

NIO200 Installation Guide

V1.1

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1.General Information

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1.1 Document Purpose

This installation guide is designed to let user quickly get necessary installation information about hardware as well as software so that the field installation can be well done through this first aid.

1.2 Definitions, Acronyms and Abbreviations

The following table lists definitions, acronyms, and abbreviations that are only suitable to this document.

Term	Description
API	Application Programming Interface
Backbone	Any data network (e.g. industrial Ethernet, IEEE 802.11, etc.) within
	a facility interfacing to the plants network.
Backbone Router	An entity in the ISA100.11a network with routing capability which
	serves as an interface between the radio network and the
	backbone network.
BBR	Backbone Router
Blacklisted channel	A channel on which transmission is prohibited.
Broadcast	Transmission intended for all the devices in an ISA100.11a network
	(used for advertisements with all devices including the BBR, or for
	receive links for field devices only).
CCA backoffs	The count of transmissions on an RF channel that were aborted due
	to CCA.
CGI	Common Gateway Interface
Channels	Divisions of radio frequencies supported in a wireless network.
Contract	An agreement between the system manager and a device in the
	network involving the allocation of network resources by the
	system manager to support a particular communication need of
	that device.
Device role	Device capabilities that will be accepted by the Security Manager.
DHCP	Dynamic Host Configuration Protocol – a method to automatically
	configure the IP settings of a host connected in a LAN.

Term	Description
EUI64, EUI-64	The 64-bit address of a device in the network; it is a unique
	identifier usually set at the manufacturing of the device.
Field	The geographic space that contains all the nodes of a wireless
	network.
Field device	A physical device designed to meet the rigors of plant operation
	that communicates via DPDU's conforming to the ISA100.11a
	protocol.
Gateway	An entity in the ISA100.11a network that serves as an interface
	between the ISA100.11a network and a client.
Graph (communication)	A collection of unidirectional interconnected devices, which defines
	a set of communication paths between a source device and a
	destination device.
Graph (Topology)	A graphical representation of the network topology.
GW	Gateway
Input/output	A device with minimum characteristics required to participate in an
	ISA100.11a network and which provides or uses data from other
	devices.
ISA100.11a	A communication protocol used in wireless networks, set up by the
	Wireless Compliance Institute.
JSON	JavaScript Object Notation
LAN	Local Area Network
Link	A momentary or persistent interconnecting path between two or
	more devices for the purpose of transmitting and receiving
	messaging.
MCS	Monitoring Control System
Network Address	The 128-bit address of a device in the network.
Packet Error Rate	The ratio, in percent, of the number of lost packets (DPDU's) to the
	total number of packets sent by the selected device to its parent.
Process value	The quantity being controlled or the measurement value.
Provision	To update settings on an entity in order to prepare it for working in
	the network.
Revision	The device software revision related to vendor/model.
Router	A device that has data routing capability.
Security Manager	An entity in the ISA100.11a network that assigns the security keys
	that are required for communication between devices.
SM	System Manager

Term	Description
Superframe	A collection of timeslots with a common repetition period and
	possibly other common attributes.
System Manager	An entity in the ISA100.11a network that supervises the various
	operational aspects of a network other than security.
TR	Transceiver – the BBR radio
User Application	From ISA100.11a standard: An active process within the highest
Process	portion of the application layer that is the user of OSI (Open
	Systems Interconnection) services.
UTC	Coordinated Universal Time – A universal timekeeping standard
	that is based on the Greenwich Mean Time (GMT). Local time is
	calculated in UTC and offset by the local time zone.
FD	Field Device
NIO210	NIO 200IAG – NEXCOM ISA100 Wireless All-in-One Gateway

2 Product Overview

2.1 About the NIO200 Gateway



NEXCOM NIO 200 is a powerful distributed network topology ISA100.11a / WirelessHART access point integrating 802.11n Mesh technology. With ISA100.11a / WirelessHART technology, NIO 200 can establish fully Mesh network to ensure robust and reliable communication for mission-critical industrial wireless applications. The integration of both 802.11n Mesh & ISA100.11a / WirelessHART technology gives a full Mesh infrastructure from field devices to Wi-Fi backbone, thus a concrete wireless connectivity can be assured. It's designed to meet CID2 and ATEX certified requirement and is perfect solution to critical data monitoring and sensing in oil & gas, chemical plant, etc···

2.2 Logical Interfaces

Interface	Description
Serial Port	The serial port is used as a kernel console and emergency backup.

Interface	Description
ТСР	The NIO200 Gateway accepts the following TCP connections.
	The NIO200 Gateway has an http server listening on port 80.
	The NIO200 Gateway has an http server listening on port 8080.
	The NIO200 Gateway has an https server listening on port 443.
	The MODBUS TCP server is listening on TCP port 502.
	The Standard GSAP interface is listening on TCP port 4900.
	The GSAP over SSL is listening on TCP port 4901.
UDP	The NIO200 Gateway utilizes the NTP protocol to synchronize time with Internet time servers. The UDP port 123 must be open in both directions to allow time synchronization.

NOTE: Not all interfaces are guaranteed to be up in all cases. Some might be disabled for specific applications.

2.3 Package Contents

Each NIO200 gateway package contains the following items:

- One NIO200 gateway
- Two simple wall mounting kit
- Three liquid-tight conduit (used only for DC power input and Ethernet port)
- Two-pin DC power connector for 12~48 VDC power input
- Grounding screws
- Five outdoor antenna for evaluation purpose (when deployed in field site, the antenna should be changed so that the wireless capability can fit the application requirement)
- One AC power adaptor with 12V output for evaluation purpose (when deployed in field site, DC power source may need to be changed)
- One CID2 warning letter

3 Getting Started

3.1 Installation background

The web-based administration is the preferred method to administer/configure the NIO200 Gateway. It requires a web browser and the IP of the NIO200 Gateway. The NIO200 Gateway is suggested to connect to the local LAN then powered on, and the IP/mask or the router must be accessible from the PC where the browser is running.

3.2 Hardware installation Guide

Hardware connection of NIO200 includes the power, Ethernet interfaces and RF connectors. The installation of NIO200 should be carefully done with standard waterproof connectors accessories in the package (CID2: conduit connector, ATEX: cable gland connector).

Note: the mounting of NIO200 should always let water proof connectors down to bottom position. The following picture illustrates the proper mounting direction of NIO200 in the field.



3.2.1 Water proof connector installation



To install conduit in NIO200 enclosure, please follow the steps below:

 Put conduit through cap nut and gland packing. 	 Position the ferrule at the end of the conduit. (Just have the bottom 	 Pass DC power cable or Ethernet cable through conduit

of ferrule cover the conduit, over-tighten may enlarge conduit diameter and loosen



- Connect connector into NIO200 enclosure, tighten locknut with body.
- Insert the conduit with ferrule into connector of NIO200 enclosure.

•

Push gland packing and cap nut forwards to NIO200 conduit connector and tighten the cap nut

To install the conduit, user should implement with Flexible Metal Conduit, Liquid-tight which meets UL360 standard. Here is the requirement of the diameter and size information for the selection of Metal Conduit that mate with NIO200 conduit connectors.

Nominal size (inch)	Inner diameter min. (mm)	Inner diameter max. (mm)	Outside diameter min. (mm)	Outside diameter max. (mm)	Min bending radius (mm)	Packing length (m)
3/8"	12.29	12.80	17.50	18.00	50.50	30
1/2"	15.80	16.31	20.80	21.30	82.50	30
3/4"	20.83	21.34	26.20	26.70	108.00	30
1"	26.44	27.08	32.80	33.40	165.00	20
1-1/4"	35.05	35.81	41.40	42.20	203.00	20
1-1/2"	40.01	40.64	47.40	48.30	228.50	20

3.2.2 Power installation

- Prepare DC power source (12~48 VDC) or standard PoE facility such PoE switch or PoE injector.
- 2. If use external DC power source, please carefully check if the polarity of power



cord fits the polarity drawing in this diagram.

- When use PoE power source, just plug the Ethernet cable into PoE port.
- 4. If the power connects correctly, then the "Power LED" will light accordingly.

3.2.3 Antenna installation





Wi-Fi antenna connector for Wi-Fi Mesh connection (WLAN 1 & WLAN 2)



ISA100/WirelessHART antenna connector

3.2.4 Earth grounding



- Be sure to ground the 0.75mm² ground screw with an appropriate grounding wire (Earth, Green/Yellow wire 18AWG, not included) by attaching it to a good earth ground connection.
- There must be a disconnect device in front of "NIO200 series" to keep the worker or field side maintainer be cautious and aware to close the general power supply before they start to do maintenance.
- The disconnect device hereby means a 20A circuit-breaker. Power installation must be performed with qualified electrician and followed with National Electrical Code, ANSI/NFPA 70 and Canadian Electrical Code, Part I, CSA C22.1.

3.2.5 Mounting of NIO200

Mounting method in NIO200 is default with simple wall mounting kit. If the installation is with pole mounting method, then user should purchase pole mounting kit for the installation. Here is the guide for both simple wall mounting method and pole mounting method:

A.Simple wall mounting method:

1. Screw the simple wall mounting kit to the bottom of NIO200 enclosure.



2. Be sure to fasten the mounting kit with horizontal position as below:



3. Hang on NIO200 to the wall with water proof connector at the bottom direction. The position of screw holes are 130mm width and height (as specified in right picture above)

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B. Pole mounting method:



3.3 Wi-Fi Mesh Network Configuration

3.3.1 Access to NIO200 Admin website

The NIO200 is pre-configured a static IP address **192.168.1.1** for connection directly to a computer. In order to communicate with the NIO200, the user must temporarily set the computer IP address to a static address (**192.168.1.100** for example) and may use an Ethernet cross-over cable to connect the NIO200 to the computer.

NIO200 - LuCI	×	A - 0	×
\leftarrow \rightarrow C \bigcirc 192.168	1.13/cgi bin/luci/	P 🕁 🖸	:
	NEXCOM NIO200		
	Authorization Required Please enter your username and password. Username root		
	Password		
	D Login Resol		
	Powerod by LuCI (gil-16.020.59380-63d70da) / Openwrt ChaosCalmer		

3.3.2 Configure the IP Address

Once the communication has been established with the NIO200, the user can log in the NIO200 Admin website to change the network configuration, including its IP address. To the access this website:

- In browser, open a connection to http://192.168.1.1/ (or the user defined IP Address)
- Admin website requires authentication, the default username and password are root and admin.

There is no	word set! password set on this	router. Please configure a root pa	ssword to protect the web int	erface and enable SSH	
Go to pass	sword configuration.				
Author	ization Req	uired			
Please onter y	your usemame and pe	issword.			
	Username	toot			
	Pessword				
			_		
E Login	Reset				
Downey of the L		Phillippin / Pressed Physic Pole			

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Click "Login" button without password and the following web page will appear:

NEXCOM NIO200	Status 👻 S	System - Ne	etwork -	Logout	AUTO REFRESH ON
No password set!					
There is no password set or Go to password configura	n this router. Ple Ition	ase configure a	a root pass	sword to protect the web interface and enable SSH.	
Status					
System					
Hostname		NIO2	200		
Model		fsl,P1	1020RDB		
Firmware Version		Open	nwrt Chaos	Calmer / LuCl (git-16.020.59380-63d70da)	
Kernel Version		3.14.	27		
Local Time		Fri M	lar 11 09:50	0:39 2016	
Uptime		0h 12	2m 8s		
Load Average		0.00,	0.01, 0.03	3	

Select "Network -> Interface"

NEXCOM NIO200 Status - System	r Network → Logout	AUTO REFRESH ON
No password set! There is no password set on this router. Please con Go to password configuration Status	Interfaces Wifi DHCP and DNS Hostnames Static Routes Firewall	
System	Diagnostics	
Hostname	NIO200	
Model	fsl,P1020RDB	
Firmware Version	Openwrt ChaosCalmer / LuCl (git-16.020.59380-63d70da)	
Kernel Version	3.14.27	

The following web page will appear.

No password set! There is no password set on this Go to password configuration	s router. Please configure a root pass	sword to protect the web interface and enable SSH.
Interface Overview		
Network	Status	Actions
LAN	Uptime: 0h 28m 39s MAC-Address: 00:10:F3:35:26:09 RX: 362.51 KB (4499 Pkts.) TX: 874.90 KB (3944 Pkts.) IPv4: 192.168.1.1/24 IPv6: fdb2:26bc:7614::1/60	Connect Stop Z Edit Delete
Global network options		•
IPv6 ULA-Prefix	fdb2:26bc:7614::/48	

Interface Name: LAN Bridge Interface: br-lan IP address: 192.168.1. 1 Physical Interfaces: eth1/eth2/wlan0/wlan1

3.3.3 Change IPv4 address

Click the "Edit" button belonging to "br-lan" network interface icon.

No password set! There is no password set on Go to password configura	this router. Please configure a root password to p	protect the web interface and enable SSH
Interfaces		
Interface Overview		
Network	Status	Actions
LAN	Uptime: 0h 14m 48s	😴 Connect 🙆 Stop 📝 Edit 🗙 Delete
ه کی کی اور (می کی	MAC-Address: 00.10.1-3.36.26.09 RX: 295.54 KB (3288 Pkts.) TX: 985.73 KB (3020 Pkts.) IPv4: 192.168.1.1/24 IPv6: fdb2:26bc:7614::1/60	
Add new interface		
Global network optio	ns	
IPv6 ULA-Prefix	t fdb2:26bc:7614:/48	

The following web page will appear.

No password	set!		
There is no passw Go to password	vord set on this configuration	s router. Please configure	a root password to protect the web interface and enable SSH.
Interfaces	- LAN		
On this page you can network interfaces so	n configure the eparated by sp	e network interfaces. You baces. You can also use <u>\</u>	can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).
Common Cor	figuration	I	
General Setup	Advanced S	Settings Physical Se	ttings Firewall Settings
	Status	త్రక br-lan	Uptime: 0h 17m 59s MAC-Address: 00:10:F3:35:26:09 RX: 354.44 KB (4026 Pkts.) TX: 1.31 MB (3832 Pkts.) IPv4: 192.168.1.1/24 IPv6: fdb2:26bc:7614::1/80
	Protocol	Static address	×

As far as each interface is concerned, there are two configuration sections: "Common Configuration" and "DHCP Server".

Scroll down to the section "Common Configuration", and click

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"General Setup" tab.

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Common C	onfiguratio	on	
General Setup	Advance	d Settings Physical Settin	gs Firewall Settings
R	Status	8) br-lan	Uptime: 0h 19m 49s MAC-Address: 00:10:F3:35:26:09 RX: 379:69 KB (4315 Pkts.) TX: 1.35 MB (4116 Pkts.) Pv4: 192.168.1.1/24 Pv6: fdb2:26bc:7614::1/60
	Protocol	Static address	¥
Really sw	vitch protocol?	Switch protocol	
	IPv4 address	192.168.1.1	
	IPv4 netmask	255.255.255.0	Ψ.
[IPv4 gateway]	
П	Pv4 broadcast		
Use custom DN	IS servers		• 🛍
IPv6 assignm	ient length	60	Y
	C	Assign a part of given length	of every public IPv6-prefix to this interface
IPv6 assign	nment hint	Assign prefix parts using this	hexadecimal subprefix ID for this interface.
IPv	6 address		
IPv	6 gateway		
IPv6 rot	uted prefix		
	6	Public prefix routed to this de	evice for distribution to clients.

The IP address, default gateway, DNS servers could be changed and added by clicking the text areas of "IPv4 address", "IPv4 Gateway" and "Use custom DNS servers" and inputting values respectively.

After the configuration is finished, click "Save & Apply" button to save this setting.

Back to Overview	Save	ive & Apply	Save	Reset

Warning:

After the IPv4 gateway and DNS servers are configured, user needs to go back to "Network -> Interface" page and click "Connect" button to take effect the setting.

3.3.4 Enable NTP (Network Time Protocol)

Navigate to "System -> System", and then the web page below will appear.

NEXCOM NIO200 Status +	System - Network -	Logout AUTO REFRESH ON
No password set!	System Administration	
There is no password set on this router. Go to password configuration	Startup Scheduled Tasks	word to protect the web interface and enable SSH.
Status	LED Configuration Backup / Flash Firmware	
System	Reboot	
Hostname	NIO200	
Model	fsl,P1020RDB	
Firmware Version	Openwrt Chao	sCalmer / LuCl (git-16.020.59380-63d70da)
Kernel Version	3.14.27	
Local Time	Fri Mar 11 02:4	9:41 2016

Click "General Settings" tab to configure "Local Time" and "Timezone" as shown below. Configure NTP server in the "Time Synchronization" section when necessary.

System

Here you can configure the basic aspects of your device like its hostname or the timezone

System Properties

,	
General Settings	Logging Language and Style
Loc	cal Time Fri Mar 11 02:52:06 2016 🚺 Sync with browser
Ho	ostname NIO200
_	
Ti	mezone UTC T

Before NTP server is working, NIO200 should have correct date/time by clicking "Sync with browser" and selecting "UTC" as Timezone.

3.3.5 Select Time Zone



3.3.6 Select/Input Time Server

NTP client is enabled by default.

Click "X" button to delete the incorrect or unwanted time server.

Time Synchronization	1	
Enable NTP client	 Image: A start of the start of	
Provide NTP server		
NTP server candidates	0.openwrt.pool.ntp.org	*
	1.openwrt.pool.ntp.org	× v
	2.openwrt.pool.ntp.org	×
	3.openwrt.pool.ntp.org	t

Keep clicking "X" buttons until only one item is left. Point the mouse cursor to text area and input "time.nist.org".

Time Synchronization	
Enable NTP client	8
Provide NTP server	
NTP server candidates	3.openwrt.pool.ntp.org

If new time server is required, click "+" button.

Time Synchronization	
Enable NTP client	8
Provide NTP server	
NTP server candidates	time.nist.org

3.3.7 Configure Wi-Fi Mesh Interface

For Wi-Fi configuration and status reporting, navigate to "Network -> Wi-Fi" and click.

NEXCOM NIO200 Status - System -	Network - Logout	AUTO REFRESH ON
No password set! There is no password set on this router. Please cont Go to password configuration	Interfaces Wifi DHCP and DNS Hostnames	
Status System	Static Routes Firewall Diagnostics	
Hostname	NIO200	
Model	fsl,P1020RDB	
Firmware Version	Openwrt ChaosCalmer / LuCl (git-16.020.59380-63d70da)	
Kernel Version	3.14.27	
Local Time	Fri Mar 11 02:22:47 2016	
Uptime	0h 44m 16s	

The following web page is shown, and contains two sections: "Wireless Overview" and "Associated Stations".

No pass There is n Go to pas	sword set! to password set on this router. Please configure a root password to protect ssword configuration	t the web interface and enable SSH.		
Virele	ss Overview			
9	Generic MAC80211 802.11an (radio0)			Scan
	SSID: MESH_CAN2 Mode: Mesh Point 77% Wireless is disabled or not associated	isable	Z Edit	Remove
2	Generic MAC80211 802.11abgn (radio1)			G Scan
	SSID: MESH_CAN4 Mode: Mesh Point 58% Wireless is disabled or not associated	Ø Disable	Z Edit	Remove

"Wireless Overview" section lists available Wi-Fi interfaces: wlan0 and wlan1.

"Associated Stations" section lists run-time connection information for each Wi-Fi interface (mesh mode).

	SSID	MAC-Address	IPv4-Address	Signal	Noise	RX Rate	TX Rate
al.	MESH_CAN2	00:10:F3:35:26:27	?	-49 dBm	-95 dBm	150.0 Mbit/s, MCS 7, 40MHz	52.0 Mbit/s, MCS 5, 20MHz
4	MESH_CAN2	00:0E:8E:67:62:69	?	-62 dBm	-95 dBm	26.0 Mbit/s, MCS 3, 20MHz	52.0 Mbit/s, MCS 5, 20MHz
al.	MESH_CAN2	00:10:F3:35:26:1E	?	-68 dBm	-95 dBm	15.0 Mbit/s, MCS 0, 40MHz	52.0 Mbit/s, MCS 5, 20MHz
4	MESH_CAN4	00:10:F3:35:26:29	?	-66 dBm	-94 dBm	6.0 Mbit/s, MCS 0, 20MHz	52.0 Mbit/s, MCS 5, 20MHz
4	MESH_CAN4	00:0E:8E:67:64:4D	?	-80 dBm	-94 dBm	26.0 Mbit/s, MCS 3, 20MHz	52.0 Mbit/s, MCS 5, 20MHz
4	MESH_CAN4	00:10:F3:35:26:21	?	-70 dBm	-94 dBm	58.5 Mbit/s, MCS 6, 20MHz	52.0 Mbit/s, MCS 5, 20MHz

Take wlan0/radio0 interface for example.

	Scan
Edit 💦	Remove
	C Scan
Edit	Remove
1] Edit

<u>Edit:</u>

For editing the configuration profile of Wi-Fi interface, click this button

There are 2 configuration sections in the web page: "Device Configuration" and "Interface Configuration".

The parameters in the "Device Configuration" are related to physical settings of Wi-Fi radio. The parameters in the "Interface Configuration" are related to network settings of Wi-Fi interface, which is built upon the Wi-Fi radio.

<u>Scan</u>: For displaying the list of all access points around with the same frequency band as this radio has, click this button.

3.3.8 Configure Physical Settings for Radio

The physical settings (radio parameters of Wi-Fi interface) exists in this "Device Configuration" section.

Clicking "General Setup" tab.

There are 4 basic types of physical settings required for radio: 802.11 protocol, 5GHz Channel,

Bandwidth, and Transmit Power.

Wireless Networ	k: Mesh Point "MESH_CAN2" (wlan0)						
The Device Configuration section covers physical settings of the radio hardware such as channel, transmit power or antenna selection which are shared among all defined wireless networks (if the radio hardware is multi-SSID capable). Per network settings like encryption or operation mode are grouped in the Interface Configuration.							
Device Configuration							
General Setup Advanced	General Setup Advanced Settings						
Status SSID: MESH_CAN2 Mode: Mesh Point 74% Wireless is disabled or not associated SGHz channel Bandwidth Wireless network is enabled of Utsable							
	Mode Channel Width						
Operating frequency	N • 36 (5180 MHz) • 40 plus MHz(Mesh mode,2.4G(ch <= 6),5G(ch=36,40,44,149) •						
	17 dBm (50 mW) •						

There are 2 options for "802.11 protocol": N (802.11n) and Legacy (802.11a).

Wireless network is enabled	😰 Disabl	е		
	Mode	Channel	Width	
Operating frequency	N *	36 (5180 MHz) 🔻	40 plus MHz(Mesh mode,2.4G(ch <= 6),5G(ch=36,40,44,149)	
	Legacy			
Transmit Power	N	0 mW)	×	
	👩 dBm			

There are 10 options for channel selection in 5GHz band.



<u>Width:</u> There are 4 options for bandwidth selection. 2 options ("20MHz" and "40MHz") are used for AP or STA client mode. 2 options ("40 plus" and "40 minus") are used for mesh mode

Mode Channel Width	
Operating frequency N ▼ 36 (5180 MHz) ▼ 40 plus MHz(Mesh mode,2.4G(ch <= 6),5G(ch=36,40,44,149) ▼	v
20 MHz(AP or Client mode)	
Transmit Power 17 dBm (50 mW) 40 MHz(AP or Client mode)	
Image: Construction of the second s	

Transmit Power: There are 14 options.

Wireless network	is enabled	🙆 Disat	le	
		Mode	Channel	Width
Operating	g frequency	N ¥	36 (5180 MHz) *	40 plus MHz(Mesh mode,2.4G(ch <= 6),5G(ch=36,40,44,149)
Transmit Power		17 dBm (50 mW)	* I
Interface Con	ifiguratior	0 dBm (1 4 dBm (2 5 dBm (3 7 dBm (5 8 dBm (6 9 dBm (7	mW) mW) mW) mW) mW) mW)	
General Setup	Wireless S	e 11 dBm (12 mW)		
ESSID/Mesh_ID		12 dBm (15 mW) 13 dBm (19 mW) 14 dBm (25 mW) 15 dBm (31 mW) 16 dBm (39 mW)		
Mode		17 dBm (50 mW)	

3.3.9 Network Settings of Wi-Fi Interface

The network settings (network parameters of Wi-Fi interface) exists in this "Interface Configuration" section.

Clicking "General Setup" tab

Interface Configuration						
General Setup	Wireless S	Security				
ESS	ID/Mesh_ID	MESH_CAN2				
	Mode	Mesh,802.11s •				
	Network	🗹 lan: 🛃 💂 🌚 🤓				
		Create:				
		Choose the network(s) you want to attach to this wireless interface or fill out the create field to define a new network.				

ESSID/Mesh ID: (Default: "MESH_CAN2") Network name.

All products with the same ID (or network name) and radio physical settings (802.11 protocol and channel) are connected together automatically.

Mode: (Default: "Mesh, 802.11s") Wireless network topology. Only mesh is supported.

For further software setup and testing examples, please refer to the User Manual

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