Modbus Scaling Overview

All DGH Modbus analog input products scale their raw analog input data values using 16-bit unsigned integer values that represent a linear percentage of the full scale input range. These raw data values range from 0 counts (-FS) to 65535 counts (+FS).

The full scale analog input range is determined by either the product model number or the user selected analog input range. These data values represent the analog input +/- Full Scale data values. For example, DC voltage, DC current, temperature, etc..

Determine and enter the proper analog input full scale values with the equation on the right. Then calculate the correct analog input value.

In our example, we will be using the J-Type Thermocouple temperature input range of -200C to +760C. These values are shown in the middle column to the right.

Modbus Scaling Constants

Raw Data Full Scale Values	-FS = 0 Counts +FS = 65,535 Counts
Analog Data J-Type TC Full Scale Values	-FS = -200 DegC +FS = +760 DegC
Raw Data Example Value	36,769 Counts

Modbus Scaling Calculation

Raw %FS = Raw Data / (+FS - -FS)
Raw %FS = 36,769 / (65535 - 0)
Raw %FS = 0.561

Data Value = (Raw %FS * (+FS - -FS)) + -FS
Data Value = (0.561 * (760 - -200)) + -200
Data Value = +338.56 DegC