

DATASHEET

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.

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.



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

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.

| 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.

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

| <u>SIM Provision</u> | |
|-----------------------------|-------------------------------------|
| SIM connector | Micro SIM Connector/eSIM (Optional) |

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

| <u>Environmental Conditions</u> | |
|--|------------------------------------|
| Operating Temperature | -20°C to +70°C (Excluding Battery) |
| Storage Temperature | -20°C to +70°C (Excluding Battery) |

| <u>Internal Battery Back-Up</u> | |
|--|--|
| 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 |

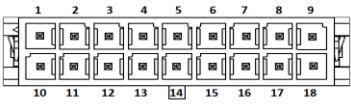
| <u>LED Indications</u> | |
|-------------------------------|---|
| LED 1 | Cellular Module Power Indication |
| LED 2 | Green - Status Indication (software configurable) |

Note: Optional features are not supported in default configuration.

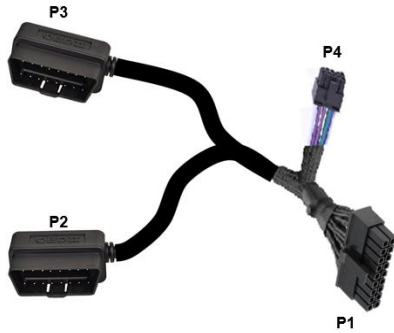
| Software Specifications | |
|--|--|
| Board support package (BSP) | U-Boot 2020.04 Linux version: 5.4.70 |
| API Support | <ul style="list-style-type: none"> • Sensors • Cellular Connectivity / Wi-Fi / Bluetooth • Interface peripherals: CAN Data • Device wake-up based on Ignition / CAN / Timer • LED |
| CAN Protocol | <ul style="list-style-type: none"> • Socket CAN • ISO 15765-4 • CANopen • J1939 • UDSonCAN • K-Line |
| Sample Data Collection Application | Sample Data Collection Application Basic parameters Cloud Connectivity |
| Security | <ul style="list-style-type: none"> • Secure boot • Secure storage • Wi-Fi Security |
| Software Modules | <ul style="list-style-type: none"> • 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 | <p>P1: 18 pin TCU mating connector</p> <p>P2: Standard Male OBD II connector</p> <p>P3: Standard Male OBD II connector (Blue in Colour)</p> <p>P4: 10 pin IO Connector</p> | | | |
| 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 + | |
| <p>Note:</p> <p>Above Signal names are for reference only. Few Signal names & Pin No will change depending upon the configurations.</p> | | | | |

| Document Revision History | | |
|---------------------------|----------------------------|--------------------------|
| Document Number | iW-PRGET-RS-01-R3.0-REL1.0 | |
| Release | Date | Description |
| 1.0 | 10 th JUNE 2020 | Official Release Version |
| 1.1 | 17 th SEP 2021 | Updated Version |

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ORDERABLE PART NUMBERS

| Part number | Description |
|--|--|
| iW-G26U-Y2-512M3-008GE-MIWB-04-TH-LI5X | Device with Cat-M1 connectivity (Global) |
| iW-G26U-Y2-512M3-008GE-LIWB-04-TH-LI5X | Device with Cat-4 connectivity (Europe) |
| iW-G26U-Y2-512M3-008GE-AIWB-04-TH-LI5X | Device with Cat-4 connectivity (North America) |
| iW-PRGAT-CB-01-R1.0-REL1.0-YCAB01 | Standard Harness Cable with CAN interface |
| iW-PRGET-DS-01-R1.0-REL1.0-HVYCAB01 | Harness Cable with J1939 9-pin interface |

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”