
UM 3023

Digital Display

for analogue input signals

instruction manual



Warranty

For delivered products our "Allgemeine Lieferungs- und Zahlungsbedingungen" are effective. In no event we or our suppliers shall be liable for any other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption or other pecuniary loss) arising out of or inability to use this product.

All our products are warranted against defective material and workmanship for a period of two (2) years from date of delivery. If it is necessary to return the product to us, the sender is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit. This warranty does not apply to defects resulting from action of the buyer, such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorized modification.

Safety instructions

When delivered the instrument has been tested to meet all functions described. Before installing the instrument please read the mounting and servicing instructions. We have no liability or responsibility to customer or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by equipment or software sold or furnished by us. Read the installation instruction carefully. No liability will be assumed for any damage caused by improper installation.

Inspect the instrument module carton for obvious damage. Be sure there are no shipping and handling damages on the module before processing. Do not apply power to the instrument if it has damages.

The warranty does not apply to defects resulting from action of buyer, such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorized modifications.

Explanation of symbols



Caution



Attention



Instruction



Hint

Caution:	Dangerous!
Attention:	Will cause damage
Instruction:	If not noticed, trouble may occur.
Hint:	Useful hints for better operation.

Trademarks

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1. Description

The digital panel meter model **UM 3023** is an universal instrument for measuring analog input signals listed below:

- Voltage 0-10V
- Current 0-20 mA/4-20 mA

Standard Hardware

- 4 function buttons on the front side

Standard Software

- Scaling
- Free setting of decimal point
- Display test
- Taring

2. Mounting

2.1. Place of operation

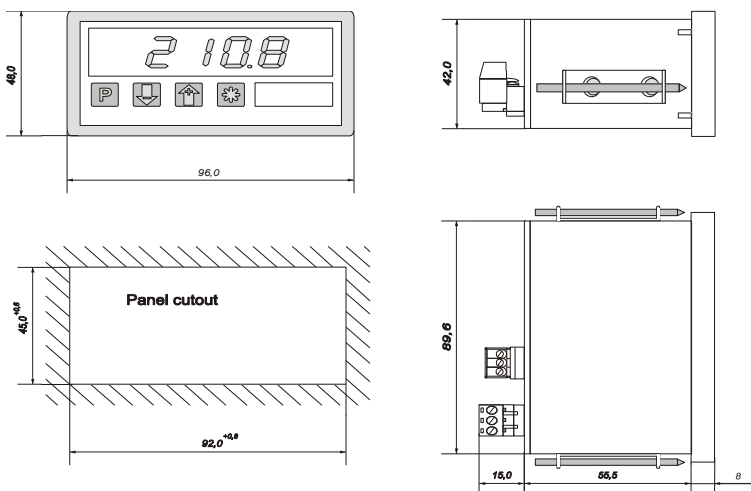
Attention must be paid to the protection against humidity, dust and high temperatures at the place of operation.

2.2. Mounting of the display

2.2.1. Panel for switchboard

Insert the case into the panel cutout ($92,0^{+0,8} \times 45,0^{+0,6}$ mm) from the front.

Tighten the screws alternately, using enough pressure to get good retention and sealing at the panel.



3. Electrical Connection

3.1. General Instructions



- It is forbidden to plug or unplug connectors with voltage applied
- Attach input and output wires to the connectors only without voltages applied
- Cords must be provided with sleeves
- Attention must be paid that the power supply voltage applied will agree with voltage noticed at the Type plate.
- The instrument has no power-on switch, so it will be in operation as soon as

3.2. Hints against noisy environment

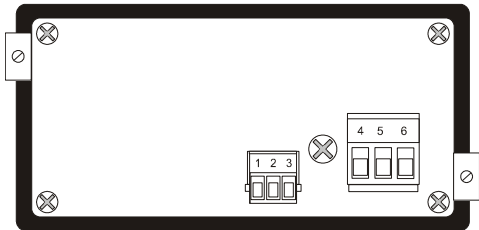
All inputs and outputs are protected against noisy environment and high voltage spikes. Nevertheless the location should be selected to ensure that no capacitive or inductive interference can have an effect on the instrument or the connection lines.

It is advisable:

- To use shielded cables.
- The wiring of shields and ground (OV) should be star-shaped.
- The distance to interference sources should be as long as possible. If necessary, protective screen or metal enclosures must be provided.
- Coils of relays must be supplied with filters.
- Parallel wiring of input signals and AC power lines should be avoided.

3.3. Connection and pin assignment

All inputs and outputs are connectors designed as plug-in screw terminals.

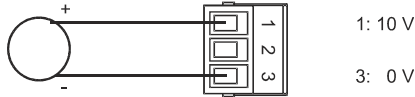


Pin assignment:

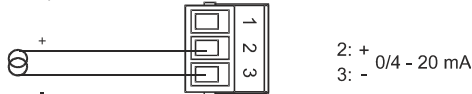
1	Signal input voltage	4	Ground
2	Signal input current	5	Supply voltage(-)
3	Signal ground	6	Supply voltage(+)

3.4. Connection of signal inputs

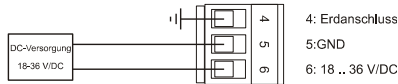
3.4.1. Signal input 0 - 10 V



3.4.2. Signal input 0 - 20 mA, 4 - 20 mA



3.4.3. Connection of power supply voltage



4. Start up



Attention must be paid that the power supply voltage applied will agree with the voltage noticed at the type plate.

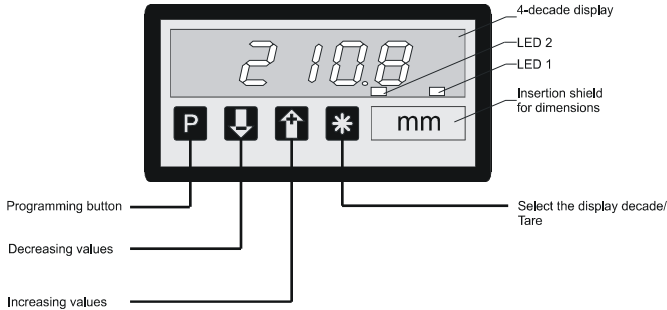
Switch the power supply on (supply voltage applied to 5 (-) and 6 (+)).



When delivered, the instrument is programmed with a standard configuration (default configuration). According to his measuring task, the customer can change the standard configuration by programming.

Attention: When the instrument is built-in in a machine and the customer wants to change the configuration, attention must be paid, that no damage will occur to the machine!

5. Functions of the buttons and LEDs



LED 1	LED 2	Bedeutung
	dark	The displayed value is not tared
	yellow-orange lights	The displayed value is tared
green/flashes		Programming mode is activated

6. Programming

The operation and the programming of the panel meter is organized in several programming levels. Programming is performed by the buttons on the front.

Taste	Funktion
P	Selecting and confirming of parameters
+	Increasing - the parameter number - the decade of the parameter
-	Decrease - the parameter number - the decade of the parameter
*	Change the decade of the parameter in programming mode / tare button

Entering the programming routine

- Pressing pushbutton „P“ together with „+“ button
- The display shows „0-00“

Leaving the programming routine

- Press „+“ or „-“ button until the display shows „0End“
- Confirm the display „0End“ by pressing the „P“ button

Selection of a Parameter

- Select the parameter with the „+“ or „-“ button
- Confirm the selected parameter with the „P“ button
- The display shows the current value of the parameter

Change and confirm the selected parameter

- Change the parameter with the „+“ or „-“ button
- Select the display decade to be changed by pressing „*“ button
- Confirm the parameter with the „P“ button
- the display shows the programming level and the number of the parameter
e.g.: „0-04“ ==>> Parameter 4

6.1. Programming level for configuration 0-00

<i>Parameter</i>	<i>Description</i>	<i>Setting range</i>	<i>Default</i>
0-00	Input range 0 -> Voltage 0 bis 10 V 1 -> Current 0 to 20 mA 2 -> Current 4 to 20 mA	0 .. 2	0
0-01	Display value for minimum input signal	-999 .. 9999	0
0-02	Display value for maximum input signal	-999 .. 9999	1000
0-03	Decimal point 0 -> XXXX 1 -> XXX.X 2 -> XX.XX 3 -> X.XXX	0 .. 3	1
0-04	Taring on=1, off = 0	0 .. 1	0
0End	Leaving programming level 0-00		

6.1.1. Scaling the display range

Overflow and underflow is indicated as follows:

In the case of an **overflow** the display shows the following: „nnnn“; this occurs if

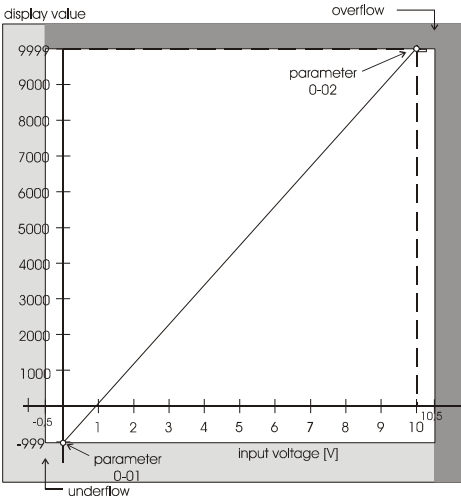
- the input signal exceeds the permissible maximum around more than 0,5V or 1 mA;
e.g. input voltage >10,5 V or input current >21 mA.
- the display range exceeds the possible maximum. (> 9999)

An **underflow** is displayed as „uuuu“; this occurs if

- the input signal exceeds the permissible minimum around more than 0,5V or 1 mA;
- e.g. input voltage < -0,5V or input current < -1 mA or 3mA.
- the display range exceeds the possible minimum. (< -999)
- the parameter PO-03 has the value 3 (decimal point after the first decade: X.XXX) (in this case is the display of negative values is not possible) and the displayed value would be below 0.000.

The display values for the minimum and the maximum input signal will be set in the parameters 0-01, 0-02.

Example:
Input range: 0 V to 10 V, display range: -999 bis +9999



Step	Param.	Value
1.	0-00	0
2.	0-01	-999
3.	0-02	9999
04.03.23	0-End	

6.1.2. Taring

By activating the tara function, the input value will be taken over into the tara memory. The tara value is subtracted from the input value. The tara value will be saved into an EEPROM and is still available after power-off.

Activating the tara function

- by pressing the „*“ button if parameter 0-04 = 1

LED 2 is on while the tared value is displayed

Erase the tara value:

- by pressing the „*“ button for about 3 seconds

LED 2 is off and the untared value is displayed

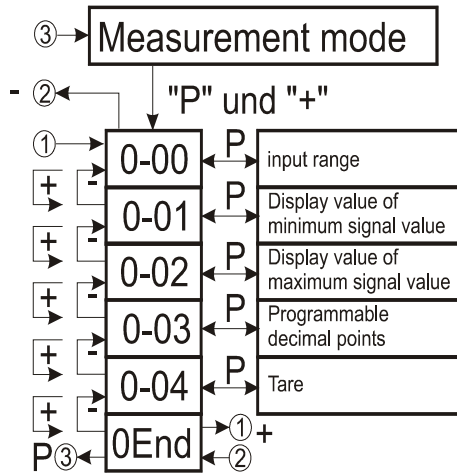
6.1.3. Display test

If the display test is activated all segments of the display will be lighted on. The display shows “8.8.8.8”

Activating the display test by:

- by pressing the „P“ button

6.2. Programming quick reference



7. Technical Specifications

A/D-Converter

Resolution : 12 Bit

Input Ranges

Voltage : 0 to 10 V, $\pm 0,05$ %, ± 1 Digit

Impedance : $> 50 \text{ k}\Omega$

Current : 0/4 to 20 mA, $\pm 0,05$ %, ± 1 Digit

Impedance : $10 \text{ }\Omega$

Conversion rate

: 5 /s

Display

: 4 decades, 14 mm, red

Decimal point programmable

preliminary zero suppression

- sign at negative values

Operation, keyboard design

: front membrane with push buttons

Power supply

: 24V, $\pm 20\%$ DC (isolated)

Power consumption

: max. 65 mA

Case

: 96 x 48 x 63,5 mm

Depth : $< 72 \text{ mm}$ (incl. screw terminal)

Front protection : IP 54

Connectors protection : IP 20

CE

: 2014/30/EU, 2014/35/EU,

2011/65/EU+2015/863

Operation temperature

: 0 to $60 \text{ }^{\circ}\text{C}$

Storage temperature

: -20 to $70 \text{ }^{\circ}\text{C}$

Humidity

: $< 80 \%$, not condensing

Field of application

: class 2

overvoltage protection II

Weight

: ca. 200 g

8. Ordering information

UM 3023 -	0	0	x	0	x	
						Housing
						0 Switchboard
						Reserved
						Front design
						0 Reserved
						1 Jessen-ERMA Logo
						2 No Logo
						Reserved
						Reserved

Jessen-ERMA-Electronic UG
(haftungsbeschränkt)
Donaustr. 5
D-78194 Immendingen

Telefon +49 (0)7462 2000 0
Fax +49 (0)7462 2000 29
email info@jessen-erma.com
Web www.jessen-erma.com

