UNIVERSAL MICROINDICATOR FOR
MEASUREMENT AND INDICATION OF PROCESS PARAMETERS

CAOM MIU 04

The CAOM M.I.U. device is hardware/ software device designed to work in automation process systems. This device allows the measurement and the display of an input value as well as the signaling and the alarming in case of over measurement. The input can be:

- RTD: PT46_1.391, PT46_1.385, PT50_1.391, PT50_1.385, PT100_1.391, PT100_1.385, PT500_1.391, PT500_1.385, PT1000_1.391, PT1000_1.385
  - thermocouple: J, K, L, T, E, N, R, S, B
  - current: 2-10 mA, 4-20 mA
  - voltage: 0-2.5 V

The display of the input value is on 4 ½ digits with sign, on 7 –segment cells (with LED), the font size is 14,3 (height) x 8 (width) mm. The device allows programming of 2 alarm limits, for each alarm providing a pair of relay type contacts. For every alarm there is an 8A/ 250V relay contact (normal open or normal closed), the relays can have energization or non-energization to alarm. The device has 5 supplementary signalization LEDs:

- two (R1 and R2) signalize the connection of R1 and R2 relays
- two (AL1 and AL2) signalize the alarming conditions fulfillment
- one (PRG) indicates that the device is in parameters programming menu.

The device can provide a 4-20mA current (with its own supply power source for Out) which is proportional to a part or the whole Input range.

It can be connected to a RS485 network, using as communication protocol a company one entitled GPMICRONET.

The device also has a programming system with 4 keys: ↓, ↑, VAL and ESC. With these keys, in combination with the menus and sub-menus provided, the following parameters can be programmed:

- type of input value (current, thermocouple, RTD)
- Input range
- Output range
- Alarm limitss
- Relay Hysteresis
- Relay action type
- Calibration values
- Decimal number
- Filtration constant
- Calibration temperature
- Variable gradient of the compensation transducer of the reference junction
- Wire resistance (for 2-wire RTDs)

For details about these products, contact GENPRO LTD in Suceava, G. Enescu Blvd no 16, Suceava county, 720247, Romania
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Voltage:	220 V c.a. ±10%
Input type	- current: 2-10 mA, 4-20 mA - thermocouple: J, K, L, T, E, N, R, S, B - RTD: PT46_1.391, PT46_1.385, PT50_1.391, PT50_1.385, PT100_1.391, PT100_1.385, PT500_1.391, PT500_1.385, PT1000_1.391, PT1000_1.385
Input Impedance for 4…20 mA current	50Ω
Input values filtration	Soft filter with 0-5s constant
Display	5 cells with 7 segments (LED) with font size of 14.3 x 8 mm. We can obtain values between -19999 and +19999
Front panel signalization	- 2 LED signalizations for relays (signalization on relay supply) - 2 LED signalizations for alarms - 1 LED signalizations for parameters programming (the LED is on at commands for parameters programming)
Precision for measurement of input signal	0,1% ±1 digit for current measurement range, thermocouples and RTDs
Automatic compensations	- reference junction compensation fro thermocouples - automatic compensation of the connection wires for 3-wire RTDs

Alarm limitss	Two alarm limitss can be programmed in 4 ways:
	  - both superior alarms
	  - both inferior alarms
	  - AL1 inferior and AL2 superior
	  - AL1 superior and AL2 inferior
	  The alarming values are programmed in engineering units and must fit within the measurement range

Output	MIU 04 can provide two outputs:
	  - 4…20 mA current
	  - Contact type output (2 pairs of relay contacts)
	The current output is proportional to the chose input type (programmable)
	The device has also an internal source for the current output.

Output precision	0.3% of the relevant range
Relay output	The device has 2 relays for the two alarms : AL1 and AL2 The relay status can be programmed as energized (non-energized) according to alarming conditions. The contacts resist for 8A/250 Vc.a. Obs. The device does not have contacts protection for inductive tasks, these protections must be done externally. Using switches, we can choose normal on or normal off contacts.
Input range according to transducer type	Thermocouples: a) -200° +700°C – thermocouple J b) -250° ±1300°C – thermocouple K c) -200° +400°C – thermocouple T d) 0° +1750°C – thermocouple R e) 0° +1700°C – thermocouple S f) -200° +1000°C – thermocouple E g) +50° +1800°C – thermocouple B h) -200° +1300°C – thermocouple N Current 4…20 mA Any range between -19999 and +19999 RTDs: a) -200° +700°C – PT46_1385 b) -200° +650°C – PT46_1391 c) -200° +700°C – PT50_1385 d) -200° +700°C – PT50_1391 e) -200° +850°C – PT100_1385 f) -200° +650°C – PT100_1391 g) -200° +250°C – PT500_1385 h) -200° +250°C – PT500_1391 i) -200° +250°C – PT1000_1391 j) -200° +250°C – PT1000_1385
Operating temperature	+5 °C…+40 °C
Humidity	Max. 85%, no condense, non chemical, non mechanical –active and non –

	explosive environment
Transportation and storage temperature	-25 ^{0}C …+55 ^{0}C with closed transportation
Mechanical protection	IP20 for carcass and IP00 for terminal
Weight	0.5 kg

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**UNIVERSAL MICROINDICATOR FOR
MEASUREMENT AND INDICATION OF PROCESS PARAMETERS**

CAOM MIU 05

The M.I.U. device is hardware/ software device designed to work in automation process systems. This device allows the measurement and the display of an input value as well as the signaling and the alarming in case of over measurement. The input can be:

a). Voltage: …….
b). Current: ….
c). thermocouple: J, K, R, S, B, T, E,N
d).RTD: PT46_1.391,   PT46_1.385, PT50_1.391,   PT50_1.385,   PT100_1.391, PT100_1.385,   PT500_1.391,   PT500_1.385, PT1000_1.391, PT1000_1.385
e). Resistance: ….

The display of the input value is on 4 ½ digits with sign, on 7 –segment cells (with LED), the font size is 14,3 (height) x 8 (width) mm. The device allows programming of 4 alarm limits, for each alarm providing a pair of relay type contacts or an open-collector digital output. For every alarm there is an 8A/ 250V relay contact (normal on or normal off), the relays can have energization or non-energization to alarm. The device has 4 supplementary signalization LEDs (AL1, AL2, AL3, AL4) which warn the user when the alarm limitss are over fulfilled

The device can provide a 4-20mA current (with its own supply power source for Out) which is proportional to a part or the whole Input range. The current 4…20 mA output is galvanically isolated from the rest of the system.

It can be connected to a RS485 network, using a company communication protocol.

The device also has a programming system with 3 keys: ↑, VAL and ESC. With these keys, in combination with the menus and sub-menus provided, the following parameters can be programmed:

- type of input value (current, thermocouple, RTD)
- Input range
- Output range
- Alarm limitss
- Relay Hysteresis
- Relay action type
- Calibration values
- Decimal number
- Filtration constant
- Wire resistance (for 2-wire resistances/ RTDs)
- Measurement unit

Voltage: Input range according to transducer Input type	220 V c.a. ±10% Thermocouples: a)Voltage: ……. b)Current: …. c)thermocouple: J, K, R, S, B, T, E,N d). RTD: PT46_1.391, PT46_1.385, PT50_1.391, PT50_1.385, PT100_1.391, PT100_1.385, PT500_1.391, PT500_1.385, PT1000_1.391, PT1000_1.385 RTDs a)Resistance: …. b).
Input Impedance for 4…20 mA current	50Ω c). d).
Input values filtration	Soft filter with 0-5s constant
Display	- 4 cells with 7 segments (LED) with font size of 14.3 x 8 mm. We can obtain values between -19999 and +19999 Voltage - bargraph with 40 LEDs for percentage display of the range - 2 cells with 14 segments for measurement units display Current - bargraph with 40 LEDs for visualization of alarm limitss
Front panel signalization	- 4 LED signalizations for alarms Resistance - 4 LED signalizations for overpassing the input range
Communication	RS485 Serial interface , galvanically isolated from the system
Operating temperature	0,5°C for +40 °C couple measurement range 0,2% for thermocouple measurement range
Automatic compensations	- reference junction compensation for thermocouples ($\pm 2^0$ C)
Humidity	Max. 85%, no condense, non chemical, non mechanical –active and non –explosive environment
Transportation and storage temperature	-25 ^{0}C …+55 ^{0}C with closed transportation
Alarm limitss	Four alarm limitss can be programmed. The alarming values are 0.25 kg measurement range
Mechanical protection	IP20 for carcass and IP00 for terminal
Weight	0.25 kg
Current 4…20 mA Output	MIU 05 provides a current 4…20 mA output. This output is proportional to the programmable range OUT÷ OUT. The output is galvanically isolated and has its own power supply source, thus the source can be connected directly to the terminals OUT+, OUT-. The output precision is 0. 2% out of the relevant range.
Sensor supply voltage	The device can provide to the user a voltage source of 24 V c.c. / 24 mA in order to supply the measurement unit.
Relay output	The device has 4 digital outputs as follows: - open collector (maximum 60 mA for 30V c.c.) - relay type contact for max. 8 A/250 V c.a. The utilization mode (On or OFF) of the digital outputs in case of alarm is programmable for each output. Obs 1. The device does not have protection for relay type contacts in case of inductive tasks. Obs.2. The device does not has protection for reverse polarization of the output transistors in case of open collector digital outputs. Using switches, we can choose normal on or normal off contacts.