

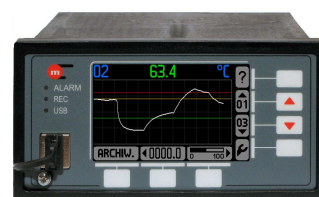


metronic

APARATURA KONTROLNO - POMIAROWA

MPI-DN, MPI-D MULTICHANNEL ELECTRONIC RECORDER for HART or RS-485/ MODBUS RTU SENSORS

- 18 channels for HART / Modbus RTU sensors
- 2 digital channels
- 16 math channels
- 4 relay outputs for alarm or control functions
- 2 GB internal memory for advanced data recording
- color LCD TFT display
- USB port on the front panel with IP54 protection
- Ethernet port: Modbus TCP, Web Server
- RS 485 port: ASCII and Modbus RTU
- Dedicated software for visualization of measurement data
- Housing for panel mounting or wall mounting



20 CHANNEL FOR MEASURED PROCESS VALUES

- 18 channels designed to read data from sensors and instruments with digital protocol (HART or Modbus RTU).
- 2 digital inputs (PULS) for state, pulse or frequency measurements; OC, voltage or NAMUR configuration.

HART

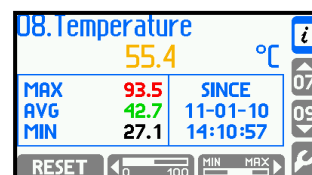
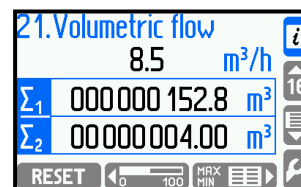
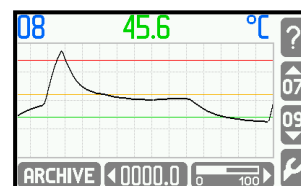
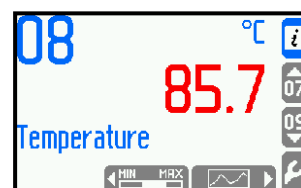
- HART port with power supply for sensors (24 VDC /60 mA), up to 15 sensors in multidrop configuration.
- Supported rev.4., rev.5., rev.6. Possible configuration as Primary or Secondary Master.
- Read variables: PV - primary variable, SV – secondary variable, TV - third variable, FV - fourth variable.

MODBUS RTU (RS485 Port)

- Sensors or instruments connected in parallel to one twisted pair of wires.
- Baud rate from 1200 bps to 115200 bps.
- Available functions: 03 (Read Holding Register) and 04 (Read Input Register), registers in the range 0 ... 65535.
- Data format: unsigned integer, integer, unsigned long, unsigned long swapped, long, long swapped, floating point, floating point swapped.

PULS INPUTS

- Measurement frequency range 0.001 Hz to 10 kHz.
- Pulse counting for totalisers.
- Tracking a binary signal (short or open circuit).



metronic
APARATURA KONTROLNO - POMIAROWA

31-261 Kraków, ul. Wybickiego 7
tel./fax: +48 12 623-75-99, 632-69-77
www.metronic.pl
metronic@metronic.pl

Quality Management

We are certified

Voluntary participation in regular
monitoring according to ISO 9001:2008





MATH CHANNELS

- 16 math channels can display calculated result based on measured or calculated values.
- Available functions: addition, subtraction, multiplication, division, square roots.

ARCHIVING RESULTS

- Writing to internal 2GB memory.
- Text files format with the encrypted checksum, recording to one file (until end or overwrite) or to successive files (24H, week, month).
- Recording time interval from 3 s to 24 h; possible to define two switched frequencies depending on alarm threshold state.

4 RELAY OUTPUTS, THRESHOLDS ALARM-CONTROL

- 4 solid-state relay outputs rated at 0,1 A / 60 V.
- Up to 4 alarm thresholds for each channel.

COMMUNICATION with the master system

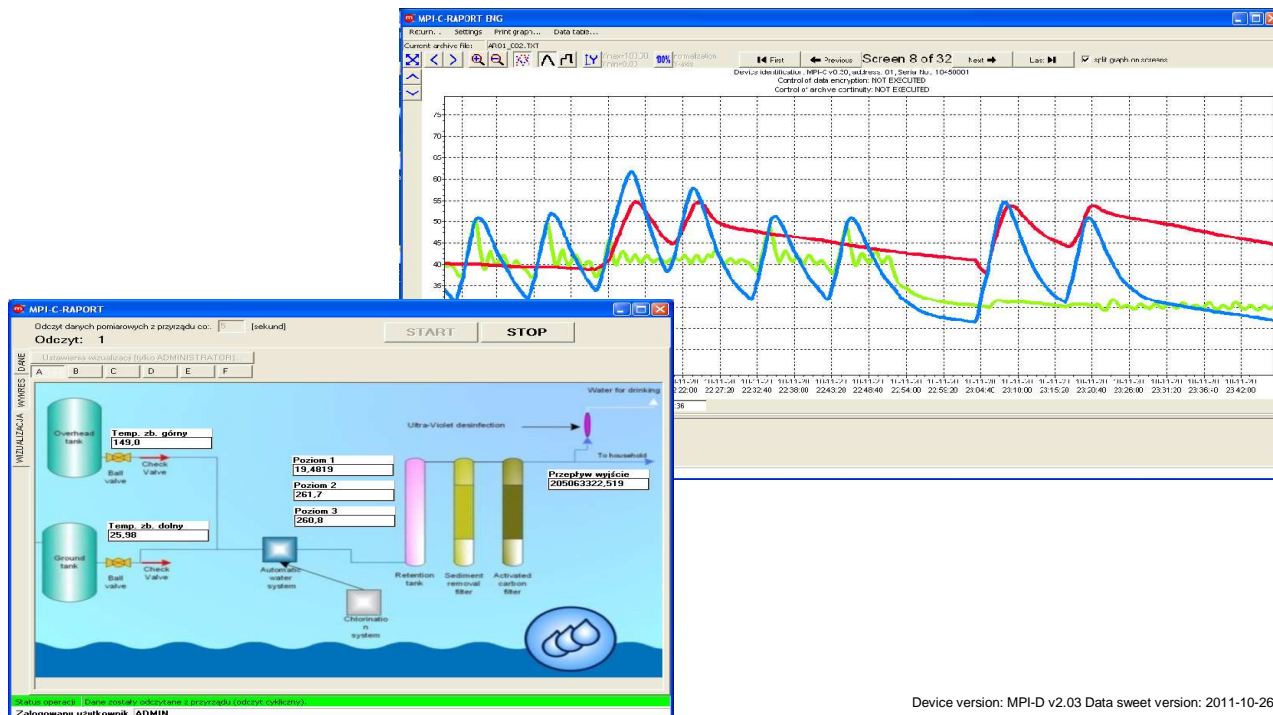
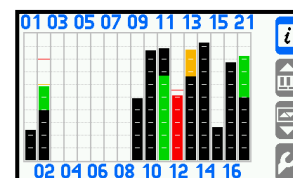
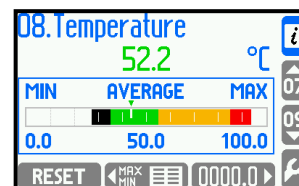
- Galvanically isolated RS-485 port; protocols: ASCII and Modbus RTU.
- Ethernet port, Modbus TCP, Web Server.

DISPLAY

- Graphic LCD TFT color display, 42 mm X 70 mm, resolution 240 px X 300 px.
- Three LEDs for alarm, data recording and USB port.
- Alarm thresholds can be indicated with color change on display.

OTHER FUNCTIONS

- USB port on the front panel.
- Two totalisers for each channels (measured or calculated); possible also to read values directly from the transmitter via HART or Modbus RTU.
- Tracking the value of the minimum, maximum and average of each of the measured and calculated channels.
- Advanced authorization functions; users and passwords; event log.
- Dedicated software for visualization of measurement results.



Device version: MPI-D v2.03 Data sweet version: 2011-10-26





TECHNICAL DATA

FRONT PANEL	
Type of display:	Graphic LCD TFT 240x300 points
Reading field size:	42 mm x 70 mm
LED signal diodes:	3 two-colour, green-red
Keyboard:	Membrane, 7 or 19 buttons (MPI-DN)
RS-485 SERIAL PORT (1)	
Transmission protocol:	Modbus RTU
Frequency of reading:	3 s, 4 s, 5 s, 6 s, 10 s, 12 s, 15 s, 30 s, 1 min,
Transmission rate:	1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbps
Address space of transducers:	1 ... 247
Maximum load:	32 receivers / transmitters
Maximum length of line:	1200 m
Galvanic separation:	Yes, 250 VAC / 300 VDC
Maximum differential voltage A(+) – B(-):	-8 V ... +13 V
Maximum total voltage A(+) – "ground" or B(-) – "ground":	-7 V ... +12 V
Minimum output signal of transmitter:	1,5 V (przy $R_0 = 54 \Omega$)
Minimum sensitivity of receiver:	200 mV / $R_{WE} = 12 \text{ k}\Omega$
Minimum impedance of data transmission line:	27 Ω
Short-circuit / thermal protection:	Yes
Internal terminating resistor:	Yes
Signals output on terminal block:	A(+), B(-), GND RS, +3,3 V RS (max 10mA), T(+), T(-)
Wire connection:	MPI-D: One 6-position pin type screw terminal blocks, max. cable diameter: 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
HART	
Transmission protocol:	Master type rev. 4, rev 5, rev.6.
Functions:	Reading variables: PV, SV, TV, FV Retrieve long address Change of short address
Multidrop mode:	Yes, up to 15 devices
Loop Power:	24 VDC (max 60 mA)
Analog readout line 4-20mA:	No
Wire connection:	MPI-D: One 3-position pin type screw terminal blocks, max. cable diameter: 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
BINARY INPUTS	
Number of inputs:	2
Maximum input voltage:	30 VDC or 30 V _{p-p}
Measurement range:	0.001 Hz - 10 kHz. (0.001 Hz - 1 kHz if the filtrating capacitor is connected)
Minimum pulse width:	20 μ s 0.5 ms if the filtrating capacitor is connected
Measurement accuracy ($T_a = 20^\circ\text{C}$):	0.02%
Wire connection:	MPI-D: Two 2-position pin type screw terminal blocks, max. cable diameter: 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
Configuration: OC / contact	
Voltage (OC):	12 V
Current (contact):	12 mA
Switch on / off threshold:	2,7 V / 2,4 V
Configuration: input voltage	
Input resistance:	About 1 k Ω
Switch on / off threshold:	2,7 V / 2,4 V
Voltage (OC):	12 V





metronic

APARATURA KONTROLNO - POMIAROWA

Namur configuration:	
High impedance	0,4 mA – 1 mA
Low impedance:	2,2 mA – 6,5 mA
TWO-STATE OUTPUTS	
Number of inputs:	4
Type of outputs:	Semiconductor relays
Maximum load current:	100 mA (AC/DC)
Maximum voltage:	60 V (AC/DC)
Wire connection:	MPI-D: One 8-position pin type screw terminal blocks, max. cable diameter 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
4-20 mA ANALOG OUTPUT - (option)	
Number of outputs :	1
Output signal :	4-20mA
Maximum voltage between I+ and I- :	28 VDC
Loop resistance (for U _{cc} = 24 V) :	0 ... 500 Ω
Converter resolution C/A:	16 bits
Accuracy:	0.5%
Current loop supply :	External or from internal unit supply 24 VDC / 22 mA
Galvanic isolation to supply voltage :	400 VAC
Wire connection:	MPI-D: One 3-position pin type screw terminal blocks, max. cable diameter 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
RS-485 SERIAL PORT (2)	
Transmission protocol:	ASCII Modbus RTU
Transmission rate:	2,4, 4,8, 9,6, 19,2, 38,4, 57,6, 115,2 kbps
Maximum load:	32 receivers / transmitters
Maximum length of line:	1200 m
Galvanic separation:	Yes, 250 VAC / 300 VDC
Maximum differential voltage A(+) – B(-):	-8 V ... +13 V
Maximum total voltage A(+) – "ground" or B(-) – "ground":	-7V ... +12 V
Minimum output signal of transmitter:	1,5 V (przy R ₀ = 54 Ω)
Minimum sensitivity of receiver:	200 mV / R _{WE} = 12 kΩ
Minimum impedance of data transmission line:	27 Ω
Short-circuit / thermal protection:	Yes
Internal terminating resistor:	Yes
Signals output on terminal block:	A(+), B(-), GND RS, +3,3 V RS (max 10mA), T(+), T(-)
Wire connection:	MPI-D: One 6-position pin type screw terminal blocks, max. cable diameter 1,5 mm ² MPI-DN: spring terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
USB PORT	
Port socket:	A socket, as per USB standard
Version:	USB 1.1
Protection class:	IP54
Recorded format:	Text file, FAT16 (within a limited scope)
Recording indication:	Green – red LED on the face plate.
ETHERNET PORT	
Transmission protocol:	Modbus TCP, ICMP (ping), DHCP server, http server
Interface:	10BaseT Ethernet
Data buffer:	300 B
Number of connections opened simultaneously:	4
Connection:	RJ-45
Indication LEDs:	2, in RJ45 socket
INTERNAL DATA MEMORY	
Capacity:	2 GB



metronic
APARATURA KONTROLNO - POMIAROWA

31-261 Kraków, ul. Wybickiego 7
tel./fax: +48 12 623-75-99, 632-69-77
www.metronic.pl
metronic@metronic.pl

Quality Management

We are certified

Voluntary participation in regular
monitoring according to ISO 9001:2008





metronic

APARATURA KONTROLNO - POMIAROWA

Estimated recording time for recording speed every 3 s for 16 measuring channels:	ca. 400 days
Recording indication:	Green – red LED on the face plate.
SUPPLY (MPI-D)	
Supply voltage:	24 VAC (+5% / -10%) 20 ... 30 VDC (any polarity)
Power consumption:	4 W max
Wire connection:	One 3-position pin type screw terminal blocks, max. cable diameter 1,5 mm ²
VOLTAGE (MPI-DN)	
Supply voltage:	230 VAC (+5% / -10%)
Power consumption:	Max 10 VA
Wire connection:	Screw terminal block, cable diameter: 0,2 mm ² – 1,5 mm ²
MECHANICAL DIMENSIONS – HOUSING	
Type of housing:	For mounting in panels, non-flammable plastic "Noryl"
Dimensions (h x w x d):	72 mm X 144 mm X 130 mm
Dimensions of panel cut-out:	138 ⁺¹ mm X 68 ^{+0,7} mm
Maximum panel thickness:	5 mm
Weight:	ca. 1,1 kg
Protection class on front panel side:	IP54
Protection class on rear panel side:	IP30
MECHANICAL DIMENSIONS – HOUSING (MPI-DN)	
Type of housing:	It can be suspended, ABS plastic
Dimensions (h x w x d):	216 mm X 260 mm X 125 mm (without cable glands) 246 mm X 260 mm X 125 mm (with cable glands)
Weight:	ca. 2,1 kg
Protection class:	IP54
CLIMATE CONDITIONS	
Ambient temperature:	0 °C ... +50 °C
Relative humidity:	0 ... 75% (without steam condensation)
Storage temperature:	-20 °C ... +80 °C

Device version: MPI-D v2.03 Data sheet version: 2011-10-26



metronic
APARATURA KONTROLNO - POMIAROWA

31-261 Kraków, ul. Wybickiego 7
tel./fax: +48 12 623-75-99, 632-69-77
www.metronic.pl
metronic@metronic.pl

Quality Management

We are certified

Voluntary participation in regular
monitoring according to ISO 9001:2008

