Railway

syslogic

Railway Computer RML-R10

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

PRELIMINARY

GNSS   5G/LTE   WiFi/BT

CFast, NVMe,
dual nano SIM support

2x USB 3.2

Display Port

image similar

Power Supply
24 .. 110VDC

2x CAN

4x LAN 2.5G
M12 x-coded

RS232

DI/O

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

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	Order Code	IPC/RML10L70-C101E[1]	IPC/RML10L70-R101E[1]
Processor / Performance			
Intel® Core™ i7-13700PRE P-Series 6 P-cores 1.9GHz up to 4.8GHz and 8 E-cores 1.2GHz up to 3.7GHz Intel's use cases for 24/7 and Turbo Mode usage apply. For further details please contact the manufacturer or the user manual.		✓	✓
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 battery option on request		✓	✓
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 (Please see Product Manual for more detailed information and maximum sampling rate)		✓	✓
Buzzer (SPECIAL DRIVER REQUIRED)		✓	✓
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 Expandable to max. 6x CAN-FD RX, TX, RTS, CTS, GND	(DSUB)	2	2
Serial RS232 RX, TX, RTS, CTS, GND	(DSUB)	1	1
Serial RS422/485 RX, TX, RTS, CTS, GND - Galvanic isolation	(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) Dual nano SIM support	(4xSMA)	n/a	✓
Global 4G LTE Cat-13 (3G fallback) Sierra Wireless EM7590 - M2M only! Dual nano SIM support	(2x SMA)	n/a	on request
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℃ … +70℃	-40℃ … +70℃
Non operating temperature (Recommended storage temperature 20℃ .. 25℃)		-40℃ … +85℃	-40℃ … +85℃
Ingress protection standard according to EN60529		IP40	IP40
Conformal coating [5]		PCX	PCX
MTBF @ 25℃ according to Telcordia SR-332, Environment GM, excluding CFast and optional interfaces		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		✓	✓

[1] Please contact factory for minimum order quantities
[2] Internal connector
[3] Multiband antenna needed (GNSS L1 band and L2/E5b/B2I bands). Example u-Blox type ANN-MB
[4] Depending on installation situation and interface connection. Please see Product manual.
[5] on all possible components (excl. Connectors and wireless devices)

For support and
further information:
sales@syslogic.com
or **syslogic.com**

Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

US

sales@assured-systems.com

Sales: +1 347 719 4508
Support: +1 347 719 4508

1309 Coffeen Ave
Ste 1200
Sheridan
WY 82801
USA

EMEA

sales@assured-systems.com

Sales: +44 (0)1785 879 050
Support: +44 (0)1785 879 050

Unit A5 Douglas Park
Stone Business Park
Stone
ST15 0YJ
United Kingdom

VAT Number: 120 9546 28
Business Registration Number: 07699660