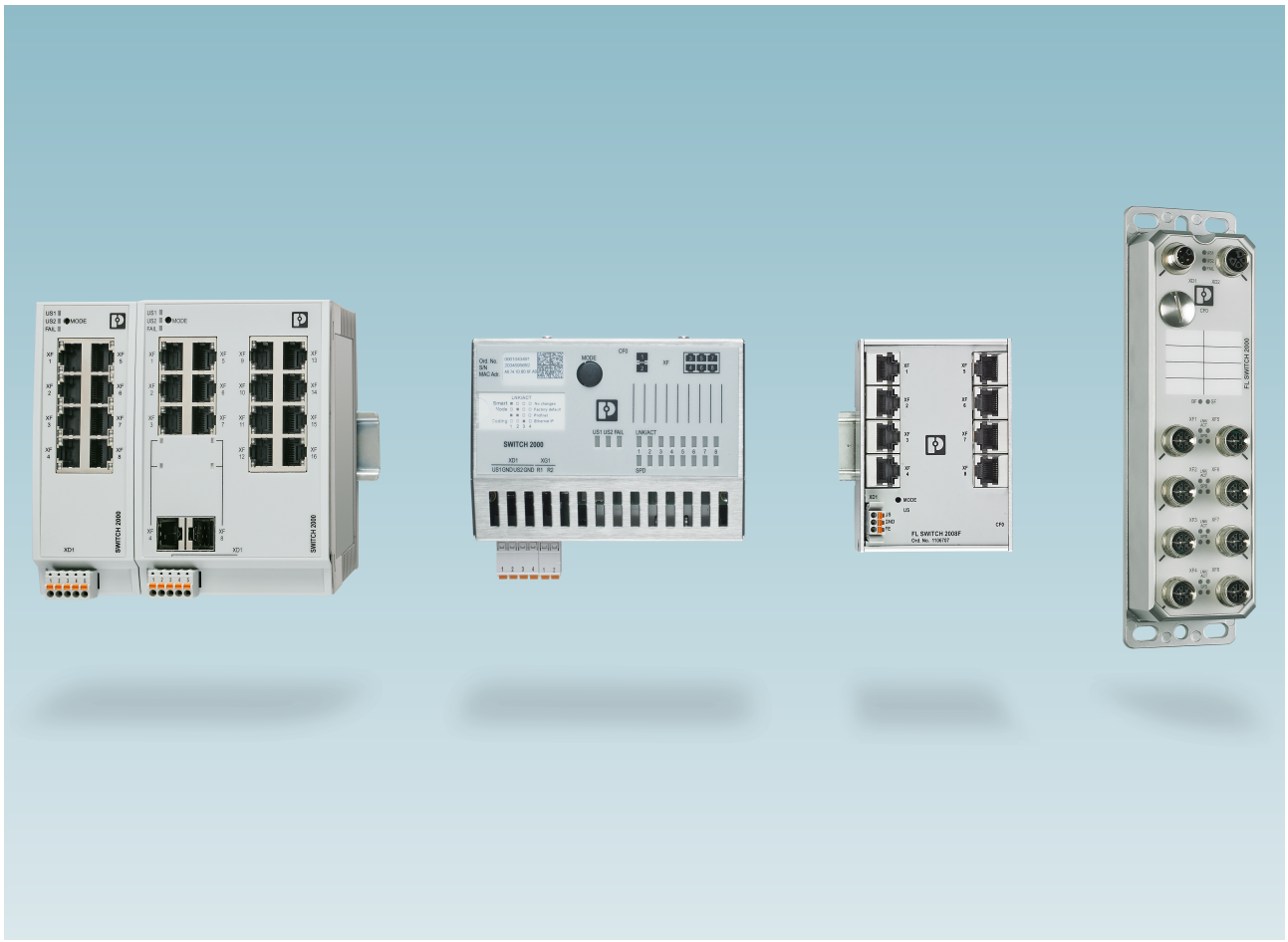


Installation and startup of the FL SWITCH 2000 and FL NAT 2000 product families

User manual

PHOENIX CONTACT
INSPIRING INNOVATIONS

User manual

Installation and startup of the FL SWITCH 2000 and FL NAT 2000 product families

UM EN HW FL SWITCH 2000, Revision 05 2023-01-20

This manual is valid for:

Designation	Item No.
FL SWITCH 2005	2702323
FL SWITCH 2008	2702324
FL SWITCH 2008F	1106707
FL SWITCH 2016	2702903
FL SWITCH 2105	2702665
FL SWITCH 2108	2702666
FL SWITCH 2116	2702908
FL SWITCH 2205	2702326
FL SWITCH 2208	2702327
FL SWITCH 2208C	1095627
FL SWITCH 2208 PN	1044024
FL SWITCH 2207-FX	2702328
FL SWITCH 2207-FX SM	2702329
FL SWITCH 2206-2FX	2702330
FL SWITCH 2206C-2FX	1095628
FL SWITCH 2206-2FX SM	2702331
FL SWITCH 2206-2FX ST	2702332
FL SWITCH 2206-2FX SM ST	2702333
FL SWITCH 2206-2SFX	2702969
FL SWITCH 2206-2SFX PN	1044028
FL SWITCH 2204-2TC-2SFX	2702334
FL SWITCH 2216	2702904
FL SWITCH 2216 PN	1044029
FL SWITCH 2214-2FX	2702905
FL SWITCH 2214-2FX SM	2702906
FL SWITCH 2214-2SFX	1006188
FL SWITCH 2214-2SFX PN	1044030
FL SWITCH 2212-2TC-2SFX	2702907
FL SWITCH 2308	2702652
FL SWITCH 2308 PN	1009220
FL SWITCH 2306-2SFP	2702970
FL SWITCH 2306-2SFP PN	1009222
FL SWITCH 2304-2GC-2SFP	2702653
FL SWITCH 2316	2702909
FL SWITCH 2316 PN	1031673
FL SWITCH 2314-2SFP	1006191
FL SWITCH 2314-2SFP PN	1031683
FL SWITCH 2312-2GC-2SFP	2702910
FL SWITCH 2408	1043412
FL SWITCH 2408 PN	1089133
FL SWITCH 2406-2SFX	1043414
FL SWITCH 2406-2SFX PN	1089126
FL SWITCH 2404-2TC-2SFX	1088853
FL SWITCH 2416	1043416
FL SWITCH 2416 PN	1089150
FL SWITCH 2414-2SFX	1043423
FL SWITCH 2414-2SFX PN	1089139
FL SWITCH 2412-2TC-2SFX	1088875
FL SWITCH 2508	1043484
FL SWITCH 2508/K1	1215350
FL SWITCH 2508 PN	1089134
FL SWITCH 2506-2SFP	1043491
FL SWITCH 2506-2SFP/K1	1215329
FL SWITCH 2506-2SFP PN	1089135
FL SWITCH 2504-2GC-2SFP	1088872
FL SWITCH 2516	1043496
FL SWITCH 2516 PN	1089205
FL SWITCH 2514-2SFP	1043499
FL SWITCH 2514-2SFP PN	1089154
FL SWITCH 2512-2GC-2SFP	1088856
FL SWITCH 2608	1106500
FL SWITCH 2608 PN	1106616
FL SWITCH 2708	1106615
FL SWITCH 2708 PN	1106610
FL NAT 2008	2702881
FL NAT 2208	2702882
FL NAT 2304-2GC-2SFP	2702981

Also observe the associated user manual for configuring the listed items. (Document 108998)

The user manual and additional user documentation can be downloaded from our website:

phoenixcontact.com

Enter one of the item numbers listed here in the search field.

108997_en_05

Table of contents

1 For your safety

Read this user manual carefully and keep it for future reference.

1.1 Identification of warning notes

This symbol indicates hazards that could lead to personal injury.

There are three signal words indicating the severity of a potential injury.

DANGER
Indicates a hazard with a high risk level. If this hazardous situation is not avoided, it will result in death or serious injury.

WARNING
Indicates a hazard with a medium risk level. If this hazardous situation is not avoided, it could result in death or serious injury.

CAUTION
Indicates a hazard with a low risk level. If this hazardous situation is not avoided, it could result in minor or moderate injury.

This symbol together with the **NOTE** signal word warns the reader of actions that might cause property damage or a malfunction.

Here you will find additional information or detailed sources of information.

1.2 Qualification of the users

The use of products described in this user manual is oriented exclusively to electrically skilled persons or persons instructed by them. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

1.3 Field of application of the product

1.3.1 Intended use

The switches of the FL SWITCH 2000 product family are recommended for use in industrial networks. They are intended for use in control cabinets or control boxes that meet the requirements of IEC/EN 62368-1 regarding fire protection enclosures. The devices may only be used in the approved ambient conditions and in the approved supply voltage range (see “Technical data” on page 65).

The prescribed mounting position is vertical on a horizontally mounted DIN rail. To allow air to circulate freely, the vents must not be covered. A clearance of at least 3 cm to the vents of the housing is recommended.

1.3.2 Product changes

Modifications to hardware and firmware of the device are not permitted.

Incorrect operation or modifications to the device can endanger your safety or damage the device. Do not repair the device yourself. If the device is defective, please contact Phoenix Contact.

1.4 Scope of application of this manual

This manual contains information on installation and startup of the FL SWITCH 2xxx and FL NAT 2xxx product families.

For information about configuration, please refer to the separate manual with the number°108998 at phoenixcontact.net/qr/<item_number>.

For information about configuration and diagnostics via the Command Line Interface (CLI), please refer to the separate manual with the number 110152 at phoenixcontact.net/qr/<item_number>.

1.5 Safety and installation instructions

WARNING: Explosion hazard in potentially explosive areas
Only use original accessories (see “Accessories” on page 251).
Observe all relevant safety and installation instructions in this documentation and in the documentation supplied with the accessories.

CAUTION: Risk of burns on hot surfaces
At high ambient temperatures, the surfaces of the device can become hot. Therefore, make sure to let the device cool down first before performing any work on it.

NOTE: Installation only by qualified personnel
Installation, startup, and maintenance of the product may only be performed by qualified specialist personnel who have been authorized for this by the system operator. An electrically skilled person is someone who, because of their professional training, skills, experience, and their knowledge of relevant standards, can assess any required operations and recognize any possible dangers. Specialist personnel must read and understand this documentation and comply with instructions. Observe the applicable national regulations with respect to the operation, function testing, repair, and maintenance of electronic devices.

NOTE: Electrostatic discharge
Electrostatic discharge can damage or destroy components. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) in accordance with EN 61340-5-1 and IEC 61340-5-1.

NOTE: Requirements for the power supply
The device is designed exclusively for operation with safety extra-low voltage (SELV) or protective extra-low voltage with electrically safe isolation (PELV). In redundant operation, both power supplies must meet the requirements of the safety extra-low voltage.

NOTE: Radio interference (Class A, EN 55032)
Operating this device may cause radio interference in residential areas.

NOTE: Requirements for the control cabinet or control box
This module snaps onto a standard DIN rail inside a control cabinet or control box. This control cabinet/control box must meet the requirements of IEC/EN 62368-1 with respect to fire protection enclosures.

NOTE: Requirements for functional ground
Mount the module on a grounded DIN rail. The module is grounded when it is snapped onto the DIN rail.

NOTE: Requirements for mounting location
The prescribed mounting position is vertical on a horizontally mounted DIN rail. To allow air to circulate freely, the vents must not be covered. A clearance of at least 3 cm to the vents of the housing is recommended.

The symbol with the crossed-out trash can indicates that this item must be collected and disposed of separately from other waste. Phoenix Contact or public collection sites will take the item back for free disposal. For information on the available disposal options, visit phoenixcontact.com. Collect and dispose of included batteries separately from other waste. Delete personal data before returning the item.

The symbol informs you that you have to observe the instructions. Only install and operate the device once you have familiarized yourself with its properties by means of the user documentation.

Opening or modifying the device is not permitted. Do not repair the device yourself; replace it with an equivalent device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from noncompliance.

The IP20 degree of protection (IEC 60529/EN 60529) of versions 20xx/21xx/22xx/23xx/24xx/25xx and NAT 2xxx is intended for a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.

The IP67 degree of protection of the 26xx/27xx versions is intended for dusty and wet environments. The device is dust-tight and is protected against temporary submersion. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.

1.6 Security in the network

NOTE: Network security jeopardized by unauthorized access
Connecting devices to a network entails the danger of unauthorized access to the network.

Observe the following safety notes:

- If possible, deactivate unused communication channels.
- Use secure passwords reflecting the complexity and service life recommended in the latest guidelines.
- Only allow authorized persons to access the device. Limit the number of authorized persons to the necessary minimum.
- Always install the latest firmware version. The firmware can be downloaded via the item (phoenixcontact.net/products).

- Observe the IT security requirements and the standards applicable to your application. Take the necessary protective measures. These may include, for example, virtual networks for remote maintenance access or a firewall.
- In security-critical applications, always use the device with an additional security appliance.

  Phoenix Contact offers security appliances in the mGuard product range. The mGuard routers connect various networks for the remote maintenance and protection of the local network and protect these networks against cyberattacks.
- You must take defense-in-depth strategies into consideration when planning networks.

Additional measures for protection against unauthorized network access can be found in the “INDUSTRIAL SECURITY” application note. The application note can be downloaded via the item (phoenixcontact.net/products).
German: AH DE INDUSTRIAL SECURITY, 107913
English: AH EN INDUSTRIAL SECURITY, 107913

If a security vulnerability exists for products, solutions, or services from Phoenix Contact, it will be published on the PSIRT (Product Security Incident Response Team) website: phoenixcontact.com/psirt

2 Properties of the devices

2.1 Properties and versions

2.1.1 FL SWITCH 2xxx device versions

Table 2-1 FL SWITCH 2xxx device versions

Item designation	Pre-configuration in factory default state	Copper ports		Fiberglass ports	
		10/100 Mbps	10/100/1000 Mbps	100 Mbps	100/1000 Mbps
FL SWITCH 2005		5 x RJ45			
FL SWITCH 2008		8 x RJ45			
FL SWITCH 2008F		8 x RJ45			
FL SWITCH 2016		16 x RJ45			
FL SWITCH 2105			5 x RJ45		
FL SWITCH 2108			8 x RJ45		
FL SWITCH 2116			16 x RJ45		
FL SWITCH 2205		5 x RJ45			
FL SWITCH 2208		8 x RJ45			
FL SWITCH 2208C		8 x RJ45			
FL SWITCH 2208 PN	PROFINET mode	8 x RJ45			
FL SWITCH 2207-FX		7 x RJ45		1 x MM SC	
FL SWITCH 2207-FX SM		7 x RJ45		1 x SM SC	
FL SWITCH 2206-2FX		6 x RJ45		2 x MM SC	
FL SWITCH 2206C-2FX		6 x RJ45		2 x MM SC	
FL SWITCH 2206-2FX SM		6 x RJ45		2 x SM SC	
FL SWITCH 2206-2FX ST		6 x RJ45		2 x MM ST	
FL SWITCH 2206-2FX SM ST		6 x RJ45		2 x SM ST	
FL SWITCH 2206-2SFX		6 x RJ45		2 x SFP	
FL SWITCH 2206-2SFX PN	PROFINET mode	6 x RJ45		2 x SFP	
FL SWITCH 2204-2TC-2SFX		4 x RJ45		2 x combo 2 x SFP	
FL SWITCH 2216		16 x RJ45			
FL SWITCH 2216 PN	PROFINET mode	16 x RJ45			
FL SWITCH 2214-2FX		14 x RJ45		2 x MM SC	
FL SWITCH 2214-2FX SM		14 x RJ45		2 x SM SC	
FL SWITCH 2214-2SFX		14 x RJ45		2 x SFP	

Table 2-1 FL SWITCH 2xxx device versions

Item designation	Pre-configuration in factory default state	Copper ports		Fiberglass ports	
		10/100 Mbps	10/100/1000 Mbps	100 Mbps	100/1000 Mbps
FL SWITCH 2214-2SFX PN	PROFINET mode	14 x RJ45		2 x SFP	
FL SWITCH 2212-2TC-2SFX		12 x RJ45		2 x combo 2 x SFP	
FL SWITCH 2308			8 x RJ45		
FL SWITCH 2308 PN	PROFINET mode		8 x RJ45		
FL SWITCH 2306-2SFP			6 x RJ45		2 x SFP
FL SWITCH 2306-2SFP PN	PROFINET mode		6 x RJ45		2 x SFP
FL SWITCH 2304-2GC-2SFP			4 x RJ45		2 x combo 2 x SFP
FL SWITCH 2316			16 x RJ45		
FL SWITCH 2316 PN	PROFINET mode		16 x RJ45		
FL SWITCH 2314-2SFP			14 x RJ45		2 x SFP
FL SWITCH 2314-2SFP PN	PROFINET mode		14 x RJ45		2 x SFP
FL SWITCH 2312-2GC-2SFP			12 x RJ45		2 x combo 2 x SFP
FL SWITCH 2408		8 x RJ45			
FL SWITCH 2408 PN	PROFINET mode	8 x RJ45			
FL SWITCH 2406-2SFX		6 x RJ45		2 x SFP	
FL SWITCH 2406-2SFX PN	PROFINET mode	6 x RJ45		2 x SFP	
FL SWITCH 2404-2TC-2SFX		4 x RJ45		2 x combo, 2 x SFP	
FL SWITCH 2416		16 x RJ45			
FL SWITCH 2416 PN	PROFINET mode	16 x RJ45			
FL SWITCH 2414-2SFX		14 x RJ45		2 x SFP	
FL SWITCH 2414-2SFX PN	PROFINET mode	14 x RJ45		2 x SFP	
FL SWITCH 2412-2TC-2SFX		12 x RJ45		2 x combo, 2 x SFP	
FL SWITCH 2508			8 x RJ45		
FL SWITCH 2508/K1			8 x RJ45		
FL SWITCH 2508 PN	PROFINET mode		8 x RJ45		
FL SWITCH 2506-2SFP			6 x RJ45		2 x SFP
FL SWITCH 2506-2SFP/K1			6 x RJ45		2 x SFP
FL SWITCH 2506-2SFP PN	PROFINET mode		6 x RJ45		2 x SFP
FL SWITCH 2504-2GC-2SFP			4 x RJ45		2 x combo 2 x SFP

Table 2-1 FL SWITCH 2xxx device versions

Item designation	Pre-configuration in factory default state	Copper ports		Fiberglass ports	
		10/100 Mbps	10/100/1000 Mbps	100 Mbps	100/1000 Mbps
FL SWITCH 2516			16 x RJ45		
FL SWITCH 2516 PN	PROFINET mode		16 x RJ45		
FL SWITCH 2514-2SFP			14 x RJ45		2 x SFP
FL SWITCH 2514-2SFP PN	PROFINET mode		14 x RJ45		2 x SFP
FL SWITCH 2512-2GC-2SFP			12 x RJ45		2 x combo 2 x SFP
FL SWITCH 2608		8 x M12 (D-coded)			
FL SWITCH 2608 PN	PROFINET mode	8 x M12 (D-coded)			
FL SWITCH 2708			8 x M12 (X-coded)		
FL SWITCH 2708 PN	PROFINET mode		8 x M12 (X-coded)		

2.1.2 FL NAT 2xxx device versions

Table 2-2 FL NAT 2xxx device versions

Item designation	Copper ports		Fiberglass ports	
	10/100 Mbps	10/100/1000 Mbps	100 Mbps	100/1000 Mbps
FL NAT 2008	8 x RJ45			
FL NAT 2208	8 x RJ45			
FL NAT 2304-2GC-2SFP		4 x RJ45		2 x combo, 2 x SFP

2.1.3 Description of Ethernet interfaces

The standard Ethernet interfaces of the FL SWITCH 2000 and FL NAT 2000 product families described below all meet the requirements of the IEEE 802.3 specification.

Copper ports:

– TX ports (RJ45), 10/100 Mbps (versions 20xx, 22xx, 24xx)
– TX ports (RJ45), 10/100/1000 Mbps (versions 21xx, 23xx, 25xx)
– TX ports (M12), 10/100 Mbps (versions 26xx)
– TX ports (M12), 10/100/1000 Mbps (versions 27xx)

Fiberglass ports:

– FO ports (ST duplex, SC duplex), 100 Mbps (versions 22xx)
– SFP ports (SFX), 100 Mbps (versions 22xx, 24xx)
– SFP ports (SFP), 100/1000 Mbps (versions 23xx, 25xx)

NOTE: Device damage
To prevent damage to the device, only use patch cables made of plastic. We recommend patch cables from Phoenix Contact, see “Accessories” on page 251.

2.2 Overview table of the functions

The functions listed in Table 2-3 are up to date at the time of publication of this manual. For information on the date of publication of individual functions, please refer to the firmware release note. This can be downloaded as part of the software package in the firmware update area on the product page (e.g., http://phoenixcontact.net/product/2702324).

Table 2-3 Device functions

	FL SWITCH/FL NAT								
	20xx	**21xx**	**22xx**	**23xx**	**24xx**	**25xx**	**25xx/K1**	**26xx**	**27xx**
Alarm output/signal contact	No		Yes				No		
Temperature range	0°C ... +60°C		-40°C … +70°C						
Data transmission									
Jumbo frames	No	Yes	No	Yes	No	Yes	Yes	No	Yes
Supply voltage									
Supply voltage range	18 ... 32 V DC		12 ... 57 V DC		19.2 ... 32 V DC		12 ... 32 V DC	9 ...57 V DC	
Redundant power supply	No		Yes						
Filter functions									
Quality of Service	Yes		Yes						
DSCP/Diffserv	Yes		Yes						
VLAN	Yes		Yes						
Multicast/IGMP snooping	Yes		Yes						
Redundancy									
Rapid Spanning Tree (RSTP)	Yes		Yes						
MRP manager/client	No/yes		Yes (optional)/yes						
Fast Ring Detection (FRD)	No		Yes						
Large Tree Support	No		Yes						
Link aggregation (LACP)	No		Yes						
Management functions									
Role-based user management	Yes		Yes						
Port configuration	Yes		Yes						
Address Conflict Detection (ACD)	Yes		Yes						
DHCP server	Port-based		Pool/port-based, option 82						
Command Line Interface (CLI)	Yes		Yes						
Diagnostic functions									
Link Layer Discovery Protocol (LLDP)	Yes		Yes						

Table 2-3 Device functions [...]

	FL SWITCH/FL NAT								
	20xx	**21xx**	**22xx**	**23xx**	**24xx**	**25xx**	**25xx/K1**	**26xx**	**27xx**
Port statistics and utilization	Yes		Yes						
SNMPv1/v2/v3	Yes		Yes						
SNMP traps	Yes		Yes						
Syslog	Yes		Yes						
Time synchronization									
Simple Network Time Protocol (SNTP)	Yes		Yes						
Automation protocols									
PROFINET conformance class	A		B						
PROFINET device	No		Yes						
Extended multicast filtering for EtherNet/IP	Yes		Yes						
Security									
MAC-based port security	No		Yes						
RADIUS authentication (IEEE 802.1X)	No		Yes						
Layer 3 functions (FL NAT versions only)									
Static routing	Yes	–[1]	Yes		–[1]				
1:1-NAT	Yes	–[1]	Yes		–[1]				
Port forwarding (1:n NAT)	Yes	–[1]	Yes		–[1]				
Virtual NAT	Yes	–[1]	Yes		–[1]				

[1] No FL NAT versions are available for these series.

2.3 Diagnostic and status indicators

Please note that the meaning of the LEDs differs in Smart mode (see "Using Smart mode" on page 49).

Table 2-4 Diagnostic and status indicators

Designation	Color	Status	Meaning
US1	Green	On	Supply voltage 1 is in the tolerance range.
		Off	Supply voltage 1 is too low.
US2 (for 22xx/23xx/24xx/25xx/ 26xx/27xx versions only)	Green	On	Supply voltage 2 is in the tolerance range.
		Off	Supply voltage 2 is too low.
FAIL[1] (for 22xx/23xx/24xx/25xx/ 26xx/27xx versions only)	Red	On	An error has occurred. The digital alarm output (22xx/23xx versions) is floated, the signal contact (24xx/25xx versions) is closed.
		Off	No error. The digital alarm output (22xx/23xx versions) is connected to ground potential (ground), the signal contact (24xx/25xx versions) is open.
LNK/ACT[2]	Green/ orange	On	Green: link active Orange: SFP link at combo port active
		Flashing	Data transmission
		Off	Link not active
SPD[2]	Green/ orange	On	Green: 100 Mbps Orange: 1000 Mbps (only for 21xx/23xx/25xx/27xx versions)
		Off	10 Mbps, if Link LED is active
BF (for PN versions only)	Red	On	The device does not have an active link.
		Flashing	The device has at least one active link but no active PROFINET connection.
		Off	The device has at least one active link and at least one active PROFINET connection.
SF (for PN versions only)	Red	On	A PROFINET alarm is present and was reported to the control system.
		Off	No PROFINET alarm present.

[1] The 26xx/27xx and 2500/K1 versions do not feature an alarm output/signal contact. Only the FAIL LED indicates a pre-defined error.

[2] 20xx/20xxF/21xx/22xx/23xx/26xx/27xx versions: The LNK/ACT LED is located directly at the top of the port. The SPD LED is located at the bottom of the respective port. 24xx/25xx versions: The LEDs are located on the device front.

2.4 Description of the integrated fiberglass transceivers

Some versions of the FL SWITCH 2000 series have integrated fiberglass transceivers with an SC duplex or ST duplex pin connector pattern.

When the device has been mounted in accordance with the instructions (see Figure 2-1), the output port or the transmitting diode (TX) of the fiberglass transceiver is always at the top, the input port or the receiving diode (RX) is always at the bottom.

Figure 2-1 Integrated fiberglass transceivers with an SC pin connector pattern

2.5 Description of the combo ports

Combo ports enable a high degree of flexibility when setting up networks. They consist of a corresponding RJ45 port (e.g., XF3.1) and a corresponding SFP port (e.g., XF3.2). You can only use one port of such a pair at a time. You can therefore use any combo port as a copper port or as a fiberglass port. Inserting an SFP module disables the corresponding RJ45 port. If a combo port is used as a fiberglass port, the Link LED of the corresponding RJ45 port lights up orange when there is an active connection (see Table 2-4).

The following FL SWITCH 2000/FL NAT 2000 versions have combo ports:

- FL SWITCH 2204-2TC-2SFX (port 3 and port 7)
- FL SWITCH 2212-2TC-2SFX (port 3 and port 7)
- FL SWITCH 2304-2GC-2SFP (port 3 and port 7)
- FL SWITCH 2312-2GC-2SFP (port 3 and port 7)
- FL SWITCH 2404-2TC-2SFX (port 3 and port 4)
- FL SWITCH 2412-2TC-2SFX (port 3 and port 4)
- FL SWITCH 2504-2GC-2SFP (port 3 and port 4)
- FL SWITCH 2512-2GC-2SFP (port 3 and port 4)
- FL NAT 2304-2GC-2SFP (port 3 and port 7)

3 Transport, storage and unpacking

3.1 Transport

The device is delivered in cardboard packaging.

- Only transport the device to its destination in its original packaging.
- Observe the humidity specifications and the temperature range specified for transport (see “Ambient conditions” in Section “Technical data” on page 65).
- Protect the surfaces as necessary to prevent damage.
- When transporting the equipment or storing it temporarily, make sure that the surfaces are protected from the elements and any external influences, and that they are kept dry and clean.

3.2 Storage

The storage location must meet the following requirements:

– Dry
– Protected from external influences
– Protected from harmful environmental influences, e.g., UV light

Observe the specifications on humidity and temperature range (see “Ambient conditions” in Section “Technical data” on page 65).

3.3 Unpacking

The device is delivered in packaging together with a packing slip.

- Read the entire packing slip carefully.
- Retain the packing slip.

NOTE: Electrostatic discharge
Electrostatic discharge can damage or destroy components. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) in accordance with EN 61340-5-1 and IEC 61340-5-1.

- Immediately upon delivery, refer to the delivery note to ensure that the delivery is complete.
- Check the delivery for transport damage.

  Damaged packaging is an indicator of potential damage to the device that may have occurred during transport. This could result in a malfunction.
  – Submit claims for any transport damage immediately, and inform Phoenix Contact or your supplier as well as the shipping company without delay.
  – Enclose photos that clearly document the damage to the packaging or delivery together with your claim.
  – We strongly recommend using the original packaging to return the product.
- Keep the box and packaging material in case you need to return the product.
- If the original packaging is no longer available, observe the following points:
  – Observe the humidity specifications and the temperature range specified for transport (see “Ambient conditions” in Section “Technical data” on page 65).

- Use suitable ESD packaging to protect components that are sensitive to electrostatic discharge.
- Make sure that the packaging you select is large enough and sufficiently thick.
- Only use bubble wrap sheets as wadding.
- Attach warning notes to the transport packaging so that they are clearly visible.
- Please be aware that the delivery note is to be placed inside the package if the package is sent within the same country. If the package is being sent abroad, the delivery note must be placed inside a delivery note pocket and attached to the outside so that it is clearly visible.

4 Mounting and installation

4.1 General information

4.1.1 Functional ground

Grounding protects people and machines against hazardous voltages. To avoid these dangers to the greatest extent possible, correct grounding, taking the local conditions into account, is vital.

All devices must be functionally grounded. Possible interference is therefore shielded from the data telegram and discharged to ground potential.

- Mount the 20xx/21xx/22xx/23xx/24xx/25xx versions on a grounded DIN rail. The functional ground of the device is achieved when the module is snapped onto the DIN rail. Functional ground must be connected to equipotential bonding in the control box at least via a 2.5 mm^2 conductor.
- For the 20xxF versions, grounding is implemented via the FE contact on the COMBICON connector and a conductor of 1.5 mm^2.
- For IP67 versions 26xx/27xx, connect the conductor directly to the metal housing of the device, e.g., at the mounting holes. For this, you can use M6 ring cable lugs in accordance with DIN 46235 or DIN 46234 with a diameter of up to 10 mm. When mounting the device with the base on a conductive surface, FE is connected via the mounting screw. A conductor of at least 2.5 mm^2 must be used for functional grounding.

4.1.2 Strain relief

The device does not provide strain relief. To avoid damage to cables, ensure strain relief externally.

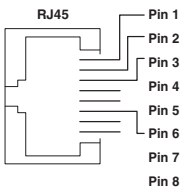
4.1.3 Assignment of the Ethernet connectors

4.1.3.1 RJ45 Ethernet connector

Only devices in the 21xx/23xx/25xx versions support Gigabit.

Please note: For operation with 1000 Mbps (Gigabit), cables with four twisted pairs (eight wires), which meet the requirements of CAT5e as a minimum, must be used.

Table 4-1 Pin assignment of RJ45 connectors

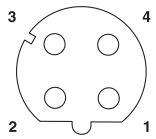
Pin number	10Base-T (10 Mbps)	100Base-T (100 Mbps)	1000Base-T (1000 Mbps)	Pin assignment
1	TD+ (transmit)	TD+ (transmit)	BI_DA+ (bidirectional)	
2	TD- (transmit)	TD- (transmit)	BI_DA- (bidirectional)	
3	RD+ (receive)	RD+ (receive)	BI_DB+ (bidirectional)	
4	–	–	BI_DC+ (bidirectional)	
5	–	–	BI_DC- (bidirectional)	
6	RD- (receive)	RD- (receive)	BI_DB- (bidirectional)	
7	–	–	BI_DD+ (bidirectional)	
8	–	–	BI_DD- (bidirectional)	

4.1.3.2 D-coded M12 Ethernet connectors

You can use M12 connectors with standard screw connection or M12 push-pull connectors from Phoenix Contact.

Only devices in the 26xx version feature Ethernet ports in D-coding.

Table 4-2 Pin assignment of D-coded M12 males

Pin number	10Base-T (10 Mbps)	100Base-T (100 Mbps)	Pin assignment
1	TD+ (transmit)	TD+ (transmit)	
2	RD+ (receive)	RD+ (receive)	
3	TD- (transmit)	TD- (transmit)	
4	RD- (receive)	RD- (receive)	

The figure only shows the pin assignment of the connector but does not give information on the mechanical alignment during installation.

The shield connection (FE) is implemented via the M12 connector and, depending on the version, via the metal thread or the push-pull retaining collar.

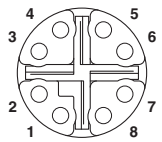
4.1.3.3 X-coded M12 Ethernet connectors

You can use M12 connectors with standard screw connection or M12 push-pull connectors from Phoenix Contact.

Only devices in the 27xx version feature Ethernet ports in X-coding and support Gigabit.

Please note: For operation with 1000 Mbps (Gigabit), cables with four twisted pairs (eight wires), which meet the requirements of CAT5e as a minimum, must be used.

Table 4-3 Pin assignment of X-coded M12 males

Pin number	10Base-T (10 Mbps)	100Base-T (100 Mbps)	1000Base-T (1000 Mbps)	Pin assignment
1	RD+ (receive)	RD+ (receive)	DB+	
2	RD- (receive)	RD- (receive)	DB-	
3	TD+ (transmit)	TD+ (transmit)	DA+	
4	TD- (transmit)	TD- (transmit)	DA-	
5	–	–	DC+	
6	–	–	DC-	
7	–	–	DD-	
8	–	–	DD+	

The figure only shows the pin assignment of the connector but does not give information on the mechanical alignment during installation.

The shield connection (FE) is implemented via the M12 connector and, depending on the version, via the metal thread or the push-pull retaining collar.

4.2 FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx

4.2.1 Device dimensions

Figure 4-1 Dimensions of 5/8-port versions in a narrow housing

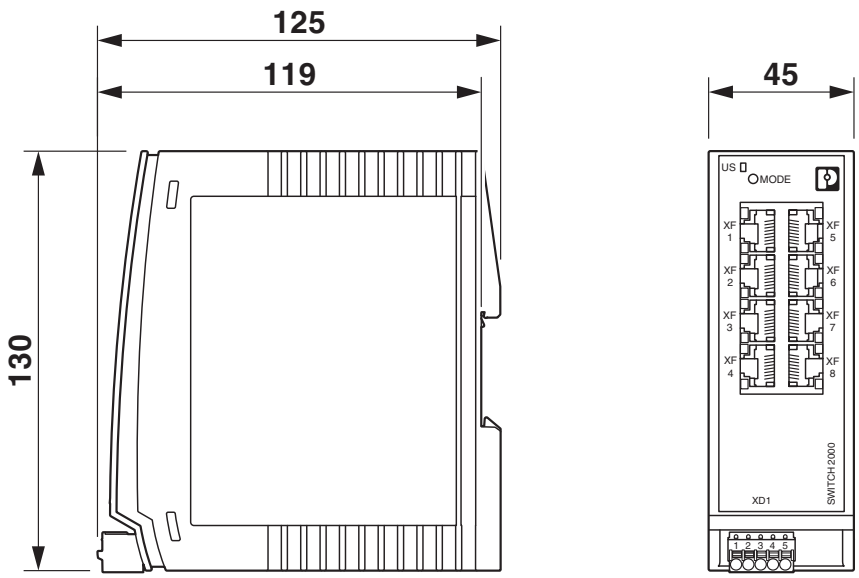
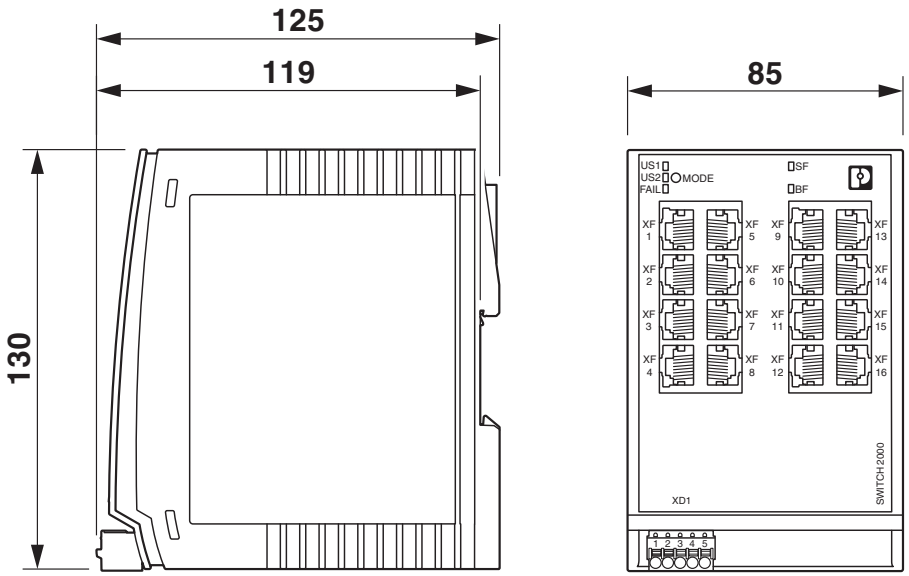


Figure 4-2 Dimensions of 16-port versions in a narrow housing



4.2.2 Elements of the devices

Figure 4-3 Elements of the FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx devices

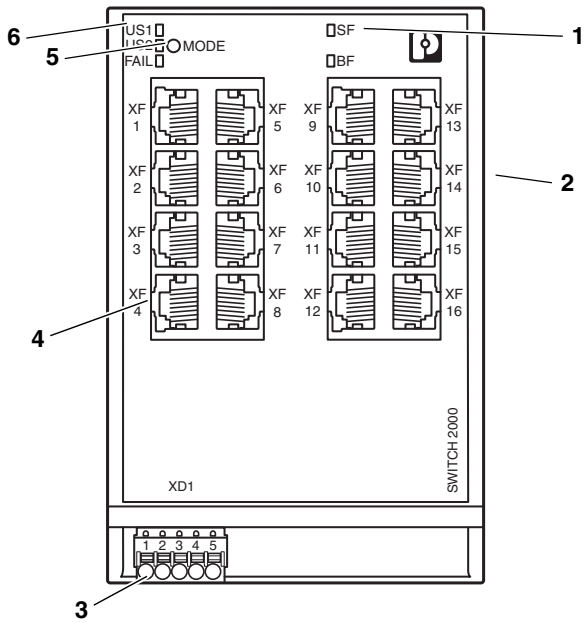


Table 4-4 Key for FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx

Number	Meaning
1	PROFINET status LEDs (for PN versions only)
2	Slot for optional SD card (rear)
3	Connection of the supply voltage
4	RJ45 ports
5	Smart mode button
6	Diagnostic and status indicators

4.2.3 Mounting and removing devices

WARNING: Danger to life from electric shock
Only mount or remove the device when it is disconnected from power.

Observe the following notes and instructions when mounting and removing the devices:

– Mount the device on a clean, horizontally installed DIN rail in accordance with DIN EN 60715 (e.g., NS 35 ... from Phoenix Contact).
– To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, item no. 0800886) can be mounted to the right and left of the device to stop the modules from slipping on the DIN rail.
– To allow air to circulate freely, the vents must not be covered. A clearance of at least 30 mm to the vents of the housing is recommended. The control cabinet/control box must meet the requirements of EN/IEC 62368-1 with respect to fire protection enclosures.

– The IP20 degree of protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
– Make sure that no foreign objects enter the inside of the housing.

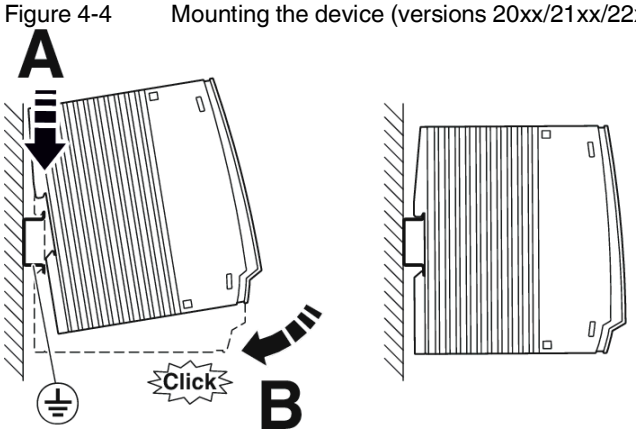
Mounting:

- Place the module onto the DIN rail from above (A). The upper holding keyway of the module must be hooked onto the top edge of the DIN rail.
- Push the module from the front towards the mounting surface (B).

⇒ The module engages with a click.

- Check that the module is securely mounted on the DIN rail.

Figure 4-4 Mounting the device (versions 20xx/21xx/22xx/23xx and NAT 2xxx)



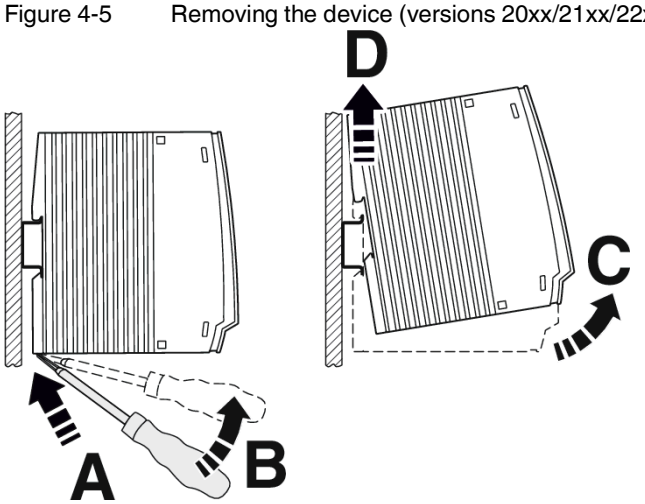
Removal:

- Pull down the positive latch (A/B) using a suitable tool (e.g., screwdriver).

On the 16-port devices, the positive latch remains snapped out.

- Then slightly swivel the bottom of the device away from the DIN rail (C).
- Lift the device upwards away from the DIN rail (D).

Figure 4-5 Removing the device (versions 20xx/21xx/22xx/23xx and NAT 2xxx)



4.2.4 Installation of the devices

4.2.4.1 Selecting a conductor

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors and ferrules:

Table 4-5 Selection of conductors/ferrules/screwdrivers

Conductor	Push-in	Screw
Conductor cross-section, rigid, minimum	0.14 mm^2	
Conductor cross-section, rigid, maximum	1.5 mm^2	
Conductor cross-section, flexible, minimum	0.14 mm^2	
Conductor cross-section, flexible, maximum	1.5 mm^2	
Conductor cross-section, flexible, with ferrule without plastic sleeve, minimum	0.25 mm^2	
Conductor cross-section, flexible, with ferrule without plastic sleeve, maximum	1.5 mm^2	
Conductor cross-section, flexible, with ferrule with plastic sleeve, minimum	0.25 mm^2	
Conductor cross-section, flexible, with ferrule with plastic sleeve, maximum	0.75 mm^2	0.5 mm^2
Suitable ferrule without plastic sleeve: maximum conductor cross-section	1.5 mm^2	
Suitable ferrule without plastic sleeve: maximum conductor cross-section	0.75 mm^2 (color code: gray, in accordance with DIN 46228)	0.5 mm^2 (color code: white, in accordance with DIN 46228)
Suitable screwdriver	Slotted Blade thickness: 0.4 mm Blade width: 2.5 mm Recommended: SZS 0,4X2,5 VDE, item no. 1205037	
Conductor cross-section, AWG, minimum	24	
Conductor cross-section, AWG, maximum	16	
Stripping length	9 mm	

Table 4-6 Specifications for ferrules

Recommended crimping pliers	1212034 CRIMPFOX 6	
Ferrules without insulating collar, in accordance with DIN 46228-1	Cross-section: 0.25 mm^2;	Length: 7 mm
	Cross-section: 0.34 mm^2;	Length: 7 mm
	Cross-section: 0.5 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 0.75 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 1 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 1.5 mm^2;	Length: 10 mm

4.2.4.2 Connecting the supply voltage

The device is operated using a 24 V DC voltage, which is applied via COMBICON connectors. For the 22xx/23xx device versions, you can supply the voltage redundantly (see Figure 4-7).

NOTE: Requirements for the power supply

The device is designed exclusively for operation with safety extra-low voltage (SELV) or protective extra-low voltage with electrically safe isolation (PELV). In redundant operation, both power supplies must meet the requirements of the safety extra-low voltage.

For 22xx/23xx device versions:

If redundant power supply monitoring is active (default setting), an error is indicated if only one voltage is applied.

A bridge between US1 and US2 prevents this error message. It is possible to deactivate monitoring in web-based management or via SNMP.

Figure 4-6 Operating the device with one power supply (example)

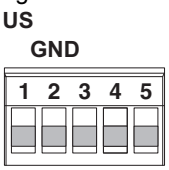
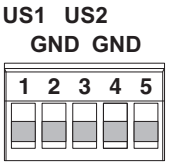


Figure 4-7 Redundant operation with two power supplies (example)

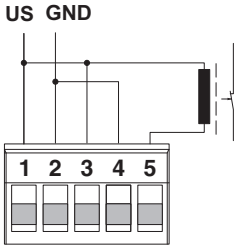


Please note that load distribution does not take place. The power supply unit with the higher voltage will supply the device on its own.

4.2.4.3 Connecting the relay to the digital alarm output

The digital alarm output is an open drain output. In normal mode, the output is connected to ground potential. If an error/alarm is present, the output is floating.

Figure 4-8 Connecting the relay to the digital alarm output

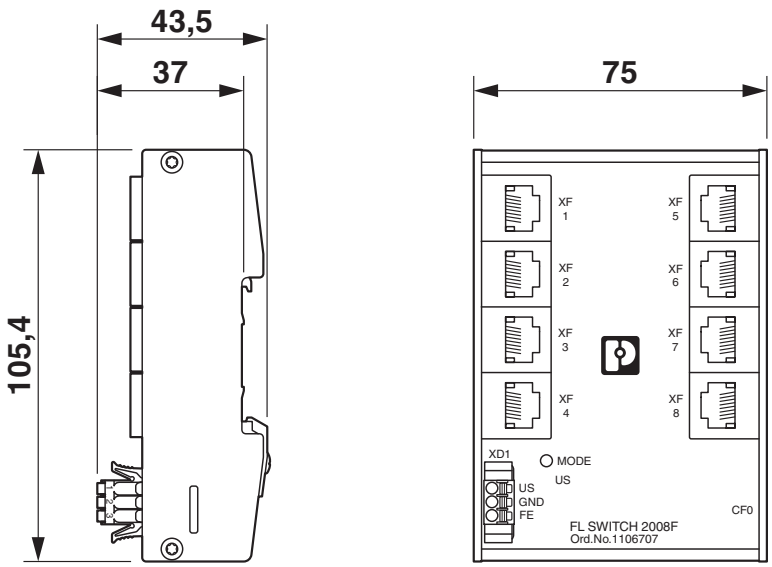


Please note that the relay must be suitable for the operating voltage. Use the RIF-0-RPT-24DC/21 (item no. 2903370), for example.

4.3 FL SWITCH 20xxF

4.3.1 Device dimensions

Figure 4-9 Dimensions of the 8-port version in a flat housing



4.3.2 Elements of the devices

Figure 4-10 Elements of the FL SWITCH 20xxF devices

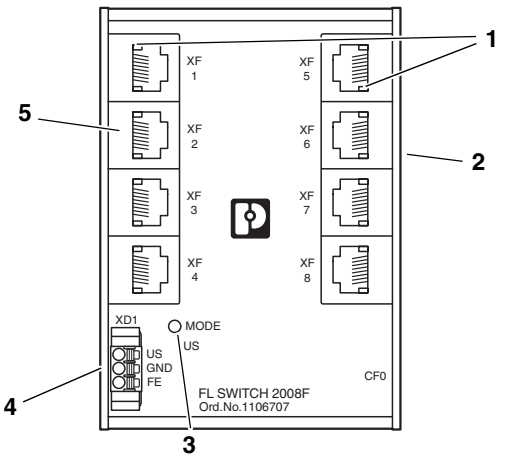


Table 4-7 Key for FL SWITCH 20xxF

Number	Meaning
1	Diagnostic and status indicators
2	Slot for optional microSD card
3	Smart mode button
4	Connection of the supply voltage
5	RJ45 ports

4.3.3 Mounting and removing devices

WARNING: Danger to life from electric shock
Only mount or remove the device when it is disconnected from power.

Observe the following notes for mounting and removing the devices:

– Mount the device on a clean, horizontally installed DIN rail in accordance with DIN EN 60715 (e.g., NS 35 ... from Phoenix Contact).
– To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, item no. 0800886) can be mounted to the right and left of the device to stop the modules from slipping on the DIN rail.
– To allow air to circulate freely, the vents must not be covered. A clearance of at least 30 mm to the vents of the housing is recommended. The control cabinet/control box must meet the requirements of EN/IEC 62368-1 with respect to fire protection enclosures.
– The IP30 degree of protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
– Make sure that no foreign objects enter the inside of the housing.

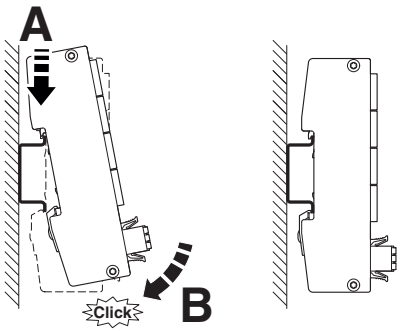
Mounting:

- Place the module onto the DIN rail from above (A). The upper holding keyway of the module must be hooked onto the top edge of the DIN rail.
- Push the module from the front towards the mounting surface (B).

⇒ The module engages with a click.

- Check that the module is securely mounted on the DIN rail.

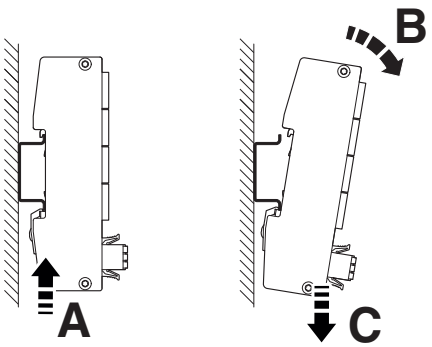
Figure 4-11 Mounting the device (version 20xxF)



Removal:

- Push the device upwards (A).
- Slightly swivel the top of the device away from the DIN rail (B).
- Lift the device downward away from the DIN rail (C).

Figure 4-12 Removing the device (version 20xxF)



4.3.4 Installation of the devices

4.3.4.1 Selecting a conductor

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors and ferrules:

Table 4-8 Selection of conductors/ferrules

Conductor	Push-in
Conductor cross-section, rigid, minimum	0.14 mm^2
Conductor cross-section, rigid, maximum	1.5 mm^2
Conductor cross-section, flexible, minimum	0.14 mm^2
Conductor cross-section, flexible, maximum	1.5 mm^2
Conductor cross-section, flexible, with ferrule without plastic sleeve, minimum	0.25 mm^2
Conductor cross-section, flexible, with ferrule without plastic sleeve, maximum	1.5 mm^2
Conductor cross-section, flexible, with ferrule with plastic sleeve, minimum	0.25 mm^2
Conductor cross-section, flexible, with ferrule with plastic sleeve, maximum	0.75 mm^2
Suitable ferrule without plastic sleeve: maximum conductor cross-section	1.5 mm^2
Suitable ferrule without plastic sleeve: maximum conductor cross-section	0.75 mm^2 (color code: gray, in accordance with DIN 46228)
Suitable screwdriver	Slotted Blade thickness: 0.4 mm Blade width: 2.5 mm Recommended: SZS 0,4X2,5 VDE, item no. 1205037
Conductor cross-section, AWG, minimum	24
Conductor cross-section, AWG, maximum	16
Stripping length	9 mm

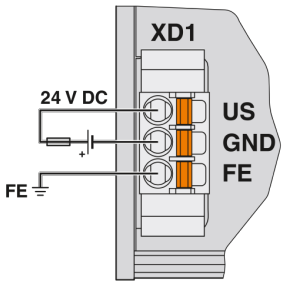
Table 4-9 Specifications for ferrules

Recommended crimping pliers	1212034 CRIMPFOX 6	
Ferrules without insulating collar, in accordance with DIN 46228-1	Cross-section: 0.25 mm^2;	Length: 7 mm
	Cross-section: 0.34 mm^2;	Length: 7 mm
	Cross-section: 0.5 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 0.75 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 1 mm^2;	Length: 8 mm … 10 mm
	Cross-section: 1.5 mm^2;	Length: 10 mm

4.3.4.2 Connecting the 24 V DC supply voltage

NOTE: Requirements for the power supply
The device is designed exclusively for operation with safety extra-low voltage (SELV) or protective extra-low voltage with electrically safe isolation (PELV). In redundant operation, both power supplies must meet the requirements of the safety extra-low voltage.

Figure 4-13 Power supply of the switch



4.4 FL SWITCH 24xx/25xx

4.4.1 Device dimensions

Figure 4-14 Dimensions of 8-port versions

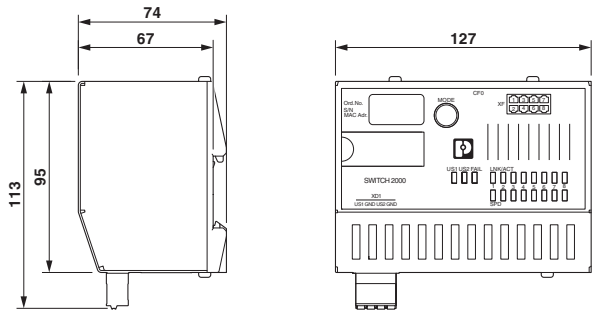
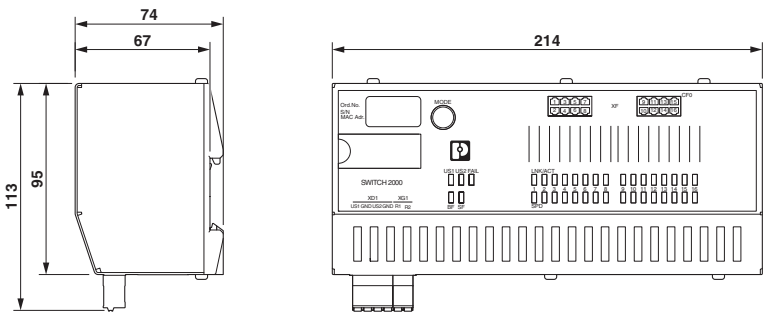


Figure 4-15 Dimensions of 16-port versions



4.4.2 Elements of the devices

Figure 4-16 Elements of the FL SWITCH 24xx/25xx devices

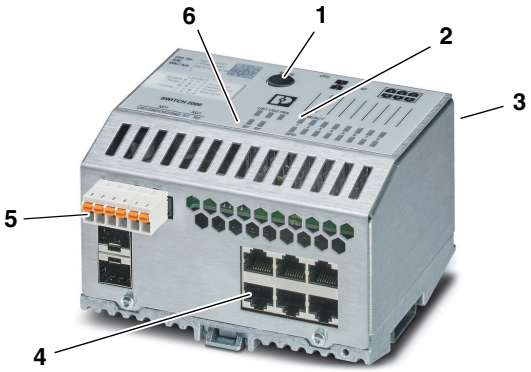


Table 4-10 Key for FL SWITCH 24xx/25xx

Number	Meaning
1	Smart mode button
2	Diagnostic and status indicators
3	Slot for optional SD card (rear)
4	RJ45 ports
5	Connection of the supply voltage
6	PROFINET status LEDs (for PN versions only)

4.4.3 Mounting and removing devices

WARNING: Danger to life from electric shock
Only mount or remove the device when it is disconnected from power.

Observe the following notes for mounting and removing the devices:

– Mount the device on a clean, horizontally mounted, DIN rail in accordance with DIN EN 60715 (e.g., NS 35 ... from Phoenix Contact).
– To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, item no. 0800886) can be mounted to the right and left of the device to stop the modules from slipping on the DIN rail.
– To allow air to circulate freely, the vents must not be covered. A clearance of at least 30 mm to the vents of the housing is recommended. The control cabinet/control box must meet the requirements of EN/IEC 62368-1 with respect to fire protection enclosures.
– The IP20 degree of protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
– Make sure that no foreign objects enter the inside of the housing.

Mounting:

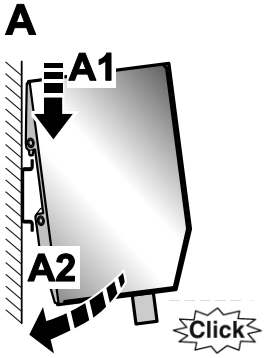
• Place the module onto the DIN rail from above (A). The upper holding keyway of the module must be hooked onto the top edge of the DIN rail.

- Push the module from the front towards the mounting surface (B).

⇒ The module engages with a click.

- Check that the module is securely mounted on the DIN rail.

Figure 4-17 Mounting the device (versions 24xx and 25xx)



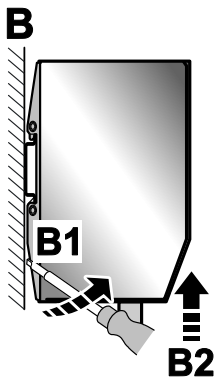
Removal:

- Pull down the positive latch using a suitable tool (e.g., screwdriver).

On the 16-port devices, the positive latch remains snapped out.

- Then slightly swivel the bottom of the device away from the DIN rail (B1).
- Lift the device upwards away from the DIN rail (B2).

Figure 4-18 Removing the device (versions 24xx and 25xx)



4.4.4 Installation of the devices

4.4.4.1 Selecting a conductor

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors:

Table 4-11 Selecting the conductors

Conductor	Push-in
Conductor cross-section, rigid, minimum	0.2 mm^2
Conductor cross-section, rigid, maximum	1.5 mm^2
Conductor cross-section, flexible, minimum	0.2 mm^2
Conductor cross-section, flexible, maximum	2.5 mm^2
Conductor cross-section, flexible, with ferrule without plastic sleeve, minimum	0.25 mm^2
Conductor cross-section, flexible, with ferrule without plastic sleeve, maximum	1.5 mm^2
Conductor cross-section, flexible, with ferrule with plastic sleeve, minimum	0.25 mm^2
Conductor cross-section, flexible, with ferrule with plastic sleeve, maximum	1.5 mm^2
Conductor cross-section, AWG, minimum	24
Conductor cross-section, AWG, maximum	16
Stripping length	10 mm

4.4.4.2 Connecting the 24 V DC supply voltage

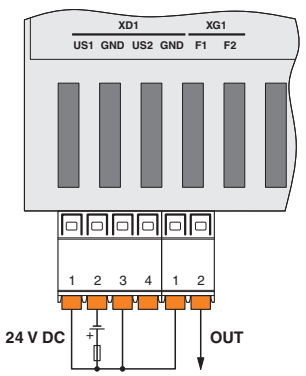
The device is operated using a 24 V DC voltage, which is applied via COMBICON connectors. The voltage can be supplied redundantly.

NOTE: Requirements for the power supply
The device is designed exclusively for operation with safety extra-low voltage (SELV) or protective extra-low voltage with electrically safe isolation (PELV). In redundant operation, both power supplies must meet the requirements of the safety extra-low voltage.

The 25xx/K1 versions do not feature a signal contact. Therefore, the 2-pos. COMBICON connector with the identification XG1 is not required (see Figure 4-19 and Figure 4-20).

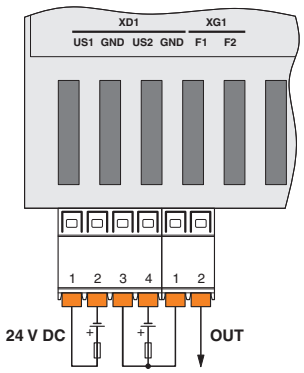
If redundant power supply monitoring is active (default setting), an error is indicated if only one voltage is applied. A bridge between US1 and US2 prevents this error message. It is possible to deactivate monitoring in web-based management or via SNMP.

Figure 4-19 Supplying the switch using one voltage source



Redundant 24 V DC feed-in

Figure 4-20 Supplying the switch using two voltage sources



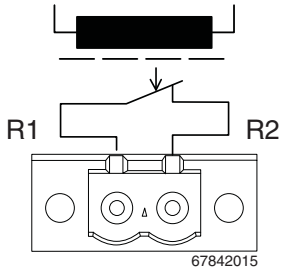
In order to reset the switch on power-up, the power supply must be interrupted for at least three seconds.

4.4.4.3 Signal contact

The 25xx/K1 versions do not feature a signal contact.

The switch has a floating signal contact. An error is indicated when the contact is opened.

Figure 4-21 Basic circuit diagram of the signal contact



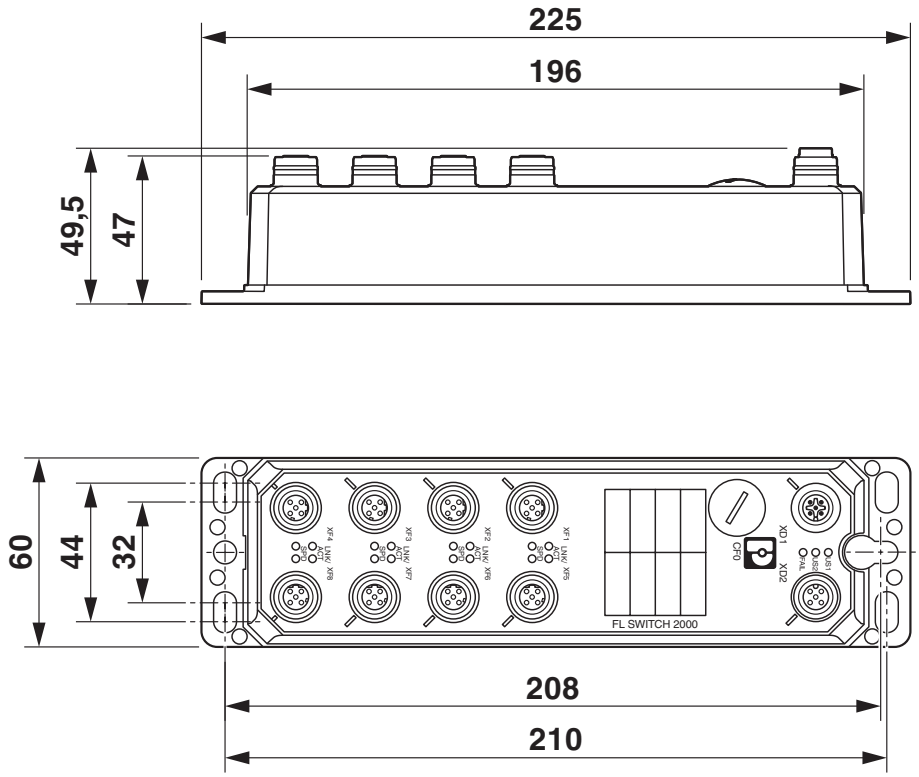
The indicated error states are configured in web-based management or via SNMP.

In the event of non-redundant voltage supply, the switch indicates the failure of a supply voltage by opening the signal contact. This error message can be prevented by connecting the supply voltage to both US1/US2 terminal blocks in parallel (see Figure 4-19). Alternatively, you can deactivate monitoring of the redundant power supply in web-based management or via SNMP.

4.5 FL SWITCH 26xx/27xx

4.5.1 Device dimensions

Figure 4-22 Dimensions of the FL SWITCH 26xx/27xx devices



4.5.2 Elements of the devices

Figure 4-23 Elements of the FL SWITCH 26xx/27xx devices

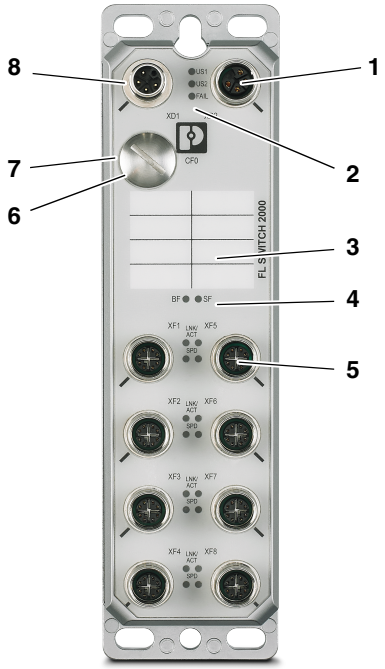


Table 4-12 Key for FL SWITCH 26xx/27xx

Number	Meaning
1	Power out
2	Diagnostic and status indicators
3	Marking field
4	PROFINET status LEDs (for PN versions only)
5	M12 Ethernet ports
6	Slot for optional microSD card (underneath the metal cap)
7	Smart mode button (underneath the metal cap)
8	Connection of the supply voltage (power in)

4.5.3 Mounting and removing devices

WARNING: Danger to life from electric shock
Only mount or remove the device when it is disconnected from power.

- Use the drilling holes to screw the device directly to a level surface or to a profile. In order to prevent forces being transmitted via the device, do not use this device to bridge gaps.

For drill hole spacing, refer to Figure 4-22.

Figure 4-24 Drill holes

For mounting, use M5 or M6 screws with a head diameter larger than 7 mm and up to 10.3 mm, maximum. When using M4 screws, you have to use washers. The use of Schnorr safety washers in accordance with DIN 6798 is possible.

Observe the maximum torque of the screws.

4.5.4 Installation of the devices

4.5.4.1 UL-compliant installation

The external circuits intended to be connected to this device shall be electrically isolated from the mains supply or hazardous live voltage by reinforced or double insulation, and meet the requirements for SELV/PELV (Class III) circuits of UL/CSA/IEC 61010-1, UL/CSA/IEC 61010-2-201.

To install the device according to UL specifications, observe the following instructions:

- If the device is not used as intended, the protection provided by the device may be impaired.
- Minimum temperature rating of the cables to be connected to the field wiring terminals: 90°C
- Only use copper conductors of a size from 24 … 16 AWG.

4.5.4.2 Tightening torques for M12 connectors and cover cap

To prevent leakage and damage to the connectors or the device, observe the tightening torques when installing M12 connectors with standard screw connection. The recommended tightening torque is 0.4 Nm.

Cover unused M12 ports with filler plugs to ensure that the housing is sealed tight. This applies to the supply voltage connections as well as to the Ethernet ports.

The recommended tightening torque for the M16 cover cap of the Smart mode button and microSD slot is 1.2 Nm; it should not exceed 4 Nm.

After each use of the Smart mode button or the microSD slot, you must install the M16 cover cap. This is the only way to ensure effective tightness of the device.

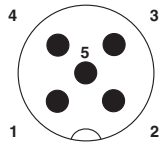
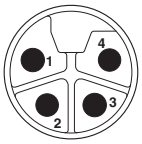
4.5.4.3 Connecting the 24 V DC supply voltage

You can use M12 connectors with standard screw connection or M12 push-pull connectors from Phoenix Contact.

- Use the XD1 female for the power supply of the device.

For the standard 26xx/27xx versions, power is supplied via an A-coded M12 connector. For the 26xx PN/27xx PN PROFINET versions, power is supplied via an L-coded M12 connector.

Table 4-13 Pin assignment for the power supply via M12 males with the identification “XD1”

Pin number	Abbreviation	Description	A-coding	L-coding
1	US1	Power supply 1		
2	GND	Ground		
3	GND	Ground		
4	US2	Power supply 2		
5	FE	Functional ground		

The figure only shows the pin assignment of the connector but does not give information on the mechanical alignment during installation.

NOTE: Data corruption or data loss

To ensure immunity when using L-coded connectors (PROFINET versions), implement the FE connection via mounting screws and a connection to the metal housing.

When using A-coded connectors, you can implement the FE connection via pin 5 or via the mounting screws.

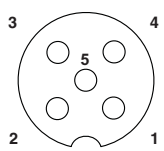
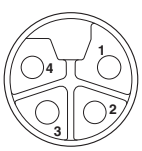
Supplying other devices with power

The 26xx/27xx versions allow for supplying other devices with power. This way, you can implement efficient cabling concepts.

- Connect the cable for the outgoing supply voltage to female XD2.

Figure 4-25 Efficient power supply

Table 4-14 Pin assignment for the power supply via M12 males with the identification “XD2”

Pin number	Abbreviation	Description	A-coding	L-coding
1	US1	Power supply 1		
2	GND	Ground		
3	GND	Ground		
4	US2	Power supply 2		
5	FE	Functional ground		

The figure only shows the pin assignment of the connector but does not give information on the mechanical alignment during installation.

NOTE: Risk of damage to electronics

The current carrying capacity per contact (US1/US2) of the A-coded M12 connectors is 4 A. The total current of US1 and US2 must not exceed 8 A.

The current carrying capacity per contact (US1/US2) of the L-coded M12 connectors is 16 A. **The total current of US1 and US2 must not exceed 20 A.**

Exceeding the permissible current carrying capacity can damage the connectors as well as the electronic components and PCB of the device.

Make sure these values are not exceeded and take into consideration the current consumption of the switch.

Please note: The connection for the outgoing supply voltage is not monitored for overload. Ensure fuse protection for the power supply that is suitable for your design.

We recommend using preassembled cables.

4.6 Using SFP slots (principle)

The SFP slots can be used by SFP modules (FO fiberglass modules in SFP format). By selecting SFP modules, you can specify whether the switch has multimode or singlemode FO ports, for example.

The SFP modules are available separately as accessories.

4.6.1 Elements of the SFP modules

Figure 4-26 Elements of the SFP modules

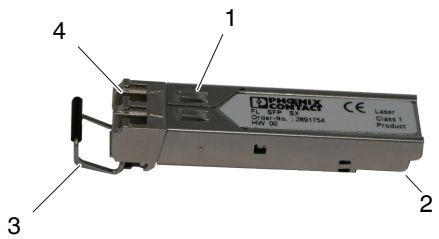


Table 4-15 Key for FL SWITCH 26xx/27xx

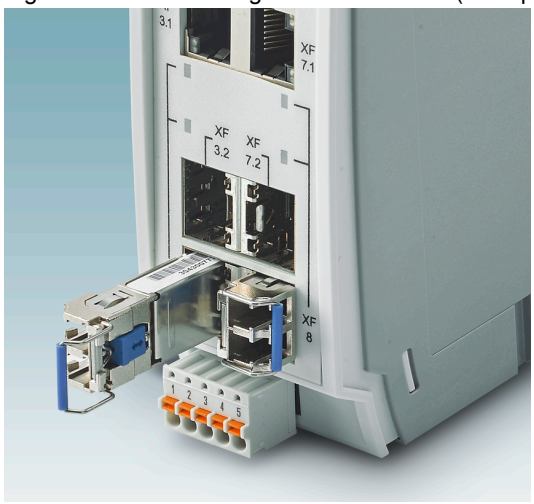
Number	Meaning
1	Mechanical locking
2	Electrical connection contacts
3	Release latch
4	FO connection

4.6.2 Mounting SFP modules

Inserting SFP modules

- Insert the SFP modules into the relevant slots on the switch.
- As you do so, ensure correct mechanical alignment of the SFP modules.

Figure 4-27 Inserting the SFP modules (example)



Removing SFP modules

- Remove the FO connector before removing the SFP module.
- Turn the release latch to the side and pull out the SFP module.

4.7 Using a (micro)SD card

Depending on the version, the switch can optionally be configured quickly using a compatible SD card or microSD card. For this, the SD card should use the VFAT/FAT32 file system (standard type for SD cards).

We recommend: Use SD and SDHC cards up to 8 GB, maximum.

– The 20xx/21xx/22xx/23xx/24xx/25xx versions support the usual SD card format.
– The 20xxF/26xx/27xx versions support microSD cards.

Please note that the correct function of the SD card and the product can only be ensured when using a Phoenix Contact SD card (see “Accessories” on page 251). If third-party SD cards are used, it is recommended that card compatibility be verified.

Figure 4-28 Position of the SD card slot on versions 20xx–23xx (left), versions 24xx and 25xx (right)

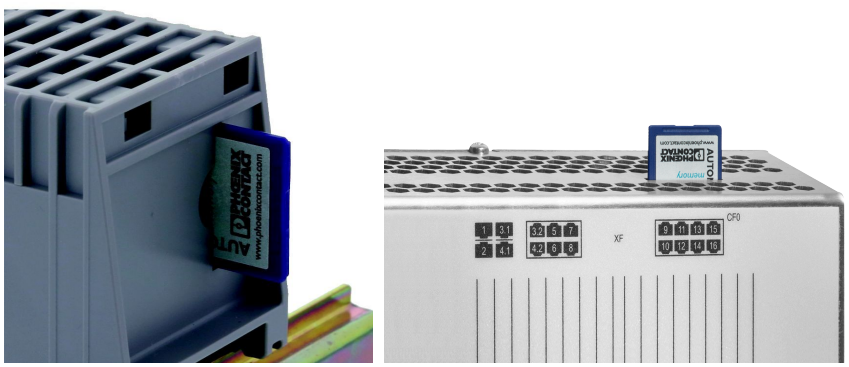
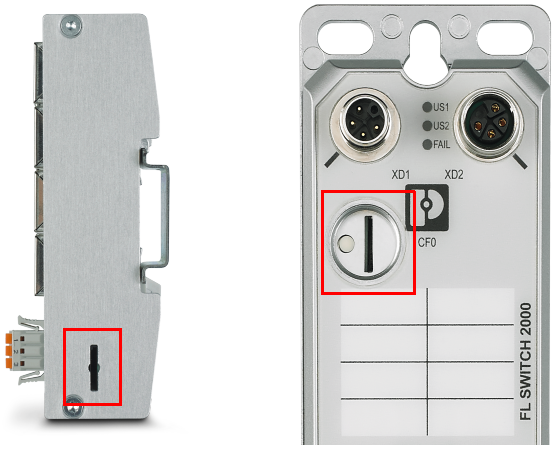


Figure 4-29 Position of the microSD card slot on the 20xxF versions (left) and versions 26xx and 27xx (right)



Using configuration files on the SD card

Example configurations of frequent application situations can be downloaded from the download page for your device (e.g., phoenixcontact.net/product/2702324). Enter the item number of your device in the search field. The example configurations can be found under “Downloads”.

The configuration file used must be saved on the SD card under this path and file name:

FLConfig\config.cfg

Automatic reading of the configuration on the SD card

If the configuration on the SD card is to be read automatically, make sure that the card is inserted when the switch is started.

As soon as the boot process has been completed, the configuration is applied in the internal switch memory and is active during operation. This is indicated by the LEDs at the ports going out.

You can then remove the SD card. If no SD card is inserted in the switch, the configuration also remains active when the device is restarted.

Using configuration files in different versions

In principle, every configuration file of an FL SWITCH 2xxx/FL NAT 2xxx can be transferred to every other version of this product family. Please note that the individual versions have different scopes of functions and numbers of ports. Unsupported functions or port numbers will be ignored by the switch when the configuration file is read in and any affected configuration parameters will not be changed in the device.

Examples:

– Configuration files of the 22xx/23xx/24xx/25xx/26xx/27xx versions may contain parameters for functions that are not supported by the 20xx/21xx versions. During reading on a 20xx/21xx device, the corresponding entries in the configuration file are ignored.
– During reading on a 5/8-port device, the entries for configuration of ports 9 to 16 are ignored.
– When the configuration of a 5/8-port device is read on a 16-port device, the parameters of ports 9 to 16 are set to factory default.

5 Startup and function

5.1 Delivery state/default settings

5.1.1 Initial IP configuration in the delivery state

The PN versions do not have an initial IP configuration in the delivery state.

Firmware version 2.72 and earlier

The device does not have an initial IP configuration.

Firmware version 2.80

In the delivery state, the device has an initial static IP configuration, which enables you to access web-based management and to assign an IP address.

– IP address: 169.254.2.1
– Subnet mask: 255.255.0.0

This initial IP configuration is deactivated as soon as the switch is assigned an IP configuration via a different IP address assignment mechanism, e.g., via BootP, DHCP, web-based management.

Firmware version 2.90 or later

In the delivery state, the device has an initial IP configuration and an individual DNS host name. This way, you can access web-based management and configure the device.

Requirement:

– The device is set to the default settings and has firmware 2.90 or higher.
– The connected PC must be set to “Obtain an IP address automatically”. A static IP address cannot be used here.

Automatic private IP addressing (APIPA)

- You can access your device via link-local IPv4 via the IP address 169.254.2.1.
- If you want to commission several devices in your network, one IP address has the IP address 169.254.2.1. All other devices are assigned a random IP address from the range 169.254.2.1 to 169.254.255.255. You can determine these IP addresses using external software such as Wireshark, or access the device via its host name.

When dealing with multiple devices, it is difficult to find out which switch has which IP address with this dynamic method. You can therefore also access the device via a DNS host name.

DNS host name

The host name consists of two portions:

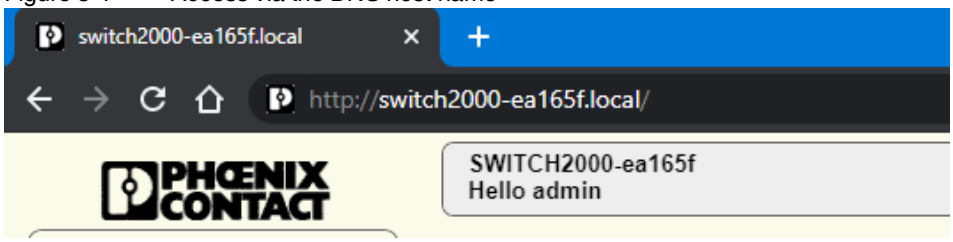
1. Device family: SWITCH2000 or NAT2000
2. The individual part of the MAC address of the device, for example, a8:74:1d:**ea:16:5f**

The complete host name in this example is therefore: SWITCH2000-EA165F

- Enter the host name as follows in your browser:
  http://SWITCH2000-ea165f.local

For name resolution, mDNS (standard for Linux and Mac systems) and LLMNR (usually used for Windows systems) are supported.

Figure 5-1 Access via the DNS host name



This initial IP configuration is deactivated as soon as the switch is assigned an IP configuration via a different IP address assignment mechanism, e.g., via BootP, DHCP, web-based management.

If you want to reactivate the initial IP configuration at a later date, you can reset the device via web-based management or the Smart mode button.

For information on which Smart modes activate the initial IP configuration, refer to Section “Using Smart mode” on page 49.

5.1.2 Configuration in the delivery state

In the delivery state or after the system is reset to the default settings, the following functions and properties are available:

- All IP parameters have been deleted. The switch has no valid IP address. An exception is the initial IP configuration in the delivery state (see “Initial IP configuration in the delivery state” on page 47).
- BootP for assigning IP parameters is activated.
- DNS name resolution is activated and the device can be accessed via the individual host name.
- The DHCP server is deactivated.
- There is an admin account with the login name “admin” and the password “private”.
- The available RJ45 ports are set to auto negotiation and auto crossing.
- All counters of the SNMP agent have been reset.
- The web server (HTTP) and SNMPv2 are activated.
- CLI (Telnet) is activated.
- Port mirroring and MRP are deactivated.
- Rapid Spanning Tree (RSTP) is activated (firmware version 2.01 or later).
- The digital alarm output/signal contact is activated for the “Power Supply Lost” event.
- The MAC address table does not contain any entries.
- LLDP is activated.
- SNTP is deactivated.
- 802.1x and port-based security are deactivated.
- The “Universal” Quality of Service profile is activated.
- Syslog is deactivated.
- Port statistics have been reset.
- Individual VLAN Learning is activated.

Delivery state of the NAT versions in relation to the layer 3 functions:

- Routing globally activated.
- LAN1 created (IP addressing: BOOTP, ports: 2 ... 8)

– LAN2 created (IP addressing: DHCP, port: 1)

The delivery state of the PROFINET versions (PN) differs as follows:

– PROFINET mode is activated.
– PROFINET device is activated.
– DCP for assigning the device name and the IP parameters is activated.
– The “PROFINET” Quality of Service profile is activated.

5.1.3 Resetting to default settings

You have the following options to reset the device to the default settings:
– Reset via Smart mode (see “Using Smart mode” on page 49).
– Reset via web-based management.

5.2 Using Smart mode

In Smart mode, you can change the operating mode of the switch without having access to one of the management interfaces.

Press the Smart mode button to enter Smart mode, select the desired setting, and exit Smart mode. The four mode LEDs indicate the setting that is currently selected and will apply when Smart mode is exited.

The following setting options are available via Smart mode:
– Reset IP configuration
– Operation in EtherNet/IP mode (default setting for standard versions)
– Operation in PROFINET mode (default setting for PROFINET versions)
– Operation with static IP address
– Operation in unmanaged mode
– Reset to default settings

On the 26xx/27xx versions, the Smart mode button is located underneath the M16 metal cap.

5.2.1 Calling up Smart mode

• Connect the device to the supply voltage.
• Wait approximately 30 seconds for the device to boot up and be ready for operation.

As soon as the device is powered up and ready for operation, the LEDs of all ports go out.

• Press and hold the Smart mode button for more than five seconds.
⇒ If Smart mode is active, the four LEDs of port XF1 and XF2 flash. The active state is indicated in alternation by the flashing sequence of all four LEDs.

When Smart mode is started, the switch is initially in the “Exit without changes” state.

5.2.2 Selecting the desired setting

- To select the various settings, press the Smart mode button briefly and select the desired operating mode (see Table 5-1).

5.2.3 Possible operating modes in Smart mode

The switch supports the selection of the following operating modes in Smart mode:

Table 5-1 Operating modes in Smart mode

Mode	LED 1[1]	LED 2[1]	LED 3[1]	LED 4[1]
Exit Smart mode without changes	**On**	Off	Off	Off
Set universal mode (default setting for standard versions)	Off	**On**	Off	Off
Set PROFINET mode (default setting on PROFINET versions)[2]	**On**	**On**	Off	Off
Set EtherNet/IP mode	Off	Off	**On**	Off
Operation with default IP address	Off	**On**	**On**	Off
Reset IP configuration	**On**	**On**	**On**	Off
Operation in unmanaged mode	Off	**On**	Off	**On**

1 On the 20xx/21xx/22xx/23xx/26xx/27xx versions, the two LEDs (LNK/ACT and SPD) of port 1 and port 2 are used. The reading direction is from top to bottom on the device (LED 1 = LNK/ACT of port 1, LED 4 = SPD of port 2).
On the 24xx/25xx versions, the four LNK/ACT LEDs of ports 1–4 are used. The port number corresponds to the LED number.

2 The 20xx/21xx versions do not support PROFINET mode.

5.2.4 Exit Smart mode

- To exit this mode, press and hold down the Smart mode button for at least five seconds. The previously selected operating mode is saved and activated as soon as you release the Smart mode button.

5.2.5 Operation in universal mode

Activating universal mode resets the device as described in “Configuration in the delivery state” on page 48. This deletes any configurations stored on the device. An automation protocol is not activated in this mode. The initial IP configuration is activated (see Section “Initial IP configuration in the delivery state” on page 47).

5.2.6 Operation in PROFINET mode

Activating PROFINET mode resets the device as described in “Configuration in the delivery state” on page 48 and activates the PROFINET device and DCP functions for IP address assignment. In addition, the “PROFINET” Quality of Service profile is activated. This deletes any configurations stored on the device. The PROFINET automation protocol is activated in this mode.

In PROFINET mode, the initial IP configuration (see Section “Initial IP configuration in the delivery state” on page 47) is not supported and therefore deactivated.

5.2.7 Operation in EtherNet/IP mode

Activating EtherNet/IP mode resets the device as described in “Configuration in the delivery state” on page 48 and activates the IGMP snooping and IGMP querier (version 2) functions. In addition, the “EtherNet/IP” Quality of Service profile is activated. This deletes any configurations stored on the device. The initial IP configuration is activated (see Section “Initial IP configuration in the delivery state” on page 47).

5.2.8 Operation with default IP address

For operation with a default IP address, the device is assigned a fixed IP address. A DHCP server is activated on the switch and assigns an IP address to the connected PC via DHCP.

To start up the device with a default IP address, activate the “Operation with static IP address” Smart mode (see “Using Smart mode” on page 49).

- In the network settings on your PC, select the “Obtain an IP address automatically” option.

Deactivate all other network interfaces on your PC.

- Connect the switch to your PC.
- Select the “Operation with default IP address” Smart mode (see “Using Smart mode” on page 49).

⇒ The switch assigns an IP address to the PC via DHCP.

⇒ The switch can now be accessed via IP address “192.168.0.254”.

- Set the desired IP address via web-based management.

5.2.9 Resetting the IP configuration

When the “Reset IP configuration” Smart mode is activated, the IP address, subnet mask, and default gateway are reset to 0.0.0.0 and BootP is activated. Any other configurations stored on the device are retained and are not deleted. The initial IP configuration is activated (see “Initial IP configuration in the delivery state” on page 47).

5.2.10 Operation in unmanaged mode

During operation in unmanaged mode, the switch can be used without an IP address. Here, the switch uses the static IP address 0.0.0.0. The subnet mask and gateway are also configured to 0.0.0.0. This means that web-based management can no longer be accessed and the switch no longer sends BootP and DHCP requests.

Major functions remain active in unmanaged mode:

– Redundancy mechanisms for loop suppression (RSTP, FRD, LTS)
– Functions for hardening the network (broadcast/multicast limiter)
– Functions for reducing the network load (IGMP snooping)

Use of IGMP in unmanaged mode is limited to IGMP snooping. The switch requires an IP address if the device is also to be used as an IGMP querier.

The functions must be configured in managed mode and will remain active when switching to unmanaged mode. Alternatively, you can activate unmanaged mode via the configuration file and with an SD card (see “Using a (micro)SD card” on page 45).

Unmanaged mode can only be exited by switching to a different Smart mode or by resetting the switch to the default settings.

5.3 Assigning the IP address

On the standard versions, BootP is activated in the delivery state. On the PROFINET versions, DCP is activated in the delivery state.

Notes on BootP

During initial startup, the device sends BootP requests without interruption until it receives a valid IP address. As soon as the device receives a valid IP address, it stops sending further BootP requests.

If the device has already been configured, it sends three BootP requests when a restart is performed. If these three BootP requests do not receive a response, the device starts with the IP address that was last assigned via BootP.

An activated firewall on the PC can hinder the assignment of IP addresses via BootP.

Numerous BootP servers are available on the Internet. You can use any of these programs for address assignment.

This section explains IP address assignment using the “FL NETWORK MANAGER BASIC” (item no. 2702889) and the “IP Assignment Tool” software tools from Phoenix Contact.

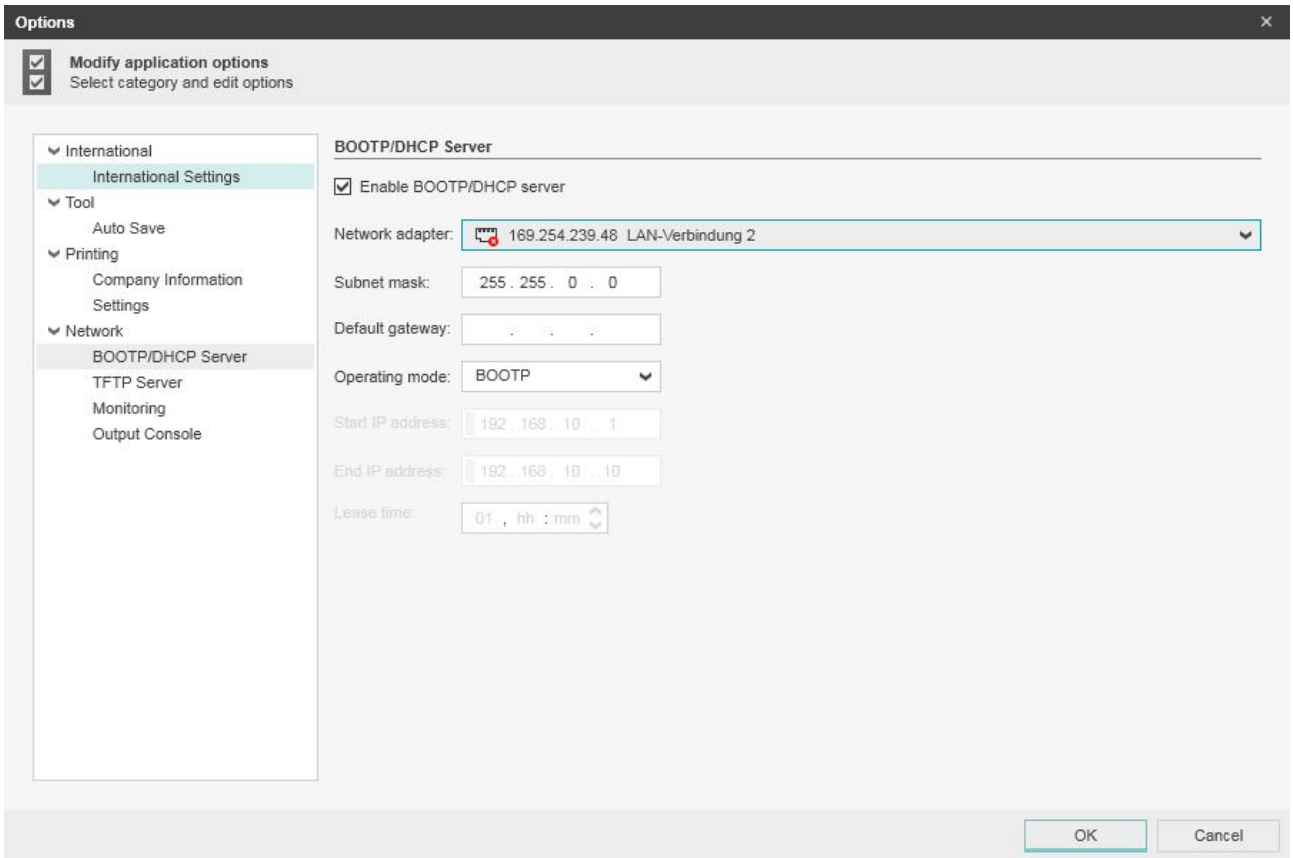
5.3.1 Assigning the IP address via BootP using Network Manager

Requirements

The device is connected to a PC with a Microsoft Windows operating system, and FL NETWORK MANAGER has been successfully installed.

Step 1: Parameterizing the BootP server

Figure 5-2 Parameterizing the BootP server



- Open the FL NETWORK MANAGER software.
- Open a new project in the software.
- Under “Extras, Options”, select the “BOOTP/DHCP Server” menu item.
- Enable the “Enable BOOTP/DHCP server” check box.
- Here, configure the network interface on your PC to which the device is connected and select the “BootP” operating mode. You can also adjust the subnet mask and configure a default gateway.
- Confirm the parameterization with “OK”.

Step 2: Starting the BootP server

Figure 5-3 Opening the BootP window

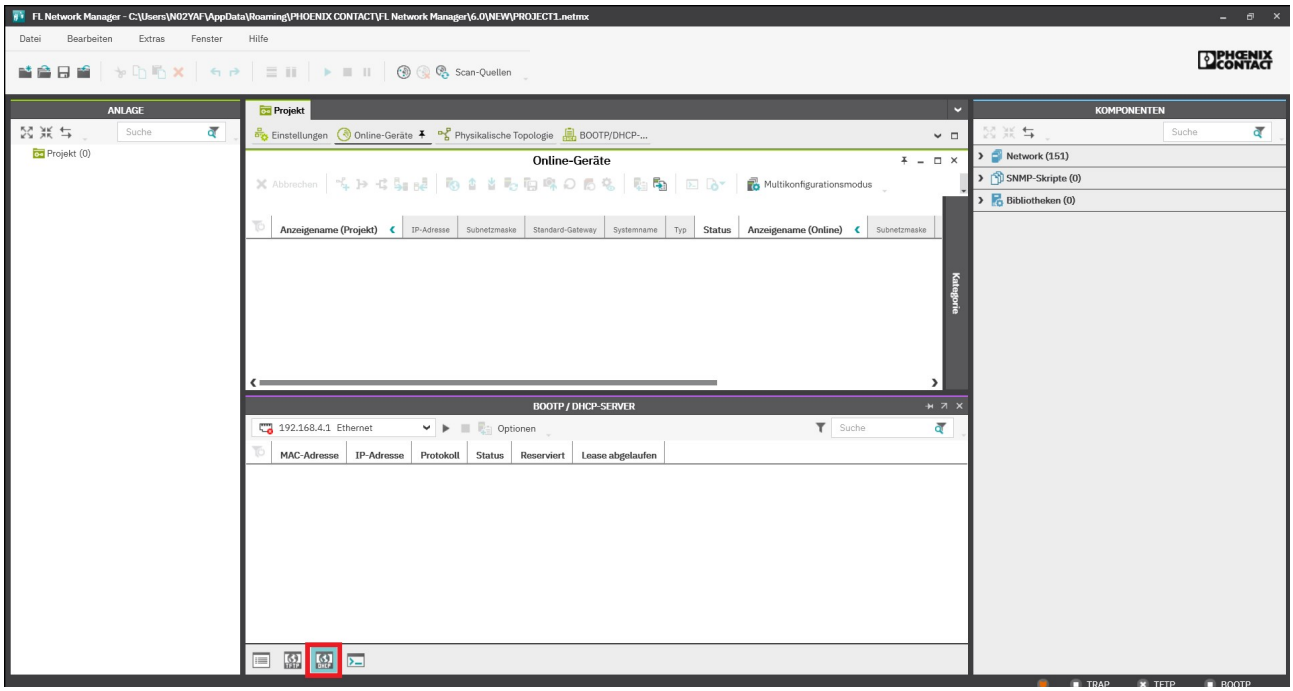


Figure 5-4 Starting the BootP server

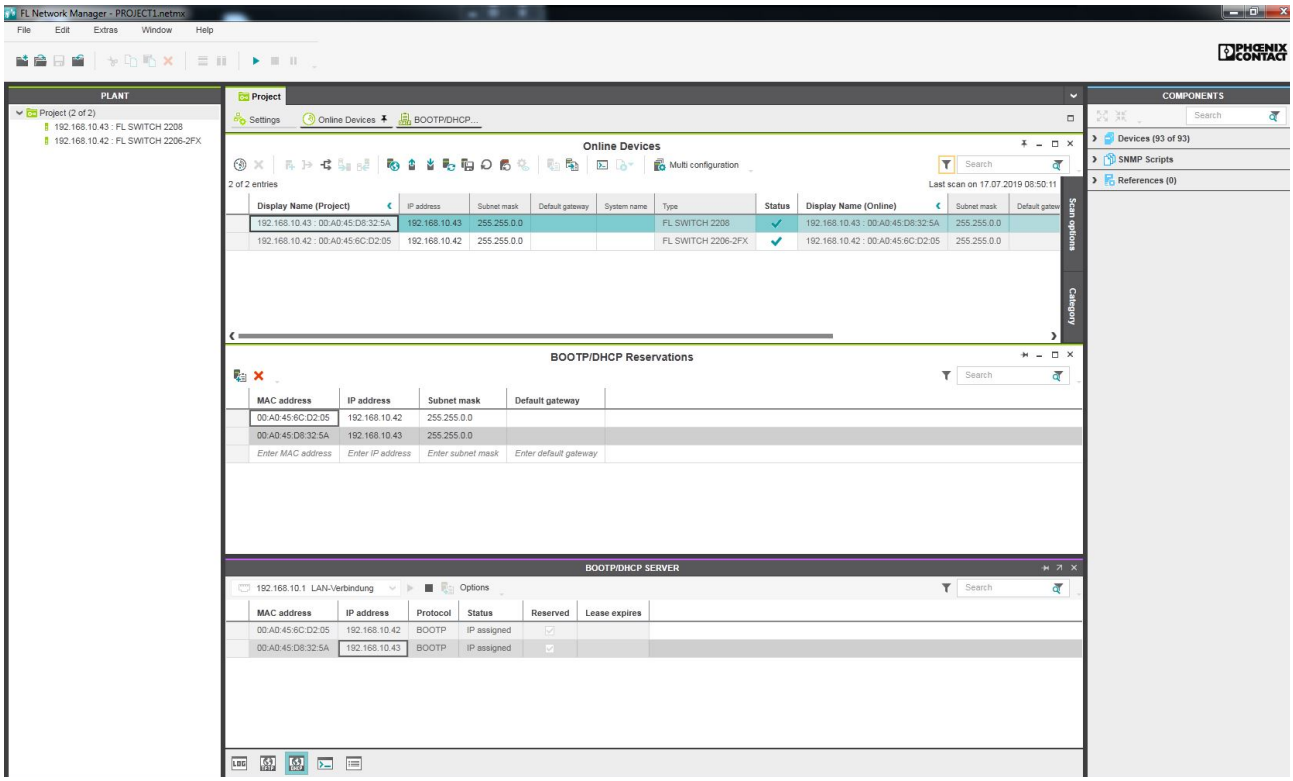
- Open the “BOOTP/DHCP SERVER” window.
- Click on the “play” icon next to the selected network interface.

⇒ The BootP server is activated.

⇒ BootP requests that are received are listed in the “BOOTP/DHCP SERVER” window in table format.

Step 3: Inserting BootP requests in the reservation list and assigning IP parameters

Figure 5-5 Inserting BootP requests in the reservation list



- If you want to assign IP parameters to a device, such as IP address, subnet mask, or default gateway, right-click on an incoming BootP request in the “BOOTP/DHCP SERVER” window. Then, select “Add to BOOTP/DHCP reservations”.
- Enter the IP address to be assigned in the “BOOTP/DHCP Reservations” window. The IP parameters are immediately transferred to the device.
- You can check whether IP address assignment was successful in the “IP address” column in the “BOOTP/DHCP SERVER” window.

The IP parameters set here can be changed in web-based management.

5.3.2 Assigning the IP address via BootP using IPAssign.exe

This section deals with IP address assignment using the “IP Assignment Tool” Windows software (IPAssign.exe).

The software can be downloaded free of charge at phoenixcontact.net/qr/<item_number>.

Requirement:

The device is connected to a computer with a Windows operating system.

Step 1: Downloading and running the software

You can download the software from the Internet.

- Go to phoenixcontact.net/qr/<item_number>.

- Under “Software”, download the BootP IP addressing tool.
- Double-click on the “IPAssign.exe” file and, if necessary, click on “Execute”.

⇒ The software is opened.

Step 2: IP Assignment Wizard

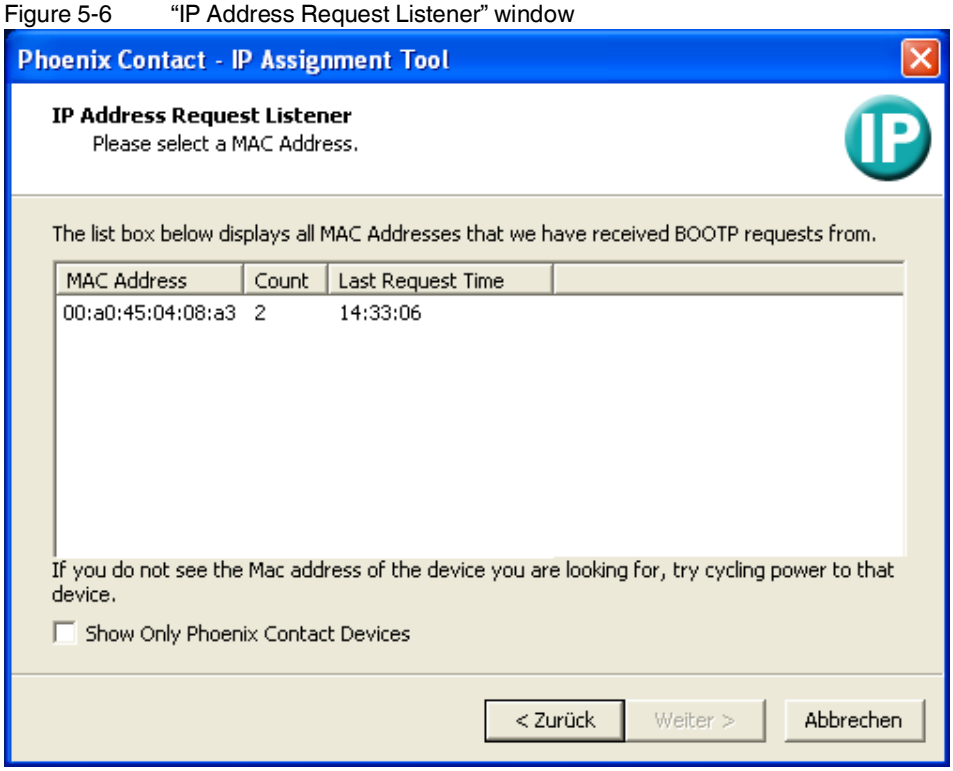
The software is in English for international purposes. However, the software buttons change according to your country-specific settings.

- Click “Next”.

⇒ You now see a list of all devices that send BootP requests and are waiting for an IP address.

Step 3: IP Address Request Listener

Figure 5-6 “IP Address Request Listener” window



In this example, the device has MAC address 00:a00:45:04:08:a3.

The MAC address of your switch can be found on the sticker on the side.

- Select the device you want to assign an IP address for.
- Click “Next”.

Step 4: Set IP Address

In the “Set IP Address” window, you can view and define various parameters:

Figure 5-7 “Set IP Address” window

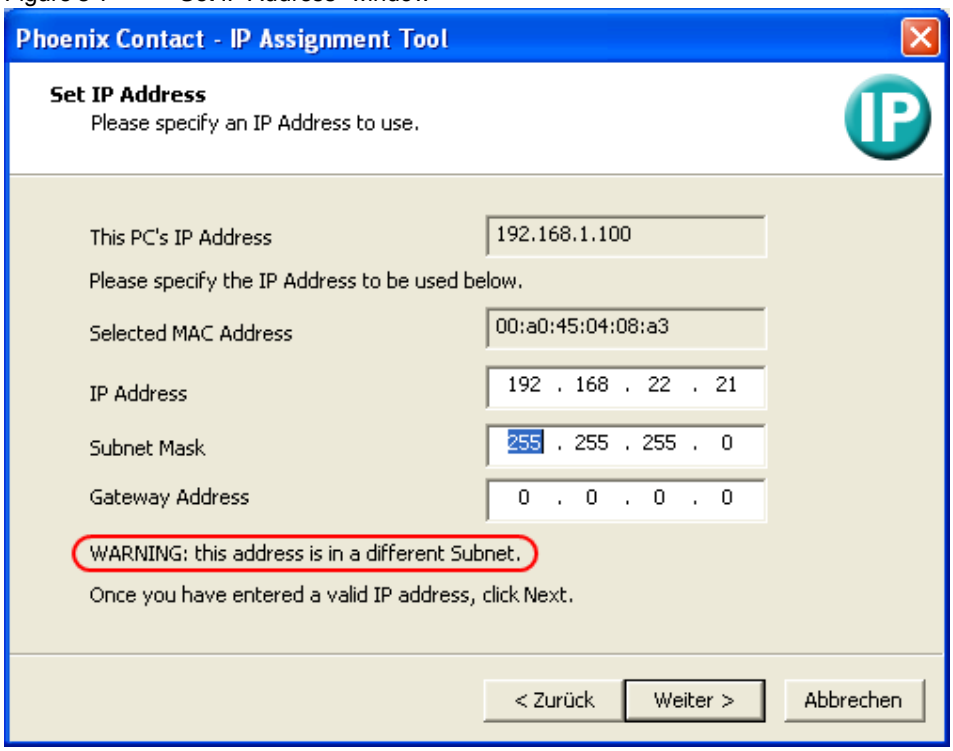


Table 5-2 “Set IP Address” window: parameters

Parameter	Description
This PC‘s IP Address	The IP address of the currently used PC is displayed here.
Selected MAC Address	The MAC address selected in the previous step is displayed here.
IP Address	In this input field, enter the desired IPv4 address for the connected device. Make sure to enter a valid IP address.
Subnet Mask	In this input field, enter the desired subnet mask for the connected device.
Gateway Address	In this input field, enter the desired gateway address for the connected device.

- Adjust the IP parameters according to your requirements.

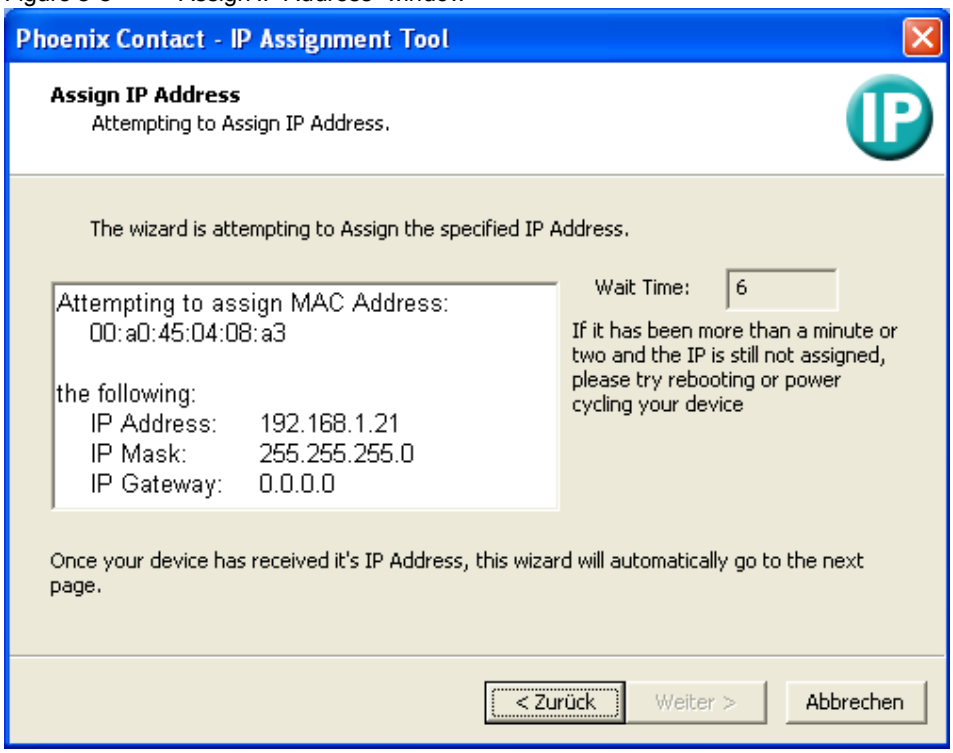
⇒ If no inconsistencies are detected, a message appears indicating that a valid IP address has been set.

- Click “Next”.

Step 5: Assign IP Address

The software now attempts to transfer the set IP parameters to the device. Following successful transfer, the next window automatically opens.

Figure 5-8 “Assign IP Address” window



Step 6: Completing IP address assignment

This window informs you that IP address assignment has been completed successfully. It provides an overview of the IP parameters that have been transferred to the selected device.

- To assign IP parameters for additional devices, click on “Back”.
- To exit the IP address assignment, click on “Finish”.

The IP parameters set here can be changed in web-based management.

6 Maintenance, repair and disposal

6.1 Maintenance

- If necessary, clean the housing with a dry, ESD-protected cloth only.

CAUTION: Electrostatic discharge
Electrostatic discharge can damage or destroy components. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) in accordance with EN 61340-5-1 and IEC 61340-5-1.

6.2 Replacing the device

WARNING: Danger to life from electric shock
Only mount or remove the device when it is disconnected from power.

You can replace the device if necessary.

- Disconnect the device from the power supply.
- Remove all cables.
- Remove the device as described in Section “Mounting and installation” on page 23.
- Replace the device with an identical device (same item number).

You can restore your individual device configuration using an SD card. For further information, please refer to the UM EN SW FL SWITCH 2000 user manual (see “Scope of application of this manual” on page 10).

6.3 Device defects and repairs

WARNING: Explosion hazard in potentially explosive areas
Only use original accessories (see “Accessories” on page 251).

Observe all relevant safety and installation instructions in this documentation and in the documentation supplied with the accessories.

CAUTION: Risk of burns on hot surfaces
At high ambient temperatures, the surfaces of the device can become hot. Therefore, make sure to let the device cool down first before performing any work on it.

Repairs may only be carried out by Phoenix Contact.

- Send defective devices back to Phoenix Contact for repair or to receive a replacement device.
- We strongly recommend using the original packaging to return the product.
- Include a note in the packaging indicating that the contents are returned goods.
- If the original packaging is no longer available, observe the following notes:
  - Observe the humidity specifications and the temperature range specified for transport (see “Ambient conditions” in Section “Technical data” on page 65).
  - Use suitable ESD packaging to protect components that are sensitive to electrostatic discharge.
  - Make sure that the packaging you select is large enough and sufficiently thick.
  - Only use bubble wrap sheets as wadding.

- Attach warning notes to the transport packaging so that they are clearly visible.
- Please be aware that the delivery note needs to be placed inside the package if the package is sent within the same country. If the package is being sent abroad, the delivery note must be placed inside a delivery note pocket and attached to the outside so that it is clearly visible.

6.4 Disposal

The symbol with the crossed-out trash can indicates that this item must be collected and disposed of separately from other waste. Phoenix Contact or public collection sites will take the item back for free disposal. For information on the available disposal options, visit phoenixcontact.com. Collect and dispose of included batteries separately from other waste. Delete personal data before returning the item.

- Dispose of packaging materials that are no longer needed (cardboard packaging, paper, bubble wrap sheets, etc.) with household waste in accordance with the currently applicable national regulations.

7 Troubleshooting

Table 7-1 Detecting and removing errors

Problem	Cause	Remedy
The device does not start.	Supply voltage not present or wrong	Make sure the device is supplied with the correct voltage. If the supply voltage is correct and the device is connected correctly, there may be a device defect. Please contact Support.
	Device visibly damaged	Please contact Support.
There is no network connection via the FO port	FO fiber mixed up (RX/TX)	Rotate the FO fiber so that it is no longer mixed up.
	Cable type wrong	Use the correct FO fiber: MM multimode or SM singlemode.
There is no network connection via the FO or RJ45 port.	Wrong transmission speed	Check the port specification and configuration and correct them.
The device cannot be reached via the default IP address 169.254.2.1.	PC interface is not set to DHCP	Configure the PC interface to DHCP.
IP address assignment via BootP fails.	Firewall of the PC active	The firewall can prevent IP assignment with BootP. Deactivate the firewall of the PC or add an appropriate exception. Alternatively, use the initial IP address 169.254.2.1 and change the IP address in web-based management.
	Active DHCP server in the network	Use the FL NETWORK MANAGER software directly in a 1:1 connection between PC and device.
	Device is a PROFINET version	Use the FL NETWORK MANAGER software for IP address assignment.
Communication via one or more ports is not possible or faulty.	Port or ports disabled	Activate the ports in web-based management.
	Switch port mode incorrectly configured (e.g., 100 Mbps instead of autonegotiation)	Check the port table status and correct the port mode.
The FAIL LED lights up.	Only one power supply connected and “Power Supply Lost” activated for local events	In the default settings, the FAIL LED lights up if no redundant power supply is connected (see “Diagnostic and status indicators” on page 18). Deactivate “Power Supply Lost” in web-based management so that this error message is no longer displayed.
The Smart mode button does not work.	Smart mode button deactivated	Activate the Smart mode button via web-based management. Alternatively, restart the device with a default configuration via the SD card.

Table 7-1 Detecting and removing errors

Problem	Cause	Remedy
The SD card has no function.	SD card slot disabled	Activate the SD card slot in web-based management.
Access to web-based management is not possible.	Incorrect IP address	Make sure that you are using the correct IP address. If you no longer know the IP address, you can reset the IP configuration (see “Resetting the IP configuration” on page 51).
	Different networks configured for PC and device	Use IP addresses in the same IP address range.
	Device configured in PROFINET mode	Use the FL NETWORK MANAGER software for IP address assignment.
	Firewall of the PC active	The firewall can prevent access to web-based management. Deactivate the firewall of the PC or add an appropriate exception.
	Data cable not plugged in or data cable damaged	Make sure that the data cable is correctly plugged into the device and PC. Make sure that the data cable is working properly. Replace the data cable if necessary.
	Combo port already occupied	If your device has combo ports: Make sure that the combo port you want to use to access the device is not already in use.
Access to web-based management via HTTP is not possible.	WBM access configured to HTTPS	Access web-based management via HTTPS. If necessary, change the configuration. Alternatively, reset the device to the default settings (see “Resetting to default settings” on page 49).
Web-based management is not displayed correctly.	Web browser unsuitable	Use a standard web browser such as Microsoft Edge. Make sure you are using an up-to-date version of the web browser.
	Java outdated or not installed	Make sure you have the latest version of Java enabled for your web browser.
Pop-up windows in web-based management do not open.	Pop-up windows not allowed	Make sure that pop-up windows are allowed for your web-based management.
VLAN access via a port does not work.	VLAN ID configuration in VLAN port configuration table not implemented	Configure the VLAN ID correctly for the corresponding ports in the VLAN port configuration table.
The network collapses after the ring is formed.	RSTP not active	Enable RSTP on all devices in the ring.
Fast Ring Detection or Large Tree Support are not configurable.	Devices used do not support proprietary Fast Ring Detection and Large Tree Support protocols	The proprietary Fast Ring Detection and Large Tree Support protocols are only available on the 22xx/23xx/24xx/25xx/26xx/27xx versions. Make sure that all devices support the protocols.
The event log has been lost after a power reset.	Persistant event logging disabled	Enable persistent event logging in web-based management.

Table 7-1 Detecting and removing errors

Problem	Cause	Remedy
The event log shows an incorrect date or time.	System time not configured	Configure the system time manually or configure an SNTP server.
The MRP device mode manager cannot be configured.	Devices used do not support the MRP manager	Make sure that all devices have firmware 3.00 or higher. The MRP manager is only available on the 22xx/23xx/24xx/25xx/26xx/27xx versions.
There is no GSDML file for a device of the 20xx/21xx version.	20xx/21xx versions do not support PROFINET IO Device	PROFINET IO Device is required for GSDML files. The following versions support this function: 2xx/23xx/24xx/25xx/26xx/27xx
FL NAT 2000: The default gateway under Network cannot be configured (LAN1).	Reference of the default gateway is LAN1	Configure a default route on the “Routing, Static Routes Configuration” page in web-based management.

8 Technical data

8.1 FL SWITCH 2005

Ordering data	
Order designation	FL SWITCH 2005
Item No.	2702323
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	220 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	507.8 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	246.55 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	56.66 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	5
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	165 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.3 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	3.96 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A

Conformity with EMC directives	
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC

8.2 FL SWITCH 2008

Ordering data	
Order designation	FL SWITCH 2008
Item No.	2702324
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	220 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	507.8 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	246.55 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	56.66 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	0.35 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	4.86 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC

8.3 FL SWITCH 2008F

Ordering data	
Order designation	FL SWITCH 2008F
Item No.	1106707
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	75 mm
Height	105 mm
Depth	43 mm

Ambient conditions	
Degree of protection	IP30
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)

General data	
Mounting type	DIN rail mounting
Type AX	Flat design
Functional grounding	The functional ground of the module is grounded via the COMBICON
Weight	240 g
Housing material	Aluminum
MAC address table	8k
MTTF	693.88 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	315.58 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	42.59 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	160 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.26 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	4.68 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.4 FL SWITCH 2016

Ordering data	
Order designation	FL SWITCH 2016
Item No.	2702903
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	435 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	218.22 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	46.17 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	315 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.5 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	9 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC, BSH

8.5 FL SWITCH 2105

Ordering data	
Order designation	FL SWITCH 2105
Item No.	2702665
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	240 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	398.76 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	174.97 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.76 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	5
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	225 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.35 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	6.12 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A

Conformity with EMC directives	
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC, CC-Link IE Field

8.6 FL SWITCH 2108

Ordering data	
Order designation	FL SWITCH 2108
Item No.	2702666
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	240 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	398.76 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	174.97 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.76 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	275 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	0.4 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	7.02 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC, CC-Link IE Field

8.7 FL SWITCH 2116

Ordering data	
Order designation	FL SWITCH 2116
Item No.	2702908
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa (1500 m above sea level)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	435 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	40.42 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	315 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.7 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	12.6 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus (UL 61010-1, Ed. 3 / UL 61010-2-201, Ed. 1, CSA C22.2 NO.61010-2-201:14. Ed. 1 / CSA C22.2 NO.61010-1-12. Ed. 3)
Further approvals	cULus Listed, EAC, BSH, CC-Link IE Field

8.8 FL SWITCH 2205

Ordering data	
Order designation	FL SWITCH 2205
Item No.	2702326
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	230 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	494.02 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	235.18 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	29.73 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	5
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	170 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.2 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	4.05 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.9 FL SWITCH 2208

Ordering data	
Order designation	FL SWITCH 2208
Item No.	2702327
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	230 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	494.02 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	235.18 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	29.73 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	185 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.3 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	4.95 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A

Conformity with EMC directives	
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.10 FL SWITCH 2208C

Ordering data	
Order designation	FL SWITCH 2208C
Item No.	1095627
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	230 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	494.02 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	235.18 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	29.73 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	185 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.3 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	4.95 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.11 FL SWITCH 2208 PN

Ordering data	
Order designation	FL SWITCH 2208 PN
Item No.	1044024
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	265 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k

General data	
MTTF	381.77 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	165.29 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	20.35 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	190 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	1.3 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	6.6 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc

Approvals / Certificates	
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, NK, RINA, PROFINET

8.12 FL SWITCH 2207-FX

Ordering data	
Order designation	FL SWITCH 2207-FX
Item No.	2702328
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	240 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k

General data	
MTTF	404.22 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	185.13 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	22.87 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	7
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	1
Connection method	SC
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	11000 m (fiberglass with F-G 62.5/125 0.7 dB/km F1000)
Transmission length	6400 m (fiberglass with F-G 50/125 0.7 dB/km F1200)

Interface : Ethernet FO	
Transmission length	3000 m (fiberglass with F-G 62.5/125 2.6 dB/km F600)
Transmission length	2800 m (fiberglass with F-G 50/125 1.6 dB/km F800)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	220 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	5.85 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.13 FL SWITCH 2207-FX SM

Ordering data	
Order designation	FL SWITCH 2207-FX SM
Item No.	2702329
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	240 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	404.22 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	185.13 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	22.87 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	7
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	1
Connection method	SC
Transmission physics	Single-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	36000 m (fiberglass with F-G 9/125 0.36 dB/km)
Transmission length	32000 m (fiberglass with F-G 9/125 0.4 dB/km)
Transmission length	26000 m (fiberglass with F-G 9/125 0.5 dB/km)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	210 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	5.85 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus

Approvals / Certificates	
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.14 FL SWITCH 2206-2FX

Ordering data	
Order designation	FL SWITCH 2206-2FX
Item No.	2702330
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	260 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	343.16 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	153.37 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.66 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	SC
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	11000 m (fiberglass with F-G 62.5/125 0.7 dB/km F1000)
Transmission length	6400 m (fiberglass with F-G 50/125 0.7 dB/km F1200)
Transmission length	3000 m (fiberglass with F-G 62.5/125 2.6 dB/km F600)
Transmission length	2800 m (fiberglass with F-G 50/125 1.6 dB/km F800)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	255 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	6.75 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A

Conformity with EMC directives	
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.15 FL SWITCH 2206C-2FX

Ordering data	
Order designation	FL SWITCH 2206C-2FX
Item No.	1095628
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	260 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	343.16 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	153.37 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.66 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	SC
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	11000 m (fiberglass with F-G 62.5/125 0.7 dB/km F1000)
Transmission length	6400 m (fiberglass with F-G 50/125 0.7 dB/km F1200)
Transmission length	3000 m (fiberglass with F-G 62.5/125 2.6 dB/km F600)
Transmission length	2800 m (fiberglass with F-G 50/125 1.6 dB/km F800)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	255 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	6.75 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU

Approvals / Certificates	
Further approvals	

8.16 FL SWITCH 2206-2FX SM

Ordering data	
Order designation	FL SWITCH 2206-2FX SM
Item No.	2702331
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	260 g

General data	
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	343.16 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	153.37 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.66 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	SC
Transmission physics	Single-mode fiberglass
Transmission speed	100 Mbps (full duplex)

Interface : Ethernet FO	
Transmission length	36000 m (fiberglass with F-G 9/125 0.36 dB/km)
Transmission length	32000 m (fiberglass with F-G 9/125 0.4 dB/km)
Transmission length	26000 m (fiberglass with F-G 9/125 0.5 dB/km)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	235 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	6.75 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2

Approvals / Certificates	
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.17 FL SWITCH 2206-2FX ST

Ordering data	
Order designation	FL SWITCH 2206-2FX ST
Item No.	2702332
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	260 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	343.16 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	153.37 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.66 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	ST
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	11000 m (fiberglass with F-G 62.5/125 0.7 dB/km F1000)
Transmission length	6400 m (fiberglass with F-G 50/125 0.7 dB/km F1200)
Transmission length	3000 m (fiberglass with F-G 62.5/125 2.6 dB/km F600)
Transmission length	2800 m (fiberglass with F-G 50/125 1.6 dB/km F800)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	255 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	6.75 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus

Approvals / Certificates	
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.18 FL SWITCH 2206-2FX SM ST

Ordering data	
Order designation	FL SWITCH 2206-2FX SM ST
Item No.	2702333
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	260 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	343.16 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	153.37 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.66 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	ST
Transmission physics	Single-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	36000 m (fiberglass with F-G 9/125 0.36 dB/km)
Transmission length	32000 m (fiberglass with F-G 9/125 0.4 dB/km)
Transmission length	26000 m (fiberglass with F-G 9/125 0.5 dB/km)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	235 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	6.75 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A

Conformity with EMC directives	
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.19 FL SWITCH 2206-2SFX

Ordering data	
Order designation	FL SWITCH 2206-2SFX
Item No.	2702969
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	290 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	491.44 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	212.99 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	24.97 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	7.8 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.20 FL SWITCH 2206-2SFX PN

Ordering data	
Order designation	FL SWITCH 2206-2SFX PN
Item No.	1044028
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	290 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	491.44 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	212.99 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	24.97 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	230 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	7.8 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, NK, RINA, PROFINET

8.21 FL SWITCH 2204-2TC-2SFX

Ordering data	
Order designation	FL SWITCH 2204-2TC-2SFX
Item No.	2702334
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	310 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	362.94 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	158.13 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.77 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	4
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	250 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	7.8 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.22 FL SWITCH 2216

Ordering data	
Order designation	FL SWITCH 2216
Item No.	2702904
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	435 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	218.22 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.7 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	315 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	8.4 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.23 FL SWITCH 2216 PN

Ordering data	
Order designation	FL SWITCH 2216 PN
Item No.	1044029
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	218.22 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.7 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	315 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	8.4 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, PROFINET

8.24 FL SWITCH 2214-2FX

Ordering data	
Order designation	FL SWITCH 2214-2FX
Item No.	2702905
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	470 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	264.71 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	135.79 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.92 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	SC
Transmission physics	multi-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	11000 m (fiberglass with F-G 62.5/125 0.7 dB/km F1000)
Transmission length	6400 m (fiberglass with F-G 50/125 0.7 dB/km F1200)
Transmission length	3000 m (fiberglass with F-G 62.5/125 2.6 dB/km F600)
Transmission length	2800 m (fiberglass with F-G 50/125 1.6 dB/km F800)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	375 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.8 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	13.2 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus

Approvals / Certificates	
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.25 FL SWITCH 2214-2FX SM

Ordering data	
Order designation	FL SWITCH 2214-2FX SM
Item No.	2702906
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	470 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	264.71 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	135.79 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	18.92 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : Ethernet FO	
Number of interfaces	2
Connection method	SC
Transmission physics	Single-mode fiberglass
Transmission speed	100 Mbps (full duplex)
Transmission length	36000 m (fiberglass with F-G 9/125 0.36 dB/km)
Transmission length	32000 m (fiberglass with F-G 9/125 0.4 dB/km)
Transmission length	26000 m (fiberglass with F-G 9/125 0.5 dB/km)
Wavelength	1300 nm

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	375 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.8 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	13.2 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A

Conformity with EMC directives	
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.26 FL SWITCH 2214-2SFX

Ordering data	
Order designation	FL SWITCH 2214-2SFX
Item No.	1006188
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	455 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	218.22 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.7 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	325 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.6 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	10.8 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.27 FL SWITCH 2214-2SFX PN

Ordering data	
Order designation	FL SWITCH 2214-2SFX PN
Item No.	1044030
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	218.22 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	31.7 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	325 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.6 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	10.8 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, PROFINET

8.28 FL SWITCH 2212-2TC-2SFX

Ordering data	
Order designation	FL SWITCH 2212-2TC-2SFX
Item No.	2702907
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	480 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	331.51 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	185.67 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	28.57 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	12
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	360 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.7 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	12 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.29 FL SWITCH 2308

Ordering data	
Order designation	FL SWITCH 2308
Item No.	2702652
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	265 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	381.77 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	165.29 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	20.35 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	7.8 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, CC-Link IE Field

8.30 FL SWITCH 2308 PN

Ordering data	
Order designation	FL SWITCH 2308 PN
Item No.	1009220
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	265 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	381.77 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	165.29 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	20.35 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.4 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	7.8 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, NK, RINA, PROFINET

8.31 FL SWITCH 2306-2SFP

Ordering data	
Order designation	FL SWITCH 2306-2SFP
Item No.	2702970
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	290 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	491.44 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	212.99 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	24.97 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.25 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	9 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus

Approvals / Certificates	
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, CC-Link IE Field

8.32 FL SWITCH 2306-2SFP PN

Ordering data	
Order designation	FL SWITCH 2306-2SFP PN
Item No.	1009222
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	290 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	491.44 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	212.99 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	24.97 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	9 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, NK, RINA, PROFINET

8.33 FL SWITCH 2304-2GC-2SFP

Ordering data	
Order designation	FL SWITCH 2304-2GC-2SFP
Item No.	2702653
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C

Ambient conditions	
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	310 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	362.94 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	158.13 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.77 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²

Connection data	
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	4
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	290 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	9 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

0.1 FL SWITCH 2316

Ordering data	
Order designation	FL SWITCH 2316
Item No.	2702909
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	435 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	27.52 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	455 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.8 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	13.2 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, CC-Link IE Field

8.34 FL SWITCH 2316 PN

Ordering data	
Order designation	FL SWITCH 2316 PN
Item No.	1031673
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	435 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	27.52 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	455 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.8 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	13.2 W (U_S = Min, T_{amb} = Max, DO_l = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A

Conformity with EMC directives	
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, PROFINET

8.35 FL SWITCH 2314-2SFP

Ordering data	
Order designation	FL SWITCH 2314-2SFP
Item No.	1006191
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	455 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	27.52 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm^2

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	460 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	2 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	15.6 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, CC-Link IE Field

8.36 FL SWITCH 2314-2SFP PN

Ordering data	
Order designation	FL SWITCH 2314-2SFP PN
Item No.	1031683
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	455 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	27.52 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	460 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	2 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	15.6 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA, PROFINET

8.37 FL SWITCH 2312-2GC-2SFP

Ordering data	
Order designation	FL SWITCH 2312-2GC-2SFP
Item No.	2702910
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	119 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	480 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	199.41 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	27.52 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.25 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.25 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	9 mm

Interface : Ethernet (RJ45)	
Number of interfaces	12
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	475 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	2 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	15.6 W (U_S = Min, T_{amb} = Max, DO_I = Max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-2 EN 61000-6-3 (noise emission) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X

Approvals / Certificates	
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.38 FL SWITCH 2408

Ordering data	
Order designation	FL SWITCH 2408
Item No.	1043412
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	160 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	220 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.13 W (US = max, Tamb = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, EAC, KC, ABS, BSH, BV, DNV GL, LR, RINA

8.39 FL SWITCH 2408 PN

Ordering data	
Order designation	FL SWITCH 2408 PN
Item No.	1089133
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	160 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	220 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.13 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A

Conformity with EMC directives	
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.40 FL SWITCH 2406-2SFX

Ordering data	
Order designation	FL SWITCH 2406-2SFX
Item No.	1043414
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	250 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.7 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.41 FL SWITCH 2406-2SFX PN

Ordering data	
Order designation	FL SWITCH 2406-2SFX PN
Item No.	1089126
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	250 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.7 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.42 FL SWITCH 2404-2TC-2SFX

Ordering data	
Order designation	FL SWITCH 2404-2TC-2SFX
Item No.	1088853
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2

Ambient conditions	
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²

Connection data	
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	4
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	200 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	290 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	5.44 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.43 FL SWITCH 2416

Ordering data	
Order designation	FL SWITCH 2416
Item No.	1043416
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Ambient conditions	
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	390 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	7.52 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, EAC, KC, ABS, BSH, BV, DNV GL, LR, RINA

8.44 FL SWITCH 2416 PN

Ordering data	
Order designation	FL SWITCH 2416 PN
Item No.	1089150
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	280 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	390 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	7.52 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.45 FL SWITCH 2414-2SFX

Ordering data	
Order designation	FL SWITCH 2414-2SFX
Item No.	1043423
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	310 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	440 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	8.26 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.46 FL SWITCH 2414-2SFX PN

Ordering data	
Order designation	FL SWITCH 2414-2SFX PN
Item No.	1089139
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

General data	
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	310 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	440 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	8.26 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.47 FL SWITCH 2412-2TC-2SFX

Ordering data	
Order designation	FL SWITCH 2412-2TC-2SFX
Item No.	1088875
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	12
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100 Mbps (full duplex)
Transmission length	up to 40 km (depending on the SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100 Mbps (full duplex)
Transmission length	up to 40 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	320 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	490 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	9.31 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.48 FL SWITCH 2508

Ordering data	
Order designation	FL SWITCH 2508
Item No.	1043484
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	High-grade steel 1.4305
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²

Connection data	
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	230 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	330 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.08 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.49 FL SWITCH 2508/K1

Ordering data	
Order designation	FL SWITCH 2508/K1
Item No.	1215350
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	High-grade steel 1.4305
MAC address table	8k

General data	
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 32 V DC
Typical current consumption	230 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	490 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.08 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2

Mechanical tests	
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, RINA

8.50 FL SWITCH 2508 PN

Ordering data	
Order designation	FL SWITCH 2508 PN
Item No.	1089134
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Ambient conditions	
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	230 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	330 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.08 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

0.2 FL SWITCH 2506-2SFP

Ordering data	
Order designation	FL SWITCH 2506-2SFP
Item No.	1043491
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	High-grade steel 1.4305
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	260 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	350 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.46 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.51 FL SWITCH 2506-2SFP/K1

Ordering data	
Order designation	FL SWITCH 2506-2SFP/K1
Item No.	1215329
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2

Ambient conditions	
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	High-grade steel 1.4305
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 32 V DC
Typical current consumption	260 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	530 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.46 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, EAC, ABS, BV, DNV GL, LR, RINA

0.3 FL SWITCH 2506-2SFP PN

Ordering data	
Order designation	FL SWITCH 2506-2SFP PN
Item No.	1089135
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	6
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	260 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	350 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.46 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.52 FL SWITCH 2504-2GC-2SFP

Ordering data	
Order designation	FL SWITCH 2504-2GC-2SFP
Item No.	1088872
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	128 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	357.82 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	191.24 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	25.65 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²

Connection data	
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	4
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	270 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	390 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	7.2 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.53 FL SWITCH 2516

Ordering data	
Order designation	FL SWITCH 2516
Item No.	1043496
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C

Ambient conditions	
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.2 mm^2
Conductor cross section flexible max.	2.5 mm^2
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	440 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	610 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	11.26 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.54 FL SWITCH 2516 PN

Ordering data	
Order designation	FL SWITCH 2516 PN
Item No.	1089205
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	16
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	440 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	610 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	11.26 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.55 FL SWITCH 2514-2SFP

Ordering data	
Order designation	FL SWITCH 2514-2SFP
Item No.	1043499
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	460 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	680 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	12.35 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.56 FL SWITCH 2514-2SFP PN

Ordering data	
Order designation	FL SWITCH 2514-2SFP PN
Item No.	1089154
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

General data	
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	14
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	460 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	680 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	12.35 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA, PROFINET

8.57 FL SWITCH 2512-2GC-2SFP

Ordering data	
Order designation	FL SWITCH 2512-2GC-2SFP
Item No.	1088856
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	113 mm
Depth	67 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Block design
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
MTTF	238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Relay
Actuation voltage range	max. 60 V DC
Current carrying capacity	max. 0.2 A

Connection data	
Connection method	Push-in spring connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

Interface : Ethernet (RJ45)	
Number of interfaces	12
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (depending on the SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	19.2 V DC ... 32 V DC
Typical current consumption	490 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	820 mA (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	14.88 W (U_S = max, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA / Canada	cULus
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
Further approvals	cULus Listed, ABS, BSH, BV, DNV GL, LR, RINA

8.58 FL SWITCH 2608

Ordering data	
Order designation	FL SWITCH 2608
Item No.	1106500
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	60 mm
Height	226 mm
Depth	46 mm

Ambient conditions	
Degree of protection	IP65
Protection class	III (VDE 0106)
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 %
Permissible humidity (storage/transport)	5 % ... 95 %
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	Wall mounting
Type AX	Stand-Alone
Weight	1150 g
Housing material	Zinc die-cast
MAC address table	8k
MTTF	461.15 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	149.69 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.78 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	M12 connector (A-coded)

Interface : Ethernet	
Number of interfaces	8
Connection method	M12 connectors, D-coded
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC

Supply voltage	
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.52 A (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.68 W (U_S = min, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-3 (conducted emissions) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.59 FL SWITCH 2608 PN

Ordering data	
Order designation	FL SWITCH 2608 PN
Item No.	1106616
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	60 mm
Height	226 mm
Depth	46 mm

Ambient conditions	
Degree of protection	IP65
Protection class	III (VDE 0106)
Ambient temperature (operation)	-40 °C ... 70 °C

Ambient conditions	
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 %
Permissible humidity (storage/transport)	5 % ... 95 %
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	Wall mounting
Type AX	Stand-Alone
Weight	1150 g
Housing material	Zinc die-cast
MAC address table	8k
MTTF	461.15 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	149.69 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.78 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	M12 connector (L-coded)

Interface : Ethernet	
Number of interfaces	8
Connection method	M12 connectors, D-coded
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)

Supply voltage	
Max. current consumption	0.52 A (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	4.68 W (U_S = min, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-3 (conducted emissions) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.60 FL SWITCH 2708

Ordering data	
Order designation	FL SWITCH 2708
Item No.	1106615
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	60 mm
Height	226 mm
Depth	46 mm

Ambient conditions	
Degree of protection	IP65
Protection class	III (VDE 0106)
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Ambient conditions	
Permissible humidity (operation)	5 % ... 95 %
Permissible humidity (storage/transport)	5 % ... 95 %
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	Wall mounting
Type AX	Stand-Alone
Weight	1150 g
Housing material	Zinc die-cast
MAC address table	8k
MTTF	461.15 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	149.69 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.78 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	M12 connector (A-coded)

Interface : Ethernet	
Number of interfaces	8
Connection method	M12 connectors, X-coded
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	260 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.77 A (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.93 W (U_S = min, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-3 (conducted emissions) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.61 FL SWITCH 2708 PN

Ordering data	
Order designation	FL SWITCH 2708 PN
Item No.	1106610
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	60 mm
Height	226 mm
Depth	46 mm

Ambient conditions	
Degree of protection	IP65
Protection class	III (VDE 0106)
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 %
Permissible humidity (storage/transport)	5 % ... 95 %

Ambient conditions	
Air pressure (operation)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	Wall mounting
Type AX	Stand-Alone
Weight	1150 g
Housing material	Zinc die-cast
MAC address table	8k
MTTF	461.15 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	149.69 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.78 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Connection data	
Connection method	M12 connector (L-coded)

Interface : Ethernet	
Number of interfaces	8
Connection method	M12 connectors, X-coded
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	260 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.77 A (U_S = min, T_{amb} = max)
Maximum power dissipation for nominal condition	6.93 W (U_S = min, T_{amb} = max)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-3 (conducted emissions) Class B
Interference emission	EN 61000-6-3 (conducted emissions) Class B
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.62 FL NAT 2008

Ordering data	
Order designation	FL NAT 2008
Item No.	2702881
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	115 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Ambient temperature (operation)	0 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

Ambient conditions	
Air pressure (operation)	86 kPa ... 108 kPa (1500 m above sea level)
Air pressure (storage/transport)	86 kPa ... 108 kPa
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	220 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	507.8 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	246.55 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	56.66 Years (SN 29500 standard, temperature 55°C, operating cycle 100%)

Connection data	
Connection method	Screw connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.08 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.08 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	28
Conductor cross section AWG max.	16
Stripping length	7 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (single)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	180 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.35 A (At U_S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	4.86 W (At U_S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	2g, according to IEC 60068-2-6
Vibration (storage/transport)	2g, criterion 1 according to IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

8.63 FL NAT 2208

Ordering data	
Order designation	FL NAT 2208
Item No.	2702882
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	115 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	230 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	494.02 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	235.18 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	29.73 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	9 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Screw connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.08 mm²

Connection data	
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.08 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	28
Conductor cross section AWG max.	16
Stripping length	7 mm

Interface : Ethernet (RJ45)	
Number of interfaces	8
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100 Mbps
Transmission length	100 m (per segment)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	9 V DC ... 57 V DC
Typical current consumption	185 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.3 A (U_S = Min, T_{amb} = Max, DO_I = Max)
Maximum power dissipation for nominal condition	4.95 W (At U_S = 9 V DC and 70°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

8.64 FL NAT 2304-2GC-2SFP

Ordering data	
Order designation	FL NAT 2304-2GC-2SFP
Item No.	2702981
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	45 mm
Height	130 mm
Depth	115 mm

Ambient conditions	
Degree of protection	IP20
Protection class	III (VDE 0106)
Degree of pollution	2
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Ambient conditions	
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Air pressure (operation)	80 kPa ... 110 kPa up to 2000 m above mean sea level (Without derating)
Air pressure (storage/transport)	79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating)
Free from substances that could impair the application of coating	Yes

General data	
Mounting type	DIN rail mounting
Type AX	Book type
Functional grounding	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail
Weight	310 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	362.94 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
MTTF	158.13 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
MTTF	19.77 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

Signal contact	
Output name	Digital output
Actuation voltage range	12 V DC ... 57 V DC
Current carrying capacity	typ. 100 mA max. 0.7 A (1 minute)

Connection data	
Connection method	Screw connection
Note on the connection method	Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C).
pluggable	yes
Conductor cross section solid min.	0.08 mm^2
Conductor cross section solid max.	1.5 mm^2
Conductor cross section flexible min.	0.08 mm^2
Conductor cross section flexible max.	1.5 mm^2
Conductor cross section AWG min.	28
Conductor cross section AWG max.	16
Stripping length	7 mm

Interface : Ethernet (RJ45)	
Number of interfaces	4
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Copper
Transmission speed	10/100/1000 Mbps
Transmission length	100 m (per segment)

Interface : SFP module	
Number of interfaces	2
Connection method	SFP ports
Transmission physics	Depending on the SFP module
Transmission speed	100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Interface : Ethernet (combo)	
Number of interfaces	2
Connection method	SFP or RJ45 ports
Note on the connection method	Auto negotiation and autocrossing
Transmission physics	Depending on the SFP module
Transmission speed	10/100/1000 Mbps (full duplex)
Transmission length	up to 80 km (Depending on the fiber/SFP module used)

Supply voltage	
Supply voltage	24 V DC (redundant)
Residual ripple	3.6 V_{PP} (within the permitted voltage range)
Supply voltage range	12 V DC ... 57 V DC
Typical current consumption	290 mA (at U_S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	1.5 A (U_S = Min, T_{amb} = Max, DO_l = Max)
Maximum power dissipation for nominal condition	9 W (At U_S = 12 V DC and 70°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)

Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
ATEX	Ⓔx II 3 G Ex ec IIC T4 Gc (EN 60079-0 , EN 60079-7)
IECEx	Ex ec IIC T4 Gc (IEC 60079-0 , IEC 60079-7)
UL, USA / Canada	cULus
UL Ex, USA / Canada	Class I, Division 2, Groups A, B, C, and D, T4 Class I, Zone 2, AEx ec IIC T4 Ex ec IIC T4 Gc X UL 60079-0 Ed. 6 / UL 60079-7 Ed. 5, CSA 22.2 No. 60079-0 Ed. 3 / CSA C22.2 No. 60079-7 Ed. 2
EAC Ex	2Ex e IIC T4 Gc X
The following continue to apply for EAC Ex:	При монтаже использовать походящий допущенный корпус со степенью защиты не ниже IP66.На корпусе/шкафу управления должна быть размещена предупреждающаяя надпись, запрещающая открывать корпус или шкаф во взрывоопасной зоне.Эксплуатация устройства допускается только при условии, что все оптические порты заняты подключенными устройствами или закрыты прилагаемыми заглушками.
CCC / China-Ex	Ex ec IIC T4 Gc
Corrosive gas test	ISA S71.04.2013 G3 Harsh Group A
UKCA Ex (UKEX)	Ⓔx II 3 G Ex ec IIC T4 Gc
Further approvals	cULus Listed, EAC, ABS, BSH, BV, DNV GL, LR, NK, RINA

9 Accessories

The following accessories can be ordered additionally for the different device variants:

9.1 FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx

Accessories	Type	Item No.	Pcs./Pkt.
Program and configuration memory, for extending the internal flash memory, pluggable, 2 GB. (Memory)	SD FLASH 2GB	2988162	1
FL Network Manager, SNMP-based configuration and firmware update software, for easy startup of Managed Switches (Software)	FL NETWORK MANAGER BASIC	2702889	1
The FL DIN RA is installed in a standard, 19-inch rack (EIA-310-D, IEC 60297-3-100) to allow DIN rail mounted equipment to be rack mounted.	FL DIN RA	2891053	1
Dust protection caps for RJ45 socket	FL RJ45 PROTECT CAP	2832991	10
End clamp, width: 9.5 mm, color: gray (Mounting)	E/NS 35 N	0800886	50
PCB connector, nominal cross section: 1.5 mm², color: light grey, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Female connector, number of potentials: 5, number of rows: 1, number of positions: 5, number of connections: 5, product range: FK-MCP 1,5/..-ST, pitch: 3.81 mm, connection method: Push-in spring connection, conductor/PCB connection direction: 0 °, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, locking: without, mounting: without, type of packaging: packed in cardboard	FK-MCP 1,5/ 5-ST-3,81GY35BD1-5	1015782	50
PCB connector, nominal cross section: 1.5 mm², color: light grey, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Female connector, number of potentials: 5, number of rows: 1, number of positions: 5, number of connections: 5, product range: MCVW 1,5/..-ST, pitch: 3.81 mm, connection method: Screw connection with tension sleeve, screw head form: L Slotted, conductor/PCB connection direction: -90 °, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, locking: without, mounting: without, type of packaging: packed in cardboard	MCVW 1,5/ 5-ST-3,81GY7035BD2DO	1034096	50
The small form-factor plug-in module provides a fiber optic interface with a data transmission speed of 100 Mbps with a wavelength of 1310 nm (long).	FL SFP FX	2891081	1
The small form-factor plug-in module provides a fiber optic interface with a data transmission speed of 100 Mbps with a wavelength of 1310 nm (long).	FL SFP FX SM	2891082	1
Gigabit SFP module for transmission up to 1 km with a wavelength of 850 nm.	FL SFP SX	2891754	1
Gigabit SFP module for transmission up to 2 km with a wavelength of 1310 nm.	FL SFP SX2	2702397	1

Accessories	Type	Item No.	Pcs./Pkt.
Gigabit SFP module for transmission up to 10 km with a wavelength of 1310 nm. (Add-ons)	FL SFP LX10-B	1025401	1
Gigabit SFP module for transmission up to 30 km with a wavelength of 1310 nm. (Add-ons)	FL SFP LX	2891767	1
Gigabit SFP module for transmission up to 40 km with a wavelength of 1310 nm (Add-ons)	FL SFP LX40	1113081	1
Gigabit SFP module for transmission up to 80 km with a wavelength of 1,550 nm. (Add-ons)	FL SFP LH	2989912	1
Gigabit SFP WDM set for transmission up to a maximum of 10 km on a single fiber with a wavelength of 1310/1550 nm.	FL SFP WDM10-SET	2702442	1
Fast Ethernet SFP WDM set for transmission up to a maximum of 20 km on a single fiber with a wavelength of 1310/1550 nm.	FL SFP FE WDM20-SET	2702439	1
Gigabit SFP module for transmission up to 100 m.	FL SFP GT	2989420	1
Patch cable, CAT5, assembled, 0.5 m (Cable/conductor)	FL CAT5 PATCH 0,5	2832263	1
Patch cable, CAT5, assembled, 1 m (Cable/conductor)	FL CAT5 PATCH 1,0	2832276	1
Patch cable, CAT5, assembled, 2 m (Cable/conductor)	FL CAT5 PATCH 2,0	2832289	1
Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, $CAT6_A$, cable outlet: straight, Ethernet	NBC-R4AC-R4AC-IE8A/.../...	1411854	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m	NBC-R4AC/10G-R4AC/10G-94F/3,0	1408365	1
Patch cable, degree of protection: IP20, cable length: 1 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/1,0-93B/R4AC	1408968	1
Patch cable, degree of protection: IP20, cable length: 2 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/2,0-93B/R4AC	1408969	1
Patch cable, degree of protection: IP20, cable length: 5 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/5,0-93B/R4AC	1408970	1
Multi-mode OM2 duplex jumper, LC-SC, UPC polishing, length 1 m	FOC-LC:PA-SC:PA-OM2:D01/1	1115607	1
Multi-mode OM2 duplex jumper, LC-SC, UPC polishing, length 2 m	FOC-LC:PA-SC:PA-OM2:D01/2	1115605	1
Multi-mode OM2 duplex jumper, LC-LC, UPC polishing, length 1 m	FOC-LC:PA-LC:PA-OM2:D01/1	1115633	1
Multi-mode OM2 duplex jumper, LC-LC, UPC polishing, length 2 m	FOC-LC:PA-LC:PA-OM2:D01/2	1115634	1
Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 1 m	FOC-LC:PA-ST:PA-OM2:D01/1	1115588	1

Accessories	Type	Item No.	Pcs./Pkt.
Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 2 m	FOC-LC:PA-ST:PA-OM2:D01/2	1115587	1
Multi-mode OM4 duplex jumper, LC-SC, UPC polishing, length 1 m	FOC-LC:PA-SC:PA-OM4:D01/1	1115601	1
Multi-mode OM4 duplex jumper, LC-SC, UPC polishing, length 2 m	FOC-LC:PA-SC:PA-OM4:D01/2	1115600	1
Multi-mode OM4 duplex jumper, LC-LC, UPC polishing, length 1 m	FOC-LC:PA-LC:PA-OM4:D01/1	1115625	1
Multi-mode OM4 duplex jumper, LC-LC, UPC polishing, length 2 m	FOC-LC:PA-LC:PA-OM4:D01/2	1115624	1
Single-mode OS2 duplex jumper, LC-LC, UPC polishing, length 1 m	FOC-LC:PA-LC:PA-OS2:D01/1	1115636	1
Single-mode OS2 duplex jumper, LC-LC, UPC polishing, length 2 m	FOC-LC:PA-LC:PA-OS2:D01/2	1115629	1
Single-mode OS2 duplex jumper, LC-ST, UPC polishing, length 1 m	FOC-LC:PA-ST:PA-OS2:D01/1	1115596	1
Single-mode OS2 duplex jumper, LC-ST, UPC polishing, length 2 m	FOC-LC:PA-ST:PA-OS2:D01/2	1115595	1
Single-mode OS2 duplex jumper, LC-SC, UPC polishing, length 1 m	FOC-LC:PA-SC:PA-OS2:D01/1	1115618	1
Single-mode OS2 duplex jumper, LC-SC, UPC polishing, length 2 m	FOC-LC:PA-SC:PA-OS2:D01/2	1115617	1
RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet (Connector/Adapter)	VS-08-RJ45-5-Q/IP20	1656725	1

9.2 FL SWITCH 2008F

Accessories	Type	Item No.	Pcs./Pkt.
FL Network Manager, SNMP-based configuration and firmware update software, for easy startup of Managed Switches (Software)	FL NETWORK MANAGER BASIC	2702889	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1
Dust protection caps for RJ45 socket	FL RJ45 PROTECT CAP	2832991	10
End clamp, width: 9.5 mm, color: gray (Mounting)	E/NS 35 N	0800886	50
Patch cable, CAT5, assembled, 0.5 m (Cable/conductor)	FL CAT5 PATCH 0,5	2832263	1

Accessories	Type	Item No.	Pcs./Pkt.
Patch cable, CAT5, assembled, 1 m (Cable/conductor)	FL CAT5 PATCH 1,0	2832276	1
Patch cable, CAT5, assembled, 2 m (Cable/conductor)	FL CAT5 PATCH 2,0	2832289	1
Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, $CAT6_A$, cable outlet: straight, Ethernet	NBC-R4AC-R4AC-IE8A/.../...	1411854	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m	NBC-R4AC/10G-R4AC/10G-94F/3,0	1408365	1
Patch cable, degree of protection: IP20, cable length: 1 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/1,0-93B/R4AC	1408968	1
Patch cable, degree of protection: IP20, cable length: 2 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/2,0-93B/R4AC	1408969	1
Patch cable, degree of protection: IP20, cable length: 5 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/5,0-93B/R4AC	1408970	1
RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet (Connector/Adapter)	VS-08-RJ45-5-Q/IP20	1656725	1
RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet (Connector/Adapter)	VS-08-RJ45-5-Q/IP20	1656725	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1

9.3 FL SWITCH 24xx/25xx

Accessories	Type	Item No.	Pcs./Pkt.
Program and configuration memory, for extending the internal flash memory, pluggable, 2 GB. (Memory)	SD FLASH 2GB	2988162	1
FL Network Manager, SNMP-based configuration and firmware update software, for easy startup of Managed Switches (Software)	FL NETWORK MANAGER BASIC	2702889	1
The FL DIN RA is installed in a standard, 19-inch rack (EIA-310-D, IEC 60297-3-100) to allow DIN rail mounted equipment to be rack mounted.	FL DIN RA	2891053	1

Accessories	Type	Item No.	Pcs./Pkt.
Dust protection caps for RJ45 socket	FL RJ45 PROTECT CAP	2832991	10
End clamp, width: 9.5 mm, color: gray (Mounting)	E/NS 35 N	0800886	50
Patch cable, CAT5, assembled, 0.5 m (Cable/conductor)	FL CAT5 PATCH 0,5	2832263	1
Patch cable, CAT5, assembled, 1 m (Cable/conductor)	FL CAT5 PATCH 1,0	2832276	1
Patch cable, CAT5, assembled, 2 m (Cable/conductor)	FL CAT5 PATCH 2,0	2832289	1
Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, $CAT6_A$, cable outlet: straight, Ethernet	NBC-R4AC-R4AC-IE8A/.../...	1411854	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m	NBC-R4AC/10G-R4AC/10G-94F/3,0	1408365	1
Patch cable, degree of protection: IP20, cable length: 1 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/1,0-93B/R4AC	1408968	1
Patch cable, degree of protection: IP20, cable length: 2 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/2,0-93B/R4AC	1408969	1
Patch cable, degree of protection: IP20, cable length: 5 m, number of positions: 4, 100 Mbps, CAT5, material: PA 6.6, PROFINET	NBC-R4AC/5,0-93B/R4AC	1408970	1
RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet (Connector/Adapter)	VS-08-RJ45-5-Q/IP20	1656725	1

9.4 FL SWITCH 26xx

Accessories	Type	Item No.	Pcs./Pkt.
FL Network Manager, SNMP-based configuration and firmware update software, for easy startup of Managed Switches (Software)	FL NETWORK MANAGER BASIC	2702889	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1

Accessories	Type	Item No.	Pcs./Pkt.
Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: D, on Plug straight M12 / IP67, coding: D, cable length: 2 m	NBC-M12MSD/ 2,0-93C/M12MSD	1416200	1
Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled M12 SPEEDCON / IP67, coding: D, on Plug angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)	NBC-MRD-MRD SCO-PN/.../...	1408624	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1

9.5 FL SWITCH 27xx

Accessories	Type	Item No.	Pcs./Pkt.
FL Network Manager, SNMP-based configuration and firmware update software, for easy startup of Managed Switches (Software)	FL NETWORK MANAGER BASIC	2702889	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1
Network cable, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$ (10 Gbps), 8-position halogen-free, shielded (Advanced Shielding Technology), Plug angled M12 / IP67, coding: X, on Plug angled M12 / IP67, coding: X, cable length: 1 m	NBC-M12MRX/1,0-94F/M12MRX	1080720	1
Network cable, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$ (10 Gbps), 8-position halogen-free, shielded (Advanced Shielding Technology), Plug angled M12 / IP67, coding: X, on Plug angled M12 / IP67, coding: X, cable length: 2 m	NBC-M12MRX/2,0-94F/M12MRX	1080721	1
Network cable, Ethernet CAT5 (1 Gbps) CAT5 (1 Gbps), 8-position, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: X, on Plug straight M12 / IP67, coding: X, cable length: 1 m	NBC-M12MSX/ 1,0-94C/M12MSX	1125028	1
Network cable, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$ (10 Gbps), 8-position halogen-free, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: X, on Plug angled M12 / IP67, coding: X, cable length: 1 m	NBC-M12MSX/1,0-94F/M12MRX	1080724	1
Network cable, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$ (10 Gbps), 8-position halogen-free, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: X, on Plug angled M12 / IP67, coding: X, cable length: 2 m	NBC-M12MSX/2,0-94F/M12MRX	1080725	1
Network cable, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$ (10 Gbps), 8-position halogen-free, shielded (Advanced Shielding Technology), Plug straight M12 / IP67, coding: X, on Plug angled M12 / IP67, coding: X, cable length: 5 m	NBC-M12MSX/5,0-94F/M12MRX	1080726	1

Accessories	Type	Item No.	Pcs./Pkt.
Data connector, Ethernet CAT6$_A$ (10 Gbps), PROFINET CAT6$_A$ (10 Gbps), 8-position, shielded, Plug straight M12 Push-Pull, X-coded, Crimp connection, knurl material: PA 6.6, external cable diameter 6.5 mm ... 10 mm, without crimp contacts (Connector/Adapter)	SACC-PO12MSX-8CT-CL SH	1021783	1
Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 Push-Pull, D-coded, Crimp connection, knurl material: PA 6.6, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts (Connector/Adapter)	SACC-PO12MSD-4CT-CM SH PN	1021830	1
Configuration memory in micro SD format (Memory)	FL MICRO SD FLASH	1129482	1

A Revision history

Revision	Date	Contents
00	2019-10-16	First publication of the hardware manual – Separation of hardware and firmware manuals
01	2020-03-30	– New section: “Description of the integrated fiberglass transceivers”
02	2020-11-04	– Addition of the FL SWITCH 2008F version
03	2021-03-24	– Addition of the IP67 versions (FL SWITCH 26xx/27xx) – Restructuring: Section “Device dimensions” now in Section “Mounting and installation” – New section: “Use of SFP slots” – New section: “Using the (micro)SD card” – New section: “Assignment of IP parameters via BootP”
04	2021-04-23	– New section: “Description of Ethernet interfaces”
05	2023-01-20	– Section 1: “For your safety” revised – New section: “Transport, storage and unpacking” – New section: “Maintenance, repair and disposal” – New section: “Troubleshooting – New section: “Accessories” – Layout adaptations – New dimensional drawings and more graphics – General additions

B Appendixes

B 1 List of figures

Section 1

Section 2

Section 3

Section 4

Section 5

Section 6

Section 7

Section 8

Section 9

Appendix A

Appendix B

B 2 List of tables

Section 1

Section 2

Section 3

Section 4

Section 5

Please observe the following notes

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GERMANY

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tecdoc@phoenixcontact.com

PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstraße 8
32825 Blomberg, Germany
Phone: +49 5235 3-00
Fax: +49 5235 3-41200
E-mail: info@phoenixcontact.com
phoenixcontact.com

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