



The IOC is custom designed Input Output Controller. The IOC is typically controlled by a module controller (PC), which communicates over an RS-485 interface using a custom protocol.

Power

The IOC is provided with +24, +15, -15 and +5 volts on J1. The +24 power and return are isolated from the other supplies. Typically the grounds are tied together, but they need not be. The IOC's metal enclosure is floating. The IOC passes the +/-15 and the +24 volts out distribution connectors J4 and J5.

CPU

Inside the IOC is a V25+ CPU, (essentially a fancy 8086). There are 128Kbytes of RAM. The current program resides in 32Kbytes of EPROM. More EPROM can be added.

Communications

There is one RS-232 port available on J3.

There is one RS-485 port on J2.

Software

The software resides in Eeprom inside the IOC. It speaks the customer protocol developed for use with QNX based module controllers. The software continuously loops reading all inputs. As requested via RS-485, it will report the state of inputs or alter the state of outputs. Also, an intelligent sequence can be downloaded to the IOC so that for example it can independently monitor a particular digital input, and when it changes ramp up an analog out or turn on a digital.

Digital Inputs

There are 24 opto isolated inputs available on J6. They are pulled up to +24. Typically they are driven with a switch or relay to ground, though sometimes a transistor or other device drives them low.

Digital Outputs

There are 20 output drivers. Each drive 500ma and is short circuit/overload protected. The outputs are source only, and intended for +24 Volts. Each output is opto isolated and is provided with its own power pin through J8. Typically the individual power lines are interlocked with mechanical relays for safety.

Analog Inputs

There are 8 differential analog inputs on J9. They can accept +/-10 Volts. The differential inputs must be referenced to the +/-15 Volt ground. The conversion is done to 14 bits, though the current software only uses 12 bits.

Analog Outputs

There are 8 analog outputs available on J9. Each has a 0 to +10 volt range with

12 bit accuracy.

Watchdog

The watchdog circuit is toggled in software once per RS-485 packet. In this way, if no RS-485 packets are received for a few seconds, or if the cpu hangs (software bug) the watchdog will trip and disable all digital outs, so they no longer source current. The only way out of a watchdog interrupt is a hardware reset or power cycle.



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