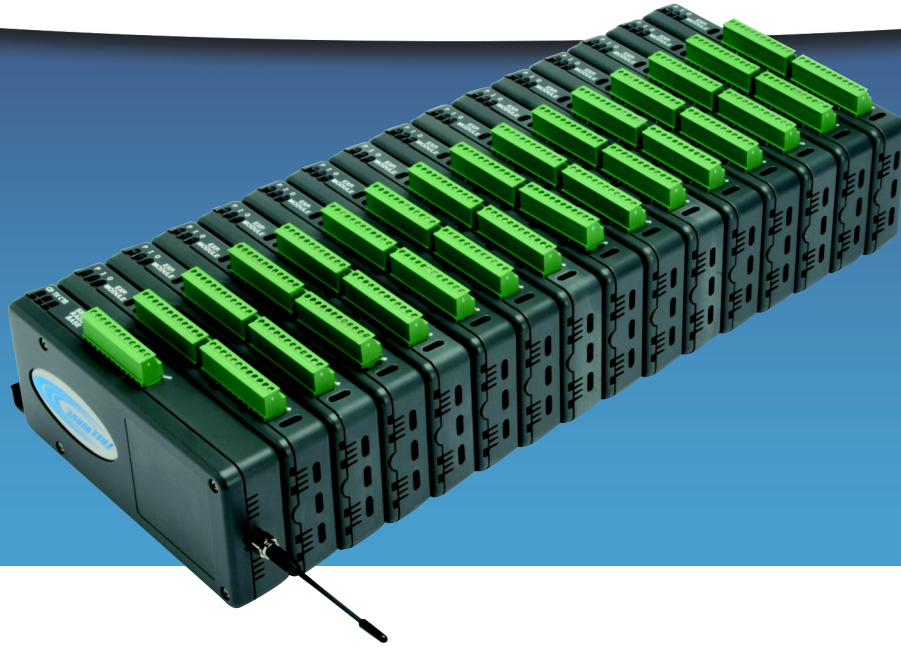# I/O Series I/O Expansion

Key Features

Modular: Up to 15 expansion modules can be added to a serial base or radio base

Flexible: Can be added to radio base for wireless I/O or serial base

Low Latency: Bus communications provide access times as fast as 11 milliseconds to 1st expansion module, 15th expansion module and every module in between

Powerful: Each universal channel can be configured as a digital input, digital output, analog input, analog output or sensor power

Reliable: Fail-safe settings are user-configurable for DO and AO channels

Easy Sensor Selection: Native support for 4 to 20 mA, 1 to 5 V and 0 to 10 V transducers with loop power

High Accuracy: Maximum reading error of 0.10% of AI channels across entire operating temperature

Low Power: Suitable for solar powered installations

Overview

The I/O Expansion module offers a reliable, safe and easy way to meet the growing measurement and control demands of your automation system. I/O Expansion builds on existing communications systems and controller infrastructure to extend the useful life of your automation system. The Expansion Modules snap easily on to a radio base to provide 188 I/O points over a single wireless link. The Serial Base features a wired serial interface to provide up to 192 I/O points to an existing PLC, RTU or other device with serial communications.

All radios are designed, manufactured and tested in Boulder, CO.

Specifications

MODEL	FORM FACTOR	OPTIONS
IOEX-4440	1 L x 3.125 W x 7.125 H (in)	Enclosure
IOEX-4422	1 L x 3.125 W x 7.125 H (in)	Enclosure
IOEX-4404	1 L x 3.125 W x 7.125 H (in)	Enclosure

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PART NUMBER SUMMARY			
Serial Base	IOE-4440	IOE-4422	IOE-4404
Expansion Module	IOEX-4440	IOEX-4422	IOEX-4404
Number of Universal Channels	4	4	4
Number of Input-Only Channels	4	4	4
Number of Isolated Digital Input Channels	4	2	0
Number of Isolated Digital Output Channels	0	2	4

TECHNICAL SPECIFICATIONS			
Digital Input	**Universal Channels**	**Input-Only Channels**	**Isolated Channels**
Input ON voltage	> 3.0 V	> 3.0 V	> 3.2 V
Input OFF voltage	< 2.5 V	< 2.5 V	< 1.2 V
Pulse-counting frequency, standard	100 Hz or 4 ms	100 Hz or 4 ms	100 Hz or 4 ms
Pulse-counting frequency, high	-	10 kHz or 40 µs	10 kHz or 40 µs
Pull-up resistor	1 kΩ to 3 V	1 kΩ to 3 V	-
Pull-down resistor	10 kΩ to ground	10 kΩ to ground	-
Digital Output	**Universal Channels**	**Input-Only Channels**	**Isolated Channels**
Output ON current	1 A to ground	-	2 A
Output ON impedance	0.2 Ω to ground, plus diode	-	0.120 Ω
Output OFF impedance	2.34 kΩ to ground	-	10 MΩ
External voltage connection	V_{BAT}	-	250 V
Analog Input	**Universal Channels**	**Input-Only Channels**	**Isolated Channels**
Resolution	20 bits	20 bits	-
Maximum Reading Error	0.10%	0.10%	-
Voltage Input Range	-2.5 to 12.5 V	-2.5 to 12.5 V	-
Current Input Range	0 to 22 mA	0 to 22 mA	-
Current Sense Resistor	250 Ω	250 Ω	-
Analog Output	**Universal Channels**	**Input-Only Channels**	**Isolated Channels**
Current Output Range	0 to 22 mA	-	-
Maximum Output Error	0.25%	-	-
Sensor Power	**Universal Channels**	**Input-Only Channels**	**Isolated Channels**
Voltage Output	0.5 V below V_{BAT}	-	-
Current Output	Up to 50 mA	-	-

General Information	
Operating Temperature	-40° C to +75° C
Humidity	0 to 95%, non-condensing
Dimension	7 1/8 H, 3 1/8 W, 1 L (inches)
Weight	0.35 lbs
Mounting	Integrated 35 mm DIN rail clip

I/O Expansion: Applications

Oil and Gas   **Agriculture**   **Utilities**   **SCADA**

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For more information, visit www.freewave.com
Specifications are subject to change without notice.

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