



## DASH7 - IP Gateway for Industrial Applications

868MHz / 915MHz

### Introduction

### Features

- Metallic casing for enhanced protection.
- Full D7A-IP Gateway for DASH7 Alliance Protocol v1.2.
- Controlled over HTTPS and MQTT.
- Ethernet connectivity.
- Cellular Connectivity (option).
- Wifi & BLE (option)
- 868 MHz SRD or 915 MHz ISM band.
- Modulation schemes:
  - FSK @ 9.6 / 55.6 / 166.7 kbps
  - LoRa @ SF8, SF10, SF11, SF12
- Output power up to +18 dBm.
- 12V power supply.
- Operating temperature: -40 °C to 85 °C

### Applications

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

### Description

- The WGATE is a fully integrated DASH7 Gateway operating in the 868/915 MHz ISM bands.
- Based on Variscite DART-6UL chipset with enhanced MQTT firmware.
- D7A modem at 868/915MHz compatible with D7A 1.2 specification ([www.dash7-alliance.org](http://www.dash7-alliance.org))
- Controlled directly from its online interface.
- Allows for bi-directional communication with any DASH7 enabled device.
- Mikrobus™ extension slot.
- WizziLab product line at [www.wizzilab.com/products](http://www.wizzilab.com/products)



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# 1 Hardware characteristics

## 1.1 Recommended operating conditions

Table 1. Recommended operating conditions

<b>Symbol</b>	<b>Parameter</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Units</b>
T <sub>A</sub>	Operating ambient temperature range	-40	-	85	°C
V <sub>CC</sub>	Operating supply voltage	10.0	12.0	14.0	V
RH	Non-condensing Relative Humidity	Less than 95% at 40°C			%

## 1.2 Mechanical description

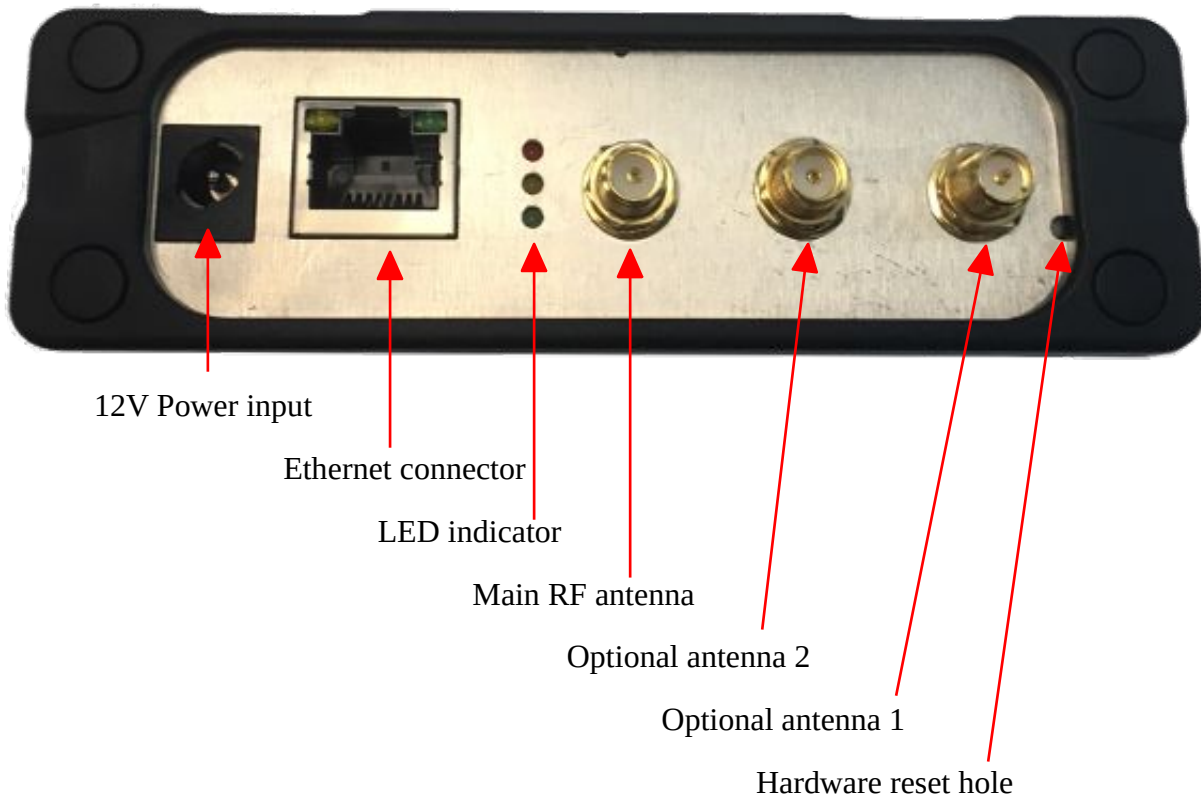


Table 2. Casing dimensions

Parameter	Value	Units
Dimensions, Length x Width x Height	115 x 55 x 42	mm
Weight	300	g

## 1.3 Power supply

The WizziGatePro works on a 12V external power supply.

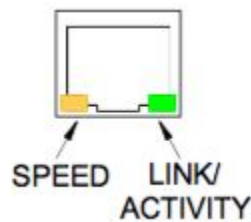


*Drawing 1: Power Jack polarity*

## 1.4 10/100/1000 Ethernet

The GW supports one GbE port. The Ethernet port operates in a 10BASE-T, 100BASE-TX or 1000BASE-T configuration and supports auto MDI/MDIX for automatically switching data receive and data transmit pairs. Additional features include full-duplex operation as well as support for auto-negotiation. The Ethernet MAC address is programmed during manufacturing.

The Ethernet port is available through a standard RJ45 connector with integrated status lights. The green status light indicates link and activity. The green light is on for link and blinking for activity. The yellow status light indicates speed. The yellow light is off for 10Mbps, on for 100Mbps, and blinking for 1000Mbps.



*Drawing 2: Ethernet RJ45 Connector*

## 1.5 LED indicator



These LEDs display the status of the WizziGatePro.

**RED LED:** Power Supply Status

- ON: Powered by Adapter
- GLOWING: Charging Internal Battery (Internal Battery is an optional feature)
- BLINKING every 1s: Battery Powered
- BLINKING every 5s: Battery Powered in Sleep Mode

**ORANGE LED:** Network Error Status

- ON: Can not ping Dash7Board (i.e. Internet available)
- BLINKING: Cellular connected but can not ping Dash7Board (with cellular option)

**GREEN LED:** OK Status

- ON: Gateway running OK
- OFF: Gateway detects an issue

## 1.6 Main SubGHz modem

A reverse polarity SMA connector is provided for connecting an externally mounted antenna (868MHz Europe – 915MHz USA).

## 1.7 Reset button

Using a paperclip, you can press the button through the little hole

Press button for 2s to reset the board.

Press the button for 6s to go to or exit SLEEP mode

## 1.8 Chipset

The WizziGatePro uses Variscite's DART-6UL SoM (System on Module) and WizziLab's custom carrier board.

The DART-6UL features:

- 900 MHz ARM Cortex-A7
- 128 MB DDR3L memory
- 128 MB NAND memory
- Certified Wi-Fi 802.11ac/a/b/g/n Dual-Band 2.4/5 GHz (Option)
- BT 4.2/BLE (Option)
- Wifi (Option)

WizziLab's carrier board has:

- Ethernet port
- DASH7 sub-GHz modem
- Mikrob<sup>TM</sup> port (for optional DASH7 sub-GHz modem)
- Mini PCI Express connector (for optional 4G communication module)
- MicroSIM slot

- NFC connectivity (Option)
- Backup battery (Option)

## 1.9 Options

All options are available on demand. For more information, contact us at : [contact@wizzilab.com](mailto:contact@wizzilab.com)

### 1.9.1 Wall mount brackets

Wall mount brackets can be added to the casing for easy fixation.

### 1.9.2 Second Sub-GHz modem

An additional modem can be added on the internal Mikrobus™ port for dual modem functionality.

A reverse polarity SMA connector is provided for connecting an externally mounted antenna (868MHz Europe – 915MHz USA).

### 1.9.3 Cellular connectivity (4G)

The gateway can be equipped with a [SIM7600-H-PCIE](#) module in the internal Mini PCI Express connector. A SMA connector is provided for connecting an externally mounted cellular antenna.

The gateway has a SIM slot in MicroSIM format. The SIM card is not provided.

Different module references are mounted depending on the selected area option (North America, EU, etc).

### 1.9.4 WIFI

Wifi option is available upon request.

### 1.9.5 Bluetooth

Bluetooth option is available upon request.

### 1.9.6 NFC

NFC option is available upon request.

### 1.9.7 Backup battery

A backup battery can be added to protect your WizziGatePro against power cuts. It is not compatible with the default casing. Contact us to request further information.



## 2 Electrical characteristics

### 2.1 Current consumption

Table 3. Current consumption @ 12V

Symbol	Parameter	Min.	Typ.	Max.	Units
$I_S$	Sleep mode	-	0.1	-	mA
$I_A$	With GSM option	-	-	1500	mA

## 3 Wireless characteristics

### 3.1 Certifications

#### 3.1.1 ECC/RED

If deployed in Europe, the DASH7 modems are provided with ECC/RED certified network profiles.

#### 3.1.2 FCC

If deployed in North America, the DASH7 modems are provided with FCC certified network profiles.

### 3.2 Data rates

#### 3.2.1 DASH7 modem

The DASH7 modem has several data rates and modulation scheme available to better fit any kind of application.

Table 4. DASH7 data rates

Modulation scheme	Parameter	Rate	Data Rate	Units
GFSK	ECC and FCC	High	166700	bps
	ECC and FCC	Normal	55600	bps
	ECC and FCC	Low	9600	bps
LoRa™	ECC and FCC	SF8	3125	bps
	ECC and FCC	SF10	980	bps
	ECC only	SF11	440	bps
	ECC only	SF12	250	bps

### 3.3 Transmitting power

#### 3.3.1 DASH7 modem

Table 5. DASH7 Transmission power

Area	Max TX power	Units
ECC	+14	dBm
FCC	+13	dBm

## 3.4 Receiver sensitivity

### 3.4.1 DASH7 modem

Table 6. DASH7 Reception sensitivity

Modulation scheme	Rate	Typical Sensitivity	Units
GFSK	High	-105.0	dBm
	Normal	-110.0	dBm
	Low	-117.5	dBm
LoRa™	SF8	-125.5	dBm
	SF10	-131.0	dBm
	SF11	-133.5	dBm
	SF12	-135.5	dBm

## **4 Installation**

To install the gateway, please follow the [Quick Start Guide](#).

## **5 Ordering information**

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

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

## **6 Revision history**

Table 7. Document revision history

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
2019-05-16	1.0	Document creation
2019-10-04	1.1	Updated picture with grey casing Added information on LED and Button