

ACTIVE & PASSIVE TEMPERATURE DETECTOR CONVERTOR

D 654
21.12.10 LB
REV. 04

CAP 328 Eng.



- 1 input: – active 0...10 V or 4...20 mA detector
– passive NTC 1 kΩ or NTC 10 kΩ detector
- 2 outputs for NTC 1kΩ or NTC 10 kΩ passive signals
- Power supply: 230 V~; DIN rail mounting

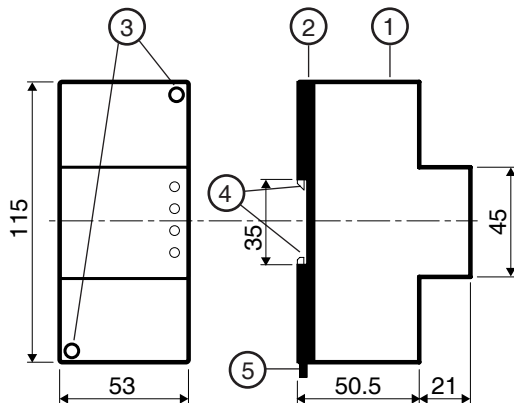
1. APPLICATION

Used to convert the signal from one active 0...10V- or 4...20mA detector or the signal from one passive NTC 1 kΩ or NTC 10 kΩ detector into two passive NTC 1 kΩ or NTC 10 kΩ signals for use by several electronic devices (max. 35) having measurement inputs with the same characteristics.

2. FUNCTIONS

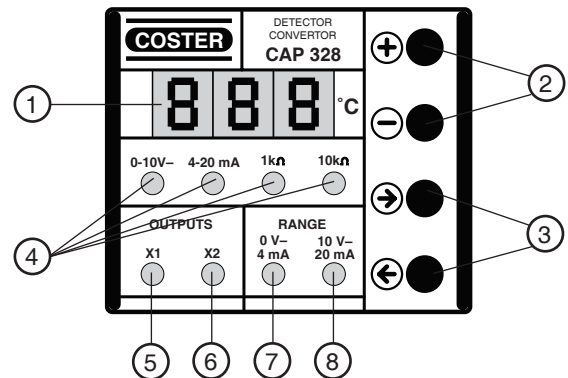
- 1 input: – one active 0...10 V- or 4...20 mA signal
– one passive NTC 1 kΩ or NTC 10 kΩ detector signal
- 2 outputs for NTC 1 kΩ or NTC 10 kΩ passive signal

3. OVERALL DIMENSIONS



- 1 – Protective cover for electronic components
- 2 – Base with transformer, relay and terminal blocks
- 3 – Screws for securing base and cover
- 4 – DIN rail securing elements
- 5 – DIN rail release lever

4. FACIA



- 1 – 3-digit display
- 2 – Keys for changing parameters
- 3 – Keys for viewing parameters
- 4 – LEDs showing type of detector connected
LEDs for data shown on display :
- 5 – Output X1
- 6 – Output X2
- 7 – Measurement value of active detector at 0 V- or at 4 mA
- 8 – Measurement value of active detector at 10 V- or at 20 mA

5. INSTALLATION

CAP 328 must be installed in a dry location that meets the ambient limits given under TECHNICAL DATA. If installed in a space classified as "Hazardous" it must be mounted in a cabinet for electrical appliances constructed according to the regulations in force for the type of danger concerned. The converter can be mounted on a DIN rail and installed in a standard DIN enclosure.

6. ELECTRICAL CONNECTIONS

Proceed as follows:

- Separate base from cover (loosen the securing screws)
- Mount the base on the DIN rail and check that it is firmly anchored by the securing elements(3.4)
- Carry out the wiring according to the diagram and in compliance with current electrical regulations and using:
 - 1.5 mm² cables for power supply
 - 1 mm² wire for input and output signals
- Switch on power (230V~) and check its presence across terminals L and N.
- Switch off power, replace cover on base/terminal block and secure it with the two screws supplied (3.3).

You are advised not to insert more than two cables in a single terminal of the controller and, if necessary, to use an external junction box.

7. TECHNICAL DATA (factory settings in bold type)

Power supply	230 V ~ ± 10%
Frequency	50 Hz
Consumption	3 VA
Protection	IP40
Radio disturbances	VDE0875/0871
Vibration test	with 2g (DIN 40 046)
Construction standards	Italian Electrotech.I Committee (CEI)
Case	DIN 3E module
Mounting	on DIN 35 rail
Materials :	
Base	NYLON
Cover	ABS
Ambient temperature :	
Operating	0...45 °C
Storage	- 25...+ 60 °C
Ambient humidity	Class F DIN 40040
Weight	0.31 kg

Measurement ranges

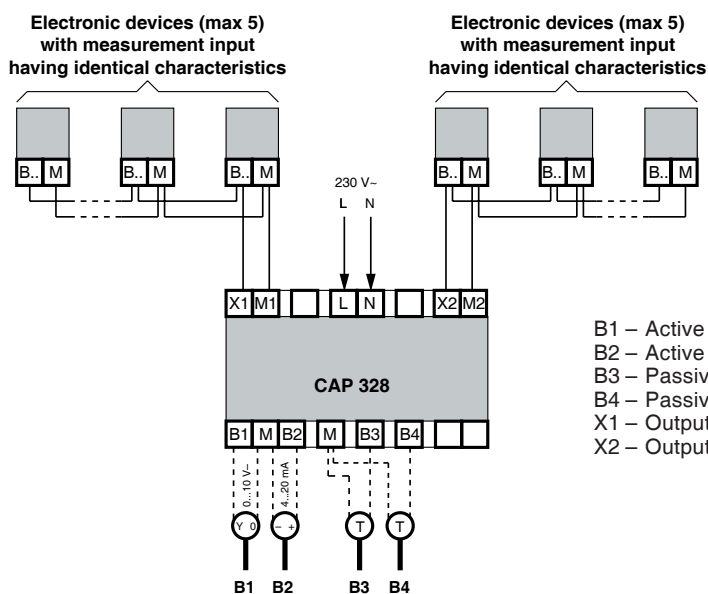
Input signal temp. range :	
active detector 0...10 V- or 4...20 mA	- 50...+150 °C
passive detector NTC 1 kΩ	- 30...+40 °C
passive detector NTC 10 kΩ	0...100 °C
Output signals temp. range :	
passive detector NTC 1 kΩ	- 30...+40 °C
passive detector NTC 10 kΩ	0...100 °C
Resolution measurements :	
active detector 0...10 V-	0.1 V-
active detector 4...20 mA	0.1 mA
passive detector NTC 1 kΩ or NTC 10 kΩ	0.1 °C
Resolution display :	
range - 30...0 °C	1 °C
range 0...99.9 °C	0.1 °C
range 100...150 °C	1 °C

Setting ranges

Active detector :	
measurement value at 0 V- or 4 mA	- 50...+150 °C
measurement value at 10 V- or 20 mA	- 50...+150 °C

- Signals**
- 1 input signal :
 - **active detector 0...10 V-**
 - active detector 4...20 mA
 - passive detector NTC 1 kΩ
 - passive detector NTC 10 kΩ
 - 2 passive output signals :
 - **detector NTC 10 kΩ**
 - detector NTC 1 kΩ

8. WIRING DIAGRAMS



- B1 - Active detector 0...10 V- (as alternative to B2, B3, B4).
- B2 - Active detector 4...20 mA (as alternative to B1, B3, B4).
- B3 - Passive detector NTC 1 kΩ (as alternative to B1, B2, B4).
- B4 - Passive detector NTC 10 kΩ (as alternative to B1, B2, B3).
- X1 - Output passive signal NTC 1 kΩ or NTC 10 kΩ for max. 35 electronic devices.
- X2 - Output passive signal NTC 1 kΩ or NTC 10 kΩ for max. 35 electronic devices.

9. OPERATION

CAP 328 converts 1 input signal : - active detector 0...10 V- or - active detector 4...20 mA or - passive detector NTC 1 kΩ or - passive detector NTC 10 kΩ into 2 output signals : - passive detector NTC 1 kΩ or NTC 10 kΩ.

9.1 Signal from active detector B1 or B2

If the detector is of the active type (B1 : 0...10 V- ; B2 : 4...20 mA) you must set the measurement range of this (see 9.5 Setting) :

- temperature value measured by signal 0 V- or 4 mA
- temperature value measured by signal 10 V- or 20 mA

9.2 Output signals X1 and X2

The output signals X1 and X2 simulate the values of a passive detector NTC 1 kΩ (-30...+40°C) or NTC 10 kΩ (0...+40°C; 0...60°C; 0...100 °C) according to the configuration given by dipperswitches 3 and 4. Each of the two signals can be connected to max. 35 electronic devices of the same category (see table 9.4).

9.3 Configuration

It is essential to configure CAP 328, by means of the dipswitches on its base, according to the type of detector connected and the type of detector to be simulated by the two outputs X1 and X2.

In the diagrams the position of the dipswitch is shown in black (N.B. white on the actual convertor).



Factory setting : – Detector connected: active 0...10 V- ;
 – Outputs X1 and X2: NTC 10 kΩ. Ambient temperature 0...40 °C.

To change the configuration, position only the dipswitches concerned :



1 On + 2 On = Detector connected: active 0...10 V- (B1)



1 On + 2 Off = Detector connected: active 4...20 mA (B2)



1 Off + 2 On = Detector connected: passive NTC 1 kΩ (B3).
 The outputs X1 and X2 must be configured only as NTC 1 kΩ.



1 Off + 2 Off = Detector connected: passive NTC 10 kΩ (B4).
 The outputs X1 and X2 must be configured only as NTC 10 kΩ.



3 On + 4 On = Outputs X1 and X2 : NTC 10 kΩ (ambient temp. 0...40 °C)



3 On + 4 Off = Outputs X1 and X2 : NTC 10 kΩ (discharge air temp. 0...60 °C)



3 Off + 4 On = Outputs X1 and X2 : NTC 10 kΩ (water temp. 0...100 °C)



3 Off + 4 Off = Outputs X1 and X2 : NTC 1 kΩ (outside temp. -30...40 °C)
: Or REMOTE CONTROL Rt (B3) for DTF 318 and DTF 314
 Panel compensated control (see section 9.5)

9.4 Category of controllers

Input CAP 328	Output CAP 328	Category	Electronic devices
NTC 1 kΩ	Outputs (-30...40°C)	1.1	CSC 328 - DRU 614 - DTA 624 - DTT 608 - DTT 618 - DTT 618 S1 - DTU 614 DTU 618 - DTU 644 - RTA 624 - RTP 318 - RTU 614 - RTU 618 - RTU 644 XTA 624 - XTT 608 - XTT 618 - XTT 618S1 - XTU 614 - XTU 618 - XTU 644 - XTU 664
		1.2	DAM 675 - DCC 602 - DCC 602 S1 - DCS 633 - DSE 600 - DSE 600 S1 DSE 602 - DTC 618 - DTC 628 - DTC 648 - DTE 600 - DTE 600 S1 DTE 600 S2 - DTE 602 - DTE 611 - DTE 611 S1 - DCF 648 - RCS 633 - RTC 604 RTE 602 - RTE 611 - RTE 643 - UPT 678 - XCC 602 - XCS 633 - XSS 633 - XPT 678 XSE 600 - XSE 600 S1 - XSE 602 - XTE 600 - XTE 600 S1 - XTE 602 - XTE 611 XTP 600 - FTC 738 - FTC 738 C1 - XTC 638 - XCC 638 - XCC 618 - MRL 608
		1.3	CSV 328 - UMF 348 - UMM 348
	Remote control	1.4	Rt (B3) per DTF 318 e DTF 314 (vedi paragrafo 9.5).
NTC 10 kΩ	Ambient (0...40°C)	2.1	CSC 328 - DTA 624 - DTR 628 - DTT 608 - DTU 614 - DTU 618 - DTU 644 RTA 624 - RTB 645 - RTP 318 - RTR 628 - RTU 614 - RTU 618 - RTU 644 UPT 678 - XPT 678 - XTA 624 - XTR 628 - XTT 608 - XTU 614 - XTU 618 - XTU 644 - XTU 664
		2.2	DAM 675 - DCS 633 - DSE 600 - DSE 600 S1 - DSE 602 - DTE 600 - DTE 600 S1 - DTE 600 S2 - DTE 602 - DTE 611 - DTE 611 S1 - FTC 738 - FTC 738 C1 - RCS 633 - RTC 604 RTE 602 - RTE 611 - RTE 643 - XCS 633 - XSS 633 - XSE 600 - XSE 600 S1 - XSE 602 XTE 600 - XTE 600 S1 - XTE 602 - XTE 611 - XTP 600 - XTC 638 - XCC 638
		2.3	DTF 314 - DTF 314 S1 - DTF 318 - DTF 318 S1 - RTF 314 - RTF 314 S1 - RTF 318 RTF 318 S1 - UMM 348
	Discharge air (0...60°C)	3.1	DTF 314 - DTF 314 S1 - DTF 318 - DTF 318 S1 - RTF 314 - RTF 314 S1 - RTF 318 RTF 318 S1 - UMM 348
	Water (0...100°C)	4.1	DRU 314 - DRU 414 - DRU 418 - DRU 614 - DTR 628 - DTT 608 - DTT 618 - DTT 618 S1 RTP 318 - RTR 628 - UCR 668 - XCC 618 - XCC 638 - XTC 638 - XTR 628 XTT 608 - XTT 618 - XTT 618 S1 - FTC 738 - FTC 738 C1
		4.2	DAM 675 - DCC 602 - DCC 602 S1 - DCS 633 - DPS 638 - DSE 600 - DSE 600 S1 DSE 602 - DTC 618 - DTC 628 - DTC 648 - DCF 648 - DTE 600 - DTE 600 S1 - DTE 600 S2 DTE 602 - DTE 611 - DTE 611 S1 - OCR 344 - OCR 348 - RCS 633 - RPS 638 - RTC 604 RTE 602 - RTE 611 - RTE 643 - UPT 678 - XCC 602 - XCS 633 - XSS 633 - XPT 678 XSE 600 - XSE 600 S1 - XSE 602 - XTE 600 - XTE 600 S1 - XTE 602 - XTE 611
		4.3	CSV 328 - DDM 328 - DTF 314 - DTF 314 S1 - DTF 318 - DTF 318 S1 DTT 318 RTF 314 - RTF 314 S1 - RTF 318 - RTF 318 S1 - UAF 322 - UAM 322 - ULT 328 - ULT 348 UMM 348

9.5 Rt (B3) remote control for DTF 318 and DTF 314

This special configuration is used to control climate adjustment through DTF 318 and DTF 314 units for panel-based systems. Each CAP 328 can control:

- 35 DTF 3.. using a single 0...5 Volt- output on the CAP 328 (for instance: output X1 - M1)
- 70 DTF 3.. using the two 0...5 Volt- outputs (X1 - M1 and X2 - M2, each with 35 DTF 3..)

An automatic remote control for DTF 3.. is obtained, in replacement of the Rt (B3) manual remote control. With this automatic remote control, the desired temperature for the panels is adjusted based on the external temperature, detected by CAP 328's sensor (B3).

The recommended basic temperature to be set on the DTF 318 - 314 (sensor B2) is 30 °C for panel-based systems, and changes automatically from an output of 20 °C with an external temperature of 20 °C, to a 40 °C output with an external temperature of - 5 °C (± 10 °C).

9.6 Setting

The setting parameters must be entered after having completed the electrical wiring and the configuration of the dipswitches. The display normally shows the value in °C of the input signal.

On switching on it shows, for two seconds, the version number e.g. 002.

"Err" appears when the X1 and X2 outputs have not been configured correctly according to the ohmic value of the passive detector connected.

When the detector is not connected "--" flows across the display.

The → and ← keys permit displaying the setting parameters (display flashing)

The + and - keys permit adjusting the parameters shown on the display.

The setting data, shown by display flashing, is identified by the relative LED being lit.

If, for 60 seconds, no key is pressed, the display again shows the value in °C of the input signal

Small differences may occur between the value measured by the detector, shown on the CAP 328 display, and the value transmitted by outputs X1 and/or X2 and shown on the display of the electronic devices connected to it.

It is possible to reconcile the two values by making a correction (max. ± 3 °C) to the output signals X1 and/or X2.

Setting data :

LED indicating type of detector connected (0-10V-; 4-20mA; 1 k Ω ; 10 k Ω) always lit.

Fixed display readout with °C value measured by the sensor, if positive.

Flashing display readout with °C value measured by the sensor, if negative.

Press → : If the detector is active type :

LED 7 lit and display flashing with temperature value measured by 0V- or 4 mA signal (minimum value of detector measurement range).

Adjust with + or - (resolution 1 °C).

Press → : If the detector is active type :

LED 8 lit and display flashing with temperature value measured by 10 V- or 20 mA signal (maximum value of detector measurement range).

Adjust with + or - (resolution 1 °C).

Press → for about 10 seconds: on the display will appear --- release key :

LED X1 lit and display flashing with number representing category of electronic devices (see Table 9.4) connected to output X1. Adjust with + or -.

With NTC 1 k Ω Outside (-30...40°C); possible categories : 1.1 ; 1.2 ; 1.3.

With NTC 10 k Ω Ambient (0...40°C); possible categories : 2.1 ; 2.2 ; 2.3.

With NTC 10 k Ω Discharge air (0...60°C); possible category : 3.1.

With NTC 10 k Ω Water (0...100°C); possible categories : 4.1 ; 4.2 ; 4.3.

Press → : LED X2 lit and display flashing with number representing category of electronic devices (see Table 9.4) connected to output X2, Adjust with + or -.

With NTC 1 k Ω Outside (-30...40°C); possible categories: 1.1 ; 1.2 ; 1.3.

With NTC 10 k Ω Ambient (0...40 °C), possible categories : 2.1 ; 2.2 ; 2.3.

With NTC 10 k Ω Ambient (0...60°C); possible categories : 3.1.

With NTC 10 k Ω Water (0...100°C); possible categories: 4.1 ; 4.2 ; 4.3.

Press → : LED X1 flashing; display flashing with adjustment value for output X1 (-3.0...+3.0).

Adjust with + or - (resolution 0.1°C) after having checked any difference between value measured by the detector (CAP 328 display) and the value shown on display of electronic devices connected to output X1.

Press → : LED X2 flashing; display flashing with adjustment value for output X2 (-3.0...+3.0).

Adjust with + or - (resolution 0.1°C) after having checked any difference between value measured by the detector (CAP 328 display) and the value shown on display of electronic devices connected to output X2.

Press → : Display fixed with value in °C measured by detector.

Amendment to data sheet

Date	Revision No.	Page	Section	Amendment description
18.07.07 LB	01	3	9.4. Category of controller	Remove UPT 678 from 2.2 category
12.09.08 LB	02	3	9.4. Category of controller	Amended table
03.06.09 AM	03	3	9.4 Category of controller	Amended table
21.12.10 VM	04	4	9.5 Rt (B3) remote control for DTF ..	Change in remote control application



Head Office & Sales

Via San G.B. De La Salle, 4/a Tel. +39 022722121
20132 - Milano Fax +39 022593645
Orders Fax +39 0227221239

Reg. Off. Central & Southern

Via S. Longanesi, 14 Tel. +39 065573330
00146 - Roma Fax +39 065566517

Shipping

Via Gen. Treboldi, 190/192 Tel. +39 0364773200
25048 - Edolo (BS) Tel. +39 0364773202

E-mail: info@coster.info Web: www.coster.eu

