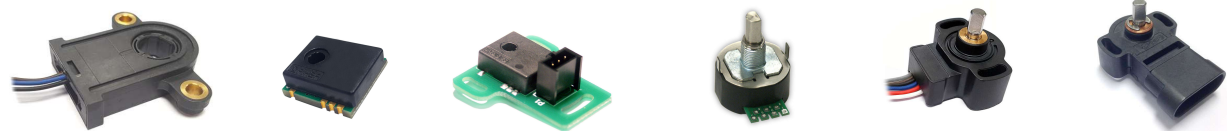


CONTACTLESS - HALL EFFECT

Original thinking



	Through shaft			End of shaft		
	PST-360	MTS-360	MTS-360PCB	PSC-360U	PSC-360	PSC-360IC
Output	Analog (ratiometric), PWM, SPI, CAN	Analog (ratiometric), PWM, SPI	Analog (ratiometric), PWM, SPI	Analog (ratiometric), PWM, SPI	Analog (ratiometric), PWM, SPI	Analog (ratiometric), PWM, SPI
Resolution*	Analog/PWM: 12 bits Serial (SPI): 14 bits	Analog/PWM: 12 bits Serial (SPI): 14 bits	Analog/PWM: 12 bits Serial (SPI): 14 bits	Analog/PWM: 12 bits Serial (SPI): 14 bits	Analog/PWM: 12 bits Serial (SPI): 14 bits	Analog/PWM: 12 bits Serial (SPI): 14 bits
Linearity	±1% absolute (0.5% upon request)	±1% absolute (0.5% upon request)	±1% absolute (0.5% upon request)	±1% absolute (0.5% upon request)	±1% absolute (0.5% upon request)	±1% absolute (0.5% upon request)
Supply voltage	Up to 30V	5V ±10%	5V ±10%	5V - 12V - 15V	Up to 30V	5V - 12V - 15V
Supply current	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version
Voltage protection	+10V over voltage protection and -10V reverse voltage protection	+20V over voltage protection and -10V reverse voltage protection	+20V over voltage protection and -10V reverse voltage protection	+10V over voltage protection and -10V reverse voltage protection	+10V over voltage protection and -10V reverse voltage protection	+10V over voltage protection and -10V reverse voltage protection
Rotational life**	Up to 50M cycles	Up to 50M cycles	Up to 50M cycles	Up to 50M cycles	Up to 50M cycles	Up to 50M cycles
Switch output	Yes, programmable	Yes, programmable	Yes, programmable	Yes, programmable	Yes, programmable	Yes, programmable
Angular range	Up to 360° (no dead band)	Up to 360° (no dead band)	Up to 360° (no dead band)	Up to 360° (no dead band)	Up to 360° (no dead band)	Up to 360° (no dead band)
Redundancy	Yes	Yes	Yes	Yes	Yes	Yes
Diameter size	Hollow shaft: 14mm or 17mm	Hollow shaft: 4mm	Hollow shaft: 4mm	Shaft: 6.35mm	Shaft: 6mm	Shaft: 6mm
Mounting	Flange/Fly lead harness	SMD mount	Flange/Molex connector	Flange/PCB	Flange/Fly lead harness	Flange/Delphi connector
Sealing***	Up to IP69	IP50	IP50	IP67	Up to IP69	IP67

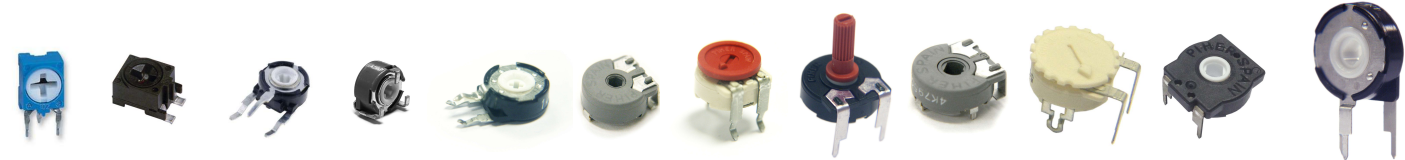


Touchless magnetic hall-effect		
Variable air gap sensor		
PS2P-ARC		
Type	Rotary	Rotary concentric sensor
Output	Analog (ratiometric), PWM, SPI	Analog (ratiometric), PWM, SPI
Resolution*	Analog/PWM: 12 bits; Serial (SPI): 14 bits	Analog/PWM: 12 bits; Serial (SPI): 14 bits
Linearity	± 1% absolute (0.5% upon request)	± 1% absolute (0.5% upon request)
Supply voltage	Up to 30V	Up to 30V
Supply current	Typ 8.5mA for single version, Typ 17mA for redundant version	Typ 8.5mA for single version, Typ 17mA for redundant version
Voltage protection	+ 10V over voltage protection, -10V reverse voltage protection	+ 10V over voltage protection, -10V reverse voltage protection
Life	Virtually unlimited	Virtually unlimited
Switch output	Yes, programmable	Yes, programmable
Measurement range	Custom	Up to 360°
Redundancy	Yes	Yes
Sealing	Up to IP69	IP69

* depends on electrical angle and rotational speed ** depending on application and mounting *** others upon request

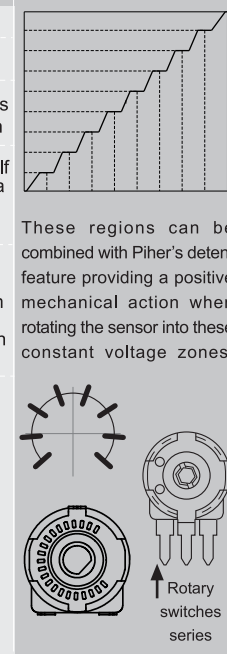
CONTACTING - POTENTIOMETERS

POTENTIOMETERS



Series	N-6	N-6R	PT-6	PS-6	PT-10	PS-10	PTC-10	PT-15	PS-15	PTC-15	ST-15	Detented & custom potentiometers
Type	Single turn	Single turn	Single turn	Single turn	Single turn	Single turn	Single turn	Single turn	Single turn	Single turn	Endless	Single-turn or endless
Dimensions	6mm	6mm	6mm	6mm	10mm	10mm	10mm	15mm	15mm	15mm	15mm	Several
Mounting	SMD	Through hole	Through hole	SMD	Through hole	SMD	Through hole	Through hole	SMD	Through hole	Through hole	SMD
Technology							cermet	carbon			cermet	carbon, cermet
Enclosure Type	Overmoulded plastic (IP54)			Dust proof plastic (IP54)			Dust proof plastic (IP54) UL 94V-0	Dust proof plastic (IP54)			Dust proof plastic (IP54) UL 94V-0	Dust proof plastic (IP54)
Typical Applications	Miniature control potentiometer and customised options well suited for most automotive and consumer applications. Consumer app. examples: ovens, ranges, dishwashers, lighting (dimmers), power hand tools, washing machines and HVAC systems. Automotive app. examples: mirror memory, headlamp control/sensor, climate temperature & fan speed controls, throttle control/sensor.											Detented controls for all types of automotive and consumer applications. Our detent design not only adds a "click" sensation of position, but also offers enormous savings in both cost and space for any given application. Strong and weak detents can be mixed as per customer's request. Piher's potentiometers can feature flattened regions in its output curve. Looking more like a "stair step" than a normal output curve, this product allows engineers to precisely control constant voltage outputs within the normal rotational range of their potentiometer.
Power rating (W)	0.1 (50°C)			0.15 (50°C)			0.33 (70°C)	0.25 (50°C)	0.15 (50°C)	0.5 (70°C)	0.25 (50°C)	
Standard Tolerance (Others upon request)	±30%		±20% ±30%	±30%	±20% ±30%	±30%	±20% ±30%		±30%	±20% ±30%	±30%	
Tapers	Linear	Linear Log Antilog Custom	Linear	Linear Log Antilog Custom	Linear	Linear Log Antilog Custom	Linear	Linear	Linear Log Antilog Custom	Linear	Linear	
Work Temp (depending on application)	-25°C +70°C *(85°C)		-40°C +85°C	-25°C +70°C *(85°C)	-40°C +85°C	-40°C +90°C (up to +120°C check availability)	-25°C +70°C *(85°C)	-40°C +85°C	-40°C +90°C (up to +120°C check availability)	-25°C +70°C *(85°C)	-25°C +70°C	

Additional Features & Optional Extras	Built-in detents (stop positions) available											
	Long life model for low cost control potentiometer applications											
Endless rotation upon request	Dual gang version	Self extinguishable plastic UL 94V-0	Wide range of shafts and rotors	Embossed tape option	Laser trimming capabilities for tighter tolerances	Wide range of shafts and rotors	Embossed tape option	Laser trimming capabilities for tighter tolerances	200K cycles life version			
Bulk for manual assembly	Magazines for automatic insertion	Specifically designed for leadfree reflow soldering processes	Magazines for automatic insertion	Improved linearity & hysteresis	Magazines for automatic insertion	Magazines for automatic insertion	Improved linearity upon request	Magazines for automatic insertion	Optional self extinguishable plastic UL 94V-0			
6.5% linearity upon request	Built-in detents	Mechanical life: 10k cycles	Self extinguishable plastic UL 94V-0	Mechanical life: 10k cycles	Magazines for automatic insertion	Self extinguishable plastic UL 94V-0	Mechanical life: 10k cycles	Magazines for automatic insertion	SMT mounting and custom electrical angles upon request.			
Shaft available	RoHS reflowable	10K cycles mechanical life version	Cut track option	Low torque version	Wide range of shafts and rotors	Cut track option	Specifically designed for leadfree reflow soldering processes	Low torque version	10mm version available			
			Custom tapers	Cermet version available	Wide range of shafts and rotors	Custom tapers	Wide range of shafts and rotors	Self extinguishable plastic UL 94V-0				
			Low torque version	Switch version	Improved linearity & hysteresis	Low torque version	Self extinguishable plastic UL 94V-0	Cermet version available				



NOTE: The information contained in this catalogue should be used for reference purposes only. Due to continuous product improvements, we reserve the right to make specification and/or product changes without prior notification.

All models can be adapted to meet customer's requirements.

The family

PRINTED PCB RESISTORS HVAC SENSORS SEAT BELT SENSOR AUTOMOTIVE APPLIANCE



Series	N-15 Z-15	PC-16	T series	PCB printed resistors	HVAC	SEAT BELT	Automotive position sensors	Appliance controls
Type	Endless	Single turn	Single turn	Thin-film resistive elements printed on a wide range of non-conductive substrates.	Climate position sensor (endless rotation)	Detection position sensor	Slide & Rotary	Available as switch, encoder or potentiometer
Dimensions	15mm	16mm	16, 18, 21mm					
Mounting	SMD	Through hole	Through hole			hall effect reed switch		
Technology	carbon			carbon	carbon	hall effect reed switch	all	all
Enclosure type	Dust proof plastic (IP54)			N/A	Dust proof	Dust proof IP67	Overmoulded plastic	Custom
Typical Applications	Customisable control or sensor for all types of automotive and consumer applications	General purpose control (with optional switch)	General purpose control (with single or multiple switch)	Ideal for potentiometer & fixed resistor combinations & high power dissipation applications	Accurate feedback of the position of the cold/hot air flap in car HVAC systems	Off-road & recreational vehicles	Automotive position & angle sensors	Customisable detented controls for all types of automotive and consumer applications
Power rating (W)	0.15 (50°C)	0.2 (50°C)	T-16: 0.2 (50°C) T-18&T-21: 0.25 (50°C)	Depending on model	0.25 (50°C)	N/A	0.25 - 0.5 (50°C)	0.15 (50°C)
Standard Tolerance (Others upon request)	±30%	±20% ±30%		±30, 20, 10, 5, 2% (ratio adj.)	±20%	N/A	±30%	±30%
Tapers	Linear (pot) Switch Encoder	Linear - Log Antilog - Custom		Custom	Linear	N/A	Linear	All
Work Temp (depending on application)	-40°C +120°C (depending application)	-25°C +70°C *(85°C)		-40°C +85°C *(+105°C)	-40°C +85°C	-40°C +80°C	-40°C +105°C	-20°C +105°C
Additional Features & Optional Extras	Infinite customisation possibilities	Extensive range of plastic and metal shafts		Special ohmic values	High accuracy (2% linearity) and low cost are among its advantages	Custom harnesses and connectors	Variety of electrical travels and clip styles (slider)	Detents configurable to specific positions in complex tapers
	Mechanical life up to 200K cycles	Stereo matching		Laser trimming			Linearity ± 3%	Configurable end stops
	2M cycles version available (Z-15 series)	Optional actuating knob (T-18)		Calibrated voltage dividers			Mechanical life: >100K cycles	Available with or without detents
	Shaft insertable from either side	Gangable (up to 4)		Resistor family matching			Single or multiturn	plastic / metal shafts
	Mounting methods: through hole, SMD and horizontal adjust	Bushless version available		3M cycles mechanical life				"plug-and-play" connectors
	Electrical Angle 340° ±10°, 360° version available	Detents						Detent Torque up to 14.7 Ncm
		Various switch types (T21)						High & low torque detents can be freely mixed
								"push to turn" function
								Laser trimming

