

# Unmanaged Fast Ethernet Switch BasicLine

---

**IE-SW-BL05 Series** (from product Rev. 2.0.2)

**IE-SW-BL08 Series** (from product Rev. 2.0.0)

## Hardware Installation Guide

**Fifth Edition, June 2018**  
**1243320000/04/06.18**

### **Important note:**

This document and additional product information can be downloaded using following link:

<http://www.weidmueller.com>

### ► Select **Product Catalogue**

- ⇒ Select „Active Industrial Ethernet “
  - ⇒ Select „BasicLine unmanaged Switches “
  - ⇒ Select Product model
    - ⇒ Click and expand section „Downloads “
    - ⇒ Download needed software or documentation

### **Copyright Notice**

Copyright © 2018 Weidmüller Interface GmbH & Co. KG  
All rights reserved.  
Reproduction without permission is prohibited.

**Weidmüller** 

## Overview

The IE-SW-BL05/08 series of industrial Ethernet switches are entry-level industrial 5 and 8-port Ethernet switches that support IEEE 802.3, IEEE 802.3u, and IEEE 802.3x with 10/100M, full/half-duplex, and MDI/MDIX auto-sensing.

The IE-SW-BL05/08 series provides 12/24/48 VDC (9.6 to 60 VDC) redundant power inputs. The switches are available with a standard operating temperature range from -10 to 60°C, or with a wide operating temperature range from -40 to 75°C, and IP30 metal housing makes them rugged enough for any harsh industrial environment.

To provide greater versatility for use with applications from different industries, the IE-SW-BL05/08 series also allow users to enable or disable broadcast storm protection with DIP switches on the outer panel.

The IE-SW-BL05/08 switches can be easily installed with DIN-Rail mounting as well as distribution boxes. The DIN-rail mounting capability and IP30 metal housing with LED indicators make the plug-and-play IE-SW-BL05/08 switches reliable and easy to use.



### ATTENTION

This device complies with part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

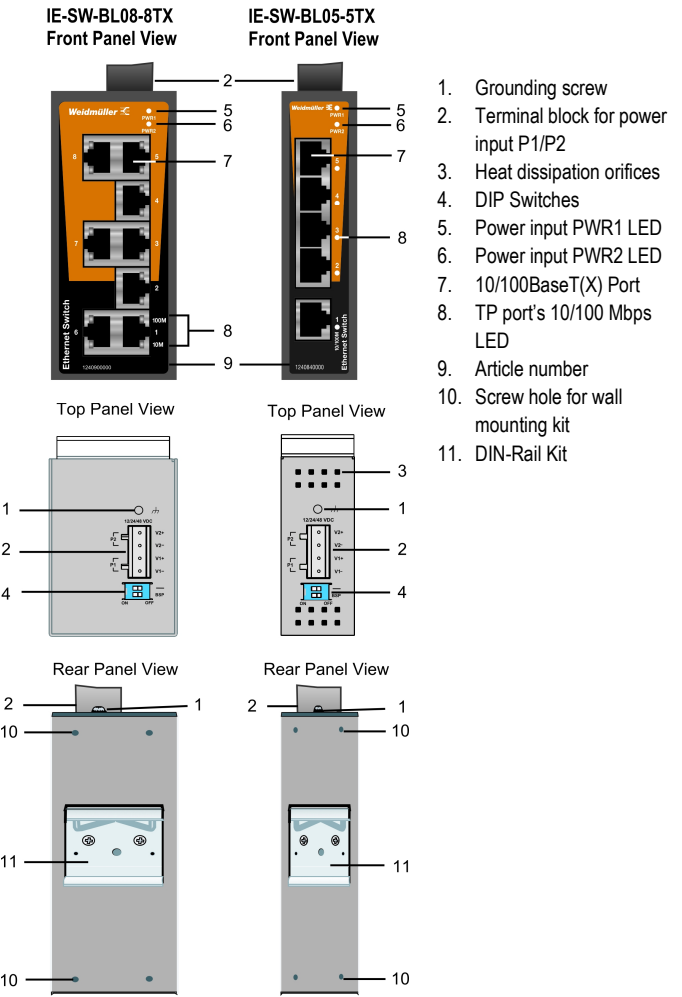
## Package Checklist

Your Ethernet Switch is shipped with the following items. If any of these items is missing or damaged, please contact your Weidmüller customer service for assistance.

- Ethernet Switch
- Hardware Installation Guide (printed)

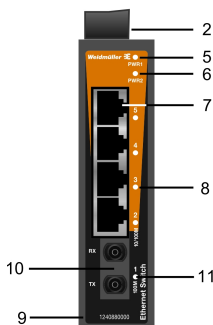
# Panel Layout of

## IE-SW-BL05(T)-5TX / IE-SW-BL08(T)-8TX

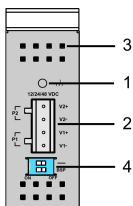


## Panel Layout of IE-SW-BL05(T)-4TX-1SC/1ST

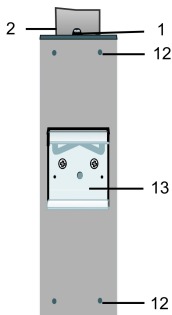
IE-SW-BL05-4TX-1ST  
Front Panel View



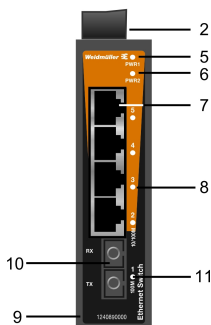
Top Panel View



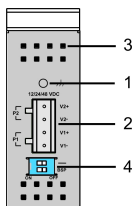
### Rear Panel View



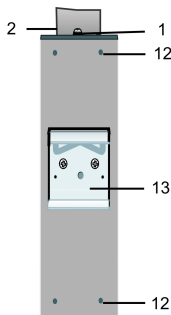
**IE-SW-BL05-4TX-1SC**  
**Front Panel View**



Top Panel View



### Rear Panel View



NOTE:

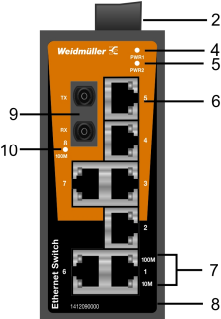
The appearance of  
IE-SW-BL05-4TX-1SC  
is identical to  
IE-SW-BL05-4TX-1SCS.

1. Grounding screw
2. Terminal block for power input PWR1 / PWR2
3. Heat dissipation orifices
4. DIP Switches
5. Power input PWR1 LED
6. Power input PWR2 LED
7. 10/100BaseT(X) Port
8. TP port's 10/100 Mbps LED
9. Article number
10. 100BaseFX Port
11. FX port's 100 Mbps LED
12. Screw hole for wall mounting kit
13. DIN-Rail Kit

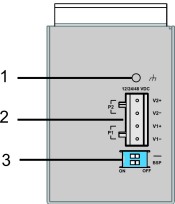
# Panel Layout of

## IE-SW-BL08(T)-7TX-1SC/1ST

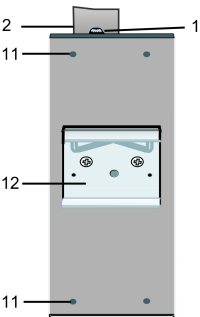
IE-SW-BL08-7TX-1SC  
Front Panel View



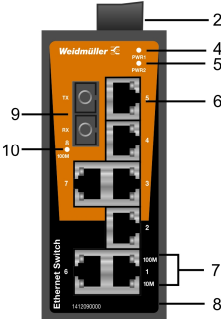
Top Panel View



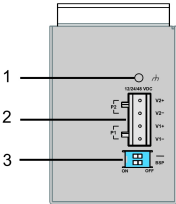
Rear Panel View



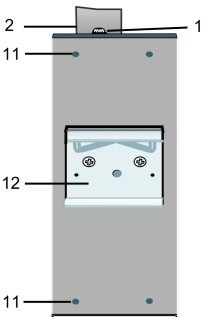
IE-SW-BL08-7TX-1ST  
Front Panel View



Top Panel View



Rear Panel View



### NOTE:

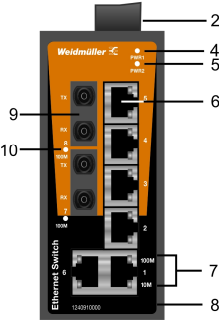
The appearance of IE-SW-BL08-7TX-1SC is identical to IE-SW-BL08-7TX-1SCS.

1. Grounding screw
2. Terminal block for power input PWR1 / PWR2
3. DIP Switches
4. Power input PWR1 LED
5. Power input PWR2 LED
6. 10/100BaseT(X) Port
7. TP port's 10/100 Mbps LED
8. Article number
9. 100BaseFX Port
10. FX port's 100 Mbps LED
11. Screw hole for wall mounting kit
12. DIN-Rail Kit

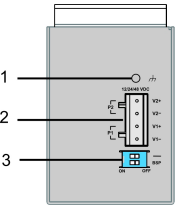
# Panel Layout of

## IE-SW-BL08(T)-6TX-2SC/2ST

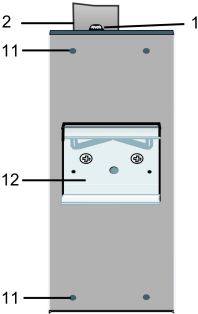
IE-SW-BL08-6TX-2SC  
Front Panel View



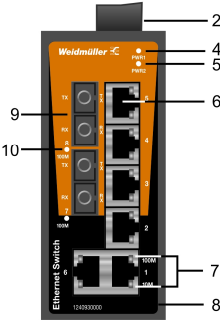
Top Panel View



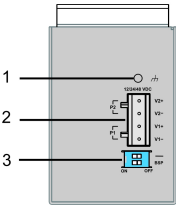
Rear Panel View



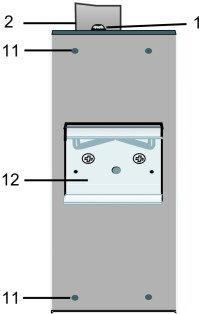
IE-SW-BL08-6TX-2ST  
Front Panel View



Top Panel View



Rear Panel View



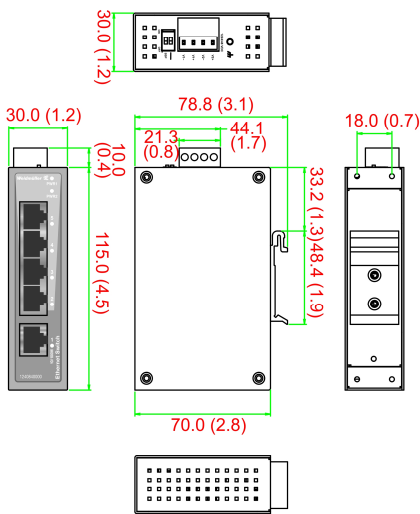
**NOTE:**  
The appearance of IE-SW-BL08-6TX-2SC is identical to IE-SW-BL08-6TX-2SCS.

1. Grounding screw
2. Terminal block for power input PWR1 / PWR2
3. DIP Switches
4. Power input PWR1 LED
5. Power input PWR2 LED
6. 10/100BaseT(X) Port
7. TP port's 10/100 Mbps LED
8. Article number
9. 100BaseFX Port
10. FX port's 100 Mbps LED
11. Screw hole for wall mounting kit
12. DIN-Rail Kit

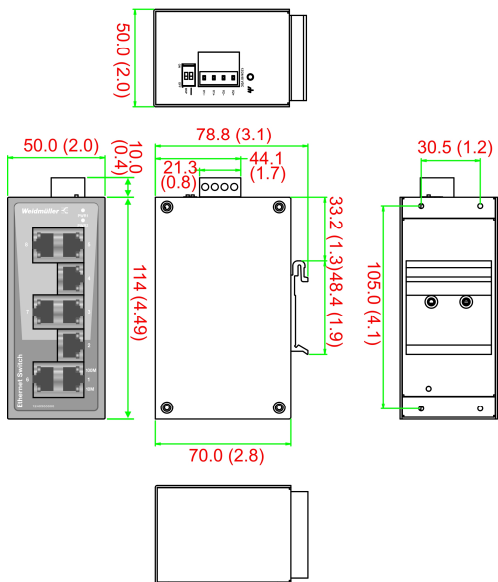
# Mounting Dimensions

IE-SW-BL05 series

Unit = mm (inch)

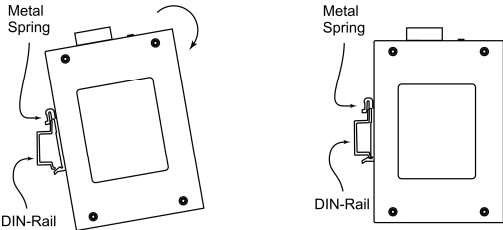


IE-SW-BL08 series



# DIN-Rail Mounting

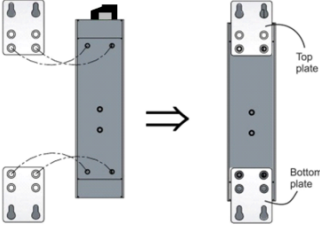
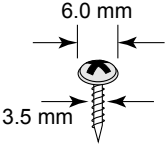
The aluminum DIN-rail attachment plate should already be fixed to the back panel of the Ethernet Switch when you take it out of the box. If you need to reattach the DIN-rail attachment plate, make sure the stiff metal spring is situated towards the top, as shown in the figures below.

|   |   |
|---|---|
| <b>STEP 1:</b><br>Insert the top of the DIN-Rail into the slot just below the stiff metal spring. | <b>STEP 2:</b><br>The DIN-Rail attachment unit will snap into place as shown below. |
|                  |   |

To remove the DIN-rail from the Ethernet Switch, simply reverse Steps 1 and 2.

# Wall Mounting (optional)

For some applications, you will find it convenient to mount the Ethernet switch on the wall, as shown in the following figures.

|   |   |  |
|---|---|--|
| <b>STEP 1:</b> Remove the aluminum DIN-Rail attachment plate from the switch rear panel, and then attach the wall mount plates as shown in the diagram at the right.  |  |  |
| <b>STEP 2:</b><br>Mounting the switch on the wall requires 4 screws. Use the switch, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right. |  |  |

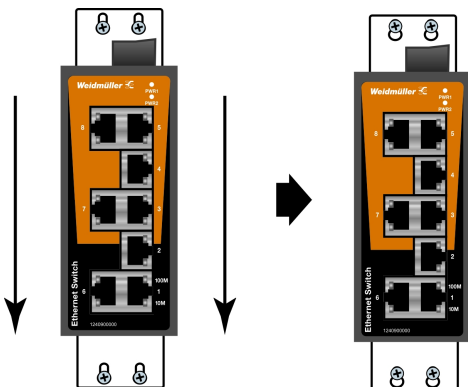
**NOTE** Before tightening the screws into the wall, make sure the screw head and shank size are suitable by inserting the screw into one of the keyhole-shaped apertures of the wall mounting plates.

Do not screw the screws in completely—leave about 2 mm to allow room for sliding the wall mount panel between the wall and the screws



### STEP 3:

Once the screws are fixed on the wall, insert the four screw heads through the large parts of the keyhole-shaped apertures, and then slide the switch downwards, as indicated. Tighten the four screws for added stability.



## ATEX Information

1. Certificate number DEMKO 11 ATEX 150194X
2. Ambient range :  $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 75^{\circ}\text{C}$
3. Certification string: Ex nA nC IIC T4 Gc
4. Standards covered:  
EN 60079-0:2012+A11:2013, EN 60079-15:2010
5. The conditions of safe usage:
  - Subject devices are to be installed in an ATEX certified IP54 enclosure accessible only with use of a tool and used in an area of not more than pollution degree 2 as defined by EN 60664-1.
  - Provisions shall be made to provide the transient protection device to be set at a level not exceeding 140% of the peak rated voltage.
  - Subject devices must use conductors suitable for use at an ambient temperature of  $100^{\circ}\text{C}$  and must be suitable for the Power Supply Terminal.

**NOTE** Suitable for use in Class I, Division 2, Groups A, B, C and D hazardous locations, or nonhazardous locations only.



### WARNING

**EXPLOSION HAZARD** - Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.



### **WARNING**

EXPLOSION HAZARD - Substitution of any component may impair suitability for Class 1, Division 2

## **Wiring Requirements**



### **WARNING**

#### **Safety First!**

Turn the power off before disconnecting modules or wires. The proper power supply voltage is listed on the product label. Check the voltage of your power source to make sure you are using the correct voltage. Do NOT use a voltage greater than what is specified on the product label.

These devices must be supplied by a SELV source as defined in the Low Voltage Directive 2014/35/EU and 2014/30/EU.



### **WARNING**

#### **Safety First!**

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following items:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.  
NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring with similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separated.
- It is strongly advised that you label wiring for all devices in the system when necessary.

## **Grounding Ethernet Switch**

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

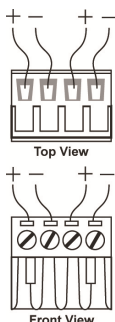


## ATTENTION

This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

## Wiring the Redundant Power Inputs

The top two contacts and the bottom two contacts of the 4-contact terminal block connector on the Ethernet Switch's top panel are used for the Ethernet Switch's two DC inputs. Top and front views of the terminal block connector are shown here.



**STEP 1:** Insert the negative/positive DC wires into the V-/V+ terminals.

**STEP 2:** To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

**STEP 3:** Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on Ethernet Switch's top panel.



## ATTENTION

Before connecting the Ethernet Switch to the DC power inputs, make sure the DC power source voltage is stable.

**NOTE** For use in Pollution Degree 2 Environments.  
Wiring terminals shall be marked to indicate the proper connections for power supply and load, or a wiring diagram coded to the terminal marking shall be securely attached to the device, and "Use Copper Conductors Only, Tighten to 4.5 pound-in."

## Communication Connections

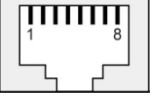
The 5-Port models have 4 or 5 10/100BaseT(X) Ethernet ports, and 1 or 0 (zero) 100 BaseFX multi/single-mode (SC/ST-type connector) fiber ports. The 8-Port models have 6, 7 or 8 10/100BaseT(X) Ethernet ports, and 2, 1 or 0 (zero) 100 BaseFX multi/single-mode (SC/ST-type connector) fiber ports.

### 10/100BaseT(X) Ethernet Port Connection

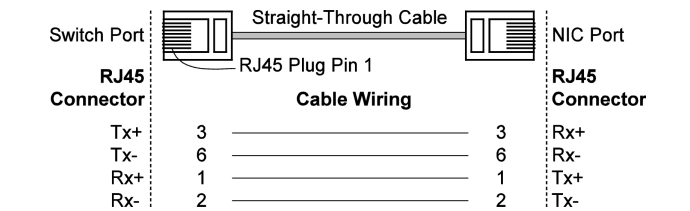
The 10/100BaseT(X) ports located on Ethernet Switch's front panel are used to connect to Ethernet-enabled devices. Below we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports, and also show cable wiring diagrams for straight-through and cross-over Ethernet cables.

10/100Base T(x) RJ45 Pinouts

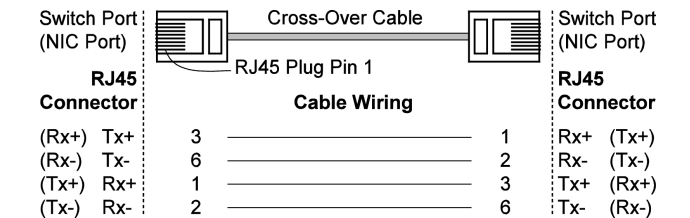
| MDI Port Pinouts |        | MDI-X Port Pinouts |        | 8-pin RJ45 |
|------------------|--------|--------------------|--------|------------|
| Pin              | Signal | Pin                | Signal |            |
| 1                | Tx+    | 1                  | Rx+    |            |
| 2                | Tx-    | 2                  | Rx-    |            |
| 3                | Rx+    | 3                  | Tx+    |            |
| 6                | Rx-    | 6                  | Tx-    |            |



RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring



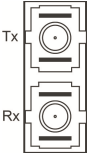
RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



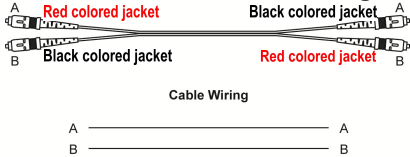
100BaseFX Ethernet Port Connection (Fiber)

Remember to connect the Tx (transmit) port of device 1 to the Rx (receive) port of device 2, and the Rx (receive) port of device 1 to the Tx (transmit) port of device 2. Fiber optic connections generally are using the full-duplex transmission mode.

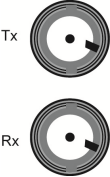
SC-Port Pinouts



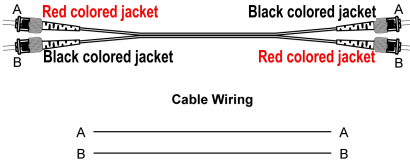
SC-Port to SC-Port Cable Wiring



ST-Port Pinouts



ST-Port to ST-Port Cable Wiring





## ATTENTION

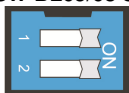
This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

## Redundant Power Inputs

Both power inputs can be connected simultaneously to live DC power sources. If one power source fails, the other live source acts as a backup, and automatically supplies all of the Ethernet Switch's power needs.

## DIP Switch Settings

### IE-SW-BL05/08 Series DIP Switches



BSP

----

The default setting for each DIP Switch is OFF. The following table explains the effect of setting the DIP Switches to the ON positions.

| DIP Switch | Setting | Description                                   |
|------------|---------|---|
| ----       | —       | Serves no function (reserved for future use). |
| BSP        | ON      | Enables broadcast storm protection            |
|            | OFF     | Disables broadcast storm protection           |



## ATTENTION

To actively update DIP switch settings, power off and then power on the Ethernet Switch.

## LED Indicators

The front panel of the Ethernet Switch contains several LED indicators. The function of each LED is described in the table below.

| LED  | Color  | State    | Description   |
|------|--------|----------|---|
| PWR1 | AMBER  | On       | Power is being supplied to power input PWR1.            |
|      |        | Off      | Power is <b>not</b> being supplied to power input PWR1. |
| PWR2 | AMBER  | On       | Power is being supplied to power input PWR2.            |
|      |        | Off      | Power is <b>not</b> being supplied to power input PWR2. |
| 10M  | YELLOW | On       | Port's 10 Mbps link is active.                          |
|      |        | Blinking | Data is being transmitted at 10 Mbps.                   |
|      |        | Off      | Port's 10 Mbps link is inactive                         |
| 100M | GREEN  | On       | Port's 100 Mbps link is active.                         |
|      |        | Blinking | Data is being transmitted at 100 Mbps.                  |
|      |        | Off      | Port's 100Mbps link is inactive.                        |

## Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows connecting devices to an Ethernet Switch's 10/100BaseT(X) port without paying attention to the type of Ethernet cable being used for the connection. This means that you can use either a straight-through cable or cross-over cable to connect devices to the Ethernet Switch.

## Auto-Negotiation and Speed Sensing

Each RJ45 Ethernet port independently supports auto-negotiation for recognizing the transmission speed 10 Mbps or 100 Mbps according to the IEEE802.3 standard. This means that some of connected Ethernet devices could operate at 10 Mbps, while at the same time other nodes are operating at 100 Mbps. Auto-negotiation takes place each time when a RJ45 cable connection is made and a link will be established. The Ethernet Switch advertises its capability for using 10 or 100 Mbps transmission speed to the connected device and expects this also from the connected device. This procedure results in an agreement to operate at a speed of either 10 or 100 Mbps.

## Auto-Negotiation and Transmission Mode

Besides the transmission speed, each RJ45 port auto-negotiates the transmission mode (half duplex or full duplex). Typically, if both devices are set to "auto-negotiation", the full duplex transmission will be set.

### **Note about possible loss of data packages in case of "Duplex mismatching"**

If the switch's auto-negotiation port is connected to a non-negotiating device, then the Switch will set its port transmission speed same as the connected device but is unable to correctly detect the duplex mode. As result the port is set to the correct speed but is using always the half duplex mode as required by the IEEE 802.3u standard in such cases. For correct transmission, the non-negotiating port must be set to half-duplex mode (speed either 10 Mbps or 100 Mbps).

## Specifications

| Technology      |  |
|-----------------|--|
| Standards       | IEEE 802.3 for 10BaseT,<br>IEEE 802.3u for 100BaseT(X) and 100Base FX,<br>IEEE 802.3x for Flow Control |
| Flow Control    | IEEE 802.3x flow control, back pressure flow control   |
| Processing Type | Store and Forward  |
| Interface       |  |
| RJ45 Ports      | 10/100BaseT(X) auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection                   |
| Fiber Ports     | 100BaseFX ports (SC/ST connector, multi/single-mode)   |
| LED Indicators  | PWR1, PWR2 (Power), 10/100M (TP-Port) and 100M (Fiber port)  |
| DIP Switches    | Enable/disable broadcast storm protection  |

| Optical Fiber  |                         |  |                         |              |
|--|-------------------------|--|-------------------------|--------------|
|  |                         | 100Base FX   |                         |              |
|  |                         | Multi-mode   | Single-mode             |              |
| Fiber Cable Type   |                         | OM1  | 50/125 μm<br>800 MHz*Km | G.652        |
| Typical Distance   |                         | 4 km   | 5 km                    | 40 km        |
| Wavelength   | Typical (nm)            | 1300   |                         | 1310         |
|  | TX Range (nm)           | 1260 to 1360   |                         | 1280 to 1340 |
|  | RX Range (nm)           | 1100 to 1600   |                         | 1100 to 1600 |
| Optical Power  | TX Range (dBm)          | -10 to -20   |                         | 0 to -5      |
|  | RX Range (dBm)          | -3 to -32  |                         | -3 to -34    |
|  | Link Budget (dB)        | 12   |                         | 29           |
|  | Dispersion Penalty (dB) | 3  |                         | 1            |
| Note: When connecting 40 km single-mode fiber over a short distance, we recommend putting an attenuator to prevent the transceiver from being damaged by excessive optical power.        |                         |  |                         |              |
| Typical Distance: To reach the typical distance of a specified fiber transceiver, please refer to the following formula: Link budget(dB) > dispersion penalty(dB) + total link loss(dB). |                         |  |                         |              |
| Power  |                         |  |                         |              |
| Input Voltage  |                         | 12/24/48 VDC (9.6 to 60 VDC),<br>2 redundant inputs  |                         |              |
| Input Current @ 24 VDC   |                         | 0.1 A (IE-SW-BL05-5TX)<br>0.11 A (IE-SW-BL05-4TX-1SC/1SCS/1ST)<br>0.07 A (IE-SW-BL08-8TX)<br>0.1 A (IE-SW-BL08-7TX-1SC/1ST)<br>0.11 A (IE-SW-BL08-7TX-1SCS)<br>0.14 A (IE-SW-BL08-8TX-2SC/2ST)<br>0.15 A (IE-SW-BL08-6TX-2SCS) |                         |              |
| Connection   |                         | One removable 4-pin terminal block   |                         |              |
| Inrush current   |                         | IE-SW-BL05 series:<br>Max. 6.24A @ 24VDC (0.1 - 1ms)<br>IE-SW-BL08 series:<br>Max. 8.81A @ 24VDC (0.1 - 1ms)   |                         |              |
| Overload Current Protection  |                         | Present  |                         |              |
| Reverse Polarity Protection  |                         | Present  |                         |              |
| Physical Characteristics   |                         |  |                         |              |
| Housing  |                         | IP30 protection, metal case  |                         |              |
| Dimension (W x H x D)  |                         | IE-SW-BL05 series: 30x 115 x 70 mm<br>IE-SW-BL08 series: 50x 114 x 70 mm   |                         |              |
| Weight   |                         | IE-SW-BL05 series: 175 g<br>IE-SW-BL08 series: 275 g   |                         |              |
| Installation   |                         | DIN-rail, Wall Mounting (with optional kit)  |                         |              |
| Environmental  |                         |  |                         |              |
| Operating Temperature  |                         | -10 to 60°C (14 to 140°F)<br>-40 to 75°C (-40 to 167°F) for -T models  |                         |              |
| Storage Temperature  |                         | -40 to 85°C (-40 to 185°F)   |                         |              |
| Ambient Relative Humidity  |                         | 5 to 95% (non-condensing)  |                         |              |

| <b>Regulatory Approvals</b> |   |
|-----------------------------|---|
| Safety                      | UL 508  |
| Hazardous Location          | UL/cUL Class I, Division 2, Groups A, B, C, and D;<br>ATEX Zone 2, Ex nA nC IIC T4 Gc   |
| Maritime                    | IE-SW-BL05 series: DNV, GL<br>IE-SW-BL08 series: IEC 60945, Pending: DNV, GL  |
| EMI                         | FCC Part 15, CISPR (EN 55032) class A   |
| EMS                         | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 |
| Shock                       | IEC 60068-2-27  |
| Free Fall                   | IEC 60068-2-32  |
| Vibration                   | IEC 60068-2-6   |
| <b>MTBF</b>                 |   |
| Time                        | IE-SW-BL05 series: 3.040.784 hrs<br>IE-SW-BL08 series: 2.701.531 hrs  |
| Database                    | Telcordia (Bellcore), GB  |
| <b>Warranty</b>             |   |
| Time Period                 | 5 years   |



### **WARNING**

This equipment is intended to be used in a restricted access location.

**HOT SURFACE!!** Before touching it, special attention or protection is required.

Weidmüller gives a 5-year warranty on this product in accordance with the warranty terms as described in the general conditions of sale of the Weidmüller company which has sold the products to you. Weidmüller warrants to you that such products the defects of which have already existed at the time when the risk passed will be repaired by Weidmüller free of charge or that Weidmüller will provide a new, functionally equivalent product to replace the defective one. Safe where expressly described otherwise in writing in this catalogue/product description, Weidmüller gives no warranty or guarantee as to the interoperability in specific systems or as to the fitness for any particular purpose. To the extent permitted by law, any claims for damages and reimbursement of expenses, based on whatever legal reason, including contract or tort, shall be excluded. Where not expressly stated otherwise in this warranty, the general conditions of purchase and the expressive liability commitments therein of the respective Weidmüller company which has sold the products to you shall be applicable.

### **Contact Information**

Weidmüller Interface GmbH & Co. KG  
Postfach 3030  
32760 Detmold  
Klingenbergstraße 16  
32758 Detmold / Germany

Phone +49 (0) 5231 14-0  
Fax +49 (0) 5231 14-292083  
E-Mail [info@weidmueller.com](mailto:info@weidmueller.com)  
Internet [www.weidmueller.com](http://www.weidmueller.com)