



INSTRUCTION MANUAL

4 ½ digit Intrinsically Safe
4-20 mA Loop Indicator
Model T3010S-NIS

Characteristics

General Description: The single channel 4 ½ digit 4-20 mA Loop Indicator T3010-NIS series provides process variable reading. It is a loop powered 4-20 mA unit with less than 1 V voltage drop. It monitors 4-20 mA current, 0-100 % percentage or process variable between -19999 to +19999 range with a 20 mm height 7-segments LCD display. Blinking display indicates over range or under range condition. An internal protected slot-in label is provided, after the last digit, to allow the unit measurement indication.

Also loop tag indication can be provided. The indicator is housed in a moulded reinforced polyamide 66 / polycarbonate IP 66 case to allow installation in field area. It can be mounted on flat surface, front panel or 2" pipe or post. The housing is divided in two parts, one for cable connection and the other for indicator parameters setting.

Field Configurability: 4 push button provided, protected with a cover, allows the configuration of the indicator parameters: decimal point position, low and high scale indication.

EMC: Fully compliant with CE marking applicable requirements.

Technical Data

Input Range: 4 to 20 mA nominal (3 to 22 mA reading).

Voltage drop: ≤ 1.0 V, loop powered.

Over range protection: ≤ 200 mA without damage.

Visualization: 4 ½ digit, 20 mm height, 7 segments LCD display.

Range indication: -19999 to +19999.

Decimal point: any position or disabled.

Setting: any value within range, direct or reverse indication.

Out of range indication: ≤ 3.5 mA or ≥ 20.5 mA blinking display.

Engineering value: internal slot-in label.

Reading rate: 2 measures per second.

Performance: Ref. conditions 4-20 mA range, 23 ± 1 °C ambient temperature.


Calibration accuracy: ≤ ± 5 digit.

Linearity error: ≤ ± 3 digit.

Series mode rejection: ≤ ± 1 digit for 1 mA peak-peak 50 Hz signal.

Temperature influence: ≤ ± 0.2 digit for a 1 °C change.

Compatibility:

 CE mark compliant, conforms to 2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

Environmental conditions:

Operating: temperature limits -20 to +60 °C, relative humidity max 95 % non condensing, up to 35 °C.

Max altitude: 2000 m a.s.l.

Storage: temperature limits -45 to +80 °C.

Mounting: flat surface, front panel or 2" pipe/post using appropriate accessories.

Weight: about 650 g.

Connection: by disconnection of clamp terminal blocks to accommodate terminations up to 2.5 mm².

Location: installation in Safe Area/Non Hazardous Locations.

Protection class: IP 66, panel mounting IP 40 standard or IP 65 with gasket provided in mounting kit OPT3092 or OPT3093.

Dimensions: Width 144 mm, Depth 61 mm, Height 144 mm.

Cut-out for panel mounting: 139 x 139 mm.

Ordering information

Model: T3010S-NIS

Accessories:

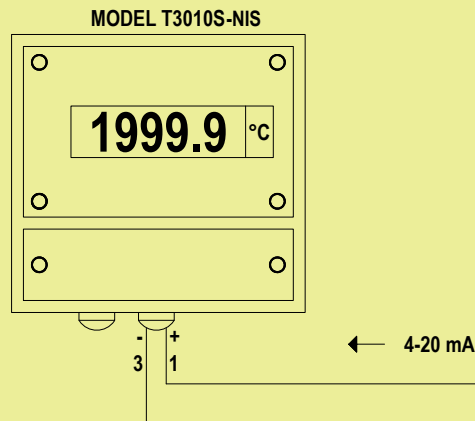
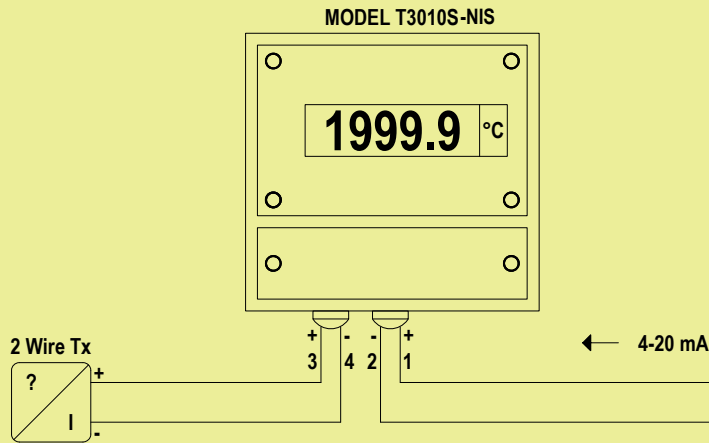
Front panel mounting kit: OPT3092

2" pipe/front panel mounting kit: OPT3093

Features

- 4-20 mA loop powered, voltage drop < 1 V.
- 4 ½ digit 20 mm height LCD display.
- -19999 to +19999 visualization range.
- High Accuracy.
- IP 66 enclosure for field mounting.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61362-1.
- In-field programmability by push-button.
- High Reliability, SMD components.

SAFE AREA/NON HAZARDOUS LOCATIONS



Warning

T3010-NIS series is a field mounted digital indicator IP66 for use in Safe Area/Non Hazardous Locations.

It can be powered by a 4-20 mA current loop. Installation can be indoor/outdoor on flat surface, on 2" pole or front panel mounting.

Operating conditions are -20 to +60 °C ambient temperature, relative humidity up to 95 % at 35 °C.

Degree of protection provided is IP66 according to EN60529.

Voltage drop caused by the indicator in the current loop is ≤ 1 V, take care this parameter evaluating functional aspect of current loop voltage requirement.

Display has a 4 ½ digit 7 segments LCD type of presentation for process measurement data in engineering units.

T3010-NIS series indicator must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards, following the installation rules.

Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury.

The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.

Storage

If after an incoming inspection the unit is not installed directly on a system (parts for spare or expansion with long storage periods) it must be conveniently stocked.

Stocking area characteristics must comply with the following parameters:

Temperature: -20 to +60 °C, the -45 to +80 °C in the data sheet is meant for limited periods, mainly to arrange for air transport, -10 to +30 °C are preferred.

Humidity: 0 to 90 %, long period high humidity affects the package integrity, 0 to 60 % humidity is preferred.

Vibration: no prolonged vibration should be perceivable in the stocking area to avoid loosening of parts or fatigue ruptures of components terminals.

Pollution: presence of pollutant or corrosive gases or vapors must be avoided to prevent corrosion of conductors and degradation of insulating surfaces.

Disposal

The product should not be disposed with other wastes at the end of its working life. It may contain hazardous substances for the health and the environment, to prevent possible harm from uncontrolled waste disposal, please separate this equipment from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

This product should not be mixed with other commercial wastes for disposal.

Operation

T3010-NIS series is a 4 ½ digit 4-20 mA loop indicator which display the current value in engineering units. The main application is to display the measured variable. T3010-NIS series provides a visual indication via a 4 ½ digit 7 segments LCD display. Visualization with 4 and 20 mA input can be independently set at any value between the -19999 to +19999 range of the indicator to show the measured variable like pressure, temperature, level or other. The decimal point can be set in any position or disabled.

Over-range or under-range conditions are signaled by display blinking. The indicator introduces a voltage drop of only 1 V, allowing the use into almost any 4-20 mA current loop, take care this parameter evaluating functional aspect of current loop voltage requirement. The indicator is housed in a robust polyamide 66/lexan polycarbonate enclosure providing a IP66 degree of protection, allowing installation in field area. Installation can be indoor or outdoor on flat surface, on 2" pole or front panel mounting.

Installation

T3010-NIS series is an indicator housed in a plastic enclosure suitable for installation on field area providing a IP66 protection degree.

It is provided with stainless steel fixing accessories permitting the use in almost industrial installation.

The indicator can be mounted on flat surface, on panel or on 2" pipe using appropriate OPT3093 mounting kit.

Electrical connection of conductors up to 2.5 mm² are accommodated by clamp terminal blocks which can be plugged in/out into a loop without suffering or causing any damage.

The wiring cables have to be proportionate in base to the current and the length of the cable.

Terminal blocks are located in a separate compartment with a sealed cover to allow the connection without exposing the measuring and display circuitry.

On this manual and enclosure side a block diagram identifies connections and configuration options.

Make sure that conductors are well isolated from each other and do not produce any unintentional connection.

If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit. Any unauthorized card modification must be avoided.

All circuits connected to T3010-NIS series must comply with the overvoltage category II (or better) according to EN/IEC60664-1.

Start-up

Before powering the unit check that all wires are properly connected, particularly their polarity.

Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts.

If configuration is needed remove the instrument front panel protecting the LCD display, turn on the signal loop power, wait about 5 second to permit the self check routine to perform, indicated by dashing display, and then read the display variable corresponding to 4-20 mA current loop value.

If possible change the current loop value and check the variation in display indication.

To display current loop value remove the instrument cover and press the pushbutton labeled 'UP' (the leftmost one); changing loop current the display will change accordingly.

Pressing the button 'DOWN' instead of 'UP' the reading will be in percentage. Visualization will be automatically changed in engineering value after 5 seconds.

Configuration

This procedure is required to set the proper values of the reading with 4 and 20 mA respectively and the proper decimal point. To access the push buttons remove the display cover and proceed as follows: press the pushbuttons 'DOWN' and 'ENTER' simultaneously, the message 'SET' will be shown, now press 'ENTER': the display will show 'dECP', this is the first item of the configuration menu, pressing the pushbutton 'SELECT' the menu item will be changed with the following sequence:

dECP	Decimal point setting
DnSC	Setting of the reading corresponding to 4 mA
UPSC	Setting of the reading corresponding to 20 mA

Pressing "ENTER" the selected menu item will be activated.

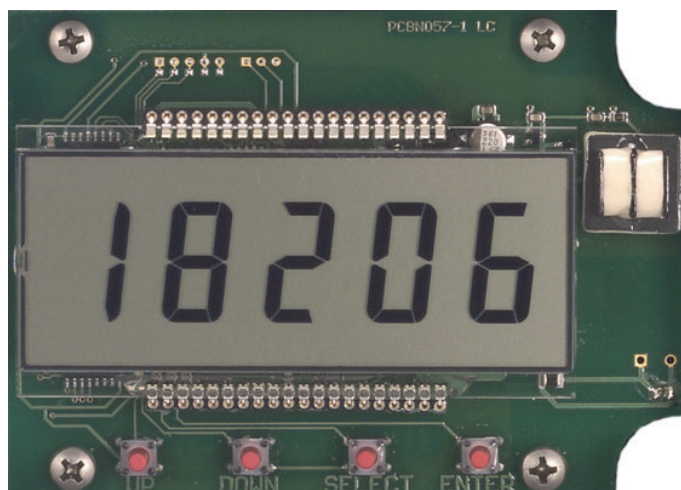
The menu dECP has the following choices:

19999	The reading has no decimal point
1.9999	Reading will be displayed with 4 decimal places
19.999	Reading will be displayed with 3 decimal places
199.99	Reading will be displayed with 2 decimal places
1999.9	Reading will be displayed with 1 decimal place

The menus DnSC and UPSC are identical: the displayed value is the current setting, to change it use the buttons as follows:

UP	The flashing digit is incremented
DOWN	The flashing digit is decremented
SELECT	The flashing digit is changed left to right
ENTER	The value on display is stored in memory

The scroll between selections is activated by the 'SELECT' button, when the desired choice is displayed pressing the 'ENTER' button the writing in memory will be activated, this is displayed by four dashed lines; entering the function current selection is shown. If no buttons are activated, after a timeout the indicator will revert to its normal operation.



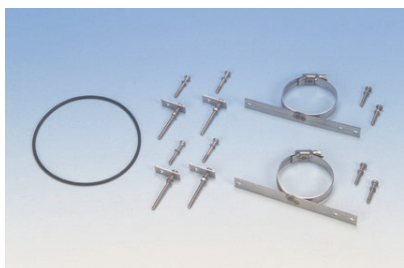
Vertical Pipe mounting



Horizontal Pipe mounting



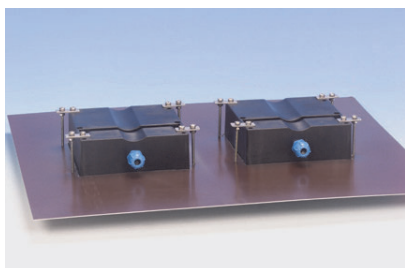
OPT3093 for Pipe / Panel mounting Accessories



Front Panel mounting



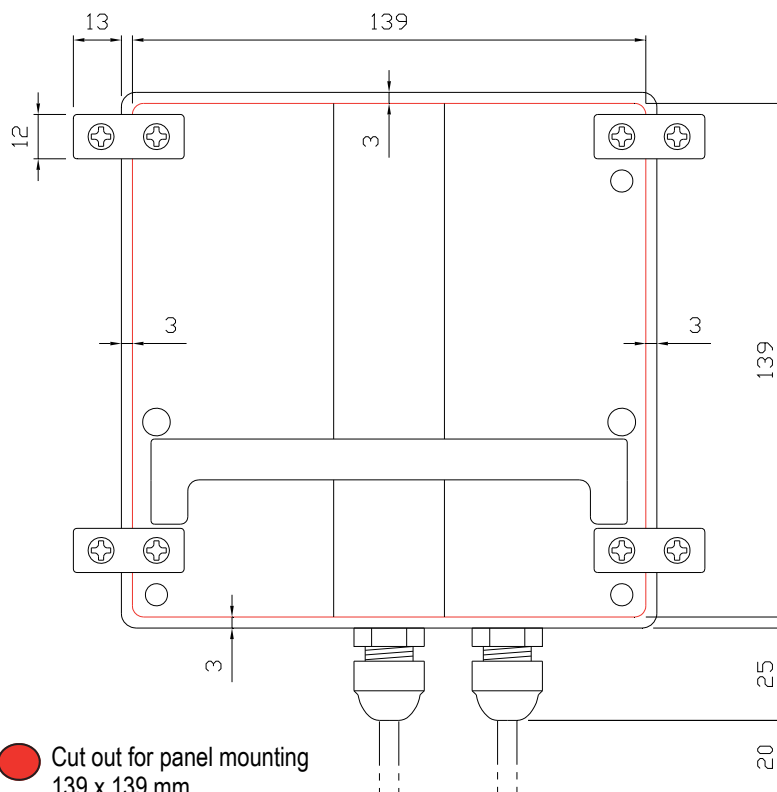
Fixing for front panel mounting



Gasket positioning for Panel mounting



Fixing for front panel mounting:



● Cut out for panel mounting
139 x 139 mm