Precision

POTENTIOMETERS, JOYSTICK CONTROLLERS & SERVO COMPONENTS

"Sakae"
SHORTFORM CATALOG
0709

New Product — 3-dimensional coordinate type Joystick Controller Model H40JHK Series (Hall effect IC type resistive element incorporated) H40JHK

Model H40JHK-ZU-3SR3G

- Contactless precision potentiometer incorporated. (Hall effect IC type)
- Cost effective, longer operating life.
- Small size joystick featuring robust structure.
- Several special outputs are available.(Single, Cross, or Parallel)

Application:Robotic operations, Camera controls, measuring apparatuses, and so on.

STANDARD SPECIFICATIONS

Mechanical performance
- Controlling range of operating lever:
  3-dimensional coordinate type
  X and Y directions:Approx.±20° from center position
  Z direction:Approx.±30° from center position
- Operating force(Standard automatic center returning spring return device)
  X and Y directions:Approx.1~2N (100~200gf)
  Z direction:Approx.40~60mN·m(400~600gf·cm)
- Operating temperature range:-20℃~+60℃
- Vibration:10~55Hz 98m/s²
- Shock:294m/s²
- Life expectancy:Approx.2,000,000 operations
- Mass:Approx.110g

Electrical performance
- Hall effect IC type
  Applied voltage:5V.D.C.
  Effective output:Approx.0.5V~4.5V
  Electrical rotating angle:X and Y-axes:Approx. ±17.5° z-axis:Approx.±27.5°
  Independent linearity tolerance:±3%FS
  Load resistance:over 10kΩ
- Dielectric strength:1 minute at 500V.A.C.
- Insulation resistance:Over 1000MΩ at 500V.D.C.
- EMC durability:100V/m(80MHz~1GHz 1KHz sine-wave 80% Amplitude Modulation)

New Product — Contactless(Hall IC type) Precision Potentiometer(360° output) HSM30

- Contactless precision potentiometer incorporated. (Hall effect IC type)
- 360° linear output is standard version.
- Robust, longer operation life, and higher vibration-resistance.
- Dust proof structure (IP65).
- Easy mounting. Flange or Bushing version is available.
- Several special outputs are available.(Single, Cross, or Parallel)
- Standard applied voltage is 5V.D.C. 12V.D.C. or 24V.D.C. is available as an option.

Model HSM30
(Bushing type)

Model HSM30F
(Flange type)

Application:Industrial vehicles, control consoles, industrial precision equipments, and so on.

Electrical performance
- Applied Voltage:5V±10%D.C.
- Effective Output:10%±3%~90%±3%
- Effective Electrical Angle:360°(endless)
- Independent Linearity Tolerance:±5%FS(FS=360°)
- Output Temperature Characteristics:±3%Vout/FS

Mechanical Perfomance
- Rotating Torque:5mN·m(Below 50gf·cm)
- Life Expectancy:Approx.50,000,000 shaft revolutions
- Mass:Approx.45g(HSM30F)

Environmental Performance
- EMC Durability:100V/m (80MHz~1GHz 1kHz 80% Amplitude Modulation)
- Operating Temperature Range:-40℃~+120℃
- IP degrees:IP65
- Vibration:10~2,000Hz 196m/s²
- Shock:980m/s² 6ms

SAKAE TSUSHIN KOGYO CO., LTD.
KANAGAWA, JAPAN

"Sakae"

CONTACTLESS (HALL IC TYPE) SERIES

New Product

Contactless (Hall IC type) Precision Potentiometer (360° mechanical rotation) HSM18E

●This is a small size, low cost and longer-life Hall IC type potentiometer. Improved EMS durability and other environmental performances are excellent in use for industrial precision equipment.

HSM18E
(With lug terminals)

HSM18EL
(With leadwires)

STANDARD SPECIFICATIONS
- Applied Voltage : 5V±10% D.C.
- Effective Output : Approx.10%~90%Vin
- Effective Electrical Angle : ±45° (90°)
- Independent Linearity Tolerance : ±1.5%
- Mechanical Rotating Angle : 360° (endless)
- Rotating Torque : Below 2mN·m

ENVIRONMENTAL PERFORMANCE
- EMC Durability : 100V/m
  (80MH z ~1GHz 1kHz 80% Amplitude Modulation)
- Operating Temperature Range : −40℃~+105℃
- Vibration : 10~2,000Hz 196m/s²
- Shock : 908m/s² 6ms
- Life Expectancy : Approx.50,000,000 shaft revolutions

New Product

Foot Controller Model H80FCL Series (Hall effect IC type potentiometer incorporated) H80FCL

●Simple structure, cost effective, and robust body. Suitable to industrial vehicle or control consoles.

H80FCL

STANDARD SPECIFICATIONS
- Applied Voltage : 5V±10% D.C.
- Effective Output : Approx.10%~90%Vin
- Independent Linearity Tolerance : ±3%
- Operating angle : Approx.20°
- Operating force : Approx.10N~60N
- Mass : Approx.850g

ENVIRONMENTAL PERFORMANCE
- EMC Durability : 100V/m
  (80MH z ~1GHz 1kHz 80% Amplitude Modulation)
- Operating Temperature Range : −20℃~+65℃
- Vibration : 10~55Hz 98m/s²
- Shock : 294m/s² 11ms
- Life Expectancy : Approx.2,000,000 operations

New Product

3-dimensional coordinate type Joystick Controller Model H30JHK Series (Hall effect IC type resistive element incorporated) H30JHK

H30JHK-ZU-3SR3
(Hard cover type)

H30JHK-ZU-3SR3G
(Rubber cover type)

●Features
- ·Longer operation life, cost effective, and simple structure.
- ·Compact joystick. Operation with finger tips. (Mounting method is the same as existing method.)
- ·Several outputs are available.(Single, Cross, or Parallel)
- ·Hall IC type, and improved environmental performance.
- ·Suitable to robotic operation, medical equipment, camera control, and so on.

STANDARD SPECIFICATIONS

●Mechanical performance
- Controlling range of operating lever : 3-dimensional coordinate type
  X and Y directions : Approx.±15° from center position
  Z direction : Approx.±30° from center position
- Operating force (With standard automatic center returning spring return device)
  X and Y directions:Approx.1.5~3N (150~300gf)
  (X and Y directions with rubber cover : Approx.1.5~3.5N(150~350gf))
  Z direction:Approx.10~30mN・m(100~300gf・cm)
- Operating temperature range : −20℃~+60℃
- Vibration : 10~55Hz 98m/s²
- Shock : 294m/s²
- Life expectancy : Approx.1,000,000 operations
- Mass : Approx.50 g

●Electrical performance

Hall effect IC type resistive element incorporated
- Applied voltage : 5V .D.C.
- Effective output : Approx.0.5V~4.5V
- Electrical rotating angle : X and Y-axes : Approx.±15°
  Z-axis:Approx.±30°
- Independent linearity tolerance : ±3%
- Load resistance : over 10KΩ
- Dielectric strength : 1 minute at 250V.A.C.
- Insulation resistance : Over 100MΩ at 250V.D.C
- EMC durability:50V/m(80MH z ~1GHz 1KHz sine-wave 80% AM modulation)

PRECISION PETENTIOMETERS & TURNS-COUNTING DIALS

- ●Wirewound Element
- ●Conductive Plastic Element
- ●Inductance Element
- ●Hybrid Element
- ●Hall IC Element
- ●Analog Read-out
- ●Digital Read-out

HELICALOHM POTENTIOMETER (Multi-turn,Wirewound)

10HP-10

12HPC-10P

20HP-10S

22HP-10

Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Max. Practical Resistance (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel (+10° 0°)	Electrical Travel (±5°)	Starting Torque Max. (mN·m)
10HP-5	φ10.5×19.2	4	100− 20k	50k	0.35~0.2	0.5	1,800+30° 0°	1,800	3
10HP-10	φ10.5×25.5	4	100− 50k	100k	0.25~0.1	1.0	3,600+30° 0°	3,600	3
12HP-5(E)	φ13×25.5	3(1/8")	100− 50k	70k	0.35~0.2	0.75	1,800+15° 0°	1,800	3
12HP-10(E)	φ13×25.5	3(1/8")	100−100k	150k	0.25~0.1	1.5	3,600+15° 0°	3,600	3
12HP-5P(EP)	φ13×25.5	3(1/8")	100− 50k	70k	0.35~0.2	0.75	1,800+15° 0°	1,800	3
12HP-10P(EP)	φ13×25.5	3(1/8")	100−100k	150k	0.25~0.1	1.5	3,600+15° 0°	3,600	3
12HPS-5(E)	φ13×28.2	3(1/8")	100− 50k	70k	0.35~0.2	0.75	1,800+15° 0°	1,800	2
12HPS-10(E)	φ13×28.2	3(1/8")	100−100k	150k	0.25~0.1	1.5	3,600+15° 0°	3,600	2
20HP-5S	φ20×18	6	100− 50k	100k	0.3 ~0.2	1.0	1,800	1,800	5
20HP-10S	φ20×25.5	6	100−100k	150k	0.2 ~0.1	2.0	3,600	3,600	5
20HPS-5S	φ20×24.5	3	100− 50k	100k	0.3 ~0.2	1.0	1,800	1,800	3
20HPS-10S	φ20×32	3	100−100k	150k	0.2 ~0.1	2.0	3,600	3,600	3
25HP-5	φ25×29	4·6	100− 50k	100k	0.3 ~0.2	1.5	1,800	1,800	8
25HP-10	φ25×37.5	4·6	100−100k	200k	0.2 ~0.1	2.0	3,600	3,600	8
25HPS-5	φ25×30.5	4	100− 50k	100k	0.3 ~0.2	1.5	1,800	1,800	5
25HPS-10	φ25×39	4	50−100k	200k	0.2 ~0.1	2.0	3,600	3,600	5
									(HDS)
46HD-3(HDS-3)	φ46×38.5	6	0.5− 20k	100k	0.4 ~0.2	2.0	1,080	1,080	20(10)
46HD-5(HDS-5)	φ46×38.5	6	0.5− 50k	100k	0.4 ~0.2	2.5	1,800	1,800	20(10)
46HD-10(HDS-10)	φ46×56	6	0.5−100k	200k	0.3 ~0.1	5.0	3,600	3,600	20(10)
46HD-15(HDS-15)	φ46×75	6	0.5−100k	200k	0.3 ~0.1	7.5	5,400	5,400	20(10)
46HD-20(HDS-20)	φ46×94.5	6	0.5−200k	500k	0.3 ~0.1	10.0	7,200	7,200	20(10)

S46HD-3 (With limit-switches)
(Specimen for reference.)

Limit-switch adaptors are also available in models 20HP and 25HP series.

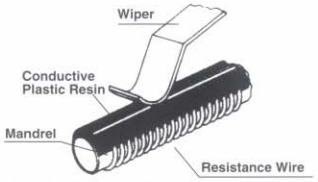
LOW-COST VERSION HELICALOHM POTENTIOMETER (Multi-turn, Wirewound)

Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Max. Practical Resistance (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel (+10° 0°)	Electrical Travel (±5°)	Starting Torque Max. (mN·m)
12HPC-5(E)	φ13×25.5	3(1/8")	100− 50k	—	0.35~0.2	0.75	1,800+15° 0°	1,800	3
12HPC-5P(EP)	φ13×25.5	3(1/8")	100− 50k	—	0.35~0.2	0.75	1,800+15° 0°	1,800	3
12HPC-5W(EW)	φ13×25.5	3(1/8")	100− 50k	—	0.35~0.2	0.75	1,800+15° 0°	1,800	3
12HPC-10(E)	φ13×25.5	3(1/8")	100−100k	—	0.25~0.1	1.5	3,600+15° 0°	3,600	3
12HPC-10P(EP)	φ13×25.5	3(1/8")	100−100k	—	0.25~0.1	1.5	3,600+15° 0°	3,600	3
12HPC-10W(EW)	φ13×25.5	3(1/8")	100−100k	—	0.25~0.1	1.5	3,600+15° 0°	3,600	3
22HP-5	φ22×19	6	100− 50k	—	0.3 ~0.2	1.0	1,800	1,800	10
22HP-5M	φ22×19	6	100− 50k	—	0.3 ~0.2	1.0	1,800	1,800	10
22HP-5E	φ22×19	6.35	100− 50k	—	0.3 ~0.2	1.0	1,800	1,800	10
22HP-5N	φ22×19	6	100− 50k	—	0.3 ~0.2	1.0	1,800	1,800	10
22HP-10	φ22×19	6	100−100k	—	0.25~0.1	2.0	3,600	3,600	10
22HP-10M	φ22×19	6	100−100k	—	0.25~0.1	2.0	3,600	3,600	10
22HP-10E	φ22×19	6.35	100−100k	—	0.25~0.1	2.0	3,600	3,600	10
22HP-10N	φ22×19	6	100−100k	—	0.25~0.1	2.0	3,600	3,600	10

HELICALOHM POTENTIOMETER (Multi-turn,Hybrid)

20HHPS-10S
(Hybrid,Servomount)

Construction of hybrid resistive element



Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Resolution	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel (+10° 0°)	Electrical Travel (±5°)	Starting Torque Max. (mN·m)
12HHP-10(E)	φ13×25.5	3(1/8")	1k− 50k	Essentially Infinite	0.4 ~0.1	1.0	3,600+15° 0°	3,600	5
12HHP-10P(EP)	φ13×25.5	3(1/8")	1k− 50k		0.4 ~0.1	1.0	3,600+15° 0°	3,600	5
12HHPS-10(E)	φ13×28.2	3(1/8")	1k− 50k		0.4 ~0.1	1.0	3,600+15° 0°	3,600	2
20HHP-5S	φ20×18	6	1k− 50k		0.35~0.2	1.0	1,800	1,800	5
20HHP-10S	φ20×25.5	6	2k−100k		0.25~0.1	2.0	3,600	3,600	5
20HHPS-5S	φ20×24.5	3	1k− 50k		0.35~0.2	1.0	1,800	1,800	3
20HHPS-10S	φ20×32	3	2k−100k		0.25~0.1	2.0	3,600	3,600	3

LOW-COST VERSION HELICALOHM POTENTIOMETER (Multi-turn, Hybrid)

Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Resolution	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel (+10° 0°)	Electrical Travel (±5°)	Starting Torque Max. (mN·m)
22HHP-5	φ22×19	6	1k− 50k	Essentially Infinite	0.35~0.2	1.0	1,800	1,800	10
22HHPS-5	φ22×22	6	1k− 50k		0.35~0.2	1.0	1,800	1,800	10
22HHP-10	φ22×19	6	2k−100k		0.25~0.1	2.0	3,600	3,600	10
22HHPS-10	φ22×22	6	2k−100k		0.25~0.1	2.0	3,600	3,600	10

"Sakae"

PRECISION POTENTIOMETERS & TURNS-COUNTING DIALS

TURNS-COUNTING DIAL (for use with Helicalohm Pot. or Multi-turn Pot.)

MG20-22B

MF10-15YB

DB10-26B

MB10-25B

DC10-27B
Standard type
(round window)

DC10-27BFK
Flange type
(square window)

Read-out & Type		Model No.	Outer Dimensions (mm)	Max.Number of Turns-Counting	Matching Shaft Diameter (mm)	Combinable Helicalohm Pot.	Lock Device
Analog	MA	MAn-55	ϕ54	3,5,10,15,20	6,1/4″	25HP,46HD	No
	MB	MB10-25B	ϕ26	10	3,1/8″,4,6,1/4″	10HP,12HPC,12HP,20HP,25HP, 46HD,12HHP,20HHP	Yes
		MB10-30B	ϕ31				
	MF	MF10-15B	15×18.5	10	3,1/8″,4	10HP,12HPC,12HP,25HP,12HHP	
		MF20-22B	ϕ22	20	3,1/8″,4,6,1/4″	10HP,12HPC,12HP,20HP,22HP, 25HP,20HHP,22HHP,46HD,12HHP	
		MF20-46B	ϕ46	20	6,1/4″	20HP,22HP,25HP,20HHP,22HHP,46HD	
Digital	DA	DA10-24B	ϕ24	10	6,1/4″	20HP,25HP,20HHP,46HD	
	DB	DB20-26B	26×43.5	10	6,1/4″	20HP,22HP,25HP,20HHP,22HHP,46HD	
	DC	DC10-27B	27×31.5	10	6,1/4″	22HP,22HP-N,25HP-D,22HHP, 22HHP-N	
		DC10-27BF					
		DC10-27BK	30.5×31.5				
		DC10-27BFK					

LOW-COST VERSION TURN-COUNTING DIAL (for use with Helicalohm Pot. and Multi-turn Pot.)

Read-out & Type		Model No.	Outer Dimensions (mm)	Max.Number of Turns-Counting	Matching Shaft Diameter (mm)	Combinable Helicalohm Pot.	Lock Device
Analog	MF	MF10-15BD	15×18.5	10	3,1/8″,4	10HP,12HPC,12HP,25HP,12HHP	Yes
	MG	MG20-22B	ϕ22	20	3,1/8″,4,6,1/4″	10HP,12HPC,12HP,20HP,22HP 25HP,20HHP,22HHP,46HD,12HHP	
Digital	DB	DB10-26BD	26×43.5	10	3,4,6,1/4″,1/8″	20HP,22HP,25HP,20HHP,22HHP,46HD	

NOTE: (1) Our multi-turn potentiometers cannot always combine with our turns-counting dials and therefore, please duly check with above table when ordering.
(2) If you combine other manufacturers' multi-turn potentiometers with our turns-counting dials, please consult us for your best selection.
(3) Recessed Mounting Adaptors for use with our DA digital dial are available:A type (without lock device) and B type (with lock device)

1-TURN POTENTIOMETER (1-turn, Wirewound & Conductive Plastic)

FCP12AC

FCP12A

FCP22E

FCP22AC

FCP50A

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Max. Practical Resistance (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel	Electrical Travel	Starting Torque Max. (mN·m)
Wirewound	CP22	ϕ22.23×15	3	50−10k	20k	0.5~0.2	0.5	360°	355°±5°	1.5
	CP30	ϕ27×15	3	50−20k	50k	0.5~0.15	0.75	360°	355°±5°	2
	CP45	ϕ41×18	6	50−20k	50k	0.5~0.1	1.0	360°	355°±3°	4
	CP50	ϕ50×18	6	50−20k	50k	0.5~0.1	1.5	360°	355°±3°	5
Low-torque	LNB22	ϕ22×20	2	100−20k	—	0.5~0.25	0.3	360°	355°±5°	0.1
Conductive Plastic	FCP22A	ϕ22.23×15	3	1k−10k	100k	1.0~0.25	1.0	360°	320°±5°	1.5
	FCP30A	ϕ27×15	3	1k−10k	100k	1.0~0.2	1.5	360°	340°±5°	2
	FCP40A	ϕ36.5×18	6	1k−10k	200k	0.5~0.1	2.0	360°	340°±5°	3
	FCP50A	ϕ50.8×18	6	1k−10k	500k	0.5~0.05	3.0	360°	350°±5°	4

LOW-COST VERSION 1-TURN POTENTIOMETER (1-turn, Wirewound & Conductive plastic)

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Max. Practical Resistance (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel	Electrical Travel	Starting Torque Max. (mN·m)
Wirewound	CP22C	ϕ22×12	6	50−10k	20k	0.5~0.25	0.5	360°	355°±5°	5
	CP22E	ϕ22×12	6	50−10k	20k	0.5~0.25	0.5	360°	355°±5°	5
Conductive Plastic	FCP12AC	ϕ13×10	3	1k−10k	100k	2.0~1.0	0.2	360°	300°±5°	2
	FCP12A	ϕ13×12.5	3	1k−10k	100k	2.0~1.0	0.2	360°	300°±5°	1
	FCP22AC	ϕ22×12	6	1k−10k	100k	1.5~1.0	1.0	360°	320°±5°	5
	FCPS22AC	ϕ22×20	6	1k−10k	100k	1.0~0.5	1.0	360°	320°±5°	5
	FCP22E	ϕ22×12	6	1k−10k	100k	1.5~1.0	1.0	360°	320°±5°	5
	FCP22R	ϕ22×12	6	1k−10k	100k	1.5~1.0	1.0	360°	340°±5°	5

●**Inch dia. shaft is available on reqest.**

SEE-SAW MOTION POTENTIOMETER UNIT

RMP30AY

RMP30HF

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Standard Resistance Range (Ω)	Max. Practical Resistance (Ω)	Independent Linearity (±)	Power Rating (W)	Operating Angle	Electrical Travel	Degrees of protection
Conductive Plastic	RMP 30A	35×19×35	10k	1k-20k	3	0.1	15°~19°	30°±5°	IP40
Hall IC	RMP 30H	35×19×35	—	—	3	Standard Applied Voltage 5VD.C.	15°~19°	30°±5°	IP65

PRECISION POTENTIOMETERS

NON-LINEAR POTENTIOMETER (1-turn, Wirewound & Conductive Plastic)

FSCB22A

Sin-Cos 360°

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Function Characteristics	Standard Resistance Range (Ω)	Conformity (Peak to peak) (±%)	Power Rating (W)	Mechanical Travel	Electrical Travel	Starting Torque Max. (mN・m)
Wirewound	SCB50	φ50×40	6	360° sin/cos	500−10k	1.0~0.5	2.0	360°	360°	8
Conductive Plastic	FSCB22A	φ22.23×22.5	3	360° sin/cos	1k−10k	2.0~1.0	0.5	360°	360°	3
	FSCB30A	φ29×22.5	3	360° sin/cos	1k−10k	1.0~0.7	0.75	360°	360°	3
	FSCB50A	φ50.8×26	6	360° sin/cos	1k−10k	0.5~0.2	1.25	360°	360°	5

●Conductive plastic resistive element type potentiometers with various special functional curves are available on request.
●Inch dia. shaft is available on reqest.

LINEAR-MOTION POTENTIOMETER (Linear-motion, Wirewound, Conductive Plastic & Hybrid)

8FLP10A

13FLP25A

15FLP10A

18FLPCC50RE

40FLP500A

Resistive Element	Model No.	Dimensions (mm) H×W×L	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Stroke (mm) $\binom{+2}{0}$	Electrical Stroke (mm) (±0.5)	Friction Max. (N)
Wirewound	18LP15	20.5×18×50	10−5k	2.0~1.0	0.3	15	15	0.6
	18LP30	20.5×18×60	20−10k	1.0~0.5	0.5	30	30	0.8
	18LP50	20.5×18×85	50−10k	0.7~0.4	0.75	50	50	1
	18LP100	20.5×18×135	50−20k	0.5~0.25	1.0	100	100	1
	30LP50	30×30×120	50−10k	0.7~0.4	0.75	50	50±1	0.6
	30LP100	30×30×170	50−20k	0.5~0.25	1.0	100	100±1	0.6
	30LP200	30×30×320	100−50k	0.5~0.25	2.0	200	200±1	0.8
	50LP300	50×50×400	200−50k	0.3~0.15	3.0	300	300	4
	50LP500	50×50×600	500−100k	0.25~0.1	5.0	500	500	4
	50LP1000	50×50×1200	500−200k	0.25~0.1	9.0	1000	1000	6
Conductive Plastic	18FLPA15	20.5×18×50	500−10k	0.7~0.5	0.3	15	15	0.3
	18FLPA30	20×18×65	500−10k	0.7~0.5	0.6	30	30	0.3
	18FLPA50	20×18×85	500−10k	0.4~0.25	0.75	50	50	1
	18FLPA100	20×18×135	1k−20k	0.3~0.2	1.25	100	100	1
	18FLPBC25	18×18×74.5	500−10k	0.5~0.2	0.5	30	25±1	1.2
	18FLPBC50	18×18×99.5	500−10k	0.5~0.1	0.75	55	50±1	1.2
	18FLPBC75	18×18×124.5	500−20k	0.5~0.1	1.0	80	75±1	1.2
	18FLPBC100	18×18×149.5	1k−20k	0.5~0.1	1.25	105	105±1	1.2
	18FLPBC150	18×18×199.5	1k−20k	0.5~0.05	1.5	155	150±1	1.2
	18FLPCC25RE	18×18×63	500−10k	0.5~0.2	0.5	30^{+1}_{0}	25±1	3
	18FLPCC50RE	18×18×88	500−10k	0.5~0.1	0.75	55^{+1}_{0}	50±1	3
	20FLP15A	20×20×50	500−10k	1.0~0.5	0.3	15	15	0.5
	20FLP30A	20×20×65	500−10k	1.0~0.5	0.5	30	30	0.5
	20FLP50A	20×20×85	1k−10k	0.5~0.3	0.75	50	50	1
	20FLP100A	20×20×135	2k−20k	0.5~0.25	1.25	100	100	1
	30FLP100A	35×32×170	1k−10k	0.5~0.075	1.25	105	100	2
	30FLP200A	35×32×270	2k−20k	0.5~0.05	1.5	205	200±1	2
	30FLP300A	35×32×370	5k−20k	0.5~0.05	2.0	305	300±1	2
	30FLP400A	35×32×470	5k−100k	0.5~0.05	2.5	405	400±1	2
	30FLP500A	35×32×570	5k−200k	0.5~0.05	5.0	505	500±1	2
	30FLP750A	35×32×820	5k−200k	0.5~0.1	7.5	755	750±1	2
	30FLP1000A	35×32×1070	10k−500k	0.5~0.1	10.0	1005	1000±1	2
	40FLP200A	47×40×360	2k−10k	0.5~0.05	1.5	205	200±1	2
	40FLP300A	47×40×460	3k−20k	0.5~0.05	2.0	305	300±1	2
	40FLP400A	47×40×560	4k−100k	0.5~0.05	2.5	405	400±1	2
	40FLP500A	47×40×660	5k−200k	0.5~0.05	5.0	505	500±1	2
	40FLP750A	47×40×810	5k−200k	0.5~0.1	7.5	755	750±1	2
	40FLP1000A	47×40×1160	10k−500k	0.5~0.1	10.0	1005	1000±1	2

●Above models(except 9HLP series)can be mounted with spring return device as special version.

LOW-COST VERSION LINEAR-MOTION POTENTIOMETER (Linear-motion,Wirewound,Conductive Plastic & Hybrid)

Resistive Element	Model No.	Dimensions (mm) H×W×L	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Stroke (mm) $\binom{+2}{0}$	Electrical Stroke (mm) (±0.5)	Friction Max. (N)
Conductive Plastic	8FLP10A	8.2×7.3×32	1k−20k	2.0~1.0	0.2	12	11	0.3
	13FLP12A	11×13×38	500−10k	2.0~1.0	0.2	12.7^{+3}_{0}	12.7	0.5
	13FLP25A	11×13×51	500−10k	1.5~0.7	0.4	25.4^{+3}_{0}	25.4	0.5
	13FLP50A	11×13×76	1k−20k	1.0~0.5	0.7	50.8^{+3}_{0}	50.8	0.5
	13FLP100A	11×13×127	1k−20k	0.7~0.3	1.2	101.6^{+3}_{0}	101.6	1
	15FLP10A	15×24×37	500−10k	2.0~1.0	0.2	10	10	0.3
	15FLP15A	15×24×37	500−10k	1.0~0.5	0.3	15	15	0.3
	15FLP20A	15×24×52	500−10k	1.0~0.5	0.4	20	20	0.3
	15FLP30A	15×24×52	500−10k	1.0~0.5	0.5	30	30	0.3

●Above models can be mounted with spring return device as special version.

RESISTANCE ELEMENT SUB-ASSEMBLY

CFL200

Resistive Element	Model No.	Dimensions (mm) H×W×L	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Stroke (mm)	Electrical Stroke (mm) (±1)	Friction Max. (N)
Conductive Plastic	CFL400	10×20×450	5k−100k	0.5~0.05	3.0	abt. 403	400	0.2
	CFL500	10×20×550	5k−200k	0.5~0.05	4.0	abt. 505	500	0.2
	CFL1000	10×20×1050	10k−500k	0.5~0.1	6.0	abt.1005	1000	0.2

●Hybrid resistive element type is also available on the strokes of 400,500 and 1,000 mm. on request.

LOW-COST VERSION RESISTANCE ELEMENT SUB-ASSEMBLY

Resistive Element	Model No.	Dimensions (mm) H×W×L	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Stroke (mm)	Electrical Stroke (mm) (±1)	Friction Max. (N)
Conductive Plastic	CFL200	10×20×250	2k−10k	0.5~0.05	2.0	abt. 203	200	0.2
	CFL300	10×20×350	5k−20k	0.5~0.05	2.5	abt. 303	300	0.2

"Sakae"

PRECISION POTENTIOMETERS

OIL-FILLED POTENTIOMETER (Multi-turn & 1-turn, Wirewound, Conductive Plastic & Hybrid)

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Travel	Electrical Travel	Starting Torque Max. (mN・m)
Wirewound	OF30	φ32×21	5	500− 10k	2.0 ~0.5	0.75	360°	280°±5°	30
	OF50	φ62×50	6	100 −20k	1.0 ~0.5	5.0	300°±5°	280°±5°	30
	OF50PB	φ62×50	6	100 −20k	1.0 ~0.5	5.0	300°±5°	280°±5°	30
	OFCP50	φ70×52	6	1k− 50k	0.5 ~0.1	1.5	360°	355°±3°	30
	OF46HD-10	φ62×75	6	100−100k	0.3 ~0.1	5.0	3600° $^{+10°}_{0}$	3600°±5°	30
Conductive Plastic	OF30-MCA	φ32×21.5	5	1k− 10k	1.0 ~0.5	1.0	360°	280°±5°	30
Hybrid	OF20HHP-10S	φ32×40	6	2k−100k	0.25~0.1	2.0	3600° $^{+10°}_{0}$	3600°±5°	20
	OF20HHPS-10S	φ32×45	6	2k−100k	0.25~0.1	2.0	3600° $^{+10°}_{0}$	3600°±5°	20

OIL-FILLED LINEAR-MOTION POTENTIOMETER (Linear-motion, Wirewound)

Model No.	Dimensions (mm) Dia.×Length	Shaft Dia. (mm)	Standard Resistance Range (Ω)	Independent Linearity (±%)	Power Rating (W)	Mechanical Stroke (mm)	Electrical Stroke (mm) (±0.5)	Friction Max. (N)
OF10LP30	φ12× 75	3	100− 5k	1.0~0.5	0.5	abt. 32	30	6
OF10LP50	φ12× 95	3	100−10k	0.7~0.4	0.75	abt. 52	50	6
OF10LP100	φ12×145	3	100−20k	0.5~0.25	1.0	abt.102	100	6
OF20LP50	φ20×135	5	100−10k	0.7~0.4	0.75	abt. 53	50	15
OF20LP100	φ20×185	5	100−20k	0.5~0.25	1.0	abt.103	100	15
OF20LP200	φ20×285	5	100−50k	0.5~0.25	2.0	abt.203	200	15
OF40LP100	φ40×252	with ball end joint	100−20k	0.5~0.25	1.0	abt.105	100	20
OF40LP200	φ40×352		100−50k	0.5~0.25	2.0	abt.205	200	20
OF40LP300	φ40×452		200−50k	0.3~0.1	3.0	abt.305	300	20

●Oil-filled linear-motion potentiometers with hybrid resistive element are available on request.

NOTE : (1) We assume no responsibility on so-called "products liability", unless we are fully noticed of the use or applications and a written confirmation to do so was issued from us.
(2) All details given in this catalog may be subject to change without notice in order to improve their qualities and designs.
(3) All of our products comply with Rohs directive in EU which has been stipulated since July 1, 2006.
(4) For further details, please request us general catalogs on precision potentiometers, dials, servo components and joystick controllers/foot controllers, respectively and separately. or please visit our web-site : http : //sakae-tsushin.co.jp /

Specially Ordered Potentiometers

Flange type, High IP grade
・SFCP18A-2172

Low-torque, 1-turn type with special housing case
・SLNB30-2546B

Wire winding type potentiometer
・SFCP50A

Digital potentiometer
・DP2003

PRECISION POTENTIOMETERS

CONTACTLESS POTENTIOMETER (1-turn, Hall IC)

HSM12

HSM18E

Resistive Element	Model No.	Outer Dimensions Dia.×Length	Linearity Tolerance (% FS)	Electrical Travel	Applied Voltage (V)	Starting Torque Max. (mN・m)
Hall IC	HSM12	φ13×33	1.5	±45° (90°)	5	2
	★ HSM18E/EL	φ18×12	1.5	±45° (90°)	5	2

★ HSM18E : With lug terminals.
HSM18EL : With leadwires.

CONTACTLESS POTENTIOMETER (Sin-Cos Output, Hall IC)

HSCB22

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Conformity (±%)	Electrical Travel	Applied Voltage (V)	Starting Torque Max. (mN・m)
Hall IC	HSCB22	φ22×22.5	0.8	360° (Endless)	5	0.5

CONTACTLESS POTENTIOMETER (1-turn, Inductance Element)

KSM22E-5

KSM22FS-5

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Linearity (±% FS)	Electrical Rotating Angle (θ)	Max. Input Voltage (V)	Starting Torque Max. (mN・m)
Inductance	★KSM22F-5	φ22×15.6	0.5	±50°	5	1
	KSM22FI-5	φ22×15.6	0.5	±50°	5	3
	KSM22FS-5	φ22×19.3	0.5	±50°	5	0.2
	KSM22E-5★	φ22.5×15.6	0.5	±50°	5	1

●The model with mark ★ is low-cost version.
●FS means 100°.

CONTACTLESS LINEAR-MOTION POTENTIOMETER (Linear-motion, Inductance Element)

LSM22-10-5

Resistive Element	Model No.	Dimensions (mm) Dia.×Length	Linearity (±% FS)	Mechanical Stroke (mm)	Electrical Stroke (mm)	Applied Voltage (V)	Friction Max. (N)
Inductance	LSM22-10-5	φ22×54	0.5	Abt.14	Abt.10	5	0.1
	LSM22-20-5	φ22×74	0.5	Abt.24	Abt.20	5	0.1
	LSM22-30-5	φ22×90	0.5	Abt.34	Abt.30	5	0.1

Specially Ordered Potentiometers

Super precision class potentiometer
・30HDS-10

25HP pot. with a small limit switch adapter
・S25HP- n MS

20HP-10
Dual ganged version with extended rear shaft
・S20HP-10SG

22HP-10
10 ganged version
・S22HPM-10G10

"Sakae"

PRECISION MOTOR-POTENTIOMETER

Our motor-potentiometer series are consisting of our precision potentiometer combined with a reduction gear mechanism and a D.C.motor.

NOMENCLATURE

MPH30-A-5-SCP22G 2KΩ 0.5

- Model number of motor-potemtiometer
- Coupled motor code
- Coupled reduction gear number
- Special version of potentiometer
- Independent linearity tolerance of the potentiometer
- Resistance value of the potentiometer
- Number of gangs of the potentiometer
- Coupled potentiometer model number

Standard Specifications

Model No.	Coupled Potentiometer		Slipping Torque (mN·m)	Motor Code	Reduction Gear Code	Reduction Gear Ratio	A Motor		B Motor		C Motor	
	No.of Turns	Pot.Model No.					1-turn pot. (Second)	10-turn pot. (Second)	1-turn pot. (Second)	10-turn pot. (Second)	1-turn pot. (Second)	10-turn pot. (Second)
MPH22	1	CP22,CP50	20~30	B	5	1 : 41	—	—	0.6	4.9	—	—
	10	25HP-10,22HHP-10	50		6	1 : 76	—	—	0.7	6.2	—	—
	1	FCP22A,FCP30A,FCP50A	20~30		7	1 : 141	0.9	7.8	1.0	9.8	—	—
MPH30	1	CP22C,CP22	20	A , B	8	1 : 262	1.2	11.2	1.6	15.7	—	—
	10	20HP-10S,25HP-10	30		9	1 : 485	1.8	17.9	2.9	28.1	—	—
	1	FCP22AC,FCP22A,FCP30A	20		10	1 : 900	3.2	31.2	6.0	60.0	—	—
		OF30-MCA	50		11	1 : 1670	5.6	55.7	9.4	93.8	—	—
MPH35	1	CP50,FCP50A	50	C	25	1 : 30.7	—	—	—	—	0.3	2.3
					26	1 : 54.6	—	—	—	—	0.4	4.0
					27	1 : 97.3	—	—	—	—	0.7	7.0
					28	1 : 173	—	—	—	—	1.3	12.5
MPH46	10	46HD-10	50		29	1 : 308	—	—	—	—	2.2	22.2
					30	1 : 548	—	—	—	—	4.0	39.4
					31	1 : 975	—	—	—	—	7.0	70.1
					32	1 : 1734	—	—	—	—	12.5	124.7

Low-Cost Versions

MPH22B10FCP22A
(1-turn Potentiometer servo mount type)

MPH22A7FCP22E
(1-turn Low-Cost type)

MPH30A1022HP-10
(10-turn Low-Cost type)

Model No.	Coupled Potentiometer		Slipping Torque (mN·m)	Motor Code	Reduction Gear Code	Reduction Gear Ratio	V Motor	
	No.of Turns	Pot.Model No.					1-turn pot. (Second)	10-turn pot. (Second)
MPH22 MPH30	1	FCP22E	20~30	A	7	1 : 141	0.9	7.8
					8	1 : 262	1.2	11.2
					9	1 : 485	1.8	17.9
	10	22HP-10	50		10	1 : 900	3.2	31.2
					11	1 : 1670	5.6	55.7

NOTE: Other reduction gears are available.

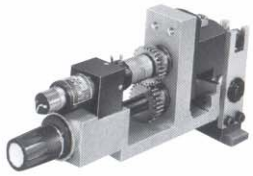
Specifications of Coupled Potentiometer

Technical details of potentiometer to be coupled are referred to in the potentiometer section in this catalog.

Rated Specifications of Coupled Motor

Motor Code	Max. Output P (W)	Starting Torque Mdk (mN·m)	Max. Efficiency η (%)	Operating Voltage U (V)	No. load speed nL (r.p.m)
A	0.26	0.52	65	6	19.100
B	0.43	1.55	70	6	10.700
C	3.1	14	87	6	8.350

SPECIALLY ORDERED ITEM



We can also supply special electro-mechanical unit consisting of our motor-pot. and mechanical parts on request.

●Special specifications of other various types of motor-potentiometers are available on request.

MPH35C25FCP50A
(1-turn Panel mounting method type)

MPH46C2846HD-10
(10-turn Panel mounting method type)

JOYSTICK CONTROLLERS

These are joystick controllers using precision potentiometers for industrial use and precision multi-directional operation.

NOMENCLATURE

50 JCK - Y O - 2 0 R2 G

- Approx. size of base housing of joystick controller in mm.
- J means joystick controller.
- Kinds of type
- Shape
- Mechanisms (1, 2 and 3 axes)
- Semi-standard Specifications.
- Spring return device.
- Number of various switches to be incorporated.
- Number of potentiometers to be incorporated.
- Available directions of lever operation.

Conductive plastic resistive element in corporated or outside mounted type

Model 30JB (Pot. incorporated type)

(L) 30JBK-YO-20R2 (Standard 2-axes type)
(R) 30JBK-ZT-30R3 (Standard 3-axes type)

Features Most miniaturized series in "Sakae" joystick controllers. 3 axes type is also available. Spring return device is incorporated inside housing case, and it returns an operating lever to the center position.

Applications Various kinds of measuring devices, electromotive wheelchairs, robot operations, precision machine tools, etc.

Model 30JE (Switch incorporated type)

(L) 30JEK-YQ-04R2 (Standard 2-axes type)
(R) 30JEK-ZU-06R3 (Standard 3-axes type)

Features Modified version of type 30JB with switches incorporated inside, instead of potentiometers. Spring return devices are also incorporated inside as in 30JB Series.

Applications Medical instruments, studio-related apparatuses, special vehicles, etc.

30JHK-ZT-30R3G (Standard 3-axes type)

LOW COST ITEM

30JHK-ZT-30R3G
(Standard 3-axes type)

Features Small sized 3 axes type with dust proof rubber cover is a standard version.

Applications 3-dimensional coordinate measuring apparatuses, CAD/CAM/CAE display devices, electromotive wheelchairs, medical instruments, optical instruments, etc.

30JLK-XI-10R1GR (Standard 1-axis type)

LOW COST ITEM

30JLK-XI-10R1GR
(Standard 1-axis type)

Features Completely sealed potentiometer is used and 4 kinds of knob shape are available.

Applications Various robot operations, civil engineering & construction machinery, precision machine tools, medical instruments, etc.

Model 40JB (Potentiometer incorporated type)

LOW COST ITEM

(L) 40JBK-YO-20 (Standard 2-axes type)
(R) 40JBK-YO-20R2G (40 JBK-YO-20 type with dust-proof rubber cover and spring return device)

Features This series is the lowest-cost in "Sakae" joystick controllers.

Applications Image processing devices, electro-motive wheelchairs, medical instruments, etc.

Model 50JA (Potentiometer outside-mounted type)

(L) 50JAK-YO-20 (Standard 2-axes type)
(R) 50JAK-ZZ-30 (Standard 3-axes type)

Features Most standardized joystick controllers. Various special specifications are easily available.

Applications 3-dimensional coordinate measuring apparatuses, CAD/CAM/CAE display devices, robot operations, etc.

Model 50JC (Potentiometer outside-mounted type)

(L) 50JCK-YO-20R2G (Standard 2-axes type)
(R) S50JCK-YO-25R2G (With 5 micro-switches, one of them detects a center position)

Features Robust structure featuring dust and drip-proof rubber cover, spring return device which automatically returns lever shaft to the center position.

Applications Precision equipment for industrial use, vehicles, construction machinery, cranes, etc.

Model 60JB (Potentiometer incorporated type)

LOW COST ITEM

(L) 60JBM-YO-20R2 (Standard 2-axes type)
(R) 60JBM-ZT-30R3G (3-axes type, a pot. for z axis is built-in the knob, G-4 type dust proof rubber cover.)

Features Low-cost type. Spring return device is incorporated inside housing case, and it automatically returns an operating lever shaft to the center position.

Applications 3-dimensional coordinate measuring apparatuses, image processing devices, robot operations, etc.

Model 90JA (Pot. mounted outside) & 90JB (Pot. mounted inside)

(L) 90JAM-YO-20R2G (Standard 2-axes type)
(R) 90JBM-YO-20R2G (Standard 2-axes type)

Features Robust structure featuring sealed housing case, dust proof rubber cover, and spring return device as standard. Various special specifications are available in 90JA/90JB Series.

Applications Civil engineering & construction machinery, Precision machine tools, various robot operations, etc.

Model 100JB (Pot. mounted inside)

LOW COST ITEM

100JBM-ZU-30R3G (3 axes type)

Features See-Saw motion potentiometer is incorporated in Z axis and this model is very suitable to 3D application.

Applications 3-dimensional coordinate measuring apparatuses, special vehicles, robot operations, etc.

Small — Size of housing — Big

"Sakae"

JOYSTICK CONTROLLERS

Hall effect IC type resistive element incorporated type

Notable Product

H series joysticks are added to our products lineup. HSM18E Hall effect IC Potentiometer is incorporated.

H50JAK-YO-20R2

H90JAM-YO-20R2G
With sub-mounting Panel

Features Applications

- With Hall effect IC type potentiometer
- Longer operating life(1.5 times longer than those of 50JA and 90JA)
- Several additional options such as knob shape, rubber cover, and so on, are available.
- Industrial vehicles, robotic controls, and so on.

Reputed H30JLK series.1axis type

H30JLK-XI-10R1
(Standard version)

H30JLK-XI-10R1GRP
With rubber cover, round shaped knob and sub-mounting panel

H30JLK-XI-10R1HP
With flat shaped knob and sub-mounting panel

Features Applications

- With Hall effect IC type potentiometer (Contactless)
- One axis
- Cost effective
- IP65 protection
- EMC 50V/m

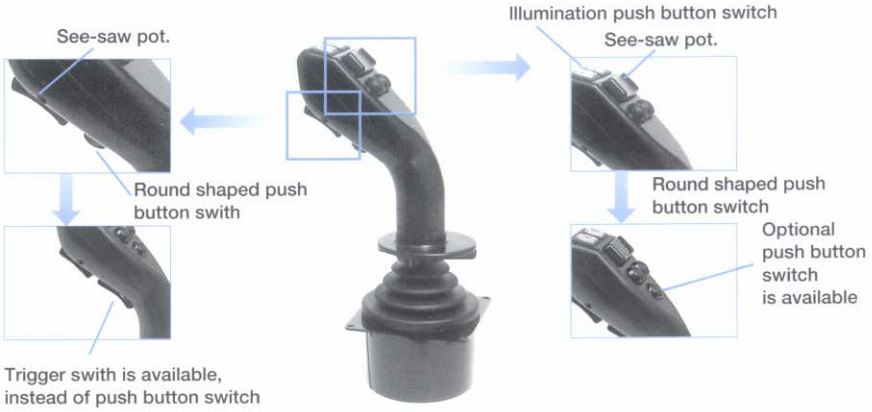
Multi-functional cobra head shaped knob type

Notable Product

Multi-functional control & with cobra head shaped knob
Models C90JA & C90JB

Features Applications

- The cobra head shaped knob incorporates some push-button switches and see-saw potentiometer, which enables a unique lever operation and complex controls in wide range.
- Please specify quantity and positions for mounting push-button switches and see-saw pot, which will be available in accordance with each different applications.
- Industrial vehicles, robot operations, Medical instruments, etc.



Digital switch incorporated type

40JEK-YQ-075R2
(Standard 2-axes type)

40JEK-YQ-075R2G
(With dust proof rubber cover and with spring return device)

● Model 40JE Series (4 bits digital switch incorporated type)

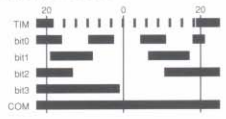
Features Digital code switch is incorporated inside, and it provides 4 bits digital output.

Applications Medical instruments, special vehicles, various robot operations, etc.

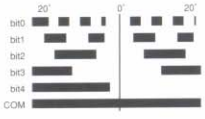
●Pattern of Digital Code Switch

When ordering, please specify on which you require gray code or binary code.

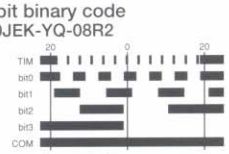
● 4bit gray code
● 40JEK-YQ-07R2



● 5bit gray code
● 40JEK-YQ-075R2



● 4bit binary code
● 40JEK-YQ-08R2



Note : In case of binary code, it is necessary to use the terminal TIM output code as a conversion gate signal.

"Sakae"

JOYSTICK CONTROLLERS

● Special knob shapes. Model numbers below pictures mean the knob is available to the model. For example,101 type knob is available to 40JB, 40JE, 50JA, H50JA, and 60JB.

Push-button knob

Type 101

40JB,40JE,50JA,H50JA,60JB
ϕ23×50

Type 102A

50JC
ϕ30×68

Type 103

50JA,H50JA
ϕ16×30

Type 104

30JB, 30JE
ϕ19×45

Grip-knob

Type 201

50JA, H50JA, 50JC
ϕ32×55

Type 202

50JA, H50JA, 60JB
ϕ20×37

Grip-knob

Type 203

50JC
ϕ30×69

Rotary-knob

Type 301

50JA, H50JA, 60JB
ϕ23×55

Type 302

50JA, H50JA, 60JB
ϕ30×55

Type 303

50JA-ZZ
with spring return device
ϕ16×30

Type 304

30JB, 30JE
ϕ18×26

Specially Ordered Joysticks

S30JLK-XI-11R1GP
With special " T " shaped knob with a push-button switch.

S65JHM-ZS-30R3P
Only round shaped knob is operative.

S90JAM-YX-24R2G
With over-drive gears together with potentiometers.

S50JAK-YO-09R2G
With push-button switch, encoders and gray colored rubber cover.

S50JAK-ZR-06R3GP
Special knob for operating Z axis with 2 micro-switches and a push-button switch.

S90JAM-YO-24R2GP
Round shaped knob with 2 push-button switches.

S90JAM-ZZ-36R3G
With a linear-motion potentiometer for Z axis and special knob with 7 push-button switches.

S150JNK-YS-40
Special operations by special shaped lever.

Separate general catalog on our joystick controllers / foot controllers is available on request.

"Sakae"

FOOT CONTROLLERS

Foot motion for various industrial applications such as civil engineering construction machinery, special vehicles, precision machine tools, medical instruments, studio apparatuses, etc.

NOMENCLATURE

200 FC A - 1 0 A

- Approx. size of bese housing in mm.
- FC means foot controller
- Shape
- Rating of switch.
- Number of switches to be incorporated.
- Number of potentiometers to be incorporated.

Model No. and Kind

New Product

H80FCL

200FCA

200FCW

■Selection Guide

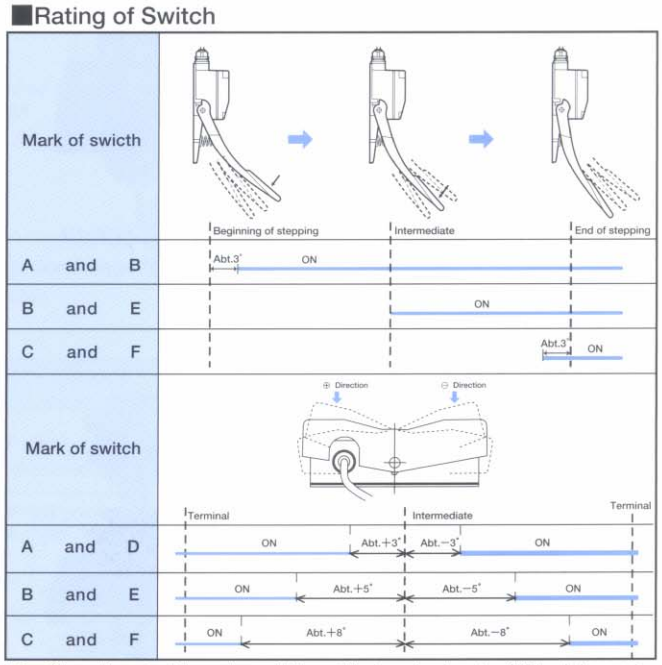
Model	Approx.Outer Dimensions WidthXLengh (mm) (Length of pedal)	Operating Angle. (Alt.)	Total Resistance Value of Potentiometer incorporasted	Optional No.of Switch incorporated (Note 1)	Degree of Protection (Note2) Standard Version	Degree of Protection (Note2) Optional Version	Life Expectancy (Note 3) (Unit : Ten Thousand)	Features
H80FCL	100×140 (Abt.200)	20°	Hall effect IC type potentiometer is mounted. Applied voltage: 5V ± 10%D.C.	Up to 2	IP65	—	200	Hall effect IC type potentiometer is mounted. It offers long life expectarcy.
200FCA	110×240 (Abt.200)	17°	10kΩ	Up to 2	IP54	IP65	200	Wall-mounted accel type Suitable for various vehicle applications
200FCW	120×220 (Abt.220)	±11°	10kΩ	Up to 2	IP54	IP65	100	Seesaw type

■Standard and Special Specifications Available

Specifications \ Models	H80FCL	200FCA	200FCW	Remarks
Spring return device	◎	◎	◎	
Code-Switch (Standard switch)	○	○	○	Number of switch to be mounted is subject to models
Micro-Switch	○	○	○	
Alteration of potentiometer's total resistance value	—	○	○	
Intermediate tap of potentiometers	—	—	○	Current tap (Shortened zone of abt. 8°)
Degree of protection (IP65)	◎	○	○	
Pedal locking device	—	—	—	
Special stepping angle	—	—	—	

(Note) ◎:means standard specifications.
○:means special specifications.
—:means"not available".

■Rating of Switch



N.B. : Other ratings of switch are also available, which shows the character of "G" and please ask us for details.

Mark of switch and specifications

★A. B. C. : 12V D. C./1mA (Code-switch) Life expectancy : Abt. 2,000,000 operations

★D. E. F. : 125V A. C./5A (Micro-switch) Life expectancy : Abt. 200,000 operations

Note 1) : We will supply the unit with A version switch, unless otherwise requested.

2) : It is not available to combine with more than 3 pcs. of switches on A, B and C or D, E and F.

SAKAE TSUSHIN KOGYO CO., LTD.

Head Office: 322 Ichinotsubo, Nakahara-ku, Kawasaki, Kanagawa, 211-0016 JAPAN
Phone: 044-411-5580 Fax: 044-434-2520
URL: http://sakae-tsushin.co.jp/
Factories: Niigata

meditronik®
części elektroniczne i komputerowe

Dystrybucja i sprzedaż: MEDITRONIK Sp. z o.o.
02-952 Warszawa, ul. Wiertnicza 129
tel. (+48 22) 651-72-42 w.108, fax (+48 22) 651-72-46
http://www.meditronik.com.pl e-mail: elektronika@meditronik.com.pl