

# COVAL

vacuum managers

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## MPX

Controlled Micro Vacuum Pumps



**ADVANCED VACUUM SOLUTIONS**

# MPXE

## Controlled Micro Vacuum Pumps

### General information

Thanks to their low weight and extremely compact design, the **MPXE Series** of controlled micro vacuum pumps can be closely integrated with the suction cups to meet the needs of very high speed applications.

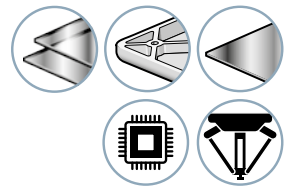
The **MPXE** micro vacuum pumps can be banked with up to 8 modules together, with common supply pressure and common collectable exhaust. They are equipped with vacuum and blow-off control valves, LEDs for displaying the control valve status, a vacuum check valve, and an analog vacuum level signal.

The analog vacuum level signal and the vacuum check valve allow the vacuum regulation to be managed by the PLC.

In addition, the **MPXE** micro-pump range offers 2 blow-off options: standard or powerful. The powerful blow-off can be adjusted via a set screw.



Industry-specific applications



Full scale

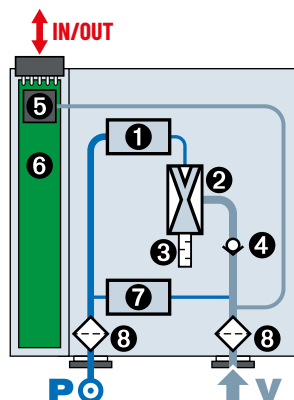


### Advantages

- Ultra-thin (12.5 mm wide).
- Nozzle Ø: 1.0 mm.
- Maximum vacuum 85%.
- NC or NO vacuum control and NC blow-off control.
- Standard blow-off or powerful adjustable blow-off.
- Vacuum switch with analog output.
- Vacuum check valve.
- Exhaust collection.
- Banked mounting with up to 8 modules.

### Integrated Functions

The **MPXE Series** micro vacuum pumps integrate all the necessary functions into a compact footprint for a simple, efficient solution adapted to each application:



- 1 Vacuum solenoid valve
- 2 Single-stage Venturi pump
- 3 Open silencer
- 4 Vacuum check valve
- 5 Electronic vacuum switch
- 6 Integrated electronics
- 7 Blow-off solenoid valve
- 8 200 µm filter screen

### Applications

The compact and lightweight nature of the **MPXE Series** micro vacuum pumps allow installation as close as possible to the suction cups.

They are ideal for high speed gripping applications:

- Plastics processing
- Electronics
- Pharmaceutical



# MPXE

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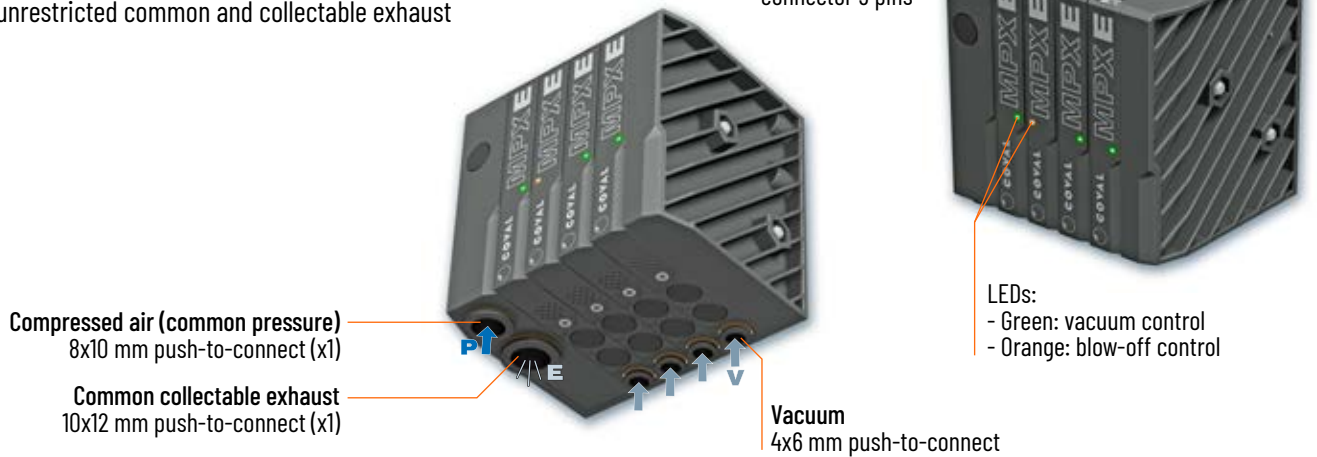
### General information



#### Configurations

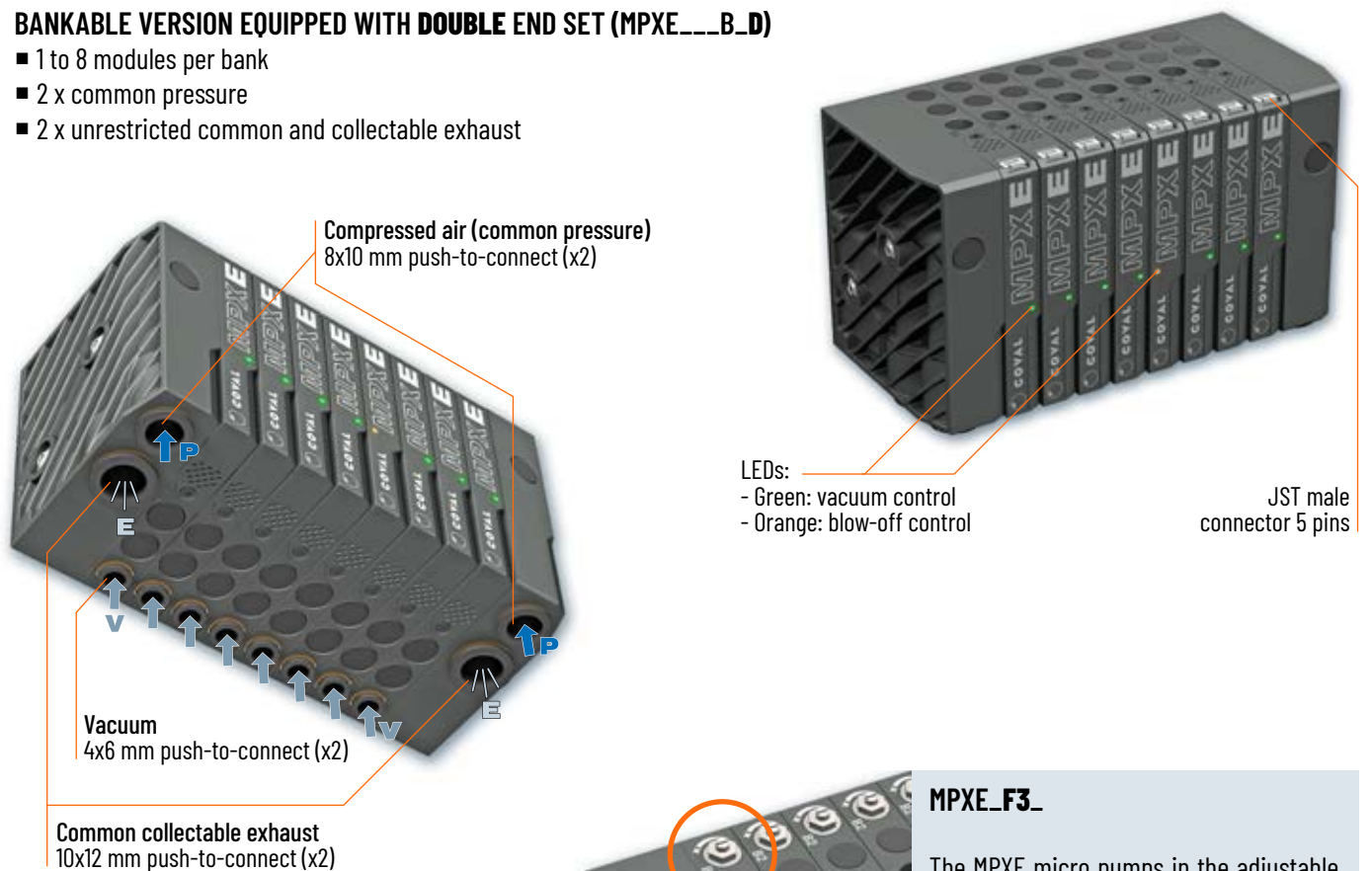
##### BANKABLE VERSION EQUIPPED WITH SINGLE END SET - LEFT (MPXE\_\_\_B\_L)

- 1 to 4 modules per bank
- 1 x common pressure
- 1 x unrestricted common and collectable exhaust



##### BANKABLE VERSION EQUIPPED WITH DOUBLE END SET (MPXE\_\_\_B\_D)

- 1 to 8 modules per bank
- 2 x common pressure
- 2 x unrestricted common and collectable exhaust



#### MPXE\_F3\_

The MPXE micro pumps in the adjustable high-power blow-off version (**F3**) feature an adjustment screw with locking nut to adjust flow as needed (adjustable from 16 to 55 NI/min at 3.7 bar).

# MPXE

## Controlled Micro Vacuum Pumps

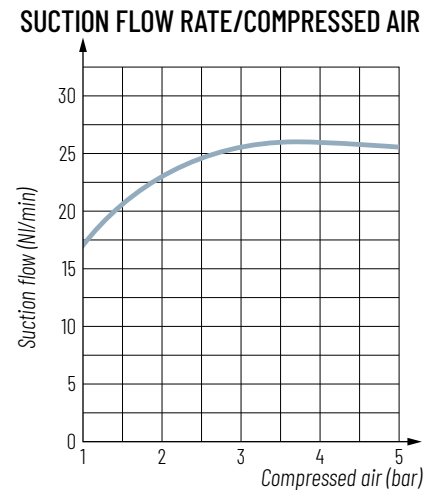
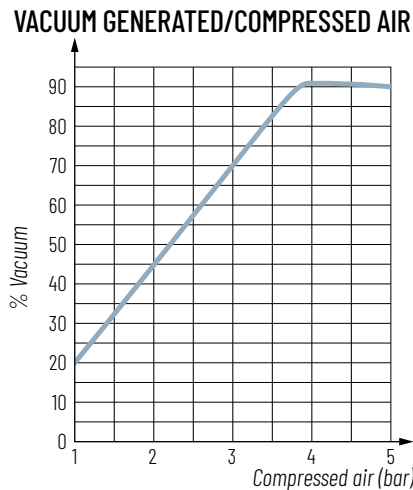
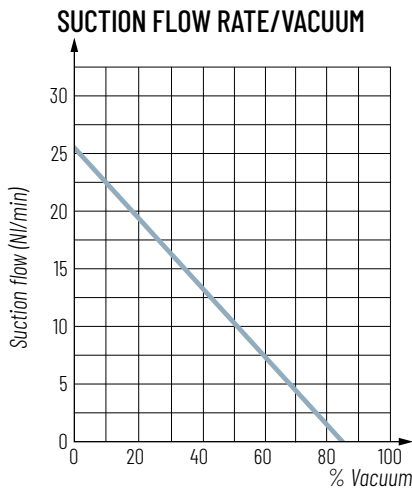
### Selection guide



#### Characteristics

Vacuum reached Nozzle Ø (mm)	Evacuation time <sup>(1)</sup> (ms) of a volume of 5 cl <sup>(2)</sup>				Max. vacuum (%)	Air drawn in (NI/min)	Air consumed (NI/min)	Air pressure level (bar)
	50 %	60 %	70 %	80 %				
1.0	9	14	22	37	85	26	44	3.7

(1) Out of valve response time. (2) Example of a 5 cl volume: 6 suction cups 1.5 bellows Ø 25 (VSA25) + 4 pipes 4x6 mm lg 600 mm + 1 pipe 4x6 mm lg 500 mm.

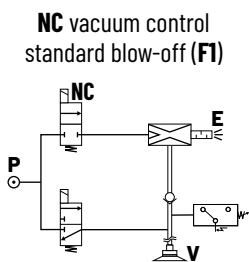


#### Vacuum Control: 2 Solutions

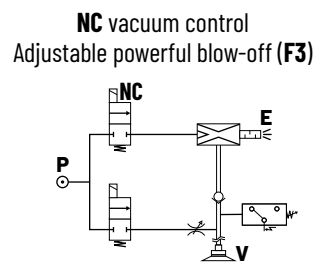
##### Model MPXE\_S:

Vacuum pump with **NC** vacuum control and **NC** blow-off.  
In the event of power failure, vacuum is no longer generated.  
In the event of compressed air failure, the vacuum is no longer maintained.

- NC blow-off and vacuum control: solenoid valves.



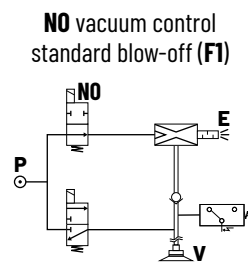
P: Pressure / Compressed Air  
V: Vacuum / Suction Cup  
E: Exhaust



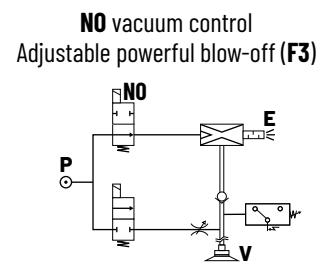
##### Model MPXE\_V:

Vacuum pump with **NO** vacuum control and **NC** blow-off.  
In the event of power failure, vacuum is still generated: object is held in place → fail-safe. In the event of compressed air failure, the vacuum is no longer maintained.

- NO vacuum control solenoid valve.
- NC blow-off control solenoid valve.



P: Pressure / Compressed Air  
V: Vacuum / Suction Cup  
E: Exhaust



#### Electrical Connections



IN / OUT	
1	brown 24V DC
2	white 24V DC suction command <sup>(1)</sup>
3	blue 0V - GND
4	black Vacuum level signal - analog output 5V DC
5	gray 24V DC blow-off command

(1) 24V DC vacuum control, depending on version:  
- S: 24V DC NC vacuum control  
- V: 24V DC NO vacuum control



# MPXE

## Controlled Micro Vacuum Pumps

### Configuring a Vacuum Pump



MPXE90X 10 S L15 P R2 F1 E B4 D			
<b>NOZZLE Ø</b> Ø 1.0 mm <b>10</b>	<b>BLOW-OFF</b> Standard blow-off <b>F1</b> Adjustable powerful blow-off <b>F3</b>	<b>ASSEMBLED BANKS</b> <b>B1</b> Bank of 1 module <b>B2</b> Bank of 2 modules <b>B3</b> Bank of 3 modules <b>B4</b> Bank of 4 modules <b>B5</b> Bank of 5 modules <b>B6</b> Bank of 6 modules <b>B7</b> Bank of 7 modules <b>B8</b> Bank of 8 modules	<b>BANK END SETS</b> <b>L</b> <b>Single left</b> end version for banks of 1 to 4 modules. ▪ 1 x common pressure, 8x10 mm push-to-connect ▪ 1 x common collectable exhaust, 10x12 mm push-to-connect <b>D</b> <b>Double</b> end set version, for banks of 1 to 8 modules. ▪ 2 x common pressure, 8x10 mm push-to-connect ▪ 2 x common collectable exhaust, 10x12 mm push-to-connect
<b>GENERATOR CONTROL</b> Vacuum <b>NC</b> and blow-off <b>NC</b> <b>S</b> Vacuum <b>NO</b> and blow-off <b>NC</b> <b>V</b>			

### Sample part number consisting of an assembled bank of micro vacuum pumps

#### MPXE90X10SL15PR2F1EB8D

Assembled bank of 8 MPXE micro vacuum pumps, 85% max. vacuum, 1.0 mm nozzle, controlled by NC (Normally Closed) solenoid valves, with standard blow-off and double end sets.



#### MPXE90X10SL15PR2F3EB4L

Assembled bank of 4 MPXE micro vacuum pumps, 85% max. vacuum, 1.0 mm nozzle, controlled by NC (Normally Closed) solenoid valves, with adjustable powerful blow-off and single left end.



### Accessories

#### Double-Ended Cables:

- Part No.: **CDM8M6PJSTF5PL01**  
Cable JST 5P NSH to M8 6P straight male A-coded, Lg 10 cm.
- Part No.: **CDM12M5PJSTF5PL02**  
Cable JST 5P NSH to M12 5P straight male A-coded, Lg 20 cm.



#### Mounting Kits:

- Part No.: **MPXFIXC**  
DIN rail mounting kit for bank:  
- 2 clips + 2 screws
- Part No.: **MPXFIXD**  
Mounting kit from front for bank:  
- 2 plates + 4 screws

# MPXE

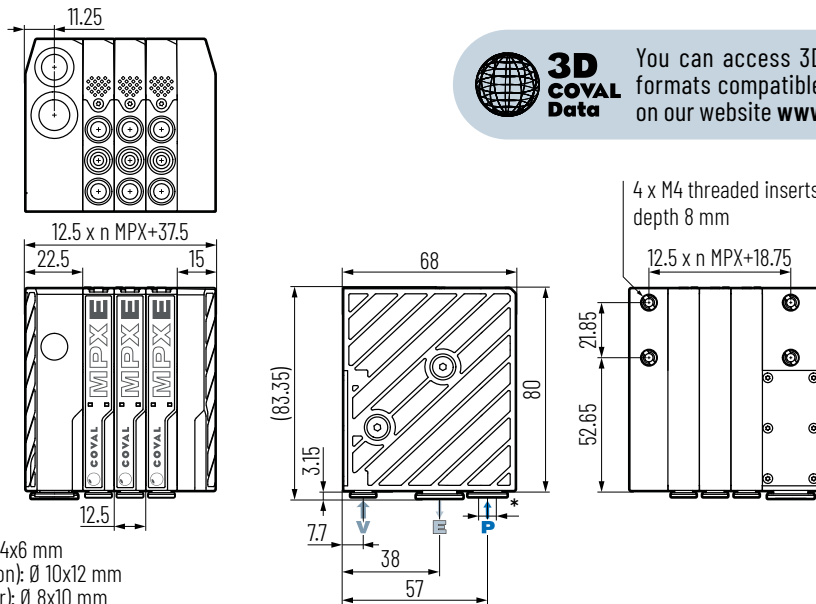
## Controlled Micro Vacuum Pumps Dimensions and Installation Options



### Dimensions

#### MPXE\_B\_L VERSION

Note: All dimensions are in mm.



You can access 3D files of all our products in formats compatible with the main CAD software on our website [www.coval.com](http://www.coval.com)

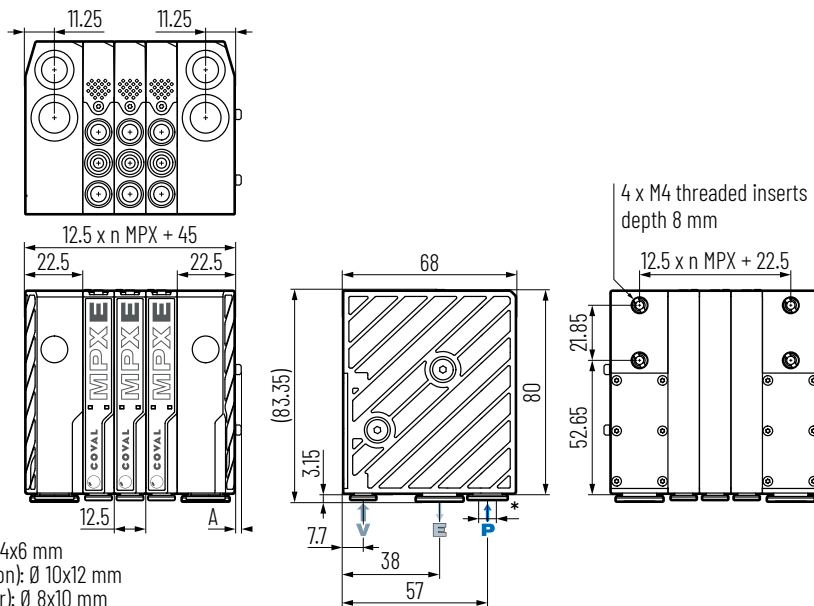
\* push-to-connect:

- **V** (vacuum / suction cup): Ø 4x6 mm
- **E** (exhaust collection, E option): Ø 10x12 mm
- **P** (pressure / compressed air): Ø 8x10 mm

#### MPXE\_B\_D VERSION

##### Dimensions

Part No.	A
MPXE___B1D	0
MPXE___B2D	3
MPXE___B3D	0
MPXE___B4D	3
MPXE___B5D	0
MPXE___B6D	3
MPXE___B7D	0
MPXE___B8D	0



\* push-in connector:

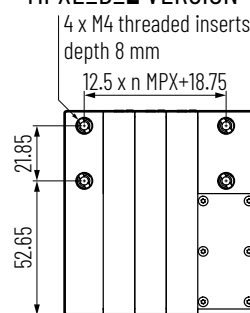
- **V** (vacuum / suction cup): Ø 4x6 mm
- **E** (exhaust collection, E option): Ø 10x12 mm
- **P** (pressure / compressed air): Ø 8x10 mm

### Mounting from rear

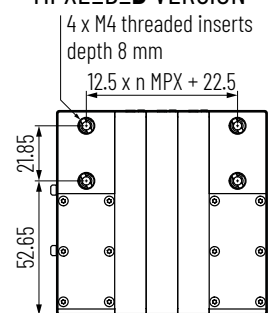
4 x M4 threaded inserts  
depth 8 mm



#### MPXE\_B\_L VERSION



#### MPXE\_B\_D VERSION



# MPXE

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### Installation Options and Technical Specifications



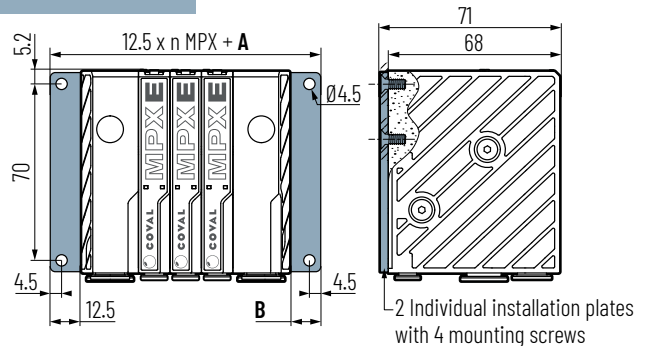
#### Mounting from front

4 x 4.5 mm dia. (for M5 screws).  
For front panel installation, order the following installation kit:

Part No.: **MPXFIXD**  
(2 plates + 4 fastening screws)

Dimensions

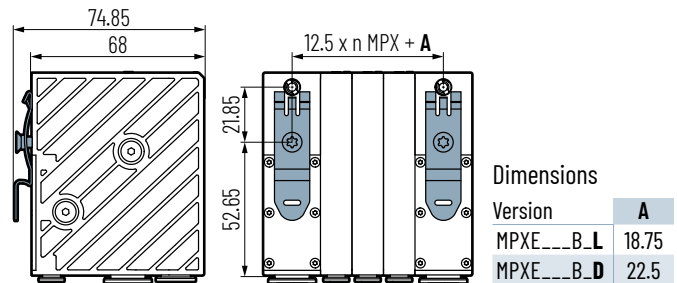
Version	A	B
MPXE...B_L	66.3	16.25
MPXE...B_D	70	12.5



#### Installation on DIN rail

The bank can be mounted on a DIN rail for a static installation (e.g. in a cabinet). In this case, it must be equipped with an installation clip that is to be ordered separately:

Part No.: **MPXFIXC**  
(2 clips + 2 fastening screws)



#### General characteristics

- Supply: non-lubricated air, filtered to 5 microns, according to standard ISO 8573-1:2010 [3:4:3].
- Operating pressure: from 3.5 to 7 bar.
- Optimal dynamic pressure per module: 3.7 bar (*bank supply pressure must be adjusted according to the number of modules to ensure 3.7 bar dynamic pressure / module*).
- Standard blow-off (MPXE...F1): network pressure (blow-off flow rate of 7 NI/min at 3.7 bar).
- Adjustable powerful blow-off (MPXE...F3): network pressure with valve (flow rate adjustable from 16 to 55 NI/min at 3.7 bar).
- Pressure connection: push-to-connect 8x10 mm with 200 µm filter screen.
- Vacuum connection: push-to-connect 4x6 mm with 200 µm filter screen.
- Exhaust collection: push-to-connect 10x12 mm.
- Noise level: approximately 72 dBA.
- Protection rating: IP40.
- Max. operating frequency: 4 Hz.
- Endurance: 30 million cycles.
- Weight:
  - MPXE...B\_L: 85 g X number of modules + 130 g for ends set
  - MPXE...B\_D: 85 g X number of modules + 180 g for ends set
- Operating temperature: from 0 to 50° C (0 to 122° F).
- Materials: PA 6.6 FV, aluminum, stainless steel, brass, steel, NBR, PC+ABS, FKM, POM, PU. Housing materials comply with

the requirements of UL standard 94 class HB.

#### Electrical Controls

- Control voltage: 24V DC (regulated ± 10 %), PNP Rating 0.5A.
- Max. consumption: 60 mA (1.4 W) per vacuum and blow-off solenoid valve.
- Valve response time:
  - opening: 20 ms
  - closure: 15 ms

#### Integrated Electronics

- 24 V DC power supply (regulated ± 10 %), protected against reversed polarity.
- Typical current consumption: < 10 mA / max. 16 mA.
- Measuring range: 0 to 99 % vacuum.
- Measurement accuracy: ± 2% of the range, compensated for temperature.
- LEDs for visualization of the controls:
  - Green LED: vacuum control.
  - Orange LED: blow-off control.
- Vacuum level signal, analog output 5V DC: from 1 to 4V DC from 0 to 90% of vacuum.
- Protected against reversed wiring and polarity.
- Protection against short circuits.
- Inputs switching type: PNP.
- JST connector 5 pins with 1 mm type NSH.



**COVAL**  
vacuum managers

vacuum  
**components**



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Located in the South of France, COVAL SAS designs, produces, and markets high-performance vacuum components and systems for industrial applications in all sectors worldwide.

An ISO 9001: V2015 certified company, COVAL innovates globally in vacuum handling. Our optimized components integrate intelligent and reliable functionalities, adapt to your industrial context, and safely improve your productivity.

With a strong spirit of innovation and technological advancements, the COVAL team is now recognized as an expert in developing reliable, economical, and productive custom solutions.

COVAL's references are found in major industrial sectors such as packaging, food processing, automotive, plastics, aerospace, and robotics, where vacuum handling is crucial for efficiency and productivity.

COVAL markets its products and services worldwide through its subsidiaries and authorized distributor network. Always attentive to its customers, COVAL supports the implementation of its solutions with a continuous and attentive relationship.

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