



Mounting and installation of FL SWITCH 2000 and FL NAT 2000 product family

User manual

User manual

Mounting and installation of FL SWITCH 2000 and FL NAT 2000 product family

UM EN HW FL SWITCH 2000, Revision 00

2019-10-21

This user manual is valid for:

Designation	Order-Nr.	Designation	Order-Nr.
FL SWITCH 2005	2702323	FL SWITCH 2008	2702324
FL SWITCH 2016	2702903	FL SWITCH 2105	2702665
FL SWITCH 2108	2702666	FL SWITCH 2116	2702908
FL SWITCH 2205	2702326	FL SWITCH 2208	2702327
FL SWITCH 2208C	1095627	FL SWITCH 2208 PN	1044024
FL SWITCH 2207-FX	2702328	FL SWITCH 2207-FX SM	2702329
FL SWITCH 2206-2FX	2702330	FL SWITCH 2206C-2FX	1095628
FL SWITCH 2206-2FX SM	2702331	FL SWITCH 2206-2FX ST	2702332
FL SWITCH 2206-2FX SM ST	2702333	FL SWITCH 2206-2SFX	2702969
FL SWITCH 2206-2SFX PN	1044028	FL SWITCH 2204-2TC-2SFX	2702334
FL SWITCH 2216	2702904	FL SWITCH 2216 PN	1044029
FL SWITCH 2214-2FX	2702905	FL SWITCH 2214-2FX SM	2702906
FL SWITCH 2214-2SFX	1006188	FL SWITCH 2214-2SFX PN	1044030
FL SWITCH 2212-2TC-2SFX	2702907	FL SWITCH 2308	2702652
FL SWITCH 2308 PN	1009220	FL SWITCH 2306-2SFP	2702970
FL SWITCH 2306-2SFP PN	1009222	FL SWITCH 2304-2GC-2SFP	2702653
FL SWITCH 2316	2702909	FL SWITCH 2316 PN	1031673
FL SWITCH 2314-2SFP	1006191	FL SWITCH 2314-2SFP PN	1031683
FL SWITCH 2312-2GC-2SFP	2702910	FL SWITCH 2408	1043412
FL SWITCH 2408 PN	1089133	FL SWITCH 2406-2SFX	1043414
FL SWITCH 2406-2SFX PN	1089126	FL SWITCH 2404-2TC-2SFX	1088853
FL SWITCH 2416	1043416	FL SWITCH 2416 PN	1089150
FL SWITCH 2414-2SFX	1043423	FL SWITCH 2414-2SFX PN	1089139
FL SWITCH 2412-2TC-2SFX	1088875	FL SWITCH 2508	1043484
FL SWITCH 2508 PN	1089134	FL SWITCH 2506-2SFP	1043491
FL SWITCH 2506-2SFP PN	1089135	FL SWITCH 2504-2GC-2SFP	1088872
FL SWITCH 2516	1043496	FL SWITCH 2516 PN	1089205
FL SWITCH 2514-2SFP	1043499	FL SWITCH 2514-2SFP PN	1089154
FL SWITCH 2512-2GC-2SFP	1088856	FL NAT 2008	2702881
FL NAT 2208	2702882	FL NAT 2304-2GC-2SFP	2702981

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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.

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 Device versions FL SWITCH 2xxx

Order designation	Preconfiguration by default upon delivery	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 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 SFX	
FL SWITCH 2206-2SFX PN	PROFINET mode	6 x RJ45		2 x SFX	
FL SWITCH 2204-2TC-2SFX		4 x RJ45		2 x Combo 2 x SFX	
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 SFX	
FL SWITCH 2214-2SFX PN	PROFINET mode	14 x RJ45		2 x SFX	

FL SWITCH 2000 / FL NAT 2000

Order designation	Preconfiguration by default upon delivery	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 SFX	
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 SFX	
FL SWITCH 2406-2SFX PN	PROFINET mode	6 x RJ45		2 x SFX	
FL SWITCH 2404-2TC-2SFX		4 x RJ45		2 x Combo, 2 x SFX	
FL SWITCH 2416		16 x RJ45			
FL SWITCH 2416 PN	PROFINET mode	16 x RJ45			
FL SWITCH 2414-2SFX		14 x RJ45		2 x SFX	
FL SWITCH 2414-2SFX PN	PROFINET mode	14 x RJ45		2 x SFX	
FL SWITCH 2412-2TC-2SFX		12 x RJ45		2 x Combo, 2 x SFX	
FL SWITCH 2508			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 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	Preconfiguration by default upon delivery	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

2.1.2 Device versions FL NAT 2xxx

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

2.2 Overview table of the functions

Table 2-2 Device functions

	FL SWITCH 20xx/21xx FL NAT 20xx	FL SWITCH 22xx/23xx/24xx/25xx FL NAT 22xx/23xx
Alarm output/signal contact	No	Yes
Temperature range	0°C ... +60°C	-40°C ... +70°C
Data transmission		
Jumbo frames	Yes (only 21xx versions)	Yes (only 23xx/25xx versions)
Supply voltage		
Supply voltage range	18 ... 32 V DC	Versions 22xx/23xx: 12 ... 57 V DC Versions 24xx/25xx: 18 ... 32 V DC
Redundant power supply	No	Yes
Filter functions		
Quality of Service	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

FL SWITCH 2000 / FL NAT 2000

Table 2-2 Device functions [...]

	FL SWITCH 20xx/21xx FL NAT 20xx	FL SWITCH 22xx/23xx/24xx/25xx FL NAT 22xx/23xx
Fast Ring Detection (FRD)	No	Yes
Large Tree Support	No	Yes
Link Aggregation (LACP)	No	Yes
Management functions		
Port configuration	Yes	Yes
Address Conflict Detection (ACD)	Yes	Yes
DHCP server	Port-based	Pool/port-based, option 82
Command Line Interface (CLI)	Yes	Yes
Diagnostic functions		
Link Layer Discovery Protocol (LLDP)	Yes	Yes
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	Yes
1:1 NAT	Yes	Yes
Port forwarding (1:n-NAT)	Yes	Yes
Virtual NAT	Yes	Yes

2.3 Device dimensions

2.3.1 Device versions FL SWITCH 20xx/21xx/22xx/23xx and FL NAT 2xxx

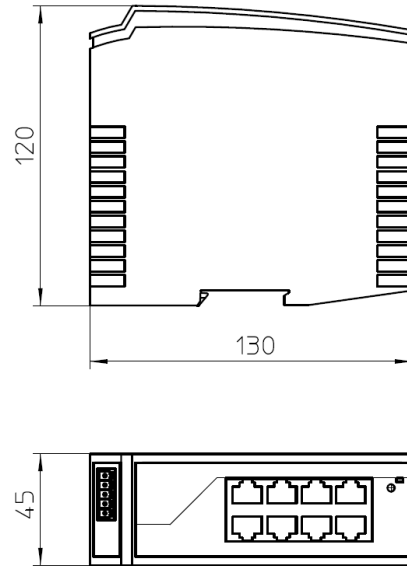


Figure 2-1 Dimensions of 5/8 port versions

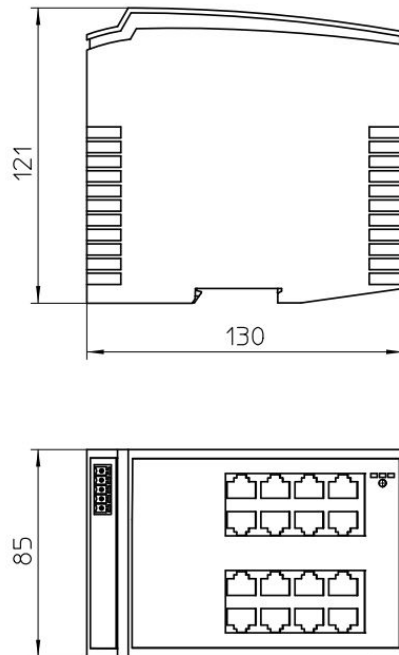


Figure 2-2 Dimensions of 16 port versions

2.3.2 Device versions FL SWITCH 24xx/25xx

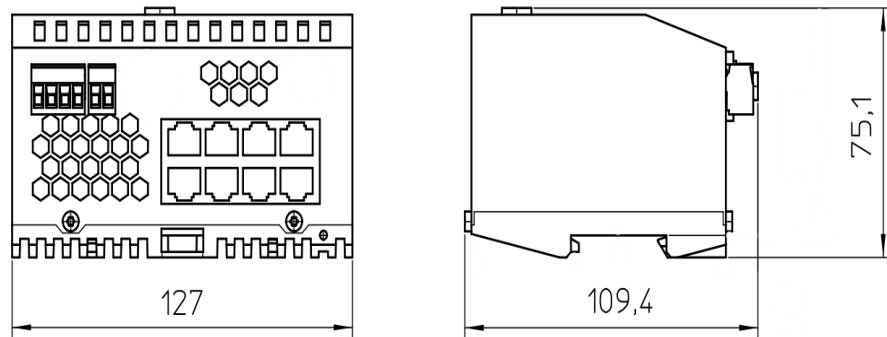


Figure 2-3 Dimensions of 8 port versions

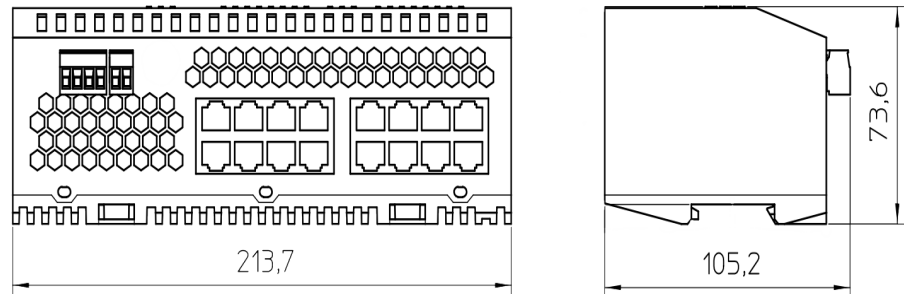


Figure 2-4 Dimensions of 16 port versions

2.4 Elements of the devices

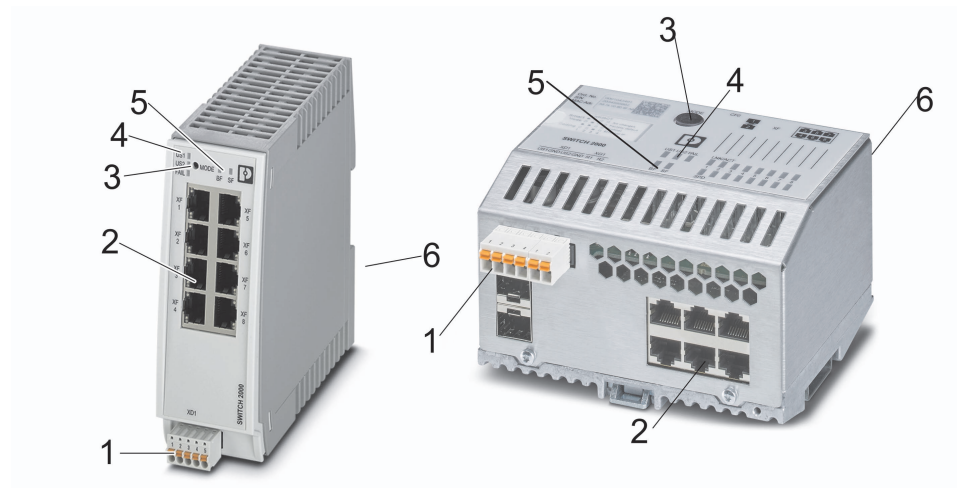


Figure 2-5 Elements of the devices

Table 2-3 Key

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

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., X3F.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.

2.6 Status and diagnostic indicators



Please note that the meaning of the LEDs differs in Smart mode (see “Using smart mode”).

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 version only)	Green	On	Supply voltage 2 within the tolerance range
		Off	Supply voltage 2 too low
FAIL (for 22xx/23xx/24xx/25xx version only)	Red	On	Digital alarm output floated, i.e. an error is present
		Off	Digital alarm output connected to ground potential (ground), i.e. an error is not present
LNK/ACT¹	Green/ orange	On	Green: link active Orange: SFP link at combo port active
		Flashing	Data transmission
		Off	Link not active
SPD¹	Green/ orange	On	Green: 100 Mbps Orange (for 21xx/23xx/25xx versions only): 1000 Mbps
		Off	10 Mbps if Link LED is active
BF (for PN versions only)	Red	On	The device does not have an active link
		Flashing	The device has at least one active link but no active PROFINET connection
		Off	The device has at least one active link and at least one active PROFINET connection
SF (for PN versions only)	Red	On	A PROFINET alarm is present and was reported to the control system
		Off	No PROFINET alarm present

¹ For the 20xx/21xx/22xx/23xx 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. For the 24xx/25xx versions, the LEDs are located on the front of the device.

3 Mounting and installation

3.1 Mounting and removing the devices

Mount the device on a clean DIN rail according to DIN EN 50 022 (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.

Mounting:

- Place the module onto the DIN rail (A) from above. 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).

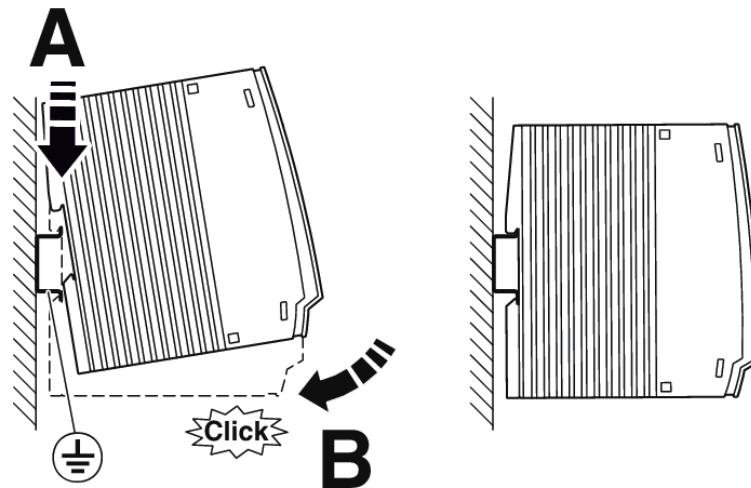


Figure 3-1 Snapping the device onto the DIN rail

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

Removal:

- Pull down the latch (A/B) using a suitable tool (e.g., screwdriver). On the 16-port devices, the latch remains snapped out. Then slightly swivel the bottom of the device away from the DIN rail (C). Next, lift the device upwards away from the DIN rail (D).

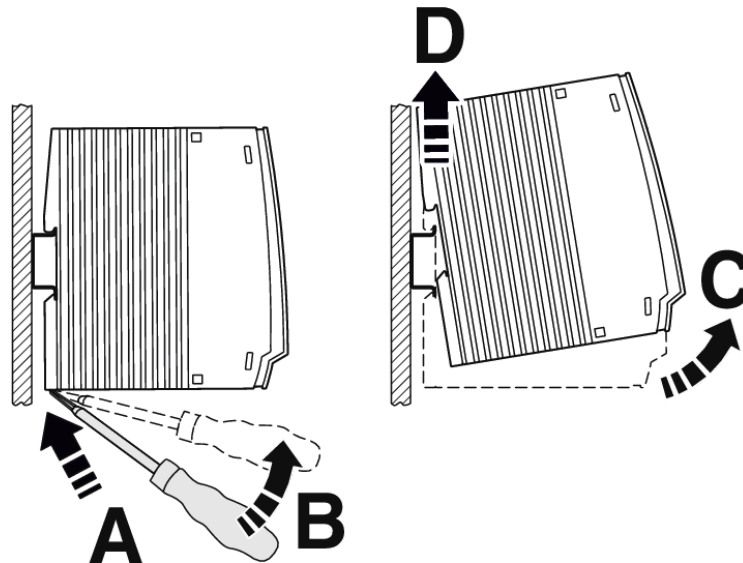


Figure 3-2 Removing the device

3.2 Installation of device versions 20xx/21xx/22xx/23xx

3.2.1 Selecting the conductors

The devices are supplied with a screw connector or a Push-in connector, depending on the version. In both cases, the specifications for conductors and ferrules that can be used must be observed:

Table 3-1 Selection of conductors/ferrules/screwdrivers

Conductor	Push-in	Screw
Conductor cross section, solid, minimum		0.14 mm ²
Conductor cross section, solid, maximum		1.5 mm ²
Conductor cross section, stranded, minimum		0.14 mm ²
Conductor cross section, stranded, maximum		1.5 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, minimum		0.25 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, maximum		1.5 mm ²
Conductor cross section, stranded, with ferrule with plastic sleeve, minimum		0.25 mm ²

Table 3-1 Selection of conductors/ferrules/screwdrivers

Conductor	Push-in	Screw
Conductor cross section, stranded, with ferrule with plastic sleeve, maximum	0.75 mm ²	0.5 mm ²
Ferrule without plastic sleeve that can be used: maximum conductor cross section	1.5 mm ²	
Ferrule without plastic sleeve that can be used: maximum conductor cross section	0.75 mm ² (color code gray according to DIN 46228)	0.5 mm ² (color code white according to DIN 46228)
Screwdriver that can be used	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 min.	24	
Conductor cross section AWG max.	16	
Stripping length	9 mm	

Table 3-2 Specifications for ferrules

Recommended crimping pliers	1212034 CRIMPFOX 6
Ferrules without insulating collar, according to 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

3.2.2 Connecting the supply voltage

The device is operated using a 24 V DC voltage, which is applied via COMBICON. For the 22xx/23xx device version, the voltage can be supplied redundantly (see Figure 3-4).



For the 22xx/23xx device version: If redundant power supply monitoring is active (default setting), an error is indicated if only one supply 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.

Operation with one power supply

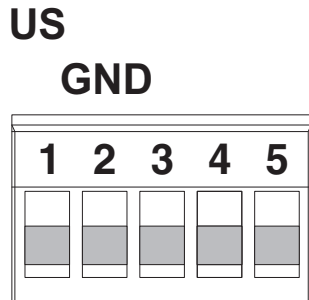


Figure 3-3 Operating the device with one power supply (example)

Redundant operation with two power supplies

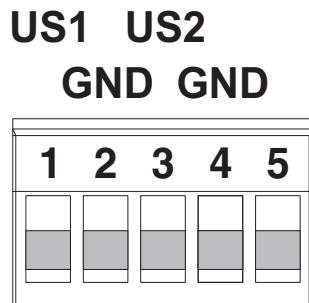


Figure 3-4 Redundant operation with two power supplies (example)



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

3.2.2.1 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.

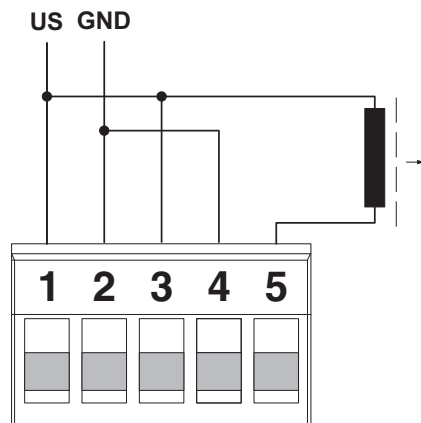


Figure 3-5 Connecting a relay to the digital alarm output



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 Installation of device versions 24xx/25xx

3.3.1 Selecting the conductors

The devices are supplied with a Push-in connector. The specifications for conductors that can be used must be observed.

Table 3-3 Selecting the conductors

Conductor cross section, solid, minimum	0.2 mm ²
Conductor cross section, solid, maximum	1.5 mm ²
Conductor cross section, stranded, minimum	0.2 mm ²
Conductor cross section, stranded, maximum	2.5 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, minimum	0.25 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, maximum	1.5 mm ²
Conductor cross section, stranded, with ferrule with plastic sleeve, minimum	0.25 mm ²
Conductor cross section, stranded, with ferrule with plastic sleeve, maximum	1.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Stripping length	10 mm

3.3.2 Connecting the 24 V DC supply voltage

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



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.

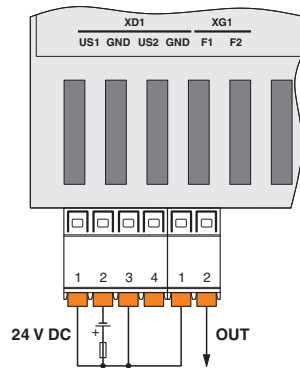


Figure 3-6 Supplying the switch using one voltage source

Redundant 24 V DC supply

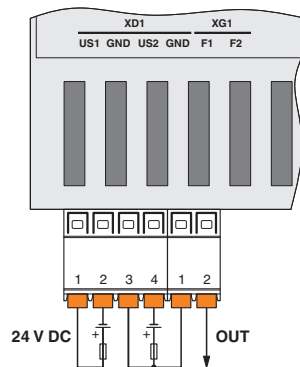


Figure 3-7 Supplying the switch using two voltage sources



In order to reset the switch on power up, the power supply must be interrupted for at least 3 seconds.

3.3.3 Signal contact

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

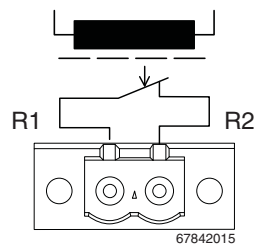


Figure 3-8 Basic circuit diagram for the signal contact

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 3-6](#), or by deactivating redundant power supply monitoring in web-based management or via SNMP.

3.4 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. A conductor of at least 2.5 mm² must be used for grounding. Mount the module on a grounded DIN rail. The functional ground of the module is achieved when the module is snapped onto the DIN rail.

3.5 Assignment of the RJ45 Ethernet connectors



Please note that 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.



Please note that only devices in the 21xx/23xx/25xx version support Gigabit.

Table 3-4 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)

3.6 Use of SFP slots (principle)

The SFP slots are used by SFP modules (FO fiberglass modules in SFP format). By selecting SFP modules, the user can specify whether the switch has multimode or single-mode fiber optic ports, for example.

The SFP modules are available separately as accessories.

3.6.1 Elements of the SFP modules

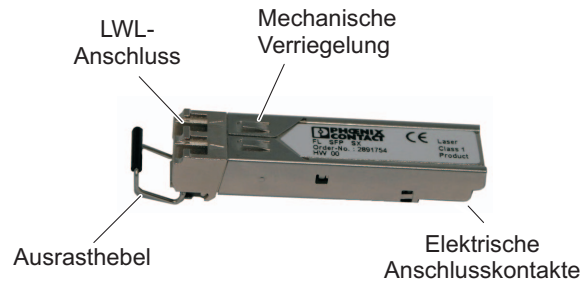


Figure 3-9 Elements of the SFP modules

3.6.2 Mounting the SFP modules

Inserting the SFP modules

- Insert the SFP modules in the relevant slots on the switch.
- Ensure correct mechanical alignment of the SFP modules.



Figure 3-10 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.

3.7 Using the SD card

The switch can optionally be configured quickly using a compatible SD card. To do so, the SD card must use the VFAT file system (standard with SD cards). SD and SDHC cards up to a maximum of 8 GB are supported.



Please note that the 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). When using SD cards from other providers, it is recommended that card compatibility be verified.

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

Automatically reading 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 (indicated by the LEDs on the port going out), the configuration is applied in the internal switch memory and is active during operation. The SD card can then be removed. The configuration also remains active when the switch is restarted, provided an SD card is not inserted in the device.

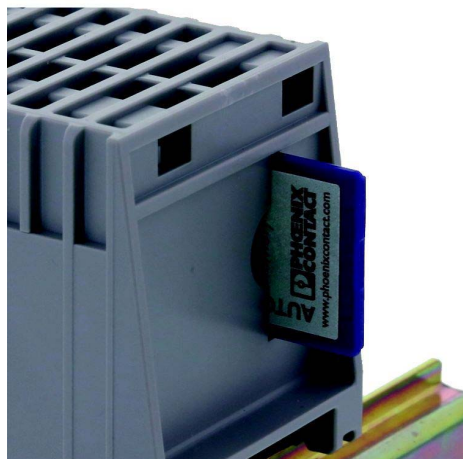


Figure 3-11 Position of the SD card slot

Use of configuration files in different FL SWITCH 2xxx/FL NAT 2xxx versions

In principle, every configuration file of a FL SWITCH 2xxx/FL NAT 2xxx can be transferred to every other version of this product range. It must be observed, however, that the individual versions have different scopes of functions and port numbers. Functions or port numbers that are not supported are ignored by the switch when reading-in the configuration file, and affected configuration parameters in the device are not changed.

Examples:

- Configuration files of versions 22xx/23xx/24xx/25xx can contain parameters for functions that do not support the versions 20xx/21xx. The corresponding entries in the configuration file are ignored when reading in on a 20xx/21xx device.
- The entries for configuration of ports 9 to 16 are ignored when reading in on a 5/8 port device. Inversely, the parameters of ports 9 to 16 are set to factory default when the configuration of a 5/8 port device is read in on a 16-port device.

4 Startup and function

4.1 Delivery state/default settings

4.1.1 Initial static IP configuration in the delivery state

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 disabled as soon as the switch is assigned an IP configuration through a different address assignment mechanism, e.g., BootP, DHCP, DCP, web-based management. The mechanism that is active in the delivery state (BootP or DCP - depending on the version) can be used in parallel to the IP assignment.



If you want to reactivate the initial static IP configuration at a later date, this **only** works through a reset (factory default) of the switch using web-based management (see separated user manual UM EN SW FL SWITCH 2000). A reset using the smart mode button does not activate the initial static IP configuration.

4.1.2 Configuration in the delivery state

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

- All IP parameters are deleted. The switch has no valid IP address. An exception is the initial static IP configuration in the delivery state (see [“Initial static IP configuration in the delivery state”](#) on page 27).
- BootP for assigning IP parameters is activated.
- The DHCP server is disabled.
- The user name is: “admin”
- The password is: “private”
- The available RJ45 ports are set to auto negotiation and auto crossing.
- All counters of the SNMP agent are reset.
- The web server (HTTP) and SNMPv2 are activated.
- CLI (Telnet) is activated.
- Port mirroring and MRP are disabled.
- Rapid Spanning Tree (RSTP) is activated (as of firmware version 2.01).
- 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.
- 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.

4.2 Using smart mode

Smart mode enables the user to change the operating mode of the switch, without having access to one of the management interfaces.

The following setting options can be selected using smart mode:

- Resetting the IP configuration
- Operating in EtherNet/IP™ mode
- Operating in PROFINET mode
- Operating with a static IP address
- Operating in unmanaged mode
- Resetting to the factory defaults

The MODE button is used to call/exit smart mode and to select the desired setting. The four mode LEDs indicate the mode that is currently selected and that will apply when exiting smart mode.

4.2.1 Calling up smart mode

- Following the boot phase of the switch, as soon as the LEDs of all ports go out, press and hold down the MODE button for more than five seconds. If smart mode is active, the four LEDs of port X1 and X2 will flash. The active state is indicated alternately by the flashing 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 MODE button briefly and select the desired operating mode (see Table "Operating modes in smart mode" on page 29).

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
Exiting smart mode without changes	On	Off	Off	Off
Setting universal mode (default setting on standard versions)	Off	On	Off	Off
Setting PROFINET mode (default setting on PROFINET versions)	On	On	Off	Off
Setting EtherNet/IP™ mode	Off	Off	On	Off
Operating with a default IP address	Off	On	On	Off
Resetting the IP configuration	On	On	On	Off
Operating in unmanaged mode	Off	On	Off	On

¹ On versions 20xx/21xx/22xx/23xx, the two LEDs (LNK/ACT or SPD) each are used by port 1 and 2 - 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 version, the four LNK/ACT LEDs of port 1-4 are used - the port number is equivalent to the LED number.

4.2.4 Exiting smart mode

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

4.2.5 Operating in universal mode

Activating universal mode resets the device as described in [“Configuration in the delivery state” on page 27](#). This deletes any configurations stored on the device. An automation protocol is not activated in this mode.

4.2.6 Operating in PROFINET mode

Activating PROFINET mode resets the device as described in [“Configuration in the delivery state” on page 27](#) and activates the PROFINET device and DCP functions for IP address assignment. This deletes any configurations stored on the device. The PROFINET automation protocol is activated in this mode.

4.2.7 Operating in EtherNet/IP™ mode

Activating EtherNet/IP™ mode resets the device as described in [“Configuration in the delivery state” on page 27](#) and activates the IGMP snooping and IGMP querier (version 2) functions. This deletes any configurations stored on the device.

4.2.8 Operating with a 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 “Operating with a static IP address” smart mode as described in Section [“Using smart mode” on page 28](#).

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 “Operating with a default IP address” smart mode as described in Section “Using smart mode” on page 28.
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 activating the “Resetting the IP configuration” smart mode, 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.

4.2.10 Operating in unmanaged mode

When operating in unmanaged mode, the switch can be used without an IP address. The switch adopts the static IP address 0.0.0.0. The subnet mask and gateway are also configured to 0.0.0.0. In this way, web-based management can no longer be accessed, and the switch no longer sends BootP and DHCP requests.

The main 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 defaults.

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

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 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)

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

5.4 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

5.5 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

5.6 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

5.7 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

5.8 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

5.9 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)

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	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

5.10 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 _I = Max)
Maximum power dissipation for nominal condition	6.6 W (U _S = Min, T _{amb} = Max, DO _I = Max)
Test section	for one minute 500 V DC

Mechanical tests

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

Conformity with EMC directives

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

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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

5.11 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

5.12 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

5.13 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

5.14 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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5.15 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

5.16 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

5.17 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

5.18 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

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

5.19 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

5.20 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

5.21 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

5.22 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

5.23 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

5.24 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

5.25 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

5.26 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

5.27 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

5.28 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

5.29 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

5.30 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 _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

5.31 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 _I = Max)
Maximum power dissipation for nominal condition	9 W (U _S = Min, T _{amb} = Max, DO _I = Max)
Test section	for one minute 500 V DC

Mechanical tests

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

Conformity with EMC directives

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

Approvals / Certificates	
ATEX	⊕ II 3 G Ex ec IIC T4 Gc
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

5.32 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

5.33 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

5.34 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

5.35 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

5.36 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

5.37 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

5.38 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 achieved when the module is snapped onto the DIN rail.
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	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	220 mA (U _S = min, T _{amb} = max)
Maximum power dissipation for nominal condition	2.34 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 61000-6-2 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

5.39 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 achieved when the module is snapped onto the DIN rail.
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	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	220 mA (U _S = min, T _{amb} = max)
Maximum power dissipation for nominal condition	2.34 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 61000-6-2 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

5.40 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 achieved when the module is snapped onto the DIN rail.
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	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	250 mA (U _S = min, T _{amb} = max)
Maximum power dissipation for nominal condition	2.7 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 61000-6-2 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

5.41 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	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	250 mA (U _S = min, T _{amb} = max)
Maximum power dissipation for nominal condition	2.7 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 61000-6-2 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

5.42 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 achieved when the module is snapped onto the DIN rail.
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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 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	18 V DC ... 32 V DC
Typical current consumption	200 mA (at U _S = 24 V DC and 25 °C ambient temperature)

Supply voltage

Max. current consumption	290 mA ($U_S = \text{min}$, $T_{\text{amb}} = \text{max}$)
Maximum power dissipation for nominal condition	3.06 W ($U_S = \text{min}$, $T_{\text{amb}} = \text{max}$)
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

5.43 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 temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

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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 achieved when the module is snapped onto the DIN rail.
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	7.02 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 61000-6-2 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

5.44 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 achieved when the module is snapped onto the DIN rail.
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	7.02 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 61000-6-2 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

5.45 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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

Connection data

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	18 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	7.92 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 61000-6-2 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

5.46 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	7.92 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 61000-6-2 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

5.47 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 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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 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	18 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	8.82 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 61000-6-2 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

5.48 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 achieved when the module is snapped onto the DIN rail.
Weight	610 g
Housing material	High-grade steel 1.4305
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	3.42 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 61000-6-2 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

5.49 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 achieved when the module is snapped onto the DIN rail.
Weight	610 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	3.42 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 61000-6-2 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

5.50 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 achieved when the module is snapped onto the DIN rail.
Weight	650 g
Housing material	High-grade steel 1.4305
MAC address table	8k

Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	3.6 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 61000-6-2 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 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 achieved when the module is snapped onto the DIN rail.
Weight	650 g
Housing material	Stainless steel 1.4301
MAC address table	8k
Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	3.6 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
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

5.52 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 achieved when the module is snapped onto the DIN rail.
Weight	6050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 V DC ... 32 V DC
Typical current consumption	270 mA (at U _S = 24 V DC and 25 °C ambient temperature)

FL SWITCH 2000 / FL NAT 2000

Supply voltage

Max. current consumption	390 mA ($U_S = \min$, $T_{amb} = \max$)
Maximum power dissipation for nominal condition	4.14 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 61000-6-2 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

5.53 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 achieved when the module is snapped onto the DIN rail.
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	10.98 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 61000-6-2 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 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 achieved when the module is snapped onto the DIN rail.
Weight	1010 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	10.98 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 61000-6-2 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

5.55 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact

Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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

Connection data	
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	18 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	12.24 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 61000-6-2 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

5.56 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 achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k

Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	12.24 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 61000-6-2 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

5.57 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)

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	Block design
Functional earth ground	The functional ground of the module is achieved when the module is snapped onto the DIN rail.
Weight	1050 g
Housing material	Stainless steel 1.4301
MAC address table	8k
Signal contact	
Output name	Relay
Current carrying capacity	max. 0.2 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.	0.2 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	18 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	14.76 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 61000-6-2 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

5.58 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

Connection data

Conductor cross section solid min.	0.08 mm ²
Conductor cross section solid max.	1.5 mm ²
Conductor cross section flexible min.	0.08 mm ²
Conductor cross section flexible max.	1.5 mm ²
Conductor cross section AWG min.	28
Conductor cross section AWG max.	16
Stripping length	7 mm

Interface: Ethernet (RJ45)

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

Supply voltage

Supply voltage	24 V DC (single)
Residual ripple	3.6 V _{PP} (within the permitted voltage range)
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	180 mA (at U _S = 24 V DC and 25 °C ambient temperature)
Max. current consumption	0.35 A (At U _S = 18 V DC and 60°C ambient temperature)
Maximum power dissipation for nominal condition	4.86 W (At U _S = 18 V DC and 60°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests

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

Conformity with EMC directives

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

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

5.59 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.
Weight	230 g
Housing material	Polycarbonate fiber reinforced
MAC address table	8k

General data

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)
Max. current consumption	1.3 A (U _S = Min, T _{amb} = Max, DO ₁ = Max)
Maximum power dissipation for nominal condition	4.95 W (At U _S = 9 V DC and 70°C ambient temperature)
Test section	for one minute 500 V DC

Mechanical tests	
Mechanical tests	Free fall in accordance with EN 61131-2
Vibration (operation)	in acc. with IEC 60068-2-6: 5g, 150 Hz
Vibration (storage/transport)	5g, 150 Hz, in acc. with IEC 60068-2-6
Shock (operation)	30g (EN 60068-2-27)
Conformity with EMC directives	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conducted noise emission	EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A
Interference emission	EN 61000-6-2 EN 61000-6-4 (interference) Class A
Immunity to burst	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A
Immunity to EF	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A
Immunity to ESD	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B
Immunity to surge	EN 61000-6-2 EN 61000-4-5 (surge) Criterion B
Immunity to conducted interference	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A
Approvals / Certificates	
ATEX	⊕ 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

5.60 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 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	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
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 _I = 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

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

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