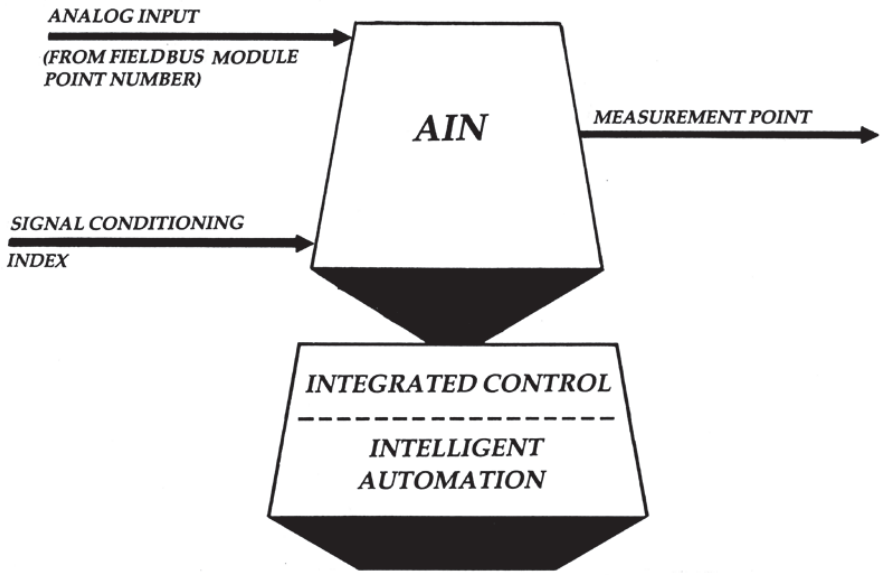
# Foxboro Evo™ Process Automation System

**Product Specifications**

Foxboro by Schneider Electric

**PSS 31S-3AIN**

## Analog Input (AIN) Block




*The Analog Input (AIN) block is a single channel (point) signal conditioning block for scanning, filtering and alarm implementation of a field measurement.*

### OVERVIEW

The AIN block reads the analog input point data, in raw counts, from the specified Fieldbus Module. After validation, the raw counts are conditioned and converted into engineering units (in floating point) according to the specified conditioning index and engineering units range. The data is optionally filtered and made available at the measurement output parameter.

Manual/Auto control of the measurement point output allows the user to disconnect a control scheme from a live process input, for simulation and checkout purposes.

The AIN block provides alarming upon detection of a fault in the operational status of the Fieldbus Module or input channel, and high/low absolute alarming of the conditioned measurement output.

The delayed alarming feature reduces the number of nuisance alarms as a block parameter crosses over an alarm limit multiple times in a short period.

## STANDARD FEATURES

- Selectable signal conditioning of the analog input signal.
- Manual/Auto control of the measurement output signal, which can be initiated by a host process or another block.
- Bad-input-point detection. The AIN block detects errors in the operational status of the Fieldbus Module or input channel, and provides a bad-point indicator for optional alarming.
- Clamping of the measurement output signal when it exceeds a specifiable range.

## EXTENDED FEATURES

- Last good value retention. When a bad-input point is detected, the AIN block retains, on option, the last good value for the measurement output. When all errors are corrected, the block resumes normal operation.
- First- or second-order filtering. Filtering introduces a lag dependent on a specifiable time constant. Filtering also minimizes changes to an output signal that may be stimulating actual process changes.
- External or internal temperature reference for thermocouple cold-junction compensation.
- Bad input point alarming. The outputs include an alarm indicator signal and a user-defined alarm message.
- High and low absolute alarming of the measurement output signal. The outputs include alarm indicator signals and user-defined alarm messages.
- Inhibiting of block alarm messages.
- Indication of the alarm level (1 to 5) and alarm type of the highest-priority active alarm for the block.
- Conditioning of a low frequency pulse input from a digital input (16 DI only) Fieldbus Module.
- Meter factor for converting an input pulse rate to the desired engineering units.
- Scale and bias terms for converting thermocouple and resistance thermometer outputs from degrees Celsius to another temperature scale.

## PRINCIPAL PARAMETERS

### Inputs

- One analog input point
- Signal conditioning index (integer)
- Manual/Auto control mode switching (Boolean)

### Outputs

- Conditioned measurement point output (real)
- Three alarm indicators (Boolean)

## ADDITIONAL FEATURES

- Delayed alarming. A configurable timer delays alarm detection or return-to-normal messages for a specific alarm to reduce the number of alarm messages generated when a block parameter crosses back and forth over an alarm limit.
- Quality Status output parameter provides a single source for the block's value record status, block status, and alarm status.

| SIGNAL CONDITIONING INDEX ASSIGNMENTS | |
|---|---|
| **Conditioning Index** | **Signal Conditioning** |
| 0 | No Conditioning |
| 1 | 0 to 64 000 raw counts linear (0 to 20 mA) |
| 2 | 1600 to 64 000 raw counts linear (nominal 0 to 10 V dc) |
| 3 | 12 800 to 64 000 raw counts linear (4 to 20 mA) |
| 4 | 0 to 64 000 raw counts square root (0 to 20 mA) |
| 5 | 12 800 to 64 000 raw counts square root (4 to 20 mA) |
| 6 | 0 to 64 000 raw counts square root with low cutoff (3/4%) (0 to 20 mA) |
| 7 | 12 800 to 64 000 raw counts square root with low cutoff (3/4%)(4 to 20 mA) |
| 8 | pulse rate |
| 10 | Intelligent Transmitter support |
| 20 | type B thermocouple |
| 21 | type E thermocouple |
| 23 | type J thermocouple |
| 24 | type K thermocouple |
| 25 | type N thermocouple |
| 26 | type R thermocouple |
| 27 | type S thermocouple |
| 28 | type T thermocouple |
| 40 | copper RTD |
| 41 | nickel RTD |
| 42 | platinum RTD (DIN) |
| 43 | platinum RTD (IEC) |
| 44 | platinum RTD (SAMA) |

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