



OM 502I



- 5-digit programmable projection
- Range 0...5 mA; 0...20 mA; 4...20 mA
±2 V; ±5 V; ± 10V
- Mathematic functions, digital filters, Tare
- Accuracy 0.02 %, Rate: 100 meas./s
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC

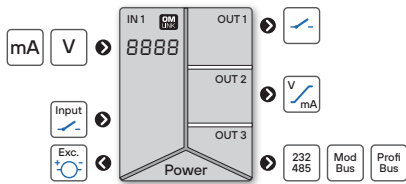
Option

Comparators ● Data output ● Analog output ● Data record

Type OM 502I is a precision 5-digit programmable panel integrator with projection of both integrated and instantaneous values.

The instrument is based on a microcontroller and fast 24-bit $\Delta\Sigma$ ADC, which secures high accuracy, stability and easy operation of the instrument.

INTEGRATOR



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 one, two, three or four limit values with relay output. As a user you can select the mode limit: LIMIT/BATCH/FROM-TO. The limits have adjustable hysteresis within the full range of the display as well as selectable delay of the switch-on in the range of 0...99.9 s. 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/PROFIBUS protocols.

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. 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 266 000 values may be stored in the instrument memory. Data transmission into PC via serial interface RS232/485 and OM Link.

STANDARD FUNCTIONS

PROGRAMMABLE PROJECTION

Setting: manual, in menu optional projection on the display can be set for both limit values of the input signal (e.g. input 4...20 mA > 0...500.0), dividing and multiplying constant, deadband or suppression of negative value

Time base: 1 s, projection of both integrated and instantaneous values

Projection: -99999...99999

EXCITATION

Range: 5...24 VDC/1.2 W, for feeding sensors and transmitters

FUNCTIONS

Linearization: non-linear signal is converted by a 50-point linear interpolation

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, 1/x, logarithm, exponential, power, root, sin x

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

Lock: control keys blocking

Hold: display/instrument blocking

Tare: tare activation

Resetting Min/Max: resetting min./max. value

TECHNICAL DATA

INPUT

No. of inputs	1		
Range	0...5 mA 0...20 mA 4...20 mA	< 300 mV < 300 mV < 300 mV	Input I Input I Input U
	+2 V +5 V +10 V	1.8 M Ω 1.8 M Ω 1.8 M Ω	Input U Input U Input U
Time base	1 s		
Multiplication constant	1...100 000		
Dividing constant	1/10/60/100/1 000/3 600		
Deadband	signal integration up from the set value 1...100 000		
Negative value	option allows to suppress negative signal value, the device integrates only in positive values (adds)		
Automic resetting	setting of an automatic reset on display overflow		

EXTERNAL INPUT

No. of inputs	3, on contact
Function	<ul style="list-style-type: none"> 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) CL. I. integrated value reset CL. SUM. sum reset CHAN. A value display „Channel A“ FIL. A value display „Channel A“ + filter MAT. FN. value display „Math. functions“

PROJECTION

Display	-99999...999999, single color 14-segment LED
Digit height	14 mm
Display color	red or green
Description	last two characters on the display may be used for description of measured quantities
Decimal point	adjustable - in menu
Brightness	adjustable - in menu

INSTRUMENT SPECIFICATION

TC	50 ppm/°C
Accuracy	$\pm 0.02\%$ of FS + 1 digit <i>above accuracies apply for projection 99999 and 10 meas./s</i>
Rate	1...100 measurement/s
Overload	10x (t < 30 ms), 2x
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 50 points <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	up to 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	1...2x relay with switch-on contact (Form A) (250 VAC/30 VDC, 3 A)* 1...2x relay with switching contact (Form C) (250 VAC/50 VDC, 3 A)* 2x bistable relays (250 VAC/250 VDC, 3 A/0,3 A) 2...4x open collector (30 VDC/100 mA)
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	$\pm 0.02\%$ of FS
Rate	response to change of value < 1 ms
Ranges	0...2 / 5 / 10 V, ± 10 V, resistive load ≥ 1 k Ω 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, < 12 W, isolated
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POWER SUPPLY

Range	10...30 V AC/DC, $\pm 10\%$, PF ≥ 0.4 , $I_{50\%} < 40$ A / 1 ms, isolated 80...250 V AC/DC, $\pm 10\%$, PF ≥ 0.4 , $I_{50\%} < 40$ A / 1 ms, isolated <i>Protection by fuse inside the device</i>
Consumption	< 8.0 W / 7.8 VA

MECHANIC PROPERTIES

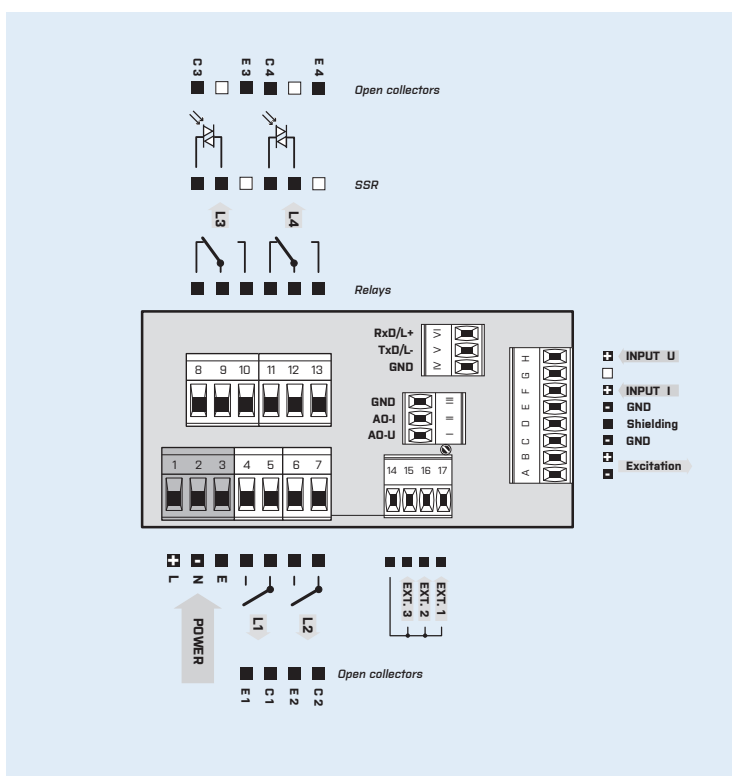
Material	Noryl GFN2 SE1, incombustible UL 94 V-1, black
Dimensions	96 x 48 x 120 mm (w x h x d)
Panel cutout	90.5 x 45 mm (w x h)

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

* PI - Primary insulation, DI - Double insulation

CONNECTION



ORDER CODE

OM 5021		- [] [] [] [] [] [] - []			
Power supply	10...30 V AC/DC 80...250 V AC/DC	0			
Comparators	none 1x relay (Form A) 2x relay (Form A) 3x relays (2x Form A + 1x Form C) 4x relays (2x Form A + 2x Form C) 2x open collector 4x open collector 2x open collector + 2x relays (Form C) 2x relays (Form C) 2x SSR 2x bistable relays 1x relay (Form C)	1			
Data output	none RS 232 RS 485 Modbus* PROFIBUS	0			
Analog output	no yes (compensation < 600 Ω /12 V) yes (compensation < 1 000 Ω /24 V)	1			
Excitation	yes		1		
Data record	no RTC FAST			0	
Display color	red green				1 2
Specification	customized version, do not fill in				00

Basic configuration of the instrument is indicated in bold.

* Unavailable in combination with RTC/FAST