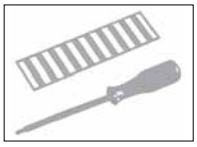
Industrial Switches

Industrial Switches

- Copper cables
- Fiber optic cable
- Ring redundancy

Industrial Switches

Contents



Industrial Switches
General Product Information

Always the Right Solution

WAGO's range of switches ensures the scalability of your 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 802.3.

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 30 km are important parameters – 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 30 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:

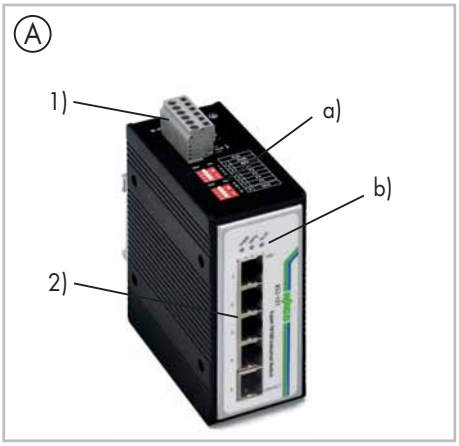
- "Spanning Tree" acc. to IEEE 802.1D compatible with IT standard
- Jetring – a simple ring protocol with a switching time of < 300 ms
- Xpress Ring – fast ring protocol switching time < 50 ms

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.

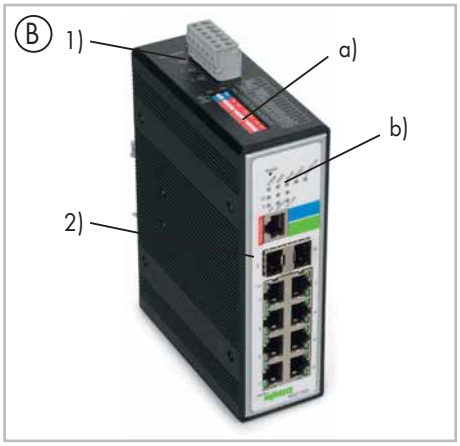
- Adaptable to different transmission media
- Automatic adaptation to
  - Speed (autonegotiation)
  - Wiring (auto-crossover, MDI/MDIX)
- Various switching modes
- Optional redundancy
- Larger supply voltage range

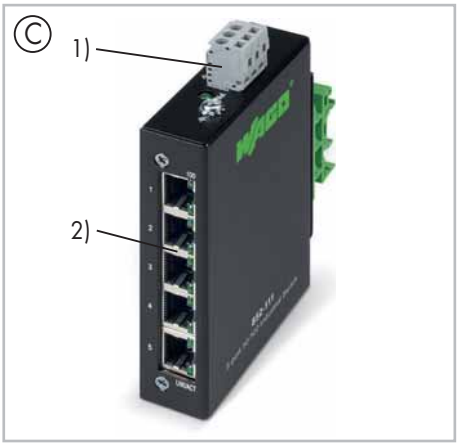


Power supply (1)
Technologically related differences on the connection level (2)

Housing design (A)
- DIP switch for configuration (a)
- Diagnostic LEDs (b)
- W x H* x L (mm) 50 x 120 x 105

Housing design (B)
- DIP switch for configuration (a)
- Diagnostic LEDs (b)
- W x H* x L (mm) 50 x 120 x 162





Housing design ECO (C)
- W x H* x L (mm) 23.4 x 73.8 x 109.2
- DIN-rail or wall mount

Housing design ECO (D)
- W x H* x L (mm) 109.2 x 23.4 x 73.8
- DIN-rail or wall mount

*Height from upper edge of DIN-rail

Housing design (E)
- SFP module for connecting fiber optic cables
- LC connection
- W x H x L (mm) 13.4 x 13.3 x 56.6

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

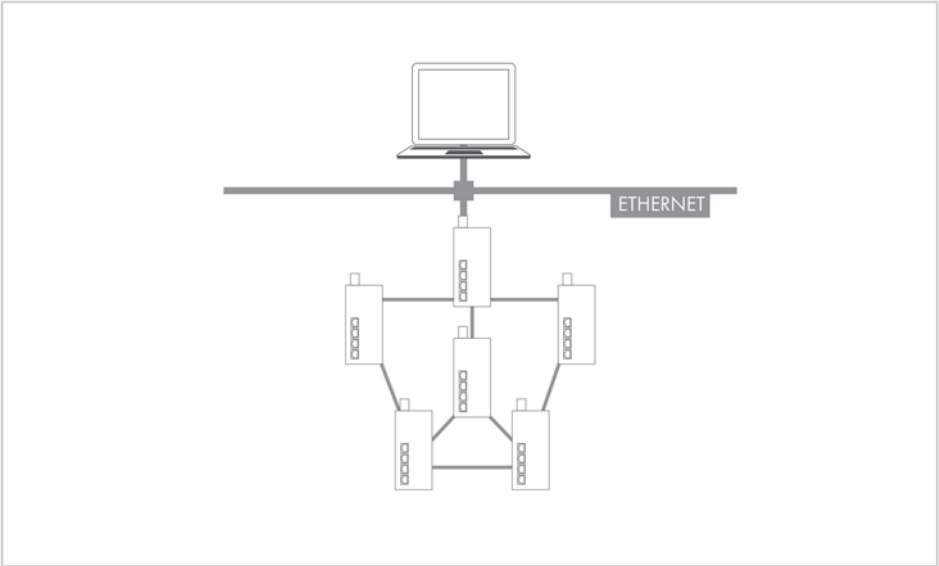
- Is a standardized protocol for determining the shortest path
- Is used in any complex topologies to disable redundant paths
- Determines the best alternative paths during a connection interruption and activates the required paths
- Typically requires one to three seconds to switch

Jetring

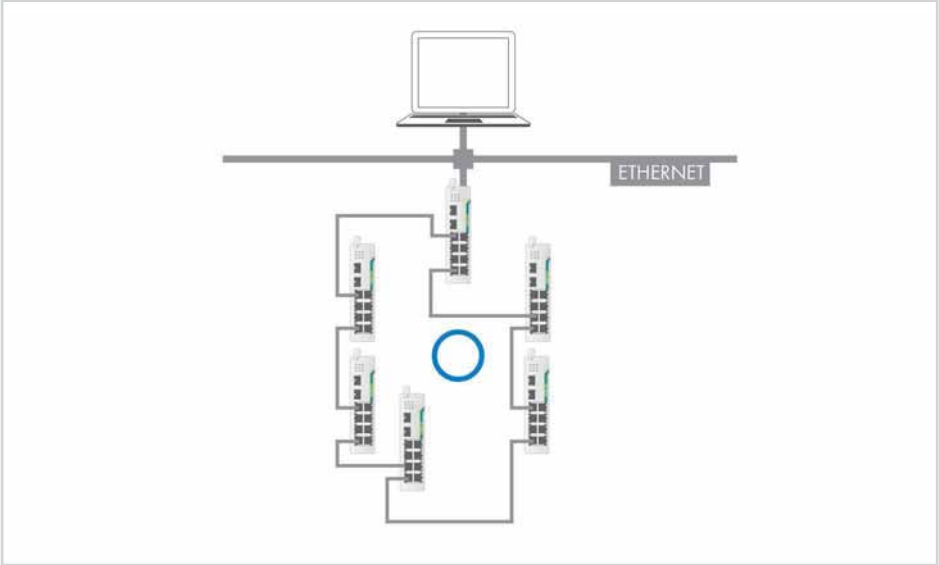
- Is a simple protocol that can be used exclusively in physical ring topologies
- Requires no configuration
- Automatically assigns a switch as the "master"; disables those network connections that would lead to loop and automatically switches over in case of failure
- Typically requires approx. 300 ms to switch
- Can be operated in "Fast Aging Mode" in connection with specific ETHERNET controllers (e.g., 750-880) for fast switching

Xpress Ring

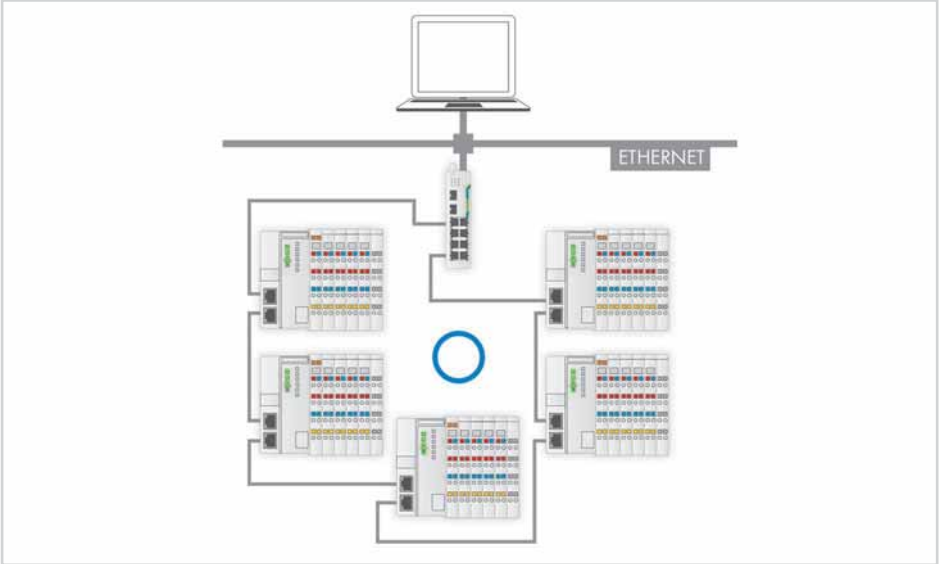
- Is only suitable for ring topologies like Jetring
- Requires that all nodes in the ring support the protocol
- Requires an explicit configuration of the connections
- Requires less than 50 ms to switch
- Is suitable as a protocol in redundant coupled ring systems (coupling ring)



Example: Complex topology



Example: Simple ring topology



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

Industrial Switches
Versions

Extended temperature range

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

Item Number Keys

Explanations of the components for the item number key

Series

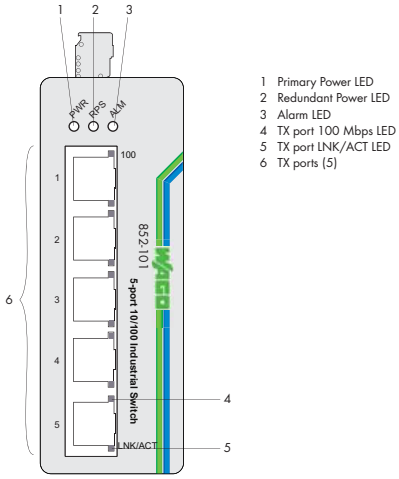
Item No. : 852-xxxx

0xxx: 100 Mbit/s
1xxx: 1 Gbit/s
x1xx: Unmanaged switch
x2xx: SFP module
x3xx: Managed switch
x4xx: Unmanaged switch, PoE
x5xx: Managed switch, PoE
xx0x: Industrial switch (redundant power supply)
xx1x: Industrial ECO switch
xxx1: 5 ports
xxx2: 8 ports
xxx3: 8 ports + 2 LWL ports
xxx4: 7 ports + 2 LWL ports
xxx5: 8 ports + 4 LWL ports

Standards and Rated Conditions

General Specifications	
Operating voltage	9 VDC ... 48 VDC (ECO version 18 V ... 30 V)
Operating temperature	0 °C ... +60 °C
Operating temperature for versions with an extended temperature range	-40 °C ... +70 °C
Storage temperature	-20 °C ... +80 °C
Storage temperature for versions with an extended temperature range	-40 °C ... +85 °C
Relative humidity (without condensation)	95 %
Vibration resistance	4g acc. to IEC 60068-2-6
Shock resistance:	15g acc. to IEC 60068-2-27
EMC immunity to interference	EN 61000-6-2
EMC emission of interference	EN 61000-6-4
Protection type	IP30
Type of mounting	on DIN-rail, ECO version also for wall mounting
Mounting position	any

5-Port 100BASE-TX Industrial Switch



1 Primary Power LED
2 Redundant Power LED
3 Alarm LED
4 TX port 100 Mbps LED
5 TX port LNK/ACT LED
6 TX ports (5)

The 852-101 Industrial Switch is a 5-port 10/100Base-TX ETHERNET switch. The switch has a rugged housing, a redundant power supply and function monitoring with relay, making it ideal for a wide range of applications.

Features:

- Redundant DC power supply
- Wide supply voltage range: 9 V ... 48 V
- DIP switch enables alarm functions
- Full compliance with IEEE802.3, 802.3u stantards
- Non-blocking, store-and-forward switching
- Auto-negotiation on all 10/100Base-TX ports
- Auto-MDI/MDIX (crossover) on all 10/100Base-TX ports

Description	Item No.	Pack. Unit
5-Port 100BASE-TX Industrial Switch	**852-101**	1

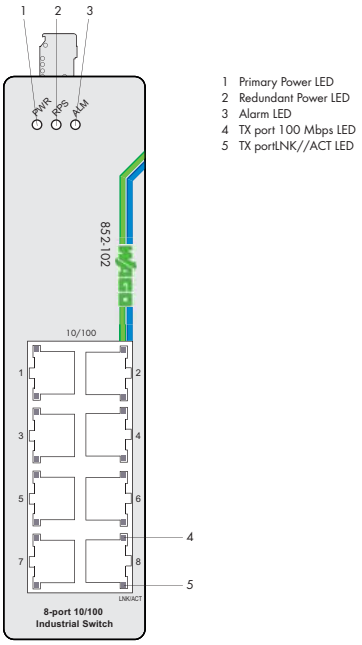
Approvals

Conformity marking	CE
Korea Certification	
UL 508	

Technical Data

Ports	5 x 10/100Base-TX (RJ-45)
Standards	IEEE 802.3u 100Base-TX;
	IEEE 802.3 10Base-T
Maximum length	10/100Base-TX: 100 m
Supply voltage	9 V ... 48 V DC (line length < 3 m)
Energy consumption max.	3.84 W
Energy consumption typ. (24 V)	3.36 W
Operating temperature	0°C ... +60°C
Storage temperature	-20 °C ... +80 °C
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	50 x 120 x 105
	Height from upper-edge of DIN 35 rail
Weight	639 g
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP30
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4

8-Port 100BASE-TX Industrial Switch



The 852-102 Industrial Switch is an 8-port 10/100Base-TX ETHERNET switch. The switch has a rugged housing, a redundant power supply and function monitoring with relay, making it ideal for a wide range of applications.

Features:

- Redundant DC power supply
- Large supply voltage range: 9 V ... 48 V
- DIP switch enables alarm functions
- Full compliance with IEEE802.3, 802.3u stantards
- Non-blocking, store-and-forward switching
- Auto-negotiation on all 10/100Base-TX ports
- Auto-MDI/MDIX (crossover) on all 10/100Base-TX ports

Description	Item No.	Pack. Unit
8-Port 100BASE-TX Industrial Switch	**852-102**	1

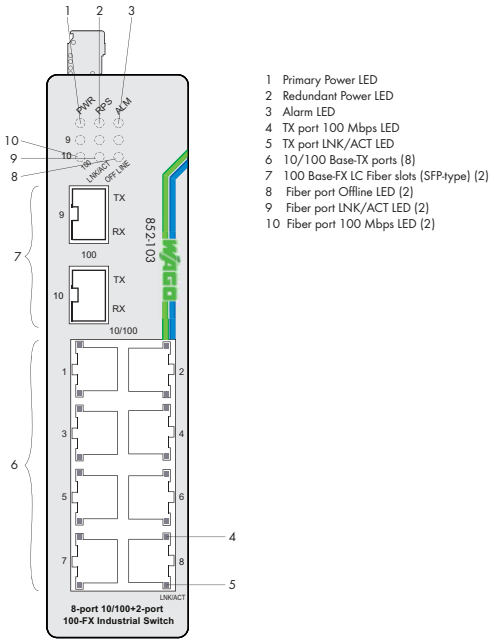
Approvals

Conformity marking	CE
Korea Certification	
UL 508	

Technical Data

Ports	8 x 10/100Base-TX (RJ-45)
Standards	IEEE 802.3u 100Base-TX;
	IEEE 802.3 10Base-T
Throughputs	14,880/148,800 packets per second
	(pps) to 10/100 Mbps ports
Maximum length	10/100Base-TX: 100 m
Supply voltage	9 V ... 48 V DC (line length < 3 m)
Energy consumption max.	5.28 W
Energy consumption typ. (24 V)	4.56 W
Operating temperature	0°C ... +60°C
Storage temperature	-20 °C ... +80 °C
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	50 x 120 x 162
	Height from upper-edge of DIN 35 rail
Weight	909 g
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP30
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4

8-Port 100BASE-TX + 2-Slot 100BASE-FX Industrial Switch



1 Primary Power LED
2 Redundant Power LED
3 Alarm LED
4 TX port 100 Mbps LED
5 TX port LNK/ACT LED
6 10/100 Base-TX ports (8)
7 100 Base-FX LC Fiber slots (SFP-type) (2)
8 Fiber port Offline LED (2)
9 Fiber port LNK/ACT LED (2)
10 Fiber port 100 Mbps LED (2)

The 852-103 Industrial Switch is an 8-port 10/100Base-TX with dual SFP 100Base-FX port (SFP modules are optional) ETHERNET switch.
The switch has a rugged housing, a redundant power supply and function monitoring with relay, making it ideal for a wide range of applications.

Features:

- Redundant DC power supply
- Large supply voltage range: 9 V ... 48 V
- DIP switch enables alarm functions
- Full compliance with IEEE802.3, 802.3u stantards
- Non-blocking, store-and-forward switching
- Auto-negotiation on all 10/100Base-TX ports
- Auto-MDI/MDIX (crossover) on all 10/100Base-TX ports

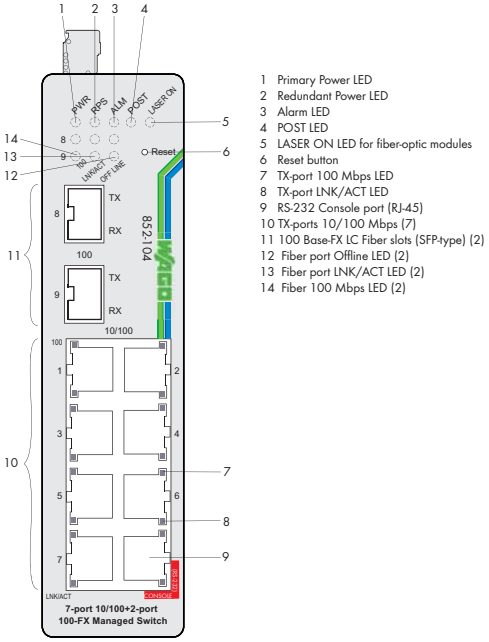
Description	Item No.	Pack. Unit
8/2 Port 100BASE-TX/FX Industrial Switch	**852-103**	1
8/2 Port 100BASE-TX/FX Industrial Switch T	**852-103/040-000**	1
Extended temperature range: -40 °C ... +70 °C		

Accessories	Item No.
SFP Module 2: 1310nm, 100Base-FX Multi-mode LC, 2 km	**852-201/107-002**
SFP Module 30: 1310nm, 100Base-FX Single-mode LC, 30 km	**852-201/107-030**
SFP Module 2 T: 1310nm, 100Base-FX, Multi-mode, LC, 2 km, (Extended temperature range: -40 °C ... +70 °C)	**852-201/040-002**

Approvals	
Conformity marking	CE
Korea Certification	
UL 508	to 60 °C (852-103/040-000)

Technical Data	
Ports	8 x 10/100Base-TX (RJ-45);
	2 x SFP 100Base-FX Fiber
Standards	IEEE 802.3u 100Base-TX/FX;
	IEEE 802.3 10Base-T
Throughputs	14,880/148,800 packets per second
	(pps) to 10/100 Mbps ports
Wavelength (optical fibers)	depend on SFP module
Maximum length	10/100Base-TX: 100 m;
	Fiber optic: up to 30 km
Supply voltage	9 V ... 48 V DC (line length < 3 m)
Energy consumption max.	6.08 W
Energy consumption typ. (24 V)	5.76 W
Operating temperature	0°C ... +60°C (852-103)
	-40 °C ... +70 °C (852-103/040-000)
Storage temperature	-20 °C ... +80 °C (852-103)
	-40 °C ... +85 °C (852-103/040-000)
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	50 x 120 x 162
	Height from upper-edge of DIN 35 rail
Weight	922 g
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP30
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4

7-Port 100BASE-TX + 2-Slot 100BASE-FX Industrial Managed Switch



The 852-104 Industrial Switch is a 7-port 10/100Base-TX with dual SFP 100Base-FX port (SFP modules are optional) configurable ETHERNET switch. The switch has a rugged housing, a redundant power supply and function monitoring with relay. These functions along with extensive ETHERNET switch options make it ideal for a wide range of applications.

Features:
- Web-based/SNMP management
- Redundant DC power supply
- Large supply voltage range: 9 V ... 48 V
- DIP switch to enable alarm functions
- Full compliance with IEEE802.3, 802.3u, 802.3x,802.1d, 802.1q, 802.1p standards
- Xpress Ring (redundant ring recovery < 50 ms)
- Non-blocking, store-and-forward switching
- Auto-negotiation on all 10/100Base-TX ports
- Auto-MDI/MDIX (crossover) on all 10/100Base-TX ports
- VLAN (802.1q) VID
- IGMP Snooping for multicast filtering
- Port configuration, status, statistics
- Port Trunking
- SNMP v1/v2 and RMON

Description	Item No.	Pack. Unit
7/2-Port 100BASE-TX/FX Industrial Managed Switch	**852-104**	1
7/2-Port 100BASE-TX/FX Industrial Managed Switch T	**852-104/040-000**	1
Extended temperature range: -40 °C ... +70 °C		

Accessories	Item No.
SFP Module 2: 1310nm, 100Base-FX Multi-mode LC, 2 km	**852-201/107-002**
SFP Module 30: 1310nm, 100Base-FX Single-mode LC, 30 km	**852-201/107-030**
SFP Module 2 T: 1310nm, 100Base-FX, Multi-mode, LC, 2 km, (Extended temperature range: -40 °C ... +70 °C)	**852-201/040-002**

Approvals

Conformity marking	CE
Korea Certification	
UL 508	to 60 °C (852-104/040-000)

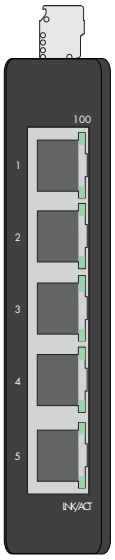
Technical Data

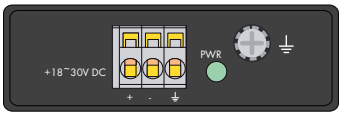
Operating temperature	0°C ... +60°C (852-104)
	-40 °C ... +70 °C (852-104/040-000)
Storage temperature	-20 °C ... +80 °C (852-104)
	-40 °C ... +85 °C (852-104/040-000)
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	50 x 120 x 162
	Height from upper-edge of DIN 35 rail
Weight	1050 g

Technical Data

Ports	7 x 10/100Base-TX (RJ-45);
	2 x SFP 100Base-FX Fiber;
	1 x RS-232 (RJ-45)
Standards	IEEE 802.3u 100Base-TX/FX;
	IEEE 802.3ad Port Trunking;
	IEEE 802.3 10Base-T;
	IEEE 802.1d Spanning Tree Protocol;
	IEEE 802.3x Flow Control;
	IEEE 802.1p Priority Queues;
	IEEE 802.1q VLAN Tagging
MAC table	Up to 2K addresses
VLANs	Port-based and Tag-based (64VIDs)
Throughputs	14,880/148,800 packets per second
	(pps) to 10/100 Mbps ports
Wavelength (optical fibers)	depend on SFP module
Maximum length	10/100Base-TX: 100 m;
	Fiber optic: up to 30 km;
	RS-232: 15 m
Supply voltage	9 V ... 48 V DC (line length < 3 m)
Energy consumption max.	10.08 W
Energy consumption typ. (24 V)	8.4 W
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP30
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4

5-Port 100BASE-TX Industrial Eco Switch





The 852-111 has 5 ports with each port featuring Auto-negotiation and auto MDI/MDI-X detection. Existing 10Mbps networks can now be upgraded effortlessly to higher speed 100Mbps Fast ETHERNET networks.
The 852-111 5-port density can be used to create multiple segments to alleviate client congestion and provide dedicated bandwidth to each user node. The 852-111 is a cost-effective solution to keep up with the constant demands for emerging IP-based industry communication needs.
The switch can be easily configured and installed and is also ideally suited for small to medium-sized networks.

Features:

- 5-port 10/100 Mbps Auto-negotiation ETHERNET ports
- Comprehensive front-panel diagnostic LEDs
- Supports Auto-MDI/MDI-X
- Full/half-duplex transfer modes for each port
- Wire speed reception and transmission
- Store-and-forward switching method
- Integrated address Look-Up Engine, supports 2K absolute MAC addresses
- Supports surge protection
- IEEE 802.3x flow control for fullduplex
- Supports DIN 35 rail

Description	Item No.	Pack. Unit
5-Port 100BASE-TX Industrial Eco Switch	**852-111**	1

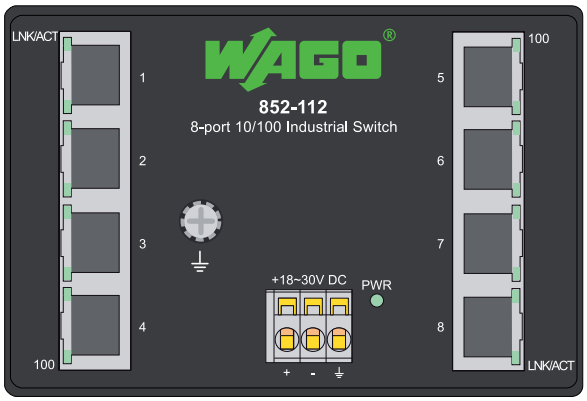
Approvals

Conformity marking	CE
Korea Certification	KC
Marine applications	DNV pending
cULus UL 508	

Technical Data

Ports	5 x 10/100Base-TX (RJ-45)
Standards	IEEE 802.3 10Base-T;
	IEEE 802.3u 100Base-TX/FX;
	IEEE 802.3x Flow Control
Topology	Star
LED	each device:
	1 x Power (PWR), green;
	each port:
	1 x Link/Activity (LNK/ACT), green;
	1 x Speed (100 Mbps), green
Supply voltage	18 V ... 30 V DC
Energy consumption max.	3 W
Operating temperature	0°C ... +60°C
Storage temperature	-20 °C ... +80 °C
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	23.4 x 73.8 x 109.2
	Height from upper-edge of DIN 35 rail
Fixing	DIN 35 rail
Weight	190 g

8-Port 100BASE-TX Industrial Eco Switch



852-112 has 8 ports with each port featuring Auto-negotiation and Auto MDI/MDI-X detection. Existing 10Mbps networks can now be upgraded effortlessly to higher speed 100Mbps Fast ETHERNET networks.
The 852-112 8-port density can be used to create multiple segments to alleviate client congestion and provide dedicated bandwidth to each user node. The 852-112 is a cost-effective solution to keep up with the constant demands for emerging IP-based industry communication needs.
The switch can be easily configured and installed and is also ideally suited for small to medium-sized networks.

Features:
- 8-port 10/100 Mbps Auto-negotiation ETHERNET ports
- Comprehensive front-panel diagnostic LEDs
- Supports Auto-MDI/MDI-X
- Full/half-duplex transfer modes for each port
- Wire speed reception and transmission
- Store-and-forward switching method
- Integrated address Look-Up Engine, supports 2K absolute MAC addresses
- Supports surge protection
- IEEE 802.3x flow control for fullduplex
- Supports DIN 35 rail

Description	Item No.	Pack. Unit
8-Port 100BASE-TX Industrial Eco Switch	**852-112**	1

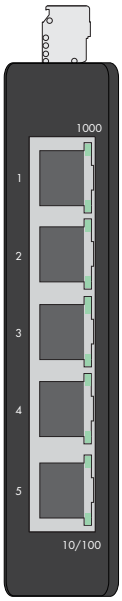
Approvals

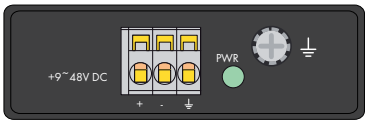
Conformity marking	CE
Korea Certification	
UL 508	

Technical Data

Ports	8 x 10/100Base-TX (RJ-45)
Standards	IEEE 802.3 10Base-T;
	IEEE 802.3u 100Base-TX/FX;
	IEEE 802.3x Flow Control
Topology	Star
LED	each device:
	1 x Power (PWR), green;
	each port:
	1 x Link/Activity (LNK/ACT), green;
	1 x Speed (100 Mbps), green
Supply voltage	18 V ... 30 V DC
Energy consumption max.	3 W
Operating temperature	0°C ... +60°C
Storage temperature	-20 °C ... +80 °C
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	109.2 x 23.4 x 73.8
	Height from upper-edge of DIN 35 rail
Fixing	DIN 35 rail
Weight	415 g

5-Port 1000BASE-T Industrial Eco Switch





The 852-1111 is a 5-port 1000Base-T industrial ETHERNET switch supporting Auto-Negotiation and Auto-MDI-/MDI-X detection for each port.
The 852-1111 5-port density can be used to create multiple segments to alleviate client congestion and provide dedicated bandwidth to each user node. The 852-1111 is a cost-effective solution to keep up with the constant demands for emerging IP-based industry communication needs.
The switch can be easily configured and installed and is also ideally suited for small to medium-sized networks.

Features:

- 5-port 10/1000 Mbps Auto-negotiation ETHERNET ports
- Comprehensive front-panel diagnostic LEDs
- Supports Auto-MDI/MDI-X
- Full/half-duplex transfer modes for each port
- Wire speed reception and transmission
- Store-and-forward switching method
- Integrated address Look-Up Engine, supports 2K absolute MAC addresses
- Supports surge protection
- IEEE 802.3x flow control for fullduplex
- Supports DIN 35 rail

Description	Item No.	Pack. Unit
5-Port 1000BASE-T Industrial Eco Switch	**852-1111**	1

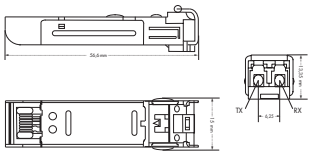
Approvals

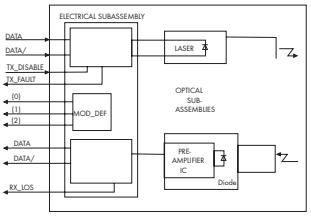
Conformity marking	CE
Marine applications	DNV pending
UL 508	pending

Technical Data

Ports	5 x 10/100/1000Base-T (RJ-45)
Standards	IEEE 802.3 10Base-T;
	IEEE 802.3u 100Base-TX/FX;
	IEEE 802.3ab 1000Base-T;
	IEEE 802.3x Flow Control
Topology	Star
LED	each device:
	1 x Power (PWR), green;
	each port:
	1 x Link/Activity (LNK/ACT), green;
	1 x Speed (100 Mbps), green
Supply voltage	9 V ... 48 V DC
Energy consumption max.	3 W
Operating temperature	0°C ... +60 °C
Storage temperature	-20 °C ... +80 °C
Relative air humidity (no condensation)	95 %
Dimensions (mm) W x H x L	23.4 x 73.8 x 109.2
	Height from upper-edge of DIN 35 rail
Fixing	DIN 35 rail
Weight	190 g

SFP Modules 100Base-FX LC





ETHERNET via fiber optic cables offers a multitude of advantages for industrial applications.
High immunity to interference, electrical isolation, and long ranges are important parameters here.

Description		Item No.	Pack. Unit
SFP Module 2: 1310nm, 100Base-FX	Connector Duplex LC,	**852-201/107-002**	1
Multi-mode LC, 2 km	Wavelength 1310 nm,		
	Fiber type Multi-mode 62.5/125 µm, 50/125 µm,		
	Maximum length 2000 m,		
	Operating temperature 0 °C ... +60 °C,		
	Storage temperature -20 °C ... +80 °C,		
	Dimensions (mm) W x H x D: 13.4 x 13.3 x 56.6;		
	Laser Class 1 acc. to EN 60825-1		
SFP Module 30: 1310nm, 100Base-FX	Connector Duplex LC,	**852-201/107-030**	1
Single-mode LC, 30 km	Wavelength 1310 nm,		
	Fiber type Single-mode 9/125 µm,		
	Maximum length 30000 m,		
	Operating temperature 0 °C ... +60 °C,		
	Storage temperature -20 °C ... +80 °C,		
	Dimensions (mm) W x H x D: 13.4 x 13.3 x 56.6;		
	Laser Class 1 acc. to EN 60825-1		
SFP Module 2 T: 1310nm,	Connector Duplex LC,	**852-201/040-002**	1
100Base-FX, Multi-mode, LC, 2 km,	Wavelength 1310 nm,		
(Extended temperature range: -40 °C ... +70 °C)	Fiber type Multi-mode 62.5/125 µm, 50/125 µm,		
	Maximum length 2000 m,		
	Operating temperature -40 °C ... +70 °C,		
	Storage temperature -40 °C ... +80 °C,		
	Dimensions (mm) W x H x D: 13.4 x 13.3 x 56.6;		
	Laser Class 1 acc. to EN 60825-1		

Characteristics:

- Duplex LC optical connector
- Industry standard small form pluggable (SFP) package
- Compliant with Fast ETHERNET standard;
- Differential LVPECL inputs and outputs;
- Single 3.3V power supply;
- TTL signal detect indicator;
- Hot pluggable capability