

Temperature controller

1/16 DIN - 48 x 48

M4 line



Quick Guide • ISTR-FM4ENG02

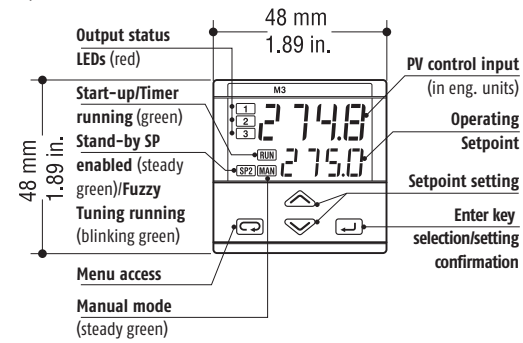


Declaration of Conformity and Manual retrieval

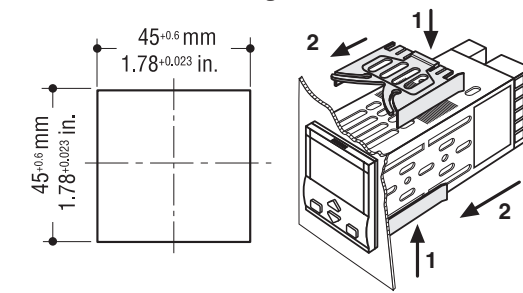
M4 is panel mounting, Class II instrument. It has been designed with compliance to the European Directives. All information about the controller use can be found in the User Manual: [MIU_M4_EN.pdf](#). The Declaration of Conformity and the manual of the controller can be downloaded (free of charge) from the web-site: www.ascontecnologic.com Once connected to the web-site, search: **M4** then click on **M4** from the result list. In the lower part of the product page (in any language) is present the download area with links to the documents available for the controller (in the available languages).

Description and dimensions

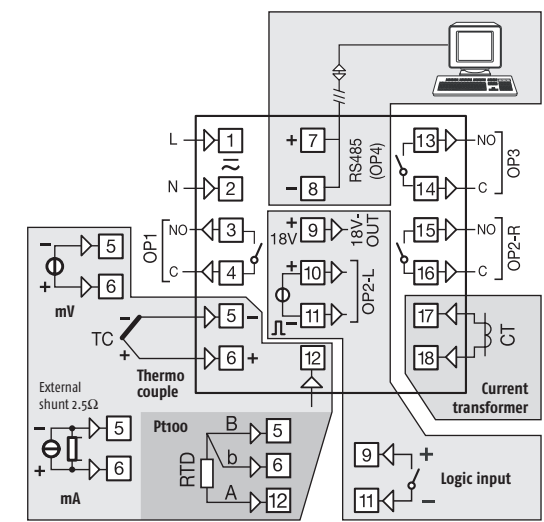
Depth: 120 mm



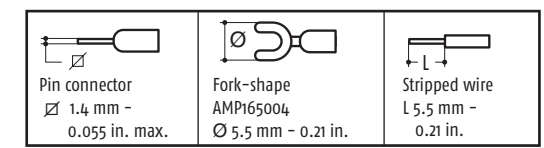
Panel cut out and mounting



Electrical connections



Terminals



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Model Code

The product code indicates the specific hardware configuration of the instrument, that can be modified by specialized engineers only.

Line Basic Accessories Configuration
Model: **M4** **A B C D** **E 9 0 0** / **I L M N** **- O**

Line	M	3
Power supply	A	
100...240Vac (-15...+10%)	3	
24Vac (-25...+12%) or 24Vdc (-15...+25%)	5	
Outputs OP1 - OP3	B	
Relay - Relay	1	
Relay - Triac	2	
Serial Comm.s	C	D
Options		
None	0	0
Current transformer input (CT)	0	1
Transmitter Power Supply (P.S.)	0	2
Transmitter P.S. + Retransmis.	0	3
Transmitter P.S. + CT	0	4
Transmitter P.S. + Retransmis. + CT	0	5
None	5	0
Transmitter Power Supply (P.S.)	5	6
Transmitter P.S. + CT	5	8
None	9	0
Current transformer input (CT)	9	3
Analogue control output	7	2
Analogue control output +CT	9	9

Special functions	E
Not fitted	0
Start-up + Timer	2

Configuration Code

A 4 + 1 digits index code follows the model (letters from I... O). This code must be set to configure the controller. Using UP (▲) and DOWN (▼) keys insert the desired configuration code. When not configured the 1st part of the code is 9999.

Input type and range	I	
TR Pt100 IEC751	-99.9...300.0°C / -99.9...572.0°F	0
TR Pt100 IEC751	-200...600°C / -328...1112°F	1
TC L Fe-Const DIN43710	0...600°C / 32...1112°F	2
TC I Fe-Cu45% Ni IEC584	0...600°C / 32...1112°F	3
TC T Cu-CuNi	-200...400°C / -328...752°F	4
TC K Chromel-Alumel IEC584	0...1200°C / 32...2192°F	5
TC S Pt10%Rh-Pt IEC584	0...1600°C / 32...2912°F	6
Dc input 0...50mV linear	Engineering and units	7
Dc input 10...50mV linear	Engineering and units	8
Custom input and range [1]		9

[1] For instance, other thermocouples types, ΔT (with 2 Pt100), custom linearisation etc.

Control mode	Output configuration [2]	L
PID	Control OP1/Alarm AL2 on OP2	0
	Control OP2/Alarm AL2 on OP1	1
On-Off	Control OP1/Alarm AL2 on OP2	2
	Control OP2 / Alarm AL2 on OP1	3
Heat/Cool action	Control OP1- OP3/Alarm AL2 on OP2	6
	Control OP1- OP2/Alarm AL2 on OP3	7
	Control OP2- OP3/Alarm AL2 on OP1	8

[2] Each control output can be replaced by the OP4 analogue output. The replaced output is not more available.

Control action type	M	
Reverse (single action)	Linear Cool (Heat/Cool double action)	0
Direct (single action)	On-Off Cool (Heat/Cool double action)	1

Alarms 2 and 3 type and function		N	O
Disabled (or, only for alarm AL3, used by Timer)			
Sensor break/Loop break alarm (LBA)		1	1
Absolute	active high	2	2
	active low	3	3
Deviation	active high	4	4
	active low	5	5
Band	active out	6	6
	active in	7	7
Heater break by CT [3]	active during ON output state	8	8
	active during OFF output state	9	9

[3] This function can be set only when the CT option is installed.

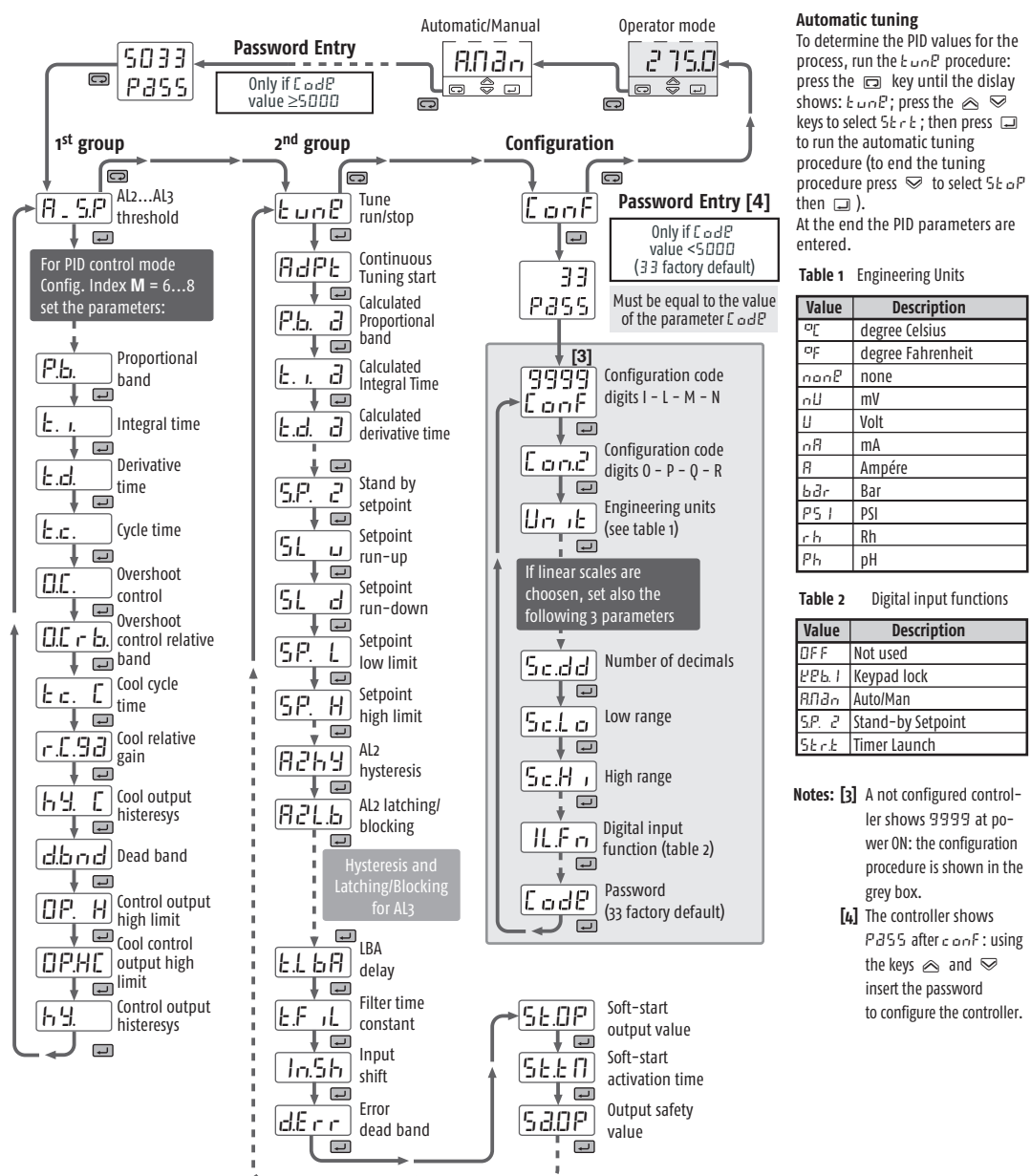
Controller configuration chart

The present chart includes only the basic parameters

For the list and the description of all the controller parameters see the User Manual.

When the controller is new and not configured shows the code 9999 at power ON. In this case NO PASSWORD is needed to configure the instrument (see the grey box in the chart below). Enter the configuration code in accordance with the desired functional characteristics.

Warning! If the parameter *CodP* has previously set to a value ≥ 5000 , (for example 5033 in the chart) the controller is locked in operator mode; insert the correct password to access both the parameter and the configuration menus.



Parameter list

The parameters pointed out with grey background are those necessary to configure the options and are NOT shown in the configuration chart. All the parameters are fully described and explained in the user manual of the controller.

Code	Parameter Name	Value	
		Default	User
<i>CodF</i>	1 st Configuration code	9999	
<i>Cod2</i>	2 nd Configuration code	0000	
<i>Unit</i>	Engineering units	none	
<i>Scdd</i>	Decimal point	0	
<i>ScLo</i>	Low range for engineering units	0	
<i>ScHi</i>	High range for engineering units	9999	
<i>ILFn</i>	Digital input function	OFF	
<i>ENod</i>	Timer/Start-up operating mode	OFF	
<i>ERAc</i>	Timer Action	OFF	
<i>PrAc</i>	Communications protocol	JBUS	
<i>baud</i>	Baud rate	9600	
<i>rPTr</i>	Continuous Output range	4...20	
<i>rEH</i>	Output selection	none	
<i>HLFS</i>	Current transformer range	OFF	
<i>CodP</i>	Password	33	
<i>AMAn</i>	Auto/Man		
<i>ErUn</i>	Timer run/stop	Stop	
<i>AL2SP</i>	AL2 alarm threshold	0	
<i>AL3SP</i>	AL3 alarm threshold	0	
<i>Pb</i>	Proportional band (Hysteresis ON - OFF)	5.0	
<i>ti</i>	Integral time	5.0	
<i>td</i>	Derivative time	1.00	
<i>tc</i>	Output Cycle time	20	
<i>OC</i>	Overshoot Control	1.00	
<i>OCrb</i>	Overshoot Control relative band	0.5	
<i>cc</i>	Cool cycle time	20	
<i>rCG</i>	Relative Cooling Gain	1.0	
<i>hY</i>	Cool output Hysteresis (ON-OFF only)	0.5	
<i>dbnd</i>	Heat/Cool Dead band	0.5	
<i>OP.H</i>	Control output high limit	100.0	

Code	Parameter Name	Value	
		Default	User
<i>OP.HC</i>	Cool output maximum value	100.0	
<i>hY</i>	Control output hysteresis (ON-OFF only)	0.5	
<i>ErUnP</i>	Start/Stop One shot tuning (0=Stop 1=Run)	STOP	
<i>AdPt</i>	Continuous Tuning start	stop	
<i>Pb.P</i>	Calculated Proportional band		
<i>ti.P</i>	Calculated Integral Time		
<i>td.P</i>	Calculated derivative time		
<i>tiPE</i>	Timer Setting	1	
<i>SP.2</i>	Stand-by Setpoint	0	
<i>SL.u</i>	Slope up	OFF	
<i>SL.d</i>	Slope down	OFF	
<i>SP.L</i>	Setpoint low limit	PV.LO	
<i>SP.H</i>	Setpoint high limit	PV.HI	
<i>SPSU</i>	Start-Up Setpoint	0	
<i>EHSH</i>	Start-Up Hold time	1	
<i>OP.HS</i>	Output high limit during Start-up	100.0	
<i>AL2HY</i>	AL2 Alarm Hysteresis	0.5	
<i>AL2LB</i>	AL2 latching and blocking functions	NONE	
<i>AL3HY</i>	AL3 Alarm Hysteresis	0.5	
<i>AL3LB</i>	AL3 latching and blocking functions	NONE	
<i>ELBA</i>	Loop Break Alarm delay	OFF	
<i>EFIL</i>	Input filter	2.0	
<i>InSh</i>	Input shift	OFF	
<i>dErr</i>	Error Dead Band	OFF	
<i>StOP</i>	Soft-start output value	OFF	
<i>SttN</i>	Soft-start activation time	1	
<i>SdOP</i>	Output safety value	0.0	
<i>Addr</i>	Serial comm address	1	
<i>rELo</i>	Retransmission low range	PV.LO	
<i>rEHl</i>	Retransmission high range	PV.HI	

Automatic tuning
To determine the PID values for the process, run the *tuneP* procedure: press the *tuneP* key until the display shows: *tuneP*; press the *▲* *▼* keys to select *Start*; then press *Enter* to run the automatic tuning procedure (to end the tuning procedure press *Enter* to select *Stop* then *Enter*). At the end the PID parameters are entered.

Table 1 Engineering Units

Value	Description
°C	degree Celsius
°F	degree Fahrenheit
none	none
mV	mV
V	Volt
mA	mA
A	Ampère
Bar	Bar
PSI	PSI
Rh	Rh
pH	pH

Table 2 Digital input functions

Value	Description
OFF	Not used
KEPb.l	Keypad lock
AMAn	Auto/Man
SP.2	Stand-by Setpoint
SttN	Timer Launch

Notes: [3] A not configured controller shows 9999 at power ON; the configuration procedure is shown in the grey box. [4] The controller shows P335 after *CodF*: using the keys *▲* and *▼* insert the password to configure the controller.