

## UBM-180, Universal Bus Modem

Connect one or multiple hosts to multiple TRL/2 fieldbuses seamlessly.

Easily insert an Ethernet or fiber optics segment into your TRL/2 fieldbus for extended range and improved communication.

Boost and extend your TRL/2 fieldbus with the UBM-180 in repeater mode, allowing you to split the system into multiple TRL/2 segments for optimized performance.

Fast message response by integrated cache

Fieldbus message monitoring and diagnostics

Easy commissioning

Compact dimensions

DIN-rail mounted

Based on Exalon Delft extensive communication know-how

### Ready to connect

The UBM-180 is a versatile, fully TRL/2-compatible communication interface. As a global standard in tank gauging, the Emerson® TRL/2 fieldbus ensures seamless connectivity. The UBM-180 efficiently converts serial RS232/RS485 Modbus® RTU communication to the TRL/2 fieldbus—and vice versa.

Thanks to its scalable design, advanced functionalities can be achieved by integrating multiple UBM-180 units. Front-facing LED indicators provide real-time diagnostics, including communication activity and TRL/2 signal quality.

As part of Exalon Delft's innovative solutions, the UBM-180 offers a flexible and reliable way to connect host systems with field instruments in the tank gauging industry.

### Expanding the Potential of the TRL/2 Fieldbus

The TRL/2 fieldbus is essential for connecting Tank Management Applications to field instruments, supporting up to 8 instruments per trunk over distances of up to 4 kilometers.

With the UBM-180 multi-host feature, TRL/2 fieldbus utilization is maximized, enabling both Tank Management Applications and Control Applications to share the same TRL/2 bus. The repeater feature expands the number of connected instruments while seamless Modbus message exchange integrates Modbus, 4-20mA, or HART field instruments into Control or Tank Management Applications.

The UBM-180 enhances flexibility and scalability, optimizing your tank gauging system.

### Applications

- Tank Management and Control Applications Migration markets
- TRL/2 fieldbus communication infrastructure
- TRL/2 fieldbus diagnostics
- Integration of remote Modbus RTU slaves

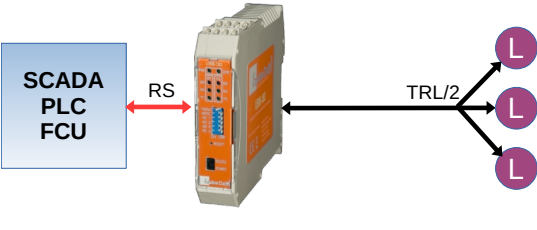
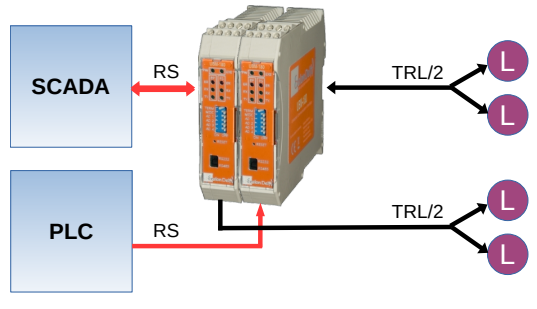
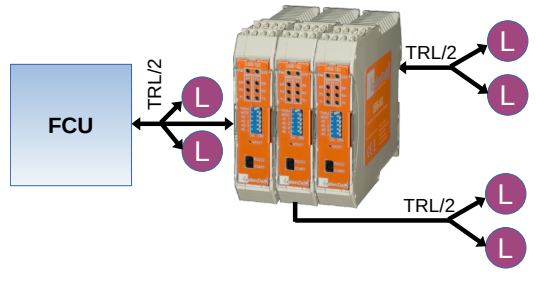
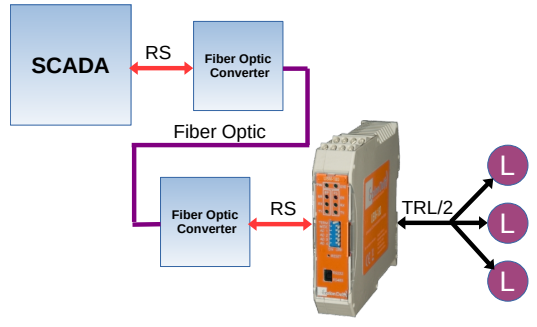


# Configurations

The UBM-180 is a compact, DIN-rail mountable module designed for seamless integration with other components in junction boxes or cabinets. Equipped with two galvanically isolated serial ports—Port A supporting RS232 and RS485 interfaces, and Port B featuring a TRL/2 fieldbus interface—it ensures reliable operation by preventing grounding issues and safeguarding against high voltage surges, such as those caused by lightning.

An additional backplane enables easy interconnection between multiple UBM-180 units, allowing advanced configurations. Powered by 24 VDC, all connections are made through convenient screw terminals for secure installation.

With the ability to assign either Port A or Port B as a host port and the feature to interconnect multiple UBM-180s, this versatile modem supports a wide range of configurations to meet your communication needs.

	<p><b>Connect a single host</b></p> <p>In this configuration the UBM-180 is the interface between a single host in the system and the TRL/2 fieldbus connected to the level gauges in the field. A host can be e.g. a SCADA/Tank Management Application, a DCS/PLC, PC or Emerson FCU performing Modbus request to the field instruments. Also a service laptop could be a temporarily host during the initial commissioning of TRL/2 field instruments in the office.</p>
	<p><b>Join multiple hosts, split to multiple TRL/2 fieldbuses</b></p> <p>This example illustrates the joining of multiple hosts to a single or multiple TRL/2 fieldbuses. Each UBM-180 provides one RS host port and one TRL/2 fieldbus port, with all hosts and fieldbus ports operating in parallel. Host requests and fieldbus responses are shared over an internal bus. This setup also allows the connection of a service laptop for commissioning field devices on an operational TRL/2 fieldbus without disconnecting it from SCADA or PLC.</p>
	<p><b>Repeater or split to multiple TRL/2 fieldbuses</b></p> <p>Fieldbus signals can be enhanced, or the number of field devices can be increased, by splitting or extending the TRL/2 fieldbus into segments and connecting them by via a repeater. A repeater is created by using at least two UBM-180 units, which are installed in the field. The incoming and outgoing TRL/2 messages are shared through the internal bus of the UBM-180.</p> <p>A fieldbus splitter can be created using three UBM-180 units, installed near, for example an Emerson FCU. This configuration may be useful when no FCU TRL/2 field slots are available for expansion.</p>
	<p><b>Insert a fiber optic, ethernet segment or wireless connection</b></p> <p>Fiber optics can resolve TRL/2 fieldbus communication issues in installations experiencing severe crosstalk from mains power cables in the same cable tray. The UBM-180 allows the use of standard RS232 to fiber optic converters by converting TRL/2 messages to RS232 and vice versa.</p>

## Mechanical

Dimensions	110 x 25 x 110 mm (h x w x d)
Weight	150 g

## Environmental

Housing	DIN-rail mountable
DIN-rail	EN-IEC60715, mounting rail 35x7,5 mm
Protection class	IP20
Operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +85 °C
Relative humidity	20 to 95%

## Applied safety standards

EMC standards	EU Directives
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## UBM-180 generic

Power supply	24 Vdc +/- 5%, max. 80 mA
Switches	Dip switches: terminal/operational, miscellaneous, node address Push button: reset
Intercommunication bus for multi node	RS485 (bus address selected by dip switch)
Number of devices in multi node	Maximum 4 (three UBM-180 + one UBM-180 for commissioning)
Commissioning/Service	Via terminal mode by RS232 port (115k2 kbit) Available: Configuration, statistics, TRL/2 fieldbus analyser
LED indicators	Power on/off Operational status TRL/2 port: communication quality, RX, TX RS port: communication quality, RX, TX

## TRL/2 fieldbus communication

Serial connection	Galvanic isolated by transformer Full galvanic isolation from ground, 1500Vac Lightning protection
Physical layer	Serial FSK modulated, half duplex, on screw terminals
Protocol	Modbus RTU protocol
Baudrate	4800 Baud
Fieldbus wiring	Shielded twisted pair
Maximum cable length	3 km @ AWG 20 (0.50 mm <sup>2</sup> ) 4 km @ AWG 18 (0.75 mm <sup>2</sup> )
Maximum number of field devices	8, depending on cable length, cable specifications and network topology
Signal level	max. 3,3 Vpp (+/- 10%)

## RS232/RS485 communication

Serial connection	Galvanic isolated by opto isolation Full galvanic isolation, 1500 Vac
Physical layer	RS232C, 3 wire <15 m, on screw terminals RS485, 3 wire, 1000 m (with additional lightning protecting device), on screw terminals
Protocol	<b>During operation on both TRL/2 and RS port:</b> Modbus RTU protocol <b>During commissioning:</b> RS232 field port: ASCII terminal protocol (in terminal mode)
Baudrate	1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 Baud
Handshake	None

## Maintenance

Maintenance is not needed throughout the lifetime of the product, except cleaning and visual inspection of the product

## Installation

It is requested to read the installation manual before installation.  
This installation manual is available with Exalon Delft.

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Exalon Delft BV  
Radex Innovation Center  
Rotterdamseweg 183C  
2629 HD Delft  
The Netherlands

Tel.: +31 15 2682554  
Fax: +31 84 8337893  
E-mail: [info@exalondelft.nl](mailto:info@exalondelft.nl)  
Internet: [www.exalondelft.com](http://www.exalondelft.com)