FL SWITCH 300…

Factoryline 5- and 8-port managed switches with optional fiber optic ports and wide temperature ratings



Datenblatt
3037_en_D

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1 Description

The FL SWITCH 300… managed switches provide scalable power for application flexibility and ease of use.

The FL SWITCH 300… consists of 5- and 8-port managed switches that provide maximum redundancy, message filtering and security functions with both wide and normal industrial temperature options. The large IEEE function set meets application and IT requirements while retaining the ease-of-use needed by supporting plant floor personnel. Versions with 10/100Base-T and fiber-optic port combinations are available.

The unique web simplification approach allows users to choose from extensive redundancy, message filtering and security functions while reducing overall system complexity. It allows maintenance personnel complete access to read diagnostic information without login requirements.m

Features

- Large capacity message filtering with 64 VLANs and 256 multicast groups provide increased network performance for expanding applications
- -10…60°C and -40…75°C options, 5 or 8 ports and up to 2 multimode fiber ports allow selection of a cost-effective switch
- 802.1x, radius authentication, user accounts and more provide flexible security options
- Unique “cleanup” function hides unused configuration pages, reducing complexity, maintenance and startup times
- Complete redundancy options, including the ability to mix RSTP and the new extended ring (three rings of up to 134 devices per ring), increases network uptime (<15 ms) for IT-compatible and control applications

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This document is valid for all products listed in the “Ordering data” on page 2.

2 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Managed Ethernet switch with four RJ45 ports at 10/100 Mbps, one SC format fiber optic port and operating temperature of -40°C … +75°C	FL SWITCH 3004T-FX	2891033	1
Managed Ethernet switch with five RJ45 ports at 10/100 Mbps and operating temperature of -10°C … +60°C	FL SWITCH 3005	2891030	1
Managed Ethernet switch with five RJ45 ports at 10/100 Mbps and operating temperature of -40°C … +75°C	FL SWITCH 3005T	2891032	1
Managed Ethernet switch with eight RJ45 ports at 10/100 Mbps and operating temperature of -10°C … +60°C	FL SWITCH 3008	2891031	1
Managed Ethernet switch with eight RJ45 ports at 10/100 Mbps and operating temperature of -40°C … +75°C	FL SWITCH 3008T	2891035	1
Managed Ethernet switch with four RJ45 ports at 10/100 Mbps, one ST format fiber optic port and operating temperature of -40°C … +75°C	FL SWITCH 3004T-FX ST	2891034	1
Managed Ethernet switch with six RJ45 ports at 10/100 Mbps, two SC format fiber optic ports and an operating temperature of -40°C … +75°C	FL SWITCH 3006T-2FX	2891036	1
Managed Ethernet switch with six RJ45 ports at 10/100 Mbps, two ST format fiber optic ports and an operating temperature of -40°C … +75°C	FL SWITCH 3006T-2FX ST	2891037	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
PCB connector, nominal cross section: 2.5 mm², color: green, nominal current: 12 A, rated voltage (III/2): 320 V, contact surface: Tin, type of contact: Female connector, Number of potentials: 8, Number of rows: 1, Number of positions per row: 8, number of connections: 8, product range: MSTB 2,5/..-ST, pitch: 5 mm, connection method: Screw connection with tension sleeve, conductor/PCB connection direction: 0 °, Stecksystem: CLASSIC COMBICON, Locking: without, type of packaging: packed in cardboard	MSTB 2,5/ 8-ST	1754562	
Lockable security element	FL PATCH GUARD	2891424	
Key for lockable security element	FL PATCH GUARD KEY	2891521	
Surge protection in accordance with Class EA (CAT6A), for Gigabit Ethernet (up to 10 Gbps), token ring, FDDI/CDDI, ISDN, and DS1. Suitable for Power over Ethernet (PoE+) “Mode A” and “Mode B”. RJ45 attachment plug with separate grounding cable and ground connection snap-on foot for NS 35 DIN rails	DT-LAN-CAT.6+	2881007	
Layer1 security elements for four RJ45 network connections for use with patch boxes and panels	FL SEC PAC 4TX	2832865	
The FL DIN RA is installed in a standard, 19-inch rack (EIA-310-D, IEC 60297-3-100) to allow DIN rail mounted equipment to be rack mounted	FL DIN RA	2891053	
Dust protection caps for RJ45 socket	FL RJ45 PROTECT CAP	2832991	
End clamp, width: 9.5 mm, color: gray	E/NS 35 N	0800886	

Accessories

Description	Type	Order No.	Pcs./Pkt.
Patch cable, CAT5, assembled, 0.5 m	FL CAT5 PATCH 0,5	2832263	
Patch cable, CAT5, assembled, 1 m	FL CAT5 PATCH 1,0	2832276	
Patch cable, CAT5, assembled, 2 m	FL CAT5 PATCH 2,0	2832289	
Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, CAT6A, cable outlet: straight	NBC-R4AC-R4AC-IE8A/…/…	1411854	
Patch cable, CAT6A, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	
Patch cable, CAT6A, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m	NBC-R4AC/10G-R4AC/10G-94F/3,0	1408365	
Patch cable, Ethernet (100 Mbps), PROFINET (100 Mbps), EtherCAT® (100 Mbps), shielded, star quad, AWG 22 flexible (7-wire), green, RJ45 connector/IP20, straight, to RJ45 connector/IP20, straight, length: 1 m	NBC-R4AC1,0-93B/R4AC	1408968	
Patch cable, Ethernet (100 Mbps), PROFINET (100 Mbps), EtherCAT® (100 Mbps), shielded, star quad, AWG 22 flexible (7-wire), green, RJ45 connector/IP20, straight, to RJ45 connector/IP20, straight, length: 2 m	NBC-R4AC2,0-93B/R4AC	1408969	
Patch cable, Ethernet (100 Mbps), PROFINET (100 Mbps), EtherCAT® (100 Mbps), shielded, star quad, AWG 22 flexible (7-wire), green, RJ45 connector/IP20, straight, to RJ45 connector/IP20, straight, length: 5 m	NBC-R4AC5,0-93B/R4AC	1408970	
FO patch cable, cable length: 1 m, 1 bps, OM2	FOC-LC:PA-SC:PA-OM2:D01/1	1115607	
FO patch cable, cable length: 2 m, 1 bps, OM2	FOC-LC:PA-SC:PA-OM2:D01/2	1115605	
FO patch cable, cable length: 1 m, 1 bps, OM2	FOC-SC:PA-SC:PA-OM2:D01/1	1115536	
FO patch cable, cable length: 2 m, 1 bps, OM2	FOC-SC:PA-SC:PA-OM2:D01/2	1115535	
FO patch cable, cable length: 1 m, 1 bps, OM2	FOC-ST:PA-SC:PA-OM2:D01/1	1115574	
FO patch cable, cable length: 2 m, 1 bps, OM2	FOC-ST:PA-SC:PA-OM2:D01/2	1115573	
FO patch cable, cable length: 1 m, 10 bps, OM4	FOC-LC:PA-SC:PA-OM4:D01/1	1115601	
FO patch cable, cable length: 2 m, 10 bps, OM4	FOC-LC:PA-SC:PA-OM4:D01/2	1115600	
FO patch cable, cable length: 1 m, 10 bps, OM4	FOC-SC:PA-SC:PA-OM4:D01/1	1115424	
FO patch cable, cable length: 2 m, 10 bps, OM4	FOC-SC:PA-SC:PA-OM4:D01/2	1115423	

3 Technical data

General data	
Width	54.4 mm
Height	146.4 mm
Depth	125 mm
Mounting type	NS 35 (IEC 60715) DIN rail
Ambient temperature (storage/transport)	-40°C ... 85°C
Permissible humidity (operation)	5% ... 95% (no condensation)
Permissible humidity (storage/transport)	5% ... 95% (no condensation)
Air pressure (operation)	72 kPa ... 108 kPa (up to 3000 m above mean sea level)
Air pressure (storage/transport)	66 kPa ... 108 kPa (up to 3500 m above mean sea level)
Degree of protection	IP20
Protection class	III, VDE 0106, IEC 60536

Temperature range	
FL SWITCH 3004T-FX	-40°C ... 75°C
FL SWITCH 3005	-10°C ... 60°C
FL SWITCH 3005T	-40°C ... 75°C
FL SWITCH 3008	-10°C ... 60°C
FL SWITCH 3008T	-40°C ... 75°C
FL SWITCH 3004T-FX ST	-40°C ... 75°C
FL SWITCH 3006T-2FX	-40°C ... 75°C
FL SWITCH 3006T-2FX ST	-40°C ... 75°C

Weight	
FL SWITCH 3004T-FX	920 g
FL SWITCH 3005	920 g
FL SWITCH 3005T	920 g
FL SWITCH 3008	940 g
FL SWITCH 3008T	940 g
FL SWITCH 3004T-FX ST	930 g
FL SWITCH 3006T-2FX	960 g
FL SWITCH 3006T-2FX ST	955 g

Power	
Connection method	Pluggable COMBICON screw connections,
Conductor cross section, solid	0.2 mm^2 ... 2.5 mm^2
Conductor cross section, stranded	0.2 mm^2 ... 2.5 mm^2
Conductor cross section [AWG]	24 ... 12
Supply voltage	24 V DC
Supply voltage range	12 V DC ... 48 V DC
Residual ripple	3.6 V_{PP} (within the permitted voltage range)

Current		
	Current draw	**Inrush current**
FL SWITCH 3004T-FX	230 mA (24 V DC)	9.2 A (2 ms)
FL SWITCH 3005	200 mA (24 V DC)	8.6 A (2 ms)
FL SWITCH 3005T	200 mA (24 V DC)	8.6 A (2 ms)
FL SWITCH 3008	210 mA (24 V DC)	8.6 A (2 ms)
FL SWITCH 3008T	210 mA (24 V DC)	8.6 A (2 ms)
FL SWITCH 3004T-FX ST	230 mA (24 V DC)	9.2 A (2 ms)
FL SWITCH 3006T-2FX	330 mA (24 V DC)	8.2 A (2 ms)
FL SWITCH 3006T-2FX ST	330 mA (24 V DC)	8.2 A (2 ms)

Port configurations		
	No. of RJ45 ports	No. of fiber optic ports
FL SWITCH 3004T-FX	4	1 (SC)
FL SWITCH 3005	5	
FL SWITCH 3005T	5	
FL SWITCH 3008	8	
FL SWITCH 3008T	8	
FL SWITCH 3004T-FX ST	4	1 (ST)
FL SWITCH 3006T-2FX	6	2 (SC)
FL SWITCH 3006T-2FX ST	6	2 (ST)

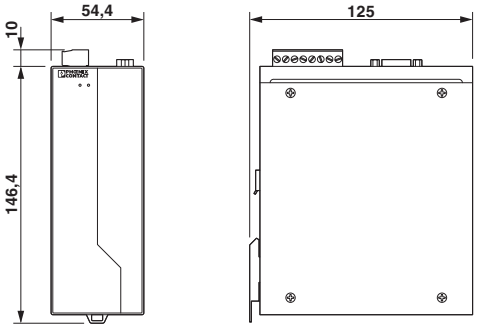
Ethernet (RJ45)	
Connection method	RJ45
Transmission speed	10/100 MBit/s
Transmission length	100 m

Fiber optic interface	
Connection method	SC
Transmission speed	100 MBit/s (SC-D, full duplex)
Wavelength	1300/1310 nm
Transmission length	12.1 km (fiberglass with F-G 62.5/125 0.7 dB/km F1000) 3.3 km (fiberglass with F-G 62.5/125 2.6 dB/km F600) 7.1 km (fiberglass with F-G 50/125 0.7 dB/km F1200) 3.1 km (fiberglass with F-G 50/125 1.6 dB/km F800)

Electrical isolation/isolation of the voltage areas	
Supply voltage/functional earth ground	500 V, 1 min

Mechanical tests	
Shock test in acc. with IEC 60068-2-27	25g, 11 ms half-sine shock pulse
Vibration resistance in acc. with IEC 60068-2-6	5g, 150 Hz, Criterion 3
Free fall in acc. with IEC 60068-2-32	1 m

Dimensions



4 Managed switch functions

Ease of use for everyone

FL SWITCH 300… switches include context-sensitive help for hardware and firmware functions. Web viewing modes can be configured for different user types, such as maintenance, control engineers or network administrators, providing quick access to data.

– Monitor mode provides one-click access to read-only diagnostics – no logins and no searching for web pages
– Administrative mode allows access to the complete range of switch functions and customizing of the user-mode web pages
– User mode can be customized to include only those functions that are actually used, whether for start up or on-going maintenance purposes. With one click, unwanted web pages are hidden from the user.

Telnet	Yes
SNMP V1, V2	Yes
Serial interface	Password protected for basic maintenance addressing and major function access
Transfer of firmware and configuration files	via TFTP
Web view simplification	Monitor, user and administrative views. User mode is customizable by account type or individual.
Network addressing	BOOTP or DHCP

Mix IT and high-performance redundancy

The extended ring redundancy protocol allows network recovery time in as little as 15 ms (18 ms between rings) and configurations up to 134 devices. Coupling of up to three rings of 134 switches each allows redundancy systems of over 300 switches. Coupling rings and ring ports may only be connected to other switches (no other devices allowed). Both extended ring and IEEE redundancy may be operated simultaneously in the switch. Complete IEEE STP/RSTP/MST options, with the additional option of extended ring redundancy, serves a broad range of IT compatibility and industrial performance-based applications.

Powerful network performance options

The FL SWITCH 300… provides a complete range of message filtering and network performance-increasing functions. Performance may be scaled from basic to increasingly sophisticated functions.

IGMP snooping/query	Yes; 256 multicast groups and GMRP support
QoS: priority queus	4
QoS: ToS: COS diff serv	Yes
Link aggregation trunking	Yes; up to four ports combined with LACP trunk control
Flow control	User enable/disable by port
Bandwidth rate control by message type by port	Yes - percent bandwidth by message type to separate ingress/egress transfer rates by port
Time synchronization	SNTP
VLAN Static	16 port-based VLANs, 64 maximum; tagging-based VLAN supported with >4000 address range
VLAN Dynamic (tagging based)	GVRP

Tailor security functions to your facility

The FL SWITCH 300… provides a wide array of security functions that can be tailored to guard against unauthorized network access. Scalable security measures can be used to protect against unauthorized access by people, devices or network communications.

Secure people access: General	Enable/disable Web interface and Telnet, 802.1x Radius Authentication
Secure people access: Manage access to switch configuration parameters	User login accounts, customization of read and read/write access, and control of function access for each type of account or on an individual basis
Secure device access	MAC address filtering (up to 24) by port; enable/disable ports; and global MAC discard
Secure network access	SNMP V3 with encryption; enable/disable SNMP; https secure web access

5 Structure

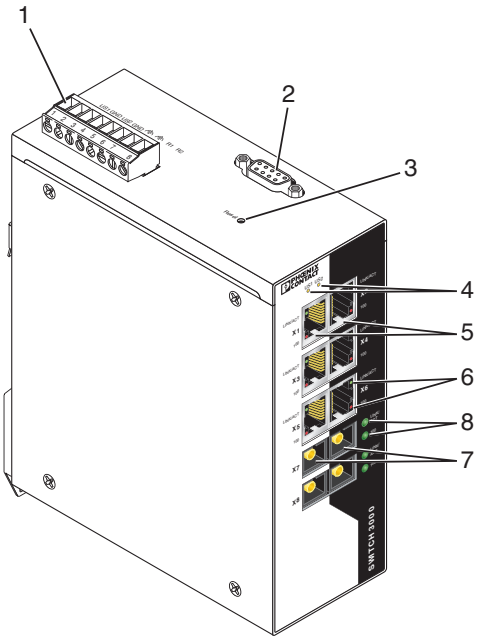


Bild 1 Structure (FL SWITCH 3006T-2FX shown)

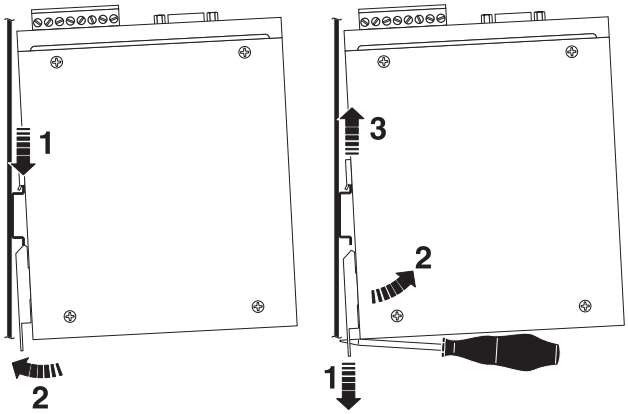
1 Power supply/remote alarm connector
2 DB-9 serial port (RS-232)
3 Reset button
4 Power LEDs (US1/US2)
5 RJ45 ports
6 RJ45 port LEDs (LNK/ACT and 10/100 Mbps)
7 Fiber optic ports
8 Fiber optic port LEDs (LNK/ACT and 100 Mbps)

6 Installation

This device is designed for SELV and PELV operation according to IEC 61140/EN 61140

Assembly

Position the device on the upper edge of the DIN rail and snap it into place with a downward motion.



Removal

Pull the release lever open using a screwdriver. Rotate the device upward and remove from DIN rail.

Power supply

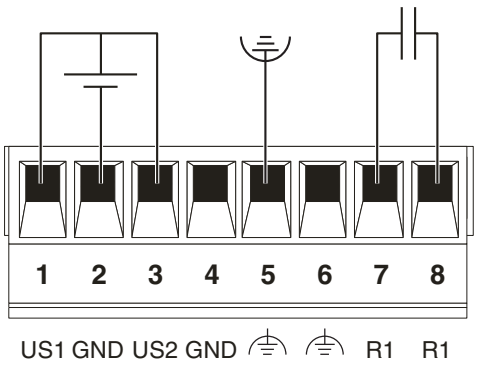


Bild 2 Redundant power supply connection

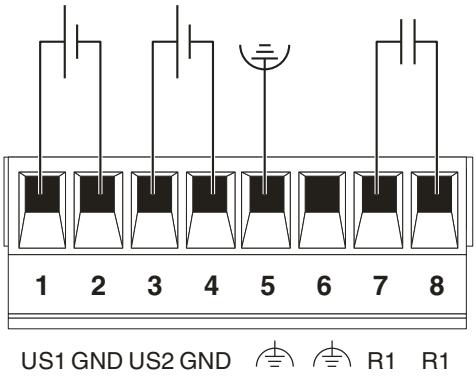


Bild 3 Single power supply connection

Snapping the switch onto a grounded rail connects it to the ground potential.

Alarm contacts

FL SWITCH 300… switch provides contacts (R1 and R2) to provide an external alarm in the event of a failure. If either power supply fails (≤12 V) or a port fails (LNK), the internal dry contacts close.

Individual ports that are monitored for alarm notification are configured using the software interface. Refer to the User Manual for details on configuration.