

I/O Series I/O Expansion



I/O Expansion

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, Colorado.

MODEL	DIMENSIONS	PRODUCT OPTIONS
IOEX-4440	7 1/8 H, 3 1/8 W, 1 L (inches)	Enclosure
IOEX-4422	7 1/8 H, 3 1/8 W, 1 L (inches)	Enclosure
IOEX-4404	7 1/8 H, 3 1/8 W, 1 L (inches)	Enclosure

APPLICATIONS



Oil & Gas



Smart Grid



Water & Wastewater



Precision Agriculture

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 or Radio 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
- **Safe:** UL approved for Class 1 Division 2, Groups A, B, C and D
- **Industrial Grade:** All devices are tested and tuned across full operating temperature range from -40° to $+75^{\circ}$ C

I/O Expansion Module Technical Specifications

PART NUMBER SUMMARY

Serial Base	IOE-4440	IOE-4422	IOE-4404
Frequency Range	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 μ s	10 kHz or 40 μ s
Pull-up resistor	1 k Ω to 3 V	1 k Ω to 3 V	
Pull-down resistor	10 k Ω to ground	10 k Ω 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 k Ω to ground	-	10 M Ω
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	-	-
Power Supply			
Operating Supply Voltage	+7.5 to +28 VDC		
Current Consumption 12 V	DI 17 mA, DO 18 mA, AI voltage, 17 mA, AI current 25 mA, AO 0 mA 17 mA, AO 4 x 20 mA 98 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		



FreeWave Radios Require Professional Installation. Specifications may change at any time without notice. ©2013 FreeWave Technologies, Inc.

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