ROTARY HAPTIC MODULE DHM$_3$

Rotary haptic measuring systems are used to test rotary actuators in the automotive and consumer sector to record and evaluate their haptic torque curves.

The rotary haptic module DHM 3 is a measuring system that has been specially developed for this purpose. It can be easily integrated in automatic and laboratory systems.

The measuring range of ± 100 mNm and an integrated overload protection to prevent excessive torques allow to record the torque curves of all conventional rotary actuators. The module can be combined with the various gripper variations in the DHG3 series for adjustment to special requirements in terms of rotary actuator geometry. An integrated electric drive opens and closes the gripper. The module is designed for a minimum service life of 10 million measuring cycles.

The surrounding housing protects the system from external influences and protects the user from moving parts, so that the module can be used without a safety enclosure. The housing is matt black and is therefore particularly suited for the use beside image processing systems.

Compensation of radial deviation

One special feature of the system consists in its high tolerance to radial offset between module and rotary actuator. This offset may be up to 0.5 mm in each direction without negatively affecting the measuring result. As a result of this, it is not necessary to elaborate fine adjustment of the rotary actuator.

Integrated encoder

The system has an integrated encoder for exact allocation of torque and angle of rotation.

Technical Data

Measuring range [mNm]	±100
Measurement accuracy [mNm]	1.0
Resolution measurement range [bit]	16
Sampling rate [kHz]	10
Max. radial deviation [mm]	0.5
Mass [kg]	3.3
Max. angular velocity [°/s]	360
Nominal angular velocity [°/s]	90
Operating temperature [°C]	10 … 50
Storage temperature [°C]	10 … 70
Dimensions without gripper [mm]	358 x 135 x 70

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Control and evaluation

For operation, the rotatory haptic module must be always connected with a PC or an industrial PC. The DHM 3 is used for data acquisition. The evaluation of the data is done with a special software on the PC. The DHM 3 has two operating modes:

Adjustment and test measurements

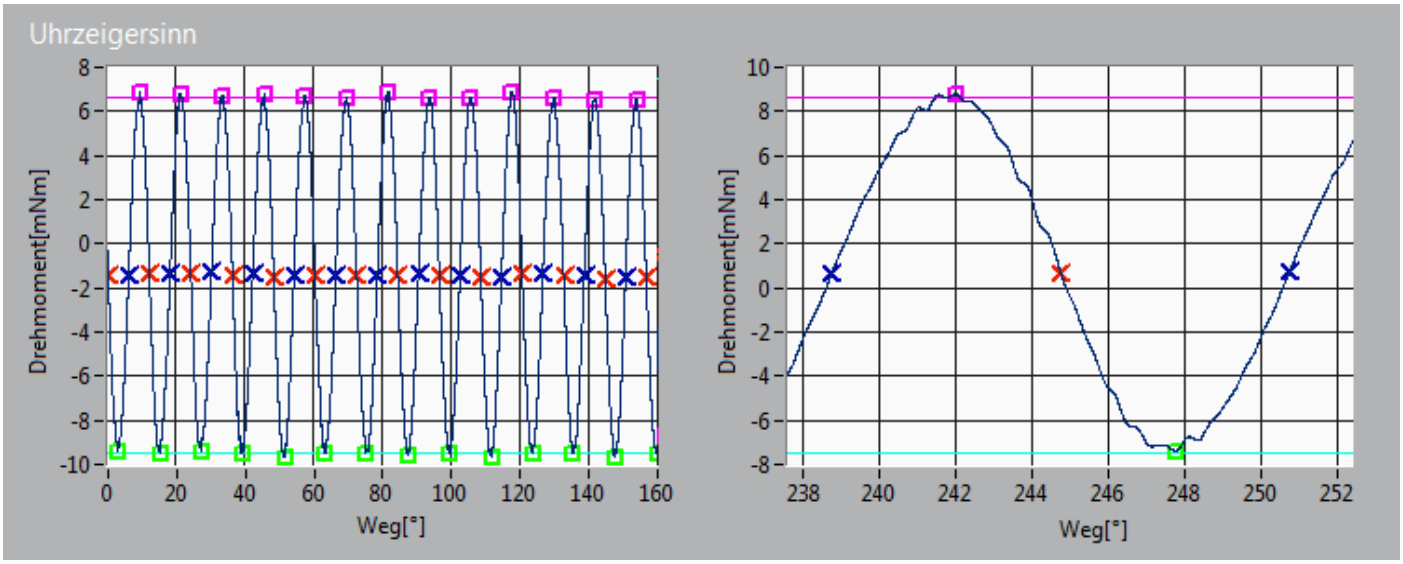
To set up and execute first test measurements the intuitive software **PANOVO tec MX** (Measurement Explorer) is provided.

Automatic operation

The automation software **PANOVO tec Test-squenzer** enables integration in automated plants. Besides evaluation and execution of variant - specific checklists for connection to a database, the software is perfectly suitable for documentation of the tests. Furthermore it is possible to control additional peripheral devices, like printers or drives. Additional measurement modules can be combined to a complete test system by request.

Measuring signal and suitability as measuring system

The system gathers an analogue signal that indicates the torque acting on the gripper and sends it via Ethernet to the PC. The actual analysis is done by the PC. The following diagram shows the measured torque curve of the torque transfer standard measure DTN 38.



The DTN 38 can be used to verify the suitability of the rotary haptic module DHM as a measuring system in accordance with the guidelines on “Capability certification of measuring systems".
(tolerance range T ≥ ± 5.00 mNm; cgk value ≥ 2.00)