

# I-MAT Variable speed system driven by frequency converter



## Benefits

### Flexibility

I-MAT frequency converters are equipped with a software which provide different operating modes in order to cover a wide range of applications.

### Reliability

The high efficiency heatsink with integrated fans allows to cool the frequency converter independently from the motor, to provide a higher reliability of the system.

### Safety

The shape of the I-MAT frequency converters allows to separate the signal terminals area, from the power terminals area, in this way the user can operate on the signals connections in safety conditions.

### Easy to use

The integrated control panel allows to program all the parameters directly on the frequency converters. Moreover it's possible to remove the control panel and remote it with a connection cable.

### Communications between units

The system flexibility allows, with an optional electronic card, to assemble more units making them communicate together. The system is capable to manage variable speed pumps (up to 6) and fixed speed pump (up to 5).

## Construction

Variable speed system driven by frequency converter for the motor control in the water supply applications and in the production/distribution of hot/cold water.

I-MAT is an integrated control system which, applied to the motor, allows to manage a wide range of applications and operating modes.

## Applications

Frequency converter for automatic pump control suitable for:

- water supply
- water transport and distribution
- production and distribution of hot/cold water
- water treatment

### For protection of the pumps:

- Against dry running
- Against operations with closed connection ports
- Against overcurrent of the motor
- Against overvoltage and undervoltage of the power supply
- Against unbalance or missing supply phases.

## Operating conditions

Standard voltage: 400 V  $\pm 10\%$  (380-415V) three-phase

Input voltage: 3~380V-10%  $\div$  3~480V+5%

Output voltage: 0  $\div$  100% of the input voltage

Input frequency: 50-60 Hz

Output frequency: up to 70 Hz

Protection: IP55

Max Ambient Temperature: 50°C

Altitude: no higher than 1000 m, inside closed environment.

## Construction

(standard execution)

The system comprises of:

- Frequency converter
- Removable control panel
- Power terminal board
- Signals terminal board
- Cable glands

### On request:

- Adapter for motor mounting
- Adapter for wall mounting
- Pressure and temperature transducer
- Main switch
- Line filter and output filter

## Type

Type (three-phase)	Frequency converter max current output A	Standard power motor 400V kW
I-MAT 5,2 TT-A	5,2	0,55 $\div$ 1,8
I-MAT 11,2 TT-B	11,2	2,2 $\div$ 4
I-MAT 25,8 TT-C	25,8	5,5 $\div$ 11

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## Operating modes



### Constant pressure mode

Constant pressure keeps the pressure constant at a fixed value set by the user. This value of pressure is automatically kept by the system to provide to the final user a constant pressure even with different water demand, within the maximum performance of the motor-pump system.



### Proportional pressure modes

Proportional pressure reduces the pressure of the pump (and as a consequence, the operating frequency) proportionally with the water demand of the system.



### Constant temperature mode

In this operating mode the system is used to keep the temperature at a constant value in a specified system point.



### Constant flow mode

Constant flow mode grants that system change the speed of the pump in order to keep constant the flow which pass inside a flow meter.



### Fixed speed mode

In this operating mode the system work as a fixed speed pump. The speed of the pump could be set by the user between a range of speeds, or controlled by an external signal.



### Night mode

The night mode is an optional mode which allows to reduce the speed of the pump if the temperature in the system decreases below a set value, this operating mode can be used with all operating modes over described.

## Control Panel



I-MAT is equipped with a control panel that allows to carry out the set-up of the system and to monitor all system parameters.

The control panel is inside a IP55 enclosure which is possible to rotate and install in remote positions.

It is possible use the control panel in remote positions by means a cable with M12 connectors (standard cable).

The LCD custom display gives an easy overview of the system situation and of the operating parameters.

The icons on the top and below the display area explain in which way i-MAT is working and if there are some problems on the system.

The 2 scroll buttons are used to scroll the different operating parameters that i-MAT can show. At the same time you can use the 2 scroll buttons to move in the set up menu and to change the different options.

**The 4 set-up buttons** are created to enter and to move on the set-up menus and to start and to stop the pump. The symbols help to understand the function of each button. With these 4 buttons and the 2 scroll buttons you can manage all the set-up and operating parameters without the use of another control panel or computers.

### Overview

#### Control panel

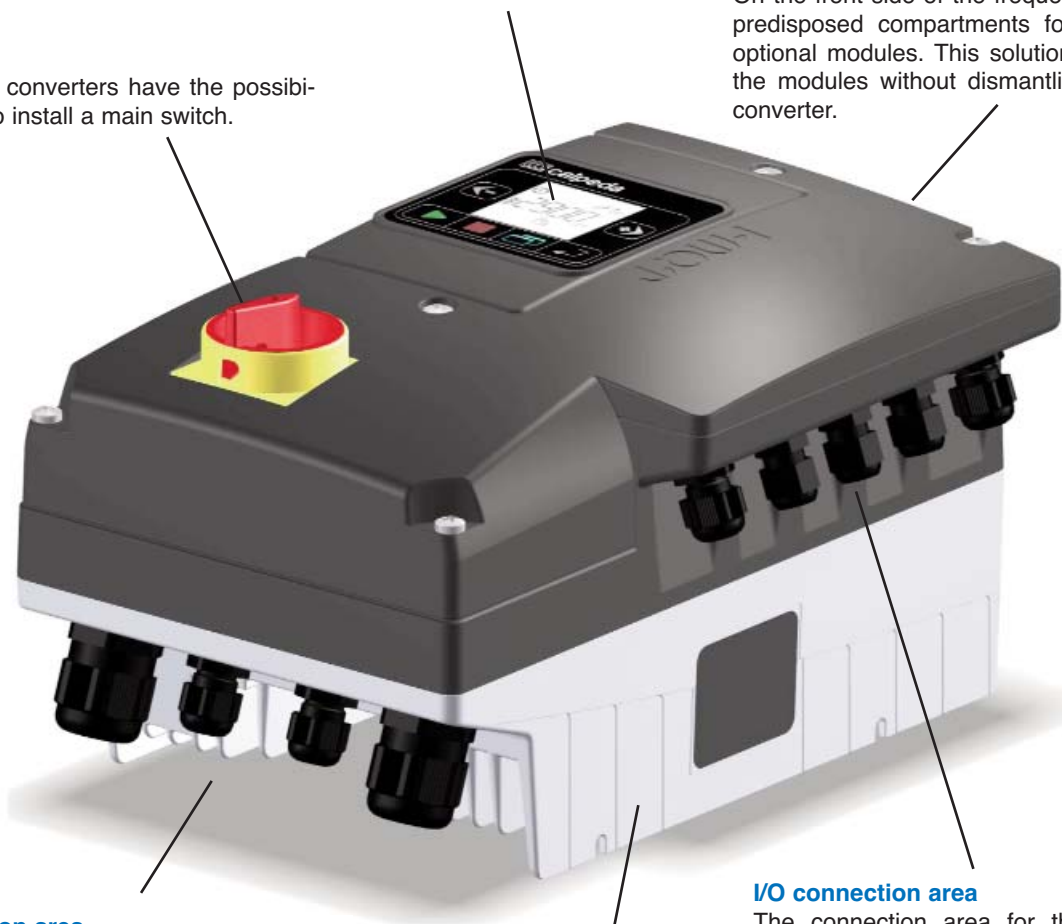
The integrated control panel gives the customer the possibility to set all the parameters of the frequency converter.

#### Optional modules

On the front side of the frequency converter are predisposed compartments for connecting the optional modules. This solution allows to install the modules without dismantling the frequency converter.

#### Main switch

The frequency converters have the possibility (optional) to install a main switch.



#### Power connection area

The connection area is protected by a safety cover, there are dedicated clamps to connect one PTC probe.

#### I/O connection area

The connection area for the input/outputs is separated from the power connection area, this solution allows to connect external.

#### Heatsink

The high efficiency heat sink cooled by fans guarantees a high reliability. The side connection system allows an easy connection with the motors.

**Installation example**

**One pump installation scheme**



MXH



NM



NR



MXV

**Two pumps installation scheme**



2MXH



2NM



2MXV