



## DASH7 Gateway

868 MHz / 915 MHz

# 1 Introduction

## Features

- Full DASH7 Alliance Gateway (D7A v1.1)
- Connection to the Internet via Ethernet/Wifi.
- MQTT broker
- 868 and / or 915 MHz ISM band operation (SAW / no SAW option).
- Modulation schemes: 2-FSK, GFSK, LoRa
- Output power up to +19 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 GW2120 is a fully integrated DASH7 Gateway operating in the 868 and / or 915 MHz ISM bands.
- Based on GL-iNet AR150 Smart Router with enhanced MQTT firmware and 868/915MHz RF extension.
- Compatible with D7A 1.1 specification ([www.dash7-alliance.org](http://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](http://www.wizzilab.com/products)



## Table of Contents

1 Introduction.....	1
2 Hardware specification.....	3
2.1 Connections.....	3
2.2 Current consumption.....	3
3 Operating modes.....	4
3.1 Data rates.....	4
3.2 RX Sensitivity.....	4
3.3 TX Power.....	4
4 Gateway operations.....	5
5 Ordering information.....	6
6 Revision history.....	7

## List of tables

Table 1. Current consumption.....	3
Table 2. Data rates.....	4
Table 3. RX Sensitivity.....	4
Table 4. TX Power.....	4
Table 5. Document revision history.....	7

## List of figures

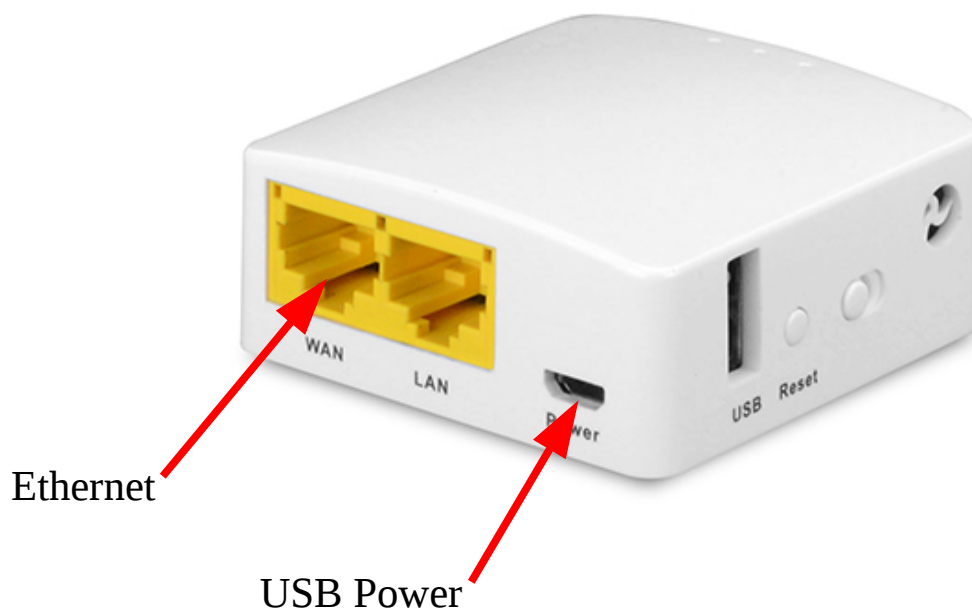
Figure 1: Gateway connections.....	3
------------------------------------	---

## 2 Hardware specification

For more details, see the GL-iNet AR150 specification at <http://www.gl-inet.com/ar-specifications>

### 2.1 Connections

Figure 1: Gateway connections



### 2.2 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 <sup>(1)</sup>	-	19 <sup>(1)</sup>	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](https://developer.mbed.org/teams/Wizzilab/code/D7A_1x_demo) demo who can be found here:  
[https://developer.mbed.org/teams/Wizzilab/code/D7A\\_1x\\_demo](https://developer.mbed.org/teams/Wizzilab/code/D7A_1x_demo)

## **5 Ordering information**

Contact us at : [contact@wizzilab.com](mailto:contact@wizzilab.com)

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

## 6 Revision history

Table 5. Document revision history

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
08-Sep-2016	1.0	Document creation.
25-Oct-2016	1.1	Added Operating modes section.
20-Mar-2017	1.2	LoRa modulation support