



IPC/RML82

This fanless vehicle RML COMPACT82 generation is based on the Intel® Atom™ Elkhart Lake (x6000E) processors, using the new 10nm Tremont architecture it offers a wide range of interface options.

The robust and uncompromising industrial design allows the implementation in the most demanding railway applications and guarantees long term availability.

- **Multi-core Intel® Atom™ processor**
- **Power over Ethernet**
- **Railway approved (EN50155 & EN45545)**
- **Shock and vibration resistant**
- **Designed for 24/7 continuous operation**



Product Highlights

- Maintenance free & long term availability
- Power Ignition controller
- Inertial measurement unit (IMU)
- Trusted platform module (TPM 2.0)
- GNSS with dead reckoning
- Fanless, no moving parts

Product Features

- Intel® Atom™ Elkhart Lake, up to 4 cores
- up to 16GB LPDDR4 RAM
- 5G/4G, GNSS and WiFi connectivity
- CFast socket
- microSD socket
- M.2 socket
- PoE, Ethernet, USB 3.1, CAN FD
- M12 connectors
- Modular product design,
- wide range of expansion options

Industries / Applications

- Railway
- Transportation

Processor / Performance

Intel® Atom™ x6414RE - Quad core 1.5Ghz clock | 3.0Ghz (Burst) •
 Intel® Atom™ x6425RE - Quad core 1.9Ghz clock | 3.0Ghz (Burst) optional

Memory / Storage

L2 cache 1.5MB
 LPDDR4x RAM soldered on board 8GB
 16GB LPDDR4x RAM soldered on board optional
 CFast socket with retention frame ² 1
 MicroSD card socket ² 1

Features

Inertial measurement unit STMicroelectronics ISM330DHCXTR •
 TPM 2.0 according to ISO/IEC11889 •
 Hardware Watchdog & Temperature supervisor •
 Real time clock (RTC) with Goldcap backup holds charge for 48h •
 Real time clock (RTC) with Battery backup Renata CR2477N (950 mAh) optional

Communication Interfaces

DisplayPort 1.4 (up to 7680 x 4320 @ 60Hz) 1
 USB version 3.1 (Type A) 2
 USB version 2.0 (Type A) optional
 Ethernet 10/100/1000 Mbit (Intel I210-IT) (M12 female x-coded) 2
 PoE+ IEEE802.3at 10/100/1000Mbit (4x Intel I210-IT) ^{max Power at PSEs/PDs: 45W/39W} (M12 female x-coded) 4
 CAN 2.0A/B & CAN FD (PEAK FPGA chip, SJA1000 compatible) active/passive, isolated (DSUB9) 2
 M.2 Key B socket ² (3042) 1
 M.2 Key E socket ² (2230) 1
 Mini PCIe socket ² 1
 Buzzer 1
 I2C bus ² 1
 Digital I/O module, 24VDC ^{multiple DI/O modules possible} (4 inputs, 4 outputs) optional
 Analog input, 16Bit resolution, voltage input: +/-10V, 0 ... 30V ^{Accuracy: +/- 0.1%} (4 inputs) optional
 Analog input, 16Bit resolution, current input: 0-20mA (4 inputs) optional
 Serial RS232 (DSUB9) optional
 Serial RS422/485, isolated (DSUB9) optional
 HD Audio, Line in / out, Mic-in ² optional

Wireless connectivity

5G cellular module with integrated eSIM (4G/3G/2G fallback) Module tbd (2x SMA) optional
 4G cellular module (3G/2G fallback) Telit LE910C4-EU / Sierra Wireless MC7455 / EM7565 - M2M only! (2x SMA) optional
 Dual SIM support (nanoSIM) optional
 GNSS module with dead reckoning u-blox NEO-M9L Module (1x SMA) optional
 Wireless LAN IEEE 802.11ac/a/b/g/n/ dual-band 2x2 MIMO Module tbd (2x RP-SMA) optional

Technical Data

Exterior dimensions [mm] w228 x h85 x d127
 Net weight [gram] ~ 1750
 Isolated input voltage, with ignition controller function (M12 4P male a-coded) 16.8 ... 45VDC
 Wide input voltage (isolated and reverse polarity protected) (M12 4P male a-coded) 16.8 ... 137.5VDC
 Current consumption typ. in mA @ 24V without Add-Ins, idle ~ 500
 Power consumption typ. in Watt @ 24V without Add-Ins, idle ~ 12

Environmental Conditions

Operating temperature ³ -40°C ... +65°C
 Storage temperature -40°C ... +85°C
 Ingress protection standard according to EN60529 IP40
 Conformal coating ⁴ PCX / PC2
 Road vehicles UNECE-R10 (E-mark)
 Shock (designed to meet) EN61373
 Vibration (designed to meet) EN61373
 EMI-Conformity EN50121-3-2
 Safety according to EN62368-1
 Fire protection (designed to meet) EN45545-2 HL3
 Radio and Telecommunication (designed to meet) RED
 MTBF @ 25°C ambient ^{according to Telcordia SR-332, Environment GB, excluding battery and optional interfaces} tbd

¹ Please contact factory for minimum order quantities² Internal connector³ Depending on installation situation and interface connection. Please see user documentation.⁴ on all possible components (excl. Connectors and wireless devices)

Product specifications subject to change without notice. | All data is for information purposes only and not guaranteed for legal purposes. Information in this data sheet has been carefully checked and is believed to be accurate. However, no responsibility is assumed for inaccuracies. Please refer to the user documentation for additional product specification.