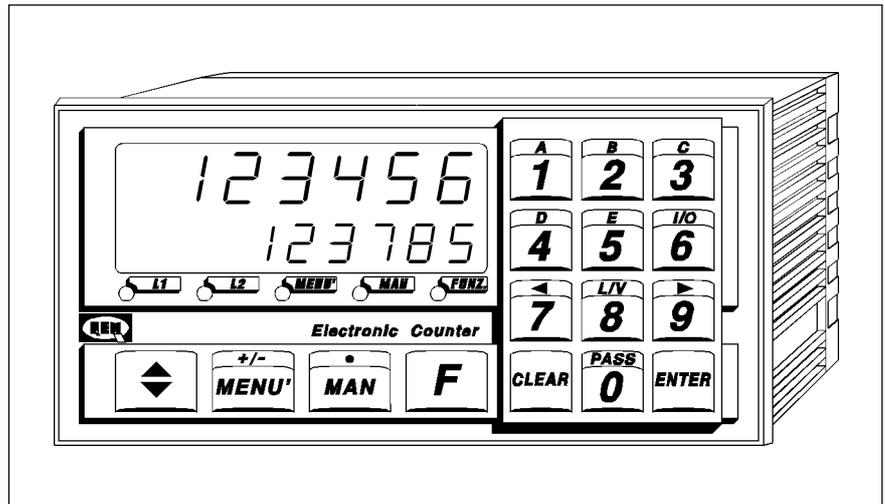


- *Dimensions DIN 72 x 144*
- *Encoder resolution multiplier*
- *Anti-scratch feedback keyboard*
- *Encoder supplier incorporated*
- *AC / DC outputs*
- *EEPROM memory*



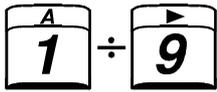
HOW THE INSTRUMENT WORKS

The instrument HB 548.13 is an ON/OFF positioner that works with positive measurements. The memory can be organised by the operator into groups of steps (max. 80) which determine the number of programmes available. A totalizer (if enabled) can be linked up to every step. The restart, counter to zero, and increase of steps functions can be organised so that their functioning is automatic

or managed by inputs. The anti-scratch feedback keyboard is realised with mechanical actuators that give the operator an actual physical sense of operating the keys. The counting function, the preselections and the working parameters are memorised on EEPROM in order to guarantee maximum reliability and safety, even when working at capacity.

The catalogue only presents ways of using the product and does not limit the functioning of the instrument.

DESCRIPTION OF KEYBOARD



For the introduction of data.
When pressed after the key F, they select the function written on the upper part of the key.



When pressed impulsively, the following monitor window is displayed.
When pressed continuously, the previous monitor window is displayed.



For the introduction of programmes.
During data introduction, insert or remove the sign + / -.



This key gives access to the manual functions.
During data introduction, insert the decimal point.



This enables the selection of the functions shown on the upper part of the numerical key.



During data introduction, this puts the digitized value back to zero and re-introduces the previous value.



During data introduction, this confirms the data introduced.



This lights up when the programme function output is activated.



This lights up when the step function output is activated.



This lights up during the menu programming function.



This lights up during the execution of the manual functions.



This lights up during the selection of a function shown on the upper part of the numerical key.

DESCRIPTION OF THE INPUTS

Name	Signal	Input Enabling	Description
I1	C	ON	POSITIONING A +Δ. When F0 is at 0, the positioning of the measurement being effected is obtained +F0 .
I2	I	ON	START. When input I2=ON, the positioning of the measurement selected is obtained. If the positioning is interrupted by the stop (I3=ON), or by the instrument being turned off, the activation of input I2 re-starts the positioning again from where it was interrupted.
I3	I	ON	STOP. If positioning is in progress and the stop function is activated, the axis goes into the stop function and the movement outputs are disabled. To finish the interrupted movement it is necessary to activate the start function (I2).
I4	I	ON	TOTALIZER INCREASE. This function is enabled when the parameter At=1 (SET-UP). The totalizer is increased.
I5	I	ON	TOTALIZER ZERO SETTING. Its functioning is enabled when the parameter At=1 (SET-UP). It puts the number of pieces counted back to zero.
I6	I / C	ON	RESTART. This function is enabled only when there is no positioning in progress. During manual procedures, the input is not enabled. RESTART (impulsively). It aborts the programme in progress and re-proposes the first step of the programme.
I=Impulsive output C=Continuous output			

DESCRIPTION OF THE OUTPUTS

Name	Signal	Duration	Description
U1	C	/	FORWARD. It controls the movement of the motor, both at slow and at fast speeds.
U2	C	/	REVERSE. It controls the movement of the motor, both at slow and at fast speeds.
U3	C	/	SLOWING DOWN. Active when the counting function is comprised between (measurement-slowng down-inertia) and (measurement+slowing down+inertia).
U4	C	Min. 300 ms.	TOLERANCE. It is activated when the axis counting function reaches the programmed tolerance levels. The activation of this function can be retarded by the tA parameter in SET-UP in the inertia re-calculation phase.
U5	C	/	PROGRAMME END. This is activated at the end of the work cycle and is deactivated by an input re-start (min. 300 ms.).
I=Impulsive output C=Continuous output			

HOW KEY F WORKS

The operator can choose the desired function by acting in the following way:

Press the key **F** ; the led will light  and on the display will appear:

 The operator can select the desired function by pressing the numerical key. The functions that can be re-called are as follows:

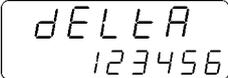
F + 

 Selection of the programme to be activated.

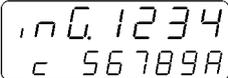
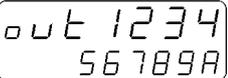
F + 

 Selection of the step to be activated.

F + 

 Introduction of Δ (I1) only if the parameter **Ab**=1 (SET-UP).

F + 

   Input and output diagnostic function.

F + 

 SET-UP function and axis calibration with introduction of password.

To exit from functions press the key again **F** the led will go off  and the monitor will show the display data in use.

HOW THE MAN KEY WORKS

The operator can choose the required function by acting as follows:

Press the key  ; any positioning being carried out will be aborted, the led will light up  ; the following will appear on the display:



The axis movement is selected by using the keys **7,8,9**.

By pressing the key  the monitor will display:



In this way the function for introducing a counter value is selected.

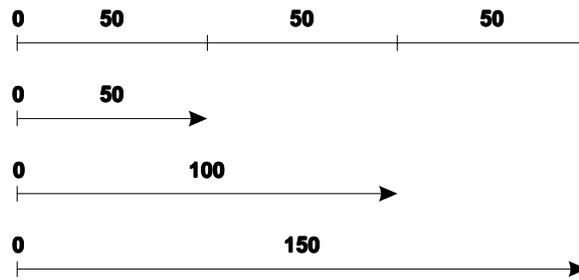
To exit from the manual function press the key  when not in the data introduction phase.

When the instrument exits from the manual function, it memorizes the function that was selected and the manual function is then re-activated.

DESCRIPTION OF POSITIONINGS

ABSOLUTE POSITIONINGS:

The measurements introduced are always in relation to the machine at zero.



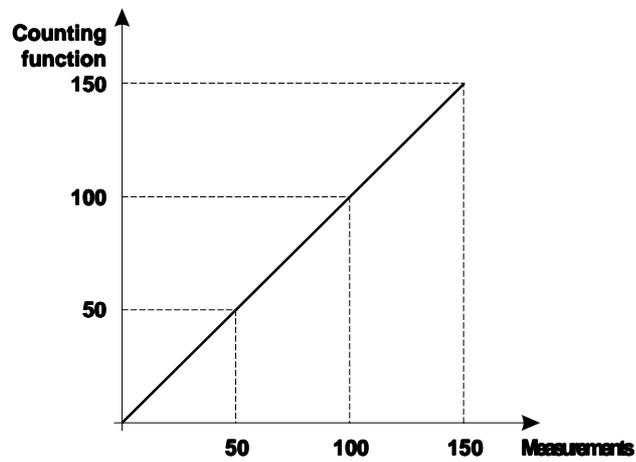
For positioning at the measurements it is necessary to introduce the absolute value at every step.

1^o step 50.

2^o step 100.

3^o step 150.

ABSOLUTE POSITIONING

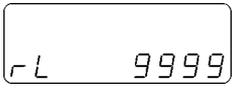
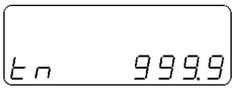
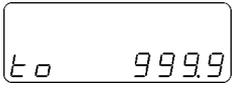


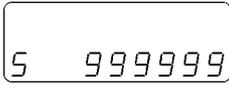
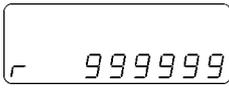
INTRODUCTION OF THE SET-UP PARAMETERS

These parameters determine the way the machine works and so only the installer has access to them; for programming it a password has to be introduced as follows:

- To stop a programme if in use (I3=ON).
- Press the key **F** and then the key **PASS 0** and the led lights up **FUNZ**
- On the display the  request for the password will appear.
- Introduce the numerical keys 548 and press **ENTER**; the parameters will then become accessible.

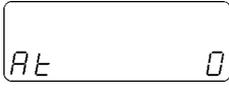
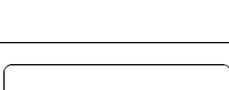
(At the end of the introduction of every function press **ENTER** for confirmation and go on to the following one).

FUNCTION	DISPLAY	DESCRIPTION
Type of display		<p>0= Normal display.</p> <p>1= Display using HDR (High definition reading). See the relevant paragraph.</p>
Decimal figures		Specify the number of decimal figures required for the reading of the axis measurements (max. 3).
Encoder resolution		<p>This parameter indicates by how much the encoder impulses per revolution should be multiplied to obtain a reading of the lengths in the measurement units required. Values from 0.00001 to 4.00000 can be introduced but it should be remembered that the frequency of the PH phases must not exceed 20 KHz.</p> <p>The formula for calculation of the resolution is as follows:</p> $R = \frac{\text{Movement obtained with the rotation of one encoder revolution (integral number)}}{N^{\circ} \text{ encoder impulses per revolution}}$ <p>If for example there is a movement of 123,4 mm. and an encoder of 500 imp. / rev.:</p> $R = \frac{1234}{500} = 2,468$
Slowing down		This is the distance of the arrival measurement at which the axis slowing down output is activated. (max. 9999).
Negative tolerance		Limit of negative tolerance allowed at the positioning of the axis (max. 999.9). This parameter always has one decimal figure more than the number programmed in the parameter " Decimal point parameter" to allow for the functioning of the QPS (QEM POSITIONING SYSTEM).
Positive tolerance		Limit of positive tolerance allowed at the positioning of the axis (max. 999.9). This parameter always has one decimal figure more than the one programmed in the parameter " Decimal point parameter" to allow for the functioning of the QPS (QEM POSITIONING SYSTEM).

FUNCTION	DISPLAY	DESCRIPTION
Slowing down time		Delay time (in seconds) between the activation of the forward/reverse motor output when the positioning system goes into the slowing down function. .During this time through inertia the axis does not enter the tolerance band.
Start activation delay time		This is the delay time (expressed in seconds) before the activation of the positioning start function. After this time, the comparisons for the movement outputs are enabled.
Maximum measurement		This is the maximum axis measurement.
Minimum measurement		This is the minimum axis measurement.
"Extra" measurement for play recovery		This is the measurement which is added to that of the positioning in progress to allow for recovery of mechanical play. Positioning always occurs with reverse mechanical play recovery.
Inversion time		To avoid possible mechanical stress due to excessively fast inversions in the direction of axis movement, an inversion delay time expressed in seconds can be inserted (min. 0,00 max. 9,99 sec.).
Enabling Δ 1		<p>0=The introduction of the Δ measurement is required in the following parameter.</p> <p>1= The introduction of the Δ measurement can be enabled through the keyboard by pressing keys F + 4.</p> <p>N.B. The Δ measurement must be greater than the "extra" measurement.</p>

This display information appears if the parameter " Enabling Δ 1" is =0

Δ 11 measurement		If $F0 \neq 0$, on activating the input I1, the axis positions itself at the selected measurement + $F0$. On de-activating the input I1, and ordering start again, the axis returns to the selected measurement.
-------------------------	---	--

Totalizer enabling		<p>0=The totalizer is not enabled.</p> <p>1= The totalizer is enabled.</p>
Totalizer increase front		<p>0= The totalizer increase takes place on the descent front of input 14.</p> <p>1= The totalizer increase takes place on the ascent front of input 14.</p>
Step increase		<p>0=The step increase is managed by input 14.</p> <p>1=The step increase is managed automatically by the instrument.</p>

FUNCTION	DISPLAY	DESCRIPTION
Memory configuration		<p>This determines the number of steps that make up a programme. The total memory available is 80 steps, so that by dividing this value by the number of steps programmed the number of programmes available is obtained.</p> <p>Example:</p> <p>Cn=11 N° of programmes=80 / 11=7</p> <p>The steps left over from the division will be added to the last programme, which in this case will have a dimension of 10 steps.</p> <p>N.B. Any variation on the memory configuration means that the programmed memory has to be re-written (menù key).</p>
<p align="center">In order to exit from the introduction of SET-UP parameters function at any time, press the F key .</p>		

INTRODUCTION OF WORK PROGRAMMES

The operator can introduce work programmes as follows:

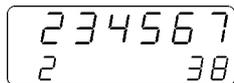
Press the key  ; the led lights up  and the following information appears on the display:



By using the numerical keyboard, the operator can introduce the number of the programme required. After confirming with **ENTER**, the display will show:

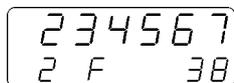


By using the numerical keyboard, the operator can introduce the measurement of the first step. After confirming with **ENTER**, the operator can introduce the totalizer (on the bottom right) which, if enabled, will act as a piece counter. After confirming with **ENTER**, the display will show:



By using the numerical keyboard, the operator can introduce the measurement of the second step. After confirming with **ENTER**, the operator can introduce the totalizer (on the bottom right) which, if enabled, will act as a piece counter. After confirming with **ENTER**, the display will show:

In order to introduce or remove the end of programme function at a particular step, press  and the display will show:



N.B. If the value programmed on the totalizer is 9999, the piece counting will continue to infinity without generating the end step output.

By pressing this key  it is possible to run right through the steps programmed from the first to the last and from the last to the first.

To exit from the programming function at any time, press this key  ; the led  will go off and the display will go back to showing the display information in use.

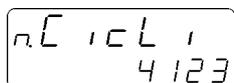
CHOICE OF THE PROGRAMME TO BE RUN

The operator can choose the programme to be used by proceeding as follows:

Press these keys  and  in succession; the led will light  and the display will show:



By using the numerical key the operator can introduce the number of the programme chosen. After confirming with **ENTER** the display will show:



By using the numerical key the operator can introduce the number of the cycles to be done (programme repetition). After confirming with **ENTER** the programme selected is run, as though a restart had been activated.

N.B. The end of programme output (U5) becomes enabled at the end of the programmed cycle

To exit from the choice of programme at any time, press the key  the led  will go off and the display will go back to showing the display information in use.

CHOICE OF THE STEP TO BE RUN

The operator can choose the step to be run by proceeding as follows:

in succession press the keys **F** and **2** ; the led will light  and the display will show:



By using the numerical key the operator can introduce the number of the chosen step from the chosen programme. After confirming with **ENTER** the selected step is run by activating a start (I2 must switch from OFF to ON).

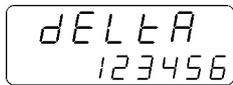
To exit at any time from the programme choice press the key **F** the led  will go off and the display will return to showing the display information in use.

INTRODUCTION OF THE "Δ" (I1) MOVEMENT

The operator can introduce the Δ measurement to be managed by input I1 by proceeding as follows:

To stop a positioning in progress if necessary (I3=ON).

Press these keys in succession **F** and **4** ; the led will light  and the display will show:



By using the numerical key the operator can introduce a measurement which, on activating the input I1, will be added to the preselection in use, thus enabling the positioning at this new preselection. To position the axis at the previous preselection, de-activate the input I1. The axis will move to the measurement previously selected.

N.B. The value of "Δ" must be greater than the "extra" measurement.

After confirming with **ENTER** the led **FUNZ.** will go off and the display will go back to showing the display information in use.

DISPLAY OF INPUTS /OUTPUTS

To see the state of the inputs and outputs on the display, proceed as follows:

Press the key **F** and then the key **6** ;the led will go on  and the display will show:

inG.1234 c 56	}	1 =I1 2 =I2 3 =I3 4 =I4 5 =I5 6 =I6 c =Z	ENTER	out 1234 5	}	1 =U1 2 =U2 3 =U3 4 =U4 5 =U5
------------------	---	--	--------------	---------------	---	---

To exit from the display of the inputs/outputs, press the key **F** the led  will go off and the display will go back to showing the display information in use.

INTRODUCTION OF A VALUE ON THE COUNTER

To programme a value onto the counter, proceed as follows:

Press the key  ; the led will light 

Press the key  until the display shows:

 By using the numerical key the operator can programme the new value onto the counter. After confirming with **ENTER** the display will show:

 This is the new counter value.

To exit from the new value introduction function press the key  when the value of the counter is being introduced; this led  will go off and the display will go back to showing the display information in use.

MANUAL MOVEMENT OF THE AXIS

To move the axis manually proceed as follows:

Press the key  ; the led will light 

Press the key  until the display shows:

 When in manual operation, keys **7**, **8**, **9** are enabled.
Key **8** selects slow or fast manual movement, and the state is indicated on the display on the bottom left-hand corner with the letter **L** (low) or **F** (fast).
By pressing key **7**, the axis moves back and at the release of the key the movement stops.
By pressing key **9**, the axis moves back and at the release of the key the movement stops. The counter on the display shows the position of the axis.

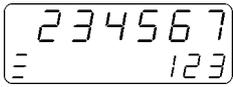
N.B. During manual movement the stops on the minimum and the maximum measurements programmed in SET-UP are enabled.

To exit from the manual movement function at any time press the key  the led  will go off and the display will go back to showing the display information in use.

INTRODUCTION OF AN IMMEDIATE MEASUREMENT

To introduce an immediate measurement proceed as follows:

Press any numerical key and the display will show:



On the upper line the counter appears while on the lower line the value digitized through the numerical keyboard can be seen. After confirming with **ENTER** the measurement introduced will be carried out on activation of the start function.

N.B. The display will show the axis positioning in relation to an immediate measurement in its introduction phase, with 3 segments lit on the display in the bottom left-hand corner. On arriving at the tolerance stage the piece counter which is incrementable from input I4 will be displayed. This display will remain even in the Δ "+ Δ " positioning stage. When returning to the original measurement the cutting measurement will be shown, and, once the tolerance stage has been reached, the piece counter will once again be proposed.

If the piece counter is on the display, on pressing this key  the piece counter will go back to zero and will not exit from the immediate measurement

To exit at any time from the insertion of the immediate measurement stage press the key  and the axis will stop (if there is a positioning in progress).

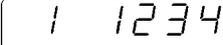
N.B. If the instrument is turned off during the stage of positioning at an immediate measurement, when it is turned on again it will still be showing the immediate positioning in progress at the moment of switching off; in order to continue with this, just confirm with **ENTER** and digitize the start function or else digitize a new immediate measurement.

READINGS

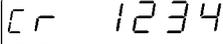
With this key  it is possible to display messages in succession.

 Axis counter
Measurement in progress

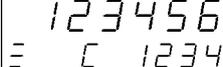


Programme in use  Totalizer counter
Step in use  Totalizer pre-selection



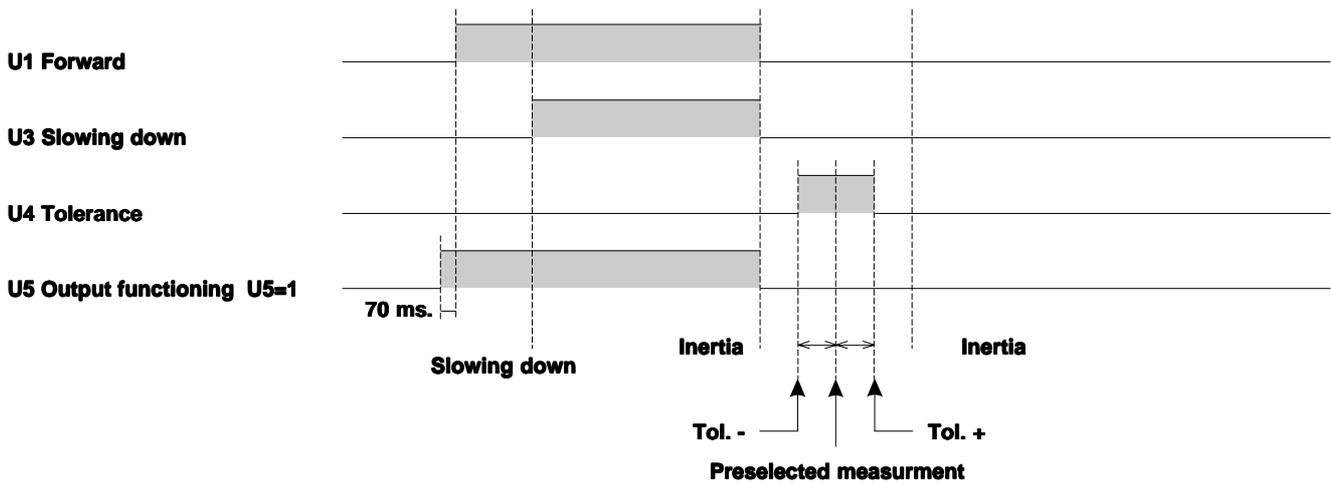
 Cycles programmed
 Cycles done



Indication of immediate procedure  Axis counter
Totalizer

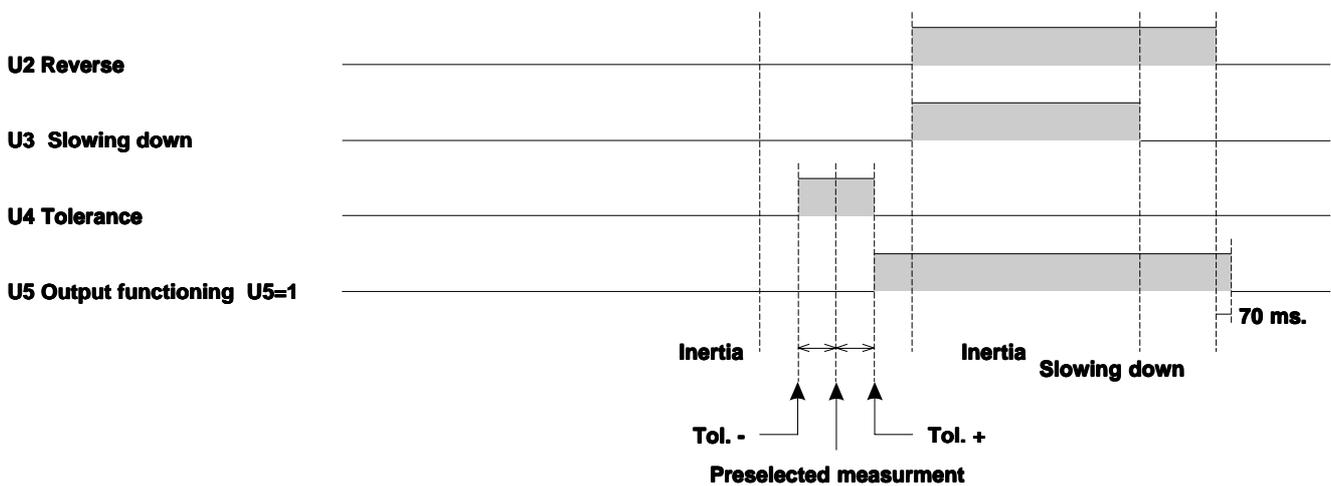
N.B. The display will show the axis positioning in relation to an immediate measurement in its introduction phase, with 3 segments lit on the display in the bottom left-hand corner. On arriving at the tolerance stage the piece counter which is incrementable from input I4 will be displayed. This reading will remain even in the Δ "+ Δ " positioning stage. When returning to the original measurement the cutting measurement will be shown, and, once the tolerance stage has been reached, the piece counter will once again be proposed.

DIAGRAM OF FORWARD POSITIONING WITHOUT PLAY RECOVERY



N.B. The activation of output U4 is enabled after the tolerance activation delay time

DIAGRAM OF REVERSE POSITIONING WITHOUT PLAY RECOVERY



N.B. The activation of output U4 is enabled after the tolerance activation delay time

DESCRIPTION OF ON / OFF POSITIONING

The ON / OFF positioning was created for those systems which use asynchronous two-speed motors in order to position themselves at the programmed measurement. The ON/OFF module has a forward output which commands movement forward (the number on the counter goes up), a reverse output which commands reverse movement (the number on the counter goes down), a slowing down output which commands slow movement (second speed), and a tolerance output, which indicates that positioning has taken place. To get repetitive positioning, the slow speed on the motor is used, and this is activated when the counting function enters the slowing down band. If the movement is interrupted in the slowing down phase, the axis stops through inertia. The distance covered after the de-activation of the movement function is the inertia value that is used to anticipate the stop function so that the axis enters the tolerance band. In positioning systems where the friction is not constant it is possible to divide the axis travel into 8 bands and assign an inertia value to each one. In order to get repetitive positioning it is also necessary for the system to move at a constant level when the slowing down function is activated. Thus, if the movement to be carried out is smaller than a minimum D , the axis will move away from the arrival measurement up to a distance which will permit proper control of the slowing down phase. It is also possible to activate an automatic inertia calculation procedure which is applied at every positioning. When the counter number arrives in the slowing down band it is possible to programme the de-activation of the direction output (forward or reverse), activate the slowing down function and therefore re-activate the forward or reverse functions by programming the slowing down time.

DIAGRAM OF POSITIONING WITH REVERSE PLAY RECOVERY

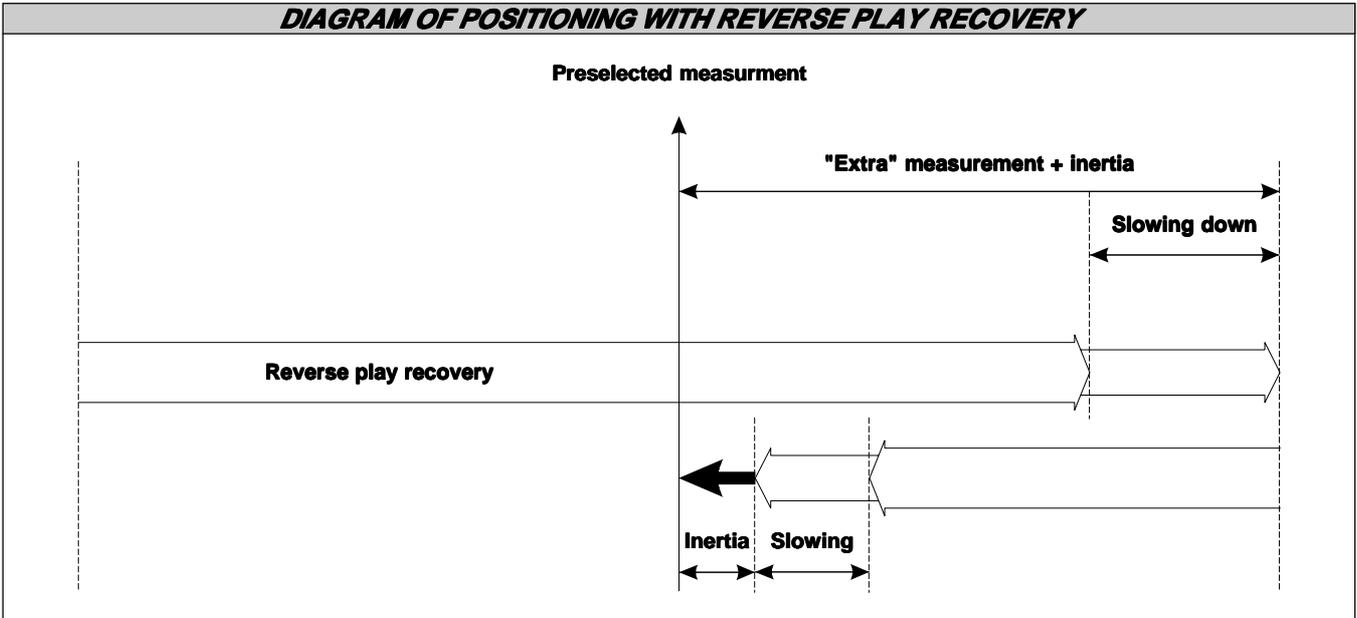
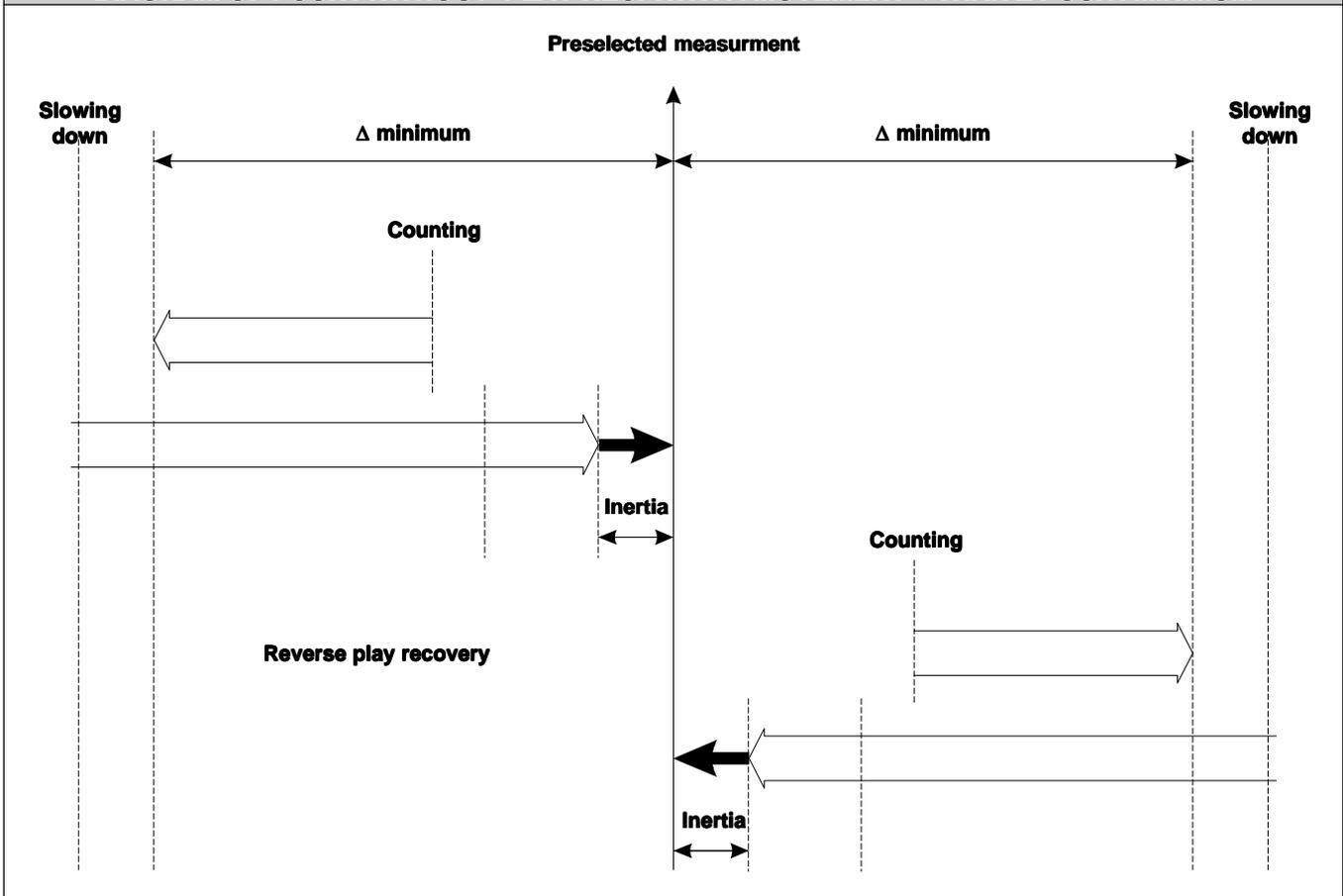


DIAGRAM OF POSIT. WITHOUT PLAY REC. WITH A MOVEMENT < THAN Δ POSIT. MINIMUM



ON / OFF POSITIONING CALIBRATION PROCEDURE

- 1** Gain access to the set-up parameters by introducing the password, and programme the various functions paying particular attention to the slowing down measurement, the tolerance measurement, the slowing down time and the "extra" measurement for the positioning minimum Δ play recovery.
- 2** gain access to the calibration function, by introducing the password. In this section it is possible to choose to subdivide the axis into one or eight inertia bands, calculate the inertias, enable the inertia calculation at every positioning and define the tolerance activation waiting time.
- 3** Check the positionings by using the manual procedure, if it is activated.
- 4** If the positioning test is positive, proceed to a general instrument test.

EXECUTION OF CALIBRATION PHASES WITH ON / OFF POSITIONING

In order to make the positioning calibration phases easier, proceed as follows:

- Programme the SET-UP parameters and in particular the resolution, decimal figures, maximum measurement, minimum measurement, slowing down, tolerance, choice of play recovery and minimum delta positioning ("extra" measurement play recovery)
- Bring the counter into line with the actual position of the axis.
- In calibration the positionings are not linked to the functioning of the instrument.

- Press the key **F** and then the key **0** ^{PASS} the led will light **FUNZ**

- On the display will appear:  This is the request for the password..

- Introduce the numerical keys 123 and press **ENTER**

- De-activate the stop input and the following information will appear on the display:

 By digitizing **1**, the operator can introduce the activation of eight equal-sized bands in which the difference between the minimum and the maximum measurement is subdivided and which has a different inertia. by introducing the value **0** th eight inertia bands are not enabled and in the whole movement of the axis the inertia value remains constant. After confirming with **ENTER** the display will show:

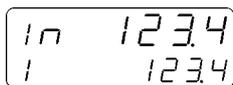
 By introducing the value **1**, the operator can set up the automatic inertia re-calculation function when, after a positioning the axis is not in the tolerance phase (in this case automatic re-calculation occurs even outside the calibration cycle in any positioning). By introducing the value **0**, the automatic inertia re-calculation function is not enabled. After confirming with **ENTER**, the instrument performs the same number of positionings as there are inertias, in order to autodetermine the inertias without having to wait the start activation delay time. The display will show:

 On the upper display will appear the axis counter number, on the bottom left one the counting function band in autocalibration, and on the the bottom right display the calculated preselection in the central point of the band.

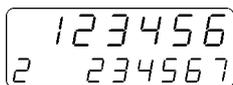
$$\text{Pres.} = [(Q.\text{max.} - Q.\text{min.}) / 8] \times (N^0 \text{ fascia} - 1/2) + Q.\text{min.}$$

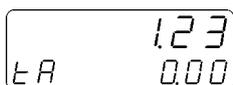
every time the **ENTER** confirmation is given the positioning is commanded without waiting the "ts" time. If after having commanded several positionings the axis does not position itself correctly, it is necessary to modify the SET-UP parameters (slowing down, tolerance, etc.).

If the positioning is correct press the key  ; the display will show:

 The instrument will show the calculated inertia (upper display) in the previous positioning. If the operator wishes to confirm the inertia reading on the display he should press the arrow key, or confirm by pressing **ENTER**. If he wishes to modify it, however, it is sufficient to digitize the value (with the lower display flashing) by using the numerical key and confirm with **ENTER**. This parameter always has an extra decimal point in that it is programmed in the "Decimal point positioning" parameter to allow the QPS (QEM POSITIONING SYSTEM) to function. (See relevant paragraph)

On pressing the key  the display will show:

 The instrument proposes inertia calibration in relation to the second counting band. The procedures for autocalibration are identical to those described above. At the end of the calibration of the last inertia band the display will show:

 The instrument proposes the tolerance activation waiting time (expressed in seconds) calculated during the calibration phase. At the end of this time the positioning is concluded and, if they are not in the tolerance function, the inertia is calculated. If the operator wants to keep the waiting time on the display he must press the arrow key, or he must confirm with **ENTER**, or else if he wants to modify it it is sufficient to type in the value using the numerical keyboard and confirm with **ENTER**.

N.B. If the eight inertia bands have not been enabled, the calculation of the sole inertia is only made at the (Q.min.+(Q.max.-Q.min.) / 2) measurement.

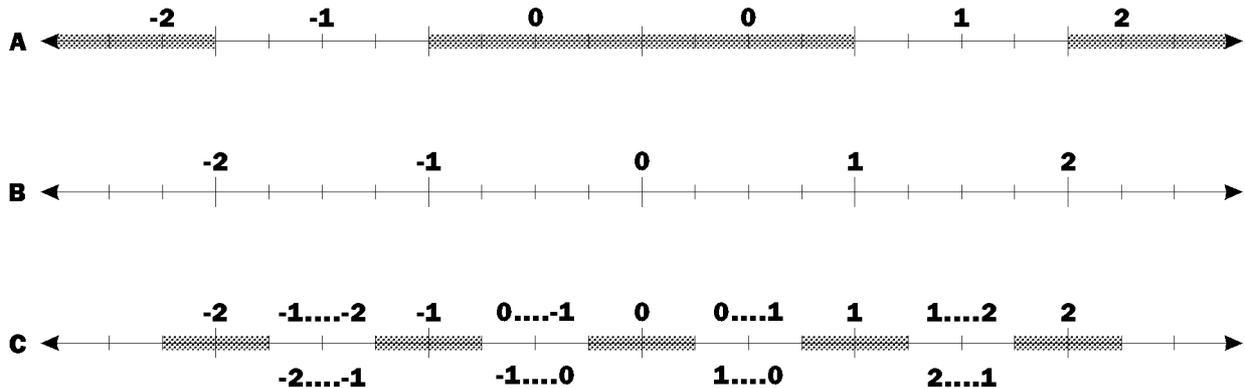
To exit at any moment from execution of the calibration phases, press the key



HDR (HIGH DEFINITION READING) DISPLAY SYSTEM

This system makes it possible to show both readings on a bidirectional counter simultaneously, thus producing a higher definition compared to the traditional reading because, if the transducer permits this, it is possible to measure the space between the unit on the display and the previous and the following one. The space between each unit on the display is divided into four equal parts; the two outside sections are areas in which the display shows figures in a stable reading, while in the two central areas, the display shows first one figure then the other, thus emphasizing that the actual reading is between the two figures.

The HDR system is totally effective if the transducer resolution requires a multiplicative co-efficient inferior or equal to 2,00000, while if the multiplicative co-efficient is comprised between 2,00001 and 4,00000, the readings on the display will be read but the middle area in which the figures oscillate between one reading and the other is not recorded.



A= Normal reading

B=Real movement

C=HDR reading

As can be seen from the graphs the HDR system gives the readings in the real position, thus making it possible to measure the middle distances between the units without having to take readings or programme data in unit measurements 10 times smaller than necessary.

QEM POSITIONING SYSTEM (QPS)

If the transducer resolution permits it, this system makes it possible to check and adjust the ON-OFF type of positioning (this system is piloted with digital signals such as FORWARD/REVERSE/SLOWING DOWN/TOLERANCE) with a resolution 10 times superior to that chosen for programming and reading data. In fact, the inertia and tolerance parameters are proposed with one extra decimal figure compared with the number of decimal figures used for the programming or reading of data. (For example, if the general data has one decimal figure, inertia and tolerance will be proposed with 2 decimal figures). The last figure of these parameters divides up the number of transducer impulses which make up one displayed or preselected unit into 10 parts, so that if the multiplicative coefficient is a number inferior to 0,40000, every variation of that last figure will alter the positioning and the tolerance band reading; if the multiplicative coefficient is comprised between 0,40001 and 3,99999, the influence of the last figure will gradually diminish until it stops completely when this coefficient is equal to 4,00000.

ELECTRICAL CONNECTIONS (INPUTS)

1	XXX	Supply voltage Vac $\pm 15\%$ 50 / 60 Hz
2	XXX	Supply voltage Vac $\pm 15\%$ 50 / 60 Hz
3	GND	Earth (it is advisable to use a cable of ϕ 4 mm.)
4	+	Transducer positive supply 12 V 150 mA
5	-	Transducer negative supply
INGRESSI ENCODER SOLO 12 V	12	PE Encoder polarization terminal board(+ NPN, - PNP)
	13	PH Incremental encoder phase 1 input
	14	PH Incremental encoder phase 2 input
	15	Z Not used
	16	P1 Input polarization terminal board (+ NPN, - PNP)
INGRESSI 12 V \div 24 V	17	I1 (I) Positioning at $+\Delta$
	18	I2 (I) Start
	19	I3 (I) Stop
	20	I4 (I) Totalizer increase
	21	I5 (I) Totalizer to zero
	22	I6 (I / C) Restart

ELECTRICAL CONNECTIONS (OUTPUTS)

6	C1	Output polarization terminal board (+ PNP, - NPN)
7	U1	(C) Forward
8	U2	(C) Reverse
9	U3	(C) Slowing down
10	U4	(C) Tolerance
11	U5	(C) End of programme / Brake release

ELECTRICAL OUTPUTS USED WITH EXPANSION (SORTING CODE "E")

23	A1	Not used
24	GA	Analogic output common (It can be earthed or not)
25	C2	Morsetto di polarizzazione delle uscite (+ PNP, - NPN)
26	U6	Not used
27	U7	Not used
28	U8	Not used
29	U9	Not used
30	U10	Not used

ELECTRICAL CONNECTIONS (INPUTS)



31	P2	Input polarization terminal board (+ NPN, - PNP)
32	I7	Not used
33	I8	Not used
34	I9	Not used
35	I10	Not used

GENERAL INFORMATION CONCERNING CONNECTIONS

INPUTS

Each ON / OFF output is universal, optoisolated and can receive digital signals both in NPN and PNP logic. By connecting P1, P2, PE to + all the inputs accept NPN signals, that is, with closure towards the negative supply pole. By connecting P1, P2, PE to - all the inputs accept PNP signals, that is, with closure towards the positive supply pole. Each input is protected against short-circuiting in both supply poles, and is therefore virtually indestructible. Several inputs with the same logic can be parallelly connected, if the output which pilots them is able to withstand the total current required, which is equal to the number of inputs connected together multiplied by 10 mA.

OUTPUTS

The dc are optoisolated in continuous supply and they have one common terminal between them (C1, C2). By connecting this terminal to a + voltage all the outputs become PNP outputs, and by connecting this terminal to a - voltage all the outputs become NPN outputs. The maximum continuous voltage that can be applied is 50 V. The outputs are able to withstand current up to 70 mA with a typical voltage drop of 3,5 V between the output and the common. With dc outputs it is even possible to pilot 24 Vac relays.

APPLICATION

FIG. 1: Connection of an HB 548.13 with continuous relay, NPN inputs and PNP outputs

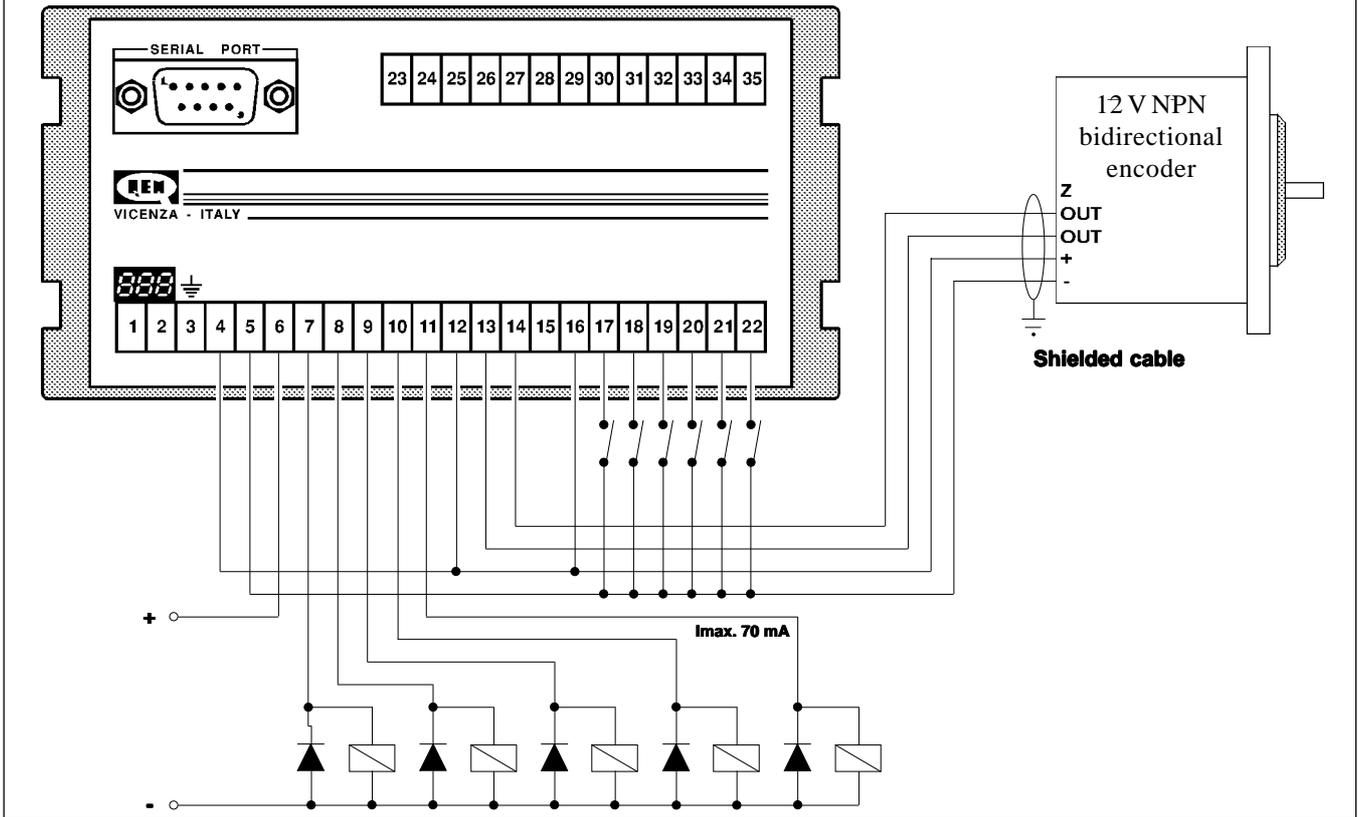
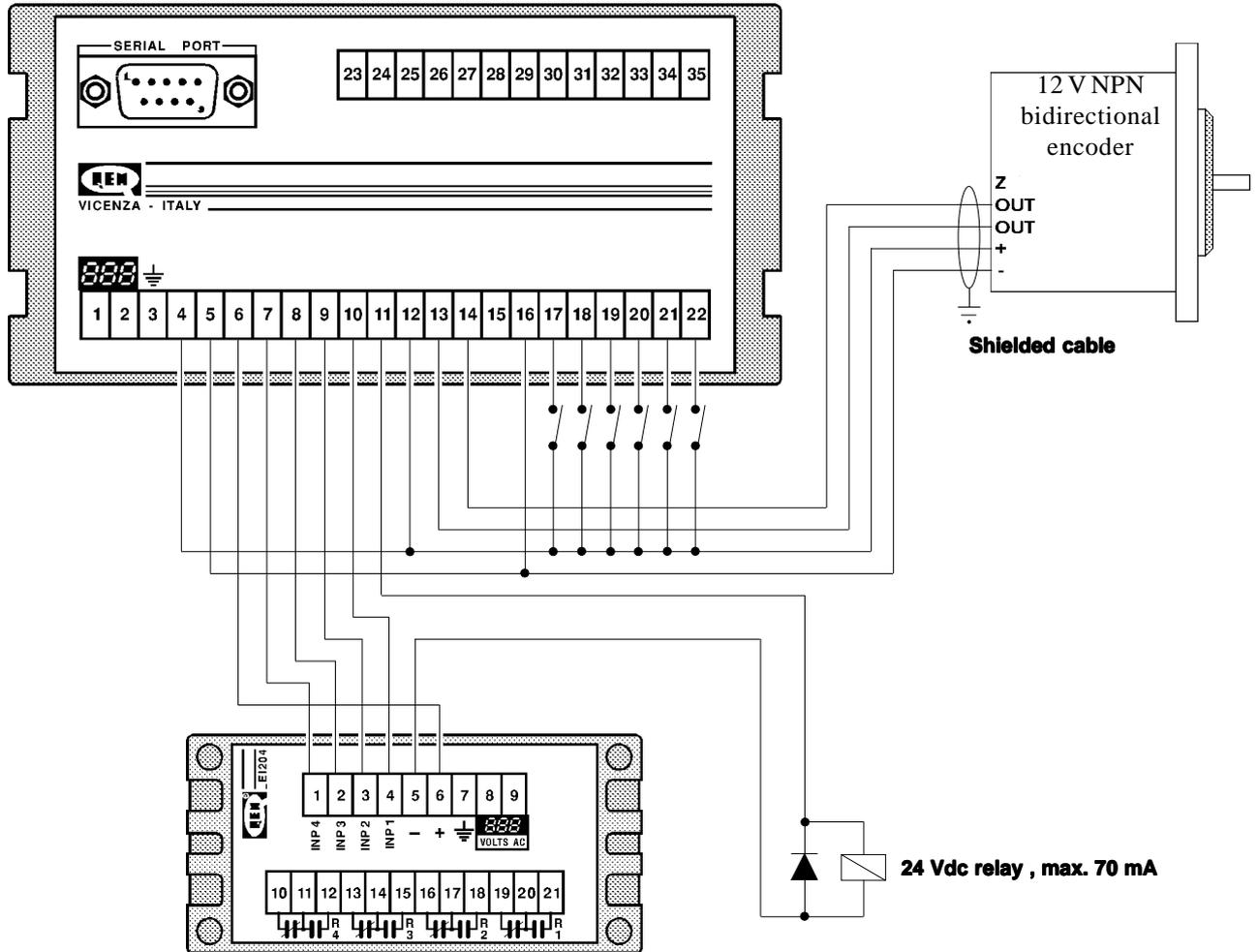


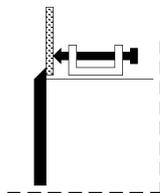
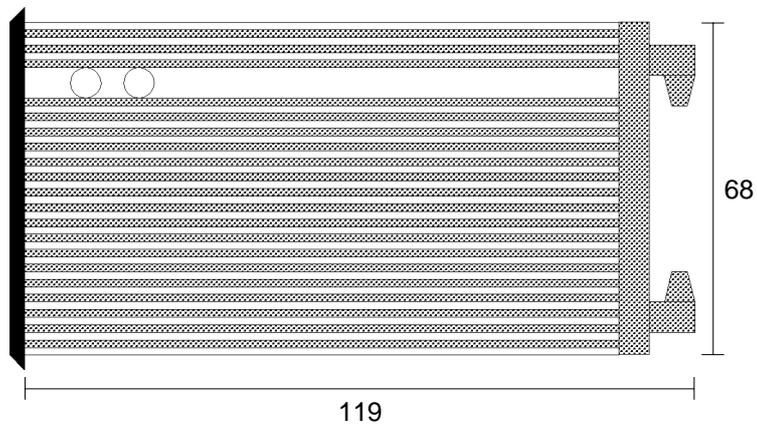
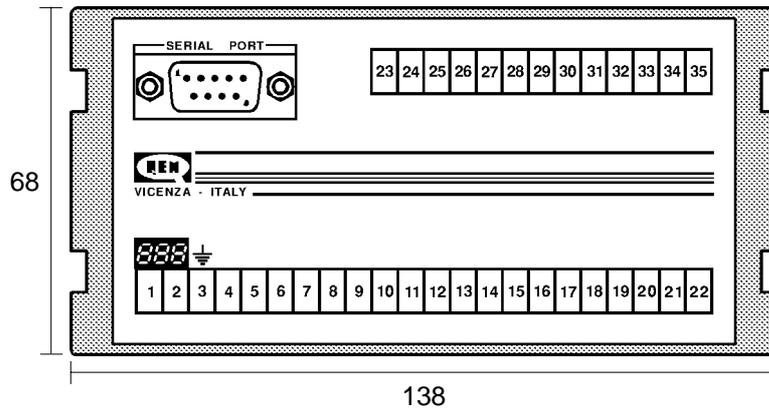
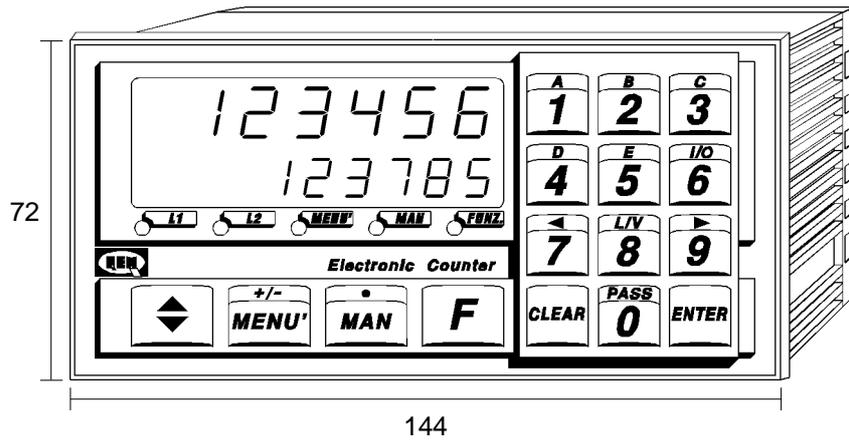
FIG. 2: Connection of an HB 548.13 with an EI 204 relay interface and PNP inputs



EI 204

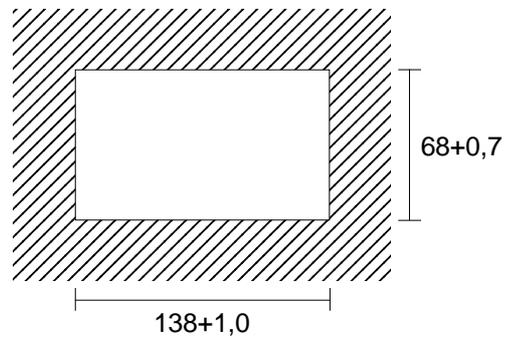
L'EI 204 has 4 5 A / 250 V relays with a 24 V supply, the voltage of which is taken from inside the interface itself. The relays are connected as in figure 2; the assembly should be effected according to DIN standards. the space occupied is 45 x 93 x 85 mm.

DIMENSIONS



WARNING!

After placing the hook of the hinge on the board, only do a half rotation to avoid tearing the frame.



N.B. All the measurements are in millimetres.

SORTING CODE

H **B** **5** **4** **8** . **1** **3** / **110**

Supply voltage= 24=24 Vac
110=110 Vac
220=220 Vac

**The manufacturer reserves the right to modify the characteristics of the instruments described without any prior warning.
The manufacturer accepts no liability for damage caused by an incorrect or improper use of the instrument.**



Quality in Electronic Manufacturing  **Date 25 / 03 / 93**

Technical sheet B548H13.2

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