



AX020 Miniature Panel Meter with Analog Input

Product features:

- Small housing dimensions of 48 x 24 mm (1.890 x 0.945")
- Bright LED display 6 decades/ 8mm (0.315")
- Add-on frame for 50 x 25 mm (1.969 x 0.984")
- Analog inputs 0 to 10 V, 2 to 10 V, 0 to 20 mA and 4 to 20 mA
- Display range from -19 999 up to +99 999
- Adjustable scaling factor
- 10 to 30 volts DC supply
- Latch input to freeze the display
- Protection class IP65 on front
- Minimum/ Maximum memory
- Easy to set up by menu support

Version:	Description:
AX02002a/hk/Dec06	Brochure format A5
AX02002b/hk/Aug07	Modification of temperature range
AX02002c/pp/Apr12	Corrected Specifications : Measuring cycle
Ax020_02d_oi/ag/July15	- Image replaced (5 instead of 6 decades display) - Safety instructions and legal Notices supplemented - Technical Specifications updated
Ax020_02e_oi/ag	Correction of the temperature range

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1. Safety Instructions and Responsibility

1.1. General Safety Instructions

This operation manual is a significant component of the unit and includes important rules and hints about the installation, function and usage. Non-observance can result in damage and/or impairment of the functions to the unit or the machine or even in injury to persons using the equipment!

Please read the following instructions carefully before operating the device and observe all safety and warning instructions! Keep the manual for later use.

A pertinent qualification of the respective staff is a fundamental requirement in order to use these manual. The unit must be installed, connected and put into operation by a qualified electrician.

Liability exclusion: The manufacturer is not liable for personal injury and/or damage to property and for consequential damage, due to incorrect handling, installation and operation. Further claims, due to errors in the operation manual as well as misinterpretations are excluded from liability.

In addition the manufacturer reserve the right to modify the hardware, software or operation manual at any time and without prior notice. Therefore, there might be minor differences between the unit and the descriptions in operation manual.

The raiser respectively positioner is exclusively responsible for the safety of the system and equipment where the unit will be integrated.

During installation or maintenance all general and also all country- and application-specific safety rules and standards must be observed.

If the device is used in processes, where a failure or faulty operation could damage the system or injure persons, appropriate precautions to avoid such consequences must be taken.

1.2. Use according to the intended purpose

The unit is intended exclusively for use in industrial machines, constructions and systems. Non-conforming usage does not correspond to the provisions and lies within the sole responsibility of the user. The manufacturer is not liable for damages which has arisen through unsuitable and improper use.

Please note that device may only be installed in proper form and used in a technically perfect condition (in accordance to the Technical Specifications, see chapter [6](#)).

The device is not suitable for operation in explosion-proof areas or areas which are excluded by the EN 61010-1 standard.

1.3. Installation

The device is only allowed to be installed and operated within the permissible temperature range. Please ensure an adequate ventilation and avoid all direct contact between the device and hot or aggressive gases and liquids.

Before installation or maintenance, the unit must be disconnected from all voltage-sources. Further it must be ensured that no danger can arise by touching the disconnected voltage-sources.

Devices which are supplied by AC-voltages, must be connected exclusively by switches, respectively circuit-breakers with the low voltage network. The switch or circuit-breaker must be placed as near as possible to the device and further indicated as separator.

Incoming as well as outgoing wires and wires for extra low voltages (ELV) must be separated from dangerous electrical cables (SELV circuits) by using a double resp. increased isolation.

All selected wires and isolations must be conform to the provided voltage- and temperature-ranges. Further all country- and application-specific standards, which are relevant for structure, form and quality of the wires, must be ensured. Indications about the permissible wire cross-sections for wiring are described in the Technical Specifications (see chapter 6).

Before first start-up it must be ensured that all connections and wires are firmly seated and secured in the screw terminals. All (inclusively unused) terminals must be fastened by turning the relevant screws clockwise up to the stop.

Overvoltages at the connections must be limited to values in accordance to the overvoltage category II.

For placement, wiring, environmental conditions as well as shielding and earthing/grounding of the supply lines the general standards of industrial automation industry and the specific shielding instructions of the manufacturer are valid.

Please find all respective hints and rules on www.motrona.com/download.html
--> "[General EMC Rules for Wiring, Screening and Earthing]".

1.4. Cleaning, Maintenance and Service Notes

To clean the front of the unit please use only a slightly damp (not wet!), soft cloth. For the rear no cleaning is necessary. For an unscheduled, individual cleaning of the rear the maintenance staff or assembler is self-responsible.

During normal operation no maintenance is necessary. In case of unexpected problems, failures or malfunctions the device must be shipped for back to the manufacturer for checking, adjustment and reparation (if necessary). Unauthorized opening and repairing can have negative effects or failures to the protection-measures of the unit.

2. Operation of the front keys

To enter the setup mode, keep both front keys down while you switch power on. The display shows:



Prog

As soon as you release the keys, the display starts alternating between the actual parameter text and the associated setting, in a cycle of two seconds.

Press the key on the right to increment the actual set value to next.

For numeric entries, use the left key to select the decade and the right key to scroll the value. To continue to the next parameter, keep the left key down while you press the right key.

When you have reached the item „Endpro“, you get the choice

- „Yes“: this will store your entries to the unit and switch to normal operation.
- „No“: this will start the menu again and your previous data will not be stored.

3. Operational parameters

Please enter all of the subsequent parameters, like shown in section [2](#).

3.1. Input range

rRnGE		range
	0.20nA	0.20mA
	4.20nA	4..20mA
	0.10V	0..10V
	2.10V	2..10V

3.2. Maximum value record

rMAX		MAX	
	YES	YES	Maximum record on. (Right front key scrolls display between „Act“, „Min“ and „Max“)
	no	no	Maximum record off. Skips next parameter
rRMAX		rMAX	
	YES	YES	Red key sets maximum value to the actual value.
	no	no	Maximum Reset disabled

3.3. Minimum value record

rMin		Min	
	YES	YES	Minimum record on. (Right front key scrolls display between „Act“, „Min“ and „Max“)
	no	no	Minimum record off. Skips next parameter.
rRMin		rMin	
	YES	YES	Red key sets minimum value to the actual value.
	no	no	Minimum Reset disabled.

3.4. Decimal point

dP	dP	
	0	Provides setting of up to four decimal positions.
	0.0000	

3.5. Minimum input signal

Lo	Lo	(with 4-20 mA or 2-10V range only)
	04.000	Unit shows "Lo" when input voltage or current gets lower than this setting.
	20.000	

3.6. Display value with lowest input signal

LodiS	LodiS	
	-199.99	Setting range – 19 999....99 999. Sets the display value as desired with a 0V / 0mA or 2V / 4mA input signal
	999.99	

3.7. Maximum input signal

hiCh	High	(with 4–20mA or 2–10V range only)
	04.000	Unit shows "Hi" when input voltage or current gets higher than this setting.
	20.000	

3.8. Display value with highest input signal

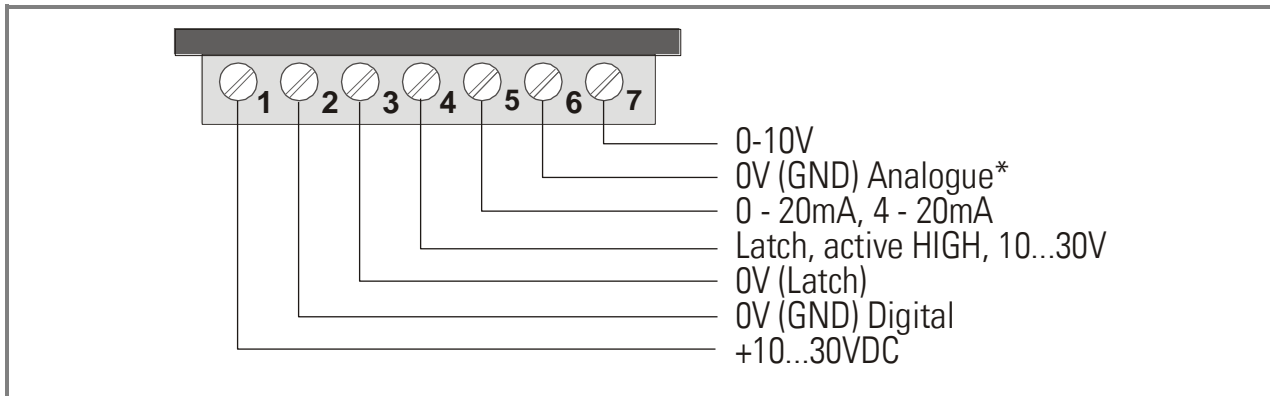
hi diS	Hi.diS	
	-199.99	Setting range – 19 999....99 999.
	999.99	Sets the display value as desired with a 10V or 20mA input signal

3.9. End of program

EndPro	EndPro	
	YES	Select "Yes" to store data and exit the menu.
	no	Select "No" to return to the beginning of the menu for verification of settings.

4. Terminal Assignment

(also printed to the top of the unit)



* Potential separated from GND digital/ power supply (terminal 2)

5. Delivery includes:

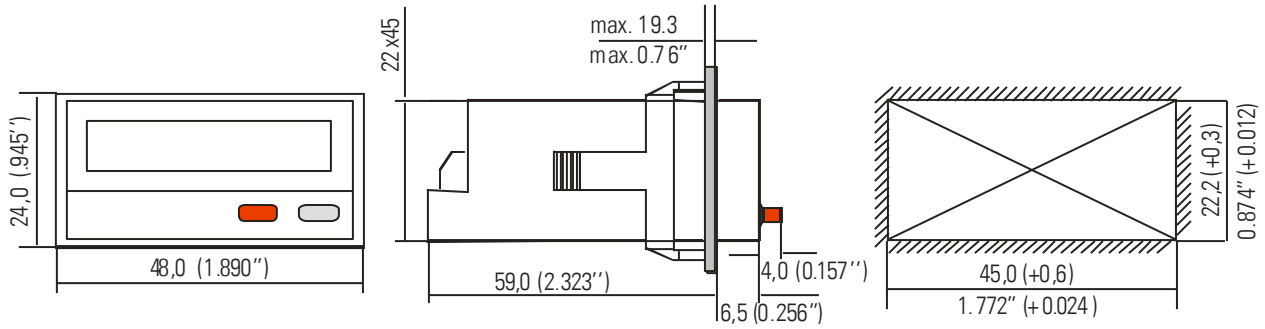
- Panel mounting clip
- Bezel for screw mount with panel cut out 50 x 25mm
- Bezel for clip mount with panel cut out 50 x 25mm
- Sealing
- 1 sheet with self adhesive stickers (engineering units)

6. Technical Specifications

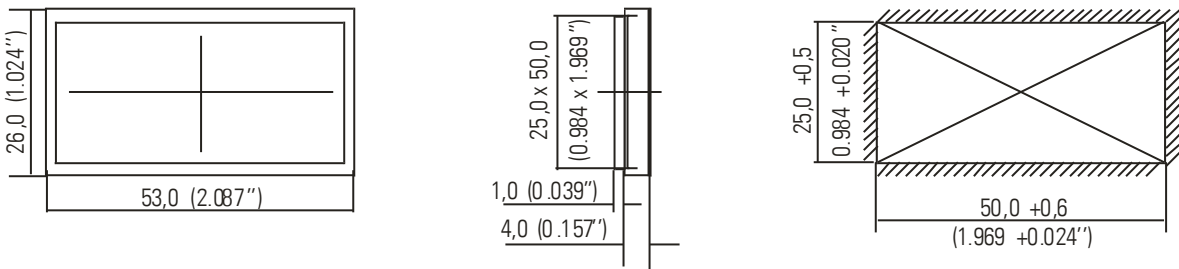
Power supply:	Input voltage: 10 ... 30 VDC Protection circuit: reverse polarity protection Consumption: max. 50 mA Connections: screw terminal, 1.5 mm ² / AWG 16
Analog input:	Resolution: 14 Bit Voltage input: 0 ... 10 V / 2 ... 10 V Internal resistance: Ri ≈ 1 MOhm mA input: 0 ... 20 mA / 4 ... 20 mA Internal resistance: Ri ≈ 100 Ohm Voltage drop: max. 2 V at 20 mA Measurement cycle: run-up: 2 s / return: 0.5 s
Control input:	Function: display hold / latch Characteristic: PNP, active high Signal levels: LOW = 0 ... 2 V, HIGH = 4 ... 30 V
Accuracy:	Entire measuring range : < 0.1 %, +/- 1 Digit (at 20° C / 68 °F ambient temperature) Temperature drift: < 70 ppm/K Measuring rate: 2 measurements per second
Display:	Type: 6 digit LED, red Digit height: 8 mm / 0.3149 inch Range: -19999 ... 99999
Housing:	Material: plastic Mounting: panel Dimensions: cut out: 45 x 22 mm / 1.772 x 0.866 inch (w x h) outer dimensions: 48 x 24 x 59 mm resp. 1.889 x 0.9449 x 2.323 inch (w x h x d) Miscellaneous: additional bezels for clip or screw mounting are included in the delivery Protection class: front: IP 65 / rear: IP20 Weight: approx. 50 g
Ambient temperature:	Operation: -20°... + 55° C / -4° ... 131° F (not condensing) Storage: -25°... + 70° C / -13° ... 158° F (not condensing)
Conformity & standards:	EMC 2004/108/EC: EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 RoHS 2011/65/EU: EN 50581

7. Dimensions

7.1. Mounting without use of add-on frames



7.2. Bezel 50 x 25 mm (1.969 x 0.984'') for clip mounting



7.3. Bezel 50 x 25 mm (1.969 x 0.984'') for screw mounting

