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Telematics Control Unit

iW-Rainbow-G26®

The Telematics Control Unit is built to power your connected mobility and telematics applications across a range of connected vehicles. Integrated with multiple CAN ports, a wide range of protocol support and a multitude of wireless connectivity options such as 4G, Wi-Fi and Bluetooth, The globally certified TCU powers applications such as Electric Vehicles, Motor Bikes, Diesel Engines, fleet management and personalized driving experiences.

Key Features

- NXP i.MX 6ULL CPU
- 3 CAN Ports: 1 x CAN FD and 2 x HS CAN
- Wireless Connectivity: 4G / Wi-Fi / BT
- Sensors: Accelerometer / Gyroscope Magnetometer / Temperature
- LINUX 5.15.52 BSP and API for peripherals
- Wide range of protocol support
    - ISO 15765-4 / J1939 / CANopen/ UDSonCAN / UDSonIP
- FCC and CE Certified

Software flexibility and Security

Powered by a powerful processor, The TCU is equipped with LINUX 5.15.52 Kernel and API's available for the various peripherals, sensors and connectivity modems. The i.MX 6 powered telematics unit provides consumers the flexibility to build their custom application and integrate with various cloud and analytics platforms.

The processor helps you integrate various security functions on the connected device such as secure boot, secure storage and remote firmware updates over the air.

Benefits and Value Proposition

The TCU is globally certified with CE /FCC / ISED and various country specific regulatory approvals. 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 for the customer to build their proprietary application and integration, makes the device the right choice for end applications.

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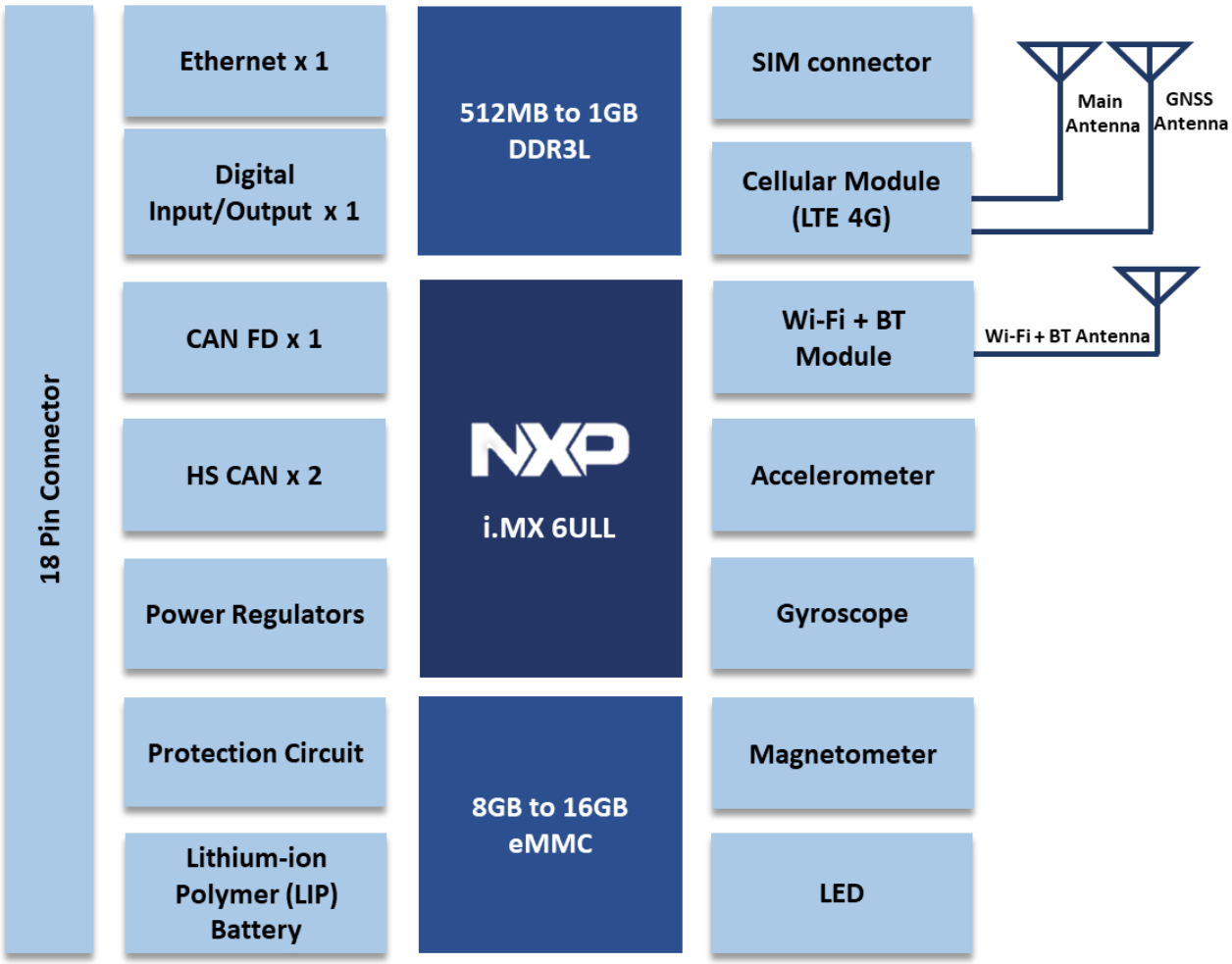
Telematics Control Unit

Functional Block Diagram



Note: *Standard delivery varies with respect to the few sections of this block diagram, depending on the ordered configuration*

Ordering Part Numbers

Part number	Description
iW-G26U-Y2-512M3-008GE-MIWB-04-TH-LI5X-D	Telematics Control Unit Evaluation Kit (LTE Cat M1 (Global), Wi-Fi & Bluetooth)
iW-G26U-Y2-512M3-008GE-LIWB-04-TH-LI5X-D	Telematics Control Unit Evaluation Kit (LTE Cat 4 (EMEA/APAC), Wi-Fi & Bluetooth)
iW-G26U-Y2-512M3-008GE-AIWB-04-TH-LI5X-D	Telematics Control Unit Evaluation Kit (LTE Cat 4 (North America/Canada), Wi-Fi & Bluetooth)
iW-G26U-Y2-512M3-008GE-MIWB-04-TH-LI5X	Telematics Control Unit (LTE Cat M1 (Global), Wi-Fi & Bluetooth)
iW-G26U-Y2-512M3-008GE-LIWB-04-TH-LI5X	Telematics Control Unit (LTE Cat 4 (EMEA/APAC), Wi-Fi & Bluetooth)
iW-G26U-Y2-512M3-008GE-AIWB-04-TH-LI5X	Telematics Control Unit (LTE Cat 4 (North America/Canada), Wi-Fi & Bluetooth)

Note:

- *In production, The telematics control unit can be configured as per the required features*
- *For more details on the TCU configurations, please contact iWave sales team at mktg@iwave-global.com*

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Telematics Control Unit

Processor Core and Storage

CPU	i.MX 6ULL Micro-Processor Arm® Cortex®-A7 based CPU @ 792MHz
RAM	DDR3L SDRAM – 512MB (Expandable up to 1GB)
FLASH	eMMC Flash – 8GB (Expandable up to 16GB)

Wireless Connectivity

Cellular Connectivity	LTE Cat 4 EMEA/APAC - B1/B3/B7/B8/B20/B28 North America/Canada - LTE FDD - B2/ B4/ B5/ B12/B13/ B25/ B26
	LTE Cat M1 LTE FDD - B1/ B2/ B3/ B4/ B5/ B8/ B12/ B13/ B18/ B19/ B20/B28 LTE TDD - B39 (for Cat M1 only)
Wi-Fi	802.11a/b/g/n/ac Hotspot and client mode With WPA2 feature
Bluetooth	Bluetooth v5.0 BR/EDR/LE

Interfaces and Peripherals

CAN FD	1 port
	Data rate up to 5Mbps
	Identifier Support: 11 and 29 bit
	Classic CAN backwards compatible
High-speed CAN	2 ports
	Data rate up to 1 Mbps
	Identifier Support: 11 and 29 bit
Ethernet	1x 10/100Mbps (10Base-T/100Base-TX)
Digital Input/Output	Digital Input x 1 (Voltage: 12V/24V) Digital Output x 1 (Voltage: 12V/24V, Current: 500mA)

Positioning

GNSS	GPS/GLONASS/BeiDou/Galileo
Receiving Channel[2]	72 Channel
Time to update position[2]	1s
Receiver sensitivity[2]	Tracking & Nav: –157 dBm
	Cold starts: –146 dBm
	Hot starts: –157 dBm
Time to First Fix[2]	Cold starts: 11.57s
	Warm starts: 2.52s
	Hot starts: 1.82s

Sensors

Accelerometer	Function: 3 Axis
	Sensitivity Range: ±2/ ±4/ ±8/ ±16 g full scale
Gyroscope	Function: 3 Axis
	Sensitivity Range: ±125/±250/±500/±1000/±2000 dps
Magnetometer[1]	Function: 3 Axis
	Sensitivity Range: Up to ±50 gauss magnetic dynamic range

Antenna

Internal Antenna	1 x GNSS (SMT Patch Antenna), 1 x Cellular (SMD Antenna), 1 x Wi-Fi/BT (PCB Antenna)

Power Characteristics

Power Input	9V - 32V
Power Consumption	Current consumption at normal mode: 270mA at 12V
Sleep Current	8mA at 12V

[1] Optional features, For more information, please contact iWave sales team at mktg@iwave-global.com

[2] Above table gives information about satellite positioning as per the module specification

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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	Certified with UN38.3 and IEC 62133-2

SIM Provision

SIM connector	Micro SIM Connector eSIM[1]

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

Software Specifications

Board support package (BSP)	Linux version: 5.15.52
API Support	• Sensors / Cellular Connectivity / Wi-Fi / Bluetooth • Interface peripherals: CAN Data • Wake-Up based on Ignition / CAN / Timer / Accelerometer • LED
Time Synchronization	GNSS and NTP
Wake-Up Modes	Ignition / CAN / Timer / Accelerometer
CAN Protocol[1]	Socket CAN ISO 15765-4 CANopen J1939 UDSonCAN UDSonIP
Security[1]	Secure boot Secure storage Wi-Fi Security
Software Modules[1]	• OTA Update • Power Management • Data collection application on the device • Cloud Platform SDK Integration

[1] Optional features: For more information, please contact iWave sales team at mktg@iwave-global.com

[2] Above table gives information about satellite positioning as per the module specification

[3] Temperature range subject to use case and operational functionality

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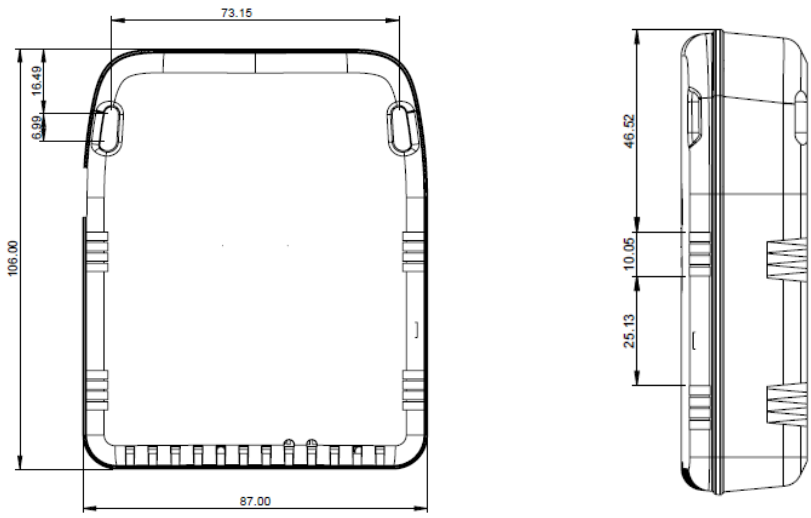
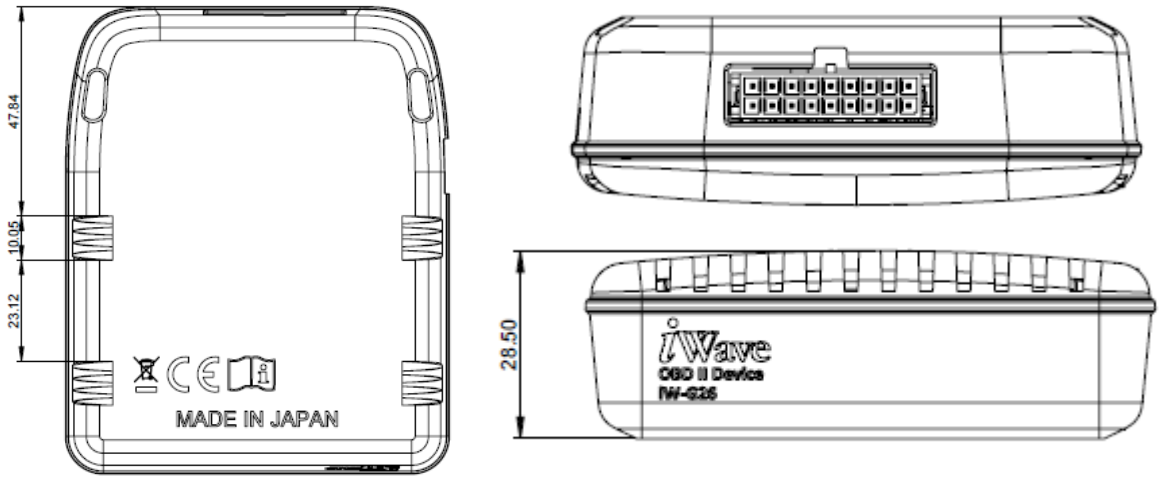
Mechanical	
Dimensions (H x W x D)	106 x 87 x 28.5 mm
Weight	160 gm
Enclosure Material	Polycarbonate UL 94 V0
Manufacturing Process	Injection Moulded
Assembly Type	Snap Fit
Colour of Enclosure	Black (RAL 9005) Opaque
Enclosure Surface Finish	Texture Finish VDI 30
Protection Class	IP30
Mounting Options	Slots for Cable Tie
Number of Enclosure Parts	2
Enclosure Certification	Flammability rating, UL94-V0

Top View



Bottom View



Compliance Test Standards and Certifications*	
Test Cases	**Standards**
Regulatory Test	
FCC	FCC KDB 996369
ISED	ISED RSS-132 ISED RSS-130 ISED RSS-139 ISED RSS-199
CE	EN 62368-1 EN 62311 ETSI EN 301 489-1 ETSI EN 301 489-17 ETSI EN 301 489-19 ETSI EN 301 489-52 EN 301 511 EN 301 908-1 EN 301 908-2 EN 301 908-13 ETSI EN 300 328 ETSI EN 301 893 ETSI EN 303 413 EN 50581
Electrical Test	
Direct current supply voltage	ISO 16750-2
Overvoltage	ISO 16750-2
Reverse voltage	ISO 16750-2
Short circuit protection	ISO 16750-2-24
Pulse 1	ISO 7637-2
Pulse 2a	ISO 7637-2
Pulse 3a	ISO 7637-2
Pulse 3b	ISO 7637-2
Pulse 4	ISO 16750-2
Pulse 5b	ISO 16750-2
Jump start	ISO 16750-2
Momentary Drop in Supply Voltage	ISO 16750-2
Mechanical Test	
Random Vibration Test	IEC 60068-2-64
Sinusoidal vibration Test	IEC 60068-2-6
Environmental Test	
Temperature Cyclic	J1455

** Certifications can vary based on the configuration. Please contact iWave sales team for more information at mktg@iwave-global.com*

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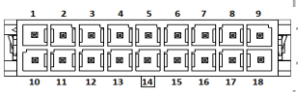
Connector Specifications

Description	18 Pin Micro-Fit Connector (Part Number: CP3518P1HST-NH)		
Connector Pinout 	**Pin No**	**Signal Name**	**Description**
	1	HS_CAN2_H	Software BSP reference is CAN1
	2	UART_RXD / DIN1[1]	UART RXD / Digital Input 1[1]
	3	FD_CAN_H	Software BSP reference is CAN2
	4	Battery +	External Battery Input Voltage Positive
	5	IGN_DET	Ignition Detection Input
	6	UART_TXD / DOUT1[1]	UART TXD / Digital OUT 1[1]
	7	DOUT2	Digital OUT 2
	8	ETH_MAG_TXM	Ethernet TXM
	9	ETH_MAG_RXM	Ethernet RXM
	10	HS_CAN2_L	Software BSP reference is CAN1
	11	DIN2 / ETH_ACTIVATE[1]	Digital IN 2 / ETH_ACTIVATE[1]
	12	FD_CAN_L	Software BSP reference is CAN2
	13	HS_CAN1_H	Software BSP reference is CAN0
	14	HS_CAN1_L	Software BSP reference is CAN0
	15	Battery -	External Battery Input Voltage Negative
	16	ETH_ACTIVATE	Ethernet Activate
	17	ETH_MAG_TXP	Ethernet TXP
	18	ETH_MAG_RXP	Ethernet RXP
	[1] Marked one are optional features, in standard delivery these features are not supported by default. For example, pin 6 is UART_TXD/DOUT1[1], in standard delivery UART_TXD is supported and DOUT1 is an optional feature. For optional features support, contact iWave.		
Mating connector	18 pin TCU Mating connector (Part Number: CP3518S0010-NH)		

Mating Harness Cable Specifications

Specification & Pinout

Note on Cable Length:

P1 - P2 : 1000 mm

P1 - P3 : 1000 mm

P1 - P4 : 100 mm

P1: 18 pin TCU mating connector (Part Number: CP3518S0010-NH)

P2: Standard Male OBD II connector (Part Number: Standard OBD II Connector)

P3: Standard Male OBD II connector - Blue (Part Number: Standard OBD II Connector)

P4: 10 pin IO Connector (Part Number: CP3510S0010-NH)

Pin No	Standard OBD II Connector (CAN)-P2	Standard OBD II Connector (Ethernet)-P3	IO Connector-P4
1	HS_CAN2_H	IGN_DET	Battery -
2	NC	NC	UART_TXD / DOUT1[1]
3	FD_CAN_H	ETH_MAG_RXP	UART_RXD / DIN1[1]
4	NC	NC	DOUT2
5	Battery -	Battery -	DIN2 / ETH_ACTIVATE[1]
6	HS_CAN1_H	HS_CAN1_H	ETH_ACTIVATE
7	NC	NC	IGN_DET
8	HS_CAN2_L	ETH_ACTIVATE	HS_CAN1_H
9	NC	NC	HS_CAN1_L
10	NC	NC	Battery +
11	FD_CAN_L	ETH_MAG_RXM	
12	NC	ETH_MAG_TXP	
13	NC	ETH_MAG_TXM	
14	HS_CAN1_L	HS_CAN1_L	
15	NC	NC	
16	Battery +	Battery +	

[1] Marked one are optional features, in standard delivery these features are not supported by default. For example, in P4, pin 2 is UART_TXD/DOUT1[1] in standard delivery, UART_TXD is supported and DOUT1 is an optional feature. For supporting optional features, contact iWave.

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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 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.

Telematics EdgePrime

Telematics EdgePrime, powered by the i.MX 93 processor, features 4 CAN-FD ports, automotive Ethernet, LTE Cat-4, Wi-Fi, and Bluetooth. Its IP67 enclosure supports external antennas for rugged use. The device includes a secure element, onboard RTC, lithium-polymer battery, and super capacitor support for reliable power backup.

Document Revision History

Document Number	iW-PRGET-RS-01-R3.0-REL1.4	
Release	**Date**	**Description**
1.0	10th June, 2020	Official Release Version
1.1	27th April, 2022	Harness Cable Pinouts Update
1.2	19th July, 2023	Updated Certification details
1.3	9th Feb, 2024	Updated Software Specifications & Certification details
1.4	9th July, 2025	Updated Technical Specifications & Part Numbers

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Since 1999, we have pioneered leadership in embedded systems technology, establishing ourselves as a strategic embedded technology partner for advanced solutions. Our comprehensive portfolio encompasses ARM and FPGA System on Modules, COTS FPGA solutions, and ODM solutions which include Telematics, Gateways & HMI Solutions.

Beyond our robust product ecosystem, we provide comprehensive ODM support with specialized custom design and manufacturing capabilities, enabling customers to accelerate and optimize their product development roadmaps. With a strategic focus on industrial, automotive, medical, and avionics markets, we deliver innovative technology solutions to global clients.

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