

DIO02 Octal Digital I/O Device

8 Channels, Open Collector Input / Output, 24 V compatible

Product Description

The DIO02 device is a versatile and easy-to-use octal, bidirectional digital I/O module which can be interfaced with open collector inputs or outputs. Every of the eight channels can individually be configured for input or output.

Custom timers, counters, pulse generators, logic analyzers, functional tests or digital communication protocols can easily be implemented. Digital control loops and custom serial or parallel protocols can be realized in software and modifications are done in a much more comfortable way compared to equivalent hardware solutions.

The versatility and the straightforward usability make the device ideal for industrial applications as well as for scientific experiments.

Features

- ▶ Connected to 10/100BASE-TX Ethernet over RJ45 jack
- ▶ Eight independent general purpose I/O channels
- ▶ Every channels is individually configurable for input or output
- ▶ Increased voltage input hysteresis
- ▶ Internal pull-up resistors for open collector or direct input
- ▶ Open collector output up to +24V
- ▶ Nominal output impedance of 47 Ω
- ▶ Short-circuit and continuous over-voltage protection of up to $\pm 30V$
- ▶ Surveillance of all voltages and board temperature
- ▶ Powered via PoE (Power over Ethernet)
- ▶ Idle power consumption of less than 1.2W
- ▶ Compatible with all modern Ethernet standards
- ▶ Drivers for Microsoft® Visual C++™, MathWorks® MATLAB™, Python and National Instruments® LabVIEW™ programming environment

Transducer Connection

The figure on the next page shows the recommended pin configuration of the DIO02 device. All I/O channels (D1 to D8) referenced to GND are protected against continuous short-circuit and over-voltage of up

to $\pm 30V$. Only one channel should be in an over-voltage condition at a time. The nominal output impedance of each channel is 47 Ω at room temperature. In case of increased ambient temperature or in short-circuit or over-voltage condition the impedance is subject to rise. After some seconds the impedance automatically returns to its nominal level when the fault condition vanishes.

When a channel is configured for input, an internal pull-up resistor of 10k Ω is internally connected to +5V via a diode which allows direct connection of open-collector outputs or manual switches to the DIO02 device. The circuitry also allows a direct connection of a voltage source of up to +24V. For input voltages above +5V the pull-up resistor is becoming inactive and the input current virtually vanishes.

Due to the pull-up resistors, unused inputs may be left unconnected and reliably show logic high.

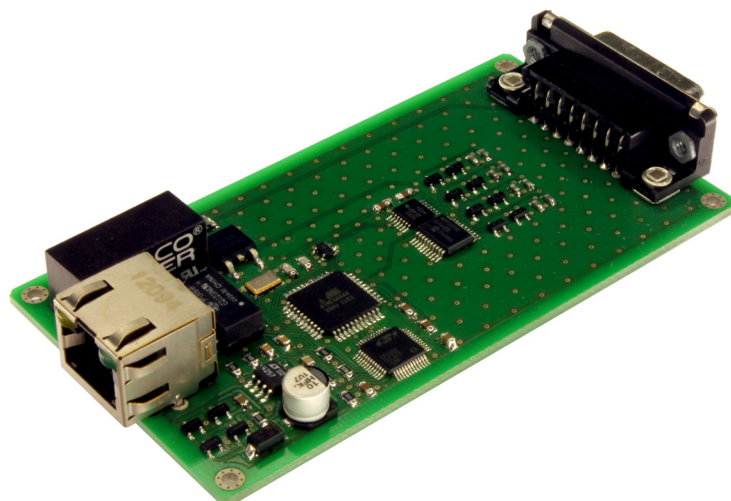
For improved noise immunity in harsh environments and in order to avoid switch bouncing the DIO02 device uses larger hysteresis than the usual TTL / CMOS specifications. For logic low the input voltage should not exceed +1.0V and the logic high state is detected when the input voltage is above +4.0V.

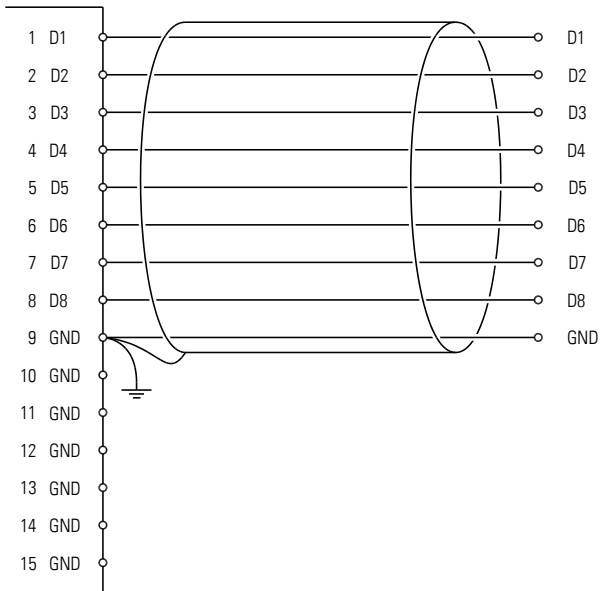
When a channel is configured as output, it can be directly interfaced with an input circuitry using a pull-up resistor to a voltage levels between +5V to +24V. Each channel is able to sink currents of up to 20 mA.

Gold-plated connectors ensure reliable and low impedance transducer connectivity. Do not connect or disconnect wires unless power has been switched off in order not to endanger the sensitive electronics.

Shielding and Grounding

For lowest error-proneness the transducers should be connected to the DIO02 device by using a single shielded cable with multiple leads or multiple coaxial cables. Since pins 9 to 15 represent the ground signal of the printed circuit board and are connected internally, any shield must be connected to one of these pins.





Physical Specifications

Dimensions: 100 mm x 54 mm x 18 mm (3.94 in x 2.13 in x 0.71 in)

Mounting: 4 holes \varnothing 2.2 mm (0.087 in) at a distance of 94 mm x 48 mm (3.70 in x 1.89 in), intended for the use with metric M2 screws

PCB operating temperature: 0 °C to 70 °C (32 °F to 158 °F), ambient operating temperature depends on the case and its thermal isolation

Weight: 42 g (1.48 oz)

This product is not authorized for use as a critical component in life support devices or systems without the express written approval.