

# **Certification Exhibit**

### FCC ID: MWC406WIFI

### FCC Rule Part: 15.247

## TÜV SÜD Project Number: 16-3095

Manufacturer: Sealevel Systems Inc. Model: 406

# Manual

# SeaIO WiFi Bridge Configuration Guide

MODEL:SeaIO WiFi BridgeP/N:406FCC ID:MWC406WIFI

#### **SEAI/O W-SERIES**

SealO WiFi Bridge adds 802.11b/g/n communication interface to Seal/O<sup>M</sup> product family. It is an add-on daughter card that can be factory-installed in any Seal/O<sup>M</sup> module. It utilizes a single proprietary header for power and data transfer. WiFi option is indicated by "W" suffix in the Seal/O<sup>M</sup> module model name.

#### 200W - WIRELESS GATEWAY

The 200W Wireless Gateway is a standalone Wi-Fi to RS-485 Modbus RTU converter. It contains SealO WiFi Bridge installed on a custom carrier in a metal enclosure. After configuration on a local network, the gateway enables the functionality of wireless modules to the serial or USB modules when the gateway is connected to the expansion port of Seal/O<sup>™</sup>module.

#### SEAI/O WIRELESS SPECIFICATIONS

406 WiFi Bridge features networking engine based on TI's popular CC3200MODB module. This subsystem integrates an ARM Cortex-M4 MCU with an 802.11 b/g/n radio, baseband, MAC, and a powerful crypto engine for fast, secure Internet connections with 256-bit encryption. It supports Infrastructure and access point modes and supports WPA2 personal and enterprise security and WPS 2.0. The engine includes embedded TCP/IP and TLS/SSL stacks, HTTP server, and multiple Internet protocols.

Standards	2.4 GHz IEEE 802.11b/g/n WLAN
Channels	1–11
Frequency Range	2.412 – 2.484 GHz
TX Power	17 dBm at 1 DSSS 17.25 dBm at 11 CCK
RX	13.5 dBm at 54 OFDM -94.7 dBm at 1 DSSS -87 dBm at 11 CCK
Application Throughput	-73 dBm at 54 OFDM UDP: 16 Mbps TCP: 13 Mbps
Range	300' line-of-sight (with no obstructions or interference)
WLAN	2.4 GHz IEEE 802.11b/g/n WLAN Supported Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, and HTTP TCP/IP Stack
	Infrastructure and Access Point Modes
	Crypto Engine for Secured WLAN Connections with 256-Bit Encryption
	WEP, WPA1 and WPA2 Personal and Enterprise Security

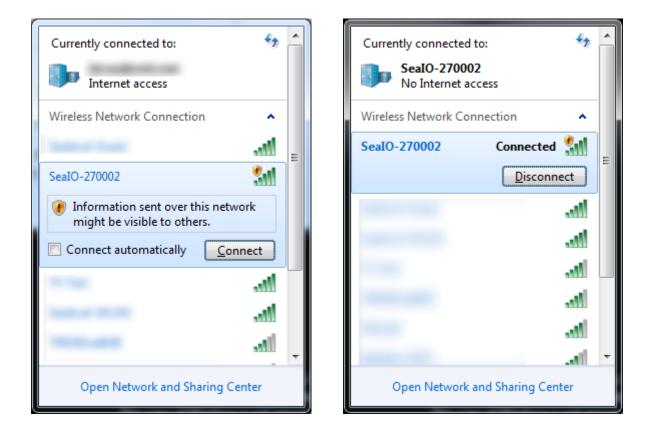
#### ANTENNA CONSIDERATIONS

The wireless device ships with an approved external hinged Wi-Fi antenna. Using a different antenna is not supported and it may invalidate regulatory certification and the user's authority to operate the equipment.

### DEVICE SETUP (WINDOWS 7/8.1/10™)

#### **AP MODE**

Each WiFi enabled Seal/O<sup>™</sup> device leaves the factory configured for connection in AP (Access Point) Mode. By default SSID is set to match the device name (SealO-270002 in the picture below) with no security. Select the device from available "Wireless Networks Connection" list and click "Connect" button.



Once connected open web browser and enter <u>http://SeaIO-27xxxx</u> (replace xxxx with corresponding portion of your actual device name) in the address field to access the device status/configuration page. Enter administrator login credentials when prompted.

Default User Name: seaioadmin Default Password: seaioadmin

It is strongly recommended to change the login credentials to prevent unauthorized access.

# Windows Security The server seaio-270002 is asking for your user name and password. The server reports that it is from Seal/O Wireless. Warning: Your user name and password will be sent using basic authentication on a connection that isn't secure. Seaioadmin Remember my credentials OK Cancel

**DEVICE TAB** 

The Device tab displays current configuration, as well as offers a path to firmware update over the WiFi connection. User can restart the device or reload factory defaults via buttons in Administration pane.

	SeaIO Wireles	ss Bridge   Dev	ice
Configuration Network	<pre>vertice About tructure Mode</pre>		System
DHCP State	Enabled	Device Name	SeaIO-270027
IP Address *		Device Mode	Access Point
Subnet Mask *		IP Address	192.168.1.1
Default Gateway *		MAC Address	00:0A:0B:27:00:27
DNS Server *		System Uptime	0 days 00:01:20
* Static Addressing only		Firmware Version	1.0.6
Acces	ss Point Mode	Signal Strength	Unavailable
Channel #	6	Adn	ninistration
SSID	SeaIO-270027		Restart Device
Security Type	Open	-	ory Settings Reset
IP Address	192.168.1.1	Facto	ory Settings Reset
DHCP Server			
Start Address	192.168.1.2		
Last Address	192.168.1.254		

#### **CONFIGURATION TAB**

In the Configuration tab you can customize the device name if desired. If changed the new device name must be used to access the configuration pages. Administrator credentials can be modified in HTTP Authentication pane. Reset or power cycle is necessary for any changes to take effect.

O Seaio-2	_	*) Bridge   Configuration
Device Nam SeaIO-270		Firmware Update
NOTE: Current Username: Password:	HTTP Authentication t values not shown for security	

#### NETWORK TAB

The Network tab is used to customize connection parameters for Infrastructure Mode and AP Mode. Reset or power cycle is necessary for any changes to take effect.

C 🛈 seaio-270027/network.html	
SeaIO Wirele	ss Bridge   Network
Configuration Network Profiles About	
Infrastructure Mode	Access Point Mode
DHCP Client:	IP Address:
Enabled	192.168.1.1
Disabled — Fill out settings below:	DHCP Start Address:
IP Address:	192.168.1.2
0.0.0.0	DHCP End Address:
Subnet Mask:	192.168.1.254
0.0.0.0	DHCP Lease Time (sec):
Default Gateway:	86400
0.0.0.0	Apply
DNS Server:	Арру
0.0.0.0	
	Access Point Configuration
Apply	Channel (1–11):
	6
	SSID:
	SeaIO-270027
	Security Type:
	Open
	WEP
	WPA
	Apply

#### **PROFILES TAB**

In the Profiles you can configure typical connection parameters specific to your wireless network (SSID, security type, password). Multiple profiles are available. They can be prioritized via Profile Priority setting. Reset or power cycle is necessary for any changes to take effect.

€→	http://192.168.66.99	/profiles.html	5 <del>-</del> Q	🜑 Device   SealO Wireless Bridge 🛛 Wi-Fi Profiles   SealO Wirele ×	nt ★ ¤
			Sea	IO Wireless Bridge   Profiles	
Device	Configuration	Network	Profiles	About	
				Existing Wi-Fi Profiles	
				No profiles defined	
				•	

	ttp://192168.66.99/ profiles.html D - C Device   SealO Wireless Bridge 💁 Wi-Fi Profiles   SealO Wirele ×	× □ − −
	ttp://192168.66.99/profiles.html D - C 🛇 Device   SealO Wireless Bridge 💿 Wi-Fi Profiles   SealO Wirele X	
	SeaIO Wireless Bridge   Profiles	
	Sealo Wilcless Bridge [110files	
Device C		
	Add Profile	
	SSID:	
	Security Type:	
	Open	
	WEP	
	O WPAL	
	() WPA2	
	Password:	
	Profile Priority (0-7, 7 = highest):	
	7	
	Save Cancel	

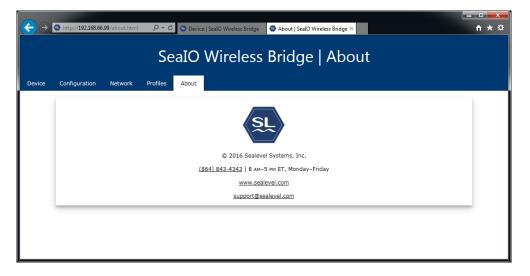
Existing profiles cannot be edited. They can only be deleted. If changes are required a new profile has to be created and configured.

	L/profiles.html		🕲 Wi-Fi Profiles   SealO Wirele X 🔯 Wi-Fi Profiles   SealO Wireless	t + − − − − − − − − − − − − − − − − − −
		Sea	IO Wireless Bridge   Profiles	
Configuration	Network	Profiles	About	
			Existing Wi-Fi Profiles	
Remove	SSID		Security	Priority
□ 1	TEST		WPA	2
			Remove Selected Profile(s)	
				+
	Remove	Remove SSID	Configuration Network Profiles Remove SSID	Existing Wi-Fi Profiles       Remove     SSID       Security       1     TEST

Once the connection profile is defined the device will make an attempt to establish infrastructure type connection based on priority level. If there are no profiles that match the actual infrastructure settings the device will no longer be accessible. See Forced AP mode to regain access to the device.

#### **ABOUT TAB**

The About tab shows "Sealevel Systems" contact and support information.



#### FORCE AP MODE

The device can be forced to reconnect in AP mode in case communication cannot be established in Infrastructure mode. Power down the device. Locate the Reset/Configure button on the front of the module just above the antenna. Using a paperclip or similar sized blunt object, depress and hold the button then power on the device. Wait about 3 seconds and release the button. The device is now in AP mode with settings as previously configured.

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### **RESTORE FACTORY DEFAULTS**

To reset the device to factory defaults locate the Reset/Configure button on the front of the module just above the antenna. Using a paperclip or similar sized blunt object, depress and hold the button for at least 10 seconds. The device has been reset. All the configuration settings have been reverted to their default values. The device is in AP mode ready to be configured.

#### **TECHNICAL SUPPORT**

The Sealevel website is an excellent resource located at www.sealevel.com. The most current software updates and user manuals are available via our homepage by clicking on the 'Drivers' or 'Manuals' links located under 'Technical Support.' Manuals and software can also be downloaded from the product page for your device.

Monday - Friday 8:00 am to 5:00 pm EST Phone: +1 (864) 843-4343 Email: support@sealevel.com www.sealevel.com

### REGULATORY

#### FCC STATEMENT



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 limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### **RF EXPOSURE**

This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and human body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

#### UNAUTHORIZED MODIFICATIONS

Changes or modifications to this device not expressly approved by Sealevel Systems Inc. could void the user's authority to operate the equipment.