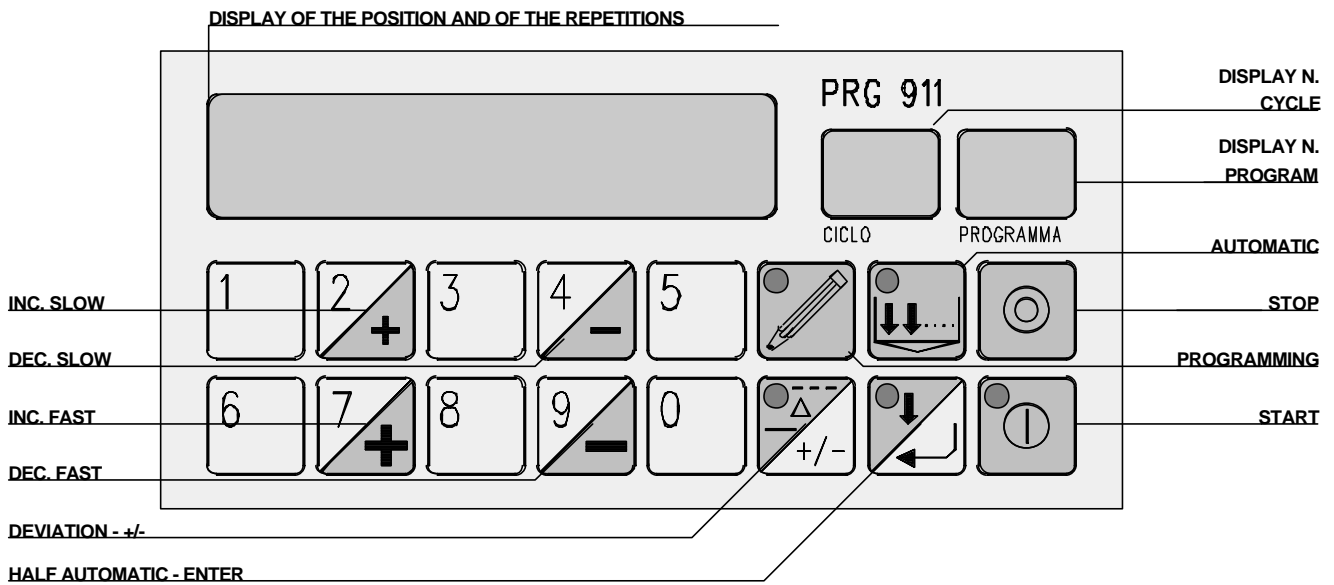


**MONO-AXIS PROGRAMMABLE
POSITIONER
PRG 911**

MANUAL FOR USE AND PROGRAMMING

SOFTWARE TYPE 0201
HARDWARE TYPE B01

FRONTAL POSITIONER PRG 911



TECHNICAL FEATURES

- Feeding on request 24 - 110 - 220 V AC.
- Absorbed power : 8W.
- Exit stabilized encoder feeding or optical line : 12 V CC 100 mA
- Max. Counting frequency 10 KHz with Mult x 4
- Relay axis control exits with interlock of contacts : FORWARD/REVERSE, SLOW/FAST.
- Relay OK POSITION exit.
- Relay QUALIFICATION exit.
- Electronical decoupled inputs by means of photocouplers
- High luminosity led display 6 digits + sign for 2 digits position for cycles and 2 digits for programs.
- Memory capacity up to 99 programs consisting of 1 up to 20 cycles, with the possibility to insert from 1 up to 99 steps in every cycle.
- Electronical circuit, completely realized with CMOS Technology, RISC Micro Controller Technology, memory for programs and machine constants on EEPROM, thus without buffer battery.
- Water and abrasion-proof, polycarbonate keyboard with tactile sensitivity.
- Electronical circuit completely realized with CMOS Technology, RISC Micro Controller technology.
- Power down supervisor circuit as warrant of a very high security in data storage.
- Connections with external circuits with extractable terminals.
- Plastic self-extinguishing housing container "VO" in NORLY 43700 144X72X125 DIN standards.
- Drilling measures of the panel for ambedding: 138 x 68.

IN COMPLIANCE WITH:

**EN 50081-1 FOR NOISES RADIATION
 EN 50082-2 FOR NOISES EXEMPTION
 AS PROVIDED BY THE LAW ABOUT ELECTRO-MAGNETIC COMPATIBILITY.**

READING OF THE INSTRUCTION MANUAL

This manual describes the functioning and programming of PRG 911. In some points we refer to the installed software or to the hardware configuration since this product is very flexible either in construction or in programming, so it has been possible to produce it in a lot of versions, which are different in order to permit the most suitable functioning of the machine on which it is assembled.

So this instruction manual describes all the main functionings of the positioner but for functional details, please read the last page of the manual where we have shortly noted the modifications carried out on each single product.

RUNNING MODE

PRG 911 positioner can settle a powered axis in a manual, semiautomatic and automatic mode.

PRG 911 positions in manual or semiautomatic mode the connected axis by means of the relative buttons, whereas in automatic mode, it positions the axis according to the program previously memorized.

PRG 911 has a memory capable of holding up to 99 programs, from number 1 up to 99.

Each program can include up to 20 positions, which may have 99 repetitions.

PRG 911 has also a memory desk, where it's possible to write the necessary parameters, called "machine constants", for the running of the powered axis.

Each position with the relative repetitions makes up a cycle of the program.

With "repetitions" we mean the number of times that the contact connected to the increase cycle input has to close in order to permit the passage to the following cycle.

Semiautomatic mode acts as a single cycle of a program, with the difference that it is directly carried out without memorizing it.

It is possible to pass from a functioning mode to another one by simply pressing the button of the desired functioning mode.

This operation will cause the closing of the present functioning mode and the opening of the selected one.

PRG 920 has also a memory desk, where the parameters necessary to the functioning of the two axis are stored; these parameters are called machine constants and they are completely independent between the two axis.

MACHINE CONSTANTS PROGRAMMING

In order to write the machine constants, act as follows:

Press button 0 for about 5 seconds, the display of position will start flashing, then press button 1 to correct the position where the axis is placed or button 2 to write or change the following listed parameters.

Anyway remember that during this operation, by pressing ENTER button it's possible to read the different parameters without changing them, whereas by pressing a numerical button from 0 up to 9, the display will automatically set on zero and it will be possible to insert the new value confirming it with ENTER button.

The number of parameter that You are reading or correcting appears on the display of cycles.

Press STOP button to exit this operation.

1 Axis-position, reading limits from 150000 up to 750000.

2 Taking-up slack value : if set on zero the taking-up slack value will not be carried out; if positive, the taking-up slack value is carried out in positive or increasing direction, if negative it's carried out in negative or decreasing direction.

3 Value of the change of speed: if set on zero the axis moves only at slow speed. When using a system with 2 speeds, for a correct positioning the change of speed value has to be higher than the inertia value of the system in fast speed.

4 Value of inertia in slow speed if the system has 2 speeds, in negative or decreasing direction, only readable, since PRG 911 adjusts it automatically at every positioning, according to the installed software.

5 Value of inertia in slow speed if the system has 2 speeds, in positive or increasing direction, only readable, since PRG 911 adjusts it automatically at every positioning, according to the installed software.

6 Value of tolerance, where positioning is accepted.

- 7 Value of deviation.
- 8 Value of time, in tenths of a second, to pass from the moment when a deviation is controlled till the moment it's carried out.
- 9 Value of the minimum limit switch from -150000 up to 750000.
- 10 Value of the maximum limit switch, from - 150000 up to 750000.
- 11 Value of the multiplication constant of the encoder impulses X1 X2 X4
- 12 Value of the decimal multiplication constant of the encoder impulses from 0,000001 up to 1,999999.
By setting 0 this parameter is excluded. The six numbers of this parameter are decimal and the negative sign has the function of 0,..... whereas the absence of the negative sign has the function of 1,.....
- 13 Value of preset, from -150000 up to 750000, where the position of the axis is immediately setted when operating the relative entry.
- 14 Decimal point position: by setting 0 = reading without decimal 1= one decimal 2= two decimals 3= three decimals.
- 15 Value of time, in tenths of second, that pass or among the end of positioning and the control of position reached, in the limits of tolerance, or in occasion of reversing movement.
- 16 Option of positioning.
- 0 If the position request is in the limits of tolerance it is positioned.
 - 1 If the position request is in the limits of tolerance it is not positioned.
- 0 Spending from fast to slow it stays the value of the change speed and it then takes back slow.
 - 1 Spending from fast to slow it doesn't stay the value of the change speed but commutes only relays.
- 0 It doesn't come effected the calculus of the inertia.
 - 1 It comes effected the calculus and the relative adjournment of the inertia.
- 0 At the end of each positioning comes visualized the position really reached.
 - 1 At the end of each positioning, comes visualized the in demand position, if this is in the limits of the tolerance.

MANUAL MODE

Upon start-up PRG 911 is ready for manual mode.

This operative mode can be recognized by the displays, as in this mode, only the display connected with the position of axis is lit up.

In this mode, the axis movement can be controlled by means of the four buttons:

slow increase, fast increase, slow decrease, fast decrease.

The limit switches, for the minimum and maximum attainable values, are operating even in manual mode but they are exceeded by the value of inertia of the system in fast speed..

PROGRAMMING

By pressing PROGRAMMING button, the led on the button will light up as well as the display of programs, showing the first empty program at disposal. Confirm with ENTER if You want to write in the proposed program or introduce the number of the program You want to write or read again by means of the numerical buttons, then press ENTER button.

If the recalled program is empty, the led on programming button starts flashing, showing you are in writing mode and on the display of position a flashing 000000 will appear and the display of cycles will show 1.

In order to write a series of positions and of possible relative repetitions, max. 99 for each cycle, write the position using numerical buttons; when making a mistake it's enough to set on = all the display by means of button 0, so that it shows again 000000 and then confirm with ENTER.

Number 01 appears on the display and it shows the numbers of repetitions to make before passing to the following position, confirm with ENTER or write the number of repetitions to program.

After confirming with ENTER, 00000 will appear on the display and 02 on the cycle display and following the above mentioned procedure. Once the last position with the relative repetition has been written and confirmed with ENTER, by pressing button PROGRAMMING the led will stop flashing and visualization will show the first written position, thus allowing to read the program again with button ENTER; whereas by pressing button STOP, the display of position will be off and the program display will show the first empty program at disposal, thus permitting to introduce a new program.

By pressing again button STOP, PRG 911 comes back from programming mode, returning in manual mode.

It's also possible to correct programs already written.

To make corrections, position on the data to be corrected, in reading, then press PROGRAMMING button, correct the data and confirm with ENTER.

To cancel a whole program, position on the repetitions of the first value, press PROGRAMMING button, write 00 on repetitions and confirm with ENTER.

If the recalled program contains some data, the led on programming button is switched on but with fix light and the position of first cycle will appear on the display of position and the display of cycles will show 1.

By pressing button ENTER visualization will show the repetitions, pressing ENTER again the second cycle and so on.

After having visualized the last cycle of a program, by pressing again ENTER, visualization will show again the first cycle.

It is also possible to correct programs already written.

To make corrections, position on the cycle and on the data to be corrected, press PROGRAMMING button, correct the data and confirm with ENTER.

To cancel a part or a whole program, position of the cycle to start with, write 00 on repetitions and confirm with ENTER.

It's also possible to cancel fast all the memory desk of programs: it's enough to be in programming mode, not recall programs and keep pressed button for about 5 seconds; after that PRG 911 will start cancelling all the programs.

SEMIAUTOMATIC MODE

By pressing ENTER/SEMIAUTOMATIC, the led on the relative button will light up and the display of position will show a flashing 000000.

Introduce the position to reach by means of the numerical buttons; it's possible to introduce only values included among the previously setted limits of the limit switches.

By pressing START button, positioning will start.

By pressing again ENTER button instead of START button, the display will show 01, which shows the number of repetitions to program.

Confirm 01 or write the number of repetitions, max. 99, and confirm with START, thus allowing the beginning of positioning.

At the end of positioning, by pressing again ENTER/SEMIAUTOMATIC button, it's possible to carry out a new positioning.

In this condition, the led on button START will be on, to show that a positioning is taking place.

If for every reason, positioning doesn't occur within the limits of the programmed tolerance, PRG 911 will try to carry it out again, max. for three times, and if also after the last attempt positioning has not been carried out correctly, O.K. POSITION relay will stay open and the led on button START will start flashing, thus indicating the anomaly. Press button STOP to exit this operation and check if the non-positioning was due to a wrong setting of the machine constants or to mechanical problems.

At the end of positioning, by pressing again button ENTER/AUTOMATIC, it's possible to make a new positioning.

By using STOP button, it's possible to stop positioning or the counting of repetitions in every moment.

PRG 911 permits positionings even if the requested position is included among the limits obtained from the present position more or less the value of inertia of the system.

In this case, the positioner places on its own at a distance so far as three times the inertia of the system from the present position or makes a take-up slack value, it means in the more suitable direction for positioning and from that position it permits to the axis to place to the requested quota.

When establishing the mechanical limits of the system you have to take into consideration that even if PRG 911 doesn't accept values of positioning higher than the limits programmed on the machine constants, it exceeds these limits, in order to make a correct positioning, according to the taking-up slack value plus the value of the inertia system in high speed, or it exceeds the above mentioned limits of three times the value of inertia in slow speed.

By using STOP button, it's possible to stop positioning or the counting of steps in every moment.

AUTOMATIC MODE

In AUTOMATIC mode it's possible to execute the programs previously stored. As far as the considerations on the movements of the controlled axis is concerned, take into consideration the same rules as for SEMIAUTOMATIC mode. By pressing button AUTOMATIC in manual mode, the led on the relative button will light up and the display of programs will show the number of the last one that has been executed.

Confirm it or set the number of the desired program by means of the numerical buttons: by pressing START button positioning will start, otherwise the first position to reach will appear on the display of position by confirming with ENTER; press START and positioning will begin.

By pressing again button ENTER, the visualization will show the second cycle and so on, by pressing START, positioning will start from the visualized cycle.

If before pressing START or during the execution of the program You press again button AUTOMATIC, the led, already light up on this button, will start flashing, thus showing that the program will be carried out in CONTINUOUS mode, it means that at the end of the program, it will be executed again, until You press again button AUTOMATIC and the relative led will stop flashing.

When the positioning of the first programmed cycle has been carried out, according to the installed software, PRG 920 awaits that the INCREASE CYCLE contact closes so many times as programmed in the cycle repetitions, in order to position itself according to the second cycle and so on, or in automatic mode after positioning of the first cycle has been completed, it passes to the positioning of the second cycle and so on.

By pressing button START, the program will be again executed.

When choosing the number of program, in case the selected number is not accepted, it means that the requested program is without any data.

By using button STOP it is possible to interrupt positioning in every moment and the display of programs and cycles will start flashing.

By pressing button START, it is possible to start the program again.

By pressing again button STOP, the execution of the program stops definitively and the display of programs shows the number of the last executed program, thus allowing the new execution of the program or the selection of a new one, whereas pressing again button STOP You return in manual mode.

In every moment, when the program is being carried out, the display of cycles shows the number of cycle which is being executed and the display of programs will show the number of program.

O.K. POSITION

O.K. POSITION is a contact which opens during movements and closes 0.5 seconds after the execution of positioning.

It remains open if positioning has not had a positive result, in semiautomatic mode if the repetitions counter has reached the value previously setted, in automatic mode at the end of each program in programming mode and when entering the machine constants.

GATING

Gating is a contact which closes when PRG 911 starts a movement of positioning, either in manual or in automatic mode and it closes about 0,5 seconds after the end of the movement.

DEVIATION

DEVIATION is a function which is operated by the relative button; it's operating when the led is lit up and makes the position of the axis increase according to the programmed value of the machine constants, when the relative entry is closed.

The increase occurs after the time programmed in the machine constants has passed.

During this movement the O.K. POSITION is closed.

The coming back to the previous position occurs when the cycle-increase entry, which has priority on deviation, closes; in fact it's possible to come back to the value even if the deviation movement is not finished.

CYCLE INCREASE

When this entry is closed the programmed repetitions are counted.

At each closing the counter is increased of 1 unit.

EXTERNAL START

It repeats the function of the button placed on the frontal.

EXTERNAL STOP

It repeats the function of the button placed on the frontal , with the only difference that each time this input is gated, the positioner returns on manual mode.

This input must be connected to a contact normally closed.

PRESET

Each time this input is closed, the preset value, memorized on the machine constants, is stored on the counter and this value is the new position of the controlled axis. This happens only if the output of 0 of the encoder is not connected to the INPUT 0. Each axis may be equipped with this input.

MEMORANDUM OF THE MEMORIZED MACHINE CONSTANTS

N.	CONSTANT VALUE	
2	TAKING-UP SLACK VALUE	
3	CHANGE OF SPEED	
4	INERTIA -	
5	INERTIA +	
6	TOLERANCE	
7	DEVIATION	
8	DELAY OF DEVIATION	
9	MINIMAL LIMIT-SWITCH	
10	MAXIMAL LIMIT-SWITCH	
11	ENCODER MULTIPLICATION	
12	DECIMAL ENCODER MULTIPLICATION	
13	RESET	
14	POSITION OF THE DECIMAL	
15	TIME OF CALCULUS CORRECT POSITION	
16	OPTIONES OF POSITIONING	

TABLE OF THE GENERAL OPTINONS:

IT REACHES PRESET VALUE AFTER EACH POSITIONING	
O.K. POSITION MAKES AN IMPULSE AFTER EACH POSITIONING	
OUTPUT GATING	
INPUT EXTERNAL STOP	
INPUT EXTERNAL START	
INPUT PRESET	
INPUT 0 ENCODER	