# **SIEMENS**

SITOP power supply

SITOP SEL1200-1400

**Equipment Manual** 

SITOP SEL1200 8 x 5 A 6EP4437-7FB00-3DX0 SITOP SEL1200 4 x 10 A 6EP4437-7FB00-3CX0 SITOP SEL1200 8 x 10 A 6EP4438-7FB00-3DX0

SITOP SEL1400 8 x 5 A 6EP4437-7EB00-3DX0 SITOP SEL1400 4 x 10 A 6EP4437-7EB00-3CX0 SITOP SEL1400 8 x 10 A 6EP4438-7EB00-3DX0

Safety instructions	1
Description, device design, dimension drawing	2
Mounting/removal	3
Mounting position, mounting clearances	4
Installation	5
Technical data	6
Safety, approvals, EMC	7
Ambient conditions	8
Environment	9
Service & Support	10

Overview

#### Legal information

#### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

#### **DANGER**

indicates that death or severe personal injury will result if proper precautions are not taken.

## **▲**WARNING

indicates that death or severe personal injury may result if proper precautions are not taken.

## **A**CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

#### NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

#### **Qualified Personnel**

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

#### Proper use of Siemens products

Note the following:

# **A**WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

#### **Trademarks**

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

#### Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

# Overview

## **Description**



In conjunction with a 24 V power supply, the selectivity module is used to distribute the load current across several branches and to monitor the individual currents in these branches. Faults in the individual branches caused by overload or short-circuit are detected and selectively switched off, so that the fault does not impact the other load circuits. This means fast troubleshooting and minimized downtimes.

SEL1200 assumes loads that correspond to the PLC standard and can therefore automatically buffer a voltage-free period of 10 ms. At the time of shutdown, the current cannot be briefly limited, and as a consequence brief voltage dips below 20 V are possible.

SEL1400 is designed for demanding applications, and does not permit voltage dips below 20 V for any period of time. This is also suitable for loads/consumers that do not comply with the PLC standard.

The key benefits of the product include:

- A maximum of 8 load branches are monitored for each module
- The response threshold can be continually set for each output using a potentiometer
- Overcurrents are reliably switched off, independent of the cable length and cable crosssection
- The 24 V supply for the other loads is maintained
- 2 adjacent outputs can be connected in parallel to increase the power rating (for max.
   15 A)

- Fast fault diagnostics using:
  - Multi-colored LEDs for each output for faster troubleshooting on-site
  - You can toggle between group message and single-channel diagnostics
- Floating group signal contact for remote diagnostics
- Single-channel signal using the diagnostics interface to serially signal the state of the individual outputs
- Evaluation using free of charge SIMATIC S7 function blocks (S7-1200/1500)
- It can be selected that the load branches are sequentially switched on to reduce the total inrush current
- Narrow design
- Push-in terminals

# Ordering data

The following device options are available:

Selectivity modules		
Туре	Order number	
SITOP SEL1200 8 × 5 A	6EP4437-7FB00-3DX0	
24 V DC input		
Number of outputs: 8		
Setting range of the response threshold: 1 - 5 A with group signaling contact		
SITOP SEL1200 4 × 10 A	6EP4437-7FB00-3CX0	
24 V DC input		
Number of outputs: 4		
Setting range of the response threshold: 2 - 10 A with group signaling contact		
SITOP SEL1200 8 × 10 A	6EP4438-7FB00-3DX0	
24 V DC input		
Number of outputs: 8		
Setting range of the response threshold: 2 - 10 A with group signaling contact		
SITOP SEL1400 8 × 5 A	6EP4437-7EB00-3DX0	
24 V DC input		
Number of outputs: 8		
Setting range of the response threshold: 1 - 5 A with group signaling contact		
SITOP SEL1400 4 × 10 A	6EP4437-7EB00-3CX0	
24 V DC input		
Number of outputs: 4		
Setting range of the response threshold: 2 - 10 A with group signaling contact		
SITOP SEL1400 8 × 10 A	6EP4438-7EB00-3DX0	
24 V DC input		
Number of outputs: 8		
Setting range of the response threshold: 2 - 10 A with group signaling contact		

Accessories	
Туре	Order number
Reference labeling plate (160 plates)	6ES7193-6LF30-0AW0

## Validity

This manual provides information on the following products:

- Selectivity module SITOP SEL1200 8 × 5 A Article number: 6EP4437-7FB00-3DX0 Product state: 1
- Selectivity module SITOP SEL1200 4 × 10 A Article number: 6EP4437-7FB00-3CX0 Product state: 1
- Selectivity module SITOP SEL1200 8 × 10 A Article number: 6EP4438-7FB00-3DX0 Product state: 1
- Selectivity module SITOP SEL1400 8 × 5 A Article number: 6EP4437-7EB00-3DX0 Product state: 1
- Selectivity module SITOP SEL1400 4 × 10 A Article number: 6EP4437-7EB00-3CX0 Product state: 1
- Selectivity module SITOP SEL1400 8 × 10 A Article number: 6EP4438-7EB00-3DX0 Product state: 1

# Table of contents

	Overview	v	3
1	Safety in:	structions	g
	1.1	General safety instructions	g
	1.2	Safety instructions for hazardous zones	10
2	Description	ion, device design, dimension drawing	11
	2.1	Device description	11
	2.2	Connections and terminal designation	13
	2.3	Potentiometer	15
	2.4	Status displays and signaling	16
	2.5	Buttons and selector switches	19
	2.6	Electronic overload shutdown and reset	21
	2.7	Setting the switch-on delay time	24
	2.8	Block diagram	25
	2.9	Dimensions and weight	26
3	Mounting	g/removal	29
4	Mounting	g position, mounting clearances	31
	4.1	Standard mounting position	31
	4.2 4.2.1 4.2.2 4.2.3 4.2.4 4.2.5 4.2.6	Other mounting positions	
5	Installatio	on	47
	5.1	Connection at the input	47
	5.2	Connection at the output	49
6	Technica	al data	51
	6.1	Input	51
	6.2	Output	52
	6.3	Efficiency	54
	6.4	Protection and monitoring	54
	6.5	MTRE	5.4

10	Service &	Support	63
9	Environme	ent	61
8		onditions	
	7.3	EMC	
	7.2	Approvals	
	7.1	Safety	
7	Safety, ap	provals, EMC	57
	6.8	Dimension drawing	56
	6.7	Accessories	55
	6.6	Mechanical system	55

Safety instructions

# 1.1 General safety instructions



## Correct handling of the devices

When operating electrical devices, it is inevitable that certain components will carry dangerous voltages.

Therefore, failure to handle the units properly can result in death or serious physical injury as well as extensive property damage.

Only appropriately qualified personnel may work on or in the vicinity of this equipment.

Perfect, safe, and reliable operation of this equipment is dependent on proper transportation, storage, installation and mounting.

Before installation or maintenance work can begin, the system's main switch must be switched off and measures taken to prevent it being switched on again.

If this instruction is not observed, touching live parts can result in death or serious injury.

1.2 Safety instructions for hazardous zones

# 1.2 Safety instructions for hazardous zones

The devices comply with ATEX directive 2014/34/EU; EN 60079-0; EN 60079-7.



OPERATE POTENTIOMETERS OR SWITCHES IN NON-HAZARDOUS AREAS ONLY!

Description, device design, dimension drawing

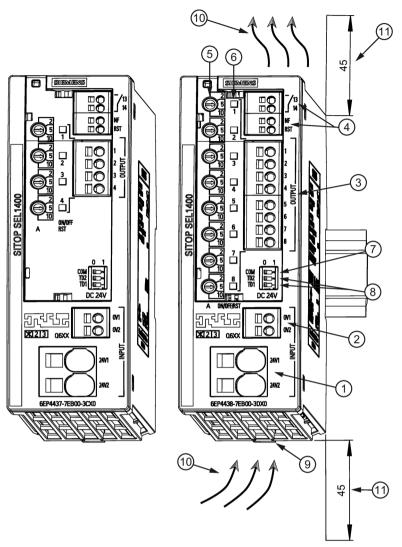
# 2.1 Device description

Using the selectivity module, a 24 V DC output voltage from a regulated power supply can be distributed across four or eight load circuits. The response threshold of the output current can be individually set for each output using a potentiometer. When the set response threshold is exceeded, the output is automatically switched off according to a defined switch off characteristic, and can be switched on again after a wait time using a pushbutton (ON/OFF/RST) or remote reset (RST). The status of the output is displayed using a multicolor LED for each output. The status of the outputs can be processed via a group signaling contact (13, 14) or via a serial single-channel signal.

#### NOTICE

In addition to the energy demand for continuous operation of the application, an adequate energy reserve must be taken into consideration for tripping according to the I²t characteristic if a fault occurs.

#### 2.1 Device description



- 1 +24 V DC input
- ② 0 V connection for the internal supply
- 3 +24 V DC outputs
- 4 Group signaling contact (13, 14); not assigned (NF); remote reset (RST)
- 5 Potentiometer for each output
- (ON/OFF/RST) pushbutton and indicator light for each output
- Selector switch for diagnostic interface (COM)
- 8 Selector switch for switch-in delay (time definition) (TD1, TD2)
- Mounting rail slider
- Matural convection
- ① Clearance above/below

Figure 2-1 Design

# 2.2 Connections and terminal designation

The input terminals ① can be used to establish the connection to the supply voltage. The "0 V" connection ② is used to supply the internal electronics. The output terminals ③ are used to connect to the loads to be supplied (see also Chapter Installation (Page 47)).

The operating state of the device can be processed using the group signal contact ④ (for the function and content rating, see Figure 2-4 Status displays and signaling (Page 16)). The remote reset (RST) input ④ is used to reset outputs that have automatically been shut down (function, see Chapter Status displays and signaling (Page 16)).

Connections and terminal designations	
① 24 V DC input	2 spring-loaded terminals
② 0 V connection for the internal supply	2 spring-loaded terminals
③ 24 V DC output: 1 - 4 (1 - 8)	one spring-loaded terminal each
④ Group signaling contact (13, 14); not assigned (NF); remote reset (RST)	one spring-loaded terminal each

	1	2 + 3	4	5
	0,8 x 5,5	0,6 x 3,5	0,4 x 2,5	0,6 x 3 / PZ1 / PH1 max. Ø 3,5 mm
	1 x 0,75 - 16 mm²	1 x 0,2 - 4 mm <sup>2</sup>	1 x 0,2 - 1,5 mm <sup>2</sup>	-
	1 x 0,75 - 25 mm <sup>2</sup>	1 x 0,2 - 2,5 mm <sup>2</sup>	1 x 0,2 - 1,5 mm <sup>2</sup>	-
	1 x 0,75 - 16 mm <sup>2</sup>	1 x 0,25 - 2,5 mm <sup>2</sup>	1 x 0,25 - 1,5 mm <sup>2</sup>	-
	1 x 0,75 - 16 mm <sup>2</sup>	1 x 0,25 - 1,5 mm <sup>2</sup>	1 x 0,25 - 0,75 mm <sup>2</sup>	-
AWG	18 - 4	24 - 12	24 - 16	-
Nm	-	-	-	0,04 Nm *1)
	18 - 20 mm	10 mm *2)	10 mm *2)	-

<sup>\*1)</sup> Do not subject the end stop to higher loads

Figure 2-2 Terminal data

The terminal location must first be opened for smaller conductor cross-sections and for flexible conductors without conductor end sleeves. To do this, an appropriate slotted screwdriver must be inserted into the square slot at the appropriate connection.

We recommend the CRIMPFOX 6 - 1212034 crimping tool to crimp conductor end sleeves. If the conductor end sleeve is longer than the permissible length of the crimping tool, then the end sleeve must be crimped in several steps.

Applying pulling and lateral forces to the terminal should be avoided.

<sup>\*2) 8</sup> mm of insulation has to be stripped when using conductor end sleeves

## 2.2 Connections and terminal designation

### **NOTICE**

## Overload of the wiring

The "0 V" connection is only used to supply the internal electronics of the selectivity module. The 0 V of the connected loads must be routed directly to the power supply using separate cables!

## 2.3 Potentiometer

The potentiometer ⑤ on the front of the device is used to set the response threshold of the output current. When delivered, the maximum possible response threshold is set.

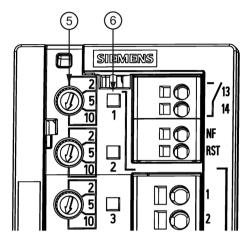


Figure 2-3 Potentiometer

#### Note

It is only permissible to use an insulated screwdriver when actuating the potentiometer.

For information on actuating the potentiometer (screwdriver, torque), see Figure 2-2 Terminal data (Page 13).

# 2.4 Status displays and signaling

	6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0 6EP4437-7EB00-3DX0 6EP4437-7EB00-3CX0 6EP4438-7EB00-3DX0
Group signal contact (13, 14) (4)	floating relay contact (NO contact), contact rating: 24 V AC/0.1 A; 30 V DC/0.1 A NOTICE: It is not permissible that the signaling contact is connected to the line voltage!
Remote reset (RST) ④	non-isolated 24 V DC input Signal level "High" for > 15 V
Indicator light and pushbutton (ON/OFF/RST) for each output ⑥	Three-color LED: rot, green and orange
Selector switch for diagnostic interface (COM) ⑦	Switchover between signaling the status of the output channels and communication at the signaling contact.

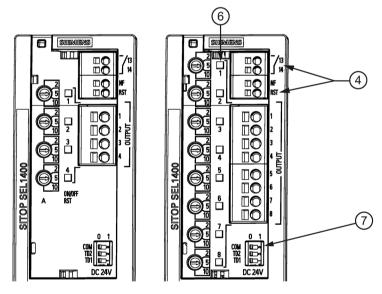


Figure 2-4 Status displays and signaling

The operating state of the outputs is displayed using multi-color LEDs at the front of the device. Symbols indicate the significance of each LED, which are listed in the following table.

0	LED off
•	LED is continuously lit
*	LED flashes

# Indicator light (LED 1 - 4 (1 - 8)) 6, signaling contact (13, 14) 4 and selector switch for diagnostics interface (COM) 7

Signaling		6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0 6EP4437-7EB00-3DX0 6EP4438-7EB00-3CX0 6EP4438-7EB00-3DX0
0	Off	All LEDs:  No supply voltage
		<ul> <li>Device powering up: After the device has powered up, the outputs are switched on, taking into consideration the switch-on delay that has been set.</li> </ul>
		LED, individual output: Output defective (internal fuse has ruptured)
	Lights up green	Normal operation, output is switched on
*	Flashes green	The output current is in the overload range according to the shut- down characteristic (see Chapter Electronic overload shutdown and reset (Page 21))
		Overload at the output: Output current 100 - 150 % of the response threshold (permissible for 5 s)
*	Flashes orange	Output manually switched off using pushbutton (ON/OFF/RST) 6: The state is saved when the device is switched off, and can only be reset again by pressing the up button again.
•	Lights up red	Output is automatically shut down due to overload or external overvoltage > typ. 30 V/100 ms. The output can be switched on again after a typical wait time of 20 s. The wait time still to elapse is saved when switching off the device – and is reactivated after the device has been switched on again.
*	Flashes red	Output ready to be reset after an automatic switch off by actuating the (ON/OFF/RST) ⑥ or remote reset (RST) ④ (effective for all outputs that have been automatically switched off)
**	all LEDs indi- vidually flash red	Overload - total max. output current exceeded, after max. 30 s outputs are successively switched off $(4 \rightarrow 3 \rightarrow 2 \rightarrow (8 \rightarrow 7 \rightarrow 6 \rightarrow))$ until there is no longer an overload condition.
*000 <b>&gt;&gt;&gt;</b>	Red running light	Device overtemperature: The outputs can be switched-on again once the temperature is in the normal range.
Contact (13, 4 tact):	14) (NO con-	Contact rating: 24 V AC/0.1 A; 30 V DC/0.1 A  NOTICE: It is not permissible that the signaling contact is connected to the line voltage!  closed: for COM = '0': all outputs active for COM = '1': Data transfer
Selector switch for diagnostic interface (COM)		Switchover between signaling the status of the output channels and communication at the signaling contact.  '0': Displays the status of the output channels  '1': Internal device parameters are transferred via the signaling contact
Signaling con	tact	'1' = 24 V DC / '0' = 0 V (pull down)

#### 2.4 Status displays and signaling

If the selector switch for the diagnostics interface (COM) is at 0, then signal contact ④ is only closed if all channels are in the LED state "green", "green flashing" or "orange flashing".

Additional information about the data transfer (COM = 1) is provided in the documents:

- Diagnostics interface (https://support.industry.siemens.com/cs/ww/en/view/109767425)
- Faceplates and communication blocks (https://support.industry.siemens.com/cs/ww/en/view/109763709)

## 2.5 Buttons and selector switches

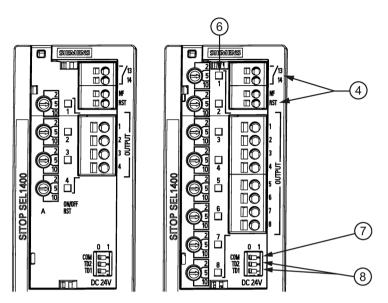


Figure 2-5 Buttons and selector switches

Buttons (ON/OFF/RST) 6 for the selectivity module SITOP SEL1200-1400 fulfill the following two functions:

- 1. manually switching an output off and on (see the following).
- 2. resetting an output automatically switched off due to an overload condition (see Chapter Electronic overload shutdown and reset (Page 21)).

Using selector switch COM ⑦, at the message contact (13, 14) ④ you can toggle between signaling the state of the output channels and the communication at the signaling contact.

COM = 0: Displays the status of the output channels

COM = 1: Internal device parameters are transferred via the signaling contact (diagnostics interface)

Selector switches (TD1, TD2) ® can be used to select the delay time when switching on the individual outputs (see Chapter Setting the switch-on delay time (Page 24)).

#### 2.5 Buttons and selector switches

#### Manually switching an output on and off

An individual output can be switched on and switched off using the button (ON/OFF/RST) ⑥. When the device is delivered, the outputs are manually switched off.

#### Switching off an output:

For outputs that are switched on, LED ⑥ of the particular output is lit green. You can switch off the output by pressing the assigned button (ON/OFF/RST) ⑥. The LED then flashes orange (output has been manually switched off).

#### Switching on an output:

For outputs that have been manually switched off, LED ⑥ of the particular output is lit orange. You can switch on the output by pressing the assigned button (ON/OFF/RST) ⑥. The LED is then lit green (output is switched on).

#### Note

An output that has been manually switched-off can only be manually switched-on again by manually pressing the button again. It is not possible to switch on an output that has been manually switched off using the remote reset signal (RST) ④.

An output that has been manually switched off remains saved (latch) even when the supply voltage is no longer available, and is a manually switched off when the supply voltage returns.

## 2.6 Electronic overload shutdown and reset

An overload is permitted for a defined period of time for each selectivity module output. The output is electronically shut down according to the "Shutdown characteristic" diagram after the limit value has been exceeded.

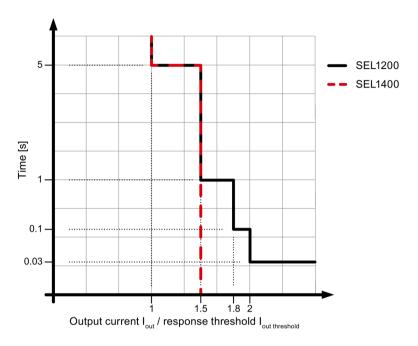


Figure 2-6 Shutdown characteristic

The following applies for the SEL1200: In the range > 150 %, a higher current is briefly permitted; afterwards it is shut down corresponding to the "Shutdown characteristic" diagram.

The following applies for the SEL1400: In the range > 150 % of the selected current response threshold, the current is limited to 150 %, typically after 10 ms to 100 ms, the output is electronically shut down (LED of the output is lit red).

- An output current is continuously permissible up to the selected current response threshold (LED of the output is lit green).
- In the range 100 150 % of the selected current response threshold, an overload current
  is permissible for 5 seconds (LED of the output flashes green), then the output is
  electronically shut down (LED of the output is lit red).

# Reset of an electronic overload shutdown via button (ON/OFF/RST) <sup>(6)</sup> and remote reset (RST) <sup>(4)</sup>

An output that has been shut down due to overload can be reset by pressing the associated button (ON/OFF/RST) (6) (reset).

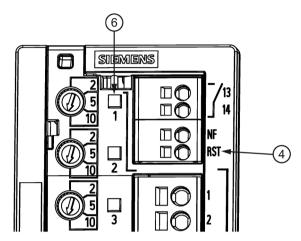


Figure 2-7 Button and remote reset terminal

The initial situation is an electronic shutdown of individual outputs as a result of an overload condition. This is signaled using the LED 1-8 ⑥ of the particular output.

LED	Meaning/handling
Lit red	Electronic shutdown as a result of an overload; wait time until a reset is possible: approx. 20 seconds.
Flashes red	Output ready for a reset; press the button to switch-on the output again.
Lit green	The reset was carried out, the output was switched-on again.

#### Procedure to reset an electronic shutdown:

- 1. After an electronic shutdown (LED of the output is lit red), allow a wait time of 20 seconds to elapse (LED of the output flashes red).
- 2. Press the reset button ⑥ of the particular output: Electronic shutdown was reset, and the output is switched-on again (LED of the output is lit green).

## Remote reset (RST) 4:

Alternatively, the reset can be performed using a remote reset signal (RST) ④. The non-isolated 24 V input (referred to the "0 V" terminal of the module) can be used at terminal "RST". A reset is executed for an input level of > 15 V.

#### Note

The rising edge of the remote reset signal is evaluated, i.e. for an additional remote reset signal, initially a voltage level of 13 V must be fallen below.

Using a remote reset signal at terminal "RST" all outputs that were shut down electronically due to an overload are again reset. Prerequisite: The output is ready to be reset, i.e. the electronic overload shutdown occurred longer than 20 s ago (LED of the output flashes red).

#### Note

If, after a reset, the cause of the overload is still present, then the output is again automatically shut down. Before carrying out a reset, remove the cause of the overload to prevent a new shutdown.

# 2.7 Setting the switch-on delay time

For specific loads, it can make sense to sequentially switch-on the outputs in order to reduce the peak inrush currents, and therefore the load on the power supply. To achieve this, the individual outputs of the selectivity module can be switched-in with a time delay between one another in a fixed sequence (output  $1 \Rightarrow 2 \Rightarrow 3 \Rightarrow 4$  ( $1 \Rightarrow 2 \Rightarrow 3 \Rightarrow 4 \Rightarrow 5 \Rightarrow 6 \Rightarrow 7 \Rightarrow 8$ )). The delay time set between the individual outputs is the same for all of the outputs. The delivery condition is load-dependent switch on.

### Setting the sequential switch-on delay

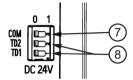


Figure 2-8 Selector switch

The switch-on delay time is set at selector switches TD1 and TD2 ®. When delivered, DIP switches "TD1" and "TD2" are in the "0" position (load-dependent switch on delay).

#### Procedure when setting the delay time:

With the selectivity module in a no-voltage condition, set DIP switches "TD1" and "TD2" to the required delay time.

0 1 TD2 TD1	Outputs switched on depending on the load: The next output is switched on as soon as the previous output has run-up (at the earliest, after 5 ms).
0 1 TD2 TD1	25 ms delay between the outputs being switched on
0 1 TD2 TD1	200 ms delay between the outputs being switched on
0 1 TD2 TD1	500 ms delay between the outputs being switched on

The next time that the selectivity module powers up, the outputs are sequentially switched on corresponding to the selected delay time.

# 2.8 Block diagram

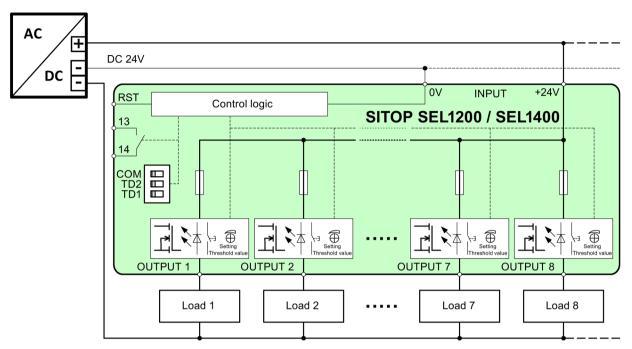


Figure 2-9 Block diagram

# 2.9 Dimensions and weight

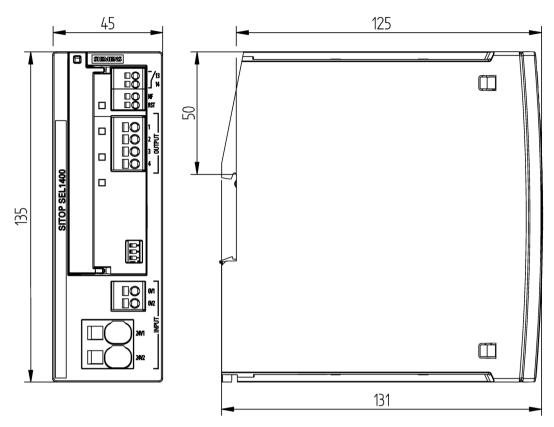


Figure 2-10 Dimension drawings 6EP4437-7FB00-3CX0 and 6EP4437-7EB00-3CX0

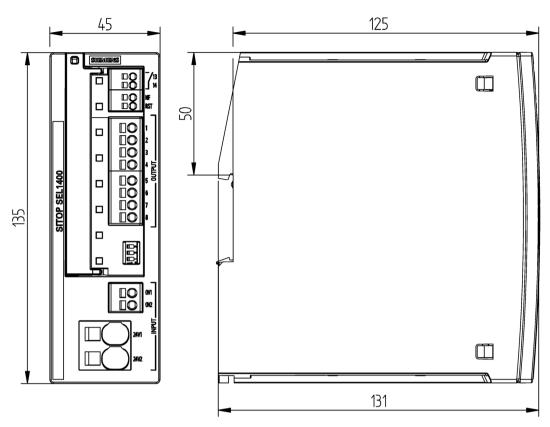


Figure 2-11 Dimension drawings 6EP4437-7FB00-3DX0, 6EP4437-7EB00-3DX0, 6EP4438-7FB00-3DX0 and 6EP4438-7EB00-3DX0

	6EP4437-7FB00-3CX0	6EP4437-7EB00-3CX0
Dimensions (W × H × D) in mm	45 × 135 × 125	45 × 135 × 125
Weight	Approx. 0.3 kg	Approx. 0.4 kg

	6EP4437-7FB00-3DX0	6EP4437-7EB00-3DX0
Dimensions (W × H × D) in mm	45 × 135 × 125	45 × 135 × 125
Weight	Approx. 0.3 kg	Approx. 0.4 kg

	6EP4438-7FB00-3DX0	6EP4438-7EB00-3DX0
Dimensions (W × H × D) in mm	45 × 135 × 125	45 × 135 × 125
Weight	Approx. 0.3 kg	Approx. 0.5 kg

2.9 Dimensions and weight

Mounting/removal 3

# **A**WARNING

## Installing the device in a housing or a control cabinet

The SITOP SEL1200-1400 selectivity modules are built-in units. They must be installed in a housing or control cabinet where only qualified personnel have access.

The device can be mounted in a control cabinet on standard mounting rails (see Chapter Mechanical system (Page 55))

#### Mounting

To mount the device, position it with the mounting rail guide at the upper edge of the standard mounting rail and press down to lock it into place. If this is too difficult, simultaneously press the slider (9) as described under "Removal".

#### Removal

To remove, pull up the slider (9) using a screwdriver (see Figure 3-1 Mounting-removal (Page 29)) and disengage the device at the bottom edge of the standard mounting rail. Then you can remove the device from the upper edge of the standard mounting rail.

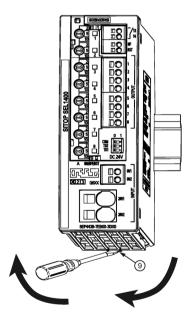


Figure 3-1 Mounting-removal

Mounting position, mounting clearances

4

# 4.1 Standard mounting position

The device is mounted on standard mounting rails TH 35-15/7,5 (EN 60715). The device must be mounted vertically in such a way that the input terminals are at the bottom.

A clearance of at least 45 mm should be maintained above and below the device (maximum depth of the cable duct, 50 mm).

No space is required at the side.

### Individual output current as a function of the ambient temperature and installation altitude

Applicable for 8 × 10 A devices (6EP4438-7FB00-3DX0, 6EP4438-7EB00-3DX0)

#### **NOTICE**

In total, the maximum device load must not exceed 60 A. The derating of 2 %/K must also be complied with here. At 70 °C, this corresponds to a total maximum device load of 48 A.

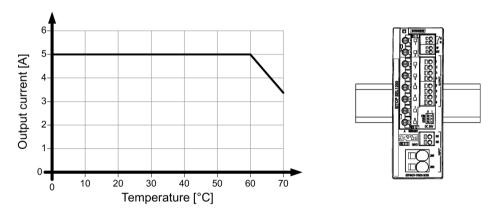


Figure 4-1 6EP4437-7FB00-3DX0 standard mounting position

## 4.1 Standard mounting position

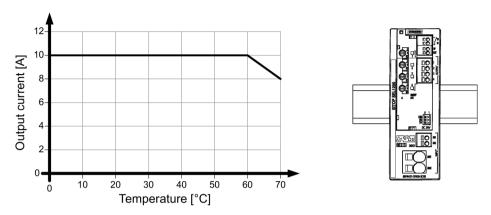


Figure 4-2 6EP4437-7FB00-3CX0 standard mounting position

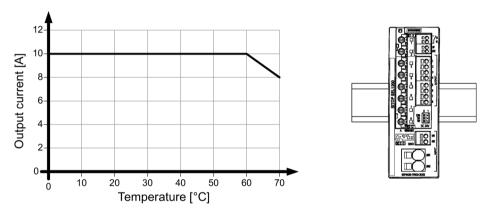


Figure 4-3 6EP4438-7FB00-3DX0 standard mounting position

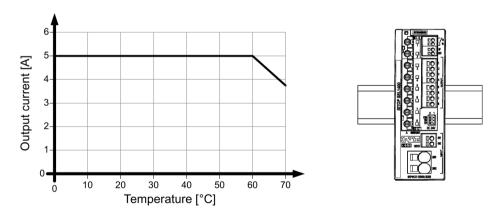


Figure 4-4 6EP4437-7EB00-3DX0 standard mounting position

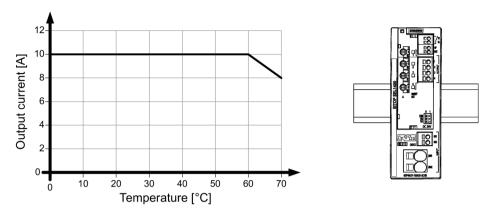


Figure 4-5 6EP4437-7EB00-3CX0 standard mounting position

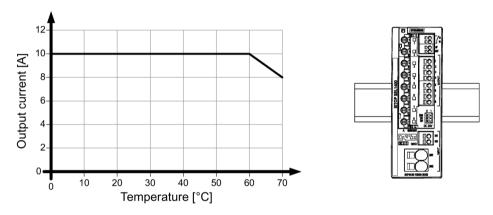


Figure 4-6 6EP4438-7EB00-3DX0 standard mounting position

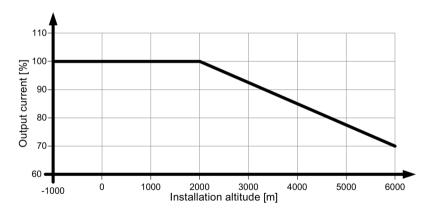


Figure 4-7 Mounting height derating

# 4.2 Other mounting positions

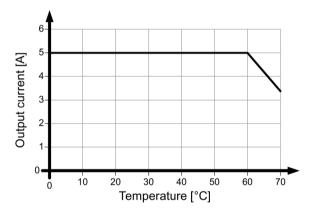
For mounting positions that deviate from the standard mounting position, derating factors (reduction of the output power or the permissible ambient temperature) must be observed in accordance with the following diagrams.

#### Note

In the case of mounting positions that deviate from the standard mounting position, reduced mechanical resistance of the devices against vibration and shock must be expected.

Particularly when installing on a vertically fastened standard mounting rail, additional measures may be required, e.g. to prevent the device from slipping on the standard mounting rail.

## 4.2.1 SEL1200 8 x 5 A 6EP4437-7FB00-3DX0



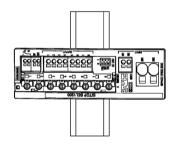
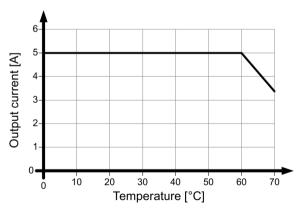


Figure 4-8 Mounting position 1



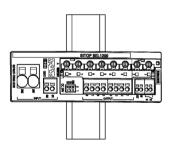
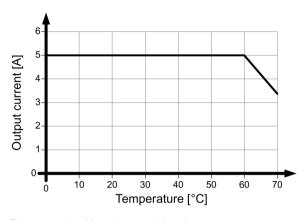


Figure 4-9 Mounting position 2



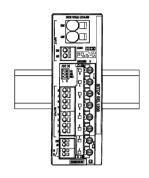
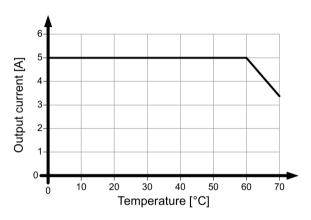


Figure 4-10 Mounting position 3



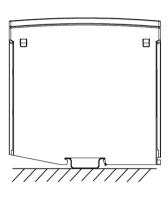
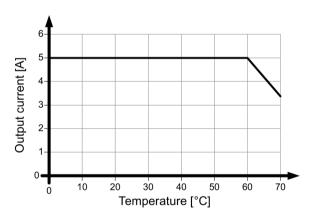


Figure 4-11 Mounting position 4



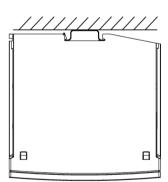
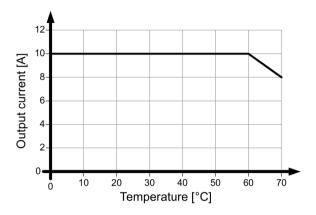


Figure 4-12 Mounting position 5

# 4.2.2 SEL1200 4 x 10 A 6EP4437-7FB00-3CX0



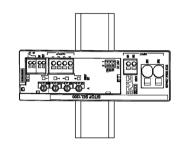
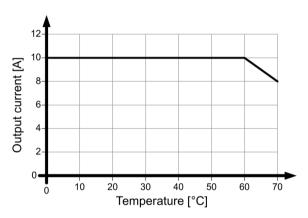


Figure 4-13 Mounting position 1



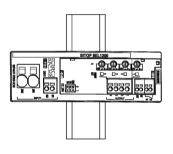
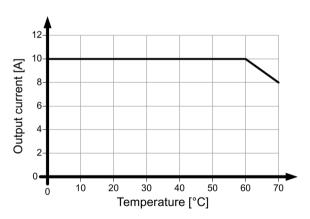


Figure 4-14 Mounting position 2



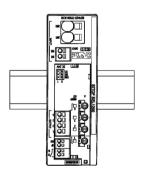
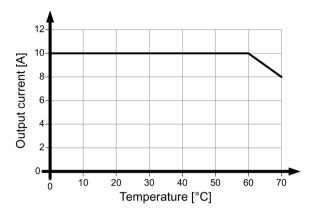


Figure 4-15 Mounting position 3



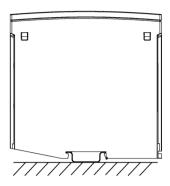
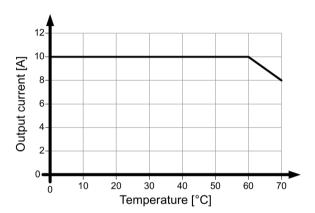


Figure 4-16 Mounting position 4



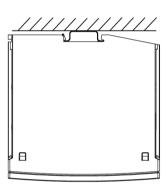
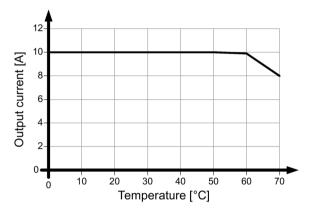


Figure 4-17 Mounting position 5

### 4.2.3 SEL1200 8 x 10 A 6EP4438-7FB00-3DX0

### **NOTICE**

In total, the maximum device load must not exceed 60 A. The derating of 2 %/K must also be complied with here. At 70 °C, this corresponds to a total maximum device load of 48 A.



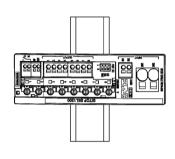
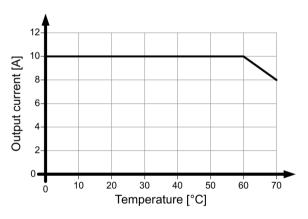


Figure 4-18 Mounting position 1



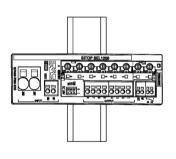
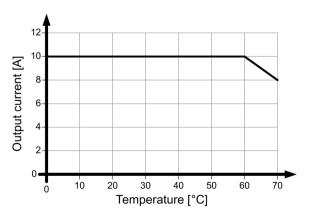


Figure 4-19 Mounting position 2



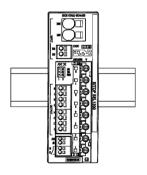
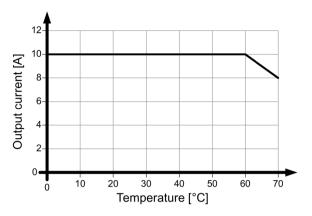


Figure 4-20 Mounting position 3



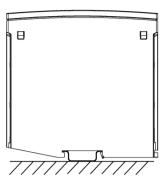
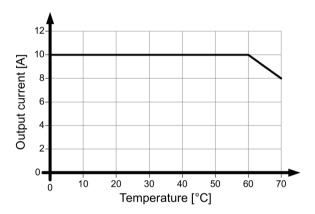


Figure 4-21 Mounting position 4



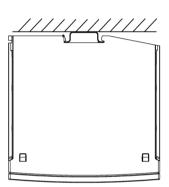
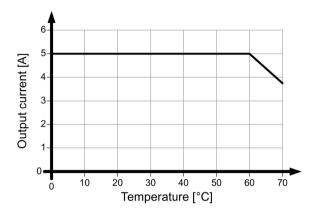


Figure 4-22 Mounting position 5

## 4.2.4 SEL1400 8 x 5 A 6EP4437-7EB00-3DX0



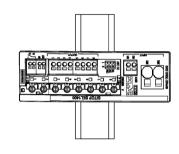
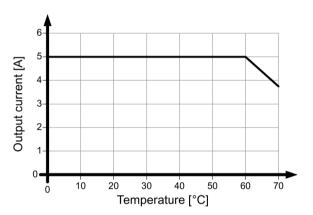


Figure 4-23 Mounting position 1



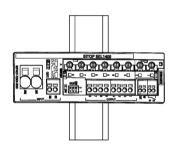
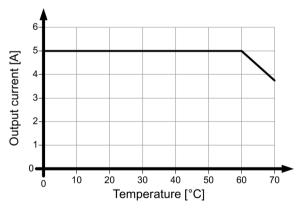


Figure 4-24 Mounting position 2



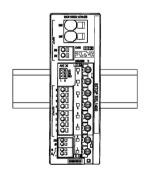
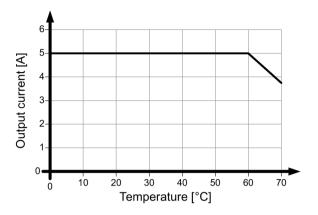


Figure 4-25 Mounting position 3



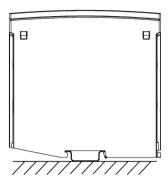
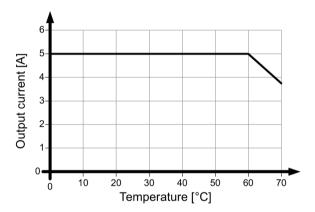


Figure 4-26 Mounting position 4



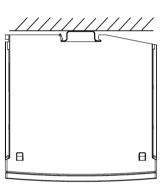
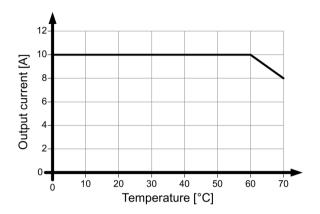


Figure 4-27 Mounting position 5

## 4.2.5 SEL1400 4 x 10 A 6EP4437-7EB00-3CX0



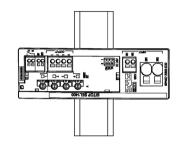
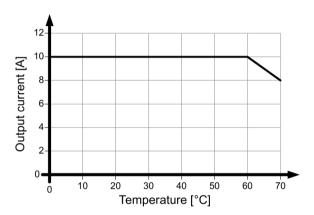


Figure 4-28 Mounting position 1



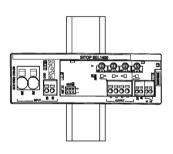
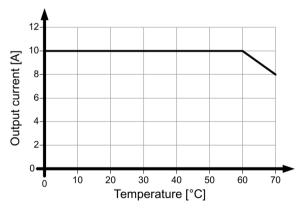


Figure 4-29 Mounting position 2



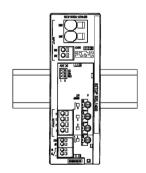
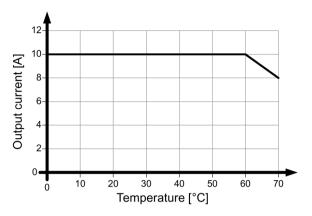


Figure 4-30 Mounting position 3



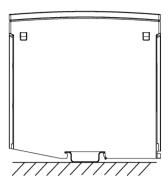
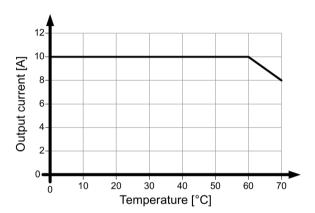


Figure 4-31 Mounting position 4



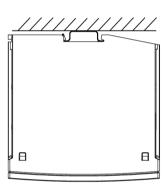
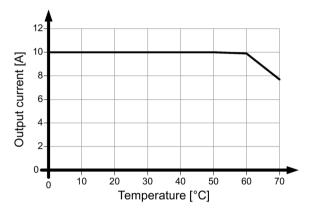


Figure 4-32 Mounting position 5

### 4.2.6 SEL1400 8 x 10 A 6EP4438-7EB00-3DX0

### **NOTICE**

In total, the maximum device load must not exceed 60 A. The derating of 2 %/K must also be complied with here. At 70 °C, this corresponds to a total maximum device load of 48 A.



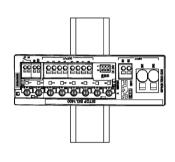
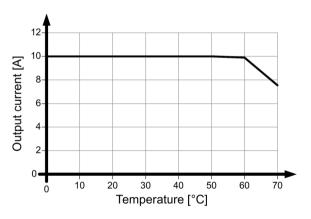


Figure 4-33 Mounting position 1



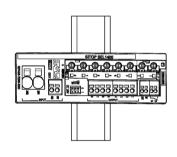
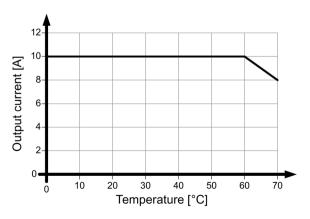


Figure 4-34 Mounting position 2



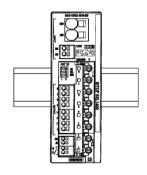
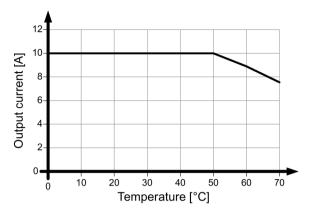


Figure 4-35 Mounting position 3



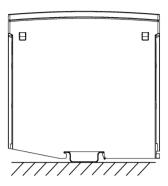
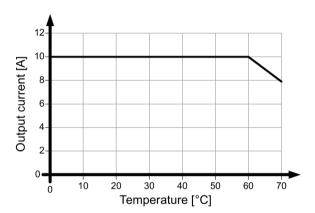


Figure 4-36 Mounting position 4



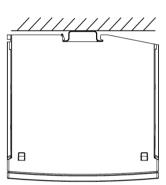


Figure 4-37 Mounting position 5

4.2 Other mounting positions

Installation



#### Hazard due to electric shock

Before installation or maintenance work can begin, the system's main switch must be switched off and measures taken to prevent it being switched on again. If this instruction is not observed, touching live parts can result in death or serious injury.

## 5.1 Connection at the input

# **A**WARNING

The device is only suitable for operation with **24 V DC voltages** (safety extra low voltage). If this device is connected to line supplies with higher voltage levels this can result in death or serious injury as well as extensive material damage.

Only appropriately qualified personnel may work on or in the vicinity of this equipment. Perfect, safe, and reliable operation of this equipment is dependent on proper transportation, storage, installation and mounting.

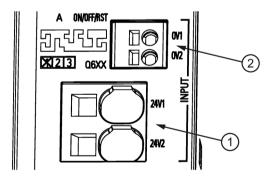


Figure 5-1 Input connection

The supply is connected via input terminal ①, designated "24 V" and the 0 V terminal ②, designated "0 V"; the "0 V" connection is not used for the load supply, but only to supply the internal electronics of the selectivity module (terminal cross-sections, see Figure 2-2 Terminal data (Page 13)).

### 5.1 Connection at the input

### **NOTICE**

### Overload of the wiring

The "0 V" connection is only used to supply the internal electronics of the selectivity module. The 0 V of the connected loads must be routed directly to the power supply using separate cables!

The input terminals of the selectivity module are designed for a maximum input current of 40 A or 60 A. This must be taken into account when connecting several selectivity modules in parallel by "looping through". If the total current demand of all selectivity modules connected in parallel is more than 40 A or 60 A, then the maximum current should be reduced to 40 A or 60 A per branch by using additional feeder cables directly from the power supply to the selectivity modules connected in parallel.

## 5.2 Connection at the output

(see Chapter Technical data (Page 51))

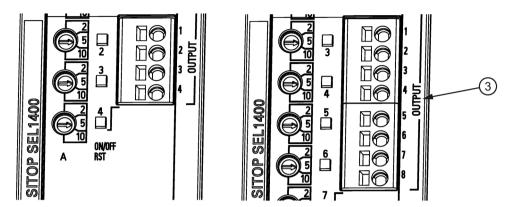


Figure 5-2 Output connection

The loads to be supplied are connected at output terminals ③ labeled OUTPUT 1, 2, 3, 4 (1, ..., 8). (terminal cross-sections, see Figure Terminal data (Page 13)).

### Note

The 0 V of the loads must be routed directly to the power supply using separate cables!

5.2 Connection at the output

Technical data

### Note

Technical data apply for a rated input voltage, rated load and 25 °C ambient temperature if nothing else is specified.

# 6.1 Input

	6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4437-7EB00-3DX0 6EP4437-7EB00-3CX0	6EP4438-7FB00-3DX0 6EP4438-7EB00-3DX0
Input	Regulated DC voltage	
Rated voltage U <sub>in rated</sub>	24 V	
Voltage range	20.4 - 30 V	
Overvoltage strength	35 V	
Input current at Uin rated	Max. 40 A Max. 60 A	

## 6.2 Output

	6EP4437-7FB00- 3DX0	6EP4437-7EB00- 3DX0	6EP4437-7FB00- 3CX0 6EP4437-7EB00- 3CX0	6EP4438-7FB00- 3DX0 6EP4438-7EB00- 3DX0
Output	Regulated DC voltage	e		
Output voltage	U <sub>out</sub> = U <sub>in</sub> - approx. 0.2	2 V		
Total tolerance	Corresponding to the supplying input voltage			
Number of outputs	8 8		4	8
Output current up to 60 °C for each output (rated value)	5 A	5 A	10 A	10 A (in total, not more than 60 A)
Remark	60 70 °C derating: 3.25 % I <sub>out</sub> /K	60 70 °C derating: 2.5 % I <sub>out</sub> /K	60 70 °C derating: 2 % I <sub>out</sub> /K	60 70 °C derating: 2 % I <sub>out</sub> /K
Adjustable response threshold	old 1-5A 1-5A 2-1		2 - 10 A	2 - 10 A
Connecting outputs in parallel	Yes, max. 4 × 2 outputs each that must lie next to one another.			
Switching on outputs	All outputs are switched-on after the supply voltage ramps up > 20 V, delay time of 25 ms, 200 ms, 500 ms – or "load optimized", selectable using DIP switch.			

### Shutdown characteristics:

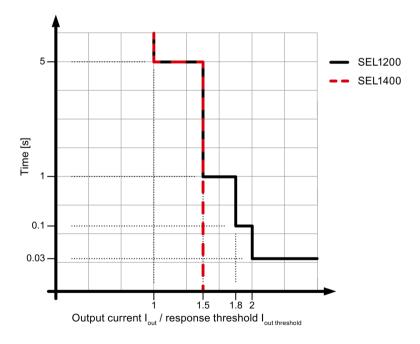


Figure 6-1 Shutdown characteristic

The following applies for the SEL1200: In the range > 150 %, a higher current is briefly permitted; afterwards it is shut down corresponding to the "Shutdown characteristic" diagram.

The following applies for the SEL1400: In the range > 150 % of the selected current response threshold, the current is limited to 150 %, typically after 10 ms to 100 ms, the output is electronically shut down (LED of the output is lit red).

- An output current is continuously permissible up to the selected current response threshold (LED of the output is lit green).
- In the range 100 150 % of the selected current response threshold, an overload current is permissible for 5 seconds (LED of the output flashes green), then the output is electronically shut down (LED of the output is lit red).

# 6.3 Efficiency

	6EP4437-7FB00- 3DX0	6EP4437-7EB00- 3DX0	6EP4437-7FB00- 3CX0	6EP4437-7EB00- 3CX0	6EP4438-7FB00- 3DX0 6EP4438-7EB00- 3DX0
Efficiency at Uout rated, lout rated, approx.	98 %	98 %	99 %	99 %	99 %
Power loss at Uout rated, lout rated, approx.	12 W	15 W	12 W	15 W	15 W

# 6.4 Protection and monitoring

	6EP4437-7FB00-3DX0	6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0	6EP4437-7EB00-3DX0	6EP4437-7EB00-3CX0 6EP4438-7EB00-3DX0
Device pro- tection	Internal fuse 10 A for each output (not accessible)	Internal fuse 20 A for each output (not accessible)	Internal fuse 8 A for each output (not accessible)	Internal fuse 15 A for each output (not accessible)
Operating display	One LED per output: LED green for "Output switched on", LED orange flashing for "Output manually switched off", LED red for "Output switched off due to overload or overvoltage", all LEDs flashing red for "Device overload (total max. output current exceeded)", red running light for "Device overtemperature". More detailed information is provided in Chapter Status displays and signaling (Page 16).			
Signaling	Group signaling contact (NO contact), contact rating: 24 V AC/0.1 A; 30 V DC/0.1 A			

## 6.5 MTBF

	6EP4437-7FB00-3DX0	6EP4438-7EB00-3DX0
	6EP4437-7FB00-3CX0	
	6EP4438-7FB00-3DX0	
	6EP4437-7EB00-3DX0	
	6EP4437-7EB00-3CX0	
Mean Time Between Failures	> 500,000 hours at 40 °C, rated load, 24 hour operation	> 300,000 hours at 40 °C, rated load, 24 hour operation

# 6.6 Mechanical system

	6EP4437- 7FB00-3DX0	6EP4437- 7FB00-3CX0	6EP4438- 7FB00-3DX0	6EP4437- 7EB00-3DX0	6EP4437- 7EB00-3CX0	6EP4438- 7EB00-3DX0
Connection system	Spring-loade	d terminals				
+24 V input	2 spring-load	ed terminals for	0.75 - 16 mm²	(0.75 - 25 mm²)	solid/finely stra	anded
0 V connection	2 spring-load	ed terminals for	0.2 - 4 mm² (0.	2 - 2.5 mm²) so	lid/finely strand	ed
Output 1 - 4 / 1 - 8	one spring-lo	aded terminal p	er output for 0.2	2 - 4 mm² (0.2 -	2.5 mm²) solid/	finely stranded
Group signaling contact (13, 14)	2 spring-load	ed terminals for	0.2 - 1.5 mm² (	0.2 - 1.5 mm²) :	solid/finely strar	nded
Not assigned (NF)	one spring-lo	aded terminal fo	or 0.2 - 1.5 mm²	(0.2 - 1.5 mm²)	) solid/finely stra	anded
Remote reset (RST)	one spring-lo	aded terminal fo	or 0.2 - 1.5 mm²	(0.2 - 1.5 mm²)	) solid/finely stra	anded
Width of the housing	45 mm					
Height of the housing	135 mm					
Depth of the housing	125 mm					
Installation width	45 mm					
Mounting height	225 mm					
Weight, approx.	Approx. 0.3 kg	Approx. 0.3 kg	Approx. 0.3 kg	Approx. 0.4 kg	Approx. 0.4 kg	Approx. 0.5 kg
Mounting	Can be snap	oed onto standa	rd TH 35-15/7,5	5 mounting rails	(EN 60715)	

# 6.7 Accessories

	6EP4437-7FB00-3DX0
	6EP4437-7FB00-3CX0
	6EP4438-7FB00-3DX0
	6EP4437-7EB00-3DX0
	6EP4437-7EB00-3CX0
	6EP4438-7EB00-3DX0
Mechanical accessories	Reference labeling plate (160 plates) 6ES7193-6LF30-0AW0

## 6.8 Dimension drawing

See Chapter Dimensions and weight (Page 26).

CAD data that can be downloaded from the Internet:

6EP4437-7FB00-3DX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G KT01 XX 01648)

6EP4437-7FB00-3CX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G\_KT01\_XX\_01645)

6EP4438-7FB00-3DX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G\_KT01\_XX\_01575)

6EP4437-7EB00-3DX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G\_KT01\_XX\_01654)

6EP4437-7EB00-3CX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G\_KT01\_XX\_01651)

6EP4438-7EB00-3DX0

(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G\_KT01\_XX\_01578)

Safety, approvals, EMC

# 7.1 Safety

	6EP4437-7FB00-3DX0
	6EP4437-7FB00-3CX0
	6EP4438-7FB00-3DX0
	6EP4437-7EB00-3DX0
	6EP4437-7EB00-3CX0
	6EP4438-7EB00-3DX0
Standard for safety	acc. to IEC61204-7 and EN 50178
Protection class	Class III
Degree of protection (EN 60529)	IP20

# 7.2 Approvals

	6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0 6EP4437-7EB00-3DX0 6EP4437-7EB00-3CX0 6EP4438-7EB00-3DX0
CE marking	Yes, (2014/35/EU, 2014/30/EU, 2011/65/EU, 2014/34/EU)
CB approval	Yes
UL/cUL (CSA) approval	UR (UL 2367) file E328600; cULus (UL 508, CSA C22.2 No. 107.1) file E197259
cCSAus approval	cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	Yes
ATEX approval	II 3G Ex ec IIC T4 Gc
IECEx approval	Yes (IECEx EPS 14.0067X)
cULus HazLoc	Available soon
Marine approvals	Available soon
RCM approval	Yes
EAC approval	Yes
SONCAP certificate	Yes

# 7.3 EMC

		6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0 6EP4437-7EB00-3DX0 6EP4437-7EB00-3CX0 6EP4438-7EB00-3DX0
Electrostatic discharge	EN 61000-4-2	8 kV contact, 8 kV air
Electromagnetic fields	EN 61000-4-3	80 - 1000 MHz 10 V/m, 1000 - 6000 MHz 10 V/m, 900 MHz ± 5 MHz 10 V/m
Fast transient disturbance variables (burst)	EN 61000-4-4	2 kV at the DC input 2 kV at the DC output
Surge voltages	EN 61000-4-5	0.5 kV symmetrical at the DC input 0.5 kV symmetrical at the DC output
High-frequency fields	EN 61000-4-6	10 V/m; 0.15 - 80 MHz
Magnetic fields	EN 61000-4-8	30 A/m; 50 Hz
Generic standards	EN 61000-6-2	Noise immunity for industrial environments
	EN 61000-6-3	Emission for residential areas

Ambient conditions

	6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0 6EP4438-7FB00-3DX0 6EP4437-7EB00-3DX0 6EP4437-7EB00-3CX0 6EP4438-7EB00-3DX0
Ambient temperature	-25 70 °C for natural convection (self convection)
	Tested according to:
	<ul> <li>EN 60068-2-1 Cold, Ad test</li> </ul>
	<ul> <li>EN 60068-2-2 Dry heat, Bb test</li> </ul>
	<ul> <li>EN 60068-2-78 Humid heat, constant Cab test</li> </ul>
	<ul> <li>EN 60068-2-14 Temperature change, Nb test</li> </ul>
Fransport and storage temperature	-40 85 °C
	Tests (packed for shipping) according to:
	<ul> <li>EN 60068-2-1 Cold, Ab test</li> </ul>
	<ul> <li>EN 60068-2-2 Dry heat, Bb test</li> </ul>
	<ul> <li>EN 60068-2-30 Humid heat, cyclic Db test</li> </ul>
Humidity class	Climatic class 3K3 according to EN 60721, 5 - 95 % no condensation
Degree of pollution	2
Mechanical stressing in operation	<ul> <li>Test according to EN 60068-2-6 vibration, test Fc:</li> <li>3.5 mm deflection in the range 5 - 8.4 Hz</li> <li>2 g acceleration in the range 8.4 - 150 Hz</li> </ul>
	<ul> <li>Test according to EN 60068-2-27 shock, test Ea: acceleration 150 m/s², test duration 11 ms</li> </ul>

	6EP4437-7FB00-3DX0 6EP4437-7FB00-3CX0
	6EP4438-7FB00-3DX0
	6EP4437-7EB00-3DX0
	6EP4437-7EB00-3CX0
	6EP4438-7EB00-3DX0
Damaging gases	Sulfur dioxide: 10 cm <sup>3</sup> /m <sup>3</sup> , 4 days
	Hydrogen sulfide: 1 cm <sup>3</sup> /m <sup>3</sup> , 4 days
	Tested according to:
	<ul> <li>EN 60068-2-42 sulfur dioxide</li> </ul>
	<ul> <li>EN 60068-2-43 hydrogen sulfide</li> </ul>
Atmospheric pressure	Operation:
	• 1080 - 795 hPa (0 - 2000 m)
	<ul> <li>For operation at altitudes of 2000 - 6000 m above sea level:</li> </ul>
	output must be derated by -7.5% / 1000 m or
	the ambient temperature must be reduced by
	5 K / 1000 m
	(see Standard mounting position (Page 31))
	Storage:
	• 1080 - 660 hPa (0 - 3500 m)

Environment

The devices are in conformance with RoHS.

Only substances in conformance with PWIS are used (paint-wetting impairment substances)

## Disposal guidelines



Packaging and packaging aids can and should always be recycled. The product itself may not be disposed of as domestic refuse.

Equipment Manual, 06.2020, A5E46496083-2-76

Service & Support 10

### **Technical support**

You can access technical support through the following communication channels:

- Telephone: + 49 (0) 911 895 7222
- Internet:

Web form for support request (http://www.siemens.de/automation/support-request)

#### Technical documentation on the Internet

Operating instructions and manuals for SITOP are available in the Internet: Operating instructions/manuals (http://www.siemens.com/sitop/manuals)

### SITOP power supply homepage

Current information about our power supplies is available in the Internet at the SITOP home page:

SITOP (http://www.siemens.com/sitop)

#### Texts for invitation to tender

You can find invitation to tender texts for SITOP power supplies here: Link to the portal (http://www.siemens.de/ausschreibungstexte)

#### CAx data

You can find 2D-/3D data, devices circuit diagrams according to IEC and ANSI as well as EPLAN macros as download in the Internet:

Siemens image database (http://www.siemens.com/sitop-cax)

Request all CAx data via the CAx download manager: CAx shopping cart (http://www.siemens.com/cax)

#### **TIA Selection Tool**

Simply and quickly select the optimum power supply, add-on modules and DC-UPS: TIA Selection Tool cloud (http://www.siemens.com/tst-powersupply)

In addition, the 24 V load view in the TIA Selection Tool allows you to simply select the power supply for your particular project as the current demand of the automation products being supplied is automatically calculated.

Download the TIA Selection Tool (http://www.siemens.de/tia-selection-tool-standalone)

#### Online catalog and ordering system

The online catalog and the online ordering system are available through the Industry Mall homepage:

Industry Mall (http://www.siemens.com/industrymall/de)

### **Contact persons**

If you have any questions regarding the use of our products, then contact the Siemens contact person in your regional Siemens sales office.

You can find these addresses as follows:

- On the Internet (http://www.automation.siemens.com/partner)
- Industry Mall (http://www.siemens.com/industrymall/de)