

TRACe-B104



Multipurpose Rugged Fanless Edge computer for rolling-stock applications

- ▶ Latest silicon Gen Intel Atom® Quad-Core CPU and Gen11 LP integrated GPU
- ▶ Versatile I/O and storage options (5G/LTE, Wi-Fi, SSD, GPS ...) via M.2 and mPCIe sockets
- ▶ Compact rugged enclosure for easy integration in any constraining environment
- ▶ Railway EN50155 certification (TRACe-B104-TR)

A rugged multipurpose IoT computer for modern transportation applications

With the TRACe-B104, Kontron takes the outstanding new Intel Atom® Elkhart Lake System On Chip 10nm architecture to the next level, in the form of a compact rugged fanless edge computer designed to sustain railway harsh environmental conditions.

The Kontron TRACe-B104 features by default numerous I/Os (3x Gigabit Ethernet Ports of which 2 can be P.S.E, 2x USB3.0/2.0 + 1x M12 USB2.0, 8x insulated Digital I/Os, 2x insulated RS232/422/485, Audio, display port, extractible SATA 2,5" disk with hot-swap capability) on robust connectors as well as 4x extensions sockets (3x M.2, 1x Mini PCI Express®), making it perfect for any rolling stock applications requirements.

Kontron TRACe-B104 compact rugged aluminum enclosure along with its mounting options (wall mount or rack mount mechanical kits) enable a smooth integration in any constraining environment from buses and light trains up to heavy rail vehicles. Supporting several operating systems such as Linux, Windows 10/Windows 10 IoT or Kontron SEC-Line firmware (hardened openWRT hypervisor), this Kontron 5G-ready TRACe-B104 box computer is a perfect match to fulfill the most demanding transportation (Rail & Road) mission profiles such as on-board Gateway, Network Video Recorder, Passenger Infotainment Server, Wi-Fi server, Diagnostic Server, Smart Vehicle Server, Ticketing system, SDWAN on uCPE ...



SR-TRACe-B104 Server / Router Gateway powered by Kontron SEC-Line

When powered by Kontron SEC-Line firmware and usually equipped with cellular and/or Wi-Fi modems, TRACe-B104 becomes SR-TRACe-G104, a secure Server/Router Gateway answering the challenges of IT and OT edge computing with hardware root of trust, cybersecurity protections, virtualization and fleet management tools.

Kontron SEC-Line firmware is built from the OpenWRT distribution and other open source software to transform Kontron embedded Computers into remotely controlled secure edge computers. It operates in tandem with its management console: OpCenter. The software is delivered as signed images accepted by the secure

boot method enforced on systems powered by SEC-Line. It has been designed to foster a clean collaboration pattern between IT teams controlling the firewall/router/cyber defense/hypervisor settings and OT teams orchestrating mission software payloads (OS + applications stacks) that are protected by the security bubble offered via Virtual Machines operating behind the Kontron SEC-Line embedded firewall. This is also a plus to run existing legacy software, designed for silo operation, with no security considerations.

The security of SEC-Line firmware (KSeOS) comes from Kontron hardware root of trust based design. It leverages the trusted platform module (TPM) for measured boot and secrets protection. It offers the modern firewall and multi zone router features of OpenWRT™ augmented by Kontron with several cyber defense mechanisms (OSSEC, AppArmor) topped by a virtualization layer (QEMU), and packed in a small footprint (<100 MByte) firmware installed during manufacturing. SEC-Line powered hosts are thus capable to run and protect any software payload (OS + Applications) from outside attacks with minimal or no porting effort, whatever the initial OS used.

OpCenter management console enables the centralized management of all the data needed by computers in the fleet, easing the management tasks for large deployment such as replacement of a unit. It is run as a standalone VM inside an infrastructure server.

➤ Learn more about Kontron SEC-Line here:
<http://kfrlabs.kontron.com/secline.html>

Kontron solid support throughout product life cycle

Kontron TRACe-B104 is available in production for a minimum of 7 years. Beyond end-of-life date, dedicated Long Term Services are available to guarantee procurement and inform for significant evolution of monitored frozen configuration and propose best strategies to protect the future.

It is possible to extend the standard warranty of Kontron TRACe-B104 by one, two or three extra years, for a maximum total of 5 years.

By choosing Kontron, our customers also enjoy the support of a local technical support team fully dedicated to technical questions and issues.

Deploying with Kontron TRACe-B104 is a sure way to support a vast choice of modern transportation applications and serve demanding new programs with a rugged boxPC for the next decade, optimizing development efforts and long term logistics.

PROCESSOR		Intel Atom® x6425E, quad core @2,0 GHz
GRAPHICS CONTROLLER		Integrated Intel® Gen11 LP GPU, 32EUs
MEMORY	RAM MEMORY	8 GByte DDR4 3200 MT/s by default. Optional: 16 GByte DDR4
STORAGE	FLASH SATA	64 GByte industrial grade eMMC soldered Flash 2x SATA III links: 1 towards internal M.2 slot, 1 towards external drive bay for removable 2,5" SATA SSD/HDD
INSULATED USER I/Os	POWER ETHERNET USB SERIAL DIO	1x DC IN with ignition power control, insulated, M12 4pin A-coded 3x 10/100/1000 Mbps Gigabit Ethernet ports, M12 8pin X-coded 1x USB2.0, insulated up to USB1.1, M12 5pin A-coded 2x RS232/422/485 (BIOS switchable), insulated, SUBD9 4x Digital Inputs + 4x Digital Outputs, insulated, 0-24VDC, SUBD25
OTHER USER I/Os	USB DISPLAY AUDIO SIM CARDS LEDS RESET HOTSWAP	2x USB 3.1/2.0, type A 1x Display Port (DP1.4++) Mic In, Stereo Line In (Differential) Stereo Line Out, SUBD9 4x nanoSIM sockets (cover protected), 2 SIMs per optional modem Power Led, Alarm Led, 2x User's Led, 1x hotswap Blue Led 1x Reset Button 1x disk Hotswap Button (safe disk hotswap mechanism)
SUPPORTED OS		Linux (default), Windows 10 IoT (on request), SEC-Line hardened openWRT hypervisor (on request)
DIMENSIONS		280 x 186 x 60 mm (w/o wall mounting brackets) 306 x 186 x 60 mm (with wall mounting brackets)
MECHANICAL	IP LEVEL FIXATION	IP 20 Desktop, Wall Mounting, Rack mounting into 19" cabinet
EXPANSIONS SLOTS	M.2 SLOT#0 M.2 SLOT#1 M.2 SLOT#2 MINI PCIE	M.2 3042/3052 key B. USB3.1, USB2.0, PCIe interfaces. Preferred slot for 5G/LTE modem. Hardware resettable via CPLD M.2 3042/3052 key B. USB3.1, USB2.0, PCIe, SATA interfaces. Dedicated to 5G/LTE modem or SATA SSD. Hardware resettable via CPLD M.2 2230 key E. PCIe and USB2.0 interfaces. Preferred slot for Wi-Fi/BT module. Hardware resettable via CPLD Mini PCI Express full size. PCIe and USB2.0 interfaces. Preferred slot for GNSS or any other add-on card. Hardware resettable via CPLD
OTHER FEATURES	CPLD ANTENNAS RTC SECURE ELEMENT	CPLD controller for low level hardware functions: power control, digital I/Os, reset, watchdog, M.2/mPCIe slots power control, LEDs, disk hotswap (interruption and blue LED management) 8 pre-holes (7x SMA, 1x TNC) with caps for antennas ~6 days retention time (powered via Golden Cap) TPM 2.0
DC-DC CONVERTER	RAIL	Ultra Wide Range 24 to 110VDC nominal voltage EN50155 class S2-C1 PSU
OPTIONS	POE+ ADD-ONS WARRANTY EXTENSION	PoE+ capability on 2x GbE ports (P.S.E, 30 W shared) Industrial grade SSDs, 5G modem, 4G/LTE modems, Wi-Fi / BT, GNSS, only on request / program 2 years warranty by default. Optional 1, 2 or 3 extra years warranty
TEMPERATURE RANGE	OPERATING STORAGE	-25 °C to +70 °C, 10min @ 85 °C, EN50155 Class OT3 -40 °C to +85 °C
CERTIFICATIONS	RAIL	EN50155: 2017 including EN45545-2 Fire & Smoke, EN50121-3-2 EMI/EMC, EN61373 Shock & Vibrations (Body Mount Class B), EN60068-2 Climatic. CE (EN62368-1 for safety)

ARTICLE	PART NO.	DESCRIPTION
TRACe-B104-TR-H02-00000C-V-0	1068-7917	Railway TRACe Box Computer, Intel Atom® x6425E, 4x 2.0 GHz, 64 GByte eMMC MLC Flash, EN50155 Railway PSU class S2-C1 (10 ms hold up time), 72 VDC/110 VDC nominal, No PoE, 8 GByte DDR4 @3200MT/s, M.2 key E slot #0 Not equipped, M.2 key B slot # Not equipped, M.2 key B slot #2 Not equipped, mPCIe slot #3 Not equipped, No other options, Conformal coating of internal components, No Operating System, EN50155 Class OT3
TRACe-B104-TR-W02-00000C-V-0	1070-9579	Railway TRACe Box Computer, Intel Atom® x6425E, 4x 2.0 GHz, 64 GByte eMMC MLC Flash, EN50155 Railway PSU class S2-C1 (10 ms hold uptime), Ultra Wide Range 24 to 110VDC nominal, No PoE, 8 GByte DDR4 @3200MT/s, M.2 key E slot #0 Not equipped, M.2 key B slot # Not equipped, M.2 key B slot #2 Not equipped, mPCIe slot #3 Not equipped, No other options, Conformal coating of internal components, No Operating System, EN50155 Class OT3

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