Termoregolatori Digitali

HT ...

Manuale d'Uso

User Manual Digital Heat Regulators

CE

Vemer SPA

Contents

Series of digital thermoregulator for regulating the temperature that execute 1B type actions (EN 60730-1).

SAFETY WARNINGS

■ **During the installation and operation of the instrument, the following safety instructions should be followed:**

1) The instrument should be installed by qualified personnel
2) Read the instructions in this manual carefully
3) Carefully follow the instruction diagrams to install the device
4) Before gaining access to the connector terminals, make sure the conductors to be connected to the instrument or already connected are not powered
5) Make sure the electric panel in which the device is inserted will prevent access to the terminals after installation
6) Do not supply power to the device if any part of it is damaged
7) The instrument must be installed and activated in compliance with current electric systems standards.
8) The connection cables should be able to resist the maximum operating temperature in the form of the maximum ambient temperature + 20 °C
9) The instruments guarantee main insulation between the low voltage parts (250 V) and the extremely low voltage parts
10) Any outside switches connected to the control panel should guarantee a minimum insulation of 250 V AC at operating temperature, or should be protected by equivalent insulation

IMPORTANT: In order to avoid malfunctions, the differential of intervention (DF1 or DF2 parameter) should not be set above 30 °C.

TECHNICAL SPECIFICATIONS

■ Series of digital temperature regulators satisfying the simplest requirements in the field of heat regulation. They can be used as heating or refrigeration regulators and as maximum/minimum alarms.
■ Three dedicated base models for probe input:
- **PTC thermal resistances** (**P**os. **T**emp. **C**oeff.) - Ni100, Pt100 **HT *NiPt***
- **NTC thermal resistances** (**N**egative **T**emperature **C**oefficient) **HT *NTC***
- **TC thermocouples** - J, K, L, R, S, T, E, N **HT *JK***

- For each single model, the probe input can be configured from the keyboard.
- Two probe inputs for the HT *NTC* models, for the measurement of two temperatures that can be displayed alternatively by the closure or opening of an outer consensus to be connected to the instrument, or directly from the keyboard for the 72x72 mm rear panel version (this version has no digital input).
- Available in versions with 1 or 2 relay outputs with exchange contact.
- Relay capacity: 8A / 250VAC
- Heat regulators with 3 digit, seven segment and decimal point display.

- Relay intervention signalling lamp.
- Temperature T2 signalling lamp (only models HT *NTC*-..P7.. and HT *NTC*-..D..)
- Display range: -99 ÷ +999 °C
- Display resolution: 0.1 °C (-9,9 ÷ +99.9 °C) and 1 °C (< -9.9 °C and > +99.9 °C)
- Precision: ±0.5 % of the end of scale value ±1 digit
  (at an ambient temperature of 23 °C)
- Sampling time: 0.5s
- Relay capacity: 8A / 250VAC
- Digital parameter setting:
  - Set point
  - Differential
  - Neutral zone
  - Output drive times
  - Digital input function and delay time
  - Alarm delay / buzzer enable time
  - Probe calibration offset
  - Resolution displayed
  - Temperature measurement unit
  - Measurement display filter (update speed)
  - Probe input type
  - Password
  - Operating modes (regulation):
    - ON/OFF direct and/or reverse action with or without neutral zone
    - PWM direct and reverse action and neutral zone
    - ALARM
    - Refrigeration mode
    - Special mode
- 2 independent set points
- Digital input: 1 (not versions HT *NiPt*-..P7A, HT *NTC*-P7A, HT *JK*-..P7A) for outside consensus for configurable function: outside alarm, regulation ON/OFF, selection of probe to be displayed, set point switching, direct/reverse switching, etc
- Acoustic and visual alarm signals for: outside alarm (from digital input), probe alarm (malfunction), minimum or maximum alarm
- Infrared receiver with RC-5 protocol (not versions HT *NTC*-1DA, HT *NTC*-2DA) for remote control (accessory available separately for remote programming)
- Available in the following fixing versions: rear panel 33x75 mm, rear panel 72x72 mm and modular 4 DIN
- Power supply: see table on the following page
- Rated power output: 4.5 VA
- Max absorption: 100 mA at 12 V 50 mA at 24 V (1 channel)
- Operating temperature: 0 ÷ +50 °C
- Operating humidity: <80%
- Storage temperature: -10 ÷ +70 °C (<80% RH)
- Protection level: front panel IP54 (IP40 for the 4 DIN module version)
  terminals IP20

Rear panel 33x75 mm

Code	Model	Power supply (*)	Power supply tollerance	n° of relays	Digital input	Infrared receiver
VM627700	HT *NiPt*-1P3D	from 12 to 24 V AC/DC	±10	1	YES	YES
VM628500	HT *NiPt*-1P3A	230 V AC	–15/+10	1	YES	YES
VE346300	HT *NiPt*-2P3A	230 V AC	–15/+10	2	YES	YES
VM629300	HT *NiPt*-2P3D	from 12 to 24 V AC/DC	±10	2	YES	YES
VM634300	HT *NTC*-1P3D	from 12 to 24 V AC/DC	±10	1	YES	YES
VM635000	HT *NTC*-1P3A	230 V AC	–15/+10	1	YES	YES
VE347100	HT *NTC*-2P3A	230 V AC	–15/+10	2	YES	YES
VM636800	HT *NTC*-2P3D	from 12 to 24 V AC/DC	±10	2	YES	YES
VM641800	HT *JK*-1P3D	from 12 to 24 V AC/DC	±10	1	YES	YES
VM642600	HT *JK*-1P3A	230 V AC	–15/+10	1	YES	YES
VE348900	HT *JK*-2P3A	230 V AC	–15/+10	2	YES	YES
VM643400	HT *JK*-2P3D	from 12 to 24 V AC/DC	±10	2	YES	YES

Rear panel 72x72 mm

Code	Model	Power supply (*)	Power supply tollerance	n° of relays	Digital input	Infrared receiver
VM625100	HT *NiPt*-1P7A	24/230 V AC	±10	1	NO	YES
VM626900	HT *NiPt*-2P7A	24/230 V AC	±10	2	NO	YES
VM632700	HT *NTC*-1P7A	24/230 V AC	±10	1	NO	YES
VM633500	HT *NTC*-2P7A	24/230 V AC	±10	2	NO	YES
VM639200	HT *JK*-1P7A	24/230 V AC	±10	1	NO	YES
VM640000	HT *JK*-2P7A	24/230 V AC	±10	2	NO	YES

Modular 4 DIN

Code	Model	Power supply (*)	Power supply tollerance	n° of relays	Digital input	Infrared receiver
VM630100	HT *NiPt*-1DA	24/230 V AC	±10	1	YES	YES
VM631900	HT *NiPt*-2DA	24/230 V AC	±10	2	YES	YES
VM637600	HT *NTC*-1DA	24/230 V AC	±10	1	YES	NO
VM638400	HT *NTC*-2DA	24/230 V AC	±10	2	YES	NO
VM644200	HT *JK*-1DA	24/230 V AC	±10	1	YES	YES
VM645900	HT *JK*-2DA	24/230 V AC	±10	2	YES	YES

(*) *AC power supply - frequency 50/60 Hz*

DESCRIPTION OF INSTRUMENT

Display

- A 3 digit led display with decimal point is used.
  For all the models, the display range is:
  - minimum display: -99 °C or -9.9 °C
  - maximum display: 999 °C or 99.9 °C

Relay intervention signalling lamp:

- **Out 1**:
  LED off if relay one is OFF, on if relay one is ON, flashing if relay one in OFF is waiting to become ON due to an active timing.
- **Out 2**:
  LED off if relay two is OFF, on if relay two is ON, flashing if relay two in OFF is waiting to become ON due to an active timing.

Keys

- Three parameter setting keys are used:

Confirm and parameter programming/display key.

Key used to increase the parameter or go to the next parameter.

Key used to decrease the parameter or leave the menu.

ELECTRICAL CONNECTIONS

- Adhere strictly to the instructions in the safety warnings and the **"connection diagram"** section.

GLOSSARY

Set point (set or operating point)

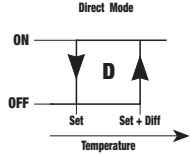
- The set point is the value at which the appliance has to intervene to maintain the measurement controlled at the required level.

Differential (or hysteresis)

- The differential is the maximum permitted variation from the set point for the measurement controlled prior to the intervention of the appliance.
- This is usually set in such a way as to prevent rapid oscillations in the measurement around the set point from causing frequent start-ups and shutdowns of the appliance or the driver connected to it.

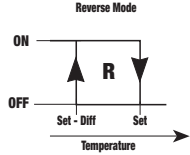
Direct action

- A regulator acts in **direct** mode when it limits the measurement as this increases. A typical example is a refrigerator: the increase in temperature corresponds to an increase in the refrigeration power produced, with a view to reducing the temperature



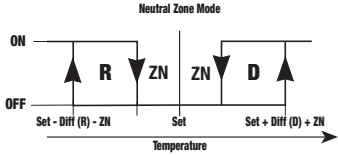
Reverse action

- A regulator acts in **reverse** mode when it limits the reduction of the measurement controlled.
  For example, in a heating system, the reduction in temperature corresponds to an increase in heat production



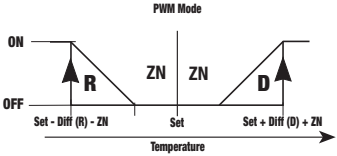
Neutral or dead zone ("dead-band")

- This indicates an interval of values around the set point in which the measurement regulated may oscillate without the activation of any output. It is normally used in the appliances in which there is a strong inertia of the system, as a result of which the set point may be exceeded even after the driver has been switched off or to prevent the overlap of a heating and cooling action.
  Around the neutral zone, no output is activated. Outside the neutral zone, the instrument operates in **direct** mode if the measurement controlled increases, and in **reverse** if it decreases.



PWM operation (in proportion to time)

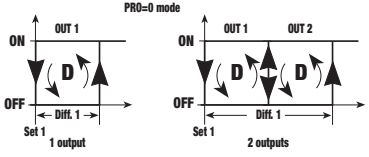
- This is a neutral zone type of operation in which the relays are activated periodically in impulse mode (the interval can be set, see the output menu).
  The PWM procedure modulates the power in accordance with the position occupied by the measurement within the differential (the further we move away from the set point, the more the power increases).



Important: we advise against using this method to drive compressors, due to the very close distance between start-up and shutdown.

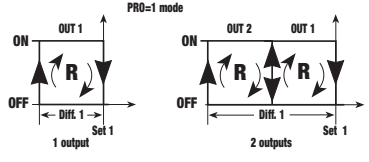
Direct operating mode [PRO=0]

- In this mode, all the outputs operate in **direct**. The values of set point 1 **[ST1]** and differential 1 **[DF1]** have to be set. Hysteresis is to the right of the set point. If both outputs are used, the hysteresis for each output is equivalent to half the differential. In this case, output 1 will be activated when the measurement controlled reaches the value **[ST1]+[DF1]/2**, and remains active until the temperature drops below the value of **[SP]**, while output 2 is activated by temperature values of **[SP]+[DF1]** and remains active until the temperature drops below the value of **[SP]+[DF1]/2**.



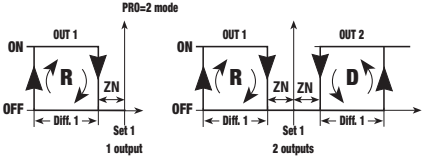
Reverse operating mode [PRO=1]

- In this mode, all the outputs operate in **reverse**.
  The set point 1 **[ST1]** and differential 1 **[DF1]** values have to be set.
  Hysteresis is to the left of the set point. If both outputs are used, the hysteresis for each output is equivalent to half the differential. In this case, output 1 will be activated when the measurement controlled reaches the value **[ST1]-[DF1]/2**, and remains active until the temperature exceeds the value of **[SP]**, while output 2 will be activated when the temperature reaches the values of **[SP]-[DF1]** and remains active until the temperature exceeds the value of **[SP]-[DF1]/2**.



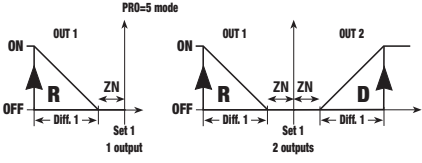
Neutral zone operating mode [PRO=2]

- In this mode, output 1 operates in **reverse** and output 2 in direct.
  The set point 1 **[ST1]**, differential 1 **[DF1]** and neutral zone **[DBN]** values have to be set. These are parameters for both outputs.
  The regulator will tend to maintain the measurement controlled within the neutral zone. Outside of this, output 2 will be activated if the measurement tends to increase, or output 1 if it tends to decrease.
  If a single output is present, this will operate in **reverse**, with the hysteresis shifted towards the left of the value **[DBN]**.



PWM operating mode [PRO=5]

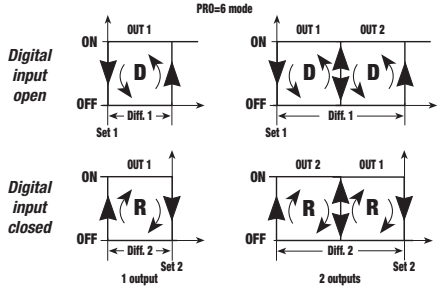
- The regulation logic in this mode is the same as that with the neutral zone.
  It is therefore necessary to set the set point 1 **[ST1]**, differential 1 **[DF1]** and **neutral zone [DBN]** values, which are parameters for both outputs.
  In this operating mode, the relays are activated impulsively, with an interval that can be set on the basis of the **[TCL]** value (see the output menu).
  Within this interval, the relay will stay on for a period in proportion to the distance of the measurement regulated from the set point (plus the neutral zone, where applicable).
  In addition to the differential value, the relay will be active for 100% of the time.



Operating mode with Direct/Reverse switching from digital input. [PRO=6]

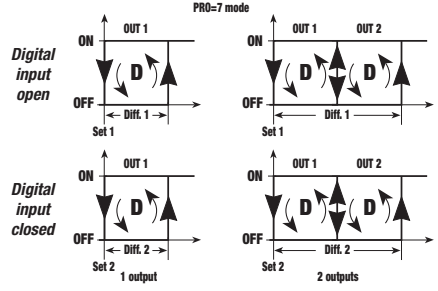
- In this mode, both outputs operate in **direct** (with set point 1 and differential 1) or **reverse** (with set point 2 and differential 2) depending on the status of the digital input.
  More precisely, in **direct** if the digital input is open and in **reverse** if closed.
  The operating modes are the same as modes 0 and 1.

It is therefore necessary to set both set point **[ST1]** and **[ST2]** and differential **[DF1]** and **[DF2]** values.



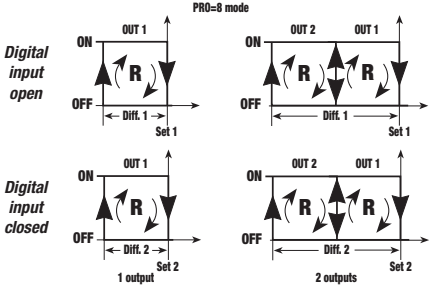
Direct operating mode with switching of set point and differential from digital input. [PR0=7]

- In this mode, both outputs operate in **direct**, with set point 1/differential 1 or set point 2/differential 2 depending on the digital input status.
  More precisely, with set point 1/differential 1 if the digital input is open and set point 2/differential 2 if closed. The operating modes are the same as mode 0.
  It is necessary to set both the set point **[ST1]** and **[ST2]** differential **[DF1]** and **[DF2]** values.



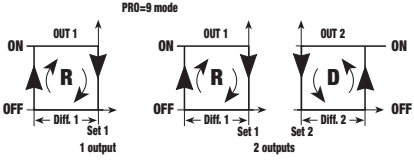
Reverse operating mode with set point and differential switching from digital input. [PRO=8]

- In this mode, both outputs operate in **reverse**, with set point 1/differential 1 or set point 2/differential 2, depending on the status of the digital input.
  More precisely, with set point 1/differential 1 if the digital input is open and set point 2/differential 2 if closed. The operating modes are the same as mode 1.
  It is necessary to set both values of the set points **[ST1]** and **[ST2]** and differentials **[DF1]** and **[DF2]**.



Operating mode with channels 1 and 2 in reverse with set point 1 and differential. 1 and direct with set point 2 and differential 2 [PRO=9] respectively.

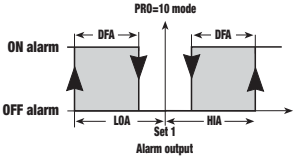
- In this mode, output 1 operates in reverse and output 2 in direct. It is necessary to set the values of set point 1 **[ST1]** and differential 1 **[DF1]** for output 1, and set point 2 **[ST2]** and differential 2 **[DF2]** for output 2.
  The operating modes are the same as modes 0 and 1.
  If there is a single output, this will operate in reverse.



Alarm operating mode [PRO=10]

- In this mode, output 1 operates in reverse (with neutral zone), and output 2 is dedicated to the alarm. It is necessary to set the values of set point 1 **[ST1]**,

differential 1 **[DF1]** and the neutral zone **[DB1]** for output 1 and all the alarm menu parameters for output 2 (no **[SUA]** poarameter). The maximum alarm will be activated when the value **[ST1]+[HIA]** is reached and will be deactivated at value **[ST1]+[HIA]-[DFA]**. The minimum alarm will be activated when the value **[ST1]-[LOA]** is reached and will be deactivated at value **[ST1]-[LOA]+[DFA]**. When there is a single output, this will be dedicated to the alarm in the same way.



OPERATION

Normal operation

The appliance operates in this way when no parameters are being programmed. In this status, the instrument carries out the regulation on the basis of the temperature measured and the parameters set. The following information is displayed:

- The temperature measured by the sensor
- The status of outputs OUT1 and OUT2

SETTING THE REGULATION PARAMETERS

There are two types of programming for the setting of the regulation parameters:
- Simplified programming
- Advanced programming

Note: to reset the default values set in the factory, switch on the instrument while holding down the OK key. The display shows [dEF]

Note: to restore the values and programming settings in the factory, hold the keys "up" (▲), "down" (▼), "OK" and power on. The display shows [CLr].

Simplified programming

This is used to modify the **regulation menu [REG]** parameters only. Access is gained to this type of programming by pressing the **"OK"** key. Depending on the operating mode previously selected (see the system menu **[SYS]**), the following parameters can be modified:

– set, differential (ON/OFF regulation)
– set, differential, neutral zone (ON/OFF regulation with neutral zone)
– set, differential, neutral zone (PWM regulation)

Use the **"up" (▲)** key to scroll through the parameter labels in a circular sequence.

Press the **"down" (▼)** key at any time to leave the menu and return to normal operation (this also happens if no key is pressed for at least 40 seconds).
Press **"OK"** to switch between the display of the parameter label and its numerical value. To modify a parameter:

- from the display of its label or value, press **"OK"** and hold down for at least three seconds
- the display will start to flash and will show the parameter value
- use the **"up" (▲)** and **"down" (▼)** keys to increase or reduce the value
- press **"OK"** to confirm the parameter and leave the modification (the display will stop flashing)

Note: if no key is pressed for at least 40 seconds, the instrument leaves the parameter modification without memorising the changes made. During the display and modification of the parameters, the instrument will continue to operate with the previously set parameters.

If "password 1" is enabled (access password to protect the settings entered-see system menu), when the **"OK"** key is pressed from normal status the message **"- - - "** will appear. To set the parameters, enter the previously set password (a number from 0 to 255) with the **"up" (▲)** and **"down" (▼)** keys and press **"OK"** to confirm. If the password is entered correctly, the label of the first menu will appear. Otherwise, the system will return to normal status.

Advanced programming

Access is gained to advanced programming from normal status by pressing and holding down the p and q keys for at least 3 seconds.

Note: to reset the default values set in the factory, switch on the instrument while holding down the "OK" key.

These parameters are grouped into eight menus, by type:

1) **Regulation** (indicated with **[REG]**): set point, differential, neutral zone
2) **Output** (indicated with **[OUT]**): output drive times, PWM cycle time
3) **Digital input** (indicated with **[ING]**): function, delay time
4) **Alarm** (indicated with **[ALR]**): output status in probe alarm, minimum/maximum shift, differential, delay time, buzzer enable
5) **Display** (indicated with **[DSP]**): set point limits, probe offset, resolution, measurement unit, measurement filter
6) **Sensor** (indicated with **[SNS]**): type of sensor, sensor parameters
7) **System** (indicated with **[SYS]**): password, modification enable, operating mode
8) **Advanced** (indicated with **[ADD]**): dependence, type, entry, differential/logic

All the parameters inside the menus and their values are listed in the section that follows.

- Use the **"up" (▲)** to scroll through the eight menus in sequence
- To enter the menu required, press **"OK"**

- Inside each menu, it is possible to scroll through the labels of the parameters that can be modified by pressing **"up" (▲)**. To display the value of the parameter, press **"OK"** (press **"OK"** a second time to return to the display of the parameter label).
- To modify the parameter value, hold down **"OK"** for at least 3 seconds.
- The parameter value will start to flash and it will be possible to increase or decrease it with the **"up" (▲)** and **"down" (▼)** keys.
- To confirm the value set, press **"OK"**. The parameter will stop flashing and the new value will be displayed.
- It is possible to return to normal operation at any time by pressing **"down" (▼)** (or if no key is pressed for at least 40 seconds).

Note: if no key is pressed for at least 40 seconds, the instrument leaves the parameter modification without memorising the changes made.

Note: During the display and modification of the parameters, the instrument will continue to operate with the previously set parameters.

If "password 2" is enabled (access password for the protection of the settings-see system menu), when the **"up" (▲)** and **"down" (▼)** keys are held down for three seconds from normal status, the message **"- - - "** will appear.
To set the parameters, enter the previously set password (a number from 0 to 255) with the **"up" (▲)** and **"down" (▼)** keys and press **"OK"** to confirm.
If the password is entered correctly, the label of the first menu will appear.
Otherwise, the system will return to normal status.

PARAMETER MENU

To simplify the programming of the instruments, the parameters are grouped into various menus, in the following order:

— [REG] regulation menu
— [OUT] output menu
— [ING] outside input menu
— [ALR] alarm menu
— [DSP] display menu
— [SNS] sensor menu
— [SYS] system menu
— [ADD] special parameter menu (for special operating mode only)

Description of parameters

- Inside the tables, the labels are presented in the same order as they appear in the various menus of the instrument.

[REG] regulation menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
ST1	set-point 1	degrees	LO1	HI1	20.0	(1)
DF1	Differential for set-point 1	degrees	0.1	100	2.0	
ST2	set-point 2	degrees	LO2	HI2	30.0	(2)
DF2	Differential for set-point 2	degrees	0.1	100	2.0	(2)
DBN	Neutral zone (dead band)	degrees	0	100	2.0	(2)

Notes:
(1) For values LO1/LO2 and HI1/HI2, see the display menu [DSP]
(2) Parameter active only if the operating mode permits

[OUT] output menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
ETR	Handling time on relays enabled	-	0	3	3	(3)
DON	Minimum time between 2 start-ups of the same relay	min	0	200	0	(4)
TON	Minimum relay ON time	min	0	200	0	(5)
TOF	Minimum relay OFF time	min	0	200	0	(6)
INI	Initial delay from start-up of instrument	min	0	200	0	(7)
TCL	PWM cycle time	sec	1	200	200	(8)

Notes:
(3) This parameter enables the handling of the times defined by DON, TOF and TON for each output channel, in the following ways:
***0** timing not enabled for either relay output*
***1** timing enabled for relay 1 output only*
***2** timing enabled for relay 2 output only*
***3** timing enabled for relay 1 and 2 outputs*
(4) this parameter limits the number of start-ups per hour for the driver connected to the instrument (this parameter is frequently used for compressors, for example)
(5) the minimum time for which the output should remain ON
(6) timing enabled for relay 1 output only OFF

(7) the delay time for the driving of the outputs from the instant of instrument reset
(8) the period that can be set for PWM regulation. This item is displayed only if the operating mode selected is PRO=5 (see system menu).

[ING] outside input menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
TID	Digital input function	-	0	4	0	(9)
DID	Digital input delay	min	0	200	0	(10)
SUI	Output status with digital input active (open)	-	0	3	0	(11)
DEL	Variation in night-time temperature	degrees	-50.0	+50.0	5.0	(12)

Notes:
(9) The values that can be set are:
- ***0*** *Not active*
- ***1*** *Outside alarm (with contact open) with delay time "DID" and automatic reset at the end of the alarm. The output status becomes "SUI"*
- ***2*** *Outside alarm (with contact open) with manual reset*
- ***3*** *The input operates as a switch: instrument on with contact closed and off with contact open*
- ***4*** *The input operates as a switch for the display of the two probes S0 and S1 (contact open-probe S0, contact closed-probe S1)*

The digital input function is excluded when one of the following operating modes is selected inside the system menu [SYS]: mode=6, mode=7 and mode=8

(10) This is the delay after which the instrument responds to a signal from the digital input
(11) When the digital input is active and a time period "DID" has lapsed, the outputs take on the following states:
- ***0*** *Both relays OFF*
- ***1*** *Relay 1 ON and relay 2 OFF*
- ***2*** *Relay 1 OFF and relay 2 ON*
- ***3*** *Both relays ON*

(12) This is the variation of the "Set" in degrees when the instrument switches to night operation

English

[ALR] alarm menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
SUA	Output status in probe alarm condition	-	0	3	0	(13)
LOA	Minimum alarm shift	degrees	0.1	100	50	(14)
HIA	Maximum alarm shift	degrees	0.1	100	50	(14)
DFA	Alarm differential	degrees	0.1	100	2	
TRA	Alarm activation delay time	min	0	200	0	
SOU	Buzzer enable	-	no	yes	yes	(15)
EAC	Alarm message in timing enable	-	no	yes	no	(16)

Notes:

(13) This is the status taken on by the outputs in probe alarm condition (see note 11)

(14) This value is added to or subtracted from the set point defined for the maximum or minimum alarm respectively

(15) If "yes", the acoustic signal of the key and the buzzer are enabled in alarm condition. If "no", the buzzer is enable in alarm condition only.

(16) If "yes", the type of alarm is also displayed during its timing.
If "no", the type of alarm is displayed only at the end of the timing

[DSP] display menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
LO1	Lower limit of set-point 1	degrees	-99	HI1	-99	
HI1	Upper limit of set-point 1	degrees	LO1	999	999	
LO2	Lower limit of set-point 2	degrees	-99	HI2	-99	(17)
HI2	Upper limit of set-point 2	degrees	LO2	999	999	(17)
SOF	Probe calibration offset	degrees	-50	+50	0.0	(18)
RIS	Resolution displayed	-	HI	LO	HI	(19)
UNI	Temperature measurement	-	C	F	C	(20)
FIL	Measurement filter	-	no	yes	yes	(21)

Notes:

(17) Parameter active only if the operating mode permits

(18) This value is added to the measurement to compensate for imprecision

(19) This is the resolution at which the measurement is displayed:
0.1 if "HI" or 1.0 if "LO"

*(20) **Important:** if the measurement unit is modified, the parameters set are not con verted automatically, but have to be re-calibrated.*

(21) If the parameter is set to "yes", a mobile average is taken of 8 measurement values (4 seconds approx.). If "no", this average is not calculated

[SNS] sensor menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
TY0	Sensor type 0	-	0	16		(22)
TY1	Sensor type 1	-	12	16		(23)
GFA	Cold joint correction enable	-	no	yes	yes	(24)
S01	Display of sensor 0 or 1	-	S0	S1	S0	(23)

Notes:

(22) the range of sensors and the default sensor depend on the model. All the sensors used are listed below:

NiPt thermal resistance

Type of sensor	Display message
Pt100 (*)	PtE (*)
Ni100	nI

** The instrument is set to this parameter by default.*

NTC thermal resistances

Type of sensor	Display message
(**)	nt0
(**)	nt1
type 4	nt2 (*)
(**)	CSt

** The instrument is set to this parameter by default. It corresponds to the use of temperature sensor NTC code VN870200*

*** For the use of sensors other than "type 4" listed above (see note *), it is possible to select one of the three items "nt0, nt1, CSt", corresponding to probes with different temperature/resistance ratios. To identify the type of sensor to be selected in these cases, we recommend contacting our Technical Assistance Service directly*

English

JK Thermocouples

Type of sensor	Display message
J	J
K (*)	C (*)
L	L
T	t
E	E
N	n
R	r
S	S

** The instrument is set to this parameter by default.*
(23) this parameter is visible in NTC models only
(24) this parameter is visible in TC models only

[SYS] system menu

Labels of parameters that can be modified	Description	Parameter values min	max	default	notes
PS1	password 1 - to set the temperature	0	255	0	(25)
PS2	password 2 - to advanced settings	0	255	0	(25)
NEN	Parameter modification enable	yes	no	no	(26)
PRO	Operating mode		12	0	(27)

Notes:
(25) the password is enabled if the parameter is different from 000
(26) if set to "yes", it is not possible to modify all the other parameters, only to display hem
(27) the following operating modes are available:
- ***0 channels 1 and 2 in direct** mode with set-point 1 and 1 (hysteresis to the right of the set point)*
- ***1 channels 1 and 2 in reverse** with set-point 1 and differential 1 (hysteresis to the left of the set point)*
- ***2 neutral zone** with channel 1 in reverse and channel 2 in direct with set-point 1 and differential 1*
- ***3** as mode 0 but with differential centred on the set-point*
- ***4** as mode 1 but with differential centred on the set-point*
- ***5 PWM regulation** with channel 1 in reverse and channel 2 in direct with set-point 1 and differential 1, and neutral zone where applicable*
- ***6** switching between outputs in direct (with set-point 1 and differential 1) and outputs in reverse (with set-point 2 and differential 2) from digital input*
- ***7** outputs in direct with switching between set-point 1/differential 1 and set-point 2/differential 2 from digital input*

8 *outputs in reverse with switching between set-point 1/differential 1 and set-point 2/differential 2 from digital input*

9 ***channel 1 in reverse*** *with set-point 1 and differential 1 and* ***channel 2 in direct*** *with set-point 2 and differential 2*

10 *if one channel:* ***alarm operation****;*
if two channels: ***channel 1 in reverse*** *(with set-point 1, differential 1 and neutral zone) and* ***channel 2 in alarm operation***

11 ***refrigeration mode***

12 ***special mode***

[ADD] special parameter menu

Labels of parameters that can be modified	Description	unit	Parameter values min	max	default	notes
DP0	Dependent on output 1	-	0	10		(28)
TI0	on/off or PWM 1 type	-	0	1		(29)
DB0	Neutral zone 1	-	0	1		(30)
IN0	Entry 1	%	-100	+100		(31)
DF0	Logic 1 differential	%	-100	+100		(32)
DP1	Dependent on output 2	-	0	10		(28)
TI1	on/off or PWM 2 type	-	0	1		(29)
DB1	Neutral zone 2	-	0	1		(30)
IN1	Entry 2	%	-100	+100		(31)
DF1	Logic 2 differential	%	-100	+100		(32)

Notes:

(28) the parameter defines in what mode an output depends on a set-point or an alarm mode. The values take on the following meanings:

0 *output not active*

1 *output relates to set-point 1*

2 *output relates to set-point 2*

3 *switching between output in direct (with set-point 1 and differential 1) and output in reverse (with set-point 2 and differential 2) through digital input (open-direct, closed-reverse)*

4 *switching between set-point 1/differential 1 and set-point 2/differential 2 through digital input (open-set 1, closed-set 2)*

5 *output associated with maximum alarm for set-point 2*

6 *output associated with minimum alarm for al set-point 2*

7 *output associated with maximum alarm for set-point 1*

8 *output associated with minimum alarm for al set-point 1*

9 *output associated with maximum/minimum alarm for set-point 1*

10 *output associated with maximum/minimum alarm for set-point 2*

(29) defines whether the type of regulation is ON/OFF (value 0) or PWM (value 1)

(30) indicates whether the neutral zone is present (value 1) or not (value 0)

(31) indicates the ON switching point of the relay with respect to the set-point

defined by the "dependence" parameter: the switching point is calculated by adding a percentage "IN0" (from -100% to +100%) to the set-point of the differential

(32) indicates the OFF switching point of the relay with respect to the point where the ON switching took place. The OFF switching point is calculated by adding to the ON point a percentage "DF0" (from -100% to +100%) of the differential.

Note: the default values of these parameters depend on the operating mode and number of channels, as set out in the table below:

1 Channel

	Operating mode										
Parameter	0	1	2	3	4	5	6	7	8	9	10
IN0	100	-100	-100	50	-50	-100	*	100	-100	-100	0
DF0	-100	100	100	-100	100	100	*	-100	100	100	100
IN1	100	-100	100	50	-50	100	*	100	-100	100	0
DF1	-50	50	-100	-50	50	-100	*	-50	50	-100	100

2 Channels

	Operating mode										
Parameter	0	1	2	3	4	5	6	7	8	9	10
IN0	50	-50	-100	0	0	-100	*	50	-50	-100	-100
DF0	-50	50	100	-50	50	100	*	-50	50	100	100
IN1	100	-100	100	50	-50	100	*	100	-100	100	0
DF1	-50	50	-100	-50	50	-100	*	-50	50	-100	100

* *The default values for mode 6 are the same as those of modes 0 or 1, depending on whether the outputs are operating in direct or reverse.*

ERROR MESSAGES

- Due to alarms or malfunctions, the display of the measurement may alternate with the display of messages describing the type of alarm.
  The table below describes the alarm/error messages used.

Message	Type of error	Output status
ER0	Sensor 1 disconnected or in short circuit	As parameter [SUA]
ER1	Sensor 2 disconnected or in short circuit	As parameter [SUA]
ALL	Minimum alarm	Depends on operating mode
ALH	Maximum alarm	Depends on operating mode
ALE	Outside input alarm	As parameter [SUA]
OFF	Regulation inhibited by outside input	As parameter [SUA]
ERR	Error parameter storage	

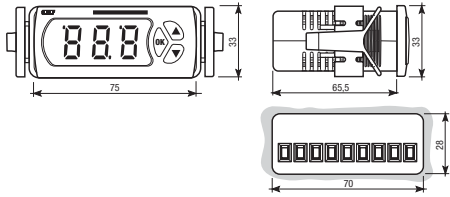
Note:
the "OFF" message is not alternated with the measurement, but remains fixed on the display
If the message Err is shown, do a CLr reset.

REFERENCE STANDARDS

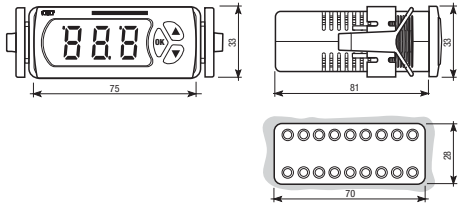
- Compliance to the Community Directives:
  2006/95/EC (Low Voltage - LVD)
  2004/108/EC (Electromagnetic compatibility- EMC)
  is declared with reference to the follow Harmonised Standard:
  EN 60730-2-9

33x75 mm REAR PANEL DIMENSIONS

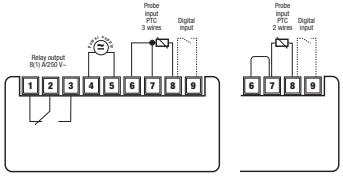
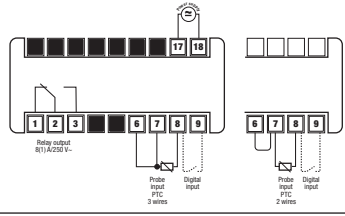
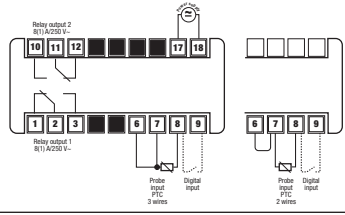
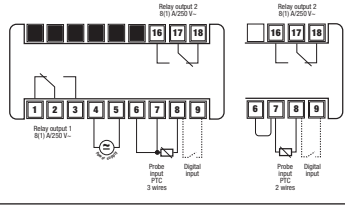
HT *NiPt*-1P3D
HT *NTC*-1P3D
HT *JK*-1P3D



HT *NiPt*-1P3A
HT *NTC*-1P3A
HT *JK*-1P3A
HT *NiPt*-2P3A
HT *NTC*-2P3A
HT *JK*-2P3A
HT *NiPt*-2P3D
HT *NTC*-2P3D
HT *JK*-2P3D

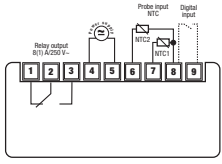
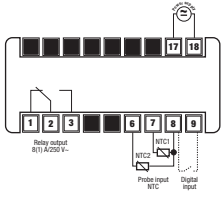
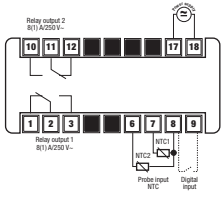
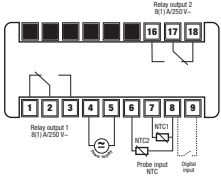


33x75 mm REAR PANEL DIAGRAMS

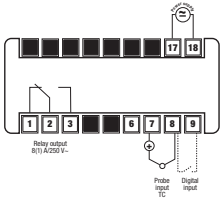
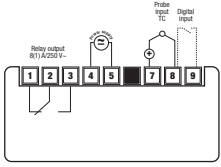
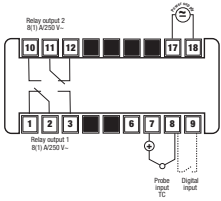
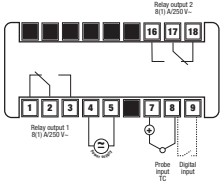
Model	Connection diagram
HT *NiPt*-1P3D	
HT *NiPt*-1P3A	
HT *NiPt*-2P3A	
HT *NiPt*-2P3D	

English

33x75 mm REAR PANEL DIAGRAMS

Model	Connection diagram
HT *NTC*-1P3D	
HT *NTC*-1P3A	
HT *NTC*-2P3A	
HT *NTC*-2P3D	

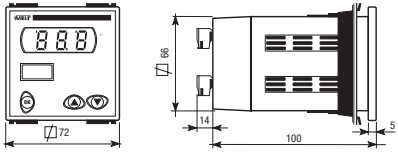
33x75 mm REAR PANEL DIAGRAMS

Model	Connection diagram
HT *JK*-1P3A	
HT *JK*-1P3D	
HT *JK*-2P3A	
HT *JK*-2P3D	

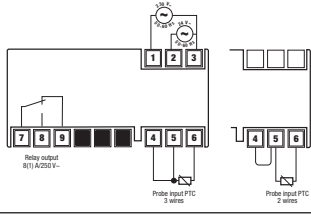
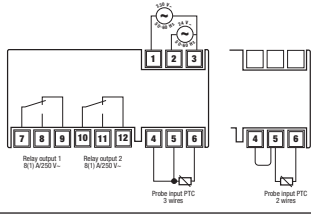
English

72x72 mm REAR PANEL DIMENSIONS

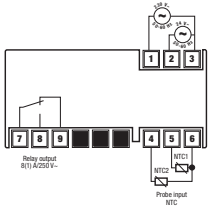
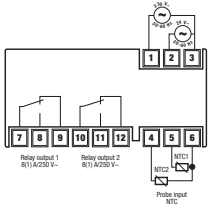
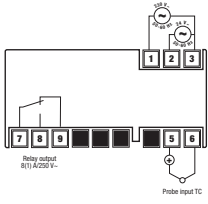
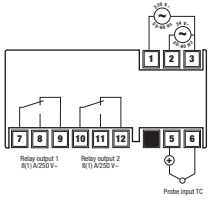
HT *NiPt*-.. P7A
HT *NTC*-..P7A
HT *JK*-..P7A



72x72 mm REAR PANEL DIAGRAMS

Model	Connection diagram
HT *NiPt*-1P7A	
HT *NiPt*-2P7A	

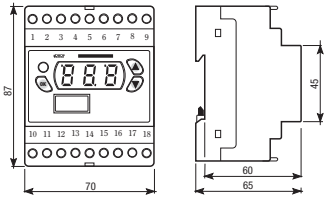
72x72 mm REAR PANEL DIAGRAMS

Model	Connection diagram
HT *NTC*-1P7A	
HT *NTC*-2P7A	
HT *JK*-1P7A	
HT *JK*-2P7A	

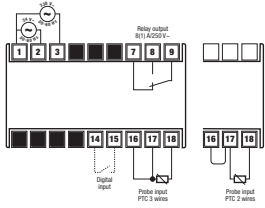
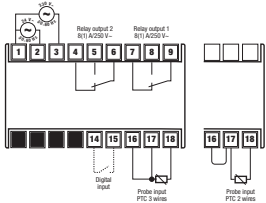
English

4 DIN DIMENSIONS MODULARS

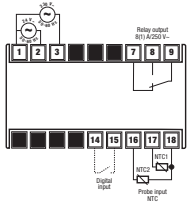
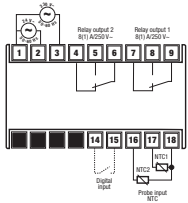
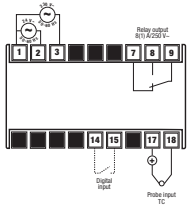
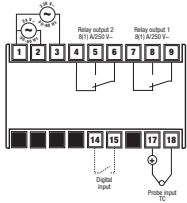
HT *NiPt*-..DA
HT *NTC*-..DA
HT *JK*-..DA



4 DIN DIAGRAMS MODULARS

Model	Connection diagram
HT *NiPt*-1DA	
HT *NiPt*-2DA	

4 DIN DIAGRAMS MODULARS

Model	Connection diagram
HT *NTC*-1DA	
HT *NTC*-2DA	
HT *JK*-1DA	
HT *JK*-2DA	

English

note

V3IS00559-010

Vemer S.p.A.
I - 32032 Feltre (BL)
Via Camp Lonc, 16
Tel +39 0439 80638
Fax +39 0439 80619

e-mail: info@vemer.it - web site: www.vemer.it