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VSD - S.MT Inverter

OPERATION AND MAINTENANCE MANUAL

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OPERATION & MAINTENANCE
CONTENTS

General
Information

These instructions are to assist in the installation of the flowcon VSD - S.MT Inverter please follow them carefully.

If, having read this Operation & Maintenance Manual, there is any doubt about any aspect of the installation please don't hesitate to contact our technical team.

Definitions of Safety Warnings and Precautions

WARNING!

Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.

CAUTION!

Indicates a potentially hazardous situation which, if not avoided. Can result in minor to moderate injury, or serious damage to the product.

WARNING!

This equipment may cause electrical shock when in use due to static electricity build up. We strongly advise that any system pipework is fitted with additional earth bonding, particulary if plastic pipework is being used in other areas of the system.

Safety

Information

It is essential that correct and safe working practices are adhered to at all times when installing, operating and/or maintaining any piece of equipment. Always consult safety data sheets, operating and maintenance manuals, Health & Safety legislation and recommendations and specific requirements of any equipment manufacturer, site controller, building manager or any other persons or organisation relating to the procurement, installation, operation and/or maintenance of any piece of equipment associated or in conjunction with any product provided by **flow**tech Water Solutions.

This document is intended for ALL installers, operators, users and persons carrying out maintenance of this equipment and must be kept with the equipment, for the life of the equipment and made available to all persons at all times. Prior to carrying out any work associated with the set it is essential that the following sheets are read, fully understood and adhered to at all times.

Equipment must only be installed, operated, used, and/or maintained by a competent person. A competent person is someone who is technically competent and familiar with all safety practices and all of the hazards involved.

Any damage caused to any equipment by misapplication, mishandling or misuse could lead to risk of Electrocution, Burns, Fire, Flooding, death or injury to people and/or damage to property dependent upon the circumstances involved. **flow**tech Water Solutions accepts no responsibility or liability for any damage, losses, injury, fatalities or consequences of any kind due to misapplication, mishandling or misuse of any equipment, or as a result of failure to comply with this manual.

Failure to install, operate, use or maintain the equipment in accordance with the information contained within this document could cause damage to the equipment and any other equipment subsequently connected to it, invalidating any warranties provided by **flow**tech Water Solutions to the buyer.

Safety Warnings &

Precautions

These instructions should be read and clearly understood before working on the system. Please read this manual carefully and all of the warning signs attached before installing or operating the equipment keep this manual handy for your reference. This equipment should be installed, adjusted and serviced by trained and qualified personnel. Failure to observe this precaution could result in bodily injury.

WARNING! - Install an emergency stop key separately from the isolator. Rotating shafts can be hazardous.

WARNING! - This equipment has a high leakage current and must be permanently fixed to earth.

WARNING! - Do not attach or remove wiring or connectors when the power is applied. Do not check signals during operation. When the power is turned on and the running command is on, the motor will start rotating. The stop key is only effective when the function is set. If there is a power failure and an operation instruction is given the unit may start automatically when the power is reinstated.

WARNING! - Make sure that the input voltage is correct. Be sure to install the unit in a room that is not exposed to direct sunlight and is well ventilated.

Avoid environments which have a high ambient temperature, high humidity or excessive condensation. Avoid dust. Corrosive gas, explosive gas, inflammable gas, grinding-fluid mist and salt damage, etc.

WARNING! - Do not connect the power source to any terminals except power connectors.

WARNING! - Motor control equipment and electronic controllers are connected to hazardous line voltages. When servicing drives and electronic controllers, you may be exposed to components at or above the line potential. Extreme care should he taken to protect against shock. Dangerous voltage may exist after the power light is off.

Wait more than 5 minutes after turning off the power supply before performing maintenance or inspection. Hazard of electric shock. Disconnect incoming power before working on this unit.

WARNING! - The inverter should be protected separately against ground fault.

Observe the regional regulations for electrical installation!

CAUTION! - It is strongly recommended that all electrical equipment conforms to National Electrical Codes and local regulations. Only qualified personnel should perform installation, alignment and maintenance. The manufacturer reserves the right to alter the technical data in order to make improvements or update information.

CAUTION! - Failure to observe these rules will render the guarantee invalid. The same applies to repair jobs and/or replacement. Your legal rights are not affected.

CAUTION! - The manufacturer declines all responsibility in the event of damage or injury caused as a result of tampering with the equipment.

CAUTION! - Do not switch on/off power supply to run/stop the motor/system! Start the unit only by using run button or external run command.

Customer / Contractor RESPONSIBILITIES

It is the responsibility of the customer and/or the contractor:

- To ensure that anyone working on the equipment is wearing all necessary protective gear and/or clothing.
- Is aware of appropriate health & safety warnings.
- Has read the information in this section of the manual.

Warranty

The manufacturer guarantees this product for a period of 24 months as of the date of sale; if returned, the device must be accompanied by this handbook, with the installation date and programming parameter values entered on the last page.

The guarantee is forfeited in the event of the following: the device is tampered with, disassembled or damaged due to mishandling and/or incorrect installation; the device is put to any other use than the one it was intended for; the device is installed in unsuitable environmental conditions or connected to a non-standard electrical system.

The manufacturer cannot be held responsible for any kind of damage to people and/or things ensuing from failure to install the necessary electrical safety devices upstream of the device, or as a result of unprofessional installation.

The installation and servicing of this device must be performed by specially trained personnel with the ability to understand the entire contents of this owner's manual.

For all operations required to be carried out with the cover removed, the device must be disconnected from the power supply.

Even though there should not be any reason to remove the card, if you do so, remember that some of its parts remain live for a few minutes after the unit has been disconnected from the mains.

The manufacturer cannot be held responsible for any kind of damage to people and/or things ensuring from the failure of any internal safety devices to intervene, with the exception of compensation for the device itself if still under guarantee.

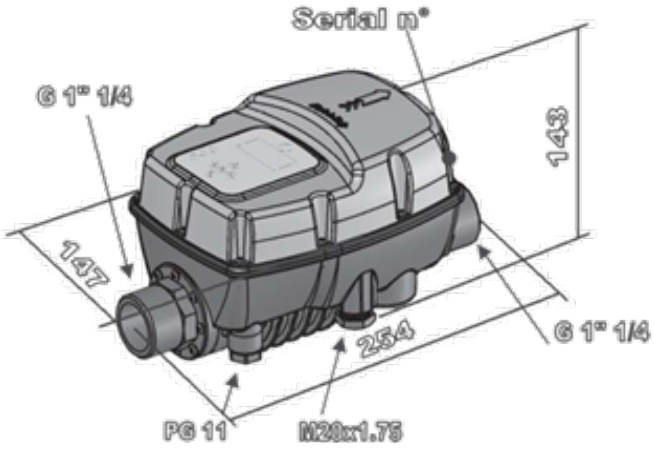
This device complies with the directive ROHS 2011/65/EC.

Description

Flowcon VSD - S.MT Inverter is an electronic device, employing inverter-based technology, which controls the pump stopping and starting functions. Thanks to the particular type of technology used, it can modulate the frequency (Hz) of the motor's input current to alter the speed (rpm) according to the water delivery rate required from the system.

In both operating modes, the device protects the pump from dry running in the absence of water on intake, by means of a combined control on flow and pressure.Operation of twin pumping units is admissible only in "P+P" mode.

Dimensions



Technical Data

Mains power:	Single-phase, 230Vac + 10% - 50/60Hz
Motor output:	3x230 V
Maximum motor power:	2.2 kW-3.0 HP
Maximum motor phase current:	9.7 A (rms)
Max. line absorption:	16 A (rms)
Maximum admissible pressure:	800 KPa (8 bar)
Set-point adjustment range:	0.5 - 8 bar
Start pressure adjustment range:	0,2 - 7.7 bar
Pressure drop:	0.7 bar at 100 l/min
Hydraulic connection:	1 ¼" M-M (1"F inlet; rotary on request)
Protection rating:	IP X5
Weight:	1.6 kg
Dimensions:	254x147x143 mm
Type of action	1.Y (according to EN 60730-1)
Operating ambient temperature:	From +0°C to +35°C
Liquid temperature:	From +5°C to +35°C

Functions

- Automatic start-up and shutdown of the pump.
- Constant pressure due to pump/motor speed regulation
- Energy savings due to less pump absorption
- Gradual pump start and stop reduces hammering
- Protection against dry running in the event of water shortage during intake
- Automatic reset in the event of dry running, with autonomous error condition recovery
- Efficient leakage monitoring to protect pump in the event of repeated restarts
- Anti- seize function
- Intelligent overload cut-out management for a longer duration of the inverter
- Digital display of pressure, current, voltage and frequency
- Operation/error status signaling via LEDs and on-screen alerts display
- Auxiliary contact for remote control, pair connection or double set-point
- Optional I/O board for additional input and output
- Soft-start can be enabled to allow a gradual start of the motor pump
- Possibility of interfacing multiple devices as part of the pressurisation units (from two to four)
- Operation with and without flow switch (in the event of water not perfectly clean or ferrous)

Protections

- Dry Running
- Overpressure cut-out
- Power supply under-voltage
- Power supply over-voltage
- Output terminal short circuit
- Motor output amperometric control
- Internal overheating of the inverter (ambient temperature and IGBT temperature)
- Significant leakage with continuous motor pump restarts

EMC

The product has been tested according to the standards cited in the declaration of CE compliance in one of the typical conditions of use. Experience has however demonstrated that critical variations to the levels of EMC disturbances may occur by changing the length of the cables, their position, the type of motor used, etc. When conditions of disturbance towards other devices occur, contact the manufacturer to evaluate additional solutions to reduce electro-magnetic disturbance.

Installation Hydraulic Connection

The Flowcon VSD - S.MT Inverter must be installed on the pump delivery side, either upright or horizontally and respecting the flow direction shown by the arrow on the cover. The pump outlet water flows through the device before being distributed to the various appliances connected.

The water that enters the inverter must not contain any impurities and/or other substances that could jam up the check valve fitted inside it. To reduce this risk as much as possible, it is advisable to fit special filters on the intake side of the pump.

When it is not possible to guarantee the perfect cleanliness of the pumped fluid, it is advisable to deactivate operation of the integrated flow switch.

Install a small expansion tank (1-2 liters) after the inverter, to limit restarts caused by any small leakages which are common in most systems.

The pre-charge value of the tank must be suitable for the pressure values set. This will also help to keep the operation constant in applications where water requirements are greater (e.g. for washing machines, toilet flushing systems, etc.).

On no account must a check valve be fitted between the inverter and the motor pump or between the device itself and the user appliances, as it could cause device malfunctions. When used with a submerged pump, the installation of a check valve before the inverter is allowed, provided that it is positioned at least 3 metres from the inverter.

A check valve can be fitted on the motor pump intake pipe, though, to prevent it draining when the pump stops.

It is recommended that you do not install the equipment in shafts or watertight casing where heavy condensation can form.

CAUTION: When the pump stops, the conduits are still pressured so a cock must be opened to bleed the system before any work is carried out.

Electrical Connection

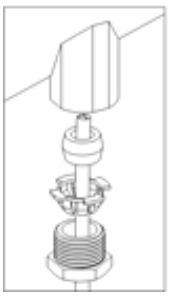
Warning - All wiring up must be carried out by specially trained personnel

Warning- An incorrect motor pump connection could result in damage to the device or the pump motor.

Warning- Failure to comply with what is stated in this paragraph may cause serious damage to things and/or serious injuries to people, and the manufacturer declines all responsibility.

Warning- if the power supply cable or the cable between the inverter and the pump is damaged, only the manufacturer of the device, its appointee or equally qualified personnel can replace it; this is to prevent risks to things and people.

Fit the electric wires into the relative wire clamps, making sure the correct assembly order is maintained for all the components. Secure the threaded nuts tightly enough to prevent the wires being pulled or turned from the outside. The wire clamp for the auxiliary contact is a blind fastener: if you wish to insert a remote control wire, it is best to remove the said nut from the unit, then break open the plastic nut with a screwdriver.



The hole diameter for the cable gland should be 7 mm.
Use the provided grommet with the cable gland. It is suitable for cables from 3.5 mm to 6.5 mm.

If the device is used in one of the following situations:
- temperature of the fluid used higher than 30°C
- ambient temperature higher than 35°C

Cables with a thermal resistance of at least 100°C must be used for the power supply and motor cable.

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Line Connection

The device has a single-phase 230 Volt 50/60Hz power line.
The electrical system to which the equipment is connected must comply with the safety regulations in force and must therefore be equipped with:
- An automatic magnetothermal switch with high breaking capacity and with a trigger current proportional to the capacity of the pump installed (see chart below)
- Earthing with total resistance in conformity with local standards and in any case never over 100Ω

If the device is used in swimming pools, fountains or garden ponds, an automatic type “A” residual current operated circuit breaker (with IΔn=30mA) must always be fitted.
The system comprising the S inverter and a motor pump is considered a “fixed system”; it is therefore advisable to make arrangements to prevent the device being disconnected from the power line it was originally connected to and mistakenly reconnected to another source of power not equipped with the electrical protection required.

If the device is not fitted with a power lead and plug, to disconnect it from the mains install an omnipolar cut-off device with a gap of at least 3 mm between the contacts.
Before making the electrical connection, the cables must be prepared with the supplied crimp terminals. Connect the two device power wires to the 2-pole green terminal marked “LINE”; then proceed with connection of the earth wire to one end of the double earthing terminal using the special eyelet terminals supplied. The faston terminals must be crimped by specially trained personnel, using proper crimping pliers.

The recommended wire section is 1.5 mm2, which is compatible with motor pumps up to 1.1 kW. For powers over 1.1 kW and up to 2.2 kW 2.5 mm2 wire section is recommended.
If the power lead is longer than 5-10 metres, a lead with a 2.5mm2 section should be used to reduce drops in the power supplied by the lead and to reduce the chance of the under-voltage protection being triggered. The type of wire must be selected according to the conditions of use (domestic, dry or wet, indoor or outdoor installation).

CAPACITY OF PUMP INSTALLED (KW)	**MAGNETOTHERMAL PROTECTION (A)**
0.37 (0.5Hp)	4
0.75 (1Hp)	6
1.5 (2Hp)	12
2.2 (3Hp)	16

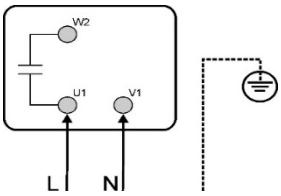
Electric Pump Connection

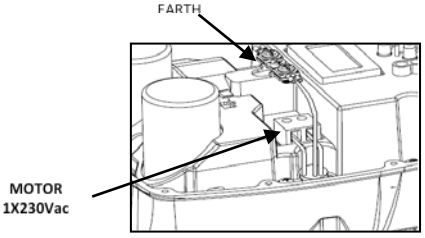
Before carrying out the electrical connection, is necessary to properly prepare the cables with special crimp terminals. Connect the two power supply wires to the green bi-polar terminal on the pump motor, marked with the word "MOTOR"; then connect the earthing cable to one end of the double earth terminal, using special eyelet terminals. The crimping of the terminals must be carried out by specialised personnel, using proper pliers.
The device is fitted with an output short circuit protection.
The recommended cable section is 1.5 mm2 for cable lengths up to 30 metres; for lengths greater than 30 metres it is recommended to use a cable section of 2.5 mm2. The type of electrical cable must correspond to the conditions of use (use in domestic rooms, dry or wet, for installation indoors or outdoors).

Where an excessive cable length (over 80 metres) is used, it is recommended to insert a dV/dT filter to limit peak current voltage and safeguard the durability of the motor, particularly the windings.
Also observe the installation limits as declared by the manufacturer of the electric pump connected to the inverter.

Single-Phase Pump

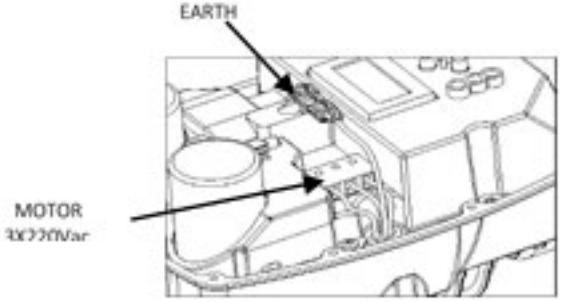
The Flowcon VSD - S.MT Invertercan only be fitted on single-phase 230Vac electric pumps, already provided with capacitor.
When wiring up the device it is necessary to check the terminals inside the pump to ensure they are connected as prescribed by the manufacturer of the pump. The figure below shows a typical example of connection:



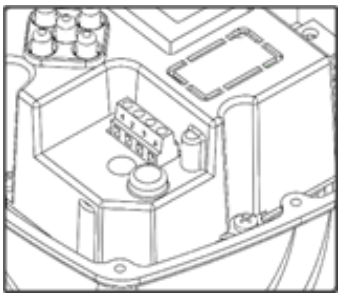


Three Phase Pump

The Flowcon VSD - S.MT Invertercan be fitted on three-phase pumps with a 230Vac power supply therefore a delta configuration.
When used with a submerged pump the motor must be ordered from the manufacturer with a factory-installed delta connector.
When installing external pumps, at the time of electrical connections, ensure that the terminals inside the electrical enclosure of the motor are connected as shown in the following figure:

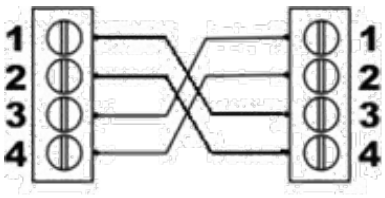


Auxiliary Connector Connection



The remote connector is insulated from the network power by a “main” type insulation (basic insulation according to EN 60730-1). Any circuit which will be connected to this terminal, will acquire the same insulation grade from the network power. For this reason the connection must be carried out using a cable type that can guarantee the additional insulation.
The Flowcon VSD - S.MT Inverteris fitted with a special connector for an auxiliary contact so that additional functions can be exploited by interfacing the device with external equipment. The function of the auxiliary contact depends on the setting of the “Auxiliary Contact” parameter described in the paragraph on programming. The three operational modes, relevant functions and connection methods are described below.

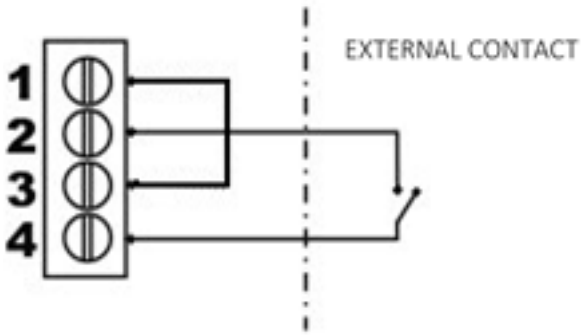
SETTING OF “AUXILIARY CONTACT” PARAMETER = “1” –Exchange function in the pressurisation units.



When the “AUXILIARY CONTACT” parameter is set on “1” the inverter is set to work independently (single system) or to dialogue with another partner device as part of a twin pump pressurisation unit, depending on whether the connection cable is used. If the device is set to work independently no connection is required. On the other hand, if the inverter is connected to another unit to create a pressurisation group, follow the wiring diagram shown here; for further information on the operation as part of twin pump pressurisation units see the “PRESSURISATION UNITS” section in the appendix.

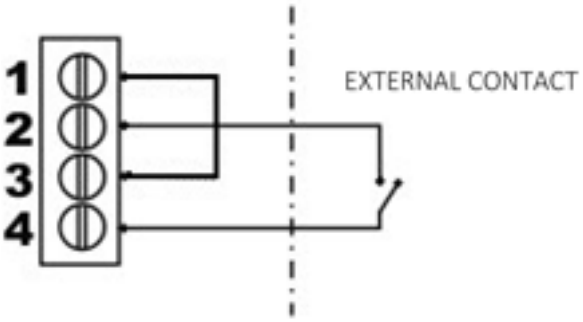
SETTING OF “AUXILIARY CONTACT” PARAMETER = “2” –Remote on/off control function

When the “AUXILIARY CONTACT” parameter is set on “2” the inverter is set to be switched on and off by remote control according to the system requirements. This function is useful when there is the need to program the start of the motor pump at the same time as other devices connected to one same control unit, for example in irrigation systems where the pump is switched on only when the irrigation control unit activates one or more of the system’s solenoid valve. Connect the device according to the wiring diagram shown here, bearing in mind that when the external contact is open the inverter shall not start the pump even if the system reaches the Pmin value, while when the external contact is closed the device shall operate according to the values set.



SETTING OF "AUXILIARY CONTACT" PARAMETER = "3" ––Second set-point (Pmax2) function

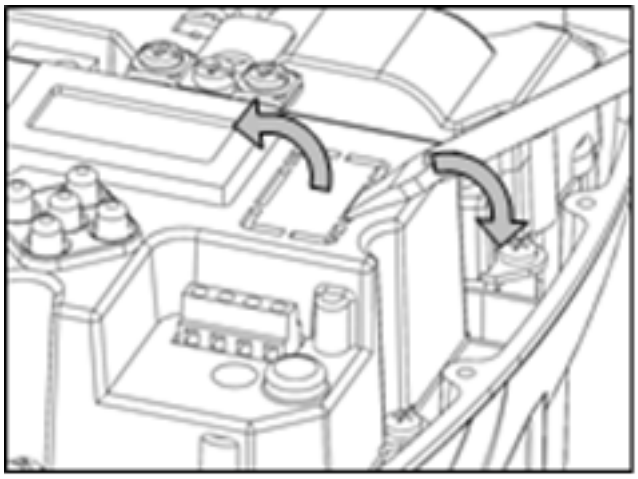
When the "AUXILIARY CONTACT" parameter is set on "3" the inverter is set to adjust the rotations of the motor pump in accordance to the Pmax2 pressure value. This function is useful when the device must temporarily work at a different pressure to the one set in the Pmax parameter, for example if distributors requiring different pressures are used. Connect the device according to the wiring diagram shown here bearing in mind that when the external contact is open the inverter shall adjust the pump rotations according to the Pmax pressure value, while when the external contact is closed the device shall adjust the pump speed according to the Pmax2 value.

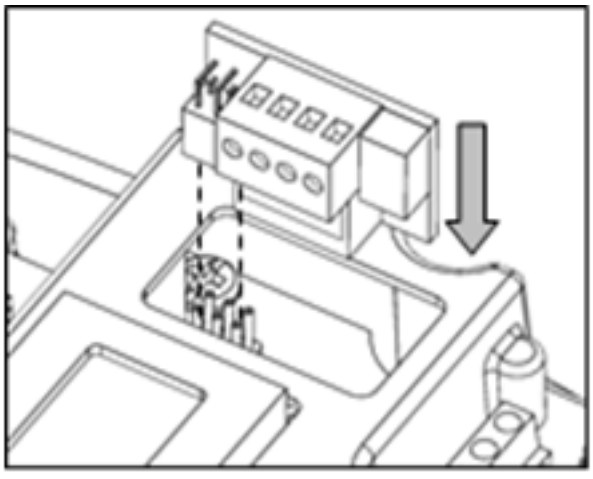


ATTENTION: incorrect wiring of the auxiliary contact may cause the low voltage circuit to short circuit with consequent blowing of the fuse! Carry out the connection with particular care.

Auxiliary I/O Board

To insert the auxiliary I/O board, use a flat screwdriver to lift and break the plastic window as shown in the following figure.
Then insert the expansion board, taking care to align it perfectly with the display board pins. The connection terminal is removable and may be connected to the I/O board after having carried out the electrical connections.
The expansion board provides an auxiliary input and output. Refer to the documentation supplied with the board for the electrical characteristics and method of connection.





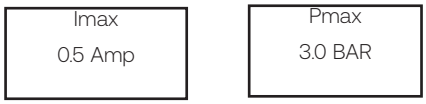
Start Up

CAUTION: On initial start-up, prime the pump before powering up the system!

WARNING: do not allow the pump to run for long without water the first time it is switched on otherwise the inverter will overheat! Prime the pump before switching on the system.

Once all the electrical connections have been made and checked to ensure they are correct, close the unit's cover and switch on the power.

On initial start-up the operator will be requested to enter the current as stated on the motor data plate on the following screen:



Set the value as stated in the technical specifications of the pump (in the case of 3-phase pumps, identify the value for 230V delta connections); press the central key to confirm and proceed with entry of the maximum operating pressure (Pmax)
After setting the pressure, press the central key again to exit the settings menu.
The S.MT is now in stand-by; in this mode (pump stationary) all the various parameters can be set (see "programming" paragraph) before the system is started up.

To start up the pump, simply press the "on-off" button in the centre: The inverter will exit the stand-by mode and the motor will start turning.

If the pump does not run or if it produces anomalous vibrations, ensure correct connection of the pump and of its capacitor in case of single-phase pumps. For three-phase pumps also check the direction of rotation is correct.

To facilitate pump filling, the "+" button on the main screen can be pressed to force the pump up to top speed without the dry running protection feature cutting in.

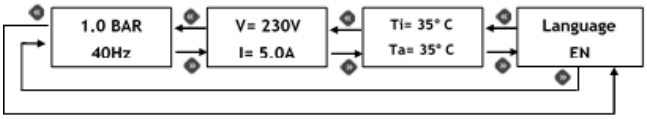
After setting all the device parameters, write the data entered in the form found at the end of this handbook for future reference and for guarantee purposes.

Programming

1. Left-hand arrow: this scrolls back through the menu pages
2. Right-hand arrow: this scrolls forwards through the menu pages
3. On-Off/Reset: this switches the device from stand-by to operation mode and resets the unit in the event of alarms and/or errors.
4. “+” button: this increases the value of the parameter currently shown on the display, it allows the pump to run at top speed without the dry running protection feature cutting in.
5. “-” button: this decreases the value of the parameter currently shown on the display.

Main Manu Structure

The main menu shows the operational values of the system: pressure, current frequency of the motor, input voltage, output current of the motor and internal temperature of the inverter. It is also possible to select the language.



Main Menu

These screen pages are accessible when the device is on.

1.0 BAR 40Hz

Main screen page: when the Flowcon VSD - S.MT Inverteris operating correctly, the first line of the display shows the instantaneous pressure detected by the system; the second line shows the current frequency of the motor. From here, it is possible to scroll through the main menu using the arrows, or put the system in "Stand-by" by pressing the central "on-off" key

1.0 BAR Stand By

When the inverter is in stand-by, the pump will not start up even if the pressure drops below the “Pmin” value set. To exit stand-by, press the central button again. By holding down the “+” button, the pump is brought up to the maximum operating speed, overriding the dry running protection (use this function to fill the pump on initial start-up).

V= 230V I= 5.0A

Voltage and current screen: on this page of the menu it is possible to view the input voltage to the inverter and the current absorbed by the motor. The value of the output current to the motor may differ from the value of the input current as the inverter modulates both frequency and voltage.

Ti= 35° C Ta= 35° C

Temperature screen: this displays the ambient temperatures inside the inverter and the IGBT power module. The values of these temperatures contribute to the intelligent power management which limits the value of the maximum frequency of the motor when the pre-alarm thresholds are reached.

Ti= 35° C Ta= 35° C

Language: The language used for the menus and the alarm messages can be selected by the user. Use the + and – buttons to alter the parameter setting.

Alarms

In the event of system anomalies or malfunctions, one of the following screens will appear on the inverter display. Each error is coded with the letter "E" followed by a number from 0 to 13. The number which appears in brackets represents the number of recurrences of each error. To reset an alarm, after having resolved the cause, it is usually sufficient to press the central "reset" key or interrupt the electrical power supply for a few seconds.

E0 – Low voltage: indicates that the power supply voltage is too low. Check the input voltage value

E1 – High voltage: indicates that the power supply voltage is too high. Check the input voltage value

E2-Short Circuit: This message will appear on the screen when a short circuit is detected at the inverter output; this may occur following incorrect connections of the electric motor, damage to the electrical insulation in the wires which connect the electric pump to the device or a fault in the pump's electric motor. When this error appears the electrical system should be checked as soon as possible by specialised personnel. The error may only be removed by disconnecting the equipment from the electrical power source and resolving the cause of the fault. Attempting to restart the inverter in the presence of a short-circuit in output may cause serious damage to the equipment and be a source of danger to the user.

E3-Dry running: this message appears when the system is stopped following a pump intake water shortage. If the auto-reset function has been enabled, the inverter will carry out automatic attempts to check for the availability of water. To clear the error status, press the central “reset” button.

E4- Ambient temperature: the error appears if the maximum internal ambient temperature of the inverter is exceeded. Check the conditions of operation of the inverter.

E5-module temperature: the error appears if the maximum temperature of the IGBT module of the inverter is exceeded. Check inverter operating conditions, in particular the water temperature and the current absorbed by the pump.

E6-Overload: this alarm is displayed when electric pump absorption exceeds the maximum set current as entered in the Imax value: this may occur following intensive use of the electric pump, continuous restarts at close intervals, problems with the motor windings, or following problems with the electrical connection between the motor and inverter. If this alarm trips frequently, arrange for the system to be checked by the installer.

E8-Serial error: this alarm may occur where there is an internal serial communication on the inverter. Contact the technical assistance.

E9-Pressure limit: the alarm intervenes when the maximum set pressure threshold has been exceeded. If the error appears repeatedly, check the setting of the "P limit" parameter. Also check other conditions which may have caused an overpressure (for example, partial freezing of the fluid).

E10- External error: this alarm will be displayed if, after having set the external error function on the auxiliary I/O board, the I/O input contact is closed.

E11-Number of maximum starts/hour: this error appears if the maximum number of admissible start-ups per hour has been exceeded. Check for the presence of any leaks in the system. Check the pre-loading of any installed tanks.

E12- Error 12V: an anomaly has been detected in the internal low voltage power supply circuit. Have the manufacturer check the device.

E13- Pressure sensor error: the pressure sensor has detected an incorrect value. Have the manufacturer check the device.

Troubleshooting

When one of the taps / outlets in the system is opened, the pump does not start, or there is a few seconds delay before it starts
The DeltaP value is set too high or a check valve has been fitted downstream of the device.
Try to increase the value of the start-up pressure Pmin and eliminate any valves after the S.MT.
Ensure correct operation of the external enabling contact.

When the taps / outlets are closed, the pump stops but restarts a few seconds later and there is no leakage from the system
Dp start" value is too low, increase it.

The pump keeps switching on and off
There is leakage in the system. Check the various hydraulic connections. Check the display for pressure drops when the taps are closed. Check the S.MT's check valve for dirt which could be preventing it from closing properly and, if necessary, clean it with compressed air.

The device often signals 'dry running'
The pump intake pipe drains when the system is not used for some time, thereby preventing it priming the next time it is started. If there is a foot valve fitted, check its seal.

The device often signals 'high or low voltage'
The power supply voltage may not comply with the device specifications; have it checked by qualified personnel.

The device overheats and the over-temperature protection intervenes
The inverter no longer exchanges heat with the water that runs through the device or the temperature of the fluid pumped is too high; check for foreign bodies that block the flow of water and if necessary have the device checked by the manufacturer.

When the water flow is extremely low, the pump does not operate normally
The flow values are too low and as the device is unable to detect them, it shuts down the motor pump. Fit a small surge tank (1-2 litres) in the system to give it more flexibility and reduce the number of restarts.

The pump does not stop
There is substantial leakage in the system or the check valve on the device is jammed by dirt; try moving the check valve with your fingers and checking that the spring can maintain the seal.
The sensor which detects the valve position is broken. Have the device checked by the manufacturer.

The pump is running at top speed but performance levels are low
The pump or the capacitor connection is not correct: check the electric wiring.
The pump runs in the opposite direction (three-phase model); check rotation direction.
The pump is damaged or there is foreign matter clogging the waterway.

When more water is required of the system, the pressure drops
This is a normal condition which is due to the fact that the device is unable to force the pump above its capacity curve. As a result, once a certain capacity is reached, the pressure is no longer offset as the pump is already running at the highest number of revolutions allowed. In these cases, a pump with higher performance levels should be installed.

Maintenance

The Flowcon VSD - S.MT Inverteris designed to keep maintenance requirements at a minimum. To guarantee the device a long working life and perfect functionality, always follow the instructions below:
Ensure the device does not have to withstand temperatures of below 3° C; if this is not possible, make sure all the water inside it is drained out to prevent it from freezing up and damaging the device's plastic body;
If the pump is equipped with intake filters, carry out regular checks to ensure they are clean;
Always ensure that the cover is closed properly and the cable conduit is tight to prevent water from penetrating from outside;
Switch off the power supply and drain the water from the system when it is going to be left unused for some time;
Do not force the pump to run without intake water, as this could damage both the pump and the inverter.
Before using the device with any other liquids than water, contact the manufacturer.
Do not carry out any operations when the device is open
Wait 3 minutes before removing the cover from the device so the condensers can discharge.

This device does not contain any parts that can be repaired or replaced by the end user. You are therefore advised not to remove the electronic card's protective cover as this would lead to forfeiture of the guarantee!

Date of installation	..../..../.....	Installer	
Pump make-model			
Serial N°			
FACTORY SETTINGS ON INSTALLATION			
Mode			
Pmin	Bar		
Pmin2	Bar		
Pmax	Bar		
Reset	Minutes		
Reset	Test		
Prot.24H			
Prot.4°C			
Stop delay	Seconds		
Imax	A		
Plimit	Bar		
Aux. Con.			
Deact. thresh.			
Notes			

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WATER SOLUTIONS

flowzone©
MEMBERS AREA

This section of the **flow**tech© website holds information exclusively for members. Members will need to log in to gain access to these pages.

Our member's will be granted exclusive access to our technical resource library. Within this resource is a wide range of product information including data sheets, technical drawings, O&M Manuals and training videos

flowcare©
AFTER SALES SERVICE

At **flow**tech© we operate a network of Service Engineers located throughout the UK who are supported by our offices located in and Greater Manchester. The distribution of engineers means that in the majority of cases we are less than 4 hours away from attending a customer call out.

We place great emphasis on providing technical back up to support our Service Engineers in resolving some difficult operational and technical issues. We pride ourselves on completing a project on time, within budget and never leaving a problem unresolved, or a customer waiting. This quality of service has made us the first choice for our customers.

FOR FURTHER INFORMATION OR ASSISTANCE

contact us

Flowtech Water Solutions are experts in water services and water booster sets. We have continuously supplied a wide range of standard and custom products since being founded in 1996.

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Membership No. 700106

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