

Eddy Current

Eddy current distance and displacement transducer



Series TX

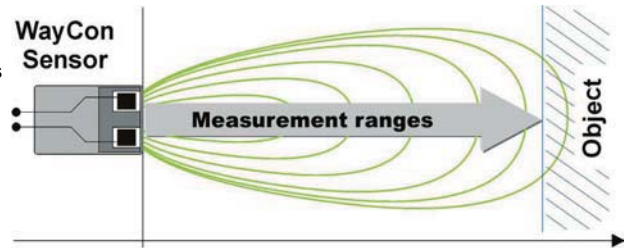
-Preliminary edition -

- **Measurement ranges 0,5...10 mm**
- **One or dual-channel device**
- **Output modes: analogue: 0...10 V, 4...20 mA, CAN, RS232**
- **Linearity $\pm 0,25\%$ of FS**
- **For fast changing of movement (10/25 kHz)**
- **Operating temperature: -35...+185°C**
- **Unaffected of non-metallic media in the measurement room (e.g. water, oils, fouling, synthetics)**
- **distance measurement on static and rotating objects**
- **Measurement of unbalance and vibration**
- **Contactless quality check in automation**

Introduction

WayCon Positionsmesstechnik GmbH is a manufacturer of high quality eddy current displacement transducer for industrial use. These devices measure contactless and high-vibrantly distances, vibration and rotation of metallic conducting objects irrespective non-metallic media in the measurement room (e.g. oil)

The fundamental measurement principle is based on the fact that the coil in the sensor head produces an alternating magnetic field. The streamlines of the field leave the sensor level, pass the object and close together. Thereby the alternating magnetic field induces eddy currents in the electroconductive object which causes an ohmic loss. This eddy current loss in the object rises with less distance. On the entrance-site of the sensor coil this extraction of eddy current loss is metrologically evaluated via the changing of the complex entrance-impedance.



The microcontroller, used by WayCon, provides to handle only certain spectral components within a strictly limited bandwidth. Interferences from other spectral ranges are extracted. The analogue output signal is conditioned and issued via the microcontroller.

Overview

The eddy current basic module can be constructed in one or dual-channel way (same type of sensor heads).

- DSP on board

- One or dual-channel construction
- low power-architektur (1,9 V Core)
- 150MHz, Flash 256KB
- 16-channel, AD-Conv.-Time 80nsec
- CAN on board



- Possibilities of software

- Cascading, multiplexing, master/slave function
- Adaptation of material
- Form factor
- Pipeline length compensation
- Customized linearisation
- Data storage
- CAN-Bus-transfer
- Teach-In, Min-Max, Peak, threshold alarm, filter

- Sensor heads

- With enhanced temperature stability up to 200°C
- Pressure resistant construction
- Special casing/integration of customized periphery

Applications

- Axial and radial wave displacement
- Unbalance, vibration and shock
- Measurement of roundness, ovality
- Bending and deformation
- Measurement of bearing clearance and detection of bearing erosion
- Measurement of split lube under pressure of oil
- Detection of tooth flanks
- Detection of tappet and deviation of tappet
- Detection of slots and measurement of depth of slots
- Compression gap
- carriage forming, form checking
- Measurement of thickness of foils and non-conductive media

Technical data

type	T05	T2	T5	T8	T10
measurement ranges MB	0...0,5 mm	0...2 mm	0...5 mm	0...8 mm	0...10 mm
resolution stat. (12 bit)	0,13 µm	0,5 µm	1,3 µm	2 µm	2,5 µm
resolution dyn.	0,1% v. MB				
linearity	±0,25% v. MB				
dynamics	10 kHz (25 kHz -3 dB)				
output	0...10 V / 0...5 V / ±5 V / ±10 V / 4...20 mA				
temp. range of the sensor	-35...185°C				
emp. range of electronics	-10...70°C				
supply	12 VDC (9...18 V) oder 24 VDC (18...36 V)				
max. power input	400 mA (12V), 200 mA (24V) 2-channel mode				
short-circuit resistant	Yes				
resistan against reverse polarity	Yes				
cache material	stainless steel 1.4305, sensor head PEEK (Polyetheretherketon, fibre-glass reinforced)				
Sensor cable	PTFE-Koax				
Protection class sensor	IP67/IP68				
Protection class electronics	IP40				

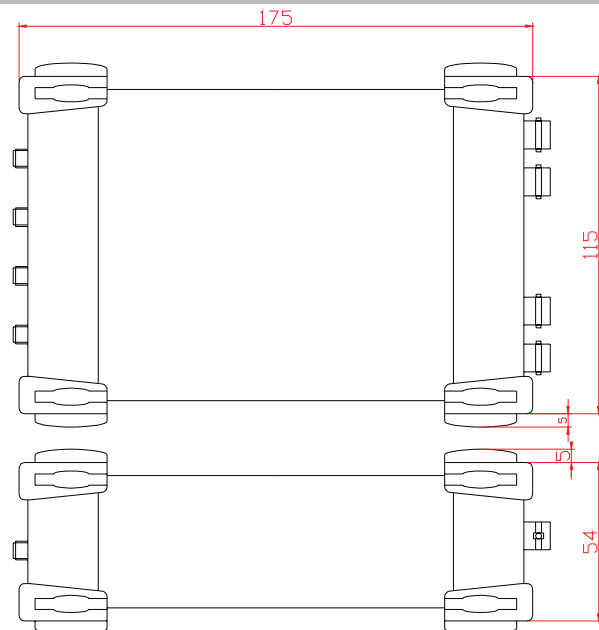
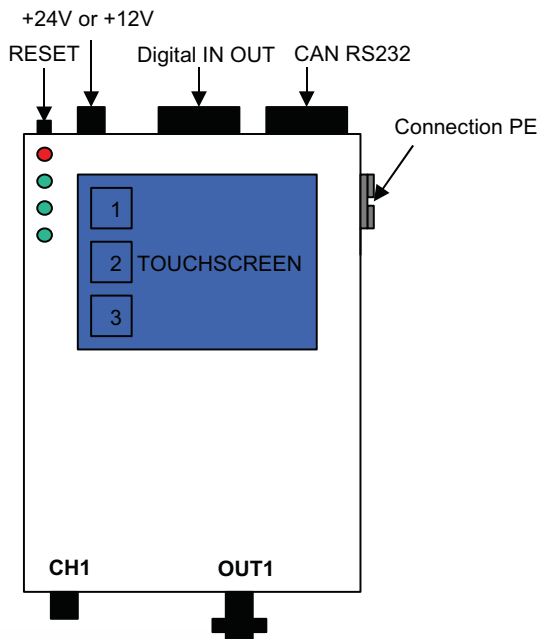
Assignment D-SUB 15 and 9 pol.

PIN	name	description	PIN	name	description
1	IN1	digital input1	9	GND	mass
2	IN2	digital input2	10	OUT1	digital output1
3	IN3	digital input3	11	OUT2	digital output2
4	IN4	digital input4	12	OUT3	digital output3
5	IN5	digital input5	13	OUT4	digital output4
6	IN6	digital input6	14	OUT5	digital output5
7	IN7	digital input7	15	OUT6	digital output6
8	IN8	digitaler Input8			

PIN	name	description
1	-	not occupied
2	CAN_L	CAN_low
3	GND	mass
4	-	not occupied
5	screen	screen
6	TXD	RS232 Transmit
7	CAN_H	CAN_High
8	RXD	RS232 receive
9	V+	external voltage

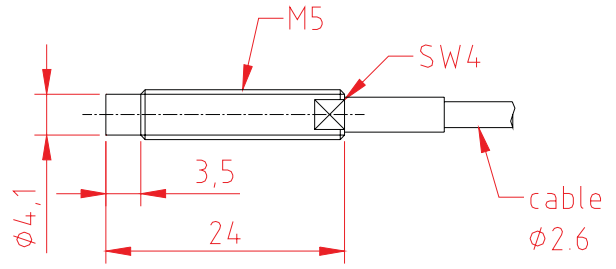
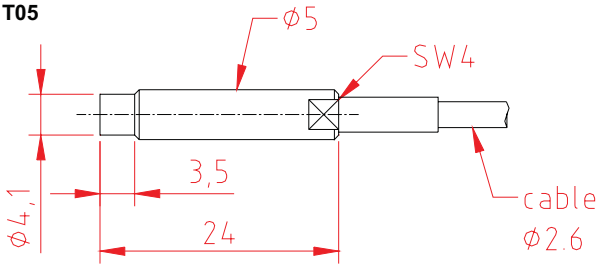
Note: All in- and outputs are galvanically separated via optoelectronic coupler

Technical drawings electronics

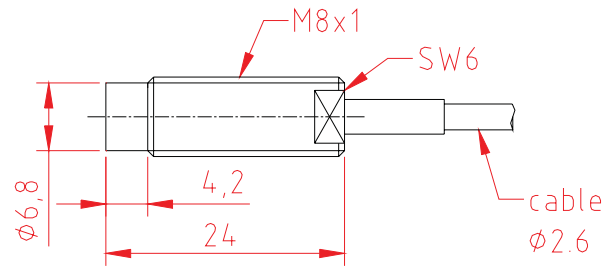
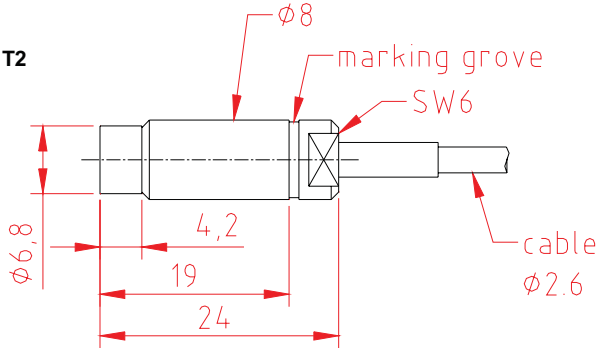


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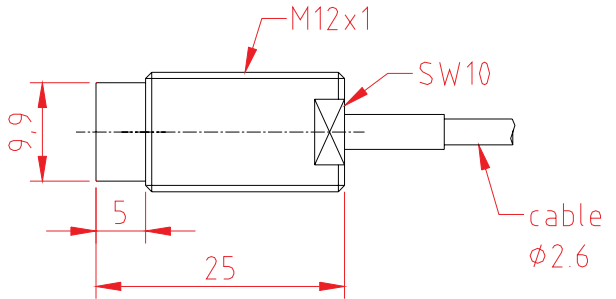
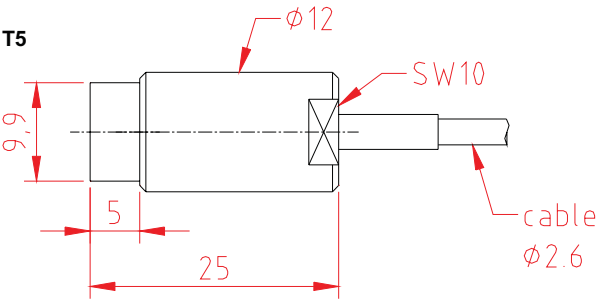
T05



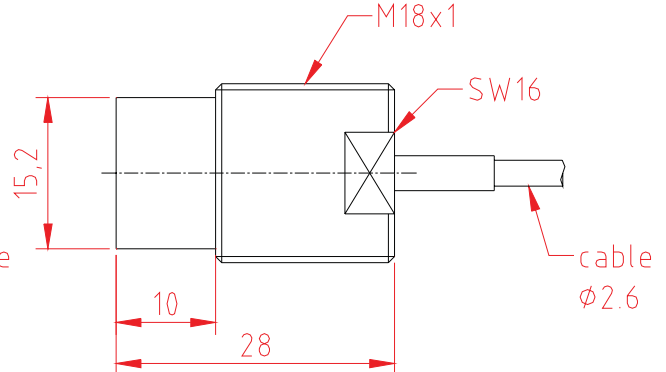
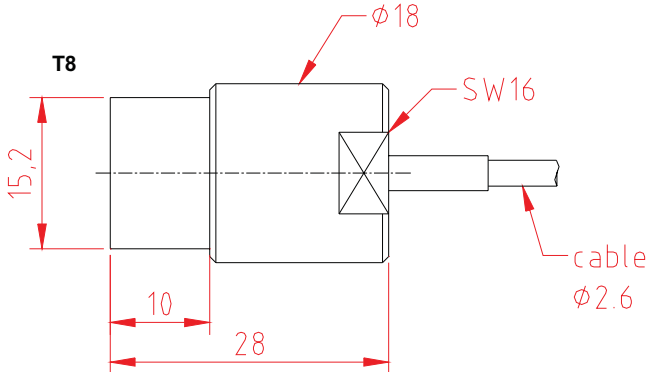
T2



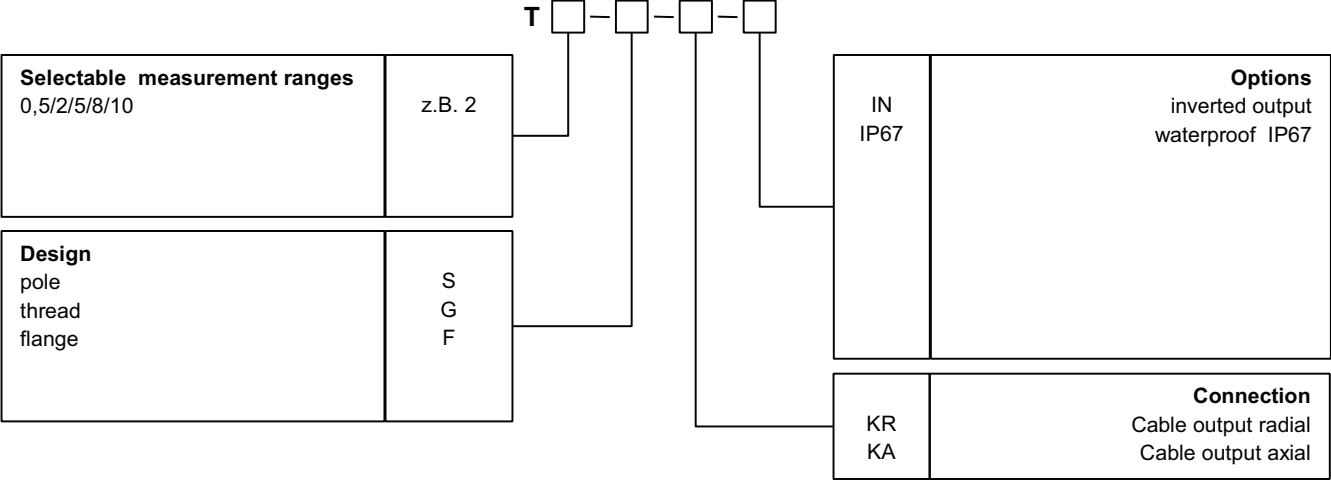
T5



T8



Ordering code Eddy current sensor



Ordering code Eddy current electronics

