

USER MANUAL

FLOW METER ITC 250 SERIES



- Firmware: V.1.00 or Higher
- Input Type: 4-20 mA
- Supply from Current Loop 4-20 mA

Read the user's manual carefully before starting to use the unit or software.
Producer reserves the right to implement changes without prior notice.

TABLE OF CONTENTS

1. BASIC REQUIREMENTS AND USER SAFETY	02
2. GENERAL CHARACTERISTICS	03
3. TECHNICAL DATA	03
4. DEVICE INSTALLATION	04
4.1. UNPACKING	04
4.2. ASSEMBLY	04
4.3. CONNECTION METHOD	05
4.4. MAINTENANCE	07
5. DESCRIPTION OF THE FRONT PANEL AND IR REMOTE CONTROLLER PUSH-BUTTONS	07
6. PRINCIPLE OF OPERATION	08
6.1. MEASUREMENT MODE	08
6.2. DETECTION OF THE PEAK VALUES	09
6.3. CONTROL OF THE RELAY OUTPUT	09
7. DEVICE PROGRAMMING	10
7.1. PROGRAMMING MENU	10
7.2. PARAMETERS EDITION.	11
7.2.1. Numeric parameters (digit change mode)	11
7.2.2. Switch parameters ("LIST" type)	11
7.3. MENU DESCRIPTION	12
7.3.1. "rEL" menu	12
7.3.2. "inPt" menu	13
7.3.3. "HOLd" menu	15
7.3.4. "Scod" parameter	16
7.3.5. "dEFS" parameter	16
7.3.6. "SErv" menu	16
7.4. MENU STRUCTURE	17

Explanation of symbols used in the manual



This symbol denotes especially important guidelines concerning the installation and operation of the device. Not complying with the guidelines denoted by this symbol may cause an accident, damage or equipment destruction.

IF THE DEVICE IS NOT USED ACCORDING TO THE MANUAL THE USER IS RESPONSIBLE FOR POSSIBLE DAMAGES.



This symbol denotes especially important characteristics of the unit. Read any information regarding this symbol carefully.

1. BASIC REQUIREMENTS AND USER SAFETY

- Do not use the unit in areas threatened with excessive shocks, vibrations, dust, humidity, corrosive gasses and oils.



- Do not use the unit in areas where there is risk of explosions.
- Do not use the unit in areas with significant temperature variations, exposure to condensation or ice.
- Do not use the unit in areas exposed to direct sunlight.
- Make sure that the ambient temperature (e.g. inside the control box) does not exceed the recommended values. In such cases forced cooling of the unit must be considered (e.g. by using a ventilator).

- The manufacturer is not responsible for any damages caused by inappropriate installation, not maintaining the proper environmental conditions and using the unit contrary to its assignment.
- Installation should be conducted by qualified personnel. During installation all available safety requirements should be considered. The fitter is responsible for executing the installation according to this manual, local safety and EMC regulations.

- GND input of device should be connected to PE wire;



- The unit must be properly set-up, according to the application. Incorrect configuration can cause defective operation, which can lead to unit damage or an accident. If in the case of a unit malfunction there is a risk of a serious threat to the safety of people or property additional, independent systems and solutions to prevent such a threat must be used.
- The unit uses dangerous voltage that can cause a lethal accident. The unit must be switched off and disconnected from the power supply prior to starting installation of troubleshooting (in the case of malfunction).
- Neighboring and connected equipment must meet the appropriate standards and regulations concerning safety and be equipped with adequate overvoltage and interference filters.
- Do not attempt to disassemble, repair or modify the unit yourself. The unit has no user serviceable parts. Defective units must be disconnected and submitted for repairs at an authorized service center.



The unit is designed for operation in an industrial environment and must not be used in a household environment or similar.

2. GENERAL CHARACTERISTICS

The **ITC 250** is a simple digital wall-mounted indicator, equipped with one measurement input (current input, 4-20mA) used simultaneously as device power supply input. Current input has additionally overcurrent protection circuit, which protects standard resistor. The **ITC 250** allows user to select a conversion characteristic of several kinds: linear, square, square root, and user defined (max.20 points length). Result is showed on 4-digit LED display. Displayed values range can be selected by user, from -999 to 9999, plus decimal point.

Optionally **ITC 250** can be equipped with bistable relay output. The device can be configured via IR remote controller.

IR remote controller is not a part of the **ITC 250** and must be ordered separately.

3. TECHNICAL DATA

Minimal Supply Current	3.5 mA, device supplied from current loop
Measurement Loop voltage Drop	Max. 7 V
Current Input	4÷20 mA overload protected, maximum input current about 50 mA
Current Measurement Accuracy	± 0,1% @ 25°C; ± One Digit
Temperature Stability	50 ppm / °C
Display Range	-999 ÷ 9999, plus decimal point
Accepted Prolonged Input Overload	20%
Relay Output	Bistable 0.5A/30V AC (cos j = 1), min. switching delay: about 4 sec.
Display	LED, 4 digit, 13mm height, Red
Data Memory	Non-volatile memory, EEPROM type
Protection Level	IP 65
Housing Type	Wall Mounted
Housing Material	ABS + fibreglass
Housing dimensions	Without Glands: 64 x 58 x 36 mm With Glands: 64 x 82 x 36 mm
Operating Temperature (Depending on Version)	0°C to +50°C or -20°C to +50°C
Fastening	-10°C to +70°C or -20°C to +70°C
Connection Cable	to wall, 2 M3 bolts
Screws Tightening Max. Torque	Without relay : 2 core cable (power supply) With relay : 4 or 5 core cable (2 power supply wires + 2 or 3 wires for relay)

Max. Connection Leads Diameter	2,5 mm ²
EMC	According to: PN-EN 61326-1



This is a class A unit. In a residential or a similar area it can cause radio frequency interference. In such cases the user can be requested to use appropriate preventive measures.

4. DEVICE INSTALLATION

The unit has been designed and manufactured in a way assuring a high level of user safety and resistance to interference occurring in a typical industrial environment. In order to take full advantage of these characteristics installation of the unit must be conducted correctly and according to the local regulations.



- Installation should be conducted by qualified personnel.
- Read the basic safety requirements on page 3 prior to starting the installation.
- All installation works must be conducted with a disconnected power supply.

4.1. UNPACKING

After removing the unit from the protective packaging, check for transportation damage. Any transportation damage must be immediately reported to the carrier. Also, write down the unit serial number on the housing and report the damage to the manufacturer.

Attached with the unit please find:

- User's Manual,
- Warranty,

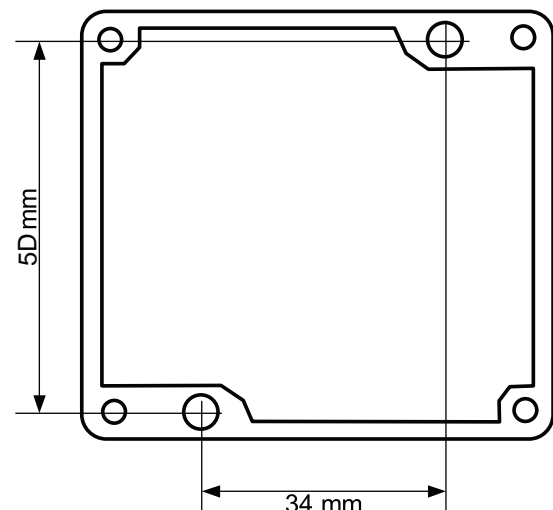
4.2. ASSEMBLY



- Disconnect the power supply prior to starting assembly.
- Check the connections are wired correctly prior to switching the unit on.



To install device on the wall, a pinholes should be made. Figure 4.1 presents dimensions of the device and distances between holes. The back side of the device has four mounting holes. This part of the case should be mounted to a wall by screws.



4.3. CONNECTION METHOD

CAUTION



- Installation should be conducted by qualified personnel. During installation all available safety requirements should be considered. The fitter is responsible for executing the installation according to this manual, local safety and EMC regulations.
- Wiring must meet appropriate standards and local regulations and laws.
- Tighten the clamping screws. The recommended tightening torque is 0.5 Nm. Loose screws can cause fire or defective operation. Over tightening can lead to damaging the connections inside the units and breaking the thread.
- The unit is equipped with housing, cover and gland or M12 connector, protecting against water intrusion. Pay special attention to their correct tightening or clamping. In the case of any doubt consider using additional preventive measures (covers, roofing, seals, etc.). Carelessly executed assembly can increase the risk of electric shock.

Due to possible significant interference in industrial installations appropriate measures assuring correct operation of the unit must be applied. To avoid the unit of improper indications keep recommendations listed below.

- Avoid common (parallel) leading of signal cables and transmission cables together with power supply cables and cables controlling induction loads (e.g. contactors). Such cables should cross at a right angle.
- Contactor coils and induction loads should be equipped with anti-interference protection systems, e.g. RC-type.
- In the case of magnetically induced interference the use of twisted couples of signal cables (so-called "spirals") is recommended.

Connections of measurement signal and relay output should be made by screw connectors mounted inside the housing.

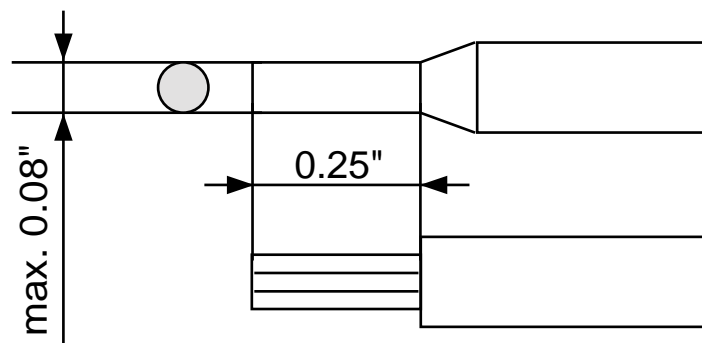


Figure 4.2. Method of cable insulation replacing and cable terminals

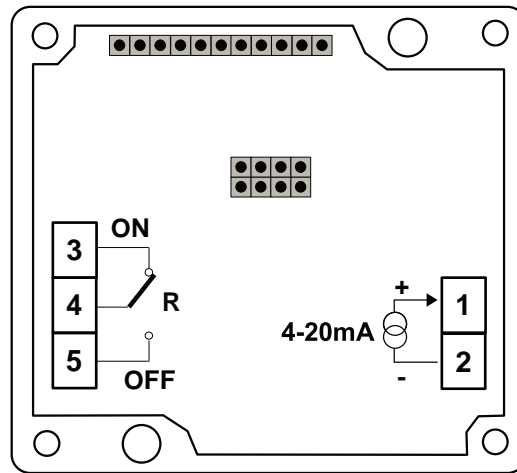


Figure 4.3. Terminals description

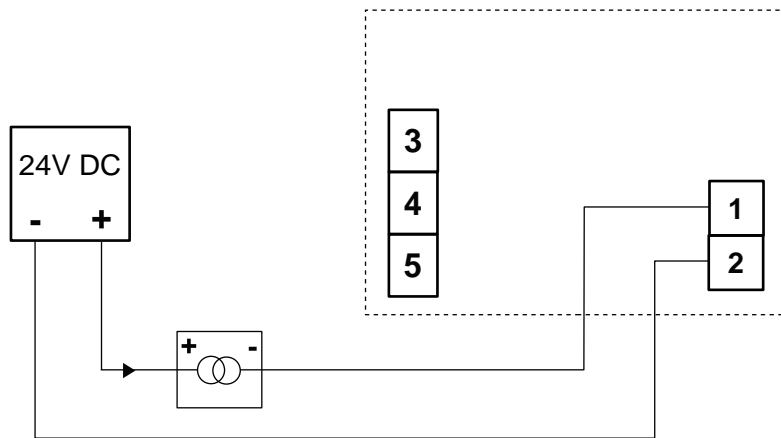


Figure 4.4. Connection of 2-wire current converters

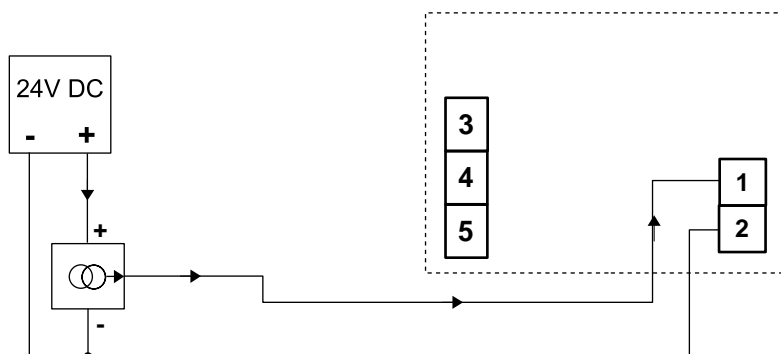


Figure 4.5. Connection of 3-wire current converters

4.4. MAINTENANCE

The unit does not have any internal replaceable or adjustable components available to the user. Pay attention to the ambient temperature in the room where the unit is operating. Excessively high temperatures cause faster ageing of the internal components and shorten the fault-free time of unit operation.

In cases where the unit gets dirty do not clean with solvents. For cleaning use warm water with small amount of detergent or in the case of more significant contamination ethyl or isopropyl alcohol.



Using any other agents can cause permanent damage to the housing.



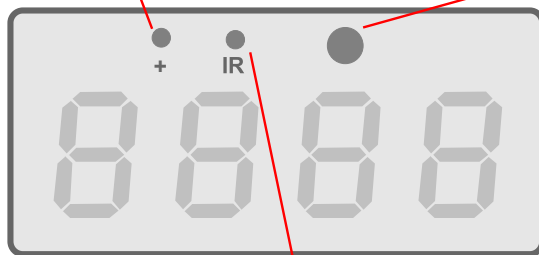
Product marked with this symbol should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

5. DESCRIPTION OF THE FRONT PANEL AND IR REMOTE CONTROLLER PUSH-BUTTONS

R LED indicates if the relay is in ON state

infrared receiver

infrared transmitter



IR LED confirms that the infrared receiver is on



programming pushbuttons

Symbols and functions of Push Buttons:



Symbol used in the manual : [ESC/MENU]

Functions:

- Enter to main menu (press and hold for at least 2 sec.)
- Exit the current Screen and Enter to previous menu (or measure mode)
- Cancel the changes made in parameter being edited



Symbol used in the manual : [ENTER]

Functions :

- Start to edit the parameter
- Enter into the sub-menu,
- Confirmation of changes made in parameter being edited



Symbol used in the manual : [^] [v]

Functions :

- Change of the present menu,
- Modification of the parameter value,
- Change of the display mode.

6. PRINCIPLE OF OPERATION

Device is supplied from current loop. For proper work of device it is required to guarantee that signal value of current loop is greater than 3.5 mA. If signal value is too low then running decimal point is displayed. Device configuration using remote controller is possible if signal value of current loop is greater than 10 mA (it is signalled by front panel LED marked "IR").

6.1. MEASUREMENT MODE

In the measure mode, the measurement results, converted over selected characteristic, are displayed on the LED display. The measurement range equal to the nominal range is called: **nominal measurement range**, and the measurement range equal to the extended nominal range is called: **permissible measurement range** (figure 6.1).

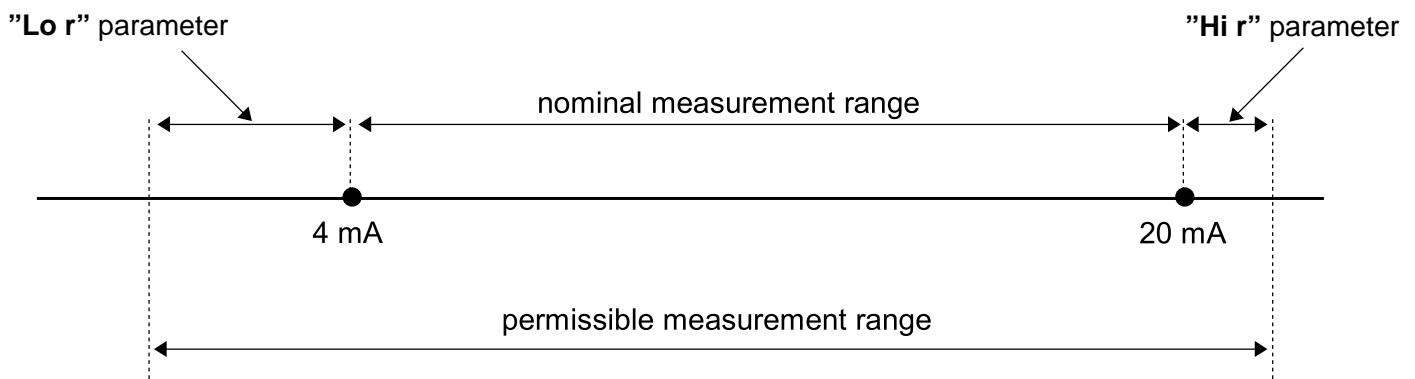


Figure 6.1. Definitions of measurement ranges in mode 4 ÷ 20mA

If the result of measurement exceeds the **permissible measurement range**, warning "-Hi-" or "-Lo-" is displayed rather than input signal, depends on exceeded value (see description of "Lo r" i "Hi r" parameters, paragraph "inPt" menu).



If the measurement value do not exceeds **permissible measurement range**, but displayed value exceeds range -999 ÷ 9999, the warning "-Ov-" is displayed rather than the calculated result.

Range of displaying values, characteristic of conversion, decimal point position and measure filtering ratio, are user configurable parameters. All accessible parameters can be changed by entering the menu (see: **DEVICE PROGRAMMING**). Use the remote controller to do it.



Configuration of the device via menu do not stops measures.

6.2. DETECTION OF THE PEAK VALUES

The ITC 250 controller is equipped with peaks detection function. It can detect a peaks of the input signal and display their values. Presets connected with this function are placed in "HOLD" menu (see description of "HOLD" menu). The detection of the peak can be done if the measured

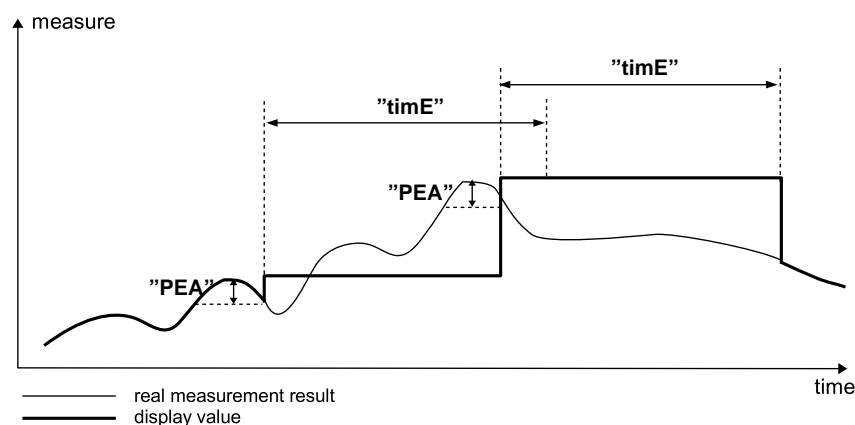


Figure 6.4. Process of peaks detection

signal raises and drops of value at least equal to parameter "PEA". Detected peaks are displayed during the time defined by parameter "timeE". If a new peak will be detected while one is displayed, this new peak will be displayed and display time counter will be cleared (figure 6.2). If no peaks are detected while time "timeE" elapses, device starts to show the current value of input signal again.

6.3. CONTROL OF THE RELAY OUTPUT

Device is equipped with one bistable SPDT relay output. Front panel LED named "R" indicates the state of the relay output. After device power on relay is in the same state as it was set while power off (see parameter "AL" of "rEL" menu description). There is **no possibility** to change relay state **until** 10 seconds elapsed since device power on. During this period it is required to power device by at least 3.5 mA current. Otherwise the waiting time is extended by the time of waiting for the correct current. Each next change of the relay state is possible after at least 4 seconds since last change of the relay state. This delay is also extended by the time of waiting for the correct current (minimum 3.5 mA). During device power off the relay is set according to the value of "AL" parameter.

Modes of the control can be changed depend on the values of parameters "SEtP", "SEt2", "HYSt", "modE" and "AL". Depend on "modE" parameter, relay can be used or controlled over one or two thresholds values. If one threshold is used (figure 6.4) the relay can be turned on ("modE" = "on") or off ("modE" = "off") when the input signal value enters the zone A. If two thresholds are used (figure 6.5) the relay will be turned on when value of input signal enters the zone A ("modE" = "in") or zone B ("modE" = "out") and turned off if the signal enters the second one.

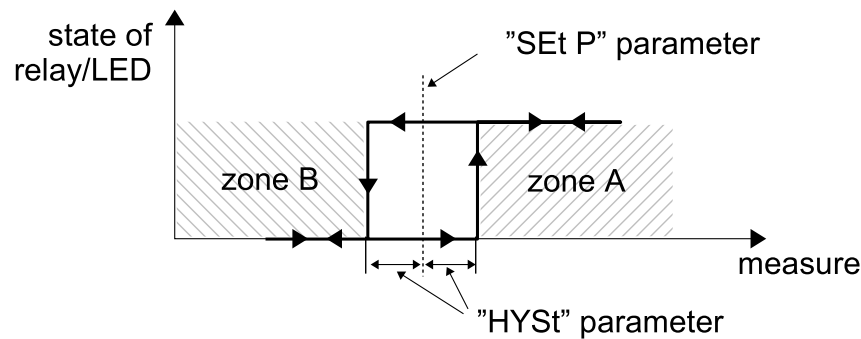


Figure 6.5. One threshold control of the relay/LED outputs

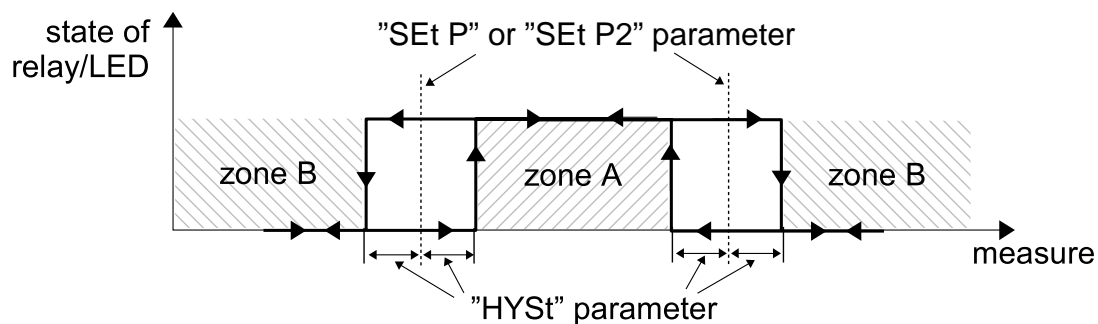


Figure 6.6. Two threshold control of the relay/LED outputs



The relay outputs and LEDs (named "R") can be controlled depend on both - the current value and the peak value (when peak detection is active, for flow rate only) of the input signal.

7. DEVICE PROGRAMMING

The device menu allow user to set all parameters connected to operation of measurement input, control modes, critical situations behaviour and access settings. The meaning of the particular parameters is described in paragraph **MENU DESCRIPTION**.



The device can be configured via IR remote controller but it must be supplied at least by 10mA current and the temperature must be at least 0°C in order to do that.

7.1. PROGRAMMING MENU

To enter main menu (being in the measurement mode) operator must to press and hold at least 2 sec. [ESC/MENU] button.

If the user password is defined (see parameter "Scod"), operator have to enter correct one before proceeding to menu options . Entering of the passwords is similar to the edition of numeric parameters (see: **PARAMETERS EDITION**), however presently editing digit is showed only on the display, other digits are replaced by "-" sign.

After entering of last digit of the password first menu position will be displayed (if the password is correct) or warning "Err" in other case.

Functions of the buttons while sub-menu and parameters choice:



Selection of sub-menu or parameter for editing. Name of selected item (submenu or parameter) is displayed.



Operation of **[ENTER]** button depend on present menu position:

- if the name of some sub-menu is displayed - enter this sub-menu; name of the first parameter (or next level sub-menu) is displayed,
- if the name of some parameter is displayed - enter the edition of this parameter; present value of the parameter is displayed,



[ESC/MENU] button allow user to exit present menu level and goes to upper level menu (or measurement mode).



After about 1 min. since last use of the buttons, device exits the menu mode and returns to the measurement mode (only if no parameters are in editing mode).

7.2. PARAMETERS EDITION

To start edition of any parameter user should select name of desired one using **[^]** **[v]** buttons and then press **[ENTER]**.

7.2.1. Numeric parameters (digit change mode)

Numerical parameters are displayed as decimal numbers. The mode of its new value entering depends on chosen edit method (see parameter “Edit”).

In mode “**by digit**” (“Edit”=“**dig**”) pressing one of the keys **[^]** or **[v]** causes change of current position (flashing digit) or the sign (+/-). Short pressing of the **[ENTER]** button causes change of the position (digit).

Press **[ENTER]** at least 2 seconds to accept the changes, after that question “**SEt?**” is displayed, and user must to confirm (or cancel) the changes. To conform changes (and store it in EEPROM) press **[ENTER]** button shortly after “**SEt?**” is displayed. To cancel the changes press **[ESC]** button shortly after “**SEt?**” is displayed. After that device returns to the menu.

7.2.2. Switch parameters (“LIST” type)

Switch parameters can be described as a sets of values (a lists) out of which only one of the options available on the list can be selected for the given parameter. Options of switching parameter are selected using **[^]**, **[v]** keys.

Short pressing of **[ENTER]** causes in displaying of the acknowledge question (“**SEt?**”). If key **[ENTER]** is pressed again, the changes are accepted, stored in EEPROM and the edition process finished. Pressing the key **[ESC]** after “**SEt?**” causes in cancelling of made changes and returning to menu.

Functions of buttons when editing numeric and switching parameters :



While editing numeric parameter - change of current (flashing) digit.
While editing switch parameter - selection of switch parameter.



If numerical parameter is being edited, a short press of **[ENTER]** button change edited position. A long press of **[ENTER]** button (at least 2 sec.) causes of display a “SEt?” ask, which allow user to make sure if change of the parameter value is correct. If switch parameter is being edited, a short press of **[ENTER]** button causes of display a “SEt?” ask. When **[ENTER]** button is pressed again (while “SEt?” is displayed) the new value of the parameter is stored in EEPROM memory.



Pressing this button operator can cancel the changes done up to now (if they were not approved by **[ENTER]** button after the “SEt?” ask) and come back to menu

7.3. MENU DESCRIPTION

“- - - -”

- password checking. If some password different from “0000” is set, then every enter to main menu follows the entering of password. If entered password is correct then first menu position will be displayed else warning “Err”, and unit returns to measurement mode.



Due to problem with direct displaying of “m” letter, it is exchanged with special sign “m”. Independently in user manual letter “m” is used to make it more readable (example: “modE”).

7.3.1. “rEL” menu

This menu allows to configure the operation mode of relay and LED marked “R”. Principle of the relay operation is described in paragraph **CONTROL OF THE RELAY OUTPUT**.



The relay output and LED (named **R**) can be controlled depend on both - the current value and the peak value (when peak detection is active) of the input signal.

“SEtP”	first threshold of the relay (range -999 ÷ 9999). Negative values can be input by selecting a “-” sign on first digit (to change value use [^] and [v] buttons). Threshold is the medium value of relay hysteresis.
“SEt2”	second threshold of the relay (range -999 ÷ 9999). Negative values can be input by selecting a “-” sign on first digit (to change value use [^] and [v] buttons). This threshold is accessible when “modE” parameter is set to “in” or “out” value. Threshold is the medium value of relay hysteresis.
“HYSt”	hysteresis of relay (range 0 ÷ 999). Full hysteresis of the relay is equal to 2x “HYSt” parameter. The relay state can change when an input signal is out of threshold-hysteresis to threshold+hysteresis zone.



Presented parameters should be set to ensure that “SEtP” + “HYSt”, “SEt2” + “HYSt”, “SEtP” - “HYSt” or “SEt2” - “HYSt” do not exceeds the measure range. Additionally, in two threshold mode (“modE” = “in” or “out”), the hysteresis for both thresholds must not cover each other (in other case relay can't change its state).

"modE" - relay operation mode:

"noAc"	the relay is not active (doesn't change state)
"on"	one threshold mode, the relay turns ON when input signal exceeds from the bottom SETP+HYSt value, and turns OFF when exceeds from the top SETP-HYSt,
"oFF"	one threshold mode, the relay turns ON when input signal exceeds from the top SETP-HYSt value, and turns OFF when exceeds from the bottom SETP+HYSt,
"in"	- two threshold mode, the relay turns ON when the input signal exceeds from the bottom "lower threshold + HYSt" or from the top "bigger threshold - HYSt", and turns OFF when exceeds from the top "lower threshold - HYSt" or from the bottom "bigger threshold + HYSt". The bigger threshold means bigger one of "SEtP" and "SEt2" thresholds, the lower threshold means lower one of "SEtP" and "SEt2" thresholds.
"out"	- two threshold mode, the relay turns ON when the input signal exceeds from the top "lower threshold - HYSt" or from the bottom "bigger threshold + HYSt", and turns OFF when exceeds from the bottom "lower threshold + HYSt" or from the top "bigger threshold - HYSt". The bigger threshold means bigger one of "SEtP" and "SEt2" thresholds, the lower threshold means lower one of "SEtP" and "SEt2" thresholds.



- LED lights when "ON" part of the relay is closed, independently of relay's mode.
- When power supply fail, unit sets relay state accordingly to "AL" parameter.

"AL"	- this parameter defines the relay reaction when some critical situations occurs: "noCH" - relay do not change his state, "on" - relay will be turned ON, "oFF" - relay will be turned OFF.
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If parameter "modE" is set to "on", "oFF", "in" or "Out" the "critical situation" means that allowable measurement range is exceeded.



- If option "noCH" is selected for "AL" parameter, behaviour of the relay may depend on "FiLt" parameter in some cases. If "FiLt" is set to big value and the input signal drops, result value of the measure will change slow, causes of turning on or off relay due to thresholds values. The critical situation is slowly detected, so it is impossible to predict the relay state in that situations.
- If parameter "AL" = "on", the relay will be turned on in the critical situations, even if his parameter "modE" = "noAC".

7.3.2. "inPt" menu

This menu presets the measurement input:

"CHAR"	- this option presets type of the conversion characteristic, and can be set to: "Lin" - linear "SqR" - square "SqRt" - square root "USEr" - user defined characteristic. Maximal length 20 points. Every point is defined by user. Adding, Editing and Deleting of points is done by options "AddP", "EdtP", "dELP" ("InPt" menu) respectively.
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When one of those characteristics is chosen display range is defined by "Lo C" and "Hi C".



- If user defined characteristic is selected, and if number of defined points is lower than 2 then warning "Errc" is displayed in measurement mode.

The process of displayed result calculation is described in details in **DISPLAY VALUES CALCULATION** paragraph.

"FiLt"	- this parameter sets filtration rate. It can be set to values from 0 (no filtration) to 5 (strongest filtration – time window about 3 sec).
"Pnt"	- decimal point position. It can be set to one of : "0", "0.0", "0.00", "0.000" Decimal point position is changed by [^], [v] buttons.
"Lo C" "Hi C"	These parameters describe the values displayed for minimum and maximum input current. "Lo C" parameter defines the value displayed when input current is equal 4 mA, and "Hi C" parameter defines the value displayed for 20 mA of input current. Available range for these parameters: -999 ÷ 9999. Negative values can be set by entering '-' sign on the first position (by use of [^], [v] buttons).



If user defined characteristic is selected (parameter "CHAR" = "USER") the parameters "Lo C" and "Hi C" are not available for modification, due to their values are calculated from defined characteristic.

"AddP"	- this menu allow user to add single point to the user defined characteristic. After selection of this option device waits for "X" and "Y" coordinates of new point. Modification of the coordinates is done accordingly to numerical parameters edition. Coordinate "X" defines the percentage ratio of input current to selected current range. The "X" range: -99,9 ÷ 199,9. Coordinate "Y" defines displayed value for particular "X" value. The "Y" value can be changed in range: -999 ÷ 9999, decimal point position depend on "Pnt" parameter (menu "inPt").
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- User can not enter two points with the same value of "X" coordinate. If user trays to do it, "Err" warning is displayed. To modify any defined point use "EdtP" option.



- To distinguish "X" and "Y" coordinates, if "X" coordinate is displayed an additional decimal point on utmost right position is displayed.
- If user defined characteristic is selected, and if number of defined points is lower than 2 then warning "Errc" is displayed in measurement mode.

"dELP"	- this option allows user to delete any of the points of the user defined characteristic. After selection current number of points of the user defined characteristic is displayed for about approx. 1.5 sec. After that device waits for selection of point being deleted (by [^], [v] buttons). The short pressing of [ENTER] button causes by switching between X and Y value of the displayed point. The long press (press and hold at least 2 sec) of [ENTER] button causes by displaying "dEL?" ask. If [ENTER] button is pressed again, current point is deleted and new updated number of points of the user defined characteristic is displayed.
"Pnt"	- this option allows user to modify of particular point of the user defined characteristic. After selection current number of points of the user defined characteristic is displayed for about approx. 1.5 sec. After that device waits for selection of point being edited (by [^], [v] buttons). The short pressing of [ENTER] button causes by switching between X and Y value of the displayed point. The long press (press and hold at least 2 sec) of [ENTER] button causes by entering to edit the selected coordinate of the point. Modification of the coordinates is done accordingly to numerical parameters edition.



"AddP", "dELP" and "EdtP" options are available only if the user defined characteristic is used (it means when parameter "CHAR" = "USER").

"Lo r", "Hi r"	- these parameters define the expansion of nominal range in percent. They determine the permissible range of input signal (figure 7.1). The permissible range allow user to exceed the nominal range of input signal. If input value is contained in the permissible range a proper result is displayed. If input signal exceeds this range (defined by "Lo r" and "Hi r"), "-Lo-" or "-Hi-" warning is displayed depend on input signal value.
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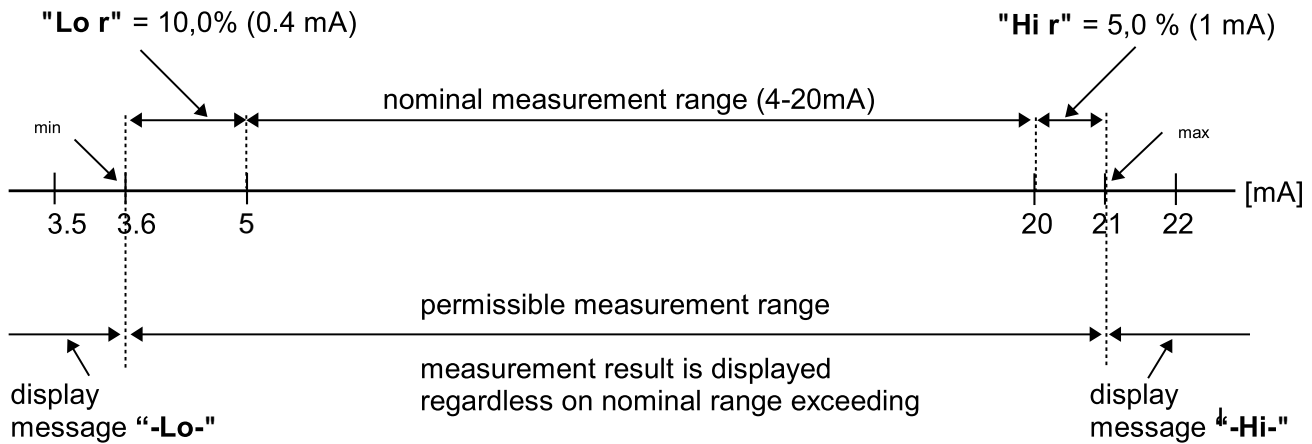


Figure 7.1 Example of definition of permissible range of input signal - "Lo r" and "Hi r" parameters

The "Lo r" parameter determines lower border of the permissible range calculated due to expression: $I_{min} = 4 \text{ mA} - 4 \text{ mA} \times \text{"Lo r"} \%$.

The "Lo r" value can be set from 0 to 12.4%.

Parameter "Hi r" determines the upper border of the permissible range accordingly to the expression: $I_{max} = 20 \text{ mA} + 20 \text{ mA} \times \text{"Hi r"} \%$.

The value of "Hi r" can be set from 0 to 19.9%

In example no 1 of the **DISPLAY VALUES CALCULATION** paragraph the procedure of the permissible input range determining is presented in details.

i If the measurement value do not exceeds **permissible measurement range** but displayed value exceeds range -999 ÷ 9999, the warning "-Ov-" is displayed rather than the calculated result.

7.3.3. "HOLd" menu

This menu contains parameters connected with peak detection function. See also full description of the peak detection function in paragraph: **DETECTION OF THE PEAK VALUES**

"modE"	- the type of detected changes of the input signal, can be set to values: "norm" - peaks - peak and next drop of the input signal of value equal at least "PEA", "inv" - drops - drop and next peak of the input signal of value equal at least "PEA",
"PEA"	- minimal detected signal change classified as peak or drop (see Figure 6.2)
"timE"	- maximum time of displaying of the peak (drop) value, can be set from 0.0 to 19.9 sec, with 0.1 sec. resolution.
"HdiS"	- type of displayed values: "rEAL" - current value is displayed, "HOLd" - peak (drop) value is displayed,
"H r1"	- relay/LED output R operation mode: "rEAL" - relay/LED operates depend on the current value, "HOLd" - relay/LED operates depend on the peak (drop) value.

7.3.4. "Scod" parameter

This parameter defines user password (4-digits number). If this parameter is set at value "0000", user password is turned off.

If the user do not remember his password, the access to the menu is possible by the "one-use password". To get this password please contact with Marketing Division. "Single use password" can be used only one time, after that it is destroyed. Entering this password causes in clearing of user password, it means sets the user password to "0000".



The "one-use password" can be used **ONE TIME ONLY**, it is impossible to use it again! The "one-use password" can be restored by Service Division only.

7.3.5. "dEFS" parameter

This setting allows to restore the factory settings of the device. To get the access to this option special password is required: "5465", next the device displays acknowledge question "SEt?". Press [ENTER] to acknowledge the restoring of factory settings or [ESC] to cancel.

7.3.6. "SErv" menu

This menu contains the parameters for authorized service only. To enter this menu proper service password must be entered. Improper settings can causes of damage of the device.

7.4. MENU STRUCTURE

