

## CMG-3ESP CALIBRATION SHEET

WORKS ORDER: 1277                      DATE: 24/02/12  
SERIAL NUMBER: T3678                      TESTED BY: SDG

|             | Velocity<br>Output<br>V/m/s<br>(Differential) | Mass Position<br>Output<br>(Acceleration<br>output)<br>V/m/s <sup>2</sup> | Feedback Coil<br>Constant<br>Amp/m/s <sup>2</sup> |
|-------------|---|---|---|
| VERTICAL    | 2 x 2960                                      | 858   | 0.01826   |
| NORTH/SOUTH | 2 x 2995                                      | 917   | 0.01952   |
| EAST/WEST   | 2 x 2984                                      | 917   | 0.01951   |

Power Consumption: 70mA @ +12V input  
Calibration Resistor: 51000

NOTE: A factor of 2 x must be used when the sensor outputs are used differentially (also known as push-pull or balanced output). Under no conditions should the negative outputs be connected to the signal ground. A separate signal ground pin is provided.

## POLES AND ZEROS TABLE

WORKS ORDER NUMBER: 1277

SENSOR SERIAL NO: T3678

Velocity response output, Vertical Sensor:

| <u>POLES (HZ)</u>                                | <u>ZEROS HZ</u> |
|--|-----------------|
| $-7.07 \times 10^{-3} \pm j 7.07 \times 10^{-3}$ | 0               |
| $-80.5 \pm j 30.8$                               | 0               |
|  | 150.5           |

Normalizing factor at 1 Hz: A = -49.5

Sensor Sensitivity: See Calibration Sheet.

Velocity response output, Horizontal Sensors:

| <u>POLES (HZ)</u>                                | <u>ZEROS (HZ)</u> |
|--|-------------------|
| $-7.07 \times 10^{-3} \pm j 7.07 \times 10^{-3}$ | 0                 |
| $-80.5 \pm j 30.8$                               | 0                 |
|  | 150.5             |

Normalizing factor at 1 Hz: A = -49.5

Sensor Sensitivity: See Calibration Sheet.

**NOTE:** The above poles and zeros apply to the vertical and the horizontal sensors and are given in units of Hz. To convert to Radian/sec multiply each pole or zero with  $2\pi$ . The normalizing factor A should also be recalculated.



|              |       |           |             |            |            |             |     |                  |
|--------------|-------|-----------|-------------|------------|------------|-------------|-----|------------------|
|              |       | Input (V) | Digital Val | V/Bit      | V/M/S      | M/S/bit     |     |                  |
| Chan 1 (Z)   | Pos   | 4.69532   | 3559317     |            |            |             |     |                  |
|              | Neg   | -4.6945   | -3796048    |            |            |             |     |                  |
|              | Total | 9.38982   | 7355365     | 1.277E-6   | 2993       | 426.527E-12 |     |                  |
| Chan 2 (N)   | Pos   | 4.6935    | 3558170     |            |            |             |     |                  |
|              | Neg   | -4.6936   | -3796015    |            |            |             |     |                  |
|              | Total | 9.3871    | 7354185     | 1.276E-6   | 3011       | 423.922E-12 |     |                  |
| Chan 3 (E)   | Pos   | 4.6932    | 3539270     |            |            |             |     |                  |
|              | Neg   | -4.6933   | -3777384    |            |            |             |     |                  |
|              | Total | 9.3865    | 7316654     | 1.283E-6   | 3003       | 427.205E-12 |     |                  |
|              |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
| Mux Chan Cal |       |           |             |            |            |             |     |                  |
|              |       |           |             |            |            |             |     |                  |
| Chan No      |       | Vin       |             | Pos Counts | Neg Counts | V/Bit       |     |                  |
| 0            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     | average of aux i |
| 1            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 2            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 3            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 4            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 5            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 6            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| 7            |       | Value     | #VALUE!     | Value      | Value      | #VALUE!     |     |                  |
| Z Mass 8     |       | 4.7438    | 9.4876      | 16934      | -16940     | 280.085E-6  | 858 | 326.439E-9       |
| N Mass 9     |       | 4.7423    | 9.4846      | 16888      | -16893     | 280.767E-6  | 917 | 306.180E-9       |
| E Mass 10    |       | 4.7413    | 9.4826      | 16887      | -16887     | 280.766E-6  | 879 | 319.416E-9       |
|              |       | counts    | Deg K       |            |            |             |     |                  |
| temperature  |       | 23445     | 294         | 12.540E-3  |            |             |     |                  |