

Vernetzen 1000 Series Wi-Fi over Coax Mini Headend



Rugged and Durable Wi-Fi Solution for Large and Complex Coverage Areas

Vernetzen's 1000 Series Wi-Fi over Coax Mini-Headend is 802.11n compliant and comes with an IP67-rated aluminium case, designed to deliver industry-leading performance with the flexibility and reliability of radiating cable antennas. The 1000 Series offers industrial-grade environmental qualifications while providing higher speeds and coverage for industrial applications, such as automation, control systems, CCTV, tablets, and high-performance laptops. The 1000 Series Mini-Headend offers a flexible, highly secure, and scalable platform that can be deployed as part of a larger wireless network or as a standalone, autonomous solution. By connecting Vernetzen's radiating coaxial cable, it is easy to achieve various underground and outdoor long-distance applications, capable to operate in any rough environment.

- Versatile RF coverage with Vernetzen's Wi-Fi radiating Coax cable optimised for the 2.4Ghz range
- Maximum allowable radiated RF power
- Cylinder shaped coverage areas capable of distances up to 500m long by 100m radius
- Designed for extreme industrial, underground and outdoor environments
- Ideal for rail, transportation, mining, oil and gas, manufacturing, and demanding outdoor applications.
- Low latency, MIMO support through multiple cables
- Compact but rugged IP67-rated housing to protect against liquid and dust ingress
- Catenary wire and pole mount installation options

Industrial Wireless LAN

- Compliant with the IEEE 802.11b/g/n wireless technology
- 2T2R architecture with wireless data rate of up to 300Mbps
- Supports Long Range PoE up to 600m from a switch
- Operates in the 2.4Ghz range

RF Interface Characteristics

- Two built-in N-type connectors for Radiating Coax cable
- High output power
- Supports MIMO with multiple cables

Outdoor Environmental Characteristics

- IP67-rated sturdy aluminium case
- IEEE 802.3af/at Power over Ethernet
- Operating temperature: -40~70 degrees C

Multiple Operation Modes and Wireless Features

- Multiple operation modes: AP, Gateway, Repeater, WDS, WISP
- WMM (Wi-Fi multimedia) provides priority to real-time traffic such as voice or video transmitting over wireless
- Real-time Wi-Fi channel analysis chart and client limit control for better performance

Industrially Secure

- Full encryption supported: 64/128-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK and 802.1X RADIUS authentication
- Supports 802.1Q VLAN and SSID-to-VLAN mapping
- Supports IP/Port/MAC address/URL filtering, DoS, SPI and firewall features
- Supports DMZ and Port Forwarding
- Bandwidth control per IP address to increase control over the network
- Logging capability for SIEM

Easy Deployment and Management

- Supports Vernetzen Wireless LAN Controllers
- Supports L2 discovery protocols
- Self-healing mechanism
- System status monitoring through remote Syslog and SNMP Server
- Supports DDNS

Built for Automation



Vernetzen's 1000 Series Wi-Fi over Coax Mini-Headend provides an arsenal of features and capabilities to ensure continuous connectivity for static and mobile industrial applications, such as Programmable Logic Controllers (PLCs), Automated Guided Vehicles (AGVs), container handling equipment, and high-performance train-to-trackside links. These unique capabilities can enable autonomous operation of critical mobile assets in industries such as manufacturing, mining, and transportation and deliver a high-reliability solution for applications that cannot tolerate even the shortest losses in wireless connectivity, including in a roaming environment:

- Fast roaming leverages the IEEE 802.11v Fast BSS Transition amendment to ensure consistent throughput and stable rate shifting for connections to assets that are moving at high speeds
- Additional enhancements relevant for industrial applications include prioritised MODBUS/TCP and PROFINET protocol transport support
- Built from high quality parts, including an enterprise grade Qualcomm chipset, larger memory capacity and faster CPU clock speed to be able to support strict Automation requirements
- Supports IEEE 802.3af/at PoE and is suitable for Solar Power installations
- Highly secure supporting MAC address filtering, WPA/WPA2 and 802.1X RADIUS authentication
- Natively supports IEEE 802.1Q protocol allowing multiple VLAN tags to be mapped to multiple SSIDs to distinguish the wireless access
- The Wi-Fi over Coax Mini Headend provides excellent wireless coverage through improved radio sensitivity and range with 802.11a/b/g/n multiple-input multiple-output (MIMO) technology, with two or three spatial streams and up to 300-Mbps data rates
- Each mini-headend connects back into the Local Area Network (LAN) via an Ethernet Switch
- An omni or directional antenna can be connected to the end of the Coaxial cable further extending Wi-Fi RF off the end of the cable

Flexible Deployment

Multiple deployment topologies can be achieved with Vernetzen Radiating Coax Cable as a truly flexible antenna system. For the length of the cable, consistent 2.4Ghz 802.11n Wi-Fi RF is radiated out, allowing Wi-Fi enabled devices to connect to the network. The cable can be rolled out to follow an undulating path, providing consistent Wi-Fi coverage for tunnel systems, underground mining drives, shafts, declines, haul roads, railway tracks etc. This type of antenna system can be used on the surface as well as underground and drastically reduces the amount of infrastructure required with traditional Wi-Fi deployments particularly in large complex environments.



Wi-Fi over Coax Topologies

Single Antenna Low Density Deployment – Up to 150Mbps



Dual Antenna High Density Deployment – Up to 300Mbps



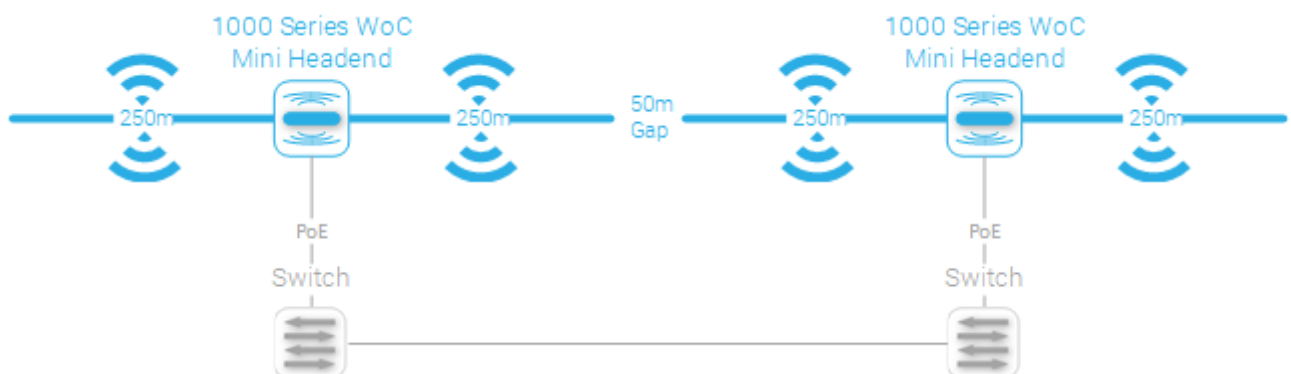
Omni-directional Antenna connected to the end of the cable – Up to 300Mbps



Dual Antenna deployed in multiple directions – Up to 150Mbps

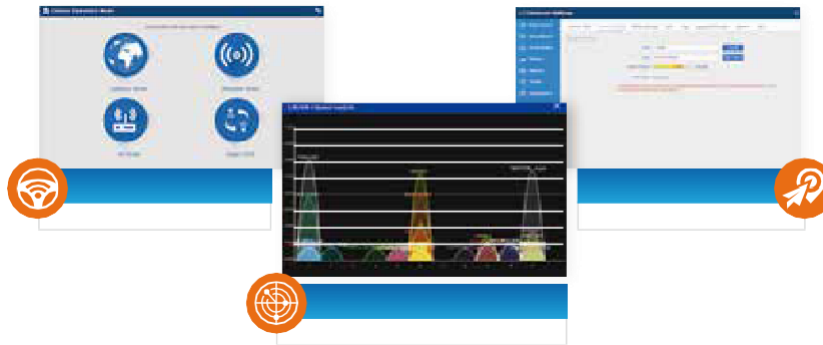


Multiple 1000 Series WoC Mini Headends – Up to 150Mbps




Manageability

Vernetzen's 1000 Series Wi-Fi over Coax Mini-Headend includes a built-in Wi-Fi analyser to provide real-time channel utilisation and prevent channel overlapping to assure greater performance and higher reliability. Each headend is accessible via a Web based GUI, that is intuitive to use and quick to configure. For larger deployments, the headends can be managed by a central controller.



Specifications

Product	1000 Series Wi-Fi over Coax		
	300Mbps 802.11n Mini-Headend		
			
Standard Support	IEEE 802.11b/g/n IEEE 802.11i IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3x flow control		
Material	Aluminium		
Dimensions (W x D x H)	153.2 x 79.5 x 234.5 mm		
Weight	2kg		
Power Requirement	48V 0.5A, IEEE 802.3af/at PoE+		
Power Consumption (max.)	< 13W		
Mounting Type	Catenary wire or pole mounting		
Interface	Wireless IEEE 802.11b/g/n, 2T2R PoE LAN: 1 x 10/100BASE-TX, auto-MDI/MDIX, 802.3af/at PoE In		
Button	Reset button		
Antenna	Two built-in N-type connectors		
Data Rate	IEEE 802.11b: 1, 2, 5.5, 11Mbps IEEE 802.11g: up to 54Mbps IEEE 802.11n (20MHz): up to 150Mbps IEEE 802.11n (40MHz): up to 300Mbps		
Media Access Control	CSMA/CA		
Modulation	802.11g/n: OFDM (BPSK/ QPSK/ 16QAM/ 64QAM) 802.11b: DSSS (DBPSK/ DQPSK/ CCK)		
Frequency Band	FCC: 2.412~2.462GHz ETSI: 2.412~2.472GHz		
Operating Channels	FCC: 1~11 Channels ETSI: 1~13 Channels		
Max. Transmit Power (dBm)	FCC: up to 29 ± 1dBm ETSI: < 20dBm (EIRP)		
Receiver Sensitivity (dBm)	Network Mode	Data Rate	Receive Sensitivity (dBm)
	802.11b	1Mbps	-95
		11Mbps	-90
	802.11g	6Mbps	-90
		54Mbps	-72
	802.11n HT20	MCS0/MCS8	-90
		MCS7/MCS15	-72/-68
	802.11n HT40	MCS0/MCS8	-90
MCS7/MCS15		-72/-68	
Environment & Certification			
Operating Temperature	-40 ~ 70 degrees C		
Operating Humidity	10 ~ 90% (non-condensing)		
IP Level	IP67		
ESD Protection	± 8kV air-gap discharge ± 4kV contact discharge		
Surge Protection	± 4kV		
Regulatory	CE, RoHS		
Software			
LAN	Static IP		
	Supports IP-MAC binding		
WAN Type (GW/WISP mode)	– Static IP – Dynamic IP – PPPoE		
Wireless Modes	– Access Point – Gateway – Repeater – WDS (AP/Bridge/Station) – WISP		
Channel Width	20MHz, 40MHz		
Enrcryption Type	64-/128-bit WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, 802.1X		

Specifications

Wireless Security	Enable/Disable SSID Broadcast
	Wireless MAC address filtering
	User Isolation
Max. SSIDs	4
Max. Wireless Clients	64 per radio (50 is suggested, depending on usage)
Max. WDS Peers	4
Wireless QoS	Supports Wi-Fi Multimedia (WMM)
Wireless Advanced	Auto Channel Selection
	5-level Transmit Power Control (100%, 75%, 50%, 25%, 12.5%)
	Client Limit Control, Coverage Threshold
	Distance control (Auto Ack Timeout)
Status Monitoring	Wi-Fi channel analysis chart
	Device status, wireless client List
	Smart Discovery
	DHCP client table
VLAN	System Log supports remote syslog server
	IEEE 802.1Q VLAN (VID: 3~4094)
Self-healing	SSID-to-VLAN mapping up to 4 SSIDs
	Supports auto reboot settings per day/hour
Management	Remote management through DDNS/ Easy DDNS
	Configuration backup and restore
	Supports UPnP
	Supports IGMP Proxy
	Supports PPTP/L2TP/IPSec VPN Pass-through
Central Management	SNMP v1/v2c/v3 support, MIB I/II, Private MIB
	Applicable controllers: ZenController-500, ZenController-1000

Ordering

V-WoC1024	2.4Ghz Wi-Fi over Coax Mini-Headend
COAX-24-500m	500-metre 2.4Ghz Radiating Coaxial Cable
ANT-OM8	2.4GHz 8dBi Omni-directional Antenna
ANT-OM15	2.4GHz 15dBi Omni-directional Antenna
WL-LTNA	2.4/5GHz Lightning Arrester (N-male to N-female)



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