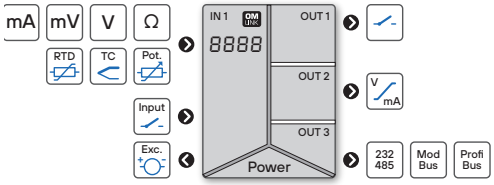
OM 402PID

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

Option

Data output ● Analog output

UNIVERSAL PID REGULATOR



OM 402PID is a 4-digit universal panel PID regulator designed for maximum flexibility 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.

In its basic configuration the OM 402PID has two regulatory relays and two relay alarm outputs. Desired value can either be constant or defined by one of 14 programmes.

The instrument is based on a microcontroller and multichannel 24-bit ΔΣ ADC, which secures high accuracy, stability and easy operation of the instrument.

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).

option

INPUT OF DESIRED VALUE enables the regulator to be used for follow-up control. Both current and voltage inputs can be used.

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 isolated RS232 and RS485 with the ASCII/PROFIBUS protocols.

STANDARD FUNCTIONS

PROGRAMMABLE PROJECTION
Selection: of input type and measuring range
Setting: manual, optional projection on the display may be set in menu for both limit values of the input signal, e.g. input 0...20 mA > 0...500.0
Projection: -999...9999

PID REGULATOR
Execution: parallel PID, PI or proportional
Relay output: double, two-state, PWM
Analog output: isolated, modes: heating, cooling, both
Required value: set, from analog output, from program
Number of programs/steps: 14/64
Launching: time - one-off/weekly, by external input, by buttons

RELAY OUTPUTS
Type: digital, adjustable in menu
Outputs: relays L1, L2 are alarm ones, relays L3, L4 are intended as regulatory but they can also be used as alarms

ANALOG OUTPUT
Usage: where this type of signal is requested by action devices, or it can be used for processing of the measured value by external devices
Type: isolated, programmable with a 12 bit D/A trasmitters, functions, type and range of the output are selectable in the instrument´s menu

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)

DIGITAL FILTERS
Floating/Exp./Arithm. average: from 2...30/100/100 measurements
Rounding: setting the projection step for display

FUNCTIONS
Linearization: non-linear signals can be linearized by the means of a linearisat. table
Min./max. value: registration of min./max. value reached during measurement
Tare: designed to reset display upon non-zero input signal
Peak value: the display shows only max. or min. value
Mathemat. operations: polynom, root

TECHNICAL DATA

INPUT

No. of inputs	1 The range is adjustable in the instrument menu		
DC Range	±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	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
Required value	optional extensions - by order range and setting is the same as option „PM" connection to inputs - Required value U/I"		
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	-50°...450°C	
	Pt 100, 3 920 ppm/°C	-50°...450°C	
	Pt 50, 3 910 ppm/°C	-200°...1100°C	
	Pt 100, 3 910 ppm/°C	-200°...450°C	
Connection	2-, 3- and 4-wire		
Ni Range	Ni 1 000/10 000, 5 000 ppm/°C	-50°...250°C	
	Ni 1 000/10 000, 6 180 ppm/°C	-200°...250°C	
Connection	2-, 3- and 4-wire		
Cu Range	Cu 50/100, 4 260 ppm/°C	-50°...200°C	
	Cu 50/100, 4 280 ppm/°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°...1 820°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	
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 tare activation CL. TA. tare resetting CL. M.M. resetting min/max value SAVE data recording start (FAST/RTC) CL. ME. data recording reset (FAST/RTC) STOP R. regulation stop STAR. P. running regulation to the spec. value STAR. A running regulation to „Required value"

PROJECTION

Display	-999...9999, single color 14-segment LED
Digit height	14 mm
Display color	red or green
Description	2x -999...9999, green 7seg. LED, height 9 mm The upper display shows the number of the program/step, the lower display shows the desired value
Signalling LED	„*", „-", „3", „4" gelb (regulation) „1", „2", „3", „4" red (alarm) „1", „t" green (tare)
Decimal point	adjustable - in menu
Brightness	adjustable - in menu

INSTRUMENT SPECIFICATION

TC	50 ppm/°C	
Accuracy	±0.1 % of FS + 1 digit ±0.15% of FS + 1 digit *above accuracies apply for projection 9999 and 5 meas./s*	RTD / T/C
Rate	0.1...40 measurement/s	
Overload	10x (t < 30 ms), 2x	
Compensation of conduct	< 30 Ω	RTD
Measurement accuracy CJC	±1.5°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, rouding	
Math functions	polynomial / inverse polynomial / logarithm / exponential / power / root	
Linearization	linear interpolation in 50 points *setup only via OM Link*	
Data record	RTC 15 ppm/°C, time-date-display value < 266k 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 % r.h.	

RELAYS / OC OUTPUT

No. of outputs	4
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	-99999...999999
Hysteresis	0...999999
Delay	0...99.9 s
Outputs	2x relay with switch-on contact (Form A) (250 VAC/30 VDC, 3 A)* 2x relay with switching contact (Form C) (250 VAC/50 VDC, 3 A)* 2x SSR (250 VAC/ 1 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)

EXCITATION

Adjustable	5...24 VDC, < 1.2 W, isolated

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 *Protection by fuse inside the device.*
Consumption	< 9.4 W / 9.2 VA

MECHANIC PROPERTIES

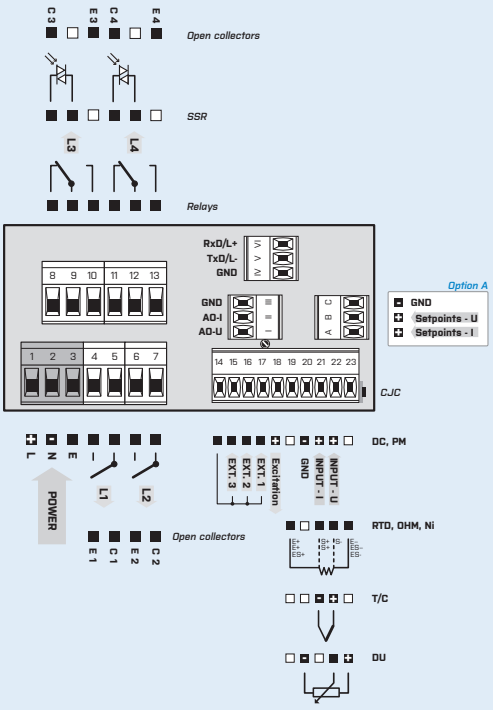
Material	Noryl GFN2 SE1, incombustible UL 94 V-I, black
Dimensions	96 x 48 x 120 mm (w x h x d)
Panel cutout	90.5 x 45 mm (w x h)

OPERATING CONDITIONS

Connection	connector terminal blocks, section < 1.5 / 2.5 mm²
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



*For the „Requested value" we recommend to connect terminals GND (main board/additional board) by external connection.

ORDER CODE

OM 402PID - [ ][ ][ ][ ][ ][1] - [ ]

Power supply	10...30 V AC/DC	**0**						
	80...250 V AC/DC	**1**						
Input for the requested value	no		**0**					
	yes		**A**					
Alarm relays (outputs L3, L4)	relay			**0**				
	SSR			**1**				
Analog output	no				**0**			
	yes (compensation < 600 Ω/12 V)				**1**			
	yes (compensation < 1 000 Ω/24 V)				**2**			
Data output	none					**0**		
	RS 232					**1**		
	RS 485					**2**		
	Modbus					**3**		
	PROFIBUS					**4**		
Excitation	yes						**1**	
Specification	customized version, do not fill in							**00**

Basic configuration of the instrument is indicated in bold.

* Launch for sale has not been set.