

Optical transmission method flange type torque meter TMHSB series

2024/02/28

Features



- Compact size and light weight. Available for high speed measurement by bearing-free structure. (25 000 rpm: 100 Nm ~ 300 Nm, 22 000 rpm: 500 Nm, 1 kNm, 16 000 rpm: 2 kNm, 3 kNm, 14 000 rpm: 5 kNm, 12 000 rpm: 10 kNm)
- Measurement accuracy of ± 0.02 %R.O. in frequency output and ± 0.03 %R.O. in voltage output is achieved.
- The frequency response improves to 6kHz more than 1kHz of the TMHSA type.
- The torque signal outputs the frequency output and the voltage output at the same time.
- Calibraton software provided transfers commands between TMHSA and a PC, and allows users to read TMHSA setting parameter, proceed calibration, or write the number of moving average and the analog filter frequency.
- Even when a momentary error occurs, the error content can be confirmed because the error log is recorded
- CE mark is applicable.
- High accuracy and low noise are achieved by the digital signal transmission by the optical transmission method of the patent.
(USA PAT No. US6.472.656.B2, Japanese PAT No.3448738, PAT No.3453654)
- Special transmitter OPT-564 is available to connect.

Specification

Specification name	Specification contents
Rated capacity	$\pm 100 \text{ N}\cdot\text{m} \sim \pm 10 \text{ kN}\cdot\text{m}$
Safe overload	150 %R.C.
Ultimate overload	300 %R.C.

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Rated output	Voltage output: ± 10 VDC, Frequency output: 240 kHz ± 120 kHz
Measurement accuracy	Frequency output: ± 0.02 %R.O., Voltage output: ± 0.03 %R.O. (including linearity, hysteresis and repeatability.)
Output polarity inversion	Output polarity is inverted relative to the direction of torsion.
Temp. range, safe	-10 °C ~ 70 °C
Temp. range, compensated	0 °C ~ 60 °C (non-condensing)
Temp. effect on zero balance	0.02 %R.O./10 °C
Temp. effect on output	0.03 %LOAD/10°C
Zero shift by rotation	0.5 %R.O.p-p (WB=6 kHz)
Measurement frequency range,	6 kHz
Group delay	< 1.2 ms
Class of protection	IP54 or equivalent
Material (Rotor part)	Alloy steel
Material (Stator part)	Alluminium alloy

Table of P/N

Parts No.	Rated capacity [N·m]	Rated capacity [kN·m]	Maximum rotation speed [rpm]	Zero shift by rotation [%R.O.p-p]	Mechanical characteristics Inertia moment [kg·cm ²]	Mechanical characteristics Torsional rigidity [kN·m/rad]
TMHSB-100NM	± 100		25000	0.5	13.79	325
TMHSB-200NM	± 200		25000	0.5	13.8	371.4
TMHSB-300NM	± 300		25000	0.5	13.82	472.7
TMHSB-500NM	± 500		22000	0.5	19.77	660.7
TMHSB-1KNM		± 1	22000	0.5	26.86	909.8
TMHSB-2KNM		± 2	16000	0.5	107.6	1515
TMHSB-3KNM		± 3	16000	0.5	107.8	1881
TMHSB-5KNM		± 5	14000	0.5	260.3	2647
TMHSB-10KNM		± 10	12000	0.5	668.4	4043

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10KNM							
Parts No.	Mechanical characteristics Torsional peculiar pitch [KHz]	Mechanical characteristics Bending peculiar pitchTorsional rigidity [KHz]	Mechanical characteristics Bending peculiar pitchThrust direction [KHz]	Mechanical characteristics Twist angle at rated capacity [°]	Mechanical characteristics Twist angle at rated capacity [N]	Mechanical characteristics Accuracy safe thrust load [N]	Weight (Approx.) [kg]
TMHSB-100NM	4.757	2.821	3.458	0.018	75	65	1
TMHSB-200NM	5.161	2.911	3.528	0.031	150	130	1
TMHSB-300NM	5.882	3.073	3.656	0.036	225	195	1
TMHSB-500NM	5.701	3.135	3.715	0.043	375	325	1.2
TMHSB-1KNM	5.899	3.492	4.519	0.063	750	650	1.6
TMHSB-2KNM	3.801	1.763	2.38	0.076	800	3750	3.5
TMHSB-3KNM	4.258	1.995	2.59	0.091	1000	12000	3.5
TMHSB-5KNM	3.233	1.857	2.356	1.368	1650	20000	6.0
TMHSB-10KNM	2.489	1.368	1.670	0.142	2750	22000	10.

Parts No.	Weight (Approx.) [kg]	CAD files[DXF]	CAD files [DXF] with detector for rotation speed and rotational direction RPM	3D CAD files [STEP]
TMHSB-100NM	1.5	tmhsb-100NM.dxf	tmhsb-RPM-100NM.dxf	TMHSB-100NM.STEP
TMHSB-200NM	1.5	tmhsb-100NM.dxf	tmhsb-RPM-100NM.dxf	TMHSB-200NM.STEP
TMHSB-300NM	1.5	tmhsb-100NM.dxf	tmhsb-RPM-100NM.dxf	TMHSB-300NM.STEP
TMHSB-500NM	1.5	tmhsb-500NM.dxf	tmhsb-RPM-500NM.dxf	TMHSB-500NM.STEP
TMHSB-1KNM	1.5	tmhsb-1KNM.dxf	tmhsb-RPM-1KNM.dxf	TMHSB-1KNM.STEP
TMHSB-2KNM	1.5	tmhsb-2KNM.dxf	tmhsb-RPM-2KNM.dxf	TMHSB-2KNM.STEP
TMHSB-3KNM	1.5	tmhsb-2KNM.dxf	tmhsb-RPM-2KNM.dxf	TMHSB-3KNM.STEP

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TMHSB-5KNM	1.7	tmhsb-5KNM.dxf	tmhsb-RPM-5KNM.dxf	TMHSB-5KNM.STEP
TMHSB-10KNM	1.7	tmhsb-10KNM.dxf	tmhsb-RPM-10KNM.DXF	

* Accuracy safe bending load and accuracy safe thrust load are the load (actual measurement value) which generate output error of 0.05%R.O.

* Accuracy safe bending load is the result of applying the load at the position of 200 mm from the flange edge.

* All are the gurantee over static load.

Associated Specification sheet

Specification sheet

Rotation detector for rotation speed and rotational direction : RPM

[Rotation detector RPM No.KT53515-2](#)

Specification sheet

Cable

[Connecting cable CAC-176D No.KT54839-2](#)

Options

Dedicated cable: CAC-176D-*M (φ12.5/ 16-cores shielded cable with connector at the both end). (Selectable from 10 m/ 20 m or 30 m)

Rotation detector for rotation speed and rotational direction : RPM