F9.03 Flow Monitor and Transmitter

INSTRUCTION MANUAL

EN 10-11

Table of Contents

1. Introduction

1.1. Safety Instructions

General Statements

- Do not install and service the instrument without following the Instruction Manual.
- This unit is designed to be connected to other instruments which can be hazardous if used improperly. Read and follow all associated instrument manuals before using with this instrument.
- Unit installation and wiring connections should only be performed by qualified staff.
- Do not modify product construction.

Installation and Commissioning Statements

- Remove power to the instrument before wiring input and output connections.
- Do not exceed maximum specifications using the instrument.
- To clean the unit, use only chemical compatible products.

1.2. Unpacking

Please verify that the product is complete and without any damage. The following items must be included:

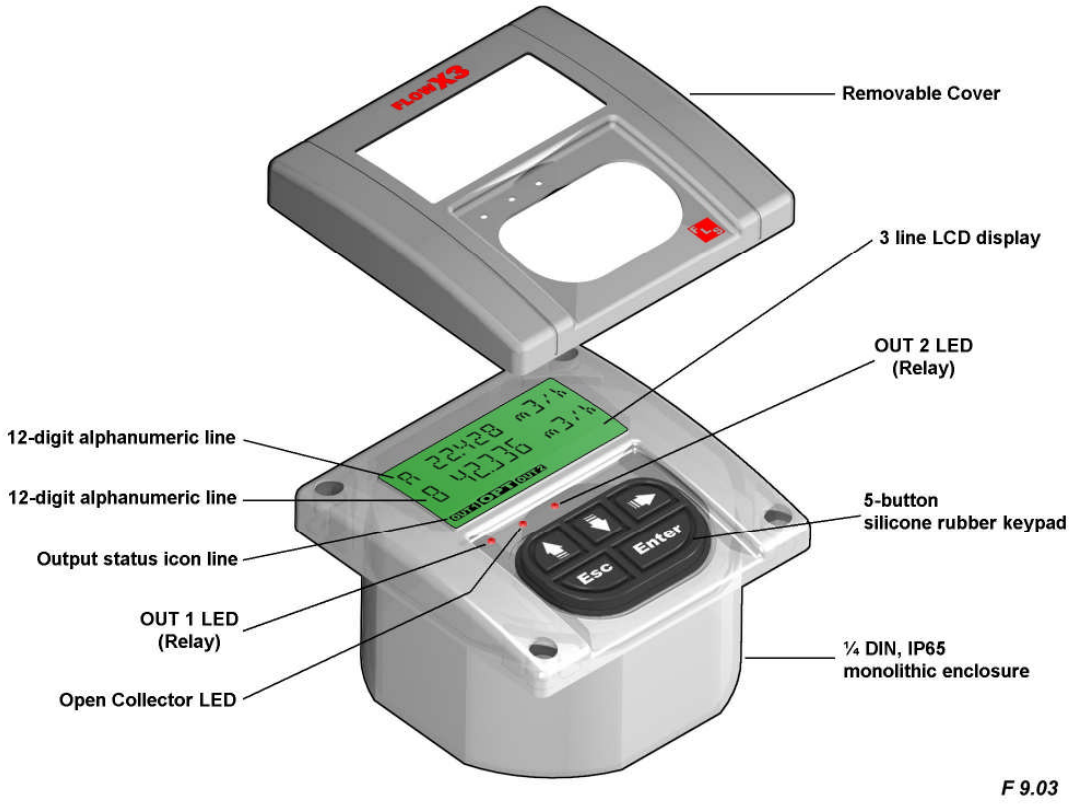
- F9.03 Flow Monitor and Transmitter
- Instruction Manual for F9.03 Flow Monitor and Transmitter

2. Description

2.1. Design

The FLS FlowX3 F9.03 Flow Monitor and Transmitter has two flow sensor inputs and two 4-20 mA outputs. This monitor is designed to convert the signal from all FlowX3 flow sensors into a display indication and a 4 - 20 mA signal for long distance transmission and it also provides one programmable open collector output and two relay outputs. A very high flexibility is achieved via only one packaging for compact pipe mount, panel or wall installation. Self explaining calibration menus allow a customized setup of all measuring parameters and the state of the art electronic design ensures long-term reliable and stable signals.

2.2. Technical Features



2.3. Connection to FlowX3 Sensors

	FlowX3 Sensors													
FlowX3 Monitor	**F3.00.H**	**F3.00C**	**F3.01.H**	**F3.01.C**	**F3.15.H***	**F3.30.H***	**ULF.H**	**ULF.R**	**ULF3.15***	**ULF3.30***	**F3.80**	**F111.C**	**F111.H**	**F3.6XM**
F9.03	X		X		X		X		X		X		X	X

* with Output Kit mounted

3. Specifications

3.1. Technical Data

General

Associated flow sensor:

- 2 FLS FlowX3 Hall effect and electromagnetic with frequency output

Materials:

- Case: PC
- Panel gasket: Neoprene
- Wall & Field gasket: EPDM
- Keypad: 5-button silicone rubber

Display:

- 3 line LCD: 2 x 12 alphanumeric lines + 1 icon line
- Update rate: 1 second
- Contrast: User adjustable with 5 levels

Enclosure: IP65 front

Electrical

Supply Voltage: 12 to 24 VDC ± 10% regulated

Sensor Input (Frequency):

- Sensor power: 5 VDC @ < 20 mA
- Range: 0 to 1000 Hz
- Optically isolated from current loop
- Short circuit protected

Current output:

- 2 Loop 4…20 mA, isolated, fully adjustable and reversible
- Max loop impedance: 150Ω @ 12 VDC, 330Ω @ 18 VDC, 600Ω @ 24 VDC

Open Collector output:

- User selectable as MIN alarm, MAX alarm, Pulse Out, Freq Out, Off
- Optically isolated, 50 mA MAX sink, 24 VDC MAX pull-up voltage
- Max pulse/min: 300
- Hysteresis: User selectable

Relay output:

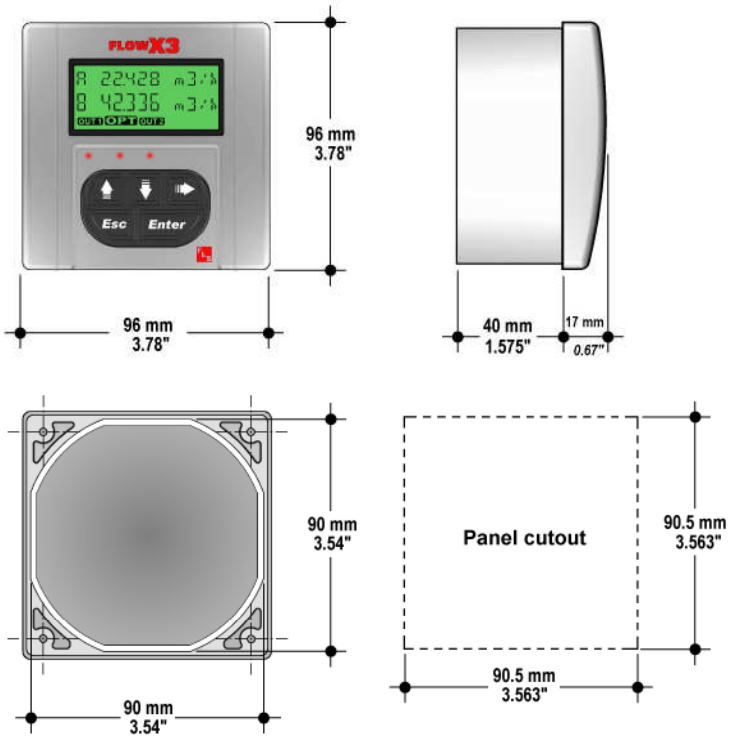
- User selectable as MIN alarm, MAX alarm, Pulse Out, Off
- Mechanical SPDT contact
- Expected mechanical life (min. operations): 10^7
- Expected electrical life (min. operations):
  - N.O. switching capacity 5 A 250 VAC n° of operations 5×10^4
  - N.C. switching capacity 2 A 250 VAC n° of operations 2×10^5
- Max pulse/min: 180
- Hysteresis: User selectable

Environmental
Operating temperature: -10 to +70°C (14 to 158°F)
Storage temperature: -15 to +80°C (5 to 176°F)
Relative humidity: 0 to 95% non condensing

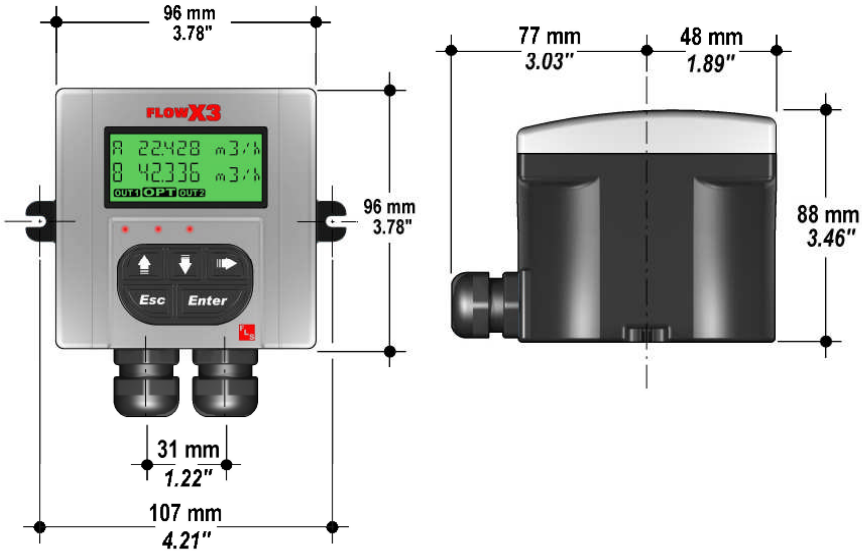
Standards and Approvals
Manufactured under ISO 9002
Manufactured under ISO 14001
CE

3.2. Dimensions

Panel Mount



Wall Mount

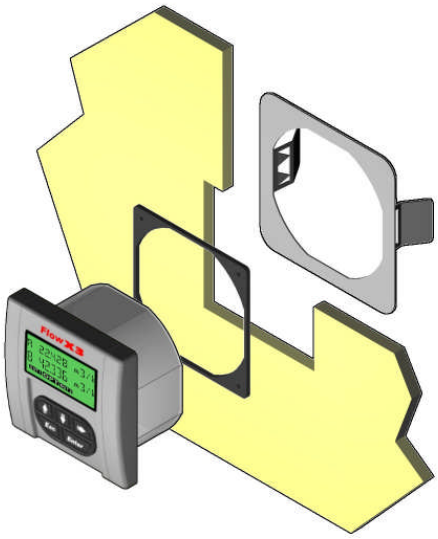


4. Installation

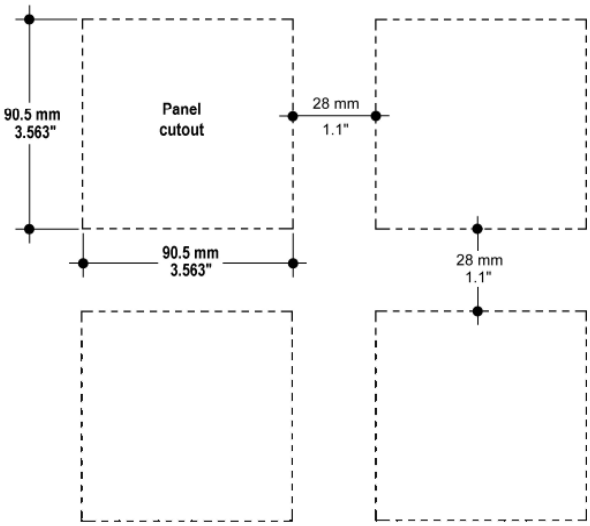
The flow monitor & transmitter with two inputs and two output loops are available just in one packaging for panel or wall installation. The panel version is installed using the panel mounting kit (F9.KP1), while the wall mounting version is fixed with the wall mounting kit (F9.KWX).The mounting kits can be ordered directly connected to the monitor or separately and then simply installed on it.

4.1. Panel Installation

The panel mounting version consists of the monitor and the mounting bracket kit F9.KP1 with gasket for IP65 watertight panel installation. The monitor perfectly fits into a standard ¼ DIN panel cutout.



1. Cut out the panel: the F9.03 requires a panel opening of 90,5 x 90,5 mm (3,563” x 3,563”). ¼ DIN punches are recommended, alternatively a jigsaw or another cutting tool may be used.
2. Recommended minimum clearance between panel cutouts is 28 mm (1.1”) as illustrated.

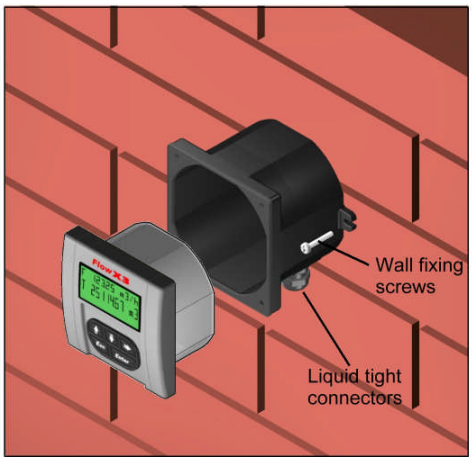


3. Place gasket on the instrument and install into the panel. Be sure the panel gasket is properly seated against the panel and around the instrument case.
4. Slide the metal bracket over the back of the instrument. Press the bracket against the inside of the panel to perfectly fix the instrument in place.

To REMOVE: press the clips outward while pulling the bracket away from the instrument panel. Do not allow the instrument to fall out of the panel opening: it may be helpful to secure the instrument temporarily with tape from front.

4.2. Wall Installation

The wall mounting version consists of the monitor and the wall mounting kit. The F9.KW1 kit includes the plastic adapter with gasket for IP65 watertight wall installation and the fixing screws. The F9.KW2 includes also a 110/230 VAC to 24 VDC power supply directly mounted into the plastic adapter to provide a low voltage regulated output to the flow monitor.



1. Fix the wall mounting kit to a solid wall using the included screws.
2. Pull the electrical cables through liquid tight connectors.
3. Make wiring connections according to wiring diagrams.
4. Secure carefully the F9.03 to the wall mounting kit using the included screws until finger tight.
5. Assemble the front cover.

4.3. Wiring

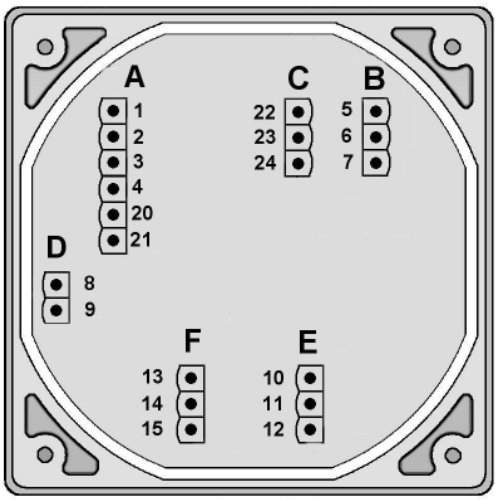
All wiring connections to F9.03 are made via removable terminals. Flow sensors terminals are orange, all other terminals are green.

CAUTION

General recommendation

- Always ensure the power supply is switched off before working on the device.
- Terminals accept 26 to 12 AWG (0.08 to 2.5 mm^2)
- Strip around 10 mm (0.4") of insulation from the wire tips and tin bare ends to avoid fraying.
- Ferrules are suggested when connecting more than one wire to a single terminal.
- Remove the upper part of the terminals for an easy cabling.
- Insert wire tip or ferrule completely into the terminal and fix with the screw until finger tight.
- **Compact or Wall Installation**
  Use electrical cables with the proper external diameter for the liquid tight connector:
  PG11: external diameter between 2-7 mm (0.079-0.276")
  PG13,5: external diameter between 5-12 mm (0.197-0.472")

Rear Terminal View



Power supply	A	1	+ VDC
		2	+ LOOP
		3	- LOOP
		4	- VDC
		20	+ LOOP2
		21	- LOOP2

Sensor A	B	SENSOR A	
		5	GND
		6	IN
		7	V+

Sensor B	C	SENSOR B	
		22	GND
		23	IN
		24	V+

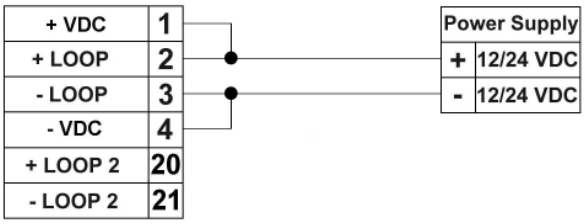
Open collector output	D	8	O.C.+
		9	O.C.-

OUT 1 RELAY	E	RELAY 1	
		10	NC
		11	COM
		12	NO

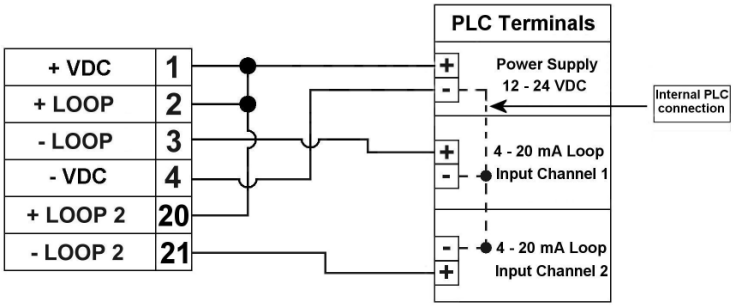
OUT 2 RELAY	F	RELAY 2	
		13	NC
		14	COM
		15	NO

Power / Loop Wiring Diagram

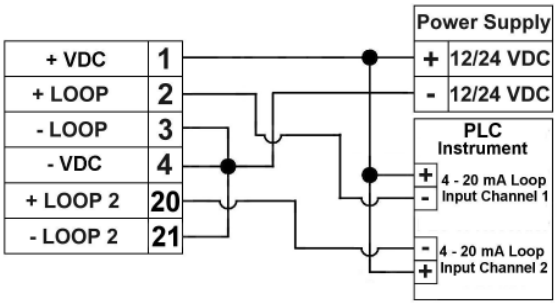
Stand-alone application,
no current loop used



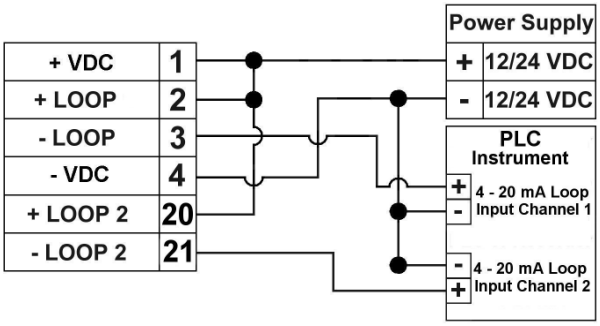
Connection to a PLC with built-in
power supply



Connection to a PLC / Instrument with ONE separate power supply

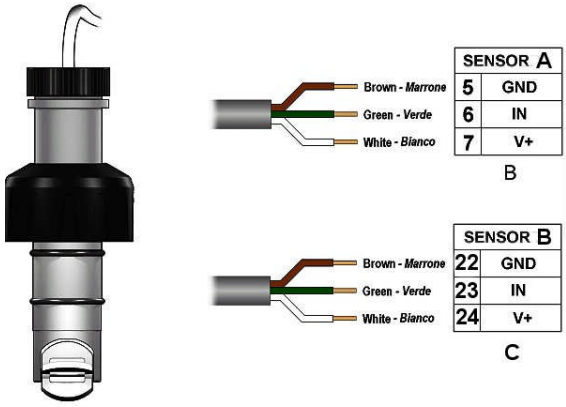


OR

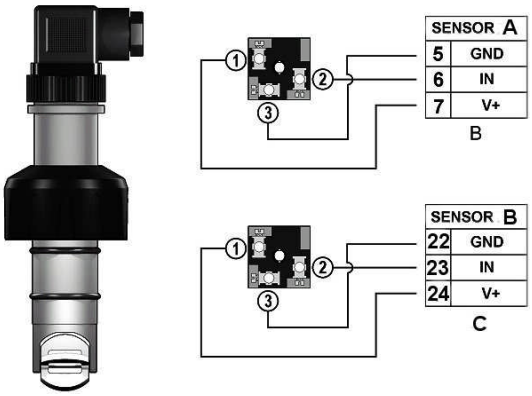


Sensor Wiring Diagram

F3.00.H IP68 or F3.01.H (compact version) or ULFXX.H flow sensor connection



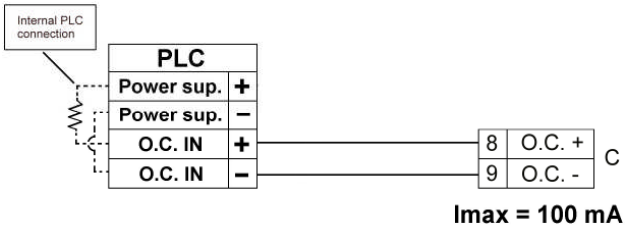
F3.00.H IP65 flow sensor connection



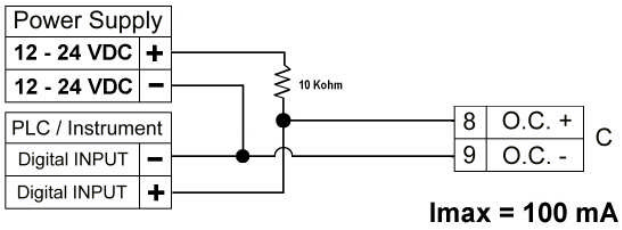
- Maximum cable length is 300 m (990 ft).
- Do not route sensor cable together with AC power wiring: electromagnetic noise may interfere with sensor signal.

Open Collector Wiring Diagram

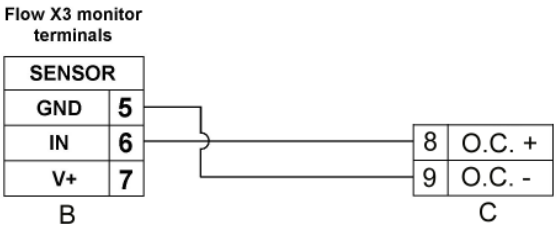
Connection to a PLC Open Collector input



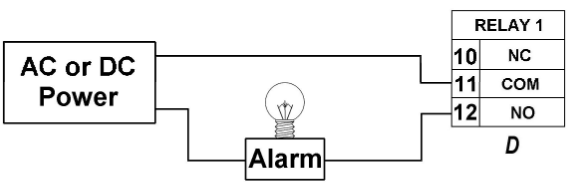
Connection to a PLC / Instrument digital input with separate Power Supply



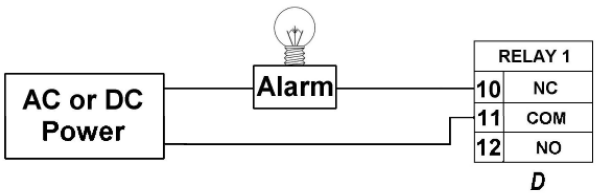
Connection to FlowX3 Instruments (F9.00 excluded)



Relay Wiring Diagram



The alarm is OFF during normal operation and goes ON according to Relay settings.



The alarm is ON during normal operation and goes OFF according to Relay settings

5. Operational Overview

The FlowX3 F9.03 flow monitor and transmitter, like all members of X3 Line, features a digital display and a five-button keypad for system set-up, calibration and operation. This section contains a description of the keypad functions and the general operation flowchart of the instrument.

5.1. Keypad Functions

The five push buttons of the keypad are used to navigate display levels and modify settings.

CAUTION

The function of each button may change according to display level; please refer to following table:

					
Level	**Function**				
View	Scroll through items	Scroll through items	Select items marked with >	---------	Go to Menu Directory Level
Menu Directory	Scroll through items	Scroll through items	Enter menu for editing	Return to View	---------
Menu	Scroll through items	Scroll through items	Enter menu item for editing	Return to Menu Directory	---------
Edit	Modify an item or a flashing digit	Modify an item or a flashing digit	Scroll right through flashing digits	Return to Menu without saving	Save new settings

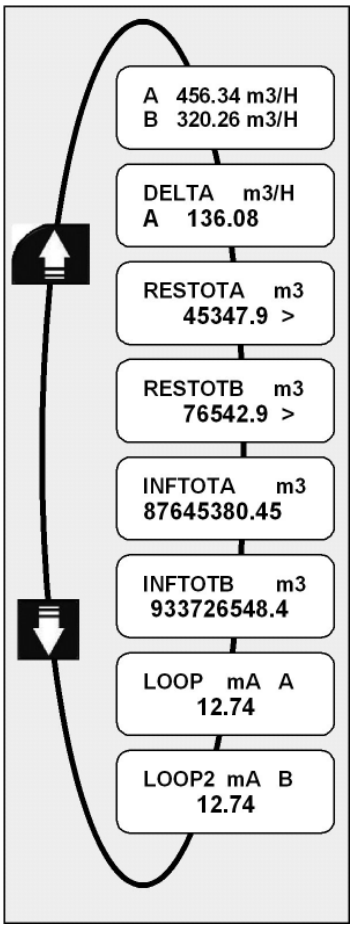
5.2. Operation Levels

The F9.03 flow monitor and transmitter features four different levels as shown in the following flowchart illustrating the basic navigation concepts.

- **View Level:** this is the default level. After instrument set-up, all measured values and status of outputs will be available. Refer to section **6. View Level** for details.
- **Menu Directory Level:** there are two different Menu Directories for different set-up and calibration. Refer to section **7. Menu Directory Level** for details.
  Access to this level can be free or password protected. Entering the correct password allows direct access to next levels and to all editable items in all menus, until a return to View Level.
- **Menu Level:** the current setting for each item in a Menu can be viewed and selected for editing at this level.
- **Edit Level:** all instrument parameters can be set, modified and saved at this level. Refer to section **8. Menu and Edit Levels** for details.

6. View Level

- During normal operation, the flow monitor and transmitter is in View Level displaying all measured values and the status of the analog outputs, O.C. and Relay outputs.
- If the flow monitor is in a different level and no activity occurs for more than 3 minutes, it will return to View Level.
- To select the item you want displayed, press UP or DOWN arrows.
- **Changing display indication does not affect or interrupt instrument operation and calculation.**



Description

Flow rate sensor A line 1, Flow rate sensor B line 2

Delta flow (A – B) if A>B or (B – A) if B > A

Resettable totalizer value for sensor A and B. Press the RIGHT arrow key to reset. If locked, you will need to enter the password first. Lock or unlock the total reset in Option Menu (refer to section **8.4.8 Restot PWD** for details)

Permanent totalizer value for sensor A

Permanent totalizer value for sensor B

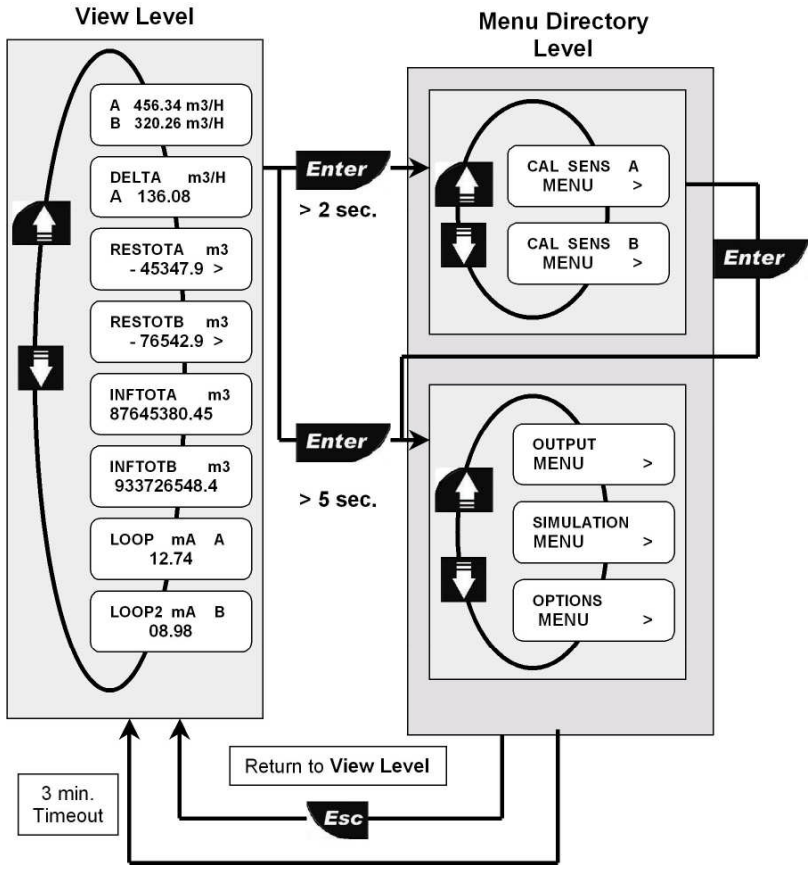
4-20 mA Loop Output

4-20 mA Loop2 Output

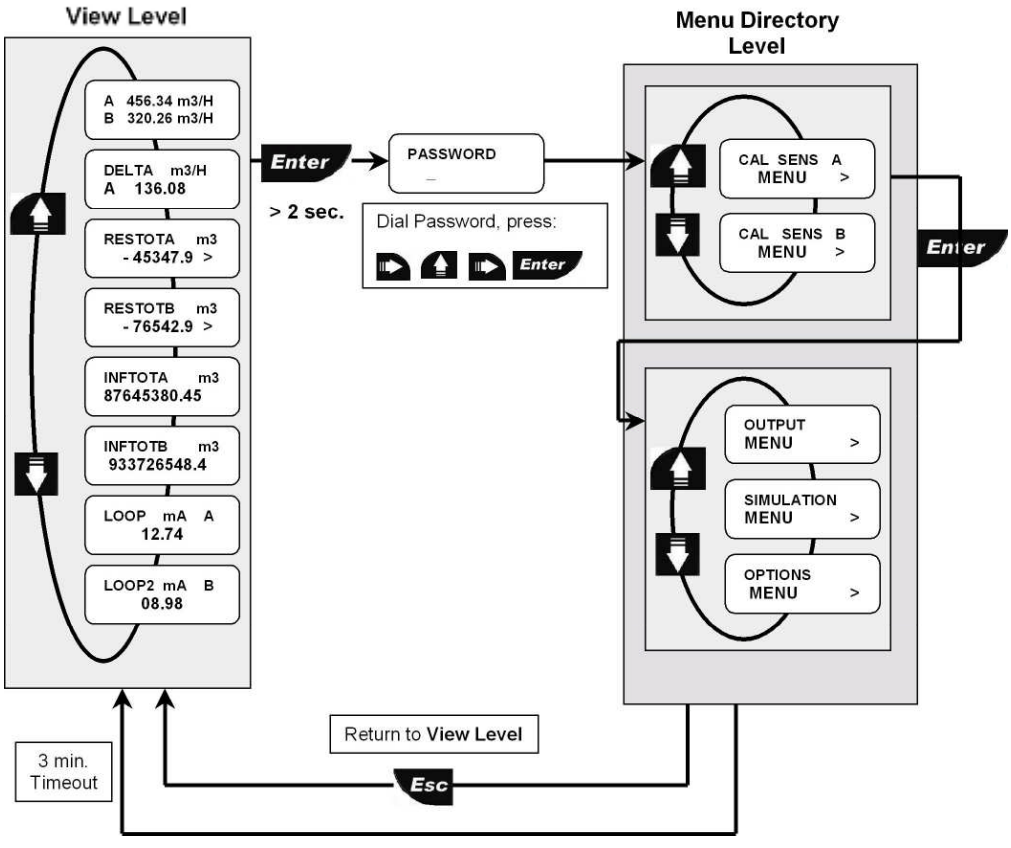
7. Menu Directory Level

Access to this level can be free or password protected. Entering the correct password allows direct access to next levels and to all editable items in all menus, until a return to View Level (refer to **section 8.4.7. Menu PWD** to select password protected access).
Five different menus are available to fully set-up the F9.03 flow monitor and transmitter. These menus are separated into two different Menu Directories.
In terms of getting started and making measurements, Calibration Menu for sensor A and Calibration Menu for sensor B are the most important menus in F9.03 and they are included in the first Menu Directory.
Output Menu, Simulation Menu and Option Menu are included together in the second Menu Directory.

7.1. Free access (no password required)



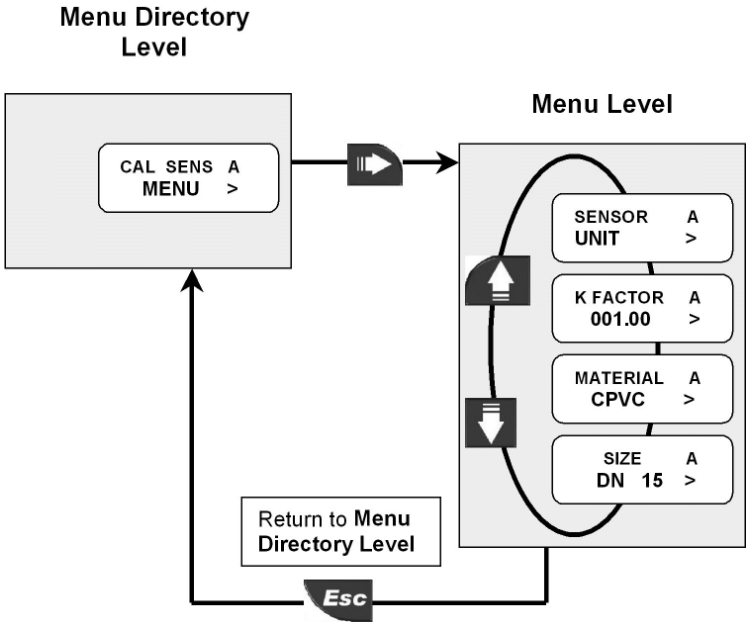
7.2. Password protected access



8. Menu and Edit Levels

8.1. Calibration Menu sensor A

The F9.03 basic setting are made in these menu. **All sensor A settings repeat for sensor B.**



To set flow rate and totalizer Engineering Units to sensor A

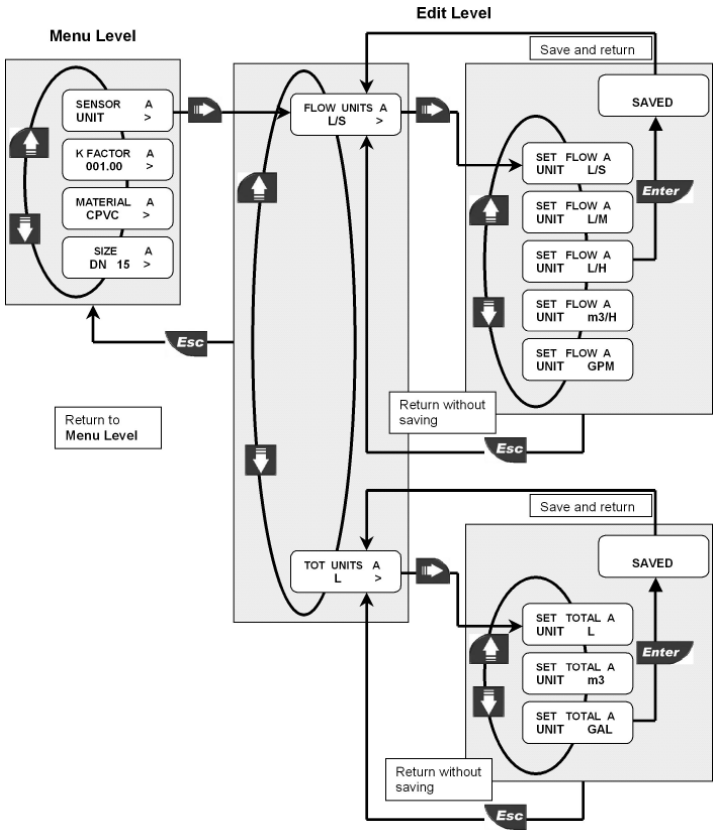
To set K-Factor value to sensor A

To select sensor material (available with ASEC set ON)

To select pipe size (available with ASEC set ON)

8.1.1. Unit sensor A

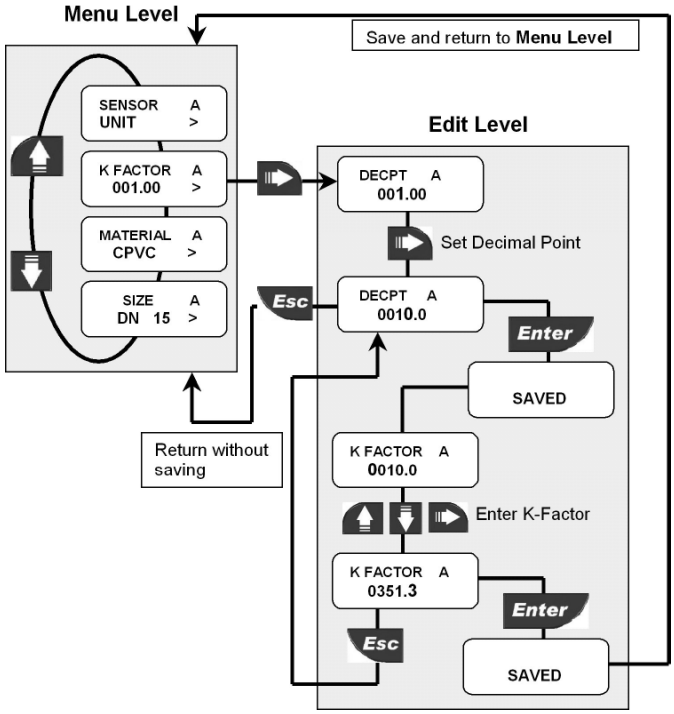
Set the engineering units for the instant flow rate and the total flow rate.
All the options available are displayed on the LCD.



The instrument will automatically convert the values of the two totalizers in the new engineering units.

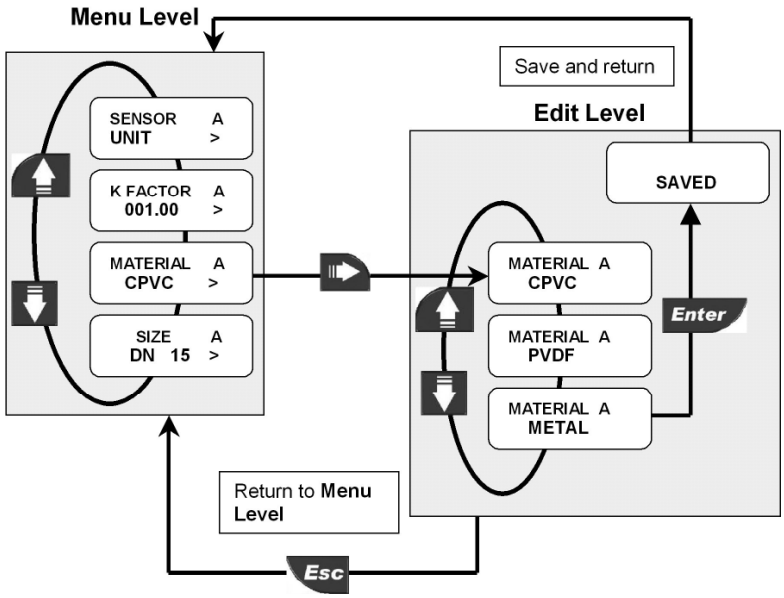
8.1.2. K-Factor sensor A

Set the K-Factor to tell the monitor and transmitter how to convert the input frequency from the flow sensor into a flow rate. The K-factor is unique to the sensor model and to the pipe size and material.
Refer to Flow Sensor Instruction Manual for the correct value.
Limits: 000.01 to 99999 (the K-Factor cannot be set to 0)



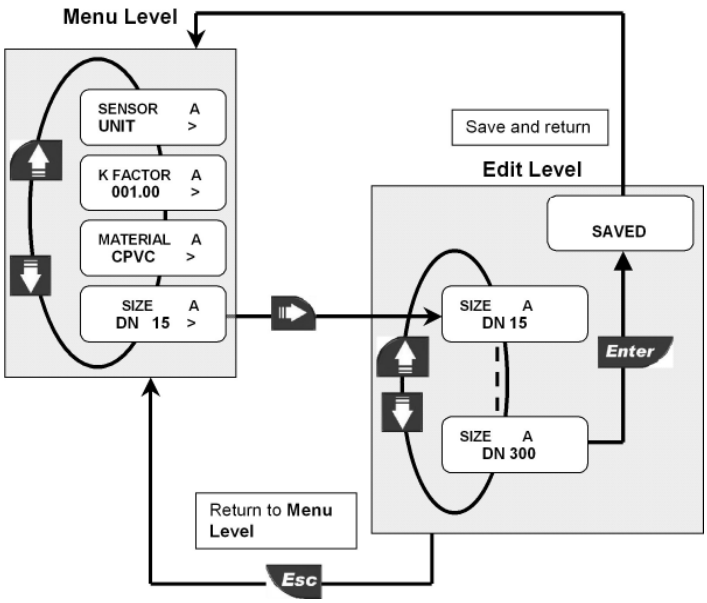
8.1.3. Material

To select sensor's material allows ASEC to improve instrument's performance.
You can choose between: CPVC, PVDF or METAL (for Brass and Stainless Steel).
"CAUTION": To set OFF ASEC make Material Option unavailable.



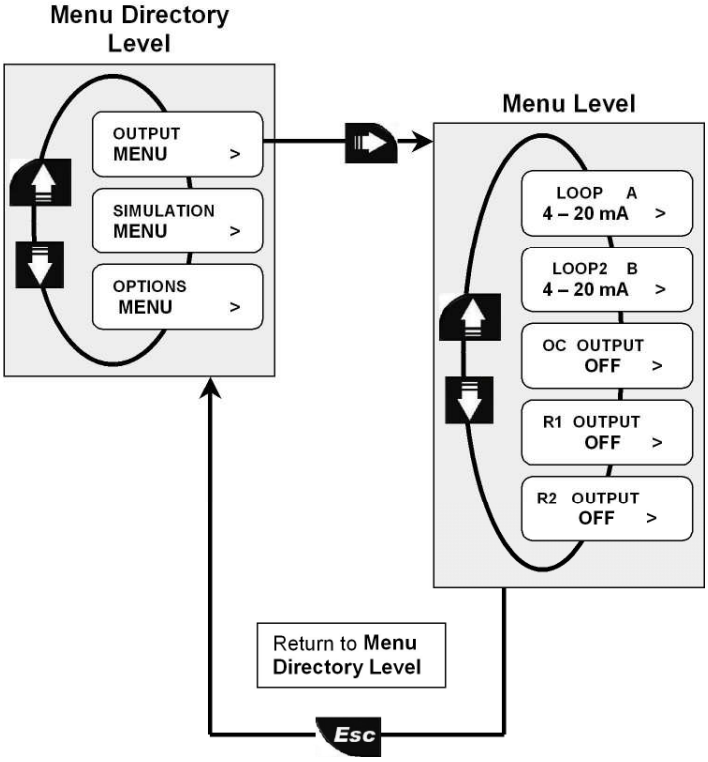
8.1.4 Size

To select pipe's size allows ASEC to improve instrument's performance.
You can choose between standard sizes from DN15 to DN300. For pipes bigger than DN300 choose DN300.
"CAUTION": To set OFF ASEC make size Option unavailable.



8.2. Output Menu

The F9.03 analog and digital outputs are set-up in this menu:



To set 4 – 20mA Loop Output value

To set 4 – 20mA Loop2 Output value

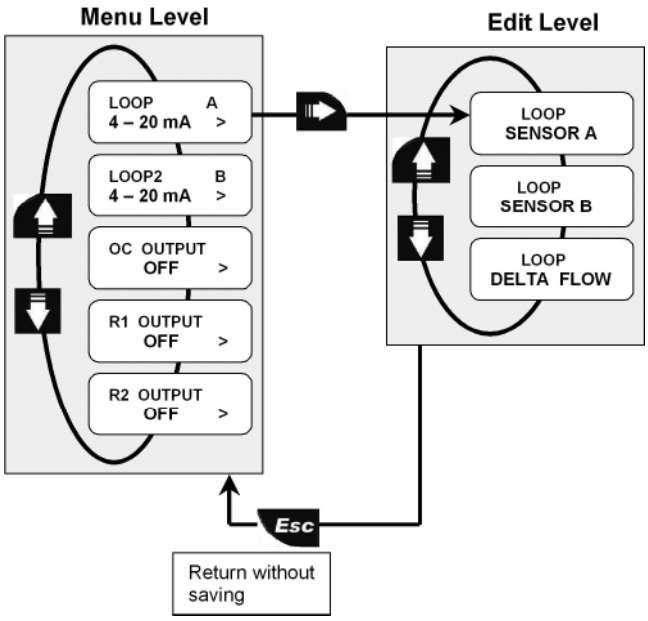
To set OPT Open Collector Output mode

To set R1 Relay Output mode

To set R2 Relay Output mode

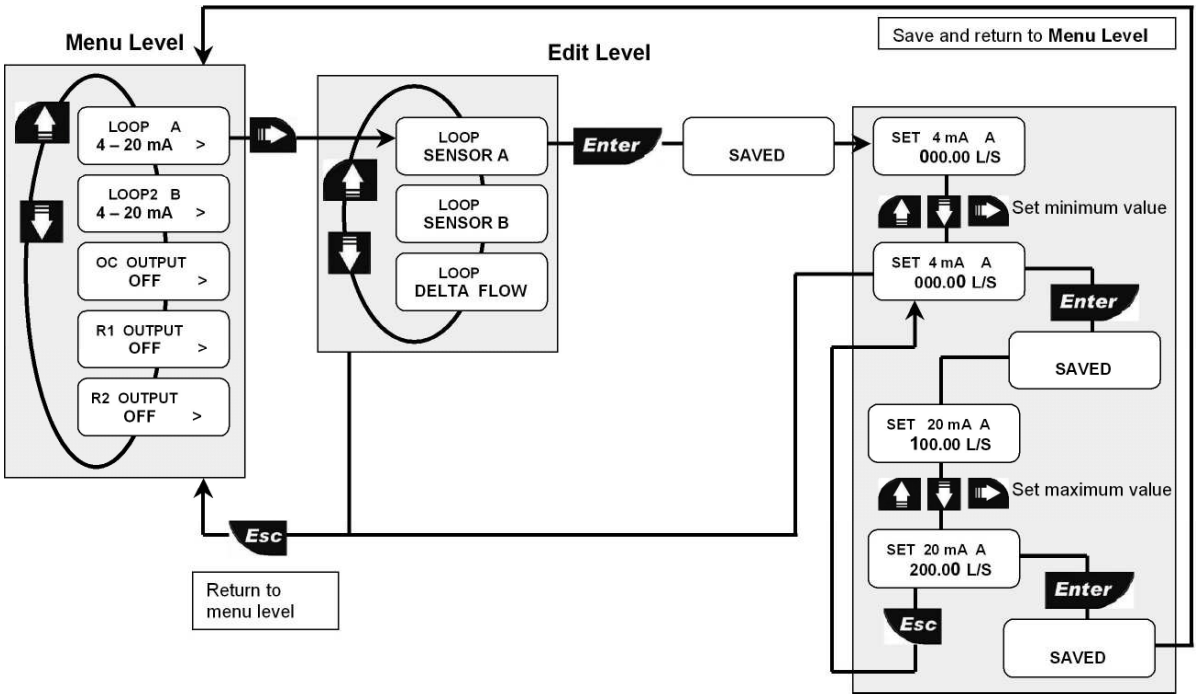
8.2.1. 4 - 20mA Loop Output

The 4-20 mA output current can be programmed to work with sensor A, sensor B or Delta Flow. **All 4-20 mA Loop Output settings repeat for the 4-20 mA Loop2 Output.**



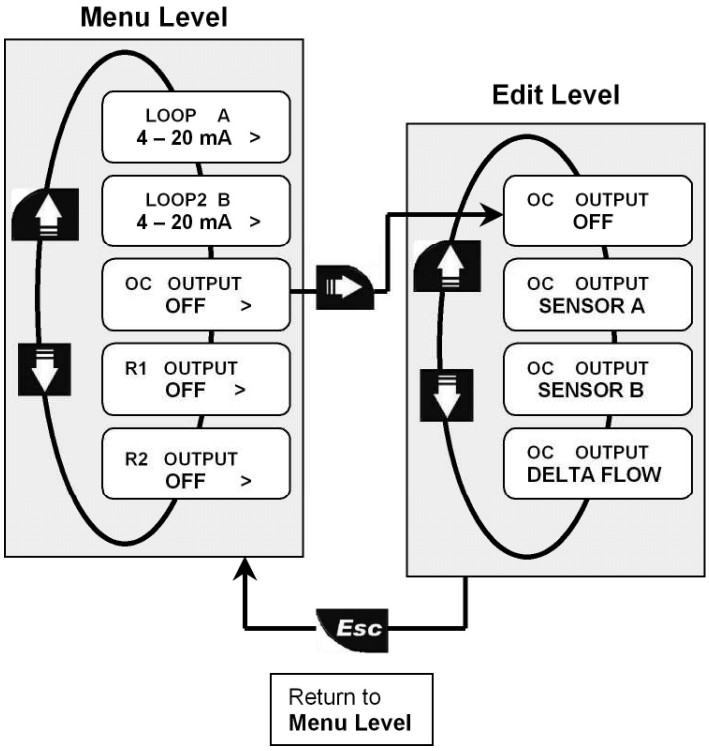
8.2.1.1. 4 - 20mA Loop Output sensor A

The measuring range of the flow, corresponding to the 4-20 mA output current programmed to work with sensor A is entered here by selecting the minimum and maximum values for the current loop. The F9.03 will allow any value from 0.0000 to 99999 and the beginning of the measuring range can be larger than the end of it (inverted output signal). **All Loop Output sensor A setting repeat for the Loop Output sensor B or Loop Output Delta Flow.**



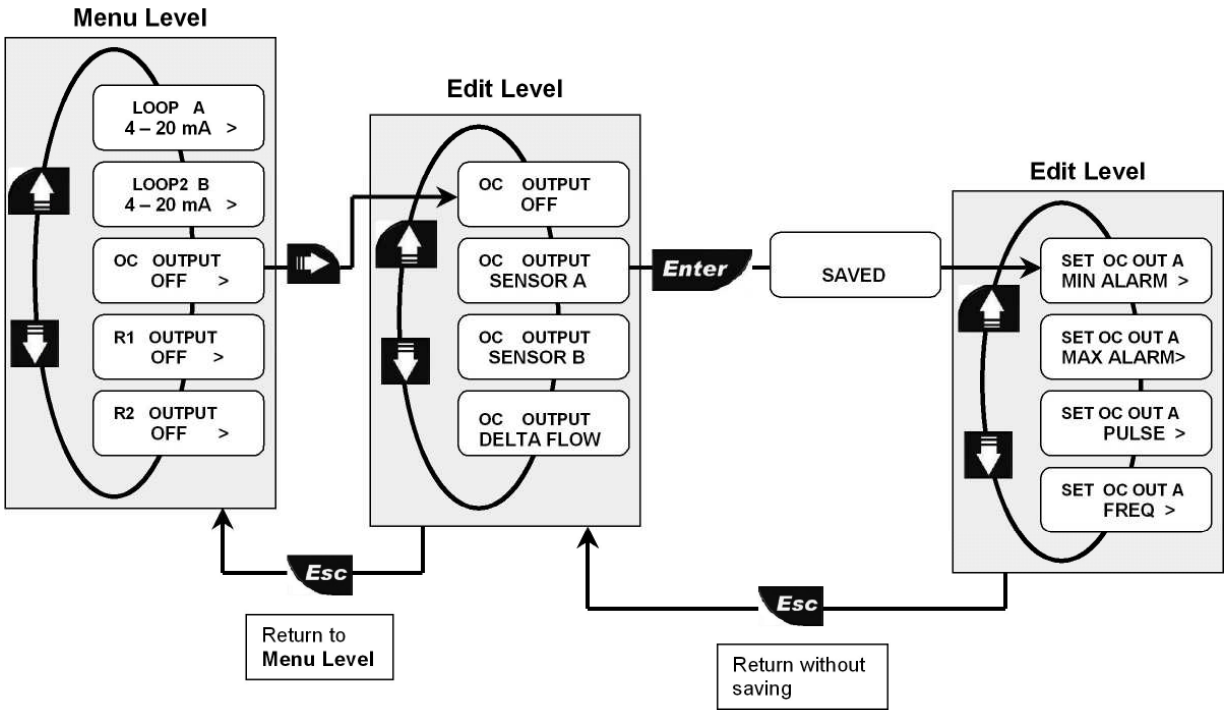
8.2.2. O.C. Output (OPT)

The Open Collector (OPT) Output can be disabled or programmed to work with sensor A, sensor B or Delta Flow.



The Open Collector can be programmed to work with sensor A, sensor B, Delta Flow or can be disable if not used (OFF).

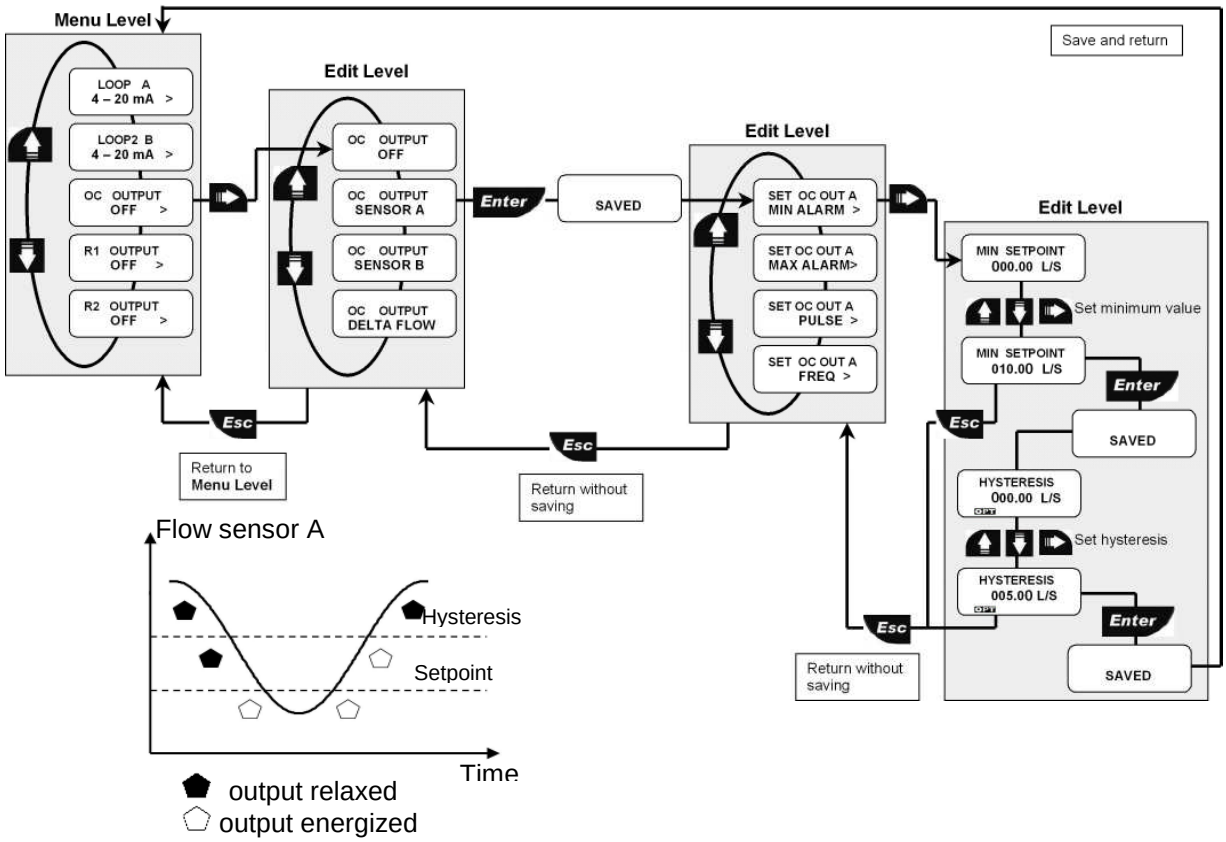
8.2.2.1. O.C. Output (OPT) sensor A



The mode of operation for the Open Collector (OPT) output programmed to work with sensor A can be selected between different options : MIN alarm, MAX alarm, volumetric Pulse or Frequency.

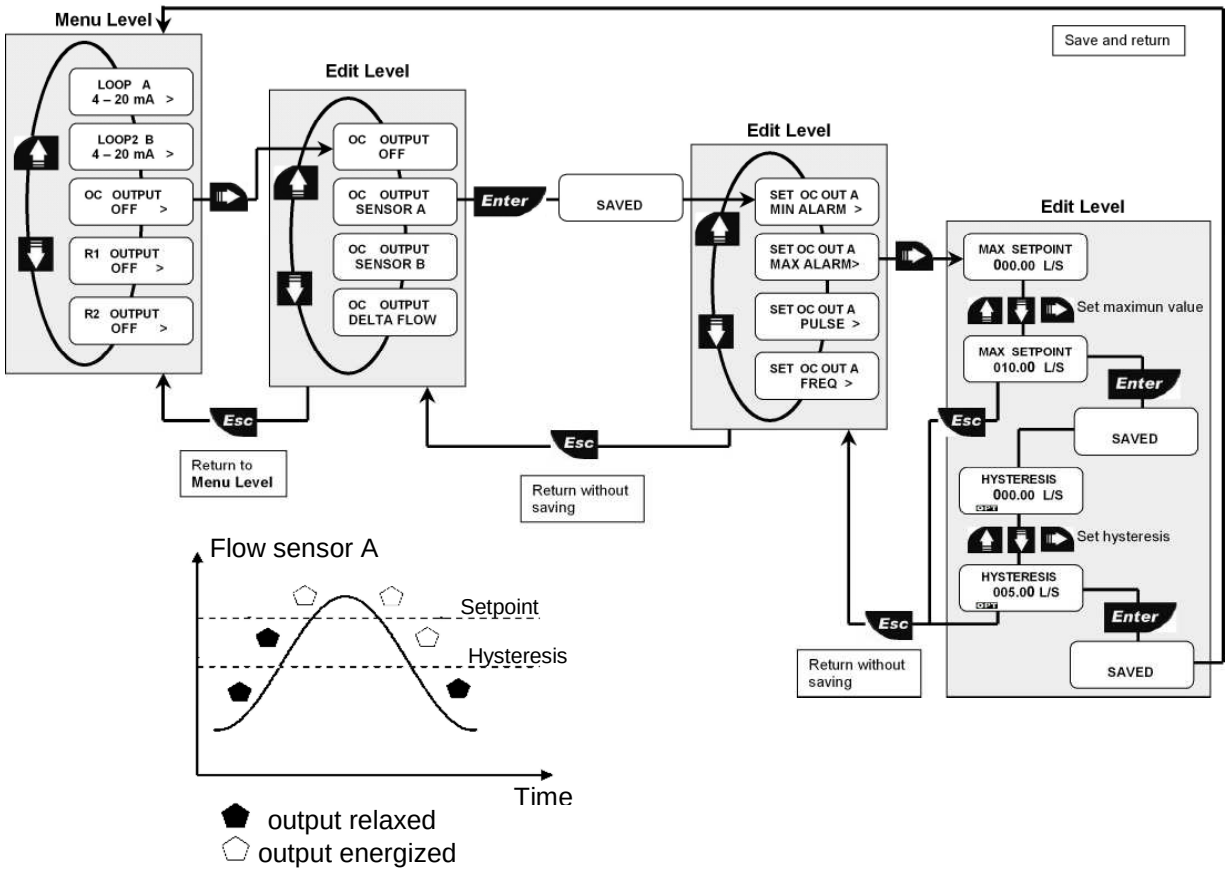
8.2.2.1.1. O.C. Output (OPT) sensor A: MIN mode

The output triggers when the flow rate of sensor A drops below the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.

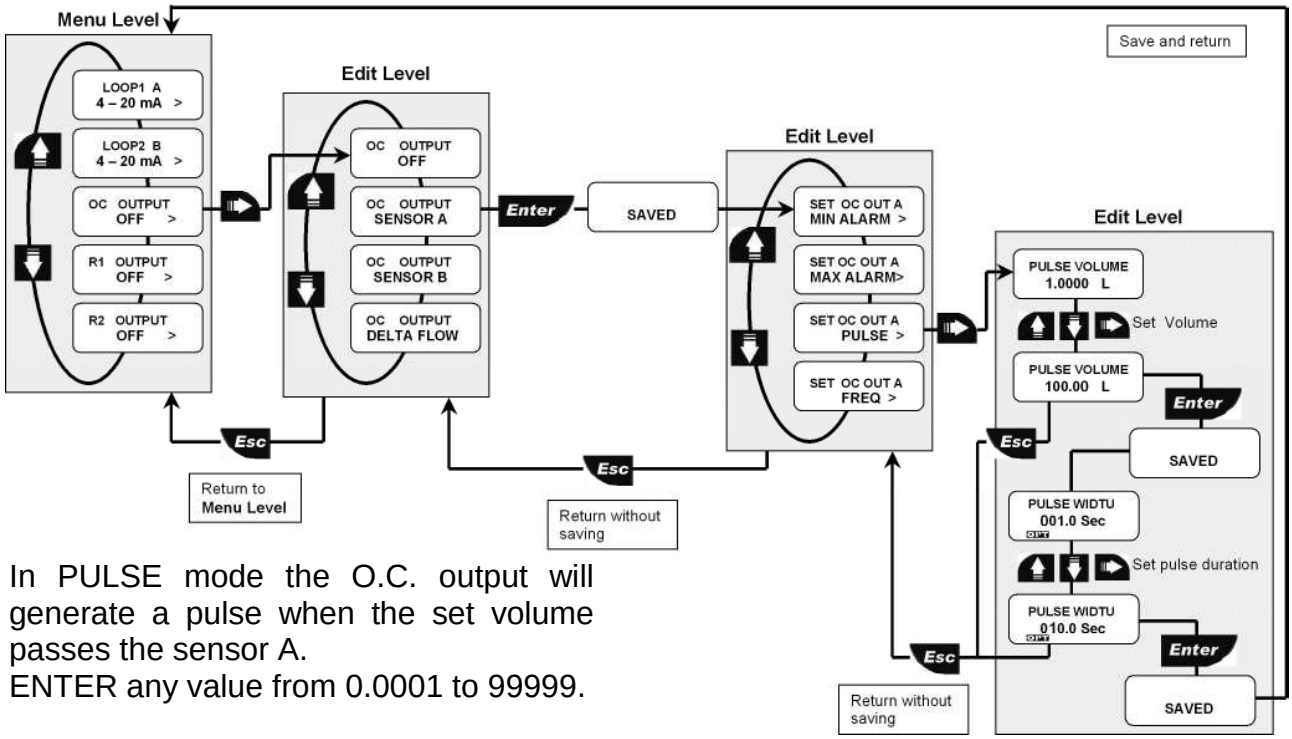


8.2.2.1.2. O.C. Output (OPT) sensor A: MAX mode

The output triggers when the flow rate of sensor A is greater than the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



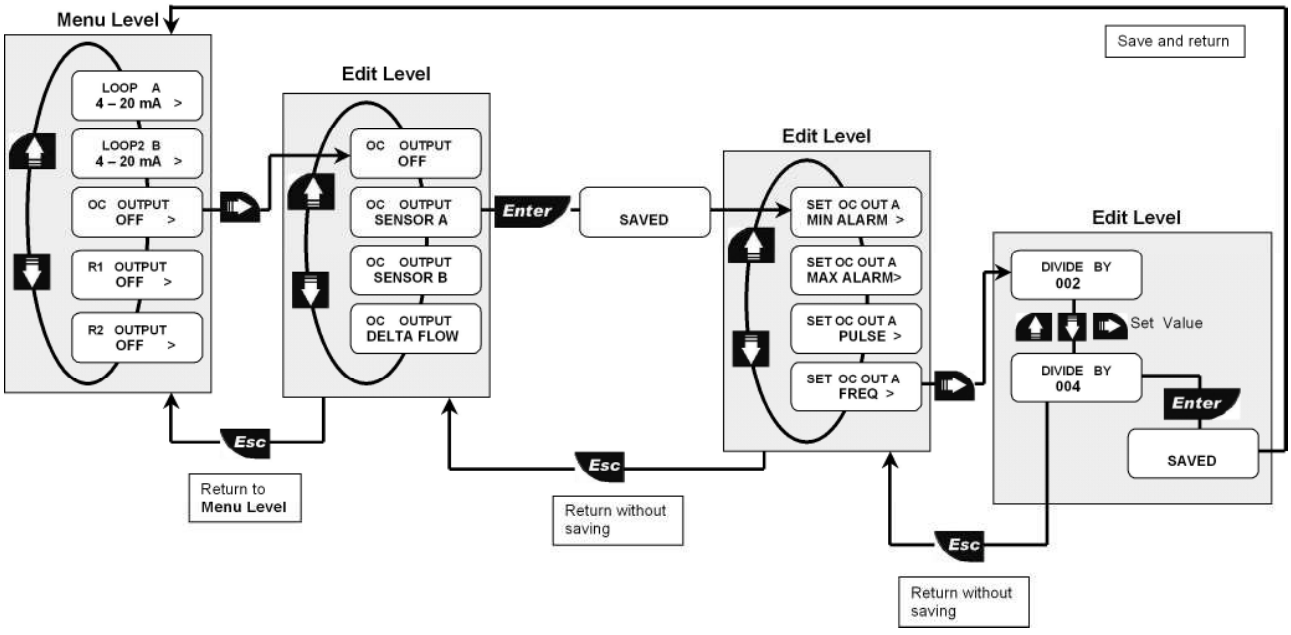
8.2.2.1.3. O.C. Output (OPT) sensor A : PULSE mode



In PULSE mode the O.C. output will generate a pulse when the set volume passes the sensor A.
ENTER any value from 0.0001 to 99999.

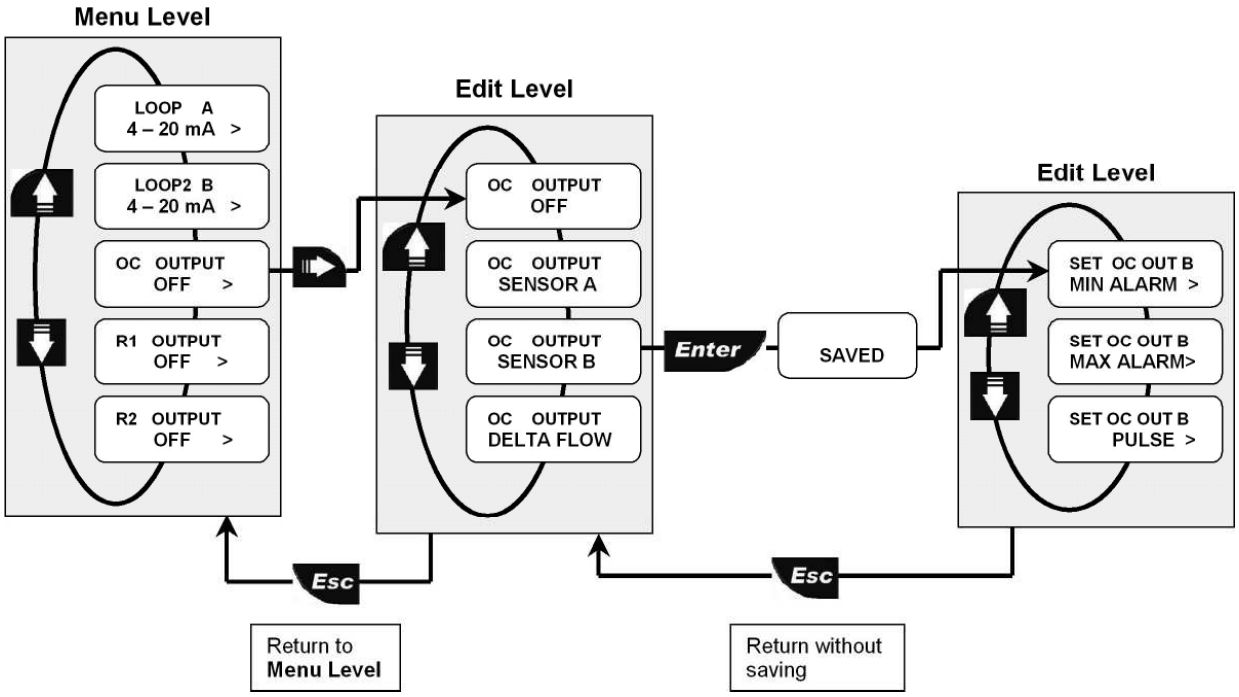
The duration of the pulse can be chosen from 000.1 to 999.9 seconds.

8.2.2.1.4. O.C. Output (OPT) sensor A : FREQUENCY mode



In FREQUENCY mode the O.C. output will simulate the sensor A frequency divided by the set value. Enter any value between 002 and 255.

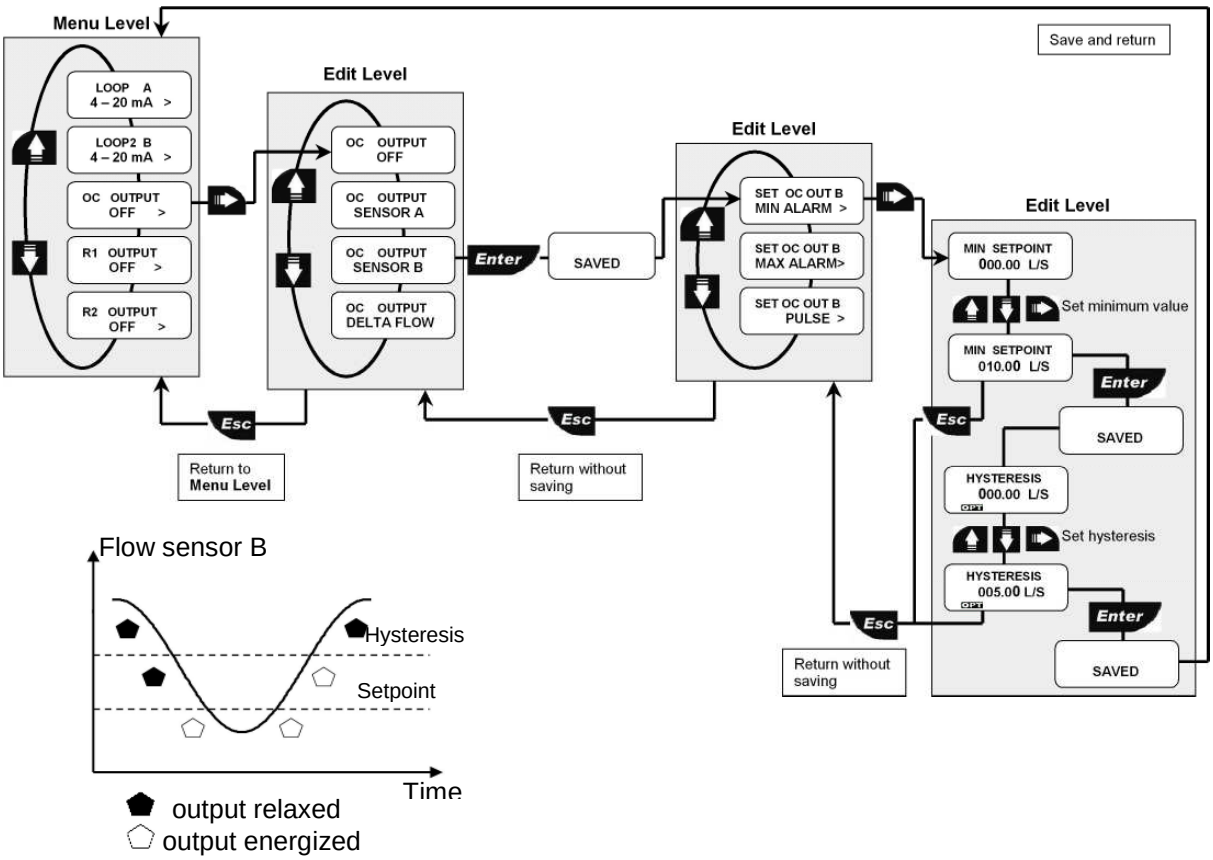
8.2.2.2. O.C. Output (OPT) sensor B



The mode of operation for the Open Collector (OPT) output programmed to work with sensor B can be selected between different options : MIN alarm, MAX alarm or volumetric Pulse.

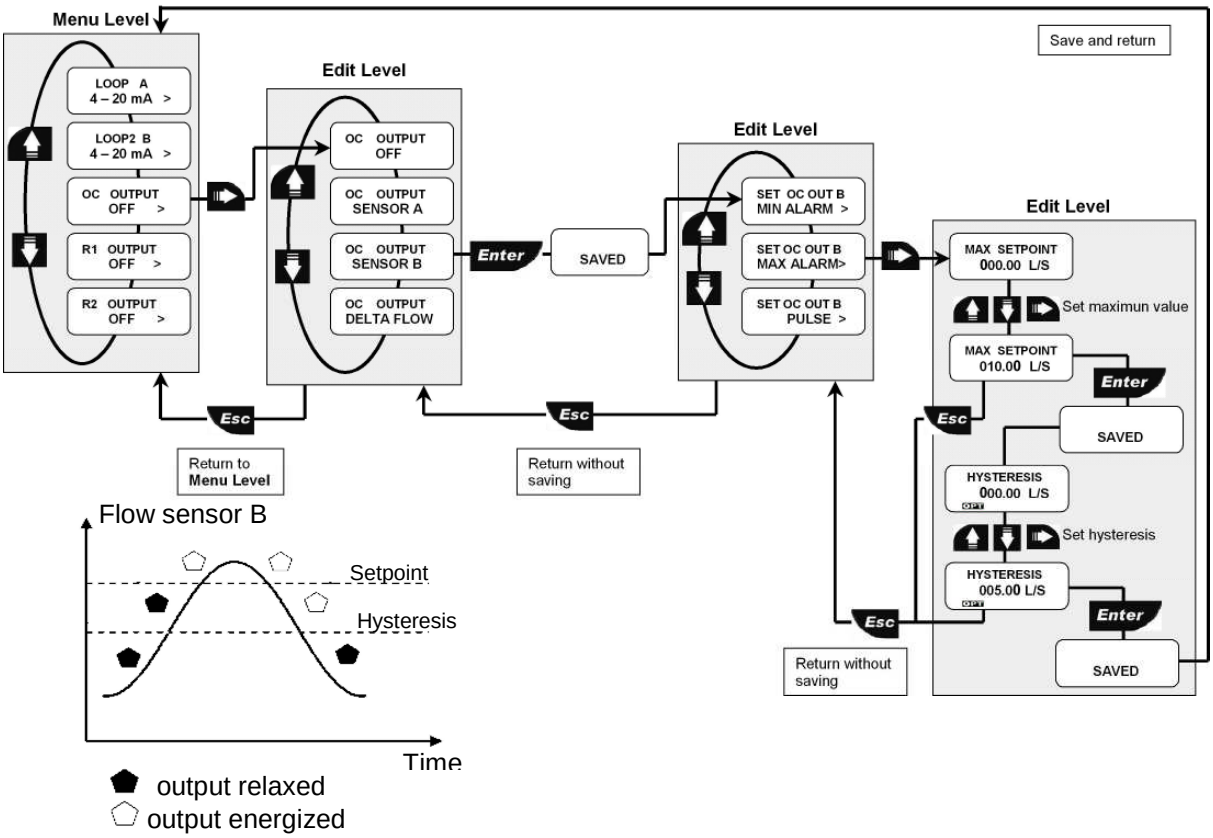
8.2.2.2.1. O.C. Output (OPT) sensor B: MIN mode

The output triggers when the flow rate of sensor B drops below the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.

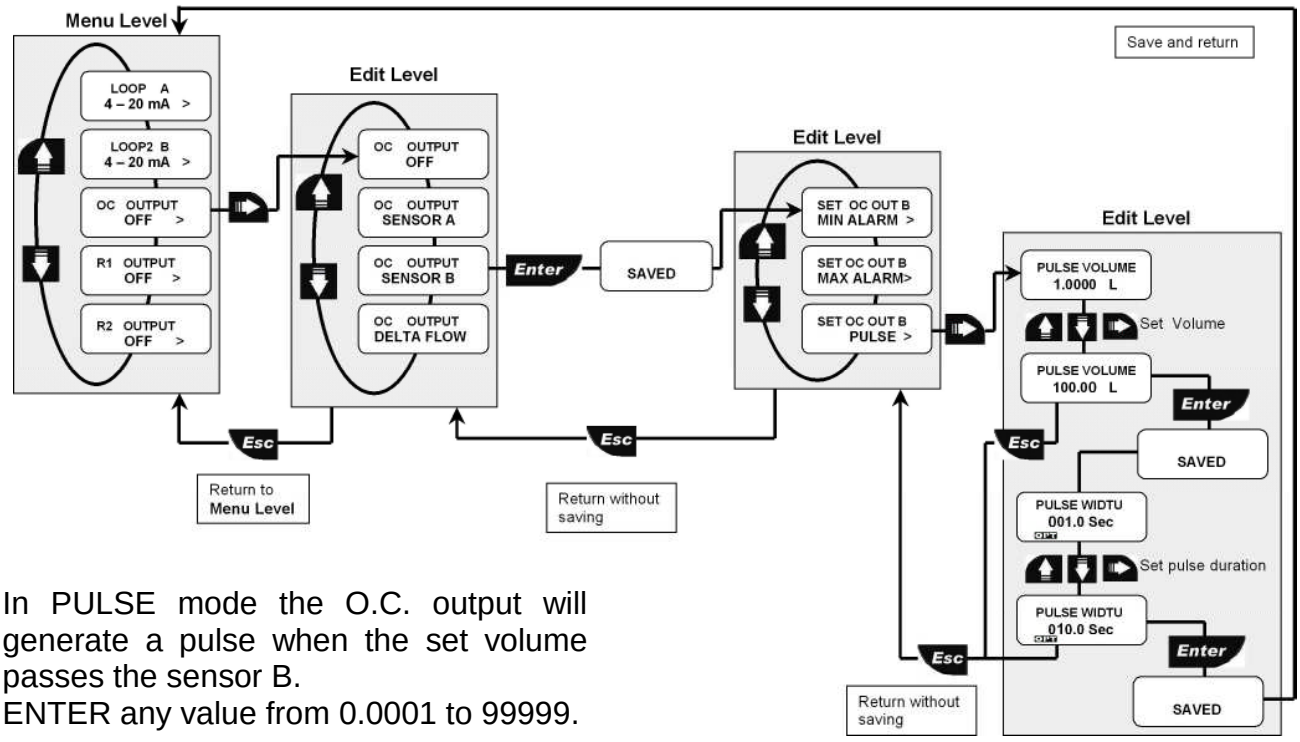


8.2.2.2.2. Output (OPT) sensor B: MAX mode

The output triggers when the flow rate of sensor B is greater than the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



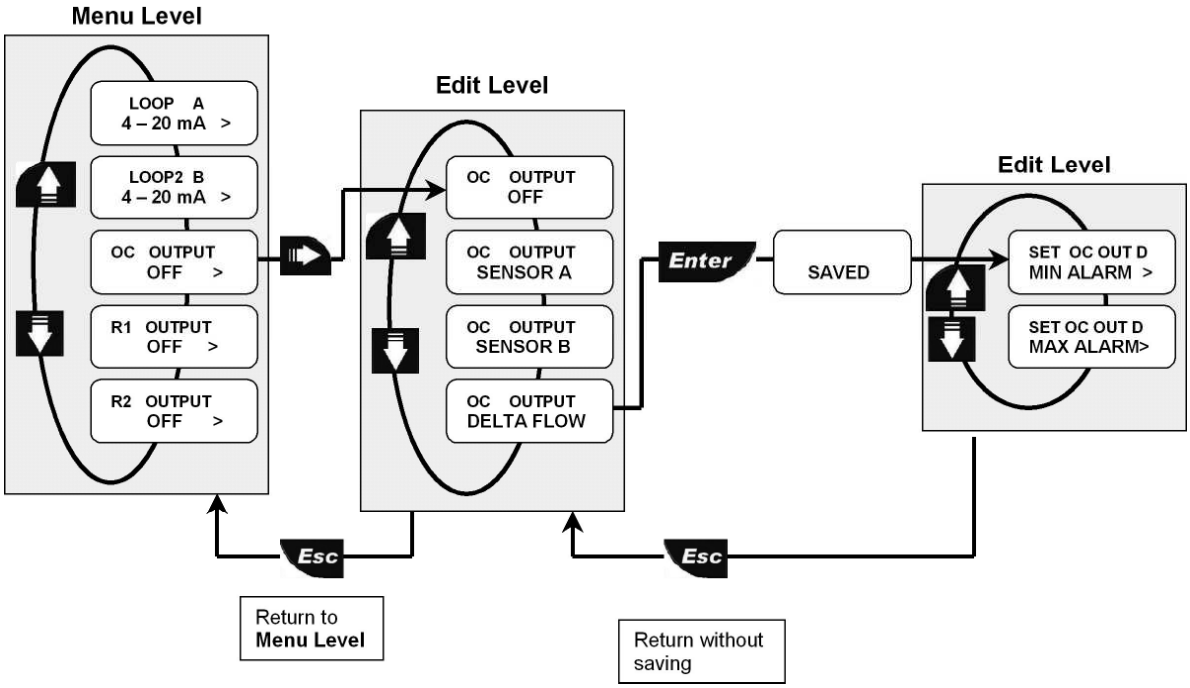
8.2.2.2.3. O.C. Output (OPT) sensor B : PULSE mode



In PULSE mode the O.C. output will generate a pulse when the set volume passes the sensor B.
ENTER any value from 0.0001 to 99999.

The duration of the pulse can be chosen from 000.1 to 999.9 seconds.

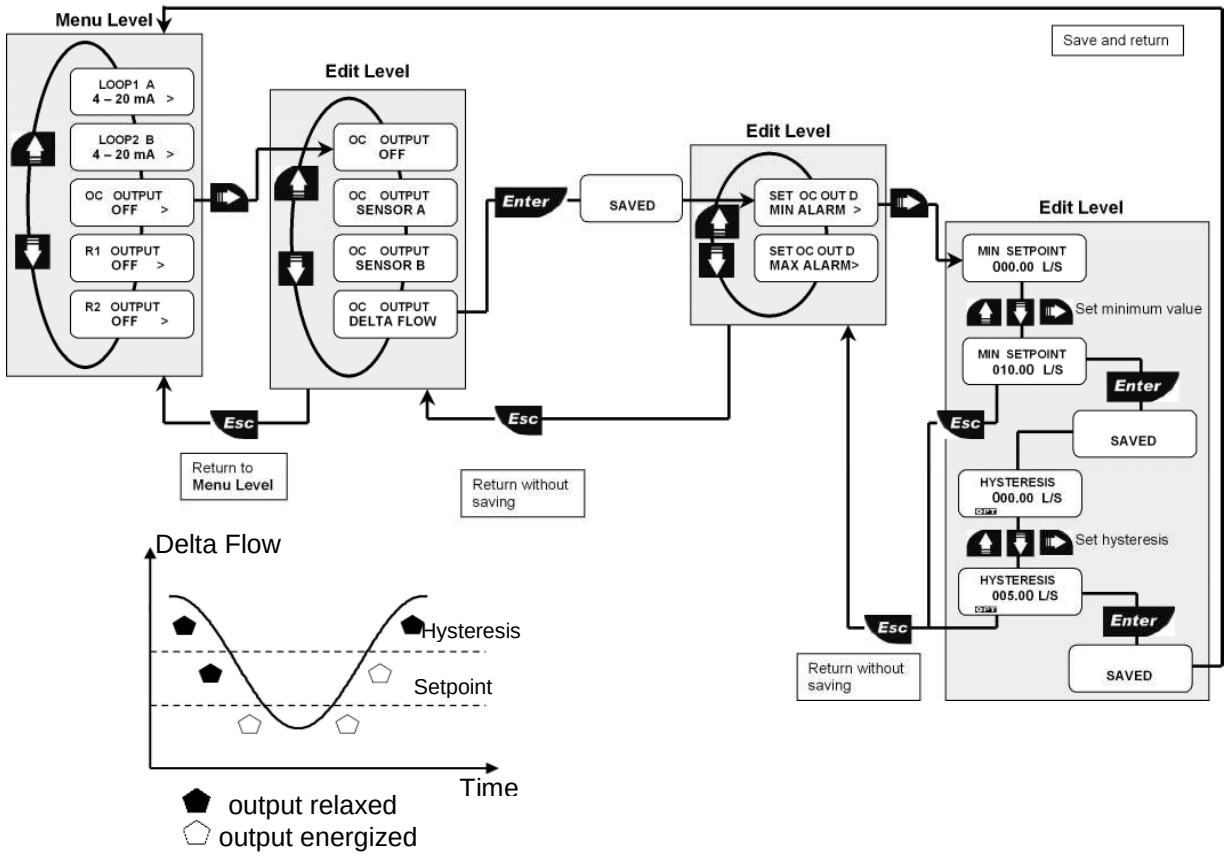
8.2.2.3. O.C. Output (OPT) Delta Flow



The mode of operation for the Open Collector (OPT) output programmed to work with Delta Flow can be selected between different options : MIN alarm or MAX alarm.

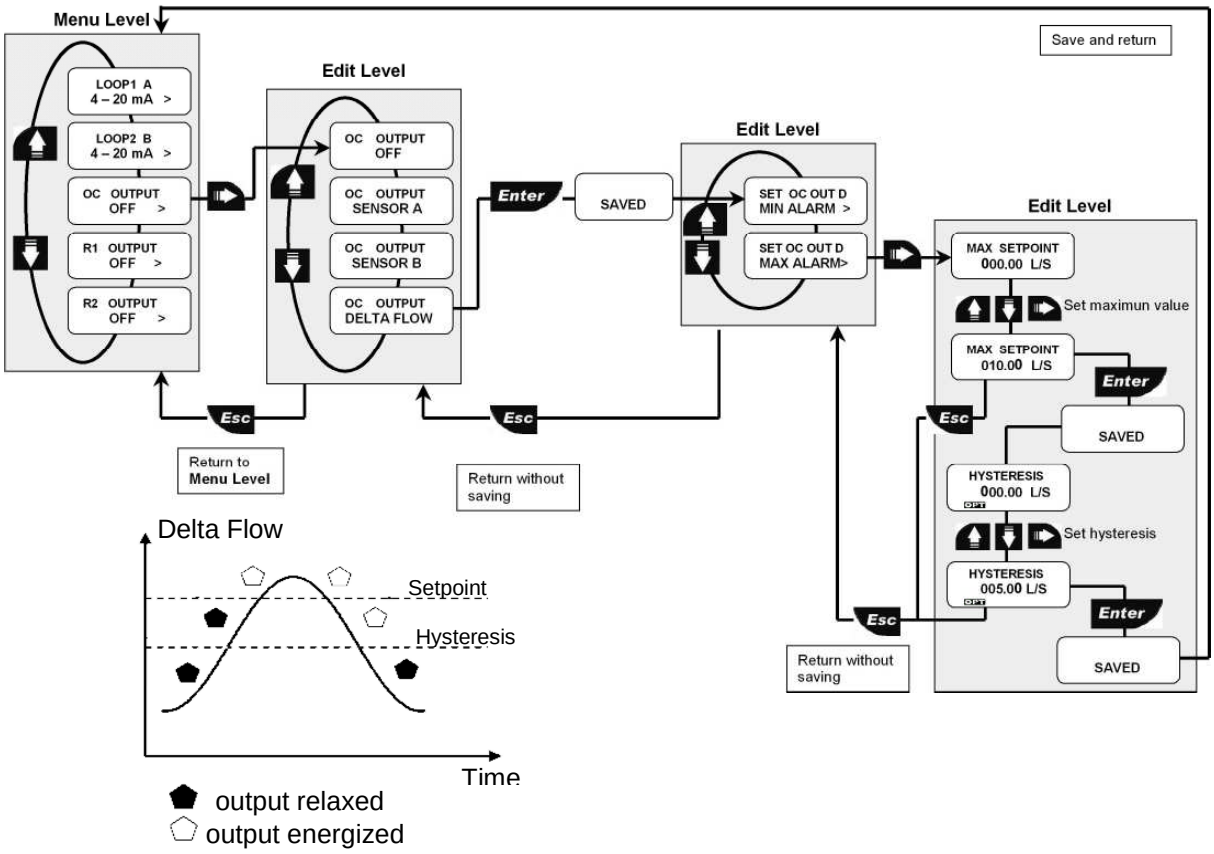
8.2.2.3.1. O.C. Output (OPT) Delta Flow : MIN mode

The output triggers when the delta flow drops below the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.



8.2.2.3.2. O.C. Output (OPT) Delta Flow : MAX mode

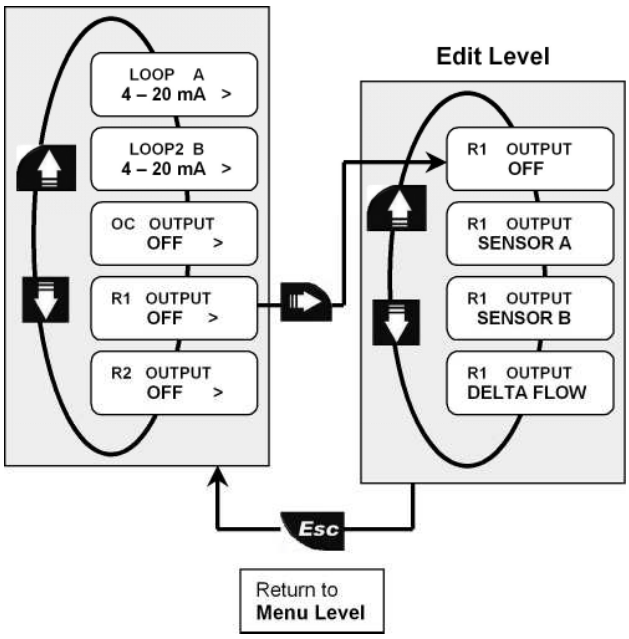
The output triggers when the delta flow is greater than the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



8.2.3. R1 Output (OUT1)

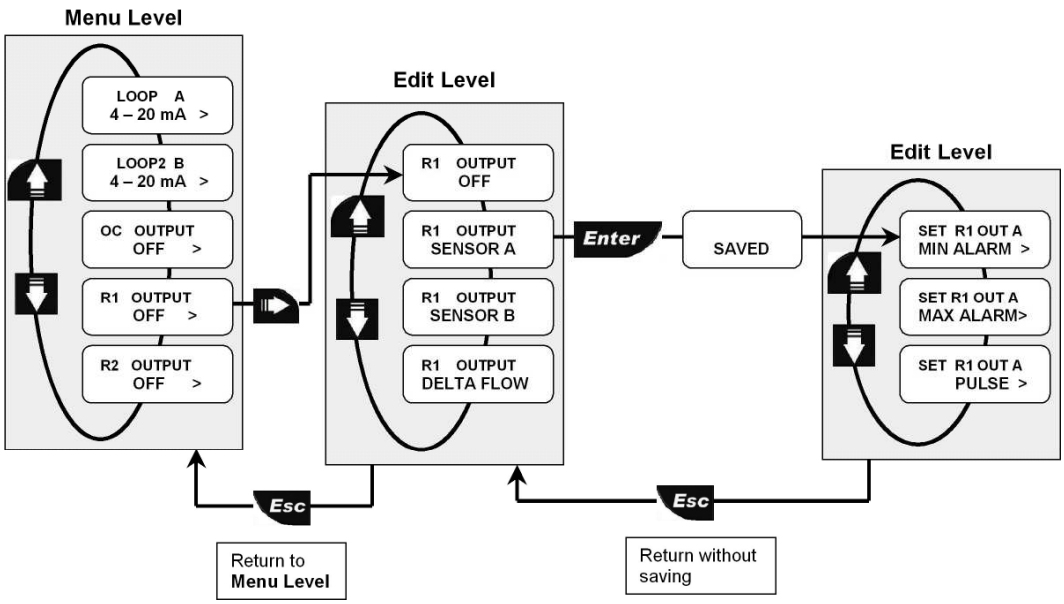
All R1 Output (OUT1) settings repeat for R2 Output (OUT2)

The R1 (OUT1) Output can be disable or programmed to work with sensor A, sensor B or Delta Flow.



The R1 can be programmed to work with sensor A, sensor B, Delta Flow or can be disable if not used (OFF).

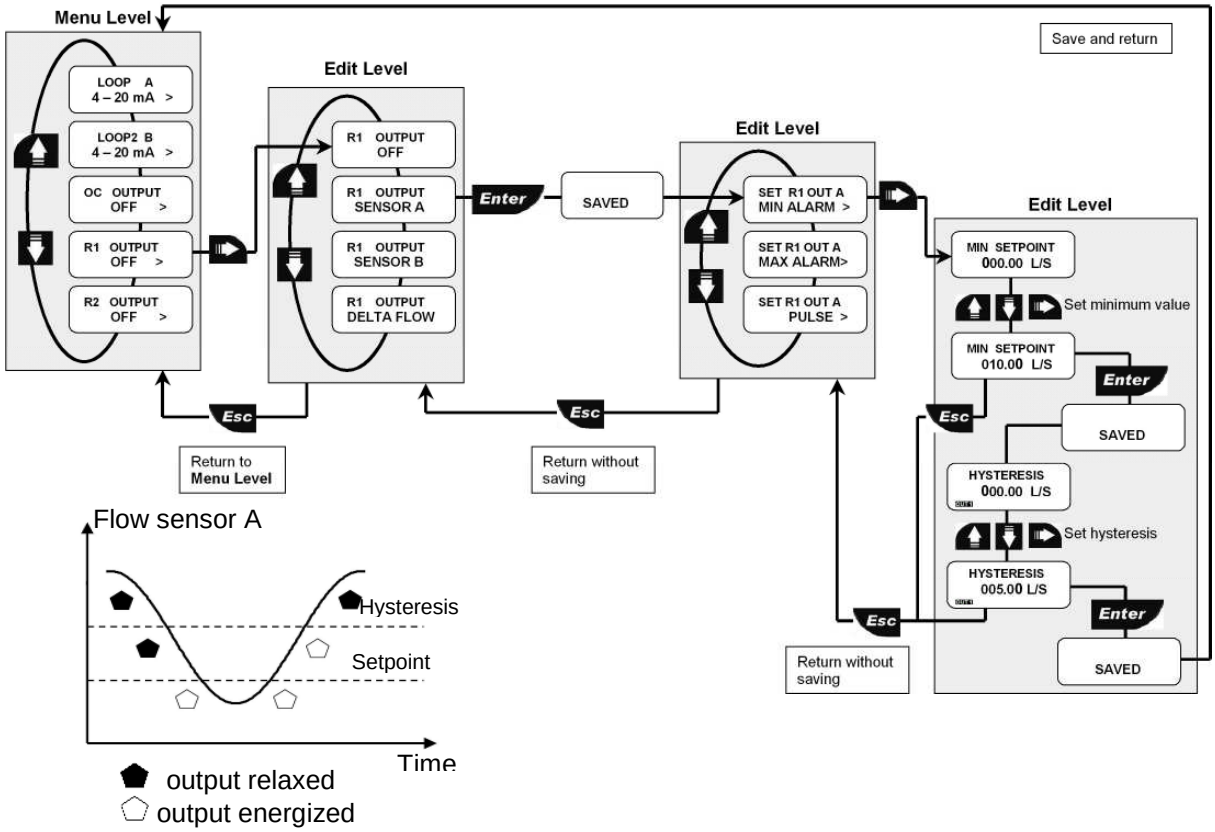
8.2.3.1. R1 Output (OUT1) sensor A



The mode of operation for the R1(OUT1) output programmed to work with sensor A can be selected between different options : MIN alarm, MAX alarm or volumetric Pulse.

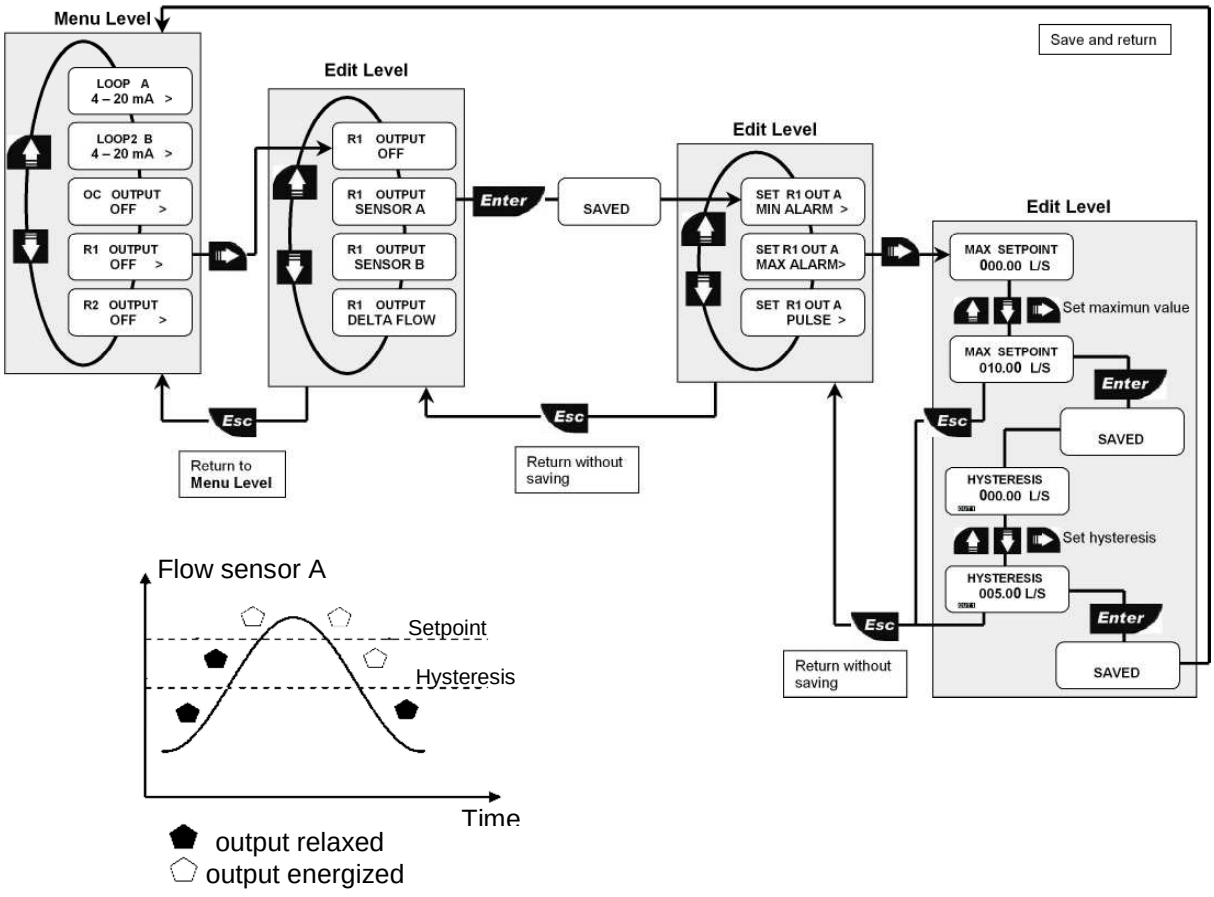
8.2.3.1.1. R1 Output (OUT1) sensor A : MIN mode

The output triggers when the flow rate of sensor B drops below the setpoint: LED placed below OUT1 icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.

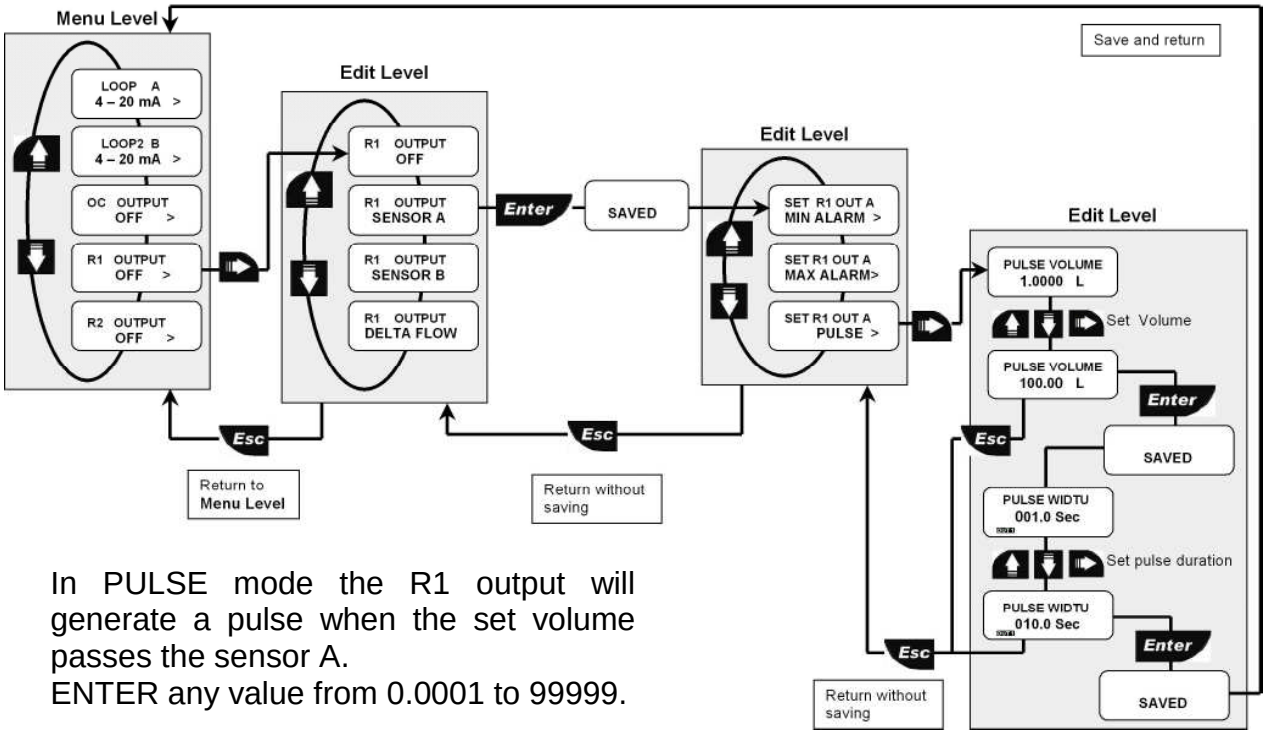


8.2.3.1.2. R1 Output (OUT1) sensor A : MAX mode

The output triggers when the flow rate of sensor A is greater than the setpoint: LED placed below OUT1 icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



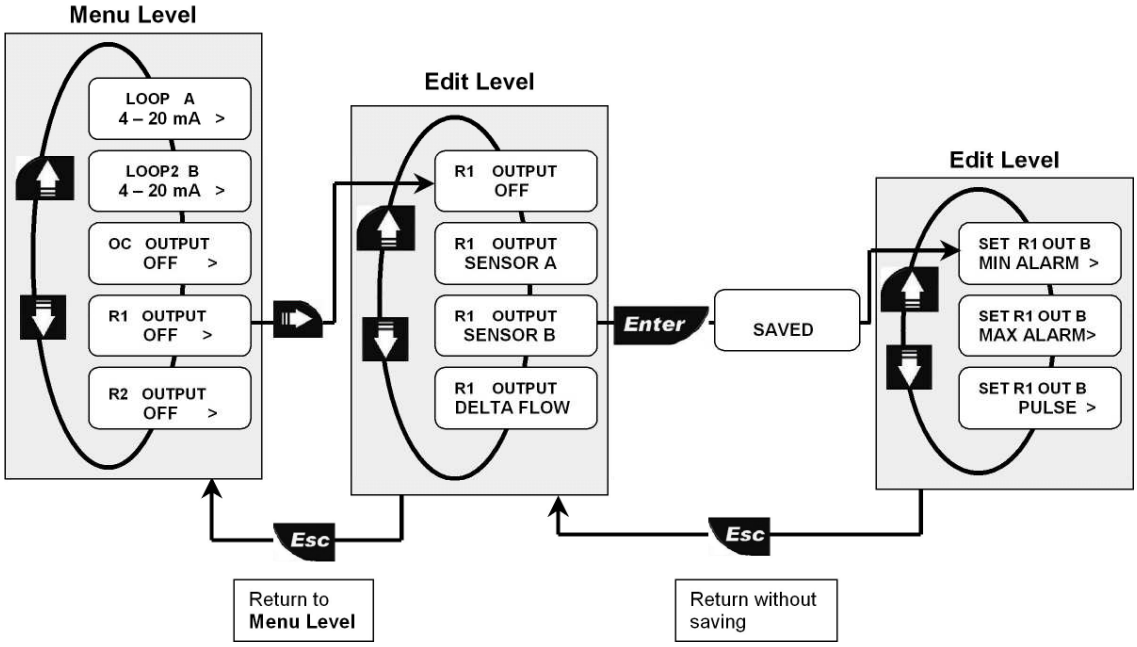
8.2.3.1.3. R1 Output (OUT1) sensor A : PULSE mode



In PULSE mode the R1 output will generate a pulse when the set volume passes the sensor A.
ENTER any value from 0.0001 to 99999.

The duration of the pulse can be chosen from 000.1 to 999.9 seconds.

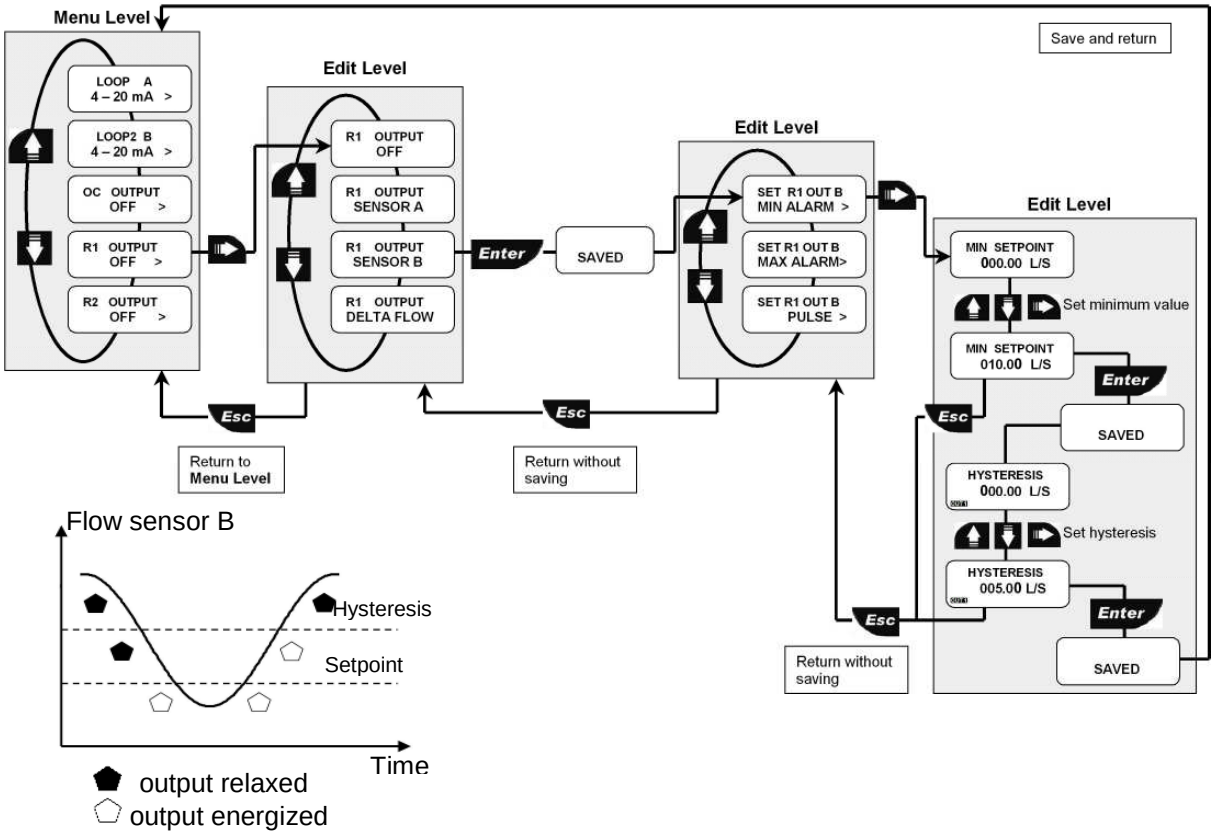
8.2.3.2. R1 Output (OUT1) sensor B



The mode of operation for the R1(OUT1) output programmed to work with sensor B can be selected between different options : MIN alarm, MAX alarm or volumetric Pulse.

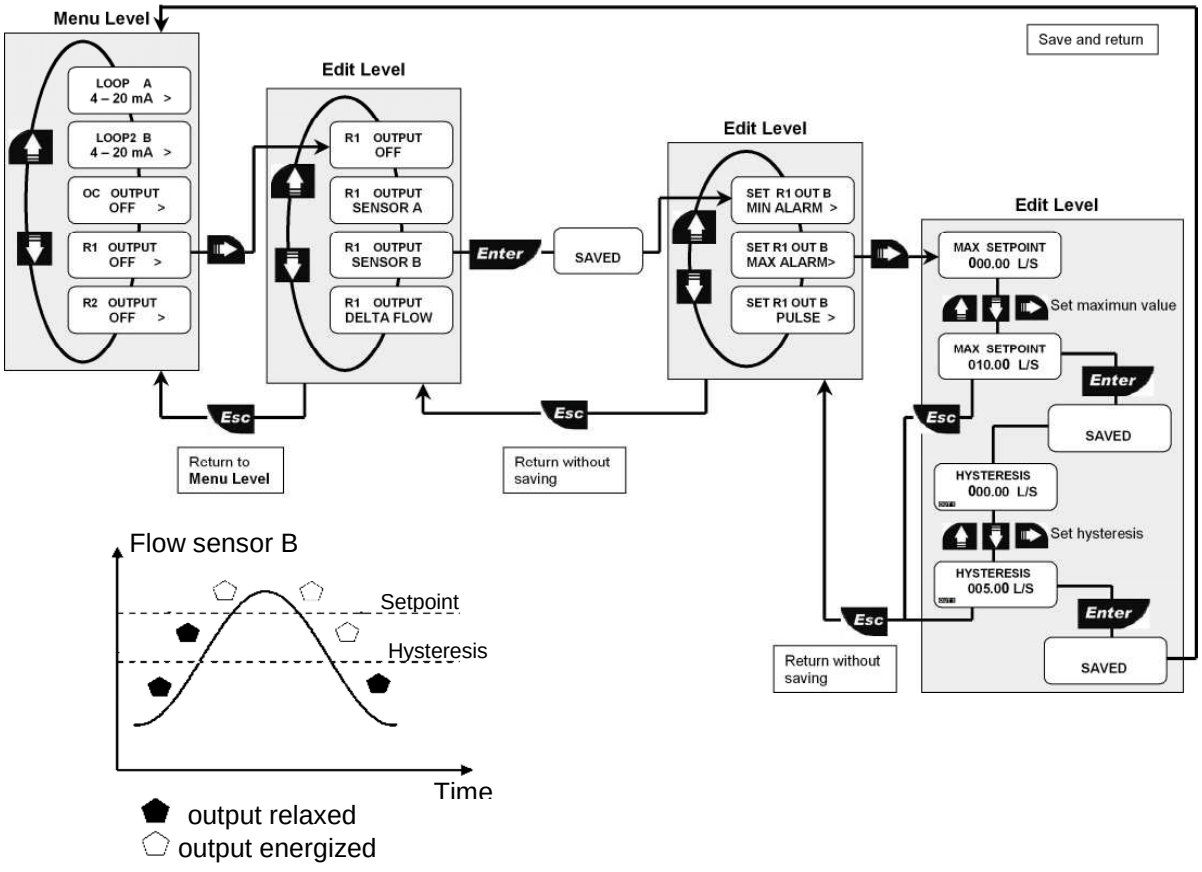
8.2.3.2.1. R1 Output (OUT1) sensor B : MIN mode

The output triggers when the flow rate of sensor B drops below the setpoint: LED placed below OUT1 icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.

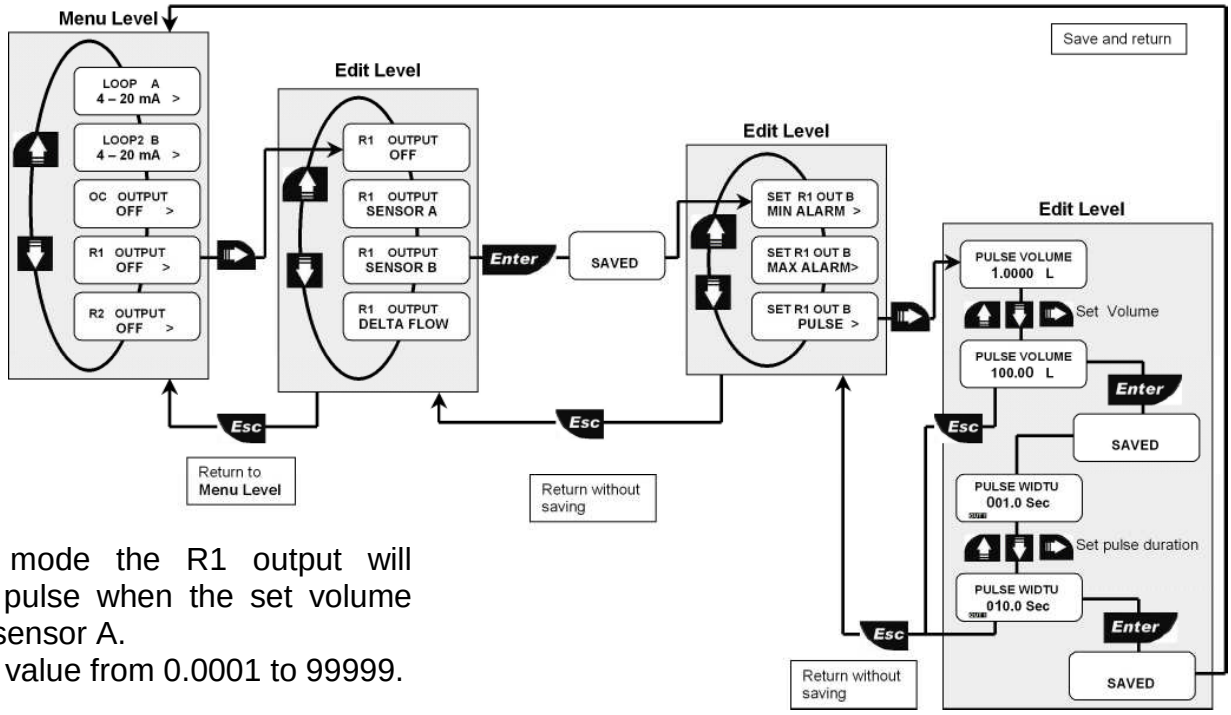


8.2.3.2.2. R1 Output (OUT1) sensor B : MAX mode

The output triggers when the flow rate of sensor B is greater than the setpoint: LED placed below OUT1 icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



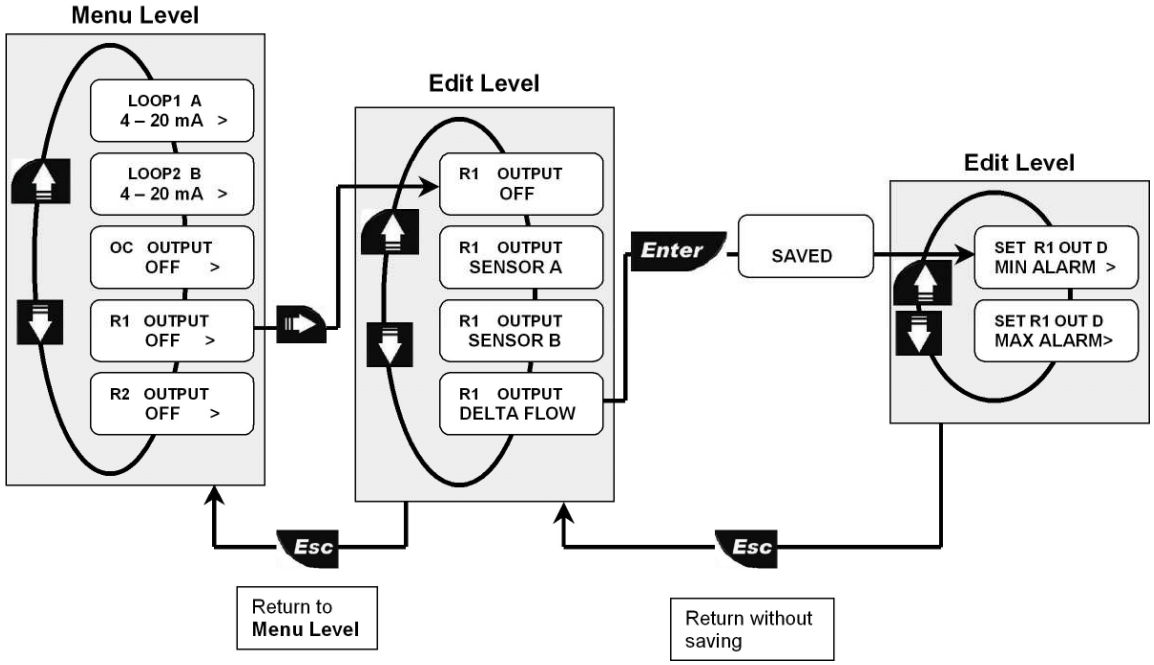
8.2.3.2.3. R1 Output (OUT1) sensor B : PULSE mode



In PULSE mode the R1 output will generate a pulse when the set volume passes the sensor A.
ENTER any value from 0.0001 to 99999.

The duration of the pulse can be chosen from 000.1 to 999.9 seconds.

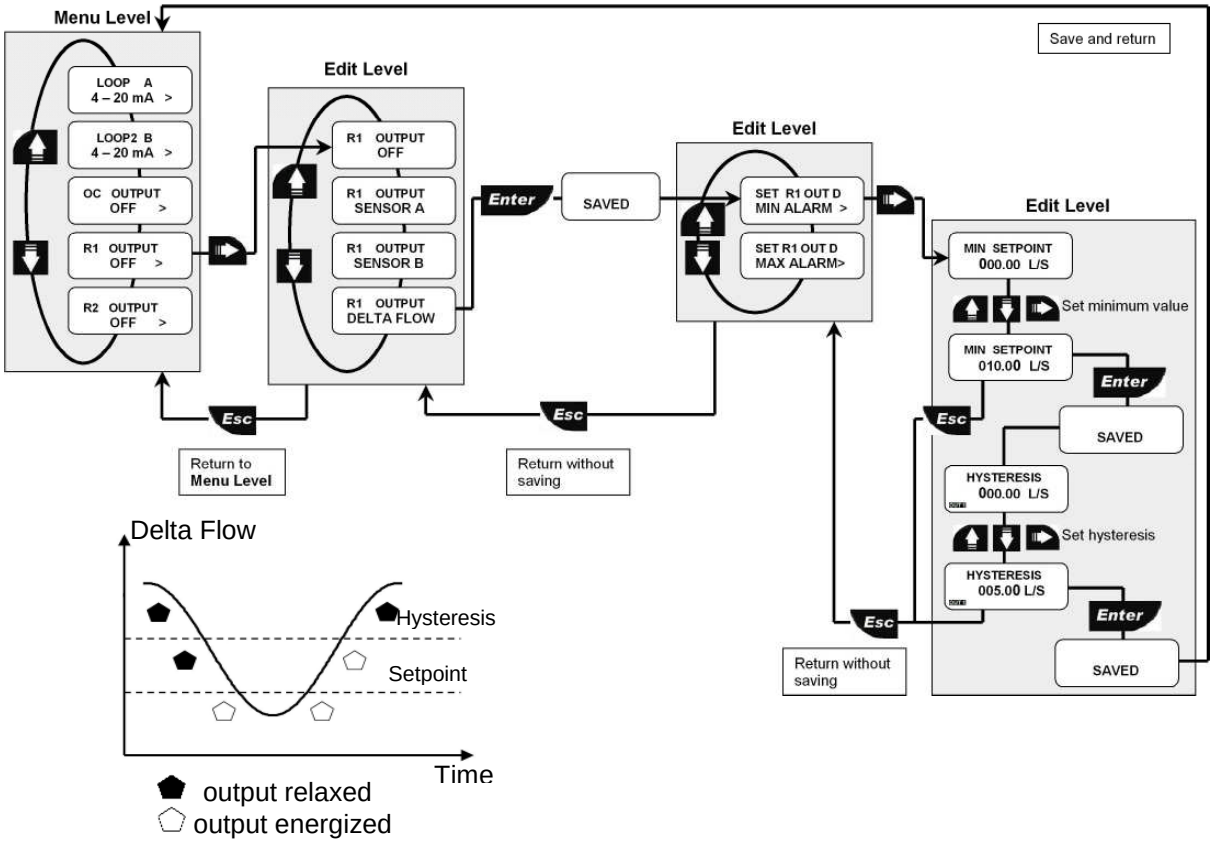
8.2.3.3. R1 Output (R1) Delta Flow



The mode of operation for the R1(OUT1) output programmed to work with Delta Flow can be selected between different options : MIN alarm or MAX alarm.

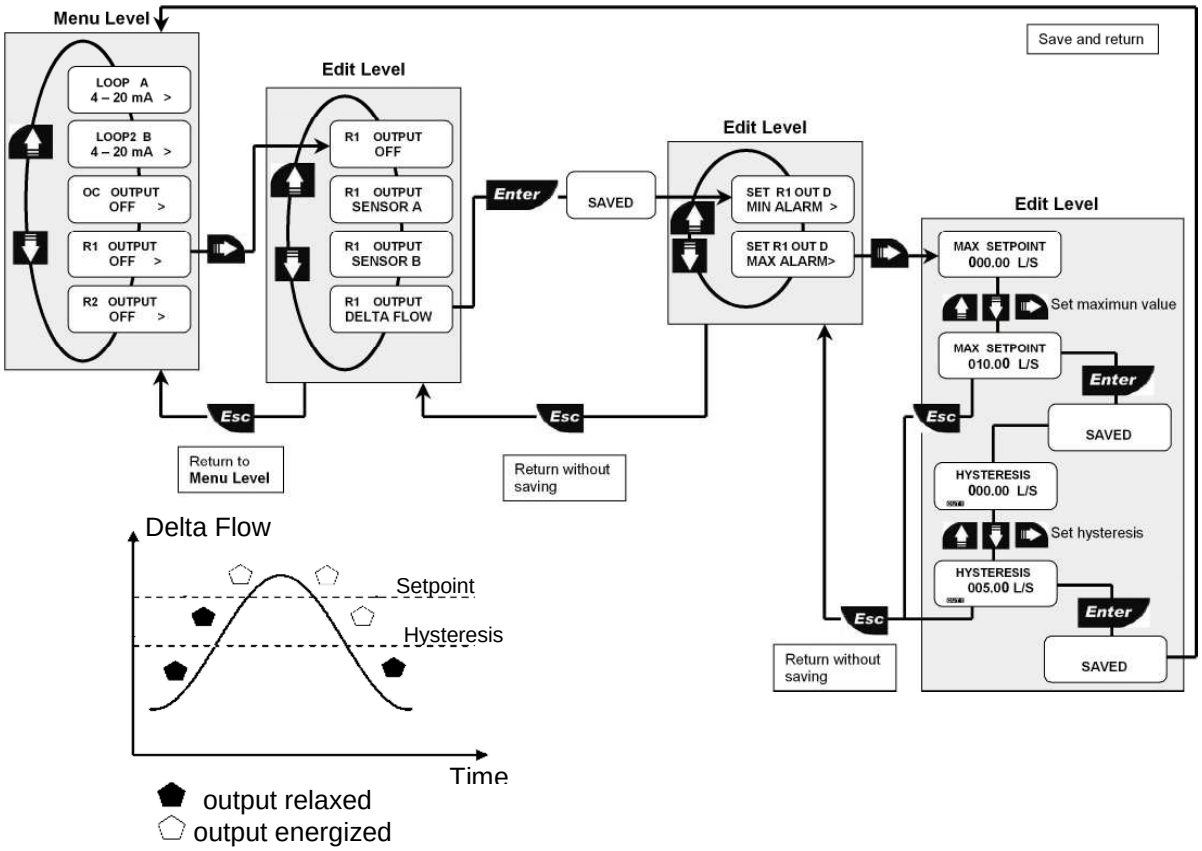
8.2.3.3.1. R1 Output (R1) Delta Flow : MIN mode

The output triggers when the delta flow drops below the setpoint: LED placed below OUT1 icon will switch on.
The output will relax when the flow rate moves above the setpoint plus the hysteresis value.



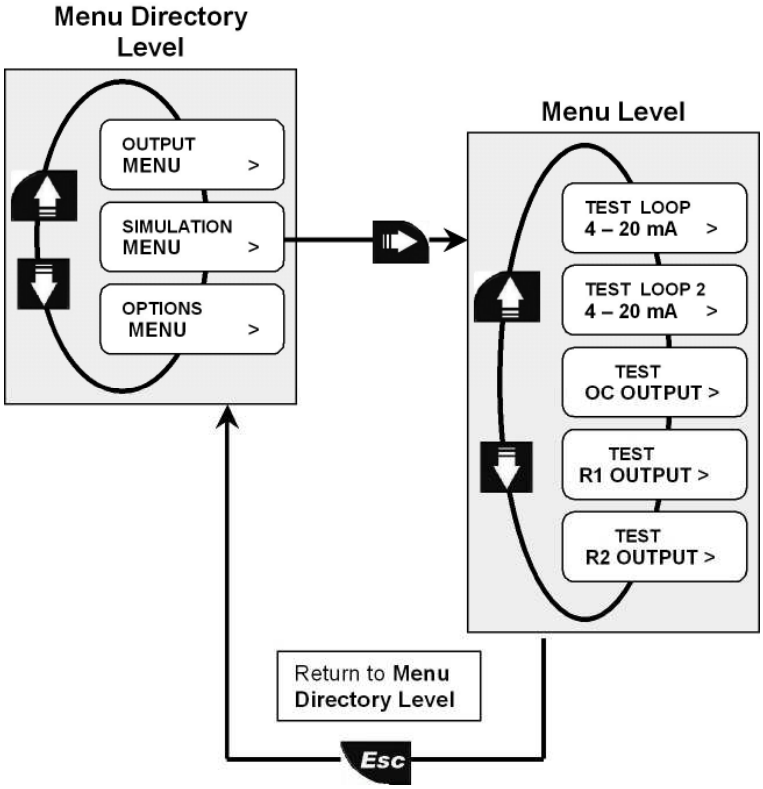
8.2.3.3.2. R1 Output (R1) Delta Flow : MAX mode

The output triggers when the delta flow is greater than the setpoint: LED placed below OPT icon will switch on.
The output will relax when the flow rate drops below the setpoint minus the hysteresis value.



8.3. Simulation Menu

The F9.03 analog and digital output can be simulated and tested in this menu:



To manually test the output current loop

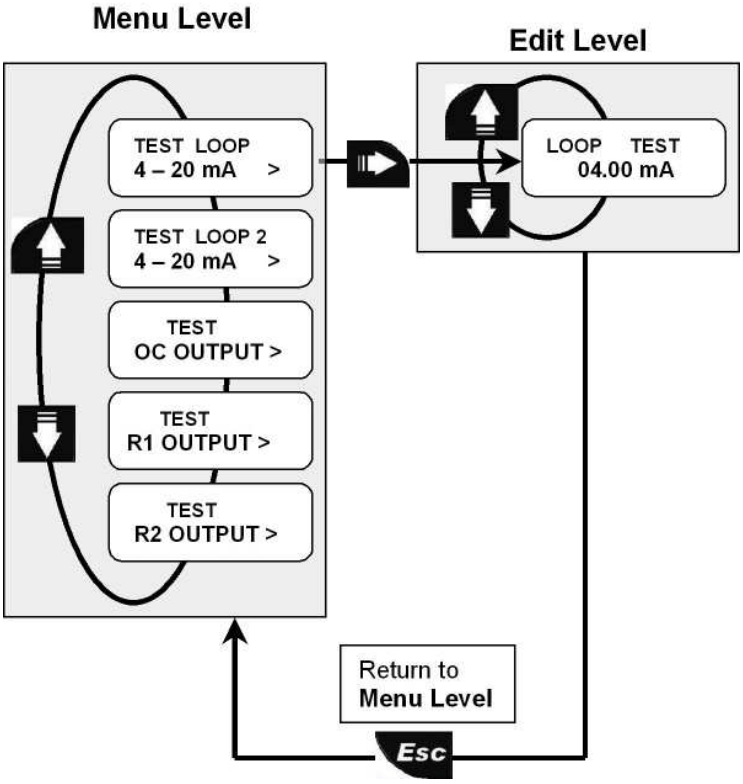
To manually test the output current loop2

To manually toggle OPT output

To manually toggle OUT1 output

To manually toggle OUT2 output

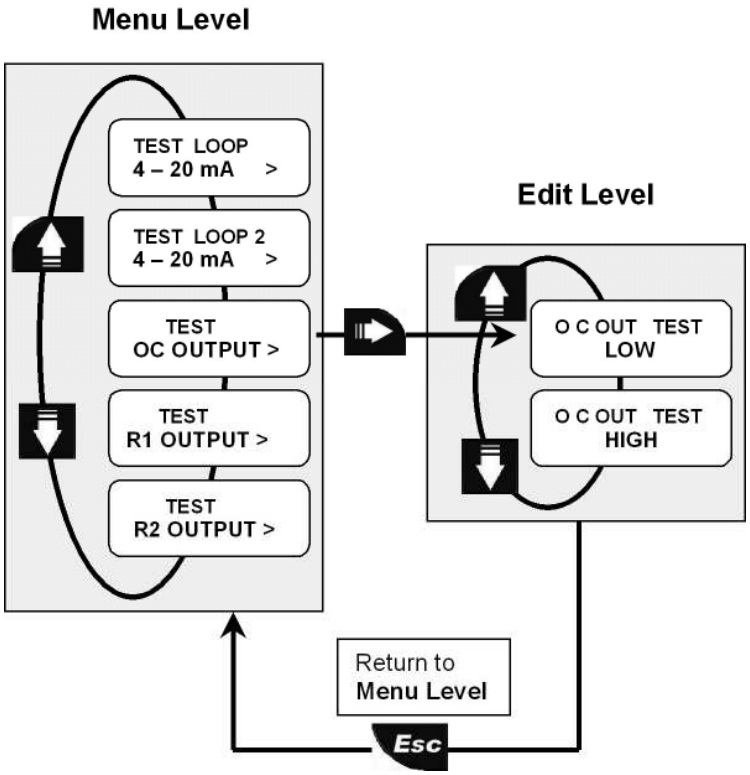
8.3.1. Test 4 – 20mA Loop



Manually simulate any output current value to test current loop

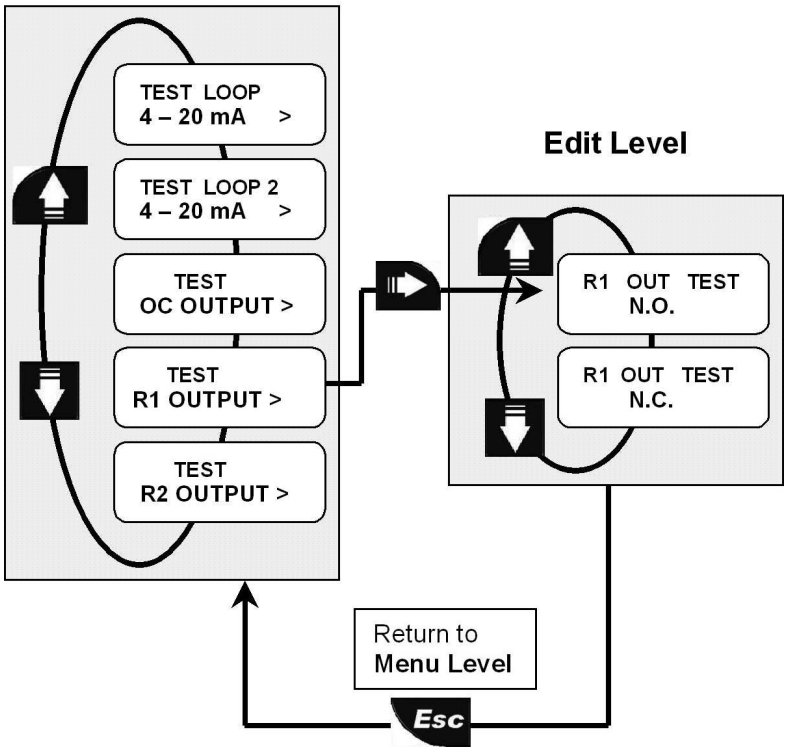
4-20 mA Loop test repeats for 4-20 mA Loop2

8.3.2. Test O.C. Output (OPT)



Manually toggle the status of the Open Collector (OPT) output for testing

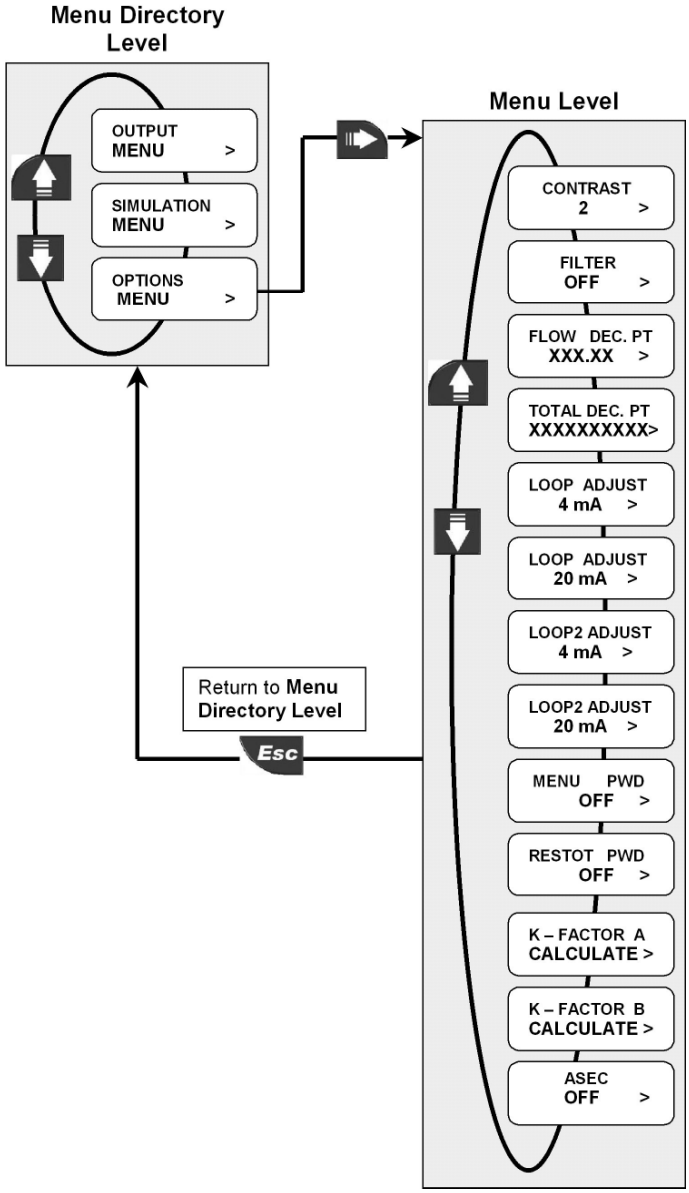
8.3.3. Test R1 Output (OUT1)



Manually toggle the status of the Relay R1 (OUT1) output for testing

R1 Output (OUT1) test repeats for R2 Output (OUT2)

8.4. Options Menu



To adjust LCD contrast

To select the averaging level of LCD, output and relay response

To set the flow rate decimal point position

To set the totalizer decimal point position

To adjust the minimum current output loop

To adjust the maximum current output Loop

To adjust the minimum current output loop2

To adjust the maximum current output Loop2

To set ON or OFF password protection to enter Menu Levels

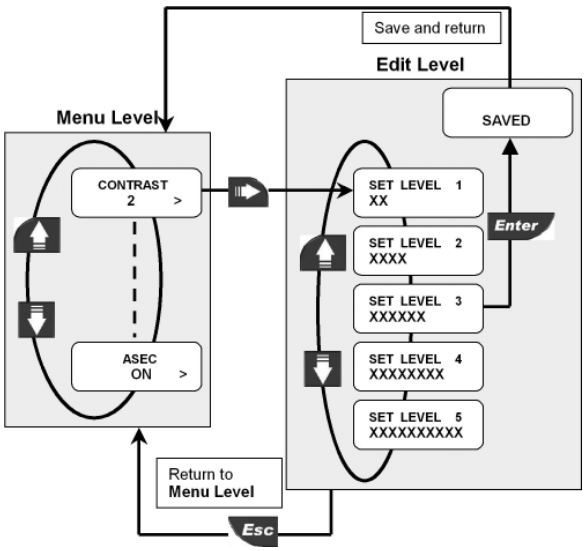
To set ON or OFF password protection to reset totalizer

To perform automatic calculation of K-Factor A

To perform automatic calculation of K-Factor B

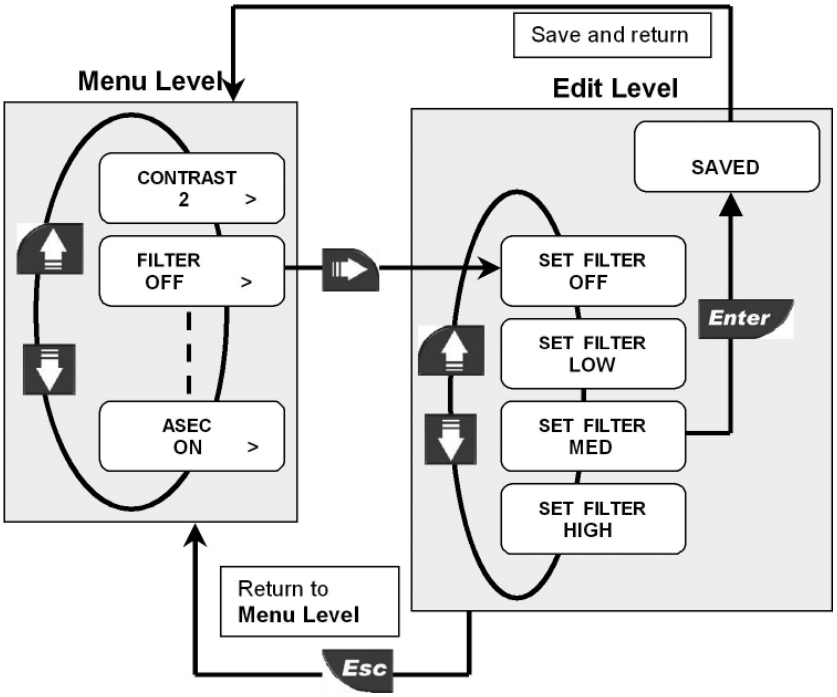
To set ON or OFF ASEC

8.4.1. Contrast



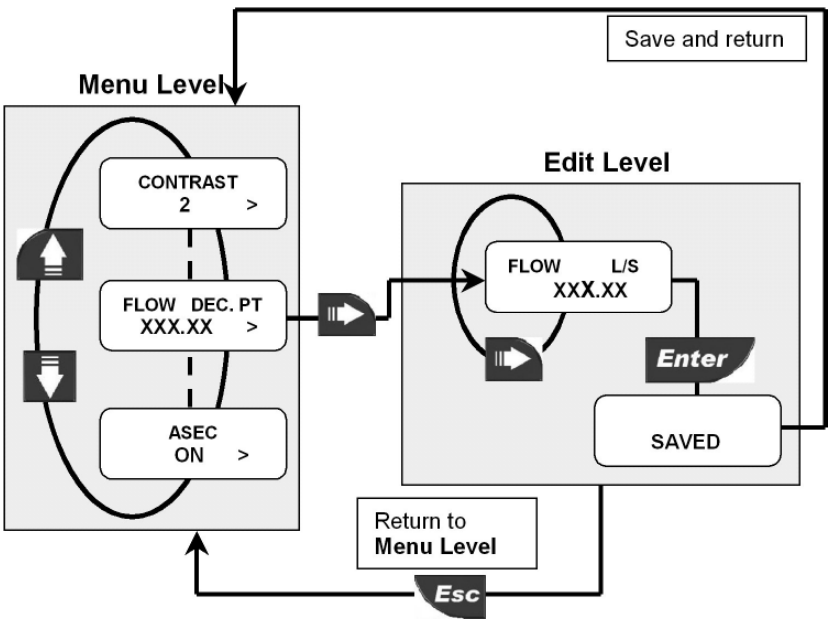
Adjust the LCD contrast for best viewing. Five different levels are available, from 1 for low contrast up to 5 for high contrast.

8.4.2. Filter



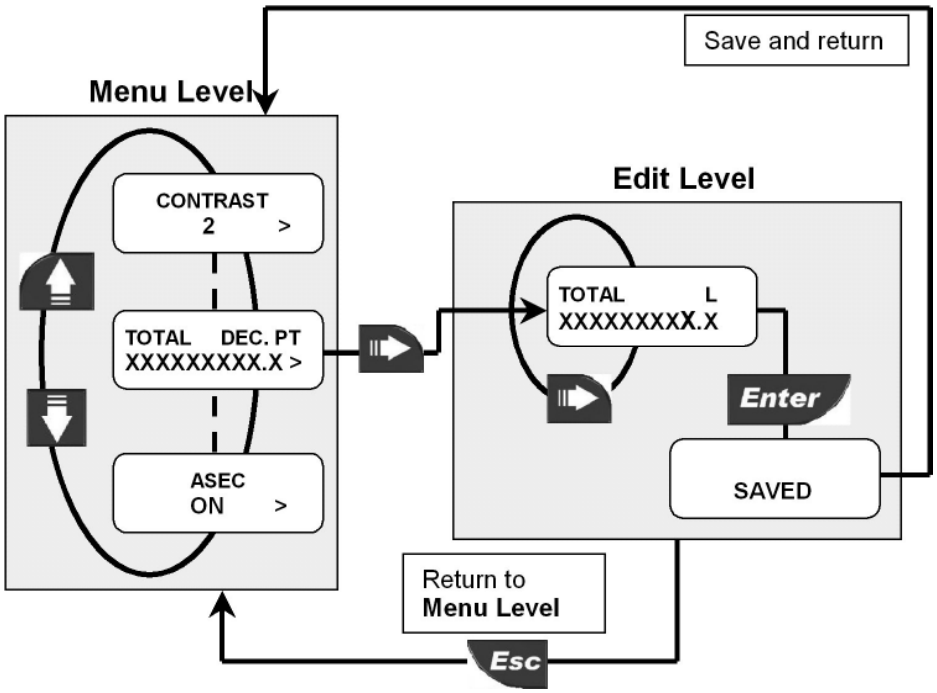
Select the averaging level to dampen LCD indication, output and relay response.
OFF: no dampening effect, near instantaneous response.

8.4.3. Flow Decimal Point



Set the decimal point position to get the best resolution for the application.
Select one of the following options:
X.XXXX ; **XX.XXX** ; **XXX.XX** ; **XXXX.X** ; **XXXXX.**

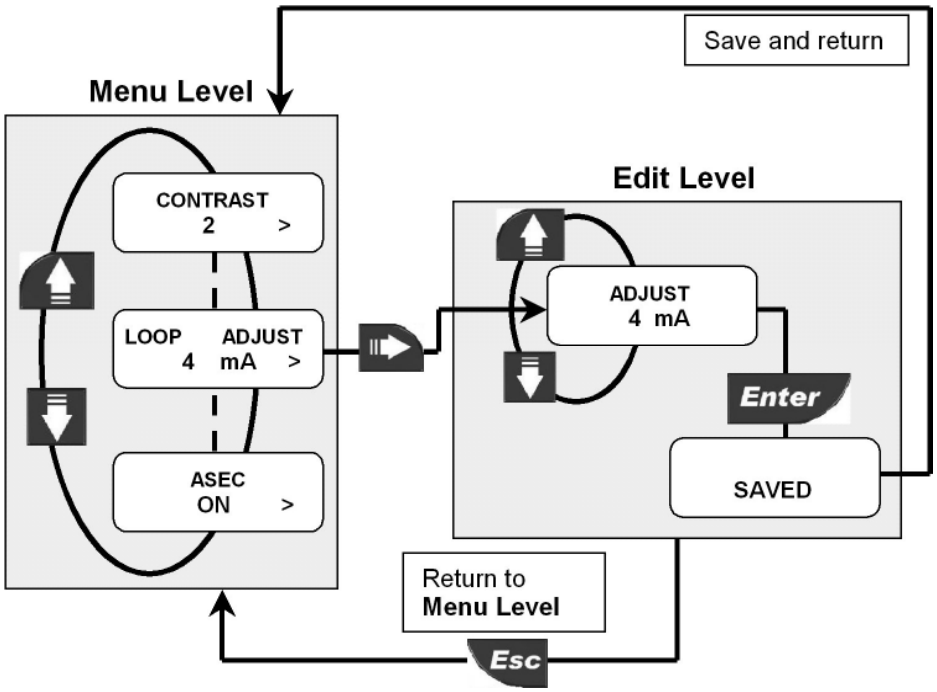
8.4.4. Total Decimal Point



Set the decimal point position to get the best resolution for the application.
Select one of the following options
XXXXXXXX.XX
XXXXXXXXX.X
XXXXXXXXXX.

8.4.5. Loop Adjust 4mA

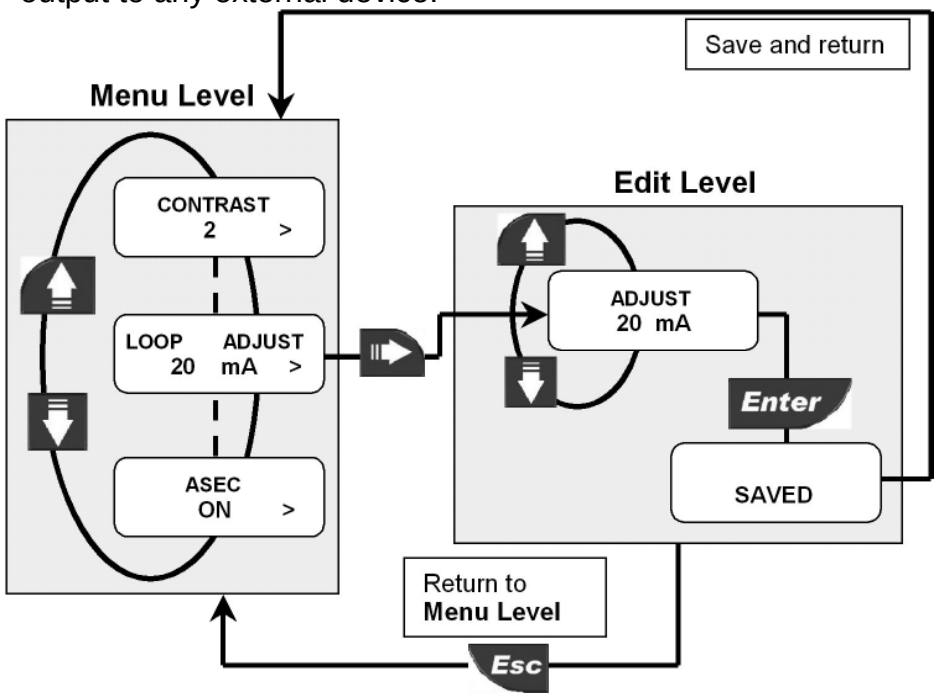
This option can be used to modify the basic 4mA setting to match the transmitter output to any external device.



Increment output current value by pressing UP arrow key or decrement it by pressing DOWN arrow key.

8.4.6. Loop Adjust 20mA

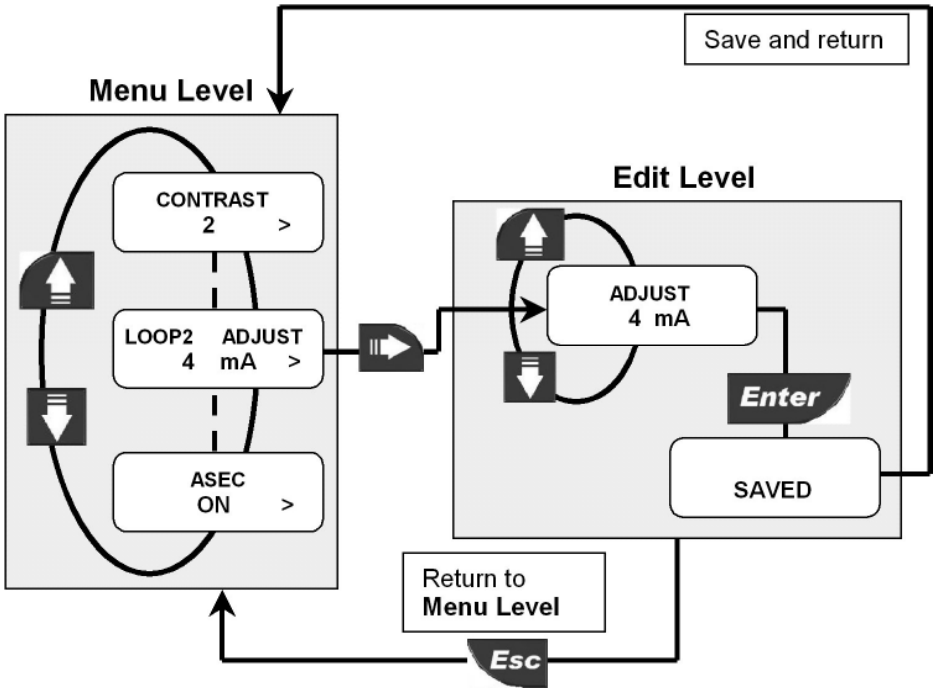
This option can be used to modify the basic 20mA setting to match the transmitter output to any external device.



Increment output current value by pressing UP arrow key or decrement it by pressing DOWN arrow key.

8.4.7. Loop2 Adjust 4mA

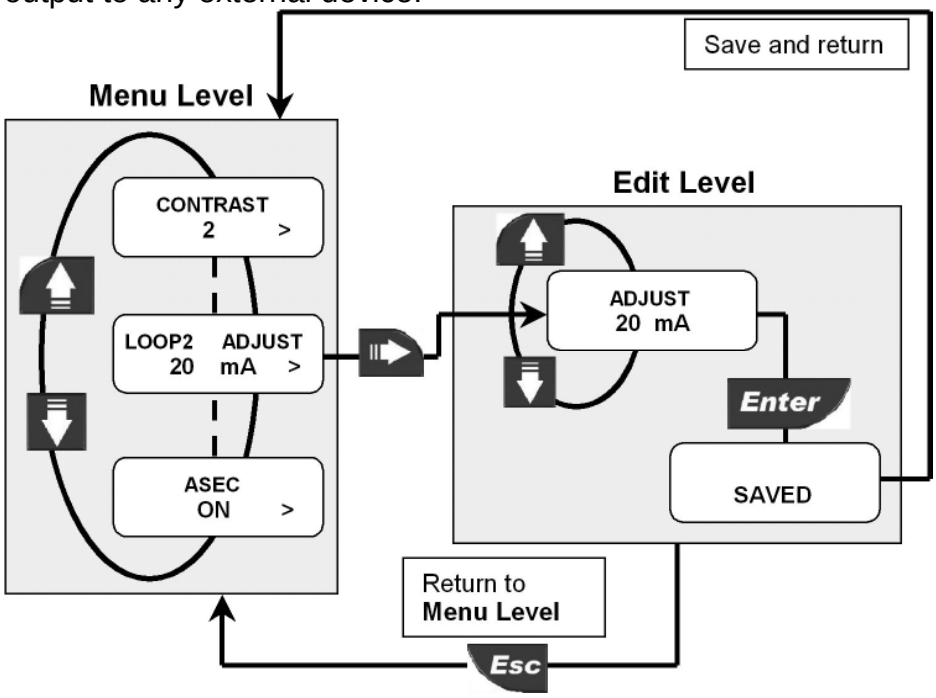
This option can be used to modify the basic 4mA setting to match the transmitter output to any external device.



Increment output current value by pressing UP arrow key or decrement it by pressing DOWN arrow key.

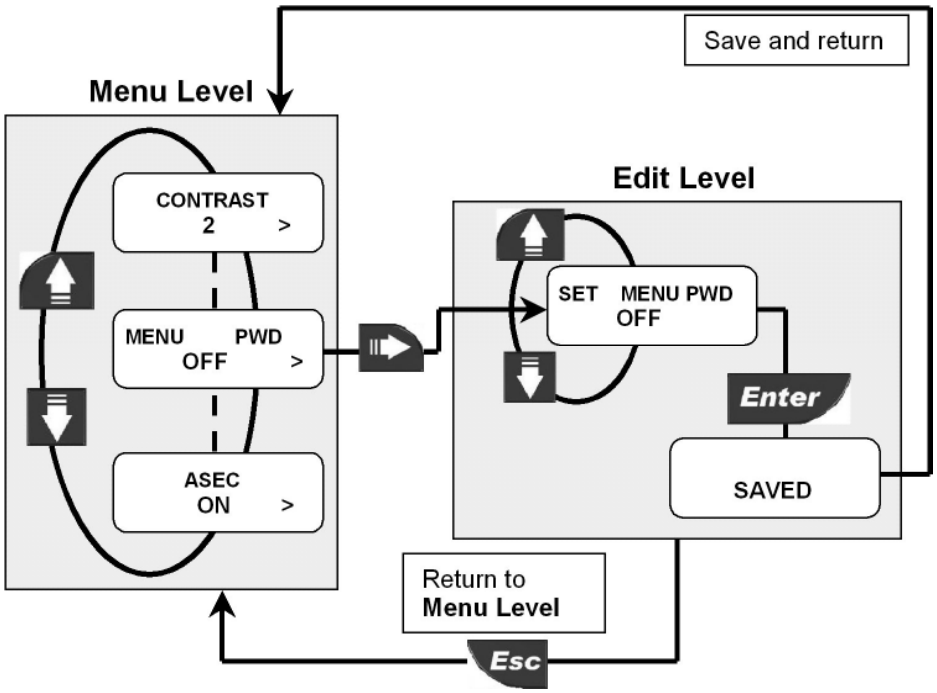
8.4.8. Loop2 Adjust 20 mA

This option can be used to modify the basic 20mA setting to match the transmitter output to any external device.



Increment output current value by pressing UP arrow key or decrement it by pressing DOWN arrow key.

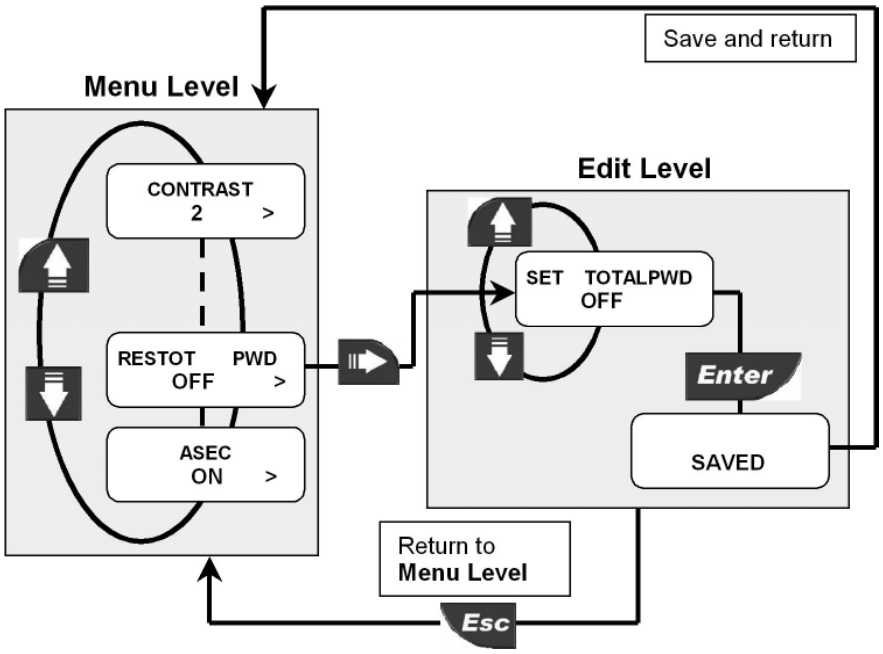
8.4.9. Menu PWD



Set ON the Menu PWD to protect access to Menu Directory Level and next levels.

NOTE: the standard password is  and it cannot be modified.

8.4.10. Restot PWD

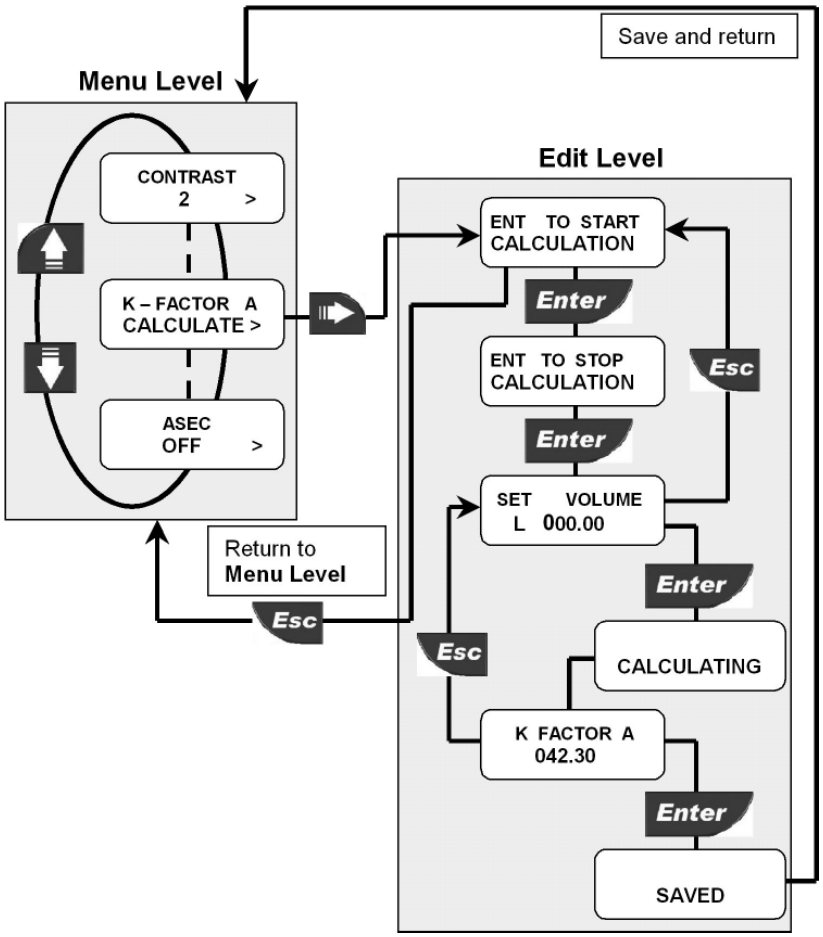


Set ON the Restot PWD to protect the resettable totalizer from undesired reset operations.

NOTE: the standard password is  and it cannot be modified.

8.4.11. K-Factor Calculate sensor A

Option used to perform automatic calculation of K-Factor to sensor A by measuring the volume filled into a tank. This to get the highest accuracy possible.



Press ENTER to start calculation. Switch on a pump or open a valve. F9.03 starts counting pulses from the sensor.
When the tank is full, switch off the pump or close the valve. Press ENTER to stop calculation. F9.03 stops counting pulses from the sensor.

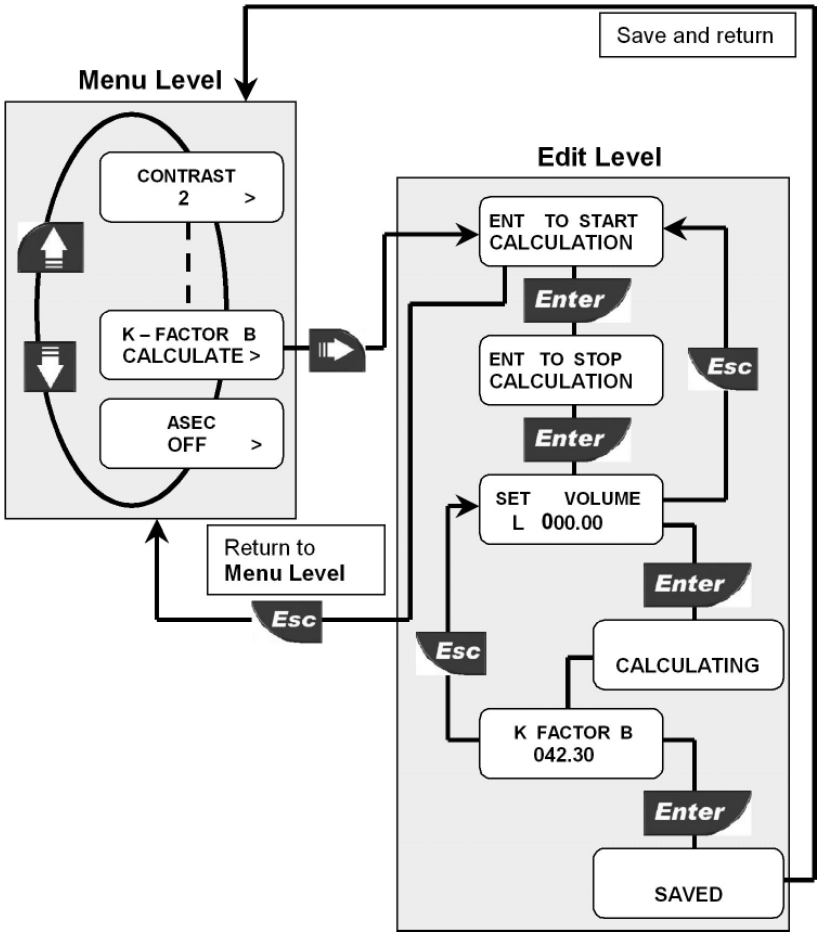
Enter the volume (in liter) of fluid filled into the tank.

F9.03 is calculating the new K-Factor.

Successful K-Factor calculation. Press ENTER to accept new K-Factor or ESC to return without saving.

8.4.12. K-Factor Calculate sensor B

Option used to perform automatic calculation of K-Factor to sensor B by measuring the volume filled into a tank. This to get the highest accuracy possible.



Press ENTER to start calculation. Switch on a pump or open a valve. F9.03 starts counting pulses from the sensor.

When the tank is full, switch off the pump or close the valve. Press ENTER to stop calculation. F9.03 stops counting pulses from the sensor.

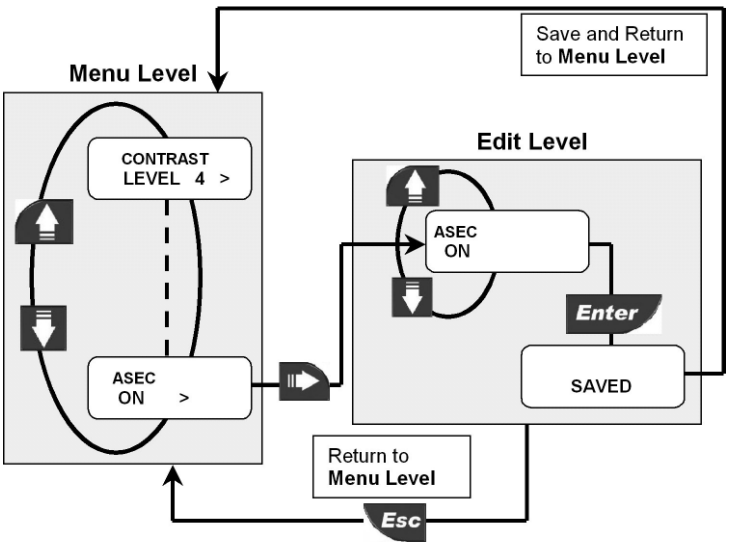
Enter the volume (in liter) of fluid filled into the tank.

F9.03 is calculating the new K-Factor.

Successful K-Factor calculation. Press ENTER to accept new K-Factor or ESC to return without saving.

8.4.13. ASEC

ASEC (Automatic Systematic Error Compensation) improve instrument performance. ASEC works starting from application's parameter, particularly sensor body's material and pipe's size.



To set ASEC OFF makes Size and Material Options useless, so it makes them unavailable from Calibration Menu.
CAUTION: ASEC is designed to work in conjunction with F 3.00 sensor, so you are advised to set it off if you use another kind of sensor.

9. Troubleshooting

The instrument correctly installed is maintenance-free. The case and the front panel can be cleaned with soft cloth and an appropriate cleaning agent.

9.1. Display messages

Display	Causes	Solutions
	• The display is OFF: no power supply provided	• Check power supply connection. Check "bridges" between terminals.
A OVF L/H B OVF L/H	• Flow rate is in OVERFLOW: it exceeds the maximum display capability	• Change the flow rate engineering units
MAX FREQ ERROR	• Input frequency is too large	• Check sensor connection • If not FlowX3 sensor, verify sensor data sheet and compatibility
SET VALUE MORE THAN 0	• K-Factor cannot be set to 0 • Volume corresponding to one pulse (when setting OPT as Pulse Out) cannot be set to 0 • Pulse width (when setting OPT as Pulse Out) cannot be set to 0 • Volume filled into the tank (during K-factor calculation procedure) cannot be set to 0	• Enter K-Factor value from 000.01 to 99999 • Enter any volume from 0.0001 to 99999 • Enter any pulse width from 000.1 to 999.9 seconds • Enter any volume from 000.01 to 999.99
TOTAL OVF ERROR	• With the new engineering unit chosen, the totalized volume exceeds maximum display capability	• Change the totalizer engineering units
SMALLER THAN MAX ALARM	• Hysteresis value is larger than the MAX alarm value: the instrument will never get out of the maximum alarm	• Change the hysteresis value
SET BETWEEN 002 AND 255	• The dividing value (when setting OPT as Freq Out) is out of range	• Enter any value between 002 and 255
PULSE OVF ERROR	• The pulse width is too wide compared to pulse frequency	• Increase volume setting • Decrease pulse width • Reduce flow rate
K FACTOR OUT OF RANGE	• The value calculated during the K-Factor calculation procedure is out of range	• Move decimal point position • Check entered volume

10. Ordering Data

FlowX3 F9.03

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.03	Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4…20mA) 1 (Open Collector) 2 (Relay)

FlowX3 F9.03.P1
(Panel Mount version)

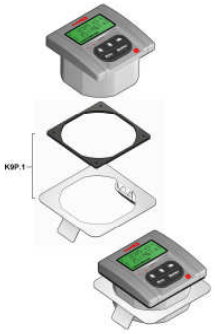
Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.03.P1	Panel Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4…20mA) 1 (Open Collector) 2 (Relay)

FlowX3 F9.03.WX
(Wall Mount version)

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.03.W1	Wall Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4…20mA) 1 (Open Collector) 2 (Relay)
F9.03.W2	Wall Mount Flow Monitor & Transmitter	3/4 wire	110 to 230 VAC	2 (Freq.)	2 (4…20mA) 1 (Open Collector) 2 (Relay)

Mounting Kits

Part No.	Name	Description
F9.KP1	Panel mounting Kit	Mounting bracket with gasket
F9.KW1	Wall mounting Kit	Plastic adapter with gasket and fixing screws
F9.KW2	Wall mounting Kit with Power Supply	Plastic adapter with gasket, fixing screws and 110/230VAC to 24VDC power supply included

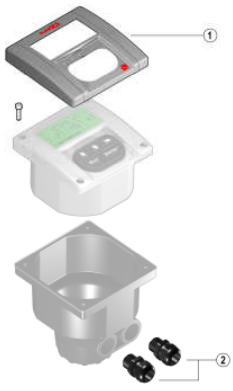


F9.KP1

F9.KWX

Spare Parts

Item	Part No.	Name	Description
1	F9.SP2	Cover	PC front cover, 3 LED
2	F9.SP4.1	PG 13.5	PG13.5 Cable Gland for Compact or Wall mounting Kit
2	F9.SP4.2	PG 11	PG11 Cable Gland for Compact or Wall mounting Kit



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