



Industrial Switches

Industrial switches

- Copper cables
- Fiber optic cables
- Ring redundancy

Industrial Switches

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Industrial switches

General Product Information

Always the Right Solution

WAGO's range of switches ensures the scalability of your ETHERNET network infrastructure, while providing outstanding electrical and mechanical characteristics. These robust devices are designed for industrial use and they are fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab.

Combinable with Fiber Optic Conductors

ETHERNET via fiber-optic cables offers a multitude of advantages for industrial applications.

High immunity to interference, electrical isolation and long ranges up to 80 km are extremely beneficial characteristics — and all are compatible with the IT world!

Scaled Offering

Unmanaged and managed switches in various designs are available for high-end applications. Our ECO switches are ideal for cost-sensitive applications that do not require technical features such as redundancy. They are ideally suited for small- to medium-sized networks.

Modular Expandability

Exchangeable SPF modules can be used to adapt WAGO switches for various fiber optic cables and the necessary distances and fibers.

There are SFP modules for multimode and single mode fiber optic cables for ranges up to 80 km. With the optimum combination of copper and fiber optic cables, you are equipped for a multitude of requirements.

Web-Based Management

WAGO's fully managed switches have integrated Web-based management. Any Web browser can be used to configure the switch.

Integrated Function Monitoring

For monitoring and error reporting, the managed switch has configurable functions such as e-mail alarm and SNMP traps. In addition, all switches except for ECO versions can monitor individual ports or the power supply via a potential-free alarm contact. A DIP switch is used to configure this function.

Availability, Redundancy

Select industrial switches have several options to build redundant network structures and to guarantee secure communication even when connections are faulty:

- "Rapid Spanning Tree" per IEEE 802.1w compatible with IT standard
- Jetring — a simple ring protocol with a switching time of < 300 ms
- Xpress Ring — fast ring protocol switching time < 20 ms
- ERPSv2 per ITU-T standard switching time < 50 ms

In addition to redundancy of the communication link, a redundant power supply is integrated into the switches that can be monitored using an alarm relay. Thus, if the power supply fails, communication is not interrupted.

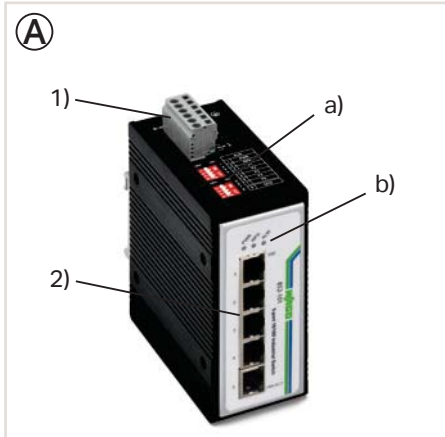
Different Operating Modes

The unmanaged switches are ideally suited for direct plug-and-play use. Managed switches are available for applications where IP filtering or further interpretation of telegrams is required for the application.

Advantages:

- Adaptable to different transmission media
- Automatic adaptation to
 - Speed (auto-negotiation)
 - Wiring (auto-crossover, MDI/MDIX)
- Optional redundancy
- Larger supply voltage range

Industrial switches Interfaces and Types



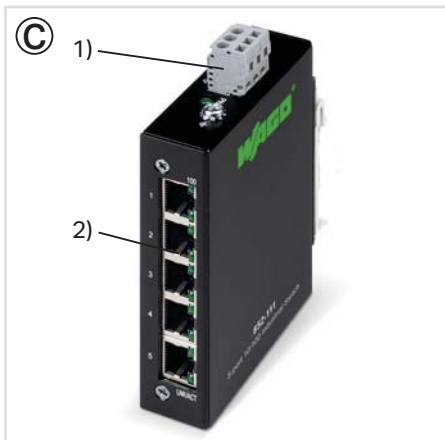
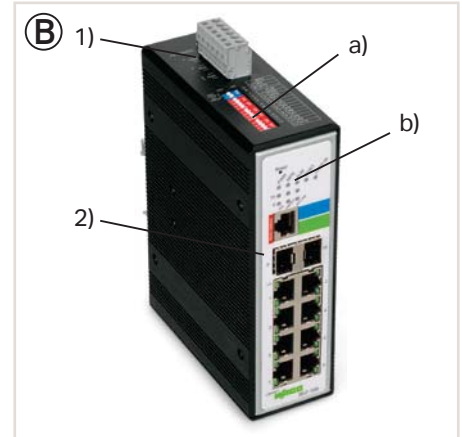
Power Supply (1)
Technologically related differences on the connection level (2)

Housing Design (A)

- DIP switch for configuration (a)
- Diagnostic LEDs (b)
- W x H* x D (mm) 50 x 120 x 105

Housing Design (B)

- DIP switch for configuration (a)
- Diagnostic LEDs (b)
- W x H* x D (mm) 50 x 120 x 162

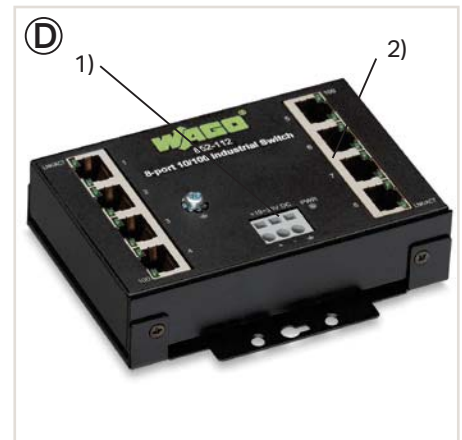


Housing Design ECO (C)

- W x H* x D (mm) 23.4 x 73.8 x 109.2
- 35 mm DIN-rail or wall-mount

Housing Design ECO (D)

- W x H* x D (mm) 109.2 x 23.4 x 73.8
- 35 mm DIN-rail or wall-mount
- * Height from upper edge of DIN-rail



Housing Design (E)

- SFP module for connecting fiber optic cables
- LC connector
- W x H x D (mm) 13.4 x 13.3 x 56.6

Versions



Extended Temperature Range

Industrial automation technology is typically operated in temperatures ranging from 0 ... 55 °C. However, there are applications that require an extended temperature range. Nearly all switches and SFP modules are available for an extended temperature range of -40 °C ... +70 °C.

Industrial switches

Application and Installation Instructions

Increasing Availability through Media Redundancy

A primary reason for the success of ETHERNET communication in automation technology is that redundant mechanisms exist and uptime can be increased. This is accomplished by duplicating components and lines so that defects, such as a broken cable, no longer cause communication to fail. However, this requires complex algorithms that detect errors and determine alternative paths without causing loops or rings in the network — and this is performed with the shortest possible downtime. WAGO provides select switches with corresponding features.

Rapid Spanning Tree

- Is a standardized protocol for determining the shortest path.
- Is used in any complex topologies to disable redundant paths.
- Determines the best alternative paths during a connection interruption and activates the required paths.
- Typically requires one to three seconds to switch.

Jetring

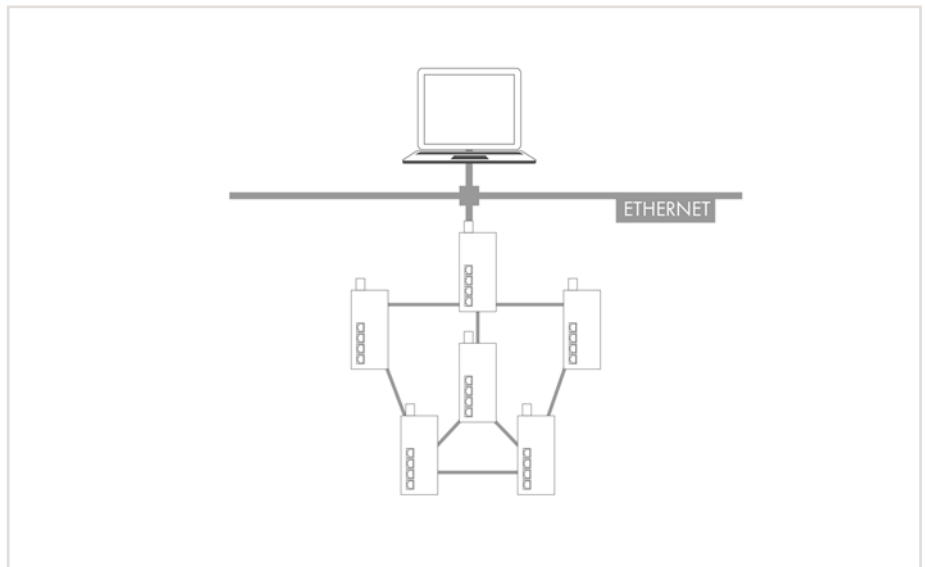
- Is a special ring protocol which does not need any special configuration.
- Automatically assigns a switch as the "master"; disables those network connections that would lead to loop and automatically switches over in case of failure.
- Typically requires approx. 300 ms to switch.
- Can be operated in "Fast Aging Mode" in connection with specific ETHERNET couplers/controllers for fast switching.

Xpress Ring

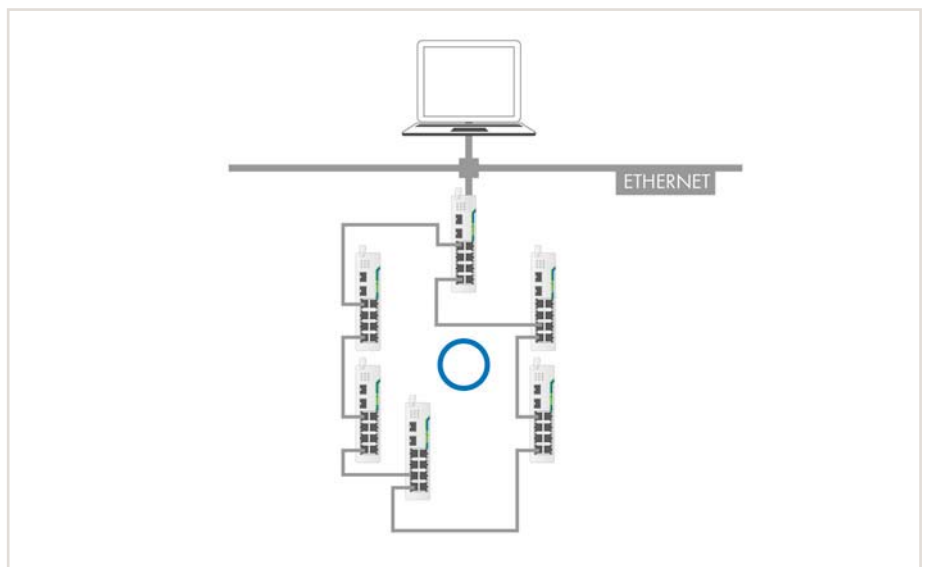
- Requires that all nodes in the ring support the protocol.
- Requires an explicit configuration of the connections.
- Requires less than 20 ms to switch.
- Is suitable as a protocol in redundant coupled ring systems (coupling ring).

ERPSv2 Ring

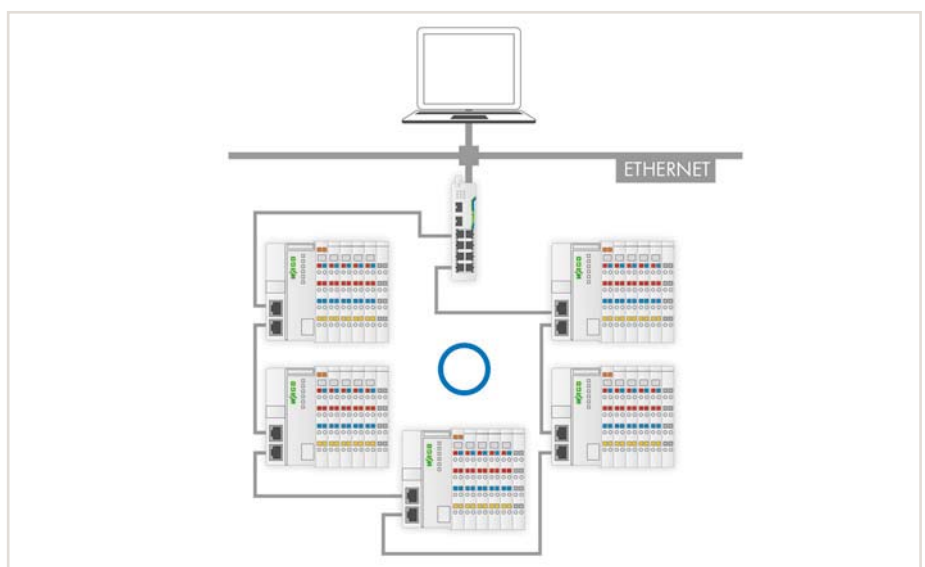
- Enables complex network structures, each with 6 rings per switch.
- Requires < 50 ms to switch.



Example: Complex topology



Example: Simple ring topology

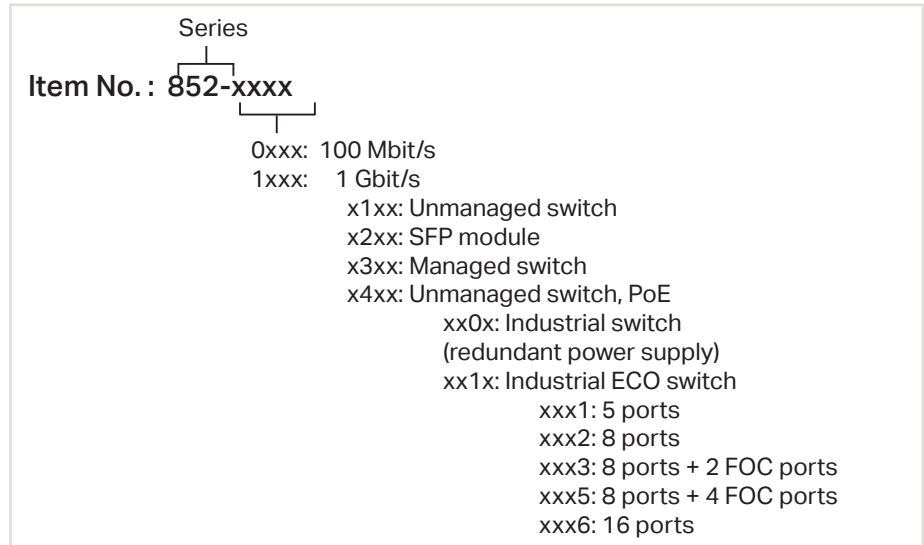


Example: Simple ring topology with 750-881 in "Fast Aging Mode"

Industrial switches

Item Number Key

Explanation of the components of an item number key



Standards and Rated Conditions

General Specifications

Packet throughput per port	10 Mbps port: 14,880 packages per second (pps) 100 Mbps port: 148,800 packages per second (pps) 1000 Mbps port: 1,488,000 packages per second (pps)
Ambient temperature (operation)	-40 ... +70 °C
Ambient temperature (storage)	-40 ... +80 °C
Relative humidity	95 % non-condensing
Vibration resistance	4 g per IEC 60068-2-6
Shock resistance	15 g per IEC 60068-2-27
EMC immunity to interference	EN 61000-6-2
EMC emission of interference	EN 61000-6-4
Degree of protection	IP30
Mounting type	On 35 mm DIN-rail, ECO version also for wall mounting
Mounting position	Any

Approvals

Overview of the approvals in the article comparison in Section 12, Technical Appendix, or online under www.wago.com

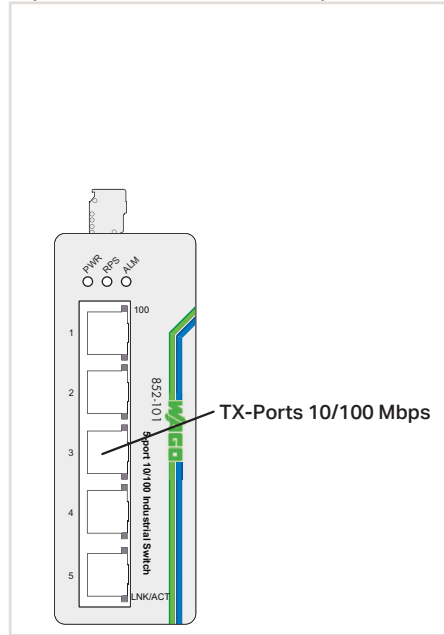


Industrial Switches

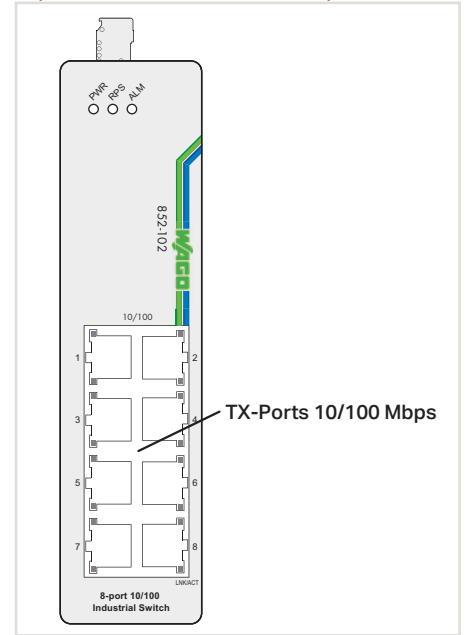


Figure: 852-101

5-port 100Base-TX, ext. Temperature



8-port 100Base-TX, ext. Temperature



Item description	Switch
Version	5Port T
Item no.	852-101

Item description	Switch
Version	5Port T
Item no.	852-101

Item description	Switch
Version	8Port T
Item no.	852-102

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	5 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
Redundancy functions	Redundant DC power supply
Configuration	DIP switch for signal contact
Diagnostics	Signal contact
MAC table (large)	2000 addresses
Jumbo frame size	1536 bytes
Supply voltage	9 ... 48 VDC
Power consumption	4 W
ESD (contact/air discharge)	8 KV / 15 KV
Connection technology: Communication	5 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 105 mm
Approvals	CE, UL 508
Data sheet and further information, see:	wago.com/852-101

Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
Redundancy functions	Redundant DC power supply
Configuration	DIP switch for signal contact
Diagnostics	Signal contact
MAC table (large)	2000 addresses
Jumbo frame size	1516 bytes
Supply voltage	9 ... 48 VDC
Power consumption	5.3 W
ESD (contact/air discharge)	8 KV / 15 KV
Connection technology: Communication	8 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 162 mm
Approvals	CE, UL 508
Data sheet and further information, see:	wago.com/852-102

Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
Redundancy functions	Redundant DC power supply
Configuration	DIP switch for signal contact
Diagnostics	Signal contact
MAC table (large)	2000 addresses
Jumbo frame size	1516 bytes
Supply voltage	9 ... 48 VDC
Power consumption	5.3 W
ESD (contact/air discharge)	8 KV / 15 KV
Connection technology: Communication	8 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 162 mm
Approvals	CE, UL 508
Data sheet and further information, see:	wago.com/852-102

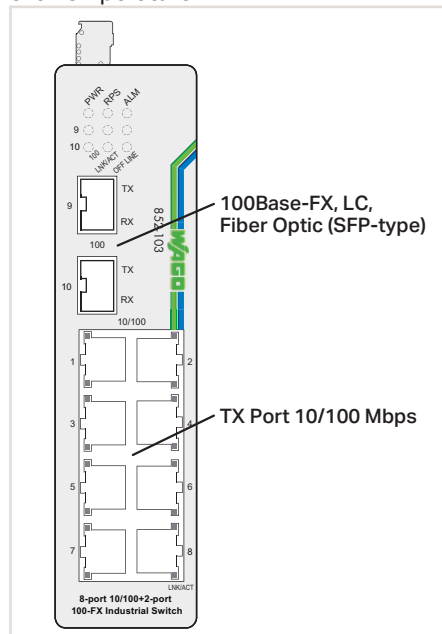
- SFP Modules
see Page 388
- DIN rails and tool
see Section 11
- Approvals and corresponding ratings,
see Page 525 or www.wago.com

Industrial Switches



Figure: 852-103

8-port 100Base-TX, 2 x 100Base-FX,
ext. Temperature



Item description	Switch
Version	8Port 2FOC T
Item no.	852-103

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX
No. of ports, FOC	2 x 100Base-FX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX IEEE 802.3x Flow Control
Redundancy functions	Redundant DC power supply
Configuration	DIP switch for signal contact
Diagnostics	Signal contact
MAC table (large)	2000 addresses
Jumbo frame size	1536 bytes
Supply voltage	9 ... 48 VDC
Power consumption	6.1 W
ESD (contact/air discharge)	8 KV / 15 KV
Connection technology: Communication	8 x RJ-45, 2 x SFP
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 162 mm
Approvals	CE, UL 508
Data sheet and further information, see:	wago.com/852-103

Industrial Switches

8-port 1000Base-T, ext. Temperature

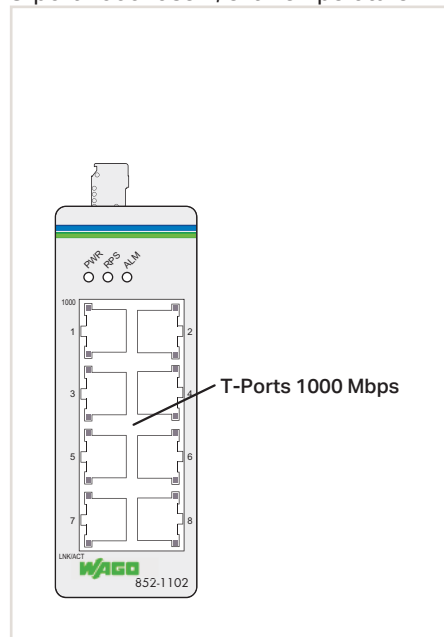


Figure: 852-1102

Item description	Switch
Version	8Port Gb T
Item no.	852-1102

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 1000Base-T
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3x Flow Control IEEE 802.3az Energy Efficient Ethernet IEEE 802.1p Class of Service Profinet CC-A
Redundancy functions	Redundant DC power supply
Configuration	DIP switch for signal contact
Diagnostics	Signal contact
MAC table (large)	8000 addresses
Jumbo frame size	9 kB
Supply voltage	9 ... 57 VDC
Power consumption	6 W
ESD (contact/air discharge)	8 KV / 15 KV
Connection technology: Communication	8 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 105 mm
Approvals	CE, UL 508*
Data sheet and further information, see:	wago.com/852-1102

*pending

- SFP Modules
see Page 388
- DIN rails and tool
see Section 11
- Approvals and corresponding ratings,
see Page 525 or www.wago.com

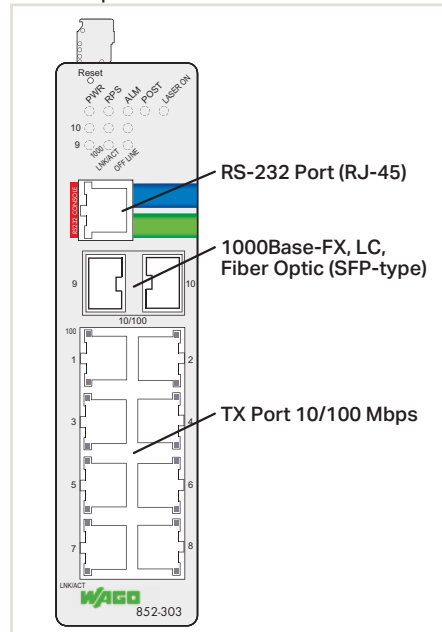
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Industrial Managed Switches

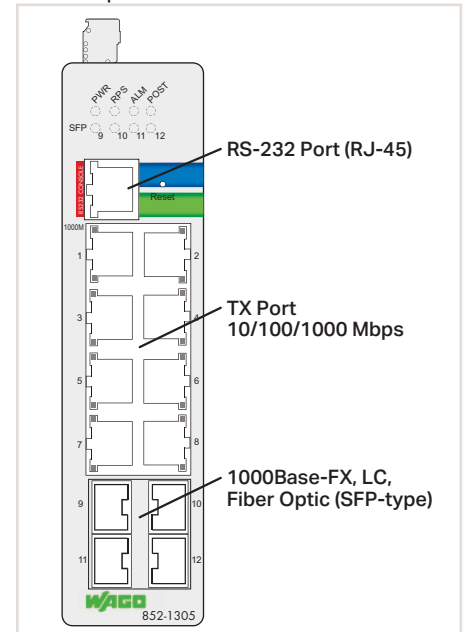


Figure: 852-303

8-port 100Base-TX, 2 x 1000Base-FX, ext. Temperature



8-port 1000Base-T, 4 x 1000Base-FX, ext. Temperature



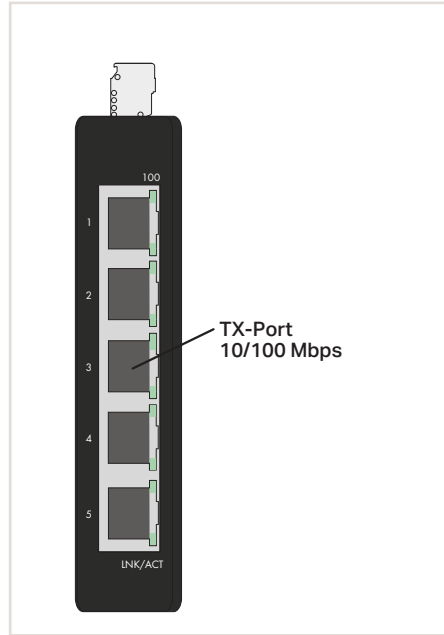
Item description	Managed Switch	Managed Switch
Version	8Port 2FOC Gb T	8Port Gb 4FOC Gb T
Item no.	852-303	852-1305
Technical Data		
Switching mode	Store-and-Forward, non-blocking	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX	8 x 1000Base-T
No. of ports, FOC	2 x 100Base-FX / 1000Base-SX/LX	4 x 1000Base-SX/LX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX IEEE 802.3z 1000Base-SX/LX IEEE 802.3x Flow Control IEEE 802.3w RSTP IEEE 802.1q VLAN Tagging IEEE 802.1ab LLDP IEEE 802.1p Class of Service IEEE 802.1x Port Authentication ITU-T G.8032 ERPSv2	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3z 1000Base-SX/LX IEEE 802.3x Flow Control IEEE 802.3w RSTP IEEE 802.1q VLAN Tagging IEEE 802.1ab LLDP IEEE 802.1p Class of Service IEEE 802.1x Port Authentication ITU-T G.8032 ERPSv2
Redundancy functions	Redundant DC power supply, STP, RSTP, MSTP, Je-tring < 300 ms, XPRESS ring < 20 ms, Dual homing < 20 ms, Dual ring, ERPSv2 < 50 ms, LCAP	Redundant DC power supply, STP, RSTP, MSTP, Je-tring < 300 ms, XPRESS ring < 20 ms, Dual homing < 20 ms, Dual ring, ERPSv2 < 50 ms, LCAP
Configuration	DIP switch for signal contact, Web-based CLI, SNMPv1/v2/v3	DIP switch for signal contact, Web-based CLI, SNMPv1/v2/v3
Diagnostics	Signal contact, MODBUS/TCP, port status, port statistics, port load, traffic monitor, SFP information, syslog, mail alarm, SNMP traps	Signal contact, MODBUS/TCP, port status, port statistics, port load, traffic monitor, SFP information, syslog, mail alarm, SNMP traps
MAC table (large)	16000 addresses	16000 addresses
Jumbo frame size	10 kB	10 kB
Supply voltage	12 ... 60 VDC	12 ... 60 VDC
Power consumption	12 W	12 W
ESD (contact/air discharge)	8 KV / 15 KV	8 KV / 15 KV
Connection technology: Communication	8 x RJ-45, 2 x SFP, 1 x RJ-45 (RS-232)	8 x RJ-45, 4 x SFP, 1 x RJ-45 (RS-232)
Communication standards	IEEE802.3x (in full duplex mode)	IEEE802.3x (in full duplex mode)
Ambient temperature (operation)	-40 ... +70 °C	-40 ... +70 °C
Dimensions W x H x D	50 x 120 x 162 mm	50 x 120 x 162 mm
Approvals	CE, DNV	CE, DNV
Data sheet and further information, see:	wago.com/852-303	wago.com/852-1305

Industrial Switches (ECO)

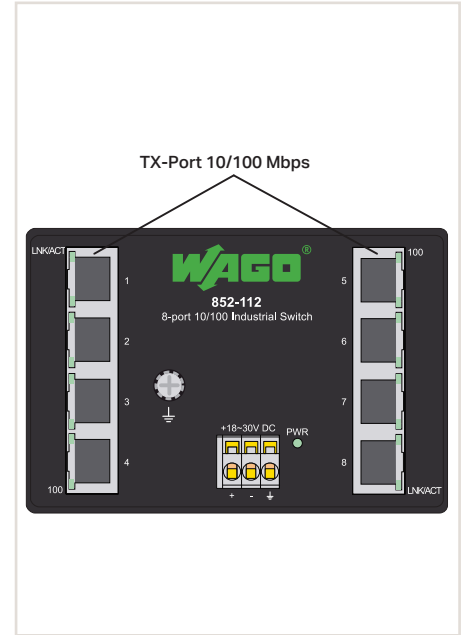


Figure: 852-111

5-port 100Base-TX, ext. Temperature, ECO



8-port 100Base-TX, ext. Temperature, ECO



Item description
Version
Item no.

Switch
5Port T ECO
852-111

Switch
8Port T ECO
852-112

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	5 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
MAC table (large)	2000 addresses
Jumbo frame size	1536 bytes
Supply voltage	18 ... 30 VDC
Power consumption	3 W
ESD (contact/air discharge)	4 KV / 8 KV
Connection technology: Communication	5 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	24 x 74 x 110 mm

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
MAC table (large)	2000 addresses
Jumbo frame size	1536 bytes
Supply voltage	18 ... 30 VDC
Power consumption	3 W
ESD (contact/air discharge)	4 KV / 8 KV
Connection technology: Communication	8 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	110 x 24 x 74 mm

Technical Data	
Switching mode	Store-and-Forward, non-blocking
No. of ports, copper	8 x 100Base-TX
Profiles supported	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3x Flow Control
MAC table (large)	2000 addresses
Jumbo frame size	1536 bytes
Supply voltage	18 ... 30 VDC
Power consumption	3 W
ESD (contact/air discharge)	4 KV / 8 KV
Connection technology: Communication	8 x RJ-45
Ambient temperature (operation)	-40 ... +70 °C
Dimensions W x H x D	110 x 24 x 74 mm

Approvals	CE, UL 508 DNV (only with DNV attachment adapter), UL 508
Data sheet and further information, see:	wago.com/852-111

Approvals	CE, UL 508 DNV (only with DNV attachment adapter), UL 508
Data sheet and further information, see:	wago.com/852-112

Approvals	CE, UL 508 DNV (only with DNV attachment adapter), UL 508
Data sheet and further information, see:	wago.com/852-112

Accessories
DNV mounting adapter

Item no.	Page
852-9101	389

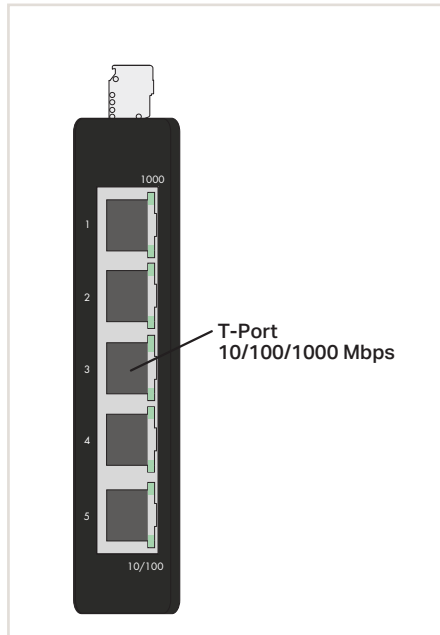
- DIN rails and tool see Section 11
- Approvals and corresponding ratings, see Page 525 or www.wago.com

Industrial Switches (ECO)

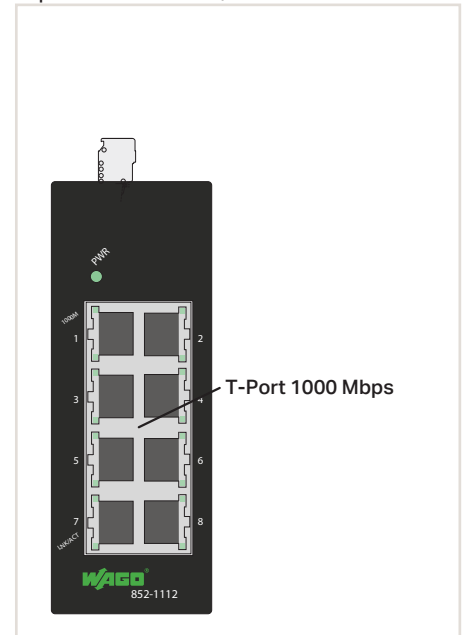


Figure: 852-1112

5-port 1000Base-T, ext. Temperature, ECO



8-port 1000Base-T, ECO



Item description
Version
Item no.

Switch
5Port Gb T ECO
852-1111

Switch
8Port Gb ECO
852-1112

Technical Data	
Switching mode	
No. of ports, copper	
Profiles supported	
MAC table (large)	
Jumbo frame size	
Supply voltage	
Power consumption	
ESD (contact/air discharge)	
Connection technology: Communication	
Ambient temperature (operation)	
Dimensions W x H x D	
Approvals	
Data sheet and further information, see:	
Accessories	
DNV mounting adapter	

Store-and-Forward, non-blocking	
5 x 1000Base-T	
IEEE 802.3 10Base-T	
IEEE 802.3u 100Base-TX	
IEEE 802.3ab 1000Base-T	
IEEE 802.3x Flow Control	
IEEE 802.1p Class of Service	
Profinet CC-A	
8000 addresses	
9 kB	
9 ... 48 VDC	
3 W	
4 KV / 8 KV	
5 x RJ-45	
-40 ... +70 °C	
24 x 74 x 110 mm	
CE, DNV (only with DNV attachment adapter), UL 508*	
wago.com/852-1111	
Item no.	Page
852-9101	389

Store-and-Forward, non-blocking
8 x 1000Base-T
IEEE 802.3 10Base-T
IEEE 802.3u 100Base-TX
IEEE 802.3ab 1000Base-T
IEEE 802.3x Flow Control
IEEE 802.3az Energy Efficient Ethernet
IEEE 802.1p Class of Service
Profinet CC-A
8000 addresses
9 kB
9 ... 57 VDC
6 W
8 KV / 15 KV
8 x RJ-45
0 ... +60 °C
50 x 100 x 116 mm
CE, UL 508*
wago.com/852-1112

*pending

*pending

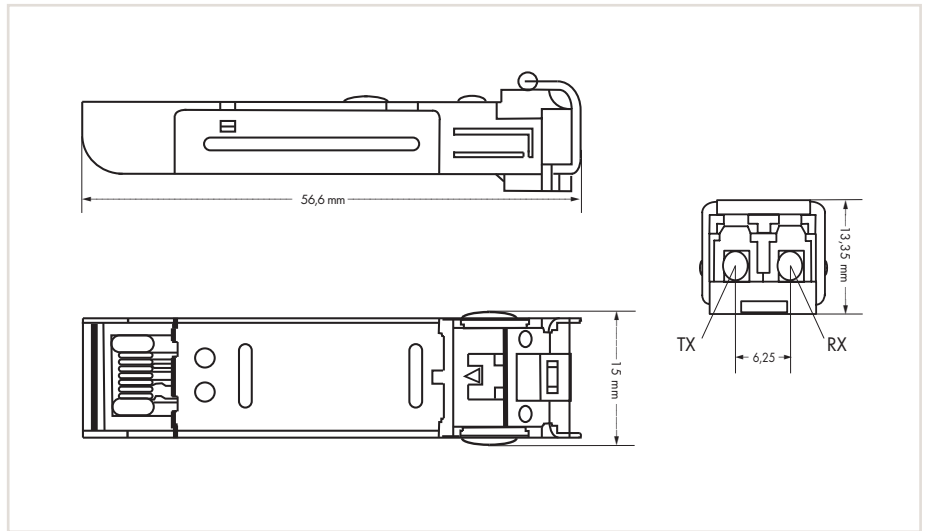
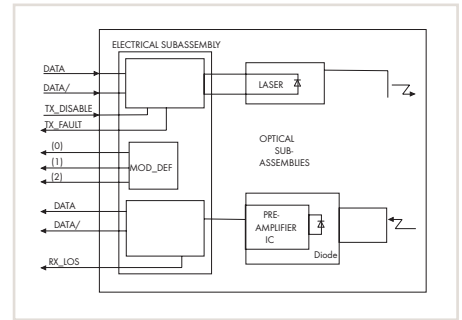
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Industrial Switches – Accessories

SFP Modules

Features:

- Duplex LC optical connector
- Small Form-Factor Pluggable (SFP) industry-standard design
- Compliant with Fast ETHERNET standard and Gigabit ETHERNET standard IEEE802.3z
- Differential LVPECL inputs and outputs
- Power supply: 3.3 V
- TTL signal detect indicator
- Hot-pluggable capability



7

SFP Module 100BASE, FX Multi-mode
1310 nm LC, 2 km, optional: ext. Temperature

Item description	SFP-Module 100BASE	
Version	FX 2km	FX 2km T
Item no.	852-201/107-002	852-201/040-002
Technical Data		
Wavelength	1310 nm	
Multimode fiber	62.5/125 µm, 50/125 µm	
Maximum lengths	2000 m	
Laser type	Laser class 1 per EN 60825-1	
Other		
Ambient temperature (operation)	0 ... +60 °C	-40 ... +70 °C
Dimensions W x H x D	13.4 x 13.3 x 56.6 mm	
Data sheet and further information, see:	wago.com/852-201	

SFP Module 1000BASE, SX Multi-mode
850 nm LC, 0.55 km, ext. Temperature, Digital Diagnostics Monitoring

Item description	SFP-Module 1000BASE	
Version	SX 0.55km T DDM	
Item no.	852-1200	
Technical Data		
Wavelength	850 nm	
Multimode fiber	62.5/125 µm, 50/125 µm	
Maximum lengths	300 m, 550 m	
Laser type	Laser class 1 per EN 60825-1	
Other	Supports Digital Diagnostics Monitoring	
Ambient temperature (operation)	-40 ... +85 °C	
Dimensions W x H x D	13.4 x 13.3 x 56.6 mm	
Data sheet and further information, see:	wago.com/852-1200	

SFP Module 100BASE, LX Single-mode
1310 nm LC, 30 km

Item description	SFP-Module 100BASE	
Version	LX 30km	
Item no.	852-201/107-030	
Technical Data		
Wavelength	1310 nm	
Single-mode fiber	9/125 µm	
Maximum lengths	30000 m	
Laser type	Laser class 1 per EN 60825-1	
Other		
Ambient temperature (operation)	0 °C ... +60 °C	
Dimensions W x H x D	13.4 x 13.3 x 56.6 mm	
Data sheet and further information, see:	wago.com/852-201	

SFP Module 1000BASE, LX Single-mode
1310 nm LC, 10 km, optional: 80 km, ext. Temperature, Digital Diagnostics Monitoring

Item description	SFP-Module 1000BASE	
Version	LX 10km T DDM	ZX 80km T DDM
Item no.	852-1210	852-1280
Technical Data		
Wavelength	1310 nm	1550 nm
Single-mode fiber	9/125 µm	
Maximum lengths	10000 m	80000 m
Laser type	Laser class 1 per EN 60825-1	
Other	Supports Digital Diagnostics Monitoring	
Ambient temperature (operation)	-40 ... +85 °C	
Dimensions W x H x D	13.4 x 13.3 x 56.6 mm	
Data sheet and further information, see:	wago.com/852-1210	wago.com/852-1280

Industrial Switches – Accessories

DNV mounting adapter, ship approval



Item description	DNV Carrier Rail Adapter Switches
Item no.	852-9101
Technical Data	
Dimensions W x H x D	20 x 9.6 x 102.2 mm
Weight	32.8 g
Data sheet and further information, see:	wago.com/852-9101