High Density Analog Input Modules For Demanding Process Control Applications

Allen-Bradley

Product Profile

1746-NI8, 1746-NI16I, and 1746-NI16V

Small programmable controllers continue to be placed in process control applications demanding higher densities, faster, more accurate measurement and the flexibility to interface to a variety of temperature, pressure and flow transducers. 1746 high density analog input modules broaden the control capabilities of the SLC 500 to serve these demanding process applications.

High Density and Excellent Performance

These new 8 and 16 channel analog modules provide more efficient use of rack space and lower cost per point compared to competitive four channel analog modules. The modules provide excellent performance with accuracy ranging from +/- 0.05% to 0.15% of full scale. The NI8 module performs continuous auto-calibration to maintain its high accuracy over temperature change. Fast step responses range from 7 msec for the NI8 (all channels enabled — no filter option selected) to 18 msec for the NI16 (all channels enabled — 250Hz filter selected). These modules also provide 14 — 16 bit resolution and can interface to current or voltage signals from various process sensors.

Diagnostic Feedback and Flexible Software

Machine uptime is improved and troubleshooting time reduced with the help of diagnostic status bits for open-circuit and out-of-range detection. Channel status indicators and a module status indicator are also provided.

Each channel can be individually configured with the ladder program and can be reconfigured without interrupting CPU operation. An easy to use bit configuration table gives the user a choice of input range, filtering frequency, data format and status data best suited for the application. The on-board scaling feature eliminates the need to program functions with complex ladder programming.

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1746 High Density Analog Input Modules Specifications

Specifications	1746-NI8	1746-NI16I / 1746-NI16V
Input Ranges	0-20mA, 4-20mA, +/- 20mA, 0-1mA 0-5Vdc, 1-5Vdc, 0-10Vdc, +/-10Vdc	0-20mA, 4-20mA, +/- 20mA, 0-1mA (NI16I) 0-5Vdc, 1-5Vdc, 0-10Vdc, +/-10Vdc (NI16V)
Channels/Input Wiring	8/single-ended or differential, 18 point terminal block including 2 shields connections	16/single-ended, 18 point terminal block including 2 analog common connections
Resolution	14-16 bit (range dependent) 10 bit for 0-1 mA range	14-16 bit (range dependent)
Accuracy	+/- 0.05% of full scale for current (0°C to 60°C) +/- 0.10% of full scale for voltage (0°C to 60°C)	+/- 0.15% @ 25°C (NI16I) +/- 0.05% @ 25°C (NI16V)
Module Drift	+/- 12ppm/°C (Current) +/- 6ppm/°C (Voltage)	+/- 20ppm/°C (NI16I) +/- 15ppm/°C (NI16V)
Module Update Time/Step Response (full Scale)	No filter = .75 msec + mut 75 Hz filter = 18 msec + mut 50 Hz filter = 24 msec + mut 20 Hz filter = 60 msec + mut 10, 5,2,1 Hz filters also available mut = module update time = .75 msec per enabled channel	250 Hz filter (8 ch. Enabled) = 9 msec 100 Hz filter (8 ch. Enabled) = 18 msec 60 Hz filter (8 ch. Enabled) = 34 msec 20 Hz filter (8 ch. Enabled) = 96 msec 250 Hz filter (16 ch. Enabled) = 18 msec 100 Hz filter (16 ch. Enabled) = 37 msec 60 Hz filter (16 ch. Enabled) = 69 msec 20 Hz filter (16 ch. Enabled) = 194 msec 80, 40,10,6 Hz filters also available
Ch-Ch Isolation	None, see common mode voltage range	None, see common mode voltage range
Backplane Isolation (Between field wiring and backplane)	500 Vac for 1 sec	500 Vac for 1 sec
Common Mode Voltage Range	+/- 10.5 volts (15 volts max between any two input signal terminals when connected in a single-ended configuration)	+/- 10.25 volts relative to analog com. (20.5 volts max. between any two input signal terminals)

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