ASG200 Datasheet

Version 0.9.0

☞ For more information, visit our website at https://www.wiznet.io/

Contents

Figures

Tables

1. ASG200

1.1. Overview

WIZnet Azure Sphere Guardian 200 (ASG200) is a product which provides Ethernet interfaces to both Public and Private Network. The general Azure Sphere Module supports only one ethernet Interface interacting with Azure Sphere Pluton OS. But ASG200 has an additional Ethernet interface which WIZnet Hardwired TCP/IP is embedded on, so that a legacy device having only ethernet interface can send data to the cloud server in Azure Sphere Security system.

East to apply in brown field system, ASG200 supports a plenty of network application protocol libraries. ASG200 receives data from brown field system in private network and parses it. Then the data is secured and sent to Cloud server by ASG200.
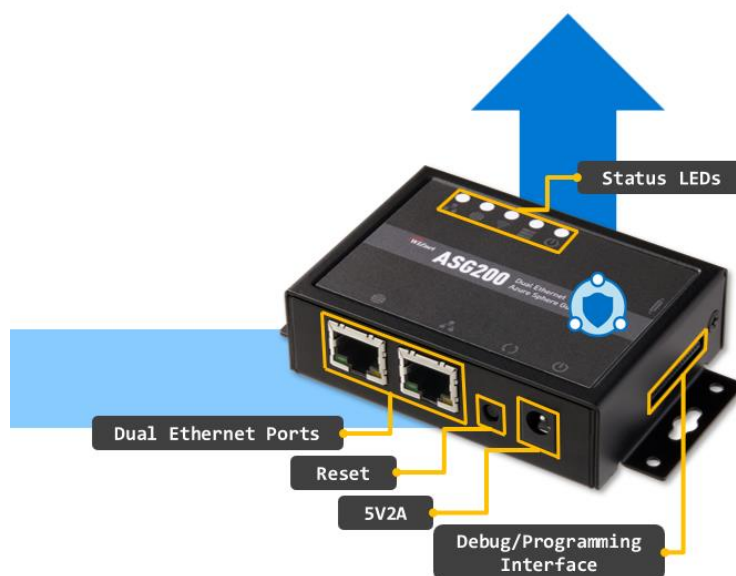

Figure 1. Azure Sphere Guardian 200

1.2. Feaures

- Data transfer between the private network and the public network
- Certificate management
  - By console
  - By Azure Sphere Service
  - By Configuration tool thru Ethernet (*Under development*)
- Support TLS session in private network

- Auto switching between Wi-Fi and Ethernet for public networks optionally
- Support USB interface for debug and programming

1.3. Specification

Item		Description
MCU		MediaTek MT3620 (Single ARM Cortex A7 Core, Dual ARM Cortex M4 Dual Core)
Operating System		Customized Linux Kernel by Microsoft
WAN	HW	Wi-Fi (2.4G/5G Dual band 1T1R) Ethernet (Microchip Ethernet)
	SW	Client application to a Cloud service on Azure IoT
	LEDs	LEDs output: Link, Active
LAN	HW	Ethernet (WIZnet Hardwired TCP/IP)
	SW	Supports following Hardwired TCP/IP protocols: • TCP Server/ TCP Client • DHCP Server/ DHCP Client • SNTP Server • UDP *(To be applied to various brown field network systems, it will be updated a plenty of TCP/IP protocols)*
	LEDs	LEDs output: Link, Active
GPIO	Status LEDs	Five Status LEDs: LAN Ethernet Data communication, WAN Ethernet Link, WAN Wi-Fi Connection, Server Connection, Power
	Input Button	One User Button: Can be set as HW Reset or User-defined Button
	Pin header	18 pin headers are FTDI board connector for Azure Sphere debugging and programing
Power		5V2A (Power Consumption -TBD)
Dimension		Case: 85x62x35 mm Base PCB: 77x55x18 mm
Case		Preliminary *(To be changed for Wi-Fi communication)*
Environment		Operating Temperature: -25 ~ 70 Storage Temperature: -40 ~ 85 Operating Humidity: 20 ~ 95 Storage Humidity: 0~95

Table 1. ASG200 Specification

2. System Architecture

System Architecture describes entire system which is ASG200 applied to brown field network and connected to Cloud Server and Management service

2.1. Block Diagram

In ASG200, M4 Core of MT3620 is connected to W5500 which is WIZnet Hardwired TCP/IP chip with SPI interface. Because of Hardwired TCP/IP stack embedded in W5500, software TCP/IP stack is not required on M4 Core for ethernet communication. M4 Core only receives data parsed by W5500 then sends it to A7 Core on Inter-core communication. A7 Core secures this data on Azure Sphere Security System and sends it Azure Cloud via public network.
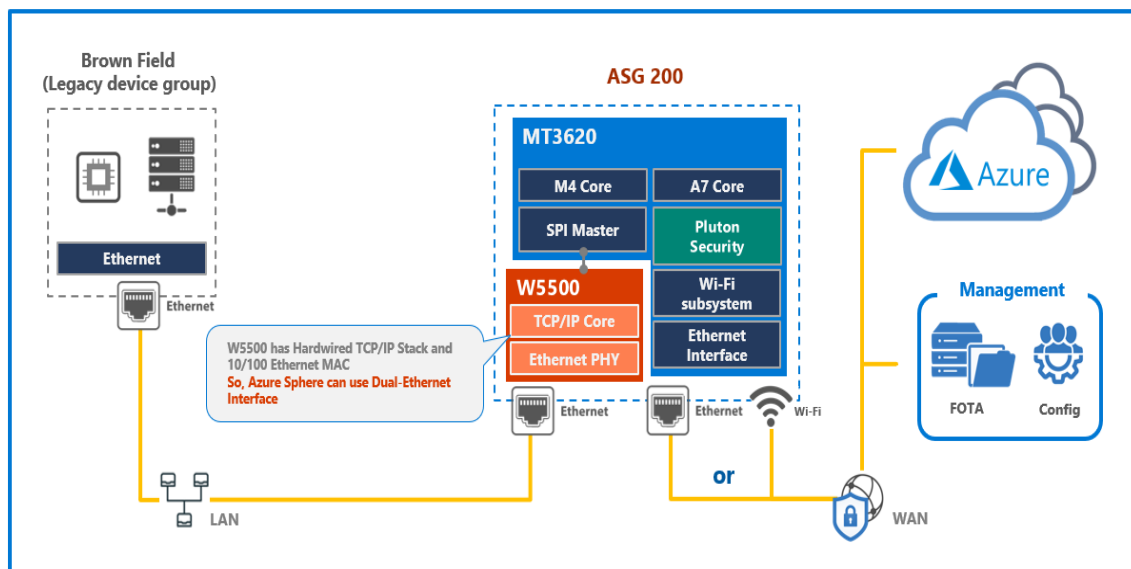

Figure 2. ASG200 Block Diagram

W5500 is connected with only SPI interface to M4 Core. So, the data communication between brown field system and W5500 is out of Azure Sphere Security system. However, W5500 which is Hardwired TCP/IP embedded can filter the ethernet packets used in data communication. It allows reliable ethernet communication even if heavy traffic occurs, like DDoS attack.

3. Installation Overview

ASG200 components consists of two lan cable, micro usb cable, 5V2A power adaptor and debugger board. Debugger board can be connected to ASG200 18pin headers to debug and
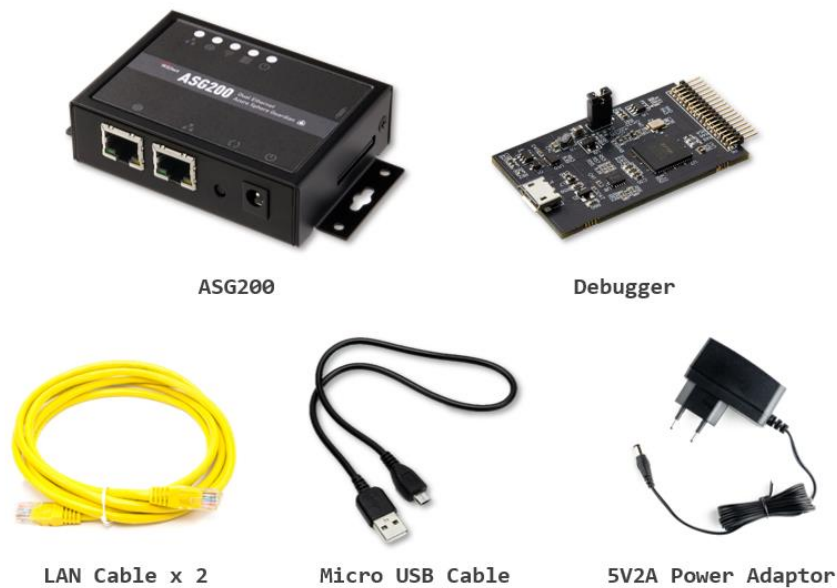
programing ASG200.

ASG200   Debugger

LAN Cable x 2   Micro USB Cable   5V2A Power Adaptor

Figure 3. ASG200 Components

Status LEDs

POWER
SERVER
Wi-Fi
ETH0
ETH1

WAN port

LAN port

Figure 4. ASG200 External description

3.1. ASG200 Connections

An overview of how ASG200 interface to the equipment in local network is as follows:

1. Power provided to ASG200 with 5V2A power adaptor, power status LED turned on.
2. For equipment with as Ethernet interface, connect Ethernet cable from ASG200's LAN port to the equipment.
3. Connect another Ethernet cable from ASG200's WAN port to internet router for public network.
4. Once connected, the LEDs on ASG200 should be as follows:

Status LEDs	Color	Description

Power	Red	Confimation that 5V supply rail voltage is ok
Connection	Green	Ready to communicate with Azure Cloud
Wi-Fi	Green	Activate Wi-Fi
ETH0	Green	Activate WAN port
ETH1	Green	Received data from LAN port

Table 2. LED Status description

4. Hardware Specification

4.1. Dimensions

4.1.1. Preliminary Case

Figure 5. ASG200 Preliminary Case Dimension
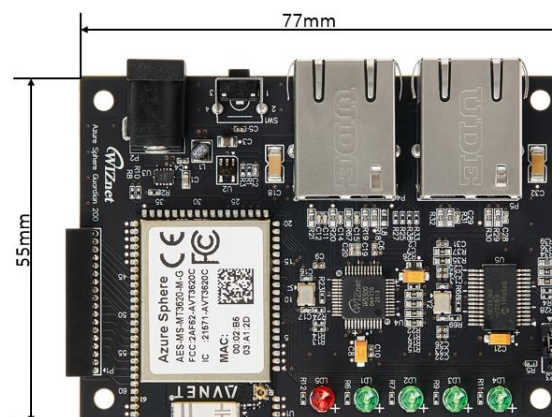
4.1.2. Base PCB

Figure 6 ASG200 Base PCB Dimension
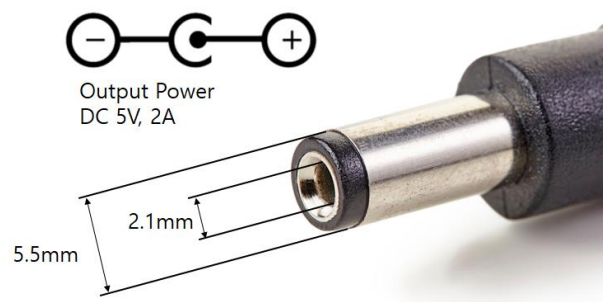
4.2. DC Power Cable Specification

Figure 7. ASG200 DC Power cable specification

5. Resource

5.1. Software Checklist

ASG200 Application	Github Repository
ASG200_App	[Github Repository Link](#)

Table 3. ASG200 Application Github Repository

Libraries and Samples	Github Repository
ASG200_m4_Software	[Github Repository Link](#)

Table 4. Libraries and Samples Github Repository

Document History Information

Version	Date	Description
Ver. 0.9.0	8JUN2020	Preliminary Release

Copyright Notice