

500 LINE

GENERAL INFORMATION

USE

Series CX 500 controllers are used in industrial plants to control temperature in ovens, driers, autoclave, heat-exchangers, refrigerators, etc., where an high control precision is required.

MANUFACTURING SPECIFICATIONS

Electronic controllers integrates and hybrid component circuit type, proportional action (P) or proportional + integral + derivative (PID) changeable on field.
These controllers use detectors with thermoresistance sensing element.
Temperature controller, analogue type with green LED powered unit indication.



CONTROLLER SPECIFICATIONS

model	scale °C	proportional band °C	integr. Time Tn sec.	deriv. Time Td	installation
CX 528	-10 to 120	2 to 40	18 to 600	1/8 Tn	on wall or flush mounting

Output signal

– with PID action 6 to 9 V d.c. (direct action)
– with P action 3 to 12 V d.c. (direct action)
Xp proportional band corresponds to 3 V d.c. output from controller.
Only with proportional action it is possible to obtain sequence working of actuators.
Set-point precision : ± 1,5 K
Supply : either direct from actuator (15 V d.c.) or from TL51 feeder (see *ACCESSORIES*)

Consumption : 15 mA
Cover : in ABS
Protection : IP 55 (DIN 40050)
Ambient temperature : 0 to 50 °C (working)
-25 to 65 °C (storage)
Weight : 0.5 kg

SENSOR SPECIFICATIONS: Sensing element: Balco 1000 Ohm at 21.1 °C

model	description
SBA	room type-ABS light grey case with glazed Al front-dimensions 85x55x31 mm - max temperature 50 °C (122 °F) - response time 120 sec. with 0.2 to 0.5 m/sec air velocity- Protection IP 30 (DIN 40050)
SBC	immersion type - Noryl light grey case with conduit opening Ø 10 mm - AISI 304 stainless steel well connection ½" gas in nickel plated brass - length 116 mm -max ambient temperature 50 °C (122 °F) - max fluid temperature 140 °C (284 °F) - max fluid pressure 40 bar - Protection IP 44 (DIN 40050)
SBD	duct type - Noryl light grey case with conduct opening Ø 10 mm - AISI 304 stainless steel tube Ø 75 mm - length 300 mm with bushing mounting flange - max ambient temp. 50 °C (122 °F) - max air temperature 65 °C (149 °F) - response time 120 sec. with 0.2 to 0.5 m/sec. air velocity - Protection IP 44 (DIN 40050)
SBV	as above, with high speed sensing element - length 210 mm - max air temper. 65 °C (149 °F) - response time 35 sec. with 0.2 to 0.5 m/sec. air velocity. Not suitable with high humidity.
421	for SBC with connection in AISI 304 stainless steel



ACCESSORIES

TL51 - 24 Vca / 15 Vcc feeder for a maximum of 3 actuators. Either wall or panel mounting. Dimensions 85x55x31 mm. IP30.

INSTALLATION INSTRUCTIONS

Install the controller free from vibration, in ambient with temperature between 0 to 50 °C (32 to 122 °F), without aggressive atmosphere, For flush mounting by the outfit supplied fixing brackets.

SBA (Room) - Max temperature 50 °C (122 °F)

locate the sensor where it will be exposed to unrestricted natural air circulation and to average conditions of the controlled space.
Do not locate the sensor near sources of heat or cold which might affect the control point.

Install the sensor on wall or on panel employing the two holes placed in the base.

Mount controllers in electrical panel, separate by metal partition the control group from power group (relays, switches, power cables) and when it is possible install controllers in separate panel.

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SBC (Immersion) - Max fluid temperature 140 °C (316 °F)
 Locate the sensor where it will sense the average temperature of the controlled medium.
 Install the sensor on the pipe-line by well with ½" pipe connection.

SBD - SBV (Duct) - Max air temperature SBD 95 °C (203 °F)
 SBV 65 °C (149 °F)
 Locate the sensor where it will sense the average temperature of the controlled medium.
 Install the sensor on the duct by flange with bushing that allows to adjust the immersion length.

WIRING CONNECTIONS

Make connections according to diagram.

For connections use wires with minimum size 1 mm².

ATTENTION: wires of sensor must run separately from wires of actuator. Wires of sensors and actuators must not run near voltage line. If this is not possible use screened connections.

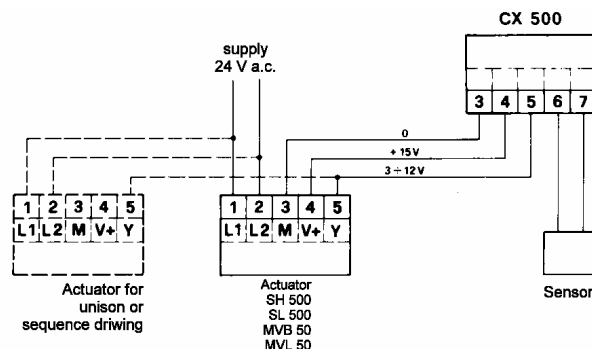
Mounting module in electrical panel, separate the control group from power group.

Controller CX 528 can drive max 3 actuators in unison (range 6 to 9 V d.c.) or 2 actuators in sequence (range 4 to 7 and 8 to 11 V d.c.).

Xp proportional band corresponds to 3 V d.c. output from controller. Only with proportional action it is possible to obtain sequence working of actuators.

The supply connections (terminals 1-2) to all actuators must respect the same phase.

Controllers are supplied from actuator (15 V d.c. 100 mA). Each actuator can supply max 3 controllers. It is also possible to supply controllers from TL51 separate feeder (see *ACCESSORIES*)



START-UP

- Check that connections are as per wiring diagram.
- Adjust set-point by turning the dial knob until indicator points to the desired temperature value.

Controllers are fitted with a change-over placed on electronic printed circuit to select desired type of action (P or P.I.D.).

Normally controllers are factory supplied in P position.

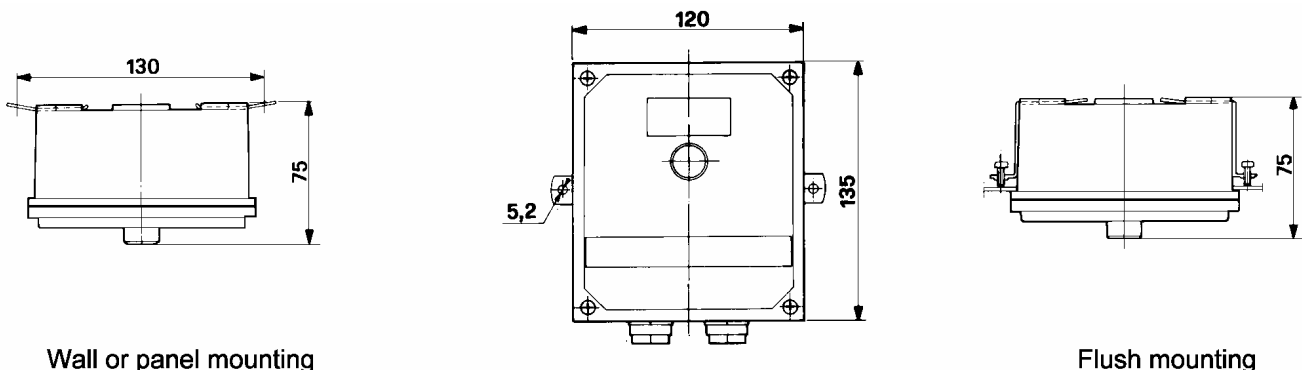
In the plants not subject to remarkable or sudden load variations, it is possible to proceed to adjust by the following way:

- Place the index of knob in the middle of its span and knob Tn at around ¼ (~150 sec.), this setting corresponds to values of Xp and Tn which normally represent a good compromise between stability and feedback velocity to load variations.

- Put the process into service and let it become stable, after which check the working: if it is not satisfactory, turn on gradually knobs Xp and Tn, keeping in mind that by instability of temperature (very stable valve) it is possible to decrease XP value and/or increase Tn one.

If viceversa valve is not stable, increase Xp value and/or decrease Tn one. We suggest to make only one operation by time and every time let the system become stable.

DIMENSIONS (mm)



Wall or panel mounting

Flush mounting

The performances stated in this sheet can be modified without any notice.

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Automatic control systems for:
 air conditioning/heating/industrial thermal process.