



Data Sheet  
**OM 402LC**

*Distributed by*



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## OM 402LC



The OM 402 model series are 4-digit panel programmable instruments designed for maximum efficiency and user comfort while maintaining their favourable price.

Type OM 402LC is an instrument for connection of strain gauge bridges.

The instrument is based on a single-chip microcontroller and a multichannel 24-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

### DISPLAY FOR STRAIN GAUGES

- 4-digit programmable projection
- Range: 1...4/2...8/4...16 mV/V
- 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 • Three-color display - 20 mm

**OM 402LC**  
DISPLAY FOR STRAIN GAUGES

#### 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

**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 (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 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

**Measuring range:** adjustable in menu

**Calibration:** manual - setting sensitivity and maximum measuring range of the sensor, automatic - setting measuring range's limits and use of the reference load

**Projection:** -999...9999

##### EXCITATION

**Fixed:** 10 VDC, load  $\geq 80 \Omega$

##### FUNCTIONS

**Linearization:** non-linear signals can be linearized by the means of a linearization table (up to 50 points)

**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/Exp./Arithm. average:** from 2...30/100/100 measurements

**Rounding:** setting the projection step for display

##### EXTERNAL CONTROL

**Lock:** control keys blocking

**Hold:** display/instrument blocking

**Tare:** tare activation

**Resetting MM:** resetting min/max value

## TECHNICAL DATA

### INPUT

Number of inputs	1
LC Range	optional in configuration menu
	1..4 mV/V
	2..8 mV/V
	4..16 mV/V
Connection	6-wire
Power supply	10 VDC, load $\geq$ 80 $\Omega$
Ext. inputs	3 inputs, on contact
The following functions can be assigned:	
OFF	input off
HOLD	display stop
LOCK	control keys blocking
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)
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;  
-999..9999, 3-color 7-segment LED  
Digit height: 14 or 20 mm  
Display color: red or green (height 14 mm)  
red/green/orange (height 20 mm)  
Description: last two characters on the display may be used for description of measured quantities (menu adjustable - only 14 mm display)  
Decimal point: adjustable - in menu  
Brightness: adjustable - in menu

### INSTRUMENT ACCURACY

TC: 50 ppm/°C  
Accuracy:  $\pm$ 0.1% of range + 1 digit (for projection 9999 and 5 measur./s)  
Rate: 0.1..40 measurement/s  
Overload capacity: 2x; 10x (t < 30 ms)  
Linearization: linear interpolation in 50 points (only via OM Link)  
Digital filters: Exp./Floating/Arithm. average, Rounding  
Functions: Offset, Min/max value, Tare, Peak value, Mat. operations  
Data record: measured data record into instrument memory  
RTC - 15 ppm/°C, time-date-display value < 266k data  
FAST - display value < 8k data  
Watch-dog: reset after 0.4 s  
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, contact switch-on < 30 ms  
Hysteresis mode: switching limit, hysteresis band (Lim and  $\pm$ 2 Hys.) and time ( $\pm$ 99.9 s) determining the switching delay  
Mode From-To: switching on and switching off interval  
Mode Batch: period, its multiples and time (0..999.9 s), within which the output is active  
Output: 1..2x relays Form A (250 VAC/30 VDC, 3 A) and 1..2x relays Form C (250 VAC/50 VDC, 3 A);  
2x/4x open collector (30 VDC/100 mA); 2x SSR (250 VAC/1 A);  
2x bistable relays (250 VAC/250 VDC, 3 A/0.3 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, 0,0096..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, output type and range are 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,  $\pm$ 10 V, 0..5 mA, 0/4..20 mA (comp. < 600  $\Omega$ /12 V or 1 000  $\Omega$ /24 V)

### POWER SUPPLY

Range: 10..30 V AC/DC,  $\pm$ 10 %, PF $\geq$ 0.4, I<sub>STP</sub> < 40 A/1 ms, isolated  
80..250 V AC/DC,  $\pm$ 10 %, PF $\geq$ 0.4, I<sub>STP</sub> < 40 A/1 ms, isolated  
Consumption: < 9.4 W/9.2 VA  
Power supply is protected by a fuse inside the instrument.

### MECHANIC PROPERTIES

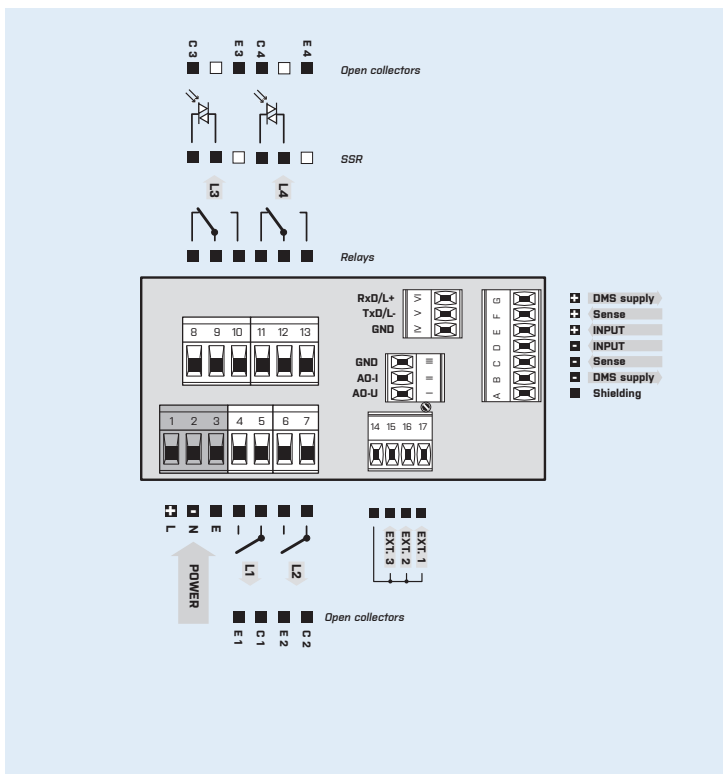
Material: Noryl GFN2 SE1, incombustible UL 94 V-1  
Dimensions: 96 x 48 x 120 mm (w x h x d)  
Panel cutout: 90.5 x 45 mm (w x h)

### OPERATING CONDITIONS

Connection: connector terminal blocks, section < 1.5/2.5 mm<sup>2</sup>  
Stabilization period: within 5 minutes after switch-on  
Working temperature: -20°..60°C  
Storage temperature: -20°..80°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

PI - Primary insulation, DI - Double insulation

## CONNECTION



## ORDER CODE

### OM 402LC

Power supply	10..30 V AC/DC <b>80..250 V AC/DC</b>	0 1
Comparators	no 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 relays, bistable 1x relay (Form C)	0 1 2 3 4 5 6 7 8 9 A B
Analog output	no yes (compensation < 600 $\Omega$ /12 V) yes (compensation < 1000 $\Omega$ /24 V)	0 1 2
Data output	no RS 232 RS 485 MODBUS* PROFIBUS	0 1 2 3 4
Data record	no RTC FAST	0 1 2
Display color	<b>red (14 mm)</b> green (14 mm) red/green (20 mm)	1 2 3
Specification	customized version, do not fill in	00

Basic configuration of the instrument is indicated in bold.

\* Unavailable in combination with RTC/FAST