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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 predictive maintenance scheduling, fleet management and personalized driving experiences.

Key Features

- NXP i.MX 6 CPU
- 3 CAN Ports: CAN FD/HS CAN/LS CAN
- Wireless Connectivity: 4G/Wi-Fi/BT
- Accelerometer/Gyroscope/Magnetometer
- LINUX 5.4 BSP and API for peripherals
- Wide range of protocol support
    - ISO 15764-4/J1939/CANopen
- Internal Battery Back Up

Software flexibility and Security

Powered by a powerful processor, The TCU 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 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. Security features such as secure boot, secure storage and remote firmware updates over the air.

Benefits and Value Proposition

The Telematics Control Unit is globally certified with FCC / ISED / CE 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 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 Control Unit

Processor Core and Storage	
CPU	Arm® Cortex®-A7 based CPU @ 792MHz i.MX 6ULL Micro-Processor
RAM	DDR3L SDRAM – 512MB
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)
Wi-Fi	802.11 a/b/g/n/ac Hotspot and client mode With WPA2 feature
Bluetooth	Bluetooth v5.0 BR/EDR/LE

Interfaces and Peripherals	
CAN	HS CAN * 1 LS CAN * 1 CAN FD * 1
Ethernet	10/100Mbps * 1 (10Base-T/100Base-TX)
Digital Input	Digital Input * 1: Voltage - 12V Digital Output * 1: Voltage - 12V, Current - 500mA

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

Positioning	
GNSS	GPS/GLONASS/BeiDou/Galileo

Note: Optional features are not supported in default configuration.

Antenna	
Internal Antenna	GNSS * 1 Cellular * 1 WiFi/BLE * 1
External Antenna (Optional)	On-board U.FL connector to support Cellular Diversity

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

Power Characteristics	
Power Input	12V – 36V
Power Consumption	3.25 W Voltage: 12V Current consumption at normal mode: 270mA
Sleep Current	8-9mA

Environmental Conditions	
Operating Temperature	-20°C to +70°C (Excluding Battery)
Storage Temperature	-20°C to +70°C (Excluding Battery)

Internal Battery Back-Up	
Capacity	Lithium-ion Polymer (LIP) 3.7V 1500mAh
Temperature Support	Battery when discharging: -20°C to +60°C Battery when charging: 0°C to 45°C
Certification	Certified with UN38.3 and IEC 62133-2
Battery Indication	Voltage based Monitoring Battery charging indication

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

Note: Optional features are not supported in default configuration.

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Software Specifications	
Board support package (BSP)	U-Boot 2020.04 Linux version: 5.4.70
API Support	• Sensors • Cellular Connectivity / Wi-Fi / Bluetooth • Interface peripherals: CAN Data • Device wake-up based on Ignition / CAN / Timer • LED
CAN Protocol	• Socket CAN • ISO 15765-4 • CANopen • J1939 • UDSonCAN • K-Line
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)	106 X 87 X 28.5 mm (approximate)
Weight	85 gm (Enclosure alone)
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
Protecting Class	IP 30
Mounting Options	Slots for Cable Tie
Number of Enclosure Parts	2
Enclosure Certification	Flammability rating, UL94-V0

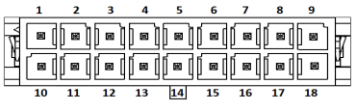
Regulatory

CE / E-mark	
Safety & Health	EN 62368-1, EN 62311
EMC	EN 301 489-1 (EN 55032, EN 61000-4-3, ISO 7637-2, ISO 16750-2)
Radio	EN 301 511, EN 300 328, EN 303 413, EN 301 908-1, EN 301 908-2, EN 301 908-13, ETSI EN 301 893
RoHS	2011/65/EU & (EU) 2015/863, EN 50581
FCC/ISED	
Part	FCC Part 2, Part 22, Part 27

Connector Specifications

Number of Pins	18 Pin Micro-Fit Connector

Connector Pinout



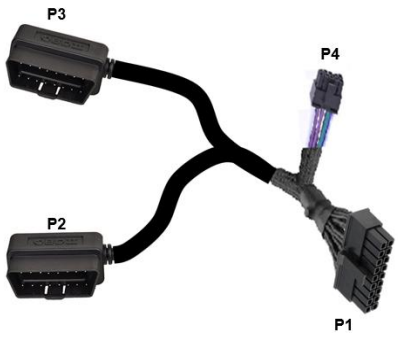
Pin No	Signal Name	Description
1	CAN3-HS-High	CAN3 bus I/O line high level
2	UART RXD	Debug UART RXD
3	CAN1-FD-High	CAN1 FD bus I/O line high level
4	Battery +	External Battery Input Voltage Positive
5	IGN_DET	Ignition Detection Input
6	UART TXD	Debug UART TXD
7	DOUT	Digital OUT
8	ETHERNET_TXM	Ethernet TXM
9	ETHERNET_RXM	Ethernet RXM
10	CAN3-HS-Low	CAN3 bus I/O line low level
11	DIN	Digital IN
12	CAN1-FD-Low	CAN1 FD bus I/O line low level
13	CAN2-HS-High	CAN2 bus I/O line high level
14	CAN2-HS-Low	CAN2 bus I/O line low level
15	Battery -	External Battery Input Voltage Negative
16	ETH_ACTIVATE	Ethernet Activate (with 510E pull up)
17	ETHERNET_TXP	Ethernet TXP
18	ETHERNET_RXP	Ethernet RXP

Note:

Above Signal names are for reference only. Signal Configuration and pin out can change depending upon the configurations.

Mating Harness Cable : Specifications

Image



Specification

P1: 18 pin TCU mating connector

P2: Standard Male OBD II connector

P3: Standard Male OBD II connector (Blue in Colour)

P4: 10 pin IO Connector

Pinout

Pin No	Standard OBD II Connector (CAN)-P2	Standard OBD II Connector (Ethernet)-P3	IO Connector-P4
1	CAN3-HS-High	IGN_DET	UART TXD
2	NC	NC	UART RXD
3	CAN1-FD-High	ETHERNET_RXP	DOUT
4	NC	NC	DIN
5	GND	GND	Battery -
6	CAN2-HS-High	CAN2-HS-High	Battery +
7	NC	NC	IGN_DET
8	CAN3-HS-Low	ETH_ACTIVATE	NC
9	NC	NC	NC
10	NC	NC	NC
11	CAN1-FD-Low	ETHERNET_RXM	
12	NC	ETHERNET_TXP	
13	NC	ETHERNET_TXM	
14	CAN2-HS-Low	CAN2-HS-Low	
15	NC	NC	
16	Battery +	Battery +	

Note:

Above Signal names are for reference only. Few Signal names & Pin No will change depending upon the configurations.