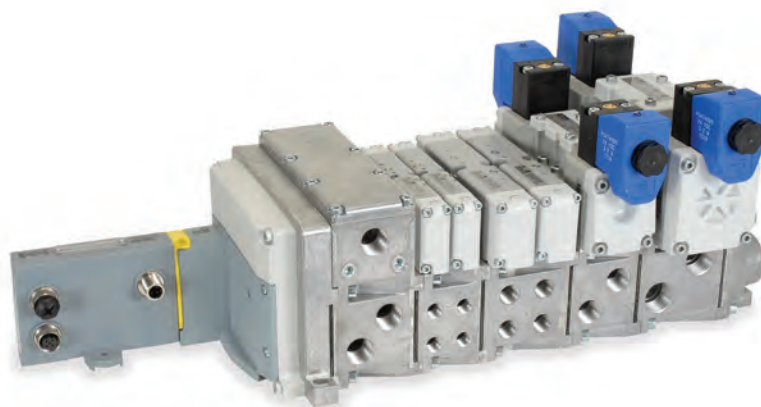
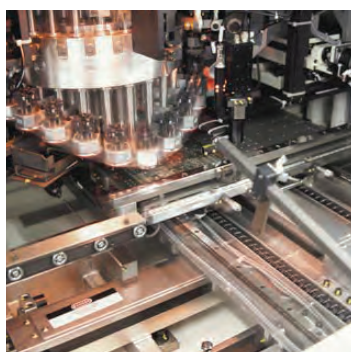
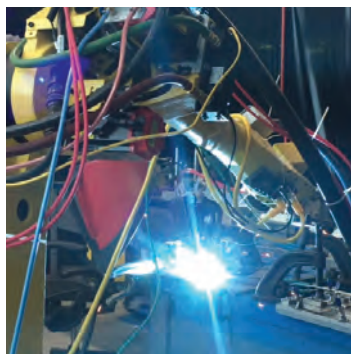




H Series ISO Valve and Network Connectivity

Catalog 0699P



H Series ISO

Plug-in



Non plug-in

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Network Connectivity

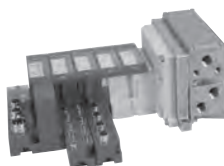
P2M Network Node



H Series Network Portal



P2H Network Node



Turck Network Portal

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**WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".

H Series ISO

The H Series ISO valve conforms to international standards 15407 and 5599, providing maximum flexibility for end users. As Parker's premier manifold mount product offering, H Series ISO offers machine builders a complete offering with a wide variety of accessories and options in a valve family with flow ranges from 0.55 Cv up to 6.0 Cv. HB/HA/H1/H2 can be mounted on the same manifold. Individual wiring is available with DIN or central connectors, and collective solutions offer installation time savings with either multi-pin connectors or network solutions.

Ports, Flow

- H Universal Manifold
 - HB: 1/8 inch, 0.55 Cv
 - HA: 1/4 inch, 1.1 Cv
 - H1: 3/8 inch, 1.5 Cv
 - H2: 1/2 inch, 3.0 Cv
- H Classic Manifold (not compatible with H Universal)
 - H3: 3/4 inch, 6.0 Cv
- NPT and BSPP "G" standard

Solenoids

- HB & HA: 24 VDC, 1.0 Watt, and 120 VAC, 1.0 VA
- H1, H2, & H3: 24 VDC, 3.2 Watt, 120 VAC, 4.5 VA, 24 VDC, 1.3 Watt

Certification / approval

- IP65 rated
- cCSAus approved voltages:
 - 15407-2 & 5599-2 24VDC manifolds only
 - 15407-2 & 5599-2 single subbase, all voltages
 - 15407-1 & 5599-1 manifold and single subbase, all voltages
- BSPP manifold and subbase ports meet ISO 1179 specifications

Operating Pressure

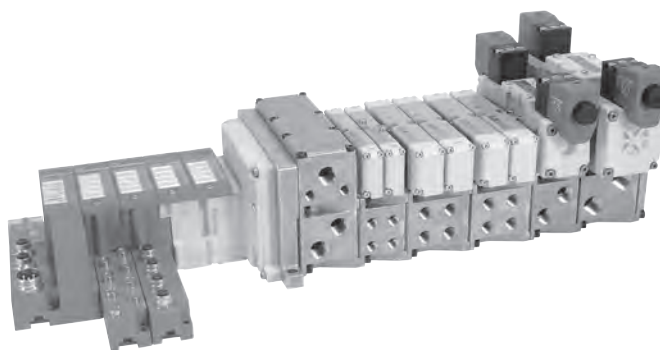
Maximum: 145 PSIG (1000 kPa)

Minimum: see below chart

Operator / function	Internal pilot	PSIG (Min. kPa) HB	PSIG (Min. kPa) HA	PSIG (Min. kPa) H1	PSIG (Min. kPa) H2	PSIG (Min. kPa) H3
1	Single solenoid - 2-position	30	25	25	25	35
2	Double solenoid - 2-position	(207)	(173)	(173)	(173)	(241)
3	Single remote pilot - 2-position **	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
4	Double remote pilot - 2-position**	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
5, 6, 7	Double solenoid - 3-position APB, CE, PC	35	35	35	50	50
		(241)	(241)	(241)	(345)	(345)
8, 9, 0	Double remote pilot - 3-position** APB, CE, PC	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
E	Single solenoid pilot - 2-position					
	Air return / spring assist	30	30	35	45	45
		(207)	(207)	(241)	(310)	(310)
F	Single remote pilot - 2-position**					
	Air return / spring assist					
N, P, Q	Double solenoid - dual 3/2	30	N/A	N/A	N/A	N/A
		(207)				
	External pilot *	*	*	*	*	*
All	H Series	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum

* External Pilot Pressure / Remote Pilot Supply - Must meet or exceed minimum pilot pressure for internal pilot option. Not available on Operator / Function N, P, or Q.

** Must be equal to or greater than operating pressure.



Operating information

Operating pressure:	Vacuum to 145 PSIG (Vacuum to 10 bar)
Pilot pressure:	See chart
Temperature range:	5°F to 120°F (-15°C to 49°C)

Material specifications

Body	Aluminum
End caps	PBT
End plates	Aluminum
Fasteners	Zinc plated steel
Manifolds	Aluminum
Seals	Nitrile
Spool	Aluminum



For inventory, lead times, and kit lookup, visit www.pdnplu.com

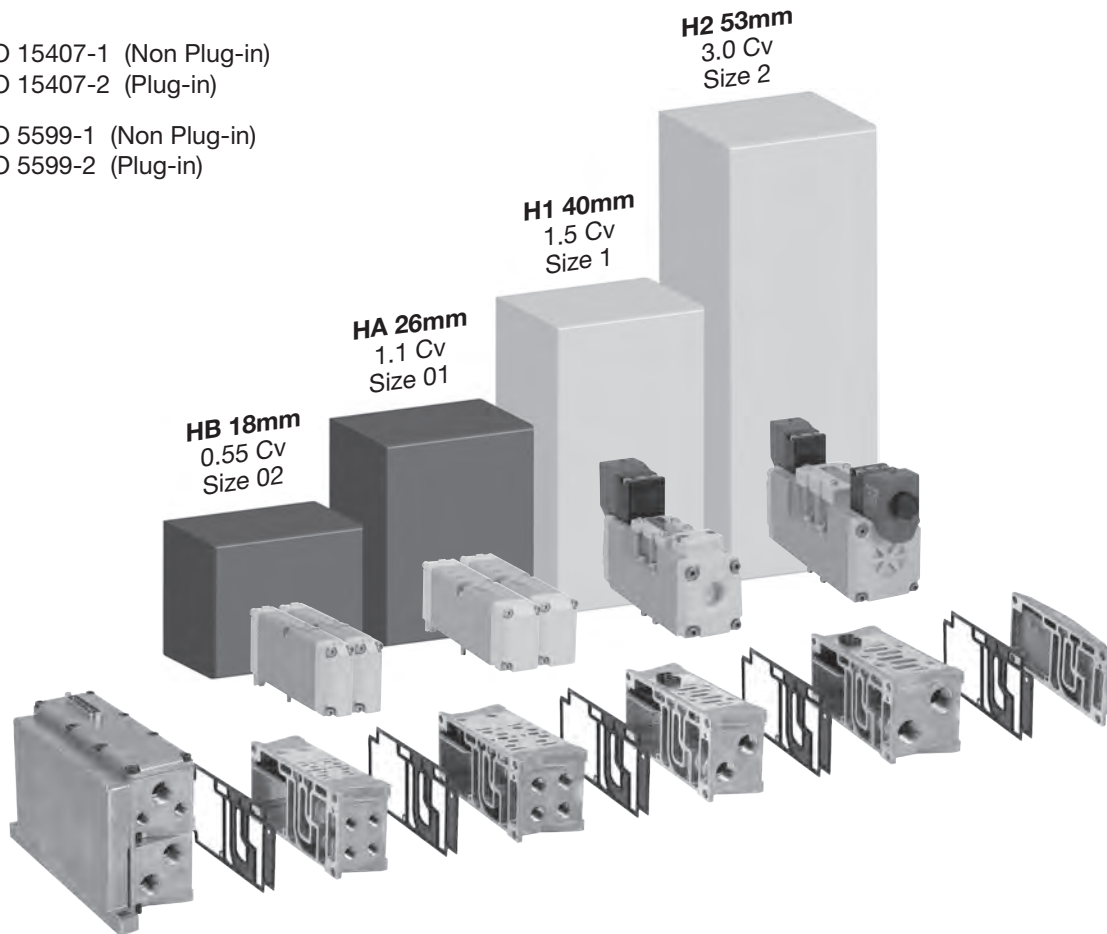
Right Sizing



ISO 15407-1 (Non Plug-in)
ISO 15407-2 (Plug-in)



ISO 5599-1 (Non Plug-in)
ISO 5599-2 (Plug-in)



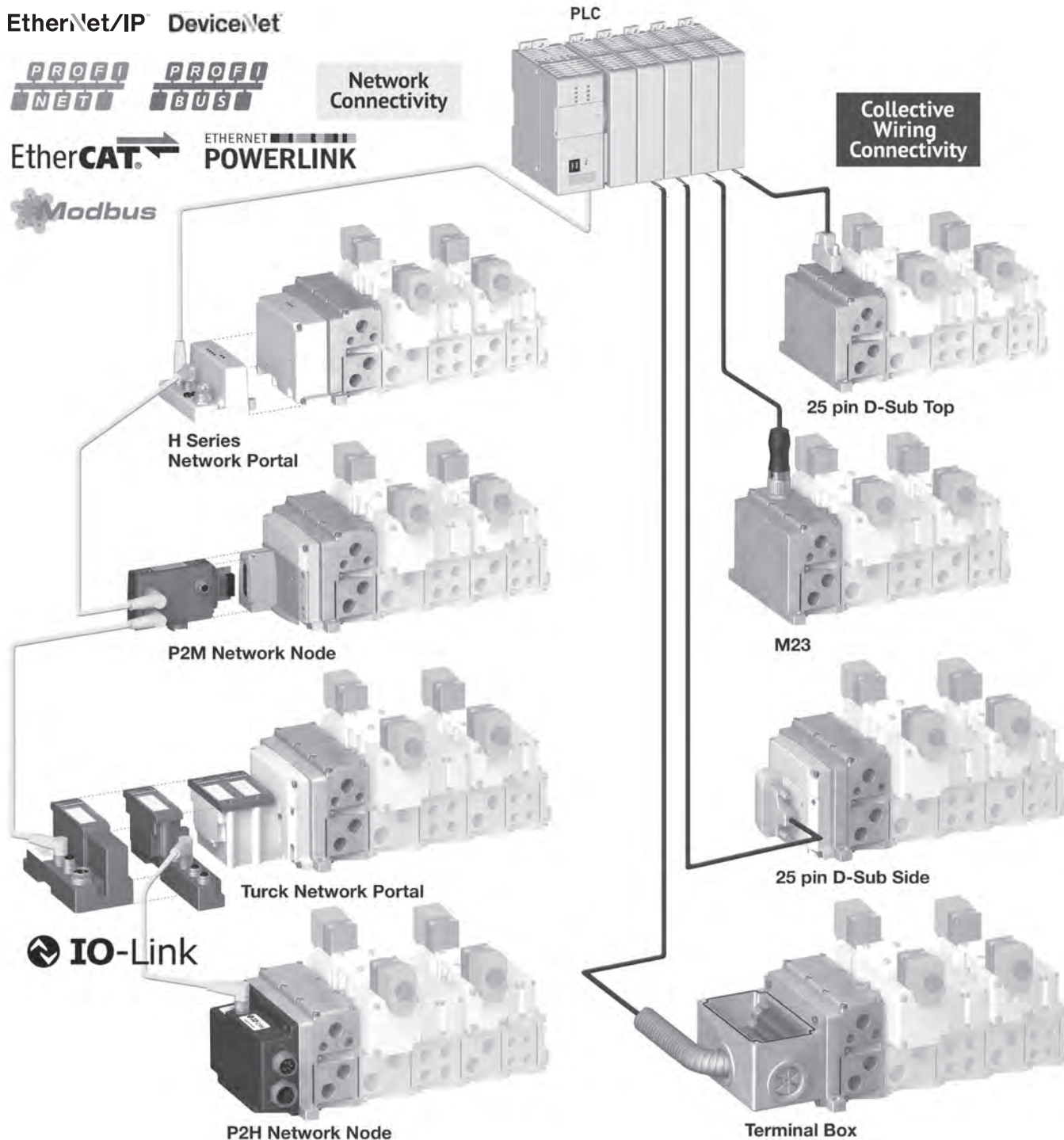
Cylinder Bore Size - inches (mm)

	1-1/4" (32 mm)	1-1/2" (40 mm)	2.00" (50 mm)	2-1/2" (63 mm)	3-1/4" (80 mm)	4.00" (100 mm)	5.00" (125 mm)	6.00" (150 mm)
1.96 (50)	0.03	0.04	0.06	0.10	0.17	0.26	0.41	0.59
3.93 (100)	0.05	0.08	0.13	0.21	0.35	0.53	0.82	1.19
5.90 (150)	0.08	0.12	0.20	0.31	0.52	0.79	1.24	1.78
7.87 (200)	0.10	0.16	0.26	0.41	0.69	1.05	1.64	2.37
9.84 (250)	0.13	0.20	0.33	0.52	0.87	1.32	2.06	2.97
11.81 (300)	0.16	0.25	0.40	0.62	1.05	1.58	2.47	3.56
13.77 (350)	0.18	0.29	0.46	0.72	1.22	1.85	2.88	4.15
15.74 (400)	0.21	0.33	0.53	0.82	1.39	2.11	3.30	4.75
17.71 (450)	0.24	0.37	0.59	0.93	1.57	2.37	3.71	5.34
19.68 (500)	0.26	0.41	0.66	1.03	1.74	2.64	4.12	5.94
	HB		HA		H1	H2	H3	

Cylinder Speed - in/s (mm/s)



Connectivity



Two easy ways to order H Universal

1 Online Configuration

Navigate to the landing page
www.parker.com/pdn/HSeriesISO
 Customize your manifold assembly
 Create and save a unique assembled part number
 Generate a CAD model



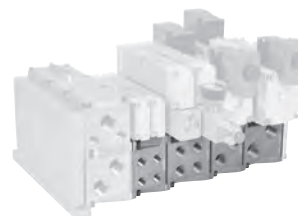
OR

2 Order Components

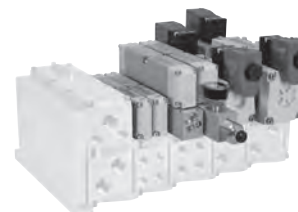
- A Select Endplate Kit**
 Includes Left and Right Hand Endplate



- B Select Valve Manifold Segments**
 Manifold (size HB, HA, H1 or H2)
 Air Supply Module



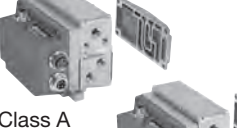
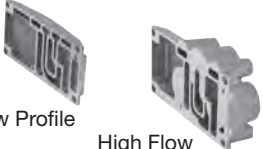
- C Select Valve Stations**
 Valves (size HB, HA, H1 or H2)
 Blanking Plate



- D Select Sandwich Accessories**
 Sandwich Regulators
 Sandwich Flow Control
 Pilot Exhaust

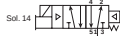
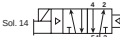
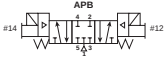
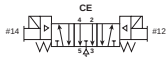
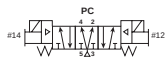
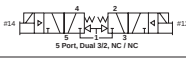


End Plate Kits - Universal for use with HB, HA, H1 H2

	Electrical option	NPT port	BSPP port
	25-pin, D-Sub Side, 24 address	PSHU20L100P	PSHU20L101P
	25-pin, D-Sub Top, 24 address	PSHU20L200P	PSHU20L201P
	19-pin, round, Brad Harrison, 16 address	PSHU20L300P	PSHU20L301P
	12-pin, M23, 8 address	PSHU20L400P	PSHU20L401P
	19-pin, M23, 16 address	PSHU20M200P	PSHU20M201P
	Terminal box, 32 address	PSHU20L500P	PSHU20L501P
	P2M Network Node, 24 address	PSHU20M400P	PSHU20M401P
	H Series Network, with valve driver module, 32 address	PSHU20L600P	PSHU20L601P
	Turck Network with valve driver module, 16 address	PSHU20T100P	PSHU20T101P
	Turck Network with valve driver module, 32 address	PSHU20T200P	PSHU20T201P
 Class A	P2H IO Link Class B, standard version, 24 address	PSHU20N200P	PSHU20N201P
	P2H IO Link Class B, safe version, 24 address	PSHU20S200P	PSHU20S201P
	P2H IO Link Class A, 4-pin safe version, 24 address	PSHU20S400P	PSHU20S401P
	P2H IO Link Class A, 5-pin safe version, 24 address	PSHU20S500P	PSHU20S501P
 Low Profile High Flow	Right hand end plate only, low profile no port	PSHU4000P	—
	Right hand end plate only, high flow 1/2" ports	PSHU4100P	PSHU4101P
	Right hand end plate only, high flow 3/4" ports	PSHU4200P	PSHU4201P

 Most popular.

Valve - 15407-2, Plug-in, Size 18mm (HB)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	0.55	Single solenoid	24 VDC	Internal	HBEVXBG0G9A	HBEVXBH0G9A
					External	HBEVXLG0G9A	HBEVXLH0G9A
				120 VAC	Internal	HBEVXBG023A	HBEVXBH023A
					External	HBEVXLG023A	HBEVXLH023A
				24 VDC	Internal	HB1VXBG0G9A	HB1VXBH0G9A
					External	HB1VXLG0G9A	HB1VXLH0G9A
	4-way, 2-position, air return	0.55	Single solenoid	24 VDC	Internal	HB1VXBG0G9A	HB1VXBH0G9A
					External	HB1VXLG0G9A	HB1VXLH0G9A
				120 VAC	Internal	HB1VXBG023A	HB1VXBH023A
					External	HB1VXLG023A	HB1VXLH023A
	4-way, 2-position	0.55	Double solenoid	24 VDC	Internal	HB2VXBG0G9A	HB2VXBH0G9A
					External	HB2VXLG0G9A	HB2VXLH0G9A
				120 VAC	Internal	HB2VXBG023A	HB2VXBH023A
					External	HB2VXLG023A	HB2VXLH023A
	4-way, 3-position, all ports blocked	0.5	Double solenoid	24 VDC	Internal	HB5VXBG0G9A	HB5VXBH0G9A
					External	HB5VXLG0G9A	HB5VXLH0G9A
				120 VAC	Internal	HB5VXBG023A	HB5VXBH023A
					External	HB5VXLG023A	HB5VXLH023A
	4-way, 3-position, center exhaust	0.5	Double solenoid	24 VDC	Internal	HB6VXBG0G9A	HB6VXBH0G9A
					External	HB6VXLG0G9A	HB6VXLH0G9A
				120 VAC	Internal	HB6VXBG023A	HB6VXBH023A
					External	HB6VXLG023A	HB6VXLH023A
	4-way, 3-position, pressure center	0.5	Double solenoid	24 VDC	Internal	HB7VXBG0G9A	HB7VXBH0G9A
					External	HB7VXLG0G9A	HB7VXLH0G9A
				120 VAC	Internal	HB7VXBG023A	HB7VXBH023A
					External	HB7VXLG023A	HB7VXLH023A
	3-way, 2-position, dual valve, NC/NC	0.45	Double solenoid	24 VDC	Internal	HBNVXBG0G9A	HBNVXBH0G9A
				120 VAC	Internal	HBNVXBG023A	HBNVXBH023A
	3-way, 2-position, dual valve, NO/NO	0.45	Double solenoid	24 VDC	Internal	HBPVXBG0G9A	HBPVXBH0G9A
				120 VAC	Internal	HBPVXBG023A	HBPVXBH023A

Manifold Base - 2-Station, 15407-2, Plug-in, Size 18mm (HB)

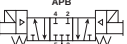
End ported bases	Enclosure / Lead length	Solenoid addresses	1/8" NPT	1/8" BSPP
	Circuit board	Single solenoid - 2 address	PSHU1151J1P	PSHU1152J1P
	Circuit board	Double solenoid - 4 addresses	PSHU1151M1P	PSHU1152M1P

Accessories - 15407-2, Plug-in, Size 18mm (HB)

Accessories		Description	Part number	
	Gauge adapter kit	Includes 1/8" coupling, long nipple, and gauge	PS5651160P	
	Blanking plate kit		PS5634P	
	Sandwich flow control for individual valve		PS5635P	
	Sandwich regulator		Common pressure	Independent pressure
		2-60 PSIG w/ gauge	PS5638155P	PS5638255P
		5-125 PSIG w/ gauge	PS5638166P	PS5638266P
	Sandwich module		Supply module	Exhaust module
		1/8" NPT	PS561600P	PS561700P
		1/8" BSPP	PS561601P	PS561701P

 Most popular.

Valve - 15407-2, Plug-in, Size 26mm (HA)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	1.1	Single solenoid	24 VDC	Internal	HAEVXBG0G9A	HAEVXBH0G9A
					External	HAEVXLG0G9A	HAEVXLH0G9A
				120 VAC	Internal	HAEVXBG023A	HAEVXBH023A
					External	HAEVXLG023A	HAEVXLH023A
				24 VDC	Internal	HA1VXBG0G9A	HA1VXBH0G9A
					External	HA1VXLG0G9A	HA1VXLH0G9A
	4-way, 2-position, air return	1.1	Single solenoid	24 VDC	Internal	HA1VXBG0G9A	HA1VXBH0G9A
					External	HA1VXLG0G9A	HA1VXLH0G9A
				120 VAC	Internal	HA1VXBG023A	HA1VXBH023A
					External	HA1VXLG023A	HA1VXLH023A
				24 VDC	Internal	HA2VXBG0G9A	HA2VXBH0G9A
					External	HA2VXLG0G9A	HA2VXLH0G9A
	4-way, 2-position	1.1	Double solenoid	24 VDC	Internal	HA2VXBG0G9A	HA2VXBH0G9A
					External	HA2VXLG0G9A	HA2VXLH0G9A
				120 VAC	Internal	HA2VXBG023A	HA2VXBH023A
					External	HA2VXLG023A	HA2VXLH023A
				24 VDC	Internal	HA5VXBG0G9A	HA5VXBH0G9A
					External	HA5VXLG0G9A	HA5VXLH0G9A
	4-way, 3-position, all ports blocked	1.0	Double solenoid	24 VDC	Internal	HA5VXBG023A	HA5VXBH023A
					External	HA5VXLG023A	HA5VXLH023A
				120 VAC	Internal	HA5VXBG023A	HA5VXBH023A
					External	HA5VXLG023A	HA5VXLH023A
				24 VDC	Internal	HA6VXBG0G9A	HA6VXBH0G9A
					External	HA6VXLG0G9A	HA6VXLH0G9A
	4-way, 3-position, center exhaust	1.0	Double solenoid	24 VDC	Internal	HA6VXBG023A	HA6VXBH023A
					External	HA6VXLG023A	HA6VXLH023A
				120 VAC	Internal	HA6VXBG023A	HA6VXBH023A
					External	HA6VXLG023A	HA6VXLH023A
				24 VDC	Internal	HA7VXBG0G9A	HA7VXBH0G9A
					External	HA7VXLG0G9A	HA7VXLH0G9A
	4-way, 3-position, pressure center	1.0	Double solenoid	24 VDC	Internal	HA7VXBG023A	HA7VXBH023A
					External	HA7VXLG023A	HA7VXLH023A
				120 VAC	Internal	HA7VXBG023A	HA7VXBH023A
					External	HA7VXLG023A	HA7VXLH023A

Single Subbase - 15407-2, Plug-in, Size 26mm (HA)

Enclosure / Lead length	Solenoid addresses	1/4" NPT	1/4" BSPP
 Terminal strip in the base	Double solenoid - 2 addresses	PS551113CP	PS551114CP

Manifold Base - 2-Station, 15407-2, Plug-in, Size 26mm (HA)

End port bases	Enclosure / Lead length	Solenoid addresses	1/4" NPT	1/4" BSPP
	Circuit board	Single solenoid - 2 address	PSHU1153J1P	PSHU1154J1P
	Circuit board	Double solenoid - 4 addresses	PSHU1153M1P	PSHU1154M1P

Accessories - 15407-2, Plug-in, Size 26mm (HA)

Accessories	Description	Part number
 Gauge adapter kit	Includes 1/8" coupling, long nipple, and gauge	PS5651160P
 Blanking plate kit		PS5534P
 Sandwich flow control for individual valve		PS5535P
 Sandwich regulator	Common pressure	Independent pressure
	2-60 PSIG w/ gauge PS5538155P	PS5538255P
 Sandwich module	5-125 PSIG w/ gauge PS5538166P	PS5538266P
	Supply module	Exhaust module
 Sandwich module	1/4" NPT PS552600P	PS552700P
	1/4" BSPP PS552601P	PS552701P

Most popular.

For inventory, lead times, and kit
lookup, visit www.pdnplu.com

Valve - 5599-2, Plug-in, Size 1 (H1)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	1.5	Single solenoid	24 VDC	Internal	H1EVXBG0B9D	H1EVXBH0B9D
					External	H1EVXXG0B9D	H1EVXXH0B9D
					Internal	H1EVXBG023D	H1EVXBH023D
					External	H1EVXXG023D	H1EVXXH023D
	4-way, 2-position, air return	1.5	Single solenoid	24 VDC	Internal	H11VXBG0B9D	H11VXBH0B9D
					External	H11VXXG0B9D	H11VXXH0B9D
					Internal	H11VXBG023D	H11VXBH023D
					External	H11VXXG023D	H11VXXH023D
	4-way, 2-position	1.5	Double solenoid	24 VDC	Internal	H12VXBG0B9D	H12VXBH0B9D
					External	H12VXXG0B9D	H12VXXH0B9D
				120 VAC	Internal	H12VXBG023D	H12VXBH023D
					External	H12VXXG023D	H12VXXH023D
				24 VDC	Internal	H15VXBG0B9D	H15VXBH0B9D
					External	H15VXXG0B9D	H15VXXH0B9D
	4-way, 3-position, all ports blocked	1.2	Double solenoid	24 VDC	Internal	H15VXBG023D	H15VXBH023D
					External	H15VXXG023D	H15VXXH023D
				120 VAC	Internal	H16VXBG0B9D	H16VXBH0B9D
					External	H16VXXG0B9D	H16VXXH0B9D
				24 VDC	Internal	H16VXBG023D	H16VXBH023D
					External	H16VXXG023D	H16VXXH023D
	4-way, 3-position, center exhaust	1.2	Double solenoid	24 VDC	Internal	H17VXBG0B9D	H17VXBH0B9D
					External	H17VXXG0B9D	H17VXXH0B9D
				120 VAC	Internal	H17VXBG023D	H17VXBH023D
					External	H17VXXG023D	H17VXXH023D
				24 VDC	Internal	H17VXBG023D	H17VXBH023D
					External	H17VXXG023D	H17VXXH023D

Single Subbase - 5599-2, Plug-in, Size 1 (H1)

Side ported	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Terminal strip in base	Double solenoid - 2 addresses	PS401115CDP	PS401116CDP
	6" flying leads	Double solenoid - 2 addresses	PS401115ADP	PS401116ADP
	4-pin, M12 micro connector in base, SAE / Ford wiring	Double solenoid - 2 addresses	PS4011158FDP	PS4011168FDP

Manifold Base - 5599-2, Plug-in, Size 1 (H1)

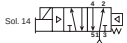
End Ported	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Circuit board	Single solenoid - 1 address	PSHU1155J1P	PSHU1156J1P
	Circuit board	Double solenoid - 2 addresses	PSHU1155M1P	PSHU1156M1P

Accessories - 5599-2, Size 1 (H1)

Accessory	Description	Part number
	Common pressure 5-125 PSIG w/ gauge	PS4038166CP
	Independent pressure 5-125 PSIG w/ gauge	PS4038266CP
	Blanking plate kit	PS4034CP
	Sandwich flow control	PS4035CP
	A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	

 Most popular.

Valve - 5599-2, Plug-in, Size 2 (H2)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	3.0	Single solenoid	24 VDC	Internal	H2EVXBG0B9D	H2EVXBH0B9D
					External	H2EVXXG0B9D	H2EVXXH0B9D
				120 VAC	Internal	H2EVXBG023D	H2EVXBH023D
					External	H2EVXXG023D	H2EVXXH023D
	4-way, 2-position, air return	3.0	Single solenoid	24 VDC	Internal	H21VXBG0B9D	H21VXBH0B9D
					External	H21VXXG0B9D	H21VXXH0B9D
				120 VAC	Internal	H21VXBG023D	H21VXBH023D
					External	H21VXXG023D	H21VXXH023D
	4-way, 2-position	3.0	Double solenoid	24 VDC	Internal	H22VXBG0B9D	H22VXBH0B9D
					External	H22VXXG0B9D	H22VXXH0B9D
				120 VAC	Internal	H22VXBG023D	H22VXBH023D
					External	H22VXXG023D	H22VXXH023D
	4-way, 3-position, all ports blocked	2.8	Double solenoid	24 VDC	Internal	H25VXBG0B9D	H25VXBH0B9D
					External	H25VXXG0B9D	H25VXXH0B9D
				120 VAC	Internal	H25VXBG023D	H25VXBH023D
					External	H25VXXG023D	H25VXXH023D
	4-way, 3-position, center exhaust	2.8	Double solenoid	24 VDC	Internal	H26VXBG0B9D	H26VXBH0B9D
					External	H26VXXG0B9D	H26VXXH0B9D
				120 VAC	Internal	H26VXBG023D	H26VXBH023D
					External	H26VXXG023D	H26VXXH023D
	4-way, 3-position, pressure center	2.8	Double solenoid	24 VDC	Internal	H27VXBG0B9D	H27VXBH0B9D
					External	H27VXXG0B9D	H27VXXH0B9D
				120 VAC	Internal	H27VXBG023D	H27VXBH023D
					External	H27VXXG023D	H27VXXH023D

Single Subbase - 5599-2, Plug-in, Size 2 (H2)

Side ported base	Enclosure / Lead length	Solenoid addresses	1/2" NPT	1/2" BSPP
	Terminal strip in base	Double solenoid - 2 address	PS411117CCP	PS411118CCP
	6" flying leads	Double solenoid - 2 addresses	PS411117ACP	PS411118ACP

Manifold Base - 5599-2, Plug-in, Size 2 (H2)

End Ported	Enclosure / Lead length	Solenoid addresses	1/2" NPT	1/2" BSPP
	Circuit board	Single solenoid - 1 address	PSHU1157J1P	PSHU1158J1P
	Circuit board	Double solenoid - 2 addresses	PSHU1157M1P	PSHU1158M1P

Accessories - 5599-2, Size 2 (H2)

Accessory	Description	Part number
	Common pressure 5-125 PSIG w/ gauge	PS4138166CP
	Independent pressure 5-125 PSIG w/ gauge	PS4138266CP
	Blanking plate kit	PS4134CP
	Sandwich flow control	PS4135CP
	A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	

 Most popular.

End Plate Kit - Universal Plug-in

PSHU20 L1 0 0 P

Valve Type	
Plug-in (internal pilot)	PSHU20
Plug-in (external pilot)	PSHU2X

Thread Type	
0	NPT
1*	BSPG "G"

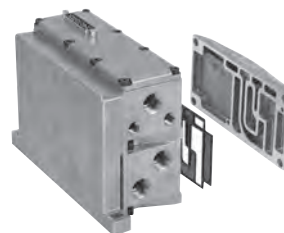
* BSPG conforms to ISO 1179-1 w 228-1 threads

Left Hand End Plate Type †	
25-Pin, D-Sub (side)	L1
25-Pin, D-Sub (top)	L2
19-Pin, Round, Brad Harrison	L3
12-Pin, M23	L4
32-Point Terminal Strip	L5
H Series Network, with valve driver module ‡	L6
19-Pin, M23	M2
P2M Network Node ‡	M4
P2H IO Link Class B, 24 Address, Standard Version	N2
P2H IO Link Class B, 24 Address, Safe Version	S2
P2H IO Link Class A, 24 Address, 4-Pin, Safe Version	S4
P2H IO Link Class A, 24 Address, 5-Pin, Safe Version	S5
Turck Network with valve driver module - 16 outputs ‡	T1
Turck Network with valve driver module - 32 outputs ‡	T2

Right Hand End Plate Type / Port	
0	Low profile (no ports)
1	1/2 Exhaust and inlet port
2	3/4 Exhaust and inlet port

† PSHU11P gaskets included in each end plate kit.

‡ Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately. See Network Connectivity section for more information.



25-pin D-Sub (top) with
low profile end plate shown
3.97 Cv

Hi-flow - Right Hand End Plates



1/2" ports
6.07 Cv



3/4" ports
8.35 Cv

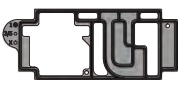
Optional Installation Bracket



PSHU60P

See Technical section
for more details

Gasket Kit - Universal Manifold to Manifold

Description		Part number
 1 – Supply & Exhaust & Pilots Open  5 – Supply & Exhaust Open, Pilots Closed	Pilots opened	PSHU11P
		PSHU12P
		PSHU13P
		PSHU14P
 2 – Supply Closed, Exhaust & Pilots Open  6 – Supply & Pilots Closed, Exhaust Open  3 – Supply & Exhaust Closed, Pilots Open  7 – Supply & Exhaust & Pilots Closed  4 – Supply & Pilots Open, Exhaust Closed  8 – Supply Open, Exhaust & Pilots Closed	Pilots blocked	PSHU15P
		PSHU16P
		PSHU17P
		PSHU18P

Valve - 15407-2 Plug-in, Size 18mm (HB) & 26mm (HA)

HB 1 VX B G 0 G9 A

Basic Series 15407-2	
ISO 15407-2 18mm	HB
ISO 15407-2 26mm	HA

15407-2 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E
Double solenoid, dual 3/2, NC/NC	N*
Double solenoid, dual 3/2, NO/NO	P*
Double solenoid, dual 3/2, 14 end NC - 12 end NO	Q*

* Available on HB Only, must use Internal Pilot Source Option "B".

15407-2 Voltage & Frequency			
	AC	DC	Light & surge suppression
	60Hz	50Hz	
G9			24
23	120	115	

15407-2 Enclosure / Lead length	
0	Valve less base

15407-2 Overrides / Lights	
G	Non-locking, flush, push - w/ light
H	Locking, flush, push / turn - w/ light

15407-2 Pilot Source / Pilot Exhaust	
B	Internal pilot, port #1 / vented
L*	External pilot, port #14 / vented

* Must be specified when using Sandwich Regulators.

Mounting
15407-2 Valve less base VX



HB 18mm Valve shown

Valve - 5599-2 Plug-in, Size H1 & H2

H1 E VX B G 0 B9 D

Basic series 5599-2	
ISO 5599-2 Size 1	H1
ISO 5599-2 Size 2	H2

5599-2 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-2 Voltage & Frequency			
	AC	DC	Light & surge suppression
	60Hz	50Hz	
42	24		
45		12	
B9		24	LED & suppression, 3.2 watt
F9		24	LED & suppression, 1.3 watt
23	120	115	
57*	240		

* Single subbase only. Not available for 5599-2 manifold mount.

5599-2 Enclosure / Lead length	
0	None, valve less base

5599-2 Overrides / Lights		
	Voltage code	
B	42, 45, 57	Non-locking, flush, push - w/o light
C	42, 45, 57	Locking, flush, push / turn - w/o light
G	B9, F9, 23	Non-locking, flush, push - w/ light
H	B9, 23	Locking, flush, push / turn - w/ light

5599-2 Mounting	
5599-2 Valve less base	VX

5599-2 Pilot source / Pilot exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.



H1 Valve shown

Most popular.

Manifold Kit - Universal Plug-in

PSHU1153

J

1

P

Mounting Style / Port Size

HB manifold with 1/8 NPT end ports

PSHU1151

HB manifold with 1/8 BSPP end ports

PSHU1152*

HA manifold with 1/4 NPT end ports

PSHU1153

HA manifold with 1/4 BSPP end ports

PSHU1154*

H1 manifold with 3/8 NPT end ports

PSHU1155

H1 manifold with 3/8 BSPP end ports

PSHU1156*

H2 manifold with 1/2 NPT end ports

PSHU1157

H2 manifold with 1/2 BSPP end ports

PSHU1158*

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Gasket Options

1

1,3,5 ports open and pilots open

2

1,3,5 ports closed and pilots open

3

1 closed, 3,5 ports open and pilots open

4

1 port open, 3,5 ports closed and pilots open

5

1,3,5 ports open and pilots closed

6

1,3,5 ports closed and pilots closed

7

1 closed, 3,5 ports open and pilots closed

8

1 port open, 3,5 ports closed and pilots closed

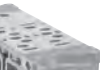
Circuit Board Address Configuration

J

Interconnect, Single Address

M

Interconnect, Double Address





HA manifold shown

Intermediate Air Supply - Universal Plug-in

PSHU115A

T

1

P

Mounting Style / Port Size

Intermediate air supply, NPT / internal pilot	PSHU115A
Intermediate air supply, BSPP / internal pilot	PSHU115B*
Intermediate air supply, NPT / external pilot	PSHU115C
Intermediate air supply, BSPP / external pilot	PSHU115D*

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Gasket Options

1	1,3,5 ports open and pilots open
2	1,3,5 ports closed and pilots open
3	1 closed, 3,5 ports open and pilots open
4	1 port open, 3,5 ports closed and pilots open
5	1,3,5 ports open and pilots closed
6	1,3,5 ports closed and pilots closed
7	1 closed, 3,5 ports open and pilots closed
8	1 port open, 3,5 ports closed and pilots closed

Circuit Board Address Configuration

T	With electrical pass through
E	With electrical expansion to 25th address



Intermediate air supply module shown

Subbase Kit - Plug-in

PS55

Series	
HA Subbase	PS55
H1 Subbase	PS40
H2 Subbase	PS41

1113

Mounting Style / Port Size	
HA Series	
1/4 NPT side ports	1113
1/4 BSPP side ports	1114*
1/4 NPT bottom / side ports	1123
1/4 BSPP bottom / side ports	1124*
H1 Series	
3/8 NPT side ports	1115
3/8 BSPP side ports	1116*
H2 Series	
1/2 NPT side ports	1117
1/2 BSPP side ports	1118*

C

Wiring Options	
Blank	None
C ‡	Chrysler
F ‡	SAE / Ford
G ‡	General Motors

Enclosures / Lead Length	
Individually Wired Base*	
7 ‡	3-Pin mini connector in base
8 ‡	4-Pin M12 micro connector in base
9 ‡	5-Pin mini connector in base
A ‡	6" Leads
C	Terminal block

Engineering Level	
Blank	HA Series
D	H1 Series
C	H2 Series

P

* BSPP conforms to ISO 1179-1 w 228-1 threads.

‡ Not available on HA series.



HA subbase shown

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Sandwich Regulator - 15407-2, Plug-in,

PS5638

1

6

6

P

Basic Series	
HB 15407-2, 18mm, Plug-in	PS5638
HA 15407-2, 26mm, Plug-in	PS5538

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

#4 Port Regulator / Gauge*	
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

Ordering Components

- Sandwich Regulator Kit configured for Internal Pilot as standard.
- Order valve as External Pilot.



HB - 18mm
(Independent Dual Port Regulator shown)



HA - 26mm
(Common Port Regulator shown)

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator HA, HB
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

Sandwich Regulator Cv Flow Chart*

	Common Pressure Code 166				Dual Pressure Code 266			
	1-2	1-4	2-3	4-5	1-2	1-4	2-3	4-5*
HB	0.20	0.20	0.41	0.34	0.23	0.19	0.28	0.27
HA	0.41	0.43	0.87	0.89	0.42	0.45	0.68	0.66

* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

Sandwich Regulator - 5599-2, Plug-in,

PS4038 1 6 6 C P

Basic Series	
H1 5599-2, Plug-in	PS4038
H2 5599-2, Plug-in	PS4138

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

#4 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

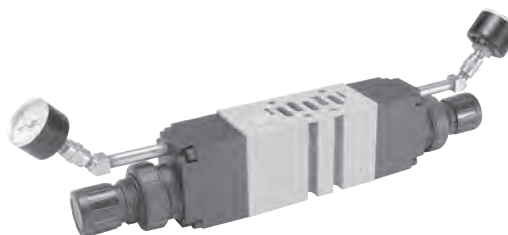
** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

Ordering Components

- Sandwich Regulator Kit configured for Internal Pilot as standard.
- Order valve as External Pilot.



H1 - Size 1
 (Independent Dual Port Regulator shown)



H2 - Size 2
 (Independent Dual Port Regulator shown)

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator H1, H2

Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H1, H2

An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

	Common Pressure Code 166				Single Pressure 2 Code 206				Single Pressure 4 Code 260				Dual Pressure Code 266			
	1-2	1-4	2-3	4-5	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H1	0.62	0.61	1.28	1.18	0.73	0.96	0.96	0.93	0.34	0.70	0.94	0.98	0.52	0.48	0.86	0.88
H2	1.47	1.60	2.41	2.33	1.71	1.90	1.52	1.75	1.74	1.67	1.73	1.79	1.61	1.62	1.50	1.67

* Regulator Port exhaust through Base Port 3.

Note: All Cv's calculated with regulator adjusted full open.

Add-A-Fold - Universal Plug-in

AA

HU20

L1

0

0

P

04

Valve Type

Plug-in (internal)AAHU20

Plug-in (external)AAHU2X

Left Hand End Plate Type †

25-Pin, D-Sub (side)L1

25-Pin, D-Sub (top)L2

19-Pin, Round, Brad HarrisonL3

12-Pin, M23L4

32-Point Terminal StripL5

H Series Network, with valve driver moduleL6

19-Pin, M23M2

P2M Network NodeM4

P2H IO Link Class B, 24 Address, Standard VersionN2

P2H IO Link Class B, 24 Address, Safe VersionS2

P2H IO Link Class A, 24 Address, 4-Pin, Safe VersionS4

P2H IO Link Class A, 24 Address, 5-Pin, Safe VersionS5

Turck Network with valve driver module - 16 outputsT1

Turck Network with valve driver module - 32 outputsT2

Number of Segments

01

↓

32

Thread Type

0NPT

1*BSPP “G”

* BSPP Conforms to ISO 1179-1 w 228-1 Threads

Right Hand End Plate Type / Port

0Low profile (no ports)

11/2 Exhaust and inlet port

23/4 Exhaust and inlet port

* 120VAC is not CSA rated. Not available with 240VAC coils.

Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately. See Network Connectivity section for more information.

† (1) PSHU11P gasket included in each end plate kit.

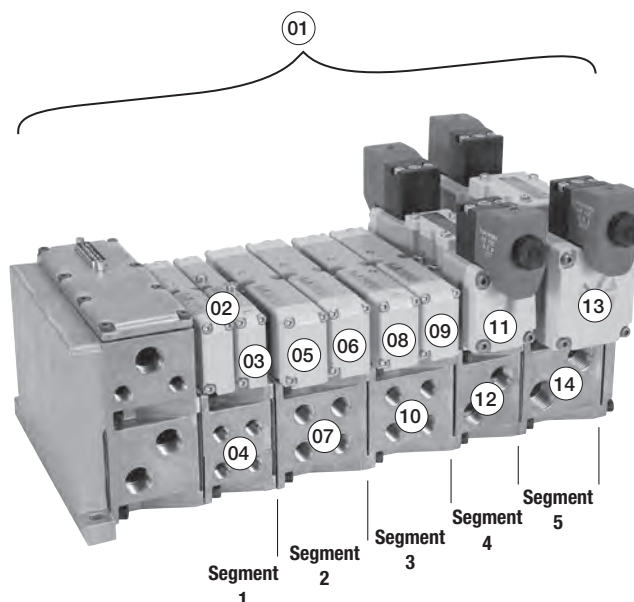
How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

Example

Application requires a 5 segment manifold.

Item	Part No.	Location	
01	AAHUL200P05		
02	HB2VXBG0G9A	Segment 1	Valve station 1
03	HB2VXBG0G9A		Valve station 2
04	PSHU1151M1P		Manifold base
05	HA1VXBG0G9A	Segment 2	Valve station 3
06	HA2VXBG0G9A		Valve station 4
07	PSHU1153M1P		Manifold base
08	HA1VXBG0G9A	Segment 3	Valve station 5
09	HA2VXBG0G9A		Valve station 6
10	PSHU1153M1P		Manifold base
11	H12VXBG0B9A	Segment 4	Valve station 7
12	PSHU1155M1P		Manifold base
13	H22VXBG0B9A	Segment 5	Valve station 8
14	PSHU1157M1P		Manifold base



Example:
5 segment manifold with (2) HB, (4) HA, (1) H1, and (1) H2 valve on manifold bases with 25-pin, D-Sub end plate.

End Plate Kit - Plug-in, 5599-2, Size 3 (H3) * Not compatible with H Universal

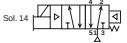
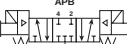
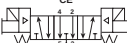
Electrical option		NPT port	BSPP port
	No connector - use with individually wired base	PS4231010DP	PS4231011DP
	25-pin, D-sub	PS4220L20DP	PS4220L21DP
	19-pin, round, Brad Harrison	PS4220L30DP	PS4220L31DP
	12-pin, M23	PS4220L40DP	PS4220L41DP
	19-pin, M23	PS4220M20DP	PS4220M21DP
	P2M Network Node	PS4220M40DP	PS4220M41DP
	H Series Network, with valve driver module	PS4220L60DP	PS4220L61DP
	Turck Network with valve driver module - 16 address	PS4220T10DP	PS4220T11DP
	Turck Network with valve driver module - 24 address	PS4220T20DP	PS4220T21DP
	P2H IO Link Class B, standard version, 24 address	PS4220N20DP	PS4220N21DP
	P2H IO Link Class B, safe version, 24 address	PS4220S20DP	PS4220S21DP
	P2H IO Link Class A, 4-pin safe version, 24 address	PS4220S40DP	PS4220S41DP
	P2H IO Link Class A, 5-pin safe version, 24 address	PS4220S50DP	PS4220S51DP

Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately.
See Network Connectivity Section for more information.

Note:

For cable part numbers and pin out information see Network Connectivity Accessories.

Valve - 5599-2, Plug-in, Size 3 (H3) * Not compatible with H Universal

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	Internal	H3EVXBG0B9D	H3EVXBH0B9D
					External	H3EVXXG0B9D	H3EVXXH0B9D
				120 VAC	Internal	H3EVXBG023D	H3EVXBH023D
					External	H3EVXXG023D	H3EVXXH023D
				24 VDC	Internal	H31VXBG0B9D	H31VXBH0B9D
					External	H31VXXG0B9D	H31VXXH0B9D
	4-way, 2-position, air return	6.0	Single solenoid	24 VDC	Internal	H31VXBG0B9D	H31VXBH0B9D
					External	H31VXXG0B9D	H31VXXH0B9D
				120 VAC	Internal	H31VXBG023D	H31VXBH023D
					External	H31VXXG023D	H31VXXH023D
				24 VDC	Internal	H32VXBG0B9D	H32VXBH0B9D
					External	H32VXXG0B9D	H32VXXH0B9D
	4-way, 2-position	6.0	Double solenoid	24 VDC	Internal	H32VXBG0B9D	H32VXBH0B9D
					External	H32VXXG0B9D	H32VXXH0B9D
				120 VAC	Internal	H32VXBG023D	H32VXBH023D
					External	H32VXXG023D	H32VXXH023D
				24 VDC	Internal	H35VXBG0B9D	H35VXBH0B9D
					External	H35VXXG0B9D	H35VXXH0B9D
	4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	Internal	H35VXBG023D	H35VXBH023D
					External	H35VXXG023D	H35VXXH023D
				120 VAC	Internal	H36VXBG0B9D	H36VXBH0B9D
					External	H36VXXG0B9D	H36VXXH0B9D
				24 VDC	Internal	H36VXBG023D	H36VXBH023D
					External	H36VXXG023D	H36VXXH023D
	4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	Internal	H37VXBG0B9D	H37VXBH0B9D
					External	H37VXXG0B9D	H37VXXH0B9D
				120 VAC	Internal	H37VXBG023D	H37VXBH023D
					External	H37VXXG023D	H37VXXH023D
				24 VDC	Internal	H37VXBG0B9D	H37VXBH0B9D
					External	H37VXXG0B9D	H37VXXH0B9D
	4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	Internal	H37VXBG023D	H37VXBH023D
					External	H37VXXG023D	H37VXXH023D
				120 VAC	Internal	H37VXBG023D	H37VXBH023D
					External	H37VXXG023D	H37VXXH023D
				24 VDC	Internal	H37VXBG0B9D	H37VXBH0B9D
					External	H37VXXG0B9D	H37VXXH0B9D

Subbase - Single 5599-2, Plug-in, Size 3 (H3)

Side ported base	Enclosure / Lead length	Solenoid addresses	3/4" NPT	3/4" BSPP
	Terminal strip in base	Double solenoid - 2 address	PS421119CCP	PS421110CCP
	6" flying leads	Double solenoid - 2 addresses	PS421119ACP	PS421110ACP

Manifold Base - 5599-2, Plug-in, Size 3 (H3) * Not compatible with H Universal

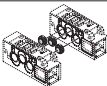
Bottom / End ported bases	Enclosure / Lead length	Solenoid addresses	3/4" NPT	3/4" BSPP
	Circuit board	Double solenoid - 2 addresses	PS421169MCP	PS421160MCP
	Terminal strip in base	Double solenoid - 2 address	PS421169CCP	PS421160CCP
	6" flying leads	Double solenoid - 2 addresses	PS421169ACP	PS421160ACP
End Ported	Enclosure / Lead length	Solenoid addresses	3/4" NPT	3/4" BSPP
	Circuit board	Double solenoid - 2 addresses	PS421159MCP	PS421150MCP
	Terminal strip in base	Double solenoid - 2 address	PS421159CCP	PS421150CCP
	6" flying leads	Double solenoid - 2 addresses	PS421159ACP	PS421150ACP

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Accessories - 5599-2, Size 3 (H3) * Not compatible with H Universal

Accessory	Description	Part number
	Common pressure 5-125 PSIG w/ gauge	PS4238166CP
	Independent pressure 5-125 PSIG w/ gauge	PS4238266CP
	Blanking plate kit	PS4234CP
	Sandwich flow control A Sandwich Flow Control and Common Port Sandwich Regulator may be used together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	PS4235CP
	Manifold to manifold gasket kits	PS4213P
	Main galley (1, 3, 5)	PS4232CP
	Pilot galley	PS4033CP

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

End Plate Kit - Plug-in, 5599-2, Size 3 (H3) * Not compatible with H Universal

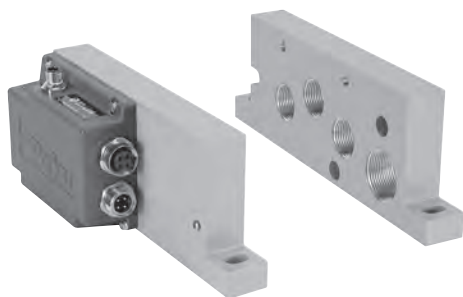
PS42		20L2		0	D	P
Basic Series				Engineering Level		
ISO 5599, Size 3		PS42		D Current		
Options †				Thread Type		
25-Pin, D-Sub		20L2*		0	NPT	
19-Pin, Round, Brad Harrison		20L3		1*	BSPP "G"	
12-Pin, M23		20L4		* BSPP Conforms to ISO 1179-1 w 228-1 Threads		
19-Pin, M23		20M2				
P2M Network Node		20M4				
P2H IO Link Class B, 24 Address, Standard Version		20N2				
P2H IO Link Class B, 24 Address, Safe Version		20S2				
P2H IO Link Class A, 24 Address, 4-Pin, Safe Version		20S4				
P2H IO Link Class A, 24 Address, 5-Pin, Safe Version		20S5				
H Series Network, with Valve Driver Module		20L6				
Turck Network with Valve Driver Module - 16 Outputs		20T1				
Turck Network with Valve Driver Module - 24 Outputs		20T2				

* 120VAC is Not CSA Rated.

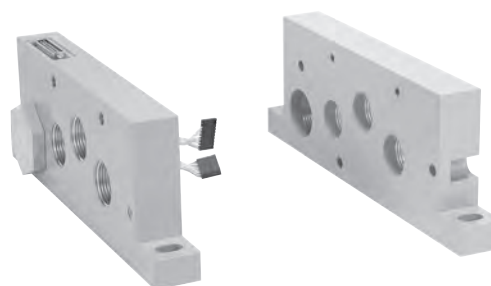
† Manifold bases must have a circuit board.

Turck Network, H Series Network, and P2M Network Node communication modules must be ordered separately.
See Network Connectivity Section for more information.

* BSPP Conforms to ISO 1179-1
w 228-1 Threads



H3 P2H Class A
end plate shown



H3 25-pin D-Sub
end plate shown

Valve - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

H3

E

VX

B

G

0

B9

D

Basic Series 5599-2

ISO 5599-2 Size 3H3

5599-2 Operator / Function

Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-2 Mounting

5599-2 Valve less baseVX

5599-2 Pilot source / Pilot exhaust

Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-2 Engineering Level

DCurrent

5599-2 Voltage & Frequency

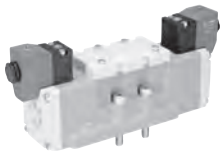
	AC		DC	Light & surge suppression
	60Hz	50Hz		
42	24			
45			12	
B9			24	LED & suppression, 3.2 watt
F9			24	LED & suppression, 1.3 watt
23	120	115		LED & suppression
57	240			

5599-2 Enclosure / Lead length

0None, valve less base

5599-2 Overrides / Lights

	Voltage code	
B	42, 45, 57	Non-locking, flush, push - w/o light
C	42, 45, 57	Locking, flush, push / turn - w/o light
G	B9, F9, 23	Non-locking, flush, push - w/ light
H	B9, 23	Locking, flush, push / turn - w/ light



H3 Valve shown

Manifold / Subbase Kit - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

PS421159**M****C****P**

Mounting Base Style / Port Size	
Subbase: 3/4 NPT side port	PS421119
Subbase: 3/4 BSPP side port	PS421110*
Manifold: 3/4 NPT end port	PS421159
Manifold: 3/4 BSPP end port	PS421150*
Manifold: 3/4 NPT bottom / end port	PS421169
Manifold: 3/4 BSPP bottom / end port	PS421160*

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Engineering Level	
C	H3

Wiring Options	
Blank	None
C	Chrysler
F	SAE / Ford
G	General Motors

Enclosures / Lead Length	
Individually Wired Base**	
7†	3-pin mini connector in base
8†	4-pin M12 micro connector in base
9†	5-pin mini connector in base
A	6" Leads
C	Terminal block
Collective Wired Base	
M*	Circuit board, double address

* Not available with subbase kits.

** Use plate with no connection.

† Must specify valve auto wiring option "C", "F", or "G".

Note:

When using the enclosure / lead length "M" option:

12VDC - Maximum number of coils energized simultaneously is 13

24VDC - Maximum number of coils energized simultaneously is 21, B9 coil
Maximum number of coils energized simultaneously is 24, F9 coil120VAC - Coils limited by the number of pins available in the connector
(25-pin D-Sub = 24 coils, 19-pin Brad Harrison = 16, 12-pin M23 = 8)

240VAC - Must use "A" or "C" option, lead wires or terminal blocks

**Subbase Kit****Automotive Connectors**

Mounted in 1/2" Conduit Port

- 3-Pin - Wired for Single Solenoid
- 4-Pin / 5-Pin - Wired for Double Solenoid

**Manifold Kit****Automotive Connectors**

Mounted in Individual Manifold Conduit Cover

- 3-Pin - Wired for Single Solenoid
- 4-Pin / 5-Pin - Wired for Double Solenoid

Sandwich Regulator - Plug-in, 5599-2

PS4038

1

6

6

C

P

Basic Series

H3 5599-2, Plug-in PS4238

Regulator Function

Common Pressure Regulator 1

Independent Pressure Regulator 2

#2 Port Regulator / Gauge*

0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)
** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

#4 Port Regulator / Gauge*

0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For Common Pressure Regulator Option, Regulator Gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)
** Pressure Line By-Pass Option can only be used with Independent Pressure Regulators.

Ordering Components

- Sandwich Regulator Kit configured for Internal Pilot as standard.
- Order valve as External Pilot.

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator H3

Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H3

An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

Common Pressure Code 166					Single Pressure 2 Code 206				Single Pressure 4 Code 260				Dual Pressure Code 266			
1-2	1-4	2-3	4-5		1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H3	2.37	2.39	4.30	4.47	2.37	2.81	2.75	3.01	2.65	2.59	2.68	2.74	2.43	2.41	3.16	3.04

* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

Add-A-Fold Assembly - Plug-in, 5599-2, Size 3 * Not compatible with H Universal

AA	H3	D	0	0	03
Valve Series		Number of Segments			
Right & left end plate		01 ↓ 32			
End Plate Type					
Turck Network with valve driver module - 16 address		A*			
Turck Network with valve driver module - 32 address		B*			
25-pin, D-sub		D†			
19-pin, Brad Harrison		E†			
12-pin, M23		G†			
19-pin, M23		H†			
P2H IO Link Class B, 24 Address, Standard Version		J			
P2H IO Link Class B, 24 Address, Safe Version		N			
P2H IO Link Class A, 24 Address, 4-Pin, Safe Version		P			
P2H IO Link Class A, 24 Address, 5-Pin, Safe Version		R			
Standard, non-collective wiring		S			
P2M Network Node		T*			
H Series Network, with valve driver module		Y*			
		Thread Type			
		0 NPT			
		1* BSPP "G"			

* Must order communication modules separately.

† Collective wiring module included.

* BSPP Conforms to ISO 1179-1
w 228-1 Threads

How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

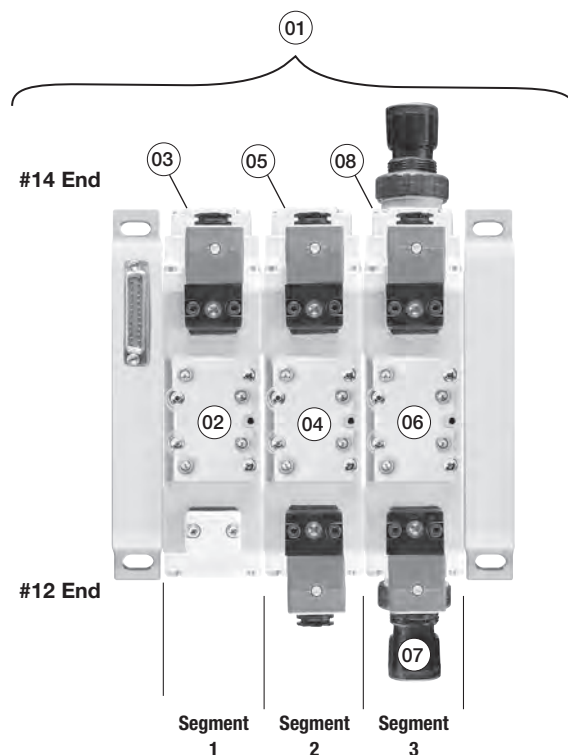
Example

Application requires a 3 segment manifold and regulator on segment 3.

Item	Part No.	Location	
01	AAH3D003		
02	H31VXBG0B9D	Segment 1	Valve station 1
03	PS421159MCP		Manifold base
04	H32VXBG0B9D	Segment 2	Valve station 2
05	PS421159MCP		Manifold base
06	H32VXXG0B9D	Segment 3	Valve station 3
07	PS4238166CP		Sandwich regulator
08	PS421159MCP		Manifold base

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.

Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:

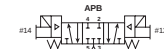
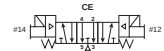
3 segment manifold with (3) H3 valves on manifold bases and regulator at segment 3.

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

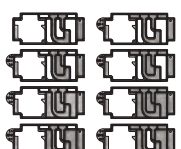
Valve -15407-1, Non Plug-in, Size 18mm (HB)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	Sol. 14 4-way, 2-position, spring return	0.55	Single solenoid	24 VDC	Internal	HBEXWBG2G9000FA	HBEXWBH2G9000FA
					External	HBEXWLG2G9000FA	HBEXWLH2G9000FA
	Sol. 14 4-way, 2-position, air return	0.55	Single solenoid	24 VDC	Internal	HB1WXBG2G9000FA	HB1WXBH2G9000FA
					External	HB1WXLG2G9000FA	HB1WXLH2G9000FA
	Sol. 14 4-way, 2-position	0.55	Double solenoid	24 VDC	Internal	HB2WXBG2G9000FA	HB2WXBH2G9000FA
					External	HB2WXLG2G9000FA	HB2WXLH2G9000FA
	APB 4-way, 3-position, all ports blocked	0.5	Double solenoid	24 VDC	Internal	HB5WXBG2G9000FA	HB5WXBH2G9000FA
					External	HB5WXLG2G9000FA	HB5WXLH2G9000FA
	CE 4-way, 3-position, center exhaust	0.5	Double solenoid	24 VDC	Internal	HB6WXBG2G9000FA	HB6WXBH2G9000FA
					External	HB6WXLG2G9000FA	HB6WXLH2G9000FA
	PC 4-way, 3-position, pressure center	0.5	Double solenoid	24 VDC	Internal	HB7WXBG2G9000FA	HB7WXBH2G9000FA
					External	HB7WXLG2G9000FA	HB7WXLH2G9000FA
	3-way, 2-position, dual valve, NC/NC	0.45	Double solenoid	24 VDC	Internal	HBNWXBG2G9000FA	HBNWXBH2G9000FA
					Internal	HBPWXBG2G9000FA	HBPWXBH2G9000FA
	3-way, 2-position, dual valve, NO/NO	0.45	Double solenoid	24 VDC	Internal	HBQWXBG2G9000FA	NA
					Internal	HBQWXBG2G9000FA	NA

Base / End Plate - 15407-1, Non Plug-in, Size 18mm (HB)

		Description	NPT	BSPP
	Universal manifold base	2 station, end ported	PSHU115101P	PSHU115201P
	Universal end plate	Non-collective wiring	PSHU31L000P	PSHU31L001P

Accessories - 15407-1, Non-Plug-in, Size 18mm (HB)

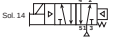
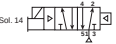
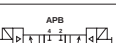
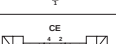
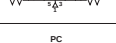
Accessories	Description	Part number
	Gauge adapter kit	Includes 1/8" coupling and long nipple PS5651160P
	Blanking plate kit	PS5634P
	Sandwich supply module	1/8" NPT PS562600P
		1/8" BSPP PS562601P
	Sandwich exhaust module	1/8" NPT PS562700P
		1/8" BSPP PS562701P
	Sandwich flow control	PS5642P
	Sandwich regulator	Common pressure 2-60 PSIG w/ gauge PS5637155P
		Independent pressure 5-125 PSIG w/ gauge PS5637255P
	Manifold to manifold gasket kits	Pilot open #1, 3, 5 ports open PSHU11P
		Pilot blocked Blocked #1 port PSHU12P
		Blocked #1, 3, 5, ports PSHU13P
		Blocked #3, 5 ports PSHU14P

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

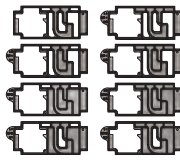
Valve - 15407-1, Non Plug-in, Size 26mm (HA)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
	4-way, 2-position, spring return	1.1	Single solenoid	24 VDC	Internal	HAEWXBG2G9000FA	HAEWXBH2G9000FA
					External	HAEWXLG2G9000FA	HAEWXLH2G9000FA
	4-way, 2-position, air return	1.1	Single solenoid	24 VDC	Internal	HA1WXBG2G9000FA	HA1WXBH2G9000FA
					External	HA1WXLG2G9000FA	HA1WXLH2G9000FA
	4-way, 2-position	1.1	Double solenoid	24 VDC	Internal	HA2WXBG2G9000FA	HA2WXBH2G9000FA
					External	HA2WXLG2G9000FA	HA2WXLH2G9000FA
	4-way, 3-position, all ports blocked	1.0	Double solenoid	24 VDC	Internal	HA5WXBG2G9000FA	HA5WXBH2G9000FA
					External	HA5WXLG2G9000FA	HA5WXLH2G9000FA
	4-way, 3-position, center exhaust	1.0	Double solenoid	24 VDC	Internal	HA6WXBG2G9000FA	HA6WXBH2G9000FA
					External	HA6WXLG2G9000FA	HA6WXLH2G9000FA
	4-way, 3-position, pressure center	1.0	Double solenoid	24 VDC	Internal	HA7WXBG2G9000FA	HA7WXBH2G9000FA
					External	HA7WXLG2G9000FA	HA7WXLH2G9000FA

Base / End Plate - 15407-1, Non Plug-in, Size 26mm (HA)

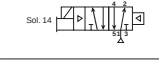
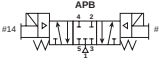
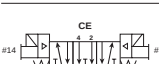
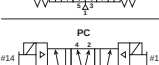
	Description	NPT	BSPP
 Single subbase	Side ported base, 1/4" port	PS5511130P	PS5511140P
 Universal manifold base	2 station, end ported	PSHU115301P	PSHU115401P
 Universal end plate	Non-collective wiring	PSHU31L000P	PSHU31L001P

Accessories - 15407-1, Non-Plug-in, Size 26mm (HA)

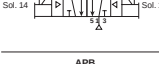
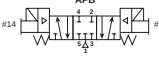
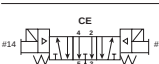
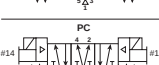
Accessories	Description	Part number
 Gauge adapter kit	Includes 1/8" coupling and long nipple	PS5651160P
 Blanking plate kit		PS5534P
 Sandwich supply module	1/4" NPT	PS552600P
	1/4" BSPP	PS552601P
 Sandwich exhaust module	1/4" NPT	PS552700P
	1/4" BSPP	PS552701P
 Sandwich flow control		PS5542P
Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.		
 Sandwich regulator		Common pressure Independent pressure
	2-60 PSIG w/ gauge	PS5537155P PS5537255P
	5-125 PSIG w/ gauge	PS5537166P PS5537266P
 Manifold to manifold gasket kits		Pilot open Pilot blocked
	#1, 3, 5 ports open	PSHU11P PSHU15P
	Blocked #1 port	PSHU12P PSHU16P
	Blocked #1, 3, 5, ports	PSHU13P PSHU17P
	Blocked #3, 5 ports	PSHU14P PSHU18P

 Most popular.

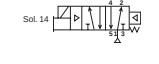
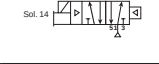
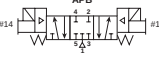
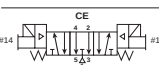
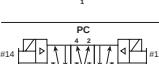
Valve with Central Connector - 5599-1, Non Plug-in, Size 1 (H1)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
4-Pin Central M12 Connector, 24 VDC							
		1.5	Single solenoid	24 VDC	Internal	H1EWXBG2B9000FD	H1EWXBH2B9000FD
					External	H1EWXXG2B9000FD	H1EWXXH2B9000FD
		1.5	Single solenoid	24 VDC	Internal	H11WXBG2B9000FD	H11WXBH2B9000FD
					External	H11WXXG2B9000FD	H11WXXH2B9000FD
		1.5	Double solenoid	24 VDC	Internal	H12WXBG2B9000FD	H12WXBH2B9000FD
					External	H12WXXG2B9000FD	H12WXXH2B9000FD
		1.2	Double solenoid	24 VDC	Internal	H15WXBG2B9000FD	H15WXBH2B9000FD
					External	H15WXXG2B9000FD	H15WXXH2B9000FD
		1.2	Double solenoid	24 VDC	Internal	H16WXBG2B9000FD	H16WXBH2B9000FD
					External	H16WXXG2B9000FD	H16WXXH2B9000FD
		1.2	Double solenoid	24 VDC	Internal	H17WXBG2B9000FD	H17WXBH2B9000FD
					External	H17WXXG2B9000FD	H17WXXH2B9000FD

5-Pin Central 7/8" Mini Connector, 120 VAC

		1.5	Single solenoid	120 VAC	Internal	H1EWXBG323000FD	H1EWXBH323000FD
					External	H1EWXXG323000FD	H1EWXXH323000FD
		1.5	Single solenoid	120 VAC	Internal	H11WXBG323000FD	H11WXBH323000FD
					External	H11WXXG323000FD	H11WXXH323000FD
		1.5	Double solenoid	120 VAC	Internal	H12WXBG323000FD	H12WXBH323000FD
					External	H12WXXG323000FD	H12WXXH323000FD
		1.2	Double solenoid	120 VAC	Internal	H15WXBG323000FD	H15WXBH323000FD
					External	H15WXXG323000FD	H15WXXH323000FD
		1.2	Double solenoid	120 VAC	Internal	H16WXBG323000FD	H16WXBH323000FD
					External	H16WXXG323000FD	H16WXXH323000FD
		1.2	Double solenoid	120 VAC	Internal	H17WXBG323000FD	H17WXBH323000FD
					External	H17WXXG323000FD	H17WXXH323000FD

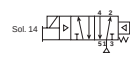
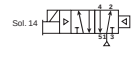
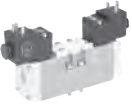
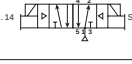
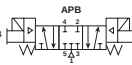
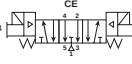
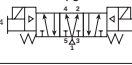
Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 1 (H1)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
3-Pin DIN Connector, 24 VDC							
		1.5	Single solenoid	24 VDC	Internal	H1EWXBBL49D	H1EWXBCL49D
					External	H1EWXXBL49D	H1EWXXCL49D
		1.5	Single solenoid	24 VDC	Internal	H11WXBBL49D	H11WXBCL49D
					External	H11WXXBL49D	H11WXXCL49D
		1.5	Double solenoid	24 VDC	Internal	H12WXBBL49D	H12WXBCL49D
					External	H12WXXBL49D	H12WXXCL49D
		1.2	Double solenoid	24 VDC	Internal	H15WXBBL49D	H15WXBCL49D
					External	H15WXXBL49D	H15WXXCL49D
		1.2	Double solenoid	24 VDC	Internal	H16WXBBL49D	H16WXBCL49D
					External	H16WXXBL49D	H16WXXCL49D
		1.2	Double solenoid	24 VDC	Internal	H17WXBBL49D	H17WXBCL49D
					External	H17WXXBL49D	H17WXXCL49D

 Most popular.


For inventory, lead times, and kit
lookup, visit www.pdnplu.com

Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 1 (H1) (continued)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
3-Pin DIN Connector, 120 VAC							
		1.5	Single solenoid	120 VAC	Internal	H1EWXBBL53D	H1EWXBCL53D
					External	H1EWXXBL53D	H1EWXXCL53D
		1.5	Single solenoid	120 VAC	Internal	H11WXBBL53D	H11WXBCL53D
					External	H11WXXBL53D	H11WXXCL53D
		1.5	Double solenoid	120 VAC	Internal	H12WXBBL53D	H12WXBCL53D
					External	H12WXXBL53D	H12WXXCL53D
		1.2	Double solenoid	120 VAC	Internal	H15WXBBL53D	H15WXBCL53D
					External	H15WXXBL53D	H15WXXCL53D
		1.2	Double solenoid	120 VAC	Internal	H16WXBBL53D	H16WXBCL53D
					External	H16WXXBL53D	H16WXXCL53D
		1.2	Double solenoid	120 VAC	Internal	H17WXBBL53D	H17WXBCL53D
					External	H17WXXBL53D	H17WXXCL53D

Base / End Plate - 5599-1, Non Plug-in, Size 1 (H1)

		Description	NPT	BSPP
	Single subbase	Side ported, 3/8" port	PS4011150DP	PS4011160DP
	Universal manifold base	End ported	PSHU115501P	PSHU115601P
	Universal end plate	Non-collective wiring	PSHU31L000P	PSHU31L001P

Accessories - 5599-1, Non Plug-in, Size 1 (H1)

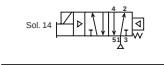
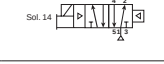
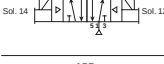
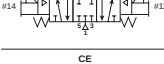
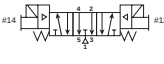
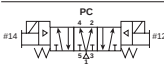
Accessory	Description	Part number
	Common pressure	5-125 PSIG w/ gauge
	Independent pressure	5-125 PSIG w/ gauge
	Blanking plate kit	PS4034CP
	Sandwich flow control	PS4042CP
	Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	

 Most popular.

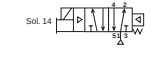
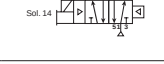
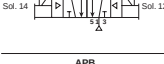
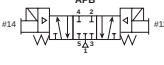
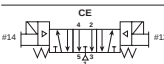
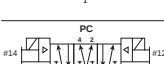


For inventory, lead times, and kit lookup, visit www.pdnplu.com

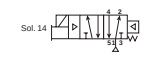
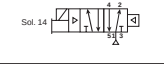
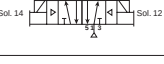
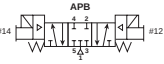
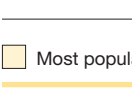
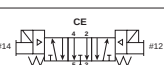
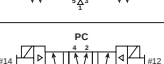
Valve with Central Connector - 5599-1, Non Plug-in, Size 2 (H2)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
4-Pin Central M12 Connector, 24 VDC							
		3.0	Single solenoid	24 VDC	Internal	H2EWXBG2B9000FD	H2EWXBH2B9000FD
					External	H2EWXXG2B9000FD	H2EWXXH2B9000FD
		3.0	Single solenoid	24 VDC	Internal	H21WXBG2B9000FD	H21WXBH2B9000FD
					External	H21WXXG2B9000FD	H21WXXH2B9000FD
		3.0	Double solenoid	24 VDC	Internal	H22WXBG2B9000FD	H22WXBH2B9000FD
					External	H22WXXG2B9000FD	H22WXXH2B9000FD
		2.8	Double solenoid	24 VDC	Internal	H25WXBG2B9000FD	H25WXBH2B9000FD
					External	H25WXXG2B9000FD	H25WXXH2B9000FD
		2.8	Double solenoid	24 VDC	Internal	H26WXBG2B9000FD	H26WXBH2B9000FD
					External	H26WXXG2B9000FD	H26WXXH2B9000FD
		2.8	Double solenoid	24 VDC	Internal	H27WXBG2B9000FD	H27WXBH2B9000FD
					External	H27WXXG2B9000FD	H27WXXH2B9000FD

5-Pin Central 7/8" Connector, 120 VAC

		3.0	Single solenoid	120 VAC	Internal	H2EWXBG323000FD	H2EWXBH323000FD
					External	H2EWXXG323000FD	H2EWXXH323000FD
		3.0	Single solenoid	120 VAC	Internal	H21WXBG323000FD	H21WXBH323000FD
					External	H21WXXG323000FD	H21WXXH323000FD
		3.0	Double solenoid	120 VAC	Internal	H22WXBG323000FD	H22WXBH323000FD
					External	H22WXXG323000FD	H22WXXH323000FD
		2.8	Double solenoid	120 VAC	Internal	H25WXBG323000FD	H25WXBH323000FD
					External	H25WXXG323000FD	H25WXXH323000FD
		2.8	Double solenoid	120 VAC	Internal	H26WXBG323000FD	H26WXBH323000FD
					External	H26WXXG323000FD	H26WXXH323000FD
		2.8	Double solenoid	120 VAC	Internal	H27WXBG323000FD	H27WXBH323000FD
					External	H27WXXG323000FD	H27WXXH323000FD

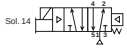
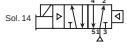
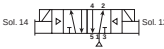
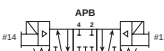
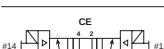
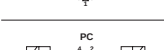
Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 2 (H2)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
3-Pin DIN Connector on Coil, 24 VDC							
		3.0	Single solenoid	24 VDC	Internal	H2EWXBBL49D	H2EWXBCL49D
					External	H2EWXXBL49D	H2EWXXCL49D
		3.0	Single solenoid	24 VDC	Internal	H21WXBBL49D	H21WXBCL49D
					External	H21WXXBL49D	H21WXXCL49D
		3.0	Double solenoid	24 VDC	Internal	H22WXBBL49D	H22WXBCL49D
					External	H22WXXBL49D	H22WXXCL49D
		2.8	Double solenoid	24 VDC	Internal	H25WXBBL49D	H25WXBCL49D
					External	H25WXXBL49D	H25WXXCL49D
		2.8	Double solenoid	24 VDC	Internal	H26WXBBL49D	H26WXBCL49D
					External	H26WXXBL49D	H26WXXCL49D
		2.8	Double solenoid	24 VDC	Internal	H27WXBBL49D	H27WXBCL49D
					External	H27WXXBL49D	H27WXXCL49D

 Most popular.


For inventory, lead times, and kit
lookup, visit www.pdnplu.com

Valve with 3-Pin DIN Connector - 5599-1, Non Plug-in, Size 2 (H2) (continued)

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
3-Pin DIN connector on coil, 120 VAC							
		3.0	Single solenoid	120 VAC	Internal	H2EWXBBL53D	H2EWXBCL53D
					External	H2EWXXBL53D	H2EWXXCL53D
		3.0	Single solenoid	120 VAC	Internal	H21WXBBL53D	H21WXBCL53D
					External	H21WXXBL53D	H21WXXCL53D
		3.0	Double solenoid	120 VAC	Internal	H22WXBBL53D	H22WXBCL53D
					External	H22WXXBL53D	H22WXXCL53D
		2.8	Double solenoid	120 VAC	Internal	H25WXBBL53D	H25WXBCL53D
					External	H25WXXBL53D	H25WXXCL53D
		2.8	Double solenoid	120 VAC	Internal	H26WXBBL53D	H26WXBCL53D
					External	H26WXXBL53D	H26WXXCL53D
		2.8	Double solenoid	120 VAC	Internal	H27WXBBL53D	H27WXBCL53D
					External	H27WXXBL53D	H27WXXCL53D

Base / End Plate - 5599-1, Non Plug-in, Size 2 (H2)

	Description	1/2" NPT	1/2" BSPP
	Single subbase	Side ported, 1/2" port	
	Universal manifold base	End ported	
	Universal end plate	Non-collective wiring	

Accessories - 5599-1, Non Plug-in, Size 2 (H2)

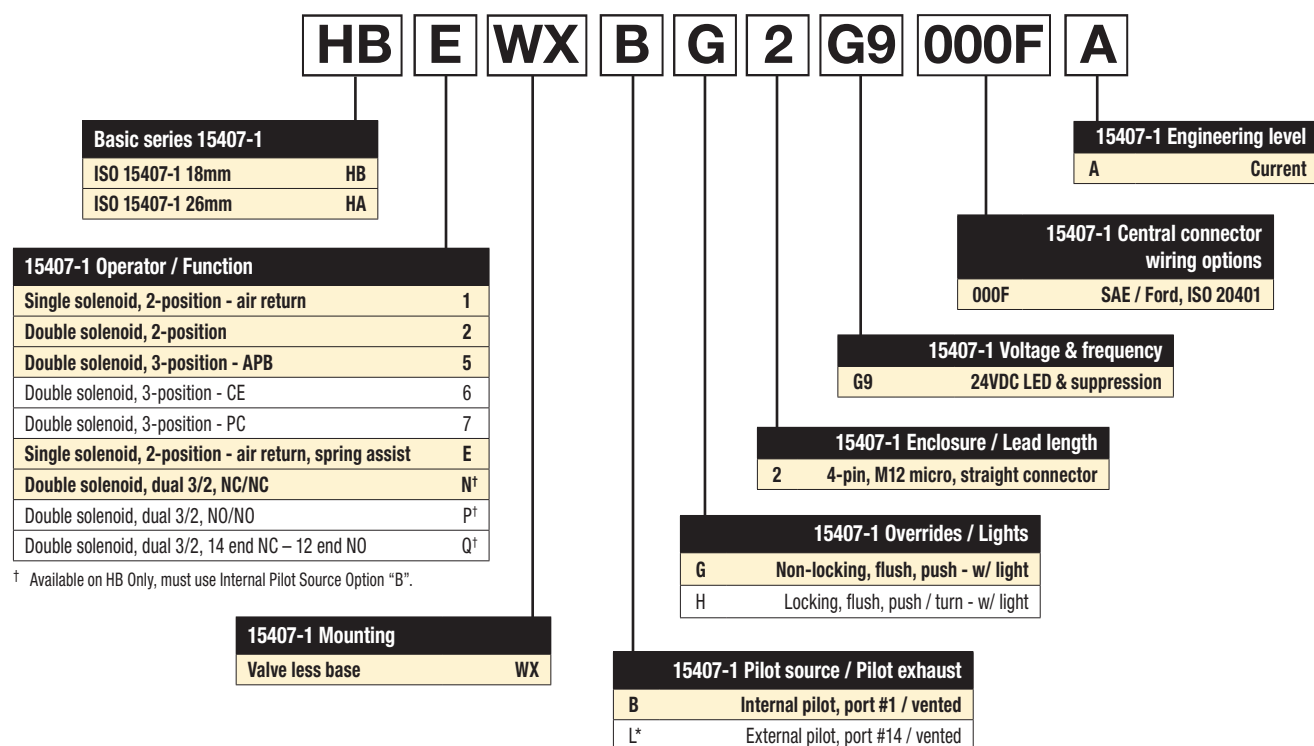
Accessory	Description	Part number
	Common pressure	5-125 PSIG w/ gauge
	Independent pressure	5-125 PSIG w/ gauge
	Blanking plate kit	
	Sandwich flow control	
	Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Valve - Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA)



Valve - Non Plug-in, 5599-1, Central Connector - Size 1 & 2

H1 E WX B G 2B9 000F D

Basic Series 5599-1	
ISO 5599-1 Size 1	H1
ISO 5599-1 Size 2	H2

5599-1 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting	
Valve less base	WX

5599-1 Pilot Source / Pilot Exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights	
Non-locking, flush, with light	G
Locking, flush, with light	H

5599-1 Engineering Level	
D	Current

5599-1 Central Connector Wiring Options			
000C	Chrysler		
000F*	SAE / Ford, ISO 20401		
000G	General Motors		

* Complies to ISO 20401 with Enclosure Lead Length "2".

Enclosure / Lead Length / Voltage*				
	AC		DC	
	60Hz	50Hz		
1B9†			24	3-pin, central mini connector, 3.2 watt
1F9†			24	3-pin, central mini connector, 1.3 watt
123†	120	115		3-pin, central mini connector
2B9			24	4-pin, central M12 micro connector, 3.2 watt
2F9*			24	4-pin, central M12 micro connector, 1.3 watt
3B9			24	5-pin, central mini connector, 3.2 watt
3F9*			24	5-pin, central mini connector, 1.3 watt
323	120	115		5-pin, central mini connector
619†			24	2-pin, M12 micro connector on coil

* All coils include LED & suppression
† Operator function "1" or "E"
* Only available with wiring option "000F"
* Override "G" only.

Valve - Non Plug-in, 5599-1, CNOMO - Size 1 & 2

H1 E WX B B L53 D

Basic Series 5599-1	
ISO 5599-1 Size 1	H1
ISO 5599-1 Size 2	H2

5599-1 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting	
Valve less base	WX

5599-1 Pilot Source / Pilot Exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Engineering Level	
D	Current

Enclosure / Lead length / Voltage				
	AC		DC	
	60Hz	50Hz		
L42	24			3-pin, 30mm DIN 43650A with CNOMO connector
L45			12	3-pin, 30mm DIN 43650A with CNOMO connector
L49			24	3-pin, 30mm DIN 43650A with CNOMO connector
L53	120	115		3-pin, 30mm DIN 43650A with CNOMO connector
L57	240			3-pin, 30mm DIN 43650A with CNOMO connector
NXX				Valve less coil

5599-1 Overrides / Lights	
B	Non-locking, flush, push - no light
C	Locking, flush, push / turn - no light

Most popular.

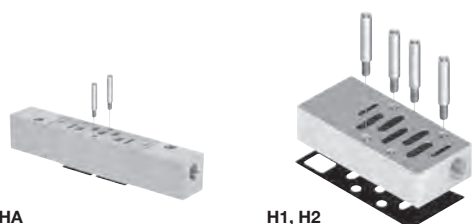
Remote Pilot - Size 18mm (HB), Size 26mm (HA), Size 1 (H1) & Size 2 (H2)

H1	4	WX000XX	D																
<table><tr><th colspan="2">Basic Series</th></tr><tr><td>ISO 15407-1 18mm</td><td>HB</td></tr><tr><td>ISO 15407-1 26mm</td><td>HA*</td></tr><tr><td>ISO 5599-1 Size 1</td><td>H1*</td></tr><tr><td>ISO 5599-1 Size 2</td><td>H2*</td></tr></table>	Basic Series		ISO 15407-1 18mm	HB	ISO 15407-1 26mm	HA*	ISO 5599-1 Size 1	H1*	ISO 5599-1 Size 2	H2*			<table><tr><th colspan="2">Engineering Level</th></tr><tr><td>A</td><td>15407 Current</td></tr><tr><td>D</td><td>5599 Current</td></tr></table>	Engineering Level		A	15407 Current	D	5599 Current
Basic Series																			
ISO 15407-1 18mm	HB																		
ISO 15407-1 26mm	HA*																		
ISO 5599-1 Size 1	H1*																		
ISO 5599-1 Size 2	H2*																		
Engineering Level																			
A	15407 Current																		
D	5599 Current																		
* Must order remote pilot access plates for manifolds.		<table><tr><th colspan="2">Remote Pilot Valve</th></tr><tr><td>WX000XX</td><td>Remote pilot valve</td></tr></table>	Remote Pilot Valve		WX000XX	Remote pilot valve													
Remote Pilot Valve																			
WX000XX	Remote pilot valve																		
<table><tr><th colspan="2">15407-1 Operator / Function</th></tr><tr><td>Single remote pilot, 2-position - air return</td><td>3</td></tr><tr><td>Double remote pilot, 2-position</td><td>4</td></tr><tr><td>Double remote pilot, 3-position - APB</td><td>8</td></tr><tr><td>Double remote pilot, 3-position - CE</td><td>9</td></tr><tr><td>Double remote pilot, 3-position - PC</td><td>0</td></tr><tr><td>Single remote pilot, 2-position - air return, spring assist</td><td>F</td></tr></table>				15407-1 Operator / Function		Single remote pilot, 2-position - air return	3	Double remote pilot, 2-position	4	Double remote pilot, 3-position - APB	8	Double remote pilot, 3-position - CE	9	Double remote pilot, 3-position - PC	0	Single remote pilot, 2-position - air return, spring assist	F		
15407-1 Operator / Function																			
Single remote pilot, 2-position - air return	3																		
Double remote pilot, 2-position	4																		
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Double remote pilot, 3-position - CE	9																		
Double remote pilot, 3-position - PC	0																		
Single remote pilot, 2-position - air return, spring assist	F																		

Note: For manifolds, end plates, and accessories, see 15407-1 & 5599-1 Non Plug-in valve section.

Note: HB 18mm Valve Remote Pilot Option only available with PL02 Individual Subbase Kits.

Remote Pilot Access Plate Kit



Size	Port size	NPT	BSPP "G"
HA	1/4"	PS551500P	PS551501P
H1	1/8"	PS401500CP	PS401501CP
H2	1/8"	PS411500CP	PS411501CP

Kit includes: Pilot port access plate, gasket and mounting studs.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Manifold Kit - Universal Non Plug-in

PSHU1153**0****1****P**

Mounting Style / Port Size	
HB manifold with 1/8 NPT end ports	PSHU1151
HB manifold with 1/8 BSPP end ports	PSHU1152*
HA manifold with 1/4 NPT end ports	PSHU1153
HA manifold with 1/4 BSPP end ports	PSHU1154*
H1 manifold with 3/8 NPT end ports	PSHU1155
H1 manifold with 3/8 BSPP end ports	PSHU1156*
H2 manifold with 1/2 NPT end ports	PSHU1157
H2 manifold with 1/2 BSPP end ports	PSHU1158*

* BSPP conforms to ISO 1179-1 w 228-1 threads.



HA manifold

Gasket Options	
1	1,3,5 ports open and pilots open
2	1,3,5 ports closed and pilots open
3	1 closed, 3,5 ports open and pilots closed
4	1 port open, 3,5 ports closed and pilots open
5	1,3,5 ports open and pilots closed
6	1,3,5 ports closed and pilots closed
7	1 closed, 3,5 ports open and pilots closed
8	1 port open, 3,5 ports closed and pilots open

Circuit Board Address Configuration

0	No interconnect
----------	------------------------

Intermediate Air Supply - Universal Non Plug-in

PSHU115A**0****1****P**

Mounting Style / Port Size	
Intermediate air supply, NPT / internal pilot	PSHU115A
Intermediate air supply, BSPP / internal pilot	PSHU115B*
Intermediate air supply, NPT / external pilot	PSHU115C
Intermediate air supply, BSPP / external pilot	PSHU115D*

* BSPP Conforms to ISO 1179-1 w 228-1 Threads.



Intermediate air supply

Gasket Options	
1	1,3,5 ports open and pilots open
2	1,3,5 ports closed and pilots open
3	1 closed, 3,5 ports open and pilots closed
4	1 port open, 3,5 ports closed and pilots open
5	1,3,5 ports open and pilots closed
6	1,3,5 ports closed and pilots closed
7	1 closed, 3,5 ports open and pilots closed
8	1 port open, 3,5 ports closed and pilots open

Circuit Board Address Configuration

0	No electrical
----------	----------------------

 Most popular.

End Plate Kit - Universal Non Plug-in

Left hand
end plate

PSHU31 **L0** **0** **0** **P**

Valve Type	
Non Plug-in (internal pilot)	PSHU31
Non Plug-in (external pilot)	PSHU3X

Left Hand End Plate Type	
Non Plug-in	L0

Thread Type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Threads

Right Hand End Plate Type / Port	
0	Low profile (no ports)
1	1/2 Exhaust and inlet port
2	3/4 Exhaust and inlet port

Right Hand End Plate



Low Profile



High Flow

Electrical option

Right hand end plate only, low profile

Right hand end plate only, high flow 1/2" ports

Right hand end plate only, high flow 3/4" ports

NPT port

PSHU4000P

PSHU4100P

PSHU4200P

BSPP port

PSHU4001P

PSHU4101P

PSHU4201P

Subbase Kit - Non Plug-in

HA non plug-in
subbase shown

PS55 **1113** **0** **P**

Series	
HA Subbase	PS55
H1 Subbase	PS40
H2 Subbase	PS41

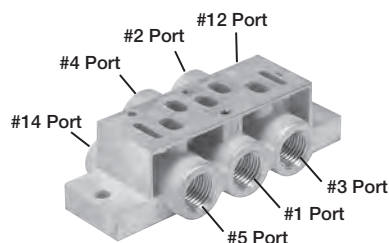
Engineering Level	
Blank	HA Series
D	H1 Series
C	H2 Series

Mounting Style / Port Size	
HA Series	
1/4 NPT side ports	1113
1/4 BSPP side ports	1114*
1/4 NPT bottom / side ports	1123
1/4 BSPP bottom / side ports	1124*
H1 Series	
3/8 NPT side ports	1115
3/8 BSPP side ports	1116*
H2 Series	
1/2 NPT side ports	1117
1/2 BSPP side ports	1118*

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Enclosures / Lead Length	
0	None, No Electrical Plug

HB Series ISO 15407-1 Size 18mm (HB) Single Subbase

Side ported base
18mm DX02 / HB

1/8" NPT

PL02-01-80

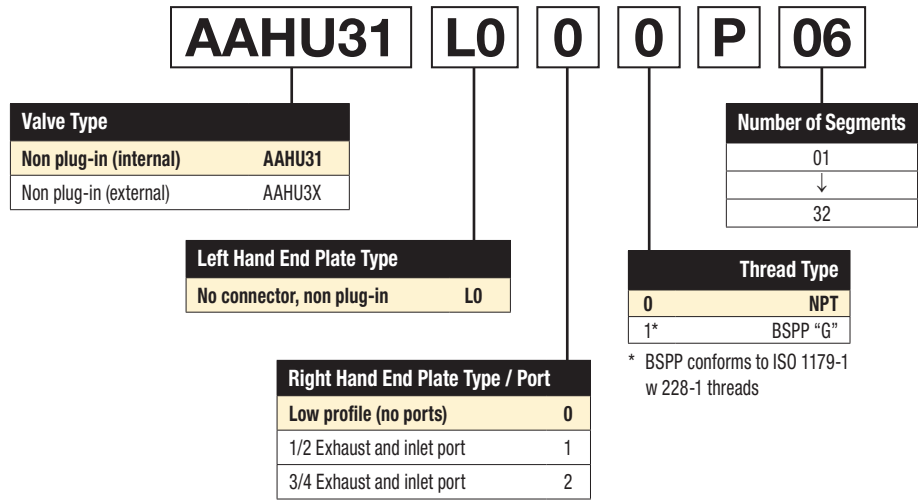
1/8" BSPP

PL02-01-70

Note: Can be used for external, single, or double remote pilot.

Most popular.

Add-A-Fold - Universal Non Plug-in



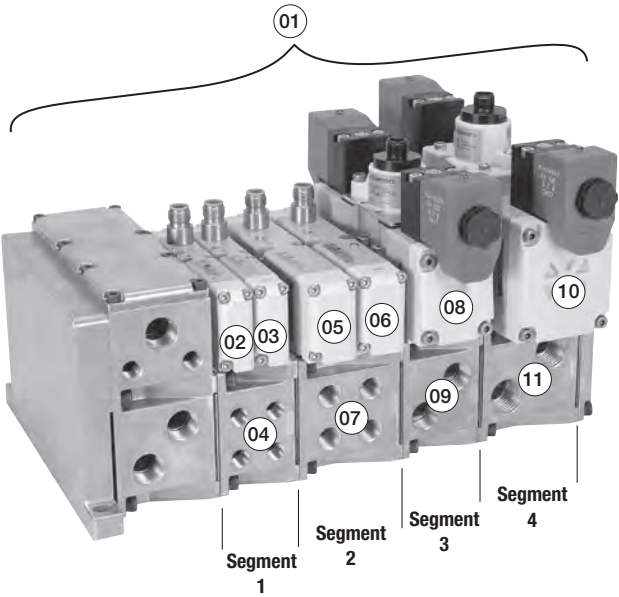
How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

Example

Application requires a 4 segment manifold.

Item	Part No.	Location	
01	AAHU31L000P04		
02	HB2WXBG2G9000FA	Segment 1	Valve station 1
03	HB2WXBG2G9000FA		Valve station 2
04	PSHU115101P		Manifold base
05	HA1WXBG2G9000FA	Segment 2	Valve station 3
06	HA2WXBG2G9000FA		Valve station 4
07	PSHU115301P		Manifold base
08	H12WXBG2B9000FD	Segment 3	Valve station 5
09	PSHU115501P		Manifold base
10	H22WXBG2B9000FD	Segment 4	Valve station 6
11	PSHU115701P		Manifold base



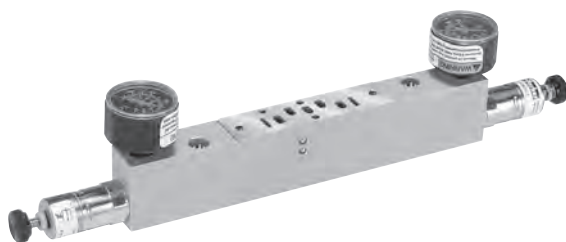
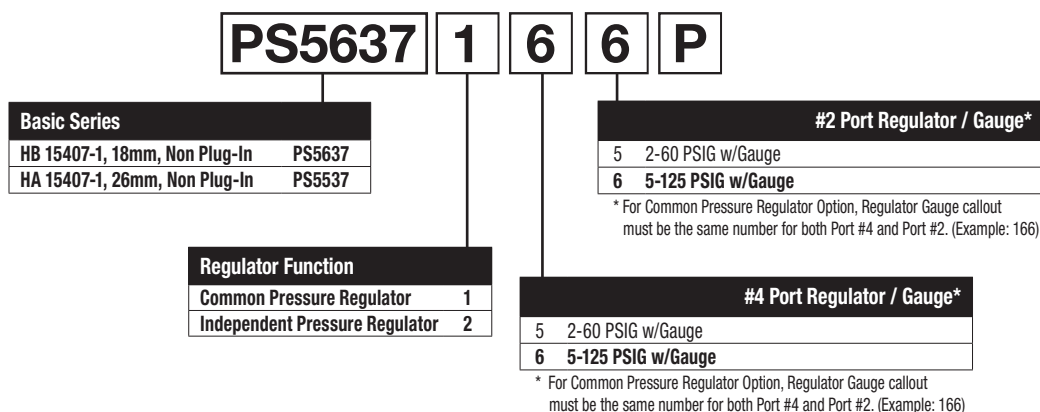
Example:
4 segment manifold with (2) HB, (2) HA,
(1) H1, and (1) H2 valve on manifold bases
with low profile, NPT end plate.

Most popular.



For inventory, lead times, and kit
lookup, visit www.pdnplu.com

Sandwich Regulator - Non Plug-in, 15407-1



HB - 18mm
(Independent Dual Port Regulator shown)



HA - 26mm
(Common Port Regulator shown)

Ordering Components

- Manifold or Subbase Kit required.
- Sandwich Regulator Kit configured for Internal Pilot as standard.
- Order valve as External Pilot.

How to Configure Sandwich Regulator / Valve Combinations**Internal Pilot Configuration of Sandwich Regulator HA, HB**

Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

Sandwich Regulator - Non Plug-in, 5599-1

PS4037 **1** **6** **6** **C** **P**

Basic Series	
H1 5599-1, Non Plug-in	PS4037
H2 5599-1, Non Plug-in	PS4137

Regulator Function	
Common Pressure Regulator	1
Independent Pressure Regulator	2

#2 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

** Pressure Line by-pass option can only be used with independent pressure regulators.

#4 Port Regulator / Gauge*	
0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)

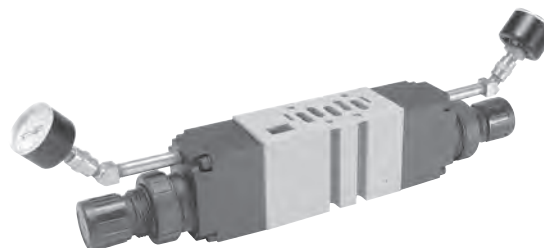
** Pressure Line by-pass option can only be used with independent pressure regulators.

Ordering Components

- Sandwich regulator kit configured for internal pilot as standard.
- Order valve as external pilot.



H1 - Size 1
(Independent Dual Port Regulator shown)



H2 - Size 2
(Independent Dual Port Regulator shown)

How to Configure Sandwich Regulator / Valve Combinations**Internal Pilot Configuration of Sandwich Regulator H1 & H2**

Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H1 & H2

An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve. This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

Common Pressure Code 166					Single Pressure 2 Code 206				Single Pressure 4 Code 260				Dual Pressure Code 266			
1-2	1-4	2-3	4-5		1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H1	0.62	0.61	1.28	1.18	0.73	0.96	0.96	0.93	0.34	0.70	0.94	0.98	0.52	0.48	0.86	0.88
H2	1.47	1.60	2.41	2.33	1.71	1.90	1.52	1.75	1.74	1.67	1.73	1.79	1.61	1.62	1.50	1.67

* Regulator Port exhaust through Base Port 3.

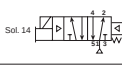
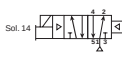
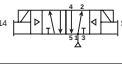
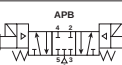
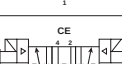
Note: All Cv's calculated with regulator adjusted full open.

Most popular.

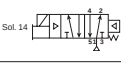
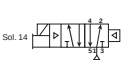
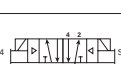
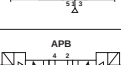
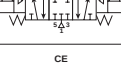
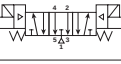


For inventory, lead times, and kit lookup, visit www.pdnplu.com

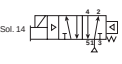
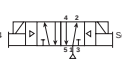
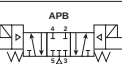
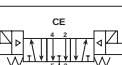
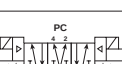
Valve with Central Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking	
4-Pin Central M12 Connector, 24 VDC								
		4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	Internal	H3EWXBG2B9000FD	H3EWXBH2B9000FD
						External	H3EWXXG2B9000FD	H3EWXXH2B9000FD
		4-way, 2-position, air return	6.0	Single solenoid	24 VDC	Internal	H31WXBG2B9000FD	H31WXBH2B9000FD
						External	H31WXXG2B9000FD	H31WXXH2B9000FD
		4-way, 2-position	6.0	Double solenoid	24 VDC	Internal	H32WXBG2B9000FD	H32WXBH2B9000FD
						External	H32WXXG2B9000FD	H32WXXH2B9000FD
		4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	Internal	H35WXBG2B9000FD	H35WXBH2B9000FD
						External	H35WXXG2B9000FD	H35WXXH2B9000FD
		4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	Internal	H36WXBG2B9000FD	H36WXBH2B9000FD
						External	H36WXXG2B9000FD	H36WXXH2B9000FD
		4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	Internal	H37WXBG2B9000FD	H37WXBH2B9000FD
						External	H37WXXG2B9000FD	H37WXXH2B9000FD

5-Pin, Central 7/8" Mini Connector, 120 VAC

		4-way, 2-position, spring return	6.0	Single solenoid	120 VAC	Internal	H3EWXBG323000FD	H3EWXBH323000FD
						External	H3EWXXG323000FD	H3EWXXH323000FD
		4-way, 2-position, air return	6.0	Single solenoid	120 VAC	Internal	H31WXBG323000FD	H31WXBH323000FD
						External	H31WXXG323000FD	H31WXXH323000FD
		4-way, 2-position	6.0	Double solenoid	120 VAC	Internal	H32WXBG323000FD	H32WXBH323000FD
						External	H32WXXG323000FD	H32WXXH323000FD
		4-way, 3-position, all ports blocked	5.0	Double solenoid	120 VAC	Internal	H35WXBG323000FD	H35WXBH323000FD
						External	H35WXXG323000FD	H35WXXH323000FD
		4-way, 3-position, center exhaust	5.0	Double solenoid	120 VAC	Internal	H36WXBG323000FD	H36WXBH323000FD
						External	H36WXXG323000FD	H36WXXH323000FD
		4-way, 3-position, pressure center	5.0	Double solenoid	120 VAC	Internal	H37WXBG323000FD	H37WXBH323000FD
						External	H37WXXG323000FD	H37WXXH323000FD

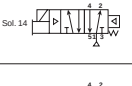
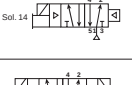
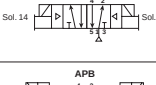
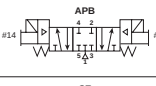
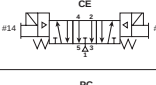
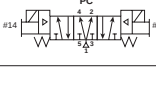
Valve with 3-Pin DIN Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking	
3-Pin DIN Connector on Coil, 24 VDC								
		4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	Internal	H3EWXBBL49D	H3EWXBCL49D
						External	H3EWXXBL49D	H3EWXXCL49D
		4-way, 2-position, air return	6.0	Single solenoid	24 VDC	Internal	H31WXBBL49D	H31WXBCL49D
						External	H31WXXBL49D	H31WXXCL49D
		4-way, 2-position	6.0	Double solenoid	24 VDC	Internal	H32WXBBL49D	H32WXBCL49D
						External	H32WXXBL49D	H32WXXCL49D
		4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	Internal	H35WXBBL49D	H35WXBCL49D
						External	H35WXXBL49D	H35WXXCL49D
		4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	Internal	H36WXBBL49D	H36WXBCL49D
						External	H36WXXBL49D	H36WXXCL49D
		4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	Internal	H37WXBBL49D	H37WXBCL49D
						External	H37WXXBL49D	H37WXXCL49D

 Most popular.


For inventory, lead times, and kit
lookup, visit www.pdnplu.com

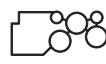
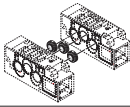
Valve with 3-Pin DIN Connectors - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
3-Pin DIN Connector on Coil, 120 VDC							
		6.0	Single solenoid	120 VAC	Internal	H3EWXBBL53D	H3EWXBCL53D
					External	H3EWXXBL53D	H3EWXXCL53D
		6.0	Single solenoid	120 VAC	Internal	H31WXBBL53D	H31WXBCL53D
					External	H31WXXBL53D	H31WXXCL53D
		6.0	Double solenoid	120 VAC	Internal	H32WXBBL53D	H32WXBCL53D
					External	H32WXXBL53D	H32WXXCL53D
		5.0	Double solenoid	120 VAC	Internal	H35WXBBL53D	H35WXBCL53D
					External	H35WXXBL53D	H35WXXCL53D
		5.0	Double solenoid	120 VAC	Internal	H36WXBBL53D	H36WXBCL53D
					External	H36WXXBL53D	H36WXXCL53D
		5.0	Double solenoid	120 VAC	Internal	H37WXBBL53D	H37WXBCL53D
					External	H37WXXBL53D	H37WXXCL53D

Base / End Plate - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

		Description	NPT	BSP
	Single subbase	Side ported base, 3/4" port	PS4211190CP	PS4211180CP
	Manifold base	End ported bases	PS4211590CP	PS4211500CP
		Bottom / end ported bases	PS4211690CP	PS4211600CP
		Note: Manifolds include 2 pipe plugs		
	End plate	End plate - non-collective wiring	PS4231010DP	PS4231011DP

Accessories - 5599-1, Non Plug-in, Size 3 (H3) * Not compatible with H Universal

Accessory	Description	Part number
	Common pressure	5-125 PSIG w/ gauge
	Independent pressure	5-125 PSIG w/ gauge
	Blanking plate kit	PS4234CP
	Sandwich flow control	PS4242CP
	Sandwich Flow Control and Common Port Sandwich Regulator may be sandwiched together on a manifold or subbase. The Sandwich Flow Control MUST be located between the manifold/subbase and the Common Port Sandwich Regulator.	
	Manifold to manifold gasket kits	PS4213P
	Manifold port isolation kit	Main galley (1, 3, 5)
	Manifold port isolation kit	Pilot galley (12, 14)

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Valve Central Connector - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

H3 **E** **WX** **B** **G** **2B9** **000F** **D**

Basic Series 5599-1
ISO 5599-1 Size 3 H3

5599-1 Operator / Function

Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting
Valve less base WX

5599-1 Pilot Source / Pilot Exhaust

Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights

Non-locking, flush, with light	G
Locking, flush, with light	H

5599-1 Engineering Level
D Current

5599-1 Central Connector Wiring Options

000C	Chrysler
000F*	SAE / Ford, ISO 20401
000G	General Motors

* Complies to ISO 20401 with Enclosure Lead Length "2".

Enclosure / Lead length / Voltage*

	AC		DC	
	60Hz	50Hz		
1B9†			24	3-pin, central mini connector, 3.2 watt
1F9†			24	3-pin, central mini connector, 1.3 watt
123†	120	115		3-pin, central mini connector
2B9			24	4-pin, central M12 connector, 3.2 watt
2F9*			24	4-pin, central M12 connector, 1.3 watt
3B9			24	5-pin, central mini connector, 3.2 watt
3F9*			24	5-pin, central mini connector, 1.3 watt
323	120	115		5-pin, central mini connector
619††			24	2-pin, M12 connector on coil

* All coils include LED & suppression
† Operator function "1" or "E"
* Only available with wiring option "000F"
* Override "G" only.

Valve CNOMO - Non Plug-in, 5599-1 Size 3 (H3) * Not compatible with H Universal

H3 **E** **WX** **B** **B** **L53** **D**

Basic Series 5599-1
ISO 5599-1 Size 3 H3

5599-1 Operator / Function

Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting
Valve less base WX

5599-1 Pilot Source / Pilot Exhaust

Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Engineering Level
D Current

Enclosure / Lead Length / Voltage

	AC		DC	
	60Hz	50Hz		
L42	24			3-pin, 30mm DIN 43650A with CNOMO connector
L45			12	3-pin, 30mm DIN 43650A with CNOMO connector
L49			24	3-pin, 30mm DIN 43650A with CNOMO connector
L53	120	115		3-pin, 30mm DIN 43650A with CNOMO connector
L57	240			3-pin, 30mm DIN 43650A with CNOMO connector
NXX				Valve less coil

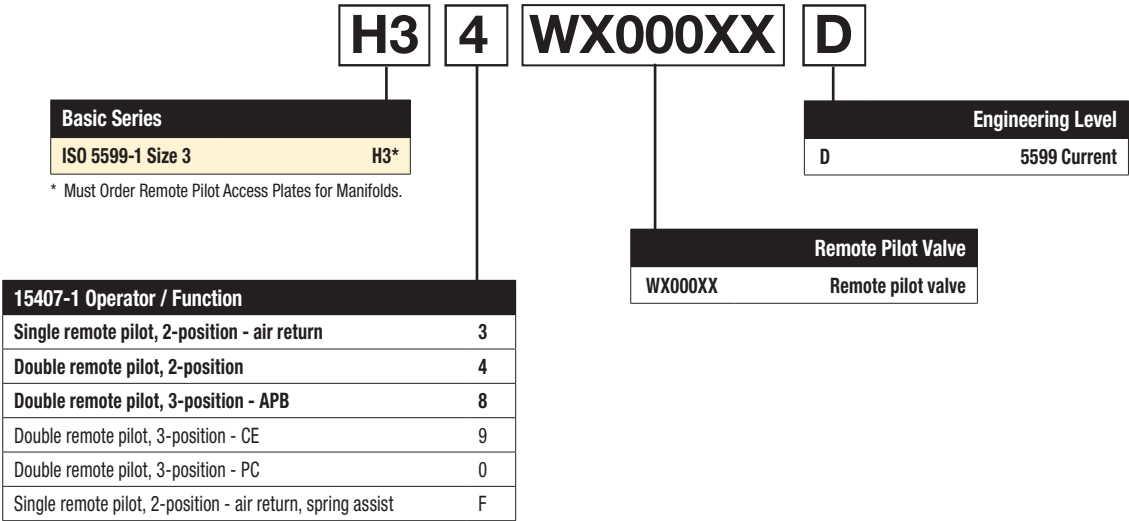
5599-1 Overrides / Lights

B	Non-locking, flush, push - no light
C	Locking, flush, push / turn - no light

Most popular.

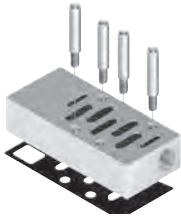
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Remote Pilot - Size 3 (H3) * Not compatible with H Universal



Note: For manifolds, end plates, and accessories, see 5599-1 Non Plug-in valve section.

Remote Pilot Access Plate Kits * Not compatible with H Universal



Size	Port size	NPT	BSPP "G"
H3	1/8"	PS421500CP	PS421501CP

Kit includes: Pilot Port Access Plate, Gasket and Mounting Studs.

 Most popular.

Manifold / Subbase Kit - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

PS421159		0	C	P
Mounting Base Style / Port Size		Engineering Level		
Subbase: 3/4 NPT side ports	PS421119	C		
Subbase: 3/4 BSPP side port	PS421110*	H3		
Manifold: 3/4 NPT End port	PS421159			
Manifold: 3/4 BSPP end port	PS421150*			
Manifold: 3/4 NPT bottom / end port	PS421169			
Manifold: 3/4 BSPP bottom / end port	PS421160*			
		Enclosures / Lead Length		
		0	None, No Electrical Plug - 5599-1	

* BSPP conforms to ISO 1179-1 w 228-1 threads.



H3 Subbase shown

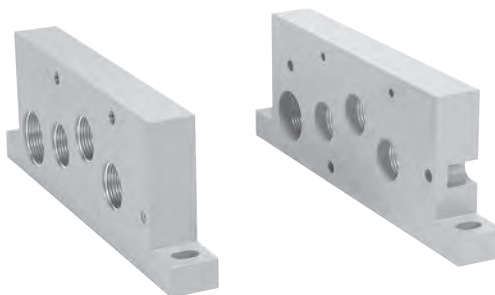


H3 Manifold shown

End Plate Kit - Non-Plug-in, 5599-1 * Not compatible with H Universal

PS423101		0	C	P
Basic Series		Thread Type		
ISO 5599, Size 3	PS423101	0	NPT	
		1*	BSPP "G"	

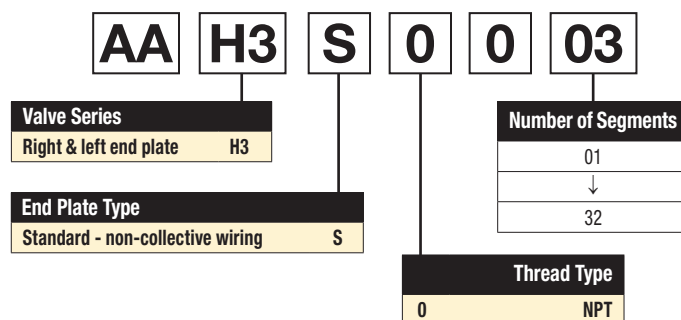
* BSPP conforms to ISO 1179-1 w 228-1 threads.



H3 Non-Collective Wiring End Plates shown

 Most popular.

Add-A-Fold Assembly - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal



How To Order Non Plug-in Add-A-Fold Assemblies

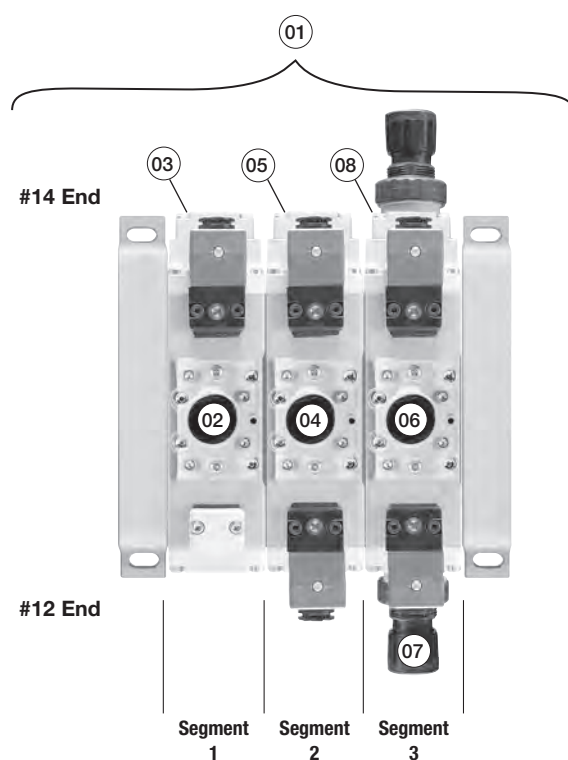
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve, regulator, flow control and manifold base kit. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most segment is segment 1. (If a blank station is needed, list the blanking plate part number and the individual manifold part numbers for the required segment.)

Example

Application requires a 3 segment manifold and regulator on segment 3.

Item	Part No.	Location	
01	AAH3S003		
02	H31WXBG2B9000FD	Segment 1	Valve station 1
03	PS4211590CP		Manifold base
04	H32WXBG2B9000FD	Segment 2	Valve station 2
05	PS4211590CP		Manifold base
06	H32WXXG2B9000FD	Segment 3	Valve station 3
07	PS4237166CP		Sandwich regulator
08	PS4211590CP		Manifold base

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3 segment manifold with (3) H3 valves on manifold bases and regulator at segment 3.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Sandwich Regulator - Non Plug-in, 5599-1, Size 3 (H3) * Not compatible with H Universal

PS4237

Basic Series
H3 5599-1, Non Plug-in PS4237

1

Regulator Function
Common Pressure Regulator 1
Independent Pressure Regulator 2

6

#2 Port Regulator / Gauge*

0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)
** Pressure line by-pass option can only be used with independent pressure regulators.

6

#4 Port Regulator / Gauge*

0**	Line By-Pass Plate
4	1-30 PSIG w/Gauge
5	2-60 PSIG w/Gauge
6	5-125 PSIG w/Gauge
D	Remote Pilot ISO 2 & 3 only

* For common pressure regulator option, regulator gauge callout must be the same number for both Port #4 and Port #2. (Example: 166)
** Pressure line by-pass option can only be used with independent pressure regulators.

C

P

Ordering Components

- Sandwich regulator kit configured for internal pilot as standard.
- Order valve as external pilot.

How to Configure Sandwich Regulator / Valve Combinations

Internal Pilot Configuration of Sandwich Regulator H3
Pressure in Base Port 1 feeds regulator configured for Internal Pilot which feeds valve configured for External Pilot.

External Pilot Configuration of Sandwich Regulator H3
An External Pilot pressure in Port 12 or 14 of the base feeds thru the Sandwich Regulator 12 or 14 galley directly to the 12/14 pilot of the valve.
This configuration takes an External Pilot from the 12 port of the base and passes it thru the regulator to feed the 12 galley of the valve.

Sandwich Regulator Cv Flow Chart*

Common Pressure Code 166					Single Pressure 2 Code 206				Single Pressure 4 Code 260				Dual Pressure Code 266			
1-2	1-4	2-3	4-5		1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*	1-2	1-4	2-3	4-5*
H3	2.37	2.39	4.30	4.47	2.37	2.81	2.75	3.01	2.65	2.59	2.68	2.74	2.43	2.41	3.16	3.04

* Regulator Port exhaust through Base Port 3.
Note: All Cv's calculated with regulator adjusted full open.

Most popular.

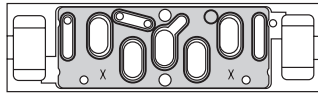
For inventory, lead times, and kit lookup, visit www.pdnplu.com

47

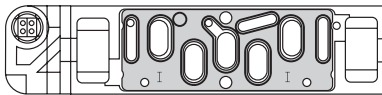
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

ISO Pneumatic Valve Standard Definitions

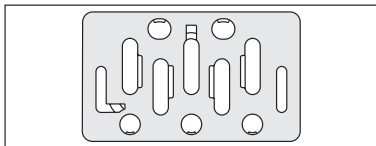
15407-1: Non-Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



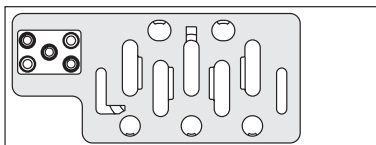
15407-2: Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



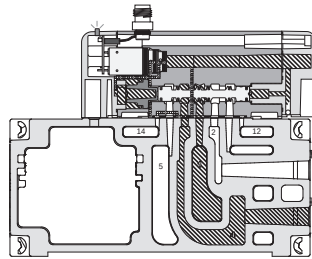
5599-1: Non-Plug-in Standards for Sizes 1, 2, 3



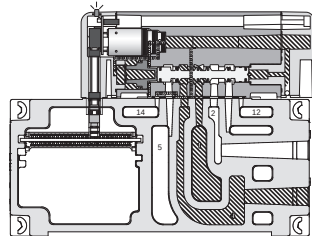
5599-2: Plug-in Standards for Size 1, 2, 3



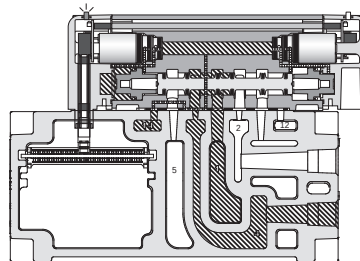
HB / HA Series



15407-1 18mm Single Solenoid Internal Pilot Manifold Mounted



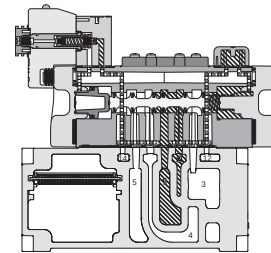
15407-2 18mm Single Solenoid Internal Pilot Manifold Mounted



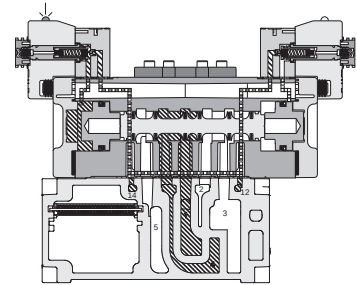
15407-2 26mm Double Solenoid External Pilot Manifold Mounted

Pressure Exhaust

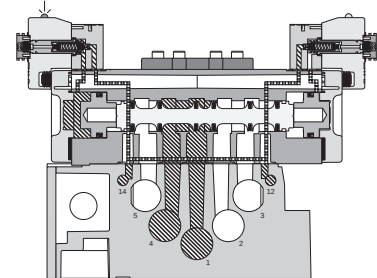
H1, H2, H3 Series



H1 5599-2 Single Solenoid Internal Pilot Manifold Mounted



H2 5599-2 Double Solenoid External Pilot Manifold Mounted

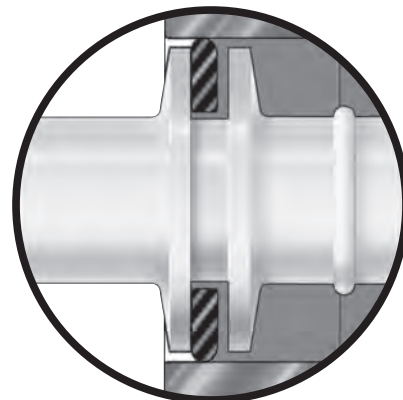


H3 5599-2 Double Solenoid External Pilot Subbase Mounted

Pressure Exhaust

Wear Compensation System

- Maximum Performance
 - Low Friction
 - Fast Response
 - Lower Operating Pressures
 - Less Wear
- Long Cycle Life - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- Non-Lube Service - No lubrication required for continuous valve shifting.
- Bi-Directional Spool Seals - Common spool used for any pressure, including vacuum.



Flow Rating (Cv)

Valve size	Port size	2-Position	3-Position
HB	1/8"	0.55 Cv, C = 1.5 NI/s x bar, b = 0.25, Qn = 390 l/min, Qmax = 648 l/min	0.50 Cv, C = 1.4 NI/s x bar, b = 0.25, Qn = 360 l/min, Qmax = 595 l/min
HA	1/4"	1.1 Cv, C = 3.6 NI/s x bar, b = 0.30, Qn = 918 l/min, Qmax = 1518 l/min	1.0 Cv, C = 3.3 NI/s x bar, b = 0.30, Qn = 845 l/min, Qmax = 1395 l/min
H1	3/8"	1.5 Cv, C = 5.0 NI/s x bar, b = 0.30, Qn = 1248 l/min, Qmax = 2070 l/min	1.2 Cv, C = 4.1 NI/s x bar, b = 0.30, Qn = 1000 l/min, Qmax = 1660 l/min
H2	1/2"	3.0 Cv, C = 9.7 NI/s x bar, b = 0.35, Qn = 2520 l/min, Qmax = 4140 l/min	2.8 Cv, C = 9.0 NI/s x bar, b = 0.35, Qn = 2340 l/min, Qmax = 3860 l/min
H3	3/4"	6.0 Cv, C = 18.7 NI/s x bar, b = 0.35, Qn = 5022 l/min, Qmax = 7848 l/min	5.0 Cv, C = 15.4 NI/s x bar, b = 0.35, Qn = 4185 l/min, Qmax = 6545 l/min

Cv tested per ANSI / (NFPA) T3.21.3
 Flow tested According to ISO 6358.

Response Time** (ms)

Valve size	Port size	0 Cu. In. Chamber		## Cu. In. Chamber	
		Fill	Exhaust	Fill	Exhaust
Single Solenoid 2-Position - Air Return / Spring Assist					
HB	1/8"	28	30	141	154
HA	1/4"	24	26	77	124
H1	3/8"	28	39	124	198
H2	1/2"	38	76	149	295
H3	3/4"	56	70	163	235

F9, 1.3 W Coil Only Single Solenoid 2-Position - Air Return / Spring Assist

H1	3/8"	55	84	188	270
H2	1/2"	91	146	245	349
H3	3/4"	126	127	256	328

HB (12), HA (25), H1 (50), H2 (100), H3 (200)

** With 100 PSIG supply, time (ms) required to fill from 0 to 90 PSIG and Exhaust from 100 PSIG to 10 PSIG measured from the instant of energizing or de-energizing 24VDC solenoid.

Tested per ANSI / (NFPA) T3.21.8

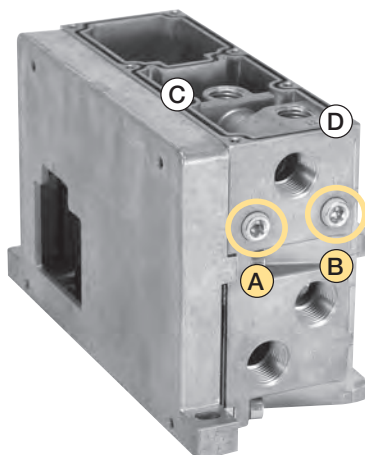
Left End Plate Field Conversion

End plate kits and manifold assemblies are ordered as internal or single external pilot however field conversion is possible.

End Plate Configuration - Internal Pilot *

Insert 2 pipe plugs in locations A & B (1/8" NPT or G 1/8) as shown

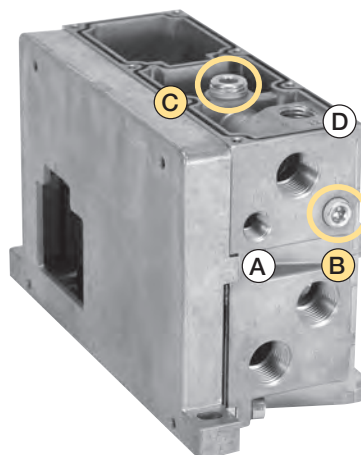
Blocking off the pilot supply ports will configure the left end plate as internally piloted. Pilot pressure required to operate the H Series valves will be drawn from the supply or #1 port and no additional connections are required. Port locations C & D must be left unplugged for this option to function properly.



End Plate Configuration - Single External Pilot *

Insert 1 pipe plug into location C (1/4" NPT) as shown to configure the left end plate as single externally piloted.

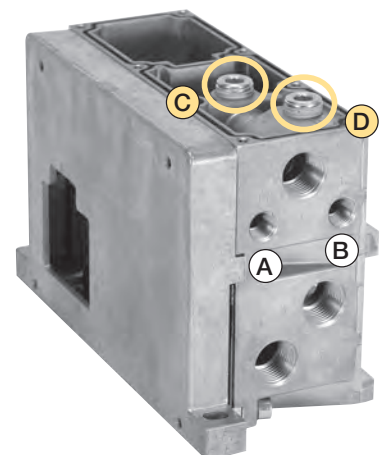
Pilot pressure required to operate the H Series valves must be supplied to the 14 port only at location A which is internally connected to the 12 pilot.



End Plate Configuration - Double External Pilot

Insert 2 pipe plugs in locations C & D (1/4" NPT) as shown to configure the left end plate as double externally piloted.

Pilot pressure required to operate the H Series valves must be supplied separately to both ports 14 and 12 (locations A and B).



* Standard in catalog

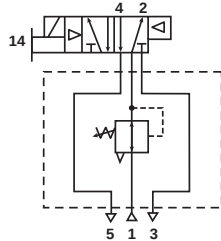
Note: Left end plate shown with cover removed.

Common Port Regulation - Plug-in, HB & HA

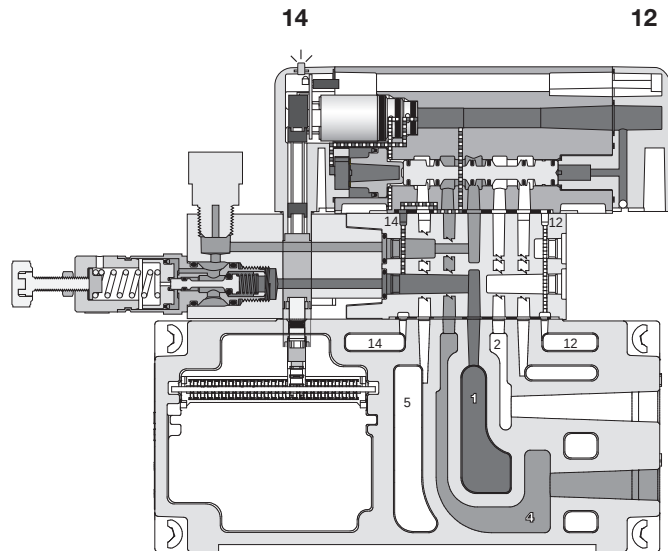
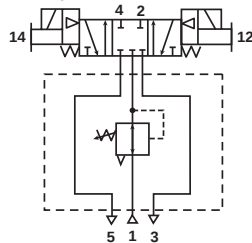
Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

HB Common Port Regulator Shown - Single Solenoid, 14 Energized

Common Port Regulator with
 4-Way, 2-Position
 Single Solenoid Valve



Common Port Regulator with
 4-Way, 3-Position APB Valve



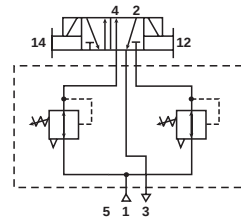
Independent Dual Port Regulation - Plug-in, HB & HA

Dual Port Regulator

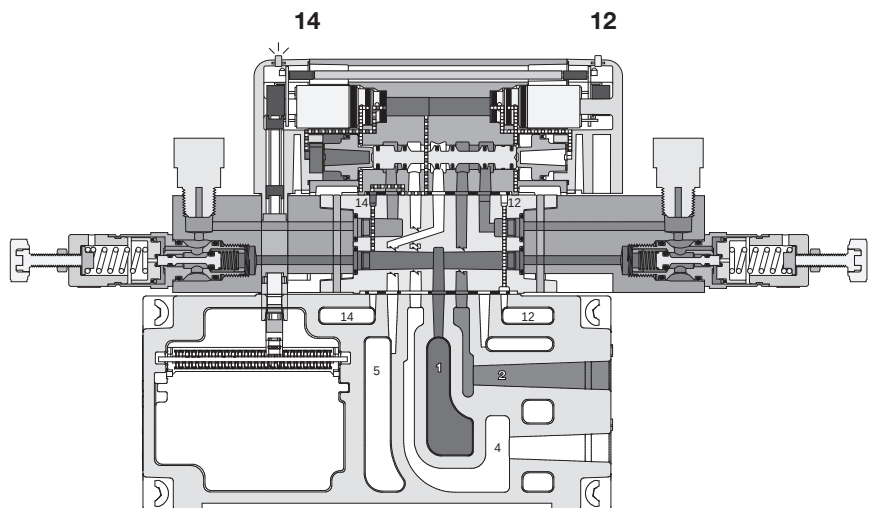
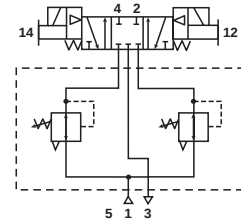
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized

Independent Dual Port Regulator with
 4-Way, 2-Position
 Double Solenoid Valve



Independent Dual Port Regulator with
 4-Way, 3-Position
 Double Solenoid Valve

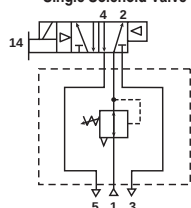


When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics above.)

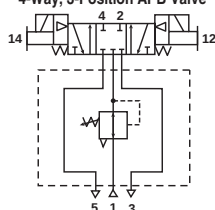
Common Port Regulation - Non Plug-in, HB & HA

Provides adjustable regulated air pressure to the valve's #1 port which gives the same pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

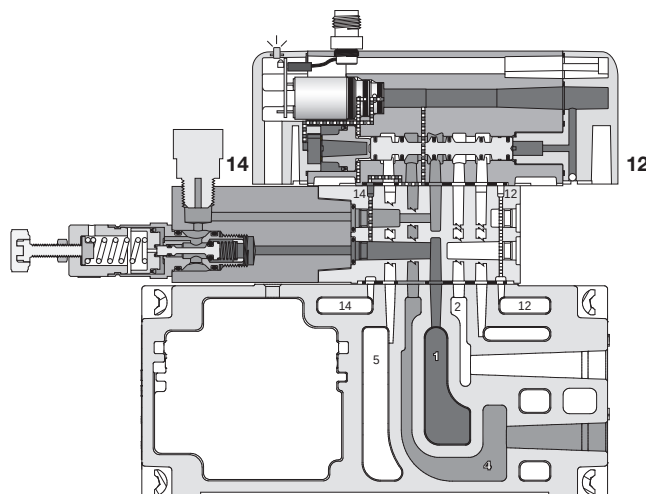
Common Port Regulator with
 4-Way, 2-Position
 Single Solenoid Valve



Common Port Regulator with
 4-Way, 3-Position APB Valve



HB Common Port Regulator Shown - Single Solenoid, 14 Energized

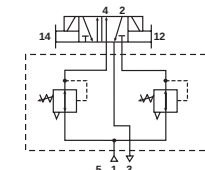


Independent Dual Port Regulation - Non Plug-in, HB & HA

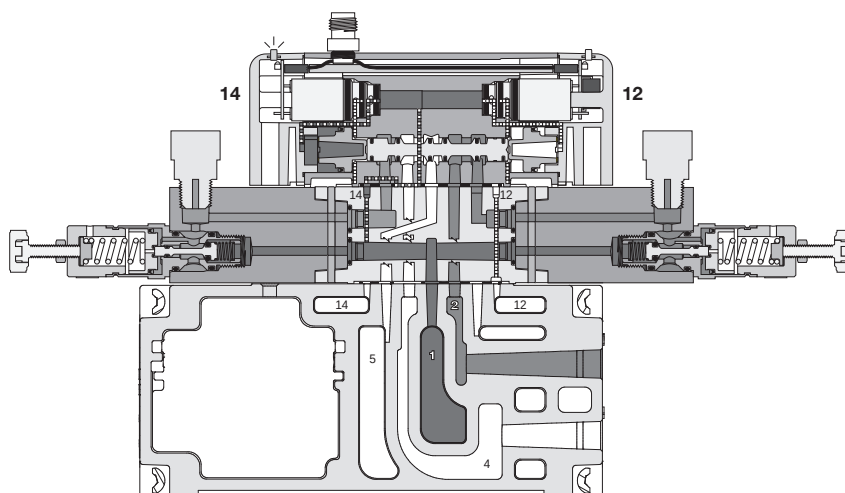
Dual Port Regulator

Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

Independent Dual Port Regulator with
 4-Way, 2-Position
 Double Solenoid Valve



HB Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized



When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)

 Most popular.

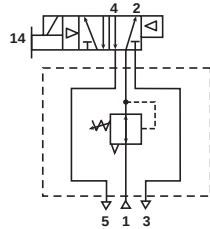


For inventory, lead times, and kit
 lookup, visit www.pdnplu.com

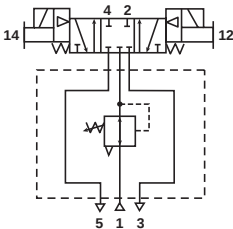
Common Port Regulation - Plug-in, H1, H2, H3

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

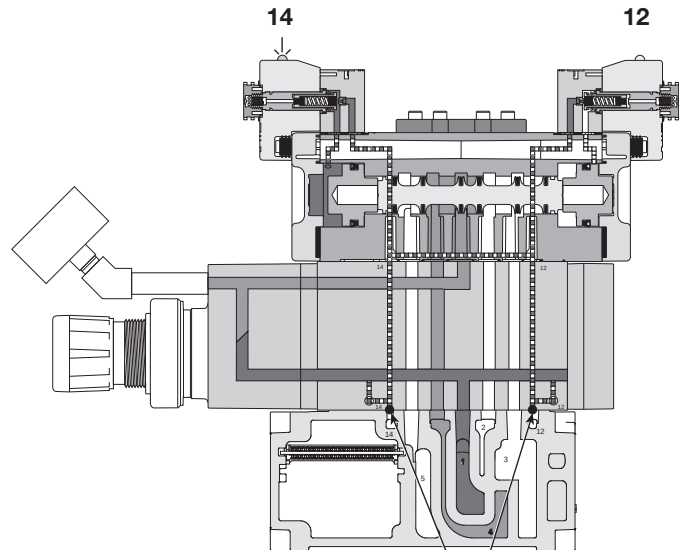
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



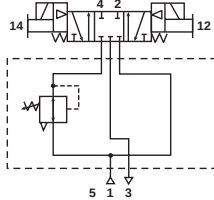
Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

Independent Port Regulation - Plug-in, H1, H2, H3

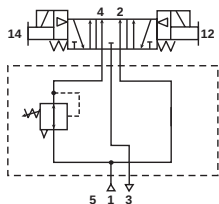
Single Port Regulator

Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve

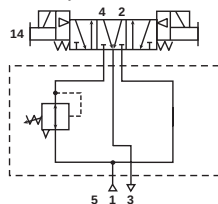


Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function



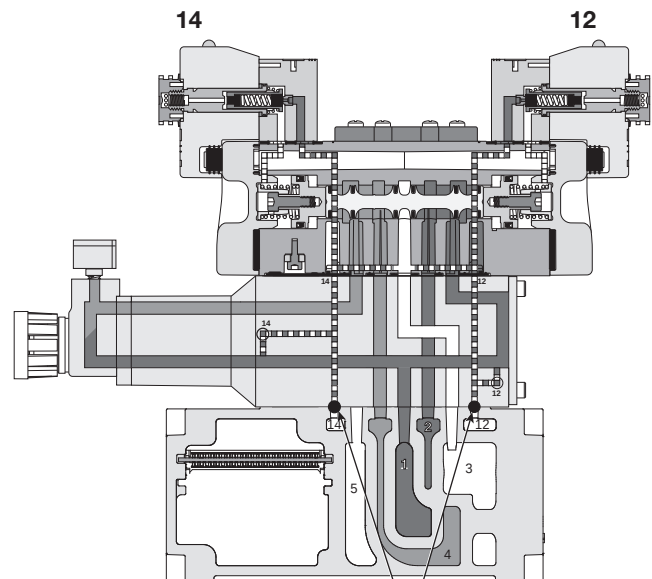
CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve

Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function



CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve

H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics above.)

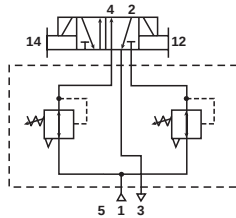
Independent Dual Port Regulation - Plug-in, H1, H2, H3

Dual Port Regulator

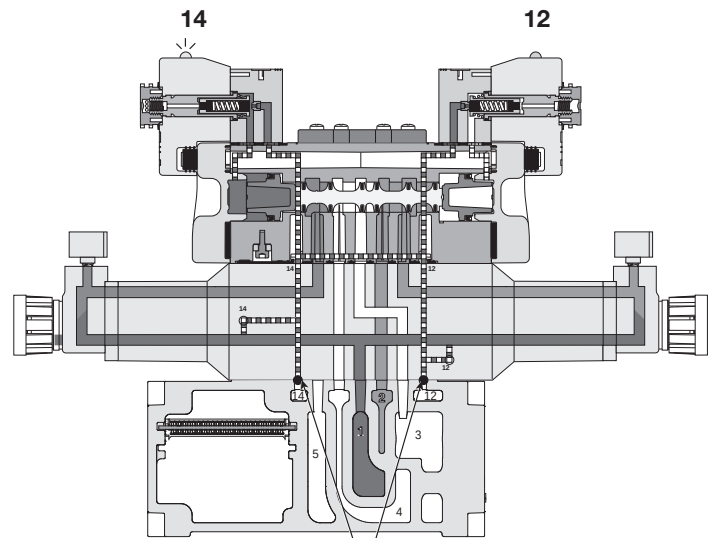
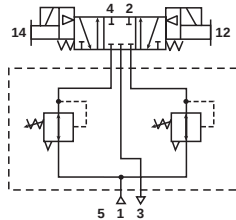
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot

Independent Dual Port Regulator with
 4-Way, 2-Position
 Double Solenoid Valve



Independent Dual Port Regulator with
 4-Way, 3-Position
 Double Solenoid Valve



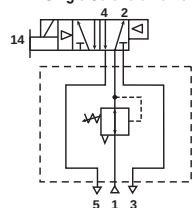
Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)

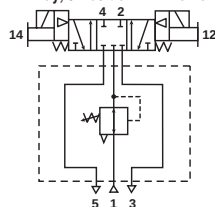
Common Port Regulation - Non Plug-in, H1, H2, H3

Provides adjustable regulated air pressure to the valve's #1 port which gives the same regulated pressure to both the #2 and #4 port of the manifold or subbase. The regulator is always on the 14 end of the valve.

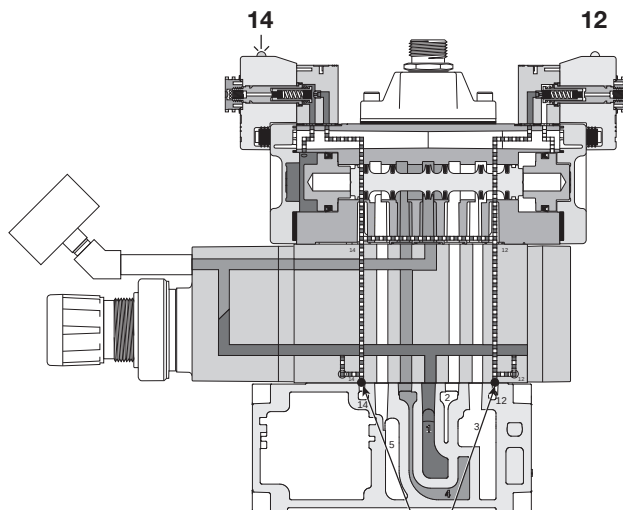
Common Port Regulator with 4-Way, 2-Position Single Solenoid Valve



Common Port Regulator with 4-Way, 3-Position APB Valve



H2 Common Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot



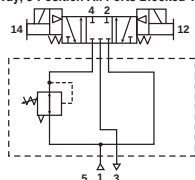
Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of the I & E Pilot Holes which prevents line pressure from escaping through the manifold.

Independent Port Regulation - Non Plug-in, H1, H2, H3

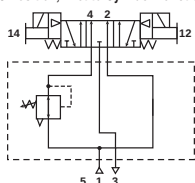
Single Port Regulator

Provides regulated pressure to one of the ports and full line pressure to the other by use of the Line Pressure By-Pass Plate. Pressure regulation can occur out of the #4 port of the valve.

Independent Port Regulator with 4-Way, 3-Position All Ports Blocked Valve

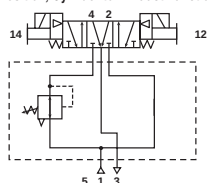


Independent Port Regulator with 4-Way, 3-Position, Inlet to Cylinder Function



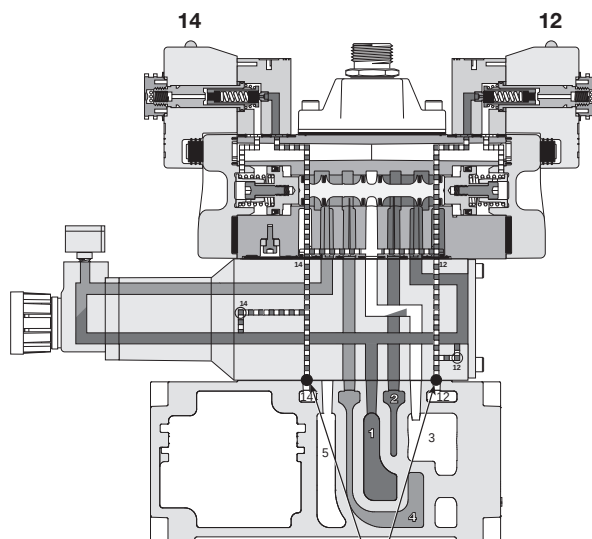
⚠ CAUTION: Requires 4-Way, 3-Position, Cylinder to Exhaust Valve

Independent Port Regulator with 4-Way, 3-Position, Cylinder to Exhaust Function



⚠ CAUTION: Requires 4-Way, 3-Position, Inlet to Cylinder Valve

H1 Independent Port Regulator Shown - Double Solenoid, De-energized, Internal Pilot



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom of #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

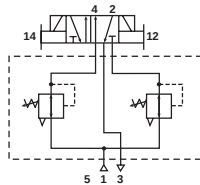
Independent Dual Port Regulation - Non Plug-in, H1, H2, H3

Dual Port Regulator

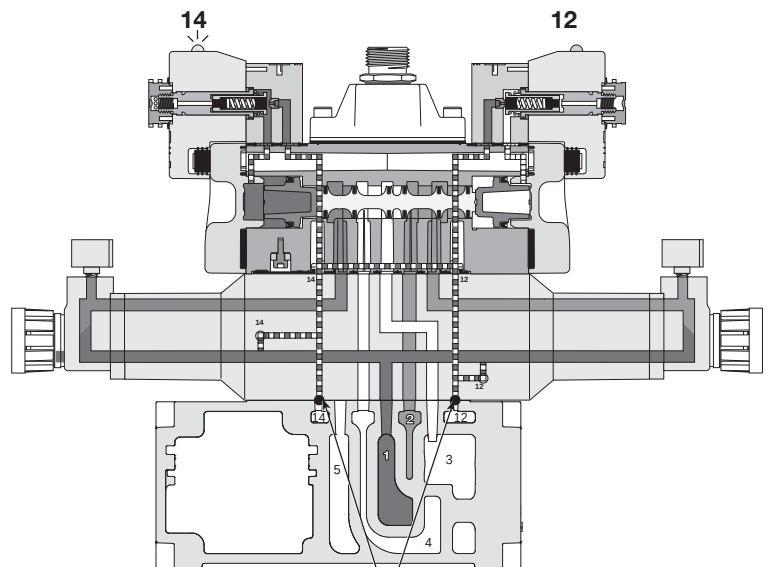
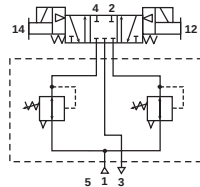
Provides regulated pressure to both ports. Pressure regulation can occur out of the #2 or #4 port of the valve.

H1 Independent Dual Port Regulator Shown - Double Solenoid, 14 Energized, Internal Pilot

Independent Dual Port Regulator with
 4-Way, 2-Position
 Double Solenoid Valve



Independent Dual Port Regulator with
 4-Way, 3-Position
 Double Solenoid Valve



Sandwich Regulator has standard configuration of Internal Pilot with the Pilot Plug in the bottom #12 and #14 Pilot Hole which prevents line pressure from escaping through the manifold.

When using an Independent Pressure Sandwich Regulator, the cylinder outlet ports are reversed. The 12 end energizes the #4 port and the 14 end energizes the #2 port. The 3-Position CE and PC functions are also reversed. (See schematics on above.)

Minimum Operating Voltage

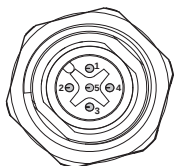
	HB	HA	H1	H2	H3
MOV (24VDC)	20.4	20.4	20.4	20.4	20.4
MOV (120VAC)	102*	102*	102	102	102

* 120VAC coils have a dropout voltage of 10VAC when used with solid state relays. A pull-down resistor may be necessary.

P2H IO-Link

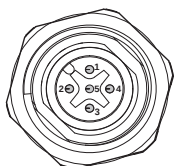
Class B, M12 pin

Pin Number	Address
1	L+
2	AUX+
3	L-
4	C/Q
5	AUX-



Class A, M12 pin

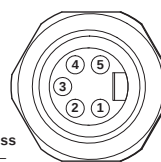
Pin Number	Address
1	L+
2	
3	L-
4	C/Q
5	



Class A, Power IN / OUT 7/8 pin

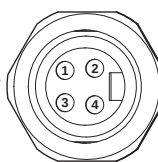
Class A, 5-Pin

Pin Number	Address
1	AUX-
2	*L-
3	Earth
4	*L+
5	AUX+



Class A, 4-Pin

Pin Number	Address
1	AUX+
2	*L+
3	*L-
4	AUX-

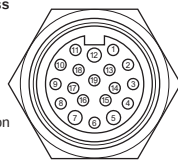


* 7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3).

19-Pin Connector, Round Brad Harrison

Male, face view

Pin Number	Address
1	0
2	1
3	2
4	3
5	N/A
6	4
7	Common
8	5
9	6
10	7



Pin Number	Address
11	8
12	Ground
13	9
14	10
15	11
16	12
17	13
18	14
19	15

19-Pin Round Cable Specifications

Common Pin "7" is rated for 8 amps. Cable common wire must be greater than total amperage of solenoids on Add-A-Fold assembly.

Example: 8 segment manifold, 16 solenoids, 120VAC - 16 x .039 amps = .63 total amp rating.

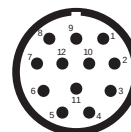
NEMA 4 rated with properly assembled NEMA 4 rated cable.

H Series ISO & Network Connectivity H Series ISO 15407 & 5599

M23, Round Connector

Male 12-pin connector, face view

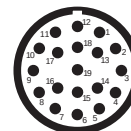
Pin Number	Address
1	0
2	1
3	2
4	3
5	4
6	5



Pin Number	Address
7	6
8	7
9	Ret (Common)
10	Ret (Common)
11	Not Used
12	Ground

Male 19-pin connector, view into end plate

Pin Number	Address
1	0
2	1
3	2
4	3
5	4
6	Common
7	5
8	6
9	7



Pin Number	Address
10	8
11	9
12	Not Used
13	10
14	11
15	12
16	13
17	14
18	15
19	Not Used

25-Pin, D-Sub Connector

Male, view into end plate connector

Address	Pin Number	Pin Number	Address
1	14	1	0
3	15	2	2
5	16	3	4
7	17	4	6
9	18	5	8
11	19	6	10
13	20	7	12
15	21	8	14
17	22	9	16
19	23	10	18
21	24	11	20
23	25	12	22
		13	Common

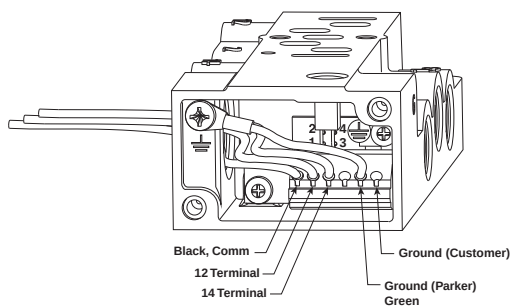
Female, view into cable connector

Address	Color	Pin Number	Pin Number	Color	Address
0	Black	1	14	Brown / White	1
2	Brown	2	15	Red / White	3
4	Red	3	16	Orange / White	5
6	Orange	4	17	Green / White	7
8	Yellow	5	18	Blue / White	9
10	Green	6	19	Purple / White	11
12	Blue	7	20	Red / Black	13
14	Purple	8	21	Orange / Black	15
16	Gray	9	22	Yellow / Black	17
18	White	10	23	Green / Black	19
20	Pink	11	24	Gray / Black	21
22	Lt Green	12	25	Pink / Black	23
Common Black / White		13			



Description	Length	Part number
25-pin, D-sub cable, IP20	3 Meters	P8LMH25M3A
25-pin, D-sub cable, IP20	9 Meters	SCD259D
25-pin, D-sub cable, IP65	3 Meters	SCD253W
25-pin, D-sub cable, IP65	9 Meters	SCD259WE

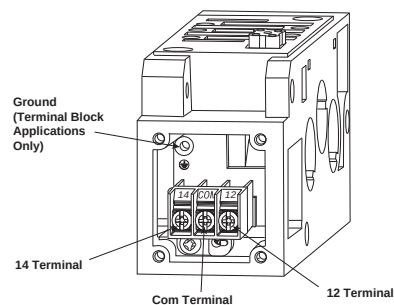
Subbase Wiring



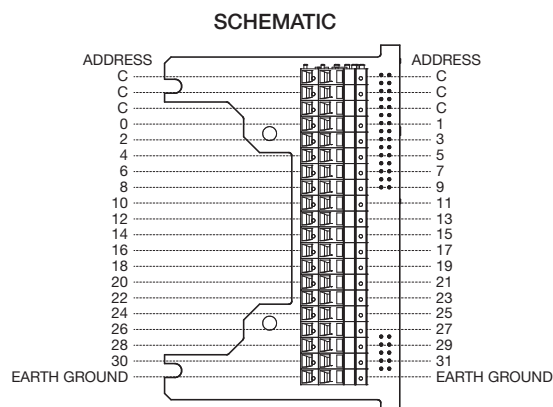
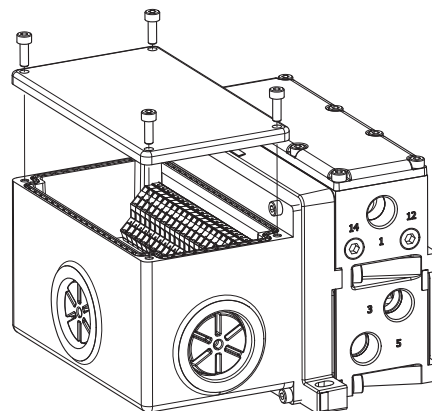
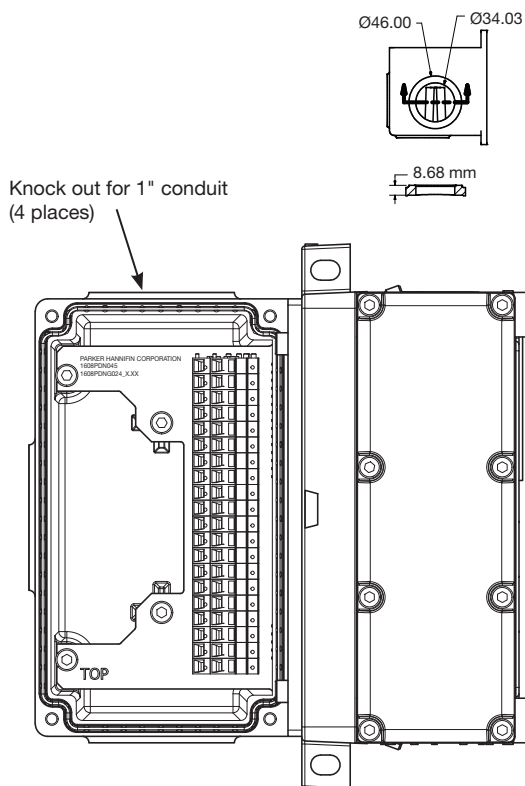
All commons internally connected on terminal strip

Connections	14 Solenoid	12 Solenoid
Valves with Wires	Black Wires	Red Wires
Valves with Terminal Block (Will accept 18 to 24 Gauge Wires)	14 and Com Terminals	12 and Com Terminals

Manifold Wiring - Size 3



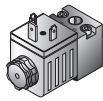
Terminal Box Wiring (H Universal)



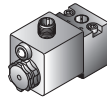
All commons internally connected on terminal strip

Electrical Connectors - Size 1, 2 & 3

5599-1 CNOMO

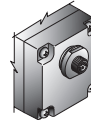


30mm 3-Pin ISO 4400
(DIN 43650A)

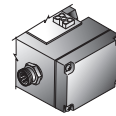


2-Pin M12 Euro

5599-2



Manifold Auto Connector
(H3 Only)

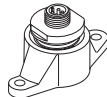


Subbase Auto Connector

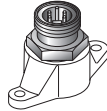
5599-1 AUTO



3-Pin Mini

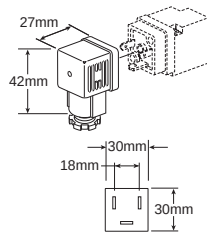


4-Pin Micro



5-Pin Mini

30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure “A”)



Description	Connector with 6' (2m) cord	Connector
Unlighted	PS2028JCP	PS2028BP
Light – 6-48V. 50/60Hz. 6-48VDC	PS2032J79CP*	PS203279BP
Light – 120V/60Hz	PS2032J83CP*	PS203283BP

* LED with surge suppression.

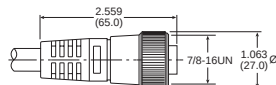
Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:

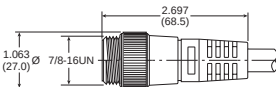
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 Inch); contact spacing: 18mm

7/8" Mini Power Cables - use with 5-pin mini connector

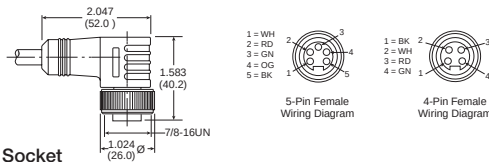
RKM Female Socket



RSM Male Pins



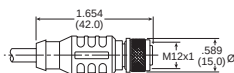
WKM Female Socket



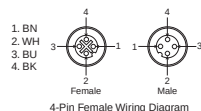
Description	Part number
4-pin female to flying lead cable, 5 meters, TPE	RKM 46-5M/S1587
5-pin female to flying lead cable, 5 meters, TPE	RKM 56-5M/S1587
4-pin male to female cable, TPE	RSM RKM 46-x/S1587
5-pin male to female cable, TPE	RSM RKM 56-x/S1587
4-pin right angle female to flying lead cable, 5 meters, TPE	WKM 46-5M/S1587
5-pin right angle female to flying lead cable, TPE	WKM 56-5M/S1587

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

M12 A-code Cables - use with 4-pin micro, 2-pin micro



RKC Female Sockets



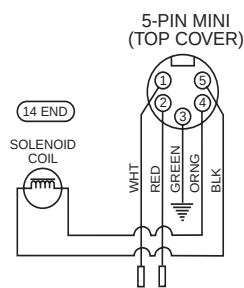
Description	Part number
4-pin female to flying lead cable, PVC	RKC 4.4T-1
4-pin male to flying lead cable, PVC	RSC 4.4T-*
4-pin male to female cable, PVC	RKC 4.4T-*/RSC 4.4T
5-pin female to flying lead cable, TPE	RKC 4.5T-*/S1587
5-pin male to flying lead cable, TPE	RSC 4.5T-4/S1587
5-pin male to female cable, TPE	RKC 4.5T-*/RSC 4.5T/S1587

Where * = 1, 2, 3, 4 meter standard lengths

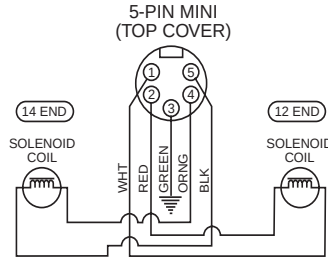
Automotive Connection – Wiring Options

‘C’ Chrysler Connection

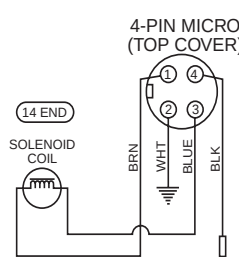
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option C)



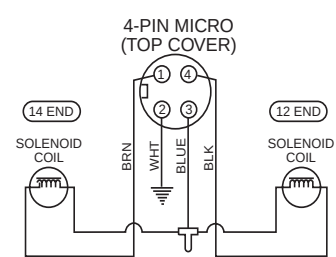
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option C)



4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option C)

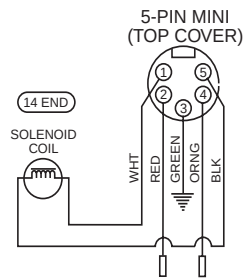


4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option C)

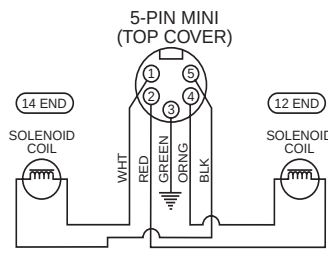


‘F’ SAE / Ford Wiring

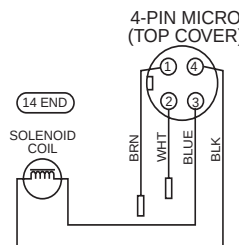
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option F)



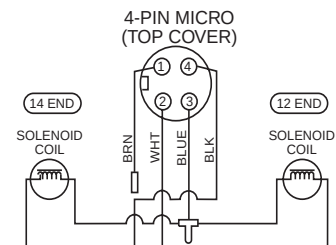
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option F)



ISO 20401
4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option F)

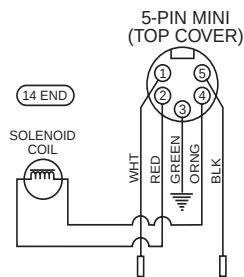


ISO 20401
4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option F)

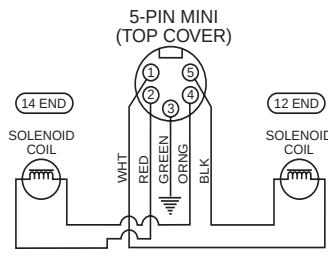


‘G’ GM Wiring

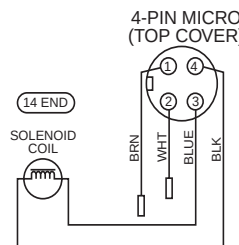
5-Pin Male / Single Solenoid
(Encl. Option 3, Auto Option G)



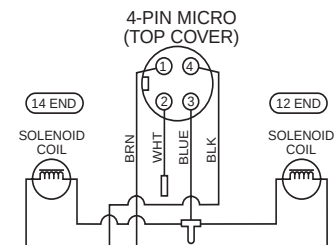
5-Pin Male / Double Solenoid
(Encl. Option 3, Auto Option G)



4-Pin Male / Single Solenoid
(Encl. Option 2, Auto Option G)

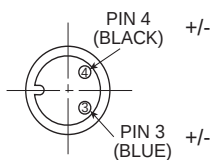


4-Pin Male / Double Solenoid
(Encl. Option 2, Auto Option G)

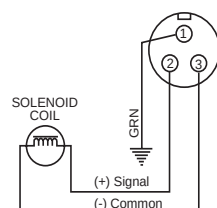


CNOMO Connection - Wiring Options

2-Pin Male / Single Solenoid
(Encl. Option 6, Auto Option F)



3-Pin Male / Single Solenoid
(Encl. Option 1, Auto Options C, F & G)



Maximum Number of Solenoids (Maximum energized simultaneously)

	Voltage code	25-pin D-sub	19-pin Brad Harrison	12-Pin M23	19-pin M23	P2M Network Node	P2H Network Node	H Series Network Portal	Turck Network Portal	
									16 Outputs	32 Outputs
HA & HB										
24VDC	G9 (1.0 watt)	24 (24)	16 (16)	8 (8)	16 (16)	24 (24)	24 (24)	32 (32)	16 (16)	32 (32)
120VAC*	23 (1.0 VA)	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A	N/A
H1, H2										
12VDC	45 (2.4 watt)	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A	N/A	N/A	N/A
24VAC*	42 (4.0 VA)	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A	N/A
24VDC	B9 (3.2 watt)	24 (24)	16 (16)	8 (8)	16 (16)	24 (24) [†] §	24 (24) [†]	32 (32)	16 (16)	32 (32)
24VDC	F9 (1.3 watt)	24 (24)	16 (16)	8 (8)	16 (16)	24 (24)	24 (24) [†]	32 (32)	16 (16)	32 (32)
120VAC*	23 (4.5 VA)	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A	N/A
H3 Only										
12VDC	45 (2.4 watt)	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A	N/A	N/A	N/A
24VAC*	42 (4.0 VA)	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A	N/A
24VDC	B9 (3.2 watt)	24 (20)	16 (16)	8 (8)	16 (16)	24 (24) [†] §	24 (24) [†]	24 (21)	16 (16)	24 (21)
24VDC	F9 (1.3 watt)	24 (24)	16 (16)	8 (8)	16 (16)	24 (24)	24 (24) [†]	24 (24)	16 (16)	24 (24)
120VAC*	23 (4.5 VA)	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A	N/A

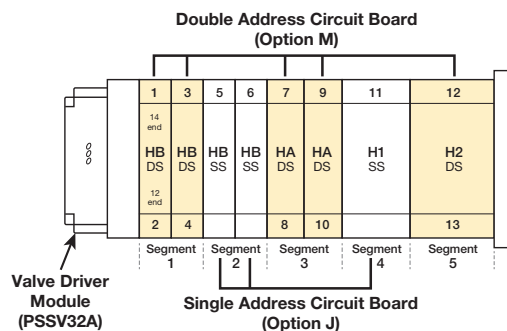
* Not CSA certified for 25-pin, D-sub option.

† Use Type A IO-Link module for 24 outputs simultaneously.

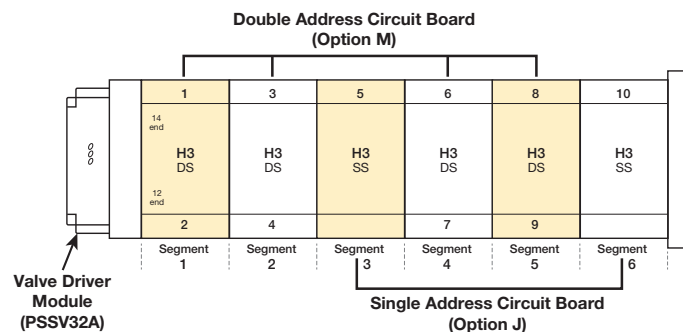
§ P2M Industrial Ethernet limited to 2A, use F9 coil for more than simultaneous solenoids.

I/O Addressing Examples

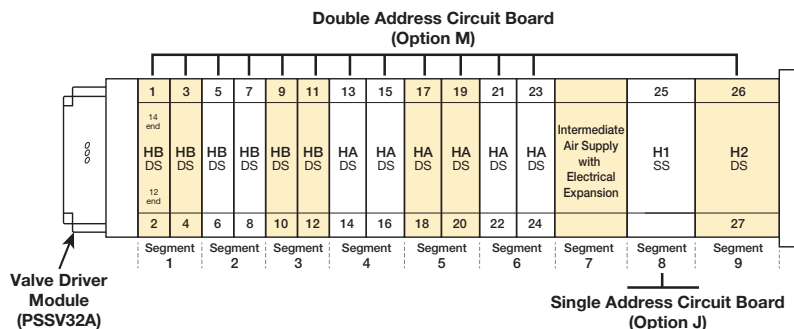
HB, HA, H1, H2 - Five Segment Manifold Example



H3 Example - Six Segment Manifold Example



HB, HA, H1, H2 - Nine Segment Manifold with Intermediate Supply Example



Notes: SS = Single Solenoid Valve
DS = Double Solenoid Valve
First output address is the #14 end of the valve closest to the valve driver module.

Intermediate Module with Electrical Expansion to 25th address required for manifolds with greater than 24 solenoid addresses.

5599-2 & 5599-1 AUTO Solenoid Kits

Valve size	Voltage code	Coil kit number
H1, H2 & H3	42 (24VAC)	PS404142P
	45 (12VDC)	PS404145P
	B9 (24VDC), 3.2 watt	PS4041B9P
	F9 (24VDC), 1.3 watt	PS4041F9P
	23 (120VAC)	PS404123P
	57 (240VAC)	PS404157P

Quantity 1

Pilot Operator - CNOMO

Valve size		Kit number
H1, H2 & H3	Locking	PS4052CP
	Non-locking	PS4053CP
	Non-locking †	PS4054CP

† F9 (1.3 watt) coil option only.

Manifold Hardware Kits – PS Series

Valve size	Kit number
HB, HA, H1, H2 *	PSHU10P
H3 **	PS4212P

* Quantity 20

** Quantity 12

Valve Bolt Kits

Valve size	Kit number
HB	PS5687P
HA	PS5587P
H1	PS4087DP
H2	PS4187DP
H3	PS4287DP

Quantity 12

Valve to Base Gasket Kits

Valve size	Standard	Remote pilot	Dual pressure #3	Dual pressure #5
HB	PS5605P*	—	—	—
HA	PS5505P*	—	—	—
H1	PS4005DP	PS4006DP	PS40D3DP	—
H2	PS4105DP	PS4106DP	PS41D3DP	PS41D5DP
H3	PS4205DP	PS4206DP	PS42D3DP	PS42D5DP

Quantity 1

* Quantity 10

H Series ISO & Network Connectivity H Series ISO 15407 & 5599

5599-1 CNOMO Solenoid Kits

Voltage code	3-pin, 30mm 'L' coil kit	2-pin, M12 Euro '6' coil kit
19	—	PS2828619P
42	P2FCA442	—
45	P2FCA445	—
49	P2FCA449	—
53	P2FCA453	—
57	P2FCA457	—

Quantity 1

Body Service Kits

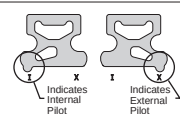
Valve size	2-position	3-position		
		APB	CE	PC
HB	PS5601P	PS5602P	PS5603P	PS5604P
HA	PS5501P	PS5502P	PS5503P	PS5504P
H1	PS4001CP	PS4002CP	PS4003CP	PS4004CP
H2	PS4101CP	PS4102CP	PS4103CP	PS4104CP
H3	PS4201CP	PS4202CP	PS4203CP	PS4204CP

HB / HA Kit Includes: Spool assembly with seals.

H1, H2, H3 Kit Includes: Spool assembly with seals, all piston seals, return spring, pilot selector gasket, coil to end cap gasket.

Quantity 1

Pilot Select Gasket Kits

	Valve size	Part number
	HB	PS5605P
	HA	PS5505P
	H1, H2 & H3	PS4007P

Quantity 10

Regulator Kits

Valve size	Part number
H1	PS4039P
H2, H3	PS4139P

Regulator & Flow Control Mounting Studs

Valve type	Type	Part number
HB	Flow Control & Regulator	PS5636P
HA	Flow Control & Regulator	PS5536P
H1	Flow Control	PS4036P
	Regulator	PS4040P
H2	Flow Control	PS4136P
	Regulator	PS4140P
H3	Flow Control	PS4236P
	Regulator	PS4240P

Quantity 12

Regulator Gauge Kits – Size H1, H2 & H3

Gauge type	Part number
1" Face Air - Standard	
0 to 60 PSIG	PS4051060BP
0 to 160 PSIG	PS4051160BP
1-1/2" Face Air - Large*	
0 to 60 PSIG	PS4053060BP
0 to 160 PSIG	PS4053160BP
1-1/2" Face Liquid*	
0 to 160 PSIG	PS4052160BP

* Includes brass pipe fitting extensions
Quantity 1

Regulator Spring Range Kits – Size H1, H2 & H3

Spring range	Valve size	Part number
0 to 30 PSIG	H1	PS4050030P
	H2, H3	PS4150030BP
2 to 60 PSIG	H1	PS4050060P
	H2, H3	PS4150060BP
5 to 125 PSIG	H1	PS4050125P
	H2, H3	PS4150125BP

Quantity 1

Regulator Conversion Kits – Size H1, H2 & H3

Valve size	Description	Part number
H1	Manual Bonnet Assembly (w/o Spring)	PS4045BP
	Air Pilot Bonnet Assembly	PS4047BP
	Independent By-Pass Plate	PS4048BP
H2, H3	Manual Bonnet Assembly (w/o Spring)	PS4145BP
	Air Pilot Bonnet Assembly	PS4147BP
	Independent By-Pass Plate	PS4148BP

Quantity 1

Pilot By-Pass Plate

Valve size	Part number
H1, H2, H3	PS4051CP

Quantity 10

Valve Driver Module

Driver Module	Part number
32 Point Module – HB, HA, H1, H2, H3	PSSV32A*†

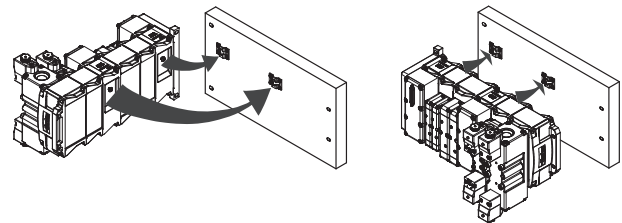


PSSV32A

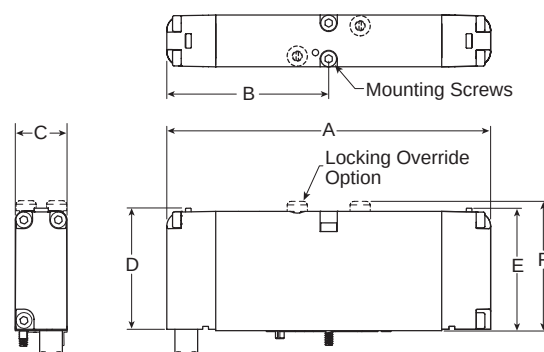
* Reference Document E100P for Installation Instructions.
See www.pdnplu.com

Installation Bracket

Bracket	Part number
Bracket and Bolt (Quantity 2)	PSHU60P



H Series ISO 15407-2, Plug-in, Size 18mm (HB)



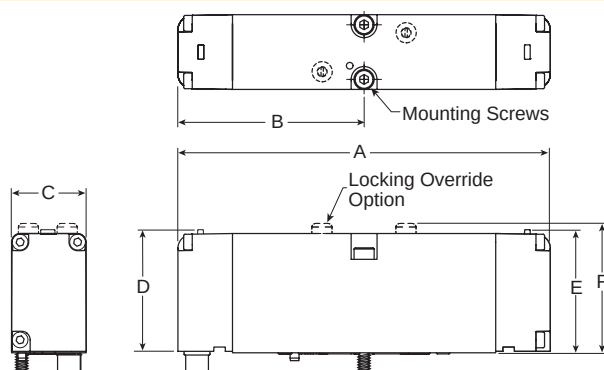
18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	1.98 (50)

E	F
1.68 (43)	1.77 (45)

Inches (mm)

H Series ISO 15407-2, Plug-in, Size 26mm (HA)



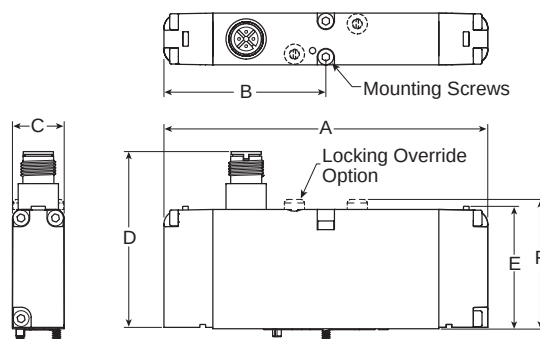
26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	1.98 (50)

E	F
1.68 (43)	1.77 (45)

Inches (mm)

H Series ISO 15407-1, Non Plug-in, Size 18mm (HB)



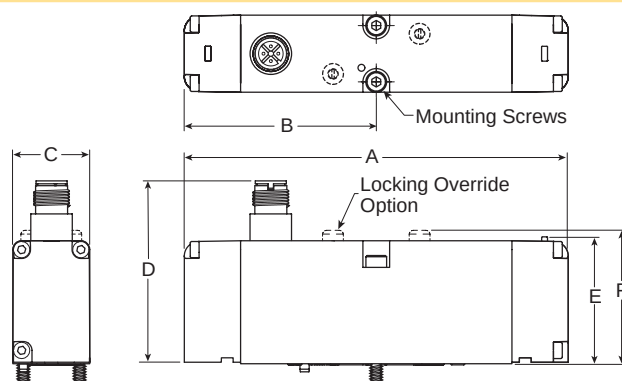
18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	2.40 (61)

E	F
1.68 (43)	1.77 (45)

Inches (mm)

H Series ISO 15407-1, Non Plug-in, Size 26mm (HA)



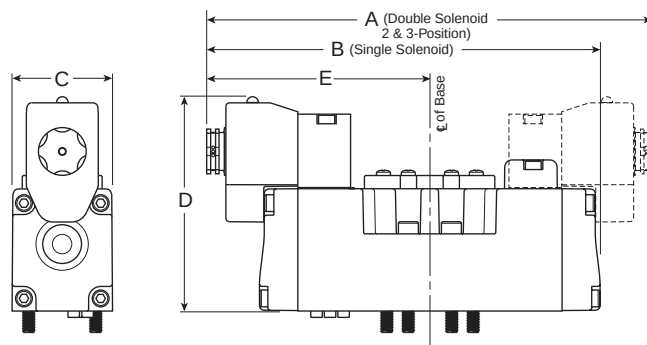
26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	2.40 (61)

E	F
1.68 (43)	1.77 (45)

Inches (mm)

H Series ISO 5599-2



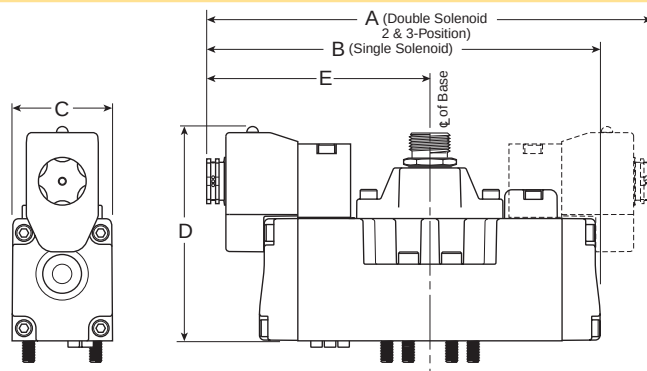
H1 Valves Shown

H1 Dimensions

A	A ₁	B	C
7.32 (186)	5.59 (142)	6.46 (164)	1.65 (42)
D	D ₁	D ₂	D ₃
3.54 (90)	4.29 (109)	4.29 (109)	2.50 (63.5)
D ₄	E	E ₁	
2.48 (63)	3.66 (93)	2.80 (71)	

Inches (mm)

H Series ISO 5599-1 Auto

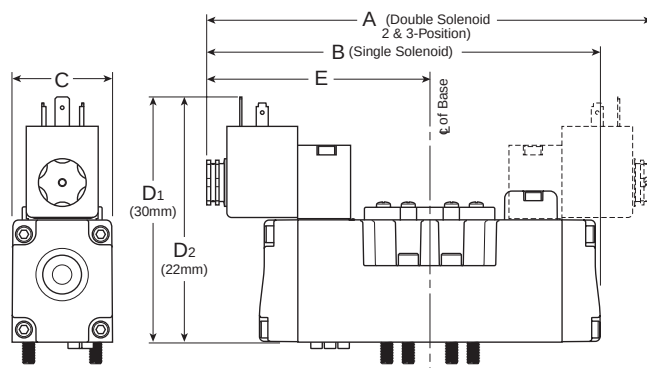


H2 Dimensions

A	A ₁	B	C
8.35 (212)	6.62 (168)	7.48 (190)	2.17 (55)
D	D ₁	D ₂	D ₃
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	E ₁		
4.17 (106)	3.31 (84)		

Inches (mm)

H Series ISO 5599-1 CNOMO

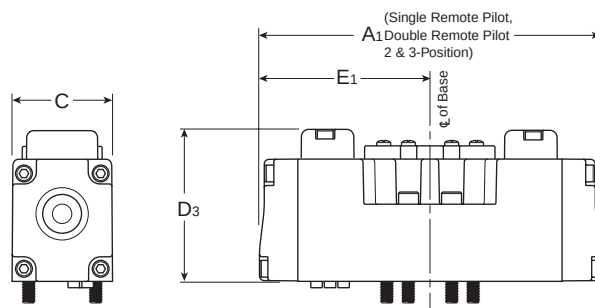


H3 Dimensions

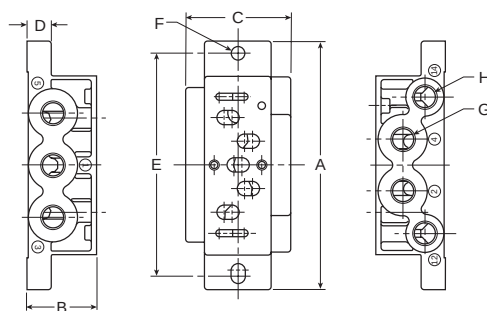
A	A ₁	B	C
9.68 (246)	6.98 (177)	8.68 (220)	2.17 (55)
D	D ₁	D ₂	D ₃
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	E ₁		
4.74 (121)	3.49 (89)		

Inches (mm)

H Series ISO 5599-2 / 5599-1 Remote Pilot



HB Series ISO 15407-1, Size 18mm (HB) Single Subbase

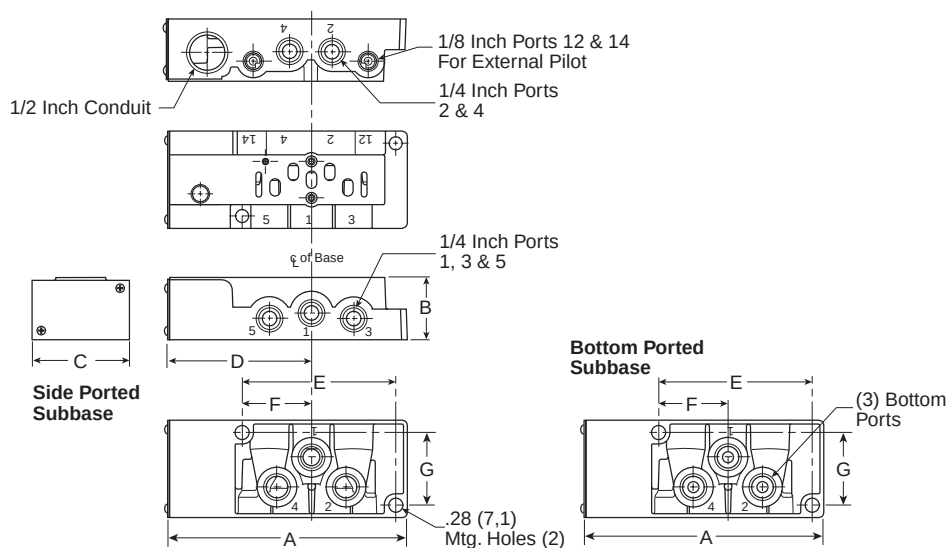


HB Dimensions (PL02)

A	B	C	D
3.15 (80)	.87 (22)	1.06 (27)	.31 (8)
E	F	G	H
2.76 (70)	.216 Dia. (Ø 5.5)	1/8 (50.8)	M5

Inches (mm)

H Series ISO 15407-2 & 15407-1 Size 26mm (HA), Plug-in Subbases

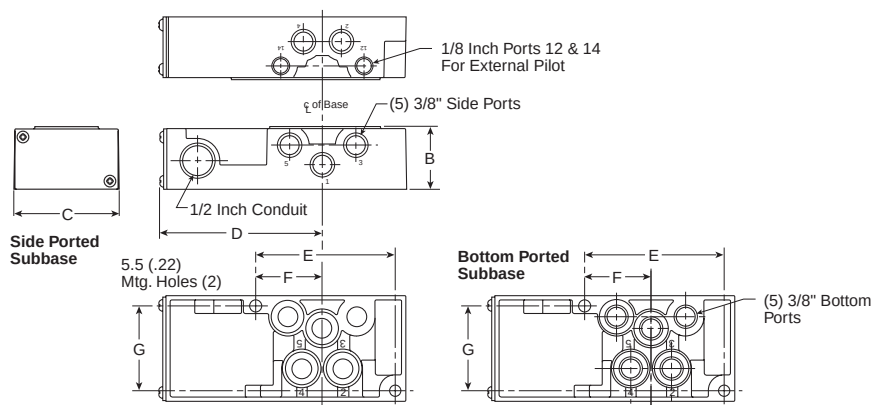


HA Dimensions

A	B	C	D
4.88 (124)	1.28 (32.5)	2.00 (50.8)	2.91 (74)
E	F	G	H
1.43 (36.2)	3.16 (80.2)	1.49 (37.9)	

Inches (mm)

H Series ISO 5599-1 Size H1, PS4011 Subbase



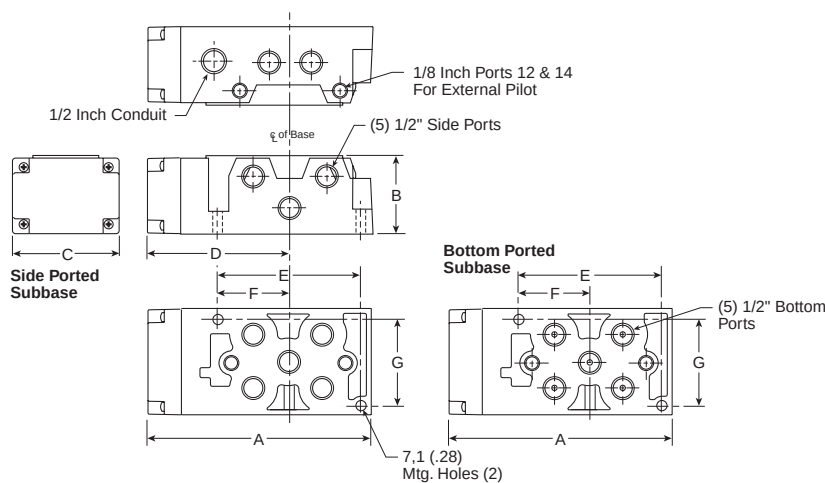
PS4011 Subbase Dimensions

A	B	C	D
5.83	1.48	2.50	3.86
(148)	(38)	(64)	(98)

E	F	G
3.29	1.57	2.00
(84)	(40)	(51)

Inches (mm)

H Series ISO 5599-1 Size H2, PS4111 Subbase



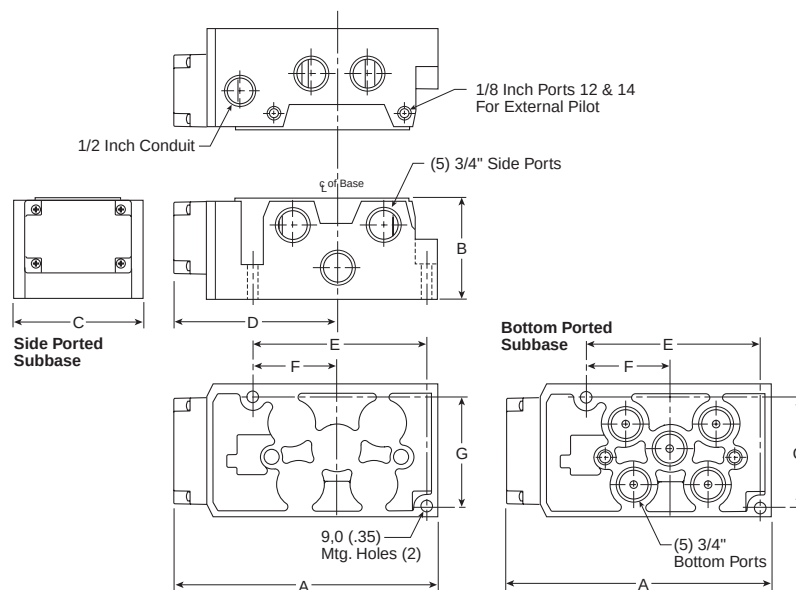
PS4111 Subbase Dimensions

A	B	C	D
6.69	2.33	3.15	4.25
(170)	(59)	(80)	(108)

E	F	G
4.21	2.07	2.56
(107)	(52)	(65)

Inches (mm)

H Series ISO 5599-1 Size H3, PS4211 Subbase

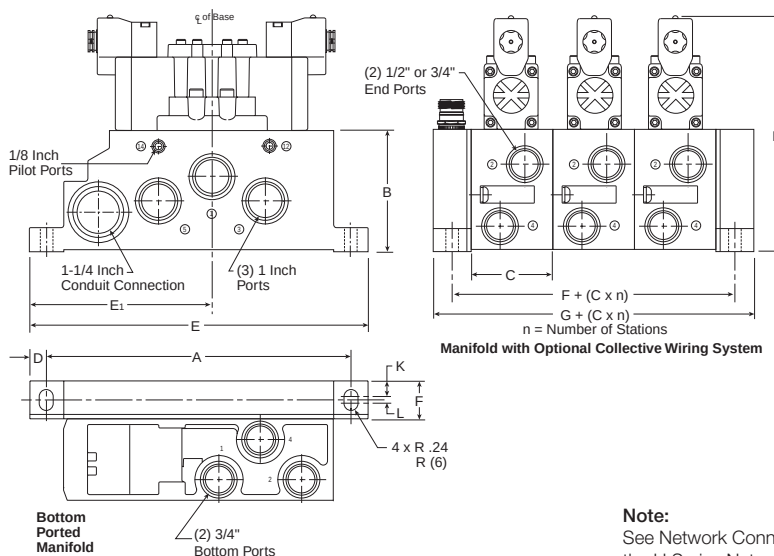


PS4211 Subbase Dimensions

A	B	C	D
7.90 (201)	2.96 (75)	3.90 (99)	4.92 (125)
E	F	G	
5.14 (131)	2.50 (64)	3.24 (82)	

Inches (mm)

H Series ISO 5599 Size H3, PS4211 Manifold



PS4211 Manifold Dimensions

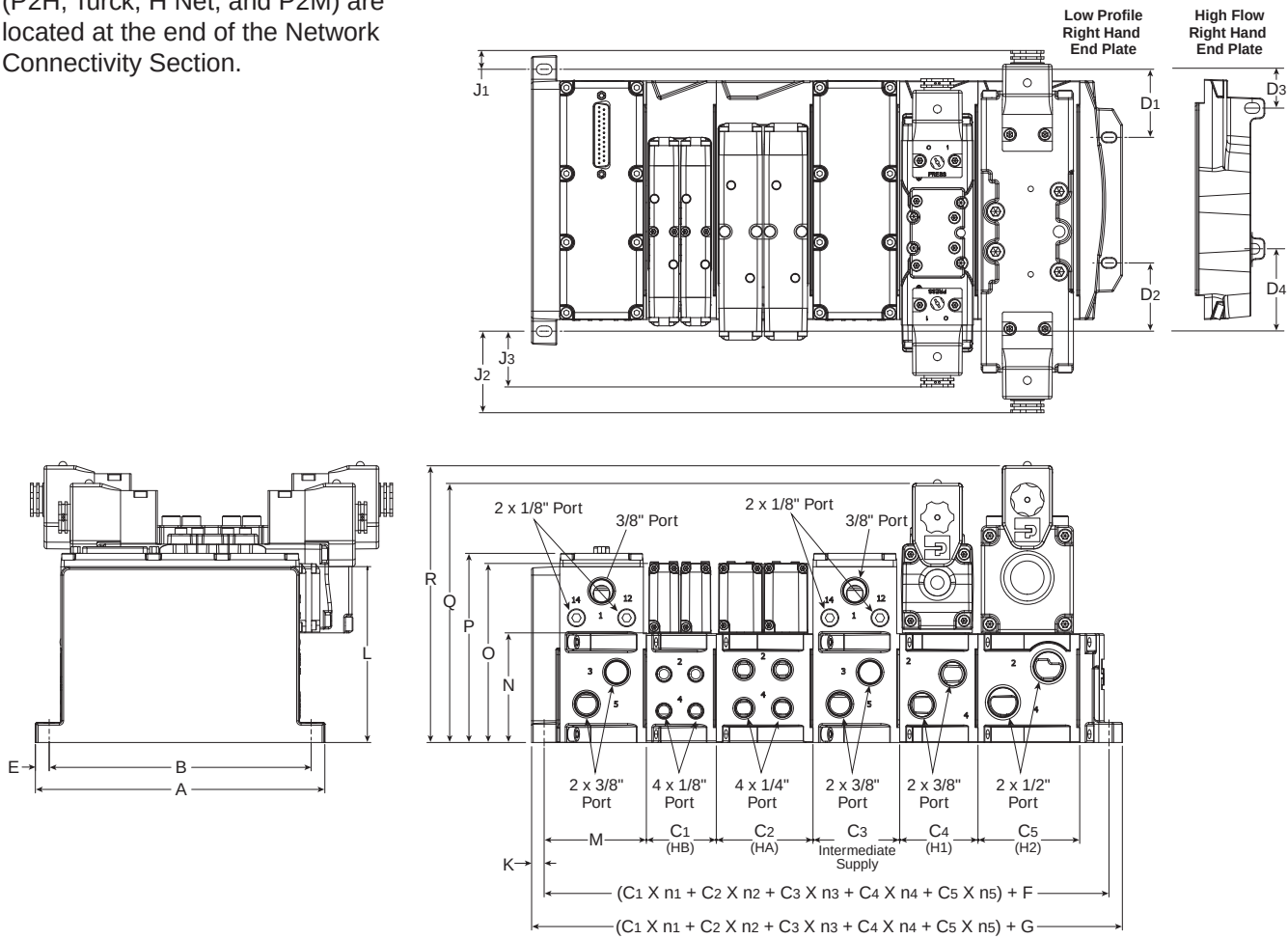
A	B	C	D	E
10.41 (265)	4.13 (105)	2.80 (71)	.59 (15)	11.61 (295)
E ₁	F	G	H	
6.26 (159)	1.30 (33)	2.60 (63)	8.19 (208)	
K	L			
.53 (13.5)	.24 (6)			

Inches (mm)

Note:
 See Network Connectivity Section for the dimensions of manifolds utilizing the H Series Network, Turck Network, or P2M Network Node end plate type.

H Series ISO Universal Manifold

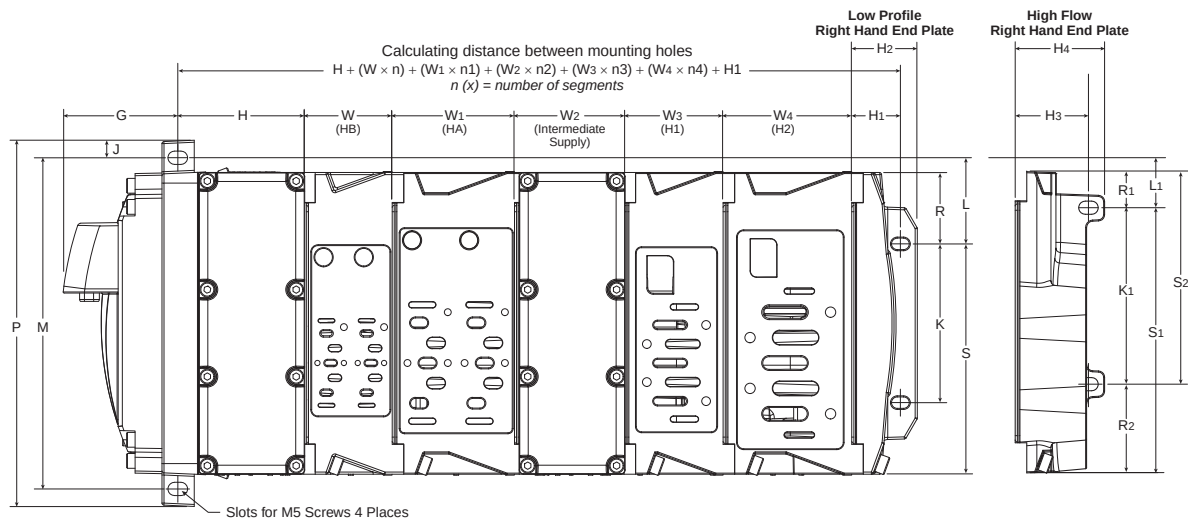
Network Connectivity dimensions (P2H, Turck, H Net, and P2M) are located at the end of the Network Connectivity Section.



A 6.81 (172.95)	B 6.16 (156.5)	C1 1.65 (41.79)	C2 2.28 (57.79)	C3 2.04 (51.79)	C4 1.84 (46.79)
C5 2.39 (60.79)	D1 1.60 (40.71)	D2 1.60 (40.71)	D3 0.96 (24.3)	D4 1.92 (48.8)	F 3.09 (78.58)
G 4.39 (111.58)	J1 0.44 (11.2)	J2 1.92 (48.7)	J3 1.31 (33.3)	K 0.30 (7.5)	L 4.14 (105.08)
M 2.40 (61.08)	N 1.92 (48.7)	O 4.21 (107)	P 4.45 (113)	Q 6.09 (154.77)	R 6.51 (165.32)

Inches (mm)

25-Pin Side with H Series ISO Valves

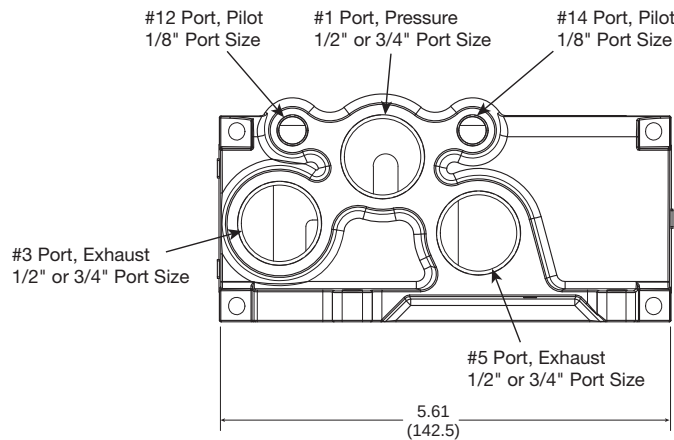


n (x) = number of segments

G	H	H1	H2	H3	H4	J	K	K1	L	L1	M
2.13 (54.0)	2.36 (60.0)	0.90 (23.0)	1.22 (31.0)	1.36 (34.6)	1.66 (42.3)	0.33 (8.3)	2.95 (75.0)	3.28 (83.4)	1.60 (40.7)	0.96 (24.3)	6.16 (156.5)
P	S	S1	S2	R	R1	R2	W	W1	W2	W3	W4
6.81 (173.1)	4.28 (108.8)	4.93 (125.2)	3.96 (100.7)	1.33 (33.7)	0.68 (17.3)	1.6 (41.8)	1.63 (41.3)	2.28 (57.8)	2.06 (52.3)	1.82 (46.3)	2.39 (60.8)

Inches (mm)

Hi-Flow Right Hand End Plate



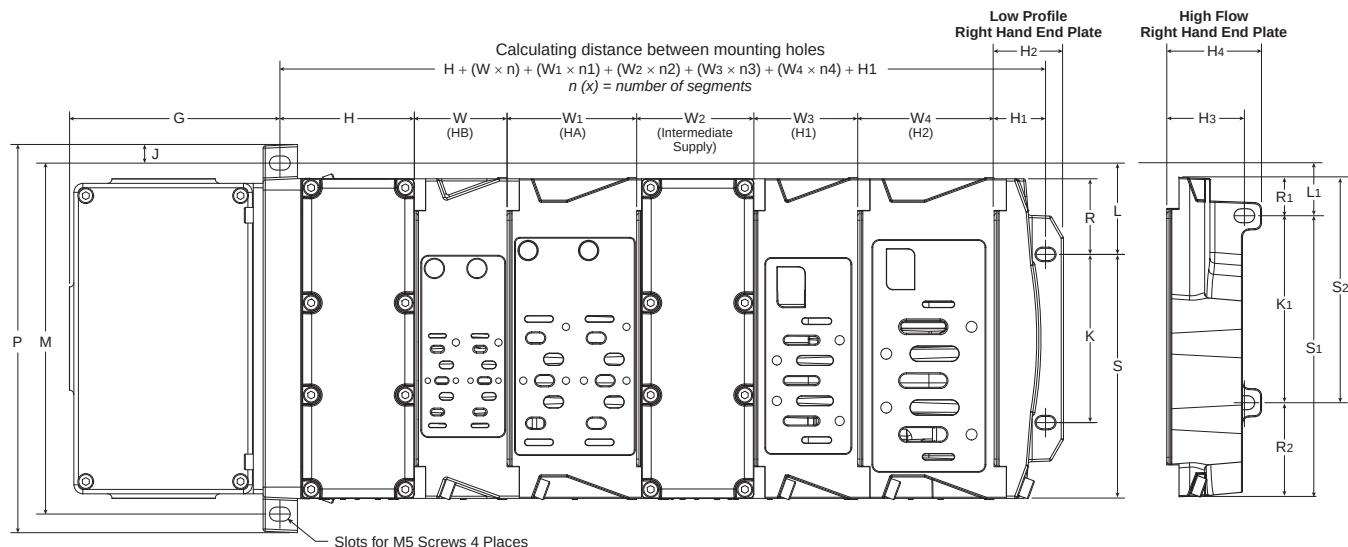
Hi-Flow Right Hand End Plate

PSHU41 1/2" port size

PSHU42 3/4" port size

Inches (mm)

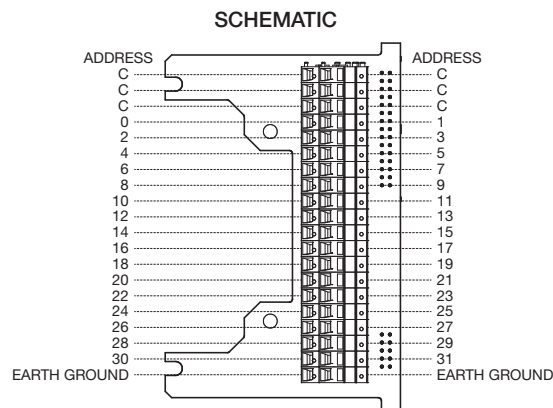
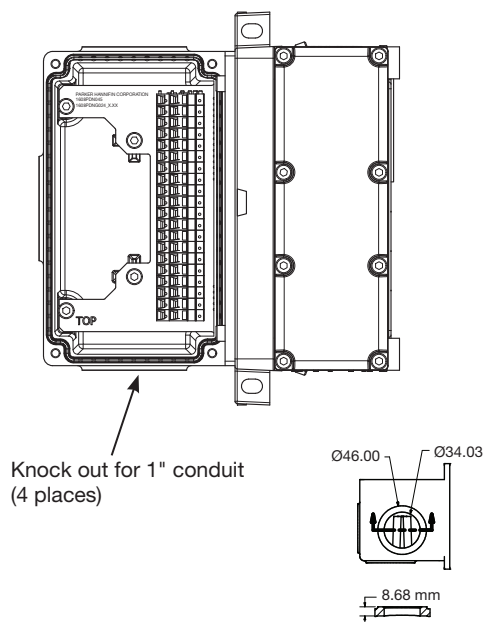
Terminal Block with H Series ISO Valves



n (x) = number of segments

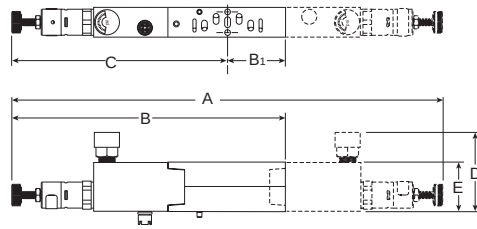
G	H	H1	H2	H3	H4	J	K	K1	L	L1	M
3.69 (93.8)	2.36 (60.0)	0.90 (23.0)	1.22 (31.0)	1.36 (34.6)	1.66 (42.3)	0.33 (8.3)	2.95 (75.0)	3.28 (83.4)	1.60 (40.7)	0.96 (24.3)	6.16 (156.5)
P	S	S1	S2	R	R1	R2	W	W1	W2	W3	W4
6.81 (173.1)	4.28 (108.8)	4.93 (125.2)	3.96 (100.7)	1.33 (33.7)	0.68 (17.3)	1.65 (41.8)	1.63 (41.3)	2.28 (57.8)	2.06 (52.3)	1.82 (46.3)	2.39 (60.8)

Inches (mm)



**All commons internally
connected on terminal strip**

H Series ISO 15407, HB / HA Sandwich Regulator

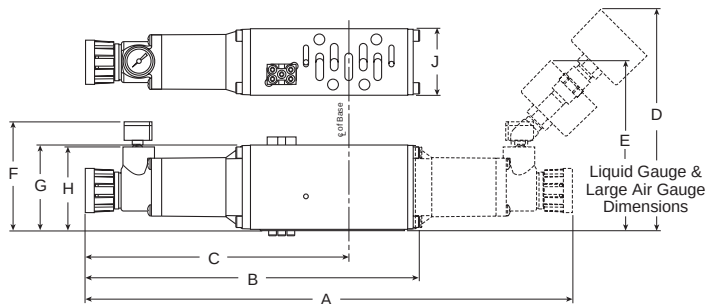


HB / HA Series Sandwich Regulator, Dimensions

HB (PS5637)	A	B	B1	C	D	E
	10.28 (261)	6.14 (156)	1.02 (26)	5.13 (130)	2.60 (66)	1.18 (30)
HA (PS5537)	A	B	B1	C	D	E
	10.00 (254)	6.42 (163)	1.42 (36)	5.00 (127)	2.72 (69)	1.18 (30)

Inches (mm)

H Series ISO 5599, Size H1 Sandwich Regulator



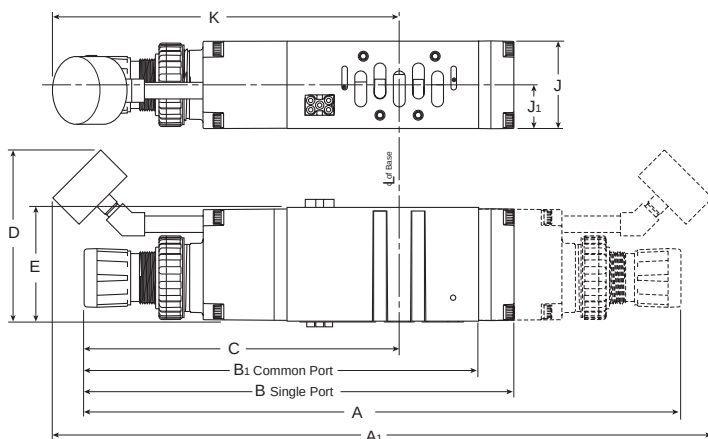
H1 Series Sandwich Regulator, Dimensions

H1 (PS4037) (PS4038)	A	B	C	D	E	F
	11.84 (301)	8.13 (207)	6.40 (163)	5.45 (138)	4.25 (108)	2.85 (72)
	G	H	J			
	2.09 (53)	2.05 (52)	1.63 (41)			

Inches (mm)

H Series ISO 5599, Size H2 & H3 Sandwich Regulator

H2 Sandwich Regulator shown



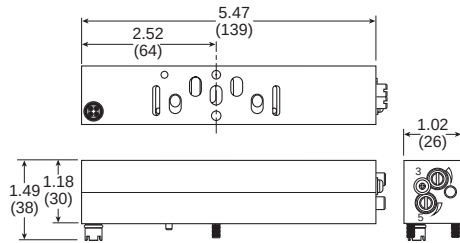
H2 & H3 Series Sandwich Regulator, Dimensions

H2 (PS4137) (PS4138)	A	A1	B	B1	C	D
	14.65 (372)	16.18 (411)	10.56 (268)	9.84 (250)	7.71 (196)	4.20 (107)
	E	J	J1	K		
	2.80 (71)	2.15 (55)	1.07 (27)	8.50 (216)		
H3 (PS4237) (PS4238)	A	A1	B	B1	C	D
	15.67 (398)	17.15 (436)	11.53 (293)	10.67 (271)	8.37 (213)	4.20 (107)
	E	J	J1	K		
	2.93 (75)	2.50 (64)	1.25 (32)	9.10 (231)		

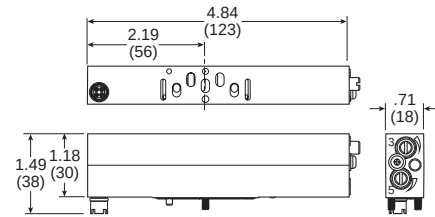
Inches (mm)

H Series ISO 15407, Size 18mm (HB) & 26mm (HA), Flow Control

HA Flow Control

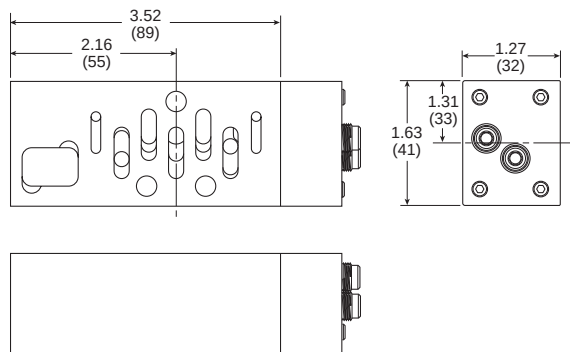


HB Flow Control

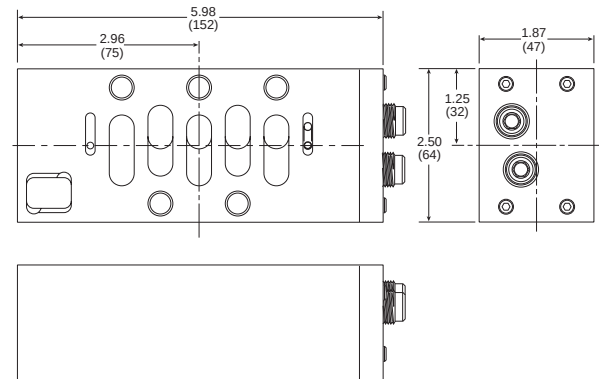


H Series ISO 5599, Size H1, H2 & H3, Flow Control

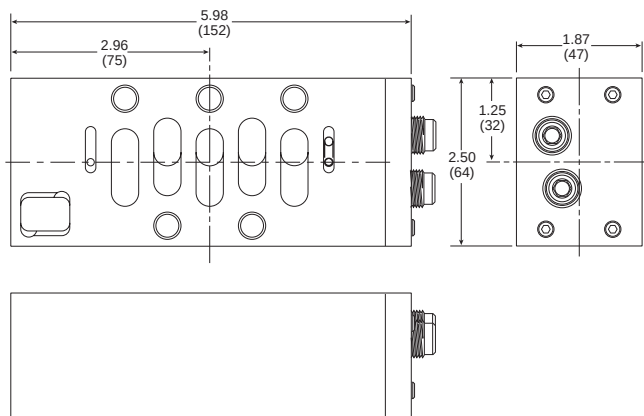
H1 Flow Control



H2 Flow Control



H3 Flow Control



Network Connectivity

Offering

Valve series	P2M	P2H	H Series	Turck
Moduflex	X			
H Series Micro	X		X	X
H Series ISO	X	X	X	X

Protocol	P2M	P2H	H Series	Turck
IO-Link	X	X		
DeviceNet	X			X
EtherNet/IP	X		X	X
PROFIBUS-DP	X		X	X
PROFINET	X			X
Modbus/TCP	X			X
EtherCAT	X			
PowerLink	X			
AS-i	X			
CANopen	X			X
InterBus-S	X			

Options	P2M	P2H	H Series	Turck
Digital inputs / outputs*	X		X	X
Analog inputs / outputs			X	X
Class A IO-Link master module				X
24 Solenoid control**	X	X		X
32 Solenoid control			X	X
Short circuit protection on inputs				X
Current sensing outputs				X
Bus expansion			X	
DeviceNet subnet				X
Programmable comm modules				X
Power over DeviceNet / CANopen				X
Rockwell preferred connectivity			X	
CANopen expansion				X

* P2M AS-i modules are available with 6 or 8 inputs and 6 or 8 solenoid outputs.

** P2M DeviceNet, PROFIBUS, AS-I, CANopen, and InterBus-S only 16 solenoids.

P2M Network Nodes (shown on H Micro & Moduflex)



Moduflex



H Micro

P2H Network Nodes (shown on H Series ISO)

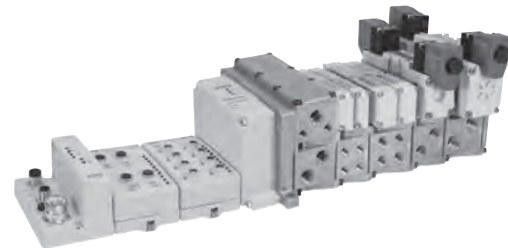


Class A

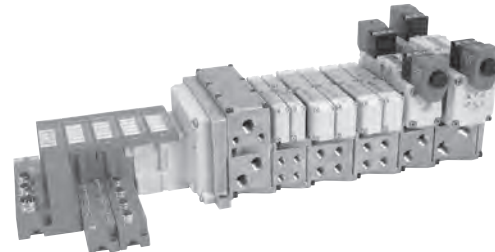


Class B

H Series Network Portal (shown on H Series ISO)



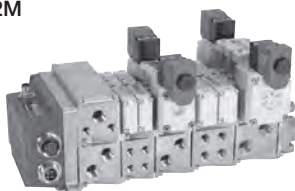
Turck Network Portal (shown on H Series ISO)



P2M & P2H Network Nodes: Network diagnostics made simple!



P2M



P2H

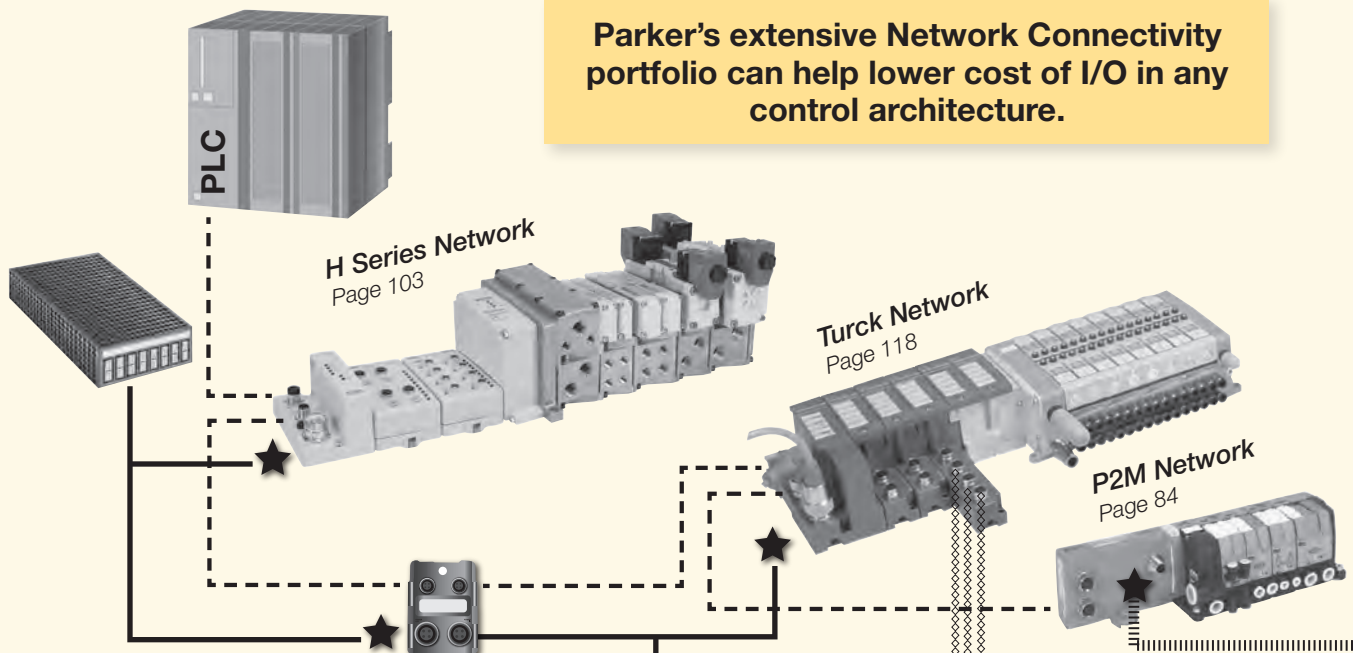
Standard on any IO-Link or Industrial Ethernet protocol

- Useful diagnostic flags in process (cyclic) data for easy access
 - Voltage warnings
 - Internal communication error & more
- Detailed diagnostic information in parameter (acyclic) data
 - Cycle count for each solenoid

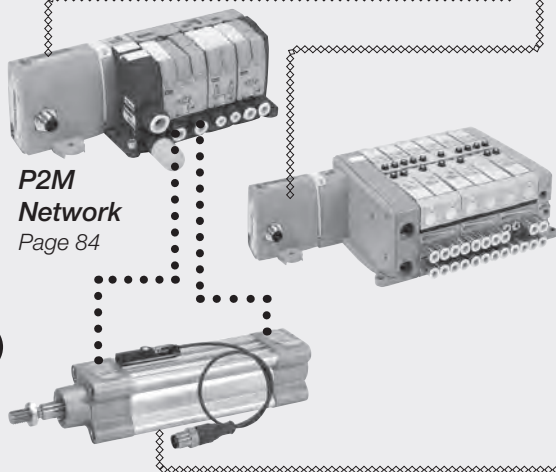
Add on Instructions / Function Blocks are also available!

Industrial Ethernet

Parker's extensive Network Connectivity portfolio can help lower cost of I/O in any control architecture.



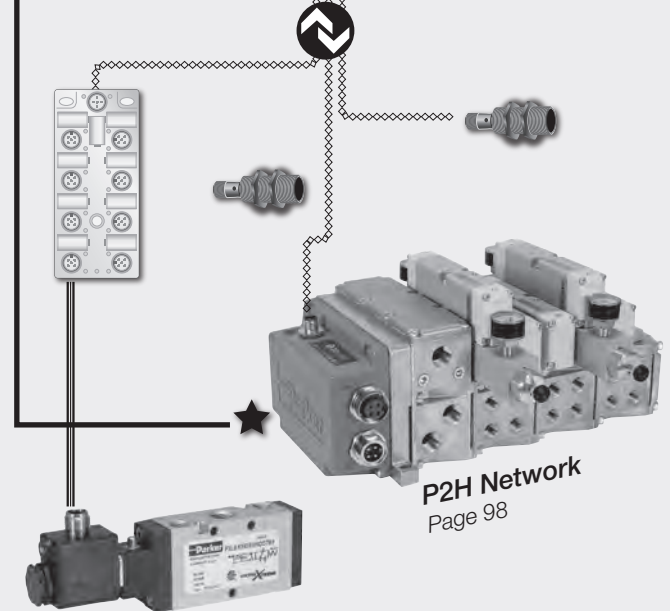
IO-Link



Network to Remote IO-Link Master

Reduce cabinet size by using a de-centralized "on-machine" IO-Link Master

- * Control all local I/O with IO-Link Masters
 - Discrete I/O
 - "Smart" I/O
 - P2M IO-Link Class B & CPS pictured see www.parker.com/pdn/CPS and www.parker.com/pdn/P2M_IOL



Node Expansion Using IO-Link

Reduce node count by adding an IO-Link Master module onto Turck Network manifold

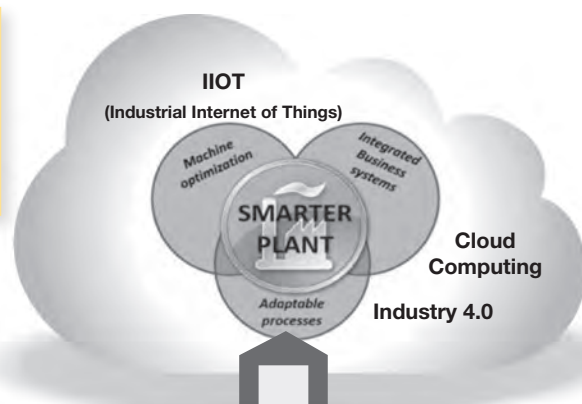
- * 20m max length for I/O-Link cables
- * Control all "smart I/O" on 1 node
- * Reduce cost of secondary valve manifold
 - P2H IO-Link Class A pictured see www.parker.com/pdn/P2H_IOL



Use PLC with integrated I/O-Link Master for machines with smaller I/O counts

- * 20m max length for I/O-Link cables
- * Control all local I/O with IO-Link
 - Discrete I/O
 - “Smart” I/O
 - P2M IO-Link Class A pictured

- Industrial Network
- ◇◇◇◇◇ IO-Link 
- ==== Discrete Wired Input / Output
- ★ 24 VDC Power
- |||||★ 24 VDC SAFE Power
- Pneumatic



IO-Link is another step towards the smarter plant by lowering the cost for gathering component level prognostics and diagnostics.

Out of Tolerance Warnings

- * Voltage
- * Temperature

Error Descriptors

- * Solenoid short circuit
- * IO-Link communication error cycle count for each valve

THIS IS EASIER

Faster installation than discrete wiring
 Standard IP67 M12 cable

THIS IS SAVINGS

- Fewer network nodes
- Easy expandability

THIS IS VALUE

- Easy access diagnostics
- Prognostics to prevent downtime

System Overview - Discrete Wiring

- Up to 24 solenoids per manifold
- Discretely wired solenoids - optimized for PLCs with onboard inputs and outputs
- 25-Pin D-Sub, 19-Pin Brad Harrison or M23, or 12-Pin M23 connectors available

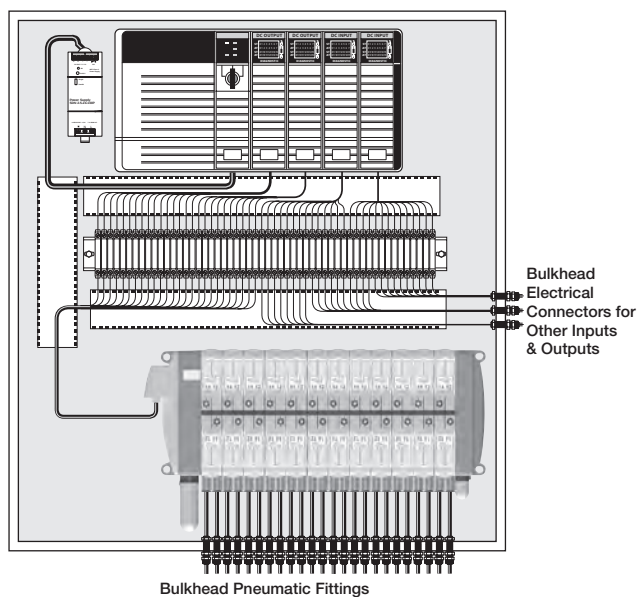
Centralized Application

Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Disadvantages

- Difficult to troubleshoot
- Difficult to maintain
- Expensive bulkhead fittings
- Long wiring time in cabinet



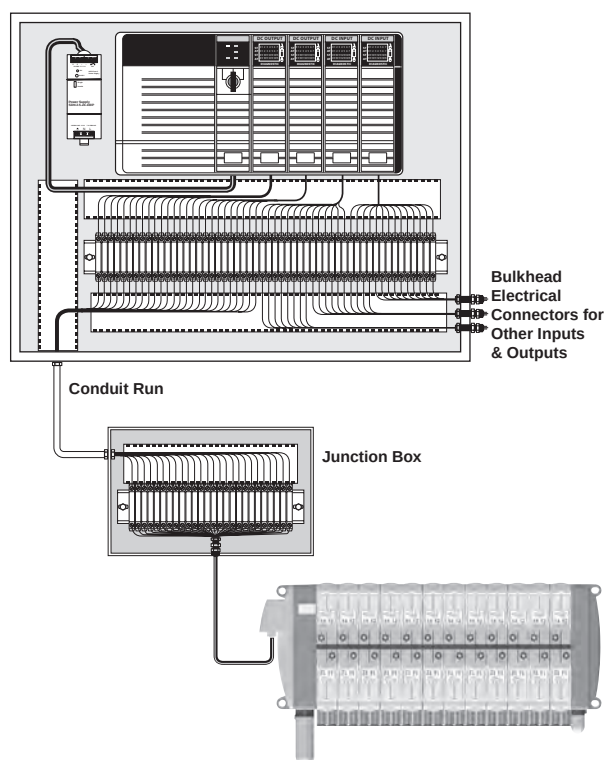
De-centralized Application

Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Disadvantages

- Difficult to troubleshoot
- Difficult to maintain
- Long wiring time in cabinet
- Long wiring time in junction box



System Overview - P2M Network Node

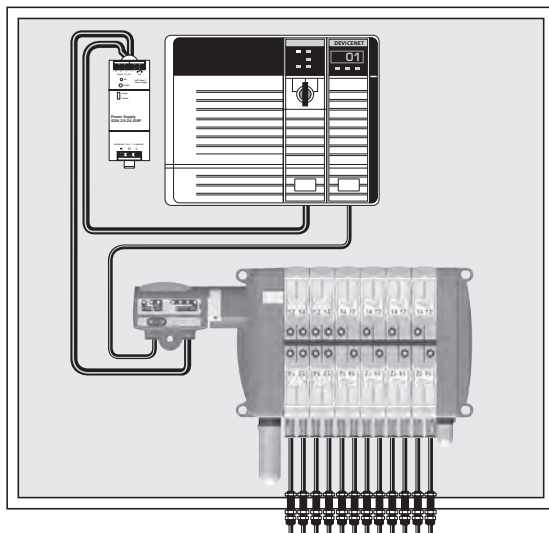
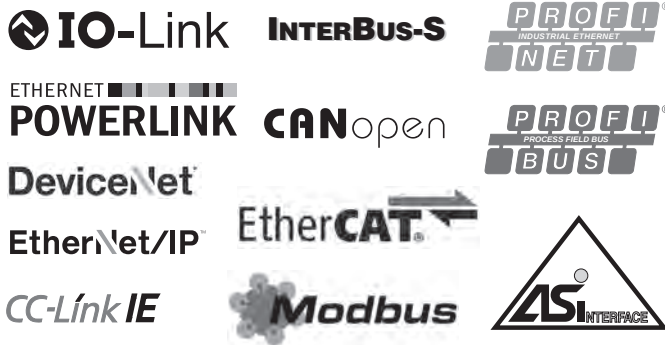
- Up to 24 solenoids per manifold
- Optimized for PLCs with network capability
- Routinely used on medium sized machines
- Connectivity to Moduflex, H Series Micro and H Series ISO valves

Centralized Application**Valves Inside Control Cabinet**

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are not directly attached to valve manifold

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves



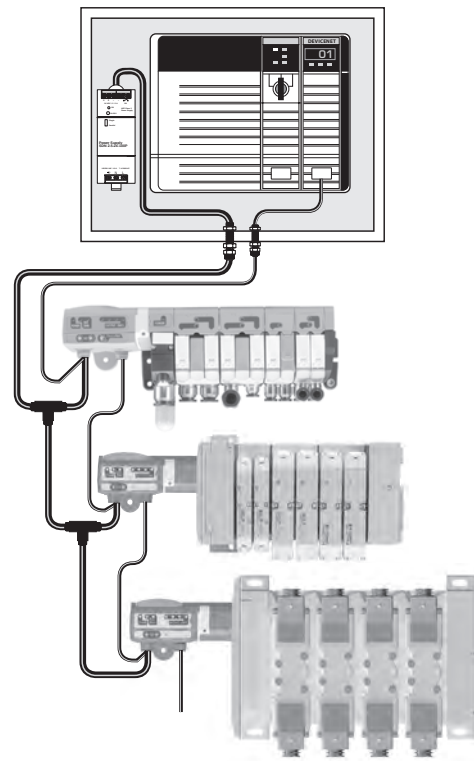
Bulkhead Pneumatic Fittings

De-centralized Application**H Series Micro Outside Control Cabinet**

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are not directly attached to valve manifold

Advantages

- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many network nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices
- Eliminates terminal strips and wire ways for valves
- Greatly reduces wiring time
- Eliminates junction boxes for valves
- Eliminates conduit runs for valves



System Overview - H Series Network Portal

- Up to 32 solenoids per manifold
- With H Series Micro bus extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same node
- Add inputs and outputs to the H Series Network Portal
- Optimized for PLC's with network capability
- Connectivity to H Series Micro and H Series ISO valves

Centralized Application

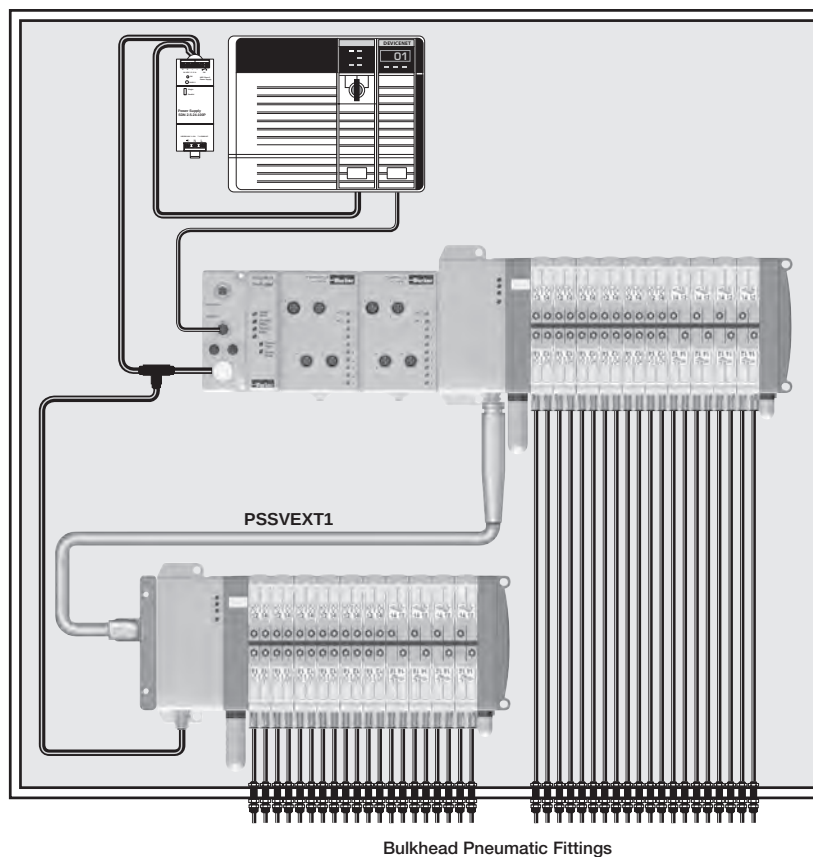
Valves Inside Control Cabinet

- H Series Network Portal with inputs and outputs
- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures
- Additional inputs and outputs are directly attached to valve manifold

Advantages

- Handle all I/O from one node
- Eliminate PLC input / output cards
- Up to 128 solenoids per node with bus extension cables
- Up to 256 inputs and 256 outputs per H Series Network node
- Analog inputs / outputs available
- Highest degree of environmental protection
- One location for all control devices
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time

EtherNet/IP™



System Overview - H Series Network Portal

- Up to 32 solenoids per manifold
- With H Series Micro bus extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same node
- Add inputs and outputs to the H Series Network
- Optimized for PLC's with network capability
- Connectivity to H Series Micro and H Series ISO valves

De-centralized Application

Valves Outside Control Cabinet

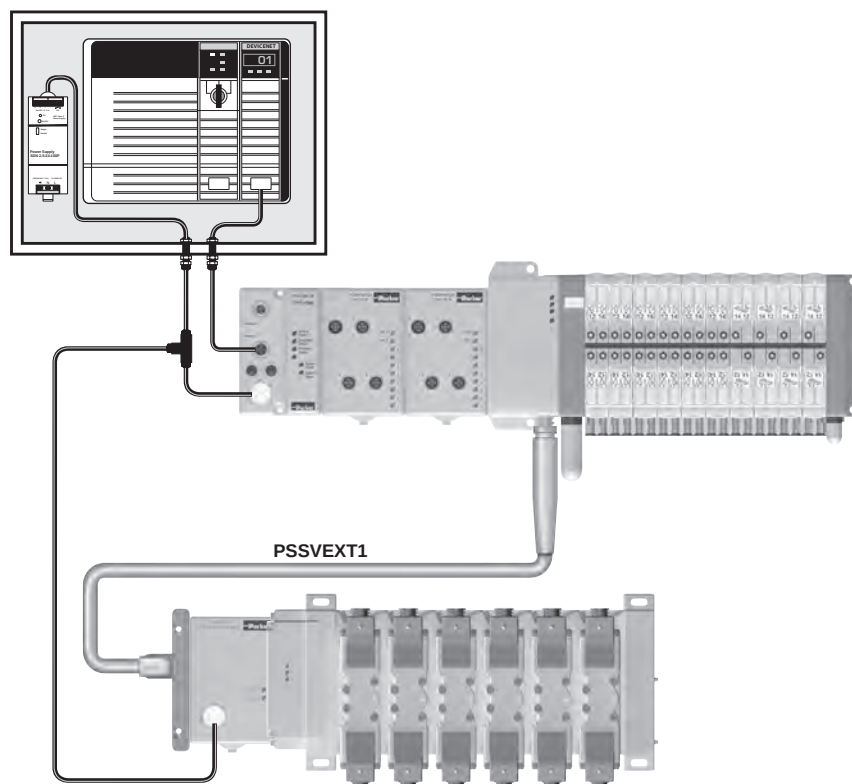
- H Series Network Portal with inputs and outputs
- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments
- Additional inputs and outputs are directly attached to valve manifold

Advantages

- Handle all I/O from one node
- Eliminate PLC input / output cards
- Up to 128 solenoids per node with bus extension cables
- Up to 256 inputs and 256 outputs
- Analog Inputs / outputs available
- Smallest control cabinet
- Reduces tubing length and improves pneumatic response time
- Eliminates pneumatic bulk fittings on control cabinet
- Many network nodes can be attached to the network with little incremental cost – valve manifolds, inputs, outputs and other devices.
- Eliminates terminal strips and wire ways
- Greatly reduces wiring time
- Eliminates junction boxes for all inputs and outputs
- Eliminates conduit runs for all inputs and outputs

EtherNet/IP™

PROFI®
PROCESS FIELD BUS
BUS



System Overview - Turck Network Portal

General Product Features

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valve series

Advantages

- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

Centralized Application

Valves Inside Control Cabinet

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

De-centralized Application

Valves Outside Control Cabinet

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet

EtherNet/IP™

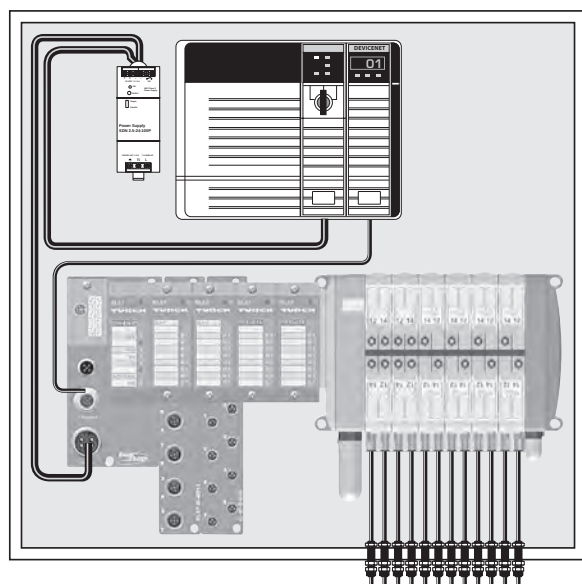
PROFI
NET

Modbus/TCP™

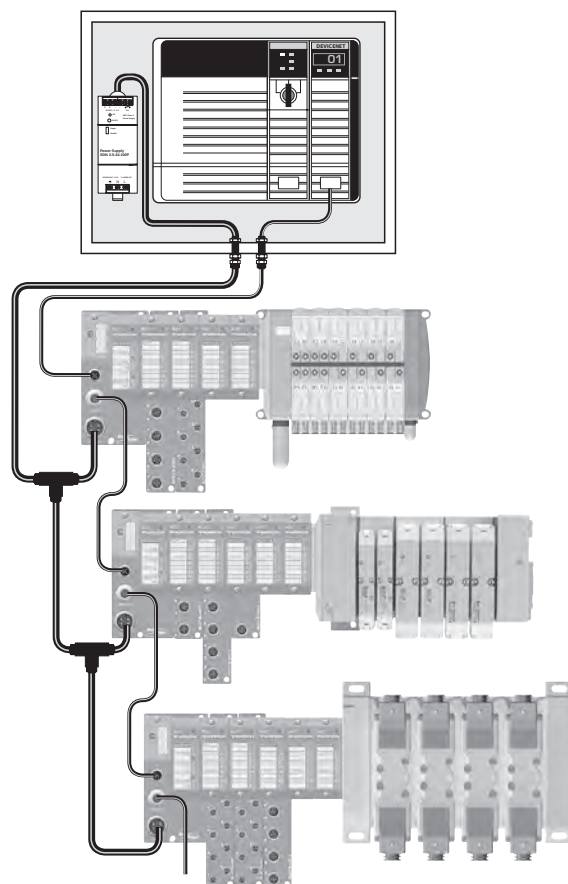
DeviceNet™

PROFI
BUS

CANopen



Bulkhead Pneumatic Fittings



System Overview - Turck Network Portal with CANopen Expansion

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

- Using a CANopen interface module, a CANopen subnet is created within the Turck Network Portal, controlling an additional 64 inputs, outputs, or solenoids
- The CANopen subnet is independent of the main network, and is not visible to the master PLC
- Additional P2M CANopen modules can be attached to the CANopen subnet to provide a connection for 16 solenoids each
- Other 3rd party CANopen devices can also be used on this network, within the 64 bit CANopen expansion limit

- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Several CANopen nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- CANopen expansion allows additional devices to be attached to the system without a CANopen scanner card
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

- Valves located near machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet

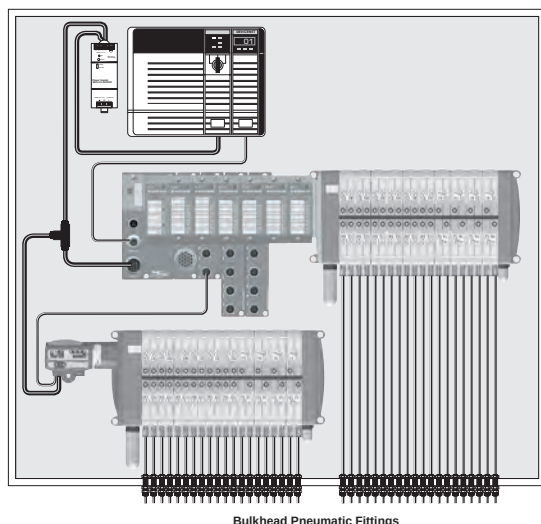
EtherNet/IP™



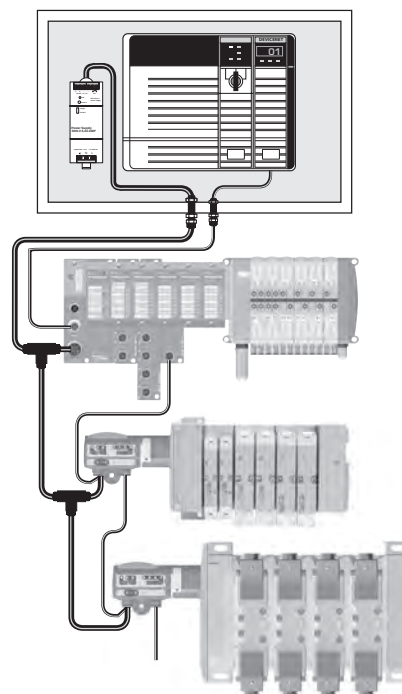
Modbus/TCP™

DeviceNet

CANopen



Bulkhead Pneumatic Fittings



System Overview - Turck Network Portal with BL Remote DeviceNet Subnet**General Product Features**

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

BL Remote DeviceNet Subnet Features

- With BL remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control
- BL remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC
- P2M DeviceNet modules can be attached to the subnet to provide a connection for 16 solenoids each
- Turck DeviceNet modules can be attached to the subnet to provide a connection for 16 or 32 solenoids each and inputs and outputs up to the 256 input and output limitation

System Advantages

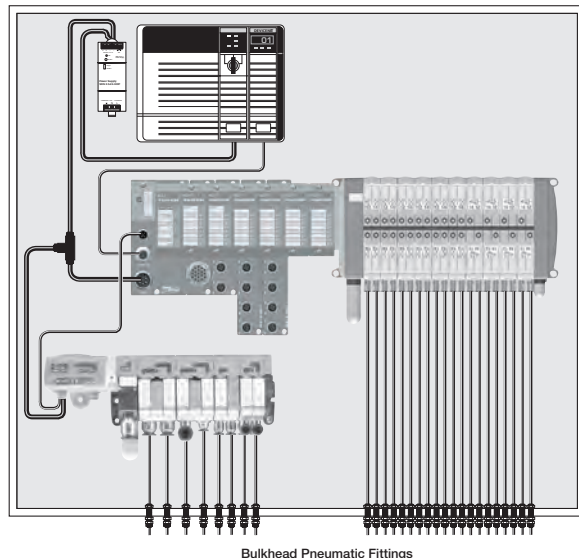
- Handle all I/O from one node; eliminate PLC input / output cards
- Optimized for PLC's with network capability
- Many DeviceNet nodes can be attached to the network – valve manifolds, inputs, outputs or other devices
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

Centralized Application**Valves Inside Control Cabinet**

- Valves located near machine control
- Applications with caustic wash down, hazardous areas or extreme temperatures

Advantages

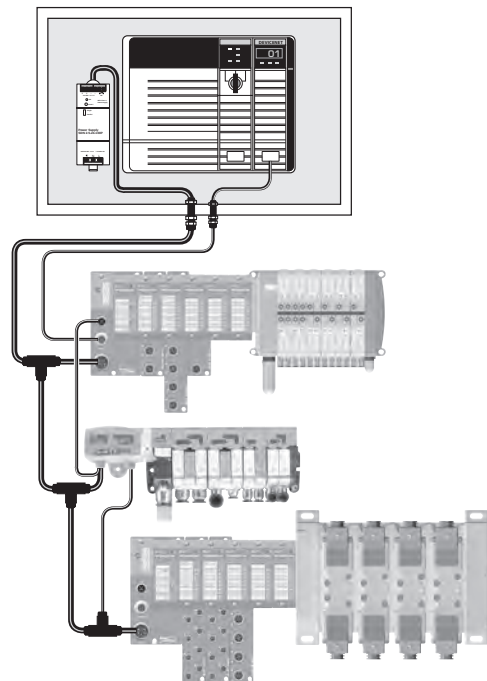
- Highest degree of environmental protection
- One location for all control devices
- Small size requires minimal cabinet space

**De-centralized Application****Valves Outside Control Cabinet**

- Valves located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- Smallest control cabinet
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet



System Overview - Turck Network Portal with Stand Alone Control**General Product Features**

- Turck Network Portal with up to 256 inputs / outputs and 32 solenoids per manifold
- Digital inputs / outputs, analog inputs / outputs, serial interface, counter modules, and RFID modules available
- Connectivity to H Series Micro and H Series ISO valves

Stand Alone Control Features

- Communication modules equipped with standalone control – programmed according to IEC61131-3 with CoDeSys
- 512KB program memory with 32 bit RISC processor
- Run 1000 instructions in less than 1 ms
- Optimized for PLC's with network capability or standalone controllers that need to interface with other devices

System Advantages

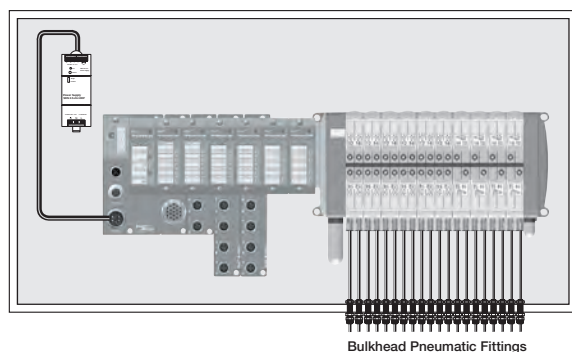
- Handle all I/O and control with one system; eliminate the PLC when used as the main controller for smaller machines
- Reduces programming and bandwidth requirements on large machines with a master PLC controller by handling local I/O and interfacing with the PLC over the network
- Eliminates junction boxes, terminal strips, and conduit runs for all inputs and outputs, greatly reducing wiring time

Centralized Application Valves**Inside Control Cabinet**

- Valves attached to the machine control
- Applications with caustic wash down, hazardous areas, or extreme temperatures

Advantages

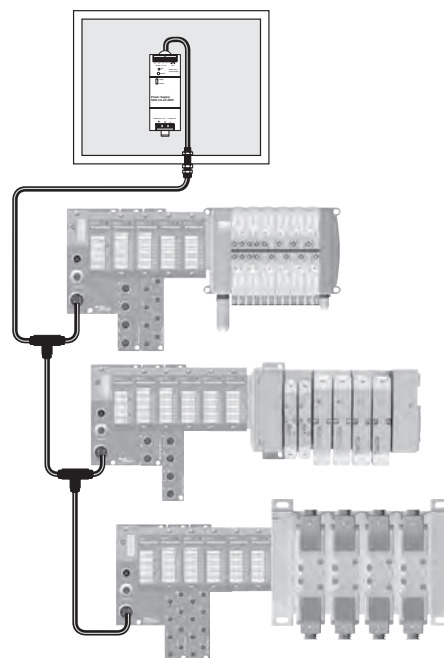
- Highest degree of environmental protection
- One location for all control devices

**De-centralized Application****Valves Outside Control Cabinet**

- Valves and machine control located near application - ready for machine mounting
- IP65 rating suitable for dusty and wet environments

Advantages

- No control cabinet needed when used as the main controller
- Reduces tubing length and improves response time
- Eliminates pneumatic bulk fittings on control cabinet

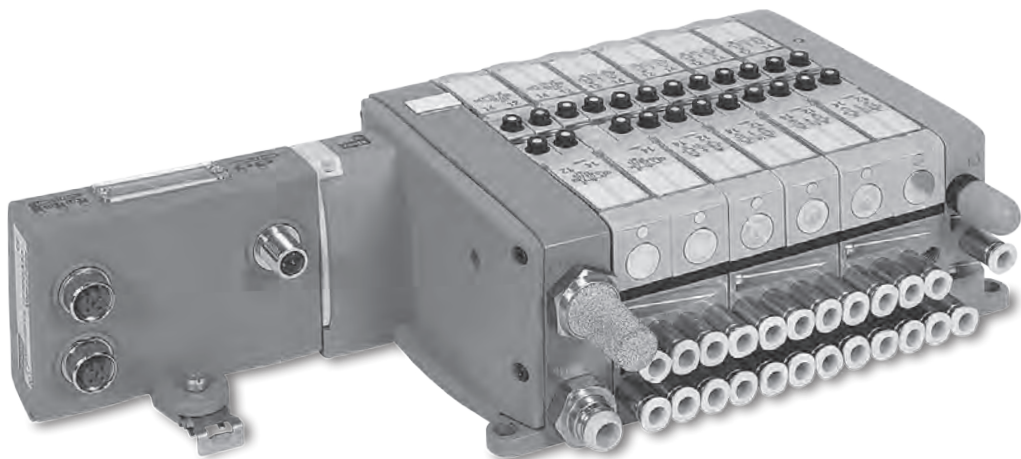
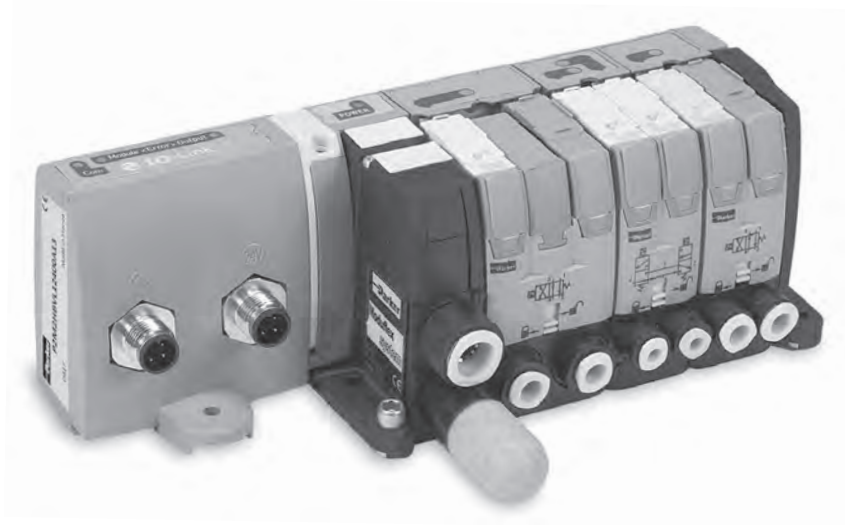


P2M Network Nodes

P2M module attaches directly to the Moduflex valve series as well as the P2M endplates of the H Series Micro and H Series ISO valve products. The P2M node offers a compact and low cost network solution.

Features

- Small, compact product design
- IO-Link Class A & Class B nodes
- Broad protocol offering
- Channel-level diagnostics (LED and Electronic)
- Inputs available with AS-i modules
- Horizontal and vertical mounting without derating
- 5g vibration
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- CE certification



Features

P2M Network Nodes

P2M Network Nodes

P2M communication module attaches directly to the end plate. It offers a compact and low cost network solution.

Features

- Small, compact product design
- IO-Link Class A & Class B nodes
- Broad protocol offering
- Inputs available with AS-i modules
- Built-in panel grounding
- CE certification



INTERBUS-S



CANopen



DeviceNet

EtherCAT

EtherNet/IP™ CC-Link IE Modbus

Industrial Ethernet Protocol	Maximum Addresses †	Part number
EtherNet/IP (Safe Power Capable)	24 †	P2M2HBVE12400
PROFINET (Safe Power Capable)	24 †	P2M2HBVN12400
EtherCAT (Safe Power Capable)	24 †	P2M2HBVT12400
Modbus/TCP (Safe Power Capable)	24 †	P2M2HBVM12400
PowerLink (Safe Power Capable)	24 †	P2M2HBVW12400
CC-Link IE (Safe Power Capable)	24 †	P2M2HBVK12400

Bus Protocol	Maximum Addresses	Part number
PROFIBUS-DP	16	P2M2HBVP21600
DeviceNet	16	P2M2HBVD21600
CANopen	16	P2M2HBVC21600
InterBus-S	16	P2M2HBVS11600

	IO-Link class	IO-Link	Aux. power	Aux. power pinout	Maximum addresses †	Part number	
						Standard	Safe power capable *
	Class A	3 Pins	3 Pins	1 & 3	24 †	P2M2HBVL12400A13	P2M2HBVL12400A13-SPC
		3 Pins	3 Pins	4 & 3	24 †	P2M2HBVL12400A43	P2M2HBVL12400A43-SPC
		3 Pins	5 Pins	4 & 2	24 †	P2M2HBVL12400A42	P2M2HBVL12400A42-SPC
	Class B	5 Pins		2 & 5	24 †	P2M2HBVL12400B25	P2M2HBVL12400B25-SPC

* Safe Power Capable (-SPC) version is suitable for connection to an OSSD (test pulsed) SAFE output source.

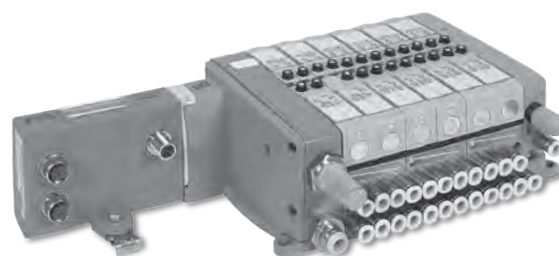
† If using with Moduflex valves, maximum solenoid addresses limit is 19.

Further details: www.parker.com/pdn/P2M_IOL

 Most popular.

**P2M2HBVL12400A13**

(Class A IO-Link)

**P2M2HBVE12400**

(EtherNet/IP)

**P2M2HBVP21600**

(PROFIBUS)



P2M Industrial Ethernet Node

The P2M Industrial Ethernet 24 DO node allows a very simple and cost efficient connection to the most popular Industrial Ethernet networks.

Designed with isolated auxiliary power, it can easily be adapted to all power supply architectures and follow any required machine directives as Safe Power Capable.

EtherNet/IP™

PROFINET
INDUSTRIAL ETHERNET

Modbus

CC-Link IE

ETHERNET
POWERLINK

EtherCAT®



Simple Product Set-Up



The P2M Industrial Ethernet Node offers IP addressing through 3 rotary switches located on the top side.

The 3 rotary switches also allow for Factory Reset, IP address storage, and DHCP addressing.

If supported by the protocol used, the IP address can be modified through the embedded web page.

For an application requiring a regular disconnection / reconnection of communication & power, PROFINET and EtherNet/IP protocols allow respectively a Fast Start-Up (FSU) and Quick Connect mode. This mode can be enabled or disabled.

Topology / Integrated Ethernet Switch



The P2M Industrial Ethernet 24 DO Node offers 2 Ethernet ports allowing a line topology without external switch. The Ring topology can also be supported (enable/disable) for PROFINET, EtherNet/IP and Modbus TCP/IP.

The integrated Ethernet switch supports Class C services allowing use in an isochronous real time (IRT) structure.

Easy Diagnostics – Local LEDs, Process (cyclic) data, Parameter (acyclic) data



The P2M Industrial Ethernet 24 DO Node offers local diagnostics through 7 LED's located on the visible top side, showing:

- Logic status
- Ethernet activity on both ports
- Standard status due to protocol
- Output error / Auxiliary power

This local information as well as configuration and predictive maintenance diagnostics (Power monitoring, Solenoid cycle counting, etc) are available via both Process Data (cyclic) and Parameter Data (acyclic) via the PLC through the network and also easily viewable from the embedded web page.

When the PLC is NOT in control, the web page allows the user to force ON/OFF the solenoids state. This function has password protection.

Safe Power Capable

Auxiliary power of P2M Industrial Ethernet 24 DO Node can be supplied from a safe output device following machinery directives. This includes:

- Output Signal Switch Device (OSSD) test pulse compatible
- Galvanic isolation between 0 VDC Logic and Auxiliary power
- PP or PM cabling modes

For more details, refer to the user manuals located at www.parker.com/pdn/P2M_IE

P2M Industrial Ethernet Connections & Configuration

Ethernet ports and Auxiliary power connection

Ethernet ports: 2 x Standard Female M12 D-Coded – 5 pins
Auxiliary Power: Standard Male M12 A-Coded – 4 pins

Configuration file

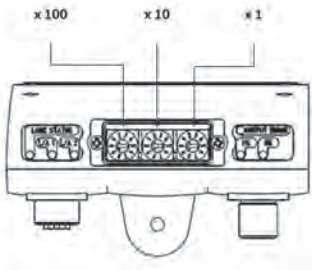
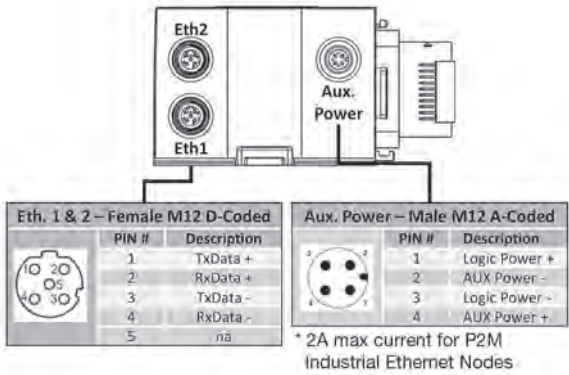
The configuration files (.EDS, .GDS, etc) can be download from the product web page.

Add on Instructions & Function Blocks

Add on Instructions & Function Blocks to assist in the configuration and programming of the P2M Node are available on the product web page – www.parker.com/pdn/P2M_IE

IP Address Setting

Can be done via Rotary Switches, DHCP, Web page, Ipconfig Tool or TCP/IP Interface Object, depending on protocol:



Description	EtherNet/IP Profinet IO Modbus TCP/IP	Ethernet PowerLink	EtherCAT	CC-Link IE
IP-Address setting stored into the NV-memory of the P2M node	000	000	N/A	000
IP-Address setting determined by the 3 rotary switches:				
• IP Address: 192.168.1.xxx	001 – 254	001 – 239	N/A	001 – 120
• Subnet Mask: 255.255.255.0				
• Default Gateway for 001: 192.168.1.2				
• Default Gateway for 002 - 254: 192.168.1.1				
The device will obtains its address via DHCP	888	N/A	N/A	N/A
Reset to factory status	999	999	999	999
Invalid, the module will not start	All others	All others	All others	All others

P2M Industrial Ethernet Valve Control

All P2M Industrial Ethernet Modules can easily connect to and control pneumatic valves sizes ranging from 0.18 Cv to 6.0 Cv utilizing the Moduflex, H Micro, or H ISO valve series including the new H ISO Universal manifold which can mix ISO sizes 15407 (sizes 02 & 01) and 5599 (sizes 1 & 2) without transition plates.

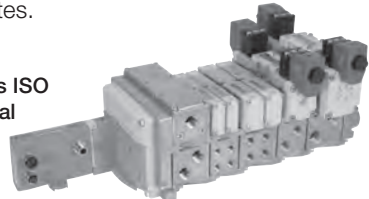
P2M on
Moduflex



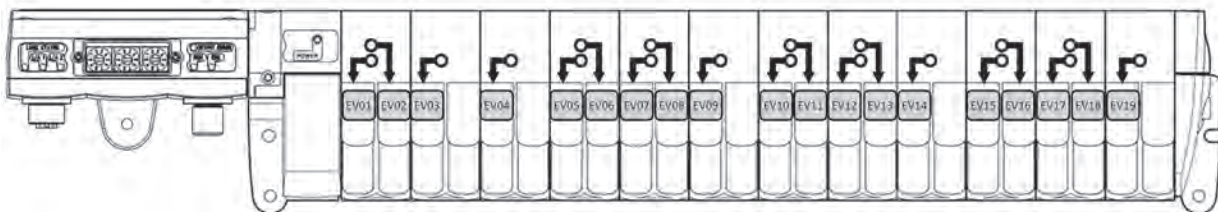
P2M on
H Series
Micro



P2M on
H Series ISO
Universal



P2M Industrial Ethernet Node Output (Solenoid) data mapping - shown on Moduflex valve series



	7 3	2 0
Byte 0	EV08	EV01
Byte 1	EV16	EV09
Byte 2*	EV24 EV20	EV19 EV17

* Byte 2 / Bits 3 to 7 are only available when connected to H Series Micro or H Series ISO valve manifolds. The Moduflex valve series is limited to 19.

Process (Cyclic) Diagnostic through network via ADI #9 – “Module Error Input”

Easy to access diagnostic data transmitted to the PLC as Application Device Instance (ADI) #9

- Voltage warning, short circuit condition, module error, etc
- For more details refer to user manual on product web page – www.parker.com/pdn/P2M_IE

ADI	Instance name	Data type	Access
#9	Module error input	Unit 16	Read
Byte 0	Diag 7	Diag 0	
Byte 1	Reserved		

“V” Series Valve Island
P2M head module for IO-Link

Electrical Module for 24 outputs
 (The last 5 outputs of this 24 DO module can not be used with Moduflex Valve)



M12 A coded Connector connection

	Description	IO-Link class	IO-Link	Aux. power	Aux. power pinout	Weight (g)	Part number	
							Standard	Safe power capable
 Class A	P2M IO-Link communication module	Class A	3 Pin's	3 Pin's	1 & 3	160	P2M2HBVL12400A13	P2M2HBVL12400A13-SPC
			3 Pin's	3 Pin's	4 & 3	160	P2M2HBVL12400A43	P2M2HBVL12400A43-SPC
			3 Pin's	5 Pin's	4 & 2	160	P2M2HBVL12400A42	P2M2HBVL12400A42-SPC
 Class B		Class B	5 Pin's		2 & 5	140	P2M2HBVL12400B25	P2M2HBVL12400B25-SPC
Power & communication cable							RKC 4.5T*-RSC 4.5T/S1587	

IODD file can be downloaded from IODD Finder or the Moduflex web site:
<https://ioddfinder.io-link.com> or www.parker.com/pdn/io-link

Where * = 1, 2, 3, 4, 5, 10, 20 meter standard lengths

P2M Class A Module with Independent Auxiliary Power Supply



The P2M **IO-Link** Class A module can handle a Moduflex valve manifold having up to 19 solenoid outputs, or H Series Micro / ISO up to 24 solenoid outputs.

Thanks to its 2 x M12 A coded male connectors, the P2M node can be connected to any IO-Link Class A master and separately receive its auxiliary power supply for valves from an independent source.

The P2M **IO-Link** Class A module exists in 3 versions with the auxiliary power M12 connector pin out adapted to any sourcing through a standard M12 cable:

- P2M2HBVL12400A13 version: 24VDC / 0VDC on pins 1 & 3 – Standard version
- P2M2HBVL12400A43 version: 24VDC / 0VDC on pins 4 & 3 – Compatible with Siemens wiring
- P2M2HBVL12400A42 version: 24VDC / 0VDC on pins 4 & 2 – Compatible with Rockwell wiring and Turck wiring

P2M Class B module



The P2M **IO-Link** Class B module can handle a Moduflex valve manifold having up to 19 solenoid outputs, or H Series Micro / ISO up to 24 solenoid outputs.

Thanks to its single M12 A coded male connectors, P2M node can be connected to any IO-Link Class B master receiving its auxiliary power supply for valves on pins 2 & 5 from the only cable simplifying the connection.

- P2M2HBVL12400B25 version: 24VDC / 0VDC on pins 2 & 5

Diagnostic



The P2M **IO-Link** module offers a local diagnostic through 4 LED's located on the visible top side, showing:

- IO-Link com status
- Module error
- Output error
- Auxiliary power

Additional useful diagnostic information can be read by the PLC through the network simplifying diagnostic and allowing predictive maintenance (all details in the user manual).

 Most popular.

Auxiliary power for safe supply

The P2M **IO-Link** module is compatible with a SAFE power source for valve control.

For more details, refer to next page.

IO-Link Module Connection and Diagnostic Functions



IO-Link Module Connection

Standard male M12 – type A

Usage of standard manufactured cables available from your usual electrical supplier is recommended.

Note: Auxiliary power for solenoids can be wired allowing the user to turn outputs off while the communications remains on.

Configuration

IODD file can be downloaded from IODD Finder or the P2M web site:
<https://ioddfinder.io-link.com>
www.parker.com/pdn/P2M_IOL

Class B



Class A



Legend

Symbol	Description
L+	IO-Link power supply "+"
L-	IO-Link power supply "-"
C/Q	IO-Link communication
Aux +	Auxiliary power supply 24 VDC
Aux -	Auxiliary power supply 0 VDC

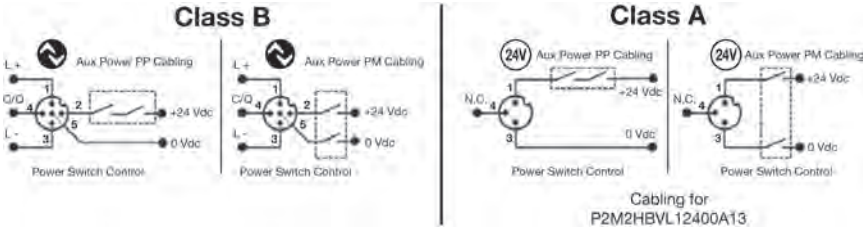
Class B 5 pin's P2M...B., P2M...A..	Class A 3 pin's P2M...A..
L+	L+
Aux +	-
L-	L-
C/Q	C/Q
Aux -	-

Class A		
3 pin's		5 pin's
P2M...A13	P2M...A43	P2M...A42
Aux +	Not used	Not used
-	-	Aux -
Aux -	Aux -	Not used
n.c.	Aux +	Aux +
-	-	Not used

Auxiliary Power Supply Compatibility

The P2M IO-Link Node can be powered from a 24VDC auxiliary source in PP or PM mode as grounds are isolated.

The P2M Safe Power Capable (-SPC) versions can be connected from a SAFE OSSD test pulsed power source.



IO-Link Module Diagnostic Functions

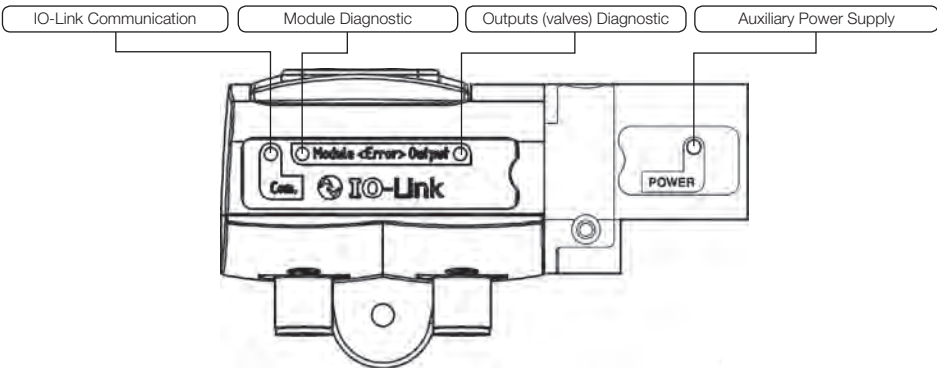
The P2M IO-Link module offers additional useful module status information:

- Solenoid overload or short circuit
- Auxiliary voltage out of tolerance
- Cycle counter for each solenoid
- Module temperature

For more information on product technical information and module diagnostic functionalities, please refer to the user manual available from the product web page:

www.parker.com/pdn/P2M_IOL

Green LED			Module — Error Red LED			Error — Output Red LED			Green LED		
LED Status	Description	Solving	LED Status	Description	Solving	LED Status	Description	Solving	LED Status	Description	Solving
OFF	IO-Link L+ / L- not powered	Check connection	OFF	Standard mode	NA	OFF	Standard mode	NA	OFF	AUX power failure	Check Auxiliary Power Supply
ON	IOL L+ / L- powered IO mode	Set IO-Link mode in IO-Link master	ON	24 VDC AUX power missing or any active malfunction	Check power supply or change module	ON	Any driver error (overload, over temperature, etc.)	Fix solenoid issue then acknowledge error	ON	Standard	NA
Blinking	IO-Link communication active	NA							Blinking	Aux Power is out of range, alarm level	Check Auxiliary Power Supply



Technical Data**P2M Network Nodes****Input Data**

One byte of diagnostic input data is transferred from P2M IO-Link to the IO-Link Master.

Process input data

7	6	5	4	3	2	1	0
Output driver SPI error	Output driver channel error	Polyfuse tripped	Temperature warning	SPI error	AUX voltage error	AUX voltage warning	Acknowledge Required

Output Data

Three bytes of process data are received by P2M IO-Link from the IO-Link Master for control of solenoids.

Process output data (Byte 0)

7	6	5	4	3	2	1	0
EV8	EV7	EV6	EV5	EV4	EV3	EV2	EV1

Process output data (Byte 1)

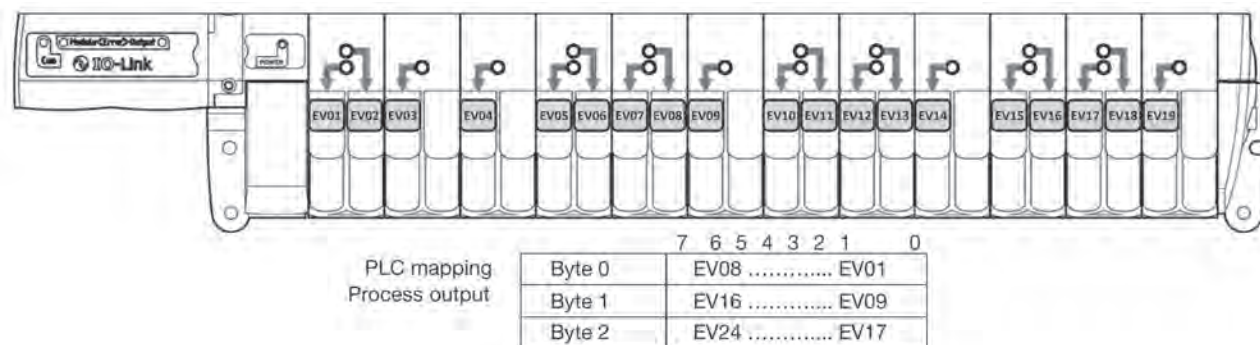
7	6	5	4	3	2	1	0
EV16	EV15	EV14	EV13	EV12	EV11	EV10	EV9

Process output data (Byte 2)

7	6	5	4	3	2	1	0
EV24	EV23	EV22	EV21	EV20	EV19	EV18	EV17

Solenoid Pilots Addressing and Process Mapping**P2M IO-Link node addressing used with Moduflex Valve System**

The P2M IO-Link node, when used with Moduflex Valve System can handle up to 19 pilot solenoid valves. Addressing will be done as shown below.

**P2M IO-Link Module Electrical Specifications**

IO-Link power supply	According to IO-Link standard V1.1.2
Speed communication	Com 2 – 38 kBd
Auxiliary power supply	20.4 VDC to 26.4 VDC
Current limit per channel	150 mA
Max current limit	4 A
Polarity inversion	YES
Short circuit protection	YES
Operating temperature	0°C to 55°C
Storage temperature	-25°C to 70°C
Shock according to IEC	60068-2-27:2008
Vibration according to IEC	60068-2-6:2007
EMC according to IEC	61000-4-2 up to -4-6

Network Diagnostic Through Process Mapping:

The P2M IO-Link module offers diagnostic data transmitted to the PLC through the master:

	7	6	5	4	3	2	1	0
PLC mapping Process input	Byte 0 Diag 7 Diag 0							

Diag bit	Error message	Detail
Diag 0.....	Fail-safe status	Acknowledgement required
Diag 1.....	Auxiliary voltage warning.....	Check auxiliary power
Diag 2.....	Auxiliary voltage failure.....	Check auxiliary power
Diag 3.....	Module failure	Module HS. must be replaced
Diag 4.....	Module over-temperature	
Diag 5.....	Module over-load	
Diag 6.....	Pilot solenoid(s) short circuit.....	Solenoid must be replaced
Diag 7.....	Outputs stage failure	

For further details, refer to the user manual: can be downloaded from www.parker.com/pdn/P2M_IOL



For inventory, lead times, and kit lookup, visit www.pdnplu.com



P2M2HBVA10808A



P2M2HBVA10808B

Standard AS-i Protocol (up to 31 nodes)
Communication module for 8 solenoids max.
(2 nodes per module, 4 inputs, 4 solenoids per node)

Input / output capability	Weight (oz)	Part number
0 inputs and 8 solenoid outputs	5.29	P2M2HBVA10800
8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	7.05	P2M2HBVA10808A
8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	7.05	P2M2HBVA10808B

Network Connectivity Accessories

	Protocol	Connector type	Part number
Power supply field wireable connector	PROFIBUS-DP / InterBus-S / DeviceNet / CANopen	M12 type A female	P8CS1205AA
Line termination resistor	PROFIBUS-DP	M12 type B	P8BPA00MB
	DeviceNet / CANopen	M12 type A	P8BPA00MA

AS-i Version 2.1 Protocol (up to 62 nodes)
Communication module for 6 solenoids max.
(2 nodes per module, 4 inputs, 3 solenoids per node)

Input / output capability	Weight (oz)	Part number
0 inputs and 6 solenoid outputs	5.29	P2M2HBVA20600
8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	7.05	P2M2HBVA20608A
8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	7.05	P2M2HBVA20608B

AS-i Bus Accessories
M12 Cable with Jack for Addressing

Length	Weight (oz)	Part number
1 m	3.53	P8LS12JACK

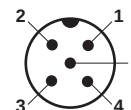
H Series ISO & Network Connectivity
P2M Network Nodes

M12 (Male) Power Supply Connector

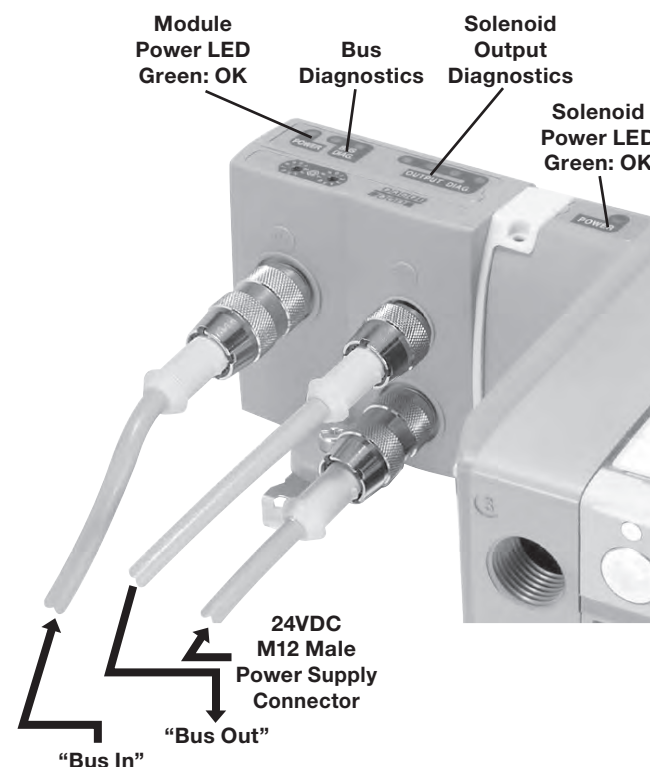
PROFIBUS-DP / DeviceNet / CANopen / InterBus-S

- 1 - 24VDC node (not connected for DeviceNet and CANopen)
- 2 - Not connected
- 3 - 0VDC node and solenoid
- 4 - 24VDC solenoid
- 5 - Protected earth (PE)

24VDC
(As Seen On Module)



M12 Male Type A



Connection

All communication modules have an M12 male connector for power supply.

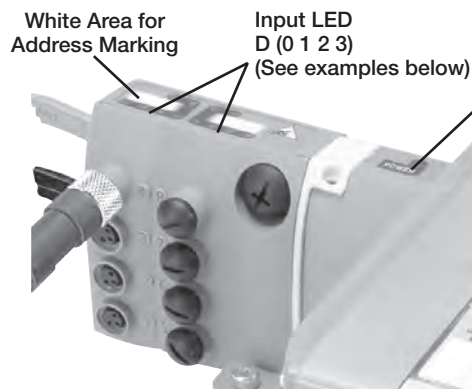
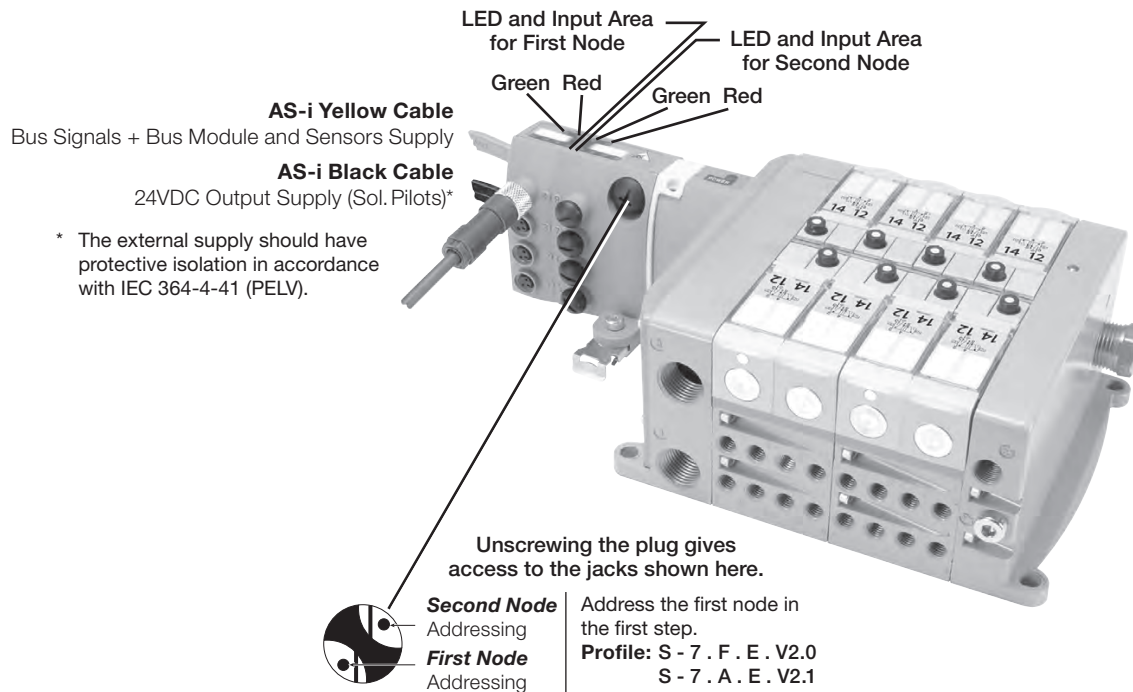
Bus connectors are labeled "Bus In" and "Bus Out" while, power supply connections are labeled "24VDC". Connect to "Bus In" and "Bus Out" and power supply to "24VDC".

Diagnostic

The two "power" indicators shown on the illustrations provide visual indication of the module and solenoid supply status.

Note: Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing communications to remain on. This can be done by placing the user's emergency stop switch or other hard-wired control contact between Pin 1 and Pin 4. If this feature is not required, Pin 1 and Pin 4 should be wired together.

AS-i Bus Communication Module: Addressing, Diagnostic, Input Wiring Bus Addressing, First and Second Node



Bus Diagnostic

"Power" LED state		Off	Green	Red
Power supply		Sol. pilot supply	Normal operation	Solenoid overload
First node LEDs state		Second node LEDs state		System Condition
Green LED	Red LED	Green LED	Red LED	
★	○	★	○	Normal operation
○	○	○	○	No module + sensor supply
○	⚙	○	⚙	Input overload
○	★	○	⚙	No AS-i communication
⚙	★	○	⚙	Address first node = 0
★	○	⚙	★	Address second node = 0

★ ON ○ OFF ⚙ BLINK

Input Wiring

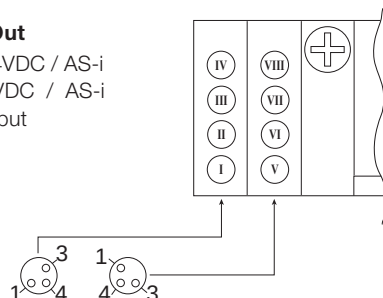
Physical input (**I, II, III, IV**) = D (0 1 2 3) first node
 Physical input (**V, VI, VII, VIII**) = D (0 1 2 3) second node

Examples: Physical input **III** = logical input 6.2
 Physical input **V** = logical input 7.0

M8 Female Connectors

Pin Out

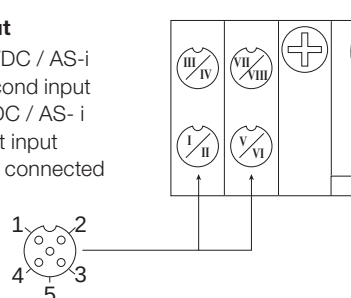
- 1 - 24VDC / AS-i
- 3 - 0VDC / AS-i
- 4 - Input



M12 Female Connectors

Pin Out

- 1 - 24VDC / AS-i
- 2 - Second input
- 3 - 0VDC / AS-i
- 4 - First input
- 5 - Not connected



Note: With only one node, the inputs **II** and **IV** are connected to the connections on the right.

Communication Module: Connections, Addressing, Diagnostic



Bus Cable Connections

PROFIBUS-DP standard male and female type B M12 connectors.

Line termination P8BPA00MB, is necessary on the “bus out” connector of the last station.

This module incorporates an autobaud detect feature, eliminating the need to set switches.

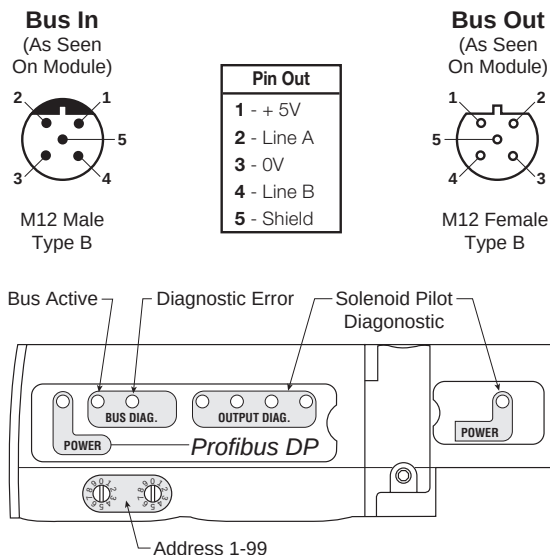
Addressing

Use the GSD file on web site.

The rotary switches enable configuration of the decimal address.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



DeviceNet

Bus Cable Connections

DeviceNet standard male and female type A M12 connectors.

Line termination P8BPA00MA, is necessary on the “bus out” connector of the last station.

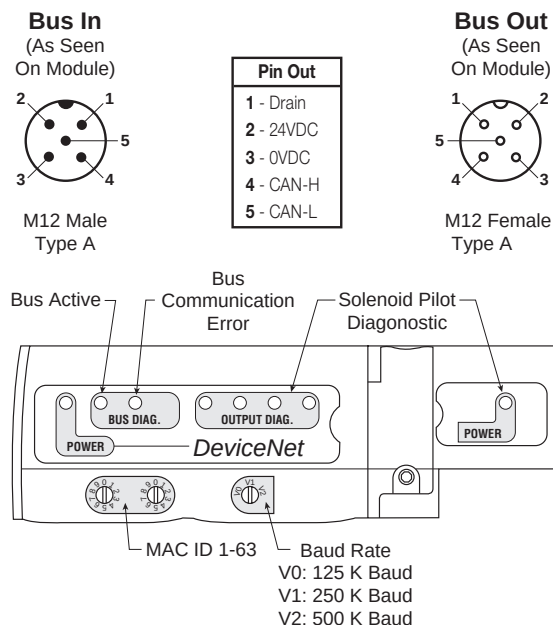
Addressing

Use the EDS file on web site.

The rotary switches enable configuration of the node address (MAC ID) and the baud rate.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



CANopen

Bus Cable Connections

CANopen standard male and female type A M12 connectors.

Line termination P8BPA00MA, is necessary on the “bus out” connector of the last station.

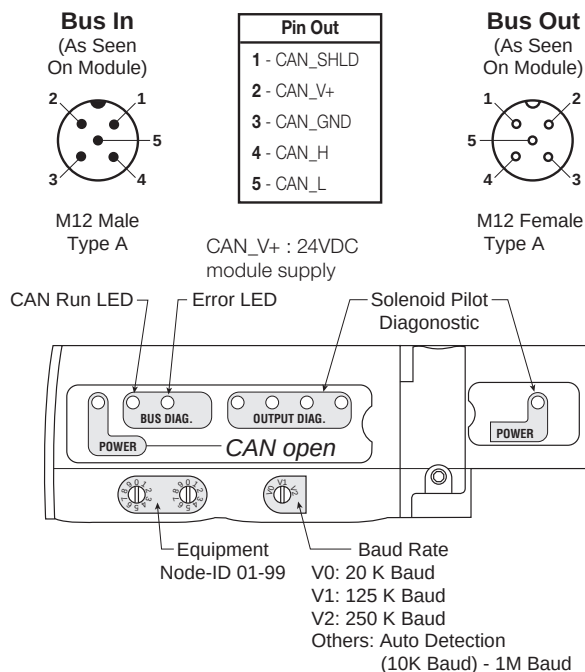
Addressing

Use the EDS file on web site.

The rotary switches enable configuration of the decimal address.

Diagnostic

Diagnostic according to the module dialog shown on the illustration.



INTERBUS-S

Bus Cable Connections

The M23 connectors conform to “InterBus remote bus”.

This module operates at 500 kbps.

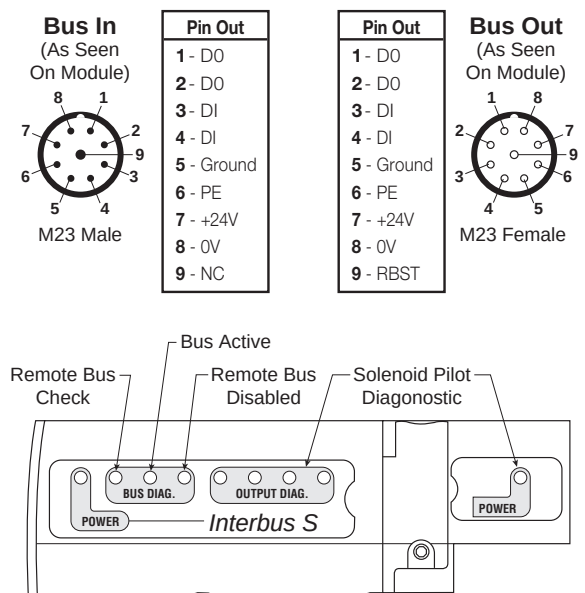
Addressing

InterBus-S is self addressing; therefore, it does not need any software or hardware configuration.

Diagnostic

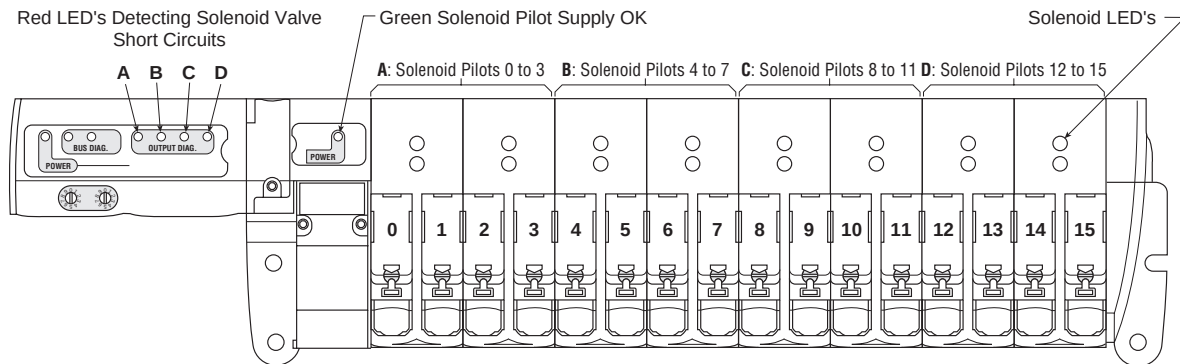
Diagnostic according to the module dialog shown on the illustration.

This diagnostic conforms to the InterBus-S standard.



Note: For more details, please consult “InterBus remote bus” documentation.

Solenoid Pilot Diagnostic Common to All Device Bus Modules



Inside the communication module, solenoid valve control is protected against short-circuits with the following visual indication provided:

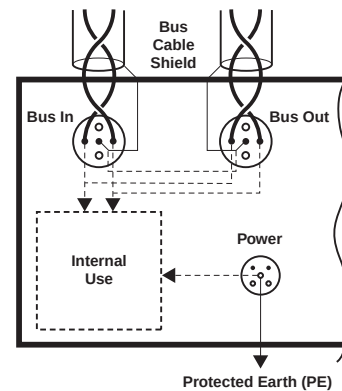
- The red LEDs with code, shown above, detect solenoid valve short-circuits
- Supply is OK when the solenoid pilot power supply indicator is green

Bus Cable Protection

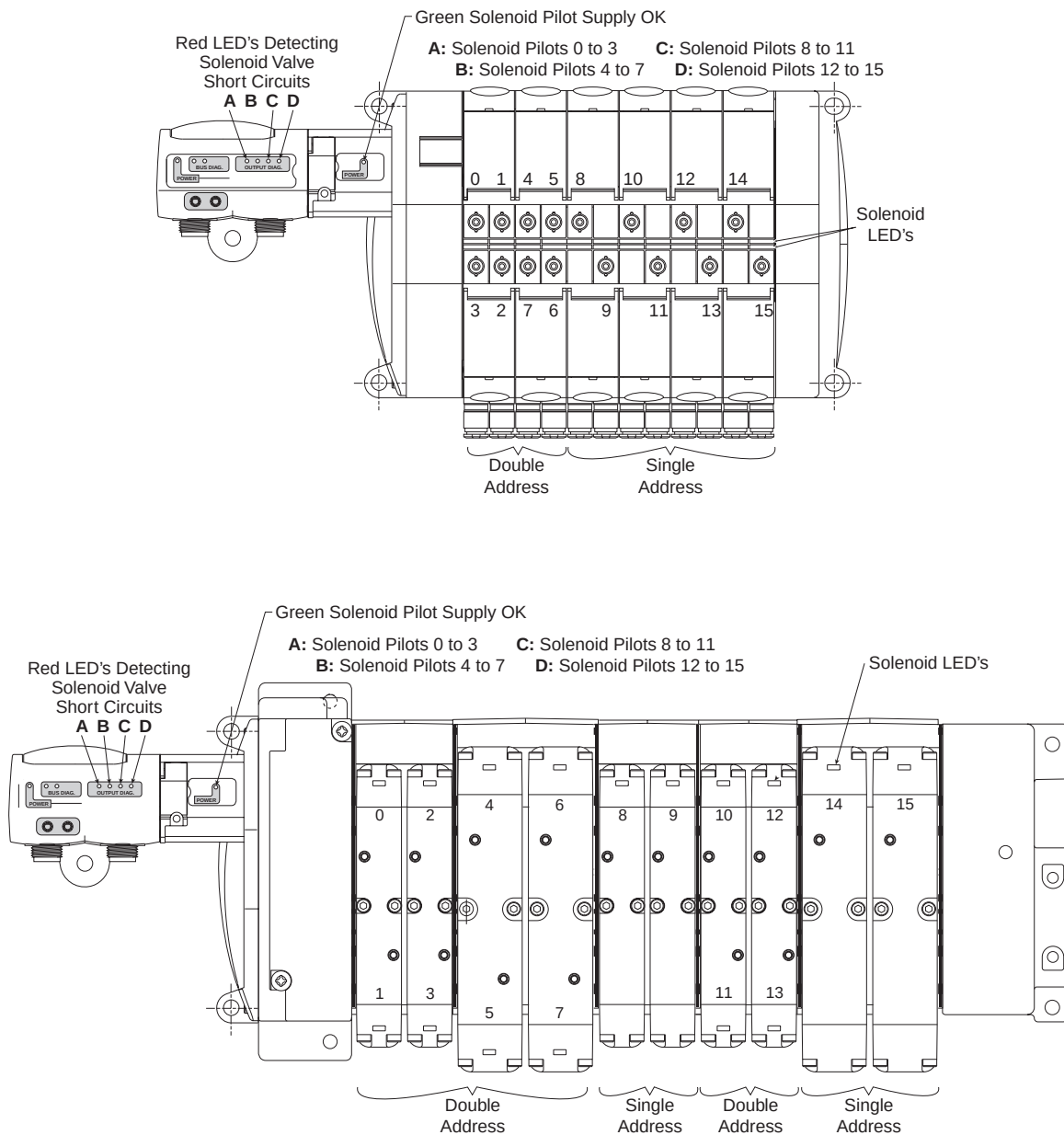
Shield Connections for PROFIBUS-DP, DeviceNet and CANopen

To provide protection against electro-magnetic interferences, the bus cables are shielded. The "bus in" and "bus out" connectors each include a pin for connecting the cable shield. It is safer to connect the shield to the protected earth (PE) at both ends of the bus. Within the communication module, provision is made to enable shield continuity by connecting the two shield pins.

The protected earth must be connected locally on each module in accordance with CE.



Solenoid Pilot Diagnostic Common to All P2M Nodes



Inside the communication module, solenoid valve control is protected against short-circuits with the following visual indication provided:

- The red LEDs with code, shown above, detect solenoid valve short-circuits
- Supply is OK when the solenoid pilot power supply indicator is green

Serial Bus Specifications

All Buses	EMC / CE Mark	According to EN 61 000-6-2	EN 50081-2
AS-i Bus	AS-i line	According to EN 50295	
	Solenoid pilot voltage	24VDC	
	Module consumption	max. 70 mA (2 nodes)	
	Max. supply for all inputs	240 mA (including internal input consumption)	
	Internal input consumption	9 mA for each active input	
	Inputs	According to IEC 1131-2 class 2	
	Certification	These products have been developed according to the association complete specification (v.2.11) and to the slave profiles S-7.FE or S-B.FE	
Device Bus	Bus line	According to each bus specification	
	Module voltage	20 to 30VDC	
	Solenoid pilot voltage	24VDC	
	Module consumption	PROFIBUS-DP max. 1.5W	DeviceNet / CANopen max. 1.5W InterBus-S max. 2W
	Outputs	Overload protection	
	Certification	DeviceNet: Compliant to composite test revision 17, test suite: M002	
		PROFIBUS-DP: Compliant to test specifications for PROFIBUS-DP slaves, version 2.0, February 2000, based on EN 50170-2 at Siemens AG in Furth	
		InterBus-S: This product has passed the relevant tests in accordance with the InterBus conformance requirements Certified no. 385	

I/O Tables Common to All Device Bus Modules

Input Data Table

Byte	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
0	Discrete input 0 (diagnostic LED 0-3)	Discrete input 1 (diagnostic LED 4-7)	Discrete input 2 (diagnostic LED 8-11)	Discrete input 3 (diagnostic LED 12-15)	—	—	—	—

Output Data Table

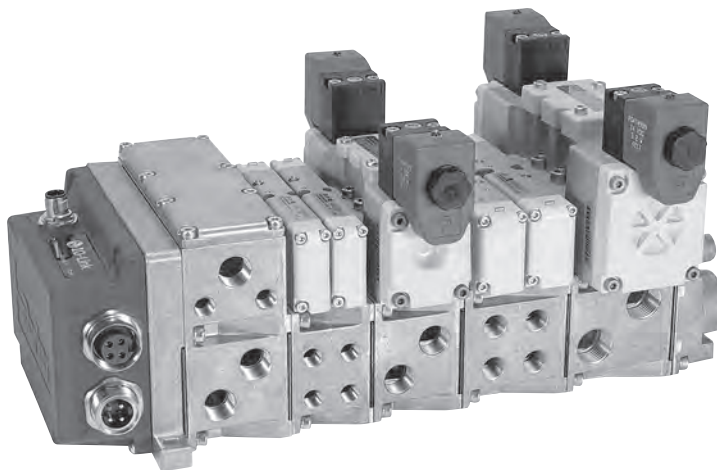
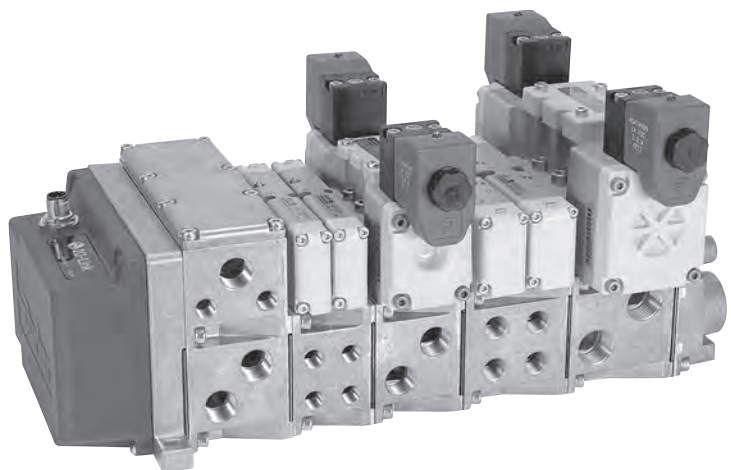
Byte	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
0	Discrete output 0	Discrete output 1	Discrete output 2	Discrete output 3	Discrete output 4	Discrete output 5	Discrete output 6	Discrete output 7
1	Discrete output 8	Discrete output 9	Discrete output 10	Discrete output 11	Discrete output 12	Discrete output 13	Discrete output 14	Discrete output 15

P2H Network Node

The P2H Network Node is available with IO-Link connectivity for the industries first connection of ISO valves (5599 & 15407) to the low cost IO-Link network.

Features

- Compact, robust product design
- Weld splatter resistant housing material
- Simple connection to IO-Link Class A or Class B masters
- Industries first power in & out capability for Class A version
- Industries first 7/8" power connectors on Class A version
- IO-Link connection to new H Series ISO Universal Manifold, capable of mixing valve sizes from 0.5 Cv – 3 Cv
- Safe Power Capable for supplying valve power from a safety device (ie. safe relay)
- Diagnostics made SIMPLE! Useful diagnostic flags in process (cyclic) data for easy access and use for preventative maintenance
- Certified to IP65 ingress protection
- CE certification

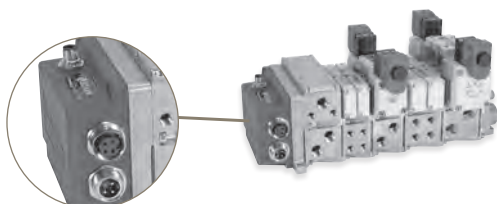
**Class A Node****Class B Node**

Overview - P2H Network Node

Designed to integrate directly with all H Series ISO valve sizes, the P2H IO-Link Network Node provides a compact, robust and cost efficient solution for IO-Link capability. The P2H IO-Link network node is offered as an end plate kit on the H Series valve for five sizes (HB, HA, H1, H2 and H3). The P2H node is suitable for use on a valve manifold with up to 24 solenoid outputs.

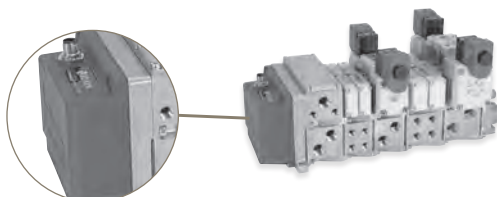
Connection Types and Power:

Class A Node



The Class A node has (1) 3 pin M12 connector for communication and logic power from any class A IO-Link master, and (2) 7/8" connectors for auxiliary valve power IN and OUT.

Class B Node



The Class B node has (1) 5 pin M12 connector to connect IO-Link for communication to a Class B IO-Link master, logic power and auxiliary power for the valve solenoids (up to the limit of the Class B node output*).

*It is recommended to use the Class A node with auxiliary power if the Class B master cannot provide enough power.

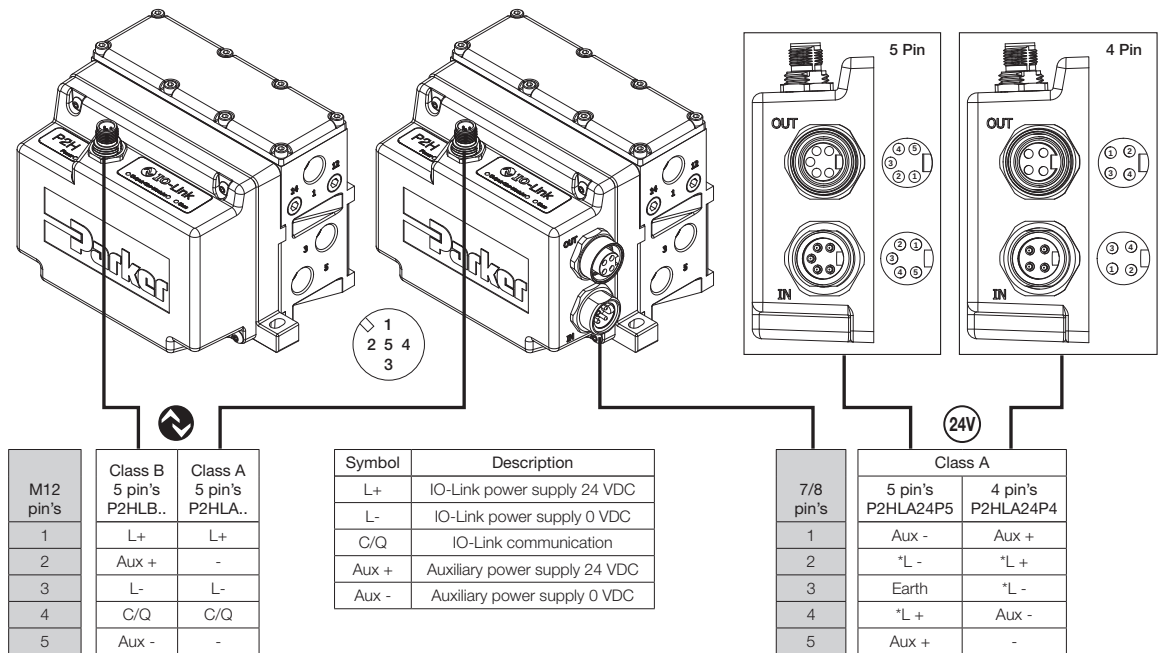
Left and Right Hand End Plate

	IO-Link class / type	Current	HB, HA, H1, H2 Valves		H3 Valves	
			NPT port	BSPP port	NPT port	BSPP port
Class B	P2H IO-Link Class B, standard version, 24 address	3.2A max	PSHU20N200P	PSHU20N201P	PS4220N20DP	PS4220N21DP
	P2H IO-Link Class B, Safe Power Capable, 24 address	2.0A max	PSHU20S200P	PSHU20S201P	PS4220S20DP	PS4220S21DP
Class A	P2H IO-Link Class A, 4-pin Safe Power Capable, 24 address	3.2A max	PSHU20S400P	PSHU20S401P	PS4220S40DP	PS4220S41DP
	P2H IO-Link Class A, 5-pin Safe Power Capable, 24 address	3.2A max	PSHU20S500P	PSHU20S501P	PS4220S50DP	PS4220S51DP

www.parker.com/pdn/P2H_IOL

Description	Standard version	- Safe power capable versions
IO-Link power supply	According to IO-Link standard V1.1.2	
Speed communication	Com 2 – 38 kBd	
Auxiliary power supply	voltage	20,4 VDC to 26,4 VDC
	OSSD compatibility	No Yes
Short circuit protection	Yes	
Operating temperature	0°C to +55°C	
Shock	According to IEC 60068-2-27:2008	
Vibration	According to IEC 60068-2-6:2007	
EMC	According to EN 55011 & EN 61000-4-2 to -4-6	
Ingress protection	Certified to IP65	

P2H Network Node – Connections and LED Diagnostics

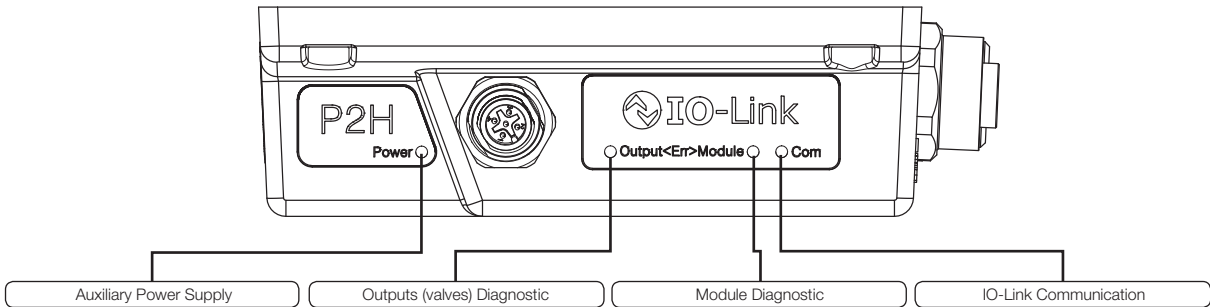


Note:
*7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3)

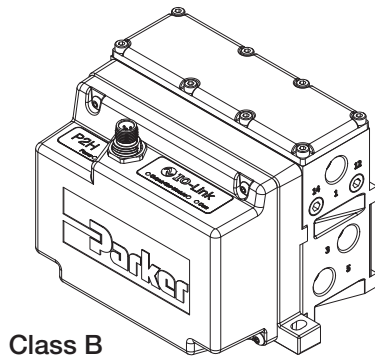
Local diagnostic through LED:

The P2H IO-Link Node offers a local diagnostic through 4 LED's status with interpretation described in the table below:

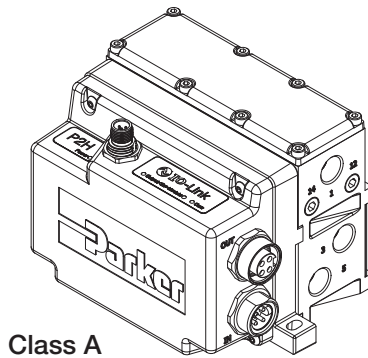
Power Green LED			Output<Err> Red LED			<Err>Module Red LED			Com Green LED		
LED Status	Description	Solving	LED Status	Description	Solving	LED Status	Description	Solving	LED Status	Description	Solving
OFF	Auxiliary power failure < 18V or > 28,5V	Check auxiliary power supply	OFF	Standard mode (No error active)	N/A	OFF	Standard mode (No error active)	N/A	OFF	IO-Link L+ / L- line not powered	Check IO-Link power supply from IO-Link Master (pin's 1 & 3)
ON	Standard mode (auxiliary power within normal range 20,4V* to 26,4V*)	N/A	ON	Any outputs driver error (auxiliary power error, overload, short circuit, over temperature, ...)	If auxiliary power OK (see Power LED status), check error messages and related troubleshooting	ON	24 VDC auxiliary power missing or any active malfunction	Check Auxiliary power supply. If auxiliary power supply OK, module must be replaced	ON	IO-Link L+ / L- line powered IO-Link master port set as SIO mode	Set IO-Link master channel in IO-Link mode
Blinking	Auxiliary power out of range (warning level*)	Check auxiliary power supply, check/reset adjusted values							Blinking	IO-Link communication active	N/A



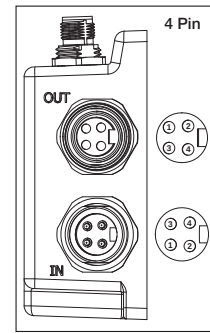
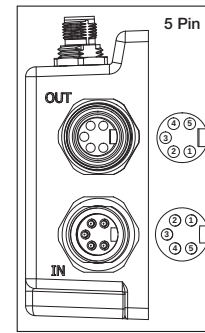
P2H Network Node – Connections and LED Diagnostics



Class B



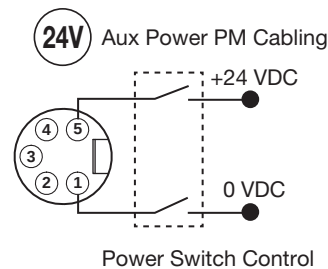
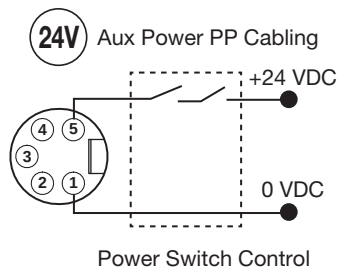
Class A



P2H IO-Link 24DO Node connection to SAFE Power PP / PM mode for valve control

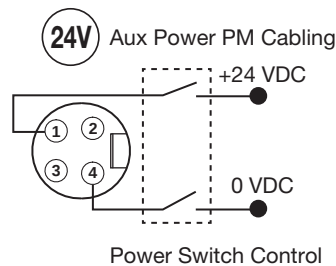
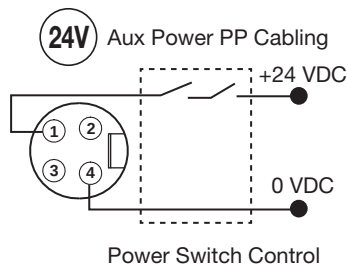
The P2H IO-Link 24DO node can be powered from a SAFE 24 VDC auxiliary source in PP or PM mode as grounds are isolated. Auxiliary power for solenoids can be wired allowing the functionality to turn outputs OFF while communications remain active.

Class A – 5 Pin



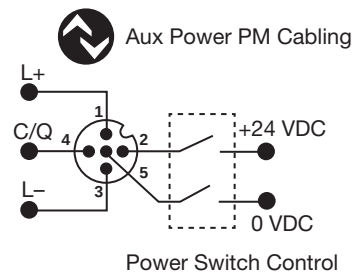
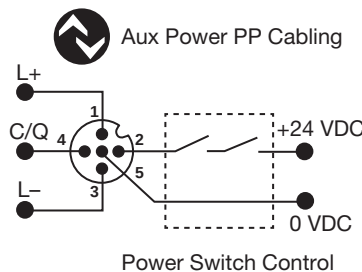
Pin Number	Address
1	AUX–
2	*L–
3	Earth
4	*L+
5	AUX+

Class A – 4 Pin



Pin Number	Address
1	AUX+
2	*L+
3	*L–
4	AUX–

Class B



Pin Number	Address
1	L+
2	AUX+
3	L–
4	C/Q
5	AUX–

* 7/8" logic power has no connection to internal P2H unit but does carryover to OUT 7/8" connector (for jumper logic power only). Logic power for P2H unit will be supplied from M12 (pin 1 & 3).

P2H Network Node – Input / Output Data Mapping

Input Data

One byte of diagnostic input data is transferred from Moduflex to the IO-Link Master.

Process Input Data

7	6	5	4	3	2	1	0
Output driver SPI error	Output driver channel error	Polyfuse tripped	Temperature warning	SPI error	Aux voltage error	Aux voltage warning	Acknowledge required

Diag bit	Error Message	Detail
Diag 0	Fail-safe status	Acknowledgment required
Diag 1	Auxiliary voltage warning	Auxiliary voltage out of range, check auxiliary power line
Diag 2	Auxiliary voltage failure	Auxiliary voltage out of order, check auxiliary power source
Diag 3	Module failure	Switch OFF / ON auxiliary power, if error message persists, replace the module
Diag 4	Module over-temperature	Switch OFF / ON auxiliary power, if error message persists, replace the module
Diag 5	Module over-load	Check overall pilot solenoid valves, if error message persists, replace the module
Diag 6	Pilot solenoid(s) short circuit	Check faulty pilot solenoid valve(s), replace if necessary
Diag 7	Outputs stage not available	Auxiliary power is OFF

Output Data

Three bytes of process data are received by Moduflex from the IO-Link Master for control of solenoids.

Process Output Data (Byte 0)

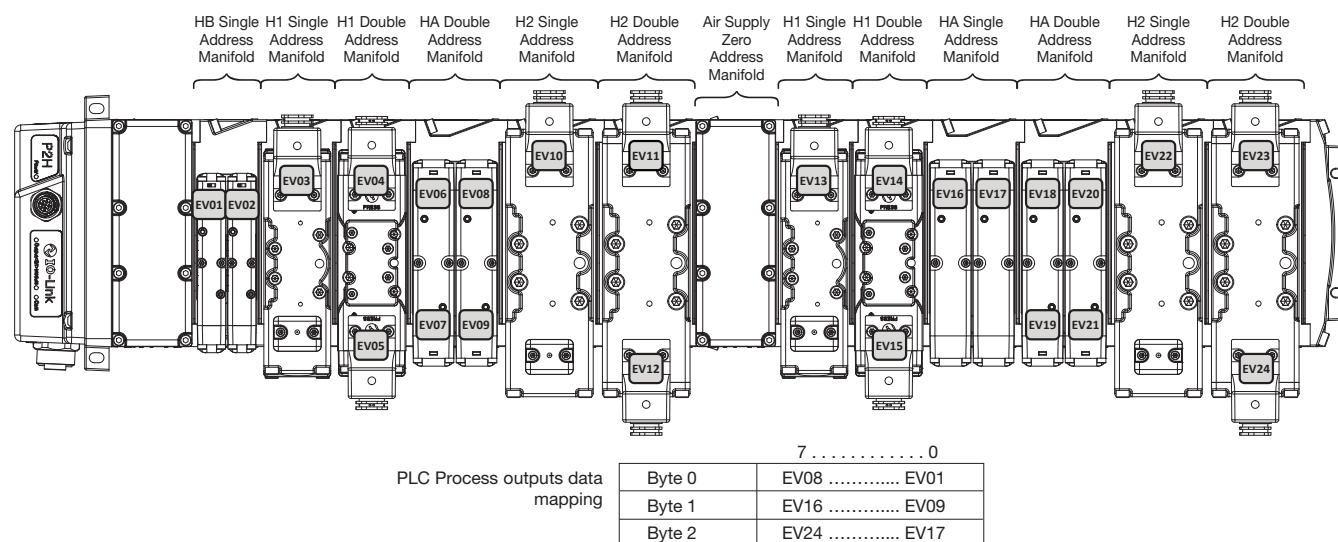
7	6	5	4	3	2	1	0
EV8	EV7	EV6	EV5	EV4	EV3	EV2	EV1

Process Output Data (Byte 1)

7	6	5	4	3	2	1	0
EV16	EV15	EV14	EV13	EV12	EV11	EV10	EV9

Process Output Data (Byte 2)

7	6	5	4	3	2	1	0
EV24	EV23	EV22	EV21	EV20	EV19	EV18	EV17



Configuration IODD File

IODD file can be downloaded from IODD Finder or the P2H IO-Link web site:

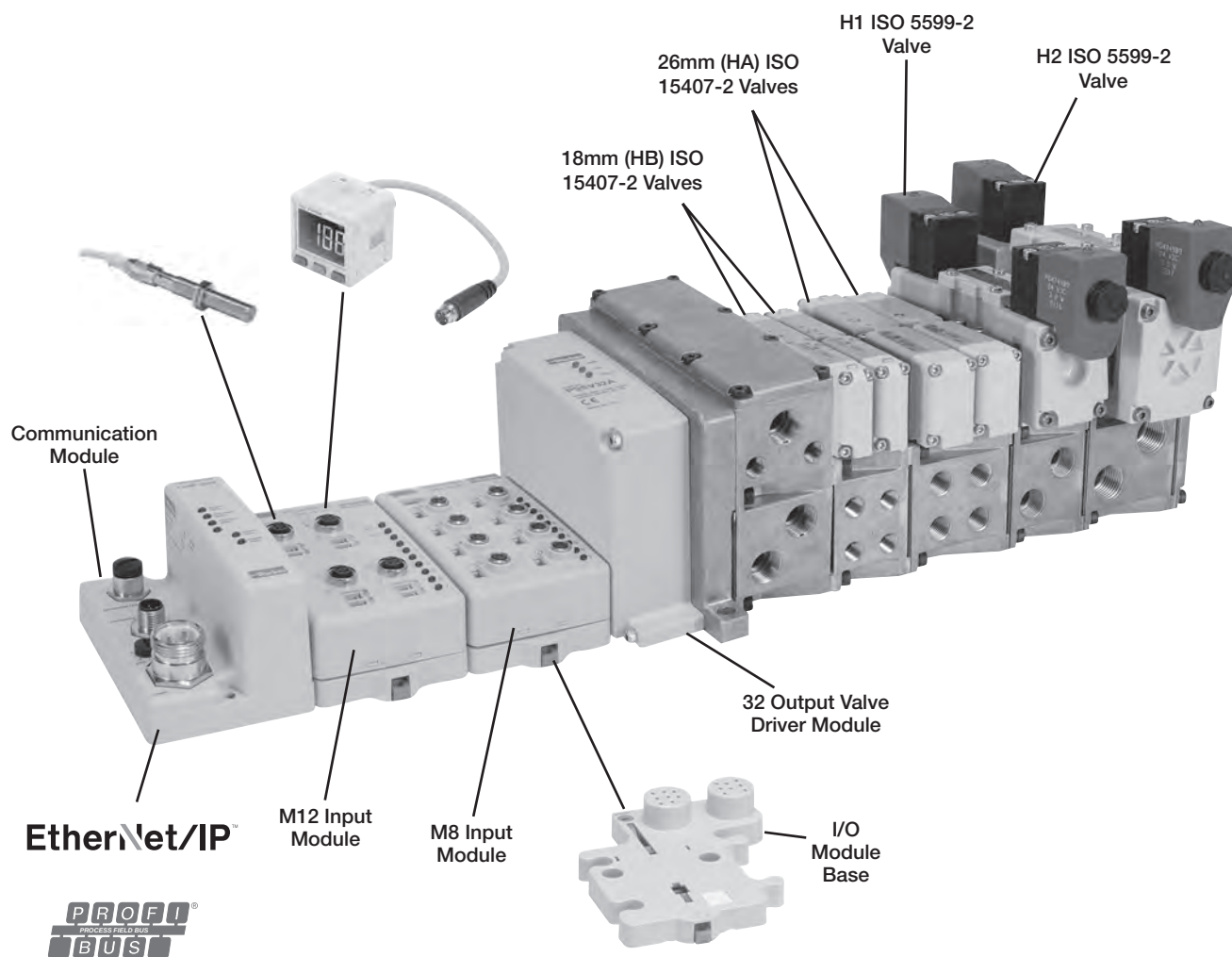
- <https://ioddfinder.io-link.com>
- www.parker.com/pdn/P2H_IOL

H Series ISO & H Series Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves
- CSA, cCSAus and CE certifications (as marked)

I/O Configuration

- De-centralized H Series Network Portal
- M23, 12-Pin or 19-Pin output extension to an H Series ISO valve manifold
- Separate input clusters using a bus extender cable
- Separate output and input power using a power extension module
- I/O density per module = 8 or 16

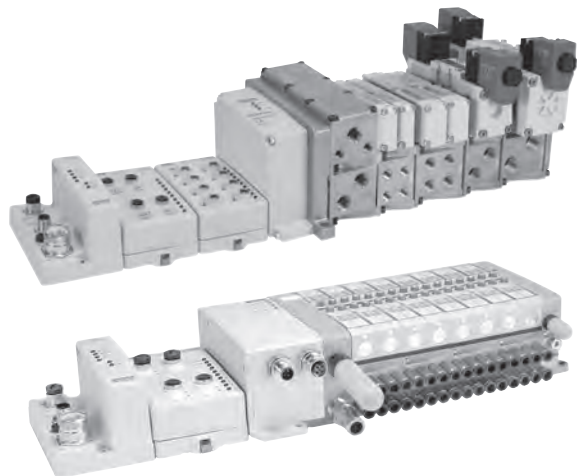


Features

The H Series Network Portal

H Series Network Portal has four major components:

- Valve driver module provide control for 32 solenoids on a manifold, with bus extension providing connectivity to 3 more manifolds
- I/O modules provide the field interface, system-interface circuitry, and bases for mounting
- Communication modules provide the network-interface circuitry
- Power distribution module provide 5 additional power inputs to the H Series Network Portal



H Series ISO & Network Connectivity

H Series Network Portal

Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Parameter-level explicit messaging
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, cUL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

Communications Module



PSSCENA

Protocol

EtherNet/IP

PROFIBUS-DP

Part number

PSSCENA

PSSCPBA

All modules are IP67 certified.

Reference the following documents for installation instructions.

DeviceNet - E101P, PSS-UM001A; ControlNet - E103P

EtherNet/IP - E104P; PROFIBUS-DP - E102P

Digital Inputs



PSSN16M12A



PSSN8M8A

I/O modules

16 digital inputs M12, 5-pin used with PNP sourcing input device

8 digital inputs M12, 5-pin used with PNP sourcing input device

8 digital inputs M8, 3-pin used with PNP sourcing input device

Voltage

10 to 28.8VDC

10 to 28.8VDC

10 to 28.8VDC

Part number

PSSN16M12A

PSSN8M12A

PSSN8M8A

Reference E106P document for installation instructions.

 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Digital Outputs

	I/O modules	Voltage	Part number
 PSST16M12A  PSST8M12A	16 digital outputs M12, 5-pin used with PNP sourcing outputs*	10 to 28.8VDC	PSST16M12A
	8 digital outputs M12, 5-pin used with PNP sourcing outputs*	10 to 28.8VDC	PSST8M12A
	4 digital output, high watt relay M12, 5-pin used with PNP sourcing outputs (2 Amp) [§]	24VDC	PSSTR4M12A
	8 digital outputs M23, 12-pin used with PNP sourcing outputs*	10 to 28.8VDC	PSST8M23A

All modules are IP67 certified.
Reference the following documents for installation instructions.
+ E107P
§ E109P
See www.pdnplu.com

Analog Inputs

	I/O modules	Voltage	Part number
 PSSNAVM12A PSSNACM12A	2 Analog inputs voltage M12, 5-pin [†]	-10 to 10VDC or 0 to 10VDC	PSSNAVM12A
	2 Analog inputs current M12, 5-pin [†]	4 to 20mA or 0 to 20mA	PSSNACM12A

All modules are IP67 certified,
[†] Reference E110P document for installation instructions.
See www.pdnplu.com

Terminating Base Module

	Base module	Part number
 PSSTERM	Termination base for stand alone units	PSSTERM

Used as the last terminating module for a stand alone H Series network assembly.

Power Extender Module

	Extender module	Part number
 PSSSE24A	24VDC field power module	PSSSE24A

A Power Extender Module must be used on every 14th module in H Series Network assembly.
Reference document E105P and PSS-SG001 for configuration instructions.
See www.pdnplu.com

 Most popular.

Bus Extender Cable

	Description	Voltage	Part number
	1 meter cable*	24VDC	PSS1738-EXT1
	3 meter cable*	24VDC	PSS1738-EXT3

* Requires a PSSSE24 Power Extender Module.
IP67 certified.
Reference E117P document for installation instructions.
See www.pdnplu.com

H Series Micro Bus Extender Cable

	Description	Voltage	Part number
	1 meter cable*	24VDC	PSSVEXT1

* IP67 certified.

Replacement Base Module

	Description	Part number
	Base module	PSSBASE

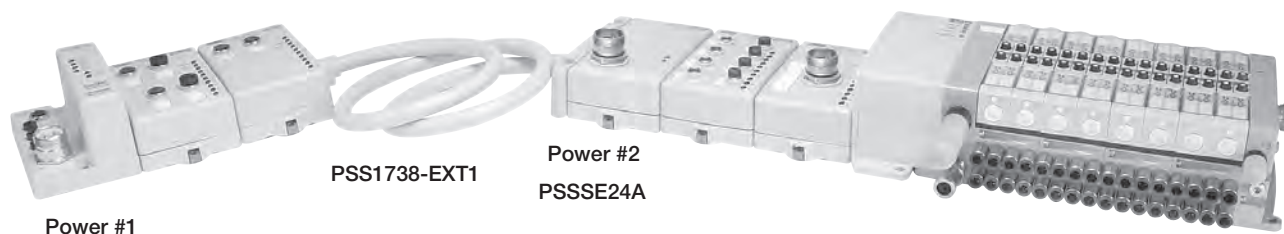
 Most popular.

Using Bus Extender Cables

Example #1:

H Series Micro with Standard Bus Extender Cable

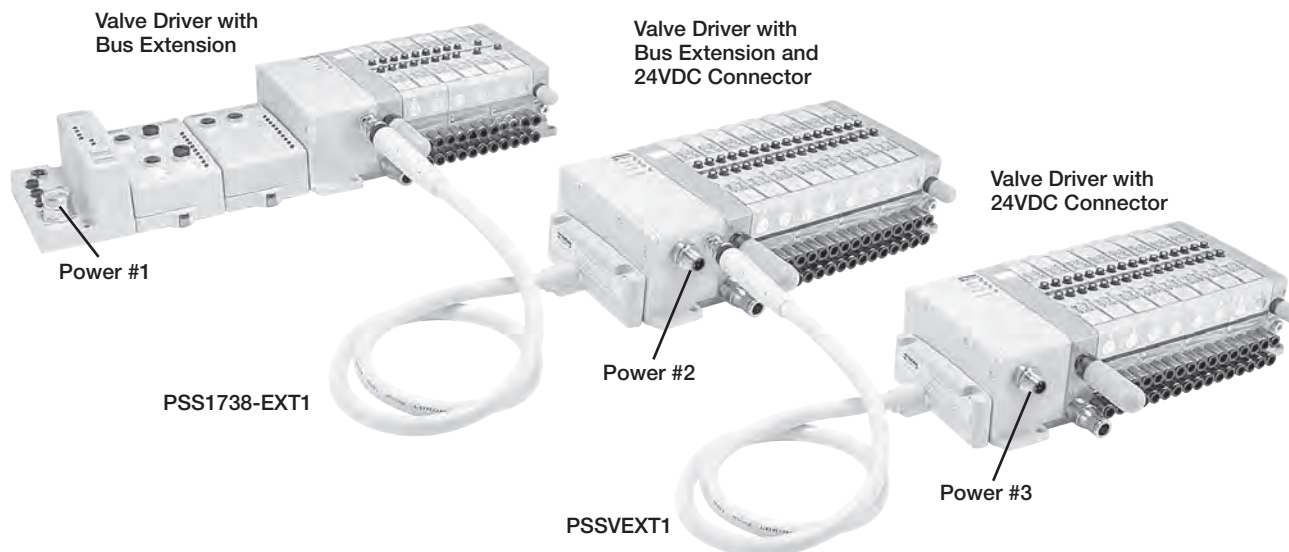
- Separate the communication module and a portion of the I/O from other I/O and the valve manifold
- Commonly used when overall length is restricted
- PSSSE24A is needed on the extension. No 24VDC connector needed on the H Series Network end plate
- Can be used with H Series ISO and H Series Micro valves



Example #2:

H Series Micro with Bus Extension on Valve Driver Module – No additional I/O at the Extension

- Add up to three additional valve manifolds without adding another communication module
- No PSSSE24A is needed on the extension when the valve driver module with 24VDC connector is used
- Commonly used when many valves are required
- Bus expansion only available with H Series Micro valves

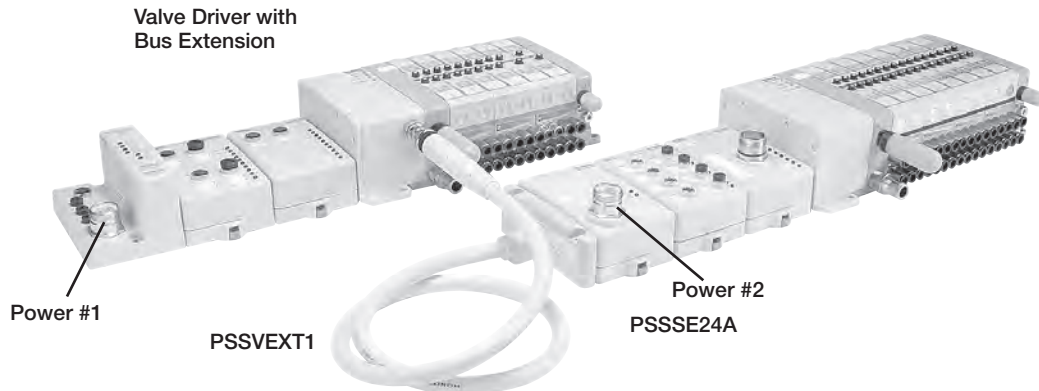


Using Bus Extender Cables (continued)

Example #3:

H Series Micro with Bus Extension on Valve Driver – With I/O at Extension

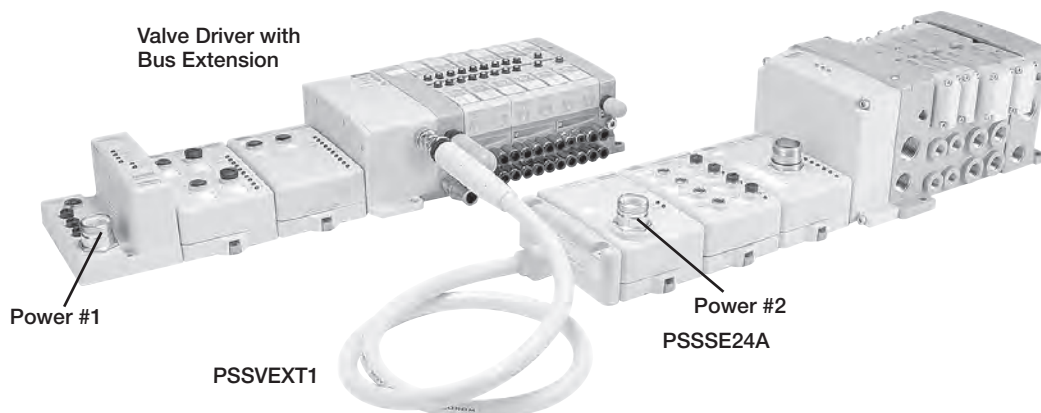
- Add up to three additional valve manifolds without adding another communication module
- PSSSE24A is needed on the extension. No 24VDC connector needed on the H Series Network end plate
- Commonly used when many valves are required, and each location requires additional I/O
- Bus expansion only available with H Series Micro



Example #4:

H Series Micro with Bus Extension on Valve Driver Module – With I/O at the Extension and Larger H Series ISO Valve Manifold

- Add up to two additional H Series Micro valve manifolds and one H Series ISO valve manifold without adding another communication module
- PSSSE24A is needed on the extension
- H Series ISO valve manifold must be the last manifold on the extension
- Commonly used when many valves are required, and each location requires additional I/O
- Bus expansion only available with H Series Micro, H Series ISO manifold must be the last manifold in the system



Digital I/O Modules

Choose digital I/O modules when you need:

- **Input Modules.** An input module responds to an input signal in the following manner:
 - Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data. All input modules use input filtering.
 - Optical isolation shields logic circuits from possible damage due to electrical transients.
 - Logic circuits process the signal.
 - An input LED turns on or off indicating the status of the corresponding input device.
- **Output Modules.** An output module controls the output signal in the following manner:
 - Logic circuits determine the output status.
 - An output LED indicates the status of the output signal.
 - Optical isolation separates module logic and bus circuits from field power.
 - The output driver turns the corresponding output on or off.
- **Surge Suppression.** Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. However, we recommend that you use an additional suppression device if an output is being used to control inductive devices, such as:
 - Relays
 - Motor starters
 - Solenoids
 - Motors

Additional suppression is especially important if your inductive device is in series with, or parallel to, hard contacts such as:

 - Push buttons
 - Selector switches

The digital I/O modules support:

- A wide variety of voltage interface capabilities
- Isolated and non-isolated module types
- Point-level output fault states
- Choice of direct-connect or rack-optimized communications
- Field-side diagnostics on select modules

Connector types are indicated by the catalog number. For example, the PSSN16M12A has an M12 connector.

Digital DC Input Modules

	PSSN8M8A PSSN8M12A	PSSN16M12A
Number of inputs	8 PNP sourcing	16 PNP sourcing
Key switch position	1	
Voltage, on-state input, nom.	24VDC	
Voltage, on-state input, min.	10VDC	
Voltage, on-state input, max.	28.8VDC	
Input delay time, ON to OFF	0.5 ms hardware + (0...65 ms selectable)*	
Current, on-state input, min.	2 mA	
Current, on-state input, max.	5 mA	
Current, off-state input, max.	1.5 mA	
Bus power current (mA)	75	
Power dissipation, max.	1.0 W @ 28.8VDC	

* Input ON-to-OFF delay time is the time from a valid input signal to recognition by the module.

Digital DC Output Modules

	PSST8M12A PSST8M23A	PSST16M12A
Number of outputs	8 PNP sourcing	16 PNP sourcing
Keyswitch position	1	
Voltage, on-state output, nom.	24VDC	
Voltage, on-state output, min.	10VDC	
Voltage, on-state output, max.	28.8VDC	
Output current rating, max.	3.0 A per module, 1.0 A per channel	
Bus power current (mA)	75	
Power dissipation, max.	1.2 W @ 28.8VDC	

Relay Output Module

	PSSTR4M12A
Number of outputs	4 Form A (N.O.) relays, isolated
Key switch position	7
Output delay time, ON to OFF, max.	26 ms*
Contact resistance, initial	30 mΩ
Current leakage, Off-state output, max.	1.2 mA and bleed resistor thru snubber circuit @ 240V ac
Output current rating, max	8.0 A per module, 2.0 A per channel
Bus power current (mA)	90
Power dissipation, max.	0.5 W

*Time from valid output off signal to relay de-energization by module.

Analog I/O Modules

The H Series Network Portal analog modules support: on-board, channel-level data alarming (four set-points per channel); scaling to engineering units; channel-level diagnostics (electronic bits and LEDs); and integer format.

Choose analog input modules when you need:

- **Individually configurable channels** to use the module(s) with a variety of sensors.
- **On-board scaling** to eliminate the need to scale the data in the controller. Controller processing time and power are preserved for more important tasks, such as I/O control, communications, or other user-driven functions.
- **On-line configuration.** Modules can be configured in the RUN mode using the programming software or the control program. This allows you to change configuration while the system is operating. For example, the input filter for a particular channel could be changed, or a channel could be disabled based on a batch condition. To use this feature, the controller and network interface must also support this feature.
- **Over- and under-range detections and indications.** This eliminates the need to test values in the control program, saving valuable processing power of the controller. In addition, since alarms are handled by the module, the response is faster and only a single bit per channel is monitored to determine if an error condition has occurred.
- **Ability to individually enable and disable channels.** Disabling unused channels improves module performance.
- **Selectable input filters** This lets you select the filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations. Lower filter settings provide greater noise rejection and resolution. Higher filter settings provide faster performance. Note: The analog modules provide four input filter selections.
- **Selectable response to broken input sensor.** This feature provides feedback to the controller that a field device is not connected or operating properly. This lets you specify corrective action based on the bit or channel condition.
- **High accuracy.** The modules share a high accuracy rating of $\pm 0.1\%$ of full-scale accuracy at 25°C.

Analog Input Modules

	PSSNACM12A	PSSNAVM12A
Number of inputs	2	2
Key switch position	3	3
Input signal range	4...20 mA 0...20 mA	-10 to 10VDC 0 to 10VDC
Input resolution, bits	16 bits - over 21 mA 0.32 μ A/cnt	15 bits plus sign 320 μ V/cnt in unipolar or bipolar mode
Absolute accuracy, current input	0.1% full scale @ 25°C*†	—
Absolute accuracy, voltage input	—	0.1% full scale @ 25°C*†
Input step response, per channel	70 ms @ notch = 60 Hz (default) 80 ms @ notch = 50 Hz 16 ms @ notch = 250 Hz 8 ms @ notch = 500 Hz	70 ms @ notch = 60 Hz (default) 80 ms @ notch = 50 Hz 16 ms @ notch = 250 Hz 8 ms @ notch = 500 Hz
Input conversion type	Delta Sigma	Delta Sigma
Bus power current (mA)	75	75
Power dissipation, max.	0.6 W @ 28.8VDC	0.6 W @ 28.8VDC

* Includes offset, gain, non-linearity and repeatability error terms.

† Analog input modules support these configurable parameters and diagnostics: open-wire with LED and electronic reporting; four-alarm and annunciation set-points; calibration mode and electronic reporting; under- and over-range and electronic reporting; channel signal range and update rate and on-board scaling; filter-type; channel update rate.

Valve Driver Modules

The PSSV32A and PSSVM32A valve driver modules provide an interface between the H Series Network Portal and the valve assembly. These modules will always be the last on the H Series Network serial bus, and control 32 digital outputs at 24VDC. Depending on the valve selection, a valve driver module can control up to 32 single solenoid valves or 16 double solenoid valves.

PSSV32A is used with H Series ISO valves and PSSVM32A is used with H Series Micro valves.

Specifications

	PSSV32A and PSSVM32A
Outputs per module	32, PNP sourcing
Voltage drop, on-state output, maximum	0.2VDC
Voltage, off-state output, maximum	28.8VDC
Voltage, on-state output, maximum	28.8VDC
minimum	10VDC
nominal	24VDC
Output current rating	200 mA per channel, not to exceed 6.0 A per module
Output surge current, maximum	0.5 A for 10 ms, repeatable every 3 seconds
Current leakage, off-state output, Maximum	0.1 mA
Current, on-state output minimum	200 mA per channel
Output delay time OFF to ON, Maximum ¹	0.1 ms
Output delay time, ON to OFF, Maximum ¹	0.1 ms
External DC power supply voltage range	10 to 28.8VDC
External DC power supply voltage nominal	24VDC

1. OFF to ON or ON to OFF delay is time from a valid output "on" or "off" signal to output energization or de-energization.

Select the Appropriate Power Supply

Part number	Power supply input voltage, nom.	Operating voltage range	Maximum continuous current draw	Power supply inrush current, max.	Input overvoltage protection	Power supply interruption protection
PSSCENA						
PSSCPBA	24VDC	10...28.8VDC	10 A	6 A for 10 ms	Reverse polarity protected	Output voltage will stay within specifications when input drops out for max. load.
PSSSE24A						

Power Extender Module

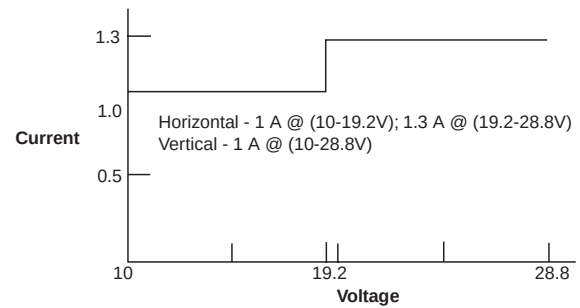
The PSSSE24A expansion power unit passes 24VDC field power to the I/O modules to the right of it. This unit extends the backplane bus power and creates a new field voltage partition segment for driving field devices for up to 13 I/O modules. The expansion power unit separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for:

- Separating field power between input and output modules
- Separating field power to the analog and digital modules
- Grouping modules to perform a specific task or function

You can use multiple expansion power units with any of the communication adapters to assemble a full system. If you are using the PSSCENA adapter, you may use a PSSSE24A expansion power unit to add additional modules. For example, if you had a 36 module system with a PSSCENA adapter, you would have at least two or more PSSSE24A expansion power units to provide more bus power current for modules to the right of the supply.

- 1.3A of additional bus power
- Starts new voltage distribution
- Partitioning for E-Stop wiring

PSSSE24A Current Derating for Mounting



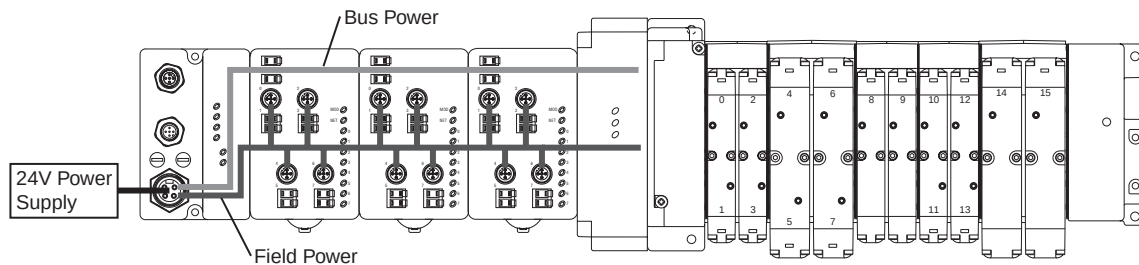
Power Distribution General Specifications

	PSSSE24A
Power supply requirements	Note: In order to comply with CE low voltage directives (LVD), you must use a safety extra low voltage (SELV) or a protected extra low voltage (PELV) power supply to power this adapter
Field side power requirements	24VDC (+20% = 28.8VDC max.) @ 400 mA
Inrush current, max.	6 A for 10 ms
Input overvoltage protection	Reverse polarity protected
Power supply interruption protection	Output voltage will stay within specifications when input drops out for 10 ms at 10V with max. load
Power supply input voltage, nom.	24VDC
Operating voltage range	10...28.8VDC
Power consumption, max.	9.8 W @ 28.8VDC
Power dissipation, max.	3.0 W @ 28.8VDC
Thermal dissipation, max.	10.0 BTU/hr @ 28.8VDC
Isolation voltage	1250V rms
Bus power supply current, max.	1.5 A
Field power supply current, max.	10 A

Power Distribution Options for H Series ISO

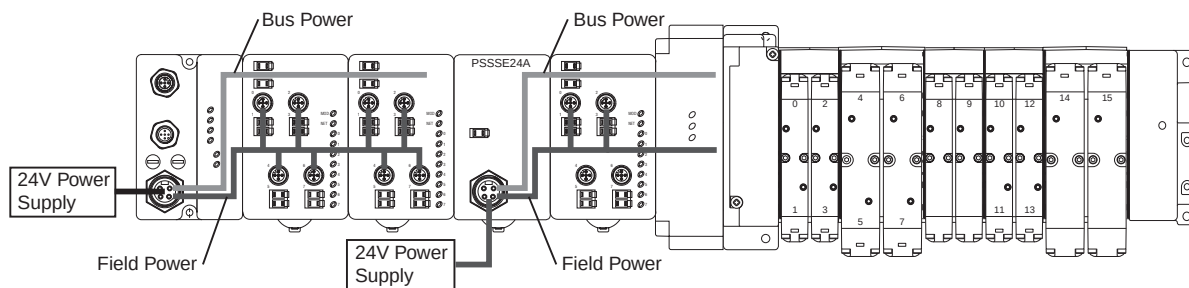
H Series Network Communication and I/O Modules

An auxiliary 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 I/O modules with a maximum of 10A field power, using the auxiliary power.



H Series Network Portal with 24VDC Expansion Power Unit (PSSSE24A)

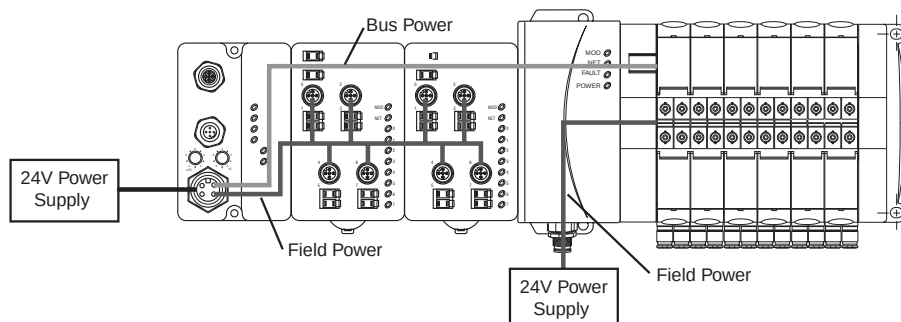
The auxiliary power from the communication module supports up to 13 I/O modules with a maximum of 10A field power. The 24VDC power extender module (PSSSE24A) extends the backplane bus power and I/O Module field power to support up to 13 more I/O modules. Connect additional power extender modules to expand the I/O assembly up to the maximum of 63 I/O modules. This secondary 24VDC connector on the PSSSE24A can be wired into an emergency stop circuit.



Additional Power Distribution Options for H Series Micro

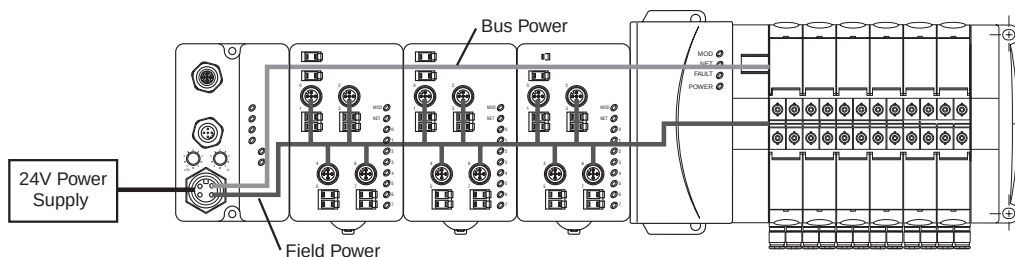
H Series Network Communication Module and Valve Driver Module with 24VDC Connector

The 24VDC power supply from the communication adaptor provides power to the backplane bus power and I/O module field power for up to 13 modules and an adapter with a maximum of 10A field power. In this configuration, backplane bus power and I/O module field power are supplied to the input and output modules. The communication module only supplies backplane bus power to the valve driver module, as the H Series Micro with 24VDC connector separates the field power from the rest of the network. This secondary 24VDC connector on the valve driver module supplies field power to the valves, and can be wired into an emergency stop circuit.



H Series Network Communication and I/O Modules

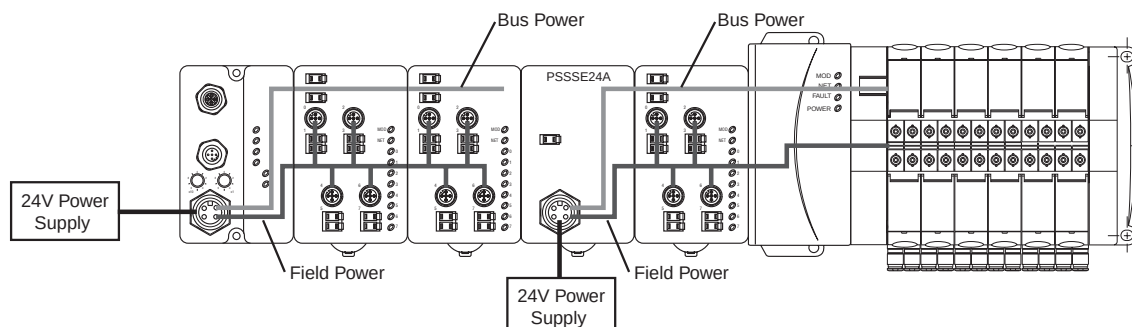
The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source.



H Series Network Communication and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source.

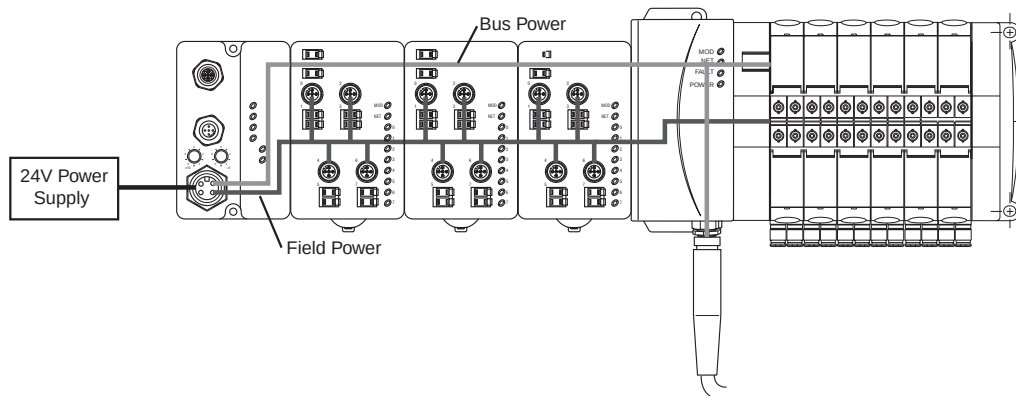
The 24VDC power extender module (PSSSE24A) extends the backplane bus power and I/O module field power to support up to 13 more modules. Connect additional power extender modules to expand the assembly up to the maximum of 63 I/O modules. The valve driver module is the last module on the system, and will draw bus power and field power from the PSSSE24A to the left of it. This secondary 24VDC connector on the PSSSE24A can be wired into an emergency stop circuit.



Power Distribution Options for H Series Micro (Continued)

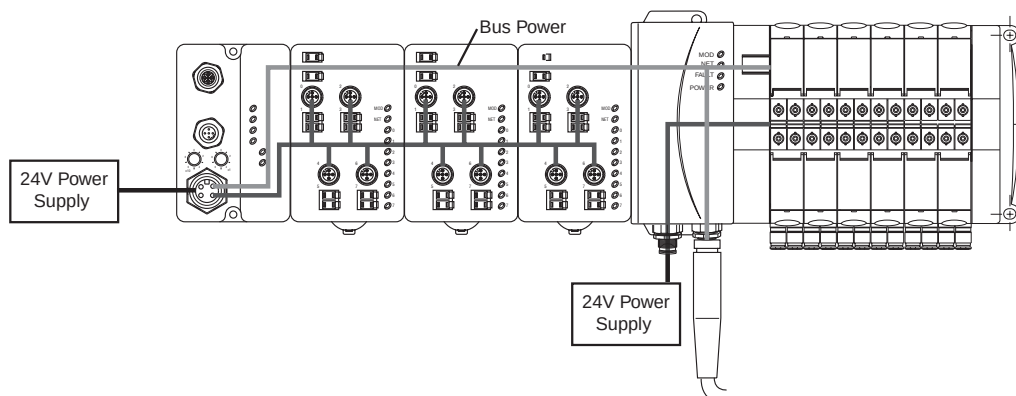
H Series Network Communication Module with Bus Extension Connector and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10A field power, using this power source. The H Series Micro with bus extension connector carries backplane bus power and communication down to another H Series network assembly through the PSSVEXT1 cable. If additional H Series Network input and output modules or H Series ISO valve manifold is used on this extension, a PSSSE24A power extender module is required to provide field power. If the extension is attached directly to an H Series Micro manifold, field power can be supplied directly by using the 24VDC connector option.



H Series Network Communication Module with 24VDC and Bus Extension Connectors and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. In this configuration, bus power and field power are supplied to the input and output modules. The communication module only supplies bus power to the valve driver module, as the 24VDC connector separates the field power from the rest of the network. This secondary 24VDC connector on the valve driver module supplies field power to the valves, and can be wired into an emergency stop circuit. The bus extension connector carries bus power and communication down to another H Series Network assembly through the PSSVEXT1 cable. If additional H Series Network input and output modules or H Series ISO valve manifold is used on this extension, a PSSSE24A power extender module is required to provide field power. If the extension is attached directly to an H Series Micro manifold with 24VDC connector, field power can be supplied directly by using the 24VDC connector option.



Placing H Series Network Modules

Maximum Size Layout

Part number	Bus power supply	Maximum I/O modules with 24VDC backplane current at 75 mA each	Maximum I/O modules with expansion power supplies
PSSCENA on EtherNet/IP PSSCPBA on PROFIBUS	1000		
PSSSE24A Expansion Power	Horizontal mounting: 1A @ 10...19.2V input; 1.3A @ 19.2...28.8V input Vertical mounting: 1A @ 10...28.8V input	Up to 13	63

Power Supply Distance Rating

Modules are placed to the right of the power supply. Each H Series Network module can be placed in any of the slots to the right of the power supply until the usable backplane current of that supply has been exhausted. A communication module provides 1 A current to the PointBus. The power extend module, PSSSE24A, provides up to 1.3 A and I/O modules require from 75 mA (typical for the digital and analog I/O modules) up to 90 mA or more.

Current Requirements

Part number	PointBus current requirements
PSSN8xxx	
PSSP8xxx	
PSST8xxx	75 mA
PSSN16xxx	
PSST16xxx	
PSSTR4MRA	90 mA
PSSNACM12A	
PSSNAVM12A	75 mA
PSSV32A	
PSSVM32A	

Related Documentation

Additional user documentation presents information according to the tasks performed and the programming environment used. Refer to the table below for information on H Series Network Portal products.

H Series Network Portal Related Publications*

	Part number	Description	Instruction sheet*
General information	—	Industrial automation wiring and grounding guidelines	E115P
		Safety guidelines for the application, installation and maintenance of solid state control	E116P
Communication interfaces	PSSCENA	H Series EtherNet/IP 10/100 Mbps adapter module	E104P, installation instructions
	PSSCPBA	H Series PROFIBUS adapter module	E102P, installation instructions
Valve driver module	PSSV32A, PSSVM32A	32 Point valve driver module	E100P
DC I/O	PSSN16M12A	24VDC 16 sink input w/8 M12 connectors, 2 points per connector	E106P
	PSSN8M8A	24VDC 8 sink input w/8 M8 connectors	
	PSSN8M12A	24VDC 8 sink input w/4 M12 connectors, 2 points per connector	
	PSST16M12A	24VDC 16 source output w/8 M12	E107P
	PSST8M12A	24VDC 8 source output w/4 M12	
	PSST8M23A	24VDC 8 source output w/8 M8	
Analog	PSSNACM12A	24VDC analog current input w/ 2 M12 connectors	E110P
	PSSNAVM12A	24VDC 2 analog voltage input w/ 2 M12 connectors	
Power unit	PSSSE24A	24VDC expansion power supply	E105P
Relay output	PSSTR4M12A	4 from A isolated (normally open) electromechanical relays	E109P

* Publications are electronic versions only. To make copies of these publications, go to: www.pdnplu.com

Features

The Turck Network Portal

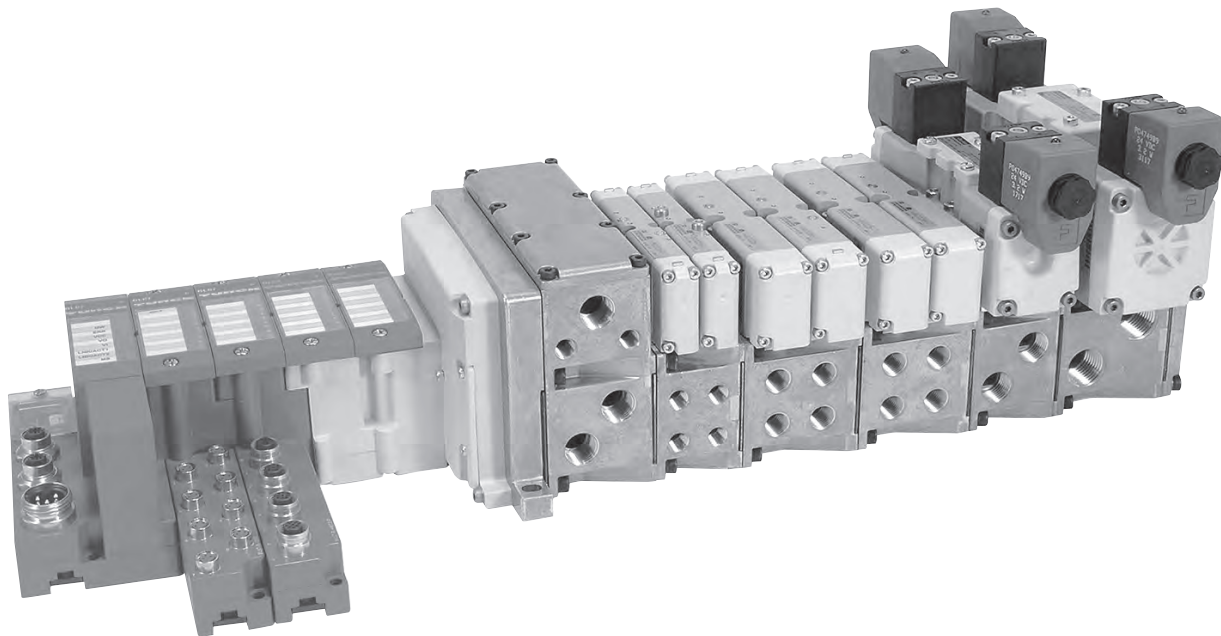
Turck Network Portal has four major components:

- **Valve Driver Module** provide control for either 16 or 32 solenoids on a manifold
- **I/O Modules** provide the field interface and system-interface circuitry
- **Communication Modules** provide the network-interface circuitry
- **Power Distribution Module** provide 5 additional power inputs to the Turck system

H Series ISO & Network Connectivity Turck Network Portal

Turck Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Expandable 4 port Class A IO-Link master
- Channel-level diagnostics (LED and electronic)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Channel-level short-circuit detection with electronic feedback
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, cCSAus, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits



Turck Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves
- CSA, cULus and CE certifications (as marked)

I/O Configuration

- Centralized Turck Network Portal
- Pneumatics and I/O are in close proximity with one another
- M23, 12-Pin or 19-Pin output extension to an additional H Series valve manifold
- I/O density per module = 4, 8 or 16

EtherNet/IP™

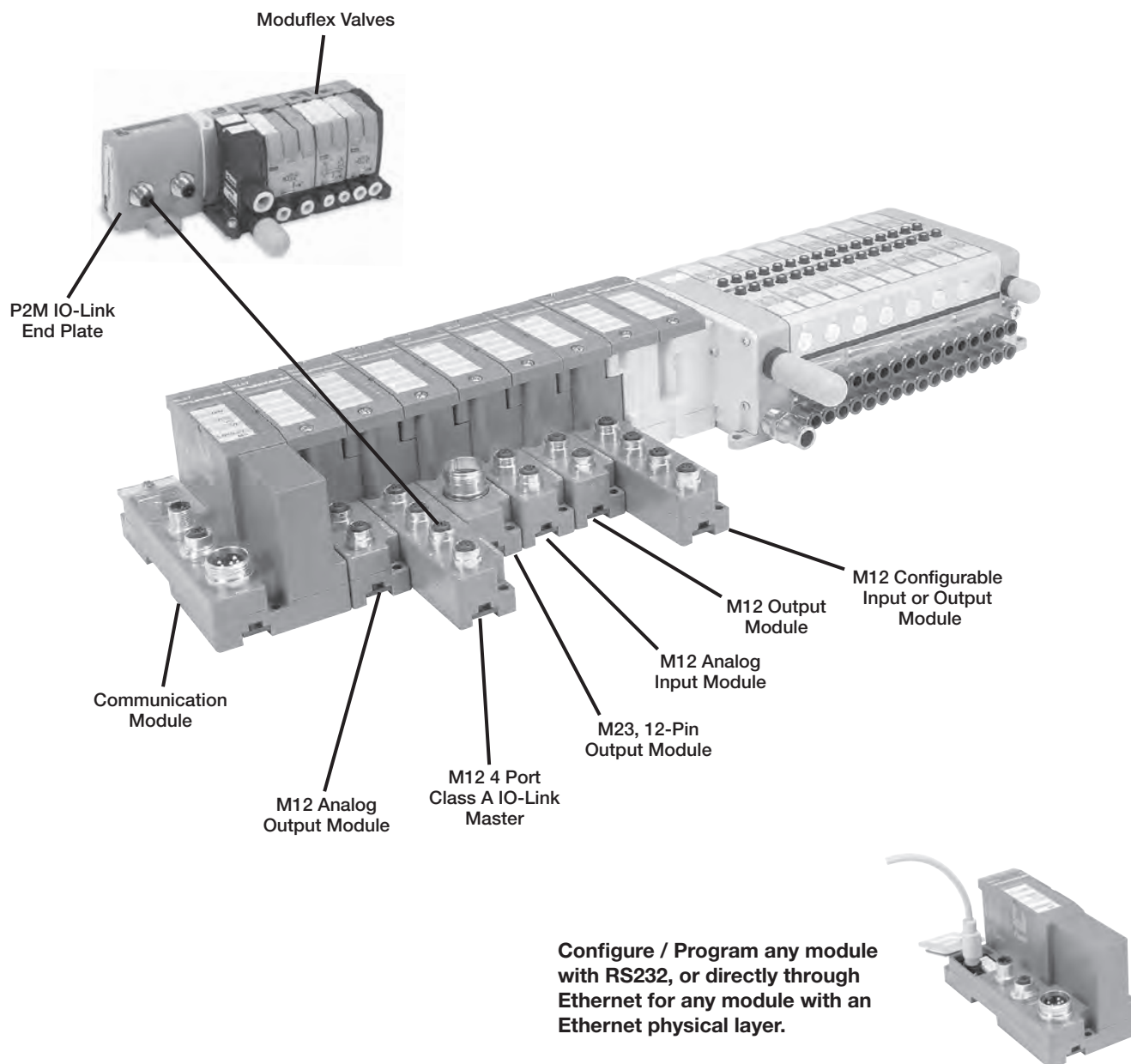
DeviceNet™

PROFI®
BUS

PROFI®
NET

Modbus/TCP™

CANopen



Turck Network Portal

- A complete network communication offering for all H Series ISO and H Series Micro valves.
- CSA, cCSAus and CE certifications (as marked).

I/O Configuration

- Complete control of all I/O and valves with stand alone control
- Additional I/O and valves connected over DeviceNet with BL Remote Subnet
- BL Remote connection to P2M and Turck DeviceNet equipped communication modules
- I/O density per module = 4, 8 or 16

EtherNet/IP™

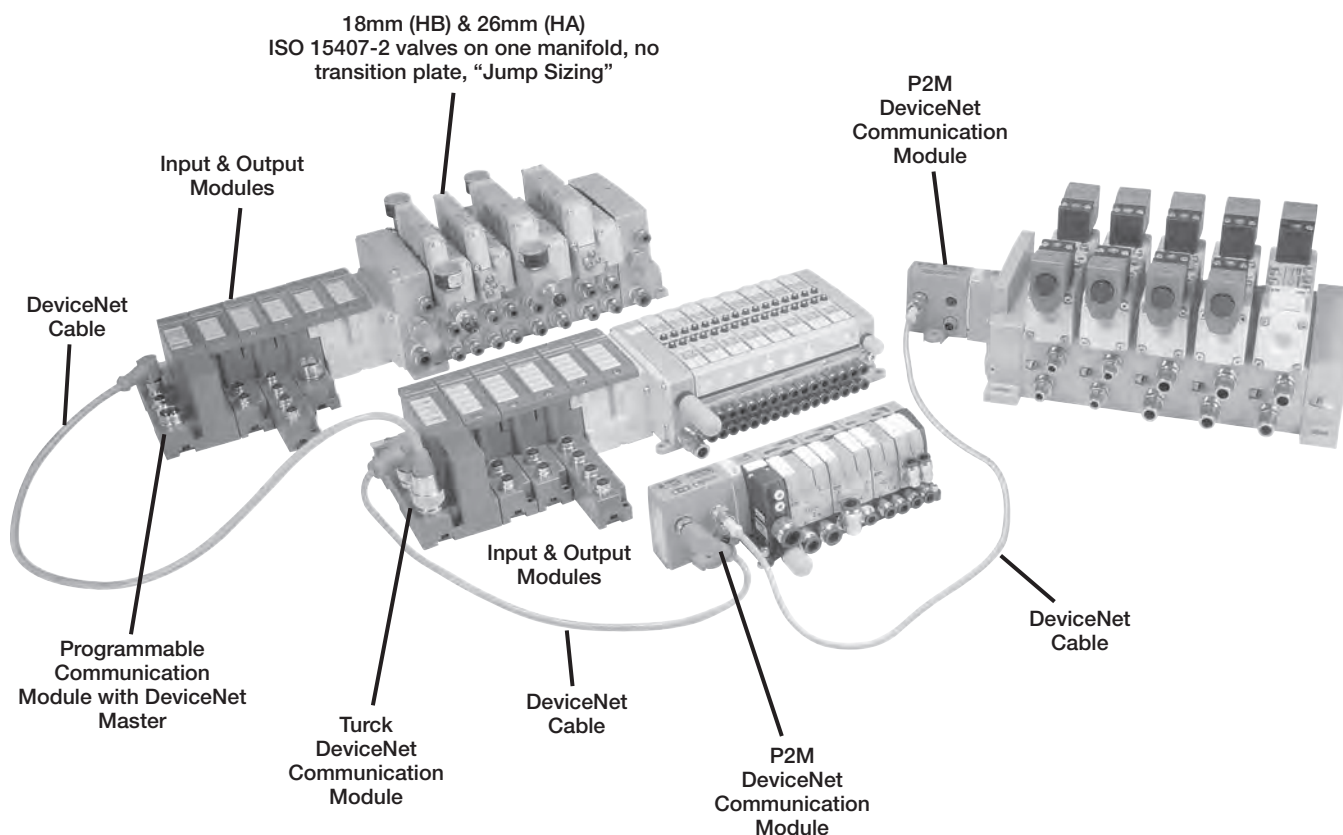
DeviceNet™

PROFI®
BUS

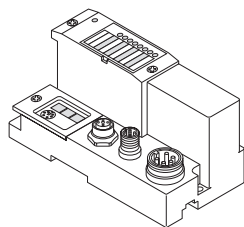
PROFI®
NET

Modbus/TCP™

CANopen



Communications Module

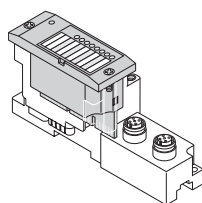


BL67 communication modules are the heart of a BL67 station. They are designed to connect the modular nodes to the higher level network (PROFIBUS-DP, DeviceNet, CANopen, Ethernet).

All BL67 electronic modules communicate over the internal module bus with the communication modules. The communication module structures the data and sends them clustered via network nodes to the higher control system.

This way all I/O modules can be configured independently of the system.

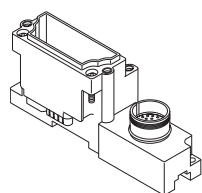
Electronic Module



BL67 electronic modules are inserted into the passive base modules from above and then simply affixed with two screws. Maintenance is extremely simplified due to the separation of connection level and module electronics.

Moreover, flexibility is enhanced because the base modules provide different types of connectors. Voltage supply for the electronic modules is either provided via the communication modules or a Power Extender module. Power Extender modules can be used to create galvanically isolated potential groups.

Base Module



BL67 base modules are aligned one by one to the right of the communication module and are tightened each with two screws, either with the communication modules or with the previous module. A DIN rail is not required. This way a compact and stable unit is created which can be mounted directly on the machine.

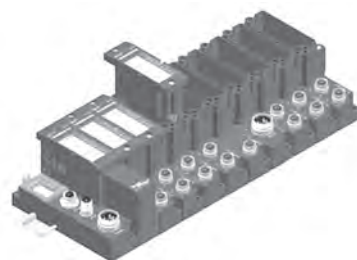
The base modules serve for connection of the field devices and are available with different connection types (M8, M12, M23 and 7/8).

A BL67 system can be extended to a total length of 1 m, comprising of a communication module for PROFIBUS-DP, DeviceNet / CANopen or Ethernet and a maximum of 32 modules.

System supply: The power supply for the BL67 system is either derived separately for Profibus-DP and Ethernet communication modules or directly from the DeviceNet / CANopen cable for the DeviceNet / CANopen communication module.

Power Extender modules can be inserted anywhere in the BL67 station. They provide isolated field voltage for the I/O modules mounted to their right.

Thus Power Extender modules can also be used to create different potential groups.



Maximum System Extension

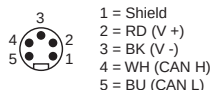
Module type		PROFIBUS		DeviceNet		CANopen		ModbusTCP		EtherNet/IP		PROFIBUS NET	
		Number of chan.	Number of mod.	Number of chan.	Number of mod.	Number of chan.	Number of mod.	Number of chan.	Number of mod.	Number of chan.	Number of mod.	Number of chan.	Number of mod.
Digital inputs	4 DI	128	32	128	32	128	32	128	32	128	32	128	32
	8 DI	256	32	256	32	256	32	256	32	256	32	256	32
Digital outputs	4 DO	128	32	128	32	128	32	128	32	128	32	128	32
	8 DO	256	32	256	32	256	32	256	32	256	32	256	32
	16 DO	512	32	512	32	512	32	512	32	512	32	512	32
Analog inputs	2AI	64	32	64	32	64	32	64	32	64	32	64	32
	4AI	112	28	124	31	124	31	128	32	128	32	128	32
	2 AI-PT	56	28	64	32	64	32	64	32	64	32	64	32
	2 AI-TC	64	32	64	32	64	32	64	32	64	32	64	32
Analog outputs	2 AO-I	38	19	64	32	64	32	64	32	64	32	64	32
	2 AO-V	38	19	50	25	50	25	50	25	50	25	50	25

BL67-GW-DN

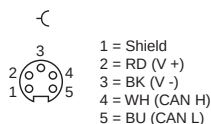
DeviceNet Communication
 Module with Power Over
 the Network



7/8 Mini bus in wiring,
 view into male connector



7/8 Mini bus out wiring,
 view into female connector



Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. DeviceNet communication speeds selectable between 120, 250, 500 kbps, and CANopen communication speeds are selectable between 10 kbps up to 1 Mbps. Addressing for either module can be selected via rotary switches or set through software.

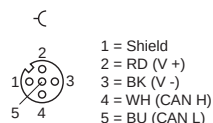
With the Power over the Network feature, it is only necessary to connect one cable to the communication module. For networks requiring additional power, a Bus Power Tee can be installed to combine separate network and power feeds into the communication module. See the Cables and Cordsets section for additional information.

BL67-GW-CO

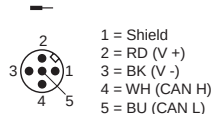
CANopen Communication
 Module



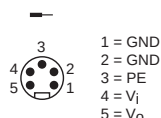
M12 A-code bus out Wiring,
 view into female connector



M12 A-code bus In Wiring,
 view into male connector



7/8 Mini Power in wiring,
 view into male connector



Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. CANopen communication speeds are selectable between 10 kbps up to 1 Mbps, and addressing can be selected via rotary switches or set through software.

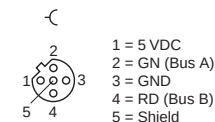
H Series ISO & Network Connectivity Turck Network Portal

BL67-GW-DPV1

PROFIBUS Communication
 Module



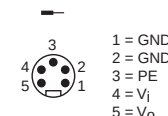
M12 B-code bus out Wiring,
 view into female connector



M12 B-code bus In Wiring,
 view into male connector



7/8 Mini Power in wiring,
 view into male connector



Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. PROFIBUS communication speeds are selectable between 9.6 kbps up to 12 Mbps, and addressing can be selected via rotary switches or set through software.

BL67-GW-EN

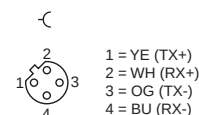
Modbus/TCP, EtherNet/IP, and PROFINET

BL67-GW-EN-PN

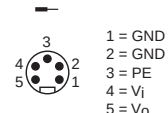
PROFINET Communication Module



M12 D-code
 Ethernet in Wiring,
 view into female connector



7/8 Mini Power in wiring,
 view into male connector



Turck Network Portal with up to 256 inputs, outputs, and 32 solenoids per H Series Micro or H Series ISO manifold. Digital inputs / outputs, analog inputs / outputs, serial interface, and counter modules are available. Communication speeds of 10/100 Mbps, and addressing can be selected via rotary switches, BOOTP, DHCP, or through software.

BL67-GW-EN-DN

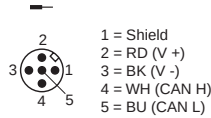
Modbus/TCP Communication
Module with DeviceNet Subnet

BL67-GW-EN-IP-DN

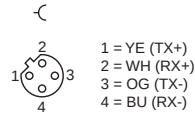
EtherNet/IP Communication
Module with DeviceNet Subnet



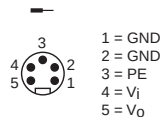
DeviceNet OUT



M12 D-code Ethernet in Wiring, view into female connector



7/8 Mini Power in wiring, view into male connector



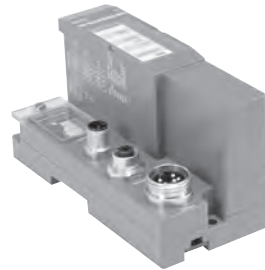
With BL Remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control. BL Remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC.

BL67-PG-EN-DN

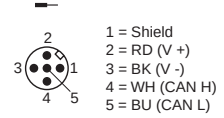
Modbus/TCP Programmable
Communication Module with
DeviceNet Subnet

BL67-PG-EN-IP-DN

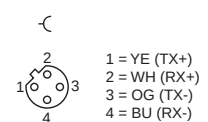
EtherNet/IP Programmable
Communication Module with
DeviceNet Subnet



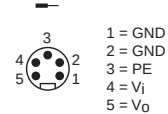
DeviceNet OUT



M12 D-code Ethernet in Wiring, view into female connector



7/8 Mini Power in wiring, view into male connector



Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These network equipped modules are optimized to interface with PLC's with network capability or act as standalone controllers that need to interface with other network equipped devices.

With BL Remote DeviceNet subnet functionality, each communication module has its own DeviceNet master which provides a connection for 63 DeviceNet nodes with additional inputs, outputs, and solenoid control. BL Remote DeviceNet subnet is independent of the main network, and is not visible to the master PLC.

BL67-PG-DP

PROFIBUS Programmable Communication Module

BL67-PG-EN

Modbus/TCP Programmable Communication Module

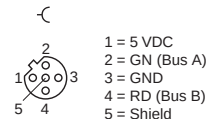
BL67-PG-EN-IP

EtherNet/IP Programmable Communication Module

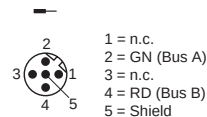


Profibus Wiring

M12 B-code bus out Wiring, view into female connector

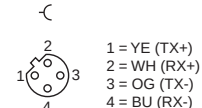


M12 B-code bus in Wiring, view into female connector

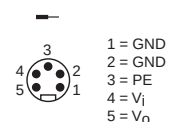


Ethernet Wiring

M12 D-code Ethernet in Wiring, view into female connector



7/8 Mini Power in wiring, view into male connector Common to modules



Communication modules are equipped with a built in standalone controller which is programmed according to IEC61131-3 with CoDeSys. Each module has 512KB Program memory with 32 bit RISC processor, and can run 1000 instructions in less than 1 ms. These network equipped modules are optimized to interface with PLC's with network capability or act as standalone controllers that need to interface with other network equipped devices.

	Base Modules												
	BL67-B-4M8	BL67-B-8M8	BL67-B-1M12	BL67-B-1M12-8	BL67-B-2M12	BL67-B-2M12-P	BL67-B-4M12	BL67-B-4M12-P	BL67-B-1M23	BL67-B-1M23-19	BL67-B-1RSM	BL67-B-1RSM-4	BL67-1RSM-VO
Power Extender Modules													
BL67-PF-24VDC											✓	✓	✓
Digital Input Modules													
BL67-4DI-P	✓				✓	✓	✓		✓				
BL67-8DI-P		✓					✓	✓	✓				
BL67-4DI-PD	✓				✓	✓	✓		✓				
BL67-8DI-PD		✓					✓	✓	✓				
BL67-4DI-N	✓				✓	✓	✓		✓				
BL67-8DI-N		✓					✓	✓	✓				
Digital Output Modules													
BL67-4DO-0.5A-P	✓				✓	✓	✓		✓				
BL67-4DO-2A-P	✓				✓	✓	✓		✓				
BL67-8DO-0.5A-P		✓					✓	✓	✓				
BL67-16DO-0.1A-P										✓			
BL67-4DO-2A-N	✓				✓	✓	✓		✓				
BL67-8DO-0.5A-N		✓					✓	✓	✓				
Relay Output Modules													
BL67-8DO-R-NO								✓					
Digital Input / Output Modules													
BL67-4DI4DO-PD		✓					✓	✓	✓				
Configurable Digital Input / Output Modules													
BL67-8XSG-PD		✓					✓	✓	✓				
Analog Input Modules													
BL67-2AI-I					✓								
BL67-2AI-V					✓								
BL67-4AI-V/I							✓						
BL67-2AI-PT					✓								
BL67-2AI-TC					✓								
Analog Output Modules													
BL67-2AO-I					✓								
BL67-2AO-V					✓								
Technology Modules													
BL67-1RS232			✓	✓					✓				
BL67-1RS485/422			✓	✓					✓				
BL67-1SSI				✓					✓				
BL67-1CNT/ENC				✓					✓				
BL67-1CVI			✓										
BL Ident® RFID Modules													
BL67-2RFID-A					✓								
BL67-2RFID-S					✓								

System Supply via the Module Bus

The number of BL67 modules that can be powered by the communication module, depends on the nominal current draw of all the modules in the system. The total bus power current consumption of the installed BL67 modules may not exceed 1.5 A. The total field power current for inputs may not exceed 4 A, and the total field power for outputs may not exceed 8 A for DeviceNet and CANopen with power over the network, or 10A for all other communication modules.

When using the software PACTware, the menu item <Station - Verify> will automatically generate an error message if the system supply via the module bus is not reliably ensured.

Nominal Current Consumption

The following table shows the nominal current consumption of the various BL67 modules:

Modules	Bus power current (mA)	Field power for inputs ¹⁾ (mA)	Field power for outputs (mA)
PROFIBUS-DP communication module	0		150
DeviceNet communication module	0		150
CANopen communication module	0		150
Ethernet communication module	0		150
Valve driver with 16 outputs	30		< 109 mA (plus load current)
Valve driver with 32 outputs	60		< 218 mA (plus load current)
BL67-PF-24VDC	30		9
BL67-4DI-P	30	< 49 mA	
BL67-4DI-N	30	< 10 mA	
BL67-4DI-PD	30	< 109 mA	
BL67-8DI-P	30	< 49 mA	
BL67-8DI-N	30	< 10 mA	
BL67-8-DI-PD	30	< 109 mA	
BL67-4DO-0.5A-P	30		< 109 mA (plus load current)
BL67-4DO-2A-P	30		< 109 mA (plus load current)
BL67-4DO-2A-N	30		< 109 mA (plus load current)
BL67-8DO-0.5A-P	30		< 109 mA (plus load current)
BL67-8DO-0.5A-N	30		< 109 mA (plus load current)
BL67-16DO-0.1A-P	30		< 109 mA (plus load current)
BL67-4DI4DO-PD	30		< 109 mA (plus load current)
BL67-8XSG-PD	30		< 109 mA (plus load current)
BL67-8DO-R-NO	30		< 109 mA (plus load current)
BL67-2AI-V	35	< 22 mA	
BL67-2AI-I	35	< 22 mA	
BL67-4AI-I/V	35	< 22 mA	
BL67-2AI-TC	35	< 40 mA	
BL67-2AI-PT	45	< 58 mA	
BL67-2AO-I	40		< 62 mA
BL67-2AO-V	60		< 67 mA
BL67-1RS232	140	< 90 mA	
BL67-1RS485/422	60	< 42 mA	
BL67-1SSI	50	< 39 mA	
BL67-1CNT/ENC	30	< 109 mA	
BL67-1CVI	30	< 109 mA	

1) Is limited to 4A by means of the integrated short-circuit protection.

Digital Input Modules

I/O modules	Voltage	Part number
 8 PNP input module	7 to 30 VDC	BL67-8DI-P
8 PNP input module, with diagnostics	7 to 30 VDC	BL67-8DI-PD
8 NPN input module	24 VDC	BL67-8DI-N

Base module	Part number
 8 x M8, 3 pole, female	BL67-B-8M8
 4 x M12, 5 pole, female, A-code	BL67-B-4M12
 4 x M12, 5 pole, female, A-code	BL67-B-4M12-P
 1 x M23, 12 pole, female	BL67-B-1M23

I/O modules	Voltage	Part number
4 PNP input module	7 to 30 VDC	BL67-4DI-P
4 PNP input module, with diagnostics	7 to 30 VDC	BL67-4DI-PD
4 NPN input module	24 VDC	BL67-4DI-N

Base module	Part number
 4 x M8, 3 pole, female	BL67-B-4M8
 2 x M12, 5 pole, female, A-code	BL67-B-2M12
 2 x M12, 5 pole, female, A-code	BL67-B-2M12-P
 4 x M12, 5 pole, female, A-code	BL67-B-4M12
 1 x M23, 12 pole, female	BL67-B-1M23

Digital Output Modules

I/O modules	Output current	Part number
 8 PNP output module	0.5 amps per channel	BL67-8DO-0.5A-P
8 NPN output module	0.5 amps per channel	BL67-8DO-0.5A-N

Base module	Part number
 8 x M8, 3 pole, female	BL67-B-8M8
 4 x M12, 5 pole, female, A-code	BL67-B-4M12
 4 x M12, 5 pole, female, A-code	BL67-B-4M12-P
 1 x M23, 12 pole, female	BL67-B-1M23

I/O modules	Output Current	Part number
4 PNP output module	0.5 amps per channel	BL67-4DO-0.5A-P
4 PNP output module	2 amps per channel	BL67-4DO-2A-P
4 PNP output module	4 amps per channel	BL67-4DO-4A-P
4 NPN output module	2 amps per channel	BL67-4DO-2A-N

Base module	Part number
 4 x M8, 3 pole, female	BL67-B-4M8
 2 x M12, 5 pole, female, A-code	BL67-B-2M12
 2 x M12, 5 pole, female, A-code	BL67-B-2M12-P
 4 x M12, 5 pole, female, A-code	BL67-B-4M12
 1 x M23, 12 pole, female	BL67-B-1M23

 Most popular.

Digital Output Modules

I/O modules	Output current	Part number
16 PNP output module	0.14 amps per channel	BL67-16DO-0.1A-P

Base module	Part number
 1 x M23, 19 pole, female	BL67-B-1M23-19

Relay Output Modules

I/O modules	Output current	Part number
8 normally open relays	0.14 amps per channel	BL67-8DO-R-NO

Base module	Part number
 4 x M12, 5 pole, female, A-code	BL67-B-4M12-P

Analog Input Modules

I/O modules	Input type	Part number
4 configurable current or voltage analog input module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	BL67-4AI-V/I

Base module	Part number
 4 x M12, 5 pole, female, A-code	BL67-B-4M12

I/O modules	Input type	Part number
2 current analog input module	4 to 20 mA or 0 to 20 mA	BL67-2AI-I
2 voltage analog input module	-10 to +10 VDC or 0 to +10 VDC	BL67-2AI-V
2 temperature analog input module	PT100, PT200, PT500, PT1000, Ni100, Ni1000	BL67-2AI-PT
2 temperature analog input module	Type B, E, J, K, N, R, S, T	BL67-2AI-TC

Base module	Part number
 2 x M12, 5 pole, female, A-code	BL67-B-2M12

Combination Input / Output Modules

I/O modules	Input voltage & output current	Part number
4 PNP output 4 PNP input module, with diagnostics	7 to 30 VDC 0.5 Amps	BL67-4DI4DO-PD

8 PNP configurable input or output module, with diagnostics	7 to 30 VDC 0.5 Amps	BL67-8XSG-PD
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Base module	Part number
 8 x M8, 3 pole, female	BL67-B-8M8

 4 x M12, 5 pole, female, A-code	BL67-B-4M12
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 4 x M12, 5 pole, female, A-code	BL67-B-4M12P
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Analog Output Modules

I/O modules	Input type	Part number
4 voltage analog output module	-10 to +10 VDC or 0 to +10 VDC	BL67-4AO-V

Base module	Part number
 4 x M12, 5 pole, female, A-code	BL67-B-4M12

I/O modules	Input type	Part number
2 current analog output module	4 to 20 mA or 0 to 20 mA	BL67-2AO-I
2 voltage analog output module	-10 to +10 VDC or 0 to +10 VDC	BL67-2AO-V

Base module	Part number
 2 x M12, 5 pole, female, A-code	BL67-B-2M12

 Most popular.

Combination Analog Input / Output Modules

I/O modules	Output current	Part number
4 configurable input and 4 configurable output current or voltage analog module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	BL67-4AI4AO-V/I

Base module	Part number
 8 x M8, 3 pole, female	BL67-B-8M8
 4 x M12, 5 pole, female, A-code	BL67-B-4M12

CANopen Subnet Module

Extender module	Capacity	Part number
1 CANopen connection	64 bits of inputs or outputs	BL67-1CVI

Base module	Part number
 1 x M12, 5 pole, female, A-code	BL67-B-1M12

IO-Link Class A Master

Extender module	Part number
4 master channels	BL67-4IOL

Base module	Part number
 4 x M12, 5 pole, female, A-code	BL67-B-4M12

Power Extender Module

Extender module	Current capacity	Part number
24 VDC field power module	10 amps input	BL67-PF-24VDC

Base module	Part number
 5 pole mini connector to supply bus power and field power	BL67-B-1RSM
 5 pole mini connector to field power only	BL67-B-1RSM-VO
 4 pole mini connector to supply bus power and field power	BL67-B-1RSM-4

I/O modules	Output current	Part number
2 configurable input and 2 configurable output current or voltage analog module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	BL67-2AI2AO-V/I

Base module	Part number
 8 x M8, 3 pole, female	BL67-B-8M8

Serial Interface Module

Extender module	Capacity	Part number
1 RS232 serial interface	300 to 115200 bps	BL67-1RS232
1 RS485 or 422 serial interface	300 to 115200 bps	BL67-1RS485/422

Base module	Part number
 1 x M12, 5 pole, female, A-code	BL67-B-1M12
 1 x M12, 8 pole, female, A-code	BL67-B-1M12-8
 1 x M23, 12 pole, female	BL67-B-1M23

SSI and Counting Modules

Extender module	Capacity	Part number
1 SSI sensor interface	65 kbps up to 1 Mbps	BL67-1SSI
1 counter interface	Up to 250 kHz	BL67-1CNT/ENC

Base module	Part number
 1 x M12, 8 pole, female, A-code	BL67-B-1M12-8
 1 x M23, 12 pole, female	BL67-B-1M23

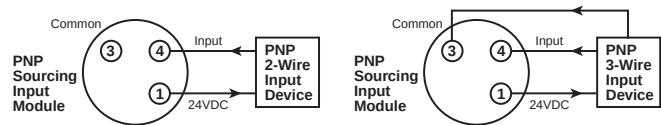
 Most popular.

Digital PNP Input Modules

DC Input Module	BL67-4DI-P	BL67-8DI-P	BL67-4DI-PD	BL67-8DI-PD
Number of inputs	4	8	4	8
Sensor requirement	PNP Sourcing		PNP Sourcing	
Voltage, on-state input, nom.	24 VDC		24 VDC	
Field power for inputs current consumption	49 mA		109 mA	
Bus power current consumption	30 mA		30 mA	
Low level signal voltage	<4.5 V		<4.5 V	
High level signal voltage	7...30V		7...30V	
Low level signal current	<1.5 mA		<1.5 mA	
High level signal current	2.1...3.7 mA		2.1...3.7 mA	
Type of diagnostics	Group Diagnostics		Channel Diagnostics	
Short circuit protection	Group Protection		Channel Protection	
Input delay	0.25 ms		0.25; 2.5 ms	

PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.

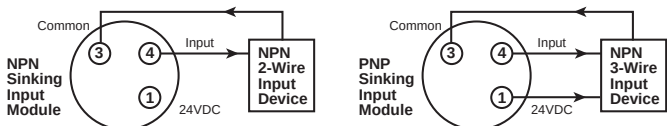


Digital NPN Input Modules

Digital DC Input Module	BL67-4DI-N	BL67-8DI-N
Number of inputs	4	8
Sensor requirement	NPN Sinking	NPN Sinking
Voltage, on-state input, nom.	24 VDC	24 VDC
Field power for inputs current consumption	10 mA	10 mA
Bus power current consumption	30 mA	30 mA
Low level signal voltage	>7 V	>7 V
High level signal voltage	<5 V	<5 V
Low level signal current	<2.5 mA	<1.2 mA
High level signal current	>3 mA	>1.5 mA
Type of diagnostics	Group Diagnostics	Group Diagnostics
Short circuit protection	Group Protection	Group Protection
Input delay	0.25 ms	0.25 ms

NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.

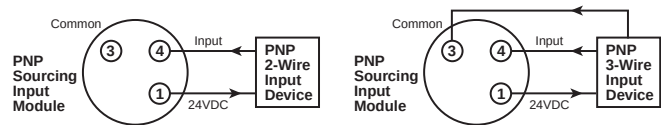


Digital PNP Output Modules

Digital DC Output Module	BL67-4DO-0.5A-P	BL67-8DO-0.5A-P	BL67-4DO-2A-P	BL67-16DO-0.1A-P
Number of outputs	4	8	4	16
Sensor requirement	PNP Sourcing	PNP Sourcing	PNP Sourcing	PNP Sourcing
Output voltage	24 VDC	24 VDC	24 VDC	24 VDC
Field power for outputs current consumption	109 mA (Plus load current)	109 mA (Plus load current)	109 mA (Plus load current)	109 mA (Plus load current)
Bus power current consumption	30 mA	30 mA	30 mA	30 mA
Output current per channel	0.5 A	0.5 A	2.0A	0.1 A
Output delay	3 ms	3 ms	3 ms	3 ms
Load type	Resistive, Inductive, Lamp Load	Resistive, Inductive, Lamp Load	Resistive, Inductive, Lamp Load	Resistive, Inductive
Load resistance, resistive	>48 Ohm	>48 Ohm	>12 Ohm	>250 Ohm
Load resistance, inductive	<1.2 H	<1.2 H	<1.2 H	<1.2 H
Lamp load	< 3W	< 3W	< 10W	< 10W
Switching frequency, resistive	<200 Hz	<200 Hz	<200 Hz	<200 Hz
Switching frequency, inductive	< 2 Hz	< 2 Hz	< 2 Hz	< 2 Hz
Switching frequency, lamp load	< 20 Hz	< 20 Hz	< 20 Hz	< 20 Hz
Short-circuit protection	Group Protection	Group Protection	Group Protection	Group Protection
Diagnostic bits	4	8	4	16

PNP (Sourcing)

PNP input modules provide sourcing capabilities. When the input field device is passing, current flows from the input device into the Turck input module.

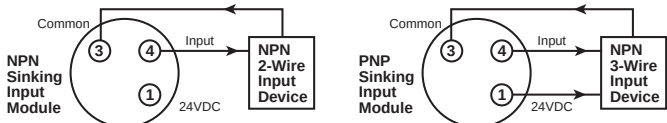


Digital NPN Output Modules

Digital DC Output Module	BL67-8DO-0.5A-N	BL67-4DO-2A-N
Number of outputs	8	4
Sensor requirement	NPN Sinking	NPN Sinking
Output voltage	24 VDC	24 VDC
Field power for outputs current consumption	109 mA (Plus load current)	109 mA (Plus load current)
Bus power current consumption	30 mA	30 mA
Output current per channel	0.5 A	2.0 A
Output delay	3 ms	3 ms
Load type	Resistive, Inductive, Lamp Load	Resistive, Inductive, Lamp Load
Load resistance, resistive	>48 Ohm	>48 Ohm
Load resistance, inductive	<1.2 H	<1.2 H
Lamp load	< 3W	< 3W
Switching frequency, resistive	<200 Hz	<200 Hz
Switching frequency, inductive	< 2 Hz	< 2 Hz
Switching frequency, lamp load	< 20 Hz	< 20 Hz
Short-circuit protection	Group Protection	Group Protection
Diagnostic bits	4	8

NPN (Sinking)

NPN input modules provide sinking capabilities. When the input field device is passing, current out of the Turck input module into the field input device.



Relay Output Modules

Relay Output Module	BL67-8DO-R-NO
Number of outputs	8
Output type	Relay
Output voltage	24 VDC
Field power for outputs current consumption	109 mA (Plus load current)
Bus power current consumption	30 mA
Output current per channel	100 mA
Output delay	3 ms
Load type	Resistive, TTL logic
Switching resistor	<31 Ohm
Switching frequency, resistive	<200 Hz
Short-circuit protection	None

Combination Digital Modules

Combination Input and Output Modules	BL67-4DI4DO-PD	BL-67-8XSG-PD
Number of outputs	4	Configurable 0 to 8
Number of inputs	4	Configurable 0 to 8
Total channels	8	8
Sensor requirement	PNP Sourcing	PNP Sourcing
Voltage, on-state input, nom.	24 VDC	24 VDC
Output voltage	24 VDC	24 VDC
Field power for outputs current consumption	109 mA	109 mA
Bus power current consumption	30 mA	30 mA
Input low level signal voltage	<4.5 V	<4.5 V
Input high level signal voltage	7...30V	7...30V
Input low level signal current	<1.5 mA	<1.5 mA
Input high level signal current	2.1...3.7 mA	2.1...3.7 mA
Input delay	0.25; 2.5 ms	0.25; 2.5 ms
Output current per channel	0.5 A	0.5 A
Output delay	3 ms	3 ms
Load type	Resistive, Inductive, Lamp Load	Resistive, Inductive, Lamp Load
Load resistance, resistive	>48 Ohm	>48 Ohm
Load resistance, inductive	<1.2 H	<1.2 H
Lamp load	< 3W	< 3W
Switching frequency, resistive	<200 Hz	<200 Hz
Switching frequency, inductive	< 2 Hz	< 2 Hz
Switching frequency, lamp load	< 20 Hz	< 20 Hz
Short-circuit protection	Channel Protection	Channel Protection
Diagnostic bits	8	12

Analog Input Modules

Analog Input Module	BL67-2AI-I	BL67-2AI-V	BL67-4AI-V/I
Number of inputs	2	2	4
Nominal voltage	24 VDC	24 VDC	24 VDC
Field power for inputs current consumption	22 mA	22 mA	22 mA
Bus power current consumption	35 mA	35 mA	35 mA
Analog input type	0/4...20mA	-10/0...+10 VDC	0/4...20mA or -10/0...+10 VDC
Input resistance	<0.125 kOhm	<98.5 kOhm	<0.125 kOhm or <98.5 kOhm
Maximum limiting frequency	50 Hz		20 Hz
Fault limit @ 23 degree C	<0.2%		<0.3%
Repeatability	0.05%	0.05%	0.05%
Temperature coefficient (ppm/degree C of full scale)	<300	<150	<300
Resolution	16 Bit	16 Bit	16 Bit
Measuring principle	Sigma Delta	Sigma Delta	Sigma Delta
Measured value display	16 bit signed integer, 12 bit full range left justified	16 bit signed integer, 12 bit full range left justified	16 Bit signed integer, 12 bit full range left justified
Diagnostic bits	16		32

Temperature Inputs

Analog Input Module	BL67-2AI-PT	BL67-2AI-TC
Number of inputs	2	2
Nominal voltage	24 VDC	24 VDC
Field power for inputs current consumption	58 mA	40 mA
Bus power current consumption	45 mA	35 mA
Temperature input type	PT100, PT200, PT500, PT1000, Ni100, Ni1000	B, E, J, K, N, R, S, T
Voltage resolution	n/a	+/- 50mV; <2uV
Fault limit @ 23 degree C	<0.2%	<0.2%
Repeatability	0.05%	0.05%
Temperature coefficient (ppm/degree c of full scale)	<300	<300
Resolution	16 Bit	16 Bit
Measured value display	16 bit signed integer, 12 bit full range left justified	16 bit signed integer, 12 bit full range left justified
Diagnostic bits	16	16

Analog Input Modules

Analog Input Module	BL67-2AO-I	BL67-2AO-V
Number of inputs	2	2
Nominal voltage	24 VDC	24 VDC
Field power for outputs current consumption	62 mA	67 mA
Bus power current consumption	40 mA	60 mA
Analog output type	0/4...20mA	-10/0...+10 VDC
Output current per channel	n/a	250 mA
Load resistance, resistive	<0.45 kOhm	> 1kOhm
Load resistance, inductive	<1 mH	n/a
Load resistance, capacitive	n/a	> 1 uF
Transmission frequency	<200 Hz	<100 Hz
Fault limit @ 23 degree C	<0.2%	<0.2%
Repeatability	0.05%	0.05%
Temperature coefficient (ppm/degree c of full scale)	<150	<300
Resolution	16 bit	16 bit
Measured value display	16 bit signed integer, 12 bit full range left justified	16 bit signed integer, 12 bit full range left justified

Combination Analog Modules

Analog Combination Module	BL67-4AI4AO-V/I	BL67-2AI2AO-V/I
Number of analog inputs	4	2
Number of analog outputs	4	2
Nominal voltage	24 VDC	24 VDC
Field power for outputs current consumption	67 mA	67 mA
Bus power current consumption	60 mA	60 mA
Analog input type	0/4...20mA or -10/0...+10 VDC	0/4...20mA or -10/0...+10 VDC
Input resistance	0.065 or 225 kOhm	0.065 or 225 kOhm
Maximum limiting frequency	20 Hz	20 Hz
Fault limit @ 23 degree c	<0.3%	<0.3%
Repeatability	0.05%	0.05%
Temperature coefficient (ppm/degree c of full scale)	<300	<300
Resolution	16 bit	16 bit
Measuring principle	Sigma Delta	Sigma Delta
Measured value display	16 bit signed integer, 12 bit full range left justified	16 bit signed integer, 12 bit full range left justified
Analog output type	-10/0...+10 VDC	-10/0...+10 VDC
Output current per channel	250 mA	250 mA
Load resistance, resistive	>1 kOhm	>1 kOhm
Load resistance, capacitive	<1 uF	<1 uF
Transmission frequency	<100 Hz	<100 Hz
Fault limit @ 23 degree C	<0.3%	<0.3%
Repeatability	0.05%	0.05%
Temperature coefficient (ppm/degree c of full scale)	<300	<300
Resolution	16 bit	16 bit
Measured value display	16 bit signed integer, 12 bit full range left justified	16 bit signed integer, 12 bit full range left justified
Diagnostic bits	8	4

Power Extender Module

Power Extender Module	BL67-PF-24VDC
Nominal voltage	24 VDC
Field power for outputs current consumption	9 mA
Bus power current consumption	30 mA
Supply for field power for inputs current	4.0 A
Supply for field power for outputs current	10 A
Diagnostic bits	3

RS232 Interface

RS232 Interface	BL67-1RS232
Number of channels	1
Field power for inputs current consumption	90 mA
Bus power current consumption	140 mA
Transmission level active (u rs1)	-15 to -3 VDC
Transmission level inactive (urso)	3 to 15 VDC
Common-mode range (ugl)	-7 to 12 VDC
Transmission signals	RxD, TxD, RTS, CTS
Data buffer received	128 Byte
Send data buffer	64 Byte
Connection type	Full Duplex
Transmission rate	300 to 115200 bps
Parameter	Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control
Cable length	15 m
Diagnostic bits	8

RS485 / 422 Interface

RS485/422 Interface	BL67-1RS485/422
Number of channels	1
Field power for inputs current consumption	42 mA
Bus power current consumption	60 mA
Transmission signals	RxD, TxD
Connection type	2 Wire Half Duplex or 4 Wire Full Duplex
Transmission rate	300 to 115200 bps
Parameter	RS485/422, Transmission Rate, Diagnostics, Data Bits, Stop Bits, XON - Character, XOFF - Character, Parity, Flow Control
Cable length	1000 m
Line impedence	120 Ohm
Bus termination	External
Diagnostic bits	8

SSI Sensor Interface

SSI Sensor Interface	BL67-1SSI
Number of channels	1
Field power for inputs current consumption	39 mA
Bus power current consumption	50 mA
Transmission signals	CL, D
Connection type	4 Wire Full Duplex (Clock Output/Signal Input)
Transmission rate	62.5 kbps up to 1 Mbps
Parameter	Transmission Rate, Diagnostics, Data Format (Binary / GRAY coded), Data Fram Bits (1-32), Number of Invalid Bits (LSB: 0-15, MSB 0-7)
Cable length	30 m
Diagnostic bits	8

Counting Module

Counting Module	BL67-1CNT/ENC
Number of channels	1
Field power for inputs current consumption	109 mA
Bus power current consumption	30 mA
Input type	PNP
Output type	PNP
Output current per channel	0.5 A
Output delay	2 ms
Load type	Resistive
Frequency measurement	Up to 250 kHz
Speed measurement	Factor Configurable
Period duration measurement	2 usec
Upper count limit	0x80000000 up to 0xFFFFFFFF
Lower count limit	0x80000000 up to 0xFFFFFFFF
Short circuit protection	Channel Protection

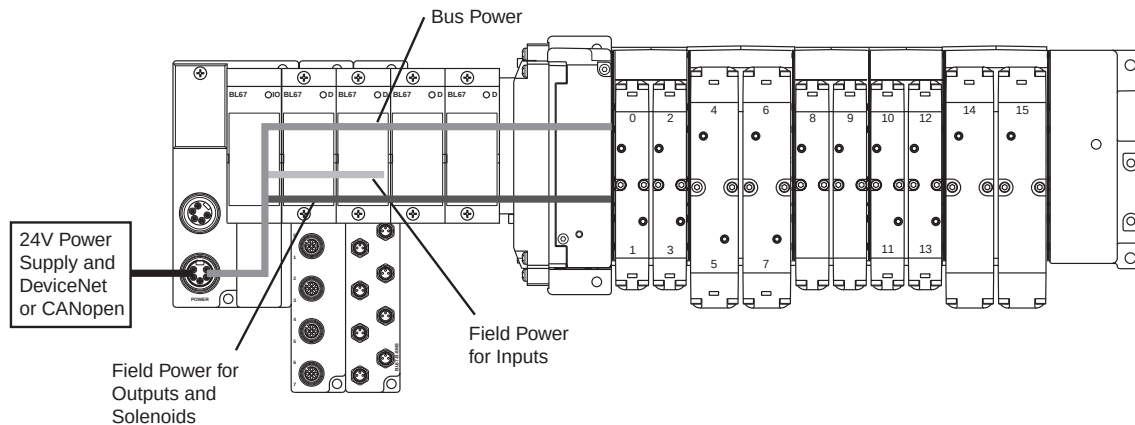
CANopen Expansion Module

CANopen Expansion Module	BL67-1CVI
Number of channels	1
Field power for inputs current consumption	109 mA
Bus power current consumption	30 mA
Transmission signals	CAN High, CAN Low
Connection type	CANopen
Transmission speed	10 kbps up to 1 Mbps
Parameter	Transmission Rate, Diagnostics, Bus Termination, Range of I/O Data
Bus termination	Internal
Diagnostic bits	48
Max number of CANopen nodes	8
Max processing data per module	8 Byte
Max data per node	4 Byte

Power Distribution Options for Turck Network Portal

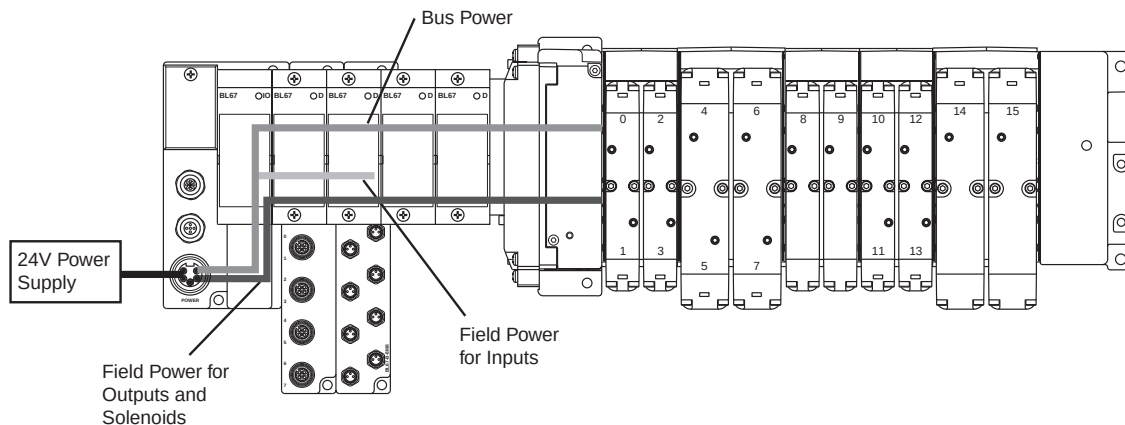
Turck Communication and I/O Modules - DeviceNet and CANopen, Power Over Network

The 24VDC power supply pins from the DeviceNet or CANopen network connection on the communication module provides a single power circuit. This circuit provides 1.5A bus power, 4A field power for inputs and 8A field power for outputs.



Turck Communication and I/O Modules - EtherNet/IP, Modbus/TCP, PROFINET, PROFIBUS, and CANopen

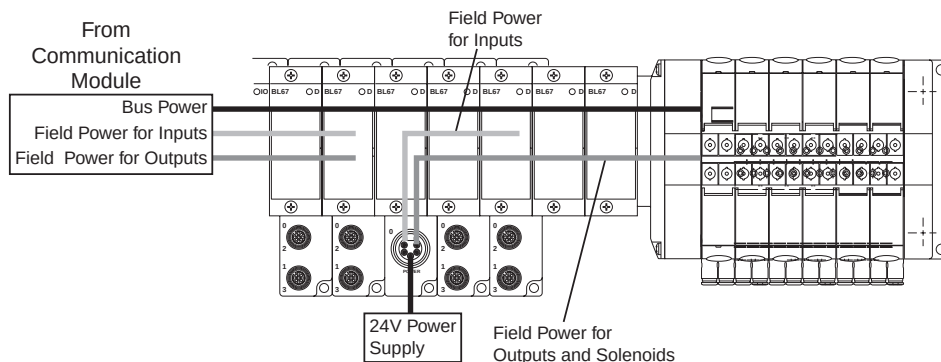
An auxiliary 24VDC power supply from the communication module provides power across two separate circuits. The first circuit provides 1.5A bus power and 4A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs.



Power Distribution Options for Turck Network Portal (continued)

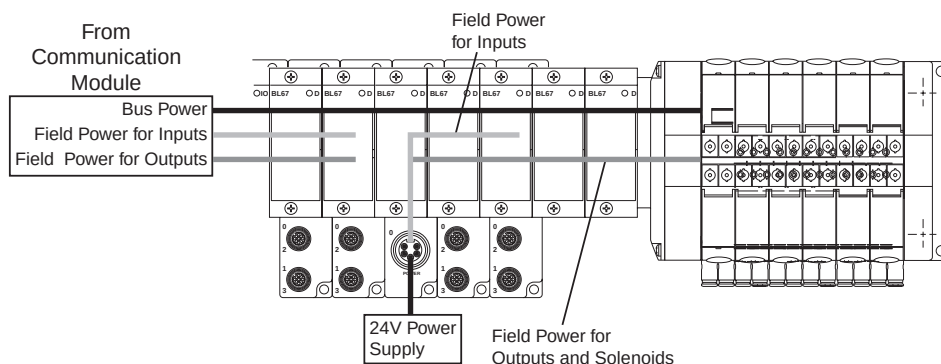
24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM

This configuration creates an auxiliary 24VDC power supply and provides power across two separate circuits, regardless of the communication module used. The first circuit provides 4A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5A bus power is uninterrupted, and is still supplied from the communication module.



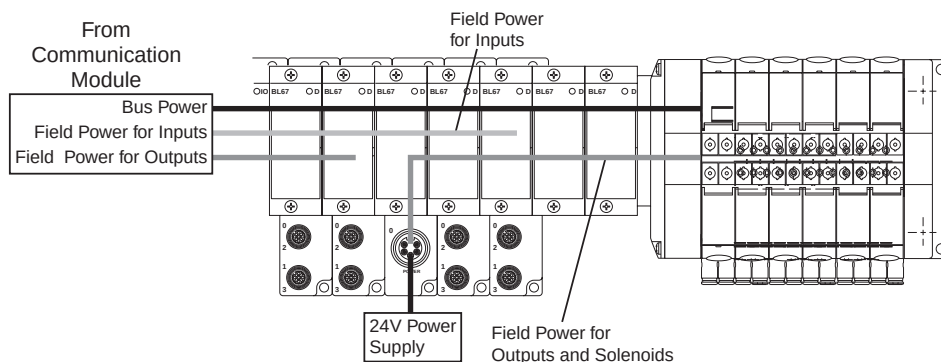
24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-4

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 4A field power for inputs and 10A field power for outputs. The 1.5A bus power is uninterrupted, and is still supplied from the communication module.



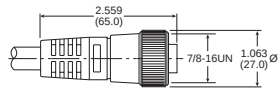
24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-VO

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5A bus power and 4A field power for inputs are uninterrupted, and are still supplied from the communication module.

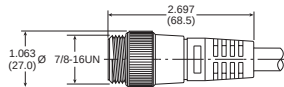


7/8" Mini Power Cables - P2H Network Node, H Series Network Portal, Turck Network Portal

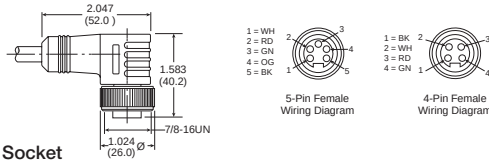
RKM Female Socket



RSM Male Pins



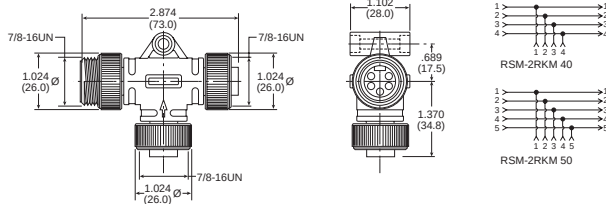
WKM Female Socket



Description	Part number
4-pin female to flying lead cable, 5 meters, TPE	RKM 46-5M/S1587
5-pin female to flying lead cable, 5 meters, TPE	RKM 56-5M/S1587
4-pin male to female cable, TPE	RSM RKM 46-x/S1587
5-pin male to female cable, TPE	RSM RKM 56-x/S1587
4-pin right angle female to flying lead cable, 5 meters, TPE	WKM 46-5M/S1587
5-pin right angle female to flying lead cable, 5 meters, TPE	WKM 56-5M/S1587

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

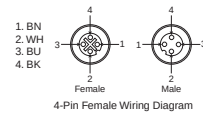
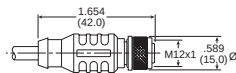
Power Tee - P2H Network Node, H Series Network Portal, Turck Network Portal



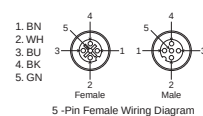
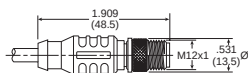
Description	Part number
4-pin Male to 2 female sockets	RSM-2RKM 40
5-pin Male to 2 female sockets	RSM-2RKM 50

M12 A-code Cables - P2M IO-Link, P2H IO-Link, H Series IO-Link Network Portal, Turck IO-Link Network Portal

RKC Female Sockets



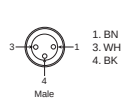
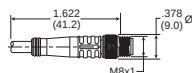
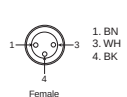
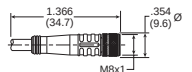
RSC Male Pins



Description	Part number
4-pin female to flying lead cable, PVC	RKC 4.4T-1
4-pin male to flying lead cable, PVC	RSC 4.4T-*
4-pin male to female cable, PVC	RKC 4.4T-*/RSC 4.4T
5-pin female to flying lead cable, TPE	RKC 4.5T-*/S1587
5-pin male to flying lead cable, TPE	RSC 4.5T-4/S1587
5-pin male to female cable, TPE	RKC 4.5T-*/RSC 4.5T/S1587

Where * = 1, 2, 3, 4 meter standard lengths

M8 Cables - H Series IO-Link Network Portal, Turck IO-Link Network Portal



Description	Part number
3-pin female to flying lead cable, PUR	PKG 3M-4/S90
3-pin male to flying lead cable, PUR	PSG 3M-*/S90
3-pin male to female cable, PUR	PKG 3M-*/PSG 3M/S90

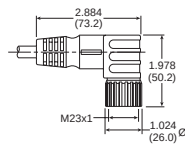
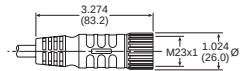
Where * = 1, 2, 3, 4 meter standard lengths

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

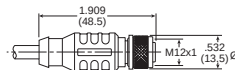
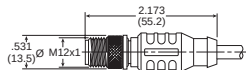
M23 Cables



Description	Part number
12-pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for H Series Network Portal.	CSCM CKCM 12-11-x/S90
19-pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for H Series Network Portal.	CSM CKM 19-19-x/S90
19-pin, 90° double ended female thread with male pins and female socket, PUR. Pinout optimized for Turk Network Portal.	CSWM CKWM 19-19-x/CS12852

Where x = 1, 2, 3, 4 meter standard lengths

PROFIBUS Cables - P2M Network Node, Turck Network Portal



Description	Part number
M12 male to M12 female, PUR	RSSW RKSW 455-xM

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

RSSW Side, Male Pins

RKSW Side, Female Sockets

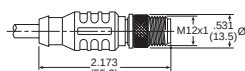
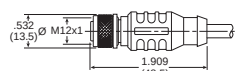
PROFIBUS Terminating Resistor - P2M Network Node, Turck Network Portal



Male Pins

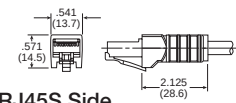
Description	Part number
M12 male pin terminating resistor	P8BPA00MB

Ethernet Cables - P2M Network Node, H Series Network Portal, Turck Network Portal



RKSD Side, Female Sockets

RSSD Side, Male Pins



RJ45S Side

Description	Part number
M12 female to M12 male, PUR	RSSD RKSD 443-xM
RJ45 to M12 male, PUR	RSSD RJ45S 443-2M

Where x = 2, 5, 10, 15, 20, 30 meter standard lengths

25-pin, D-Sub Cable (Female)

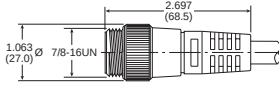
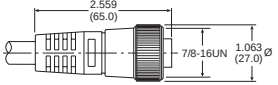
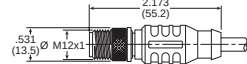
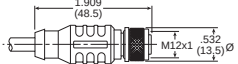
Description	Length	Part number
25-pin, D-sub cable, IP20	3 meters	P8LMH25M3A
25-pin, D-sub cable, IP20	9 meters	SCD259D
25-pin, D-sub cable, IP65	3 meters	SCD253W
25-pin, D-sub cable, IP65	9 meters	SCD259WE

Most popular.

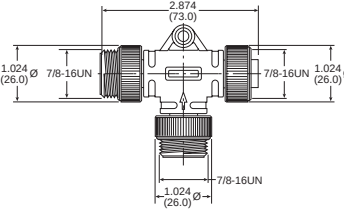
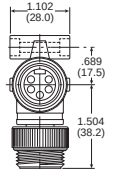
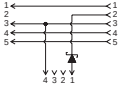


For inventory, lead times, and kit lookup, visit www.pdnplu.com

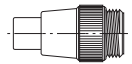
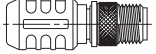
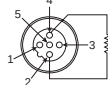
DeviceNet and CANopen Cables - P2M Network Node, H Series Network Portal, Turck Network Portal

		Description	Part number
RSM Side, 7/8 Mini with Male Pins	RKM Side, 7/8 Mini with Male Pins	7/8" mini male to 7/8" mini female, PUR	RSM RKM 5711-xM
		7/8" mini male to M12 female, PUR	RSM RKC 5711-xM
		M12 male to M12 female, PUR	RSC RKC 5711-xM
		M12 male to 7/8" mini female, PUR	RSC RKM 5711-xM
Where x = 2, 4, 5, 6, 8, 10 meter standard lengths			
			
RSC Side, Male Pins	RKC Side, Female Sockets		

Bus Power Tee - P2M Network Node, H Series Network Portal, Turck Network Portal

			Description	Part number
			Bus power tee	RSM RKM 57 WSM 40 PST
			For systems not equipped with Power over network, combines separate network and power feeds into the communication module. Includes reverse current protection	

DeviceNet & CANopen Terminating Resistor - P2M Network Node, H Series Network Portal, Turck Network Portal

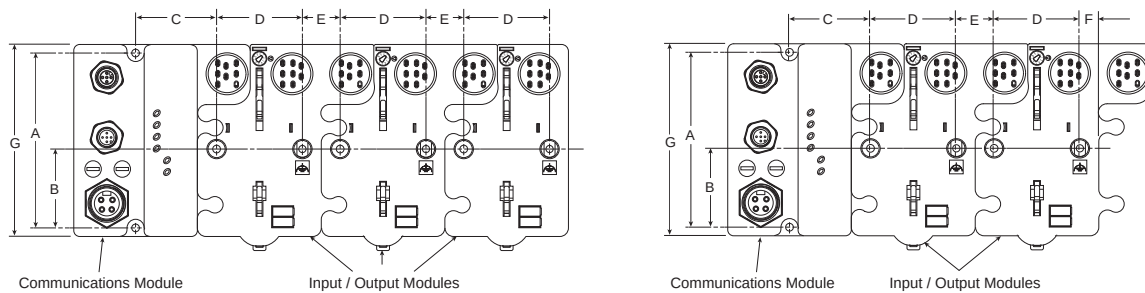
		Description	Part number
RSM 57-TR2	Male Pins	7/8" Mini Male Pin Terminating Resistor	RSM 57-TR2
		M12 Male Pin Terminating Resistor	P8BPA00MA
			
P8BPA00MB	Male Pins		

 Most popular.



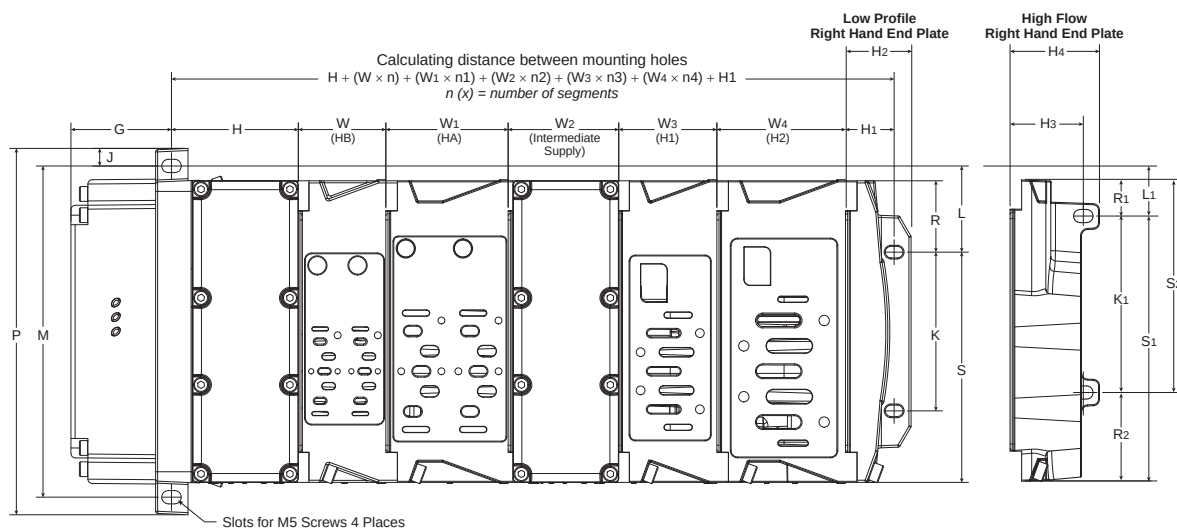
For inventory, lead times, and kit lookup, visit www.pdnplu.com

H Series Network with H Series ISO Valves



A	B	C	D	E	F	G
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)	.87 (22)	.43 (11)	4.41 (112)

Inches (mm)

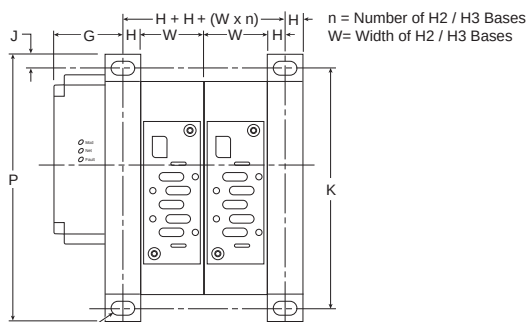


n (x) = number of segments

G	H	H1	H2	H3	H4	J	K	K1	L	L1	M
1.87 (47.5)	2.36 (60.0)	0.90 (23.0)	1.22 (31.0)	1.36 (34.6)	1.66 (42.3)	0.33 (8.3)	2.95 (75.0)	3.28 (83.4)	1.60 (40.7)	0.96 (24.3)	6.16 (156.5)
P	S	S1	S2	R	R1	R2	W	W1	W2	W3	W4
6.81 (173.1)	4.28 (108.8)	4.93 (125.2)	3.96 (100.7)	1.33 (33.7)	0.68 (17.3)	1.65 (41.8)	1.63 (41.3)	2.28 (57.8)	2.06 (52.3)	1.82 (46.3)	2.39 (60.8)

Inches (mm)

H3 Manifold Assembly

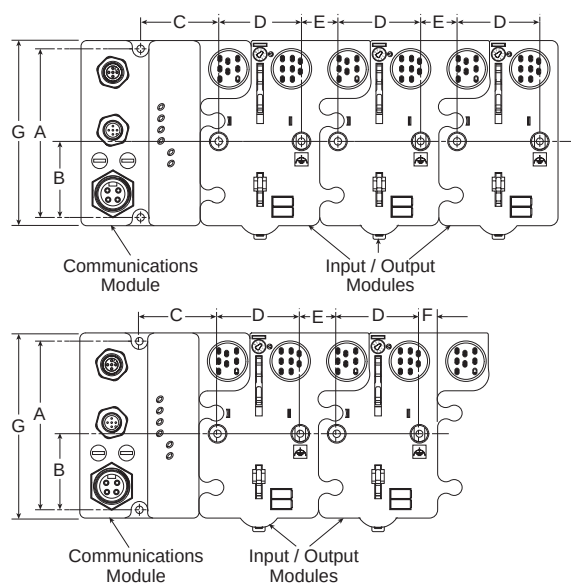


Slots for M10 (or 7/16") Screws 4 Places

G	H	J	K	P	W
2.34 (59.5)	.65 (16.5)	.59 (15)	10.43 (265)	11.61 (295)	2.80 (71)

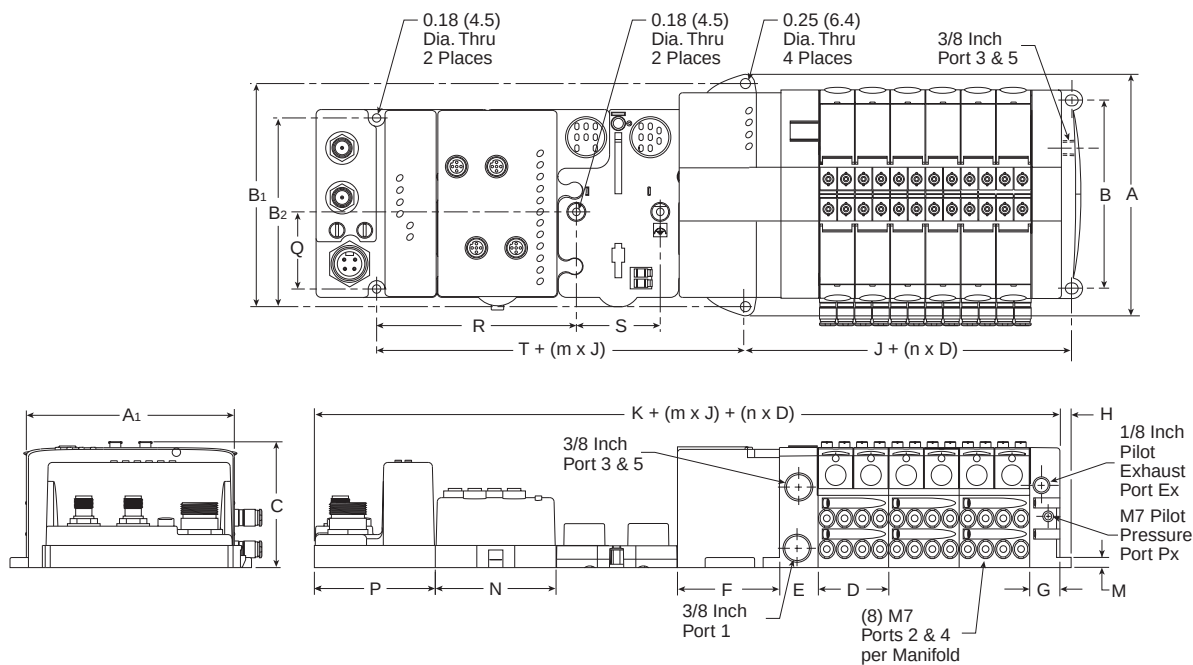
Inches (mm)

H Series Network with H Series Micro Valves



A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)
E	F	G	
.87 (22)	.43 (11)	4.41 (112)	

Inches (mm)

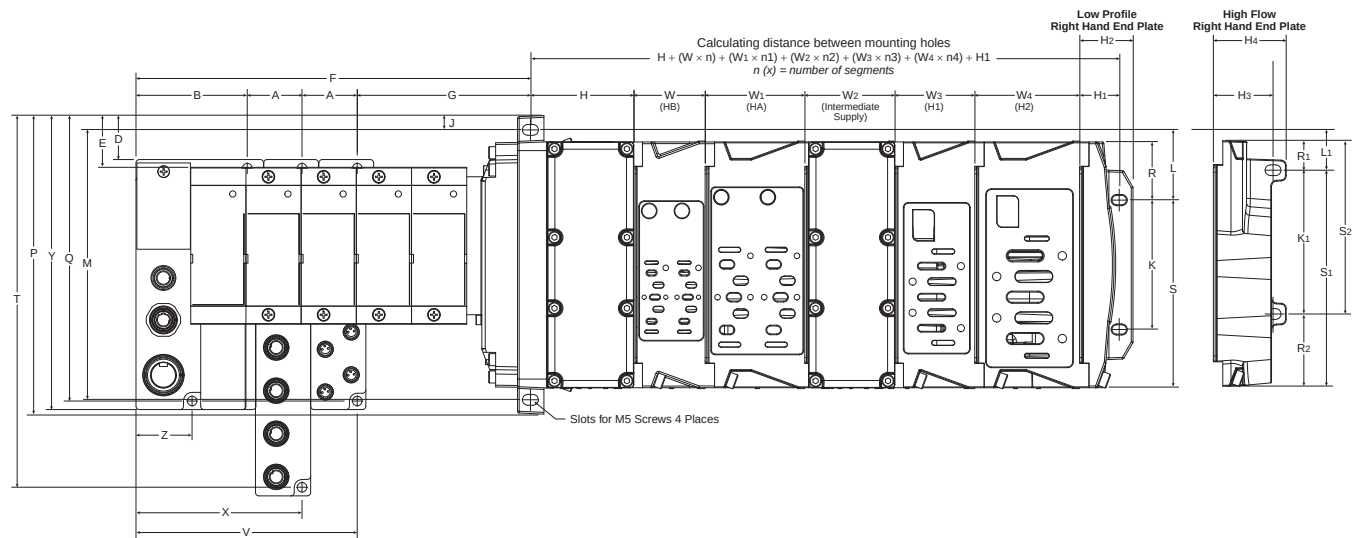


A	A1	B	B1	B2	C	D	E	F	G
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	2.40 (61.0)	0.71 (18.0)
H	J	K	M	N	P	Q	R	S	T
0.49 (12.5)	2.72 (69.0)	7.32 (186.0)	0.24 (6.1)	2.83 (72.0)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)

Inches (mm)

n = Number of Manifolds
m = Number of Modules

Turck with H Series ISO Valves

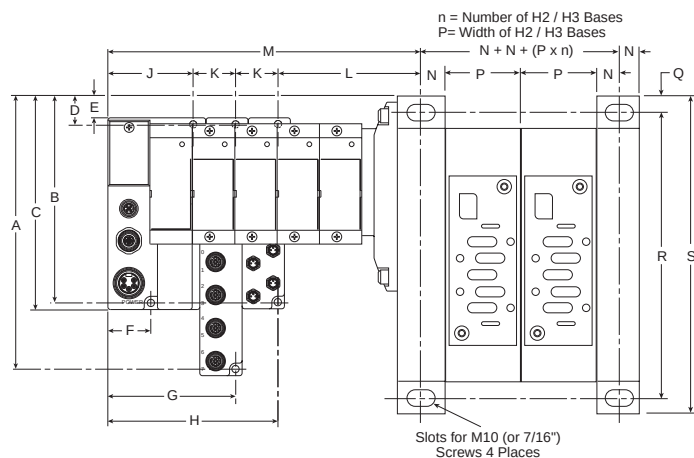


$n(x)$ = number of segments

A 1.26 (32.0)	B 2.54 (64.5)	D 1.00 (25.4)	E 1.18 (29.9)	F 8.99 (228.4)	G 3.94 (100.1)	H 2.36 (60.0)	H₁ 0.90 (23.0)	H₂ 1.22 (31.0)	H₃ 1.36 (34.6)	H₄ 1.66 (42.3)	J 0.33 (8.3)
K 2.95 (75.0)	K₁ 3.28 (83.4)	L 1.60 (40.7)	L₁ 0.96 (24.3)	M 6.16 (156.5)	P 6.81 (173.1)	Q 6.51 (165.4)	R 1.33 (33.7)	R₁ 0.68 (17.3)	R₂ 1.65 (41.8)	S 4.28 (108.8)	S₁ 4.93 (125.2)
S₂ 3.96 (100.7)	T 8.48 (215.4)	V 5.05 (128.3)	W 1.63 (41.3)	W₁ 2.28 (57.8)	W₂ 2.06 (52.3)	W₃ 1.82 (46.3)	W₄ 2.39 (60.8)	X 3.79 (96.3)	Y 6.71 (170.4)	Z 1.28 (32.5)	

Inches (mm)

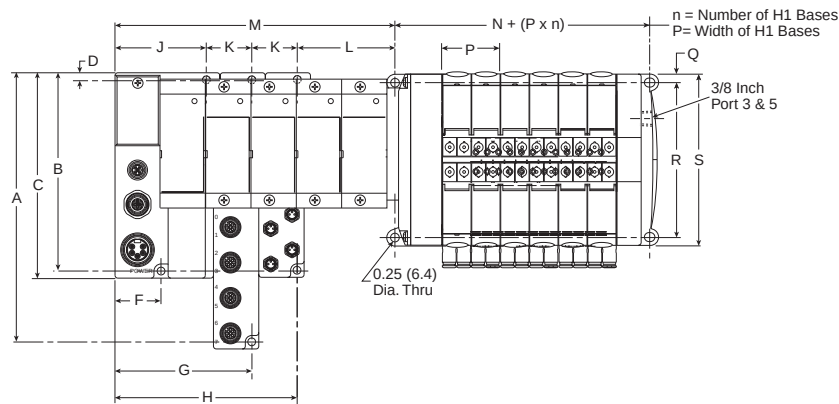
H3 Manifold Assembly



A 8.62 (218.9)	B 6.65 (168.9)	C 6.85 (173.9)	D 1.33 (33.9)	E 1.14 (28.9)	F 1.28 (32.5)	G 3.79 (96.5)	H 5.06 (128.5)	J 2.53 (64.5)	K 1.26 (32)	L 4.34 (110)	M See note 1	N .65 (16.5)	P 2.80 (71)	Q .59 (15)	R 10.43 (265)	S 11.61 (295)
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Note 1: $M = J + L + n_2 \times K$, where n_2 = Number of Turck input / output modules
 Inches (mm)

Turck with H Series Micro Valves

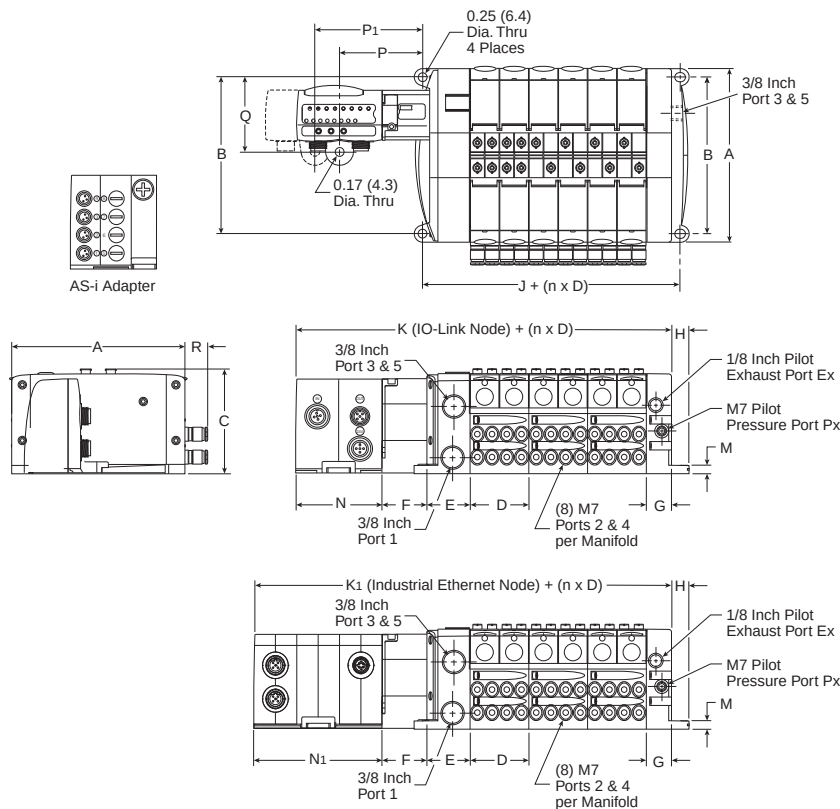


n = number of segments

A	B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S
7.48 (190)	5.51 (140)	5.71 (145)	0.20 (5)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	2.54 (64)	See note 1	2.28 (58)	1.65 (42)	.19 (4.9)	4.41 (112)	4.88 (124)

Note 1: $M = J + L + n_2 \times K$, where n_2 = Number of Turck input / output modules
 Inches (mm)

P2M Adapter, Side Ported



n = number of segments

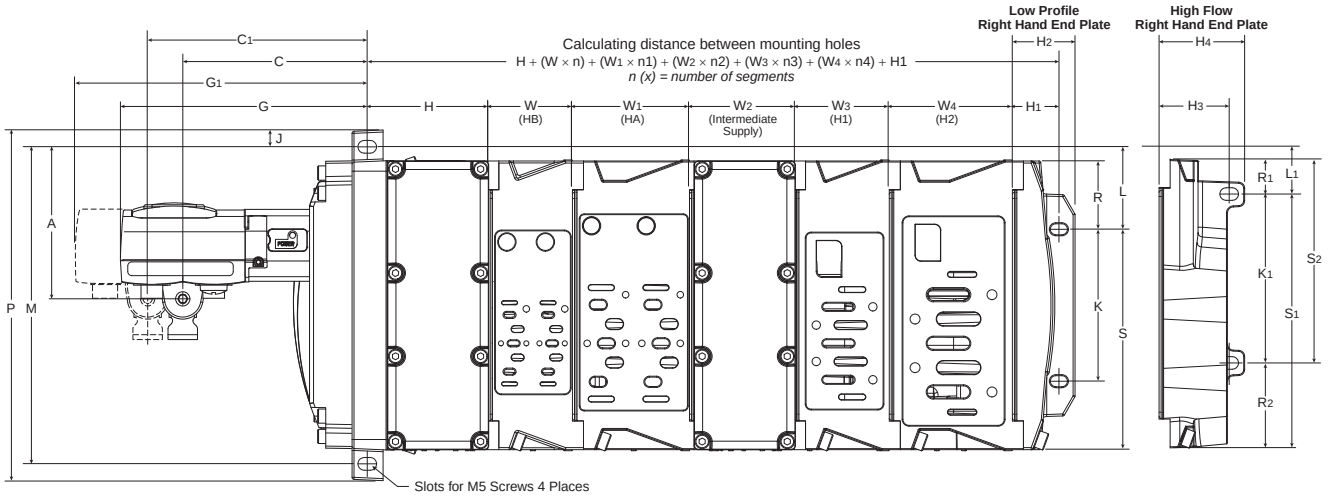
A	B	C	D	E	F	G	H	J	K	K1	M	N	N1	P	P1	Q	R
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)	1.22 (31.0)	1.28 (32.5)	0.71 (18.0)	0.49 (12.5)	2.28 (58.0)	6.10 (155.0)	6.87 (174.5)	0.24 (6.1)	2.40 (61.0)	3.71 (94.3)	2.36 (60.0)	2.94 (74.7)	2.07 (52.5)	0.56 (14.3)

Inches (mm)



For inventory, lead times, and kit
 lookup, visit www.pdnplu.com

P2M with H Series ISO Valves

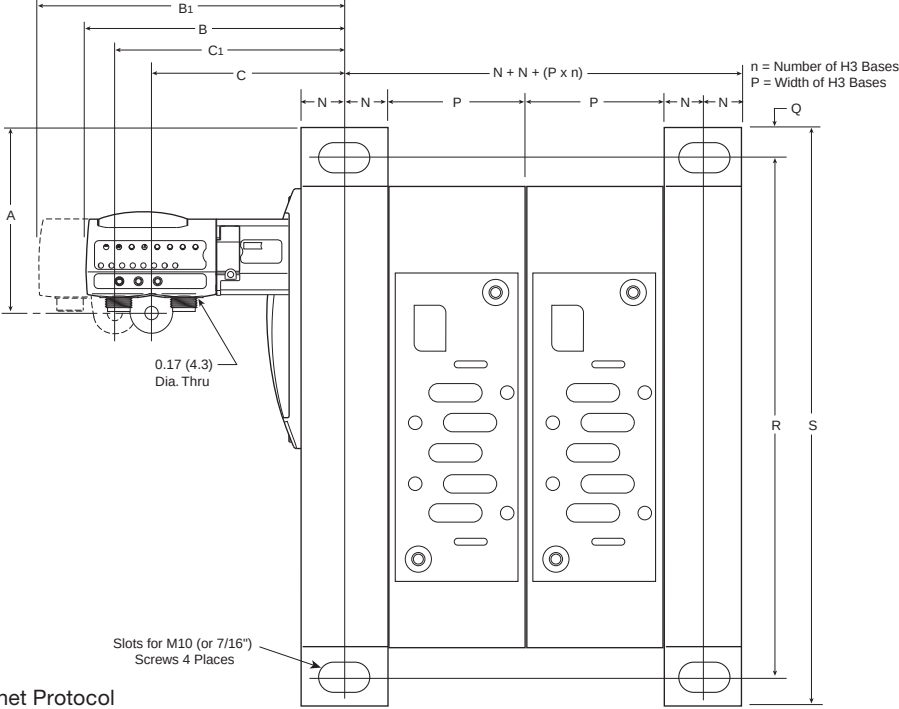


GP2M Bus Protocol
G1P2M Industrial Ethernet Protocol
n (x) ...Number of segments

A	C	C1	G	G1	H	H1	H2	H3	H4	J	K	K1	L
2.97 (75.5)	3.57 (90.8)	4.32 (109.8)	4.79 (121.6)	6.19 (157.2)	2.36 (60.0)	0.90 (23.0)	1.22 (31.0)	1.36 (34.6)	1.66 (42.3)	0.33 (8.3)	2.95 (75.0)	3.28 (83.4)	1.60 (40.7)
L1	M	P	S	S1	S2	R	R1	R2	W	W1	W2	W3	W4
0.96 (24.3)	6.16 (156.5)	6.81 (173.1)	4.28 (108.8)	4.93 (125.2)	3.96 (100.7)	1.33 (33.7)	0.68 (17.3)	1.65 (41.8)	1.63 (41.3)	2.28 (57.8)	2.06 (52.3)	1.82 (46.3)	2.39 (60.8)

Inches (mm)

H3 Manifold Assembly



BP2M Bus Protocol
B1P2M Industrial Ethernet Protocol
n (x) ...Number of segments

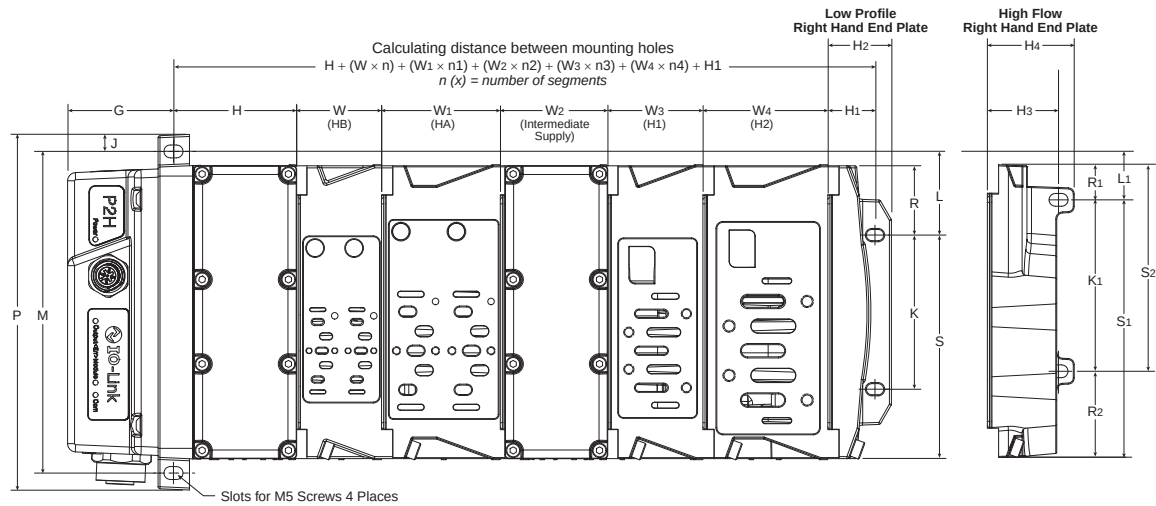
H3	A	B	B1	C	C1	N	P	Q	R	S
	3.31 (84.2)	6.40 (161.5)	6.04 (153.3)	5.19 (131.8)	4.31 (109.5)	.65 (16.5)	2.80 (71)	.59 (15)	10.43 (265)	11.61 (295)

Inches (mm)



For inventory, lead times, and kit
lookup, visit www.pdnplu.com

P2H with H Series ISO Valves

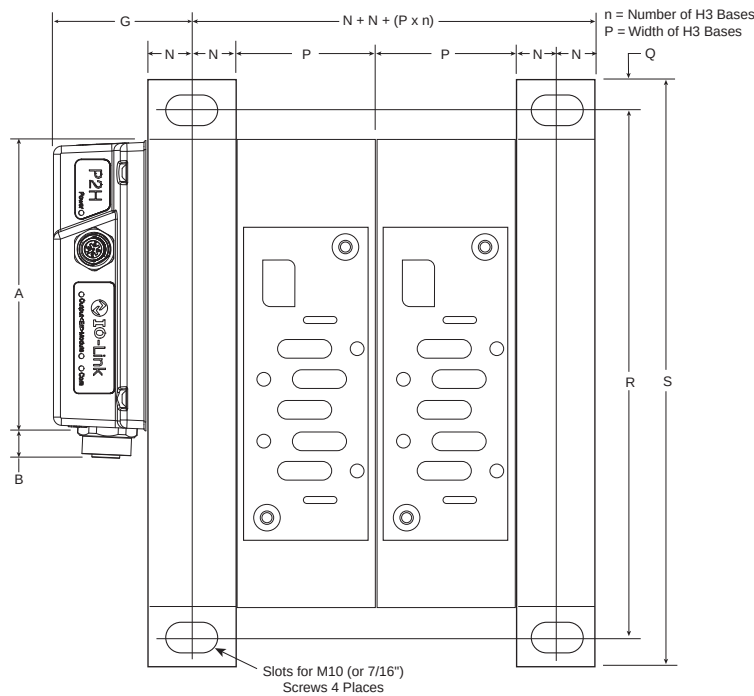


$n(x)$ = number of segments

G	H	H1	H2	H3	H4	J	K	K1	L	L1	M
2.03 (51.5)	2.36 (60.0)	0.90 (23.0)	1.22 (31.0)	1.36 (34.6)	1.66 (42.3)	0.33 (8.3)	2.95 (75.0)	3.28 (83.4)	1.60 (40.7)	0.96 (24.3)	6.16 (156.5)
P	S	S1	S2	R	R1	R2	W	W1	W2	W3	W4
6.81 (173.1)	4.28 (108.8)	4.93 (125.2)	3.96 (100.7)	1.33 (33.7)	0.68 (17.3)	1.65 (41.8)	1.63 (41.3)	2.28 (57.8)	2.06 (52.3)	1.82 (46.3)	2.39 (60.8)

Inches (mm)

H3 Manifold Assembly



$n(x)$ = number of segments

A	B	G	N	P	Q	R	S
5.51 (140)	0.49 (12.5)	3.01 (76.5)	0.65 (16.5)	2.80 (71)	0.59 (15)	10.43 (265)	11.61 (295)

Inches (mm)



For inventory, lead times, and kit
lookup, visit www.pdnplu.com

Model No.	Section / Page No.	Model No.	Section / Page No.	Model No.	Section / Page No.
BL67-1CNT/ENC	124, 125, 128, 135	BL67-B-2M12	124, 126, 127	H1EWXXG2B9000FD	29
BL67-1CVI	124, 125, 128, 135	BL67-B-2M12-P	124, 126	H1EWXXG323000FD	29
BL67-1RS232	124, 125, 128, 134	BL67-B-4M8	124, 126	H1EWXXH2B9000FD	29
BL67-1RS485/422	124, 125, 128, 134	BL67-B-4M12	124, 126, 127, 128	H1EWXXH323000FD	29
BL67-1RSM-VO	124	BL67-B-4M12-P	124, 126, 127	H2EVXBG0B9D	11
BL67-1SSI	124, 125, 128, 135	BL67-B-4M12P	127	H2EVXBG023D	11
BL67-2AI2AO-V/I	128, 133	BL67-B-8M8	124, 126, 127, 128	H2EVXBH0B9D	11
BL67-2AI-I	124, 125, 127, 132	BL67-GW-CO	122	H2EVXBH023D	11
BL67-2AI-PT	124, 125, 127, 132	BL67-GW-DN	122	H2EVXXG0B9D	11
BL67-2AI-TC	124, 125, 127, 132	BL67-GW-DPV1	122	H2EVXXG023D	11
BL67-2AI-V	124, 125, 127, 132	BL67-GW-EN	122	H2EVXXH0B9D	11
BL67-2AO-I	124, 125, 127, 133	BL67-GW-EN-DN	123	H2EVXXH023D	11
BL67-2AO-V	124, 125, 127, 133	BL67-GW-EN-IP-DN	123	H2EWXBBL49D	31
BL67-2RFID-A	124	BL67-GW-EN-PN	122	H2EWXBBL53D	32
BL67-2RFID-C	124	BL67-PF-24VDC	124, 125, 128, 134, 137	H2EWXBCL49D	31
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BL67-4AI-I/V	125	BL67-PG-EN	123	H2EWXBG2B9000FD	31
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Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories



WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

- 1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- 1.3. Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.
- 1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
 - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
 - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
 - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
 - Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices:** Safety devices should not be removed, or defeated.
- 1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.
- 1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

- 2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- 2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:
 - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
 - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
 - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

- 2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5
- 2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
 - Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
 - Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

- 3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.
- 3.2. Installation Instructions:** Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.
- 3.3. Air Supply:** The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

- 4.1. Maintenance:** Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.9.
- 4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.
- 4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)
- 4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
 - Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
 - Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
 - Any observed improper system or component function: Immediately shut down the system and correct malfunction.
 - Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.
- Caution: Leak detection solutions should be rinsed off after use.**
- 4.5. Routine Maintenance Issues:**
- Remove excessive dirt, grime and clutter from work areas.
 - Make sure all required guards and shields are in place.
- 4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.
- 4.7. Service or Replacement Intervals:** It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
 - Government and / or industrial standards.
 - When failures could result in unacceptable down time, equipment damage or personal injury risk.

- 4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
 - Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
 - Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
 - Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
 - After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
 - Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.
- 4.9. Putting Serviced System Back into Operation:** Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.



PARKER-HANNIFIN CORPORATION
OFFER OF SALE

1. Definitions. As used herein, the following terms have the meanings indicated.

Buyer:	means any customer receiving a Quote for Products from Seller.
Goods:	means any tangible part, system or component to be supplied by the Seller.
Products:	means the Goods, Services and/or Software as described in a Quote provided by the Seller.
Quote:	means the offer or proposal made by Seller to Buyer for the supply of Products.
Seller:	means Parker-Hannifin Corporation, including all divisions and businesses thereof.
Services:	means any services to be supplied by the Seller.
Software:	means any software related to the Products, whether embedded or separately downloaded.
Terms:	means the terms and conditions of this Offer of Sale or any newer version of the same as published by Seller electronically at www.parker.com/saleterms .

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3. Price; Payment. The Products set forth in Seller's Quote are offered for sale at the prices indicated in Seller's Quote. Unless otherwise specifically stated in Seller's Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). All sales are contingent upon credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

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6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

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8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which are or become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. Special Tooling includes but is not limited to tooling, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Products. A tooling charge may be imposed for any Special Tooling. Such Special Tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in Special Tooling belonging to Seller that is utilized in the manufacture of the Products, even if such Special Tooling has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property in its sole discretion at any time.

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11. User Responsibility. The Buyer through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. The Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and other technical information provided with the Product. If Seller provides Product options based upon data or specifications provided by the Buyer, the Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event the Buyer is not the end-user, Buyer will ensure such end-user complies with this paragraph.

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14. Limitation on Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

15. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control ("Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

16. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of these Terms by legislation or other rule of law shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

17. Termination. Seller may terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

18. Ownership of Software. Seller retains ownership of all Software supplied to Buyer hereunder. In no event shall Buyer obtain any greater right in and to the Software than a right in the nature of a license limited to the use thereof and subject to compliance with any other terms provided with the Software.

19. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights ("Intellectual Property Rights") except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third party claim that one or more of the Products sold hereunder infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by the Seller to the Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products sold hereunder is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products so as to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer; or (ii) directed to any Products provided hereunder for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products provided hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for such claims of infringement of Intellectual Property Rights.

20. Governing Law. These Terms and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

21. Entire Agreement. These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. In the event of a conflict between any term set forth in the main body of a Quote and these Terms, the terms set forth in the main body of the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. These Terms may not be modified unless in writing and signed by an authorized representative of Seller.

22. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws.



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