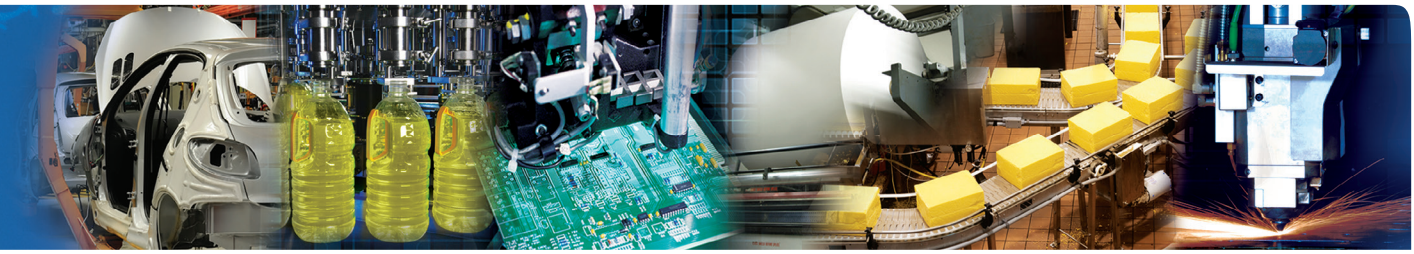
Solenoid Pilot Actuated Valves

503 Series | Zoned Safety Manifold



www.asco.com

numatics®

Numatics, Inc. is a leading manufacturer of pneumatic products and motion control products. Our broad spectrum of standard, custom developed products and application components, have made a significant impact on pneumatic innovation as well as pneumatic and motion control technology. Our company has an extensive history of generating innovative concepts and technological breakthroughs. Many of today's standard features in pneumatic technology were industry firsts from Numatics. We continue our innovative approach to product development by developing electric motion control solutions and enhancing our embedded Fieldbus and I/O products to continually meet and solve our customer's application requirements.

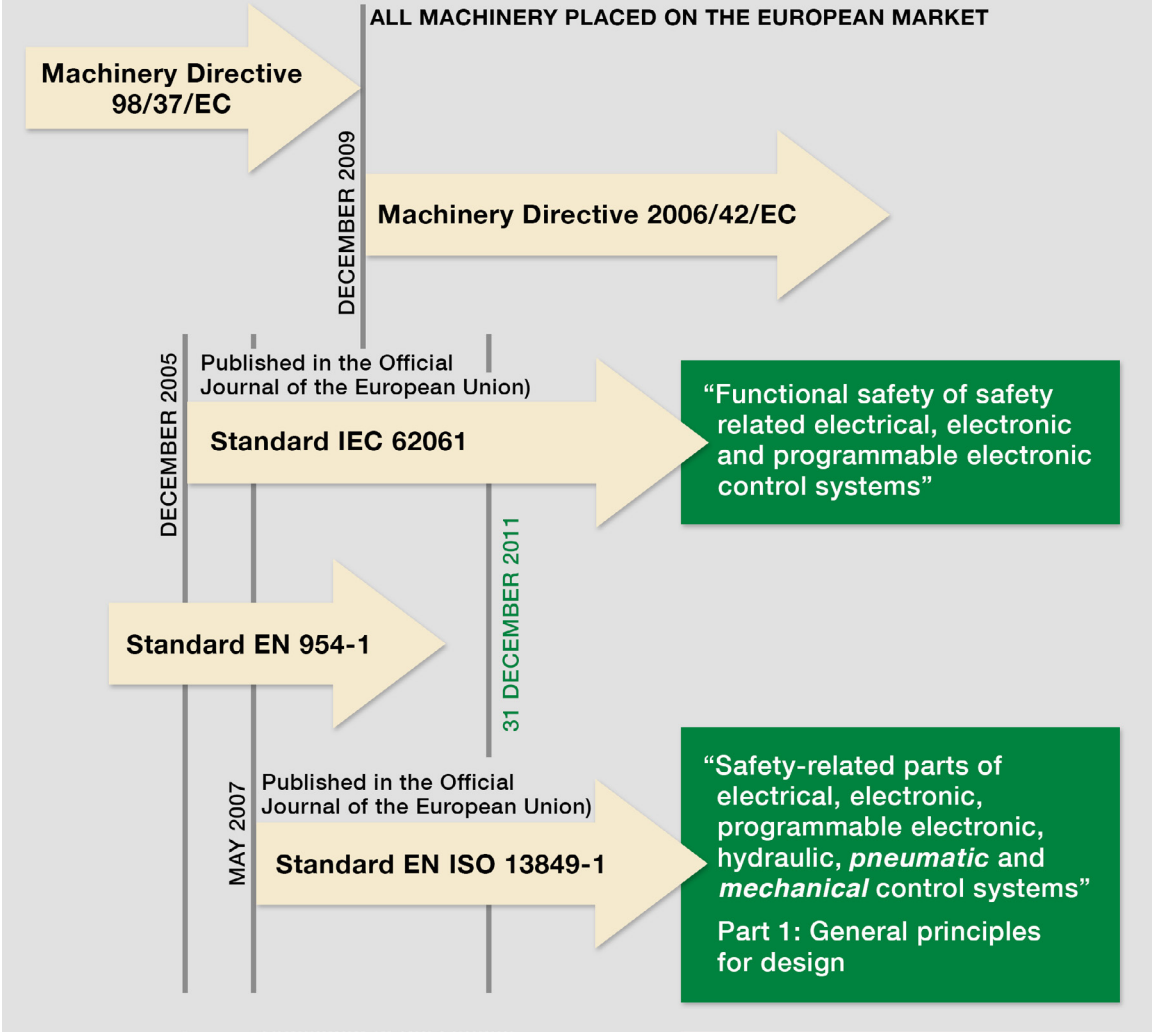
Today Numatics is proud to be a part of Emerson Electric Co. Emerson (NYSE:EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets through its network power, process management, industrial automation, climate technologies, and appliance and tools businesses. For more information, visit www.Emerson.com.

EMERSON™

Principle of the Safety of Machinery:

To guarantee the safety and health of persons exposed to the installation, operation, adjustment and maintenance of machinery.

DEVELOPMENT OF THE STANDARDS



Three key concepts for the design of machinery and their safety functions have emerged from the implementation of the new Machinery Directive 2006/42/EC:

- A risk analysis prior to design
- A particular consideration of the quantitative aspect of the safety functions in addition to the qualitative approach
- The use of performance levels (PL)

Risk Evaluation:

The manufacturer or supplier of a machine must see to it that a risk evaluation is conducted to determine the health and safety requirements for persons involved in its operation. The machine must then be designed and constructed in accordance with the results of the risk evaluation.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

RISK EVALUATION

"Good engineering practice + probabilistic calculations"

CONSTRUCTION AND RISK EVALUATION OF MACHINES

EN ISO 12100
Safety of machinery
Basic concepts, general principles for design

EN 1050 (EN ISO 14121-1)
Safety of machinery
Risk assessment - Part 1: Principles

Functional and safety-relevant requirements for safety-related control systems

Functional Safety Aspect

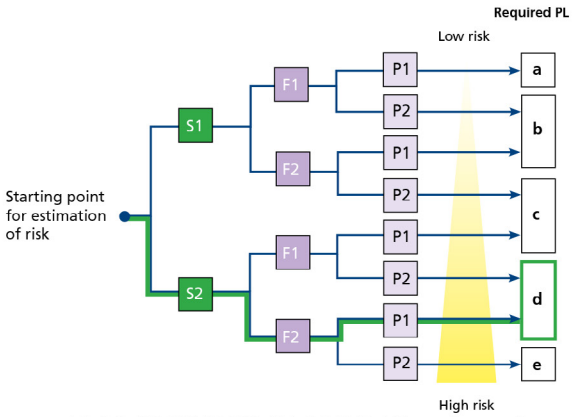
EN 60204-1
Safety of machinery. electrical equipment of machines - Part 1: General requirements

CONSTRUCTION AND RISK EVALUATION OF MACHINES

EN/IEC 62061 | **EN ISO 13849-1**

Risk related to the hazardous event = Severity of damage S and Frequency and/or duration of exposure F / Probability of occurrence O / Probability of avoidance P → Probability of damage

Effects	Severity S	Class K = F + O + P				
		3-4	5-7	8-10	11-13	14-15
Death, loss of eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
Permanent, loss of fingers	3			SIL 1	SIL 2	SIL 3
Reversible, medical treatment	2	Other measures			SIL 1	SIL 2
Reversible, first aid	1					SIL 1



SAFETY INTEGRITY LEVELS SIL 1, 2, 3

PERFORMANCE LEVELS PL a, b, c, d, e

ANY ARCHITECTURE

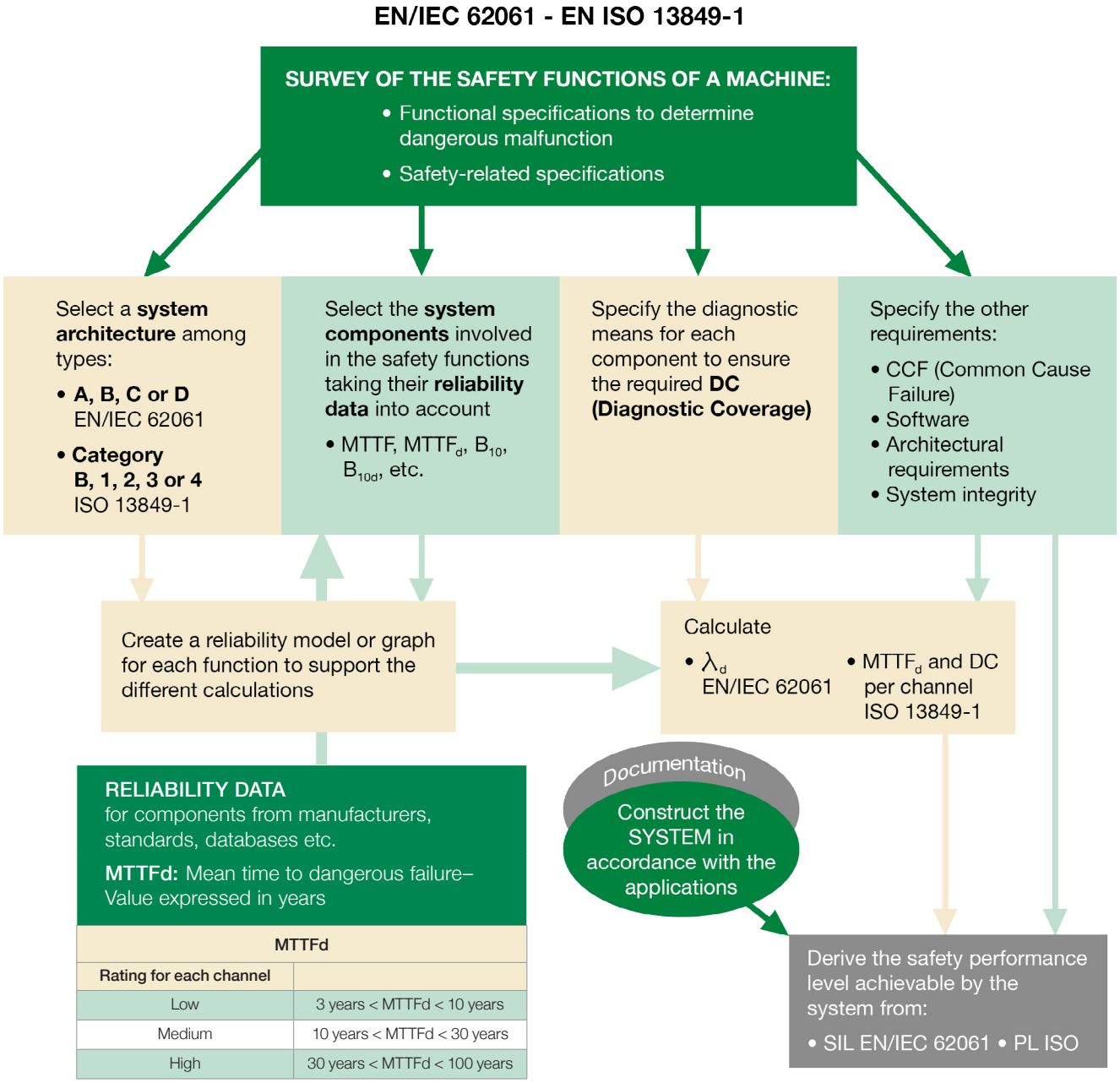
A → Series arrangement w/o diagnostic function
B → Parallel arrangement w/o diagnostic function
C → Series arrangement with diagnostic function
D → Parallel arrangement with diagnostic function

DESIGNATED ARCHITECTURE (CATEGORIES)

B,1 → Series arrangement w/o diagnostic function
2 → Series arrangement with diagnostic function
3,4 → Parallel arrangement with diagnostic function

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

EN/IEC 62061 - EN ISO 13849-1



B_{10d}: Number of cycles after which 10% of a random sample of wearing components fail dangerously – Value expressed in number of cycles.

DC: Diagnostic Coverage

DIAGNOSTIC COVERAGE			
None	Low	Medium	High
DC < 60%	60% < DC < 90%	90% < DC < 99%	99% < DC

CCF: Common Cause Failure. Measures to be taken to prevent a given cause (and its effect) from concurrently disabling the multiple channels of a safety circuit.

Mission time T_{10}: In line with "good engineering practice" as recommended in EN ISO 13849-1, components attaining this value must be replaced (precautionary principle).

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

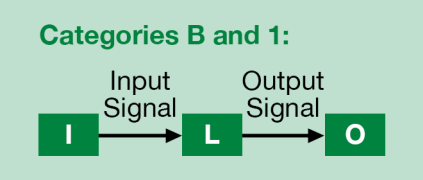
FOR YOUR SAFETY

Only the pneumatic part is described in the form of a subsystem in these examples. Other safety-related components (e.g. protective devices, electrical logic elements) must be added to ensure the safety function is complete.

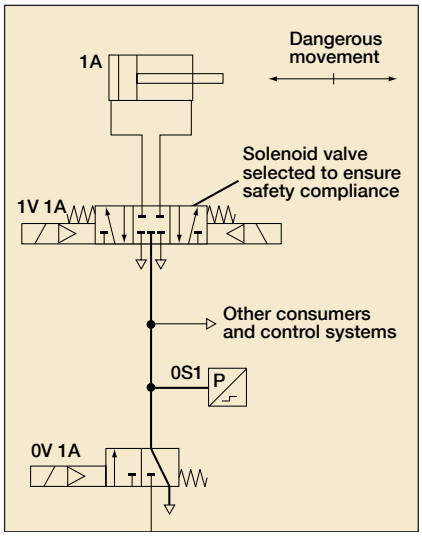
The examples shown here only relate to the stopping of hazardous movements. In pneumatics, safety measures concerning the interruption of energy sources, the evacuation of potential energy (pressure contained in a part of the circuit), and a “progressive” start-up after an unexpected shutdown should not be omitted.

To attain a PL = c, category 1 architecture

- **Safety function**: Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description**:



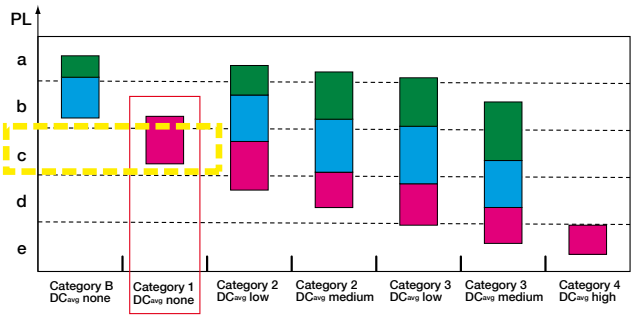
Input ‘I’: not represented, movable guard or light barrier, etc.
Logic element ‘L’: not represented, PLC



- **Calculation of the probability of dangerous failure**:

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 5 s	16 h	240 days	2,764,800 cycles

B_{10d} (1V1A – series 520) = 130,000,000 cycles, i.e. an operating time of 47 years, $MTTF_d$=470 years “high”



PL Performance Levels

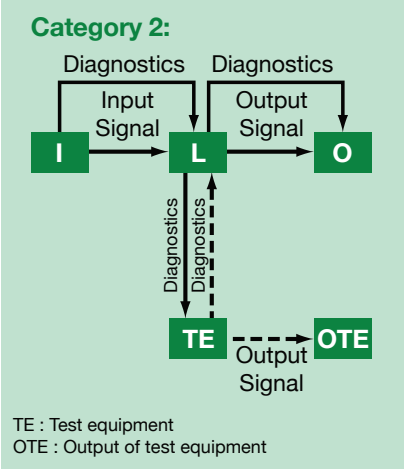
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

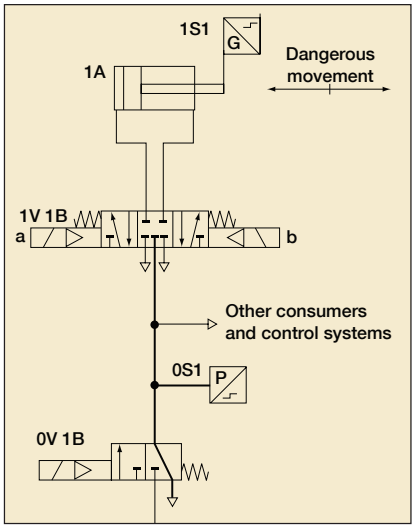
By limiting the valve’s operating time to 47 years, this corresponds to a PL = c

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

To attain a PL = c, category 2 architecture

- **Safety function**: Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description**:





Input 'I': not represented, movable guard or light barrier, etc.
Logic element 'L': not represented, PLC

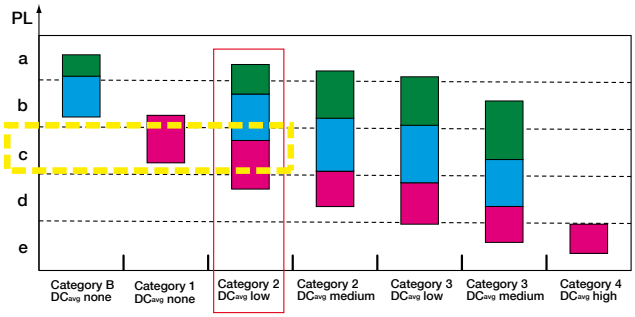
Stop of cylinder ensured by:	Diagnostics ensured by:
Output O: Valve 1V1B	Cross-monitoring in L1 of the supply status coherence of coils 1V1Ba and 1V1Bb and the limit switches 1S1

0V1: Energy isolating valve: ensures the system is exhausted in case of loop failure.

- **Calculation of the probability of dangerous failure**:

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 5 s	16 h	240 days	2,764,800 cycles

B_{10d} (valve 1V1B - series 542) = 44,912,670 cycles, i.e. an operating time of 16.2 ans,
$MTTF_d$ = 162 years "high"
$MTTF_d$ (sensors 1S1) = 45,000,000h, i.e. 11,718 years "high"
The case study shows: DC (Diagnostic Coverage) = 60% "low"



PL Performance Levels

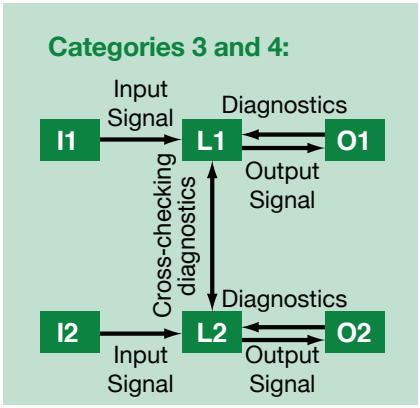
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

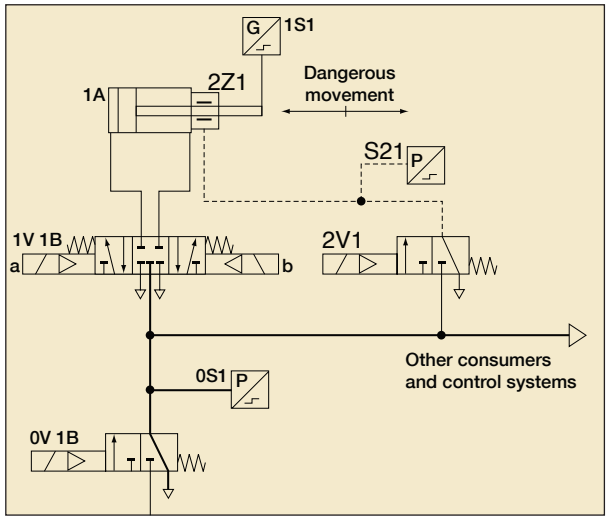
By limiting the valve's operating time to 16.2 years, this corresponds to a PL = c for the safety loop.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

To attain a PL = d, category 3 architecture

- **Safety function**: Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description**:





Inputs 'I1' and 'I2': not represented, movable guard or light barrier, etc.
Logic elements 'L1' and 'L2': not represented, PLC

Stop of cylinder ensured by:		
Output O: Valve 1V1B	Cross-monitoring in L1 of the supply status coherence of coils 1V1Ba and 1V1Bb and the limit switches 1S1	Cross-monitoring of L1/L2 status coherence within the PLC
Output O2: Valve 2V1 controlling the rod lock 2Z1	Pressure switch 2S1 for transmission of signal to L2	

0V1B: Energy isolating valve: ensures the system is exhausted.

- **Calculation of the probability of dangerous failure**:

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 10 s	16 h	240 days	1,382,400 cycles

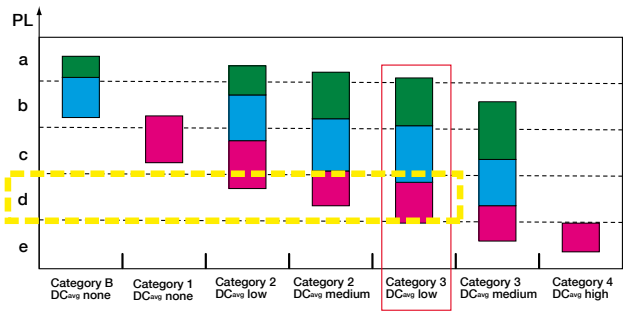
B_{10d} (valve 1V1B - series 542) = 44,912,670 cycles, i.e. an operating time of 32.4 years, $MTTF_d$ = 324 years "high"

B_{10d} (valve 2V1 - series 520) = 20,000,000 cycles, i.e. an operating time of 14.5 years, $MTTF_d$ = 145 years "high"

B_{10d} (pressure switch 2S1, dynamic rod lock 2Z1) = 4,000,000 cycles, i.e. a mission time of T10 = 2.89 years, $MTTF_d$ = 28.9 years "medium"

$MTTF_d$ (sensors 1S1) = 45,000,000 h, i.e. 11,718 years "high"

The case study shows: DC (Diagnostic Coverage) = 60% "low", DC (2V1) = 99% "high", DC* (2Z1) = 75% i.e. for channel O2, DC = 78% "low"



* "Good engineering practice" methods associate this type of component with a low-to-medium DC to cover any of the component's drift failures.

PL Performance Levels

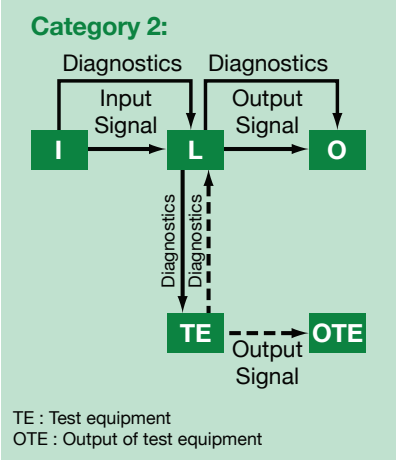
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

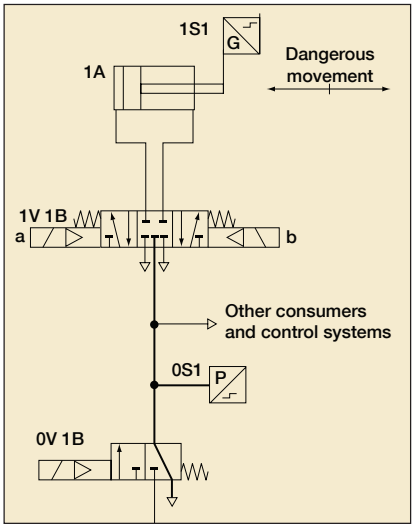
By limiting the operating time of the pressure switch and rod lock to 2.89 years, this corresponds to a PL = d for the safety loop.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

To attain a PL = d, category 3 architecture

- **Safety function:** Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description:**





Inputs 'I1' and 'I2': not represented, movable guard or light barrier, etc.
Logic elements 'L1' and 'L2': not represented, PLC

Stop of cylinder ensured by:		
Output O: Valve 1V1B	Comparison in L1 of the supply status of coils 1V1Ba and 1V1Bb and the limit switches 1S1	Cross-monitoring of L1/L2 status coherence within the PLC
Output O2: Valve 2V1 controlling the two 2/2 "cylinder stop" valves used as braking units	Pressure switch 2S1 for transmission of signal to L2	

0V1B: Energy isolating valve: ensures the system is exhausted.

- **Calculation of the probability of dangerous failure**:

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 10 s	16 h	240 days	1,382,400 cycles

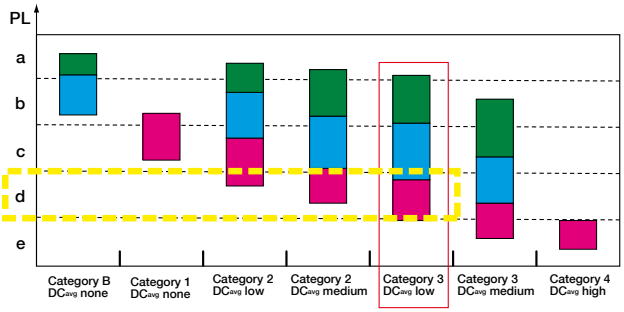
B_{10d} (valve 1V1B - series 542) = 44,912,670 cycles, i.e. an operating time of 32.4 years, $MTTF_d$ = 324 years "high"

B_{10d} (valve 2V1 - series 520) = 20,000,000 cycles, i.e. an operating time of 14.5 years, $MTTF_d$ = 145 years "high"

B_{10d} (pressure switch 2S1, dynamic rod lock 2Z1) = 4,000,000 cycles, i.e. a mission time of T10 = 2.89 years, $MTTF_d$ = 28.9 years "medium"

B_{10d} (2/2 cylinder stop valves 2V3, 2V2) = 60,000,000 cycles, i.e. MTTFd = 434 years "high"

The case study shows: DC (1V1B)=60% "low", DC (2V1)=99% "high", DC* (2V3, 2V2)=60%, i.e. for channel O2, DC = 78% "low".



* "Good engineering practice" methods associate this type of component with a low-to-medium DC to cover any of the component's drift failures.

PL Performance Levels

- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

By limiting the operating time of the pressure switch and rod lock to 2.89 years, this corresponds to a PL = d for the safety loop.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Table of Contents

503 Series

Technical and Operating Data 2
How to Order 3
Sandwich Pressure Regulators 4
Valve Regulator/Speed Control Plug-in Assembly 5
Regulator Service Kits and Parts 5
Sandwich Pressure Regulator Dimensions 6
Manifold Assembly 7
Valve on Manifold Block 7
Sandwich Port 4 Supply Block 11
Sandwich Pilot Supply Block 12
Sandwich Pressure Block 13
Sandwich Exhaust Block 13
Blank Station Plate Kit 14
Speed Control Kit 14
DIN Rail Clamp Kit 15
Blocking Discs 15
End Plate Kits 15
Manifold Assembly Dimensions 16
Internal/External Pilot Selection 17
Internal Muffler 17

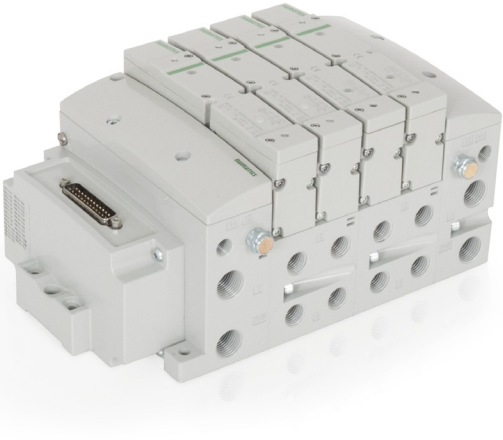
G3 Electronics

Features and Benefits 19
Ethernet 21
PROFINET® 22
Ethernet POWERLINK® 23
EtherCAT® 24
EtherNet/IP™ DLR 25
CC-Link IE Field™ 26
I/O Modules 27
Miscellaneous Modules & Accessories 30
G3 Fieldbus Communication Assembly Dimensions 32
How to Order G3 Assembly Kit & G3 Electronics 33
How to Order Complete G3 Manifold Assemblies 34
Cables & Connectors 35
PROFINET® Cables & Connectors 38
Ethernet POWERLINK® Cables & Connectors 39
EtherCAT® Cables & Connectors 40
Ethernet Cables & Connectors 41
I/O Cables & Connectors 42

503 SERIES

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve and Rubber Seal, Cv: 1.2 - 1.4

- Solenoid air pilot actuated
- Low wattage – 1.7 watt for DC application
- DC solenoids polarity insensitive with surge suppression
  Plug together circuit boards eliminate internal wiring
- Integral recessed gaskets
- IN Fittings to accommodate various tube sizes
- Simple conversion from internal to external pilot
- G3 Fieldbus electronics
- IP65 Certified

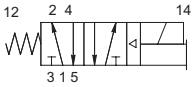


Performance Data		
Valve Data	**Min.**	**Max.**
Pilot Pressure Range	29 PSI (2 Bar)	115 PSI (8 Bar)
Valve Operating Pressure Range	28" HG Vacuum	115 PSI (8 Bar)
Ambient Temperature Range	-10 °C (-14 °F)	50 °C (122 °F)

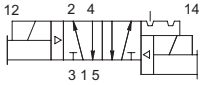
	ISO		**Proprietary**	
Valve Flow Data	Cv	NL/m (6 - 5 Bar)	Cv	NL/m (6 - 5 Bar)
5/2, Double Solenoid & Single Solenoid, Spring Return (Spool & Sleeve)	1.1	1100	1.2	1200
5/2, Double Solenoid & Single Solenoid, Spring Return (Rubber Seal)	1.2	1200	1.4	1400
2X 3/2 NC-NC	0.9	900	1.0	1000
2X 3/2 NO-NO	0.9	900	1.0	1000
Double Solenoid, 3 pos. 4 way, Spring Centered- Open to 4 and 2 in center	0.6	600	0.6	600
Double Solenoid, 3 pos. 4 way, Spring Centered - Open Center	1.1	1100	1.3	1300
Double Solenoid, 3 pos. 4 way, Spring Centered - Closed Center	1.2	1200	1.4	1400

Operating Data	
All Solenoids Are Continuous Duty Rated	**24 VDC**
Power (Watts)	1.7
Holding Current (Amps)	0.071

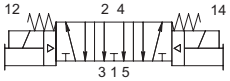
single solenoid air pilot
2 position 4-way



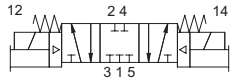
double solenoid air pilot
2 position 4-way
(Spool & Sleeve)



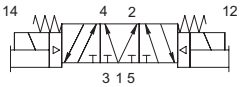
double solenoid air pilot
3 position 4-way
open center



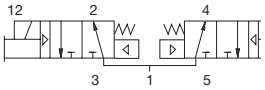
double solenoid air pilot
3 position 4-way
closed center



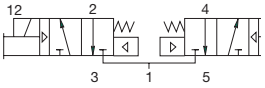
double solenoid air pilot
3 position 4-way
pressure center



double solenoid
2 position dual 3-way
“14” & “12” NO



double solenoid
2 position dual 3-way
“14” & “12” NC



Response Time (ms)	Spool & Sleeve		Rubber Seal	
	Energize	**Deenergize**	**Energize**	**Deenergize**
5/2, Single Solenoid, Spring Return	20	60	20	60
5/2, Double Solenoid	15	N/A	20	N/A
5/3 Spring Centered	–	–	15	20
2x3/2 NC	–	–	15	25
2 X3/2 NO	–	–	15	20

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

How to Order

Valve

R 503 A 2 B 4 0 M A00 F1

Product Series
503 = 26mm Valve

Revision
A = Initial Release

Valve Type
1 = Spool and Sleeve*
2 = Rubber Packed

Actuation
B = Solenoid Pilot with Flush Non-Locking Override

Function
1 = 2 Position 4-Way (5/2), Spring Return
4 = 2 Position 4-Way (5/2), Dual Solenoid
5 = 3 Position 4-Way (5/3), Open Center, Dual Pressure
6 = 3 Position 4-Way (5/3), Blocked Center
7 = 3 Position 4-way (5/3), Open to A & B in Center
A = Dual 3-way, A normally open - B normally open
D = Dual 3-way, A normally closed - B normally closed
N = Differential Air Return w/o Spring

* Spool and Sleeve not available with Functions 6, A, D, and N

Port Size
0 = No Port Size

Electrical
M = Plug-in, w/ Light, VDC
N = M12 Connector Pin#1 = unused, #2 = Coil 12, #3 = Common, #4 = Coil 14

Options
A00 = Standard (No Options)
11B = Flush Locking Manual Override
11M = Without Manual Override
11Z = With push-button type maintained manual operator

Voltage
F1 = 24 DC

Regulator

R 503 A R S 1 1 J A00 1 0

Product Series
503 = 26mm Valve

Revision
A = Initial Release

Product Type
R = Regulator

Regulator Type
S = Single Reg. - Pressure to Port 1
D = Double Reg. - Pressure to Ports 5 & 3
E = Double Reg. - Pressure to Ports 4 & 2, w/o Valve*
T = Double Reg. - Pressure to Ports 1 & 3, 2 Pressure Selector

Pressure Range
1 = 10 - 130 PSIG (0.7 - 9 bar)
3 = 3 - 30 PSIG (0.2 - 2 bar)
4 = 5 - 60 PSIG (0.3 - 4.1 bar)

* For Regulator Type "E" must select "0" wiring option + "0" interface

Gauge Type
1 = PSI
2 = bar

Wiring Options
J = Plug-in, Receptacle Assembly
0 = Non Plug-in*

Options
A00 = Standard (No Options)
16N = Jumper for Supply Pressure to Valve, 14 End
16P = Jumper for Supply Pressure to Valve, 12 End

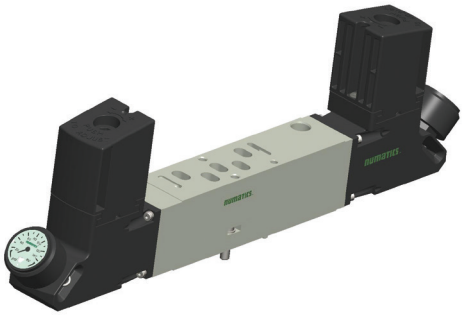
Interface
1 = Proprietary
2 = ISO 15407-2
0 = No Interface*

Reserved

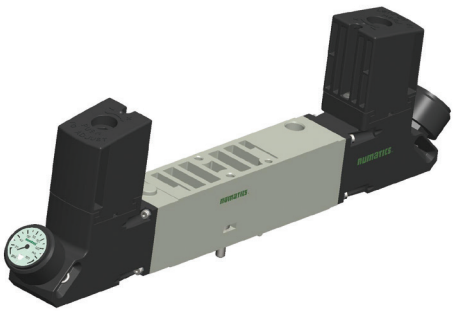
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Sandwich Pressure Regulators

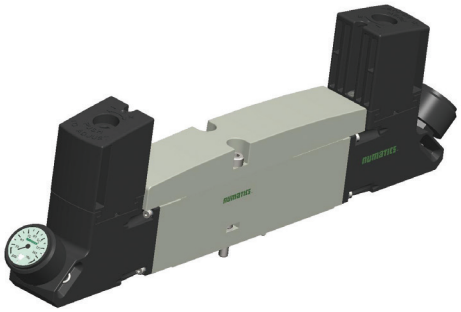
Types: RS / RD / RE / RT



ISO 15407-2 Interface

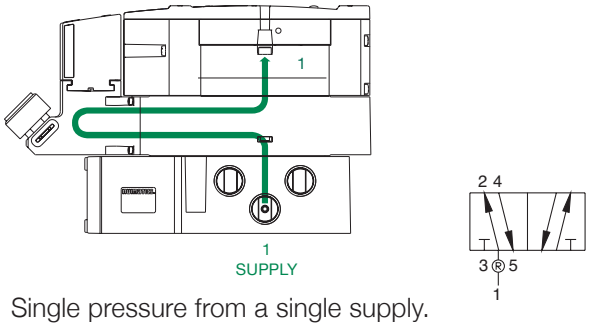


Proprietary Interface



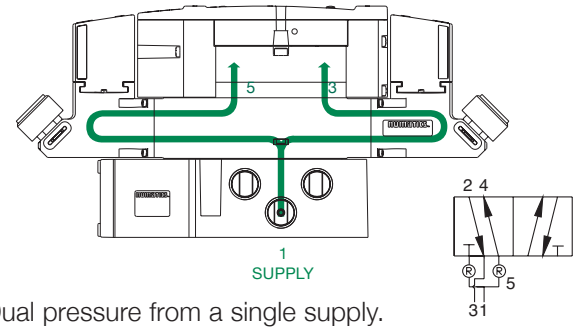
External Outlet Regulator

Type RS



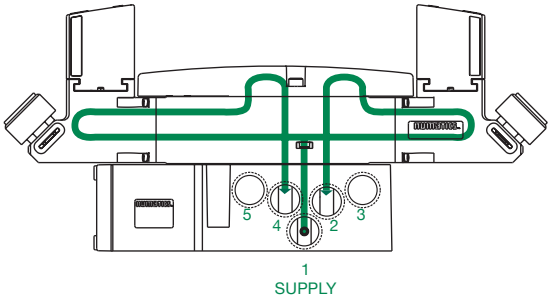
Single pressure from a single supply.

Type RD



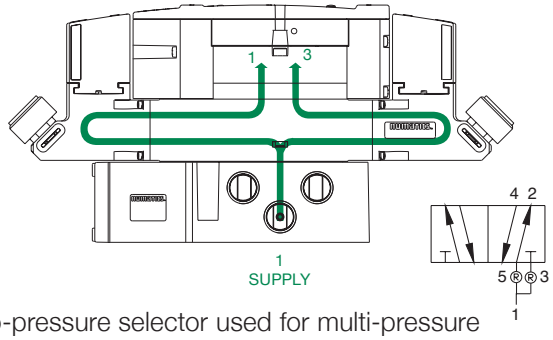
Dual pressure from a single supply.

Type RE



External outlet regulator used with jumper plate for single or dual pressure.

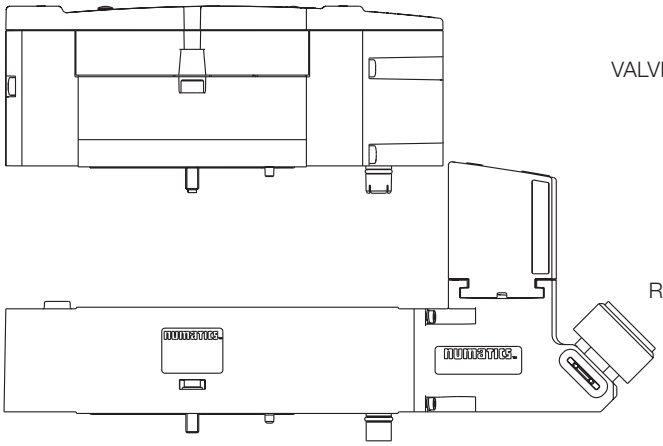
Type RT



Two-pressure selector used for multi-pressure applications.

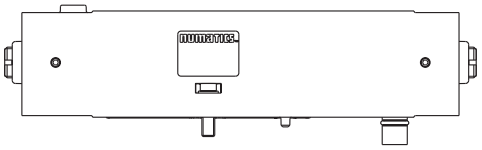
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Valve Regulator / Speed Control Plug-in Assembly

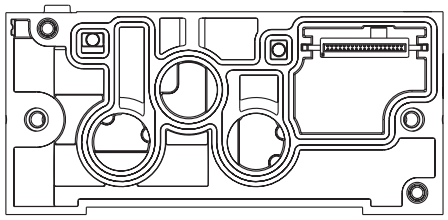


VALVE — **R503A2B10MA00F1**

REGULATOR — **R503ARS11JA0010**



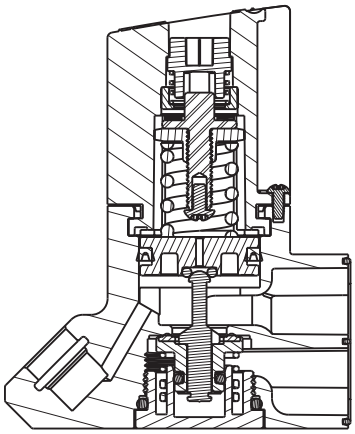
SPEED CONTROL — **R503AS425575002**



MOUNTING — **8503AMM22MA0010**

Regulator Kits and Service Parts

Regulator Service Kit



Regulator Unit Kits

(includes regulator assembly, gaskets, screws)

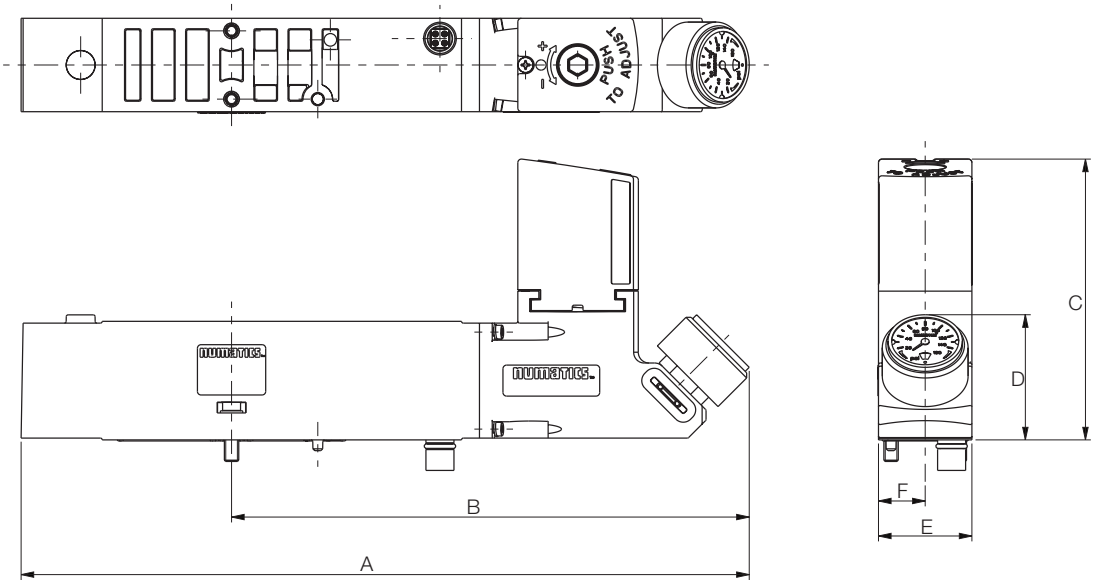
Part Number	Description
M503AR428759001	3-30 PSIG Regulator Kit
M503AR428759002	5-60 PSIG Regulator Kit
M503AR428759003	10-130 PSIG Regulator Kit
M503AR428759004	0.2-2.0 Bar Regulator Kit
M503AR428759005	0.3-4.0 Bar Regulator Kit
M503AR428759006	0.7-9.0 Bar Regulator Kit

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

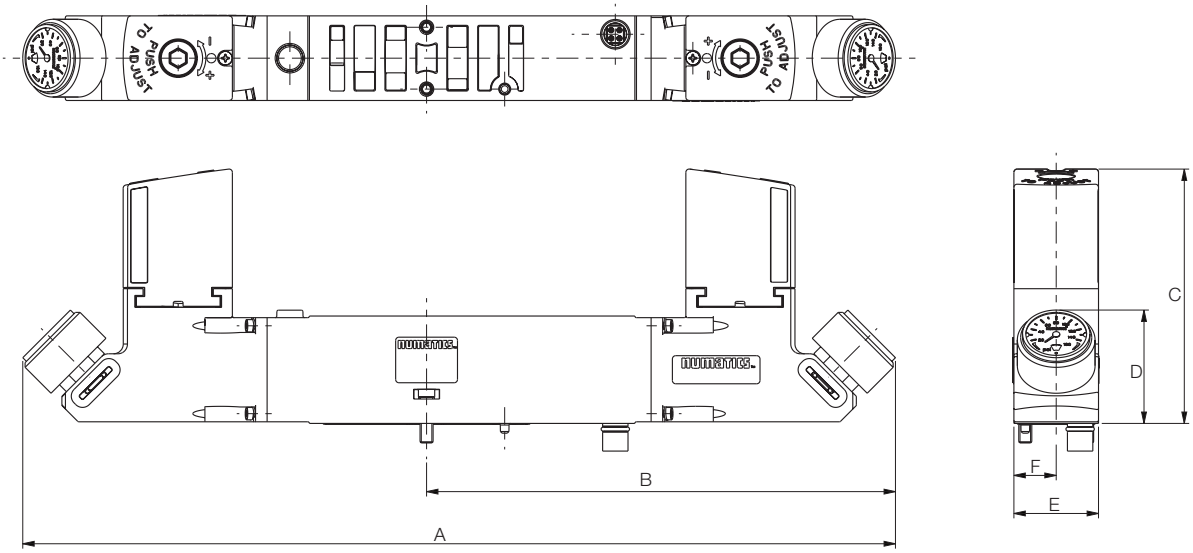
Dimensional Drawing - Sandwich Pressure Regulator

Single Regulator



A	B	C	D	E	F
202.7 (7.98)	144.1 (5.673)	78.2 (3.08)	34.8 (1.37)	26 (1.02)	13 (0.51)

Double Regulator



A	B	C	D	E	F
268.2 (10.56)	144.1 (5.673)	78.2 (3.08)	34.8 (1.37)	26 (1.02)	13 (0.51)

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

How to Order

Manifolds

8 503 A M S2 2 M A00 1 0

Port Type
8 = NPTF[1]
G = ISO228/1-G[1]
K = Push-in Fittings

Product Series
503 = 26mm Valve

Revision
A = Initial Release

Product Type
M = Manifold Subbase
Z = Mid-Station Supply[2]

Mounting
S2 = Manifold Subbase, 2 Stations, Side Ports, Single Z-Board
M2 = Manifold Subbase, 2 Stations, Side Ports, Double Z-Board

Interface
1 = Proprietary
2 = ISO15407-2

Options
A00 = Standard (No Options)
83H = Pilot Separation for Station 1[3]

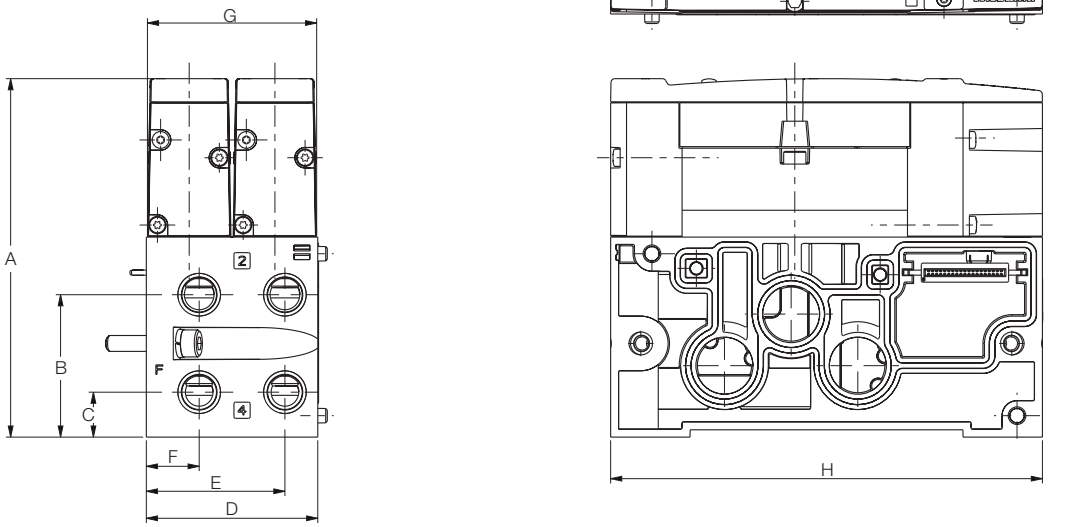
Wiring Options
M = Plug-in, Receptacle Assembly
0 = Non-Plug-in
U = M12 Connectors w/Pass Thru Communication Pin 1 = Coil 14, Pin 2 = Not Used, Pin 3 = Common, Pin 4 = Not Used[4]
X = 0 & 24 VDC Separation at First Station of a Safety Zone[5]

Port Size
2 = 1/4
3 = 3/8
H = 8mm
K = 10mm

[1] Port Type '8' and 'G' only available with Port Size '2'
[2] Only available with 'M' Wiring and 'M2' Mounting
[3] Only available with 'X' Wiring
[4] Only available with Product Type 'M' and 'S2' Mounting
[5] Only available with Product Type 'M' and 'M2' Mounting

Dimensions: mm (inches)

Dimensional Drawing - Plug-in Valve Mounted

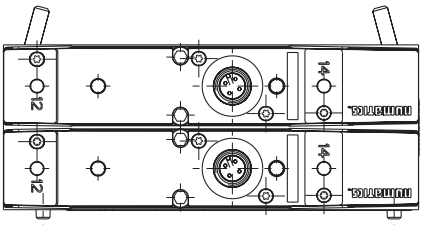


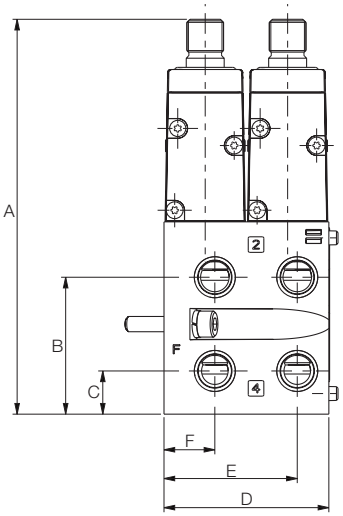
A	B	C	D	E	F	G	H
112.9 (4.445)	44.9 (1.768)	14.2 (0.56)	54 (2.13)	43.7 (1.72)	16.7 (0.66)	53.3 (2.098)	136 (5.35)

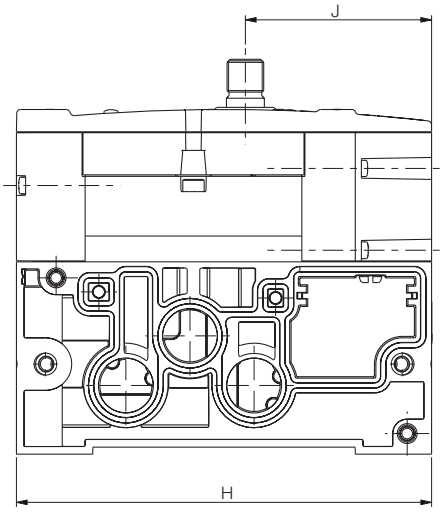
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - M12 Valve Mounted





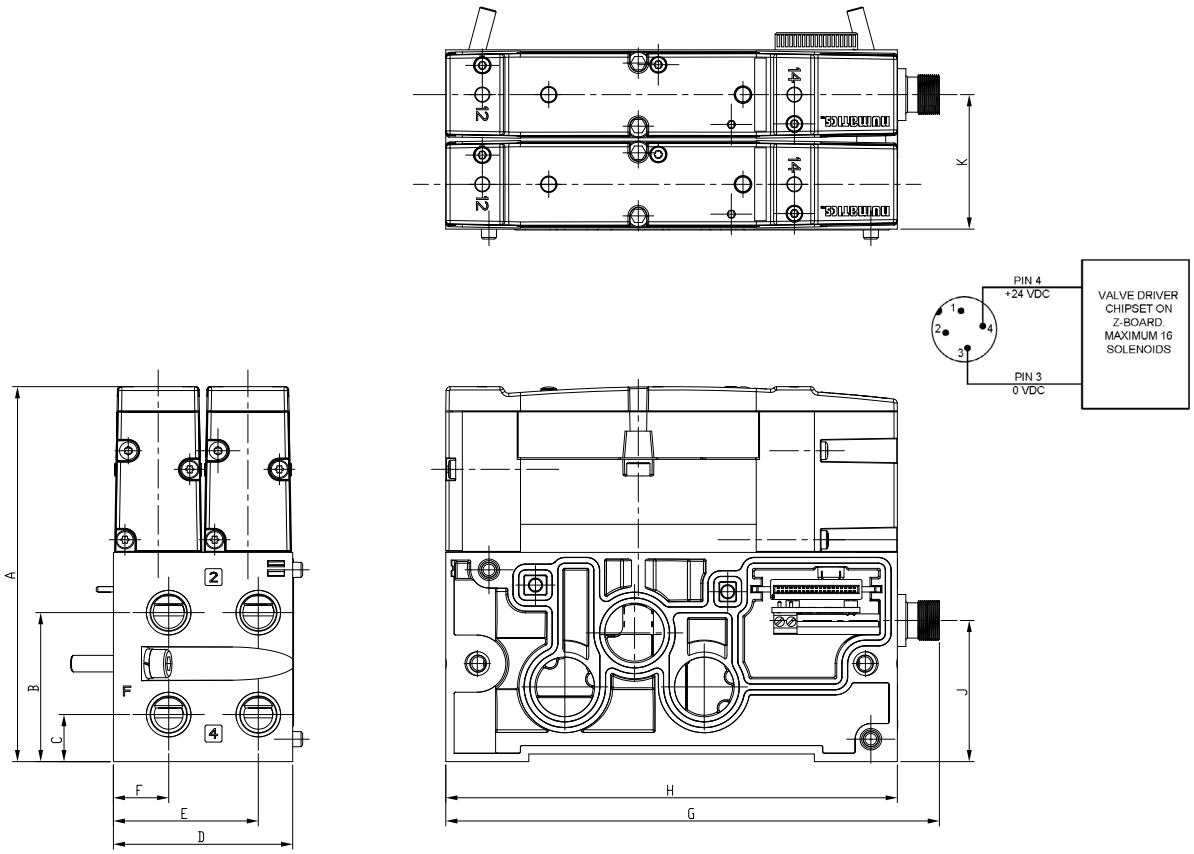


A	B	C	D	E	F	H	J
129.4 (5.094)	44.9 (1.768)	14.2 (0.56)	54 (2.13)	43.7 (1.72)	16.7 (0.66)	136 (5.35)	61 (2.4)

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - Plug-in Valve Mounted (X Wiring Option)



A	B	C	D	E	F	G	H	J	K
112.9 (4.445)	44.85 (1.766)	14.15 (0.557)	54 (2.126)	43.65 (1.719)	16.65 (0.656)	148.654 (5.853)	136 (5.354)	42.5 (1.673)	40.5 (1.594)

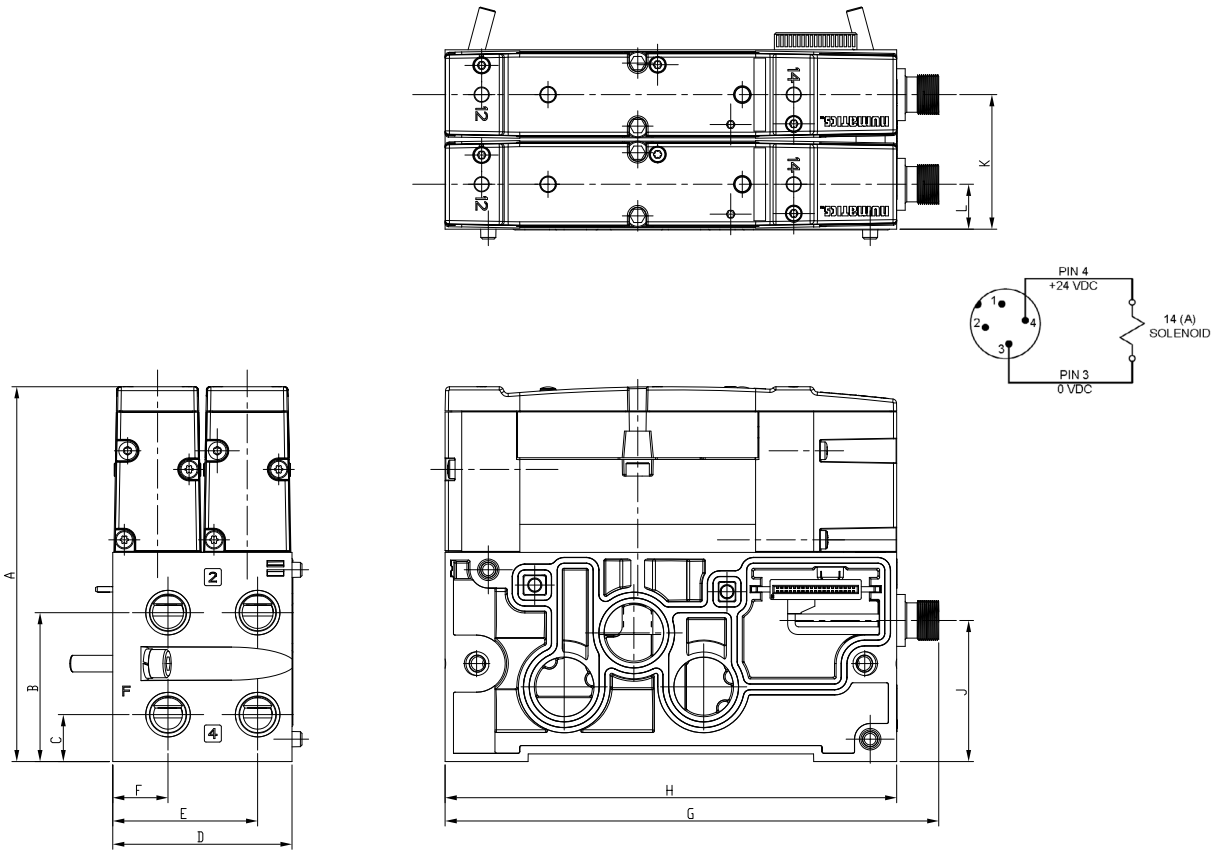
Zoned Power Manifold Base ("X" Wiring")

- Via M12 Connector supplies power to up to 16 valve solenoid coils
- All valve solenoid coils are controlled via the attached G3 node
- When M12 connector is externally supplied by a Safety Relay or Safety Output via a Safety PLC the valves within the Safety zone become one of the redundant channels of a Category 3 or 4 circuit

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - Plug-in Valve Mounted (U Wiring Option)



A	B	C	D	E	F	G	H	J	K	L
112.9 (4.445)	44.85 (1.766)	14.15 (0.557)	54 (2.126)	43.65 (1.719)	16.65 (0.656)	148.654 (5.853)	136 (5.354)	42.5 (1.673)	40.5 (1.594)	13.5 (0.531)

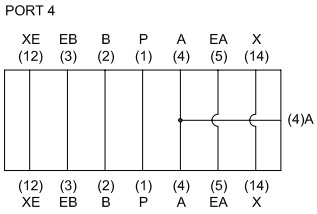
Pilot Valve Manifold Base ("U" Wiring)

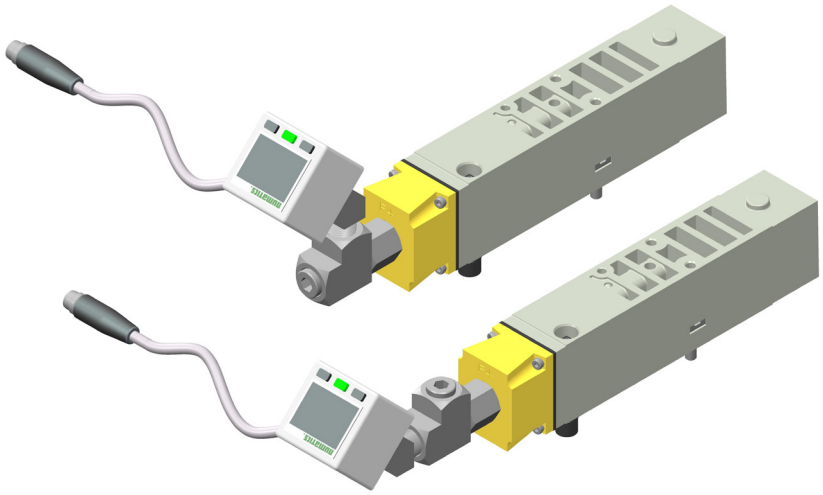
- Allows mounted pilot valves to be electrically controlled via M12 connector; isolated from the connected G3 node
- When M12 connector is externally supplied by a Safety Relay or Safety Output via a Safety PLC the pilot valves become one of the redundant channels of a Category 3 or 4 circuit
- Pilot supply valves when used to supply Pilot Operated Check Valves, Rod-Locks, Pilot Operated Spring Return Valves etc provide one of the channels required for Category 3 & 4 circuits

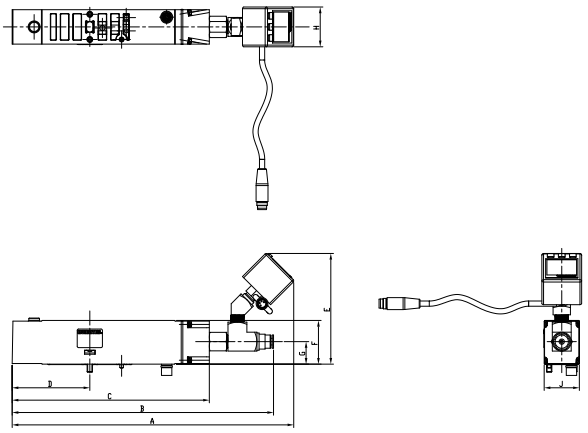
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

SANDWICH PORT 4 SUPPLY BLOCK

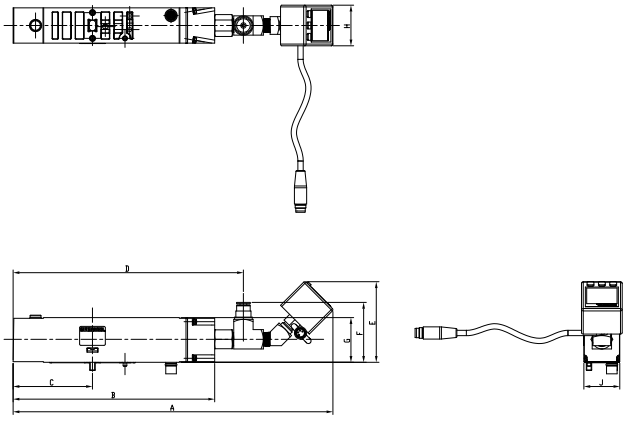
- Monitors pressure to external devices by DPS280 Pressure Switch
- Can be use to supply pressure from Port 4 of valve to pilot Safety zone of manifold via Pilot Separation Pilot block
- Vertical and Horizontal orientation of DPS 280 allows for mounting on adjacent stations







Vertical



Horizontal

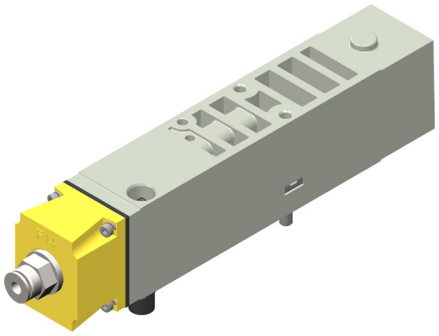
Part Number	Port for Pilot Supply	Description
8503AU516663005	Plugged	Proprietary Port 4 supply block with Vertical DPS280
8503AU516663009	Plugged	Proprietary Port 4 supply block with Horizontal DPS280
K503AU516663006	5/32 (4mm) Push-In Fitting	Proprietary Port 4 supply block with Vertical DPS280
K503AU516663010	5/32 (4mm) Push-In Fitting	Proprietary Port 4 supply block with Horizontal DPS280
8503AU516663003	Plugged	ISO15407-2 Port 4 supply block with Vertical DPS280
8503AU516663007	Plugged	ISO15407-2 Port 4 supply block with Horizontal DPS280
K503AU516663004	5/32 (4mm) Push-In Fitting	ISO15407-2 Port 4 supply block with Vertical DPS280
K503AU516663008	5/32 (4mm) Push-In Fitting	ISO15407-2 Port 4 supply block with Horizontal DPS280

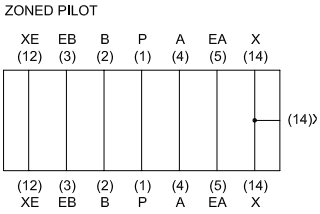
	A	B	C	D	E	F	G	H	J
w/Vertical DPS280	212.48 (8.365)	197.21 (7.764)	148.78 (5.857)	58.58 (2.306)	83.55 (3.289)	33 (1.299)	17 (0.669)	30 (1.181)	26.5 (1.043)
w/Horizontal DPS280	236.02 (9.292)	148.78 (5.857)	58.58 (2.306)	169.98 (6.692)	5951 (2.343)	44.23 (1.741)	33 (1.299)	30 (1.184)	26.5 (1.043)

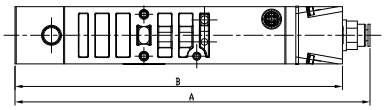
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

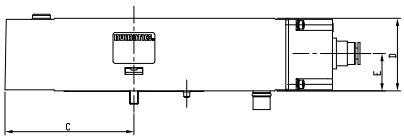
SANDWICH PILOT SUPPLY BLOCK

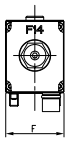
- Allows for introduction of secondary pilot supply to either an individual valve or zone of valves on manifold. Supply to zone of manifold requires selection of Manifold Block and End Plates with Pilot Separation option
- Pilot Supply air can be from either an external valve or integrated into the manifold via the Port 4 Supply Block











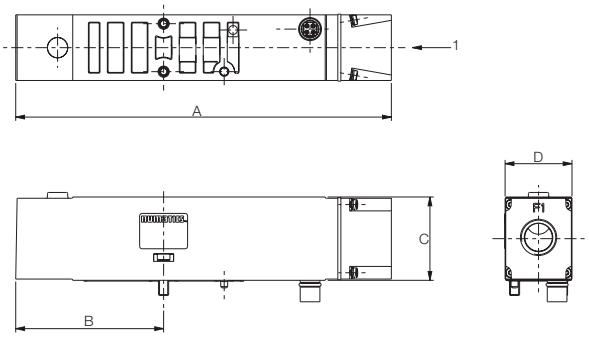
Part Number	Port for Pilot Supply	Description
8503AP428300008	1/4 NPTF	Proprietary Zoned Pilot Supply Block
G503AP428300008	G 1/4	Proprietary Zoned Pilot Supply Block
K503AP428300010	5/32 (4mm) Push-In Fitting	Proprietary Zoned Pilot Supply Block
8503AP428300007	1/4 NPTF	ISO15407-2 Zoned Pilot Supply Block
G503AP428300007	G 1/4	ISO15407-2 Zoned Pilot Supply Block
K503AP428300009	5/32 (4mm) Push-In Fitting	ISO15407-2 Zoned Pilot Supply Block
8503AP428300006	1/4 NPTF	Proprietary Independent Pilot Supply Block
G503AP428300006	G 1/4	Proprietary Independent Pilot Supply Block
8503AP428300005	1/4 NPTF	ISO15407-2 Independent Pilot Supply Block
G503AP428300005	G 1/4	ISO15407-2 Independent Pilot Supply Block

A	B	C	D	E	F
161 (6.350)	148.78 (5.857)	58.58 (2.306)	33 (1.299)	17 (0.669)	26.5 (1.043)

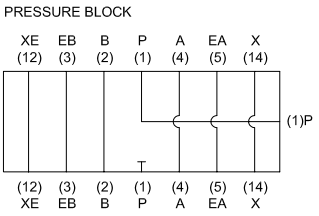
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - Sandwich Pressure Block



- Used to supply a separate pressure to a single valve station without needing blocking disks

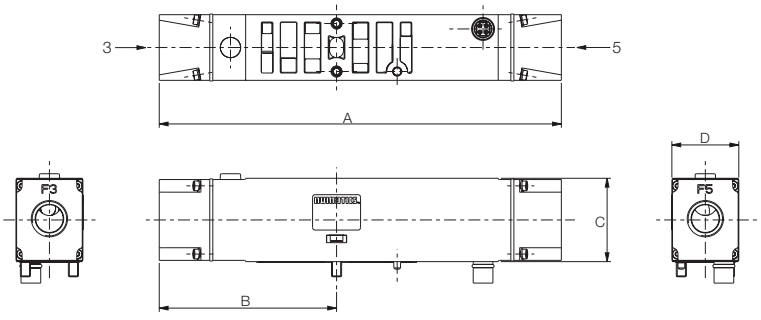


Sandwich Pressure Block Kit

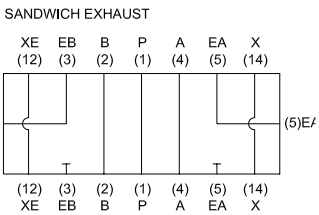
Part Number	Port Type	Description
8503AW428300004	1/4 NPTF	Proprietary Sandwich Pressure Block
G503AW428300004	G 1/4	Proprietary Sandwich Pressure Block
8503AW428300003	1/4 NPTF	ISO 15407-2 Sandwich Pressure Block
G503AW428300003	G 1/4	ISO 15407-2 Sandwich Pressure Block

A	B	C	D
148.8 (5.858)	58.6 (2.307)	33 (1.3)	26.5 (1.04)

Sandwich Exhaust Block



- Used to isolate the exhaust of a single valve station from the manifold
- Allows faster exhaust response by re-routing exhaust externally to the manifold



Sandwich Exhaust Block Kit

Part Number	Port Type	Description
8503AX428300002	1/4 NPTF	Proprietary Sandwich Exhaust Block
G503AX428300002	G 1/4	Proprietary Sandwich Exhaust Block
8503AX428300001	1/4 NPTF	ISO 15407-2 Sandwich Exhaust Block
G503AX428300001	G 1/4	ISO 15407-2 Sandwich Exhaust Block

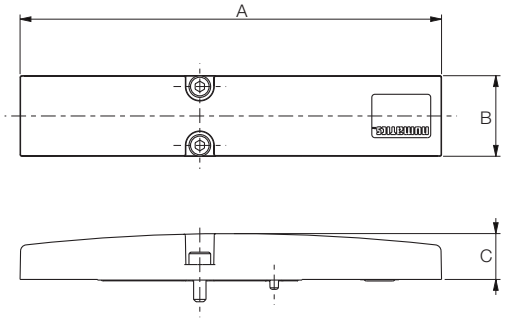
A	B	C	D
159.2 (6.268)	70.2 (2.764)	33 (1.3)	26.5 (1.04)

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - Blank Station Plate Kit

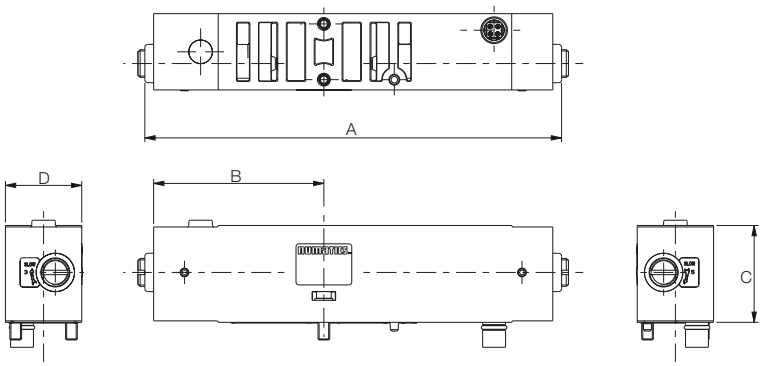
P503AB428359001

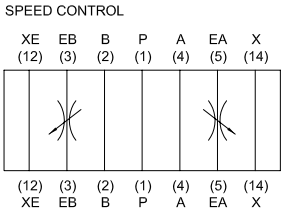


- Used to block off a manifold station block for future use

A	B	C
136 (5.354)	26 (1.024)	14.8 (0.58)

Speed Control Kit





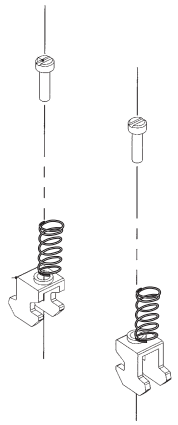
Part Number	Description
R503AS425575002	Proprietary Sandwich Speed Control
R503AS425575001	ISO 15407-2 Sandwich Speed Control

A	B	C	D
142 (5.591)	58 (2.283)	33 (1.3)	26 (1.02)

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

DIN Rail Clamp Kit

239-980



Blocking Disc Kits

(Includes tag to label ports blocked)

Ports	Part
1	P503AD431191001
3	P503AD431191002
5	P503AD431191003
1 + 3	P503AD431191004
1 + 5	P503AD431191005
3 + 5	P503AD431191006
1, 3, 5	P503AD431191007

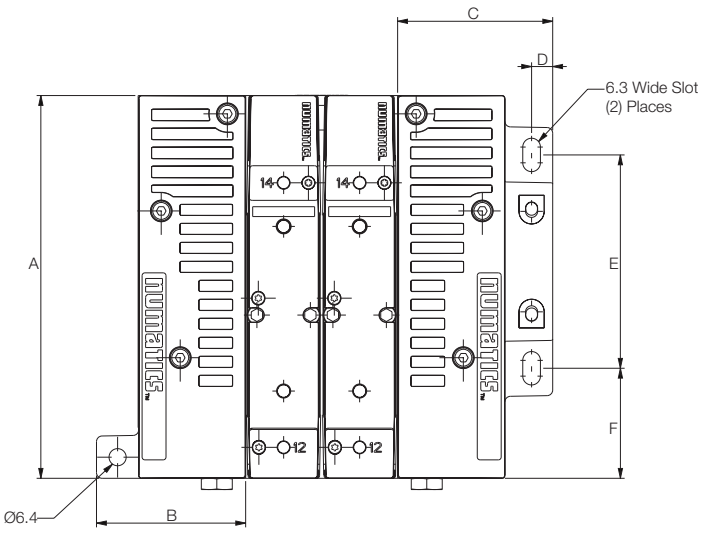
Zoned Safety End Plate Kit - Threaded

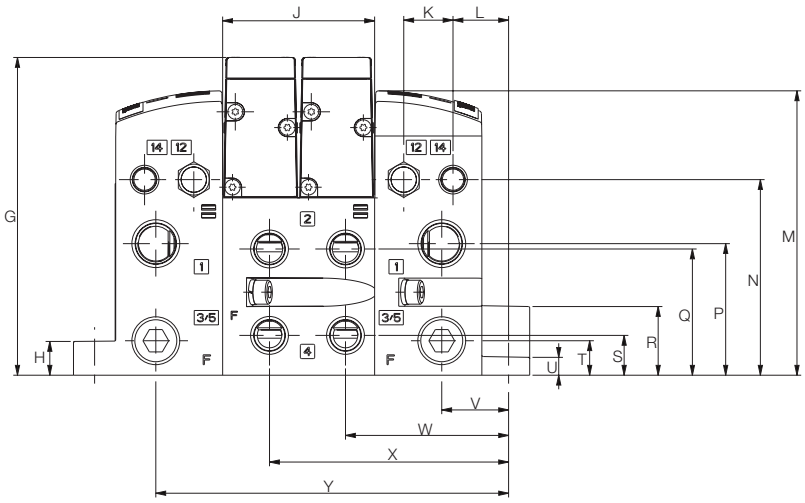
PORT TYPE	NPTF			G			PUSH-IN			PUSH-IN			PUSH-IN			PUSH-IN		
Port Type	1	3/5	12/14	1	3/5	12/14	1	3/5	12/14	1	3/5	12/14	1	3/5	12/14	1	3/5	12/14
Port Size	3/8	3/8	1/8	3/8	3/8	1/8	3/8	3/8	1/8	1/2	1/2	1/8	10mm	10mm	6mm	12mm	12mm	6mm
Vertical w/o muffler, w/o DIN	8503AK428327001			G503AK428327013			K503AK428327003			K503AK428327005			K503AK428327015			K503AK428327017		
Vertical w/o muffler, w/DIN	8503AK428327002			G503AK428327014			K503AK428327004			K503AK428327006			K503AK428327016			K503AK428327018		
Vertical w/muffler, w/o DIN	8503AK428327007			G503AK428327019			K503AK428327009			K503AK428327011			K503AK428327021			K503AK428327023		
Verical w/muffler, w/DIN	8503AK428327008			G503AK428327020			K503AK428327010			K503AK428327012			K503AK428327022			K503AK428327024		
Vertical w/o muffler, w/o DIN, w/Pilot Separation	8503AK428327025			G503AK428327037			K503AK428327027			K503AK428327029			K503AK428327039			K503AK428327041		
Vertical w/o muffler, w/DIN, w/Pilot Separation	8503AK428327026			G503AK428327038			K503AK428327028			K503AK428327030			K503AK428327040			K503AK428327042		
Vertical w/muffler, w/o DIN, w/Pilot Separation	8503AK428327031			G503AK428327043			K503AK428327033			K503AK428327035			K503AK428327045			K503AK428327047		
Verical w/muffler, w/DIN, w/Pilot Separation	8503AK428327032			G503AK428327044			K503AK428327034			K503AK428327036			K503AK428327046			K503AK428327048		

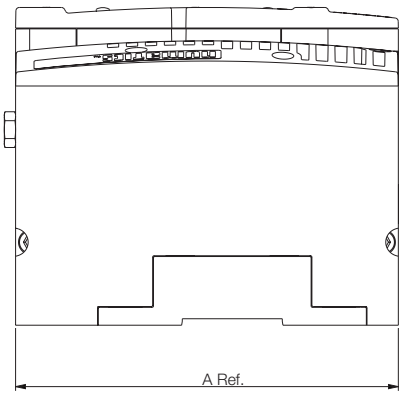
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (inches)

Dimensional Drawing - Manifold Assembly





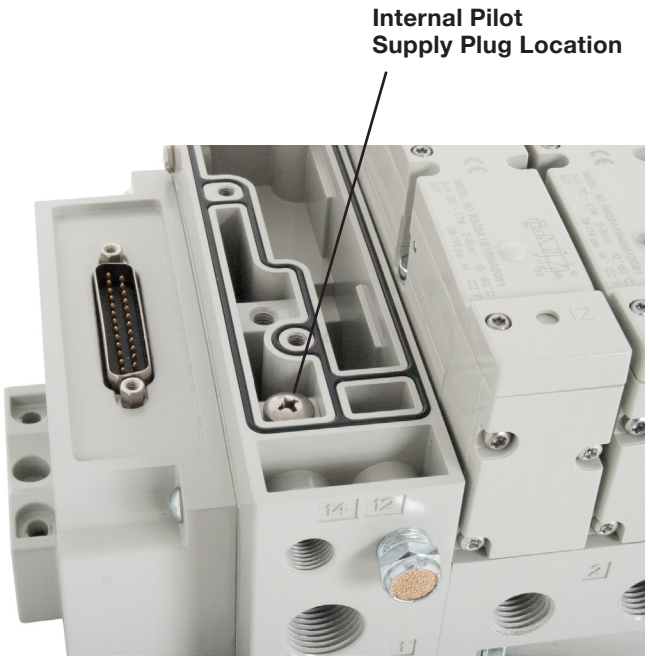


A	B	C	D	E	F	G	H	J	K	L	M
136 (5.354)	53 (2.087)	55.1 (2.17)	7.5 (0.3)	75.8 (2.98)	39.1 (1.54)	112.9 (4.445)	12 (0.47)	54 (2.13)	17.5 (0.69)	19.8 (0.78)	101.1 (3.98)

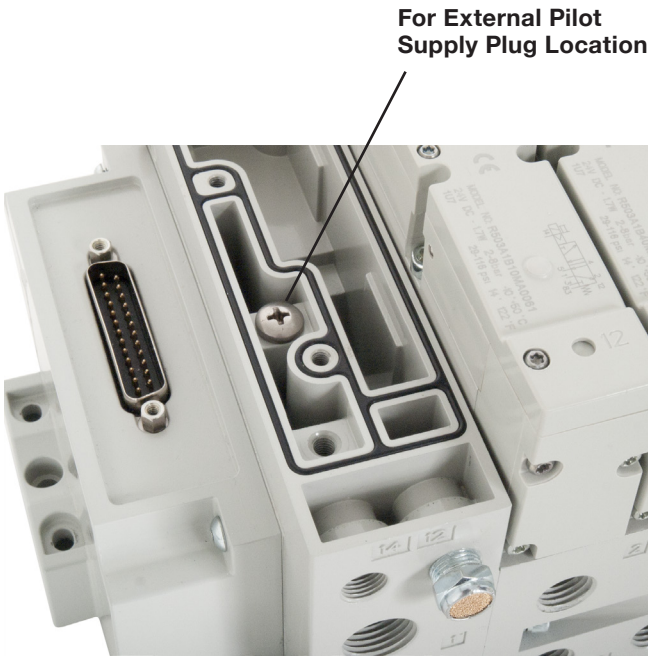
N	P	Q	R	S	T	U	V	W	X	Y
69.5 (2.74)	46.8 (1.843)	44.9 (1.77)	24.4 (0.96)	14.2 (0.56)	12.3 (0.48)	6.4 (0.25)	23.8 (0.94)	58 (2.28)	85 (3.346)	125.4 (4.937)

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Internal Pilot

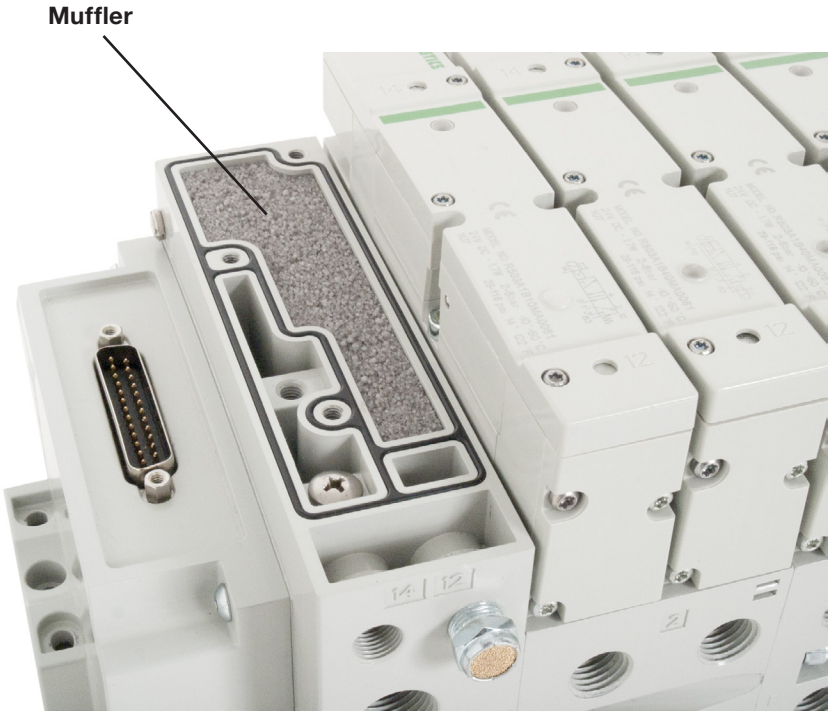


External Pilot



- Pilot selection can only be made at the left hand end plate when the manifold has pilot separation

Internal Muffler



Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

numatics®

Fieldbus Electronics

G3 | Communication Node and I/O

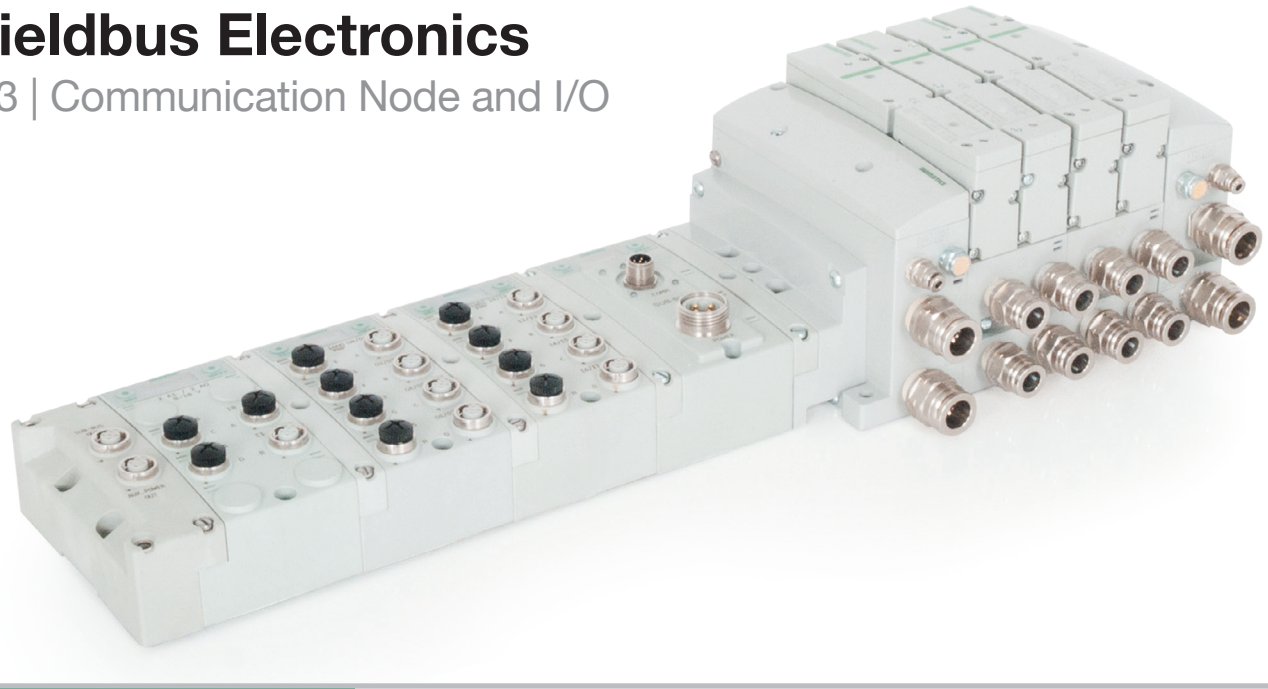


Table of Contents

Section 1

Features and Benefits	19
Ethernet	21
PROFINET®	22
Ethernet POWERLINK®	23
EtherCAT®	24
EtherNet/IP™ DLR	25
CC-Link IE Field™	26
I/O Modules	27
Miscellaneous Modules & Accessories	30
G3 Fieldbus Communication Assembly Dimensions	32

Section 2 - How to Configure & Order G3 Electronics

How to Order G3 Assembly Kit & G3 Electronics	33
How to Order Complete G3 Manifold Assemblies	34
Cables & Connectors	35
PROFINET® Cables & Connectors	38
Ethernet POWERLINK® Cables & Connectors	39
EtherCAT® Cables & Connectors	40
Ethernet Cables & Connectors	41
I/O Cables & Connectors	42

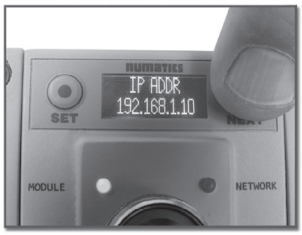
EMERSON

G3 Fieldbus - Electronics Made Easy!

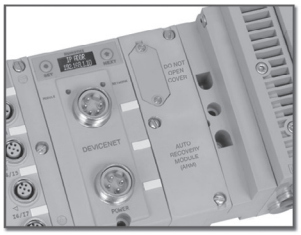
Innovative Graphic Display is used for easy commissioning, visual status & diagnostics.

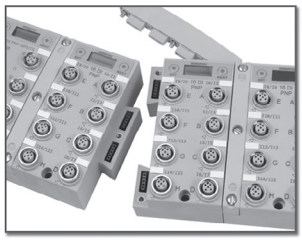
Commissioning Capabilities

- Set network address (including IP & Subnet mask for Ethernet)
- Set baud rate
- Set auto or manual I/O sizes
- Set fault/idle output states
- Set brightness
- Set factory defaults
- Visual diagnostics
- Shorted and open load detection
- Shorted sensor/cable detection
- Low & missing power detection
- Missing module detection
- Self-test activation
- Log of network errors
- Distribution errors



Graphic Display for Configuration & Diagnostics


Auto Recovery Module


Highly Distributable


Easy, Robust Connections

G3 Fieldbus Communications Electronics

Why use Numatics Fieldbus communication electronics?
Modular Reality...

No internal wiring simplifies assembly

- SPEEDCON M12 connector technology allows for fast and efficient ½ turn I/O connector attachment
- Power connector allows output power to be removed while inputs and communication are left active
- IP65 protection
- Up to 1200 Input/1200 Output capability with one communication node! (Present physical I/O combinations allows 1200 I/544 O)
- 32 valve solenoids per manifold up to 17 manifolds per communication node!
- One node supports 16 I/O modules – Analog I/O, Digital I/O (NPN & PNP) and Specialty
- Innovative clip design allows easy module removal/replacement without dismantling manifold
- Auto Recovery Module (ARM) protects configuration information during a critical failure. Allows configuration information to be saved and reloaded to replacement module automatically

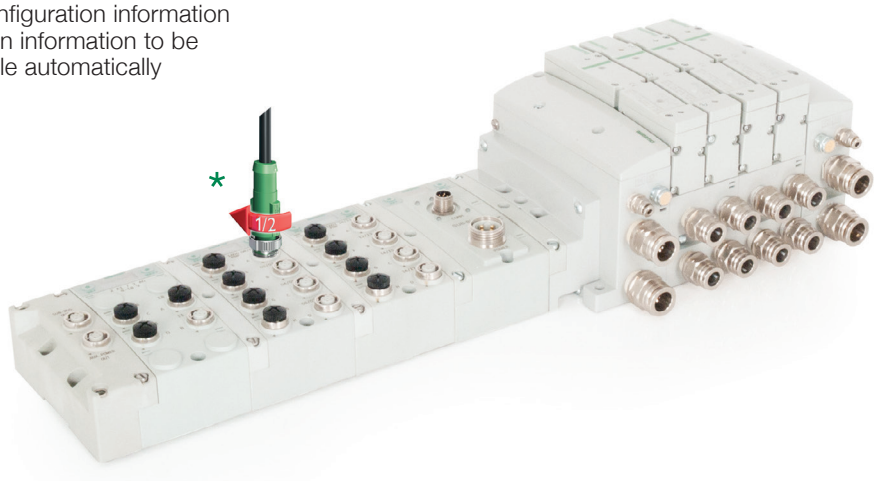
Supported Protocols

- Ethernet
- PROFINET®
- Ethernet POWERLINK®
- EtherCAT®
- EtherNet/IP™ DLR w/QuickConnect™
- CC-Link IE Field™

CE

*Numatics I/O with SPEEDCON® technology

- 1/2 turn for faster I/O connections
- Backwards compatible with standard M12 cables/connectors
- Meets the same IP/NEMA standards as M12/Micro cables/connectors
- Same cost as standard M12/Micro cables/connectors
- See pages 42 & 43 for cables with SPEEDCON® connector technology.



PROFINET is a registered trademark of Profibus Nutzerorganisation e.V.
Ethernet POWERLINK is a registered trademark of Bernecker + Rainer Industrie – Elektronik Ges.m.b.H.
CC-Link is a registered trademark and CC-Link IE Field is a trademark of the CC-Link Partner Association.

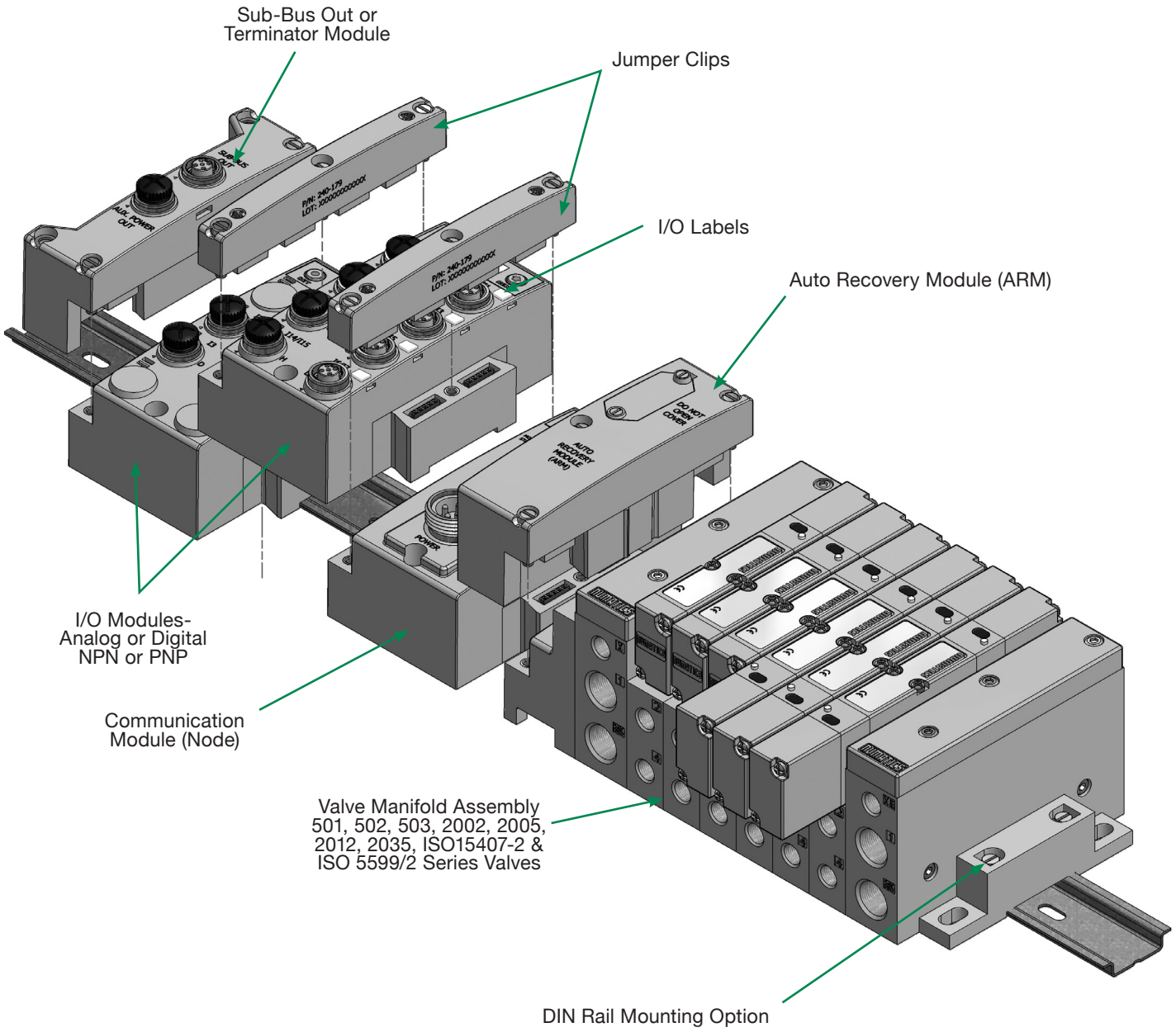
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

G3 Electronics Modularity

Discrete I/O

The G3 Series product line is a completely modular system. All of the G3 electronic modules plug together, via mechanical clips, allowing easy assembly and field changes. This makes the system highly distributable. Additional flexibility is incorporated because the same modules can be used in either centralized or distributed applications.

The G3 electronics interfaces with the highly modular Numatics 500 Series, generation 2000 Series, ISO 5599/2 and ISO 15407-2 Series valve lines to further enhance the modularity and flexibility of the entire system.



Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

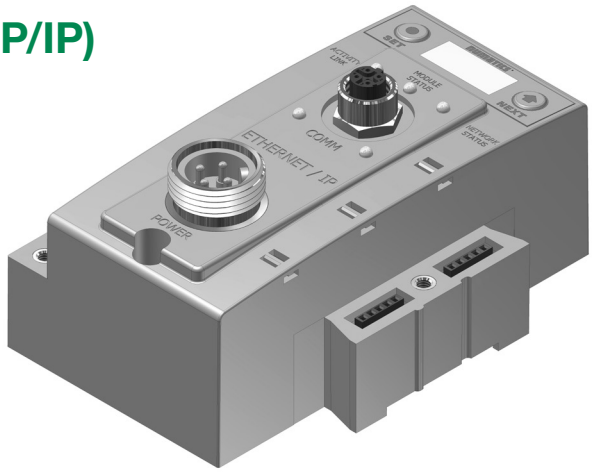
Ethernet (EtherNet/IP™ & Modbus TCP/IP)

Ethernet used throughout the world to network millions of PCs has now evolved into a viable industrial network. Ethernet is an open architecture high-level communication network that meets the demands of today's industrial applications requiring high-speed (10/100 Mbit/s), high-throughput and flexibility. Additionally, Ethernet technology can integrate an on-board web server, which can make the node readily accessible to any standard web browser for configuration, testing and even retrieval of technical documentation.

Numatics' G3 nodes for Ethernet have an integrated graphic display and are capable of addressing combinations of up to 1200 outputs and 1200 inputs.

The G3 EtherNet/IP™ nodes have been tested and approved for conformance by the ODVA.

More information about EtherNet/IP™ and the ODVA can be obtained from the following website: www.odva.org.



Description	Replacement Part Number
EtherNet/IP™ communications module (node)	240-181
Modbus TCP/IP communications module (node)	240-292

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness	24 VDC +/- 10%	.091 Amps
Valves & Discrete I/O	24 VDC +/- 10%	8 Amps maximum
Power Connector	Single key 4 pin 7/8" MINI type (male)	
Communication Connector	D-coded 4 pin M12 type (female)	
LEDs	Module Status, Network Status and Activity/Link	

Operating Data	
Temperature Range (ambient)	-23 ºC to 50 ºC (-10 ºF to 115 ºF)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Moisture Protection	IP65 (with appropriate assembly and termination)

Configuration Data	
Graphic Display	Display used for setting IP Address, Subnet mask, Fault/Idle Actions, DHCP/BootP and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system setting in the event of total or partial system failure
Maximum Valve-Solenoid Outputs	32
Maximum Addressable I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Bus Connector	D-coded 5 pin M12 type (female)
Diagnostics	Power, short, open load conditions and module health are monitored
Special Features	Integrated web server, fail-safe device settings, HTTP, FTP, and UNICAST (for EtherNet/IP™)

Weight	
Ethernet Communications Module	255g/9 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

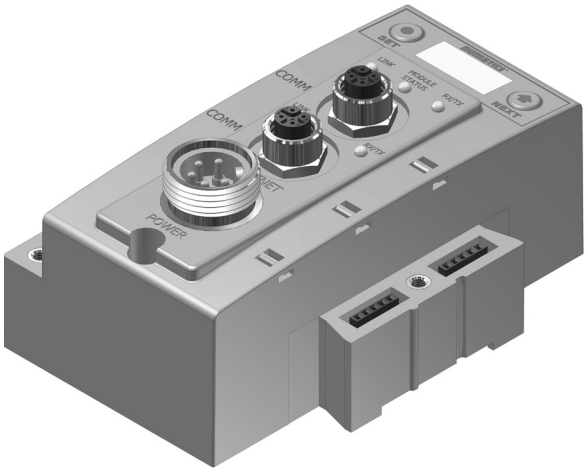
PROFINET®

PROFINET® is the innovative open standard for Industrial Ethernet, developed by Siemens and the PROFIBUS® User Organization (PNO). PROFINET® complies to IEC 61158 and IEC 61784 standards. PROFINET® products are certified by the PNO user organization, guaranteeing worldwide compatibility.

Numatics' G3 nodes for PROFINET® IO (PROFINET® RT) have an integrated graphic display and are capable of addressing combinations of up to 1200 outputs and 1200 inputs.

PROFINET® is based on Ethernet and uses TCP/IP and IT standards and complements them with specific protocols and mechanisms to achieve Real Time performance.

More information regarding PROFINET® can be obtained from the following website: www.profibus.com.



Description	Replacement Part Number
PROFINET® communications module (node)	240-240

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness	24 VDC +/- 10%	
Valves & Discrete I/O	24 VDC +/- 10%	8 Amps Maximum
Power Connector	Single key 5 pin 7/8" MINI type (male)	
Communication Connector	Two D-coded 4 pin M12 type (female)	
LEDs	Module Status, Network Status and Activity/Link	

Operating Data	
Temperature Range (ambient)	-23 °C to 50 °C (-10 °F to 115 °F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Moisture Protection	IP65 (with appropriate assembly and termination)

Configuration Data	
Graphic Display	Display used for setting IP Address, Subnet Mask, Fault/Idle Actions, and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system setting in the event of total or partial system failure
Maximum Valve-Solenoid Outputs	32
Maximum Addressable I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Bus Connector	Two D-coded 4 pin M12 type (2-Female)
Diagnostics	Power, short, open load conditions and module health and configuration are monitored
Special Features	Integrated web server, Integrated 2 port switch, fail-safe device settings, and FSU

Weight	
PROFINET® Communications Module	227g/8 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

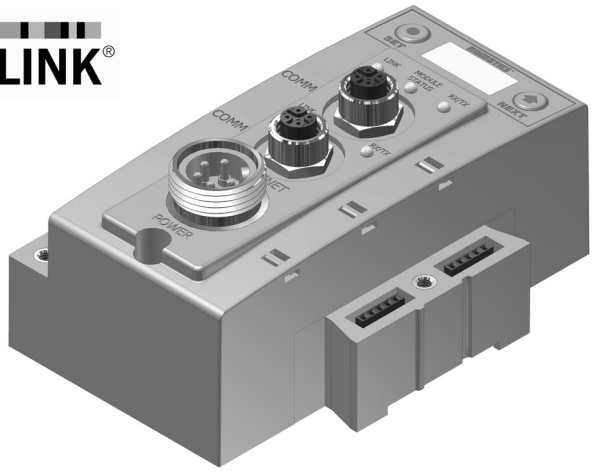
Ethernet POWERLINK®

Ethernet POWERLINK® is an open fieldbus protocol designed by B&R for communication between automation control systems and distributed I/O at the device level.

Numatics' G3 Ethernet POWERLINK® nodes have an integrated graphic display and are capable of addressing combinations of up to 1200 outputs and 1200 inputs.

The G3 Ethernet POWERLINK® nodes have been designed and tested to conform to the Ethernet POWERLINK® specifications available at EPSG group (Ethernet Powerlink® Standardization Group). The certification process ensures interoperability for all Ethernet POWERLINK® devices and compatible with B&R systems.

More information regarding Ethernet POWERLINK® can be obtained from the following website: www.ethernet-powerlink.org.



Description	Replacement Part Number
POWERLINK® communications module (node)	240-309

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness	24 VDC +/- 10%	
Valves & Discrete I/O	24 VDC +/- 10%	8 Amps maximum
Power Connector	Single key 5 pin 7/8" MINI type (male)	
Communication Connector	Two D-coded 4 pin M12 type (female)	
LEDs	Module Status, Network Status and Activity/Link	

Operating Data	
Temperature Range (ambient)	-23 °C to 50 °C (10 °F to 115 °F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Moisture Protection	IP65 (with appropriate assembly and termination)

Configuration Data	
Graphic Display	Display used for setting IP Address, Subnet Mask, Fault/Idle Actions, and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system setting in the event of total or partial system failure
Maximum Valve-Solenoid Outputs	32
Maximum Addressable I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Bus Connector	Two D-coded 4 pin M12 type (2-Female)
Diagnostics	Power, short, open load conditions and module health and configuration are monitored
Special Features	Integrated web server, Integrated 2 port switch and fail-safe device settings

Weight	
POWERLINK® Communications Module	227g/8 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

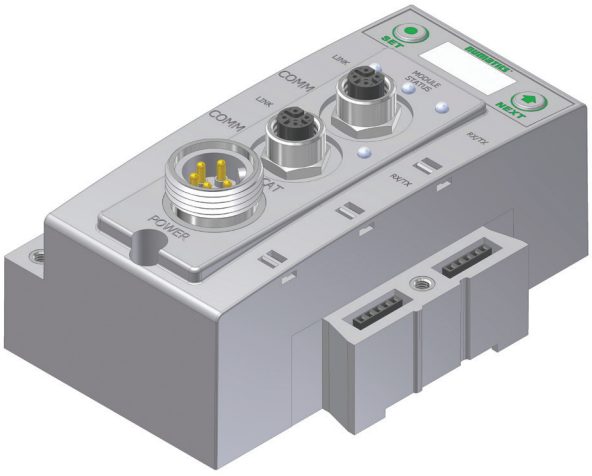
EtherCAT®

EtherCAT® is an open ethernet-based fieldbus protocol developed by Beckhoff. EtherCAT® sets new standards for real-time performance and topology flexibility with short data update/cycle times and low communication jitter.

Numatics' G3 EtherCAT® node has an integrated graphic display for simplified commissioning and diagnostics. It is capable of addressing combinations of up to 1200 outputs and 1200 inputs.

The G3 nodes for EtherCAT® have been designed and tested to conform with EtherCAT® specifications set forth by the ETG.

More information regarding EtherCAT® can be obtained from the following website: www.ethercat.org.



Description	Replacement Part Number
EtherCAT® communications module (node)	240-310

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness Valves and Discrete I/O	24 VDC +/- 10% 24 VDC +/- 10%	8 Amps Maximum
Power Connector	Single key 5 pin 7/8" MINI type (male)	
Communication Connector	Two D-coded 4 pin M12 type (female)	
LEDs	Module Status, Network Status and Activity/Link	

Operating Data	
Temperature Range	-23 °C to 50 °C (-10 °F to 115° F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture	IP65 (with appropriate assembly and termination)

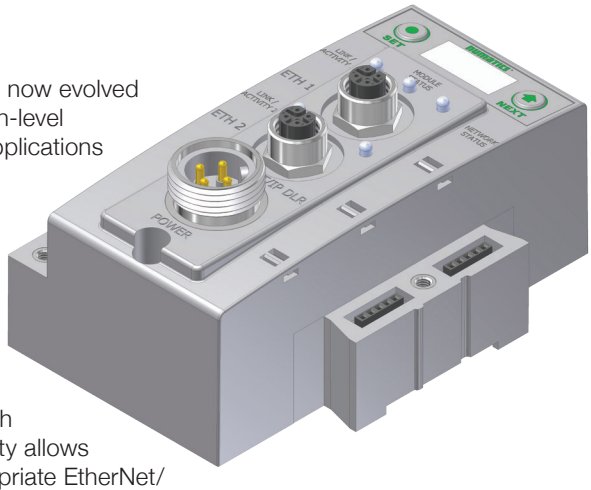
Configuration Data	
Graphic Display	Display used for setting IP address, Subnet Mask, Fault/Idle Actions, and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system settings in the event of total or partial system failure
Maximum Valve Solenoid Outputs	32
Maximum Sub-Bus I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Bus Connector	Two D-coded 4 pin M12 type (female)
Diagnostics	Power, short, open load conditions and module health and configuration are monitored
Special Features	Integrated web server, fail-safe device settings

Weight	
EtherCAT® Communications Module	227g/8 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

EtherNet/IP™ DLR



EtherNet/IP™ used throughout the world to network millions of PCs has now evolved into a viable industry network. EtherNet/IP™ is an open architecture high-level communication network that meets the demands of today's industrial applications requiring high-speed (10/100 Mbit/s), high-throughput and flexibility. Additionally, EtherNet/IP™ technology can integrate an on-board web server, which can make the node readily accessible to any standard web browser for configuration, testing and even retrieval of technical documentation.

Numatics' G3 EtherNet/IP™ DLR (Device Level Ring) node with integrated display has an embedded switch which allows the unit to be used in simplified networks with linear topology configurations (daisy chain). This technology alleviates the need for an external Ethernet switch device in a single subnet configuration. Additionally, the DLR compatibility allows the node to be used in a fault tolerant "ring" network, when using appropriate EtherNet/IP™ DLR scanners. DLR configuration allows communication recovery from a single point failure on the network ring (e.g. failed network connection or cable).

Numatics G3 EtherNet/IP™ nodes are capable of addressing combinations of up to 1200 outputs and 1200 inputs.

Description	Replacement Part Number
EtherNet/IP™ DLR communications module (node)	240-325

The G3 EtherNet/IP™ nodes have been tested and approved for conformance by the ODVA.

More information about EtherNet/IP™ and the ODVA can be obtained from the following website: www.odva.org.

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness Valves and Discrete I/O	24 VDC +/- 10% 24 VDC +/- 10%	8 Amps Maximum
Power Connector	Single key 4 pin 7/8" MINI type (male)	
Communication Connector	Two D-coded 4 pin M12 type (female)	
LEDs	Module Status, Network Status and Activity/Link	

Operating Data	
Temperature Range	-23 ˚C to 50 ˚C (-10 ˚F to 115˚ F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture	IP65, IP67 (with appropriate assembly and termination)

Configuration Data	
Graphic Display	Display used for setting IP address, Subnet Mask, Fault/Idle Actions, and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system settings in the event of total or partial system failure
Maximum Valve Solenoid Outputs	32
Maximum Sub-Bus I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Bus Connector	Two D-coded 4 pin M12 type (female)
Diagnostics	Power, short, open load conditions and module health and configuration are monitored
Special Features	Embedded two port switch, Device Level Ring (DLR) compatibility, Linear network topology, QuickConnect™ capability, fail-safe device settings, integrated web server, HTTP, TFTP, UNICAST

Weight	
EtherNet/IP™ DLR Communications Module	227g/8 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

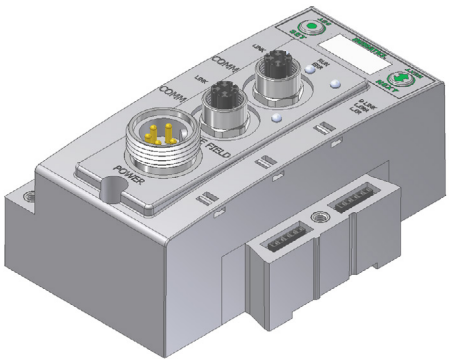
CC-Link IE Field™

CC-Link IE Field™ is an open standard 1 Gbps Ethernet Manufacturing network that enables seamless data communication from the plant-level enterprise network to the production floor network. The CC-Link Partner Association (CLPA) oversees and manages CC-Link® specifications.

Numatics' G3 nodes for CC-Link IE Field™ have an integrated graphic display and are capable of addressing combinations of up to 1200 outputs and 1200 inputs.

CC-Link IE Field™ is based on 1 Gbps Ethernet standards and complements them with specific protocols and mechanisms to achieve real time performance.

More information regarding CC-Link IE Field™ can be obtained from the following website: www.CCLinkAmerica.org



Description	Replacement Part Number
CC-Link IE Field™ communications module (node)	240-362

Technical Data

Electrical Data	Voltage	Current
Node Power at Max. Brightness	24 VDC +/- 10%	
Valves & Discrete I/O	24 VDC +/- 10%	8 Amps Maximum
Power Connector	Single key 5 pin 7/8" MINI type (male)	
Communication Connector	Two X-coded 8 pin M12 type (female)	
LEDs	Run, ERR, Link, D Link, L.ERR, L.ER	

Operating Data	
Temperature Range (ambient)	-23 °C to 50 °C (-10 °F to 115 °F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Moisture Protection	IP65 (with appropriate assembly and termination)

Configuration Data	
Graphic Display	Display used for setting Node Number, Network Number, Fault/Idle Actions, and all other system settings
ARM	(Auto Recovery Module) Optional module that contains automatic recovery of system setting in the event of total or partial system failure
Maximum Valve-Solenoid Outputs	32
Maximum Addressable I/O Points	Various combinations of 1200 outputs and 1200 inputs

Network Data	
Supported Baud Rates	1 Gbps
Bus Connector	Two D-coded 8 pin M12 type (2-Female)
Diagnostics	Power, short, open load conditions and module health and configuration are monitored
Special Features	Integrated 2 port switch, fail-safe device settings

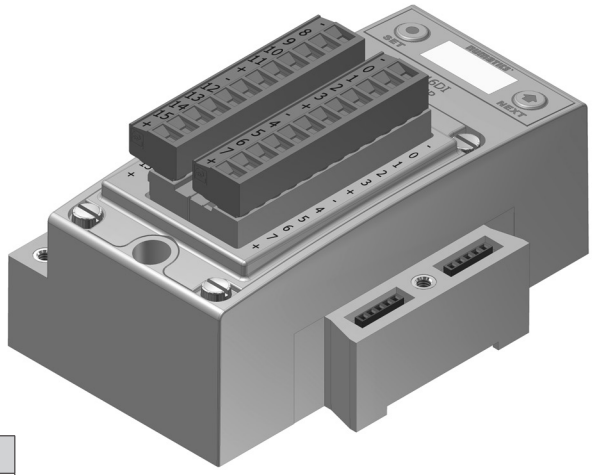
Weight	
CC-Link IE Field™ Communications Module	269g/9.5 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

I/O Modules

Digital Inputs - Terminal Strip Modules

Description	Part Number
16 PNP Inputs	240-203
16 NPN Inputs	240-204
8 PNP Inputs	240-316
16 PNP outputs	240-330



Technical Data

Operating Data	
Temperature Range (ambient)	-23 ºC to 50 ºC (-10 ºF to 115 ºF)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Wire Range	12 to 24 AWG
Strip Length	7mm
Tightening Torque	0.5 Nm
Ingress Protection	IP20

Spare Parts	
Replacement Terminal Strip (I/O 0-7)	140-1073
Replacement Terminal Strip (I/O 8-15)	140-1074
Keying Element for terminal strip	140-1076
Keying Element for Module	140-1077

Weight	
Input Module	292g/10.3 oz.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

I/O Modules

Digital I/O 5-pin M12 Modules

Description	Part Number
Inputs	
8 PNP Inputs	240-206
8 NPN Inputs	240-210
16 PNP Inputs	240-205
16 NPN Inputs	240-209
Outputs	
8 PNP Outputs	240-208
8 PNP High Current Outputs (Fig. A Only)	240-300
16 PNP Outputs	240-207
Inputs and Outputs	
8 PNP Inputs and 8 PNP Outputs	240-211

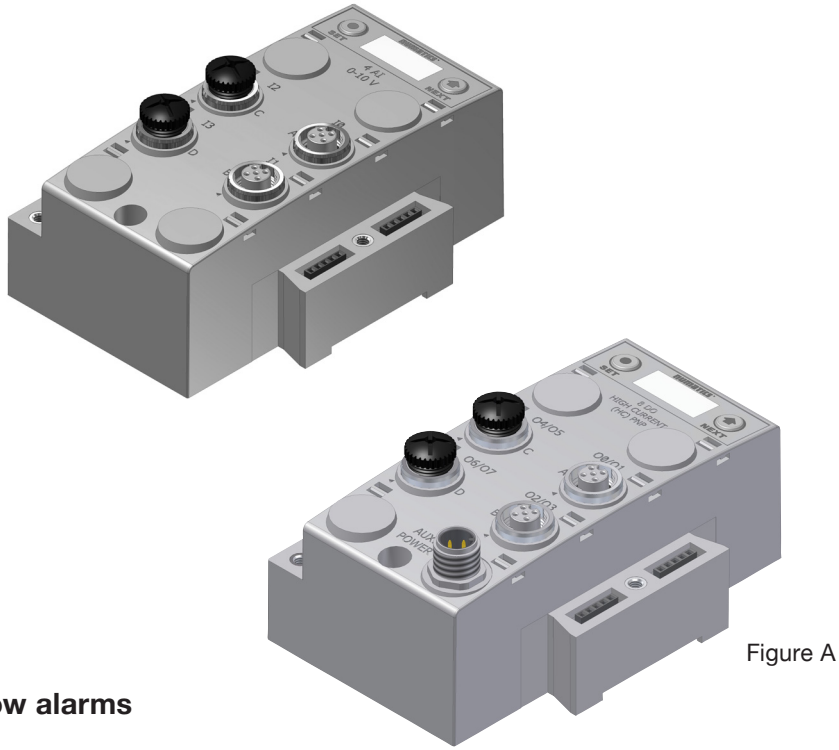


Figure A

Analog I/O with settable high and low alarms 5-pin M12 Modules

Description	Signal Type	Part Number
Inputs		
4 Analog Inputs	0-10 VDC	240-212
4 Analog Inputs	4-20 mA	240-214
Inputs and Outputs		
2 Analog Inputs & 2 Analog Outputs	0-10VDC	240-213
2 Analog Inputs & 2 Analog Outputs	4-20 mA	240-215
2 Analog Inputs & 2 Analog Outputs High Current (Figure A Only)	0-10 VDC	240-307
4 Analog Inputs & 4 Analog Outputs High Current (Figure A Only)	4-20 mA	240-363

Technical Data

Operating Data	
Temperature Range (ambient)	-23 °C to 50 °C (-10 °F to 115 °F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Ingress Protection	IP65, IP67 (with appropriate assembly and termination)
Connector	M12 4 Pin Female, Speedcon (Compatible with 5 Pin)
Resolution	16 bit

Weight	
I/O Module-Analog	244g/8.6 oz.
I/O Module-Digital	274g/9.7 oz.

Dust Cover -
M12 Male 230-647

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

G3 RTD Temperature Module 240-311

The RTD module is for use with RTD (Resistive Temperature Detectors), supporting up to four RTD devices simultaneously. The module supports various RTD types including: Pt100, Pt200, Pt500, Pt1000, Ni100 and Ni1000.

Technical Data

Electrical Data	
Voltage	24 VDC Module Supply (Via G3 System Aux. Power Connection)
Input Type	RTD (Resistive Temperature Detector), 4 per Module
Supported Sensor Type	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni1000
Supported Temperature Coefficients	.00385; .00392; ….Ω/Ω/°C
Resolution	15 bits plus sign
Data Format	Signed Integer
Calibration	Factory Calibrated Field Calibration w/high tolerance (± .005%) 100 ohm and 350 ohm resistors
Input Update (filter) Rate	Adjustable (5-20mS), factory default: 5ms
Accuracy	0.1% of full scale @ 25° C

Mechanical Data	
I/O Connector	M12 4 Pin Female. Speedcon (Compatible with 5 Pin)
Mass	247g/8.7 oz.

Operating Data	
Temperature Range Ambient	-23 ºC to 46 ºC (-10 ºF to 115 ºF)
Humidity	95% relative humidity: non-condensing
Ingress Protection	IP65 (with appropriate assembly and terminations)

240- 320 G3 [Ex ia] NAMUR Input Module

The [Ex ia] module is for use with NAMUR certified intrinsically safe (IS) sensors.

Technical Data

Electrical Data	
Voltage	24 VDC Module Supply Sensor Supply = 8.2 VDC Nominal
Input Type NC (Normally Closed)	NAMUR Signal Current (0) ≥ 2.1 mA Signal Current (1) ≤ 1.2 mA Short Circuit Monitoring < 100 Ω Open/Broken Wire Detection < 0.05 mA
Safety Parameter Output Maximums	Uo ≤ 9.6 V Io ≤ 13 mA Po ≤ 31 mW
Diagnostics	Open (broken wire) and Short Circuit

Certification	
Module Marking (ATEX)	Ⓔx II(1)GD [Ex ia Ga] IIC [Ex ia Da] IIIC

Mechanical Data	
I/O Connector	M12 4 Pin Female Speedcon (Compatible with 5 Pin)
Mass	284g/10.0 oz.

Operating Data	
Temperature Range Ambient	-23 ºC to 46 ºC (-10 ºF to 115 ºF)
Humidity	95% relative humidity: non-condensing
Ingress Protection	IP65 (with appropriate assembly and terminations)

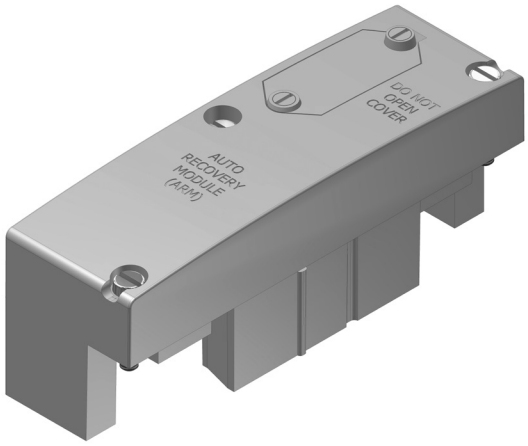
Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Miscellaneous Modules

Auto Recovery Module (ARM)

Protects configuration information during a critical failure. Allows configuration information to be saved and reloaded to replacement module automatically.

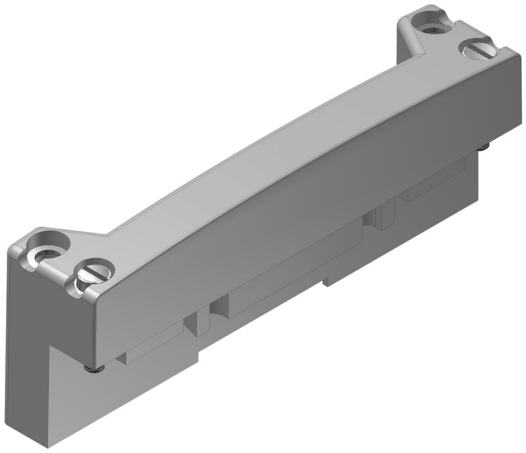
Description	Part Number	Weight
ARM Module	240-182	127g/4.5 oz.



Terminator Module

Provides termination for the Sub-Bus. Must be installed after the last I/O module or after the communications module if there are no I/O modules installed.

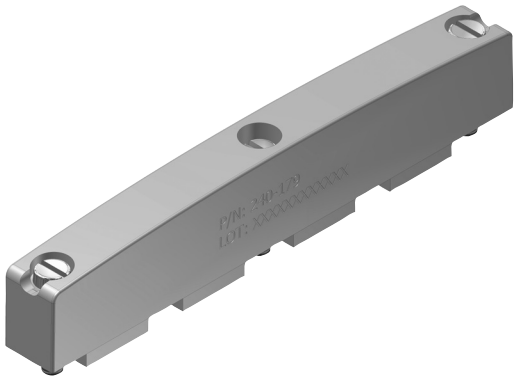
Description	Part Number	Weight
Terminator Module w/DIN Rail Clips	240-245	102g/3.6 oz.
Terminator Module	240-184	91g/ 3.2 oz.



Jumper Clip

Provides electrical connections between modules.

Description	Part Number	Weight
Jumper Clip	240-179	45g/1.6 oz.
Jumper Clip for Intrinsically Safe	240-317	65g/2.3 oz.

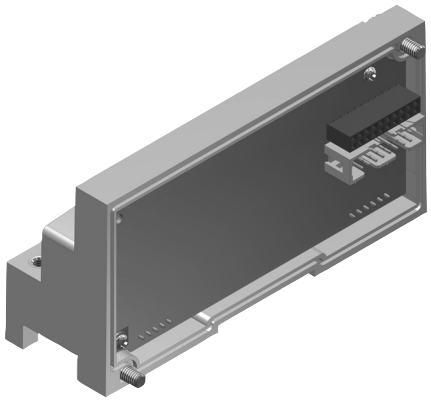


Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Miscellaneous Modules

Valve Driver Module

Provides connections between the communication module or Sub-Bus valve module and the valve manifold.

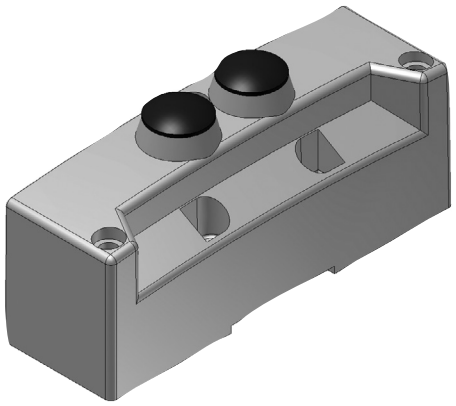


501, 502 and 503 Series Valves

Description	Part Number
Valve Driver Module	P599AE508827001
Valve Driver Module w/DIN Rail Clips	P599AE508827002

Right Hand Mounting Cover*

Used when a communications module is used without local valves installed.



Description	Part Number	Weight
Right Hand Mounting Cover w/DIN Rail Clips	240-290	82g/2.9 oz.
Right Hand Mounting Cover	240-255	71g/2.5 oz.

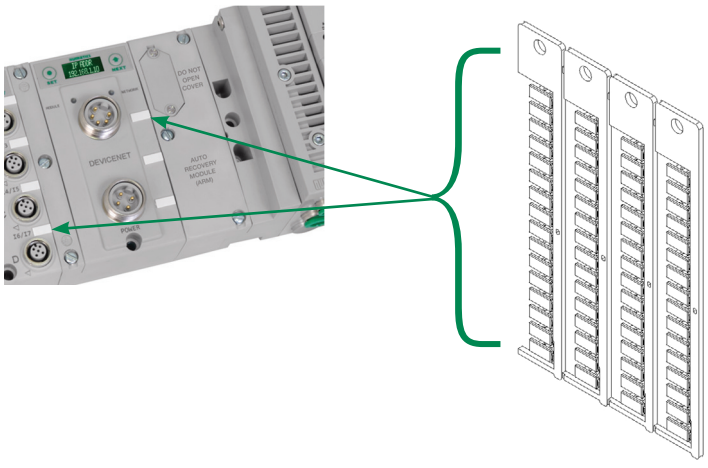
* Not for use in combination with ARM Module

Accessories

For use with Murrplastik© Type 20 Software.

Labels - 122-1251

Technical Data	
Material	Polycarbonate (PC)
Color	White
Temperature Range	-40 °C to 140 °C (-40 °F to 284 °F)
Label Dimensions	0.19" x 0.39"
Label - Printable Area	0.19" x 0.39"

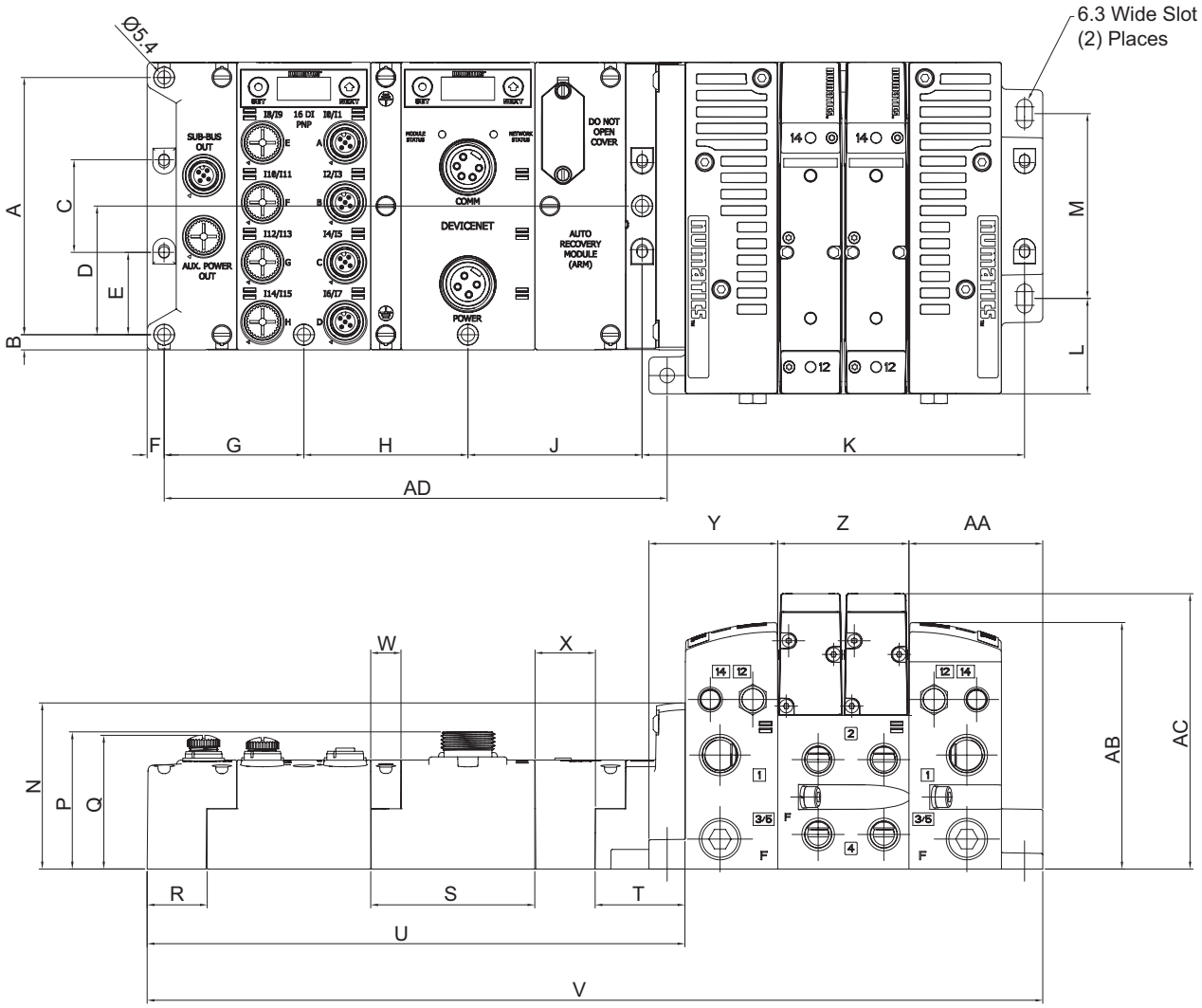


Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Dimensions: mm (Inches)

Dimensional Drawing - G3 Fieldbus Manifold Assembly

503 Series Valve Manifold Assembly with G3 Electronics and Sub-Bus Output



A	B	C	D	E	F	G	H	J	K	L	M	N	P
105.5 (4.154)	6.3 (0.248)	38 (1.5)	52.8 (2.08)	33.8 (1.33)	7 (0.28)	57.5 (2.264)	67.5 (2.66)	71.7 (2.82)	–	39.1 (1.54)	75.8 (2.984)	68.1 (2.68)	56.3 (2.217)

Q	R	S	T	U	V	W	X	Y	Z*	AA	AB	AC	AD
54 (2.13)	24.8 (0.98)	67.5 (2.66)	36.9 (1.45)	221.3 (8.713)	368.6 (14.51)	12.5 (0.49)	24.8 (0.976)	53 (2.087)	–	55.1 (2.17)	101.1 (3.98)	112.9 (4.445)	207 (8.2)

* For valve manifold dimensions refer to Valve Series product catalogs.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

How to Order

Manifold Assembly

8 503 A V 3 B 3 0 0 V A00

Port Type
8 = NPTF*
G = ISO228/1-G*
K = Push-in Fittings

Product Series
503 = 26mm Valve

Revision
A = Initial Release

Product Type
V = Valve Manifold Assembly

Electronics
3 = G3 Fieldbus Electronics

Number of Valve Stations

B	= 2	V	= 22
D	= 4	X	= 24
F	= 6	Z	= 26
H	= 8	3	= 28
J	= 10	5	= 30
L	= 12	7	= 32
N	= 14		
P	= 16		
R	= 18		
T	= 20		

* Port Type '8' and 'G' only available in Port Size '3'

Options
A00 = Standard (No Options)
MUF = Muffler in End Plates
DRM = DIN Rail Mount
DWM = DIN Rail with MUF
14X = External Pilot Supply from Port # 14
D12 = (14X) External Pilot Supply from Port #14 and (MUF) Muffler in End Plates
D14 = (14X) External Pilot Supply from Port #14 and (DRM) DIN Rail Mount
F06 = (14X) External Pilot Supply from Port #14, (MUF) Muffler in End Plates, and (DRM) DIN Rail Mount
A45 = Zoned Pilot for End Plate Assembly Kit
D47 = A45 + MUF
D48 = A45 + DRM
D49 = 14X
F21 = A45 + DRM + MUF
F22 = A45 + 14X + MUF
F23 = A45 + 14X + DRM
K30 = A45 + 14X + DRM + MUF

End Plate Style
V = Vertical

Second Valve Series
0 = No Second Valve Series

End Plate Port Size
3 = 3/8
4 = 1/2
K = 10mm
M = 12mm

G3 Electronics

G3 EP1 00 R 0 STD

Series
G3 = G3 Electronics

Electronics Protocol
CC1 = CC-Link IE Field
EC1 = EtherCAT
ED1 = EtherNet/IP DLR
EM1 = Ethernet Modbus - TCP
EP1 = EtherNet/IP
PL1 = Ethernet POWERLINK
PN1 = PROFINET

Number of I/O Modules

00	= 0	09	= 9
01	= 1	10	= 10
02	= 2	11	= 11
03	= 3	12	= 12
04	= 4	13	= 13
05	= 5	14	= 14
06	= 6	15	= 15
07	= 7	16	= 16
08	= 8		

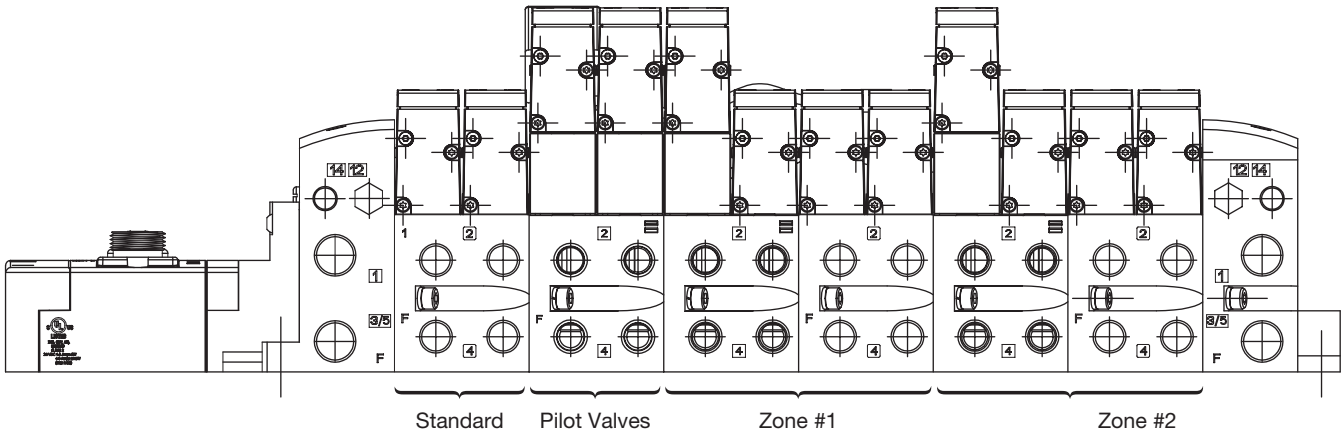
Options
STD = Standard
DRM = DIN Rail Mounting
E40 = Auto Recovery Module (ARM)
G32 = E40 + DRM

Modification
0 = Initial Release

Left Mounting
R = w/Terminating Resistor

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Ordering Zoned Safety Manifolds with G3 Electronics and 503 Valves



Zoned Safety manifolds can be configured with a combination of valves for non safety related applications and up to 3 independent safety zones. Within each safety zone both power and pilot air to the valves can be isolated.

- Any valves that are not part of the safety related functions must be configured starting @ Station 1
- The “U” Wiring block is the beginning of the safety zone. Only 5/2 Single Solenoid /Spring return valves without override may be used. Each valve corresponds to a safety zone. A manifold with 2 Safety zones will have 2 valves with the “U” Wiring
- The “X” wiring block allows 0 and +24 VDC separation for a section of the manifold while the remainder of the manifold remains operational. Each “X” wiring block controls up to 16 solenoids
- If Pilot Zoning is required, must select “Zoned Pilot for End Plate Assembly Kit” in the Valve Assembly number and option “83H” Pilot Separation for Station 1 in the Manifold Assembly Kit
- Refer to the How to Order example to the right

Example Order - 503 Shown

Assembly Kit	8503AV3L300VA45	
Valve Station #1	R503A2B40MA00F1	STANDARD
Valve Station #2	R503A2B40MA00F1	
Mounting #1	8503AMM22MA0010	
Valve Station #3	R503A2B10M11MF1	PILOT VALVES
Accessory Station #3	K503AU516663006	
Valve Station #4	R503A2B10M11MF1	
Accessory Station #4	K503AU516663010	
Mounting #2	8503AMS22UA010	
Valve Station #5	R503A2B40MA00F1	
Accessory Station #5	K503AP48330010	
Valve Station #6	R503A2B40MA00F1	ZONE #1
Mounting #3	8503AMM22X83H10	
Valve Station #7	R503A2B40MA00F1	
Valve Station #8	R503A2B40MA00F1	
Mounting #4	8503AMM22MA0010	
Valve Station #9	R503A2B40MA00F1	
Accessory Station #9	K503AP48330010	
Valve Station #10	R503A2B40MA00F1	ZONE #2
Mounting #5	8503AMM22X83H10	
Valve Station #11	R503A2B40MA00F1	
Valve Station #12	R503A2B40MA00F1	
Mounting #6	8503AMM22MA0010	
Electronics ASSEMBLED	G3EP100R0STD	

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

7/8" MINI Cables

4 Pin Cables for DeviceNet™, DeviceLogix™, Ethernet, Modbus TCP/IP, CANopen®, and Sub-Bus

7/8" MINI Straight 4 Pin Female Single Ended Cable, Euro Color Code
MC0405MAC0000000 – 5 Meter
MC0410MAC0000000 – 10 Meter

7/8" MINI 90° 4 Pin Female Single Ended Cable, Euro Color Code
MD0405MAC0000000 – 5 Meter
MD0410MAC0000000 – 10 Meter

5 Pin Cables for PROFIBUS® DP, PROFINET®, POWERLINK®, and EtherCAT®

7/8" MINI Straight 5 Pin Female Single Ended Cable, Euro Color Code
MC0505MAG0000000 – 5 Meter
MC0510MAG0000000 – 10 Meter

7/8" MINI 90° 5 Pin Female Single Ended Cable, Euro Color Code
MD0505MAG0000000 – 5 Meter
MD0510MAG0000000 – 10 Meter

7/8" MINI Field Wireable Connectors

4 Pin Connectors for DeviceNet™, DeviceLogix™, Ethernet, Modbus TCP/IP, CANopen®, and Sub-Bus

7/8" MINI Straight 4 Pin Female Field Wireable Connector
MC04F90000000000 –Cable Gland – One size fits all

7/8" MINI 90° 4 Pin Female Field Wireable Connector
MD04F20000000000 – PG 9 Cable Gland

5 Pin Connectors for PROFIBUS® DP, PROFINET® and POWERLINK®, and EtherCAT®

7/8" MINI Straight 5 Pin Female Field Wireable Connector
MC05F90000000000 – Cable Gland – One size fits all

7/8" MINI 90° 5 Pin Female Field Wireable Connector
MD05F20000000000 – PG 9 Cable Gland

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

M12 to 7/8" MINI Cable

4 Pin Cable for Sub-Bus Power

M12 Straight 4 Pin Male to 7/8" MINI 4 Pin Female Extension
TA0401MA0MC0471T – 1 Meter
TA0405MA0MC0471T – 5 Meter
TA0410MA0MC0471T – 10 Meter

M12 Cables

4 Pin Cables for Sub-Bus Power

M12 Straight 4 Pin Female Single Ended Cable, Euro Color Code
TC0405MAE0000000 – 5 Meter
TC0410MAE0000000 – 10 Meter

M12 90° 4 Pin Female Single Ended Cable, Euro Color Code
TD0405MAE0000000 – 5 Meter
TD0410MAE0000000 – 10 Meter

M12 Straight 4 Pin Male to Female Cable Extension
TC0401MAETA04000 – 1 Meter
TC0405MAETA04000 – 5 Meter
TC0410MAETA04000 – 10 Meter

M12 Field Wireable Connectors

4 Pin Connectors for Sub-Bus Power

M12 Straight 4 Pin Female Field Wireable Connector
TC04F10000000000 – PG 7 Cable Gland
TC04F20000000000 – PG 9 Cable Gland

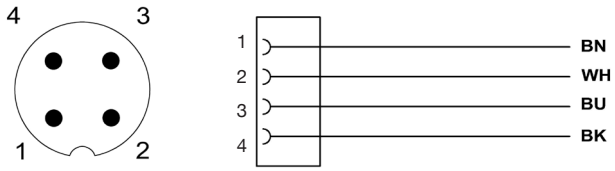
M12 90° 4 Pin Female Field Wireable Connector
TD04F10000000000 – PG 7 Cable Gland
TD04F20000000000 – PG 9 Cable Gland

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Pin Out and Technical Data

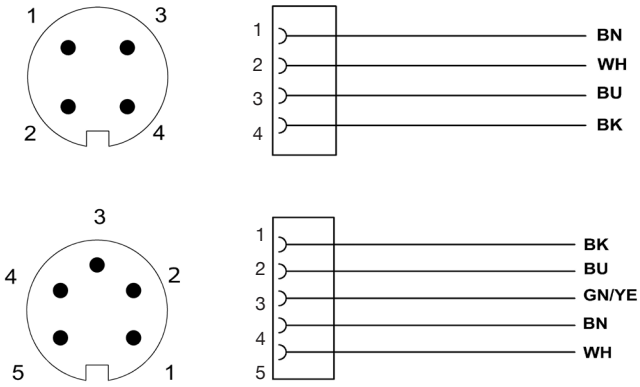
M12 Cable - Pin Out/Euro Color Code

(Male View)



7/8" MINI Cable - Pin Out/Euro Color Code

(Male View)



Technical Data	M12	7/8" MINI
Molded Body/Insert	Cable = PVC Field Wireable = Polyamide	Cable = PVC Field Wireable = Polyamide or PBT
Coupling Nut	Nickel Copper Alloy	Black Anodized Aluminum/Die Cast Zinc
Cable Jacket Material	PVC	PVC
Cable O.D.	7.4mm	7.4mm (4 Pin & 5 Pin)
Voltage Rating (Nominal)	250 V Max. @ 105 °C (221 °F)	250 V Max. @ 105 °C (221 °F)
Current Rating	Cables = 4.0 Amps Field Wireable = 4.0 Amps	Cables = 5.5 Amps Field Wireable = 8.0 Amps
Degree of Protection	IP67 (mated)	IP67 (mated)
Operating Temperature	-25 °C to 85 °C (-13 °F to 185 °F)	-40 °C to 85 °C (-40 °F to 185 °F)
Conductor Gauge	Cable = 18 AWG	Cable = 18 AWG
Bend Radius	Cable = 74mm	Cable = 74mm (4 Pin & 5 Pin)
Maximum Wire AWG	Field Wireable = 18 AWG	Field Wireable = 16 AWG
Wire Connection	Field Wireable = Screw Terminal	Field Wireable = Screw Terminal
PG 7 Range	4-6mm	N/A
PG 9 Range	6-8mm	5-13mm – One size fits all
PG 13.5 Range	N/A	5-13mm – One size fits all

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

G3 PROFINET® CABLES & CONNECTORS

numatics







M12 D-Coded Cables

M12 Straight 4 Pin Male D-Coded Single Ended Cable
QA0405MR00000000 – 5 Meter
QA0410MR00000000 – 10 Meter

M12 Straight 4 Pin Male D-Coded Double Ended Cable
QA0405MR0QA04000 – 5 Meter
QA0410MR0QA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to Male RJ45 Cable
QA0405MR0VA04000 – 5 Meter
QA0410MR0VA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to RJ45 Female Socket Convertor
QA04D2MK0VC04000 – 0.2 Meter

M12 D-Coded Field Attachable CONNECTORS

M12 Straight 4 Pin Male D-Coded Field Wireable Connector
QA04F20000000000 – PG 9 Cable Gland – Screw Terminal

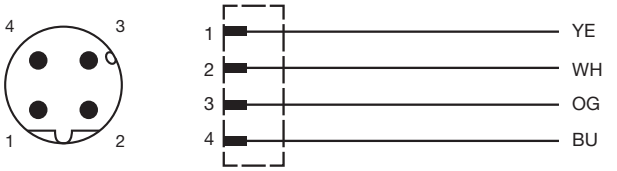
M12 Straight 4 Pin Male D-Coded Field Wireable Connector W/IDC
QA04F200R000071N – PG 9 Cable Gland – IDC

RJ45 Field Attachable CONNECTOR

RJ45 Field Wireable Connector with IDC
VA08F200R000071N – PG 9 Cable Gland

M12 D-Coded Cable - Pin Out/Color Code

(Male View)



Technical Data	Cable	RJ45 Field Attachable	M12 Field Attachable
Molded Body/Insert	TPU	Housing = PA Carrier = PC	Body = Nickel Plated Zinc Insert = PA 66
Coupling Nut	Nickel Plated Zinc	N/A	Nickel Plated Brass
Cable Jacket Material	PVC	N/A	N/A
Cable O.D.	6.5 to 7.4mm	Accepts 4.5 to 8.0mm	Accepts 6.0 to 8mm
Voltage Rating (Nominal)	250 Volts	N/A	60 Volts
Current Rating	4.0 Amps	1.75 Amps	Screw 4.0 Amps IDC 1.75 Amps
Degree of Protection	IP65 (mated), RJ45 – IP20	IP20	IP 65 (mated)
Operating Temperature	-25 °C to 60 °C (-13 °F to 140 °F)	-10 °C to 60 °C (14 °F to 140 °F)	-40 °C to 85 °C (-40 °F to 185 °F)
Conductor Gauge	22 & 24 AWG	22 AWG Solid/Stranded	Screw 24-18 AWG IDC 26-22 AWG
Bend Radius Minimum	19.5mm (fixed) 45.5mm (Flexible)	N/A	N/A
Wire Connection	NA	IDC	Screw Terminal, IDC

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

M12 D-Coded Cables

M12 Straight 4 Pin Male D-Coded Double Ended Cable
QA0405MS0QA04000 – 5 Meter
QA0410MS0QA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to Male RJ45 Cable
QA0405MS0VA04000 – 5 Meter
QA0410MS0VA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to RJ45 Female Socket Converter
QA04D2MK0VC04000 – 0.2 Meter

M12 D-Coded Field Attachable CONNECTORS

M12 Straight 4 Pin Male D-Coded Field Wireable Connector
QA04F20000000000 – PG 9 Cable Gland – Screw Terminal

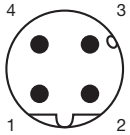
M12 Straight 4 Pin Male D-Coded Field Wireable Connector W/ IDC
QA04F200R000071N – PG 9 Cable Gland – IDC

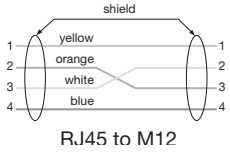
RJ45 Field Attachable CONNECTOR

RJ45 Field Wireable Connector with IDC
VA08F200R000071N – PG 9 Cable Gland

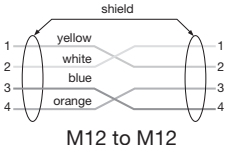
M12 D-Coded Cable & RJ45 Pin Out/Color Code

(Male View)





RJ45 to M12



M12 to M12

Technical Data	Cable	RJ45 Field Attachable	M12 Field Attachable
Molded Body/Insert	N/A	Housing = PA Carrier = PC	Body = Nickel Plated Zinc Insert = PA 66
Coupling Nut	Nickel Plated Zinc or Brass	N/A	Nickel Plated Brass
Cable Jacket Material	PUR	N/A	N/A
Cable O.D.	6.5mm	Accepts 4.5 to 8.0mm	Accepts 6.0 to 8mm
Voltage Rating (Nominal)	N/A	N/A	60 Volts
Current Rating	N/A	1.75 Amps	Screw 4.0 Amps IDC 1.75 Amps
Degree of Protection	IP65 (mated), RJ45 – IP20	IP20	IP 65 (mated)
Operating Temperature	-25 °C to 60 °C (-13 °F to 140 °F)	-10 °C to 60 °C (14 °F to 140 °F)	-40 °C to 85 °C (-40 °F to 185 °F)
Conductor Gauge	22 AWG	22 AWG Solid/Stranded	Screw 24-18 AWG IDC 26-22 AWG
Bend Radius Minimum	45.5mm	N/A	N/A
Wire Connection	N/A	IDC	Screw Terminal, IDC

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

G3 ETHERCAT® CABLES & CONNECTORS

numatics

M12 D-Coded Cables

M12 Straight 4 Pin Male D-Coded Single Ended Cable
QA0405MT00000000 – 5 Meter
QA0410MT00000000 – 10 Meter

M12 Straight 4 Pin Male D-Coded Double Ended Cable
QA0405MT0QA04000 – 5 Meter
QA0410MT0QA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to Male RJ45 Cable
QA0405MT0VA04000 – 5 Meter
QA0410MT0VA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to RJ45 Female Socket Convertor
QA04D2MK0VC04000 – 0.2 Meter

M12 D-Coded Field Attachable Connectors

M12 Straight 4 Pin Male D-Coded Field Wireable Connector
QA04F20000000000 – PG 9 Cable Gland – Screw Terminal

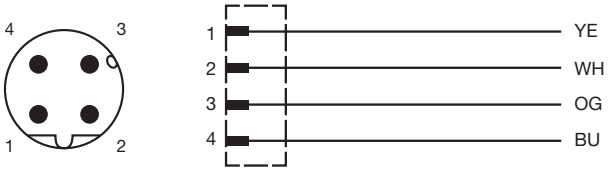
M12 Straight 4 Pin Male D-Coded Field Wireable Connector W/IDC
QA04F200R000071N – PG 9 Cable Gland – IDC

RJ45 Field Attachable Connector

RJ45 Field Wireable Connector with IDC
VA08F200R000071N – PG 9 Cable Gland (1658435)

M12 D-Coded Cable - Pin Out/Color Code

(Male View)



Technical Data	Cable	RJ45 Field Wireable	M12 Field Attachable
Molded Body/Insert	TPU/PE	Housing = PA Carrier = PC	Nickel Plated Zinc/PA 66
Coupling Nut	Nickel Plated Zinc	NA	Nickel Plated Brass
Cable Jacket Material	PVC	NA	NA
Cable O.D.	6.5mm	Accepts 4.5 to 8.0mm	Accepts 4.0 to 8mm
Voltage Rating (Nominal)	250 Volts	NA	60 Volts
Current Rating	4.0 Amps	1.75 Amps	Screw 4.0 Amps IDC 1.75 Amps
Degree of Protection	IP65 (mated), RJ45 – IP20	IP20	IP 65 (mated)
Operating Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	-10 °C to 60 °C (14 °F to 140 °F)	-40 °C to 85 °C (-40 °F to 185 °F)
Conductor Gauge	22 & 24 AWG	22 AWG Solid/Stranded	Screw 24-18 AWG IDC 26-22 AWG
Bend Radius Minimum	19.5mm (fixed) 45.5mm (Flexible)	NA	NA
Wire Connection	NA	IDC	Screw Terminal, IDC

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

M12 D-Coded Cables

M12 Straight 4 Pin Male D-Coded Single Ended Cable
QA0405MK00000000 – 5 Meter
QA0410MK00000000 – 10 Meter

M12 Straight 4 Pin Male D-Coded Double Ended Cable
QA0405MK0QA04000 – 5 Meter
QA0410MK0QA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to Male RJ45 Cable
QA0405MK0VA04000 – 5 Meter
QA0410MK0VA04000 – 10 Meter

M12 Straight 4 Pin Male D-Coded to RJ45 Female Socket Convertor
QA04D2MK0VC04000 – 0.2 Meter

M12 D-Coded Field Wireable Connectors

M12 Straight 4 Pin Male D-Coded Field Wireable Connector
QA04F20000000000 – PG 9 Cable Gland – Screw Terminal

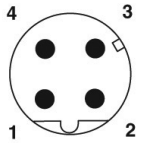
M12 Straight 4 Pin Male D-Coded Field Wireable Connector W/IDC
QA04F2000000071N – PG 9 Cable Gland – Screw Terminal

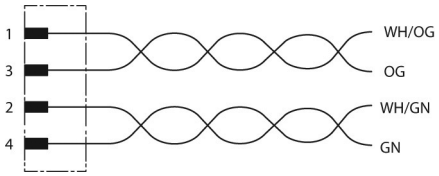
RJ45 Field Wireable Connector

RJ45 Field Wireable Connector with IDC
VA08F2000000071N – PG 9 Cable Gland

M12 D-Coded Cable - Pin Out/Color Code

(Male View)





Technical Data	Cable	RJ45 Field Wireable	M12 Field Attachable
Molded Body/Insert	TPU, PA, PA66	Housing = PA Carrier = PC	Body = Nickel Plated Zinc Insert = PA 66
Coupling Nut	Nickel Plated Zinc or Brass	NA	Nickel Plated Brass
Cable Jacket Material	PUR or PVC	NA	NA
Cable O.D.	0.67 to 8.0mm	4.5 to 8.0mm	6.0 to 8.0mm
Voltage Rating (Nominal)	42 Volts	NA	60 Volts
Current Rating	1.5 Amps	1.75 Amps	Screw 4.0 Amps IDC 1.75 Amps
Degree of Protection	IP65 (mated)	IP20	IP 65 (mated)
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)	-20 °C to 70 °C (-4 °F to 158 °F)	-40 °C to 85 °C (-40 °F to 185 °F)
Conductor Gauge	26 & 24 AWG	26-22 AWG Solid/Stranded	Screw 24-18 AWG IDC 26-22 AWG
Bend Radius	40mm	NA	NA
Wire Connection	NA	IDC	IDC, Screw Terminal

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

G3 I/O CABLES & CONNECTORS

I/O Cables with SPEEDCON® Connector Technology

M12 Straight 4 Pin Male Single Ended Cable, Euro Color Code
TA04E5MIE000071P – 1.5 Meter
TA0403MIE000071P – 3 Meter
TA0405MIE000071P – 5 Meter

M12 90° 4 Pin Male Single Ended Cable, Euro Color Code
TB04E5MIE000071P – 1.5 Meter
TB0403MIE000071P – 3 Meter
TB0405MIE000071P – 5 Meter

M12 Straight 4 Pin Male to Female Cable Extension
TC04E5MIETA0471P – 1.5 Meter
TC0403MIETA0471P – 3 Meter

M12 Straight 3 Pin Male to M8 3 Pin Straight Female Extension
TC03E5MIEPA0371P – 1.5 Meter
TC0303MIEPA0371P – 3 Meter

I/O Connectors

M12 Straight 4 Pin Male Field Wireable Connector, IDC Connection
TA04F2000000081E – PG 9 Cable Gland w/SPEEDCON® connector technology

M12 Straight 4 Pin Male Field Wireable Connector, Screw Terminal
TA04F10000000000 – PG 7 Cable Gland
TA04F20000000000 – PG 9 Cable Gland

M12 90° 4 Pin Male Field Wireable Connector, Screw Terminal
TB04F10000000000 – PG 7 Cable Gland
TB04F20000000000 – PG 9 Cable Gland

I/O Splitters

M12 to M12 “Y” Splitter, 21mm Spacing
TA0500000JC05000

M12 to M8 “Y” Splitter
TA0400000KC03000

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

M12 Cable Splitter, 2 Straight M12 Female Connectors
TA04D3MIEJC04000 – 0.3 Meter
TA04E5MIEJC04000 – 1.5 Meter
TA0403MIEJC04000 – 3.0 Meter

M12 Cable Splitter, 2 Straight M8 Female Connectors
TA04D3MIEKC03000 – 0.3 Meter
TA04E5MIEKC03000 – 1.5 Meter
TA0403MIEKC03000 – 3.0 Meter

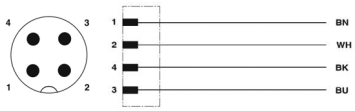
Wire Stripper Tool
140-1097

I/O Cable Connector Pin Out Diagrams

M12 Cable - Pin Out/Color Code

TA04XXMIE0000000,
TB04XXMIE0000000

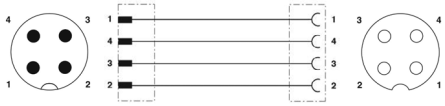
(Male View)



M12 Cable - Pin Out/Color Code

TC03XXMIEPA0371P

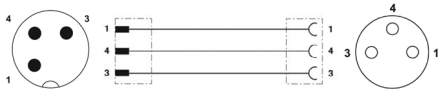
(Male to Female View)



M12 Cable - Pin Out/Color Code

TC03XXMIEPA0371P

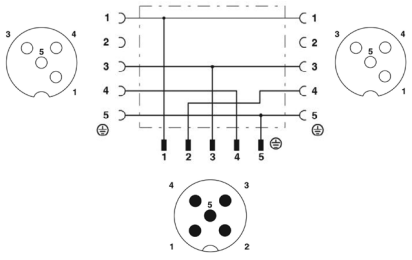
(Male to Female View)



M12 to M12 "Y" Splitter - Pin Out

TA0500000JC05000

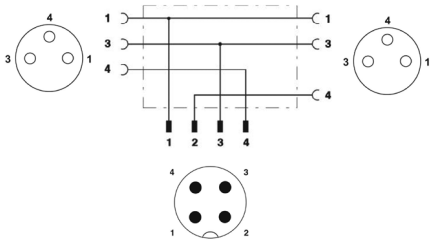
(Male to Female View)



M12 to M8 "Y" Splitter - Pin Out

TA0400000KC03000

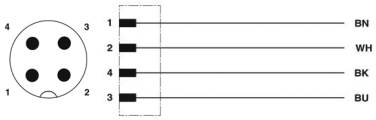
(Male to Female View)



M12 Field Wireable (IDC) - Pin Out

TA04F2000000081E (SPEEDCON®)

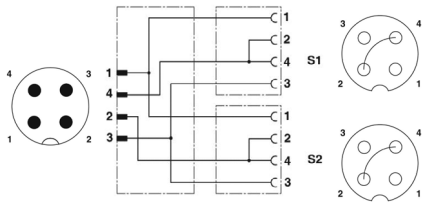
(Male View)



M12 to M12 Cable Splitter - Pin Out

TA04XXMIEJC04000

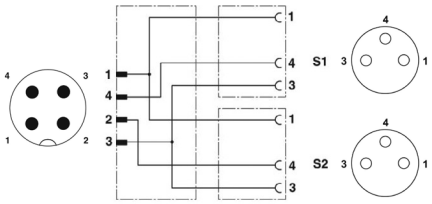
(Male to Female View)



M12 to M8 Cable Splitter - Pin Out

TA04XXMIEKC03000

(Male to Female View)



NOTE:
XX denotes allowable length.
See pages 42 & 43.

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

Cable and Connector Technical Data

Technical Data	M12 Cables	M12/M8 Cables	M12 Connectors
Molded Body/Insert	TPU	TPU	Polyamide (or) PA 66
Coupling Nut	Nickel Plated Zinc	Nickel Plated Zinc	Nickel Plated Zinc
Cable Jacket Material	PUR	PUR	NA
Cable O.D.	4.70mm	4.70mm	PG7 4.0 to 6.0mm PG9 4.0 to 8.0mm
Voltage Rating	250 Volts	60 Volts	50 Volts
Current Rating (Cond.)	4.0 Amps	3.0 Amps	4.0 Amps
Degree of Protection	IP65 (mated)	IP65 (mated)	IP67 (mated)
Operating Temperature	-25 ºC to 80 ºC (-13 °F to 176 °F) (fixed instl.)	-25 ºC to 80 ºC (-13 °F to 176 °F) (fixed instl.)	-25 ºC to 80 ºC (-13 °F to 176 °F)
Conductor Gauge	22 AWG	22 AWG	22 AWG Min. 18 AWG Max.
Bend Radius	47mm	47mm	NA

Technical Data	I/O "Y" Splitter	I/O Cable Splitter
Molded Body/Insert	TPU	TPU
Coupling Nut	Nickel Plated Zinc	Nickel Plated Zinc
Cable Jacket Material	NA	PUR
Cable O.D.	NA	4.40mm
Voltage Rating	60 Volts	60 Volts
Current Rating (Cond.)	3.0 Amps	3.0 Amps
Degree of Protection	IP67 (mated)	IP67 (mated)
Operating Temperature	-25 ºC to 90 ºC (-13 °F to 194 °F)	-25 ºC to 80 ºC (-13 °F to 176 °F)
Conductor Gauge	NA	22 AWG or 24 AWG
Bend Radius	NA	44mm

Technical Data	Wire Stripper
Use with	PVC Insulation
Stripping Range	28 AWG to 10 AWG
Cutting Range (Flexible)	10 AWG
Cutting Range (Rigid)	12 AWG

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

NOTES

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

NOTES

Information subject to change without notice. For ordering information or regarding your local sales office visit www.asco.com.

World Headquarters

USA - Numatics, Incorporated
46280 Dylan Drive
Novi, Michigan 48377

P: 248-596-3200
F: 248-596-3201

Canada - Numatics, Ltd
P: 519-758-2700
F: 519-758-5540

México - Ascomatica SA de CV
P: 52 55 58 09 56 40 (DF y Area metropolitana)
P: 01 800 000 2726 (Interior de la República)
F: 52 55 58 09 56 60

Brazil - Ascoval Ind.e Comercio Ltda
P: (55) 11-4208-1700
F: (55) 11-4195-3970

LT-503ZSeries Rev 05/16
10M-Walsworth-09/12

© Numatics Inc. 2012-2016

Numatics® is registered in the United States and elsewhere