

Technology	C A R B O N												
Type	CONTROLS & SENSORS												
	ROTARY									SLIDER	ATTENUATORS		
Appearance													
Series	N-6	PT-6	PT-10	PT-15	PS-15	PC-16	T-16	T-21	T-18	NPL	PL-40	AA	
Description	6mm square single turn SMD or through hole mount	6mm round single turn	10mm round single turn	15mm round single turn	15mm SMD sensor/pot.	16mm square single turn	16mm round single turn	21mm round single turn	18mm round single turn	7mm - 12mm travel slide	40mm travel slide	High frequency variable attenuator	
Enclosure Type	Overmoulded plastic			Dust proof plastic				Dust proof plastic	Overmoulded plastic	Dust proof plastic			
Typical Applications	General purpose & miniature control pot.		Miniature control potentiometer and customised options			General purpose (with switch)		General purpose (with single or multiple switch)		Audio	Automotive position sensors	Audio Consumer electronics	CATV amplifier Antenna amplifier TV distribution systems
Power rating (W)	0.1 (50°C)	0.1 (50°C)	0.15 (50°C)	0.25 (50°C)		0.2 (50°C)		0.25 (50°C)		0.25 - 0.5 (70°C)		0.3 (50°C)	0.15 (50°C)
Temp. Coef.	±300 (R<100KΩ)												
Resistance	100Ω to 1MΩ	220Ω to 5MΩ	100Ω to 5MΩ		1kΩ to 1MΩ		100Ω to 5MΩ			1KΩ to 100KΩ	100Ω to 5MΩ	75Ω	
Standard Tolerance	±20% ±30%				±30%		±20% ±30%		±30%	±20% ±30%			
Tapers	Linear	Linear - Log - Antilog - Specials			Linear		Linear - Log - Antilog - Specials			Linear	Linear Log Antilog Specials		
Work Temp	-25°C +70°C *(85°C)		-40°C +85°C			-25°C +70°C *(85°C)		-40°C +105°C	-25°C +70°C *(85°C)	-25°C +70°C *(85°C)		-40°C +120°C	
Additional Features & Optional Extras	<p>Tape on reel, ammopack, magazine and embossed tape packaging for automatic insertion</p> <p>RoHS reflowable version available</p> <p>Endless rotation upon request</p> <p>Bulk for manual assembly</p> <p>6.5% linearity upon request</p> <p>10K cycles version</p> <p>Shaft available</p> <p>Dual gang version</p> <p>Wide range of special shafts and rotors</p> <p>Long life model for low cost control potentiometer applications</p> <p>Self extinguishable plastic UL 94V-0</p> <p>Cut track option</p> <p>Special tapers</p> <p>Mechanical detents (up to 27)</p> <p>Low or extra low torque version</p> <p>Low torque version</p> <p>200K cycles version</p> <p>Improved linearity & hysteresis</p> <p>Embossed tape option</p> <p>Extensive range of plastic and metal shafts</p> <p>Stereo matching</p> <p>Stereo matching</p> <p>Optional actuating knob</p> <p>Variety of electrical travels and clip styles</p> <p>Shielded versions</p> <p>Various mounting types</p> <p>Specifically designed for leadfree reflow soldering processes</p> <p>Mechanical life: 10k cycles</p> <p>10k cycles</p> <p>Mechanical detents (up to 27)</p> <p>Gangable (up to 4)</p> <p>10A/250V switch rating available (PC17 series)</p> <p>Mechanical detents</p> <p>Optional SPST switch</p> <p>Stackable construction</p> <p>10 or 20dB versions</p> <p>Cut track initial or final</p> <p>Up to 800 Mhz</p> <p>Taps (1/3, 1/2, 2/3)</p> <p>Busless version</p> <p>High & low torque detents can be freely mixed</p> <p>Encoder standard versions: 3 pulse (through hole); 5 Pulse (SMD)</p> <p>Configurable end stops</p> <p>Up to 16 high torque detents</p> <p>Available with or without detents</p> <p>Wiper positioned at 50% or fully clockwise</p> <p>plastic / metal shafts</p> <p>"plug-and-play" connectors</p> <p>Detent Torque up to 8.8 Ncm</p> <p>Detent Torque: 8.8-14.7 Ncm</p> <p>Availability as switch, encoder or potentiometer</p> <p>"push to turn" Laser trimming</p> <p>Magazine for automatic insertion</p> <p>Low and extra low torque options</p> <p>Datasheets available at: www.pihier.net</p> <p>Linearity: ±1%</p> <p>True redundancy available</p> <p>Mechanical life: 50M cycles</p> <p>Mechanical rotation angle: 360° (Endless)</p> <p>Programmable angular range up to 360°</p> <p>Functional trimming</p> <p>Laser trimming</p> <p>Calibrated voltage dividers</p> <p>Resistor family matching</p> <p>3M cycles mechanical life</p> <p>Special ohmic values</p> <p>Pulses/Detents configurations available: 15/30; 15/30; 20/00; 20/20</p> <p>Mechanical life 20K cycles</p> <p>Detent torque 0.3 to 2 Ncm</p> <p>Reflow Soldering capability</p> <p>Optional push on switch (0.5 and 1.5mm travel)</p> <p>Mechanical life 20K cycles</p> <p>Detent torque 0.3 to 2 Ncm</p> <p>Snap-in or bush type fastening</p> <p>Nut and Washer (supplied unassembled)</p> <p>Optional push on switch</p>												

Technology	CARBON	ELECTRO MECHANICAL		C E R M E T			NEW	PRINTED RESISTORS	INCREMENTAL ENCODERS (endless rotation)			
Type	CONTROLS & SENSORS				CONTROLS & SENSORS			CONTACTLESS (see last page)	PRINTED RESISTORS	INCREMENTAL ENCODERS (endless rotation)		
	ROTARY				ROTARY							
Appearance												
Series	N-15 A-15	E-15 S-15	DCM-PT15	DCM-PTT	PTC-10	PTC-15	CP-21	PSC-360	PCR	CS-11	CI-11	CI-12
Description	15mm long life position/angle sensor	15mm incremental encoder or rotary switch	Detented control for PT-15, PTC-15 and PS-15	Appliance control	10mm round single turn	15mm round single turn	21mm high power (2W)	23mm round	Thick-film resistive elements printed on a wide range of non conductive substrates.	11mm SMD Incremental Encoder (metal shaft)	11mm Incremental Encoder (metal shaft)	12mm Incremental Encoder (plastic shaft)
Enclosure Type	Dust proof plastic				Dust proof plastic UL 94V-0			Plastic (IP65)		Overmoulded plastic		
Typical Applications	Customisable control or sensor for all types of automotive and consumer applications	Automotive, Consumer HVAC, major appliances, electrical houseware & power tools...	Customisable detented control for all types of automotive and consumer applications	Customisable control for appliance / consumer applications	Improved performance option for miniature control potentiometer and customised applications		General purpose	Automotive, harsh environments, off-road applications, marine, industrial equipment, HVAC...	Ideal for potentiometer & fixed resistor combinations & high power dissipation applications	Appropriate for all applications which require a single or multi-function rotary control	15 or 20 pulse encoder for appliance, instrumentation and audio applications	Economical 12 or 20 pulse encoder for consumer and computer peripheral applications
Power rating (W)	0.15 (50°C)			0.15 (50°C)	0.33 (70°C)	0.5 (70°C)	2 (70°C)		Depending on model	5 VDC 10 mA (1 mA min.)		
Temp. Coef.	±300 (R<100KΩ)		±300 (R<100KΩ)		±100 (R<100KΩ)				±300	all versions		
Resistance	5k, 10k, 100k			1KΩ to 1MΩ	100Ω to 5MΩ				10Ω to 1MΩ	with switch version		
Standard Tolerance	±30%		±30%		±20% ±30%				±30, 20, 10, 5, 2% (ratio adj.)	with switch version		
Tapers	Linear				Linear - Log - Antilog - Specials			Programmable analog, PWM, SPI	Specials			
Work Temp	-40°C +120°C	-40°C +120°C (depending application)		-40°C +120°C	-40°C +90°C			-40°C +150°C	-40°C +85°C *(+105°C)	-30°C +70°C	-40°C +85°C	-10°C +70°C
Additional Features & Optional Extras	<p>Infinite Customisation possibilities</p> <p>Mechanical life up to 200K cycles</p> <p>2M cycles version (Z-15 series)</p> <p>Endless rotation</p> <p>Shaft insertable form either side</p> <p>Polarised "T" rotor</p> <p>Mounting methods: through hole, SMD and horizontal adjust</p> <p>Electrical Angle: 340° ±10°, 360° version available: A15</p> <p>High & low torque detents can be freely mixed</p> <p>Detents configurable to specific positions in complex tapers.</p> <p>Configurable end stops</p> <p>Up to 16 high torque detents</p> <p>Available with or without detents</p> <p>Wiper positioned at 50% or fully clockwise</p> <p>plastic / metal shafts</p> <p>"plug-and-play" connectors</p> <p>Detent Torque up to 8.8 Ncm</p> <p>Detent Torque: 8.8-14.7 Ncm</p> <p>Availability as switch, encoder or potentiometer</p> <p>"push to turn" Laser trimming</p> <p>Magazine for automatic insertion</p> <p>Low and extra low torque options</p> <p>Datasheets available at: www.pihier.net</p> <p>Linearity: ±1%</p> <p>True redundancy available</p> <p>Mechanical life: 50M cycles</p> <p>Mechanical rotation angle: 360° (Endless)</p> <p>Programmable angular range up to 360°</p> <p>Functional trimming</p> <p>Laser trimming</p> <p>Calibrated voltage dividers</p> <p>Resistor family matching</p> <p>3M cycles mechanical life</p> <p>Special ohmic values</p> <p>Pulses/Detents configurations available: 15/30; 15/30; 20/00; 20/20</p> <p>Mechanical life 20K cycles</p> <p>Detent torque 0.3 to 2 Ncm</p> <p>Reflow Soldering capability</p> <p>Optional push on switch (0.5 and 1.5mm travel)</p> <p>Mechanical life 20K cycles</p> <p>Detent torque 0.3 to 2 Ncm</p> <p>Snap-in or bush type fastening</p> <p>Nut and Washer (supplied unassembled)</p> <p>Optional push on switch</p>											



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

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.



PSC-360 contactless position sensor

Main features

- Low cost
- Linearity: $\pm 1\%$ (absolute)
- Simple & Robust Magnetic Design
- Programmable Angular Range up to 360 Degrees (without dead band)
- Programmable Linear Transfer Characteristic (some positive slopes & one negative slope can be programmed in the same transfer characteristic; up to 4 programmable points)
- Selectable Analog (Ratiometric), PWM, Serial Protocol
- Programmable switch output
- Up to 14 bit Angular Resolution
- Full Redundant option upon request
- 40 bit ID Number
- High & low torque detents can be freely mixed
- Self-Diagnostic features
- Rotational life: >50.000.000 cycles (depending on application and mounting)
- Operating temperature: -40°C to $+150^{\circ}\text{C}$
- +20V over voltage protection and -10V reverse voltage protection
- IP65 (others upon request)

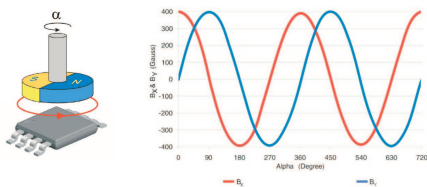
Application examples

- Non-Contacting long life angle/position sensor
- Absolute Rotary Position Sensor
- Pedal Position Sensor
- Throttle/EGR Valve and Gear Position Sensor
- Height & suspension Sensor
- Non-Contacting Potentiometer
- Float-Level Sensor
- Motor-shaft Position Sensor
- Precision Robotics, industrial equipment and HVAC monitoring & control...

Measurement of angular position using variation of magnetic field amplitude induced by the displacement of a moving magnet has been intensively developed over the last fifteen years. However, these solutions have limits in terms of angular range and temperature influence.

The technology used by Piher is only sensitive to the flux density coplanar with the IC surface. This allows to decode the absolute rotary (angular) position from 0 to 360 degrees. It enables the design of high performance non-contacting rotary position sensors for both automotive and industrial applications without the limitations of potentiometric solutions (wear, electrical angle...).

In combination with the appropriate signal processing, the magnetic flux density of a small magnet (diametral magnetization) rotating above the IC can be measured in a non-contacting way. The angular information is computed from both vectorial components of the flux density (i.e. B_x and B_y). Then an output signal proportional to the decoded angle is produced. The output is selectable between Analog, PWM and Serial Protocol. A configurable switch output is integrated within the sensor too.



Redundancy is also integrated in the circuit and furthermore you can request a dual-chip sensor for true full redundancy which comprises a dual switch output.

The robust PSC360 is sealed and flange mounted for easy positioning when necessary. It provides high stability under harsh environment conditions such as vibration, shock, extreme temperatures / humidity, dither, moisture or dirt. Featuring a modular architecture, electrical & mechanical characteristics can be fully customised to customer's needs as well as connector configurations.

This product shows Piher's competences in sensors for use in harsh environments and custom product tailoring for use on Tier One and OEM platforms including contactless magnetic technology complete sub assemblies.

About PIHER-NACESA
Piher is a specialist manufacturer of position sensor and control solutions for the worldwide Land Vehicle and Appliance markets. Our products are typically employed for HVAC (Climate Control), AFL (Adaptive Front Lighting), Infotainment and Seat Memory & Heating in the Automotive industry and for Human Interface applications in the Consumer Electronics, Major Appliances, Power Tools and Industrial/Instrumentation markets.

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PIHER

Controls & sensors

Shortform v2.9

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