OMU 408UNI

8-CHANNEL MEASURING INSTRUMENT

- 4-digit programmable projection
- Multifunction input (DC, PM, RTD, T/C, DU)
- Digital filters, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC
- Option
  Comparators • Data output • Analog output • Measured data record

OMU 408UNI is an 8-channel measuring instrument designed for maximum efficiency and user comfort while maintaining its favourable price. It is a multifunction instrument with the option of configuration for 8 various input options, easily configurable in the instrument menu.

The instrument is based on a single-chip microcontroller with multichannel 24-bit sigma-delta converters that secure high accuracy, stability and easy operation of the instrument.

Great merit of the instrument, owing to the high rate of sampling on individual channels, is the chance to evaluate all measuring inputs at the same time.

OMU 408UNI
DC VOLTMETER AND AMMETER
PROCESS MONITOR
OHMMETER
THERMOMETER FOR Pt/Cu/Ni/THERMOCOUPLES
DISPLAY UNIT FOR LINEAR POTENTIOMETERS

OPERATION

The instrument is set and controlled by five buttons located on the front panel. All programmable settings of the instrument may be performed in three adjusting modes:

LIGHT MENU is protected by optional number code and contains solely items necessary for instrument setting.

PROFI MENU is protected by optional number code and contains complete instrument setting.

USER MENU may contain arbitrary items from the programming menu (LIGHT/PROFI), which determine the right (see, change). Access w/o password.

Standard equipment is the OM Link interface, which together with operation program enables modification and filing of all instrument settings as well as performing firmware updates (with OML cable). The program is also designed for visualization and filing of measured values from more instruments.

All settings are stored in the EEPROM memory (settings hold even after the instrument is switched off). The measured units may be projected on the display.

OPTION

COMPARATORS are assigned to monitor four or eight limit values with relay output. For each input the user may select an arbitrary number of relays with the regime: LIMIT/FROM-TO. The limits have adjustable hysteresis within full range of the display and selectable delay of the switch-on. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

DATA OUTPUTS are for their rate and accuracy suitable for transmission of the measured data for further projection or directly into the control systems. We offer an isolated RS232 and RS485 with the ASCII/MESSBUS/MODBUS/PROFIBUS protocol.

ANALOG OUTPUTS will find their place in applications where further evaluating or processing of measured data is required in external devices. We offer universal analog output with the option of selection of the type of output - voltage/current and the option of assigning it to arbitrary input. The value of analog output corresponds with the displayed data. Its type and range are selectable in menu.

MEASURED DATA RECORD is an internal time control of data collection. It is suitable where it is necessary to register measured values. Two modes may be used. FAST is designed for fast storage (80 records/s) of all measured values up to 8 000 records. Second mode is RTC, where data record is governed by Real Time with data storage in a selected time segment and cycle. Up to 532 000 values may be stored in the instrument memory. Data transmission into PC via serial interface RS232/485 and OM Link.

STANDARD FUNCTIONS

PROGRAMMABLE PROJECTION
Selection: of input type and measuring range
Setting: manual, in menu optional projection on the display may be set for both limit values of the input signal
Projection: -999...9999

SWITCHING OF INPUTS
Manual: by control key on the front panel or from the outside (inputs EXT.)
Automatic: by a set time interval

COMPENSATION
Of conduct (RTD, OHM): automatic (3- or 4-wire) or manual in menu (2-wire)
Of conduct in probe (RTD): internal connection (conduct resistance in measuring head)
Of CJC (T/C): manual or automatic, in menu it is possible to perform selection of the type of thermocouple and compensation of cold junctions, which is adjustable or automatic (temperature of terminals)

FUNCTIONS
Linearization: non-linear signals can be linearized by the means of a linearization table (up to 256 points/8 channels)
Tare: designed to reset display upon non-zero input signal
Min./max. value: registration of min./max. value reached during measurement
Peak value: the display shows only max. or min. value
Mathemat. operations: polynom, 1/x, logarithm, exponential, power, root, sin x, and operations between inputs - sum, difference, product and quotient

DIGITAL FILTERS
Floating average: from 2...30 measurements
Exponential average: from 2...100 measurements
Arithmetic average: from 2...100 measurements
Rounding: setting the projection step for display

EXTERNAL CONTROL
Hold: display/instrument blocking
Lock: control keys blocking
Resetting MM: resetting min./max. value
Functions: control of optional functions from instrument menu

TECHNICAL DATA

INPUT

Number of inputs		4 or 8	
DC	Range	optional in configuration menu	
		±60 mV > 100 MΩ	Input U
		±150 mV > 100 MΩ	Input U
		±300 mV > 100 MΩ	Input U
		±1 200 mV > 100 MΩ	Input U
PM	Range	optional in configuration menu	
		0...20 mA < 400 mV	Input I
		4...20 mA < 400 mV	Input I
		±2 V 1 MΩ	Input U
		±5 V 1 MΩ	Input U
		±10 V 1 MΩ	Input U
		±40 V 1 MΩ	Input U
OHM	Range	optional in configuration menu	
		0...100 Ω	
		0...1 kΩ	
		0...10 kΩ	
		0...100 kΩ	
	Connection	2, 3 or 4 wire	
Pt	Type	optional in configuration menu	
		EU > 100/500/1 000 Ω, 3 850 ppm/°C	-50°...450°C
		US > 100 Ω, 3 920 ppm/°C	-50°...450°C
		RU > 50 Ω, 3 910 ppm/°C	-200°...1 100°C
		RU > 100 Ω, 3 910 ppm/°C	-200°...450°C
	Connection	2, 3 or 4 wire	
Ni	Type	optional in configuration menu	
		Ni 1 000/10 000 with 5 000 ppm/°C	-50°...250°C
		Ni 1 000/10 000 with 6 180 ppm/°C	-50°...250°C
	Connection	2, 3 or 4 wire	
Cu	Type	optional in configuration menu	
		Cu 50/100 with 4 260 ppm/°C	-50°...200°C
		Cu 50/100 with 4 280 ppm/°C	-200°...200°C
	Connection	2, 3 or 4 wire	
T/C	Type	optional in configuration menu	
		J (Fe-CuNi)	-200°...900°C
		K (NiCr-Ni)	-200°...1 300°C
		T (Cu-CuNi)	-200°...400°C
		E (NiCr-CuNi)	-200°...690°C
		B (PtRh30-PtRh6)	300°...1 820°C
		S (PtRh10-Pt)	-50°...1 760°C
		R (Pt13Rh-Pt)	-50°...1 740°C
		N (Omegalloy)	-200°...1 300°C
		L (Fe-CuNi)	-200°...900°C
DU	Pot. power supply	2 VDC/6 mA, Potentiometer resistance > 500 Ω	
Ext. inputs		3 inputs, on contact	
		The following functions can be assigned: OFF / HOLD / LOCK / PASS. / TARE A...H/ CL. T.A...H /CL. M.M. / SAVE / CL. ME. / SWITCH.	

PROJECTION

Measured value: -999...9999, 14-segment LED
Digit height: 14 mm
Measuring units: 0...99, 14-segment LED
Digit height: 10 mm
Display color: red or green
Channel marking: 0...9, 7-segment LED
Digit height: 9,1 mm
Display color: red or green (opposite to the measured value)
Decimal point: adjustable - in menu
Brightness: adjustable - in menu

INSTRUMENT ACCURACY

TC: 50 ppm/°C
Accuracy: ±0,2 % of range + 1 digit (for projection 9999 and 5 measur./s)
Accuracy of cold junction measur.: ±1,5°C
Rate: 0,1...40 measurement/s
Overload capacity: 2x; 10x (t < 30 ms)
Resolution: 0,1°C (RTD), 1°C (T/C)
Line compensation: max. 40 Ω
Cold junction compensation: manual 0°...99°C or automatic
Linearization: linear interpolation in 255 points/8 channels (only via OM Link)
Digital filters: Exp./Floating/Arithm. average, Rounding
Functions: min./max. value, tare, peak value, math. operations betw. inputs
Data record: measured data record into instrument memory
RTC - 15 ppm/°C, time-date-display value,< 532k data
FAST - display value < 8k data
Watch-dog: reset after 400 ms
OM Link: company communication interface for operation, setting and update of instruments
Calibration: at 25°C and 40 % r.h.

COMPARATOR

Type: digital, menu adjustable, limit can be assigned to any input, contact switch-on < 30 ms
Hysteresis mode: switching limit, hysteresis band (Lim and ±1/2 Hys.) and time (±99,9 s) determining the switching delay
Mode From-To: switching on and switching off interval
Mode Batch: period, its multiples and time (0...99.9 s), within which the output is active
Output: 4/8x Form A relays (250 VAC/30 VDC, 3 A)

DATA OUTPUTS

Protocol: ASCII, MESSBUS, MODBUS RTU, PROFIBUS DP
Data format: 8 bit + no parity + 1 stop bit (ASCII)
7 bit + even parity + 1 stop bit (Messbus)
Rate: 600...230 400 Baud
9 600 Baud...12 Mbaud (PROFIBUS)
RS 232: isolated
RS 485: isolated, addressing (max. 31 instruments)

ANALOG OUTPUTS

Type: isolated, programmable with a 16 bit D/A converter, type and range of output is optional in the menu
Non-linearity: 0,1% of range
TC: 15 ppm/°C
Rate: response to change of value < 1 ms
Ranges: 0...2/5/10 V, ±10 V, 0...5 mA, 0/4...20 mA
(comp. < 600 Ω/12 V)

POWER SUPPLY

Range: 10...30 V AC/DC, ±10 %, PF≥ 0,4, I_{STP}< 40 A/1 ms, isolated
80...250 V AC/DC, ±10 %, PF≥ 0,4, I_{STP}< 40 A/1 ms, isolated
Consumption: < 6,7 W/7 VA
Power supply is protected by a fuse inside the instrument.

MECHANIC PROPERTIES

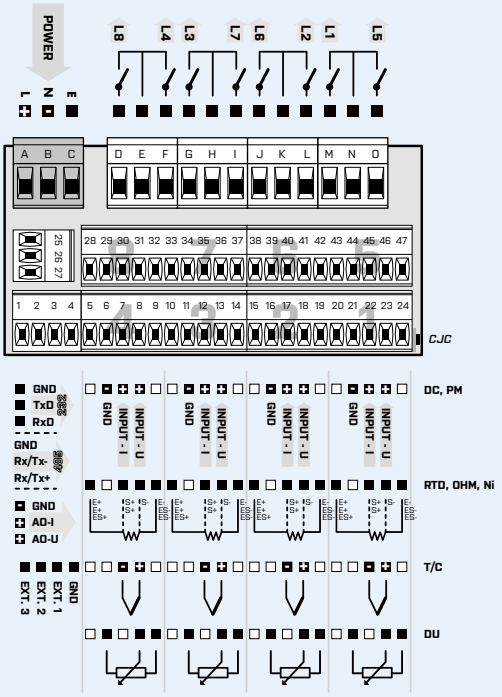
Material: Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions: 96 x 48 x 120 mm (w x h x d)
Panel cutout: 90,5 x 45 mm (w x h)

OPERATING CONDITIONS

Connection: connector terminal blocks, section < 1,5/2,5 mm²
Stabilization period: within 5 minutes after switch-on
Working temperature: -20°...60°C
Storage temperature: -20°...85°C
Protection: IP64 (front panel only)
El. safety: EN 61010-1, A2
Dielectric strength: 4 kVAC per 1 min test between supply and input
4 kVAC per 1 min test between supply and data/analog output
4 kVAC per 1 min test between input and relay output
2,5 kVAC per 1 min test between input and data/analog output
Insulation resistance: for pollution degree II, measuring cat. III
power supply > 670 V (PI), 300 V (DI)
input, output, PN > 300 V (PI), 150 V (DI)
EMC: EN 61326-1
Seismic capacity: IEC 980: 1993, par. 6
SW validation: Classification IEC 62138, 61226 group B, C

PI - Primary insulation, DI - Double insulation

CONNECTION



ORDER CODE

OMU 408UNI - [ ][ ][ ][ ][ ][ ] - [ ]

Power supply	10...30 V AC/DC	**0**						
	80...250 V AC/DC	**1**						
Number inputs	4 inputs		**0**					
	8 inputs		**1**					
Comparators	**none**			**0**				
	4 relays			**1**				
	8 relays			**2**				
Output	**none**				**0**			
	Analog				**1**			
	RS 232				**2**			
	RS 485**				**3**			
	PROFIBUS				**4**			
Data record	**no**					**0**		
	RTC					**1**		
	FAST*					**2**		
Display color	**red**						**1**	
Channel marking has the opposite color	green						**2**	
Specification	**customized version, do not fill in**							**00**
	SW validation - IEC 62138, IEC 61226							**VS**

*Data record in FAST mode is only available from odd channels, i.e. 1, 3, 5 and 7.

Basic configuration of the instrument is indicated in bold.

** Unavailable with MODBUS protocol in combination with RTC/FAST