



Modbus - Spans & Diagnostics

Basic Modbus Span and Diagnostic Registers for Hawk Sultan Series Instruments v3.85 and later.

Hawk Sultan series units communicate using '2 wire' (plus Ground) RS485 connection, and can be connected in 'multi-drop' configurations.

Protocol: Modbus RTU (2 wire)
Speed: 19200 Baud
Data bits: 8
Parity: None
Stop Bits: 1

Hawk Sultan series units act as 'slave' devices on a Modbus network.

Units are shipped from the factory with a default Modbus address of 1. The Modbus address of any unit can be changed individually if units are to be connected in a multi-drop network. Each address number must only be used once on any network (possible addresses are 1...255).

The registers below are not an exhaustive list, though all commonly used functions are covered.

Diagnostic Block (Read Only): *Can be read as Singles or any Block wholly within the limits of this range of addresses*

- 40124 - LOW LEVEL span set point in mm
- 40125 - HIGH LEVEL span set point in mm
- 40126 - DISPLAYED DISTANCE (DISTANCE) in mm
- 40127 - NOT USED
- 40128 - NEW DISTANCE (E-DISTANCE) in mm
- 40129 - CONFIRM DISTANCE (C-DISTANCE) in mm
- 40130 - ECHO SIZE in Volts/102
- 40131 - GAIN at Echo detection point in %/7.5
- 40132 - NOT USED (Gain Limit)
- 40133 - RECOVER GAIN currently being used in %/7.5
- 40134 - NOISE in %/7.5
- 40135 - TEMPERATURE in Degrees K/10 ((DegreesC-273.2)/10)
- 40136 - NOT USED
- 40137 - CONFIRM COUNTER current value
- 40138 - HOLD COUNTER current value
- 40139 - NOT USED
- 40140 - WINDOW FORWARD POSITION in mm
- 40141 - WINDOW BACK POSITION in mm

Span Adjustment (Read/Write) *MUST Read/Write SINGLES-NOT BLOCKS*:

- 40013 - LOW LEVEL span set point in mm
- 40014 - HIGH LEVEL span set point in mm

RELAY Function Adjustment (Read/Write) *MUST Read/Write SINGLES-NOT BLOCKS*:

- 40052 - Relay 1 Mode setting- values defined as listed here:
 - 0-OFF
 - 1-FS (Failsafe)
 - 2-EN (Energise on Level)
 - 3-DEN (De-Energise on Level)
- 40053 - Relay 2 Mode setting- values defined as listed for Relay 1 above
- 40054 - Relay 3 Mode setting- values defined as listed for Relay 1 above
- 40055 - Relay 4 Mode setting- values defined as listed for Relay 1 above
- 40056 - Relay 5 Mode setting- values defined as listed for Relay 1 above
- 40036 - Relay 1 L1 set point in mm
- 40037 - Relay 1 L2 set point in mm
- 40038 - Relay 2 L1 set point in mm
- 40039 - Relay 2 L2 set point in mm
- 40040 - Relay 3 L1 set point in mm
- 40041 - Relay 3 L2 set point in mm
- 40042 - Relay 4 L1 set point in mm
- 40043 - Relay 4 L2 set point in mm
- 40044 - Relay 5 L1 set point in mm
- 40045 - Relay 5 L2 set point in mm

Extended Params (Read/Write) *MUST Read/Write SINGLES-NOT BLOCKS*:

- 40060 - DISPLAY UNITS parameter setting- values defined as listed here:
 - 0-Frequency (Hz) *Not valid for level instruments*
 - 1-Pressure (kPa) *Not valid for level instruments*
 - 2-Pressure (PSI) *Not valid for level instruments*
 - 3-Millimetres
 - 4-Centimetres
 - 5-Metres
 - 6-Feet
 - 7-Inches
- 40015 - FAILSAFE MODE parameter setting- values defined as listed here:
 - 0- 3.5mA
 - 1- 3.8mA
 - 2- 20.2mA
 - 3- Last Known

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- 4- 4.0mA
- 5- 20.0mA
- 40016 - FAILSAFE TIME parameter setting- in seconds
- 40017 - APPLICATION TYPE parameter setting- values defined as listed here:
 - 0-Liquid
 - 1-Solid
 - 2-Slurry
 - 3-Position
- 40018 - FILL RATE parameter setting- in metres per hour/10
- 40019 - EMPTY RATE parameter setting- in metres per hour/10
- 40020 - DISPLAY MODE parameter setting- values defined as listed here:
 - 1-Volume
 - 2-Flow
 - 3-Material %
 - 4-Material
 - 5-Space
 - 6-Differential Output
 - 7-Average Material
- 40065 - FLOW UNITS parameter setting- values defined as listed here:
 - 32-Litres
 - 33-Kilolitres
 - 34-Megalitres
 - 35-Cubic Metres
 - 36-Cubic Feet
- 40031 - FLOW EXPONENT parameter setting- in raw units/100
- 40032 - FLOW MAX parameter setting- in selected flow units per second/10
- 40033 - LOW CUT OFF parameter setting- in mm
- 40033 - OFFSET parameter setting- in mm (0-5000)
- 40021 - LOCK CODE parameter setting- raw number
- 40022 - FILL DAMPING parameter setting- raw number
- 40023 - EMPTY DAMPING parameter setting- raw number
- 40064 - ANALOG mode parameter setting- values defined as listed here:
 - 0 - 4-20mA (4mA low, 20mA high- standard)
 - 1 - 20-4mA (20mA low, 4mA high- inverted)
- 40448 - GAIN parameter setting in %/7.5
- 40449 - GAIN STEP parameter setting in %/7.5
- 40450 - DISTANCE STEP parameter setting in mm
- 40451 - THRESHOLD parameter setting in Volts/100
- 40452 - BLANKING parameter setting in mm
- 40453 - EMPTY DISTANCE parameter setting in mm