



1/32 DIN controller

- SMART function for the self tuning of control parameters.
- "Loop break alarm" function for the indication of an anomalous condition in the control loop.
- Timed output power limiter (Soft Start).
- Output power off function.
- Stand by (mask) alarm function, it allows to avoid unwanted alarm indications at instrument start up or after a set point modification.
- Two independent ramps (ramp up and ramp down) for set point changes.
- Two stored set points selectable by keyboard.
- Switching power supply (from 100 to 240 VAC or 24 V AC/DC).
- IP 65 and NEMA 4X front protection.
- CE certified for use in residential and industrial environment.

FKS



The FKS represents a new generation of super-compact controllers.



This instrument is not only characterized by having very small dimensions but it encompasses, also, many functions and solutions designed for more complex products.

These solutions make this instrument highly flexible and very easy to use at the same time.

Case:	Polycarbonate case
Self extinguishing degree:	V-2 according to UL 746 C.
Front protection:	Front protection - designed and tested for IP 65 and NEMA 4X for indoor locations (when panel gasket is installed). Test were performed in accordance with IEC 529, CEI 70-1 and NEMA 250-1991 STD.
Dimensions:	- 24 x 48 mm Depth 102 mm (according to DIN 43700)
Weight:	90 g max.
Power supply: (switching mode)	from 100 to 240 V AC. 50/60 Hz (+10 % to -15 % of the nominal value) or 24 V DC/AC (±10 % of the nominal value).
Power consumption:	2,5 W.
Common mode rejection ratio:	120 dB @ 50/60 Hz.
Normal mode rejection ratio:	60 dB @ 50/60 Hz.
Electromagnetic compatibility and safety requirements:	This instrument is marked CE. Therefore, it is conforming to council directives 89/336/EEC for industrial, residential and commercial environmental and to council directives 73/23/EEC and 93/68/EEC (reference harmonized standard EN 61010-1).
Installation category:	II.
Sampling time:	250 ms for linear inputs 500 ms for TC or RTD inputs
Accuracy:	± 0.2% f.s.v. @ 25 °C (77 °F) and nominal power supply voltage.
Operative temperature:	from 0 to +50 °C (32 to 122 °F).
Storage temperature:	from - 20 to +70 °C (-4 to 158 °F).
Humidity:	from 20% to 85 % RH not condensing.

MEASURING INPUT

Thermocouples

Burn out:	Detection of the open input circuit (wires or sensor) with overrange indication.
Cold junction:	automatic compensation for an ambient temperature between 0 and 50 °C.
Cold junction compensation error:	0.1 °C/°C.
Calibration:	according to IEC 584-1.

STANDARD RANGES TABLE

TC type	°C	Range	°F
L	-100 / 900		-150 / 1650
L	-100.0 / 900.0		
J	-100 / 1000		-150 / 1830
J	-100.0 / 999.9		
K	-100 / 1370		-150 / 2500
K	-100.0 / 999.9		
N	-100 / 1400		-150 / 2550
R	-50 / 1760		-60 / 3200
S	-50 / 1760		-60 / 3200
T	-200 / 400		-330 / 750
T	-199.9 / 400.0		



RTD input

Type: Pt 100 3 wires.
Calibration: according to DIN 43760
Line resistance: Max 20 Ω /wire with no measurable error.
Burn out: Detection of the sensor and of one or more wires open circuit. The instrument shows the short circuit indication when the resistance of the sensor is lower than 12 Ω .

STANDARD RANGES TABLE

RTD type	$^{\circ}\text{C}$ range	$^{\circ}\text{F}$
PT100	-199.9 / 850.0	-199.9 / 999.9
PT100	-200 / 850.0	-330 / 1560

Linear input

Type: 0-60 mV
 12-60 mV.
Read-out: keyboard programmable from -1999 to 9999.
Decimal point: programmable in any position.

CONTROL ACTION

Algorithm: PID + SMART.
Types: - one control output
 - two control outputs
Output types: Relay or SSR.
Output control action: Proportional time
Proportional Band: from 1.0% to 100.0% of the input span.
 Setting a PB equal to 0 the control action becomes ON/OFF.
Hysteresis (for ON/OFF control action): from 0.1% to 10.0 % of the input span.
Integral time: from 1 second to 20 minutes or excluded.
Derivative time: from 1 second to 10 minutes or excluded.
Integral preload: - for one control output, from 0 to 100% of the output range.
 - for two control outputs, from -100 % to +100 % of the heating/cooling output range.
Main output cycle time: from 1 second to 200 seconds.
Secondary output cycle time: from 1 to 200 seconds.
ARW action: from 10% to 200% of the input span.
Relative secondary output gain: from 0.20 to 1.00 referred to the proportional band.
Overlap / dead band: from - 20 % (dead band) to + 50 % (overlap) of the proportional band.
Output limiters: - output high limits
 - output low limits
 - output max. rate of rise.

OUTPUTS 1 and 2

Function: singularly programmable as:
 - Control output
 - Alarm output

Out 1 and 2 - Relay

Relay type: SPST.
Contact rating: 3 A @ 250 V on resistive load.

Out 1 and 2 - SSR

Type: not isolated outputs
 - Logic level 1: 14V DC @ 20 mA max. 24 V DC @ 1 mA.
 - Logic level 0: < 0.5 V D.c.

ALARMS

Alarm action: direct or reverse.
Alarm functions: each alarm can be configured as process alarm, band alarm, deviation alarm.
Alarm reset: automatic or manual reset programmable for each alarm.
Alarm masking: each alarm can be configured as masked alarm or standard alarm.
Hysteresis: programmable in engineering units from 1 to 200 digits.

Process alarm:

Operative mode: Minimum or maximum programmable.
Threshold: programmable in engineering unit within the input range.

Band alarm

Operative mode: Inside or outside programmable.
Threshold: Low - from 0 to -1000 units.
 High - from 0 to +1000 units.

Deviation alarm

Operative mode: High or low programmable.
Threshold: programmable from - 1000 to +1000 units.

Loop break alarm

Operative mode: automatically activated when the power output reaches the programmed limits.
Time interval: programmable from 1 s to 40 minutes.
Deviation: programmable from 0 to 500 digits.
Hysteresis: from 1 to 50% of the input span.

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DIMENSIONS AND PANEL CUT-OUT

