TML

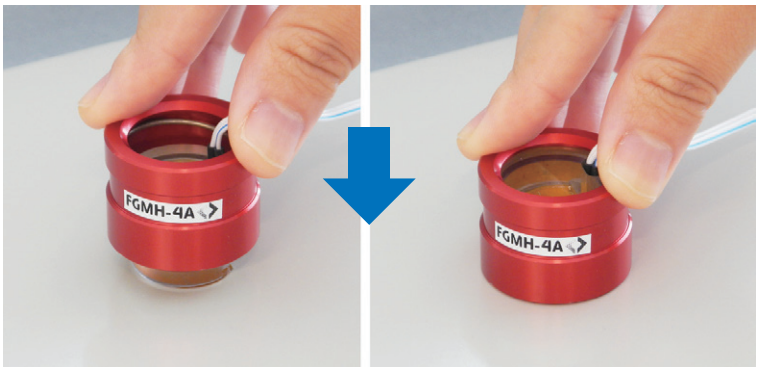
Strain checker

Frictional Strain Checker FGMH series

NEW

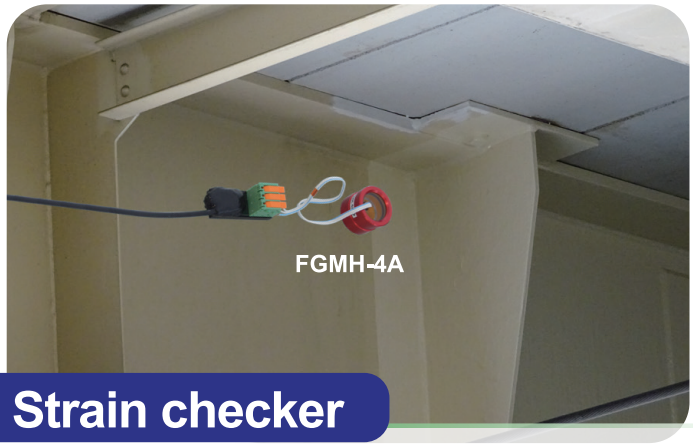
FGMH-4A

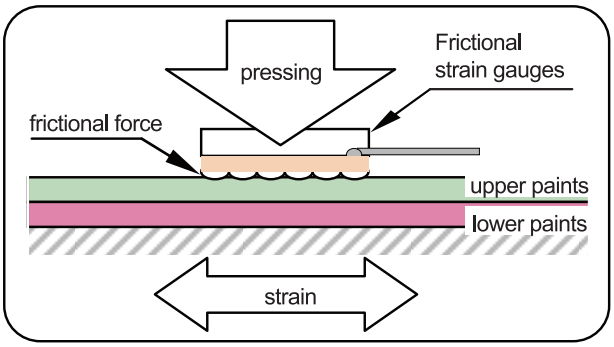
●One touch operation
Pressed from above and fitted in the measuring position



The magnetic attraction presses the friction-type gauge against the measuring section for measurement

▼Measurement image of steel girder section

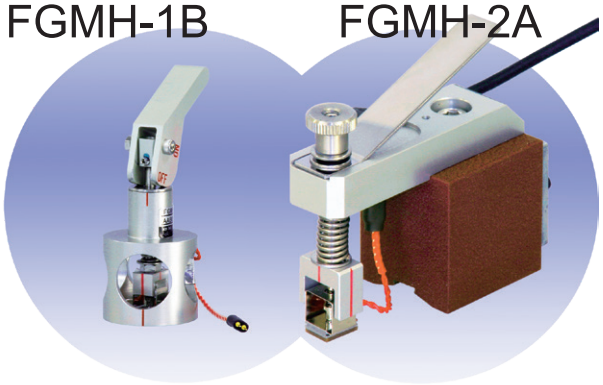




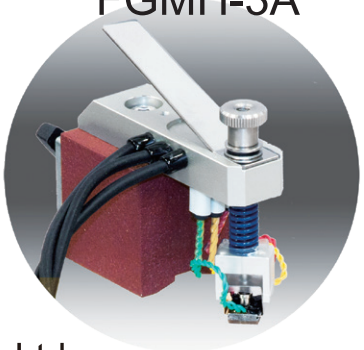
Strain checker

- **Strain measurement in steel**
- **Easy installation and removal with one-touch operation**
- **Use of magnets makes it unnecessary to affix strain gauges**
- **No paint removal, polishing, gluing or curing required**
- **Repeatable frictional strain gauge**
- **Strain measurement in three directions (FGMH-3A)**

FGMH-1B FGMH-2A



FGMH-3A

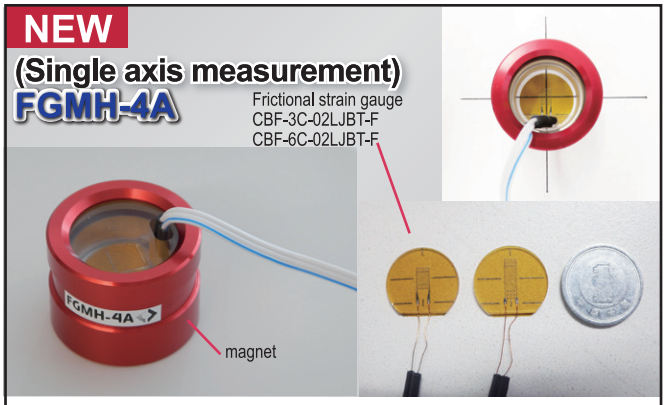


Strain Checker FGMH series stress stethoscopes measure strain due to the friction generated on the boundary surface by pressing the sensing part against the structure by magnetic attraction.
The FGMH series does not require any pre-treatment or bonding work like bonding-type strain gauges, which significantly shortens the work.
In combination with a hand-held measuring instrument, the FGMH series can easily measure the strain on bridges and other structures while moving, enabling preliminary measurements prior to long-term measurements.
The FGMH series includes the single-axis FGMH-1B/-2A/-4A and the 0°/45°/90° tri-axial FGMH-3A.

Tokyo Measuring Instruments Laboratory Co., Ltd.

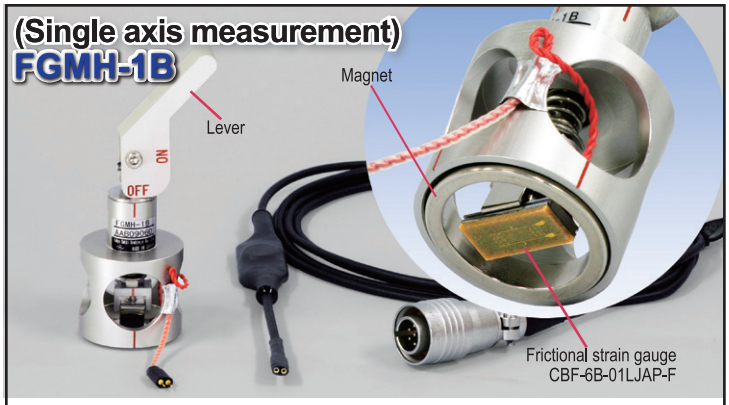
Strain checker Frictional Strain Checker FGMH series

NEW (Single axis measurement) FGMH-4A



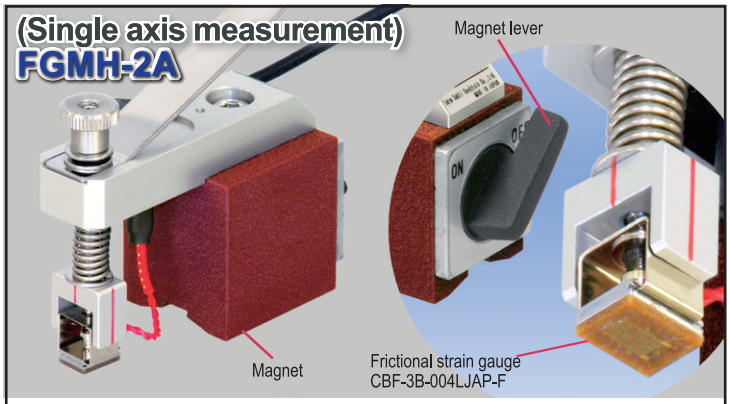
The FGMH-4A is a new, smaller and lighter Frictional Strain Checker that is an evolution of the FGMH-1B.
Compared with the Frictional Strain Checker FGMH-1B, **the overall holder length has been reduced by approximately 55%** (from 65 mm to 29 mm) and **the holder mass by approximately 50%** (from approximately 60 g to 30 g).
*Frictional strain gauges are available with a gauge resistance of 120 Ω and a gauge length of 3 mm or 6 mm

(Single axis measurement) FGMH-1B



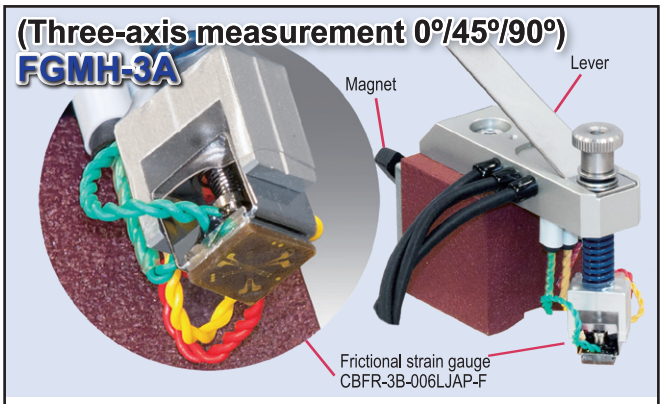
The FGMH-1B is a strain checker constructed small and light. The frictional strain gauge is set to on, off and replacing position by the operation of lever, thus allowing easy handling of the strain checker.

(Single axis measurement) FGMH-2A



The FGMH-2A is a strain checker especially designed for measurement on a small area such as the vicinity of a welded part. It can be easily attached to and detached from measurement object by the operation of magnet lever. In addition, a lever is provided on the upper part to slightly lift the frictional strain gauge from the measurement surface by pushing the lever downward. It enables easy adjustment of the direction of the strain gauge.

(Three-axis measurement 0°/45°/90°) FGMH-3A



The FGMH-3A is a strain checker for three-axis measurement in 0°/45°/90°. Principal stress (principal strain) and its direction can be found by applying rosette analysis calculation to the measured strain values in three directions. It is applicable to measurement in the vicinity of weld bead like as the FGMH-2A. Also similarly as the FGMH-2A, it can be easily attached to and detached from a measurement object by the operation of magnet lever. Another lever is provided for easy adjustment of the direction of the strain gauge.

*The frictional strain gauge is a consumable part. If it is stained, deteriorated or damaged, replace it with a new one.

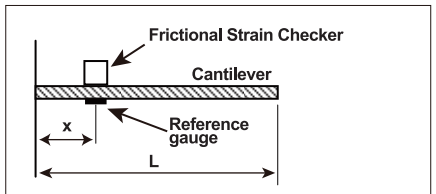
Applicable frictional strain gauge
FGMH-1B : CBF-6B-01LJAP-F(CE Marking Compliant)
FGMH-2A : CBF-3B-004LJAP-F(CE Marking Compliant)
FGMH-3A : CBFR-3B-006LJAP-F(CE Marking Compliant)
NEW FGMH-4A : CBF-3C-02LJBT-F(CE Marking Compliant)/CBF-6C-02LJBT-F(CE Marking Compliant)

Specifications

Type	FGMH-1B	FGMH-2A	FGMH-3A	NEW FGMH-4A
Number of axes	Single(1)		3	Single(1)
Gauge length	6mm	3mm		3mm or 6mm
Allowable temperature range	0 to +60°C			
Measuring material	Metals, steel			
Gauge factor	Approx. 2			
Input/output resistance	120Ω			
Measurement mode	Full bridge			
Input-output cable	—	Φ3mm 0.05mm² 4-core shielded chloroprene cable 2m with NDIS-plug	3- Φ3mm 0.05mm² 4-core shielded chloroprene cable 2m with NDIS-plug	—
Supplied cable	2m with bridge circuit board with NDIS plug	—		Φ3mm 0.05mm² 4-core shielded chloroprene cable 2m with NDIS-plug(Type : FGL-2B)
Weight(excluding cable)	Approx. 60g	Approx. 260g		Approx. 30g

Note
*Magnetically adsorbs. Therefore, it cannot be used on structures where magnetic force is not effective
*The frictional strain gauge cannot be used on uneven or curved surfaces
*If the vicinity of the Frictional Strain Checker is struck hard with a hammer or similar object, the value will shift
*Strain may not be measured correctly on structures or machinery subject to severe vibration
*For precise measurements, remove the paint and bond the strain gauge to the bare metal

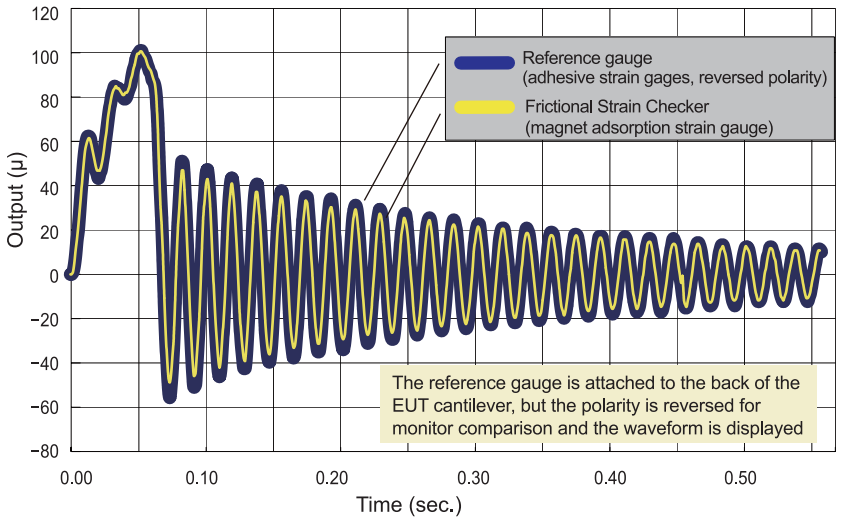
Comparison of Frictional Strain Checker and reference gauges



Measuring conditions

Overhang Length L	: 150mm
Distance to measuring point x	: 50mm
Vibration	: 1st free vibration
Sampling	: 1 msec.
Frequency	: 55Hz

Vibration testing with cantilever

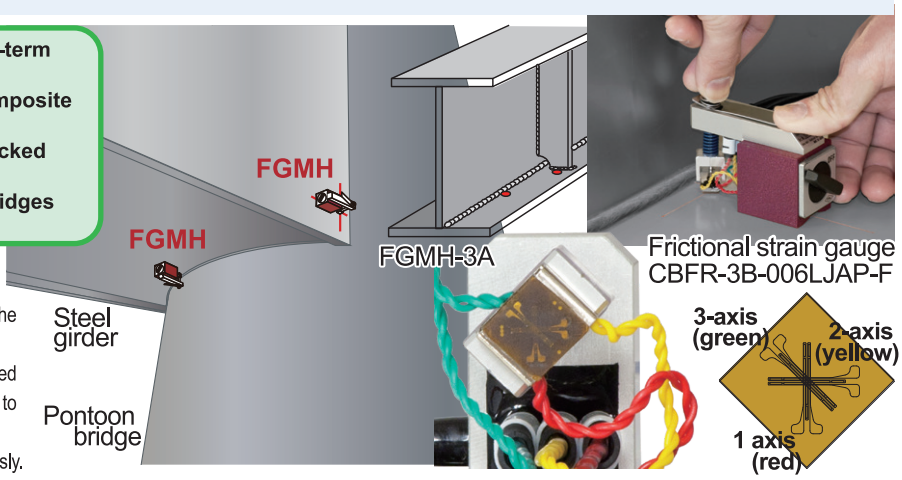


Application examples

- **Preliminary measurements on bridges for long-term monitoring**
- **Investigation of the neutral axis position of composite girder bridges**
- **Investigation of stress directions in fatigue cracked bridge members**
- **Stress measurements on newly constructed bridges where the coating cannot be peeled off**

Strain measurement in narrow areas

Stresses are concentrated near the weld bead, which rises in the welding area of metal welding.
The FGMH-2A/-3A Frictional Strain Checker can be easily attached and detached by turning the magnet on and off, making it easy to measure strain in narrow areas such as near the bead.
The FGMH-3A can measure strain in three directions simultaneously.



Easy-to-carry, one-touch connector connection measuring system

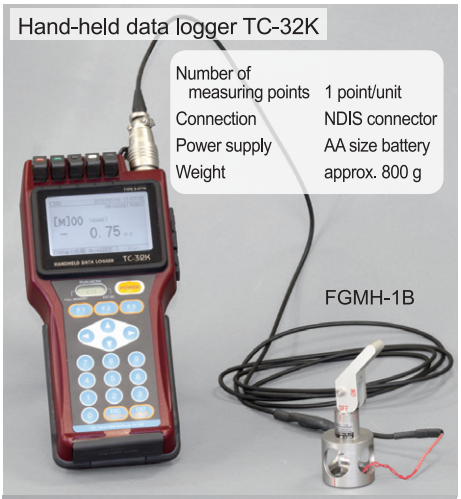
T-ZACCS3 Pocket load meter MM-014L

NEW
FGMH-4A

Number of measuring points	1 point/unit
Connection	NDIS connector
Power supply	Dedicated USB type AC adapter
Weight	approx. 300 g

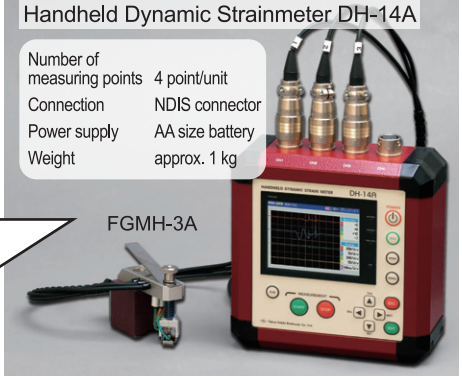
Hand-held data logger TC-32K

Number of measuring points	1 point/unit
Connection	NDIS connector
Power supply	AA size battery
Weight	approx. 800 g



Handheld Dynamic Strainmeter DH-14A

Number of measuring points	4 point/unit
Connection	NDIS connector
Power supply	AA size battery
Weight	approx. 1 kg



Measurement Software *Visual LOG* ® Rosette analysis support

Strain measured with the 3-axial type Frictional Strain Checker FGMH-3A can be used to determine the principal stress and direction using rosette analysis. By installing the optional measurement software Visual LOG on your PC, the principal stress (principal strain) and angle are automatically calculated from the measured strain.

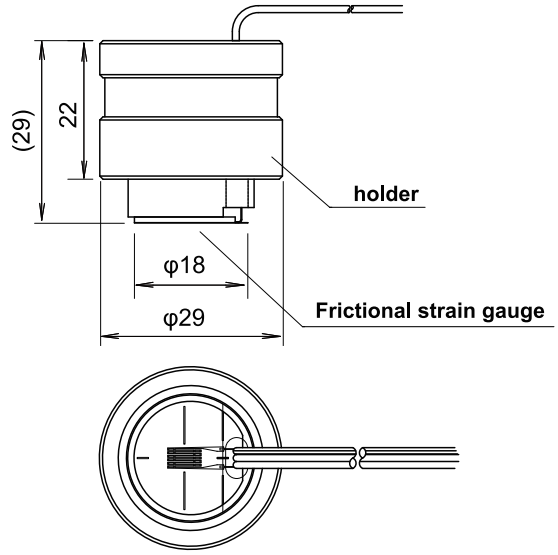
- WF-7630 Waveform display software

Visual LOG is a registered trademark of the company

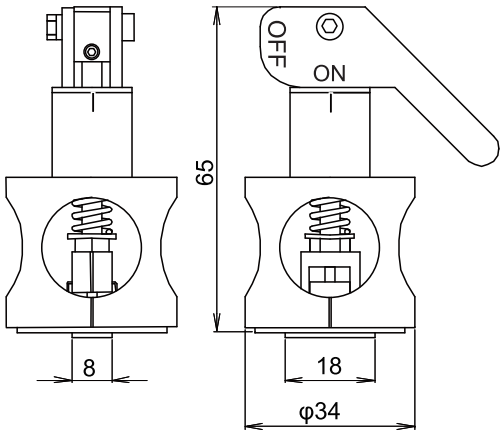
Exterior Dimension

Unit : mm

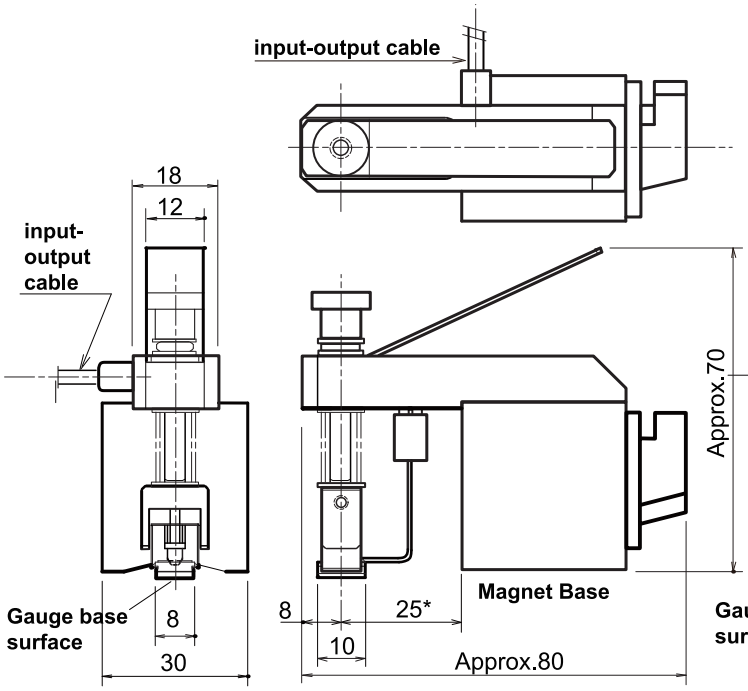
FGMH-4A (Single axis measurement)



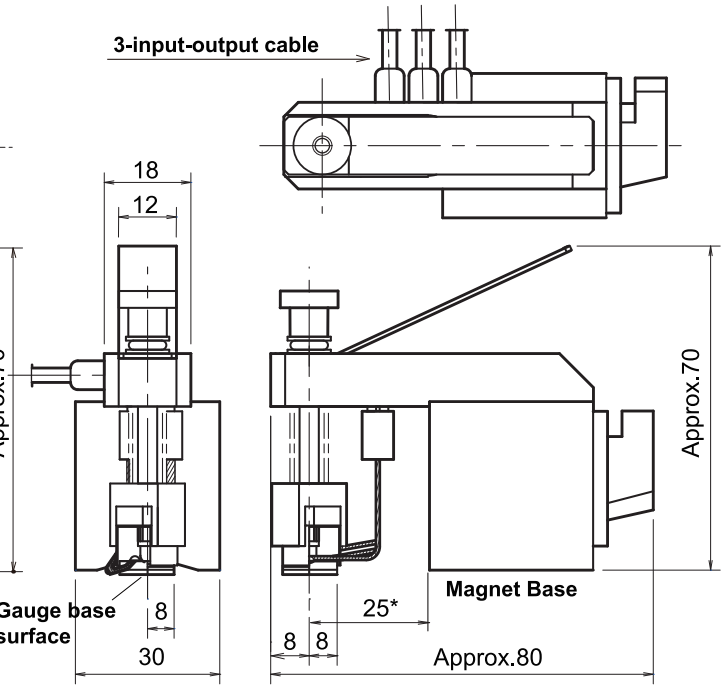
FGMH-1B (Single axis measurement)



FGMH-2A (Single axis measurement)



FGMH-3A (Three-axis measurement 0º/45º/90º)



*Dimensions when the gauge base surface is horizontal to the magnetic base. (FGMH-2A, FGMH-3A)

The contents of this catalog are subject to change without prior notice.
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