TVG1 to 2 Series

Technical data 1 Pneumatic system selection guide

Standard system table (with internal exhaust check valve)

1. Common exhaust

Series	Solenoid valve port size	System No.	Speed controller	Cylinder piping Pipe length 1 m	Common exhaust piping	Composite effective sectional area (mm ²)
TVG1	C4	A1	SC3W-M5-4	ø4 x ø2.5	ø6 x ø4 x 3m	1.0
	C4	A2	SC3W-6-4	ø4 x ø2.5	ø6 x ø4 x 3m	1.4
	C6	B1	SC1-6	ø6 x ø4	ø8 x ø5.7 x 3m	2.7
TVG2	C6	B2	SC1-6	ø6 x ø4	ø8 x ø5.7 x 3m	3.8
	C8	B3	SC1-8	ø8 x ø5.7	ø10 x ø7.2 x 3m	5.9

2. Atmospheric release exhaust (internal silencer)

Series	Solenoid valve port size	System No.	Speed controller	Cylinder piping Pipe length 1 m	End supply and exhaust block	Composite effective sectional area (mm ²)
TVG1	C4	A3	SC3W-M5-4	ø4 x ø2.5		1.0
	C4	A4	SC3W-6-4	ø4 x ø2.5	TVG1P-EB-08CS-X	1.5
	C6	B4	SC1-6	ø6 x ø4		2.9
TVG2	C6	B5	SC1-6	ø6 x ø4		4.2
	C8	B6	SC1-8	ø8 x ø5.7	1VG2F-ED-10C3-A	5.9

3. Exhaust with silencer

Series	Model No.	System No.	Speed controller	Cylinder piping Pipe length 1 m	Silencer	Composite effective sectional area (mm ²)
TVG1	C4	A5	SC3W-M5-4	ø4 x ø2.5		1.0
	C4	A6	SC3W-6-4	ø4 x ø2.5	SLW-H8	1.5
	C6	B7	SC1-6	ø6 x ø4		2.7
TVG2	C6	B8	SC1-6	ø6 x ø4	SLW-H8	3.8
	C8	B9	SC1-8	ø8 x ø5.7	SLW-H10	6.0

1. Common exhaust











Model No.	D	L	Α	В	l
SLW-H8	ø8	42	16	20	23
SLW-H10	ø10	53	20	27	31.5

Device selection guide is used to select the optimum model at a glance. Fluid control components selection

table shown below as a reference, select the theoretical reference speed of the cylinder.

Degree of cylinder speed	Theoretical reference speed (mm/s)
Low speed	250
Medium speed	500
High speed	750
Ultra high speed	1.000

Component selection guide 1 table (Page 127) and select the equivalent cylinder bore size and the proper standard system No. corresponding to theoretical reference speed.

- speed with no load. When load is applied, speed drops considerably.) $vo=1920 \times \frac{S}{A} = 2445 \times \frac{S}{D^2}$ — (1)
 - vo : Theoretical reference speed (mm/s)
 - A : Cylinder sectional area (cm²)
 - S : Composite effective cross-sectional area of circuit (exhaust air side) (mm²)
 - D : Cylinder bore size (cm)





Values in the table are when P = 0.5 MPa. The required flow rate is a value necessary to select clean air system components.

$$Q = \frac{Avo (P + 0.101) \times 60}{0.101 \times 10^4}$$
(2)

Q: Required flow rate (L/min) (ANR) P: Supply pressure (MPa)

- sectional area S and sonic conductance C is S≈5.0×C.
- operating a cylinder with velocity vo. The combination in the table is for a pipe length of 1 m.

Depending on the actual unit, they are shown as follows.

```
P<sub>2</sub> + 0.1
\frac{1}{P_1 + 0.1} Choked flow when \leq b
                                   293
Q=
```

=600×C (P₁ + 0.1)
$$\sqrt{-273+t}$$
(1)

 $\frac{P_2 + 0.1}{P_1 + 0.1}$ Subsonic flow when >b



When calculating with effective cross-sectional area S, substitute value C obtained with C = S/5 in the above formula. For subsonic flow, substitute b = 0.5 in formula (2).

125

TVG1 to 2 Series

Technical data 1 Pneumatic system selection guide

Whether the cylinder bore size and cylinder being used are driven with relative high or low speed is determined as a condition. Using the

• What is the theoretical reference speed? Indicates the degree of cylinder speed, expressed as the following formula. (This value matches

When expressed as a graph, the theoretical reference speed is the speed within the range where the cylinder moves at a uniform speed:

t1: Time until movement starts t2: Time of primary delay t3: Operating time with constant velocity

• Note: t1 and t2 differ depending on load. Can be effectively ignored with no load.

• What is the required flow rate? Instantaneous flow rate for operating a cylinder with velocity vo, expressed with the following formula.

• Required effective sectional area: Composite effective cross-sectional area for the exhaust circuit required for moving the cylinder at speed vo. (composite effective cross-sectional area of solenoid valve, speed controller, silencer and piping) The conversion of effective cross-

• What is a proper standard system? This is the most appropriate combination of solenoid valve, speed controller, silencer and bore size for

Q: Air flow rate [dm³/min(ANR)], SI unit dm³ (cubic decimeter) can also be expressed with L (liter). $1 \text{ dm}^3 = 1 \text{ L}$ C: Sonic conductance [dm³/(s·bar)] b: Critical pressure ratio [-] P1: Upstream pressure [MPa] P₂: Downstream pressure [MPa]

t: Temperature (°C)

TVG1 to 2 Series

Technical data 1 Pneumatic system selection guide

TVG Series [Component selection guide 1]

Cylinder bore	Theoretical	Required flow rate	Required effective	Proper standard system No.						
size (mm)	speed (mm/s)	(L/min) (ANR)	(mm ²)	1. Common exhaust	2. Atmospheric release exhaust	3. Exhaust with silencer				
ø6	(500)	-	(0.1)	A 1	A 3	A 5				
ø10	(500)	-	(0.2)	A 1	A 3	A 5				
ø16	(500)	-	(0.5)	A 1	A 3	A 5				
a20	250	29	0.5	A 1	A 3	A 5				
020	400	46	1.6	B 1	B 4	B 7				
a 25	250	44	0.8	A 2	A 4	A 6				
020	400	70	1.9	B 1	B 4	B 7				
a 20	250	64	1.1	A 2	A 4	A 6				
030	400	100	2.8	B 1	B 4	B 7				
a20	250	73	1.3	A 2	A 4	A 6				
ØSZ	400	120	3.1	B 2	B 4	B 8				
~10	250	110	2.0	B 1	B 4	B 7				
Ø40	400	180	4.9	B 3	B 6	B 9				
	250	110	1.7	B 1	B 4	B 7				
~10	500	230	3.3	B 2	B 5	B 8				
Ø40	750	340	5.0	B 3	B 6	B 9				
	1000	450	6.6	-	-	-				
	250	180	2.6	B 1	B 1	B 7				
a50	500	350	5.2	B 3	B 6	B 9				
000	750	530	7.7	-	-	-				
	1000	710	10.4	-	-	-				
	250	280	4.1	B 2	B 5	B 8				
a62	500	560	8.2	-	-	-				
003	750	840	12.3	-	-	-				
	1000	1.100	16.4	-	-	-				
	250	450	6.6	-	B 6	-				
a90	500	910	13.2	-	-	-				
000	750	1,400	19.8	-	-	-				
	1000	1,800	25.4	-	-	-				

Pressure I

* System No. is Page 125 details.

[Effective cross-sectional area]



[Clean air system components]

Part	Model No.	Port size	Max. flow rate (L/min atmospheric pressure conve <u>rsion</u>)
	C1000-6-W	Rc1/8	450
	C1000-8-W	Rc1/4	630
Ę	C3000-8-W	Rc1/4	1280
Ļ.	C3000-10-W	Rc3/8	1750
Ř	C4000-8-W	Rc1/4	1430
-	C4000-10-W	Rc3/8	2400
	C4000-15-W	Rc1/2	3000
	W1000-6-W	Rc1/8	830
	W1000-8-W	Rc1/4	1150
nit	W3000-8-W	Rc1/4	2150
□ 	W3000-10-W	Rc3/8	2430
ЦĽ.	W4000-8-W	Rc1/4	2500
	W4000-10-W	Rc3/8	4350
	W4000-15-W	Rc1/2	4750
	F1000-6-W	Rc1/8	460
	F1000-8-W	Rc1/4	610
Ē,	F3000-8-W	Rc1/4	1230
ltei	F3000-10-W	Rc3/8	1500
ir fi	F4000-8-W	Rc1/4	1320
∢	F4000-10-W	Rc3/8	2140
	F4000-15-W	Rc1/2	3000
	R1000-6-W	Rc1/8	770
Ŕ	R1000-8-W	Rc1/4	1350
or (R3000-8-W	Rc1/4	2000
latc	R3000-10-W	Rc3/8	2600
ng	R4000-8-W	Rc1/4	2500
Re	R4000-10-W	Rc3/8	4400
	R4000-15-W	Rc1/2	5000
	L1000-6-W	Rc1/8	550
Ĵ	L1000-8-W	Rc1/4	700
or	L3000-8-W	Rc1/4	1100
cat	L3000-10-W	Rc3/8	2250
bric	L4000-8-W	Rc1/4	1000
Ľ	L4000-10-W	Rc3/8	1700
	L4000-15-W	Rc1/2	2700

Note) Max. flow rate: For FRL, FR and R, flow rate at 0.7MPa primary pressure, 0.5MPa set pressure, 0.1MPa pressure drop. For air filter, flow rate at 0.7 MPa primary pressure, 0.02 MPa pressure drop. For lubricator, flow rate at 0.5 MPa primary pressure, 0.03 MPa pressure.

MEMO





Technical data **2** Notes on wiring; Common terminal block

Common terminal block (wiring method EA1A, EA1B)

Notes on wiring

[Precautions for common terminal block (EA1*)]

- (1) With the common terminal box, the common wiring is internal processed beforehand. When using the independent contact PLC output unit, wire the common wires at the contact section.
- (2) Check the correspondence of the number of stations with solenoid positions to prevent incorrect wiring. (Refer to the table below.)
- Note that the correspondence will not function if the number of solenoid stations exceeds 20.
- (4) The manifold station numbers are set in order from left with the piping port facing forward.
- (5) A voltage drop may occur due to simultaneous energizing or cable length. Confirm that the voltage drop for the solenoid is within 10% of the rated voltage.



EA1* terminal array (example)

- *1:Valve No. 1a, 1b, 2a, 2b...The numbers in indicate the first and second stations. The letters a and b indicate the a side solenoid and the b side solenoid. The manifold's max. station number differs depending on the model. Check the specifications of each model.
- *2: When using a single solenoid with standard wiring (double wiring), if the (empty) part of the table below is energized, the operation lamp will light up. However, this is not an abnormality.

[Standard wiring (double wiring)]

	(MF station No. max. 10 stations)												
	Terminal block No.	COM	20	19	18	17	16	15	14	13	12	11	
solenoid	Valve No.	COM	(Blank)	10a	(Blank)	9a	(Blank)	8a	(Blank)	7a	(Blank)	6a	
	Terminal block No.	10	9	8	7	6	5	4	3	2	1	COM	
			-	-		•	-	•	-	-	-		
	Valve No.	(Blank)	5a	(Blank)	4a	(Blank)	3a	(Blank)	2a	(Blank)	1a	COM	

	Terminal block No.	COM	20	19	18	17	16	15	14	13	12	11
For double solenoid	Valve No.	COM	10b	10a	9b	9a	8b	8a	7b	7a	6b	6a
valve	Terminal block No.	10	9	8	7	6	5	4	3	2	1	COM
	Valve No.	5b	5a	4b	4a	3b	3a	2b	2a	1b	1a	COM

	(Number	of so	lenoi	d val	ves u	ip to 2	20 pc	ints)				
Eor mixed use (single)	Terminal block No.	COM	20	19	18	17	16	15	14	13	12	11
	Valve No.	COM	10b	10a	9b	9a	8b	8a	7b	7a	(Blank)	6a
double mixture)	Terminal block No.	10	9	8	7	6	5	4	3	2	1	COM
	Valve No.	5b	5a	4b	4a	(Blank)	3a	(Blank)	2a	(Blank)	1a	COM

For single valve

Terminal layout Terminal No. Relay connector Polarity COM (-)(+) 10 (-)(+ 9 20 (-)(+) 19 18 17 16 15 14 13 12 8 7 6 5 4 3 2 1 (-)(+)**14** (-)(+ 13 • (-)(+ . 12 . (-)(+ (-)(+)(-)(+)(-)(+ (-)(+ (-)(+)(-)(+

COM

(-)(+)(-)(+

COM =

Internal wiring of wiring method EA1* (up to 20 solenoid stations)

Terminal No.

	СС	м	2	0	1	9	1	8	1	7	10	6	1:	5	14	4	1;	3	1:	2	1'	1
1	C	ç	9	8	3	7	7	6	6	Ę	5	4	4	~,	3	4	2		1	СС	рм	

[Single solenoid, double solenoid layout specification]

(MF station	MF station No. max. 2stations)													
Terminal block No.	COM	20	19	18	17	16	15	14	13	12	11			
Valve No.	COM	20a	19a	18a	17a	16a	15a	14a	13a	12a	11a			
Terminal block No.	10	9	8	7	6	5	4	3	2	1	COM			
Valve No.	10a	9a	8a	7a	6a	5a	4a	3a	2a	1a	COM			

/IF station	on No	o. ma	x. 10	stati	ons)						
minal block No.	COM	20	19	18	17	16	15	14	13	12	11
alve No.	COM	10b	10a	9b	9a	8b	8a	7b	7a	6b	6a
minal block No.	10	9	8	7	6	5	4	3	2	1	CON
alve No.	5b	5a	4b	4a	3b	3a	2b	2a	1b	1a	CON

onoid valvos un to 20 pointe

aumper	admber of solehold valves up to 20 points)										
erminal block No.	COM	20	19	18	17	16	15	14	13	12	11
/alve No.	COM	(Blank)	(Blank)	(Blank)	(Blank)	10b	10a	9b	9a	8b	8a
erminal block No.	10	9	8	7	6	5	4	3	2	1	COM
/alve No.	7b	7a	6a	5b	5a	4b	4a	3a	2a	1a	COM

Serial transmission: Wiring method

J** Serial transmission

- The device unit's output No. differs with the manufacturer. The internal connector pin No. and the manifold solenoid correspond as shown below.
- The manifold station numbers are set in order from left with the piping port facing forward regardless of the wiring block position
- Internal connectors are wired in order, so there may be some blank numbers depending on the number of stations. These blank outputs cannot be used to drive other than the solenoid manifolds in use.
- The working power is 24 VDC dedicated.
- Securely fix the attached connector with fixing screws. (Proper tightening torque 0.3 N·m)

J** connector pin array (example)

*: Valve No.1a, 1b, 2a, 2b,...The numbers in indicate the 1st and 2nd stations, and the letters a and b indicate the a side solenoid and the b side solenoid. The manifold's max. station number differs depending on the model. Check the specifications of each model.

[Standard wiring (double wiring)]

For single solenoid valve

onigio o	0101	ioic	1 10	110																													
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Valve No.	1a	(Blank)	2a	(Blank)	3a	(Blank)	4a	(Blank)	5a	(Blank)	6a	(Blank)	7a	(Blank)	8a	(Blank)	Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Valve No.	9a	(Blank)	10a	(Blank)	11a	(Blank)	12a	(Blank)	13a	(Blank)	14a	(Blank)	15a	(Blank)	16a	(Blank)	Valve No.	17a	18a	19a	20a	21a	22a	23a	24a	(Blank)							
double	sole	enoi	d v	alve)	_																											
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b	Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Valve No.	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b	Valve No.	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b
mixed u	ise	(sin	gle	/dou	uble	e mi	xtu	re)																							_		
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Valve No.	1a	(Blank)	2a	(Blank)	3a	3b	4a	4b	5a	(Blank)	6a	(Blank)	7a	7b	8a	(Blank)	Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	7a	7b	8a	9a	10a	10b	11a	11b
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Valve No.	9a	(Blank)	10a	10b	11a	11b	12a	(Blank)	13a	(Blank)	14a	14b	15a	15b	16a	(Blank)	Valve No.	12a	13a	14a	14b	15a	15b	16a	17a	18a	18b	19a	20a	21a	21b	22a	22b
tuse (Bla	nk)																																

01	onigio o	0101	1010	1 10	110																													
	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Valve No.	1a	(Blank)	2a	(Blank)	3a	(Blank)	4a	(Blank)	5a	(Blank)	6a	(Blank)	7a	(Blank)	8a	(Blank)	Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a
	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	Valve No.	9a	(Blank)	10a	(Blank)	11a	(Blank)	12a	(Blank)	13a	(Blank)	14a	(Blank)	15a	(Blank)	16a	(Blank)	Valve No.	17a	18a	19a	20a	21a	22a	23a	24a	(Blank)							
or	double	sole	enoi	d v	alve)	_	_	_	_		_	_	_	_		_																	
	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b	Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b
	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	Valve No.	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b	Valve No.	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b
or	mixed u	se	(sin	gle	/doi	uble	e mi	xtu	re)																									
	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Valve No.	1a	(Blank)	2a	(Blank)	3a	3b	4a	4b	5a	(Blank)	6a	(Blank)	7a	7b	8a	(Blank)	Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	7a	7b	8a	9a	10a	10b	11a	11b
	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	Valve No.	9a	(Blank)	10a	10b	11a	11b	12a	(Blank)	13a	(Blank)	14a	14b	15a	15b	16a	(Blank)	Valve No.	12a	13a	14a	14b	15a	15b	16a	17a	18a	18b	19a	20a	21a	21b	22a	22b
no	Luco (Bla	nk)																																

* Do not use (Blank).



TVG Series



[Single/Double mixed wiring]



Technical data 2 Notes on wiring; Serial transmission

JA1* Image:	Model <u>No.</u>	LED display			V	Viring m <u>etho</u>	d		
JA1* MS						Commu	unicati	on connect	tor pin array
JA1* Image: second						Port	Din	Signal name	Function
JA1* Image: state of the device and body relief PW (v) Image: state of the device and body relief PW (v) Image: state of the device and body relief Image: state of the device and body relief M2, 5pin plug Image: state of the device and body relief M2, 4pin plug Image: state of the device and body relief M2, 4pin plug Image: state of the device and body relief M2, 4pin plug Image: state of the device and body relief M2, 4pin plug Image: state of the device and body relief M2, 4pin plug Image: state of the network relief of the body relief M2, 4pin plug Image: state of the network relief of the body relief M2, 4pin plug Image: state of the network relief of the body relief M2, 4pin plug Image: state of the network relief of the body relief M2, 4pin plug Image: state of the network relief of the the relief of the state of the network relief of the state of the s			1		7	1 oft	1	Drain	Shield terminal
JA1* Image: spin second state of the second state of the spin second state second state second state spin second state spin second state spin second state spin second state second stat				A 6	4		2	V+	Communication power supply (+
JA1* Image: start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with body relation to the start of the device with the specifications of this product body relation to the start of the device with the specifications of the product Corporate to the device with the specifications of the product Corporate to the state of the device with the specifications of the product Corporate to the state of the device with the specifications of the product Corporate to the state of the device with the specifications of the product Corporate to the state of the device with the specifications of the product Corporate to the state of the device with the specifications of the product Corporate to the state of the device with the specifications of the product Recommended MI2/cone with start of the start of CON Corporate to the state of the start of CON Corporate to the state of the start of CON Corporate to the start of CON Corporate to the state of CON Corporate to the start of CON Corporate to the star					M12, 5 pin socket	IN	3	V-	Communication power supply (-
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JA1* Image: Second		MS 🗌				_	5	CAN I	Communication terminal (I
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NS DeviceNet is indicated by the LED binking) Wiring of communication cables or connectors that are compatible with the specifications of this product Preventing example. PW Lights when communication power is ON. Green lamp is ON when normal (Camnot be wonitored when the communication power is not turned ON) Wiring of communication cables or connectors that are compatible with the specifications of this product Connector with cable for both sides : DCA1-5CN**H1 (socket)) OMRON Corporation OMRON Corporation is DCA1-5CN**H1 (plug) OMRON Corporation OMRON Corporation : DCA1-5CN**H1 (plug) OMRON Corporation :		Status of the network	related to						
Binking) PW Hease purchase communication cables or connectors that are compatible with the specifications of this produce for with cable for both sides DCA1-5CN**W1 (socket/plug) OMRON Corporation OMRON Corporation PW (v) Green lamp is ON when normal (Cannot be monitored when the communication power is not turned OM) OMRON Corporation DMRON Corporation PW (v) Green lamp is ON when normal (Cannot be monitored when the communication power is not turned OM) OMRON Corporation PW (v) Green lamp is ON when normal (Cannot be monitored when the communication power is not turned OM) OMRON Corporation PW (v) Green lamp is ON when normal (Cannot be monitored when the communication power is not turned OM) OMRON Corporation PW (v) Green lamp is ON when normal (Cannot be monitored when the communication power is not turned OM) OWRON Corporation PW (v) Wiring to the power supply socket Power supply socket Straight OMRON Recommended M12-loose wire type power cables or connectors that are compatible with the specifications of this produce Recommended communication plug and power cables or connectors that are compatible with the specification Straight OMRON Recommended M12-loose wire type power cables or connectors that are compatible with the specification Electrowing size: AVG22-18, Recommended communication power is not turned OM M12, 5 pin socket A cord M12, 5 pin socket A cord M12, 4 pin plug A cord <td></td> <td>NS DeviceNet is indicated b</td> <td>y the LED</td> <td>Wiring of comm</td> <td>unication line</td> <td></td> <td></td> <td></td> <td></td>		NS DeviceNet is indicated b	y the LED	Wiring of comm	unication line				
PW Ughts when communication power is ON. Green lamp is ON when normal communication power is ON. Green lamp is ON when normal communication power is ON. Green lamp is ON when normal communication power is on turned ON I'unit gineurou, reser to the following communication confector pin array and communication cable within get DC oncector with cable for both sides DCA1-5CN**F1 (socket) OMRON Corporation OMRON Corporation PW (v) O'Wing the thought cable for both sides DCA1-5CN**F1 (socket) OMRON Corporation Communication power is not turned ON O'Wing to the power supply socket Please purchase power cables or connectors that are compatible with the specifications of this product Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Straight OMRON Recommended M12-loose wire type power cable : Type XS2F-D421 B - Straight OMRON Straight OMRON Will the type power cable : Communicat		blinking)	Ple	ease purchase comm	unication cables or cor	nnectors that are co	mpatible	e with the spec	cifications of this product
Image: Solution and the solution and the solution and the solution of the solution and the solution of the solution and the solution of the solutic solution of the solution of the solutic sol		PW Lights when communication p	ower is ON.	Connector with cabl	e for both sides	DCA1-50 : DCA1-50	marray a CN**W1	(socket/plua) OMRON Corporatio
PW (V) Creen lamp is ON when normal (Cannot be monitored when the communication power is not turned ON) For OUT : DCA1-SCN**H1 (plug) OMRON Corporation (DARON Corporation) • Wiring to the power supply socket Please purchase power cables or connectors that are compatible with the specifications of this product Recommended M12-loose wire type power cable : Type XS2F-D421-18		Lights when valve power is	ON.	For IN connector wit	th cable for one side	: DCA1-50	CN**F1	(socket)	OMRON Corporatio
Accord Wing to the power supply socket Pease purchase power cables or connectors that are compatible with the specifications of this product Recommended M12-loose wire type power cable: : Type XS2F-D421		PW (V) Green lamp is ON when no	mal	For OUT		: DCA1-5	CN**H1	(plug)	OMRON Corporatio
Please purchase power cables or connectors that are compatible with the specifications of this product Recommended M12-loose wire type power cables : Type XS2F-D421_8Straight OMRON Recommended Communication plug and power cable : Part number: 2103 212 2305 Assembly M12 connector Manufactured by HARTING Electric wire size: AWG22-18, applicable cable diameter: e6-8 *		communication power is not	urned ON)	Wiring to the po	wer supply socke	et			
Recommended M12-loose wire type power cable : Type XS2F-D421-1 B Straight OMRON Recommended communication plug and power cable : Part number: 2103 212 205 Assembly M12 connector Manufactured by HATTINE Electric wire size: AWG22-18, applicable cable diameter: o6-8 :			Ple	ease purchase pow	er cables or connect	ors that are compa	atible w	ith the specif	ications of this product
RUN Run M12, 5 pin socket M12, 5 pin socket M12, 5 pin socket Port Pin Signal name Wire (shield) M12, 5 pin socket M12, 5 pin socket M12, 5 pin socket N12, 5 pin plug N12, 4 pin plug N12,				Recommended M12-loos	e wire type nower cable	Type XS2E-D421.		Straight	
RUN RUN RUN M12, 5 pin socket M12, 5 pin socket M12, 5 pin socket N Social to the social t				Recommended communica	ation plug and power cable	: Part number: 2103 21	2 2305 As	sembly M12 con	nector Manufactured by HARTING
RUN M12, 5 pin socket RUN M12, 5 pin plug PW M12, 4 pin plug M12, 4 pin plug M12, 4 pin plug						Electric wire size:	AWG22	-18, applicab	le cable diameter: ø6-8
RUN M12, 5 pin socket RUN M12, 5 pin socket RUN M12, 5 pin plug RER M12, 5 pin plug PW M12, 4pin plug PW (V) M12, 4pin plug JA2* M12, 4pin plug						Commu	unicati	on connect	tor pin array
RUN M12, 5 pin socket RUN M12, 5 pin socket RUN M12, 5 pin plug RER M12, 5 pin plug PW M12, 4 pin plug PW (V) M12, 4 pin plug JA2* M12, 4 pin plug			F		7	Port	Pir	Signal name	Wire sheath color/others
RUN M12, 5 pin socket RUN M12, 5 pin plug RUN M12, 5 pin plug RUN M12, 5 pin plug PW M12, 4 pin plug PW (V) M12, 4 pin plug JA2* M12, 4 pin plug				ି ବ ି ଅ			1	SLD	Ground wire (shield)
RUN IN 3 DG Yellow M12, 5pin plug M12, 5pin plug 5 NO Vacant NW M12, 4pin plug A cord Power supply connector pin array PW M12, 4pin plug M12, 4pin plug 1 Unit power + side: 24V PW (V) PWR IN 1 Unit power - side: 24V PWR IN IN IN IN IN JA2* IN IN IN IN IN				Tour /	M12, 5 pin socket		2	DB	White
RUN M12, 5pin plug ERR M12, 4pin plug PW M12, 4pin plug PW (V) M12, 4pin plug JA2* JA2*			- I I		A cord	IN	3	DG	Yellow
RUN M12, 5pin plug ERR M12, 4pin plug PW M12, 4pin plug PW (V) M12, 4pin plug JA2* M12, 4pin plug			- I I			OUT	4	DA	Blue
RUN M12, 5pin plug ERR PW PW M12, 4pin plug PW (V) M12, 4pin plug JA2* M12, 4pin plug			- I I				5	NO	Vacant
RUN A cord Power supply connector pin array ERR PW M12, 4pin plug M12, 4pin plug PW (V) PW (V) M12, 4pin plug M12, 4pin plug JA2* JA2* Power supply -side: 0 V					M12, 5pin plug	L			
Image: Second					A cold	Power	supply	connector	pin array
PW M12, 4pin plug PW (V) M12, 4pin plug PW (V) PW (V) M12, 4pin plug A cord PWR 2 Valve power supply 3 Unit power 4 Valve power supply				FG		M12	4pin	Signal name	Function
JA2* PW (V) A cord PW (V) A cord PWR A cord Question A cord Question Question PWR Question Question Question Question Question Question Question Question Question				T	M12, 4pin plua		1	Unit power	+ side: 24V
JA2*					A cord	_	2	Valve power supply	+ side: 24V
JA2*						PWR	3	Unit power	-side: 0 V
	JA2*				_		4	Valve power supply	-side: 0 V
				(\))	L		I Fringe gappij	
	Ver1.10	L RUN Displays data link status							
Ver1.10 LRUN Displays data link status		LERR Displays data link error state	e au	Wiring of comm	unication line				
Ver1.10 L RR Displays data link status L RR Displays data link error status		PW Lights when unit power is O	N. Ple	ease purchase comm	unication cables or cor	nnectors that are co	mpatible	e with the spec	cifications of this product
Ver1.10 L RUN Displays data link status L RR Displays data link error status PW Lights when unit power is ON. Wiring of communication line Please purchase communication cables or connectors that are compatible with the specifications of this product		Lights when valve power is	ON. For	wiring method, refer to the follo	owing communication connector	r pin array and communication	on cable wir	ing example. (and	differ depending on the cable length
Ver1.10 L RUN Displays data link status L RER Displays data link error status PW Lights when unit power is ON. Lights when valve power is ON. For wiring method, refer to the following communication cables or connectors that are compatible with the specifications of this product For wiring method, refer to the following communication cable wiring example. (and differ depending on the cable length)		Pvv (v) (Cannot be monitored wh	en the unit	Connector with cable for both	sides : SAC-4P-M12MS/		FS (socket/	plug) Manufacture	ed by PHOENIX CONTACT CO., LT
Ver1.10 L RUN Displays data link status L RER Displays data link error status PW Lights when unit power is ON. PW (V) Lights when valve power is ON. PW (V) Cannot be monitored when the unit power is not turned ON)		power is not turned ON)		For in connector with cable for o	nie side : SAC-4P-M12MS//_	LELLE-990	(SUCKET)	Manufactur	ieu by Prioenix Contact Co., Lt
Ver1.10 Image: Non-intervention intervention interventintervention interventintervention intervention					(Spacify a E	IE WILL CONDECION T	ur une ll'	N SUCKELL	
Ver1.10 Instant and the state of the		power is not turned ON)		For OUT	(Specify a 5-po		DES /rel	(a) Manufactura	d hy Phoenix Contact Co. 14
Ver1.10 Instant		power is not turned UN)		For OUT * The terminating resistor can	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to	n of the product. Connect the	2FS (pli e following t	ug) Manufacture	d by Phoenix Contact Co., Lt
Ver1.10 Instant		power is not turned UN)		For OUT * The terminating resistor can Terminating resistor M12 con	(Specify a 5-poi : SAC-4P-M12MS/ be set from the switch on the to nector : SAC-4P-M12MD CC	p of the product. Connect the	2FS (pli e following t	ug) Manufacture erminating resistor t	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co.
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Ver1.10 Instant Instant Instant L RUN Displays data link status Instant L RR Displays data link error status PW Lights when unit power is ON. PW Lights when valve power is ON. Cannot be monitored when the unit power is not turned ON) Person		power is not turned UN)	Pla	For OUT * The terminating resistor can Terminating resistor M12 cor Wiring to the po ease purchase powe	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to nector : SAC-4P-M12MD CC wer supply socke er cables or connect	p of the product. Connect the L	2FS (pli e following t	ug) Manufacture erminating resistor t	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co., Lt ications of this product
Ver1.10 Image: Non-intervent of the product of the		power is not turned UN)	Ple	For OUT * The terminating resistor can Terminating resistor M12 cor Wiring to the po ease purchase powr Percommended M12	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to nector : SAC-4P-M12MD CC wer supply socke er cables or connect	p of the product. Connect th L et ors that are compa	2FS (pli e following t atible w	ug) Manufacture erminating resistor t	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co., Lt ications of this product
Ver1.10 Instrume Instrume Displays data link status L RR Displays data link error status PW Lights when unit power is ON. PW Lights when valve power is ON. Cannot be monitored when the unit power is not turned ON) Pelase purchase communication cables or connectors that are compatible with the specifications of this product. For wing method, refer to the following communication cable wing example. (and differ depending on the cable lengt connector with cable for one side : SAC-4P-M12MS/		power is not turned UN)	● Ple F	For OUT * The terminating resistor can Terminating resistor M12 con Wiring to the po ease purchase pow Recommended M12- Recommended communication	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to nnector : SAC-4P-M12MD CC wer supply socke er cables or connect loose wire type powe	p of the product. Connect th L et ors that are compa r cable: Type XS2F	atible w	ug) Manufacture erminating resistor t ith the specif	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co., Lt ications of this product straight OMRO! Manufactured by HARTIN
Ver1.10 Instrume instruction to compute iteration L RUN Displays data link status L RUN Displays data link error status PW Lights when unit power is ON. Cannot be monitored when the unit PW (V) U (2) Lights when valve power is ON. (Cannot be monitored when the unit PW (V) (Cannot be monitored when the unit PW (V) (Cannot be monitored of the unit POW (V) (Cannot be monitored of the unit POW (V) (Cannot be monitored of the unit) POW (V) (Cannot be monitored of the unit) POW (V) (Cannot be monitored of the unit) POW (V) (Specify a 5-pole M12 connector for the IN socket.) For Nornector with cable for one side : SAC-4P-M12MS/(power is not turned UN)	● Ple F R	For OUT * The terminating resistor can Terminating resistor M12 con Wiring to the po ease purchase pow Recommended M12- Recommended communication p	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to nnector : SAC-4P-M12MD CC wer supply socke er cables or connect loose wire type powe olug and power cable : Part No Electet	p of the product. Connect th L et ors that are compa r cable: Type XS2F .: 2103 212 2305 Assembly h ric wire size: AWG3	atible w -D421- 112 connect	ug) Manufacture erminating resistor t ith the specif 0 8 0 - 0 or pplicable cab	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co., Lt ications of this product straight OMROI Manufactured by HARTIN le diameter: ø6-8
Ver1.10 I. RUN Displays data link status L RR Displays data link status PW Lights when unit power is ON. PW (V) Lights when valve power is ON. (Cannot be monitored when the unit power is not turned ON) For wiring method, refer to the following communication cables or connector pin array and communication cable wiring example. (and differ depending on the cable lengt Connector with cable for both sides : SAC4P-M12MS/990(M12FS (socket/ plug) Manufactured by PhOENIX CONTACT CO., LI For Nonnector with cable for one side : SAC-4P-M12MS//990 (socket) For OUT : SAC-4P-M12MS//		power is not turned UN)	● Ple F R	For OUT * The terminating resistor can Terminating resistor M12 con Wiring to the po ease purchase pow Recommended M12- Recommended communication p	(Specify a 5-po : SAC-4P-M12MS/ be set from the switch on the to nnector : SAC-4P-M12MD CC wer supply socke er cables or connect loose wire type powe olug and power cable : Part No Electr	p of the product. Connect th L et ors that are compa r cable: Type XS2F .: 2103 212 2305 Assembly ric wire size: AWGG *	atible w -D421- 112 connect 22-18, a differs	ug) Manufacture erminating resistor t th the specif 8 or pplicable cab depending or	d by Phoenix Contact Co., Lt o the OUT side if not using switches TR Phoenix Contact Co., Lt ications of this product straight OMRO Manufactured by HARTIN le diameter: ø6-8 n the cable specification



131

CKD



Technical data 2 Notes on wiring; Serial transmission

Wiring method



Communication	connecto	or pin	array

M12 p	oins	Signal name	Function
	1	TD+	Transmitted data, positive
IN	2	RD+	Received data, positive
OUT	3	TD-	Transmitted data, negative
	4	RD-	Received data, negative

M12, 4pin socket D cord

M12, 4pin socket

D cord



M12, 4pin plug A cord

Power supply connector pin array

			. ,
M12	4pin	Signal name	Function
	1	Unit power	+ side: 24V
	2	Valve power supply	+ side: 24V
FVIR	3	Unit power	-side: 0 V
	4	Valve power supply	-side: 0 V
	4	Valve power supply	-side: 0 V

The unit power supply and the valve power supply are separate power supplies.

Supply power from the power supply connector (24 VDC).

• Connect the EtherCAT cable from the previous station to the communication connector (IN). · Prepare a connector to be used on the wiring end.

• Refer to page 137 for details on connectors and power supplies.

	1	Commu
(B)		Port
	M12, 4pin socket D cord	IN
J)		OUT
	M12, 4pin socket D cord	Power s
Ŋ		M12 4
	M12, 4pin plug A cord	PWR
Z/)	1	1

unication connector pin array

Port	Pin	Signal name	Function
	1	TD+	Transmitted data, positive
IN	2	RD+	Received data, positive
OUT	3	TD-	Transmitted data, negative
	4	RD-	Received data, negative

oppostor pip

Power supply connector pin array									
4pin	Signal name	Function							
1	Unit power	+ side: 24V							
2	Valve power supply	+ side: 24V							
3	Unit power	-side: 0 V							
4	Valve power supply	-side: 0 V							
	4pin 1 2 3 4	Appin Signal name 1 Unit power 2 Valve power supply 3 Unit power 4 Valve power supply							

• The unit power supply and the valve power supply are separate power supplies. Supply power from the power supply connector (24 VDC).

· Connect the communication cable to IN or OUT.

· Prepare a connector to be used on the wiring end.

(13)

* Refer to page 137 for details on connectors and power supplies.



Technical data 2 Notes on wiring; Serial transmission



Model No.		LED display	
	CC Lin		
	CC-LIII	L ERR D Link RUN/ERR INFO L/A OUT L/A IN PW PW (V)	
	LED name	Indicator description	V
JA7* CC-Link IE	L ERR	Communication port error status of CC-Link IE Field is indicated by the LED (red) state (Lamp is OFF during normal communication) Data link communication status of CC-Link	PWR
Field	D Link	IE Field is indicated by the LED (green) state (ON during normal communication)	
	RUN/	by LED (green) ON status	
		is indicated by the LED (red) state Device unit notification status is indicated by the LED	
		(red) state (OFF during normal communication) Status of the Ethernet port (OUT side)	
	(P1)	is indicated by the LED (green) state (OFF/blinking/blinking)	
	L/A IN	Status of the Ethernet port (IN side) is	• The unit no
	(P2)	(OFF/blinking/blinking)	Supply pow
	PW	Lights when unit power is ON (Green lamp is ON when normal)	Connect the
	PW (V)	Lights when valve power is ON (Green lamp is ON when normal) * Cannot be monitored when the unit power is not turned ON	Prepare a
		· · · · · · · · · · · · · · · · · · ·	* Refer to pa
	CC-Lin	k IE TSN	
		D Link RUN/ERR INFO L/A OUT L/A IN PW PW (V)	OVI IN FG
	LED name	Indicator description	
JA8* CC-Link IE	D Link	IE TSN is indicated by the LED (green) state (ON during normal communication) RUN: Product operational status indicated	PWR
TSN	RUN/	by LED (green) ON status	(
	ERR	is indicated by the LED (red) state	
	INFO	Device unit notification status is indicated by the LED (red) state (OFF during normal communication)	
		is indicated by the LED (green) state	
	(P1) L/A IN	Status of the Ethernet port (IN side) is	
	(P2)	indicated by the LED (green) state (OFF/blinking/blinking)	
	PW	Lights when unit power is ON (Green lamp is ON when normal)	The unit po
	PW (V)	Lights when valve power is ON (Green lamp is ON when normal) * Cannot be monitored when the unit	Connect the

power is not turned ON



Technical data 2 Notes on wiring; Serial transmission

Wiring method



M12 8pin socket

M12 4-pin plug

X-cord

A cord

Communication connector pin array

M12	8pin	Signal name	Function
	1	BI_DA+	Transmit/receive data, positive
	2 BI_DA- Transmit/receive data, negat		Transmit/receive data, negative
	3	BI_DB+	Transmit/receive data, positive
IN	4	BI_DB-	Transmit/receive data, negative
OUT	5	BI_DD+	Transmit/receive data, positive
	6	BI_DD-	Transmit/receive data, negative
	7	BI_DC-	Transmit/receive data, negative
	8	BI DC+	Transmit/receive data, positive

Power supply connector pin array

ower supply connector pin anay				
M12 4pin		Signal name	Function	
	1	Unit power	+ side: 24 V	
PWR	2	Valve power supply	+ side: 24 V	
	3	Unit power	-side: 0 V	
	4	Valve power supply	-side: 0 V	

ower supply and the valve power supply are separate power supplies. wer from the power supply connector (24 VDC).

e communication cable to IN or OUT.

connector to be used on the wiring end

age 138 for details on connectors and power supplies.



Communication connector pin array

M12	8pin	Signal name	Function
	1	BI_DA+	Transmit/receive data, positive
	2	BI_DA-	Transmit/receive data, negative
	3	BI_DB+	Transmit/receive data, positive
IN	4	BI_DB-	Transmit/receive data, negative
OUT	5	BI_DD+	Transmit/receive data, positive
	6	BI_DD-	Transmit/receive data, negative
	7	BI_DC-	Transmit/receive data, negative
	8	BI_DC+	Transmit/receive data, positive

Power supply connector pin array

M12 4pin		Signal name	Function	
	1	Unit power	+ side: 24 V	
PWR	2	Valve power supply	+ side: 24 V	
	3	Unit power	-side: 0 V	
	4	Valve power supply	-side: 0 V	

ower supply and the valve power supply are separate power supplies.

wer from the power supply connector (24 VDC).

e communication cable to IN or OUT.

· Prepare a connector to be used on the wiring end

* Refer to page 138 for details on connectors and power supplies.

Technical data 2 Notes on wiring; Serial transmission



* Refer to page 140 for details on connectors and power supplies.

PLC compatibility table

Model	del Communication protocol Recommended PLC model No.			PLC model No. *1	
No.	Association	Network name	Manufacturer	Host unit model No.	
JA1*	ODVA	DeviceNet	OMRON Corporation	CJ1W-DRM21	
JA2*	CC-Link Partner Association (CLPA)	CC-Link ver. 1.10	Mitsubishi Electric Corporation	RJ61BT11	
	EtherCAT Technology		Connected to EtherCAT compati	ble master	
JA3*	Group (ETG)	EtherCAT	OMRON Corporation	NJ Series NX Series	
			Connected to EtherNet/IP compa	atible master	
10.4*		EtherNet/ID	Rockwell Automation Co., Ltd.	ControlLogix5570	
JA4	ODVA		OMRON Corporation	NJ Series NX Series	
CC-Link Partner		Connected to CC-Link IEF Basic compatible master			
JA5^	Association (CLPA)	CC-LINK IEF Basic	Mitsubishi Electric Corporation	R Series CPU unit	
			Connected to CC-Link IEF Basic	compatible master	
146*	PROFIBUS & PROFINET	PROFINET Mitsubishi Electric Corporation	Mitsubishi Electric Corporation	RJ71PN92	
JAO	International(PI)		S7-1200		
			S7-1500		
ΙΔ7*	CC-Link Partner	CC-Link IE Field	Connected to CC-Link IE Field c	ompatible master	
377	Association (CLPA)		Mitsubishi Electric Corporation	RJ71GF11-T2	
148*	CC-Link Partner		Connected to CC-Link IE TSN co	ompatible master	
370	Association (CLPA)		Mitsubishi Electric Corporation	RJ71GN11-T2	
			Connected to IO-Link compatible	e master	
			OMRON Corporation	Contact the manufacturer	
JA9*	IO-Link Community	IO-Link	Mitsubishi Electric Corporation	Contact the manufacturer	
			Balough Co., Ltd.	Contact the manufacturer	
			Turk Japan Co., Ltd.	Contact the manufacturer	
			Connected to IO-Link Wireless c	ompatible master	
IB1*	IO-Link Community	IO-I ink Wireless	CKD IO-Link Wireless Compone	nt compatible Region: Japan, EU	
100			Core Tigo Technolody	To Toho Technology Co., Ltd.	
				Contact CKD for details.	

*1 Information as of June 2023. For details, contact the PLC manufacturer.

Communication quality "normal": Orange lit Communication error: Red lit

TVG Series

Technical data 2 Notes on wiring; Serial transmission

TVG -P4
Mth reduced witing/serial transmission device unit With interface for remote I/O connection Compatible with reshargeable tatlety manufacturin



Technical data 2 Notes on wiring; Waterproof connector



Waterproof connector

For CC-Link IE Field, CC-Link IE TSN

Connector for CC-Link IE Field, CC-Link IE TSN



For wiring method, refer to the following communication connector pin array and communication cable wiring example. Use CAT5 or higher for communication cable lines. Recommended M12-RJ45 communication cable with connector • SC-E5EW-Mitsubishi Electric System Service Co., Ltd.

Recommended communication plug (assembly) * Compatible with SPEEDCON fitting method • 1411043 (SACC-MSX-8Q0) Phoenix Contact

• Connector for power supply



Recommended M12-loose wire type power cable • XS2F-D421-🗌 8 🗌 - 🗌 Straight OMRON

Recommended communication plug (assembly) * Compatible with SPEEDCON fitting method • 1424655 (SACC-M12FS-4PL M) Phoenix Contact

Connection method





Technical data 2 Notes on wiring; Waterproof connector

Communication connector pin array				
M12	8pin	Signal name	Function	
	1	BI_DA+	Transmit/Receive data, positive	
	2	BI_DA-	Transmit/Receive data, negative	
	3	BI_DB+	Transmit/Receive data, positive	
IN	4	BI_DB-	Transmit/Receive data, negative	
OUT	5	BI_DD+	Transmit/Receive data, positive	
	6	BI_DD-	Transmit/Receive data, negative	
	7	BI_DC-	Transmit/Receive data, negative	
	8	BI DC+	Transmit/Receive data, positive	

Fower supply connector pin array	Power	supply	connector	pin	array
----------------------------------	-------	--------	-----------	-----	-------

M12	4pin	Signal name	Function
PWR	1	Unit power	+ side: 24 V
	2	Valve power supply	+ side: 24 V
	3	Unit power	- side: 0 V
	4	Valve power supply	- side: 0 V



Technical data 2 Notes on wiring; Waterproof connector

Waterproof connector

For IO-Link





Communication connector pin array			
M12	4pin	Signal name	Function
	1	L+	Unit power: 24 V
NET	2	NC	Vacant
	3	L-	Unit power: 0 V
	4	C/Q	IO-Link signal

Power supply connector pin array

Communication connector pin array

Function

Unit power supply (+ side: 24V)

Valve power supply (+ side: 24V)

Unit power supply (- side: 0V) IO-Link signal

Valve power supply (- side: 0 V)

M12 5pin Signal r

NET

1 L+

2 P24

4 C/Q 5 N24

3 L-

M12	4pin	Signal name	Function
	1	NC	Vacant
	2	P24	Valve power supply: 24 V
FVK	3	NC	Vacant
	4	N24	Valve power supply: 0 V

For wiring method, refer to the following communication connector pin array and communication cable wiring example. Use CAT5 or higher for communication cable lines.

Recommended M12-loose wire power cable

• Type XS2F-D421-D8D-D Straight OMRON

Recommended M12 connector and power cable

Assembly M12 connector Manufactured by HARTING • No. 2103 212 2305

• Electric wire size: AWG22-18, applicable cable diameter: ø6-8

* differs depending on the cable specifications.

Connector for IO-Link ClassB (NET)



Recommended M12-loose wire type • Type XS2F-D521-__8__-_ Straight OMRON

Recommended M12 connector and power cable

• No. 2103 272 2505 Assembly M12 connector Manufactured by HARTING

• Electric wire size: AWG22-18, applicable cable diameter: ø6-8

* differs depending on the cable specifications.

Connection method



Waterproof connector

For IO-Link Wireless

Connector for power supply



Recommended M12-loose wire powe	r cable
• Type XS2F-D421-□8□- □	Straight OMRON

Recommended communication plug and power cable • No. 2103 212 2305 Electric wire size: AWG22-18, applicable cable diameter: ø6-8

* differs depending on the cable specifications.

Connection method



power cable
Charlet OMDON



Technical data 2 Notes on wiring; Waterproof connector



Power supply connector pin array					
M12 4pin		Signal name	Function		
PWR	1	Unit power	+ side: 24 V		
	2	Valve power supply	+ side: 24 V		
	3	Unit power	- side: 0 V		
	4	Valve power supply	- side: 0 V		

Assembly M12 connector Manufactured by HARTING



Technical data 2 Notes on wiring; Wiring between blocks

Wiring: Wiring between supply and exhaust blocks and valve blocks

A part called a dedicated wiring connector is built into the valve block and intermediate supply and exhaust block, etc., This structure enables the wiring to be completed simultaneously with the disassembly and assembly of the block manifold. Special wiring work is not required during disassembly and assembly. There is regularity to the wiring block terminal block numbers or solenoid output numbers and wired valves. Refer to the wiring method of each wiring block and connect the valves to the control device. Take special care when increasing or decreasing the number of valve blocks. In addition, an example of the wiring circuit when expanding stations is shown below.

Example of wiring circuit

The diagram below shows the wiring circuit for TVG and differs from the actual specifications.

Standard wiring (double wiring)

When one station of a valve block has been expanded between the 2nd and 3rd stations, the output that had been assigned to terminal block No. 5 and No. 6 of the wiring blocks will automatically shift for two solenoids and be assigned to terminal blocks No. 7 and No. 8.





Exploded view of block manifold





Single/Double mixed wiring

Similar to double wiring, the terminal block numbers will shift assignments. However, how they shift will depend on the solenoid valve. With types having one solenoid valve (2-position single), they shift for one valve position. With types having two solenoid valves (2-position Double / 3-position), they shift for two valve positions.



Technical data 3 How to expand reduced wiring manifold

Increasing the valve blocks

①Remove the hexagon socket head cap screw.

2 Remove all valve blocks and remove tie rods.

- ③Install a tie rod for the units being increased on the wiring block. * Be sure to mount tie rods for the units being increased on the wiring block. Install the original tie rod to the right of the tie rod for the units being increased.
- (4)Confirm that the gasket is in the groove, and then mount the valve block.
- ⑤Press so that there is no gap between blocks, and fasten with the hexagon socket head cap screw. (Tightening torque: 1.1 to 1.3 N·m)
- * Be sure to mount the valve block after mounting the tie rod.
- * Take special care to prevent the gasket from getting caught in between blocks.

Replacing valves

Removing method

①Loosen the mounting screws (2-positions).

2 Remove the valve from the valve block.

Installation method

Follow the removal procedure in reverse. Refer to the table below for the recommended tightening torque for the mounting screws. Recommended tightening torque for the valve mounting screw

Model	Thread size	Proper tightening torque (N·m)
TVG1	M1.7	0.19 to 0.21
TVG2	M2.5	0.35 to 0.40

CKD