

Tape Sensor

The optical tape sensor SE-TAPE-01 is a speed and angle sensor using a black/white tape which is glued on a rotating part. The reflection is converted into a TTL signal, bandwidth 100 kHz.

The sensor consists of a tiny electronics part and a 5 m fiber optic cable terminated with a M6 screw. Thus areas where space is very limited still can be reached conveniently.



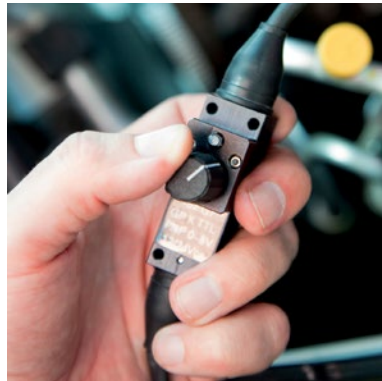
Specifications	SE-TAPE-01
Supply voltage	9 - 30 V _{DC}
Supply current	120 mA
Max. input frequency	100 kHz
Output	TTL
Rise time	200 ns
Fall time	<1.5 µs
Temperature range	-10 to 50 °C non condensing
Temperature fiber sensor	-40 to 100 °C
Temperature B&W tape	-10 to 60 °C
Weight	150 g (0.33 lb.)
Working area of probe	2 - 5 mm
Trigger level adjustable	potentiometer 3/4 turn
TRG deviation	@ 60 pulses/rev, 2 mm tape: < ±1.5 % deviation from average speed around current position
Probe diameter	M6 x 20 mm
Black/white tape	2 mm black, 2 mm white; width 10 mm; 1 m tape included
Connector	Lemo FGG.1B.307, directly fits to a DEWETRON counter input

Applications

- Order tracking
- Field balancing
- General rpm measurements
- Rotational and torsional vibration analysis
- Angle based display

Sensor position

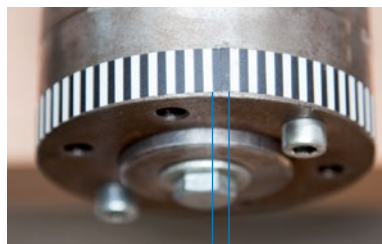
The sensor should be placed about 2 to 5mm above the tape. A sensitivity potentiometer is available to adjust the trigger level for reliable pulse output.



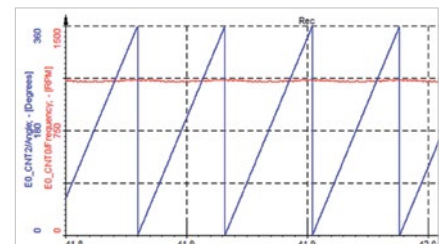
Automatic gap detection

When applying the black/white tape to the rotating shaft there will be an irregular rasterization at the transition point. This can be used as the zero pulse to indicate a defined start position. On the other hand this would result in a rpm drop or spike in our rpm measurement.

A software procedure automatically measures the pulses per revolution and also detects the exact gap length to enable robust and high-quality measurement.



Transition point of tape



blue = angle 0 - 360°
red = rpm