

MIXTILE

Mixtile 2-in-1 Zigbee & Z-Wave mPCIe Interface Module

| Accessory

User Manual

Get Started with

<https://www.mixtile.com/store/accessory/mixtile-hybridconnect-module/>

Changes

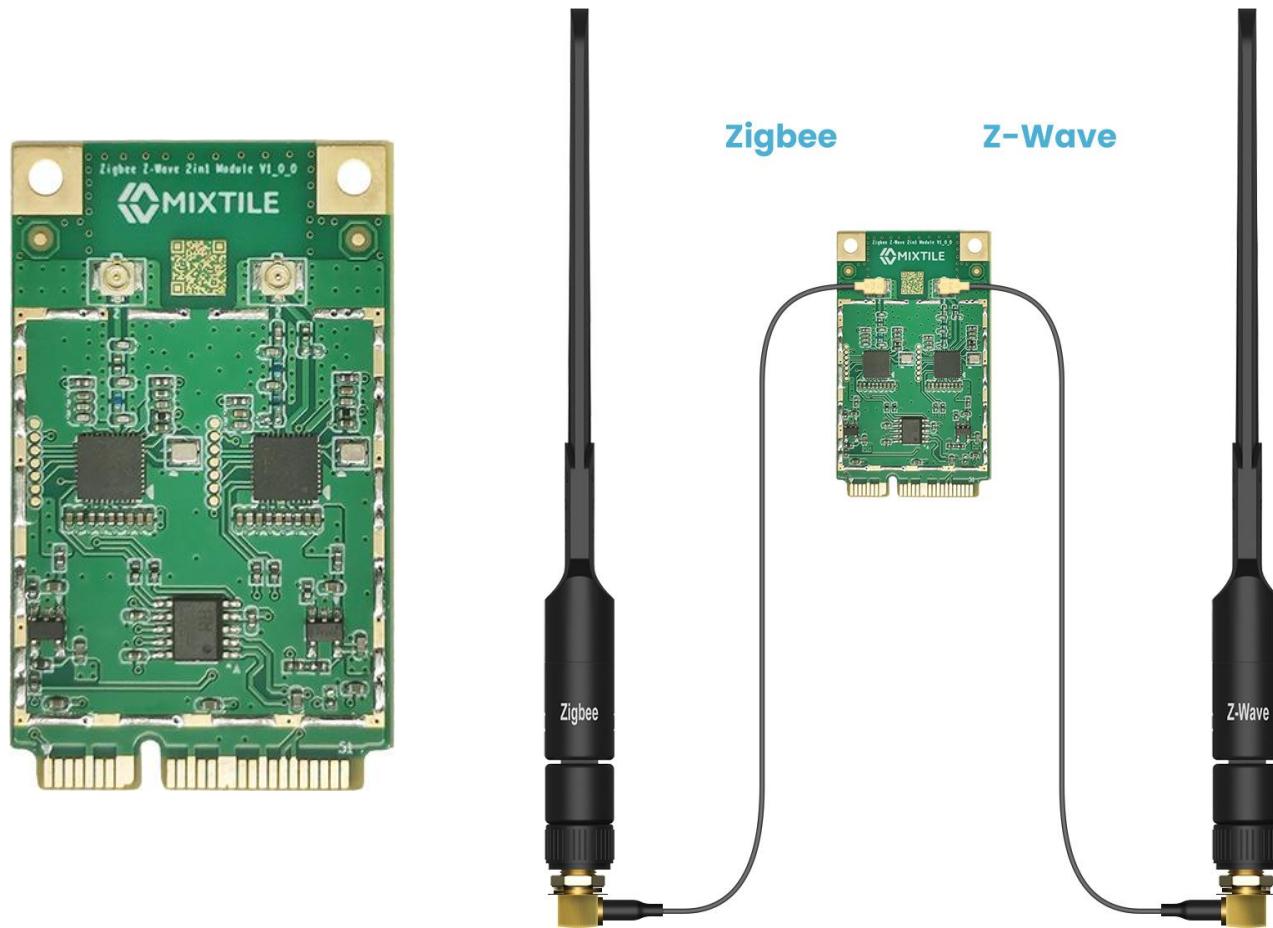
Version	Date	Changes	Name
1.0	2024-07-26	First version	CZ

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1 Introduction

1.1 Product Overview



1.2 Product Description

Mixtile 2-in-1 Zigbee & Z-Wave mPCIe Interface Module is designed for Home Assistant users and developers. It offers easy connectivity with Zigbee and Z-Wave and will support Matter and Thread specifications with a future Mixtile firmware update. It supports Over-The-Wire (OTW) Firmware Update via the mini-PCIe interface, which allows easy and quick firmware updates for both protocols.

Mixtile 2-in-1 Zigbee & Z-Wave mPCIe Interface Module is compatible with any IoT gateway and PC with the mini-PCIe interface and runs the Home Assistant. It also works seamlessly with our Mixtile Edge 2 Kit IoT gateway.

1.3 Specifications

- Power Supply: 3.3V
- Interface: mini-PCIe (Use USB Lines)
- Size: 51.0 mm × 30.0 mm × 4.9 mm
- Operating Temperature: 0° C ~ +65° C
- Transceiver 1: Silabs EFR32MG24
 - Frequency: 2.4 GHz
 - RX sensitivity: -105.4 dBm (250 kbps)
 - Protocols: Zigbee, Matter, Thread
- Transceiver 2: Silabs EFR32ZG23
 - Frequency: sub-1 GHz
 - RX sensitivity: -109.9 dBm (9.6 kbps)
 - Protocol: Z-Wave
- Antenna: 2x IPEX-1 antenna connector (one for Zigbee, one for Z-Wave), optional external antenna

2 Installation Instructions

2.1 Prepare the Device:

- Ensure that your device has a standard mini-PCIe port available for installation.
- Power off the device and unplug all cables to prevent any electrical hazards.

2.2 Insert the Module:

- Carefully align the mini-PCIe module with the slot on your device.
- Gently push the module into the slot until it is fully seated and securely connected.

2.3 Secure the Module:

- Use the provided screws to fasten the module in place, ensuring it does not move within the device.
- Tighten the screws appropriately without over-tightening, which could damage the module or the device.

2.4 Reassemble the Device:

- Replace any covers or panels that were removed during the installation process.
- Reconnect all cables and power on the device to confirm proper installation.

2.5 Verify Operation:

- Check the device settings or system configuration to ensure that the new mini-PCIe module is recognized and functioning correctly

Support

3.1 Support

1. Model number: ZFH01
 2. Standard Certification: FCC ID: 2A4YH-ZFH01
 3. Company name: Mixtile Limited
 4. Manufacture/Country: Mixtile Limited/China

3.2 FCC Caution

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy if, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 25cm the radiator your body. Use only the supplied antenna.



3.4 CE Compliance Declaration

MIXTILE technical support team assists you with the questions you may have. Contact us with the following methods below.

Email: technicalsupport@mixtile.com

Website: www.mixtile.com

This equipment complies with the essential requirements of the European Union Radio Equipment Directive 2014/53/EU. Compliance with the directive implies conformity to harmonized European standard EN for electromagnetic compatibility and radio spectrum use.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247&15.249 & 15.207 & 15.209

2.3 Specific operational use conditions

The module is a zigbee and z-wave module with zigbee and z-wave function.

Operation Frequency: 2405-2480MHz /908.4MHz,916MHz

Number of Channel: 16/2

Modulation: O-QPSK/FSK

Type: External Antenna

Gain (Max.): 3.3 dBi for Z-wave and 2.72 for Zigbee

The module can only be used for mobile applications with a maximum 3.3 dBi for Z-wave and 2.72 for Zigbee antenna. The host manufacturer installing this module into their product must ensure that the final composit product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

2.5 Trace antenna designs

Not applicable. The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc.

2.6 RF exposure considerations

The module must be installed in the host equipment such that at least 20cm is maintained between the antenna and users' body; and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.7 Antennas

Antenna Specification are as follows:

Type: External Antenna

Gain: 2.72/3.3 dBi

This device is intended only for host manufacturers under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna;

The module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating “Contains FCC ID: **2AYEW-ZZM01**” with their finished product.

2.9 Information on test modes and additional testing requirements

Operation Frequency: 2405-2480MHz /908.4MHz,916MHz

Number of Channel: 16/2

Modulation: O-QPSK/FSK

Type: External Antenna

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is **only** FCC authorized for FCC Part 15 Subpart C 15.247&15.249 & 15.207 & 15.209 and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Federal Communication Commission Statement (FCC, U.S.)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.

FCC Caution:

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

IMPORTANT NOTES

Co-location warning:

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

OEM integration instructions:

This device is intended only for OEM integrators under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module.

As long as the conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End product labeling:

The final end product must be labeled in a visible area with the following: "Contains Transmitter Module [FCC ID: 2AYEW-ZZM01](#)".

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.