

DRYTEK 1 - User Manual

ELECTRICAL PANEL FOR 1 MOTOR WITH POWER FACTOR CONTROL

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1. INTRODUCTION

This manual must always accompany the relevant equipment and be conserved in an accessible location for consultation by qualified technicians assigned for operation and maintenance of the system.

The installer/user is strongly recommended to carefully read all instructions and information in this manual before using the product, in order to avoid damage or improper use of the unit, which would also render the warranty null and void.

Before operating the equipment, carefully read the manual and follow all instructions provided.

The information and instructions in this manual refer to the standard use of this product; in the event of special circumstances, functions or applications not described in this document, contact our service center for assistance.

If technical assistance or spare parts are required, when contacting the manufacturer always specify the identification code of the model and construction number as stated on the data plate.

Our service center is available for any requirement or clarification.

On receipt of the goods, inspect immediately to ensure that the equipment has not been damaged during transport. If defects are found, the client should promptly notify our retailer within 5 days of receiving the goods, or in the event of direct purchases, the producer service center.



N.B. the information provided in this manual is subject to modifications without notice. The manufacturer shall not be held liable for any damage caused in relation to the use of these instructions, as they are to be considered guideline only. Note that failure to observe the instructions provided in this manual may cause physical injury or damage to objects.

In any event all local and/or current legislation must be observed at all times.

2. WARNINGS



The electrical panel must be used exclusively for the purpose and function as specified in design. Any other application or use is to be considered improper and therefore hazardous.

In the event of a fire in the place of installation or the surrounding area, avoid the use of water jets and use the appropriate extinguishing equipment and means (powder, foam, carbon dioxide).

Install the equipment far from heat sources and in a dry and sheltered location in observance of the stated protection rating (IP).

The installation of a safety device is recommended to protect the panel power line in compliance with current electrical standards.

The electrical panel must be connected by a qualified electrician in observance of the relevant electrical standards.

No parts of the panel must be disassembled without the official authorization of the producer: any tampering with or modifications to the unit will render all terms of the warranty null and void.

All installation and/or maintenance operations must be performed by a specialized technician who is fully aware of the relevant current safety standards.

Ensure the installation is connected to an efficient earthing system.

After making the electrical connection, check that all electrical panel settings are correct to avoid automatic start-up of the electric pump.

The producer declines all liability in the event of the following:

- Incorrect installation;
- Use by personnel not adequately trained in the correct use of the panel;
- Serious failure to perform scheduled maintenance;
- Use of non-original spare parts or parts not specific to the model;
- Unauthorized modifications or interventions;
- Partial or total failure to observe instructions.

3. GENERAL DESCRIPTION

- Power supply 1 ~ 50/60Hz 230V±15% (DRYTEK 1-Single);
- Power supply 3 ~ 50/60Hz 400V±15% (DRYTEK 1-Three);
- C/I1 normally open input for start-up command;
- Buttons for function selection and programming;
- Buttons AUTOMATIC-0-MANUAL (spring return);
- Display for values: Volts, Amperes, Cos ϕ of motor and alarms;
- Green led: motor active;
- Adjustable electronic motor overload control;
- Motor control on 2 phases;
- Motor current overload protection (adjustable);
- Protection of sequence/phase
- Protection of minimum/maximum voltage (adjustable);
- Protection against dry running (adjustable power factor);
- Automatic reset from dry running status with 4 separate programmable times, from 0 to 240 minutes (also possible cyclical);
- Protection of aux. circuits and motor with fuses;
- Alarm output (NC-C-NO resistive load - 5A / 250V);
- Door lock general disconnect switch;
- Provision for start-up capacitor for single-phase (not included);
- Box in ABS, IP55;
- Ambient temperature: -5/+40 °C;
- Relative humidity 50% at 40 °C (condensate free).

4. INSTALLATION

Ensure that the mains power supply specifications correspond to the voltage specified on the data plate of the electrical panel and motor connected, then make the earthing connection before all other connections.

| | | |
|---------------|---|----------------------|
| DRYTEK 1 Mono | ▶ | 1~230V ± 15% 50/60Hz |
| DRYTEK 1 Tri | ▶ | 3~400V ± 15% 50/60Hz |

The power line must be protected by a residual current circuit breaker.

Tighten the electrical cables on the relative terminals using a suitable tool correctly sized to avoid the risk of damage to the fixing screws. Take care if using an electric screwdriver.

The electrical panel is designed for wall-mounting using screws and plugs in the pre-drilled holes at the corners of the enclosure, or by means of brackets when present.

Install the equipment in areas compliant with the protection rating and ensure that the box is kept intact when drilling the holes for fitting the cable clamps.

Avoid the use of multicore cables where there are wires connected to inductive loads and power cables and signal cables such as sensors and digital inputs.

Keep connection cables as short as possible, preventing any twisting of cables which may be harmful due to inductive effects on the electronic equipment.

All wires used in the cabling must be suitably sized to withstand the load to be powered.

5. CONTROL PANEL



Display of values and programming



Green led: electric pump operating



SETUP (or multifunction) button



UP arrow button




DOWN arrow button



OK button

6. INPUTS AND OUTPUTS

| | |
|---|---|
| C - I1 | The load is activated or deactivated on closure or opening of the normally open contact C/I1. If no float or pressure switch is used, a jumper must be wired in on input C/I1. |
| OUT ALARM (NC - C - NO) | Volt free contacts cumulative alarm output (resistive load 5A - 250V) for: <ul style="list-style-type: none">- Alarm motor dry running.- Alarm motor in protection.- Alarm voltage too low.- Alarm voltage too high.- Alarm sequence or lack phases. |
| OUT MOTOR | SINGLE-PHASE: <ul style="list-style-type: none">• L/S - Motor phase• N/R - Motor neutral• AVV - Start by capacitor in the panel THREE-PHASE: <ul style="list-style-type: none">• T1 (contactor) - Motor's phase U• T2 (contactor) - Motor's phase V• T3 (contactor) - Motor's phase W |
|  | Earth. |

7. KEY TO FUNCTIONS AND SETTINGS

7.1 Main display items

On activation of the DRYTEK 1 panel, the display shows the following:



At the end of the start-up sequence, the main menu is displayed, as described below.



This screen enables display of the electrical data as read by the DRYTEK 1 panel in real time:

- 230 V = Power supply voltage reading;
- 0.0 A = Current absorbed by connected load;
- 1.00 ϕ = Power factor of connected load;
- MAN (*) = Panel set to manual mode;
- AUT (*) = Panel set to automatic mode;

7.2 Activation of load in manual mode

On activation the panel always starts up in Automatic mode, indicated by the asterisk (*) displayed alongside the text *AUT* on display.

The operating mode can be changed by pressing the **UP** arrow to change to Manual mode, or the **DOWN** arrow to change to Automatic mode.

Therefore, to enable operation in Manual mode, press the **UP** arrow (the asterisk (*) is displayed alongside the text *MAN*) and then press and hold **OK**.

The display then displays current absorption of the motor and the power factor values in real time; the green led also lights up to indicate the electric pump is running.

On release of the **OK** button, the motor is shut down.

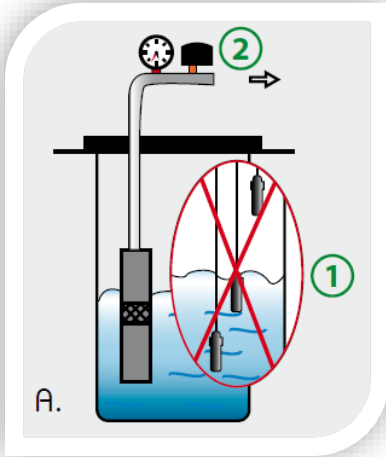


N.B. in manual mode, the load is activated and bypasses all alarms, but in the event of a fault the display flashes, and the user can press the **DOWN** arrow to view a description of the alarm.

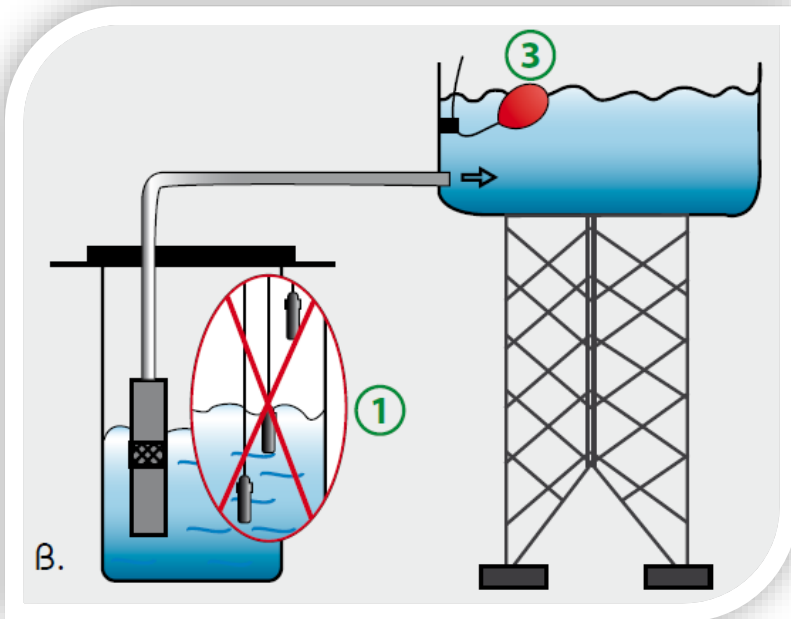
7.3 User programming in automatic mode

To access the user programming menu, press and hold the **SETUP** button until the first parameter settings menu is displayed (minimum power factor).

Practical examples:



- ① Protection against dry run by motor $\cos \varphi$.
- ② Pressure switch ON-OFF.
- ③ Float ON-OFF.



7.3.1 MINIMUM POWER FACTOR (COS-FI)



MINIMUM COS-FI
0.80 φ

On access to the menu, the first window enables modifications to the minimum power factor value, below which the load is deactivated due to dry running conditions (use the arrows to modify the value).

To go to the next window, press **OK**.

EXAMPLE:

To enable operation in manual mode, activate in no-load conditions (dry running), check the power factor reading (e.g. 0.65) and enter the minimum power factor, increasing it by approx. 0.05.



MINIMUM COS-FI
0.70 φ

7.3.2 MAXIMUM CURRENT



MAXIMUM CURRENT
5.7 A

The second screen enables modifications to the maximum motor current value, above which it is shut off due to current overload (use the arrows to change the value).

To go to the next window, press **OK**.

EXAMPLE:

To enable operation in manual mode, read the load current value displayed (e.g. 6.0 Ampere) and check that this corresponds to the motor data plate specifications.

Enter the maximum current value, increasing it by 10-15% with respect to the previously checked value.



MAXIMUM CURRENT
6.9 A

7.3.3 RESET

In the event of a dry running alarm (minimum power factor) the panel may attempt to reset automatically, which can be programmable in minutes, with the option of setting this function as sequential.



4 reset times can be set, in which the system automatically restarts after being blocked;



By default these values are set as shown alongside:



The first reset attempt is performed 5 minutes after the dry running alarm.



The second reset attempt is performed 10 minutes after the alarm.

The third reset attempt is performed 20 minutes after the alarm.

The fourth reset attempt is performed 30 minutes after the alarm.



N.B. On each reset screen, use the arrows to modify any set times and press **OK** to go to the next screen.

After setting all times, press **OK** to go to the screen for the reset cycle settings.



If the value 0 (zero) is set, all automatic resets are blocked after the fourth attempt; if the value is set to 1 (one) at the end of the fourth attempt, the reset cycle is repeated continuously;



The system protecting the panel against dry running conditions activates the reset cycle according to the time intervals set, and resumes the same reset cycle each time water is detected for more than 10 seconds.

To exit the menu, press **SETUP**.

7.3.4 SUMMARY SETUP TABLE

| DESCRIZIONE PARAMETRO | VALORE | DEFAULT |
|---|-------------|--|
| <p>MAXIMUM CURRENT</p> <p>This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value.</p> <p><i>Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.</i></p> | 1 - ... A | - |
| <p>MINIMUM COS-PHI</p> <p>This parameter establishes the minimum Cos-Phi power factor value for each motor</p> <p>Enable operation in manual mode, activate in no-load conditions (dry running), check the power factor reading (e.g. 0.65) and enter the minimum power factor, increasing it by approx. 0.05.</p> | 0.15 - 1.00 | - |
| <p>AUTOMATIC RESET ON DRY RUNNING ALARM</p> <p>In the event of a dry running alarm (minimum power factor) the panel may attempt to reset automatically, which can be programmable in minutes. 4 reset times can be set, in which the system automatically restarts after being blocked; By default these values are set as shown below: The first reset attempt is performed 5 minutes after the dry running alarm. The second reset attempt is performed 10 minutes after the alarm. The third reset attempt is performed 20 minutes after the alarm. The fourth reset attempt is performed 30 minutes after the alarm.</p> | 1 - 240 Min | <p>1° 5 Min</p> <p>2° 10 Min</p> <p>3° 20 Min</p> <p>4° 30 Min</p> |
| <p>SEQUENTIAL RESET ON DRY RUNNING ALARM</p> <p>If the value "N" is set, all automatic resets are blocked after the fourth attempt; if the value is set to "Y" at the end of the fourth attempt, the reset cycle is repeated continuously;</p> <p>The system protecting the panel against dry running conditions activates the reset cycle according to the time intervals set, and resumes the same reset cycle each time water is detected for more than 10 seconds.</p> | Y or N | Y |
| <p>DISPLAY BRIGHTNESS ON STANDBY</p> <p>This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).</p> | 0 - 9 | 4 |
| <p>TIME FOR ENTRY TO SET-UP</p> <p>This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.</p> | 2 - 30 Sec | 3 Sec |

8. ALARMS



The measured power factor value is the set value and the panel shuts down the relative pump. The display blink and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system resets automatically on the basis of the times set during programming, or manually by pressing the button **SETUP** until the screen is displayed without flashing, after which the button **OK** can be pressed to reset.



The load current absorption is higher than the set value and the panel shuts down the relative pump. The display blink and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button **SETUP** until the screen is displayed without flashing, after which the button **OK** can be pressed to reset.



The measured mains voltage is too low (the pumps are shut down).

The display blink and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system automatically resets every 60 seconds or manually by pressing the **OK** button.



The measured mains voltage is too high (the pumps are shut down).

The display blink and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system automatically resets every 60 seconds or manually by pressing the **OK** button.



The phase sequence is incorrect or one or more phases is missing (the pumps are shut down). The display blink and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually turning off and on the electrical panel after reconnecting the phases correctly.

9. ASSISTANCE MENU PARAMETERS

This menu is accessed by simultaneously pressing the buttons **SETUP** and **OK** during activation of the panel.

This menu enables modifications to the language, minimum and maximum voltage, with the latter programmed by default as shown in the table below (modify only if absolutely necessary).



IF YOU CHANGE THE OPERATING LIMITS, BEYOND THE DEFAULT PARAMETERS, WILL RESULT IN IMMEDIATE FORFEITURE OF THE GUARANTEE.

Press **OK** to go to the next screen.

| DESCRIPTION OF PARAMETER | VALUE |
|---|----------------|
| LANGUAGE ITALIAN / ENGLISH / FRENCH / SPANISH / GERMAN | ENGLISH |
| MINIMUM VOLTAGE Single-phase voltage rated 230 - 15% Three-phase voltage rated 400 - 15% | 195 V 340 V |
| MAXIMUM VOLTAGE Single-phase voltage rated 230 - 15% Three-phase voltage rated 400 - 15% | 264 V 460 V |
| COS-PHI ALARM OUTPUT This parameter enables removal of the dry running alarm. | Y or N |

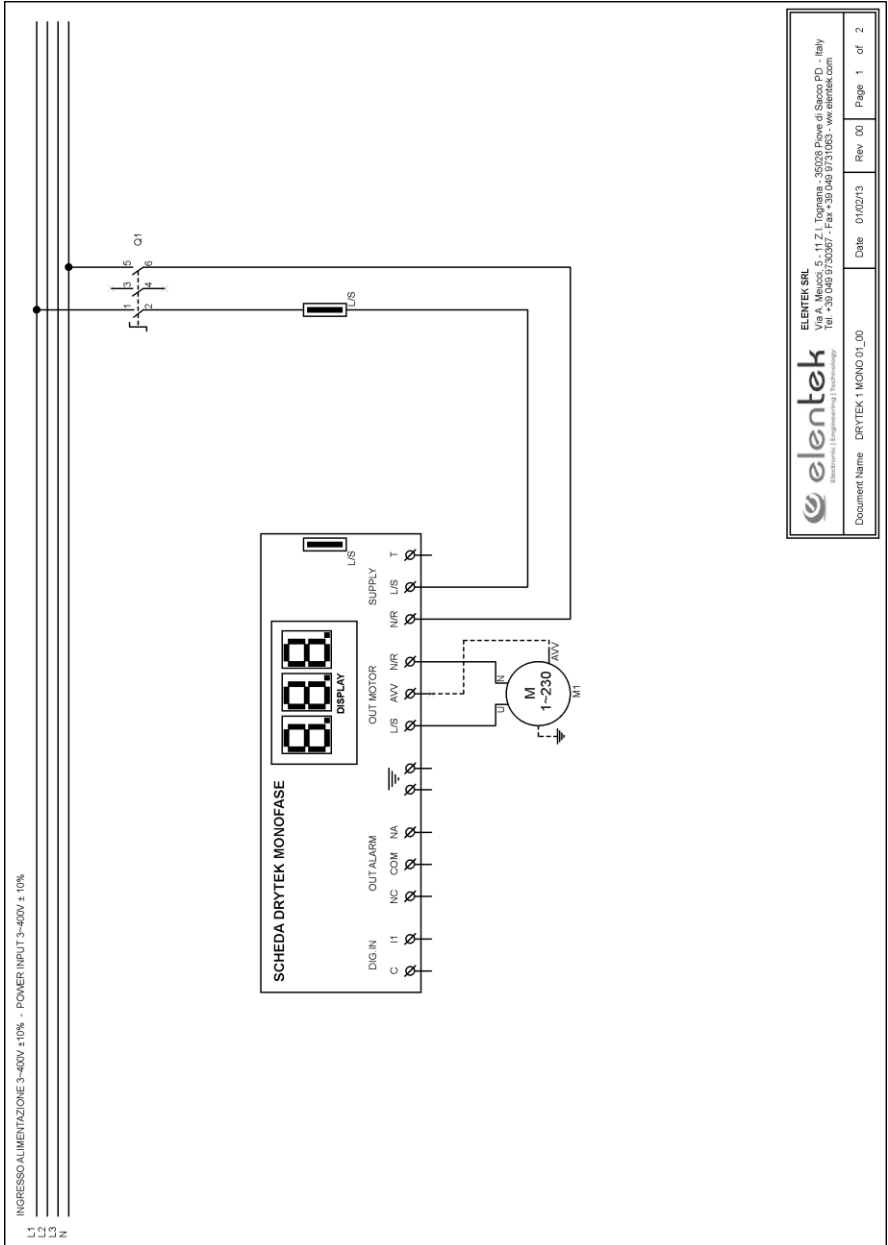


N.B. On each screen, use the arrows to modify any set values and press **OK** to go to the next screen.

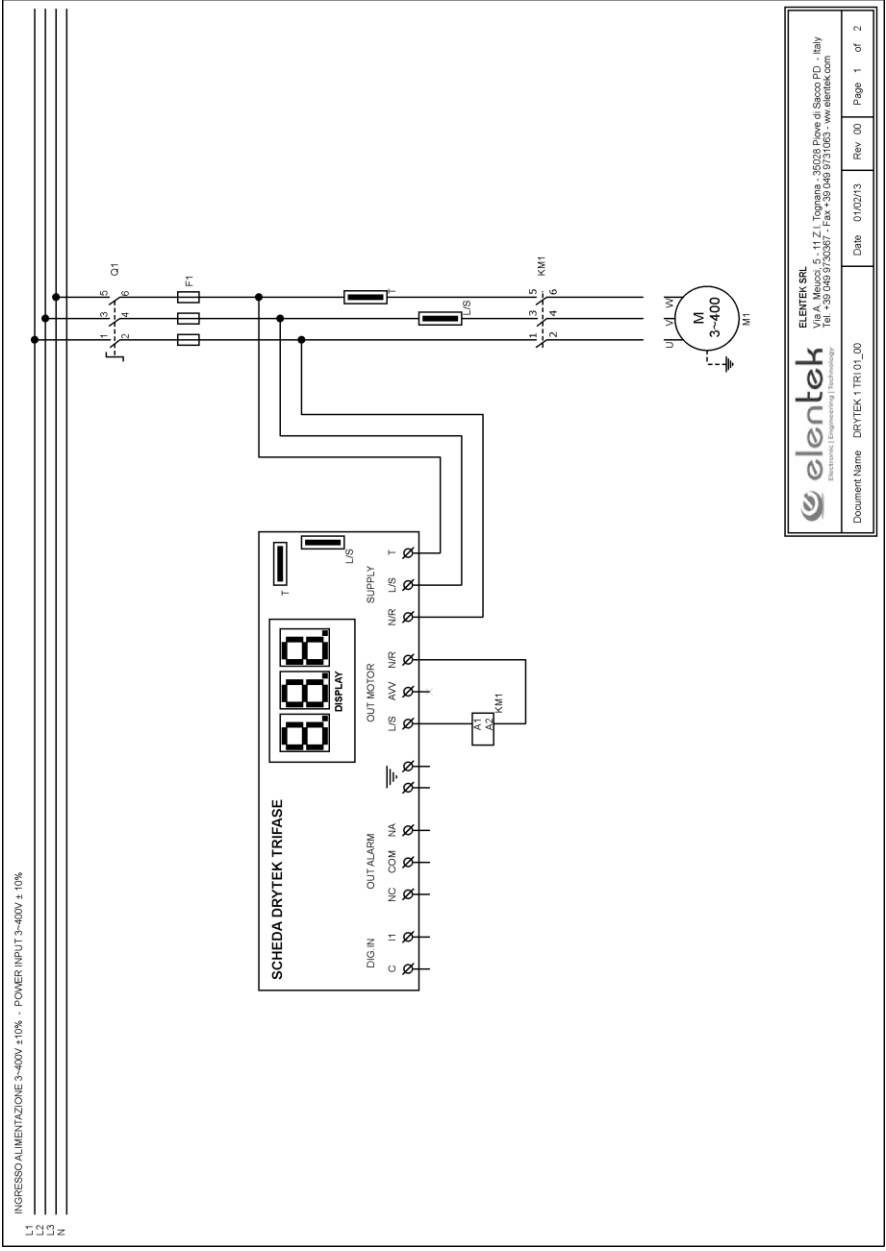
To exit the menu, press **SETUP**.

10. STANDARD CIRCUIT DIAGRAMS

10.1 DRYTEK 1 Single phase circuit diagram



10.2 DRYTEK 1 Three phase circuit diagram



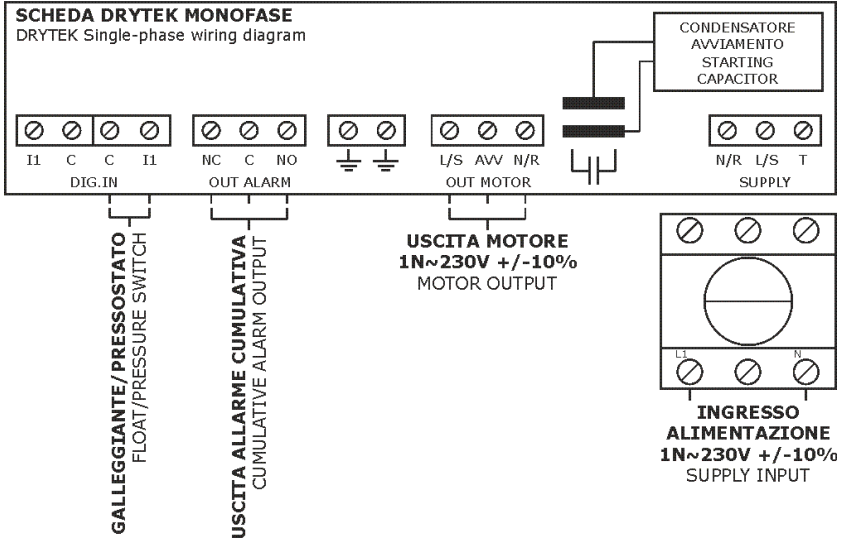
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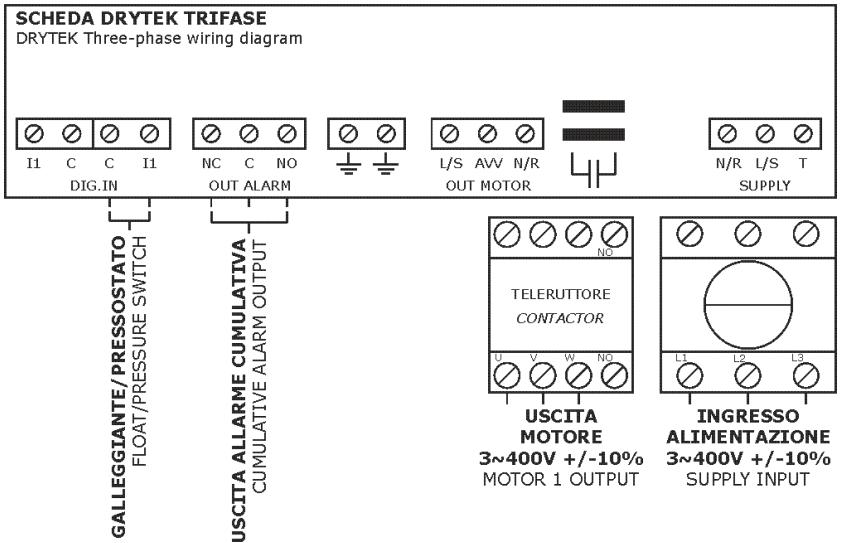
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11. STANDARD WIRING DIAGRAMS

11.1 DRYTEK 1 Single phase wiring diagram

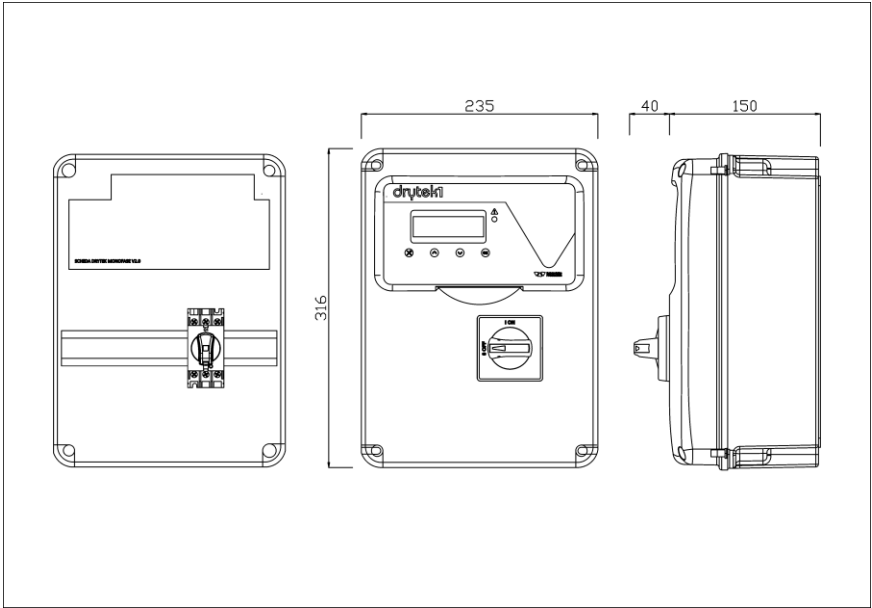


11.2 DRYTEK 1 Three phase wiring diagram

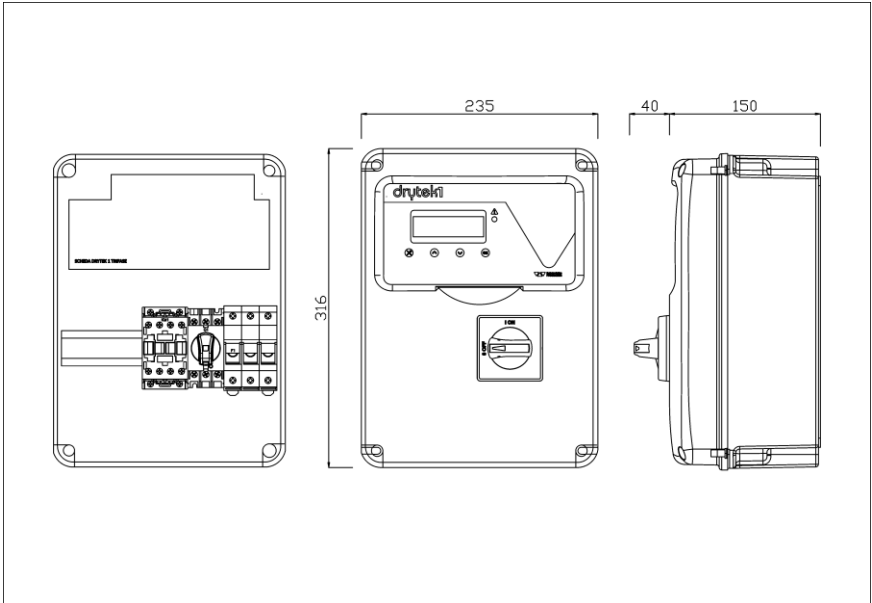


12. STANDARD DIMENSIONAL DIAGRAM

12.1 DRYTEK 1 Single phase dimensional



12.2 DRYTEK 1 Three phase dimensional



13. TROUBLESHOOTING

| PROBLEM | CHECKS/SOLUTIONS |
|--|--|
| THE PANEL IS SET TO AUTOMATIC MODE BUT THE PUMP DOES NOT START. | <ul style="list-style-type: none">▪ Ensure that a jumper is wired in on input C/I1, if a float or pressure switch is not connected.▪ Ensure correct operation of the float or pressure switch connected to the input C/I1. |
| ON PUMP START-UP, THE PANEL SETS TO ALARM STATUS "ALARM MOTOR PROTECTION TRIP". | <ul style="list-style-type: none">▪ Check the maximum current settings in the user menu (see page 13).▪ Ensure correct operation of the motor used. |
| ON PUMP START-UP, THE PANEL SETS TO ALARM STATUS "ALARM MOTOR DRY RUN" | <ul style="list-style-type: none">▪ Check the minimum power factor settings in the user menu (see page 13).▪ On the 230V~ single phase model, check to ensure correct sizing of the start-up capacitor.▪ On the 400V~ three phase model, check correct sequence of the motor phase wiring. |
| ON PUMP START-UP, THE PANEL SETS TO ALARM STATUS "ALARM VOLTAGE TOO HIGH" AND "ALARM VOLTAGE TOO LOW". | <ul style="list-style-type: none">▪ Ensure that the input voltage on the electrical panel is adequate.▪ Check the input voltage on the electrical panel and set the correct minimum and maximum voltage values in the assistance menu (see page 17). |
| THE DISPLAY DOES NOT SWITCH ON. | <ul style="list-style-type: none">▪ Ensure that the FLAT cable is connected correctly.▪ Ensure that the FLAT cable has not been damaged. |

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