

# NON-LINEAR POTENTIOMETER

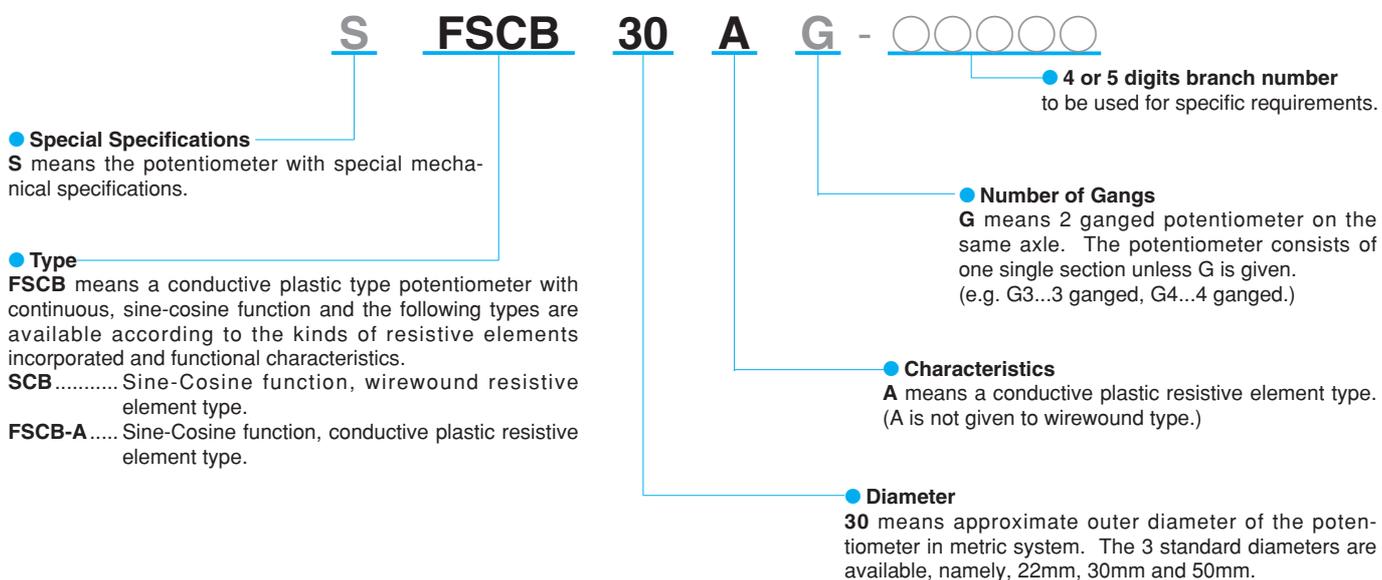
(Precision 1-turn, Wirewound & Conductive Plastic Element)

A precise detection of Sine-Cosine function voltage can be obtained through the shaft revolution of **SAKAE Non-Linear Potentiometer Series**. There are 2 kinds of resistive element in this series: traditional wirewound with

high stability and latest conductive plastic featuring long life expectancy and high speed tracking ability.

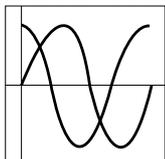
Non-linear

## THE NOMENCLATURE OF SAKAE NON-LINEAR POT. SERIES



### ■ Examples of Non-Linear Function Curves

Sine-Cosine 360°



## SELECTION GUIDE

Function Characteristics	Kind of Element	Model No.	Features
Sine-Cosine	Wirewound	SCB50	Most popular precision pot. with sine-cosine output.
	Conductive Plastic	FSCB22A, FSCB30A, FSCB50A	Conductive plastic resistive element pot. with essentially infinite resolution and long life expectancy, using a patented multifinger contact.

## ● General Performances

Kind of Element	Model No.	Function Characteristics	Standard Total Resistance Range ( $\Omega$ )	Special Resistance Values ( $\Omega$ )	Conformity Tolerance (Peak-Peak) (%)	Special Specifications					
						With Stopper	Front and Rear Shaft Extension	Extra Taps	Simple Sealing Type	With-Switch	Multi-ganged
Wirewound	SCB50	Sin-Cos	500~10k	20k	$\pm 1.0 \sim \pm 0.5$	—	○	—	○	—	○
Conductive Plastic	FSCB22A	Sin-Cos	1k~10k	500, 20k, 50k	$\pm 2.0 \sim \pm 1.0$	—	○	—	○	—	○
	FSCB30A	Sin-Cos	1k~10k	500, 20k, 50k	$\pm 1.0 \sim \pm 0.7$	—	○	—	○	—	○
	FSCB50A	Sin-Cos	1k~10k	20k, 50k, 100k	$\pm 0.5 \sim \pm 0.2$	—	○	—	○	—	○

Note: 1. For detailed performances, please refer to specifications of each model in this catalog.

## ● Environmental Performances

Model Nos.	SCB50	FSCB22A, FSCB30A, FSCB50A
<b>Parameters</b>		
<b>Operating Temperature Range</b>	$-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$	$-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$
<b>Temperature Cycle</b>	5 cycles under $-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$ Total resistance value variation: within $\pm 5\%$ No mechanical damage	5 cycles under $-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$ Total resistance value variation: within $\pm 10\%$ No mechanical damage
<b>Exposure at Low Temperature</b>	24 hours at $-55^{\circ}\text{C}$ Total resistance value variation: within $\pm 5\%$ No mechanical damage	24 hours at $-55^{\circ}\text{C}$ Total resistance value variation: within $\pm 5\%$ No mechanical damage
<b>Exposure at High Temperature</b>	1,000 hours at $105^{\circ}\text{C}$ Total resistance value variation: within $\pm 5\%$ No mechanical damage	1,000 hours at $105^{\circ}\text{C}$ Total resistance value variation: within $\pm 10\%$ No mechanical damage
<b>Vibration</b>	10Hz to 2,000Hz $147\text{m/s}^2$ 12 hours Total resistance value variation: within $\pm 5\%$ No mechanical and electrical damage	10Hz to 2,000Hz $147\text{m/s}^2$ 12 hours Total resistance value variation: within $\pm 2\%$ No mechanical and electrical damage
<b>Shock</b>	$490\text{m/s}^2$ 11ms 18 times Total resistance value variation: within $\pm 1\%$ No mechanical and electrical damage	$490\text{m/s}^2$ 11ms 18 times Total resistance value variation: within $\pm 1\%$ No mechanical and electrical damage
<b>Moisture Resistance</b>	$40^{\circ}\text{C}$ 95%RH 240 hours Total resistance value variation: within $\pm 10\%$ Insulation resistance: over $10\text{M}\Omega$	$40^{\circ}\text{C}$ 95%RH 120 hours Total resistance value variation: within $\pm 10\%$ Insulation resistance: over $10\text{M}\Omega$
<b>Rotational Life Expectancy (at <math>25^{\circ}\text{C}</math>)</b>	No load at 40 r.p.m. 1,000,000 shaft revolutions Total resistance value variation: within $\pm 5\%$ against initial value Conformity tolerance: within 150% of specified value Noise: within 500 $\mu$ E.N.R.	No load at 400 r.p.m., inverting every 15 minutes 50,000,000 shaft revolutions Total resistance value variation: within $\pm 10\%$ against initial value Conformity tolerance: within 150% of specified value Output smoothness: within 150% of specified value

Note: 2. In case of the potentiometer with special resistance values and special specifications, the above performances may vary and therefore, please consult us in advance, separately.

3. As for operating temperature range, we can't always guarantee exactly the same performances and values in actual industrial applications even if the temperature out there is within standard range. (Please see page 23 in this catalog for further details.)

4. All values of each parameter were measured under standard temperature and standard testing conditions. For the values during the tests and other characteristics, please ask us separately.