

# World First Outdoor Wireless 2.4G+5GHz MESH AP/Router

## WA512GM-IP67

### Industrial 2.4G+5GHz Mesh WLAN AP/Router

The WA512GM is the first outdoor WiFi AP / Router in the world to adopt the latest MESH WiFi technology for the growing demands of the industrial WiFi network. The MESH WiFi features Self Organizing Network that automatically selects and links different wireless networking devices together by the mesh topology. The WA512GM significantly improves network coverage in different corners in an outdoor environment with advanced security. Equipped with a high-performance quad-core ARM processor, it can serve dual channels 5GHz IEEE 802.11ac Wave 2 and 2.4G 802.11n WLAN radio at the same time and reaches up to 866M+300Mbps high throughput. Advanced cybersecurity features such as OpenVPN, IPSec, L2TP and GRE tunnel are supported. The outdoor IP67 protection grade for -40~70C wide operation temperature and PoE power input can be integrated easily into IoT applications.



ViewMaster  
NetMaster  
ThingsMaster



### Features & Benefits

#### Dual Bands Wireless LAN

- Quad Core ARM Processor
- IEEE 802.11ac Wave 2, compatible with 802.11a/b/g/n
- Concurrent dual band 2.4 G+5GHz radio, up to 866Mbps + 300Mbps Bandwidth
- Dual Gigabit Ethernet ports in Router mode for WLAN/LAN to Eth-WAN routing

#### Qualcomm® Wi-Fi SON Technology

- Self-Healing auto rerouting through multi-hop (up to 4 layers and 8 hops)
- Self-Configuring Plug-and-play via Wireless network with ViewMaster utility
- Autonomous performance optimization (802.11k)\*
- Interference management via band steering (802.11v)\*
- Seamless roaming (802.11r)\*
- Self-defending (Round-the-clock security)\*

#### Enhanced Cyber Security & Redundancy

- Support Firewall for inbound/outbound traffic
- OpenVPN (server/client), IPsec for secure remote connection
- IPsec Performance >150Mbps @256-bit encryption
- Support L2TP with PPP, PAP, CHAP(LCP, IPCP)
- Support GRE tunnel
- HTTPs/SSH secure login
- Support TACACS+ multi-user authentication for privileged user management

#### Management Features

- Various configuration paths, including Web GUI, Telnet, LAN Utility (ViewMaster) and NMS (NetMaster)
- Support First login password management
- Web GUI for Wireless LAN Setting, Radio On/Off, Band and Frequency selection, SSID/Multiple SSID, SSID Broadcast On/Off
- 1:1 NAT, port forwarding for local traffic protection
- Support SNMPv3 and entity-MIB (RFC4133), MIB II (RFC1213)
- NTP v3 time management

#### Cloud Management Service\*

- Support Amazon AWS & Microsoft Azure cloud service
- Support proprietary ThingsMaster cloud service
- Interactive monitoring dashboard and map shows the status, signal strength, location etc.

#### Outdoor IoT Application

- Outdoor IP67 Production Design
- Effective heat dissipation design for operating in -40~70°C environments
- Power Input 802.3af PD by Industrial PoE switch as a complete wire/wireless solution.



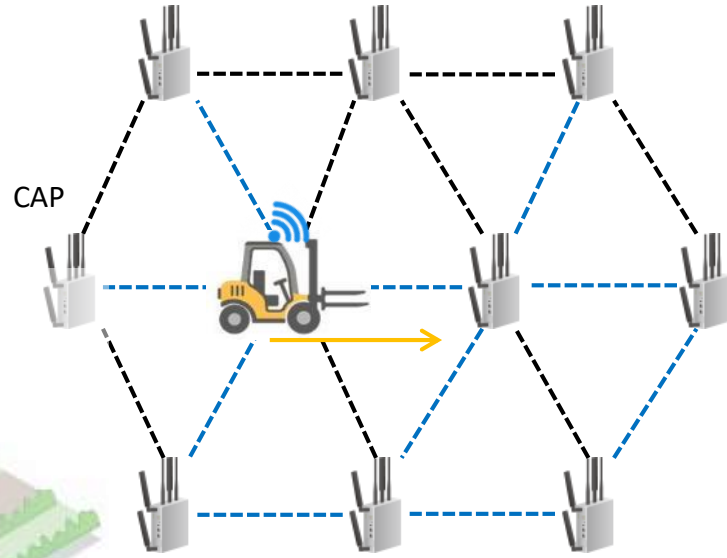
### ✓ Self-Healing Mesh Technology

- Eliminate network bottleneck
- Auto rerouting through multi-hop
- Interference management (band steering)\*
- Airtime fairness\*
- Seamless roaming\*

\*By Request

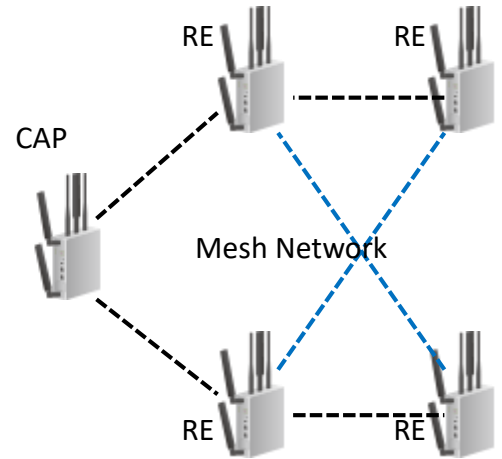


Mesh Network



### ✓ Self-Configuring by ViewMaster Utility

- Simple configuration with 3 steps
  1. Select a CAP (Central AP)
  2. Auto discovery RE (Range Extender)
  3. Group Mesh setting
- Group Mesh SSID and WPA PSK setting
- Mesh status (signal, channel, uplink) \*



## 1 Select a CAP



## 2 Auto Discovery RE

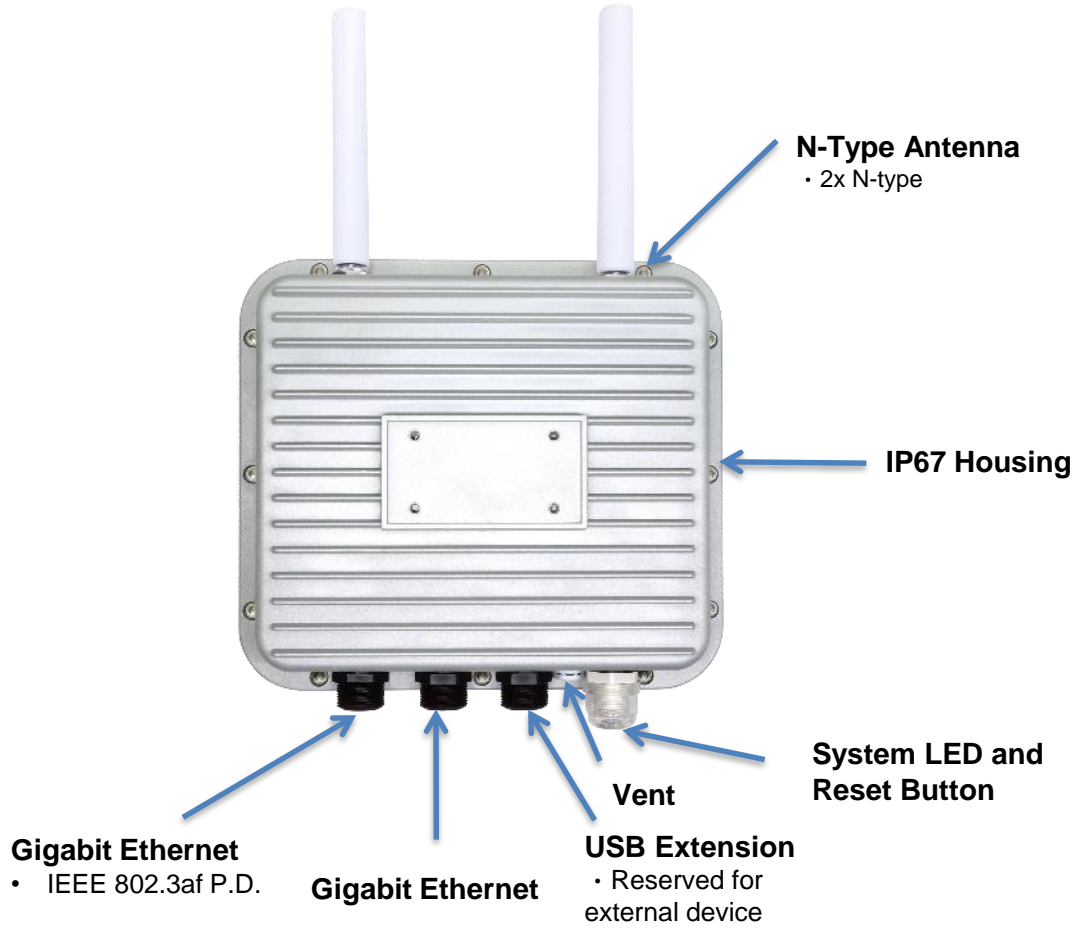


## 3 Group Mesh Setting



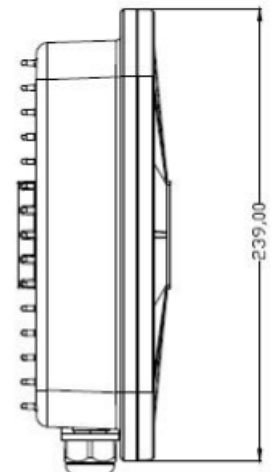
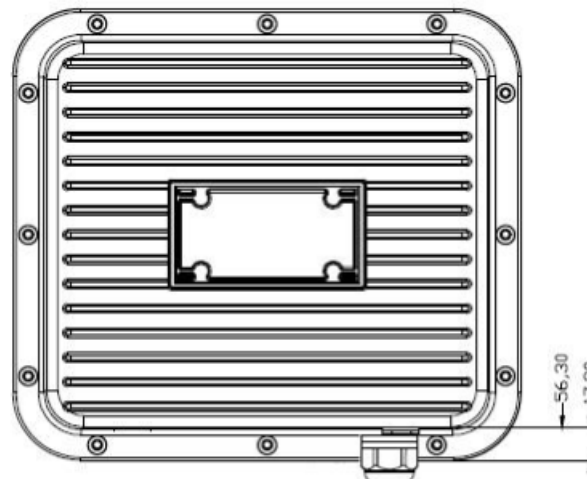
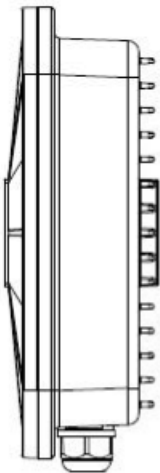
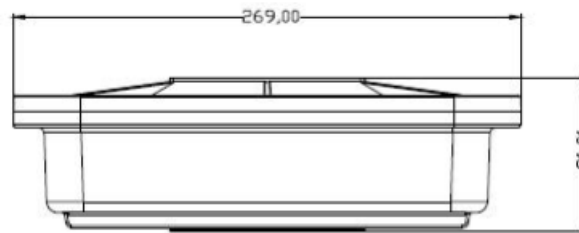


## Interfaces



## Dimensions

(mm)



Technology	
<b>Standard</b>	IEEE 802.11ac wireless local area network (WLAN), Backward support 802.11n/g/a/b Wireless LAN
	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet Copper
	IEEE 802.3af PoE
Interface	
<b>Ethernet Port</b>	1x 10/100/1000Base-T Gigabit WAN PoE (P.D.) port, RJ45 water-proof cable gland 1x 10/100/1000Base-T Gigabit LAN, RJ45 water-proof cable gland
<b>System LED + Reset</b>	Water-proof cable gland, with 1x Power 1x 2.4G 1x 5G 1x Reset button
<b>SMA Socket</b>	2x N-type female
<b>USB</b>	1x USB, type A water-proof cable gland
<b>Power Input</b>	802.3af PD
WLAN Properties	
<b>Processor</b>	Quad-Core CPU, 4x ARM Cortex A7 at 716.8MHz
<b>Standard</b>	Dual Band 2x2 2.4GHz 802.11n + 2x2 5GHz 802.11ac Radio IEEE 802.11ac/a/b/g/n wave2 MU-MIMO 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)
<b>Data Rate</b>	802.11ac: MCS0 ~ 9, max. 866Mbps 802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0 ~ 15, max. 300Mbps Check detail TX/RX information in User Manual
<b>Frequency</b>	ISM Band, 2.4GHz: 2.412GHz ~ 2.472GHz 5GHz: 5.180MHz ~ 5.240MHz, 5.745 ~ 5.825MHz(Band 1,4) 802.11ac 80MHz@5210MHz/5770MHz 2x SMA connector for simultaneous dual bands concurrent
<b>MIMO</b>	2.4/5GHz: 2T2R MU-MIMO DBDC (Dual Band Dual Concurrent)
<b>Max. E.I.R.P.</b>	≤20db, compliant with CE request
Power Requirement	
<b>Input Voltage</b>	IEEE 802.3af PD Powered Device
<b>Power Consumption</b>	9W full traffic, suggest to reserve 15% tolerance

Software	
<b>Management</b>	CGI WebGUI, Command Line Interface (CLI), IPv4/IPv6*, Telnet, SNMP v1/v2c/v3, DDNS, DHCP server/client, DHCP Relay, TFTP, System Log, SMTP, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy)
<b>MESH Wi-Fi</b>	Qualcomm® Wi-Fi SON Technology, Self-healing by auto rerouting through multi-hop, Self-configuring Plug-and-play via ViewMaster, Mesh SSID/WPA PSK, Mesh status (signal/channel/uplink)*
<b>Traffic Management</b>	Flow Control, Traffic shaping
<b>Security</b>	IEEE 802.1X/RADIUS, TLS v1.2, HTTPs/SSH, First login password management WLAN AP Security: Share Key, WPA/WPA2-PSK(Pre-Shared Key), WPA/WPA2 Enterprise Encryption: 64/128-bit WEP(Wired Equivalent Privacy), TKIP(WPA-PSK), AES(WPA2-PSK)
<b>Advanced Security</b>	TACACS+, Multi-user authentication
<b>Time Management</b>	NTP, SNTP
<b>WAN/Routing/NAT/Firewall/VPN</b>	NAT: 1-1 NAT, NAPT(SNAT/DNAT), Port Forwarding Firewall: Stateful Inspection firewall, DMZ, IP/Port Filter, *MAC Filter VPN: IPSec, OpenVPN, L2TP, *PPTP, GRE, >150Mbps IPSec Performance @256-bit encryption
<b>IIoT Industrial Protocol</b>	MQTT, RESTful API*
<b>Private Cloud</b>	ThingsMaster, ThingMaster OTA
<b>Public Cloud</b>	AWS Agent, Azure Agent
<b>MIB</b>	MIB-II, Entity MIB, WoMaster Private MIB*
<b>Utility</b>	ViewMaster, NetMaster, Ping, Traceroute
<b>WLAN Configuration</b>	WLAN Basic Settings: Radio on/off, 2.4G 11n/5G 11ac Band and Frequency selection, SSID/Multi-SSID configuration, SSID broadcast and advanced WLAN settings
Mechanical	
<b>Installation</b>	Ceiling/Wall/Pole mount
<b>Enclosure Material</b>	Steel Metal
<b>Dimension</b>	239mm(H) x 269mm(H) x 68mm(D)
<b>Ingress Protection</b>	IP67
<b>Weight</b>	≈2.4Kg
Environmental	
<b>Operating Temperature &amp; Humidity</b>	-40°C~70°C (PD mode) 5%~95% Non- Condensing Note: Power the device by Industrial PoE Switch for high temperature environment.
<b>Storage Temperature</b>	-40°C~85°C
<b>MTBF</b>	>200,000 hours at 40° full cycle
<b>Warranty</b>	3 years
<b>Attached PoE Injector</b>	Input: 90~264Vac, 47~63Hz, Max. 0.55A Output: Passive 48V, 500mA (RJ45 Output Pin 4/5: V+, Pin 7/8: V-) Operating Temperature: 0~40°C Storage Temperature: -20~85°C
Approval	
<b>CE</b>	CE RED Compliance Safety: IEC/EN60950-1 EN 55032/55035/EN51000-3-2/EN61000-3-3 EN 301 489-1/17 EN 300 328/EN 301 893/EN 300 400 EN 62311 MPE
<b>FCC</b>	EMC: Part 15B

\*By Request



## Ordering Information

Model Name	Description
<b>WA512G-IP67-U</b>	Industrial Dual Radio 2.4G +5GHz Concurrent Wireless AP, 802.11ac Wave 2 + 802.11b/g/n WLAN, 2GE, USB, IP67 Enclosure, US-plug
<b>WA512G-IP67-E</b>	Industrial Dual Radio 2.4G +5GHz Concurrent Wireless AP, 802.11ac Wave 2 + 802.11b/g/n WLAN, 2GE, USB, IP67 Enclosure, EU-plug
<b>WA512GM-IP67-U</b>	Industrial Dual Radio 2.4+5GHz Concurrent Wireless MESH AP, 802.11ac Wave 2 + 802.11b/g/n WLAN, 2GE, USB, IP67 Enclosure, US-plug
<b>WA512GM-IP67-E</b>	Industrial Dual Radio 2.4+5GHz Concurrent Wireless MESH AP, 802.11ac Wave 2 + 802.11b/g/n WLAN, 2GE, USB, IP67 Enclosure, EU-plug
<b>Package List</b>	
1x Product Unit	
1x Quick Installation Guide	
1x PoE Injector	
1x Mounting kit	
<b>Note: Antenna is not included</b>	



## Optional Accessory

Ordering Information	
<b>Outdoor OMNI Antenna</b>	
A-WLAN-6-NM	Wi-Fi Antenna, Wi-Fi 2.4/5GHz dual band Omni Antenna 4/6dBi, N-type male
<b>Outdoor Long-Range Directional Antenna</b>	
A-D1T1R-2.4GHZ-14DB-6KM-NF	2.4Ghz Directional Antenna, 1T1R, 14Dbi, 6KM, vertical polarization, N-Type Female, Pole Mounting, 190*190*30mm (LxWxH), IP65
A-D1T1R-2.4GHZ-19DB-10KM-NF	2.4Ghz Directional Antenna, 1T1R, 19Dbi, 10KM, vertical polarization, N-Type Female, Pole Mounting, 373*373*15mm (LxWxH), IP67
A-D1T1R-5GHZ-23DB-10KM-NF	5Ghz Directional Antenna, 1T1R, 23Dbi, 10KM, vertical polarization, N-Type Female, Pole Mounting, 373*373*15mm (LxWxH), IP67
A-D2T2R-5GHZ-19DB-8KM-NF	5Ghz Directional Antenna, 2T2R, 19Dbi, 8KM, vertical polarization, N-Type Female, Pole Mounting, 190*190*30mm (LxWxH), IP65
C-RF-CFD400-NM_NM-1M	RF cable, N-Type Male to N-Type Male , 1M
C-RF-CFD400-NM_NM-3M	RF cable, N-Type Male to N-Type Male , 3M

## 2.4GHz 1T1R Outdoor Directional Panel 19dBi Pole Mount Antenna

### A-D1T1R-2.4GHZ-19DB-10KM-NF

- 2.4Ghz Wireless Access Point to Point
- High Gain 19dBi, 18° for H Plane and 18° E Plane long distance coverage
- Long Distance up to 10KM coverage
- IP67 Protection Enclosure and Prevention of Rust
- Fiberglass Light Weight Pole Mounting



## Specifications

Electrical	
Frequency Range	2.4 ~ 2.5GHz
Transmission	1T1R
Network	Wireless 2.4Ghz Network IEEE 802.11n , IEEE 802.11b/g
Gain	19dBi
Max. Distance	8km-10Km
V.S.W.R	≤ 1.5
Max. Distance	10km
Beam Width-H Plane	18°
Beam Width-E Plane	18°
Polarization	Vertical
Input Impedance	50Ω
Lightning Protection	DC Grounded
Mechanical	
Connector	N-Type Female
Wind Resistance	245km/h
Mount	Pole Mounting Kit ( U-Clamps )
Pole Mounting Kit Angle	Up 30°
Op. Temperature	-50°C – + 85°C
Ingress Protection	IP67
Dimension	373 * 373 *15 mm ( L x W x H )
Weight	1.09kg
*Optional RF Cables	C-RF-CFD400-NM_NM-1M (N Male and N Male, 1 Meter) C-RF-CFD400-NM_NM-3M (N Male and N Male, 3 Meter)

# 5GHz 1T1R Outdoor Directional Panel 23dBi Pole Mount Antenna

## A-D1T1R-5GHZ-23DB-10KM-NF

- 5Ghz Wireless Access Point to Point
- High Gain 23dBi, 10° for H Plane and 10° E Plane long distance coverage
- Long Distance up to 10KM coverage
- IP67 Protection Enclosure and Prevention of Rust
- Fiberglass Light Weight Pole Mounting



### Specifications

Electrical	
Frequency Range	5.1~5.9 GHz
Transmission	1T1R
Network	Wireless 5Ghz Network IEEE 802.11a/an/ac
Gain	23dBi
Max. Distance	8km-10Km
V.S.W.R	≤ 2
Max. Distance	10km
Beam Width-H Plane	10°
Beam Width-E Plane	10°
Polarization	Vertical
Input Impedance	50Ω
Lightning Protection	DC Grounded
Mechanical	
Connector	N-Type Female
Wind Resistance	210km/h
Mount	Pole Mounting Kit ( U-Clamps )
Pole Mounting Kit Angle	Up 30°
Op. Temperature	-50°C – + 85°C
Ingress Protection	IP67
Dimension	373 * 373 *15 mm ( L x W x H )
Weight	1.54kg
*Optional RF Cables	C-RF-CFD400-NM_NM-1M (N Male and N Male, 1 Meter) C-RF-CFD400-NM_NM-3M (N Male and N Male, 3 Meter)



# 5GHz 2T2R Outdoor Directional Dual Polarization Panel 23dBi Pole Mount Antenna

## A-D2T2R-5GHZ-23DB-10KM-NF

- 5Ghz Wireless Access Point to Point
- 2 sets of SMC connectors with 2 RF cables
- High Gain 23dBi, 10° for H Plane and 10° E Plane long distance coverage
- Long Distance up to 10KM coverage
- IP67 Protection Enclosure and Prevention of Rust
- Fiberglass Light Weight Pole Mounting



### Specifications

Electrical	
Frequency Range	5.1~5.9 GHz
Transmission	2T2R
Network	Wireless 5Ghz Network IEEE 802.11a/an/ac
Gain	23dBi
Max. Distance	8km-10Km
V.S.W.R	≤ 2
Max. Distance	10km
Beam Width-H Plane	10°
Beam Width-E Plane	10°
Polarization	Vertical
Input Impedance	50Ω
Lightning Protection	DC Grounded
Mechanical	
Connector	N-Type Female
Wind Resistance	210km/h
Mount	Wall and Pole Mounting Kit ( U-Clamps )
Pole Mounting Kit Angle	Up 30°
Op. Temperature	-50°C – + 85°C
Ingress Protection	IP67
Dimension	373 * 373 *15 mm ( L x W x H )
Weight	1.54kg
RF Cables	2 x C-RF-CFD400-NM_NM-1M ( N Male and N Male, 1 Meter)