

2500 Nm
1 Channel

F1

Torquemeter

Description

The bearingless system consists of an one-piece measuring body manufactured from a very low hysteresis steel material. The torsion of the measuring segment is registered by means of strain gages, converted into electrical voltage signals, and then transmitted contactlessly via modulated infrared light to the stator. The master frequency is 60 kHz and the span is ± 20 kHz for \pm rated torque.

Temperature related offset shifts are minimized by an active temperature compensation. A special configured magnetic sensor provides two 90 degree phase shifted speed signals with 1024 ppr. Maximum frequency is 250 kHz. This sensor is insensitive to pollution and distortion.

An optionally available second transmission track provides an additional second torque measuring range or a multi-channel temperature transmission.



Significant technical data

- Bearingless torque flange with IR-signal transmission
- High overload capability
- Active temperature compensation to reduce temperature effect on zero balance
- Accuracy 0.1 (Option 0.05)
- Magnetic speed encoder (1024 ppr)
- Option: 2 torque ranges (span up to 1:10)
- Compact design
- Fits to cardan shaft type 228 and 587

Rated torque T_r	Nm	≤ 2500
Overload capability torsional shaft	Nm	$5T_r$
Accuracy including hysteresis and nonlinearity	% F.S.	$< \pm 0,1$
Temperature effect on zero	% F.S./10K	$< \pm 0,1$
Operating temperature range	$^{\circ}\text{C}$	0...+70
Rated speed	rpm	12,000



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Technical Data Torquemeter Type F1

TORQUEMETER

Rated torque nominal T_r	Nm	≤ 2500
Torque limit of torque shaft related to T_r	Nm	$> 5T_r$
Rated speed n_r	rpm	12,000
Accuracy	-	0.1
Nonlinearity and hysteresis related to T_r	%	$< \pm 0.1$
Temperature effect on zero per 10K related to T_r	%	$< \pm 0.1$
Nominal temperature range	$^{\circ}\text{C}$	0...+70
Operating temperature range	$^{\circ}\text{C}$	-10...+80

OUTPUT SPECIFICATION TORQUE

Frequency output	kHz	60 ± 20
Dynamic response up to	kHz	> 1.5
Shunt calibration	-	approx. 30% of T_r

OUTPUT SPECIFICATION SPEED

Pulses per rev (magnetic encoder)	-	1024
Impulse divider (placed in evaluation unit)	-	/2
Output signal (RS422)	-	2 tracks 90° phase shifted
Required speed	rpm	> 0

MECHANICAL DATA

Weight (rotor)	kg	approx. 5.2
Inertia (rotor)	gm^2	approx. 12.7
Twist angle under rated torque	grad	0.04
Torsional stiffness	kNm/rad	1979
Coupling mass (typ.)	kg	17
Fits to cardan shaft	-	Type 228 and 587

OPTIONS

Nonlinearity and hysteresis related to T_r	%	$< \pm 0.05$
Temperature effect on zero per 10K related to T_r	%	$< \pm 0.05$
2nd torque range	Nm	up to $1/10 T_r$
Temperature acquisition (thermocouple) up to 8 channels	$^{\circ}\text{C}$	-40...+1000

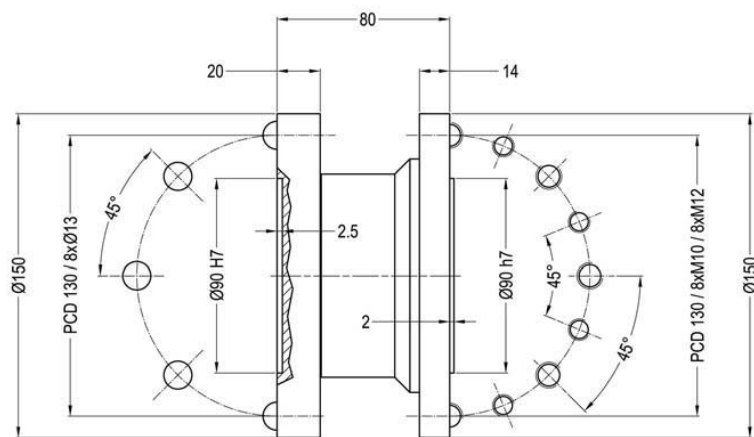
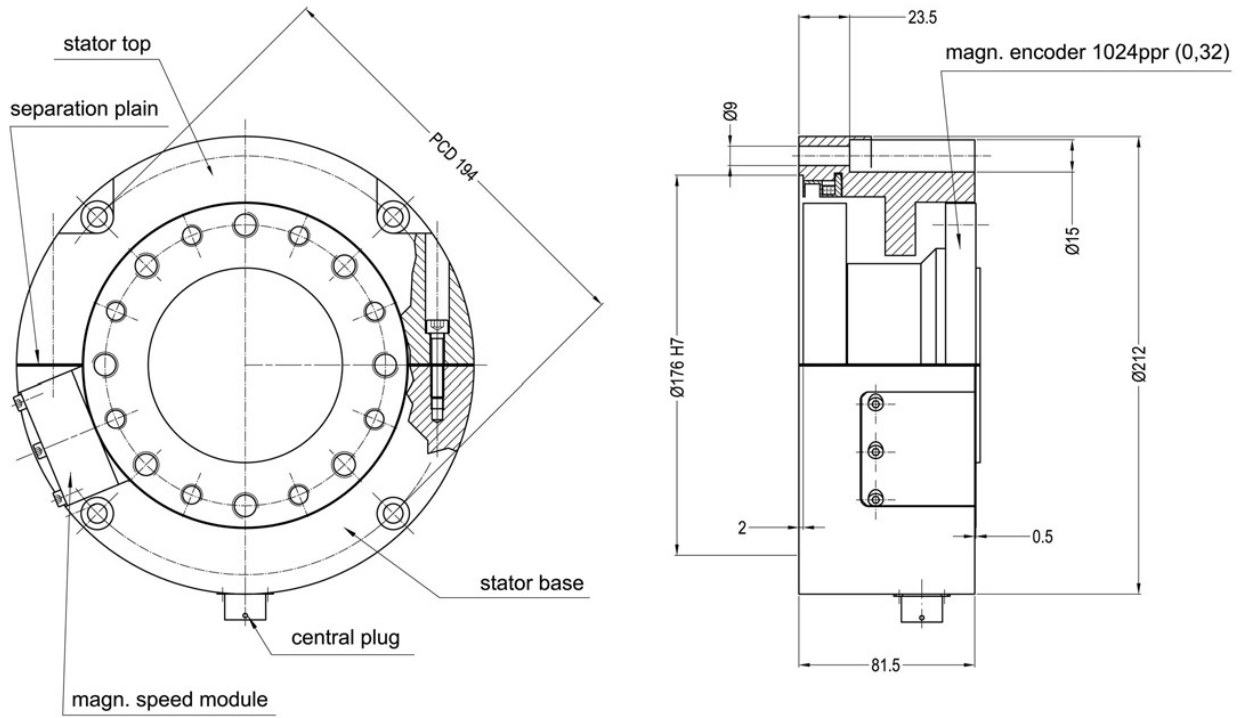
Order Number

F1-1000-1024-KLN

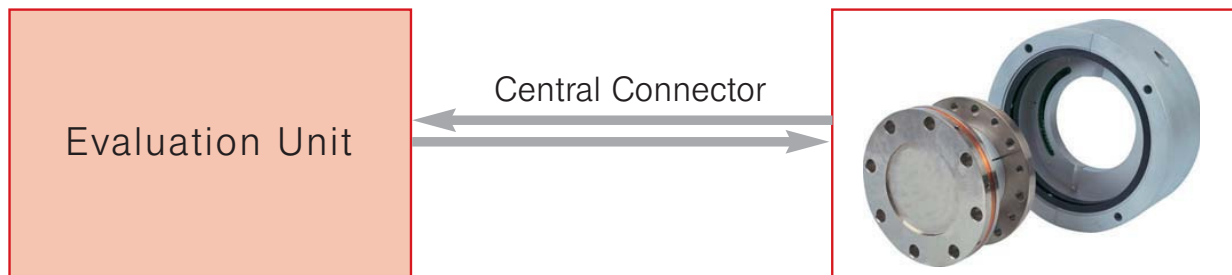
Type _____
 Rated torque _____
 1024 Pulses per rev _____
 K-Nominal temperature range 0...+70 $^{\circ}\text{C}$ _____
 S-Nominal temperature range -25...+125 $^{\circ}\text{C}$ _____
 L-Speed limit up to 0-10,000 rpm _____
 H-Speed limit up to 0-14,000 rpm (*) _____
 N-Accuracy 0.1 _____
 X-Accuracy 0.05 _____

(*)=without speed detection

Dimensions Torquemeter F1



Setup layout and available evaluation units for minimum configuration and operation of torquemeter F1



Type: TCU 1



Significant technical data

- Power supply 9VDC - 30VDC
- One channel
- Analog output torque sample rate 800 sec⁻¹
- Analog output speed sample rate 800 sec⁻¹
- Serial interface with terminal function
- Interface for external Touch Screen Display
- Diagnostic connector
- Central connector Type ZK 12/12 required

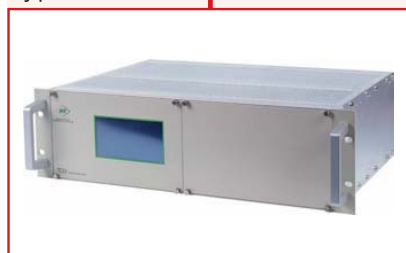
Type: GIF AE...



Significant technical data

- Power supply 230VAC, option 115VAC
- One channel
- Frequency output torque and speed
- Analog output torque and speed
- Serial interface with terminal function
- Built-in LC Display (single-line)
- Option: Dynamic plug-in card for torque and speed
- Central connector Typ ZK 12/10 required

Type: TCU 19



Significant technical data

- Power supply 115VAC or 230VAC
- One or two channel
- Frequency output torque and speed
- Analog output torque and speed
- Serial interface with terminal function
- Built-in Touch Screen Display
- Free slots for special plug-in cards
- CAN-BUS function
- Central connector Typ ZK 12/12 required

