

PRESYS®

PCON KOMPRESSOR-Y18

Automated Pressure Calibrators with built-in Air Compressor from Vacuum to 1000 psi / 70 bar

Field Service
version



19" Rack
Mounting
version



Desktop
version



Technical Manual

EM0360-02

**WARNING!**

The instruments described in this technical manual are equipments for use in a specialized technical area. The user is responsible for the configuration and selection of suitable parameters for the instruments. The manufacturer warns about the risk of personal injury and property damage resulting from the incorrect use of the instruments. Use the instruments only according to this technical manual. Any operation not described here is not allowed.

**WARNING!**

Other pressure equipments and accessories (such as hose, reservoirs, protection devices) connected to the calibrator must be appropriate to the working pressure range.

**WARNING!**

During startup, do not connect any instrument to the output port of the Pressure Control Module. Before making any connections to the Pressure Control Module, enter the CALIBRATOR menu and wait for the automatic VENT and RESET operations.

**WARNING!**

The calibrator releases gas to the atmosphere through the VENT port. Leave this port free, when exposed.

**WARNING!**

Before connecting the instrument under test to the output port, perform a VENT operation to release any gas inside the controller.

**WARNING!**

Before connecting the instrument under test to the output port it is recommended to configure the output range parameters. These parameters limit the controller output range in order to protect the instrument under test.

**ATTENTION!**

To prevent damage to the instrument connected to the PCON KOMPRESSOR-Y18 output, do not turn it off if the CONTROL mode is selected. Before turning it off, go to depressurized shutdown (See section 2.1.4. Vent Mode).

**ATTENTION!**

In the FS version, the three holes located at the bottom of the instrument are used for releasing the air present in the system. Do not obstruct these holes.

**WARNING!**

Avoid electric shock risk when touching the equipment. Use only a suitable power cable with earth connection and never power up the equipment to the mains socket without an earth connection (RM/DT Versions).
For the FS Version, use only the charger provided by the manufacturer.

**WARNING!**

High voltage is present inside these equipments. It can cause great damages and injuries. Do not make any repair service inside the equipment without removing the power supply plug (RM version).

**NOTICE!**

High level of electromagnetic noise can cause instability to the equipment. The equipment is provided with electromagnetic interference filters that protect not only the mains but also the equipment itself against noise. These filters have no function if the unit/charger is not earthed properly.

**IMPORTANT!**

All pressure equipment and accessories (such as hoses, connections, adapters, etc.) connected to the calibrator must be clean, free of residues such as oil, dirt, dust etc. These residues can cause irreversible damage to the internal system of the Pressure Control Module. It is mandatory to use filters at the OUT port.

**ATTENTION! INSTRUMENT STOP BY TEMPERATURE RISING**

In cases of the extended periods of use with high air flow and depending on the ambient thermal condition, the compressor can interrupt its operation due to a rise of temperature detected by the safety device, in this case this symbol will appear on the upper left of the display: 
As soon as the ventilation system brings the compressor temperature back to appropriate levels, which may take a few minutes, the instrument will return to its normal operational status.

**WARNING!**

Beware of the pressure connections. High pressure within a large volume may cause damage to both people and property. Never disconnect a hose or a connection with the system pressurized.

**WARNING!**

This instrument generates high levels of pneumatic pressure and should not be operated out of the case. Only qualified technicians should perform maintenance procedures.

CAUTION: Damage caused by failure to observe the above recommendations results in total or partial loss of the equipment warranty.

The warranty conditions are available in our sites:

www.presys.com.br/warranty

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1 - INTRODUCTION

1.1. General Description

The **PCON KOMPRESSOR-Y18 Automatic Pressure Calibrator** allows pneumatic pressure control from 0 to 15 psi up to 0 to 1000 psi (70 bar), including vacuum. Due to its built-in compressor, it provides a complete solution for the test and calibration of pressure switches, transmitters and manometers. In addition to the internal compressor, it also allows the use of an external air source as a pressure supply, which may be an external compressor (see Presys CPY), a manual air pump, a pressurized cylinder with a regulating valve, etc.

It has a high level of accuracy, including aspects relating to changes in ambient temperature, and it maintains the specifications over long periods of time. Besides that, it also allows the measurement of signals generated by the instrument under test which is being calibrated. This is possible due to an **embedded calibrator** specific for these types of signals, including 4-20 mA current. Thus, the PCON KOMPRESSOR-Y18 incorporates the functions of pressure controller, digital pressure standard and calibrator for mA, V, mV, ohms, RTD and pressure switches.

For pressure measure sensors increase beyond the available on the calibrator, there is the possibility of acquiring an external pressure module (**MPYA**) that communicates with the PCON via USB port.

It also works as a **Hart® Communicator** with a configurable 250 Ω internal resistance, 24 VDC power supply for transmitters and the latest DD library (optional). This allows configuring and calibrating Hart® pressure transmitters easily.

A highly visible **5.7" touchscreen display** allows easy configuration and user-friendly operation.

PCON KOMPRESSOR-Y18 features **full advanced documenting capabilities**. It enables the creation and execution of automatic calibration procedures (tasks). After completing a task, a Calibration Report is issued and it can be printed directly on a USB connected printer or a PDF document can be generated.

It also allows performing **automatic calibrations** by using the ISOPLAN® Calibration Management Software. In this way, the calibrator and the computer share data for a more efficient treatment of information, by issuing reports and certificates, and by service order management, for a global coverage of quality procedures such as the ISO-9000.

Communication with the computer through **SCPI** and **WebApi commands** is available for on-line data acquisition and control of the calibrator.

1.2. Technical Specifications

1.2.1. Pressure Control Module

Ranges	Resolution	Control Stability	Accuracy
(3C) -0.9 to 1 bar	0.00001	± 0.002 % FS*	± 0.0125 % FS
(4C) -0.9 to 2 bar	0.00001	± 0.002 % FS	± 0.0125 % FS
(5G) 0 to 7 bar	0.0001	± 0.002 % FS	± 0.0125 % FS
(5C) -0.9 to 7 bar	0.0001	± 0.002 % FS	± 0.0125 % FS
(6G) 0 to 17 bar	0.0001	± 0.002 % FS	± 0.0125 % FS
(6C) -0.9 to 17 bar	0.0001	± 0.002 % FS	± 0.0125 % FS
(7G) 0 to 35 bar	0.0001	± 0.004 % FS	± 0.0125 % FS
(8G) 0 to 70 bar	0.001	± 0.004 % FS	± 0.0125 % FS

(*)FS = Full Scale.

1.2.2. Auxiliary Input

Input Ranges	Resolution	Accuracy	Remarks
millivolt -500 mV to -150 mV -150 mV to 150 mV 150 mV to 2450 mV	0.01 mV 0.001 mV 0.01 mV	± 0.02 % FS* ± 0.01 % FS ± 0.02 % FS	R _{input} > 10 MΩ auto-range
Volt -10 V to 11 V 11 V to 45 V	0.0001 V 0.0001 V	± 0.02 % FS ± 0.02 % FS	R _{input} > 1 MΩ
mA -5 mA to 24.5 mA	0.0001 mA	± 0.01 % FS	R _{input} < 120 Ω
resistance 0 to 400 Ω	0.01 Ω	± 0.01 % FS	Excitation current 0.85 mA, auto-ranging
Pt-100 -200 to 850 °C -328 to 1562 °F	0.01 °C 0.01 °F	± 0.1 °C ± 0.2 °F	IEC 60751
Cu-10 -200 to 260 °C -328 to 500 °F	0.1 °C 0.1 °F	± 2.0 °C ± 4.0 °F	Minco 16-9
Ni-100 -60 to 250 °C -76 to 482 °F	0.1 °C 0.1 °F	± 0.2 °C ± 0.4 °F	DIN-43760

(*) FS = Full Scale

Accuracy values are valid within one year and temperature range from 20 to 26 °C. Outside these limits add 0.001 % FS / °C, taking 23 °C as the reference temperature.

1.2.3. General Specifications

Thirty minutes warm-up time to reach full specifications.

Transmitter Power Supply (TPS): 24 Vdc, with protection against short-circuit (30 mA).

Contact input for calibration of pressure switches.

Operating temperature range: 0 to 50 °C.

Relative Humidity: 0 to 90 % RH.

Engineering units:

- Pressure: psi, bar, mbar, atm, at, mmH₂O, mmH₂O@4°C, cmH₂O, cmH₂O@4°C, mH₂O, mH₂O@4°C, inH₂O, inH₂O@60°F, inH₂O@4°C, , ftH₂O, ftH₂O@4°C, mmHg, mmHg@0°C, cmHg, cmHg@0°C, inHg, inHg@0°C, inHg@60°F, torr, kPa, Pa, MPa, kgf/cm², gf/cm², kgf/m².
- Temperature: °C, °F, K.

Built in Web Server.

Ethernet communication. USB port for software/firmware upgrade.

HART[®] Communication Protocol.

Includes technical manual and test leads. For the FS (Field Service) Version a battery charger is also included (100 to 240 Vac 50/60Hz).

Pneumatic Connection: Female 1/8" BSPP (G1/8)

Power Supply:RM/DT (Rack Mounting/Desktop) Version: 100 to 240 Vca 50/60 Hz.

FS (Field Service) Version: Lithium Polymer 4200 mAh rechargeable battery or 27Vdc/4.4 A charger

Dimensions:

132 mm x 483 mm x 255 mm (HxWxD) for the RM Version.

210 mm x 500 mm x 260 mm (HxWxD) for the DT Version.

200 mm x 300 mm x 260 mm (HxWxD) for the FS (Field Service) Version *up to 25 bar*.

330 mm x 430 mm x 220 mm (HxWxD) for the FS Version *above 25 bar*.

Weight: 8.5 kg approx. (RM Version)
 9.0 kg approx. (DT Version)
 7.0 kg approx (FS Version – *up to 25 bar*).
 10.0 kg approx (FS Version – *above 25 bar*).

18 Months warranty.

Calibration Certificate (optional).

Notes:

- * PCON KOMPRESSOR-Y18 and ISOPLAN[®] are registered trademarks of Presys.
- * Changes can be introduced in the instrument, altering specifications in this manual.
- * HART[®] is a *FieldComm Group* trademark.

1.3. Special Software Features

- **PRESET POINTS:** edit your most frequently used setpoints and access them quickly.
- **STEP:** steps or setpoints with configurable time.
- **STABILITY / LEAK TEST:** measure the variation of a signal (be it pressure or an auxiliary input signal) within a configurable period.
- **PRESSURE SWITCH TEST:** automatic testing of pressure switches.
- **AUTOMATED TASKS:** create calibration work orders and execute automatic calibration services, store data and generate a calibration report to be sent to a directly connected USB printer or PDF file.
- **DATA LOGGER:** monitor input or output signals, store and visualize data on a chart or table.
- **HELP DESK:** store and watch videos and documents on the calibrator screen.
- **MEMORY MANAGER:** store configuration types predefined by the user.

Do you have any doubt?

Press **HELP** or  icons to have information about the function.

1.4. Order Code

PCON KOMPRESSOR-Y18 - - - - - - -

Mounting Version

FS - Field Service (Field Service in Rugged Polypropylene Case)

RM - Rack Mounting Version (Fixed in a 19" Rack or Workbench)

DT - Desktop Version (For Workbench use)

Hart® Communication

CH - Hart® Calibrator (basic commands: zero, span, trim mA). (Standard Included)

FH - Full-Hart® Configurator, with DD library from FieldComm Group (Optional)

Pressure Range

Code	Pressure Range	Range 1 - Low	Range 2 - High
3-C-5-G	-0.9 to 7 bar	-0.9 to 1 bar	0 to 7 bar
4-C-5-G		-0.9 to 2.5 bar	
3-C-6-G	-0.9 to 25 bar	-0.9 to 1 bar	0 to 25 bar
4-C-6-G		-0.9 to 2.5 bar	
5-C-6-G		-0.9 to 7 bar	
3-C-7-G	-0.9 to 40 bar	-0.9 to 1 bar	0 to 40 bar
4-C-7-G		-0.9 to 2.5 bar	
3-C-8-G		-0.9 to 1 bar	
4-C-8-G	-0.9 to 70 bar	-0.9 to 2.5 bar	0 to 70 bar
5-C-8-G		-0.9 to 7 bar	
6-C-8-G		-0.9 to 25 bar	
5-C-7-G		-0.9 to 7 bar	

Optional

BR - BR - Barometric Reference to measure and emulate absolute pressure
Accuracy 0.16 mmHg / 0.2 mbar

1.5. Parts Identification

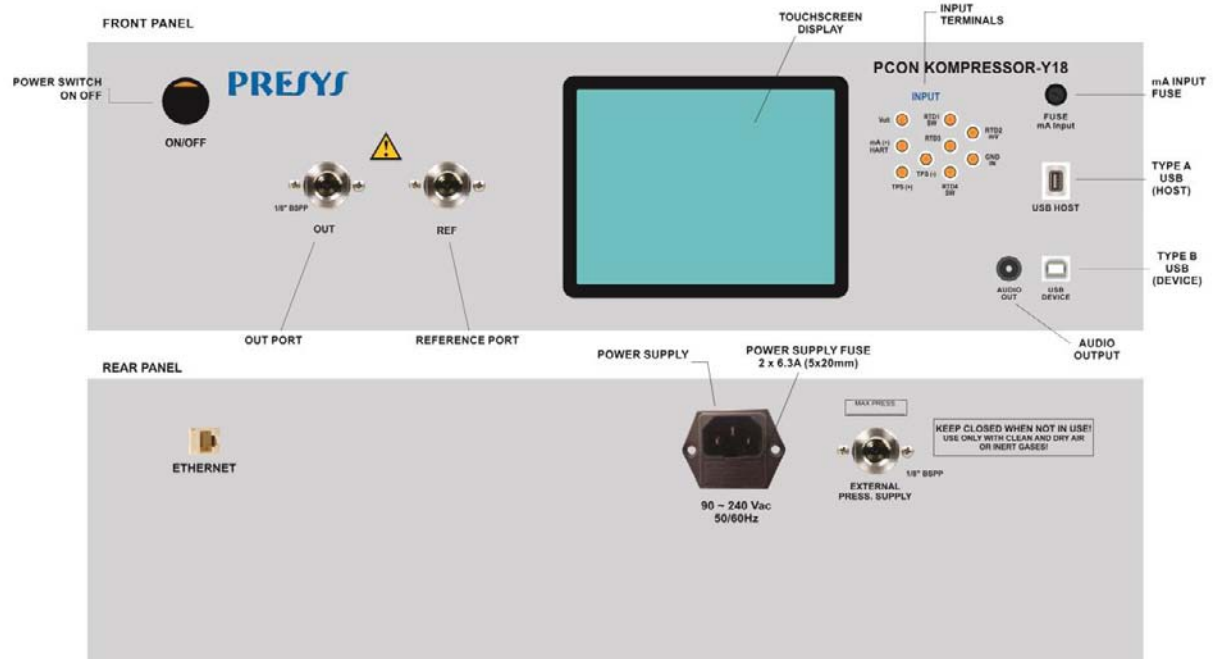


Fig. 01 – RM Version- Rack Mounting



Fig. 02 – FS Version - Field Service Case

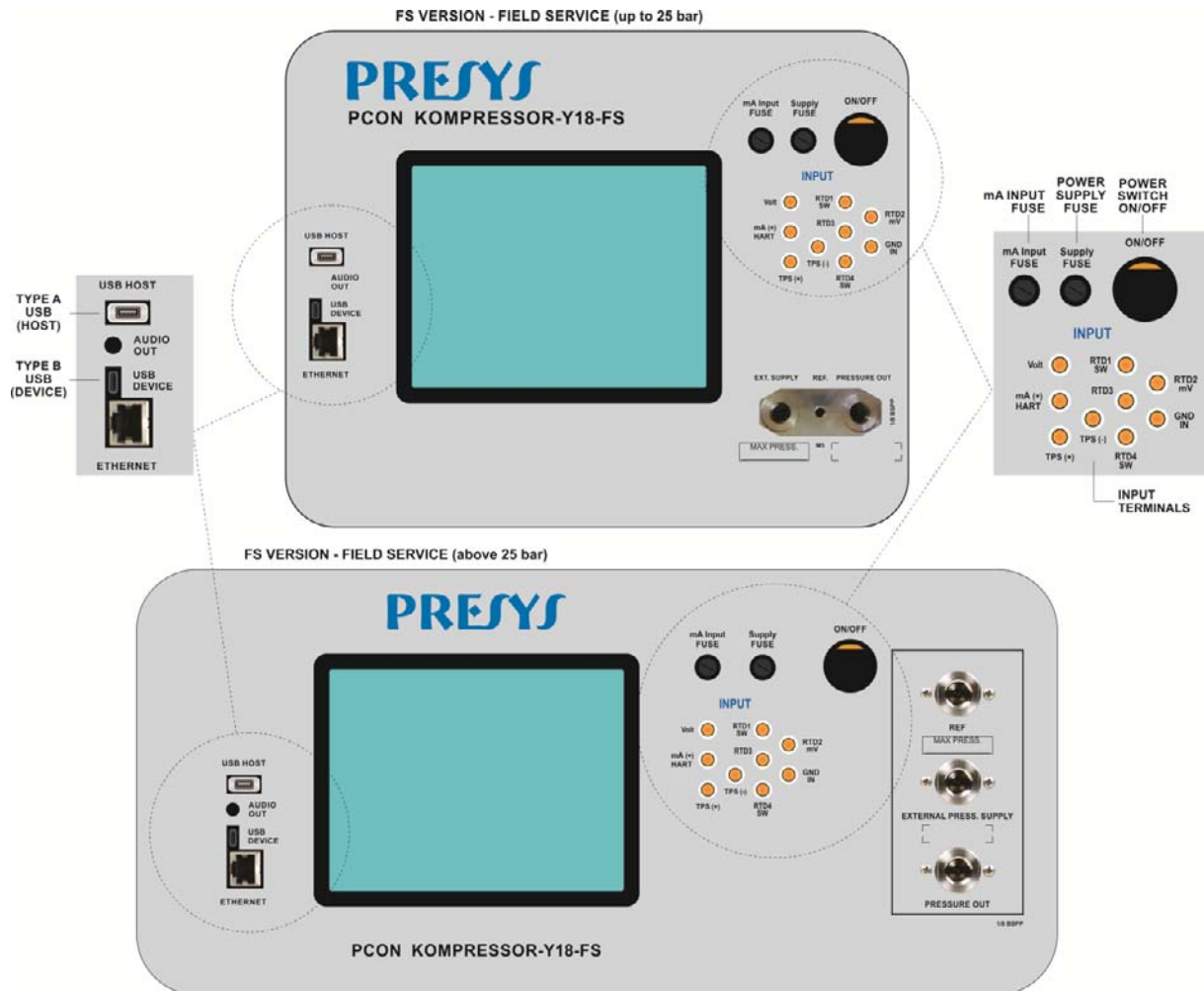


Fig. 03 – FS Version - *Field Service* Front Panel

Note: VENT port located internally in the FS version, not accessible to the user.

2 - CALIBRATOR OPERATION

Turn on the PCON KOMPRESSOR-Y18 by pressing the ON/OFF power switch on the front panel.

When powered on, the calibrator runs a self-test routine. If there is a failure, the display shows a message to indicate the error type. In this case, please contact the Presys Technical Assistance department.

As soon as the self-test is completed, the display shows the **MAIN** screen, as seen below.

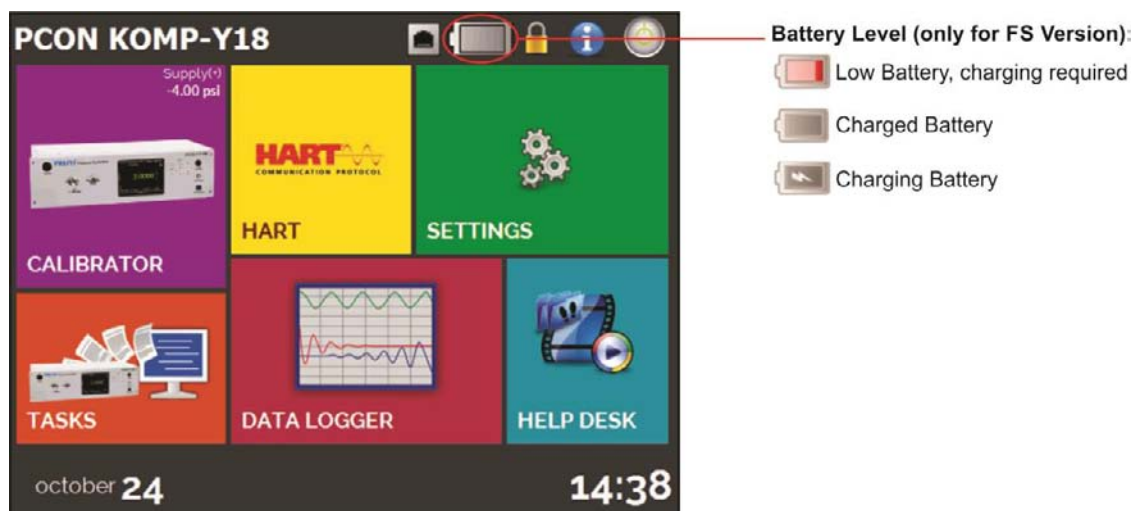


Fig. 04 – MAIN menu



WARNING!

During startup, do not connect any instrument to the output port of the Pressure Control Module. Before making connections to the Pressure Control Module, enter the CALIBRATOR menu and wait for the automatic VENT operation.

The **MAIN** menu is divided into the following menus:

CALIBRATOR – selects the input / output functions (Pressure Control Module and Auxiliary Input Signals), see section 2.1.

HART® – optional module for the communication with devices using the Hart® Communication Protocol, see section 2.3.

TASKS – performs automatic calibrations, see section 2.4.

DATA LOGGER – records measurements, visualized on a chart or table, see section 2.5.

HELP DESK – features videos provided by Presys to assist in the use of the calibrator, and can also store videos and documents made by the user, see section 2.6.

SETTINGS – general calibrator settings, see section 2.7.

2.1. Calibrator Menu

The **CALIBRATOR** menu on the **MAIN** screen allows access to the OPERATION screen with the Pressure Control Module and Auxiliary Input functions.

When entering the **CALIBRATOR** menu for the first time, the PCON KOMPRESSOR-Y18 executes a VENT operation and an automatic reset of the pressure read by the Pressure Control Module. When the operation is completed, it remains in the **VENT** mode.



Fig. 05 – Calibrator initialization and VENT mode on the OPERATION screen.

The Pressure Control Module has three operation modes: **MEASURE**, **VENT** and **CONTROL** (see sections 2.1.2, 2.1.3 and 2.1.4). To select an operation mode, press one of the buttons shown below. The current mode is indicated by the ● symbol.



Fig. 06 – Operation mode buttons on the OPERATION screen.

2.1.1. Pressure Supply

The PCON KOMPRESSOR-Y18 controls the pressure at the output port with high precision and stability. For the control, pressure is supplied to the controller by a built-in compressor or an external pressure supply.

Using internal pressure supply mode the compressor is activated to provide the required pressure for the entire operating range. When external pressure supply mode is activated, the compressor is disabled.

To change the supply mode:

CALIBRATOR → **SETTINGS** → **ADVANCED** → **SUPPLY MODE**

INT: Internal pressure supply mode (internal compressor enable)

EXT: External pressure supply mode (internal compressor disabled)

Note: By default the PCON KOMPRESSOR-Y18 is shipped from the factory configured as internal pressure supply mode.



Fig. 07 – Pressure Supply Mode

When configured as external pressure supply mode, the PCON will do the depressurization cycle and when finished it will be ready to receive an external pressure supply through the **EXTERNAL PRESS SUPPLY** port, located on the rear panel of the PCON (RM/DT version) or on the front panel next to the port OUT (FS version).

Never supply the PCON with a pressure higher than the maximum allowable pressure, this value appears on the label next to the EXTERNAL PRESS SUPPLY port.

Increase the External Pressure Supply slowly as there is some delay on the SUPPLY indication. If the pressure is higher than the maximum allowable pressure, the PCON will open the VENT valve to release the pressure. See the Pressure Supply indication on **SETTINGS > ADVANCED** tab.

Use only clean, dry air or inert gases (e.g. nitrogen) to supply the PCON.

The **EXTERNAL PRESS SUPPLY** port has 1/8" thread pattern BSPP (G1/8) has an internal filter to prevent debris from entering the Controller (Presys Order Code: 02.09.0162-21) which can be removed for cleaning or replacement with the help of a screwdriver. An external filter with 7 micron filter element (Presys Order Code:

02.09.153-21) can also be used to prevent contamination with debris and dirt particles from the external pressure supply.

The **EXTERNAL PRESS SUPPLY** port must be kept closed (plugged in) when the PCON is in Internal Pressure Supply mode (**INT**), if it remains open the compressor will start and will never reach the proper pressure.

2.1.1.1 Control Module – Output Connections

The presence of water, oil or particles in the Pressure Control Module can cause irreparable damage to the system. Equipment and connectors must be clean and dry when connected to the output. The use of a contamination trap is necessary to protect the system (see item 4.0).

FRONT PANEL

OUT

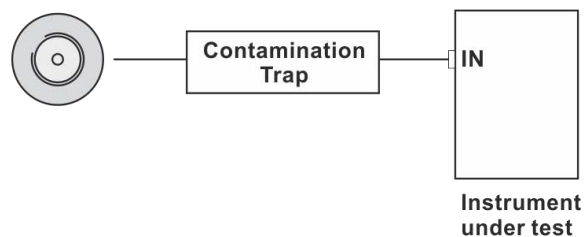


Fig. 08 – Output Connections (Front Panel).

The OUT port has 1/8" thread pattern BSPP (G1/8) has an internal filter to prevent debris from entering the Controller (Presys Order Code: 02.09.0162-21) which can be removed for cleaning or replacement with the help of a screwdriver.

**WARNING!**

The instruments described in this technical manual are equipments for use in a specialized technical area. The user is responsible for the configuration and selection of suitable parameters for the instruments. The manufacturer warns about the risk of personal injury and property damage resulting from the incorrect use of the instruments. Use the instruments only according to this technical manual. Any operation not described here is not allowed.

**WARNING!**

Other pressure equipments and accessories (such as hose, reservoirs, protection devices) connected to the calibrator must be appropriate to the working pressure range.

**WARNING!**

The calibrator releases gas to the atmosphere through the VENT port. Leave this port free, when exposed

**WARNING!**

Before connecting the instrument under test to the output port, perform a VENT operation to release any gas inside the controller.

**ATTENTION!**

To prevent damage to the instrument connected to the PCON KOMPRESSOR-Y18 output, do not turn it off if the CONTROL mode is selected. Before turning it off, go to depressurized shutdown (See section 2.1.4. Vent Mode).

**IMPORTANT!**

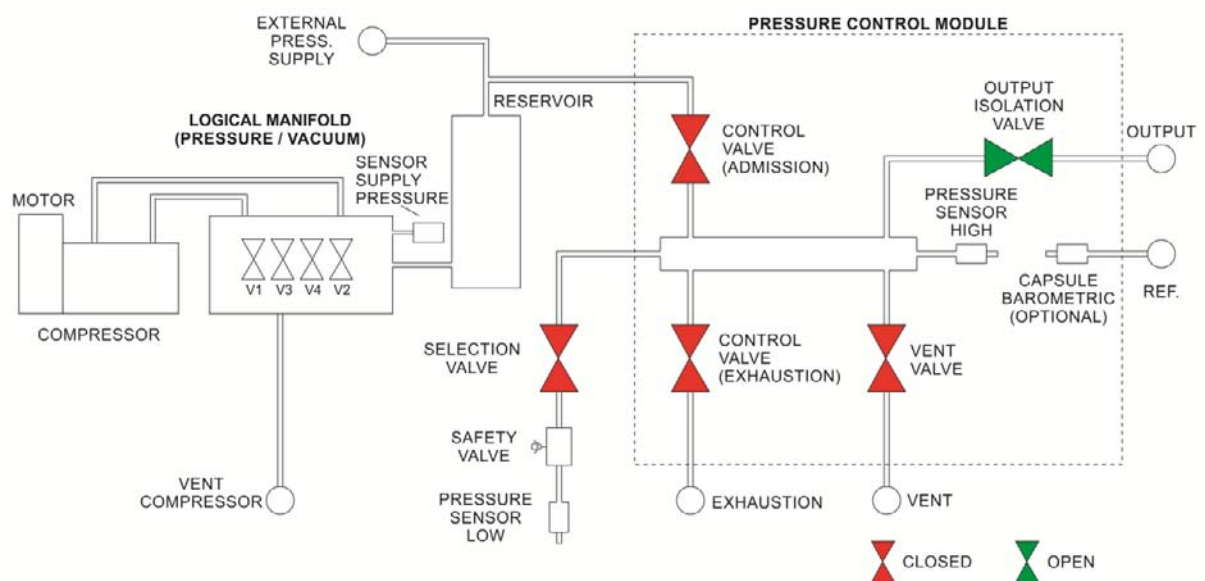
All pressure equipment and accessories (such as hoses, connections, adapters, etc.) connected to the calibrator must be clean, free of residues such as oil, dirt, dust etc. These residues can cause irreversible damage to the internal system of the Pressure Control Module. It is mandatory to use filters at the OUT port.

2.1.2. Measure Mode

In the **MEASURE** mode, the calibrator shows the pressure measured by the Pressure Sensor (C1). In this mode, the pressure control is disabled and is not consuming the air supply.



Fig. 09 – MEASURE mode on the OPERATION screen.



Note: VENT is an internal port, not accessible to the user.
The Selection Valve is OPEN when Range Low is selected.

Fig. 10 – State of the valves in the MEASURE mode.

In order to reset the current pressure measurement, press the **RESET PRESS** button. Whenever this function is applied, the PCON KOMPRESSOR-Y18 executes a VENT operation and an **AUTO RESET** of the pressure read by the Pressure Control Sensor and returns to the **VENT** mode.

The **VENT** valve opens allowing the pressurized air from the control manifold to be released, allowing the selected pressure sensor to measure ambient pressure.



Fig. 11 – Reset pressure button on the OPERATION screen.

The state of the output isolation valve is user configurable. To change the state of the valve, press the **SETTINGS** button shown below and change the **Output Parameters** option (OPEN / CLOSE) on the **ADVANCED** tab.



Fig. 12 – Output Isolation Valve Status.

The isolation valve has the following specifications:

- Can seal pressures up to 7 bar internally generated in the PCON (from inside out - direct solenoid mode);

- Can seal pressures generated outside the PCON (outside in - reverse solenoid mode). Maximum 30 bar for models with range up to 25 bar and maximum 75 bar for models with range over 25 bar.

Head Height Correction

Height correction can be applied when the instrument to be calibrated is at a different height than the PCON port OUT.

To enable correction, set the height, temperature, type of gas supply, local gravity acceleration, relative humidity and whether the instrument to be calibrated is above or below the PCON port OUT.

The correction is already applied to the PCON indication and the correction value is also shown on the screen.

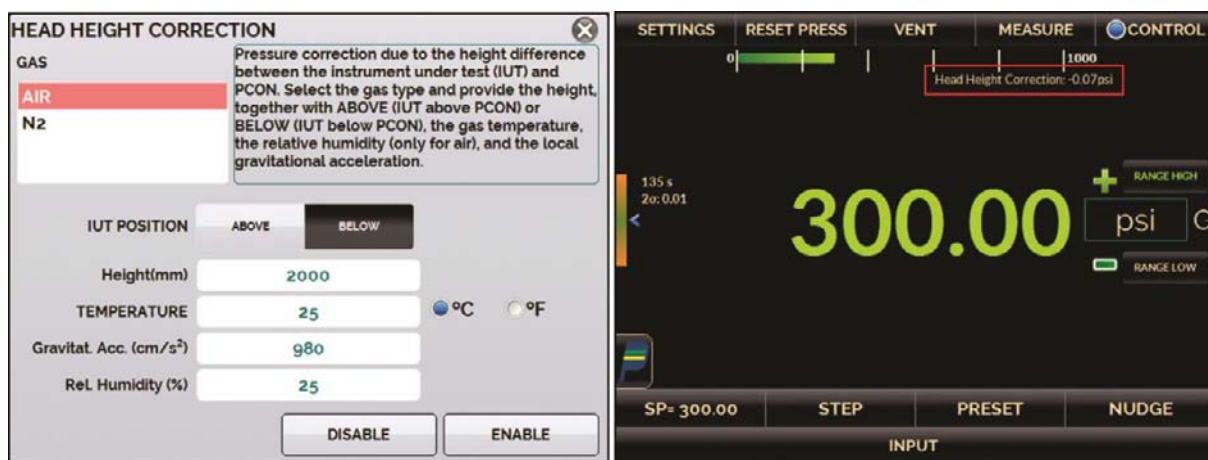


Fig. 13 – Head Height Corretion

Pressure Sampling Rate

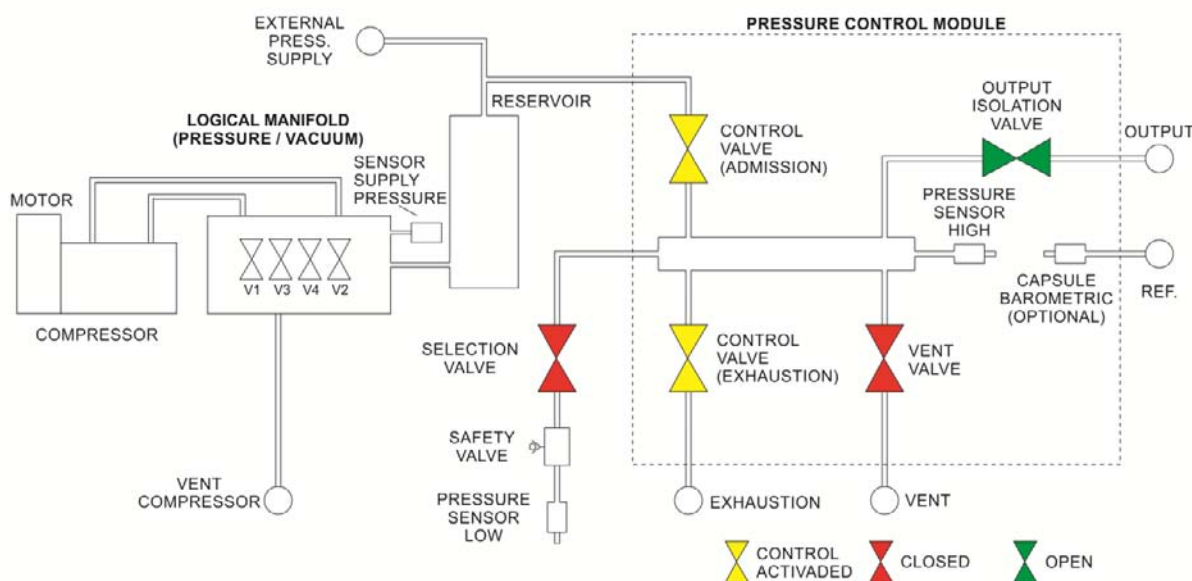
It is the sampling rate of the A/D converter of the pressure indication. By selecting **SLOW**, indication will be more accurate but the value update on screen may slow down. Selecting **FAST**, indication will be less accurate but the value update on screen may be faster. This parameter can be changed in **SETTINGS > ADVANCED > PRESSURE SAMPLING RATE**.

2.1.3. Control Mode

In the **CONTROL** mode, the calibrator controls pressure at the output port by means of the admission and exhaustion control valves, using the pressure supplied by the internal compressor or external pressure supply.



Fig. 14 – CONTROL mode on the OPERATION screen.



Note: VENT is an internal port, not accessible to the user.
The Selection Valve is OPEN when Range Low is selected.

Fig. 15 – State of the valves in the CONTROL mode.

a) Range Parameters

The PCON KOMPRESSOR-Y18 is a dual range pressure controller. To select the desired range through the following buttons:



Fig. 16 – Selecting the Pressure Range

By changing the selected range, the PCON KOMPRESSOR-Y18 initiates a VENT and a RESET procedure for the selected pressure sensor.



WARNING!

Before connecting the instrument under test to the output port it is recommended to configure the output range parameters. These parameters limit the controller output range, in order to protect the instrument under test.

To change the output limits of the pressure controller press the **SETTINGS** button to access the **PCON OPERATION SETTINGS** screen shown below and edit the **Min** and **Max** values on the **RANGE** tab. These settings are valid only for the selected pressure range (LOW or HIGH).

All parameters configured here follow the same engineering unit shown at the upper right corner of this screen. To change the pressure unit, return to the OPERATION screen, touch on the unit (bar, psi etc) and select another one.

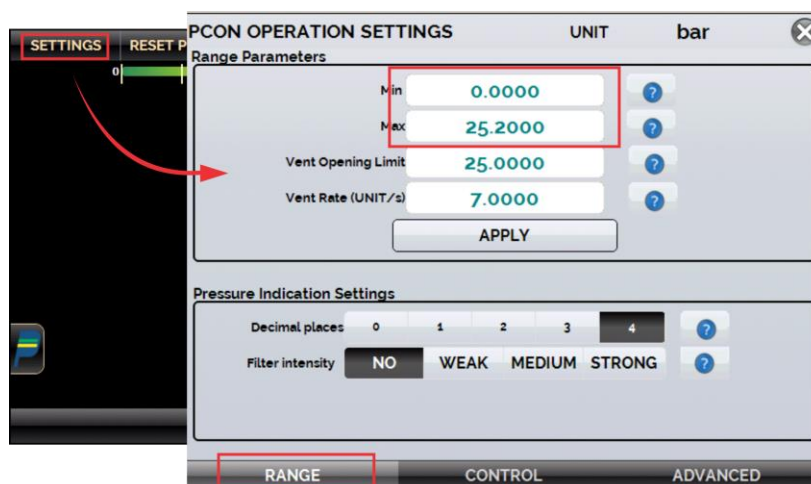


Fig. 17 – Range parameters from the PCON OPERATION SETTINGS.

Changing the output limits is recommended when the pressure range of the instrument under test is smaller than the PCON selected pressure range. This procedure protects against overpressure and to avoid setting pressure setpoints that may damage the instrument under test.

You can also select the number of decimal places for the pressure indication. Enter the **SETTING > RANGE > Decimal Places** menu and choose the desired option.

b) Changing the Setpoint

Press the **SP** button or touch on the pressure **indication** to change the setpoint to the desired value. When the pressure is stable, its reading value becomes **green**.

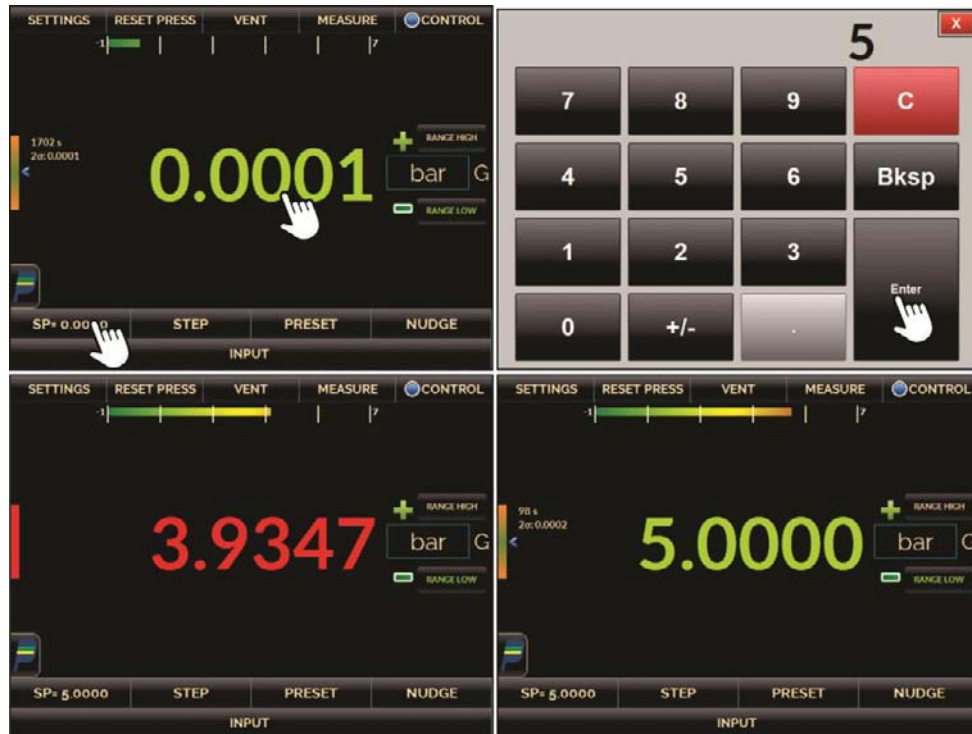


Fig. 18 – Changing the setpoint value in the CONTROL mode.

c) Stabilization Settings

When the controlled pressure is within the limits established by the **Stabilization Settings**, its indication is shown in **green (stable)**. When it is outside, it is shown in **red (not stable)**.

You can configure the **Error Window** ($\pm$ value in the current unit of pressure) that a stable pressure reading may deviate from the setpoint value, and the **Minimum Time** (in seconds) during which the pressure reading must be inside these limits to be considered stable. Press the **SETTINGS** button and select the **CONTROL** tab shown below, edit the values in **Stabilization Settings** and press the **APPLY** button.

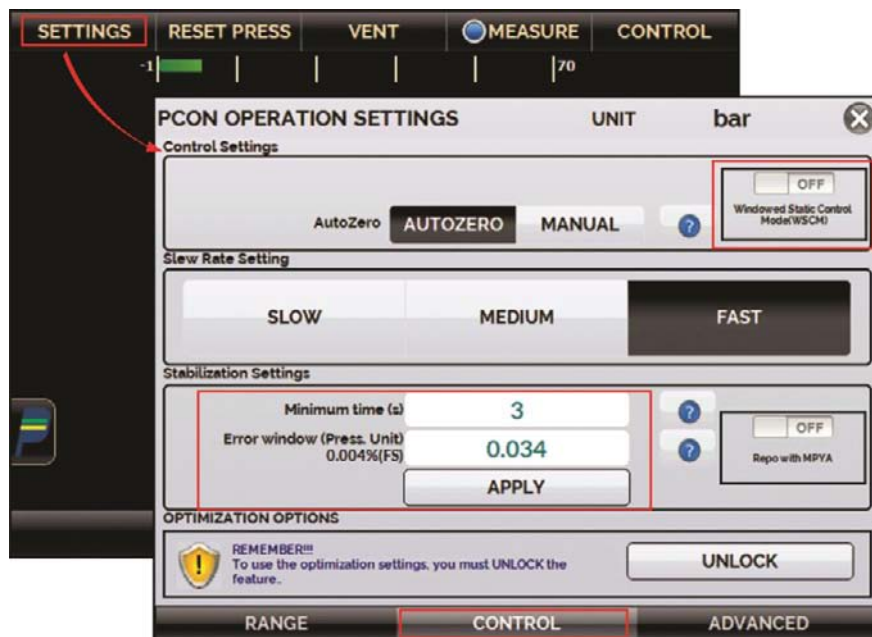


Fig. 19 – Stabilization Settings.

By activating the **Windowed Static Control Mode (WSCM)**, whenever the controlled pressure value is within the limits set in the Error Window option, the solenoid control valves (admission and exhaust) will close. This behavior is similar to measure mode and does not consume air supply during this period. Outside these limits, the valves resume operation and control the pressure again.

d) Control Settings

External Pressure Supply

For the external pressure supply mode enabled, the PCON KOMPRESSOR-Y18 has three different control modes that define the output behavior of the controller when the setpoint is changed: **Linear**, **Auto** and **Max**.

- **Linear**: the output varies linearly according to the **SP Slew Rate** parameter (pressure unit / second). The controlled pressure will be closer to the linear behavior for lower rate values, protecting the test instrument against overshoot.
- **Auto**: for positive steps, the controlled pressure varies exponentially according to preconfigured parameters (not user configurable), protecting the test instrument against overshoot.
- **Max**: control mode is faster but can cause an overshoot of the controlled pressure.

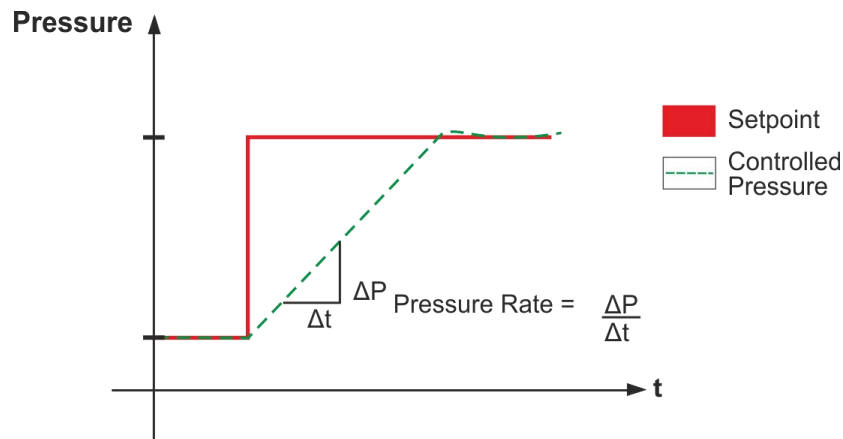


Fig. 20 – Linear control mode.

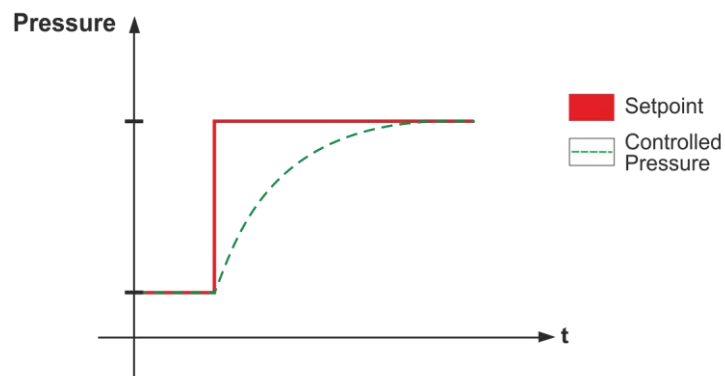


Fig. 21 – Auto control mode.

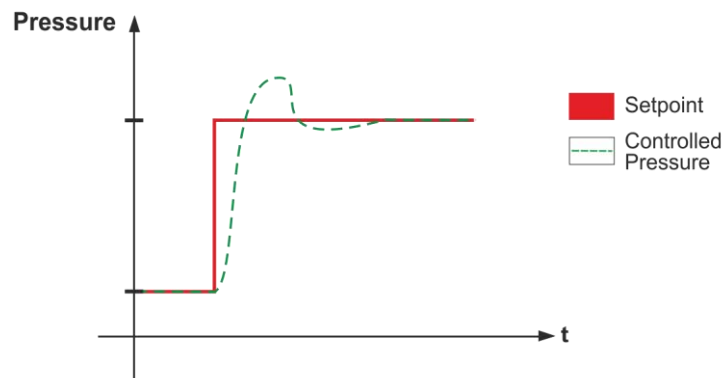


Fig. 22 – Max control mode.

Configure the control settings parameters to be compatible with the external pressure source. For example, when using a compressor as external pressure supply, set the Linear mode to a Slew Rate compatible with the compressor output rate. When using an air cylinder, MAX mode can be used.

In order to edit the control settings press the **SETTINGS** button shown below, go to the **CONTROL** tab, and select the desired option for **Control Mode**. For the Linear control mode, set also the **SP Slew Rate** (in the current pressure unit / second).

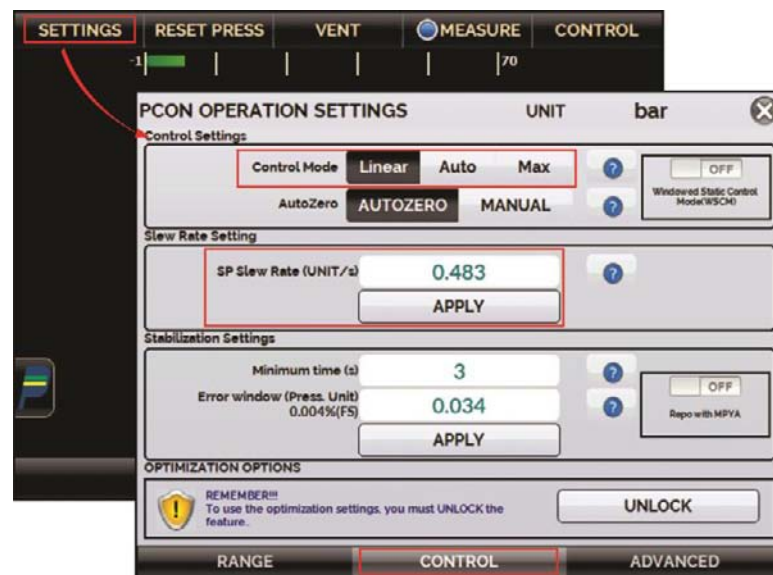


Fig. 23 – Control Settings - External Pressure Supply Mode

The **AUTOZERO** function refers to zero pressure setpoint control (atmospheric pressure). When **AUTOZERO** is enabled, the control valves close and the VENT valve opens, allowing the pressure sensor to measure the atmosphere. In the **MANUAL** option, the control solenoids do not close and start to control the pressure close to atmospheric pressure. In this mode, there may be a noise from the control solenoids when trying to control zero.

Internal Pressure Supply

For the internal pressure supply mode enabled, the PCON KOMPRESSOR-Y18 has a control mode that define the output behavior of the controller when the setpoint is changed: the **Linear Mode**. In this mode, the output varies linearly according to the **Slew Rate Setting** parameter (SLOW, MEDIUM and FAST).



Fig. 24 – Control Settings - Internal Pressure Supply Mode

It is possible to adjust the output flow in order to improve stability when the system is unstable.

Note: The following options are protected by password. To enable them, go to the **SETTINGS** → **CONTROL** → **OPTIMIZATION OPTIONS** and press **UNLOCK** (the password is **9875**). In this way, the **OPTIMIZATION OPTIONS** will be accessible.

The **CONTROL** tab of the **PCON OPERATION SETTINGS** screen includes the following **OPTIMIZATION OPTIONS**:

FLOW ADJUSTMENT: Manual flow rate adjustment option. By increasing the air flow (HIGHER), the output tends to be more stable, but may cause overshoot. Reducing flow (LOWER) minimizes overshoot, but can increase instability.

The number between the buttons indicates the adjusted value of the flow in counts. The default value is 0 (zero). The value can be re-adjusted for other points of the pressure range. The higher the number of counts, the higher the air consumption.

To control very low pressure values (close to ambient pressure) sometimes it is necessary to increase the flow. PCON unit is adjusted for an external volume of 50 ml. For higher volumes, the user may have to change the air flow to get an optimum stabilization.

AUTO TUNE: Automatic flow adjustment option. Whenever this function is selected, the controller starts an algorithm to optimize the flow rate to achieve the best

control stability (optimal flow rate) at the current pressure setpoint and will apply for all the other setpoints. This algorithm may take a few minutes to finish.

AUTOMATIC TUNE: Automatic flow adjustment option. When **ON** is selected, the flow optimization algorithm is always active for all the pressure setpoints. This automatic adjustment is slower as it will find the optimal flow rate for each requested setpoint.

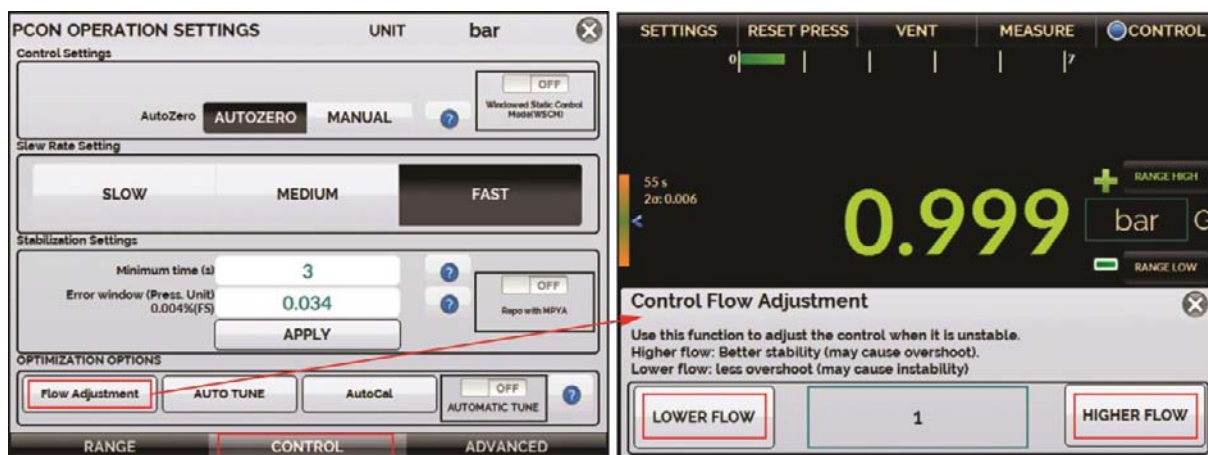


Fig. 25 – Control Optimization Options

Auto Cal: This function executes an algorithm that rewrites the pressure values that the control first reaches when requesting a setpoint. It must be executed with the output port closed (plugged), with active control mode and will follow the parameters previously set in Stabilization Settings (Settings> Control tab).

e) Preset Setpoints

Configure your most frequently used setpoints with the **PRESET** function. You can edit up to eight points (P1 to P8). By pressing the **OK** button the setpoint is automatically changed to the value of the corresponding point.

Another quick way to change the setpoint to the preset values is using a numeric keyboard connected to the PCON KOMPRESSOR-Y18 Type A USB (see **section 1.5** – Parts Identification). When in **CONTROL** mode, pressing the keys from 0 to 7 in the keyboard makes the corresponding preset setpoints from P1 to P8 to be controlled.

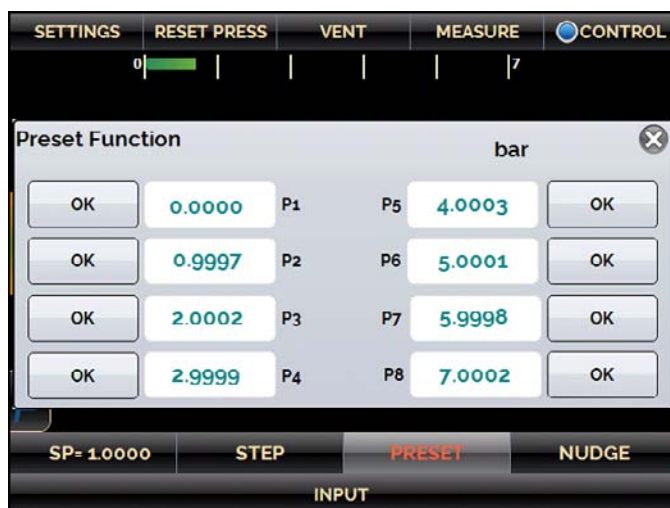


Fig. 26 – Preset Setpoints.

f) Step Function

The **STEP** programming makes the calibrator output vary in pre-defined steps. It is useful in calibrations where some scale points are verified; for example 0% - 25% - 50% - 75% - 100%.

To generate setpoints, you must set the minimum and maximum range points (**MIN** and **MAX**) and the desired number of points.

If you want each step to be achieved automatically after a preset time, you must set the **TIME** (in seconds). In this case, the steps are controlled automatically and continuously.

To start the **STEP** function, press on **PLAY** icon. Once the function is activated, the output starts executing the **STEP** program. The steps are automatically and continuously controlled according to the set time. To stop the function, enter in **STEP** function and press **STOP**.

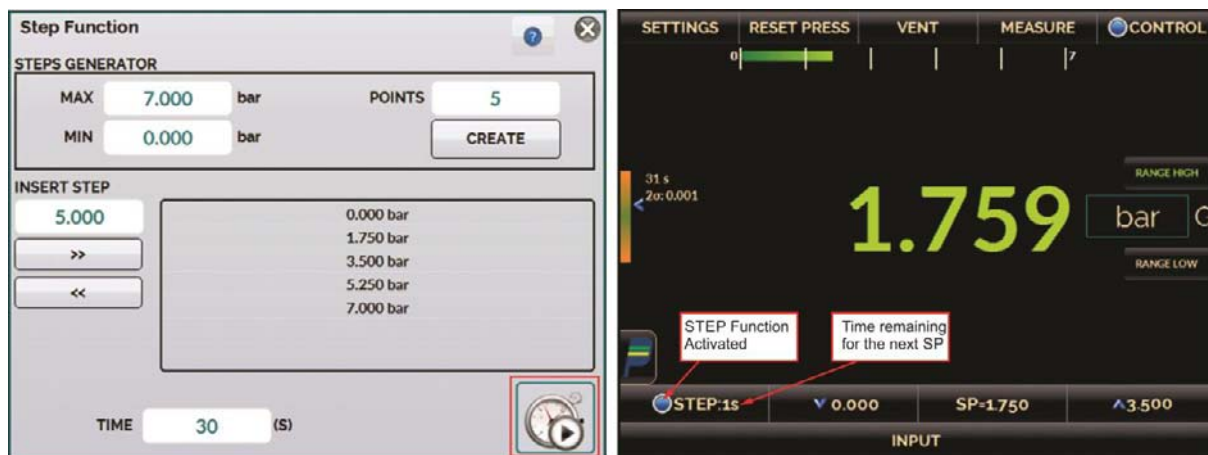


Fig. 27 – STEP Function (automatic step program).

If the **TIME** parameter is set to zero, the steps are not changed automatically (manual step program). In this case, to move to the next step you must press the next setpoint button. By pressing the previous setpoint button, it goes back one step.

If **Wait Stabilize** is checked, the PCON KOMPRESSOR-Y18 will wait for the pressure stabilization before changing to the next setpoint.

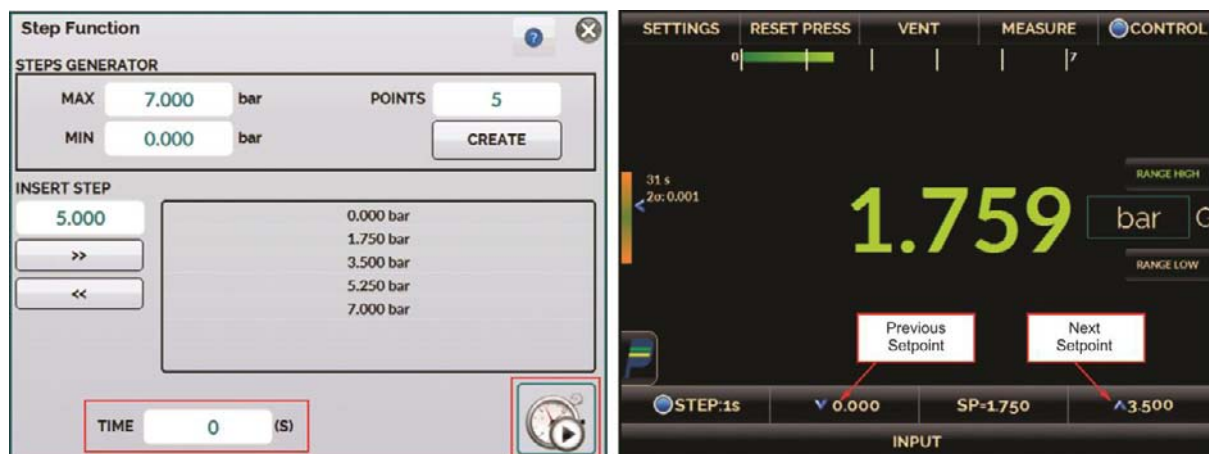


Fig. 28 – STEP Function (manual step program).

g) Nudge Function

The **NUDGE** function allows the user to change the setpoint up or down by small steps. Press the **NUDGE** button to edit the step size. Press the “+” and “-” symbols to increment and decrement the setpoint.

If you are using a numeric keyboard connected to the PCON KOMPRESSOR-Y18 Type A USB (see section 1.5 – Parts Identification), you can increment and decrement the setpoint by pressing the “+” and “-” buttons from the keyboard.



Fig. 29 – NUDGE Function.

2.1.4. Vent Mode



WARNING!

The calibrator releases gas to the atmosphere through the vent port. Leave this port free.



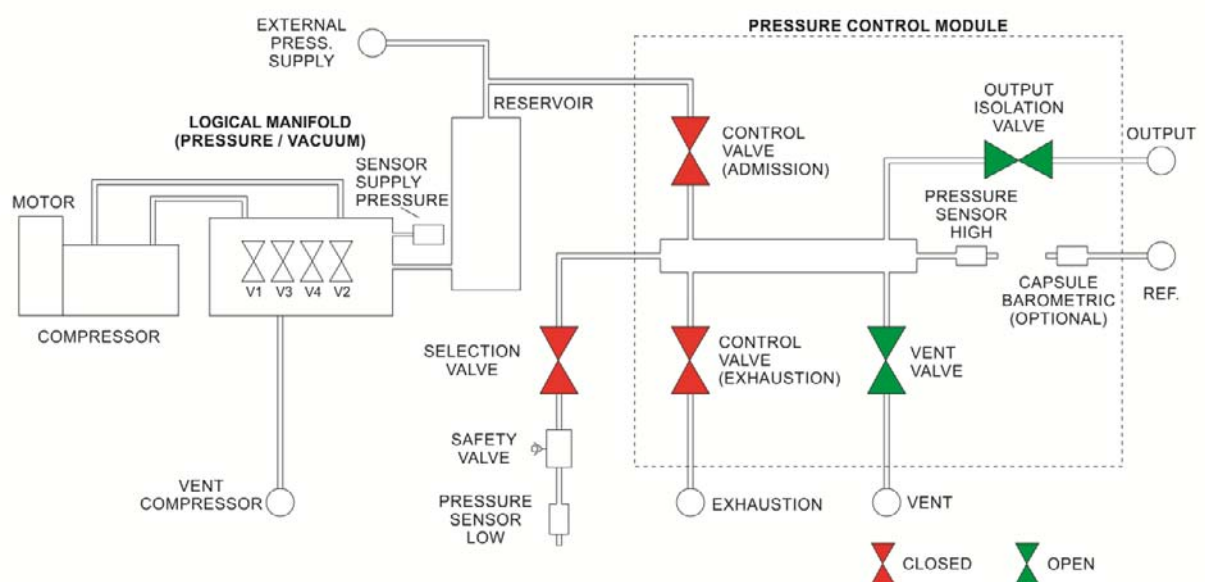
WARNING!

Before connecting the instrument under test to the output port, perform a VENT operation to release any gas inside the controller and go to MEASURE mode.

In the **VENT** mode, the calibrator turns the pressure control off and vents the pressure inside the Pressure Control Module through the VENT valve.



Fig. 30 – VENT mode on the OPERATION screen.



Note: VENT is an internal port, not accessible to the user.
The Selection Valve is OPEN when Range Low is selected.

Fig. 31 – VENT mode – state of the valves

To reset the current pressure measurement, press the **RESET PRESS** button. Whenever this function is used, the PCON KOMPRESSOR-Y18 performs a VENT operation and an AUTO RESET of the pressure read by the Pressure Control Module and returns to the **CONTROL** mode.



Fig. 32 – Reset of the current pressure measurement.

The VENT control settings are accessed by pressing the **SETTINGS** button and selecting the **RANGE** tab. It presents two parameters for the **VENT** mode: **Vent Opening Limit** (in the current pressure unit) and **Vent Rate** (in the current pressure unit/ second).

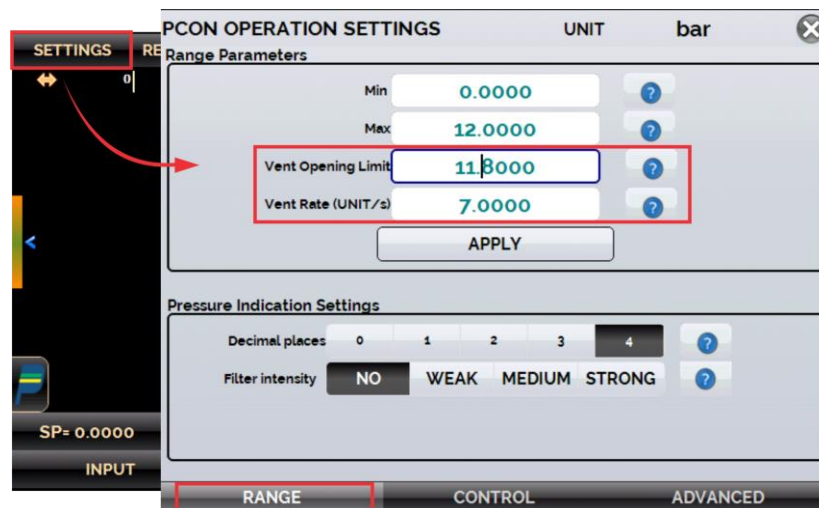


Fig. 33 – VENT Configuration

When the **VENT** mode is started, firstly the calibrator reads the pressure in the Pressure Control Module. If the pressure measurement is below the **Vent Opening Limit** value, the control is turned off and the VENT valve opens. Otherwise, if the pressure is above this limit, the controller reduces the pressure down to the **Vent Opening Limit** value by varying it according to the **Vent Rate** parameter. When the pressure reaches this limit, the control is turned off and the VENT valve is opened.

The VENT valve remains opened until another operation mode (**CONTROL** or **MEASURE**) is started. To select another operation mode, select **MEASURE** or **CONTROL**.

Before shutting down the calibrator, full system depressurization is recommended. To do this, select the depressurized shutdown button located in the main menu. This procedure relieves all pressure from the control and logic manifolds and from the compressor.

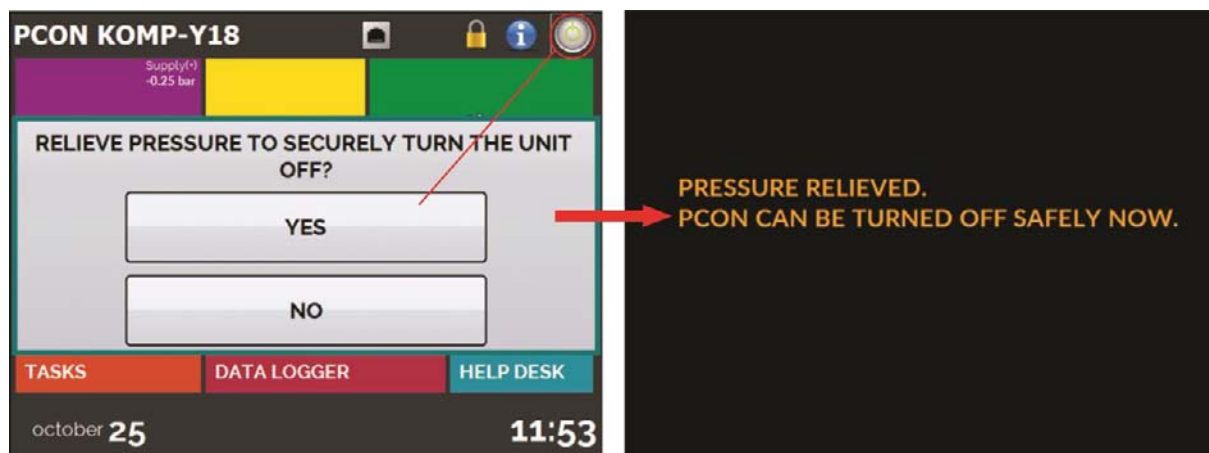


Fig. 34 – Depressurized shutdown

2.1.5. Changing the Engineering Unit

To change the pressure unit press on the current engineering unit (bar, psi etc.), select the desired option and press **OK**.



Fig. 35 – Pressure Unit

2.1.6. Filter Intensity

If necessary, you can configure the **Filter Intensity** applied to the pressure reading. When filtering the measured pressure is not required, just set this parameter to **NO**. The filter intensity is applied only to the reading; it does not affect the pressure control.

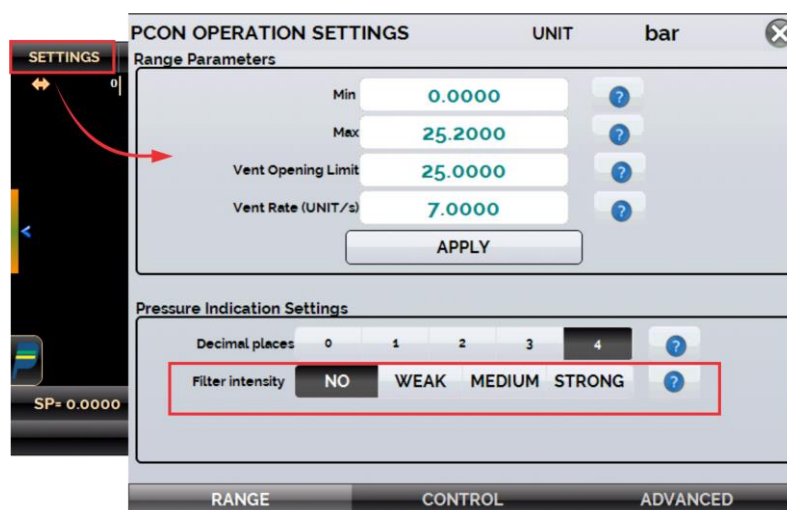


Fig. 36 – Filter Intensity.

2.1.7. Auxiliary Input

At the bottom of the screen, an input can be configured. When an input is selected, the screen will split automatically, showing two simultaneous variables. To select an input type, just touch the **INPUT** button.



Fig. 37 – Auxiliary Input.

In the **INPUT SELECTION** menu, select the type of signal to be measured and apply it to the corresponding terminals (see **Fig. 40 – Input Connections** or press the **HELP** button).



Fig. 38 – Auxiliary input type selection.

For **OHM** and **RTD** measurements, you should also select between 2, 3 or 4 wires options. The **SWITCH** input is a measurement of continuity of an external contact connected to the input (between RTD1 and RTD4) of PCON KOMPRESSOR-Y18. When there is continuity, the display shows **CLOSED**, otherwise it shows **OPEN**.

The **PRESSURE** option activates the pressure measurement by the Pressure Control Module (C1).

Whenever the input signal is above or below the input ranges established in the specifications, the display shows **OVER** or **UNDER**, respectively.

The engineering unit can be changed by pressing on it ($^{\circ}\text{C}$, $^{\circ}\text{F}$, K) and selecting the desired option.

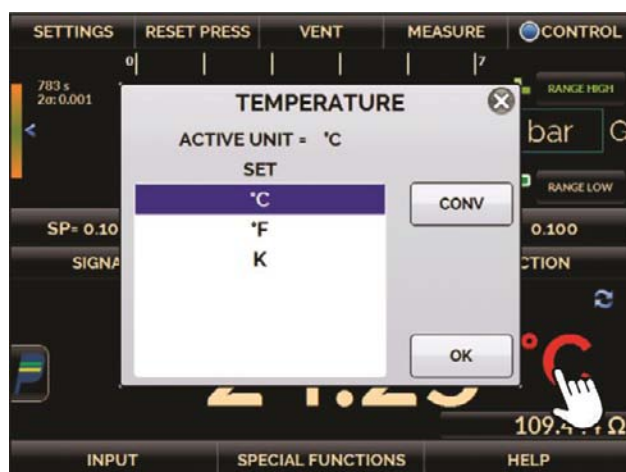


Fig. 39 – Selecting the Engineering Unit

The **NONE** option turns the auxiliary input function off.

Auxiliary Input or Measurement Connections

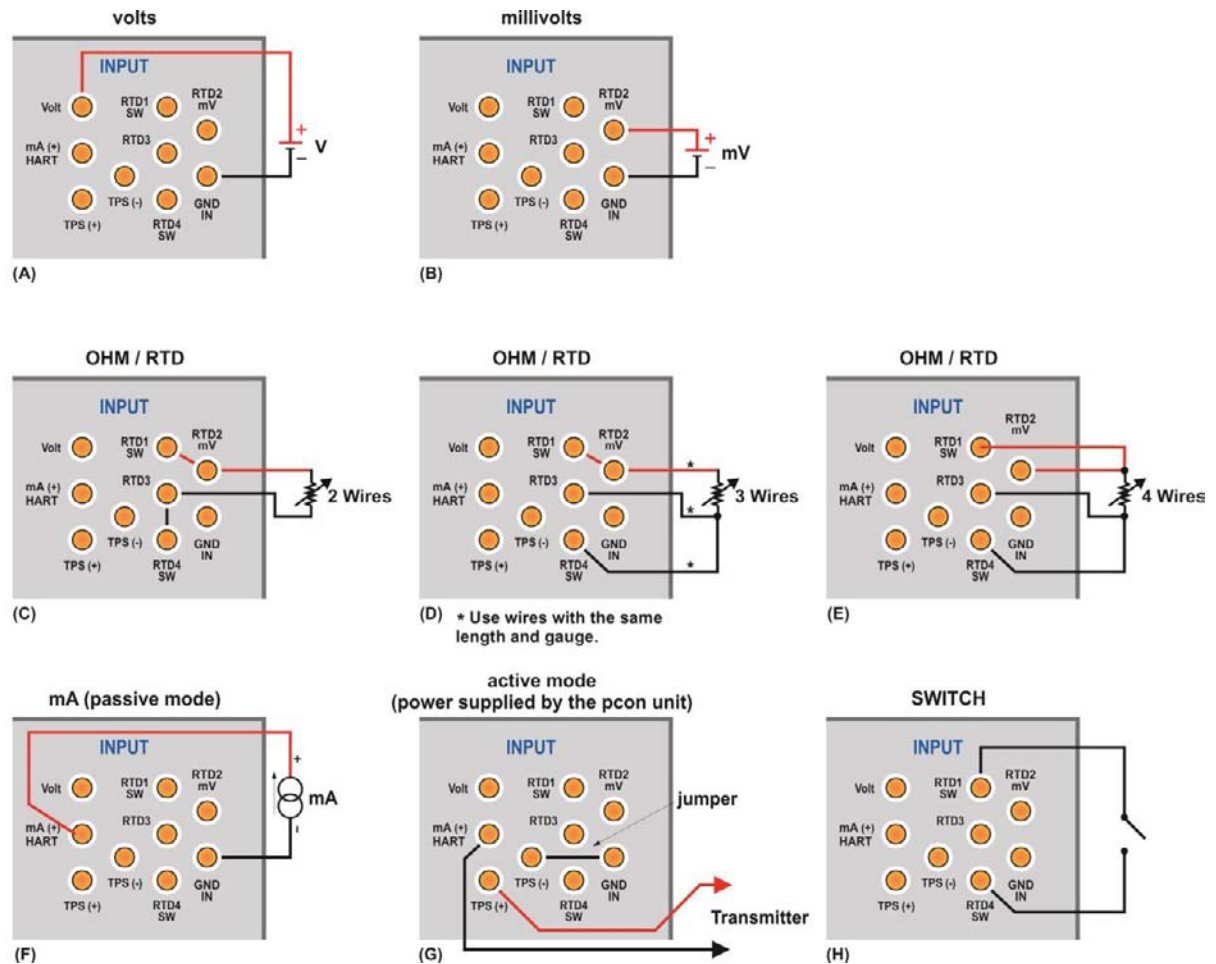


Fig. 40 – Auxiliary Input Connections.

2.1.8. Transmitter Power Supply (TPS)

The PCON KOMPRESSOR-Y18 has a 24 Vdc TPS (transmitter power supply), galvanically isolated and provided with short-circuit protection (current limited to 30 mA).

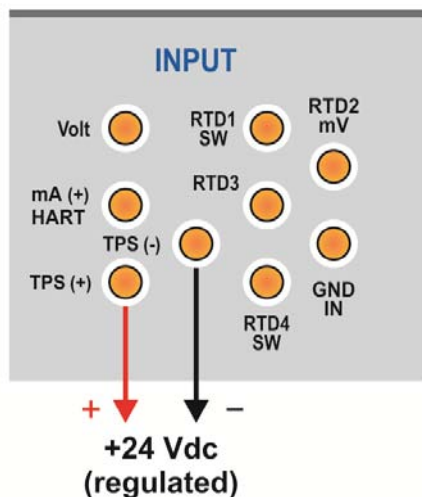


Fig. 41 – TPS Power Supply.

2.1.9. Auxiliary Input Scale Function

When selecting **SPECIAL FUNCTIONS** in the auxiliary input channel, the display will show the window below:

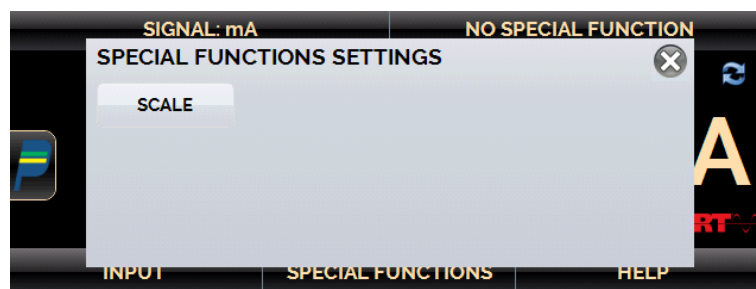


Fig. 42 – Auxiliary Input Special Functions Settings.

The special function will be applied upon the previously selected input.

After selecting and configuring the special function, enable it by changing the key status to **ON**. To disable it change the key to **OFF**. To change the state of the key, just press it.

When there is no active special function, the **NO SPECIAL FUNCTION** message is displayed at the top of the screen.

SCALE Function

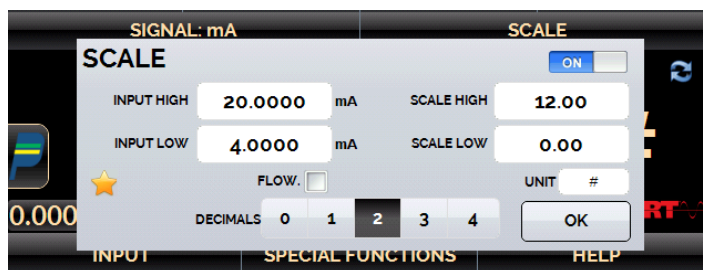


Fig. 43 – SCALE Function (LINEAR)

It establishes a linear relationship between the PCON KOMPRESSOR-Y18 input signal and the indication shown on the display, according to the graphic below:

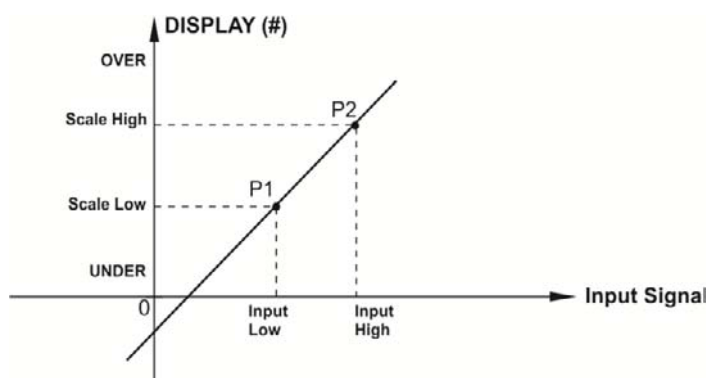


Fig. 44 – SCALE Function (LINEAR)

The scaled indication on the display (#) may represent any engineering unit, such as: m/s, m³/s, %, etc. The number of decimals of the indication is configured from 0 to 4.

The value for **Input High** must be necessarily higher than **Input Low**. On the other hand, **Scale High** and **Scale Low** may follow any order (higher than, lower than or equal to) and they may even set as signed numbers. Thus direct or reverse relationships between the input signal and the indication may be established.

For the current input, this relationship may be linear, as shown above, or squared (**FLOW**), as illustrated below. The switch input cannot be scaled.

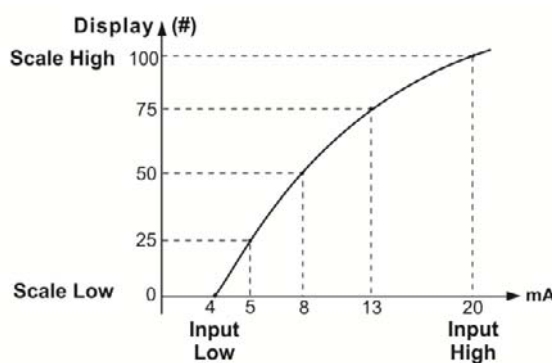


Fig. 45 – SCALE Function (FLOW)

2.1.10. Calibration Examples

a) Pressure Transmitter Calibration

Use the PCON KOMPRESSOR-Y18 TPS source (24 Vdc) to power up a two-wire transmitter and connect it to the current input as illustrated below.

Select **mA** (current) in the **Input (Auxiliary)** menu and configure the Pressure Control Module parameters.

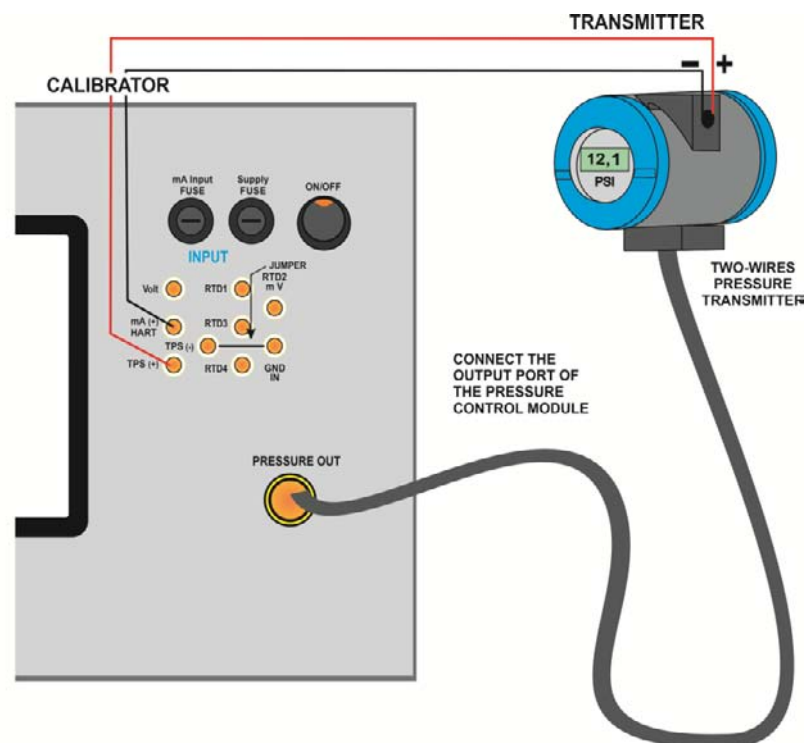


Fig. 46 – Pressure Transmitter Calibration.

Readings of the mA input can be scaled to pressure unit through the **SCALE** option (see section 2.1.9). Thus, the error between the input and the output of the pressure transmitter is easily calculated.

b) Pressure Switch Verification

Pressure switches are devices that receive a pressure signal and have relay alarm. The relay is activated whenever the pressure passes above or below a certain alarm setpoint.

Connect the relay output of the pressure switch to the switch input of PCON KOMPRESSOR-Y18, **RTD1** and **RTD4** terminals, and make the pneumatic connections as illustrated in the figure below.

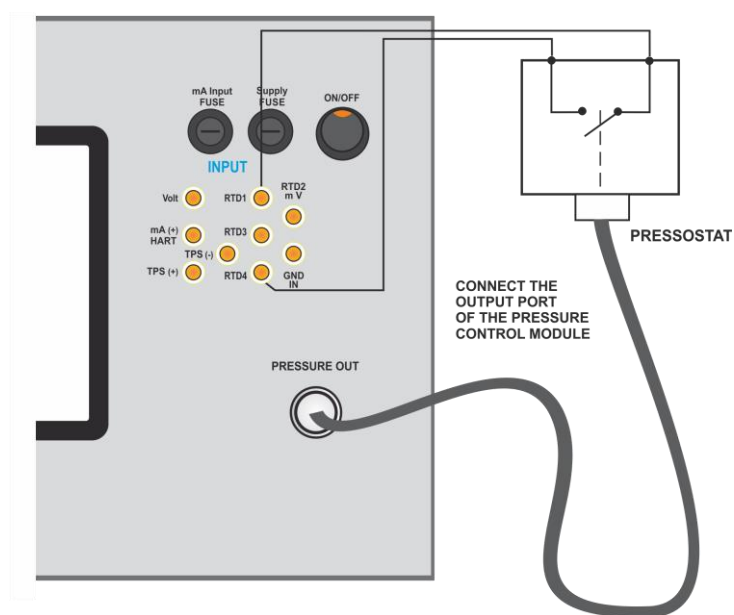


Fig. 47 – Pressure Switch Verification.

Select **SWITCH** in the **Input** menu and configure the Pressure Control Module parameters (**CONTROL** mode must be selected).

To perform the automatic pressure test, press PRESSURE SWITCH as shown in the following figure.

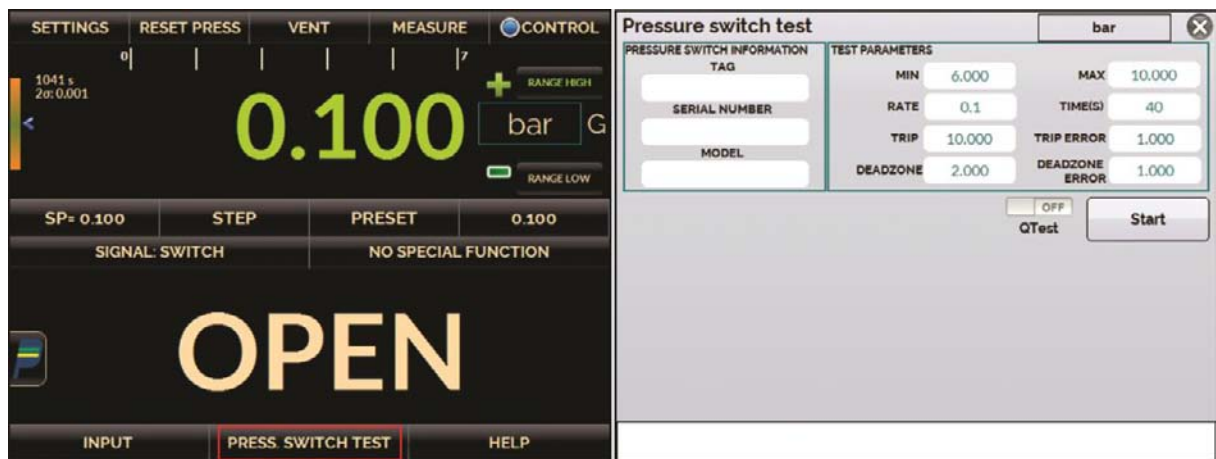


Fig. 48 – Pressure Switch Test

Fill out the following fields:

TAG, SERIAL NUMBER and **MODEL**: Identification (optional) of the pressure switch under test.

MIN and **MAX**: Minimum and maximum pressure values of the test to be performed.

TRIP: Expected pressure value at which the state of the switch will change.

DEADZONE: expected pressure variation for the switch to return to its initial state.

RATE: Setpoint increase / decrease rate. The lower the rate, the higher the test accuracy.

TRIP ERROR: Maximum allowed error for the TRIP value (in engineering unit).

DEADZONE ERROR: Maximum permissible error for the DEADZONE value (in engineering unit).

TIME: Rise / Fall Time

Press **START** to start the pressure switch test. PCON KOMPRESSOR-Y18 will control the pressure at the output port from the **MIN** to the **MAX** pressure value. At the instant the switch state changes, the display shows the trip value of the pressure switch. Then PCON KOMPRESSOR-Y18 starts to decrease the output pressure to find the opposite switch state change and calculate the deadzone value.

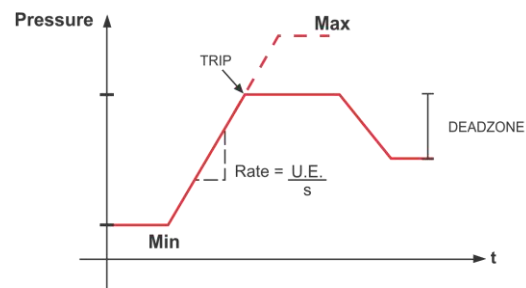
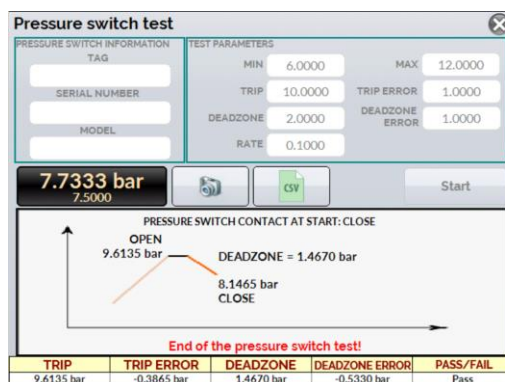


Fig. 49 – Pressure Switch Test Result

2.1.11. Leakage Test

The leakage test measures the variation of the pressure reading for a certain time. It is useful, for example, to verify the occurrence of a pressure leak in the system.

To perform the leakage test, set the PCON KOMPRESSOR-Y18 to **MEASURE** mode (the pressure control valves turn off) and select the testing sensor pressure in the **INPUT > PRESSURE**. Press **LEAKAGE TEST** button and set the time in seconds. Choose which unit to display results in engineering unit per seconds, minutes or hours. Click **START** to run the test.



Fig. 50 – Leak test (select MEASURE mode and the Auxiliary Input).

To save the test, press the camera icon. The file is saved in the SD Card > IMG > LEAKAGE.

2.1.12. BAR GRAPH

The PCON allows you to monitor an input and include HIGH and LOW alarms for the range. To set the alarm, press the icon  > **MORE OPTIONS**, and the **BARGRAPH** button.



Fig. 51 – MENU (Quick Navigator).

Select between HIGH and / or LOW alarms. Press **SOUND** to have the calibrator beep when in alarm. In EVENTS it is possible to check a list of the time when the alarm detected values outside the registered tolerance.

Pressing the icon  it returns to the Calibrator menu, keeping the monitoring bar next to it.

The Stability Test may be done with any of the Auxiliary Input signals; Select the input and enter **BAR GRAPH** option.

Pressing the icon , a screen for stability test is presented. Select the time in seconds. Choose which unit to display results in engineering unit per seconds (S), minutes (M) or hours (H). Click **START** to run the test.

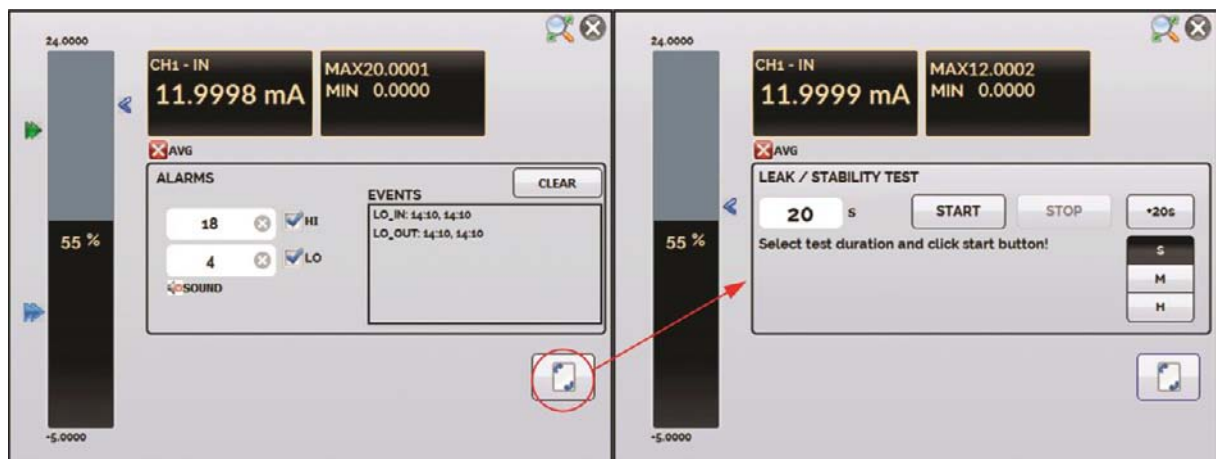


Fig. 52 – Leak/stability test screen.

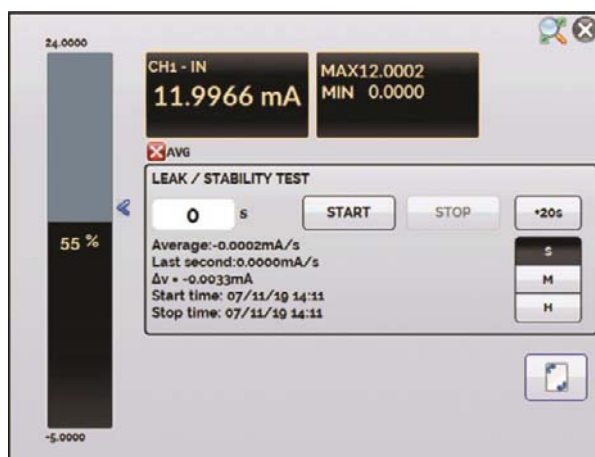


Fig. 53 – Leak/stability test results.

During the test, you can increase the test time by pressing the **+20s** button. The **S**, **M** and **H** buttons change the time unit to seconds, minutes and hours, respectively. The display shows the variation of the signal between the first and the last readings (ΔV , in the input unit) and the increasing or decreasing rate is calculated (**Average**, in input unit / time unit).

2.1.13. Saving Current Configuration (Memory Manager)

The PCON admits several special functions that may become of frequent use. In these situations, it is useful to store such settings in the instrument in order to save time.

After setting the desired calibration mode (input type, output range or special functions), press the icon  > **MORE OPTIONS**, and the button **MEMORY MANAGER**. On the bottom of the screen, type a name for this configuration and a description. Press the **SAVE** button.

The operation that was being performed by the PCON shall be stored in memory identified by the name given to it. To use it again, even after the PCON is turned off and on, select the name of the desired setting and press the **LOAD** button. The **SAVE AS DEFAULT** button sets the current configuration as the default configuration of the calibrator. Thus, every time the PCON is turned on, this will be the initial configuration of the calibrator.

2.2. Use of the External Pressure Module MPYA (optional)

The **MPYA** comes with a USB adapter cable; through this cable, the module is powered by the PCON without using a battery or external power supply. The MPYA module is plug and play. By simply plugging the module into PCON's USB Host port to automatically recognize it;

Connect the MPYA USB cable to PCON. **MPYA EXT** option will be displayed on the Operation screen. To enable MPYA, click MPYA EXT and WAIT a few seconds. EXT will appear close to the current pressure unit. In **MEASURE** mode, it will indicate only the MPYA measurements.



Fig. 54 – MPYA Connected

After activating MPYA, remember to reset pressure; To do so, go to the RESET PRESS menu; Both pressure sensors (External and Internal) will be reset to ensure correct pressure reading.

In **CONTROL** mode, it will indicate the MPYA and the Internal pressure sensor (PCON) measurements. In this mode, the PCON is using the internal sensor indication to control the pressure.

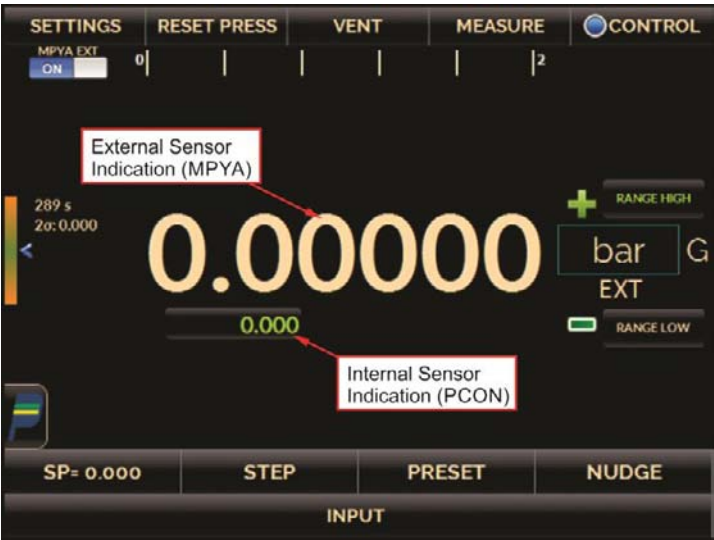


Fig. 55 – Control Mode with MPYA

For MPYA with barometric reference sensor, the RANGE tab will show the pressure mode option: ABS (Absolute) and GAUGE. Selecting ABS mode, the PCON will use the ambient pressure indication from MPYA to emulate as absolute indication/control of the pressure.

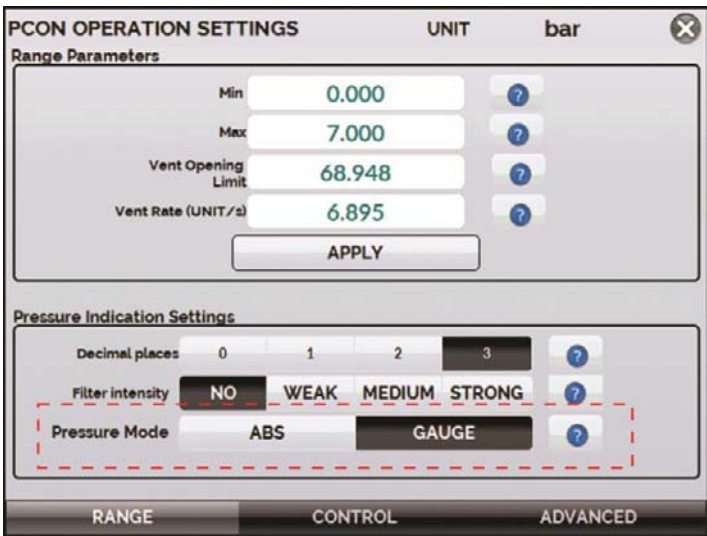


Fig. 56 – Control Mode with MPYA

REPO MODE

PCON also allows the use of the external reading (MPYA) to control the pressure;
To enable this function, access the SETTINGS menu, CONTROL tab and enable the REPO WITH MPYA function.

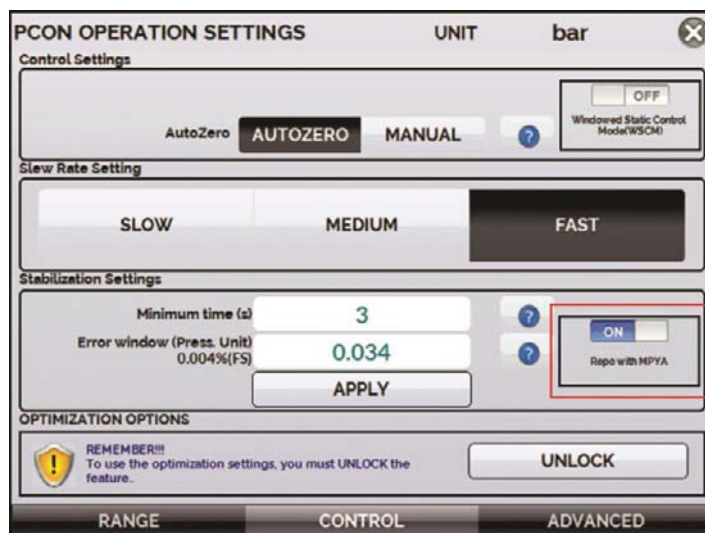


Fig. 57 – Control Mode with MPYA



IMPORTANT: ENABLING REPO MODE DOES NOT GUARANTEE MORE CONTROL RESOLUTION OR MORE STABILITY, ONLY SETPOINT CORRECTION BY EXTERNAL READING (MPYA).

2.3. HART®

PCON KOMPRESSOR-Y18 can be used to read and set parameters in devices that have HART® Communication Protocol. The HART® Protocol allows digital communication between master (in this case, PCON KOMPRESSOR-Y18) and slave (field instrument) superimposed on the 4-20 mA analog signal. To access this function from the **MAIN** screen, select the **HART®** option.

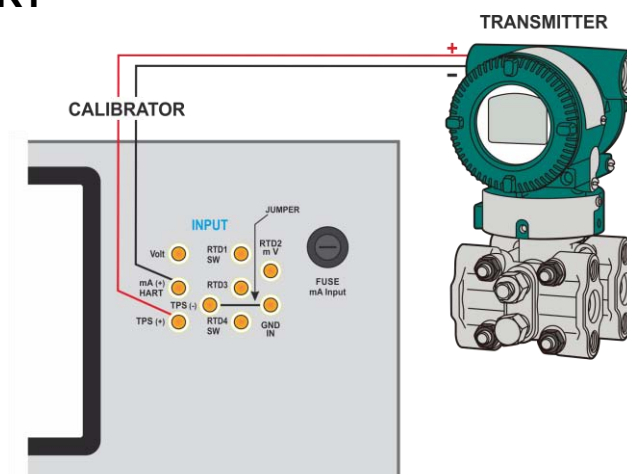
The HART® Communication of PCON KOMPRESSOR-Y18 is an optional module. The calibrator has two versions: **CH** (HART® Calibrator) and **FH** (Full-HART® configurator with DD library).

The **CH** option has basic and universal commands for HART® communication (zero, span, trim mA etc.) that allow you to adjust the range of the instrument, monitoring the primary variable, current adjustment etc. The **FH** option, in addition to basic and universal commands, is provided with the DD library (Device Description) from *FieldComm Group* and allows the setting of specific parameters of each instrument.

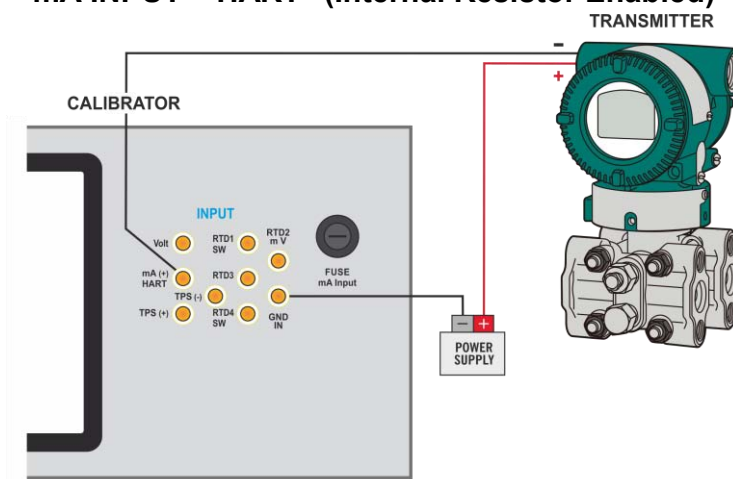
2.3.1. HART® Connections

When selecting HART® on the **MAIN** screen the **mA INPUT + HART** and **ONLY HART (INCLUDING NETWORK)** options are shown. An internal resistor (250 Ω) can also be enabled or disabled. The option must be chosen according to the type of connection to be made.

mA INPUT + HART®



**Fig. 58 – Transmitter powered up by the Calibrator (TPS)
mA INPUT + HART® (Internal Resistor Enabled)**



**Fig. 59 – Transmitter powered up by an External Power Supply
mA INPUT + HART® (Internal Resistor Enabled)**

For the connections shown in **Figures 58 and 59**, use the **mA INPUT + HART®** option and **INTERNAL RESISTOR** enabled. In this mode, the 250 Ω resistor is internally activated in series with the calibrator mA input. The calibrator can measure current from the transmitter and also read and set parameters via HART®. If the internal resistor is not enabled, an external resistor of at least 150 Ω must be inserted in series with the mA input. To power up the transmitter, you can use the PCON KOMPRESSOR-Y18 TPS (Fig. 58) or an external source (Fig. 59).

ONLY HART (INCLUDING NETWORK)

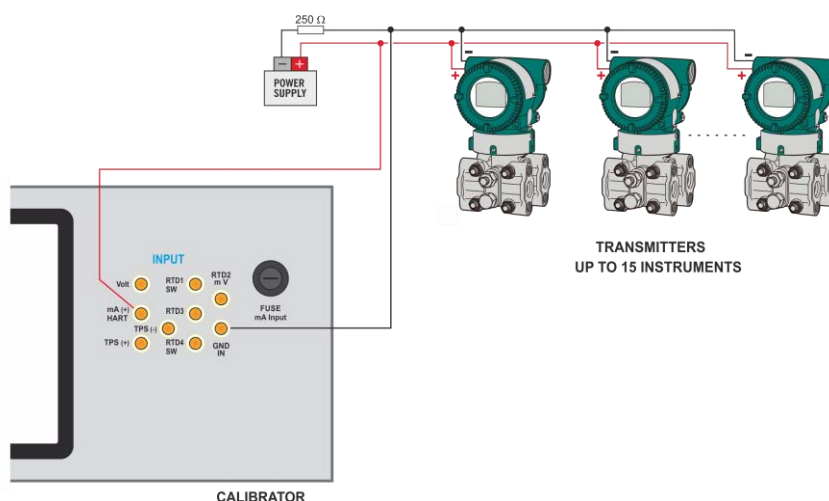


Fig. 60 – ONLY HART®

IMPORTANT: Before connecting the calibrator to the transmitter(s) as shown above, make sure that the mA input is not selected in the PCON KOMPRESSOR-Y18 (Enter the CALIBRATOR menu and select any auxiliary input except mA or select the NONE option).

For the connection shown in **Figure 60**, use the **ONLY HART®** option. In this mode, the internal resistor and the mA input are disabled. The HART® resistor (at least 250 Ω) must be externally inserted in series with the power source and the transmitter. In this case, the calibrator does not perform the measurement of the transmitter current, but can read and configure its parameters via HART®.

2.3.2. Starting Communication

When accessing the **HART®** menu, the following screen is shown. By enabling the **HART® CONFIGURATOR** option (only for the **FH** version) you have access to the Full-Hart software (DD library) with all device parameters. By disabling this function, the **CH** software is launched with basic and universal commands for Hart® communication (zero, span, trim mA etc.).

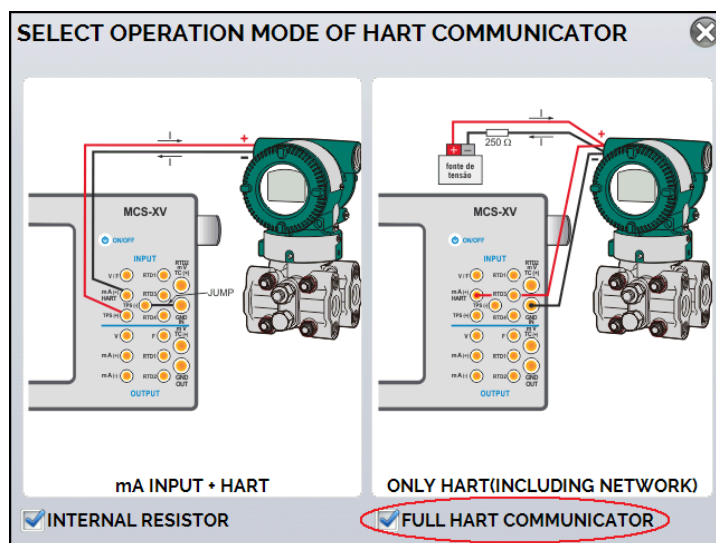


Fig. 61 – ONLY HART®

Then define the configuration of the internal resistor ($250\ \Omega$) and that of the HART® connection type (**mA + HART®** or **ONLY HART®**).

For the **CH** option, provide the **ADDRESS** of the instrument to establish communication and press the **CONNECT** button. If the address of the instrument is not known, press the **SEARCH** button to start a search for the instrument addresses in the range from 0 to 15.

Up to 15 instruments (addresses 1 to 15) are allowed in a HART® network. For a single field instrument with address 0, with **mA IN + HART®** connection, the primary variable can be read in both analog (4 to 20 mA) and digital (HART®) forms. For a network connection, the only way to read the primary variable is digitally (**ONLY HART®**).

2.3.3. Adjusting the Measurement Range of a HART® Transmitter (CH Option)

When the instrument is being connected, the **DEVICE INFO** tab shows information about the identification of the instrument, such as its TAG, manufacturer, description, message, date, measuring range and damping filter. Some of these parameters can be changed in **DEFAULT SETTINGS**.

On the **DEVICE INFO** tab, the MIN and MAX fields indicate the measuring range of the HART® transmitter. For the primary variable equal to the MIN value, the transmitter should generate 4 mA. For the primary variable equal to the MAX value, the transmitter should generate 20 mA. The maximum allowed range of the transmitter is shown just above (RANGE ...). To edit the range of the transmitter, change the MIN and MAX values and press the **SAVE RANGE** button.

On this screen you can also edit the unit of the primary variable and the input filter (damping).

HART COMMUNICATION PROTOCOL

ADDRESS 0 CHANGE DISCONNECT

GENERAL INFO

MANUFACTURER Yokogawa

REVISION 5

TAG Po2

DATE 1/5/2009

MESSAGE TESTE PRESYS

DESCRIPTOR

Range: -14.22339 .. 14.22339 psi

MIN -0.002557

MAX 9.999995

UNIT: psi

FILTER(S) 0.5

SAVE RANGE SAVE SAVE FILTER

DEVICE INFO DEFAULT SETTINGS MONITORING

Fig. 62 – Adjusting the measurement range of the HART® transmitter.

2.3.4. Adjusting the Measurement Range of a HART® Transmitter with Reference (CH Option)

The range of the transmitter can also be adjusted by generating reference signals for the minimum and maximum of the desired range and applying them to the transmitter input (adjustment with reference).

To adjust the range of a pressure transmitter, connect the output port of the Pressure Control Module to the pressure input of the transmitter. Go to the **CALIBRATOR** menu, configure the control parameters and select the **CONTROL** mode. Select **mA** for the **(Auxiliary) Input** and press the **HART®** button. The controlled pressure will be used as the reference value for the adjustment of the instrument range limits.

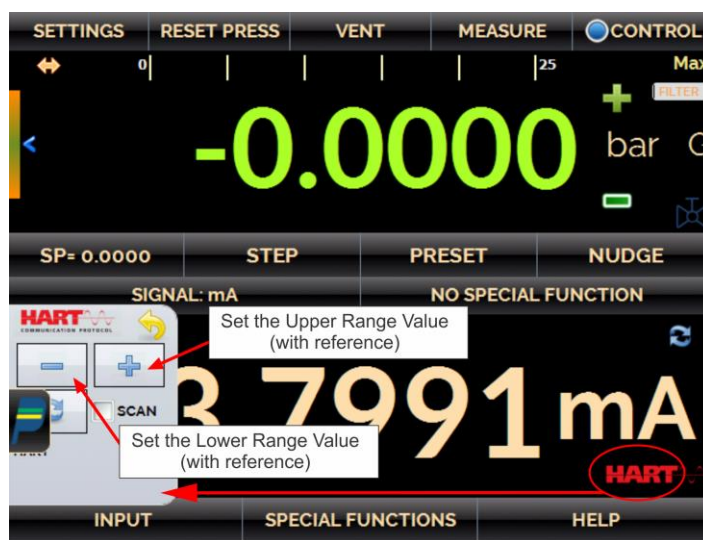


Fig. 63 – Quick HART® Adjustment with Reference.

Generate the pressure to the transmitter input corresponding to the lower range value and press the  button. The transmitter will generate 4 mA for this value. Generate the pressure to the transmitter input corresponding to the upper range value and press the  button. The transmitter will generate 20 mA for this value.

In another way to do this adjustment, access the **HART** option on the **MAIN** screen, set the connection type, address and then press **CONNECT**. Select the **MONITOR** tab. This screen shows the value of the primary variable read by HART® (digital), the current value that the transmitter should generate (**AO - DIGITAL OUTPUT**), and the current measured by the PCON KOMPRESSOR-Y18 (**ANALOGIC READ**). Set the controlled pressure by pressing **OUTPUT** and adjust the transmitter range by pressing the **↓ INF. RANGE** and **↑ SUP. RANGE** buttons.

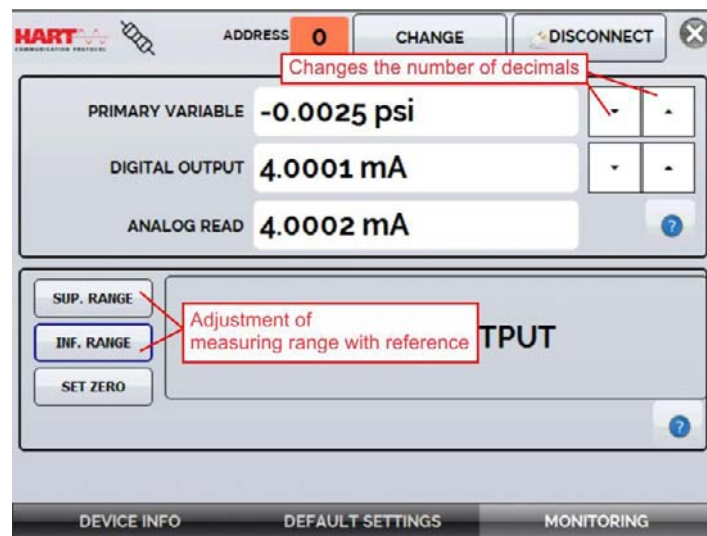


Fig. 64 – Adjusting the Measurement Range of the HART® Transmitter with Reference.

2.3.5. Checking / Adjusting the HART® Transmitter mA Output

In the **DEFAULT SETTINGS** tab, you can adjust the output current of the HART® transmitter (output trim) according to the current measured by the calibrator. You can perform this adjustment only when the PCON KOMPRESSOR-Y18 is connected to a single transmitter with address 0, in the **mA INPUT + HART®** connection option, since the calibrator needs to measure the current to make the adjustment.

Before performing the adjustment, a transmitter output current check may be performed by pressing the **CHECK** button. The transmitter will generate a fixed current signal (4, 8, 12, 16, 20 mA) and the calibrator will show the measured values for each point.

For an automatic adjustment, simply press the **AUTO** button. The calibrator will send the commands to the transmitter to generate 4 and 20 mA (fixed), measure these points, and adjust the output (trim). The adjustment is completed when the **D/A ADJUSTMENT COMPLETED** message appears.

SETTLING TIME sets the stabilization time (in seconds) of each point.

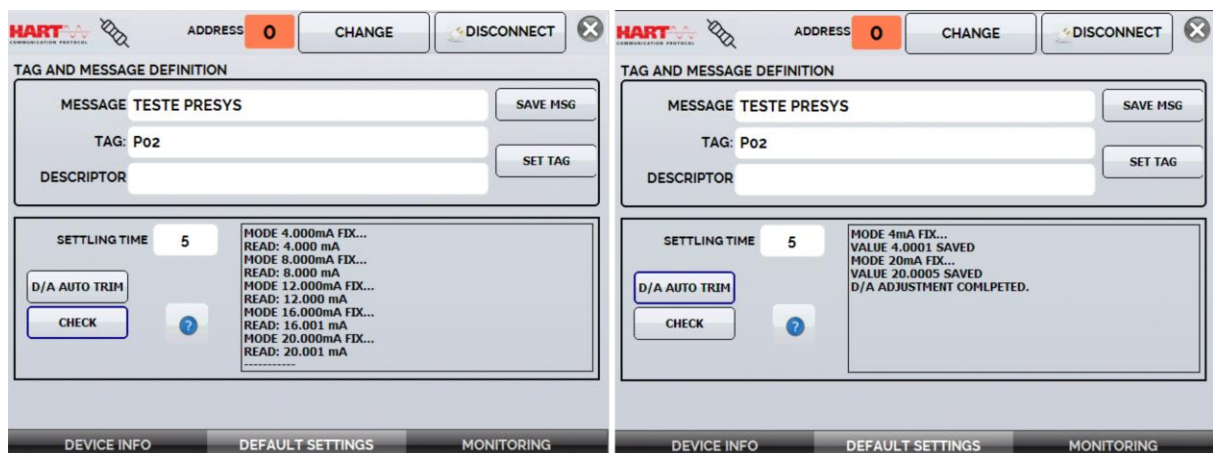


Fig. 65 – Checking / Adjusting the mA HART® Transmitter Output.

2.3.6. Full-Hart Configurator (FH Option)

If the **HART® CONFIGURATOR** option is enabled, the **FH** software starts. For this option, the instrument is searched automatically and the calibrator displays the basic, universal and specific parameters (DD library).

To start the HART configurator you must wait for the PCON KOMPRESSOR-Y18 to read all the instrument parameters. The PCON KOMPRESSOR-Y18 will display the message: **Reading device information. Please wait ...** After connected, at the bottom of the screen it will show the TAG, model of the connected instrument and the DD (Device Description) file used.

You can open the instrument configuration tree, located on the left side of the screen. This tree changes according to the instrument, since each HART® transmitter has its specific commands.

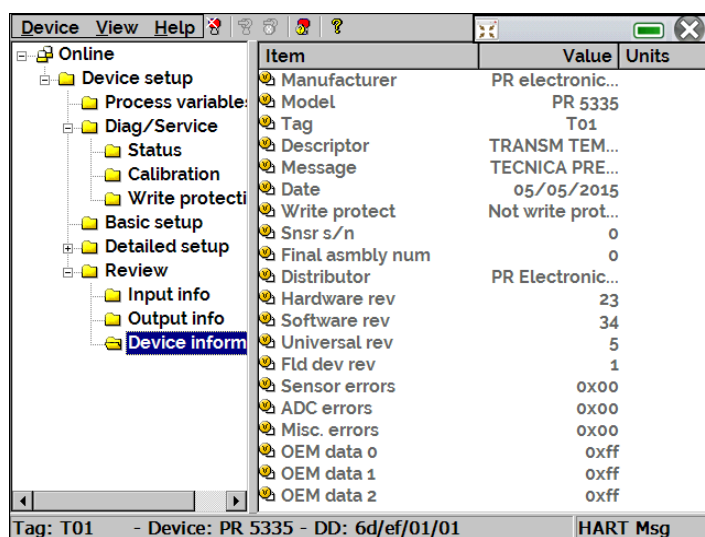


Fig. 66 – Device Parameters.

Double-click on the parameter you want to change and edit its value.

Parameters identified by the  icon have methods. To change them, double click on the parameter and follow the indicated steps.

For other parameters, values of edited fields become yellow, indicating that the parameter was changed but it was not saved in the transmitter. To confirm, press the  button. To cancel, press .

To view the value of the mA input or change the output setpoint, press the  button:

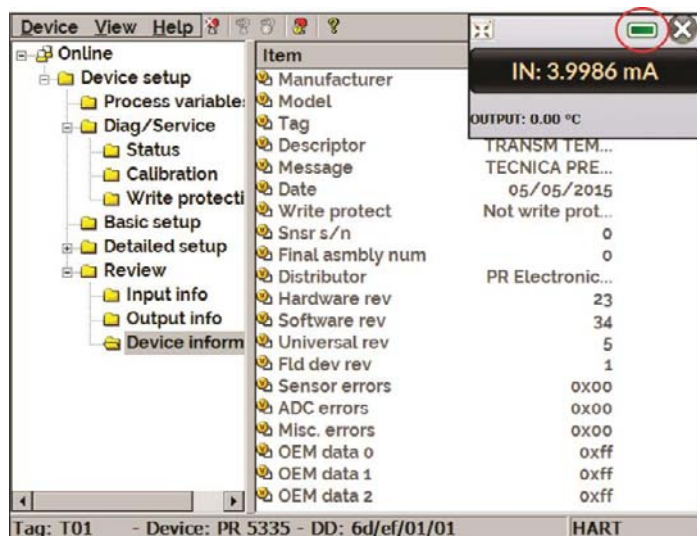


Fig. 67 – Calibrator / Controller Input and Output Values.

To view the status of the device, enter the **VIEW** menu and then **DEVICE CONDITION**:

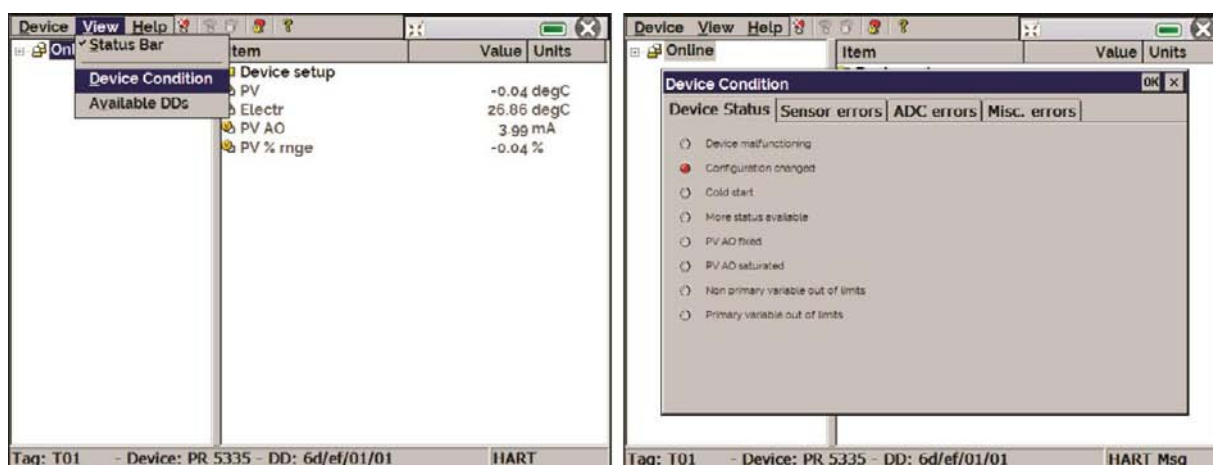


Fig. 68 – Device Status.

To save the entire configuration of a HART® instrument connected to the calibrator, use the **Document Device** option of the **Device** menu. This option is useful when you want to save the configuration of an instrument for a later download to another instrument of the same model, or to back up its settings.

Select **Device** → **Document Device**, fill out the **File Name** field with a name for the configuration and press **Save Device Config**. Optionally, you can write down notes about the description of the configuration in the **Notes** field.

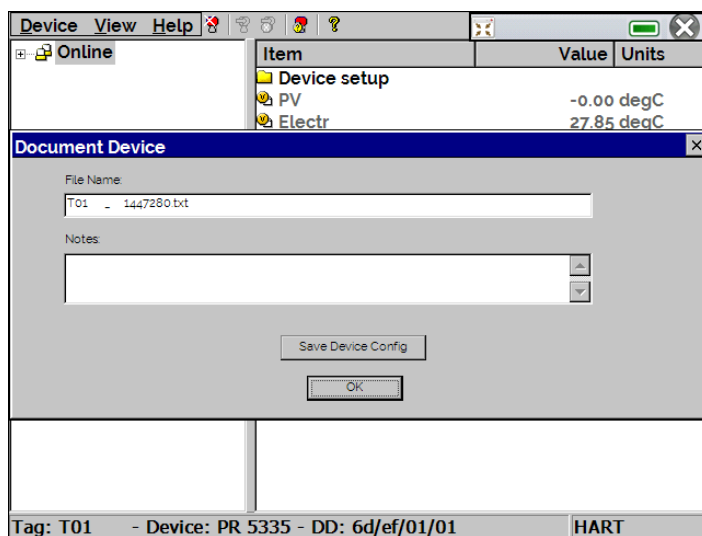


Fig. 69 – Saving the Configuration of a Device

If you want to download the saved configuration into an instrument, go to **Device** → **Download / View**. To select the configuration file, double click on it.

Press the **WRITE** button to download the configuration file for the connected instrument. Before the instrument is completely configured, some confirmation messages will be displayed. To cancel, press **X**. To continue, press **OK**. At the end of the configuration, the **Configuration Write Complete** message appears.

2.4. Automatic Tasks

In the PCON KOMPRESSOR-Y18 you can create and perform automatic calibration tasks. This option can be used to generate calibration work orders for transmitters and indicators. PCON KOMPRESSOR-Y18 also creates and performs tasks for calibration of analog gauges, using the inverted calibration method, so that the user can change the control setpoint in small steps until the expected value is indicated on the gauge.

2.4.1. Creating Tasks

To create tasks from the **MAIN** screen, select **CALIBRATOR**. Select the desired type of **Input (Auxiliary)** and the **Pressure Control Module** configuration (select **CONTROL** mode). For example, to calibrate a pressure transmitter, select the **CONTROL** mode and mA auxiliary input (which will be connected to the current output of the transmitter). For a pressure indicator, e.g., selected **NONE** for the auxiliary input.

To calibrate an analog gauge using the inverted calibration method, select **NONE** for the input.



Press the **QUICK NAV** icon, and select **TASKS** and **CREATE NEW TASK**.

Fill out at least the serial number of the instrument to be calibrated, instrument TAG, stabilization time for each point (wait time in minutes), maximum error allowed for the instrument to be calibrated (in % of the span, reading or full scale), calibration range.

OPEN TEMPLATE

CREATED BYJohn

MANUFACTURERPresys

MODELPressure Transmitter

MESSAGE

AREA

CUSTOMERPresys Instrumentos

PROCEDUREPTEC-LMP01

SERIAL NO.123.12.07

TAGPT-10

ERROR SOURCESPAN

AcceptON

SETTLING TIME(S)15

MAX ERROR (%)0.250

Task infoAs Found/ AsLeftReview and Save

Fig. 70 – Task Information

Go to the **As Found/As Left** tab. Add each point to be generated by the PCON KOMPRESSOR-Y18 and the expected value for the instrument under calibration, for both **AS FOUND** (calibration done before the adjustment) and **AS LEFT** (calibration done after the adjustment). Points can also be generated with the help of the **AUTO** button. By pressing this button, simply enter the maximum and minimum values of the calibration range and the amount of points so that a list of points will be generated by considering constant steps and a linear scale. Also, fill out the number of repetitions (**REP**) of readings, and the calibration strategy (initial to the final point ↑, final to the initial point ↓, etc.). If the As-Found repetitions are set to 0 (zero), the task will contain only the As-Left calibration.

For inverted calibrations, select the ☒ **INVERTED CAL** option (available only if the input type **NONE** has been selected).

AS FOUND

EXPECTED

POINT

REPETITIONS0

STRATEGY

AUTO

AS LEFT

EXPECTED

POINT

REPETITIONS2

STRATEGY

AUTO

RANGE4.000020.0000 mA

Task infoAs Found/ AsLeftReview and Save

Fig 71 – Task Points and Strategy

Go to the **Review and Save** tab. Choose an identification name/number for your task. If you want to save the model of this task for later use when creating other tasks, press **SAVE TEMPLATE** and give a title for it. When you want to open this model again, open the task creation screen and press **OPEN TEMPLATE** on the **Task info** tab.

Press the **CREATE** button to create the task. It is now saved in the calibrator.

The screenshot shows a software window titled 'TASK DETAILS' and 'IDENTIFICATION'. The 'TASK DETAILS' section contains the following information:

- CREATED ON: 28/10/19
- CUSTOMER: Presys Instrumentos
- ADDRESS: Rua Luis da Costa Ramos, 260 - Saúde - São Paulo - SP
- PROCEDURE: PTEC-LMP01
- INSTRUMENT DETAILS:
- TAG: PT-10
- SERIAL NUMBER: 123.12.07
- MODEL: Pressure Transmitter
- MANUFACTURER: Presys
- PRESSURE CONTROL: 0 to 100 psi
- OUTPUT RANGE: 4 to 20 mA

The 'IDENTIFICATION' section has a text input field containing 'PT-10-CAL' with a close button (X) to its right. Below the input field are two buttons: 'SAVE TEMPLATE' and 'CREATE'. At the bottom of the window, there are three tabs: 'Task info', 'AsFound/AsLeft', and 'Review and Save', with 'Review and Save' being the active tab.

Fig. 72 – Creating a Calibration Task.

2.4.2. Performing Tasks

To perform an existing task, select the **TASKS** menu on the **MAIN** screen. A list is shown which identifies the created work orders that have not been performed yet (● **WAITING**). Select the desired task and press **OK**. Make the necessary connections between the calibrator and the instrument to be calibrated and press **START**.

The screenshot shows a software window titled 'TASK SELECTION' with the subtitle 'SELECT A TASK TO SEE THE DETAILS'. There is a 'Remote server' button in the top right corner. On the left, there is a list of tasks: 'PT-10-CAL' (highlighted in blue) and 'PT-45 cal' (highlighted in yellow). On the right, the 'TASK DETAILS' for the selected task are displayed:

- CREATED ON: 28/10/19
- CUSTOMER: Presys Instrumentos
- ADDRESS: Rua Luis da Costa Ramos, 260 - Saúde - São Paulo - SP
- PROCEDURE: PTEC-LMP01
- INSTRUMENT DETAILS:
- TAG: PT-10
- SERIAL NUMBER: 123.12.07
- MODEL: Pressure Transmitter
- MANUFACTURER: Presys
- PRESSURE CONTROL: 0 to 100 psi
- OUTPUT RANGE: 4 to 20 mA
- MAX ERROR = 0.25% SPAN(SPAN = 16 mA)
- SETTLING TIME: 15 SECONDS
- PDF: N

At the bottom of the window, there are two radio buttons: 'WAITING' (selected) and 'PERFORMED'. To the right of these are two buttons: 'DELETE' and 'OK'.

Fig. 73 – Exploring tasks.

PCON KOMPRESSOR-Y18 automatically starts the calibration by generating the setpoints registered in the task and doing the reading of the instrument to be calibrated. If you select the **NONE** option for the input, for each generated point the calibrator asks for the value read by the instrument.

For inverted calibrations, it is possible to vary the control setpoint in small steps, until the pointer of the analog gauge indicates the desired value. When the initial setpoint stabilizes, the following screen is shown. This setpoint variation is made through the “+” and “-” buttons and the steps are configured by the **STEP** parameter.

When the analog gauge reaches the desired value, press **OK** to confirm the point.

Fig. 74 – Inverted Calibration

The result will be displayed on the screen, and a progress bar is displayed to indicate the calibration remaining time. At the end of the calibration, a report is shown with the generated values, obtained values, expected values, and the error. If the error is greater than the registered value for the task, the line appears in **red**.

The first time that a task is performed, it is saved as **As-found** (before adjustment). If it runs again, it will be saved as **As-left** (after adjustment). The results are saved in the calibrator and can be viewed at any time.

2.4.3. Viewing Results

Once a task has been performed, it remains saved in the calibrator.

To view the results of a calibration by the PCON KOMPRESSOR-Y18, select the **TASKS** menu on the **MAIN** screen.

Enable the **PERFORMED** option. The list will show only the tasks that have been performed. Select the desired work order and press **OK**. On the screen, the report will be shown with the calibration points, obtained values, expected values and the errors. If the error is greater than the value registered for the task, the line appears in **red**.

 PRINT  CREATE DOC  VIEW PDF 				
PERFORMED BY: John				
POINT	EXPECTED	OBTAINED	ABS. ERR.	SPAN ERR.
0.000 psi	4.0000 mA	4.0023 mA	0.0023 mA	0.014%
25.000 psi	8.0000 mA	8.0229 mA	0.0229 mA	0.143%
50.000 psi	12.0000 mA	12.0228 mA	0.0228 mA	0.143%
75.002 psi	16.0003 mA	15.9976 mA	-0.0027 mA	-0.017%
100.006 psi	20.0010 mA	19.9460 mA	-0.0550 mA	-0.344%
0.001 psi	4.0002 mA	4.0047 mA	0.0045 mA	0.028%
25.003 psi	8.0005 mA	8.0224 mA	0.0219 mA	0.137%
49.997 psi	11.9995 mA	12.0209 mA	0.0214 mA	0.134%
75.003 psi	16.0005 mA	15.9957 mA	-0.0048 mA	-0.030%
100.002 psi	20.0003 mA	19.9470 mA	-0.0533 mA	-0.333%
AS-FOUND AS-LEFT AS-FOUND ERR. AS-LEFT ERR. DETAILS				

Fig. 75 – Viewing the Task Results in the Calibrator

CREATE DOCUMENT option saves the job data as a PDF extension file to the calibrator's internal memory (SD card), which can be printed or accessed via a computer.

To print the Calibration Report, press the icon . The printer must have been previously configured in **SETTINGS > SYSTEM > PRINTER CONFIG** (see section 3.4 and connected to the PCON USB Host port (see section 1.5 – Parts Identification).

To access the files saved in the internal SD card of the calibrator, connect the USB cable to the computer (type A USB) and to the PCON (USB type B for version RM/DT, and USB micro type for the FS version;). Tasks are saved within the TASKS\REPORTS folder, identified by the registered TAG number.

To save all tasks to a connected USB flash drive or external HD, go to **TASKS> ADVANCED TASK OPTIONS> EXPORT RESULTS TO PEN-DRIVE**.

The logo can be changed to one of your own company. To do so, plug a PENDRIVE with the logo file into the PCON USB port. Enter the **TASKS> ADVANCED TASK OPTIONS> ADVANCED> CERTIFICATE MODEL MANAGER> LOGO** and select the file by its name (must have the extension .jpg). We recommend an image size of approx. 200 x 200 pixels.

To add your sign to the Report, create a user with a signature in System Menu (See section 2.7.1 - System) and enable the Protected Access with password.

CALIBRATION REPORT FOR TAG
PT-10-CAL

PRESYS

CUSTOMER: Presys Instrumentos				
TAG: PT-10		MODEL: Pressure Transmitter		
SERIAL NUMBER: 123.12.07		MANUFACTURER: Presys		
OUTPUT RANGE: 4 to 20 mA		MAX ERROR = 0.25% SPAN(SPAN = 16 mA)		
PRESSURE CONTROL: 0 to 100 psi				
STANDARD:				
MANUFACTURER	SERIAL NUMBER	MODEL	NEXT CAL.	CERT. NUMBER
PRESYS	01.01.01	PCON-Y18	07/03/20	R5555.07.19

As-left performed by: John DATE 28/10/2019

POINT	EXPECTED	OBTAINED	ERROR	SPAN ERR.	PASS/FAIL
0.000 psi	4.0000 mA	4.0023 mA	0.0023 mA	0.014%	Pass
25.000 psi	8.0000 mA	8.0229 mA	0.0229 mA	0.143%	Pass
50.000 psi	12.0000 mA	12.0228 mA	0.0228 mA	0.143%	Pass
75.002 psi	16.0003 mA	15.9976 mA	-0.0027 mA	-0.017%	Pass
100.006 psi	20.0010 mA	19.9460 mA	-0.0550 mA	-0.344%	Fail
0.001 psi	4.0002 mA	4.0047 mA	0.0045 mA	0.028%	Pass
25.003 psi	8.0005 mA	8.0224 mA	0.0219 mA	0.137%	Pass
49.997 psi	11.9995 mA	12.0209 mA	0.0214 mA	0.134%	Pass
75.003 psi	16.0005 mA	15.9957 mA	-0.0048 mA	-0.030%	Pass
100.002 psi	20.0003 mA	19.9470 mA	-0.0533 mA	-0.333%	Fail

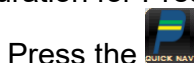
DOCUMENT CREATED ON 28/10/19	RESPONSIBLE 
--	---

Fig. 76 – Printed Task Report

2.5. Data Logger

PCON KOMPRESSOR-Y18 allows you to record a series of measurements over time to display the data in chart or table format.

Select the **CALIBRATOR** menu on the **MAIN** screen and select the desired configuration for Pressure Control and Auxiliary Input.



Press the icon and select **DATA LOGGER**.

The calibrator automatically starts the measurements and displays each measured point on the chart. To record the measurements, you must press the **REC** button (see **Figure 77**). With this option, all points (measurement and time) are saved in an internal file and can be used to generate a table or chart.

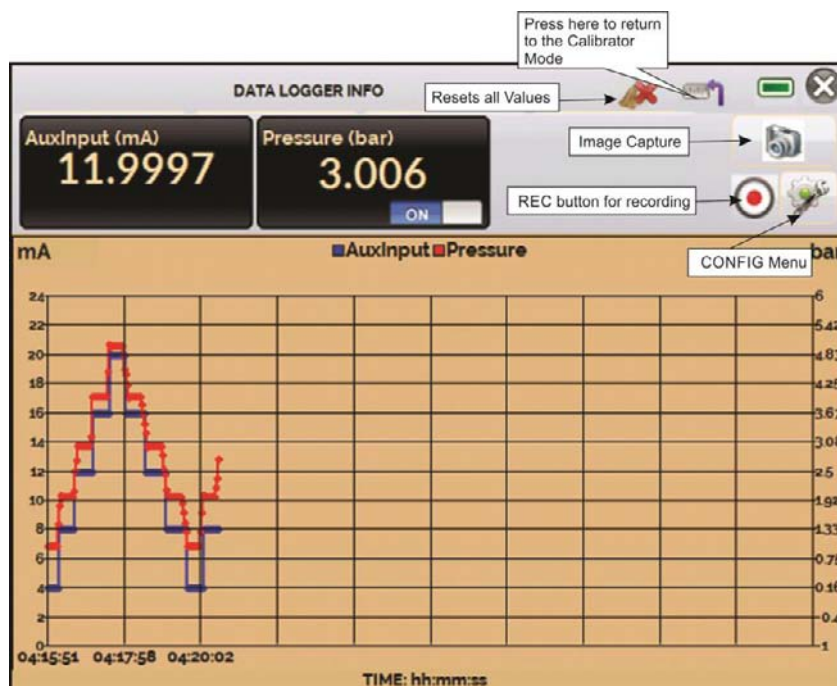


Fig. 77 – Data Logger.

In the **CONFIGURATION** menu ( icon), you can edit the background color of the chart, color and line thickness, sampling rate (in seconds) and set the x (time) and y (measurements) axis of the chart.

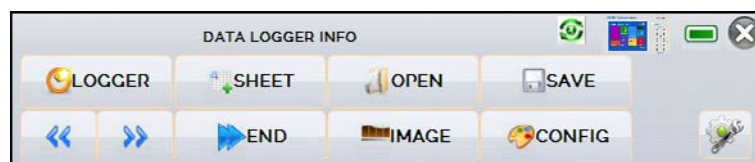


Fig. 78 – Data-Logger Configuration Menu.

Recording can also be programmed to start at a certain date and time in the **LOGGER** option. Just set the start time and end time of recording. During the defined period, the measured points are saved in an internal file in PCON KOMPRESSOR-Y18.

To view a saved file press the **OPEN** button, select the desired file, and press **LOAD**. The file name contains the date and time of the measurements.

The **SHEET** button allows the visualization of data in table format, with the date and time of the measurement and the measured values.

If the user wants to export the current data to a “.csv” file that can be opened in a spreadsheet software, press the **SAVE** button and indicate the name and the location where it will be saved.

The  button saves the current screen image as a “.png” file. All saved screens can be viewed in the **IMAGE** menu.

If a Pen Drive is connected to the USB Host port, the data logger files (images and data) may be saved in it. If no Pen Drive is connected, these files are saved in the internal SD card of the calibrator. To access the files saved on the PCON KOMPRESSOR-Y18 internal memory, connect the USB cable to the computer (type A USB) and to the USB Device port of the PCON KOMPRESSOR-Y18 (USB type B for the RM/DT version, and USB micro type for the FS version, see section **1.5** – Parts Identification).

2.6. HELP DESK

PCON calibrator has a video player and documents viewer. These videos can be viewed while a calibration is performed and are designed to assist in the use of the calibrator. Documents can be, for example, calibration procedures or instructions that can be stored and viewed on the calibrator itself.

From the main menu, selecting **HELP DESK** and the tab **VIDEOS** a list of video categories appears. Select the category and the desired video. Press the button **FULL SCREEN** to view the video in full screen and the button **WINDOW** to reduced screen.

To add new videos to the calibrator, connect the USB cable to the computer (type A USB) and to the PCON KOMPRESSOR-Y18 (USB type B for the RM/DT version, and USB micro type for the FS version, see section **1.5** – Parts Identification). Open the **VIDEOS** folder and copy the new video to any sub-folder (category) of the VIDEOS folder. If you prefer to create a new category, simply create a new folder inside VIDEOS with the title of the desired category and copy the video to this folder.

To insert documents, such as procedures or instructions, files must be converted to PNG files and must be saved into the SD-card HELP folder; Create a folder with the name of the document and insert it into this folder. To make the process easier, there are PDF converter software for the files in the correct form. We recommend that the file be in presentation format for better viewing on the calibrator screen.

2.7. SETTINGS

2.7.1. System

In the **SYSTEM** tab you can set the volume of the calibrator loudspeaker, the touchscreen calibration, identification of the calibrator, language, printer and security options.

- **TOUCHSCREEN OPTIONS**

CALIBRATE TOUCH: Press the spots on the screen indicated by + (it is recommended to use the stylus on the touchscreen). After the calibration, press again on the screen at any point twice.

ROTATE SCREEN: For the FS version, it can be convenient to position the case lying over the workbench. So that the screen is not upside down, you can rotate the screen 180° in this function.

- **Language Setting**

Press the desired language for the system and confirm with the **OK** button. The system must be restarted to save the configuration.

- **Screen Brightness**

Press the desired bright for the screen and confirm with the **OK** button. The options are 25 %, 50 %, 75 %, 100 %.

- **Calibrator Identification**

In this option it is possible to identify your calibrator, choosing a TAG name, owner name and location.

- **Sound Options**

Press + or - to configure the value of the system audio volume.

- **Security Options**

The instrument initially has no access password. This setting can be changed in **SECURITY OPTIONS**.

To create a new user, press the key icon  and then the users icon . Fill out the blanks and press **CREATE**. It is possible to add a signature to be used when issuing a calibration report through the **TASK** feature.

Pay attention to the functions that each user level has access to in the table below:

User Level	Function				
	Calibrator	Tasks	Hart®	Data-Logger	Settings
Operator	✓	✓	✗	✗	✗
Tec	✓	✓	✓	✓	✗
Admin	✓	✓	✓	✓	✓

To lock the system, press the padlock icon  in the **SYSTEM** menu. The next time the PCON KOMPRESSOR-Y18 is turned on, it will request a login and password. To unlock the system, login as an Admin level user and press the padlock icon in the **SYSTEM** menu again.

- **Adjust Cal.**

Adjustment level protected by password (**9875**).

2.7.2. Network and Services

On the **NETWORK** tab it is configured the IP address of the calibrator for Ethernet communication with the computer and Wi-Fi (wireless) network. The IP address can be dynamically configured (**DHCP**) or may have a fixed address (disable **DHCP** option and edit the desired address).

Wifi communication is via USB / WIFI adapter (optional item). In the **NETWORK** tab you can configure the device name (name which calibrator will be displayed on network). By selecting **CONFIGURE WIRELESS (WIFI)** the user views available networks and configures which network they want to connect to.

By connecting the calibrator to the network it is possible to view and print calibration reports and saved data-logger files. Press network icon  to get access to the configured IP address after connecting to the network. When connected to the wireless network, the icon will be Wifi network .

2.7.3. Services

In the SERVICES bar the user can configure the calibrator communication types and other settings. The options are

- **REMOTE ACCESS** - WEBSERVER (Remote Server) and VNC (Virtual Network Computing) access options
- **SERIAL COMM** - Serial Communication Settings. Configuration of Baud Rate and Stop Bits.
- **FILE SHARING AND USB HOST CONTROL** - Options for allowing / denying file sharing access and setting passwords
- **SERVER ADDRESS** - Remote Server Address Configuration
- **STARTUP MODE** - The user selects whether to prefer the calibrator to start in calibrator mode or the main screen.

The types of communication are described below.

2.8. Built-in Web Server

Before accessing the PCON KOMPRESSOR-Y18 built-in web server, you must configure the network settings (see section **2.7.2.** - Network and Services). Connect the network cable into the Ethernet port of PCON KOMPRESSOR-Y18, located on the front panel for the FS version, and on the rear panel for the RM/DT version.

To access the PCON KOMPRESSOR-Y18 built-in webserver open the web browser on your computer and enter the following address.

<calibrator_IP_address>:5000/pconserver/pages/main.cgi

User: admin

Password: xvmaster

To verify the PCON KOMPRESSOR-Y18 IP address press the button indicated below.

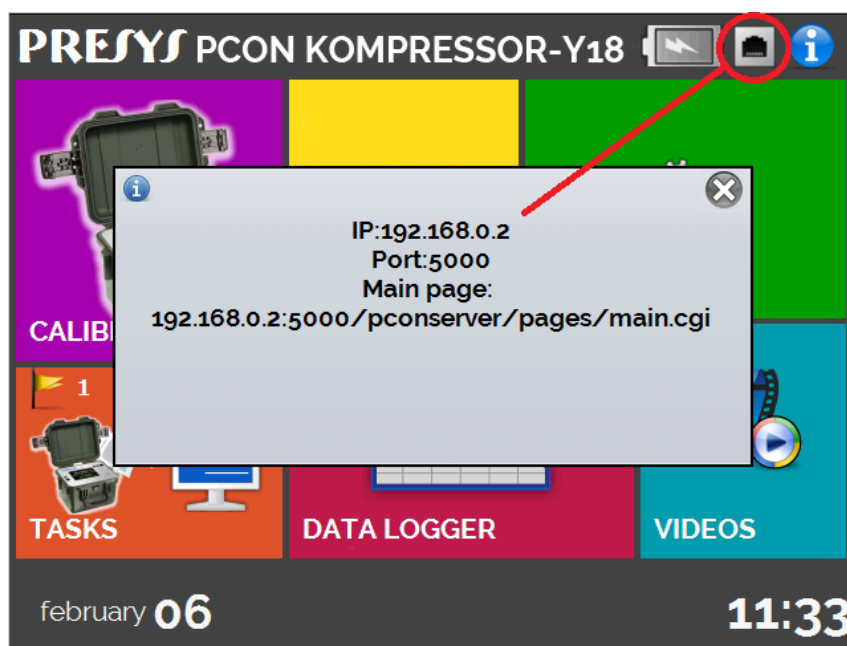


Fig. 79 – IP address.

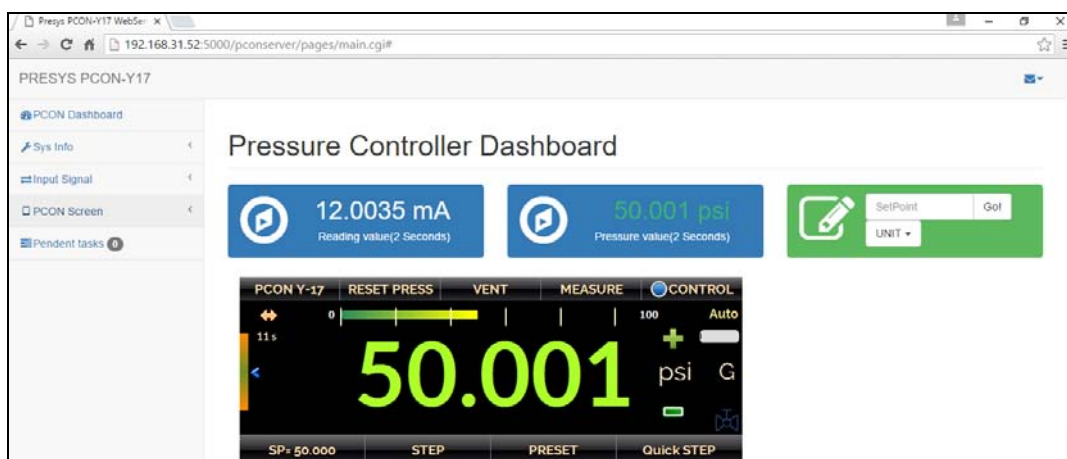


Fig. 80 – PCON KOMPRESSOR-Y18 Web Server.

In the PCON KOMPRESSOR-Y18 Web Server, you can monitor the calibrator screen, change the setpoint and see the pressure and the auxiliary input readings.

2.9. Remote Access - VNC

Virtual Network Computing (or VNC only) is a desktop graphics sharing system that uses the Remote Frame Buffer protocol (RFB) to remotely control another computer or device. By enabling this option, the calibrator screen can be accessed directly from the computer.

For access via VNC you need to download and install a VNC viewer program, some available for free on the internet. Connect the calibrator to the network via Ethernet cable or Wifi. Set in the VNC viewer the IP address indicated on the network icon (Figure 79) and connect. When prompted, use the password "adm". This password can be changed later on the **NETWORK> FILE SHARING AND USB HOST CONTROL > SECURITY**.

2.10. SCPI Commands Set

In order to control the calibrator using SCPI commands connect a serial cable to the USB Type A port of the PCON KOMPRESSOR-Y18 (see section 1.5 – Parts Identification). Connect the cable to the serial port of the computer. In the **SETTINGS** menu, select **Network** → **Serial Comm**, and enable the **SERIAL COMM** (RUN switch as ).

Communication Parameters:

Parity: none

Data bits: 8

Baud rate: configurable in **SETTINGS** menu → **Network** → **Serial Comm**

Stop Bits: configurable in **SETTINGS** menu → **Network** → **Serial Comm**

*IDN?

Description: Instrument Identification.

Parameters: ---

Response: Manufacturer, ID, Serial Number, Software Version

*CLS

Description: Clears the errors list.

Parameters: ---

Response: ---

SOURce:PRESSure <press>

Description: Changes the Pressure Control Setpoint.

Parameters: New Setpoint

Response: ---

MEASure:PRESSure?

Description: Pressure Reading.

Parameters: ---

Response: Pressure Reading | Unit | Stability

UNIT[:PRESSure]?

Description: Current Pressure Unit.

Parameters: ---

Response: Current Pressure Unit

UNIT[:PRESSure] <unit>

Description: Sets the Pressure Unit.

Parameters: New Pressure Unit

Response: ---

SYSTem:ERRor[:NEXT]?

Description: Checks the Errors List.

Parameters: ---

Response: Last Error

OUTput:CONTRol:TYPE <mode>

Description: Sets the Pressure Output Control Mode.

Parameters: LINEAR | AUTO | MAX

Response: ---

SOURce:PRESSure:SLEW?

Description: Reads the Current Pressure Output Slew Rate.

Parameters: ---

Response: Slew Rate (in pressure unit / second)

SOURce:PRESSure:SLEW <slewrates>

Description: Sets the Current Pressure Output Slew Rate.

Parameters: New Slew Rate (in pressure unit / second)

Response: ---

MEASure[:SCALar]:CURRent[:DC]?

Description: mA Input (Auxiliary) Reading.

Parameters: ---

Response: mA Reading

MEASure[:SCALar]:VOLTage[:DC]?

Description: Voltage Input (Auxiliary) Reading.

Parameters: ---

Response: Voltage Reading

OUTPUT:MODE <mode>

Description: Sets the Pressure Operation Mode.

Parameters: VENT | CONTrol | MEASure

Response: ---

RESETPRESS?

Description: Returns if pressure reset is running

Parameters: ---

Response: 0 - Reset is NOT running / 1 - Reset is running

RESETPRESSON

Description: Performs pressure reset

Parameters: ---

Response: OK

VENTON

Description: Enter vent mode

Parameters: ---

Response: OK

VENTOFF

Description: Exits vent mode

Parameters: ---

Response: OK

CONTROL

Description: Enter Control mode

Parameters: ---

Response: OK

MEASURE

Description: Enter Measure mode

Parameters: ---

Response: OK

DATA?

Description: Returns multiple execution data

Parameters: ---

Response: {MODE : A/G}{CURRENTPRESSURE}{UNIDADE}{SETPOINT}
{CURRENTCONTROLMODE}

3 - MAINTENANCE

3.1. Replacing the mA Current Input Fuse

In order to replace the PCON KOMPRESSOR-Y18 mA Input (Auxiliary) fuse, proceed as follows:

- Rotate the fuse holder counterclockwise (see section 1.5 – Parts Identification – mA input Fuse). Try to use a plastic tool to avoid damaging the fuse holder;
- The fuse holder will be released;
- Pull the fuse holder and remove the fuse;
- Place the spare fuse (Time-Lag Type Fuse 32 mA / 250 V / 5 x 20mm).

3.2. Replacing the Power Supply Fuse

In case the power fuse (6.3 A / 250 V / 5x20mm) burns out, it can be replaced. It is located in the power outlet on the rear (DT/RM version) or beside the ON/OFF switch on the top panel (FS version).

The fuse may burn out due to a mains voltage surge or a component failure in the calibrator. After replacing the fuse, if it burns out again, the failure may be not simple. In this case, contact the Presys technical support.

3.3. Battery care and specifications



Warning:

Battery Pack Lithium Polymer (Li-Po) for Presys Advanced Calibrators

- Authorized service provider only
- Potencial for fire or burning;
- Do not disassemble, puncture, crush, heat, or burn;
- Use specified charger only;
- Do not throw into fire;
- Environment Temp.: -10 °C ~50 °C;
- Do not short circuit;
- Must be disposed properly;
- Do not use sharp objects.

Specifications:

- Nominal Voltage: 22.2 Vdc;
- Max. Current: 4200 mAh;
- Max. Capacity: 93.24 Wh

3.4. Replacing Battery Pack (Only for FS Version)

FS Version - up to 25 bar

- a) Loosen the 2 screws from the cover of the battery pack (1);
- b) Disconnect the battery (2);
- c) Remove the cover and the 2 screws from the clamp (3);
- d) Remove the battery and replace it for the new one (4);
- e) Fix the 2 screws from the clamp;
- f) Connect the battery and close the cover, fixing the 2 screws.

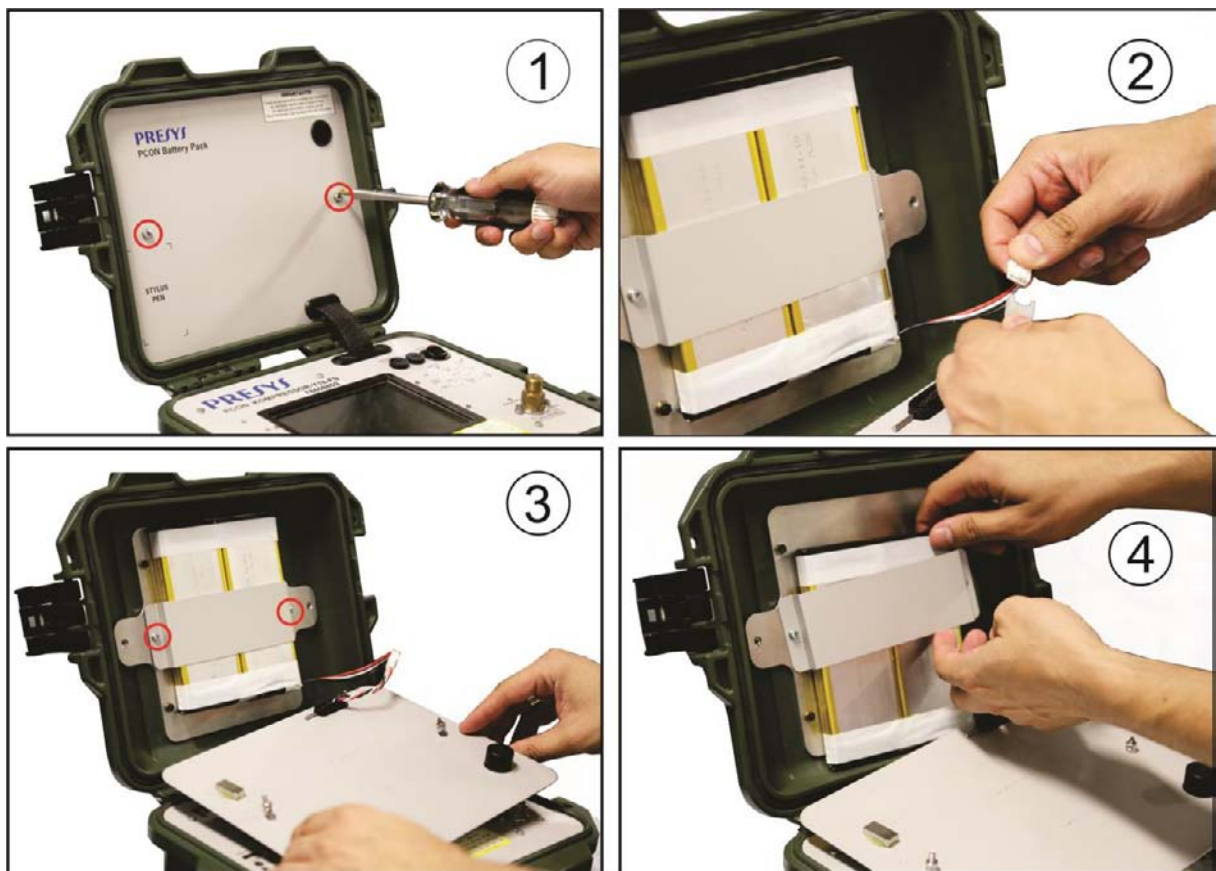


Fig. 81 – Replacing Battery Pack - FS Version up to 25 bar

FS Version - over 25 bar

- a) Remove the 6 screws from the cover of the battery pack (1);
- b) Remove the cover (2);
- c) Disconnect the battery (3);
- d) Remove the battery and replace it for the new one (4) **Do not pull through the wires;**
- e) Connect the battery and close the cover, fixing the 6 screws.

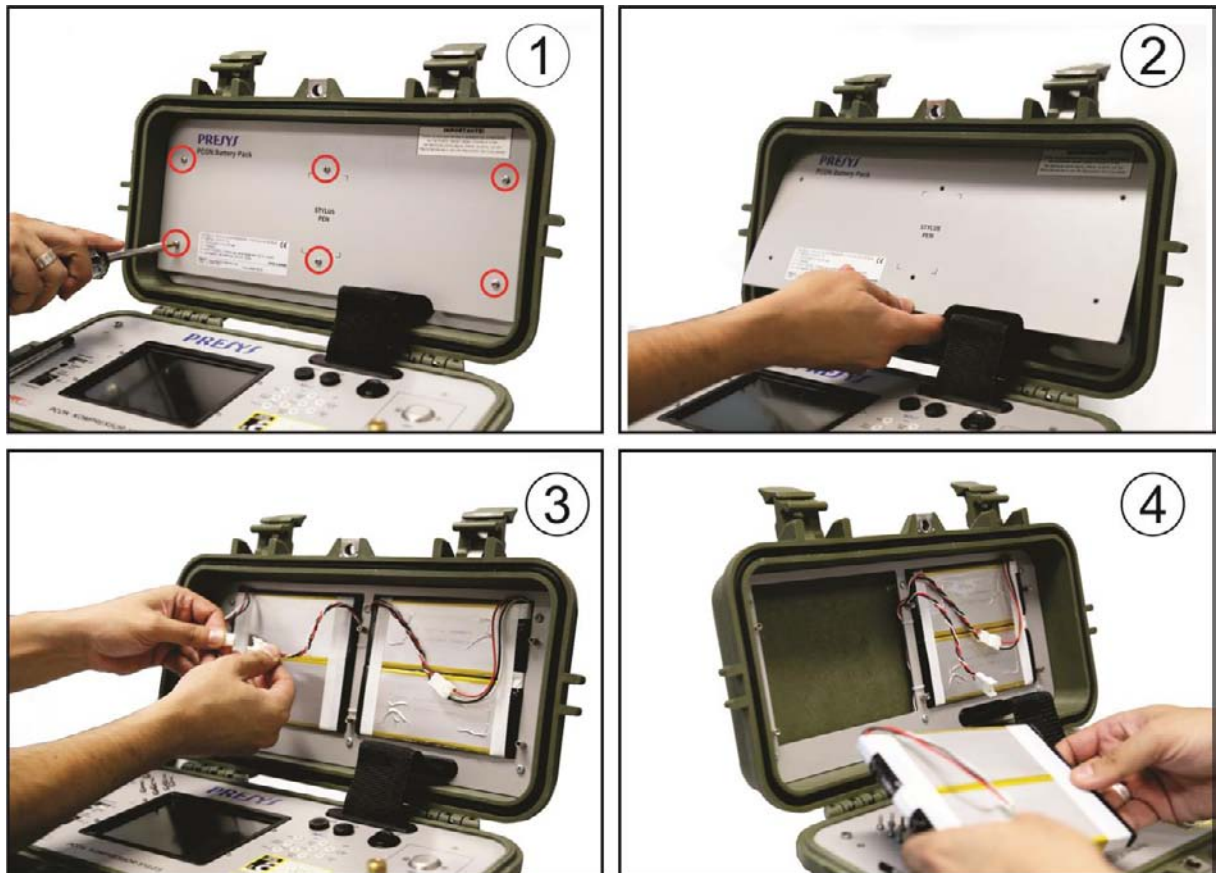


Fig. 82 – Replacing Battery Pack - FS Version over 25 bar

4 - CONTAMINATION TRAP (OPTIONAL ACCESSORY)

The contamination traps are designed to protect pressure equipments, such as controllers, calibrators and pressure generators, from impurities, liquids (water, oil etc.) and residues released by manifolds, pressure gauges, pressure transmitters and other process instruments under calibration.

During transitions from a large pressure setpoint to a smaller one, liquid and residues present in the pneumatic system may flow into the generator / controller. For example, consider a controller which initially controls 250 psi (17.2 bar) on a pressure gauge and the setpoint is changed to 25 psi (1.7 bar). In order to decrease the pressure, the controller / generator must remove air from the system. Such air removal can cause liquids and residues present in the manometer to flow into the controller / generator, damaging it and compromising the operation of the control valves. This may also occur when selecting negative setpoints (vacuum).

The contamination trap must be placed between the generator / controller and the instrument to be calibrated or adjusted in order to avoid that liquid (water, oil etc.) and residues from these process instruments damage the internal system of the generator / controller.

Recommended for PCON calibrators with control ranges above 15 psi.



Fig. 83 – SI-600 , SI-1000 and SI-3000 Contamination Traps

Model: SI-600 (Order Code: 06.08.0090-00)

Maximum Pressure: 600 psi (40 bar)

Model: SI-1000 (Order Code: 06.08.0103-00)

Maximum Pressure: 1000 psi (70 bar).

Recommended for PCON KOMPRESSOR-Y18 over 40 bar (small volume).

Model: SI-3000 (Order Code: 06.08.0095-00)

Maximum Pressure: 3000 psi (210 bar).

Recommended for use with External Pressure Supply (large volume)

Material: Stainless steel, polycarbonate and nitrile rubber seals.

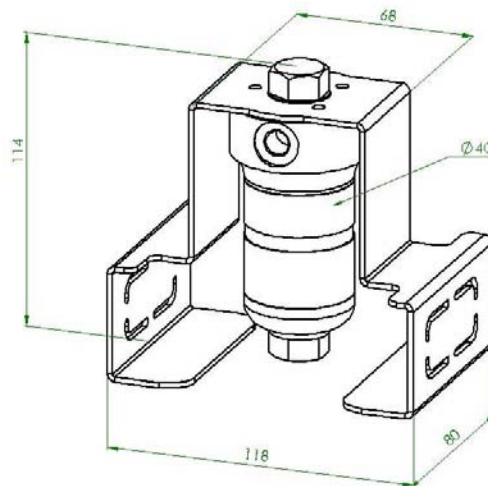
Connections: 2 x Adapters 1/8" BSP male brass with sealed system for high-pressure hose, polyurethane and nitrile rubber seal.

Weight:

SI-600: 720 g

SI-1000: 700 g

SI-3000: 1010 g



SI-600

Fig. 84 – Dimensional drawing

The Contamination Trap must be used always in the upright position to prevent liquid from flowing into the pressure controller, calibrator or generator.

The CLEAN port must be connected to the pressure calibrator, controller or generator. The DIRTY (UUT*) port must be connected to the manifold, manometer, pressure switch, transmitter or other process instruments that will be calibrated or adjusted.

*UUT = Unit Under Test



Fig. 85 – Connections

Note: Keep the contamination trap always upright to prevent liquids from flowing into the Controller/Calibrator/Pressure Generator and do not swap the hoses (Clean and Dirty ports).

Cleaning and Maintenance

When the liquid accumulated inside the contamination trap reaches the level of the boundary line, the liquid can be removed as follows:

- Disconnect the two hoses from the contamination trap;
- Turn the contamination trap upside down (with the 3 screws facing down);
- Connect the DIRTY (UUT) port to a pressure source of at least 50 psi (3 bar) (for example, PCON itself);
- Keep the CLEAN port unobstructed and direct it to a container;
- Generate the pressure with the generator/pressure controller and the liquid will exit the contamination trap through the CLEAN port;
- The higher the pressure generated the easier it is to expel the liquid from the contamination trap;
- For safety, it is not recommended to apply pressures greater than 150 psi (10 bar).

Note: When performing the cleaning procedure, liquid and residues will be pressurized through the CLEAN port. NEVER direct this port to the eyes or any other part of the body.

When completing the procedure, restore the correct contamination trap connections:

- CLEAN port connected to the pressure controller, calibrator or generator.
- DIRTY (UUT) port connected to the manifold, manometer or transmitter (instruments to be calibrated).

After performing this procedure, if there is still accumulation of dirt and residues inside the contamination trap, it will be necessary to disassemble it for cleaning:

- Unscrew the three M4 screws on the top side, releasing the contamination trap from its support.
- It will be necessary two $\frac{3}{4}$ -inch wrenchs, one to hold the hexagon screw of the top flange and another to hold the hexagon screw of the bottom flange. Unscrew them by turning counterclockwise.
- Remove the two $\frac{1}{8}$ " BSPP (G1/8) adapters (CLEAN and DIRTY ports) for a more effective cleaning. Use a $\frac{9}{16}$ -inch wrench.
- Clean the hoses that are used with the Contamination Trap.

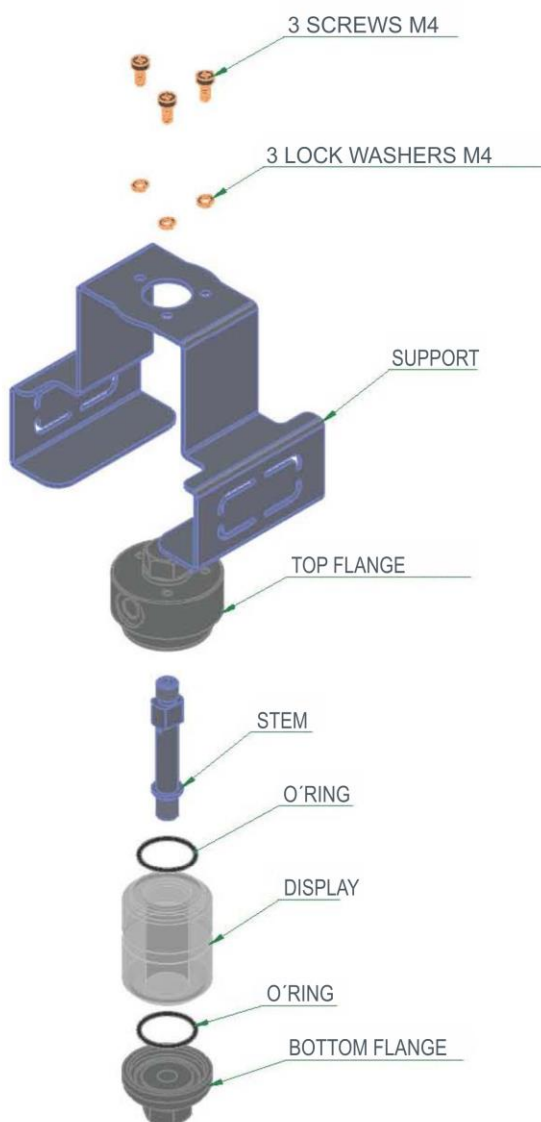


Fig. 86 – Contamination Trap Mounting

Never clean the display with solvents, petroleum derivatives or others.

Wash all parts with water and detergent or mild soap.

Dry all parts before reassembling, by using compressed air, paper towel or cotton cloth;

Do not forget to place the O'rings before reassembling the contamination trap (if necessary, apply silicone grease to the O'rings);

CAUTION when tightening the flanges during reassembling. NEVER use excessive force, this may damage the display.

5 - PRESSURE UNITS CONVERSION

psi	bar	mbar	MPa	kPa
1	6.894757×10^{-2}	6.894757×10^1	6.894757×10^{-3}	6.894757

psi	Pa	atm	at	mmH ₂ O
1	6.894757×10^3	6.804605×10^{-2}	7.030696×10^{-2}	7.030696×10^2

psi	mmH ₂ O@4°C	cmH ₂ O	cmH ₂ O@4°C	ftH ₂ O
1	7.030889×10^2	7.030696×10^1	7.030889×10^1	2.306659

psi	ftH ₂ O@4°C	inH ₂ O	inH ₂ O@4°C	inH ₂ O@60°F
1	2.306726	2.767990×10^1	2.768067×10^1	2.770759×10^1

psi	torr	mmHg	mmHg@0°C	cmHg
1	5.171500×10^1	5.171500×10^1	5.171507×10^1	5.171500

psi	cmHg@0°C	inHg	inHg@0°C	inHg@60°F
1	5.171507	2.036024	2.036026	2.041772

psi	gf/cm ²	kgf/cm ²	kgf/m ²	mH ₂ O
1	7.030696×10^1	7.030696×10^{-2}	7.030696×10^2	7.030696×10^{-1}

psi	mH ₂ O@4°C
1	7.030889×10^{-1}

Reference: Guide for the Use of the International System of Units (SI) – NIST Special publication 811 – 2008 Edition.



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