OPERATING MANUAL

CONV485USB-I and CONV485USB converters enable the connection of devices with an RS-485 port to a PC computer via a USB port. Both versions are powered from the USB port.

CONV485USB is designed for service purposes and does not have galvanic separation.

CONV485USB-I is designed for both service and data transmission applications in measuring systems and is galvanically separated from the USB port.

CONV485USB-I   CONV485USB

Connecting to PC

The converter should be connected to PC via an USB A/B cable. The converter is delivered with a 1.8 m USB cable. The USB standard allows connecting a 5 m cable. After connecting the converter to a computer, the green indication LED should light on (PWR1 LED in CONV485USB-I).

Connecting to RS-485 transmission line

The converter has screw type terminal blocks on the RS-485 port side (max 1.5 mm^2 cable diameter). Bus cables should be connected to A(+) and B(-) terminals. In an industrial environment the shielded cable, twisted pair and an additional GND cable are strongly recommended. The shield should be grounded and connected to the reference potential. It is recommend to use of digital data transmission cables, especially in the case of larger distances and higher transmission rates. According to RS-485 standard, 32 devices can be connected. The bus may not be arranged into a star connection. The CONV485USB-I converter has DIP-switches used for connection the RS-485 line termination (both switches in the ON position). Termination should be switched on only when the converter is installed at one of the ends of the transmission line.

- Terminal block in CONV485USB:

No.	Symbol	Description
1	A(+)	Data input/output signal line
2	B(-)	Data input/output signal line

- Terminal block in CONV485USB-I:

No.	Symbol	Description
1	+5V DC OUT	Supply voltage output terminal
2	A(+)	Data input/output signal line
3	A(+)	Data input/output signal line
4	B(-)	Data input/output signal line
5	B(-)	Data input/output signal line
6	GND	Ground terminal for +5V power supply and A(+) and B(-) signal lines
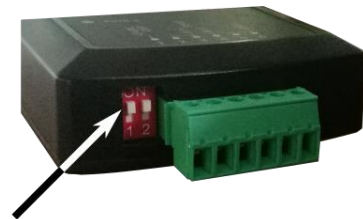
DIP-switch ON: RS-485 termination connected

Information LEDs

CONV485USB-I – four LEDs:
- PWR1 (green) – indicates presence of supply voltage from USB port side,
- PWR2 (green) – indicates presence of supply voltage from RS-485 port side,
- RxD (yellow) – indicates data transmission between devices and PC (RS-485 → USB),
- TxD (blue) – indicates data transmission between PC and devices (USB → RS-485).

No light LEDs PWR1 and PWR2 during data transmission indicate invalid state.

CONV485USB – three LEDs (inside the housing):
- green – indicates presence of supply voltage; lights on when device is connected to PC,
- yellow (RxD) and blue (TxD) – during data transmission, these LEDs should pulse.

First start – installation of drivers via Internet

Connect the converter to the computer with the USB A/B cable. The green LED should light (in CONV485USB-I PWR1 diode). Drivers are installed automatically.

First start – manual driver installation

Connect the converter to the computer with the USB A/B cable. The green LED should light (in CONV485USB-I PWR1 diode). The system will automatically detect a new device and open the installation wizard window. Install the CDM (Combined Driver Model) drivers downloaded from the www.metronic.pl website or the CD attached.

NOTE: The drivers are compressed into a ZIP file. Before installation, unpack them.

Checking the installed drivers

In Device Manager, expand the *Universal Serial Bus Controllers* list - the *USB Serial Converter* should appear. To determine the COM port number under which the converter is "seen", expand the list of *Ports (COM and LPT)* in the *Device Manager*, where the *USB Serial Port (COMx)* will be visible, where x is the COM port number (e.g. COM3).

Driver uninstallation

To uninstall the CDM driver, click the right mouse button on *USB Serial Port (COMx)* and *USB Serial Converter* in *Device manager* and choose *Uninstall*.

CONV485USB-I, CONV485USB

Delivery content

Converter	1 pc.	
Six-position pin type screw terminal block	1 pc.	only CONV485USB-I
Two-position pin type screw terminal block	1 pc.	only CONV485USB
Handles for assembly on TS-35 rail	2 pcs.	only CONV485USB-I
USB A/B type cable with a length of 1.8 meters	1 pc.	
CD with installation software and operating manual	1 pc.	
Operating manual (printed)	1 pc.	

Technical specification

CONV485USB-I	
USB	
Standard	In compliance with USB 2.0
RS-485	
Baud rate	300 bps .. 115.2 kbps
Maximum number of transmitters / receivers	32
Differential output voltage (TxD)	5 V for $R_L=\infty$; min.: 1.5 V for $R_L=54\ \Omega$
Short circuit current (TxD)	Max. 250 mA
Receiver input resistance (RxD)	12 kΩ
Minimum input voltage (RxD)	0.2 V
Acceptable voltage on A,B terminals	-7 .. +12 V (max)
Short-circuit protection	Yes
Line RS-485 terminating resistor	220 Ω + 2 x 390 Ω, external
Others	
Power supply	From USB port
Rated current	Max. 350 mA (nominal work)
USB / RS-485 galvanic separation	500 VAC
Work temperature	0 .. +50 °C
Store temperature	-20 .. +60 °C
Dimensions (without terminals) l x w x h	93 mm x 57 mm x 21 mm
Weight	ca. 65 g
Operating system	
For VCP (Virtual COM PORT Drivers)	Windows 10 (32,64 bit), Windows 8/8.1 (32,64 bit), Mac OS-X, Linux 3.2 and greater
For D2XX (USB Direct Drivers)	Windows 10 (32,64 bit), Windows 8/8.1 (32,64 bit), Mac OS-X, Linux 2.6 and greater

CONV485USB	
USB	
Standard	In compliance with USB 2.0
RS-485	
Baud rate	300 bps .. 230.4 kbps
Maximum number of transmitters / receivers	32 (limited line length and without terminating resistors)
Differential output voltage (TxD)	3.3 V for $R_L=\infty$; min.: 1.5 V for $R_L=54\ \Omega$
Receiver input resistance (RxD)	12 kΩ
Minimum input voltage (RxD)	0.2 V
Acceptable voltage on A,B terminals	-7 .. +12 V (max)
Short-circuit protection	Yes
Others	
Intended use	For service purpose only
Power supply	From USB port
Rated current	35 mA (without load on RS-485 side)
USB / RS-485 galvanic separation	No
Work temperature	0 .. +50 °C
Store temperature	-20 .. +60 °C
Dimensions (without terminals) l x w x h	56 mm x 31 mm x 25 mm
Weight	ca. 25 g
Operating system	
For VCP (Virtual COM PORT Drivers)	Windows 10 (32,64 bit), Windows 8/8.1 (32,64 bit), Mac OS-X, Linux 3.2 and greater
For D2XX (USB Direct Drivers)	Windows 10 (32,64 bit), Windows 8/8.1 (32,64 bit), Mac OS-X, Linux 2.6 and greater

CE — The device is compliant with the EMC requirements (electromagnetic compatibility of industrial devices), according to Directive 2014/30/EU.

Information from the Manufacturer

All functions of the recorder are subject to modifications for the benefit of technical progress.

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