CTS
CONNECTION TECHNOLOGY SYSTEMS

FWRIII-3105 SERIES

4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 port 1000Mbps SFP slot uplink Residential Gateway

4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 port 100/1000Mbps SFP slot uplink Residential Gateway

4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 port 100/1000Mbps fiber optics uplink Residential Gateway

4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 uplink port combo (10/100/1000Mbps RJ-45 and 100/1000Mbps SFP slot) Residential Gateway

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User's Guide

Version 0.99.00

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FCC Warning

This equipment has been tested and found to comply with the limits for a Class-A digital device, pursuant to Part 15 of the FCC Rules. These limitations are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if the equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna.

■ Increase the separation between the equipment and receiver.

■ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

■ Consult your local distributors or an experienced radio/TV technician for help.

■ Shielded interface cables must be used in order to comply with emission limits.

Changes or modifications to the equipment, which are not approved by the party responsible for compliance, could affect the user's authority to operate the equipment.

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1. INTRODUCTION

Thank you for choosing this WLAN Residential Gateway. The WLAN Residential Gateway can provide the best performance and price ratio when multiple copper ports need to be deployed in networking environment.

1.1 The Managed Residential Gateway

With 4 or 5 10/100/1000Mbps RJ-45 ports on the front panel and 4 wireless LAN for IEEE802.11N standards, this compact WLAN Residential Gateway provides high performance store-and-forward switching capability plus other advanced features such as QoS, VLAN, etc.. Clear, at-a-glance per-port LED indicators make it easier for users to control and manage network status. The built-in management module also allows users to configure, control and monitor the system via SNMP based management system.

Specification

Interface

- LAN Ports: 10/100/1000BASE-T x 4
- WAN Port: 1000 or 100/1000BASE-X x 1 or 10/100/1000BASE-T x 1
- Wireless LAN x 4

Standards

- Comply with IEEE 802.3, 802.3u, 802.3ab, 802.3z, 802.1q, 802.1p, 802.11n standards

Features

- Management:
  - SNMP/Web interface
  - Storm Control
  - DHCP Auto-Provisioning
  - Text Based Config
  - SFF-8472 (digital diagnostic management interface for SFP)
  - Power Down Trap
- RMON:
  - FTP/TFTP upgrade
- Switching and Routing:
  - Support Auto-Negotiation in TP ports
  - Support MDI/MDIX Auto-Crossover in TP ports
 - Full/Half Duplex Mode Operation

- MAC Address Table: 1K
- Store-and-Forward Switching Mechanism
- Support up to 9k Jumbo Frames
- Support IEEE802.1Q Tag VLAN
- VLANs: Support up to 128 VLAN Groups
- Support IGMP Proxy
- Support IGMP Snooping V1 and V2
- Bandwidth Control
- QoS: support 802.1p and ToS Classification
- Priority Queues: 4 Queues
- Support NAT/Bridge Hybrid Mode
- Support RIP V1 and V2
- Support DHCP Client & Server
- Support DDNS
- Support Packet/URL Filter
- Support VPN Passthrough (IPSec, PPTP and L2TP)
- Support DMZ Host
- Support UPnP

- WiFi Function:
  - WiFi Protected Setup (WPS)
  - 64/128-bit WEP, WPA, WPA2 Data Encryption
  - MAC Access Control for WiFi Link

1.2 Appearance

Front Panel
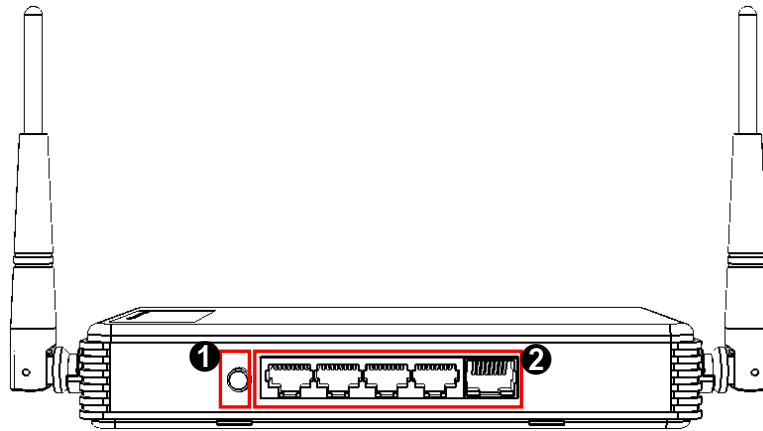
Figure 1. Front Panel for 4 ports 10/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 uplink port combo (10/100/1000Mbps RJ-45 and 100/1000Mbps SFP slot) Residential Gateway
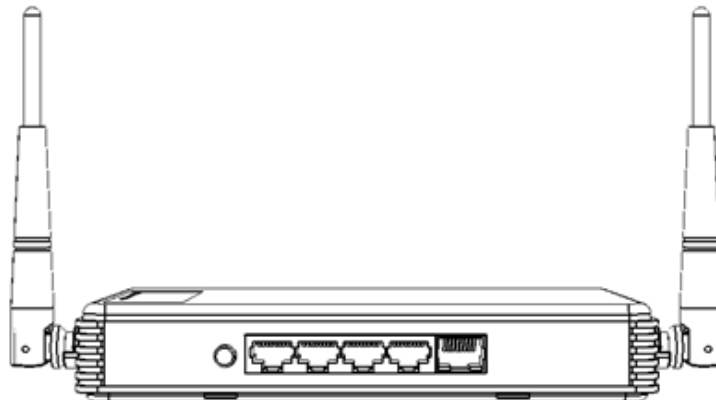
Figure 2. 4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 uplink port combo (10/100/1000Mbps RJ-45 and 100/1000Mbps SFP slot) Residential Gateway

❶ **Smart Lighting Control:**

System Status LED and Port Link LEDs will be turned off by pressing the button. Only Power LED indicator stays on.

❷ **10/100/1000Mbps RJ-45 ports**

Rear Panel

Figure 3. Rear Panel for 4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 port 10/100/1000Mbps RJ-45 uplink Residential Gateway

Figure 4. Rear Panel for 4 ports 10/100/1000Mbps RJ-45; built-in IEEE802.11n WiFi and 1 port 100/1000Mbps fiber optics uplink Residential Gateway

❸ **1000Mbps SFP or 100/1000Mbps F/O Port**
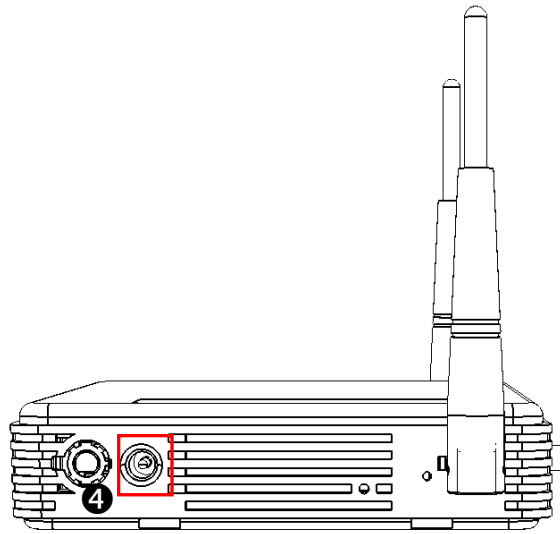
Left and Right Panel
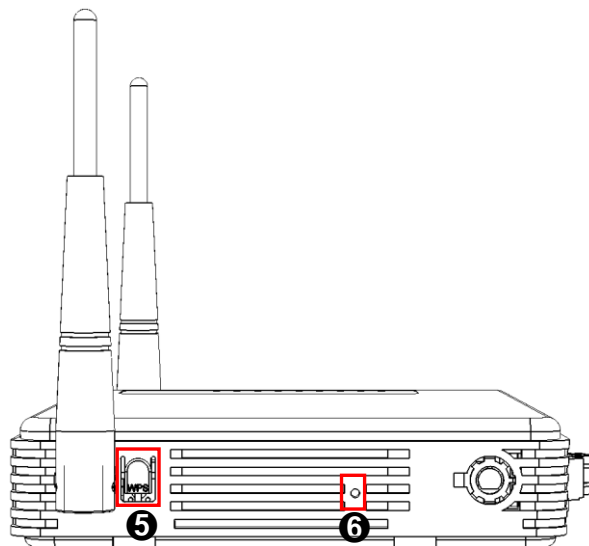

Figure 5. Left Panel

Figure 6. Right Panel

❹ **Power Jack Connector**

❺ **WPS Button**

❻ **Reset Button:**

- Insert a pin or paper clip to press the Reset Button for 5 seconds to restart the system

- Insert a pin or paper clip to press the Reset Button for 10 seconds to reset the device back to factory defaults.
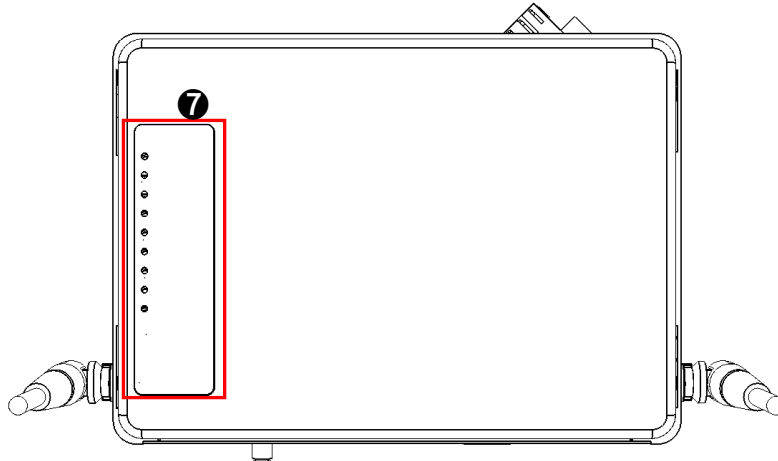
Top Panel

Figure 7. Top Panel

❼ **LED:** For detail definitions, please refer to chapter *3.1 LED Definitions*

Cable Specifications

The following table contains various cable specifications for the WLAN Residential Gateway. Please make sure that you use the proper cable when connecting the WLAN Residential Gateway.

Cable Type	Description
10BASE-T	UTP Category 3, 4, 5 (100 meters max.) EIA/TIA- 568 150-ohm STP (100 meters max.)
100BASE-TX	UTP Cat. 5 (100 meters max.) EIA/TIA-568 150-ohm STP (100 meters max.)
1000BASE-T	UTP Cat. 5e (100 meters max.) UTP Cat. 5 (100 meters max.) EIA/TIA-568B 150-ohm STP (100 meters max.)
100BASE-FX	Multi-mode fiber module(2km) / Single-mode fiber module
1000BASE-SX	Multi-mode fiber module (550m)
1000BASE-LX	Single-mode fiber module (10km)
1000BASE-LH	Single-mode fiber module (30km/50km)
1000BASE-ZX	Single-mode fiber module (80km)
Mini-GBIC	SFP Transceiver for 1000BASE-SX Multi-mode fiber module (550m) SFP Transceiver for 1000BASE-LX Single-mode fiber module (10km) SFP Transceiver for 1000BASE-LH Single-mode fiber module (30km/50km) SFP Transceiver for 1000BASE-ZX Single-mode fiber module (80km)

2. INSTALLATION

To properly install the WLAN Residential Gateway, please follow the procedures listed below. Procedures covered in this chapter are described below in separate sections.

- Installation Requirements
- Unpacking the WLAN Residential Gateway
- Installing the WLAN Residential Gateway
- Powering on the WLAN Residential Gateway
- Connecting the WLAN Residential Gateway to the Network

2.1 Installation Requirements

Basic requirements for installation are as follows:

- Environmental conditions
  - One power outlet
  - Proper ventilation
  - Proper isolation to electrical noise, radio, etc..
  - UTP cables should not run in the same duct with power and phone line cords
- Required SFP Transceivers, fiber cables, UTP cables or phone line cords

2.2 Checking the Package Contents

Unpack the package carefully and check the package contents. The package should contain the following items:

- Items included in standard package:
  - 1 WLAN Residential Gateway
  - 1 Documentation CD
  - 1 Power Adaptor
  - 1 Mac ID Label

If any of the above items is found missing or damaged, please contact your local sales representative for support or replacement.

2.3 Installing the WLAN Residential Gateway

CAUTION

To prevent any damage or failure of the WLAN Residential Gateway, please DO NOT block the ventilation FAN holes.

Use the following guidelines when choosing a place to install the Residential Gateway:

- Firm and steady flat surface.
- The location of power outlet should not be far away from the device.
- Make sure that there is proper heat dissipation from and adequate ventilation around the switch. Do not place heavy objects on the WLAN Residential Gateway.
- Make sure water and moisture cannot enter the case.
- Keep the cabling away from electrical noise.

2.4 Powering ON

The WLAN Residential Gateway can be used with AC power adapter 100-240 VAC Input and 12VDC output. The input connector is located on the left panel of the WLAN Residential Gateway. Before turning on the WLAN Residential Gateway, please make sure that network cables, and power cables are securely connected.

Procedures:

1. Plug one end of the power adaptor into the power jack on the left panel.
2. Plug the other end of the power adaptor into the power outlet. After the power is on, the Power LED indicator should light in green.

Power Failure

In the event of power failure, unplug the power that is plugged into the Residential Gateway at the left of the device. When power is resumed, plug the power back to the Residential Gateway. Please note that the WLAN Residential Gateway has no Power ON/OFF Button. Therefore, the only way to power on or power off the Residential Gateway is to connect or disconnect the power adaptor.

2.5 Connecting the Gateway to Network

Connect to Network

This WLAN Residential Gateway has 4 or 5 10/100/1000Mbps RJ-45 ports on the front panel. These ports can be inserted by 10/100/1000Base-T cables, connecting to the end devices. The connection of the fiber port on the rear panel must be matched, i.e. Transmitter to Receiver and vice versa.
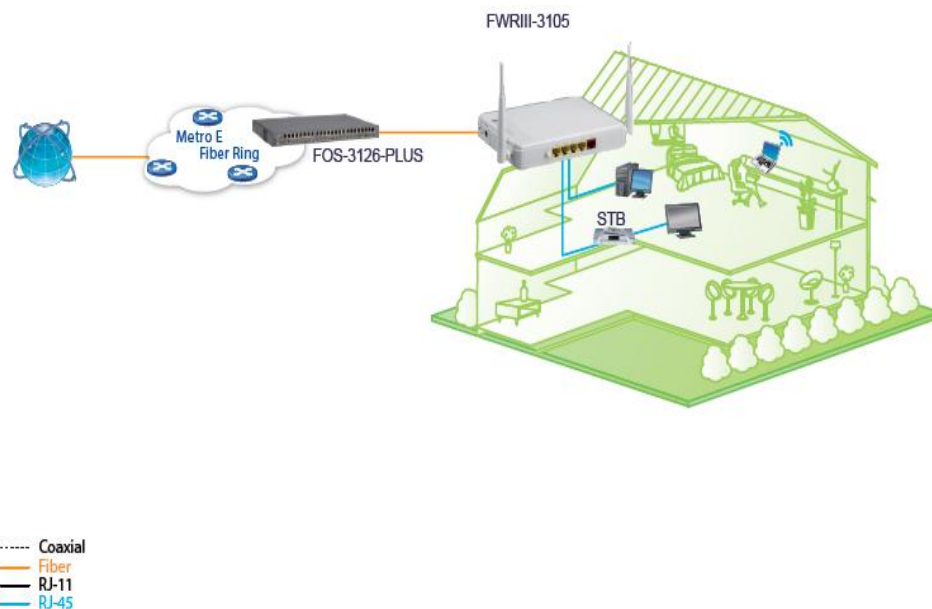

Figure 4. Example of segmenting network configuration

3. OPERATION

The WLAN Residential Gateway is Plug & Play compliant. Real-time operational status can be monitored through a set of LED indicators located on the top panel. A built-in management module provides users with flexible interfaces to configure, control and monitor the complete system remotely.

3.1 LED Definitions

LED	Color	Operation
Power	Off	Power is off.
	Green	Power is functioning normally.
STATUS	Green	System is ready.
	Orange	System is not ready.
	Orange blinking	Insert a pin or paper clip to press the Reset button for 3 seconds to restart the device. The STATUS LED will blink in orange once.
		Insert a pin or paper clip to press the Reset button for 10 seconds to reset the device to factory defaults. The STATUS LED will blink in orange three times.
WAN	Off	The port link is off or it is up in 10Mbps.
	Green	The link is up and works at 100Mbps.
	Orange	The link is up and works at 1000Mbps.
	Blinking	The traffic is present.
LAN 1	Off	The port link is off or it is up in 10Mbps.
	Green	The link is up and works at 100Mbps.
	Orange	The link is up and works at 1000Mbps.
	Blinking	The traffic is present.
LAN 2	Off	The port link is off or it is up in 10Mbps.
	Green	The link is up and works at 100Mbps.
	Orange	The link is up and works at 1000Mbps.
	Blinking	The traffic is present.
LAN 3	Off	The port link is off or it is up in 10Mbps.
	Green	The link is up and works at 100Mbps.
	Orange	The link is up and works at 1000Mbps.
	Blinking	The traffic is present.
LAN 4	Off	The port link is off or it is up in 10Mbps.
	Green	The link is up and works at 100Mbps.
	Orange	The link is up and works at 1000Mbps.
	Blinking	The traffic is present.
Wi-Fi	Off	WLAN link is off.
	Green	WLAN link is up
	Green blinking	The traffic is present.
WPS	Off	WLAN link is off.
	Green	WPS is searching for the WPS client.

4. MAINTENANCE

It is easy to use and maintain this WLAN Residential Gateway. The procedures are suggested when you want to identify faults, perform hardware replacement and firmware upgrading.

4.1 Fault Identification

Identifying faults can greatly reduce the time required to find the problem and solution. Users may perform local or remote checks to find the problems.

Local Check

Users can perform local checks by observing LED indicators status.

- When the whole system fails to function,
  - Check Power LED status
  - Check Power connection
  - Reset power

- When certain network link fails to function,
  - Locate the port of the switch
  - Check Port Link Status LED
  - Check cable connection between the port and the connected device
  - Reset power

Remote Check

Users may check the WLAN Residential Gateway through SNMP manager remotely. For detailed procedures, please refer to the Network Management User's Manual.

4.2 Hardware Replacement Procedures

WARNING!

The WLAN Residential Gateway contains no user-serviceable parts. DO NOT, UNDER ANY CIRCUMSTANCES, open and attempt to repair it.

Failure to observe this warning could result in personal injury or death from electrical shock.

Failure to observe the above warning will immediately void any Warranty.

4.3 Firmware Upgrade

This WLAN Residential Gateway may perform firmware upgrading when required. New firmware can be obtained from your sales representative. For detailed upgrading procedures, please refer to the Network Management User's Manual.