

Railway



Railway Computer RML-R10

Embedded Railway Computer with Intel® Core™ Raptor Lake (P-Series)

PRELIMINARY



image similar

Product Highlights

- _____ Maintenance free
- _____ Fixed BOM
- _____ Hardware Watchdog
- _____ Cybersecurity Features
- _____ Integrated IMU
- _____ Ignition Controller
- _____ Fanless, no moving parts
- _____ RAM down
- _____ High-accuracy GNSS with RTK

Market/Applications

- _____ Railway (rolling stock)
- _____ Transportation
- _____ rolling stock monitoring
- _____ Train-to-Ground Communication
- _____ Railway Signaling
- _____ Real-Time Data Logging
- _____ Real-Time Event Recording
- _____ remote Diagnosis

IPC/RML-R10

This fan less RML-R10 embedded computer is based on the 13th Generation Intel®Core™ processor technology and offers high performance and a wide range of interface options.

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

- Temperature acc. EN50155 OT4
- Fully railway approved
- S2 Backup according EN50155
- Shock and vibration resistant

Railway Computer RML-R10



| Order Code | IPC/RML10L70-C101E ¹ | IPC/RML10L70-R101E ¹ |
|---|---------------------------------|---------------------------------|
| Processor / Performance | | |
| Intel® Core™ i7-1370PRE P-Series 6 P-cores 1.9GHz up to 4.8GHz and 8 E-cores 1.2GHz up to 3.7GHz <small>Intel's use cases for 24/7 and Turbo Mode usage apply. For further details please contact the manufacturer or the user manual.</small> | ✓ | ✓ |
| Intel® Core™ i7-1365URE U-Series 2 P-cores 1.7GHz up to 4.9GHz and 8 E-cores 1.2GHz up to 3.7GHz | on request | on request |
| Memory / Storage | | |
| Intel® Smart Cache | 12MB | 12MB |
| Dual channel LPDDR5x 6000 MT/s SDRAM (memory soldered down) | 64GB | 64GB |
| M.2 2280 Key M socket (PCIe x4) NVMe Drive | 1TB | 1TB |
| M.2 2280 Key M socket (PCIe x4) for additional NVMe Drive 120GB to 2TB | ✓ | ✓ |
| CFast socket with latching retainer ² | 1 | 1 |
| Features | | |
| Real time clock PC compatible with Goldcap backup (up to 48h) | ✓ | ✓ |
| Hardware Watchdog & Temperature supervisor <small>battery option on request</small> | ✓ | ✓ |
| TPM 2.0 according to ISO/IEC11889 | ✓ | ✓ |
| UEFI Secure Boot key material must be provided by customer, custom bios version required | on request | on request |
| Inertial measurement unit STMicroelectronics ISM330DHCX <small>(Please see Product Manual for more detailed information and maximum sampling rate)</small> | ✓ | ✓ |
| Buzzer <small>(SPECIAL DRIVER REQUIRED)</small> | ✓ | ✓ |
| Power Ignition Controller | ✓ | ✓ |
| Communication Interfaces | | |
| DisplayPort 1.4a | 1 | 1 |
| USB version 3.2 (5Gbps) (Type A) | 2 | 2 |
| 100/1000/2500Mbit Ethernet (NBASE-T) with separated Intel® I226-IT NICs (M12 female X-coded) | 4 | 4 |
| SPE (Automotive Ethernet 100/1000BASE-T1) or Gbit LAN (BASE-T) (M12 female X-coded) | on request (up to 4) | on request (up to 4) |
| CAN 2.0A/B & CAN FD (PEAK FPGA chip) active/passive, isolated <small>Expandable to max. 6x CAN FD</small> (DSUB) | 2 | 2 |
| Serial RS232 <small>RS, TX, RTS, CTS, GND</small> (DSUB) | 1 | 1 |
| Serial RS422/485 <small>RS, TX, RTS, CTS, GND - Galvanic isolation</small> (DSUB) | on request | on request |
| Digital I/O module, 24/36VDC - Galvanic isolation 1500Vrms (process to Logic) current sourcing output / current sinking inputs (DSUB) | 4 Inputs, 3 outputs | 4 Inputs, 3 outputs |
| Analog Input module, Voltage and Current Version available | on request | on request |
| M.2 Key E (2230) and B (3042,3052) socket ² | 1 | 1 |
| Mini PCIe socket ² | 1 | 1 |
| Wireless connectivity | | |
| Global Cellular 5G module (4G/3G fallback) (4xSMA) | n/a | ✓ |
| Dual nano SIM support | | |
| Global 4G LTE Cat-13 (3G fallback) Sierra Wireless EM7590 - M2M only! (2x SMA) | n/a | on request |
| Dual nano SIM support | | |
| High precision GNSS module (with RTK and dead reckoning) u-blox ZED-F9R (1x SMA) ³ | n/a | ✓ |
| Wireless LAN (Wi-Fi 6) 802.11ac/a/b/g/n/ax Intel, Bluetooth 5.2 Module Intel Wireless- AX210 (2x RP-SMA) | n/a | ✓ |
| Technical Data | | |
| Exterior Dimensions [mm] (housing incl. mounting plate) | w314 x h94 x d170 | w314 x h94 x d170 |
| Net weight [gram] | -3000 | -3000 |
| Input voltage isolated and reverse polarity protected (M12 male K-coded/Push Pull) | 16.8 ... 137.5VDC | 16.8 ... 137.5VDC |
| Interruption of voltage supply time: EN50155 - Class: S2 | 10ms | 10ms |
| Power consumption typ. in Watt @ 24V without Add-Ins | 30-40W | 30-40W |
| Environmental Conditions | | |
| Operating temperature (complies with EN50155 class OT4/ST0) ⁴ | -40°C ... +70°C | -40°C ... +70°C |
| Non operating temperature (Recommended storage temperature 20°C .. 25°C) | -40°C ... +85°C | -40°C ... +85°C |
| Ingress protection standard according to EN60529 | IP40 | IP40 |
| Conformal coating ⁵ | PCX | PCX |
| MTBF @ 25°C <small>according to Telcordia SR-332, Environment GM, excluding CFast and optional interfaces</small> | tbd | tbd |
| Certifications | | |
| Railway certification EN50155 | ✓ | ✓ |
| Railway environmental conditions EN50125 | ✓ | ✓ |
| Shock + Vibration EN60068-2-27/ EN60068-2-64 / EN61373 | ✓ | ✓ |
| EMI-Conformity EN50121-3-2 / EN301489-1 | ✓ | ✓ |
| Safety (according to EN62368-1) | designed to meet | designed to meet |
| Fire protection DIN EN45545-2 | HL3 | HL3 |
| e-Mark | on request | on request |
| CE/UKCA | ✓ | ✓ |
| UN/ECE R10 | ✓ | ✓ |
| Software | | |
| Linux Debian 12 (Bookworm) | ✓ | ✓ |
| Windows 11 IoT Enterprise LTSC 2024 | ✓ | ✓ |
| Ubuntu Pro LTSB | ✓ | ✓ |

¹Please contact factory for minimum order quantities

² Internal connector

³ Multiband antenna needed (GNSS L1 band and L2/E5b/B21 bands). Example u-Blox type ANW-MB

⁴ Depending on installation situation and interface connection. Please see Product manual.

⁵ 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.

For support and further information:
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Assured Systems

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