

Configurable
Indicator - Transmitter
Universal **JM** series
JT series for transducers

INSTRUCTION MANUAL

MIU.JM/JT -1/92.06/E

COD. J30-154-1AJM/JT E



ASCON spa

Milano - Italy

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	SERIAL COMMUNICATION (see INSTRUCTION MANUAL “supplement serial communica- tion” MIU.JM/JT-CS/E supplied separately)	

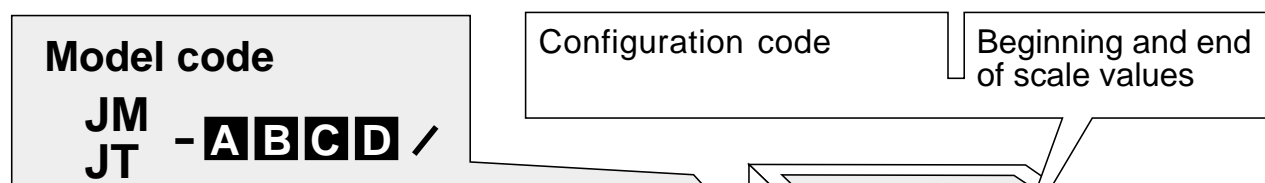
1 • IDENTIFICATION OF MODEL

Thank you for having chosen an ASCON indicator-transmitter

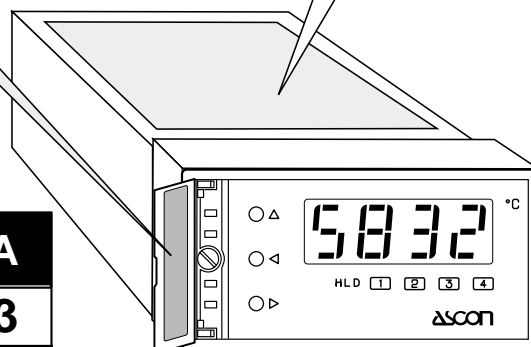
The instruments of the JM/JT series belong the last generation of microprocessor based indicators.

They can be fitted with 2 or 4 alarms and with serial communication to be inserted in a distributed control network. The operating mode can be configured, according to the required application.

1.1 Model code



OPTIONS	Power supply	A
	100 ...240V 50 Hz	3
	16 ...28V 50 Hz and 20...30 Vdc	5
	Serial communication	B
	None	0
	20mA C.L. Std Ascon protocol	1
	20mA C.L. Modbus/Jbus protocol	2
	Retransmission of measurement	C
	None	0
	4...20 mA	1
	0...10 V	2
	Alarms	D
	Without	0
2 alarms	2	
4 alarms (only for JM models)	4	

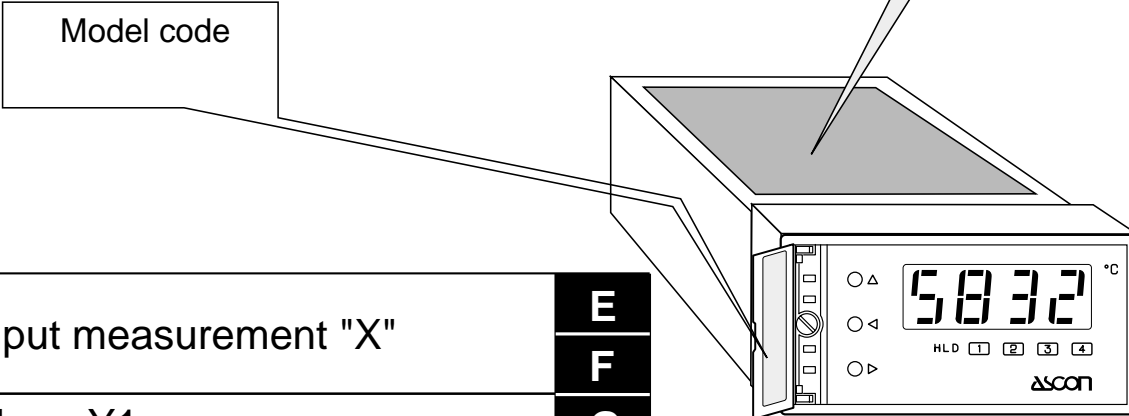


1 • IDENTIFICATION OF MODEL

1.2 Configuration code


Configuration code
E F G H - I L M / Beginning and end of scale **N O**

Model code



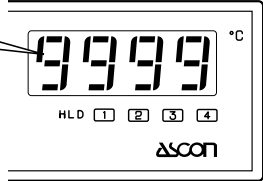
1st block	Input measurement "X"	E	
	Alarm Y1	F	
	Alarm Y2	G	
2nd block	Only for JM models	Alarm Y3	I
	Only for JM models	Alarm Y4	L
	Only for JT models	Power supply for transducers	M
Beginning and end of scale (only for mA and Volt inputs)		N	
		O	

The instrument is usually configured in factory.



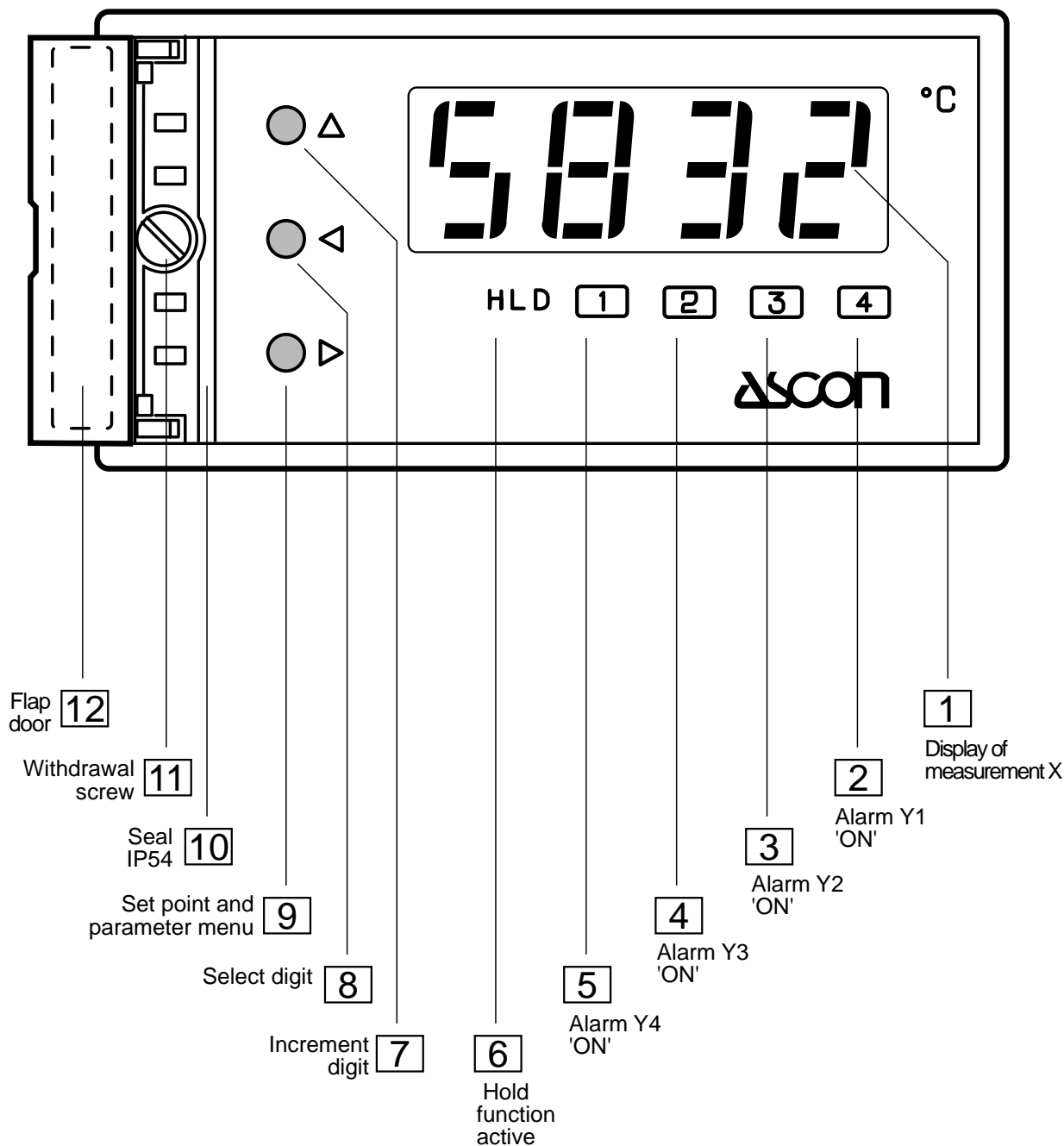
If at power-up appears

the indicator **IS NOT CONFIGURED**






To configure the indicator follow the instructions for configuration from the enclosed leaflet

2 • FUNCTION OF KEYS AND DISPLAYS



DISPLAY

<p>1- Measurement X (green)</p>	<p>Normally: displays the input value expressed in engineering units</p>
	<p>If above the end of scale </p> <p>If below the beginning of scale </p> <ul style="list-style-type: none"> - During programming: displays alternatively the mnemonic codes and the data values - During configuration: displays alternatively the 1st and 2nd block of the configuration code

2 • FUNCTION OF KEYS AND DISPLAYS




ALARM LEDS

2 - Alarm 1	<ul style="list-style-type: none"> The red led (for each alarm) <ul style="list-style-type: none"> - flashes to signal the alarm state - is lit when the alarm has been acknowledged and the alarm state is ON again (for ISA A configuration only)
1	
3 - Alarm 2	
2	
4 - Alarm 3	
3	
5 - Alarm 4	
4	

HOLD LED

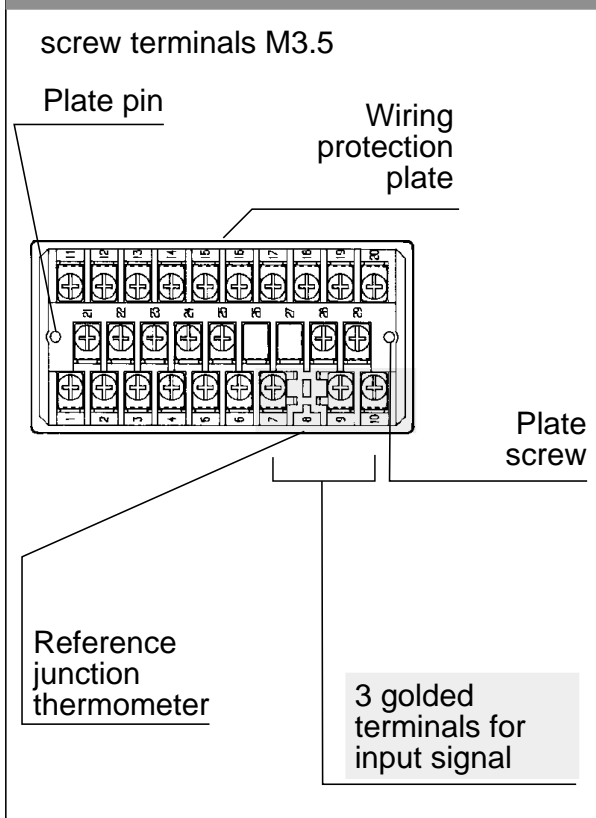
6 - HLD Function	Lit when the function "Peak" or "Valley" capture or the "Freeze" of the last measurement is activated
<i>HLD</i>	

KEYS

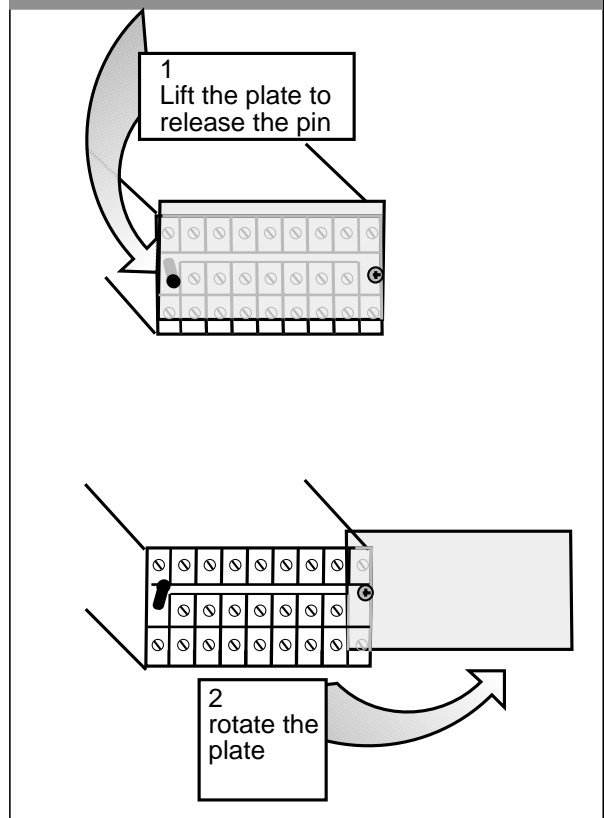
7 - Increment digit	Increments the value of the flashing digit from 0...9	Keys for modifying the numeric values of all data (see enclosed leaflet)
		
8 - Select digit	Selects the digit to be modified	
		
9 - Menu	To display or modify the alarm Set points To scroll the parameters to be programmed and to enter values	
		

3 • DIMENSIONS, INSTALLATION

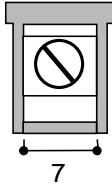
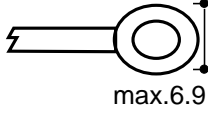
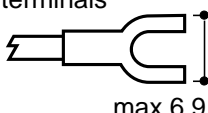
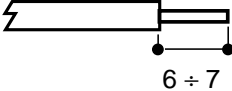
A • Terminal board



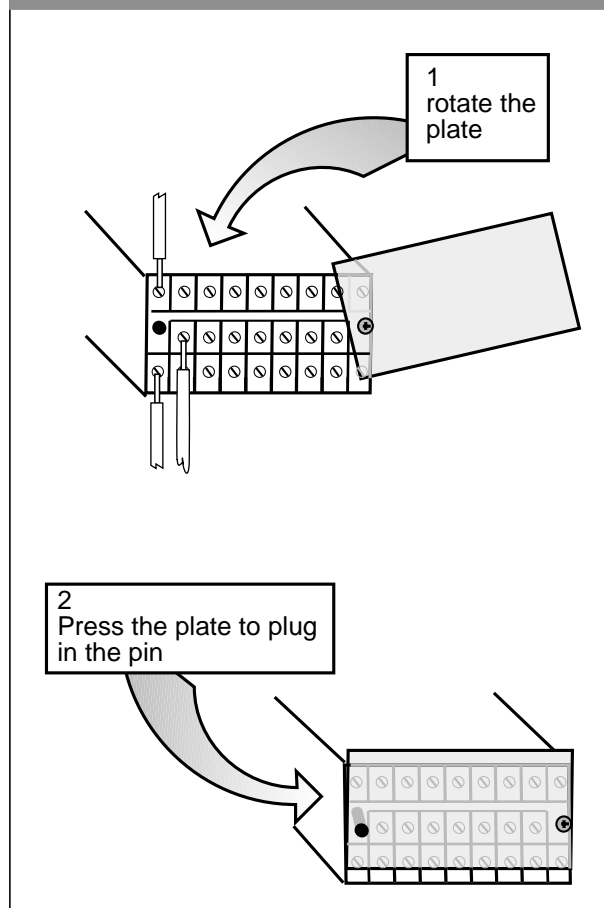
B • Release screw terminals



C • Effecting connections

With eyelet terminals	Cable section $0.25 \div 2.5$ AWG $22 \div 14$	wires N°	 7	
 max.6.9				2
 max.6.9				1
With tinned wire  6 ÷ 7	2			
Preferential				

D • Protecting the terminal board



4 • ELECTRICAL CONNECTIONS

Although this controller is designed to resist the heaviest disturbances encountered in industrial environments (level IV of standard (IEC 801-4), you are advised to keep to the following precautions:

Precautions

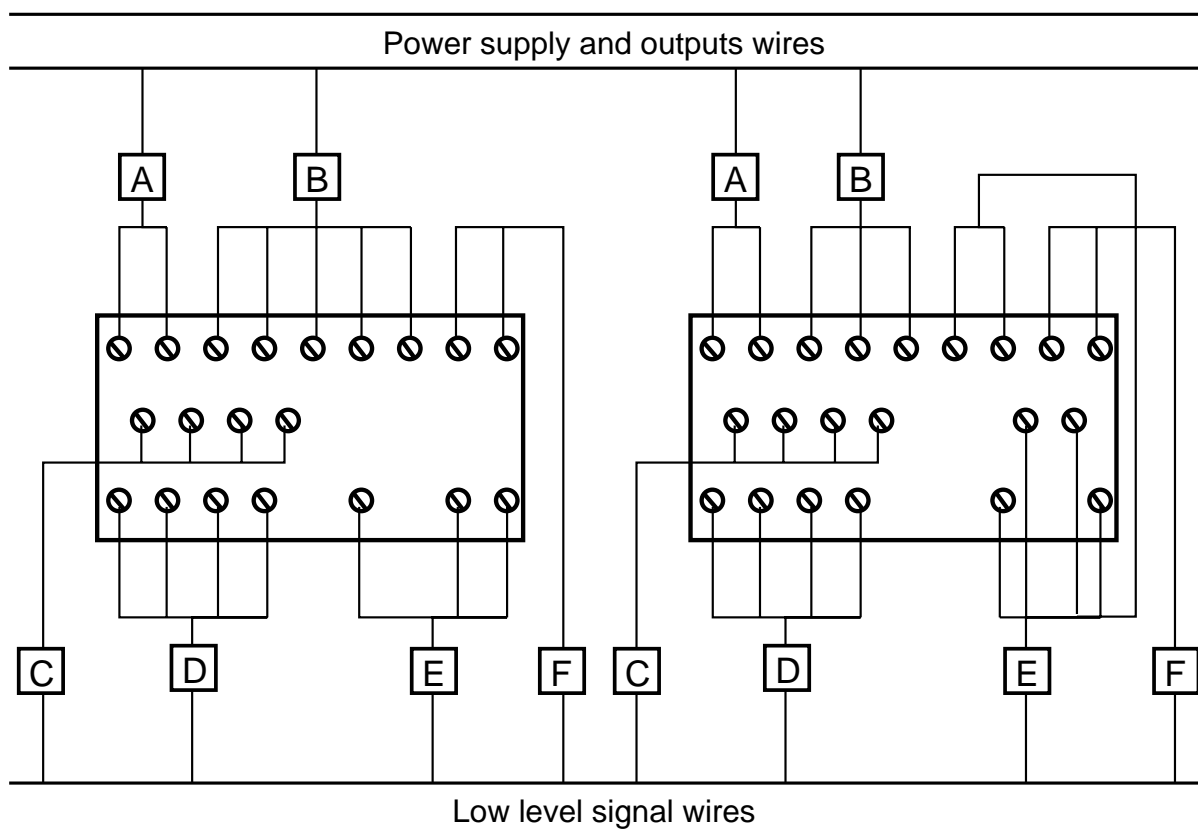


Single out supply line from others power lines

Keep away from electromagnetic contactors and motors

Keep away from SCR power units, especially if with phase control

Advised wiring



Power supply **A**

Logic inputs **C**

Relay alarms **B**

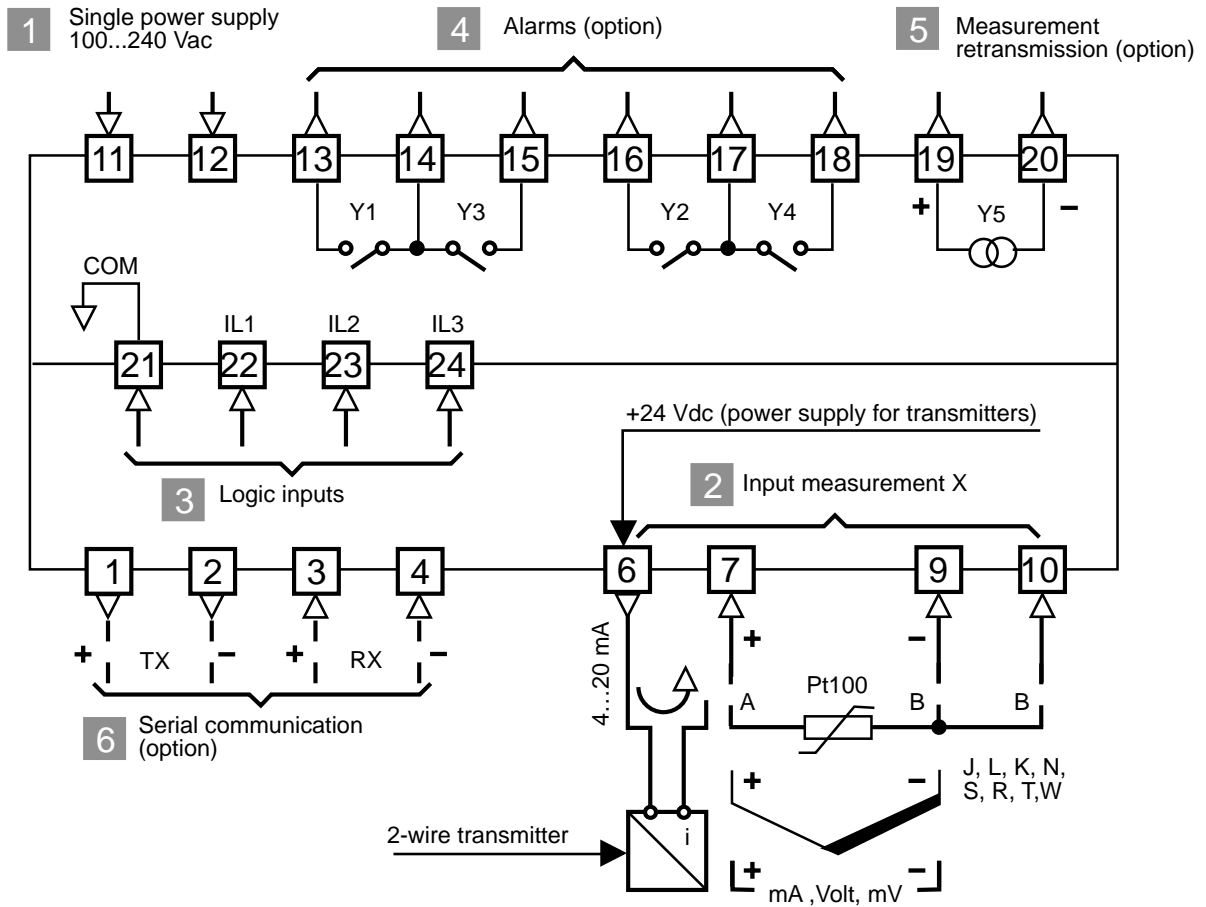
Serial communication **D**

Measurement input **E**

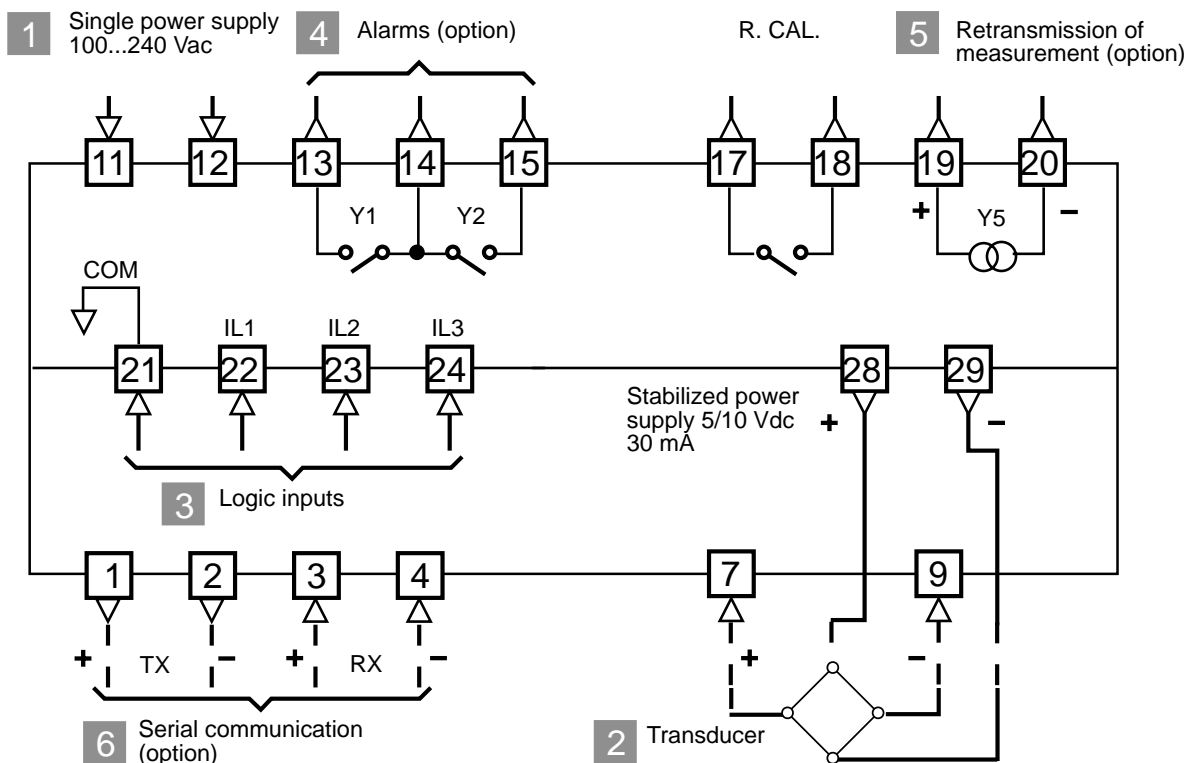
Measurement retransmission **F**

4 • ELECTRICAL CONNECTIONS

Wiring diagram for JM models

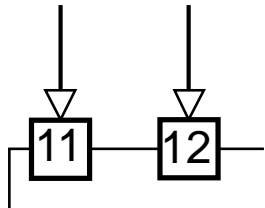


Wiring diagram for JT models - (for transducers)

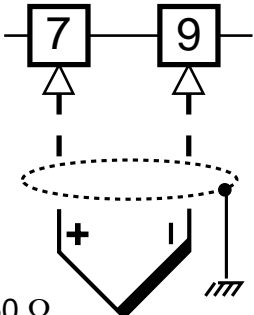
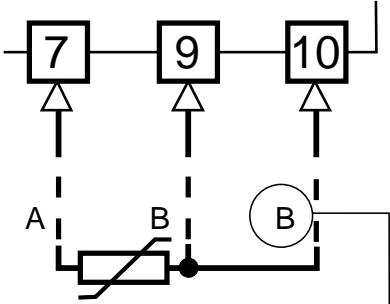
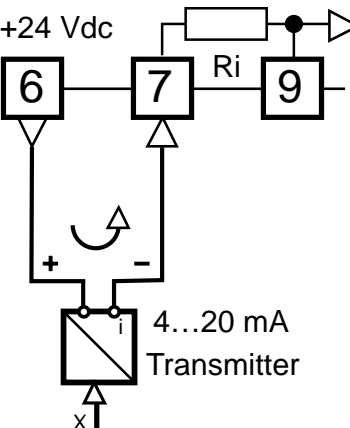
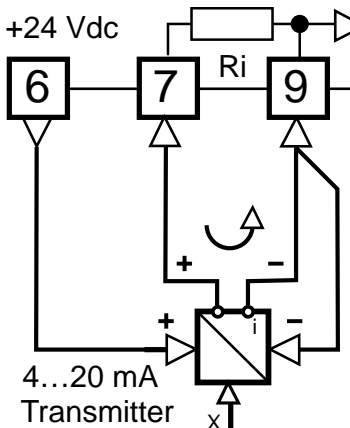
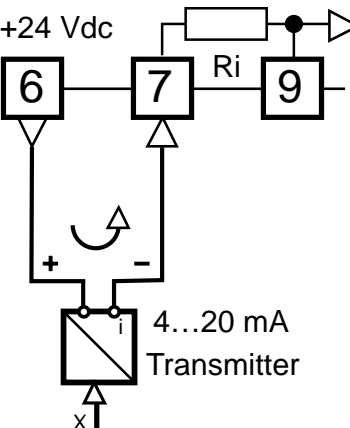
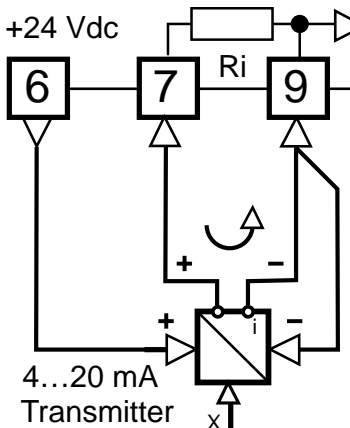
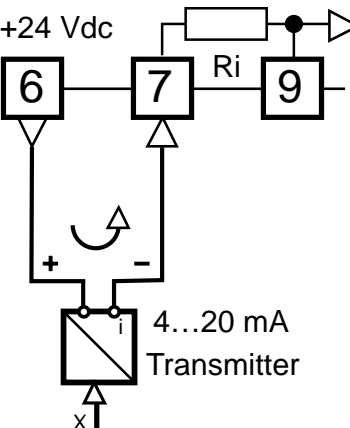
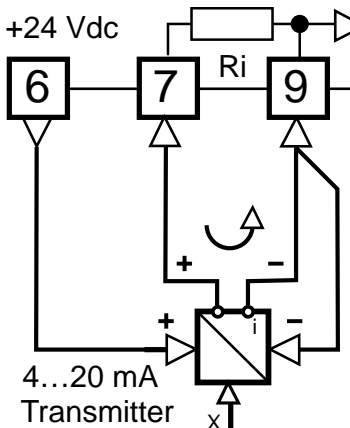
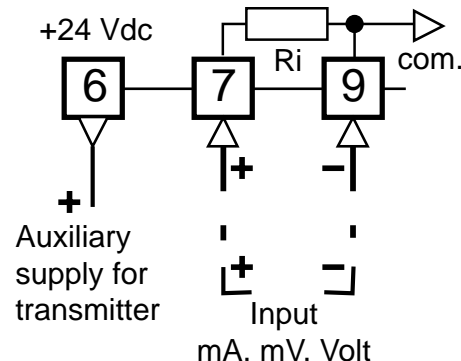


4 • ELECTRICAL CONNECTIONS

1 • Single power supply

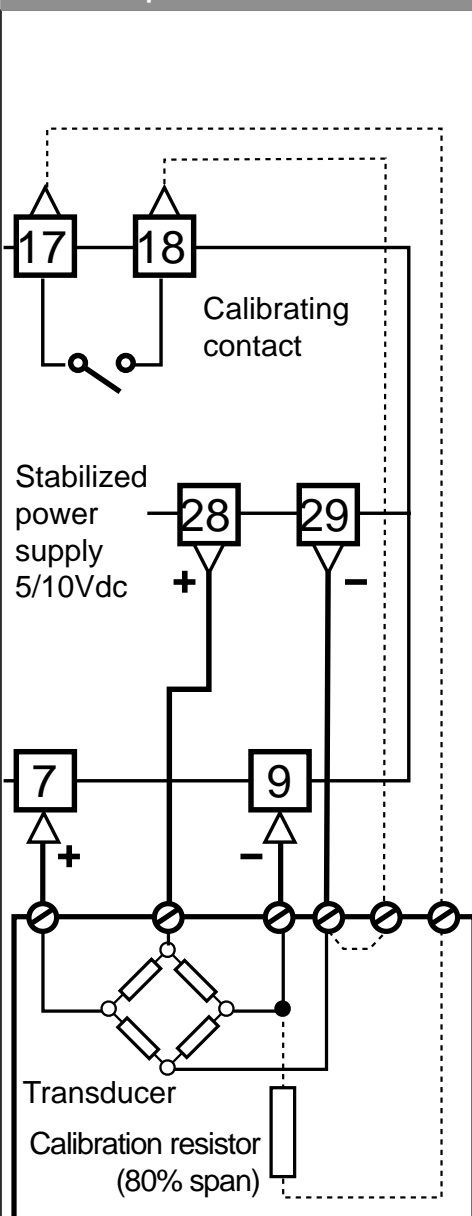
<p>Power supply</p> 	<p>"Switching" type</p> <ul style="list-style-type: none"> • Standard: 85...264Vac, 50 Hz • Low voltage: 18...28Vac, 50 Hz 20...30Vdc <p>Power: 4VA</p>
-------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2.1 • Input of measurement "X" for JM models - Universal

<p>A - For THERMOCOUPLES</p>		<ul style="list-style-type: none"> • Observe polarity • For extension, use a compensation cable suitable for the thermocouple used • The eventual shield must be well earthed at only one end 				
 <p>Line max. 150 Ω</p>	<ul style="list-style-type: none"> • For 3-wire connection, use cables of the same section (min. 1mm²) • For 2-wire connection, use cables of adequate section (min. 1,5mm²) <p>Note: with a 15 m. probe to controller distance and a 1.5 mm² section cable, the error is about 1 °C.</p>					
<p>B - For RTD Pt100</p>  <p>for 3-wire connection only Line max. 20 Ω per wire</p>		<table border="1"> <thead> <tr> <th data-bbox="657 1590 1045 1635">For 2-WIRE TRANSMITTER</th> <th data-bbox="1045 1590 1423 1635">3 or 4-WIRE TRANSMITTER</th> </tr> </thead> <tbody> <tr> <td data-bbox="657 1635 1045 2094">  </td> <td data-bbox="1045 1635 1423 2094">  </td> </tr> </tbody> </table>	For 2-WIRE TRANSMITTER	3 or 4-WIRE TRANSMITTER		
For 2-WIRE TRANSMITTER	3 or 4-WIRE TRANSMITTER					
						
<p>C • For, mA dc, V dc</p>  <p>Ri = 30 Ω for mA Ri = 10 KΩ for Volt</p>						

4 • ELECTRICAL CONNECTIONS

2.2 • Input for JT models for transducers

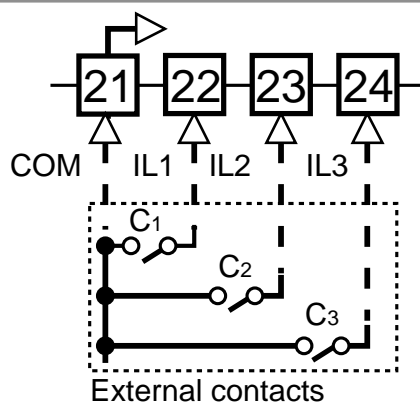


- Power supply for bridge:
[28] (+) [29] (-) stabilized 5Vdc
or 10 Vdc $\pm 5\%$
(programmable from keyboard
max. current 30 mA)
- Input: [7] (+) [9] (-)
0...60 mV or 0...300 mV
(selectable in configuration)

Note:

The calibrating contact makes easy and fast the "span" calibration

3 • Logic inputs



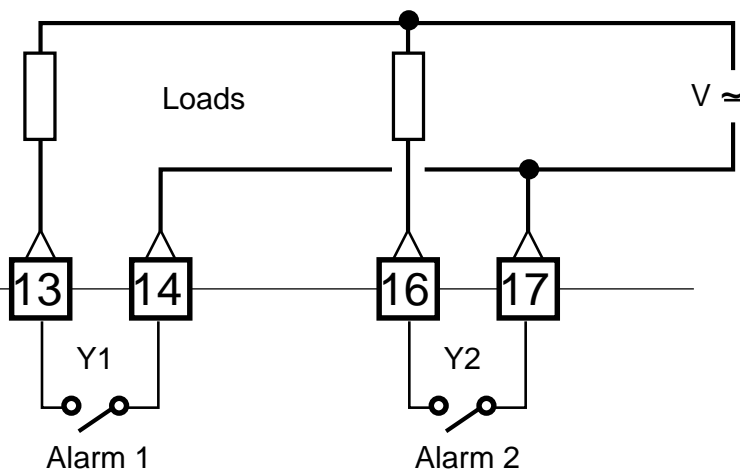
The permanent closing of the external contacts C1, C2, C3 allows:

- To freeze the measurement (C1)
- To store a peak (C2)
- To acknowledge alarms (C3)
(Only for ISA alarm, C3 has to be closed for at least 2 sec)

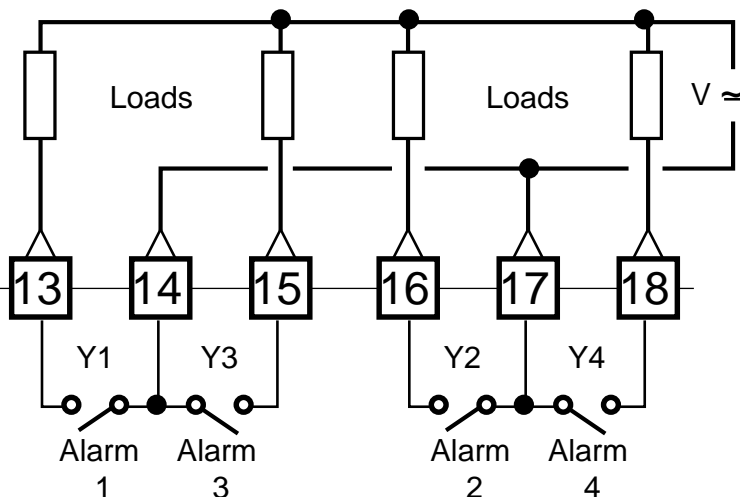
4 • ELECTRICAL CONNECTIONS

4 • Contact alarm outputs (options)

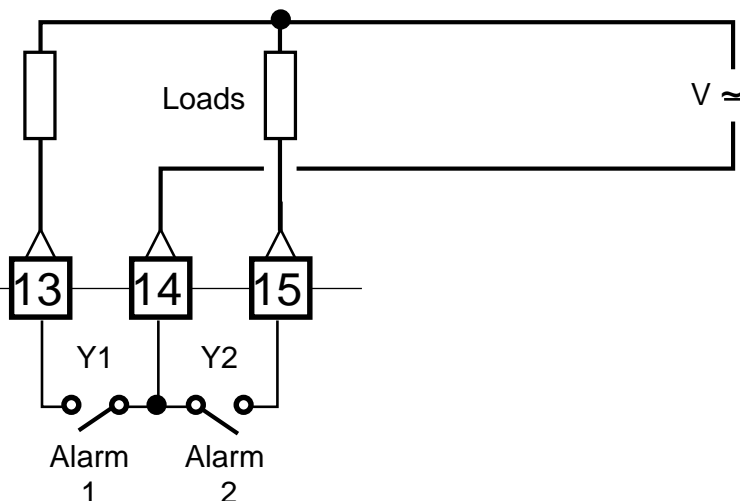
A • JM models, with 2 alarms



B • JM models, with 4 alarms



C • JT models, with 2 alarms



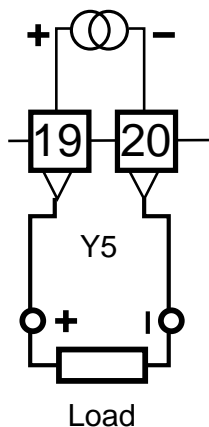
2 or 4 contacts, rated 5A/250Vac for resistive loads (switchings 2×10^5 min. at 5A/250Vac) For the choice of type and operating mode see page 14



In case of power cutoff, the relays are deenergized and therefore the contacts are open

4 • ELECTRICAL CONNECTIONS

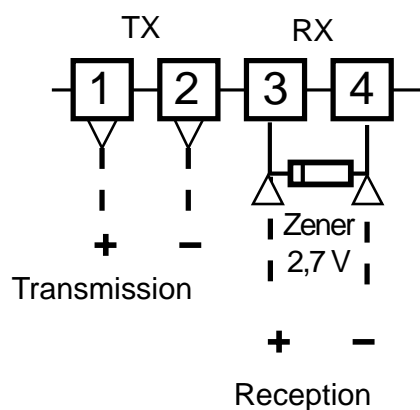
5 • Retransmission of measurement, output Y5 (option)



It is galvanically isolated:

4..20 mA, max. 10Vdc, load 500Ω max.
or
0..10Vdc, max 20 mA, load 500Ω min.

6 • Serial communication (option)



Note
Zener 2,7 V Only for 20mA C.L.

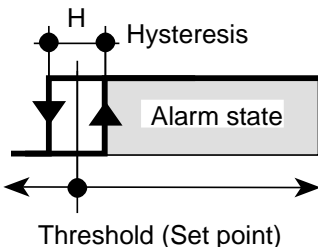
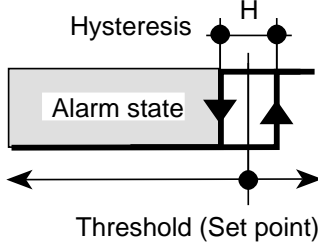
Interface 20 mA C.L. passive
and galvanically isolated

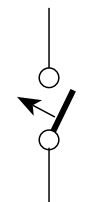
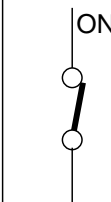
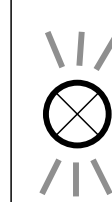
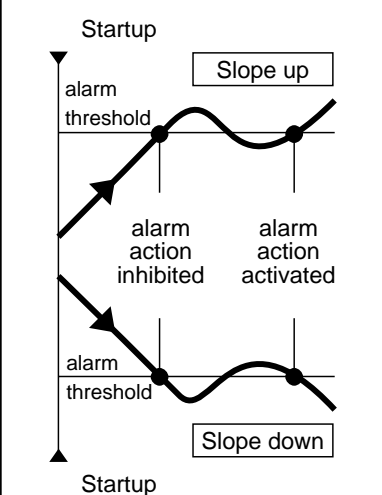
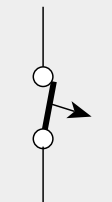
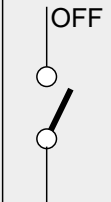

**See Instruction Manual
"SUPPLEMENT SERIAL
COMMUNICATION
MIU.-CS/E"
supplied separately**

5 • ALARMS

1 • SELECTING THE OPERATING MODE

In order to define the alarm operating mode select for each alarm:
See leaflet: 7 • Programming instructions

In configuration phase (See configuration code, indexes G-H-I-L)	
1° TYPE OF ALARM	2° ALARM ACTION MODE
Disabled	Activated above the threshold 
Normal	
With ISA A sequence and acknowledgement	Activated below the threshold 

In programming phase (See alarm configuration, indexes from Ø to 7)		
3° ALARM INHIBITION MODE AT STARTUP	4° STATE OF CONTACT	5° SAFETY STATE IN CASE OF INPUT FAILURE
Disabled	NO In alarm state closes   	NON-Alarm state
Enabled		
	NC In alarm state opens   	Alarm state

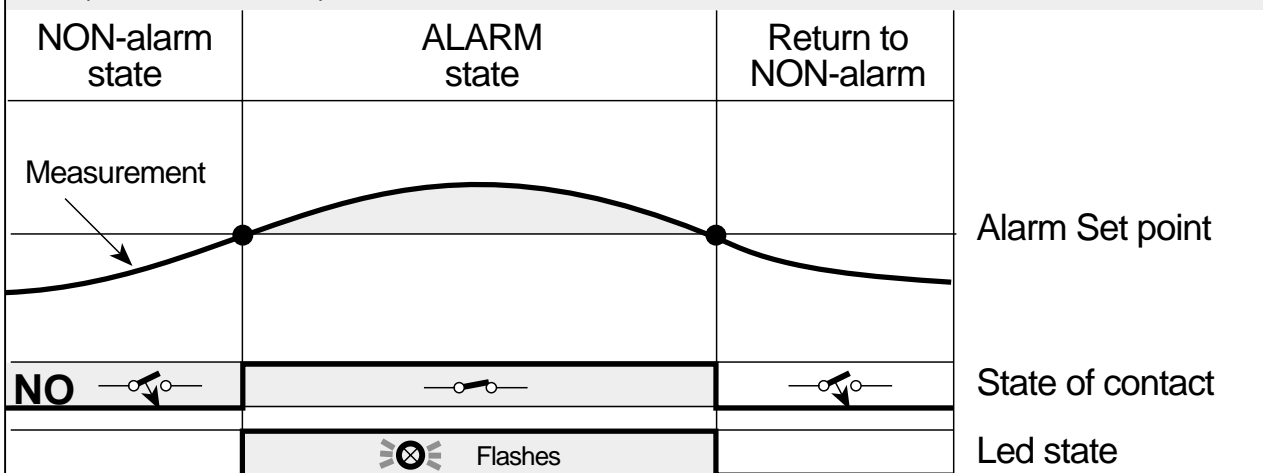
Note: 3°-4°-5° with the end are preset in factory (default) with the configuration index 7

5 • ALARMS

2 • OPERATION

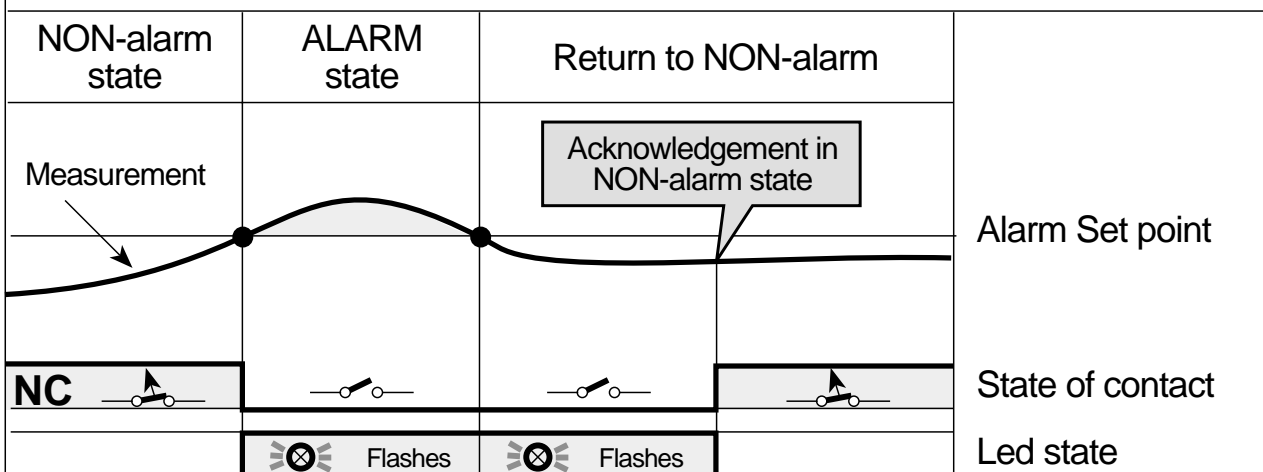
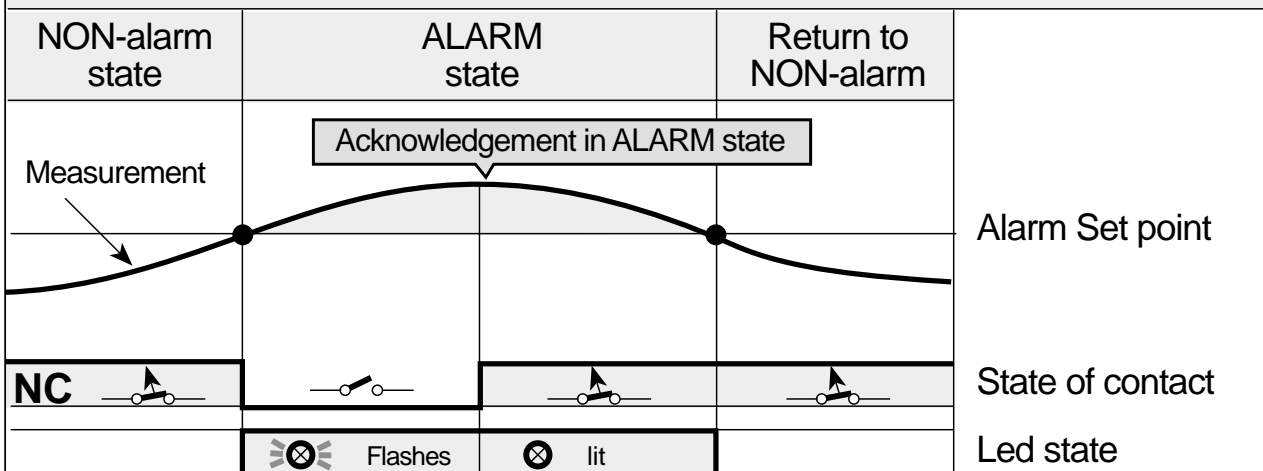
A • Normal type

Example with normal type alarm, activate high and state of contact **NO** (in alarm closes)






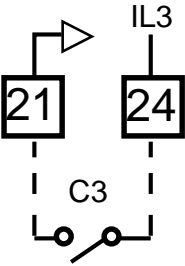

B • -With ISA A sequence

Example with alarm with ISA A sequence, activate high and state of contact **NC** (in alarm opens)



5 • ALARMS

3 • ALARM ACKNOWLEDGEMENT (for iSA A only)

Acnowledgement mode	Moment of acknowledgement	LED	
		In alarm	Alarm acknowledged
Pressing the key 	Measurement is again in alarm state	 Flashes	 Lit (see Note)
Closing C3 or at least for 2 sec. 	Measurement is come back to NON-Alarm state		 Switched off



In case of mains cutoff, relay is deenergized and the relative contact is open

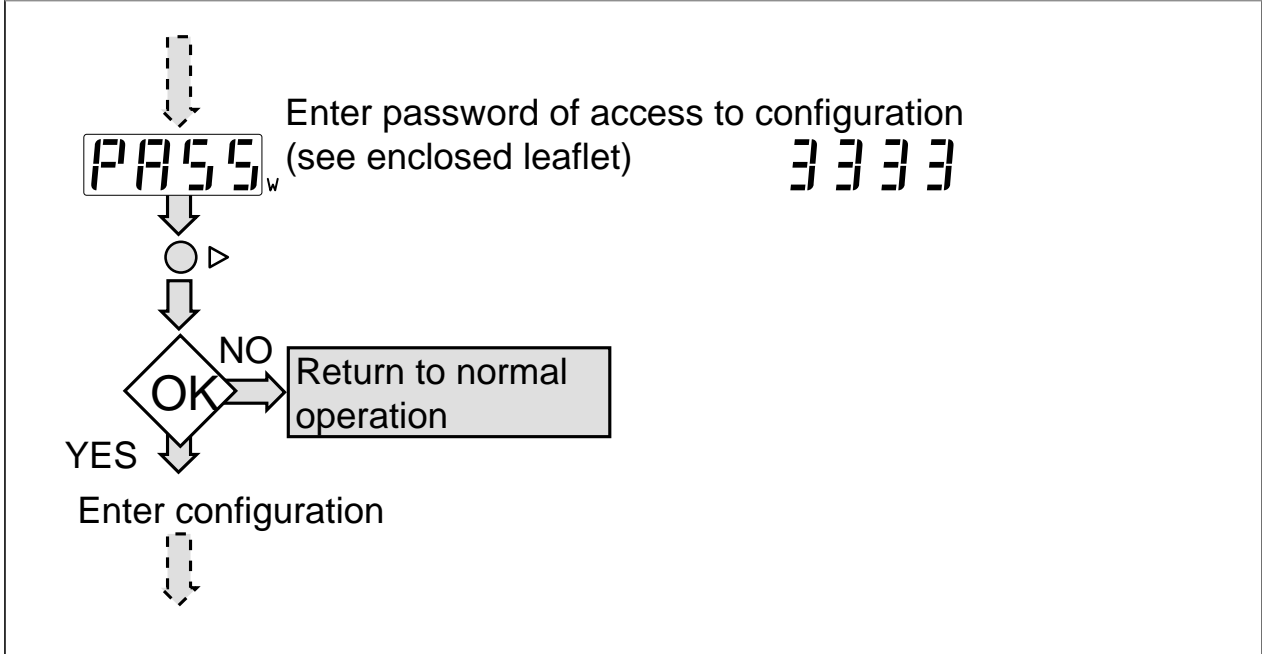
Note:

Switched off when Measurement return to NON-alarm state

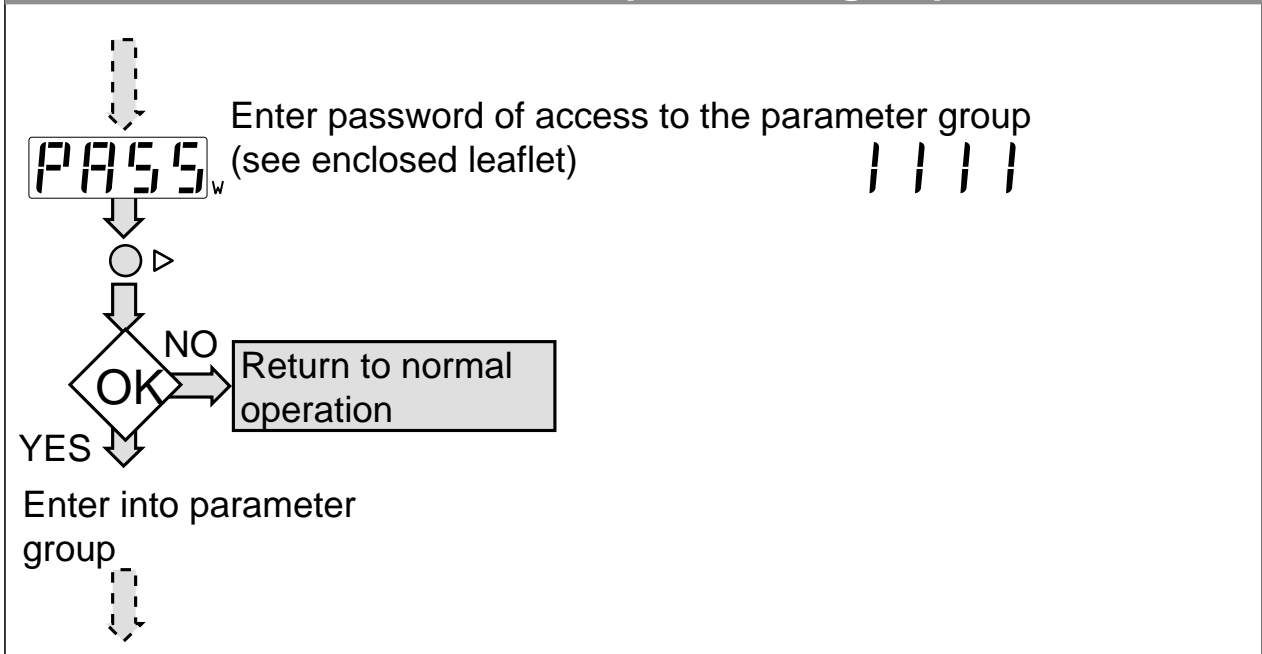
6 • ACCESS CODE

In order to protect the configuration or some important parameters against inadvertent alterations or tampering, during programming it is necessary to enter password

6.1 Password of access to configuration 3333



6.2 Password of access to the parameter group 1111



12 • TECHNICAL DATA

Input measurement (configurable)	Common features	A/D Converter: 50.000 points		
		Measurement sampling time: 62 msec.		
		Time constant of measurement filter: 0 ...30 sec		
		Input shift: -50 ... +50 digit		
	Type	RTD: Pt100Ω , (IEC 751), line 20Ω max. (3-wires)		
		Thermocouples J-K-N-S-R-T-W (IEC 584), L (DIN 43710), line 150Ω max		
		mA dc	4..20mA, 0..20mA, Ri 30Ω with or without $\sqrt[3]{}$	With configurable scale engineering units
		mV dc V dc	0..60mV, 0..300mV, Ri 10MΩ	
			0..1Vdc, 0..10Vdc, Ri 10KΩ with or without $\sqrt[3]{}$	
	0..60mV, 0..300mV, Ri 10MΩ (JT models only) Zero: within±10% of the measurement range End of scale: at 80% of scale span			
Accuracy (at 25°C amb.)	0.2% ±1 digit	for input for RTD or thermocouples		
	0.1% ±1 digit	for input in current or voltage		
Auxiliary power supplies	24 Vdc ± 10%, 20 mA max		for 2-wire or 3 or 4-wire transmitters	
	5 or 10Vdc ±5% selectable, 30 mA max.		for bridge transducers (JT models only)	
Auxiliary inputs	3 logic		to freeze the measurement, store a peak, acknowledge alarms	
Alarms Y1 - Y2 - Y3 - Y4 configurable (for every alarm)	Relay output		1 contact, 5A/250 Vac max.	
	Signalling		Red led, flashing in alarm state, lit after acknowledgement (if configured with ISA A sequence only)	
	Set point:		settable within the scale	
	Hysteresis:		0.1 ... 10.0 % scale span	
	Action delay		0 ...100 sec.	
	Type:		Disabled, normal, with ISA A sequence	In configuration (indexes G-H-I-L)
	Action mode:		Active above or below the threshold	
	Contact state		NO closes in alarm state NC opens in alarm state	In programming (see instructions separately)
	Security in case of anomaly		ALARM state NO alarm state	
	Alarm inhibition at startup:		Disabled or enabled operation	
Hold function		Stores a max. or min. peak or freezes the last measurement effected (see operative instructions)		

12 • TECHNICAL DATA

Retransmission of meas. output Y5 (option)	Current output: 4..20mA (500Ω max, 10Vdc max)	galvanically isolated
	Voltage output: 0..10Vdc (500Ω min, 20mA max)	
Serial communication (option)	Passive and galvanically isolated interface 20 mA C. L. For other data see manual MIU.-CS/E	
Protections:	Access to parameters	by password
	Access to Set point	3 levels modification, indication only, no access
	Immunity to disturbances:	level IV, standard IEC 801-4
	Storing data	in non-volatile memory for unlimited time
Single power supply	Standard model	100..240V, 50Hz, -15% + 10% 250 Vac max.
	Low voltage model	24V, 50Hz, -15% + 10% or 24Vdc ± 15%
General features	Isolation group	C according to VDE 0110
	Climatic group	KWF according to DIN 40040
	Ambient	temperature 0..50°C, humidity 35..85HR%
	Protection	Front: IP54 standard (IP65 with Kit F10-170-2A101) Case: IP30, terminal board IP20
	Material	Self-extinguishing 94V1
	Weight	about 480 gr.
	Dimensions	48x96, depth 150 mm., according to DIN 43700

GUARANTEE

The equipment is guaranteed free from manufacturing defects for 1 year after installation, for a maximum of 18 month after delivery.

Faults caused by use other than that described in the operating instructions are excluded from the guarantee.

Ascon SPA

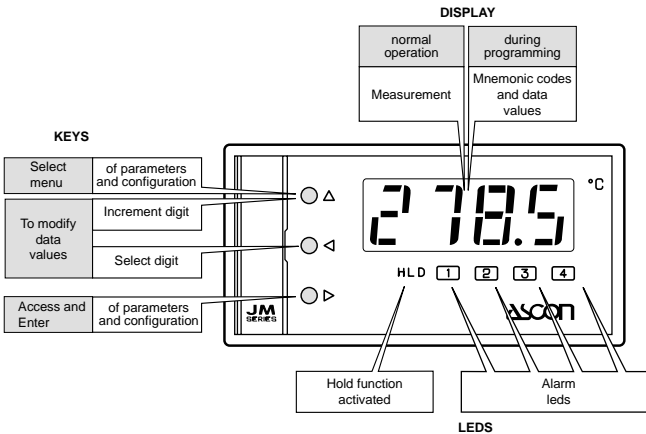
Via Falzarego, 9/11

20021 Bollate (Milano) Italy

Tel. 02 333371 - Fax 02 3504243

7 • PROGRAMMING INSTRUCTIONS • JM and JT SERIES INDICATORS

KEYS AND DISPLAY



ALARM CONFIGURATION INDEXES

Alarm inhibition at startup	State of contact during normal operation			State of contact in case of input failure (safety state)			Index [0..7]
	Condition	State of contact	Led	Condition	State of contact	Led	
Enabled	NON-alarm	NO	OFF	NON-alarm	NC	OFF	0
	ALARM	NO	ON	ALARM	NO	ON	1
	NON-alarm	NC	OFF	NON-alarm	NO	OFF	2
	ALARM	NC	ON	NON-alarm	NO	ON	3
	NON-alarm	NO	OFF	NON-alarm	NC	OFF	4
	ALARM	NO	ON	ALARM	NO	ON	5
Disabled	NON-alarm	NO	OFF	NON-alarm	NC	OFF	6
	ALARM	NO	ON	ALARM	NO	ON	7
	NON-alarm	NC	OFF	NON-alarm	NO	OFF	0
	ALARM	NC	ON	NON-alarm	NO	ON	1
	NON-alarm	NO	OFF	NON-alarm	NC	OFF	2
	ALARM	NO	ON	ALARM	NO	ON	3

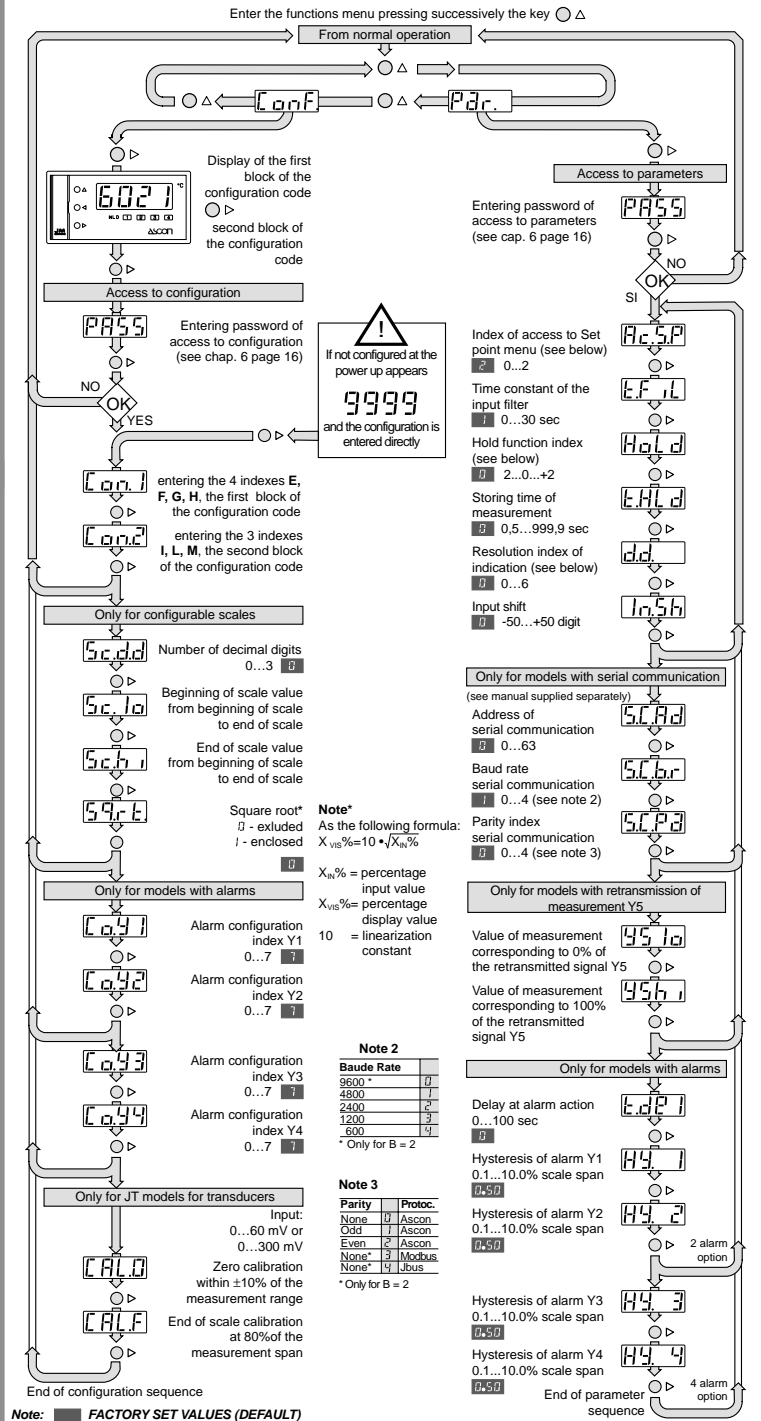
The index 7 is set in factory (default) and it is the one normally used for an alarm contact. The index 5 is the one normally used when the contact is employed for a control action. In case mains cutoff the relay is deenergized and its contact is therefore opened.

CONFIGURATION CODE

Input type, scale range (2)	E	F	Type and operating mode, Alarm Y2	H
RTD IEC 751	Pt 100	-200...600°C	Disabled	0
	Pt 100	-99.9...300.0°C	Normal	1
	Type J	0...600°C	Active high	2
	Type W	0...2200°C	Active low	3
	Type L	0...600°C	With ISA A sequence	4
	Type K	0...1200°C	Active high	5
	Type N	0...1200°C	Active low	6
	Type S	0...1600°C	Normal	7
	Type R	0...1600°C	With ISA A sequence	8
	Type T	-100...400°C	Active high	9
For JM models	4...20 mA	Conf. eng. units	Active low	0
	0...20 mA	Conf. eng. units	Active high	1
	0...60 mV	Conf. eng. units	Active low	2
	0...300 mV	Conf. eng. units	Active high	3
	0...1V	Conf. eng. units	Active low	4
	0...10V	Conf. eng. units	Active high	5
	0...60 mV calibrate	Conf. eng. units	Active low	6
	0...300 mV calibrate	Conf. eng. units	Active high	7
* Fe-Const Din 43710				

if at power-up appears 9999 the indicator IS NOT CONFIGURED (see procedure)

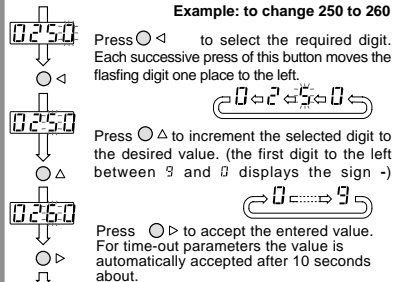
FUNCTIONS MENU



Note: FACTORY SET VALUES (DEFAULT)

MODIFICATION OF A VALUE

It is possible to modify any numeric field by changing each digit in turn. The modified digit flashes. When it is displayed the mnemonic code of the value to be modified appears. Press the key < to display the value and then modify it



INDEX OF ACCESS TO SET POINT R.C.S.P

Visible and modification	Index
Visible and modification	2
Visible but NO MODIFICATION	1
NOT VISIBLE and NO MODIFICATION	0

RESOLUTION INDEX OF INDICATION d.d

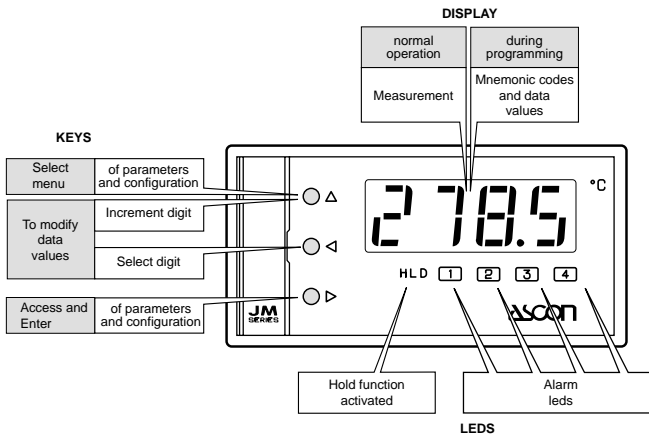
Index	0	1	2	3	4	5	6
Resolution	1	2	5	10	20	50	100

HOLD FUNCTION INDEX (see leaflet)

Disabled	Peak	Valley
The value of measurement is stored for a time preset t H / d	1	-1
With the external contact on the logic input I.L.1 the value of measurement is stored for the entire closing time of the contact	2	-2

8 • OPERATIVE INSTRUCTIONS • JM and JT SERIES INDICATORS

KEYS AND DISPLAY



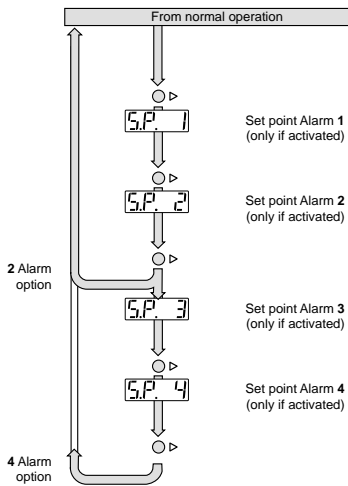
SET POINT ALARMS MENU

It is displayed only for models with alarms

It is possible to protect the Set points from inadvertent tampering setting up the index of access SP from 0..2 (see leaflet)

Index 2 Set points visible and modification
 Index 1 Set points visible but NO modification
 Index 0 Set points not visible and therefore NO modification

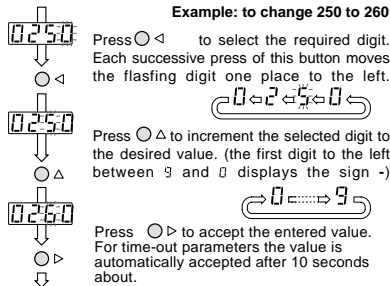
The Set point menu is entered pressing successively the key $\circ \triangleright$



MODIFYING SET POINT

It is possible to modify any Set point value by changing each digit in turn. The modified digit flashes.

When it is displayed the mnemonic code of the value to be modified appears. Press the key $\circ \triangleleft$ to display the value and then modify it.



HOLD FUNCTION

Function	Activating mode	Duration	Note
MEASUREMENT FREEZING	Startup from external contact (see fig. 1)	For all the closing time of C2	This function prevents further acquisitions of measurement and freezes also all the other functions of the instrument
	Automatic startup (see fig. 2)	For Hold time t_{Hld} set in advance	This function does not inhibit the acquisition of measurement and therefore alarms and retransmission remain operative
MEASUREMENT "PEAK" OR "VALLEY" CAPTURE AND STORAGE	Startup from external contact (see fig. 3)	For all the closing time of C1	
	Setting up during programming:		

Fig. 1 Hold function activated from the closing of an external contact to display an instantaneous desired value, for example weightings with weighting cells

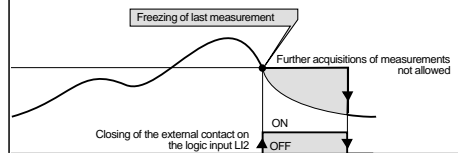


Fig. 2 Hold function automatically to display for example maximum peaks of rapid phenomena

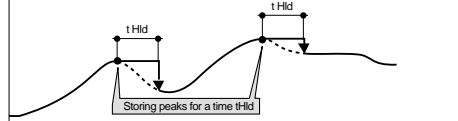


Fig. 3 Hold function activated from the closing of an external contact to display, for example, maximum peaks for a long period

