

**DECLARATION OF CONFORMITY**



**KOLVER S.r.l.  
VIA MARCO CORNER, 19/21  
36016 THIENE (VI) ITALIA**

Declare that the new machine here described:

**ACE Screw Counter**

Is in conformity with the following standards and other normative documents:  
2006/42/CE, 2006/95/CE, 2004/108/CE, EN 60745-1, EN 60204-1, EN 61000-6-1,  
EN 61000-6-3.

It is also in conformity with RoHS II normative.

Name: Giovanni Colasante  
Position: General Manager  
Person authorized to compile the technical file in Kolver

Thiene, Jan. 1st 2016

*Giovanni Colasante*



# Operator's Handbook

## IDENTIFICATION DATA OF THE MANUFACTURER

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## IDENTIFICATION DATA OF THE PRODUCT

MODEL: ACE Screw Counter  
CODE: 020021 for EDU1FR/SG  
020022 for EDU..BL/SG – EDU2AE

## THECNICAL DATA OF THE PRODUCT

TENSION: 12V DC

**WARNING:** To reduce the risk of injury, before using or servicing tool, read and understand the following information as well as the safety instructions (Item number: OMS000). The features and descriptions of our products are subject to change without prior notice.

### 1. General view

The Screw Counter is a process control system that monitors the fastening assembly process by calculating the fastening time and by checking how many screws are left to be tightened. The system works by comparing the motor time on and off window, to a preset MIN/MAX value.

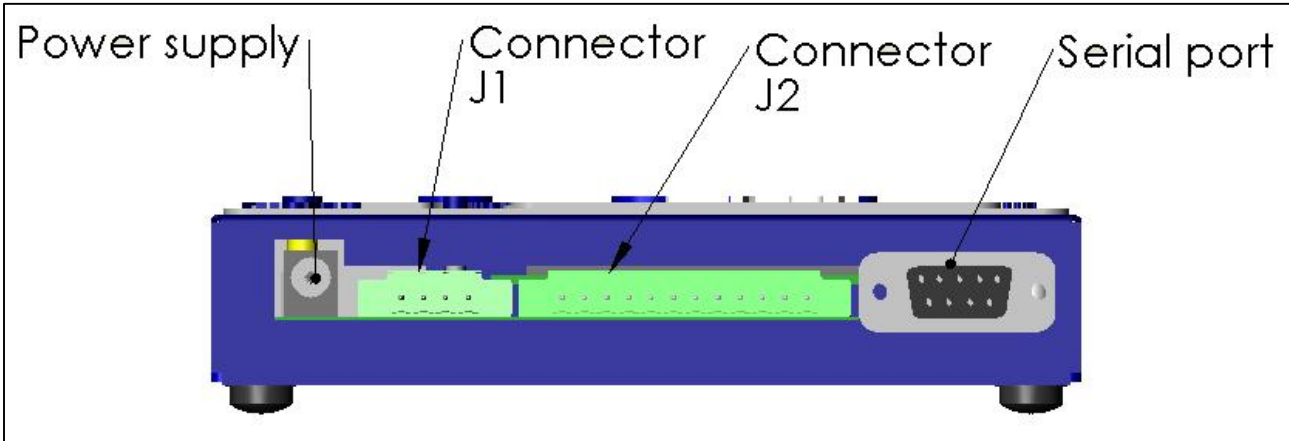


Fig. 1.0 Back panel

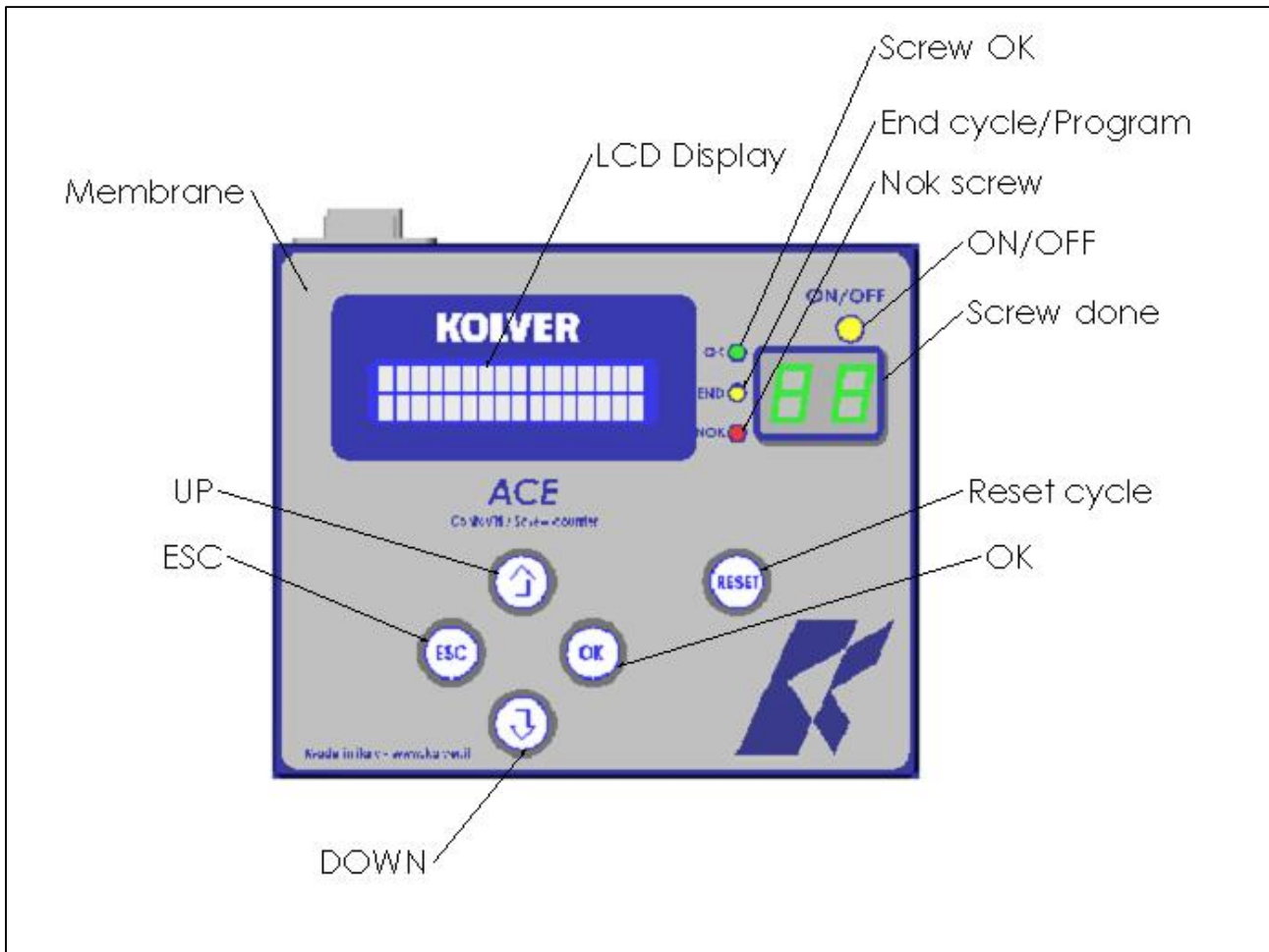
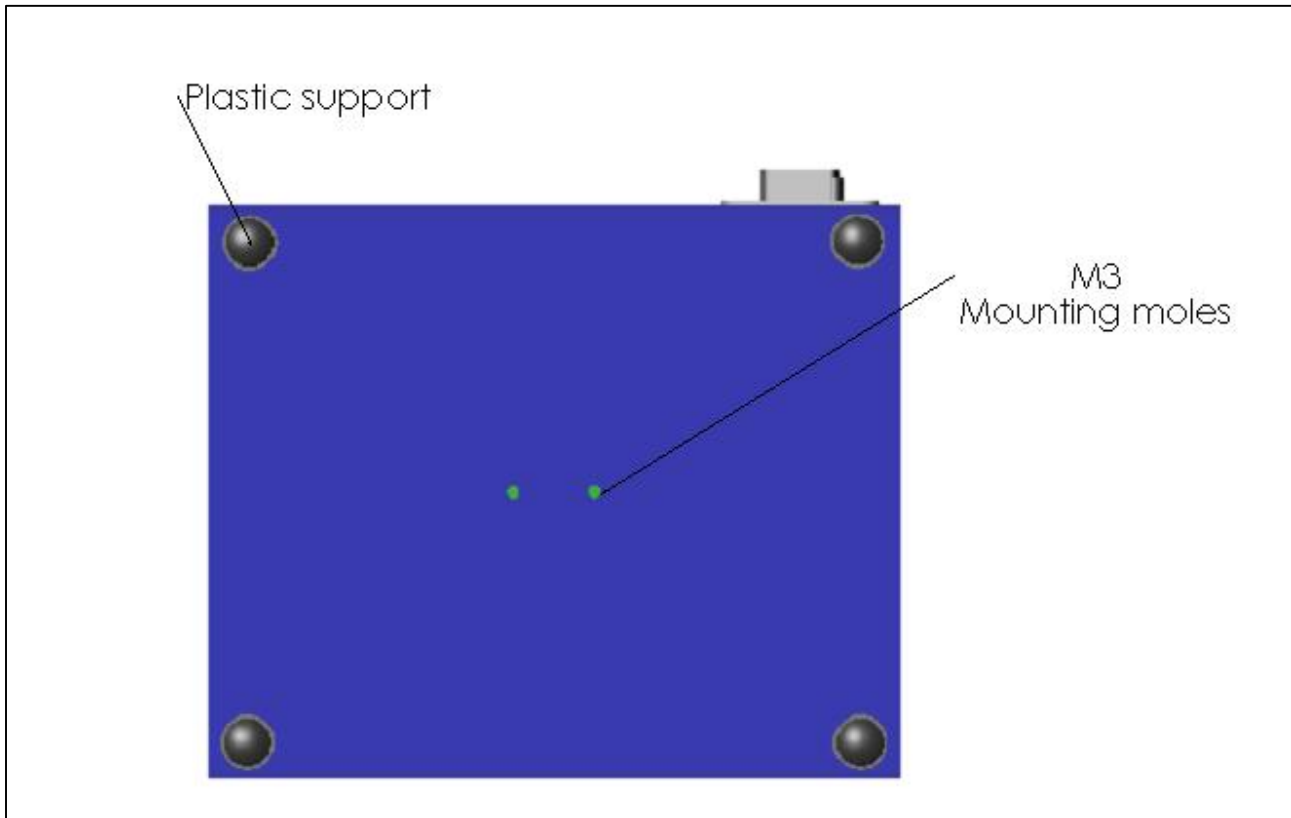


Fig 1.1 Front side



*Fig 1.2 Bottom*

## 2. Main features

- 9 independent programs
- Up to 99 screw for each program
- Min and max fastening time (accuracy: 0.01sec)
- User confirmation: active stop motor: push OK, to start a new cycle.
- In case of error, push ESC to continue (active stop motor).
- Password at the first starting and every time after the unit has been switched off
- Sequence of 4 programs
- Statistics: total number of correct screws done, wrong screws, cycles done, sequences done
- Connectors on the back panel with output signal of OK, NOK and END CYCLE
- Remote control of the system (optional)
- RS232 port

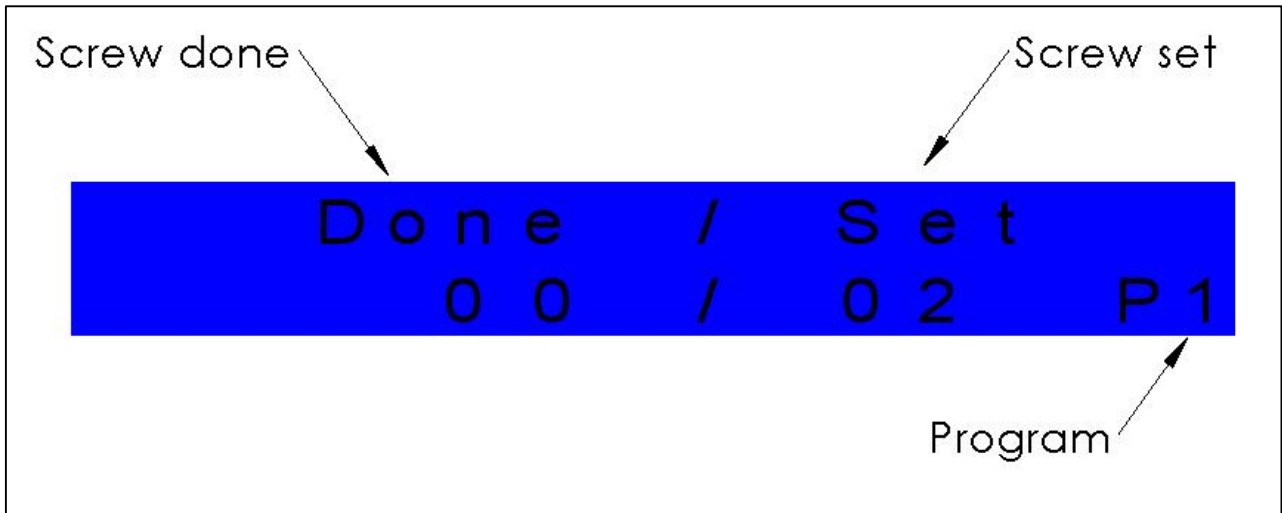
## 3. Main Display

The *ACE Screw Counter* offers 2 different modes of operation:

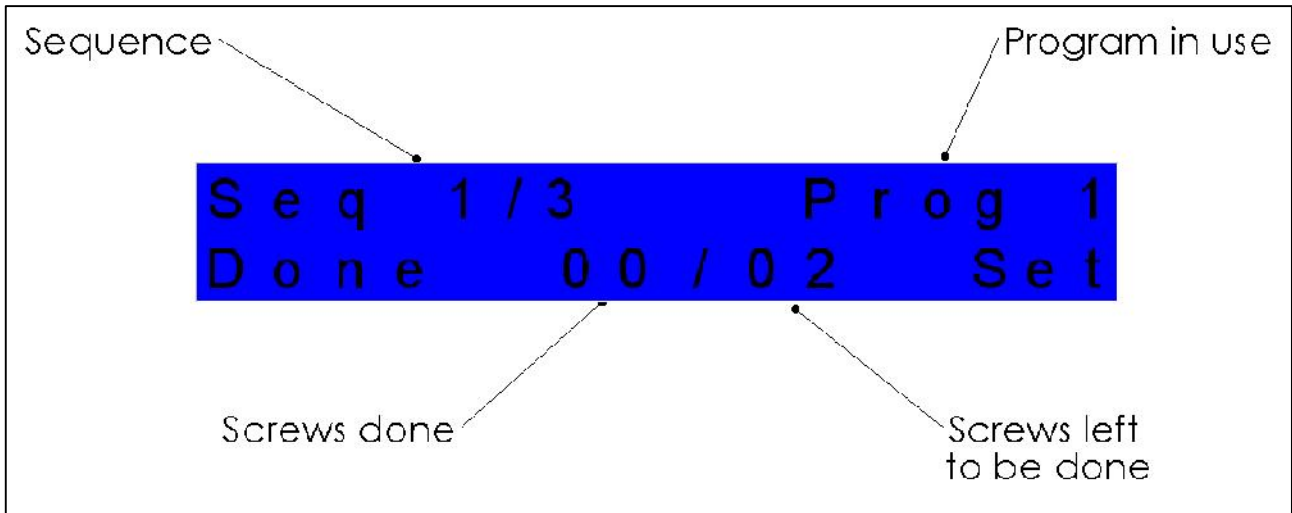
- Single program/Cycle,
- Sequence.

**SINGLE PROGRAM:** to perform a cycle for each program. The display will show all the parameters needed to run the program.

**SEQUENCE:** to perform up to 4 programs in sequence. On the display the selected programs need more information: screws done, screws to be done, total programs of the sequence and the program you are in.

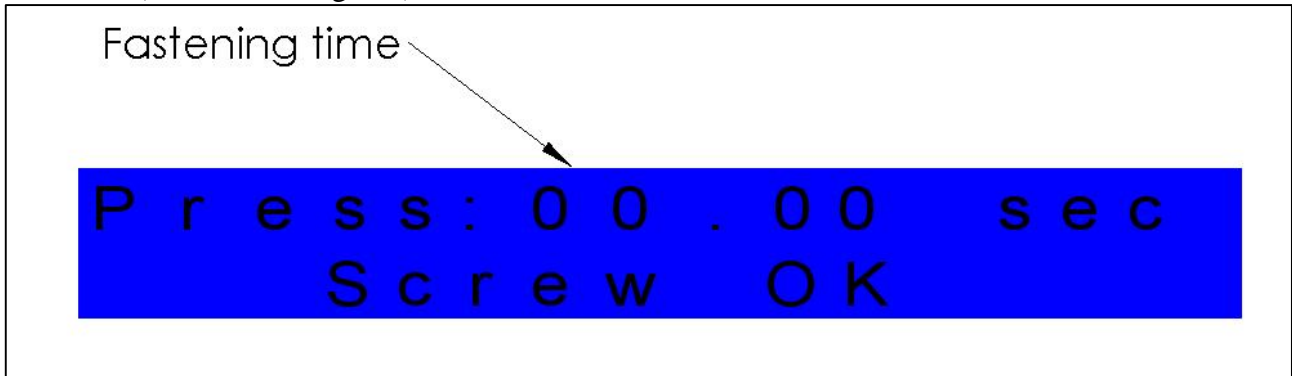


*Fig 3.0 Single program: main screen*



*Fig 3.1 Sequence: main screen*

If the screw has been done correctly, the unit will display the fastening time and the correct result of the screw (Screw OK – fig. 3.2).



*Fig 3.2 Screw OK*

If the screw has been done wrongly, the unit will display the fastening time and the type of error (fig. 3.3).



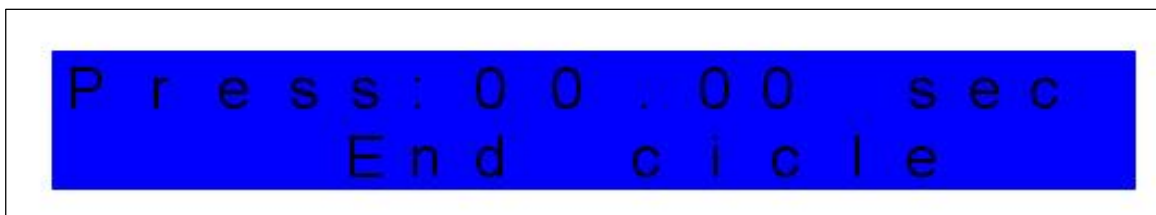
*Fig. 3.3 Screw NOK*

Errors can be:

- “Under min time”: when the torque is reached under the pre-set min time
- “Over max time”: when the fastening time is over the pre-set max time. In this case the screwdriver will stop.

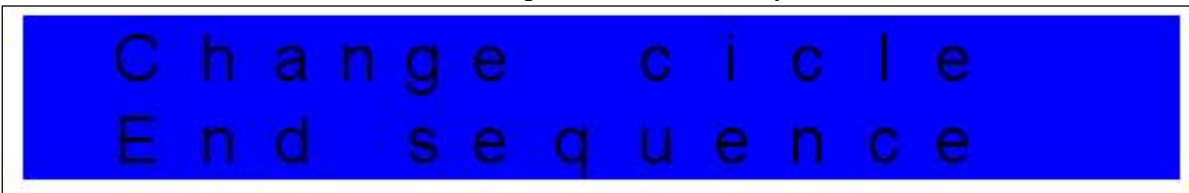
If the program you are in is finished, the unit will display the END CYCLE (fig. 3.4).

If the automatic reset is not active, this screen will be on until you push OK; instead if the automatic reset is active, the unit will go to the next program.



*Fig. 3.4 End program screen*

In case of Sequence and last cycle, if the RESET is set on manual (fig. 3.5), push OK to re-start the sequence; instead the unit will re-start the sequence automatically.



*Fig. 3.5 End of sequence screen*

### **Screw done display**

This display shows the OK screws done. Its bigger digits ensure a more effective reading.

### **LED OK/ END/ NOK**

To check more quickly the result of your fastening operation, 3 leds will help:

- GREEN: Screw OK
- YELLOW: end of program or end of sequence
- RED: Screw NOT-OK

### **Beep sounds**

Beep sounds at the end of the screwing allow to check if the screwing itself is correct or not.

- 1 beep: Screw ok
- 3 beep: Screw not-ok
- 5 beep: end of cycle

### 3. Menu

To enter the menu, push ESC for 1 sec.

At the first starting, you must digit a password: through UP/DOWN keys, digit the number and push OK to save it. Default password: 0000.

Menu:

- 1) Program: X
- 2) Screw : XX
- 3) Tmin : X.XX
- 4) Tmax : X.XX
- 5) Reset : YES/NO
- 6) Password
- 7) Sequence YES/NO
- 8) Sequence: XXXX
- 9) Statistic

To enter, select through UP/DOWN and push OK:

- 1) Program: to select the desired program. Once set, Pieces and Time will automatically be loaded. The selected program will be used in “Single Program” mode.  
Select the program through the UP/DOWN keys and push OK to save it or ESC to exit without saving.
  - 2) Screws: to select the number of pieces for each program.  
Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
  - 3) Tmin: to set the minimum fastening time. Reaching the torque under the min time will result in error. The min time must be lower than the max time. Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.  
consente di inserire il tempo minimo di avvitatura. Se l'avvitatore arriverà in coppia in un
  - 4) Tmax: to set the maximum fastening time. Reaching the torque over the max time will result in error. In this case the screwdriver will stop and the operator will be advised on the display and with 3 beep sounds. The max time must be higher than the min time.  
Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
  - 5) RESET: if active, at the end of each program, push OK to start a new program. If not active, the new program will start automatically. The end of the cycle will result on the display and in a beep sound. Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
  - 6) Password: you can select a new password instead of the default 0000. Push OK and digit the numbers through UP/DOWN, then push OK to save each value.
  - 7) Sequence YES/NO: if YES, you can activate the sequence or a functioning sequence of the pre-set programs (see § 8).
- Push OK to enter

- Through UP/DOWN keys, select “YES” to set the sequence or “NO” to remain in single program
- Push OK to confirm.

Once you set the sequence, you can modify only the number of the screws, the min and the max time but not the number of program you are in.

8) Sequence: you can set a sequence up to 4 programs. Each program can be repeated:

- Push OK to enter
  - Set the number of cycle per program (2, 3, 4) through UP/DOWN and push O
  - Set each single program through UP/DOWN and push OK
- Once set the last program, the unit will save automatically the data. The sequence will be shown on the display.

9) Statistic:

- Screws OK
- Screw NOT-OK
- Cycles done
- Sequences done correctly

Functioning:

- Push OK to enter
- All the data are visualized, then push OK to go on
- RESET ALL?: select YES through UP/DOWN to reset all the data or NO
- PRINT ALL: select YES through UP/DOWN to print all the data or NO

## 5.Connectors

**Warning:** *a wrong connection may cause irreversible damage to this device, ensure that tensions and connections are made by skilled technicians. Read the operating instructions before connecting external systems and ensure that tensions and external signals are within the limits of the device. Any tampering or damage caused by improper use of the device are not covered by warranty.*

On the back panel, there are 2 connectors:

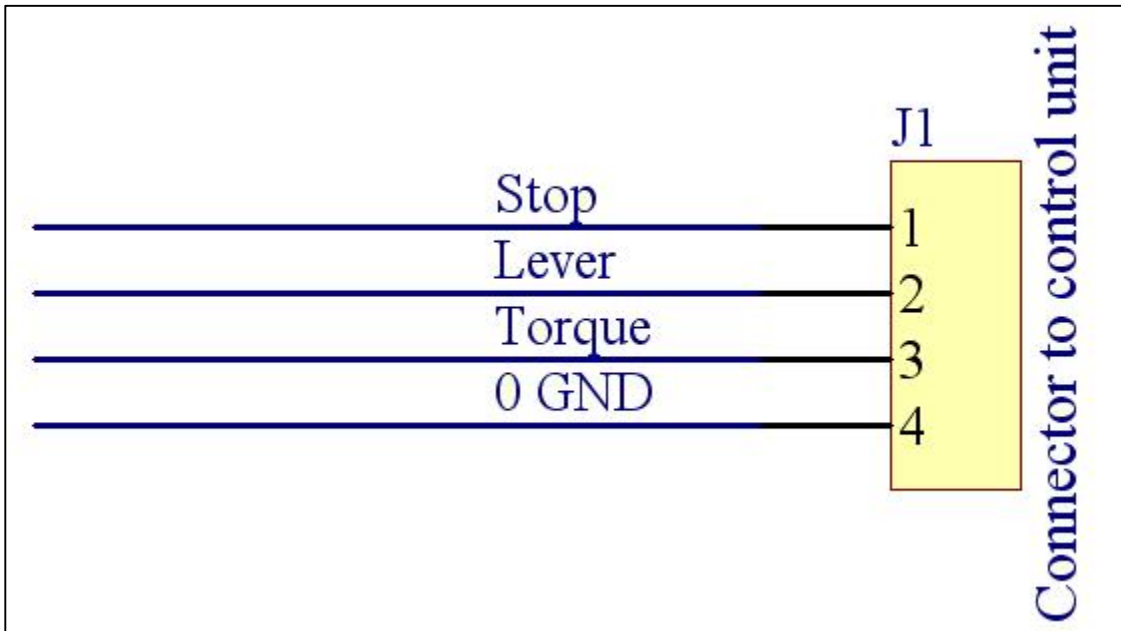
- A)** In/Out screwdriver
- B)** Output signals
- C)** Connection to external keyboard for a remote control
- D)** Remote suspension of cycle.

A) To be connected to the control unit:

- 1) Stop motor
- 2) Lever: start signal (lever pressed)
- 3) Torque: torque signal
- 4) 0 GND: common signal



Fig. J1



5.0

connector to Kolver control units

B) Pins 1 to 4 send out the signals of OK/NOT-OK screws and CYLE/SEQUENCE END. It features 2 relays to be used with up to 250VAC contacts: ideal to send for the signals to external devices located in the medium-long distances or to light signals.

Pins are:

- 1) GND Output
- 2) OK Screw
- 3) NOK Screw
- 4) CYLE/SEQUENCE END

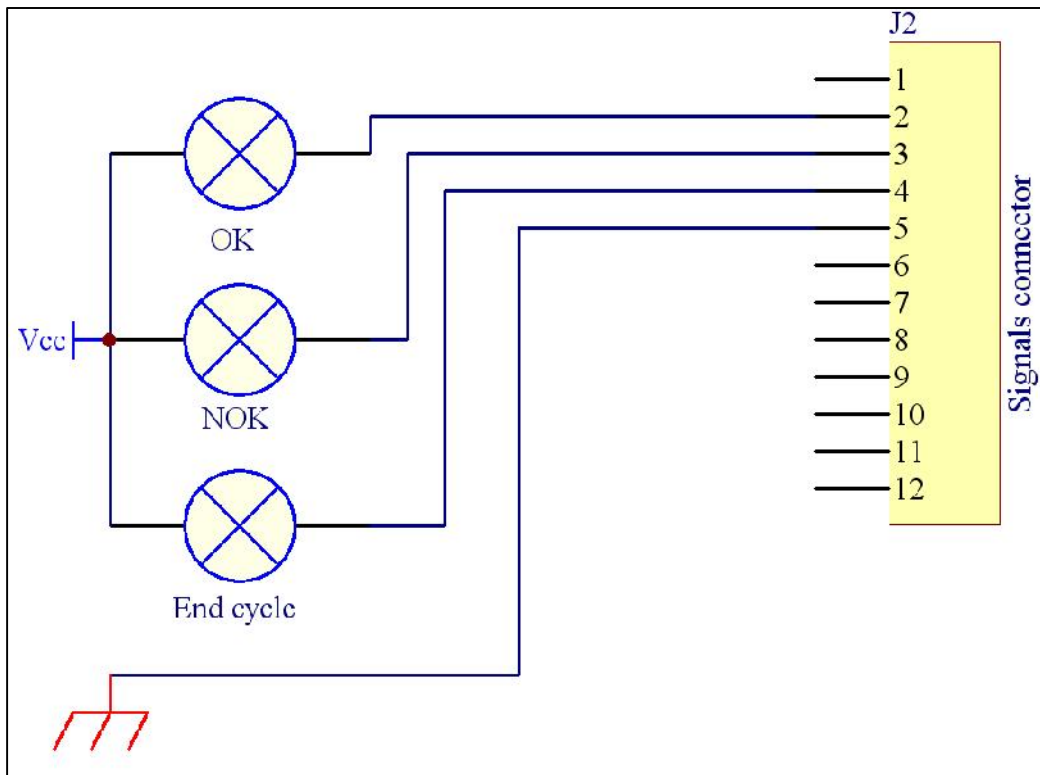


Fig 5.1 Signal connectors

CONTACT DATA	
Contact Arrangement	1A,1C
Initial Contact Resistance Max.	70mΩ (at 1A 24VDC)
Contact Material	AgNi
	1A                      1C
Contact Rating (Res. Load)	Standard    Sensitive    Standard
	5A 250VAC 3A 250VAC 5A 30VDC 3A 30VDC
Max. switching voltage	250VAC/30VDC
Max. switching current	5A
Max. switching power	1250VA/150W
Mechanical life	1 x 10 <sup>6</sup> OPS
Electrical life	1 x 10 <sup>6</sup> OPS

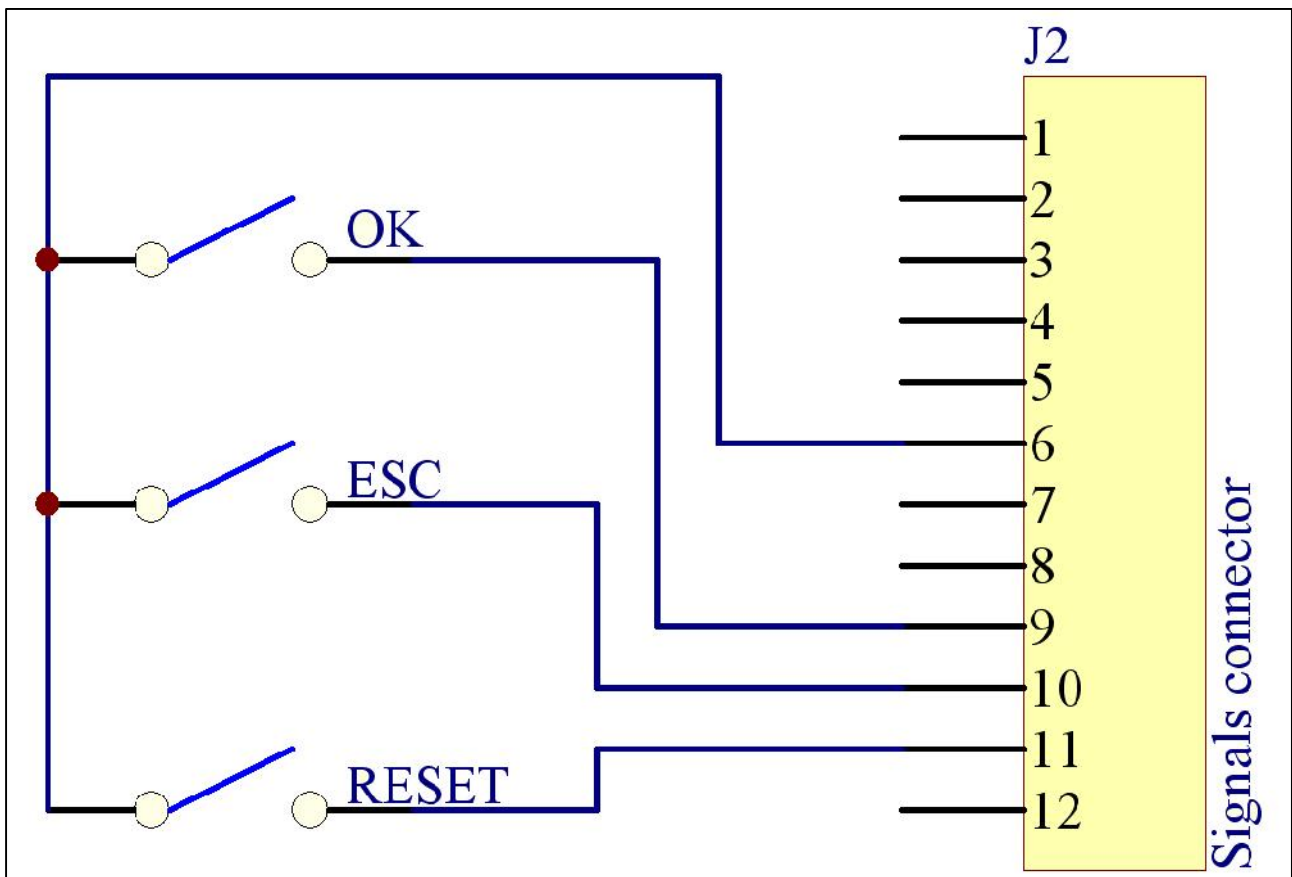
Fig. 5.2 Signal connectors: features

C) Keyboard connections allow the ACE screw counter functions through remote controls parallel to those on the screw counter itself, UP/DOWN not included useful only in the setting. The keyboard has also a “part present”: when active, it disables the screwdriver and it also available on your assembly line for a better control of the production cycle.

Controls are:

- 0 VDC
- OK
- ESC
- RESET
- Part present.

Fig. 5.2 Signal connectors on the keyboard



**Warning:** Do not connect buttons or other systems (for example remote systems such as PLC) with external voltage and/or earth. Refer only to the figure 5.2.  
Any tampering or damage caused by improper use of the device are not covered by warranty.

It's possible to stop by remote the fastening cycle through a contact available on the back panel. Closing this contact, the cycle is blocked and also the screwdriver. Useful as a part present on your assembly line.

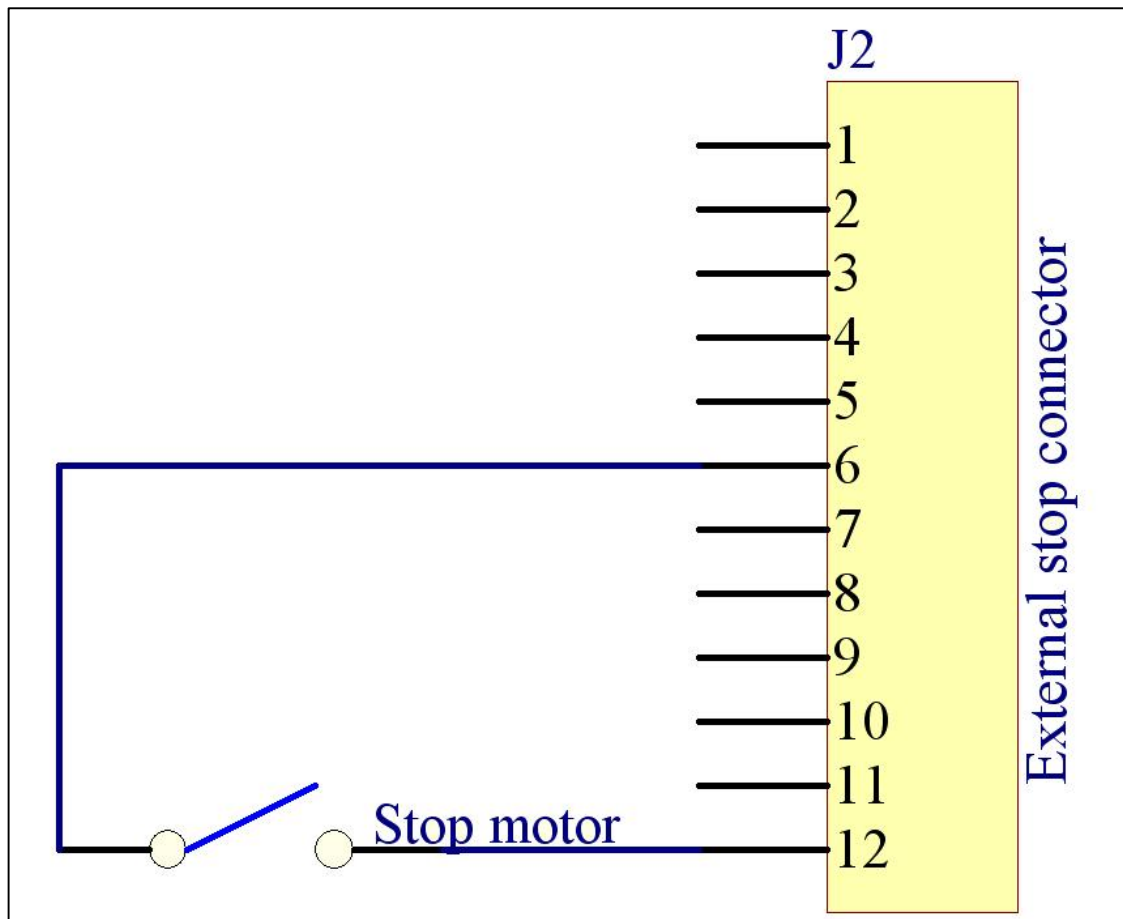


Fig. 5.3 Connection keyboard – part present

**Technical features:**

Transformer	12VDC 200mA
Nominal current	230mA
Max current	500mA

**Keyboard Relay:**

Nominal voltage	Pick-up Voltage VDC	Drop-out Voltage VDC	Max. allowable Voltage VDC (at 20 )
24	18.0	1.20	31.2

## **GUARANTEE**

1. This KOLVER product is guaranteed against defective workmanship or materials, for a maximum period of 12 months following the date of purchase from KOLVER, provided that its usage is limited to single shift operation throughout that period. If the usage rate exceeds of single shift operation, the guarantee period shall be reduced on a prorata basis.
2. If, during the guarantee period, the product appears to be defective in workmanship or materials, it should be returned to KOLVER or its distributors, transport prepaied, together with a short description of the alleged defect. KOLVER shall, at its sole discretion, arrange to repair or replace free of charge such items.
3. This guarantee does not cover repair or replacement required as a consequence of products which have been abused, misused or modified, or which have been repaired using not original KOLVER spare parts or by not authorized service personnel.
4. KOLVER accepts no claim for labour or other expenditure made upon defective products.
5. Any direct, incidental or consequential damages whatsoever arising from any defect are expressly excluded.
6. This guarantee replaces all other guarantees, or conditions, expressed or implied, regarding the quality, the marketability or the fitness for any particular purpose.
7. No one, whether an agent, servant or employee of KOLVER, is authorized to add to or modify the terms of this limited guarantee in any way. However it's possible to extend the warranty with an extra cost. Further information at [kolver@kolver.it](mailto:kolver@kolver.it).