XetaBridge9

Debian/Edge Computer
Cell Modem with 900 MHz Radio

The **XetaBridge9** is a flexible and extremely capable industrial Class 1 Div 2 LTE cell modem certified for operation in the US and Canada with an integrated Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) software defined radios supporting the unlicensed 900 MHz frequency band. The **XetaBridge9** is offered in two variants – as a standalone product or integrated within the **XetaEdge** edge computer platform. Both are based on the open Debian operating system and are available with an optional 8 programmable I/O.

The **XetaBridge9 XetaEdge** is a powerful, low cost platform that supports hosting of applications such as AUTOSOL eACM, Inductive Automation Ignition Edge, Node-RED, Reverity PLC Shift, and supports multiple protocols for interacting with existing devices like flow meters, ROCs, and PLCs.

The web user interface of the **XetaBridge9** is consistent with the Debian Xeta9, XetaEdge9, and the XetaCell which simplifies configuration and use. The versatility of the **XetaBridge9** product offering enables companies to select the version best meets their needs from simple to more advanced communication and automation.

The **XetaBridge9** with the 900 MHz ISM radio is compatible with all XetaWave Xeta9 products.

Key Features

Variants Offering standard Debian or Edge Computer variants with CAT M1 or CAT 4 and a 902 to 928 MHz ISM software defined radio (SDR).

SDR Speed Over-the-air data rates from 57 kbps to 5.3 Mbps plus higher throughput with payload compression and **EMP**.

Adjustable RF Output Power output up to 1 Watt (+30 dBm).

Network Types Point to Point, Point to Multipoint, Enhanced MultiPoint, Peer to Peer, and MESH.

Selective Modulation Multiple MSK, FSK, PSK, and QAM modulations.

Diagnostics Monitoring of TX and RX statistics (noise, RSSI, more), voltage, and temperature over SNMP and Modbus.

Industrial Safe C1D2 certified for operation from –40°C to +75°C for hazardous industrial applications.

Edge Computing Host apps like the AUTOSOL eACM, Node-RED, Inductive Automation Ignition Edge, Codesys, PLC Shift, and many more.

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

XetaBridge9 Specifications

Processing

CPU	ARM Cortex-A8 @ 300 MHz (Debian) ARM Cortex-A8 @ 1GHz (XetaEdge)
OS	Debian
RAM | Flash	256 MB | 4 GB (Debian) 1 GB | 16GB (XetaEdge)

Power

Cell Linked	190 mA@ +12 Vdc
RF Transmit	235 mA @ +12 Vdc
RF Receive	190 mA @ +12 Vdc
RF Idle	176 mA @ +12 Vdc
RF Idle & Cell Off	140 mA @ +12 Vdc

Interfaces

Power Connector	2-pin Phoenix | +10 to +32 Vdc
Ethernet	2x RJ45 | 10/100 Mbps Base-T
Serial	2x RJ45 | up to 1Mbps | RS232/422/485
Micro-USB	On-the-Go; +5 Vdc @ 500 mA
LTE | GPS	2x SMA | 1x SMA
RF	1x TNC | 50 Ohms
I/O (optional)	12-pin Phoenix 4 Analog In/Out or Digital In 4 Digital In or Digital Out

Environmental/Physical

Op. Temperature	-40°C to +75°C
Humidity	95% @ +40°C non-condensing
Safety	UL Class 1 Div 2
Dimensions	5.5” x 3.5” x 1.5”
Weight	182 grams

XetaBridge9 Specifications

Functionality

Carriers	Verizon | AT&T | Rogers | Telus
LTE M1 / NMB1	B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B26, B28 M1 : 300 kbps down, 375 kbps up | NB1 : 21 kbps down, 62.5 kbps up
LTE 4	B2, B4, B5, B12, B13, B14, B66, B71 150 Mbps down, 50 Mbps up
Radio Roles	Access Point, Endpoint, Repeater
Compatibility	As an Endpoint compatible with the TransNET and TransNext
Networking	Static IP Routing, Net Filtering, Port Forwarding, Network Address Translation, Modbus Bridging
Protocols	IEEE 802.3, TCP, UDP, ARP, DHCP, NTP, FTP, ICMP, HTTP, HTTPS, SSH, Telnet, Multicast SNMP
Management	Web GUI, SNMP v1, v2, & v3
VLANs	802.1q VLANs and Trunks, QoS
Serial Services	TCP/UDP Terminal Server, TCP Terminal Client, Up to 5 Simultaneous Connections
Quality of Service	Four Levels of VLAN QoS
Error Handling	CRC, FEC, Retransmit on error
Error Correction	Golay, Reed-Solomon
Data Encryption	128 & 256-bit AES Payload Data Encryption
RF Encryption	128-bit AES RF Overhead Encryption
Hop Patterns	10 Pseudo Random, 1 Pseudo Random Based on Network ID, & 1 Secure
Secure Hop Pattern	128-bit AES Hop Pattern Determination
Compression	Low, High, Decompress Only
Repeater	Store-and-forward
MultiMaster (MMS)	Synchronization of Collocated Access Points or Multiple Access Points within a Network
MultiSpeed	Up to 4 Data Rates within the Same Channel Bandwidth
Diagnostics	Neighbor List, RF Ping, RF Throughput, RF Statistics, IP Ping, Traceroute, IPERF, TCP Dump, DNS Lookup, Network Statistics, Serial Statistics, Modbus Bridging Statistics, Statistics Graphing and CSV downloading
Programmable I/O Option	8 programmable input/output signals (4 independently programmed analog inputs/ outputs, or digital inputs and 4 independently programmed digital inputs/outputs)

XetaBridge9 Specifications

Transmitter	ISM FHSS	ISM DTS
Frequency Range	902 to 928 MHz	
Output Power	10 to 1000 mW (10 to 30 dBm)	
Modulation	MSK, 2FSK, BPSK, QSPK, 8PSK, 16PSK, 16QAM, 32QAM, 64QAM	
Data Rate	57 to 5303 kbps	530 to 5303 kbps
Channel Bandwidth	77, 154, 207, 310, 600, 900 & 1200 kHz	600, 900 & 1200 kHz
Frequency Stability	1.0 ppm	
Range	70+ miles	30 miles

Receive sensitivity numbers are with FEC disabled. When enabled, sensitivity improves by 3 dBm.

Receiver	ISM					
	77 kHz Channel		154 kHz Channel		207 kHz Channel	
Modulation	**Sensitivity**	**Data Rate**	**Sensitivity**	**Data Rate**	**Sensitivity**	**Data Rate**
MSK	-110 dBm	57 kbps	-107 dBm	114 kbps	-106 dBm	153 kbps

	310 kHz Channel		600 kHz Channel		1200 kHz Channel	
Modulation	**Sensitivity**	**Data Rate**	**Sensitivity**	**Data Rate**	**Sensitivity**	**Data Rate**
MSK	-105 dBm	229 kbps				
BPSK			-100 dBm	530 kbps	-99 dBm	884 kbps
QPSK			-98 dBm	1061 kbps	-97 dBm	1768 kbps
8PSK			-93 dBm	1591 kbps	-92 dBm	2651 kbps
16PSK					-85 dBm	3535 kbps
16QAM			-89 dBm	2121 kbps	-87 dBm	3535 kbps
32QAM			-86 dBm	2651 kbps	-83 dBm	4419 kbps
64 QAM			-76 dBm	3182 kbps	-76 dBm	5303 kbps

	900 kHz Channel	
Modulation	**Sensitivity**	**Data Rate**
2FSK	-100 dBm	663 kbps

XetaBridge9 Specifications

Ordering

XETA9C1-22IPDFC	Plastic Enclosed, CAT M1, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 1 USB, 2 DIs, 1 MMS
XETA9C1-22IPDFC-IO	Plastic Enclosed, CAT M1, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 1 USB, 8 I/O, 1 MMS
XETAEC9C1-22IPDFC	Plastic Enclosed Edge Computer, CAT M1, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 2 USB, 2 DIs, 1 MMS
XETAEC9C1-22IPDFC-IO	Plastic Enclosed Edge Computer, CAT M1, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 2 USB, 8 I/O, 1 MMS
XETA9C4-22IPDFC	Plastic Enclosed, CAT 4, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 1 USB, 2 DIs, 1 MMS
XETA9C4-22IPDFC-IO	Plastic Enclosed, CAT 4, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 1 USB, 8 I/O, 1 MMS
XETAEC9C4-22IPDFC	Plastic Enclosed Edge Computer, CAT 4, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 2 USB, 2 DIs, 1 MMS
XETAEC9C4-22IPDFC-IO	Plastic Enclosed Edge Computer, CAT 4, 902-928 MHz XETA9, 2 Ethernet & 2 Serial, 2 USB, 8 I/O, 1 MMS

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