PluraSens®

µLAN Controller

E7718

User Manual

Evikon

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Specifications

Power supply	12….36 VDC, 24 VDC nominal, 100 mA max
Enclosure	Dark grey ABS
Dimensions	See below
Operation range	-40…+85℃, 0...99% RH
Protection class	IP65
Connections	M12 male IP68 4-pole connector for µLAN 2x M16 IP68 cable gland
Recommended cabling	LiYY-TP (2×2 wire twisted pair)
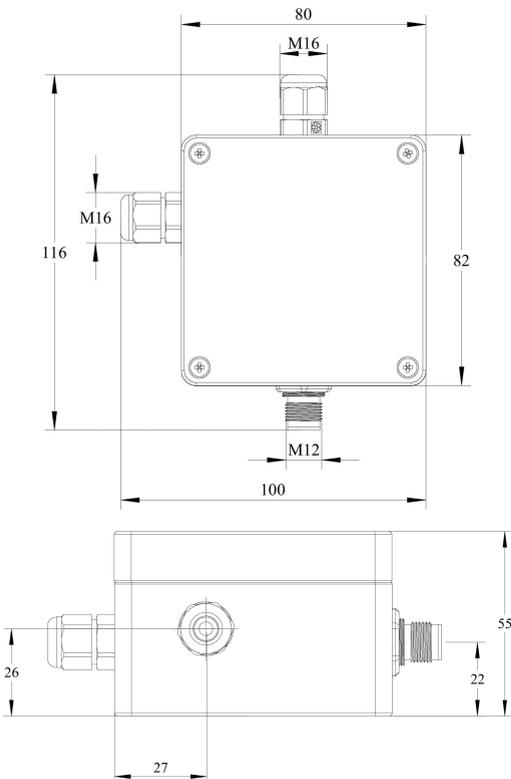
Product description

The E7718 controller operates as a 1-wire master device, performing µLAN network analysis and regularly polling for data from 1-wire sensors.

The instrument implements dynamic register assignment for sensor data, allowing to build very flexible and complex 1-wire digital sensor networks with hundreds of sensors may be easily implemented, provided that the total length of the path, active at any moment, does not exceed 100 m.

E7718 acts also as RS485 Modbus RTU slave device, storing and providing measurement data for an automation system.

The controller is fully weather and dust protected and complies with ATEX requirements for Zone 20 and Zone 21 installations in grain silos. The innovative design provides robustness and extremely fast and easy installation.

Safety requirements

Always adhere to the safety provisions applicable in the country of use.

Do not perform any maintenance operation with the power on. Do not let water or foreign objects inside the device.

Electrical connections

Unscrew four lid screws and detach the lid from the instrument. Fix the transmitter through mounting holes by screws.

Plug the power cable and connect the digital interface terminals to the relevant device according to the connection diagram and table.
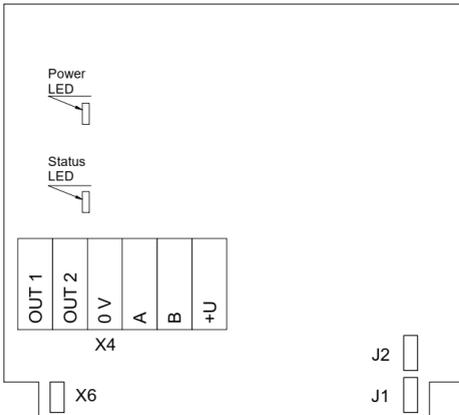
Jumpers	
J1	Not used
J2	Not used
X6	Reset Modbus network parameters to default
X4 terminals	
OUT1	Not used
OUT2	Not used
0V	0 V / 24 VAC Neutral (optional)
A	RS485 A / Data +

B	RS485 B / Data -
+U	+24 VDC / 24 VAC Phase (optional)

Make certain that the cable gland is properly tightened to ensure the conformity to IP65 protection class.

The screwless quick connect spring terminals on the E7718 are suitable for a wide range of wires with cross-section 0,2...1,5 mm^2. The recommended wire stripping length is 8...9 mm. Push the spring loaded terminal lever, insert the wire end into the terminal hole and release the lever.

Use twisted pair cable, e.g. LiYY TP 2×2×0,5 mm2 or CAT 5, to connect the device to the RS485 network. Use one pair for A and B wires and the second pair for common 0V and power +U wires to connect the transmitter to the Fieldbus network. Polarity must be respected when connecting to an external RS485 network.

Overall length of all connections via the RS485 interface should not exceed 1200 m.

Place the lid back and tighten it with the four screws.

Return to default settings

To reset the device's Slave ID, baud rate and stop bit number to factory settings, proceed as follows:

1. De-energize the device
2. Connect the X6 jumper
3. Turn on the device
4. De-energize the device
5. Disconnect the X6 jumper
6. Turn on the device

Communication parameters

Port settings

Parameter	Permitted values	Default
Supported baud rates	1200, 2400, 4800, 9600, 19200, 38400, 57600	9600
Data bits	8	8
Parity	none / odd / even	none
Flow control	None	none
Stop bits	1, 2	1
Protocol	Modbus RTU	
Modbus functions	03 - Read multiple registers 06 - Write a single register	
Error codes	01 – Illegal function 02 – Illegal data address 03 – Illegal data value 04 – Slave device failure (details of last error 04 can be read from register 0x0008)	

Modbus registers

Holding register numbers are shown in the table with offset 40000 ("0 based representation").

Address		R W	Description	Supported values	Remarks
Reg (hex)	MHR (dec)			dec (Hex)	
0x0001	1	R	Instrument type		1617 (0x0651)
0x0002	2	R	Software version.subversion = v.s	MSB=v, LSB=s	257 (0x0101) = Ver 1.01
0x0003	3	R	Serial Number	0 ... 65535	Default 0
			NB! Registers 1-3 are set by the manufacturer and should not be altered by the user!		
0x0004	4	R W	RS485 network address	001 ... 253 (0x01 ... 0xFD)	Default 001 (0x01)
0x0005	5	R W	Baud Rate	1200,2400,4800,9600, 19200	Default 19200
0x0006	6	R W	Response delay, ms	10 ... 255	Default 10
0x0010	16	R W	µLAN polling period, s	0 ... 65535	Default 0 (permanent cyclic polling of all sensors)

0x00 11	17	R W	Restart	To restart the controller write **0xA55A** to this register. There will be no response to this command, as the controller restarts immediately.	Reading is a cumulative number of restarts, incremented by 1 for each restart
			NB! Changing values in registers 4-16 takes effect only after the restart!		
0x00 12	18	R	Last polling time	Seconds passed from the last μLAN polling (if polling period > 0)	
0x00 13	19	R	Polling counter	Incremented by 1 after each μLAN polling, cycled within 0 ... 255	
0x00 14	20	R	I2C parameters	Used for debugging	
0x00 15	21	R	μLAN parameters	Used for debugging	

0x00 FF	255	R	MSB - *µLAN* status	**Important data for the system engineer!**
				
				MSB bits (1 if error):
				    0x01 - no power on *µLAN* bus
				    0x02 - overcurrent on *µLAN* bus
				    0x04 - no *µLAN* slaves
				    detected 0x08 - short circuit
				    detected

Block of registers 0x01 00 ... 0x01 FF, describing detected temperature cables				
0x01 00	256	R W	Description of temperature cable detected	MSB: identifier ID of the temperature cable, detected during *µLAN* analysis procedure. ID can be assigned by the administrator (0x01 .. 0xFF / 1 ... 255) by writing 0xNN00 into this register. 6 LS bits - number of sensors (0 ... 63) detected in this temperature cable
...	...	. . .	...	... ...
Block of registers 0x0200 ... 0x03FF with temperature data				
0x02 00	512	R	Temperature data	Temperature of the sensor of detected cable with ID obtained from register 0x0100
0x02 01	513	R	Temperature data	Temperature of the 2-nd sensor of detected cable with ID obtained from register 0x0100
...	...	R	...	...

Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of the original sale. During this warranty period, the Manufacturer will, at its option, either repair or replace a product that proves to be defective. This warranty is void if the product has been operated in conditions outside ranges specified by the Manufacturer or damaged by customer error or negligence or if there has been an unauthorized modification.

Manufacturer contacts

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