MICROSENS

**Quick Start Guide**

Commissioning the

12-Port 10 GbE Industrial Switch PoE+Layer2/3 managed

v0.0.1

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# 0 Overview and Aim of this Quick Start Guide

The Industrial 10 Gigabit Ethernet L2/L3 Switch from MICROSENS provides eight Gigabit Ethernet RJ-45 ports and four 10G SFP+ fiber uplink ports. All RJ-45 ports support Power-over-Ethernet (PoE+) and deliver up to 30W power per port.

The switch has extensive Layer 2 and Layer 3 management functions, such as VLANs, IGMP Snooping, QoS, RSTP, Fast Ring or Layer 3 routing. It can be easily managed via a WEB GUI (http/https), CLI (telnet/ssh/console) or SNMP.

The device is designed for a wide operating temperature range from -40 to +75° C and has a redundant power supply. It is equipped with an alarm relay that can be configured via software.

This guide will help you with

- connecting the power supply and commissioning the device,
- understanding the status LEDs and
- setting up the network management access.

**Note:**
For comprehensive information about configuring the device please refer to the following documents:

- Web manual: describes Web network management system configuration instructions.
- CLI manual: describes CLI-based configuration instructions

# 1 Safety Information

Before performing an operation, read the following operation instructions and precautions to be taken, and follow them to prevent accidents.

## 1.1 General Requirements

- Only qualified and skilled personnel must install, configure, and disassemble the device.
- When operating the device, obey the local safety regulations. The safety precautions provided in the document are supplementary and shall be in compliance with the local safety regulations.
- When operating the device, in addition to the precautions, follow the specific safety instructions.
- The installation and maintenance personnel need to understand the basic safety precautions to be taken.
- Only qualified personnel must install, configure, operate, maintain, disassemble and replace the device.
- Do not block the ventilation while the device is running. Keep a minimum distance of 5 cm from the ventilation to the walls or the other objects that block the ventilation.
- Do not operate the device in an area that exceeds the maximum recommended ambient temperature of 75°C.
- Do not place the device in the environment that has inflammable and explosive air or fog. Do not perform any operation in this environment.

## 1.2 Electric Safety

- During the installation of the AC power supply facility, follow the local safety regulations. The personnel who install the AC facility must be qualified to perform high voltage and AC operations.
- Before installing or removing the power cable, turn off the power switch.
- Before connecting the power cable, confirm that the power cable and label comply with the requirements of the actual installation.
- For the DC power supplied device, use 1.0 mm² or 16 AWG minimum power supply cord.
- It is recommended to use the type H03VV-F or light PVC sheathed flexible cord based on IEC 60227.

- Before touching the device, hand-operating parts, circuit boards, or ASICs, wear a grounded electrostatic discharge (ESD) wrist strap. It can prevent the sensitive components from damage by the static electricity in the human body.

### 1.3 Optical Safety

- When handling optical fibers, do not stand close to, or look at the optical fiber outlet directly with unaided eyes.
- Cutting and splicing fibers must be performed by the trained personnel only.
- Before cutting or splicing a fiber, ensure the fiber is disconnected from the optical source. After disconnecting the fiber, use protecting caps to protect all the optical connectors.

## 2 Display and Connections

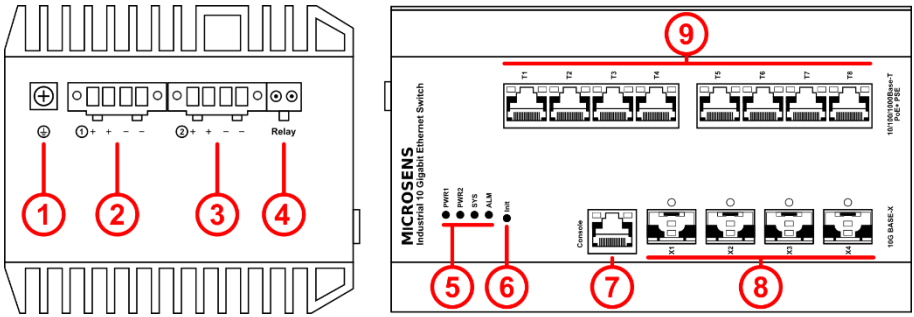


***Fig. 1: Display and Connections***

| No. | Description | No. | Description |
|---|---|---|---|
| 1 | Grounding | 5 | LED indicators (PWR1, PWR2, SYS, ALM) |
| 2 | Main power supply (48-57 VDC) | 6 | Init button |
| 3 | Redundant power supply (48-57 VDC) | 7 | Console port |
| 4 | Relay interface | 8 | 4x 10G SFP ports |
| | | 9 | 8x Gigabit PoE+ ports |

## 3 Mounting the Device

This device supports two installation methods:

- DIN-rail installation
- Wall mounted installation

**Note:**
All necessary mounting parts are provided with the enclosed mounting accessory set.

### 3.1 DIN-rail Installation

Please follow the steps below:

1. Fix the provided DIN-rail hanger to the backside of the device using the 3 screws. Use the three center holes on the backside of the device.
2. Install the device to the DIN rail.

Keep the following points in mind:

- Make sure not to pinch existing cables!
- Keep a distance of at least 5 cm to walls or nearby devices to provide ventilation and to avoid overheating.
- Position the device the way that connected cables will not cause mechanical tension on the device or its attachment.

### 3.2 Wall-mounted Installation

Please follow the steps below:

1. Fix the provided hangers to the backside of the device using 2 srews each. Use the respective holes on the top and bottom backside.
2. Drill 4 holes on the wall where the device is installed:
   - Diameter of hanger holes: 4,2 mm
   - Distance of holes per hanger: 21 mm
   - Distance of hangers: 183,8 mm
3. Insert an expansion anchor into each hole drilled in the wall, and beat the top of it with a rubber hammer until all the anchor is inserted into the wall.
4. Install the device to the wall.

Keep the following point in mind:

- When drilling holes in walls make sure not to damage flush-mounted installations like cables or pipes.

## 4 Connecting the Power Supply

**Note:**
Ground the switch housing with the grounding screw on the side of the housing (s. Fig. 1, ①)! Always make the ground connection first and disconnect it at the end.

The switch is powered by a 48…57 VDC power connection (s. Fig. 1, ②). For redundancy or load sharing reasons it is possible to connect a second power source using the same voltage with the redundant power supply port (s. Fig. 1, ③). If one source fails, the alternative source takes over the power supply without interruption.

If the switch is used to power further equipment (role "Power Sourcing Equipment – PSE"), it requires a minimum input voltage:

| | | | |
|---|---|---|---|
| 1. | Input voltage | < 44 VDC: | PSE feature disabled (neither PoE nor PoE+) |
| 2. | Input voltage | 44 – 54 VDC: | PoE possible |
| 3. | Input voltage | ≥ 50 VDC: | PoE and PoE+ possible |

### 4.1 Mains Supply

**Note:**
Ensure that the mains unit is disconnected from the building's power supply network.

### 4.2 48...57 VDC Supply

Both power supply connectors (s. Fig. 1, ② and ③) are equipped with 4-pin plug connectors. Please observe the polarity (terminal labelling ++--).

Connect positive/negative wires of DC power separately to the "+" and "-" power terminals, using a screw driver to screwing stably.

Please observe the following specifications:

- Wire range: 22...14 AWG (2.5mm²)
- Torque: 0.4Nm
- Wire strip length: 7...8mm

- Dielectric Strength: AC 2000V/1 minute
- Rating: 300V/10A

Connect the mains supply to the building's power supply network.

**Note:**
To switch of the device, always disconnect both the main and redundant power supply.

### 4.3 Starting Up

After connection to the power supply, the switch starts automatically and is ready for operation after approx. 90 s.

LED indicators "PWR1" and "PWR2" (if connected) turn green.

Connect the switch to your local network segment using a suitable connector cable.

## 5 Factory Settings

**Note:**
Please note that the factory settings may change with future firmware versions (s. section 11). For this reason we recommend that you check the release notes for information about any changes to the factory settings before carrying out a firmware update.

The switch starts with its factory settings:

- Interfaces:
  - RS232: (Sub-D9 to RJ-45) Enabled, transfer rate: 115200 bit/s, flow control: no, test mode: no, Stop bits: 1, Data bits: 8
  - SSH: Disabled
  - Telnet: Disabled
  - SNMP: Disabled
  - Web Manager: Enabled
- User level: as per "Preset User Level for Management Access" (s. section 6)
- IP configuration: DHCP disabled, default static IP address: 192.168.1.200, default subnet mask: 255.255.255.0
- Ethernet RJ-45 ports: Ports T1…T8: 10Gbit/s operation enabled in VLAN 1
- PoE+ function: Ports T1…T8: enabled
- SFP ports: Ports X1…X4: SFP inserted: 1000Base-X operation, SFP+ inserted: 10GBase-X operation

## 6 Preset User Level for Management Access

The following user level (role with specific access rights) is preset:

| User | Password | Access | Comments |
|---|---|---|---|
| admin | admin | Access privilege: 15<br>Full access rights | This user can adjust all settings of the switch. |

# 7 Notifications

## 7.1 Status LEDs

The status LEDs on the device's front side (s. Fig. 1, ⑤) have the following meaning:

- "PWR1" (main power supply), "PWR2" (redundant power supply)
  - Off – The respective power supply is off.
  - Green – The respective power supply is working.
- "SYS" (system)
  - On/Off – System failure
  - Green *blinking* – System is working normally.
- "ALM" (relay alarm)
  - Off – The device is working normally.
  - On (red) – The device alarms via the relay interface (s. section 9 for further information)

## 7.2 Port Status LEDs

### 7.2.1 Ethernet (10/100Base-TX)

The device's Ethernet copper ports (s. Fig. 1, ⑨) have two port status indicators

- Port link indicator
  - Off – Link down, no connection.
  - Green – Link up
  - Green *blinking* – Port sending or receiving data.
- Port PoE indicator
  - Off – PoE (role "PSE") disabled.
  - Orange – PoE or PoE+ enabled, port supplying power (role "PSE" active)

### 7.2.2 SFP/SFP+ (1000/10GBase-X)

The device's SFP ports s. Fig. 1, ⑧) have one port status indicator:

- lnk (Link)
  - Off – Link down, no connection.
  - Green – Link up
  - Green *blinking* – Port sending or receiving data.

# 8 Reset Button

On the front of the housing there is a reset button (s. Fig. 1, ⑥), which is accessible with a thin object.

By pressing the button longer than 5s, the switch will be restored to the original factory default setting.

**Note:**
Additionally, status messages are issued via the console port.

# 9 Relay Interface

The switch supports relay alarm function. The input port of the relay interface (s. Fig. 1, ④) adopts a removable 2-position terminal block. The interface can be connected with a warner device, such as a buzzer.

Please observe the following specifications:

- Wire range: 22...14 AWG (2.5mm²)
- Torque: 0.4Nm

- Wire strip length: 7...8mm
- Dielectric Strength: AC 2000V/1 minute
- Rating: 300V/10A

In the following three cases the switch will alarm and the ALM Indicator will turn red:

| Alarm case | Description |
|---|---|
| Power supply off | The main power supply or backup power supply is off (s. Fig. 1, ② and ③).<br>In this case, the PWR indicator of the working power supply is off.<br>Please check the main and/or redundant power supply. |
| Port network disconnected | A linking port of the Ethernet copper ports is disconnected (s. Fig. 1, ⑨).<br>In this case, the link led on the left side of a linking port is off.<br>Please check the respective network cable. |
| Port PoE off | An Ethernet copper port stops supplying PoE power.<br>In this case, the PoE indicator on right side of the port is off.<br>Please check the PoE function of the respective port. |

## 10 Access for Network Management

**Note:**
For accessing the device after starting up successfully please refer to one of the following documents:

- Web manual: describes Web network management system configuration instructions.
- CLI manual: describes CLI-based configuration instructions

## 11 Firmware Updates and Further Information

You have access to current firmware versions and further information once you have registered on our website.

### 11.1 Registration

1. In your internet browser open the address "www.microsens.com" and navigate to the page "Partner Login".
2. Follow the link "Please register here".
3. Fill out and submit the online user registration form.
4. You will receive an e-mail containing a user name and password for the partner login.

### 11.2 Login

1. In your internet browser open the address "www.microsens.com" and navigate to the page "Partner Login".
2. Enter your username and your password.
3. Click the button "Login".
4. To find your switch quickly, enter the item number of your switch into the search box on the website.

### 11.3 Firmware Image File

Please navigate to your switch and select the tab "Services". This tab contains recent download files for your device.

Upload the firmware image file to the device by using the Web Manager. For further information please refer to the web manual of your device.

### 11.4 MICROSENS Support

For further questions please contact our support:

- E-mail: support@microsens.com
- Phone: +49 (0)2381 9452-345 (Mo. – Fr., 7:30 AM – 04:00 PM CET)

## 12 DECLARATION OF CONFORMITY

The following information is for CE compliance of Class A and Class B devices:

This equipment has been tested and found to comply with the limits for a Class A digital device.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## 13 Specifications

| Item | Description |
|---|---|
| **Ethernet Ports** | |
| Copper Ports | 8* 10/100/1000Base-T PoE RJ45 (Auto-MDI/MDI-X) |
| SFP Ports | 4*1000M/10G Base-X SFP (Mini-GBIC) |
| Console Port | 1*RJ45-R232 serial port (115200,8,N,1) |
| PoE | |
| PoE Standard | IEEE 802.3af/at (PSE) |
| PSE Type | End-span |
| Power Pin Assignment | 1/2(+),3/6(-) |
| PoE Power Output | 46...55V DC |
| PoE Power | 30W for each port, 240W max. |
| **Switch Property** | |
| Standards | IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z, IEEE 802.3x, IEEE 802.1Q, IEEE 802.1p, IEEE 802.3ad, IEEE 802.1D, IEEE 802.1x |
| Switch Architecture | Store and Forward |
| Packet Buffer | 12Mbit |
| MAC Table | 16k, supported auto learning |
| Switching Capacity | 96Gbps / non-blocking |

| Item | Description |
|---|---|
| Packet Forwarding Rate | 71.4Mpps |
| Jumbo Frame | 9kB |
| **Power Supply** | |
| Input Voltage | Power 1 (Main): 48...57V DC,<br>Power 2 (Backup): 48...57V DC |
| Power Consumption | 260W(Including PoE) |
| **Reliability** | |
| Surge Immunity | 6kV, Standard: IEC61000-4-5 |
| ESD | 8kV Contact discharge, 15kV Air discharge, Standard: IEC61000-4-2 |
| MTBF | 310972h |
| MTBF Standards | Telcordia SR-332, 25°C |
| Protection Level | IP40 |
| Work Temperature | -40...75°C |
| Storage Temperature | -40...85°C |
| Humidity | 0...95% (Non-condensation) |
| **Physical parameters** | |
| Dimension（W*D*H) | 163mm*110mm*95.6mm |
| Gross Weight | 1900g±15g |
| Net Weight | 1620g±15g |
| Material | Aluminum |
| **Certifications** | |
| Certifications | CE, RoHS |

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