

Standard Specifications



Mode ^{Note 1)}	NPF3W704-03-□-M	NPF3W720-04-□-M	NPF3W740-06-□-M	NPF3W711-10-□-M	NPF3W721-14-□-M
Applicable fluid	Water and Ethylene glycol aqueous solution (with viscosity of 3 mPa·s [3 cP] or less) ^{Note 1)}				
Detection method	Karman vortex				
Rated flow range ^{Note 2)}	0.5-4L/min	2-16L/min	5-40L/min	10-100L/min	50-250L/min
Display flow range	0.35-5.50L/min	1.7-22.0L/min	3.5-55.0L/min	7-140L/min	20-350L/min
Set flow range	0.35-5.50L/min	1.7-22.0L/min	3.5-55.0L/min	7-140L/min	20-350L/min
Smallest settable increment	0.01L/min	0.1L/min	0.1L/min	1L/min	2L/min
Conversion of accumulated pulse	0.05L/pulse	0.1L/pulse	0.5L/pulse	1/pulse	2L/pulse
Fluid temperature	0 to 90°C (No freezing or condensation)				
Display unit	Instantaneous flow: L/min, Accumulated flow: L				
Accuracy	Display value: ±3% F.S. Analog output: ±3% F.S.				
Repeatability	±2% F.S. ^{Note 3)}				
Temperature characteristics	±5% F.S. (25°C standard)				
Operating pressure range	0-1MPa				
Proof pressure	45 kPa or less at the maximum flow				60 kPa or less at the maximum flow
Accumulated flow range ^{Note 4)}	99999999.9L		999999999L		
	By 0.1L	By 0.5L	By 1L		
Switch output	NPN or PNP open collector output				
	Max. load current				
	80mA				
	Max. applied voltage				
	DC28V				
Analog output	Internal voltage drop				
	NPN: 1 V or less (at load current of 80 mA) PNP: 1.5 V or less (at load current of 80 mA)				
	Response time ^{Note 5)}				
0.5s/1s/2s					
Output protection					
Short-circuit protection					
Output mode	Flow rate				
	Temperature				
Select from Hysteresis, Window comparator, Accumulated output, or Accumulated pulse output modes.					
Select from Hysteresis mode or Window comparator mode.					
Response time ^{Note 6)}					
0.5 s/1 s/2 s (linked with the switch output)					
Voltage output					
Voltage output: 1 to 5 V Output impedance: 1 kΩ					
Current output					
Output current: 4 to 20 mA Max. load impedance: 300 Ω for 12 VDC, 600 Ω for 24 VDC					
Hysteresis					
Variable					
External input					
Voltage free input: 0.4 V or less (Reed or Solid state), input for 30 ms or longer					
Display method					
2-screen display (Main screen: 4-digit, 7-segment, 2-color, Red/Green Sub screen: 6-digit, 11-segment, White) Display values updated 5 times per second					
Indicator light					
Output 1, Output 2: Orange					
Power supply voltage					
DC12-24V±10%					
Current consumption					
50mA以下					
Environment	Enclosure				
	IP65				
	Operating temperature range				
	0 to 50°C (No freezing or condensation)				
Operating humidity range					
Operation, Storage: 35 to 85% R.H. (No condensation)					
Withstand voltage ^{Note 7)}					
1000 VAC for 1 minute between terminals and housing					
Insulation resistance					
50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing					
Standards and regulations					
CE, UL(CSA), RoHS					
Wetted parts material					
PPS.SUS304.FKM.SCS13					
Non-grease					
Piping port size					
3/8 1/2 3/4 1 11/2					

Specifications (Remote Sensor Unit)

Model		PF3W504	PF3W520	PF3W540	PF3W511	PF3W521
Applicable fluid		Water and ethylene glycol aqueous solution (with viscosity of 3 mPa·s [3 cP] or less)*1				
Detection method		Karman vortex				
Rated flow range		0.5 to 4 L/min	2 to 16 L/min	5 to 40 L/min	10 to 100 L/min	50 to 250 L/min
Fluid temperature		0 to 90°C (No freezing or condensation)				
Accuracy		±3% F.S.				
Repeatability		±2% F.S.				
Temperature characteristics		±5% F.S. (25°C standard)				
Operating pressure range *2		0 to 1 MPa*2				
Proof pressure *2		1.5 MPa				
Pressure loss (without flow adjustment valve)		45 kPa or less at the maximum flow				
Analog output		Voltage output: 1 to 5 V Output impedance: 1 kΩ				
Response time *3		1 s				
Current output		Output current: 4 to 20 mA Max. load impedance: 300Ω for 12 VDC, 600 Ω for 24 VDC				
Indicator light		For power supply status, flow rate indicator (Blinking speed changes in response to flow rate.), and other error indicator				
Power supply voltage		12 to 24 VDC ±10%				
Current consumption		30 mA or less				
Environment		Enclosure IP65				
Operating temperature range		0 to 50°C (No freezing or condensation)				
Operating humidity range		Operation, Storage: 35 to 85% R.H. (No condensation)				
Withstand voltage *4		1000 VAC for 1 minute between terminals and housing				
Insulation resistance		50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing				
Standards and regulations		CE marking (EMC directive/RoHS directive), UL (CSA)				
Wetted parts material *5		PPS, Stainless steel 304, FKM, SCS13				
Piping port size *6		3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1 1/4, 1 1/2
Weight	Without temperature sensor/Without flow adjustment valve	195 g	245 g	395 g	705 g	875 g
	With temperature sensor/Without flow adjustment valve	270 g	320 g	515 g	840 g	1060 g
	Without temperature sensor/With flow adjustment valve	295 g	345 g	595 g	—	—
	With temperature sensor/With flow adjustment valve	370 g	415 g	715 g	—	—
	With lead wire with connector	—	—	+85 g	—	—

- *1 Refer to the graph of measurable range for ethylene glycol aqueous solution on page 10. Measurement is possible as long as the fluid does not corrode the wetted parts and viscosity is 3 mPa·s (3 cP) or less. Be aware that water leakage may occur due to internal seal shrinkage or swelling depending on the type of fluid.
- *2 The operating pressure range and proof pressure may change according to the fluid temperature. Refer to the graphs on page 8.
- *3 The response time until the set value reaches 90% in relation to the step input (The response time is 7 s when it is analog output by the temperature sensor.)
- *4 When the temperature sensor is used, it will be 250 VAC.
- *5 For details, refer to "Wetted Parts Construction" on page 10.
- *6 When the piping diameter or piping passage is restricted, the specifications may not be satisfied.
- * Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

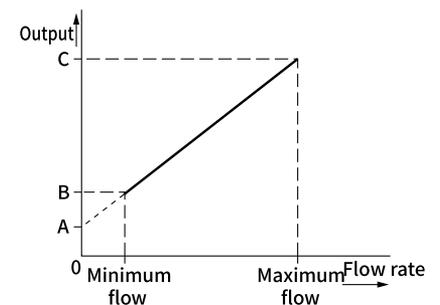
Analog Output

Flow rate/Analog output

	A	B			C
		04/20/40	11	21	
Voltage output	1 V	1.5 V	1.4 V	1.5 V	5 V
Current output	4 mA	6 mA	5.6 mA	5.9 mA	20 mA

The values of B vary according to the range.

Model	Flow rate [L/min]	
	Minimum	Maximum
NPF3W704/504	0.5	4
NPF3W720/520	2	16
NPF3W740/540	5	40
NPF3W711/511	10	100
NPF3W721/521	30	250

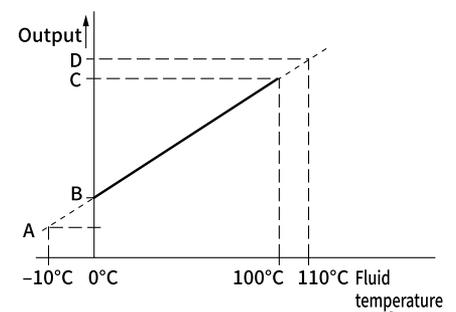


Fluid temperature/Analog output

	A	B
	Voltage output	0.6 V
Current output	2.4 mA	4 mA

	C	D
	Voltage output	5 V
Current output	20 mA	21.6 mA

Be sure to use in combination with remote sensor unit with temperature sensor.



Standard Specifications

Remote sensor unit Output specification/Temperature sensor

Symbol	OUT1	OUT2	Temperature sensor
	Flow rate	Temperature	
2	Analog 4 to 20 mA	—	None
1T	Analog 1 to 5 V	Analog 1 to 5 V	With temperature sensor

- * To use in combination with remote monitor (PF3W3 series), select analog output of 1 to 5 V of flow rate (output symbol "-1" or "-1T").
- * Analog output of 4 to 20 mA with temperature sensor is made to order.

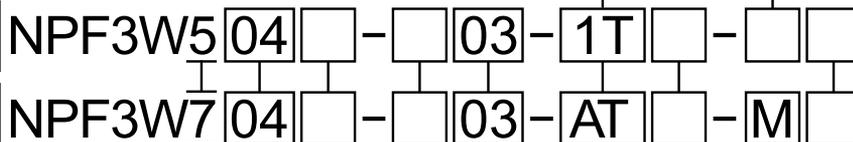
Remote sensor unit/Unit printed on label

Symbol	Instantaneous flow	Temperature
Nil	L/min	°C
G*1	L/min (gal/min)	°C/°F

- *1 Under the New Measurement Act, units other than SI (symbol "Nil") cannot be used in Japan.
- * G: Made to order
Reference: 1 [L/min] ↔ 0.2642 [gal/min]
1 [gal/min] ↔ 3.785 [L/min]
°F = 9/5°C + 32

Remote sensor unit

Integrated display



Type

5	Remote sensor unit
7	Integrated display

Rated flow range (Flow range)

Symbol	Rated flow range
04	0.5 to 4 L/min
20	2 to 16 L/min
40	5 to 40 L/min
11	10 to 100 L/min
21	50 to 250 L/min

Thread type

Nil	Rc
N	NPT
F	G*1

*1 ISO 228 equivalent

Port size

Symbol	Port size	Rated flow range				
		04	20	40	11	21
03	3/8	●	●	—	—	—
04	1/2	—	●	●	—	—
06	3/4	—	—	●	●	—
10	1/1	—	—	—	●	—
12	1 1/4	—	—	—	—	●
14	1 1/2	—	—	—	—	●

Flow adjustment valve

Symbol	With/without flow adjustment valve	Rated flow range				
		04	20	40	11	21
Nil	None	●	●	●	●	●
S	Yes	●	●	●	—	—

- * 100 and 250 L/min types with flow adjustment valves are not available.

- * The flow adjustment valve of this product is not suitable for applications which require constant adjustment of flow rate.

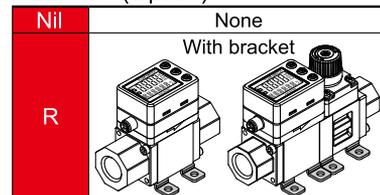
- *1 External input: The accumulated value, peak value, and bottom value can be reset.

- *2 For units with temperature sensor, only OUT2 can be set as either temperature output or flow rate output. Setting when shipped is for temperature output.

Integrated display Output specification/Temperature sensor

Symbol	OUT1	OUT2		Temperature sensor
	Flow rate	Flow rate	Temperature	
A	NPN	NPN	—	None
B	PNP	PNP	—	
C	NPN	Analog 1 to 5 V	—	
D	NPN	Analog 4 to 20 mA	—	
E	PNP	Analog 1 to 5 V	—	
F	PNP	Analog 4 to 20 mA	—	
G	NPN	External input*1	—	
H	PNP	External input*1	—	
MB	ModBus 485			With temperature sensor
AT	NPN	(NPN) *2	NPN	
BT	PNP	(PNP) *2	PNP	
CT	NPN	(Analog 1 to 5 V) *2	Analog 1 to 5 V	
DT	NPN	(Analog 4 to 20 mA) *2	Analog 4 to 20 mA	
ET	PNP	(Analog 1 to 5 V) *2	Analog 1 to 5 V	
FT	PNP	(Analog 4 to 20 mA) *2	Analog 4 to 20 mA	
MBT	ModBus 485			

Bracket (Option)



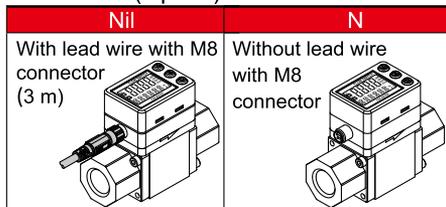
- * Bracket is not available for 250 L/min type.

Integrated display/Unit specification

Symbol	Instantaneous flow	Accumulated flow	Temperature
M	L/min	L	°C
G	gal/min	gal	°C
F	gal/min	gal	°F
J	L/min	L	°F

- * Under the New Measurement Act, units other than SI (symbol "M") cannot be used in Japan.
- * G, F, J: Made to order
Reference: 1 [L/min] ↔ 0.2642 [gal/min]
1 [gal/min] ↔ 3.785 [L/min]
°F = 9/5°C + 32

Lead wire (Option)



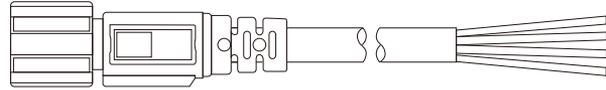
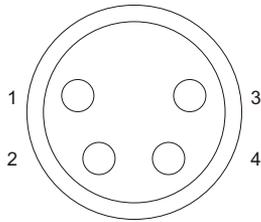
Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Description	Part no.	Qty.	Note
Bracket*1	ZS-40-K	1	For PF3W704/720/504/520 With 4 tapping screws (3 x 8)
	ZS-40-L	1	For PF3W740/540 With 4 tapping screws (3 x 8)
	ZS-40-M	1	For PF3W711/511 With 4 tapping screws (4 x 10)
Lead wire with M8 connector	ZS-40-A	1	Lead wire length: 3 m

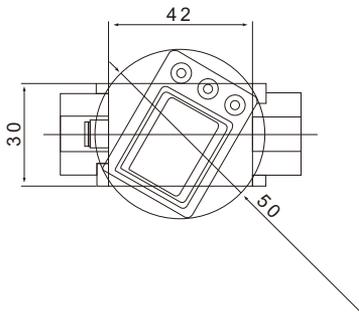
- *1 For units with flow adjustment valve, 2 brackets are required.

Dimensions

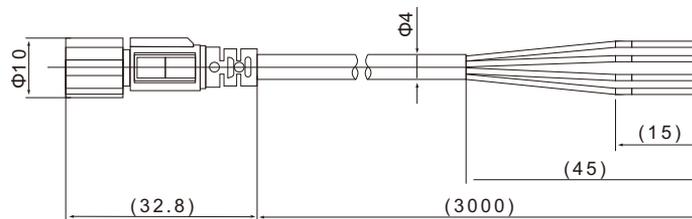
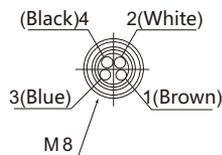


* 4-wire type lead wire with M8 connector used for the NPF3W series

1	DC(+):Brown
2	OUT:White
3	DC(-):Blue
4	OUT:Black

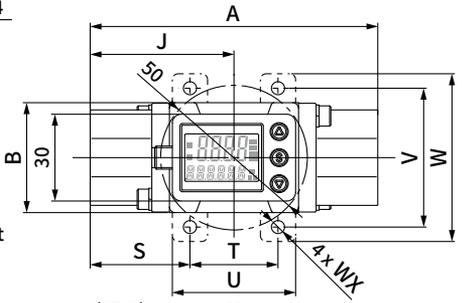
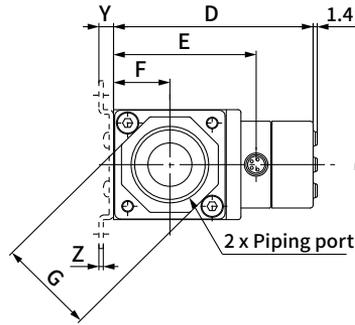


Lead wire with M8 connector

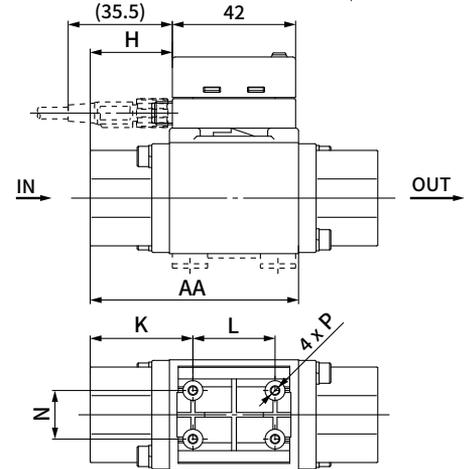
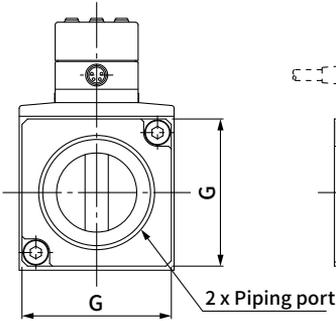


Dimensions

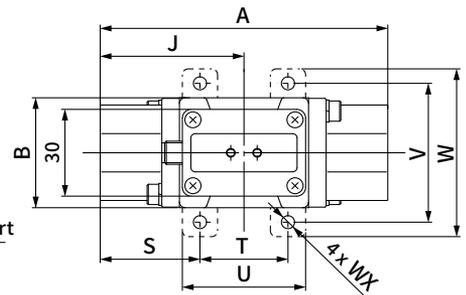
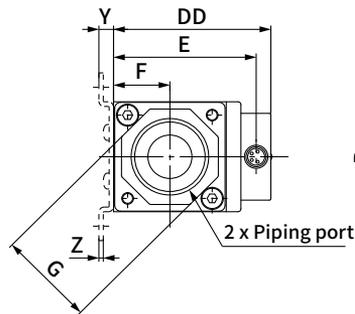
NPF3W704/720/740/711/721
Integrated display



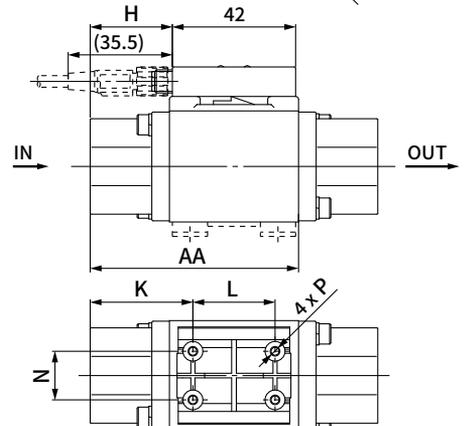
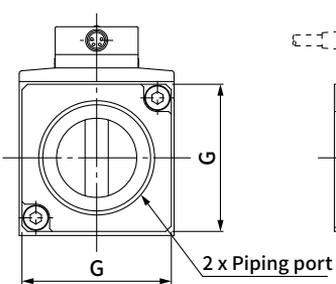
For NPF3W721



NPF3W504/520/540/511/521
Remote sensor unit



For NPF3W521



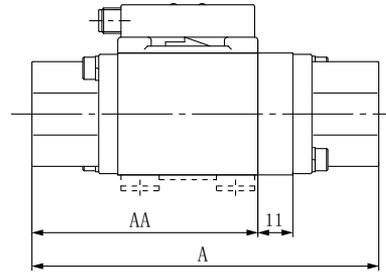
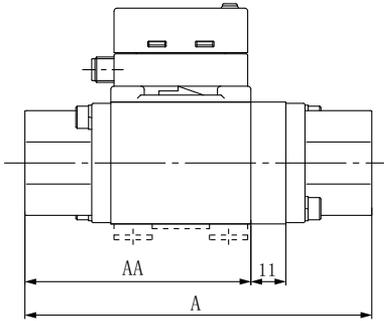
[mm]

Model	Port size (Rc, NPT, G)	A	AA	B	D	DD	E	F	G	H	J	K	L	N	P	Bracket dimensions							
																S	T	U	V	W	WX	Y	Z
NPF3W704/504	3/8	70	50	30	60	45.6	40.6	15.2	24	14	35	26	18	13.6	ø2.7 depth 14	24	22	32	40	50	4.5	5	1.5
NPF3W720/520	3/8, 1/2	78	54	30	60	45.6	40.6	15.2	27	18	39	30	18	13.6	ø2.7 depth 12	28	22	32	40	50	4.5	5	1.5
NPF3W740/540	1/2, 3/4	98	71	38	68	53.6	48.6	19.2	32	28	49	35	28	16.8	ø2.7 depth 12	34	30	42	48	58	4.5	5	1.5
NPF3W711/511	3/4, 1	124	92	46	77	62.6	57.6	23.0	41	42	63	48	28	18.0	ø3.5 depth 14	44	36	48	58	70	5.5	7	2.0
NPF3W721/521	1 1/4, 1 1/2	104	74								31	52	39.5										
	G1 1/4	108	76	56	91	76.6	71.6	28.5	54		33	54	41.5	25	27.5	ø3.5 depth 14							
	G1 1/2	112	78								35	56	43.5										

Dimensions

NPF3W704/720/740/711/721-□-□T
Integrated display: With temperature sensor

NPF3W504/520/540/511/521-□-□T
Remote sensor unit: With temperature sensor

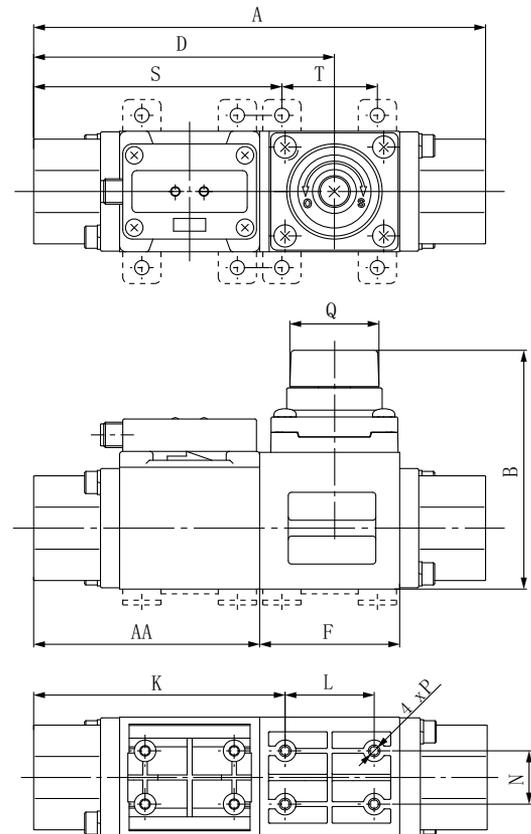
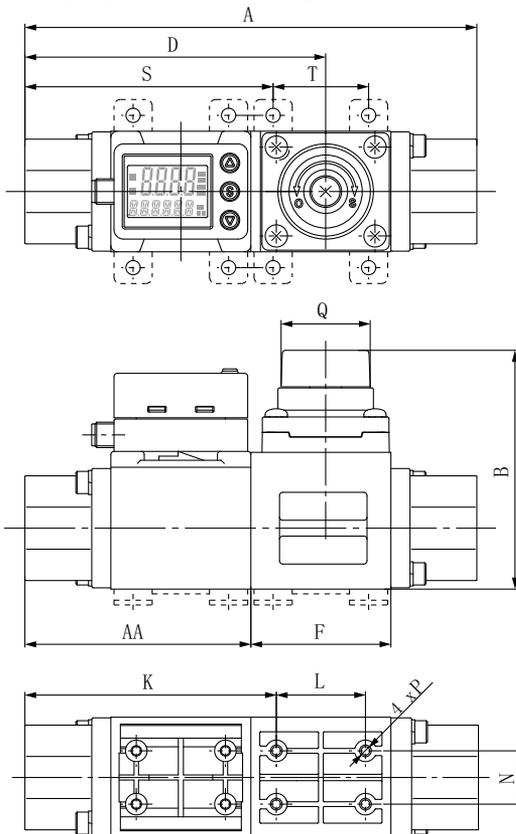


[mm]

Model	A	AA
NPF3W704/504-□-□T	81	50
NPF3W720/520-□-□T	89	54
NPF3W740/540-□-□T	109	71
NPF3W711/511-□-□T	135	92
NPF3W721/521-□-□T	115	74
NPF3W721/521-F12-□T	119	76
NPF3W721/521-F14-□T	123	78

NPF3W704S/720S/740S
Integrated display: With flow adjustment valve

NPF3W504S/520S/540S
Remote sensor unit: With flow adjustment valve

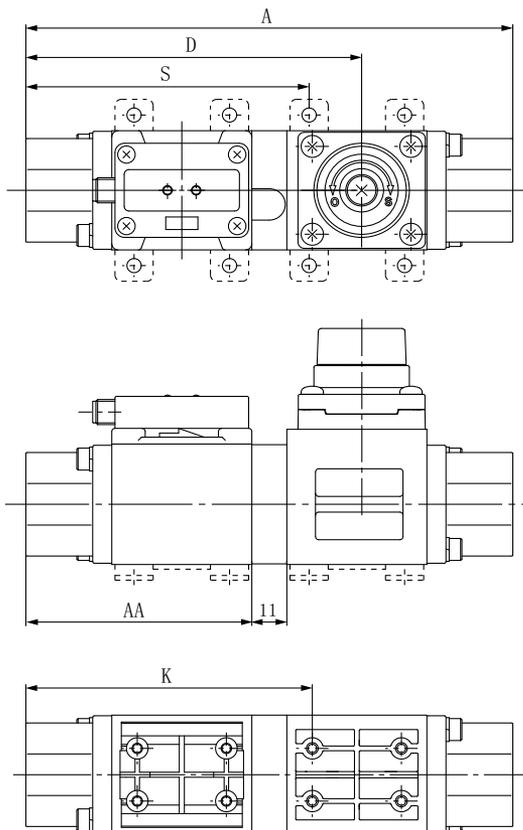
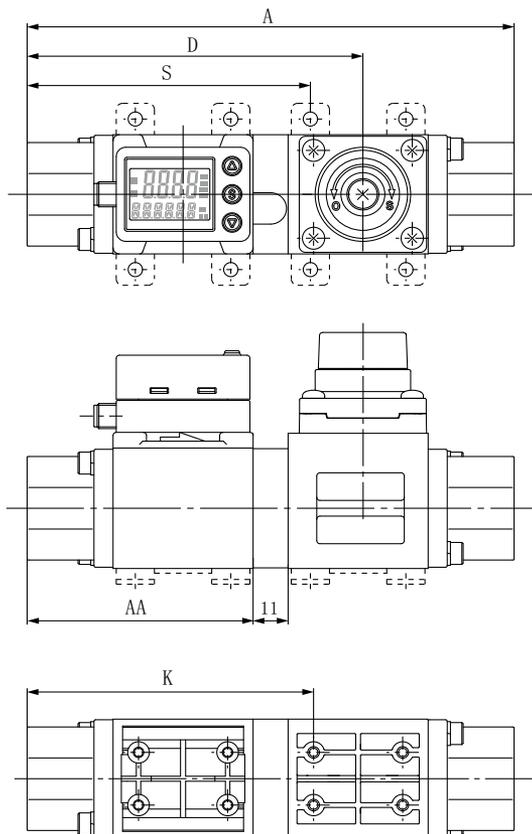


Model	A	AA	B	D	F	K	L	N	P	Q	Q number of rotations	Bracket dimensions		[mm]
												S	T	
PF3W704S/504S	104	50	63.6 (Max. 68.6)	70.2	34	58.5	18	13.6	ø2.7 depth 10	ø19	6	56.5	22	
PF3W720S/520S	112	54	63.6 (Max. 68.6)	74.2	34	62.5	18	13.6	ø2.7 depth 10	ø19	6	60.5	22	
PF3W740S/540S	142	71	75.25 (Max. 81)	94.5	44	79.0	28	16.8	ø2.7 depth 10	ø28	7	78.0	30	

Dimensions

NPF3W704S/720S/740S-□-□T
Integrated display: With temperature sensor and flow adjustment valve

NPF3W504S/520S/540S-□-□T
Remote sensor unit: With temperature sensor and flow adjustment valve

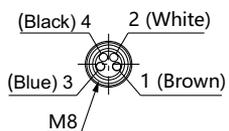


[mm]

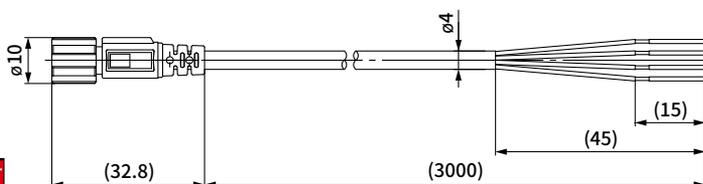
Model	A	AA	D	K	S
NPF3W704S/504S-□-□T	115	50	81.2	69.5	67.5
NPF3W720S/520S-□-□T	123	54	85.2	73.5	71.5
NPF3W740S/540S-□-□T	153	71	105.5	90.0	89.0

ZS-40-A

Lead wire with M8 connector



Pin no.	Pin name	Wire color
1	DC (+)	Brown
2	OUT2	White
3	DC (-)	Blue
4	OUT1	Black



* 4-wire type lead wire with M8 connector used for the NPF3W series

Lead Wire Specifications

Conductor	Nominal cross section	AWG23
	O.D.	Approx. 0.7 mm
Insulator	Material	Heat-resistant PVC
	O.D.	Approx. 1.1 mm
Color	Brown, White, Black, Blue	
Sheath	Material	Heat- and oil-resistant PVC
Finished O.D.	ø4	