Nm

FGDH-4A

Frictional Torque Sensor System

Dedicated digital telemetry receiver

Easy torque measurement by simply fitting!

No need to install strain gauges on the drive shaft, one-touch measurement is possible and significantly reduces preparation time. The FGDH-4A friction-type torque sensor system measures the torque generated on a rotating shaft and transmits the digital data wirelessly. The radio bandwidth of 2.4 GHz allows for long transmission distances and easy installation of a receiving antenna. The sensor is simply mounted by clamping the shaft and fastening with screws. The applicable shaft diameter is ø20-30mm, ø30-40mm and ø40-50mm.

FEATURES

- Conventional FGDH-3A: 6 hours
  New product FGDH-4A: 10 hours
- Longer measurement time! Lasts approx. 1.7 times longer!
- Switchable between three ranges of ±3200, ±6400, ±16000×10-6
- Available as a transmitting unit for affixed strain gauges!
- High-speed processing means that the delay time for digital telemetry is less than 1/10th of that of conventional systems!
- This product is compliant with regulations in Japan, the European Union (EU), the United States, Canada, China, India, Australia, and the Republic of Korea.

  *For availability or compliance in other countries, please contact us.

FGDH-4A

Frictional Torque Sensor System

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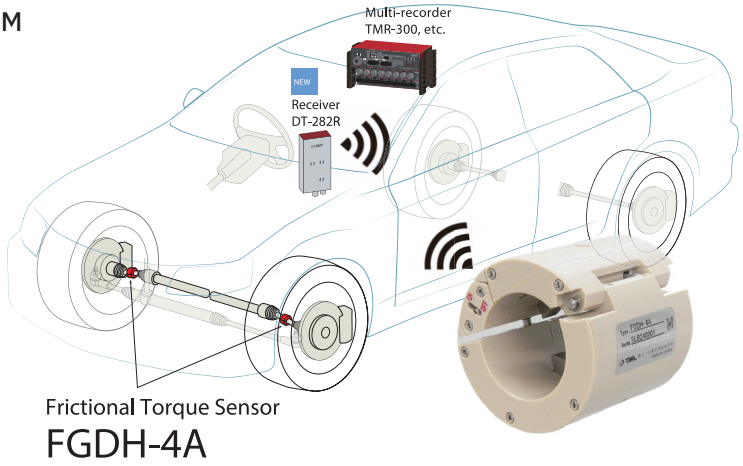
FRICTIONAL TORQUE SENSOR SYSTEM

Frictional Torque Sensor: FGDH-4A
Receiver: DT-282R

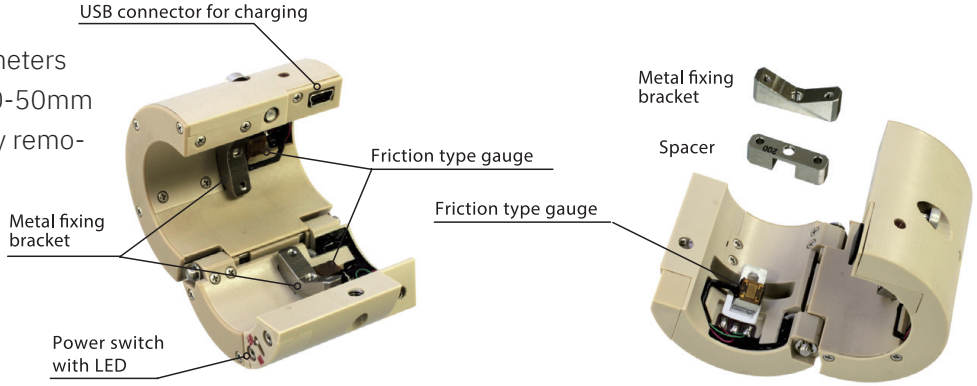


- **CE marking compliant**
  For non-EU countries, CE Mark-compliant products
- **Use of friction-type gauges**
  Ordinary strain gauges require preparation for bonding and wiring of leads. Friction-type gauges do not require any gluing work, so sensors with these gauges integrated can be mounted on the shaft with great simplicity.

- **Built-in sleep function**
  Power-saving design automatically puts the receiver in sleep mode when switched off. This reduces battery drain and provides a longer operating time.
- **Uses 2.4 GHz radio bandwidth**
  This product is compliant with regulations in Japan, the European Union (EU), the United States, Canada, China, India, Australia, and the Republic of Korea. *For availability or compliance in other countries, please contact us.
- **Easy-to-use rechargeable**
  The power supply uses a rechargeable USB power cable, so the sensor can be recharged without having to be removed.
- **Applicable diameters ø20-30, ø30-40 and ø40-50mm**
- **Wide measuring range of± 3200, ±6400, ±16000×10 -6 strain**
  The wide measuring range enables measurement of even large amplitude torques.
  *For details, see specifications (sensors).
- **Digital transmitter/receiver system makes it noise-resistant and integrated, eliminating the need for wiring work.**
- **Response frequency 1 kHz**
- **No calibration required**

PART NAMES

Applicable to different shaft diameters ø20-30mm, ø30-40mm and ø40-50mm by simply replacing the spacer by removing the screw.



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SPECIFICATION (SENSOR)

Friction type torque sensor system FGDH-4A series

Type	FGDH-4A	FGDH-4A-30/40	FGDH-4A-40/50
Applicable shaft diameter	φ20 .0 ～ 30.0mm	φ30 .0 ～ 40.0mm	φ40 .0 ～ 50.0mm
Capacity	Depends on the diameter (outer and inner), material, surface roughness and surface treatment of the shaft *		
Output	Depends on the diameter (outer and inner), material, surface roughness and surface treatment of the shaft *		
Allowable temperature	-20 to +60 °C (No dew condensation)		
Sampling frequency	5kHz		
Frequency response	1kHz		
Wireless specifications	Conforms to 2.4 GHz band advanced low power data communication system		
Number of radio channels	16 channels (paired with receiver radio channels)		
External Dimensions	φ52× 50mm	φ64×50 mm	φ75×50 mm
Weight(spacer excluded)	Approx. 85 g (Excluding spacers)	Approx. 130 g (Excluding spacers)	Approx. 160 g (Excluding spacers)
Protection rating	Equivalent to IP51		
Continuous operating time	Approx. 10 hours (23°C ±5°C)		
Power supply	lithium-ion rechargeable battery		
Accessory	USB charger (FGDHF-51) / USB cable (mini-B-A) CR-6187		

* Some shafts may not be applicable depending on the shaft material, surface roughness and surface treatment. Please contact the sales person in charge in advance.

TEST CONDITIONS

- Torque 500Nm
- Output 2500mV (equivalent to 8000 x 10^{-6} strain)
- Non-linearity 1%RO (when output is 8000 x 10^{-6} strain)
- Conditions of test piece

1. Diameter 20mm
2. Material SNCM439
3. Elastic Modulus 210000 N/ mm2
4. Poisson's Ratio 0.29 (test result by TML)
5. Surface roughness Ra3.2
6. Hardness HRC38

Friction type torque sensor FGDH-4A

Dedicated digital telemetry receivers

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SPECIFICATION (RECEIVER)

Dedicated digital telemeter receiver DT-282R

Type	DT-282R
Radio part	
Received point	1
Wireless specification	2.4 GHz band advanced low-power data communication compliant
Number of radio channels	16 channels(Switching by radio channel switching SW)
Wireless antenna connection terminal	SMA connector
Power output section	
Voltage output connector	BNC connector
Voltage output	± 5V Selected by strain output range selector switch ± 16000× 10^{-6} strain ± 6400× 10^{-6} strain ± 3200× 10^{-6} strain
Voltage output accuracy	± 0.5% FS (whole system)
Stability Zero point	± 0.55mV/ ˚C (whole system)
Stability Sensitivity	± 0.05% FS/ ˚C (whole system)
S/N ratio	47dB (whole system)
Calibration output level	± 5V
Low-pass filter	100Hz、500Hz、PASS (1kHz)(−3dB± 1dB)
Equilibrium adjustment range	± 6000× 10^{-6}strain
Equalization accuracy	± 5mV
Display and operation	Strain output range selector switch, LPF selector switch, calibration output selector switch, balance adjustment switch, output level LED

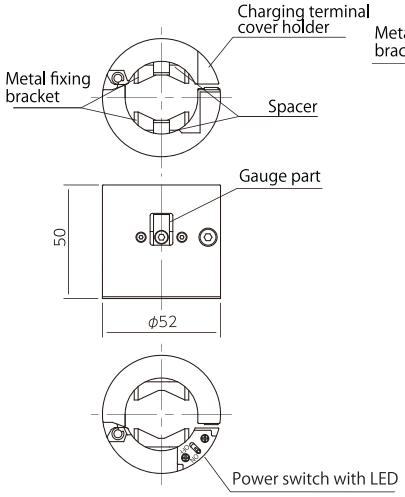
General	
Rated voltage	DC 9 ～ 16V
Current consumption	80mA MAX (DC12V supply +23 ˚C ±5˚C)
Connector	Hosiden HEC3800 (compatible plug φ5.5 x 3.3PIN φ1)
Operating temperature/humidity range	0 to +50°C 85%RH or less (excluding condensation)
External dimension	48(W)× 23.5(H)× 100(D)mm (Excluding projections)
Weight	Approx. 140 g
Accessory	BNC coaxial cable (CR-31) DC power cable (CR-062) Receiver antenna

***DT-282R is not compatible with DT-182R**

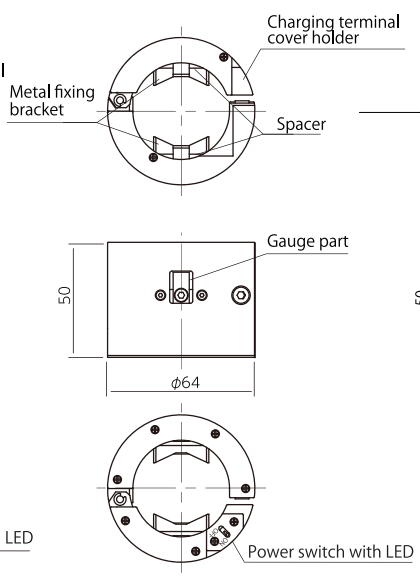
Dedicated digital telemeter receiver DT-282R

EXTERIOR DIMENSION

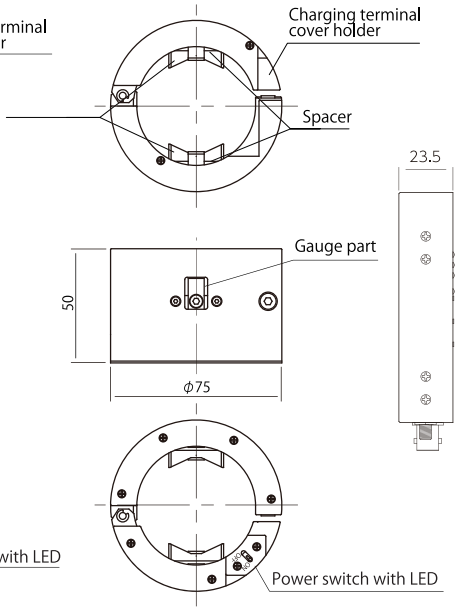
FGDH-4A



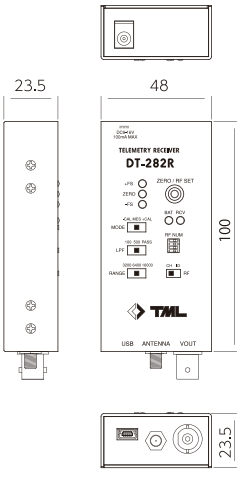
FGDH-4A-30/40



FGDH-4A-40/50



DT-282R



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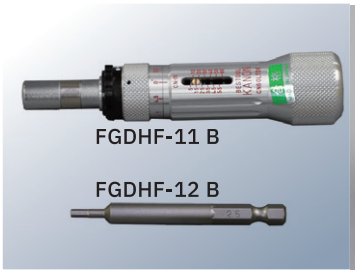
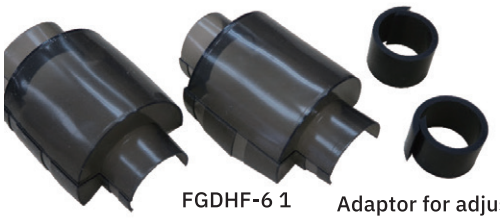
RELATED PRODUCTS

Torque screwdriver handle FGDHF-11 B
Replacement shafts for torque screwdrivers
FGDHF-12 B (M3: For holder fixing/gauge mounting)
FGDHF-13 B (M4)
FGDHF-14 B (M2.5:USB)
FGDHF-15 B (M2: Spacer replacement)
Storage Trunk FGDHF-21 (FGDH-4 A)
FGDHF-22 (FGDH-4 A-30/40)
FGDHF-23 (FGDH-4 A-40/50)

Friction type torque sensor protective cover
FGDHF-61 (FGDH-4 A)
FGDHF-62 (FGDH-4 A-30/40)
FGDHF-63 (FGDH-4 A-40/50)





Adaptor for adjustment
2 each of 5 sizes included

FGDHF-61 Combined weight		FGDHF-62 Combined weight *planned		FGDHF-63 Combined weight *planned	
Adapter size	Weight	Adapter size	Weight	Adapter size	Weight
φ21	Approx34g	φ31	Approx47g	φ41	Approx59g
φ23	Approx31g	φ33	Approx43g	φ43	Approx53g
φ25	Approx27g	φ35	Approx38g	φ45	Approx47g
φ27	Approx24g	φ37	Approx33g	φ47	Approx40g
φ29	Approx20g	φ39	Approx28g	φ49	Approx34g

Notes.
- Please contact us if you wish to carry out high-precision meas urements
- The surface must be stripped of paint and degreased as far as possible
- Sudden torque fluctuations may not be followed
- Accurate measurement may be impaired by shaft surface conditio ns

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Germany/Austria/Switzerland info@althen.de
Benelux sales@althen.nl
France info@althensensors.fr
Sweden info@althensensors.se
USA/Canada info@althensensors.com
Other countries info@althensensors.com