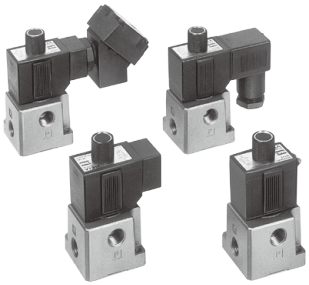
3 Port Solenoid Valve
Direct Operated Poppet Type
VT317 Series
Rubber Seal

[Option]
Note) CE/UKCA-compliant: Electrical entry is applicable only for the DIN terminal.

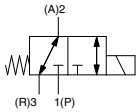
Compact yet provides a large flow capacity
Dimensions (W x H x D)·····45 x 89.5 x 45 (Grommet)
C: 2.6 dm^3/(s·bar)
(Passage 2 → 3)

Suitable for use in vacuum applications
–101.2 kPa
(For vacuum specifications: VT/VO317V)

A single valve with 6 valve functions
(Universal porting type)
Selective porting can provide 6 valve functions, such as N.C. valve, N.O. valve, Divider valve, Selector valve etc.



Symbol



How to Order

V T 317 [ ] - 1 G [ ] - 02 [ ] - [ ]

Body type

T	Body ported
O	Manifold

Valve option

Nil	Standard type
E	Continuous duty type
V	For vacuum

Rated voltage

1	100 VAC,50/60 Hz
2	200 VAC,50/60 Hz
3	110 VAC,50/60 Hz
4	220 VAC,50/60 Hz
5	24 VDC
6	12 VDC
7	240 VAC,50/60 Hz

Note 1) CE/UKCA-compliant: Electrical entry is applicable only for the DIN terminal.
Note 2) For other rated voltages, please consult with SMC.

Electrical entry

		CE/UKCA-compliant
G	Grommet, 300 mm lead wire	—
H	Grommet, 600 mm lead wire	—
C	Conduit	—
T	Conduit terminal	—
D	DIN terminal	●
DO	DIN terminal, Without connector	●

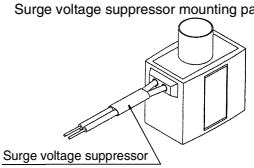
Note) A gasket must be ordered separately for DO.
Gasket part no.: VX020-026

Light/Surge voltage suppressor

Symbol \ Electrical entry	G	H	C	T	D	DO	CE/UKCA-compliant D	CE/UKCA-compliant DO
Nil	●	●	●	●	●	●	●	●
S	●Note)	●Note)	●Note)	●	●	—	●	—
Z	—	—	—	●	●	—	●	—

S: With surge voltage suppressor
Note) Refer to the figure below.
Z: With light/surge voltage suppressor

Surge voltage suppressor mounting part (For "G")



CE/UKCA-compliant

Nil	——
Q	CE/UKCA-compliant *

* CE/UKCA-compliant: Electrical entry is applicable only for the DIN terminal.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Nil	Without port (For manifold)
02	1/4 (8A)

Manifold

Model	Applicable manifold type	Accessory
VO317(-Q)	Common or individual exhaust	O-ring (KA00066, 4 pcs.) Note) Hexagon socket head screw (XT012-25C#1, 2 pcs.)

Note) It is not applied to "Continuous duty type". Refer to the accessories on page 1254.

Standard Specifications

Type of actuation	Direct operated type 2 position single solenoid
Fluid	Air
Operating pressure range	0 to 0.9 MPa
Ambient and fluid temperature	–10 to 50°C (No freezing.)
Response time (1)	30 ms or less (at the pressure of 0.5 MPa)
Max. operating frequency	10 Hz
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
Manual override	Non-locking push type
Mounting orientation	Unrestricted
Impact/Vibration resistance (2)	150/50 m/s^2
Enclosure	Dustproof

Electrical entry			Grommet, Conduit, Conduit terminal, DIN terminal
Coil rated voltage (V)	**AC (50/60 Hz)**		100, 200, 110 *, 220 *, 240 *
	DC		24, 12 *
Allowable voltage fluctuation			–15 to +10% of rated voltage
Apparent power (3)	**AC**	**Inrush**	19 VA (50 Hz), 16 VA (60 Hz)
		Holding	11 VA (50 Hz), 7 VA (60 Hz)
Power consumption (3)	**DC**		Without indicator light: 6 W, With indicator light: 6.3 W
Light/Surge voltage suppressor (Not applicable for grommet type)	**AC**		Varistor, Neon bulb
	DC		Varistor, LED (Neon bulb for 100 V or more)

* Semi-standard

Note 1) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 1000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 3) At rated voltage

Flow Rate Characteristics/Weight

Valve model	Flow rate characteristics												Weight
	1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
	C [dm^3/(s·bar)]	b	Cv	C [dm^3/(s·bar)]	b	Cv	C [dm^3/(s·bar)]	b	Cv	C [dm^3/(s·bar)]	b	Cv	Grommet
VT317													
VT317V (Vacuum spec. type)	2.4	0.26	0.62	2.6	0.34	0.67	2.8	0.25	0.67	2.5	0.37	0.66	0.29kg
VT317E (Continuous duty type)													

Note) Values for a single valve unit. It differs in the manifold case. Refer to manifold specifications on page 1254.

Valve Options

Continuous duty type: VT317E

Exclusive use of VT317E is recommended for continuous duty with long time loading.

⚠ Caution

1. This model is for continuous duty, not for high cycle rates. But even in low cycle rates, if energizing the valve more than once a day, please consult with SMC.
2. Energizing solenoid should be done at least once in 30 days.

Vacuum spec. type: VT317V

This vacuum model has less air leakage than the standard model under low pressure. It is recommended for vacuum application.

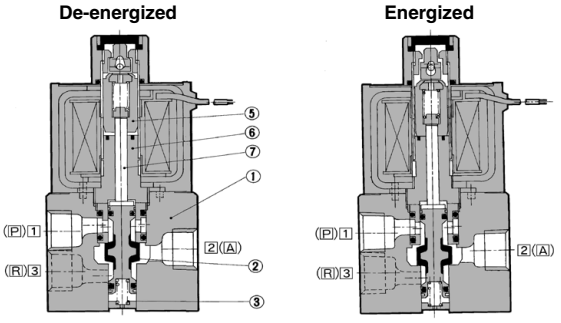
⚠ Caution

1. Since this valve has slight air leakage, it can not be used for vacuum holding (including positive pressure holding) in the pressure container.

Specifications different from standard are as follows.

Operating pressure range	–101.2 kPa to 0.1 MPa

Construction



Operation principles

<De-energized>

Spool valve ② is pushed upward by the return spring ③, port P is closed, and port A and port R are opened.

<Energized>

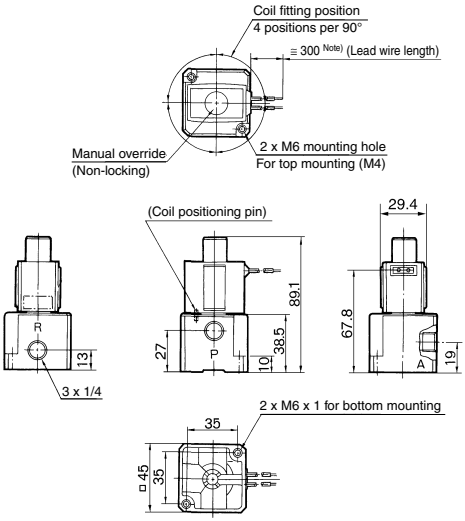
When an electric current is applied to the molded coil ④, the armature ⑤ is attracted to the core ⑥, and through the push rod ⑦, it pushes down the spool valve ②. Then, port P and port A are connected. At this time, there will be gaps between the armature ⑤ and the core ⑥, but the armature will be magnetically attracted to the core ⑥.

Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Color: Platinum silver
2	Spool valve	Aluminum, NBR	

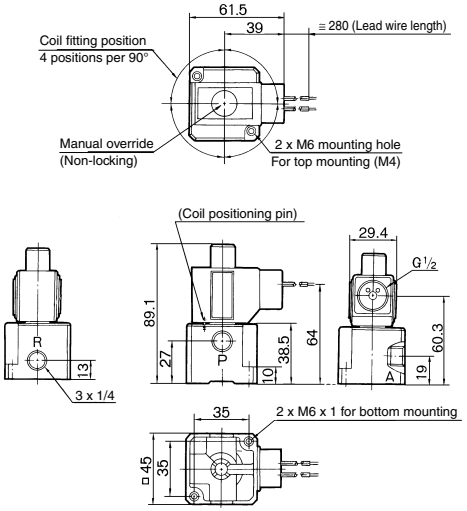
Dimensions

Grommet: VT317-□G

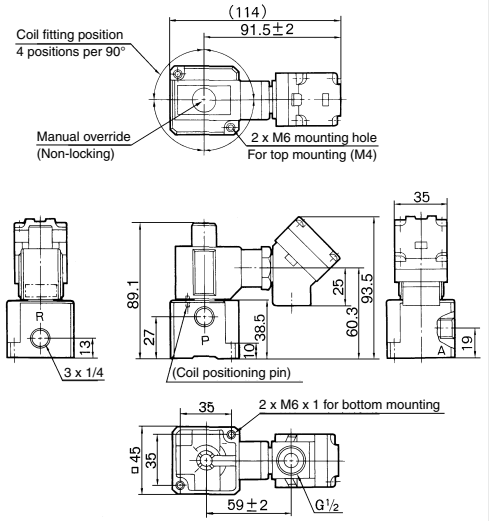


Note) There is also "VT317-□H" (Lead wire length: 600 mm).

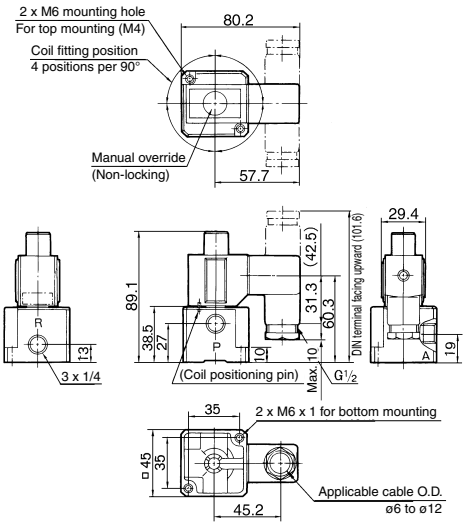
Conduit: VT317-□C



Conduit terminal: VT317-□T



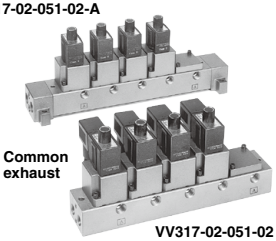
DIN terminal: VT317-□D



VT317 Series
Manifold Specifications

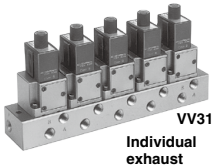
VT317 manifold is B mount type and available both as a common exhaust and individual exhaust model.

VV317-02-051-02-A



Common exhaust

VV317-02-051-02



VV317-02-053-02

Individual exhaust

How to Order Manifold

VV317 - 02 - 05 1 - 02 - A -

Base type: 1/4

Valve stations

02	2 stations
⋮	⋮
20	20 stations

Max. 20 stations

VT317 manifold

∗ Please indicate manifold base type, applicable manifold valve and blanking plate when ordering.

Ordering example:
VV317-02-051-02-A····· 1 pc.
(5-station manifold base)
∗VO317-1G····· 4 pcs.
∗PVT317-53-1A····· 1 pc.
(Blanking plate)
→ The asterisk denotes the symbol for assembly.
Prefix it to the part nos. of the solenoid valve, etc.

Symbol

Symbol	Passage		Porting specifications
	P	R	A
1	Common	Common	Side
3	Common	Individual	Side

A port size (Base piping) 1/4

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Option

Nil	Without mounting bracket
A	With mounting bracket∗

∗ Common exhaust type only

CE/UKCA-compliant

Nil	—
Q	CE/UKCA-compliant

Manifold Specifications

Manifold type	B mount
Max. number of stations	20 stations (1)
Applicable solenoid valve	VO317□-□□□(-Q) (3)

Exhaust port		Port location (Direction)/Port size		
Symbol	Type	P	A	R
1	Common (2)	Base (Side) 1/4 (3/8)	Base (Side) 1/4	Base (Side) 1/4 (3/8)
3	Individual	Base (Side) 1/4	Base (Side) 1/4	Base (Side) 1/4

Note 1) For more than 3 stations, supply air both sides of P port. The common exhaust type should exhaust from both of the R port.
Note 2) In the case of common exhaust type, R and P ports size can be Rc 3/8 by using a mounting adaptor.
Note 3) Can also be applied to VVT320 series manifold.

Accessory for Applicable Solenoid

Description	Part no.	Qty	Note
O-ring	KA00066 (P10)	4	Standard type vacuum specifications type
	KA00098 (P10F)		Continuous duty type
Hexagon socket head screw	XT012-25C#1(M4×0.7×20)	2	

Option

Description	Part no.
Blanking plate (With screw, O-ring)	PVT317-53-1A
Mounting bracket assembly (With screw)	DXT010-37-4□A (For common exhaust)

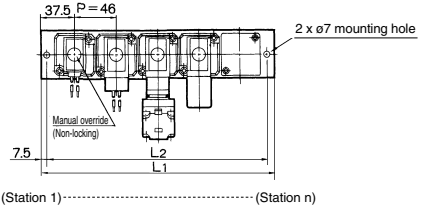
□: Thread type (Refer to "How to Order".)

Flow Rate Characteristics/Weight

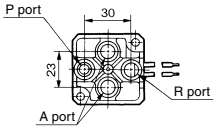
Valve model	Flow rate characteristics												Weight
	1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	Grommet
VO317													
VO317V (Vacuum spec. type)	2.0	0.11	0.47	2.2	0.12	0.49	2.0	0.14	0.45	2.1	0.14	0.48	0.32kg
VO317E (Continuous duty type)													

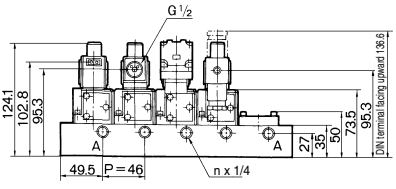
Dimensions: Common Exhaust (Interchangeable with VVT320 for mounting)

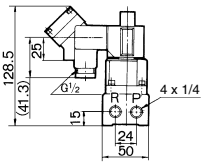
Without mounting bracket: VV317-02-□1-02

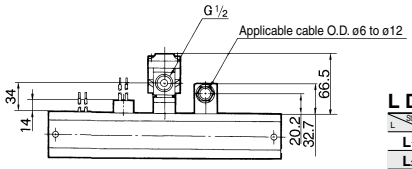


A single valve unit port location





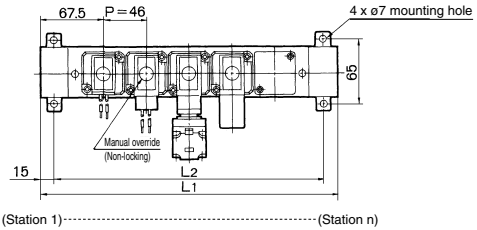


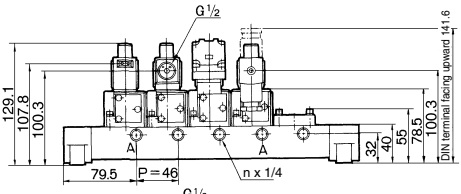


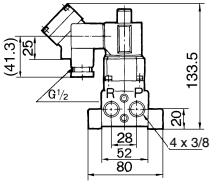
L Dimension n: Stations

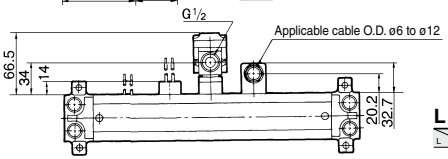
L / Stations	2	3	4	5	6	7	8	9	10	Formula
L_1	121	167	213	259	305	351	397	443	489	$L_1 = 46 \times n + 29$
L_2	106	152	198	244	290	336	382	428	474	$L_2 = 46 \times n + 14$

With mounting adaptor: VV317-02-□1-02-A







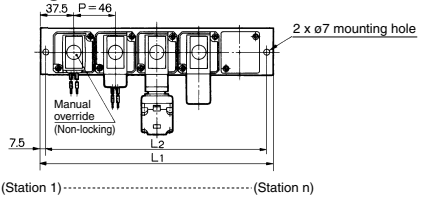


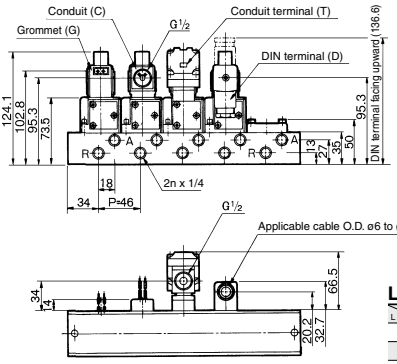
L Dimension n: Stations

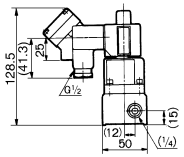
L / Stations	2	3	4	5	6	7	8	9	10	Formula
L_1	181	227	273	319	365	411	457	503	549	$L_1 = 46 \times n + 89$
L_2	151	197	243	289	335	381	427	473	519	$L_2 = 46 \times n + 59$

Dimensions: Individual Exhaust

Without mounting bracket/VV317-02-□3-02







L Dimension n: Stations

L / Stations	2	3	4	5	6	7	8	9	10	Formula
L1	121	167	213	259	305	351	397	443	489	L1 = 46 x n + 29
L2	106	152	198	244	290	336	382	428	474	L2 = 46 x n + 14

⚠Precautions

Be sure to read this before handling the products. Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

Mounting

⚠ Warning

1. When mounting valves on the manifold base, the mounting orientation is decided. If it is mounted in the wrong direction, connected equipment may malfunction. Mount it by referring to how to switch over from N.C. to N.O. specifications.

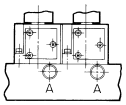
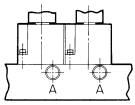
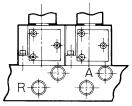
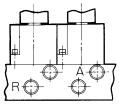
⚠ Caution

1. Each valve is fixed to the manifold base with two M4 mounting screws. Tighten the screws evenly when re-mounting. Tightening torque of the mounting screw (M4): 1.4 N·m
2. For mounting, tighten M4 or equivalent screws evenly into the mounting holes of the manifold base.

Changing from N.C. to N.O.

⚠Caution

Universal porting permits convertibility N.C./N.O. by a simple 180 degree rotation. Mounting conditions for N.C. and N.O. is indicated as below figure.

Exhaust port type \ Valve	N.C.	N.O.
Common exhaust		
Individual exhaust		

∗ Changing from N.C. to N.O.
This product is delivered as N.C. valve. If N.O. valve is needed, remove mounting screws of the required valve and turn the valve at 180° degrees. (Make sure that there are O-rings fixed on 4 positions of the valve surface.) Then, tighten the mounting screws to fix the valve to the manifold base.

How to Use DIN Terminal

1. Disassembly

1) After loosening the screw ①, then if the housing ④ is pulled in the direction of the screw ①, the connector will be removed from the body of equipment (solenoid, etc.).
2) Pull out the screw ①, then remove the gasket ②.
3) On the bottom part of the terminal block ③, there's a cut-off part (indication of an arrow) ㉛. If a small flat head screwdriver is inserted between the opening in the bottom, terminal block ③ will be removed from the housing ④. (Refer to graph at right.)
4) Remove the cable gland ⑤ and plain washer ⑥ and rubber seal ⑦.

2. Wiring

1) Pass the cable ⑧ through the cable gland ⑤, washer ⑥, rubber seal ⑦, in this order and then insert them into the housing ④.
2) Dimensions of the cable ⑧ are as shown in the right figure. Skin the cable and crimp the crimped terminal ⑨ to the edges.
3) Remove the screw with washer ㉙ from the bracket ㉚. (Loosen in the case of Y-shape type terminal.) As shown in the right figure, mount a crimped terminal ⑨, and then again tighten the screw ㉙.
   Note) Tighten within the tightening torque of 0.5 N·m ±15%.

Note: a It is possible to wire even in the state of bare wire. In that case, loosen the screw with washer ㉙ and place a lead wire into the bracket ㉚, and then tighten it once again.
b The maximum size for the round terminal ⑨ is 1.25 mm²—3.5 and for the Y terminal is 1.25 mm²—4.
c Cable ⑧ outside diameter: ø6 to ø12 mm

Note) For the one with outside diameter ranged between ø9 to ø12 remove the inside parts of the rubber seal ⑦ before using.

3. Assembly

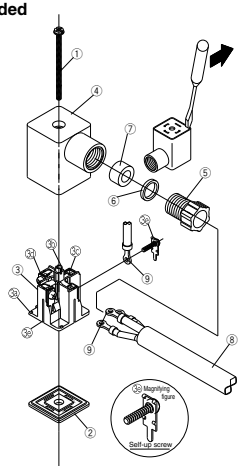
1) Terminal box ③ connected with housing ④ should be reinstated. (Push it down until you hear the click sound.)
2) Putting rubber seal ⑦, plain washer ⑥, in this order into the cable introducing slit on the housing ④, then further tighten the cable gland ⑤ securely.
3) By inserting gasket ② between the bottom part of the terminal box ③ and a plug on an equipment, screw in ① on top of the housing ④ and tighten it.

Note) Tighten within the tightening torque of 0.5 N·m ±20%.

Changing the entry direction

The cable entry direction of a connector can be changed as desired (4 directions at 90° intervals), depending on the combination of a housing ④ and a terminal block ③.

Exploded view



Comparison between the Product Model No. and the Coil Part No.

Product model no.	Coil no.	Coil assembly with terminal part no.
VT/O317□-∗G(-02)	PVT317-001GB-0∗	——
VT/O317□-∗GS(-02)	PVT317-∗G	——
VT/O317□-∗H(-02)	PVT317-001GB-0∗L06	——
VT/O317□-∗HS(-02)	PVT317-∗G-06	——
VT/O317□-∗C(-02)	PVT317-001CB-0∗	——
VT/O317□-∗CS(-02)	PVT317-∗C	——
VT/O317□-∗T(-02)	——	PVT317-001TBT-0∗
VT/O317□-∗TS(-02)	——	PVT317-001TBTS-0∗
VT/O317□-∗TZ(-02)	——	PVT317-001TBTZ-0∗
VT/O317□-∗D(-02)	PVT317-001DB-0∗	PVT317-001DBT-0∗
VT/O317□-∗DS(-02)	PVT317-001DB-0∗	PVT317-001DBTS-0∗
VT/O317□-∗DZ(-02)	PVT317-001DB-0∗	PVT317-001DBTZ-0∗

Note 1) ∗ mark in the product model numbers denotes the rated voltage.

Note 2) □ mark denotes the valve option.

Note 3) ∗ mark and 0∗ mark are for coil part number and coil assembly with terminal the rated voltage.

Example 1) In the case of 0∗ PVT317-001GB-05

Example 2) In the case of ∗ PVT317-5G

Note 4) In the case of CE/UKCA-compliant products (-Q), coils are not shipped together.

⚠ Caution

When the rated voltage is AC and if it is assembled with the coil for DC, response may be delayed and occur malfunction. Also, for DC valves, when the coil for AC is assembled, it occurs malfunction. For AC valves, assemble the coil for AC, and for DC valves, assemble the coil for DC.

Connector for DIN Terminal

Rated voltage	Without light/surge voltage suppressor (D)	With surge voltage suppressor (DS)	Light/Surge voltage suppressor (DZ)
100 VAC	GDM2A	GDM2A-S1	GDM2A-Z1
200 VAC		GDM2A-S2	GDM2A-Z2
24 VDC		GDM2A-S5	GDM2A-Z5

For other rated voltages, please consult with SMC.