Fieldbus Electronics

580 | Communication Node

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580 Electronics

580 Fieldbus - Electronics Made Easy!

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

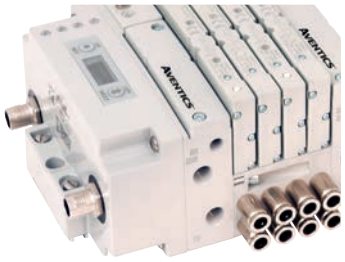
Commissioning Capabilities

- Set network address (including IP & Subnet mask for Ethernet)
- Set baud rate
- Set brightness
- Set factory defaults

Visual Diagnostics

- Shorted and open load detection
- Shorted sensor/cable detection
- Low & missing power detection
- Self-tests activation
- Log of network errors

Graphic Display for configuration & diagnostics



Compact Electronic Module

580 Fieldbus Communications Electronics

Why use Aventics Fieldbus communication electronics?

Modular Reality...

- No internal wiring simplifies assembly
- Power connector allows output power to be removed while inputs and communication are left active
- IP65 protection
- 128 coils for 501 - 80 coils for 502/503
- Direct Connection to Emerson DeltaV™ with Electronic Marshalling platform via the 580 CHARM Node
- 500 Series valve compatibility

Supported Protocols

- CANopen®
- CC-Link IE Field™
- DeviceNet™
- PROFIBUS™ DP (1)
- PROFINET™ (1)
- EtherCAT® (1)
- EtherNet/IP™ DLR (1)
- CHARM
- Ethernet POWERLINK®
- IO-Link®*

* IO-Link® is a communication network that requires an IO-Link® Master with a higher level fieldbus or Ethernet communication protocol.

(1) 32+ capable

CANopen®

CANopen® is an open protocol based on Controller Area Network (CAN). It was designed for motion oriented machine control networks but has migrated to various industrial applications. CAN in Automation (CIA) is the international users' and manufacturers' organization that develops and supports CAN-based protocols.

Aventics' 580 nodes for CANopen® have an integrated graphic display.

More information regarding this organization can be found at: www.can-cia.org

Description	Replacement Part Number
CANopen® communications module (node)	P580AECO1010A00

CANopen®

COMMUNICATION MALE

Pin 1 = Shield
Pin 2 = V+ (24 V DC)
Pin 3 = V- (Ground)
Pin 4 = CAN_H
Pin 5 = CAN_L

POWER MALE

Pin 1 = +24 V DC (node)
Pin 2 = +24 V DC (Valves)
Pin 3 = 0 V DC (node)
Pin 4 = 0 V DC (Valves)

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.03 A
BUS Power	11-25 VDC	0.05 A
Valves	24 VDC +/- 10%	4 A maxi
Power Connector	A-Coded 4 Pin M12 (male)	
Communication Connector	A-Coded 5 Pin M12 (male)	
LEDs	Module Status and Network Status	

Operating Data	
Temperature Range (ambient)	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture Protection	IP65

Configuration Data	
Graphic Display	Display used for setting Node Address, Baud Rate, Fault / Idle Actions, and all other system settings.
Maximum Valve-Solenoid Outputs	32 for Series 501/502/503

Network Data	
Supported Baud Rates	125K Baud, 250K Baud, 500K Baud, 1M Baud
Communication Connector	A-Coded 5 Pin M12 (male)
Diagnostics	Power, short, open load conditions are monitored
Special Features	Fail-safe device settings

Weight	
CANopen® Communications Module	320 g

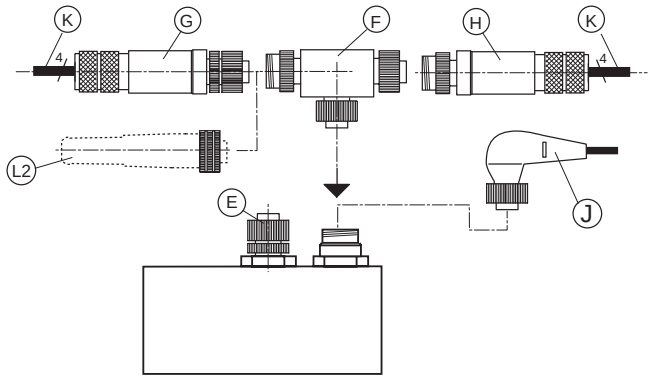
CANopen® bus connection

the front panel of the communication module for Canopen® is equipped with a 5 pin male M12-A socket for the bus cable.

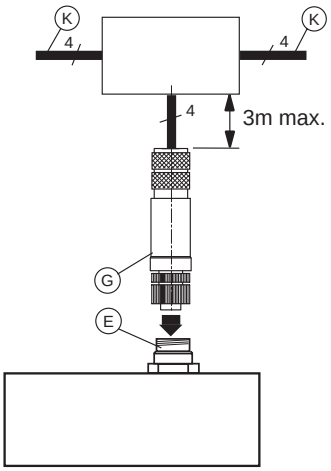
The bus can be connected in the two following ways:
- directly to the module with a T-connector;
- with a straight connector, cable (max. length: 3 m) and a CANopen® distributor box.

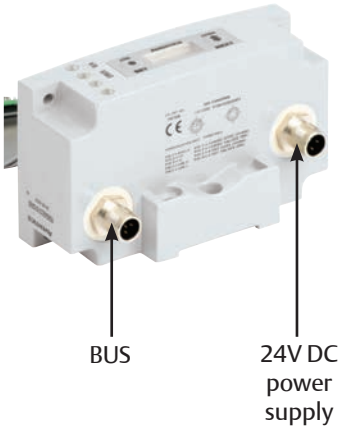
The modules on either side of the system must be provided with terminating resistors (L1 or L2).

■ Wiring with T-connector



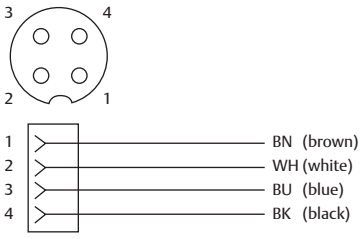
■ Connection with CANopen® distributor box (X)





Accessories for CANopen®

The modules on either side of the system must be provided with terminating resistors (H)

	Accessory	Description	Catalog number
G		M12 90° 5 Pin Female Field Wireable network Connector – Spring Cage (A coded) PG9 cable gland	**TD05F2000000071V**
		M12 Straight 5 Pin Female Field Wireable network Connector – Spring Cage PG9 cable gland	**TC05F2000000071V**
H		M12 Straight 5 Pin Male Field Wireable network Connector – Spring Cage PG9 cable gland	**TA05F2000000071V**
F		3 Way M12 “T” (T-connector M12, 5 male / female / female pins)	**TC0500000TT05000**
L2		Terminating resistor male plug	**TA05TR0000000000**
		Terminating resistor female plug	**88157770**
J		M12 90° 4 Pin Female Field Wireable Connector (PG 9 Cable Gland) (4 pin elbow female cable connector 7/8”	**TD04F20000000000**
		M12 90° 4 Pin Female Single Ended Cable, Euro Color Code (4 pin elbow female cable connector 90° with 10 m cable) 	**TD0410MAE0000000**

(K) Cable to be ordered separately.

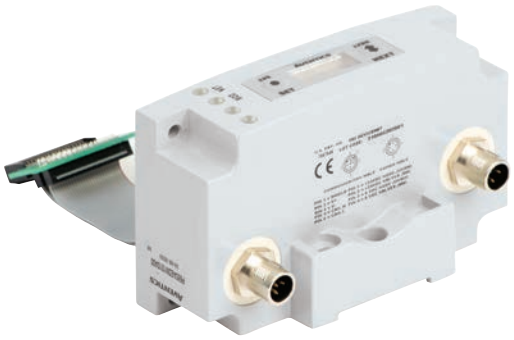
DeviceNet™

DeviceNet™ is an open bus fieldbus communication system developed by Allen-Bradley based on Controller Area Network (CAN) technology. The governing body for DeviceNet™ is the Open DeviceNet™ Vendors Association (ODVA). The ODVA controls the DeviceNet™ specification and oversees product conformance testing.

Aventics' 580 nodes for DeviceNet™ have an integrated graphic display.

They have been tested and approved for conformance by the ODVA.

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



Description	Replacement Part Number
DeviceNet™ communications module (node)	P580AEDN1010A00

DeviceNet™

COMMUNICATION MALE

Pin 1 = Shield
Pin 2 = V+ (24 V DC)
Pin 3 = V- (Ground)
Pin 4 = CAN_H
Pin 5 = CAN_L

POWER MALE

Pin 1 = +24 V DC (node)
Pin 2 = +24 V DC (Valves)
Pin 3 = 0 V DC (node)
Pin 4 = 0 V DC (Valves)

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.03 A
BUS Power	11-25 VDC	0.05 A
Valves	24 VDC +/- 10%	4 A Maximum
Power Connector	A-Coded 4 Pin M12 (male)	
Communication Connector	A-Coded 5 Pin M12 (male)	
LEDs	Module Status and Network Status	

Operating Data	
Temperature Range (ambient)	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture Protection	IP65

Configuration Data	
Graphic Display	Display used for setting Node Address, Baud Rate, Fault/Idle Actions, and all other system settings.
Maximum Valve-Solenoid Outputs	32 for Series 501/502/503

Network Data	
Supported Baud Rates	125K Baud, 250K Baud, 500K Baud, with Auto-Baud detection
Supported Connection Type	Polled, Cyclic, Change of State (COS) and combination Message Capability
Communication Connector	A-Coded 5 Pin M12 (male)
Diagnostics	Power, short, open load conditions are monitored
Special Features	Supports Auto-Device Replacement (ADR) and fail-safe device settings

Weight	
DeviceNet™ Communication Module	320 g

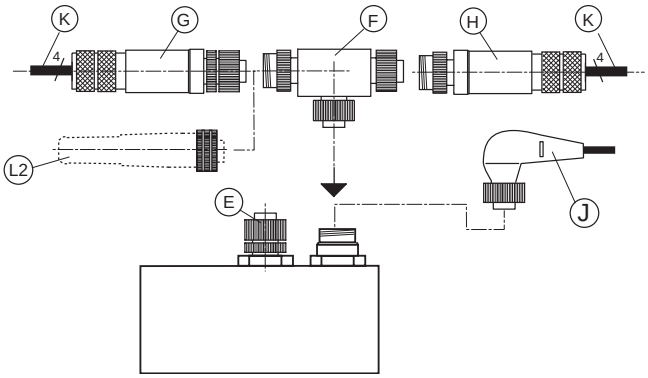
DeviceNet™ bus connection

the front panel of the communication module for DeviceNet™ is equipped with a 5 pin M12-A male socket.

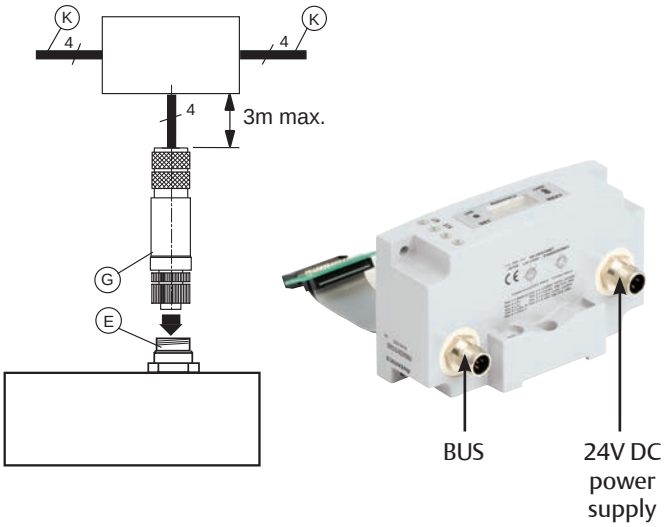
The bus can be connected in the two following ways:
- directly to the module with a T-connector;
- with a straight connector, cable (max. length: 3 m) and a DeviceNet distributor box.

The modules on either side of the system must be provided with terminating resistors (L1 or L2).

■ Wiring with T-connector

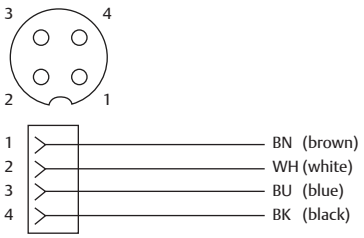


■ Connection with DeviceNet™ distributor box (X)



Accessories for DeviceNet™

The modules on either side of the system must be provided with terminating resistors (H)

	Accessory	Description	Catalog number
G		M12 90° 5 Pin Female Field Wireable network Connector – Spring Cage (A coded) PG9 cable gland	**TD05F2000000071V**
		M12 Straight 5 Pin Female Field Wireable network Connector – Spring Cage PG9 cable gland	**TC05F2000000071V**
H		M12 Straight 5 Pin Male Field Wireable network Connector – Spring Cage PG9 cable gland	**TA05F2000000071V**
F		3 Way M12 “T” (T-connector M12, 5 male / female / female pins)	**TC0500000TT05000**
L2		Terminating resistor male plug	**TA05TR0000000000**
		Terminating resistor female plug	**88157770**
J		M12 90° 4 Pin Female Field Wireable Connector (PG 9 Cable Gland) (4 pin elbow female cable connector 7/8”	**TD04F20000000000**
		M12 90° 4 Pin Female Single Ended Cable, Euro Color Code (4 pin elbow female cable connector 90° with 10 m cable) 	**TD0410MAE0000000**

(K) Cable to be ordered separately.

EtherCAT®

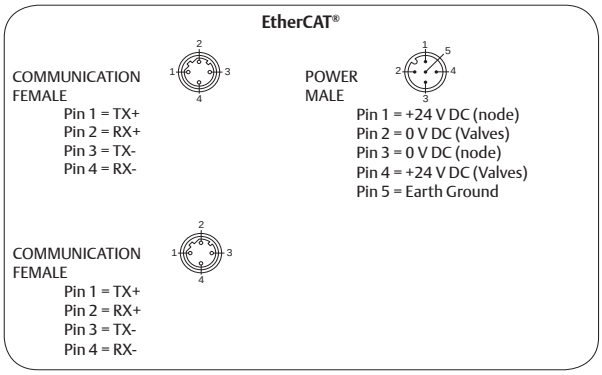
EtherCAT® is an open ethernet based fieldbus protocol developed by Beckhoff. EtherCAT® sets new standards for real-time performance and topology flexibility with short data update/cycle times and low communication jitter.

Aventics' 580 EtherCAT® node has an integrated graphic display for simplified commissioning and diagnostics.

The 580 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	P580AEEC1010A00



Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.03 A Maximum
Valves	24 VDC +/- 10%	4 A Maximum
Power Connector	A-Coded 5 pin M12 (male)	
Communication Connector	Single reverse key (B-Coded) 5 Pin M12 (1 male and 1 female)	
LEDs	Error/Run	

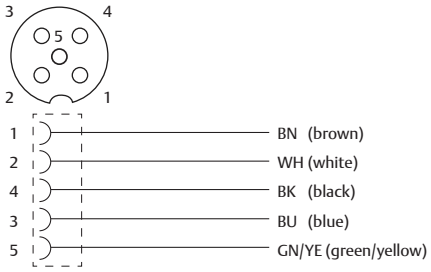
Operating Data	
Temperature Range	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture	IP65

Configuration Data	
Graphic Display	Display used for Subnet Mask, Fault / Idle Actions, and all other system settings.
Maximum Valve Solenoid Outputs	128 for Series 501 and 80 for Series 502/503

Network Data	
Supported Baud Rates	10 Mbit / 100 Mbit
Communication Connector	Single reverse key (B-Coded) 5 Pin M12 (1 male and 1 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	332 g

Accessories for EtherCAT®

Accessory	Description		Catalog number
	M12 Straight 4 Pin Male D-Coded to Male RJ45 network Cable - Shielded	5 m	QA0405MK-0VA04000
		10 m	QA0410MK-0VA04000
	M12 elbow 4 Pin Male D-Coded Field Wireable network Connector PG 9 Cable Gland – Screw Terminal		QB04F2000000071N
	M 12 90° 5 Pin Female Field Wireable Connector (24 V DC supply, PG 9 Cable Gland)		TD05F20000000000
	M12 90° 5 Pin Female Single Ended Cable, Euro Color Code (5 pin elbow female cable connector, 24 V DC supply, with 10 m cable)		TD0510MAE0000000

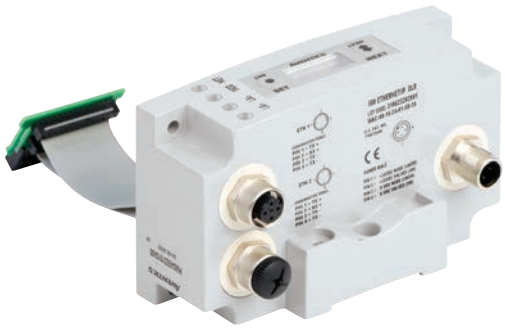
EtherNet/IP™ DLR

EtherNet/IP™ used throughout the world to network millions of PC's 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.

Aventics' 580 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).

The 580 EtherNet/IP™ nodes have been tested and approved for conformance by the ODVA

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



Description	Replacement Part Number
EtherNet/IP™ DLR communications module (node)	P580AEED1010A00

Ethernet/IP™ DLR

COMMUNICATION
FEMALE

Pin 1 = TX+
Pin 2 = RX+
Pin 3 = TX-
Pin 4 = RX-

POWER
MALE

Pin 1 = +24 V DC (node)
Pin 2 = +24 V DC (Valves)
Pin 3 = 0 V DC (node)
Pin 4 = 0 V DC (Valves)

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.09 A Maximum
Valves	24 VDC +/- 10%	4 A Maximun
Power Connector	A-Coded 4 Pin M12 (male)	
Communication Connector	Two D-coded 4 Pin M12 (female)	
LEDs	Module Status, Network Status and Activity/Link	

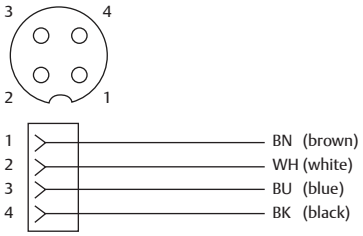
Operating Data	
Temperature Range	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture	IP65

Configuration Data	
Graphic Display	Display used for setting IP address, Subnet Mask, Fault/Idle Actions, and all other system settings
Maximum Valve Solenoid Outputs	128 for Series 501 and 80 for Series 502/503

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Communication Connector	Two D-coded 4 pin M12 (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, fail-safe device settings, integrated web server, HTTP, TFTP, UNICAST

Weight	
EtherNet/IP™ DLR communications module	337 g

Accessories for EtherNET/IP™ DLR

Accessory	Description		Catalog number
	M12 Straight 4 Pin Male D-Coded to Male RJ45 network Cable - Shielded	5 m	QA0405MK-0VA04000
		10 m	QA0410MK-0VA04000
	M12 elbow 4 Pin Male D-Coded Field Wireable network Connector PG 9 Cable Gland – Screw Terminal		QB04F2000000071N
	M12 90° 4 Pin Female Field Wireable Connector (PG 9 Cable Gland) (4 pin elbow female cable connector 7/8"		TD04F20000000000
	M12 90° 4 Pin Female Single Ended Cable, Euro Color Code (4 pin elbow female cable connector 90° with 10 m cable)		TD0410MAE0000000

Ethernet POWERLINK®

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

AVENTICS' 580 nodes for Ethernet POWERLINK® have an integrated graphic display.

The 580 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 compatibility 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)	P580AEPL1010A00

Ethernet POWERLINK®

COMMUNICATION FEMALE

Pin 1 = TD+
Pin 2 = RD+
Pin 3 = TD-
Pin 4 = RD-

POWER MALE

Pin 1 = +24 V DC (node)
Pin 2 = 0 V DC (Valves)
Pin 3 = 0 V DC (node)
Pin 4 = +24 V DC (Valves)
Pin 5 = Earth Ground

COMMUNICATION FEMALE

Pin 1 = TD+
Pin 2 = RD+
Pin 3 = TD-
Pin 4 = RD-

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.09 A
Valves	24 VDC +/- 10%	4 A Maximum
Power Connector	Single Key 5 Pin M12 (male)	
Communication Connector	Two D-Coded 4 Pin M12 (female)	
LEDs	Error, Status and Activity/Link	

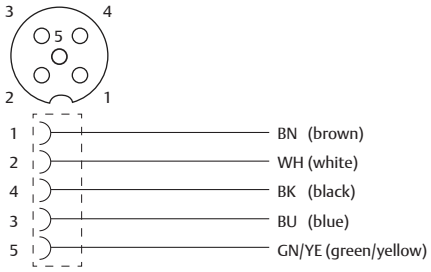
Operating Data	
Temperature Range (ambient)	-23 °C to 50 °C (-10 °F to 122 °F)
Humidity	95% relative humidity, non-condensing
Vibration/Shock	IEC 60068-2-27, IEC60068-2-6
Moisture	IP65

Configuration Data	
Graphic Display	Display used for setting IP address, Subnet Mask, Fault/Idle Actions, and all other system settings
Maximum Valve Solenoid Outputs	128 for 501 and 80 for 502/503

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

Weight	
POWERLINK® Communications Module	Class A: 328 g

Accessories for EtherNET POWERLINK®

Accessory	Description		Catalog number
	M12 Straight 4 Pin Male D-Coded to Male RJ45 network Cable - Shielded	5 m	QA0405MK-0VA04000
		10 m	QA0410MK-0VA04000
	M12 elbow 4 Pin Male D-Coded Field Wireable network Connector PG 9 Cable Gland – Screw Terminal		QB04F2000000071N
	M 12 90° 5 Pin Female Field Wireable Connector (24 V DC supply, PG 9 Cable Gland)		TD05F20000000000
	M12 90° 5 Pin Female Single Ended Cable, Euro Color Code (5 pin elbow female cable connector, 24 V DC supply, with 10 m cable)		TD0510MAE0000000

IO-Link® (Class A & Class B)

IO-Link® is a globally standardized IO technology (IEC 61131-9) developed primarily for communication with smart sensors and actuators that can also be used with valves and other field devices. IO-Link® is used to individually link field devices and resides below the I/O level. An IO-Link® Master with a higher level fieldbus or Ethernet communication protocol is required. The IO-Link Consortium, which is a technical committee within PROFIBUS® & PROFINET® International (PI), oversees and manages IO-Link® specifications.

Aventics' IO-Link® communications node offers both event based as well as standard I/O mapped diagnostics, requires minimal commissioning, and is compatible with distributed modular I/O. Supports both Class A (4 pin) and Class B (5 pin) with isolated ground) communication port types.

More information regarding IO-Link® can be obtained from the following website: www.io-link.com

Description	Replacement Part Number
IO-Link® Class A (4 pin) Communications Module (node)	P580AELM1010A00
IO-Link® Class B (5 pin) Communications Module (node)	P580AELM2010A00

IO-Link® (Class A & Class B)

The IO-Link® (Port Type A) connector is a single keyway 4 pin M12 male connector
Pin 1 = +24 V DC PWR
Pin 2 = +24 V DC (Valves)
Pin 3 = 0 V DC PWR (Valves)
Pin 4 = IO-Link COMM (C/Q)
Pin 5 = NO CONNECT

The IO-Link® (Port Type B) connector is a single keyway 5 pin M12 male connector
Pin 1 = +24 V DC PWR
Pin 2 = +24 V DC (Valves)
Pin 3 = 0 V DC PWR
Pin 4 = IO-Link COMM (C/Q)
Pin 5 = 0 V DC (Valves)

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.020 A
Valves	24 VDC +/- 10%	4 A Maximum
Power and Communication Connector	Class A: A-Coded 4 pin M12 (male)/Class B: A-Coded 5 pin M12 with isolated ground (male)	
LEDs	Valve Power, Node Power, Communication	

Operating Data	
Temperature Range (ambient)	-10ºC to 50ºC
Humidity	95% Relative Humidity, Non-condensing
Vibration/Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture	IP65

Configuration Data	
Maximum Valve Solenoid Outputs	32 for Series 501/502/503

Network Data	
Supported Baud Rates	38.4K
Diagnostics	Power, short, open load conditions with both standard I/O mapped diagnostics and event based diagnostics
Special Features	Fail-safe device settings

Weight	
IO-Link® Communications Module	Class A: 298 g, Class B: 303 g

IO Link field wireable

M12 straight 5 pins Female A-Coded IO Link field wireable PG-9 Cable Gland

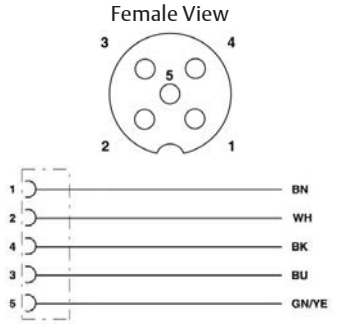
TC05F20000000000

M12 90° Elbow 5 pins Female A-Coded IO Link field wireable PG-9 Cable Gland

TD05F20000000000

Accessories for IO-Link® (Class A & Class B)

Accessory	Description		Catalog number
M12 Class A Compatible Cables			
	M12 Straight 4 Pin Male Single Ended Cable, Euro Color Code	1.5 m	**TA04E5MIE000071P**
		5 m	**TA0405MIE000071P**
	M12 90° 4 Pin Male Single Ended Cable, Euro Color Code	1.5 m	**TB04E5MIE000071P**
		5 m	**TB0405MIE000071P**
	M12 Straight 4 Pin Male to Female Cable Extension	1.5 m	**TC04E5MIETA0471P**
		3 m	**TC0403MIETA0471P**
M12 Class B Compatible Cables			
	M12 Straight 5 Pin Female Single Ended Cable - Unshielded	5 m	**TC0505MIE000071P**
		10 m	**TC0510MIE000071P**
	M12 Straight 5 Pin Female to Male Double Ended Cable - Unshielded	5 m	**TC0505MIETA0571P**
		10 m	**TC0510MIETA0571P**
	M12 90° 5 Pin Female Single Ended Cable - Unshielded	5 m	**TD0505MIE000071P**
		10 m	**TD0510MIE000071P**

Technical Data	Cable	M12 Field Wireable	Pin Out/Color Code
Molded Body/Insert	TPU	Polyamide	Female View 
Coupling Nut	Nickel Plated Zinc	Nickel Plated Zinc	
Cable Jacket Material	PUR	NA	
Cable O.D.	5mm	Accepts 3 – 6.5 mm	
Voltage Rating	60 V	125 V	
Current Rating	4 A	4 A	
Degree of Protection	IP65 (mated)	IP65 (mated)	
Operating Temperature	-25°C to 90°C	-20°C to 100°C	
Conductor Gauge	22 AWG	18 – 24 AWG	
Minimum Bend Radius	50 mm	NA	
Wire Connection	NA	Screw Terminal	

PROFIBUS™ DP

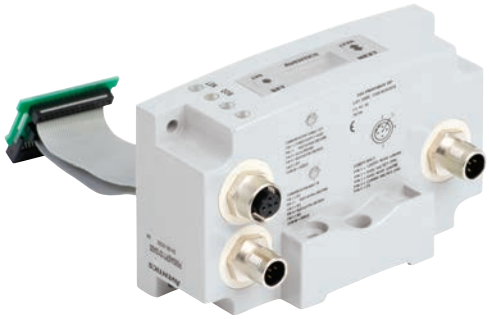
PROFIBUS™ DP is a vendor-independent, open fieldbus protocol designed for communication between automation control systems and distributed I/O at the device level.

Aventics' 580 nodes for PROFIBUS™ DP have an integrated graphic display.

The 580 nodes for PROFIBUS™ DP have been designed and tested to conform to the PROFIBUS® standard EN50170. Certification has been done by the PROFIBUS™ Interface Center (PIC) according to the guidelines determined by the PROFIBUS™ Trade Organization (PTO). The certification process ensures interoperability for all PROFIBUS™ devices.

More information regarding PROFIBUS™ can be obtained from the following website:

www.profibus.com



Description	Replacement Part Number
PROFIBUS™ DP communications module DPV0/DPV1	P580AEPT1010A00

PROFIBUS™ DP

COMMUNICATION
FEMALE OUT

Pin 1 = +5V DC
Pin 2 = RxD/TxD-N / Data Line A
Pin 3 = DATA GROUND (0V DC)
Pin 4 = RxD/TxD-P / Data Line B
Pin 5 = No Connected
Thread = Shield

POWER
MALE

Pin 1 = +24 V DC (node)
Pin 2 = 0 V DC (Valves)
Pin 3 = 0 V DC (node)
Pin 4 = +24 V DC (Valves)
Pin 5 = Earth Ground

COMMUNICATION
MALE IN

Pin 1 = No Connected
Pin 2 = RxD/TxD-N / Data Line A
Pin 3 = No Connected
Pin 4 = RxD/TxD-P / Data Line B
Pin 5 = No Connected
Thread = Shield

Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.08 A
Valves	24 VDC +/- 10%	4 A Maximum
Power Connector	A-Coded 5 pin M12 (male)	
Communication Connector	Single reverse key (B-Coded) 5 Pin M12 (1 male and 1 female)	
LEDs	Module Status and Network Status	

Operating Data	
Temperature Range (ambient)	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture Protection	IP65

Configuration Data	
Graphic Display	Display used for setting Node Address, Fault/Idle Actions, and all other system settings.
Maximum Valve-Solenoid Outputs	128 for Series 501 and 80 for Series 502/503

Network Data	
Supported Baud Rates	Auto-Baud (From 9.6k to 12m Baud)
Communication Connector	Single reverse key (B-coded) 5 pin M12 (1 male and 1 female)
Diagnostics	Power, short, open load conditions and module health are monitored

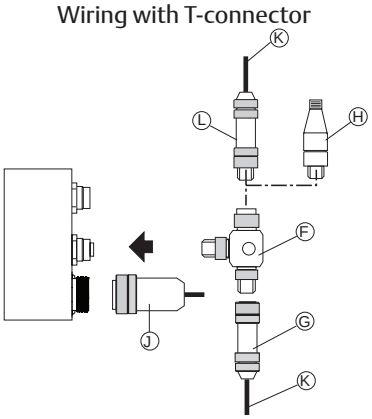
Weight	
PROFIBUS™ DP Communication Module	326 g

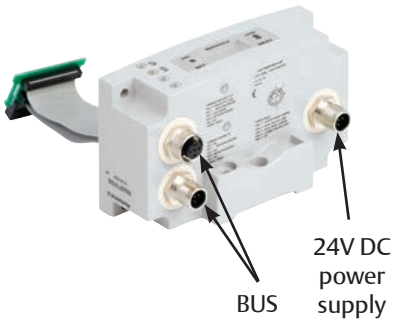
PROFIBUS™ DP bus connection

The front panel of the communication module for Profibus-DP® is equipped with:
- a 5 pin male M12 socket for power supply
- a 5 pin male M12-B socket or 5 pin female M12-A socket for the bus cable (with a T-connector on integrated M12 COM-IN/COM-OUT connector)

Fieldbus connection

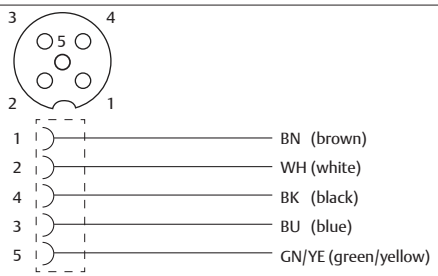
Wiring with T-connector





Accessories for PROFIBUS™ DP

The modules on either side of the system must be provided with terminating resistors (H)

	Accessory	Description	Catalog number
F		T-connector M12-B, 5 female / male / male pins (Profibus 12Mb max)	**88100712**
G		M12-B network connector, 5 female pins - for cable dia. 6 - 8 mm (Profibus 12Mb max)	**88100713**
		M12 90° 5 Pin Male & Female Field Wireable network Connectors, w/IDC PG9 Cable Gland – IDC FEMALE	**RD05F200P000071V**
L		M12-B network connector, 5 male pins - for cable dia. 6 - 8 mm (Profibus 12Mb max)	**88100714**
		M12 90° 5 Pin Male & Female Field Wireable network Connectors, w/IDC PG9 Cable Gland – IDC MALE	**RB05F200P000071V**
H		Terminating resistor M12-B - male plug	**88100716**
J		M 12 90° 5 Pin Female Field Wireable Connector (24 V DC supply, PG 9 Cable Gland)	**TD05F20000000000**
		M12 90° 5 Pin Female Single Ended Cable, Euro Color Code (5 pin elbow female cable connector, 24 V DC supply, with 10 m cable) 	**TD0510MAE0000000**
		Dust cover - M12 female	**88157773**

(K) Cable to be ordered separately.

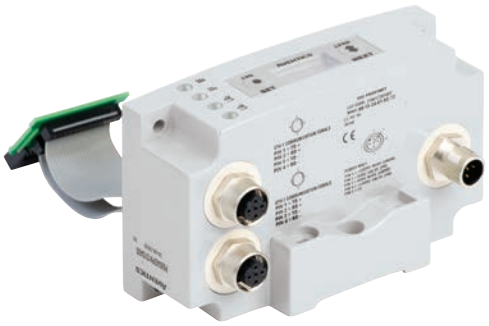
PROFINET®

PROFINET® is the innovative open standard for Industrial Ethernet, development 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.

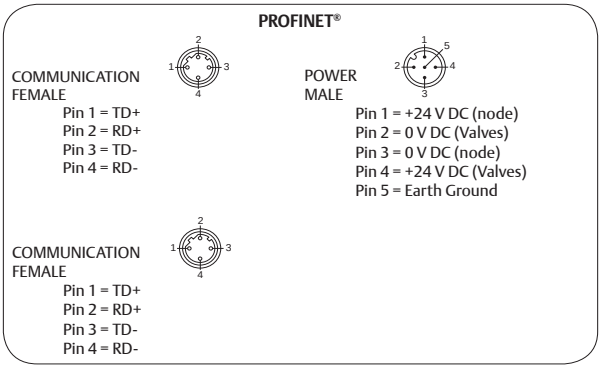
Aventics' 580 nodes for PROFINET IO (PROFINET RT) have an integrated graphic display.

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)	P580AEPN1010A00



Technical Data

Electrical Data	Voltage	Current
Node Power	24 VDC +/- 10%	0.11 A
Valves	24 VDC +/- 10%	4 A Maximum
Power Connector	A-Coded 5 Pin M12 (male)	
Communication Connector	Two D-Coded 4 Pin M12 (female)	
LEDs	System Fault, Bus Fault and Activity/Link	

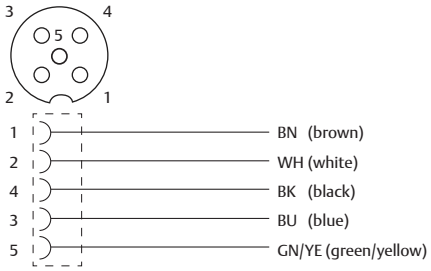
Operating Data	
Temperature Range (ambient)	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC 60068-2-6
Moisture Protection	IP65

Configuration Data	
Graphic Display	Display used for setting IP Address, Subnet Mask, Fault/Idle Actions, and all other system settings.
Maximum Valve-Solenoid Outputs	128 for Series 501 and 80 for Series 502/503

Network Data	
Supported Baud Rates	10 Mbit/100 Mbit
Communication Connector	Two D-Coded 4 Pin M12 (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

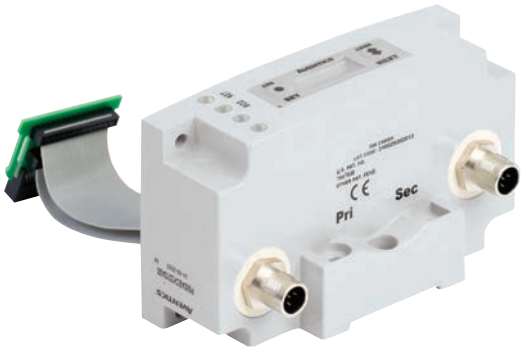
Weight	
PROFINET® Communication Module	335 g

Accessories for PROFINET®

Accessory	Description		Catalog number
	M12 Straight 4 Pin Male D-Coded to Male RJ45 network Cable - Shielded	5 m	QA0405MK-0VA04000
		10 m	QA0410MK-0VA04000
	M12 elbow 4 Pin Male D-Coded Field Wireable network Connector PG 9 Cable Gland – Screw Terminal		QB04F2000000071N
	M 12 90° 5 Pin Female Field Wireable Connector (24 V DC supply, PG 9 Cable Gland)		TD05F20000000000
	M12 90° 5 Pin Female Single Ended Cable. Euro Color Code (5 pin elbow female cable connector, 24 V DC supply, with 10 m cable)		TD0510MAE0000000

580 CHARM Node

The 580 CHARM node provides direct connectivity of pneumatic manifolds to DeltaV with Electronic Marshalling. The node connects directly to the CHARM I/O baseplate via 2 cables which attach to CHARM column extender. The cables provide redundant communication and power to the pneumatic manifold and allow the 580 CHARM node to be directly controlled by DeltaV Explorer. The 580 CHARM node configures the same as a DO CHARM.



Description	Replacement Part Number
580 CHARM module (node)	P580AECH2010A00

Technical Data

Electrical Data	Voltage	Current
Bus Power	6.3 V	100 mA
Valve Power	24 V	1.07 A
Power and Bus Connector	A-Coded 5 Pin M12 Male	
LEDs	Module Status and Network Status	

Operating Data	
Temperature Range (ambient)	-10°C to +50°C
Humidity	95% relative humidity, non-condensing
Vibration / Shock	IEC 60068-2-27, IEC60068-2-6
Moisture Protection	IP65

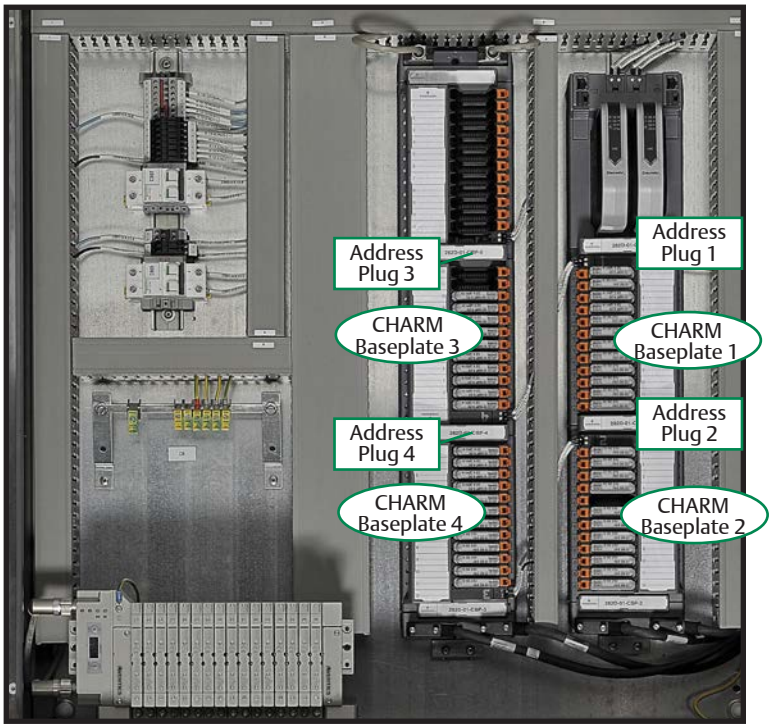
Configuration Data	
Graphic Display	Display used for setting CHARM address and all other system settings.
Maximum Valve-Solenoid Outputs	96 for 501 / 64 for 502/503

Network Data	
Power and Bus Connectors	A-Coded 5 Pin M12 Male
Diagnostics	Power, short, open load conditions are monitored
DeltaV version	Compatible DeltaV series S ; FHX file integrated in v13 version ; download file for v11 and v12 versions

Weight	
CHARM Communication Node	320 g

CHARM Communication & Power connection

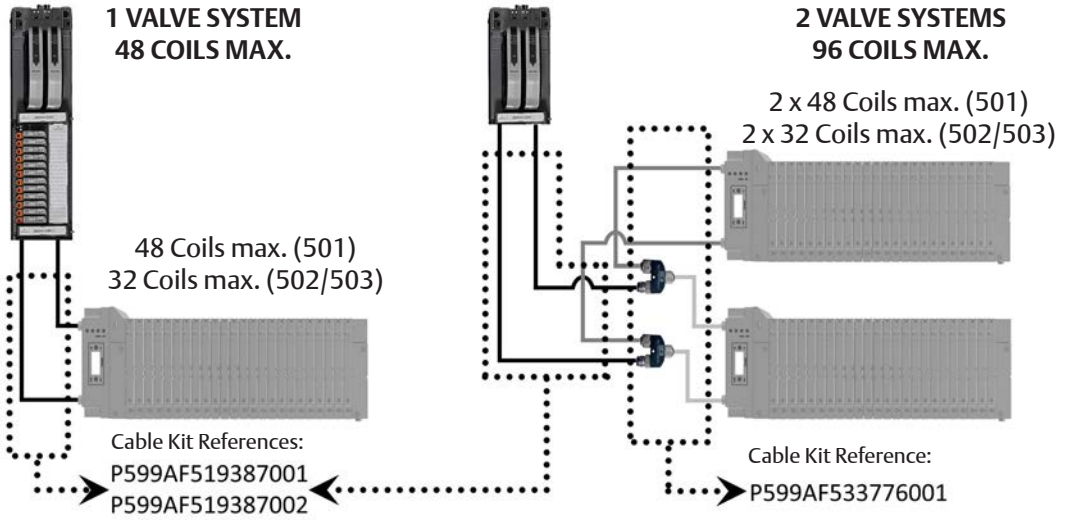
the front panel of the communication module is equipped with a 5 pin M12.



Both Cables provide 6.3 V for Comm. and 24 V for valve Power

Accessories for CHARM

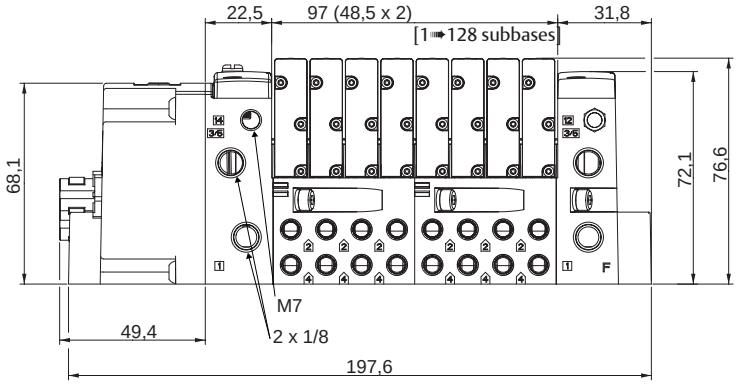
Accessory	Description	Catalog number
-	1.5 Meter Cable with M12 and Sub-D Connectors (Moulded version)	**P599AF519387001**
-	0.5 Meter Cable with M12 and Sub-D Connectors (Moulded version)	**P599AF519387002**
	Valve Power Isolator M12-Y	**P599AF516881001**
-	Cable kit to connect 2 CHARM modules for 96 coils capability maximum	**P599AF533776001**

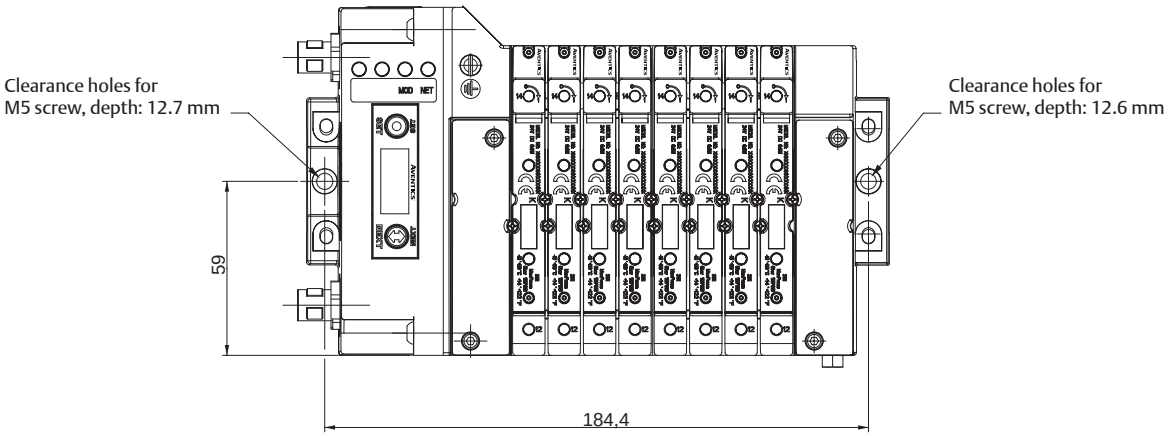


Dimensions (mm) - 580 Fieldbus Manifold Assembly

Series 501 Valve Manifold Assembly with 580 Electronics

Configurator - CAD Files



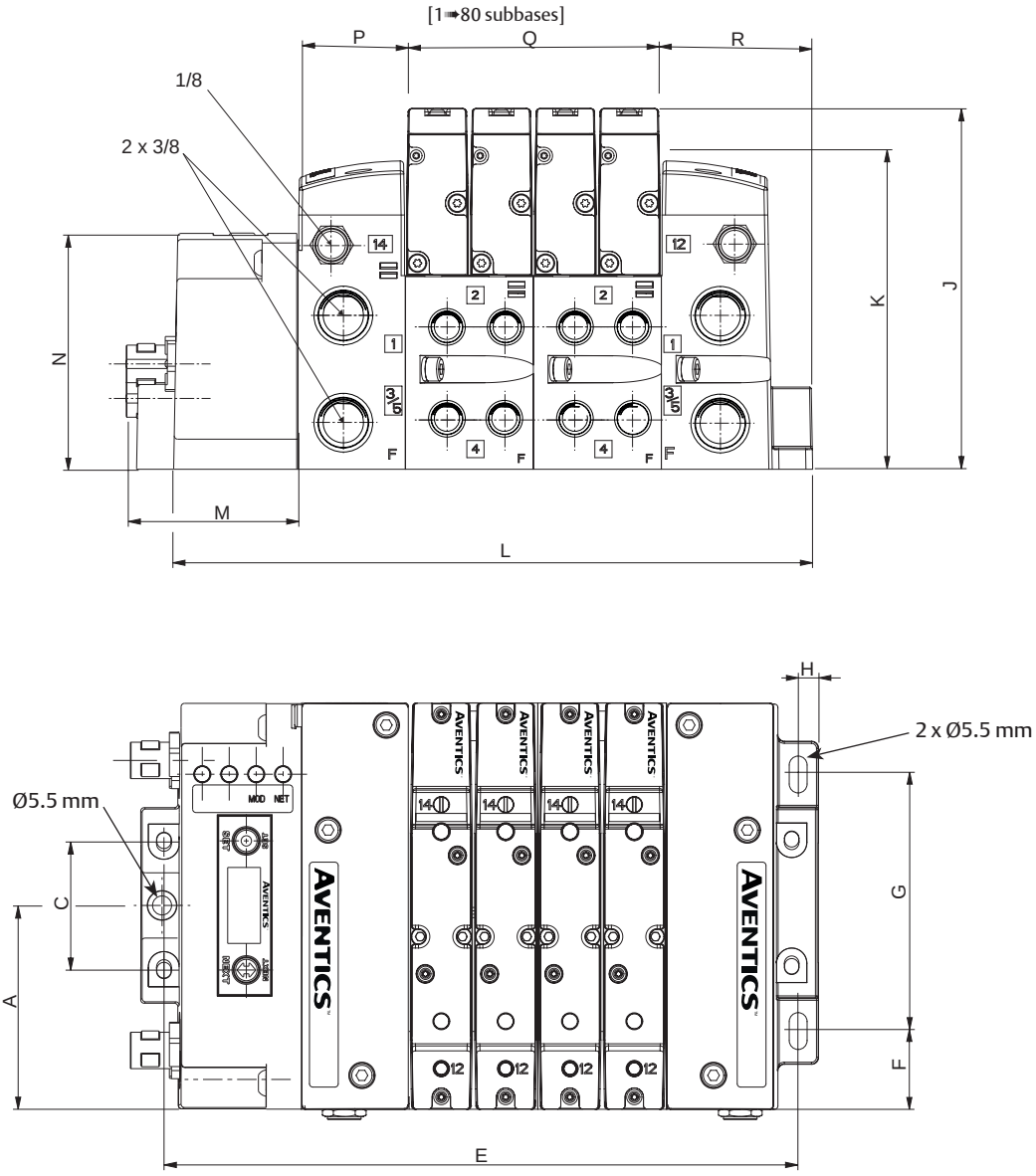


* - For valve manifold dimensions refer to Valve Series product catalogs

Dimensions (mm) - 580 Fieldbus Manifold Assembly

Series 502 Valve Manifold Assembly with 580 Electronics

Configurator - CAD Files



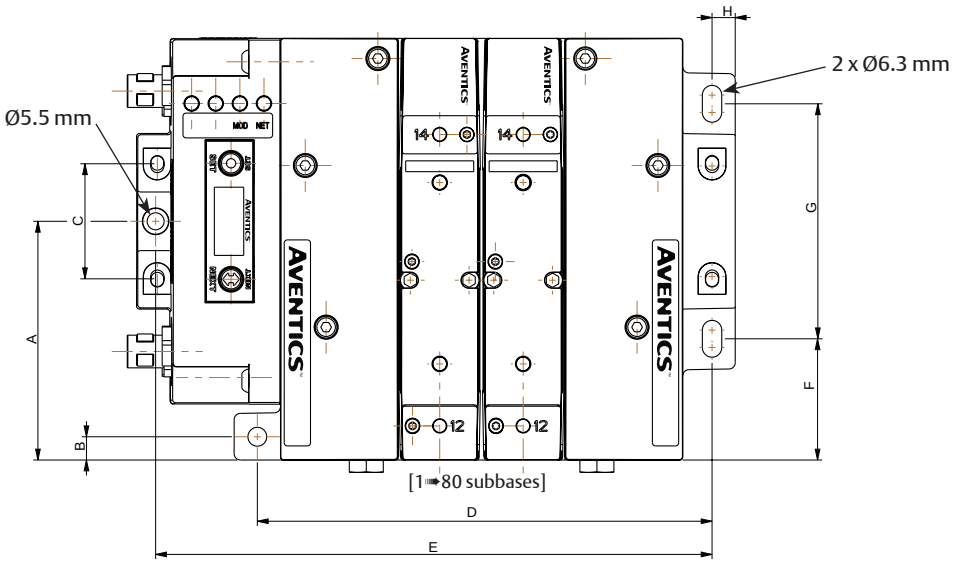
A	C	E	F	G	H	J	K	L	M	N	P	Q	R	weight (kg)
60	38	186.95	23.1	75.8	6	107.3	91.5	187.8	49.4	68.1	31.8	76	45	2.6

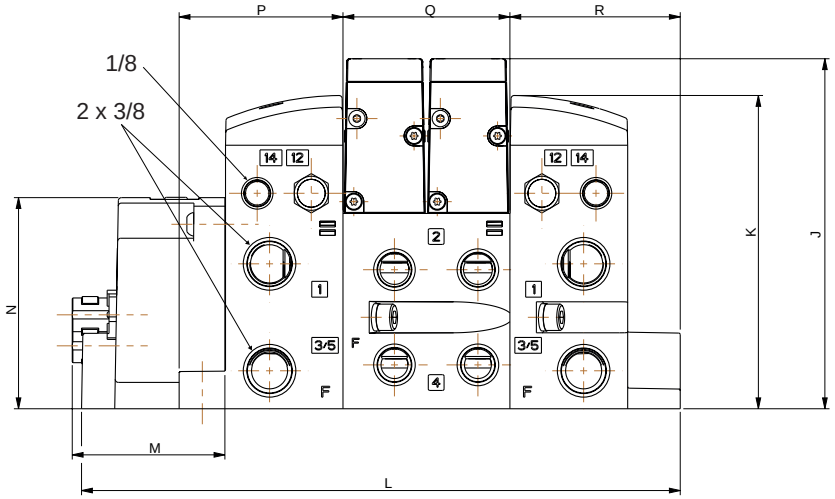
* - For valve manifold dimensions refer to Valve Series product catalogs

Dimensions (mm) - 580 Fieldbus Manifold Assembly

Series 503 Valve Manifold Assembly with 580 Electronics

Configurator - CAD Files





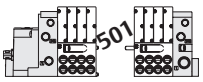
masse (kg)
2.8

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
77	7.5	38	147.1	180	39.1	75.8	7.5	113	101	194	49.4	68.1	53	54	55.1

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

How to Order

Manifold assemblies kit (Electronic + End plate)



PRODUCT CODE

G	501	A	V	8	B	1	0	0	V	A00

Thread connection
G = ISO 228/1
8 = NPT (contact us)
K = Push-in connectors

Product series
501 (11 mm valve)

Revision letter
A = Initial release

Product type
V = Valve Manifold Assembly

Electronics
8 = **580 Fieldbus Electronics**

D = CHARMs Electronics

Number of Valve Stations

501

A = NA/33/65/97	**F** = 6/38/70/102	**K** = 11/43/75/107	**P** = 16/48/80/112	**U** = 21/53/85/117	**Z** = 26/58/90/122	**6** = 31/63/95/127
B = NA/34/66/98	**G** = 7/39/71/103	**L** = 12/44/76/108	**Q** = 17/49/81/113	**V** = 22/54/86/118	**2** = 27/59/91/123	**7** = 32/64/96/128
C = 3/35/67/99	**H** = 8/40/72/104	**M** = 13/45/77/109	**R** = 18/50/82/114	**W** = 23/55/87/119	**3** = 28/60/92/124	
D = 4/36/68/100	**I** = 9/41/73/105	**N** = 14/46/78/110	**S** = 19/51/83/115	**X** = 24/56/88/120	**4** = 29/61/93/125	
E = NA/37/69/101	**J** = 10/42/74/106	**O** = 15/47/79/111	**T** = 20/52/84/116	**Y** = 25/57/89/121	**5** = 30/62/94/126	

End Plate Port Size (1-3-5)
501:
Used with the first digit «G» or «8»:
1 = 1/8 (female thread only)
Used with the first digit «K»:
H = 6 x 8 mm (push-in connector)

Valve Station Adder
0 = No Adder
1 = 32+
2 = 64+
3 = 96+

Second Valve Series
0 = No Second Valve Series

End Plate Style
V = Vertical

Options
A00 = Standard (no options)
MUF = Muffler in End Plates

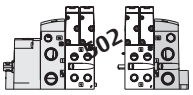
DRM = DIN Rail Mount
DWM = IN Rail Mount with Muffler

14X = External pilot supply from port 14
D12 = External pilot supply from port 14 and Muffler in End Plates

D14 = External pilot supply from port 14 and DIN Rail Mount
F06 = External pilot supply from port 14 Muffler in End Plates and DIN Rail Mount

How to Order

Manifold assemblies kit (Electronic + End plate)



PRODUCT CODE

G	502	A	V	8	B	1	0	0	V	A00

Thread connection
G = ISO 228/1
8 = NPT (contact us)
K = Push-in connectors

Product series
502 (18 mm valve)

Revision letter
A = Initial release

Product type
V = Valve Manifold Assembly

Electronics
8 = **580 Fieldbus Electronics**

D = CHARMs Electronics

Number of Valve Stations

502			
B = 2/34/66	**L** = 12/44/76	**V** = 22/54	**7** = 32/64
D = 4/36/68	**N** = 14/46/78	**X** = 24/56	
F = 6/38/70	**P** = 16/48/80	**Z** = 26/58	
H = 8/40/72	**R** = 18/50	**3** = 28/60	
J = 10/42/74	**T** = 20/52	**5** = 30/62	

End Plate Port Size (1-3-5)
502:
Used with the first digit «G» or «8» or «K»:
3 = 3/8
(female thread or push-in connector)
Used with the first digit «K»:
K = 8 x 10 mm (push-in connector)
M = 10 x 12 mm (push-in connector)

Valve Station Adder
0 = No Adder
1 = 32+
2 = 64+

Second Valve Series
0 = No Second Valve Series
1 = 11 mm Valve

End Plate Style
V = Vertical

Options
A00 = Standard (no options)
MUF = Muffler in End Plates

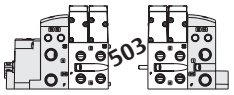
DRM = DIN Rail Mount
DWM = IN Rail Mount with Muffler

14X = External pilot supply from port 14
D12 = External pilot supply from port 14 and Muffler in End Plates

D14 = External pilot supply from port 14 and DIN Rail Mount
F06 = External pilot supply from port 14 Muffler in End Plates and DIN Rail Mount

How to Order

Manifold assemblies kit (Electronic + End plate)



PRODUCT CODE

G	503	A	V	8	B	1	0	0	V	A00

Thread connection
G = ISO 228/1
8 = NPT (contact us)
K = Push-in connectors

Product series
503 (26 mm valve)

Revision letter
A = Initial release

Product type
V = Valve Manifold Assembly

Electronics
8 = **580 Fieldbus Electronics**
D = CHARMs Electronics

Number of Valve Stations

503

B = 2/34/66	**L** = 12/44/76	**V** = 22/54	**7** = 32/64
D = 4/36/68	**N** = 14/46/78	**X** = 24/56	
F = 6/38/70	**P** = 16/48/80	**Z** = 26/58	
H = 8/40/72	**R** = 18/50	**3** = 28/60	
J = 10/42/74	**T** = 20/52	**5** = 30/62	

Options
A00 = Standard (no options)
MUF = Muffler in End Plates

DRM = DIN Rail Mount
DWM = DIN Rail Mount with Muffler
14X = External pilot supply from port 14
D12 = External pilot supply from port 14 and Muffler in End Plates
D14 = External pilot supply from port 14 and DIN Rail Mount
F06 = External pilot supply from port 14 Muffler in End Plates and DIN Rail Mount
A27 = Fanuc Robot EE Connection Interface

D28 = Fanuc Robot EE Connection + Muffler in End Plate

End Plate Style
V = Vertical
C = Combination

Second Valve Series
0 = No Second Valve Series
2 = 18 mm Valve

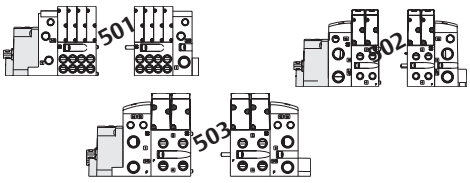
Valve Station Adder
0 = No Adder
1 = 32+
2 = 64+

End Plate Port Size (1-3-5)
Used with the first digit «G» or «8» or «K»::
3 = 3/8 (female thread or push-in connector)

Used with the first digit «K»:
K = 8 x 10 mm (push-in connector)
M = 10 x 12 mm (push-in connector)

How to Order

580 Electronics



PRODUCT CODE

P	580	A	E	DN1	0	1	0	A00

Product series
580 Fieldbus Electronics

Revision letter
A = Initial release

Actuation
E = Electronics

Options
A00 = Standard (no options)

Connector Type
1 = M12 Connector (push-in connector)

Protocol

CO1 = CANopen®		**PN1** = PROFINET® (1)	
DN1 = DeviceNet™		**PT1** = PROFIBUS-DP® (1)	
EC1 = EtherCAT® (1)		**LM1** = IO-Link Class A (4 pin)	
ED1 = EtherNet/IP™ DLR (1)		**LM2** = IO-Link Class B (5 pin)	
PL1 = POWERLINK		**CH2** = CHARM (1) (Max. 48 coils)	
		DS4 = SUB-BUS (1)	

(1) 32+ capable.

How to Order

Valves

501

PRODUCT CODE

R	501	A	2	B	4	0	M	A00	F1

Thread connection
R = Pad mount

Product series
501 (11 mm valve)

Revision letter
A = Initial release

Actuation
2 = Rubber packed

Valve type
B = Solenoid pilot

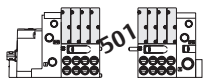
Function
A = 2x3/2 NO, dual 3-way
D = 2x3/2 NC, dual 3-way
N = 5/2, Differential air return
1 = 5/2, spring return
4 = 5/2, solenoid air return
5 = 5/3, W3, open center to exhaust
6 = 5/3, W1, center closed
7 = 5/3, W2, open center to pressure

Voltage - class
F1 = 24 V DC - class F

Options
A00 = With impulse manual operator
11B = With maintained manual operator
11M = Without manual operator

Electrical interface
M = Plug-in (with LED indicator / DC)

Configurator - CAD Files



502

PRODUCT CODE

R	502	A	2	B	4	0	M	A00	F1

Thread connection
R = Pad mount

Product series
502 (18 mm valve)

Revision letter
A = Initial release

Actuation
1 = Spool and sleeve
2 = Rubber packed (2x3/2 NC, only)

Valve type
B = Solenoid pilot
(With impulse manual operator)

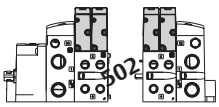
Function
D = 2x3/2 NC, dual 3-way (Rubber packed)
N = 5/2, Differential air return
1 = 5/2, spring return
4 = 5/2, solenoid air return
5 = 5/3, W3, open center to exhaust
6 = 5/3, W1, center closed
7 = 5/3, W2, open center to pressure

Voltage - class
F1 = 24 V DC - class F

Options
A00 = Standard (No option)
With impulse manual operator
11B = With maintained manual operator
11M = Without manual operator

Electrical interface
M = Plug-in (with LED indicator / DC)

Configurator - CAD Files



503

How to Order

Valves

PRODUCT CODE

R	503	A	2	B	4	0	M	A00	F1

Thread connection
R = Pad mount

Product series
503 (26 mm valve)

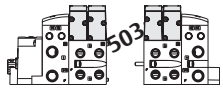
Revision letter
A = Initial release

Actuation
1 = Spool and sleeve
2 = Rubber packed

Valve type
B = Solenoid pilot
(With impulse manual operator)

Function
A = 2x3/2 NO, dual 3-way [2]
D = 2x3/2 NC, dual 3-way [2]
N = 5/2, Differential air return [2]
1 = 5/2, spring return
4 = 5/2, solenoid air return
5 = 5/3, W3, open center to exhaust
6 = 5/3, W1, center closed [2]
7 = 5/3, W2, open center to pressure

Configurator - CAD Files



Voltage - class
F1 = 24 V DC - class F

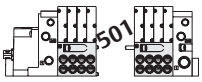
Options
A00 = Standard (No option)
With impulse manual operator [1]
11B = With maintained manual operator
11Z = With push-button type maintained manual operator
11M = Without manual operator
14B = Internal pilot supply from port 1
81G = 11B + 14B
82K = 11M + 14B

Electrical interface
M = Plug-in (with LED indicator / DC)

[1] Used external spool valves (internal/external supply configurated in the end plate kits).
For internal piloting, contact us.
[2] Only with rubber packed version.

How to Order
Subbase

501



PRODUCT CODE

H	501	A	M	S4	B	M	A00	1	0

Thread connection
H = Metric thread
K = Push-in connectors

Product series
501 (11 mm valve)

Revision letter
A = Initial release

Product type
M = Manifold base
Z = Mid station supply
F = 32+ Solenoid Manifold Subbase

Mounting
S3 = Manifold base, 3 stations, side port, single Z-Board™
M3 = Manifold base, 3 stations, side port, double Z-Board™
S4 = Manifold base, 4 stations, side port, single Z-Board™
M4 = Manifold base, 4 stations, side port, double Z-Board™
M8 = 32+ Solenoid Manifold Sub Base, 8 Stations, Side Ports, Double Z-Board™

Interface
1 = High flow

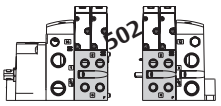
Options
A00 = Standard (No option)
96X = 4 mm Port Size Override for Stations 5-8 of the 128 Solenoid Manifold Sub Base

Wiring option
M = Plug-in
V = +24 V DC Separation at First Station

Port connection
B = M7 (female thread only)
D = 2.7 x 4 mm [push-in connector only] (Mid station supply not available)
F = 4 x 6 mm [push-in connector only]

How to Order
Subbases

502



PRODUCT CODE

G	502	A	M	S2	2	M	A00	1	0

Thread connection
G = ISO 228/1
8 = NPT (contact us)
K = Push-in connectors

Product series
502 (18 mm valve)

Revision letter
A = Initial release

Product type
M = Manifold base
Z = Mid station supply
F = 32+ Solenoid Manifold Subbase

Mounting
S2 = Manifold base, 2 stations, side port, single Z-Board™
M2 = Manifold base, 2 stations, side port, double Z-Board™
V2 = Manifold base, 2 stations, side port
M4 = 32+ Manifold Sub Base, 4 Stations, Side Ports, Double Z-Board™
D2 = Manifold Sub Base, 2 Stations, Dual Flow, Side Ports, Double Z-Board™

Interface
1 = Pneumatic high flow
2 = ISO 15407-2 (18 mm)

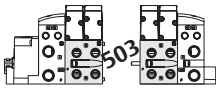
Options
A00 = Standard (internal pilot)
14X = External pilot supply from port 14
83H = Pilot Separation from Station 1
83J = Pilot Separation from Station 2

Wiring option
M = Plug-in
T = 32+ Solenoid Auxiliary Power (used with M4 and F)
V = +24 V DC Separation at First Station
W = +24 V DC Separation at Second Station

Port connection (2-4)
Used with the first digit «G» or «8»:
1 = 1/8 (female thread only)
3 = 3/8 (Used for Dual Flow only)
4 = 1/2 (Used for Dual Flow only)
Used with the first digit «K»:
F = 4 x 6 mm [push-in connector only]
H = 6 x 8 mm [push-in connector only]

How to Order

Subbases



PRODUCT CODE

G	503	A	M	S2	2	M	A00	1	0

Thread connection
G = ISO 228/1
8 = NPT (contact us)
K = Push-in connectors

Product series
503 (26 mm valve)

Revision letter
A = Initial release

Product type
M = Manifold base
Z = Mid station supply
F = 32+ Solenoid Manifold Subbase

Mounting
S2 = Manifold base, 2 stations, side port, single Z-Board™
M2 = Manifold base, 2 stations, side port, double Z-Board™
M4 = 32+ Manifold Sub Base, 4 Stations, Side Ports, Double Z-Board™
D2 = Manifold Sub Base, 2 Stations, Dual Flow, Side Ports, Double Z-Board™

Port connection (2-4)
Used with the first digit «G» or «8»:
2 = 1/4
4 = 1/2 (Used for Dual Flow only)
Used with the first digit «K»:
H = 6 x 8 mm [push-in connector only]
K = 8 x 10 mm [push-in connector only]

Wiring option
M = Plug-in
V = +24 V DC Separation at First Station
W = +24 V DC Separation at Second Station
X = 0 & +24 V DC Separation at First Station
T = 32+ Solenoid Auxiliary Power (used with M4 and F)

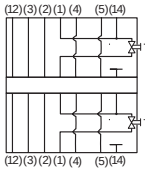
Options
A00 = Standard (internal pilot)
14X = External pilot supply from port 14
83H = Pilot Separation from Station 1
83J = Pilot Separation from Station 2

Interface
1 = Pneumatic high flow
2 = ISO 15407-2 (26 mm)

Sandwich shut off block (Series 501-502-503)

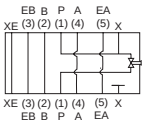
- Used to shut-off pressure to the valve which is mounted above it.
- Allows easy maintenance without the need to shut-off pressure to the whole manifold.
  (specified for 2x3/2 NC-NC valve)

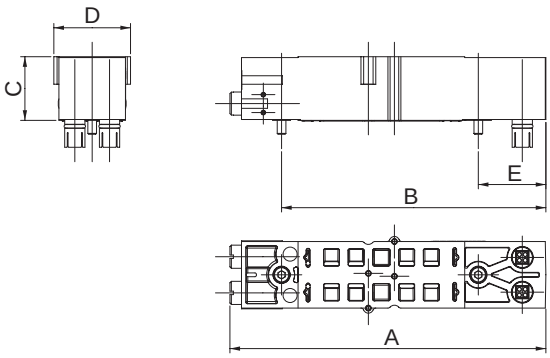
Series 501

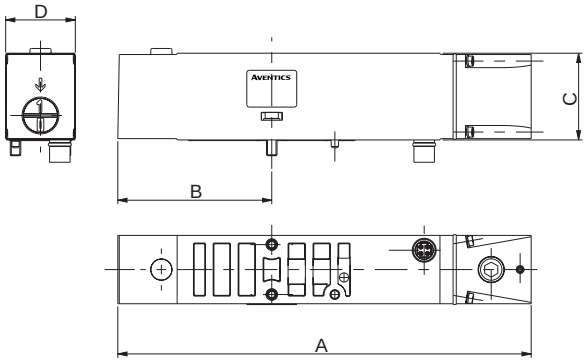


Series 503

Series 502







Dimensions (mm)

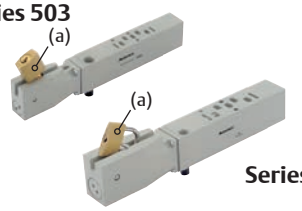
	A	B	C	D	E
501	109.2	91.35	22	26.5	23.35
502	147.2	50.5	27.5	18.5	-
503	157.3	58.6	33	26.5	-

⚠ **Usable only for internal pilot supply island**

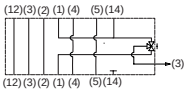
⚠ **Pay attention to residual pressures**

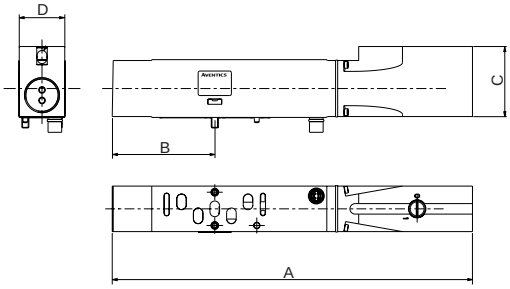
⚠ **The valve(s) should not be energised during disassembly**

Series 503



Series 502





Dimensions (mm)

	A	B	C	D
502	171	51	32.7	18.5
503	205.8	58.6	40.5	26

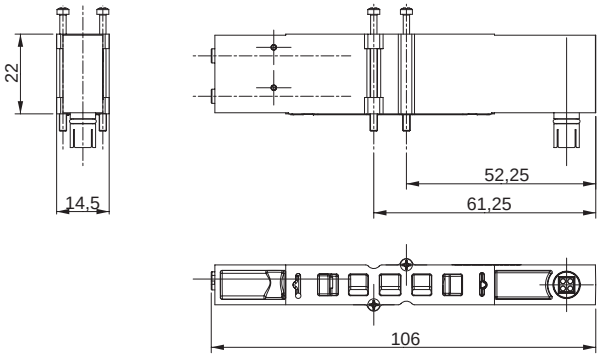
(a) The Lock is in not included with this accessory.

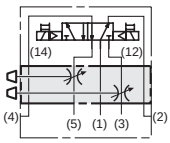
	Catalog number	Description	weight (kg)
501	**R501AY428501001**	Sandwich shut off block (double)	0.11
502	**R502AY429409002**	High Flow - Sandwich shut off block	0.145
503	**R503AY426707002**		0.237
502	**R502AY429409001**	ISO 15407-2 - Sandwich shut off block	0.145
503	**R503AY426707001**		0.237
502	**R502AY429409004**	ISO 15407-2 - Lockable shut off block	0.176
503	**R503AY426707003**		0.352

Sandwich speed control kit (501-502-503 Series)

⚠ No usable for ATEX

Series 501





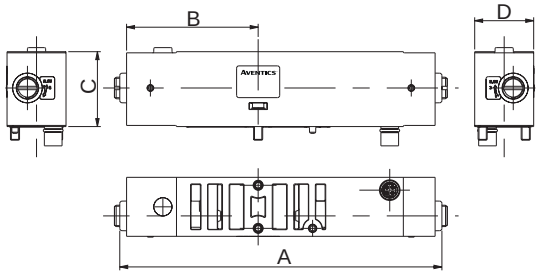
14

	weight (kg)
501	0.055
502	0.138
503	0.248

⚠ No usable for ATEX

Series 502

Series 502



Dimensions (mm)

	A	B	C	D
502	124	51	27.5	18.5
503	142	58	33	26

	Catalog number	Description
501	**R501AS428500001**	Sandwich Speed Control
502	**R502AS429395002**	High Flow - Sandwich Speed Control
503	**R503AS425575002**	
502	**R502AS429395001**	ISO 15407-2 - Sandwich Speed Control
503	**R503AS425575001**	