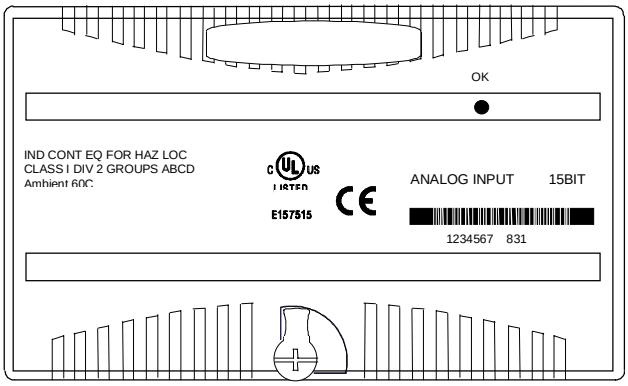
Analog Input Module, 15-Bit Current, 15 Channels

October 2001 GFK-1935B

Product Description

This Analog Input Module provides an interface to 15 current inputs.



The module receives power from the backplane power supply. No external power source is required for module operation. Power for the user's transceivers must be supplied from an external source.

Module features include:

- Fifteen single-ended input channels, one group
- Jumper selection of 4-20mA or 0-20mA operating range
- Fifteen bit converter resolution
- Software-configurable selection of default/hold last state operation

Host Interface

The module provides 15 words of analog input data.

Diagnostics

The module reports a Loss of Internal Power fault for field-side circuits. The module reports an Open Wire fault for each channel, when in 4-20mA mode.

LED Indicators

The green OK LED is on when backplane power is present, internally generated field power is functioning properly, the module has been configured, and the module has been recognized on the backplane.

Configuration Parameters

A jumper on the carrier terminals can be used to configure 4-20mA or 0-20mA input ranges. With no jumper installed, the module accepts 4-20mA input signals. With a jumper installed, the module accepts 0-20mA input signals.

The analog inputs are software-configurable to either default or hold last state upon a loss of module.

Module Characteristics	
Channels	15 single ended, one group
Module ID	FFFFB50F (when cfg for 4-20mA range) FFFFB40F (when cfg for 0-20mA range)
Isolation: User input to logic (optical) and to frame ground Group to group Channel to channel	 250VAC continuous; 1500VAC for 1 minute Not applicable None
LED indicators	OK LED indicates successful power-up and configuration
Thermal derating	None
Backplane current consumption	5V output: 100mA maximum
External power supply	None
Configuration parameters	Range select (terminal jumpers)
Diagnostics	Loss of Internal Power, Open wire detection of 4-20mA signals only
Input Characteristics	
Input current	4 to 20mA (default: no terminal jumper installed) 0 to 20mA (with terminal jumper installed)
Input Impedance	100 Ohms
Accuracy at: 25 degrees C * 0 to 60 degrees C	 +/-0.3% typical of full scale, +/-0.5% maximum of full scale +/-1% maximum of full scale
Resolution	15 bits 0.5µA = 1 counts (for 4-20mA range) 0.625µA = 1 counts (for 0-20mA range)
Filter response (3dB Corner Freq)	24 Hz +/-20%
Update rate	7.5ms

* In the presence of severe RF interference, (IEC 1000-4-3, 10V/m), accuracy may be degraded to +/-2%.

Preinstallation Check

Carefully inspect all shipping containers for damage. If any equipment is damaged, notify the delivery service immediately. Save the damaged shipping container for inspection by the delivery service. After unpacking the equipment, record all serial numbers. Save the shipping containers and packing material in case it is necessary to transport or ship any part of the system.

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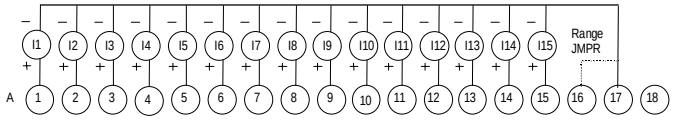
Field Wiring Terminals

Terminal assignments for the module are shown below.

Number	Connection	Number	Connection
A1	I1	B1	No connection
A2	I2	B2	No connection
A3	I3	B3	No connection
A4	I4	B4	No connection
A5	I5	B5	No connection
A6	I6	B6	No connection
A7	I7	B7	No connection
A8	I8	B8	No connection
A9	I9	B9	No connection
A10	I10	B10	No connection
A11	I11	B11	No connection
A12	I12	B12	No connection
A13	I13	B13	No connection
A14	I14	B14	No connection
A15	I15	B15	No connection
A16	Range JMPR	B16	No connection
A17	RTN	B17	No connection
A18	NC	B18	No connection

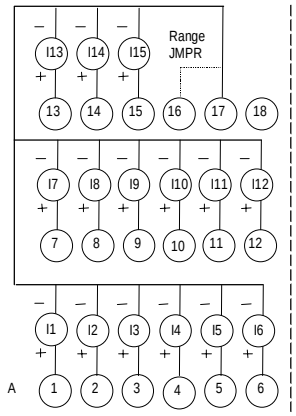
Wiring Connections for Carriers with Two Rows of Terminals

The diagram below shows wiring connections for this module when installed on a carrier with two rows of terminals.



Wiring Connections for Carriers with Three Rows of Terminals

The next diagram shows wiring connections for this module when installed on a carrier with three rows of terminals.



Jumper Selections

A jumper selects the current input range.

Jumper	Range
None	4-20mA
Installed from A16 to A17	0-20mA

Cable Shield Connections

Shielded twisted pair cable is recommended for the analog channel connections. If possible, the cable should be grounded at the source device. If that is not possible, the cable shield must be grounded at the I/O module. This can be done using an Auxiliary I/O Terminal.

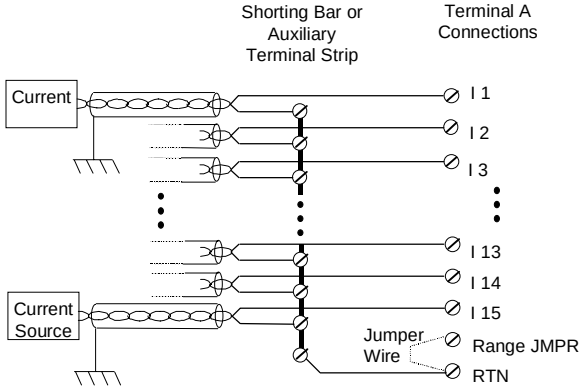
If the module is installed on a Terminal-style I/O Carrier, shield connections can be made on an Auxiliary I/O Terminal that is attached to the I/O carrier.

If the module is installed on a Compact Terminal-style I/O Carrier, shield connections can be made on an Auxiliary I/O Terminal that is mounted near the I/O carrier.

If the module is installed on a Connector-style I/O Carrier, the cable shield can be connected directly to an Interposing Terminal. A shielded interposing cable (shielded cables are available separately) must be used between the Connector-style I/O Carrier and the Interposing Terminal.

An Auxiliary I/O Terminal Strip can also be added to the Interposing Terminal if additional shield connections are required.

Wiring Example



An optional Shorting Bar or Auxiliary I/O Terminal Strip can be used for wiring convenience, when multiple Return paths need to be wired together.

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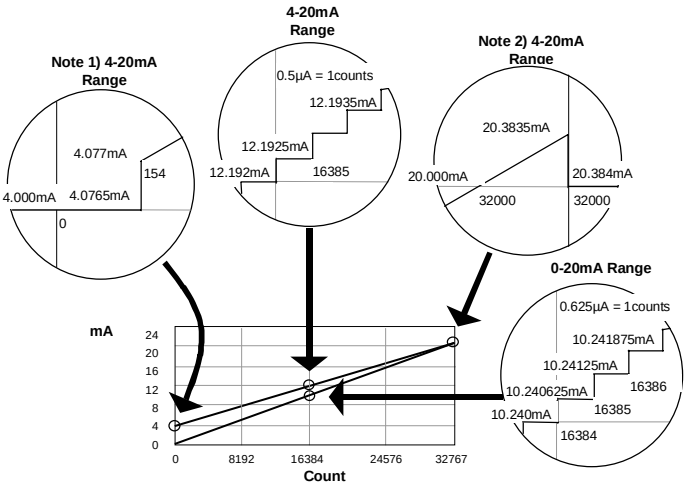
Scaling

The illustration below shows the relationship between the input current measured at the field terminals and the data that is output by the module.

Count and 4-20mA Input Current



The following equations can be used to calculate count values:

4-20mA Range: Counts = (Current in mA - 4mA) x (32000 / 16mA)

0-20mA Range: Counts = (Current in mA) x (32000 / 20mA)

Note 1) In 4-20mA mode, signal inputs below 4.077mA are converted to zero counts. Note 2) In 4-20mA mode, signal inputs at 20.000mA or above 20.383mA are converted to 32000 counts.

Compatibility

This module is compatible with:

- PLC CPU firmware version 2.1 or later.
- VersaPro software version 2.0 or later.
- Ethernet NIU EBI001 firmware version 1.10 or later
- Genius NIU GBI001: planned for future release
- Profibus NIU PBI001: planned for future release
- DeviceNet NIU DBI001: planned for future release