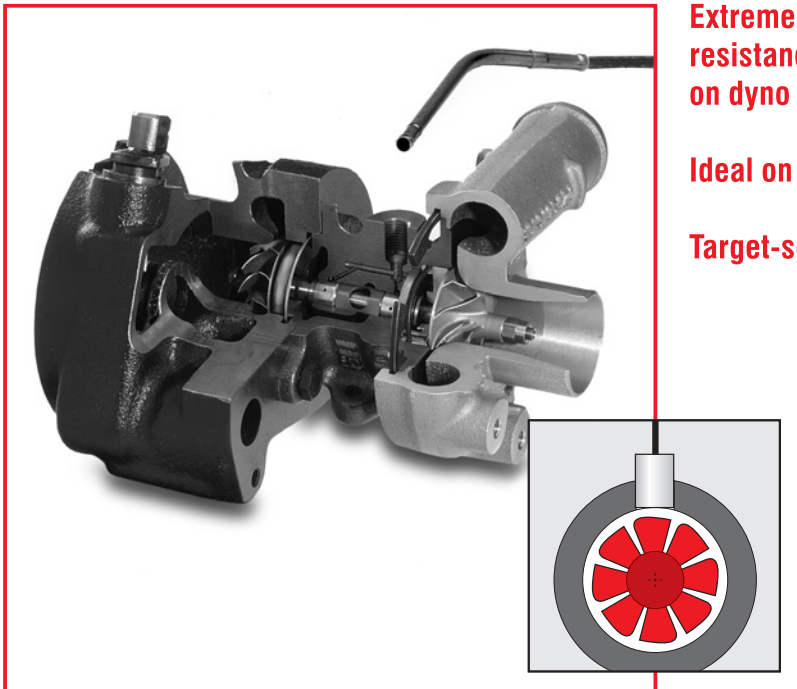
MICRO-EPSILON

EDDY CURRENT PRINCIPLE

TURBO SPEED

NEW: high temperature probe DZ135



Extreme high interference resistance and noise immunity on dyno and testbenches

Ideal on vehicle and test cell use

Target-sensor gap to 1.5 mm

Speed Sensor for Turbo Chargers

turboSPEED 135

turboSPEED

Speed Sensor for Turbo Chargers

Measuring principle

A coil is potted in a sensor case and is energized by a high frequency alternating current. The electromagnetic field from the coil generates eddy currents in the turbo-charger blade. Every blade generates a pulse. The controller identifies the speed (analog 0 ... 10 V) by considering the number of blades.

System properties

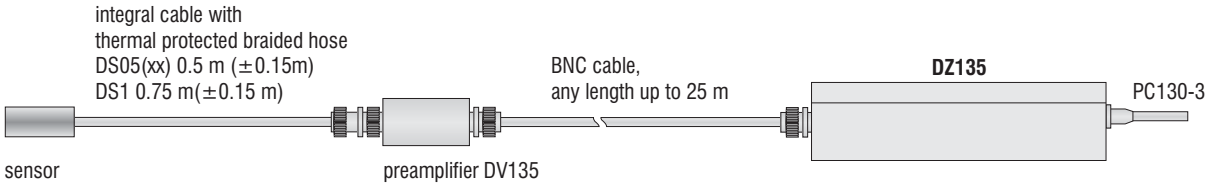
The DZ 135 marks the arrival of the next generation in eddy current turbocharger speed measurement systems. The primary aim of the further development was to produce a system immune to the most difficult EMC test cell conditions. Particularly where multi-test cells are in use, very high levels of EMC emissions are causing effect on test cell instrumentation. The DZ135 offers a new electronic circuit which 'boosts' signal levels from the sensor and also dramatically improves circuit shielding. This gives the sensor EMC levels of immunity which are several factors higher than existing devices in the marketplace. The system has also been designed to be able to replace the sensor mounted in the turbo housing, without having to recalibrate the system electronics.

The eddy current measurement technique is also immune to the effects of oil, dirt, carbon particles that can be found in the engine, which can affect the measurement output quality of other measurement principles, particularly capacitive and optical measurement technologies.

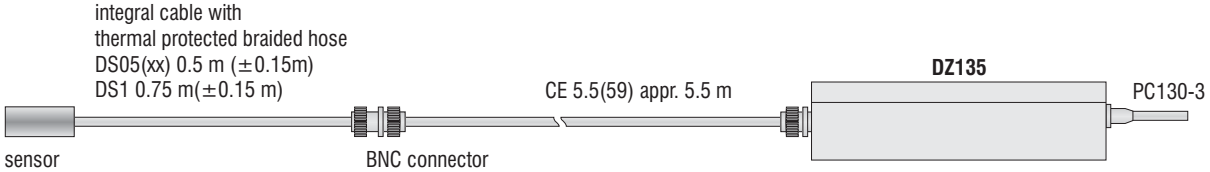
ADVANTAGES:

- **Maximum speed range from 500 to 400,000 RPM**
- **Miniature sensor design (ø 3 mm)**
- **No blade modification necessary**
- **Immune to electromagnetic interference**
- **Cable length to 25 m**
- **Supply 9 ... 30 VDC**
- **Target clearance up to 1.5 mm**
- **Changing sensor without calibration**

1.) Operation with preamplifier



2.) Operation without preamplifier



Technical data

Controller DZ 135		DZ 135				
Amplifier (option)		DV 135				
Sensors		DS 05(03)	DS 05(04)	DS 05(14)	DS 05(15)	DS 1
Measuring principle		eddy-current loss principle				
Target (blade material)		aluminium or titan				
Operating temperature	electronics	-30 to +70 °C				
	preamplifier	-30 to +125 °C				
	sensor	-40 to +200 °C				-40 to +235 °C
Maximum speed range		500 ... 400,000 RPM				
Distance sensor to blade	blade width<1.2 mm	appr. 0.1 to 0.5 mm				0.1 to 1 mm
	blade width >1.2 mm	appr. 0.1 to 0.7 mm				0.1 to 1.5 mm
		adjusting with LED-indicator (green)				
Number of blades		programmable divider (jumper) from 2 to 17 blades				
Output 1 (digital)		1 pulse/blade (TTL-level with 7 µs pulse width)				
Output 2 (digital)		1 pulse/rotation (TTL-level with 100 µs pulse width)				
Output 3 (analog)	jumper 1	0 ... 10 V (0 ... 200,000 RPM)				
	jumper 2	0 ... 10 V (0 ... 400,000 RPM)				
		load resistance min 1 kOhm, load capacitance max. 1 nF				
		output frequency 1.5 to 100 Hz (speed sloping)				
	linearity	±0.2 % FSO				
	resolution	0.1 % FSO				
Power supply		9 V ... 30 VDC / max.150 mA (short time to 36 VDC)				
Sensor cable	with preamplifier DV135	any cable length up to max. 25 m; any BNC cable (impedance 75 Ohm or 95 Ohm)				
	without preamplifier	total length appr. 6 m for direct operation (sensor cable CE5.5(59) necessary)				
Integral sensor cable		0.5 m ±0.15 m				0.75 m ±0.15 m
Weight		controller DZ 135: appr. 380 g				
		preamplifier DV135: appr. 50 g				

FSO = Full Scale Output

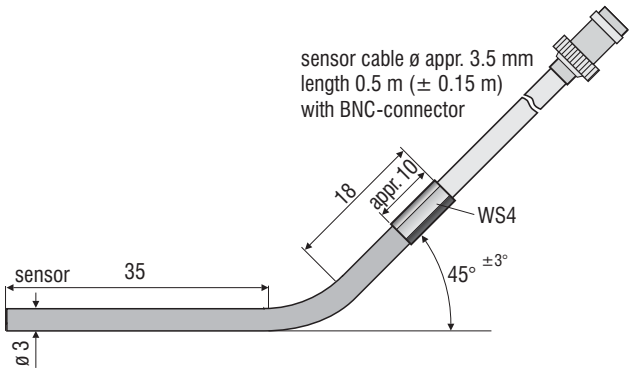
Accessories

PC 130-3, 3 m
Supply and signal cable
tinned eds for feeding (open ends)
analog output and 2 x TTL-signal on
BNC connector

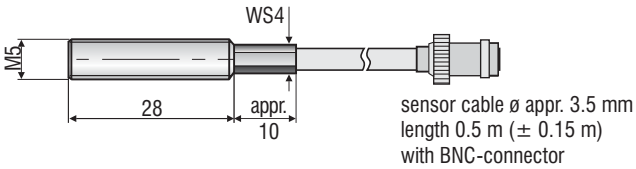
CE135-10, BNC-cable, 10 m
Cable extension between preamplifier and controller,
operation temperature up to 200 °C

CE5,5(59), cable extension
only for use with preamplifier DZ135

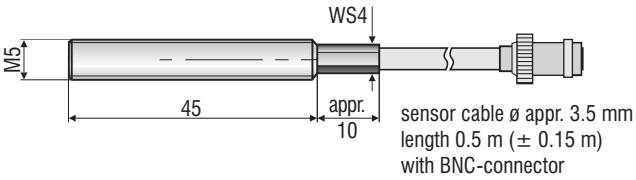
Sensor DS05(03)



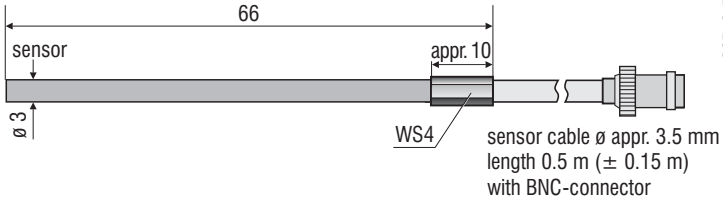
Sensor DS05(14)



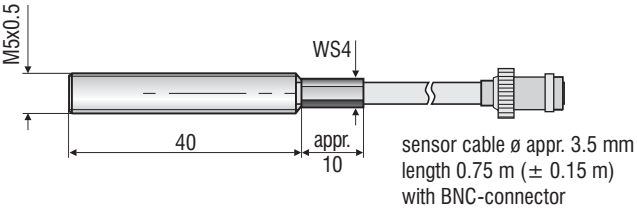
Sensor DS05(15)



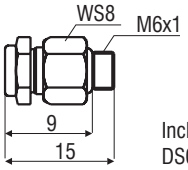
Sensor DS05(04)



Sensor DS1

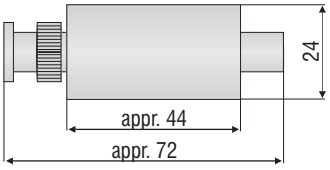


Mounting adapter MA135



Included in delivery of
DS05(03) and DS05(04)

Preamplifier DV135



Controller DZ 135