

## COMPACT RML Series

Embedded Railway Computer with Intel® Atom™ Elkhart Lake processor (x6000 Series)



## IPC/COMPACT82 - RML-R

This fanless railway 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.

- Intel® Atom™ Elkhart Lake Series
- Railway approved (EN50155 & EN45545)
- Shock and vibration resistant
- Designed for 24/7 continuous operation
- 24/110VDC wide input range



### Product Highlights

Maintenance free & long term availability  
 Power Ignition controller  
 Inertial measurement unit (IMU)  
 Trusted platform module (TPM 2.0)  
 UEFI Secure Boot  
 GNSS with dead reckoning  
 Wide input voltage 16.8 ... 137.5VDC  
 Fanless, no moving parts

### Product Features

Intel® Atom™ Elkhart Lake, up to 4 cores  
 up to 16GB LPDDR4 RAM  
 LTE-4G, GNSS and WiFi6 connectivity  
 CFast socket  
 microSD socket  
 1Gbit Ethernet and USB 3.1  
 CAN-FD and Serial Ports  
 Modular product design  
 wide range of expansion options

### Industries / Applications

Railway (rolling stock)  
 Transportation

**Processor / Performance**

Intel® Atom™ x6425RE - Quad core 1.9GHz clock | 16GB RAM

Intel® Atom™ x6414RE - Quad core 1.5GHz clock | 4GB RAM

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on request

**Memory / Storage**

L2 cache

1.5MB

4267MT/s LPDDR4x RAM soldered on board

16GB

Internal eMMC

32GB

CFast socket with latching retainer <sup>2</sup>

1

MicroSD Card socket <sup>2</sup>

1

**Features**

Real time clock PC compatible with Goldcap backup (up to 48h)

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Hardware Watchdog &amp; Temperature supervisor

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Intelligent power management (Ignition controller)

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TPM 2.0 according to ISO/IEC11889

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UEFI Secure Boot key material must be provided by customer

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Inertial measurement unit STMicroelectronics ISM330DHCXTR (Please see user documentation for more detailed information and maximum sampling rate)

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**Communication Interfaces**

DisplayPort 1.4 (4096 x 2160 @ 60Hz)

1

USB version 3.1

(Type A)

2

Ethernet 10/100/1000 BASE-T (1x Intel® GbE | 1x Intel® I210-IT)

(M12 female x-coded)

2

CAN 2.0A/B &amp; CAN FD (PEAK FPGA chip, SJA1000 compatible) active/passive, isolated

(DSUB9)

2

Serial RS232 (not isolated)

(DSUB9)

2

Serial RS422/485, isolated

(DSUB9)

1

Mini PCIe socket <sup>2</sup>

1

Buzzer

1

Digital I/O module, 24/36VDC - Galvanic isolation 1500Vrms (process to Logic) current sourcing output / current sinking inputs (Mating plug type Weidmüller B2CF 3.5/10/180F SN BK)

(2x5-Pin Terminal Block)

4 in / 4 out

Analog input, 16Bit resolution, voltage input: +/-10V, 0 ... 30V Accuracy: +/- 0.1%

(4 inputs)

on request

Analog input, 16Bit resolution, current input: 0-20mA

(4 inputs)

on request

**Wireless connectivity**

4G LTE Cat-13 (3G fallback) Sierra Wireless EM7590 - M2M only!

(2x SMA)

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Dual nano SIM slot for cellular modules for 4G module

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GNSS module u-blox NEO-M9V Module

(1x SMA)

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High precision GNSS module (with IMU, RTK) u-blox ZED-F9P/R

(1x SMA)<sup>3</sup>

on request

Wireless LAN (Wi-Fi 6) 802.11ac/a/b/g/n/ax Intel, Bluetooth 5.2 Module Intel Wireless- AX210

(2x RP-SMA)

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**Technical Data**

Exterior dimensions [mm]

w262 x h105 x d138

Net weight [gram]

~2100

110VDC wide input voltage (isolated and reverse polarity protected)

(M12 4P male a-coded)

16.8 ... 137.5VDC

Interruption of voltage supply time: EN50155 - Class: S2

10ms

Power consumption typ. in Watt @ 24V without Add-Ins, idle

~17

**Environmental Conditions**Operating temperature (complies with EN50155 class OT4/ST0)<sup>4</sup>

-40°C ... +70°C

Non operating temperature (Recommended storage temperature 20°C .. 25°C)

-40°C ... +85°C

Ingress protection standard according to EN60529

IP40

Conformal coating<sup>5</sup>

PCX

Railway certification EN50155

•

Railway environmental conditions EN50125

•

Shock EN60068-2-27 / EN61373

•

Vibration EN60068-2-64 / EN61373

•

EMI-Conformity EN50121-3-2 / EN301489-1

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Safety (according to EN62368-1)

designed to meet

Fire protection DIN EN45545-2

HL3

MTBF @ 25°C according to Telcordia SR-332, Environment GM, excluding CFast and optional interfaces

tbd

<sup>1</sup> Please contact factory for minimum order quantities<sup>2</sup> Internal connector<sup>3</sup> Multiband antenna needed (GNSS L1 band and L2/E5b/B2I bands). Example u-Blox type ANN-MB<sup>4</sup> Depending on installation situation and interface connection. Please see user documentation.<sup>5</sup> 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.

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Version 1.0 | July 2023

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