

MICRA-M

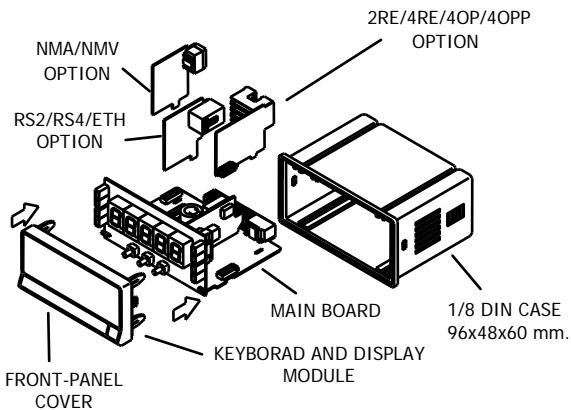
PROCESS / LOAD CELL / TEMPERATURE

DESCRIPTION

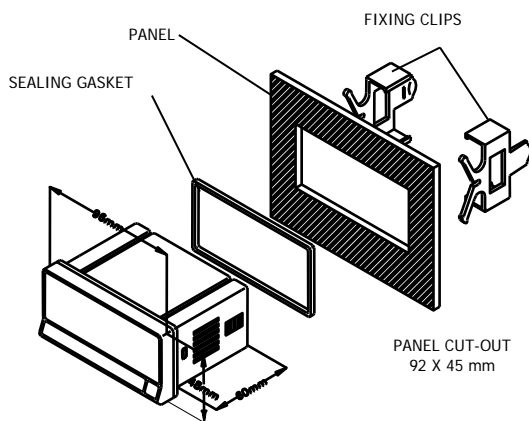
- The Micra-M, is a programmable instrument with the update technology, which accepts input signals for: Process (mA, V), Temperature (sensor Pt100, thermocouples J, K, T, N), or Load Cells (mV/V, mV).
- With programmable display colour, the Micra-M let you choose between green, amber or red colour assignable to measure, programming or alarm activation.
- It provides excitation of 24V@60mA or 10V/5V@60mA.
- 10 point scaling for non-linear processes.
- Easily scaleable in required engineering units.
- Tare by front keyboard or remote control.
- 3 inputs with 12 programmable logic functions.
- 2 brightness levels for display.
- Total or partial configuration lockout.
- Peak and Valley reading.
- Universal Power Supply 85-265V AC (MICRA-M) or Low voltage supply 10,5-70V DC (MICRA-M6).
- Communication protocol ASCII, ISO1745, MODBUS-RTU, MODBUS TCP/IP.
- Totally configurable from PC (Free Software).
- Programmable Filter (10 levels)
- Internal Resolution A/D ± 15 bits, Sigma-Delta Type.
- Segments Linearization (10 segments)



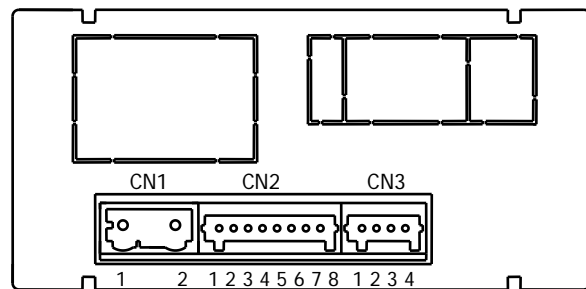
STRUCTURE



DIMENSIONS AND MOUNTING



CONNECTIONS



CN1	POWER SUPPLY		
	PIN	AC VERSION	DC VERSION
	1	AC	VDC
	2	AC	VDC
CN2	INPUT SIGNAL / EXCITATION		
	PROC.	TEMP.	LOAD CEL.
	1	-EXC24V	-EXC 10/5 V
	2	+EXC24V	
	3		+EXC 10/5 V
	4		Pt100A
	5	+mA	
	6	+V	
	7	Pt100B	+TC +mV
	8	-V / -mA	Pt100B -TC -mV
CN3	LOGICAL INPUT		
	PIN		
	1	COMMON	
	2	INPUT 1	
	3	INPUT 2	
	4	INPUT 3	

MICRA-M

OPTIONS

The MICRA-M models can accept up to 3 simultaneous options; output option 2RE, 4RE, 4OPP or 4OP; communication option RS2, RS4 or ETH and analogical option NMV or NMA:

- 2 SPDT Relays rating 8 A @ 250 V AC / 24 V DC
Ref **2RE**
 - 4 SPST Relays rating 5 A @ 250 V AC / 30 V DC
Ref **4RE**
 - 4 NPN Outputs rating 50 mA @ max. 50 V DC
Ref **4OP**
 - 4 PNP Outputs rating 50 mA @ max. 50 V DC
Ref **4OPP**
- The setpoints are independently programmable for HI / LOW action and time delay or hysteresis operation.*

- RS232C communication output, 1200 to 19200 baud
Ref **RS2**
 - RS485 communication output, 1200 to 19200 baud
Ref **RS4**
- Serial communication protocols: standard, ISO1745 and MODBUS RTU.

- ETHERNET communication output
Ref **ETH**
- Serial communication protocol: MODBUS TCP/IP.

- Isolated analogue output 4-20 mA
Ref **NMA**

- Isolated analogue output 0-10 V
Ref **NMV**

STANDARD FUNCTIONS

• TARE

The tare operation is accomplished by pushing the TARE key on the front panel or by applying a low level signal to the corresponding logic input at the CN3 connector. The tare memory is cleared to zero by a constant push of 3 seconds of the TARE key (also at connector CN3).

• PEAK AND VALLEY

The instrument detects and memorizes the max. and min. values reached for the variable after the last reset (peak and valley).

To display the peak value, press the MAX/MIN key. The second push makes the display calls up the valley value (also at connector CN3).

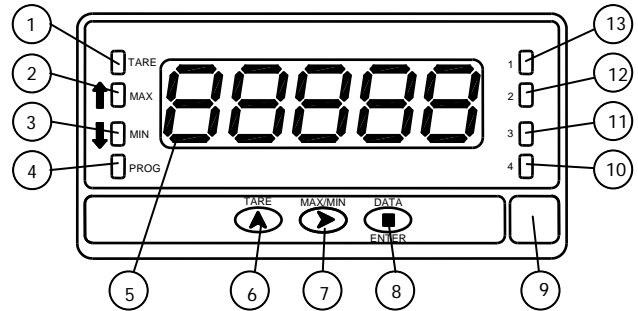
• RESET PEAK AND VALLEY MEMORY

The peak and valley memories can be reseted to current display value by pressing the MAX/MIN key for 3 seconds. The same function is available at the CN3 connector.

• HOLD

The hold function is only accessible from the CN3 connector. The hold condition (display frozen) is maintained as long as the corresponding logic input is kept at "0" level.

FRONT-PANEL FUNCTIONS



MODE		RUN		PROG	
TARE	1	Indicates tare in the memory		-	
MAX	2	Indicates peak displayed		-	
MIN	3	Indicates valley displayed		-	
PROG	4	-		Indicates programming mode	
DISPLAY	5	Displays the input variable		Displays programming parameters	
TARE KEY	6	Takes on the display value as tare		Increments the value of the flashing digit	
MAX/MIN KEY	7	Recalls peak/valley values		Moves to the right	
ENTER KEY	8	Enters in PROG mode. Displays data		Accepts data. Advances program	
Label	9	Measurement unit			
LED Output 4	10	Activation Output 4	Programming output 4		
LED Output 3	11	Activation Output 3	Programming output 3		
LED Output 2	12	Activation Output 2	Programming output 2		
LED Output 1	13	Activation Output 1	Programming output 1		

Programmable Logic Functions (CN3)

The rear connector CN3 provides 3 user programmable optocoupled inputs that can be operated from external contacts or logic levels supplied by an electronic system.

Three different functions may be then added to the available functions from the front-panel keys. Each function is associated to one of the CN3 connector pins (PIN 2, PIN 3 and PIN 4) and is activated by applying a falling edge or a low level pulse to the corresponding pin with respect to common (PIN 1). Each pin can be assigned to one of the functions listed below.

N°	Function	Description	Activation
0	Deactivated	None	None
1	TARE	Adds the current display value to the tare memory and sets the display to zero.	Falling edge
2	TARE RESET	Adds the tare memory to the display value and clears the tare memory.	Falling edge
3	LIST RESET	Performs a reset of the peak or the valley, depending on selection.	Falling edge
4	SEE LIST	Displays peak value (MAX.), valley value (MIN.), tare value, net value (NET) or gross value (GROSS) depending on selection.	Low level
5	PRINT LIST	Sends to the printer depending on selection MAX., MIN, TARE, SET1, SET2, SET3 or SET4 value.	Falling edge
6	HOLD	Freezes the display while all the outputs remain active	Low level
7	BRIGHTNESS	Changes the display brightness from Hi to Low	Low level
8	DISPLAY COLOR	Changes display color (green, red or amber)	Low level
9	SETP PROG/TARE	Configures Setpoints or Tare depending on Selection List (TARE, SET1, SET2, SET3 and SET4)	Falling edge
10	FALSE SETPOINTS	Simulates that the instrument has a four Setpoints option installed	Low level
11	KEYB. EMULATION	Emulates keyboard (Input 1=ENTER, Input 2=SHIFT, Input 3=UP)	Low level
12	RESERVED		

MICRA-M

SPECIAL FUNCTIONS

- Return to the factory configuration.
- Programmable display colour change.
- Total or partial lockout of the configuration by code.

ACCURACY

- Temperature coefficient 100ppm/°C
- Warm-up time 15 minutes

FUSES (DIN 41661) Recommended (not incl.)

- MICRA-M F 0.5A/ 250V
- MICRA-M6 F 2A/ 250V

POWER SUPPLY

- UNIVERSAL 85 – 265 V AC
100 – 300V DC
- LOW VOLTAGE 10,5 – 70 V DC
22 – 53 V AC
- Consumption 5 W without options, 8 W max.

A/D CONVERSION

- Technique Sigma-Delta
- Resolution ± 15 bits
- Rate 20/s

FILTERS

Filter P

- Cut-off frequency from 4 Hz to 0.05 Hz
- Slope 20 dB/decade

DISPLAY

- Range -19999/ 39999
- Digits 5 tricolor LED of 14mm
Programmable colour (Red, Green, Amber)
- LEDs 4 for functions and 4 for outputs
- Display refresh rate
Process/Load cell 20 /s
Pt100 20 /s
TC 10 /s
- Overflow indication *-oUEr, oUEr*

ENVIRONMENTAL

- Indoor use
- Operating temperature -10 °C to +60 °C
- Storage temperature -25 °C to 80 °C
- Relative humidity <95% to 40 °C
- Max. Altitude 2000 m

MECHANICAL

- Dimensions 1/8 DIN case, 96x48x60 mm
- Weight 135g
- Case material UL 94 V-0 polycarbonate
- Sealed front panel IP65

ORDERING REFERENCES

- Universal Power supply MICRA-M
- Low tension MICRA-M6

INPUT SIGNAL

Configuration differential asymmetrical

PROCESS	VOLTAGE	CURRENT
• Input	± 10 V DC	± 20 mA DC
• Resolution	1 mV	1 μ A
• Input impedance	1 M Ω	15 Ω
• Excitation	24 V @ 60 mA, 10 V/5 V @ 60 mA	

LOAD CELL

- Input ± 15 mV, ± 30 mV, ± 150 mV
- Max. resolution 1 μ V
- Input impedance 100 M Ω
- Excitation 10 V @ 60 mA, 5 V @ 60 mA

POTENTIOMETER INPUT

- Display resolution 0.001%
- Input impedance 1 M Ω
- Excitation 10 V @ 60 mA

TEMPERATURE

- Cold junction compensation -10°C to 60°C
- Pt100 sensor excitation < 1 mA DC
- Max lead resistance 40 Ω /cable (balanced)
- Unit selectable (Celsius) / (Fahrenheit)
- Resolution (selectable) 0.1° / 1°
- Offset programmable -19.9° / +99.9°

Input

Temperature range

Thermocouple J (Fe-CuNi)	-150 to +1100 °C -238 to +2012 °F
Thermocouple K (NiCr-NiAl)	-150 to +1200 °C -238 to +2192 °F
Thermocouple T (Cu-CuNi)	-200 to +400 °C -328 to +752 °F
Thermocouple N (Cu-CuNi)	-150 to +1300 °C -238 to +2372 °F
Pt100	-200 to +800 °C -328 to +1472 °F

ERROR INDICATIONS

OPEN CIRCUIT OR SHORTCIRCUIT ERROR

- Pt100, TC, Load cell (open) " - - - - "
- Load cell, mA (short) " - - - - "

ZERO INPUT ERROR ('InErr'=Yes)

- Process indication, load cell " - - - - "
- Input signal limits $\pm 0.1\%$ FS