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**884116**

**Universal  
Transmitter**

Version no. 103  
Revision date 09/09



# UNIVERSAL TRANSMITTER

884116

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**GENERAL**

## WARNING

This device is designed for connection to hazardous electric voltages.

Ignoring this warning can result in severe personal injury or mechanical damage.

To avoid the risk of electric shock and fire, the safety instructions of this manual must be observed and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following.

Prior to the commissioning of the device, this manual must be examined carefully.

Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



**HAZARDOUS VOLTAGE**

## WARNING

Until the device is fixed, do not connect hazardous voltages to the device.

The following operations should only be carried out on a disconnected device and under ESD safe conditions:

- General mounting, connection and disconnection of wires.
- Troubleshooting the device.



**Repair of the device and replacement of circuit breakers must be done by Morsettitalia S.p.A. only.**



**INSTALLATION**

## WARNING

To keep the safety distances, the relay contacts on the device must not be connected to both hazardous and non-hazardous voltages at the same time.

884116 must be mounted on a DIN rail according to DIN 46277.



## WARNING

Do not open the front plate of the device as this will cause damage to the connector for the display / programming front 884501. This device contains no DIP-switches or jumpers.

## SYMBOL IDENTIFICATION



**Triangle with an exclamation mark:** Warning / demand. Potentially lethal situations.



**The CE mark** proves the compliance of the device with the essential requirements of the directives.



**The double insulation symbol** shows that the device is protected by double or reinforced insulation.

## SAFETY INSTRUCTIONS

### DEFINITIONS:

**Hazardous voltages** have been defined as the ranges: 75 to 1500 Volt DC, and 50 to 1000 Volt AC.

**Technicians** are qualified persons educated or trained to mount, operate, and also troubleshoot technically correct and in accordance with safety regulations.

**Operators**, being familiar with the contents of this manual, adjust and operate the knobs or potentiometers during normal operation.

### RECEIPT AND UNPACKING:

Unpack the device without damaging it. The packing should always follow the device until this has been permanently mounted.

Check at the receipt of the device whether the type corresponds to the one ordered.

### ENVIRONMENT:

Avoid direct sunlight, dust, high temperatures, mechanical vibrations and shock, as well as rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

All devices fall under Installation Category II, Pollution Degree 1, and Insulation Class II.

### MOUNTING:

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the device.

Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively, **Morsettitalia S.p.A. - Via Santi, 87 - 20037 Paderno Dugnano (MI), tel: 02 991 991 1.**

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.e. wire cross section, protective fuse, and location. Descriptions of input / output and supply connections are shown in the block diagram and side label.

The following apply to fixed hazardous voltages-connected devices:

The max. size of the protective fuse is 10 A and, together with a power switch, it should be easily accessible and close to the device. The power switch should be marked with a label indicating that it will switch off the voltage to the device.

Year of manufacture can be taken from the first two digits in the serial number.

#### **UL INSTALLATION REQUIREMENTS:**

Use 60/75°C copper conductors only

For use only in pollution degree 2 or better

Max. ambient temperature ..... 60°C

Max. wire size..... AWG 26-14

#### **CALIBRATION AND ADJUSTMENT:**

During calibration and adjustment, the measuring and connection of external voltages must be carried out according to the specifications of this manual. The technician must use tools and instruments that are safe to use.

#### **NORMAL OPERATION:**

Operators are only allowed to adjust and operate devices that are safely fixed in panels, etc., thus avoiding the danger of personal injury and damage. This means there is no electrical shock hazard, and the device is easily accessible.

#### **CLEANING:**

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

#### **LIABILITY:**

To the extent that the instructions in this manual are not strictly observed, the customer cannot advance a demand against Morsettitalia S.p.A. that would otherwise exist according to the concluded sales agreement.

## **EC DECLARATION OF CONFORMITY**

As manufacturer

**Morsettitalia S.p.A.**

**Via Santi, 87)**

**I - 20037 Paderno Dugnano (MI)**

hereby declares that the following product:

**Type: 884116**

**Name: Universal transmitter**

is in conformity with the following directives and standards:

The EMC Directive 2004/108/EC and later amendments

**EN 61326-1**

For specification of the acceptable EMC performance level, refer to the electrical specifications for the module.

The Low Voltage Directive 2006/95/EC and later amendments

**EN 61010-1**

Rønde, 28 August 2009

  
\_\_\_\_\_  
Filippo Codara  
Manufacturer's signature

## HOW TO DEMOUNT 884116

First, remember to demount the connectors with hazardous voltages.



**Picture 1:**  
Detach the device from the DIN rail by lifting the bottom lock.

### When front LED lights red / display shows AO.ER

884116 is designed as a SIL 2 device with a high safety level. Therefore, a continuous measurement of the outgoing current is carried out on a 4...20 mA output signal. If the current is 0, an error mode switches on the red front LED and disables the relays. This function is not a default option but must be actively selected in the menu. The error mode can only be reset by switching off and then switching on the supply voltage to the device.

## UNIVERSAL TRANSMITTER 884116

- *Input for RTD, TC, Ohm, potentiometer, mA and V*
- *2-wire supply > 16 V*
- *Output for current, voltage and 2 relays*
- *Universal AC or DC supply*

### Advanced features

- Programmable via detachable display front (884501), process calibration, signal and relay simulation, password protection, error diagnostics and selection of help text in several languages.

### Application

- Linearised, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analogue current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 pairs of potential-free relay contacts and analogue output.
- Galvanic separation of analogue signals and measurement of floating signals.
- The 884116 is designed according to strict safety requirements and is thus suitable for application in SIL 2 installations.

### Technical characteristics

- When 884116 is used in combination with the 884501 display / programming front, all operational parameters can be modified to suit any application. As the 884116 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP switches.
- A green / red front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 4-port 2.3 kVAC galvanic isolation.

# 884501 DISPLAY / PROGRAMMING FRONT



## Functionality

The simple and easily understandable menu structure and the explanatory help texts guide you effortlessly and automatically through the configuration steps, thus making the product very easy to use. Functions and configuration options are described in the section "Configuration / operating the function keys".

## Application

- Communications interface for modification of operational parameters in 884116.
- Can be moved from one 884116 device to another and download the configuration of the first transmitter to subsequent transmitters.
- Fixed display for readout of process data and status.

## Technical characteristics

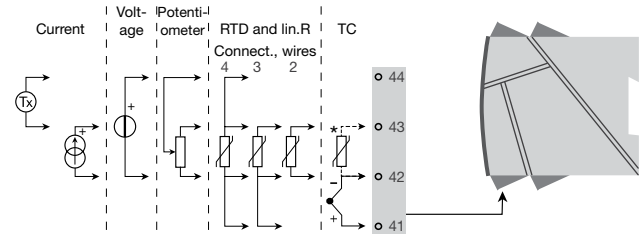
- LCD display with 4 lines; Line 1 (H=5.57 mm) shows input signal, line 2 (H=3.33 mm) shows units, line 3 (H=3.33 mm) shows analogue output or tag no. and line 4 shows communication and relay status.
- Programming access can be blocked by assigning a password. The password is saved in the transmitter in order to ensure a high degree of protection against unauthorised modifications to the configuration.

## Mounting / installation

- Click 884501 onto the front of 884116.

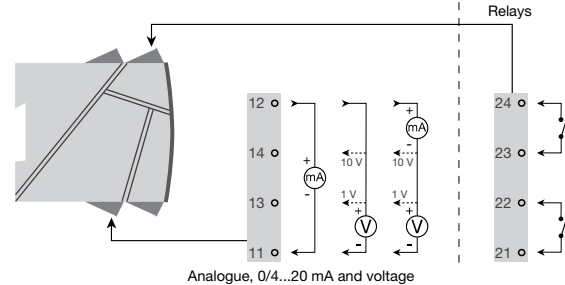
# APPLICATIONS

## Input signals:

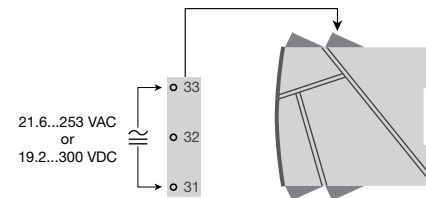


\* Order separately for TC via CJC connector: 885910 CJC connector. See connections diagram on page 47

## Output signals:



## Supply:



## Order codes

**884116 = Universal transmitter**  
**884501 = Display / programming front**  
**5910 = CJC connector**

### Electrical specifications

Specifications range ..... -20°C to +60°C

### Common specifications:

Supply voltage, universal ..... 21.6...253 VAC,  
 or 19.2...300 VDC  
 Max. consumption ..... ≤ 2.5 W  
 Fuse ..... 400 mA SB / 250 VAC  
 Isolation voltage, test / operation ..... 2.3 kVAC / 250 VAC  
 Communications interface ..... Programming front 884501  
 Signal / noise ratio ..... Min. 60 dB (0...100 kHz)  
 Response time (0...90%, 100...10%):  
   Temperature input ..... ≤ 1 s  
   mA / V input ..... ≤ 400 ms  
 Calibration temperature ..... 20...28°C  
 Accuracy, the greater of the general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.1% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
mA	≤ ±4 µA	≤ ±0.4 µA / °C
Volt	≤ ±20 µV	≤ ±2 µV / °C
Pt100	≤ ±0.2°C	≤ ±0.01°C / °C
Linear resistance	≤ ±0.1 Ω	≤ ±0.01 Ω / °C
Potentiometer	≤ ±0.1 Ω	≤ ±0.01 Ω / °C
TC type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C / °C
TC type: R, S, W3, W5, LR	≤ ±2°C	≤ ±0.2°C / °C
TC type: B 85...400°C	≤ ±4.5°C	≤ ±0.45°C / °C
TC type: B 400...1820°C	≤ ±2°C	≤ ±0.2°C / °C

EMC immunity influence .....	< ±0.5% of span
Extended EMC immunity:	
NAMUR NE 21, A criterion, burst .....	< ±1% of span

### Auxiliary supplies:

2-wire supply (terminal 44...43) ..... 25...16 VDC / 0...20 mA  
 Max. wire size ..... 1 x 2.5 mm<sup>2</sup> stranded wire  
 Screw terminal torque ..... 0.5 Nm  
 Relative humidity ..... < 95% RH (non-cond.)  
 Dimensions, without display front (HxBxD) .. 109 x 23.5 x 104 mm  
 Dimensions, with display front (HxBxD) ..... 109 x 23.5 x 116 mm  
 Protection degree ..... IP20  
 Weight ..... 170 g / 185 g with 884501

### RTD, linear resistance and potentiometer input:

Input type	Min. value	Max. value	Standard
Pt100	-200°C	+850°C	IEC60751
Ni100	-60°C	+250°C	DIN 43760
Lin. R	0 Ω	10000 Ω	-
Potentiometer	10 Ω	100 kΩ	-

### Input for RTD types:

Pt10, Pt20, Pt50, Pt100, Pt200, PT250, Pt300, Pt400, Pt500, Pt1000  
 Ni50, Ni100, Ni120, Ni1000  
 Cable resistance per wire (max.), RTD ..... 50 Ω  
 Sensor current, RTD ..... Nom. 0.2 mA  
 Effect of sensor cable resistance  
 (3- / 4-wire), RTD ..... < 0.002 Ω / Ω  
 Sensor error detection, RTD ..... Yes  
 Short circuit detection, RTD ..... < 15 Ω

**TC input:**

Type	Min. value	Max. value	Standard
B	0°C	+1820°C	IEC 60584-1
E	-100°C	+1000°C	IEC 60584-1
J	-100°C	+1200°C	IEC 60584-1
K	-180°C	+1372°C	IEC 60584-1
L	-200°C	+900°C	DIN 43710
N	-180°C	+1300°C	IEC 60584-1
R	-50°C	+1760°C	IEC 60584-1
S	-50°C	+1760°C	IEC 60584-1
T	-200°C	+400°C	IEC 60584-1
U	-200°C	+600°C	DIN 43710
W3	0°C	+2300°C	ASTM E988-90
W5	0°C	+2300°C	ASTM E988-90
LR	-200°C	+800°C	GOST 3044-84

**Cold junction compensation (CJC)**

CJC via external sensor in

connector 5910 ..... 20...28°C ≤ ±1°C  
 -20...20°C and 28...70°C ≤ ±2°C

CJC via internal sensor ..... ±(2.0°C + 0.4°C \* Δt)

Δt = internal temperature - ambient temperature

Sensor error detection, all TC types ..... Yes

Sensor error current:

when detecting ..... Nom. 2 µA  
 else ..... 0 µA

**Current input:**

Measurement range ..... 0...20 mA

Programmable measurement ranges ..... 0...20 and 4...20 mA

Input resistance ..... Nom. 20 Ω + PTC 50 Ω

Sensor error detection:

Loop break 4...20 mA ..... Yes

**Voltage input:**

Measurement range ..... 0...12 VDC

Programmable measurement ranges ..... 0...1 / 0.2...1 / 0...5 / 1...5 /  
 0...10 and 2...10 VDC

Input resistance ..... Nom. 10 MΩ

**Current output:**

Signal range (span) ..... 0...20 mA

Programmable signal ranges ..... 0...20 / 4...20 / 20...0 and 20...4 mA

Load (max.) ..... 20 mA / 800 Ω / 16 VDC

Load stability ..... ≤ 0.01% of span / 100 Ω

Sensor error detection ..... 0 / 3.5 / 23 mA / none

NAMUR NE 43 Upscale / Downscale ..... 23 mA / 3.5 mA

Output limitation:

on 4...20 and 20...4 mA signals ..... 3.8...20.5 mA

on 0...20 and 20...0 mA signals ..... 0...20.5 mA

Current limit ..... ≤ 28 mA

**Voltage output:**

Signal range ..... 0...10 VDC

Programmable signal ranges ..... 0...1 / 0.2...1 / 0...10 / 0...5 /

1...5 / 2...10 / 1...0 / 1...0.2 / 5...0 /

5...1 / 10...0 og 10...2 V

Load (min.) ..... 500 kΩ

**Relay outputs:**

Relay functions ..... Setpoint, Window, Sensor error, Latch  
 Power and Off

Hysteresis, in % / display counts ..... 0,1...25% / 1...2999

On and Off delay ..... 0...3600 s

Sensor error detection ..... Break / Make / Hold

Max. voltage ..... 250 VRMS

Max. current ..... 2 A / AC or 1 A / DC

Max. AC power ..... 500 VA

**Observed authority requirements:** **Standard:**

EMC 2004/108/EC ..... EN 61326-1

LVD 2006/95/EC ..... EN 61010-1

UL, Standard for Safety ..... UL 508

**of span** = of the currently selected measurement range

**Visualisation in the 884501 of sensor error detection and input signal outside range**

Sensor error check:		
Device:	Configuration	Sensor error detection:
884116	R1 (relay 1), ERR.ACT=NONE R2 (relay 2), ERR.ACT=NONE, OUT.ERR=NONE.	OFF
	Else:	ON



Outside range readout (IN.LO, IN.HI): If the valid range of the A/D converter or the polynomial is exceeded			
Input	Range	Readout	Limit
VOLT	0...1 V / 0.2...1 V	IN.LO	< -25 mV
		IN.HI	> 1.2 V
	0...10 V / 2...10 V	IN.LO	< -25 mV
		IN.HI	> 12 V
CURR	0...20 mA / 4...20 mA	IN.LO	< -1.05 mA
		IN.HI	> 25.05 mA
		IN.LO	< 0 Ω
		IN.HI	> 1075 Ω
LIN.R	0...800 Ω	IN.LO	< 0 Ω
		IN.HI	> 110 kΩ
	0...10 kΩ	IN.LO	< -0.5 %
		IN.HI	> 100.5 %
POTM	-	IN.LO	< temperature range -2°C
		IN.HI	> temperature range +2°C
TEMP	TC / RTD	IN.LO	< temperature range -2°C
		IN.HI	> temperature range +2°C

Display readout below min.- / above max. (-1999, 9999):

Input	Range	Readout	Limit
All	All	-1999	Display readout < -1999
		9999	Display readout > 9999

### Sensor error detection limits

Sensor error detection (SE.BR, SE.SH):			
Input	Range	Readout	Limit
CURR	Loop break (4...20 mA)	SE.BR	<= 3.6 mA; > = 21 mA
POTM	All, SE.BR on all 3-wire	SE.BR	> ca. 126 kΩ
LIN.R	0...800 Ω	SE.BR	> ca. 875 Ω
	0...10 kΩ	SE.BR	> ca. 11 kΩ
	TC	SE.BR	> ca. 750 kΩ / (1.25 V)
TEMP	RTD, 2-, 3-, and 4-wire No SE.SH for Pt10, Pt20 and Pt50	SE.BR	> ca. 15 kΩ
		SE.SH	< ca. 15 Ω

### Error indications

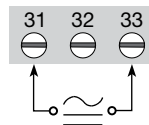
Readout at hardware error		
Error search	Readout	Error cause
Test of internal CJC sensor	CJ.ER	CJC sensor defect or temperature outside range
Checksum test of the configuration in FLASH	FL.ER	Error in FLASH
Check measurement of analogue output current	AO.ER	1) No load on the current output (only S4...20/S20...4 mA)
Communications test 884501 / 884116	NO.CO	Connection error
Check that input signal matches input configuration	IN.ER	1) Error levels on input
Check that saved configuration in 884501 matches device	TY.ER	Configuration is not 884116

! Error indications in the display flash once per second. The help text explains the error.

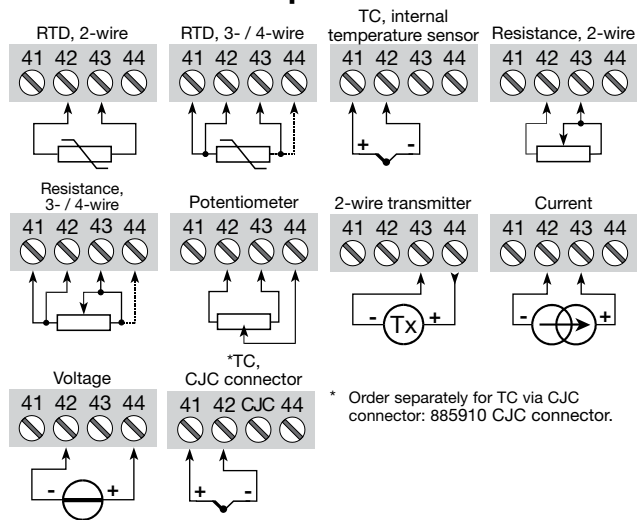
1) The error is reset by switching off and then switching on the supply voltage to the device.

## CONNECTIONS

Supply:

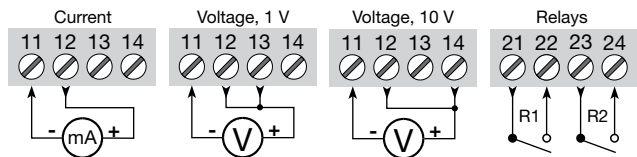


Inputs:

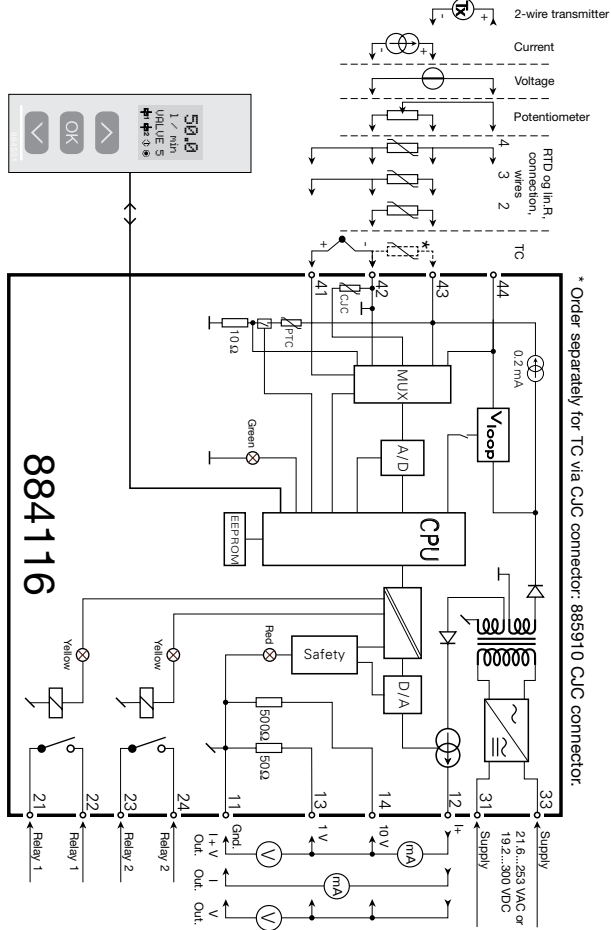


\* TC, CJC connector  
\* Order separately for TC via CJC connector: 885910 CJC connector.

Outputs:



## BLOCK DIAGRAM



## CONFIGURATION / OPERATING THE FUNCTION KEYS

Documentation for routing diagram.

### In general:

When configuring the 884116, you will be guided through all parameters and you can choose the settings which fit the application. For each menu there is a scrolling help text which is automatically shown in line 3 on the display.

Configuration is carried out by use of the 3 function keys:

- ⬆ will increase the numerical value or choose the next parameter
- ⬇ will decrease the numerical value or choose the previous parameter
- Ⓚ will accept the chosen value and proceed to the next menu

When configuration is completed, the display will return to the default state 1.0.

Pressing and holding Ⓚ will return to the previous menu or return to the default state (1.0) without saving the changed values or parameters.

If no key is activated for 1 minute, the display will return to the default state (1.0) without saving the changed values or parameters.

### Further explanations:

**Fast setpoint adjustment and relay test:** These menus allow you to make a quick setpoint change and relay test when the FastSet menu is activated. This function can only be activated when the relays are set for setpoint function and are controlled by a setpoint.

Pressing ⬆ and ⬇ simultaneously will activate a relay test and change the state of the relay.

Pressing Ⓚ will save the setpoint change.

Holding down Ⓚ for more than 1 second will return the unit to the default state without saving the setpoint change.

**Password protection:** Programming access can be blocked by assigning a password. The password is saved in the transmitter in order to ensure a high degree of protection against unauthorised modifications to the configuration. Default password 2008 allows access to all configuration menus.

## Signal and sensor error info via display front 884501

Sensor error (see limits in the table) is displayed as SE.BR (sensor break) or SE.SH (sensor short). Signals outside the selected range (not sensor error, see table for limits) are displayed as IN.LO indicating low input signal or IN.HI indicating high input signal. The error indication is displayed in line 3 as text and at the same time the backlight flashes. Line 4 of the display is a status line which displays status of relay 1 and relay 2, COM (flashing bullet) indicating correct functioning of 884501 and arrow up/down which indicates tendency readout of the input signal. If the figure 1 or figure 2 flashes, the unit has detected that the setpoint has been exceeded and that the relay is in "delay" mode. When the delay time has passed and the relay makes/breaks, the relay sign either displays or disappears.

## Signal and sensor error indication without display front

Status of the unit can also be read from the red/green LED in the front of the device.

Green flashing LED 13 Hz indicates normal operation.

Green flashing LED 1 Hz indicates sensor error.

Steady red LED indicates internal error.

## Relay functions

6 different settings of relay function can be selected.

**Setpoint:** The unit works as a single limit switch

**Window:** The relay has a window that is defined by a low and a high setpoint. On both sides of the window the relay has the same status.

**Error function:** The relay is activated by sensor error.

**Power:** The relay is activated as long as the power is on.

**Off:** The relay is deactivated.

**Latch:** The relay is latched. Only valid for setpoint and window function.

**Increasing/decreasing:** The relays can be set to activate at increasing or decreasing input signal.

**Delay:** An ON and an OFF delay can be set on both relays in the range 0...3600 s.

**Hysteresis:** A hysteresis can be set at 0.1...25% of the span or between 1 and 2999 counts.

## Latch

When the setpoint is exceeded the relay outputs enters an alarm state. The latch function of the 884116 will hold the relays in this state until the function

is deactivated manually. The latch function can be applied when the relay function setpoint or window is selected.

The latch function can be selected separately for each relay output. If the configuration is copied from one device to another by way of the 884501, the latch function must be reconfigured.

The latch function activates and holds the relays when the input signal rises above or falls below the selected setpoints and the relay action has been selected as increasing or decreasing.

The window function is selected by choosing "window" in the menu and defining a high and a low setpoint.

It can be selected for each relay contact whether the contact is open or closed inside the window. This selection is made in the menu R1.cont and R2.cont.

The setpoint function is selected by choosing "setpoint" in the menu and entering the desired limit. The device then works as a single limit switch.

An activated relay means that the contact is closed if the contact function "normally open" is selected, and the contact is open if the contact function "normally closed" is selected.




The delay time for activation and deactivation can be set independently of each other in the menus ON.DEL and OFF DEL respectively.

If the relay function "Error" is active, the relay will latch when a sensor error occurs and will not be deactivated automatically when the sensor error is rectified.

The relay can only be deactivated by an operator and only when the normal conditions for deactivation are met. If the input signal still has a value that will activate the relay, the relay will latch again.

See the graphic depiction of the setpoint and window functions on pages 62 and 63.

## Manual deactivation of the latch function



If the relay outputs are activated and thereby latched, it will be indicated in the display. The backlight flashes and the scrolling help text tells you how to deactivate the output. Manual deactivation is carried out by way of the front buttons on the 884501. Use  and  to navigate in the menu and  to validate your selection. If the password protection has been activated, the password must be entered in order to access the deactivation menu. See the menu structure on page 59.

## Advanced functions

The device gives access to a number of advanced functions which can be reached by answering "Yes" to the point "adv.set".

**Display setup:** Here you can adjust the brightness contrast and the backlight. Setup of TAG numbers with 6 alphanumerics. Selection of functional readout in line 3 of the display - choose between readout of analogue output or tag no.

**Two-point process calibration:** The device can be process-calibrated in 2 points to fit a given input signal. A low input signal (not necessarily 0%) is applied and the actual value is entered. Then a high signal (not necessarily 100%) is applied and the actual value is entered. If you accept to use the calibration, the device will work according to this new adjustment. If you later reject this menu point or choose another type of input signal the device will return to factory calibration.

**Process simulation function:** If you agree to the point "EN.SIM" it is possible to simulate an input signal by means of the arrow keys and thus control the output signal up or down. When you finalise the point with , the device returns to normal mode. The following point allows you to activate relay 1 and relay 2 by means of the arrow-keys up/down. You must exit the menu by pressing  (no time-out).

**Password:** Here you can choose a password between 0000 and 9999 in order to protect the device against unauthorised modifications to the configuration. The device is delivered default without password. If you have locked the device with a password by mistake, you can always open the menu by using the master password 2008.

**Language:** In the menu "lang.setup" you can choose between 7 different language versions of help texts that will appear in the menu. You can choose between UK, DE, FR, IT, ES, SE and DK.

## Auto diagnosis

The device performs an advanced auto diagnosis of the internal circuits.

The following possible errors can be displayed in the front unit 884501.

CJ.ER - CJC sensor defect or CJC temperature outside range

FL.ER - Flash error

AO.ER - No load on the current output (only for S4...20 mA / S20...4 mA)

NO.CO - Connection error

IN.ER - Error levels on input

TY.ER - Configuration in 884501 does not match this product type

## Selection of units

After choosing the input signal type you can choose which process units should be displayed in text line 2 (see table). By selection of temperature input the process value is always displayed in Celsius or Fahrenheit. This is selected in the menu point after selection of temperature input.

## Safety readback

When the device is delivered with default configuration, the SIL function is disabled. The safety readback function (loop surveillance) can be selected in the menu O.RANGE, thus enabling the device to run in SIL mode. In order to enable the SIL functionality, the menu item S4...20 mA must be selected. Please note, however, that when safety readback is enabled, a sensor error will be indicated as an error on the analogue output signal.

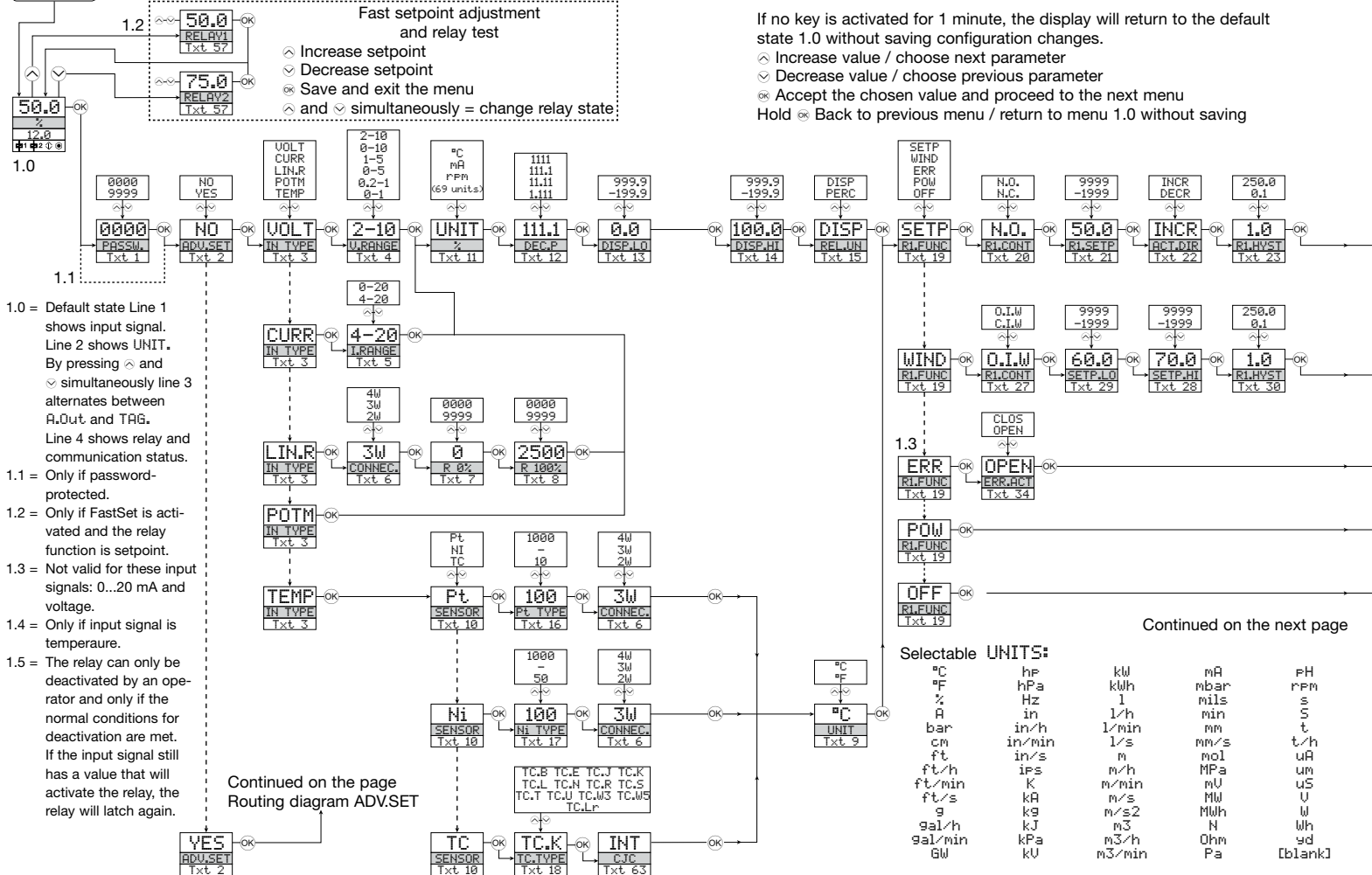
## CJC

In the CJC menu you can choose between CJC connector and internal cold junction compensation. The CJC connector (885910) must be ordered separately.

# ROUTING DIAGRAM

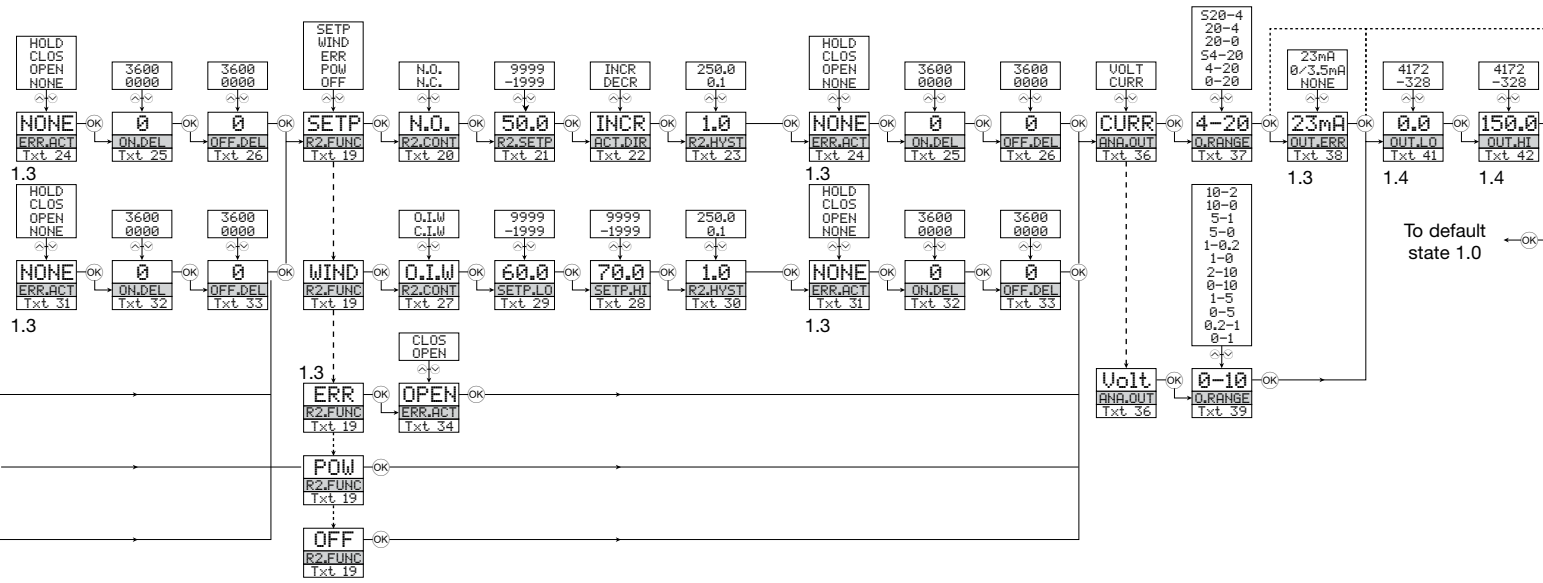
If no key is activated for 1 minute, the display will return to the default state 1.0 without saving configuration changes.

- ⬆ Increase value / choose next parameter
- ⬇ Decrease value / choose previous parameter
- ⊗ Accept the chosen value and proceed to the next menu
- ⏪ Back to previous menu / return to menu 1.0 without saving



Continued on the page  
Routing diagram ADV.SET

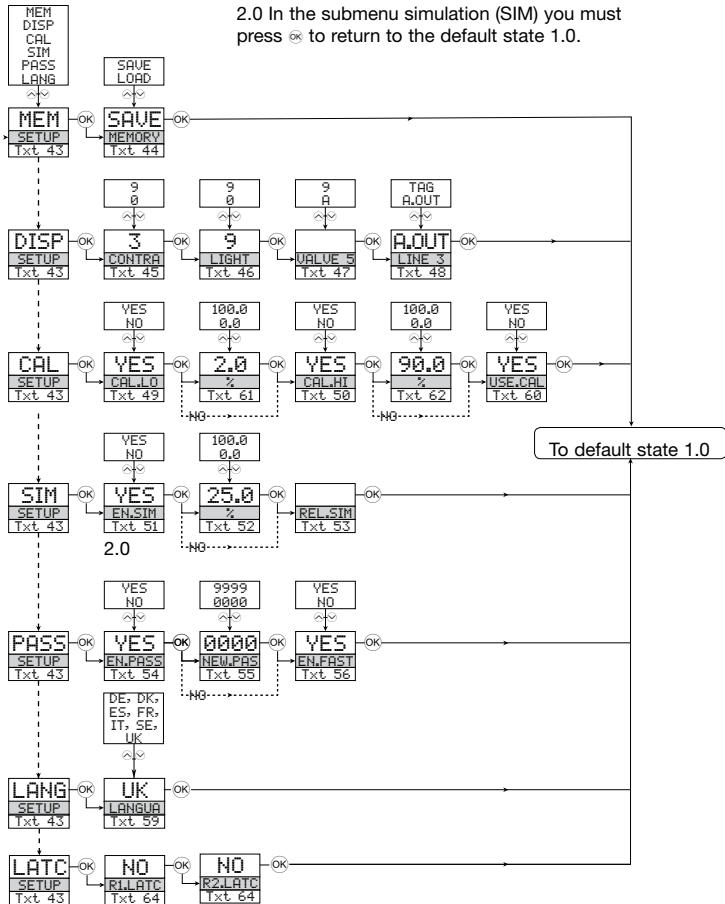
Continued on the next page



# ROUTING DIAGRAM

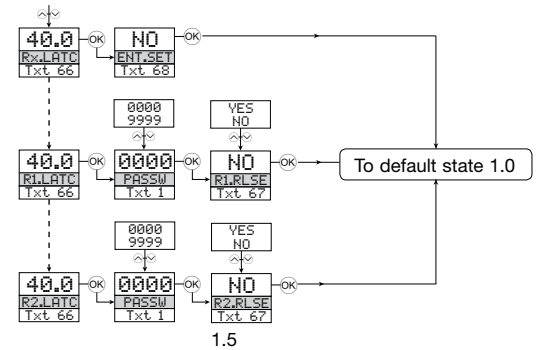
Advanced settings (ADV.SET)

2.0 In the submenu simulation (SIM) you must press **OK** to return to the default state 1.0.



# ROUTING DIAGRAM

Latch

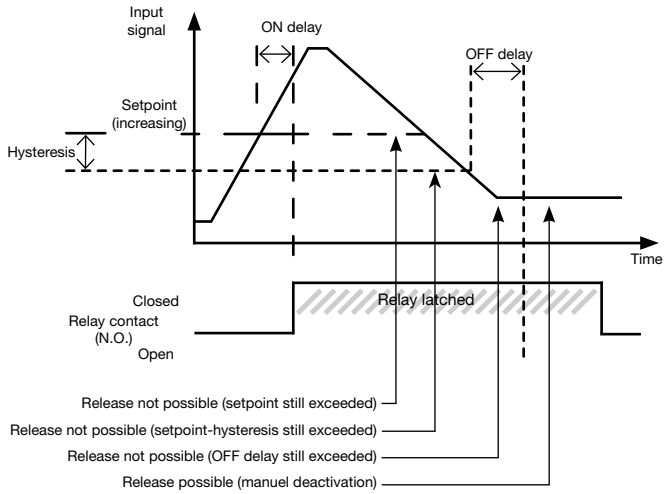


# SCROLLING HELP TEXT IN DISPLAY LINE 3

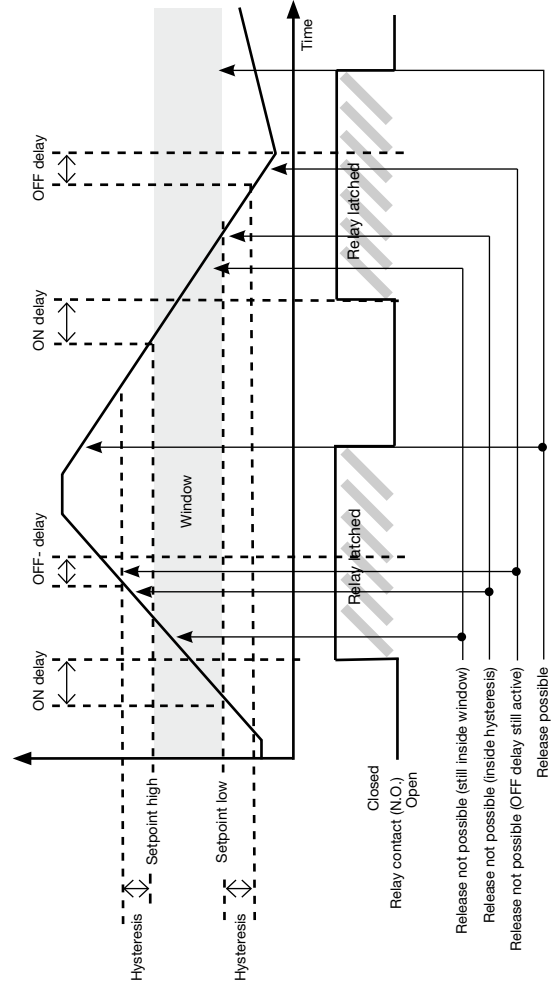
- [01] Set correct password
- [02] Enter advanced setup menu?
- [03] Select temperature input  
Select potentiometer input  
Select linear resistance input  
Select current input  
Select voltage input
- [04] Select 0.0-1 V input range  
Select 0.2-1 V input range  
Select 0-5 V input range  
Select 1-5 V input range  
Select 0-10 V input range  
Select 2-10 V input range
- [05] Select 0-20 mA input range  
Select 4-20 mA input range
- [06] Select 2-wire sensor connection  
Select 3-wire sensor connection  
Select 4-wire sensor connection
- [07] Set resistance value low
- [08] Set resistance value high
- [09] Select Celsius as temperature unit  
Select Fahrenheit as temperature unit
- [10] Select TC sensor type  
Select Ni sensor type  
Select Pt sensor type
- [11] Select display unit
- [12] Select decimal point position
- [13] Set display range low
- [14] Set display range high
- [15] Set relays in % of input range  
Set relays in display units
- [16] Select Pt10 as sensor type  
Select Pt20 as sensor type  
Select Pt50 as sensor type  
Select Pt100 as sensor type  
Select Pt200 as sensor type  
Select Pt250 as sensor type  
Select Pt300 as sensor type  
Select Pt400 as sensor type  
Select Pt500 as sensor type  
Select Pt1000 as sensor type
- [17] Select Ni50 as sensor type  
Select Ni100 as sensor type  
Select Ni120 as sensor type  
Select Ni1000 as sensor type
- [18] Select TC-B as sensor type  
Select TC-E as sensor type  
Select TC-J as sensor type  
Select TC-K as sensor type  
Select TC-L as sensor type  
Select TC-N as sensor type  
Select TC-R as sensor type  
Select TC-S as sensor type  
Select TC-T as sensor type  
Select TC-U as sensor type  
Select TC-W3 as sensor type  
Select TC-W5 as sensor type  
Select TC-Lr as sensor type
- [19] Select OFF function - relay is permanently off  
Select POWER function - relay indicates power status OK  
Select ERROR function - relay indicates sensor error only  
Select WINDOW function - relay controlled by 2 setpoints  
Select SETPOINT function - relay controlled by 1 setpoint
- [20] Select Normally Closed contact
- [21] Select Normally Open contact
- [22] Set relay setpoint  
Activate relay on decreasing signal  
Activate relay on increasing signal
- [23] Set relay hysteresis
- [24] No error action - undefined status at error  
Open relay contact at error  
Close relay contact at error  
Hold relay status at error
- [25] Set relay ON delay in seconds
- [26] Set relay OFF delay in seconds
- [27] Relay contact is Closed Inside Window  
Relay contact is Open Inside Window
- [28] Set relay window setpoint high
- [29] Set relay window setpoint low
- [30] Set relay window hysteresis
- [31] No error action - undefined status at error  
Open relay contact at error  
Close relay contact at error  
Hold relay status at error
- [32] Set relay ON delay in seconds
- [33] Set relay OFF delay in seconds
- [34] Open relay contact at error  
Close relay contact at error
- [36] Select current as analogue output type  
Select voltage as analogue output type
- [37] Select 0-20 mA output range  
Select 4-20 mA output range  
Select S4-20 mA with safety readback  
Select 20-0 mA output range  
Select 20-4 mA output range  
Select S20-4 mA with safety readback
- [38] Select no error action - output undefined at error  
Select downscale at error  
Select NAMUR NE43 downscale at error  
Select NAMUR NE43 upscale at error
- [39] Select 0.0-1 V output range  
Select 0.2-1 V output range  
Select 0-5 V output range  
Select 1-5 V output range  
Select 0-10 V output range  
Select 2-10 V output range  
Select 1-0.0 V output range  
Select 1-0.2 V output range  
Select 5-0 V output range  
Select 5-1 V output range  
Select 10-0 V output range  
Select 10-2 V output range
- [41] Set temperature for analogue output low
- [42] Set temperature for analogue output high
- [43] Enter password setup  
Enter simulation mode  
Perform process calibration  
Enter display setup  
Perform memory operations  
Enter relay latch setup
- [44] Load saved configuration into 884116  
Save 884116 configuration in 884501
- [45] Adjust LCD contrast
- [46] Adjust LCD backlight
- [47] Write a 6-character device TAG
- [48] Analogue output value is shown in display line 3  
Device TAG is shown in display line 3
- [49] Calibrate input low to process value?
- [50] Calibrate input high to process value?
- [51] Enable simulation mode?
- [52] Set the input simulation value
- [53] Relay simulation - use  $\wedge$  and  $\vee$  to toggle relay 1 and 2
- [54] Enable password protection?
- [55] Set new password
- [56] Enable Fastset functionality?
- [57] Relay setpoint - press  $\infty$  to save
- [58] Relay setpoint - Read only
- [59] Select language
- [60] Use process calibration values?
- [61] Set value for low calibration point
- [62] Set value for high calibration point
- [63] Select CJC connector (accessory)  
Select internal temperature sensor
- [64] Enable relay latch function?
- [66] Relay is latched - press  $\infty$  to acknowledge  
Relay 1 is latched - press  $\wedge$  to release  
Relay 2 is latched - press  $\vee$  to release  
Relays are latched - press  $\wedge$  or  $\vee$  to release relay 1 or relay 2
- [67] Release relay? (if conditions allow)
- [68] Enter setup menu? (latched relays may release!)



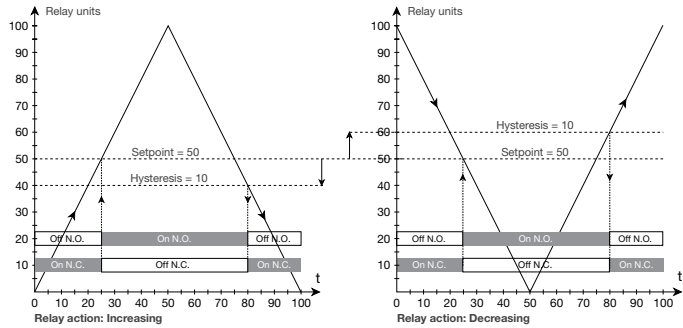
## Graphic depiction of latch function setpoint



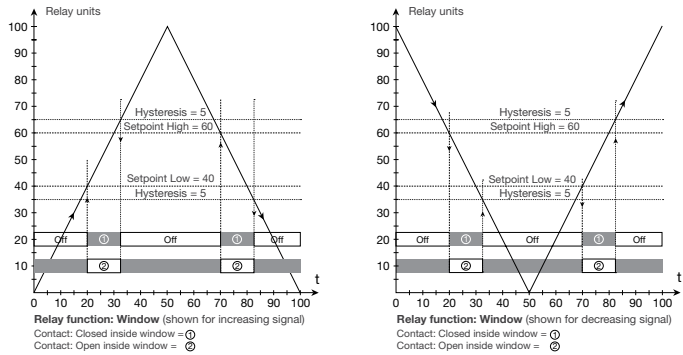
## Graphic depiction of latch function window



## Graphic depiction of relay action setpoint



## Graphic depiction of relay action window





M O R S E T T I T A L I A

**Morsettitalia S.p.A.**  
Via Santi, 87  
20037 Paderno Dugnano (MI)  
[www.morsettitalia.com](http://www.morsettitalia.com)