

Establish Robust and Secure Railway Communication Network Solutions

Industrial EN50155 Ethernet Switch/ AP/ VPN Router

- EN50155-certified for harsh railway standards
- High-speed connectivity and fast redundancy
- Onboard wireless connection supported
- Vibration-proof feature supported
- Wide operating temperature range



Product Specifications

	Industrial EN50155 Ethernet Switch					
	Managed PoE Switch			Unmanaged PoE Switch		
Industrial Ethernet Switch						
	TPS-3082GT-M12(BP1)(24V)	TPS-3162GT-M12(BP1)(24V)	TGPS-9084GT-M12(BP2)(24V)	TGPS-9164GT-M12(BP2)(24V)	TGPS-1080-M12(BP2)(24V)	TPS-1080-M12(BP2)(24V)
Port Number						
Number of ports	10	18	12	20	8	8
10/100Base-T(X) M12 D-Coding Ports	8(P.S.E.) IEEE 802.3 af	16(P.S.E.) IEEE 802.3 af	-	-	-	8 (P.S.E.) IEEE 802.3 at (4 HW Bypass)
10/100/1000 Base-T(X) M12 A-Coding Ports	-	-	8(P.S.E.) IEEE 802.3 at	16(P.S.E.) IEEE 802.3 at	8 (P.S.E.) IEEE 802.3 at (4 HW Bypass)	-
10/100/1000Base-T(X) Ports	2(1xHW Bypass)	2(1xHW Bypass)	4(2xHW Bypass)	4(2xHW Bypass)	-	-
100Base-FX Fiber Ports	-	-	-	-	-	-
1000Base-X Fiber Ports	-	-	-	-	-	-
100Base-FX SFP Ports	-	-	-	-	-	-
1000Base-X SFP Ports	-	-	-	-	-	-
Gigabit Combo Ports	-	-	-	-	-	-
Power Redundancy						
On M12 Connector	-	-	-	-	-	-
On M23 Connector	2(12~57VDC)	2	2	2	2	2
Installation						
DIN-Rail Mounting	-	-	-	-	-	-
Wall Mounting	•	•	•	•	•	•
Physical Characteristics						
Casing Protection	IP-40	IP-40	IP-30	IP-30	IP-40	IP-40
Dimensions (mm)	170(W) x 75(D) x 196(H)	170(W) x 75(D) x 196(H)	261.2(W) x 95.6(D) x 228(H)	261.2(W) x 95.6(D) x 228(H)	125(W) x 65(D) x 196(H)	125(W) x 65(D) x 196(H)
Operating Temperature						
-40 to 75°C	•	•	•	•	•	•
Network Redundancy						
O-Ring	•	•	•	•	-	-
Open-Ring	•	•	•	•	-	-
O-Chain	•	•	•	•	-	-
STP/RSTP	•	•	•	•	-	-
MSTP	•	•	•	•	-	-
Management and Control						
802.1X	•	•	•	•	-	-
Rate Limit	•	•	•	•	-	-
Port Mirror	•	•	•	•	-	-
Port Security	•	•	•	•	-	-
SNMP v1/v2/v3	•	•	•	•	•	•
IGMP v2/v3	•	•	•	•	-	-
QoS Port Base/COS/TOS	•	•	•	•	-	-
Port Trunk Static/LACP	•	•	•	•	-	-
LLDP	•	•	•	•	-	-
System Alarm	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	SYSLOG / SNMP Trap / Relay	-	-
DHCP	Server/Client	Server/Client	Server/Client	Server/Client	-	-
VLAN	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	Port-Based/802.1Q/Q-in-Q/GVRP	-	-
Management / Configuration	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)	-	-
Warranty	5 years					

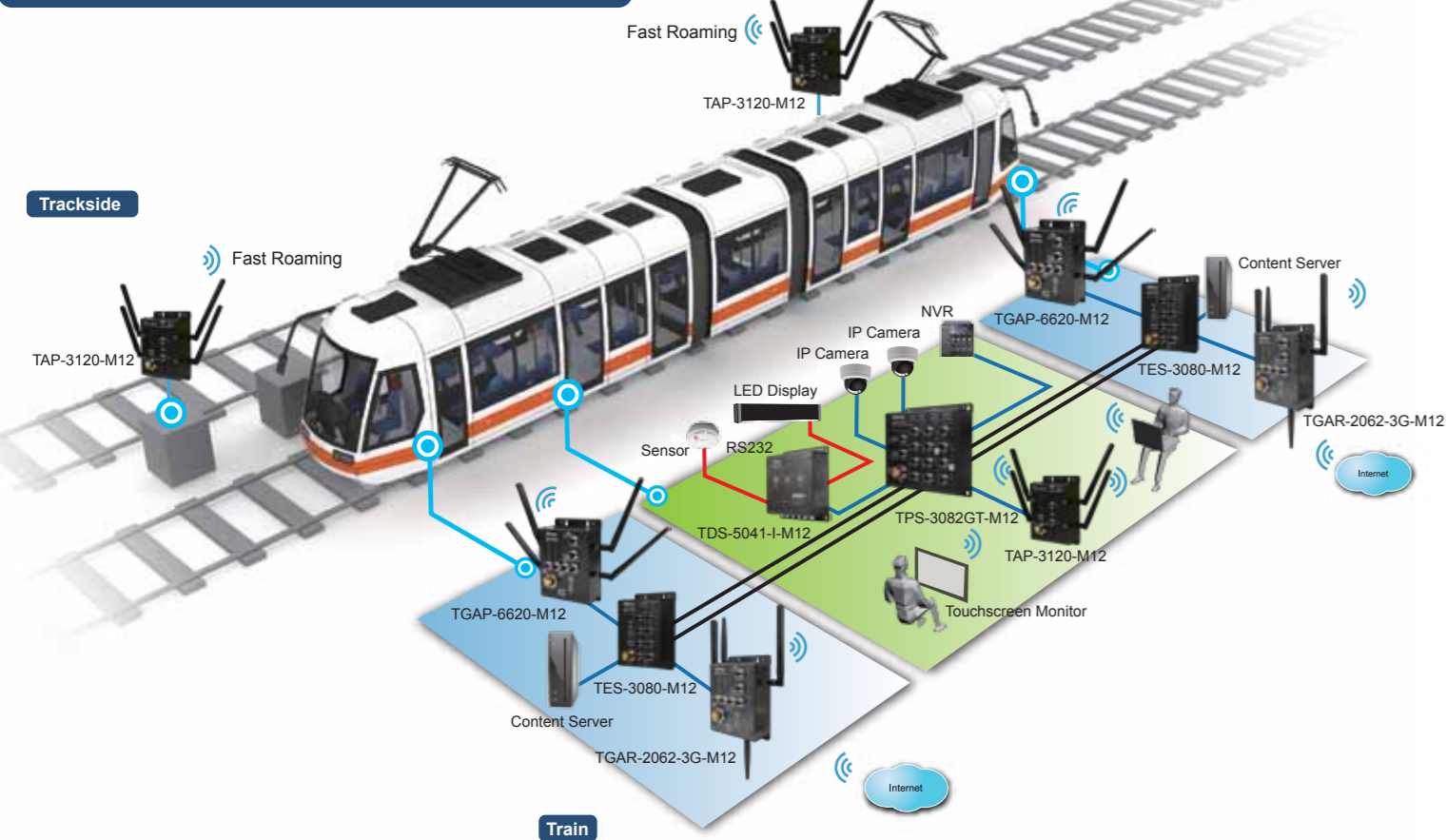
Product Specifications

	Industrial Gigabit PoE Ethernet Switch	Industrial Gigabit Ethernet Switch
	Managed Switch	
Industrial Ethernet Switch		
	IGPS-9084GP	IGS-9812GP
Port Number		
Number of ports	12	20
10/100Base-T(X) RJ45 Ports	-	-
10/100/1000Base-T(X) Ports	8(P.S.E.) IEEE 802.3 at	8
100Base-FX Fiber Ports	-	-
1000Base-X Fiber Ports	-	-
100Base-FX SFP Ports	-	-
1000Base-X SFP Ports	4	12
Gigabit Combo Ports	-	-
Power Redundancy		
DC Terminal Block	2	2
DC Power Jack	-	-
Installation		
DIN-Rail Mounting	•	•
Wall Mounting	•	•
Physical Characteristics		
Casing Protection	IP-30	IP-30
Dimensions (mm)	96.4(W)x105.5(D)x154(H)	96.4(W)x105.5(D)x154(H)
Operating Temperature		
-40 to 70°C	•	•
Network Redundancy		
O-Ring	•	•
Open-Ring	•	•
O-Chain	•	•
STP/RSTP	•	•
MSTP	•	•
Management and Control		
802.1X	•	•
Rate Limit	•	•
Port Mirror	•	•
Port Security	•	•
SNMP v1/v2/v3	•	•
IGMP v2/v3	•	•
QoS Port Base/COS/TOS	•	•
Port Trunk Static/LACP	•	•
LLDP	•	•
System Alarm	SYSLOG / SMTP / SNMP Trap / Relay	SYSLOG / SMTP / SNMP Trap / Relay
DHCP	Server / Client	Server / Client
VLAN	Port-Based / 802.1Q / Q-in-Q / GVRP	Port-Based / 802.1Q / Q-in-Q / GVRP
Management / Configuration	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)	WEB / Windows Utility / SNMP v1,v2,v3 / Telnet / Console (CLI)
Warranty	5 years	

	EN50155 Wireless Access Point	EN50155 Wireless Cellular VPN Router		
		TGAP-6620-M12	TGAR-1062-4G-M12	TGAR-2062-3G-M12
Industrial Wireless Access Point and Cellular VPN Router				
Ethernet Ports				
10/100/1000 Base-T(X) LAN Ports	2 (M12 A-coding)	2 (M12 A-coding)	2 (M12 A-coding)	1 (M12 A-coding) with PD.
Ethernet Switch / Redundant Mode Support	•	•	•	-
Cellular Interface				
Cellular Standard	-	GSM / GPRS / EDGE / WCDMA / HSPA / HSUPA / HSPA+ / LTE	GSM/GPRS/EDGE/UMTS/HSPA	GSM/GPRS/EDGE/UMTS/HSPA
Band Option	-	America(US) LTE: 700/1700/2100/1900 MHz UMTS/HSPA/HSUPA/HSPA+ / DC-HSPA+ 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz Europe(EU) LTE: 800/900/1800/2100/2600 MHz UMTS/HSPA/HSUPA/HSPA+ / DC-HSPA+ 900/2100 MHz GSM/GPRS/EDGE: 900/1800/1900 MHz	Tri-band: UMTS/HSPA 850/1900/2100 MHz Quad-band: GSM/GPRS/EDGE/850/900/1800/1900 MHz	Tri-band: UMTS/HSPA 850/1900/2100 MHz Quad-band: GSM/GPRS/EDGE/850/900/1800/1900 MHz
Fault Contact				
Relay	Relay output to carry capacity of 1A or 3A at 24VDC	Relay output to carry capacity of 1A or 3A at 24VDC	Relay output to carry capacity of 1A or 3A at 24VDC	-
WLAN Interface				
WLAN Standard	Dual-IF: 1. IEEE802.11a/b/g/n 2. IEEE802.11a/b/g/n	IEEE802.11a/b/g/n	IEEE802.11a/b/g/n	IEEE802.11a/b/g/n
Transmit Power	17dBm max.	17 dBm max.	17 dBm max.	17 dBm max.
Transmission Rate	IEEE802.11b: 11Mbps IEEE802.11a/g: 54Mbps IEEE802.11n: Up to 300Mbps	IEEE802.11b: 11Mbps IEEE802.11a/g: 54Mbps IEEE802.11n: Up to 300Mbps	IEEE802.11b: 11Mbps IEEE802.11a/g: 54Mbps IEEE802.11n: Up to 300Mbps	IEEE802.11b: 11Mbps IEEE802.11a/g: 54Mbps IEEE802.11n: Up to 300Mbps
Antenna Connector	Reverse SMA	Reverse SMA	Reverse SMA	Reverse SMA
Antenna	2.4GHz: 3 dBi 5GHz: 2 dBi	2.4GHz: 3 dBi 5GHz: 2 dBi	2.4GHz: 3 dBi 5GHz: 2 dBi	2.4GHz: 5 dBi 5GHz: 2 dBi
WAN Interface				
WAN Connection Type	-	Static/Dynamic IP, PPPoE, AG, LTE Modem dial-up	Static/Dynamic IP, PPPoE, 3G Modem dial-up	Static/Dynamic IP, PPPoE, 3G Modem dial-up
WAN Dial-UP	-	4G LTE	Dual 3G	3G
Power Redundancy				
DC(Connector)	2(M23)	2(M23)	2(M23)	2(M12)
Installation				
DIN-Rail Mounting	-	-	-	-
Wall Mounting	•	•	•	•
Physical Characteristics				
Casing Protection	IP-40	IP-40	IP-40	IP-67
Dimensions (mm)	125(W) x 65(D) x 196(H)	125(W) x 65(D) x 196(H)	125(W) x 65(D) x 196(H)	310(W) x 310(D) x 87(H)
Operating Temperature				
-25 to 70°C	•	•	•	•
Network Technology				
Alarm Notification	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log	Relay Output / SNMP Trap / System Log	SNMP Trap / System Log/SNMP
Management / Configuration	WEB / Windows Utility	WEB / Windows Utility	WEB / Windows Utility	WEB / Windows Utility
Warranty	5 years			

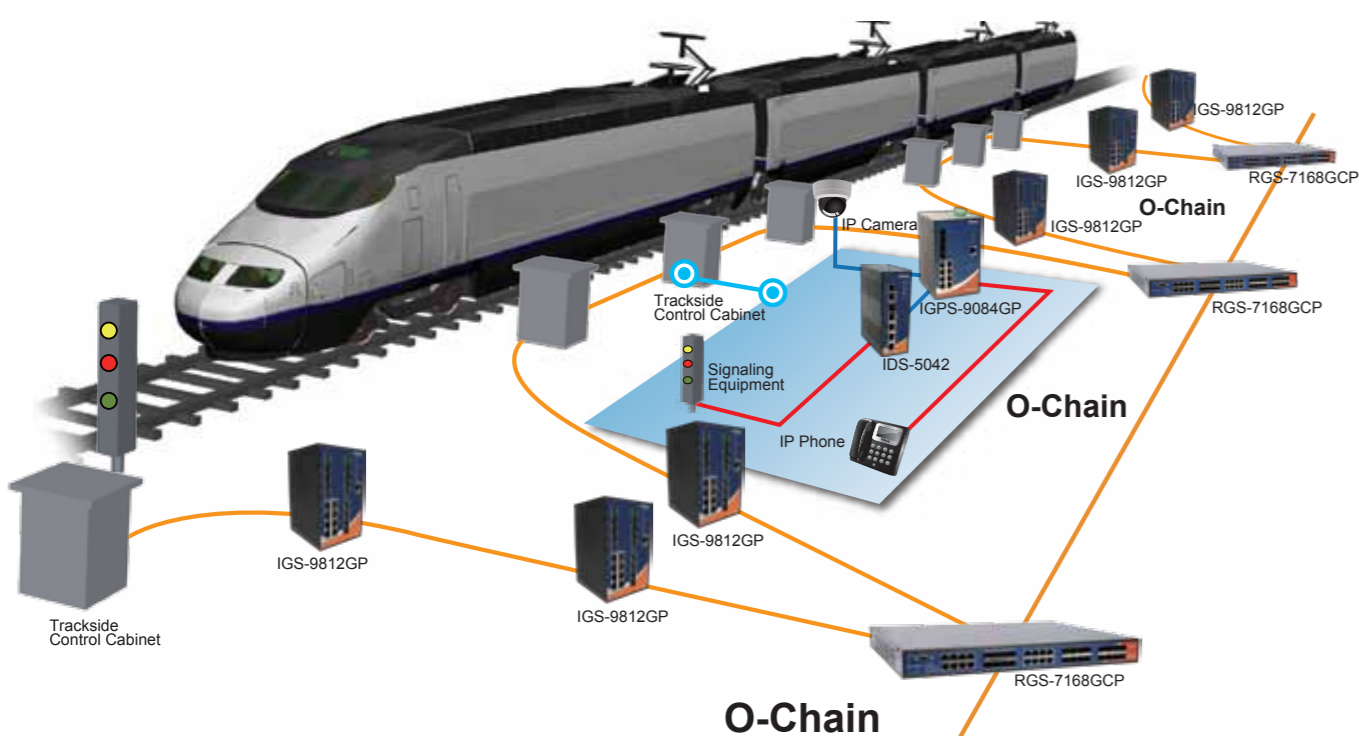


Train On-Board Communication Architecture



Trackside Application

Port Trunk Optic Fiber CAT5e Serial



Railway Network Application

On-Board

- Passenger Information System
- Passenger Entertainment System

Trackside

- Video Surveillance
- VoIP System
- Wireless Connection
- Train Status Monitoring
- Signaling System

Train-to-Ground

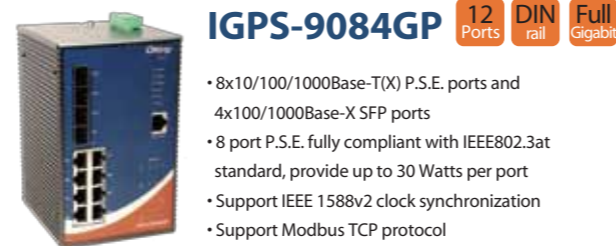


Railway Communication Network System

Railway transportation systems are vital and can bring rapid economic growth to an entire country. With such high importance of railway transportation systems, dependable information management of railway traffic is absolutely necessary, calling for the need of rugged network capable of handling massive real-time traffic information accurately without interruptions. It is not easy, however, to sustain reliable network service in such a high-speed moving platform, since data can be affected by the train's high speed and associated vibrations, plus strong interferences on and off the train.

To meet the rising demand of TCN (train communication network), **ORing**, with industry-leading expertise of industrial networking, presents the EN50155-certified industrial-grade **Transporter Series** products for the tough applications of TCN. Thus far, ORing already has EN50155 Ethernet Switch, EN50155 Wireless Access Point, and EN50155 Wireless Cellular VPN Router, as the development of more EN50155 products on the way. With ORing **Transporter Series** products, it's easier to build up the secure and reliable communication network for railway applications.

Industrial EN50155 Gigabit Ethernet Switch



- IGPS-9084GP** 12 Ports DIN Full Gigabit
- 8x10/100/1000Base-T(X) P.S.E. ports and 4x100/1000Base-X SFP ports
 - 8 port P.S.E. fully compliant with IEEE802.3af standard, provide up to 30 Watts per port
 - Support IEEE 1588v2 clock synchronization
 - Support Modbus TCP protocol
 - Support IEEE 802.3az Energy-Efficient Ethernet technology
 - Provided HTTPS/SSH protocol to enhance network security
 - Support SMTP client
 - Support IP-based bandwidth management



- IGS-9812GP** 20 Ports DIN rail
- Fastest Redundant Ethernet Ring: O-Ring (Gigabit model recovery time < 30 ms)
 - Open-Ring support the other vendor's ring technology in open architecture
 - O-Chain allow multiple redundant network rings
 - Supports standard IEC 62439-2 MRP (Media Redundancy Protocol) function
 - Supports IEEE 1588v2 clock Synchronization
 - Supports IPv6 new internet protocol version
 - Supports centralized management via Windows utility - Open-Vision, plus configurations by web-based interface, Telnet, and console (CLI)

Industrial EN50155 Ethernet Switch



- TGPS-9084GT-M12(-BP2) (-24V)** 12 Ports Wall mount
- Supports standard IEC 62439-2 MRP (Media Redundancy Protocol) function
 - 8 port P.S.E. fully compliant with IEEE802.3af standard, provide up to 30 Watts per port with 120Watts total power budget
 - Supports PoE scheduled configuration and PoE auto-ping check function
 - Supports IEEE 1588v2 clock synchronization
 - Supports 12~57 VDC Power input(-24V model)



- TGPS-9164GT-M12(-BP2) (-24V)** 20 Ports Wall mount
- Supports standard IEC 62439-2 MRP (Media Redundancy Protocol) function
 - Support PoE scheduled configuration and PoE auto-ping check function
 - Support IEEE 1588v2 clock synchronization
 - Support IEEE 802.3az Energy-Efficient Ethernet technology
 - Supports 12~57 VDC Power input(-24V model)



- TPS-3082GT-M12(-BP1) (-24V)** 10 Ports Wall mount
- Supports world's fastest O-Ring / Open-Ring / O-Chain professional ring technology and standard MSTP/RSTP/STP redundancy protocol
 - Provided Relay bypass function with two gigabit ports
 - Windows utility (Open-Vision) support centralized management and configurable by Web-based, Telnet, and Console (CLI)



- TGPS-1080-M12(-BP2) (-24V)** 8 Ports Wall mount
- Provide 8x10/100/1000Base-T(X) PoE (P.S.E.) ports
 - Supports IEEE 802.3af compliant PoE and total power budget is 120Watts with maximum 30Watts per port
 - Supports dual power inputs for power redundancy
 - Supports auto-negotiation and auto-MDI/MDI-X



- TPS-3162GT-M12(-BP1) (-24V)** 18 Ports Wall mount
- Leading EN50155-compliant Ethernet switch for rolling stock application
 - 16 ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port
 - World's fastest Redundant Ethernet Ring: O-Ring (recovery time < 10ms over 250 units of connection)
 - Open-Ring support the other vendor's ring technology in open architecture



- TPS-1080-M12(-BP2) (-24V)** 8 Ports Wall mount
- Supports IEEE 802.3af compliant PoE with maximum 30Watts per port
 - Supports dual power inputs for power redundancy
 - Supports auto-negotiation and auto-MDI/MDI-X
 - Supports store and forward transmission

Industrial EN50155 Wireless Access Point & Cellular VPN Router



- TGAR-W1061+3G-M12** 2 Ports Wall mount Dual RF IP67 3.5G PoE
- High Speed Air Connectivity: WLAN interface supports up to 300Mbps link speed
 - 3.5G HSUPA Modem included
 - Rugged IP67-rated housing
 - Supports HNAT enhance LAN to WAN routing performance



- TGAP-6620-M12** 2 Ports Wall mount Dual RF
- High Speed Air Connectivity: WLAN interface support up to 300 Mbps link speed
 - Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
 - Dual Gigabit Ethernet ports support Ethernet redundant mode (Recovery time < 10ms) and switch mode in M12 connector (A-coding)
 - Support X-Roaming < 60 ms

Industrial EN50155 Cellular VPN Router Series



- TGAR-1062+3G/4GS-M12** Wall mount Wifi Dual LTE GPS
- Leading EN50155-compliant wireless access point for rolling stock application
 - High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
 - Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
 - Secured Management by HTTPS
 - 4G LTE Modem included



- TGAR-2062+3G/4GS-M12** Wall mount Wifi Dual LTE GPS
- Leading EN50155-compliant wireless access point for rolling stock application
 - High Speed Air Connectivity: WLAN interface support up to 300Mbps link speed
 - Highly Security Capability: WEP/WPA/WPA-PSK(TKIP,AES)/WPA2/WPA2-PSK(TKIP,AES)/802.1X Authentication supported
 - Secured Management by HTTPS
 - Support dual 3.5G HSUPA dial up backup and load balance



ORing

3F., No.542-2, Zhongzheng Rd., Xindian Dist., New Taipei City 23148, Taiwan
Tel: +886-2-2218-1066 Fax: +886-2-2218-1014
Email:sales@ORing-Networking.com www.ORing-Networking.com