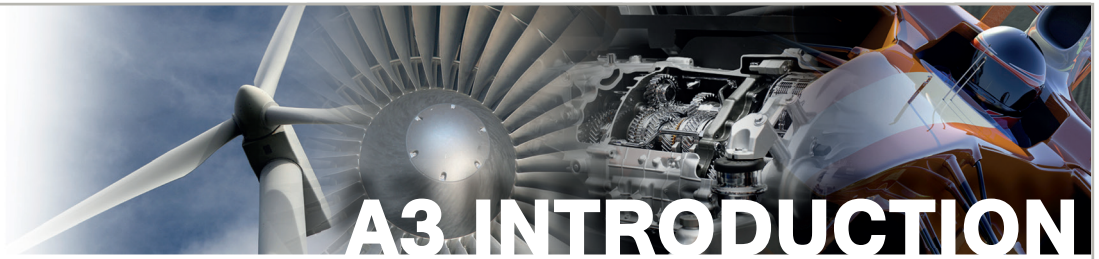




TORQUE AND MORE



Plug-and-Play Torque Sensor Kit: Active-3 Technology

The Active-3 (A3) Torque Sensor from Torque And More GmbH (TAM) is the 3rd generation of a Non-Contact and stand-alone Torque Sensor family, developed by the engineering team at Torque And More GmbH (TAM). The A3 Sensor can be used with any Ferro-magnetic Test-Object (e.g. solid shaft, hollow tube, beam) and can be used to measure Torque forces, Bending forces, and Axial Load forces. This is Plug-and-Play technology: mount the A3 Sensing Module nearest to the Test-Object; switch on electric power; initialise, and measure immediately. The Active-3 technology can be applied to volume applications and is also available as an **A3 Sensor Kit for Laboratory-use and Test-applications**.

KEY FEATURES

- True Non-Contact (air gap of up-to 3 mm)
- Plug-and-Play Sensor; Very easy to apply
- Bi-directional Measurement (+/- Torque)
- Any Shaft Speed, and Static Operation
- Over-Torque protected; Cannot age
- Works with any Ferro-magnetic material
- High Resolution; High Signal Bandwidth
- Analogue Signal Output (0 to +5 Volt)
- USB Interface; Zero-Torque Setting Button



The Active-3 Torque Sensor Kit

ACTIVE-3 TORQUE SENSOR KIT

Stored in a protective case, the A3 Torque Sensor Kit contains a fully functional Torque Sensor System (Sensing Module and Sensor Electronics), mounting materials, mains powered +12 Volt DC supply, connection cable, USB stick with files, and full sized user manual. The Sensing Module is supplied for a specific shaft diameter range and should be mounted by the user, facing towards the location from where Torque has to be measured.

The Sensing Module comes in three different sizes to cover all possible applications (from a shaft diameter of 15 mm upwards to a flat surface) the size should be selected by the user when ordering the A3 Sensor Kit.

The Sensing Module does not need to touch the Test-Object (drive shaft) and an air gap of up to 3 mm can be managed by this sensor.

STANDARD A3 SENSING MODULE

The Sensing Module of the Active-3 Torque Sensor is placed in a 30 mm diameter, industrial grade housing, and is designed for a specific Test-Object (shaft) diameter.

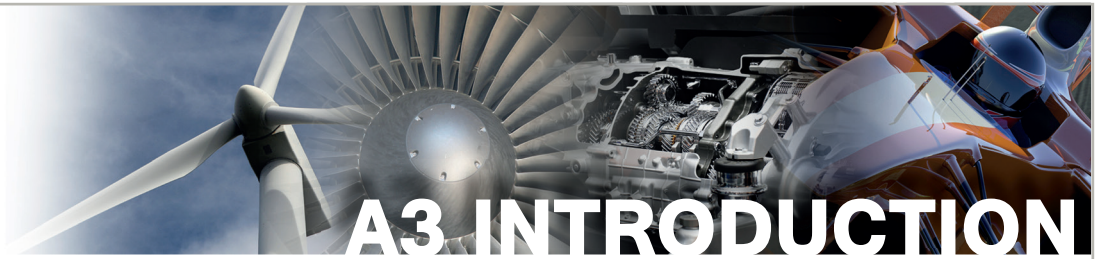


A Standard Active-3 Sensing Module

The Sensing Module will be connected to the Sensor Electronics by the attached 2 meter cable. The front-end of the Sensing Module (pointing towards the Test-Object) is curved and is adapted for specific shaft diameters.

The Standard A3 Sensing Module (as supplied with the A3 Sensor Kit) can be ordered for one of three different shaft diameter ranges.

The recommended smallest Test-Object (shaft) diameter is 15 mm (SM-Type-1). The Sensing Module for larger shaft diameters (SM-Type-3) can be applied to any large diameter shafts and to flat surface objects.



SENSOR ELECTRONICS

The Sensor Electronics is placed in its own housing and has three connectors on the front panel: +12 Volt DC power supply, Sensing Module cable, and a mini BNC connector for the analogue output signal (+5 Volt range). On the back panel is a USB connector and one push button for the user to reset the "zero" Torque Value.

The A3 Sensor Kit is supplied with a comprehensive user manual.

MEASUREMENT RANGE AND CALIBRATION

Depending on the Ferro-magnetic shaft material used, and on the applied hardening process, the user of the A3 Sensor Kit has to apply a one-time calibration to the application installed A3 Sensing Module. The calibration values are then stored into the A3 Sensor Electronic on-board non-volatile memory and can be changed again by the user (when used at a different shaft location) at a later time.

PRELIMINARY SPECIFICATIONS

The actual Torque Measurement Range is subject to the Test-Object diameter. The example specifications given below are valid for a 20 mm diameter shaft, tooled from 1.2767 (45CrNiMo16) Ferro-magnetic material, with a hardening of 52 HRC.

Specification	Description	Min	Typical	Max	Units
Measurement Range	Full Scale Measurement range (FS)	- 175		+ 175	Nm
Signal Resolution			+/- 0.1		% of FS
Repeatability	Under identical conditions		+/- 0.25		% of FS
Default Sampling Rate			1,000		s/S
Analogue Output Signal	Whereby „zero“ Torque = 2.5 Volt	0.5		4.5	Volt

An optional Custom Specific Sensing Module can be used at temperatures from -40 deg C to above +150 deg C (has to be ordered separately).



ABOUT US

We are experts in the field of developing, testing and producing sophisticated and market leading magnetic principle based sensing technology. Our key applications for the global markets include: automotive, industry, renewable energy, power tools and consumer products. Founded in Germany, TAM is a research, testing, and production management Company that is 100% privately owned. TAM works together with automotive certified production partners.