**Control de Presión Diferencial -** de 0,75 a 2,2 kW
**Differential Pressure Control -** from 0,75 to 2,2 kW
**Controllo della Pressione Differenziale -** di 0,75 a 2,2kW

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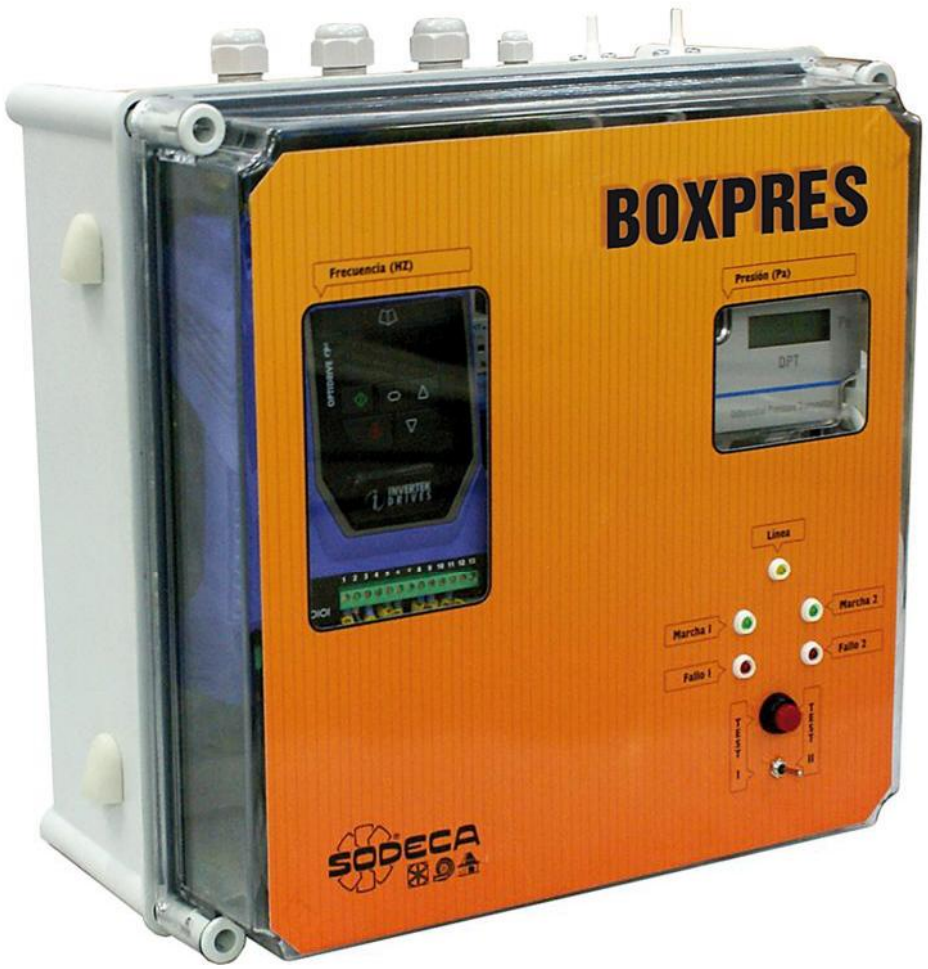
# BOXPRES KIT




## Manual del Usuario

## User Manual

## Manuale Utente

Code: 1130065
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## CONTENTS



### Electromagnetic Compatibility

All BOXPRES KIT equipment incorporates a frequency converter as a main element of regulation. The frequency converter has been designed according to the most demanding EMC standards. All the BOXPRES KIT versions with single-phase 230Vac and three-phase 400Vac power, suitable for use within the European Union, include an internal EMC filter. This filter is designed to reduce the emissions brought back to the electrical line through the power cables in fulfilment of the harmonised European standards. It is the responsibility of the installer of BOXPRES KIT equipment to ensure that the equipment, systems or spaces into which our equipment is fitted fulfil the EMC legislation of the country of use. Within the European Union, the equipment which may be installed in the near future must fulfil Directive 2004/108/EC.

When a BOXPRES KIT which incorporates a VSD*/A frequency converter with integrated or external filter is used, the following EMC categories may be achieved as defined by EN61800-3:2004:

<table>
<tr><th rowspan="2">BOXPRES KIT</th><th colspan="3">EMC Category</th></tr>
<tr><th>Cat C1</th><th>Cat C2</th><th>Cat C3</th></tr>
<tr><td>Single-phase 230Vac input</td><td colspan="3">No additional filter is required<br>Use screened cable for the motor</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="2">Three-phase 400Vac input</td><td>Use external OD-Fx34x filter</td><td colspan="2">No additional filter is required</td></tr>
<tr><td colspan="3">Use screened cable for the motor</td></tr>
<tr><td>Note</td><td colspan="3">For motor cables of more than 25 metres, it is necessary to install outlet filters of dv/dt type.</td></tr>
</table>

# 1. Mechanical Installation and the surroundings of the installation

## 1.1 General

- Store the equipment in its box until use. Clean and dry location with a range of temperatures of between –20°C +60°C

## 1.2 Operating conditions

- Assemble the BOXPRES KIT in a flat place, vertically and free from vibration and protected from direct solar radiation. Furthermore, you should ensure that the air inlets and outlets of BOXPRES KIT are not blocked and permit the air to circulate.
- The BOXPRES KIT equipment will always be applicable in installations with pressurisation of spaces and for operation in case of fire, non-continuous operation. Furthermore, its installation is obligatory in interiors (it must never be used outdoors), in areas where there is no direct solar radiation which may increase the operating temperature of the equipment, always taking as a base that the maximum operating environmental temperature of this equipment is 25ºC. Tests carried out at 25ºC frequency of switching of the 4 kHz frequency converters. For other working environments, it is necessary to consult the manufacturer.

## 1.3 Ventilation

- The size 1 Boxpres equipment (up to 1.5 kW) has two type DV-m ventilation devices. The size 2 equipment (up to 2.2 kW) has four type DV-g ventilation devices.
- The internal ventilation system is forced using as its ventilation element its own fan incorporated in the frequency converter.

## 1.4 Mechanical dimensions and assembly

The BOXPRES KIT equipment is made in two different sizes according to the following table:

| Power (kW) | Input Voltage | Output voltage | Output current | Size | length x width x depth |
|---|---|---|---|---|---|
| 0.75kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 2.2A | 1 | 270x270x170mm |
| 1.5kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 4.1A | 1 | 270x270x170mm |
| 2.2kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 5.8A | 2 | 360x360x360mm |
| | | | | | |
| 0.75kW | 230Vac II[1 ph] | 230Vac III[3 ph] | 4.3A | 1 | 270x270x170mm |
| 1.5kW | 230Vac II[1 ph] | 230Vac III[3 ph] | 7.0A | 1 | 270x270x170mm |

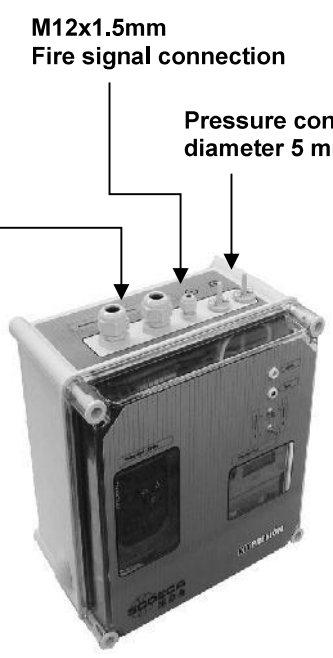
This table indicates all available models according to voltage and input as well as output phases. The measurements of the casing vary according to the model selected.

**STUFFING BOXES FOR ENTRY OF HOSES TO THE EQUIPMENT** **SIZE 1**

**M20x1.5mm**
**Connection of power and motor**

**M12x1.5mm**
**Fire signal connection**

**Pressure connection diameter 5 mm**

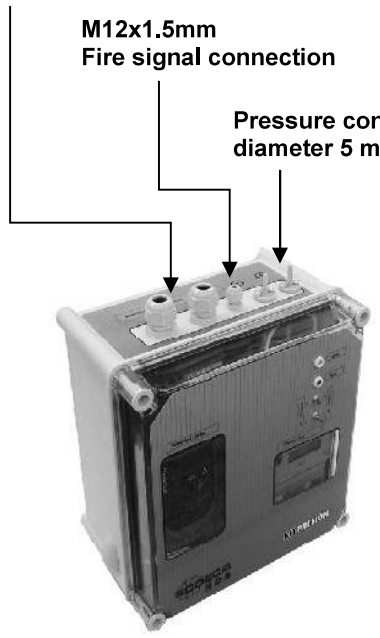


**STUFFING BOXES FOR ENTRY OF HOSES TO THE EQUIPMENT** **SIZE 2**

**M25x1.5mm**
**Connection of power and motor**

**M12x1.5mm**
**Fire signal connection**

**Pressure connection diameter 5 mm**



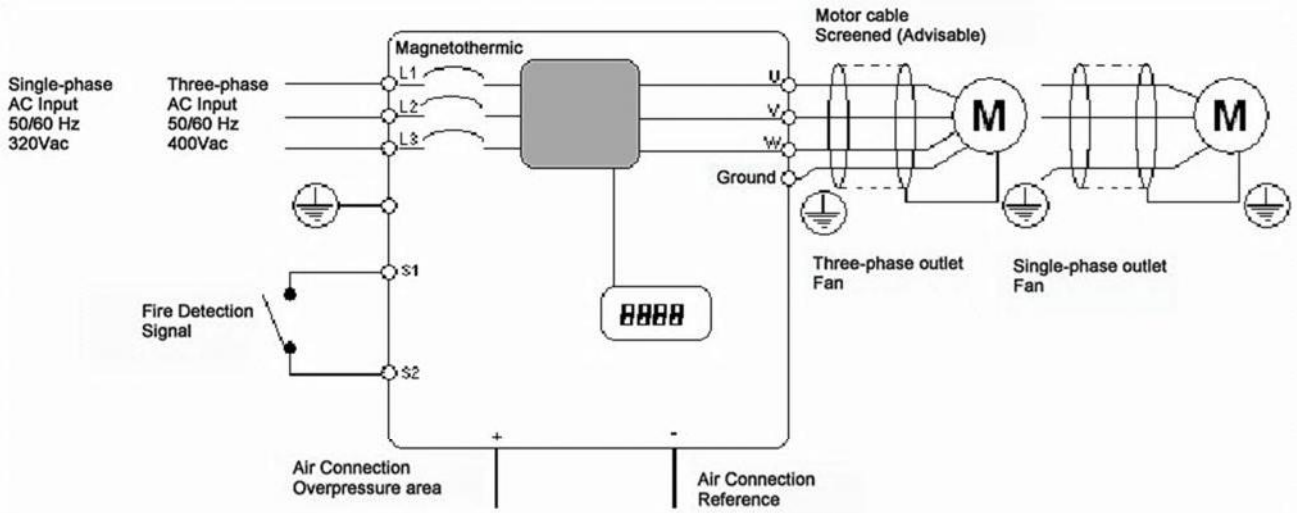
The channeling of the power supply connection, motor and fire signal hoses will be by the upper part of the BOXPRES KIT equipment, as well as the pressure inputs.
The wiring to the equipment will be carried out with a hose with features adapted to the supply power and the regulations current at the moment of the installation.

### 1.5 Degrees of protection

The BOXPRES KIT equipment has a degree of protection IP45 and must be installed indoors. Do not use outdoors or indoors with direct solar radiation.

## 2. Electrical installation and connection

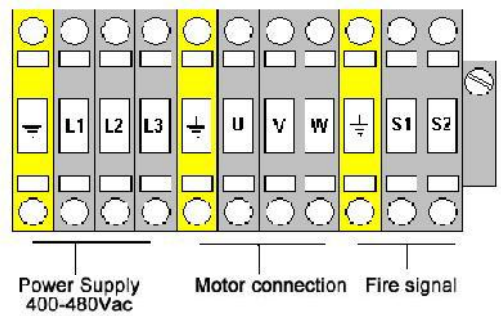
Connect the equipment in accordance with the following connection diagram, making sure that the junction box of the motor is correct. There are two connections in general: star and triangle. It is essential to ensure that the motor is connected in accordance with the voltage at which it is operated.
The section of the power cable and motor must be adapted to the power installed, and it is necessary to adapt the section of cable to the minimum measures indicated in chapter 8 of this guide. It is advisable that the power cable to the motor should be screened and connected to earth at both ends, thus minimising the interference that the equipment might cause through the motor cable.



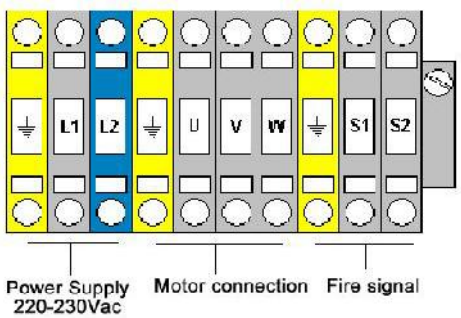

The fire detection signal is free of potential and will be cabled with a 1.5 mm cable. 2. In repose, the condition of this contact is open and in case of fire the contact of the fire-alarm system will close, in such a manner as to start up the BOXPRES KIT system. It is very important to verify the input power which is going to be connected to the power terminals as incorrect power could seriously damage the equipment.

- For single-phase energy supplies it is necessary to connect between L1 and L2. For three-phase energy supplies it is necessary to connect between L1, L2, and L3. The sequence of phases is not important.
- The motor must be connected between U, V ,W. For single-phase motors, it will be connected between U and V. If the motor turns in the opposite direction, it will be necessary to invert the two output phases, for example U for V. Inverting the input phases will not invert the direction of the motor.

**BOXPRES connection 400Vac [3ph/3ph]**




**BOXPRES connection 230Vac [1ph/3ph]**



CAUTION

This manual is to be understood as a guide for correct installation. Sodeca cannot accept responsibility for the fulfilment or otherwise of any regulation, whether national, local or of any other scope, for the correct installation of the equipment or associated equipment. If the regulations are ignored during the installation, there is a danger of personal injury and/or material damage. This manual must be read and totally understood before proceeding.

The BOXPRES KIT equipment contains high-voltage condensers which take some time to discharge after a loss of electricity supply. Always wait for 30 minutes before handling BOXPRES KIT after disconnection from the mains electricity so that the condensers can discharge to safe levels of voltage. Breach of this precaution might give rise to severe injuries or loss of life. It is important that BOXPRES KIT is installed or adapted by qualified electrical staff who are familiar with the construction and operation of the equipment and the dangers involved.

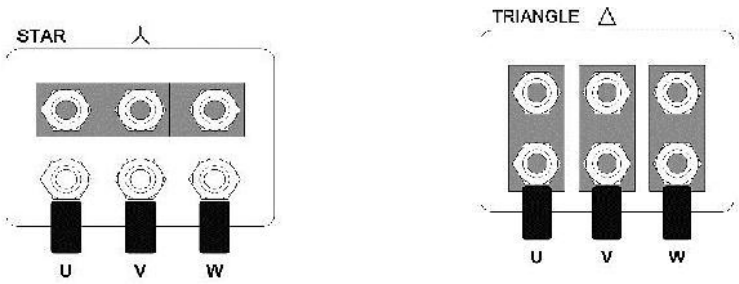
**IMPORTANT:** It is important that the earth terminal of BOXPRES KIT is connected directly to the general earth system.

## *MOTOR CONNECTIONS*

The majority of motors for general purposes are wound to work with dual voltage sources. This is indicated on the identification plate of the motor. This operating voltage is normally selected when the motor is installed or alternatively with a STAR or TRIANGLE connection. The STAR always gives the highest voltage of the two voltage ranges.

The typical characteristics are: 人/△

**400V / 230V**
**690V / 400V**




## *AIR TUBE CONNECTIONS*


Air connections will be made using a Ø4mm tube and the end of each tube should be placed in the following position or area:
(-) The tube should be left in the pressure room of reference
(+) The tube should be left in the room that we are going to pressurize in case of fire.

BOXPRES KIT has all the hose inputs or air tubes in the upper part, perfectly indicated and with pressure packing glands to maintain airtightness.

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# 3. Factory Adjustments

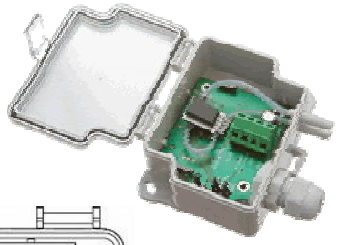
The equipment is supplied by default with a series of adjustments which make it possible to start it up without modifying the parameterization of the frequency converter and the differential pressure transducer.

## 3.1 Adjustments in the differential pressure transmitter

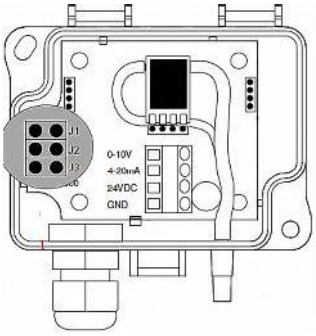
Boxpres incorporates a multi-range differential pressure transmitter. This transforms and amplifies the signal to 4..20mA and the range is determined by some bridges in the interior which make it possible to adjust it.

1. Boxpres is adjusted by the factory to work at a pressure of 50 Pascales. If there are any doubts about the factory adjustment, we must check the adjustments of the differential pressure transmitter.

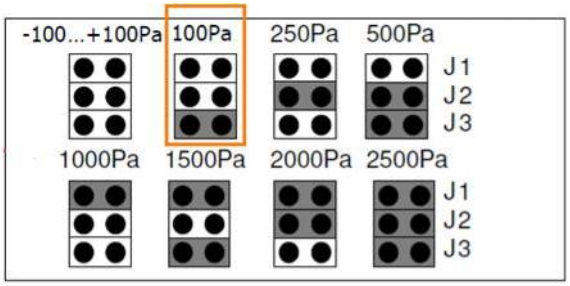
2. In order to carry out this check, we must lift the front cover of the transmitter and in this way gain access to the bridges in the interior.



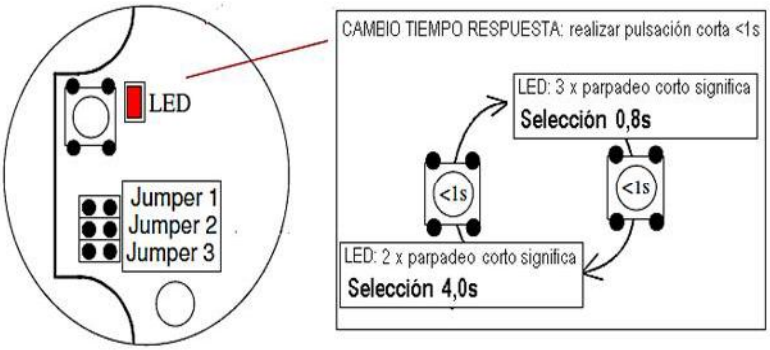
3. We show the location of these below




4. Of the 8 scales of adjustment, the option **0..100 Pa**. must be selected.




5. By pushing the calibration button briefly, it is possible to adjust the response time to the optimum value. In Boxpres this is 0.8s.



### 3.2- Adjustments to the frequency converter

In this same way, the frequency converter should be parameterised to work in PI regulation mode and with the following functions and values which are detailed below.
The equipment is configured by the factory to work at 50 Pa in applications of pressurisation of spaces.
The way of gaining access to the programming and modifying values in the frequency converter is described below.

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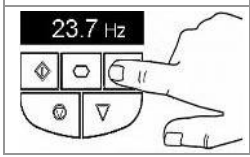
### The Frequency Converter Keyboard and the action of each key.

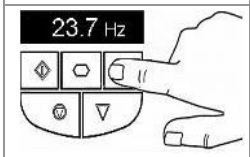
| | | |
|---|---|---|
|  | BROWSER | Used to visualise the information in real time, to gain access and exit the parameter editing mode and to save changes of parameters. |
|  | INCREASE | Used to increase the speed in real time or to increase the values of the parameters in the editing mode. |
|  | DECREASE | Used to reduce the speed in real time or to reduce the values of the parameters in the editing mode. |
|  | RESET / STOP | Used to reset a piece of equipment on alarm. When it is in the keyboard mode it is used to stop a piece of equipment that is running. |
|  | START | When it is in keyboard mode, it is used to start up a piece of equipment that is stopped or to change the direction of rotation if the bi-directional keyboard is enabled. |
|  | | |

In order to change the value of a parameter, press the key and keep it pressed for >1s until StOP is viewed. The display changes to P-01 indicating parameter 01. Press and release the key to see the value of this parameter. Change the desired value using the keys and . Press and release the key once more to save the change. Press the key and keep it pressed for >1s to return to the real time mode. The display will show StOP if the equipment is stopped or the information in real time of the equipment is indeed operating (e.g. speed).

### Programming for operation of local pressurization indicated in *Boxpres Adjustments.*

***IMPORTANT NOTE:*** The highlighted parameters are those which it may be necessary for the technician who carries out the start up to adjust.

| *Parameter* | *Name of parameter* | *Boxpres Adjustment* |
|---|---|---|
| ***P-01*** | ***Maximum speed*** | ***50.0Hz*** |
|   | *Description of the parameter*<br>Maximum speed that the fan can reach. Units in Hertzes. If this parameter is increased above 50.0Hz, it is necessary to check that the intensity of the motor does not go over the maximum indicated on the motor plate at maximum speed. If this is the case, it will be necessary to reduce this parameter. | |

| *Parameter* | *Name of parameter* | *Boxpres Adjustment* |
|---|---|---|
| ***P-02*** | ***Minimum Motor Speed*** | ***10.0Hz*** |
|   | *Description of the parameter*<br>Minimum speed of the fan. Units in Hertzes.<br>Once the operating pressure is reached, it will regulate the speed of the motor to maintain the adjustment pressure. If the premises have a high degree of airtightness, the motor will reduce the speed until it reaches the minimum speed. | |

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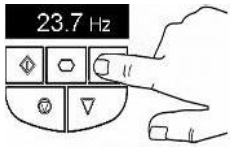
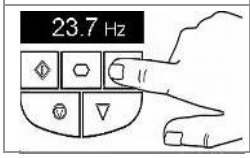
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-03** | ***Time of acceleration ramp*** | **2s** |




*Description of the parameter*

Time for the acceleration ramp from speed zero to the nominal speed of the motor. Very short ramp times may cause a response that is too fast because of variations of pressure and very long ramp times may cause a response that is too slow.

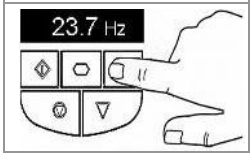
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-04** | ***Time of deceleration ramp*** | **2s** |




*Description of the parameter*

Time for the acceleration ramp from nominal speed of the motor to zero speed. Very short ramp times may cause a response that is too fast because of variations of pressure and very long ramp times may cause a response that is too slow.

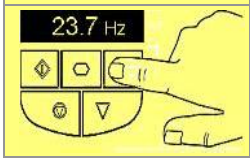
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-07** | ***Motor nominal voltage*** | **400/230V** |




*Description of the parameter*

Nominal voltage of the motor connected to Boxpres in volts.
This parameter enables us to use Boxpres for special motors with voltages that are different from the standard. For these cases, it is necessary to select Boxpres according to the maximum current from the motor to be applied.

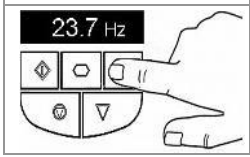
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-08** | ***Nominal motor current*** | **--.-A** |




*Description of the parameter*

Nominal motor current indicated on the motor plate.
It is very important to properly adjust this parameter so that the thermal protection of the Boxpres operates correctly.

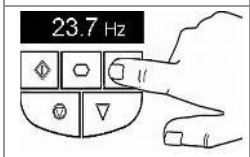
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-09** | ***Nominal motor frequency*** | **50Hz** |




*Description of the parameter*

Nominal motor frequency indicated on the motor plate.
This parameter enables one to use Boxpres for motors with different nominal frequencies.

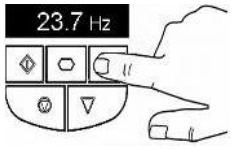
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-12** | ***Selection of mode of control of Boxpres*** | **5** |




*Description of the parameter*

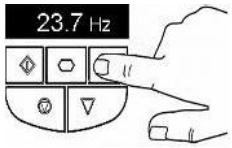
Boxpres uses a type PI regulation (Proportional - Integral) This type of control by feedback calculates the error or deviation between pressure adjustment and real pressure on the premises to be pressurised and applies corrective action to ensure that this deviation is zero.

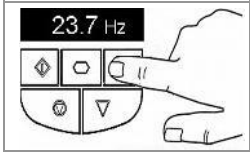
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-14** | ***Access to extended menu*** | **101** |

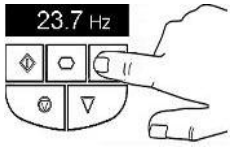



*Description of the parameter*

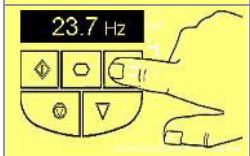
Parameter to 101 permits us to gain access to the following parameters. We will otherwise only be able to gain access to the first fourteen.

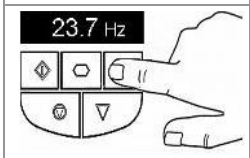
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-16** | ***Format of analogue entry of pressure transmitter*** | ***r 4..20mA*** |
|  | *Description of the parameter*<br>It configures the format of analogue input according to the transmitter installed in Boxpres. If ***r 4..20mA*** is selected in case of a failure of the transmitter, Boxpres will adjust the speed of revolutions of the motor to the speed of transmitter failure, so as to keep a minimum pressure in the premises even though the transmitter is not working. | |

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-17** | ***Frequency of switching – Motor noise.*** | ***4kHz*** |
|  | *Description of the parameter*<br>Adjusts the switching frequency of the power transistors. They do not affect the effective working frequency which will be between P-01 and P-02. Low values such as 4Khz give a better motor performance, less heat loss from the motor and a lower level of electric noise although the audible noise increases. | |

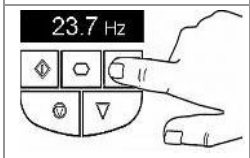
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-18** | ***Selection of relay exit*** | ***3*** |
|  | *Description of the parameter*<br>Parameter which enables one to define the function of the exit relay of the converter when the adjustment condition is fulfilled. Value 3 defines the function of the relay as an Alarm for the converter. | |

**Important Note:** Adapt the P-20 parameter to the safety speed necessary to keep the 50 Pa in case of a fault in the pressure transmitter. Check in mode II of the Test

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-20** | ***Speed of transmitter fault*** | ***20.0Hz*** |
|  | *Description of the parameter*<br>Frequency of revolutions of the motor in the case of a transmitter fault. This parameter must be checked in mode II of the Test as it will make it possible to select a motor speed so that in the case of a fault in the pressure transmitter, the fan will turn at a speed which will not give a pressure greater than 50 Pa in normal conditions. | |

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-30** | ***Automatic Converter Alarms Reset*** | ***Auto-5*** |
|  | *Description of the parameter*<br>The equipment will make five attempts to re-establish itself after a converter alarm and with a pause time of 25 seconds. Once five attempts have been made without managing to start the motor due to a converter fault the alarm must be reset so as to re-establish the equipment. | |

**Important Note:** It is possible that, for a limited number of applications, it is necessary to adjust P-41 and P-42 for better behaviour of the system, if it is not possible to stabilise the 50 Pa for working. Check Test in mode I.

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-41** | ***Proportional gain PI*** | ***0.2*** |
|  | *Description of the parameter*<br>A limited proportional gain will cause a system of slow reaction which may be of interest in installations where this response is suitable. On increasing the proportional gain, the system will react more quickly and may transform itself into an unstable system. | |

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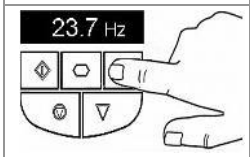
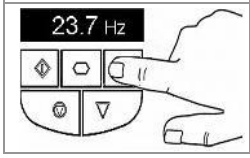
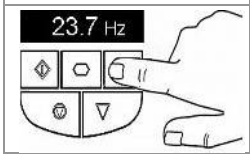
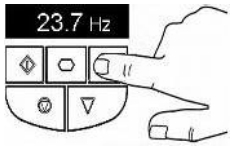
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-42** | ***Integral Time PI*** | **0.9s** |
|  | *Description of the parameter*<br>The proportional mode induces errors of a stationary type which may be corrected by integrating the error into the time and adding it to the proportional action. Very high values may cause slowness in correction and response. | |

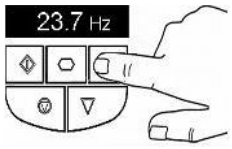
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-45** | ***Boxpres Working Value*** | **50.0Pa** |
|  | *Description of the parameter*<br>Adjustmnent of the set value of Boxpres. In case of activation of the fire signal, the system will start and will regulate the fan to keep the pressure adjusted in this parameter. | |

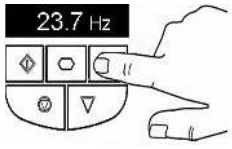
| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-46** | ***Selection of entry of feedback to transmitter*** | **1** |
|  | *Description of the parameter*<br>This parameter selects the analogue entry where the pressure transmitter is connected. | |

At the end of the process of modification, it is necessary to leave parameter P38 to 1 so as to avoid undue manipulation of parameters.

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-38** | ***Freezing of parameters*** | **1** |
|  | *Description of the parameter*<br>This parameter blocks the entry of parameters and therefore it does not allow them to be modified. Set to zero to unblock. | |

**Important Note:** The parameters P-32 and P-33 have a different function if the frequency converter is for three-phase or single-phase motors. In the case of Boxpres for three-phase motors, independently of the phases of powering of the equipment, these parameters will not be programmed. In the case of Boxpres for a single-phase motor, these will be the parameters configured.

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-32** | ***Frequency of starting*** | **40.0Hz** |
|  | *Description of the parameter*<br>Select the frequency at which the motor will turn when the fire signal is activated and for a time configured in P-33. Once this time has passed, the equipment will begin to regulate the speed so as to maintain the working pressure. Appropriate for single-phase motors due to its low starting torque. | |

| Parameter | Name of parameter | Boxpres Adjustment |
|---|---|---|
| **P-33** | ***Time for starting*** | **1.0s** |
|  | *Description of the parameter*<br>Time for which the motor keeps turning at the start-up frequency set in P-32 which makes it possible to start up the single-phase motor giving acceleration at a maximum speed so as to overcome the inertia of the fan. After this time has passed, the motor starts regulation PI so as to keep up the working pressure. | |

All the equipment comes from the factory with this parameterization, which is necessary for the correct operation of BOXPRES KIT. Sodeca does not make itself responsible for unsatisfactory operation as a result of manipulation of these adjustments or incorrect connections.

**WARNING:**

In the case that the safety of the parameters which have been modified is lost, it is advised that you load the factory parameters into the frequency converter and configure the parameters detailed above in the fourth column highlighted in bold.

In order to load the factory parameters, press ▲, ▼ and ▼ for >2s. The display will show P-DEF. Press the button ▼ to recognize and reset the equipment.

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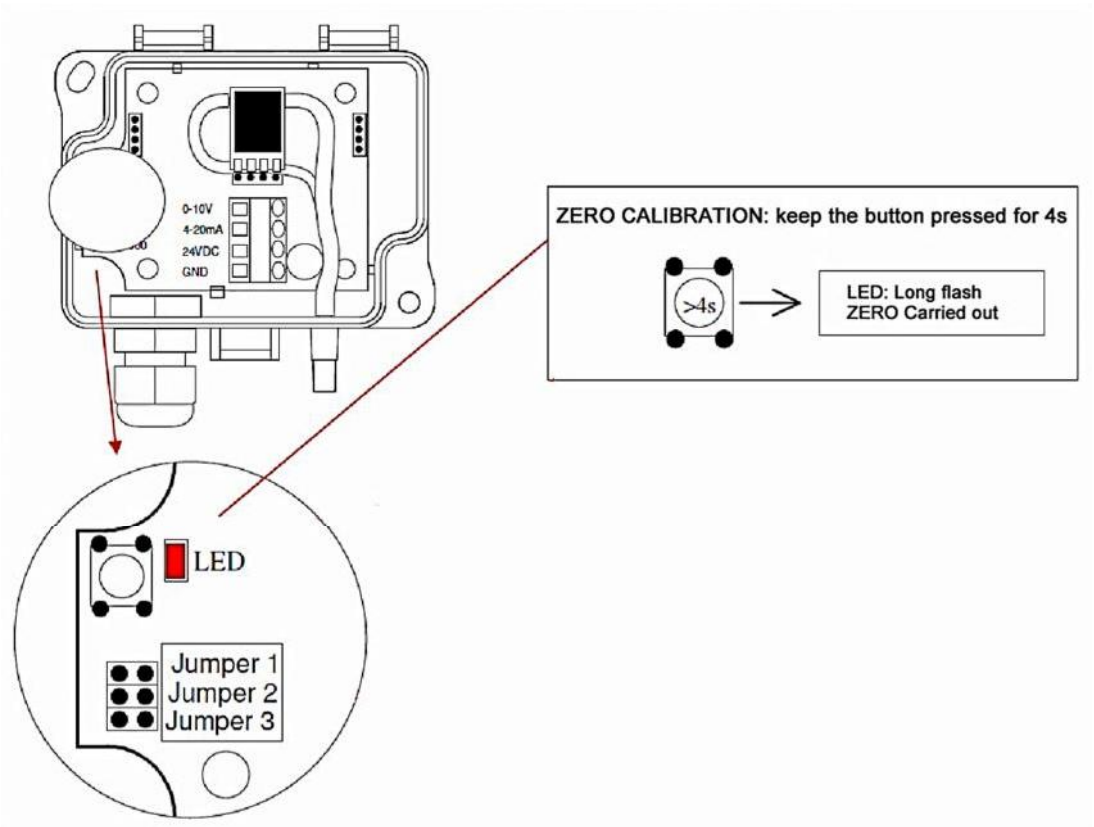
## 4. Calibration of Point Zero

All pieces of BOXPRES KIT equipment must be calibrated once they have been installed in their operating position. For this purpose, the following steps should be taken:

1. Connect the power supply to BOXPRES KIT and check that the Line LED and the display of the pressure transmitter lights up. The power must be connected one hour before proceeding to the adjustment of point zero.
2. Release both pressure tubes of the + and - inputs of BOXPRES KIT.
3. Press the zero button for more than four seconds until the red light comes on. ( Note: For access to this button, it is necessary to open the front cover of the pressure transmitter)




4. Wait until the red light comes on and then install the pressure tubes again.

It is recommended to carry out the calibration of point zero once a year or whenever the location of the cabinet is modified or any element of the complete system is replaced.

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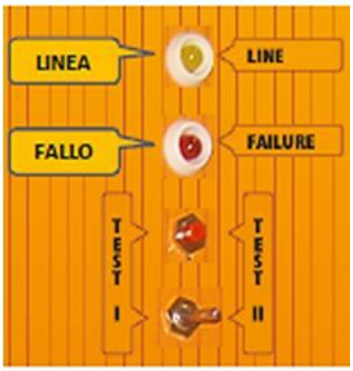
# 5. Start up

Once the connections of BOXPRES KIT and its parameterisation have been reviewed and checked, it is possible to proceed to start up. For this purpose, there are a number of elements available in the front of BOXPRES KIT which make it possible to start it up without any need to manipulate the fire detector.




Once there is power in the equipment, the line LED must always be lit in a continuous manner. The failure LED must not be lit as if it were it would be indicating an anomaly in the converter or the motor.
For greater detail on indication of faults and alarms, go to the section on location and solution of faults.

Once all the system is connected up and the Line LED is lit up, you should put the MODE switch into position II and subsequently press and keep pressed the TEST button.

**MODE II ( Adjustment of the speed of the motor in the case of a fault in the pressure transmitter)**

This position will simulate the fault of the transmitter and the converter will start up until it reaches the frequency of turning set in the parameter of the frequency converter P-20.
You should verify that the motor is turning in the correct direction. If it is not, it will be necessary to invert two of the phases of the motor.
We shall also monitor the pressure which this fixed speed gives us, on the transmitter display. You should adjust P-20 on the frequency converter until a fixed speed is achieved which keeps the pressure close to 50 Pa.

Attention: A high value of P-20 might mean that before a breakdown or pressure transmission fault, the equipment would raise the pressure to values which would prevent the opening of the door due to excess overpressure. It is therefore VERY important to adjust and perfectly check that the adjusted frequency at P-20 is that which makes it possible to compensate for the losses due to infiltrations and to achieve a differential value that is close to 50 Pa.

Once this prior step has been taken, it is possible to proceed to change the selector to MODE I and to simulate the case of a fire.

**MODE I (Forced normal working mode)**

This position will simulate the normal functioning of the system in case of fire. For this reason, it is necessary to press the TEST button once mode I is selected. BOXPRES KIT will start the motor reaching a pressure of 50 Pa. The speed will be continuously modified so as to maintain this pressure value

Once the checks on the equipment are carried out, it is necessary to connect the signal free of potential which comes from the fire detector, to terminals S1 and S2. The system is ready to function in case of fire.

# 6. Maintenance

You are advised to periodically check that the system is in perfect condition for operation and that therefore, in case of necessity, the equipment will work. For this purpose, both TEST I and II should be carried out by technical staff at least every six months or according to the regulations if applicable.

# 7. Location and solution of faults

Those alarms or faults which may arise and their solutions are detailed below.

**The Line LED does not light up**

Cause: Power fault

- Check power at terminals L1, L2 or L1,L2, L3. It should be 230Vac for single-phase equipment or 400Vac for three-phase equipment.
- Check that the magneto-thermal detector inside the cabinet has not gone off. If it has gone off, there might be a short-circuit at the input of BOXPRES KIT. Contact Sodeca.
- Check voltage at the terminals of converter 1 and 7. It should be 24VDC. If there is no power, contact Sodeca for repair of the equipment.

**The LED of the thermal detector is lit**

Cause: Fault in the frequency converter

This error is reset by disconnecting BOXPRES KIT from the power supply and connecting it again or pressing the test button with the fire signal disconnected.

- Disconnect the motor of BOXPRES KIT and check that the three coils have the same value in Ohms and are not connected to earth.
- Check that the fan motor is not braked or mechanically jammed and produces over-consumption when it is working.
- Connect the fan motor again and check that it is not making an abnormal noise or is not turning regularly.

If the fault persists or if you detect any of the above-mentioned anomalies, contact Sodeca for repair.

**When starting in the Test mode, the pressure transmitter shows negative pressure**

Cause: Fault in the pressure transmitter

- It is possible that the air inlet is being connected in a reference area and the inlet in the pressurization area. Invert.
- Check that the fan motor is turning in the correct direction as if not the fan may be sucking air in.
- Locally, blow into the (+) tube and if the differential transmitter does not increase the value and the indication remains negative, it is possible that one of the inlets is blocked or the transducer is faulty.

If the fault persists or if you detect any of the above-mentioned anomalies, contact Sodeca for repair.

**In Standby mode the pressure transmitter shows negative pressure**

(the standby mode arises when the system is stopped due to the fact that there is no fire signal or the TEST mode has not been forced)

Cause: Fault in the pressure transmitter

- Locally, blow into the (+) tube and if the differential transmitter does not reduce its value and the indication remains positive, it is possible that one of the inlets is blocked or the transducer is faulty.
- Check that the air inlets are in the proper positions and the motor is turning in the correct manner.

If the fault persists or if you detect any of the above-mentioned anomalies, contact Sodeca for repair.

**When starting in Test I mode, the pressure transmitter shows pressure but the shifter does not regulate.**

Cause: Fault in transmitter analogue outlet.

- Check parameter P0-01 of the converter. It should show 0% if there is 0 Pa in the transmitter and 100% if there is 100 Pa.

If the fault persists or if you detect any of the above-mentioned anomalies, contact Sodeca for repair.

**On starting in Test II mode, it is impossible to open the doors**

Cause: Incorrect parameterization

- It is necessary to reduce the frequency set in Parameter P-20 until the turning speed does not generate a differential pressure of more than 50 Pa. (monitor pressure on display transmitter)

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**The display of the transmitter is off and the Line LED is lit.**

Cause: Transmitter fault

- Open the transmitter cover and check that the power connections are correct.

If the connections are reviewed and it is verified that there is no power problem (see switched-off Line LED fault), it is necessary to contact Sodeca to replace the transmitter.

**The display of the converter indicates a fault message:**

Cause: Converter protection activated

The following table indicates the alarm codes which may appear in the converter and the corrective action.
In order to reset the error on the display of the converter, it is necessary to press TEST once the fire signal is disabled.

| Alarm code | Description | Corrective action |
|---|---|---|
| *P-dEF* | The factory parameters have been loaded | Press the STOP button, the equipment is ready to configure a particular application |
| *O-I* | Excess current in the converter outlet.<br>Excess load on the motor.<br>Excess temperature in the radiator of the equipment. | Motor at constant speed: overload or improper operation<br>Start up of the motor: charge paralyzed or jammed. Check for a connection error in the star/triangle motor.<br>Acceleration/deceleration of the motor: the time for acceleration/ deceleration is too short and requires too much energy. If P-03 or P-04 cannot be increased, a larger device is required. Cabling fault between the equipment and the motor. |
| *I . t-trP* | The equipment has carried out an overload alarm after giving >100% of the value on P-08 for a period of time. | Check when the decimal points are flashing (equipment on overload) or alternatively increase the acceleration ramp (P-03) or decrease the motor load. Check whether the length of the cable is within specifications. Check the load mechanically to ensure that it is free, without interference, jams and that there is no other mechanical fault. |
| *OI - b* | Excess current in the braking channel | Excess current in the braking resistance circuit. Check the cabling in the braking resistance. Check the value of the braking resistance. Make sure of the minimum values of the resistances in the characteristics tables. |
| *OL - br* | Overload on braking resistance | Overload on braking resistance. Increase in deceleration time, reduce the inertia load or add more braking resistance in parallel. Make sure of the minimum values of the resistances in the Characteristics tables. |
| *PS-trP* | Internal fault in the power transistor | Check the motor connections and look for a ph-ph short circuit or ph-earth. Check the temperature around the converter. Check whether the equipment is not forced into overloads. |
| *O.Uo It* | Excess voltage on DC bus | Problem of supply, or increase in the time of the deceleration ramp P-04. |
| *U.Uo It* | Low voltage on DC bus | This occurs routinely when the energy is switched off. If it occurs during operation, check the voltage of the energy supply. |
| *O-t* | Excess temperature of the radiator | Check the temperature around the converter. Additional or cooling spaces are required. |
| *U-t* | Low temperature | The alarm occurs when the surrounding temperature is less than -10°C. The temperature must increase to above -10°C in order to start the converter. |
| *Th-FIT* | Thermistor fault in the radiator | Consult Sodeca. |

| | | |
|---|---|---|
| ***E-tr iP*** | External alarm (at digital inlet 3) | E-trip requested at digital inlet 3. Normally the closed contact has opened for some reason.<br>If the thermistor motor is connected, check whether the motor is too hot. |
| ***SC-trP*** | Communication Error | Check the communication between the converter and external mechanisms. Make sure that each converter on the network has its single direction. |
| ***P-LOSS*** | Alarm loss phase entry. | The equipment planned for use with a three-phase supply has lost a phase entry. |
| ***SPI n-F*** | Flight connection function fault | The function of flight connection fault to detect the motor speed. |
| ***DAtA-F*** | Fault of internal memory | Unsaved parameters, factory values loaded.<br>Try again. If the problem persists, consult Sodeca. |
| ***4-20 F*** | Analogue input current outside range | Check the input current in the range defined in P-16. |
| ***SC-FLt*** | Internal fault in the shifter | Consult Sodeca. |
| ***FAUltY*** | Internal fault in the shifter | Consult Sodeca. |
| ***Pro9*** | Internal fault in the shifter | Consult Sodeca. |

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You must contact Sodeca technical services to indicate the fault in case it is not possible to solve the fault.

# 8. Technical characteristics

**Main Boxpres models and specifications:**

| Power (kW) | Input Voltage | Output voltage | Output current | Size | length x width x depth |
|---|---|---|---|---|---|
| 0.75kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 2.2A | 1 | 270x270x170mm |
| 1.5kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 4.1A | 1 | 270x270x170mm |
| 2.2kW | 400Vac III[3 ph] | 400Vac III[3 ph] | 5.8A | 2 | 360x360x360mm |
| | | | | | |
| 0.75kW | 230Vac II[1 ph] | 230Vac III[3 ph] | 4.3A | 1 | 270x270x170mm |
| 1.5kW | 230Vac II[1 ph] | 230Vac III[3 ph] | 7.0A | 1 | 270x270x170mm |

**Specifications Casing:**

- Insulating RAL-7035 grey, hot-pressed polyester Cabinet reinforced with glass fibre.
- UV-ray stabilized polycarbonate cover
- Extreme use temperature of up to +120ºC
- Resistance to heat and fire according to UNE EN60695-2-1/0
- Thermal class according to UNE 21305
- Double Insulation according to IEC60439-1
- Directive electrical material BT 73/23/CEE – 93/68/CEE
- Protection from impacts IK10
- Dielectric rigidity >5kV and insulation >5M ohm

2 measures according to power in accordance with the foregoing table.

**Protection of electrical installation:**
Boxpres incorporates a magneto-thermal device to protect the line in case of a short-circuit of the equipment or overload. This device cuts off the electricity supply to Boxpres in case the nominal values to which it has been calibrated are exceeded. According to the Boxpres model selected, the magneto-thermal device has a different trigger and protection value according to the table.

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**380 – 480V ± 10% . Three-phase input – Three-phase output**

| kW | CV | Size Boxpres | Magnetothermal |
|---|---|---|---|
| 0.75 | 1 | 1 | 10A Curve B |
| 1.5 | 2 | 1 | 10A Curve B |
| 2.2 | 3 | 2 | 10A Curve B |

**200 – 240V ± 10% . Single-phase input – Three-phase output**

| kW | CV | Size Boxpres | Magnetothermal |
|---|---|---|---|
| 0.75 | 1 | 1 | 10A Curve B |
| 1.5 | 2 | 1 | 16A Curve B |

**Measuring of electrical installation and maximum distance to the motor:**

**380 – 480V ± 10% . Three-phase input – Three-phase output**

| kW | CV | Size Boxpres | Section Entry cable | Output current | Exit cable section | Maximum Length of Motor Cable |
|---|---|---|---|---|---|---|
| 0.75 | 1 | 1 | 1.5mm phase | 2.2A | 1.5mm phase | 25m |
| 1.5 | 2 | 1 | 1.5mm phase | 4.1A | 1.5mm phase | 25m |
| 2.2 | 3 | 2 | 2.5mm phase | 5.8A | 1.5mm phase | 100m |

**200 – 240V ± 10% . Single-phase input – Three-phase output**

| kW | CV | Size Boxpres | Section Entry cable | Output current | Exit cable section | Maximum Length of Motor Cable |
|---|---|---|---|---|---|---|
| 0.75 | 1 | 1 | 1.5mm phase | 4.3A | 1.5mm phase | 25m |
| 1.5 | 2 | 1 | 1.5mm phase | 7.0A | 1.5mm phase | 25m |

**Note:** If the maximum distance from Boxpres to the motor is exceeded, it will be necessary to contact SODECA to evaluate the installation of an Output filter

**Frequency converter models and specifications**

**Type:** Alternating current frequency converter

**Models:** VSD3/A-RFT-1 equipment 0.75kW 400Vac
VSD3/A-RFT-2 equipment 1.5kW 400Vac
VSD3/A-RFT-3 equipment 2.2kW 400Vac
VSD1/A-RFM-1 equipment 0.75kW 230Vac
VSD1/A-RFM-2 equipment 1.5kW 230Vac

| | | |
|---|---|---|
| **Range of ambient temperature** | 0… 50ºC | |
| **Output values** | Overload | 150% 60s, 175% 2s |
| | Working frequency | 0…500Hz |
| **Input values** | Voltage of equipment 230Vac | 200 - 240 + / - 10% |
| | Voltage of equipment 400Vac | 380 - 480 + / - 10% |
| | Input frequency 48…62Hz | |
| **Ambient Conditions** | Temperature | 0…50ºC |
| | Altitude | 0…1000m |
| | IP Protection | IP20 |
| **Method of control** | Voltage Vector | |
| **Switching frequency** | 4…32kHz | |
| **Dimensions** | Size 1 ( up to 1.5kW) | 173 x 82 x 123mm |
| | Size 2 ( up to 2.2kW) | 221 x 109 x 150mm |

## Differential pressure Transmitter model and specifications

**Type:** DPT differential pressure transmitter 3 threads with 8 ranges of adjustment

**Model:** SI-PRESIÓN TPDA C/DISPLAY

**Range:** Adjustable from – 100 to 2500 Pa

| | |
|---|---|
| **Response Time** | 0.8 / 4 s selectable by buttons |
| **Break Pressure** | 30kPa |
| **Suitable environment** | Non-corrosive air and gases |
| **Element of measurement** | Piezoresistant |
| **Precision of the scale** | ±1,5% o (±6Pa < 250Pa) |
| **Electrical interface** | Power 24VDC or AC |
| | Max. Tolerance ±10% |
| | Power consumed <1W (<1.5W with I sal 20mA) |
| | Output signal 0…10Vdc, minimum charge 1kΩ |
| | 4…20mA, minimum charge 500Ω |

| | |
|---|---|
| **Materials** | Cash ABS |
| | Cover OC |
| | Pressure connections ABS |
| | Duct connectors ABS |
| | Connection sleeves PVC |

| | |
|---|---|
| **Weight** | 150 grams, with accessories 290 grams |
| **Dimensions:** | 90,0 x 71,5 x 36,0 mm |
| **Environmental conditions** | Range of temperature |
| | Operation -10…+50ºC |
| | Storage -20…+70ºC |
| | Environmental humidity O to 95% RH |

| | |
|---|---|
| **Safety** | Protection IP54 |
| | Regulations It fulfils requirements for CE marking |
| | EMC directive 89/336/EEC |
| | Rohs directive 2002/95/EY |

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