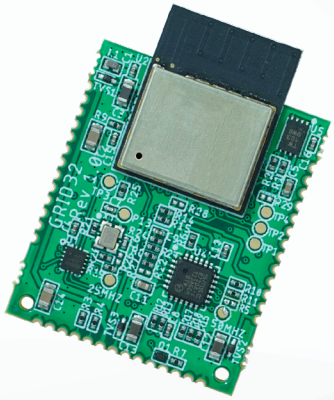
GRID32™

Secure Industrial Networking Module



HIGHLY SECURE INDUSTRIAL PROTOCOL MODULE WITH ETHERNET, WI-FI AND BT/BLE FOR IIOT APPLICATIONS

The GRID32™ is a complete Ethernet wired and wireless module with built-in Industrial network protocols. The GRID32 is designed to allow OEMs to quickly and easily add IIoT network protocols to any product. Flexible configuration modes and the built-in application firmware make for easy Integration, low design risk and allows for quick time to market. By using the built-in WEB interface, or the web API, this module can be quickly and securely configured and provisioned on your network. The GRID32 can also be configured by your host processor on power up thru the UART interface. In addition, the module completely offloads the industrial protocol communications (Ethernet traffic) from the host processor.

The GRID32 has all of the integrated hardware and application firmware needed for new and existing Industrial protocol applications. The module has an integrated Ethernet PHY and a crypto authentication chip that makes it easy to add secure Industrial Ethernet connectivity to your product. Furthermore, the module has Wi-Fi and Bluetooth built-in which add additional connectivity and configuration possibilities.

KEY Features and Benefits

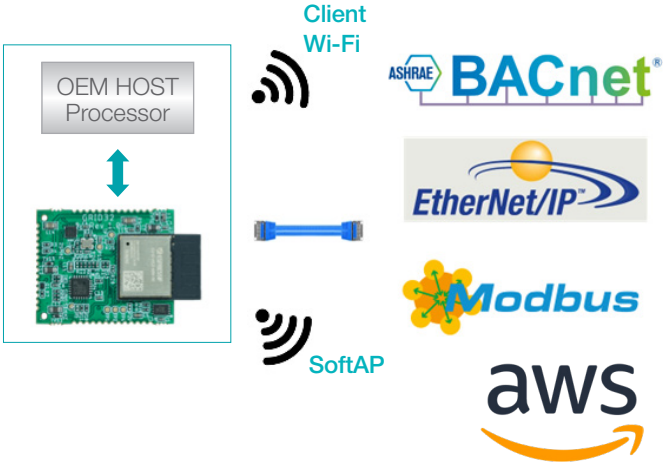
- Fast integration to add secure wired or wireless networking to any product. Minimal Engineering effort. Low design risk. Offloads network processing from a host processor.
- Built-in Security including secure boot, Flash encryption, 608A Crypto Chip, SSL/TLS, AES 256-bit, HTTPS OTA, WPA2 personal or Enterprise security.
- Secure IIoT in a compact module that can be easily integrated into an OEM product. Connect edge devices to a cloud application for actionable data analytics and management.
- Wireless 802.11BGN interface, BT/BLE 4.2 and Integrated 10/100 PHY for Wired Ethernet.
- Industrial protocol support including Modbus, Ethernet/IP and BACnet IP
- Cloud management Options—remote FW updates, Configuration updates

Industrial Ethernet Communication Protocols Supported

The GRID32 Industrial Module comes with the most popular Industrial Ethernet options speeding time to market by eliminating the need for you to develop and support a protocol stack. The module can be ordered with the following protocols:

- Serial to Wi-Fi / Serial to Ethernet
- Ethernet to Wi-Fi Bridging (OEM option)
- Modbus Serial to Modbus TCP over Ethernet or Wi-Fi
- Modbus Serial to EtherNet/IP over Ethernet
- Modbus Serial to BACnet IP
- Modbus Serial to PROFINET I/O (Future option)

Our team of engineers can customize the firmware to meet your requirements if the standard offerings don't meet your needs.



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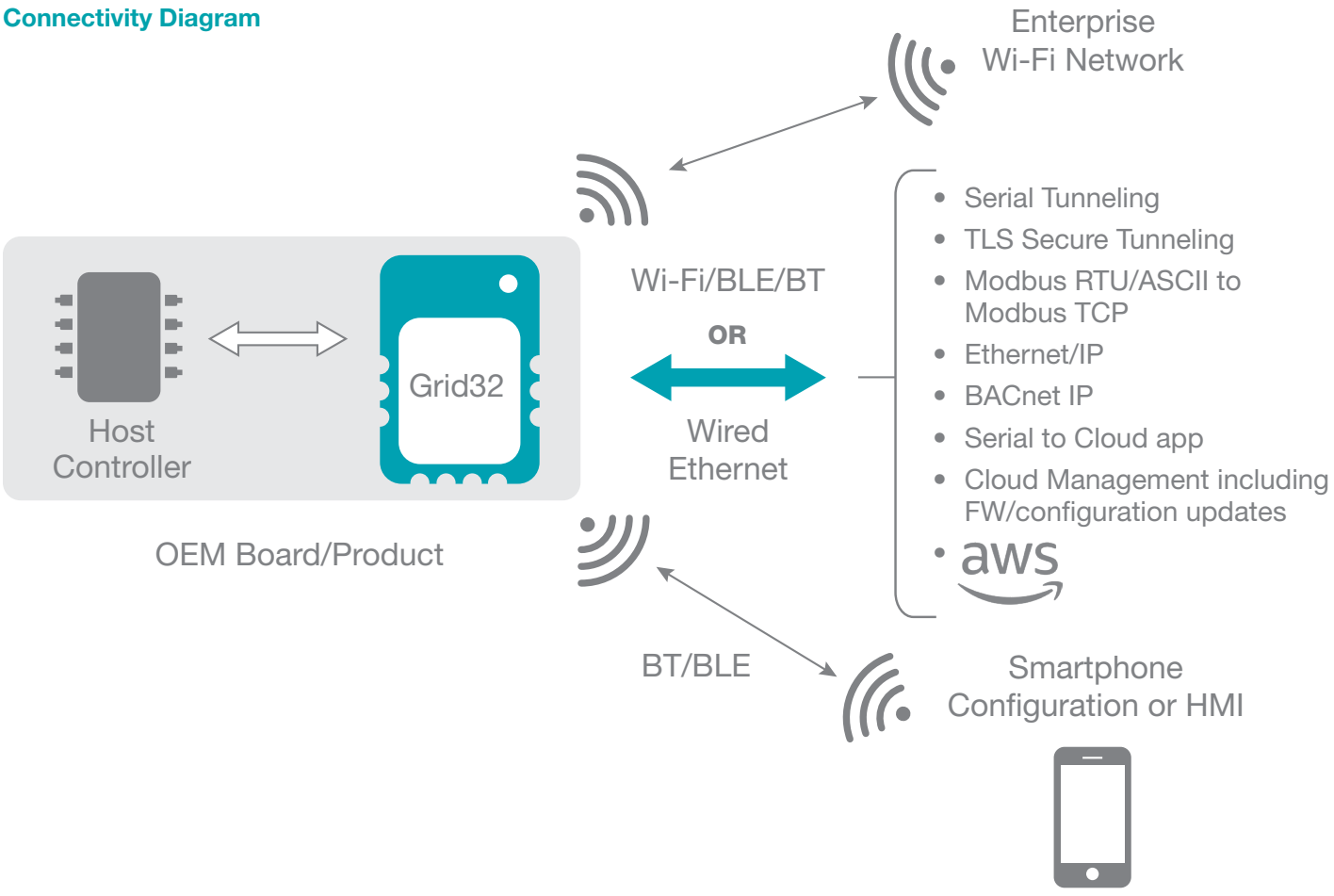
Highly Secure and IIoT ready — Designed in the USA

The module supports secure wireless protocols including WPA2-Enterprise and TLS network security. The GRID32™ ensures robust network security by using a highly secure Microchip ATECC608A Crypto Authentication chip that generates and stores a private key, certificates and AWS IoT credentials.

As an OEM option, the GRID32 can support Over-the-Air (OTA) firmware updates for cloud managed devices. The GRID32 is designed in the US and standard firmware or OEM specific firmware is loaded on the modules at our USA production facilities.

Connectivity Diagram



BT/BLE available with customization

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Features and Specifications

Network

Wired Ethernet Specifications

- IEEE802.3/802.3u compliant Media Access Controller (MAC) with Physical Layer Transceiver (Fast Ethernet PHY)
- 10BASE-T and 100BASE-TX Ethernet
- 10 Mbps and 100 Mbps rates, Auto negotiation
- Auto-MDIX support. Auto configures connection for straight through or crossover cable

Wireless LAN Specifications

- 802.11 b/g/n internal Wi-Fi controller 2.4GHz-2.5GHz
- Data rates: 802.11b/g up to 54 Mbps; 802.11n (1x1) up to 150 Mbps
- Support for concurrent Client Station and SoftAP connections
- SoftAP Wi-Fi interface supports up to 4 Wi-Fi client connections (with DHCP)

Antenna Options

The GRID32 is offered for either an internal chip antenna or a W.FL connector to support an external Antenna.

- For the internal chip antenna option, the gain is 2 dBi
- For the W.FL option, an external Antenna and antenna cable assembly is required and not included. (The W.FL is compatible with MHF3 and AMMC).

Bluetooth Specifications

- GRID32 supports dual-mode Bluetooth: Classic and BLE
- Compliant with the Bluetooth v4.2 BR/EDR and BLE specifications
- Stack options include L2CAP, SMP, SDP, ATT, GATT, GAP
- Supports Wi-Fi setup via Bluetooth

Protocol Support

Industrial Protocol Support

- Serial-to-Ethernet tunneling
- Ethernet to Wi-Fi, client Bridging available as an OEM option
- Modbus RTU or ASCII Serial Client
- Modbus Serial to Modbus TCP over Ethernet or Wi-Fi
- Modbus Serial to EtherNet/IP over Ethernet or Wi-Fi
- Modbus Serial to BACnet IP
- Modbus Serial to PROFINET I/O *(Future option)*

General Protocol Support

- DHCP Client, Server (Soft AP), HTTP Server/Client, HTTPS
- IPv4, IPv6, TCP/IP, UDP/IP
- Websocket client, MQTT (OEM option)

Security and Authentication

Security

- Secure Boot (OEM Option)
- Flash Encryption
- TLS Client/Server – TLS 1.2
- AES 128,256

CryptoAuthentication™

- ATECC608A Crytographic Co-Processor
- Protected storage for up to 16 keys, certificates or data
- SHA-256, AES-128

Management Interfaces

- SoftAP
- Internal Web Server (HTTP/HTTPS)
- Serial Port (AT-Command)
- Web API

Host Interfaces

- Serial Port: Data Rates to 921 kbps
- Characters: 7 or 8 data bits
- Parity odd, even, none
- Stop bits: 1, 1.5 or 2
- Control lines DTR/DCD, Flow Control RTS/CTS, XON/XOFF
- System Pins: Reset, Default
- ETH-TXN,TXP,RXP,RXN
- LED1, LED2

Operating Conditions

- Operating temperature: -40°C to +85°C
- Storage temperature: -40°C to +85°C

Power

- Input Voltage 3.3VDC
- Max Current Consumption (Boot with Wi-Fi enabled) ~ 500mA

Dimensions/Package

- 23mm x 33mm x 7mm; 0.9inch x 1.3inch x .25inch

Certifications & Compliance

Radio Approvals

- FCC Part 15, CE, RoHS

Ordering Information

Part Number	
GRID32-INT-MBTCP	GRID32 with Modbus TCP FW Internal Antenna
GRID32-EXT-MBTCP	GRID32 with Modbus TCP FW External Antenna
GRID32-INT-ST	GRID32 with serial tunnel FW Internal Antenna
GRID32-EXT-ST	GRID32 with serial tunnel FW External Antenna
GRID32-INT-EIP-Q	GRID32 with Ethernet/IP OEM qualification/ sample mapping FW Internal Antenna
GRID32-EXT-EIP-Q	GRID32 with Ethernet/IP OEM qualification/ sample mapping FW External Antenna

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