novotechnik
Siedle Group

Rotary Sensor potentiometric Heavy-duty

Series IPX-7900

Special features

- exceptionally durable design for extreme environmental conditions
- absolute potentiometric measuring system
- angle ranges 120°, 200° or 350° in one or two-channel versions
- increased corrosion protec tion by anodized aluminum housing and stainless steel shaft, salt spray resistant
- very good linearity
- repeatability 0.01°
- no mechanical rotation limit
- sealed to IP6K9K (w/cable output)
- high temperature range
- high lifetime >100 million movements, even under high vibration environments

Applications

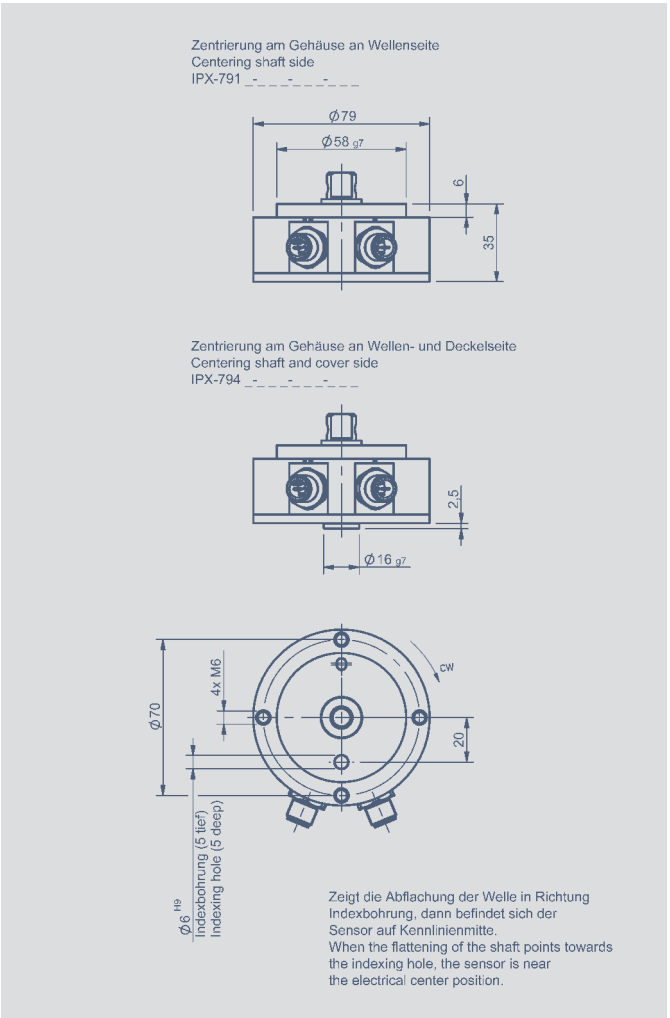
- Position measurement in steering systems
- pivotable vehicle bracings
- Transport systems with several axes
- Construction and agricultural machinery

The IPX7900 was developed for measuring the steering angle in electro-hydraulic steering systems. It offers reliable operation in mobile applications, under extreme environmental conditions.

It uses Novotechnik‘s highly-regarded conductive plastic potentiometer technology, with damped precious metal wiper.

An anodizded aluminum housing and a stainless steel shaft with double ball bearing provide an extremely strong housing.

High shaft load specifications allow the use of lever arms (see options) or other couplings.

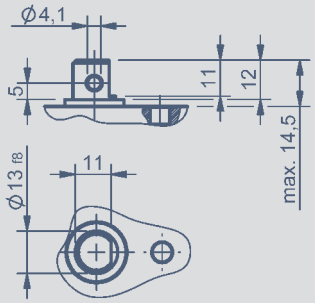


Description	
Housing	anodized aluminium; AlMgSi1, salt spray resistant
Shaft	stainless steel 1.4305 / X10CrNiS18-9
Bearing	double ball bearings
Resistance element	conductive plastic
Wiper	precious metal multifinger wiper
Electrical connections	cable with cabel gland or plug M12x1

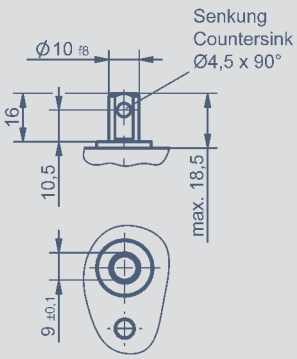
Connection assignment

Shaft versions

IPX-79_1-_ _ _-_ _ _-_ _ _

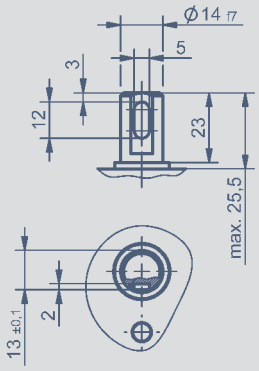


IPX-79_3-_ _ _-_ _ _-_ _ _



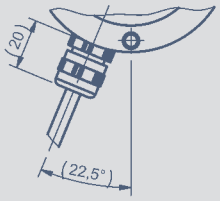
On request

IPX-79_5-_ _ _-_ _ _-_ _ _

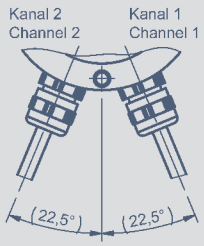


Elektrische Anschlüsse
Electrical connections

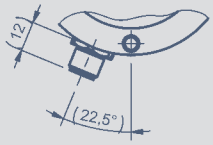
IPX-79_ _-_ _ _-_ _ _-202



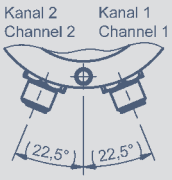
IPX-79_ _-_ _ _-_ _ _-302



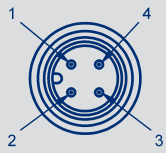
IPX-79_ _-_ _ _-_ _ _-551



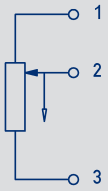
IPX-79_ _-_ _ _-_ _ _-651



Connector pin assignment
Pin #4 not connected!



Schematic of connection



Connection assignment

Signal	Connector M12 one-channel	redundant	Cable one-channel	redundant
K1 / connection 1	pin 1	K1 / pin 1	GN	K1 / GN
K1 / connection 2	pin 2	K1 / pin 2	WH	K1 / WH
K1 / connection 3	pin 3	K1 / pin 3	BN	K1 / BN
K1 not assigned	pin 4	K1 / pin 4	YE	K1 / YE
K2 / connection 1	-	K2 / pin 1	-	K2 / GN
K2 / connection 2	-	K2 / pin 2	-	K2 / WH
K2 / connection 3	-	K2 / pin 3	-	K2 / BN
K2 not assigned	-	K2 / pin 4	-	K2 / YE

K1 = channel 1, K2 = channel 2

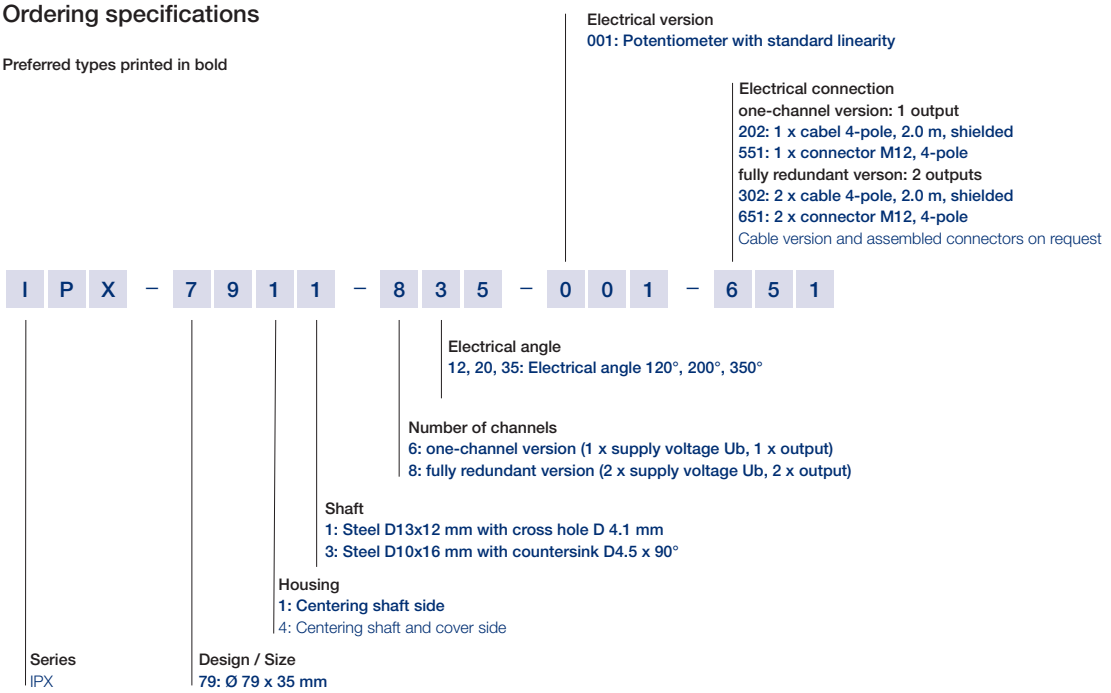
Technical Data

Electrical Data				
Electrical range	120 ±2	200 ±2	350 ±2	°
Nominal resistance	2	2	5	kΩ
Resistance tolerance	± 15			%
Repeatability	0.002 (0.007°)			%
Temperature coefficient of the output to applied voltage ratio	typ. 10			ppm/K
Independent linearity	≤ ±0.2	≤ ±0.1	≤ ±0.1	%
Max. permissible applied voltage	42			V
Recommended operating wiper current	< 10			µA
Max. allowed wiper current in case of malfunction	10			mA
Insulation resistance (500 VDC, 1 bar, 2 s)	> 100			MΩ
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC)	≤ 1000			V_{RMS}
Mechanical Data				
Dimensions	see dimension drawing			
Mounting	with 4 screws M6, screw-in depth 15 mm min.			
Fastening torque of mounting screws at housing flange	8 ±1			Ncm
Mechanical travel	360 continuous			°
Permitted shaft load (static or dynamic force)	300			N
Operating torque max. *	4			Ncm
Maximum operational speed	50			min^{-1}
Weight approx.	500			g
Environmental Data				
Operation and storage temperature	-40 ... +105			°C
Vibration IEC 60068-2-6	5 ... 2000 Amax = 0.75 amax = 5			Hz mm g
Shock IEC 60068-2-27	50 6			g ms
Life time	> 100 x 10^6			movements
MTTF	429			years
Protection class ISO 20653	IP67 connector output M12 IP6K9K cable output			

*) Depending on the environmental temperature and standstill time, the necessary force for the inital operating of the shaft may increase.

Ordering specifications

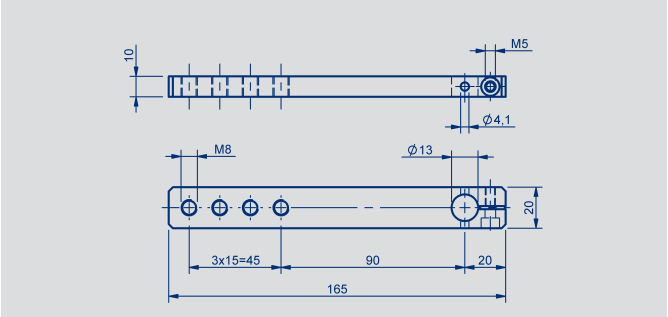
Preferred types printed in bold



Important

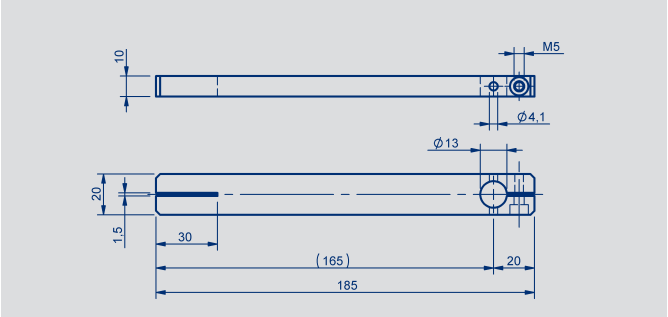
All the values given in this data sheet for linearity, lifetime and temperature coefficient in the voltage dividing mode are quoted for the device operating with the wiper voltage driving on operational amplifier working as a voltage follower, where virtually no load is applied to the wiper (Ie ≤ 1µA).

Accessories
Sensor mounting



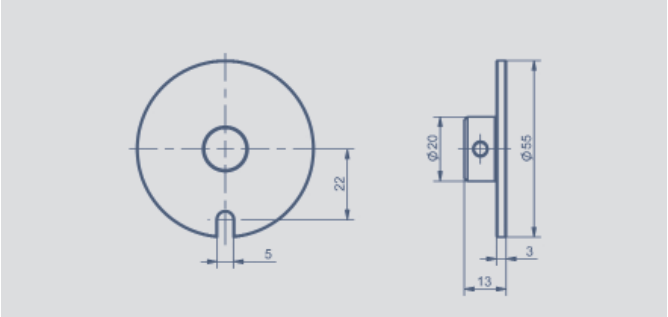
Z-IPX-M01
Lever arm 165 x 20 mm for pivot head drive
- aluminum, anodized
- for shaft IPX-79_1-...
- P/N 400105430

Assembly material (screw, locking pin) included in delivery



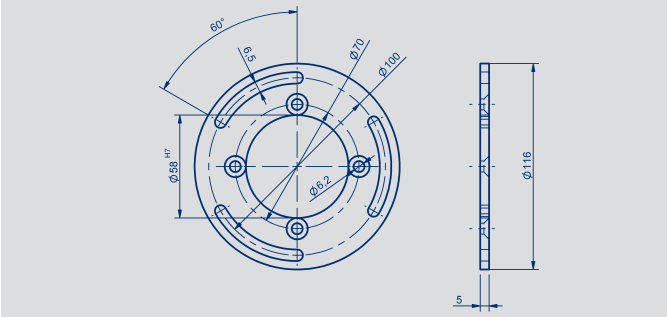
Z-IPX-M11
Lever arm 185 x 20 mm for lever arm drive, clamp connection on dimension 20 mm
- aluminum, anodized
- for shaft IPX-79_1-...
- P/N 400105431

Assembly material /screw, locking pin) included in delivery



Z-IPX-M21
Driving plate D = 55 mm for lateral shaft drive with locking pin
- aluminum, anodized
- for shaft IPX-79_1-...
- P/N 400105433

Assembly material (locking pin) included in delivery



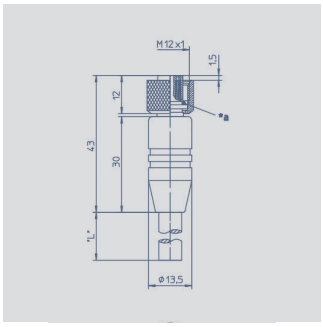
Z-IPX-M31
Mounting plate for adjustable mounting on screw-hole circle 100 mm
- aluminum, anodized
- P/N 400105432

Assembly material (4 x countersink screw) included in delivery

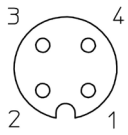
Accessories
Connector System M12

Novotechnik U.S., Inc.
155 Northboro Road

Southborough, MA 01772
Phone 508 485 2244
Fax 508 485 2430
info@novotechnik.com
www.novotechnik.com



Pin assignment

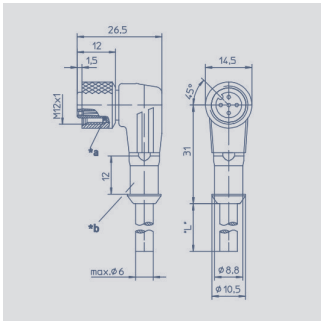


1 = brown
2 = white
3 = blue
4 = black

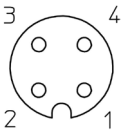
M12x1 Mating female connector, 4-pin, straight, A-coded, with molded cable, shielded, IP67, open ended

Connector housing	Plastic PA
Cable sheath	PUR; Ø = max. 6 mm, -25 °C...+80 °C (moved) -50 °C...+80 °C (fixed)
Wires	PP, 0.34 mm²

Length	Type	P/N
2 m	EEM 33-32	005600
5 m	EEM 33-62	005609
10 m	EEM 33-97	005650



Pin assignment



1 = brown
2 = white
3 = blue
4 = black

M12x1 Mating female connector, 4-pin, angled, A-coded, with molded cable, shielded, IP67, open ended

Connector housing	Plastic PA
Cable sheath	PUR; Ø = max. 6 mm, -25 °C...+80 °C (moved) -50 °C...+80 °C (fixed)
Wires	PP, 0.34 mm²

Length	Type	P/N
2 m	EEM 33-33	005601
5 m	EEM 33-63	005610
10 m	EEM 33-99	005696

IP67 Protection class IP67 DIN EN 60529

UL UL - approved

Very good resistance to oils, coolants und lubricants

Suited for applications in dragchains

Very good Electromagnetic Compatibility (EMC) and shield systems

Note: The protection class is valid only in locked position with its plugs. The application of these products in harsh environments must be checked in particular cases.