



DASH7 Gateway

868 MHz / 915 MHz

1 Introduction

Features

- Full DASH7 Alliance Gateway (D7A v1.2)
- Connection to the Internet via Ethernet/Wifi.
- MQTT broker
- 868 and 915 MHz ISM band operation
- Modulation schemes: 2-FSK, GFSK, LoRa
- Output power up to +18 dBm (at SMA connector)
- FSK data rates 9.6 / 55.6 / 166.7 kbps
- LoRa data rates – all
- Operates from a single 5V/1A USB supply.
- Operating temperature: 0 °C to 70 °C

Applications

- Wireless sensor network
- Data acquisition equipment
- Security systems
- Industrial monitor and control
- Internet of things (IoT)

Description

- The WGATE-WRT is a fully integrated DASH7 Gateway operating in the 868/915 MHz ISM bands. Supports D7A-FSK and D7A-LoRa modes
- Based on GL-iNet AR150 Smart Router with enhanced MQTT firmware and 868/915MHz RF extension.
- Compatible with D7A 1.2 specification (www.dash7-alliance.org)
- Controlled directly from its on-line interface.
- Allows for bi-directional communication with any DASH7 :: DASH7-LoRa enabled device.
- WizziLab product line at www.wizzilab.com/products



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2 Hardware specification

2.1 Motherboard

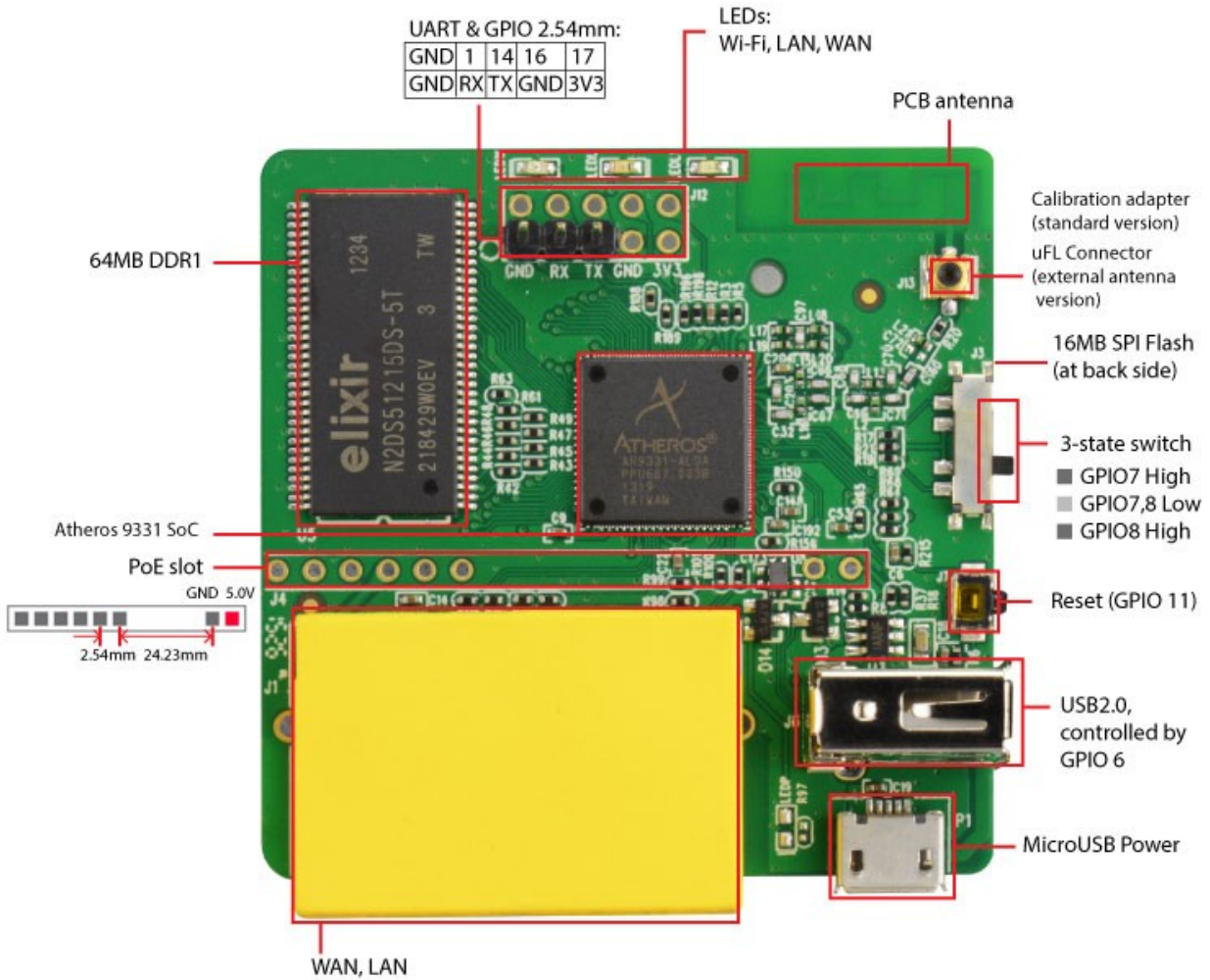
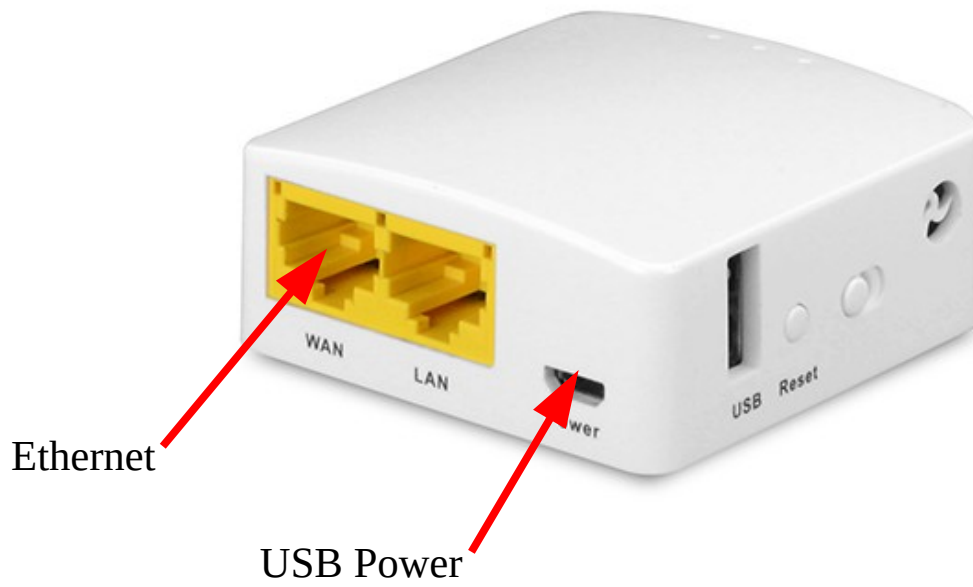


Figure 1: Gateway motherboard

For more details, see the GL-iNet AR150 specification at <https://www.gl-inet.com/products/gl-ar150/>

2.2 Connections

Figure 2: Gateway connections



2.3 Form factor

Dimensions 58*58*25mm. Weight 45 g + antenna.



2.4 Current consumption

Table 1. Current consumption

Symbol	Parameter	Min.	Typ.	Max.	Units
I_{CC}	Supply current with 5V power supply		150		mA

3 Operating modes

3.1 Data rates

Table 2. Data rates

Parameter	Test conditions	Value	Units
Data Rate	Low rate mode	9 600	baud
	Normal rate mode	55 556	baud
	High rate mode	166 667	baud

3.2 RX Sensitivity

The test is performed in real conditions - the receiver and the transmitter are placed at a distance of 5 m in a non-anechoic room with dimensions of 10x10m and the transmission power is ramped up and down. The receiver is in continuous RX and receives D7A packets consisting of 27 uncoded payload bytes encoded with ½ Forward Error Correction channel coding, resulting in 60 encoded payload bytes + 2 bytes sync word + 8 bytes preamble. See the [D7A specification](#) for more details. The test sources are available [here](#). The following values are the RSSI sensitivity limits when 90% of the packets are still received.

Table 3. RX Sensitivity

Parameter	Test conditions	Min.	Typ.	Max.	Units
RX Sensitivity (10% PER)	Low rate mode with FEC	-	-110	-	dBm
	Normal rate mode with FEC	-	-102	-	dBm
	High rate mode with FEC	-	-97	-	dBm

3.3 TX Power

Table 4. TX Power

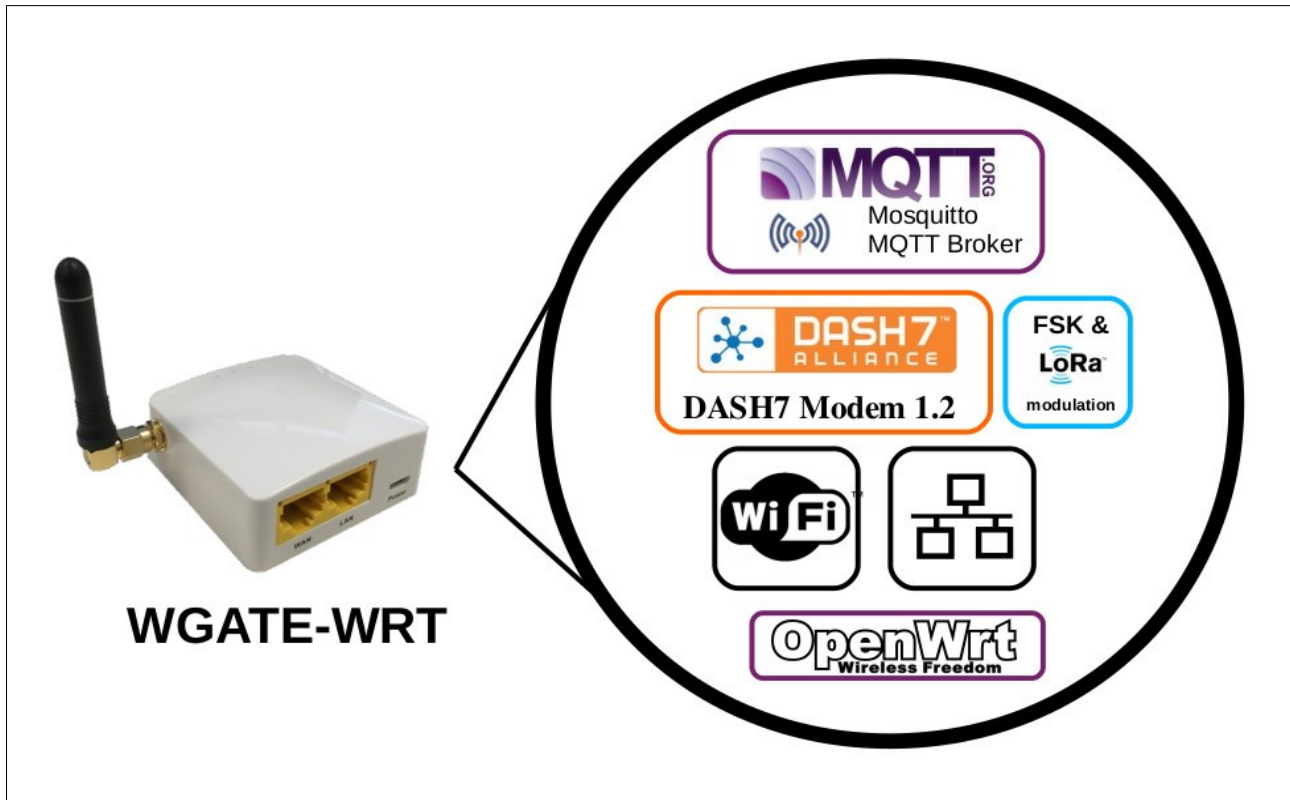
Parameter	Min.	Typ.	Max.	Units
TX Power	1 ⁽¹⁾	-	18 ⁽¹⁾	dBm

(1) At the SMA connector. Includes 1 dB attenuation due to the RF switch. Antenna insertion loss not counted.

4 Gateway operations

This gateway is meant to be used with the [mbed](#) demo who can be found here:

<http://wizzilab.com/wiki/#!/wizzikit/mbed.md>



5 Ordering information

Contact us at : contact@wizzilab.com

Or visit our website: <http://www.wizzilab.com/products>

6 Revision history

Table 5. Document revision history

Date	Revision	Changes
08-Sep-2016	1.0	Document creation.
25-Oct-2016	1.1	Added Operating modes section.
20-Mar-2017	1.2	LoRa modulation support
07-Jun-2019	1.3	Update product name, links and D7A information