



Frictional Torque Sensor System FGDH-3A



Torque Sensor System measures torque on the drive shaft of a car. Frictional strain gauges are used as sensing elements, and installation is completed by clamping the torque sensor system onto an existing shaft and securing it with a screw. There is no need of detaching the shaft, bonding nor wiring strain gauges for installation. Applicable shaft diameters are $\phi 20$ to 30 mm, $\phi 30$ to 40 mm, and $\phi 40$ to 50 mm. A digital telemetry transmitter is built in the sensor, and measured data are transmitted to an exclusive receiver DT-182R by wireless and output as analog signals. For wireless transmission, 2.4GHz band advanced low power data communication system is used. Power supply uses a USB power cable with recharging capability, so the sensor can be recharged without needing to be removed.

[Patent registered]

Features

- Easily installed by just clamping-on without detaching the drive shaft
- Three types available for applicable shaft diameter of 20~30, 30~40 and 40~50 mm
- No bonding is required because frictional strain gauges are used
- Globally standardized 2.4GHz band data communication system is used for noise resistant digital transmission
- Battery is rechargeable with the FGDH installed on the shaft
- Power saving function provided

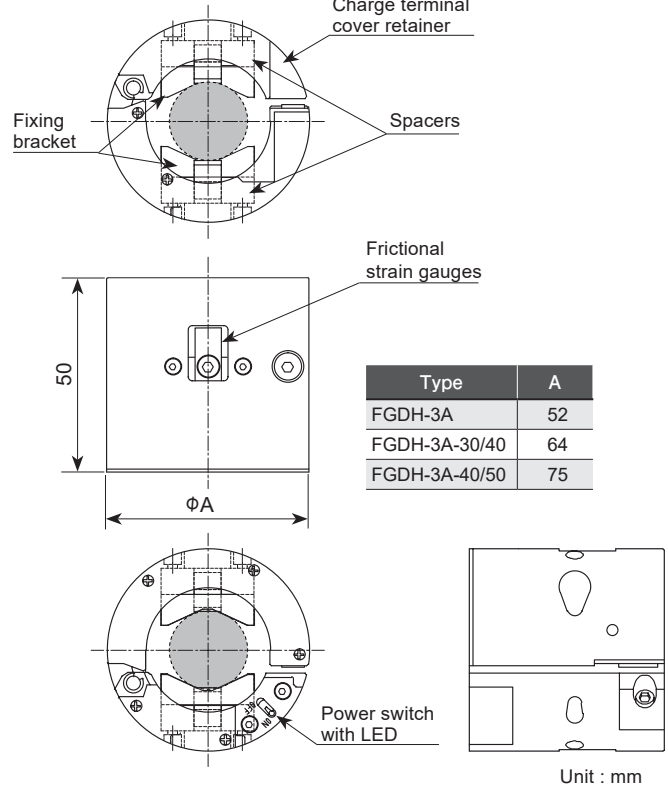
Specifications (Toque transducer)

Type	FGDH-3A	FGDH-3A-30/40	FGDH-3A-40/50
Applicable shaft diameter	$\phi 20.0 \sim 30.0$ mm	$\phi 30.0 \sim 40.0$ mm	$\phi 40.0 \sim 50.0$ mm
Capacity	Depends on the diameter (outer/inner) and material of the shaft		
Output	Depends on the diameter (outer/inner) and material of the shaft However, within $\pm 16000 \times 10^{-6}$ strain including initial unbalance of $\pm 2000 \times 10^{-6}$ strain		
Non-linearity	1%RO		
Allowable temperature	$-20 \sim +60^\circ\text{C}$ (no dew condensation)		
Sampling frequency	5kHz		
Frequency response	1kHz		
Wireless specifications	Conforms to 2.4GHz band advanced low power data communication system		
Number of wireless channels	16		
Dimensions	$\phi 52 \times 50$ mm	$\phi 64 \times 50$ mm	$\phi 75 \times 50$ mm
Weight (excluding spacer)	Approx. 85g	Approx. 130g	Approx. 160g
Protection rating	Equivalent to IP51		
Continuous operating time	Approx. 6 hours ($23 \pm 5^\circ\text{C}$)		
Power source	Lithium-ion secondary battery		
Accessory	USB charger		

NB:

- This system is approved for use in Japan, the EU member countries, the People's Republic of China. Please contact us for other countries.
- This system may not be applicable depending on the material, surface roughness or surface treatment of the shaft. Please contact us beforehand.
- Frictional strain gauges are consumable parts. Applicable type of frictional strain gauge is CBFTC-2-005CT. (option).
- A torque driver is required for the installation of FGDH-3A

Dimensions



Specifications (Receiver)

Type	DT-182R
[Wireless part]	
Number of receptions	1
Wireless specifications	Conforms to 2.4GHz band advanced low power data communication system
Number of wireless channels	16 channels (Set by wave channel switch)
Antenna connecting terminal	SMA connector
[Volage output part]	
Number of voltage outputs	1 of either received strain value or transmitter battery voltage (BNC)
Strain measurement	$\pm 5\text{V FS}$ (at $\pm 16000 \times 10^{-6}$ strain input, 5k Ω load)
Transmitter battery voltage measurement	$+1.3 \sim +3.9\text{V}$ (5k Ω load)
Voltage output accuracy	$\pm 0.5\%$ FS (Entire system)
Stability on zero	$\pm 0.55\text{mV}/^\circ\text{C}$ (Entire system)
Stability on sensitivity	$\pm 0.05\%$ FS/ $^\circ\text{C}$ (Entire system)
SN ratio	47dB
Calibration output level	$\pm 5\text{V}$
Low-pass filter	100Hz, 500Hz, PASS(1kHz)($-3\text{dB} \pm 1\text{dB}$)
Balancing range	$\pm 6000 \times 10^{-6}$ strain
Balancing accuracy	$\pm 5\text{mV}$
Display/Operation	LED for output level, Low-pass filter selection switch, Calibration output selection switch, Balancing switch
[General Specifications]	
Power source voltage	DC9~16V
Current consumption	80mA Max. (when DC12V is supplied at $+23^\circ\text{C} \pm 5^\circ\text{C}$)
Connector	HOSHIDEN HEC3800 (Compatible plug : $\phi 5.5 \times 3.3$ PIN $\phi 1$ mm)
Operating environment	$0 \sim +50^\circ\text{C}$, 85%RH or less (no dew condensation)
External dimensions	48(W) x 23.5(H) x 100(D) mm (except projecting parts)
Weight	Approx. 140g
Standard accessory	BNC coaxial cable (CR-31) DC power cable (CR-062) Receiving antenna (AA2402RSPU) USB charger (FGDHF-52) USB cable (mini-B - A)(CR-6187)

NB:

- Coaxial cable for the extension of receiving antenna is required.
C3RSPJ-EXT-1M (1m long), C3RSPJ-EXT-3M (3m long), C3RSPJ-EXT-5M (5m long)