

UDM5

Intelligent solution of drive and
torque measurement for measuring,
testing, adjusting



For more efficiency.

PROMESS

Assembly and Sensor Technology

Your partner in the field of assembly and testing technology

Gerhard Lechler founded the company PROMESS in 1977 as an engineering office in the field of technical measurement in Berlin. Initially, the company distributed handmade patented measuring bearings for tool condition monitoring before the electro-mechanical assembly press (UFM) with integrated NC control was born at the end of the 1980s. Right from the beginning it was the strength and the passion

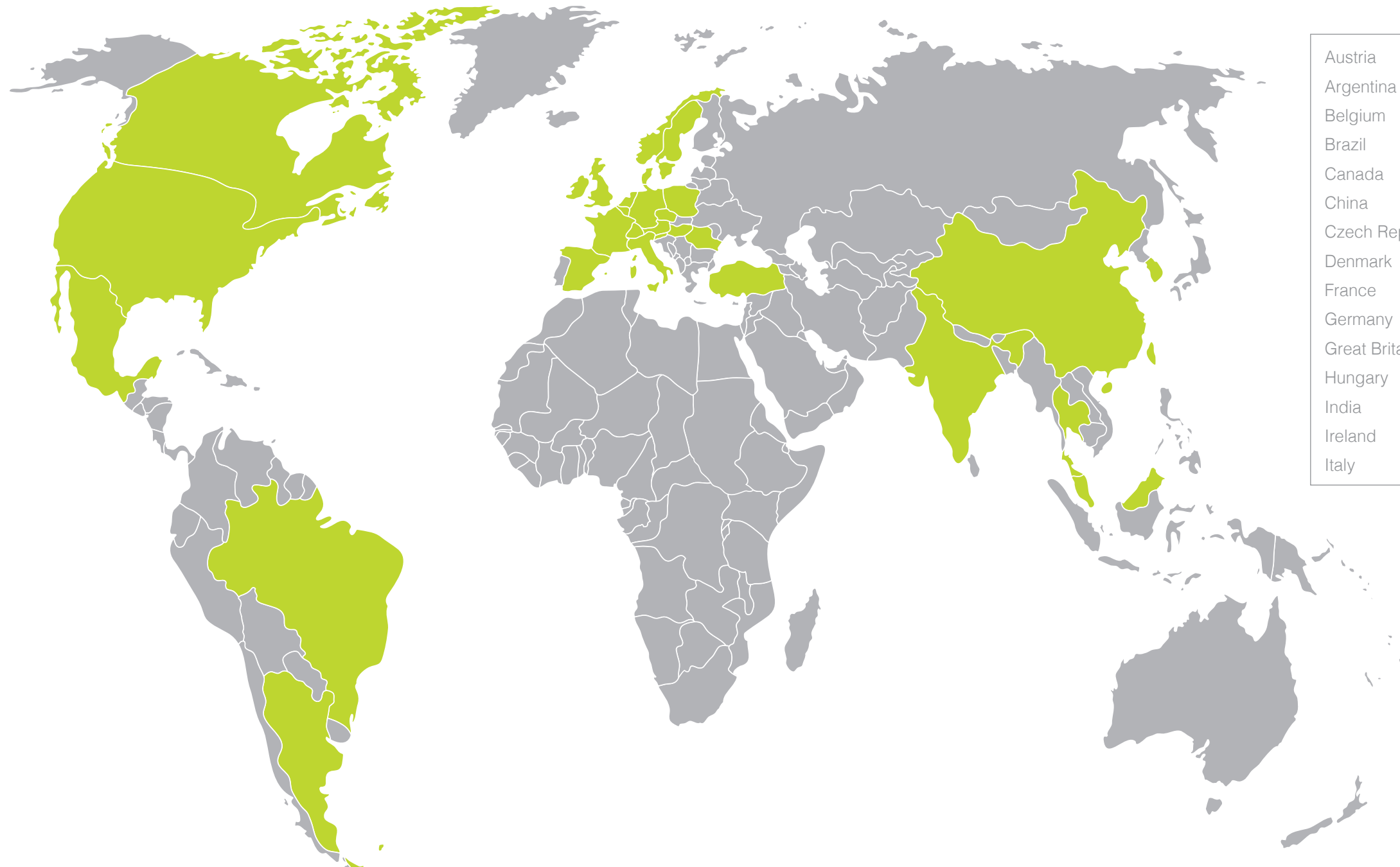
of Gerhard Lechler to develop technical solutions for his customers. And this has not changed until today. This passion has continued so that the core competence of PROMESS is still the development of complete technological systems for solving the individual and complex assembly and testing tasks and requirements of our customers.

From process development to preliminary testing, from initial installation to daily production, PROMESS offers holistic expertise from a single source. Our specialist teams have comprehensive knowledge of our products and offer prompt and effective advice worldwide.

Today PROMESS is one of the global leaders in the manufacturing of elec-

tro-mechanical assembly presses with the widest range of presses in this field. Currently, more than 15,000 presses are operating in heavy industrial applications.

In almost 30 countries all over the world
our sales and service partners are
looking forward to your enquiries and
questions.



Austria	Korea
Argentina	Malaysia
Belgium	Mexico
Brazil	Netherlands
Canada	Norway
China	Poland
Czech Republic	Romania
Denmark	Singapore
France	Slovakia
Germany	Spain
Great Britain	Sweden
Hungary	Switzerland
India	Thailand
Ireland	Turkey
Italy	USA



UDM5

Intelligent solution of drive and torque measurement: UDM5

Our Universal Torque Modules UDM5 feature an integrated solution of drive and precise torque measurement for testing, adjusting and measuring tasks. Within the torque range from 1.5 to 200 Nm, we offer seven different sizes. These units serve to trigger angle positions precisely and to apply load torques in exactly the right position. Process data is recorded and monitored easily on the PC.

Advantages:

- Integrated solution for applications of "Turning and measuring"
- High-precision torque measurement
- Process integration via standard bus systems
- Standard model includes absolute encoder that eliminates the need for referencing (except 1.5 Nm unit)
- 100 % quality control with documentation
- Low repair and maintenance reduce shutdown times and costs
- High functionality due to easily understandable technology, thus requiring less training
- Low noise levels and clean use
- Extremely robust set-up, suitable for long periods of use
- Overload protection up to 150 % of nominal torque
- Single and average value measurement possible

Specifications

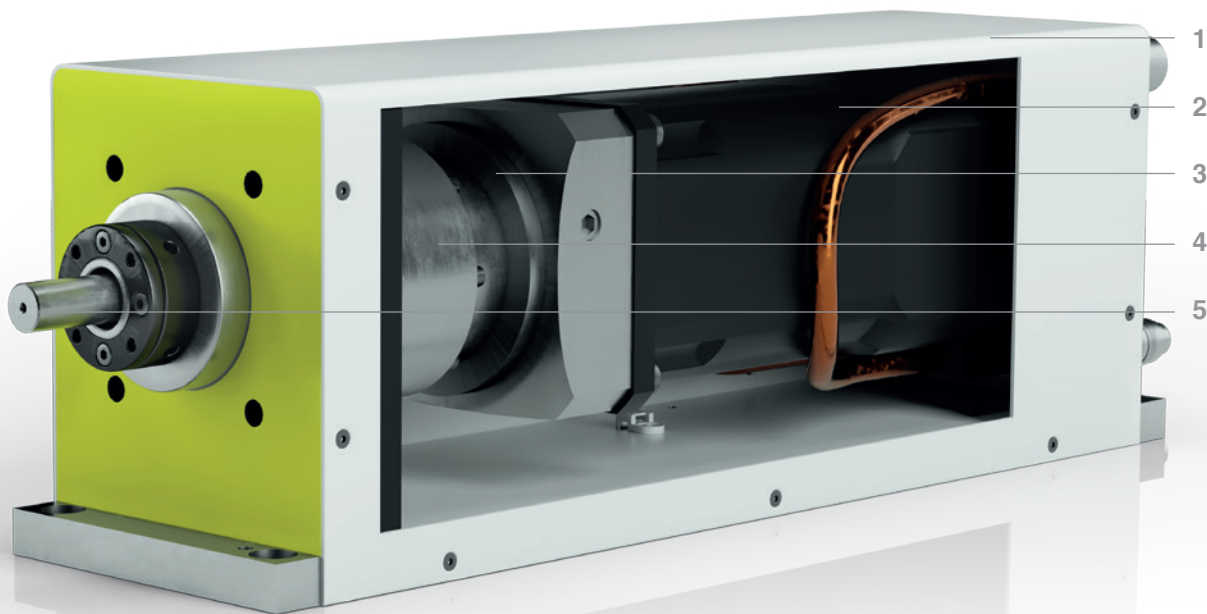
Nominal Torque	Nominal Revolution	System Accuracy*	Position Repeatability**	Resolution Angle Transmitter
1.5 Nm	200 U/min	1 % with 2-point-calibration/ 0.5 % with characteristic map	< 0.4 arcmin	< 0.04 arcmin
5 Nm	600 U/min		< 0.5 arcmin	< 0.05 arcmin
10 Nm	600 U/min		< 0.5 arcmin	< 0.05 arcmin
30 Nm	600 U/min		< 0.5 arcmin	< 0.05 arcmin
60 Nm	300 U/min		< 0.2 arcmin	< 0.02 arcmin
100 Nm	300 U/min		< 0.2 arcmin	< 0.02 arcmin
200 Nm	80 U/min		< 0.1 arcmin	< 0.01 arcmin

*Force measuring system, static calibration
**At thermal steady-state

Mechanical design

The Universal Torque Modules UDM5 feature a precise and play free signal measuring due to the used sensors and the set-up of the mechanics. Additionally the systems manifest an

extremely robust design and thus are suitable for long periods of use even in heavy industrial environment. The mechanics is composed of the following components:



1. Housing

2. AC servomotor with absolute encoder (except 1.5 Nm unit)
3. Gearbox

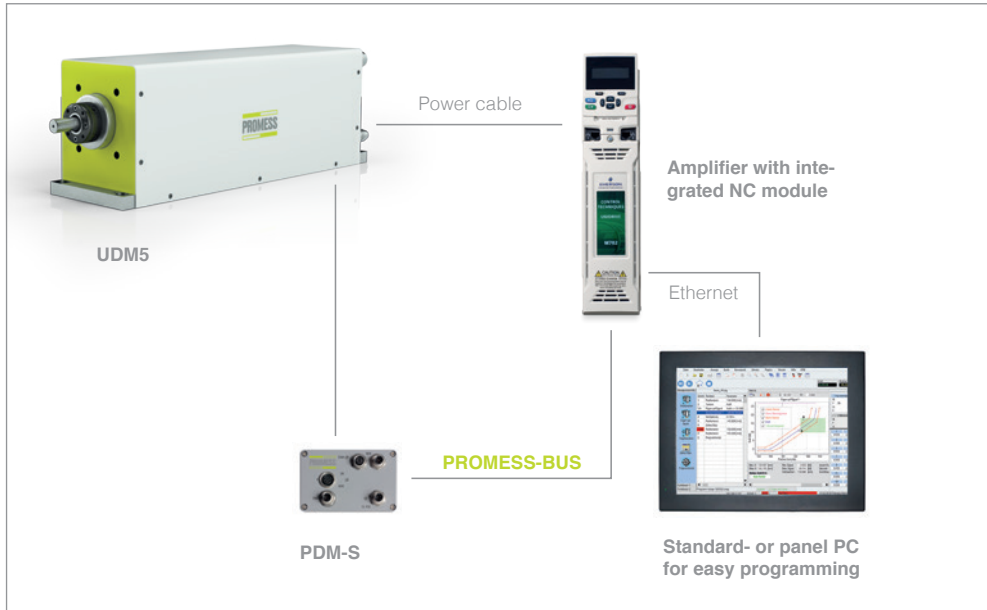
4. Torque sensor

5. End of shaft

System design/Control

The mechanics of the Universal Torque Modules UDM5 are triggered via a power amplifier with an integrated NC module. The risk processor fitted in the NC module takes over control and monitoring of the torque unit. It can be programmed comfortably and easily with the PROMESS software using a commercially available PC and thus guarantees the user the highest operating comfort as well as maximum reliability.

The control combines the motion control of the mechanics and torque-angle control. The torque-angle course can be monitored by envelope or windows functions. Quality control data and programs can be stored via the data base plug-in and can be used again at any time. The systems are networkable with all common bus systems like Profibus or Profinet.

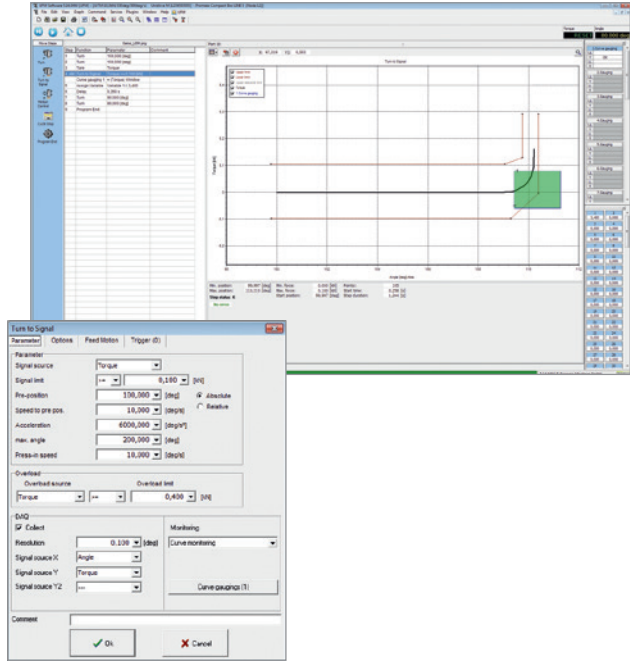


The system utilizes a digital preamplifier. This transfers the torque signal at a resolution of 24-bit. When the characteristics are calibrated, the torque module achieves a system accuracy of 0.5 % from the final value. The characteristic

calibration process is comparable to a multispan calibration for 10 spans. The characteristic map is created automatically using the UFM Calibrate plugin. The results are stored in a calibration report and can be printed out.

Software

As a standard, the UDM5 series comes with the UFM V5.xx programming software. This software is intuitive to operate and does not require any PLC expertise. It can be used to create simple or advanced testing or measuring processes. It can be run on any PC starting with operating system Windows 7.



Integrated User Administration

The integrated User Administration feature offers multiple permission levels and logging for process safety. The log documents who makes which changes to the program. Each user profile can be exported and then imported to another station. Thus it is possible to integrate an user administration system and also to connect the system to a higher-level permission system using the .Net interface or field bus (e.g. Euchner EKS).

Modern Database Struktüre

All process data including the curves can be stored in a database. All common database formats such as Oracle, MS SQL and Access are supported. A separate database is created for each station. Programs can be stored and re-used at any time. Since the program changes can be traced, this provides 100 % traceability throughout the entire production. The database can be analyzed using the DB Viewer with its extensive querying and filtering options. Graphs can be superimposed on each other for comparisons and analyses. Envelopes can be edited and reloaded into the press. The data can also be exported in Excel format at any time. The standard models include the database software package and DB viewer.

Software Highlights:

- Angle and speed can be programmed individually
- Variables can be used to transmit setpoints, perform calculations using PLC and generate counters
- 100 % quality control using window and/or envelope methods
- 100 % process documentation using modern database structure
- 100 % process analysis using standardized interface to QS-STAT (optional), alternative to process data management software IPM (optional) – can be expanded using .net interface
- Trigger function for demanding applications
- High controller accuracy (minimization of overshoot in control processes)
- Quick printout of a graph report (screenshot)

Scope of Delivery for Components

- Universal Torque Module UDM5 with integrated torque sensor
- Absolute encoder (except 1.5 Nm unit)
- Power amplifier incl. application module and UFM V5 firmware
- Digital preamplifier PDM-S
- Brake resistance
- Cable, field buses and additional accessories on request

Accessories/Applications

The UDM5 series is suitable for a variety of “Turning and measuring” applications. PROMESS has developed extensive accessories that provide our torque modules with additional functionalities. Together with our many years of experience, we offer complete technologies for solving complex assembly and testing tasks.

Accessories

■ PSB

The PROMESS Safety Box features all safety and power components and thus serves as an alternative to the integration in electrical cabinets.

■ PSD

The PSD safety module is delivered tested and ready to install. It contains the power electronics and safety controller for the UDM.

■ Calibration tool

PROMESS offers a manageable calibration tool for an easy and trouble free calibration of the UDM5 units effected by the customer.

■ Cables

■ Fieldbuses

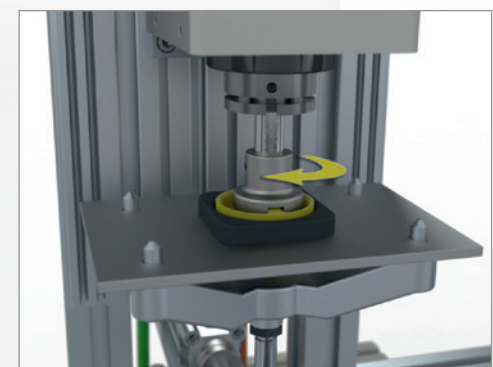
■ Additional accessories on request



Applications

The Universal Torque Modules UDM5 have been conceived for a wide range of applications and are suitable for the following tasks:

- Friction torque measurement of roller bearings under defined pre-load
- Grag torque measurements in gear construction
- Testing of vehicle seats
- 100 % testing of ball bearings
- Testing of torsion dampers
- Thread testing
- Engine cold tests



Tightening torque measurement



Backlash measurement

PROMESS. For more efficiency.

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The Promess logo consists of the word 'PROMESS' in a bold, sans-serif font, centered between two horizontal bars. The top bar is green with a white rectangular cutout on the right side. The bottom bar is also green with a white rectangular cutout on the left side.

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