Baumer
Passion for Sensors

Incremental encoders - combination

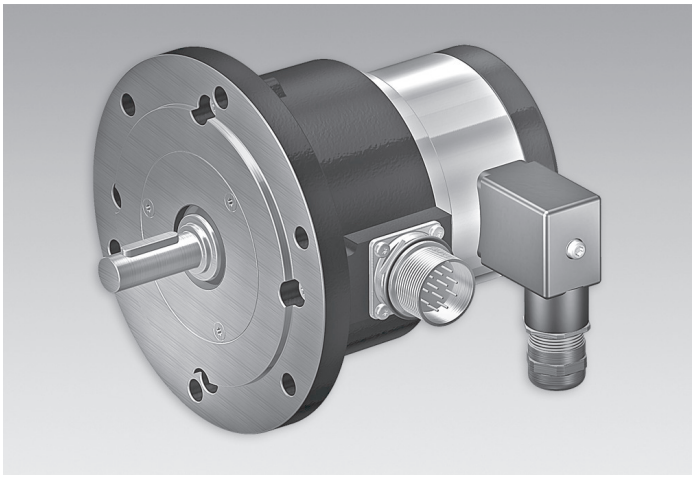
FOG 9 + GT 7

Encoder and tachogenerator in combination

Solid shaft with EURO flange B10 100…5000 pulses per revolution

Overview

- Compact, robust die-cast housing
- Flange connector with metal mating connector
- EURO flange B10 / solid shaft ø11 mm
- Temperature compensation of tacho voltage as standard
- Open circuit voltage 10...60 mV per rpm



Technical data

Technical data - electrical ratings (encoder)	
Voltage supply	9...30 VDC; 5 VDC ±5 %
Consumption w/o load	≤100 mA
Pulses per revolution	100 … 5000
Phase shift	90 ° ±20°
Duty cycle	40…60 %
Reference signal	Zero pulse, width 90°
Output frequency	≤120 kHz ≤300 kHz (on request)
Output signals	K1, K2, K0 + inverted Error output (option EMS)
Output stages	HTL; TTL/RS422
Technical data - electrical ratings (tachogenerator)	
Reversal tolerance	≤0,1 %
Linearity tolerance	≤0,15 %
Temperature coefficient	± 0,05 %/K (open-circuit)
Isolation class	B
Calibration tolerance	±5 %
Climatic test	Humid heat, constant (IEC 60068-2-3, Ca)
Performance	GT 7.08: 0.3 W (speed ≥5000 rpm) GT 7.16: 0.6 W (speed ≥5000 rpm)
Armature-circuit time-constant	<4 µs
Open-circuit voltage	10...60 mV per rpm
Technical data - mechanical design	
Size (flange)	ø115 mm

Technical data - mechanical design	
Shaft type	ø11 mm solid shaft
Admitted shaft load	≤200 N axial ≤300 N radial
Flange	EURO flange B10
Protection DIN EN 60529	IP 55
Operating speed	≤10000 rpm
Operating torque typ.	6 Ncm
Rotor moment of inertia	160 gcm²
Material	Housing: aluminium die-cast Shaft: stainless steel
Operating temperature	-30...+100 °C -25...+100 °C (>3072 pulses)
Resistance	IEC 60068-2-6 Vibration 10 g, 10...2000 Hz IEC 60068-2-27 Shock 100 g, 6 ms
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions C4 according to ISO 12944-2
Connection	Flange connector M23, 12-pin Screw terminal connector Connecting cable (option)
Weight approx.	1,3 kg (GT 7.08) 1,6 kg (GT 7.16)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Approval	CE

Optional

- Connecting cable
- Function control with EMS (Enhanced Monitoring System)

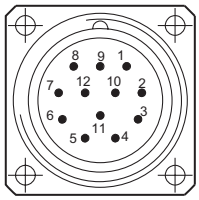
2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

FOG 9 + GT 7

Encoder and tachogenerator in combination
Solid shaft with EURO flange B10 100…5000 pulses per revolution

Terminal assignment

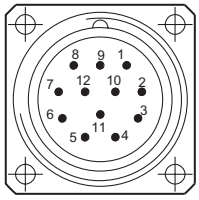
View A *(see dimension)*
Assignment flange connector encoder



Flange connector M23,
male, 12-pin,
clockwise (CW)

Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	dnu
8	K2
9	dnu
10	0V (⊥)
11	dnu
12	+UB

Option EMS: View A *(see dimension)*
Assignment flange connector encoder



Flange connector M23,
male, 12-pin,
clockwise (CW)

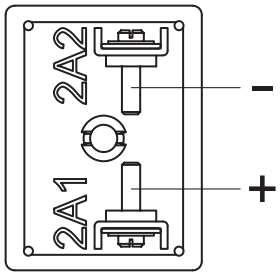
Pin	Assignment
1	$\overline{K2}$
2	dnu
3	K0
4	$\overline{K0}$
5	K1
6	$\overline{K1}$
7	$\overline{Err}$
8	K2
9	0V (⊥) @ $\overline{Err}$
10	0V (⊥)
11	dnu
12	+UB

Terminal assignment

Assignment connecting cable
Encoder with connection cable, no EMS output is possible.

Wire colour	Assignment
Yellow	$\overline{K2}$
Grey	K0
Pink	$\overline{K0}$
White	K1
Brown	$\overline{K1}$
Green	K2
Blue	0V (⊥)
Red	+UB

View B *(see dimension)*
Connecting terminal
Polarity for positive rotating direction



Terminal significance

Encoder incremental

+UB	Voltage supply
0V (⊥)	Ground
K1	Output signal channel 1
$\overline{K1}$	Output signal channel 1 inverted
K2	Output signal channel 2 (offset by 90° to channel 1)
$\overline{K2}$	Output signal channel 2 inverted
K0	Zero pulse (reference signal)
$\overline{K0}$	Zero pulse inverted
$\overline{Err}$	Error output (option EMS)
dnu	Do not use

2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

FOG 9 + GT 7

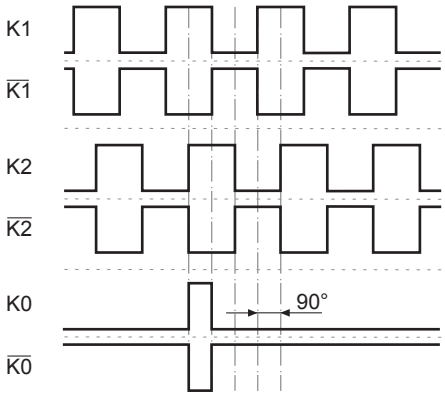
Encoder and tachogenerator in combination

Solid shaft with EURO flange B10 100…5000 pulses per revolution

Output signals

HTL/TTL

At positive rotating direction *(see dimension)*



Option EMS (Enhanced Monitoring System): Status LED / error output

Flash light red*	Error of signal sequenze, zero pulse or pulses (Error output = HIGH-LOW alternation)
Red	Overload output transistors (Error output = LOW)
Flash light green	Device o.k., rotating (Error output = HIGH)
Green	Device o.k., stopped (Error output = HIGH)
No light	No voltage supply connection or wrong connection (Error output = LOW)

* Only at rotating device

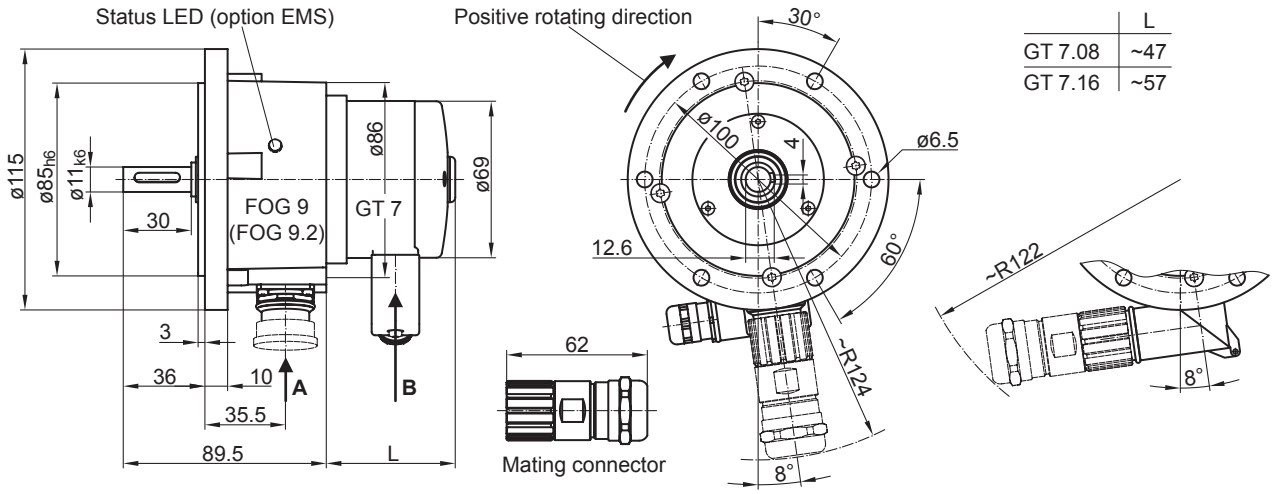
2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

FOG 9 + GT 7

Encoder and tachogenerator in combination

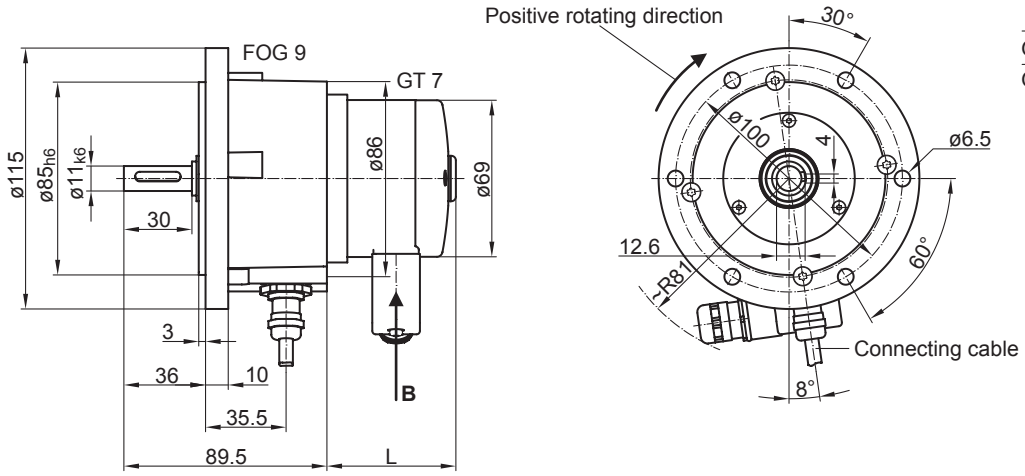
Solid shaft with EURO flange B10 100…5000 pulses per revolution

Dimensions



	L
GT 7.08	~47
GT 7.16	~57

FOG 9 with flange connector



	L
GT 7.08	~47
GT 7.16	~57

FOG 9 with connecting cable

2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

FOG 9 + GT 7

Encoder and tachogenerator in combination

Solid shaft with EURO flange B10 100…5000 pulses per revolution

Ordering reference

	FOG9	##	DN	####	###	+GT7	########
Product							
Incremental encoder + tachogenerator	FOG9						
EMS - Enhanced Monitoring System							
Without EMS							
With EMS		.2					
Output signals							
K1, K2, K0			DN				
Pulse number(1)							
100				100			
120				120			
128				128			
180				180			
192				192			
200				200			
250				250			
256				256			
300				300			
360				360			
400				400			
500				500			
512				512			
600				600			
720				720			
900				900			
1000				1000			
1024				1024			
1200				1200			
1250				1250			
2048				2048			
2500				2500			
3072				3072			
4096				4096			
5000				5000			
Voltage supply / output stage							
9...30 VDC / output stage HTL with inverted signals					I		
5 VDC / output stage TTL with inverted signals					TTL		
9...30 VDC / output stage TTL with inverted signals					R		
Version tachogenerator							
Tachogenerator GT 7						+GT7	
Open-circuit voltage							
10 mV per rpm							.08L/410
20 mV per rpm							.08L/420
30 mV per rpm							.08L/430
40 mV per rpm							.16L/440
60 mV per rpm							.16L/460

(1) Other pulse numbers on request.

2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

FOG 9 + GT 7

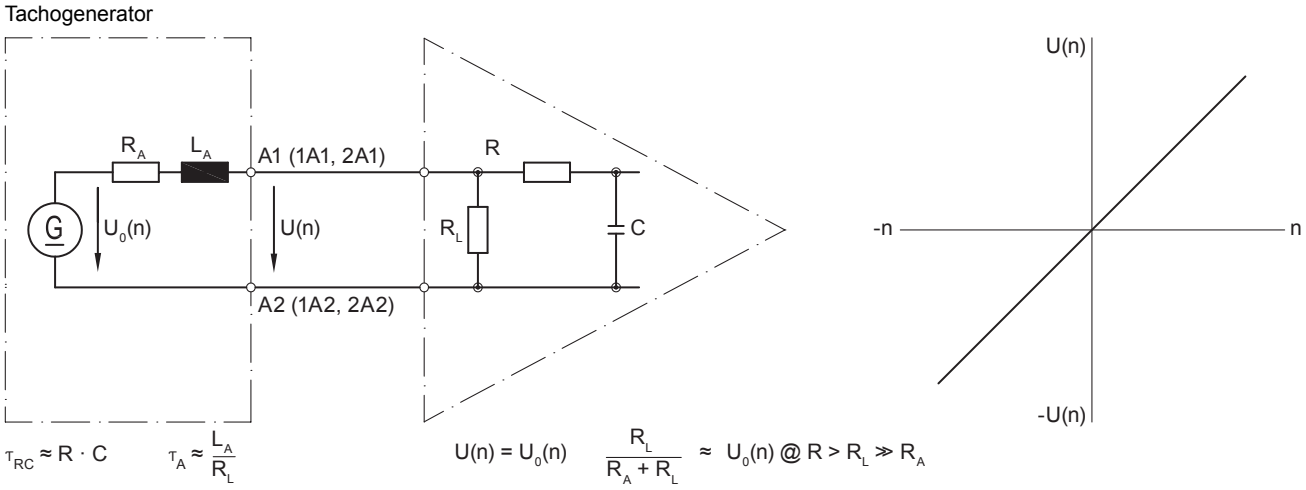
Encoder and tachogenerator in combination

Solid shaft with EURO flange B10 100…5000 pulses per revolution

Data according to type

Type	Off-load voltage	Minimum load required depending on speed range [rpm]			Maximum operating speed	Armature resistance	Armature inductance
		0-3000	0-6000	0-n_{max}			
	U_0 [mV/rpm]	R_L [kΩ]	R_L [kΩ]	R_L [kΩ]	n_{max} [rpm]	R_A (20°C) [Ω]	L_A [mH]
GT7.**08L/410**	10	≥5	≥12	≥27	9000	60	20
GT7.**08L/420**	20	≥20	≥48	≥108	9000	230	80
GT7.**08L/430**	30	≥45	≥108	≥243	9000	550	180
GT7.**16L/440**	40	≥40	≥96	≥216	9000	410	160
GT7.**16L/460**	60	≥90	≥215	≥223	6100	760	360
Superimposed ripple (for τ_{RC} = 0.3 ms):			≤0.6% (peak-peak)		≤0.25% (rms)		

Replacement switching diagram



Polarity for positive rotating direction (see dimension) / A1 (1A1, 2A1): + (VDE) / A2 (1A2, 2A2): - (VDE)

Accessories

Mounting accessories

	Spring disk coupling K 35 (shaft ø6...12 mm)
	Spring disk coupling K 50 (shaft ø11...16 mm)
	Spring disk coupling K 60 (shaft ø11...22 mm)

Connectors and cables

	Sensor cable for encoders HEK 8

Diagnostic accessories

11075858	Analyzer for encoders HENQ 1100
11075880	Analyzer for encoders HENQ 1100 with a power pack

2020-03-09 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.