

Product overview. Motion Control.  
Encoders, tachogenerators,  
resolvers, inclination sensors.



## Welcome to the world of encoders



Precise angle measurement, intelligent positioning - Baumer serves as your competent and reliable partner for detection of rotational and linear movements. Our standard portfolio comprises a large variety of flexible solutions, from miniature encoders to intelligent positioning drives with different readout principles, mounting possibilities and electrical interfaces. Baumer offers the optimum solution for your application. If required, we realize fast individual adaptations. We are your innovative technology expert at any time.

For detailed information about our extensive product range and to learn more about Baumer innovations, please visit our website:

[www.baumergroup.com/motion](http://www.baumergroup.com/motion)

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**Baumer sets benchmarks**

Our aim is always to be a step ahead of competition and to set innovative benchmarks. Quality has tradition at Baumer. High exactness and reliability characterize the sophisticated products and solutions devised for our customers. With an optimal market presence, many solutions result from the close collaboration and individual consultation of our customers at source. The mastery of the processes is the basis for consistent high quality, reliability, flexibility and economy. To continuously improve our business processes we combine lean management methods with Six Sigma. Our claim:

- High degree of innovation
- Wide variety of products
- Outstanding application expertise
- Individual collaboration and partnership with the customers
- Comprehensive consultation and outstanding service worldwide

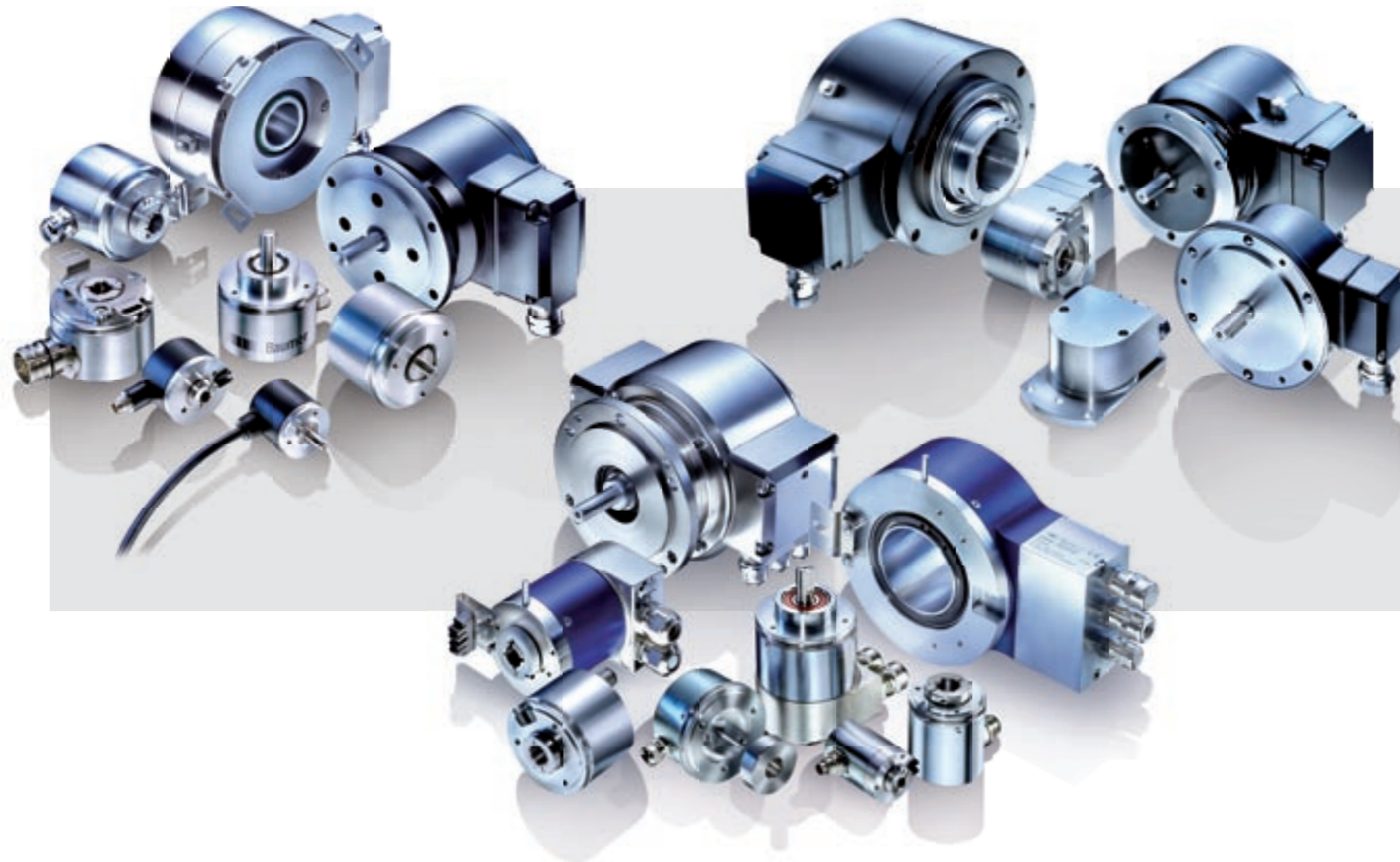
**Branches**

- Automotive Assembly
- Chemical, Petrochemical
- Drive Technology
- Electronic Production
- Food, Beverage, Semi-luxury Goods
- Graphical Machinery
- Handling and Robotics
- Injection Molding, Die Casting
- Lift Construction
- Machine Tools
- Medical Industry
- Pharmaceutical, Bio Technology
- Plastics Production
- Semiconductor Industry
- Textile Machinery
- Transportation
- Water, Energy, Mining
- Warehouse and Logistics
- Wind Power Plants
- Wood Machinery



Widest range of innovative and precise solutions for positioning, speed and angle measurement.

Motion Control



#### Motion Control

The expert know-how in position sensing that has been compiled for decades created a multitude of practice-oriented innovations and continuous improvements. They conquer new domains boosting completely new solutions in factory automation, from incremental encoders to absolute configurations that ensure a reliable and precise operation even under water. In this context, high precision, ever-growing demands on sturdiness, varied designs and mounting options, different operating principles as well as the impressive variety of fieldbus interfaces play an important role.

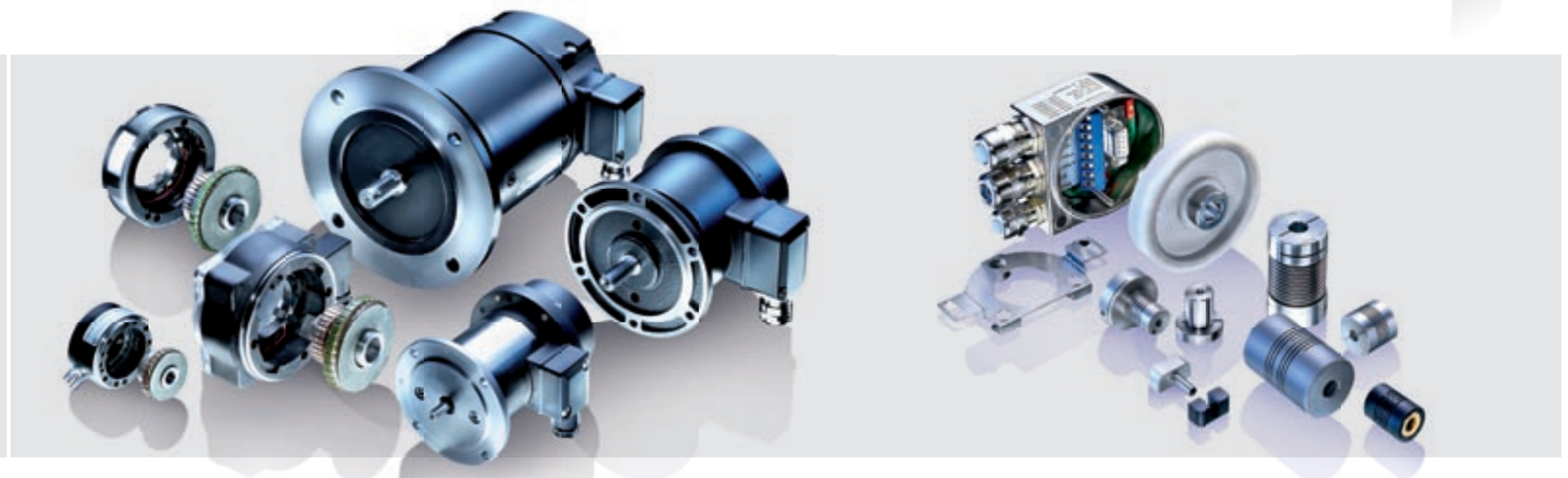
- Incremental encoders
- Sine encoders
- Absolute encoders
- Tachogenerators
- Ex encoders
- Magnetic sensors
- Speed switches
- Resolvers
- Inclination sensors



#### Customer-specific solutions

No product portfolio is versatile enough to offer the perfect solution for any application. Quite often requirements take new ways and the yet existing solutions on the market do not satisfy all demands to the desired extent. This is the reason why our R&D department is in close contact and collaboration with our customers. Searching for the optimized solution for specialised requirements, innovative specialists are creating new customer-specific configurations - from specific mechanical designs up to brandnew systems. An innovative solution can also help you to be the decisive step ahead of the competition.

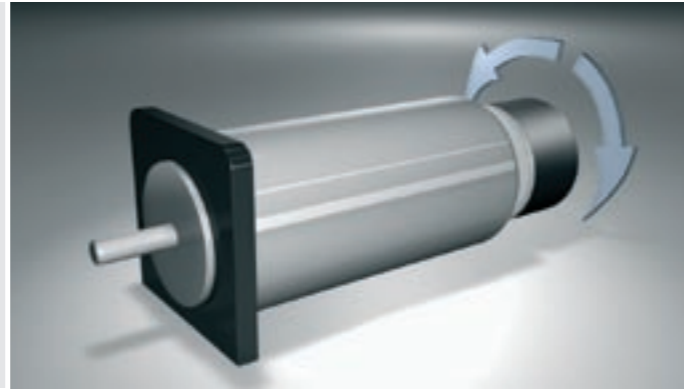
We would be happy to advise you!



## Speed and acceleration control

Nearly no domain in mechanical plant engineering where drive technology does not take over important control functions. Thanks to high resolutions and short data cycles, Baumer encoders guarantee reliable realtime measured values.

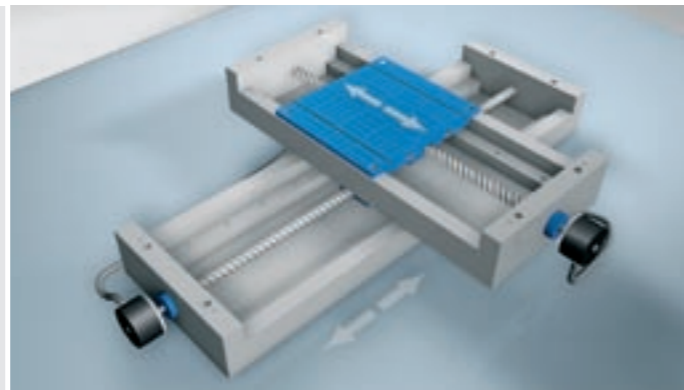
- Drive and conveyor technology
- Lift construction
- Processing machines
- Handling and robotics



## Precise position sensing

Times have changed. Obsolete complicated cabling connecting control cabinets with encoders is nowadays often replaced by fieldbus systems.

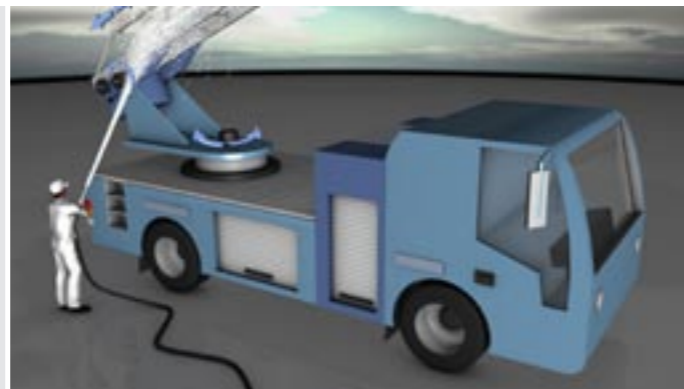
- Mounting and handling
- Metal sheet processing
- Profile milling machines
- Machinery for plastics and semiconductor industry



## Robust and shockproof

The wide temperature range and especially high protection standards provided by Baumer encoders are well-proven in mobile use. Immunity against shocks and vibrations goes without saying.

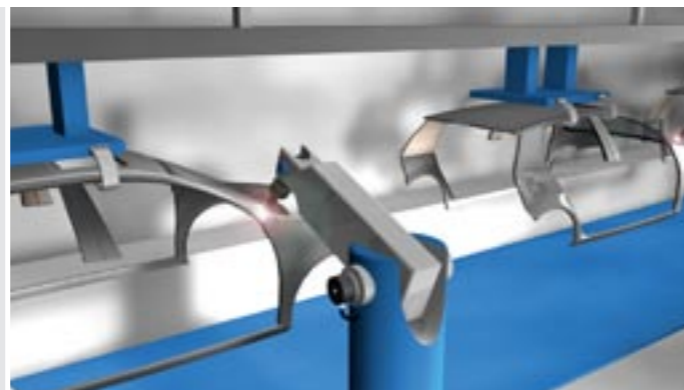
- Mobile conveyor plants (concrete pumps)
- Agricultural machinery, tractors and ambulance vehicles
- Construction site machinery as excavators and cranes
- Conveyor bridges in port facilities



## Production process control

In many domains of automotive, from car body lacquering to final assembly, Baumer encoders take over important tasks - for example in transport chains in the lacquering process as well as positioning of lifting tables at assembly lines.

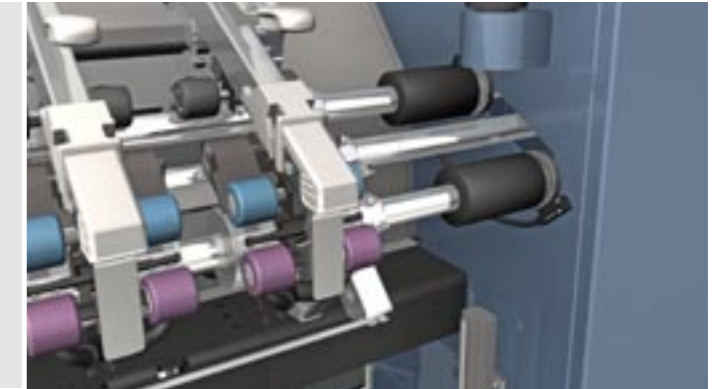
- Automotive industry
- Presses and punches
- Feed control in lacquering facilities
- Foil, cable and cloth winding machines



## A simple way of sensing linear and rotary movements

Non-contact sensing systems are easy to mount and most often satisfy requirements on precision. They can be utilized without problems also in a dusty and humid environment.

- Wood processing machines
- Spindle positioning at profile milling machines
- Graphical machinery (printing machines)
- Environment plant engineering and textile machinery



## Precise angular sensing

For optimal alignment of wind power plants towards the wind direction, absolute encoders reliably provide the actual position even under roughest conditions. Also here, for many years manufacturers in drive technology have been relying on Baumer encoders.

- Wind power plants
- Conveying systems in day-mining
- Ship construction
- Gear test stands



## Reliable and versatile

Baumer encoders are utilized in numerous domains. Very robust and up to strong impacts, they provide an excellent axial runout and reliable operation even under extreme temperatures and ambient conditions.

- Packaging machines
- Blister and carton box packaging
- Labelling machines
- Foil-winding machines



## Absolutely robust

Reliability under extreme conditions - like embarking and disembarking container ships - that's the point. No matter if the focus is on rapidness or robustness - like in many other applications Baumer encoders are the suitable solution.

- High racks
- Chipboard production plants
- Warehouse and logistics
- Metal sheet processing machines





Incremental encoders

- Compact configurations
- Shaft ø4 mm and ø5 mm
- End shaft ø8-16 mm
- Hollow shaft ø6-15 mm
- Optical and magnetic sensing
- Resolution max. 2048 pulses
- Rotation speed max. 12000 rpm
- Protection max. IP 66

										
Model	ITD 01 A 4 Y 1	ITD 01 B14	BHK	BDK		ITD 27 A 4 Y27	ITD 27 A 4 Y15	GI341, GI342 - <i>incretivo</i>	ITD 20 A 4	BRIH, BRID - <i>EcoMag</i>
Features	- Mini encoder with end shaft ø4 mm - Resolution max. 1024 ppr - Outer diameter ø24 mm - TTL- or HTL- output signals	- Mini encoder with shaft ø4 mm - Resolution max. 1024 ppr - Outer diameter ø24 mm - TTL- or HTL- output signals	- Mini encoder with end shaft or hollow shaft - Resolution max. 2048 ppr - Optical sensing - Housing ø40 mm	- Mini encoder with shaft ø5 mm - Resolution max. 2048 ppr - Optical sensing - Housing ø30 mm		- Encoder with end shaft ø10-16 mm - Resolution max. 32 ppr - Magnetic sensing - Mounting on shaft by headless pins	- Encoder with hollow shaft ø10-14 mm - Resolution max. 32 ppr - Magnetic sensing - HTL output signals	- Encoder with end or hollow shaft ø10-15 mm - Resolution max. 2048 ppr - Flange and housing made of high-tech plastics - Tangential cable output	- Encoder with end shaft max. ø14 mm - Resolution max. 1024 ppr - Mounting by torque support - TTL- or HTL- output signals	- Encoder with end or hollow shaft ø12 mm - Magnetic sensing - Resolution max. 2048 ppr - High resistance to shock and vibrations
Voltage supply	5 VDC ±5 % 8...30 VDC	5 VDC ±5 % 8...30 VDC	5 VDC ±10 % 10...30 VDC	5 VDC ±10 % 10...30 VDC		8...24 VDC	8...24 VDC	5 VDC ±10 % 4.75...30 VDC	5 VDC ±5 % 8...30 VDC	5 VDC ±10 % 10...30 VDC
Resolution (steps/turn)	30...1024	30...1024	10...2048	10...2048		1...32	1...32	5...2048	50...1024	64...2048
Output frequency	≤100 kHz	≤100 kHz	≤100 kHz	≤100 kHz		-	-	≤150 kHz	≤120 kHz	≤320 kHz
Operating temperature	-20...+85 °C	-20...+85 °C	-20...+85 °C	-20...+85 °C		-20...+85 °C	-20...+85 °C	-20...+80 °C	-20...+70 °C -20...+100 °C	-20...+85 °C
Housing	ø24 mm	ø24 mm	ø40 mm	ø30 mm		ø58 mm	ø58 mm	ø58 mm	ø58 mm	ø58 mm
Shaft diameter	ø4 mm end shaft	ø4 mm	ø6 mm hollow shaft / ø12 mm end shaft	ø5 mm		ø10-16 mm end shaft	ø10-14 mm hollow shaft	ø10-15 mm hollow shaft / end shaft	ø8-14 mm end shaft	ø12 mm hollow shaft / end shaft
Operating speed	≤10000 rpm	≤18000 rpm	≤12000 rpm	≤12000 rpm		≤12000 rpm	≤6000 rpm	≤6000 rpm	≤8000 rpm	≤12000 rpm
E-connection	Cable 1 m	Cable 1 m	Connector or cable	Connector or cable		Cable 1 m	Cable 1 m	Cable 1 m	Cable 1 m	Connector or cable

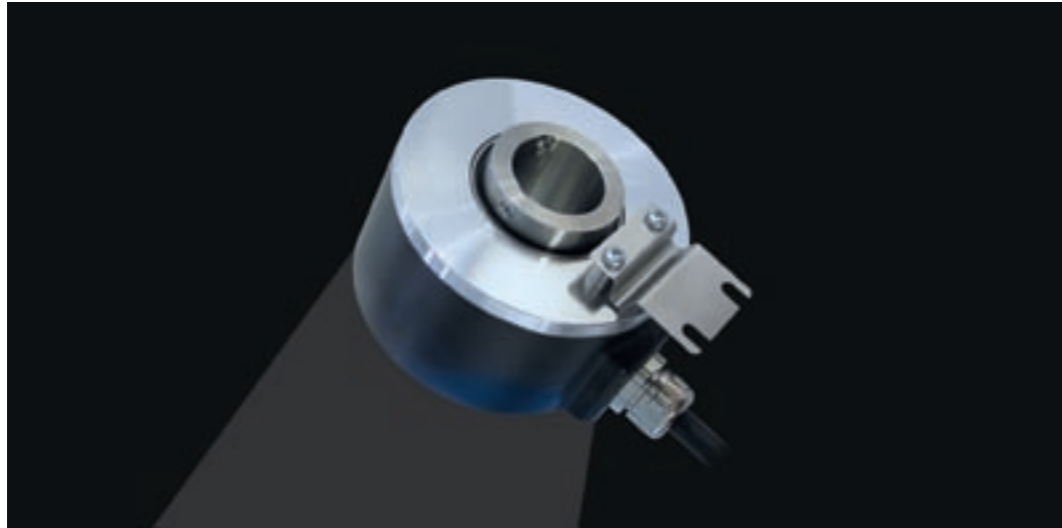


Incremental encoders

- Industrial standard encoder
- Hollow shaft max. ø27 mm
- Shaft ø6 mm, ø10 mm and ø9.52 mm (inch)
- Clamping and synchro flange
- Square flange
- Resolution max. 16384 pulses
- Rotation speed max. 12000 rpm
- Protection max. IP 65

Model	BHF, BHG	TIL	ITD 21 A 4 Y109	BDH, BDT		BRIV 58K, BRIV 58S - EcoMag	GI355, GI356	GI352	G110H, G110S	ITD 40 A 4 Y79
Features	-Encoder with end or hollow shaft ø12 mm -Resolution max. 10000 ppr -Optical sensing -Shallow installation depth	-Encoder with hollow shaft ø10-16 mm -Resolution max. 2048 ppr -Mounting by torque support -TTL- or HTL- output signals	-Encoder with end shaft ø10-14 mm -Resolution max. 6000 ppr -Anodised -Mounting by torque support	-Encoder with shaft ø10 mm or ø6 mm -Resolution max. 10000 ppr -Optical sensing -Clamping flange or synchro flange		-Encoder with shaft ø10 mm or ø6 mm -Magnetic sensing -Resolution max. 2048 ppr -High resistance to shock and vibrations	-Encoder with shaft ø10 mm or ø6 mm -Resolution max. 6000 ppr -Industrial standard -Clamping flange or synchro flange	-Encoder with inch dimensions -Resolution max. 6000 ppr -Shaft ø9.52 mm -Square flange 63.5 x 63.5 mm	-Encoder with end or hollow shaft max. ø25 mm -Resolution max. 16384 ppr -Clamping ring on flange -Sturdy design	-Encoder with hollow shaft ø20-27 mm -Resolution max. 2048 ppr -Mounting by torque support -TTL- or HTL- output signals
Voltage supply	5 VDC ±10 % 10...30 VDC 4.5...30 VDC	5 VDC ±5 % 8...26 VDC	5 VDC ±5 % 8...30 VDC	5 VDC ±10 % 10...30 VDC 4.5...30 VDC		5 VDC ±10 % 10...30 VDC	5 VDC ±10 % 4.75...30 VDC	5 VDC ±10 % 4.75...30 VDC	5 VDC ±10 % 4.75...30 VDC	5 VDC ±5 % 8...30 VDC
Resolution (steps/turn)	10...10000	100...2048	100...6000	10...10000		64...2048	5...6000	5...6000	5...16384	100...2048
Output frequency	≤750 kHz	≤120 kHz	≤300 kHz (TTL) ≤160 kHz (HTL)	≤300 kHz ≤750 kHz		≤320 kHz	≤150 kHz	≤150 kHz	≤150 kHz	≤120 kHz
Operating temperature	-20...+85 °C	-20...+70 °C	0...+70 °C	-20...+85 °C		-20...+85 °C	-25...+100 °C (5 VDC) -25...+85 °C (24 VDC)	-25...+100 °C (5 VDC) -25...+85 °C (24 VDC)	-25...+85 °C (24 VDC)	-20...+70 °C -20...+100 °C
Housing	ø58 mm	60 x 72 mm	ø68 mm	ø55 mm ø58 mm		ø58 mm	ø58 mm	ø58 mm	ø75 mm	ø80 mm
Shaft diameter	ø12 mm hollow shaft / end shaft	ø10-16 mm hollow shaft	ø10-14 mm end shaft	ø6 mm / ø10 mm		ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø9.52 mm	ø25 mm hollow shaft / end shaft	ø20-27 mm hollow shaft
Operating speed	≤12000 rpm	≤6000 rpm	≤5000 rpm	≤12000 rpm		≤12000 rpm	≤10000 rpm	≤10000 rpm	≤3800 rpm	≤5000 rpm
E-connection	Connector or cable	Cable 1 m	Cable 1 m	Connector or cable		Connector or cable	Connector or cable	Connector	Connector, 12-pin	Cable 1 m





### Incremental encoders

- Industrial standard encoder
- Hollow shaft max.  $\varnothing 115$  mm
- End shaft max.  $\varnothing 27$  mm
- Specialized housing designs
- Resolution max. 10000 pulses
- Rotation speed max. 10000 rpm
- High protection max. IP 67

										
Model	ITD 41 A 4 Y22	ITD 41 A 4 Y141	HOG 71	HOG 9		HOG 10, HOG 10 + FSL	HOG 131	ITD 70 A 4 Y 9	HOG 16, HOG 163	HOG 220
Features	-Encoder with hollow shaft $\varnothing 17-27$ mm -Resolution max. 10000 ppr -Through-hollow shaft -Mounting by torque support	-Encoder with end shaft $\varnothing 20-27$ mm -Resolution max. 10000 ppr -NIRO design -Mounting by torque support	-Encoder with end shaft $\varnothing 12-14$ mm -Compact, robust die-cast housing -Inside connecting terminals -Logic level TTL or HTL	-Encoder with end shaft $\varnothing 12-16$ mm or cone shaft $\varnothing 17$ mm (1:10) -Compact, robust die-cast housing -Metal connector -Logic level TTL with regulator UB 9...26 VDC		-Encoder with end shaft max. $\varnothing 20$ mm -Compact, robust die-cast housing -Logic level TTL with regulator UB 9...26 VDC -Logic level HTL with power drivers	-Encoder with hollow shaft $\varnothing 16-36$ mm -Shaft especially sealed for offshore applications -Housing with special surface protection -Hybrid bearing with ceramic balls	-Encoder with hollow shaft max. $\varnothing 65$ mm -Resolution max. 2500 ppr -Mounting by torque support -Mounting hole circle $\varnothing 164$ mm	-Encoder with hollow shaft $\varnothing 20-75$ mm -Robust light-metal housing -Logic level TTL with regulator UB 9...26 VDC -Logic level HTL with power drivers	-Encoder with hollow shaft $\varnothing 80-115$ mm -Robust light-metal housing -Logic level TTL with regulator UB 9...26 VDC -Logic level HTL with power drivers
Voltage supply	5 VDC $\pm 5\%$ 8...30 VDC	5 VDC $\pm 5\%$ 8...30 VDC	5 VDC $\pm 5\%$ 9...26 VDC	5 VDC $\pm 5\%$ 9...26 VDC 9...30 VDC		5 VDC $\pm 5\%$ 9...26 VDC 9...30 VDC	5 VDC $\pm 5\%$ 9...26 VDC 9...30 VDC	5 VDC $\pm 5\%$ 8...30 VDC	5 VDC $\pm 5\%$ 9...26 VDC 9...30 VDC	5 VDC $\pm 5\%$ 9...26 VDC 9...30 VDC
Resolution (steps/turn)	2000...10000	2000...10000	64...2048	1...2500		1...2500	1024...3072	1000...2500	250...2500 250...5000	1024
Output frequency	$\leq 300$ kHz (TTL) $\leq 160$ kHz (HTL)	$\leq 300$ kHz (TTL) $\leq 160$ kHz (HTL)	$\leq 120$ kHz	$\leq 120$ kHz		$\leq 120$ kHz	$\leq 120$ kHz	$\leq 120$ kHz	$\leq 120$ kHz	$\leq 120$ kHz
Operating temperature	0...+70 °C 0...+100 °C	0...+70 °C	-20...+85 °C	-30...+100 °C		-40...+100 °C -50...+100 °C (optional)	-40...+100 °C	-20...+70 °C	-30...+85 °C -20...+100 °C	-30...+85 °C
Housing	$\varnothing 80$ mm	$\varnothing 89$ mm	$\varnothing 60$ mm	$\varnothing 97$ mm		$\varnothing 105$ mm	$\varnothing 130$ mm	$\varnothing 150$ mm	$\varnothing 158$ mm	$\varnothing 227$ mm
Shaft diameter	$\varnothing 17-27$ mm hollow shaft	$\varnothing 20-27$ mm end shaft	$\varnothing 12...14$ mm end shaft	$\varnothing 12-16$ mm end shaft / $\varnothing 17$ mm cone shaft		$\varnothing 12-20$ mm end shaft / $\varnothing 17$ mm cone shaft	$\varnothing 16-36$ mm hollow shaft	$\varnothing 40-65$ mm hollow shaft	$\varnothing 20-75$ mm hollow shaft	$\varnothing 80-115$ mm hollow shaft
Operating speed	$\leq 5000$ rpm	$\leq 2500$ rpm	$\leq 10000$ rpm	$\leq 10000$ rpm		$\leq 6000$ rpm	$\leq 6000$ rpm	$\leq 3000$ rpm	$\leq 6000$ rpm	$\leq 3800$ rpm
E-connection	Cable 1 m	Cable 1 m	Terminal box	Terminal connector		Terminal box	Terminal box	Connector M23 type 2, 12-pin	Terminal box	Terminal box



Incremental encoders

- HeavyDuty solutions
- Centering flange
- Euro-flange B10
- Shaft max. ø12 mm
- Optical and magnetic sensing
- Resolution max. 10000 pulses
- Rotation speed max. 12000 rpm
- Big terminal box, pivotable through 180°
- Protection max. IP 66

Model	ITD 21 B10 Y 2	OG 9	POG 9	POG 90		POG 10, POG 10 + FSL					
Features	-Encoder with shaft ø10-12 mm -Resolution max. 6000 ppr -Centering alignment ø70 mm, mounting screw hole circle ø77 mm -Industrial standard with centering flange	-Encoder with shaft ø11 mm -Compact, robust die-cast housing -Euro-flange B10 -Logic level TTL with regulator UB 9...26 VDC	-Encoder with shaft ø11 mm -Compact, robust die-cast housing -Euro-flange B10 -Logic level TTL with regulator UB 9...26 VDC	-Encoder with shaft ø11 mm -Resolution max. 10000 ppr -Compact, robust die-cast housing -Logic level TTL with regulator UB 9...30 VDC		-Encoder with shaft ø11 mm -High protection IP 66 -Big terminal box, pivotable through 180° -Resistant to salty air/ tropical conditions					
Voltage supply	5 VDC ±5 % 8...30 VDC	5 VDC ±5 % 9...26 VDC 9...30 VDC	5 VDC ±5 % 9...26 VDC 9...30 VDC	5 VDC ±5 % 9...30 VDC		5 VDC ±5 % 9...26 VDC 9...30 VDC					
Resolution (steps/turn)	1000...6000	1...1250	1...2500	1024...10000		1...2500					
Output frequency	≤300 kHz (TTL) ≤160 kHz (HTL)	≤120 kHz	≤120 kHz	≤250 kHz		≤120 kHz					
Operating temperature	0...+70 °C 0...+100 °C	-30...+100 °C	-30...+100 °C	-20...+85 °C		-40...+100 °C -50...+100 °C (optional)					
Housing	ø58 mm	ø115 mm	ø115 mm	ø115 mm		ø115 mm					
Shaft diameter	ø10-12 mm	ø11 mm	ø11 mm	ø11 mm		ø11 mm					
Operating speed	≤12000 rpm	≤12000 rpm	≤12000 rpm	≤10000 rpm		≤12000 rpm					
E-connection	Cable 1 m	Terminal box	Terminal box	Terminal box		Terminal box					



Sine encoders

- Sine output 1 Vpp
- End shaft ø10-20 mm
- Hollow shaft ø20-27 mm
- Cone shaft ø17 mm
- Shaft ø6 and ø11 mm
- Resolution max. 5000 pulses
- LowHarmonics technique
- A 90° B and inverted signals
- Protection max. IP 66





Model	ITD 22 A 4 Y36	HOGS 71	ITD 42 A 4 Y79	HOGS 100		OGS 71	POGS 90			
Features	-Encoder with end shaft ø10-14 mm -Resolution max. 5000 ppr -Sine output signals 1 Vpp -Mounting by torque support	-Encoder with end shaft ø12-14 mm -Resolution max. 5000 ppr -Sine output signals 1 Vpp -Low harmonic content (patented LowHarmonics technology)	-Encoder with hollow shaft ø20-27 mm -Resolution max. 2048 ppr -Sine output signals 1 Vpp -Mounting by torque support	-Encoder with end shaft max. ø20 mm or cone shaft ø17 mm (1:10) -Resolution max. 5000 ppr -Low harmonic content (patented LowHarmonics technology) -Top-quality sine signals		-Encoder with shaft ø6 mm -Resolution max. 5000 ppr -Sine output signals 1 Vpp -Low harmonic content (patented LowHarmonics technology)	-Encoder with shaft ø11 mm -Resolution max. 5000 ppr -Low harmonic content (patented LowHarmonics technology) -Sine output signals 1 Vpp			
Voltage supply	5 VDC ±10 % 8...26 VDC	5 VDC ±10 % 9...30 VDC	5 VDC ±10 % 8...26 VDC	5 VDC ±10 % 9...30 VDC		5 VDC ±10 % 9...30 VDC	5 VDC ±10 % 9...30 VDC			
Resolution (steps/turn)	1024...5000	1024...5000	1024...2048	720...5000		1024...5000	720...5000			
Output signals	A, B, N	A 90° B, C + inverted	A, B, N	K1 90° K2, K0 + inverted		A 90° B, C + inverted	K1 90° K2, K0 + inverted			
Operating temperature	-20...+85 °C	-20...+85 °C	-20...+85 °C	-20...+85 °C		-20...+85 °C	-20...+85 °C			
Housing	ø58 mm	ø60 mm	ø80 mm	ø105 mm		ø60 mm	ø115 mm			
Shaft diameter	ø10-14 mm end shaft	ø12...14 mm end shaft	ø20-27 mm hollow shaft	ø12-20 mm end shaft / ø17 mm cone shaft		ø6 mm	ø11 mm			
Operating speed	≤8000 rpm	≤10000 rpm	≤5000 rpm	≤10000 rpm		≤10000 rpm	≤10000 rpm			
E-connection	Cable 1 m	Terminal box	Cable 1 m	Terminal box		Terminal box	Terminal box			

# Absolute encoders - parallel



## Absolute encoders - parallel

- End shaft and shaft encoders
- Clamping and synchro flange
- Optical and magnetic sensing
- Resolution: singleturn max. 13 bit
- Resolution: multiturn 12 bit
- High resistance to shock and vibrations
- Cable or connector output





				
Model	BMSH 58 parallel - <i>MAGRES</i>	BMSV 58 parallel - <i>MAGRES</i>	GA240, GA241 - parallel	GXP1W - parallel
Features	-Encoder singleturn / parallel -Magnetic sensing -Resolution: 12 bit -High resistance to shock and vibrations	-Encoder singleturn / parallel -Magnetic sensing -Resolution: 12 bit -High resistance to shock and vibrations	-Encoder singleturn / parallel -Optical sensing -Resolution: 13 bit -Clamping flange or synchro flange	-Encoder multiturn / parallel -Optical sensing -Resolution: singleturn 12 bit, multiturn 12 bit -Clamping flange or synchro flange
Voltage supply	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Total resolution	12 bit	12 bit	13 bit	24 bit
Interface	12 parallel outputs	12 parallel outputs	13 parallel outputs	24 parallel outputs
Operating temperature	-20...+85 °C	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+70 °C
Housing	ø58 mm	ø58 mm	ø58 mm	ø58 mm
Shaft diameter	ø12 mm end shaft	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm
Operating speed	≤12000 rpm	≤12000 rpm	≤10000 rpm	≤10000 rpm
E-connection	Cable	Cable	Connector or cable	Connector D-SUB, 37-pin, 1 m cable

# Absolute encoders - SSI



## Absolute encoders - SSI









- Hollow or end shaft encoders
- Singleturn and multiturn encoders
- Optical and magnetic sensing
- Resolution: singleturn 12-15 bit
- Resolution: multiturn 12-24 bit
- High resistance to shock and vibrations
- Programmable functions
- Optional: incremental tracks

				
Model	BMSH 58, BMMH 58 SSI - <i>MAGRES</i>	GXM2S - SSI	G0M2H - SSI	ATD 4S A 4 Y10
Features	- Encoder single- or multiturn / SSI - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 13 bit - High resistance to shock and vibrations	- Encoder multiturn / SSI - Optical sensing - Resolution: singleturn 14 bit, multiturn 12 bit - End shaft $\varnothing$ 12 mm / $\varnothing$ 14 mm	- Encoder multiturn / SSI - Optical sensing - Resolution: singleturn 14 bit, multiturn 12 bit - Hollow shaft max. $\varnothing$ 14 mm	- Encoder single- or multiturn / SSI - Hollow shaft $\varnothing$ 20-27 mm - Resolution: singleturn 15 bit, multiturn 24 bit - Programmable
Voltage supply	5 VDC $\pm$ 10 % 10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Total resolution	25 bit	26 bit	26 bit	39 bit
Interface	SSI	SSI Incremental A 90° B (optional)	SSI Incremental A 90° B (optional)	SSI
Operating temperature	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C
Housing	$\varnothing$ 58 mm	$\varnothing$ 58 mm	$\varnothing$ 58 mm	$\varnothing$ 80 mm
Shaft diameter	$\varnothing$ 12 mm end shaft	$\varnothing$ 12-14 mm end shaft	$\varnothing$ 12-14 mm hollow shaft	$\varnothing$ 20-27 mm hollow shaft
Operating speed	$\leq$ 12000 rpm	$\leq$ 6000 rpm	$\leq$ 6000 rpm	$\leq$ 5000 rpm
E-connection	Connector or cable	Connector, 12-pin	Connector, 12-pin	Connector M23 type 2, 12-pin resp. 17-pin



Absolute encoders - SSI

- Shaft and hollow shaft encoders
- Singleturn and multiturn encoders
- Optical sensing
- Resolution: singleturn 10-18 bit
- Resolution: multiturn 12-16 bit
- High resistance to shock and vibrations
- Electronic setting of zero point
- Optional: incremental signals
- Protection max. IP 66

											
Model	G1S2B - SSI	BMSV 30, BMMV 30 SSI - MAGRES	BMSV 42, BMMV 42 SSI - MAGRES	BMSV 58, BMMV 58 SSI - MAGRES		GA240, GA241 - SSI	GM400, GM401 - SSI	GBM2W - SSI	AMG 71		
Features	-Encoder multiturn / 2 x SSI -For safety-relevant applications according SIL3 -Resolution: singleturn 13 bit, multiturn 12 bit -Hollow shaft with ø20 mm and stud screw groove	-Mini encoder single- or multiturn / SSI -Magnetic sensing -Resolution: singleturn 10 bit, multiturn 15 bit -Housing ø30 mm	-Mini encoder single- or multiturn / SSI -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 13 bit -Housing ø42 mm	-Encoder single- or multiturn / SSI -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 13 bit -High resistance to shock and vibrations		-Encoder singleturn / SSI -Optical sensing -Resolution: 14 bit -Clamping flange or synchro flange	-Encoder multiturn / SSI -Optical sensing -Resolution: singleturn 14 bit, multiturn 12 bit -Clamping flange or synchro flange	-Encoder multiturn / SSI -Optical sensing -Resolution: singleturn 18 bit, multiturn 16 bit -Clamping flange or synchro flange	-Encoder multiturn / SSI -Optical sensing -Resolution: singleturn 13 bit, multiturn 12 bit / 16 bit -Multiturn: sensing principle without gears and battery		
Voltage supply	10...30 VDC	5 VDC ±10 % 10...30 VDC	5 VDC ±10 % 10...30 VDC	5 VDC ±10 % 10...30 VDC		10...30 VDC	10...30 VDC	10...30 VDC	7...30 VDC		
Total resolution	25 bit	25 bit	25 bit	25 bit		14 bit	26 bit	34 bit	29 bit		
Interface	SSI Incremental A, B + inverted	SSI	SSI	SSI		SSI	SSI Incremental A 90° B (optional)	SSI Incremental A 90° B (optional)	SSI		
Operating temperature	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C	-20...+85 °C	-20...+85 °C		-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C		
Housing	ø90 mm	ø30 mm	ø42 mm	ø58 mm		ø58 mm	ø58 mm	ø58 mm	ø60 mm		
Shaft diameter	ø20 mm hollow shaft	ø5-8 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm		ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm		
Operating speed	≤3800 rpm	≤6000 rpm	≤12000 rpm	≤12000 rpm		≤10000 rpm	≤10000 rpm	≤10000 rpm	≤6000 rpm		
E-connection	Connector, 17-pin	Connector or cable	Connector or cable	Connector or cable		Connector or cable	Connector or cable	Connector or cable	Terminal box		



- Absolute encoders - bus interfaces
- CANopen and DeviceNet
  - End shaft and hollow shaft encoders
  - Shaft encoders with clamping and synchro flange
  - Singleturn and multiturn encoders
  - Optical and magnetic sensing
  - Resolution: singleturn 12-13 bit
  - Resolution: multiturn 16-18 bit
  - High resistance to shock and vibrations
  - Electronic setting of zero point

Model	BMSH 42, BMMH 42 CANopen - MAGRES	BMSH 58, BMMH 58 CANopen - MAGRES	GXP5S - CANopen	G0P5H - CANopen		BMSV 42, BMMV 42 CANopen - MAGRES	BMSV 58, BMMV 58 CANopen - MAGRES	GXP5W - CANopen	BMSH 42, BMMH 42 DeviceNet - MAGRES	BMSH 58, BMMH 58 DeviceNet - MAGRES
Features	- Mini encoder single- or multiturn / CANopen - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 18 bit - Housing ø42 mm	- Encoder single- or multiturn / CANopen - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 18 bit - Integrated fieldbus interface	- Encoder multiturn / CANopen - Optical sensing - Resolution: singleturn 13 bit, multiturn 16 bit - End shaft ø12 mm / ø14 mm	- Encoder multiturn / CANopen - Optical sensing - Resolution: singleturn 13 bit, multiturn 16 bit - Hollow shaft max. ø14 mm		- Mini encoder single- or multiturn / CANopen - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 16 bit - Housing ø42 mm	- Encoder single- or multiturn / CANopen - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 18 bit - Integrated fieldbus interface	- Encoder multiturn / CANopen - Optical sensing - Resolution: singleturn 13 bit, multiturn 16 bit - Clamping flange or synchro flange	- Mini encoder single- or multiturn / DeviceNet - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 16 bit - Housing ø42 mm	- Encoder single- or multiturn / DeviceNet - Magnetic sensing - Resolution: singleturn 12 bit, multiturn 16 bit - Integrated fieldbus interface
Voltage supply	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC		10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Total resolution	30 bit	30 bit	29 bit	29 bit		30 bit	30 bit	29 bit	28 bit	28 bit
Interface	CANopen	CANopen	CANopen	CANopen		CANopen	CANopen	CANopen	DeviceNet	DeviceNet
Operating temperature	-20...+85 °C	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)		-20...+85 °C	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C	-20...+85 °C
Housing	ø42 mm	ø58 mm	ø58 mm	ø58 mm		ø42 mm	ø58 mm	ø58 mm	ø42 mm	ø58 mm
Shaft diameter	ø12 mm end shaft	ø12 mm end shaft	ø12-14 mm end shaft	ø12-14 mm hollow shaft		ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø12 mm end shaft	ø12 mm end shaft
Protection DIN EN 60529	IP 42 IP 65	IP 65	IP 54	IP 54		IP 65	IP 65	IP 54 IP 65	IP 65	IP 65
E-connection	Connector or cable	Connector D-SUB, 9-pin	Connector	Connector		Connector or cable	Connector D-SUB, 9-pin / connector M12	Connector	Connector or cable	Connector D-SUB, 9-pin



Absolute encoders - bus interfaces

- CANopen, DeviceNet, Profibus, SSI, EtherCAT, RS485
- Hollow shaft, end shaft and cone shaft
- Shaft encoders with clamping or synchro flange
- Singleturn and multiturn encoders
- Optical and magnetic sensing
- Resolution: singleturn 12-15 bit
- Resolution: multiturn 12-16 bit
- High resistance to shock and vibrations
- Electronic setting of zero point

Model	BMSV 42, BMMV 42 DeviceNet - <i>MAGRES</i>	BMSV 58, BMMV 58 DeviceNet - <i>MAGRES</i>	GXP8W - DeviceNet	BMMH 58 Profibus-DP - <i>MAGRES</i>		BMMV 58 Profibus-DP - <i>MAGRES</i>	HMG 11, HMG 11 + FSL	AMG 11, AMG 11 + FSL	ATD 4B A 4 Y11	GXM7S - RS485, GXM7W - RS485
Features	-Mini encoder single- or multiturn / DeviceNet -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 16 bit -Housing ø42 mm	-Encoder single- or multiturn / DeviceNet -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 16 bit -Integrated fieldbus interface	-Encoder multiturn / DeviceNet -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Clamping flange or synchro flange	-Encoder multiturn / Profibus-DP -Magnetic sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Integrated fieldbus interface		-Encoder multiturn / Profibus-DP -Magnetic sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Integrated fieldbus interface	-Encoder multiturn / SSI / Profibus / CANopen -Optical/magnetic sensing -Resolution: singleturn 13 bit, multiturn 12 bit / 16 bit -Hollow shaft, end shaft or cone shaft ø16-20 mm	-Encoder multiturn / SSI / Profibus / CANopen -Optical/magnetic sensing -Resolution: singleturn 13 bit, multiturn 12 bit / 16 bit -EURO-flange B10 / shaft ø11 mm	-Encoder single- or multiturn / EtherCAT -Hollow shaft ø20-27 mm -Resolution: singleturn 15 bit, multiturn 16 bit -Short cycle times	-Encoder multiturn / RS485 -Optical sensing -Resolution: singleturn 13 bit, multiturn 12 bit -End shaft ø12 mm / ø14 mm -Clamping flange or synchro flange
Voltage supply	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC		10...30 VDC	9...30 VDC	9...30 VDC	10...30 VDC	10...30 VDC
Total resolution	28 bit	28 bit	29 bit	29 bit		29 bit	29 bit	29 bit	31 bit	25 bit
Interface	DeviceNet	DeviceNet	DeviceNet	Profibus-DPV0		Profibus-DPV0	SSI Profibus-DPV0 CANopen	SSI Profibus-DPV0 CANopen	EtherCAT	RS485
Operating temperature	-20...+85 °C	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C		-20...+85 °C	-20...+85 °C	-20...+85 °C	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)
Housing	ø42 mm	ø58 mm	ø58 mm	ø58 mm		ø58 mm	ø122 mm	ø122 mm	ø80 mm	ø58 mm
Shaft diameter	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø12 mm end shaft		ø6 mm / ø10 mm	ø16-20 mm hollow, end or cone shaft	ø11 mm	ø20-27 mm hollow shaft	ø12-14 mm end shaft ø6 mm / ø10 mm
Protection DIN EN 60529	IP 65	IP 65	IP 54 IP 65	IP 65		IP 65	IP 67	IP 67	IP 65	IP 54 IP 65
E-connection	Connector or cable	Connector D-SUB, 9-pin	Connector	Male/female connector M12, connector M8		Male/female connector M12, connector M8	Terminal box/ bus cover	Terminal box/ bus cover	Male M12, A-coded, female M12, D-coded	Connector or cable

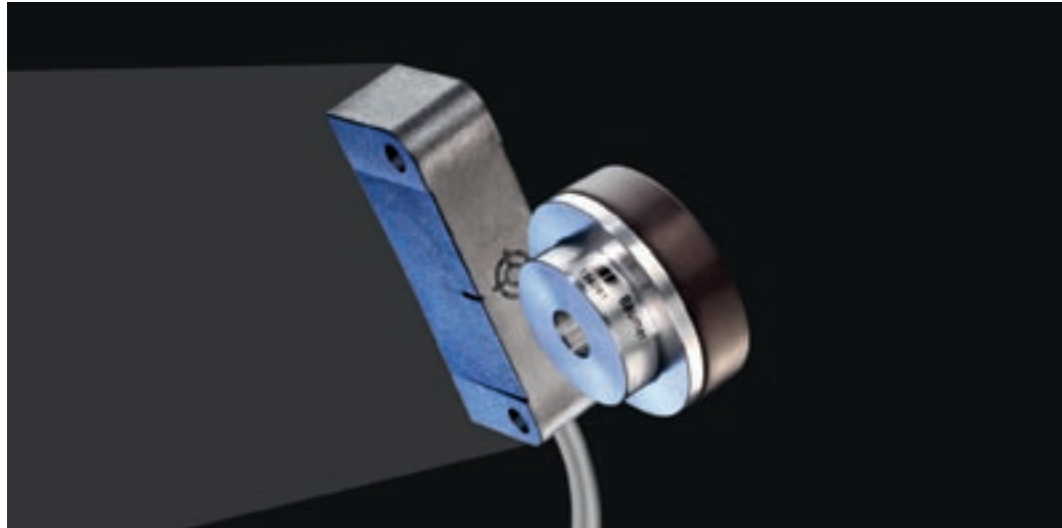




Absolute encoders - modular bus covers








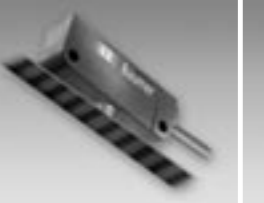
- Modular bus interfaces
- CANopen, DeviceNet, Profibus, EtherCAT, fiber-optic, SSI
- End shaft and hollow shaft encoders
- Shaft encoders with clamping and synchro flange
- Optical and magnetic sensing
- Resolution: singleturn 12-18 bit
- Resolution: multiturn 16-18 bit
- High resistance to shock and vibrations

Model	BMSH 58, BMMH 58 flexible - MAGRES	GXAMS, GXMMS - multivo	GBAMS, GBMMS - multivoPlus	G0AMH, G0MMH - multivo		G1MMH, G2MMH - multivo	GBAMH, GBMMH - multivoPlus	BMSV 58, BMMV 58 flexible - MAGRES	GXAMW, GXMMW - multivo	GBAMW, GBMMW - multivoPlus
Features	-Encoder single- or multiturn / bus cover -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 18 bit -Modular fieldbus interfaces	-Encoder single- or multiturn / bus cover -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -End shaft ø12 mm / ø14 mm	-Encoder single- or multiturn / bus cover -Optical sensing -High total resolution max. 31 bit -End shaft ø12 mm / ø14 mm	-Encoder single- or multiturn / bus cover -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Hollow shaft max. ø14 mm		-Encoder multiturn / bus cover -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Hollow shaft of 1" and 2" diameter	-Encoder single- or multiturn / bus cover -Optical sensing -High total resolution max. 31 bit -Hollow shaft max. ø14 mm	-Encoder single- or multiturn / bus cover -Magnetic sensing -Resolution: singleturn 12 bit, multiturn 18 bit -Modular fieldbus interfaces	-Encoder single- or multiturn / bus cover -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Clamping flange or synchro flange	-Encoder single- or multiturn / bus cover -Optical sensing -High total resolution max. 31 bit -Clamping flange or synchro flange
Voltage supply	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC		10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Total resolution	30 bit	29 bit	31 bit	29 bit		29 bit	31 bit	30 bit	29 bit	31 bit
Interface	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT Fiber-optic bus SSI	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT Fiber-optic bus SSI	Profibus-DPV0 CANopen DeviceNet		Profibus-DPV0 CANopen DeviceNet	Profibus-DPV0 CANopen DeviceNet	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT Fiber-optic bus SSI	Profibus-DPV0 / V2 CANopen DeviceNet EtherCAT Fiber-optic bus SSI
Operating temperature	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)		-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-20...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)
Housing	ø58 mm	ø58 mm	ø58 mm	ø58 mm		ø90 mm ø116 mm	ø58 mm	ø58 mm	ø58 mm	ø58 mm
Shaft diameter	ø12 mm end shaft	ø12-14 mm end shaft	ø12-14 mm end shaft	ø12-14 mm hollow shaft		ø25.4 / ø50.8 mm hollow shaft	ø12-14 mm hollow shaft	ø6 mm / ø10 mm	ø6 mm / ø10 mm	ø6 mm / ø10 mm
Protection DIN EN 60529	IP 65	IP 54	IP 54	IP 54		IP 54	IP 54	IP 65	IP 54 IP 65	IP 54 IP 65



Magnetic sensors

- Wear-free systems
- For rotary and linear applications
- Dust and dirt tolerant
- 2- and 3-channel variants with zero pulse
- High resolution
- Absolute position sensing through 360° rotation angle
- High protection max. IP 67

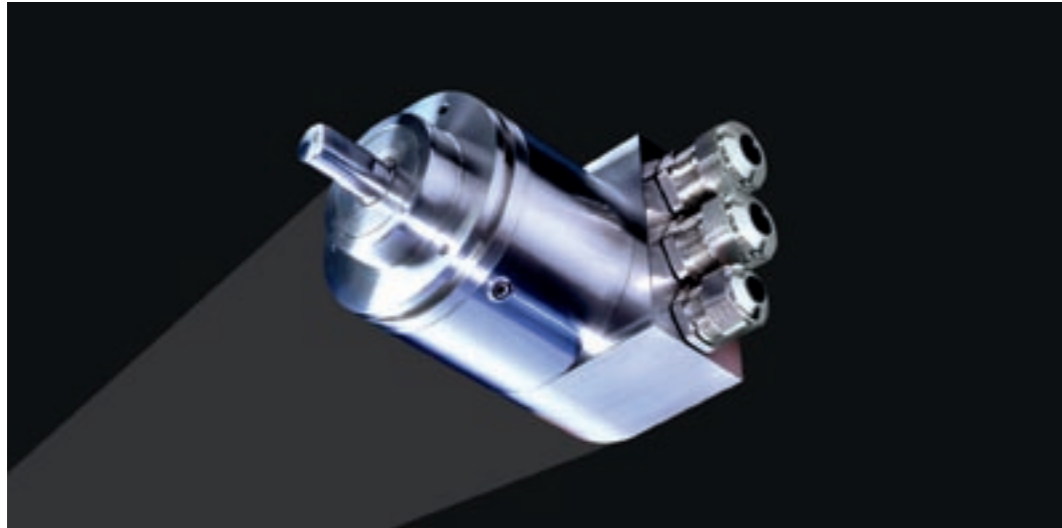
											
Model	MEFK 10 - EcoSpin	MDFK 08	MDFK 10	ITD 67 A 4 Y 9		ITD 69 A 4 Y 5	MDRM 18, MDFM 20 - A270 / C270	MDRM 18, MDFM 20 - A360 / C360	MLFK 10		
Features	-Magnetic sensor with rotor -Resolution max. 2880 steps -Output signals A 90° B -Output circuit: push-pull -Non-contact, wear-free sensing system	-Magnetic sensor with rotor -Resolution max. 4096 steps -Output signals A 90° B or A 90° B +N -Output circuits: push-pull and RS422 -Non-contact, wear-free sensing system	-Magnetic sensor with rotor -Resolution max. 16384 steps -Output signals A 90° B or A 90° B +N -Output circuits: push-pull and RS422 -Non-contact, wear-free sensing system	-Magnetic sensor with rotor -Magnetic sensing -Resolution 20 and 50 pulses -Output circuits: HTL -Without own bearings			-Magnetic sensor with rotor -Magnetic sensing -Resolution max. 2048 ppr -Output circuits HTL, TTL or sine 1 Vss -Without own bearings	-Magnetic sensor with rotor -Measuring range 270° linear -Resolution 1.41° (A270) 0.09° (C270) -Output signals 4...20 mA -Non-contact, wear-free sensing system	-Magnetic sensor with rotor -Measuring range 360° linear -Resolution 1.41° (A360) 0.09° (C360) -Output signals 0...5 V, 0...4.3 V -Non-contact, wear-free sensing system	-System for linear motion feedback -Resolution max. 0.005 mm -Output signals A 90° B and A 90° B + inverted -Output circuits: push-pull and RS422 -Non-contact, wear-free sensing system	
Voltage supply	8...28 VDC	8...30 VDC 5 VDC ±5 %	8...30 VDC 5 VDC ±5 %	8...24 VDC		5 VDC ±5 % 8...26 VDC 5 VDC ±10 %	15...30 VDC	5 VDC ±5 %	8...30 VDC 5 VDC ±5 %		
Output signals	A 90° B	A 90° B A 90° B + N A 90° B + inverted A 90° B, N + inverted	A 90° B + N A 90° B, N + inverted	A, B		A 90° B + N A 90° B, N + inverted A, B, N	4...20 mA	0...5 V, non-regulated 0...4.3 V, regulated	A 90° B A 90° B + inverted		
System accuracy	±0.8 °	±0.5 °	±0.5 °	-		-	±0.6 %, (A270) ±0.25 % (C270)	±0.6 %, (A360) ±0.25 % (C360)	±0.04 mm		
Jitter	≤20 %	≤15 %	≤15 %	-		-	-	-	-		
Angular range	-	-	-	-		-	270 ° linear	360 ° linear	-		
Housing	Rectangular 10 mm	Rectangular 8.5 mm	Rectangular 10 mm	26 x 75 mm		16 x 48 mm	Rectangular 20 mm Cylindrical M18	Rectangular 20 mm Cylindrical M18	Rectangular 10 mm		
Protection DIN EN 60529	IP 67	IP 67	IP 67	IP 66		IP 66	IP 67	IP 67	IP 67		



### Tachogenerators

- Patented LongLife technique
- Housings ø52 mm, bearingless configuration
- End shaft ø8-16 mm without bearing
- Shaft ø6-18 mm with bearing
- Cone shaft ø17 mm
- Housing with bearing
- Temperature-resistant -30...+130 °C
- High resistance to shock and vibrations
- High protection max. IP 68

											
Model	GT 5	GT 9	GTB 9	GTR 9		KTD 2-... B14	TDP 0,09	TDP 0,2	GMP 1,0	TDP 13	
Features	-High response speed -Open circuit voltage 7...10 mV per rpm -End shaft ø8-12 mm -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 10...20 mV per rpm -End shaft ø12-16 mm or cone shaft ø17 mm (1:10)" -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 10...20 mV per rpm -End shaft ø12-16 mm or cone shaft ø17 mm (1:10)" -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 20...60 mV per rpm -End shaft ø16 mm -Top signal quality over the total rotational speed range by patented Longlife technique			-High response speed -Nominal voltage 7...15 V -Shaft ø6 mm with synchro flange -Wide rotation speed range	-High response speed -Open circuit voltage 10...60 mV per rpm -Shaft ø6 mm with flange -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 10...150 mV per rpm -End shaft ø7-14 mm with flange -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 40...175 mV per rpm -End shaft ø8-12 mm -Top signal quality over the total rotational speed range by patented Longlife technique	-High response speed -Open circuit voltage 20...200 mV per rpm -Shaft ø14-18 mm with flange -Top signal quality over the total rotational speed range by patented Longlife technique
Linearity tolerance	≤0.15 %	≤0.15 %	≤0.15 %	≤0.15 %		≤0.2 %	≤0.15 %	≤0.15 %	≤0.5 %	≤0.15 %	
Temperature coefficient	±0.05 %/K (idle)	±0.05 %/K (idle)	±0.05 %/K (idle)	±0.05 %/K (idle), optional: 0.005 %/K		±0.2 %/10 K (-10...+100 °C)	±0.05 %/K (idle)	±0.05 %/K (idle)	±0.05 %/K (idle)	±0.05 %/K (idle)	
Open-circuit voltage	7...10 mV per rpm	10...20 mV per rpm	10...20 mV per rpm	20...60 mV per rpm		-	10...60 mV per rpm	10...150 mV per rpm	40...175 mV per rpm	20...200 mV per rpm	
Nominal voltage	-	-	-	-		7...15 V	-	-	-	-	
Shaft diameter	ø8-12 mm end shaft	ø12-16 mm end shaft / ø17 mm cone shaft	ø12-16 mm end shaft / ø17 mm cone shaft	ø16 mm end shaft		ø6 mm	ø6 mm	ø7-14 mm	ø12-14 mm	ø14-18 mm	
Operating temperature	-30...+130 °C	-30...+130 °C	-30...+130 °C	-30...+130 °C		-20...+100 °C	-30...+130 °C	-30...+130 °C	-30...+130 °C	-30...+130 °C	
Protection DIN EN 60529	IP 00 IP 54	IP 00 IP 44	IP 68	IP 56		IP 55	IP 56	IP 55	IP 55	IP 55	
E-connection	Plug-in terminals	Plug-in terminals	Connector	Connector		Screw connection, 2-pin	Terminal box	Terminal box	Terminal box	Terminal box	



Ex/stainless steel encoders

- Ex-approved by ATEX
- Stainless steel housing
- Incremental and absolute encoders
- SSI, CANopen and modular bus cover
- Incremental resolution max. 5000 pulses
- Total resolution max. 30 bit
- High resistance to shock and vibrations
- High protection max. IP 68 or IP 69k



Model	EEx HOG 161 - incremental	EEx OG 9 - incremental	X 700 - incremental	X 700 - SSI		X 700 - CANopen	BMMV 58 SSI - <i>MAGRES hermetic</i>	GE400 - SSI	GEMMW - <i>multivo</i>	BMMV 58 flexible - <i>MAGRES hermetic</i>
Features	-Encoder with hollow shaft ø30-70 mm / incremental -Ex-approved by ATEX II 2G Ex de IIC T6 -Robust light-metal housing -Logic level TTL with regulator UB 9...26 VDC	-Encoder with shaft ø11 mm / incremental -Ex-approved by ATEX II 2G Ex de IIC T6 -Robust light-metal housing -Logic level TTL with regulator UB 9...26 VDC	-Encoder incremental / ATEX -Optical sensing -Resolution max. 5000 ppr -Clamping flange / shaft ø10 mm	-Encoder single- or multiturn / SSI / ATEX -Optical sensing -Resolution: singleturn 14 bit, multiturn 12 bit -Clamping flange / shaft ø10 mm		-Encoder multiturn / CANopen / ATEX -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit -Clamping flange / shaft ø10 mm	-Encoder multiturn / SSI -Magnetic sensing, hermetically sealed -Resolution: singleturn 12 bit, multiturn 13 bit -High resistance to shock and vibrations	-Encoder multiturn / SSI -Stainless steel design -Optical sensing -Resolution: singleturn 14 bit, multiturn 12 bit	-Encoder multiturn / bus cover -Stainless steel design -Optical sensing -Resolution: singleturn 13 bit, multiturn 16 bit	-Encoder multiturn / bus cover -Magnetic sensing, hermetically sealed -Resolution: singleturn 12 bit, multiturn 18 bit -Modular fieldbus interfaces
Voltage supply	5 VDC ±5 % 9...26 VDC 9...30 VDC	5 VDC ±5 % 9...26 VDC 9...30 VDC	4.75...30 VDC	10...30 VDC		10...30 VDC	5 VDC ±10 % 10...30 VDC	10...30 VDC	10...30 VDC	10...30 VDC
Resolution (steps/turn)	250...2500	1...5000	5...5000	-		-	-	-	-	-
Total resolution	-	-	-	26 bit		29 bit	25 bit	26 bit	29 bit	30 bit
Operating temperature	-20...+65 °C (T5) -20...+70 °C (T6)	-20...+55 °C	-25...+70 °C	-25...+60 °C		-25...+60 °C	-40...+85 °C	-25...+85 °C -40...+85 °C (optional)	-25...+85 °C -40...+85 °C (optional)	-40...+85 °C
Housing	ø160 mm	ø120 mm	ø70 mm	ø70 mm		ø70 mm	ø58 mm	ø58 mm	ø58 mm	ø58 mm
Shaft diameter	ø30-70 mm hollow shaft	ø11 mm	ø10 mm	ø10 mm		ø10 mm	ø10 mm	ø6 mm / ø10 mm	ø10 mm	ø10 mm
Operating speed	≤5600 rpm	≤7000 rpm	≤6000 rpm	≤6000 rpm		≤6000 rpm	≤6000 rpm	≤10000 rpm	≤10000 rpm	≤12000 rpm
E-connection	Terminal box	Terminal box	Cable 2 m (other length upon request)	Cable 2 m (other length upon request)		Cable 2 m (other length upon request)	Connector or cable	Connector	Bus cover	Bus cover
Protection DIN EN 60529	IP 54 (T6) IP 56 (T5)	IP 56	IP 67	IP 67		IP 67	IP 68 IP 69K	IP 67	IP 67	IP 68 IP 69K

# Resolvers

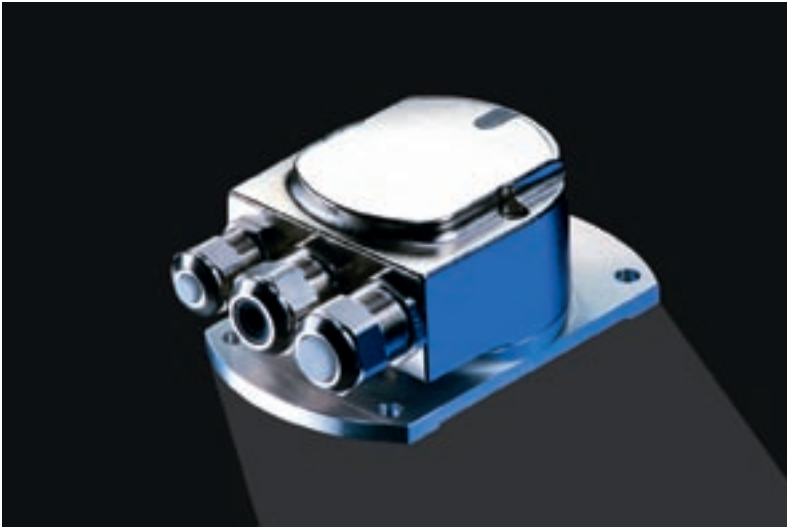


## Resolvers

- Shaft  $\varnothing 6$  mm
- Hollow shaft  $\varnothing 10-16$  mm
- Extremely robust mechanics
- Rotation speed max. 10000 rpm
- Temperature-resistant max.  $+100$  °C
- High resistance to shock and vibrations
- Protection IP 65


				
Model	RTD 1 B14 Y 1	RTD 4 A 4 Y 2		
Features	<ul style="list-style-type: none"> <li>- Robust resolver with shaft <math>\varnothing 6</math> mm</li> <li>- Rotation speed max. 10000 rpm</li> <li>- Centering alignment <math>\varnothing 50</math> mm</li> <li>- Mounting hole circle <math>\varnothing 68</math> mm</li> </ul>	<ul style="list-style-type: none"> <li>- Robust resolver with end shaft <math>\varnothing 10-16</math> mm</li> <li>- Rotation speed max. 8000 rpm</li> <li>- High resistance against shocks and vibrations</li> <li>- Wide operating temperature range</li> </ul>		
Primary element	Rotor	Rotor		
Number of pole pairs	1 = 2-pin	1 = 2-pin		
Input voltage	7 Vrms	7 Vrms		
Input frequency	10 kHz	10 kHz		
Shaft diameter	$\varnothing 6$ mm	$\varnothing 10-16$ mm end shaft		
Operating temperature	$-20...+100$ °C	$-20...+100$ °C		
Protection DIN EN 60529	IP 65	IP 65		
E-connection	Connector M23 type 2, 12-pin	Connector M23 type 2, 12-pin		

# Inclination sensors



## Inclination sensors

- Measuring range two-dimensional: 15°, 30°, 60°
- Measuring range one-dimensional: 360°
- CANopen or Profibus interface
- Temperature-resistant max. +85 °C
- High resistance to shock and vibrations
- Protection IP 66
- Optional: housing of stainless steel

				
Model	GNAMG			
Features	<ul style="list-style-type: none"> <li>- Inclination sensor / CANopen / Profibus</li> <li>- Measuring range two-dimensional: 15°, 30° and 60°</li> <li>- Measuring range one-dimensional: 360°</li> <li>- Resolution: 0.001° to 1°</li> <li>- Precision: ±0.1° to 0.5°</li> </ul>			
Voltage supply	10...30 VDC			
Measuring range	15°, 30°, 60° (two-dimensional) 360° (one-dimensional)			
Interface	CANopen Profibus-DPVO			
Housing	Mounting plate with bus cover			
Operating temperature	-25...+85 °C -40...+85 °C (optional)			
Protection DIN EN 60529	IP 66			
E-connection	Cable gland or connector M12			

# Worldwide presence

We at Baumer like to be close to customers; we listen to them and, understanding their needs, provide the best solution. Worldwide customer service for Baumer starts with on-the-spot personal discussions and qualified consultation. Our application engineers speak your language and strive from the start, through an interactive problem analysis, to offer comprehensive and user-compatible solutions. The worldwide Baumer sales organizations guarantee short delivery times and readiness to supply. Many of our customers are directly linked via our electronic order system with the JIT logistics process.

A worldwide network coupled with the most modern communication techniques enable us to deliver information quickly and transparently to decision makers in all Baumer locations.

Closeness to the customer for Baumer means being available for your needs anywhere and at any time.



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Further product information can be found in our main catalog.

[www.baumergroup.com/motion](http://www.baumergroup.com/motion)