![HBK - Hottinger Brüel & Kjær logo]

TORQUE MEASUREMENT
TECHNOLOGY FROM HBK

A new dimension of precision

For optimum results in torque measurement.

Continuous innovation

T10F

The world's
first torque
measuring flange

T12

The first fully
digital torque
transducer

T40/T40B

The benchmark
for torque
measurement
technology

T12HP

A new standard
in precision
measurement

INNOVATING FOR OVER 80 YEARS

With over 80 years of experience, HBK sets standards in
the field of torque measurement. HBK leads the global
market in innovation and is continually developing new,
state-of-the-art technologies. From non-contact torque
transducers with energy and signal transmission to the
torque measuring flange, and from the unique 400 kNm
calibration machine to the high-precision T12HP
transducer: HBK sets the benchmark for torque
measurement technology, with unwaveringly excellent
results and maximum precision.

Calibration service up to **400 kNm**

T110/T100

The new
innovative torque
sensor platform

The precise measurement chain

RELIABLE RESULTS MEASURED WITH PRECISION

From the robust transducer for simple measurement tasks to the high-precision digital torque measuring system: HBK has been the world leader in torque measurement for decades and is your one-stop shop for everything from calibration to transducers, to reliable data acquisition.

Verifiable and individual

Professional calibration of your torque sensor is a vital prerequisite for ensuring the constant quality of your measurement results.
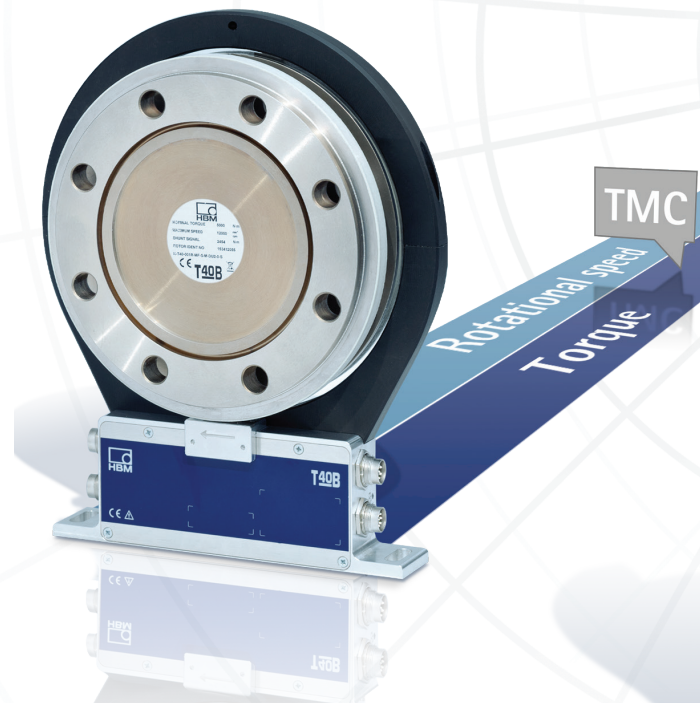
Precise and future-proof

Precision torque transducers in combination with digital TIM-PN/EC interface modules are ideal for highly dynamic applications. Via the field bus, they enable torque and speed measurements to be incorporated with ease in higher-level test bench automation and control systems.

Modular and flexible

Every application has its own special challenges. Stationary, on a test bench or in other special conditions: whatever the case, HBK can offer you the right data acquisition system for your sensor and your application.

A new dimension of precision

At HBK, we develop and produce all the components of the measurement chain – and ensure maximum precision for sensors, amplifiers, and software. This harmonised system ensures that you can achieve the best possible results for any application.

Automotive

Exact, precise measured values over the entire measuring range are vital in the automotive industry, whether for testing and optimising engines, or reducing rolling resistance to increase efficiency.

Shipping

Fast and accurate torque measurement for reducing emissions is extremely important for the optimum running of gas and dual-fuel marine engines.

Aviation

The requirements for speed and accuracy are stringent, for example, for testing turbines, turbo propellers and turboshafts.

Wind power

High torque is what count in wind energy. Precise measurement technology increases component efficiency under extremely high nominal torque.

Unbeatable mechanical design

The intelligent design of the measuring body ensures high accuracy in terms of linearity and hysteresis, and therefore a precise measurement result.
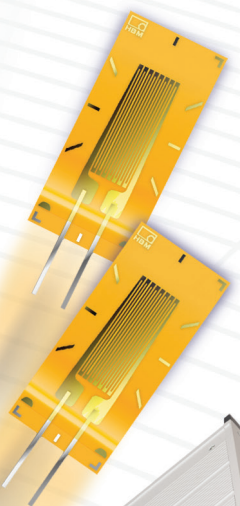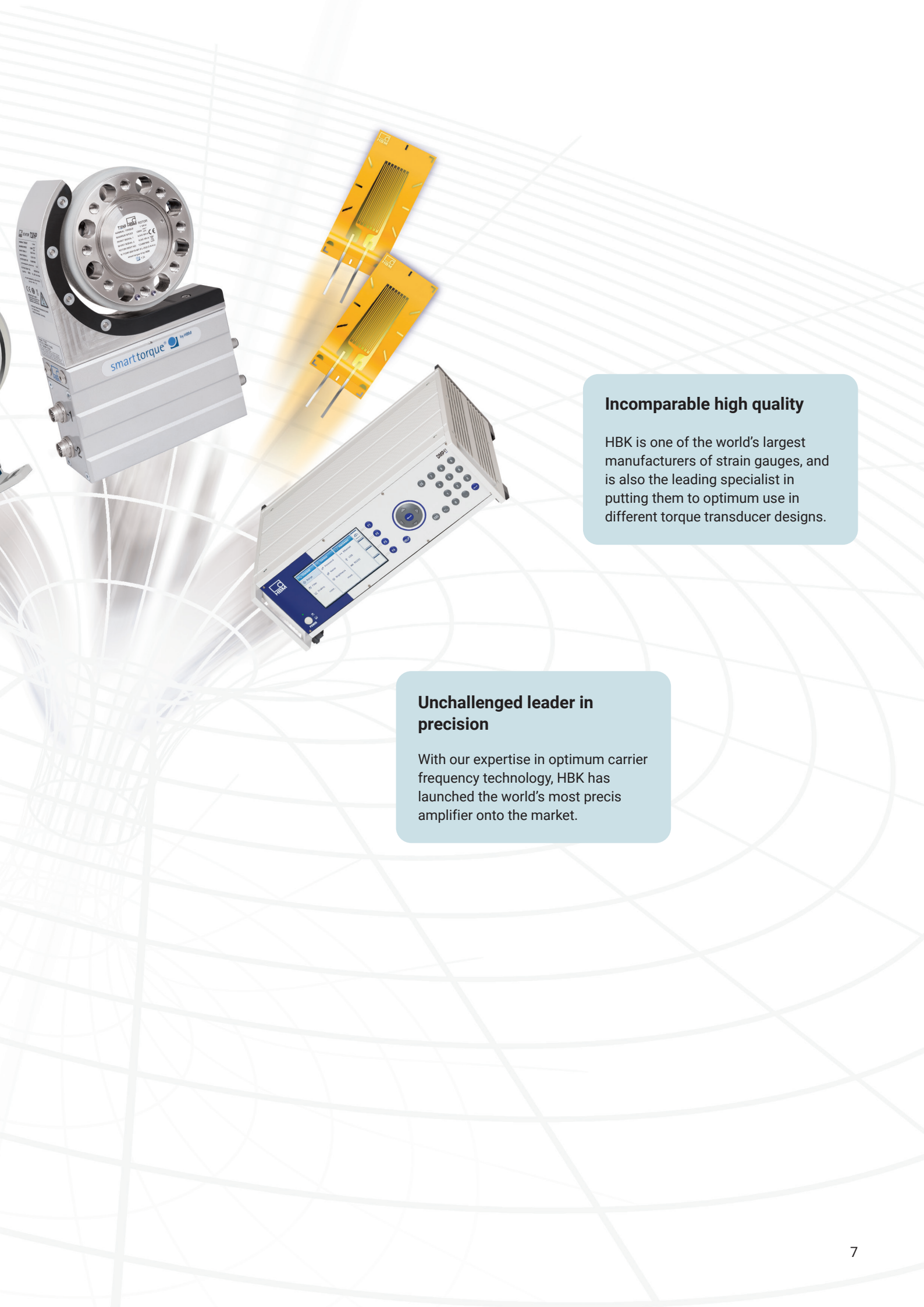
Incomparable high quality

HBK is one of the world's largest manufacturers of strain gauges, and is also the leading specialist in putting them to optimum use in different torque transducer designs.

Unchallenged leader in precision

With our expertise in optimum carrier frequency technology, HBK has launched the world's most precis amplifier onto the market.

The HBK calibration laboratory: a global standard

The HBK calibration laboratory is one of the best known and best performing labs in the world. In 1977 it was the first calibration laboratory in Germany to be accredited by the DKD (German Calibration Service), and HBK regularly invests in expanding and enhancing the various systems. Calibration with DAkkS certificate or a verifiable working standard calibration by HBK: the choice is yours.

Measuring range* in N·m — columns: 0.1 N·m, 0.5** N·m, 1 N·m, 2 N·m, 5 N·m, 10 N·m, 20 N·m, 50 N·m, 100 N·m, 200 N·m, 500 N·m, 1 kN·m, 2 kN·m, 3 kN·m, 5 kN·m, 10 kN·m, 25 kN·m, 400*** kN·m, Up to 1.1 MN·m

Working standard calibration — Possible increments: 10 / 6 | C

DAkkS calibration — Possible increments: 6 | B ; 10 / 8 | A ; 5

Legend:
- ■ Standard offer
- □ Not possible
- ▣ On request, by an external accredited calibration laboratory

A 4+3 Increasing/decreasing series (DIN 51309, EA-10/14 or DKD-R 3-5)

B 2+1 Increasing/decreasing series (VDI 2646)

C 1+1 Increasing/decreasing series

* In the 5 N·m to 1 kN·m range: for DAkkS every increment at an interval of 1 N m is possible

In the 100 N·m to 25 kN·m range: for DAkkS every increment at an interval of 100 N·m is possible

In the 3 kN·m and 400 kN·m range: for DAkkS every increment at an interval of 1 kN·m is possible

** 3 increments only

*** No vibratory torque

Lowest measurement uncertainty: >0.008%

- **PTB** (German Metrology Institute) — National Standard — Keeping and passing on national standards as a statutory duty
- **HBK DAkkS Laboratory** — Reference Standard — Surveillance of the measurement infrastructure in industrial measurement – test equipment monitoring according to ISO 9001
- **HBK Working Standard Calibration Laboratory** — Working Standard Calibration
- Process Measurement — Measuring and Test Equipment — Measurement/testing during quality assurance or production

Looking for your own customised sensor? We can produce to your specification!

If our standard products are not the right option for you, we will design a solution completely in line with your ideas including the design, verification, validation and manufacture of the final product – even in large quantities.

Maximum precision is a must even at high speeds and with high dynamics – in the aviation industry, too. Our in-house developed torque transducers ensure that you can conduct your measurements reliably and with the required accuracy.

HBK also accomplishes successful projects in the MNm range for measuring very high torques, for example, in marine propulsion, and wind and gas turbine components.

High torque ranges paired with a high accuracy also available to match the need of the drive train testing demands of the railway industry.

For optimum results in test drives, we develop, design and produce individual sensors to your specifications, for example, flexplate sensors. Additionally, we produce torque transducers with special mechanical interfaces, for example, for measuring the prop shaft of trucks.
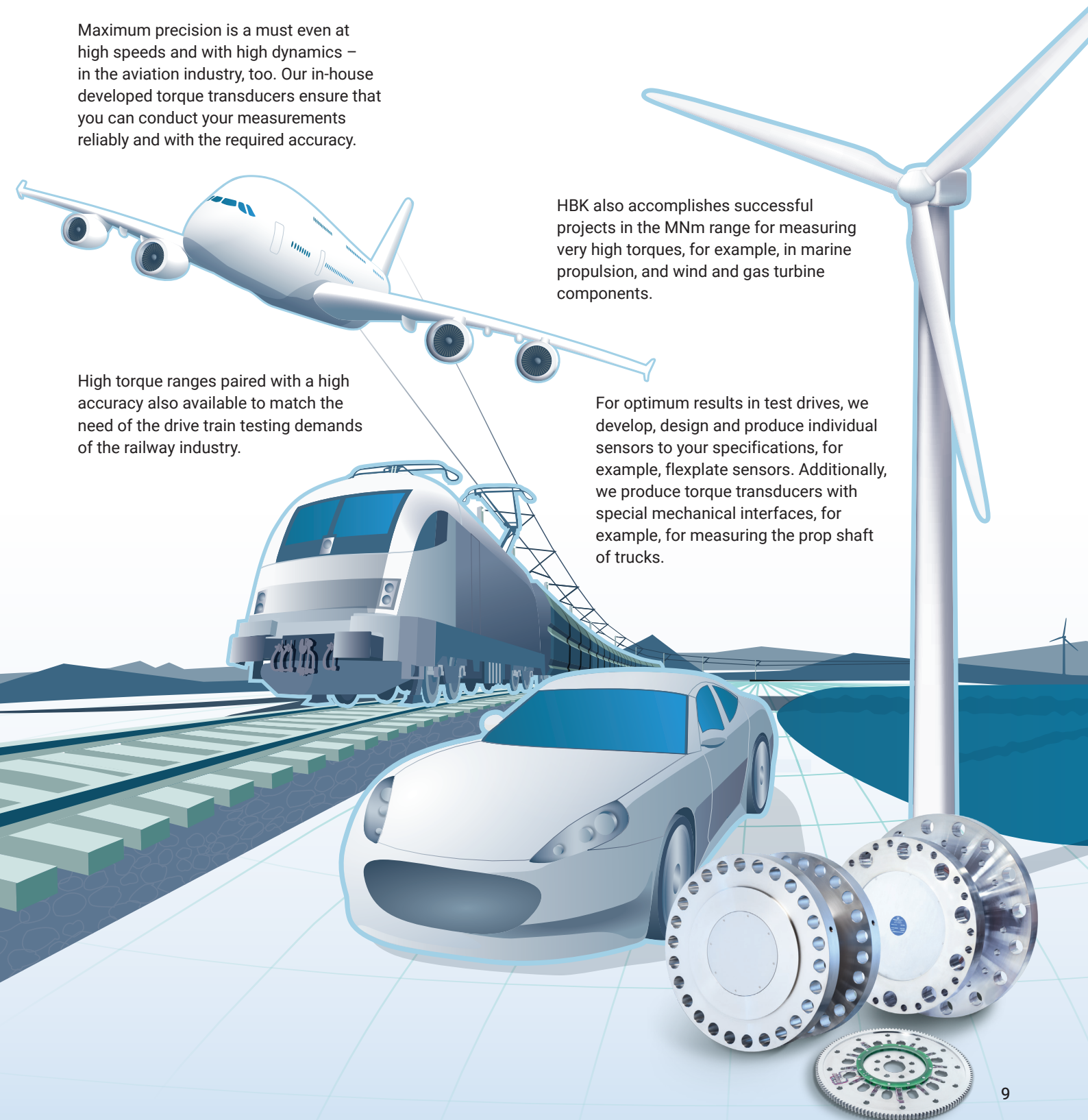
Equal to any challenge

Type			TN	TB2	TB1A	T22	T210	T40B	T40MS
Signal transmission			Non-rotating					Rotating non-contact	
Nominal torque from ... to Nm			100 Nm / 20 kNm	100 Nm / 10 kNm	100 Nm / 10 kNm	0.5 Nm / 1 kNm	0.5 Nm 200 Nm	50 Nm / 10 kNm	200 Nm / 2 kNm
kNm									
Speed [rpm]		Standard	–	–	–	9,000/16,000/ 18,000/20,000 [1]	14,000/20,000/ /30,000 [1]	10,000/12,000/ 15,000/20,000 [1]	25,000
		Option	–	–	–	–	–	12.000/14.000/ 18000/24000 [1]	30,000
Accuracy [%]	Linearity including hysteresis	Standard	0.02	0.01	0.03	0.3	0.05	0.03	0.03
		Option	–	–	–	–	–	–	–
Temperature coefficients [%/10K]	Zero point	Standard	0.01	0.01	0.05	0.5	0.1	0.05 / 0.1 [1]	0.05
		Option	–	–	–	–	–	–	–
	Span	Standard	0.02	0.02	0.05	0.2	0.1	0.05 / 0.1 [1]	0.05
Output signal/rated output									
Torque	Frequency	Standard					±5 kHz	±5/±30/±120 kHz	±5/±30/±120 kHz
	Analogue/ mV/V	Standard	1.5 – 2 mV/V	1 mV/V	1.5 mV/V	±5 V/±8 mA	±10 V	±10 V	±10V
	Dig. signal (TMC)	Standard	–	–	–	–	–	✓	–
Speed	Pulses/ revolution	Option	–	–	–	–	Standard: 512 Option: 1024	128/1024 [3]	512 / 128 [3]
Angle of rotation (ref. pulse)		Option	–	–	–	–	–	✓	–
Bus interface		Standard	–	–	–	–	–	TMC	TMC
		Option	–	–	–	–	I/O-Link	–	–
Coupling		Option	–	–	–	✓	–	✓	–
Special features			• Transfer transducer • Very high accuracy • Bending moment measurement	• Reference transducers • Very high accuracy	• Reference transducers • Compact • High rigidity	• Voltage output • Current output • Compact	• Integrated speed system • Small measuring ranges • Voltage output • Frequency output • High nominal speed • IO-Link	• High accuracy • Digital signal transmission • Highly dynamic • TIM40 interface module • TIM-EC EtherCAT module • TIM-PN PROFINET module	• Digital signal transmission • Highly dynamic lightweight titanium body • One rotor size • TIM40 interface module • TIM-EC EtherCAT module • TIM-PN PROFINET module

1) Dependent on measurement range   2) Optical speed measurement system   3) Magnetic speed measurement system

WITH A DIVERSE RANGE OF TORQUE TRANSDUCERS, HBK OFFERS THE RIGHT SOLUTION FOR EVERYONE. HBK ALSO PRODUCES CUSTOMISED TRANSDUCERS IF REQUIRED.

T40HS	T40FM	T40FH	T40MAR	T12HP	T12HS	T12HT	T110/T100
Rotating non-contact							
100 Nm / 3 kNm	15 kNm / 80 kNm	100 kNm / 300 kNm	10 kNm / 400 kNm	100 Nm / 10 kNm	200 Nm / 2 kNm	500 kNm / 1.5 MNm	50 Nm / 10 kNm
35,000/45,000 [1]	3,000/4,000/6,000 [1]	2,000/3,000 [1]	1,500 [1]	10,000/12,000/15,000 [1]	25,000	1,000	10,000/12,000/20,000/23,000 [1]
–	4.000/6.000/8.000 [1]	–	–	12.000/18.000/22.000 [1]	30,000	–	12,000/14,000/22,000/25,000 [1]
0.05	0.1	0.1	0.3	0.015	0.015	0.1	0.03
–	0.05	–	–	0.007	–	–	–
0.05	0.05	0.05	0.1	0.01	0.01	0.1	0.03
–	–	–	–		–	–	–
0.05	0.1	0.1	0.1	0.02	0.02	0.1	0.03
±5/±30/±120 kHz	±5/±30/±120 kHz	±5 kHz	±5/±30/±120 kHz	±5/±30 kHz	±5/±30 kHz	±5 kHz	±5/±30/±120 kHz
±10 V	±10 V	±10 V 0.63 − 1.1 mV/V	±10 V	±10 V	±10 V	±10 V	±10 V/4−20 mA
✓	✓	–	✓	–	–	–	Ethernet
–	1024 [3]	180 [3]	–	360/720 [3]	360 [3]	96	8192 [3]
✓	✓	–	✓	✓	–	–	–
TMC	TMC	–	TMC	CAN	CAN	CAN	Ethernet
–	–	–	–	Profibus DP	Profibus-DP	–	EtherCAT/Profinet/EthernetIP
–	–	–	–	✓	–	–	–
• Very high accuracy • Speed up to 55,000 rpm on request • Digital signal transmission • Highly dynamic • Lightweight titanium body • TIM40 interface module • TIM-EC EtherCAT module • TIM-PN PROFINET module	• Digital signal transmission • Highly dynamic • TIM40 interface module • TIM-EC EtherCAT module • TIM-PN PROFINET module	• Very high torque • Non-rotating version available • TIM40 interface module • TIM-EC EtherCAT module • TIM-PN PROFINET module • Digital signal transmission • Highly dynamic	• Marine certificate • Very high torque • High accuracy and dynamics Digital signal transmission • Torque Interface Module	• Maximum accuracy • Digital signal transmission • Highly dynamic • Very high resolution • Diagnosis • Extreme values • Temperature measurement • TIM-EC EtherCAT module • TIM-PN PROFINET module	• Very high acccuracy • Digital signal transmission • Highly dynamic lightweight titanium body • One rotor size • Very high resolution • Diagnosis • Extreme values • Temperature • TIM-EC EtherCAT module • TIM-PN PROFINET module	• Very high torques • High accuracy • Profibus interface • Speed system • Digital signal transmission	• High acccuracy • Digital signal transmission • Highly dynamic • Very high resolution • Diagnosis • Temperature • Temperature gradient compensation • One stator fits all

We provide exceptional sensing and insights to create solutions for a cleaner, healthier and more productive world

CONTACT US

ACCELERATE YOUR PRODUCT INNOVATION

HBK provides integrated solutions and domain expertise across the test and measurement product life cycle, bridging the gap between the physical world of sensors, testing and measurement and the digital world of simulation, modelling software and analysis.

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