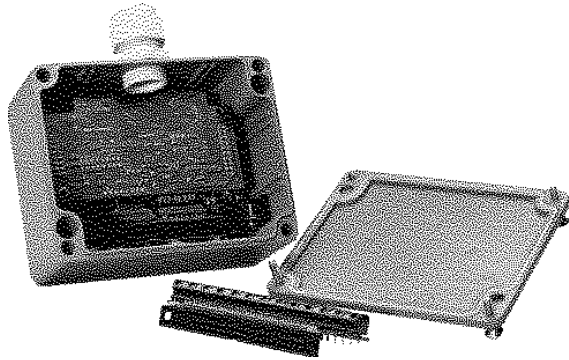# Model RSPDIO24

Remote Sealed Pod for Digital I/O

FEATURES

- **Remote Digital I/O W/ Opto-Isolated RS-485 Link to Host Computer**
- **NEMA 4 Enclosure**
- **All Programmable, NO Switches to Set**
- **24-Bit Digital I/O Programmable Bit-by-Bit, in 8-Bit Bytes, or 24-Bit Words**
- **Input and Output Voltages up to 50VDC**
- **Open Collector Outputs for Loads up to 350mA**
- **16-Bit Digital Counters on Inputs**
- **Change-of-State Flag Readable Via the Serial Port**
- **Digital Levels May be Either Level or Pulse**

DESCRIPTION

The Remote Sealed Pod, Model RSPDIO24 is a 24-bit parallel digital I/O to RS-485 interface housed in a NEMA 4 enclosure for remote installation in harsh environments. No jumper or switch settings are required for operation with the exception of a jumper to bypass the opto-isolators if desired. Serial communication is via RS-485, half-duplex operation.

Digital Inputs

Digital inputs may be read individually, in 8-bit bytes, or in 24-bit word groups at voltages up to 50VDC. There are also software counters on each input. Selectable edges can be counted for up to 65,535 transitions. These counters support Read and Reset commands. Moreover, change-of-state flags can be set on any enabled input bits and can be read via the serial port. This is particularly useful in applications where it is necessary to detect contact closures or openings. This change-of-state detection capability is enabled on a bit-by-bit basis for all bits that are programmed to be inputs. The digital input sample rate is software programmable from 14Hz to 1kHz.

Digital Outputs

Digital outputs may be programmed individually, in 8-bit bytes, or in 24-bit words. These outputs may be latched, pulsed, or set to free run at a programmed rate. The output drivers are open-collector circuits that have a 350mA drive capability at a logic "low". The outputs can comply with up to a 50VDC supply (provided by the user) or the outputs can be pulled up to 5VDC with internal 10K resistor. The digital-output square wave pulse rate is software programmable from 7Hz to 500Hz.

A built-in watchdog timer resets the pod if, for some unexpected reason the microcontroller "hangs up" or if the power supply voltage drops below 4.75VDC. Also, data collected by the pod are stored in local RAM for later access through the computer's serial port. This feature facilitates a stand-alone mode of operation. For example, a portable or laptop computer that has an RS-485 port can be brought to the pod, connected, and collect the data.

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SPECIFICATIONS

DIGITAL INPUTS

Number of Lines

Up to 24
Can be programmed on a bit-by-bit basis, on an eight-bit byte basis, or on a 24-bit word basis. In this latter case, there would be no capability left for digital outputs.

Sample Rate

14Hz to 1kHz, programmable

Software Counters

16-bit software counters on all bits programmed as inputs.
Counters can be programmed to imcrement on either rising or falling edges.

Change-of-State Detection

Selectable on all input bits

Logic Input Low

-0.5VDC to +0.8VDC

Logic Input High

+2.0VDC to +50.0VDC

Low-Level Input Current

-450mA max

DIGITAL OUTPUTS

Number of Lines

Up to 24
Can be programmed on a bit-by-bit basis, on an eight-bit byte basis, or on a 24-bit word basis. In this latter case, there would be no capability left for digital inputs.

SOFTWARE

A disk is provided that is ASCII-based. ASCII programming permits the user to write applications in any high-level language that supports ASCII string functions. The communication protocol has two forms: non-addressed and addressed. Use non-addressed protocol if only one pod is in use. If more than one pod is in use, then addressed protocol is required. The difference is that, in addressed mode, an address command is sent to enable communication with the specific pod. That address command needs to be sent only once to enable communication with that pod and disables communications with all other pods on the network. The command

ORDERING GUIDE

Model RSPDIO24

Unit, software, manual

Type

Latched, pulsed or free-run

Square Wave Programmed Rate

7Hz to 500Hz

Logic-Low Output Current

350mA max.
(Maximum allowable current per output is 350mA, but for each 7-bit group, there is a maximum cumulative total of 650mA. Output groups are bits 0-6, 7-13, 14-20, & 21-23.)

High-Level Output Voltage

Open collector, up to 50VDC (user supplied) or can be pulled up to +5VDC via 10k resistors

ENVIRONMENTAL

Temperature

Operating: 0° to 65°C (de-rated according to power supply used)
Storage: -50° to +120°C

Humidity

Meets NEMA 4 requirements

Dimensions

4.53" x 3.54" x 2.17" (115mm x 90mm x 55mm)

Power Requirements

Power for the opto-isolated section can be applied from the computer's +12VDC power supply via the serial communications cable if a four-wire cable is used. Power for the rest of the pod can be provided by a local power supply.

Opto-Isolated Section

7.5 to 35VDC @ 7mA

Local Power

7.5 to 18VDC @ 150mA

structure is seven data bits, even parity, and one stop bit. All numbers sent to and received from the pod are in hexadecimal form. Commands are issued in simple, easy to learn leter and number combinations.

Operating Systems Supported

DOS 3.3 and higher
Windows 3.1x
Windows 95
Windows NT

Languages Supported

Any high-level language that supports ASCII string functions

Demo/Example Programs Included

Examples in C, and Pascal are included.

Drivers Provided

No "Task" call drivers are included.

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