



Mark* VleS Functional Safety Universal Analog I/O Module Summary Sheet



IS430SSUAH1A
Universal Analog
I/O Module

The Mark* VleS Functional Safety IS430SSUAH1A Universal Analog Input/Output (I/O) module is an enhanced I/O device that offers users significant flexibility as compared to traditional analog I/O modules. Each of the 16 points of I/O can be uniquely configured to any of the 10 different I/O types. This flexibility allows optimization during the system design phase, lowering cabinet footprint and reducing system cost. The module facilitates last-minute field changes through simple software reconfiguration of individual I/O points for faster commissioning. Your project stays on schedule and on budget. It also provides flexibility for upgrades and expansions by simply reconfiguring the point to match the type of I/O being connected.

The Universal Analog I/O module consists of a Universal Analog IS420YUAAS1A I/O pack mounted on an IS410SUAAS1A terminal board. The ordering part number is IS430SSUAH1A (complete Universal Analog I/O module). The module is only available in a Simplex configuration.

Sixteen Simplex Analog channels can be configured individually as any of the following types: Thermocouple (TC), Resistance Temperature Device (RTD), voltage input (± 5 V or ± 10 V), 4 to 20 mA current input, 0 to 20 mA current output, pulse accumulator, digital input (DI), and digital output (DO). Highway Addressable Remote Transducer (HART®) is optional for all internally powered mA input modes. There are two connections per Analog channel that provide I/O signal + and return for the mA output mode, which also supports HART.

The YUAA I/O pack supports several types of digital (discrete) inputs and outputs, as enabled by the configuration, including: digital input modes of NAMUR, and externally wetted, internally wetted, and digital outputs using mA outputs and interposing relays.

The Universal Analog I/O module also supports a simple Pulse Accumulator input that counts pulse edges on an input channel across a specified threshold voltage up to a limited frequency.

The following table provides the specifications for the Universal Analog I/O module. For more information on the YUAA I/O pack and the SUAAS1A terminal board, refer to the *Mark VleS Functional Safety Systems for General Market Volume II System Guide for General-purpose Applications* (GEH-6855_Vol_II), the chapter *YUAA Universal I/O Modules*.

Universal Analog I/O Module Specifications

| Item | IS430SSUAH1A Specification |
|---------------------|--|
| Product Name | Mark VleS Universal Analog I/O |
| Life-cycle Status | Active |
| I/O Pack Redundancy | Simplex |
| I/O Pack | IS420YUAAS1A (qty 1) (order separately) |
| Number of Channels | 16 channels per module |
| Supported I/O Types | Thermocouple (TC) RTD 4 to 20 mA current input with HART option ± 5 or ± 10 V input 0 to 20 mA current output with HART option Digital inputs (DI) and digital outputs (DO) Pulse accumulators |
| mA / HART Inputs | 4 to 20 mA at 0.1% accuracy over temperature range |
| Voltage Inputs | ± 5 V dc or ± 10 V dc at 0.1% accuracy over temperature range |

Universal Analog I/O Module Specifications (continued)

| Item | IS430SSUAH1A Specification |
|--|---|
| Input Span | 4 to 20 mA dc with allowance for 0 to 24 mA to cover NAMUR fault conditions |
| HART Rx and Cx Values | 250 Ω in parallel with 5,000 pF for inputs; 14 k Ω with 11,000 pF for outputs |
| mA Outputs | 0 to 20 mA with 0.5% accuracy, compliance up to 18 V dc with 22 V dc or higher field supply |
| Output Converter | 16-bit D/A converter with 0.5% accuracy over 0 to 24 mA |
| Output Load | 800 Ω for 0 to 20 mA output |
| Thermocouples | E, J, K, S, T, B, N, R with 0.1% measurement accuracy of full scale Local / Remote Cold Junction options $\pm 16.7^{\circ}\text{C}$ (2°F) ($\pm 15.5^{\circ}\text{C}$, 4°F if I/O configured for mA outputs) |
| RTD | 120 Ω Nickel $\pm 16.7^{\circ}\text{C}$ (2°F) at 204.4°C (400°F) 100 Ω Platinum $\pm 15.6^{\circ}\text{C}$ (4°F) at 204.4°C (400°F) 200 Ω Platinum $\pm 16.7^{\circ}\text{C}$ (2°F) at 204.4°C (400°F) 10 Ω Copper $\pm 12.2^{\circ}\text{C}$ (10°F) at 204.4°C (400°F) Resistance up to 450 Ω ; scan time: 500 ms 2 and 3 wire support |
| Discrete Inputs | 10 to 20 V external wetted switches into 12.5 k Ω internal load line monitoring - 22 to 30 V external wetted switches using a series or series-parallel set of 8.2 k Ω Internal wetted switches with 10 mA contact current, 22 V open contact volt |
| Discrete Outputs | 0 to 24 mA at up to 22 V using mA output mode |
| Pulse Accumulators | 16-bit; voltage range: -10 to 20 V; frequency range: 0 to 500 Hz |
| Input Converter Resolution | 16-bit analog-to-digital converter |
| Measurement Accuracy | Better than 0.1% full scale over the temperature range -40 to 70°C (-40 to 158°F) |
| Common Mode Rejection | AC common mode rejection 60 dB at 60 Hz, with up to ± 5 V common mode voltage DC common mode rejection 80 dB with -5 to $+7$ peak V common mode voltage |
| Field Wiring | 24 AWG min, 12 AWG max |
| I/O Scan Time | Supported controller I/O scan rates: 10 ms, 40 ms, 80 ms, 160 ms |
| Diagnostic Fault Detection | Power-up self test, support for all I/O types, continuous monitoring of power supplies, both configurable sensor limit and system function limit checks, and incorrect terminal board check |
| Sensor Input Line Monitoring | Open/Short circuit detection for sensor outputs with DC bias, but not for zero bias signals |
| I/O Pack DC Control Power | 28 V dc, 8.1 W quiescent plus power per channel: <ul style="list-style-type: none"> • TC, 5 V, 10 V, external wetted DI, pulse accumulator, or RTD = 0.02 W per channel • External fed mA input and internal wetted DI = 0.04 W per channel • Internal fed mA input or mA output = 0.68 W per channel |
| I/O Pack DC Power Connector | Phoenix [®] contact (MC1.5/S-STF-3.81) (included) |
| I/O Pack Construction | Aluminum case |
| I/O Pack Health | Visual status LEDs, circuit health variables available to control logic |
| Termination Module Dimensions (includes cover and I/O pack) (H x W x L) | 11.2 x 8.6 x 16.8 cm (4.4 x 3.4 x 6.6 in) |
| Safety Rated | Yes, compliant with IEC 61508 |
| Hazardous Locations Capability | Class 1, Div 2 / Class 2, Zone 2 / ATEX For ratings and further details, refer to the <i>Mark VIeS Functional Safety System Equipment in Hazardous Locations (HazLoc) Instruction Guide</i> (GEH-6861). |
| G3 Compliant | Yes |
| Ambient Operational Temperature | -40 to 70°C (-40 to 158°F) |
| Storage Temperature | -40 to 85°C (-40 to 185°F) |
| Mounting Method | DIN-rail mounted |
| Module Replacement Part Number | IS430SSUAH1A |



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Issued: Sept 2018 Revised: July 2019

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