

800xA Networks

NE801

User Manual

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Safety

Warning



Do not look directly into fibre optical fibre port or any connected fibre although this unit is designed to meet the Class 1 Laser regulations.

To reduce the risk of fire, use on No. 26 AWG or larger telecommunication line cord.

Licensing Information

This device contains public available software which is under the GPL license. For more information see legal.pdf included with all firmware releases. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit- <http://www.openssl.org>.

Section 1 Industrial Ethernet 5-port Switch

The NE801 is an Industrial Ethernet 5-port switch. All ports support auto-negotiation, but DIP-switches also allow speed and duplex configuration of any individual TX port. It is also possible to set up one port to monitor traffic to/from the switch. The NE801 has been designed to meet high industrial specifications, providing very high dependability in harsh environmental conditions.

Features

- TX shields individually isolated
- Wide DC power range 12 – 48 VDC
- Wide temperature range
- Automatic MDI/MDI-X crossover
- LED indicators for Power, Speed, Duplex, Link and Traffic
- Port monitoring
- 35 mm DIN rail mounting
- Enable or disable of flow control

Example of Applications

- 5-port Switch
- Ethernet isolator, for STP networks

Section 2 Interface Specifications

| Power NE801 | |
|-------------------|-----------------------------------------|
| Rated Voltage | 12 –48 VDC, polarity protected |
| Operating voltage | 9.6 – 57.6 VDC |
| Rated Current | 350 mA @12 |
| Rated frequency | DC |
| Startup current* | 2 x Rated current |
| Connection | Detachable screw terminal |
| Connector size | 0.2 – 2.5 mm ² (AWG 24 – 12) |

| Ethernet TX | |
|--------------------------|---------------------------------------|
| Electrical specification | IEEE std 802.3. 2000 Edition |
| Data rate | 10 Mbit/s, 100 Mbit/s, manual or auto |
| Duplex | Full or half, manual or auto |
| Connection | RJ-45 |
| Circuit type | SELV |
| Transmission range | 100m |

| Ethernet FX | |
|--------------------------|------------------------------|
| Electrical specification | IEEE std 802.3. 2003 Edition |
| Data rate | 100 Mbit/s |
| Duplex | Full or half, manual or auto |
| Transmission range | 2km |
| Connection | LC |
| Circuit type | Optical |
| Number of ports | 1 |

Connections

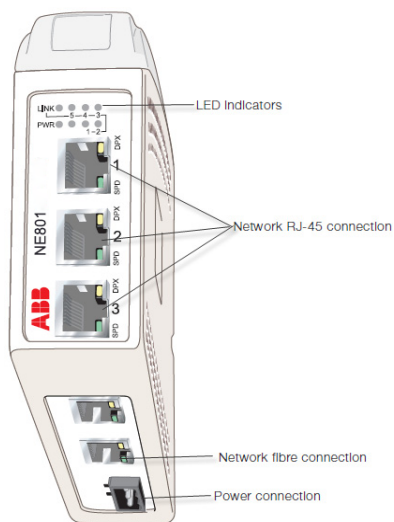


Figure 1. Connections

Power

The NE801 supports redundant power connection. The positive input are +VA and +VB, the negative input for both supplies are COM. The power is drawn from the input with the highest voltage. [Figure 2](#) shows the screw terminal.

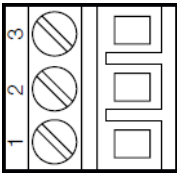


Figure 2. Screw Terminal

| 3-pos screw terminal | Description | Power |
|----------------------|-------------|-------------------|
| 1 | COM | 0 V |
| 2 | +VA | A: 9.6 – 57.6 VDC |
| 3 | +VB | B: 9.6 – 57.6 VDC |

TX

Ethernet TX connection (RJ-45 connector), automatic MDI/MDI-X crossover as shown in [Figure 3](#).

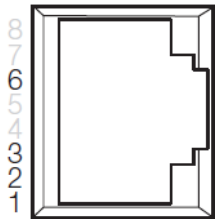


Figure 3. Ethernet TX Connection

| Contact | Signal Name | Direction | Description/Remark |
|---------|-------------|-----------|---------------------------|
| 1 | TD+ | In/Out | Transmitted/Received data |
| 2 | TD- | In/Out | Transmitted/Received data |
| 3 | RD+ | In/Out | Transmitted/Received data |
| 4 | - | - | - |
| 5 | - | - | - |
| 6 | RD- | In/Out | Transmitted/Received data |
| 7 | - | - | - |
| 8 | - | - | - |
| Shield | - | - | HF-connected |



CAT 5 cable is recommended. Unshielded (UTP) or shielded (STP) connector might be used.

FX LC Multi- or Single Mode (Optional)

Figure 4 shows the 1310nm multimode fibre transceiver with LC-connector, and indicated range 2km. The dust protection plug shall be mounted when no fibre is connected.

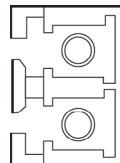


Figure 4. Ethernet FX connection

LED Indicators

At power on the PWR flashes during initializing.

| Indicators (LED) | Power (PWR) |
|------------------------------------------|-------------|
| Link (LINK) of every port | |
| Speed (SPD) and duplex (DPX) of TX ports | |

| LED | Status | Indication |
|-----------|------------|--------------------------------------------------------------|
| PWR | ON | Internal power, initializing OK |
| | Slow flash | Initialization progressing |
| | Fast flash | Initialization error |
| LINK | OFF | No Ethernet link |
| | ON | Good Ethernet link |
| | FLASH | Ethernet data is transmitted or received, traffic indication |
| SPD | OFF | 10 Mbit/s |
| (TX only) | ON | 100 Mbit/s |
| DPX | OFF | Half duplex |
| (TX only) | ON | Full duplex |

DIP Switch Settings NE801

DIP-switches are accessible under the lid on top of the unit as shown in [Figure 5](#). DIP-switches are used to configure the unit.

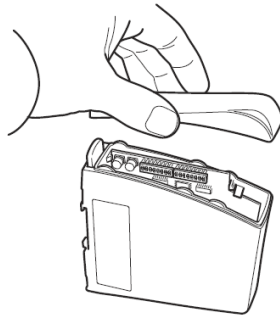


Figure 5. DIP Switch Settings



Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap), before the lid on top/front of the unit is removed.



Do not open the connected equipment. Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.









When configuration via DIP-switches, the settings of DIP-switches configure the unit only after a reboot (power off/on).







To be observe when the DIP-switches will be configured,

- speed and duplex setting only valid when auto-negotiation is disabled.
- when monitoring selected all outgoing packets from the switch is also copied to the port 1.
- speed and duplex switch settings are ignored for FX ports.
- If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X configuration.







Port 1 settings

- S1  Auto-negotiation and auto MDI/MDI-X disabled
- S1  Auto-negotiation and auto MDI/MDI-X enabled
- S1  10 Mbit/s speed selected
- S1  100 Mbit/s speed selected
- S1  Half duplex selected
- S1  Full duplex selected







Port 3 settings

- S1  Auto-negotiation and auto MDI/MDI-X disabled
- S1  Auto-negotiation and auto MDI/MDI-X enabled
- S1  10 Mbit/s speed selected
- S1  100 Mbit/s speed selected
- S2  Half duplex selected
- S2  Full duplex selected



Port 2 settings

- S1  Auto-negotiation and auto MDI/MDI-X disabled
- S1  Auto-negotiation and auto MDI/MDI-X enabled
- S1  10 Mbit/s speed selected
- S1  100 Mbit/s speed selected
- S1  Half duplex selected
- S1  Full duplex selected

Port 4 settings

- S2  Auto-negotiation and auto MDI/MDI-X disabled
- S2  Auto-negotiation and auto MDI/MDI-X enabled
- S2  10 Mbit/s speed selected
- S2  100 Mbit/s speed selected
- S2  Half duplex selected
- S2  Full duplex selected

Port mirroring settings

- S2  No monitoring selected
- S2  Monitoring selected

Factory settings

- S1 
- S2 

Section 3 Installation



Before mounting or removing the unit: Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap). Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

Mounting

This subsection describes on how to mount and remove the device.

Mounting

This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate as shown in [Figure 6](#).

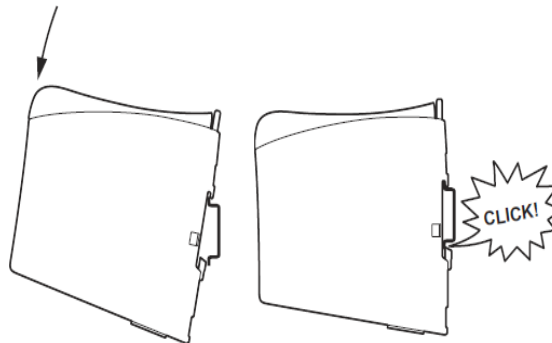


Figure 6. Mounting the Device

This unit uses convection cooling. To avoid obstructing the airflow around the unit, use the following spacing rules. Recommended spacing 25 mm (1.0 inch)

above/below and 10 mm (0.4 inches) left/right the unit. Snap on mounting as shown in Figure 7.

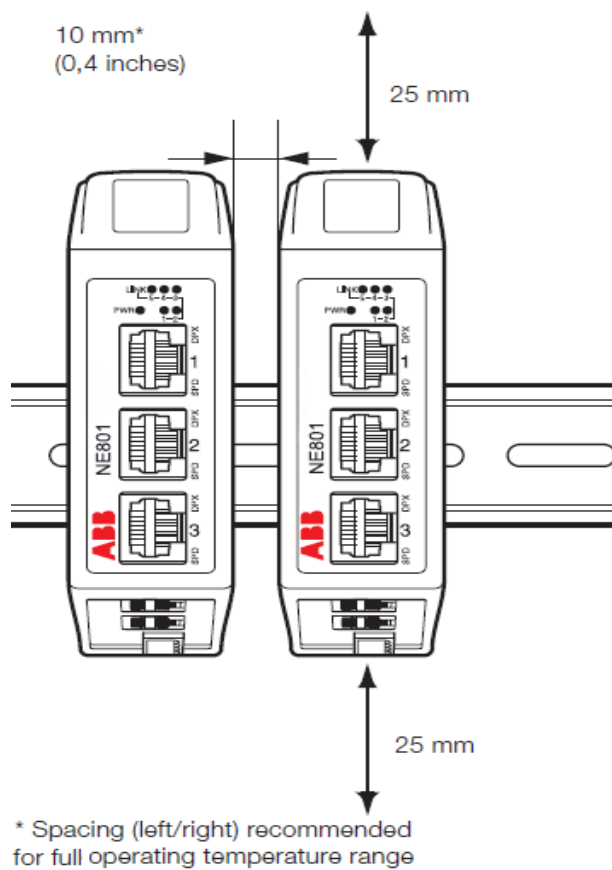


Figure 7. Cooling the Device

Removal

Press down the black support at the back of the unit as shown in the [Figure 8](#).

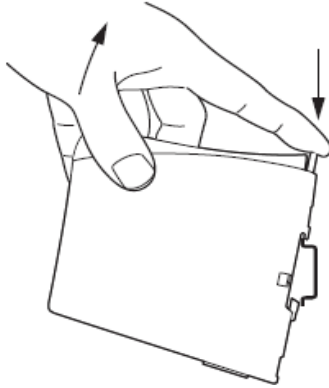


Figure 8. Removing the Device

Fibre Optic Handling

Fibre optic equipment needs special treatment. It is very sensitive to dust and dirt. If the fibre will be disconnected from the unit the protective hood on the transmitter/receiver must be connected. The protective hood must be kept on during transportation. The fibre optic cable must also be handle the same way.

If these recommendations are not followed the warranty might be jeopardized.

Maintenance

No maintenance is required, as long as the unit is used as intended within the specified conditions.

Cleaning of the Optical Connectors

In the event of contamination, the optical connectors should only be cleaned by the use of recommended cleaning fluids and correct cleaning equipment.

Recommended cleaning fluids:

- Methyl-, ethyl-, isopropyl- or isobutyl-alcohol
- Hexane
- Naphtha

Agency Approvals and Standards Compliance

| Type | Approval / Compliance |
|--------|------------------------------------------------------------|
| EMC | EN 61000-6-2, Immunity industrial environments |
| | EN 61000-6-3, Emission residential environments |
| | EN 61000-6-4, Emission industrial environments |
| Safety | UL/IEC/EN 60950-1, IT equipment |
| Marine | DNV GL rules for classification – Ships and offshore units |

Type Tests and Environmental Conditions

| Isolation Between Interfaces | |
|----------------------------------|------------------------------------------------|
| Power Interface to all other | 2.8 kV DC 2.0 kV RMS @ 50 Hz and 60 s duration |
| TX signal Interface to all other | 2.1 kV DC 1.5 kV RMS @ 50 Hz and 60 s duration |
| TX shield Interface to all other | 1.5 kV DC 1.0 kV RMS @ 50 Hz and 60 s duration |

| Environmental | |
|-----------------------------------------------|---------------------------------------------------|
| Temperature, operating | –25 to +65°C |
| Temperature, storage and transportation | –25 to +70°C |
| Relative humidity, operating | 5 to 95% (non-condensing) |
| Relative humidity, storage and transportation | 5 to 95% (condensation allowed outside packaging) |
| Altitude, operating | 2000 m/70 kPa |

| Mechanical | |
|-----------------------|-------------------|
| Dimension (W x H x D) | 35 x 121 x 119 mm |
| Weight | 0.2 kg |
| Mounting | DIN-rail |
| Degree of protection | IP21 |

| Configuration |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto configured (auto-negotiation) or manually setting of speed and duplex of individual TX port, by DIP-switches. Port mirror function is possible to set with DIP-switch. With the port mirror function active the switch will copy all outgoing traffic to port 1. This can be used to monitor all traffic going out from the switch. Packets may be discarded if the total throughput exceeds the port speed of port 1. |

| Fibre optic power budget | |
|---------------------------------|----------------------|
| Model | Multimode LC2 |
| Transmitted wavelength | 1310 nm |
| Min. output power, transmitter | –19 dBm |
| Max. output power, transmitter | –12 dBm |
| Input sensitivity, receiver | –31 dBm |
| Min. power budget | 12 dBm |

| | |
|------------------------------------------------------|--------------------|
| Max. power budget | 19 dBm |
| Recommended fibre cable and core / cladding diameter | 50/125 62.5/125 |

| Attenuation in Connectors / Splices | |
|--------------------------------------------|---------------------------|
| Type | Normal attenuation |
| Connector | 0.2 - 0.4 dBm |
| Fusion splice | 0.1 dBm |
| Mechanical splice | 0.2 dBm |

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