



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

User manual

User manual

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

UM EN HW FL SWITCH 2000, Revision 04

2021-04-23

This user manual is valid for:

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



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 order numbers listed here in the search field.

108997_en_04

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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 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.
- Qualified application programmers and software engineers. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

1.3 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 Unauthorized network access



NOTE: Risk of unauthorized network access

To prevent unauthorized network access, please read the following notes.

Connecting devices to a network via Ethernet entails the danger of unauthorized access to the network.

If possible, deactivate unused communication channels.

Assign passwords such that third-parties cannot access the switch and make unauthorized changes.

Due to its communication interfaces, the switch should not be used in safety-critical applications unless additional security appliances are being used.

Please take additional protective measures in accordance with the IT security requirements and the standards applicable to your application (e.g. virtual networks (VPN) for remote maintenance access, firewalls, etc.) for protection against unauthorized network access.

On first request, you shall release Phoenix Contact and the companies associated with Phoenix Contact GmbH & Co. KG, Flachsmarktstrasse 8, 32825 Blomberg in accordance with §§15ff. AktG (German Stock Corporation Act), hereinafter collectively referred to as "Phoenix Contact", from all third-party claims made due to improper use.

For the protection of networks for remote maintenance via VPN, Phoenix Contact offers the mGuard product series security appliances, which you can find described in the latest Phoenix Contact catalog (phoenixcontact.net/products).

Additional measures for protection against unauthorized network access can be found in the AH EN INDUSTRIAL SECURITY application note. The application note can be downloaded at phoenixcontact.net/products.

2 Properties of the devices

2.1 Properties and versions

2.1.1 FL SWITCH 2xxx device versions

Order 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	
FL SWITCH 2214-2SFX PN	PROFINET mode	14 x RJ45		2 x SFP	

FL SWITCH 2000 / FL NAT 2000

Order 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 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
FL SWITCH 2516			16 x RJ45		
FL SWITCH 2516 PN	PROFINET mode		16 x RJ45		

Order 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 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 2-1 Device versions

Order 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 properties of the Ethernet interfaces of the FL SWITCH 2000 and FL NAT 2000 product families described below all meet the requirements of the IE 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)

2.2 Overview table of the functions



The functions listed in Table 2-2 are up to date at the time of publication of this user 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 web page (e.g., <http://phoenixcontact.net/product/2702324>).

Table 2-2 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							

Table 2-2 Device functions [...]

	FL SWITCH / FL NAT								
	20xx	21xx	22xx	23xx	24xx	25xx	25xx/K1	26xx	27xx
Diagnostic functions									
Link Layer Discovery Protocol (LLDP)	Yes			Yes					
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 Status and diagnostic indicators



Please note that the meaning of the LEDs differs in Smart mode (see [“Using Smart mode” on page 43](#)).

Des.	Color	Status	Meaning
US1	Green	On	Supply voltage 1 within the tolerance range
		Off	Supply voltage 1 too low
US2 (for 22xx/23xx/24xx/ 25xx/26xx/27xx versions only)	Green	On	Supply voltage 2 within the tolerance range
		Off	Supply voltage 2 too low
FAIL¹ (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/ACT²	Green/ orange	On	Green: link active Orange: SFP link at combo port active
		Flashing	Data transmission
		Off	Link not active
SPD²	Green/ orange	On	Green: 100 Mbps Orange: 1000 Mbps (for 21xx/23xx/25xx/27xx versions only)
		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 is 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 always located at the bottom of the port.
24xx/25xx versions: The LEDs are located on the front of the device.

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 21](#)), the output port or the sending 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 21 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). Only one port of the pair can be used at a time. Each combo port can therefore be used as a copper or 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.

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)

2.6 Using the 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.

2.6.1 Elements of the SFP modules

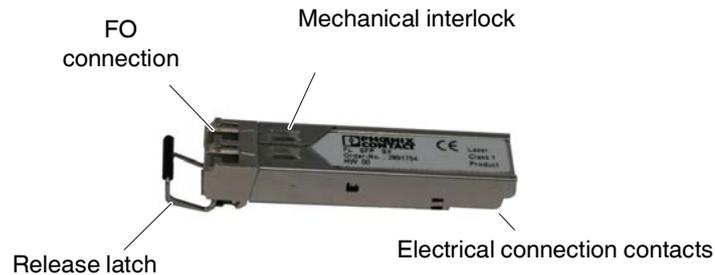


Figure 22 Elements of the SFP modules

2.6.2 Mounting the SFP modules

Inserting the SFP modules

- Insert the SFP modules in the relevant slots on the switch.
- As you do so, make sure the SFP modules are aligned mechanically correct.



Figure 23 Inserting the SFP modules (example)

Removing the SFP modules

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

2.7 Using the (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.

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



Please note that correct function of the SD card and the product can only be ensured when using a Phoenix Contact SD card (e.g., 2988162 SD FLASH 2GB or 1129482 FL MICRO SD FLASH). If third-party SD cards are used, it is recommended that card compatibility be verified.



Figure 24 Position of the SD card slot (left) and position of the microSD card slot on the 26xx/27xx versions (right)

Using configuration files on the SD card

Example configurations for frequent application situations can be downloaded from phoenixcontact.net/product/2702324. Enter the order number of your device in the search field. The example configurations can be found among the various product-related 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

To automatically read the configuration on the SD card, 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. The configuration also remains active when the switch is restarted, provided that no SD card is inserted in the device.

Using configuration files in different versions of the FL SWITCH 2xxx/FL NAT 2xxx series

In principle, every configuration file of an FL SWITCH 2xxx/FL NAT 2xxx can be transferred to every other version of this product family. It must be observed, however, that the individual versions have different scopes of functions and numbers of ports. When reading the configuration file, the switch ignores functions or port numbers that are not supported, and does not change affected configuration parameters.

Examples:

- Configuration files of versions 22xx/23xx/24xx/25xx/26xx/27xx may contain parameters for functions that are not supported by versions 20xx/21xx. 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.

Inversely, the parameters of ports 9 to 16 are set to the factory default when the configuration of a 5/8-port device is read on a 16-port device.

3 Mounting and installation

3.1 General information

3.1.1 Functional grounding



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 grounded so that the data telegram is shielded from any possible malfunctions which can then be 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. A conductor of at least 2.5 mm² must be used for functional grounding.
- For the 20xxF versions, grounding is implemented via the FE contact on the COMBICON connector and a conductor of 1.5 mm².
- 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 mm² must be used for functional grounding.

3.1.2 Assignment of the Ethernet connectors

3.1.2.1 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 3-1 Pin assignment of RJ45 connectors

Pin number	10Base-T (10 Mbps)	100Base-T (100 Mbps)	1000Base-T (1000 Mbps)
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)

3.1.2.2 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 3-2 Pin assignment of D-coded M12 connectors

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 of the push-pull retaining collar.

3.1.2.3 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 3-3 Pin assignment of X-coded M12 connectors

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 of the push-pull retaining collar.

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

3.2.1 Device dimensions

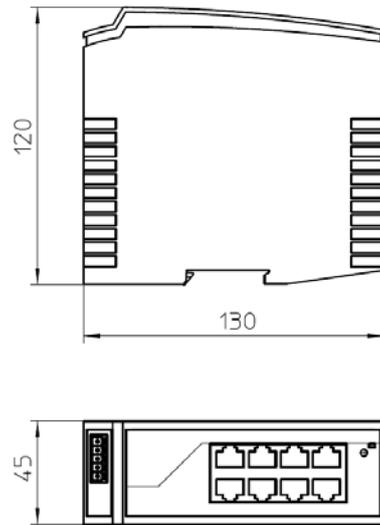


Figure 31 Dimensions of 5/8-port versions in a narrow housing

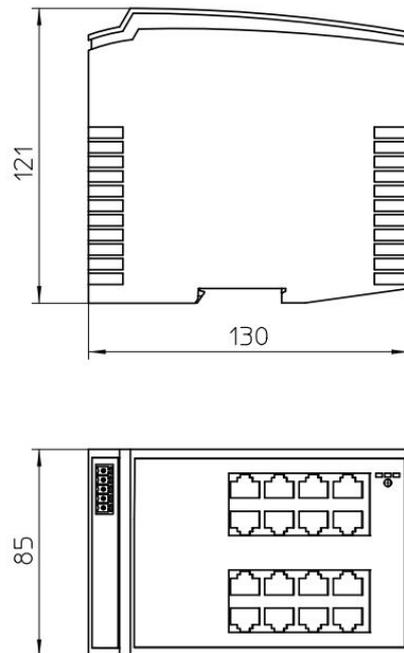


Figure 32 Dimensions of 16-port versions in a narrow housing

3.2.2 Elements of the devices

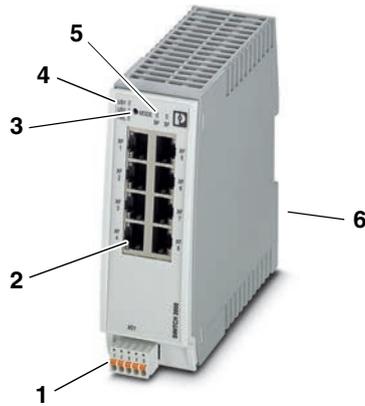


Figure 33 Elements of the FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx devices

Table 3-4 Key for FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx

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

3.2.3 Mounting and removing the devices

Mount the device on a clean, horizontally installed DIN rail in accordance with DIN EN 50022 (e.g., NS 35 ... from Phoenix Contact). To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, Order 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 30 mm to the vents of the housing is recommended. The control cabinet/box must meet the requirements of EN 60950-1:2006 with respect to fire protection enclosure.

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.

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).
- Once the module has been snapped on properly, check that it is fixed securely on the DIN rail.

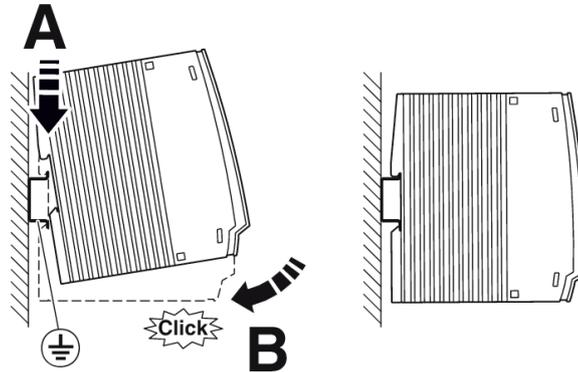


Figure 34 Snapping the device onto the DIN rail

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).

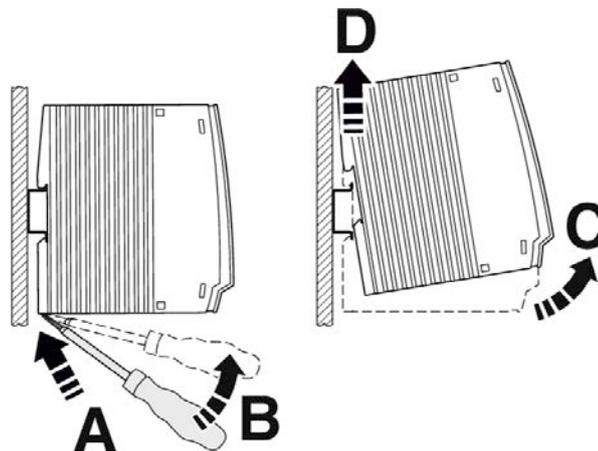


Figure 35 Removing the device

3.2.4 Installing the devices

3.2.4.1 Selecting the conductors

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors and ferrules:

Table 3-5 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	Slot-headed screwdriver Blade thickness: 0.4 mm Blade width: 2.5 mm Recommended: SZS 0,4X2,5 VDE, Order No. 1205037	
Conductor cross-section, AWG, minimum	24	
Conductor cross-section, AWG, maximum	16	
Stripping length	9 mm	

Table 3-6 Specifications for ferrules

Recommended crimping tool	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

3.2.4.2 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 37](#)).

The module is designed exclusively for operation with safety extra-low voltage (SELV/PELV). In redundant operation, both power supplies must satisfy 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.

US
GND



Figure 36 Operating the device with one power supply (example)

US1 US2
GND GND

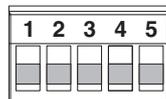


Figure 37 Redundant operation with two power supplies (example)



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

3.2.4.3 Connecting a 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.

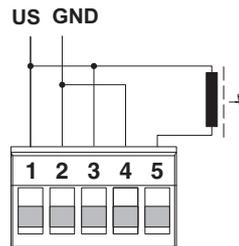


Figure 38 Connecting a relay to the digital alarm output



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

3.3 FL SWITCH 20xxF

3.3.1 Device dimensions

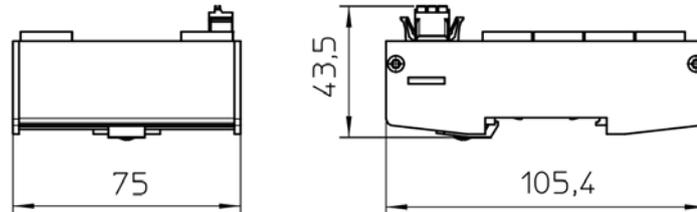


Figure 39 Dimensions of the 8-port version in a flat housing

3.3.2 Elements of the devices



Figure 310 Elements of the FL SWITCH 20xxF devices

Table 3-7 Key for FL SWITCH 20xxF

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

3.3.3 Mounting and removing the devices

Mount the device on a clean, horizontally installed DIN rail in accordance with DIN EN 50022 (e.g., NS 35 ... from Phoenix Contact). To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, Order No. 0800886) can be mounted to the right and left of the device to stop the modules from slipping on the DIN rail.

The control cabinet/box must meet the requirements of EN 60950-1:2006 with respect to fire protection enclosure.

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.

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).
- Once the module has been snapped on properly, check that it is fixed securely on the DIN rail.

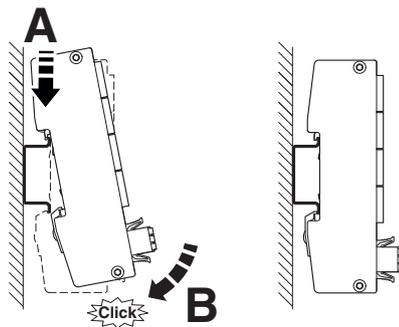


Figure 311 Snapping the device onto the DIN rail

Removal:

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

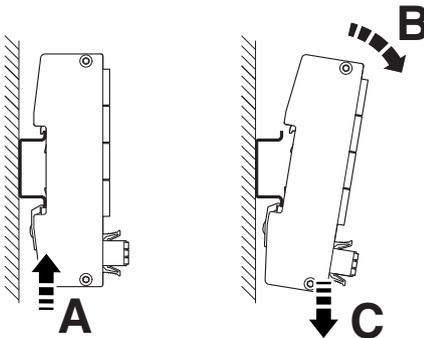


Figure 312 Removing the device

3.3.4 Installing the devices

3.3.4.1 Selecting the conductors

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors and ferrules:

Table 3-8 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	Slot-headed screwdriver Blade thickness: 0.4 mm Blade width: 2.5 mm Recommended: SZS 0,4X2,5 VDE, Order No. 1205037
Conductor cross-section, AWG, minimum	24
Conductor cross-section, AWG, maximum	16
Stripping length	9 mm

Table 3-9 Specifications for ferrules

Recommended crimping tool	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

3.3.4.2 Connecting the 24 V DC supply voltage

The device is operated using a 24 V DC voltage, which is applied via COMBICON connectors. The module is designed exclusively for operation with safety extra-low voltage (SELV/PELV).

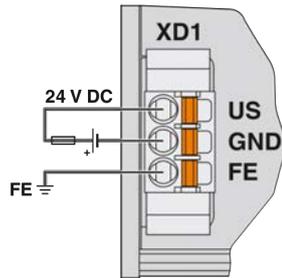


Figure 313 Power supply of the switch

3.4 FL SWITCH 24xx/25xx

3.4.1 Device dimensions

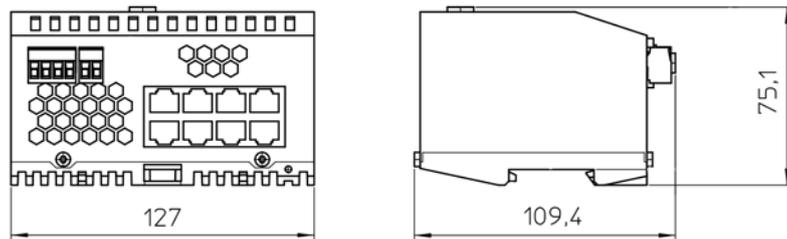


Figure 314 Dimensions of 8-port versions

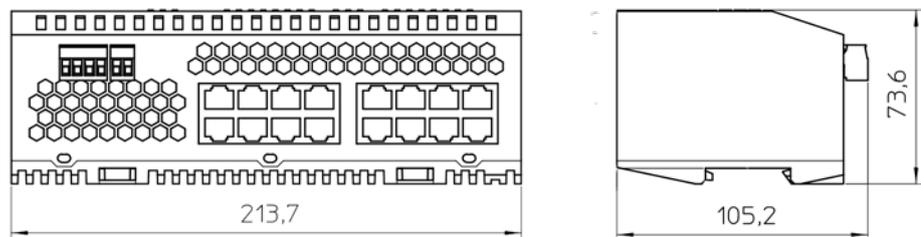


Figure 315 Dimensions of 16-port versions

3.4.2 Elements of the devices

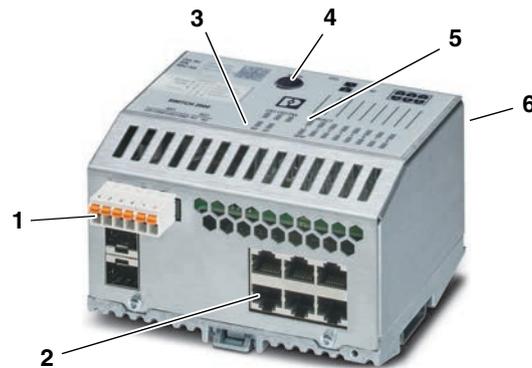


Figure 316 Elements of the FL SWITCH 24xx/25xx devices

Table 3-10 Key for FL SWITCH 24xx/25xx

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

3.4.3 Mounting and removing the devices

Mount the device on a clean, horizontally installed DIN rail in accordance with DIN EN 50022 (e.g., NS 35 ... from Phoenix Contact). To avoid contact resistance, only use clean, corrosion-free DIN rails. End brackets (E/NS 35 N, Order 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 30 mm to the vents of the housing is recommended. The control cabinet/box must meet the requirements of EN 60950-1:2006 with respect to fire protection enclosure.

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.

Mounting:

- Place the module onto the DIN rail from above (A1). 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 (A2).
- Once the module has been snapped on properly, check that it is fixed securely on the DIN rail.

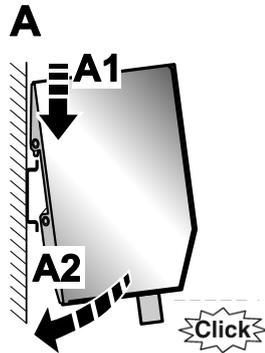


Figure 317 Snapping the device onto the DIN rail

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).

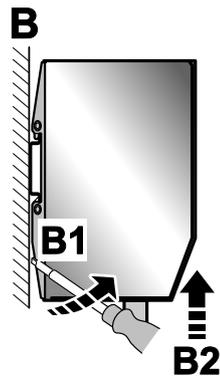


Figure 318 Removing the device

3.4.4 Installing the devices

3.4.4.1 Selecting the conductors

The devices are supplied with a Push-in connector.

Observe the specifications for suitable conductors:

Table 3-11 Selecting the conductors

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

3.4.4.2 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.

The module is designed exclusively for operation with safety extra-low voltage (SELV/PELV). In redundant operation, both power supplies must satisfy 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 marking XG1 is not required (see [Figure 319](#) and [Figure 320](#)).



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.

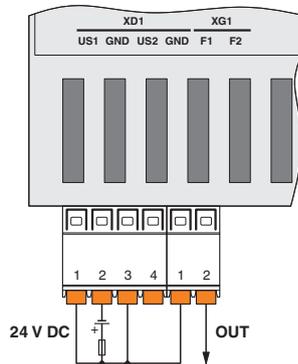


Figure 319 Supplying the switch using one voltage source

Redundant 24 V DC supply

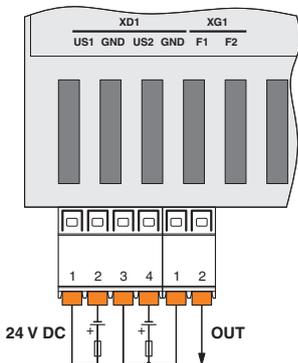


Figure 320 Supplying the switch using two voltage sources



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

3.4.4.3 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.

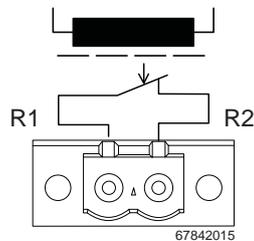


Figure 321 Basic circuit diagram for the signal contact

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 (as shown in [Figure 319](#)) or by deactivating redundant power supply monitoring in web-based management or via SNMP.

3.5 FL SWITCH 26xx/27xx

3.5.1 Device dimensions

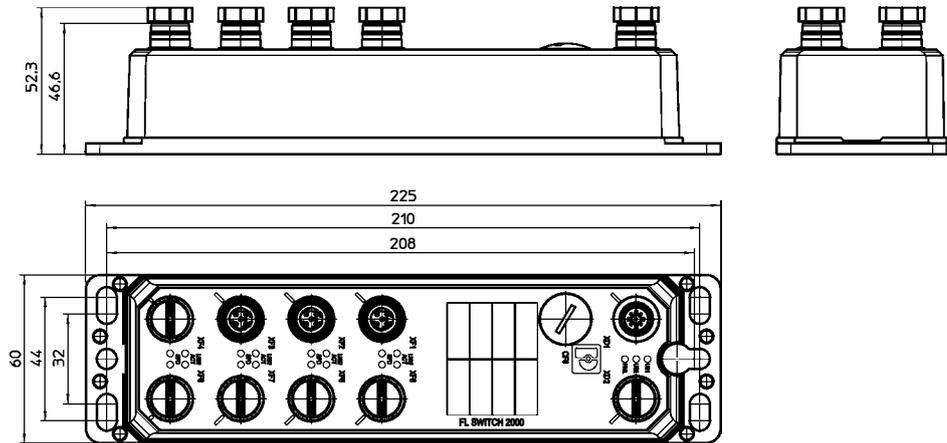


Figure 322 Dimensions of the FL SWITCH 26xx/27xx devices

3.5.2 Elements of the devices

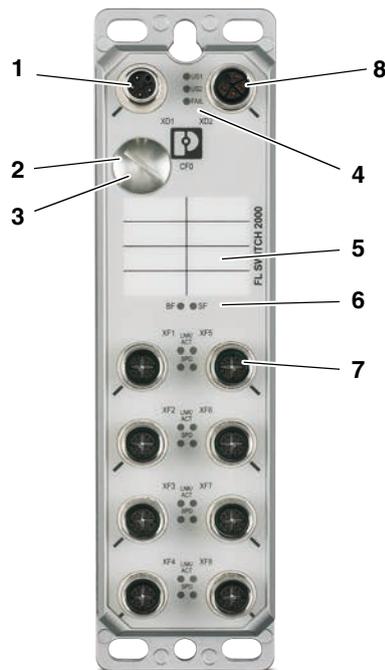


Figure 323 Elements of the FL SWITCH 26xx/27xx devices

Table 3-12 Key for FL SWITCH 26xx/27xx

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

3.5.3 Mounting and removing the devices

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

For drill hole spacing, refer to [Figure 322](#).



Figure 324 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.

3.5.4 Installing the devices

3.5.4.1 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 slots is 1.2 Nm; it should not exceed 4 Nm.



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

3.5.4.2 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 socket 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 3-13 Pin assignment for the power supply via M12 connectors with marking “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 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 socket XD2.



Figure 325 Efficient power supply

Table 3-14 Pin assignment for the power supply via M12 connectors with marking “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.**

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.

If the permissible current carrying capacity is exceeded, this may result in damage to the connectors, the electronic components, and to the PCB of the device.



We recommend using pre-assembled cables.

4 Startup and function

4.1 Delivery state/factory default

4.1.1 Initial IP configuration in the delivery state



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

4.1.1.1 Firmware revision 2.72 and earlier

The device does not have an initial IP configuration.

4.1.1.2 Firmware revision 2.80

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

- IP address: 169.254.2.1
- Subnet mask: 255.255.0.0

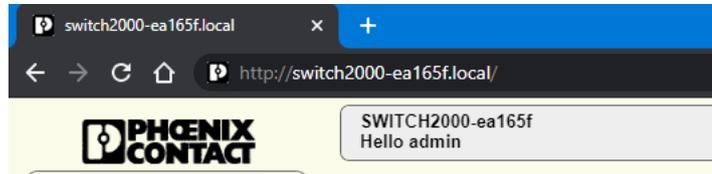
This initial IP configuration is deactivated as soon as the switch is assigned an IP configuration via a different IP address assignment mechanism, e.g., via BootP, DHCP, web-based management.

4.1.1.3 Firmware revision 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 the web-based management and configure the device.

In the factory default state, the device adopts an IP address from the link-local network (169.254.0.0/16). IP address 169.254.2.1 is preferably selected, provided it is not already present in the network. In this way, you can specifically configure individual devices via this IP address. To avoid IP address conflicts when starting multiple devices simultaneously, conflict detection is also active. If the switch detects that the adopted IP address is already assigned, it chooses another one at random.

With this dynamic method, it is difficult to find out which switch has which IP address when dealing with multiple devices. You can therefore also access the device via a DNS host name. In the factory default state, this name is made up of the device family and the individual part of the MAC address, e.g., SWITCH2000-ea165f or NAT2000-ef245c. Access is then possible using a browser, for example, via <http://SWITCH2000-ea165f.local>. For name resolution, mDNS (standard for Linux and macOS systems) and LLMNR (usually used for Windows systems) are supported.



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, this only works through a reset (factory default) of the switch using 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 43](#).

4.1.2 Configuration in the delivery state

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

- All IP parameters are 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 41](#)).
- 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 user account with the user 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.

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.

4.2 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 can be selected via Smart mode:

- Resetting the IP configuration
- Operation in EtherNet/IP mode
- Operation in PROFINET mode
- Operation with static IP address
- Operation in Unmanaged mode
- Resetting to factory default settings



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

4.2.1 Entering Smart mode

- Following the boot phase of the switch, as soon as the LEDs of all ports go out, press and hold down the Smart mode button for more than five seconds. If Smart mode is active, the four LEDs of port XF1 and XF2 will flash. The active state is indicated alternately by the flashing sequence of all four LEDs.

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

4.2.2 Selecting the desired setting

- To select the various settings, press the Smart mode button briefly and select the desired operating mode (see Table "[Operating modes in Smart mode](#)").

4.2.3 Possible operating modes in Smart mode

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

Table 4-1 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 (factory default setting on standard versions)	Off	On	Off	Off
Set PROFINET mode (factory 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
Resetting the 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 2 respectively are used – the reading direction on the device is from top to bottom (LED 1 = LNK/ACT of port 1, LED 4 = SPD of port 2).
On the 24xx/25xx versions, the four LNK/ACT LEDs of port 1-4 are used – the port number corresponds to the LED number.

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

4.2.4 Exiting 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.

4.2.5 Operation in Universal mode

Activating Universal mode resets the device as described in [“Configuration in the delivery state” on page 42](#). 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 41](#)).

4.2.6 Operation in PROFINET mode

Activating PROFINET mode resets the device as described in [“Configuration in the delivery state” on page 42](#) 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 41](#)) is not supported and therefore deactivated.

4.2.7 Operation in EtherNet/IP mode

Activating EtherNet/IP mode resets the device as described in [“Configuration in the delivery state” on page 42](#) 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 41](#)).

4.2.8 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 as described in Section [“Using Smart mode” on page 43](#).

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



Deactivate all other network interfaces on your PC.

2. Connect the switch to your PC.
3. Select the “Operation with default IP address” Smart mode as described in Section [“Using Smart mode” on page 43](#).
4. The switch assigns an IP address to the PC via DHCP.
5. The switch can now be accessed via IP address “192.168.0.254”.

Set the desired IP address via web-based management.

4.2.9 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 Section [“Initial IP configuration in the delivery state” on page 41](#)).

4.2.10 Operation in Unmanaged mode

During operation in Unmanaged mode, the switch can be used without an IP address. Here, the switch adopts 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, Unmanaged mode can be activated using a configuration file and SD card.



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

4.3 Assigning IP parameters via BootP



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

The device uses the BootP protocol for IP address assignment. 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” (Order No. 2702889) and the “IP Assignment Tool” software tools from Phoenix Contact.

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.

After a restart, the device sends three BootP requests and only adopts the old IP address if there is no BootP response.

4.3.1 Assigning the IP address using FL NETWORK MANAGER BASIC

Requirements

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

Step 1: 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.
- 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.
- Click “OK” to confirm the parameterization.

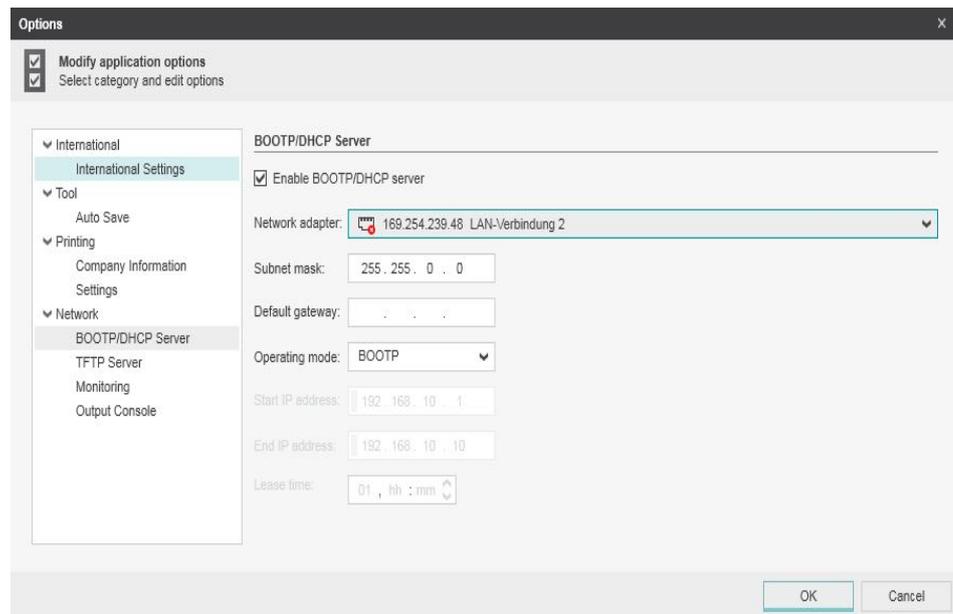


Figure 41 Settings for the BootP server

Step 2: Starting the BootP server

- In your project in the BOOTP/DHCP SERVER window, click on the “play” icon next to the selected network interface. The BootP server is now activated.
- BootP requests that are received are listed in the BOOTP/DHCP SERVER window in table format.



Figure 42 BootP server

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

- If you would now like 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 and 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.

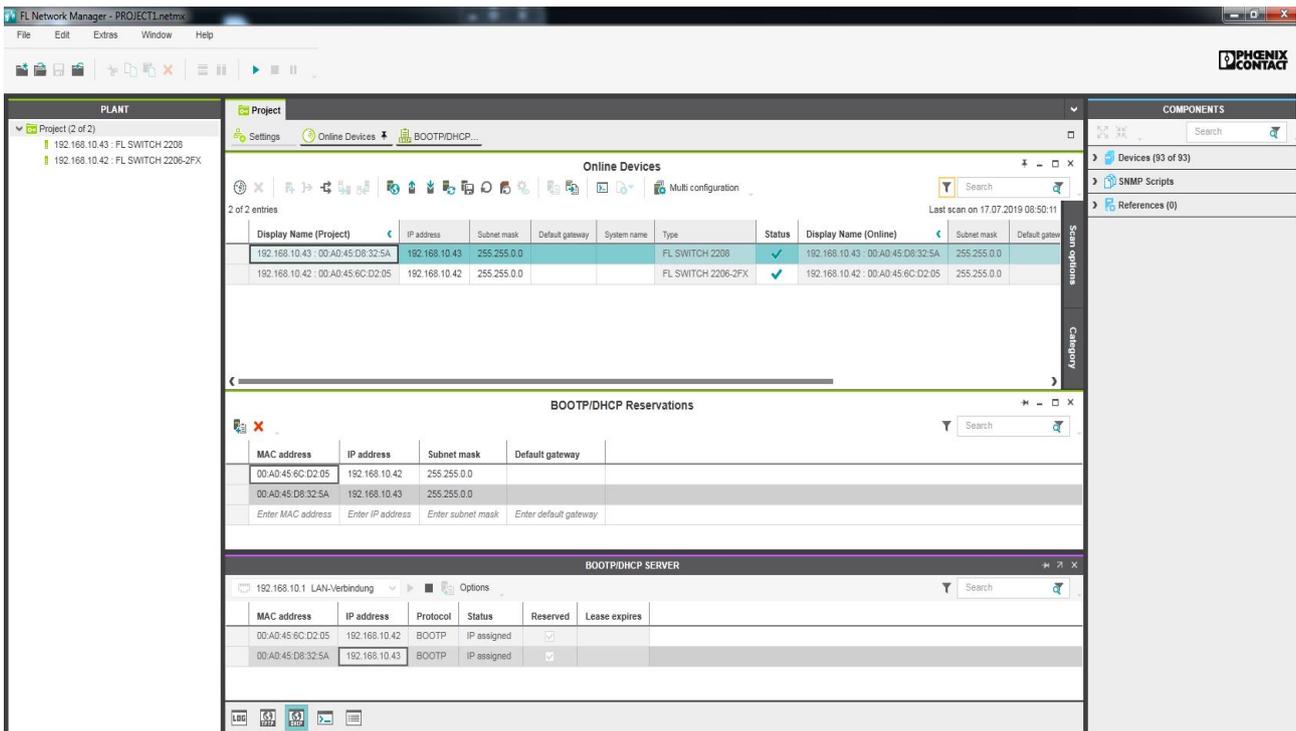


Figure 43 FL NETWORK MANAGER with BootP/DHCP reservation list shown



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

4.3.2 Assigning the IP address using IPAssign.exe

Requirements

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

Step 1: Downloading and running the program

- On the Internet, select the link phoenixcontact.net/products.
- Follow further instructions to access the search field.
- Enter order number 2702323 in the search field, for example.

The BootP IP addressing tool can be found among the various downloads for the product.

- Double-click on the "IPAssign.exe" file.
- In the window that opens, click on the "Run" button.

Step 2: "IP Assignment Wizard"

The program opens and the start screen of the addressing tool appears. The program is mainly in English for international purposes.

However, the program buttons change according to the country-specific settings.

The start screen displays the IP address of the PC. This helps when addressing the device in the subsequent steps.

- Click on the "Weiter" (Next) button.

Step 3: "IP Address Request Listener"

All devices that send a BootP request are listed in the window that opens. These devices are waiting for a new IP address.



Figure 44 "IP Address Request Listener" window



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

In this example, the switch has MAC address 00.A0.45.04.08.A3.

- Select the device to which you want to assign an IP address.
- Click on the "Weiter" (Next) button.

Step 4: “Set IP Address”

The following information is displayed in the window that opens:

- IP address of the PC
- MAC address of the selected device
- IP parameters of the selected device (IP address, subnet mask, and gateway address)
- Any incorrect settings

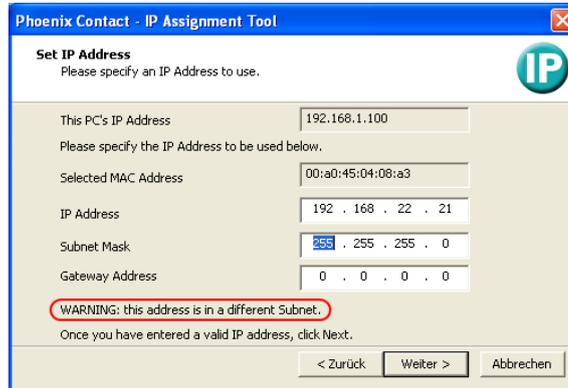


Figure 45 “Set IP Address” window with incorrect settings

- Adjust the IP parameters according to your requirements.

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

- Click on the “Weiter” (Next) button.

Step 5: “Assign IP Address”

The program attempts to transfer the set IP parameters to the device.

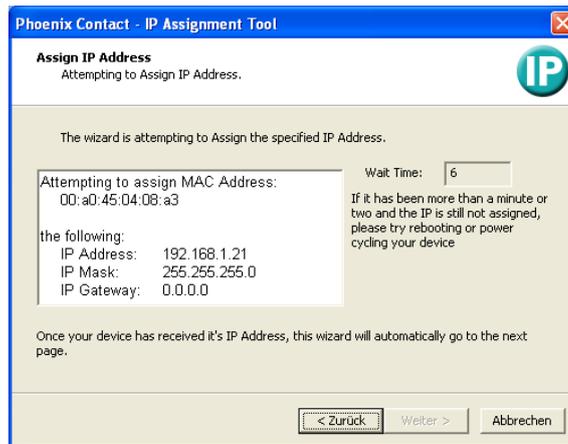


Figure 46 “Assign IP Address” window

Following successful transfer, the next window opens.

Step 6: Completing IP address assignment

The window that opens informs you that IP address assignment has been completed successfully. It provides an overview of the IP parameters that have been transferred to the device with the MAC address shown.

To assign IP parameters for additional devices:

- Click on the “Zurück” (Back) button.

To exit the IP address assignment:

- Click on the “Fertig stellen” (Finish) button.



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

5 Technical data

5.1 FL SWITCH 2005

Ordering data	
Order designation	FL SWITCH 2005
Order No.	2702323
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	246.55 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	56.66 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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 (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
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 B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates

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

5.2 FL SWITCH 2008

Ordering data

Order designation	FL SWITCH 2008
Order No.	2702324
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	220 g

FL SWITCH 2000 / FL NAT 2000

General data	
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	507.8 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	246.55 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	56.66 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))
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)
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

Mechanical tests	
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	UL 61010-1, Ed.3 / UL 61010-2-201, Ed.1
UL, Canada	CSA C22.2 NO.61010-2-201:14, Ed.1 / CSA C22.2 NO.61010-1-12, Ed.3
Further approvals	cULus Listed, EAC

5.3 FL SWITCH 2008F

Ordering data	
Order designation	FL SWITCH 2008F
Order 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)

FL SWITCH 2000 / FL NAT 2000

Ambient conditions

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
Type AX	
Functional grounding	
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

5.4 FL SWITCH 2016

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)	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)

FL SWITCH 2000 / FL NAT 2000

Ambient conditions	
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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	218.22 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	46.17 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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

5.5 FL SWITCH 2105

Ordering data

Order designation	FL SWITCH 2105
Order No.	2702665
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	174.97 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.76 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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

Connection data	
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
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	UL 61010-1, Ed.3 / UL 61010-2-201, Ed.1
UL, Canada	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

5.6 FL SWITCH 2108

Ordering data

Order designation	FL SWITCH 2108
Order No.	2702666
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	174.97 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.76 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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)
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

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	
UL, USA	UL 61010-1, Ed.3 / UL 61010-2-201, Ed.1
UL, Canada	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

5.7 FL SWITCH 2116

Ordering data	
Order designation	FL SWITCH 2116
Order No.	2702908
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	435 g

General data

Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	40.42 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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	10/100/1000 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
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Mechanical tests	
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	UL 61010-1, Ed.3 / UL 61010-2-201, Ed.1
UL, Canada	CSA C22.2 NO.61010-2-201:14, Ed.1 / CSA C22.2 NO.61010-1-12, Ed.3
Further approvals	cULus Listed, EAC

5.8 FL SWITCH 2205

Ordering data	
Order designation	FL SWITCH 2205
Order No.	2702326
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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	235.18 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	29.73 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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 _I = Max)
Maximum power dissipation for nominal condition	4.05 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
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.9 FL SWITCH 2208

Ordering data	
Order designation	FL SWITCH 2208
Order No.	2702327
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	235.18 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	29.73 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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
Approvals / Certificates	
ATEX	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.10 FL SWITCH 2208C

Ordering data	
Order designation	FL SWITCH 2208C
Order No.	1095627
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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	235.18 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	29.73 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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	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

5.11 FL SWITCH 2208 PN

Ordering data

Order designation	FL SWITCH 2208 PN
Order No.	1044024
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	165.29 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	20.35 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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)
Max. current consumption	1.3 A (U _S = Min, T _{amb} = Max, DO ₁ = Max)
Maximum power dissipation for nominal condition	6.6 W (U _S = Min, T _{amb} = Max, DO ₁ = 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

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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 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
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.12 FL SWITCH 2207-FX

Ordering data	
Order designation	FL SWITCH 2207-FX
Order No.	2702328
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	185.13 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	22.87 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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	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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5

Approvals / Certificates

UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.13 FL SWITCH 2207-FX SM

Ordering data

Order designation	FL SWITCH 2207-FX SM
Order No.	2702329
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	185.13 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	22.87 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.14 FL SWITCH 2206-2FX

Ordering data

Order designation	FL SWITCH 2206-2FX
Order No.	2702330
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	153.37 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.66 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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 _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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.15 FL SWITCH 2206C-2FX

Ordering data	
Order designation	FL SWITCH 2206C-2FX
Order No.	1095628
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 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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	153.37 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.66 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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 _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
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5.16 FL SWITCH 2206-2FX SM

Ordering data	
Order designation	FL SWITCH 2206-2FX SM
Order No.	2702331
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	153.37 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.66 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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)

Supply voltage

Max. current consumption	1.5 A ($U_S = \text{Min}$, $T_{\text{amb}} = \text{Max}$, $DO_1 = \text{Max}$)
Maximum power dissipation for nominal condition	6.75 W ($U_S = \text{Min}$, $T_{\text{amb}} = \text{Max}$, $DO_1 = \text{Max}$)
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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.17 FL SWITCH 2206-2FX ST

Ordering data

Order designation	FL SWITCH 2206-2FX ST
Order No.	2702332
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	153.37 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.66 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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

Connection data

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	Ⓔ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.18 FL SWITCH 2206-2FX SM ST

Ordering data	
Order designation	FL SWITCH 2206-2FX SM ST
Order No.	2702333
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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	153.37 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.66 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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
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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEx	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.19 FL SWITCH 2206-2SFX

Ordering data	
Order designation	FL SWITCH 2206-2SFX
Order No.	2702969
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	290 g

FL SWITCH 2000 / FL NAT 2000

General data

Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	491.44 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	212.99 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	24.97 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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 A
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
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.20 FL SWITCH 2206-2SFX PN

Ordering data	
Order designation	FL SWITCH 2206-2SFX PN
Order No.	1044028
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	212.99 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	24.97 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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 ₁ = Max)
Maximum power dissipation for nominal condition	7.8 W (U _S = Min, T _{amb} = Max, DO ₁ = 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
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.21 FL SWITCH 2204-2TC-2SFX

Ordering data	
Order designation	FL SWITCH 2204-2TC-2SFX
Order No.	2702334
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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	158.13 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	19.77 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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

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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.22 FL SWITCH 2216

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	218.22 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.7 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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	Ⓔ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.23 FL SWITCH 2216 PN

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	218.22 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.7 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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

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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 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
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.24 FL SWITCH 2214-2FX

Ordering data	
Order designation	FL SWITCH 2214-2FX
Order No.	2702905
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	135.79 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.92 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5

Approvals / Certificates

UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.25 FL SWITCH 2214-2FX SM

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	470 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k

General data	
MTTF	264.71 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	135.79 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	18.92 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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
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	Ⓔ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.26 FL SWITCH 2214-2SFX

Ordering data

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

Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	218.22 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.7 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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
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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.27 FL SWITCH 2214-2SFX PN

Ordering data	
Order designation	FL SWITCH 2214-2SFX PN
Order No.	1044030
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	365.63 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	218.22 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	31.7 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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

Interface: Ethernet (RJ45)	
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
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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5

Approvals / Certificates

UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, ABS, DNV GL, LR, NK, RINA, PROFINET

5.28 FL SWITCH 2212-2TC-2SFX

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	480 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k

General data

MTTF	331.51 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	185.67 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	28.57 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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 ₁ = Max)
Maximum power dissipation for nominal condition	12 W (U _S = Min, T _{amb} = Max, DO ₁ = 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.29 FL SWITCH 2308

Ordering data	
Order designation	FL SWITCH 2308
Order No.	2702652
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	165.29 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	20.35 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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 ₁ = Max)
Maximum power dissipation for nominal condition	7.8 W (U _S = Min, T _{amb} = Max, DO ₁ = 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA, CC-Link IE Field

5.30 FL SWITCH 2308 PN

Ordering data	
Order designation	FL SWITCH 2308 PN
Order No.	1009220
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)

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	165.29 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	20.35 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.31 FL SWITCH 2306-2SFP

Ordering data	
Order designation	FL SWITCH 2306-2SFP
Order No.	2702970
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	212.99 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	24.97 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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 ₁ = Max)
Maximum power dissipation for nominal condition	9 W (U _S = Min, T _{amb} = Max, DO ₁ = 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.32 FL SWITCH 2306-2SFP PN

Ordering data	
Order designation	FL SWITCH 2306-2SFP PN
Order No.	1009222
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 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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	212.99 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	24.97 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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 ₁ = Max)
Maximum power dissipation for nominal condition	9 W (U _S = Min, T _{amb} = Max, DO ₁ = 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
IECEx	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.33 FL SWITCH 2304-2GC-2SFP

Ordering data	
Order designation	FL SWITCH 2304-2GC-2SFP
Order No.	2702653
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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	310 g

General data

Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	362.94 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	158.13 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	19.77 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	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
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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.34 FL SWITCH 2316

Ordering data	
Order designation	FL SWITCH 2316
Order No.	2702909
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	27.52 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	10/100/1000 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 _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 61000-6-3 (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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.35 FL SWITCH 2316 PN

Ordering data

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

Dimensions (nominal sizes in mm)

Width	85 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)

FL SWITCH 2000 / FL NAT 2000

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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	27.52 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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	10/100/1000 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 _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 61000-6-3 (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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.36 FL SWITCH 2314-2SFP

Ordering data	
Order designation	FL SWITCH 2314-2SFP
Order No.	1006191
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	27.52 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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	10/100/1000 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.37 FL SWITCH 2314-2SFP PN

Ordering data	
Order designation	FL SWITCH 2314-2SFP PN
Order No.	1031683
Pcs./Pkt.	1
Dimensions (nominal sizes in mm)	
Width	85 mm
Height	130 mm
Depth	115 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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	27.52 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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	10/100/1000 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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEx	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA, PROFINET

5.38 FL SWITCH 2312-2GC-2SFP

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

Dimensions (nominal sizes in mm)	
Width	85 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	480 g

FL SWITCH 2000 / FL NAT 2000

General data	
Housing material	Polycarbonate fiber reinforced
MAC address table	8k
MTTF	379.84 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
MTTF	199.41 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	27.52 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Signal contact	
Output name	Digital output
Control 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	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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, DNV GL, LR, NK, RINA

5.39 FL SWITCH 2408

Ordering data

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

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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

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 A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates

UL, USA	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3
Further approvals	BSH, KC

5.40 FL SWITCH 2408 PN

Ordering data

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

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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)

FL SWITCH 2000 / FL NAT 2000

Supply voltage

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
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.41 FL SWITCH 2406-2SFX

Ordering data

Order designation	FL SWITCH 2406-2SFX
Order No.	1043414
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3
Further approvals	BSH

5.42 FL SWITCH 2406-2SFX PN

Ordering data

Order designation	FL SWITCH 2406-2SFX PN
Order No.	1089126
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	The functional ground of the module is grounded when it is snapped onto a grounded DIN rail

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General data

Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.43 FL SWITCH 2404-2TC-2SFX

Ordering data

Order designation	FL SWITCH 2404-2TC-2SFX
Order No.	1088853
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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

Connection data	
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	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
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.44 FL SWITCH 2416

Ordering data

Order designation	FL SWITCH 2416
Order No.	1043416
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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

Interface: Ethernet (RJ45)	
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3
Further approvals	KC

5.45 FL SWITCH 2416 PN

Ordering data

Order designation	FL SWITCH 2416 PN
Order No.	1089150
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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 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

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 A
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates	
UL, USA	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.46 FL SWITCH 2414-2SFX

Ordering data	
Order designation	FL SWITCH 2414-2SFX
Order No.	1043423
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)	
Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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

Interface: SFP module

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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.47 FL SWITCH 2414-2SFX PN

Ordering data

Order designation	FL SWITCH 2414-2SFX PN
Order No.	1089139
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.48 FL SWITCH 2412-2TC-2SFX

Ordering data

Order designation	FL SWITCH 2412-2TC-2SFX
Order No.	1088875
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	12
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing

Interface: Ethernet (RJ45)	
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)
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

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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.49 FL SWITCH 2508

Ordering data

Order designation	FL SWITCH 2508
Order No.	1043484
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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)

Supply voltage

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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.50 FL SWITCH 2508/K1

Ordering data

Order designation	FL SWITCH 2508/K1
Order No.	1215350
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
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%)
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	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
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

5.51 FL SWITCH 2508 PN

Ordering data

Order designation	FL SWITCH 2508 PN
Order No.	1089134
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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

Connection data

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.52 FL SWITCH 2506-2SFP

Ordering data

Order designation	FL SWITCH 2506-2SFP
Order No.	1043491
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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)

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Supply voltage

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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.53 FL SWITCH 2506-2SFP/K1

Ordering data

Order designation	FL SWITCH 2506-2SFP/K1
Order No.	1215329
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
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 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	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

5.54 FL SWITCH 2506-2SFP PN

Ordering data

Order designation	FL SWITCH 2506-2SFP PN
Order No.	1089135
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.55 FL SWITCH 2504-2GC-2SFP

Ordering data

Order designation	FL SWITCH 2504-2GC-2SFP
Order No.	1088872
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	128 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.56 FL SWITCH 2516

Ordering data

Order designation	FL SWITCH 2516
Order No.	1043496
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.57 FL SWITCH 2516 PN

Ordering data	
Order designation	FL SWITCH 2516 PN
Order No.	1089205
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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

Connection data	
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.58 FL SWITCH 2514-2SFP

Ordering data

Order designation	FL SWITCH 2514-2SFP
Order No.	1043499
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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)

Supply voltage

Max. current consumption	680 mA ($U_S = \text{min}$, $T_{\text{amb}} = \text{max}$)
Maximum power dissipation for nominal condition	12.35 W ($U_S = \text{max}$, $T_{\text{amb}} = \text{max}$)
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.59 FL SWITCH 2514-2SFP PN

Ordering data

Order designation	FL SWITCH 2514-2SFP PN
Order No.	1089154
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.60 FL SWITCH 2512-2GC-2SFP

Ordering data

Order designation	FL SWITCH 2512-2GC-2SFP
Order No.	1088856
Pcs./Pkt.	1

Dimensions (nominal sizes in mm)

Width	214 mm
Height	110 mm
Depth	69 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
Type AX	Block design
Functional earth ground	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

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	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)
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	UL 61010-1, Ed. 3
UL, Canada	CSA C22.2 NO. 61010-1-12, Ed. 3

5.61 FL SWITCH 2608

Ordering data	
Order designation	FL SWITCH 2608
Order 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/IP66/IP67
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)
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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)
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

5.62 FL SWITCH 2608 PN

Ordering data	
Order designation	FL SWITCH 2608 PN
Order 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/IP66/IP67
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 (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)

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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

5.63 FL SWITCH 2708

Ordering data

Order designation	FL SWITCH 2708
Order 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/IP66/IP67
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, (A-coded)
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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

5.64 FL SWITCH 2708 PN

Ordering data	
Order designation	FL SWITCH 2708 PN
Order 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/IP66/IP67
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

General data	
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

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 B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

5.65 FL NAT 2008

Ordering data

Order designation	FL NAT 2008
Order 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)
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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	246.55 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	56.66 Years (SN 29500 standard, temperature 55 °C, operating cycle 100 % (7 days a week, 24 hours a day))

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

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 B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A

Approvals / Certificates

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

5.66 FL NAT 2208

Ordering data

Order designation	FL NAT 2208
Order 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)	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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.

General data	
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 % (5 days a week, 8 hours a day))
MTTF	235.18 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	29.73 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact	
Output name	Digital output
Control 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 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 (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)

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Supply voltage

Max. current consumption	1.3 A ($U_S = \text{Min}$, $T_{\text{amb}} = \text{Max}$, $DO_1 = \text{Max}$)
Maximum power dissipation for nominal condition	4.95 W (At $U_S = 9 \text{ V DC}$ 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	⊕ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

5.67 FL NAT 2304-2GC-2SFP

Ordering data

Order designation	FL NAT 2304-2GC-2SFP
Order 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
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
Type AX	Book type
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the 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 % (5 days a week, 8 hours a day))
MTTF	158.13 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
MTTF	19.77 Years (SN 29500 standard, temperature 70 °C, operating cycle 100 % (7 days a week, 24 hours a day))

Signal contact

Output name	Digital output
Control 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

Connection data	
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 ₁ = 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	Ⓜ II 3 G Ex ec IIC T4 Gc
IECEX	Ex ec IIC T4 Gc
UL, USA	UL 60079-0, Ed.6 / UL 60079-7, Ed.5
UL, Canada	CSA C22.2 NO.60079-0, Ed.3 / CSA C22.2 NO.60079-7:16
UL, USA/Canada	Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, IIC T4
Further approvals	cULus Listed, EAC, ABS, BSH, DNV GL, LR, NK, RINA

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