



Product page

contains data sheets,
application notes,
links to software downloads
and other documentation.

Models supplied

This installation manual is intended for the installation of the xDW-2S-44-BOX series optical converters.

Ordering name	Order code	Power supply	Note
TDW-2S-44-BOX	1-301-326	10-60 VDC	Converter

Package contents

- Optical converter including SFP modules
- Mounting kit for attaching the converter to a DIN rail
- Mounting kit for attaching the converter to a flat surface
- Installation manual

Recommended use

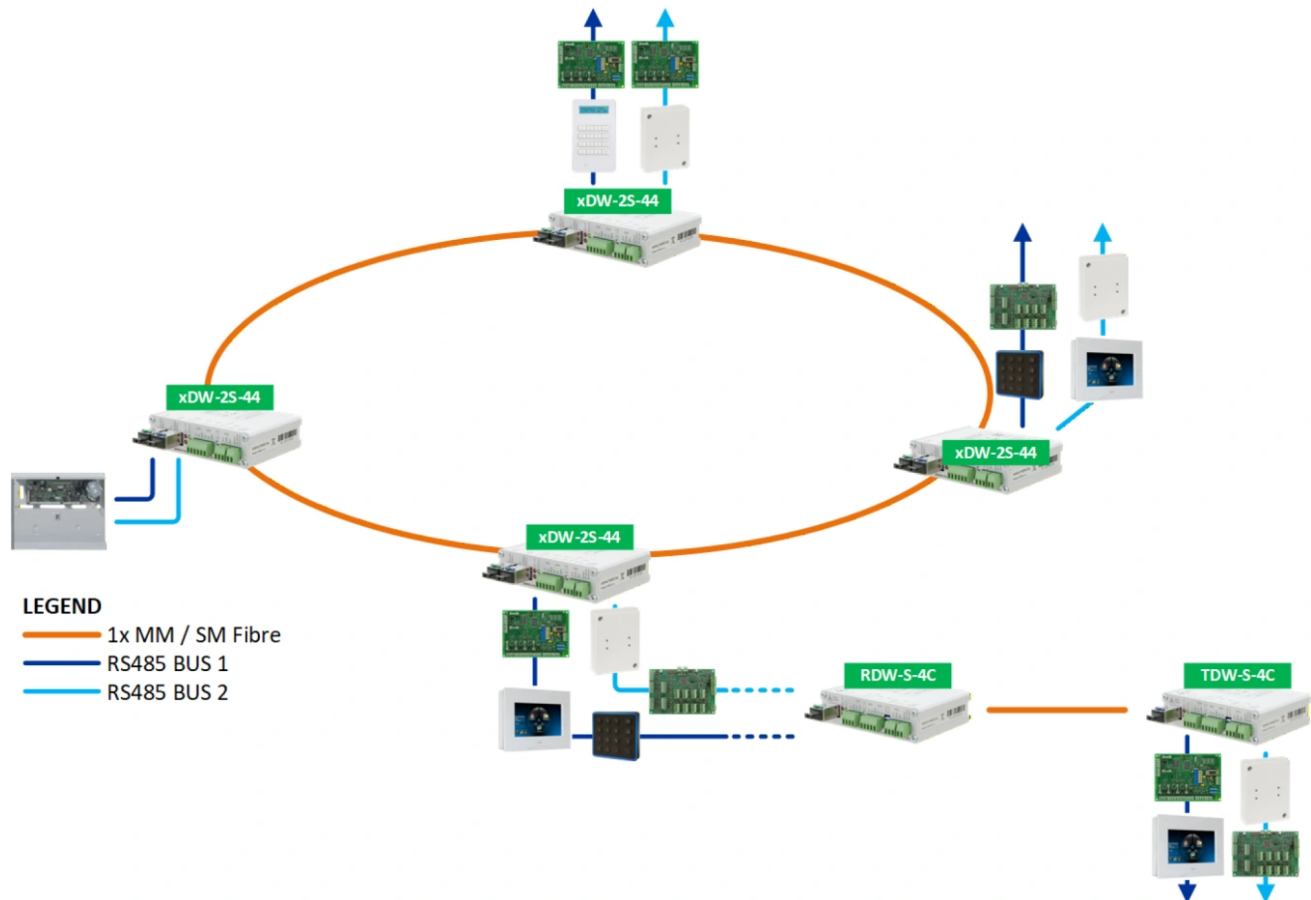
The xDW-2S-44-BOX digital optical converters are designed to extend RS485 buses over both multimode (MM) and single-mode (SM) optical fibres.

Topology

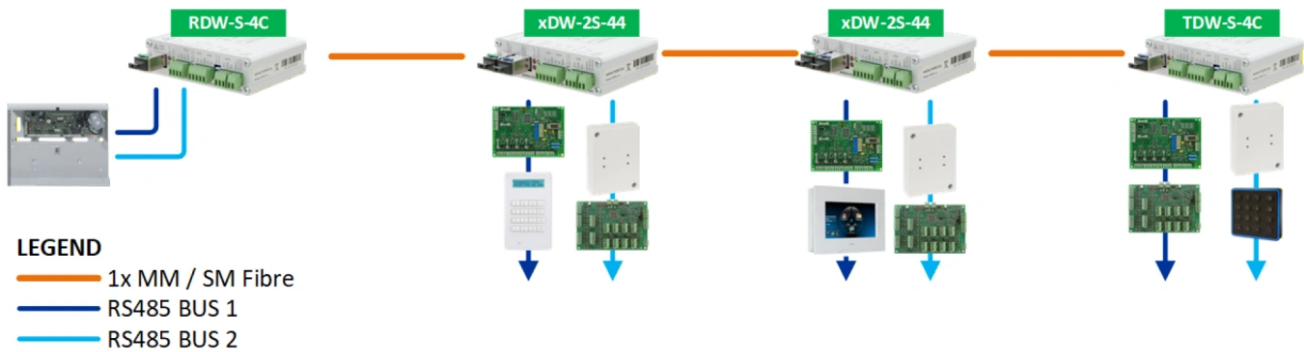
We recommend connecting the converters in a ring topology. This type of connection ensures maximum reliability. Should one optical link fail, the system will remain operational. A link failure is immediately signalled by the LOCK relay switching directly on the converters, enabling a rapid response. If it is not possible to create a ring topology, you can connect the converters in a

simplified manner using a bus topology in combination with the xDW-S-4C. Whilst this solution is easier to install, it offers no redundancy. In the event of a link failure, a complete outage will occur.

Example of a ring topology connection



Example of a bus topology connection



Wavelength multiplexing

All xDW optical converters utilise wavelength division multiplexing (WDM) technology. This means that a single optical fibre carries an optical signal at two wavelengths: 1310 nm and 1550 nm. For correct operation, it is essential that SFPs with different wavelengths are connected opposite each other: SFP SLOT PORT 1 (Tx 1310 nm / Rx 1550 nm), SFP SLOT PORT 2 (Rx 1310 nm / Tx 1550 nm).

Note

In a ring topology, the SFP module connections must be configured so that the fibre is connected from port 1 of one converter to port 2 of the next converter.

Available interfaces

Designation	Function description
LASER CLASS 1	Optical port fitted with a Class 1 SFP module; see safety warnings below.

BUS 1	Terminal block for connecting the BUS1 RS485 bus • Terminal +A - normally the positive conductor of the RS485 bus • Terminal -B - the more negative conductor of the RS485 bus when idle • GND terminal - terminals for connecting the shielding of FTP/STP cables carrying the RS485 signal
BUS 2	Terminal block for connecting the RS485 BUS2 bus • Terminal +A - the positive conductor of the RS485 bus in the off state • Terminal -B - normally the negative conductor of the RS485 bus • GND terminal - terminals for connecting the shielding of FTP/STP cables carrying RS485 signals
LOCK	Relay output
SUPPLY	Power supply input 10 to 60 VDC, or 10 to 30 VAC (polarity-independent).

Signalling LEDs

LED designation	Function description
PWR	Lights up to indicate power is present
LOCK1 LOCK2	When lit, indicates that the LOCK relay has been activated, which detects fault conditions: • Optical fibre break • Fault in the transducers

BUS1,2 Rx/Tx	• A flashing green Tx LED indicates that data is being transmitted from the optical module to the BUSx interface • A flashing red Rx LED indicates the reception of data from the BUSx interface and its transmission to the optical module
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Installation and configuration

Mounting

Mount the converter in the designated location, either on a flat surface or on a DIN35 rail. Mounting accessories are included in the package.

Connect the power supply

within the range of 10–60 V DC. The power connection is indicated by the yellow POWER LED lighting up. The polarity of the power supply can be either way.

Connect the MM/SM optical fibre

terminated with an SC connector (PC polish). Once connected to the opposite end, the LOCK LED will go out.

Connect the signal lines

Connect the RS485 bus to terminals A+ and B-. For RS422 transmission, use, for example, BUS1 on one side for receiving and BUS2 for transmitting data. On the opposite side, BUS1 will transmit data and BUS2 will read data. Connect the shield to the GND terminal on one side only.

Description of the LOCK relay

If the device has no supply voltage and/or the remote device is faulty and/or the optical fibre is damaged, COM and NC are connected. If the device is operational and the remote device is communicating

and the fibre-optic link is intact, COM and NO are connected. The maximum relay load is: 125 VAC/0.5 A or 60 VDC/0.3 A.

Safety warnings

Observe the following safety warnings when working with the device:

- **Optical port:** Although this is a Class 1 laser, which is considered safe during normal operation, never look directly into the optical port whilst it is powered on and in operation. This may cause damage to your eyesight, particularly if you are using optical instruments (magnifying glasses, microscopes).
- **Cleaning the ports:** Always switch off the device when cleaning the optical ports. Use only specialised cleaning kits designed for optical fibres and connectors. Dirt and dust can reduce performance and damage the optical interface.
- **Protective caps:** Whenever an optical port is not in use, protect it from dirt and dust using protective caps. Dust particles can interfere with data transmission and damage the delicate components inside the port.