

NEW

GPS, QZSS, GLONASS

Improved positioning stability with multi-GNSS

DANA

GNSS Automatic Displacement Measurement System

Three-dimensional ground and structures displacement measurement system in mm order.

»» **Easy & quick installation**

- Small size, light weight, no cable laying (solar power supply, wireless communication)
- Easily attachable to regular pipe

»» **Low cost initialization & use**

- Easy to deploy, perfect for multi-installation
- Remote monitoring and data collection from distant location

»» **For various needs**

- Real-time monitoring and alert transmission
- Rain gauge connectable for rain fall measurement
- Compatible with RINEX
- Stable operation on north facing slopes with GLONASS (option)

Benefit of GNSS measurement

- Operation anywhere in the world 24/7, even in stormy weather
- No moving parts, no need for calibration and maintenance
- Uninterrupted measurement even following large displacements, no need for re-installation

MG-100Series

Specialized in displacement monitoring, DANA offers a low cost and simple solution for various applications

Natural Displacement



Volcano

Variations in mountain elevation

Man-made structure (Construction management)



Road (Highway)



Pylon



Rail

Natural slopes displacements, earth cut, embankment; subsidence during landfill;
Impact of construction work on adjacent sites



Landslide

Specified and unspecified block displacement and their effect in adjacent area



Tunnel

Measure entrance/exit abnormalities and collapse risk



Dam

Dam body deformation (due to subsidence or water pressure), seismic displacement

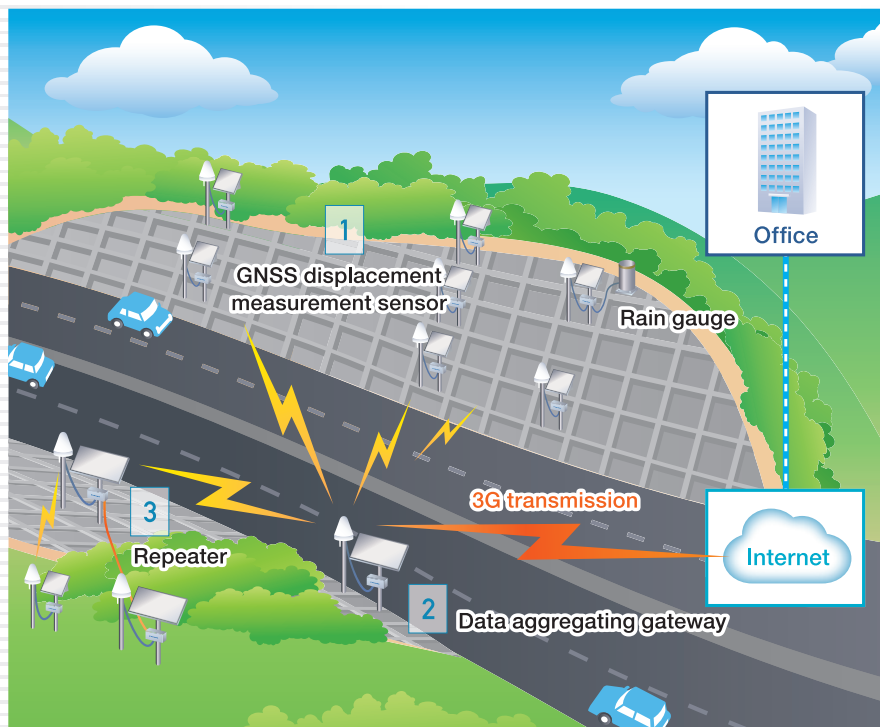
Other



Mine

Wall stability

System in working



1 GNSS Displacement measurement sensor

A GNSS antenna/receiver and a wireless communication device are integrated so that observation can start immediately upon connecting the power supply. The GNSS displacement measurement system utilizes a Furuno-made GNSS chip.

2 Data aggregating gateway

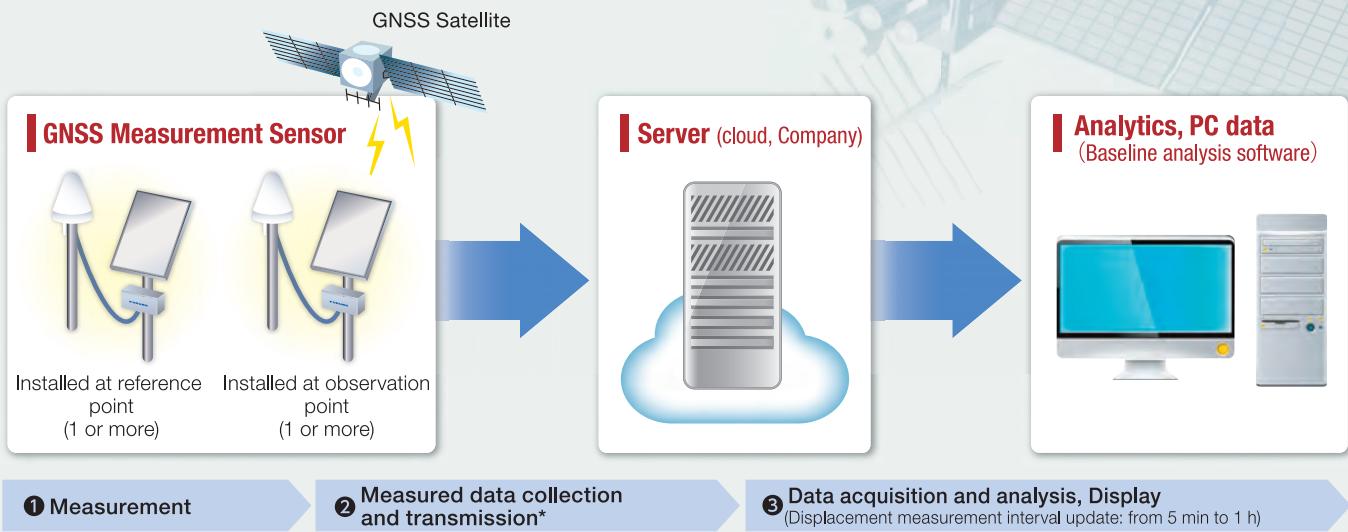
Measurement data received by each GNSS displacement measurement sensor is collected in a data aggregating gateway by wireless LAN network. The collected data is then transmitted to the office via Internet (3G/Ethernet)

3 Repeater

When GNSS displacement sensor and data aggregating gateway cannot communicate directly due to the topography, it is possible to relay the data transmission via a Repeater.

About the system

The GNSS measurement sensor MG-100 has a built-in receiver that supports GNSS L1 frequency. The displacement of multiple sensors (observation points) installed in the observation area is measured in three dimensions by the GNSS static positioning method, using the coordinates of the sensor installed outside the displacement observation area as a reference point.



*Data collection

One or more GNSS measurement sensors are used for data aggregation and server transmission among the GNSS measurement sensors installed at both the reference point or observation point, other sensors are used to send data via wireless connection to the data aggregating gateway.

In cases where the data aggregating gateway is too far from other measurement sensors or if direct data transmission is not possible due to the topography, one GNSS measurement sensor is used as a Repeater (MG-100M03) to relay the data transmission.

Baseline Analysis Program MG-100S01

(Communication / baseline analysis / error processing / display / plotting / alarm / maintenance)

Monitoring screen

Measurement point name	Reference point name 1	Reference point name 2	Reference point name 3	Hourly rainfall	SVs	Power	N/WLAN	Data collection	Equipment non-normal status
IG-1	K-1			mm	14	100.0%	ON	ON	0 count
IG-2	K-1			mm	14	100.0%	ON	ON	0 count
IG-3	K-1			mm	14	100.0%	ON	ON	0 count
IG-4	K-1			mm	14	100.0%	ON	ON	0 count
IG-5	K-1			mm	10	100.0%	ON	ON	1 count

Vector illustration

The illustration shows a structural diagram with displacement vectors. Two vectors are highlighted: IG-2 (1.7mm) and IG-3 (0.5mm). The interface includes controls for vector graph type (Horizontal/Vertical), vector scale (Auto/Manual), and north rotation.

Displacement graph

The graph displays displacement in millimeters over time for four dimensions: North, South, East, and West. The latest results are: North: +3.8 mm, South: -4.8 mm, East: -4.8 mm, West: -4.8 mm.

Real time rainfall

The graph shows hourly rainfall data in millimeters. The latest result is 0.8 mm.

Alert mail

Excess:GNSS Displacement Measurement
[Workite01:Displacement alert]
Today 01:00

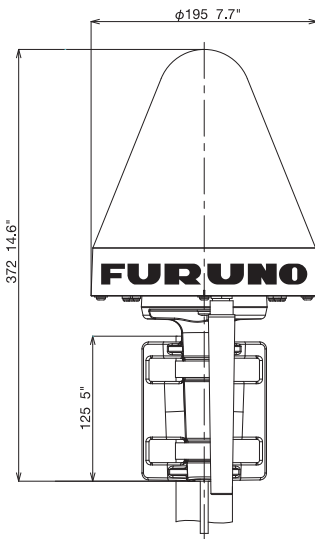
[Alert label]
Level: Excess of threshold
[Occurred time]
08/03/2019 01:00

[Baseline]
(Meas.Pt. Name)/G-1 (Ref.Pt. Name)K-1
[Alert stage]
WARNING
[Detail]
Amount of displacement of
3-Dimensional[5.1mm/12hours]
Threshold[5mm/12hours]

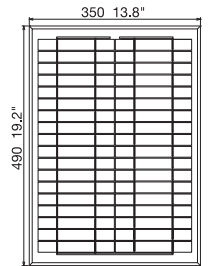
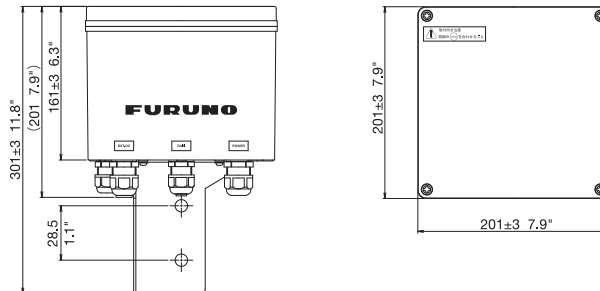
Specifications

		GNSS Displacement measurement sensor MG-100M01/87P01	Data aggregating gateway MG-100M02/87P02	Repeater MG-100M03/87P02	
Receiving satellite system		Standard: GPS/QZSS(L1 C/A), O: GLONASS(L1OF)			
Communication Type	Wireless LAN (IEEE 802.11 b/g/n)	Station function	✓	✓	
		Access point function	—	✓	
		Relay function	—	✓	
	LAN	Not supported	1 port	2 ports	
		3G Network	Not supported	Supported	Not supported
Sensor connection number (MAX) / 1 system		20			
Wireless LAN communication distance		700 m / (2,000 m Long-distance transmission option)			
Power supply		12 VDC(100 VAC Option)			
Power consumption (TYP)		0.34 W	1.76 W	3.53 W	
Temperature (during operation)		-20~60 °C			
Humidity (during operation)		95 %R.H. @40 °C			
Waterproof and Dustproof		IPX5			
Dimensions(WxDxH[mm]):Weight *Not including protrusions	Main unit	φ195x372:~1.2 kg	φ195x372:~1.4 kg	φ195x372:~1.5 kg	
	Power supply unit (including battery)	200x200x160:~4.9 kg	560x380x180:~28.4 kg		
	Solar panel	490x350x18:~2 kg	1,005x670x30:~8 kg		
Others	Data analysis frequency	1 time 5min(Standard) / 30min / 60min (selectable)			
	Measurement option	Rain gauge(Connected to each power supply)			

GNSS Displacement Measurement Sensor MG-100M01

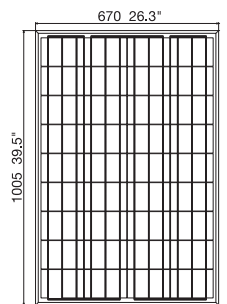
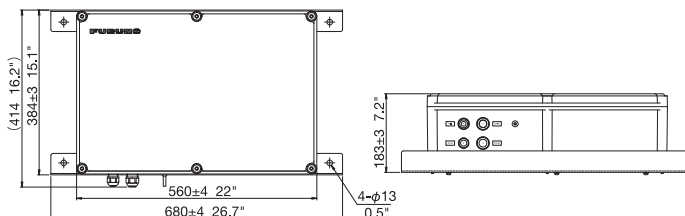


Power Supply BOX MG-87P01



20W Solar Panel
(for MG-87P01)

Power Supply BOX MG-87P02



90W Solar Panel
(For MG-87P02)

Beware of similar products

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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