

Variatore di frequenza
Frequency converter
Variateur de fréquence
Variador de frecuencia
Frequenzumwandler
Регулятор частоты

EASYMAT 5MM

EASYMAT 8,5MM

EASYMAT 5MT

EASYMAT 7,5MT

ISTRUZIONI ORIGINALI PER L'USO
ORIGINAL OPERATING INSTRUCTIONS
INSTRUCTIONS ORIGINALES POUR L'UTILISATION
INSTRUCCIONES ORIGINALES DE USO
ORIGINAL BETRIEBSANLEITUNG
ОРИГИНАЛЬНЫЕ ИНСТРУКЦИИ ПО ЭКСПЛУАТАЦИИ

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CE

Frequency converter

EASYMAT 5MM

EASYMAT 8,5MM

EASYMAT 5MT

EASYMAT 7,5MT

OPERATING INSTRUCTIONS

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1. Introduction

We strongly suggest that the operator carefully reads and follows the information contained in this instruction manual for the frequency converter.

Symbol used:



This symbol indicates **high voltage hazard**. It draws attention to components or procedures that could represent a potential danger to the health and welfare of the operator.



This symbol is used to draw the operator's attention to situations of potential danger for people or for operations that could cause damage to the product.



The maximum output frequency must not exceed the design frequency of the pump being controlled. Operating at a frequency higher than the allowable frequency can cause higher current absorption and damage to the device.



If it is necessary to remove the frequency converter, remove only the covers required in order to disconnect the electrical cables. Take care not to damage the electronic cards.



Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but also invalidates every right to assistance under warranty.

2. Special warnings regarding the frequency converter



We strongly suggest that the operator carefully reads and follows the information contained in this instruction manual for the frequency converter.



The FREQUENCY CONVERTER should NEVER be opened or tampered with and guards that come with it should never be removed.



The frequency converter must be installed, adjusted and maintained by qualified personnel who understand the risks involved.



The frequency converter must be fitted with voltage surge and overload protection devices, in accordance with the prevailing safety standards.



The connection of the alarms can distribute power even when the frequency converter is turned off. Ensure that there is no residual voltage on the terminals of the alarms.



All the power terminals and other terminals must be inaccessible after installation is completed.

Electro-magnetic compatibility.

The frequency converter is constructed in compliance with European standard 2004/108CE.

Responsibility:

The manufacturer is not liable for malfunctioning if the product has not correctly been installed, damaged, modified, and/or run outside the recommended work range or not in accordance with other indications given in this manual.

The Manufacturer declines all responsibility for possible errors in this instructions manual, if due to misprint or error in copying.

The Manufacturer reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

The responsibility of the manufacturer is limited to the product and excludes costs or greater damage caused by incorrect installation.

3. Types

Type (single-phase)	Frequency converter max current output A	Standard power V230 motor kW
Easymat 5MM	5	0,37 - 0,55
Easymat 8,5MM	8,5	0,75 - 1,1

Type (three-phase)	Frequency converter max current output A	Standard power V230 motor kW
Easymat 5MT	5	0,75 - 1,1
Easymat 7,5MT	7,5	1,5

4. Operating conditions

(Standard execution)

The electrical panel functions correctly under the following power and installation characteristics:

- Power fluctuation: +/-10% max
- Frequency fluctuations: +/- 4 % max
- Ambient temperature: -10 °C a + 40 °C
- Relative humidity: from 20% to 90% without condensation
- Vibration: max 5,9 m/s² (0,6 g) to 10-55 Hz
- Altitude: no higher than 1000 m, inside a closed environment.
- Max liquid temperature:
 - 50 °C EASYMAT 5MM and 5MT,
 - 40 °C EASYMAT 8,5MM and 7,5MT
- Minimum delivery: 16 l/min



The current distributed by the frequency converter must be equal to or lower than the maximum current absorbed by the motor to control.

5. Construction

(Standard execution)

The system is composed of:

- Frequency converter.
- Pressure transducer.
- Pipe housings.
- Fixing screws.
- Terminal board.
- Cable glands.
- Multi-hole gaskets.

5.1. Technical features

Power supply interface: 230V ± 10%

Protection: IP55

Display: LCD Display

Keyboard: 6 buttons

Digital inputs: - float switch for dry-running protection
 - tank fill float switch
 - safety pressure switch

Analogue inputs: pressure transducer 4-20 mA

Digital outputs: general alarm, the display shows the type of alarm (see paragraphs 7.6. and 9.3.)

Connectivity: RS485

Protections: - dry-running protection
 - over-current
 - over-heating
 - under-voltage and over-voltage
 - short-circuit protection on the motor phase

5.2. Pushbuttons functions



Through this button you can start the pump.



Through this button you can stop the pump.



Through this button you have access to frequency converter programming parameters. If you already are on the programming function, by pushing this button you go up on the menù.



Through this button you have access to frequency converter programming parameters. If you have changed a parameters, by pushing this button you can confirm the indicated value.

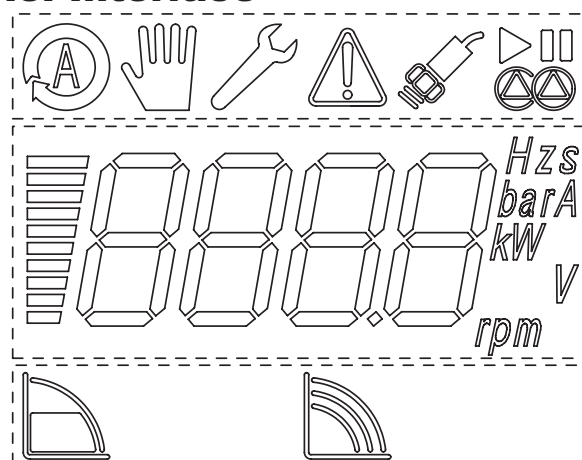


Through this button you can increase parameters or to change the visualized parameter.



Through this button you can decrease parameters or to change the visualized parameter.

5.3. Interface



4.93.409.1

The graphic interface of the display is divided in three visualization areas: - system icons
 - display area
 - operating icons

5.3.1. System icons



AUTO MODE

The system is operating in auto mode.




MANUAL MODE

The system is operating in manual mode.



SET-UP MODE ACTIVATED

It shows that the set-up menu is activated. When a icon is blinking you are modifying a parameter. You can confirm with  enter.



ALARM

It indicates that there is a fault on the system, the error number appears on the display area. When you are on the set-up mode the alarm icon will not appear



SENSOR STATE

It indicates that the system is connected with the pressure transducer; if it is blinking there is a fault on the pressure transducer.



PUMP STATE

It indicates if the pump is running or in stand-by state.



CASCADE MODE

It indicates that the cascade control mode is working. The 2 upper symbols show if the pump is running or if the pump is in stand-by. The lower symbol informs if the pump is the master (lighted icon) or slave (blinking icon).

5.3.2. Display area

It is composed from an incremental bar proportional with the displayed value and its measure unit
The display is backlit, the light will be turn off after 20s of system inactivity.

5.3.3. Operating icons



Constant pressure mode

The system keeps the pressure constant when the quantity of water requested by the user changes.



Fixed speed mode

The system works at a fixed speed that user can choose according to need.

5.4. Submersible pumps applications or long cables

To operate a submerged pump (or surface pump), where the distance from the inverter is more than 10 m, see paragraph 18.



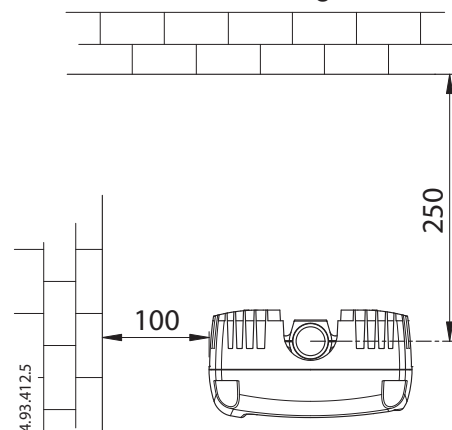
Submersible motor must operate with a frequency between 30 Hz (minimum operating frequency) and 50 Hz (maximum frequency) for 50 Hz motors, and between 30 and 60 Hz for 60 Hz motors.



The running up time from 0 to 30 Hz and the running down time from 30 Hz and 0, must be as short as possible, according to the motor power to operate.

6. Installation

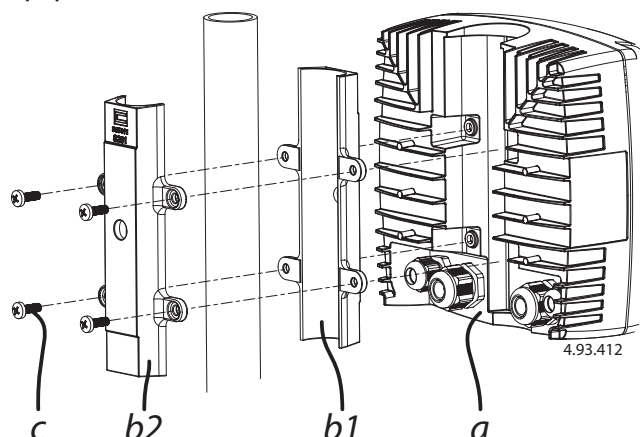
For easy assembling and disassembling of the frequency converter we recommend to respect the minimum distances as show in figure herebelow.



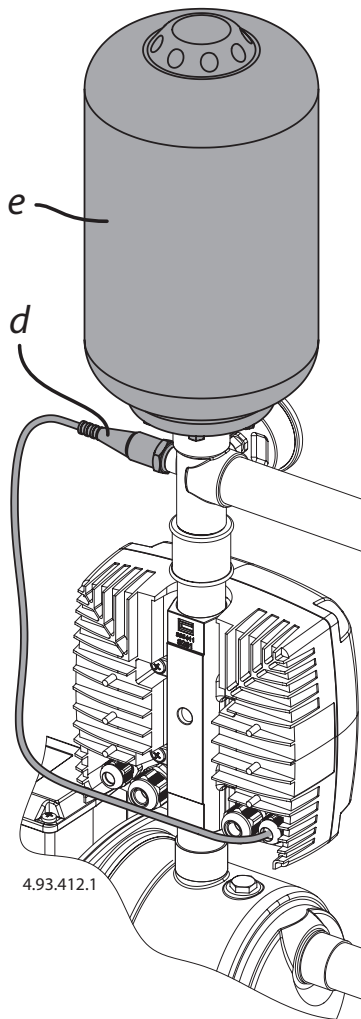
In case of reduced distances connect the frequency converter with the proper unions (see paragraph 16.3.).

Do not install the control panel in places exposed to direct sunlight or near sources of heat.

Fasten the heatsink (a) to the pipe by means of the pipe housings (b1-b2) and the screws (c) in equipment.



The pressure transducer (*d*) must be installed on the system. We always advise the installation of a small accumulator (*e*) (8 ltrs minimum) on the pump delivery side.



7. Electrical connection



Electrical connection must be carried out by a qualified electrician in accordance with local regulations.

Follow all safety standards.

The unit must be properly earthed (grounded).

Follow the instructions in the wiring diagram attached.



Once the electrical connection has been completed, remove any pieces of wire, sheath, washers or any other foreign bodies that may be found inside the frequency converter.



For the electrical connections on both the terminal board and the motor use cable with a maximum section of 2,5mm². We also advise the use of insulated pin terminals.



Bad connections may damage the electronic circuit.

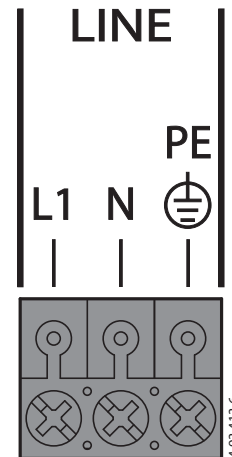
7.1. Power supply line

Power supply line must comply with the provisions under paragraph 4.



If a differential protection is necessary, install a type **A differential switch**, protected against untimely activation and with threshold of intervention of 30 mA.

Electrical connection



7.2. Motor connection

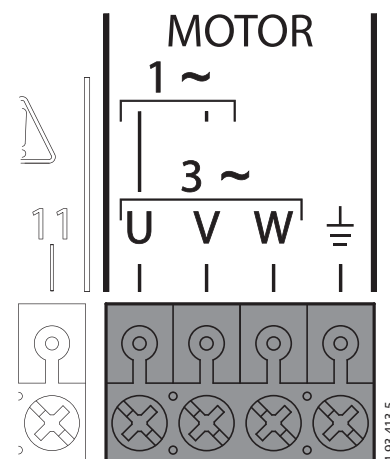
The power supply line of the electrical motor must be connected directly to the output terminal of the inverter.



To comply with the standards of electromagnetic compatibility, use a shielded three-pole cable (for MM models) or a shielded four-pole cable (for MT models) with external protection sheath.

The power supply line of the motor must never run parallel to the power line of the electrical panel.

Electrical connection



7.3. Pressure transducer

The pressure transducer is an analogical instrument with an output signal of 4-20 mA that continuously reads the pressure in a system.

Features:

Standards: EN 50081-1, EN 50082-2.

Voltage: 8-28 V

Pressure range: 0-6; 0-10; 0-16 bar

Output: 4-20 mA

Working temperature: da 0 a +50 °C

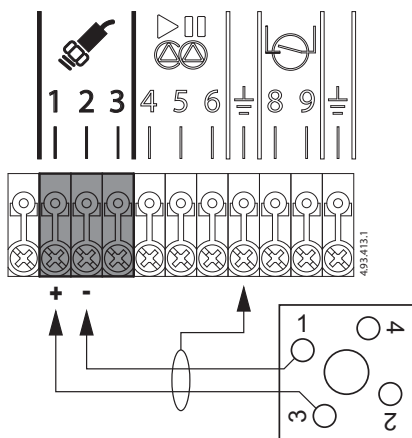
Protection: IP 65

Hydraulic connection : G 1/4 male

Weight: ~ 60 g



Electrical connection



Pressure transducer terminal box supplied by us

7.4. Cascade mode


The EASYMAT frequency converters are prearranged for use in pressure boosting sets with up to 2 pumps in the following versions:

- Pressure boosting sets with 2 variable speed pumps
- Pressure boosting sets with 1 variable speed pump and 1 fixed speed pump (single-phase)

7.4.1. Cascade mode installation

Connect the frequency converters on the delivery pipes of the pumps, the installation must comply with the provisions under paragraph 6.

Connect the pressure transducer to the delivery manifold of the pressure boosting sets.

 It is advised to install the pressure transducers on the same point of the delivery manifold and complete the installation with a pressure gauge.

7.4.2. Cascade mode electrical connection

Connect the supply cables to the motors and to the power supply following the instructions under paragraph 7. The power supply must comply the provisions of the paragraph 4.

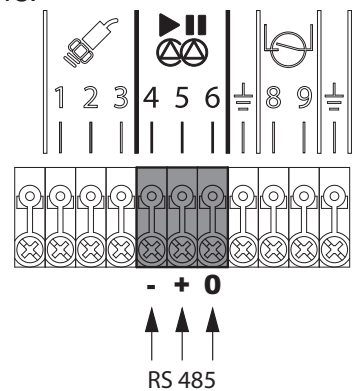


The connection with the power supply must be made with interpositions of magnetothermal bipolar switches (one for each frequency converter) with proper size and with a type A differential switch protected against untimely activation and with threshold intervention of 30 mA.

7.4.3. Cascade connection with 2 variable speed pumps

Electrical connection

By means a proper cable make the connection of the clamps number 4-5-6 of both frequency converters.



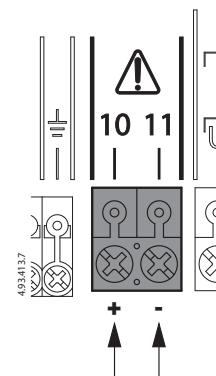
Check the correct connection sequence and check that terminals of each cable are connected on the clamp with same number.



To comply with the standards of electromagnetic compatibility, for cable length greater than 1 meter, it is recommend the use of a shielded cable with protection sheath connected on the ground of both frequency converters.

7.4.4. Cascade connection with 1 variable speed pump and 1 fixed speed pump

Connect the clamps 10-11 with a contactor with max.250 Vac and 450 mA maximum resistive current, connect to the contactor the power supply cable and the motor cable of the fixed speed pump.





The connection with the power supply must be made with interpositions of magnetothermal bipolar switches with proper size and with a type A differential switch protected against untimely activation and with threshold of intervention of 30 mA.



The use of the cascade mode with 1 fixed speed pump not allow connection of a remote alarm or a control panel remote alarm RA100.

7.4.5. Cascade mode programming

Pressure boosting sets with 2 variable speed pumps.

After the connection, change the AP09 parameter from OFF to UU for both frequency converters, define which frequency converter will work on master mode and for this frequency converter change the AP10 parameter from SLA (slave) to MAS (master).

Pressure boosting sets with 1 variable speed pump and 1 fixed speed pump (single-phase).

After the connection, change the AP09 parameter from OFF to UF for the frequency converter.

7.4.6. Cascade mode plant starting

Check that all the cascade mode parameters are with the desired values, the parameters that can change the cascade mode operation are:

AP16	Cascade mode start fall pressure set-up
AP17	Cascade mode restart delay
AP18	Cascade mode fall pressure limit set-up

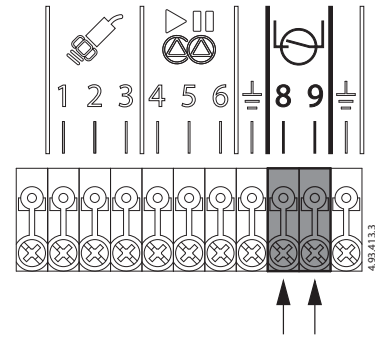
To do the plant starting follow the instructions under paragraph 12.

7.5. Float switch connection

To connect a float-switch connect to the connections 8-9 the cables of the float switch. The float switch can be used for:

- dry-running protection, AP12 parameter set on 1 value (nO),

Electrical connection



The provisions are referred to two wires float switch in NC configuration.

7.6. Remote alarm connection



To connect a remote alarm connect to the connections 10-11 the possible remote alarm or the control panel for remote alarm RA100.

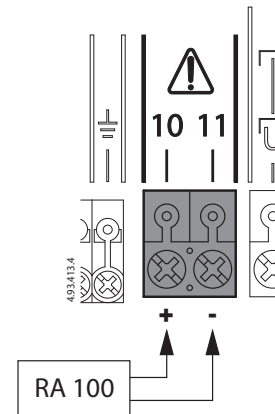
The remote alarm can be used to signal:

- error on the frequency converter (see paragraph 9.3.) (nO).
- the frequency converter is running (nC).



Operating limits: 250 Vac, 450 mA maximum resistive current.

Electrical connection



8. Dry-running protection

The frequency converter is equipped with a dry-running protection for the pumps. When the pressure on the system remain for a time higher than the dry-run time (AP05) lower than value of the dry-run pressure (AP07) the protection system stop the pump. It is possible the use of an external float switch for the dry-running protection (see paragraph 7.5.). In this case the pumps restart when the minimum working level is reached.

9. Parameters



On the frequency converter the following informations are displayed:

- Parameters of pump status.
- Programming parameters.
- Alarms.

9.1. Parameters of pump status

They allow to visualize:

- the modulation frequency of the pump (basic display).
- the pressure of the system.
- the line absorbed current.

Starting from the basic display by pushing of the directional arrow  (plus) or  (minus) the other parameters are displayed.

Example:



9.2. Programming parameters

To display the programming parameters, select



(menu).

Will be displayed progressively:

UP - User settings: these are the basis settings that user can change.

AP - Advanced settings: these settings are available only to qualified personnel. To enter password is required (see paragraph 10.1.).



SA - Technical assistance settings: these are the advanced parameters, only technical assistance personnel are allowed to access this menu. Password is required (see paragraph 10.1.).



MAN - Fixed speed mode activation: this allows activation of the fixed speed mode and the working frequency. Only qualified personnel are allowed to access this menu. Password is required (see paragraph 10.1.).

AE - Advanced parameters: this allows for the display of secondary parameters which can be useful for system diagnostics.

AE01	Software release
AE02	Supply voltage (V)
AE03	Last 5 faults

Supply voltage visualization example.

By pushing the  button (menu) the UP parameter appears. Select the AE parameter by pushing the  (plus) up to arrive at the correct

parameter , confirm with  (enter).

Select the parameter  by pushing the button  (plus) and confirm with  (enter). Supply voltage is displayed.

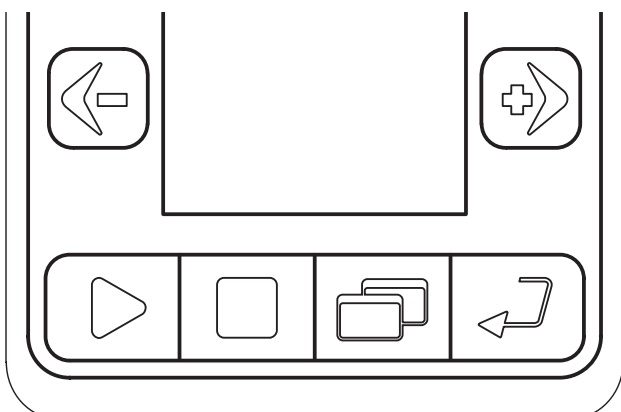
9.2.1. UP – User settings

N°	Description	Standard	Modifications	Note
UP01	restart mode power failure [rA = automatic; rM = manual]	rA		
UP02	Nominal pump current (A)	0,1		
UP03	Nominal pump frequency (Hz)	50		
UP04	Direction of rotation [E--- = std rotation; ---E= inverted rotation]	E---		
UP05	Set point pressure (bar)	1,5		

9.2.2. AP – Advanced settings

To enter password is required (see paragraph 10.1.)

N°	Description	Standard	Modifications	Note
AP01	Pressure transducer set-up (bar) [sensor full-scale]	10		
AP02	Ramp down (s)	3		
AP03	Ramp-up (s) (fixed value for MM)	2 MT 0 MM		
AP04	Time before stop (s)	30		
AP05	Dry-run time (s)	10		
AP06	First dry-run time (s)	60		
AP07	Dry-run pressure (bar)	1,5		
AP08	System dynamic [1 = fast dynamic; 5 = slow dynamic]	3		
AP09	Cascade mode [oFF; UU = cascade mode with double inverter; UF = cascade mode with an inverter]	oFF		
AP10	Master/Slave setting MAS = master; SLA = slave	SLA		
AP11	Reset to factory set-up			
AP12	Digital input activation [0 = oFF; 1 = no; 2 = nC]	1		
AP13	Digital output activation [0 = oFF; 1 = on; 2 = no; 3 = nC]	0		
AP14	Restart fall pressure set-up (bar)			
AP15	Pump address	0		
AP16	Cascade mode start fall pressure set-up (bar)	0,3		
AP17	Cascade mode restart delay (s)	10		
AP18	Cascade mode fall pressure limit set-up (bar)	0,6		



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9.2.3. SA – Technical assistance settings

To enter password is required (see paragraph 10.1.)

N°	Description	Standard	Modifications	Note
SA01	Restore attempt number	6		
SA02	Attempt time (s)	60		
SA03	Pressure PID (Proportional gain)	2,8		
SA04	Pressure PID (Integral time constant)	5,5		
SA05	Pressure PID (Derivative time constant)	5,0		
SA06	Min. run frequency (Hz)	30		
SA07	Max frequency (Hz)	60		
SA08	Set point pressure step up (bar)	0,3		
SA09	Pressure step up time (s)	3		
SA10	Pressure step up ramp (bar/s)	0,3		
SA11	Set point control ramp (bar/s)	0,4		
SA12	Carrier frequency	7010		
SA13	Singlephase starting frequency (Hz)	80		

9.2.4. MAn – Fixed speed mode activation

To enter password is required (see paragraph 10.1.)

N°	Description	Standard	Modifications	Note
MAn1	Fixed speed mode activation	oFF		
MAn2	Working frequency (Hz) [MAn2 ≤ UP03]	45		

9.3. Alarms












N°	Displayed alarm	Causes
Er01	Blockage due to no water	The device is in failure due to no water. The system try to restart automatically. - One attempt every 10 minutes for 6 times. - One attempt every hour for 24 times. - One attempt every 24hours for 30 times.
Er02	Pressure transducer fault	Not connected cable, broken connection, pressure transducer spoiled.
Er03	Blockage due to low supply voltage	Supply voltage lower than 190V. - The system automatically restart when the clamp voltage is higher than 190V.
Er04	Blockage due to high rectified voltage	Supply voltage higher than 250V. - The system automatically restart when the clamp voltage is lower than 250V.
Er05	Blockage due to missed setting of the rated current or rated frequency	
Er06	Blockage due to overcurrent in the electro pump motor	
Er07	Blockage due to overcurrent in the frequency converter	
Er08	Blockage due to direct short circuit between the phases of output terminals	
Er09	Blockage due to overheating	
Er10	Blockage due to overheating of the power module	
Er11	Blockage due to low voltage 24 V	
Er12	Stop for float switch intervention	The system will restart after 30 s from the state variation of the float switch. The control panel for remote alarm not report this alarm.
Er13	Internal hardware error	Contact the technical assistance
Er14	Cascade mode communication error	Check the RS 485 connection or that both pumps are enabled.





In case of multiple fault, scroll with the buttons  (plus) or  (minus) to visualize the fault sequence.

In case of thermal block it is advised to check the causes that have created the problem before restart the pump operation.












10. Programming



To enter programming, select  (menu). Use the buttons  (plus) or  (minus) to move to the programming parameter to be modified and select  (enter) to confirm. Use the buttons  (plus) or  (minus) to move to the parameter to be modified and select  (enter) to confirm, with the buttons  (plus) or  (minus) increase or decrease the value. From this moment the set-up icon  start blinking until the value is confirmed with  (enter).

To exit the program, push  (menu) until when you arrive on the basic display. When you go in the set-up mode appear the icon .




Example of parameter variation.

In order to modify the set point pressure from 3.0 bars to a 2.8 bars:



select  (menu) and then with the buttons  (plus) or  (minus) until you move to programming parameter UP. Confirm with  (enter) and then with the buttons  (plus) or  (minus) move to the parameter UP05. Confirm with  (enter) and then with the buttons  (plus) or  (minus) change the value up to the desired value. From this moment the set-up icon  start blinking until the value is confirmed with  (enter).

To exit the program, push  (menu) until you arrive on the basic video, when you are out from the set-up mode the icon disappear .

10.1. PASSWORD insertion

To enter on a menu with password, four numbers appear on the display, the number to insert is blinking. By pushing buttons  (plus) or  (minus) you can change the blinking value. If you confirm with  (enter) the next number start blinking.

If the password is correct you can enter on the MENU, if the password is wrong the first number restart blinking.

To exit the program, push  (menu) until you arrive on the basic display, when you are out from the set-up mode the icon disappear .

password	value
user	1959
Technical assistance	contact the technical assistance

11. Parameters to check when starting up the unit

There are 4 programming parameters that need to be checked when the unit is started up:

• Parameter UP02 NOMINAL PUMP CURRENT

The nominal current of the pump must be set.



If the value input is inappropriate there is the risk of pump damage or to have an unexpected overcurrent alarm.

• Parameter UP03 NOMINAL PUMP FREQUENCY



The nominal frequency of the pump must be set.



If the value input is inappropriate there is the risk of higher current absorption or pump damage.

• Parameter UP05 SET POINT PRESSURE

The working pressure of the pump must be set.

If the value input is inappropriate for the needs of the system, the value can be increased or decreased using the  (plus) or  (minus) keys.



If during the first start-up of the unit, filling the system takes longer than 1 minute and the unit signals a dry-running alarm, Increase the parameter AP06, until the pressure rises above the set value and the pump remain on. (Make sure the pump are primed).

11.1. Vessel pressure



Once the new working pressure is entered, the tank pre-loaded pressure must be changed to be 2/3 of the working pressure (i.e. 4 bar working pressure, tanks to be pre-loaded at 2.7 bar).

12. Plant starting



ATTENTION: never run the pump dry not even for a short trial run. Start the pump after filling completely with liquid.

After completing hydraulic and electrical connection and checked the preloaded pressure (for booster set with membrane tank), start the plant as indicated below:

Prime the pumps (see the pumps instructions).

Pump with suction lift:

- Fill the suction pipe and the pump body by means of the plug hole located close to the delivery port of the pump.
- Fill the suction tube by pouring water through the plug hole on the suction manifold of the pump.

Pump with positive suction head:


- Open the gate-valve in the suction pipeline. With sufficient head, the water will overcome the resistance of the non-return valve fitted in the suction side of the pump and will fill the pump body. Otherwise, prime the pump with the plug hole near the delivery port.



Never run the pump for more than five minutes with closed gate valve.

Starting pump


When the frequency converter is switched on, the pump are not operating and on the screen appears OFF.

Press the button  (play) to change the pump status from STOP to run. The pump starts up with the acceleration ramp set to reach the wished pressure.












When the motor starts turning, check the direction of rotation.

If the pump has been primed correctly, after a few seconds the pressure will begin to increase on the display.

If, after a few seconds, operation the pressure remains at 0.0, stop the pump by selecting  (stop) as priming has not been carried out correctly and the pump is idling. Re-prime the pump and repeat the starting up procedure.

12.1. Inversion of the direction of rotation

To change the direction of rotation of the motor, push the button  (menù) and then with the button  (plus) move up to the programming parameter UP. Confirm with  (enter) and with the button  (plus) move up to the parameter UP04, confirm with enter  (enter) and by pushing of the button  (plus) change the value, confirm with  (enter). To exit the program, push  (menù) until you arrive on the basic display, when you are out from the set-up mode the icon disappear .

13. Operations

The frequency converter is programmed to manage the automatic operation of 1 or 2 pumps, all at variable speed.


Depending on user consumption, the pumps start to guarantee the amount of water necessary at the set pressure.




When one pump has reached 50 Hz and water requirements increase, the second pump will begin operations.

The pumps are protected against:

- operation when dry, by means of a floating switch and level sensor,
- over/under voltage (frequency converter),
- thermal overload (frequency converter).

13.1. Quick set point modification

If the frequency converter is operating in constant pressure mode it is possible to change the set point pressure without enter on the user parameter (UP menu). Pushing the button  (enter) for more than 5 seconds you will enter directly to the set point pressure (UP05 parameter).

By pushing of the buttons  (plus) or  (minus) change the pressure value and confirm with  (enter).

By pushing of the button (menu) the system will return to the basic display (see paragraph 9.1.).

14. Use of megaohmmeter

Megging of an installation incorporating the frequency converter is not allowed, because the electronics may be damaged. If megging is necessary, disconnect the frequency converter and use the megaohmmeter directly on the terminal box of the pump.

15. Maintenance



Inspect the tank pre-loaded pressure of the delivery vessel periodically.

16. Accessories

16.1. RA 100

Control panel for remote alarm.

Dimensions: 110x150x70

Power supply: 220-230 V single-phase

Signals all pump assembly malfunctions detected:

- No water intake.
- Assembly malfunction.
- Converter failure.

5-Watt flashing red light plus 75 dB - 3600 Hz acoustic alarm, for use in areas of loud noise, positioned in such a way as to be visible from a distance.

The control panel is fitted to an energized panel led and an alarm reset pushbutton.



RA 100

16.2. Pipe housings kit

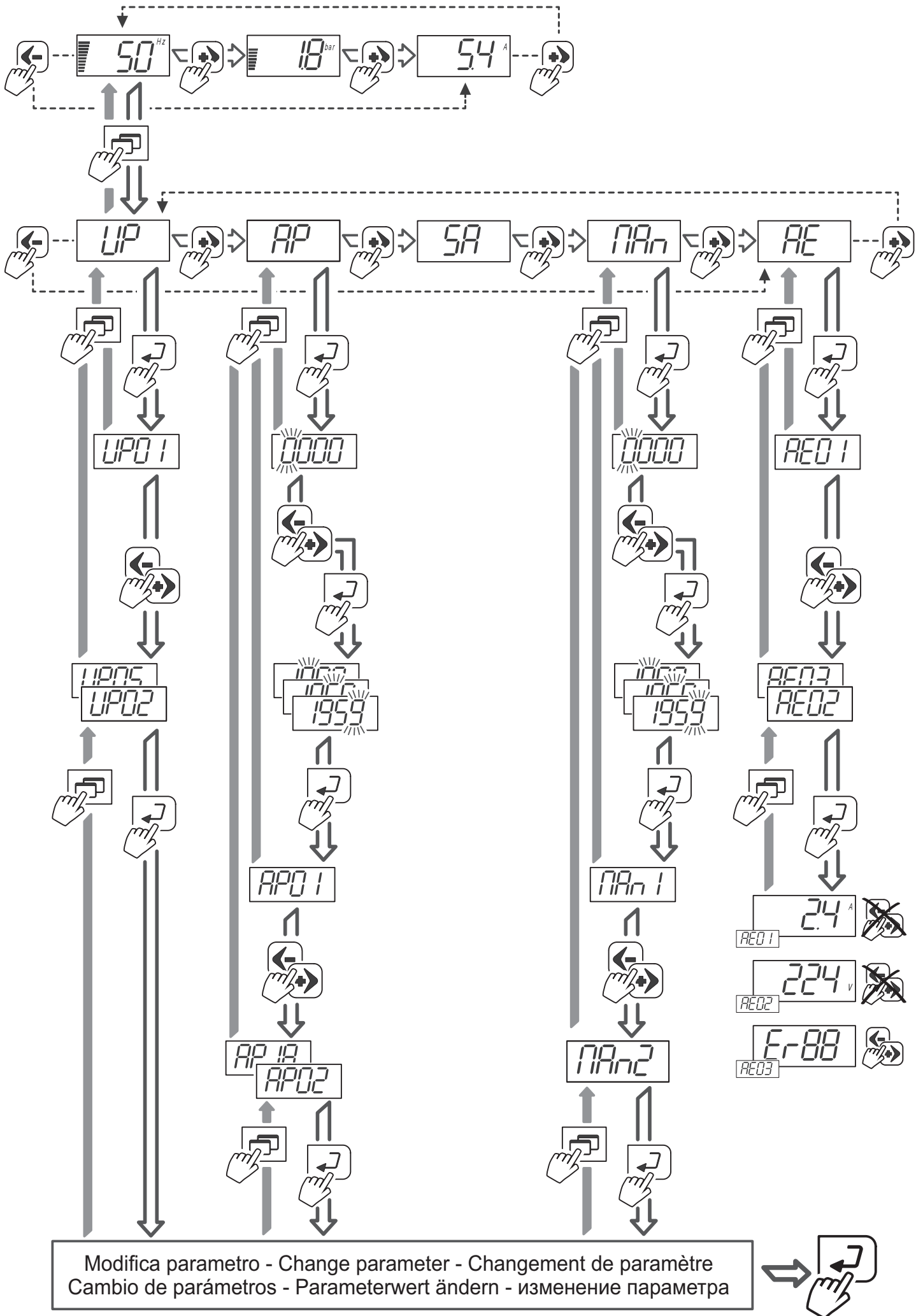
Pipe housings for G1, G1 1/4 and G1 1/2 pipes. For the G1 1/2 version of the EASYMAT it is required change the screws assembled on the heatsink with the screws provided with the G1 1/2 pipe housing kit.

16.3. Unions kit

Steel pipe with unions and pressure transducer arrangement.

17. Disposal

Observe the local regulations and dispose of any control gear accordingly. This product contains electrical and electronic components and should be disposed of accordingly.



18. Applicazione di EASYMAT con cavi motore di elevata lunghezza
High length cables EASYMAT applications
Application de l'EASYMAT avec câbles moteur de longueur élevée
Aplicación de EASYMAT con cables motor de longitud elevada
Anwendung von EASYMAT mit Motorkabeln hoher Länge
Применение EASYMAT с удлиненными кабелями для двигателя

18.1. Riduzione dei disturbi elettromagnetici emessi
Reduction of the electromagnetic noise emissions
Réduction des émissions de bruit électromagnétique
Reducción de las emisiones de ruidos electromagnéticos
Reduzierung elektromagnetischer ausgesendeter Störungen
Уменьшение электромагнитного шума

Cavo motore Motor cable Câble du moteur Cable motor Motorkabel Кабель двигателя	Installazione Installation Installation Instalación Installation Установка	Componenti aggiuntivi Additional components Composants supplémentaires Componentes adicionales Zusätzliche Komponenten Дополнительные компоненты
Cavo non schermato Not shielded cable Câble non blindé Cable sin blindaje Nicht abgeschirmtes Kabel Неэкранированный кабель	Fuori terra Out of ground Dessus du sol Por encima del suelo Oberirdisch На поверхности земли	-
Cavo non schermato Not shielded cable Câble non blindé Cable sin blindaje Nicht abgeschirmtes Kabel Неэкранированный кабель	Fuori terra Out of ground Dessus du sol Por encima del suelo Oberirdisch На поверхности земли	Ferrite tipo Kitagawa RFC-13 Ferrite type Kitagawa RFC-13 Ferrite type Kitagawa RFC-13 Ferrita tipo Kitagawa RFC-13 Ferrit Typ Kitagawa RFC-13 Ферриты типа Kitagawa RFC-13
Cavo non schermato Not shielded cable Câble non blindé Cable sin blindaje Nicht abgeschirmtes Kabel Неэкранированный кабель	In canalina metallica Inside steel pipe Dans tuyau métallique En conducto de metal In einem Metallkanal В металлической трубе	-
Cavo non schermato Not shielded cable Câble non blindé Cable sin blindaje Nicht abgeschirmtes Kabel Неэкранированный кабель	Interrato Inside the ground Sous-sol Sotano Unterirdisch Под землей	-
Cavo non schermato Not shielded cable Câble non blindé Cable sin blindaje Nicht abgeschirmtes Kabel Неэкранированный кабель	Fuori terra Out of ground Dessus du sol Por encima del suelo Oberirdisch На поверхности земли	Filtro sinusoidale Schaffner DB ZU FS5469-18-29 Sinusoidal filter Schaffner DB ZU FS5469-18-29 Filtre sinusoidal Schaffner DB ZU FS5469-18-29 Filtro sinusoidal Schaffner DB ZU FS5469-18-29 Sinusförmiger Filter Schaffner DB ZU FS5469-18-29 Синусоидальный фильтр DB ZU FS5469-18-29
Cavo schermato Shielded cable Câble blindé Cable blindado Abgeschirmtes Kabel Экранированный кабель	Fuori terra Out of ground Dessus du sol Por encima del suelo Oberirdisch На поверхности земли	-

Lunghezza massima Maximum length Longueur maximum Longitud máxima Höchstlänge Максимальная длина	Indicazioni Indications Indications Indicaciones Hinweise Показания
$\leq 2 \text{ m}$	
1 Ferrite ogni 5 metri di cavo 1 Ferrite every 5 meters of cable 1 Ferrite chaque 5 mètres de câble 1 Ferrita cada 5 metros de cable 1 Ferrit alle 5 Kabelmeter 1 феррит на каждые 5 м кабеля	Le ferriti possono essere montate anche in serie The ferrites can also be installed in series Les ferrites peuvent également être montés en série Las ferritas pueden tambien estar montadas en serie Die Ferrite können auch serienmäßig montiert werden Ферриты также может быть установлены в серии
Nessun limite di lunghezza No length limitations Pas de limite de longueur Ningún límite de longitud Kein Längenlimit Без ограничения длины	La canalina metallica deve essere collegata a terra The steel pipe must be hearth connected Le tuyau métallique doit être mis à la terre El conducto de metal debe estar conectado a tierra Der Metallkanal muss an der Erde angeschlossen sein Металлическая труба должна быть заземлена
Nessun limite di lunghezza No length limitations Pas de limite de longueur Ningún límite de longitud Kein Längenlimit Без ограничения длины	
Nessun limite di lunghezza No length limitations Pas de limite de longueur Ningún límite de longitud Kein Längenlimit Без ограничения длины	
$\leq 10 \text{ m}$	Il cavo deve avere una capacità inferiore a 5 KpF The cable must have a capacity lower than 5 KpF Le câble doit avoir une capacité inferieure à 5 KpF El cable debe tener una capacidad inferior a 5 KpF Das Kabel muss eine Kapazität von unter 5 KpF haben Кабель не должен превышать 5 KpF

18.2. Riduzione dei disturbi elettromagnetici irradiati al motore
Reduction of the electromagnetic irradiated noises to the motor
Réduction des bruits électromagnétiques irradiés dans le moteur
Reducción de las emisiones de ruidos electromagnéticos irradiados en el motor
Reduzierung elektromagnetischer am Motor ausgestrahlter Störungen
Сокращение электромагнитных помех излучаемых на двигатель

Cavo motore Motor cable Câble du moteur Cable motor Motorkabel Кабель двигателя	Installazione Installation Installation Instalación Installation Установка	Componenti aggiuntivi Additional components Composants supplémentaires Componentes adicionales Zusätzliche Komponenten Дополнительные компоненты
Tutti i tipi di cavo All cable types Tous les types de câbles Todos los tipos de cable Alle Kabeltypen Все типы кабелей	Tutte le installazioni All installations Tous les installations Todas las instalaciones Alle Installationen Все типы установок	Filtro induttivo Inductive filter Filtre inductif Filtro inductivo Induktivfilter Индуктивный фильтр
Tutti i tipi di cavo All cable types Tous les types de câbles Todos los tipos de cable Alle Kabeltypen Все типы кабелей	Tutte le installazioni All installations Tous les installations Todas las instalaciones Alle Installationen Все типы установок	Filtro sinusoidale Schaffner DB ZU FS5469-18-29 Sinusoidal filter Schaffner DB ZU FS5469-18-29 Filtre sinusoidal Schaffner DB ZU FS5469-18-29 Filtro sinusoidal Schaffner DB ZU FS5469-18-29 Sinusförmiger Filter Schaffner DB ZU FS5469-18-29 Синусоидальный фильтр DB ZU FS5469-18-29

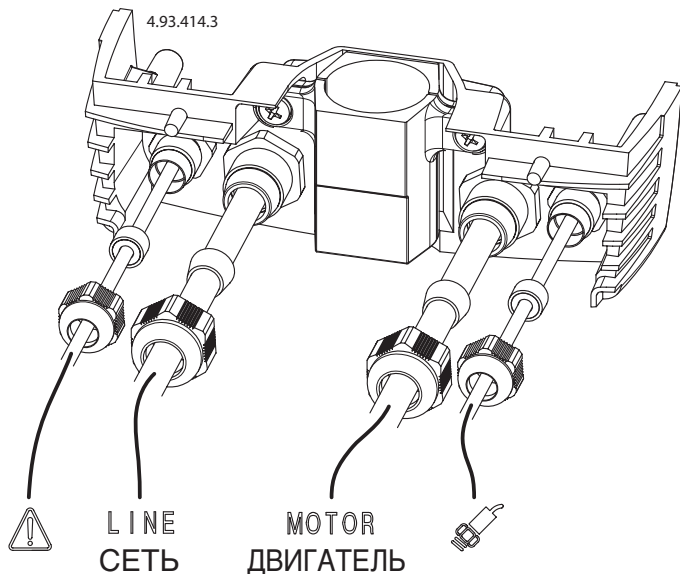
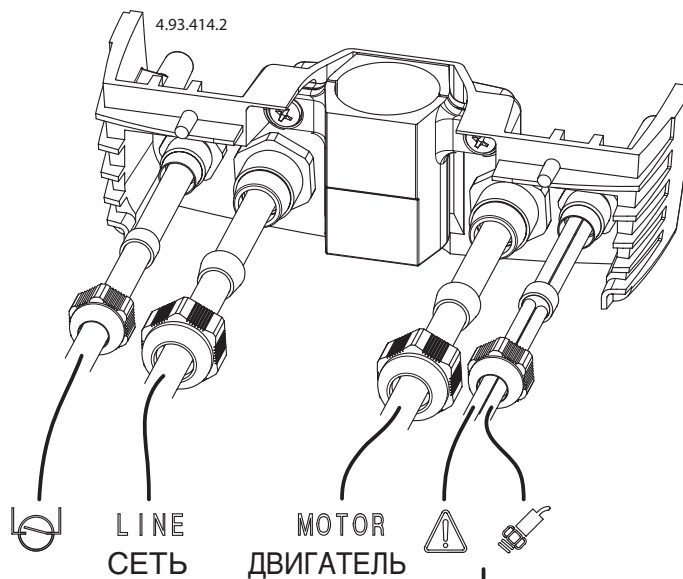
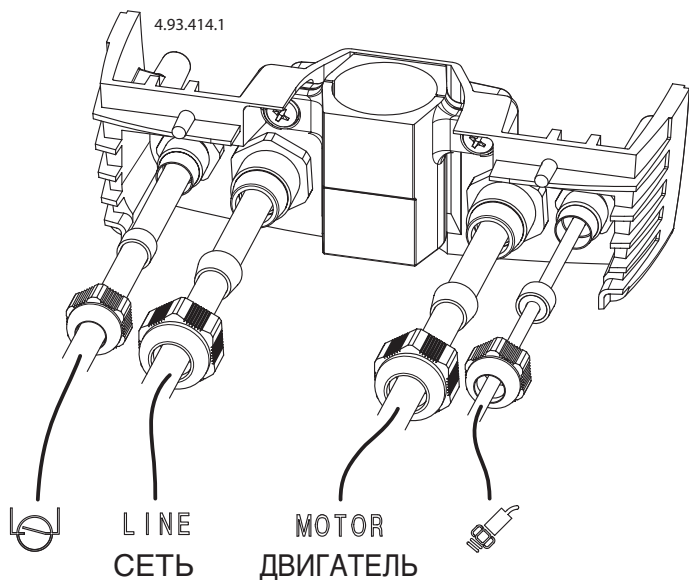
19. Applicazione di filtri EMC/RFI di linea su EASYMAT
Line filter EMC/RFI for EASYMAT applications
Application des filtres de ligne EMC/RFI avec l'EASYMAT
Aplicación de filtros de linea EMC/RFI con EASYMAT
Anwendung von EMC/RFI-Leitungsfiltern auf EASYMAT
Применение сетевых фильтров EMC / RFI для EASYMAT

EASYMAT	Tipologia di filtro Filter type Type de filtre Tipo de filtro Filtertyp Тип фильтра
EASYMAT 5MM EASYMAT 5MT EASYMAT 8,5MM EASYMAT 7.5MT	Filtro di linea EMC/RFI Schaffner FN 2410-25-33 Line filter EMC/RFI Schaffner FN 2410-25-33 Filtre de ligne EMC/RFI Schaffner FN 2410-25-33 Filtro de linea EMC/RFI Schaffner FN 2410-25-33 Leitungsfilter EMC/RFI Schaffner FN 2410-25-33 Сетевой фильтр EMC/RFI Schaffner FN 2410-25-33

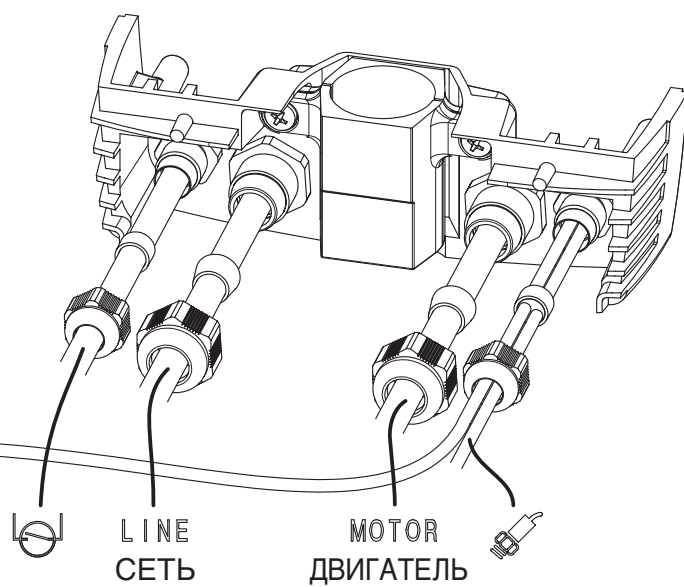
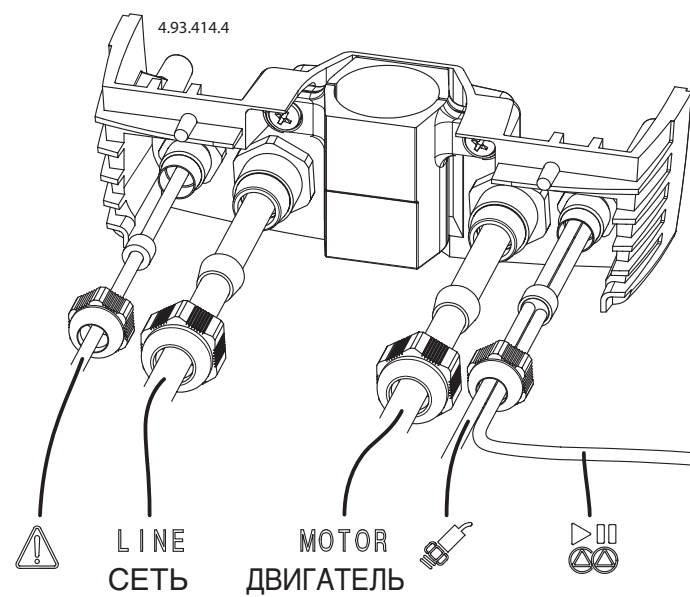
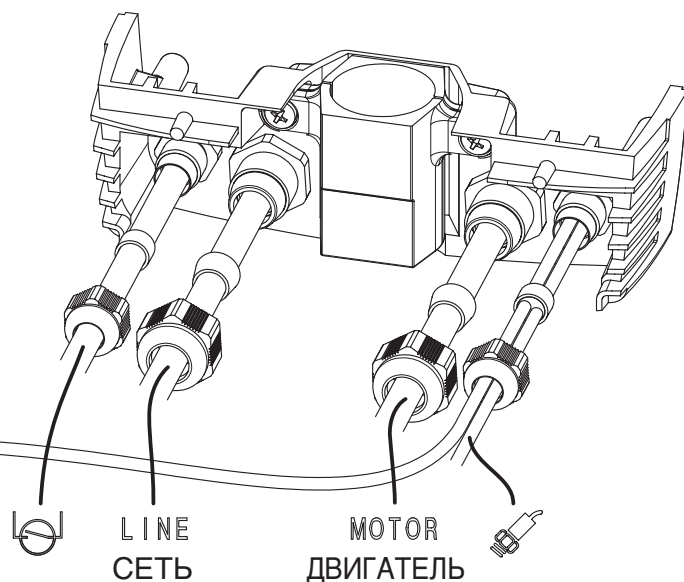
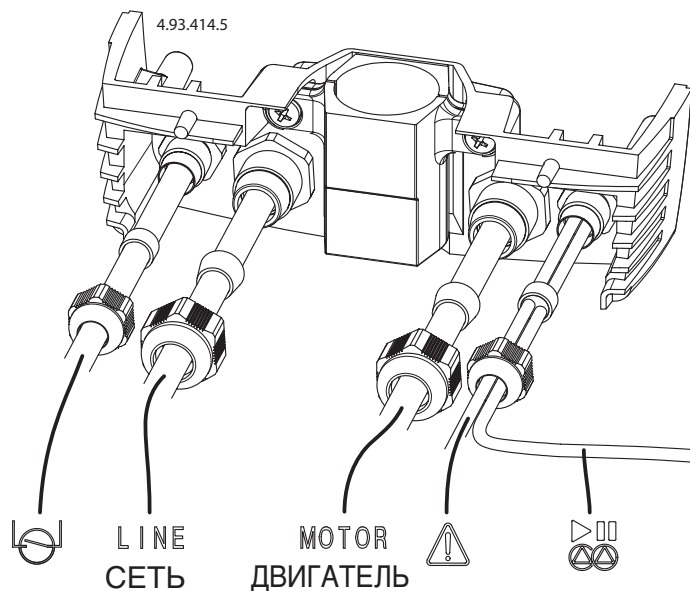
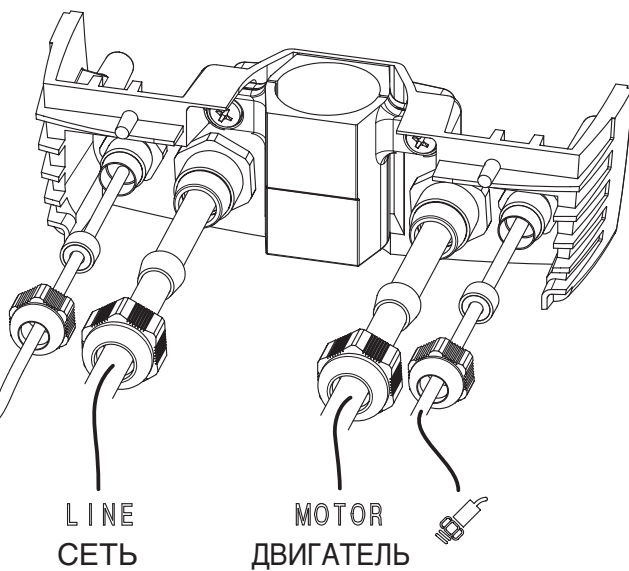
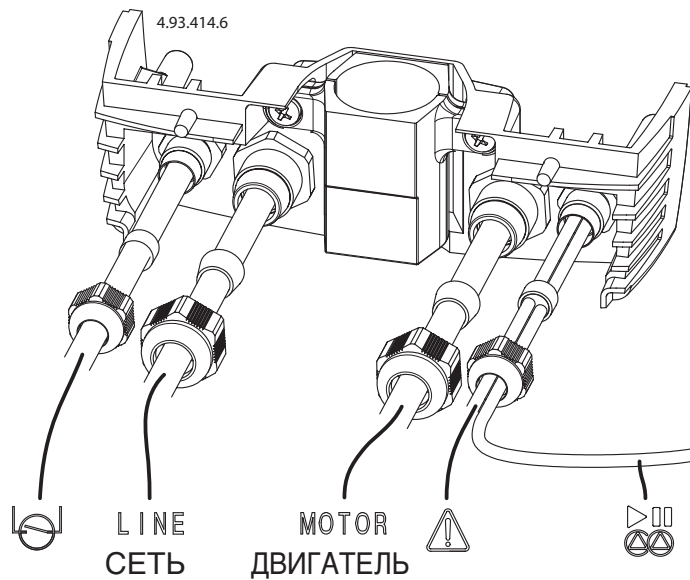
Lunghezza massima Maximum length Longueur maximum Longitud máxima Höchstlänge Максимальная длина	Indicazioni Indications Indications Indicaciones Hinweise Показания
Nessun limite di lunghezza No length limitations Pas de limite de longueur Ningún límite de longitud Kein Längenlimit Без ограничения длины	
Nessun limite di lunghezza No length limitations Pas de limite de longueur Ningún límite de longitud Kein Längenlimit Без ограничения длины	

Indicazioni Indications Indications Indicaciones Hinweise Показания
<p>Il filtro è in classe di protezione IP20, l'aumento del grado di protezione (qualora richiesto) è a cura dell'utente. The filter is in IP20 protection class, the user (if necessary) is responsible for the increasing of the protection. Le filtre est en classe de protection IP20, l'utilisateur est responsable d'augmenter la protection (si nécessaire). El filtro está en clase de protección IP 20, el usuario es responsable de aumentar el grado de protección (si es necesario). Der Filter hat die Schutzklasse IP20. Der Benutzer ist für die Erhöhung des Schutzgrades (falls notwendig) verantwortlich. Фильтр со степенью защиты IP20, увеличение степени защиты (при необходимости) выполняется пользователем.</p>

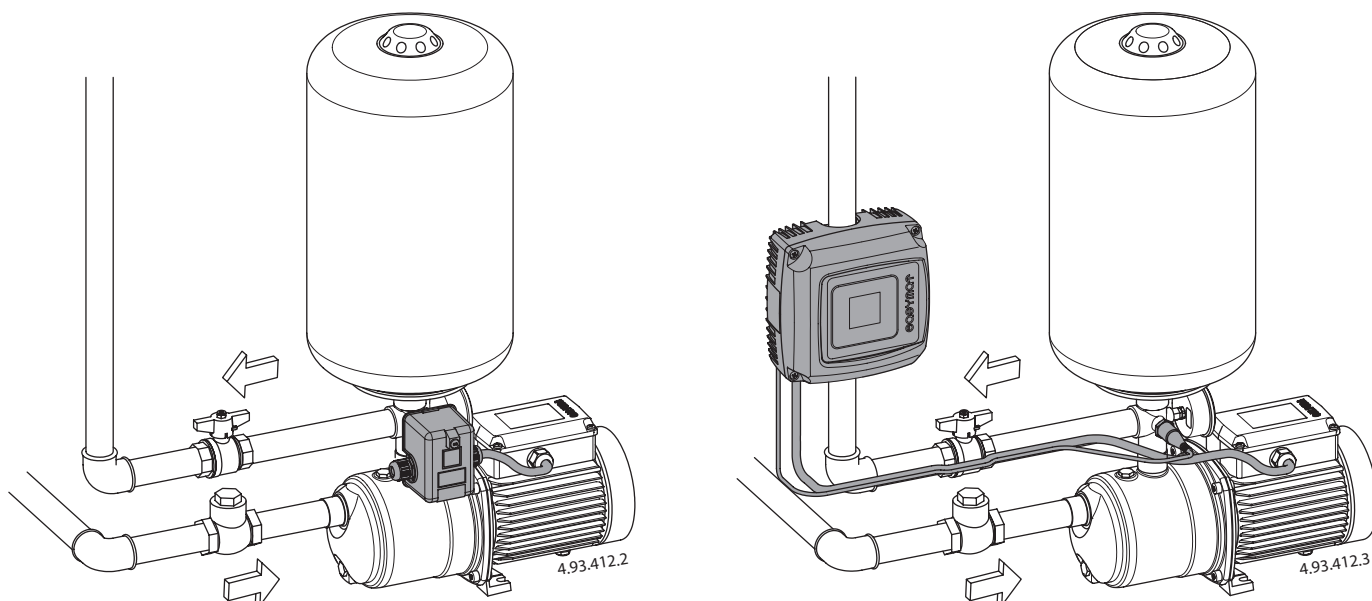
20. Schemi collegamento elettrico
Electrical connection scheme
Schémas du branchement électrique
Esquemas de conexión eléctrica
Schemata der elektrischen Anschlüsse
Электрические схемы



Max. \varnothing 4,5 mm
 макс \varnothing 4,5 мм

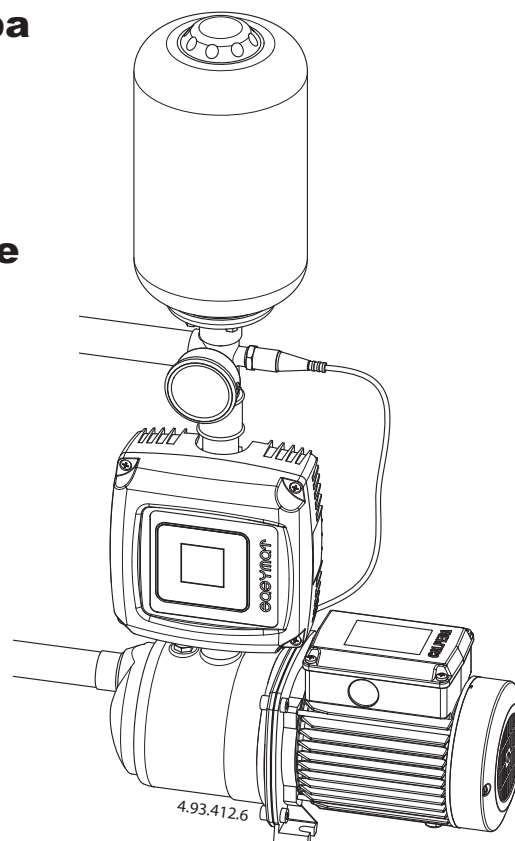


**21. Schema conversione impianto
Plant conversion scheme
Schéma de modification de l'installation
Esquema de conversión de la instalación
Konversionsschema der Anlage
Схема переоснастки системы**

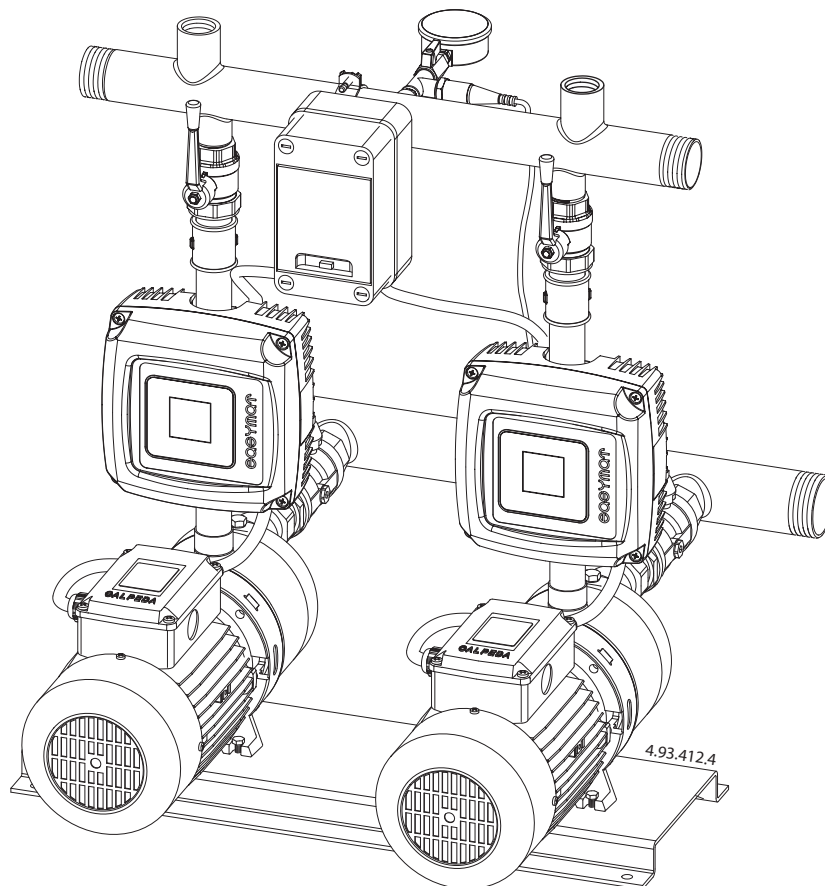


**22. Schema installazione pompa
Pump installation scheme
Schéma de l'installation de la pompe
Esquema de instalación de la bomba
Installationsschema der Pumpe
Схемы установки насоса**

**22.1. Schemi installazione ad 1 pompa
One pump installation scheme
Schémas de l'installation à 1 pompe
Esquema de instalación a 1 bomba
Installationsschema mit 1 Pumpe
Схема установки с 1 насосом**



22.2. Schemi installazione a 2 pompe
Two pump installation scheme
Schémas de l'installation à 2 pompes
Esquema de instalación a 2 bombas
Installationschema mit 2 Pumpen
Схема установки с 2 насосами



I**DICHIARAZIONE DI CONFORMITÀ**

Noi CALPEDA S.p.A. dichiariamo sotto la nostra esclusiva responsabilità che il variatore di frequenza, tipo e numero di serie riportati in targa, sono conformi a quanto prescritto dalle Direttive 2004/108/CE, 2006/95/CE, e dalle relative norme armonizzate CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11.

GB**DECLARATION OF CONFORMITY**

We CALPEDA S.p.A. declare that our frequency converter, with pump type and serial number as shown on the name plate, are constructed in accordance with Directives 2004/108/EC, 2006/95/EC, and assume full responsibility for conformity with the standards CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11.

F**DECLARATION DE CONFORMITE**

Nous, CALPEDA S.p.A., déclare sous sa seule responsabilité que le convertisseur de fréquence, type et numéro de série indiqués sur la plaque, sont conformes aux prescriptions des Directives 2004/108/CE, 2006/95/CE et des normes harmonisées correspondantes CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11.

E**DECLARACION DE CONFORMIDAD**

En CALPEDA S.p.A. declaramos bajo nuestra exclusiva responsabilidad que el convertidor de frecuencia, tipo y número de serie de la placa de nombre, son conformes a las disposiciones de las Directivas 2004/108/CE, 2006/95/CE y de la normas CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11.

D**KONFORMITÄTSEKTLÄRUNG**

Wir, das Unternehmen CALPEDA S.p.A., erklärt unter eigener Verantwortung, dass der Frequenzumwandler, Typ und Seriennummer auf dem Typenschild angegeben, mit den Vorschriften 2004/108/CE und 2006/95/CE sowie mit den harmonisierten Vorschriften CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11 übereinstimmen.

RU**Декларация соответствия**

Компания "Calpeda S.p.A." заявляет под свою исключительную ответственность, что регулятор частоты, тип и паспортный номер которого указаны на заводской табличке, отвечает требованиям Директив 2004/108/CE, 2006/95/CE и соответствующих унифицированных стандартов CE EN 55014-1, CE EN 55022, CE EN 61000-3-3, CE EN 61000-4-2, CE EN 61000-4-3, CE EN 61000-4-4, CE EN 61000-4-5, CE EN 61000-4-6, CE EN 61000-4-11.

Montorso Vicentino, 11.2011

Il Presidente

Licia Mettifogo

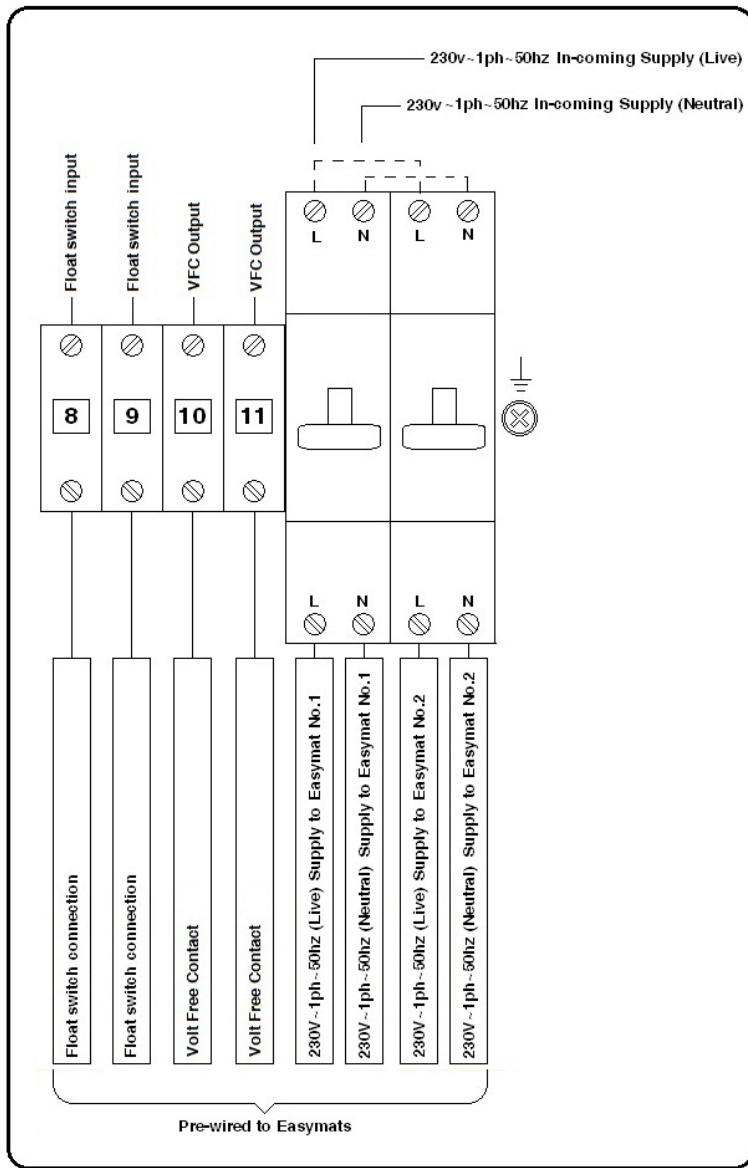
P 444.03
Con riserva di modifiche
Changes reserved
Modifications réservées
Con reserva de modificaciones
Änderungen vorbehalten
Возможны изменения

CE RoHS 

 **calpeda**[®]

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MCB Control Box Layout



Terminal layout for Easymat (2 no.) ~ Pre-wired.

