

Telematics Edge Prime

iG-RainboW-G76P



The Telematics Edge Prime, powered by the i.MX 93 processor, features 4 CAN-FD ports, an automotive Ethernet interface, and a wide range of wireless connectivity options including LTE Cat-4 (supporting for North America, Japan, Australia, Europe, Latin America), Wi-Fi, and Bluetooth. Housed in an IP67-rated enclosure, the device is designed for rugged environments and includes provisions for external antennas. To ensure robust security, it integrates a hardware secure element, along with an onboard RTC, a rechargeable lithium-polymer battery, and support for a super capacitor for power backup.

Software flexibility and Security

Powered by high-performance i.MX 93 processor featuring an Arm Cortex-A55 core, the solution is supported by a robust Linux BSP with available APIs for peripherals, sensors, and connectivity modems. The BSP offers developers complete flexibility to build custom Telematics applications / analytics solution and seamlessly integrate with various cloud platforms. It allows developers to integrate end use case specific edge features such as power management, network management and over-the-air (OTA) updates.

Device comes with dedicated Hardware security module offering secure encryption of data and crypto library support. The processor also helps integrate various security functions on the connected device.

Key Features

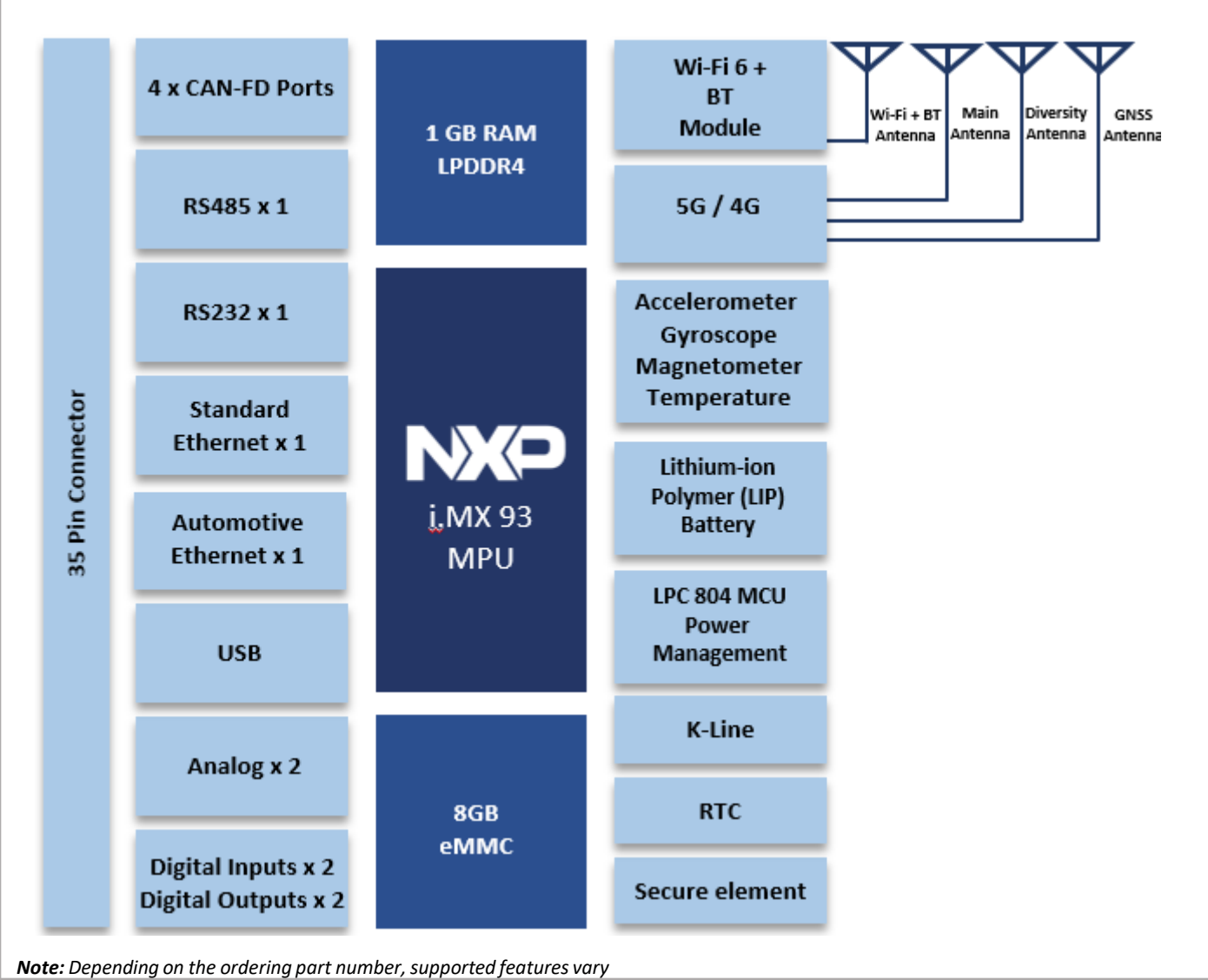
- NXP i.MX 93 Micro-Processor
- 4 CAN-FD Ports
- Automotive and Standard Ethernet Ports
- LTE Cat-4 (supporting for North America, Japan, Australia, Europe, Latin America), Wi-Fi and Bluetooth Connectivity
Upgrade Option to 5G RedCap (3GPP R17)
- Integrated Hardware Secure Element
- GNSS, Accelerometer and Gyroscope
- Dedicated Real time clock
- External antennas
- IP67 Protection Class

Rugged, Secure and Powerful

The Telematics Edge Prime Solution is a high-performance platform equipped with a wide range of interfaces, including CAN-FD, standard and automotive Ethernet, as well as RS232 and RS485 ports. Housed in a compact IP67-rated enclosure, it is engineered to withstand harsh environments, making it ideal for deployment across diverse vehicle architectures.

This robust solution supports a variety of applications such as fleet management, off-highway telematics, EV intelligence, and predictive analytics.

Functional Block Diagram



Ordering Part Numbers – Standard SKU

Part number	Description
iG-G76PVA-01G-08G-WIW-SM-11-EM-LI1BXX-D	Telematics EdgePrime Development Kit (Global LTE Cat-4 Connectivity (supporting for North America, Japan, Australia, Europe, Latin America), Wi-Fi and Bluetooth, Secure Element)
iG-G76PVA-01G-08G-WIW-SM-11-EM-LI1BXX	Telematics EdgePrime (Global LTE Cat-4 Connectivity (supporting for North America, Japan, Australia, Europe, Latin America), Wi-Fi and Bluetooth, Secure Element)

Note:

- Product Features and configuration may vary depending on the ordering part number
- For more details on the configurations, please contact iWave sales team at mktg@iwave-global.com

Processor Core and Storage

CPU	NXP i.MX 93 Micro-Processor 2 x Arm® Cortex®-A55 Cores
MCU	LPC 804 Micro-Controller Power Management Block
RAM	1GB LPDDR4X (Expandable Up to 2GB)
FLASH	8GB eMMC Flash (Expandable Up to 64GB)

Wireless Connectivity

Cellular Connectivity	Global LTE Cat -4 Connectivity (supporting for North America, Japan, Australia, Europe, Latin America), 4G bands : B1, B2, B3, B4, B5, B7, B8, B8_US B9, B12, B13, B14, B18, B19, B20, B25, B26, B28. 3G bands: B1, B2, B4, B5, B6, B8, B19. 2G bands : B2, B3, B5, B8
5G ¹	Upgrade Option to 5G RedCap (3GPP R17)
Wi-Fi	802.11 a/b/g/n/ac/ax Client Mode and Hotspot Mode
Bluetooth	BT v5.3 BR/EDR/LE

Interfaces and Peripherals

CAN FD	4 Ports
	Data rate up to 5Mbps
	Identifier Support: 11 and 29 bit
	Classic CAN backwards compatible
Ethernet	100Mbps x 1 port (100BASE-TX)
Automotive Ethernet	100Mbps x 1 port (100BASE-T1) 1000Mbps x 1 port (1000BASE-T1) ¹
Digital Inputs	2 Ports (Max 32V)
Digital Outputs	2 Ports (5V- 36V, Sink Current: 300mA)
Analog Input	2 Ports (0-32V)
Ignition Input	1 Port
RS232	1 Port
RS485 ¹	1 Port

Positioning

GNSS	GPS/GLONASS/BeiDou/Galileo
Receiver sensitivity ²	Cold Start Sensitivity : -145 dBm
	Tracking: -160dBm
Time to First Fix ²	Cold start: 29.94 s
	Hot start: 1.1s
	Warm start: 22.1s

Sensors

Accelerometer	Function: 3 Axis
	Sensitivity Range: $\pm 2/ \pm 4/ \pm 8/ \pm 16$ g full scale
Gyroscope	Function: 3 Axis
	Sensitivity Range: $\pm 125/ \pm 250/ \pm 500/ \pm 1000/ \pm 2000$ dps
Magnetometer	Function: 3 Axis
	Sensitivity Range: Up to ± 50 gauss magnetic dynamic range
Time Synchronization	Dedicated Real time clock. Through the internal Lithium Polymer Battery.

Antenna

External Antenna Connectors	SMA: 1 x LTE Primary, LTE Diversity, GNSS RP-SMA: 1 x Wi-Fi
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Security

Security Module	Integrated Hardware Secure Element Crypto-Automotive Security IC Microchip TA100
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Power Characteristics

Power Input	9 - 32V
Power Consumption	Current consumption at normal mode: 250mA at 12V
Power saving modes	Stand-by Mode: 10mA Deep Power Down Mode : <1.5mA

SIM Provision

SIM Connector	Micro SIM Connector & eSIM
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¹ Product features may vary based on ordering part number, please contact iWave sales team at mkta@iwave-global.com
² Above table gives information about satellite positioning as per the module specification

Telematics EdgePrime

Internal Battery	
Capacity	1500mAh Lithium-ion Polymer (LIP)
Temperature Support	Battery when discharging: -20°C to +60°C Battery when charging: 0°C to 50°C
Certification	UN38.3 Certificate and IEC 62133-2 Certificate

Environmental Conditions	
Temperature Range	Operating Temperature: -40°C to +70°C ³ Storage Temperature: -40°C to +85°C ³

LED	
LED 1	Red: Power
LED 2	Green: Software configurable

³ Temperature range subject to use case and operational functionality

Software BSP

Customer Responsibility	Cybersecurity Modules
	Cloud SDK, OTA Client & Device Management
	Edge Application
	Protocol Stacks
	Network Management
	Power / Battery Management
iWave deliverables	API Library
	Yocto/Linux BSP
Telematics Unit	

Software Specifications		Responsibility
Deliverables	- Yocto Source - Cross compiler - Telematics API library(Binary) - UUUTool(Flashing binaries) - API, HW and SW User manuals	iWave deliverable
Board support package	Linux version: 6.12.34/Yocto 5.2	iWave deliverable
API Support	- Sensors/Cellular/Wi-Fi/Ethernet/Bluetooth - Interface peripherals: CAN/IMU - LED - Power Saving mode : Standby Mode/Deep power down mode - Wake-Up : Ignition/CAN/Accelerometer/RTC	iWave deliverable

Interface	API Features*
Cellular Module	- Turn ON/OFF modem - Read the info of the cellular module such as IMEI, ICCID, etc. - Read the network parameters such as registration status, signal level, etc. - Establishing the network connectivity
GNSS	- Initialize and de-initialize the GNSS and AGPS - Reads the NMEA message
CAN	- Initialize and de-initialize the CAN interfaces - Configuration of CAN parameters such as CANFD mode, mask and filter - CAN read/write
Ethernet/Wi-Fi	Initialize and de-initialize the Ethernet/Wi-Fi interfaces
Accelerometer/Gyroscope	- Initialize and de-initialize the Accelerometer/Gyroscope - Read the IMU values in polling mode
Internal Battery	- Read the battery status, voltage, health - Setting the battery charging/discharging state
MCU Related	- Voltage reading for 12V supply and internal battery - Enabling Deep power down mode(Wake up sources : Accelerometer, Ignition and RTC)
Sleep/Wakeup	- Configuring wakeup sources - Accelerometer, CAN, Ignition, RTC and Timer - Entering sleep modes - Standby / Deep power down mode

* Refer iWave API reference manual document for the complete API specifications

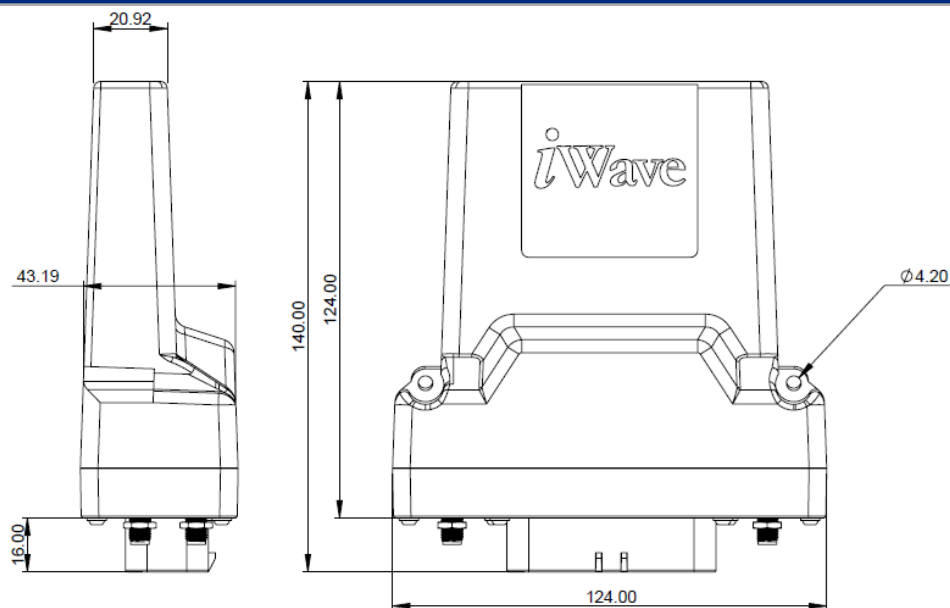
Custom Edge Application ¹		Responsibility ¹
Edge Application Modules ¹	- OTA Update - Integration of OTA clients like Mender, OSTree, Memfault - Power Management / Battery Management - Application to put the device into Low Power Mode whenever needed ; Waking up the device based on available wake up sources And handling the internal backup battery operations - Network Management - Configuring, monitoring and controlling the connectivity through Cellular, Wi-Fi, Ethernet - Data collection application - Collection of vehicle data such as vehicle location, speed, fuel usage, engine status and other vehicle parameters using CAN and other sensors(IMU, GPS) - Cloud Platform SDK Integration - Integration of the cloud SDKs such as AWS, Azure, etc. - Protocol Stacks - Decoding of CAN signals using the standard protocols like J1939, UDSONCAN, OBDII and other proprietary protocols - Cybersecurity - Implementation of Cybersecurity modules like Secure boot, Secure storage, authentication, access control, Secure CAN, etc.	Customer responsibility

¹ iWave could take up custom edge application development based on the business model. For more information please contact iWave sales team at mktg@iwave-global.com

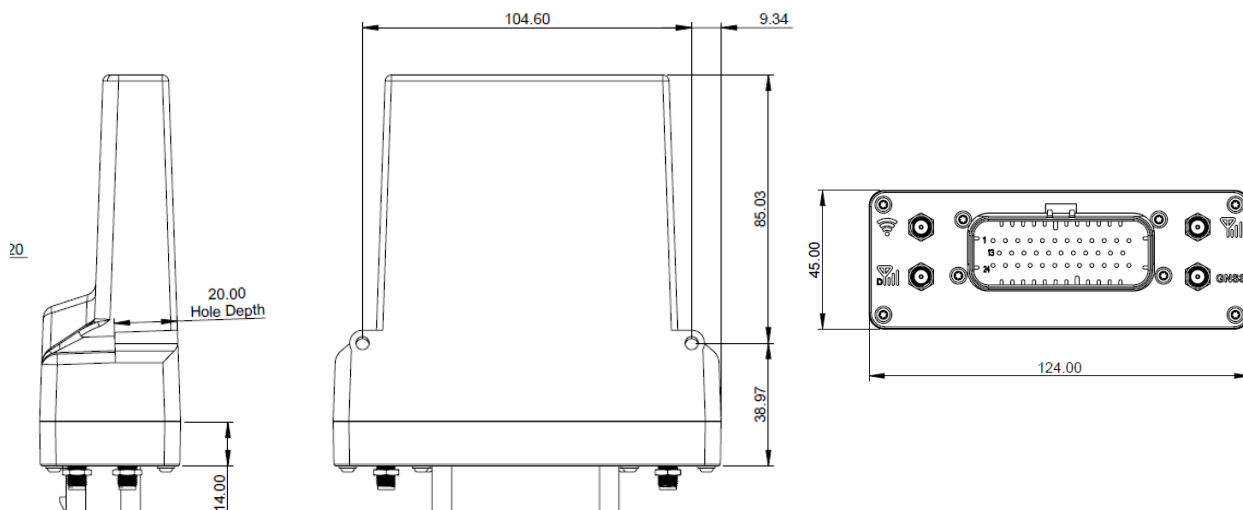
Mechanical

Dimensions (H x W x D)	140 x 124 x 45 mm
Enclosure Material	Bayblend FR3010
Manufacturing Process	Injection Moulding
Colour of Enclosure	Black (RAL 9005)
Enclosure Surface Finish	Textured Finish
Protection Class	IP67
Mounting Options	Panel mount
Number of Enclosure Parts	2
Enclosure Certification	Flammability rating, UL94-V0

Top View



Bottom View



Connector Specifications

Description			
Connector on Device: 35 Pin Ampseal Connector Tin Plated (Part Number: 776163-1) Mating Connector : 35 Pin Ampseal Connector Housing (Part Number: 776164-1)			
Connector Pinout	Pin No	Signal Name	Description
	1	ETH_MAG_A_RXP	Automotive ethernet positive
	2	ANALOG_IN1	Analog Input 1
	3	DIN2	Digital Input 2
	4	FD_CAN2_H	Flexible Data Rate CAN2 High
	5	FD_CAN2_L	Flexible Data Rate CAN2 Low
	6	FD_CAN1_H	Flexible Data Rate CAN1 High
	7	FD_CAN1_L	Flexible Data Rate CAN1 Low
	8	IGN_DET	Ignition Detection Input
	9	RS485_RXM	RS485_RXM
	10	RS485_RXP	RS485_RXP
	11	ETH1_MAG_RXP	Ethernet RXP
	12	ETH1_MAG_RXM	Ethernet RXM
	13	ETH_MAG_A_RXM	Automotive ethernet negative
	14	USB_OTG_ID	USB_OTG_ID
	15	DOUT2	Digital Output 2
	16	DOUT1	Digital Output 1
	17	FD_CAN3_H	Flexible Data Rate CAN3 High
	18	FD_CAN3_L	Flexible Data Rate CAN3 Low
	19	Analog_IN2	Analog Input 2
	20	RS232_TXD1	RS232 TXD1
	21	RS232_RXD1	RS232 RXD1
	22	ETH1_MAG_TXP	Ethernet TXP
	23	ETH1_MAG_TXM	Ethernet TXM
	24	MAIN_VCC_OBD_IN	Power Input (12V Typical)
	25	GND_OBD	Ground
	26	DIN1	Digital Input 1
	27	UART_CON_TX_3V3	Debug UART_TX
	28	UART_CON_RX_3V3	Debug UART_RX
	29	FD_CAN4_H	Flexible Data Rate CAN4 High
	30	FD_CAN4_L	Flexible Data Rate CAN4 Low
	31	VCC_3V3	3.3V Power Out
	32	5V_USB	USB Power
	33	USB_OTG_D+_CONN	USB_OTG_D+
	34	USB_OTG_D-_CONN	USB_OTG_D-
	35	USB_GND	USB_GND
	<i>¹ Marked one are optional features which are not supported by the standard configuration .. For example, pin 3 is DIN2 / ETH_ACTIVATE¹, per standard delivery DIN2 is supported and ETH_ACTIVATE¹ is an optional feature. For optional features support, contact your representative at iWave.</i>		

Related Products



Telematics Connect Hub

The Telematics Connect Hub is a powerful compact device that supports 2 CAN-FD ports, an integrated hardware secure element, LTE Cat-1 bis cellular connectivity and Bluetooth Connectivity. The hub is an ideal solution for electric vehicles, 2 Wheelers, racing motorbikes, enabling next generation telematics and edge intelligence.



Telematics Control Unit

Telematics Control Unit is built to power your connected mobility and telematics applications across a range of connected vehicles. It is integrated with multiple CAN ports, a wide range of protocol support and a multitude of wireless connectivity options.



Telematics Gateway

The i.MX 8XLite powered Telematics Gateway is built with extensive interfaces: 4 CAN Interfaces, RS232, RS485, Analog Inputs and Digital Inputs. With the support for multiple protocols and powerful edge firmware, the gateway is suitable for wide range of applications.



Rugged Telematics Device

The Rugged Telematics Device with IP67 protection class is integrated with 3 CAN Ports, RS232 and RS485 Ports, with various wireless connectivity options such as 4G, Wi-Fi and Bluetooth. Rugged device is built to track your vehicles even in tough conditions.

Document Revision History

Document Number	iG-PRGVT-DS-01-REL1.2	
Release	Date	Description
1.0	4 th July, 2025	Official Release
1.1	7 th July 2026	Added detailed SW Specifications
1.2	17 th July 2026	Updated cellular region support and band details
1.3	27 th July 2026	Updated the Automotive Ethernet optional future

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