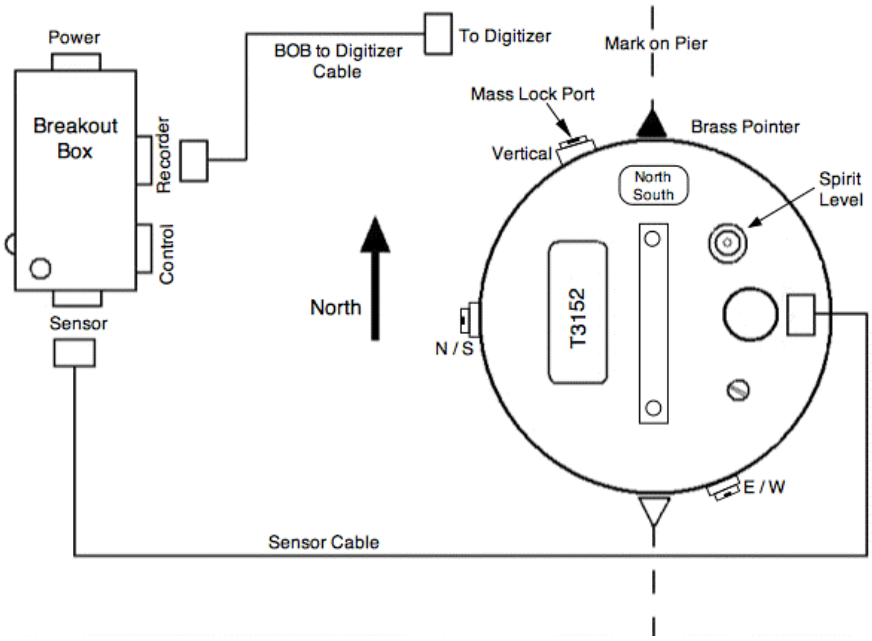
Summary Sheet for PASSCAL Sensor
Guralp CMG-3ESP



Channel Order:
(Positive voltage on digitizer channel means ground moved in given direction.)
1 Up
2 North
3 East

Sensitivity:
2000 Volts/meter/second

Step Calibration:
If needed in the field, consult the PIC Calibration Guide

Physical Characteristics:
Size: cylinder 16.8 cm diameter, 38 cm height
Weight: 14 kg
Shipping Weight: 29.5 kg **Shipping Box Size:** 33x33x61 cm
Power Consumption: 100 mA @ 12VDC
Pulses of 400 mA required for centering

Frequency Response:
Natural Freq. 0.033 Hz (30 seconds)
Damping 0.707 critical
Zeros two at zero
Poles 0.147 + 0.147ι
-0.147 - 0.147ι

Installation Tips: (See also the Guralp Field Note. Below are TIPS not instructions.)

1. The sensor pad should be within 5º of level, marked with a line oriented North/South. Construction of the sensor enclosure is critical to data quality. See Field Note on Broadband Vault Construction.
2. Align the sensor using small the small pointers extending from the base. Double check that the N mark stamped on the sensor base corresponds to the brass pointer, align this to North. The silver pointer aligns to South. Level the sensor by adjusting the feet until the bubble in the spirit level lies entirely within the inner circle. When level, on most CMG-3ESP models, twist the brass lock ring down (clockwise) onto the bottom of the slot to lock the foot and keep it from turning. On a few CMG-3ESP models, if there is no slot, turn the brass lock ring up (counter clockwise) against the base of the sensor.
3. Attach the sensor cable (26 soc to 26 soc cable). Secure the sensor cable so that tugs on it (inadvertent or otherwise) do not budge the sensor and it does not wiggle around near the sensor or touch the sensor enclosure.
4. Connect the sensor cable (26-socket to 26-socket) to the Guralp breakout box (BOB). Once the digitizer is powered, connect the digitizer to the BOB with the either 19-pin to 26-socket cable (for RT130) or 26-pin to 26-socket cable (for Q330). Power is supplied to the CMG-3ESP directly through the digitizer to BOB cable, so proceed quickly to unlock the masses.
5. Unlock the masses by removing the screw cap on the Mass Lock Port and using the 3mm hex key provided on the breakout box or in the PIC provided tools. The hex key should be clean before use. The Busy LED on the BOB will be illuminated until all masses are unlocked. Replace the screw caps once each sensor element is unlocked.
6. Give the sensor an initial centering pulse via the “enable” and “centre” buttons on the BOB until the Busy LED is illuminated or via the handheld controller connected to the digitizer. Make sure sensor is attempting to center before proceeding to the next step.
7. Note the serial number of the sensor. Cover the sensor with insulation. Insulate the vault and close the vault.
8. When the area is secure and quiet, send another centering pulse via the “enable” and “centre” buttons on the BOB until the Busy LED is illuminated or via the handheld controller connected to the digitizer. The voltage should be +/- 1.0 V. If after more than 3 attempts an element has not come within the specified range, consult the Guralp Field Note for further instructions.

Contents of a Guralp CMG-3ESP Shipping Box:

1. CMG-3ESP sensor
2. A Guralp 3ESP BOB with 1 function button on top and an enable button on the side and a 3mm hex key attached. Besure to return it to PASSCAL that way.
3. Guralp sensor to BOB cable (both connector ends are 26-socket)
4. BOB to digitizer cable (either 19-pin to 26-socket for RT130 digitizer or 26-pin to 26-socket for Q330 digitizer)