

10-Channel I/O Card (FloBoss™ 500-Series)

The 10-Channel I/O (Input/Output) Card provides ten input and output points for expanded monitoring and control applications. The card is available for use with the FloBoss 503 and 504. The I/O card provides these additional I/O channels:

- ◆ 2 Discrete Inputs (DI).
- ◆ 2 Pulse Inputs / Discrete Inputs (PI)/(DI).
- ◆ 3 Analog Inputs (AI).
- ◆ 2 Discrete Outputs (DO).
- ◆ 1 Analog Output (AO).

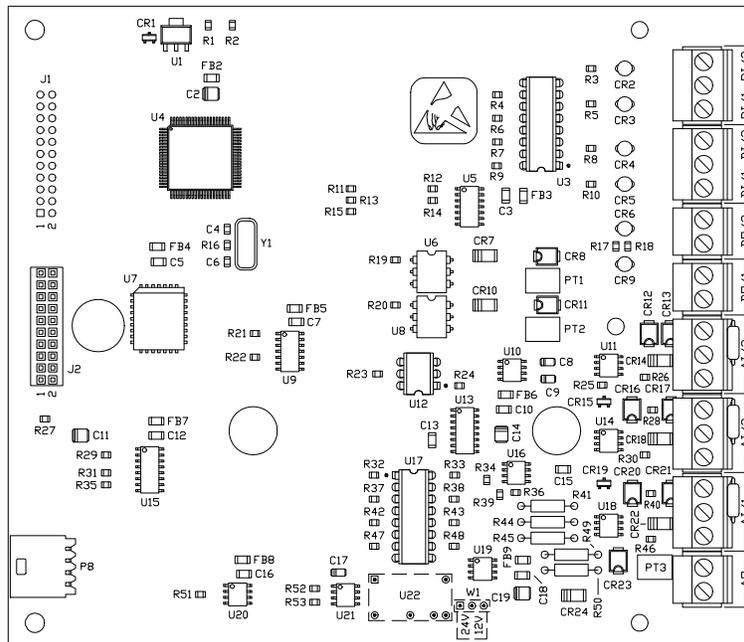
The characteristics (called parameters) of the I/O channels are configured using ROCLINK™ for Windows Configuration Software. Refer to Specification Sheet 4:RLFV.

Light-emitting diodes (LEDs) provide a visual indication as to the state of the Discrete Inputs, Pulse Inputs, and Discrete Outputs.

The I/O card uses a microprocessor for monitoring, controlling, and acquiring data from external devices connected to the I/O channels, as well as for relaying the information to and from the Master Controller Unit (MCU). Each I/O channel has a removable plug-in terminal, used for field wiring.

The I/O card receives power for its processor and logic circuits from the main processor card. The I/O card has a DC/DC converter (with a jumper-selectable “+T” output of 12 or 24 volts) to supply power for its field I/O circuits. This converter helps isolate the field I/O from the processor.

The power converter produces enough current to supply four current loops (three AIs and one AO). It also provides the power to run the Analog-to-Digital (A/D) converters, Digital-to-Analog (D/A) converters, and the Discrete Inputs. The power converter can turn off under processor control to reduce the load in low battery conditions.



DDC0305C

500-Series I/O Card

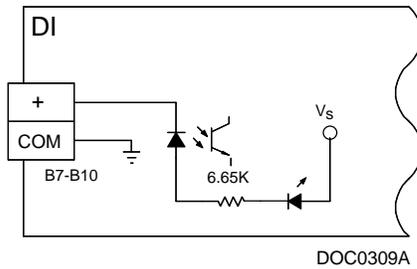
D301117X012

Discrete Inputs

Discrete Inputs (DI) monitor the status of relays, solid-state switches, or other two-state devices. DI functions supported include: discrete latched inputs and discrete status inputs.

The I/O card discrete inputs acquire power from the 24-volt power supply. An LED indicator is included for each point. The signal from the field is coupled through an optical isolator.

As described below, the Pulse Input channels can also be configured as Discrete Inputs.

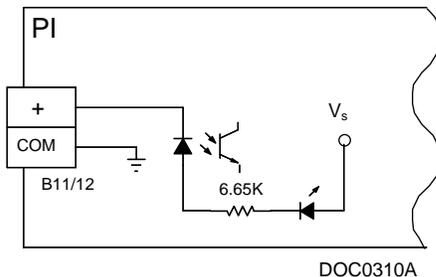


DI Circuit Schematic

Pulse Inputs

Pulse Inputs (PI) are used for sensing and counting pulses from pulse-generating devices. The I/O card Pulse Inputs consist of one medium-speed and one high-speed pulse counter input, each sourced from the 24-volt power converter. An LED indicator is included for each channel.

Because the Pulse Inputs use the same sensing circuit as the Discrete Inputs, they can instead be configured as Discrete Inputs. The Pulse Input, after optical isolation, is routed to a pulse accumulator, where the pulses are counted and accumulated.

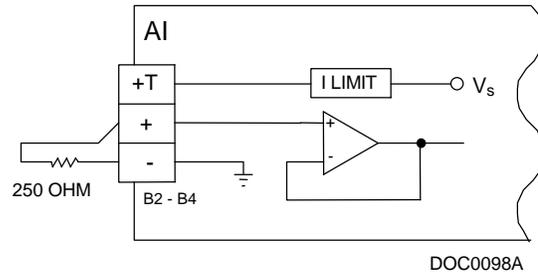


PI Circuit Schematic

Analog Inputs

Analog Inputs (AI) monitor current loop and voltage input devices.

The I/O card analog inputs consist of a jumper-selectable 12/24-volt current source and a multiplexed A/D converter with 12-bit resolution. The signal input range is from 1 to 5 volts. A 4 to 20 milliAmp current input can be accommodated by using a 250-ohm resistor as shown below.



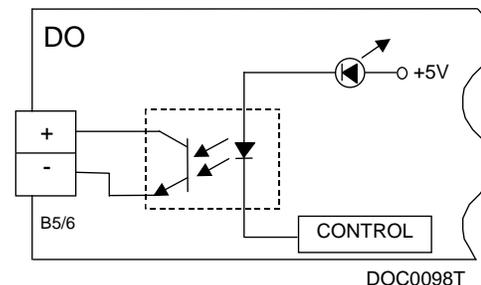
AI Circuit Schematic (Current Loop Mode)

Discrete Outputs

The I/O card Discrete Outputs (DO) are solid-state relays enabled by individual signals from the processor. The following Discrete Output functions are supported: sustained discrete outputs, momentary discrete outputs, and slow pulse-train outputs.

The I/O card provides two Discrete Output channels. The DO channel is a normally-open, single-pole, single-throw switch. The DO can be used by the software in any of these modes:

- ◆ latched mode
- ◆ toggle mode
- ◆ timed discrete output mode.

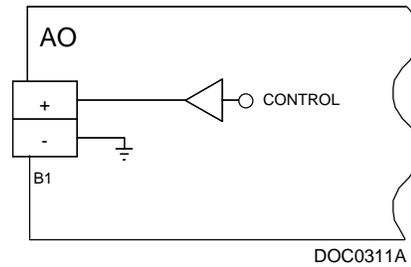


DO Circuit Schematic

Analog Outputs

The I/O card Analog Output (AO) provides a current output for powering analog devices.

The Analog Output is a 4 to 20 milliAmp loop signal. The Analog Output uses a 12-bit D/A converter and a voltage-to-current converter.



DOC0311A
AO Circuit Schematic

Specifications

DISCRETE INPUTS

- Quantity/Type:** 2 contact-sense Discrete Inputs. Two additional DIs are available when Pulse Inputs are so configured (see Pulse Inputs below).
- Terminals:** “+” positive input; “COM” negative input (common).
- Signal Current:** 0.5 to 3.5 mA in the active (on) state, 0 to 0.2 mA in the inactive (off) state.
- Isolation:** 2500 V from processor.
- Frequency:** 50 Hz maximum.
- Sample Period:** 10 ms minimum.

DISCRETE OUTPUTS

- Quantity/Type:** 2 solid-state relay outputs.
- Terminals:** “+” normally-open contact; “-” common.
- Contact Rating:** 24 V dc, 0.3 A maximum.
- Isolation:** 3000 V from processor.
- Frequency:** 5 Hz maximum.

PULSE INPUTS

- Quantity/Type:** 2 sourced pulse counter inputs, one medium-speed and one high-speed. Both are also software-configurable as discrete inputs.
- Terminals:** “+” positive input, “COM” negative input (common).
- Isolation:** 2500 V from processor.
- Frequency:** Medium-speed input (B11) is 50 Hz maximum; high-speed input (B12) is 10 kHz maximum.
- Signal Current:** 0.5 to 3.5 mA in the active (on) state, 0 to 0.2 mA in the inactive (off) state.

ANALOG INPUTS

- Quantity/Type:** 3 single-ended, voltage-sense Analog Inputs (current loop if scaling resistor is used).
- Terminals:** “+T” 12 or 24 V dc loop power, “+” positive input, “-” negative input (common).
- Signal:** 1 to 5 V dc, software configurable. 4-20 mA, with 250Ω resistor (supplied) installed across “+” and “-” terminals.
- Accuracy:** 0.1% over -40 to 65°C (-40 to 149°F) range.
- Isolation:** 2500 V from processor.
- Input Impedance:** 1 MΩ.
- Filter:** Double-pole, low-pass.
- Resolution:** 12 bits.
- Conversion Time:** 200 μs.
- Sample Period:** 50 ms minimum.

ANALOG OUTPUT

- Quantity/Type:** 1 current loop signal output.
- Terminals:** “+” positive output and “-” common.
- Range:** 4-20 mA with 0 to 22 mA overranging.
- Loop Resistance:** 300 ohm max. at 12 V dc. 600 ohm max. at 24 V dc source voltage.
- Resolution:** 12 bits.
- Accuracy:** 0.1% of full-scale output.
- Settling Time:** 100 μs maximum.
- Reset Action:** Output goes to zero percent output or last value (software configurable) on power-up (warm start) or on watchdog timeout.

Specifications (Continued)

<p>POWER Input: 8 to 15 V dc (supplied by main processor card), 20 mA typical without I/O devices. AI Loop: 12 or 24 V dc nominal provided for transmitter loop power from internal power converter. Available at "+T" terminal on each Analog Input channel.</p> <p>FIELD I/O ISOLATION 1000 V minimum.</p> <p>DIMENSIONS 21 mm H by 137 mm W by 160 mm L (0.8 in. H by 5.4 in. W by 6.3 in. L).</p>	<p>WEIGHT 0.4 kg (0.9 lb.) nominal.</p> <p>ENVIRONMENTAL Meets the Environmental specifications of the FloBoss 500 unit in which the card is installed, including Temperature and Voltage Surge specifications.</p> <p>APPROVALS Covered by the CSA approval for the FloBoss 500 unit in which it is installed.</p>
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