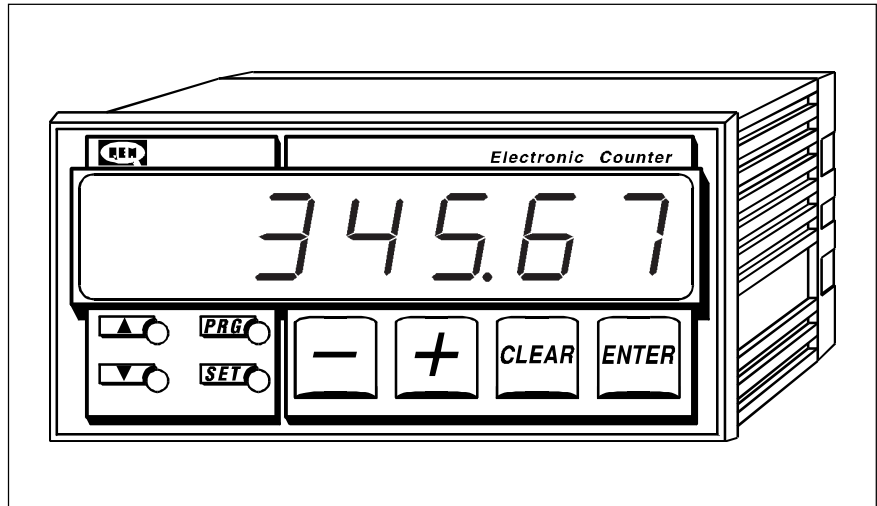




- Size DIN 48 x 96
- 6 digits display
- Non volatile memory
- Antiscratch membrane keyboard
- Extractable polarized terminal board
- Software customizations












DESCRIPTION OF OPERATION

The instrument HM 207.22 is a single direction pulse counter with preselection and increment of preselection by 6 digits. When the count of the pulse counter has reached the value of the preselection which has been set, the output U1 is activated. Upon deactivation of input I1 the value of the preselection is automatically increased of a value being equal to the value which is set in the parameter "preselection increase". If you wish to return to the starting conditions you only need to activate the inputs I3 and I4

in order to restore the value of the preselection (I3) and reset to zero the count (I4). The keyboard, in antiscratch polycarbonate, is performed with mechanical actuators which provide the operator with the touch sensation of the key's stroke. The calculation, the preselections and the operation parameters are stored on a non volatile memory in order to guarantee maximum reliability and safety of operation even under extreme conditions.

KEYBOARD DESCRIPTION






	Green	It confirms the data entering If pressed with the key (-) + PASSWORD you enter the set-up parameters When pressed for 2 seconds it provides the access to the preselection
	Red	Under data input, it sets to zero the data displayed If pressed for 2 seconds it sets to zero the count (enabled by the parameter "Function of key CLEAR" in set-up)
	Black	Under data entering it increases impulsively or continuously the selected digit (the blinking one) If pressed impulsively it displays in a sequence the count and the preselection + eventual increases currently in use. If pressed for 2 seconds it displays the status of inputs and outputs
	Black	Under data entering it moves to the right the selection of the digit If pressed with the key ENTER + PASSWORD you enter the set-up parameters If pressed for 2 seconds it provides the access to the programming of the preselection increase
	Led prg	It is ON during the programming of the set-up parameters
	Led set	It is ON during the programming of the preselection and of preselection increase
	Led	It is ON during the activation of output U1
	Led	Not used
	Led lcf	It is ON when it is displayed the preselection + the eventual increases

DESCRIPTION OF INPUTS			
Name	Signal	Input activat.	Description
I1	C	ON	COUNT ENABLING. Upon its activation it is enabled the reading of the count in the clock pulses of input I2. Upon its de-activation it is increased the preselection (if the count is equal or greater than the preselection).
I2	I	ON	CLOCK. Count input (the count is increased on the upwards or downwards front according to the set-up parameter "Front of count increment") [maximum frequency of count= 10 khz]
I3	I	ON	PRESELECTION RESET. Its operation depends upon the type of programming chosen in the set-up parameter "operation mode of input I3". If "I3=0", upon its activation restores the preselection to its original value; if "I3=1", upon its activation it restores the preselection to its original value and at the same time it sets to zero the count.
I4	I	ON	COUNT RESET TO ZERO. Upon its activation the count is set to zero.
I=Impulsive input C=Continuous input			









DESCRIPTION OF OUTPUTS			
Name	Signal	Output. activat	Description
U1	I / C	Par. t	PRESELECTION OUTPUT. It is normally de-activated. It is activated when the count reaches the preselection value.
U2	I / C	Par. t	PRESELECTION OUTPUT. It is normally activated. it is de-activated when the count reaches the value of the preselection.
I=Impulsive output C=Continuous output			

ENTERING THE SET-UP PARAMETERS

To access to the programming of the following parameters we have forecast the introduction of a 3 digits code as follows:

- Press at the same time the keys  +  for 1 second
- On the display appears  which is the request for the access code
- Enter with the keys (+) and (-) the value 207 and confirm with  ; this led goes ON 

(At the end of the data entering of each function press **ENTER** to confirm and continue with the following function)



FUNCTION	DISPLAY	DESCRIPTION
Decimal digits		<p>0= Maximum display 999999</p> <p>1= Maximum display 99999.9</p> <p>2= Maximum display 9999.99</p> <p>3= Maximum display 999.999</p>
Multiplicative coefficient		The impulses on input I2 are multiplied by this coefficient in order to adapt the displayings and the preselections of the pulse counter to the desired unit of measure (00.0005 ÷ 40,0000)
Front of increment in the count of input I2		<p>0= The count is increased by de-activating input I2</p> <p>1= The count is increased by activating input I2</p>
Minimum time of activation of input I2		<p>It is the minimum time of activation of input I2 in order that the activation is considered as valid for the count. By setting this value on zero, the check is disabled and then all impulses are deemed as valid for the count.</p> <p>N.B. This value may be obtained empirically as described in the procedure of calibration of the pulse counter on page 7.</p>
Minimum time of de-activation of input I2		<p>It is the minimum time of de-activation of input I2 in order that the activation is considered as valid for the count. By setting this value on zero, the check is disabled and then all impulses are deemed as valid for the count.</p> <p>N.B. This value may be obtained empirically as described in the procedure of calibration of the pulse counter on page 7.</p>
Function key CLEAR		<p>0= No function</p> <p>1= If pressed for 2 seconds it sets to zero the calculation.</p>
Preselection		With P=0, the preselection shall be accessible to the operator via the key ENTER (preselection P external). With P>0, the preselection shall be equal to the value which has been set and it shall not be accessible to the operator but only to the installer during the set-up.
Preselection increase		With I=0, the increase of the preselection shall be accessible to the operator via the key "-" (Preselection increase I external). With I>0, the preselection shall be equal to the value which has been set and it shall not be accessible to the operator but only to the installer during the set-up.

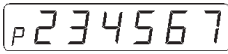
FUNCTION	DISPLAY	DESCRIPTION
Timer outputs U1 and U2		With $t_1=0$, the output U1 remains activated and the output U2 de-activated until the zero reset of the count. With $t_1>0$, the output U1 remains activated and the output U2 de-activated for the time which has been set (max. 60.00 seconds).
Count block		0 = The count is free 1 = The count is locked at the moment of the activation of output U1 and it is enabled with the zero reset of the count.
Operation input of input I3		0 =The input I3 reloads the preselection only . 1 = The input I3 reloads the preselection and sets to zero the count.
Memory enabling		0 = Upon startup the count starts again from zero. 1 = Upon startup the count starts again from the value stored in memory at the moment of the switching OFF. N.B. If the parameter "Autoreset"=1 and the parameters "Operation mode input I3"=1, upon the startup the count is set to zero.
Autoreset		0 = The autoreset is not present upon the instrument's startup. 1 = The autoreset is present upon the instrument's startup and it simulates the activation of input I3.
Once the programming of the last function is achieved, you return to the displaying in use before entering the SET-UP and the led led prg goes OFF.		

ENTERING THE PRESELECTION

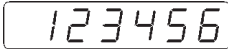
The instrument is equipped with a preselection which may be programmable or not by the user of the equipment. The preselection is called **P** and it is made programmable to the user if during the set-up you enter the value 0 to the corresponding function.

To enter the preselection operate as follows:

Press the key  for 2 seconds; this led goes ON  and on the display appears:

 Preselection **P**. The operator via the key (+) may increase by one the blinking digit. By operating the key (-) you shift to the right of a position the blinking digit. Upon confirmation with **ENTER** of the value which has been set, the display shows:



Blinking digit

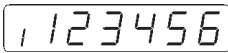
 Count

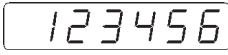
ENTERING THE PRESELECTION INCREASE

The instrument provides the possibility to set the increase of the preselection, with a 6 digits selection. the increase of the preselection is called **I** and it is made programmable to the user if during the set-up you enter the value 0 to the corresponding function.

To enter the preselection increase operate as follows:

Press the key  for 2 seconds; this led goes ON  and on the display appears:

 The operator via the key (+) may increase by one the blinking digit. By operating the key (-) you shift to the right of a position the blinking digit. Upon confirmation with **ENTER** of the value which has been set, the display shows:

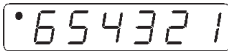
 Count


DISPLAYINGS


During normal operation the display shows:

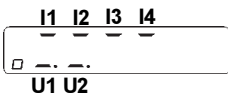
 Pulse counter count

Pressing impulsively the key  , the display shows:

 Preselection + the increases

Pressing impulsively the key  , the display shall show again the count of the pulse counter



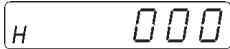

Pressing the key  for apx 2 seconds, the display shall show:

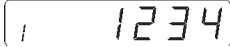
 The display shows the status of inputs and outputs. The led **_** ON indicates the activation of the input or output


Pressing any key the display shows again the displayings in use.


TACHOMETER CALIBRATION

To make the installation easier, upon the introduction of the set-up values which determine the calculation of the pulse counter, it is possible to display the count, the minimum time of activation and the minimum time of de-activation by operating as follows:


- Press at the same time the keys  +  for apx. 1 second
- On the display appears  which is the request for the access code
- Enter with the keys (+) and (-) the value 456 and confirm with  ; on the display appears


 Count


to set to zero the count press 

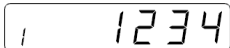
Pressing the key , the display shows:


 Minimum time of activation

Pressing the key , the display shows:

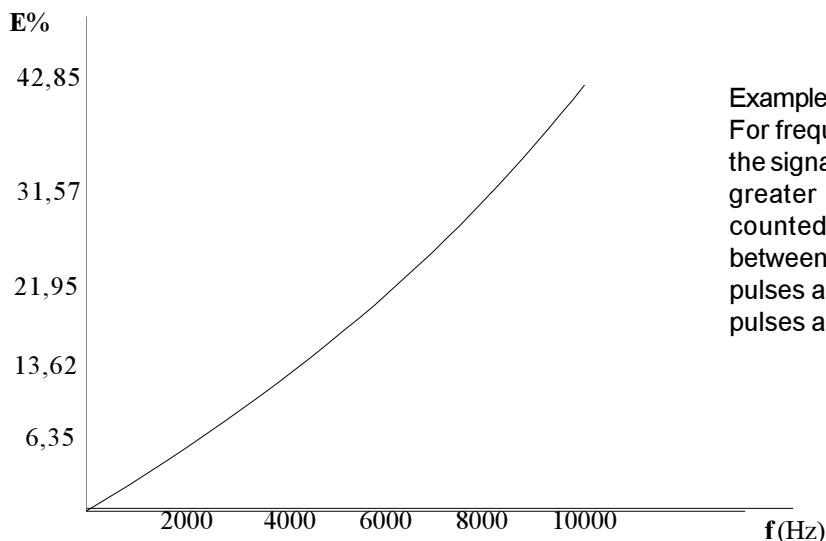
 Minimum time of de-activation

Pressing the key , the display shows again:

 Count

To exit press the key 

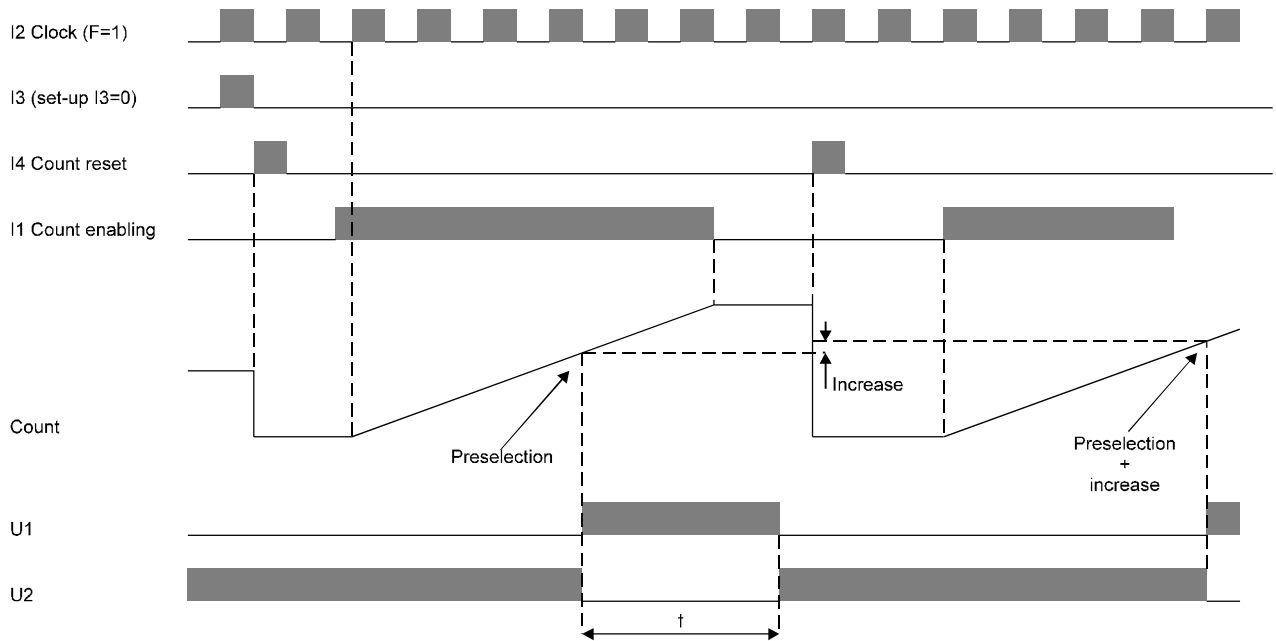
To have a correct count it is necessary to define the parameters of minimum time of activation and minimum time of de-activation. To determine the minimum times of activation and minimum time of de-activation (min. 50 µsec.) which the transducer sends, you only need to bring the transducer to max. speed and in tachometer calibration (key-)+(ENTER)+(Password 456), read the values of minimum time of activation and deactivation which the instrument displays. These values shall be introduced in set-up in the parameters "minimum time of activation" and "minimum time of de-activation". The values of the minimum times of activation and de-activation lower than those which have been set in set-up, shall not be deemed as valid for the count with a max. tolerance being equal to 42,85% with a frequency of 10KHz as shown in the diagram here below:



Example:

For frequencies of count of 10 KHz, the signals of input with frequencies greater than 14285 Hz are not counted. In the range included between 10000 and 14285 Hz some pulses are lost. Under 10000 Hz all pulses are counted.

OPERATION DIAGRAM



the preselection and then the output is enabled only if you first performed a count zero reset (I4=ON, I3=ON if in set-up the parameter "I3=1 and, upon switching OFF the instrument the parameter of set-up Ab=0").

N.B. If there is a switching OFF before the count arrives in pre-selection, upon the startup the preselection is still enabled even though the count restarts from a value being different from zero.

ELECTRIC CONNECTIONS OF INPUTS AND OUTPUTS

1	+	Positive of transducers' power supply 12 V 100 mA
2	-	Negative of transducers' power supply
3	P1	Terminal of polarization of inputs I1-I4 (+ NPN, - PNP)
4	I1	(C) Count enabling
5	I2	(I) Clock
6	I3	(I) Preselection reset
7	I4	(I) Count zero reset
8	C1	Terminal of polarization of outputs U1-U2 (+ PNP, - NPN)
9	U1	(I / C) Output of preselection P
10	U2	(I / C) Output of preselection \bar{P}
11	GND	Ground connection (we recommend a conductor with ϕ 4 mm.)
12	XXX	Power supply voltage Vac $\pm 15\%$ 50 / 60 Hz
13	XXX	Power supply voltage Vac $\pm 15\%$ 50 / 60 Hz

GENERAL CHARACTERISTICS OF CONNECTIONS

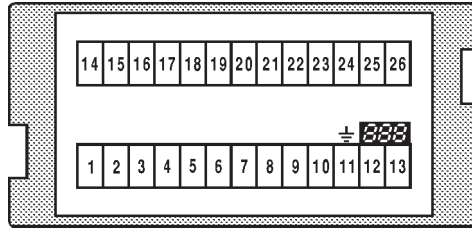
INPUTS

Each ON / OFF input is universal, optoinsulated and can receive digital signals be it in logic NPN be it PNP. Connecting the terminal P1 "+" all the inputs accept signals of type NPN, i.e. with closing to the negative of the power supply voltage. By connecting terminal P1 to - all the inputs become of type PNP, i.e. with closing to the positive of the power supply voltage. Each input is protected against short circuits to both the poles of the power supply, so that it is practically undestructible. It is possible to connect in parallel various inputs with the same logic, if the output which controls them is able to support the total current required, which is equal to the number of inputs connected together, multiplied by 10 mA.

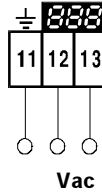
OUTPUTS

The dc outputs are optoinsulated in direct voltage and they all have a common terminal among them (C1). Connecting this terminal to a voltage "+" all the outputs become of a type PNP, connecting it to a voltage - they become of a type NPN. The maximum direct voltage which can be applied is 50 V. The outputs can support currents up to 70 mA with a typical voltage drop of 3.5 V for outputs of type U and up to 2 A with a typical voltage drop of 2 V for outputs of type UP, between the output and the common. With the dc outputs it is possible to drive also relays at 110 Vac.

CONNECTIONS



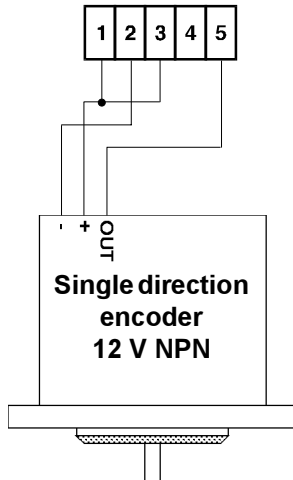
Connection to the power supply voltage



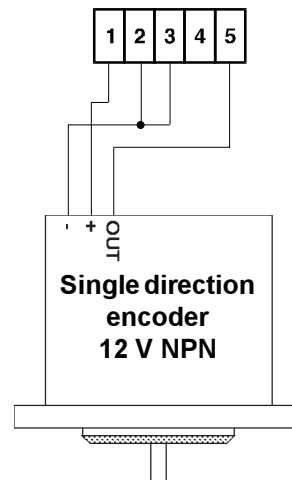
Power supply voltage: 24 Vac, 330 mA
 110 Vac, 72 mA
 220 Vac, 36 mA

Connection of the encoder with instrument's power supply

Connection with encoder NPN



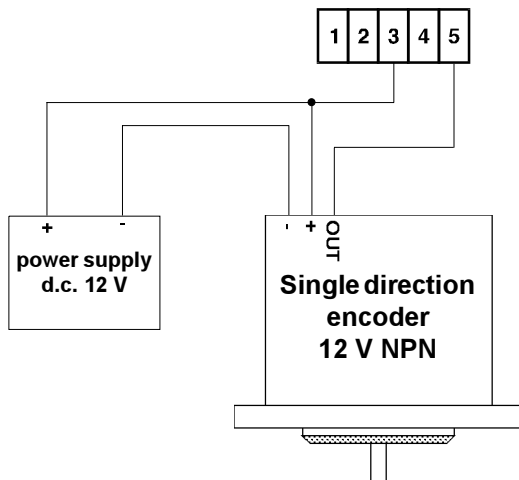
Connection with encoder PNP



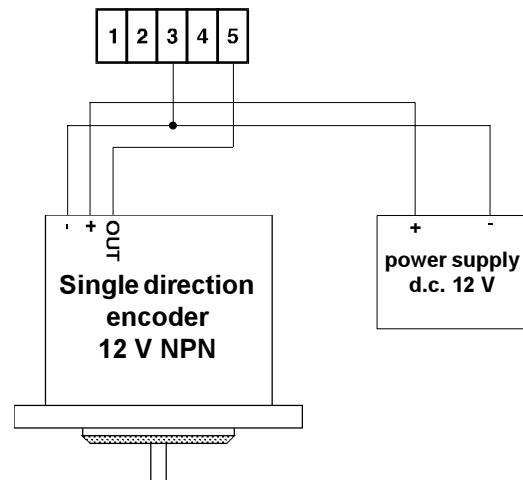
N.B. The connection of transducers (encoder, proximity) and electromagnetic contacts to the inputs of the instruments, by using the feeder at 12 V located on terminals 1 and 2, must bear into consideration the max. current which the feeder can issue.

Connection of the encoder with external power supply

Connection with encoder NPN

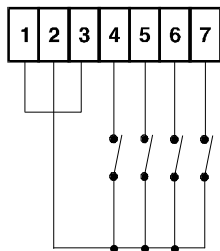


Connection with encoder PNP

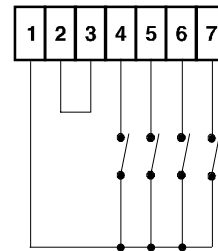


Connection of inputs ON / OFF with instrument's power supply

Connection with inputs NPN



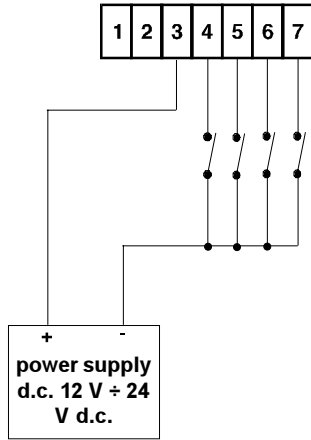
Connection with inputs PNP



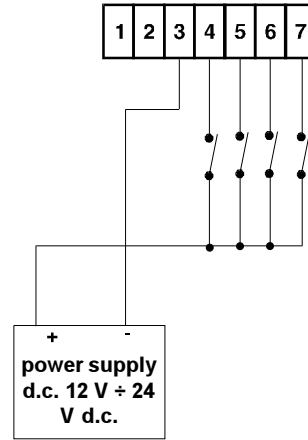
CONNECTION OF INPUTS ON / OFF

Connection of inputs with external power supply

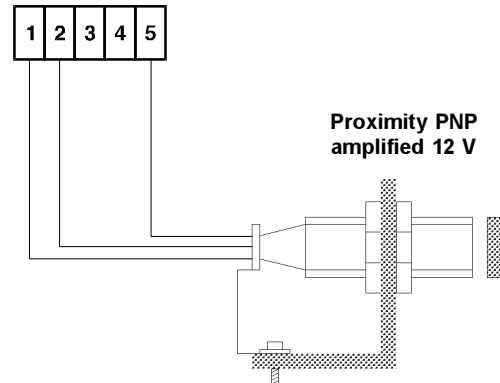
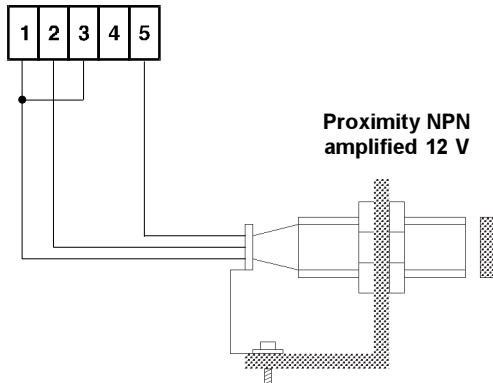
Connection with inputs NPN



Connection with inputs PNP

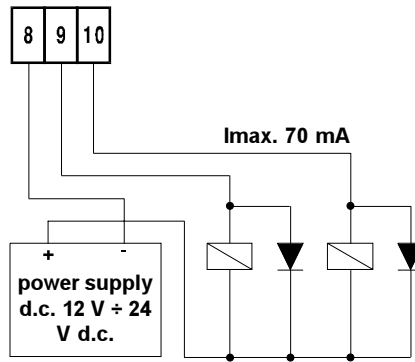


Connection with amplified proximity

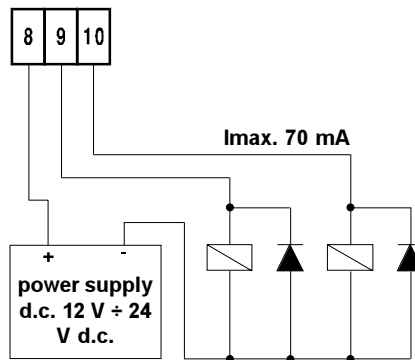


CONNECTION OF OUTPUTS ON / OFF

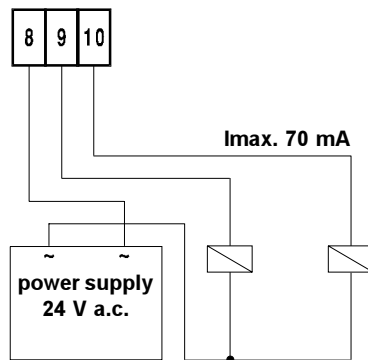
Connection with outputs NPN



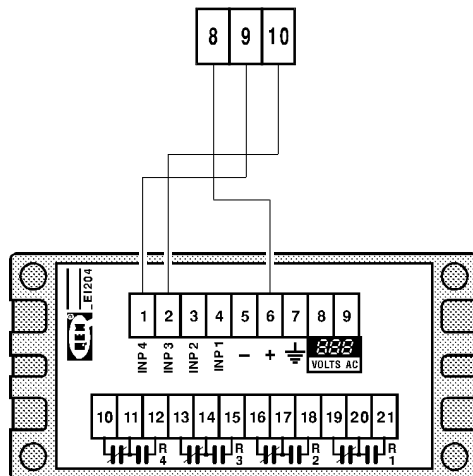
Connection with outputs PNP



Connection of outputs with relay in alternated current



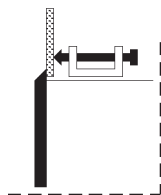
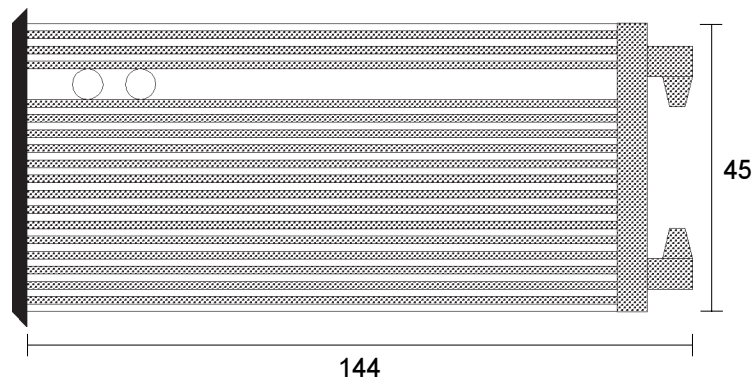
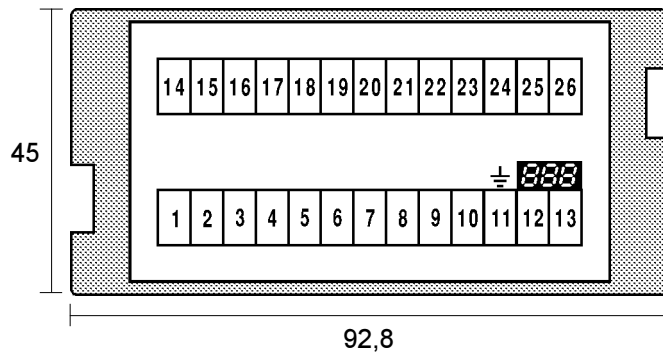
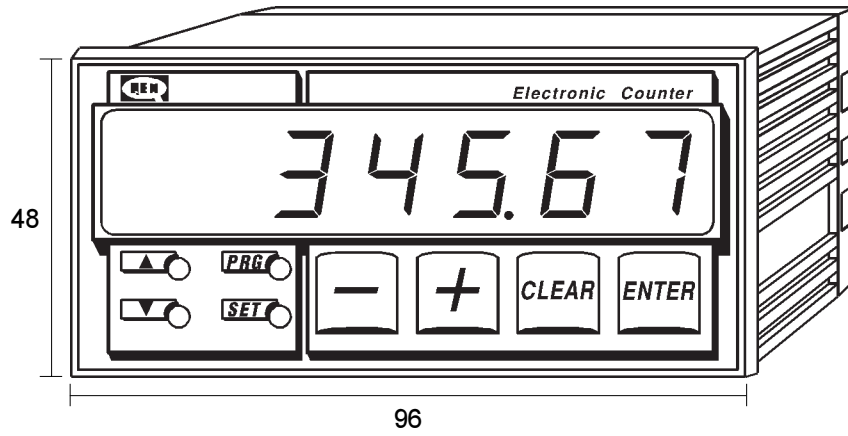
Connection of outputs with EI 204



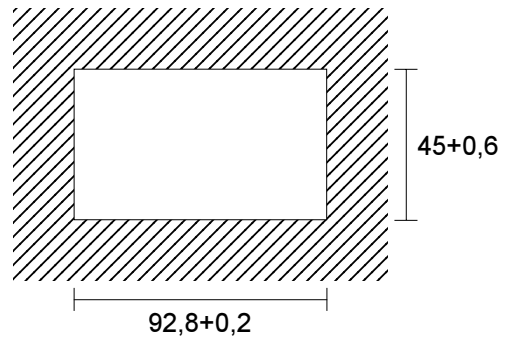
EI 204

The EI 204 has inside 4 relays of 5 A / 250 V power supplied at 24 V whose power supply voltage is obtained inside the same interface. The relays are connected as shown in figure 2; the assembly is forecast on guides DIN. the overall dimensions are 45 x 93 x 85 mm.

SIZE



ATTENTION!
After laying the pin of the hook to the panel, perform only half a revolution in order not to tear off the frame.



N.B. All levels are in millimeters.

CODICE DI ORDINAZIONE

H M 2 0 7 . 2 2 / T / 110

Power supply voltage:

24 = 24 Vac.

110 = 110 Vac.

220 = 220 Vac.

T = Front panel in polycarbonate with keyboard.

P = Front panel without keyboard.

PC = Front panel without keyboard but with button **CLEAR**.

PE = Front panel without keyboard but with button **ENTER**.

The manufacturer reserves the right to modify, without a previous notice, the characteristics of the described equipment.
The manufacturer is free from any liability for damages due to a wrong or not suitable use of the instrument.



Quality in Electronic Manufacturing  Date 09 / 05 / 94

Data sheet M207H22.0

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