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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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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

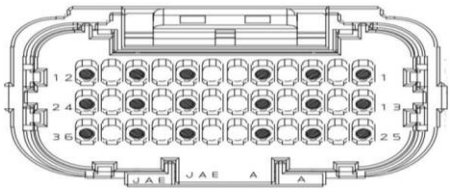
Mechanical	
Dimensions (H x W x D)	206.5x155.5x46mm
Protecting Class	IP67 with tamper detection
Mounting Options	Pole Mounting/Cable Tie Slots/Mounting Brackets

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.