

OMU 408UNI

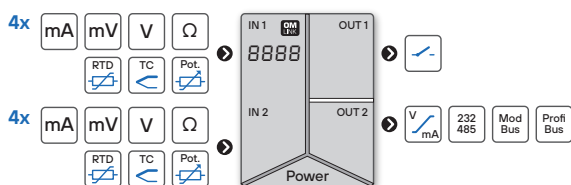
- 4-digit programmable projection
- Multifunction input (DC, PM, RTD, T/C, DU)
- Digital filters, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC

Option

Comparators ● Data output ● Analog output ● Measured data record



8-CHANNEL MEASURING INSTRUMENT



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 microcontroller and multichannel 24-bit $\Delta\Sigma$ ADC, 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.

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 (40 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

Wiring (RTD, OHM): automatic (3- or 4-wire) or manual in menu (2-wire)

Probes (RTD): internal wiring (resistance of conductors in the measuring head)

CJC (T/C): manual or automatic (terminal temperature)

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 Min/Max: resetting min./max. value

Functions: control of optional functions from instrument menu

TECHNICAL DATA

INPUT

No. of inputs	4 or 8 The range is adjustable in the instrument menu	
DC Range	±60 mV > 100 MΩ ±150 mV > 100 MΩ ±300 mV > 100 MΩ ±1 200 mV > 100 MΩ	Input U Input U Input U Input U
PM Range	0...20 mA < 400 mV 4...20 mA < 400 mV ±2 V 1 MΩ ±5 V 1 MΩ ±10 V 1 MΩ ±40 V 1 MΩ	Input I Input I Input U Input U Input U
OHM Range	0...100 Ω 0...1/10/100 kΩ	
Connection	2, 3- and 4-wire	
RTD Range	Pt 100/500/1 000, 3 850 ppm/°C Pt 100, 3 920 ppm/°C Pt 50, 3 910 ppm/°C Pt 100, 3 910 ppm/°C	-50°...450°C -50°...450°C -200°...1100°C -200°...450°C
Connection	2, 3- and 4-wire	
Ni Range	Ni 1 000/10 000, 5 000 ppm/°C Ni 1 000/10 000, 6 180 ppm/°C	-50°...250°C -200°...250°C
Connection	2, 3- and 4-wire	
Cu Range	Cu 50/100, 4 260 ppm/°C Cu 50/100, 4 280 ppm/°C	-50°...200°C -200°...200°C
Connection	2, 3- and 4-wire	
T/C Range	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°...1 620°C S (PtRh10-Pt) -50°...1 760°C R (Pt13Rh-Pt) -50°...1 740°C N (OmegaGalvo) -200°...1 300°C L (Fe-CuNi) -200°...900°C	RTD / T/C
CJC	adjustable -20°...99°C or automatical	
DU Sensor power supply	2 VDC/6 mA, potentiometer resistance > 500 Ω	

EXTERNAL INPUT

No. of inputs	3, on contact	
Function	OFF no function assigned LOCK control keys blocking HOLD measurement paused PASS menu access blocking TARE x tare activation CL Tx tare resetting CL M.M. resetting min/max value SAVE data recording start (FAST/RTC) CL ME. data recording reset (FAST/RTC) MAT. FN. value display „Math. functions“ SWIT. sequential or BCD channel switching	

PROJECTION

Display	-999...9999, single color 14-segment LED
Digit height	14 mm
Display color	red or green
Decimal point	adjustable - in menu
Channel marking	9, single color 7-segment LED, height 10 mm <i>The LED is in the opposite colour to the display</i>
Description	two characters on the display may be used for description of measured quantities
Brightness	adjustable - in menu

INSTRUMENT SPECIFICATION

TC	50 ppm/°C
Accuracy	±0.1% of FS + 1 digit ±0.15% of FS + 1 digit <i>RTD / T/C above accuracies apply for projection 9999 and 5 meas./s</i>
Rate	0.1...40 measurement/s
Overload	10x (t < 30 ms), 2x <i>not valid for 250/450 V and 5 A ranges</i>
Compensation of conduct	< 30 Ω RTD
Measurement accuracy CJC	±15°C T/C
Resolution	0.1°C / 1°C RTD / T/C
Functions	offset, Min/max value, Tare, peak value, math. functions
Digital filters	exponential / floating / arithmetic average, rounding
Math functions	polynomial / inverse polynomial / logarithm / exponential / power / root
Linearization	linear interpolation in 250 points/8 channels <i>setup only via OM Link</i>
Data record	RTC 15 ppm/°C, time-date-display value + 266k data FAST display value + 8k data
OM Link	company communication interface for operation, setting and update of instruments
Watch-dog	reset after 400 ms
Calibration	at 25°C and 40 % rh.

RELAYS / OC OUTPUT

No. of outputs	4 or 8
Type	digital, menu adjustable
Mode	HYSTER active above set value WINDOW active in the set window / band BATCH active in set period
Function Relays/OC	CLOSE is closed in active mode OPEN is open in active mode
Limits	-999...9999
Hysteresis	0...9999
Delay	0...99.9 s
Outputs	4 / 8x relay with switch-on contact (Form A) (250 VAC/30 VDC, 3 A)*
Relays	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

* values apply for resistance load

ANALOG OUTPUTS

No. of outputs	1
Type	isolated, adjustable with 16-bit DAC, output type and range is selectable
TC	15 ppm/°C
Non-linearity	0.1 % from FS
Accuracy	±0.02 % of FS
Rate	response to change of value < 1 ms
Ranges	0...2 / 5 / 10 V, ±10 V, resistive load ≥ 1 kΩ 0...5 / 20 mA, / 4...20 mA, compensation < 600 Ω/12 V or 1000 Ω/24 V Indication of error message (output < 3.2 mA)

DATA OUTPUTS

No. of outputs	1
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	300...230 400 Baud 9 600 Baud...12 Mbaud (PROFIBUS)
RS 232	isolated
RS 485	isolated, addressing (max. 31 instruments)

POWER SUPPLY

Range	10...30 V AC/DC, ±10 %, PF ≥ 0.4, I _{30s} < 40 A / 1 ms, isolated 80...250 V AC/DC, ±10 %, PF ≥ 0.4, I _{30s} < 40 A / 1 ms, isolated <i>Protection by fuse inside the device</i>
Consumption	< 9.4 W / 9.2 VA

MECHANIC PROPERTIES

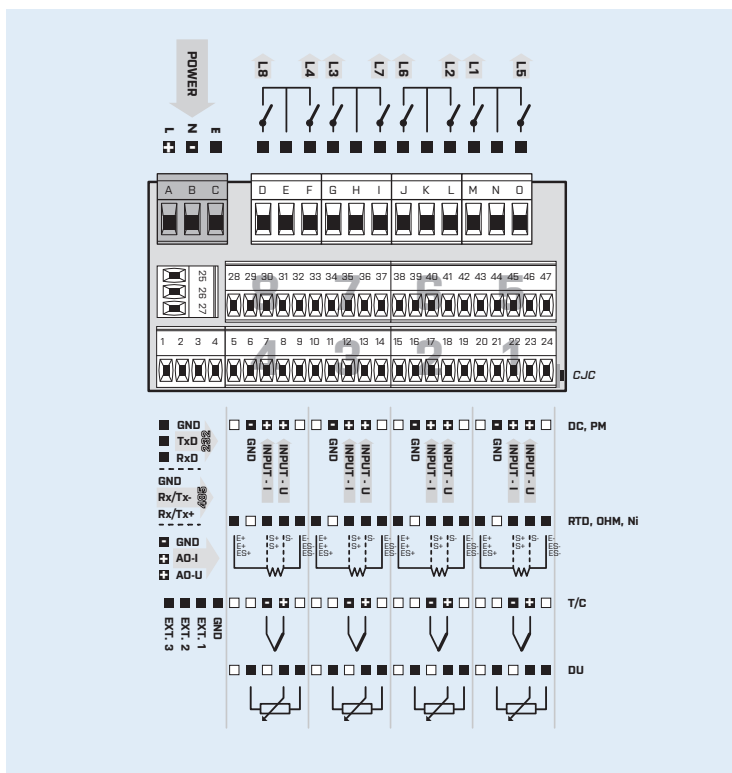
Material	Noryl GFN2 SE1, incombustible UL 94 V-1, black
Dimensions	96 x 48 x 120 mm (w x h x d)
Panel cutout	90.5 x 45 mm (w x h)

OPERATING CONDITIONS

Connection	connector terminal blocks, section < 1.5 / 2.5 mm ²
Stabilization period	within 5 minutes after switch-on
Working temperat.	-20°...60°C
Storage temperat.	-20°...85°C
Working humidity	< 95 % r.v., non condensing
Protection	IP64, front panel only
Construction	safety class I
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 resist.*	for pollution degree II, measuring cat. III power supply, input > 670 V (PI), 300 (DI) input, output, excitation > 300 V (PI), 150 V (DI)
EMC	EN 61326-1, Industrial area
Seismic capacity	IEC 980: 1993, par. 6
SW validation	Class B, C in compl. with IEC 62138, 61226

* PI - Primary insulation, DI - Double insulation

CONNECTION



ORDER CODE

OMU 408UNI

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