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Telematics Gateway

iW-Rainbow-G41

The i.MX 8 powered Telematics Gateway is built for rugged applications with extensive interfaces such as 4 CAN ports, RS232, RS485, Analog Inputs and Ethernet. With the support for various wireless technologies such as 4G, Wi-Fi and Bluetooth, Telematics Gateway is a vehicle diagnostics system that allows users to remotely monitor the key parameters of a vehicle. With the support for multiple protocols such as J1939, CAN open and CiA447, the gateway is suitable for wide range of applications.

Key Features

- NXP i.MX 8 CPU
- 4 CAN Ports: CAN FD/HS CAN/LS CAN
- Wireless Connectivity: 4G/Wi-Fi/BT/UWB
- Wired Interfaces: RS232/RS485/Automotive Ethernet/Analog Inputs
- LINUX 5.4 BSP and API for peripherals
- M.2 Expansion Connector: 5G/Wi-Fi 6
- Wide range of protocol support
    - ISO 15764-4/J1939/CANopen
- IP Enclosure for Rugged Installations

Software flexibility

Powered by a powerful processor, Telematics Gateway is equipped with LINUX 5.4 Kernel and API's available for the various peripherals, sensors and connectivity modems available on the solutions.

The i.MX 8 powered Telematics Gateway provides consumers the flexibility to build their custom application and integrate with various cloud and analytics platforms.

Benefits and Value Proposition

The powerful micro-processor provides the provision to enable various protocol standards, making the device compatible with different types of vehicles. The ruggedness of the solution with compact design makes it a perfect fit.

The software flexibility and value add for the customer to build their proprietary application and integration, makes the device the right choice for consumers.

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Telematics Gateway

Processor Core and Storage	
CPU	NXP i.MX 8 DXL Processor, 2 x Cortex-A35 @1.2GHz 1 x Cortex-M4F cores @264MHz
RAM	LPDDR4 - 1GB
FLASH	eMMC Flash – 8GB

Wireless Connectivity	
Cellular Connectivity	4G LTE Cat-4 Europe/APAC/Australia/NZ - B1/B3/B7/B8/B20/B28 North America - LTE FDD - B2/ B4/ B5/ B12/B13/ B25/ B26
	4G LTE Cat-M1/Cat-NB1 LTE FDD - B1/ B2/ B3/ B4/ B5/ B8/ B12/ B13/ B18/ B19/ B20/B28 LTE TDD - B39 (for Cat-M1 only)
Ultra-Wideband (UWB)	Supports 2 RF bands from 6.5 GHz and 8 GHz
Wi-Fi	IEEE 802.11 a/b/g/n/ac/d/e/h/i/mc Hotspot and client mode With WPA2 feature 802.11ax Wi-Fi 6 (Optional)
Bluetooth	Bluetooth v5.0 BR/EDR/LE

Interfaces and Peripherals	
CAN	CAN FD * 4 (HS CAN and LS CAN can be supported based on the requirement)
Ethernet	10/100Mbps * 1 (10Base-T/100Base-TX)
RS232	2-wire * 1
RS485	4-wire * 1
K-Line/LIN Interface	Compatible with LIN 2.0, LIN 2.1, LIN 2.2, LIN 2.2 A and ISO/DI17987 4.2
Analog Input	Analog Input * 2: Voltage upto 36V
Digital Input/Output	GPIOs * 4 (2DI, 2DO) DOUT1 & DOUT2: Voltage - 12V, Current - 750mA DIN1 & DIN2: Voltage - 36V, Current - 172mA

Note: Optional features are not supported in default configuration.

Sensors	
3 Axis Accelerometer	±2/ ±4/ ±8/ ±16 g full scale
3 Axis Gyroscope	±125/±250/±500/±1000/±2000 dps
3 Axis Magnetometer	Up to ±50 gauss magnetic dynamic range
Temperature Sensor	Temperature ADC resolution: 16-bit, Sensitivity: 256 LSB/°C

Positioning	
GNSS	GPS/GLONASS/BeiDou/Galileo

Antenna	
Internal Antenna	GNSS * 1 Cellular * 1 WiFi/BLE * 1
External Antenna (Optional)	On-board MMCX connector to support Cellular Diversity On-board MMCX connector to support Cellular & GNSS On-board MMCX connector to support Wi-Fi & BLE

SIM Provision	
SIM connector	Micro SIM Connector / eSIM(Optional)

Power Characteristics	
Power Input	12V – 36V POE support
Sleep Current	8-9mA

Connectors	
External Connector	M.2 with Key B/Key E
Enclosure Connector	36 Pin Micro-fit

Environmental Conditions	
Operating Temperature	-40°C to +85°C (Excluding Battery)

LED Indications	
LED 1	Cellular Module Power Indication
LED 2	Green - Status Indication (software configurable)

Note: Optional features are not supported in default configuration.

Software Specifications	
Board support package (BSP)	U-Boot 2020.04 Linux version: 5.4.70
API Support	• Sensors • Cellular Connectivity/Wi-Fi/Bluetooth/UWB • Interface peripherals: CAN/K-Line/LIN/UART/RS-485/RS-232 • Device wake-up based on Ignition/CAN/Timer/Accelerometer • LED
CAN Protocol	• ISO 15765 • J1939 • CANopen
Sample Data Collection Application	Sample Data Collection Application Basic parameters Cloud Connectivity
Security	• Secure boot • Secure storage • Wi-Fi Security
Software Modules	• OTA Update • Power Management • Data collection application on the device • Cloud Platform SDK Integration

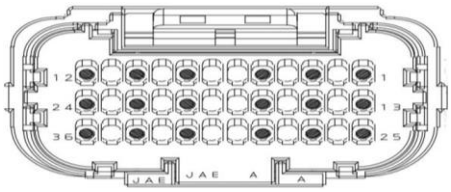
Mechanical	
Dimensions (H x W x D)	206.5x155.5x46mm
Protecting Class	IP67 with tamper detection
Mounting Options	Pole Mounting/Cable Tie Slots/Mounting Brackets

Note: Optional features are not supported in default configuration.

Connector Specifications

Number of Pins	36 Pin Micro-Fit Connector

Connector Pinout



Pin No	Signal Name	Description
1	ETH_MAG_RXP	Ethernet - RX - P pin
2	ETH_MAG_RXM	Ethernet - RX - M pin
3	HS_CAN2_L	HSCAN2 - Low
4	HS_CAN2_H	HSCAN2 - High
5	HS_CAN3_L	HSCAN3 - Low PIN
6	HS_CAN3_H	HSCAN3 - High PIN
7	HS_CAN1_H	HSCAN1 - High
8	HS_CAN1_L	HSCAN1 - Low
9	CANFD_Cntrl_L	CANFD - Low PIN
10	CANFD_Cntrl_H	CANFD - High PIN
11	GND_OBD	Ground OBD
12	VCC_12V	12V power input to the board
13	ETH_MAG_TXP	Ethernet - Transmitter - Plus
14	ETH_MAG_TXM	Ethernet - Transmitter - Minus
15	ETH_ACTIVATE_A	Ethernet activation pin
16	RS485_Z	RS485_Z pin
17	RS485_Y	RS485_Y pin
18	RS485_B	RS485_B
19	RS485_A	RS485_A pin
20	DIN2_A	Input GPIO2
21	DIN1_A	Input GPIO1
22	DOUT2_A	OUT GPIO2 – 12V
23	DOUT1_A	OUT GPIO1 – 12V
24	IGN_DET_A	Ignition detection
25	USB_N	USB _ Negative pin (Optional)
26	USB_P	USB _ Positive pin (Optional)
27	GND	Ground
28	USB_OTG_VBUS	USB OTG power
29	I2C1_SDA_1	I2C_Clock (Optional)
30	I2C1_SCL_1	I2C_Data (Optional)
31	UART_RX or RS232_DOUT	UART_Receiver pin or RS232_DOUT pin
32	UART_TX or RS232_RIN	UART_Transmitter pin or RS232_RIN pin
33	Analog_I/P_A2	Analog input - 2
34	Analog_I/P_A1	Analog input - 1
35	LIN	LIN or Kline Pin
36	VDD_3V3	3V3 Power out

Note: Optional features are not supported in default configuration.

Document Revision History		
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Release	**Date**	**Description**
1.0	9th FEB 2021	Official Release Version
1.1	17th SEP 2021	Updated Version

CONTACT US

iWave Systems technical support team is committed to provide the best possible support for our customers so that our Hardware and Software can be easily migrated and used.

For assistance, contact our Technical Support team at,

Email : mktg@iwavesystems.com

Website : www.iwavesystems.com

Address : iWave Systems Technologies Pvt. Ltd.

7/B, 29th Main, BTM Layout 2nd Stage,

Bangalore, Karnataka, India – 560076

NOTE:

"Please refer the actual configuration that has been ordered. Few sections of this manual may not apply, depending on the ordered configuration"