

Absolute HeavyDuty encoders. The new absolute reference.

HMG 10 / PMG 10



The new absolute reference.

High accuracy. Unparalleled service life.

The company Hübner Berlin, now Baumer Hübner, is the competence center of the Baumer Group for HeavyDuty sensors in drive technology. For nearly 60 years we have been world market leader in this sector, and have set standards for reliable HeavyDuty encoders.

Our unrivalled robust products merge years of experience with leading-edge technology – for dependable operation that you can rely on at any time, even under the toughest conditions. The latest generation of absolute HeavyDuty encoders continues this principle for success. The revolutionary concept of the HMG 10 and PMG 10 series combines:

Tried and tested double-sided bearing setup



New magnetic precision sensing



Energy harvesting *MicroGen*, the only solution tried and tested in tough HeavyDuty use



Long-term corrosion protection through multi-layer coating



The result is the new absolute reference for HeavyDuty encoders.



Improved robustness, high cost-effectiveness and an accuracy level that has so far only been achieved by optical scanning define a new performance class.

HMG 10 / PMG 10

- Wide temperature range –40...+100 °C
- Extremely precise, robust magnetic singleturn sensing
- The latest generation of energy-self-sufficient *MicroGen* multiturn generator
- Single- and multiturn resolution up to 20 bits each
- Accuracy comparable to optical sensing system
- Two additional incremental outputs with zero pulse
- Simultaneous shaft load up to 650 N radial and 450 N axial
- Through or blind hollow shaft design in HMG 10 series
- Solid shaft with EURO flange B10 in the PMG 10 series



Internet of Things IoT
Industrie 4.0



Ready



Perfect function. Under the toughest conditions.

Whether in container crane systems, vertical lift bridges or steelworks – the availability of equipment has top priority. Under these tough and in some cases very aggressive environmental and production conditions, Baumer HeavyDuty encoders like the HOG 10 have been proving their absolute reliability and unparalleled service life for decades now.

Wide range of interfaces

The standard features of our absolute HeavyDuty encoders:

- All common Ethernet and field bus interfaces
- Additional SinCos signals with 32 periods per revolution
- Additional square wave signals with up to 131 072 lines per output
- Additional galvanically-separated outputs with zero pulse

Integrated speed switch

In the new HMG 10 and PMG 10 series, the speed switch can also be integrated in the compact housing on request. Thereby they save valuable mounting space compared to conventional speed switch designs. HeavyDuty speed switches by Baumer stand out by their robustness, solid performance and the large selection of product variants.

- Operating speed 2 ... 12 000 rpm, programmable
- Switching accuracy ± 2 rpm or ± 1 %
- Optional semiconductor relay with galvanic separation of the switching status

Ready for Industry 4.0 and IIoT

In the new series HMG 10 and PMG 10 encoders with Profinet are the first HeavyDuty encoders on the market which support the OPC UA communication standard and thus are ready for Industry 4.0 and the industrial Internet of Things (IIoT). The open and vendor-neutral standard guarantees secure and reliable data exchange between different systems, making your equipment of today ready for the ideas of tomorrow.



HMG 10 with two flange connectors

Our service commitment – your advantages at a glance

- Our Quality Excellence gives you the security of being provided with durable encoders for longterm and trouble-free continuous operation.
- Thanks to maximum efficiency in design, production and procurement, we offer you reliable top-quality products at cost-efficient prices.
- Competent advice, personal customer support, fast help. We are there when you need us. On site, world wide!
- Our detailed documentation helps you to choose the right product and simplifies installation and start-up. Simply efficient.

Robustness redefined.

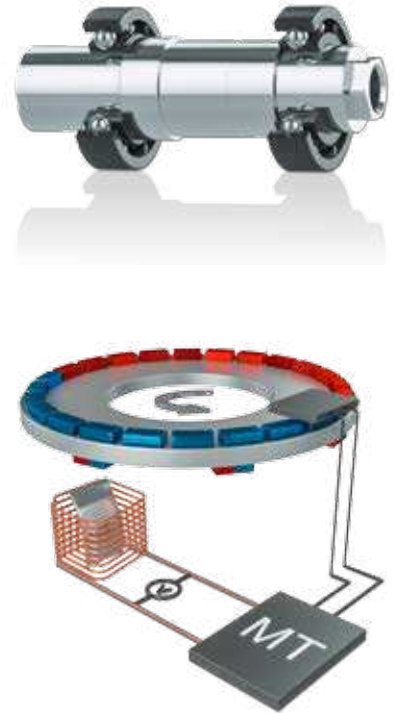
High accuracy. Unparalleled service life.

The combination of the following modules and technologies is the basis and the guarantee for the reliability of Baumer HeavyDuty encoders, as experienced by users. In practice, this means: maximum power reserves, greater availability and less maintenance for your equipment.

Double-sided bearing

For over a hundred years now, bearings on both shaft ends have proved a reliable construction concept in mechanical engineering. Applied to mechanical encoder design, this means bearings provided at the opposing sides of the housing. The interplay of optimum leverage ratios results in encoders that are in a performance class of their own:

- High bearing load reserves through double-sided bearings
- Robust, torsionally rigid Baumer HeavyDuty mechanical system
- Generously dimensioned ball bearings
- Optimized bearing clearance for absorbing situative shaft loads
- Integrated hybrid bearings with balls made of high strength ceramics for excellent emergency running properties and protection of the device electronics from induced shaft current



Energy-self-sufficient *MicroGen* HeavyDuty multiturn generator

The energy harvesting solution, which has been in tough HeavyDuty use for over 10 years now, is the heart of the new series. The patented *MicroGen* multiturn generator obtains its energy directly from the movement of the encoder shaft. It is completely free of wear and tear, and thus opens up many new application options.

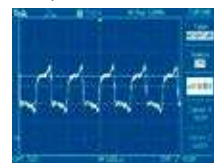
- Microgenerator of the latest generation, without batteries or gears
- Resistant to dust and magnetic fields
- Wide temperature range from -40 to $+100$ °C

Powerful output drivers

The additional outputs for incremental signals have high power output drivers and reliably offer measurable signals over very large line lengths.

- Up to 131 072 lines per output, individually selectable
- SinCos output with 32 periods per revolution
- Cable lengths of up to 550 m for TTL and 350 m for HTL-P signal levels
- Specified HTL signal strength after 300 m at $+100$ °C and 100 kHz

Competitor



Baumer



Highly robust, precise magnetic singleturn sensing

With the accuracy comparable to optical sensing systems, the new magnetic sensing system provides precise signals for high control quality, particularly at high temperatures and in rough ambient conditions.

- Shock and vibration-resistant magnetic sensing
- Resistant to dust, dirt and moisture
- Wide temperature range from -40 to $+100$ °C



HeavyDuty encoders by Hübner Berlin.

Tough and precise.

Sealing designed for long-term stability

The Baumer-specific, sophisticated sealing concept guarantees protection class IP 66 and IP 67 over a wide temperature range up to +100 °C. Thanks to a combination of labyrinth and shaft seals, the encoders are permanently protected from all kinds of solid, damp and pasty dirt. If the main focus of the application is in an oily, wet environment, Baumer offers a specially adapted sealing concept. Optionally, all sealing elements can be made in Viton for improved resistance to aggressive hydrocarbon compounds.

Robust housing design

The extremely tough housing forms the basis for the unparalleled service life and reliability of Baumer HeavyDuty encoders and their outstanding properties:

- Solid housing with generously dimensioned wall thicknesses
- Torsionally rigid design, tested under the toughest of conditions

Outstanding corrosion protection

For corrosive environments, Baumer offers highly resistant coatings to ensure longterm durability in onshore and offshore use. The corrosion protection corresponds to categories C4 or C5M, following the EN ISO 12944 standard and consists of three components:

- The housing made of corrosion-resistant aluminum alloy
- Surface passivation tried and tested in hard, HeavyDuty use
- Impact-resistant powder coating

The sturdy connection technology is designed as a chrome-plated, turned brass part. The optionally available stainless steel version offers an further improvement in corrosion protection.



Reappraisal of the installation process

Child's play. Universal. Correct.

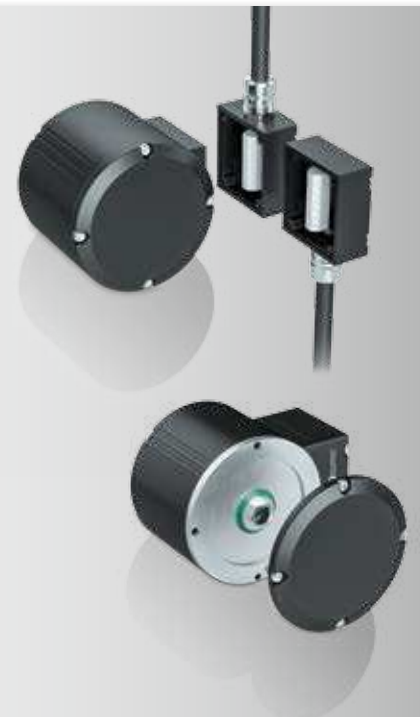
A number of well thought-out installation aids ensure that the encoders are installed safely, quickly and correctly. The objective is to create the basis for maximum service life through optimum installation.

Correct installation guaranteed

- Torque support infinitely rotatable by 360°, even when mounted
- Terminal box rotatable by 180° for connection on both sides; outgoing feeder cable always in ideal position
- Plug-in terminal strip with guide rails ensures correct installation
- Cable bushings made of metal for permanently vibration-free connection

Fast, foolproof installation

- Electronics protected during installation
- Connection pre-assembled thanks to removable terminal strip
- Utilization of standard Torx screws
- Only three tools required



Product overview HMG 10 / PMG 10.



Product family	PMG 10	HMG 10
Interface		
- SSI	■	■
- CANopen®	■	■
- Profibus-DP	■	■
- EtherCAT	■	■
- Profinet	■	■
- EtherNet/IP	■	■
Sensing method	Magnetic	
Size (housing)	ø 115 mm	ø 105 mm
Voltage supply	9 ... 30 VDC	
Shaft type		
- Solid shaft	ø 11 mm	–
- Cone shaft 1:10	–	ø 17 mm
- Blind hollow shaft	–	ø 12 ... 20 mm
- Through hollow shaft	–	ø 12 ... 20 mm
Flange	EURO flange B10	–
Connection	Bus cover, terminal box, female connector	
Resolution	≤40 bit	
Steps per turn	≤1 048 576 / 20 bit singleturn	
Number of turn	≤1 048 576 / 20 bit multiturn	
Protection	IP 66, IP 67	
Operating temperature	–40 ... +100 °C	
Operating speed	≤12 000 rpm	
Max. shaft load	≤450 N axial, ≤650 N radial	
Options	Integrated speed switch, additional incremental signals	
Optional additional output	I. Resolution: ≤131 072 increments per revolution (HTL-P or TTL-R) 32 periods per revolution (SinCos) II. Resolution: ≤131 072 increments per revolution (HTL-P or TTL-R)	

Learn more about HMG 10 / PMG 10 encoder series at:
www.baumer.com/HMG10

Find your local partner: www.baumer.com/worldwide



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