Product Datasheet - Technical Specifications

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Specifications

All specifications are subject to change without notice.
Typical for 25 °C unless otherwise specified.
Specifications in *italic* text are guaranteed by design.

Digital input/output

Table 1. Digital input/output specifications

Parameter	Specification
Digital type	5 V TTL input / CMOS output
Number of I/O	24, configured as 3 ports of 8 bits each (Port 0, Port 1, Port 2)
Configuration	Each bit can be independently configured for input or output
Pull-up configuration	Each port has 47 kΩ resistors configurable as pull-up (default) or pull-down via internal jumpers W3 (port 1), W4 (port 2), and W5 (port 0).
Digital I/O transfer rate (system-paced)	100 to 5000 reads/writes per second, typical, on a local network (Note 1)
Alarm functionality	Any combination of DIO bits may be configured to become outputs and go to defined values when an Ethernet connection with a host is established or lost.
Power on and reset state	All bits are input unless the alarm functionality is enabled for them.
Input high voltage threshold	2.0 V min (Note 2)
Input high voltage limit	5.5 V absolute max
Input low voltage threshold	0.8 V max (Note 2)
Input low voltage limit	−0.5 V absolute min 0 V recommended min
Output high voltage	4.4 V min (IOH = −50 µA) 3.76 V min (IOH = −24 mA)
Output low voltage	0.1 V max (IOL = 50 µA) 0.44 V max (IOL = 24 mA)

Note 1: This is the typical throughput when the device and host are both connected by Ethernet to the same local network. Throughput can vary significantly, and typical throughput is not guaranteed, if a wireless connection is involved or data is sent over the internet.

Note 2: The digital input thresholds (P2D7 only) and counter input thresholds are different due to different buffer types.

Counter

Table 2. Counter specifications

Parameter	Specification
Pin name	P2D7 (shared with digital I/O)
Counter type	Event counter
Number of channels	1
Input type	Schmitt trigger; uses port 2 digital I/O pull-up/down selection.
Resolution	32 bits
Schmitt trigger hysteresis	1.01 V typ 0.6 V min 1.5 V max
Input high voltage threshold	2.43 V typ (Note 3) 1.9 V min 3.1 V max
Input high voltage limit	5.5 V absolute max
Input low voltage threshold	1.42 V typ (Note 3) 1.0 V min 2.0 V max
Input low voltage limit	–0.5 V absolute min 0 V recommended min
Input frequency	10 MHz max
High pulse width	*50 ns min*
Low pulse width	*50 ns min*

Note 3:   The digital input thresholds (P2D7 only) and counter thresholds are different due to different buffer types.

Memory

Table 3. Memory specifications

Parameter	Specification
Non-volatile memory	4,096 bytes (272 bytes for settings, 3,824 bytes for user)

Power

Table 4. Power specifications

Parameter	Condition	Specification
External power supply		5 V ±5% required 5 V, 1 A supply provided (PS-5V1AEPS)
Supply current	Quiescent current	160 mA typical (Note 4) 840 mA max, including all external loading
User output voltage range	Available at +VO terminal	4.40 V min to 5.25 V max; assumes supplied AC adapter is used
User output current	Available at +VO terminal	10 mA max

Note 4:   This is the total quiescent current requirement for the device that includes the LEDs. This value does not include any potential loading of the digital I/O bits or +VO terminal.

Network

Ethernet connection

Table 5. Ethernet connection specifications

Parameter	Specification
Ethernet type	*100 Base-TX* *10 Base-T*
Communication rates	*10/100 Mbps, auto-negotiated*
Connector	*RJ-45, 8 position*
Cable length	*100 meters (328 feet) max*
Additional parameters	*HP Auto-MDIX support*

Network interface

Table 6. Factory default specifications

Parameter	Specification
Protocols used	TCP (IPv4 only) and UDP
Network ports used	UDP: 54211 (discovery) UDP: 6234 (bootloader only) TCP: 54211 (commands)
Network IP configuration	DHCP + link-local, DHCP, static, link-local
Network name	`E-DIO24-xxxxxx`, where `xxxxxx` are the lower 6 digits of the device MAC address
Network name publication	By NBNS; responds to b-node broadcasts, therefore only available on the local subnet

Network factory default settings

Table 7. Factory default specifications

Parameter	Specification
Factory default IP address	192.168.0.101
Factory default subnet mask	255.255.255.0
Factory default Gateway	192.168.0.1
Factory default DHCP setting	DHCP + link-local enabled

Network security

Table 8. Factory default specifications

Parameter	Specification
Security implementation	TCP sockets are not opened unless application sends the correct PIN connection code; stored in non-volatile memory; may be changed by user; default value is 0000
Number of concurrent sessions	1
Vulnerabilities	TCP Sequence Number Approximation Vulnerability

LED displays and the factory reset button

Table 9. LED and button configurations

Parameter	Specification
Power LED (top)	$4.2\ V < V_{ext} < 5.6\ V$: On $V_{ext} < 4.2\ V$, $V_{ext} > 5.6\ V$: Off (power fault) Both LEDs blinking continuously: In firmware update mode
Activity LED (bottom)	On when there is a valid host connection. Blinks when a command is received. Both LEDs blinking continuously: In firmware update mode.
Ethernet connector LEDS	■ Left (green) – Link/activity indicator: on when there is a valid Ethernet link, and blinks when network activity is detected. ■ Right (yellow) – Speed indicator: on for 100 Mbps, off for 10 Mbps or no link.
Factory reset button	Resets network and alarm configuration settings to factory default values. ■ Press and hold for 4 seconds. The Power and Activity LEDs will both blink twice and turn off to indicate that network settings have been restored to default values. Release the button to allow the device to reset and use the default settings. If the reset button is released before the two LEDs blink, settings are not affected. ■ Holding the reset button at power on forces the device into firmware update mode in case of a failed firmware update. In this mode, both LEDs blink together constantly. The device may be returned to normal operation by cycling the power.

Environmental

Table 10. Environmental specifications

Parameter	Specification
Operating temperature range	0 °C to 55 °C max
Storage temperature range	–40 °C to 85 °C max
Humidity	0% to 90% non-condensing max

Mechanical

Table 11. Mechanical specifications

Parameter	Specification
Dimensions (L × W × H)	117.9 × 82.8 × 29.0 mm (4.64 × 3.26 × 1.14 in.)

Signal connector

Table 12. Screw terminal connector specifications

Parameter	Specification
Connector type	Screw terminal
Wire gauge range	16 AWG to 30 AWG

Table 13. Screw terminal pinout

Pin	Signal name	Pin description	Pin	Signal name	Pin description
1	P0D0	Port 0 bit 0	17	P1D0	Port 1 bit 0
2	P0D1	Port 0 bit 1	18	P1D1	Port 1 bit 1
3	P0D2	Port 0 bit 2	19	P1D2	Port 1 bit 2
4	P0D3	Port 0 bit 3	20	P1D3	Port 1 bit 3
5	GND	Ground	21	GND	Ground
6	P0D4	Port 0 bit 4	22	P1D4	Port 1 bit 4
7	P0D5	Port 0 bit 5	23	P1D5	Port 1 bit 5
8	P0D6	Port 0 bit 6	24	P1D6	Port 1 bit 6
9	P0D7	Port 0 bit 7	25	P1D7	Port 1 bit 7
10	GND	Ground	26	+VO	User voltage output
11	GND	Ground	27	GND	Ground
12	P2D0	Port 2 bit 0	28	P2D4	Port 2 bit 4
13	P2D1	Port 2 bit 1	29	P2D5	Port 2 bit 5
14	P2D2	Port 2 bit 2	30	P2D6	Port 2 bit 6
15	P2D3	Port 2 bit 3	31	P2D7	Port 2 bit 7 / Counter
16	GND	Ground	32	GND	Ground