Proton Products PT_CC3200 WIFI Module Instruction Manual

FCC ID: 2AKS2PTCC3200

Issue 1a
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WIFI Module Instruction Manual (Issue 1a)

DECLARATION OF CONFORMITY

CE

This is to certify that the equipment specified below conforms to the requirements of CE including EMC to the heavy industrial standard Class A.

Equipment Covered

Product name	Part number	Description
WIFI Module	00001MC160	Highspeed wireless connection providing the user access to the gauge.

The manufacturer of the above named equipment is:

Proton Products International Limited

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HP9 1LW

ENGLAND

Proton Products is an ISO9001:2015 registered company.

The declaration is signed by:

Paul Sives   ………………………

INTRODUCTION

The Proton Products PT_CC3200 WIFI module provides a high speed wireless connection giving the user access to gauge through a wireless device such as wireless mobile devises or to connect through a laptop computer to avoid the need for cable connection.

This WIFI communications interface operates independently of the other communications interfaces and may be used at the same time as them.

SPECIFICATION

Wireless Parameters	Wireless standard	802.11b/g/n20
	Frequency range	2.412GHz-2.462GHz
	Max peak conducted output power	802.11b: 14.5dBm (Max)
		802.11g: 19 dBm (Max)
		802.11n20:19 dBm (Max)
	Receiver Sensitivity	802.11b: -89 dBm
		802.11g: -81 dBm
		802.11n20: -71 dBm
Hardware Parameters	Data Interface	UART: 1200bps ~ 230400bps
		Ethernet: 100mbps
		GPIOs
	Operating Voltage	3.3V
	Operating Current	350mA
	Operating temperature	+5 ~ 45℃
	Dimensions and Size	25.5 x 15.5 x 1mm
Software Parameters	Network Type	STA / AP / AP+STA mode
	Security Mechanisms	WEP/WPA-PSK/WPA2-PSK/WAPI
	Encryption	WEP64/WEP128/TKIP/AES
	Work Mode	Transparent Transmission
	Network Protocol	TCP/UDP/ARP/ICMP/DCHP/DNS/HTTP
	Max. TCP Connection	32

HARDWARE DESIGN
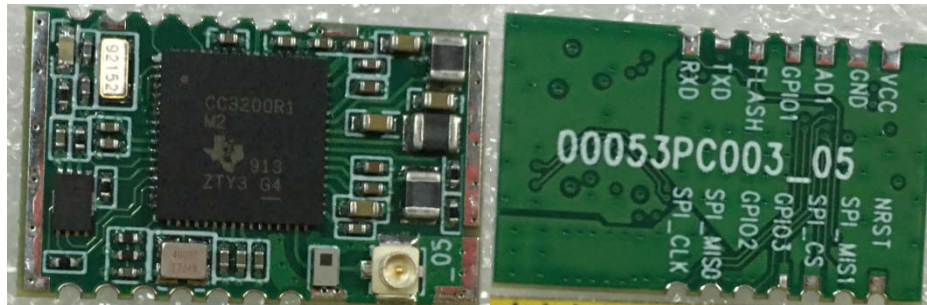
PinDefinition
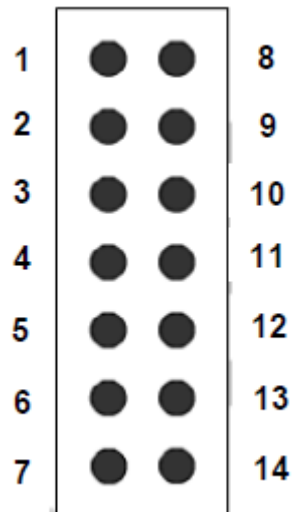
Pin	Designation	Description
1	VCC	3.3V power input
2	GND	Power ground reference
3	ADI	/
4	GPIO1	General purpose Input / Output
5	FLASH	Flash memory
6	TXD	Transmit data
7	RXD	Receive data
8	SPI_CLK	Serial Peripheral Interface_Clock
9	SPI_MISO	Serial Peripheral Interface_ Master input slave output
10	GPIO2	General purpose Input / Output
11	GPIO3	General purpose Input / Output
12	SPI_CS	Serial Peripheral Interface _Chip select
13	SPI_MOSI	Serial Peripheral Interface_ Master output slave input
14	NRST	Asynchronous reset

CONFIGURATION VIA WEB ACCESSING

The WIFI module can be configured via a web interface. The following sections introduce how to log in to the web interface and configure the relevant parameters.

Logging in to the WIFI Configuration Interface

The WIFI module is factory-configured as an Access Point (AP mode) with DHCP (Dynamic Host Configuration Protocol) server enabled (the wireless interface will automatically assign an IP address to DHCP-enabled devices connected to it).

A WIFI-equipped device such as a PC, tablet computer or smart phone may connect wirelessly to the WIFI interface using the following factory default SSID and encryption settings:

|		
SSID	GGGG_SSSSS (Example: DG2030_47A1234)	Where: GGGG is the gauge type SSSSS is the gauge serial number
Encryption type	WAP2PSK	
Encryption key (ASCII)	12345678	

For configuration purposes, a wired Ethernet connection to the gauge Ethernet port may also be used to access the WIFI configuration interface.

Once a connection has been established, a web browser (e.g. MS Internet Explorer or Google Chrome) may be used to open the WIFI configuration web interface located at the following IP address:

Default WIFI configuration webpage IP address	http://10.10.100.254

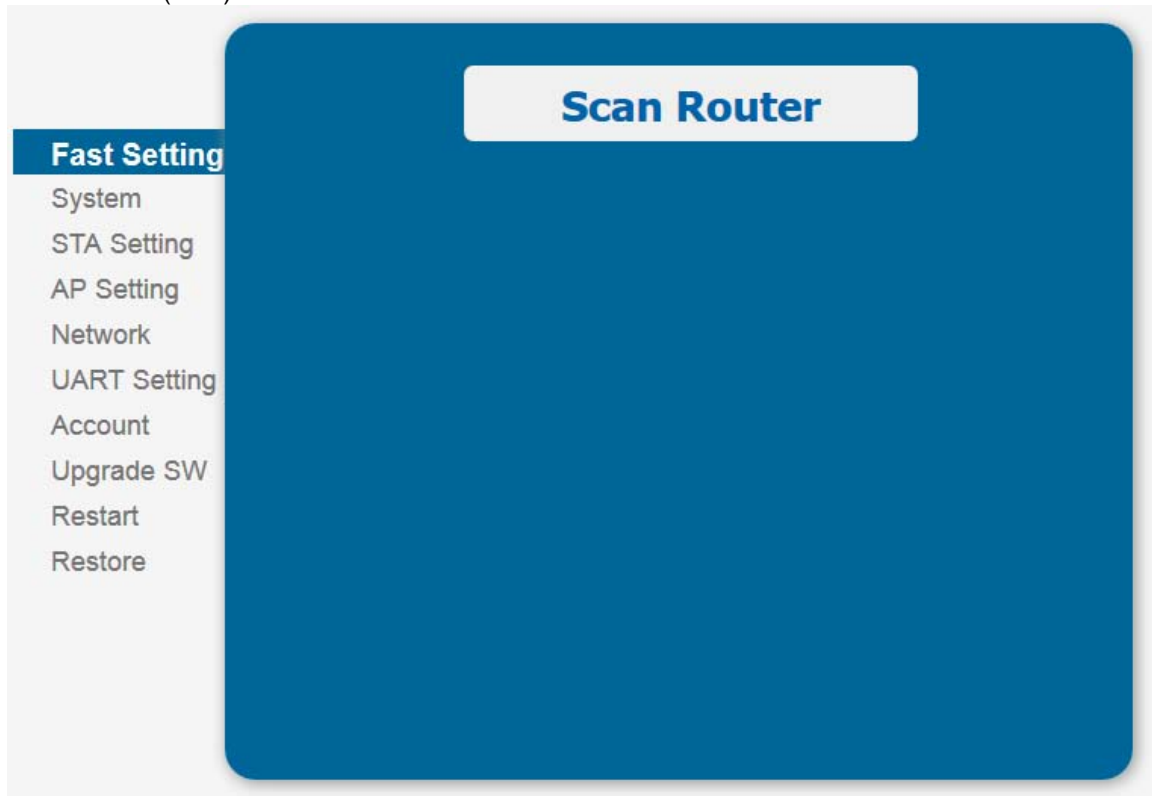Enter the following username and password at the popup dialog:

Default username	admin
Default password	admin

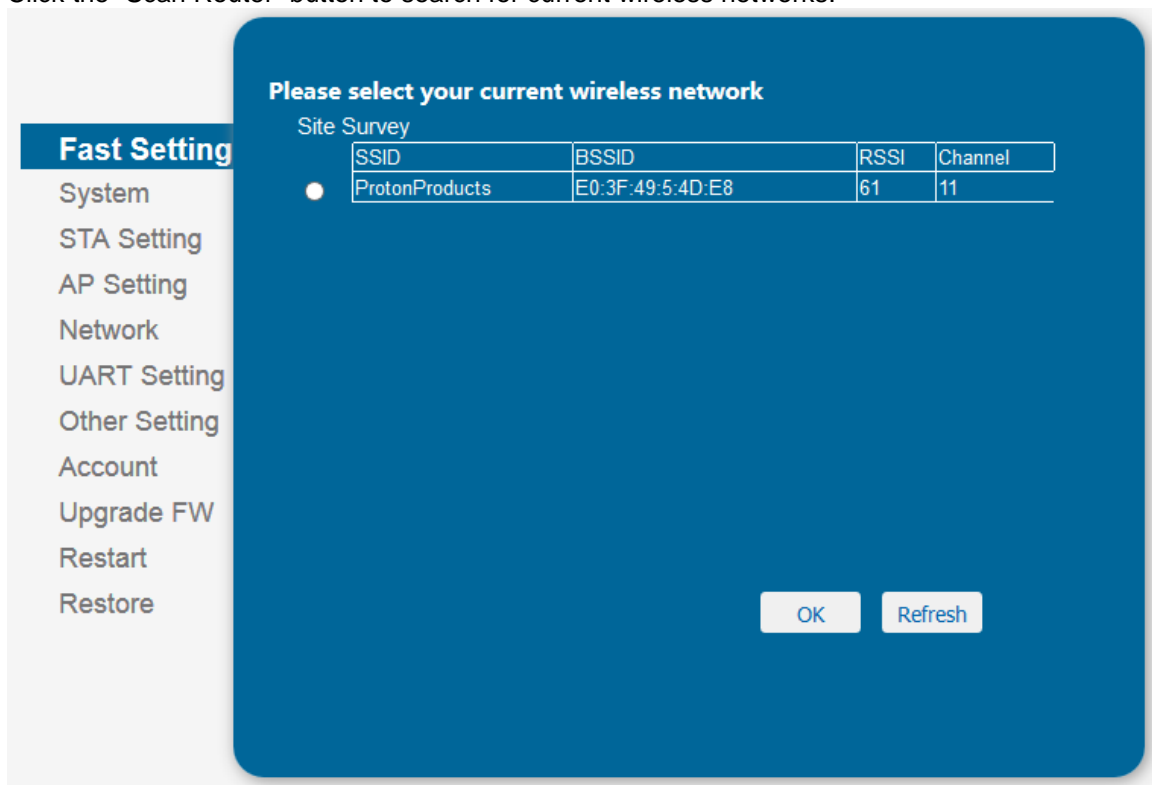WIFI Module Instruction Manual (Issue 1a)
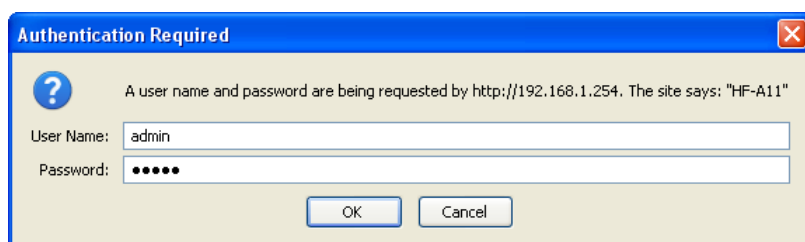
Fast Settings (Quick Start) for Connecting to an Existing Wireless Network

Click "**Fast Setting**" on the left-side of the web page to open the fast setting page.
This page is forquick connection toexisting wireless networks when the gauge acts as a wireless client/station (STA).

Scan Router

Fast Setting
System
STA Setting
AP Setting
Network
UART Setting
Account
Upgrade SW
Restart
Restore

Click the "Scan Router" button to search for current wireless networks.

Please select your current wireless network

Site Survey

SSID	BSSID	RSSI	Channel
ProtonProducts	E0:3F:49:5:4D:E8	61	11

Fast Setting
System
STA Setting
AP Setting
Network
UART Setting
Other Setting
Account
Upgrade FW
Restart
Restore

OK   Refresh

Select the wireless network and click the "OK" button to connect it. Click the "Refresh" button to search again.

System Information

Click "**System**" on the left-side of the web page to open the system information page.

This page displays current WIFI module information and configuration details, includingthe MID information,software version, WIFI mode and the corresponding configuration informationfor each mode.

MID	USR-WIFI232-T
Software Version	V1.0.04a
Small Version	V1.1
WiFi Work Mode	AP
AP mode	
SSID	DG2030_47A1245
IP Address	10.10.100.254
MAC Address	ACCF233B5FA9
STA Mode	
Router SSID	
Signal Strength	
IP Address	
MAC Address	

Fast Setting
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AP (Access Point) Mode Settings

The gauge WiFi interface can work in AP (Access Point) mode, Client / STA (Station) mode or AP+STA mode.

The factory default mode is AP mode with DHCP (Dynamic Host Configuration Protocol) server enabled (the wireless interface will automatically assign an IP address to DHCP-enabled devices connected to it).

AP (Access Point) mode		Client / STA (Station) mode		
End-user network does NOT have a wireless router or Access Point. • The gauge acts as a wireless AP for the network. • End-user devices connect directly to the gauge. • The gauge can be configured to assign IP addresses to end-user devices (if DHCP is enabled).		End-user network has an Access Point (AP) or wireless router. • The gauge is a station/client on the network. • End-user devices are also stations/clients on the network. • End-user devices connect to the gauge via a wireless router or Access Point. • The wireless router, Access Point or DHCP server is responsible for assigning IP addresses to all stations/clients on the network (if DHCP is enabled).		
Proton gauge	End-user equipment	Proton gauge	End-user AP / wireless router	End-user equipment

AP + STA mode

The gauge acts as a wireless AP and station simultaneously.

End-user equipment	Proton gauge	End-user AP / wireless router	End-user equipment

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Click "**AP Setting**" on the left-side of the web page to open the AP setting page:

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Wireless AP Setting		
Mode Selecting	AP	Select the gauge WIFI interface mode in the wireless network.
	AP+STA	
Network Mode	11bgn	Select the required WIFInetwork mode.
	11b	
	11bg	
Network Name(SSID)	GGGG_SSSSS	Enter the wireless SSID that will be broadcast by the AP. Default: GGGG is the gauge model number. SSSSS is the gauge serial number
Select Channel	Auto-select	Set to "Auto-select" to allow the AP to automatically select the frequency channel.
	2412MHz(channel 1) ~ 2462MHz(channel 11)	Manually set the frequency channel if it is necessary to avoid interference with frequencies.
Wireless AP Security Setting		
Encryption Mode	WPA2-PSK	Select the encryption mode or select "Disable" to disable encryption (not recommended).
	Disable	
WPA Encryption	TKIP	Select the required encryption key type.
	AES	
	TKIPAES	
Password	12345678	
Network Parameters Setting		
IP Address(DHCP Gateway Setting)	10.10.100.254	Enter the required IP address for the DHCP server and the configuration webpage.
Subnet Mask	255.255.255.0	Enter the required subnet mask.
DHCP Server	Enable	Select to enable the DHCP server and allow the AP to assign IP addresses.
	Disable	Select to disable the DHCP server (if another DHCP server is on the network or IP addresses are manually assigned).

*the default dropdown menu settings are shown with a **grey background** in the table above.

Click the "**Save**" button to save all the changes.

Client/STA (Station) Mode Settings

Click "**STA Setting**" on the left-side of the web page to open the STA (Client Mode)setting page:

Existing wireless network can be found by clicking the "Scan" button on this page then accessed by configuring the network parameters correctly.

Mode Selecting	STA	Select the gauge's wireless network mode.
	AP+STA	
Network Name(SSID)	Proton Products	Select the wireless network the gauge will connect to.
Encryption Method	Disable	Select the required WIFI encryption method or select "Disable" to disable WIFI encryption (not recommended).
	OPENWEP	
	SHAREDWEP	
	WPASPK	
	WPA2SPK	
Encryption Algorithm	TKIP	Select the required WIFI encryption key type.
Password	AES	
	TKIPAES	
Obtain an IP address automatically	Enable	Select "Enable" to obtain an IP address automatically; select "Disable" to manually enter the IP address, subnet mask, gateway address and DNS server address in the fields below.
	Disable	
IP Address	0.0.0.0	Enter the IP address.
Subnet Mask	0.0.0.0	Enter the subnet mask.
Gateway Address	0.0.0.0	Enter the gateway IP address.
DNS Server Address	0.0.0.0	Enter the DNS Server IP address.

*the default dropdown menu settings are shown with a **grey background** in the table above.

Click the "**Save**" button to save all changes.

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Network Settings

Click "**Network**" on the left-side of the web page to open the network setting page.

This page is for configuring the socket A and socket B parameters.

The end-user must **NOT** change any of the settings on this page unless instructed to do so by Proton Products authorised service personnel.

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UART Settings

Click "**UART Setting**" on the left-side of the web page to open the UART settings page.

This page is for configuring the UART (Universal Asynchronous Receiver Transmitter) parameters.

The end-user must **NOT** change any of the settings on this page unless instructed to do so by Proton Products authorised service personnel.

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Account Settings

Click "**Account**" on the left-side of the web page to open the user account page.

This page is used to change the user name and password for the gauge's web interface.

Click the "Save" button to save the changes.

Firmware Upgrade

Click "**Upgrade FW**" on the left-side of the web page to open the firmware upgrade page.

This page is for the firmware upgrading.

Click the "Browse…" button to browse for a WIFI interface firmware update file and click the "Upload" button to upload the file.
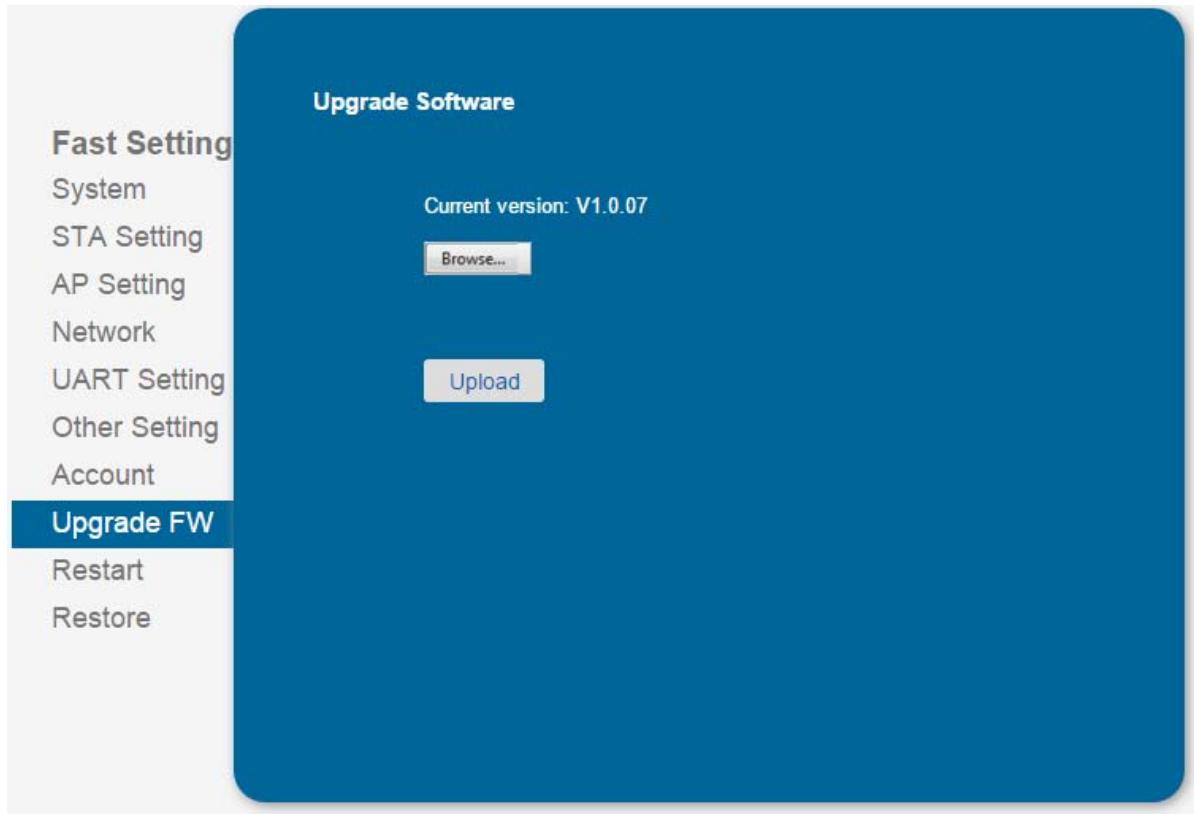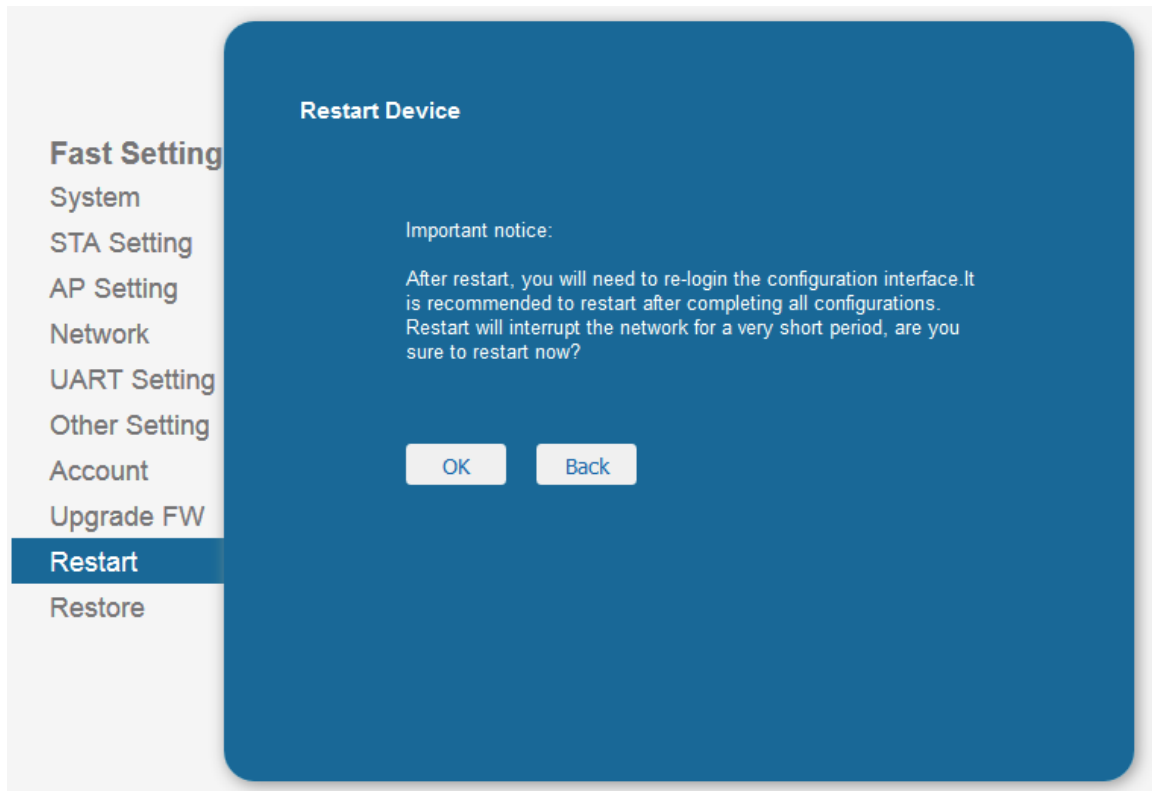
Restarting the WIFI Interface

Click "**Restart**" on the left-side of the web page to open the "Restart Device" page.

This page is for restarting the WIFI interface.

All configuration changes will be applied only after the WIFI interface is restarted. It's recommended to restart after all configuration changes have been completed. After restart, the user will be required to re-log into the web interface.
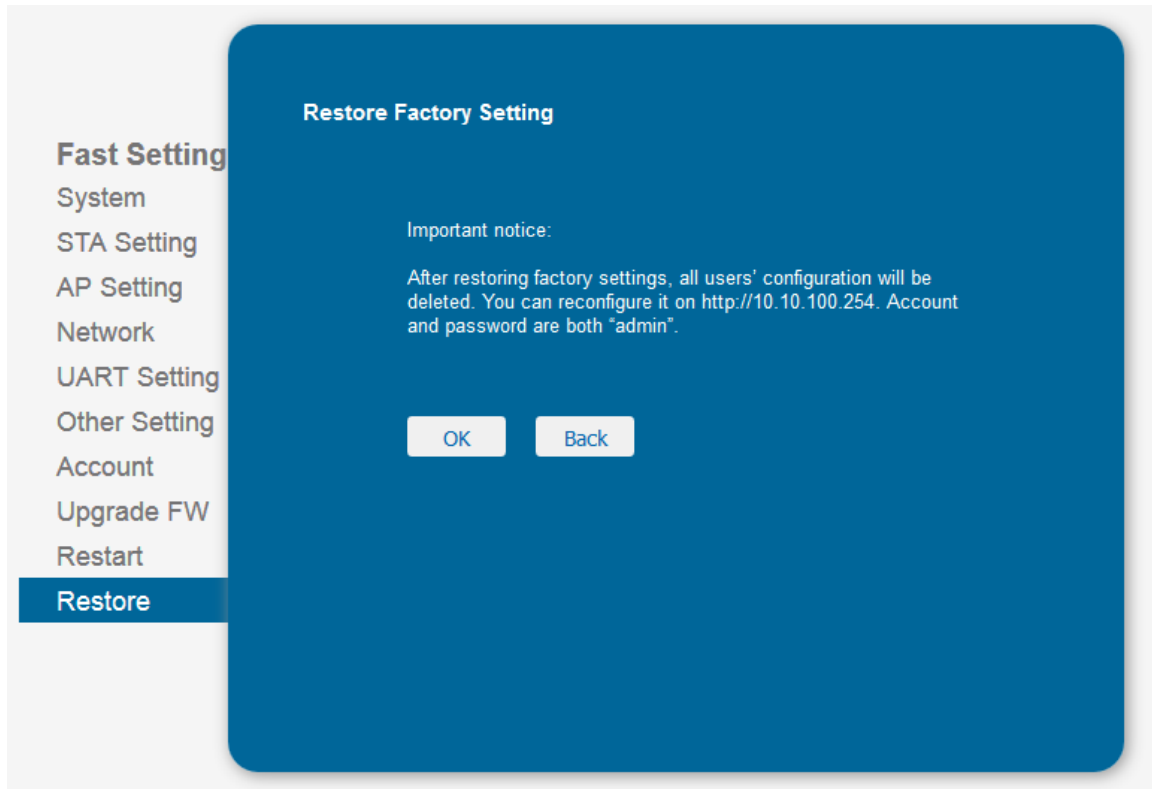

Click the "OK" button to restart the WIFI interface and the "Back" button to cancel it.

Restoring to the Factory Default Settings

In the event that the WIFI module configuration interface becomes inaccessible (due to misconfiguration or lost passwords or encryption keys), the WIFImodule configuration may be restored to factory defaults.

Click "**Restore**" on the left-side of the web page to open the "Restore Factory Setting" page.

Click the "OK"button to restore the WIFI interface configuration to factory defaults or the "Back" button to cancel it.

The WIFI interface configuration can also be restored to factory defaults via the gauge RS232 interface using the following steps:

1. Download serial terminal software, for example PuTTY pictured below.
2. Connect the gauge RS232 interface to a PC.
3. Set the COM port, baud rate and other corresponding parameters and click the"open" button on the serial terminal software.
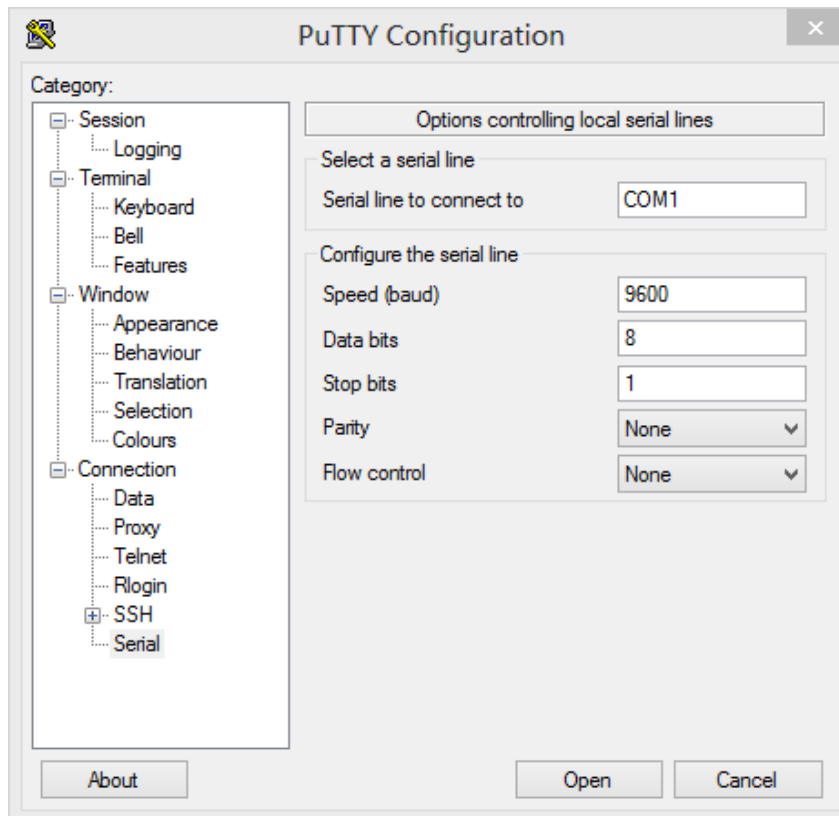
4. Enter the command "wifidefault" to restore the WIFI interface to factory defaults.

WIFI Module Instruction Manual (Issue 1a)
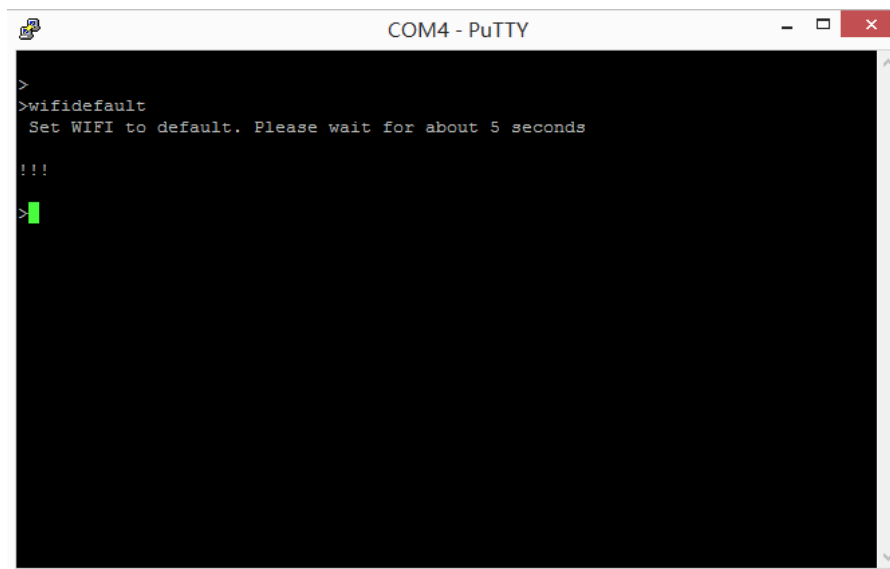
OEM/Integrators Installation Manual

List of applicable FCC rules

This module has been tested and found to comply with part 15.247 requirements for Modular Approval.

Summarize the specific operational use conditions

This module can be used in Proton industry measuring instruments with metal shell. e.g: Diameter Gauges、Eccentricity Gauge、 Speed and Length Gauge、Spark Tester、Capacitance Gauge、Diameter Gauge etc. The input voltage to the module should be nominally 3.3 VDC, and the ambient temperature of the module should not exceed 50℃. Diameter Gauges has one external monopole antenna with max antenna gain 2.0 dBi. Any other unauthorized antenna is prohibited.

Limited module procedures

N/A

Trace antenna designs

N/A

RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body. If the device built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by §2.1093.

Antennas

Manufacturer	Model Number	Antenna Size	Antenna Gain	Nominal Impedance	Antenna Connector	Antenna Type
Low Power Radio Solutions Ltd	ANT-SS2.4G	62mmx8mm	2.0dBi	50 ohm	Reverse SMA male	Monopole

Label and compliance information

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains FCC ID: 2AKS2PTCC3200". The FCC ID can be used only when all FCC ID compliance requirements are met.

Information on test modes and additional testing requirements

a) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference have been corrected , WIFI testing using QRCT in FTM mode.

Additional testing, Part 15 Subpart B disclaimer

The final host / module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device. The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369. For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly-available drivers and turned on, so the transmitters are active. In certain conditions it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10 and ANSI C63.26 for further general testing details. The product under test is set into a link/association with a partnering WLAN device, as per the normal intended use of the product.

To ease testing, the product under test is set to transmit at a high duty cycle, such as by sending a file or streaming some media content.

Federal communication commission statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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