

**Sensor
Potentiometers**

SP2800 Series



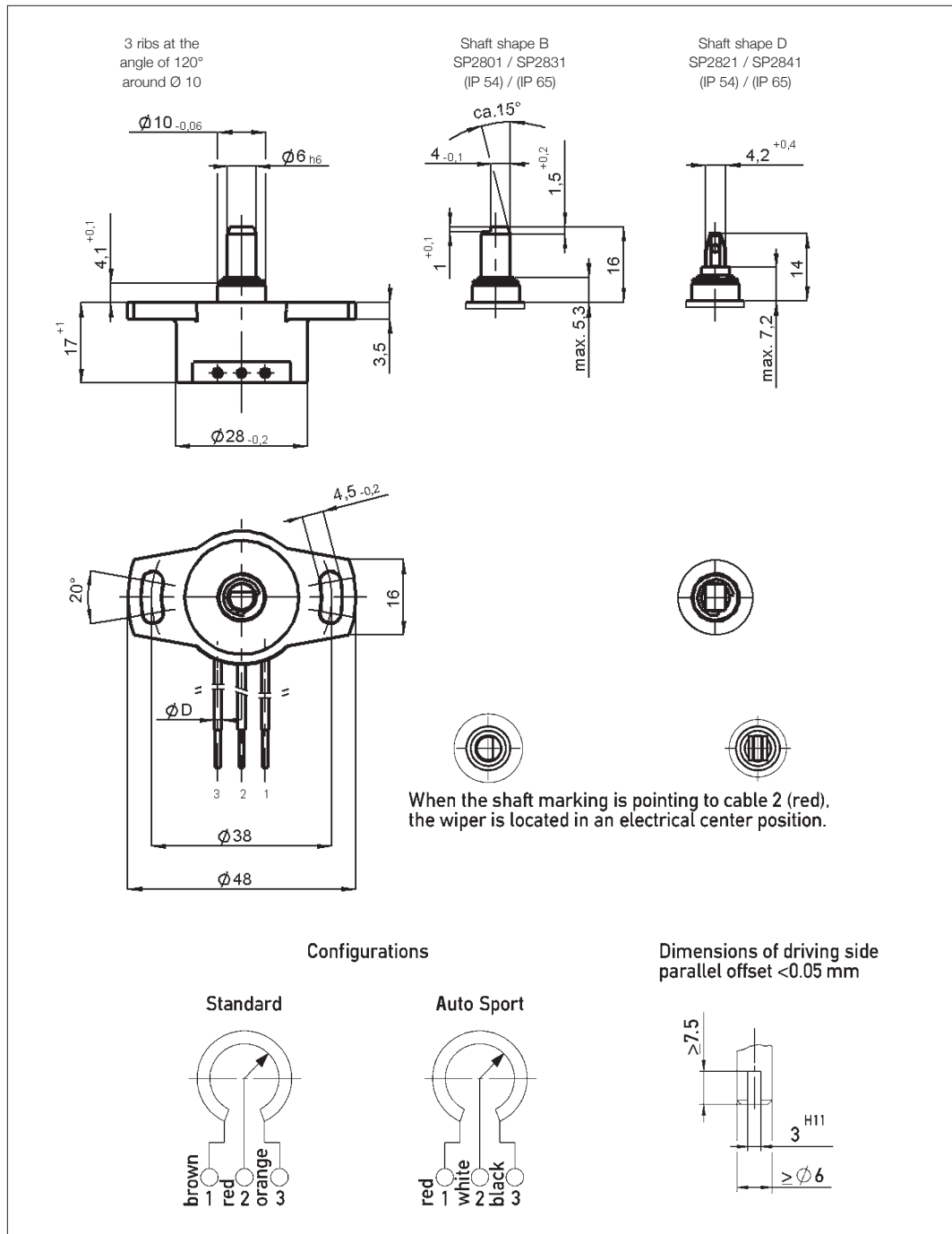
Special features

- available with push-on coupling or marked shaft
- simple mounting
- protection class IP 54 or IP 65
- long life
- good price/performance ratio

Designed to convert rotary movement into a proportional voltage, these position transducers utilize conductive plastic technology on both the resistance and collector tracks.

The housing and bearings are produced in a special high-grade temperature-resistant plastic material. Elongated slots allow simplicity in mounting as well as ease of mechanical adjustment.

The special backlash-free push-on coupling ensures extremely quick and simple installation. The transducer is not sensitive to either dirt or dampness. Electrical connections are made via conductors which are sealed into the housing. They are suitable for use with any of the termination methods currently in use. The use of an elastomer-damped precious metal multi-finger wiper ensures reliable contact even under the severest of working conditions.



Special models with different electrical travels and shaft dimensions are available.

Description	
Housing and bearing	high-grade, temperature-resistant plastic
Shaft	stainless steel
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper
Mounting position	any optional position
Electrical connections (standard)	conductors, TPE-PEE-insulation, l = 300 mm 1-channel: 3 conductors, diameter = 2.1 mm 1 = brown, 2 = red, 3 = orange 2-channel: 6 conductors, diameter = 1.6 mm 1 = brown, 2 = red, 3 = orange 4 = brown, 5 = red, 6 = orange

Mechanical Data	
Dimensions	see drawing
Mounting	with 2 M4 fillister-head screws + washer
Mechanical angles	360, continuous °
Permitted shaft loading (axial and radial) static or dynamic force	20 N
Torque	0.2 (IP 54), 0.5 (IP 65) Ncm
Maximum operational speed	120 min ⁻¹
Weight	30 g

Electrical Data				
Actual electrical angle	100	308	345	° ± 2°
Nominal resistance	3	5	5	kΩ
Resistance tolerance	± 20			%
Repeatability (dependent from mounting tolerances)	≤ 0.03° (with shaft shape B) ≤ 0.06° (with shaft shape D)			
Effective temperature coefficient of the output-to-applied voltage ratio	typical 5			ppm/K
Independent linearity	1.0	0.3	0.3	±%
Max. permissible applied voltage	42			V
Recommended operating wiper current	≤ 1			μA
Max. wiper current in case of malfunction	10			mA
Insulation resistance (500 VDC, 1 bar, 2 s)	≥ 10			MΩ
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC)	≤ 100			μA
Conductor length, bared, tinned	approx. 300			mm
Conductor diameter	approx. 1			mm ²

Environmental Data				
Temperature range	-40...+120 (temporary 150°C, max. 1 h)			°C
Vibration	5...2000 $A_{max} = 0.75$ $a_{max} = 20$			Hz mm g
Life	50 x 10 ⁶			movem.
Protection class	IP 54 or IP 65 (DIN 400 50 / IEC 529)			

Order Designations			
Type	Art. no.		
SP2801 308 000 001	019520	✗ 308°, 6 mm shaft, IP 54	
SP2821 308 000 001	019540	✗ 308°, push-on coupling, IP 54	
SP2831 308 000 001	019521	✗ 308°, 6 mm shaft, IP 65	
SP2841 308 000 001	019541	✗ 308°, push-on coupling, IP 65	
SP2801 100 002 001	019522	✗ 100°, 6 mm shaft, IP 54	
SP2831 100 002 001	019527	✗ 100°, 6 mm shaft, IP 65	
SP2841 100 002 001	019542	✗ 100°, push-on coupling, IP 65	
SP2841 345 065 001	019564	✗ 345°, push-on coupling, IP 65	
SP2841 100 067 006	019565	redundant (without diagram - drawing on request); push-on coupling, IP 65 per track: ✗ 100° ± 2°, 3 k ± 20%, indep. linearity ± 1.0%	

Recommended accessories
 MAP process-control indicators and display. MUP or MUK signal conditioner for standardized output signals.

Important
 All values given for this series – including linearity, lifetime, micro-linearity, resistance to external disturbances and temperature coefficient in voltage dividing mode – are quoted for the device operating with the wiper voltage driving an operational amplifier working as a voltage follower where virtually no load is applied to the wiper ($I_e \leq 1 \mu A$).

Auto Sport Configurations					
Model Designation	Body Material	Shaft Style	Electrical Angle	Linearity	Art. no.
SP2836 308 000 101		6 mm	308	0.3%	019531
SP2836 100 002 101		6 mm	100	1%	019532
SP2836 130 050 101		6 mm	130	1%	not released
SP2836 345 065 101		6 mm	340	0.3%	019533
SP2846 308 000 101		Push-on	308	0.3%	019550
SP2846 100 002 101		Push-on	100	1%	019551
SP2846 130 050 101		Push-on	130	1%	019556
SP2846 345 065 101		Push-on	340	0.3%	019560
SP2890 s 0002	Aluminum	Push-on	100	1%	
SP2890 s 0050	Aluminum	Push-on	130	1%	
SP2890 s 0065	Aluminum	Push-on	340	0.3%	

Notes: All auto sport models are sealed to IP 65 and are supplied with Raychem 55 cable attached. The temperature rating is -40°C to 150°C for all auto sport configurations.