1020

CONFIGURABLE 2 LOOP TEMPERATURE CONTROLLER

Main applications

- *Plastics extrusion lines and injection moulding machines*
- *Polymerisation plant for synthetic fibre production*
- *Rubber vulcanisation plants*
- *Climatic chambers and test benches*
- *Continuous ovens for the ceramics and components for the building industries*
- *Chemical and pharmaceutical industries*
- *Furnaces*
- *Food processing plant*
- *Painting cabines*
- *Water treatement*
- *Siderurgy industry*

Main features

- *Two indipendent thermocouple, resistance thermometer, d.c. voltage inputs configurable by faceplate keys*
- *Settable Offset function for input signal*
- *Relay or logic control output for each channel*
- *One configurable alarm for each channel or two alarms on one of the two channels*
- *Loop Break Alarm for open circuit load or shortcircuit probe*
- *Alarm with configurable PD action for cooling*
- *Self-tuning, Soft-start*

GENERAL

Microprocessor controller for 2 loops in 48x96 (1/8 DIN) format that is manufactured using SMT.
The 1020 controller provides a complete operator interface, with a Lexan membrane faceplate to give IP54 frontal protection that has 3 keys, two green 3-digit LED displays, 4 red LED indicators for the 4 relay/logic outputs two deviation indicators.
The main inputs for the control variables, one for each control loop, are universal and provide the possibility of connecting different types of signal:
• Thermocouples of types J, K, T
• Resistance thermometer Pt100 (3-wire)
• Linear inputs:
0-50mV, 10-50mV keyboard definable 2-10V, 0-10V, 0-20mA, 4-20mA with an external shunt.
An auxiliary analogue input is available for a current transformer input.
The instrument has a double relay control output (5A, 250Vac at cosφ =1) and one only static output (24Vdc, max.20mA) as well as two relay (3A, 250Vac) or logic (24Vdc, max. 20mA) outputs for each loop.
The programming of the instrument is simplified by the grouping of the parameters into function blocks arranged according to the increasing complexity required.

Access to the configuration parameters is protected by a hardware jumper and different values of a protection code can be used to restrict the number of parameters that can be displayed and modified by the user.

TECHNICAL DATA

INPUTS

Precision: 0,5% f.s. ± 1 digit
Sampling time: 240msec

TC- Thermocouple

J (Fe-CuNi) 0...800°C / 32...999°F
K (NiCr-Ni) 0...999°C / 32...999°F
T (Cu-CuNi) -100...400°C / -148...752°F
Faceplate key selected.
Ambient temperature compensation error is better than 0.05°C foe every 1°C variation.
Messages for overrange and underrange, for incorrect connection and opencircuit probe.

RTD 2/3-wires

Pt100 -19,9...99,9°C / -19,9...99,9°F
Pt100 -199...400°C / -199...752°F
Faceplate key selected.

DC - Linear

0...50mV with settable scale (-199...999 or -19,9...99,9)
Input impedence > 1MΩ.
For 0...10V, 0...20mA, 4...20mA signals use with external voltage devider or shunt resistors.

***OUTPUT** (for channel)*

Control output with direct (heating) or reverse (cooling) action, faceplate key selected.

Relay
With contacts rated at 5A/250Vac at cosφ = 1 (3,5A at cosφ = 0,4).
Spark suppression on the NO contacts.
(Order code R0)

Logic
22Vdc, Rout = 470Ω (20mA, max. 12V).
Protected against inverted polarity and shortcircuit (relay and logic output are both present on channel 2).
(Order code D2)

POWER SUPPLY
Standard: 100...240Vac/dc ± 10%
by request: 11...27Vac/dc ± 10%
50/60Hz; 6VA max.
Protected by internal fuse not serviceable by the user.

AMBIENT CONDITION
Working temperature: 0...50°C
Storage temperature: -20...70°C
Humidity: 20...85%Ur non-condensing

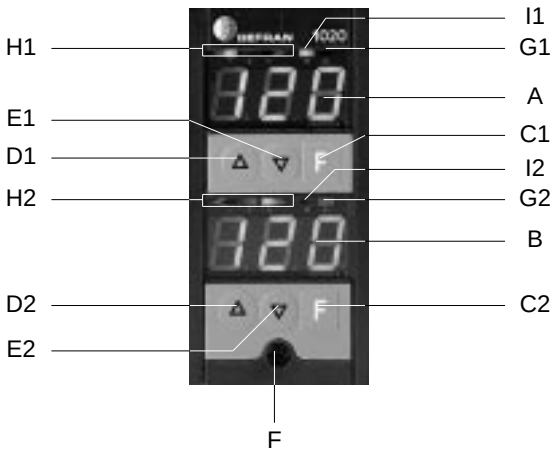
***Control** (per channel)*
On/Off, P, PD, PID for heating or for cooling. All parameters may be entered from the faceplate keys.
• Proportional band: 0,0...99,9% f.s.
• Integral time: 0,0...99,9 min
• Derivative time: 0,0...9,99 min
• Reset power (proportional band position): 0...100%.
• Hysteresis (On/Off control only):
-199...999 (-19,9...99,9) digit.
• Cycle time: 1...200 sec (0 for On/Off control).
• Soft-start (gradual increase of the control output when the instrument is powered up):
0...99,9 min
• Manual Reset (correction of offset in equilibrium):
-199...999 (-19,9...99,9) digit.
• Offset (a preset difference between the actual reading of the temperature probe and the value indicated by the controller):
-199...999 (-19,9...99,9) digit.

***ALARM** (each channel)*
• One alarm which may be configured as absolute, deviation or symmetrical deviation around the setpoint and as high or low alarm.
Two alarms may be selected for one of the channels if the other channel does not require an alarm.
• The alarm point may be set anywhere in the scale.
• Alarm (AL) may be selected with PD action (for the given channel) with adjustable parameters:
- Proportional band (entered under alarm point hysteresis): -199...999 (-19,9...99,9) digit.
- Derivative time: 0,0...9,99 min.
- Cycle time: 1...200 sec (0 for On/Off alarm).
• Hysteresis adjustement for the alarm points: -199...999 (-19,9...99,9) digit.
- Alarm response time: 240 msec.
• Alarm output can be associated to LBA function for open circuit load or shortcircuit probe.
Delay of LBA operation 0...9,99 min. (0 for excluding LBA); LBA power: 0...100% (0% or 100%) for On/Off control).

WEIGHT
400g

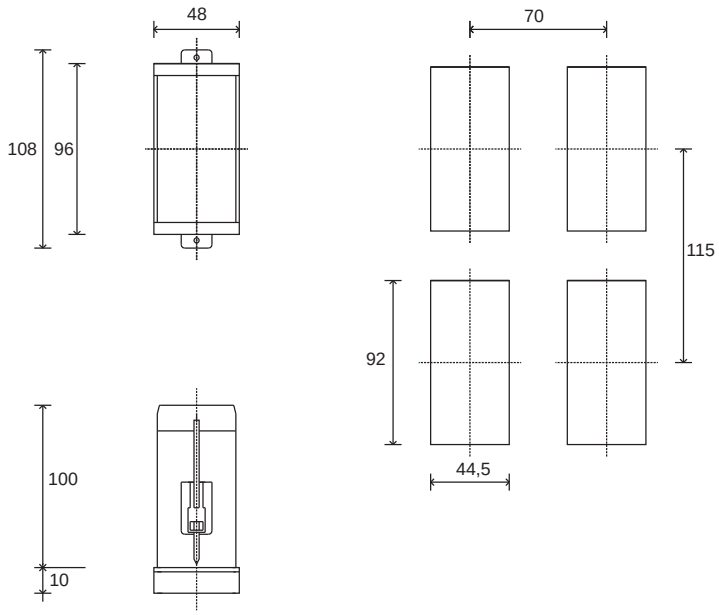
FACEPLATE DESCRIPTION

A - Process variable indication for Loop1, 14mm digit height, green coloured.
B - Process variable indication for Loop2, 14mm digit height, green coloured.
C1, C2 - "Function" Key (Loop1, Loop2)
D1, D2 - "Raise" Key (Loop1, Loop2)
E1, E2 - "Lower" Key (Loop1, Loop2)
F - Fixing screw
G1, G2 - Alarm LED (Loop1, Loop2), red coloured
H1, H2 - Deviation indicators (Loop1, Loop2), green coloured
I1, I2 - Control output LED (Loop1, Loop2), green coloured



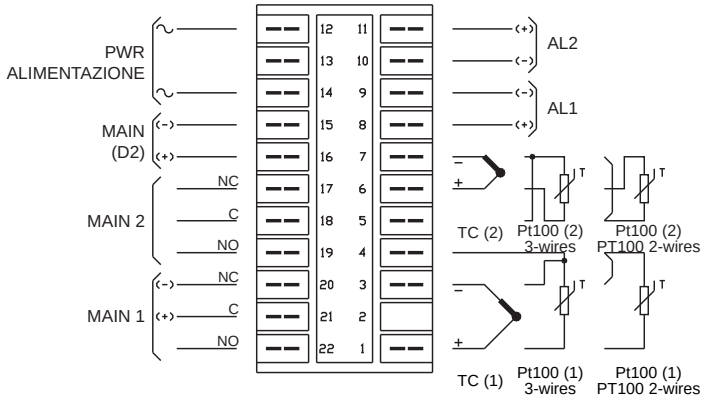
IP54 faceplate protection (IP65 available)

DIMENSIONS AND CUT-OUT



Dimensions: 48x96mm (1/8DIN), depth 100mm

CONNECTION DIAGRAM



⚠ For a right installation see the owner's manual warnings.

ORDER CODE

1020 □□□

CONTROL OUTPUT (channel 1)	
Relay	R0*
Logic	D2

ALARM OUTPUT (channel 1 and 2)	
Relay + Relay	R0
Relay + Logic	RD
Logic + Relay	DR
Logic + Logic	D2

POWER SUPPLY	
100...240Vac/dc	2*
11...27Vac/dc	4

(*) The asterisks mark the options for a standard model.

STANDARD
HW and SW CONFIGURATION
(channel 1 and 2)

- With HW/SW protection on the configuration

Pb = 1,0%
rSt = 0
Ct = 20sec
PSt = 0%
Stu = 0
It = 4,0min
SOF = 0
Hy1 = 1
Pro = 3
AL = 1
Out = 0
Typ = 0
Lb.P = 20%
Lb.t= 0,00min
oFt = 0
LO.S = 0
HI.S = 800

CE In conformity to ECC 89/336/CEE and 73/23/CEE with reference to standards:
- EN 50082-2 (immunity in industrial environment) - **EN 50081-1** (emission in residential environment) - **EN 61010-1** (safety)

GEFRAN

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