Railway Computer

COMPACT RSL-R Series

Embedded Railway Computer with Intel® Atom™ E3900 processor

preliminary first draft

IPC/RSL-R 81

This fanless RML-R COMPACT81 generation is based on the Intel® Atom™ E3900 (Apollo Lake) processor technology and offers 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.

- **Railway approved (EN50155 & EN45545)**
- **24/7 continuous operation**
- **M12 connectors for Power and LAN**
- **Shock and vibration resistant**
- **Full -40...+85°C on component level**

Windows IoT

debian

CE

Product Highlights

Power Ignition controller
Inertial Measurement Unit (IMU)
GNSS with dead reckoning
Fanless, No moving parts
Maintenance free
Long term availability

Product Features

Intel® Atom™ E3900 Series
up to 2.0GHz, 4 Cores
RAM soldered on board 8GB
Socket for CFast storage card
Gbit Ethernet, USB 3.1, RS232, CAN
Optional 5G, 4G, Wi-Fi & Bluetooth options
Rugged M12 connectors
Stainless steel housing
Protection class IP40

Markets / Applications

Railway (rolling stock)
Transportation

		Order Code IPC/RSL81I20-R152E[1]
Processor / Performance		
Intel® Atom™ x7-E3950 2.00GHz (Burst) | 1.6GHz Clock - Quad Core | 8GB RAM		•
Intel® Atom™ x5-E3940 1.80GHz (Burst) | 1.6GHz Clock - Quad Core | 4GB RAM		optional
Memory		
L2 cache		2MB
RAM DDR3L 1866MT/s soldered on board		8GB
Features		
Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR		•
Real time clock (RTC) with goldcap backup (holds charge for 48h)		•
Hardware watchdog & Temperature supervisor		•
Intelligent power management (Ignition controller)		•
TPM 2.0 according to ISO/IEC11889 Infineon SLB9665		•
Communication Interfaces		
DisplayPort 1.4 (up to 7680 x 4320 @ 60Hz)		1
USB version 3.1	(Type A)	2
Ethernet 10/100/1000 Mbit (Intel I210-IT)	(M12 female x-coded)	2
CAN 2.0A/2.0B & CAN FD (PEAK FPGA chip, SJA1000 compatible), isolated The CAN signals give no network feedback and are attached via non-volatile I/O port on the I2C bus	(DSUB9)	2
Serial RS232	(DSUB9)	optional
CFast socket with retention frame [2]		1
M.2 Key B socket [2]	(M.2 3042)	1
M.2 Key E socket [2]	(M.2 2230)	1
Mini PCIe socket [2]		1
MicroSD Card socket [2]		1
Buzzer [2]		1
I2C bus [2]		1
Wireless Connectivity		
Cellular 4G module (3G/2G fallback) Sierra Wireless EM7455 - M2M only! with dual nano SIM support		2x SMA
Wireless LAN IEEE 802.11ac/a/b/g/n/ dual-band 2x2 MIMO SparkLAN WxxB-263ACNI(BT)		2x RP-SMA
GNSS positioning module with dead reckoning u-blox NEO-M9 Module [3]		1x SMA
Cellular 5G module (4G/3G fallback) Sierra Wireless EM9191 - M2M only!	(2x SMA)	optional
High accuracy GNSS positioning module w/ RTK support u-blox ZED F9P module	(1x SMA)	optional
Technical Data		
Exterior dimensions [mm]		w262 x h53 x d137
Net weight [gram]		~1850
Input voltage (isolated and reverse polarity protected)	(M12 4P male a-coded)	16.8 ... 45VDC
Wide input voltage 14.4 .. 137.5VDC (isolated and reverse polarity protected)	(M12 4P male a-coded)	optional
Uninterruptible power supply (UPS), interruption time of supply voltage		~10-15s
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 (complies with EN50155 class OT4) [4]		-40°C ... +70°C
Storage temperature		-40°C ... +85°C
Ingress Protection standard EN60529		IP40
Conformal coating [5]		PCX
Shock		IEC/EN 61373
Vibration		IEC/EN 61373
EMC-Conformity		EN 50121-3-2 (IEC 62236-3-2)
Safety (designed to meet)		EN 62368-1
Fire protection		EN45545-2 HL3
Radio and Telecommunication (designed to meet)		RED
MTBF @ 25°C according to Telcordia SR-332, Environment GB, excluding optional extensions		~480 000h

[1] Please contact factory for minimum order quantities
[2] Internal connector
[3] NEO M9 Series, NEO-M9V (with dead reckoning) is planned, however subject to availability the NEO-M9N (without dead reckoning) may be used prior.
[4] Depending on installation situation and interface connection. Please see user documentation.
[5] On all possible components (excl. connectors and wireless devices)

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Version 0.4 | March 2021

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