MODULE FOR ELECTROMAGNETIC VIBRATORS LINEAR - CIRCULAR - HOPPER
MCP12

GENERAL
This Module MCP12 can be used for the automatic driving of a system made up by a vibratory Hopper, Cylindrical vibratory feeder, Linear vibratory feeder or Conveyor Belt with 3 PNP sensor, output blow air, Alarm Time Out.

Voltage (110V) 230V, 50/60 Hz • Input ON/OFF • Soft/Fast ramp (0 ÷ 60 sec.) • Digital Regulation amplitude min/max • Digital menu • Line input with plug • Vibrator output with connector - Delay EV Air blow (0 ÷ 60 sec.) - Alarm absence pieces (5 ÷ 180 sec. Time Out) - Lamp alarm (24Vcc).

Total max current 16A: Linear 6A max - Bowl Feeder 8A max - Hopper 6A max.
☐ 3 sensor inputs PNP for track and jet control, present signal (max 20 mA).
☐ 2 output 24VDC output for Air Valve or level sensor (max 100 mA).
☐ Output status +24V (Power ON - Enable ON).
☐ 1 x Enable input 24VDC or volt-free contacts.
☐ 3 output 0/210V feeder regulation.

PARTICULAR INSTRUCTIONS
The interlocking of channels is predetermined and cannot be altered. The MCP12 enables the linear vibrator and all other vibrators in cascade. The bowl feeder interrupts the vibrating hopper at the position STOP.

Sensors:
The Sensors 1 and 3 can be connected to the linear feeder in order to regulate the flow by MIN/MAX functions or the Sensor 1 regulates the flow and the Sensor 3 detects the presence of the unit or drives a second air-jet (Output 2) By the “logic” menu the Sensors 1 and 3 have standard functions such as Min/Max, OR, AND or the “2 track 2 EV” running.
The Sensor 2 regulates the level of units of the bowl feeder and the ON / OFF functions of the vibrating hopper.
The output 1 drives the Air-Jet with a delay interval 0/60 seconds at the position OFF of the bowl feeder.

OVERVIEW OF FUNCTIONS
Vibrator Linear-Bowl-Hopper
Speed
Invert Enable
Start Ramp
Stop Ramp
Max Limit
Vibrating Frequency Half/Full Wave
50/100 Hz (60/120Hz)

Sensor PNP 1 Linear
Invert Sensor 1
Delay ON
Delay OFF
Time Out (Empty warning)

Sensor PNP 2 Bowl Feeder
Invert Sensor 2
Delay ON
Delay OFF
Time Out (Empty warning)

Sensor PNP 3-2° Air Flow/Present Signal
Invert Sensore 3
Delay ON
Delay OFF

Output Valve
Output1: ON with bowl feeder delayed OFF bowl feeder
Output2: Sensor 3 Airjet or “Present” signal
Delay ON
Delay OFF

Logic
Sensor 1/Sensor 3 MIN-MAX Vibration levels
AND
OR
Twin Track/Air

AVIABLE VERSIONS
MCP12/03: Control circuit for vibratory Hopper, cylindrical vibratory feeder, Linear vibratory feeder with level sensor NPN/PNP in the Cylindrical vibratory feeder and overflow sensor NPN/PNP on the Linear vibratory feeder (both timed).

MCP12/02: Control circuit for Cylindrical and Linear vibratory feeders with overflow sensor NPN/PNP on the Linear vibratory feeder.

Feed Station with Bowl, Linear and Hopper feeders with 3 Sensor PNP

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CONNECTIONS AND PROCEDURES

WARNINGS

BEFORE USING THE APPLIANCE IT IS NECESSARY TO READ ATTENTIVELY THE INSTRUCTIONS INCLUDED IN THIS TECHNICAL SHEET WHICH PROVIDES YOU INFORMATION ABOUT SAFETY INSTALLATION, USE AND MAINTENANCE. KEEP THIS SHEET SAFELY FOR FURTHER FUTURE INFORMATION.

Before connecting the equipment to the mains socket, make sure that the nameplate data matches with those of the mains power supply.

Only use this equipment in accordance with the purpose of its design and manufacture; i.e. for the digital regulation of the amplitude of an electromagnetic vibrator feeder. Any other use is an improper use or even hazardous.

The Manufacturer cannot (is not) be considered liable for any improper, incorrect or unreasonable use of the equipment. If malfunctions switch it off and do not tamper with it. If repairing is needed, please contact the Manufacturer's Technical Service Centre only, as they use original spare parts. Failure to observe the above the recommendations could jeopardize the safety of the equipment. All operations regarding adjustment, measurement and testing when required, must only be carried out by authorized and qualified personnel.

The Manufacturer shall accept no liability for damage to persons, animals or objects caused by equipment's works carried out by unauthorized and unqualified personnel.

**TERMINAL**

**DISPLAY ALLARMS**

Stop: Vibrator stop  OFF: Enable OFF  Full: Full Track  T: Time Out

**ACCESS MENU PROCEDURE**

Turn on the MCP12 controller by pressing the central red button. For run press the green button. 

Press once to enter the menu SPEED and regulate the vibrators' speed. (Hopper / Bowl / Linear)

How to set the password: (if used)

Press and to move the cursor rightward

Press to set the value (0-F).

When the password is entered press to access to the menu

In the menu press:

to list menu options

to enter and move to the sub-menu options

to move backward to the sub-menu options

to increase or decrease values or to modify the settings of the sub-menu options.

If you do not press buttons after 30 seconds the display goes back to the main menu.

In order to go immediately back to the main menu press the GREEN button

The RED button stops the outputs (Feeders stop).
DISPLAY MENÜ

1. Select options
2. Select sub-menu option
3. Set the value
4. Move forward and backward sub-menu

SPEED
- Hopper
- Bowl
- Linear Feeder

1. Output Hopper Feeder
2. Output Bowl Feeder
3. Output Linear Feeder

HOPPER
- Enable Input
- Soft Start
- Soft Stop
- Max
- Wave
- Time ON
- Time OFF

BOWL
- Enable Input
- Soft Start
- Soft Stop
- Max
- Wave
- Air
- Set Low Speed

LINEAR
- Enable Input
- Soft Start
- Soft Stop
- Max
- Wave

1. Invert Enable Input (only "Indipendent" Function)
2. Ramp ON
3. Ramp OFF
4. Max Limit Vibration
5. Set Half/Full Wave
6. Delay OFF Air Jet after Stop Bowl Feeder
7. Set Low Speed (coars/fine operation)

Hopper: 50%
Bowl: 50%
Linear: 50%

T: Time Out

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**DISPLAY MENÜ**

### HOPPER SENSOR
- **F**
- **Input:** Normal or Inverted
- **ON Delay:** 0/60 sec.
- **OFF Delay:** 0/60 sec.
- **Enable Time out:** Enable or Disable
- **Time out:** 30/180 sec.

- **1. Invert Input Signal**
- **2. Delay ON**
- **3. Delay OFF**
- **4. Enable Hopper “Stop” Function after Time Out**
- **5. "Time Out" Delay (5/180 sec.)**

### TRACK SENSOR
- **F**
- **Input:** Normal or Inverted
- **ON Delay:** 0/60 sec.
- **OFF Delay:** 0/60 sec.
- **Coarse/Fine:** Disable or Enable
- **Enable Time out:** Enable or Disable
- **Time out:** 30/180 sec.

- **1. Invert Input Signal**
- **2. Delay ON**
- **3. Delay OFF**
- **4. Enable Hopper “Stop” Function after Time Out**
- **5. “Time Out” Delay (5/180 sec.)**

### AIR JET/PRESENT
- **F**
- **Input:** Normal or Inverted
- **ON Delay:** 0/60 sec.
- **OFF Delay:** 0/60 sec.
- **Enable Time out:** Enable or Disable
- **Time out:** 30/180 sec.

- **1. Invert Input Signal**
- **2. Delay ON (Output 2-24V)**
- **3. Delay OFF (Output 2-24V)**
- **4. Set Low-High Speed**
- **5. Enable Bowl Feeder “Stop” Function after Time Out**
- **6. “Time Out” (5/180 sec.)**

### INFO
- **F**
- **Firmware Version**
- **Date**

- **1. Firmware Version**
- **2. Firmware Date**

### SERVICE
- **F**
- **Factory Setting**
- **User Index**
- **Save use Params**
- **Restore use Params**
- **Language**
- **Code**

- **1. Restore Factory Setting (press ** or ** - to confirm ** or **)**
- **2. Select User (Position N° 1, 2, 3, 4)**
- **3. Save User setting (Position N° 1, 2, 3, 4)**
- **4. Restore User Setting (Position N° 1, 2, 3, 4)**
- **5. Choose Language**
- **6. Key Number to Enter Menu - PW**

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### SET LOW/HIGH SPEED OF THE BOWL FEEDER

**BOWL**

- **Air**
  - 0/60 sec.

**Bowl**

- **0/100%**

**BOWL Set Low Speed**

- **0/83%**

**TRACK SENSOR**

- **Coarse/Fine**
  - Disable
  - Enable

**Menù Track Sensor (Coarse/fine) enables high or low speed. Use input PNP to set high or low speed**

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### TIME OUT BOWL/HOPPER

The timeout Bowl/Hopper is the alarm for absence pieces that starts after a set delay time.

**HOPPER SENSOR Time out**

- 30/180 sec.

**TRACK SENSOR Time out**

- 30/180 sec.

**To set Timeout time (Hopper/bowl)**

Hopper and bowl sensor, after a set time, activate the Alarm 24Vdc output and on the display will appear a “T” symbol on the selected channel.

When Enable Timeout is activated:

The STOP channel function is enabled, after set Timeout time, for absence pieces. During the operation, in order to reset the Timeout function, push the green button.
LOGIC

STANDARD
LINEAR- BOWL FEEDER- HOPPER
PNP sensor on Linear (track sensor)
PNP sensor on Bowl feeder (Hopper sensor)
The bowl sensor stops the hopper due to overflow
The track sensor stops the bowl and the hopper due to overflow

INDEPENDENT
With independent mode is possible to manage 3 independent channels, with PNP sensor for controlling overflow.

HOPPER —- PNP2
BOWL —- PNP1
LINEAR —- PNP3

TWIN TRACK
ENABLE FUNCTIONING WITH LINEAR TWIN TRACK
Use PNP sensor 1 (x1) and sensor 3 (x2) for linear, x3 and x4 are the E.V.

When x1 and x2 are activated together, it is because the sensors recognize an overflow.
In this case, both the Bowl and the Hopper stop. E.V. are activated as well, until the switch off of the air-jet.
As soon as one of the sensor detects an empty channel, air-jet is activated and consequently the bowl and the hopper (if any) 24V outputs of E.V. come from OUT2 and from Timeout Bowl.

ENABLE
THERE ARE TWO WAYS:
- With 24V
- With free-voltage contact

Set enable – OFF all channels

PIN 2 + 24V
PIN 3 - 0V

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## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Output Status</th>
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<tr>
<td>MCP12</td>
<td>+24V</td>
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<table>
<thead>
<tr>
<th>Supply Voltage</th>
<th>Output 1 e 2</th>
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<tr>
<td>230V/115V ±15% 50/60Hz</td>
<td>+24V</td>
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<table>
<thead>
<tr>
<th>Supply Current</th>
<th>Output Time Out Linear Feeder</th>
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<tr>
<td>1.5W max</td>
<td>+24V</td>
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<table>
<thead>
<tr>
<th>Total Max Current</th>
<th>Output Time Out Bowl feeder</th>
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<tbody>
<tr>
<td>12 Amp</td>
<td>+24V</td>
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<table>
<thead>
<tr>
<th>Linear Feeder Max Current</th>
<th>Enable Invert</th>
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<tbody>
<tr>
<td>6 Amp</td>
<td>+24V</td>
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<table>
<thead>
<tr>
<th>Bowl Feeder Max Current</th>
<th>Operating temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Amp</td>
<td>0°C / +45°C</td>
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<table>
<thead>
<tr>
<th>Hopper Feeder Max Current</th>
<th>Storage temp</th>
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<tr>
<td>6 Amp</td>
<td>-10°C/+80°C</td>
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<table>
<thead>
<tr>
<th>Fuses</th>
<th>Range of Relative humidity</th>
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<tr>
<td>Double 12A F250v 5X20 H1500A</td>
<td>80% till a 31°C</td>
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<tr>
<th>Sensors</th>
<th>Altitude</th>
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<tr>
<td>PNP 24V</td>
<td>till 2000 meters</td>
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<table>
<thead>
<tr>
<th>Reg. Min/Max.</th>
<th>Guarantee</th>
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<tbody>
<tr>
<td>0/210V</td>
<td>1 Year</td>
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## FACTORY SETTING

### LINEAR FEEDER

| Range     | Default
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<tr>
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<tbody>
<tr>
<td>Feeder Speed</td>
<td>0...100 % 50 %</td>
</tr>
<tr>
<td>Enable Invert</td>
<td>Norm/Inv Normal</td>
</tr>
<tr>
<td>Ramp ON</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Ramp OFF</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Max Output</td>
<td>5...100 % 100 %</td>
</tr>
<tr>
<td>Half/Full</td>
<td>Half/Full Full</td>
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</tbody>
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### BOWL FEEDER

| Range     | Default
<table>
<thead>
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<tbody>
<tr>
<td>Feeder Speed</td>
<td>0...100 % 50 %</td>
</tr>
<tr>
<td>Enable Invert</td>
<td>Norm/Inv Normal</td>
</tr>
<tr>
<td>Ramp ON</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Ramp OFF</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Max Output</td>
<td>5...100 % 100 %</td>
</tr>
<tr>
<td>Half/Full</td>
<td>Half/Full Full</td>
</tr>
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### HOPPER FEEDER

| Range     | Default
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Feeder Speed</td>
<td>0...100 % 50 %</td>
</tr>
<tr>
<td>Enable Invert</td>
<td>Norm/Inv Normal</td>
</tr>
<tr>
<td>Ramp ON</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Ramp OFF</td>
<td>0...60 sec 1 sec</td>
</tr>
<tr>
<td>Max Output</td>
<td>5...100 % 100 %</td>
</tr>
<tr>
<td>AC-Motor for Hopper</td>
<td>Enable/Disable Disable</td>
</tr>
<tr>
<td>Pulse Feed (T-ON)</td>
<td>0...60 sec</td>
</tr>
<tr>
<td>Pulse Feed (T-OFF)</td>
<td>0...60 sec</td>
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### LOGIC

| Range     | Default
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<thead>
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<tbody>
<tr>
<td>Standard</td>
<td></td>
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<tr>
<td>Min/Max</td>
<td></td>
</tr>
<tr>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Twin Track/Air Jet</td>
<td></td>
</tr>
<tr>
<td>Indipendent Channels</td>
<td></td>
</tr>
</tbody>
</table>

## CEE NORMS

This equipment conforms with ecc directive CEE 2006/95 (EMC - Electromagnetic Compatibility) and directive CEE 2004/108 (LVD - Low Voltage Directive)

## NOTE

Don't use the apparatus in proximity of subject zones to vibrations, or in acid and humid working environment. If vibratory feeder work bad or dont work, to check electric wires, to check regolation MIN/MAX, to swicht off voltage and to check the fuses and, this case, to check current max (ampere) in the vibrator.

Do not use Full wave vibrator with half wave output (damage coil).

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**DIMENSIONS/CONNECTIONS**

**STANDARD MODEL**

**Digital Control MCP12 12Amp**

Connectors M12:
- Input: 1°/2°/3° sensor PNP
- Input: enable +24V
- Output: Out1/Out2 segnale +24V
- Output: Status +24V
- Output: blow air +24V
- Output: +24V time out

**NORMS OF GUARANTEE**

1) The controller is guaranteed for a period of 2 years from the date shown on the inside.
2) The guarantee covers the free replacement or repair of components parts that are defective at origin for manufacturing errors.
3) The guarantee is not valid for damage caused accidentally due to improper use or negligence and in case of alterations or repair carried out by unauthorized persons.

Design and specifications could be subjected to change without notice.
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laboratorio@mpelettronica.com

CUSTOMER SERVICE 24/24
HOT LINE : VOICE - WHATSAPP

<table>
<thead>
<tr>
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<th>EMAIL</th>
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<tr>
<td>ENGLISH</td>
<td><a href="mailto:mp1@mpelettronica.com">mp1@mpelettronica.com</a></td>
<td>+39 393 925 6076</td>
</tr>
<tr>
<td>GERMAN</td>
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