Series 2700

General

The 2700 Series of solenoid operated valves have been designed in accordance with ISO 15407, a standard for both pneumatic and electrical layout.
This series of valves have a 27mm valve body width and a nominal flow rate of 1000 Nl/Min.
The solenoid valves are mounted upon a modular sub-base with G1/4" pneumatic connections and built in electrical connection.
Another feature of the 2700 series is that it can be equipped with the serial bus modules currently being used with our Optyma-T valve series, thus offering an extremely flexible product that can be integrated with standard communication protocols (CANopen®, PROFIBUS DP, DeviceNet, EtherNet/IP, PROFINET IO RT/IRT, EtherCAT®, Powerlink and Modbus/TCP).
In addition to the serial bus modules, the valves manifolds can also be used with either a 25 or 37 pin D-SUB connectors offering control of up to a maximum of 32 electrical signals.

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power-Directional control valves-Measurement of shifting time"

Main characteristics

Integrated and optimized electrical connection system.
IP65 protection degree.
Only one 26mm size.
Monostable and bistable solenoid valves with the same size dimensions.
G1/4" quick coupling connections.
Easy and fast manifold assembling.

Construction characteristics

Body	Aluminium
Operators	Technopolymer
Spacers	HNBR 75-80 Shore A
Spools	Aluminium
Springs	AISI 302 stainless steel
Pistons	Technopolymer
Piston seals	NBR

Functions

SV 5/2 MONOSTABLE SOLENOID-SPRING
SV 5/2 MONOSTABLE SOLENOID-DIFFERENTIAL
SV 5/2 BISTABLE SOLENOID-SOLENOID
SV 5/3 C.C. SOLENOID-SOLENOID
SV 2x3/2 N.C.-N.C. (=5/3 O.C.) SOLENOID-SOLENOID
SV 2x3/2 N.O.-N.O. (=5/3 P.C.) SOLENOID-SOLENOID
SV 2x3/2 N.C.-N.O. SOLENOID-SOLENOID

Technical characteristics

Voltage	24 VDC ±10% PNP
Pilot consumption	1 Watt - 2,3Watt
Valve working pressure [1]	from vacuum up to 10 bar
Operating temperature	-5°C +50°C
Life (standard operating conditions)	50000000
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Solenoid - Spring

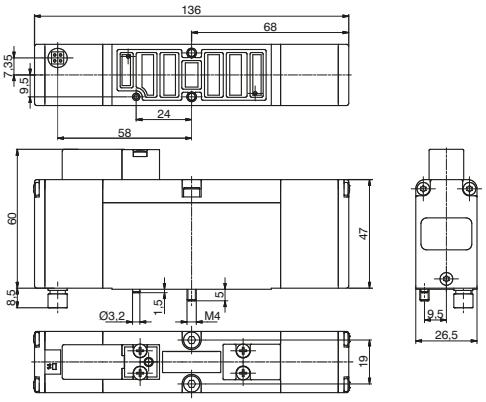
Coding: 2741.52.00.Ⓟ.Ⓣ

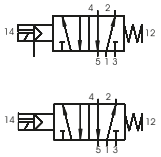
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Minimum piloting pressure (bar)	2
Temperature °C	-5 ÷ +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Responce time according to ISO 12238, activation time (ms)	20
Responce time according to ISO 12238, deactivation time (ms)	38

Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001

Ⓟ	PILOTING
	39 = Self feeding
	29 = External feeding
Ⓣ	VOLTAGE
	01 = 12V DC
	02 = 24V DC
	08 = 24V DC 1 Watt

SHORT FUNCTION (Self feeding) "AA"
SHORT FUNCTION (External feeding) "AE"
Weight 280 g





The "Activations time" values, are valid only for the 2,3W versions

Solenoid-Differential

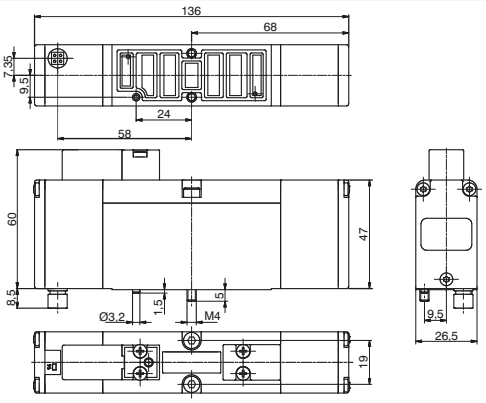
Coding: 2741.52.00.Ⓟ.Ⓣ

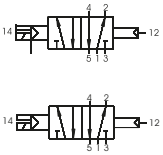
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Minimum piloting pressure (bar)	2
Temperature °C	-5 ÷ +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Responce time according to ISO 12238, activation time (ms)	20
Responce time according to ISO 12238, deactivation time (ms)	38

Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001

Ⓟ	PILOTING
	36 = Self feeding
	26 = External feeding
Ⓣ	VOLTAGE
	01 = 12V DC
	02 = 24V DC
	08 = 24V DC 1 Watt

SHORT FUNCTION (Self feeding) "BA"
SHORT FUNCTION (External feeding) "BE"
Weight 280 g





The "Activations time" values, are valid only for the 2,3W versions

Solenoid-Solenoid 5/2

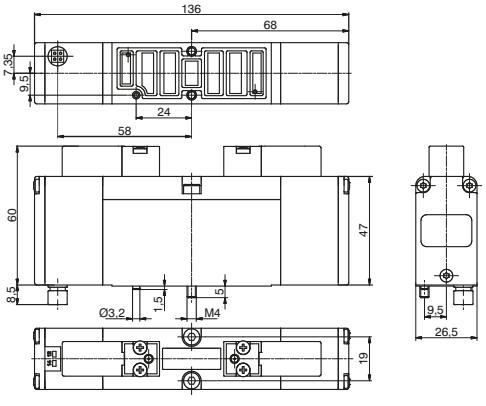
Coding: 2741.52.00.Ⓟ.Ⓣ

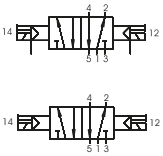
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Minimum piloting pressure (bar)	2
Temperature °C	-5 ÷ +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Responce time according to ISO 12238, activation time (ms)	12
Responce time according to ISO 12238, deactivation time (ms)	14

Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001

Ⓟ	PILOTING
	35 = Self feeding
	24 = External feeding
Ⓣ	VOLTAGE
	01 = 12V DC
	02 = 24V DC
	08 = 24V DC 1 Watt

SHORT FUNCTION (Self feeding) "CA"
SHORT FUNCTION (External feeding) "CE"
Weight 310 g





The "Activations time" values, are valid only for the 2,3W versions

Solenoid-Solenoid 5/3

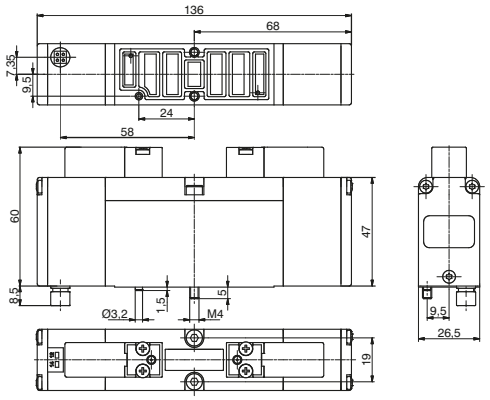
Coding: 2741.53.31.Ⓟ.Ⓣ

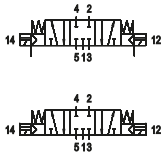
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Minimum piloting pressure (bar)	3
Temperature °C	-5 ÷ +50
Flow rate at 6 bar with Δp=1 (Nl/min)	660
Responce time according to ISO 12238, activation time (ms)	12
Responce time according to ISO 12238, deactivation time (ms)	60

Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001

Ⓟ	PILOTING
	35 = Self feeding
	24 = External feeding
Ⓣ	VOLTAGE
	01 = 12V DC
	02 = 24V DC
	08 = 24V DC 1 Watt

SHORT FUNCTION (Self feeding) "EA"
SHORT FUNCTION (External feeding) "EE"





Weight 310 g
The "Activations time" values, are valid only for the 2,3W versions

Solenoid-Solenoid 2x3/2 (Self feeding / External feeding)

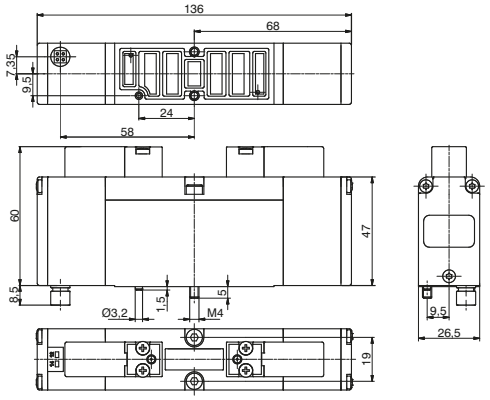
Coding: 2741.62.Ⓕ.Ⓟ.Ⓣ

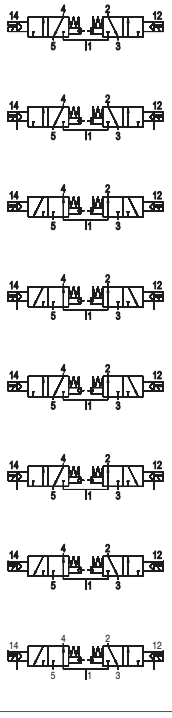
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Minimum piloting pressure (bar)	≥2+(0,3xP.alim.)
Temperature °C	-5 ÷ +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Responce time according to ISO 12238, activation time (ms)	15 (Self feeding) 12 (External feeding)
Responce time according to ISO 12238, deactivation time (ms)	15 (Self feeding) 60 (External feeding)

Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001

Ⓕ	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)
Ⓟ	PILOTING
	35 = Self feeding
	24 = External feeding
Ⓣ	VOLTAGE
	01 = 12V DC
	02 = 24V DC
	08 = 24V DC 1 Watt

SHORT FUNCTION (Self feeding):
2 3/2 NC="FA"
1 3/2 NC (14) + 1 3/2 NA (12)="HA"
2 3/2 NA="GA"
1 3/2 NA (14) + 1 3/2 NC (12)="IA"
SHORT FUNCTION (External feeding):
2 3/2 NC="FE"
1 3/2 NC (14) + 1 3/2 NA (12)="HE"
2 3/2 NA="GE"
1 3/2 NA (14) + 1 3/2 NC (12)="IE"





Weight 310 g
The "Activations time" values, are valid only for the 2,3W versions
"Example: If inlet pressure is set at 5bar then pilot pressure must be at least Pp=2+(0.3*5)=3,5bar"

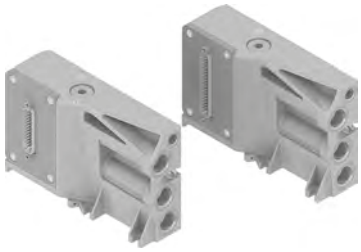
Right Endplates

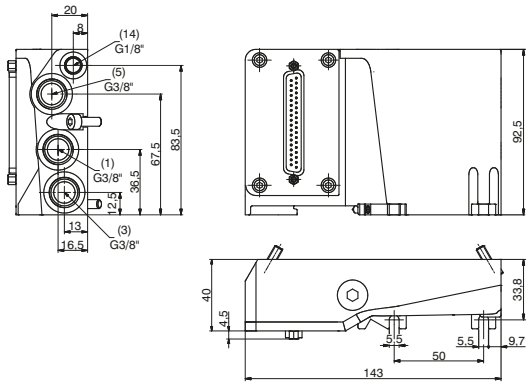
Coding: 2740.02.Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ÷ +50

Ⓒ	ELECTRICAL CONNECTION
	37P = Connectors 37 poles PNP
	25P = Connectors 25 poles PNP
	37N = Connectors 37 poles NPN
	25N = Connectors 25 poles NPN

Weight 600 g





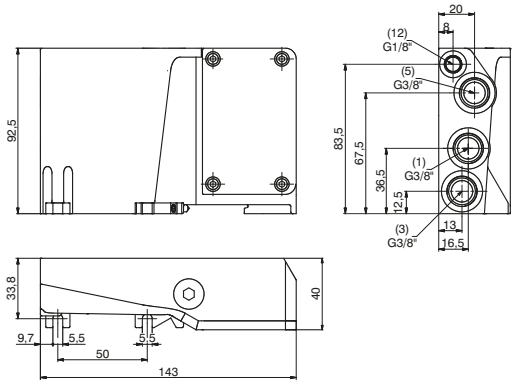
Left Endplates

Coding: 2740.03.Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ÷ +50

Ⓒ	ELECTRICAL CONNECTION
	00 = Electrical connection
	25P = Connectors 25 poles

Weight 600 g



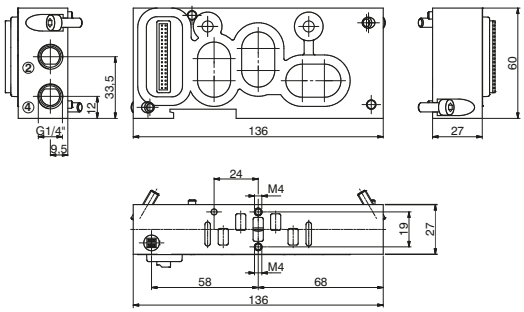
Modular base

Coding: 2740.01Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ÷ +50

Ⓥ	VERSION
	M = for Monostable SV
	B = for Bistable SV

Weight 330 g

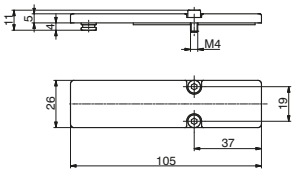


Closing plate

Coding: 2740.00

Weight 100 g

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ÷ +50



Diaphragm plug

Coding: 2740.17

Weight 65 g

Cable complete with connector, 25 Poles IP65

Coding: 2300.25.Ⓛ.Ⓒ

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres

Cable complete with connector, 37 Poles IP65

Coding: 2400.37.Ⓛ.Ⓒ

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres

Cable complete with connector, 25 Poles IP65

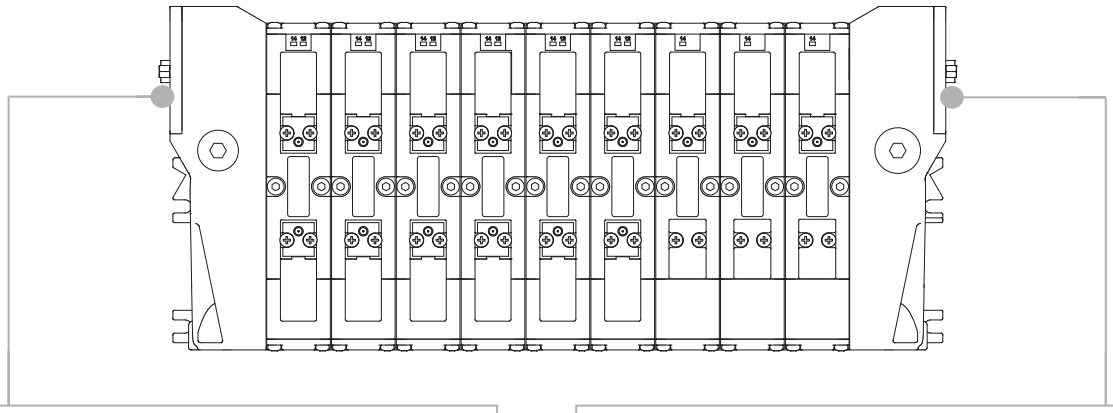
Coding: 2400.25.Ⓛ.25

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

The electrical connection is achieved by a 37 pin connector and can manage up to 32 solenoid pilots.
It is also possible use a 25 sub-D pin connector and, in this case, it is possible to manage a maximum of 22 outputs.
The management and distribution of the electrical signals between each valve is obtained thanks to an 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 and 2x3/2 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. Modular bases can be fitted with two type of electrical connector: the monostable version uses only one signal (connected to the pilot side 14) and carries forward the remaining, the bistable version which always uses two signals.
This solution allows the modification of the manifold (replacement of monostable valves without bistable for example) without having to reset the PLC output layout.
On other hand this solution limits the maximum number of valves to 16 when it is used a 37 pin connector or 11 when it is used a 25 pin connector.
Intermediate supply/exhaust module uses an electrical connector directly forwarding signals to the next one without any kind of modification.
This allows the use of intermediate modules in any position of the manifold.
All the electrical signals that have not been used on the manifold can be used placing at the end of the manifold the end plate complete with the 25 sub-D female connector.
The number of available signals depends of the connector used to the type of the left end plate and by the total signals used along the manifold:

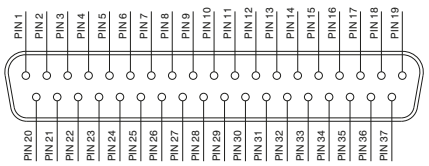
37 pin connector	nr of output = 32 – (total of used signals)
25 pin connector	nr of output = 22 – (total of used signals)

Following we show some examples of possible combination and the relative pin assignment.



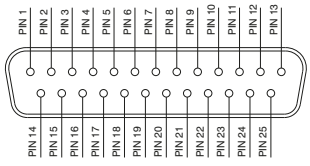
IN-LET ELECTRIC CONNECTIONS

SUB-D 37 POLE
MALE CONNECTOR



1 - 32 = SOLENOID VALVES SIGNAL
33 - 35 = GND
36 - 37 = THROUGH LINE

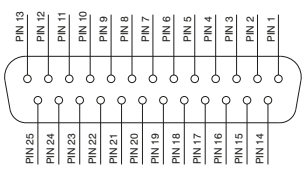
SUB-D 25 POLE
MALE CONNECTOR



1 - 22 = SOLENOID VALVES SIGNAL
23 - 24 = GND
25 = THROUGH LINE

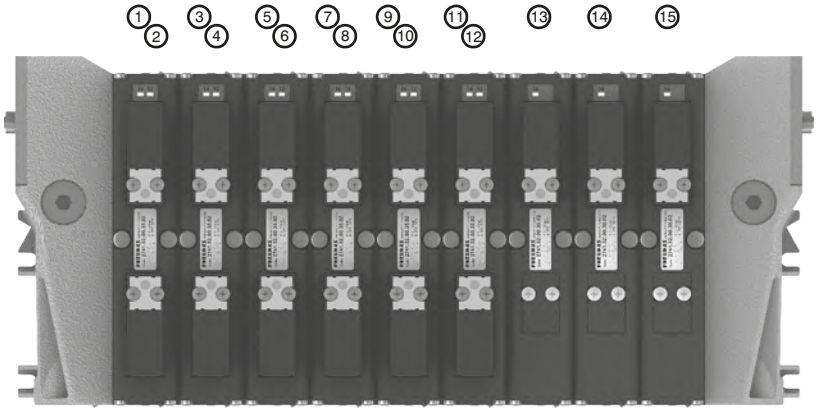
OUTLET ELECTRIC CONNECTIONS
(IF PRESENT)

SUB-D 25 POLE
FEMALE CONNECTOR



1 - 22 = SOLENOID VALVES SIGNAL
23 - 24 = GND
25 = THROUGH

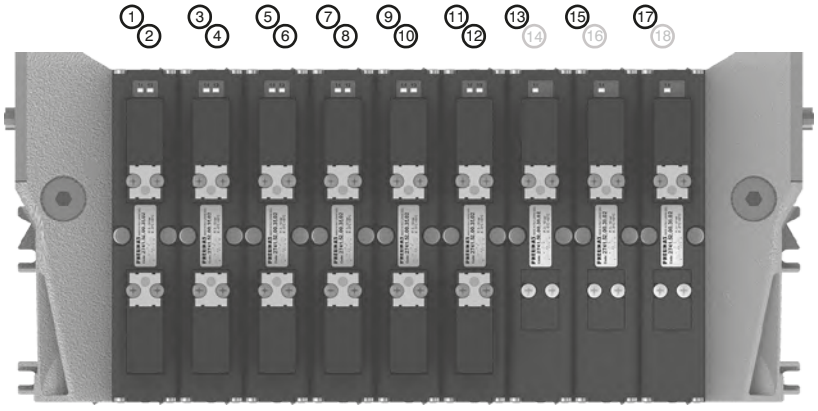
37 PIN Connector correspondence for valves assembled on mixed bases



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

POS.	1	2	3	4	5	6	7	8	9

37 PIN Connector correspondence for manifold mounted on bases for bistable valves

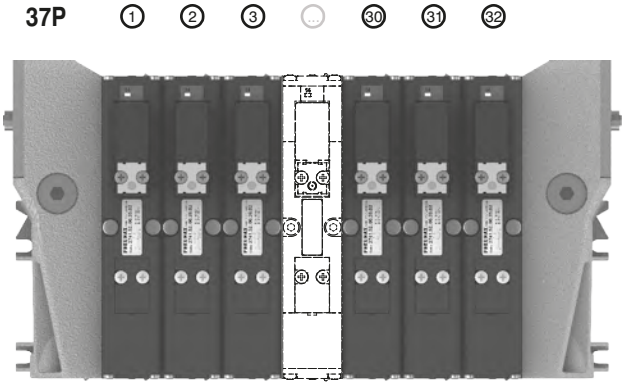


PIN 1 = PILOT 14 SV POS.1
PIN 2 = PILOT 12 SV POS.1
PIN 3 = PILOT 14 SV POS.2
PIN 4 = PILOT 12 SV POS.2
PIN 5 = PILOT 14 SV POS.3
PIN 6 = PILOT 12 SV POS.3
PIN 7 = PILOT 14 SV POS.4
PIN 8 = PILOT 12 SV POS.4
PIN 9 = PILOT 14 SV POS.5
PIN 10 = PILOT 12 SV POS.5
PIN 11 = PILOT 14 SV POS.6
PIN 12 = PILOT 12 SV POS.6
PIN 13 = PILOT 14 SV POS.7
PIN 14 = NOT CONNECTED
PIN 15 = PILOT 14 SV POS.8
PIN 16 = NOT CONNECTED
PIN 17 = PILOT 14 SV POS.9
PIN 18 = NOT CONNECTED

POS.	1	2	3	4	5	6	7	8	9

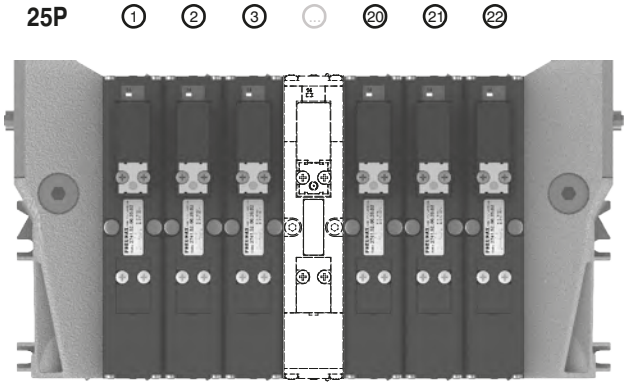
37 PIN Connector correspondence for manifold for 32 position manifold with monostable valves on base

37P



POS.	1	2	3	...	30	31	32

25P



POS.	1	2	3	...	20	21	22

General :

Using the 2740.03.25P output terminal it is possible to make any electrical signals not used by valves available on a 25 sub-D female connector at the right end of the manifold.
It is possible to then join a multi-core cable to link to the next manifold, or connect directly to one or two I/O modules.
The I/O modules can accept input or output signals, depending upon what is connected.

Ordering code

2540.08T

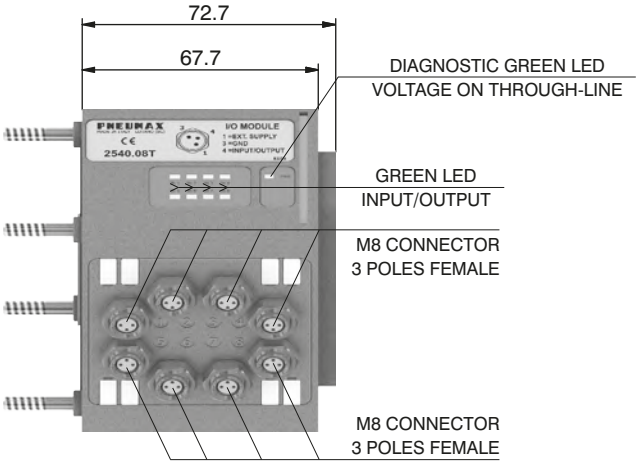
Please note: If the manifold is connected by a multi-core connection, each connection can be used as either an input or an output, while if the manifold is connected to a serial node the connections can only be used as an output.

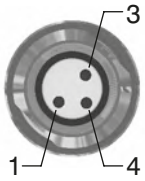
It is possible to connect the manifold to up to two I/O modules.

Each I/O module includes 8 diagnostic LEDs which indicate the presence of an Input / Output signal for each connector.

Please note: For an LED to function, a signal of at least +15VDC must be present on pin 4 of the connector. If this signal is lower, the LED will not light, this does not compromise the normal Input / Output function of the unit.

Overall dimensions and I/O layout :





PIN	DESCRIPTION
1	+24 VDC
4	INPUT/OUTPUT
3	GND

Input features:

Each connection can accept either two wire (switches, magnetic switches, pressure switches, etc.) or three wire connections (photocells, electronic end of stroke sensors, etc.) If +24VDC is required on at Pin 1 of each connector, it is possible to provide this via the through-line pin of the multi-pole connector.
I.E :
Pin 25 of the 25 pin multi-pole connector (code 2740.02.25P or 2740.12.25P)
Pin 36-37 of the 37 pin multi-pole connector (code 2740.02.37P or 2740.12.37P)

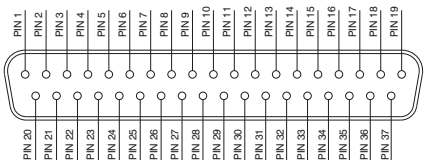
Output features:

Attention: The output connections are not protected against short-circuit. Please pay attention when wiring (avoid Pin 4 being connected to Pin 3 or Pin 1).

General characteristics	Model	2540.08T
	Case	Reinforced technopolymer
	I/O Connector	M8 connector 3 poles female (IEC 60947-5-2)
	PIN 1 voltage (connector used as Input)	By the user
	PIN 4 voltage diagnosis	Green Led
	Node consumption (Outlets excluded)	7mA per each LED with 24 VDC signal
	Outlets voltage	+23,3 VDC (serial) /by the user (multipolar)
	Input voltage	Depend by the using
	Maximum outlet current	100 mA (serial) / 400 mA (multipolar)
	Maximum Input/Output	8 per module
	Multiconnector max. Current	100 mA
	Connections to manifold	Direct connection to 25 poles connector
	Maximum n. of moduls	2
	Protection degree	IP65 when assembled
	Ambient temperature	from -0° to +50° C

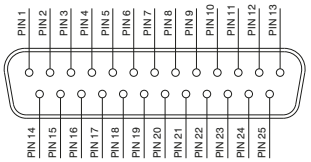
CORRESPONDENCE BETWEEN MULTI-POLE SIGNAL AND CONNECTOR

SUB-D TYPE 37 POLE MALE CONNECTOR

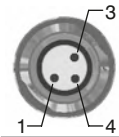


1 - 32 = SIGNALS
33 - 35 = GND
36 - 37 = THROUGH LINE

SUB-D TYPE 25 POLE MALE CONNECTOR



1 - 22 = SIGNALS
23 - 24 = GND
25 = THROUGH LINE



PIN	DESCRIPTION
1	THROUGH LINE
4	SIGNAL
3	GND

Connection modes:

The I/O module changes it is operation depending on the way the manifold is controlled. There are two possible modes:

A) Control via multi-pole connection
B) Control via fieldbus

In order to use the I/O module, the correct right hand endplate with 25 pole female outlet connector must be used.
(Code 2740.03.25P).

A) Control via multi-pole :

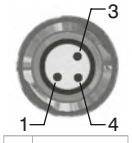
M8 connector used as Input:

Attention: Voltage applied to each connector is passed to multi-pole connector pin.

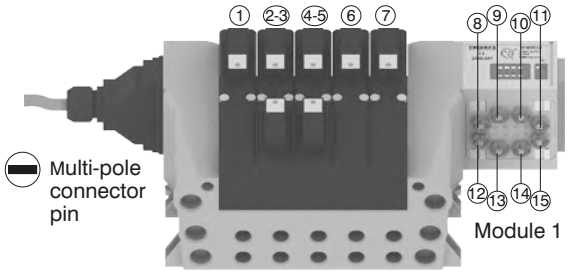
M8 connector used as Output:

Output voltage will the same as is applied at the multi-pole connector pin.
The maximum output current depends upon the power unit used, but we recommend no more than 250mA.

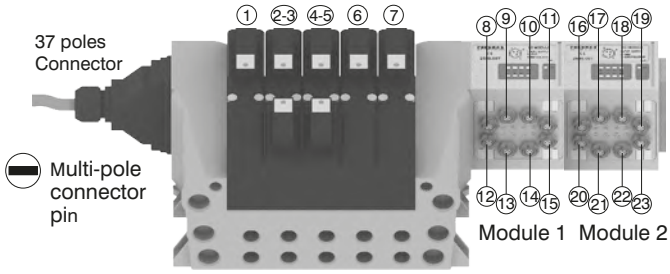
Attention: Since every cable has a degree of resistance, there will always be a voltage drop depending on the cable's length, sectional area and the current.



PIN	DESCRIPTION
1	THROUGH LINE
4	SIGNAL
3	GND

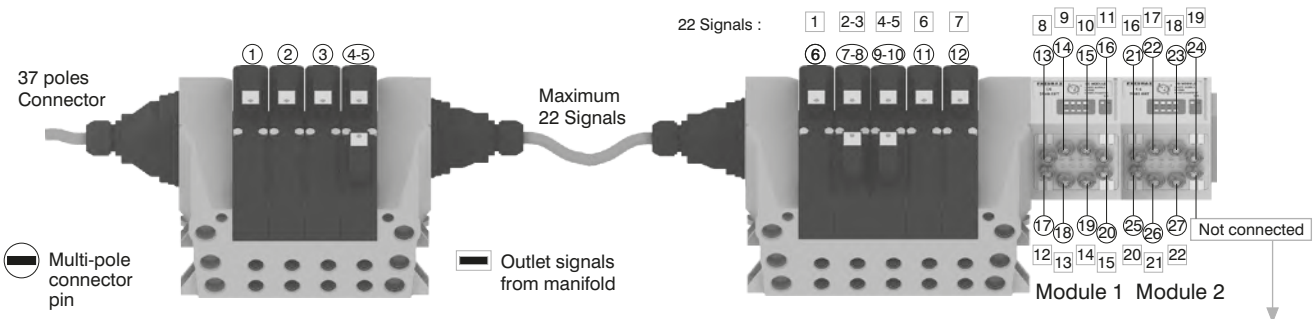


Attention: Only one more I/O module can be added.



Attention: No more additions are possible

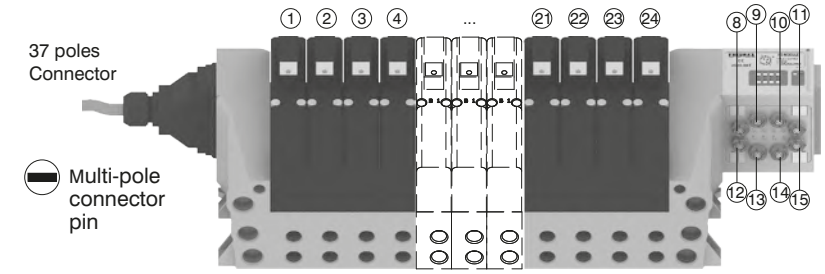
Attention : 2700 solenoid valve manifolds permit up to 22 electrical signals that are not used by manifolds to be made available: these signals can be managed by another manifold and / or by I/O modules.
The I/O module will manage these unused signals. Connections that are not managing useful signals will remain unconnected.

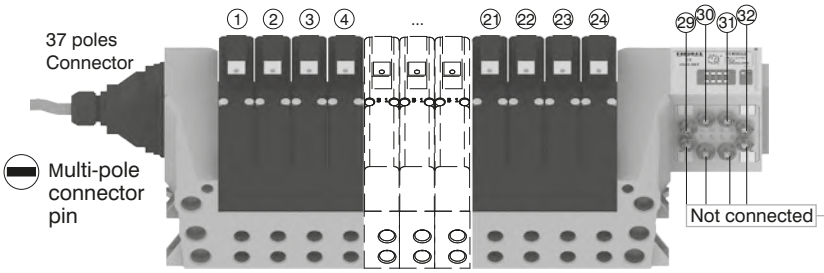


Please note: this example considers a 37 pin multi-pole connector.
The same configuration managed by a 25 pin multi-pole connector will stop at number 22 of multi-pole connector and at number 17 of the manifold. 22 17

Attention:
Signal Not connected
GND Connected
Through line Connected

Please note: 2700 solenoid valve manifolds manage up to 32 signals. If the manifold uses more than 24 signals the I/O module will manage only the remainder. Connections that are not managing useful signals will remain unconnected.

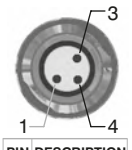




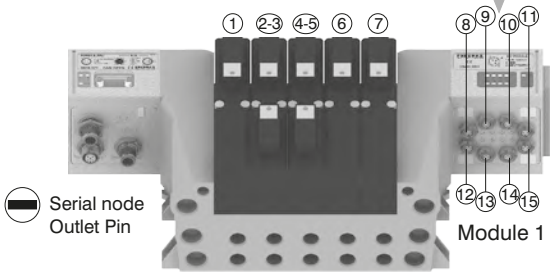
Attention:
Signal Not connected
GND Connected
Through line Connected

B) Control via fieldbus:

With this kind of control the I/O module can only be used as an output. Pin 1 of each connector is not connected. The output voltage will be 0.7V lower than that applied to Pin 4 of the connector.
The maximum output current for each output is 100mA. The correspondence between control byte and each single output depends on how many electrical signals are used by the manifold and by the relative position of the I/O module.

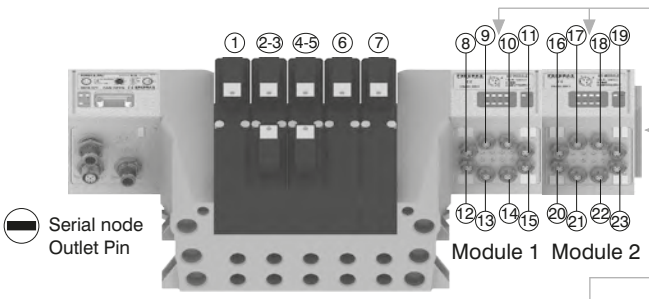


PIN	DESCRIPTION
1	NOT CONNECTED
4	SIGNAL
3	GND



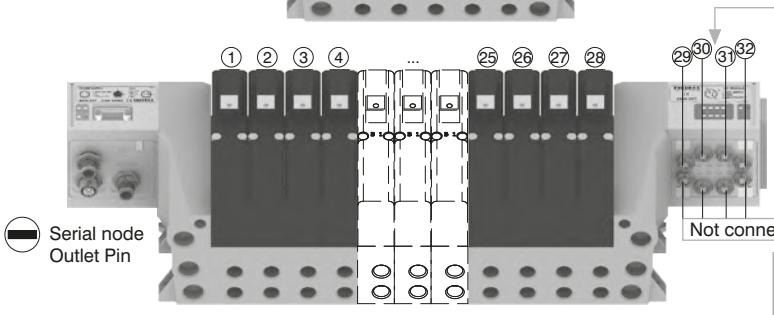
Attention:
Output only

Attention:
Only one more
I/O module
can be added.



Attention:
Output only

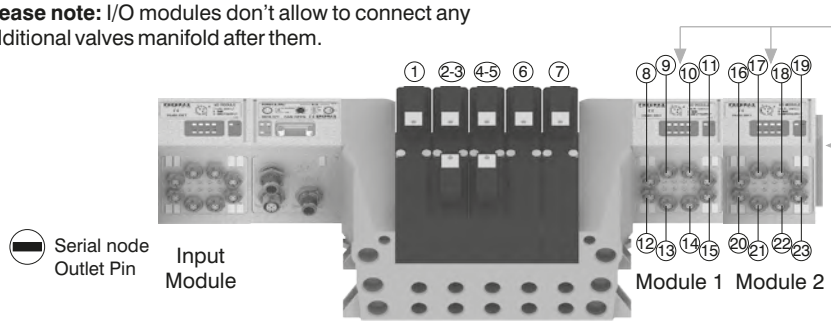
Attention:
No more additions
are possible



Attention:
Output only

Attention:
Signal Not connected
GND Connected

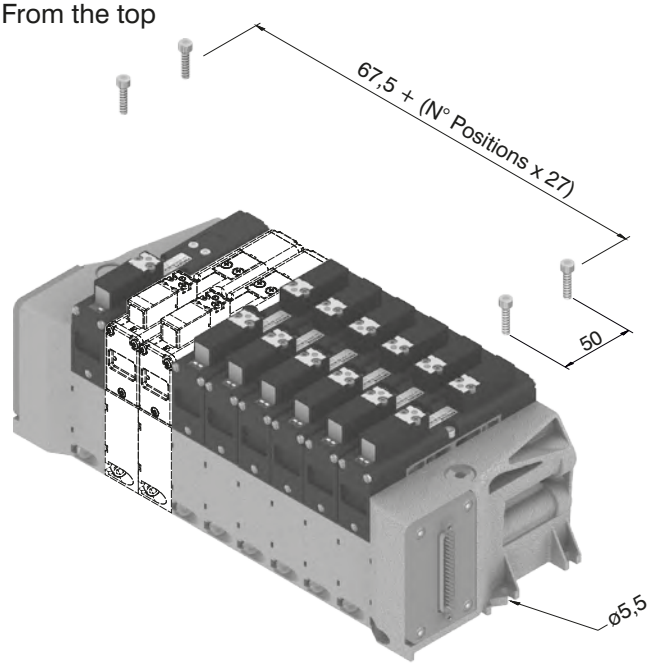
Please note: I/O modules don't allow to connect any additional valves manifold after them.



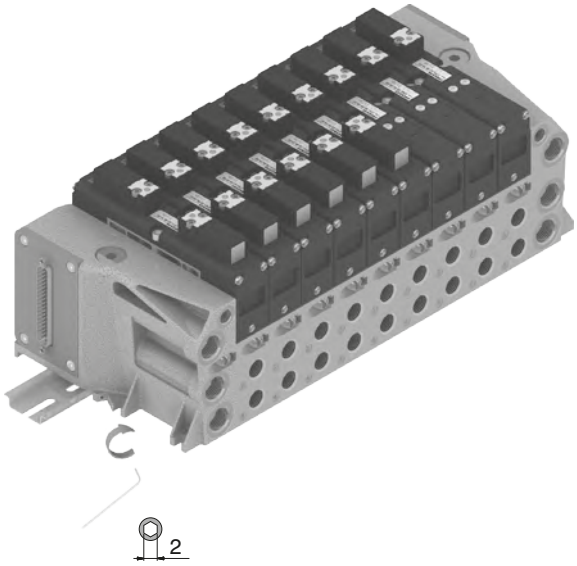
Attention:
Output only

Attention:
No more additions
are possible

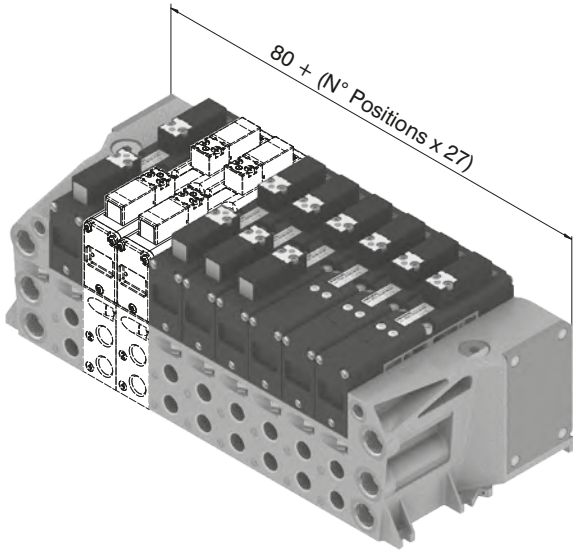
From the top

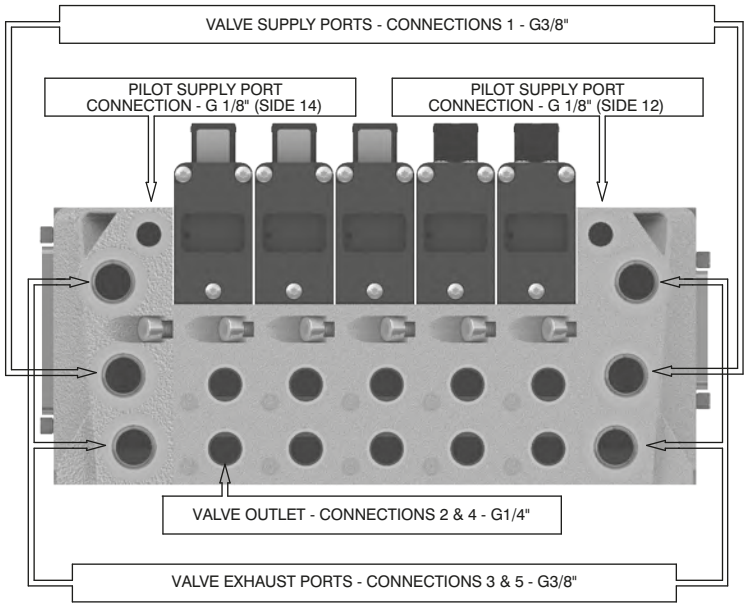


DIN rail fixing



Maximum possible size according to valves seats





1

AIR DISTRIBUTION

Manifold Layout configuration

LEFT ENDPLATE

E2 = 25 poles 2,3 W
E3 = 37 poles 2,3 W
E4 = 25 poles 1W
E5 = 37 poles 1W

RIGHT ENDPLATE

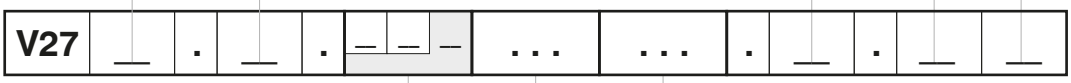
U0 = Closed
U2 = 25 Poles

MULTIPOINT CONNECTION

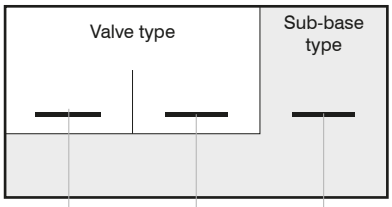
MP = PNP 24 V DC
MN = NPN 24 V DC

I/O MODULE

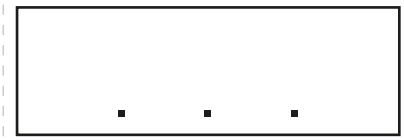
M8
(Requires 25 poles right endplate)



MODUL CONFIGURATION



ACCESSORIES CONFIGURATION



SUB-BASE TYPE

1 = Base type 1 for Monostable
(1 electrical signal occupied)
2 = Base type 2 for Bistable
(2 electrical signals occupied)

ACCESSORIES

X = Diaphragm plug on pipe 1
Y = Diaphragm plug on pipe 3
Z = Diaphragm plug on pipe 5
XY = Diaphragm plug on pipe 1 & 3
ZX = Diaphragm plug on pipe 5 & 1
ZY = Diaphragm plug on pipe 5 & 3
ZXY = Diaphragm plug on pipe 5, 1 & 3

VALVE TYPE:

A = Self-feeding
E = External feeding

SHORT CODE FUNCTION / CONNECTION :

A= 5/2 SOLENOID - SPRING
B= 5/2 SOLENOIS - DIFFERENTIAL
C= 5/2 SOLENOID - SOLENOID
E= 5/3 CC SOLENOID -SOLENOID
F= 2x3/2 NC-NC (= 5/3 OC) SOLENOID -SOLENOID
G= 2x3/2 NO-NO (= 5/3 PC) SOLENOID -SOLENOID
H= 2x3/2 NC-NO SOLENOID -SOLENOID
I= 2x3/2 NO-NC SOLENOID -SOLENOID
T= FREE VALVE SPACE PLUG

NOTE:
While configuring the manifold always be careful that the maximum number of electrical signals available is:
32 when an input 37 poles endplate is used.
22 when an input 25 poles endplate is used.
The use of monostable valve mounted on a base type 2 (2 electrical signals occupied) causes the loss of one electric signal.
In this case the monostable valve can be replaced by a bistable valve. The diaphragms plugs are used to intercept the conduits 1,3 & 5 of the base. If it is necessary to interrupt more than one conduit in the same time then put in line the letters which identifies the position (for exemple : regarding the 3 & 5 conduits, put the Y & Z letters).
Should one or more conduits be cut more than one time it is necessary to add the relevant intermediate Supply/Exhaust module.