

- Heating and/or cooling function
- 2 independent alarms
- Load break detection
- 2nd setpoint which can be selected remotely
- Manual/automatic power adjustment
- RS 485 / MODBUS - JBUS serial communication option



Type			
MIC 48			
		Part Number	Part Number
		Without RS 485 link	With RS 485 link
Output	Input Power		
Relay	100 – 240 Vac	89 422 008	89 422 408
Logic	100 – 240 Vac	89 422 018	89 422 418
Relay	24Vac / Vdc	89 422 002	89 422 402
Logic	24Vac / Vdc	89 422 012	89 422 412

Inputs		
Thermocouples	J, K, R, S, & N	Conforms to IEC 584-1
	L	Conforms to Din 43710
Reference Junction	Automatic cold junction compensation 0-50°C	
Reference junction drift	0.1°C / °C	
Input Impedance	> 1MΩ	
Calibration	Conforms to IEC 584-1	
RTD	3 wire PT 100	
Line Resistance	20 Ω Max	
Input types and standard range		
Input types	Temp Scale in °C	Temp Scale in °F
TC L	0 / 400.0 °C	0 / 1650°F
TC L	0 / 900 °C	
TC J	0 / 400.0 °C	0 / 1830°F
TC J	0 / 1000 °C	
TC K	0 / 400.0 °C	0 / 2190°F
TC K	0 / 1200 °	
TC N	0 / 1400 °C	0 / 2500°F
TC R	0 / 1760°C	0 / 3200°F
TC S	0 / 1760°C	0 / 3200°F
RTD Pt100	-199.9 / 400.0°C	-199.9 / 400.0°F
RTD Pt100	-200 / 800.0°C	-330 / 1470°F
Configurable mA & V inputs	Input	Impedance
	0 – 20mA	< 5Ω
	4 – 20mA	
	0 – 60mV	> 1MΩ
	12 - 60mV	
	0 – 5V	> 200KΩ
	1 – 5V	
	0 – 10V	> 400KΩ
2 – 10V		
Measurement Range	-1999 to +4000	
Decimal Point	adjustable 0000, 000.0, 00.00, 0.000	

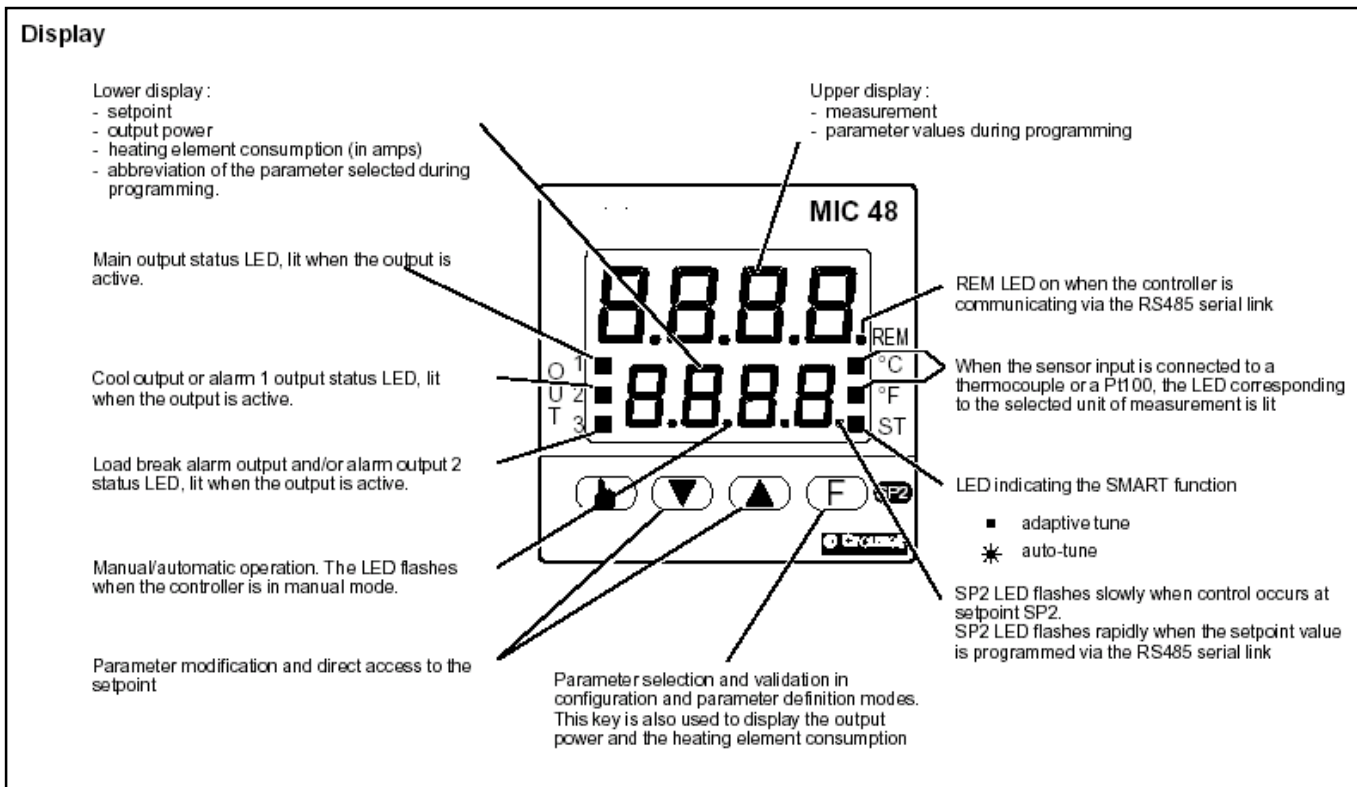
Ordering Information	
<input type="checkbox"/>	Standard products, stocked
<input type="checkbox"/>	Standard products, non stock
Example: 89 422 008, MIC 48 temperature controller	

Outputs	
Output Type	discontinuous
Action type	can be programmed for heating and/or cooling
Power output	heating action adjustable from 0 to 100%
limit :	heating/cooling adjustable from -100
SOFT-START	action to +100 %
Note : this function is only active on starting if the measurement is less than the setpoint.	
Output element	
OUT1	N/O contact 3A 250 Va resistive
Main	(N/C contact is possible via a jumper)
Output	logic Level 0: < 0.5 V==
	Level 1: 14 V == ±20% @ 20 mA max
	24 V == ±20% @ 1 mA max
Main output cycle time	1 s to 99 s
OUT2	N/O -2A contact, 250 V~ resistive
Cool output or alarm 1 output	
OUT3	N/O -2A contact, 250 V~ resistive
Load break output and/or Alarm 2 output	
Automatic/manual mode	
It is possible to force the heat or cool output power by pressing the key on the front panel.	
Manual adjustment of the output power	Heat 0 to 99 %
	Cool 0 to 99 %
Disabling the power status	
It is possible to disable the power output. In this case, the controller operates as a simple temperature display unit. This option is frequently used during machine adjustment.	

General Specifications	
Power Supply	100 – 240 Vac , 24Vac / Vdc
Frequency	50 / 60 Hz
Tolerance	-15% / +10% Vin
Power consumption	8VA max
Display	Measurement 4 digits, Red LED's, 7 segment, 10mm height
	Setpoint 4 digits, Green LED's, 7 segment, 7.5mm height

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Consult factory for application assistance.

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Inputs		
Current Transformer input for monitoring the load break		
Measurement range with transformer	10A to 100A	
Resolution	10 to 20A	0.1A
	21 to 100A	1A
Measurement logic	relay output	NO or NC
Threshold	logic output	level 1 or 0
Measurement update period	50 ms	
Setpoints		
2 setpoints are available	main setpoint	SP
	auxiliary setpoint	SP2
SP/SP2	50 mA~	
selection point	selection via external n/c type contact	
N.B. : The 50mA AC input is used either as a load break monitoring input (with an associated current transformer), or as a control input for the 2nd setpoint.		
Selection between these two functions is made in configuration mode.		

Serial Link	
Type	RS 485
Protocol	MODBUS , J.BUS
Address	1 to 255
Transmission speed	600 to 19 200 Baud
Output power	Number of data bits
Parity	even, odd, no
Stop bit	1

Alarms		
In addition to its main output, the MIC 48 has two other outputs which can be configured:		
	OUT2	cool output or alarm 1 output
	OUT3	load break output and/or alarm 2 output
Description of alarms 1 and 2		
Note : These 2 alarms can be configured independently of each other.		
Output type	direct or reverse	
Functions	absolute alarm	
	band alarm	
	deviation alarm	
Reset	manual	
	automatic	
Inhibition	can be configured	
Note : Each alarm can be configured using an inhibition sequence. This function means it is possible to ignore any temperature threshold overshoots at the start of the process and after each setpoint change.		
Alarm threshold	absolute alarm	absolute value independent from SP
	band alarm	value relative to SP, adjustable from 0 to 500 °C/°F
	deviation alarm	value relative to SP, adjustable from -500 °C/°F (negative deviation) to +500 °C/°F (positive deviation)
Alarm	0.1 to 10.0 % of scale amplitude	

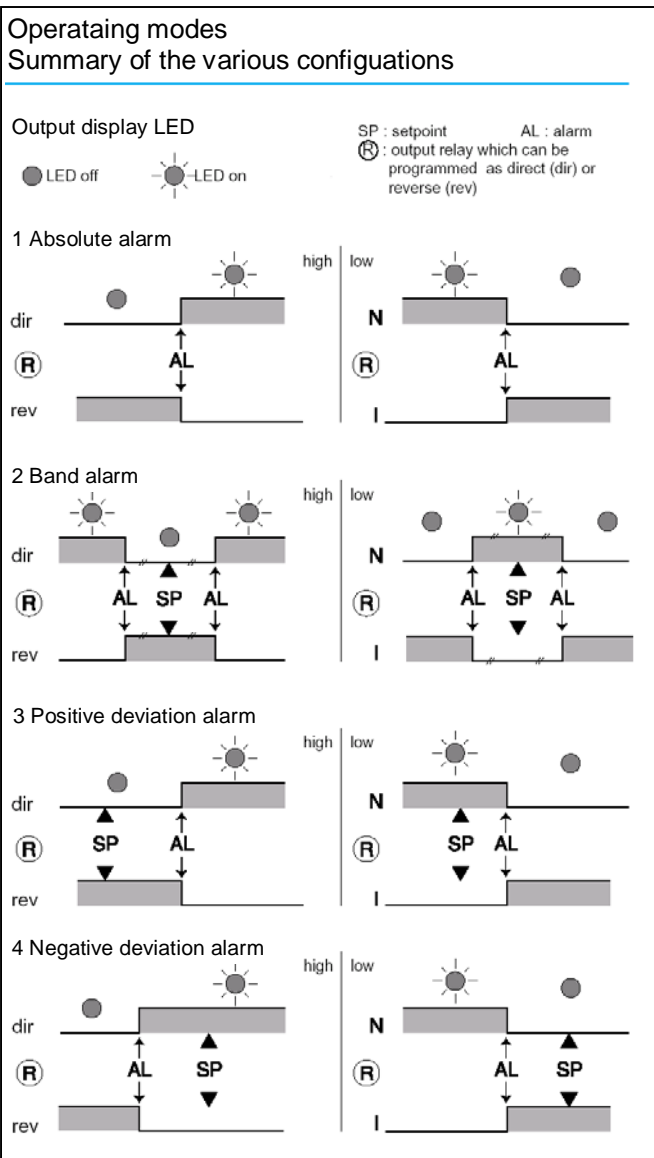
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Control characteristics			
Control algorithm	PID with auto-tune and adaptive tune : SMART		
Control type	heat or cool heat - cool		
Sampling time	linear input	250 ms	
	TC and RTD input	500 ms	
Proportional band Pb	heat or cool	1.0 to 100 %	
		of scale amplitude	
	heat - cool	1.5 to 100 %	
		of scale amplitude	
Note : if Pb = 0% :	discrete action		
Hysteresis (during discrete action)	0.1 to 10 % of scale amplitude		
Integral time ti	20 s to 20 min		
Note : if ti > 20 min:	integral action is inactive		
Derivative time td	1 s to 10 min		
Note : if td = 0 :	derivative action is inactive		
Cycle time	heating	1 to 200 s	
	Cooling	1 to 200 s	
Heat-cool control	Cool proportional band	rC x heat proportional band	
	rC : relative gain	0.20 to 1.00	
	dead/overlap band	-20% to +50% of the heat proportional band	
Note :	The MIC 48 offers the following parameters directly, depending on the cooling medium used :		
	fluid	rc relative gain	cooling cycle time
	air	1.00	10 s
	oil	0.80	4 s
	water	0.40	2 s
	These parameters can be adjusted depending on the limitations of the process.		

Presentation and environment		
Insulation resistance	conforming to IEC 348	>100 MΩ
Insulation voltage	conforming to IEC 348	1500 V
Immunity to interference	conforming to IEC 801-4	Level 3
	conforming to IEC 801-2	8000 V
Accuracy	±0.2% of the full measurement scale ±1 digit at an ambient temperature of 25°C at Un	
Temperature limits	operation	0 to +50°C
	storage	-20 to +70°C
Relative humidity	20 to 85 % Rh without condensation	
Housing		
Housing material	self-extinguishing UL94 grade VO	
Front panel made from	polycarbonate membrane	
Protection class	IP54, conforming to IEC 529	
Connection	screw terminals	
Weight	250 grams	

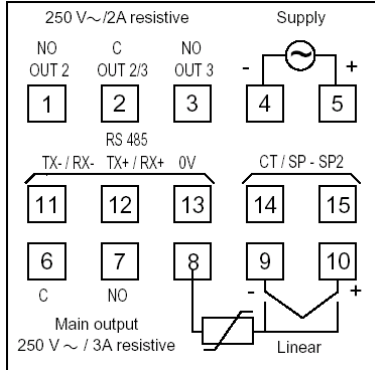
Protection	
Watchdog	detects a fault in the equipment caused by external interference and activates automatic reset without modification of the process.
Switch	the configuration and calibration are accessed via an internal switch, which can only be accessed when the device is unplugged.

Approvals	
UL / CSA	in progress

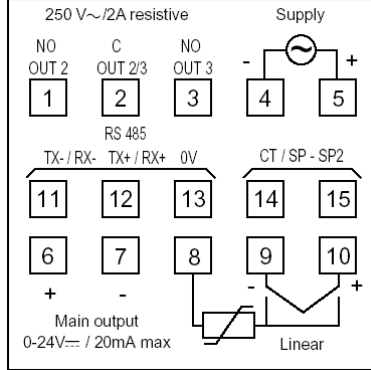


Wiring diagrams

Relay output



Logic output

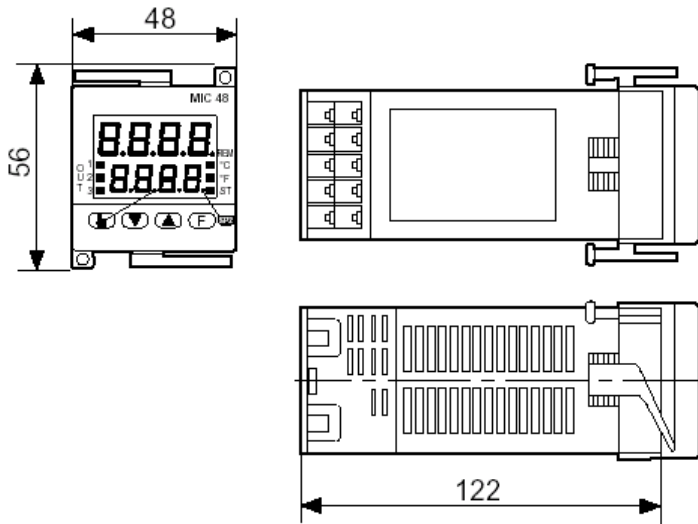


Terminal identification

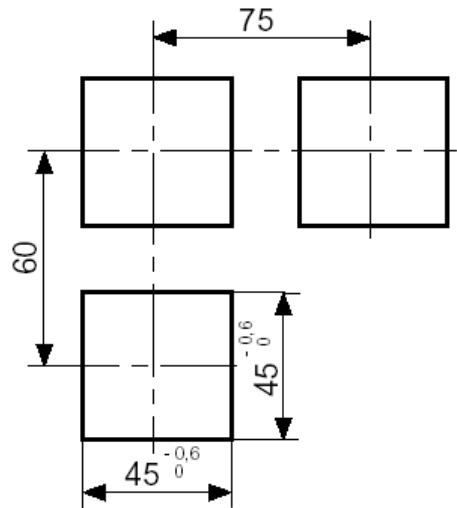
11 - 12 -13 - Serial link
14 - 15 - Input 50 mAa *

* Current transformer connected for load break monitoring or selection of 2nd setpoint

Dimensions

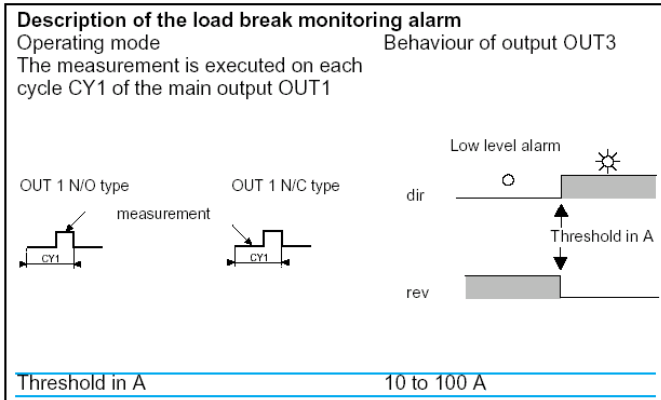


Panel cut-out



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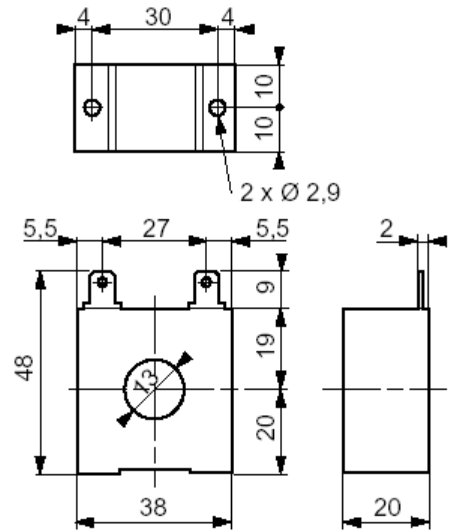
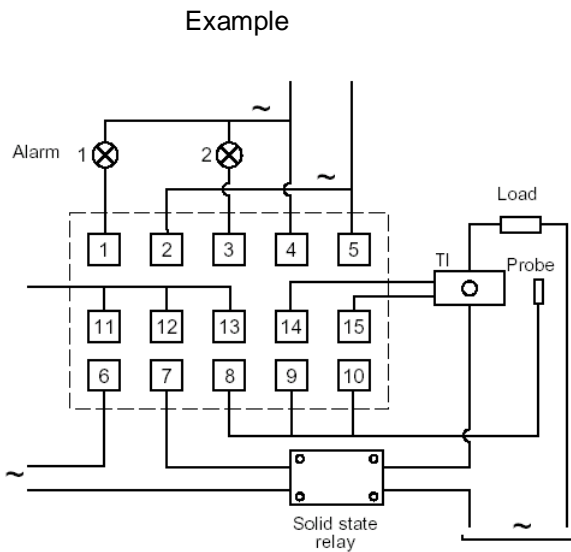
Current Transformer



Part numbers	
10 A / 50 mA	26 852 301
25 A / 50 mA	26 852 302
50 A / 50 mA	26 852 303
100 A / 50 mA	26 852 304

Wiring diagram

Dimensions



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