DATALOGGERS

DataHog2 - Setting up Differential Voltage Channels

The DataHog 2 can be set up to download measurements as raw data or as scaled data in the user's preferred engineering units. Measurements are always stored as raw data in the DataHog's memory and calculated into units, if required, at the time of downloading. So if the full scale value is changed at any time, the entire memory will be recalculated using the new values at the next data offload.

To enter a new full scale value, choose 'Option 9 - Enter AX+B calibration factors' from the DataHog's Main Menu (see Chapter 3.2.10 in the DataHog 2 manual also). Enter the software channel number you wish to configure and you will see a submenu displayed.

Item a) in this menu corresponds to voltage channels with hardware channel numbers 1-23. The Full Scale Value is calculated by dividing the sensor output (in units per mV) by the chosen gain, and multiplying the result by 2000 (see example below).

REMEMBER - VALUES NEED TO BE ENTERED AS 5 DIGITS PLUS A DECIMAL POINT - LEADING ZEROS CANNOT BE USED.

You will also need to enter the offset count for your sensor. Option 9 will continue to prompt you for its value. Calculate the offset count by multiplying the sensor offset by the chosen gain and by 9.5. Enter this value and its sign (+ or -).

IN THIS CASE - LEADING ZEROS ARE PERMITTED BUT DECIMAL POINTS ARE NOT.

1. TENSIOMETERS

This example illustrates use with the Skye electronic tensiometers which have a sensitivity of approximately 1 mV per 20 hPa, offset -0.20 mV (these are nominal values, each tensiometer is individually calibrated and supplied with a certificate).

e.g. for a gain of 10,

Full Scale Value = (Sensor output [Units per mV] / Gain) * 2000
= (20 / 10) * 2000
= **4000.0**

Offset count = Sensor offset (mV) * Gain * 9.5
= -0.20 * 10 * 9.5
= **-0019**

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However, the user can also choose to take into account the length of the column of water in each tensiometer, by adding this into the offset count. This static pressure of water is more significant with longer tensiometer lengths. Please see the SKT 600 Series Tensiometer manual for a full explanation of this, and a table of pressures equivalent to tensiometer lengths.

e.g. for a tensiometer with 600 mm acrylic shaft length, static pressure of water column is 61.5 hPa (sensitivity 1 mV per 20 hPa)

From the sensor sensitivity, 61.5 / 20 = 3.075 mV
So an additional offset count of 3.075 mV must be taken into account
Additional offset count = 3.075 * 10 * 9.5 = 292.1

Hence new offset count = 285.1 + (-19) = 273.1
ENTER as **+0273**

NOTE : When a tensiometer is supplied together with a DataHog logger directly from Skye Instruments, the shaft length and static water pressure is calculated and entered into the offset count ready for use. See the Hardware Configuration Certificate in the DataHog manual which specifies which tensiometer is for use with which channel.
However, if the tensiometer is to be used horizontally or non-vertically, the user will need to recalculate and re-enter the sensor offset as appropriate.

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