General

Monostable Solenoid valve 5/2
Bistable Solenoid valve 5/2
Solenoid valve 5/3 closed centres
Solenoid valve 2x3/2 - 5/3
Solenoid valve 2x2/2
Left endplate 5 ports
Left endplate 3 ports
Right endplate closed
Intermediate Inlet/Exhaust module

Accessories

Electrical Connection

Mounting

Settings/Connections

Manifold Lay-Out Configuration

Specifications may be subject to change without prior notice.
General

Technical innovation, rational design, high performance and extremely compact size: these are the main features the ENOVA® series bring to the market. The ENOVA® series is the latest in a string of achievements made by the Pneumax Spa R&D Department in the last few years.

The ENOVA® series has been developed according to the latest market requirements. Each valve comprises all the necessary pneumatic and electrical functions needed to produce a solenoid valve assembly. There are no limits to the configuration of the solenoid valve island, as full priority has been given to the end user’s needs; the addition or removal of modules is a simple operation that can be swiftly and easily achieved.

The management of the electrical signals through the valves is optimized through a patented dedicated connector in each valve.

Electrical connections are made via a twenty-five pin connector, which is capable of controlling up to twenty-two solenoids. Electrical and pneumatic connections are located on the same module at one end of the assembly. Serial bus nodes compatible with most common protocols are easily integrated.

Most widely used and known communication protocols, such as Profibus, Can-Open, Device-Net and AS-Interface can be directly integrated with the valve manifold by simply plugging the necessary module onto the electrical connection, maintaining IP65 environmental protection. All electrical and pneumatic connections are positioned on one face of the assembly, simplifying system design, installation and commission. The management of inputs has also been foreseen, and can be achieved by adding one or more expansion modules directly to the serial module.

MAIN CHARACTERISTICS:
- Clean profile prevents accumulation of dirt
- Compact size: modules of 12.5 mm
- Connections available: 4, 6, 8 mm
- IP65 protection grade
- Optimized electrical connection system
- Electrical and pneumatic line connections on one side
- Quick coupling connection system with visual indicator: locked/unlocked
- Freedom of configuration

AVAILABLE CONFIGURATIONS:
- 5/2 monostable
- 5/2 bistable
- 5/3 closed centres
- 2x3/2 NC/NC (5/3 open centres)
- 2x3/2 NO/NO (5/3 pressured centres)
- 2x3/2 NC/NO
- 2x3/2 NC/NC
- 2x2/2 NO/NO
- 2x2/2 NC/NO

Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central body</td>
<td>Reinforced Technopolymer</td>
</tr>
<tr>
<td>Operators</td>
<td>Reinforced Technopolymer</td>
</tr>
<tr>
<td>External casing</td>
<td>Aluminium 2011</td>
</tr>
<tr>
<td>Spool</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>Spool seals</td>
<td>Oil resistant nitrile rubber - NBR</td>
</tr>
<tr>
<td>Piston seals</td>
<td>Spring steel with protective coating</td>
</tr>
</tbody>
</table>

Technical characteristics

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>24 VDC ± 10% PNP (NPN on request)</td>
</tr>
<tr>
<td>Pilot consumption</td>
<td>0.9 Watt</td>
</tr>
<tr>
<td>Valve working pressure (1-11)</td>
<td>from vacuum to 10 bar max.</td>
</tr>
<tr>
<td>Pilot working pressure (12-14)</td>
<td>from 2.5 to 7 bar max.</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-5°C +50°C</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP 65</td>
</tr>
<tr>
<td>Life (standard operating conditions)</td>
<td>50.000.000</td>
</tr>
<tr>
<td>Fluid</td>
<td>Filtered and lubricated air or no (if lubricated air, the lubrication must be continuous)</td>
</tr>
</tbody>
</table>

"Attention: dry air must be used for applications below 0°C"

Specifications may be subject to change without prior notice.
**Solenoid valve**

**Series 2300**

**Monostable 5/2**

**Solenoid**

**Spring**

**Solenoid Differential**

**QUICK CONNECTION FOR TUBE "ØA"**

**TUBE 04**

**TUBE 06**

**TUBE 08**

**Ordering code**

**23 . 52 . 00 .**

**ELECTRICAL CONTACTS:**

- 0 = STANDARD (only one electric signal)
- 1 = CEB (Bistable Electrical Contact) (two electric signals)

**CONNECTION ØA:**

- 4 = Quick connection for tube Ø4
- 6 = Quick connection for tube Ø6
- 8 = Quick connection for tube Ø8

**TYPE:**

- 36 = Solenoid - Differential
- 39 = Solenoid - Spring

**VOLTAGE:**

- 02 = 24 VDC PNP
- 12 = 24 VDC NPN

**Specifications may be subject to change without prior notice.**
**Bistable 5/2**

**Solenoid Solenoid**

**QUICK CONNECTION FOR TUBE “ØA”**

**LED [SOLENOID VALVE STATE]**

(see note on page 5)

**MANUAL OVER RIDE - SIDE 14 & 12**

(see notes on pages 15-16)

**REMOVABLE IDENTIFICATION PLATE**

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**Ordering code**

230 . 52 . 00 . 35 .

**CONNECTION ØA:**

4 = Quick connection for tube ø4

6 = Quick connection for tube ø6

8 = Quick connection for tube ø8

**VOLTAGE:**

02 = 24 VDC PNP

12 = 24 VDC NPN

---

**SHORT CODE FUNCTION / CONNECTION:**

C4 = EV 5/2 BISTABILE SOL.-SOL. Ø4
C6 = EV 5/2 BISTABILE SOL.-SOL. Ø6
C8 = EV 5/2 BISTABILE SOL.-SOL. Ø8

**R.T.A.** = Response Time Activation

**R.T.D.** = Response Time Disactivation

---

**Specifications may be subject to change without prior notice.**

---

**Operational characteristics**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Pressure Conduit 1-11</th>
<th>Pressure Pilot Conduit 12-14</th>
<th>Temperature</th>
<th>Flow rate at 6 bar with Δp=1</th>
<th>Responce time (according to ISO 12238)</th>
<th>Weight</th>
<th>Working connection ØA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtered and lubricated air or not</td>
<td>2.5 - 7 bar</td>
<td>min. -5° C</td>
<td>max. +50° C</td>
<td>700 Nl/min</td>
<td>R.T.A. 7 ms (Diff.) R.T.D. 7 ms (Diff.)</td>
<td>130 gr.</td>
<td>ø4 - ø6 ø8</td>
</tr>
</tbody>
</table>
5/3 Closed Centres

Pressure Pilot Conduit 12-14
2,5 - 7 bar

Operational characteristics

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Pressure Conduit 1-11</th>
<th>Pressure Pilot Conduit 12-14</th>
<th>Temperature</th>
<th>Flow rate at 6 bar with Δp=1</th>
<th>Responce time (according to ISO 12238)</th>
<th>Weight</th>
<th>Working connection ØA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtered and lubricated air or not</td>
<td>2.5 - 7 bar</td>
<td>min. -5° C</td>
<td>max. +50° C</td>
<td>550 Nl/min</td>
<td>R.T.A. 15 ms (Diff.) R.T.D. 15 ms (Diff.)</td>
<td>130 gr.</td>
<td>Ø4 - Ø6 Ø8</td>
</tr>
</tbody>
</table>

Ordering code

```
230 . 53 . 31 . 35 .
```

**VOLTAGE:**
02 = 24 VDC PNP
12 = 24 VDC NPN

**connection ØA:**
4 = Quick connection for tube ø4
6 = Quick connection for tube ø6
8 = Quick connection for tube ø8

short code function / connection:

**E4 = EV 5/3 CC SOL.-SOL. Ø4**
**E6 = EV 5/3 CC SOL.-SOL. Ø6**
**E8 = EV 5/3 CC SOL.-SOL. Ø8**

Specifications may be subject to change without prior notice.

Specifications may be subject to change without prior notice.
Pressure Pilot
Conduit 12-14

Operational
characteristics

Fluid
Filtered and lubricated air or not

Pressure Conduit 1-11
2.5 - 7 bar

Pressure Conduit 12-14

Temperature
min. -5° C
max. +50° C

Flow rate at 6 bar with \( \Delta p = 1 \)
700 Nl/min

Responce time (according to ISO 12238)
R.T.A. 9 ms (Diff.)
R.T.D. 30 ms (Diff.)

Weight
130 gr.

Working connection 0A
\( \phi 4 \) - \( \phi 6 \) - \( \phi 8 \)

Specifications may be subject to change without prior notice.
Specifications may be subject to change without prior notice.
**Left Endplates**

5 ports

1/11 Conduit (tube ø10):
Main solenoid valve feeding
(pressure from vacuum to 10 bar maximum)

3/5 Conduit (G 3/8”):
Main solenoid valve exhaust

12/14 Conduit (tube ø6):
Pilot feeding (pressure from 2.5 to 7 bar)

82/84 Conduit (tube ø6):
Pilot exhaust

---

**Ordering code**

**2311. 05P**
( Electrical connection PNP)

**2311. 05N**
( Electrical connection NPN)

---

**Operational characteristics**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Pressure Conduit 1-11</th>
<th>Pressure Pilot Conduit 12-14</th>
<th>Temperature</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtered and lubricated air or not</td>
<td>From vacuum to 10 bar</td>
<td>2.5 - 7 bar</td>
<td>min. -5° C</td>
<td>max. +50° C</td>
</tr>
</tbody>
</table>

Specifications may be subject to change without prior notice.
Left Endplates
3 ports

1/11 - 12/14 Conduit (tube ø10) :
Main solenoid valve and pilot feeding
(pressure from 2.5 to 7 bar)
3/5 Conduit (G 3/8") :
Main solenoid valve exhaust
82/84 Conduit (tube ø6) :
Pilot exhaust

Ordering code

2311. 03P
(Electrical connection PNP)

2311. 03N
(Electrical connection NPN)

<table>
<thead>
<tr>
<th>Operational characteristics</th>
<th>Fluid</th>
<th>Pressure Conduit 1-11 and 12-14</th>
<th>Temperature</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Filtered and lubricated air or not</td>
<td>2.5 - 7 bar</td>
<td>min. -5° C</td>
<td>185 gr.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>max. +50° C</td>
<td></td>
</tr>
</tbody>
</table>
Right Endplates
Closed

Weight gr. 100

Ordering code

2312.00

Specifications may be subject to change without prior notice.
Intermediate Inlet/Exhaust module

Quick connection for tube Ø8

Ordering code

2308

Function:
08 = Exhaust Module
12 = Inlet Module

Specifications may be subject to change without prior notice.
SHORT CODE - FUNCTION:

Y = EXHAUST DIAPHRAGM
X = INLET DIAPHRAGM
Z = INLET-EXHAUST DIAPHRAGM

ORDERING CODE

2300.16
Weight gr. 12

2300.20
Weight gr. 6

2300.50
Weight gr. 45

NOTE: for fixing dimensions see page 14

CABLE LENGTH:
03 = 3 meters
05 = 5 meters
10 = 10 meters

CONNECTOR:
10 = In line
90 = 90° Angle
The electrical connection is achieved via a 25 pin connector and can manage up to 22 solenoid pilots.

The management and distribution of the electrical signals between each valve is obtained thanks to a patented electrical connector which receives the signals from the previous module, uses one, two or none depending on the type, and carries forward to the next module the remaining. Bistable valves, 5/3 : 2X3/2 e 2X2/2 valves which have two solenoid pilots built in, use two signals; the first is directed to the pilot side 14 the second to the pilot side 12.

Mono-stable valves can be fitted with two type of electrical connector: one that uses only one signal (connected to the pilot side 14) and carries forward the remaining and one called CEB (Electrical contact for bistable) which uses two signals, one is needed for the valve the other is not used.

This second solution (CEB) allows the modification of the manifold (replacement of monostable valves with bistable for example) without the need of reconfiguring the PLC outputs layout. On the other hand this solution limits the maximum number of valves to 11 (two signals for each position).

Intermediate supply / exhaust modules are fitted with a dedicated electrical connector which carries forward all electric signals without using any. This allows the use of intermediate modules in any position of the manifold.

Example of manifold samples with the corresponding pin layout.
25 PIN Connector correspondence for manifold with standard monostable valves

Intermediate Inlet/Exhaust module

PIN 1 = PILOT 14 EV POS.1
PIN 2 = PILOT 12 EV POS.1
PIN 3 = PILOT 14 EV POS.2
PIN 4 = PILOT 14 EV POS.3
PIN 5 = PILOT 14 EV POS.4
PIN 6 = PILOT 12 EV POS.4
PIN 7 = PILOT 14 EV POS.5
PIN 8 = PILOT 14 EV POS.7
PIN 9 = PILOT 14 EV POS.8
PIN 10 = PILOT 14 EV POS.9
PIN 11 = PILOT 14 EV POS.10
PIN 12 = PILOT 14 EV POS.11
PIN 13 = PILOT 12 EV POS.11
PIN 14 = PILOT 14 EV POS.12
PIN 15 = PILOT 12 EV POS.12

25 PIN Connector correspondence for manifold with CEB monostable valves (electrical contact for bistable)

Intermediate Inlet/Exhaust module

PIN 1 = PILOT 14 EV POS.1
PIN 2 = PILOT 12 EV POS.1
PIN 3 = PILOT 14 EV POS.2
PIN 4 = PILOT 14 EV POS.3
PIN 5 = PILOT 14 EV POS.4
PIN 6 = PILOT 14 EV POS.5
PIN 7 = PILOT 14 EV POS.6
PIN 8 = PILOT 14 EV POS.7
PIN 9 = PILOT 14 EV POS.8
PIN 10 = PILOT 14 EV POS.9
PIN 11 = PILOT 14 EV POS.10
PIN 12 = PILOT 14 EV POS.11
PIN 13 = PILOT 12 EV POS.11
PIN 14 = PILOT 14 EV POS.12
PIN 15 = PILOT 12 EV POS.12

25 PIN Connector correspondence for manifold for 22 position manifold with standard monostable valves

Specifications may be subject to change without prior notice.
Mounting

From the top

31.5 + (n x positions x 12.5)

ø5.5

From the bottom

31.5 + (n x positions x 12.5)

M5 (prof. 10)

On DIN rail

90° Bracket

Maximum envelop size based on the number of positions

43.5 x (n x positions x 12.5)

66.5 + (n x positions x 12.5)

5.5

5

Specifications may be subject to change without prior notice.
PILOT STATE IDENTIFICATION LED
(LED “ON” IDENTIFIES ACTUATED PILOT)

VALVE MANUAL OVER-RIDE

VALVE COUPLING SCREW

VALVE OUTLET
(PORTS 2 & 4)

PILOT SUPPLY CONDUIT
CONNECTIONS 12/14

VALVES SUPPLY CONDUIT
CONNECTIONS 11

EXHAUST CONDUIT
VALVES CONNECTIONS 3/5

EXHAUST CONDUIT
PILOT CONNECTIONS 82/84

EXHAUST CONDUIT
PILOT CONNECTIONS 82/84

AIR SUPPLY CONDUIT
VALVES CONNECTIONS 1/11
PILOT CONNECTIONS 12/14

VALVES CONNECTIONS 1/11

Specifications may be subject to change without prior notice.
Manual over-ride function

Unstable function

Push to actuate (when released it moves back to the original position)

Bistable function

1 Push and turn to get the bistable function

NOTE: It is strongly suggested to replace the original position after using

Manifold assembly

The use of a flat screw driver (1x5.5) is recommended

180°
Manifold Lay-Out configuration

**ELECTRICAL CONNECTION:**
- MP = MULTIPOLAR PNP (standard)
- MN = MULTIPOLAR NPN
- CA = CAN OPEN 22 OUT
- CB = CAN OPEN 22 OUT + 8 IN
- CC = CAN OPEN 22 OUT + 16 IN
- CD = CAN OPEN 22 OUT + 24 IN
- PA = PROFIBUS 22 OUT
- PB = PROFIBUS 22 OUT + 8 IN
- PC = PROFIBUS 16 OUT + 16 IN

**SHORT CODE**

**FUNCTION / CONNECTION:**
- A4 = EV 5/2 MONOST. SOL.-SPRING Ø4
- A6 = EV 5/2 MONOST. SOL.-SPRING Ø6
- A8 = EV 5/2 MONOST. SOL.-SPRING Ø8
- B4 = EV 5/2 MONOST. SOL.-DIFFERENTIAL Ø4
- B6 = EV 5/2 MONOST. SOL.-DIFFERENTIAL Ø6
- B8 = EV 5/2 MONOST. SOL.-DIFFERENTIAL Ø8
- C4 = EV 5/2 BISTABLE SOL.-SOL. Ø4
- C6 = EV 5/2 BISTABLE SOL.-SOL. Ø6
- C8 = EV 5/2 BISTABLE SOL.-SOL. Ø8
- E4 = EV 5/3 CC SOL.-SOL. Ø4
- E6 = EV 5/3 CC SOL.-SOL. Ø6
- E8 = EV 5/3 CC SOL.-SOL. Ø8
- F4 = EV 2x3/2 NC-NC (= 5/3 OC) SOL.-SOL. Ø4
- F6 = EV 2x3/2 NC-NC (= 5/3 OC) SOL.-SOL. Ø6
- F8 = EV 2x3/2 NC-NC (= 5/3 OC) SOL.-SOL. Ø8
- G4 = EV 2x3/2 NO-NO (= 5/3 PC) SOL.-SOL. Ø4
- G6 = EV 2x3/2 NO-NO (= 5/3 PC) SOL.-SOL. Ø6
- G8 = EV 2x3/2 NO-NO (= 5/3 PC) SOL.-SOL. Ø8
- H4 = EV 2x3/2 NC-NO SOL.-SOL. Ø4
- H6 = EV 2x3/2 NC-NO SOL.-SOL. Ø6
- H8 = EV 2x3/2 NC-NO SOL.-SOL. Ø8
- L4 = EV 2x2/2 NC-NC SOL.-SOL. Ø4
- L6 = EV 2x2/2 NC-NC SOL.-SOL. Ø6
- L8 = EV 2x2/2 NC-NC SOL.-SOL. Ø8
- M4 = EV 2x2/2 NO-NO SOL.-SOL. Ø4
- M6 = EV 2x2/2 NO-NO SOL.-SOL. Ø6
- M8 = EV 2x2/2 NO-NO SOL.-SOL. Ø8
- N4 = EV 2x2/2 NC-NO SOL.-SOL. Ø4
- N6 = EV 2x2/2 NC-NO SOL.-SOL. Ø6
- N8 = EV 2x2/2 NC-NO SOL.-SOL. Ø8
- P4 = EV 5/2 MONOST. SOL.-SPRING CEB Ø4
- P6 = EV 5/2 MONOST. SOL.-SPRING CEB Ø6
- P8 = EV 5/2 MONOST. SOL.-SPRING CEB Ø8
- R4 = EV 5/2 MONOST. SOL.-DIFF. CEB Ø4
- R6 = EV 5/2 MONOST. SOL.-DIFF. CEB Ø6
- R8 = EV 5/2 MONOST. SOL.-DIFF. CEB Ø8
- J = INTERMEDIATE EXHAUST MODULE Ø8
- K = INTERMEDIATE INLET MODULE Ø8
- X = INLET DIAPHRAGM
- Y = EXHAUST DIAPHRAGM
- Z = INLET-EXHAUST DIAPHRAGM

**ENDPLATES SELECTION:**
- A = 5 ports endplated left side plus right side endplated
- B = 3 ports endplated left side plus right side endplated

**ACCESSORIES:**
- 0 = none
- D = DIN bar adapter
- S = 90° Fixing bracket

**NOTE:**
While configuring the manifold always bear in mind that the maximum number of electrical signals available is 22.

**N.B.**
CEB = Electrical connector for bistable valves (uses two electric signals)
Intermediate supply / exhaust modules require the same space as a valve but do not use any electric signals (as the electric connector carries forward all signals received from the module immediately before).
The separation diaphragms are positioned between two modules and replace the standard seal therefore do not increase the dimension of the assembly. When using a separation diaphragm of any type, it is necessary to add, in any position between diaphragm and the manifold and plate, an extra air supply / exhaust module depending on the type of diaphragm used.

Specifications may be subject to change without prior notice.