

Railway Computer  
**COMPACT-RSL Series**

Embedded Railway Computer with Intel® Atom™ E3900 processor



## IPC/RSL81

This fanless RSL 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**



### 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, RS232, CAN  
M12 connectors  
Stainless steel housing  
Protection class IP40  
5G, 4G, Wi-Fi & Bluetooth options

### Markets / Applications

Railway (rolling stock)  
Transportation

Order Code IPC/RSL81I20-A151E<sup>1</sup>

Railway Computer

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 ISM330DHCXR		•
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		•
Communication Interfaces		
DisplayPort 1.4 (up to 7680 x 4320 @ 60Hz)		1
USB version 3.1	(Type A)	1
USB version 2.0	(Type A)	1
Ethernet 10/100/1000 BASE-T (Intel I210-IT)	(M12 female x-coded)	2
Serial RS232, isolated	(DSUB9)	up to 2 <sup>3</sup>
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)	up to 2 <sup>3</sup>
CFast socket with retention frame <sup>2</sup>		1
M.2 Key B socket <sup>2</sup> , used for radio options depending on config	(M.2 3042)	1
M.2 Key E socket <sup>2</sup> , used for radio options depending on config	(M.2 2230)	1
Mini PCIe socket <sup>2</sup>		1
MicroSD Card socket <sup>2</sup>		1
Buzzer <sup>2</sup>		1
I2C bus <sup>2</sup>		1
Wireless Connectivity		
GNSS positioning module u-blox NEO-M9 Module <sup>4</sup>		1x SMA
High accuracy GNSS positioning module w/ RTK support u-blox ZED F9P/F9R module	(1x SMA)	optional
Wireless LAN IEEE 802.11ac/a/b/g/n/ dual-band 2x2 MIMO SparkLAN WNF6-263ACNI(BT)	(2x RP-SMA)	optional
Cellular 4G module (3G/2G fallback) Sierra Wireless EM7455 - Dual Sim, M2M only!	(2x SMA)	optional
Cellular 5G module (4G/3G fallback) Sierra Wireless EM9191 - Dual Sim, M2M only!	(2x SMA)	optional
Technical Data		
Exterior dimensions [mm]		w228 x h53 x d127
Net weight [gram]		~ 1750
Isolated input voltage, with ignition controller function, reverse polarity protected <sup>5</sup>	(M12 4P male a-coded)	16.8 ... 30VDC
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) <sup>6</sup>		-40°C ... +70°C
Storage temperature		-40°C ... +85°C
Ingress Protection standard EN60529		IP40
Conformal coating <sup>7</sup>		PCX
Shock		IEC/EN 61373
Vibration		IEC/EN 61373
EMI-Conformity		EN 50121-3-2 (IEC 62236-3-2)
Safety (designed to meet)		EN 62368-1
Fire protection		EN 45545-2 HL3
Radio and Telecommunication (designed to meet)		RED
MTBF @ 25°C according to Telcordia SR-332, Environment GB, excluding optional extensions		~ 480 000h

<sup>1</sup>Please contact factory for minimum order quantities

<sup>2</sup>Internal connector

<sup>3</sup>A total of two DSUB9 ports are available for either 2x CAN, 2x RS232 or 1x CAN & 1x RS232. It is also possible to configure the device without any CAN or RS232 interfaces.

<sup>4</sup>NEO M9 Series, NEO-M9V (with dead reckoning) is planned, however subject to availability the NEO-M9N (without dead reckoning) may be used prior.

<sup>5</sup>Power supply complies with EN50155 class S1

<sup>6</sup>Depending on installation situation and interface connection. Please see user documentation.

<sup>7</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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## Assured Systems

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