Convertidor de Frecuencia
Variable Frequency Drive
Conversor de frequência

IP20 & IP66 (NEMA 4X)
0.37 – 22Kw (0.5 – 30HP)
110 – 480V

VSD/A

ES

EN

PT

Wiring and Configuration Manual

Code: 1127947
Doc. Num: 0000003909 (2016-05-06)

Fig. 1

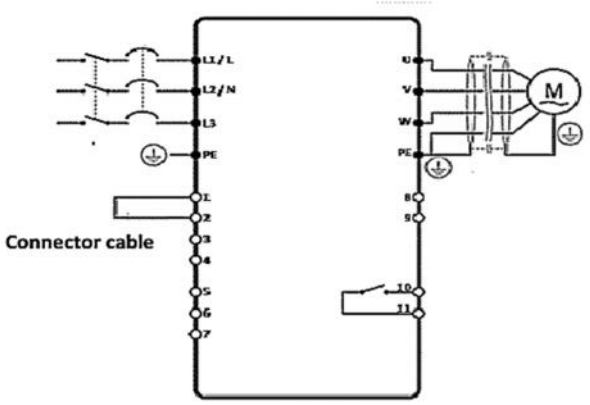


Fig. 2

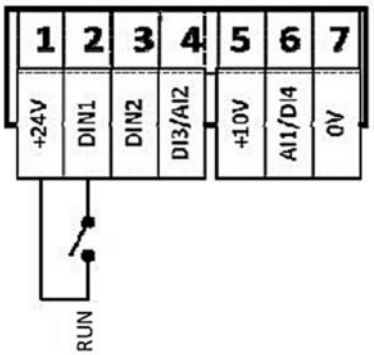
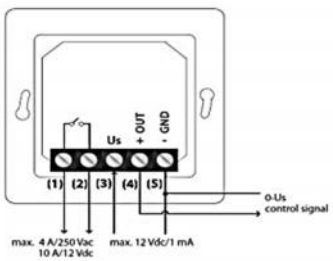
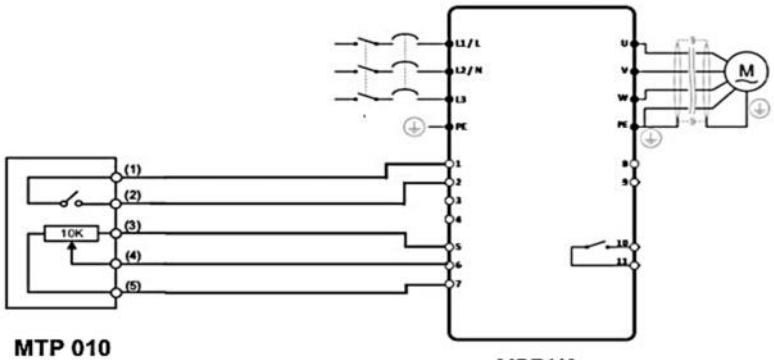


Fig. 3



Potenciometer MTP 010



MTP 010

VSD*/A

Fig. 4

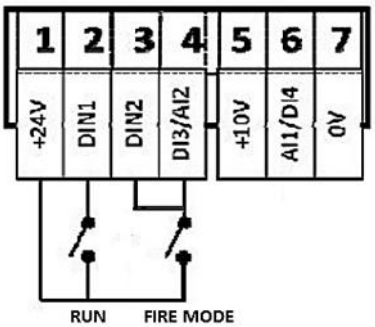


Fig. 5

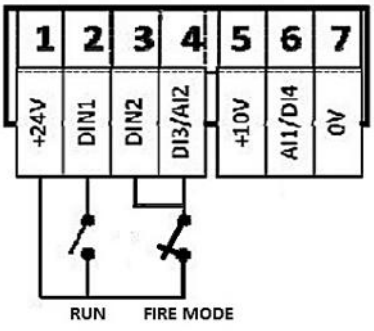


Fig. 6

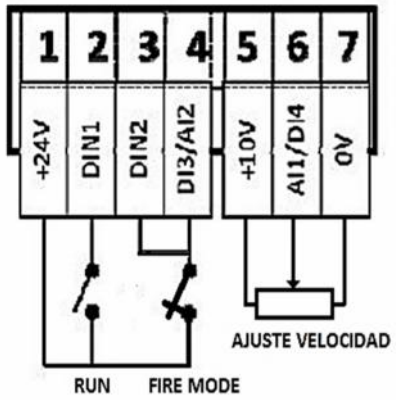


Fig.7

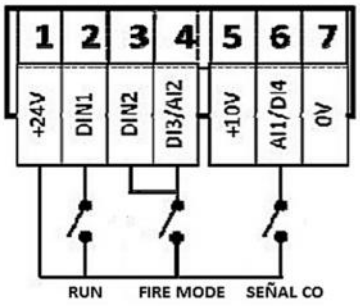


Fig.8

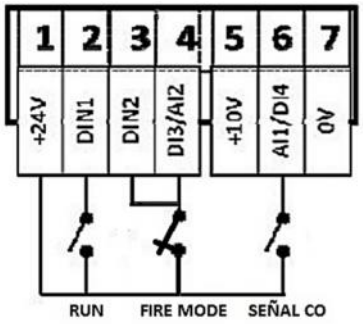


Fig. 9

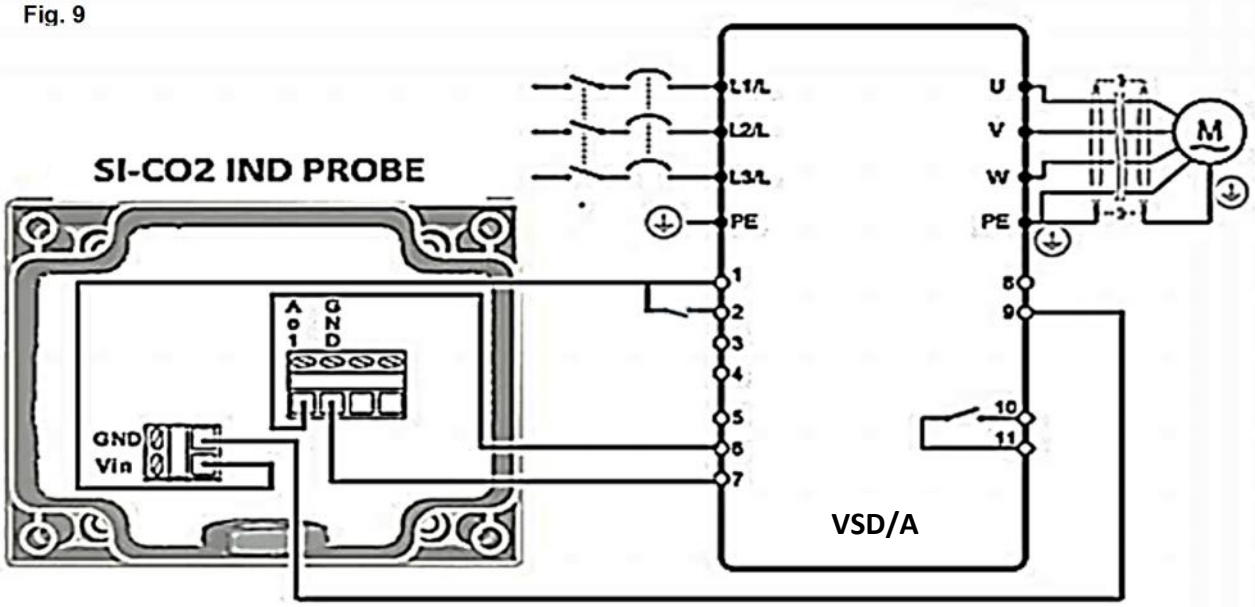
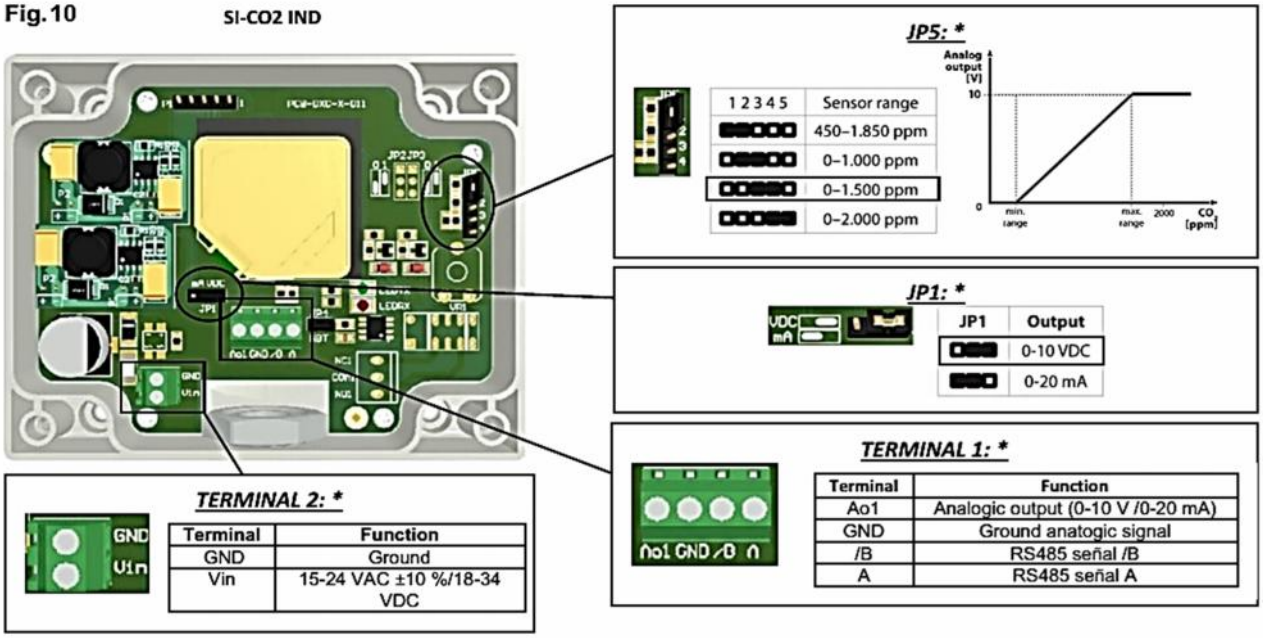
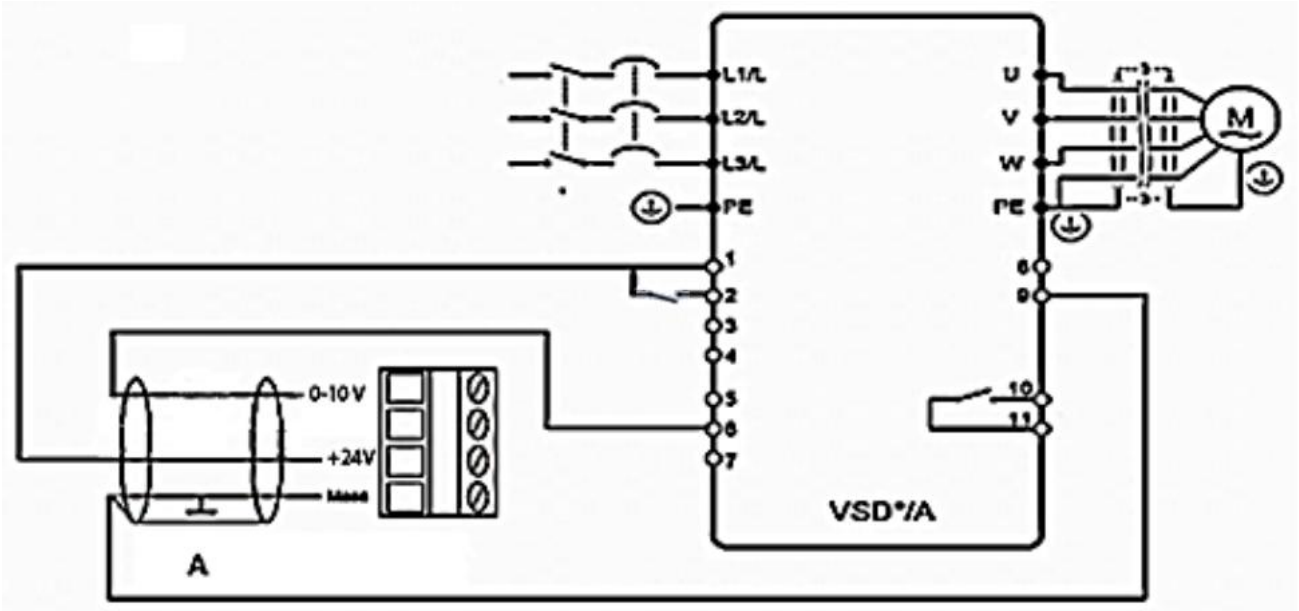


Fig.10 SI-CO2 IND



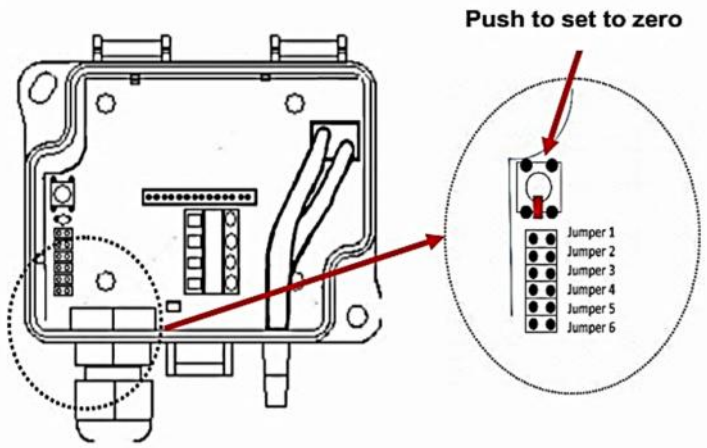
	JP5	JP1	TERMINAL 1	TERMINAL 2
ES	Escala de medida sonda	Tipo de salida analógica	Salida analógica y bus	Alimentación sonda
EN	Measuring probe scale	Analog output type	Analog output and bus	Power supply probe
PT	Escala de medida da sonda	Tipo de saída analógica	Saída analógica e bus	Alimentação da sonda

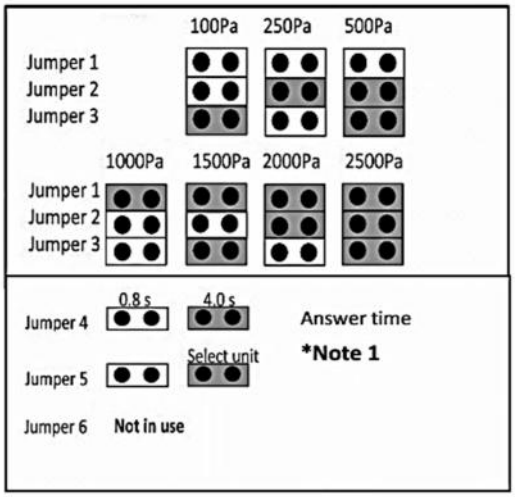
Fig. 11



	A
ES	Transmisor de presión diferencial SI-PRESIÓN TPDA
EN	Differential pressure transmitter SI-PRESIÓN TPDA
PT	Transmissor de pressão diferencial SI-PRESIÓN TPDA

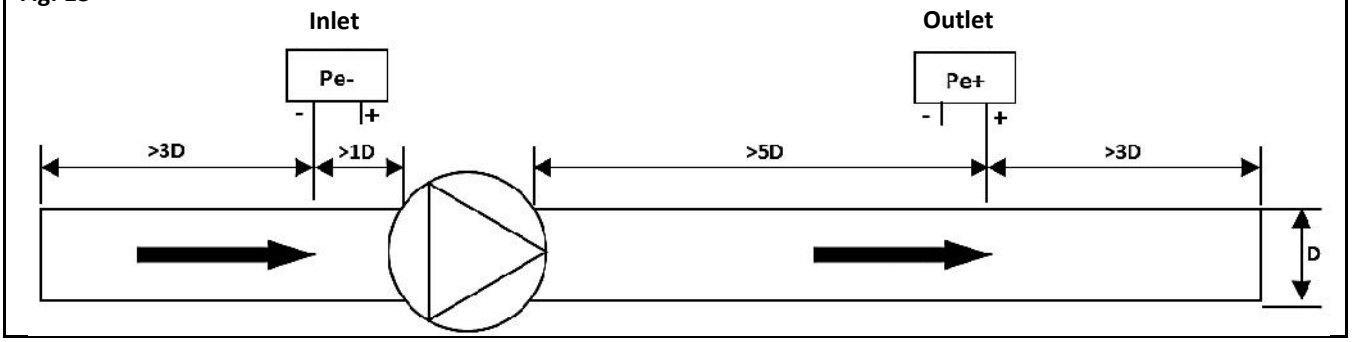
Fig. 12





	*Note 1
ES	Las unidades de medida pueden cambiarse solo con el jumper 5 instalado. Elimine el jumper al terminar
EN	The measurement units can be changed only with the jumper 5 installed. Remove the jumper at the end.
PT	As unidades de medida apenas podem ser alteradas com o jumper 5 instalado. Elimine o jumper ao terminar

Fig. 13



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EN

WARNINGS

The AC Variable Speed Drives (VSD*/A) supplied by SODECA are meant to be handled using the keypad, see **"BASIC CONFIGURATION"** section. Other control ways are possible with simple and quick adjustments. Some of them are explained in this guide. This guide is a summary from the complete VSD*/A guidebook and is meant to help with the equipment's installation and start-up of its most common operations. If the user's needs aren't properly fitted with any of the operation modes found in this guide check the **Installation and Operation Manual of the VSD/A (download it on sodeca.com**), or contact with our technic support SODECA.

It is recommended to read all the security information and obligations/recommendations that are instructed in the VSD*/A User Guide. This is an instructive guide about the applications and does not replace the complete guide, it's an addition. It is the user responsibility to apply all the required measures needed for the correct installation and programming of the VSD*/A as instructed in the user guide.

INTRODUCTION TO COMMON OPERATIONS WITH THE VSD*/A

The family of the AC Variable Speed Drive (from now on, "Drive") is well-known for its easy and quick configuration, as shown in the table below. Before the start of the programming or the start up, it is important to read carefully this page and learn the four most common actions that the user may use during the adjustment process and start up.

EN

Changing Parameters		Read Only Parameter Access		Resetting Parameters	
StoP	Press and hold the Navigate key > 2 seconds	StoP	Press and hold the Navigate key > 2 seconds	P-dEF	To reset parameter values to their factory default settings, press and hold Up, Down and Stop buttons for > 2 seconds. The display will show "P-dEF"
P-01	Use the up and down keys to select the required parameter	P-00	Use the up and down keys to select P-00		
P-08	Press the Navigate key for < 1 second	P00-01	Press the Navigate key for < 1 second	StoP	Press the Stop key. The display will show "StoP"
10	Adjust the value using the Up and Down keys	P00-08	Use the up and down keys to select the required Read Only parameter	5.5. Resetting A Fault	
P-08	Press for < 1 second to return to the parameter menu	330	Press the Navigate key for < 1 second to display the value	0-1	Press the Stop key. The display will show "StoP"
P-08	Press for > 2 seconds to return to the operating display	StoP	Press and hold the Navigate key > 2 seconds to return to the operating display	StoP	Return to the operating display.

In the next section it's explained with detail the most common applications in a concise and practical way, which will make the start up last only a few a minutes.

AP1. BASIC CONFIGURATION – Drive control using the keypad – VSD1-D, VSD3-D

The AC Variable Speed drives (VSD*/A) supplied by SODECA are meant to be handled using the keypad.

This section explains how to configure the **"BASIC CONFIGURATION"** control mode. This basic control mode allows to start and stop the drive using its keypad, START ◇ y STOP ▼ keys, and change the rotation speed of the motor with the △ y ▽ keys, without using the exterior control KIT.

1.1 PROGRAMMING

Use the next table to change to the basic configuration mode.

Table "BASIC CONFIRGURATION"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	1	

1.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"BASIC CONFIGURATION"** control mode is selected, that is after introducing the parameters of the basic configuration table (section 1.1), use a copper wire to short-circuit the terminals 1 and 2 of the VSD*/A. This short-circuit enables the keypad control mode **(See Fig. 1)**. This short-circuit can be changed with an external signal which would prevent enabling the drive when the bridge between terminal 1 & 2 is open.

1.3 "BASIC CONFIGURATION" OPERATION MODE

1. Ensure the bridge between terminals 1 & 2 is closed. The display will show StOP
2. Press the ◇ START key. The display will show H 0.0 and the drive will increase the speed until it reaches the minimum speed programmed in the P-02 parameter.
3. Press △ to increase speed.
4. The drive will increase gradually, with the acceleration ramp previously programmed, until the △ key is no longer pressed. The acceleration ramp is adjusted in the P-03 parameter, check before the start.
5. Press ▽ to decrease speed. The drive will decrease speed until the ▽ key is no longer pressed. The acceleration ramp is adjusted in the P-04 parameter.
6. Press the ▼ STOP key. The drive will decrease its speed and stop. The acceleration ramp is adjusted in the P-04 parameter.
7. The display will show StOP. The drive is disabled.
8. In order to program the speed without pressing start, that is when the display is showing StOP, press the ▼ STOP key while the drive is disabled and the display will show the objective speed. Use the △ y ▽ keys to adjust the wanted speed value. Press the ▼ STOP key to show StOP on the display again.
9. Press ◇ START, the drive will accelerate towards the objective speed.
10. While the drive is enabled, we can visualize the consumption of the motor by pressing the navigator key ⬭ >2 seconds.

AP2. EXTERNAL KIT MODE – Manipulate with the MTP 010 remote control

This section explains how to proceed with the configuration of the **"EXTERNAL REMOTE CONTROL KIT – MTP010"**control mode. This simple control mode allows to start the drive and adjust the speed from the exterior remote control kit **MTP010**.

2.1 PROGRAMMING

Use the next table to change the mode to the external kit mode.

Table "EXTERNAL REMOTE CONTROL KIT"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	

2.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"EXTERNAL REMOTE CONTROL KIT"** control mode is selected, that is after introducing the parameters of the external remote control kit table (section 2.1), wire the remote control as seen in the picture. **(See Fig. 3)**.

2.3 "EXTERNAL REMOTE CONTROL KIT" OPERATION MODE

1. To start the drive, close the built-in switch of the remote control (starting switch ON). The display will stop showing STOP and the drive will accelerate towards the speed adjusted by the potentiometer. If the potentiometer is in the lower speed position, the drive will stay at minimum velocity, programmed in the **P-02** parameter.
2. The speed can be increased or decreased with the potentiometer.
3. The drive will increase gradually, with the acceleration ramp programmed in **P-03.** Check before the start.
4. The drive will decrease gradually, with the deceleration ramp programmed in **P-04.** Check before the start.
5. When the starting switch is OFF, the drive will start to decelerate and stop, showing STOP in the display. The drive is disabled
6. While the drive is enabled, we can visualize the consumption of the motor by pressing the navigator key ⬭ >2 seconds.

⚠	**ATTENTION:** If there's a loss of the power supply while the ventilator is working with the starting switch closed, the drive will be disabled with the display showing STOP. Once the power supply is restored, the drive will be disabled even with the starting switch ON. In order to start the drive again, the switch must be changed to the OFF position and then changed again to the ON position. See P-30 parameter to modify the configuration and change it to AUTO-0.

EN

AP3. MIXED MODE – External start, speed adjustment with the internal keypad.

This section explains how to configure the mixed control mode. This mode is a combination between the basic configuration and the exterior remote control kit configuration. This mode allows to start the drive from an exterior switch and adjust the speed with the internal keypad.

3.1 PROGRAMMING

Use the next table to change to the mixed mode.

Table "MIXED MODE"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	1	
P- 14	Extended Menu Access code	101	
P-31	Keypad Start Mode Select	3	

3.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"MIXED"** control mode is selected, that is after introducing the parameters of the mixed mode table (section 3.1), wire the remote control as seen in the picture. **(See Fig. 2)**.

3.3 "MIXED" OPERATION MODE

1. To start the drive, close the built-in switch of the remote control (starting switch ON). The display will stop showing STOP and the drive will accelerate towards the minimum speed adjusted in the **P-02** parameter.
2. Press △ to increase speed.
3. The drive will increase gradually, with the acceleration ramp previously programmed, until the △ key is no longer pressed. The acceleration ramp is adjusted in the P-03 parameter, check before the start.
4. Press ▽ to decrease speed. The drive will decelerate until the ▽ key is no longer pressed. The acceleration ramp is adjusted in the P-04 parameter.
5. When the starting switch is OFF, the drive will start to decelerate and stop, showing STOP in the display. The drive is disabled.
6. While the drive is enabled, we can visualize the consumption of the motor by pressing the navigator key ◇ >2 seconds.

⚠	**ATTENTION:** If there's a loss of the power supply while the ventilator is working with the starting switch closed, the drive will be disabled with the display showing STOP. Once the power supply is restored, the drive will be disabled even with the starting switch ON. In order to start the drive again, the switch must be changed to the OFF position and then changed again to the ON position. See P-30 parameter to modify the configuration and change it to AUTO-0.

FIRE MODE

The Fire Mode function is designed to ensure continuous operation of the drive when an external alarm signal is activated (fire alarm) until the drive is no longer capable of sustaining operation. This input may be linked to a fire control system to allow maintained operation in emergency conditions, e.g. to clear smoke or maintain air quality within that building. Fire Mode disables some protection features in the drive (Heat-sink Over-Temperature, 4-20mA fault, Faulty Thermistor on Heat-sink…).

AP4. FIRE MODE with NO or NC activation signal– Preset speeds

This section explains how to configure the **"FIRE"** control mode with a normally open **(NO)** or a normally closed **(NC)** activation signal and two operation speeds; the normal speed and the fire speed which can be adjusted as a preset speed.

EN

FIRE MODE with NO activation signal

When the free potential contact is open, which enables the Fire Mode, and the drive is receiving the RUN signal, the drive will work at a preset speed with all the protections enabled. If the fire mode signal is active, that is when the activation contact changes to closed position, and the drive is receiving the start signal (it can be the a contact of the fire mode), the drive will work at a preset speed with all the protections disabled. **(See Fig.4.)**

MODO FUEGO with NC activation signal

When the free potential contact is closed, which enables the Fire Mode, and the drive is receiving the RUN signal, the drive will work at a preset speed with all the protections enabled. If the fire mode signal is active, that is when the activation contact changes to open position, and the drive is receiving the start signal (it can be a contact of the fire mode), the drive will work at a preset speed with all the protections disabled. **(See Fig.5.)**

4.1 PROGRAMMING

Use the next table to change to, or modify, the Fire mode with normally open activation signal **(NO)** or with normally closed activation signal **(NC)**. The preset speeds can be adjusted to go forwards or reverse.

Table "FIRE MODE with NO contact, Preset Speeds"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	0.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	
P- 14	Extended Menu Access code	101	
P- 15	Digital Input Function Select	16	
P-21	Fire Speed	± xx.x	Hz
P-23	Normal Speed	± xx.x	Hz
P-30- 1	Starting Mode	AUto-0	
P-30-2	Fire Logic Input	1:n_0	
P-30-3	Latch Fire	0:OFF	

Table "FIRE MODE with NC contact, Preset Speeds"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	0.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	
P- 14	Extended Menu Access code	101	
P- 15	Digital Input Function Select	16	
P-21	Normal Speed	± xx.x	Hz
P-23	Fire Speed	± xx.x	Hz
P-30- 1	Starting Mode	AUto-0	
P-30-2	Fire Logic Input	0:n_c	
P-30-3	Latch Fire	0:OFF	

EN

4.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.
Once the **"FIRE MODE with NC contact" or "FIRE MODE with NO contact"** control mode is selected, that is after introducing the parameters of the fire mode table (section 4.1), wire the drive as seen in the picture. **(See Fig. 4 o 5.)**
The Fire signal disables the protection features and maintains a constant speed. The Normal mode activates a constant speed, distinct from the Fire speed. Both modes require a starting switch (Run), which can be replaced by a short-circuit between terminals 1 & 2, or a contact related to the Fire and Normal mode activation.
In case the short-circuit is chosen, the drive will be always enabled and only will stop when the short-circuit is opened; then display will show StOP.

4.3 "FIRE MODE with Preset Speeds" OPERATION MODE

FIRE MODE with NO activation signal

1. Verify that the Fire mode signal triggers the Fire mode as well as the start signal (Run).If necessary use a two contact Normally Open relay.
2. Verify that the Normal mode signal only triggers the start signal (Run).
3. When one of the two signal is active, the drive will accelerate towards de preset speed according to the normally open contact table (see section 4.1)
4. When the two signals aren't active, the drive will start to decelerate and stop, showing StOP in the display.
5. The Fire signal disables the protection features so the drive will maintain continuous operation in emergency conditions. The speed can be forward or reverse depending on the value set in the "Fire Speed" parameter.

FIRE MODE with NC activation signal

1. Verify that the Fire mode signal halts the Fire mode and activates the start signal (Run).If necessary, use a two contact relay, one contact Normally Open and the other Normally Closed.
2. Verify that the Normal mode signal only triggers the start signal (Run).
3. When one of the two modes is triggered, the drive will accelerate towards de preset speed according to the normally closed contact table (see section 4.1).
4. When the two modes aren't active, the drive will start to decelerate and stop, showing StOP in the display.
5. The Fire signal disables the protection features so the drive will maintain continuous operation in emergency conditions. The drive can go forward or reverse depending on the value set in the "Fire Speed" parameter.

⚠	**The Fire Mode operation can affect the warranty of the drive and even nullify it. Contact with SODECA for further information.**

AP5. FIRE MODE with NC activation signal – Analog speed/potentiometer

This section explains how to configure the **"FIRE"** control mode with a normally open **(NC)** activation signal and two operation speeds; the fire speed is adjusted as a preset speed and the normal speed is adjusted with an analog signal.

FIRE MODE with NC activation signal

When the free potential contact is normally closed, which selects the operation mode, and the drive is receiving the RUN signal, the drive will operate at a speed adjusted with an analog signal or a potentiometer, with all the protections enabled. If the fire mode signal is active, that is when the activation contact changes to closed position, and the drive is receiving the start signal (it can be the a contact of the fire mode), the drive will work at a preset speed with all the protections disabled. **(See Fig.6).**

5.1 PROGRAMMING

Use the next table to change to, or modify, the Fire mode with normally closed activation signal **(NC)**. The Fire mode speed can be adjusted to go forwards or reverse.

Table "FIRE MODE with NC activation signal – Analog speed/potentiometer"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	x.x	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	
P- 14	Extended Menu Access code	101	
P- 15	Digital Input Function Select	15	
P- 16	Analog Input 1 Signal format	U 0- 10	
P-23	Fire Speed	± xx.x	Hz
P-30- 1	Starting Mode	AUto-0	
P-30-2	Fire Logic Input	0:n_c	
P-30-3	Latch Fire	0:OFF	

5.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.
Once the **"FIRE MODE with NC contact"** control mode is selected, that is after introducing the parameters of the fire mode table (section 5.1), wire the drive as seen in the picture. **(See Fig. 6.)**
The Fire signal disables the protection features and maintains a constant speed. The Normal mode activates a constant speed, distinct from the Fire speed. Both modes require a starting switch (Run), which can be replaced by a short-circuit between terminals 1 & 2, or a contact related to the Fire and Normal mode activation.
In case the short-circuit is chosen, the drive will be always enabled and only will stop when the short-circuit is opened; then display will show StOP.

5.3 "FIRE MODE with Analog Speed" OPERATION MODE

FIRE MODE with NC activation signal

1. Verify that the Fire mode signal halts the Fire mode and activates the start signal (Run).If necessary, use a two contact relay, one contact Normally Open and the other Normally Closed.
2. Verify that the Normal mode signal only triggers the start signal (Run).
3. When one of the two modes is triggered, the drive will accelerate towards de preset speed according to the table (see section 4.1).

4. When the two modes aren't active, the drive will start to decelerate and stop, showing `StOP` in the display.

5. The Fire signal disables the protection features so the drive will maintain continuous operation in emergency conditions. The drive can go forward or reverse depending on the value set in the "Fire Speed" parameter.

⚠	**The Fire Mode operation can affect the warranty of the drive and even nullify it. Contact with SODECA for further information.**

AP6. FIRE MODE + CO with NO or NC activation signal – Preset Speeds

This section explains how to configure the **"FIRE + co"** control mode with a normally open **(NO)** or a normally closed **(NC)** activation signal for the fire mode selection and a normally open **(NO)** activation signal for the CO mode. Each mode has an operation speed; CO speed and fire speed adjusted as preset speed, as well as STOP via software in case that neither of the signals are active (Fire or CO) and the RUN signal is active.

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FIRE MODE + CO with NO activation signal

If the fire signal is active, that is when the activation signal goes from normally open to normally closed, and the RUN signal is active (a fire mode contact can be used), the drive will operate at a preset speed with all the protections disabled
If the CO signal is active, that is when the activation signal goes from normally open to normally closed, the RUN signal is active and the fire mode is not active, the drive will operate at a preset speed with all the protections enabled. **(See Fig.7)**
When the drive receives the RUN signal but doesn't receive the CO or FIRE signal, the drive will show STANDBY on the display and will wait until it receives an order (CO or FIRE).

MODO FUEGO + CO with NC activation signal

If the fire signal is active, that is when the activation signal goes from normally closed to normally open, and the RUN signal is active (a fire mode contact can be used), the drive will operate at a preset speed with all the protections disabled.
If the CO signal is active, that is when the activation signal goes from normally open to normally closed, the RUN signal is active and the fire mode is not active, the drive will operate at a preset speed with all the protections enabled. **(See Fig.7)**
When the drive receives the RUN signal but doesn't receive the CO or FIRE signal, the drive will show STANDBY on the display and will wait until it receives an order (CO or FIRE).

⚠	**WARNING:** If the FIRE signal and CO signal are active simultaneously, the FIRE mode will prevail over the CO mode, as long as the drive is set with the parameters shown in the section 6.1

6.1 PROGRAMMING

Use the next table to change to, or modify, the Fire mode with normally open activation signal **(NO)** or with normally closed activation signal **(NC)**. The preset speeds can be adjusted to go forwards or reverse.

Table "FIRE MODE + CO with NO activation signal"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	0.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	
P- 14	Extended Menu Access code	101	
P- 15	Digital Input Function Select	17	
P-20	Standby Speed	0.0	Hz
P-21	Fire Speed	± xx.x	Hz

P-22	CO Speed	± xx.x	Hz
P-23	Fire Speed	± xx.x	Hz
P-30- 1	Starting Mode	AUto-0	
P-30-2	Fire Logic Input	1:n_0	
P-30-3	Latch Fire	0:OFF	
P-48	Standby Mode Timer	1.0	s

Table "FIRE MODE + CO with NC activation signal"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	0.0	Hz
P-03	Acceleration Ramp Time	20	s
P-04	Deceleration Ramp Time	20	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	0	
P- 14	Extended Menu Access code	101	
P- 15	Digital Input Function Select	17	
P-20	Fire Speed	± xx.x	Hz
P-21	Standby Speed	0.0	Hz
P-22	Fire Speed	± xx.x	Hz
P-23	CO Speed	± xx.x	Hz
P-30- 1	Starting Mode	AUto-0	
P-30-2	Fire Logic Input	0:n_c	
P-30-3	Latch Fire	0:OFF	
P-48	Standby Mode Timer	1.0	s

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6.2 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.
Once the **"FIRE MODE with NC contact + CO"** or **"FIRE MODE with NO contact + CO"** control mode is selected, that is after introducing the parameters of the fire mode table (section 6.1), wire the drive as seen in the picture. **(See Fig. 7 or 8.)**
The Fire signal disables the protection features and maintains a constant speed. The CO mode activates a constant speed, distinct from the Fire speed. Both modes require a starting switch (Run), which can be replaced by a short-circuit between terminals 1 & 2, or a contact related to the Fire and Normal mode activation.
In case the short-circuit is chosen, the drive will be always enabled and only will stop when the short-circuit is opened; then display will show **StOP**.

6.3 "FIRE MODE + CO with preset speeds" OPERATION MODE

Fire Mode with NO activation signal

1. Verify that the Fire mode signal triggers the Fire mode as well as the start signal (Run).If necessary use a two contact Normally Open relay.
2. Verify that the CO mode signal triggers the CO mode as well as the start signal (Run).If necessary use a two contact Normally Open relay.
3. When one of the two signal is active, the drive will accelerate towards de preset speed according to the normally open contact table (see section 6.1).
4. When the two signals aren't active, the drive will start to decelerate and stop, showing **StOP** in the display.
5. The Fire signal disables the protection features so the drive will maintain continuous operation in emergency conditions. The speed can be forward or reverse depending on the value set in the "Fire Speed" parameter.

Fire Mode with NC activation signal

1. Verify that the Fire mode signal halts the Fire mode and triggers the start signal (Run). If necessary, use a two contact relay, one contact Normally Open and the other Normally Closed.
2. Verify that the CO mode signal triggers the CO mode as well as the start signal (Run).If necessary use a two contact Normally Open relay.
3. When one of the two modes is triggered, the drive will accelerate towards de preset speed according to the normally open contact table (see section 6.1).
4. When the two modes aren't active, the drive will start to decelerate and stop, showing StOP in the display
5. The Fire signal disables the protection features so the drive will maintain continuous operation in emergency conditions. The speed can be forward or reverse depending on the value set in the "Fire Speed" parameter.

⚠	**The Fire Mode operation can affect the warranty of the drive and even nullify it. Contact with SODECA for further information.**

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AP7. CO2 MODE

This section explains how to configure the **"CO"** control mode. This mode allows the drive to regulate the speed of the ventilator depending on the CO_2 level read by a probe.

7.1 PROGRAMMING

Use the next table to change to, or modify, the CO2 mode.

Table "CO_2"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	10	s
P-04	Deceleration Ramp Time	10	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	5	
P- 14	Extended Menu Access code	101	
P- 16	Analog Input 1 Signal format	U 0-10	V
P-41	PI Controller Proportional Gain	1.0	%
P-42	PI Controller Integral Time	1.0	s
P-43	PI Controller Operating Mode	1	
P-44	PI Reference (Setpoint) Source Select	0	
P-45	PI Digital Setpoint	xx.x	%
P-46	PI Feedback Source Select	1	

1. In order to make the regulation more dynamic, change the P-41 o P-42 parameters. Increase P-41 until the output is fast enough. The increase P-42 as much as possible and stop before the system oscillates.

2. See section 7.2 for the setpoint configuration.

⚠	**ATTENTION:** If there's a power loss while the ventilator is working and the RUN switch is closed, the drive will enter the stop stage and show StOP on the display. Once the power is restored, if the RUN switch is still closed, the drive will maintain the stop status. In order to start again, the RUN switch must be opened and closed again. This operation can be modified setting the AUtO-0 mode in the P-30 parameter.

7.2 SETPOINT ADJUSMENT OF THE CO2 CONCENTRATION

The setpoint is adjusted in the P-45 parameter. This parameter is shown as a percentage and will translate to a different value of CO_2 concentration in ppm, subject to the chosen scale of the probe.

Scale	CO_2 concentration in ppm per every 10% of the Setpoint
450-1850 ppm	140 ppm*
0-1000 ppm	100 ppm
0-1500 ppm	150 ppm
0-2000 ppm	200 ppm
(*) Increase for every 10%, add 450 ppm to obtain the real value	

7.3 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"CO2"** control mode is selected, that is after introducing the parameters of the CO_2 mode table (section 7.1), wire the drive as seen in the picture. **(See Fig. 9.)**.
The RUN signal must be connected between the terminals 1 & 2, and the switch is always closed, the drive will start automatically when given power. If the user wants to stop the operation with a selector, timer, etc.… Set up a free potential contact in series between the terminals 1 & 2.

VSD*/A Wirings	
Terminal VSD*/A	**Description**
L/N+PE	Single phase input, only for VSD1/A
L1/L2/L3+PE	Three phase input, only for VSD3/A
U/V/W+PE	Three phase motor output
1	+24 VDC (100 mA)
2	Run signal
6	Analog input 1
7	0 V analog input
9	0 V
10	Output relay
11	'Drive OK' = Closed

7.4 PROBE SI-CO2 IND CONFIGURATION

It's advised to adjust the scale of the probe SI-CO2 IND between 0 and 1000 ppm and the output signal 0-10 V. This adjustment by means of the jumpers JP5 and JP1 respectively. Remove the cover of the probe to find this jumpers. (**See Fig. 10)**

7.5 "CO2" OPERATION MODE

1. Close the RUN switch connected between the terminals 1 & 2 to start the drive. The display will show StOP and the drive will increase the speed until reaching the objective speed. This speed is subjected to the CO2 concentration level detected by the probe and the setpoint adjusted in P-45.

2. If the CO2 level goes over the setpoint adjusted in P-45 the drive will increase the speed in order to decrease the CO2 level below the setpoint.

3. If the CO2 level goes below the setpoint adjusted in P-45 the drive will decrease the speed in order to keep the CO2 level below the setpoint.

4. If the user wants the drive to be always working, short-circuit the terminals 1 & 2 with a copper wire.

5. If the P-48 parameter has a value >0.0s, the drive will disconnect automatically when the CO2 level goes below the setpoint for a certain amount of time, adjusted in this parameter. If this feature is active and the CO2 level goes below the setpoint for an amount of time higher than the one set in P-48, the drive will stop even when the RUN switch is closed and won't start again until the CO2 level goes over the setpoint.

6. While the drive is ON, the user can see the motor consume pressing the Navigator key ⎔ >2 seconds.

AP8. TEMPERATURE MODE

This section explains how to configure the **"TEMPERATURE"** control mode. This mode allows the drive to regulate the speed of the ventilator as well as the warm or cold air inlet through a frequency inverter VSD*/A depending on the temperature detected by the analogic sensor. Inverter starting is done from an external control (selector).

8.1 PROGRAMMING

Use the next table to change to, or modify, the TEMPERATURE mode.

Table "TEMPERATURE"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	5	s
P-04	Deceleration Ramp Time	5	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	5	
P- 14	Extended Menu Access code	101	
P- 16	Analog Input 1 Signal format	U 0-10	V
P-41	PI Controller Proportional Gain	0.2	%
P-42	PI Controller Integral Time	1.0	s
P-43	PI Controller Operating Mode	0 - 1	
P-45	PI Digital Setpoint	xx.x	%
P-46	PI Feedback Source Select	1	

1. In order to make the regulation more dynamic, change the P-41 o P-42 parameters. Increase P-41 until the output is fast enough. The increase P-42 as much as possible and stop before the system oscillates.
2. If we need warm air inlet we should configure P-43 to 0, on the contrary, if we need cold air inlet we should configure to 1.
3. See sections 8.2 and 8.3 for the setpoint configuration.

⚠	**ATTENTION:** If there's a power loss while the ventilator is working and the RUN switch is closed, the drive will enter the stop stage and show StOP on the display. Once the power is restored, if the RUN switch is still closed, the drive will maintain the stop status. In order to start again, the RUN switch must be opened and closed again. This operation can be modified setting the AUtO-0 mode in the P-30 parameter.

8.2 PROBE SI-TEMP IND CONFIGURATION

Is recommended to adjust the output signal to 0-10V and the sensor SI-TEMP IND measuring scale. This adjustment by means of the jumpers JP1 and JP2 respectively. Remove the cover of the probe to find this jumpers. (**See Fig. 15).**

8.3 SETPOINT ADJUSMENT OF THE CO2 CONCENTRATION

The setpoint is adjusted in the P-45 parameter. This parameter is shown as a percentage depending on the sensor SI-TEMP IND scale chosen in JP2 it has a different temperature value in ºC **(Fig. 15)**.

Scale	CO_2 concentration in ppm per every 10% of the Setpoint
0 – 30ºC	0ºC → 0% - 30ºC → 100%
10 – 40ºC	10ºC → 0% - 40ºC → 100%
20 – 50ºC	20ºC → 0% - 50ºC → 100%
0 – 50ºC	0ºC → 0% - 50ºC → 100%

8.4 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"TEMPERATURE"** control mode is selected, that is after introducing the parameters of the Temperature mode table (section 8.1), wire the drive as seen in the picture. **(See Fig. 14)**. The RUN signal must be connected between the terminals 1 & 2, and the switch is always closed, the drive will start automatically when given power. If the user wants to stop the operation with a selector, timer, etc.… Set up a free potential contact in series between the terminals 1 & 2.

VSD*/A Wirings	
Terminal VSD*/A	**Description**
L/N+PE	Single phase input, only for VSD1/A
L1/L2/L3+PE	Three phase input, only for VSD3/A
U/V/W+PE	Three phase motor output
1	+24 VDC (100 mA)
2	Run signal
6	Analog input 1
7	0 V analog input
9	0 V
10	Output relay
11	'Drive OK' = Closed

8.5 "TEMPERATURE" OPERATION MODE

1. Close the RUN switch connected between the terminals 1 & 2 to start the drive. The display will not show StOP to start cold or warm air inlet, depending of the parameter P-43 configuration, until reaching the set point configured in P-45.

2. If the parameter P-43 is set at 0 and the temperature exceeds the set point value configured in P-45, the inverter VSD*/A will decrease the speed in order to keep it on the configured value. On the contrary, if the temperature decreases below the set point configured in P-45, the inverter VSD*/A will increase the speed in order to keep it on the configured value.

3. If the parameter P-43 is set at 1 and the temperature exceeds the set point value configured in P-45, the inverter VSD*/A will increase the speed in order to keep it on the configured value. On the contrary, if the temperature decreases below the set point configured in P-45, the inverter VSD*/A will decrease the speed in order to keep it on the configured value.

4. If the user wants the drive to be always working, short-circuit the terminals 1 & 2 with a copper wire.

5. If the P-48 parameter has a value >0.0s, the drive will disconnect automatically. In this way, even keeping the run connection, if the temperature is the desired, the inverter will stop and will show StAndbY in the display, starting again when is necessary according to the set point value configured in P-45.
   While the drive is ON, the user can see the motor consume pressing the Navigator key ⬭ >2 seconds.

AP9. PRESSURE CONTROL MODE – VSD1-P, VSD3-P

This section explains how to configure the **"PRESSURE CONTROL"** control mode. This mode allows the drive to regulate the speed of the ventilator depending on the overpressure between to places.

9.1 PROGRAMMING

Use the next table to change to, or modify the pressure control mode.

Table "PRESSURE CONTROL"

Parameter	Description	Adjustment	Units
P-01	Maximum Frequency	50.0	Hz
P-02	Minimum Frequency	20.0	Hz
P-03	Acceleration Ramp Time	10	s
P-04	Deceleration Ramp Time	10	s
P-08	Motor Rated Current	x.x	A
P- 12	Primary Command Source	5	
P- 14	Extended Menu Access code	101	
P- 16	Analog Input 1 Signal format	U 0-10	V
P-41	PI Controller Proportional Gain	0.2	%
P-42	PI Controller Integral Time	3.0	s
P-43	PI Controller Operating Mode	0	
P-44	PI Reference (Setpoint) Source Select	0	
P-45	PI Digital Setpoint	xx.x	%
P-46	PI Feedback Source Select	1	

1. In order to make the regulation more dynamic, change the P-41 o P-42 parameters. Increase P-41 until the output is fast enough. The increase P-42 as much as possible and stop before the system oscillates.

2. See section 9.2 for the setpoint configuration.

⚠	**ATTENTION:** If there's a power loss while the ventilator is working and the RUN switch is closed, the drive will enter the stop stage and show StOP on the display. Once the power is restored, if the RUN switch is still closed, the drive will maintain the stop status. In order to start again, the RUN switch must be opened and closed again. This operation can be modified setting the AUtO-0 mode in the P-30 parameter.

9.2 PRESSURE SETPOINT ADJUSTMENT

The pressure setpoint is adjusted in the P-45 parameter. The value read by the drive is shown in the only-read parameter P00-01, if the probe has a display the user will be able to see the value directly. This parameters are shown as percentages and will translate to a different value of Pa, subject to the chosen scale of the probe.

Scale	Pressure in Pa for every 10% of the Setpoint	Scale	Pressure in Pa for every 10% of the Setpoint
±100 Pa	20 Pa*	0-1000 Pa	100 Pa
0-100 Pa	10 Pa	0-1500 Pa	150 Pa
0-250 Pa	25 Pa	0-2000 Pa	200 Pa
0-500 Pa	50 Pa	0-2500 Pa	250 Pa

(*)Increase for every 10%, subtract 100 Pa to obtain the real value

9.3 WIRING

Before the start of the programming, wire the L1-L2-L3 input phases when using three phase equipment and wire the L1-L2/N input phases when using single phase equipment.

Once the **"Pressure"** control mode is selected, that is after introducing the parameters of the Pressure control mode table (section 9.1), wire the drive as seen in the picture. **(See Fig. 11.)**.
The RUN signal must be connected between the terminals 1 & 2, and the switch is always closed, the drive will start automatically when given power. If the user wants to stop the operation with a selector, timer, etc.… Set up a free potential contact in series between the terminals 1 & 2.

9.4 PROBE SI-PRESSURE TPDA CONFIGURATION

The user should customize the adjustment of the scale of the probe, fitting the facilities where the probe is set up. For example, the user should connect the jumper 2 and open the jumpers 1 & 3 to adjust the probe between 0 and 250 Pa on the pressure transducer SI-PRESSURE TPDA. **See Fig. 12 and 13.**

9.5 "PRESSURE CONTROL" OPERATION MODE

1. Close the RUN switch connected between the terminals 1 & 2 to start the drive. The display will show **StOP** and the drive will increase the speed until reaching the objective speed. This speed is subjected to the pressure level detected by the probe and the setpoint adjusted in **P-45**

2. If the overpressure level goes over the setpoint adjusted in **P-45** the drive will decrease the speed in order to keep the pressure level close to the setpoint.

3. If the pressure level goes below the setpoint adjusted in **P-45** the drive will increase the speed in order to keep the pressure level close to the setpoint.

4. If the user wants the drive to be always working, short-circuit the terminals 1 & 2 with a copper wire.

5. While the drive is ON, the user can see the motor consume pressing the Navigator key ⬭ >2 seconds.

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