

Human-machine interface FIO2

USER MANUAL FOR FIO2




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1. Introduction

This document contains instructions for the using of HMI (Human-Machine Interface) of FIO2.

This manual does not replace the user manuals of the equipment. It has been realized in order to provide to the installer a consultation tool for the main important operations to do directly from the keyboard of FIO2.

When the information provided in this manual are not sufficient, please refer to the manuals of the single equipment:

- FIO2 UM - User manual FIO2 ECU (Electronic Control Unit)

2. Operator interface

The figure below shows the layout of the operator interface, consisting of 25 keys and a graphic display. The following paragraphs describe the interaction with the user and the organization of the displayed data.

The display is off by default; it is turned on when any key is pressed and it will turn off after a configurable period of keyboard inactivity.



Layout of the operator interface

2.1 Structure of the pages



Ref.	Field	Notes
1	Date and time	Before it is set, it starts by default with 2005-01-01 00:00
2	Status icons	From left to right: <ul style="list-style-type: none"> alarm icon, blinking if there is any active error modem status icon: communicating, recording, initialization, turning on, power off Bluetooth status icon: on, off External power supply icon (only with rechargeable battery) battery charge icon emergency icon calibration icon maintenance icon programming icon: some parameters have been changed and the configuration has not been saved yet login icon: the operator has not logged-in providing the password. The password will be required at the first modification attempt and it will be valid until the display is ON
3	Data area	The first line displays a brief description of the data; the second one shows the value and measurement unit, if any.
4	Area indicator	It shows the area to which the shown data belong (L1, L2, St, Ap for line 1, line 2, station or device)
5	Icons of the function keys	They represent the functionality currently associated with the function key below.

2.2 Field types

The data area may contain information of different kind:

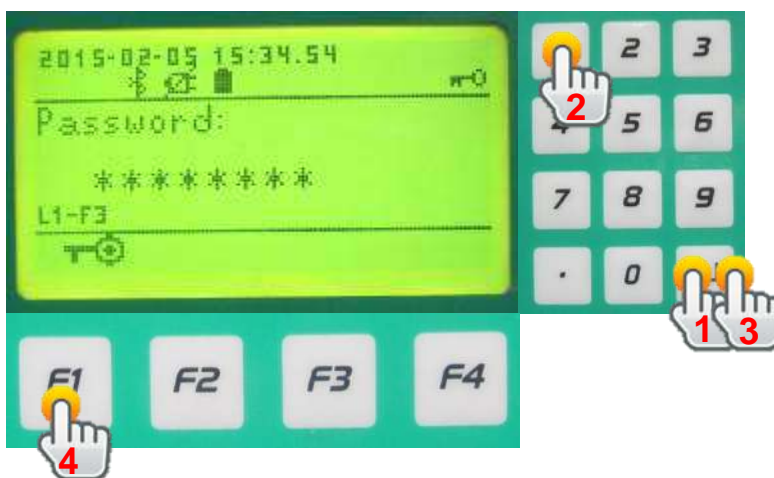
- numerical data: the value is right-aligned in the field. During editing, the value is left-aligned
- enumerated data (*choice*): the value is represented by a symbolic description, right-aligned, without measurement units. During editing, the description matching the value is left-aligned. Using the UP and DN keys, it is possible to scroll the values back and forth in circular manner
- alphanumeric data: the value is left-aligned in the field. It is not possible to perform changes
- digital inputs: each digit (0 or 1) indicates the status of the corresponding input. Each of the inputs, from 1 to 6, is represented by a digit, from the right (input 1) to the left (input 6)

2.3 Interaction via the keyboard

Keys	Function
UP, DOWN	-They allow scrolling through the list of pages currently displayed or through available values. -UP deletes the last entered digit (<i>backspace</i>), -DOWN reverses the sign of the entered number
L1, L2, ST, AP	They allow reaching directly the list of pages that describes the corresponding area of the system (line 1, line 2, station, device)
ESC	-It allows going back to the main list or higher level. -It cancels the editing session, leaving the previous value unchanged
ENTER	-It allows reaching any lower level to access some specific features; -will start an editing session: the value is aligned to the left and the editing mode is entered (the editing mode start may be subject to the request for entering a password); -ends the editing session, confirming the entered value
CLR	It allows zeroing a diagnostic condition or any other information that can only be zeroed
0..9, decimal point	Value entering
F1, F2, F3, F4	They allow the execution of the corresponding displayed icon

2.4 Authentication (password entering)

For every first modification that you are going to do, FIO2 asks the introduction of the password (the default is "1").

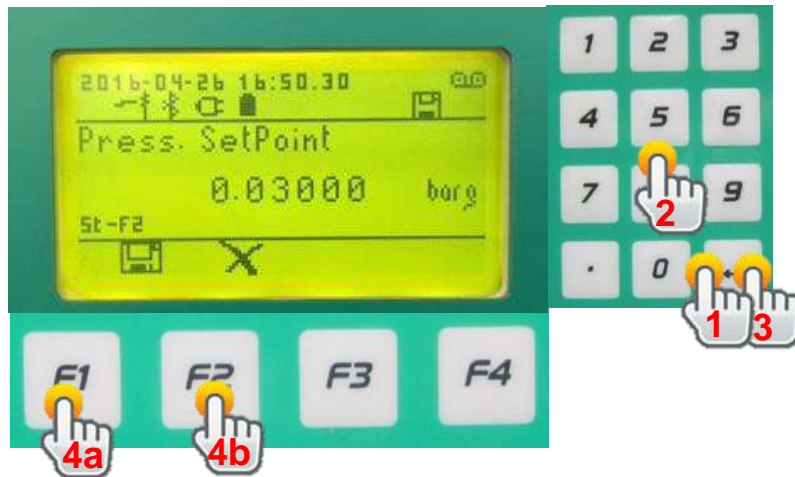


The interaction sequence is the following:

- Press the ENTER key, allowing the editing in the password field
- Enter the password value (the default value is 1)
- Press the ENTER key confirming the value (the field is right-aligned)
- Press the F1 key. if the value is correct, the user is brought back to the referring page, the login icon is no longer displayed and the user can repeat the original operation
- The authentication remains in force until the display will be ON

2.5 Configuration changing

After changing a configuration information, keys F1 and F2 respectively acquire the meaning of "save configuration" and "cancel changes". Moreover, if there are unsaved changes, the blinking programming icon is displayed.



- Press the ENTER key, allowing the editing in the field
- Enter the new value
- Press the ENTER key confirming the value (the field is right-aligned)
- By pressing the F1 key, the changed data are saved; while pressing the F2 key, the changes are canceled.

3. Meaning of the icons

The meaning of each icon that can appear on the device display is explained here below.

Status icons

Status icons appear on the top of the display and indicate a number of statuses relevant for the operator.

	<i>Shown only blinking, it indicates that date and time have not been set</i>
	<i>Shown only blinking, indicates that at least one error condition is active</i>
	<i>Modem on</i>
	<i>Initialized</i>
	<i>Connected to the network</i>
	<i>Data communication in progress</i>
	<i>Bluetooth active</i>
	<i>ON: Device powered by the rechargeable battery; external power supply ON</i> <i>Blinking: WRONG power supply configuration. Device powered by the primary battery and external power supply. Remove the external power supply</i> <i>OFF: Device powered by the primary battery</i>
	<i>ON: device powered by the rechargeable battery; external power supply OFF or insufficient</i> <i>OFF: Device powered by the primary battery</i> <i>Indicator of remaining battery duration</i>
	<i>≤ 10% (low battery)</i>
	<i>≤ 20%</i>
	<i>≤ 40%</i>
	<i>≤ 60%</i>
	<i>≤ 80%</i>
	<i>> 80%</i>
	<i>Emergency status</i>
	<i>Calibration status</i>
	<i>Maintenance status</i>
	<i>Programming status - it indicates that some parameters have been changed and the configuration has not been saved yet</i>
	<i>Authentication status</i>

Area indicators





These icons indicate the area to which the currently displayed page belongs, and therefore to which the data shown on it belong.

<i>(empty)</i>	<i>Main list</i>
L1	<i>Line 1</i>
L2	<i>Line 1</i>
St	<i>Station</i>
Rp	<i>Device</i>




Function keys

These icons will appear on the bottom of the display. They are associated with the function keys F1..F4 laying below them, and they graphically recall the functionality currently associated with the corresponding button.





Main list

	<i>Date and time setting/adjustment</i>
	<i>User Interface Language selection</i>
	<i>Backlight ON/OFF</i>
	<i>Contrast adjustment</i>





Line 1, Line 2

	<i>Measurements</i>
	<i>Settings</i>
	<i>Calibration</i>

Station



	<i>Measurements</i>
	<i>Settings</i>
	<i>Calibration</i>
	<i>Maintenance</i>

Device

	<i>Diagnostic Information</i>
	<i>Communications</i>
	<i>System</i>
	<i>Information</i>

Saving the configuration

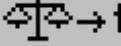
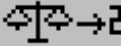
Under any hierarchy, after changing a configuration parameter (marked by the appearance of the programming icon), it is possible to scroll the sublist and modify other parameters, but it is not possible to exit the sublist without confirming or canceling the changes performed. The function keys for selecting the area are therefore inhibited, showing the following ones in their place:

	<i>Saving the configuration</i>
	<i>Canceling the changes made</i>

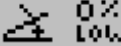
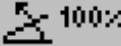
In both cases, you will exit the programming mode and the corresponding icon disappears.

Calibration

The calibration of the sensors is performed in the same way for all of them:

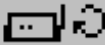

	<i>First setpoint indication</i>
	<i>Second setpoint indication</i>

Likewise, for the opening sensors:

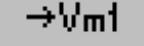
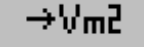
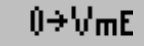
	<i>Indication of full or partial closing</i>
	<i>Indication of full opening</i>

In any case, the icons for the functions allowing saving or canceling the changes do appear.

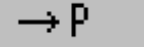


Modem

	<i>Modem initialization</i>
	<i>Forced call</i>

Setting of the totalizers



	<i>Setting of the gross volume totalizers for Line 1</i>
	<i>Setting of the gross volume totalizers for Line 2</i>
	<i>Zeroing of all volume totalizers featuring errors</i>

Maintenance commands


	<i>Pressure setpoint setting</i>
	<i>Implementation of the DOWN command</i>
	<i>Implementation of the UP command</i>

Emergency


The emergency status is activated by pressing the dedicated button for at least 3 seconds. The specific commands are:

	<i>Forced emptying of the tank</i>
	<i>Exit from the emergency status</i>

Battery replacement

	<i>Command/confirmation of battery replacement</i>
---	--

Authentication

	<i>Confirmation of password authentication</i>
---	--

4. Main list

When the system is started, the first page of the main list is displayed. Using the UP and DN keys, it is possible to scroll through the pages.

4.1 Function keys

All pages in the main list allow calling up the same functionalities associated with the function keys F1 .. F4 and identified by the icons shown in the figure.

F1	Date and time setting, if not already set Otherwise, Clock setting
F2	Language selection: every time it is pressed, the next language, displayed in circular manner, is selected and applied
F3	Backlight ON/OFF
F4	Contrast ratio: every time it is pressed, the contrast is increased up to the maximum expected; subsequently, if it is pressed again, the contrast is set back to the minimum value



4.2 List of information

The main list allows quickly accessing the most important information of the device, as listed below (using scroll UP and DOWN button)

Qb	Correct flow rate - Station
Qb1	Correct flow rate - Line 1
Qb2	Correct flow rate - Line 2
Pd	Downstream pressure
StLim	Flow rate limitation status
StMod	Pressure modulation status
Funct	List of active functions (pressing ENTER it is possible to access the list, UP and DN are used to scroll it, ESC allows returning to the upper level)
DigIn	Status of digital inputs (1 .. 6 from right to left)
Pu1	Upstream pressure - Line 1
PAux1	Upstream pressure - Line 2
T	Gas temperature

4.3 Date and time setting (first setting)

If date and time have not been set yet (blinking sync icon), the following page is displayed:

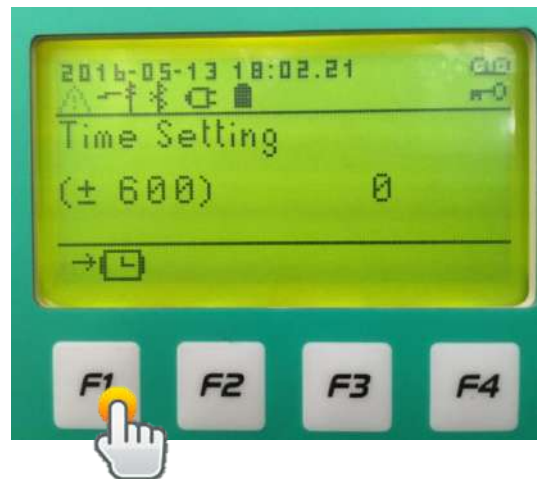
- ENTER to start
- write year, month, day, hour, minute, second on the fields
- ENTER to confirm
- press F1



4.4 Time adjustment

If the date and time have already been set (sync icon not present), the following page is displayed:

- ENTER to start
 - write the seconds of difference compared to the device time (DOWN key to change the sign). Positive number indicates that the device's clock is back; negative seconds show that the device's clock is ahead.
 - press F1
- The difference in seconds will be recovered with a gradual shift of 2 seconds per minute.
- By pressing scroll DOWN button is possible to repeat the Date and Time setting as described in 3.2.



5. Line 1

Press the L1 key. The indicator of the area shows "L1".



5.1 "Line 1" List of information

5.1.1 "L1 - F1" Measurements

Pu1	Upstream pressure - Line 1
Pd	Downstream pressure
Qb1	Correct flow rate - Line 1
Sp1	Percentage of opening (before the calibration, the raw value of ADC is shown)
Vf1	Gas velocity
Qm1	Gross flow rate - Line 1
TotVm1	Gross volume totalizer - Line 1
TotVb1	Correct volume totalizer - Line 1
TotVme1	Gross volume totalizer error - Line 1
C	Conversion factor - Line 1
Dm	Diameter - Line 1
Cg	Cg Coefficient - Line 1
Reg	Regulator type - Line 1

5.1.2 "L1 - F2" Settings

FlowCalc	Flow rate calculation - Line 1 (direct, indirect)
PulseTy	Pulse type - Line 1 (gross volumes, correct volumes)
InputTy	Input type (low frequency, high frequency)
PW LF	Pulse weight LF m3/pulse - Line 1
Pulse HF	Pulse per volume HF pulse/m3 - Line 1
Psel	Pressure selector for the calculation of the conversion factor of Line 1 (Pu1, PAux1, Pd)
Pindir	Pressure selector for the calculation of the indirect flow rate (Pu1, PAux1)
Dm	Diameter - Line 1
Displ Cal	Calibration displacement Line 1

See paragraph 12

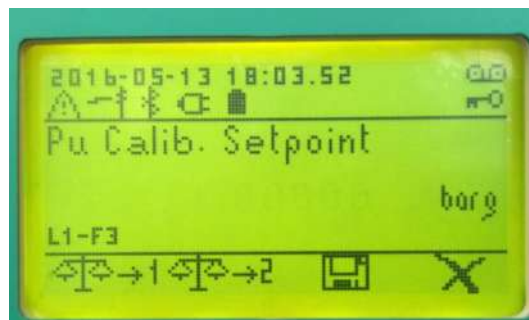
5.1.3 “L1 - F3” Calibration

Span Calib	Displacement sensor calibration
Pu Calib	Upstream pressure calibration

5.1.3.1 Calibration of the displacement sensor

Contrary to the pressure calibration, the calibration of the displacement sensor is a **activities necessary** for normal use, without which it is not possible to calculate the percentage of the opening of the sensor, which remains not configured until this activity is completed. See paragraph 9 for the instruction.

5.1.3.2 Field calibration of the pressure sensor



The calibration of the pressure sensor allows correcting the error due to the aging of the sensor itself, and takes place according to the following procedure:

- apply a first pressure setpoint to the sensor
- set the applied value in the page data field
- press the F1 key to bind the currently calculated pressure value to the set pressure value
- apply a second pressure setpoint to the sensor
- set the applied value in the page data field
- press the F2 key to bind the currently calculated pressure value to the set pressure value
- press the F3 key (Save) to confirm and save the calibration data and return to the upper page

The F4 key allows returning to the upper page, quitting the calibration task and leaving the previous situation unchanged.

The two pairs of pressure values identify a straight line, according to which the value of the pressure calculated by ADC shall be corrected. The order of application and setting of the values is not relevant (the higher or lower value may be associated with either the first or second setpoint).

Remark.

The calibration of the pressure sensor is not an activity necessary for the operation and the calculation of the pressure value, which is instead enabled by sending the characterization file to the device. This file specifies the characteristics of the sensor: serial number, full scale, type (absolute or relative), coefficients of the calculation formula. Before receiving this file, the sensor is not configured and not any acquisition of the ADC value nor any calculation of the pressure value is carried out, which in any case would not give correct results without the information mentioned above.

6. Line 2

Press the L2 key. The indicator of the area shows "L2".



6.1 "Line 2" List of information

6.1.1 "L2 - F1" Measurements

Aux1	Upstream pressure - Line 2
Pd	Downstream pressure
Qb2	Correct flow rate - Line 2
Sp2	Percentage of opening (before the calibration, the raw value of ADC is shown)
Vf2	Gas velocity
Qm2	Gross flow rate - Line 2
TotVm2	Gross volume totalizer - Line 2
TotVb2	Correct volume totalizer - Line 2
TotVme2	Gross volume totalizer error - Line 2
C	Conversion factor - Line 2
Dm	Diameter - Line 2
Cg	Cg Coefficient - Line 2
Reg	Regulator type - Line 2

6.1.2 "L2 - F2" Settings

FlowCalc	Flow rate calculation - Line 2 (direct, indirect)
PulseTy	Pulse type - Line 2 (gross volumes, correct volumes)
InputTy	Input type (low frequency, high frequency)
PW	Pulse weight LF m3/pulse - Line 2
Psel	Pressure selector for the calculation of the conversion factor of Line 2 (Pu1, PAux1, Pd)
Pindir	Pressure selector for the calculation of the indirect flow rate (Pu1, PAux1)
Dm	Diameter - Line 2
Displ Cal	Calibration displacement Line 2

See paragraph 12

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6.1.3 “L2 - F3” Calibration

Span Calib	Displacement sensor calibration
Aux1 Calib	Upstream pressure calibration line 2

6.1.3.1 Calibration of the displacement sensor

Contrary to the pressure calibration, the calibration of the displacement sensor is a **activities necessary** for normal use, without which it is not possible to calculate the percentage of the opening of the sensor, which remains not configured until this activity is completed.
See paragraph 9 for the instruction.

6.1.3.2 Field calibration of the pressure sensor

See paragraph 5.1.3.2.

7. Station

Press the St key. The indicator of the area shows "St".



7.1 "Station" List of information

7.1.1 "St - F1" Measurements

Pu1	Upstream pressure - Line 1
PAux1	Upstream pressure - Line 2
Pd	Downstream pressure
PAux2	Tank pressure
PAtm	Atmospheric pressure
Tamb	Environment temperature
T	Gas temperature
Qm	Gross flow rate - Station
Qb	Correct flow rate - Station
Vm	Gross totalizer - Station
Vb	Correct totalizer - Station
Vme	Volume totalizer error - Station

7.1.2 "St - F2" Settings

PresModul	Pressure modulation (enabled, disabled)	See paragraph 10
Setpoint	Manual pressure setpoint	
BackPres	Back Pressure (enabled, disabled)	
PdMin	Minimum downstream pressure	
PdMax	Maximum downstream pressure	See paragraph 11
Qlim	Flow rate limitation (enabled, disabled)	
LimFlow	Flow rate selector to be limited (station, line 1, line 2)	
QlimMax	Maximum flow rate for limitation	
PlimMin	Minimum pressure for limitation	See paragraph 13
LdBreak	Loads disconnection (enabled, disabled)	
TPM	Tank pressure monitoring (enabled, disabled)	
TPMBand	TPM threshold percentage	
PRef	Reference pressure	See paragraph 13
TRef	Reference temperature	
RelDens	Relative density	
VmSet	Setting of the totalizers	

7.1.3 “St - F3” Calibration

Pd Calib	Downstream pressure calibration
PAux2 Calib	Tank pressure calibration
T Calib	Temperature calibration

7.1.3.1 Field calibration of the pressure sensor

See paragraph 5.1.3.2.

7.1.4 “St - F4” Maintenance

MaintStatus	Maintenance status (on, off)
IncTime	UP command duration (ms)
DecTime	DN command duration (ms)
MaintCmd	Maintenance commands

Maintenance commands See paragraph 14.

8. Apparatus

Press the “Ap” key. The indicator of the area shows “Ap”.



8.1 “Apparatus” List of information

On some pages, the function keys have different meanings. To access the general functions, it is necessary to move to a different page.

8.1.1 “Ap – F1” Diagnostics

CurDiag	Current diagnostics (ENTER allows accessing the detail list)
HistDiag	Diagnostics log (ENTER allows accessing the detail list where it is possible to zero the individual conditions using the CLR key, subject to authentication)
NumAlm	Number of existing alarms
NumEvt	Number of existing events

8.1.2 “Ap – F2” Communications

ModemMsg	Modem last message
GsmLevel	GSM signal level: F1 allows making an immediate call; F2 reboots the modem
Baud485-1	Baud rate of the first 485 line, used as communication slave
Baud485-2	Baud rate of the second 485 line, used for the cascading connection with other devices
ChainMode	Role of the second 485 (slave, master)
Reset	Apparatus reset factory configuration

-With the F1 key an immediate call is made, according to the manner configured for periodic calls.

-With the F2 key, the modem is reset.



8.1.3 “Ap – F3” System

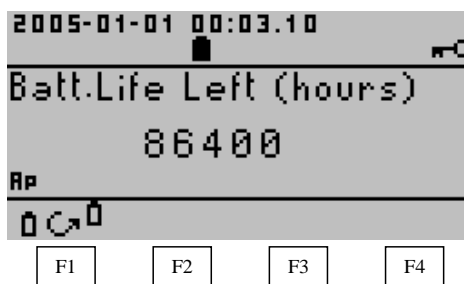
Plantcode	Plant code
Daystart	Gas day start time
Dst	Daylight Saving Time enabling (disabled, enabled)
DstStart	DST start (day and month; if day = 0, last Sunday)
DstEnd	DST end (day and month; if day = 0, last Sunday)
ModbusAddr	Modbus address of the device
Pwd	Password authentication/modification
UnitStd	Measurement unit system (international, imperial)
Tunit	Temperature measurement unit
Puunit	Upstream pressure measurement unit
Pdunit	Downstream pressure measurement unit
PAtmunit	Atmospheric pressure measurement unit
Qunit	Flow rate measurement unit
Vunit	Volume measurement unit
PWunit	Pulse weight measurement unit

8.1.4 “Ap – F4” Information

Maintdate	Forecast maintenance date (year, month, day)
BattUse	Battery usage time (hours)
BattLife	Estimated remaining battery time (hours): F1 starts the replacement procedure
SN	Device serial number
SNPd	Serial number of the sensor Pd
SNPu1	Serial number of the sensor Pu1
SNPAux1	Serial number of the sensor PAux1
SNPAux2	Serial number of the sensor PAux2
SNSpan1	Serial number of the displacement sensor 1
SNSpan2	Serial number of the displacement sensor 2
SNT	Serial number of the sensor T
Firmware	Firmware version

8.1.4.1 Replacing the battery

The sequence of steps of the procedure is shown in the following figures.



Battery time

From the page that shows the remaining time, with the F1 key the procedure is started until reaching the confirmation page.



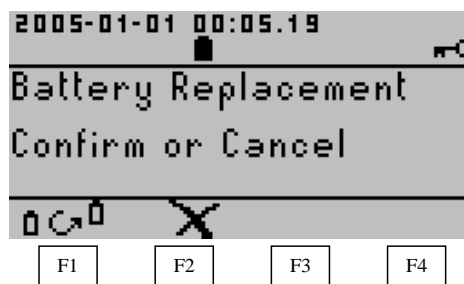
Confirm replacement: F1 to stop the system

With ESC it is possible to cancel the procedure; while F1 confirms the intention to replace the battery. The system stops all activities, saves all the necessary information, including the timestamp, and displays the final page.



Stopped system: replace the battery

Upon restart, the system prompts for confirmation of the fact that the battery has been effectively replaced, in order to reset the related time parameters. F1 confirms; F2 cancels.



Upon restart, confirmation of the occurred replacement

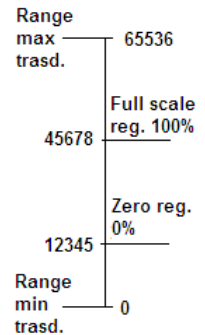
In any case, the system starts again to perform all previous activities, restarting from the timestamp saved before shutting down. The time elapsed between the replacement confirmation and the reboot can be recovered using the time alignment function, accessible from the main list.

9. Setting of Q-kit (limits 0% and 100% of regulator)

The indirect measurement of the flow rate is based on the correlation between the position % of a specific regulator and the inlet and outlet pressures. The position is measured through the displacement transducer. It has a measurement range greater than the stroke of the regulator. So it is necessary for the FIO2 to know exactly the position of complete opening and complete closing of the regulator (see example on the right) on order to calculate by interpolation the intermediate position % during the working operation.

The numbers on the example can be totally different from the real case.

The value in "count" will be displayed on the right of the display until the procedure will be finished.

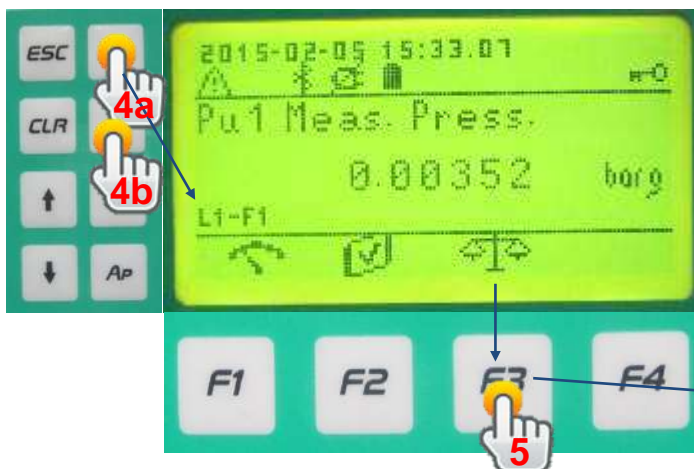


9.1 Preparation of FIO2 menu and password entering

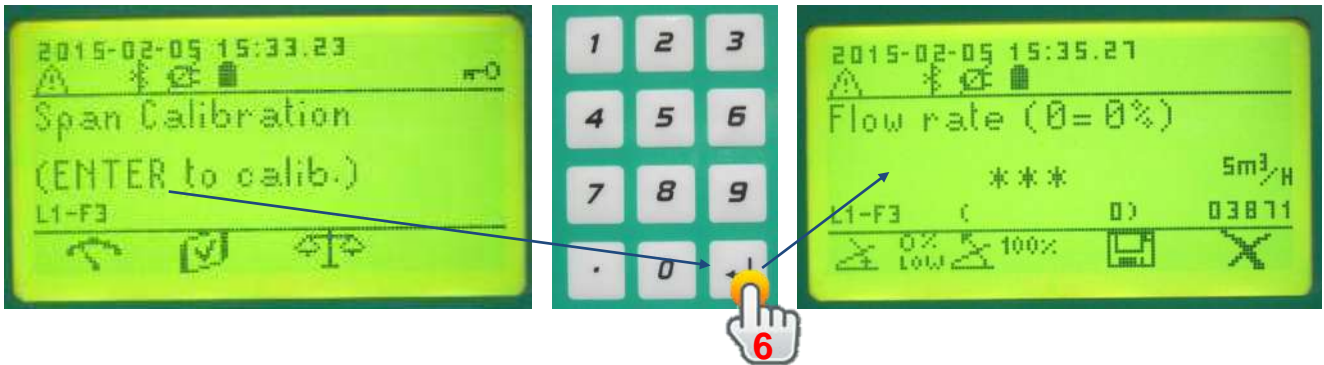
Press two times the "ESC" button. FIO2 display switches on. Press "F3" to activate the back-light if necessary.



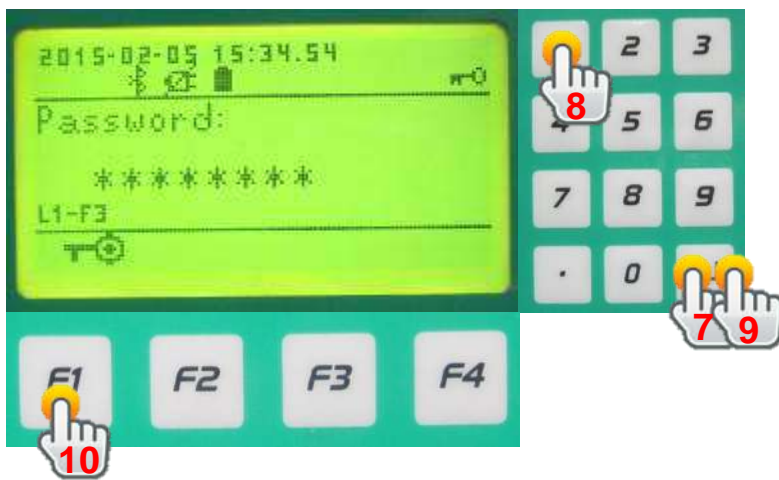
Press L1 for Line 1 setting
Press L2 for Line 2 setting



Press F3 for Calibration menu



Press the button "F1" or "F2". If is the first modification that you are going to do, the FIO2 asks the introduction of the password (the default is "1").



9.2 Setting the full scale of the regulator (100%).

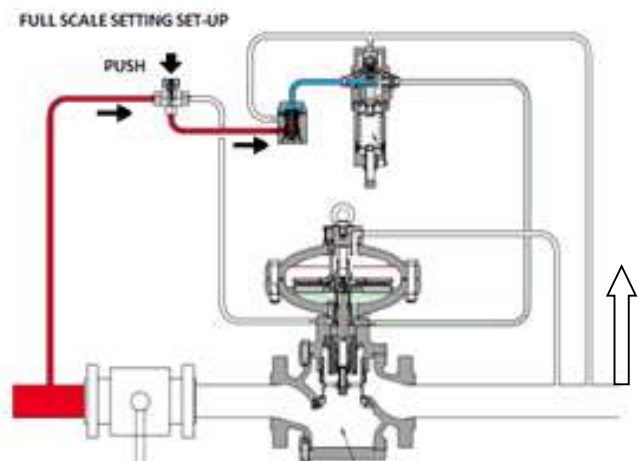
Is preferable to carry out initially the 100% and that the 0%, but the procedure can also be inverted. The suggestion is because normally the opening to 100% of the regulator is realized before the complete pressurization.

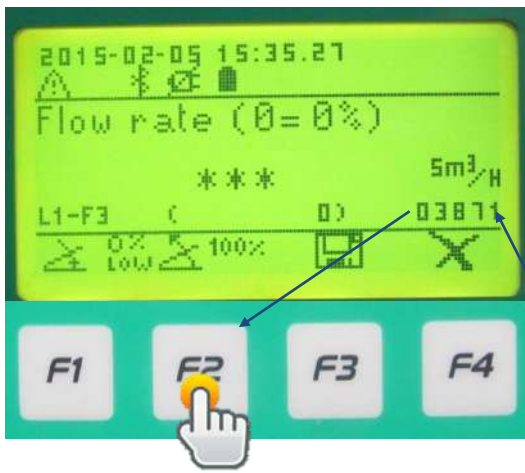
If the regulator is fail to open, you don't need to do any operation.

If is Fail to Close, widely open it by pressing the push valve upstream the pilot system.

Follow this procedure:

- check the connection of the push valve: the secondary inlet has to be connected upstream the slam shut valve or the inlet ball valve
- close the slam shut valve or the inlet ball valve
- open a discharge valve downstream the regulator in order to keep to the atmosphere the downstream volume
- press the push valve. The regulator opens widely
- keep the push valve pressed until the 100% on FIO2 is done.



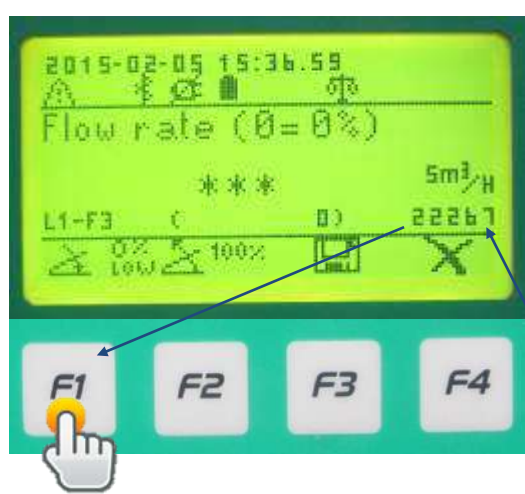
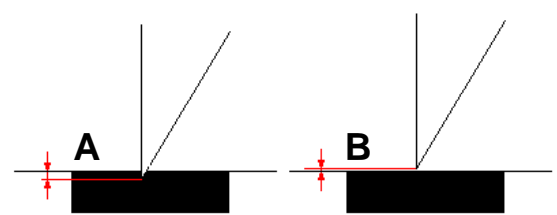


Verify that the position value in count is stable, than press "F2".

9.3 Setting the zero of the regulator (0%).

- 1- Pressurize the regulator.
- 2- Perform all the required settings (Slam shut valve, monitor).
- 3- Adjust, with the setting spring, the required outlet pressure value, flowing with a 1/2" ball valve on downstream side open at 45° discharging in atmosphere
- 4- Set the Zero on FIO2 with the following procedure

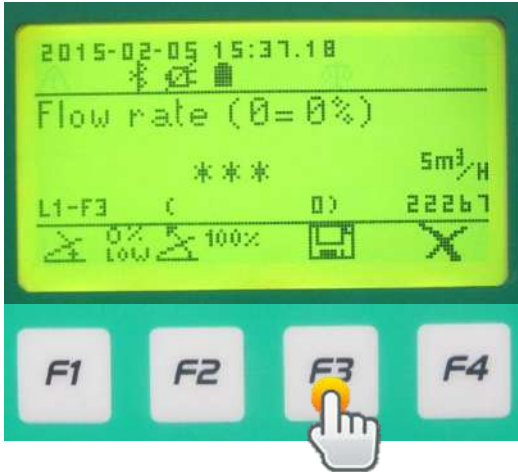
We suggest to perform the zero setting with this small flow rate in order to be sure that the regulator is not working under lock-up pressure. In fact, in lock-up pressure case, the zero would correspond to the position of the seat while it is penetrating in the rubber (see example on the right, case A). The error that could be made in the indirect flow measurement in case "A" would be with no doubt greater than the error generated when considering the zero in a condition of lamination very close to the rubber surface (see example on the right, case B).



Verify that the position value in count is stable, than press "F1".

9.4 Save of the settings.

The **first** opening and closing calibration of FIO2 must be done for both limits (100% and 0%).
 After the setting procedure, is necessary to save the new data pressing "F3".
 In case of mistakes, press "F4" in order to esc from the calibration menu without saving.

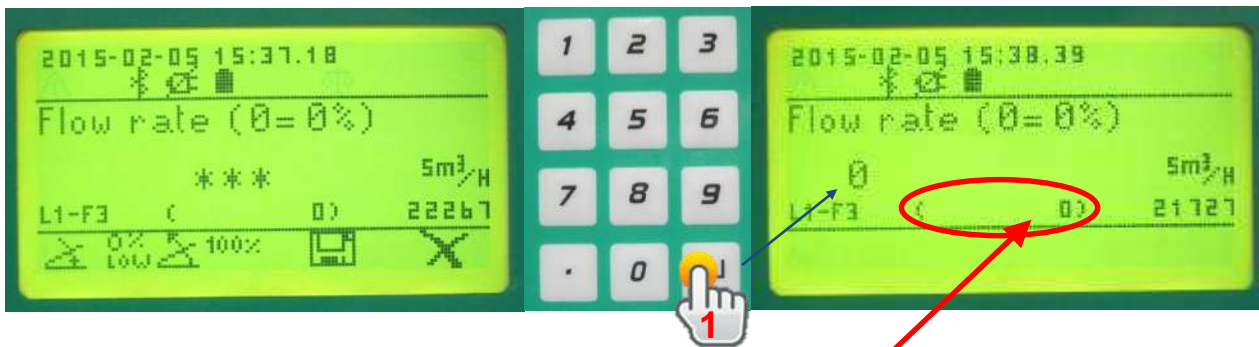


Following adjustments can be done separately.

9.5 *Setting the zero of the regulator with Low Trim Scale (<0%).*

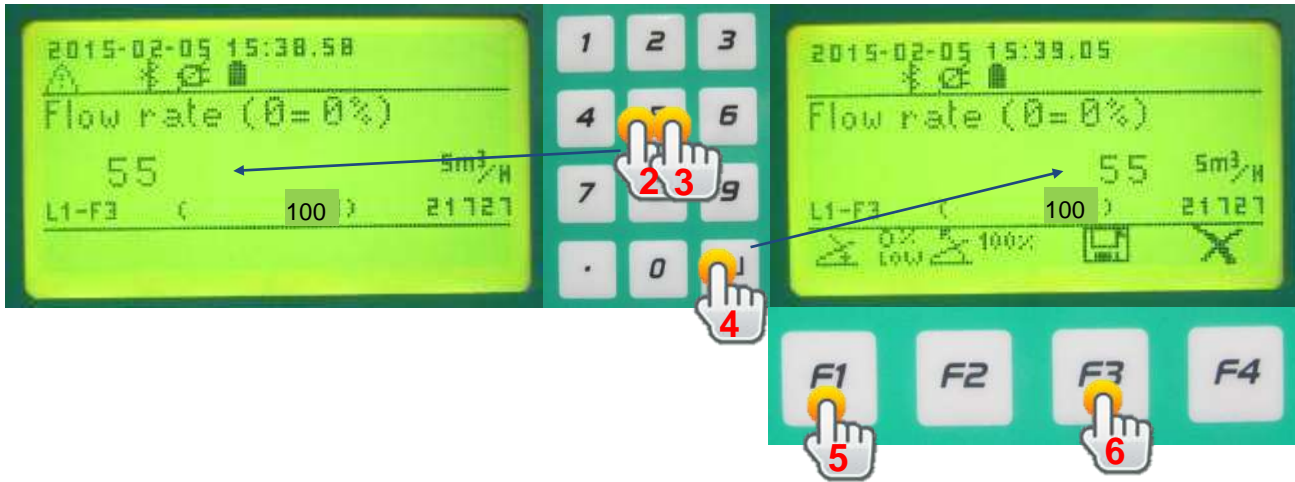
Sometime the flow rate passing through the regulator can be measured with an external device or there is a meter upstream or downstream. In this case is possible to enter this value on FIO2 as Low trim. FIO2 will calculate the corresponding opening value and redefined the Zero of the regulator. The flow rate that can be entered must be, in any case, very low and must be a corrected value in Smc/h.

From the Calibration Menu, press Enter, type the measured flow rate in Smc/h (in this example 55), press Enter again, press "F1" and press "F3" (Save).



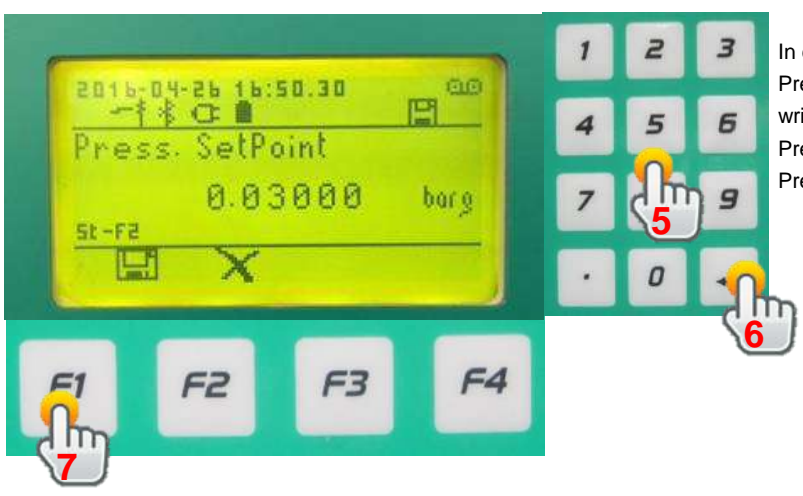
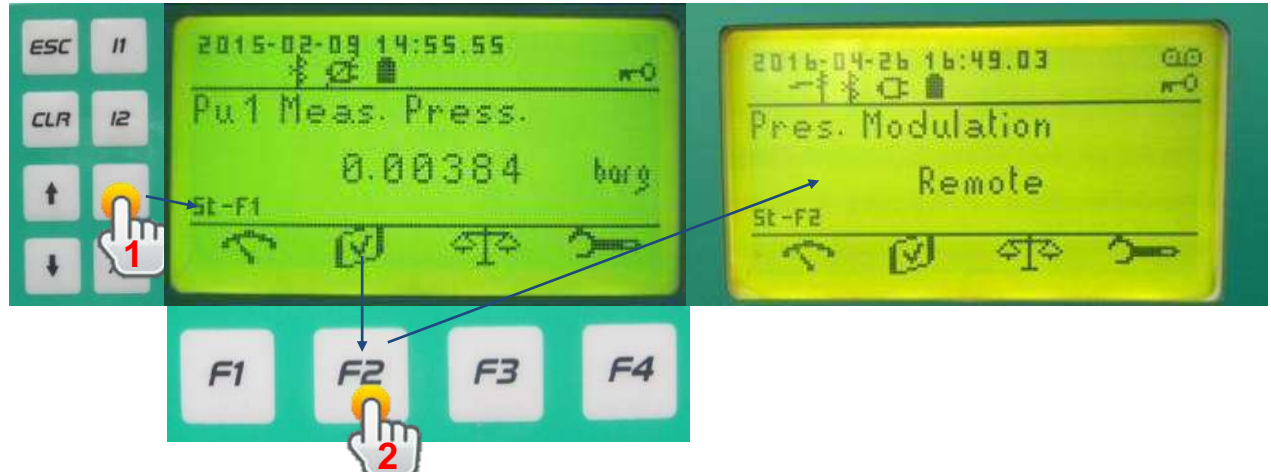
IMPORTANT: The flow rate to be inserted must be **LOWER** than the flow rate indicated in brackets.

If "0" value is displayed in brackets, no Cg curve has been entered yet on FIO2 memory. In this case, to see in brackets the correct value, enter before the Cg curve (see TSG Local manual).



10. Local Outlet Pressure Control modification

Is possible to change locally the set-point value. FIO2 will work in Remote mode (fixed set-point).
 The manual activation is in Station/ Configuration menu (F2):



In case of password entering, see paragraph 2.4.
 Press Enter to activate the set-point field
 write, with the keyboard, the new set-point value
 Press Enter to confirm
 Press "F1" to activate the new set-point

Same procedure for all the main other parameters of Pressure Modulation (scroll down with the arrows on the left):



Switch Pressure modulation mode (Remote, Profiling or Calendar, Compensation).

Remote: fixed set-point

Profiling/calendar: FIO2 change the set-point according to the time band configured from TSG/TSG Local/Scada

Compensation: FIO2 change the set-point according to the flow band configured from TSG/TSG Local/Scada



Activated/deactivate Back-pressure.

When back-pressure is activated, FIO2 recognize that there is an illogical situation, so it stops the activation of solenoid valves.

The back-pressure conditions should be:

-in case of grid with other regulators, there is a regulator with pressure set higher than this plant, so the outlet pressure doesn't decrease as expected

-in case of insufficient delta-p on the regulator, so the outlet pressure doesn't increase as expected

-in case of over load of the regulator, so the outlet pressure doesn't increase as expected



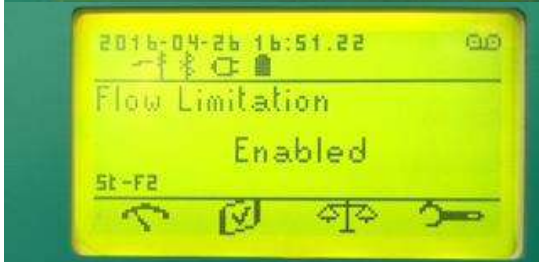
Select Minimum and maximum outlet pressure control range



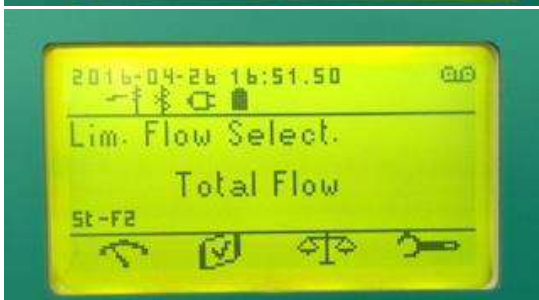
11. Local flow rate limitation modification



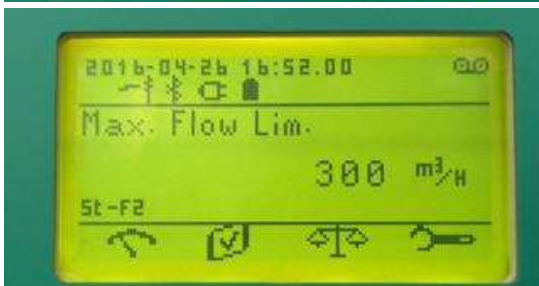
Start from this page (St-F2) and scroll down with the arrows on the left. In case of password entering, see paragraph 2.4.



Enable/disable Flow rate limitation



Select if flow rate limitation is done on Total Flow, Flow line 1 or Flow line 2

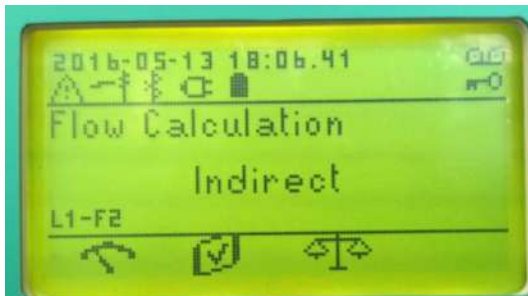


Select the threshold of Flow rate to be limited



Select Minimum outlet pressure range in case of Flow limitation

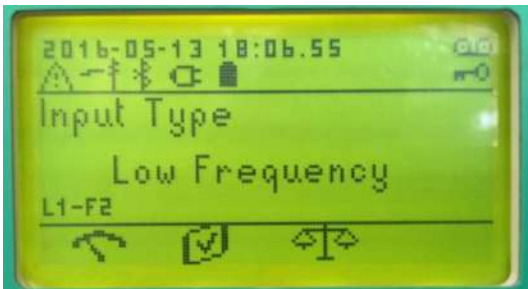
12. Local flow rate parameters modification



Select Indirect or direct



Select Gross flow (from meter) or Net flow (from flow computer)



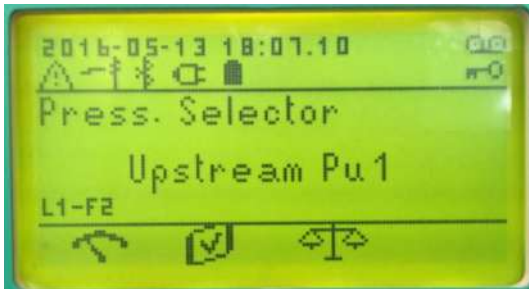
Select Low frequency or High frequency (only for Line 1)



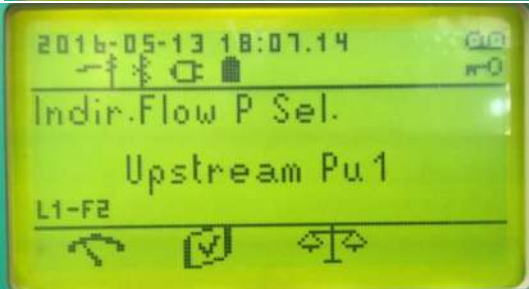
Select Low frequency weight of 1 pulse



Select High frequency pulses for 1 m3 (only for Line 1)



Select pressure used for correction of direct flow calculation



Select pressure used for correction of indirect flow calculation



Select diameter of the regulator

13. Local flow rate modification of reference conditions of the gas



Starting from this page (St-F2) and scroll down with the arrows on the left. In case of password entering, see paragraph 2.4.

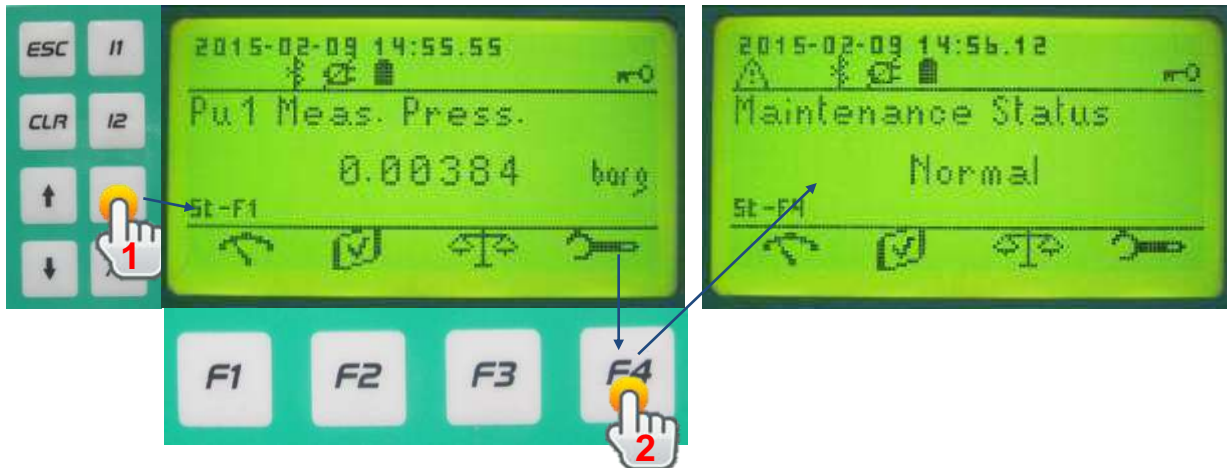


Change gas reference conditions and characteristics for Flow rate calculation



14. Local modification of maintenance settings

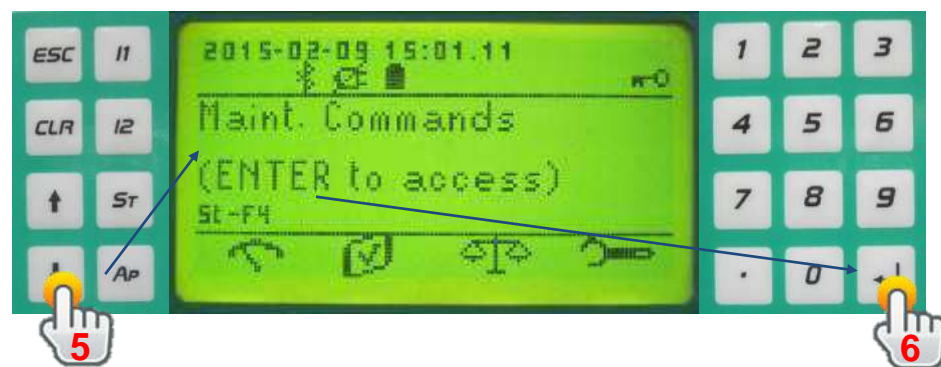
Follow this sequence on order to open the Maintenance Commands page:



Change the opening time of UP increment step and press Enter



Change the opening time of DOWN increment step and press Enter





From this page is possible to manually activate increment solenoid valve (pressing F2) and decrement solenoid valve (pressing F3) .

Is possible, with the same procedure of Paragraph 10, also to modify the set-point from this page.

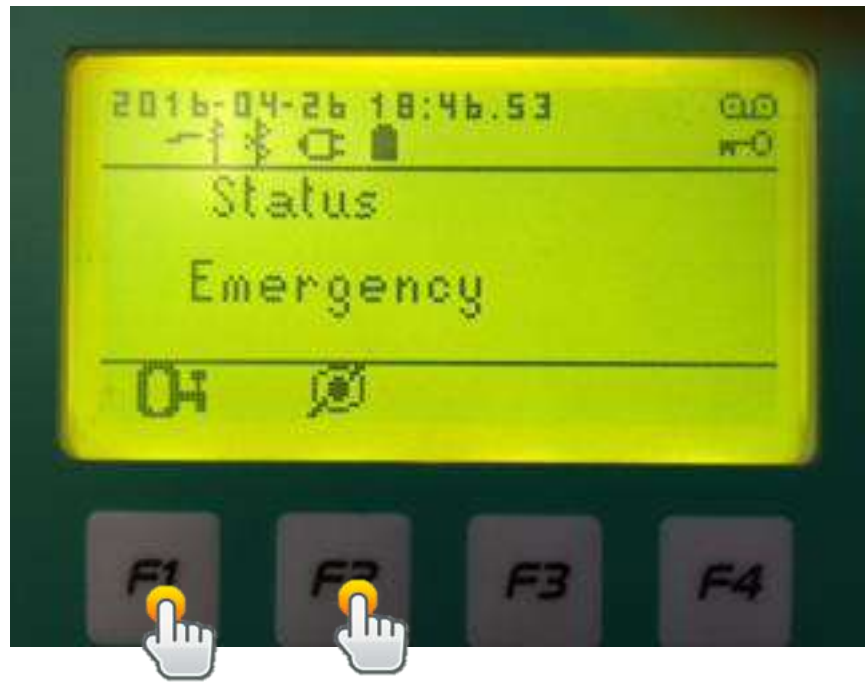
15. Emergency button

In case of uncontrolled activity of FIO2, is possible to activate the “Emergency Status” that immediately stops the functions of FIO2 (pressure modulation, flow limitation, ecc.).

The emergency button allows stopping the regulation activity, suspending the implementation of the valve commands. The system goes into the emergency status and the page shown in the figure is displayed; on this page, the corresponding icon blinks. In this status, the system performs all normal activities (acquisition, log, communication), excluding the regulation, and the operator can browse the other pages of the user interface.

From any page, by pressing once again the emergency key, it is possible to return to the corresponding page.

The function keys allow emptying the tank (F1) and exiting the emergency status (F2). When quitting, the system returns to a normal status, with inactive regulation.



-Press the “F1” button to empty completely the tank.

-When the emergency is finish, is possible to press the “F2” button to exit from emergency mode.

The pressure modulation starts from Idle mode, so is necessary also to restart the outlet pressure control (for example see the re-writing of the set-point in par.10).