DESIGN AWARD 2021

VIFIDI
Bullet VFD

VIFIDI BULLET VFD INSTRUCTION MANUAL

DEAR CLIENT,
Congratulations on your purchase of this INVERTER. Like all VIFIDI products, we had developed it with the latest technologies and produced it with the most advanced manufacturing process and the best quality parts. Failures those caused by incorrect installation or operation are not covered by the warranty, so please do read all instructions carefully before installing your new INVERTER.

GENERAL INSTRUCTION AND WARNING

1. Installation and operation must comply with local safety regulations.
2. Failure to respect the safety regulations not only causes the risk to personal safety and damage to the equipment, but invalidates every right to assistance under warranty.
3. Installation should be carried out by competent, skilled personnel in possession of the technical qualifications required by the specific legislation in force.
4. We do not recommend the INVERTER to be used by persons (including children) with reduced physical, sensory or mental capacities, or who lack experience or knowledge.
5. Please don't use the power supply cable to carry or shift the INVERTER and never pull on it to detach the plug from the electricity outlet.
6. Before working on the electrical or mechanical part of the system, always turn off the mains voltage. After switch off the power supply to the INVERTER, please wait at least five minutes before starting the INVERTER.
7. It is only acceptable for firmly wired mains connections.
8. The INVERTER must be earthed.
9. The manufacturer does not vouch for the correct operation of the water pumps or responsible for any damage that may cause if it is run outside of the recommended work range or in contrast with other indications given in this manual.
10. The total system pressure including maximum producing pressure of the selected water pump plus the incoming pressure should not be higher than the sustainable pressure of the piping system.
11. The manufacturer reserves the right to make any modifications to products that it may consider necessary or useful, without affecting their essential characteristics.

LIQUIDS TO BE PUMPED

The INVERTER can only work with non-aggressive water, or water not containing solid particles.

APPLICATIONS

1. Horizontal centrifugal pump
2. Vertical centrifugal pump
3. Peripheral pump
4. Jet Pump
5. Deep well bore pump
6. Other types pump

OPERATING CONDITIONS

- Max. pump power:
  - BV1-11.B.2: 1.1kW (1.5HP)
  - BV1-15.B.2: 1.5kW (2.0HP)
- Max. pump current:
  - BV1-11.B.2: 6A
  - BV1-15.B.2: 8A
- Absorbed current:
  - BV1-11.B.2: 10A
  - BV1-15.B.2: 15A
- Power in: 1ph, 200V~240V
- Power out: 3ph, 200V~240V
- Pressure setting range:
  1bar~6bar (14psi~84psi)
- Variable frequency range:
  - 50Hz: 30Hz~50Hz
  - 60Hz: 30Hz~60Hz
- Max. system pressure: 10bar (145psi)
- IP: 55
- Max. water temp: 50°C (122°F)
- Max. ambient temp: 50°C (122°F)
- Max. flow: 300L/min (79.3GPM)

FEATURES & BENEFITS

- All-In-One: Simplification of the whole system for cost-saving.
- In-Line Design: Easier assembling for time-saving.
- One-For-All: Upgrade most 3-phase water pump to an inverter pump.
- Intuitive interface: Smarter setting and indication for pressure+error status.
- Constant water pressure: Better water usage experiences.
- Energy saving up to 50%: Lower electricity bill and eco-friendly.
- Lower operating noise: Good nights' sleep and a better life.
- Work in multiple directions: Flexible installation and pipework.
- All-Around protections: Pump lifetime extending and safer operation.

GENERAL INSTALLATION PRECAUTIONS

Before the installation, please check that:

. The voltage and frequency on the pump's technical data plate correspond to the values of the power supply system.
. The electrical connection is made in a dry place, far from any possible flooding.
. The electrical system should include a differential switch sized according to the electrical characteristics of the INVERTER.
. The INVERTER requires an earth connection.
. If you are not sure of the containing solid particles in the water, please install a water filter on the system intake that is suitable for catching impurities. (The installation of filter might cause a decrease of the system's hydraulic performance proportional to the loss of load.)

Hydraulic connection precautions:

. Please make sure the water pump to work with this INVERTER is suitably sized.

- Systems made with excessively narrow pipes can cause load losses in which the INVERTER is unable to compensate for constant pressure on the water usage site.
- The dimensions of the pipe must be suitable for the electric pump installed.
- When installing horizontally between pipes, make sure to properly support the full weight of the INVERTER.
- RISK OF FROST: Please leave the INVERTER to be powered to activate anti-freezing protection. If the INVERTER is not operating, it is necessary to turn off the power supply, disconnect the INVERTER from the pipe and empty all water left inside.
- Highly recommend to install a pressure relief valve after the INVERTER.

Electrical connection precautions:

- Ensure that the voltage and frequency values on the inverter data plate correspond to those of the power mains.
- To improve the immunity to any noise radiated towards other equipment, please use separate ducts for the power supply cables.
- Make sure that all the terminals are fully tightened, especially the earth terminal.
- Ensure that the cable glands are fully secured to guarantee the IP55 protection rating.
- Check that all the connecting cables are in perfect condition, and the external sheathing is unbroken.
- Ensure the motor is 3ph, 200~240V.
- The output for the water pump includes the three-phase wire and earth. Please follow the wiring diagram inside the junction box while wiring. (Misconnecting would cause the wrong direction of rotor rotating.)
- Incorrect connection of the earth line to a terminal other than the earth terminal may cause irremediable damage to the INVERTER.

Wire comparison chart:

U	Brown	L1	A
V	Black	L2	B
W	Grey	L3	C

Power supply connection precautions:

- It is necessary to size the protective circuit breaker and the power supply cable according to the system.
- It is necessary to correctly size the differential switch according to the electrical characteristics of the INVERTER for protecting the system.
- In the case of extensions to the inverter cables, for example for power supply to submersible pumps, if there is an electromagnetic disturbance, the following is recommended:
  - Check to earth and, if necessary, add an earthing device near the INVERTER.
  - Embed the cables.
  - Use shielded cables and output filter.

CONFIGURATION OF THE INTEGRATED INVERTER

. The system is configured by the manufacturer to satisfy the majority of installation cases, that is :
- Operation at constant pressure
- Set-Point (desired value of constant pressure): 2.0bar (28psi)
- Reduction of pressure to restart: 33% of the Set-Point
- Pre-Charged of the pressure tank: 0.9bar (13psi)

. The pressure at which the system starts has the value:
Start-Point = Set-Point – 33% of the Set-Point
For example: 2.0bar – (2.0bar x 0.33) = 1.34bar in the default configuration
28psi – (28pis x 0.33) = 18.76psi
The system does not start if the incoming water pressure or the equivalent of the height where utility is located (consider 1bar = 10m or 1'= 0.43psi water column) is higher than the Start-Point: for the default configuration, if the incoming pressure is higher than 1.4bar (19psi) or the utility is at a height above 14m, the system does not start.

. The pressure charging of the pressure tank should base on the pressure Set-Point of the INVERTER. Otherwise, the INVERTER will operate abnormally. Below shows the recommended highest pressure charging compare to the Set-Point:

Pressure Charging	Set-Point
3.3bar (45psi)	6.0bar (84psi)
3.0bar (41psi)	5.5bar (77psi)
2.7bar (37psi)	5.0bar (70psi)
2.4bar (33psi)	4.5bar (63psi)
2.1bar (29psi)	4.0bar (56psi)
1.8bar (25psi)	3.5bar (49psi)
1.5bar (21psi)	3.0bar (42psi)
1.2bar (17psi)	2.5bar (35psi)
0.9bar (13psi)	2.0bar (28psi)
0.6bar (9psi)	1.5bar (21psi)
0.3bar (5psi)	1.0bar (24psi)

. Priming precautions:
- At each switch-in, the system checks the presence of water in delivery for the first 30 seconds. If a flow of water is detected in delivery, the pump starts its regular work. If the water flow is not detected within 30 seconds, the system will stop operating and show the dry-running alarm signal.
- At the self-priming application, you can press " ▶II " to override the dry-running protection and keep the pump running until the self-priming procedure is completed. As soon as the INVERTER detects a regular flow in delivery, it would operate regularly.
- Prolonged dry operation may cause damage to the pump.

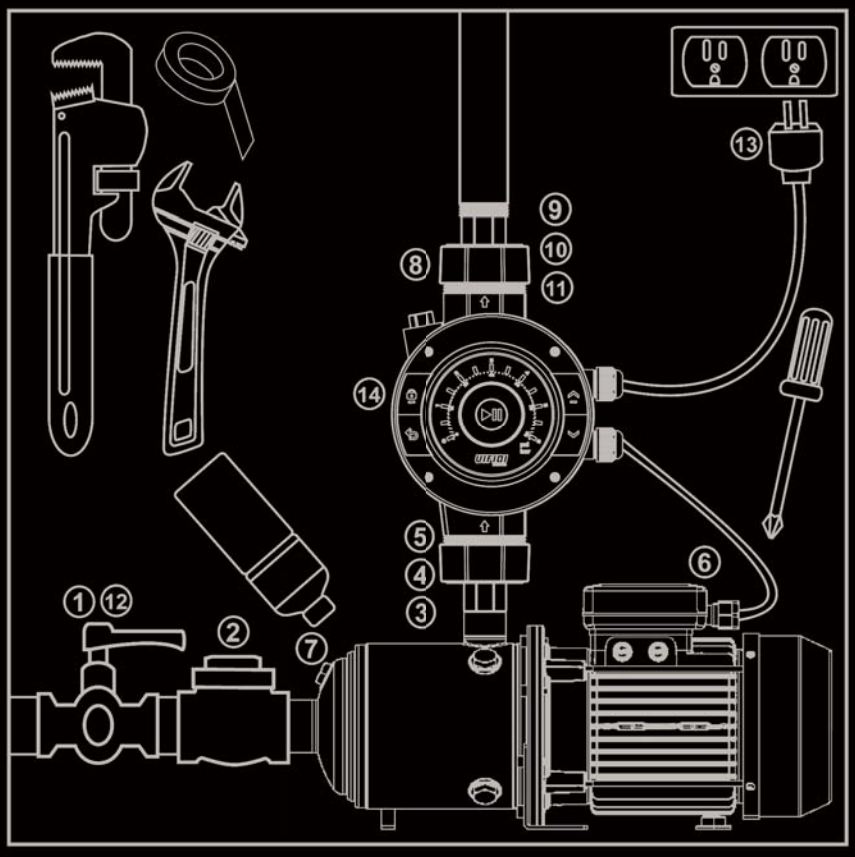
KEYBOARD AND DISPLAY

The button functions are summarized in the table below.

^	To raise the pressure setting
v	To lower the pressure setting
▶II	To start, stop, or force operation
🔒	To lock and unlock
↩	To reset

- Scrolling Light: Running
- Firmed Light: Standby
- Flashing Light: Paused
- The highest alight number is the actual system pressure

INSTALLATION STEPS



1. Turn off the water source.
2. Install a check valve before the water pump.
3. Connect union connecter, pipe fitting and water pump outlet with tape seal.
4. Attach o-ring on the pipe fitting.
5. Connect the INVERTER with the union connecter.
6. Connect the 3phase wire and earth with the cable or terminal board of the motor.
7. Prime the water pump.
8. Prime the INVERTER from the INVERTER outlet.
9. Connect union connecter, pipe fitting and the pipeline with tape seal.
10. Attach o-ring on the outlet of the INVERTER.
11. Connect the INVERTER with the union connecter.
12. Turn on the water source.
13. Plug in.
14. Press the " 🔒 " button to set water pressure.
15. Turn on water features to enjoy constant water pressure.

ERROR AND STATUS CONDITIONS VISIBLE ON THE CONTROL PANEL

Identifier	Description	Remedy
0	Overvoltage or low voltage	Check if the incoming voltage to the INVERTER is too high or too low
1	Over current	Check whether the maximum current of the selected motor exceeds the acceptable range
	Locked rotor	Check if the impeller and fan are stuck
	Phase failure	Check whether the motor wiring is correct
	Motor disconnected	
2	Excess temperature	The INVERTER will restart after cooling down. If it doesn't, please check whether the temperature of the water or the environment exceeds the acceptable range.
3	Dry running	Check the water source
		Check if the priming is complete
		Check whether the pipeline and pre-filter are closed, blocked or leaked
	Pressure set point is too high	Reduce the set pressure or choose a suitable pump
		Check if the motor runs in correct direction
4	Leakage warning	Check for leaks in the pipeline or other water-using equipment
	Pressure tank losing pressure	Check if the pressure tank lose pressure or has damage
5	System pressure is too high	Check if the incoming water pressure is too high
		Check if the pressure of the selecting pump is too high
	Abnormal pressure sensor	Check whether the pressure sensor and its connection is normal
6	Abnormal flow switch	Check if the flow switch is stuck
		Check if the flow switch is damaged
	Abnormal inverter board	Try to replug the INVERTER

* If your problem can not be fixed by the suggested remedy, please contact your INVERTER supplier.

WARRANTY

This INVERTER is warranted to the first user only to be free of defects in material and workmanship for 12 months from date of installation, but no more than 18 months from date of manufacture. VIFIDI’s liability under this warranty shall be limited to repairing or replacing at our election, without charge, FOB VIFIDI's distribution center or authorized service agent. VIFIDI will not be liable for any cost of removal, installation, transportation, or any other charges that may arise in connection with warranty claim. The warranty period commences on the date of the original purchase of the equipment. Proof of purchase and installation date, failure date, and supporting installation data must be provided when claiming repairs under warranty. This warranty is subject to due compliance by the original purchaser with all directions and conditions set out in the installation and operating instructions. Failure to comply with these instructions, damage or breakdown caused by fair wear and tear, negligence, misuse, incorrect installation, inappropriate chemicals or additives in the water, corrosive or abrasive water, lightning or high voltage spikes or through unauthorized persons attempting repairs are not covered under warranty. VIFIDI will not be liable for any incidental or consequential damages, losses, or expenses, arising from installation, use, or any other causes. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above. Certain countries do not permit the exclusion or limitation of incidental or consequential damages or the placing of limitations on the duration of an implied warranty, therefore, the limitations or exclusions herein may not apply. This warranty sets forth specific legal rights and obligations, however, additional rights may exist, which may vary from country to country.

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