

güralp

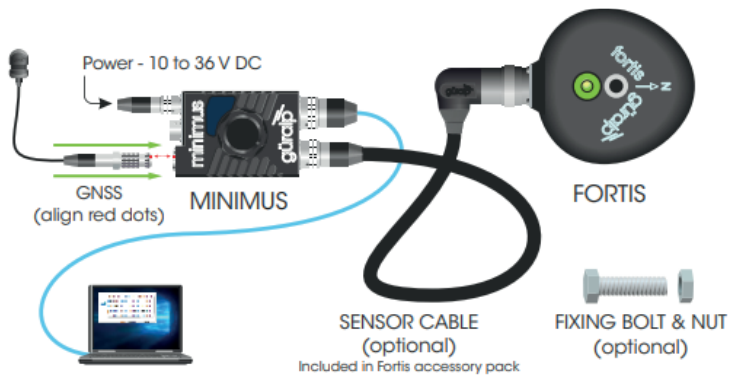
# FORTIS

STRONG MOTION SEISMOMETER

QUICK START GUIDE

# FORTIS

## Initial Hardware Setup



## Setting the Gain

The Fortis has user-selectable gain that can be switched remotely (via a Güralp Minimius digitiser) or locally via a rotary switch on the base of the instrument. Remove the cover screw using a large, flat-bladed screwdriver.



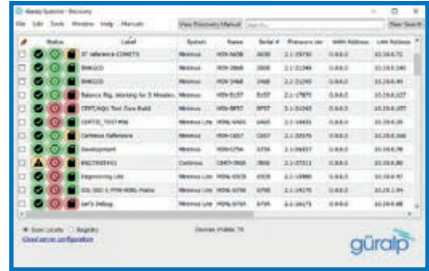
### Rotary Switch

Using a small, flat-bladed screwdriver, turn the switch to one of the four marked positions, then reattach the cover screw.

Engraved switch position	Amplifier gain	Full-scale (g)
3	1	4
2	2	2
1	4	1
0	8	0.5

# Remote Gain Control

1 To control the gain remotely, ensure that the switch is set to position '3', as described in the previous section.



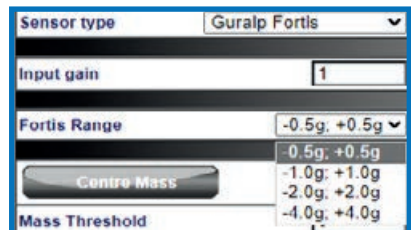
2 Launch Discovery software. The serial number (as shown on the base of the Minimus) should appear in the main window. If the instrument does not appear, check your Ethernet connection and press the **Scan Locally** button.

3 To configure the gain of the Fortis, right-click on the Minimus in Discovery's main window and select **View Web Page**.



Click to the **Setup** tab.

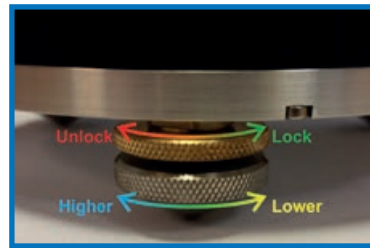
4 Make sure that **Sensor Type** is set to **Fortis** in the Analogue Sensor section. You can then change the gain from the **Sensor Gain** drop-down menu (expressed in full scale).



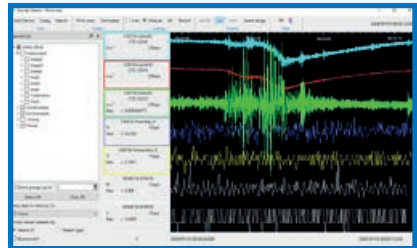
## Permanent Installation

- 1 Unpack the equipment onto a clean surface. Check that you have all components and cables. You will need a suitable digitiser/data-logger that can provide a 10-36 V DC power supply, such as the Güralp Minimus.
- 2 Prepare a flat surface by scribing an accurate North-South line and drilling a suitable bolt-hole. Place the accelerator over the fixing bolt and line up the orientation line with pointers on the Fortis.

- 3 Level the sensor using its adjustable feet until the bubble level on the lid lies entirely within the inner circle of the level indicator. Secure the instrument using a nut. Do not over-tighten!



- 4 Connect a sensor cable between the Fortis and the digitiser, then power up the digitiser. If you are using Minimus, you can now view real-time waveforms from the Fortis using Güralp Discovery software.



## Temporary Installation

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The Fortis is ideal for monitoring vibrations at field sites. Dig a shallow pit, make a smooth base, level the sensor and then cover with a box or bucket, bringing the cable out from under the bottom. The pit can be covered and back-filled with soil, sand, or polystyrene beads.

## Next Steps

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For detailed information on usage, control & configuration of the Fortis, Güralp highly recommends first reading the **Minimus Manual, MANMIN-0001**, available for download from our web site at:

<http://www.guralp.com/documents/MAN-MIN-0001>

Followed by the **Fortis Manual, MAN-FOR-0001**:

<http://www.guralp.com/documents/MAN-FOR-0001>

It may also be important to update firmware on the Minimus - refer to Section 5.17 of MAN-MIN-0001 for more details.

For further assistance please contact our technical support team on [support@guralp.com](mailto:support@guralp.com).



**Caution:** Although the Fortis is a strong motion instrument, it contains sensitive mechanical components which can be damaged by mishandling. If you are at all unsure about the handling or installation of the device, you should contact Güralp Systems for assistance.

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## Quality Certificate

It is hereby certified that the product identified below has been fully tested and calibrated in accordance with the Güralp Quality Assurance Program.

It is further certified that any product designed and manufactured by Güralp Systems Ltd is carried out in accordance with the applicable Original Manufacturer Approvals.

The Güralp Quality Management System has been assessed and is certified to meet the requirements of ISO 9001:2015 for the design and manufacture of low noise Broadband Seismometers, Accelerometers, Digitisers and associated networking equipment.

All our calibrated reference equipment is certified by an independent test laboratory, and in compliance with the international standard ISO/IEC 17025:2005.

Certificate Serial Number:

Product Serial / BatchNo:

Final Quality Approval:

Date of Issue:

## EU Declaration of Conformity

We

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READING, RG7 8EA.

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E-mail: technical@guralp.com

**Declare under our sole responsibility that the following product**

Equipment name: Fortis  
Model Number: FOR-MAA101000G01L and appropriate variants  
Serial Numbers: TF026 onwards

**Is in conformity with the**

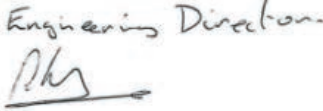
Electromagnetic Compatibility Directive 2014/30/EU  
Low Voltage Directive 2014/35/EU  
Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU

**by applying the following harmonised standards and technical specifications:**

EMC: EN 61000-4-2:2009 – Electrostatic Discharge Immunity  
EN 61000-4-3:2006 +A1:2008 +A2:2010 – Radiated RF Immunity  
EN 61000-4-4:2012 – Electrical Fast Transients Immunity  
EN 61000-4-5:2014 – Voltage Surge Immunity  
EN 61000-4-6:2014 – Conducted RF Immunity  
EN 61000-4-8:2010 – Power Frequency Magnetic Field Immunity  
EN 61000-4-11:2004 – Voltage Dips and Short Interruptions Immunity  
EN 55011:2009 +A1:2010 – Radiated Emissions  
EN 55011:2009 +A1:2010 – Conducted Emissions  
EN 61000-3-2:2014 – Harmonic Current Emissions  
EN 61000-3-3:2013 – Voltage Fluctuations and Flicker

LVD: IEC 61010-1 3<sup>rd</sup> Edition

RoHS: 2011/65/EU

Signed for and on behalf of: Guralp Systems Ltd  
Place of issue: Aldermaston  
Date of issue: 15/11/2017  
Position: Engineering Director  
Signature: 



CE



Notes

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