User Manual
Digital Readout

VISION 518

GIVI MISURE

www.givimisure.it

TABLE OF CONTENTS

STANDARD FUNCTIONS

ADDITIONAL INFORMATION

PRELIMINARY REMARKS

GIVI MISURE would like to thank you for purchasing the programmable digital readout

VISION
MICROCOMPUTER

and confirms the excellent choice made.
Thanks to a powerful microcontroller, the instrument is completely programmable by keyboard. This means that VISION can be optimized with a number of specific functions for any type of machine tool.

Disposal of waste electrical and electronic equipment (WEEE)
European Council Directive 2002/96/EC

The use of the WEEE symbol indicates that this product may not be treated as household waste. If this product is disposed correctly, you will help to protect the environment. For more detailed information about the recycling of this product, please contact your local authority, your household waste disposal service provider or the retailer where you purchased the product.

INSTALLATION

W A R N I N G !

It is forbidden to switch on the instrument unless the machine on which it is installed conforms to 2006/42/EC Directive.
All of the equipments connected to the instrument must have insulation characteristics in compliance with the regulations in force.
The instrument can be installed only by specialized personnel, following the instructions provided by the Manufacturer.
It is strictly forbidden to intervene on the instrument while it is powered from the mains power supply or by other devices.

POWER SUPPLY 230 Vac - 50/60 Hz (110 Vac or 24 Vac on request). We recommend the use of a mains power supply provided with an input filter. The power distribution network to which the instrument is connected must be equipped with a sectioning device in compliance with the regulations in force, positioned close to the instrument.

PREVENTION To avoid fires or explosions, the instrument should not be used in the presence of inflammable gases, solvents, explosives, etc.

PANELS They can be removed only by specialized personnel, after disconnecting the power supply.

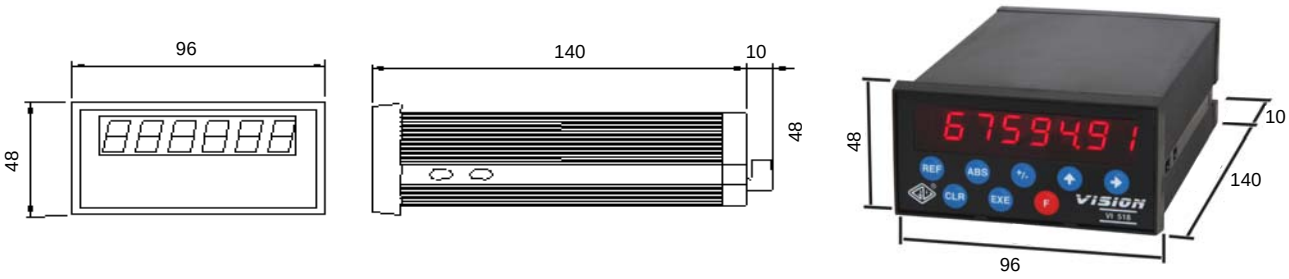
INSTALLATION The measuring systems (optical scale, rotary encoder, etc.) must be installed following the instructions provided by the Manufacturer.

CLEANING The front panel can be cleaned only after disconnecting power supply, using a moist cloth. The instrument is not protected against liquid penetration. DO NOT USE SOLVENTS.

MAINTENANCE Not required.

☞ In case of accidental or momentary mains voltage drops, the instrument does NOT provide wrong and potentially dangerous information. When switched on again, the instrument signals the occurred anomaly and requires the zero reference search (REF).

DIMENSIONAL SPECIFICATIONS



DRILLING TEMPLATE: 92 x 45 mm

CONNECTIONS

INCREMENTAL ENCODER INPUT

CONNECTIONS	1	2	3	4	5	6	7	8	9	10	11	12	13
TERMINAL BOARD	P.S.	P.S.	C1	NA1	C2	NA2	+ V	0 V	LOAD QUOTA	/	B	A	Z

ABSOLUTE (SSI) ENCODER INPUT

CONNECTIONS	1	2	3	4	5	6	7	8	9	10	11	12	13
TERMINAL BOARD	P.S.	P.S..	C1	NA1	C2	NA2	+ V	0 V	LOAD QUOTA	CK	$\overline{CK}$	D	$\overline{D}$

LEGEND:

P.S. = Power supply 230 Vac ± 10% 50/60 Hz
(optional 110 Vac 60 Hz – 24 Vac 50/60 Hz)
C1 = Relay 1 common contact
NA1 = N.O. Relay 1 contact
C2 = Relay 2 common contact
NA2 = N.O. Relay 2 contact
+ V = Encoder power supply output 12 V / 05 V
0 V = 0 V Encoder power supply
LOAD = Load position input (connect an N.O. contact between pin 9 and pin 8)
/ = Reserved
B = Encoder channel B input (for mono-directional sensors, close at 0 V)
A = Encoder channel A input
Z = Encoder reference signal input

CK = SSI absolute encoder clock+ input
$\overline{CK}$ = SSI absolute encoder clock- input
D = SSI absolute encoder data+ input
$\overline{D}$ = SSI absolute encoder data- input

☞ Connect the cable's shield to the ground.
The maximum capacity of the relay contacts is 230 Vac 3A.

KEY - MESSAGES AND SIGNALING

The following keys and symbols are used in this manual, with the following meaning:

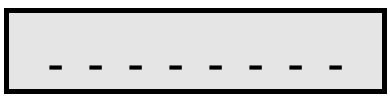
CLR	KEY USED TO RESET THE AXIS AND TO CLEAR THE OPERATION IN PROGRESS
→	KEY USED TO SELECT DIGITS DURING DATA SETTING
↑	KEY USED TO SELECT NUMERICAL VALUES (from 0 to 9) DURING DATA SETTING
+/-	KEY USED TO SELECT THE ALGEBRAIC SIGN ALSO USED TO CHANGE THE OPTION DISPLAYED
F	CODED FUNCTIONS KEY (TO BE USED TOGETHER WITH A NUMBER)
EXE	KEY USED TO CONFIRM DATA OR SELECTIONS
ABS	KEY USED TO SELECT THE ABSOLUTE/INCREMENTAL COUNTING
REF	KEY USED TO RECALL THE ZERO REFERENCE SEARCH

✸ **FLASHING VALUE**

The instrument provides a series of visual signals to support the user during configuration and use. When pressing a key, messages appear on the display, according to the operation/function (see this manual). Finally, the instrument signals the activation or the predisposition to execute a function. The flashing display, in fact, indicates that the function is in progress; when the display has a fixed light, the function has been completed.

Wrong operations are signaled with the following message:

that temporarily appears on the display to inform the operator that the entered key is not compatible with the current operation.
In case of “overflow” error, i.e. the number of digits displayed is greater than the instrument counting capacity, the error is shown on the display as:



To exit this situation, see the “Position Reset/Preset” paragraph.

DATA AND PROGRAMS RETENTION

When the mains power supply is disconnected, the instrument can retain in its memory all the data and programs set.
When powered off, the instrument can also store the last axis counting position.

To delete all the operation settings (e.g. counters resetting) see function F 00.

☞ The instrument, both in ABS and INC mode, cannot consider shifts of the carriage made whenever the mains power supply is disconnected (due to inertia, manual maneuvers, or thermal expansion). Whenever any of the above occurs, the position shown in the display is unreliable; it does not represent the new position of the carriage but the one it had prior to power disconnection.

☞ To avoid errors, we recommend to perform the zero reference (REF) search whenever the operator is not sure about the correctness of the displayed position, and whenever the same is essential for the current machining (e.g. when using relay outputs).

STANDARD FUNCTIONS

SELECTING A STANDARD FUNCTION

To recall a function, press the F key, use the +/- key to select the code of the desired function and confirm it with EXE.

☞ At any time, it is possible to quit the operation by pressing the CLR key.

SCALE ZERO REFERENCE (REF)

INCREMENTAL ENCODER INPUT

The scale zero reference (REF) can be considered as a precision micro-contact, generally located in the middle of the measuring length. Its position, with reference to the geometrical trim of the machine, is unchangeable over time. This could be modified only if the scale is disassembled (e.g. due to service, maintenance or substitution). In this case, the operator will have to set the references again.

The zero reference can be searched ***automatically*** whenever the instrument is turned on, or ***manually***:

A) **Automatically.** Whenever a momentary or prolonged interruption of power supply (voluntary or not) occurs, the instrument proposes to the operator the zero reference (REF) search to avoid the displaying of incorrect positions (LAST POSITION). This is the case, for instance, of a sudden power failure while the carriage is moving (since it would continue to move due to inertia), or of the movement due to thermal expansion (for example caused by a temperature drop during the night), or of involuntary or accidental shiftings (while cleaning the machine). The operator is therefore warned against a potential risk. He can decide to perform the zero reference (REF) search, by passing the carriage on the corresponding points, or he can cancel the operation, pressing the CLR key. If the scale does not have the zero reference, press the CLR key. In this case, it is advisable to check the accuracy of the positions reached.

B) **Manually.** Whenever the operator deems it necessary, he can verify the position reached by the carriage, performing the zero reference (REF) search **manually** on the axis.

Example:

Press REF

The display flashes and requires the operator to perform the zero reference (REF) search.

With this function, it is possible to set the 0 value in correspondence to the zero reference position. In order to reset the absolute and incremental counters:

Press CLR REF

The axis display flashes. By passing with the carriage on the corresponding point, the 0 value will be displayed.

☞ The instrument will not accept any setting until the axis has terminated the zero reference (REF) search, displaying an error message at the pressure of any key (except CLR). The operator can then decide to:

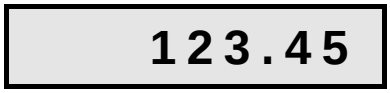
A) Complete the zero reference search;

B) Cancel it because unnecessary.

ABSOLUTE (SSI) ENCODER INPUT

In the instruments with absolute (SSI) encoder input, the zero reference search function allows to synchronize the displayed position and the absolute position of the encoder.

Press CLR REF



The absolute position of the encoder will be displayed.

SELF-TESTING

A general test of the instrument is performed automatically whenever it is turned on, checking the validity of the stored data. If no problem is detected, the following wording will appear on the display:

tESt
no Err

ABSOLUTE/INCREMENTAL COUNTING

The point positioned on the right of the display indicates the counting mode set. More specifically, if the point is

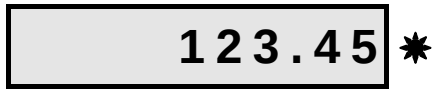
- TURNED ON = AXIS IN ABSOLUTE COUNTING MODE (ABS)
- TURNED OFF = AXIS IN INCREMENTAL COUNTING MODE (INC)

To switch the axis from one counting mode to the other, press the ABS key; the point turns on (or off) and signals that the axis is in ABS (or INC).

The counting system is managed by the instrument, which has a dual internal counter (ABS/INC). The information relating to the axis movement updates simultaneously both counters. The information entered by the operator, instead, only affects the counter of the selected counting system. For instance, it is possible to reset the ABS counter in a given point (ORIGIN) and operate in INCREMENTAL counting (that is handier and more versatile to use). The operator can then carry out all the resetting, pre-selections, functions, etc. required by the machining process, since he can return to the ABS counting at any time to find out the **absolute** position of the carriage and, therefore, the ORIGIN he had set.

POSITION RESET/PRESET

Regardless of the selected counting mode, ABS or INC, to reset a value, proceed as described below.

Press (CLR) 

Press (EXE) and the value will be reset 

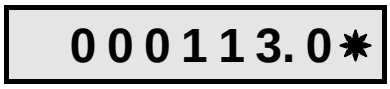
To enter a value (preset), e.g. 113.03, on the axis,

Press (→) the first digit will flash 

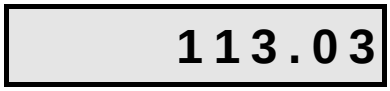
Press (→) to select the second digit 

Press (↑) to enter the value (0-9) 

Use → and ↑ to set the other digits

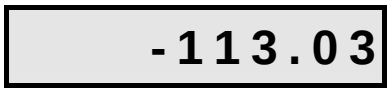


Press EXE to confirm the entered value



Note. During the position preset, the following keys can be used:

+/- to set a negative value



CLR to quit the preset operation and return to displaying the previous position.

The preset value should have a number of digits not exceeding the instrument counting capacity (8 digits, including negative sign and decimal point), therefore:

from	**-999999.9**	to	**999999.9**	for 100 µm resolution
from	**-99999.99**	to	**99999.99**	for 10 µm resolution
from	**-9999.999**	to	**9999.999**	for 1 µm resolution

MEMORY CLEARING F 00

The F 00 function can be used to delete the data entered by the operator, either entirely or selectively. These data are stored in different areas.

Press F 0 0 EXE and, if required +/-

With the +/- key, select the type of data to be deleted.

C tot	To delete all the stored data.
C Corr	To delete data relating to the linear correction, that will be reset to the value 1 (i.e. no correction).
C data	To delete positions and references, both absolute and incremental.
C Prog	To delete the relay programs.

Press EXE to execute the function

MM/INCH CONVERSION F 11

Press F 1 1 EXE

Press +/- to select

Press EXE to confirm the selection.

The selected unit of measurement is signaled by the position of the decimal point on the axis. If the conversion is not compatible with the operational conditions of the instrument, an error message will appear on the display.

MIDPOINT CALCULATION F 15

With this function it is possible to easily identify the midpoint between two points A and B of a workpiece (distance between holes centers, geometrical figures, workpiece sides, etc.). To execute the function:

Reach the first position A, moving the carriage along the axis. Let us suppose that in that position the axis display will show the value 30.00 (which is not necessary to reset).

Press F 1 5 EXE

Note. The decimal point of the position will flash.

Move to the second position B. Let us suppose that in that position the display will show the value 52.22.

Press EXE

A position will appear on the display. This will correspond to the exact halfway (rounded, if necessary) between the two positions A and B. It will be sufficient to move the carriage to the 0.00 position and it will be placed in the required midpoint.

☞ This function can be carried out only if the axis is set for **INCREMENTAL** counting. Vice versa, the instrument does not complete the calculation, as this would interfere with the **ABSOLUTE** counting settings.

INVERSION OF COUNTING DIRECTION F 22

Turn on the instrument and wait for the end of the self-testing cycle. The display remains lit up and shows the zero reference (REF) search. Press CLR to enable the axis counting. Manually move the carriage and evaluate if the axis needs to be inverted (the direction in which it advances depends on the scale's installation).

If the axis has to be inverted,

Press F 2 2 EXE → dir-

☞ The dash position (-) to the right or left of "dir" does not reflect the movement direction. The shift from dir- to -dir simply indicates to the operator that the inversion of direction has been executed.

Press ± (because the axis has to be inverted) → -dir

Press EXE the selection is confirmed and the axis is inverted → XXXXXX.XX

After having confirmed with the EXE key, the instrument exits programming (the display shows the position). In case of wrong settings, press the CLR key and repeat the operation from the beginning.

LOAD POSITION PRESET F 23

With function F 23, it is possible to set the load position. The load position is a **predefined counting value** that can be recalled at any time.

To enter the position (preset), e.g. 50.00, on the axis:

Press F 2 3 EXE the instrument requires to enter the value (position) → ✸XXXXX.XX

Use → and ↑ to enter the value → 000050.0✸

Press EXE to confirm it → 50.00

Note. During the position preset, the following keys can be used:

(+/-) to set a negative value

CLR to quit the preset operation and maintain the previous position set.

Regardless of the selected counting mode, ABS or INC, it is possible to recall the load position, following the procedure described below.

Press → the first digit will flash

Press REF and the value will be set (preset)

☞ It is possible to recall the load position also with an external contact, connected to the load position input (see connections).

DISABLING THE AUTOMATIC REF SEARCH F 24

With function F 24 it is possible to disable the automatic zero reference search (REF) that is performed whenever the instrument is turned on.

Press F 2 4 EXE

Press (+/-) to select

Press EXE to confirm the selection.

☞ Function F 24 is available for instruments with incremental encoder input.

COUNTING MODE F 25

This function allows to select the counting mode of the A and B channels of the encoder. The counting mode can be direct, double, quadruple or mono-directional.

Press F 2 5 EXE

The display will show the direct counting mode (n1).

Press ±/− to select the double counting mode (n2).

Press ±/− to select the quadruple counting mode (n4).

Press ±/− to select the mono-directional counting mode (A).

Press EXE to confirm the desired selection.

LINEAR CORRECTION F 30

Machining errors can derive from geometrical defects of the machine due to wear, lack of linearity of the guides, coupling clearances between carriage and guide, badly distributed weights, etc. If these errors are linear, i.e. proportional to the movement executed, they can be compensated with the linear correction function.
The correction factor **CF** is calculated by the operator with the following formula:

$$CF = \frac{\textbf{MEASURED DIMENSION} \text{ (measured with accuracy)}}{\textbf{DIMENSION AS PER DRAWING}}$$

Let us suppose that a machining has been performed, moving the axis by 400.00 mm (value shown on the display), but an error has been detected (positive or negative). For instance, the measured piece is either longer or shorter than intended. That means:

A) 400.20 mm **the workpiece is longer with an error of 200 µm**
B) 399.88 mm **the workpiece is shorter with an error of 120 µm**

in case **A** **CF =** 400.20 : 400.00 = 1.0005
in case **B** **CF =** 399.88 : 400.00 = 0.9997

To compensate for these errors,

Press (F) 30 (EXE)

Note. The first digit on the display will flash.

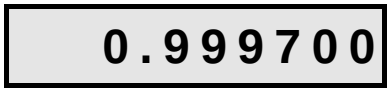
To enter the correction factor on the axis,

use (→) and (↑) to enter it

1.0005 (EXE)

or:

0.9997 (EXE)



All the movements performed on the axis will be compensated with the **CF** entered. At the end of the procedure, the display will be enabled for counting.

The linear correction has the following characteristics:

1. it is permanently stored (it becomes a mechanical component of the axis);
2. it can always be modified, entering other **CF** values. The permitted values are:

   MIN = 0.000001
   TYP = 1.000000
   MAX = 9.999999

3. it can be disabled entering **CF = 1** or deleting the linear correction with the function **F 00**;
4. it has priority over preset, reset, etc. functions.

☞ The correction must be entered before the other functions (which otherwise would be modified).

RADIUS/DIAMETER CONVERSION F 34

The function can be used to select the required reading mode.

Press F 3 4 EXE

Press +/- to select

Press EXE to confirm the selection.

After having confirmed with the EXE key, the display will be enabled for counting.
While choosing the reading mode, consider that:

A) RADIAL READING: the display shows the same value of the carriage movement. This is the most common reading mode.

B) DIAMETRAL READING: the display shows a value that is the **double** of the carriage movement. This reading mode is typically used for the transversal axes of lathes. In fact, if the tool advances by 1 mm, the workpiece diameter decreases by 2 mm.

☞
1. The unit of measurement can be switched from MM to INCHES and vice versa in both reading modes.
2. A permanently lighted point on the first digit signals that the axis is set in diametral reading.
3. Any previous RELAY OUTPUT setting is disabled since it is altered by the reading mode selected. On the contrary, the reference positions are retained.

VARIABLE RESOLUTION F 36

The instrument shows on the display the resolution initially programmed by the Manufacturer (this corresponds to the resolution of the measuring system). If machining can be facilitated by a lower resolution (e.g. roughing machining), the operator can decrease it.
Let us suppose to have an optical scale with 10 µm resolution. If the operator wants to operate with a 100 µm resolution:

Press F 3 6 EXE

r 0.00

Press +/- to select the desired resolution

r 0.0

Press EXE to confirm the selection.

☞ 1) At any pressure of the +/- key, the decimal point shifts to the lower resolution.
2) The variable resolution set will be maintained also after turning off the instrument.
3) Function F 36 does not modify the number of decimals displayed; the decimals considered unnecessary will be kept at 0.

SEXAGESIMAL DEGREES READING F 37

The angular reading, expressed in sexagesimal degrees, can be selected with the function F 37.

Press F 3 7 EXE

d M S no

Press +/- to select

d M S yes

Press EXE to confirm the selection.

On the axis display set in angular reading, degrees will be expressed as: **DDD.MM.SS.** The resolution depends on the number of encoder pulses (PPR).

ANGULAR READING F 38

On request, the instrument can be configured by the Manufacturer to operate in angular reading, in order to be used with a rotary encoder. The resolution depends on the number of encoder pulses (PPR).
The instrument calculates exactly the following formula:

$\frac{360°}{PPR \times 4}$ and selects, among the available resolutions, the one closest to the calculated value.

POSSIBLE RESOLUTIONS: **1° - 0.5° - 0.2° - 0.1° - 0.05° - 0.02° - 0.01° - 0.005° - 0.002° - 0.001°**

The highest possible resolution is 3.6 seconds of an arc (0.001°), that can be obtained with an encoder having 90,000 PPR.

If the instrument has been configured by the Manufacturer in angular reading, the operator can select the reading mode:

A) ANGLE from 0° to 360°.
B) ANGLE from 0° to 180° in positive field and from -180° to 0° in negative field.

To switch from one reading mode to the other,

Press (F) 3 8 (EXE) **0 - 3 6 0**

Press (+/-) to select **0 - 1 8 0**

Press (EXE) to confirm the selection.

1. The selection is stored permanently.
2. All the functions linked to the linear reading cannot be executed, e.g.:
   MM/INCH - LINEAR CORRECTION
3. The instrument will never incur into an “overflow” error because counting is reset after each rotation (or half-rotation) of the encoder.

RELAY OUTPUTS ACTIVATION F 40

With this function, it is possible to set the intervention of two relays during machining. This will occur in correspondence of some positions set during programming (see function F 42). When reaching the positions, the relays (if enabled) switch their status, opening or closing a contact.
This function can be activated and executed only if the instrument has been required with this option. Vice versa, the operator should contact the Manufacturer.
To activate the function,

Press	F 4 0 EXE		r E L E no
Press	±	to modify the setting	r E L E yes
Press	EXE	to confirm the selection.	St1 no

On the display it is possible to see the status of relay 1 in rest condition (position not reached) according to this definition:

NO = NORMALLY OPEN CONTACT

NC = NORMALLY CLOSED CONTACT

Press	±	to modify the setting	St1 nc
or	EXE	to confirm the selection.	St2 no

The display will then propose the selection of relay 2. Proceed as described above.

SETTING TIMED RELAY OUTPUTS F 41

With this function it is possible to set the duration of the intervention of two relays at the programmed positions (see function F 42).
Let us suppose that, in their rest condition, relay 1 has been set with the NC status (normally closed) and relay 2 has been set with NO status (normally open). In addition, let us suppose the operator wants to program the following intervention positions:

RELAY	**R1**	**IN THE POSITION 150.00**	**FOR**	**0.5 sec.**
RELAY	**R2**	**IN THE POSITION 300.00**	**FOR**	**2.0 sec.**

Press (F) 4 1 (EXE) → rELE 1

To set a time of 0.5 sec for relay 1,

Press (EXE) enter the desired duration for the relay intervention → ✸XXXXX.XX

Use (→) and (↑) to enter it and press EXE → 000000.5✸

To set a time of 2 sec for relay 2,

press (F) 4 1 (EXE) (+/-) (EXE) 2.00 (EXE)

Note. The (+/-) key is used to select the desired relay (2 in our example).

The program has been completed and, in our example, the two relays act like measuring length limits. In fact, relay 1 closes its contact for 0.5 seconds if the position passes from a value higher than 150.00 to a lower value; relay 2, instead, closes its contact for 2 seconds if the position passes from a value lower than 300.00 to a higher value.

Important: Timed relay outputs work with the relay outputs in NO status (normally open) in their rest condition. They close their contact for the programmed duration of the intervention.
With function F 40, it is possible to program the relays status (NO or NC) in their rest condition. Based on this programming, the generation of the intervention impulse will occur as indicated below.

Axis in linear reading:

NO = a timed intervention is generated when the position passes from a value lower than the intervention position, to a higher or equal value.

NC = a timed intervention is generated when the position passes from a value higher or equal to the intervention position, to a lower value.

Axis in angular reading:

NO = a timed intervention is generated when the position enters the circular sector set, on the basis of the rotation direction.

NC = a timed intervention is generated when the position exits the circular sector set, on the basis of the rotation direction.

To disable the timed output and return to the standard relay output, it is sufficient to set a timing duration of **0 seconds** on the concerned relay.

SETTING INTERVENTION POSITIONS F 42

Axis in linear reading:

Let us suppose that, in their rest condition, relay 1 has been set with the NC (normally closed) status and relay 2 has been set with NO (normally open) status.
To program the following intervention positions, proceed as indicated below:

RELAY R1 **INTERVENTION POSITION 150.00**
RELAY R2 **INTERVENTION POSITION 300.00**

Press (F) 4 2 (EXE) → rELE 1

To set the position 150.00 for relay 1,

Press (EXE) enter the desired intervention position for relay 1 → ✱XXXXX.XX

Use (→) and (↑) to enter it and press EXE → 000150.0✱

To set the intervention position for relay 2,

press (F) 4 2 (EXE) (+/-) (EXE) 3 0 0 . 0 0 (EXE)

Note. The (+/-) key is used to select the desired relay (2 in our example).

The program has been completed and, in our example, the two relays act like measuring length limits. In fact, relay 1 closes its contact if the position is lower than 150.00; relay 2, instead, closes its contact if the position is higher or equal to 300.00.

☞ **1.** The activation and the settings of the intervention positions will be **maintained** even after turning-off the instrument.
2. The MM/INCH conversion does not modify the "real" position of relays intervention.

<u>Axis in angular reading</u>:

If the instrument is set to operate in angular reading, after having set the intervention position (in degrees), the instrument requires to enter the angle of the circular sector for the intervention. The circular sector determines the area in which the relays activate, according to the formula: intervention angle ± ½ circular sector.
Let us suppose that the operator wants to activate the relay 1 at the position of 90°, with a circular sector having an angle of 2°.

Press (F) 42 (EXE) → `rELE 1`

Select the desired relay (1 or 2).

Press (EXE) the instrument requires the relay intervention angle → `✸XXXXX.XX`

Use (→) and (↑) to enter it and press EXE → `000090.0✸`

The instrument requires to set the angle of the circular sector of relay intervention:

`AnG`

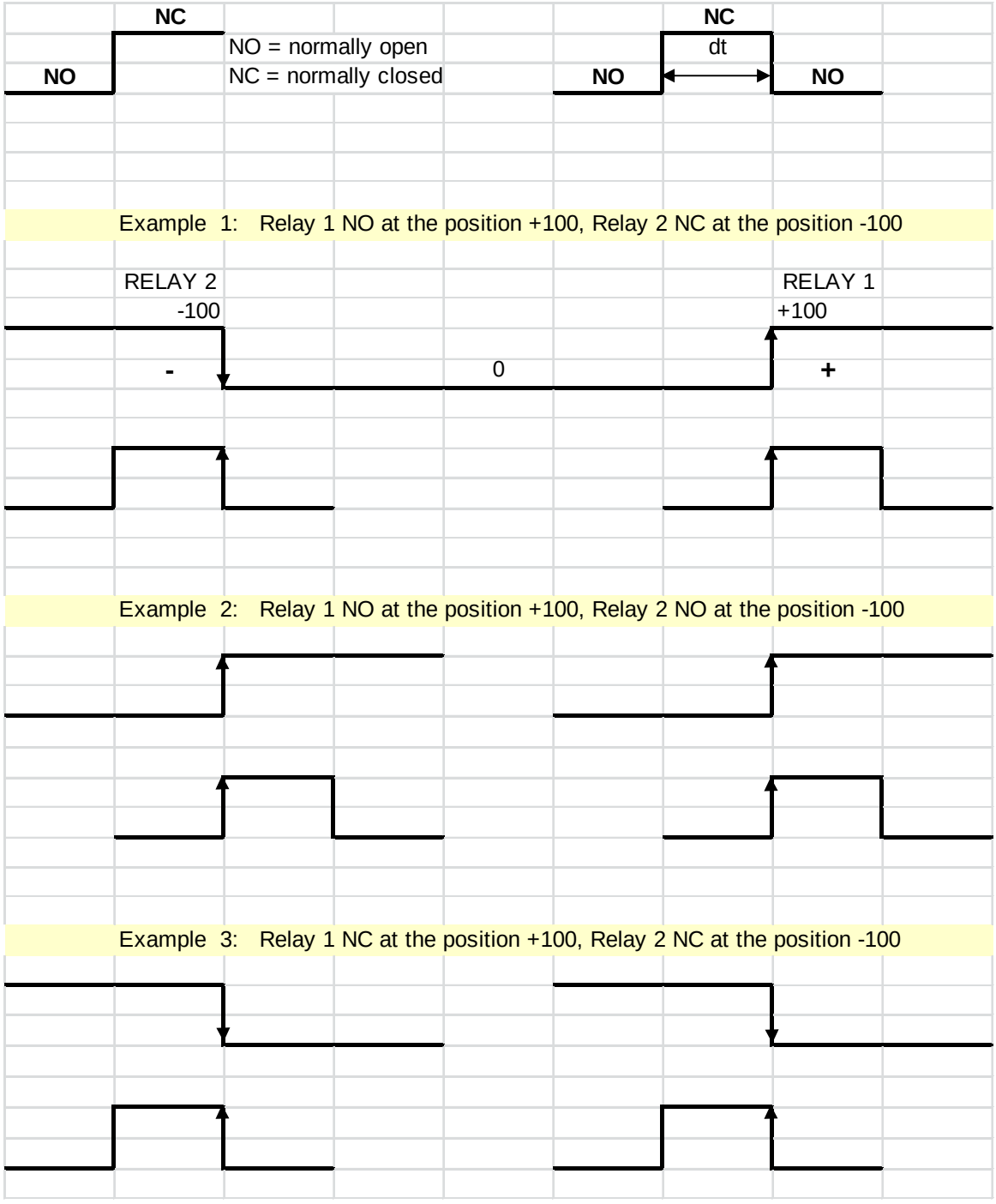
Press (EXE) to modify it or press the CLR key to quit the setting → `✸XXXXX.XX`

Use (→) and (↑) to enter it and press EXE → `000002.0✸`

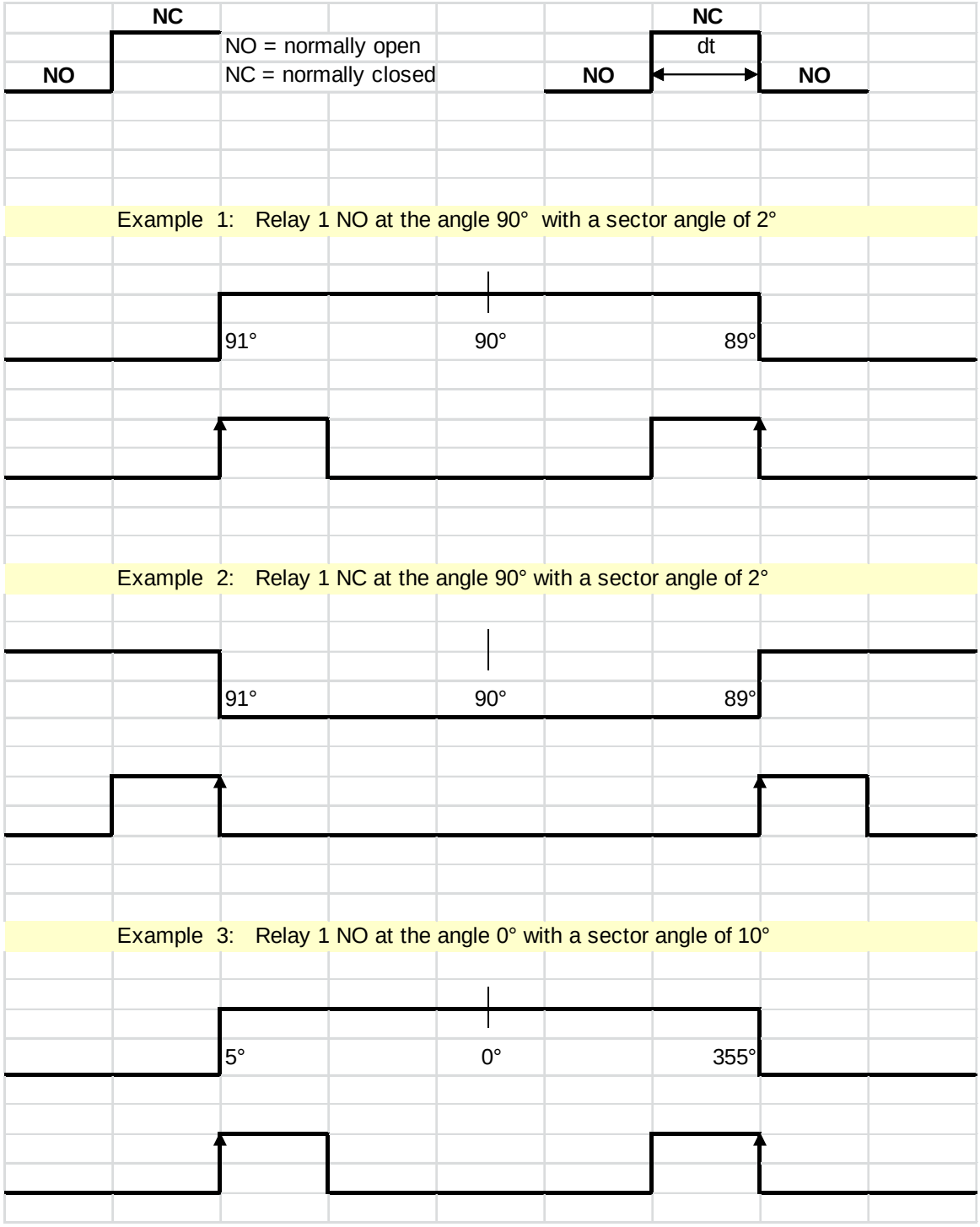
The program has been completed and relay 1 closes when it enters the circular sector set, that is, at the position of 90° ± 1°.

☞ **1.** The intervention position for the relay has to be between 0° and 359.99°.
2. The angle of the circular sector has to be between 0° and 180°.
3. If the operator sets an angle of 0° for the circular sector, the relay intervenes only if positioned exactly on the intervention position (90° in our example).

Examples of programming with the axis in linear reading:



Examples of programming with the axis in angular reading:



RS-232 SERIAL OUTPUT

The asynchronous serial interface is normally used to transfer data to a printer or to other devices having a SLAVE function.
The transmission parameters are fixed and they are the following ones:

- SPEED OF TRANSMISSION 9600 BAUD
- DATA LENGTH 8 BIT
- ONE STOP BIT
- NO PARITY BIT

CONNECTOR RS-232								
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
n.c.	RX	TX	n.c.	0 V	n.c.	n.c.	n.c.	n.c.

The SLAVE needs to have the same parameters.

If the digital readout has the serial output, each pressure of the EXE key will start the transmission.

Data have the following format:

```
=DIGITAL  READOUT=
AXIS X:      223.99
UNIT  : MM
```

Instead of printing the label, it is possible to request the readout to send the positions displayed. The request has to be made in ASCII mode on the serial line as follows:

“Q” + CR + LF

Answers, that is, the position values (e.g. 5708.65), have the following format:

“ 5708.65” + CR + LF

where **CR** = **CARRIAGE RETURN (0Dh)**
LF = **LINE FEED (0Ah)**

ENABLING THE AUTOMATIC TRANSMISSION OF POSITIONS F 55

Function F 55 is used to enable the automatic transmission of displayed positions on the serial output.

Press (F) 5 5 (EXE)

Press (+/-) to select

Press (EXE) to confirm the selection.

Data on ABS or INC positions are sent every 0.4 sec. in ASCII mode and have the following format:

“ 5708.65” + CR + LF

where **CR** = **CARRIAGE RETURN (0Dh)**
LF = **LINE FEED (0Ah)**

SETTING SSI PARAMETERS F 98771

With function F 98771 it is possible to modify the setting of the communication parameters of the absolute SSI encoder.
The parameters that could be set are the following:

STEP	SSI PARAMETER	RANGE	DEFAULT
01	Baud Rate	125 / 250 / 500 kHz	250 kHz
02	Number of Bits	8 - 32	24
03	Output Code	Binary / Gray	Binary
04	Parity Bit	No / Even / Odd	No
05	Error Bit	No / 0=bit low in case of error / 1=bit high in case of error	No

To recall a function that cannot be selected with the +/- key,

Press (F) to enter the function selection — F - Fn

Press (F) — F✱0000

Use (→) and (↑) to enter the number of the desired function and press EXE — F98771

Press (+/-) to select the Baud Rate and press EXE — 01- 250

Use (→) and (↑) to set the Number of Bits and press EXE — 02- 4

Press (+/-) to select the Output Code and press EXE — 03- bin

Press (+/-) to select the Parity Bit and press EXE — 04- bPn

Press (+/-) to select the Error Bit — 05- bEn

Press (EXE) to confirm the selection.

All the data are permanently stored in the memory and the instrument quits the function.
To cancel the modifications made and quit the function, press CLR before the last setting.

ADDITIONAL INFORMATION

TECHNICAL CHARACTERISTICS

Model	**VISION VI518** 1 display - 1 input
Display	8 high-efficiency digits h = 13 mm
Incremental encoder input signals	2 square waves with phase displacement of 90° ± 5° and zero reference 5 Vdc or 12 Vdc (TERMINAL BOARD) 250 mA_{MAX}
Maximum input frequency	250 kHz_{MAX}
Absolute (SSI) encoder input signals	RS-422 – Clock, $\overline{\text{Clock}}$, Data, $\overline{\text{Data}}$
Power supply	230 Vac ± 10% - 50/60 Hz 110 Vac ± 10% - 60 Hz 24 Vac ± 10% - 50/60 Hz
Current consumption	40 mA_{MAX} (230 Vac) 80 mA_{MAX} (110 Vac) 350 mA_{MAX} (24 Vac)
Memory	permanent for configuration and user settings (last data operating memory)
Linear resolution	200 - 100 - 50 - 20 - 10 - 5 - 2 - 1 - 0.5 µm
	0.01 - 0.005 - 0.002 - 0.001 - 0.0005 - 0.0002 - 0.0001 - 0.00005 - 0.00002 inch
Angular resolution	1 - 0.5 - 0.2 - 0.1 - 0.05 - 0.02 - 0.01 - 0.005 - 0.002 - 0.001 °
Operating temperature	0 °C ÷ 50 °C
Storage temperature	-20 °C ÷ 70 °C
Weight	450 g
Options	UR2 RELAY OUTPUTS -S SERIAL OUTPUT RS-232 SSI ABSOLUTE (SSI) ENCODER INPUT

ABSOLUTE (SSI) ENCODER PARAMETERS

Clock frequency	125 / 250 / 500 kHz
Number of position bits	8-32 bit
Output code	Binary, Gray
Optional bits	Parity bit, Error bit

Without prior notice, the products may be subject to modifications that the Manufacturer reserves to introduce as deemed necessary for their improvement.

WARRANTY TERMS

The digital readout VISION is guaranteed against manufacturing faults for a period of twelve months from the date of purchase. Any repair must take place at the Manufacturer's premises and the Customer shall arrange the delivery of the product, at its own risk and expense.

The Manufacturer is released from any claim against damages due to the nonobservance of the mounting instructions which causes the annulment of the warranty terms.

The warranty does not provide for repairing and/or replacement of those parts that have been damaged by negligence or misuse, improper installation or maintenance, maintenance performed by unauthorized personnel, transport or any other circumstance that excludes a manufacturing fault of the product.

Similarly, the warranty does not apply if serial numbers or any data identifying the product are cancelled or altered in any way, and if product modifications are introduced without the written authorization of the Manufacturer.

The Manufacturer declines any responsibility for damages to people or properties deriving from the use of the product, including any loss of profit or any other direct, indirect or incidental loss.

Any dispute not settled informally shall be referred to the COURT OF MONZA (MB) – ITALY.

DIGITAL READOUT VISION 518

I NOSTRI PRODOTTI SONO VENDUTI ED ASSISTITI IN TUTTE LE NAZIONI INDUSTRIALIZZATE
OUR PRODUCTS ARE SOLD AND HAVE AFTER-SALE SERVICE IN ANY INDUSTRIALIZED COUNTRY

RIGHE OTTICHE *OPTICAL SCALES*	SISTEMI MAGNETICI *MAGNETIC SYSTEMS*	ENCODER ROTATIVI *ROTARY ENCODERS*	VISUALIZZATORI *DIGITAL READOUTS*	POSIZIONATORI *POSITION CONTROLLERS*

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV
= ISO 9001 =

GIVI MISURE S.r.l. A SOCIO UNICO Via Assunta, 57 - 20834 Nova Milanese (MB) - Italy
C.F. e Iscrizione al Reg. Imprese di Monza e Brianza n° 04355540156 - Cap. Soc. € 51.480,00 I.V.
Tel. +39 0362 366126 - Fax +39 0362 366876 - www.givimisure.it - sales@givimisure.it