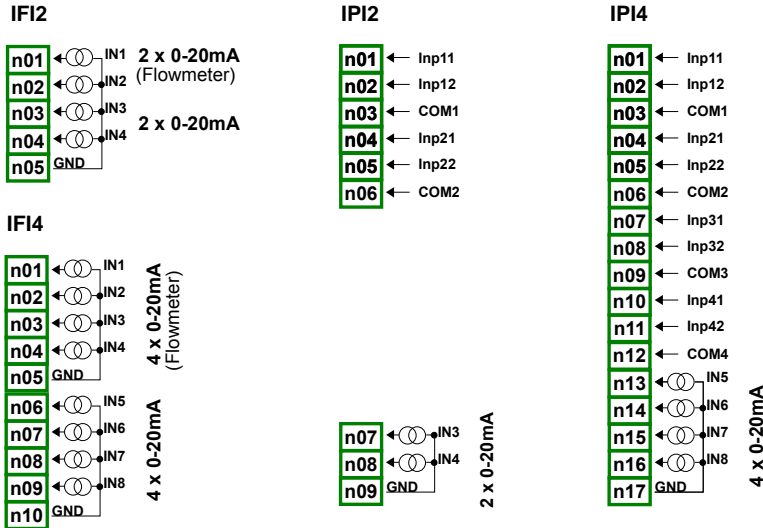


FLOWMETER MODULES

	IFI2	IFI4	IPI2	IPI4
Number of inputs	2x F + 2x I	4x F + 4x I	2x P + 2x I	4x P + 4x I
Hardware measurement ranges (current input)	-2 ... 30 mA	-2 ... 30 mA	0 ... 24 mA	0 ... 24 mA
Hardware resolution (current input)	1 μ A	1 μ A	1 μ A	1 μ A
Software measurement ranges (current input)	0 ... 20 mA 4 ... 20 mA	0 ... 20 mA 4 ... 20 mA	0 ... 20 mA 4 ... 20 mA	0 ... 20 mA 4 ... 20 mA
Precision (current input)	0.25 %	0.25 %	0.25 %	0.25 %
Internal impedance (current input)	Typ. 100 Ω	Typ. 100 Ω	Typ. 100 Ω	Typ. 100 Ω
Sampling period	10 ms	10 ms	50 ms	50 ms
Protection (current input)	50 mA ¹⁾	50 mA ¹⁾	50 mA ¹⁾	50 mA ¹⁾

¹⁾ Auto-reset fuse



IFI module with 2 (4) currents inputs for flowmeters and 2 (4) current inputs for other sensor.

IPI module with 2(4) pulse inputs for flowmeters or ratemeters and 2 (4) current inputs for other sensor. Pulse flowmeters are used to liquid flow measurement, based on pulses from sensor and calculating total flow (balance) in selected channel.

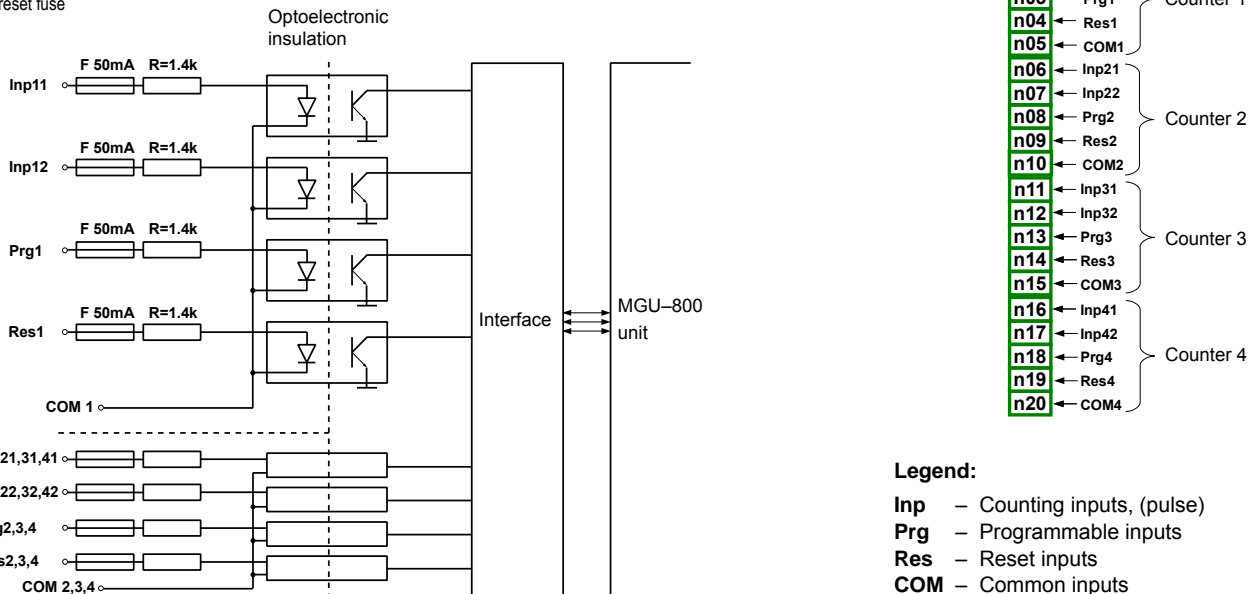
Current inputs are used to current measurement in typ. ranges (0)4 ... 20 mA.

All channels are galvanic separated from the device and from themselves.

UNIVERSAL COUNTER MODULE

	ICP4
Number of inputs	4 groups of counter inputs
Input signals	logical LOW state
voltage levels	logical HIGH state
Input frequency	max. 5 kHz
Input voltage	max. 30 V
Input current consumption	14 mA at 24 V (6 mA at 10 V)
Insulation strength	2 kV
Protection	50 mA ¹⁾

¹⁾ Auto-reset fuse



ICP4 module with 4 universal counters inputs respectively. Each counter can be configured independently and is equipped in two counting inputs (Inp), programming input (Prg), and reset input (Res).

All channels are galvanic separated from the device and from themselves.

Legend:

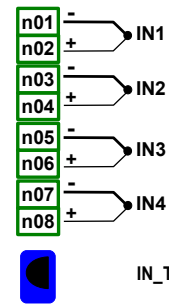
- Inp** – Counting inputs, (pulse)
- Prg** – Programmable inputs
- Res** – Reset inputs
- COM** – Common inputs

Fig. 4: ICP4 module block diagram

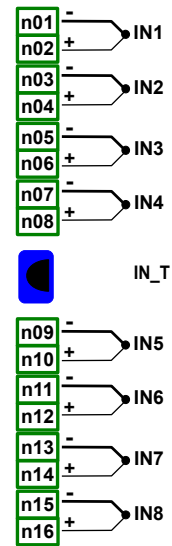
THERMOCOUPLE SENSOR MODULES

		ITC4	ITC8
Number of inputs		4	8
Hardware measurement ranges		-30 ... 30 mV -120 ... 120 mV	-30 ... 30 mV -120 ... 120 mV
Hardware resolution	Range ± 30 mV	1 μ V	1 μ V
	Range ± 120 mV	4 μ V	4 μ V
Permissible long time overload		20 %	20 %
Permissible voltage diff. between channels		0.5 V	0.5 V
Softw. measurement ranges	Thermocouple type	K, S, J, T, N, R, B, E, L (GOST)	
	Voltage	-10 ... 25 mV; ± 25 mV -10 ... 100 mV; ± 100 mV	
Input impedance		Typ. 1 M Ω	Typ. 1 M Ω
Sampling period		385 ms	385 ms

ITC4



ITC8

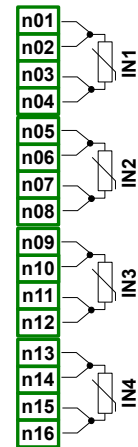


Type	Range	Resolution	Full range	Full range accuracy	Limited range	Limited range accuracy
K	± 120 mV	4 μ V	-200 ... 1370 $^{\circ}$ C	± 8 $^{\circ}$ C ± 0.51	-100 ... 1370 $^{\circ}$ C	± 4 $^{\circ}$ C ± 0.27 %
S	± 30 mV	1 μ V	-50 ... 1768 $^{\circ}$ C	± 7.5 $^{\circ}$ C ± 0.41	0 ... 1768 $^{\circ}$ C	± 6 $^{\circ}$ C ± 0.34 %
J	± 120 mV	4 μ V	-210 ... 1200 $^{\circ}$ C	± 6.3 $^{\circ}$ C ± 0.44	-100 ... 1200 $^{\circ}$ C	± 3 $^{\circ}$ C ± 0.23 %
T	± 30 mV	1 μ V	-200 ... 400 $^{\circ}$ C	± 1.9 $^{\circ}$ C ± 0.31	-100 ... 400 $^{\circ}$ C	± 1 $^{\circ}$ C ± 0.20 %
N	± 120 mV	4 μ V	-200 ... 1300 $^{\circ}$ C	± 12 $^{\circ}$ C ± 0.80	-100 ... 1300 $^{\circ}$ C	± 5.9 $^{\circ}$ C ± 0.42 %
R	± 30 mV	1 μ V	-50 ... 1768 $^{\circ}$ C	± 8.6 $^{\circ}$ C ± 0.47	0 ... 1768 $^{\circ}$ C	± 5.5 $^{\circ}$ C ± 0.31 %
E	± 120 mV	4 μ V	-200 ... 1000 $^{\circ}$ C	± 4.7 $^{\circ}$ C ± 0.40	-100 ... 1000 $^{\circ}$ C	± 2.7 $^{\circ}$ C ± 0.25 %
L	± 120 mV	4 μ V	-200 ... 800 $^{\circ}$ C	± 4.4 $^{\circ}$ C ± 0.44	-100 ... 800 $^{\circ}$ C	± 2.5 $^{\circ}$ C ± 0.28 %
B	± 30 mV	2 μ V	250 ... 1820 $^{\circ}$ C	± 15 $^{\circ}$ C 0.96	480 ... 1820 $^{\circ}$ C	± 6 $^{\circ}$ C 0.45 %

RESISTANCE TEMPERATURE DETECTORS MODULE

		IRT4
Number of inputs		4
Hardware measurement ranges		0 ... 325 Ω 0 ... 3250 Ω
Hardware resolution	Range ± 325 Ω	0.01 Ω
	Range ± 3250 Ω	0.1 Ω
Softw. measurement ranges	RTD type	Pt100; Pt'100; Pt'50; Pt'500; Pt'500; Pt1000; Cu50; Cu'50; Cu'100; Cu'100
	Resistance	0 ... 300 Ω 0 ... 3000 Ω

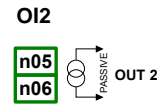
IRT4



Type	Range	Temp. range	Resolution	Accuracy	Accuracy
Pt100	0 ... 325 Ω	-100 ... 600 $^{\circ}$ C	0.01 Ω	± 1 $^{\circ}$ C	± 0.14 %
Pt500	0 ... 3250 Ω	-100 ... 600 $^{\circ}$ C	0.1 Ω	± 2 $^{\circ}$ C	± 0.3 %
Pt1000	0 ... 3250 Ω	-100 ... 600 $^{\circ}$ C	0.1 Ω	± 1 $^{\circ}$ C	± 0.14 %
Pt'50	0 ... 325 Ω	-200 ... 600 $^{\circ}$ C	0.01 Ω	± 2 $^{\circ}$ C	± 0.25 %
Pt'100	0 ... 325 Ω	-200 ... 600 $^{\circ}$ C	0.01 Ω	± 1 $^{\circ}$ C	± 0.12 %
Pt'500	0 ... 3250 Ω	-200 ... 600 $^{\circ}$ C	0.1 Ω	± 2 $^{\circ}$ C	± 0.25 %
Cu50	0 ... 325 Ω	-50 ... 200 $^{\circ}$ C	0.01 Ω	± 1.8 $^{\circ}$ C	± 0.73 %
Cu100	0 ... 325 Ω	-50 ... 200 $^{\circ}$ C	0.01 Ω	± 0.9 $^{\circ}$ C	± 0.37 %
Cu'50	0 ... 325 Ω	-200 ... 200 $^{\circ}$ C	0.01 Ω	± 1.6 $^{\circ}$ C	± 0.4 %
Cu'100	0 ... 325 Ω	-200 ... 200 $^{\circ}$ C	0.01 Ω	± 0.8 $^{\circ}$ C	± 0.2 %
Ni100	0 ... 325 Ω	-60 ... 180 $^{\circ}$ C	0.01 Ω	± 0.7 $^{\circ}$ C	± 0.3 %
Ni500	0 ... 3250 Ω	-60 ... 180 $^{\circ}$ C	0.1 Ω	± 1.4 $^{\circ}$ C	± 0.58 %
Ni1000	0 ... 3250 Ω	-60 ... 180 $^{\circ}$ C	0.1 Ω	± 0.7 $^{\circ}$ C	± 0.3 %

O12 is a module with two passive current outputs (4 ... 20 mA). These outputs require an external power supply through the loop. For its supplying can be used internal power source. The polarity of power can be arbitrary

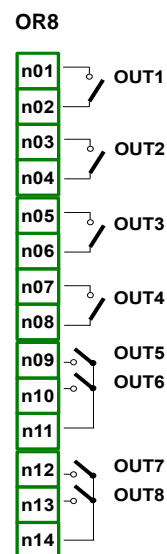
PASSIVE CURRENT OUTPUT MODULE	
	O12
Number of inputs	2
Output type	Passive current output 4 ... 20 mA
Hardware output limitation	3 ... 22 mA
Output voltage dropout	Max. 9 V
Overload protection	Internal resettable fuse 50 mA
Loop supply range	9 ... 30 V
Output current precision	0.1 % (25°C), 50 ppm/°C
Resolution	12 bit



OR8 is the output module with 8-relay switching contacts. The outputs are divided into two groups of 4, the first group has individual contacts electrically isolated, the second group is divided into pairs and each pair has a common contact (see block diagram).

RELAY MODULES	
	OR8
Number of relays	8x SPST NO
Maximum load per relay	1 A, $\cos \varphi = 1$ (resistive load)
Voltage switched by relay	Max. 250 V AC
Insulation strength ¹⁾	≥ 1000 V AC (60 s)

¹⁾ Relay to relay, relay to MGU-800 supply



TECHNICAL SPECIFICATIONS – UNITS	
Power supply voltage (depending on version) ¹⁾	230 V AC or 24 V AC/DC
Power consumption	Typically 15 VA
External Fuse (required)	T – type, Max. 2 A
Display	3.5" TFT colour graphic display with LED backlight
Display resolution	320 x 240 pixels
Sensor power supply output ¹⁾	24 V DC (Max. 0.2 A)
Data storage ²⁾	1.5 GB, up to 250M samples, min interval 0.1 seconds
Protection class	IP 40 (from front, standard) IP 20 (housing and connection clips)
Housing material	NORYL – GFN2S E1
Dimensions	96 x 96 x 100 mm
Mounting hole	90.5 x 90.5 mm
Panel thickness	Max. 5 mm
Ambient temperature range	0 ... +50 °C
Storage temperature	-10 ... +70 °C
Humidity	5 ... 90% No condensation
Altitude	Up to 2000 meters above sea level
Max. conductor size	2.5 mm ²
Weight	340 g (only base Fig. 3)

¹⁾ see the full specification in the appendix

²⁾ data from internal memory can be download to PC by USB flash disk or LAN

ELECTRICAL CONNECTION

Connections of power supply voltage and measurement signals are executed using the screw connections on the back of the unit's housing.

Avoid running signal cables and transmission cables together with power supply cables and cables controlling inductive loads (e.g. contactors). Such cables should cross at a right angle. Contactor coils and inductive loads should be equipped with interference protection systems, e.g. RC-type.

The unit is not equipped with an internal fuse or power supply circuit breaker. Because of this an external time-delay cut-out fuse with a small nominal current value must be used (recommended bipolar, Max. 2 A) and a power supply circuit breaker located near the unit. In the case of using a monopolar fuse it must be mounted on the active wire (L).

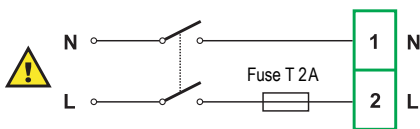


Fig. 5: Connection of power supply

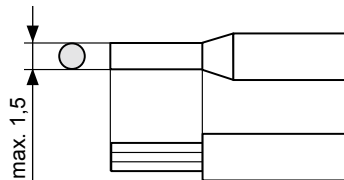


Fig. 6: Method of cable insulation replacing and cable terminals dimensions

Range of supply voltage:

Version 230 V: 85 ... 260 V AC/DC

Version 24 V: 19 ... 50 V DC

(16 ... 35 V AC)

EXAMPLES OF ELECTRICAL CONNECTIONS

Here are some examples of the connection unit MGU-800 with Dinel level sensors (CLM, ULM, HLM).

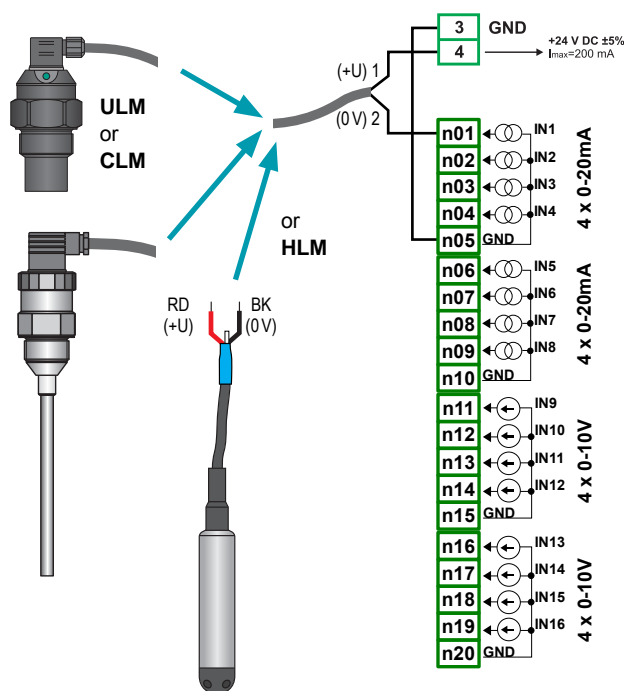


Fig. 7: Examples of the connection Dinel level meters (output 4 ... 20 mA)

The individual connector pins (of dismantable connector) which is a standard accessory to level sensors ULM-53, CLM-36 are numbered (1 and 2). Hydrostatic level meter HLM has color-coded wires:

RD = 1, BK = 2.

The unit MGU-800 can be connected in the same way with other types of level meters. Specific connections are always given in instruction manuals of the product.

Applies to modules: IUI8, IUI4, IUI6

Legend:

RD – Red

BK – Black

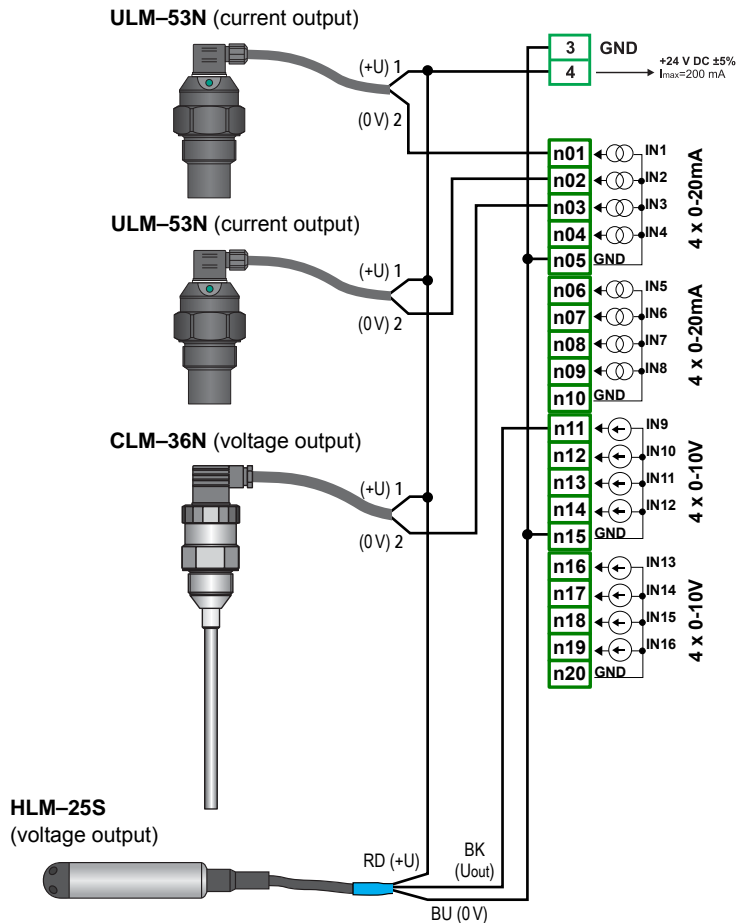


Fig. 8: Examples of the connection Dinel level meters (output 4...20 mA and 0...10 V)

To terminals IN1 ... IN16 can be connected in the same way next level meters. In the configuration with the module IUI8 it can be 8 pieces of level sensors with the current output and 8 pieces with voltage output.

Applies to modules: IUI8, IUI4

Legend:

- BU – Blue
- RD – Red
- BK – Black

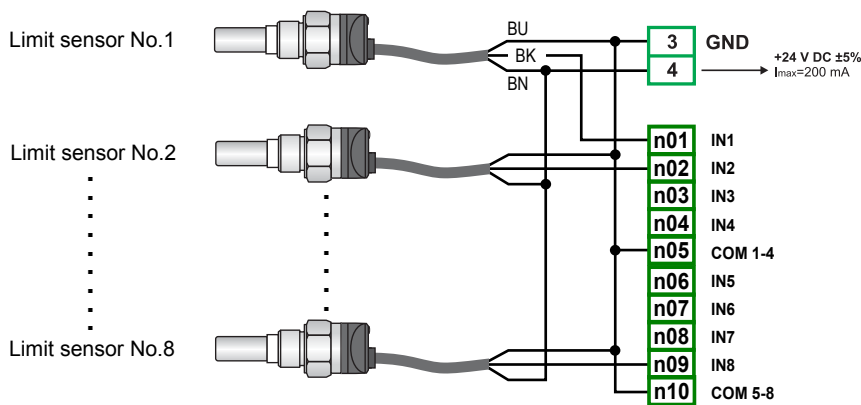


Fig. 9: Examples of the connection Dinel limit level sensors

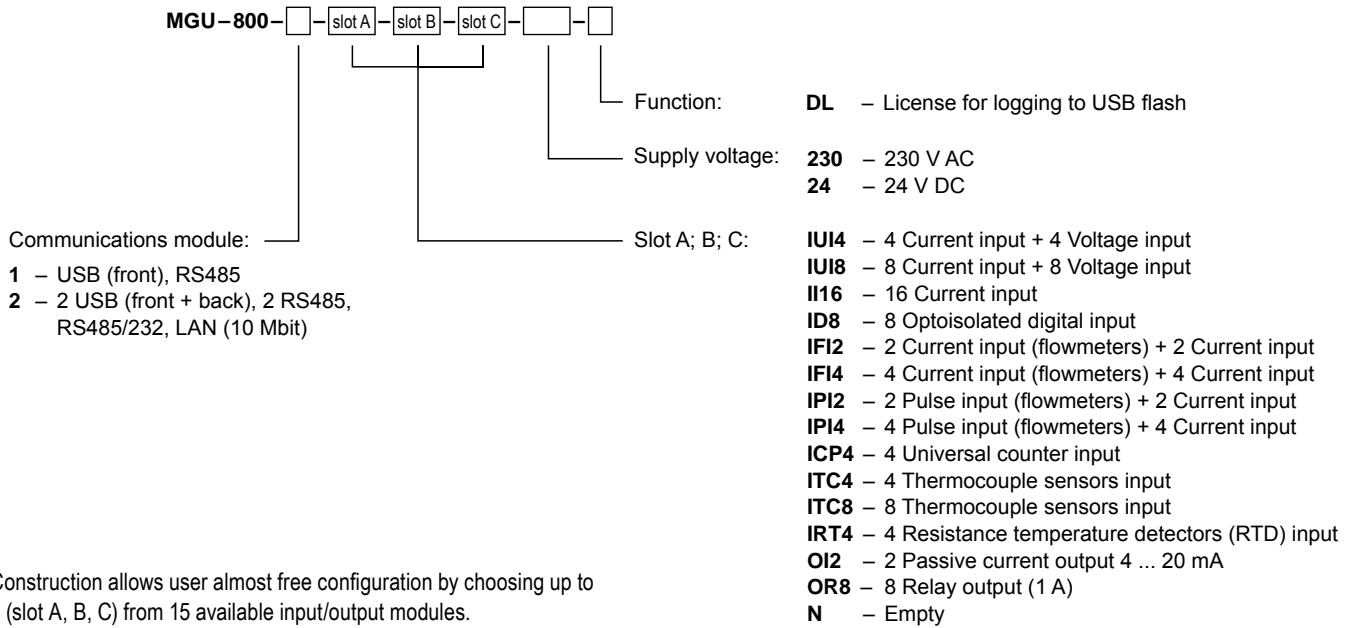
To terminals IN1 ... IN16 of module ID8 can be connected up to 8 limit level sensors with PNP output type (CLS-23, CLS-53, CPS-24, DLS-27, etc.).

Applies to module: ID8

Legend:

- BU – Blue
- BK – Black
- BN – Brown

ORDER CODE



CORRECT SPECIFICATION EXAMPLE

MGU-800-1-IUI8-IUI8-N-230V-DL

(1) USB + RS485; (IUI8) 8 Current input + 8 Voltage input; (IUI8) 8 Current input + 8 Voltage input; (230V) Supply voltage 230 V AC; (DL) License for logging

MGU-800-2-II16-N-N-24V

(2) 2 USB + 2 RS485 + RS485/232 + LAN; (II16) 16 Current output; (24V) Supply voltage 24 V DC

MGU-800-1-OR8-OI2-IFI4-230V

(1) USB + RS485; (OR8) 8 Relay output; (OI2) 2 Passive current output; (IFI4) 4 Current input for flowmeters + 4 Current input; (230V) Supply voltage 230 V AC

MGU-800-1-OR8-ITC4-IRT4-230V-DL

(1) USB + RS485; (OR8) 8 Relay output; (ITC4) 4 Thermocouple sensors input; (IRT4) 4 RTD input; (230V) Supply voltage 230 V AC; (DL) License for logging

PŘÍSLUŠENSTVÍ

Standard – included in the unit price

- 1pc of Touch pen
- 2pcs of Assembly brackets
- 1pc of USB protective cover

Optional – for extra charge

- Licence for logging

SAFETY, PROTECTION AND COMPATIBILITY

Connection to supply voltages must be done through fuse or circuit breaker (2 A). Electrical equipment of protection group II. Electrical safety according to EN 61010-1.

Electromagnetic compatibility is provided by conformity with standards EN 61326-1.

Insulation resistance >20MΩ, insulation strength between power supply and input/output terminal: 2300 V (1 min).

verze 01/2013