Steering Module Z9

RTM
Rainer Thomas Messtechnik

Version3

- **Simply adaptable system to the measurement of:**

  Steering torque
  Steering angle
  Steering speed

Steering wheel adaptor

- **Applicable into passenger cars, trucks, ...**
- **Exchangeable car- adaptors to install on different car-types**
- **Maintenance-free continuous operation, by touchless data transfer and inductive supply**
- **Automatic comparison functions by keys on reproducer**
- **Permits the application of the original steering wheel with air bag and key functions**
- **With the adaptor steering wheel Z-AL it is easy to complement to a complete measuring steering wheel**

Steering columns adaptor

RTM GmbH, Wiesseerstraße 1, D-83703 Gmund am Tegernsee, Fon ++49/8022-665 295, RT@RT-M.de, www.RT-M.de.

Steering Measurement Module Z9

Technical Data

Steering module device		
Steering torque		
	Sensor	integr. sensor with 16 active strain gages, temperature compensated
	Maximum load	temporary, dynamicaly overload 100Nm; break 500Nm
	Range, bipolar; **Z9-1** / **Z9-2**	**100Nm** +/-0.2Nm (typically +/-0.1Nm) / **200Nm** +/-0.4Nm (typically +/-0.2Nm; overload 20%)
	Drift	+/-0.02Nm/K
	Bandwidth	0...800Hz / 4,000Sample/s
	Internal resolution	16Bit; theoretical +/-0.004Nm
Steering angle		
	Sensor	Inductive transducer
	Range, bipolar	**1,000°** +/-0.036°
	Bandwidth	0...800Hz / 4,000Sample/s
	Internal resolution	16Bit; +/-0.036°
Steering speed		
	Sensor	calculated from steerig angle
	Range, bipolar Bandwidth	**1,000°/s** +/-0.1°/s 0...800Hz / 4,000Sample/s
	Internal resolution	16Bit; theoretical +/-0.03°/s
Adjustment functions		automatical zero adjustment of angle and torque; Keys at reproducer
Operating temperature		-10°C...80°C; **optional Z-t** -30°C...80°C
Mechanical data		
	Adaption to steering shaft to steering wheel	with tooth system plug-in adaptors customizable to different car typs Adaptor flange to weld together with an original steering column segment
	Outer diameter	118mm
	Height without adaptation	50mm + min.17mm Adapt.ation
	Moment of inertia	16kgcm²
	Weigth	1.2kg

Reproducer		
Signal output	-analog -digital	per channel BNC-socket on frontplate; +/-10V voltage level, single-ended **optional** CAN (**C**) or USB (**U**)
Monitor, Display		4 digit LED-display;
Power supply		9...32VDC; about 10W
Dimensiones (LxWxH); weight		200mm x 105mm x 80mm (robust compact housing); 1.2kg
Operating temperature		0...60°C

Accessories, Set of delivery, options Steering measurement module with reproducer

DC-supply cable, 2m
Steering coloumns adaptor for car type X
Flange for steering wheel adaptation
Documentation,Calibration sheet
Transport suitcase
optionally:
ESP-extension for car type X
Steering wheel adapter complete
CAN-interface with CAN-Software
USB-interface with USB-driver
Adapter steering wheel **Z-AL**

Picture version 2

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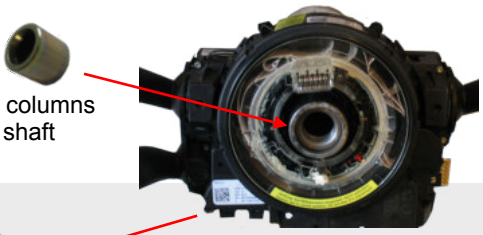
Installation, introduction, adjustment

Dismantling of original steering wheel and separation of the cable connection

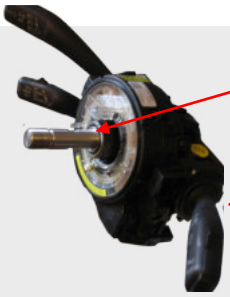
without ESP-Extension ↔ **with ESP-Extension**

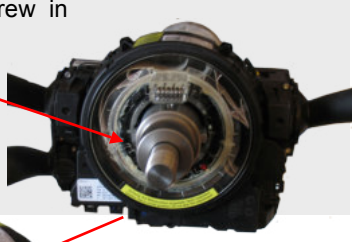
Remove clockspinn

put steering columns adaptors on shaft

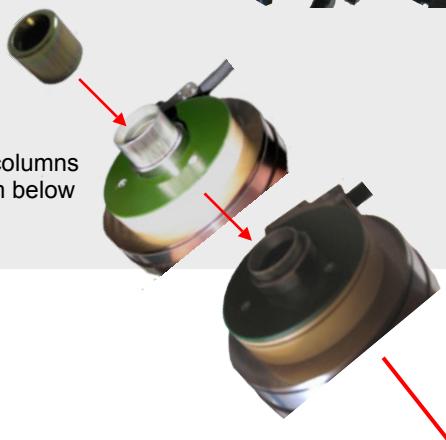


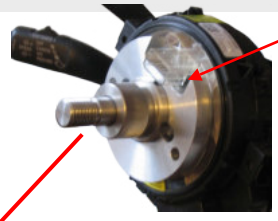
Extension shaft screw in





put steering columns adaptors from below into toothing

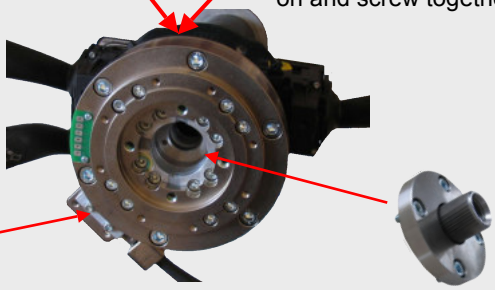




Adaptor extension and friction disk put on; fix with grub screw

Measuring steering wheel on shaft put on and screw together

Measuring steering wheel on extension put on and screw together

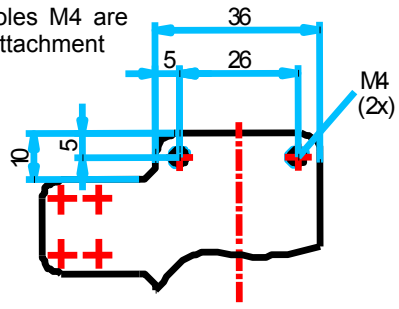


Steering wheel adaptor put on and fix (4 Inbus screws M5x8).

The fixing flap of the stators **is free of load** to fix in the vehicle.

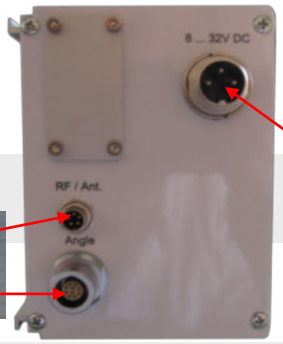
Steering wheel put on and fix

For this two tapped holes M4 are available for the easy attachment

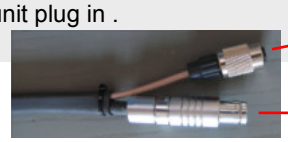


or

Adaptor steering wheel mount.
(Option Z-AL)



Connection cable to the reproduction unit plug in .



Supply cable at the back plate of the reproduction unit plug in.

Connect and switch on the power supply. Bundle plug **"red" is "+"** und **"black" is "-"** ; Digital display shines.

AZ-φ = Automatic zero adjustment of angle: Steering wheel bring in "straight ahead-position"; Front panel switch **φ** press

AZ-M = Automatic zero adjustment of moment: Steering wheel free of load; Front panel switch **M** press

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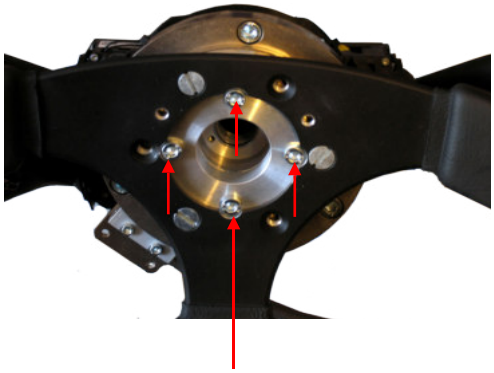
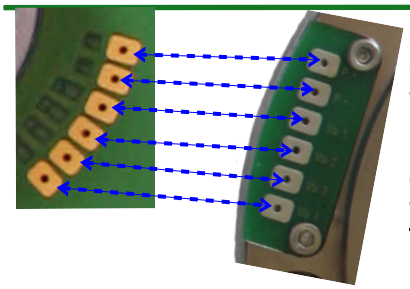
Touch-down of the adaptor steering wheel (option Z-AL)

At place of the steering wheel adaptor it is possible
Adaptor steering wheel **Z-AL** to put on.



4 Inbus srews M5x16

Realise the functionality of the original steering wheel



On the top side and bottom side the Z9 has in each case more than 6 solderpads with in each case same-being name.
This are **6 independent, free-usable, internal connections** which permit the boarding of the original steering wheel for the realisation of the functions of the **LIN-Bus (function keys)** and **air bag**.
Tip: If possibly original cable cut and paste interadaptor.

Adjustment and display functions

By short pressing of keys **AZ-M** or **AZ-φ** at the front panel the automatic adjustment functions are triggered

Keys for adjustment functions

AZ-M

AZ-φ

Display with physical units
M =100Nm / 200Nm
φ = 1.000°

Analog outputs

Steering torque	100Nm /200Nm
Steering angle	1000°
Steering speed	1.000°/s

Allocation of the connections in the reproduction unity

CAN		SubD-9 socket at rear plate	
Contact	**Signal**	**Contact**	**Signal**
2	CAN-Low	7	CAN-High

8...32V DC	
Coupling socket 3 pole on cable Type Binder 680 0306-00-03	
Contact	**Signal**
1	+ Supply
3	- Supply

Servicing hints, Recalibration cycle

Device Z9 has no special service hints.
Recalibration cycle: recommendation is 2 years.

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Steering Module Z9

EC – Certificate of Conformity

The company

Rainer Thomas Messtechnik GmbH
Wiesseer Str.1
D-83703 Gmund / Germany

herewith explains, that the telemetry devices **Type Z9**
in from it implementation brought in the traffic fulfils the regulations of the following appropriate harmonisation regulations of the community:

EMV-Richtlinie 2014/30/EU
DIN EN 61326-1; VDE 0843-20-1:2013-07 Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 1:Allgemeine Anforderungen (IEC 61326-1:2012);
Deutsche Fassung EN 61326-1:2013

The protective aims of the low-voltage directive 2014 / 35 / EU are kept.

Commissioned person for the arrangement of the technical documents:

Rainer Thomas, company RTM GmbH, Wiesseer Str.1, D-83703 Gmund

Commissioned testing centre / accredited lab:
Schwille-Elektronik GmbH, Benzstr.1A, D-85551 Kirchheim, M.Schiedrich

The following basic norms were applied:

- IEC 61000-4-2
- IEC 61000-4-3

- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-6
- IEC 61000-4-8
- CISPR 55011

Rainer Thomas, GF

Gmund, Apr. 9th. 2015