

# LILY-W1 series



## Ultra-compact host-based Wi-Fi modules

### The most economical, lean, and compact Wi-Fi modules

- Extremely small footprint
- On-board antenna
- Integrated LTE filter
- Micro access point feature for up to 8 clients
- Wi-Fi direct



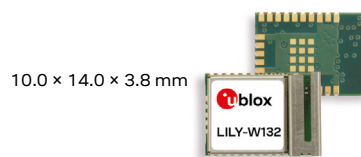
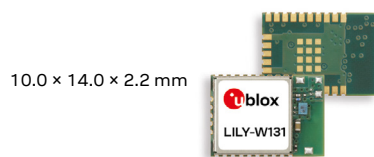
Standard



Professional



Automotive



### Product description

The LILY-W1 series ultra-compact Wi-Fi front end modules include an integrated MAC/baseband processor and RF front end components. The modules connect to a host via SDIO or USB interface. They provide simultaneous operation as a station and a micro access point for up to 8 clients. The LILY-W132 variant further includes an internal antenna and LTE filter to enable in-device co-existence without jeopardizing Wi-Fi performance. LILY-W1 is certified for US, Europe, Canada, Taiwan, and Japan. Approvals for other countries are possible upon inquiry.

### Key features

- Wi-Fi Standards IEEE 802.11b/g/n
- 802.11n 1x1 SISO
- 802.11 PHY data rates of up to 72 Mbps
- Station and micro access point operation with up to 8 clients
- AES-CCMP and WAPI hardware encryption
- Dual MAC addresses and RF parameters stored on the module
- 1.8 V or 3.3 V IO signal levels
- Extended operating temperature range of -40 °C to +85 °C

	LILY-W131	LILY-W132	LILY-W133
<b>Grade</b>			
Automotive			
Professional	•	•	•
Standard			
<b>Radio</b>			
Chip inside	NXP 88W8801	NXP 88W8801	NXP 88W8801
Wi-Fi IEEE 802.11 standards	b/g/n	b/g/n	b/g/n
Wi-Fi 2.4 / 5 [GHz]	2.4	2.4	2.4
LTE filter		•	
Channel width [MHz]	20	20	20
Antenna type	1a	i	i
<b>OS support</b>			
Android / Linux (from u-blox)	•	•	•
<b>Interfaces</b>			
SDIO [version]	v2	v2	v2
USB 2.0	1	1	1
<b>Features</b>			
Micro Access Point [max connects]	8	8	8
AES hardware support	•	•	•
Wi-Fi direct	•	•	•
Factory-assigned MAC address	•	•	•
Factory calibrated RF	•	•	•

i = Internal antenna

1a = 1 pin for external antenna

## Features

Wi-Fi IEEE 802.11	b/g/n (single-stream, 72 Mbps)
Channels	2.4 GHz channels 1-13
Channel bandwidth	20 MHz
Range (max)	200 m
Output power (max)	LILY-W131: 19 dBm including 3 dBi antenna gain LILY-W132 and LILY-W133: 15 dBm including antenna gain
LTE filter	Embedded LTE frequency filter (LILY-W132 only)

## Software features

RF parameters	Available in on-board OTP memory
MAC addresses	Available in on-board OTP memory
Security	WPA-PSK WPA2-PSK WPA3 TKIP and AES hardware accelerator WAPI
Operational modes	Station (STA) / Client Micro-AP supports up to 8 stations Simultaneous STA and Micro-AP
Driver support	Free of charge drivers for: – Android – Linux

## Interfaces

Host interface	SDIO 2.0 USB 2.0 (slave/device)
I/O signals	1.8 V or 3.3 V selectable

## Package

Dimensions	10.0 x 14.0 x 2.2 mm (LILY-W131) 10.0 x 14.0 x 3.8 mm (LILY-W132, LILY-W133)
Weight	< 2 g
Mounting	Solder edge pins with castellations (visually inspectable)

## Environmental data, quality & reliability

Operating temperature	–40 °C to +85 °C
Cold	EN 60068-2-1
Dry heat	EN 60068-2-2
Change of temperature	EN 60068-2-14 and EN 60068-2-27
Vibration	EN 60068-2-6
Road vehicles	ISO 16750
Production & design	IPC-a-610 class 3

## Electrical data

RF power supply	3.0 VDC – 3.6 VDC
Power consumption	Idle (sleep) mode: < 0.1 mA @ 3.3 VDC Max (Rx/Tx) mode: < 340 mA @ 3.3 VDC

## Certifications and approvals

Type approvals	European Radio Equipment Directive (RED), US (FCC/CFR 47 part 15 unlicensed modular transmitter approval), Canada (IC RSS), Japan (Giteki), Taiwan (NCC)
----------------	---

## Support products

EVK-LILY-W131	Evaluation kit for LILY-W131. Includes a LILY-W131 module mounted on the adapter board with SDIO card and USB interface, external RPSMA antenna, and RPSMA to U.FL adapter cable.
EVK-LILY-W132	Evaluation kit for LILY-W132. Includes a LILY-W132 module mounted on the adapter board with SDIO card and USB interface.

## Product variants

LILY-W131	LILY-W1 module with antenna pin
LILY-W132	LILY-W1 module with internal antenna and LTE filter
LILY-W133	LILY-W1 module with internal antenna

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

For more product details and ordering information, see the product data sheet.

## Legal Notice:

u-blox reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of u-blox is strictly prohibited.

The information contained herein is provided “as is”. No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by u-blox at any time. For most recent documents, please visit [www.u-blox.com](http://www.u-blox.com).  
Copyright © 2020, u-blox AG