SIGMATEK

WIFI 011

WiFi Adapter

Operating Manual

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Translation from German

WiFi Adapter WIFI 011

- WiFi 802.11 b/g/n
- 1x1 MIMO technology improves effective throughput and range over existing 802.11 b/g/n products
- Up to 150 Mbps data transfer rate
- BPSK, QPSK, 16-QAM, DBPSK, DQPSK and CCK modulation schemes
- WEP, TKIP, AES, WPA and WPA2 hardware encryption schemes

Contents

1 Technical Data

1.1 Performance Data

Wireless standard	802.11 b/g/n
Module type	Host Controller Interface (HCI)
Tested operating systems	Salamander, Gecko OS[1)]
Hardware not supported	CP 102
Security	WEP 64 bit, WEP 128 bit, TKIP, AES, WPA, WPA2
Network architecture	Ad hoc mode (peer-to-peer) and infrastructure mode

[1)] These operating systems were tested by SIGMATEK. It can be assumed however, that the USB stick works with all commercial operating systems.

1.2 Hardware

Chipset	Realtek
Antenna	Onboard chip antenna
Interfaces	USB 2.0
LED	Power

1.3 RF Characteristics

Tx output power	(±2 dBm): 13 dBm @ 11 n, 17 dBm @ 11 b, 15 dBm @ 11 g
Rx sensitivity	11 Mbps -80 dBm @ 8 % 54 Mbps -70 dBm @ 10 % 150 Mbps -64 dBm @ 10 %
Range (in open space)	indoor: up to 100 m outdoor: up to 180 m
Current consumption	transmit: average 125 mA receive: average 68 mA transmit and receive: average 104 mA
Data transfer rate	1, 2, 5.5, 6, 11, 12, 18, 22, 24, 30, 36, 48, 54, 60, 90, 120 Mbps to a maximum of 150 Mbps
Frequency	2.4 GHz ISM band
Modulation scheme	BPSK/QPSK/16-QAM/DBPSK/DQPSK/CCK

Spread spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n: OFDM (Orthogonal Frequency Division Multiplexing)

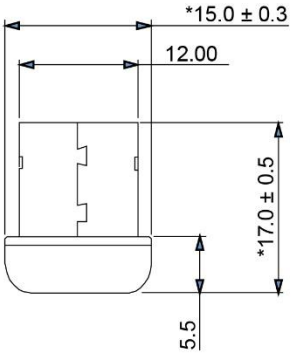
1.4 Environmental Conditions

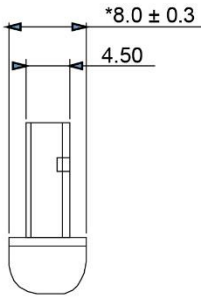
Storage temperature	-20 … +70 °C
Environmental temperature	-10 … +60 °C
Humidity	5-90 %, non-condensing

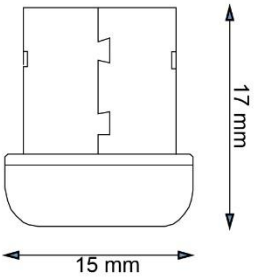
1.5 Miscellaneous

Article number	12-640-011
Mechanical dimensions	17.00 x 15.00 x 8.00 mm (L x W x H)
Weight	1.80 g ±0.25 g tolerance 25.36 g in retail pack
Approvals	ROHS, REACH, WEEE (in EU, Brazil, Canada, Japan and USA)

2 Mechanical Dimensions







3 How to Use

The WiFi adapter WIFI 011 can be operated either as a client or as an access point. If the WIFI 011 is to be used as a client, unlike the HGW 1033-X, the client mode is not started automatically (without command in the "autoexec.lsl"), since the AP mode can be activated via an application, for example. In this case it would be necessary to deactivate the client mode before.

With the following CLI or autoexec.lsl commands the desired mode can be selected or started without application.

"WLANCLIENT START 10"
or
WLANAP 10 (this command was already available)

3.1 Client

There are two ways to use the WLAN Client. To handle the WiFi adapter, you can edit the configuration file and start the client like described below. On the other hand, SIGMATEK provides a LASAL class to be used with the WiFi adapter.

3.2 Configuration File

The configuration of the network (the access point to which the client should connect) can be set in the configuration file:
“C:\LSLSYS\WIRELESS.CONF”

This file is located on the control and must be adapted. The entries for “ssid” and “psk” must exist.

Important: The line with the option `"update_config=1"` is required so that configuration changes are saved permanently.
Please note that when overwriting the configuration file, the comments from it are removed.

```
# This is the configuration file to handle the connection with
wireless networks via interface 10.
# To connect to a Wireless Access Point, use one of the methods be-
low
# (remove '#' in front of the line) depending on the security
method of the access point.
#
# NOTE: Don't touch the first line!

ctrl_interface=/var/run/wpa_supplicant
update_config=1
```

```
# Configuration for not secure networks (no key)
#network={
#    ssid="WirelessNetworkName"
#    key_mgmt=NONE
#}

# Configuration for WPA/WPA2 networks
network={
    ssid="sigmatek_internet"
    psk="xxxpasswordxxx"
}
```

Starting the WLAN client:
“C:\AUTOEXEC.LSL”

e.g.
SET IP 10 HOSTADDR DHCP

3.3 Class “WLAN_ClientControl”

SIGMATEK provides a LASAL class with the functions to handle the WiFi adapter. Refer to the online help of LASAL CLASS 2 and the documentation of the class “WLAN_ClientControl”.

With the functions in the class “WLAN_ClientControl” you can also connect to other access points during runtime.

3.4 Configuration File (access point)

If the WiFi adapter WIFI 011 is to be operated as an access point, it must be configured with the configuration file "C:\LSLSYS\HOSTAPD10.CONF".
The file is available in the directory "C:\LSLSYS\DEFAULT-CONFIGURATIONS" and must be copied into the directory "C:\LSLSYS".

The basic settings in this file should be left as they are.
The setting for the password "wpa_passphrase" should be changed in any case.

3.5 "WLAN_APControl" Class

SIGMATEK provides a LASAL class with the functions for handling the WiFi adapter. Refer to the online help of LASAL CLASS 2 and the documentation of the "WLAN_APControl" class.

You can also use the functions in the "WLAN_APControl" class to start, stop and configure the AP at runtime.

4 Hotplug

Starting from OS version 09.03.210 hotplug is supported for the stick WIFI 011.
The following functionalities are realized:

- If the stick is configured in the "autoexec.lsl", the settings of the "autoexec.lsl" are taken over at the start of the control, it is not relevant whether the stick is plugged in or not.
- If the stick is plugged in, the settings of "autoexec.lsl" are executed immediately. The configured IP address is set and the client or access point is started.
- If the stick is not plugged in, the settings of "autoexec.lsl" are executed when the stick is plugged in.
- If the stick is unplugged during operation, the current settings are restored when it is plugged in again.
- Even if the stick was not configured or reconfigured in "autoexec.lsl" but via an application, the last settings are always restored when the stick is plugged in and unplugged.

Documentation Changes

Change date	Affected page(s)	Chapter	Note
02.03.2021	6	3.1 Configuration File	Note added
03.05.2021	Document		Name changed to WiFi adapter
	6	3 How to Use	Chapter expanded
	7	3.4 Configuration File	Chapter added
	8	3.5 „WLAN_APControl“ Class	Chapter added
20.09.2021	9	4 Hotplug	Chapter added