



TURBO s.r.l.

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# SEQUENCER E5T

UP TO 120 OUTPUT CHANNELS IP65 IK09



## User Manual

23/05/2016

Manual Release 1.00

Hardware Release 1.01

## General Description

Sequencer for controlling the pneumatic cleaning function of industrial dust collection systems. The device has three output relays contacts and two digital input contacts.

A large, bright display is provided for reading the filter obstruction level, the active solenoid valves and any alarms in any moment.

## Technical Specifications

### Casing

- 15/10 thick sheet steel, painted textured RAL 7035.
- Protection degree to water and dust: IP65 (EN60529) complies with NEMA 4.
- Impact resistance degree as per IEC EN 62208: IK09 10 joule.
- Door: reversible, with one box locking element painted textured RAL 7035, provided with a seal applied by continuous molding.

### Output Channels

The basic version with a minimum number of output channels is up to 24.

With the use of expansion cards are obtained versions up to:

| Number of output channels | Casing Dimensions |        |        |
|---------------------------|-------------------|--------|--------|
|                           | H L               | L W    | P H    |
| 32 ÷ 56                   | 400 mm            | 400 mm | 200 mm |
| 64 ÷ 120                  | 600 mm            | 400 mm | 200 mm |

## Performance Of The Device

- Power voltage 115-230 Vac  $\pm$  10% 50-60 Hz selectable by means of jumpers (optional 24 Vac / Vdc).
- Output voltage 24Vdc, 24-115-230Vac selectable by means of jumper must also set with Out Voltage in Calibration / Tests.
- Lcd display viewing area 72.0 x 40.0 mm.
- Three active configurable alarm relays normally closed.
- Micro SD memory card for data storage, extractable for consultation. Sampling is performed every 10 seconds, the time interval is editable.
- Compressed air presence enable input.
- External contact cleaning activation.
- Manual solenoid valve activation.
- Operating times expressed in seconds with selectable ranges for any application.
- Solenoid valve not working alarm.
- Total and partial hour counter for maintenance.
- Setting the current date and time associated with the archiving historical data on the SD card, where are stored the detected values.

## Electric Specifications

### Electric Power

- ✧ 115 VAC ± 10% 50-60 Hz – 25W
- ✧ 230 VAC ± 10% 50-60 Hz – 25W
- ✧ 24 VAC ± 10% 50-60 Hz – 25W optional
- ✧ 24 VDC ± 10% – 25W optional

Warning! Read the section on installation before connecting the device.



### Selectable Output Voltage

- ✧ 24 Vdc           Maximum Load 25 W.
- ✧ 24 Vac           Maximum Load 25 W.
- ✧ 115 Vac         Maximum Load 25 W.
- ✧ 230 Vac         Maximum Load 25 W.

### Inputs And Outputs Galvanically Insulated

- ✧ Enable contact (remote cleaning enable).
- ✧ Fan contact (post-cleaning).

The solenoid valves connected to the unit are normally closed.

The activation of a solenoid valves causes them to open and let out a jet of air.

### Alarm Relays

The three alarm relays contain 2 clean contacts on terminals 4 ÷ 9 di J4.

Maximum permitted load: 3A @ 250Vac, 2A @ 24Vac, 2A @ 24Vdc.

The relays are normally closed, opens in case of alarm, and opens to the control unit off in the absence of power.

### Fuse

1 x 1 A     @ 115Vac.    1 x 1 A     @ 230Vac.  
 1 x 3 A     @ 24Vac.     1 x 3 A     @ 24Vdc.

### Working Temperature

from -10°C to 55°C

### Storage Temperature

-20°C to 60°C

## Timer Specifications:

### Pulse Time (Valve Opening)




from 50 ms to 5 sec

### Pause Time (Interval Between Valve Openings)



1 sec - 999 sec

## Warning Symbols Used In This Manual

The information regarding safety are highlighted using the symbols:

|   |   |                    |
|---|---|--------------------|
|  | Warning-Danger  | Generic - Warning- |
|  | Risk – Danger   | Electric Current   |
|  | Dispose according to the standards for electrical and electronic equipment RAAE |                    |

## Installation Rules Notes and Warnings

- ⇒ Protect the device from direct exposure to sunlight.
- ⇒ Do not position the device near or directly in contact with sources of heat or electromagnetic fields. 
- ⇒ Fix the device of a height of at least 60 cm from the ground.  
In a clearly visible place easily accessible.
- ⇒ Connect the device to power lines other than those for operating motors or other large power devices which could generate network interference.
- ⇒ The electrical supply of the unit must be protected by a differential switch 230Vac~ 30mA and a bipolar magneto thermic 230Vac~ 10A, positioned in a place easily accessible.
- ⇒ Before working on the equipment to perform any operation switch off the magneto thermic differential switch. 
- ⇒ For electric operations, always remove voltage, wait 30 seconds for the inside capacitors to discharge before opening. At the end of the operations, close the device to restore the correct degree of protection before powering up.
- ⇒ For the connection of the supply voltage, use anti-flame wires with a minimum section of 0.75mm<sup>2</sup> certified and conform to the standard IEC60227 or IEC60245.
- ⇒ Use flame-retardant cables with a minimum cross-section area of 0.75 mm<sup>2</sup> for all control signals.
- ⇒ Use flame-retardant cables with a minimum cross-section area of 0.75 mm<sup>2</sup> to connect to the indicating relays.
- ⇒ Use flame-retardant cables with a minimum cross-section area of 0.5 mm<sup>2</sup> for electro valves control signals.
- ⇒ The wire ground conductor of protection must be yellow/green.
- ⇒ The wire ground conductor of protection must be connected first.
- ⇒ The wire which is colored yellow/green must only be used for the ground conductor.

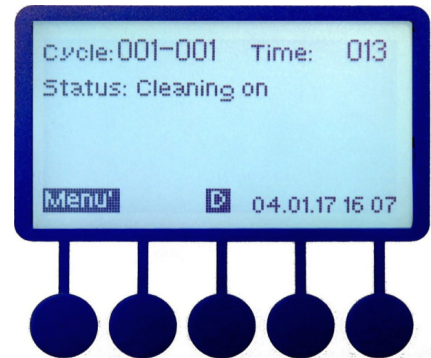
- ⇒ The cable glands must be chosen according to the diameter of the cable to be used.
- ⇒ The sealing of the press cable is guaranteed by the compression of the rubber gasket that tightens on the outer diameter of the cable.
- ⇒ The tightness of the cable gland is guaranteed by the compression of the rubber seal that tightens on the outer diameter of the cable.
- ⇒ The size of cable and cable gland must ensure that a power cord traction is not acting on the terminals.
- ⇒ The terminal block must not be the point of mechanical anchoring of the conductors.
- ⇒ The cable gland PG9 supplied on request, has cable diameter minimum of 4mm and a maximum of 8mm, with clamping nut by 19mm.
- ⇒ Any use not described in this user instruction manual or incorrect use of the device may cause damage to the device or to the devices connected to it.
- ⇒ Furthermore, incorrect use or tampering with the device may cause injury.
- ⇒ Waterproofness of the casing is guaranteed when the flap is closed.
- ⇒ Make sure that rigid or flexible ducts used for wiring, if any, do not fill up with water or other liquids.
- ⇒ To preserve the IP degree of protection of the box must be used cable glands of the same class of the enclosure or higher.
- ⇒ Cut off power supply immediately if water is found in the casing.
- ⇒ If the control unit is used in ways not specified by the manufacturer, the protection provided by the device may be impaired.
- ⇒ The Control Unit does not release potentially toxic or harmful substances to the health and the environment.
- ⇒ No part with dangerous voltage is normally accessible.

Do not use the sequencer if you have not read or do not understand this manual.

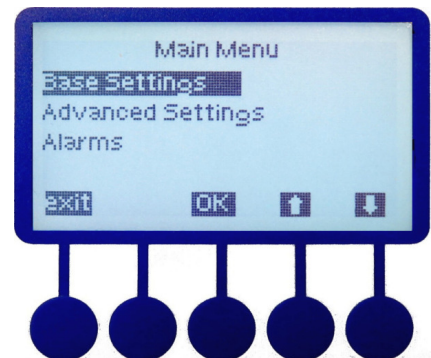
## Display And Keypad

There are five round buttons on the front panel for controlling the device and turning on the display as shown in the following figure.

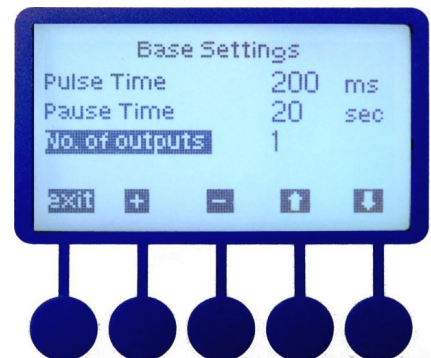
- ➔ Press the first button to the left to access the configuration menu
- ➔ By pressing the button corresponding to the letter D is accessing the menu Video Setting



- ➔ Use the arrows to scroll through the items of the menu.
- ➔ After entering one of the functions use the OK.
- ➔ The OK button is used to confirm data and reset alarms.



- ➔ Buttons + and - increase or decrease the values.
- ➔ Holding down the + and - buttons to scroll through all the values or functions until the end of the left or right.
- ➔ Press the Exit button to quit and save.



## Menu Diagram

The menu and the contents of each entry are organized as shown below.

| Base Settings     |   |
|-------------------|---|
| Pulse Time        | Solenoid activation time<br>Possible values: 0.05 seconds – 5.00 seconds step 0.01 seconds<br>> default setting 0.20 seconds            |
| Pause Time        | Washing pause time between solenoid valves<br>Possible values: 001 seconds – 999 seconds step 1 seconds<br>> default setting 20 seconds |
| Number Of Outputs | Number of connected outputs.<br>Possible values: 001 – 099 step 1<br>> default setting 001  |

| Advanced Settings |  |
|-------------------|--|
| PCC Cycles        | Number of post cleaning cycles after stopping the fan.<br>Possible values: 01 – 99 step 1<br>> default setting 01  |
| Pause PCC         | Post cleaning mode pause time between solenoid valves (fan off)<br>Possible values: 001 seconds – 999 seconds step 1 seconds<br>> default setting 10 seconds |

| Alarms                        |  |
|-------------------------------|--|
| Alarm Maintenance             | Maintenance deadline alarm enable.<br>Possible values: disabled – enabled<br>> default setting disabled  |
| Maintenance Interval          | Maintenance frequency expressed in tens of hours<br>Possible values: 001 – 999 step 1. (e.g.: 1=10h, 10=100h)<br>> default setting 100 > 100 hours                     |
| Exclude E.V. In Short Circuit | Exclusion of the valve in short circuit, if set to the valve shorted is excluded from the cycle.<br>Possible values: enabled - disabled > default setting not excluded |

| Calibration / Tests |   |
|---------------------|---|
| Voltage Output      | Output voltage setting<br>Possible values: 24 Vdc, 24 Vac, 115 Vac, 230 Vac<br>> default setting 24 Vac   |
| Manual Activation   | Manual output activation<br>Possible values: 1 – number of outputs set in<br>> Base Settings > Outputs Number   |
| Set Date & Time     | Setting the date on the internal clock<br>Settable values Day 1 – 31, Month 1 – 12, Year 00 – 99<br>Setting of the time for the internal clock<br>Settable values: Hours 0 – 23, Minutes 0 – 59 |



| Counters                 |  |
|--------------------------|--|
| Total Hour Counter       | Total counter of the hours of activity of the device   |
| Maintenance Hour Counter | Counter for maintenance  |
| Zero Maintenance Counter | Maintenance hour counter reset.<br>Possible values: disabled – reset<br>> default setting disabled |

| Display Settings |  |
|------------------|--|
| Language         | To select one of the 6 available languages: Italian, English, French, German, Spanish, Portuguese. |
| Bright           | To adjust the brightness of the Lcd video  |
| Backlight        | To adjust the back lighting of the Lcd video   |

It is possible to access at that menu Display Setting even from the main menu by pressing the button corresponding to the letter D.

| System Info    |   |
|----------------|---|
| SW GUI Version | Software Release Graphical User Interface |
| SW E5T Version | Software Release Control Unit Main Board  |

## Alarms

The unit runs a number of checks during the start-up cycle and during normal operation. The possible alarms and respective solutions are shown in the following table.

| A. Nr. | Description  | Action   |
|--------|--|--|
| E01    | Voltage Output Setting set to 24Vdc – AC jumper detected                           | <ul style="list-style-type: none"> <li>- For 24Vdc, switch the device off and move the AC/DC jumpers to DC. See jumper table next.</li> <li>- For 24Vac, set the function <b>Voltage Output Setting</b> select A24 and press OK to confirm.</li> </ul>   |
| E02    | Voltage Output Setting set to 24Vac – DC jumper detected                           | <ul style="list-style-type: none"> <li>- For 24Vac, switch the device off and move the AC/DC jumpers to AC. See jumper table next.</li> <li>- For 24Vdc, set the function <b>Voltage Output Setting</b> select A24 and press OK to confirm.</li> </ul>   |
| E03    | Voltage Output Setting set to 24Vac or dc. Voltage out of range detected           | <ul style="list-style-type: none"> <li>- To use 24V valves, switch the device off and move the output voltage selection jumper to 24V. See jumper table next.</li> <li>- If the jumper is in the correct position, set the function <b>Voltage Output Setting</b> select 115 or 230 and confirm.</li> </ul>        |
| E04    | Voltage Output Setting set to 115V. Voltage out of range detected                  | <ul style="list-style-type: none"> <li>- To use 115V valves, switch the device off and move the output voltage selection jumper to 115V. See jumper table next.</li> <li>- If the jumper is in the correct position, set the function <b>Voltage Output Setting</b> select 115 or 230 and confirm.</li> </ul>      |
| E05    | Output Voltage Setting set to 230V. Voltage out of range detected                  | <ul style="list-style-type: none"> <li>- To use 230V valves, switch the device off and move the output voltage selection jumper to 230V. See jumper table next.</li> <li>- If the jumper is in the correct position, set the function <b>Voltage Output Setting</b> select a24, d24 or 115 and confirm.</li> </ul> |
| E06    | Solenoid valve current lower than minimum threshold or disconnected solenoid valve | Check correct connection of the solenoid valve and respective data. The alarm is self-reset.   |
| E07    | Solenoid valve current higher than maximum threshold                               | Check correct connection of the solenoid valve and respective data. The alarm is self-reset.   |

|     |   |   |
|-----|---|---|
| E08 | <p>Output short circuit</p> <p>The signaling of the code E08 alternates with the indication of the interested output is shown as Uxx where xx is the number of the output and the value of dP.</p>  | <p>Turn off the device and then turn it back on, after having verified the plant of the solenoid valves.</p>        |
| E11 | <p>Maintenance deadline reached</p>   | <p>Carry out maintenance.</p>   |
| E12 | <p>dP sensor full-scale value reached</p> <p>Immediate reporting without any delay.</p>   | <p>Check state of filtering elements.</p> <p><b>IMPORTANT:</b> Running in this condition may damage the device.</p> |
| E14 | <p>Indicates that a valve in short circuit has been excluded from the cycle.</p> <p>The signaling of the code E14 alternates with the indication of the interested output is shown as Uxx where xx is the number of the output and the value of dP.</p> <p>An output is considered a short circuit if not responding for 3 following activations.</p> <p>An activation without error resets the counting.</p> | <p>Turn off the device and then turn it back on, after having verified the plant of the solenoid valves.</p>        |
| E20 | <p>Internal clock error.</p>  | <p>Replace buffer battery (CR1632 3V 130mAh) and set current time and date.</p>                                     |

## Description Of Operation

The installed SW version will appear on the display when the economizer is powered up. Meaning that coherence between settings stored in E2Prom and the set jumpers is being checked, will appear on the display when the economizer is powered up. A corresponding error will appear in case of discrepancies between settings. Only editing functions will be allowed on the unit. The operator may switch off the unit and configure the jumpers correctly.

### Operative mode

The device works as a programmable cycle sequencer. The connected outputs will be activated at the programmable frequencies. The firing and pausing times can be set on the configuration menu.

### Cleaning Function With Fan Off PCC

This function allows to carry out one or more cleaning cycles, the number of cycles is defined by the [Number Of Post Cleaning Cycles After Stopping The Fan](#) when the fan is off. The on or off state of the fan may be determined by the state of the contacts 12-13 contacts open = fan off. The pulse time of the valves will always be that defined in [Solenoid Activation Time](#), while the pause time in this case is defined in [Post Cleaning Mode Pause Time Between Solenoid Valves Fan Off](#).

The display alternately shows the number of the valve activated and the word PCC.

### Number Of Output Selection

The number of outputs (solenoid valves) on which the economizer will run the cleaning cycle can be selected. Cleaning will be carried out in order from the first to the last solenoid valve. The valves can be adjusted by the [Number Of Connected Outputs](#) function.

## Fuse

A fuse which can be reset in case of need is located near the power terminal board. Use a delayed fuse 5x20mm as shown in the table on next pages.

## SD Memory Card

The Micro SD memory card slot is located on the bottom right angle of the control unit.

The card is not supplied with the control unit. A card with a maximum of 32GB can be used.

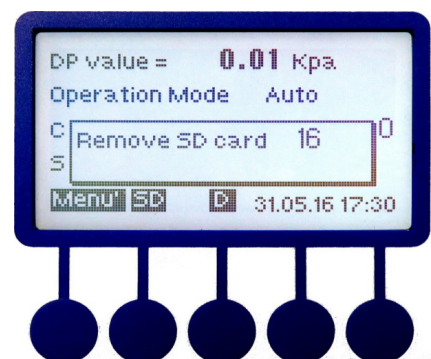
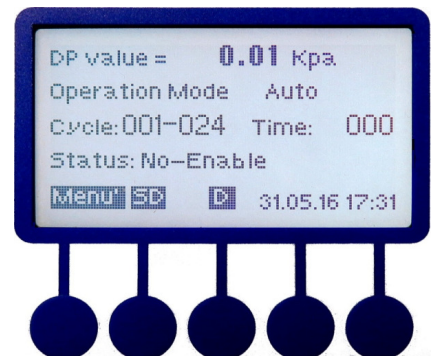
The card must be formatted FAT32, which is the format recognized by all devices and operating systems.

When the SD card is inserted into its place, SD indication on the screen is displayed.

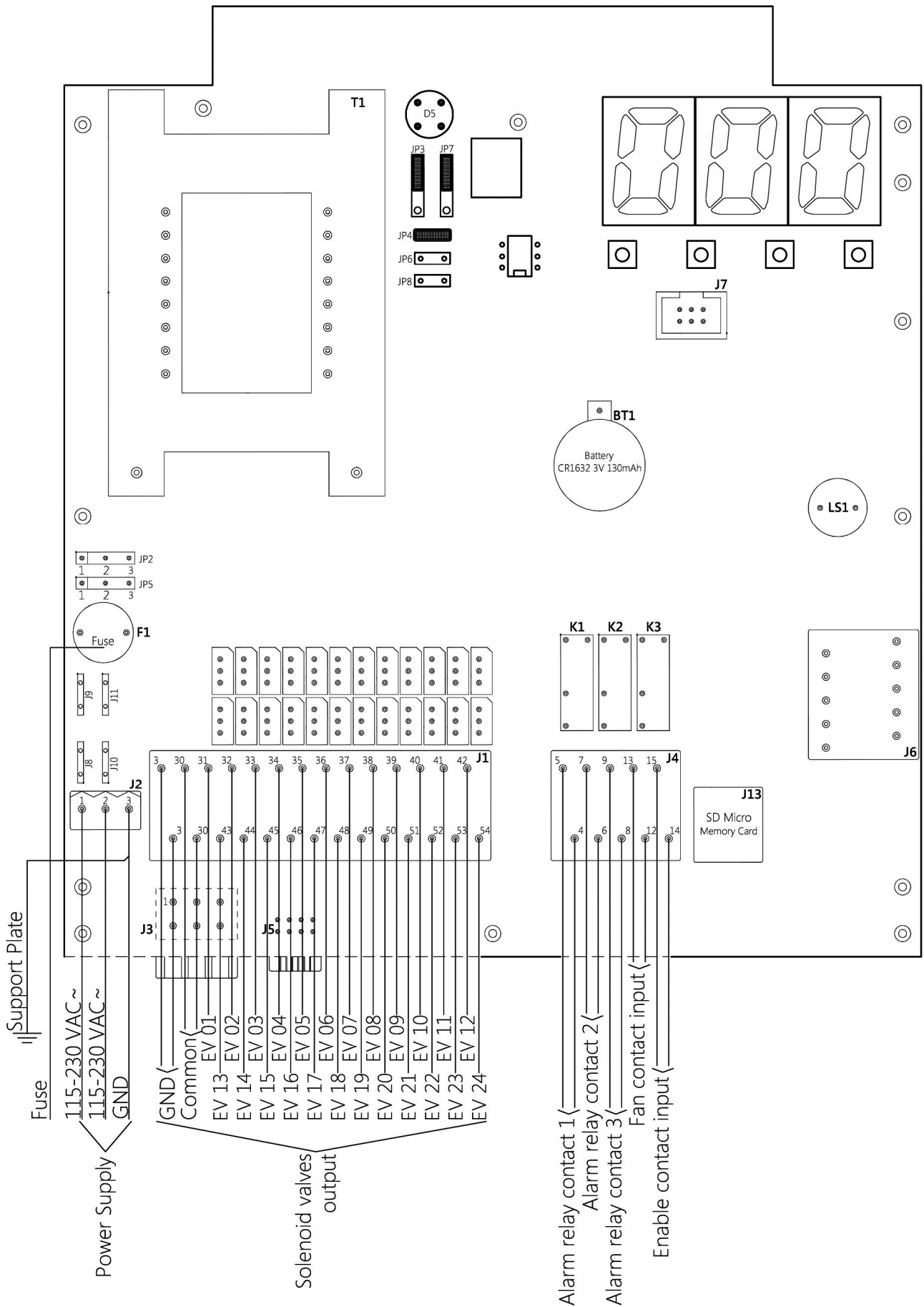
Before removing the memory card, press the second button in correspondence of the written SD, during the countdown of the duration of 20 seconds the card can be safely removed.

The Micro SD Card connector is push-pull.

Press upwards and extract the card to remove it.



# Connection Diagram Main Board



## Contacts And Relay Terminal Block J4

Enable contact input consensus 14.15 terminals.

Is used to activate the control unit remotely, it can be turned on and off remotely.

The unit is supplied with a jumper on the two terminals 14:15, without it will not turn on.

Fan contact 12.13 input terminals.

Indicated by the control unit that the plant has been started and is in operation.

The unit is supplied with a jumper on two 12:13 terminals to simulate the state of the plant, as if the fan was turned on.

Alarm Relay K1 4.5 terminals.

The relay is normally closed, opens in case of alarms, and opens to the control unit off in the absence of power.

The alarms that open the relays are:

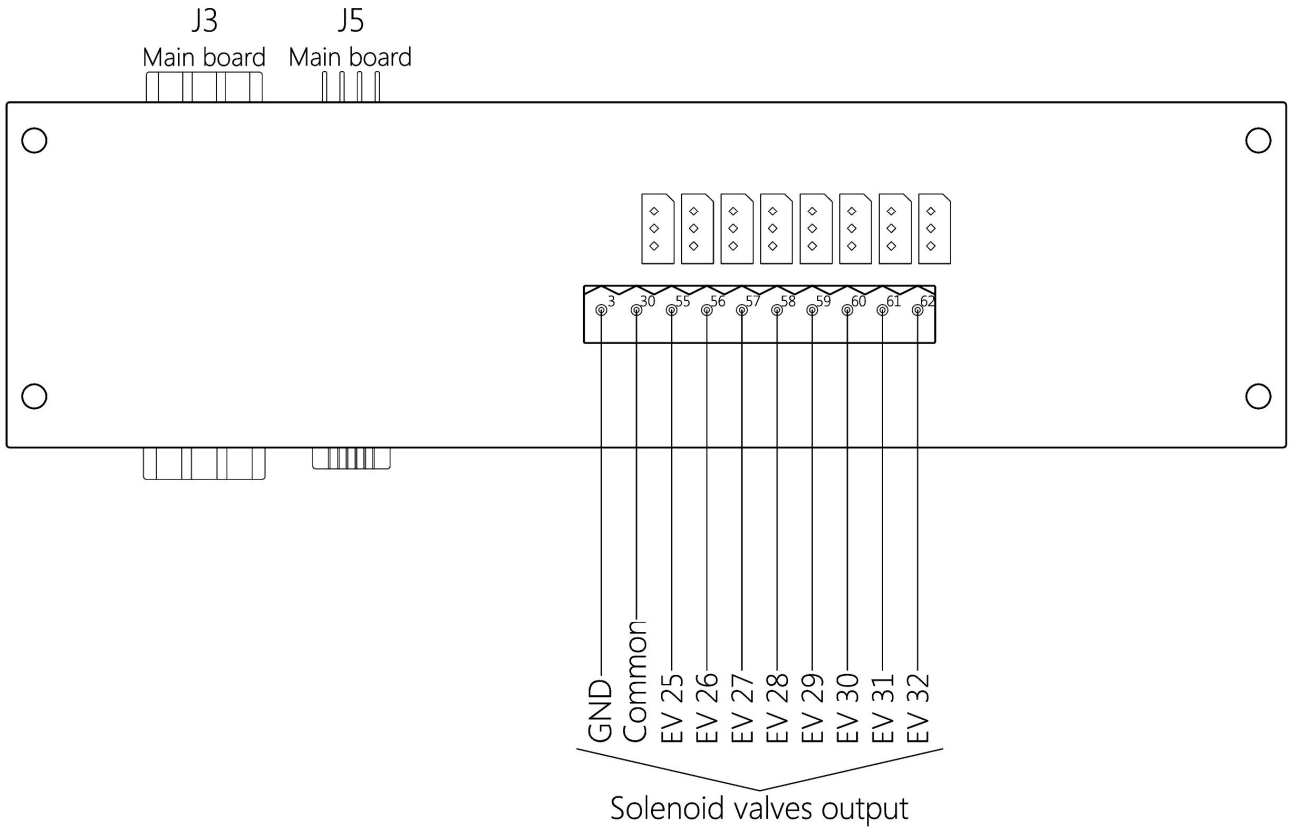
Problem with solenoid valves E06-E08.

Maintenance interval has been reached.

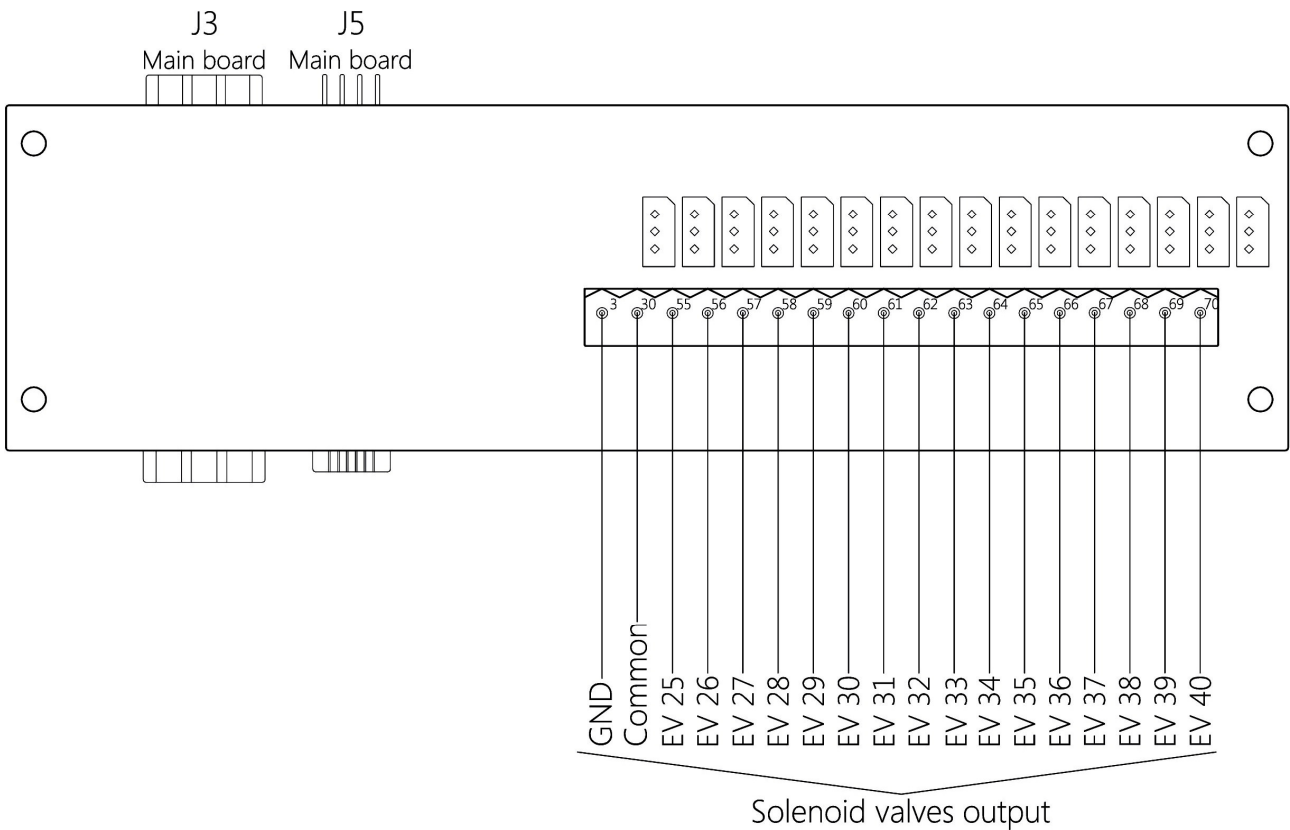
If one of these occurs, the relay is activated.

## Connection Diagram Expansions

### Expansion Up To 32 Channels

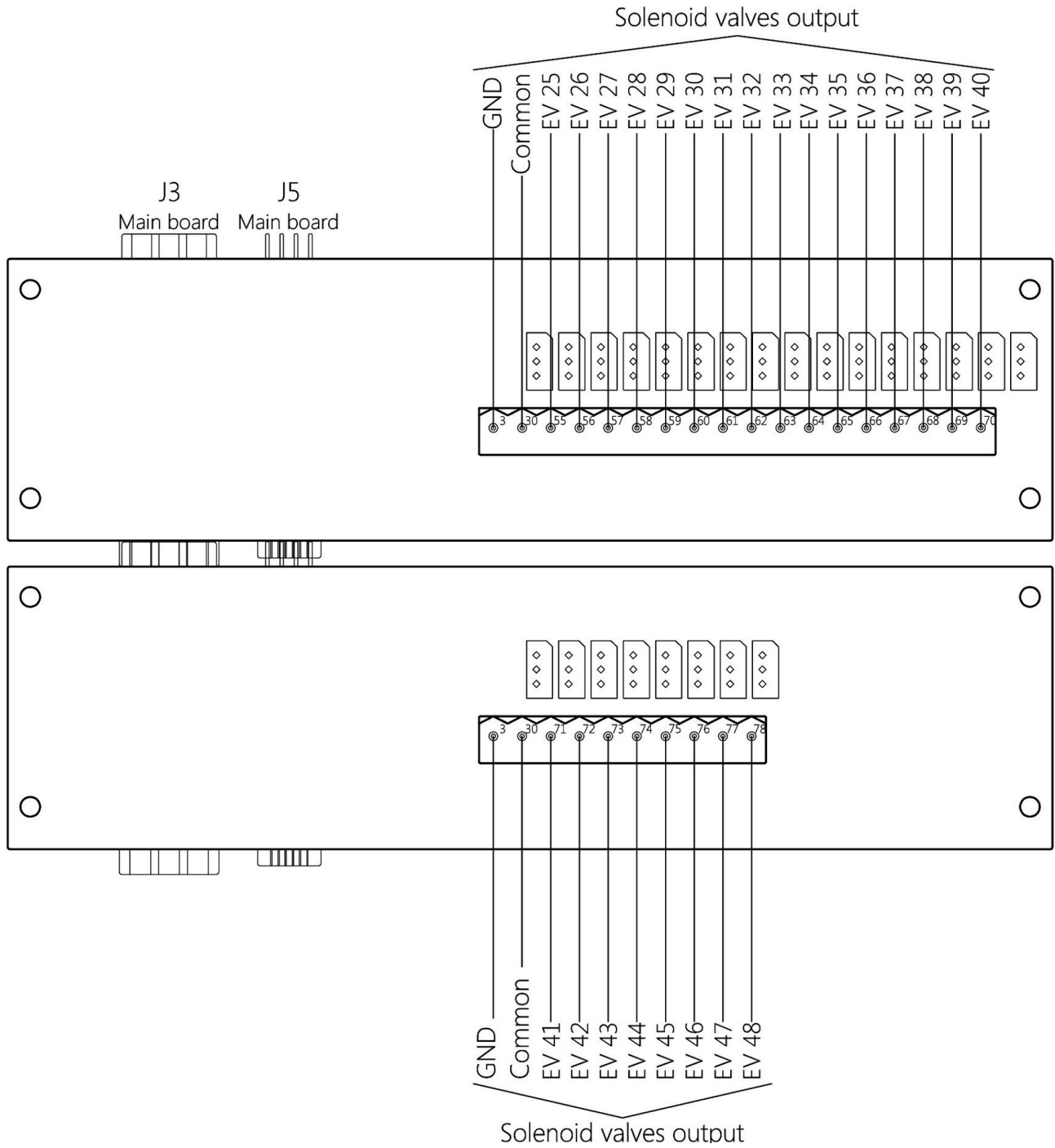


### Expansion Up To 40 Channels

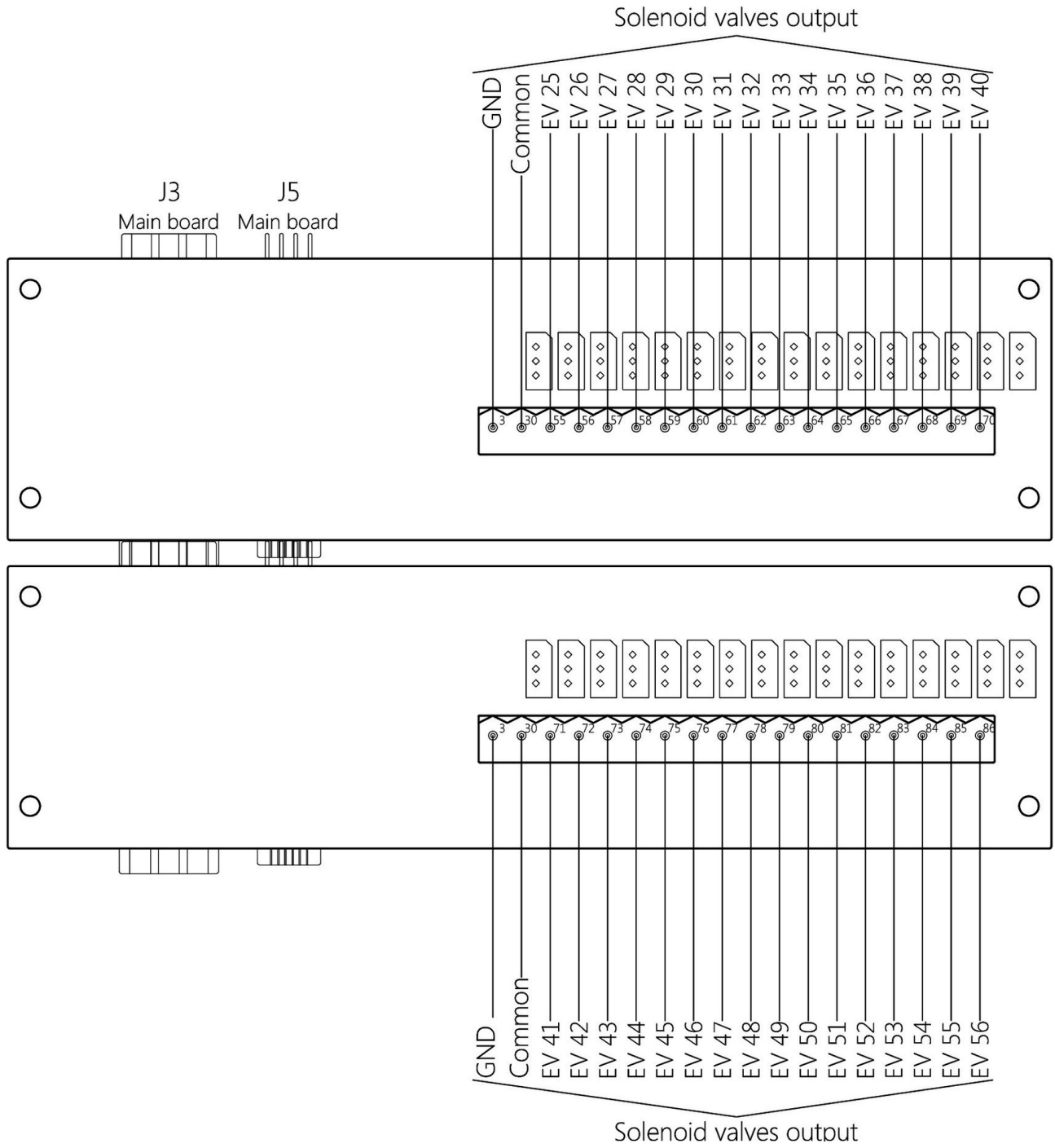




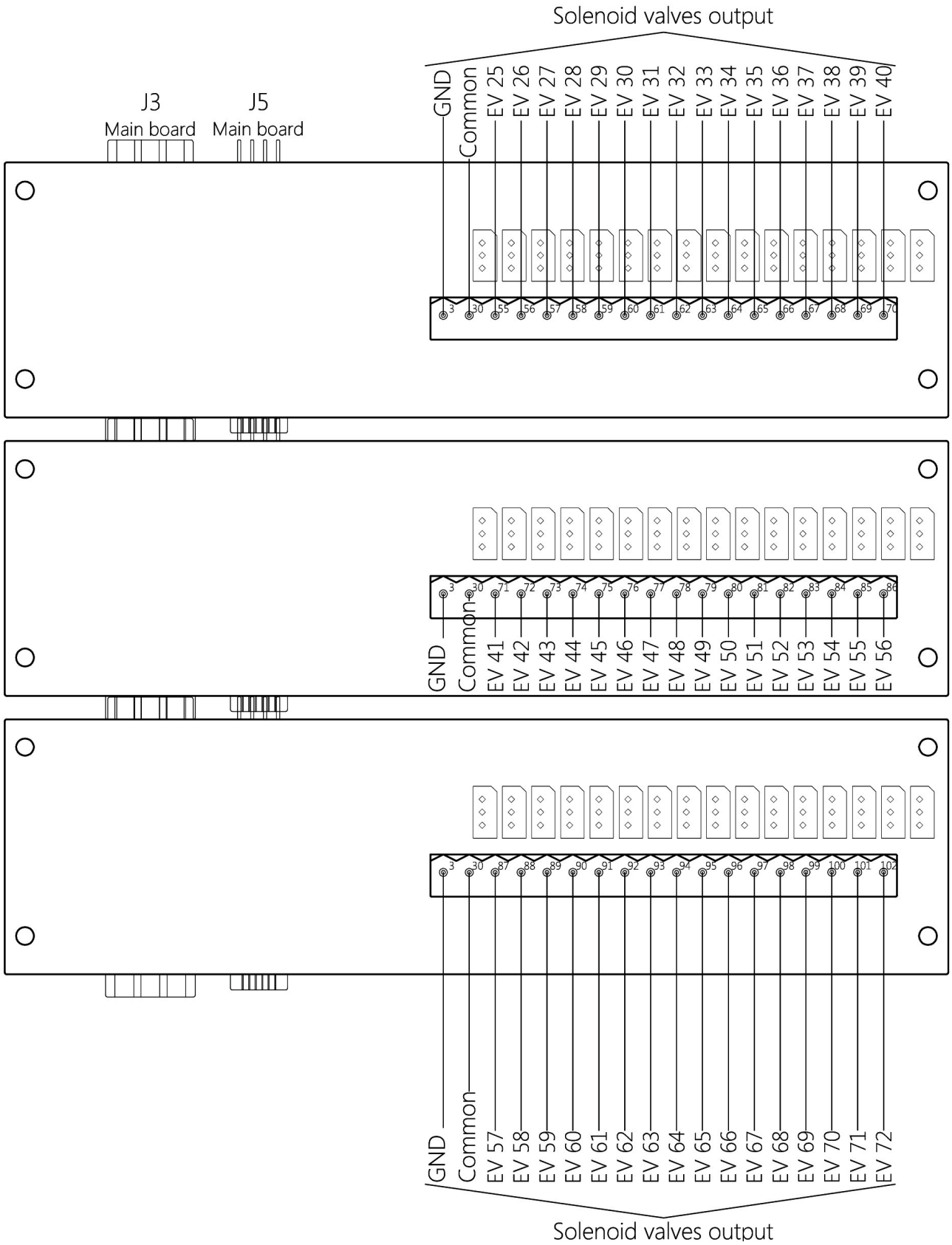
# Expansion Up To 48 Channels



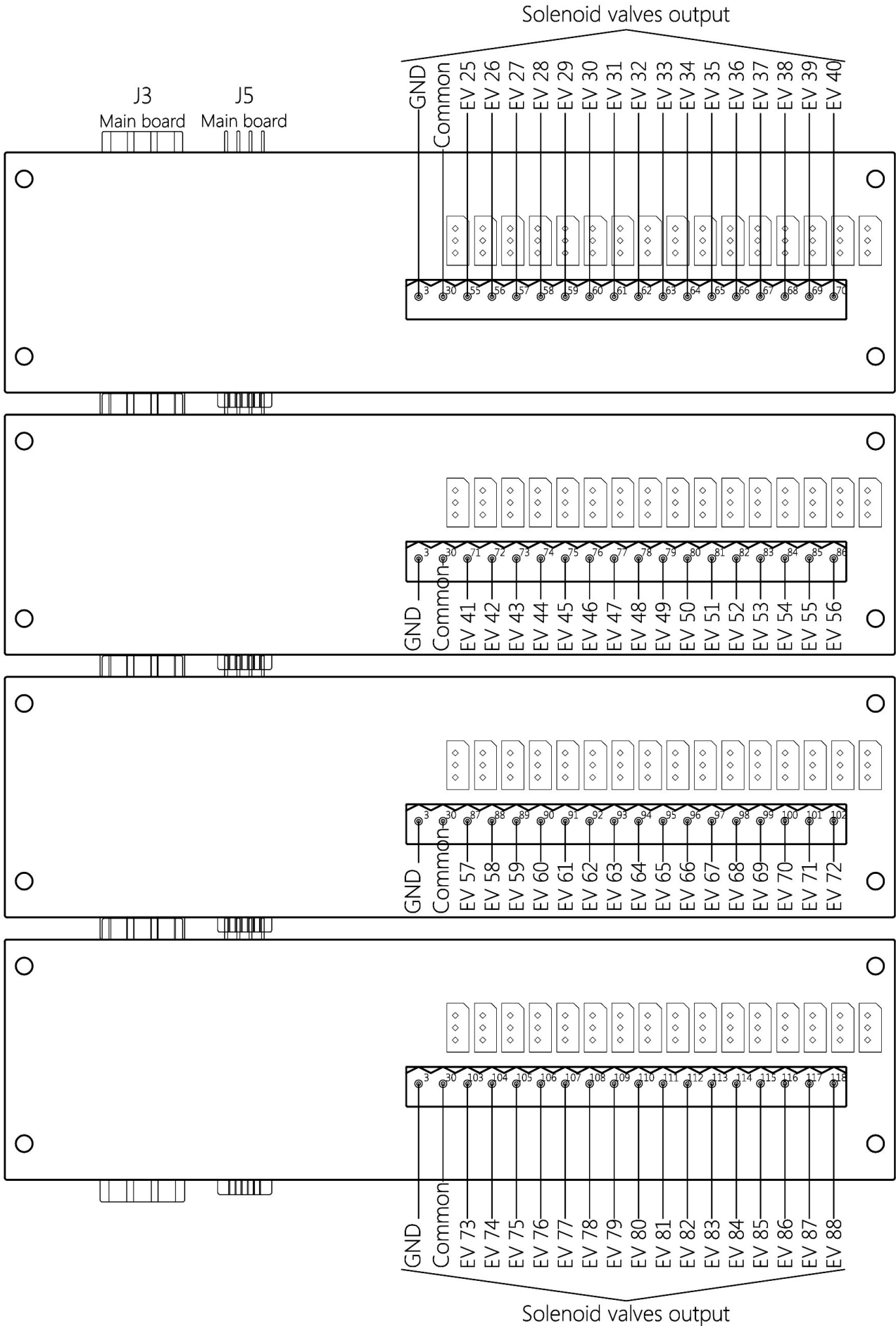
# Expansion Up To 56 Channels



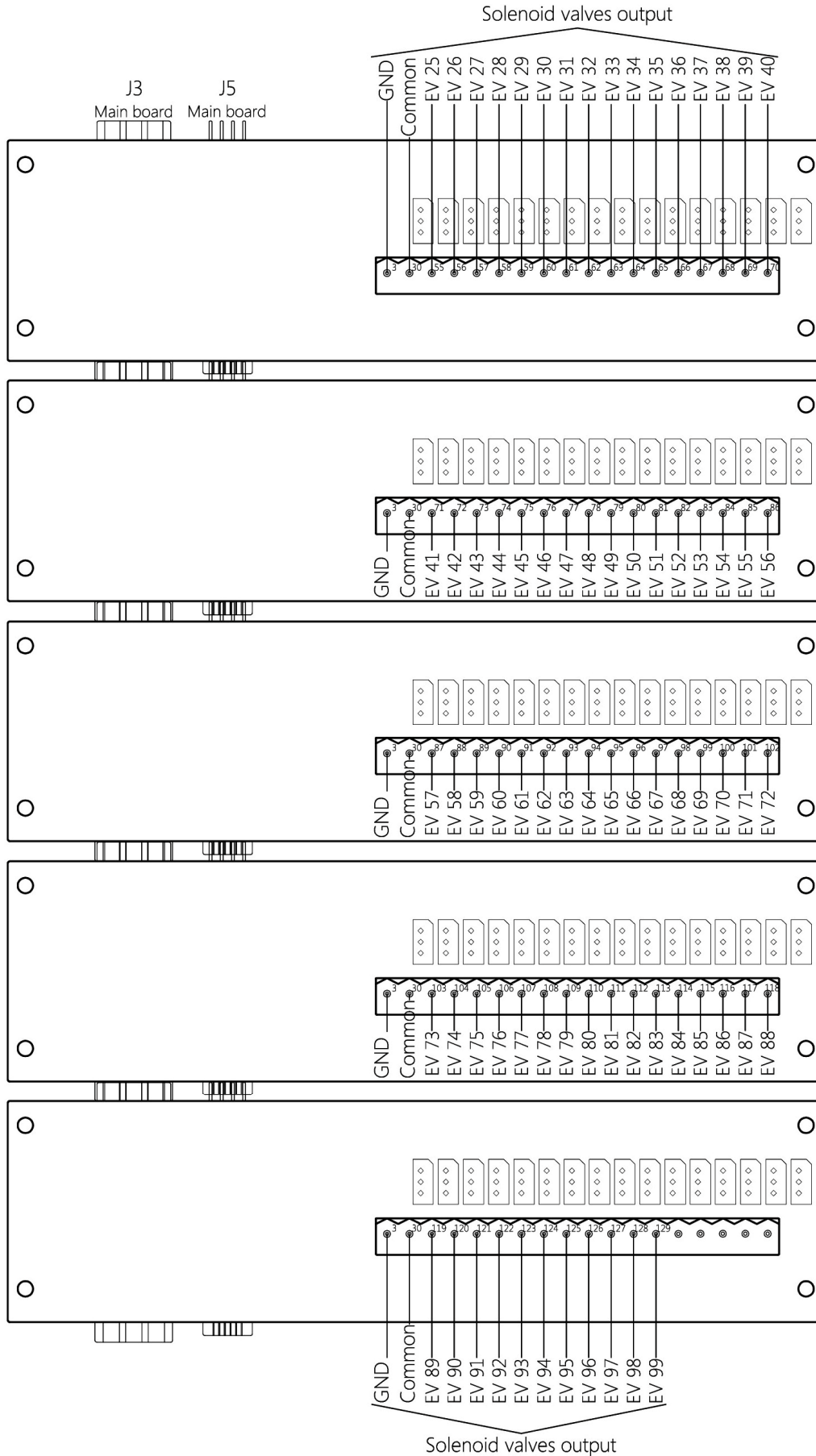
# Expansion Up To 72 Channels



# Expansion Up To 88 Channels



# Expansion Up To 99 Channels



For subsequent valves connections up to 184 channels, refer to the indications of the connection tables.





## Terminal Table





To access the terminal block of the control board, open the door locks, using the supplied wrench.





| Main Board |                          |          |                        |
|------------|--------------------------|----------|------------------------|
| Terminal   | Description              | Terminal | Description            |
| 01         | Power Supply 115 230 Vac | 46       | Solenoid output 16     |
| 02         | Power Supply 115 230 Vac | 47       | Solenoid output 17     |
| 03         | Earth Gnd                | 48       | Solenoid output 18     |
|            |                          | 49       | Solenoid output 19     |
| 03         | Solenoid Valve Earth Gnd | 50       | Solenoid output 20     |
| 30         | Solenoid valve common    | 51       | Solenoid output 21     |
| 31         | Solenoid output 01       | 52       | Solenoid output 22     |
| 32         | Solenoid output 02       | 53       | Solenoid output 23     |
| 33         | Solenoid output 03       | 54       | Solenoid output 24     |
| 34         | Solenoid output 04       |          |                        |
| 35         | Solenoid output 05       | 04       | Alarm relay contact 01 |
| 36         | Solenoid output 06       | 05       | Alarm relay contact 01 |
| 37         | Solenoid output 07       | 06       | Alarm relay contact 02 |
| 38         | Solenoid output 08       | 07       | Alarm relay contact 02 |
| 39         | Solenoid output 09       | 08       | Alarm relay contact 03 |
| 40         | Solenoid output 10       | 09       | Alarm relay contact 03 |
| 41         | Solenoid output 11       | 12       | Fan input              |
| 42         | Solenoid output 12       | 13       | Fan input              |
| 43         | Solenoid output 13       | 14       | Enable input           |
| 44         | Solenoid output 14       | 15       | Enable input           |
| 45         | Solenoid output 15       |          |                        |





If the sequencer is in G2 version with reinforced transformer, connect two solenoid valves in parallel to each terminal.





### Expansion Boards





| Expansion up to 32 channels   |   | Expansion up to 40 channels   |   |
|---|---|---|---|
| Terminal  | Description   | Terminal  | Description   |
| 03  | Solenoid valve Earth Gnd  | 03  | Solenoid valve Earth Gnd  |
| 30  | Solenoid valve common   | 30  | Solenoid valve common   |
| 55  | Solenoid output 25  | 63  | Solenoid output 33  |
|  |  |  |  |
| 62  | Solenoid output 32  | 70  | Solenoid output 40  |

| Expansion up to 48 channels   |   | Expansion up to 56 channels   |   |
|---|---|---|---|
| Terminal  | Description   | Terminal  | Description   |
| 03  | Solenoid valve Earth Gnd  | 03  | Solenoid valve Earth Gnd  |
| 30  | Solenoid valve common   | 30  | Solenoid valve common   |
| 71  | Solenoid output 41  | 79  | Solenoid output 49  |
|  |  |  |  |
| 78  | Solenoid output 48  | 86  | Solenoid output 56  |

| Expansion up to 64 channels   |   | Expansion up to 72 channels   |   |
|---|---|---|---|
| Terminal  | Description   | Terminal  | Description   |
| 03  | Solenoid valve Earth Gnd  | 03  | Solenoid valve Earth Gnd  |
| 30  | Solenoid valve common   | 30  | Solenoid valve common   |
| 87  | Solenoid output 57  | 95  | Solenoid output 65  |
|  |  |  |  |
| 94  | Solenoid output 64  | 102   | Solenoid output 72  |

| Expansion Up To 80 Channels   |   | Expansion Up To 88 Channels   |   |
|---|---|---|---|
| Terminal  | Description   | Terminal  | Description   |
| 03  | Solenoid Valve Earth Gnd  | 03  | Solenoid Valve Earth Gnd  |
| 30  | Solenoid Valve Common   | 30  | Solenoid Valve Common   |
| 103   | Solenoid Output 73  | 111   | Solenoid Output 81  |
|  |  |  |  |
| 110   | Solenoid Output 80  | 118   | Solenoid Output 88  |

| Expansion Up To 96 Channels  |  | Expansion Up To 99 Channels  |  |
|--|--|--|--|
| Terminal   | Description  | Terminal   | Description  |
| 03   | Solenoid Valve Earth Gnd   | 03   | Solenoid Valve Earth Gnd   |
| 30   | Solenoid Valve Common  | 30   | Solenoid Valve Common  |
| 119  | Solenoid Output 89   | 127  | Solenoid Output 97   |
|  |  |  |  |
| 126  | Solenoid Output 96   | 134  | Solenoid Output 99   |

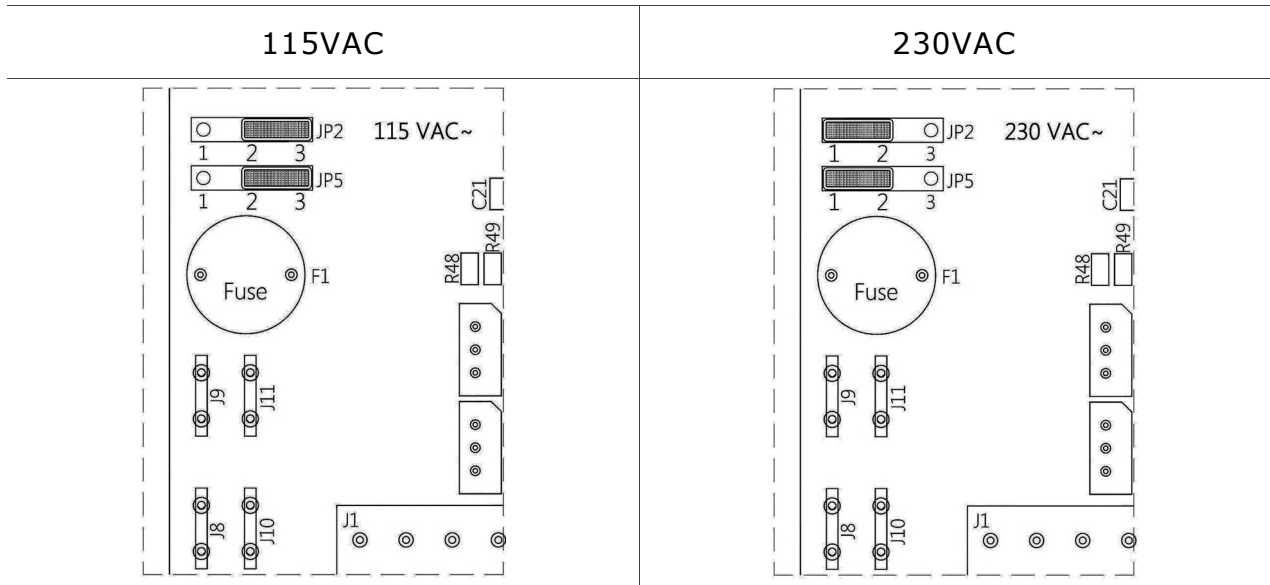
| Expansion Up To 112 Channels  |   | Expansion Up To 120 Channels  |   |
|---|---|---|---|
| Terminal  | Description   | Terminal  | Description   |
| 03  | Solenoid Valve Earth Gnd  | 03  | Solenoid Valve Earth Gnd  |
| 30  | Solenoid Valve Common   | 30  | Solenoid Valve Common   |
| 135   | Solenoid Output 105   | 143   | Solenoid Output 113   |
|  |  |  |  |
| 142   | Solenoid Output 112   | 150   | Solenoid Output 120   |

### Fuse Table

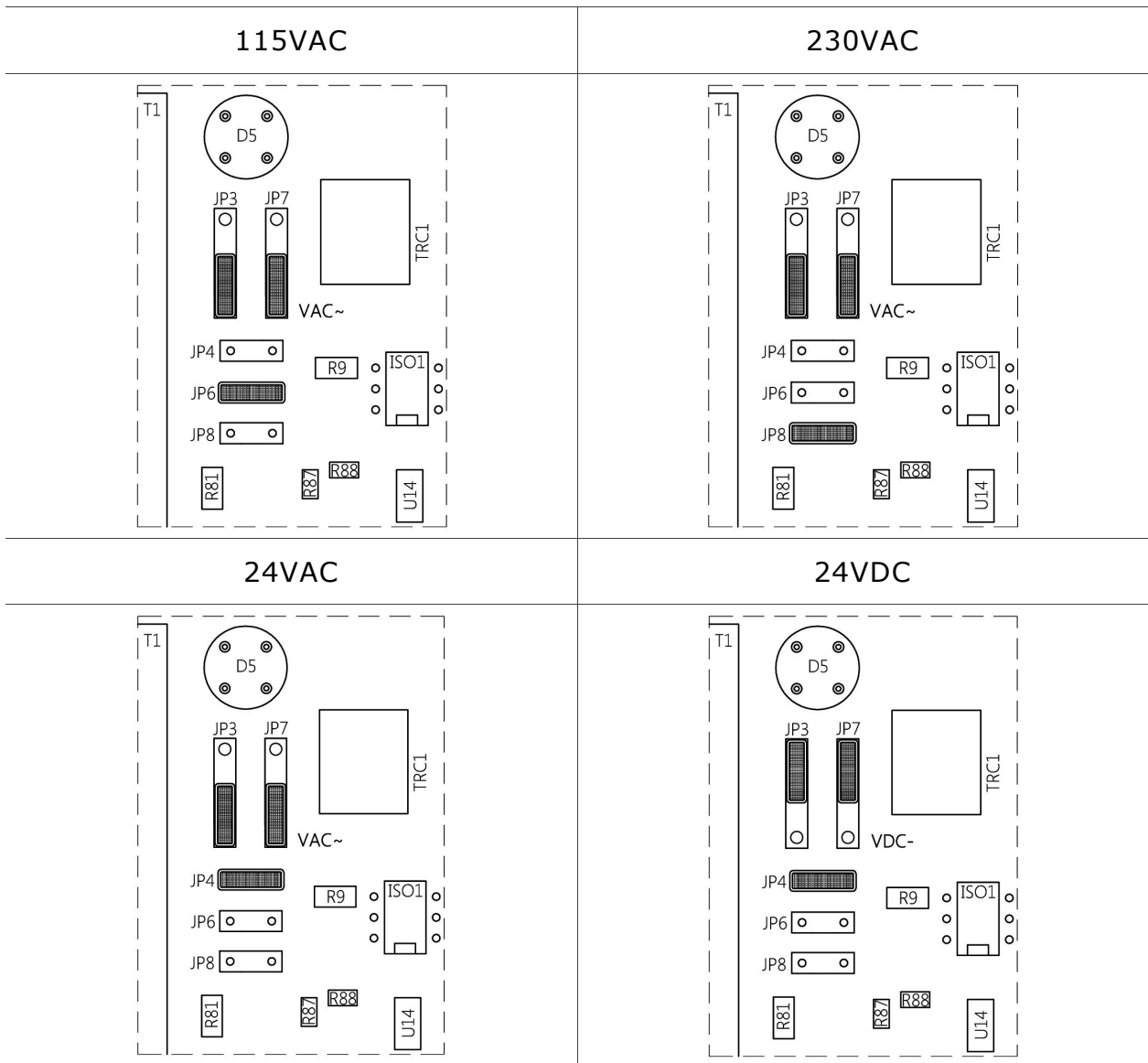
| Voltage      | Value |
|--------------|-------|
| 230 V        | 1 A   |
| 115 V        | 1 A   |
| 24 Vdc / Vac | 3 A   |



## Jumper Configuration Power Supply VAC

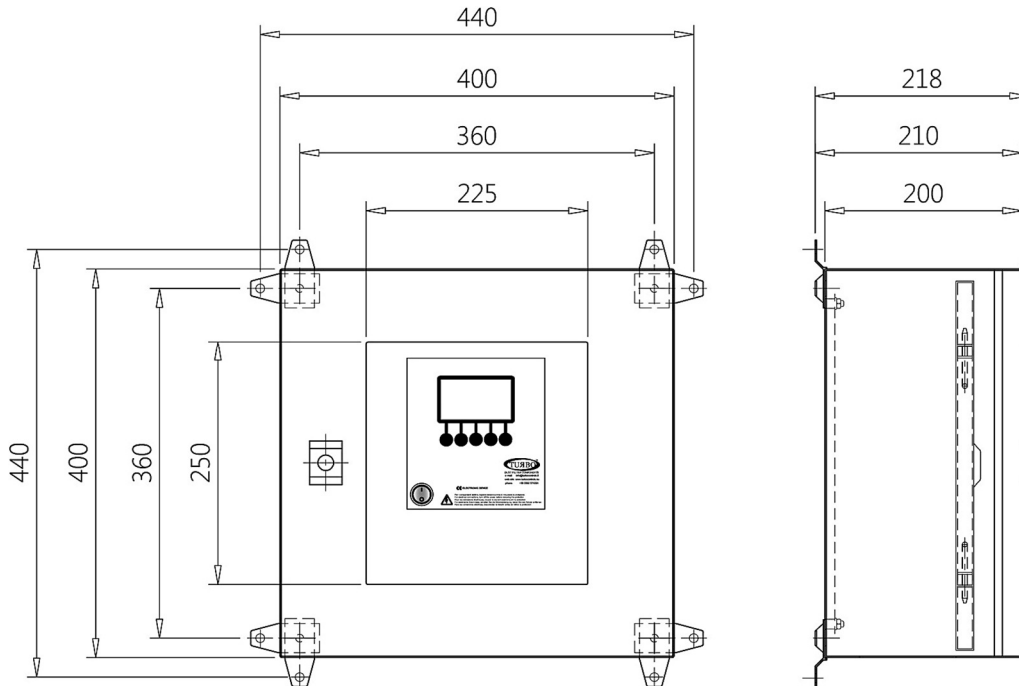


## Jumper Configuration Output



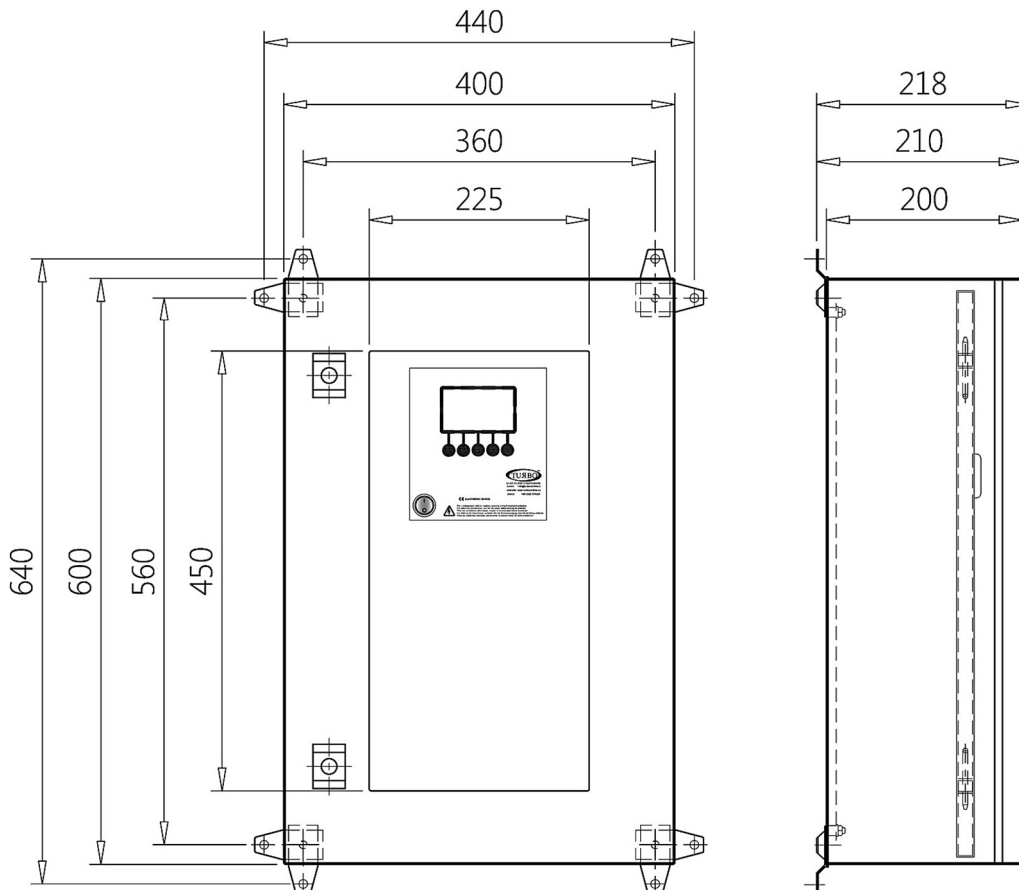
## Installation And Casing Dimensions

### Expansion Up To 56 Channels



Weight 14.6 Kg

### Expansion Up To 99 Channels



Weight 21.9 Kg

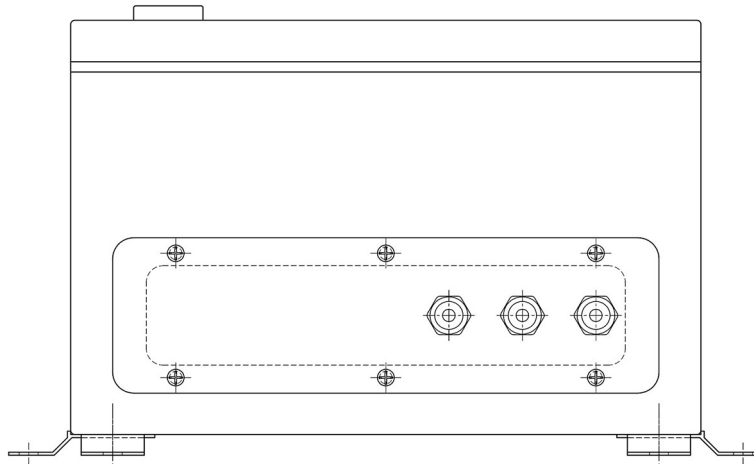
## Cable Entry For The Electrical Connections

For power supply of parts, use of cable glands which must only be installed on the removable cover plate located at the bottom of the enclosure.

To preserve the IP degree of protection of the box must be used cable glands of the same class of the enclosure or higher.

The holes should be done with precision as specified by the manufacturer of the cable glands.

The example shows a cable entry made with 3 cable glands.



## Maintenance

Only the fuses, batteries and SD card can be replaced.

All other repairs must be done by the manufacturer.



To clean dust or dirt off the surfaces, wipe gently with cotton, or other soft material soaked with isopropyl alcohol, ethyl alcohol; for the Lcd display do not use water, ketone or aromatics and never scrub hard, do not rub with abrasive sponges.



## Default Settings

| Description   | Set Value |
|---|-----------|
| Solenoid Valve Activation Time  | 0.20 Sec. |
| Washing Pause Time Between Solenoid Valves In Normal Cycle                              | 20 Sec.   |
| Number Of Outputs   | 1         |
| Tensione Uscita: 24 Vdc, 24 Vac, 115 Vac, 230 Vac.                                      | 24 Vac    |
| Manual Solenoid Valve Activation  | 1         |
| Number Of Cycles After Fan Stop   | 1         |
| Pause Time Between Solenoid Valves In Cycle With Fan Off                                | 10 Sec.   |
| Maintenance Frequency In 10h (1=10h, 100=1000h)   | 100       |
| Maintenance Deadline Alarm On (1) Or Off (0)  | 0         |
| Maintenance Hour Counter Reset: Set 1 And Confirm To Reset The Maintenance Hour Counter | No        |
| Exclusion Of Valve In Short Circuit.  | Disabled  |

## Disposal

Do not disperse in the environment after use. Dispose of the product according to current regulations for the disposal of electronic equipment.



This device is used in a dust collector system and, therefore, it is part of a fixed installation.

## Warranty

The warranty has a duration of 2 years. The company will replace any electronic component deemed defective exclusively at our workshop, except in the presence of contrary agreements to be authorized by the company.

## Exclusions From Warranty

The warranty is void in the case of:

- Signs of tampering and unauthorized repairs.
- Incorrect use of the equipment that does not comply with the technical data.
- Incorrect electrical connections.
- Failure to comply with the installation standards.
- Use beyond EC standards.
- Atmospheric events (lightning, electrostatic discharge), over voltages.
- Clogged air connections. Damaged tubes.

## Problem Solution *FAQ*

| Fault  | Possible Cause  | Solution  |
|--|---|---|
| The display does not light up.                     | Burnt fuse.   | Check the protection fuse on the power voltage.<br>Check that the power voltage is present and compliant with that required for the device (terminals 01 and 03). |
| The outputs are not activated.                     | Incorrect output voltage.<br>Wiring to solenoid valves.   | Check that the unit and solenoid valve output voltage agree.<br>Check wiring between sequencer and solenoid valves.   |
| Do alarm messages appear?                          |   | Check the alarm code with the table.  |
| Do the alarms fail to activate signalling devices? | System wiring errors.<br>No power to alarm devices.   | The alarm devices must be powered by voltage external to the sequencer.<br>Activating to open the respective relay.   |
| Does the sequencer occasionally reset?             | Check the there is no filtered pulse load on the power line (spot welding machines, welding machines, plasma cutters etc.). | Install a filter on the power line of the sequencer, if needed.   |

## Declaration Of Conformity Of The Manufacturer



### The Manufacturer:

TURBO SRL

### The Manufacturer's Address:

Via Po 33/35 20811 Cesano Maderno (MB), Italy

Declares that:

### Product Name:

Sequencer E5T

### Product Options:

All

Complies with the following directives:

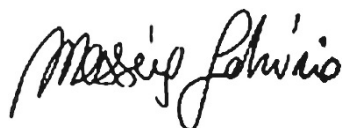
Directive 2014/30/EU Electromagnetic Compatibility compliant with Harmonised European standards EN61000-6-2:2005 class B of EN61000-6-4:2001

Directive 2014/35/EU Low Voltage compliant with Harmonised European Standards EN 60947-1:2004

A typical configuration of the product was tested.

Cesano Maderno, 23/05/2016

F. MESSINA (C.E.O.)



**TURBO s.r.l.**

**Code And Serial Number**