

The OP70 Viewer Module

The display consists of 2 lines of 16 characters H = 8mm

Backlit display for easy reading.

The characters are 8 mm high for a distance vision.

The OP70 module is equipped with a CAN-BUS serial port which communicates with the RP80.01 module.



Keyboard description

0 ÷ **9** Numeric keys

F Function key

 Key for entering the data set during the programming phase

Special keyboard functions

7 Press for 3 seconds to enter limit switch parameters

6 Press for 3 seconds to enter technical parameters

 Cycle start button during work

F Stop cycle button during work

 **0** Press together for negative sign (-)

 **1** Press together for «forward manual" movement

 **2** Press together for "back manual" movement

Operation cycle

After having programmed the instrument in all its functions according to the instructions below, a complete work cycle can be carried out.

When the start is pressed, if the quota to be reached is higher than the current position, the instrument enables forward output and fast output. When the quota, given by the formula $\text{quota to be reached} - \text{slowing down}$ (if the recovery value is positive), is reached, the instrument proceeds with the fast output deactivation and the slow output activation until the final quota is reached. When the final quota has been reached, all outputs are switched off and the "quota in position" output is activated if the measured quota is within the set tolerance. If, on the other hand, at the start pressure, the quota to be reached is lower than the current position, the instrument enables the backward output and the fast output, exceeds the quota to be reached and upon reaching the quota given by the formula $\text{quota to be reached} - \text{play recovery}$ (if the play recovery value is positive), the instrument proceeds with the back and fast outputs deactivation and activates the forward and slow outputs until the final quota is reached. When the final quota has been reached, all outputs are switched off and the "quota in position" output is activated if the measured quota is within the set tolerance.

If the play recovery parameter is set with a negative sign, the movements are reversed, ie the slow down is performed in the backward movement while the plays recovery is performed in the forward movement.

Before reaching the final quota the instrument disables the outputs in advance based on the inertia parameter value.

At any time you can intervene during the axis movement by pressing the stop button.

Then you can start from the locked position with another start command or you can change the final quota to be reached.

The interfaces

The instrument must be connected to relay modules like the MR40 (with 4 relays) or the MR80 (with 8 relays).

If the MR40 4 relay interface is used, the "quota in position" output is not available.

The connection to the instrument is done via a 10-pole flat cable which is connected to the instrument connector.

The contacts of each module individual relay can be connected to loads with maximum voltage equal to 230Vac and current equal to 10A in AC1.

The encoder

The encoder must be of the incremental push-pull (PP) type with two 24Vdc A-B channels, chosen with the pulses per revolution number that is suitable to the system required precision and to the instrument maximum read frequency.

The encoder cable must be shielded with the shield connected to ground only on the instrument side.

Pay attention to the encoder cable positioning, keep raceways away from power supply and power cables, transformers, inverters, motors and any other device that may generate electromagnetic disturbances.

Programming

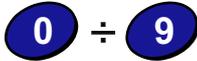
When switched on, the instrument displays:

P: 352.4 Q: /

Press



Quota: 500.0



÷



Set the new quota to be reached and confirm with the key



P: 352.4 Q: /

With the start command, the entered quota value will be loaded on the display.
To set new quota values, the machine must be in the stop phase.

P: 352.4 Q: 500.0

Technical parameters

Before starting the work cycle, the instrument must be adapted to the machine operating characteristics by setting the axis to be controlled technical parameters.

Below you can read and set these parameters:

- | | |
|-----------------|---|
| 0. Pollici | - Measurement unit setting 0 = cm / 1 = Inches (In) |
| 1. Coefficiente | - Encoder correction coefficient. |
| 2. Tolleranza | - Accepted tolerance value on the set quota value. |
| 3. Inerzia | - System inertia value. |
| 4. Rec. gioco | - Mechanical plays recovery in Forward or Return. |
| 5. Quota rall. | - Quota value in slow speed. |
| 6. Tempo uscita | - Active output time in 1/10 of a second for different values from zero to reached quota. |
| 7. Imp. Quota | - New position value setting. |
| 8. Out Analog. | - Analog output slow / fast speed setting in percentage %. |

When switched on, the instrument displays:

P: 352.4 Q: /

Press for 3 sec. the button  and on the display will appear

0. Pollici 1. Coefficiente

Use the key  to select the "Pollici" (inch) parameter and the following screen will appear

Pollici: 0

If "0" is set, the measurement unit will be centimeters.
 If "1" is set, the measurement unit will be inches (In).

Confirm the selected measurement unit with the  key and return to the following screen

0. Pollici 1. Coefficiente

Use the key  to select the "Coefficiente" (Coefficient) parameter and the following screen will appear

1. Apprendimento 2. Impostazione

By pressing 1 an automatic procedure to calculate the coefficient (recommended) is performed.
 By pressing 2 the coefficient value is manually set.

If you choose to use the automatic coefficient calculation procedure, press the key  and the following screen will appear

Pre-posizionare e premere ENTER
--

Using the forward-manual and back-manual inputs, position yourself on a known quota,
 press the button  and the following screen will appear on the display

Decimali 0

using the numeric keypad enter the decimals desired number (0 means no decimal), confirm with 
 and the following screen will appear on the display

Quota preset
100.0

Using the numeric keypad enter the note quota measured on the machine and confirm the value set with  and on the display will appear

Effett. Spost.
e premere ENTER

Using the forward-manual and backward-manual inputs, position yourself on a second note quota, higher or lower than the previous one, then press the  button and the following screen will appear on the display.

Quota finale
1500.0

Using the numeric keypad enter the second note quota measured on the machine and confirm the value with  the display will show the coefficient value automatically calculated by the instrument

Coefficiente:
?

Press the button  and on the display will appear

0. Pollici
1. Coefficiente

Press again  to go to the next screen

2. Tolleranza
3. Inerzia

Select the tolerance setting by pressing the button 

Tolleranza:
0.5

Using the numeric keypad enter the tolerance value on the quota to be obtained, confirm the value with 

2. Tolleranza
3. Inerzia

Choose the inertia setting by pressing the key  and the following screen will be displayed

1. Apprendimento
2. Impostazione

By pressing 1 an automatic procedure to calculate the inertia (recommended) is performed. By pressing 2 the inertia value is manually calculated.

If you choose the "Apprendimento" (learning) function press the **1** button and the following screen will appear

Spostamento:
0.0

Using the forward-manual and back-manual inputs, position yourself in the lowest accessible quota, then using the numeric keypad set the quota portion within which the inertia is sampled, possibly the maximum possible; in this way the inertia calculation will be more precise.

Confirming the entered value with  and the machine will start to move automatically making 5 placements; once the positioning has been completed, the instrument performs the inertias arithmetic mean that were detected during the movements the following screen will be displayed.

Inerzia:
?.. / ?..

The left digits indicate the inertia average value detected by the instrument.
 The right digits indicate the maximum deviation measured in the 5 analyzed spaces.
 All digits are expressed in pulses.

Confirm the displayed values with the key  and return to the screen

2. Tolleranza
3. Inerzia

Press again  to go to the next screen

4. Rec. gioco
5. Quota rall.

Use the **4** button to select the "Rec. Gioco" function

Rec. Gioco
0.0

Using the numeric keypad you set the mechanical plays recovery value.
 With positive plays recovery this will be done in the backward movement.

In case of reverse plays recovery, use the negative sign by pressing together **0** 

Confirm the set value with the key  and return to the screen

4. Rec. gioco
5. Quota rall.

Use the button **5** to select the "Quota rall." function

Quota rall. :
?.....

ATTENTION:

The slowdown quota value must be at least twice the inertia value.

Using the numeric keypad you can set the deviation value with respect to the quota to be reached in which the instrument will switch from fast to slow speed; the slowdown is carried out in the forward direction if the plays recovery is positive otherwise in the reverse direction if the plays recovery value is negative.

Confirm the set slowdown value with the key  and return to the screen

4. Rec. gioco
5. Quota rall.

Press again  to go to the next screen

6. Tempo uscita
7. Imp. quota

With the  key, select the “Tempo uscita” (Exit time) function

Tempo uscita
?...

Using the numeric keypad set the time in tenths of a second where the output "quota in position" remains enabled; the output is present only if you have the MR80 interface.

The output "quota in position" is activated when the quota is reached; if the time is set to zero, the output remains enabled continuously until the next start command, otherwise it will follow the set time.

After setting, confirm with  and return to the screen

6. Tempo uscita
7. Imp. quota

With the  key, select the “Imp. quota” (Quota setting) function

Pos. attuale:
?...

The displayed value represents the position in which the machine should be; check if this position is correct and if necessary change the value to align it with the actual measured quota.

This parameter is also useful to realign the instrument with the real machine position if, for any reason, the real machine position does not respect the instrument visualization.

Confirm with the key  and return to the screen

6. Tempo uscita
7. Imp. quota

Press again  to go to the next screen.

8. Uscita AN

Optional function that can only be used if the analogue output is connected. In this case the movement speed is set via 0-10Vdc analogue output.

With the  key, select the “Uscita AN” (Analog output) function

1. AN veloce
2. AN lenta

Press the key  to set the analog voltage for the fast speed, the following screen will be shown

Percentuale:
?

Using the numeric keypad, set the fast speed in percentage % :
100% indicates maximum speed equal to 10Vdc analog output while 0% indicates minimum speed equal to 0Vdc analog output.

Confirm the entered value with  and return to the screen

1. AN veloce
2. AN lenta

Press the key  to set the analog voltage for slow speed, the following screen will be shown

Percentuale:
?

Using the numeric keypad, set the slow speed in percentage % :
100% indicates maximum speed equal to 10Vdc analog output while 0% indicates minimum speed equal to 0Vdc analog output.

Confirm the entered value with  and return to the screen

1. AN veloce
2. AN lenta

Press repeatedly the  button to exit programming and you will return to the screen

P: 352.4
Q:

In this position the instrument is ready for the work cycle.

Electronic limit switches programming

When switched on, the instrument displays:

P: 352.4
Q: /

Press for 3 sec. the button  and on the display will appear

Abilita finec. :
0

If 0 is set, the electronic limit switches are disabled; if in this case it is confirmed with the key  you will exit the menu.

If instead 1 is set, the electronic limit switches are enabled and in this case, by confirming with the key ,

the following screen will be displayed

Q. finec. indietro:
?

Using the numeric keypad, set the lower limit value. Below this set value, the instrument will block backward motion. If mechanical limit switches are also present, it is recommended to set this limit switch just above the mechanical limit switch

position. If you want a negative value, press the   keys together to enter the minus sign.

Confirm the lower limit value by pressing  and you will go to the screen

Q. finec. avanti:
?

Using the numeric keypad, set the upper limit value. Above this set value, the instrument will block forward motion. If mechanical limit switches are also present, it is recommended to set this limit switch just below the mechanical limit switch position.

If you want a negative value, press the   keys together to enter the minus sign.

Confirm the upper limit value by pressing  and exit programming.

P: 352.4
Q:

In this position the instrument is ready for the work cycle.

Encoder test

After setting all the technical parameters, the instrument is ready to perform a first work cycle.
 The operator is advised to check whether the movement speed / encoder revolution pulses ratio is within the recommended parameters to avoid measurement errors during the axis movement.
 The instrument is equipped with a calculation system to check these parameters; then perform the operations shown below.

Position the machine in the smallest possible position using the manual forward/back inputs

Press together for 3 sec. the keys    and on the display will appear:

Spostamento : 0

Enter a displacement ("Spostamento") value that can cover the machine maximum stroke

With the keys    you set a displacement value (eg 1000.0)

Spostamento : 1000.0

Confirm with the button  ; the movement is carried out while the display will show:

V- : 100% V+ : 0% Err: 0
--

During movement, pressing the key  you can stop it.

When the movement is finished, pressing the key  you can exit the test mode and return to the screen

P: 352.4 NP: Q: 500.0 ...0

In this position the instrument is ready for the work cycle.

V- : Minimum detected count speed, as a percentage
V+ : Maximum detected count speed, as a percentage
Err : Number of encoder errors

To optimize the displacement speed / number of encoder pulses ratio, the V+ value must not exceed 100%.
 If **V+** exceeds 100% the **Err** value is likely to start increasing; in this case it is necessary to reduce the movement speed or the number of encoder pulses per revolution.
 The **Err** value must always be 0; otherwise, if **V+** does not exceed 100%, it must be verified connections, ground connection or the encoder cable positioning.

Inputs and outputs control

Among the many control functions that the RP80.01 is equipped, there is also a inputs and outputs status visual check on the display.

Starting from the main screen

P: 352.4
Q:

Keep the key pressed  for about 3 sec. and on the display will appear:

IN : 00000000
OUT : 00000000

The status of the 8 inputs is shown on the display in the **IN** row.
0 indicates that the input is not present while 1 indicates a present input.
The status of the 8 outputs is shown on the display in the **OUT** row.
0 indicates that the outputs is not present while 1 indicates a present outputs.

By pressing the button  you can exit the test mode and return to the initial work position

P: 352.4	NP:
Q: 500.0	...0

In this position the instrument is ready for the work cycle.

Connection schemes

RP80.01 inputs

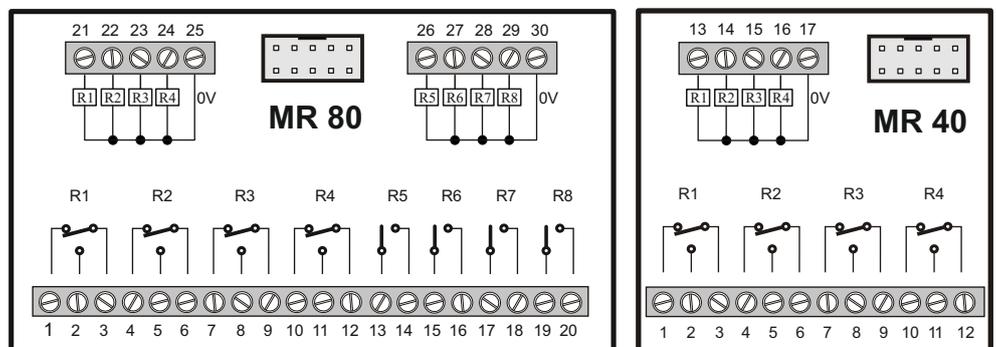
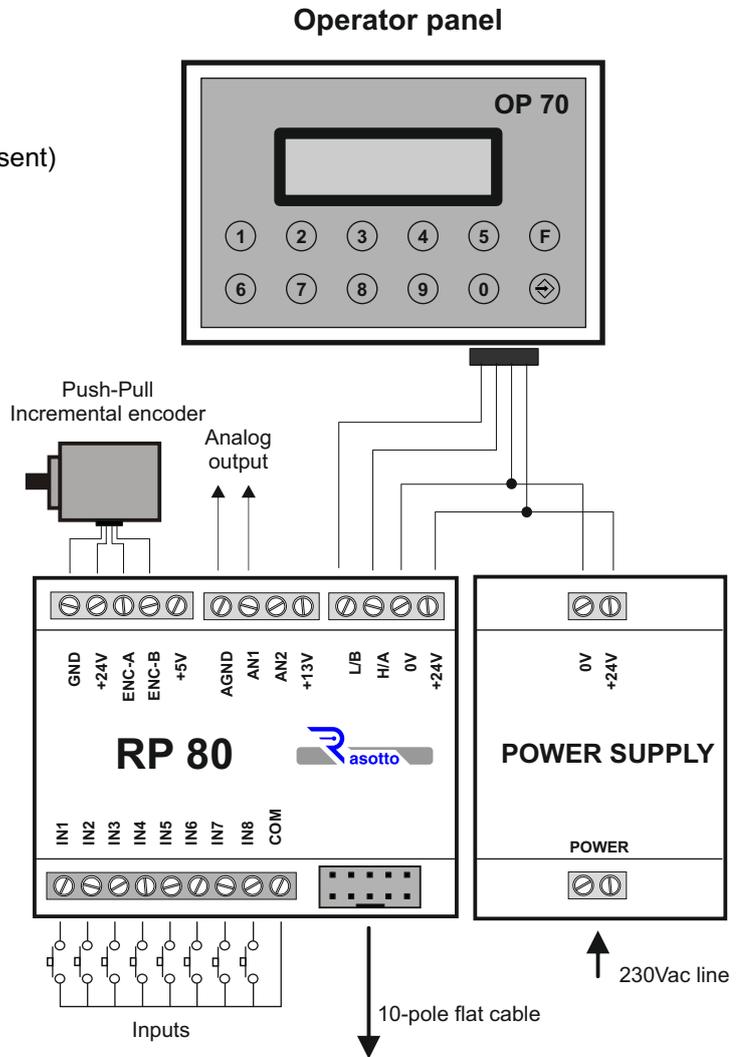
- In1 Start
- In 2 Stop
- In 3 Manual Forward
- In 4 Manual Back
- In 5 Parts Resetting (if the piece counter is present)
- In 6 Encoder position reset
- In 7 N.C.
- In 8 Preset Quota (if preset mode is present)

MR40 Outputs

- R1 Fast
- R2 Forward
- R3 Back
- R4 Slow

MR80 Outputs

- R1 Fast
- R2 Forward
- R3 Back
- R4 Slow
- R5 Quota in position
- R6 Pieces end
- R7 Reverse pieces end
- R8 No function



Interface module with 4 relays 24Vdc / 10A

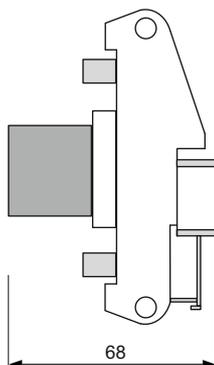


Passive relay interface module that receives commands from electronic equipment such as PLCs, industrial PCs, control modules, etc. and controls inductive and resistive loads of small power such as solenoid valves, contactors, small servomotors, lamps, resistors, etc. This type of module has a series of screw terminals that makes it universal and a multi-pin flat connector for quick connections.

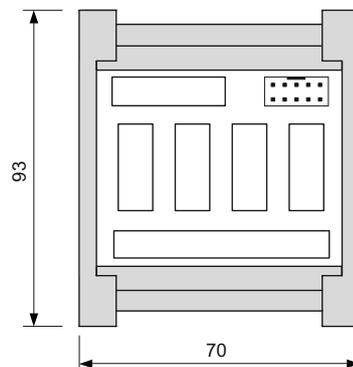
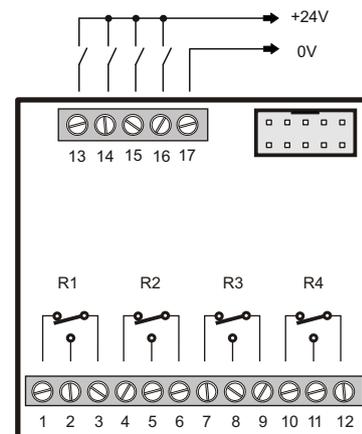
Technical features

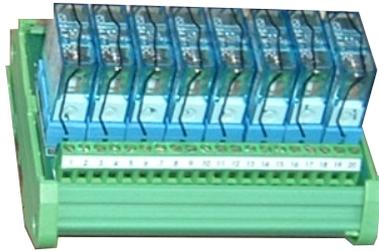
Power supply	24Vdc +/- 10%
Absorption	Max 150mA
Inputs	N.4 digital
Contact range	Max 10A / 250V resistive load
Wiring	Terminal block + 10-pole cable
Signaling	N.4 red LEDs active signal
Operation conditions	0.. +55°C / 20..90% R.U. without condensation
Storage conditions	-25.. +80°C / 20..90% R.U. without condensation
Mounting	DIN rail EN 50022
Container	DIN bar container
Protection degree	IP20

Dimensions



Electrical connections



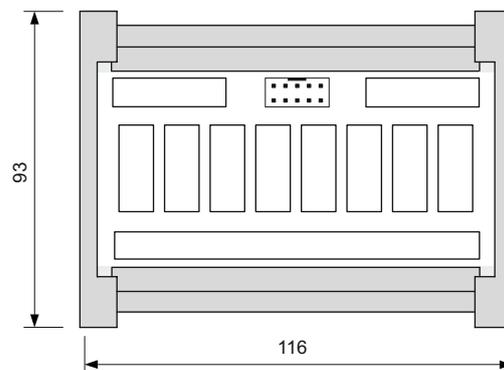
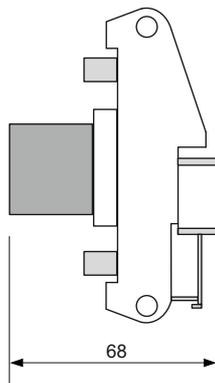
Interface module with 8 relays 24Vdc / 10A


Passive relay interface module that receives digital commands from various electronic devices such as PLCs, industrial PCs, control modules, etc. and controls inductive and resistive loads of small power such as solenoid valves, contactors, small servomotors, lamps, resistors, etc. This type of module has a series of screw terminals that makes it universal and a multi-pin flat connector for quick connection with the whole range of our controllers and instruments.

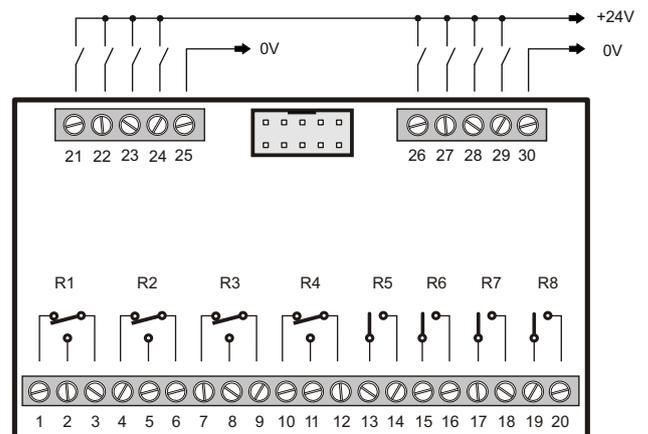
Technical features

Power supply	24Vdc +/- 10%
Absorption	Max 300mA
Inputs	N.8 digital
Contacts range	Max 10A / 250V resistive load
Wiring	Terminal block + 10-pole cable
Signaling	N.8 red LEDs
Operation conditions	0.. +55°C / 20..90% R.U. without condensation
Storage conditions	-25.. +80°C / 20..90% R.U. without condensation
Mounting	DIN rail EN 50022
Container	DIN bar container
Protection degree	IP20

Dimensions



Electrical connections





Intelligent panel with interface function between the operator and the system. The front is in silver anodised aluminum with concealed fixing screws, the keyboard is golden to be used in harsh environments.

The operator panel has a powerful microprocessor with flash memory and two serial ports: RS-485 and CAN-BUS.

The software system is protected by customizable passwords for greater security against tampering.

By assigning keys appropriate commands, you can dialogue with the system by checking from the panel each machine part.

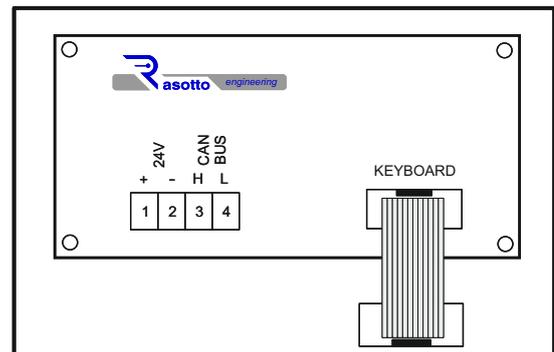
This panel finds application in automatic machines, in remote control systems, in remote diagnostics, in home automation systems, in temperatures, brightness and humidity readings, etc.

The display is green or blue with 2 lines and with large characters for remote viewing.

Technical features

Power supply	24Vdc +/- 5%
Absorption	Max 100mA
Display	LCD 20 x 2 lines large characters
Keyboard	12 golden keys
Wiring	Serial CAN-BUS
Memory	Eeprom
Operation conditions	0.. +55°C / 20..90% R.U. without condensation
Storage conditions	-25.. +80°C / 20..90% R.U. without condensation
Mounting	panel
Container	In anodised aluminum
Protection degree	IP55

Electrical connections



Dimensions

