CEBEK® ELECTRONIC CIRCUITS

CD-46 GROUPS COUNTER-DIVISOR.

The CD-46 module will connect the output each time it register and add the programed impulses number, (till a max. of 999), at will automatically attach again when it receivers news impulses.
It includes Reset function, and connection terminals.

TECHNICAL CHARACTERISTICS.

Voltage.	12 V. D.C.
Minimum Consumption.	10 mA.
Maximum Consumption.	60 mA.
Maximum Counting Frequency.	100 Hz.
Counting Impulses.	Negative-going clock.
Protection against inversion polarity. (P.I.P.)	Yes.
Maxi. Output Load.	5 A.
Sizes.	92 x 59 x 52 mm.

POWER SUPPLY and INSTALLATION.

POWER SUPPLY. The CD-46 circuit had to be supplied by a 12 VDC power supply correctly filtered. We recommend you to use the FE-2 power supply which has been developed to perfectly answer to the circuit needs.
Install a fuse and a switch has it is indicated on the schedule. Both are necessary for the module's protection as well as for your own safety, as it is required by the "CE" regulations. Connect the positive and the negative of the power supply to the respective positive and negative terminals of the module, indicated in the wiring map. The distance between the power supply and the module has to be as short as possible (max. 60 cm). Verify that the assembly is correct.
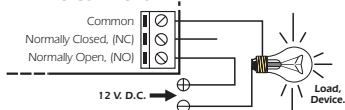**Note.** Connections indicated as 230 VAC in the wiring map have to be connected to 110 VAC. in Americans countries. Cebek's Modules and/or transformers will be supplied with corresponding modifications for their connection in these countries.

INSTALLATION. For Clock and Reset inputs connections, the maximum length has to be inferior than 30 cm. For superior length, you have to use shielded cable, connecting its braid to the negative terminal of its corresponding input. Nevertheless, even if you use shielded cable, the maximum length is 100 cm. If you don't respect this point, the module could don't properly work.
For the installation, you have to use a metallic enclosure and connect the negative of the circuit to it.
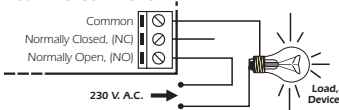
IMPULSES INPUT. The impulses input of the module is done by Negative-going clock. To excite this input you could use contact free of power (like push buttons, relays, switches, etc... or an external Clock.
If you use an external clock, you have to verify that its signal level is 5 V DC. Then, don't forget that because of the anti-rebotes filter of the module, the maximum input frequency accepted is 100 Hz.
If you don't supply the Clock device with the same power supply than the CD-46 module, you have to connect between them negative terminals of both circuits. If you use the same power supply, to supply both devices it any union is required.

OUTPUT CONNECTION. LOAD. The CD-46 output is controlled by a relay, and accept any device up to 5 A. The relay is not a component supplying voltage but its function is limited to accept or deny the voltage passage like a standard switch. For this reason, you have to supply the load through this component.
The relay has three output terminals: The normally open quiescent (NO), the normally closed quiescent (NC) and the common. Install it between the Common and the NO in accordance with the schedule "Output Connection. Load". For the inverse function you have to place the load between the NC and Common. Configuration activated deactivated

12 V. D.C. CONNECTION.
Common
Normally Closed, (NC)
Normally Open, (NO)
12 V. D.C.
Load, Device.

230 V. A.C. CONNECTION.
Common
Normally Closed, (NC)
Normally Open, (NO)
230 V. A.C.
Load, Device.

INFORMATION ABOUT THE OUTPUT. During the operating mode and according to its load, it could happen a fluctuation or an incorrect working of the output. In such case, you have to install an anti-spark circuit between both contacts of the used relay, as it is indicated on the schedule.

Common
NC
NO
47Ω 1/2W.
100nF/400 V.
Load, Device.
Power Supply to Device.
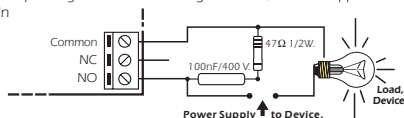
OPERATING MODE.

INDICATORS. There are three indicators Leds in the PCB.
- The CK Led, will be activated each time you inject an impulse on the impulses input.
- The RL Led will light when the relay is activated.
- The PWR Led will light when the module is supplied.

RESET FUNCTION RESET. Install, a push quality button at the Reset input, as it is indicated on the General Wiring Map.
When you press this button, the counter will reset the internal sum of inserted impulses till this moment, stopping the impulses input during you maintain it closed.
When you will release it, the module continue with its normal operating.

PRE-SELECTION FUNCTION. You have to configure the CD-46 with a pre-selection number different than zero. Then, the module will internally register and sum injected impulses on the input till to reach the selected number. From this moment, the output relay will be activated and maintained in this state till the next impulse on the input. Finally, the output will be disconnected and the cycle is automatically reactivated when the module register a new impulse on the input, or when you do another.
As operating example, we could take a factory to package eggs. Each time the circuit will register the pre-selection number, in this case each 6 impulses (half a dozen), it activates the output. Till the CD-46 module doesn't receive a new impulse (corresponding to the egg Nº7), it doesn't deactivate the output and count up again impulses. Each six eggs, the circuit will activate the output and connect the output relay.
Don't forget that if you don't pre-selected any number, the counter doesn't activate the output.

TO CONFIGURE THE PRE-SELECTION NUMBER. To select the pre-selection number, you have to use Dips (battery composed by 4 micro-switches), inserted on the circuit. See the General Wiring Map. You could see three dips, assigned each one to units, ten, and hundred. Then you have to insert the number corresponding to the wished pre-selection number. If your number is inferior than 100, on hundred you have to select the zero, if it is inferior than 10, in both (hundred and ten) you have to select the zero.
The configuration of the number on each dip is done in binary code, thanks to the four switches of the battery. If you place any of these four switches in ON position, its binary value will correspond to "1", and if you place them in OFF position, their binary value will be "0".
On the Fig. 2, you could see the equivalence between ten numbers from 0 till 9 and their respective binary code. Configure each dip with the wished number, making the corresponding binary combination. Don't make any different combination than communicated one in the Fig.2. Otherwise, the module couldn't understand the indicated number.
To allow to the CD-46 to correctly record the inserted pre-selection number, you have to re-start the module after selected it. Then, you have to Reset the module or disconnect and connect again the module's supply. Due to this point, the module doesn't accept any pre-selection number change after its activation (counting), because its posterior starting will erase this register.

Fig. 1. Switches Binary Value according to their position.
ON 1 → Equivalent to 0.
ON 1 → Equivalent to 1.
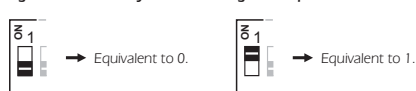
OPERATING MODE.

Fig. 2. Corresponding Table Ten - Binary.

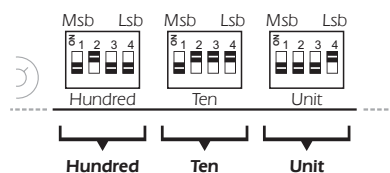| Switches	1	2	3	4
Number 0 →	0	0	0	0
Number 1 →	0	0	0	1
Number 2 →	0	0	1	0
Number 3 →	0	0	1	1
Number 4 →	0	1	0	0
Number 5 →	0	1	0	1
Number 6 →	0	1	1	0
Number 7 →	0	1	1	1
Number 8 →	1	0	0	0
Number 9 →	1	0	0	1

EXAMPLES. In order to make easier the module operating mode, in following examples, we wxplain you how to select 2 different pre-selection numbers.
Example1. To insert the Pre-selection number : 471.
Firstly you have to configure the Unit dip, consulting the table on Fig.2. On this dip, you have to put the binary code corresponding to the Nº1. In this case it will be "0001". Then, you have to configure the Ten dip, with the binary code corresponding to the Nº7. In this case it will be "0111". Finally, you have to configure the Hundred dip, with the binary code corresponding to the Nº4. In this case it will be "0100".
Now, you could re-activate the module and the number 471 will be established as Pre-selection number. See the Fig. 3 where it is indicated how are configured these 3 dips for this example.

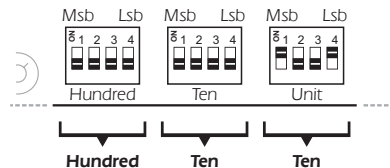**Fig. 3. To configure the Pre-selection with the number 471.**
Msb Lsb   Msb Lsb   Msb Lsb
ON 1 2 3 4   ON 1 2 3 4   ON 1 2 3 4
Hundred   Ten   Unit
Hundred   Ten   Unit

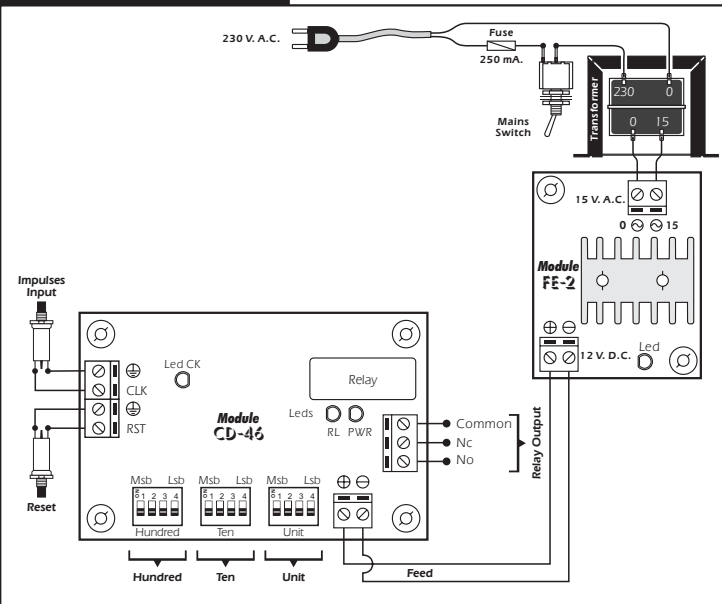**Example2.** To insert the Pre-selection number : 9.
Firstly you have to configure the Unit dip, consulting the table on Fig.2. On this dip, you have to put the binary code corresponding to the Nº9. In this case it will be "1001". Then, you have to configure the Ten dip, with the binary code corresponding to the Nº0. In this case it will be "0000". Finally, you have to configure the Hundred dip, with the binary code corresponding to the Nº0. In this case it will be also "0000".
Now, you could re-activate the module and the number 9 will be established as Pre-selection number. See the Fig. 4 where it is indicated how are configured these 3 dips for this example.

Fig. 4. To configure the Pre-selection with the number 9.
Msb Lsb   Msb Lsb   Msb Lsb
ON 1 2 3 4   ON 1 2 3 4   ON 1 2 3 4
Hundred   Ten   Unit
Hundred   Ten   Ten

GENERAL WIRING MAP.

230 V. A.C.
Fuse 250 mA.
Mains Switch
Transformer 230 0 / 0 15
15 V. A.C.
0 15
Module FE-2
12 V. D.C. Led

Impulses Input
Led CK
CLK
RST
Reset
Module CD-46
Relay
Leds RL PWR
Common
Nc
No
Relay Output
Msb Lsb Msb Lsb Msb Lsb
Hundred Ten Unit
Hundred Ten Unit
Feed

TECHNICAL CONSULTATIONS.

If you have any doubt, you could contact your wholesaler or our Technical Department.
- E-Mail, **sat@cebek.com | Fax**. 34.93.432.29.95 | by mail. P.O. Box. 23455 - 08080 Barcelona - Spain.
- **Keep the invoice of this module.** For any repair, the corresponding invoice had to be added. If the invoice is not presented together wish this module, the module's warranty will be automatically cancelled.

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