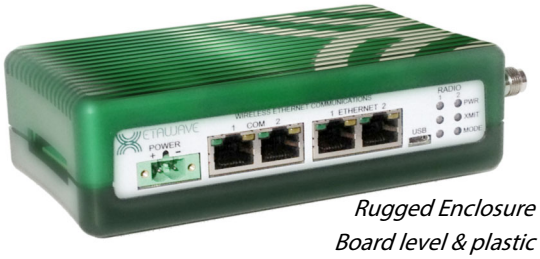
XetaWave I/O

Wireless Monitoring & Control

XetaWave I/O solutions combine Ethernet and serial high speed, long range wireless communication with integrated I/O functionality. XetaWave I/O is compatible with common instrumentation interfaces, supports Modbus, and seamlessly integrates with XetaWave networks. XetaWave I/O is ideally suited for process control to securely and wirelessly monitor temperature, pressure, level, and flow, and control pumps, latches, and valves and more. XetaWave I/O offers unmatched speed and distance and the widest selection of frequencies.



Rugged Enclosure
Board level & plastic enclosure also available.

Multi-Function I/O

XetaWave I/O includes a total of **8 multi-function I/O channels** to monitor and control industrial operations. All 8 channels are multi-function channels. I/O channels support analog input (1 to 5 Volt, 4 to 20 milliAmp with internal sense resistor), analog output (4 to 20 milliAmps), digital input (wet contact, dry contact), and digital output (sinking 2 Amps with current monitoring). Xetawave I/O also has programmable output actions for communication loss and power up. XetaWave multi-function I/O are running all the time to automate any industrial automation application with minimum configuration.

Seamless Ethernet and Serial

XetaWave I/O supports Seamless Ethernet and Serial networks to offer the ultimate flexibility in upgrading legacy equipment. Legacy serial networks can be upgraded to XetaWave I/O without changing any of the configurations on the PLC or controllers. XetaWave I/O delivers faster communication than legacy serial networks, a second virtual serial network invisible to the legacy serial network, Modbus TCP/RTU/ASCII support, and configuration and management over Ethernet and USB.

Key Differentiators

Data Concentrator With MQTT

Concentrates data from many Modbus servers into a unified Modbus map or publishes to MQTT *(Linux only)*. It polls devices over Ethernet, serial, and RF links, concatenating and simplifying values into a Modbus "proxy" register map within the XetaWave device. The RTU then only needs to poll the consolidated Modbus register map within the XetaWave devices to obtain the values. Polling can occur more often, the RTU is offloaded.

Wireless & I/O in One Offering and Multiple Frequencies

XetaWave I/O can be combined with 0, 1, or 2 XetaWave RF Modules: 100 MHz, 200 MHz, 400 MHz, 700 MHz, 900 MHz, 1.3 GHz, 1.4 GHz, or 2.4 GHz.

I/O Expander

XetaWave I/O is available without a radio (RF module) to provide the most cost effective I/O solution with a Data Concentrator.

4.2019

258 South Taylor Avenue | Louisville, CO 80027 | 303-447-2745 | sales@xetawave.com

XetaWave I/O

Wireless Monitoring & Control

Key Differentiators cont.

Distributed I/O Architecture

XetaWave I/O, with available RF, Ethernet, and serial interfaces, can provide distributed I/O architecture to the facility. This provides significant advantages and cost savings including:

Wires no longer need to be run all the way back to the central location, thereby providing savings much greater than the cost of the "concentrating" XetaWave device.

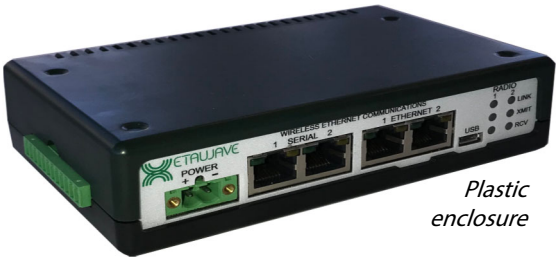
Data integrity is improved with transport over a digital interface instead of long home run wires.

Install and commissioning is dramatically simplified as subsystems can be prewired with XetaWave I/O, and at install only power and connectivity is provided.

Troubleshooting and repair is minimized with intelligent interfaces close to the I/O point and network troubleshooting technologies.

Data Concentrator

XetaWave I/O includes a **Data Concentrator** application which reduces network traffic and simplifies SCADA polling. Multiple Modbus TCP, RTU and ASCII devices can be polled by the Data Concentrator and organized in a fully customizable Modbus map. The Data Concentrator includes configurable failure filtering, command skipping, default values, and error flags so the user can get the fastest possible performance without sacrificing data integrity. The Data Concentrator is available in XetaWave's proprietary operating system, uTasker, with support for up to 32 devices and 10 polls each. It is also available as a module in an ever more powerful version for XetaWave's Linux operating system with support for more devices, more polls, more data translation options, and MQTT.



Plastic enclosure

Powerful Wireless Communication

XetaWave I/O provides wireless communication with unmatched speed, distance, and selection of frequencies. One or two high performance XetaWave radios can also be included in one device. All radio options are currently available including Xeta9 dual-band ISM/MAS modules for 902 to 960 MHz; licensed narrow band radios—100 MHz, 200 MHz, 400 MHz, 700 MHz; 1.3 GHz and the 2.4 2.4 GHz ISM band.

258 South Taylor Avenue | Louisville, CO 80027
303-447-2745 | sales@xetawave.com | www.xetawave.com

4.2019

XetaWave I/O
Additional Products

Firmware Capabilities

BASIC Interpreter
Load code into any XetaWave I/O device to add custom logic on the edge. More complex safety systems, automatic pump shutdown pump high/low hysteresis, automatic valve closure, complex variable transformation, and more.

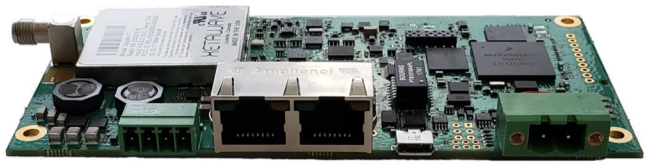
Wire Replacement
Create a virtual wire from any network accessible XetaWave I/O point to any other network accessible XetaWave I/O point and the Wire Replacement system will replicate the signal from the input to the output. Instead of transiting wires where it may not be possible or reliable, let XetaWave I/O replicate those signals across Ethernet or Radio links. *Available only in Linux.*

Modbus R/W Blocks
Create a block of Modbus registers for any use. Simplify interfacing 3rd party flow meters into the facility network and dataset allow the 3rd party meter to write to a known fixed Modbus block, and let the facility poll it with all other Modbus data. Add history, trending, and other blocks to custom developed programs running in the BASIC interpreter *(uTasker only).*

Under Development
- MQTT for Local I/O
- Data logging
- Edge Computer with I/O

Future Capabilities
- DNP3
- Custom applications/modules—*Contact XetaWave for specifics.*

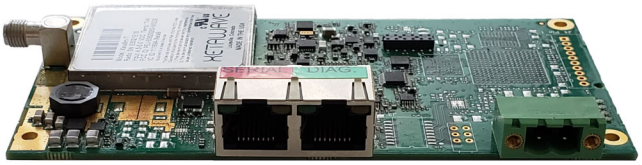
Emancipator 2+ Superset The Emancipator2+ (EM2+) is available with 3 inputs, usable as either analog inputs or digital inputs. The EM2+ is useful in applications where very limited input I/O is needed and providing a great value.



Emancipator 2+ Superset

Channel Type	Input
Digital Input function	
Input high, minimum (V)	2.4
Input low, maximum (V)	0.7
Counting frequency (Hz)	200
Pull-up resistor (Ohm)	4.7 k
Analog Input, voltage function	
Signal range (V)	-0.3 to 6.25
Accuracy	2.5% of reading
Resolution (bits)	16
Electrical and Environmental	
Input impedance (Ohm)	62 k
Maximum terminal voltage (V)	Vbat
Battery/supply voltage (Vbat)	10 to 32
Temperature (Celsius)	-40 to 85

Emancipator 2- The Emancipator 2- (EM2-) is available with 1 digital input. As a serial only option, the EM2- power consumption is minimized, while still allowing monitoring of serial devices and an I/O point, for example, door open, UPS or power monitoring/fault, flame status, and more.



Emancipator-

Channel Type	Input
Digital Input function	
Input high, minimum (V)	2.4
Input low, maximum (V)	0.6
Pull-down resistor (Ohm)	~ 5 k
Electrical and Environmental	
Input impedance (Ohm)	~ 5 k
Maximum terminal voltage (V)	+/- 25 V
Battery/supply voltage (Vbat)	10 to 32
Temperature (Celsius)	-40 to 85

XetaWave I/O

Specifications & Selection Guide

I/O Channels

Pin	IO Ref	Function
Pin 1	IO 1	Multifunction Analog
Pin 2	IO 2	Multifunction Analog
Pin 3	IO 3	Multifunction Analog
Pin 4	-	Ground
Pin 5	IO 4	Multifunction Analog
Pin 6	IO 5	Multifunction Digital with 10 kHz counting and input-only Multi-Sync
Pin 7	-	Ground
Pin 8	IO 6	Multifunction Digital
Pin 9	-	Ground
Pin 10	IO 7	Multifunction Digital
Pin 11	-	Ground
Pin 12	IO 8	Multifunction Digital

I/O Specifications

Channel Type	Multifunction Analog	Multifunction Digital
Digital Input function		
Input high, minimum (V)	2.3	2.4
Input low, maximum (V)	2.2	0.7
Counting frequency (Hz)	0.4	200
Counting frequency, high (Hz)	-	10 k (IO 5 only)
Pull-up resistor (Ohm)	-	4.7 k
Pull-down resistor (Ohm)	250	-
Digital Output function		
Output rating (A current sink)	-	2
Output reporting accuracy	-	5%
Output impedance (Ohm)	-	0.1
Power-up states	-	on, off, last value
Fail-safe states	-	on, off, last value
Analog Input, voltage function		
Signal range (V)	-0.3 to 6.25	-0.3 to 7.5
Accuracy	0.5% of reading	2.5% of reading
Resolution (bits)	16	16
Analog Input, current function		
Signal range (mA)	0 to 25	-
Accuracy	0.5% of reading	-
Internal sense resistor (Ohm)	250	-
Resolution (bits)	16	-
Analog Output function		
Signal range (mA)	0 to 24	-
Power-on states	set point	-
Fail-safe states	set point, last value	-
Accuracy	0.5% of reading	-
Resolution (bits)	10	-
Sensor Power function		
Voltage output (V)	14	-
Current output (mA)	24	-
Electrical and Environmental		
Input impedance (Ohm)	62 k	66 k
Maximum terminal voltage (V)	Vbat	
Battery/supply voltage (Vbat)	10 to 32	
Temperature (Celsius)	-40 to 85	

I/O Selection Guide

		EIO	EIOL	SIO	XEIO	XEIOL
RF Module	**I/O Model**					
	XETA1-	x	x	x		
	XETA2-	x	x	x		
	XETA4-	x	x	x		
	XETA7-	x	x	x		
	XETA9-	x	x	x		
	XETA24-	x	x	x		
# RF Modules	1 RF Module	x	x	x		
	2 RF Modules	x	x	x		
RF Features	Ethernet	x	x	x		
	Seamless	x	x	x		
	Serial	x	x	x		
	INS Master					
	INS Slave	x	x	x		
	MMS Source					
	MMS Sync	x	x	x		
IO	8 IO Channels	x	x	x	x	x
USB	Virtual Serial	x		x	x	
Ethernet	1 Port					
	2 Ports	x	x		x	x
Serial	1 Port					
	2 Ports	x	x	x	x	x
Operating System	uTasker / Bridge	x		x	x	
	Linux / Router		x			x
Networking	VLAN	x	x	x	x	x
	Ethernet Bridge	x	x	x	x	x
	IP Router		x			x
Applications	Modbus RTU	x	x	x	x	x
	Modbus ASCII	x		x	x	
	Modbus TCP	x		x	x	
	Data Concentrator	x	m	x	x	m
	SNMP		x			x
	HTTP	x	x	x	x	x
	HTTPS		x			x
Enclosure	Rugged	x	x	x	x	x

m— Software Module

Ordering Guide

I/O Expanders XETA-XEIO and XETA-XEIOL are not available with RF Modules.

To order I/O with 1 RF Module start with the RF Module and add the IO model. For example, XETA9-EIO, XETA24-SIO, XETA4-EIOL.

To order I/O with 2 RF Modules start with the RF Module, add “X” and the second RF Module, and then add the I/O model. For example, XETA9X9-EIO, XETA24X24-SIO, XETA4X4-EIOL.

I/O models with uTasker / Bridge OS must have the same RF Modules; I/O models with Linux / Router OS support different RF Modules.

258 South Taylor Avenue | Louisville, CO 80027
303-447-2745 | sales@xetawave.com | www.xetawave.com