MICROSENS

User Manual – Entry Line
Industrial Fast Ethernet Switch
4x 10/100Base-TX, 1x 100Base-X Fiber Port

Entry Line Fast Ethernet Switch

Table of Contents

General

The IP protocol has already left the in-house environment and is going to take all remaining communication areas. Industrial Ethernet already is an established idea, describing the reliable use of Ethernet components in harsh environments.

Because of the large number of these applications, the market requires simple and also reliable and cost effective products. With the new Industrial Ethernet Entry Line MICROSENS fulfils these requirements. The products are very compact and include:

- 5 and 8 port Fast Ethernet switches
- 6 and 8 Port Gigabit Ethernet switches
- Switches with fiber-uplink
- Media converter for Fast Ethernet and Gigabit Ethernet
- Device Server for the conversion of serial interfaces (RS-232/422/485) to IP.

All new devices distinguish themselves with easy handling (plug & play) and do not need extensive configuration. New developments are focusing on increasing the port numbers and further implementation of Gigabit Ethernet.

Benefits

System Interface/Performance

- 4x10/100Base-TX ports
- Fiber port supports 100Base-FX speed
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store-and-forward architecture
- Non-blocking data transmission
- Supports Flow Control
- Back-plane (Switching Fabric): 1.2 Gbps
- 1 MB Packet Buffer
- 1K MAC Address Table
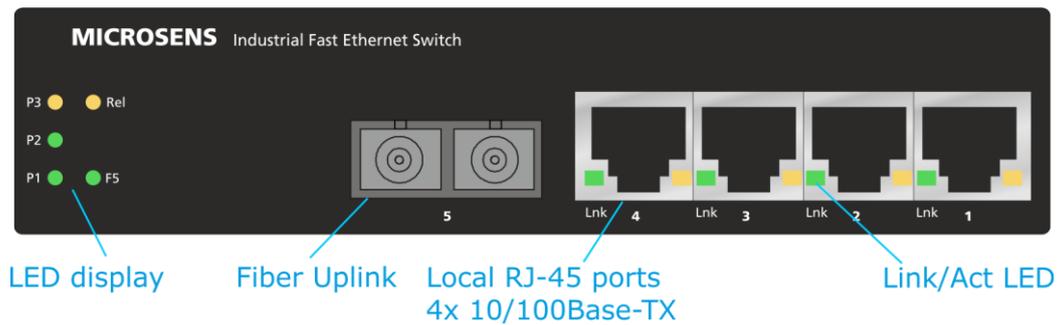- Alarm output relay for power failures

Power Supply

- 12..56 VDC Redundant Dual Power Input
- Additional Power DIN connector (P3)
- Overload current protection
- Reverse polarity protection

Chassis/Installation

- IP-30 Protection
- DIN-rail and Wall Mount Design

Front View

LED Display

There are diagnostic LED indicators located on the front panel of the industrial switch. They provide real-time information of system and operational status. The following table provides description of the LED status and their meanings for the switch.

LED	Color	Status	Meaning
P1	Green	On	Power 1 is active
		Off	Power 1 is inactive
P2	Green	On	Power 2 is active
		Off	Power 2 is inactive
P3	Green	On	Power 3 is active
		Off	Power 3 is inactive
RLY (Relay)	Red	On	Power failure (Relay status) P1 or P2 off
		Off	No failure
Port 1-4 (Lnk/Act)	Green	On	Valid link established
		Off	No link established
		Flashing	The port is transmitting or receiving data packets
Port 1-4	Amber	On	Not used
		Off	Not used
F5	Green	On	Valid link at fiber port detected
		Off	No valid link at fiber port detected
		Flashing	The port is transmitting or receiving data packets

Dimensional Drawings
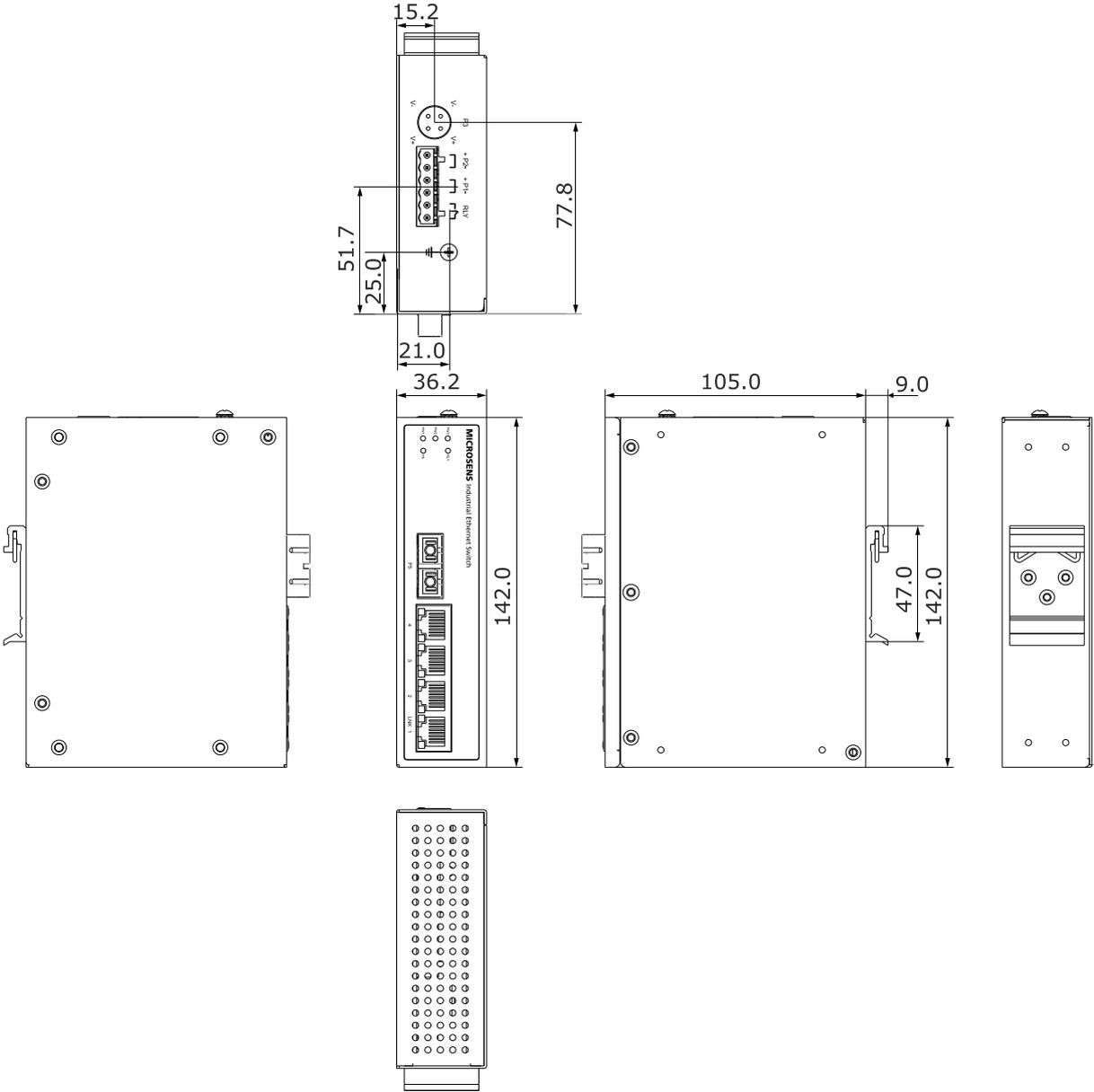
Dimensional Drawing

Mounting

The industrial switch supports two mounting methods: Wall & DIN-rail.

DIN-Rail Mounting

You can also mount industrial switch on a standard DIN-rail by below steps.

The DIN-rail kit is screwed on the industrial switch at delivery. If the DIN-rail kit is not screwed on the industrial switch, please screw it on the switch first.

1. First, hang the industrial switch to the DIN-rail with angle of inclination.

Installation to DIN-rail (Step 1)

2. Then, lightly push the DIN-rail into the track.

Installation to DIN-rail (Step 2)

3. Check if the DIN-rail is tightened on the track or not.

4. To remove the industrial switch from the track, reverse steps above.

Wall mounting

The industrial switch can be wall-mounted by using the included mounting kit.

1. First, use the screws included in the package to combine the industrial switch and metal mounting kit and remove the DIN-rail adapter.

2. Then fix the switch with some screws to the wall.

Wall mounting brackets

Power Supply / Alarm Contact

The power supply is done by an external power supply with an output voltage of 12..56 VDC. This power supply is not included at delivery, but can be ordered separately (e.g. MS700455). The connection is done by the pluggable screw terminals on the top of the device. The connection of a redundant power supply can be done by the second screw terminal. Connect positive wire to P+, negative wire to P-, also connect grounding/ earth wire to the grounding screw. Alternative the power DIN connector P3 can be used.
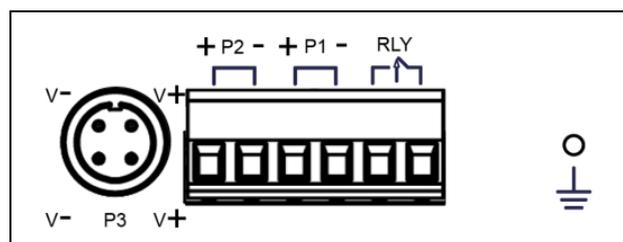
Pin out Power Connector and Alarm Contact

WARNING: Any exceeded input voltage will not make this unit function and may damage this unit!

Warning: Always ground the power source to maintain a clean power input.

The status of the alarm relay (RLY) contact depends on the power inputs P1 and P2:

| Input power condition	Relay status
Power 1 and 2 connected	Relay open
Power 1 or 2 fails	Relay closed
No power connected	Relay open

Alarm Relay functionality

Twisted Pair Connections

The integrated auto-crossing function of all twisted pair ports makes the use of crossed patch cables unnecessary. The switch automatically detects the pinout of the connected cable and adapts the port accordingly. For all connections standard 1:1 twisted pair cables can be used.

The Auto-negotiation mechanism detects automatically the speed and transmission mode (full or half duplex) between connected ports. A manual configuration is not required.

Fiber Connections

The 4x 10/100Base-TX + 1x 100Base-FX industrial switch has the SC type fiber port using in Multimode (2 km) optional Single Mode (30 km). When you connect the fiber port to another one, please follow the below figure to connect it. Wrong connection will not allow the port to work normally.
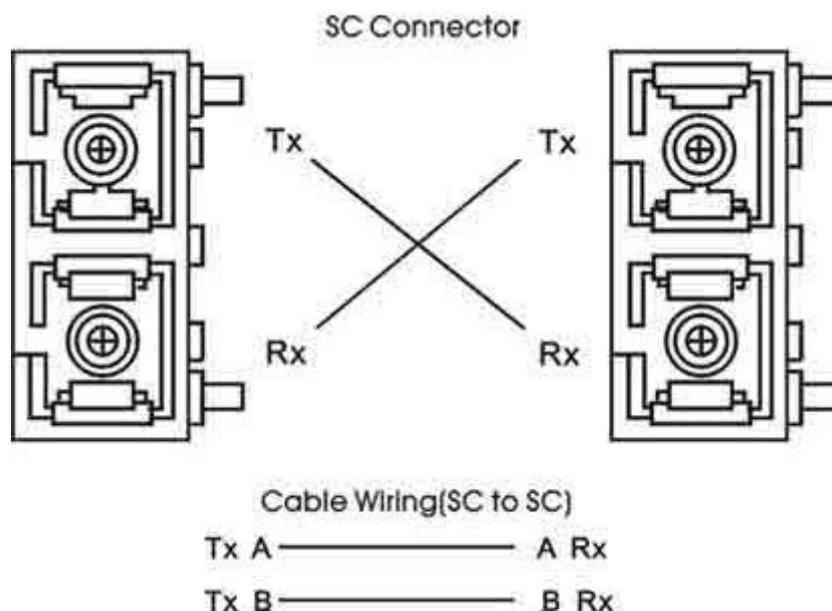
Connecting the Fiber Ports

Technical Specifications

Type	Fast Ethernet Switch 4x 10/100Base-TX 1x 100Base-FX fiber port
Fiber type	Multimode or Single Mode
Cable type	Unshielded/shielded twisted pair cable, 100 Ohm, min. category 5e
Data rate	10 or 100 Mbps
LED displays	Power 1/2/3 Alarm relay status (red) Per TX Port: (link / activity) Per FX Port: (link / activity)
Mounting	35 mm top-hat rail, according DIN EN 50 022 optional wall mounting set
Power supply	12..56 VDC connections with screw terminals, redundant ports, additional 4-pin power DIN connector (P3)
Power / relay wiring	Wire range: 0.34 mm² to 2.5 mm² Solid wire (AWG):12-24 / 14-22 Stranded wire (AWG): 12-24 / 14-22 Torque:5 lb-In / 0.5 Nm / 0.56 Nm Wire Strip length: 7-8 mm
Power consumption	Typ. 3.8 W @ 48 VDC
Alarm relay	1 A / 24 V max.
Dimensions	36.2 x 105 x 142 mm (w x d x h)
MTBF	> 500.000 h
Operating temp.	-40° C to 75° C
Storage temp.	-40° C to 85° C
Rel. humidity	5% to 95% non-condensing
EMI	EN 55022 class A
EMS	EN 61000-4-2 (ESD), EN 61000-4-3 (RS), EN 61000-4-4 (EFT), EN 61000-4-5 (Surge), EN 61000-4-6 (CS), EN 61000-4-8, EN 61000-4-11

Shock	EN 60068-2-27
Free fall	EN 60068-2-32
Vibration	EN 60068-2-6
Safety	EN 60950-1
CE	2014/30/EU EMC Directive 2011/65/EU RoHS Directive

Standard Compliance

IEEE Standards

- IEEE 802.3 10Base-T Ethernet
- IEEE 802.3u 100Base-TX Fast Ethernet
- IEEE 802.3x Flow Control and Back Pressure,

Safety Notes

WARNING: Infrared radiation as used for data transmission within the fiber optic, although invisible to the human eye, can nevertheless cause damage.

To avoid damage to the eyes:

- never look straight into the output of fiber optic components – danger of blinding!
- cover all unused optical connections with caps.
- commission the transmission link only after completing all connections.

The active laser components used with this product comply with the provisions of **Laser Class 1**.

DANGER: Conductive components of power and telecommunications networks can carry dangerously high voltage.

To avoid electric shock:

- Do not carry out installation or maintenance work during lightning storms.
- All electric installations must be carried out in accordance with local regulations.

Order Information

Art.-No.	Description	Connectors
MS657102X	Industrial Fast Ethernet Switch, 4x 10/100Base-TX, 1x 100Base-FX SC Multimode 1310nm, -40..+75°C	1x RJ-45 1x SC duplex 3x Power 1x Alarm
MS657104X	Industrial Fast Ethernet Switch, 4x 10/100Base-TX, 1x 100Base-LX SC Single Mode 1310nm max. 30km, -40..+75°C	1x RJ-45 1x SC duplex 3x Power 1x Alarm

Accessories

Art.-No.	Description	Connectors
MS700455	DIN Rail mounting power supply 50 Watt 48VDC/1.05 A, input voltage 85–264 VAC, screw terminals, temp. range -10°C..70°C	In: 3-pin Out: 4-pin
MS700456	DIN Rail mounting power supply 120 Watt 48VDC/2.5 A, input voltage 93-132/180-264 VAC, screw terminals, temp. range 35°C..70°C	In: 3-pin Out: 6-pin
MS700457	DIN Rail mounting power supply 240 Watt 48VDC/5 A, input voltage 93-132/180-264 VAC, screw terminals, temp. range -35°C..70°C	In: 3-pin Out: 6-pin

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