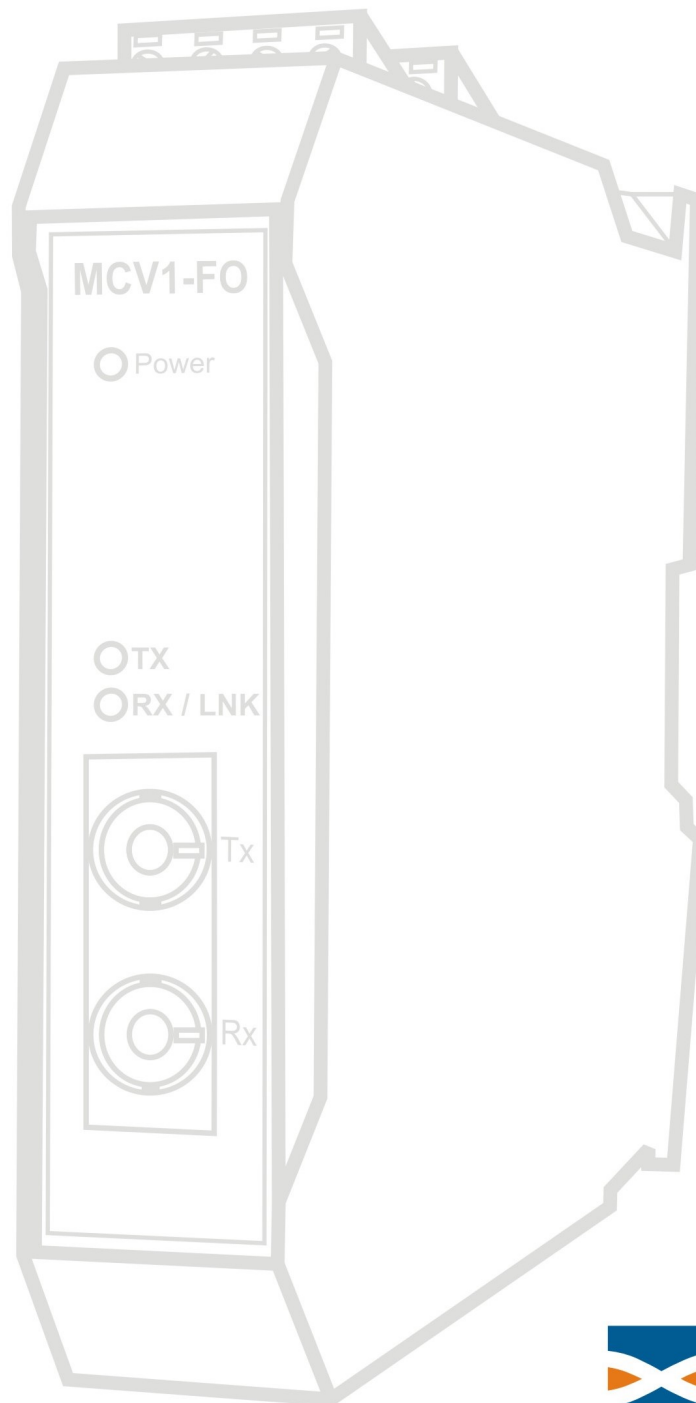


Industrial Fiber Optic to Serial Converter

# MCV1-FO-SER

User's Manual



**ISO 9001:2008 Certification**

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Rev. 6

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# 1 Introduction

## 1.1 Purpose of the manual

The purpose of this manual is to provide instructions for the fast and simple installation and operation the Industrial Fiber Optic to Serial Converter, MCV1-FO-SER.

The manual starts with the product description and then provides instructions for the proper installation of its hardware. Later on, the manual includes detailed information for configuration and operation.

## 1.2 General Description of the product

The MCV1-FO is an Industrial Multimode Fiber Optic to Serial converter, that allows to extend the communications up to 2.7 Km and without interferences for electrical noise.

The main features of the product are:

- Industrial DIN rail mountable case
- ST Connectors.
- One multimode Fiber Optic Port (TX & RX)
- One Serial Port RS232 / RS485 / RS422 (Not simultaneous)



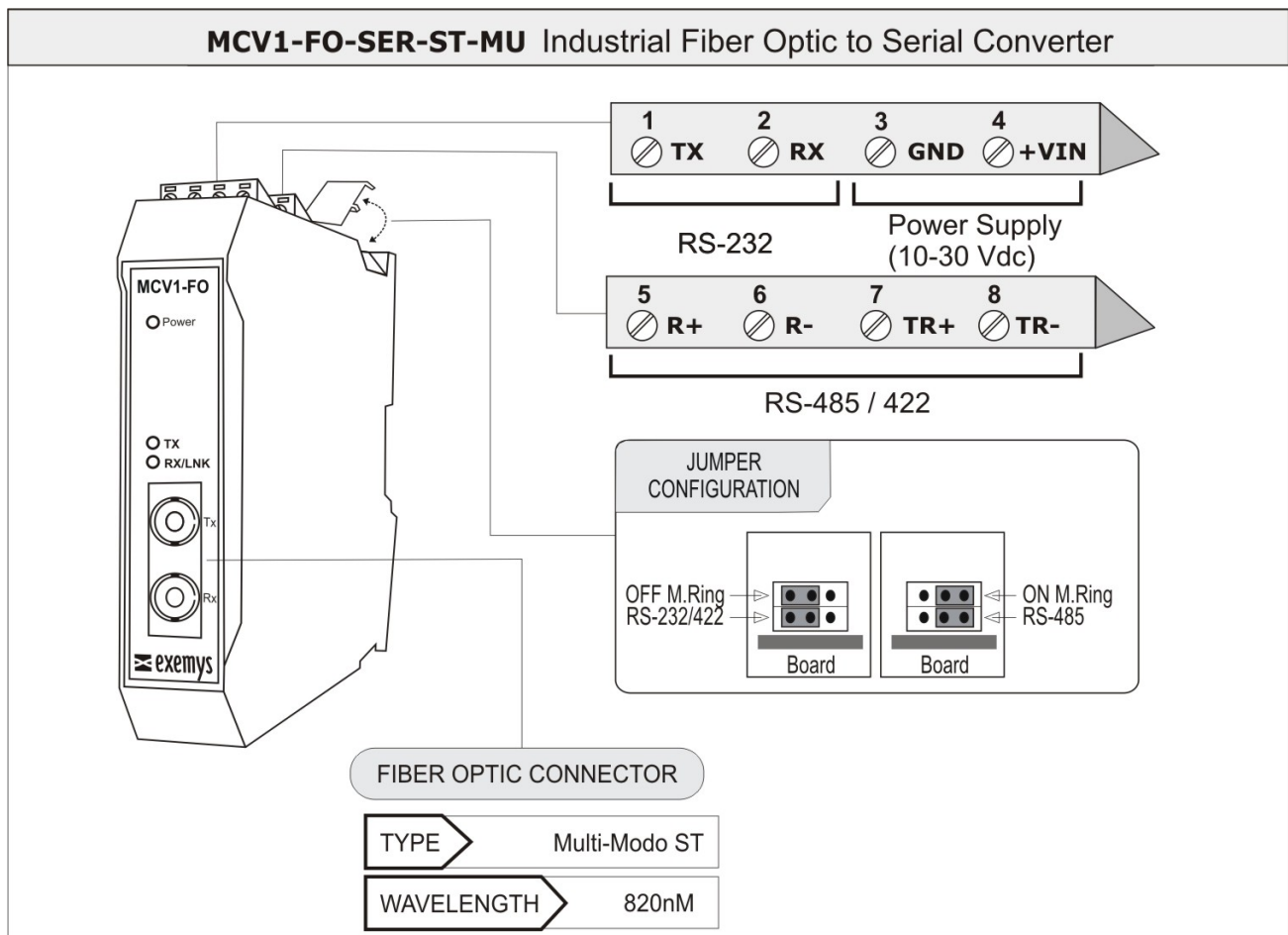
## 2 Wiring

### 2.1 General Wiring

MCV1-FO-SER wiring is very simple and intuitive. There are three different connectors.

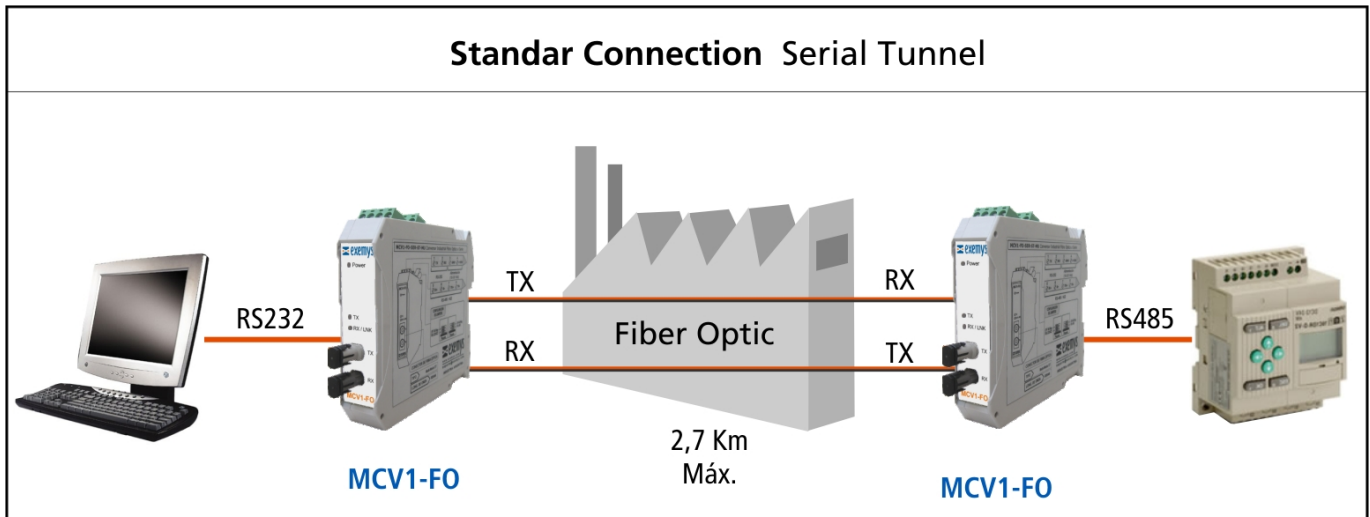
- Serial port connector in industrial pluggable terminal block.
- Optic fiber port connector in ST type.
- Power supply Terminal block (+10 a +30 Vdc)

First connect the device to an appropriated power supply, then the Serial port and finally the two Optic Fiber connectors (TX Transmitter and RX Receiver)



## 2.2 Standard Connection

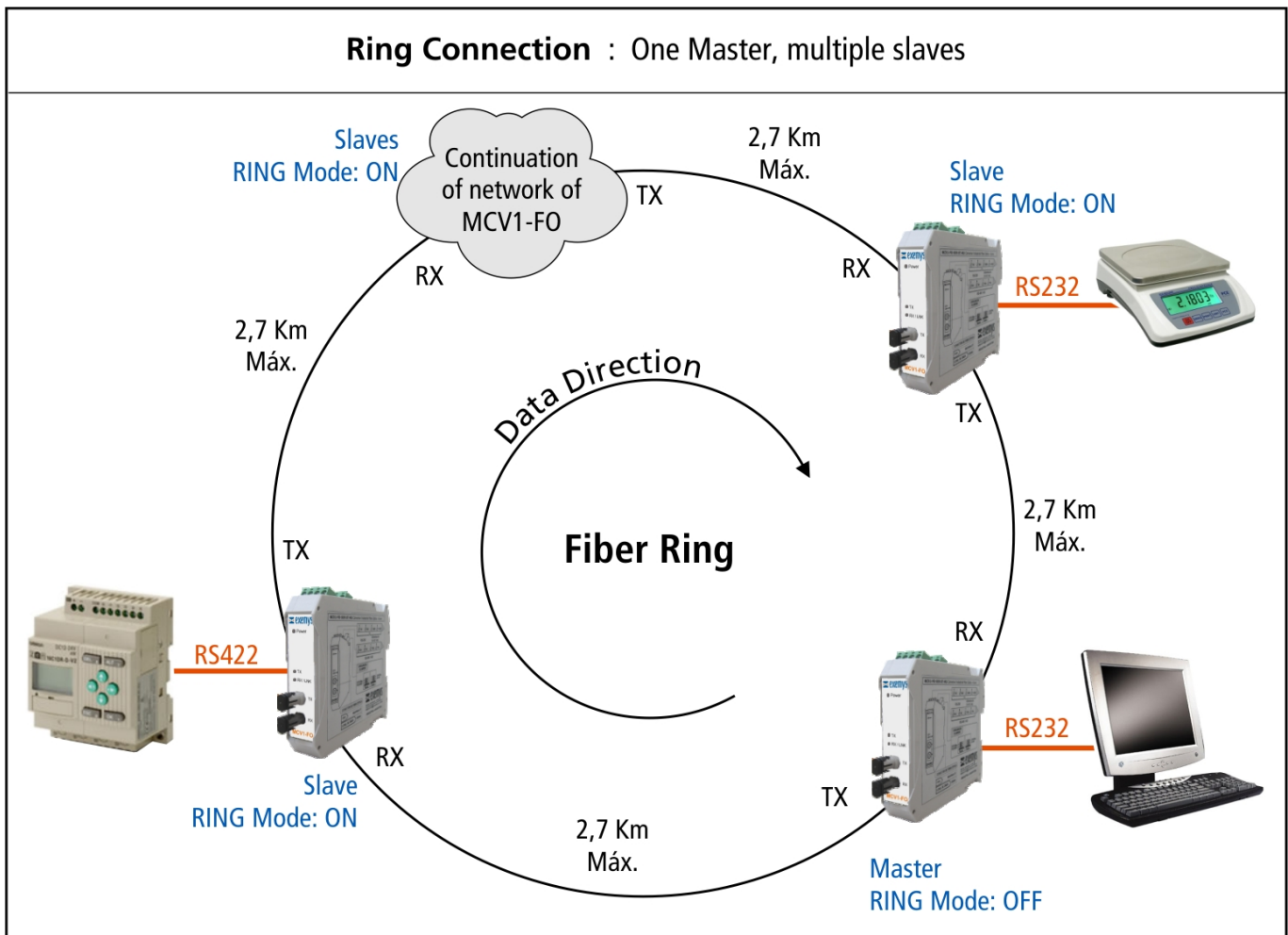
The most common connection for MCV1-FO is serial tunnel (point to point). This way it's possible to extend a serial connection up to 2.7 Km with all the characteristics of an optical fiber.



The use of the MCV1-FO also allows you convert the type of serial (RS232, RS485 or RS422), that mean that you can connect to the equipment two different type of serial in each one of the ends of the tunnel.

## 2.3 Ring Connection

The ring connection allows interconnecting several MCV1-FO using a ring. One of the devices must be the master and the rest slaves.



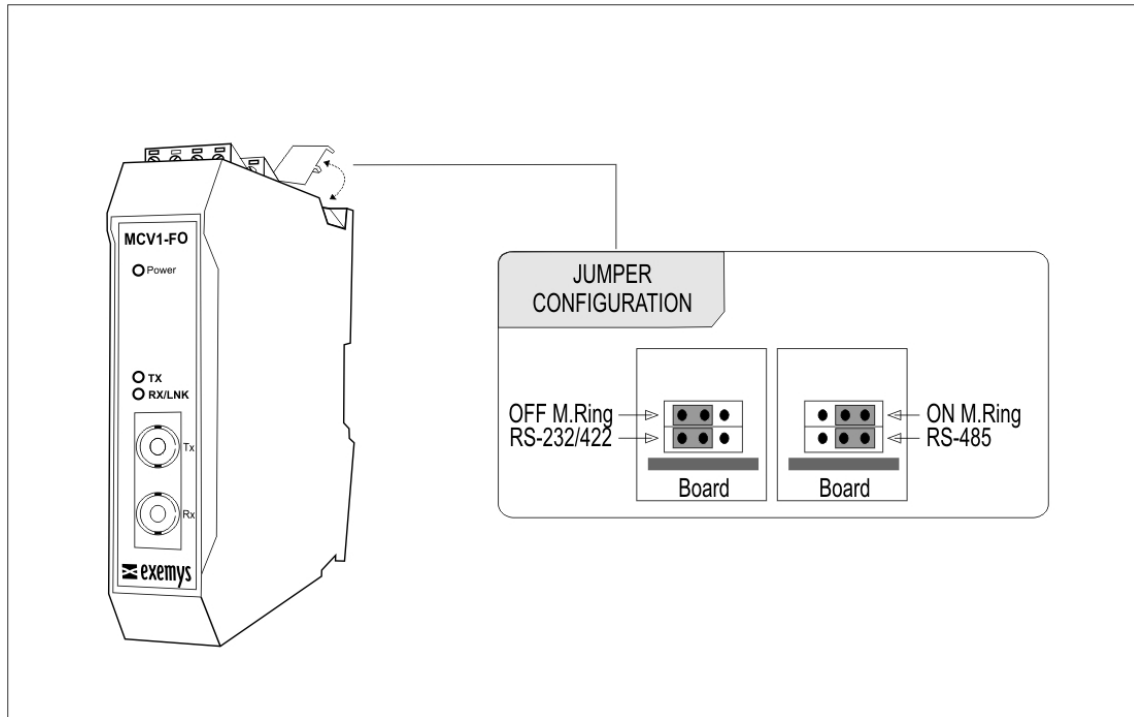
To use the ring mode each of the MCV1-FO that connected to the slaves must have the Jumper of Configuration in RING MODE in ON position, also the Master must have the RING MODE in OFF position.

Each MCV1-FO will be able to use the type of serial (RS232/RS422) that adapts to the equipment that goes connected on it, with exception of the RS485 protocol, this is because the ring mode receives and transmits simultaneously leaving the RS485 out for being a HALF DUPLEX protocol.

The data sent by the Master will be received and forwarded by all the slaves belonging to the ring. Finally, this data will arrive again up to the Master. Also every time a slave transmits something, all the slaves between the one that transmitted and the Master, will receive the data too. To know which device will receive data, it is important to know the data direction of them.

### 3 Configuration & LED's

The configuration of the converter is done by jumpers located in the top side of the device as it's shown in the following figure.



There are two configuration jumpers. They will determine how the converter will work.

#### **JUMPERS**

##### **1) RING MODE**

**Enable/disable** the optical fiber to work on Ring Mode.

In this mode data receive on the fiber RX Port, will be transmitted to the serial port and forwarded to the fiber TX Port. This way you can create an optical fiber ring.

This mode is not available for RS485.

##### **2) Serial communication mode, RS485 or RS232/RS422**

**Enable/disable** the converter to use the RS485 or the RS232/RS422 Terminals.

Ring mode is not compatible with RS485 Mode.

## **JUMPERS OPTIONS**

### **1) Standard connection / RS232/RS422**



### **2) Standard connection / RS485**



### **3) Ring Connection / RS232/RS422**



## **LED's**

**TX** - Blinks when data is sent to the Optical Fiber

**RX / LNK** - Blinks when data is received on the Optical Fiber. It also works as Fiber Link, when the LED stays steady on, the converter is not linked to any other converter.

## 4 Technical Specification

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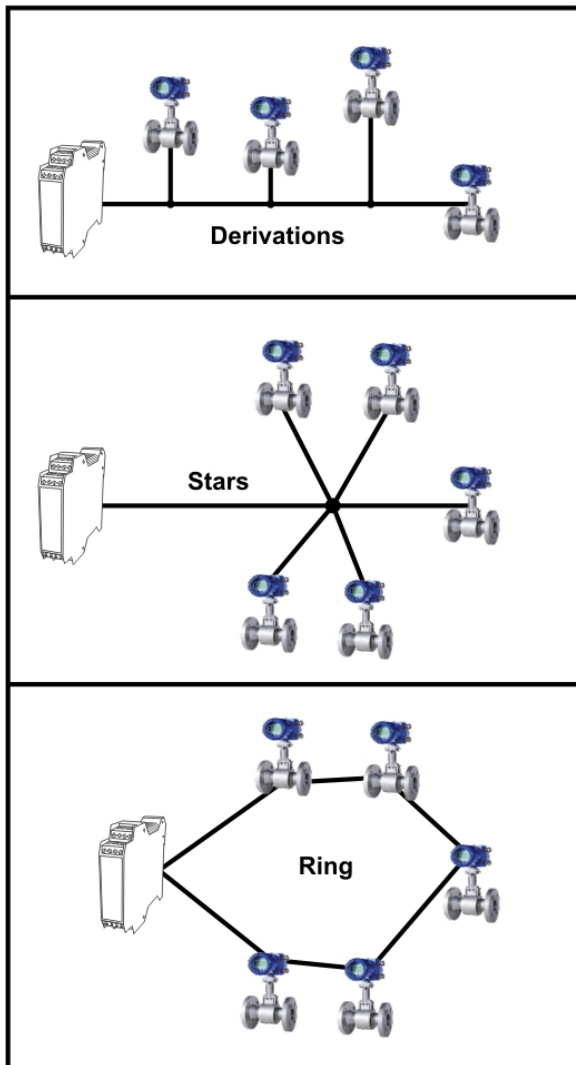
The technical characteristics of the converter are:

- Serial Port: RS232, RS485, RS422 (Not simultaneous)
- Fiber Optic Port: Transmitter & Receptor
- Fiber Optic Connector: ST
- Power Supply: +10/30 Vdc. Power ON LED
- Case: DIN Rail Mountable, Fireproof
- Maximum Distance: 2.7 Km
- Baud rate: Up to 115200 bps
- Fiber Optic supported: Multimode 50/125 um or 62.5/125 um
- Wave Length: 850 nm
- Max. Current: 150mA @ 10V  
75mA @ 30V

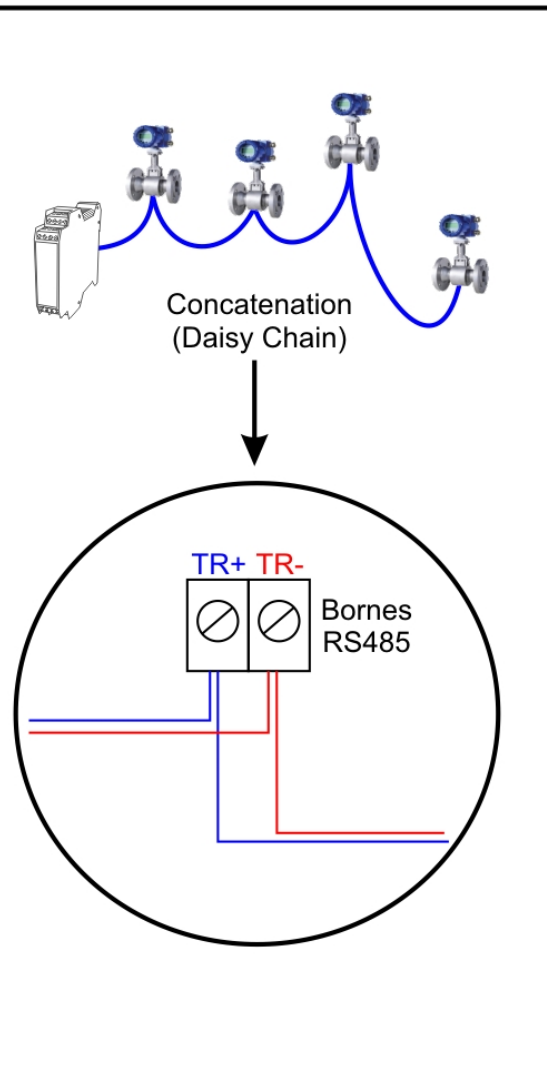
# 5 RS-485 Wiring

## RS485 Port Connection

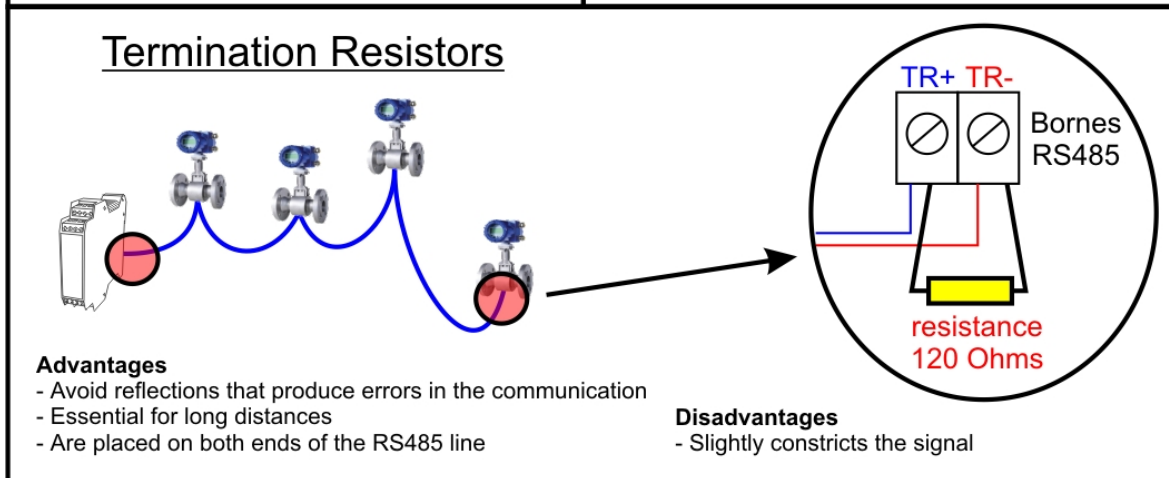
### INCORRECT Connections



### CORRECT Connections



### Termination Resistors



**Advantages**

- Avoid reflections that produce errors in the communication
- Essential for long distances
- Are placed on both ends of the RS485 line

**Disadvantages**

- Slightly constricts the signal