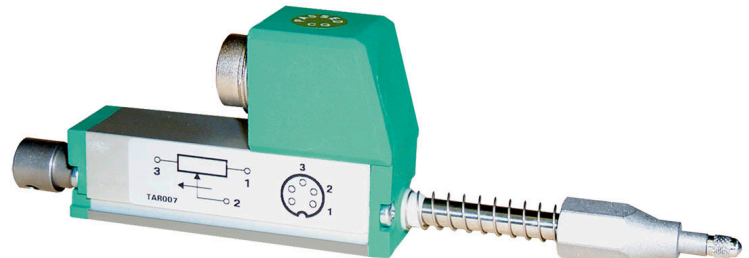


# Potentiometric Displacement Sensors

Models 8712, 8713

Code: 8712 EN  
 Delivery: ex stock  
 Warranty: 24 months



Model 8712



Model 8713



Model 8713-5xxx-V302  
 Internal spring

- Measurement ranges: 0 ... 10 mm to 0 ... 150 mm
- Non-linearity from 0.05 % F.S.
- Durability 10<sup>8</sup> operations
- Resolution 0.01 mm
- Follower roll on request
- Optional with internal spring

## Application

These displacement sensors are potentiometric displacement sensors used for direct measurement, testing and monitoring of mechanical displacements. The spring-loaded control rod eliminates the need of coupling with the measurement object.

A prerequisite for a very long life duration of the devices is a parallel alignment of the motion direction of the measurement object and the rod.

Areas of application are:

Displacement on

- ▶ Electromagnets
- ▶ Hydraulic cylinders
- ▶ Switches and buttons

Measurements of

- ▶ Deformation
- ▶ Bending
- ▶ Press-fits
- ▶ Feed strokes

## Description

Due to the technology employed in potentiometric displacement sensors, they always operate with a sliding contact system. Special processes are applied to give the resistance tracks low friction, low tendency to stick/slip, resistance to abrasion and a long-term stability.

The rods are guided in long-life, low friction sliding bearings with close tolerances which provide high durability and measuring quality. The pre-stressed spring presses the sensor tip against the measurement object. This spring is double-guided and disappears in the probe head, if the rod is in its end position.

The probe tip consists of a ball made of stainless steel. The bore at rod end serves for coupling retraction units.

The rod is protected against twist for measurement ranges up to 50 mm. The probe tip (hexagonal) must not be turned by any tool, otherwise its anti-twist protection will be destroyed.

**Technical Data**

\*length of housing \*\*total mechanical deflection

Order Code	Measuring Range (+1/-0) [mm]	Dimensions [mm]								Non-Linearity [% F.S.]	Total Mass	Moveable Mass	Dissipation at 40 °C
		-V302				-V302							
		A*	B**	C	D	A*	B**	C	D				
8712 - 10	10	48	16	32	108	60.8	6.5	15	95.3	± 0.3	60 g	18 g	0.2 W
8712 - 25	25	63	31	32	138	75.8	19.7	30	138.5	± 0.2	75 g	23 g	0.6 W
8712 - 50	50	88	56	40	196	112.7	14.2	55	194.9	± 0.1	95 g	33 g	1.2 W
8712 - 100	100	139	106	40	307	185.1	13.4	105	316.5	± 0.1	140 g	50 g	2.2 W
8712 - 125	125	163	148	40	364	221.6	13.4	130	378	± 0.05	190 g	58 g	2.2 W
8712 - 150	150	188	186	40	427	270.1	13.4	155	451.5	± 0.05	245 g	66 g	2.2 W
8713 - 10	10	48	15	32	108	60.8	6.5	15	95.3	± 0.3	60 g	18 g	0.2 W
8713 - 25	25	63	30	32	138	75.8	19.7	30	138.5	± 0.2	75 g	23 g	0.6 W
8713 - 50	50	88	55	40	196	112.7	14.2	55	194.9	± 0.1	95 g	33 g	1.2 W
8713 - 100	100	138	115	40	298	185.1	13.4	105	316.5	± 0.1	140 g	50 g	2.2 W
8713 - 125	125	163	148	40	364	221.6	13.4	130	378	± 0.05	190 g	58 g	2.2 W
8713 - 150	150	188	186	40	427	270.1	13.4	155	451.5	± 0.05	245 g	66 g	2.2 W

**Electrical values**

Resistance:  
 measuring range 10 mm and 25 mm 1 kΩ  
 measuring range 50 mm up to 150 mm 5 kΩ  
 Tolerance of resistance: ± 20 %  
 Max. operating voltage:  
 measuring range 10 mm 14 V  
 measuring range 25 mm 25 V  
 measuring range 50 mm up to 150 mm 60 V  
 Recommended current in slider circuit: < 0.1 μA  
 Max. current in slider circuit: 10 mA  
 (> 0.1 μA negative influence to linearity and durability)  
 Insulation resistance: > 100 MΩ at 500 V  
 Electrical strength: 500 V<sub>eff</sub> at 50 Hz

**Environmental conditions**

Storage temperature range: - 50 °C ... 120 °C  
 Nominal temperature range: - 30 °C ... 100 °C  
 Temperature coefficient:  
 of connection resistance max. - 200 ± 200 ppm/K  
 of output voltage < 1.5 ppm/K

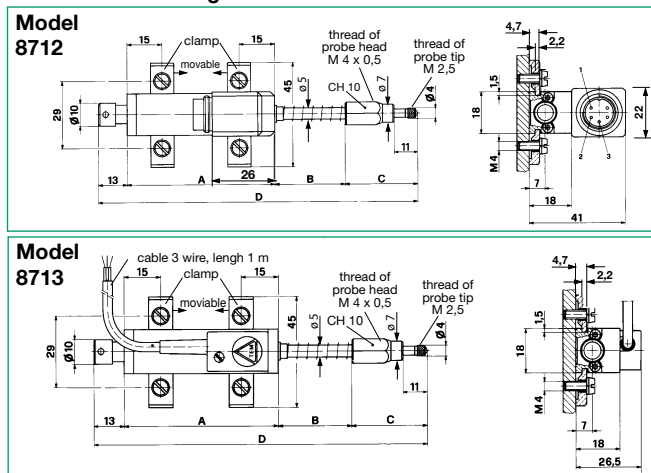
**Mechanical values**

Non-linearity: refer to table  
 Resolution (mechanically from slider): 0.01 mm  
 Durability: > 25 x 10<sup>6</sup> m strokes, or 100 x 10<sup>6</sup> operations, whichever is less (within useful electrical stroke)  
 Displacement force, horizontal: ≤ 4 N  
 Displacement speed: max. 10 m/s  
 Endurance limit: 5 ... 2000 Hz, A<sub>max</sub> = 0.75 mm, a<sub>max</sub> = 20 g  
 Shock resistance: 50 g, 11 ms  
 Protection class: acc. to EN 60529 IP40  
 Material: housing aluminium, anodized  
 rod stainless steel AISI 303  
 Electrical connection:  
 model 8712 Plug-in connector 5 pin  
 model 8713 connecting cable, length 1 m, ø 4 mm

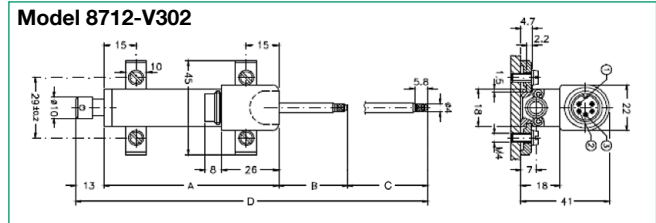
**Important:**

The excellent characteristics of these sensors are only evident when the slider current is < 0.1 μA. If the measuring chain requires higher currents, it is recommended to use an operational amplifier connected as a voltage follower (I < 0.1 μA).

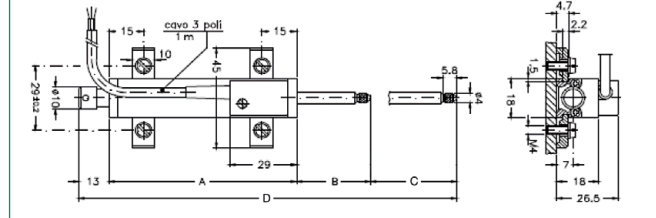
**Dimensional drawings**



**Dimensional drawings**



**Model 8713-V302**



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com).

**Scope of delivery:**

Sensor 8712, mating connector 9991, probe tip 8707, Mounting set 8710-Z001, test and calibration certificate.  
 Sensor 8713, probe tip 8707, mounting set 8710-Z001, test and calibration certificate.

**Accessories**

Probe tip (Ball ø = 3) **Model 8707**  
 Mounting set (4 angle + 4 M4 screws) **Model 8710-Z001**  
 Tip with roller bearing for displacement sensor **Model 8708**  
 Further probe tip **on request**

**for Model 8712:**

Mating connector, 5 pin **Model 9991**  
 Mating connector, 5 pin, 90° outlet **Model 9900-V590**

**Connecting cable, length 3 m, between 8712 and -**

One end open **Model 99130**  
 9180 or 9186 desktop version **Model 99132**  
 DIGIFORCE® 9307, 9310, 9311 **Model 99209-591A-0090030**  
 SENSORMASTER 9163 desktop version **Model 99209-591B-0090030**  
 ForceMaster 9110 **Model 99221-591A-0090030**

**Connector and connector mounting for sensor 8713 to:**

9180 or 9186 desktop version **Connector model 9941 mounting: 99004**  
 ForceMaster 9110 **Connector model 9900-V221 mounting: 99005**  
 DIGIFORCE® 9307, 9310, 9311 **Connector model 9900-V209 mounting: 99004**  
 SENSORMASTER 9163 desktop version **Connector model 9900-V209 mounting: 99002**  
 Connector for extension cable **Model 99121**

**Manufacturers Calibration Certificate (WKS)**

Calibration of a displacement sensor with or without evaluation electronics in 20 % increment of the measurement range (6 points).  
**Typ 87WKS-87xx**