Direct Acting 2-port Solenoid Valve

FFB-P4 Series

- NC (energized open) type
- Port size : Rc/G/NPT 1/8 to 1/2

For applicable model number details, please refer to our website.

Model No. Notation NC (energized open) type FFB-□1 Series

FFB - 4 1 08 A 4 T 3 A 3 - B - P4

- Model No.
- ❶ Valve size
- Operating method : NC (energized open) type
- ❷ Port size
- ❸ Thread type and pressure unit shown on nameplate
- ❹ Orifice diameter
- ❺ Body / Seal material combination
- ❻ Coil heat resistance class
- ❼ Coil option
- ❽ Rated voltage
- ❾ Option

❶ Valve size

Code	Description
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

❷ Port size

Code	Description	❶ Valve size 2	3	4	5
06	1/8	●	●		
08	1/4		●	●	●
10	3/8			●	●
15	1/2				●

❸ Thread type and pressure unit shown on nameplate

Code	Description	
	Thread type	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT thread	psi *1
D	G thread	MPa *2
E	NPT thread	MPa *2

*1 : Due to the Measurement Act, psi indication cannot be used within Japan.
*2 : "D" and "E" are selections used mainly within Japan to display the pressure unit as MPa even with G or NPT threads.

❹ Orifice diameter

Code	Description	❶ Valve size 2	3	4	5
S	ø1.5	●			
2	ø2	●	●		
3	ø3		●		
4	ø4			●	
5	ø5		●		●*1
7	ø7			●	●
X	ø10				●*2

*1 : ❷ Cannot be selected when port size is "15".
*2 : ❷ Cannot be selected when port size is "08".

❺ Body / Seal material combination

Code	Body	Seal	Treatment	Working fluid: Compressed air	Dry air, Inert gas	Low vacuum (*1)
T	Stainless steel	Fluororubber	Oil-free treatment	●	●	●

*1 : Can be used in low vacuum [1.33 x 10^2 Pa (abs)], but seat leakage will be 0.2 cm^3/min (ANR) or less. (Seat leakage at positive pressure) When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10^2 Pa (abs), so the upper limit is reduced by 0.1 MPa.

❻ Coil heat resistance class

Code	Description
3	Class 130 (B)

For details Click! Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

❼ Coil option

Code	Description		❶ Valve size 2	3	4	5	Voltage DC	AC
A	Lead wire (300 mm)		●	●	●	●	●	●
B	With DIN terminal box (G1/2)		*1	●	●	●	●	●
C	With DIN terminal box (Pg11)		●*2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)		●*2	●	●	●	*3	●
E	Conduit (G1/2)			●	●	●	●	●
F	Conduit (CTC19)			●	●	●	●	●
G	With HP terminal box (G1/2)			●	●	●	●	●
H	HP terminal box with lamp (G1/2)			●	●	●	●	●*5
J	Lead wire (300 mm)	With surge suppressor	●	●	●	●	●*4	
K	With DIN terminal box (Pg11)	With surge suppressor	●*2	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	With surge suppressor	●*2	●	●	●	●	
M	Conduit (G1/2)	With surge suppressor		●	●	●	●	*6
P	Conduit (CTC19)	With surge suppressor		●	●	●	●	
Q	With HP terminal box (G1/2)	With surge suppressor		●	●	●	●	
R	HP terminal box with lamp (G1/2)	With surge suppressor		●	●	●	●	

*1 : ❶When valve size is "2", coil option "B" cannot be selected.
*2 : ❶When valve size is "2", the thread size of the DIN terminal box is Pg 9.
*3 : Please use "L" DIN terminal box with lamp/surge suppressor.
*4 : For DC voltage coil option "J", the surge suppressor is attached to the product.
*5 : When coil option is "H", ❽ rated voltage "K" (230 VAC) cannot be selected.
*6 : All AC voltages include a full-wave rectifier circuit, and the action of this diode virtually eliminates significant surges generated in the coil. For this reason, there is no setting with a surge suppressor.

❽ Rated voltage

Code	Description
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

❾ Option *1

Code	Description		
Blank	None		
B	Mounting plate ①	*2	
M	Mounting plate ②	*3, *4	
P	Panel mounting plate		

*1 : The mounting plate and panel mounting plate are included with the product. For tightening torque, refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".
*2 : The mounting plate ① is compatible with CKD's FAB, FGB, FVB, FWB, and FLB Series products.
*3 : ❶ Cannot be selected when valve size is "2".
*4 : The mounting plate ② is compatible with CKD's AB Series products.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm with surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B C	DIN terminal box
	K	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box with lamp and surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box with lamp and surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor

Variation compatibility chart

	FFB
Classification	Direct Acting 2-port Valve Single
Body material	Stainless steel
P4	●

● : Applicable model ○ : Conditionally applicable model ▲ : Please contact us ▭ : Not applicable

Mounting plate Standalone Model No. Notation

With body mounting screws

Model No.	Mounting plate code : B	Mounting plate code : M	Mounting plate code : P
FFB-21	FFB-21-B-MOUNT-PLATE-KIT	Not available	FFB-21-P-MOUNT-PLATE-KIT
FFB-31	FFB-31-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-41	FFB-41-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-51	FFB-41-B-MOUNT-PLATE-KIT	FFB-51-M-MOUNT-PLATE-KIT	FFB-51-P-MOUNT-PLATE-KIT

Common specifications

Item	FFB
Working fluid	Compressed air, Dry air (atmospheric dew point -80 °C or higher), Inert gas, Low vacuum [1.33 x 10² Pa (abs)]
Maximum operating pressure MPa	1.4 (however, this varies by type ; refer to the operating pressure in the model-specific specifications)
Withstand pressure (water pressure) MPa	2.1(NC)
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	−10 to 60 (DC), −10 to 55 (AC)
Heat resistance class	Class 130 (B)
Atmosphere	Location free of corrosive or explosive gases
Valve structure	Direct Acting poppet structure
Seat leakagecm³/min (ANR)	0.2 or less (in air)
Mounting orientation	Free
Protection structure	IP65

Schematic symbol

●FFB-□1 : NC (energized open) type

Electrical specifications

Item	FFB-2							FFB-3						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	3.5	3.5	–	–	–	–	–	4.5	4.5	–	–	–	–	–
Apparent power VA	–	–	5.1	5.7	6.0	5.3	5.7	–	–	6.2	6.1	6.2	6.2	6.5
Item	**FFB-4**							**FFB-5**						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	7	7	–	–	–	–	–	10.5	10.5	–	–	–	–	–
Apparent power VA	–	–	8.6	10	9.6	9.5	9.4	–	–	13	13	14	14	13

Use with leakage current at or below the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Model-specific specifications

Item / Model No.				Port size Rc/G/NPT	Orifice diameter (mm)	Operating pressure (MPa) *1	Flow characteristics C [dm³/(s·bar)]	Flow characteristics b	Flow characteristics Cv value	Flow characteristics Kv value *2	Weight (kg) *3
NC (energized open) type											
FFB-21	06	□	S	1/8	1.5	0 to 1.0	0.31	0.42	0.085	0.074	0.21
			2		2	0 to 0.6	0.53	0.34	0.13	0.11	
FFB-31	06 08	□	2	1/8 1/4	2	0 to 1.4	0.56	0.50	0.15	0.13	0.36
			3		3	0 to 0.6	1.2	0.45	0.31	0.27	
			5		5	0 to 0.2	2.9	0.43	0.63	0.55	
FFB-41	08 10	□	4	1/4 3/8	4	0 to 1.0	1.4	0.52	0.43	0.37	0.55
			7		7	0 to 0.15	4.2	0.43	1.15	1.00	
FFB-51	08 10 15	□	5	1/4 3/8 1/2	5	0 to 0.8	2.7	0.45	0.72	0.62	0.85
			7		7	0 to 0.3	4.7	0.38	1.2	1.04	
			X		10	0 to 0.1	6.9	0.41	2.0	1.74	

*1 : Can be used in low vacuum [1.33 x 10² Pa (abs)], but seat leakage will be 0.2 cm³/min (ANR) or less. (Seat leakage at positive pressure) When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa. When used in vacuum, vacuum the OUT port side.
*2 : For Kv values, refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".
*3 : Weight of the DC lead wire type.

Direct Acting 2-port Solenoid Valve Manifold

FFBM-P4 Series

- NC (energized open) type
- Port size : Rc/G/NPT 1/8, 1/4

For applicable model number details, please refer to our website.

Model No. Notation

FFBM - 4 1 08 A 4 05 T 3 A 3 - P4

Model No. ❶ Valve size ❸ Port size (Port A) ❷ Operating method ❹ Thread type and pressure unit shown on nameplate ❺ Orifice diameter ❻ Number of manifold stations ❼ Body / Seal material combination ❽ Coil heat resistance class ❾ Coil option ❿ Rated voltage

❶ Valve size

Code	Description
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

❷ Operating method

Code	Description
1	NC (energized open) common supply type *1
5	NC (energized open) individual supply type

*1 : When used in vacuum, it becomes "5". "1" cannot be selected.

❸ Port size (Port A)

Code	Description	❶ Valve size 2	3	4	5
06	1/8	●			
08	1/4		●	●	●
00	Actuator only	●	●	●	●

❹ Thread type and pressure unit shown on nameplate

Code	Description		
	Thread type	Pressure display unit	
A	Rc thread	MPa	
B	G thread	bar	
C	NPT thread	psi	*2
D	G thread	MPa	*3
E	NPT thread	MPa	*3

*1 : ❸ When the port size is "00" (actuator only), there is no thread type, so select one of the following as the pressure display unit : "A" (MPa), "B" (bar), or "C" (psi).
*2 : Due to the Measurement Act, psi indication cannot be used within Japan.
*3 : "D" and "E" are selections used mainly within Japan to display the pressure unit as MPa even with G or NPT threads.

❺ Orifice diameter

Code	Description	❶ Valve size 2	3	4	5
S	ø1.5	●			
2	ø2	●	●		
3	ø3		●		
4	ø4			●	
5	ø5		●		●
7	ø7			●	●

❻ Number of manifold stations

Code	Description
02 to 09	2-station to 9-station
10	10-station
00	Actuator only

❼

Code	Body	Seal	Treatment	Working fluid: Compressed air	Dry air, Inert gas	Low vacuum (*1)
T	Stainless steel	Fluororubber	Oil-free treatment	●	●	●

*1 : Can be used in low vacuum [1.33 x 10² Pa (abs)], but seat leakage will be 0.2 cm³/min (ANR) or less. (Seat leakage at positive pressure) When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.

For details Click! Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

❽ Coil heat resistance class

Code	Description
3	Class 130 (B)

❾ Coil option

Code	Description		❶ Valve size 2	3	4	5	Voltage DC	AC
A	Lead wire (300 mm)		●	●	●	●	●	●
B	With DIN terminal box (G1/2)		*1	●	●	●	●	●
C	With DIN terminal box (Pg11)		●*2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)		●*2	●	●	●	*4	●
E	Conduit (G1/2)			●	●	●	●	●
F	Conduit (CTC19)			●	●	●	●	●
G	With HP terminal box (G1/2)			●*3	●	●	●	●
H	HP terminal box with lamp (G1/2)			●*3	●	●	●	●*6
J	Lead wire (300 mm)	With surge suppressor	●	●	●	●	●*5	
K	With DIN terminal box (Pg11)	With surge suppressor	●*2	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	With surge suppressor	●*2	●	●	●	●	
M	Conduit (G1/2)	With surge suppressor		●	●	●	●	*7
P	Conduit (CTC19)	With surge suppressor		●	●	●	●	
Q	With HP terminal box (G1/2)	With surge suppressor		●*3	●	●	●	
R	HP terminal box with lamp (G1/2)	With surge suppressor		●*3	●	●	●	

*1 : ❶ When valve size is "2", coil option "B" cannot be selected.
*2 : ❶ When valve size is "2", the thread size of the DIN terminal box is Pg9.
*3 : ❼ When the body/seal material combination is "A" aluminum body, the HP terminal box cannot be selected.
*4 : Please use "L" DIN terminal box with lamp/surge suppressor.
*5 : For DC voltage coil option "J", the surge suppressor is attached to the product.
*6 : When coil option is "H", ❿ rated voltage "K" (230 VAC) cannot be selected.
*7 : All AC voltages include a full-wave rectifier circuit, and the action of this diode virtually eliminates significant surges generated in the coil. For this reason, there is no setting with a surge suppressor.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm with surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B C	DIN terminal box
	K	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box with lamp and surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box with lamp and surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor

❿ Rated voltage

Code	Description
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

Variation compatibility chart

	FFBM
Classification	Direct Acting 2-port Valve Manifold
Body material	Stainless steel
P4	●

● : Applicable model ○ : Conditionally applicable model ▲ : Please contact us ▭ : Not applicable

When selecting a model number

Masking plates can also be ordered.
Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

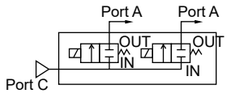
Common specifications

Item	FFBM
Working fluid	Compressed air, Dry air (atmospheric dew point -80 °C or higher), Inert gas, Low vacuum [1.33 x 10² Pa (abs)]
Maximum operating pressure MPa	1.4 (however, this varies by type ; refer to the operating pressure in the model-specific specifications)
Withstand pressure (water pressure) MPa	2.1(NC)
Fluid temperature °C	-10 to 40 (no freezing)
Ambient temperature °C	−10 to 40
Heat resistance class	Class 130 (B)
Atmosphere	Location free of corrosive or explosive gases
Valve structure	Direct Acting poppet structure
Seat leakage cm³/min (ANR)	0.2 or less (in air)
Mounting orientation	Free
Protection structure	IP65

Schematic symbol

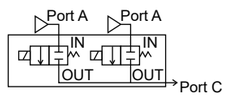
● FFBM-□1

(Common supply type, Port C pressurization)



● FFBM-□5

(Individual supply type, Port A pressurization)



Electrical specifications

Item	FFBM-2							FFBM-3						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	3.5	3.5	–	–	–	–	–	4.5	4.5	–	–	–	–	–
Apparent power VA	–	–	5.1	5.7	6.0	5.3	5.7	–	–	6.2	6.1	6.2	6.2	6.5
Item	**FFBM-4**							**FFBM-5**						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	7	7	–	–	–	–	–	10.5	10.5	–	–	–	–	–
Apparent power VA	–	–	8.6	10	9.6	9.5	9.4	–	–	13	13	14	14	13

Use with leakage current at or below the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Model-specific specifications

Model No.	Port size Rc/G/NPT Port A	Port C	Orifice diameter (mm)	Operating pressure (MPa) *1	Flow characteristics C [dm³/(s·bar)]	b	Cv value	Kv value *2
NC (energized open) type								
FFBM-2$^{1}_{5}$ 06 □ S	1/8	1/4	1.5	0 to 1.0	0.30	0.48	0.085	0.074
FFBM-2$^{1}_{5}$ 06 □ 2	1/8	1/4	2	0 to 0.6	0.52	0.39	0.12	0.10
FFBM-3$^{1}_{5}$ 08 □ 2	1/4	3/8	2	0 to 1.4	0.55	0.42	0.12	0.10
FFBM-3$^{1}_{5}$ 08 □ 3	1/4	3/8	3	0 to 0.6	1.1	0.25	0.23	0.20
FFBM-3$^{1}_{5}$ 08 □ 5	1/4	3/8	5	0 to 0.2	1.8	0.11	0.45	0.39
FFBM-4$^{1}_{5}$ 08 □ 4	1/4	3/8	4	0 to 1.0	1.7	0.11	0.42	0.36
FFBM-4$^{1}_{5}$ 08 □ 7	1/4	3/8	7	0 to 0.15	3.3	0.11	0.73	0.63
FFBM-5$^{1}_{5}$ 08 □ 5	1/4	3/8	5	0 to 0.8	2.3	0.10	0.55	0.48
FFBM-5$^{1}_{5}$ 08 □ 7	1/4	3/8	7	0 to 0.3	3.3	0.11	0.73	0.63

*1 : Can be used in low vacuum [1.33 x 10² Pa (abs)], but seat leakage will be 0.2 cm³/min (ANR) or less. (Seat leakage at positive pressure)
When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.
*2 : For Kv values, refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

Weight

Model No.	Weight (kg) Actuator only	2-station	3-station	4-station	5-station	6-station	7-station	8-station	9-station	10-station
FFBM-2	0.2	0.9	1.3	1.8	2.0	2.5	2.9	3.3	3.8	4.0
FFBM-3	0.35	1.4	2.0	2.9	3.2	4.1	4.7	5.3	6.2	6.5
FFBM-4	0.5	2.0	2.8	4.0	4.5	5.7	6.5	7.4	8.6	9.1
FFBM-5	0.7	2.5	3.5	5.0	5.7	7.1	8.2	9.3	10.7	11.5

Note) Weight of the 24 VDC lead wire type.

Direct Acting 3-port Solenoid Valve

FFG-P4 Series

- Universal type, NC pressurized type
- Port size : Rc/G/NPT 1/8 to 3/8

CE UKCA RoHS

For applicable model number details, please refer to our website.

Model No. Notation

FFG - 4 1 08 A 4 T 3 A 3 - B - P4

- Model No.
- ❶ Valve size
- ❷ Operating method
- ❸ Port size
- ❹ Thread type and pressure unit shown on nameplate
- ❺ Orifice diameter
- ❻ Body / Seal material combination
- ❼ Coil heat resistance class
- ❽ Coil option
- ❾ Rated voltage
- ❿ Option

❶ Valve size

Code	Description
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

❷ Operating method

Code	Description	❶ Valve size 2	3	4	5
1	Universal type	●	●	●	●
3	NC pressurized type		●	●	

❸ Port size

Code	Description	❶ Valve size 2	3	4	5
06	1/8	●	●		
08	1/4		●	●	●
10	3/8			●	●

❹ Thread type and pressure unit shown on nameplate

Code	Description		
	Thread type	Pressure display unit	
A	Rc thread	MPa	
B	G thread	bar	
C	NPT thread	psi	*1
D	G thread	MPa	*2
E	NPT thread	MPa	*2

*1 : Due to the Measurement Act, psi indication cannot be used within Japan.
*2 : "D" and "E" are selections used mainly within Japan to display the pressure unit as MPa even with G or NPT threads.

❺ Orifice diameter

Code	Description	❶ Valve size 2	3	4	5
1	ø1	●			
S	ø1.5		●		
2	ø2	●	●	●	●
3	ø3		●	●	●
4	ø4			●	●

❻ Body / Seal material combination

Code	Body	Seal	Treatment	Working fluid: Compressed air	Dry air, Inert gas	Low vacuum *1
T	Stainless steel	Fluororubber	Oil-free treatment	●	●	●

*1 : Can be used at low vacuum [1.33 × 10² Pa (abs)], but valve seat leakage will be 0.2 cm³/min (ANR) or less. (Valve seat leakage at positive pressure.) When used at low vacuum, the lower limit of operating pressure is 1.33 × 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.

For details Click!

Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

❼ Coil heat resistance class

Code	Description
3	Class 130 (B)

❽

Code	Description		❶ Valve size 2	3	4	5	Voltage DC	AC
A	Lead wire (300 mm)		●	●	●	●	●	●
B	With DIN terminal box (G1/2)		*1	●	●	●	●	●
C	With DIN terminal box (Pg11)		●*2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)		●*2	●	●	●	*3	●
E	Conduit (G1/2)			●	●	●	●	●
F	Conduit (CTC19)			●	●	●	●	●
G	With HP terminal box (G1/2)			●	●	●	●	●
H	HP terminal box with lamp (G1/2)			●	●	●	●	●*5
J	Lead wire (300 mm)	With surge suppressor	●	●	●	●	●*4	*6
K	With DIN terminal box (Pg11)	With surge suppressor	●*2	●	●	●	●	*6
L	DIN terminal box with lamp (Pg11)	With surge suppressor	●*2	●	●	●	●	*6
M	Conduit (G1/2)	With surge suppressor		●	●	●	●	*6
P	Conduit (CTC19)	With surge suppressor		●	●	●	●	*6
Q	With HP terminal box (G1/2)	With surge suppressor		●	●	●	●	*6
R	HP terminal box with lamp (G1/2)	With surge suppressor		●	●	●	●	*6

*1 : ❶When valve size is "2", coil option "B" cannot be selected.
*2 : ❶When valve size is "2", the thread size of the DIN terminal box is Pg9.
*3 : Please use "L" DIN terminal box with lamp/surge suppressor.
*4 : For DC voltage coil option "J", the surge suppressor is attached to the product.
*5 : When coil option is "H", ❾ rated voltage "K" (230 VAC) cannot be selected.
*6 : All AC voltages include a full-wave rectifier circuit, and the action of this diode virtually eliminates significant surges generated in the coil. For this reason, there is no setting with a surge suppressor.

❾ Rated voltage

Code	Description
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

❿ Option *1

Code	Description	
Blank	None	
B	Mounting plate①	

*1 : The mounting plate is included with the product. For tightening torque, refer to the precautions at the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".
*2 : The mounting plate ① is compatible with CKD's FAG, FGG, and FWG Series products.

Coil option code

	Code	Description
	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm with surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B C	DIN terminal box
	K	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box with lamp and surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box with lamp and surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor

Variation compatibility chart

	FFG
Classification	Direct Acting 3-port Valve Single
Body material	Stainless steel
P4	●

● : Applicable model ○ : Conditionally applicable model ▲ : Please contact us ▭ : Not applicable

Mounting plate Standalone Model No. Notation

With body mounting screws

Model No.	Mounting plate code : B
FFG-2	FFG-21-B-MOUNT-PLATE-KIT
FFG-3	FFG-31-B-MOUNT-PLATE-KIT
FFG-4	FFG-41-B-MOUNT-PLATE-KIT
FFG-5	

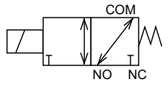
Common specifications

Item	FFG
Working fluid	Compressed air, Dry air (atmospheric dew point -80 °C or higher), Inert gas, Low vacuum [1.33 x 10² Pa (abs)] *1
Maximum operating pressure MPa	1.2 (however, this varies by type ; refer to the operating pressure in the model-specific specifications)
Withstand pressure (water pressure) MPa	1.8
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	−10 to 60 (DC), −10 to 55 (AC)
Heat resistance class	Class 130 (B)
Atmosphere	Location free of corrosive or explosive gases
Valve structure	Direct Acting poppet structure
Seat leakage cm³/min (ANR)	0.2 or less (in air)
Mounting orientation	Free
Protection structure	IP65

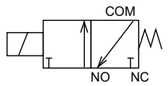
*1 : When used in low vacuum, vacuum the NC/NO port side for the Universal type, and the NO port for the NC pressurized type.

Schematic symbol

●FFG-☐1 : Universal type



●FFG-☐3 : NC pressurized type



Electrical specifications

Item	FFG-2							FFG-3						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	3.5	3.5	–	–	–	–	–	4.5	4.5	–	–	–	–	–
Apparent power VA	–	–	5.1	5.7	6.0	5.3	5.7	–	–	6.2	6.1	6.2	6.2	6.5

Item	FFG-4							FFG-5						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	7	7	–	–	–	–	–	10.5	10.5	–	–	–	–	–
Apparent power VA	–	–	8.6	10	9.6	9.5	9.4	–	–	13	13	14	14	13

Use with leakage current at or below the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Model-specific specifications

Item / Model No.	Port size Rc/G/NPT	Orifice diameter (mm)	Operating pressure (MPa) *1, *2	Flow characteristics													
				COM→NC				COM→NO				NC→COM				NO→COM			
				C [dm³/(s·bar)]	b	Cv value	Kv value *3	C [dm³/(s·bar)]	b	Cv value	Kv value *3	C [dm³/(s·bar)]	b	Cv value	Kv value *3	C [dm³/(s·bar)]	b	Cv value	Kv value *3
Universal type																			
FFG-21 06 ☐ 1	1/8	1	0 to 0.7	0.12	0.47	0.036	0.031	0.11	0.54	0.030	0.026	0.12	0.50	0.032	0.028	0.11	0.37	0.028	0.024
2		2	0 to 0.15	0.53	0.49	0.13	0.11	0.35	0.64	0.10	0.087	0.48	0.27	0.10	0.087	0.32	0.24	0.085	0.074
FFG-31 06 08 ☐ S	1/8 1/4	1.5	0 to 0.7	0.30	0.49	0.080	0.069	0.30	0.48	0.080	0.069	0.27	0.46	0.080	0.069	0.27	0.42	0.075	0.065
2		2	0 to 0.4	0.55	0.46	0.15	0.13	0.49	0.47	0.13	0.11	0.49	0.38	0.13	0.11	0.49	0.30	0.10	0.087
3		3	0 to 0.15	1.1	0.37	0.27	0.23	0.95	0.46	0.20	0.17	1.1	0.14	0.24	0.21	0.9	0.17	0.17	0.15
FFG-41 08 10 ☐ 2	1/4 3/8	2	0 to 0.7 (0.6)	0.55	0.49	0.16	0.14	0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12	0.49	0.45	0.13	0.11
3		3	0 to 0.3	1.2	0.40	0.32	0.28	1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26	1.1	0.22	0.25	0.22
4		4	0 to 0.15	1.9	0.40	0.47	0.41	1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.36	1.8	0.19	0.32	0.28
FFG-51 08 10 ☐ 2	1/4 3/8	2	0 to 1.2 (0.6)	0.55	0.49	0.16	0.14	0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12	0.49	0.45	0.13	0.11
3		3	0 to 0.6 (0.3)	1.2	0.40	0.32	0.28	1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26	1.1	0.22	0.25	0.22
4		4	0 to 0.3 (0.15)	1.9	0.40	0.47	0.41	1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.36	1.8	0.19	0.32	0.28
NC pressurized type																			
FFG-33 06 08 ☐ S	1/8 1/4	1.5	0 to 1.0					0.30	0.48	0.080	0.069	0.27	0.46	0.080	0.069				
2		2	0 to 0.7					0.49	0.47	0.13	0.11	0.49	0.38	0.13	0.11				
3		3	0 to 0.3					0.95	0.46	0.20	0.17	1.1	0.14	0.24	0.21				
FFG-43 08 10 ☐ 2	1/4 3/8	2	0 to 1.2					0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12				
3		3	0 to 0.6					1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26				
4		4	0 to 0.3					1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.35				

*1 : Values in ( ) are for NO pressurization.
*2 : When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.
*3 : For Kv values, refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

Weight

●Universal type

Model No.	Weight (kg)
FFG-21	0.27
FFG-31	0.48
FFG-41	0.74
FFG-51	0.93

Note) Weight of the DC lead wire type.

●NC pressurized type

Model No.	Weight (kg)
FFG-33	0.48
FFG-43	0.74

Note) Weight of the DC lead wire type.

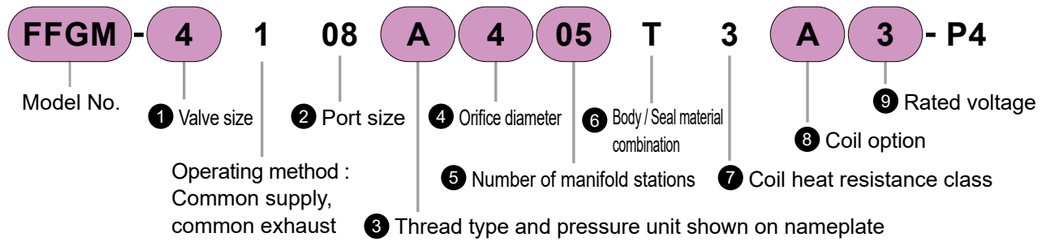
Direct Acting 3-port Solenoid Valve Manifold

FFGM-P4 Series

- Universal type
- Port size : Rc/G/NPT 1/4

For applicable model number details, please refer to our website.

Model No. Notation



1 Valve size

Code	Description
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Port size

Code	Description
08	1/4

3 Thread type and pressure unit shown on nameplate

Code	Description	
	Thread type	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT thread	psi *1
D	G thread	MPa *2
E	NPT thread	MPa *2

*1 : Due to the Measurement Act, psi indication cannot be used within Japan.
*2 : "D" and "E" are selections used mainly within Japan to display the pressure unit as MPa even with G or NPT threads.

4 Orifice diameter

Code	Description	1 Valve size 3	4	5
S	ø1.5	●		
2	ø2	●	●	●
3	ø3	●	●	●
4	ø4		●	●

5 Number of manifold stations

Code	Description
02 to 05	2-station to 5-station

6 Body / Seal material combination

Code	Body	Seal	Treatment	Working fluid: Compressed air	Dry air, Inert gas	Low vacuum (*1)
T	Stainless steel	Fluororubber	Oil-free treatment	●	●	●

*1 : Can be used in low vacuum [1.33 x 10² Pa (abs)], but seat leakage will be 0.2 cm³/min (ANR) or less. (Seat leakage at positive pressure) When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.

For details

Click!

Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

7 Coil heat resistance class

Code	Description
3	Class 130 (B)

8 Coil option

Code	Description		1 Valve size 3	4	5	Voltage DC	AC
A	Lead wire (300 mm)		●	●	●	●	●
B	With DIN terminal box (G1/2)		●	●	●	●	●
C	With DIN terminal box (Pg11)		●	●	●	●	●
D	DIN terminal box with lamp (Pg11)		●	●	●	*1	●
E	Conduit (G1/2)		●	●	●	●	●
F	Conduit (CTC19)		●	●	●	●	●
G	With HP terminal box (G1/2)		●	●	●	●	●
H	HP terminal box with lamp (G1/2)		●	●	●	●	●*3
J	Lead wire (300 mm)	With surge suppressor	●	●	●	●*2	*4
K	With DIN terminal box (Pg11)	With surge suppressor	●	●	●	●	*4
L	DIN terminal box with lamp (Pg11)	With surge suppressor	●	●	●	●	*4
M	Conduit (G1/2)	With surge suppressor	●	●	●	●	*4
P	Conduit (CTC19)	With surge suppressor	●	●	●	●	*4
Q	With HP terminal box (G1/2)	With surge suppressor	●	●	●	●	*4
R	HP terminal box with lamp (G1/2)	With surge suppressor	●	●	●	●	*4

*1 : Please use "L" DIN terminal box with lamp/surge suppressor.
*2 : For DC voltage coil option "J", the surge suppressor is attached to the product.
*3 : When coil option is "H" 9 rated voltage "K" (230 VAC) cannot be selected.
*4 : All AC voltages include a full-wave rectifier circuit, and the action of this diode virtually eliminates significant surges generated in the coil. For this reason, there is no setting with a surge suppressor.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm with surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B C	DIN terminal box
	K	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box with lamp and surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box with lamp and surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor

9 Rated voltage

Code	Description
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

When selecting a model number

Masking plates can also be ordered.
Refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

Variation compatibility chart

	FFGM
Classification	Direct Acting 3-port Valve Manifold
Body material	Stainless steel
P4	●

● : Applicable model ○ : Conditionally applicable model ▲ : Please contact us ▭ : Not applicable

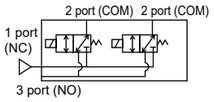
Common specifications

Item	FFGM
Working fluid	Compressed air, Dry air (atmospheric dew point -80 °C or higher), Inert gas, Low vacuum [1.33 x 10² Pa (abs)] *1
Maximum operating pressure MPa	1.2 (however, this varies by type ; refer to the operating pressure in the model-specific specifications)
Withstand pressure (water pressure) MPa	1.8
Fluid temperature °C	-10 to 40 (no freezing)
Ambient temperature °C	−10 to 40
Heat resistance class	Class 130 (B)
Atmosphere	Location free of corrosive or explosive gases
Valve structure	Direct Acting poppet structure
Seat leakage cm³/min (ANR)	0.2 or less (in air)
Mounting orientation	Free
Protection structure	IP65

*1 : When used in low vacuum, vacuum the NC/NO port side.

Schematic symbol

●Common supply / Common exhaust type



Electrical specifications

Item	FFGM-3						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %						
Power consumption W	4.5	4.5	–	–	–	–	–
Apparent power VA	–	–	6.2	6.1	6.2	6.2	6.5

Item	FFGM-4							FFGM-5						
Rated voltage V	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz	24 DC	12 DC	100 AC 50/60 Hz	110 AC 50/60 Hz	200 AC 50/60 Hz	220 AC 50/60 Hz	230 AC 50/60 Hz
Voltage fluctuation range	±10 %							±10 %						
Power consumption W	7	7	–	–	–	–	–	10.5	10.5	–	–	–	–	–
Apparent power VA	–	–	8.6	10	9.6	9.5	9.4	–	–	13	13	14	14	13

Use with leakage current at or below the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Model-specific specifications

Item / Model No.		Port size Rc/G/NPT 2-port	Port size Rc/G/NPT 1-port 3-port	Orifice diameter (mm)	Operating pressure (MPa) *1 *2	Flow characteristics: COM→NC C [dm³/(s·bar)]	COM→NC b	COM→NC Cv value	COM→NC Kv value *3	COM→NO C [dm³/(s·bar)]	COM→NO b	COM→NO Cv value	COM→NO Kv value *3	NC→COM C [dm³/(s·bar)]	NC→COM b	NC→COM Cv value	NC→COM Kv value *3	NO→COM C [dm³/(s·bar)]	NO→COM b	NO→COM Cv value	NO→COM Kv value *3
Universal type																					
FFGM-31	08 □ S	1/4	1/4	1.5	0 to 0.7	0.31	0.41	0.089	0.077	0.31	0.26	0.079	0.069	0.28	0.33	0.070	0.061	0.27	0.32	0.073	0.063
	2			2	0 to 0.4	0.54	0.42	0.15	0.13	0.52	0.10	0.12	0.10	0.49	0.19	0.12	0.10	0.48	0.25	0.12	0.10
	3			3	0 to 0.15	0.92	0.26	0.22	0.19	0.85	0.090	0.19	0.16	0.86	0.11	0.20	0.17	0.88	0.15	0.20	0.17
FFGM-41	08 □ 2	1/4	1/4	2	0 to 0.7(0.6)	0.56	0.46	0.16	0.14	0.56	0.29	0.15	0.13	0.52	0.32	0.14	0.12	0.50	0.31	0.12	0.10
	3			3	0 to 0.3	1.2	0.40	0.33	0.29	1.1	0.060	0.26	0.23	1.1	0.16	0.27	0.23	1.1	0.17	0.26	0.23
	4			4	0 to 0.15	1.8	0.27	0.42	0.36	1.3	0.15	0.36	0.31	1.6	0.090	0.36	0.31	1.5	0.13	0.37	0.32
FFGM-51	08 □ 2	1/4	1/4	2	0 to 1.2(0.6)	0.56	0.46	0.16	0.14	0.56	0.29	0.15	0.13	0.52	0.32	0.14	0.12	0.50	0.31	0.12	0.10
	3			3	0 to 0.6(0.3)	1.2	0.40	0.33	0.29	1.1	0.060	0.26	0.23	1.1	0.16	0.27	0.23	1.1	0.17	0.26	0.23
	4			4	0 to 0.3(0.15)	1.8	0.27	0.42	0.36	1.3	0.15	0.36	0.31	1.6	0.09	0.36	0.31	1.5	0.13	0.37	0.32

*1 : Values in ( ) are for NO pressurization.
*2 : When used in low vacuum, the lower limit of operating pressure becomes 1.33 x 10² Pa (abs), so the upper limit is reduced by 0.1 MPa.
*3 : For Kv values, refer to the CKD Components Site (https://www.ckd.co.jp/kiki/en/) → "Model No.".

Weight

Model No.	Weight (kg) Actuator only	2-station	3-station	4-station	5-station
FFGM-3	0.49	2.2	3.1	4.1	5.0
FFGM-4	0.78	2.8	4.1	5.4	6.6
FFGM-5	0.97	3.3	4.8	6.4	7.9

Note) Stainless steel subplate Weight of the 24 VDC lead wire type.