AI815

Analog input unit with HART support
8 channels: 0...20 mA, 4...20 mA, 0…5 V, 1…5 V.

Underflow and Overflow for Respective Ranges

Signal Range	Underflow	Overflow
4..20mA	2mA	22.4mA
4..20mA	3.65mA	22.4mA
4..20mA	3.8mA	22.4mA
1..5V	0.5V	5.6V
0..20mA	-*	23mA
0.5V	-*	5.7V
4..20mA sqrt	2mA	22.4mA

* Does not indicates underflow.

In the hardware configuration editor you have access to the functions of each unit under the following tabs.

Settings Tab

Parameters	Description
External power supervision	This parameter enables supervision of the power supply to the transducer. If an error occurs the status of the unit is updated and the channel status bits will be set. The parameter can be set to True or False.
Shunt mode	Defines if the internal or an external shunt should be used. The parameter can be set to Internal shunt or External shunt. External shunt is used, when all active inputs are used for voltage signals. It is not possible to mix current and voltage inputs.
Activate channel *No.*	Activate channel No. on the unit. The parameter can be set to Active or Deactive (PROFIBUS with CI840 or CI801), or True or False (ModuleBus and PROFIBUS with CI830).
Filter time channel *No.*	Time constant for low-pass filter on channel No. The parameter can be set to 0-65355ms via ModuleBus and off, 0.2s, 0.5s or 2s on PROFIBUS.
Linearization code channel *No.*	This parameter can enable linearization (square root) of the input signal at channel No. This can compensate for a non-linear transducer. The parameter can be set to No Linearization or Sqrt.
Signal range channel *No.*	This parameter is used to change the signal range of the channel No. The parameter can be set to 0...20 mA, 4...20 mA < 2mA underflow, 4…20mA <3.65mA underflow, 4…20mA < 3.8mA underflow, 0...5 V or 1...5 V. For S800IoModuleBusHwLib also 4...20 mA sqrt < 2mA underflow, should be used to get a correct underflow and overflow indication if Linearization code according to Sqrt (square root) is set.
	This parameter has three Underflow settings for the value 4-20 mA. Intelligent sensors indicate sensor errors by lowering the out current below a certain value. These values differ for different models and standards. That is, select a value corresponding to the sensor in use. (ModuleBus and PROFIBUS). 4-20 mA gives an underflow at < 2mA. 4-20 mA < 3.65, gives an underflow at <3.65. 4-20 mA < 3.8, gives an underflow at <3.8.
	If the Linearization parameter is enabled for signals of range: 4-20 mA, the underflow is set for signals < 3.75mA. 4-20 mA < 3.65, the underflow is set for signals < 4mA. 4-20 mA < 3.8, the underflow is set for signals < 4mA.
	If the Linearization parameter is enabled for signals 1 - 5V, the underflow is set for signals < 0.94V.
	If the Linearization parameter is enabled for signals 2 - 10V, the underflow is set for signals < 1.88V.
ISP Control channel *No.*	Set the function for ISP (Input Set as Predefined). The ISP function is activated on channel error. The parameter can be set to Keep Current Value or Use ISP Value.
ISP value channel *No.*	ISP value can be set from 0 to 100% of the signal range.

Connections Tab

Under the connections tab you connect the variables to the I/O channels.

Connections	Description
AI815: Input 1-8	Connection of input variable.
UnitStatus	The I/O channel has the UnitStatus of dint or HwStatus data type.

Properties Tab

Under the Properties tab you can scale the variable value. It is possible to set min and max value and also the number of decimals, and whether the value is to be inverted. You can also set a unit for the value, this does not affect the value in any way, it is only an aid to the programmer/operator.

Status Tab

Under the Status tab you can see the current signal values and the status of the channels. A channel can be error marked due to a module error or due to a channel specific error. Channel specific errors are listed as follows:

- Sensor power supply error (external error)
- Wrong channel parameters (for example the parameter Signal range is set to voltage signal and Shunt mode is set to internal)
- Internal channel error (internal error)
- Overflow if the signal rises above the allowed maximum value
- Underflow if the signal goes below the allowed minimum value

Unit Status Tab

Under the Unit status tab you can see the current and latched status of the unit. Both general status and device-specific status are shown. UnitStatus contains the following six components:

HwState

For more information, see HwState.

HWStateChangeTime

For more information, see HWStateChangeTime.

ErrorsAndWarnings

Errors and warnings are logged in the ErrorsAndWarnings component. This component contains both general status and device-specific status. Fore more information on general status, see ErrorsAndWarnings. There is no device-specific status for this unit.

LatchedErrorsAndWarnings

For more information, see LatchedErrorsAndWarnings.

ExtendedStatus

As a complement to ErrorsAndWarnings, the ExtendedStatus component contains information about a unit. This information may be errors or warnings, but can also be of pure information. This component contains both general status and device-specific status. Fore more information on general status see ExtendedStatus. Device-specific status for this unit is:

Bit	Text in the Unit Status Tab	Status Type	Alarm/Event	Alarm and Event Severity
4*	Not configured	Warning	Event	Low
8	Internal channel error	Warning	Event	Low

* Only on PROFIBUS

LatchedExtendedStatus

For more information, see LatchedExtendedStatus.