



TURBO s.r.l.
Electronic Control Systems for Dust Collectors
e-mail: info@turbocontrols.it web: www.turbocontrols.eu
TEL. +39 (0)362 574024 FAX +39 (0)362 574092

BUILT-IN ECONOMISER

EIT SERIES

1 to 16 solenoid valves



User Manual

01/02/2021
Manual Release 1.03
Hardware Release 4.00

General Description

The EIT control unit is an electronic device for controlling pneumatic cleaning of the Industrial Dust Collector Systems.

The pressure transducer mounted on the unit measures the differential pressure, allowing an accurate analysis of the filter clogging status.

The control unit has 2 relay contacts, to signal alarm events, a 4-20mA self-powered output, useful for transmitting the pressure value read to a remote device, and a large graphical LCD, which displays the operating status and, through a membrane keypad, allows configuration of the general parameters.

Components

- Main body of the die-cast aluminium casing.
- On-board electronics
- Multilingual alphanumeric keyboard and LCD
- Transparent and flexible protective PVC membrane, which allows IP65 protection.
- Cabinet wall fixing kit
- Support bracket for circuit board
- Item fixing bolts
- Front ON-OFF power supply switch

Technical features and general operation

- Power supply voltage 115-230Vac \pm 10% 50-60 Hz, which can be selected via hardware jumpers (Inputs optional: 24Vac, 24Vdc).
- Solenoid valves output voltage 24Vdc, 24-115-230Vac, which can be selected via hardware jumpers.
- Backlight LCD (visual area 72.0 x 40.0 mm).
- Two relays with potential-free contact, which can be associated to the desired alarm event.
- Operating mode which can be selected from MANUAL, AUTOMATIC, AUTOMATIC with forced cycle, PROPORTIONAL.
- Pressure is measured in kPa, (WC inches, mmH2O, daPa optional).
- Cleaning function with fan off (Post-Cleaning) with fan dP threshold setting or from input contact.
- Control unit work total hour meter.
- Partial hour meter for maintenance signals, which can be activated and with programmable hourly threshold.
- Maximum dP alarm (clogged filter).
- Minimum dP alarm (broken sleeve/cartridge) with the possibility of deactivation of the function.
- Solenoid valve malfunctioning alarm.
- Filtering elements maintenance alarm, with the possibility of deactivation of the function.
- Input contact for functions cut-off of the control unit (can be used as compressed air presence consent).
- Precoating function with possibility of deactivation.
- Active output 4-20 mA (self-powered), proportional to the dP reading, for transmission to remote reading device.
- Solenoid valve manual activation test function.

Electrical Features

Power Supply:

- 115Vac ± 10% 50-60 Hz – 25W
- 230Vac ± 10% 50-60 Hz – 25W
- 24Vac ± 10% 50-60 Hz – 25W (optional)
- 24Vdc ± 10% – 25W (optional)

Output voltage selectable for:

- 115Vac Maximum Load 25W
- 230Vac Maximum Load 25W
- 230Vac Maximum Load 25W
- 230Vac Maximum Load 25W

Inputs and outputs:

- Cleaning remote enabling contact input.
- Fan contact input for post-cleaning.
- Active output 4 – 20 mA for pressure dP remote transmission.

The solenoid valves connected to the control unit are the normally closed type. Their activation opens the jet of air.

Alarm Relays

The two alarm relays have potential-free contacts (no voltage) at terminals 4-5 and 6-7 of the terminal board.

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

Fuses

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

Operating Temperature

-10 °C/+55 °C

Storage Temperature

-20 °C/+60 °C

Timer features:

Pulse Time (Valve opening)

50 msec ÷ 5 sec.

Pause time (interval between valves opening)

1 sec. ÷ 999 sec.

Differential Pressure Meter

| | | |
|------------------------------|-------------------|-------------------|
| Measurable pressure range: | 0 ÷ 4 kPa | 0 ÷ 10 kPa |
| Maximum Pressure Applicable: | 16 kPa (0.16 bar) | 40 kPa (0.40 bar) |

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






Warning! Higher pressures will damage the device. Do not connect clogging measuring tubes to the compressed air circuit.





Warning Symbols Used in the Manual

The indications regarding safety are highlighted using the following symbols:

| | | |
|---|--|-------------------|
|  | Attention - Danger | Warning - Generic |
|  | Risk – Hazard | Electric Current |
|  | Dispose of according to the WEEE Waste Electrical and Electronic Equipment Directive | |

Installation Regulations and Warnings

- ⇒ Protect the equipment from direct sunlight.
- ⇒ Do not position the device near heat sources and electromagnetic fields. 
- ⇒ Mount the equipment to the wall at least 60 cm from the floor.
- ⇒ In a clearly visible place, which is easy to reach.
- ⇒ Connect the equipment to supply lines different to those used for motor drives or other large power devices that could generate network disturbances or instability.
- ⇒ The appliance electric power supply must be protected by a 230Vac~ 30 mA differential circuit breaker and a 230Vac~ 10 A bi-polar magnet circuit breaker, positioned in a place that is easy to reach.
- ⇒ Before intervening on the appliance to perform any operation, deactivate the magnet circuit breaker. 
- ⇒ For electrical operations, always remove the voltage and wait 30 seconds for the internal capacitors to discharge before opening the container. When finished, close the device before turning on power.
- ⇒ Make sure you are in a safe atmosphere before using the equipment for any type of operation.
- ⇒ Use flame-proof cables with minimum section of 0.75 mm² certified and compliant with IEC60227 or IEC60245 to connect the power supply voltage.
- ⇒ Use flame retardant cables with a minimum section of 0.75 mm² for all input control signals.
- ⇒ Use flame retardant cables with a minimum section of 0.75 mm² for signal relay contacts.
- ⇒ Use cables with a minimum section of 0.34 mm² for all solenoid valve control signals.
- ⇒ The protective earth cable must be yellow/green.
- ⇒ The protective earth cable must be connected first.
- ⇒ The yellow/green cable must only be used for earthing.

- ⇒ The cable glands must be chosen according to the diameter of the cable to be used.
- ⇒ 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 M16 supplied on request, has cable diameter minimum of 4 mm and a maximum of 8 mm, with clamping nut by 19 mm.
- ⇒ 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.
- ⇒ Do not make holes not protected on the container or protected by accessories with protection degree lower than that of the housing of the control unit.
- ⇒ 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.

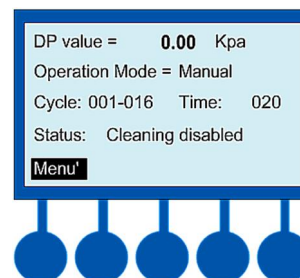
Do not use the economiser before reading
and understanding this manual.

Display and keyboard

A 5-key membrane keypad is placed on the front panel. This is useful for accessing control unit functions. At power-on, the Control unit will show the product's name and the installed firmware version.

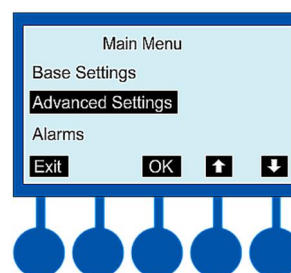
After the unit is switched on, the information about the operating status will appear on the display, such as the pressure dP reading, the operating mode set, the cycle time and the operating status.

By pressing the "MENU" button, the user can access the control unit configuration menu page.



In the menu page, by pressing the "↑" and "↓" buttons, the item desired can be highlighted.

Press the "OK" button to access the menu item highlighted and display the parameters that can be modified.

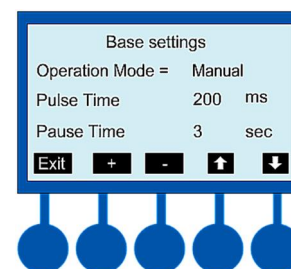


The "OK" button is also used to confirm choices or silence the alarms, if present.

In the parameters page, by pressing the "↑" and "↓" buttons, the parameter to modify can be highlighted.

The value of a parameter can be modified using the "+" and "-" buttons.

By pressing the "EXIT" button, go back to the previous screen, saving any modified parameters in the memory.



Main Menu

The menu and the individual functions in the same are organised as follows:

| Base Settings | | Default |
|-------------------|---|-----------|
| Operating Mode | Manual (dP value displayed but not used) Automatic Automatic with forced cycle Proportional | AUTOMATIC |
| Pulse time | Solenoid valve activation time Values that can be set: 0.05 seconds – 5.00 seconds step 0.01 seconds | 0.20 sec |
| Pause Time | Cleaning pause between solenoid valves Values that can be set: 001 sec – 999 sec (step 1 sec) | 20 sec |
| Number of outputs | Number of connected outputs Values that can be set: 001 – 099 (step 1) | 1 |
| Start Threshold | Cleaning cycle Start Threshold Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 0.80 KPa |
| Stop Threshold | Cleaning cycle Stop Threshold Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 0.40 KPa |

| Advanced Settings | | Default |
|-------------------|--|----------|
| Fan Mode | Fan on acknowledgement mode Values that can be set: from contact – from dP | dP |
| Fan Threshold | dP threshold for fan on acknowledgement if Fan Mode = from dP Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 0.10 KPa |
| PCC Cycles | Number of Post Cleaning cycles after the fan stops Values that can be set: 01 – 99 (step 1) | 1 |
| Pause in PCC | Pause between Post Cleaning valves during a cycle with the fan off Values that can be set: 001 sec – 999 sec (step 1 sec) | 10 sec |
| Precoating | Enabling the Precoating function Values that can be set: 0 (disabled) – 1 (enabled) | 0 |
| Precoating THold | dP threshold for Precoating function end Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 2.00 KPa |
| Enforced Cycle in | Selection of minutes or hours for Forced Cleaning Cycle interval. | minutes |
| T Enf.cycle | Interval of time for Forced Cleaning Cycle selected in relation to the choice made in "Forced Cycle In". Values that can be set: 1 - 999 (step 1) | 240 min. |

| Alarms | | Default |
|------------------|---|-----------|
| Al. Maintenance | Enabling of the alarm on maintenance interval Values that can be set: disabled – enabled | Disabled |
| Maint. interval | Maintenance interval expressed in tens of hours Values that can be set: 001 – 999 (step 1). (example: 1=10h, 10=100h) | 100 hours |
| Min DP alarm | Enabling of the Minimum dP Alarm function Values that can be set: disable – enable | Disabled |
| Min DP Thold Al. | Minimum dP Alarm Threshold for Broken Sleeve or Cartridge Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 0.20 KPa |
| Max DP | Maximum dP Alarm Threshold, Filter Clogging, signalling delayed by 20 seconds Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 3.00 KPa |
| Exclude EV in SC | If the short circuited valve is set, it is excluded from the cycle. Values that can be set: disable – enable | Disable |

| Calibration / Test | | Default |
|--------------------|---|----------|
| Volt. Output | Output voltage setting. Press "OK" button to access to configuration's window. | 24 Vac |
| Manual Activation | Output manual activation for output individual test. Values that can be set: from 1 to Number of Outputs Set | 1 |
| Zero dP | dP zero threshold for pressure zero adjustment Values that can be set: 0.00 kPa – 3.99 kPa (step 0.01) | 0.00 KPa |
| 4mA calibr. | The 4mA output signal corresponds to the 0 kPa pressure. Measure the current with a ammeter between Terminals 10 (-) and 11 (+) and, by pressing the "+" and "-" buttons, set the value so that the current is 4.00mA. | 250 |
| 20mA calibr. | The 20mA output signal corresponds to the kPa full-scale pressure. Measure the current with a ammeter between Terminals 10 (-) and 11 (+) and, by pressing the "+" and "-" buttons, set the value so that the current is 20.00mA. | 250 |

| Volt. Output (from Calibration / Test menu) | | Default |
|---|---|---------|
| Volt. Output (¹) | Values that can be set: 24 Vdc, 24 Vac, 115 Vac, 230 Vac Press "+" or "-" button to select the value of the output voltage. Press "EXIT" to store the parameter's value. | 24 Vac |

(¹) Before setting the output voltage, make sure that the valve voltage output configuration jumpers have been positioned following indication on page 16 and coherent with the value to be set.

| Counters | | Default |
|----------------|---|---------|
| Tot.hour count | Overall counter of the hours of activity of the device from commissioning. | 0 |
| Maint.hour CT | Maintenance Hour counter, dependent on the operating period of the fan. | 0 |
| Pulse Tot: | Overall counter of the pulses of activity of the device from commissioning. | 0 |

| Set up Display | | Default |
|----------------|--|---------|
| Language | One of the six languages available can be selected: Italian, English, French, German, Spanish, Portuguese. | Italian |
| Contrast | Used to increase or decrease the contrast of the screen. | 20% |
| Lighting | Used to set duration of back-lighting. The parameter can be set in ON-OFF-AUTO. | ON |

| System Info | |
|----------------|--|
| SW GUI version | Software version of the user interface (Graphical User Interface). |
| SW EIT version | Software version of the EIT SW main control unit. |

Alarms

The control unit performs a series of checks during the ignition cycle and normal operation. Below find descriptions of possible alarms and relative solutions:

| Code | Description | Operation |
|------|--|---|
| E01 | Output voltage setting set at 24Vdc Vac jumpers detected | - If 24Vdc is desired, switch the device off and move the AC/DC jumpers to DC. - If 24Vac is desired, press OK, then press SET, set the Output Voltage Setting function using "+" and "-", select 24Vac and confirm using OK. |
| E02 | Output Voltage Setting set 24Vac Vdc jumpers detected | - If 24Vac is desired, switch the device off and move the AC/DC jumpers to AC. - If 24Vdc is desired, press OK, then press SET, set the Output Voltage Setting function using "+" and "-", select 24Vdc and confirm using OK. |
| E03 | Output Voltage Setting set 24Vac or Vdc. Voltage out of range detected. | - If a 24V valve is to be used, switch the device off and move the output voltage selection jumpers to 24V. - However, if the jumpers are in the correct position, press OK and then SET, use "+" and "-" to select the Output Voltage Setting function, set 115 or 230 as jumpers and press OK. |
| E04 | Output voltage setting set at 115Vac. Voltage out of range detected. | - If a 115V valve is to be used, switch the device off and move the output voltage selection jumpers to 115V. - However, if the jumpers are in the correct position, press OK and then SET, use "+" and "-" to select the F05, set 115 or 230 as jumpers and press OK. |
| E05 | Output voltage setting set at 203V. Voltage out of range detected. | - If a 230V valve is to be used, switch the device off and move the output voltage selection jumpers to 230V. - However, if the jumpers are in the correct position, press OK and then SET, use "+" and "-" to select the Output Voltage Setting function, set a24, d24 or 115 as jumpers and press OK. |
| E06 | Solenoid Valve Current lower than the minimum threshold or solenoid valve disconnected. | Check the correct solenoid valve connection signalled during the error. The alarm auto-resets if the condition is solved. |
| E07 | Solenoid Valve Current higher than maximum value. | Check the correct solenoid valve connection signalled during the error. The alarm auto-resets if the condition is solved. |

Continue...

| Code | Description | Operation |
|------|---|---|
| E08 | <p>Short Circuit on one or more outputs.</p> <p>Signalling of code E08 alternates with the indication of the output of interest. It is shown as Uxx, where xx is the number of the output and the dP value.</p> | <p>Switch the device off and back on again, after having verified the connections of the solenoid valves.</p> |
| E09 | <p>Maximum dP pressure value exceeded</p> <p><i>dP Maximum Threshold Alarm, Filter Clogging</i>, detected for a period of time exceeding 20 seconds.</p> | <p>Verify filtering elements status.</p> |
| E10 | <p>Offset hardware of the dP sensor is out of range.</p> | <p>The self-calibration of the dP sensor has determined a value that is out of range. Disconnect the air pipes and repeat the function. Whenever the alarm should re-occur, ask for technical assistance.</p> |
| E11 | <p>Maintenance interval has been reached.</p> | <p>Perform maintenance.</p> |
| E12 | <p>Full scale value of the dP sensor has been reached. Signalling is immediately.</p> | <p>Verify filtering elements status. WARNING: Operation in this condition can damage the device.</p> |
| E13 | <p>dP minimum value alarm between <i>dP Threshold For Fan On Acknowledgement</i> and <i>dP Minimum Threshold alarm</i> for broken sleeve or cartridge. The alarm is generated with a fixed delay of 60 seconds.</p> | <p>Verify filtering elements status.</p> |
| E14 | <p>Indicates that a valve in Short Circuit has been excluded from the cycle.</p> <p>Signalling of code E14 alternates with the indication of the output short circuited. It is shown as Uxx, where xx is the number of the corresponding output.</p> <p>An output is considered Short Circuited if the error condition is maintained for 3 successive activations.</p> <p>An activation without errors resets the count.</p> | <p>Switch the device off and back on again, after having verified the solenoid valves system.</p> |

Operation Description

When the control unit is switched on, the LCD shows the SW version installed, while it verified congruency of the settings memorised in EEprom and the positions of the voltage selection hardware jumpers. Whenever there is a discrepancy between the settings, the corresponding error code will be displayed (Ref. Alarms Table). Functionality of the control unit will be limited to just modification of the parameters. The operator can switch off and configure the jumpers correctly.

Manual Operating Mode

When MANUAL operating mode is set, the control unit will work as a programmable cycle sequencer. The connected outputs will be activated at programmed time intervals. Activation of the manual function is possible by accessing the configuration menu and setting the operating mode in "*Manual*". Consequently the "*Pulse Time*" and the "*Pause Time*" will set between the triggers.

Automatic Operating Mode

By selecting the "*Automatic*" operating mode, the control unit will function autonomously, performing pneumatic cleaning only of necessary. If the unit detects that filter clogging exceeds the "*Start Threshold*", it starts the cleaning cycle. If clogging drops below the "*Stop Threshold*", cleaning is suspended until the pressure rises again to a value above that set in "*Start Threshold*".

When cleaning is in progress, the times with which the unit performs cleaning are always those set in "*Pulse Time*" and "*Pause Time*".

Automatic Operating Mode with Forced Cycle

It operates in the same way as the automatic operating mode, with exception that a cleaning cycle can be started with activation of the solenoid valves connected without having reached the "*dP Start Threshold*", after the "*Cycle Time forced*" is elapsed.

The forced cleaning interval can vary from 1-999 min/h and can be selected from the "*Forced Cycle In*" and "*Forced Cycle Time*" functions.

Proportional Operating Mode

With the Proportional Mode, the control unit will operate in complete autonomy by initially setting the "*dP Start Threshold*", "*Pulse Time*" and "*Pause Time*". Automatically, when the Start Cleaning threshold is exceeded, the solenoid valves are activated in sequence.

If the dP threshold lowers by 15% at the end of an entire pulse cycle for the connected solenoid valves, cleaning is suspended until the pressure rises over the dP Start Cleaning threshold again. If the dP value does not drop by 15% under the Start Cleaning threshold, the cycle time frequency is automatically reduced proportionately at each complete cycle of connected solenoid valve pulses, until a cycle time between solenoid valves equal to 10 seconds is reached.

The minimum 10 second threshold was chosen to not stress air distribution by the compressor connected to the filter.

Cleaning Function with Fan Off (PCC)

This function allows one or more cleaning cycles to be performed (the number of cycles is defined in *"PCC Cycles"*) when the fan is off. The status of the fan can be determined from the status of the contacts 12-13 (contacts open = fan off) if *"Fan Mode = from contact"*, or can be determined automatically with *"Fan Mode = from dP"*, when the dP pressure drops below the threshold defined in *"Fan Threshold"*. The pulse time of the valves will always be that defined in *"Pulse Time"*, while, in this case, the pause time is defined in *"PCC Pause Time"*.

During cleaning, the display will show the *"Final Cleaning (PCC)"* message.

Selecting the Number Of Outputs

The number of solenoid valve outputs on which the control unit will run the cleaning cycle can be selected. Cleaning is run in order from the first solenoid valve to the last. The total number of valves can be set using the *"Number of Outputs"* function.

Pre-coating Function

This function allows the pre-coating function to be performed. Pre-coating is a filter element treatment run with a powder called pre-coating powder. When *"Precoating = enabled"*, conventional cleaning is suspended until the precoating threshold, defined in *"Precoating Threshold"* is reached.

Zero dP calibration

This function enables to reset the dP metering with the fan turned off. Increase or decrease the value using the "+" and "-" buttons.

This value will be subtracted from the value read by the dP sensor.

Self-Calibration of the dP Sensor.

This function enables to automatically reset the dP metering with the fan turned off. Both pneumatic connections must be removed in order to perform the function.

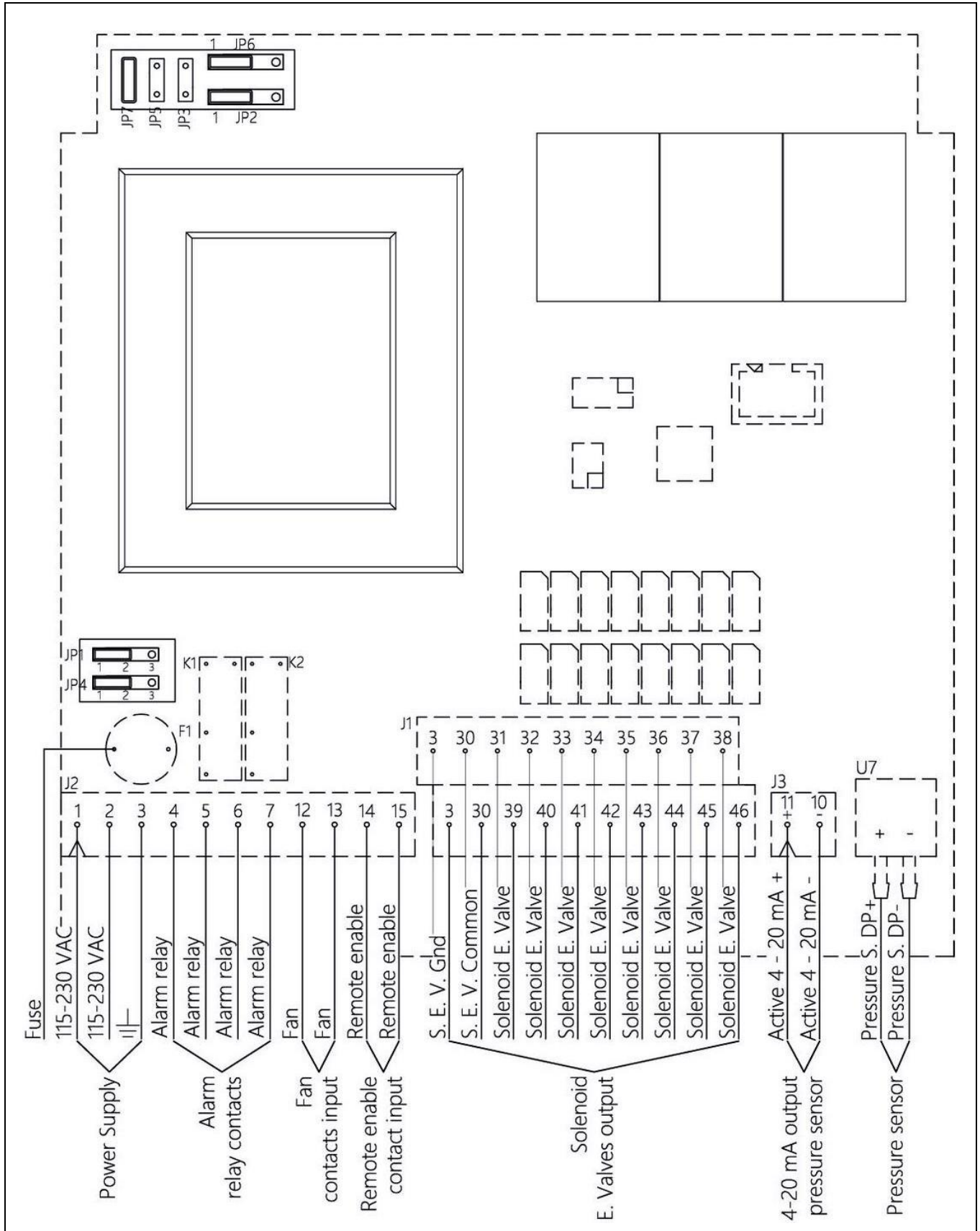
Switch the control unit on, at the same time holding the first and third keys from the left down, until the *"dP self-calibration in progress"* message appears on the screen.

The unit will return to normal status after a few moments, after having automatically completed calibration.

Keyboard lock

In main window, the user can lock the front keyboard pressing and maintain pressed the 5th key for at least 10sec. A "LOCK" message will be shown on the display to inform that the keyboard was locked. No setting operations will be possible. To unlock the front keyboard, the user needs to press and maintain pressed the 5th key for at least 10sec. The "LOCK" message will disappear. The lock/unlock condition is permanently stored in control unit non-volatile memory.

Control Board Connection Layout



| | |
|-----------------|--|
| Pressure Sensor | dP + pressure input section dirty |
| | dP + negative pressure input section clean |

Input/Output Contacts

| Input | Terminal | Description |
|-------------------------|----------|---|
| Remote Enabling Contact | 14-15 | Used to activate the control unit from remote; it can be activated and deactivated from a distance. The control unit is supplied with a jumper on the two terminals 14-15. Without this, it switches on but does not perform any activity, in stand-by for the contact to be closed. |
| Fan Contact | 12-13 | When closed, it informs the control unit that the plant has been started and is operating. The control unit is supplied with a jumper on the two terminals 12-13 to simulate plant operation, as if the fan were on. |

| Output | Terminal | Description |
|---|----------|--|
| Contact Alarm K1 (potential-free switch) | 4-5 | The relay is normally closed. It opens in the case of alarms and with board off, without power supply. The following events open the relay: Max dP reached. Min dP reached. E06-E08 Solenoid Valves Problem. Maintenance interval reached. If one of these events occurs, the relay activates. |
| Contact Alarm K2 (potential-free switch) | 6-7 | The relay is normally closed. It opens in the case of alarms and with board off, without power supply. The following event opens the relay: Max dP reached. |
| dP Output (4-20 20mA Current-loop) | 11-10 | Current-loop 4-20mA output, active. It is used to transmit the pressure valve to a remote device. |

Terminals Table

| Terminal | Description | Terminal | Description |
|----------|--------------------------|----------|-----------------------|
| 01 | Input 115-230Vac | 04 | Relay switch alarm 01 |
| 02 | Input 115-230Vac | 05 | Relay switch alarm 01 |
| 03 | PE Protection Earth | 06 | Relay switch alarm 02 |
| | | 07 | Relay switch alarm 02 |
| 03 | Solenoid Valves PE Earth | | |
| 30 | Common Solenoid valve | | |
| 31 | Solenoid valve output 01 | 12 | Fan Input |
| 32 | Solenoid valve output 02 | 13 | Fan Input |
| 33 | Solenoid valve output 03 | 14 | Consent Input |
| 34 | Solenoid valve output 04 | 15 | Consent Input |
| 35 | Solenoid valve output 05 | | |
| 36 | Solenoid valve output 06 | 10 | Output 4-20mA - |
| 37 | Solenoid valve output 07 | 11 | Output 4-20mA + |
| 38 | Solenoid valve output 08 | | |
| 39 | Solenoid valve output 09 | | |
| 40 | Solenoid valve output 10 | | |
| 41 | Solenoid valve output 11 | | |
| 42 | Solenoid valve output 12 | | |
| 43 | Solenoid valve output 13 | | |
| 44 | Solenoid valve output 14 | | |
| 45 | Solenoid valve output 15 | | |
| 46 | Solenoid valve output 16 | | |

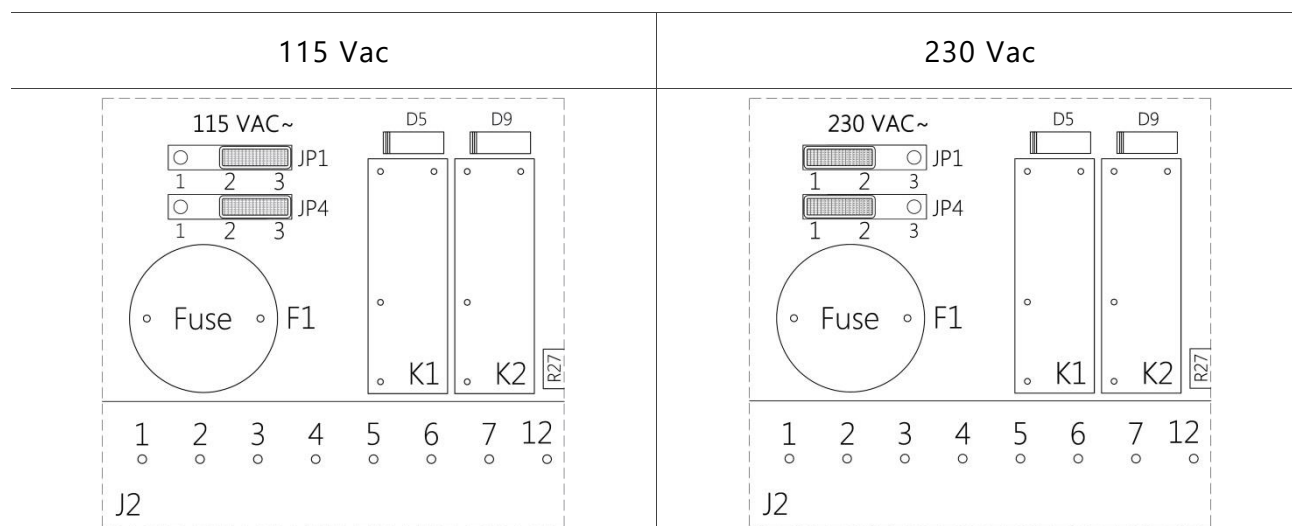
If the economiser is in G2 version with reinforced transformer, two solenoid valves can be connected in parallel to every terminal.

Fuses Table

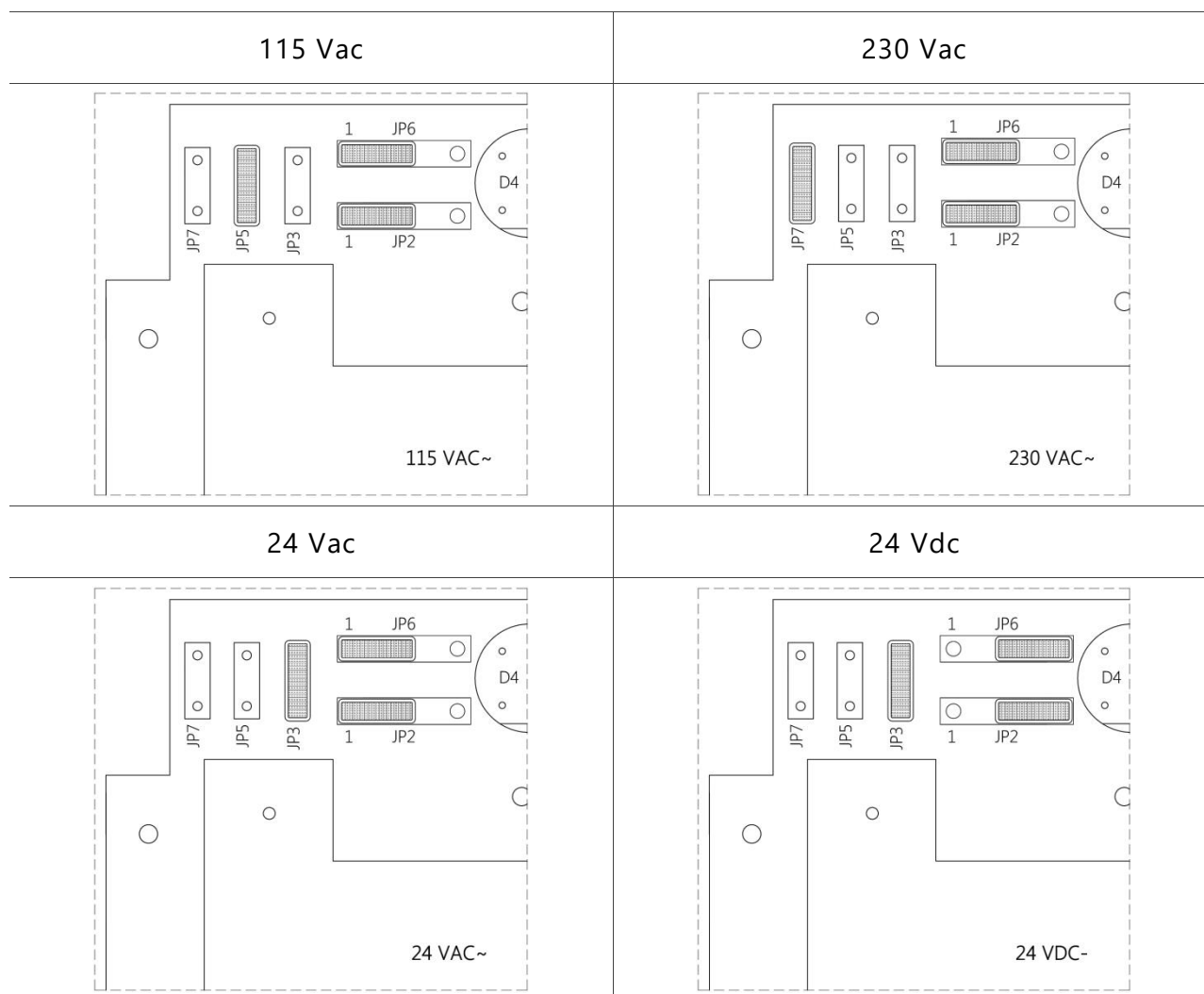
| Voltage | Value |
|--------------|-------|
| 230 V | 1 A |
| 115 V | 1 A |
| 24 Vdc / Vac | 3 A |

There is a fuse in proximity of the power supply terminals on the main board, which can be replaced if necessary. Use a time-lag fuse 5x20mm. (see table on the left for the value).

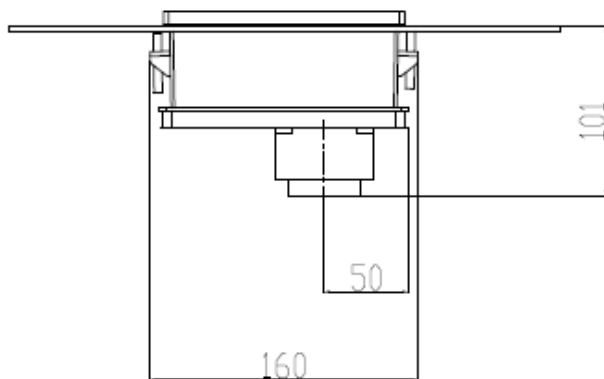
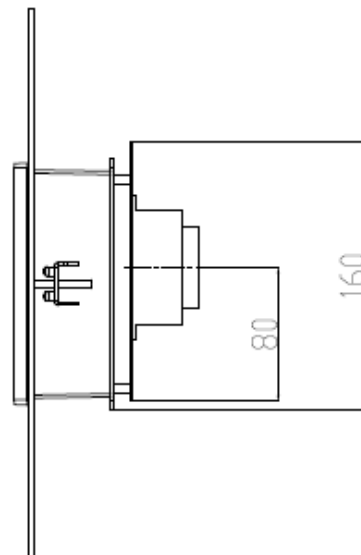
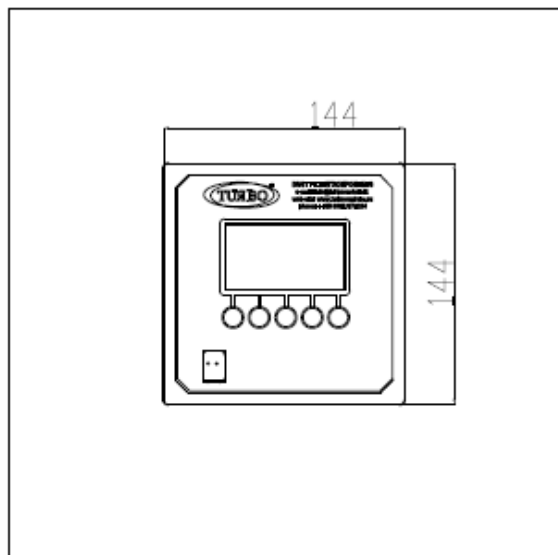
Power Supply Jumpers Configuration



Output Voltages Jumpers Configuration



Installation and Dimensions



Dimensions in mm

Maintenance

Apart from the fuse, the control unit does not have replaceable parts. All other repairs must be carried out by the manufacturer.



To clean dust and dirt from the surfaces, rub delicately with cotton or another type of soft cloth soaked in a non-aggressive, non-abrasive detergent. Use those for glass surfaces, do not use solvents or aromatic compounds and do not clean using abrasive sponges.



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 unauthorised 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.

Troubleshooting FAQ

| Fault | Possible Cause | Solution |
|---|--|---|
| The display does not turn on | Blown fuse. | Check the protection fuse on the power supply. Check that the supply voltage is present and concordant with that required for the equipment terminals 01, 02 and 03. |
| The outputs do not activate | Incorrect output voltage Wiring to the solenoid valves. | Check that the output voltage of the control unit and of the solenoid valves agree. Check the wiring between the economiser and the solenoid valves. |
| Differential pressure metering is not correct. | Clogged air connections. Damaged tubes. | Check that differential pressure metering is 0.00 kPa when the tubes are disconnected. In that case, check that the connection tubes between the equipment and the filter are not clogged or damaged. |
| The cleaning cycle is not performed | The <i>Start Threshold</i> is set too high, therefore does not perform any trigger. | Modify the start pressure threshold or put the economiser in <i>Manual</i> mode to check operation. |
| Alarm messages appear | | Check the alarm code against the table. |
| The alarms do not activate the signalling devices. | Errors in the wiring. Lack of powering of the alarm devices. | The alarm devices must be powered by voltage external to the economiser. To activate them, the latter opens the relative relay. |
| The post/cleaning starts during conventional cleaning. | <i>Fan Threshold</i> set is too high. | Modify the <i>Fan Threshold</i> of post-cleaning by lowering it to an acceptable value. |
| The post/cleaning does not start when the normal cleaning cycle ends. | <i>Fan Threshold</i> set too low. | Check that with the fan off, the pressure measured is lower than the <i>Fan Threshold</i> for post-cleaning. |
| The economiser sets sporadically. | Check that there is not an unfiltered pulse load (punching machines, welders, plasma cutters, etc.) on the power line. | If necessary, install a filter on the economiser power line. |
| With the fan off, the display does not show 0.0 kPa. | Incorrect <i>Zero dP</i> calibration. | Calibrate the <i>Zero dP</i> appropriately or run the self/calibration function, explained in the Operating paragraph. |

TURBO s.r.l.

Electronic Control Systems for Dust Collectors

e-mail: info@turbocontrols.it web: www.turbocontrols.eu

TEL. +39 (0)362 574024 FAX +39 (0)362 574092