

TRX R6

EN Compliant Compute Gateway

The TRX R6 compute gateway is an open virtualization platform. Easily deploy multiple onboard applications of passenger Wi-Fi, infotainment and passenger information systems, and CCTV. Securely access TCMS over secure WAN paths alongside management and monitoring of onboard systems.



KEY FEATURES

- Combined router/server with multiple CPU options e.g. Dual-Core i3, Quad-Core i5, or Quad-Core i7
- Support for up to six 3G/4G cellular modems, or three 5G modems
- Wi-Fi 5 (access point or client support) and six Gigabit Ethernet ports for local area networking
- Flexible interfaces of MVB, RS-422, RS-485 for telematics
- GPS integrated
- Underpinned by the KlasOS Keel operating system, with integrated support for:
 - Virtualization (KVM-based hypervisor)
 - Routing and virtualized switching
 - L2/L3 stateful firewall
 - SD-WAN path prioritization with dynamic routing and load balancing
- Easily managed through Keel CLI or via Blackrock Ansible automation and monitoring
- Integrates with existing PKI infrastructure, secure data transfers using Keel private device keys
- Keel is NIAP Common Criteria Certified [CCEVS-VR-VID11436-2024] to meet the security standards for government deployment

ORDERING DETAILS

Contact your Klas sales representative with your CPU preference and additional configuration requirements for ordering information. Email: sales@klasgroup.com



TRAINS



AUTONOMOUS



FLEET

RX R6

Specifications



CPU

- Processor options available:
 - Dual-Core Intel® i3-6102E 1.9GHz
 - Quad-Core Intel® i5-6442EQ 1.9 GHz
 - Quad-Core Intel® i7-6822EQ 2.0 GHz
- Intel® Virtualization Technology (VT-x) with IPMI
- Up to 32 GB RAM

STORAGE

- Internal storage with capacity of 16 GB
- Dual removable 2.5" SATA solid state drive (from 256 GB to 8 TB)

4G LTE MODEMS

- Sierra Wireless MC7430 / EM7430 LTE Cat-6
- Sierra Wireless MC7455 / EM7455 LTE Cat-6
- Sierra Wireless EM7511 LTE Cat-12
- Sierra Wireless EM7565 LTE Cat-12
- Telit LM 960A18 LTE Advanced Pro Cat-18

5G MODEMS

- Telit FN990A40
- Thales MV31-W

GNSS

- Reception of GPS, GLONASS, QZSS, BeiDou
- High sensitivity acquisition and single-satellite timing
- Automatic holdover
- NMEA relay over both IP and serial

WI-FI 5

- IEEE 802.11 ac/b/g/n modem (1.3Gb/s downlink)
- 3x3 MIMO
- Supports 2.4 GHz and 5 GHz bands
- Enhanced wireless security supporting 64/128-bits WEP, WPA, WPA2, 802.1x
- Additional Wi-Fi interfaces supported via expansion slots

MANAGEMENT PORTS

- 3 x serial ports: 2 x RJ45 form factor and 1 x DB-9 form factor
- 1 x DisplayPort
- 2 x USB 2.0

ETHERNET

- 6 x Gigabit Ethernet (GbE) in X-Code M12
- Supports 10 GbE in X-Code M12 format

EXPANSION SLOTS

- USB 2.0 and PCI Express signalling supports a range of devices per slot:
 - DTE RS-422/RS-485 serial devices to control remote devices
 - MVB
 - General purpose I/O with galvanically isolated outputs

PHYSICAL SPECIFICATIONS

- 9.8" W x 11" L x 3.05" H (250 mm x 279 mm x 76.5 mm)
- 9.9 lb (4.5 kg)

ELECTRICAL SPECIFICATIONS

- 24 - 110 VDC
- Power consumption: Up to 60 W (with 6 x 4G modems)

COMPLIANCE

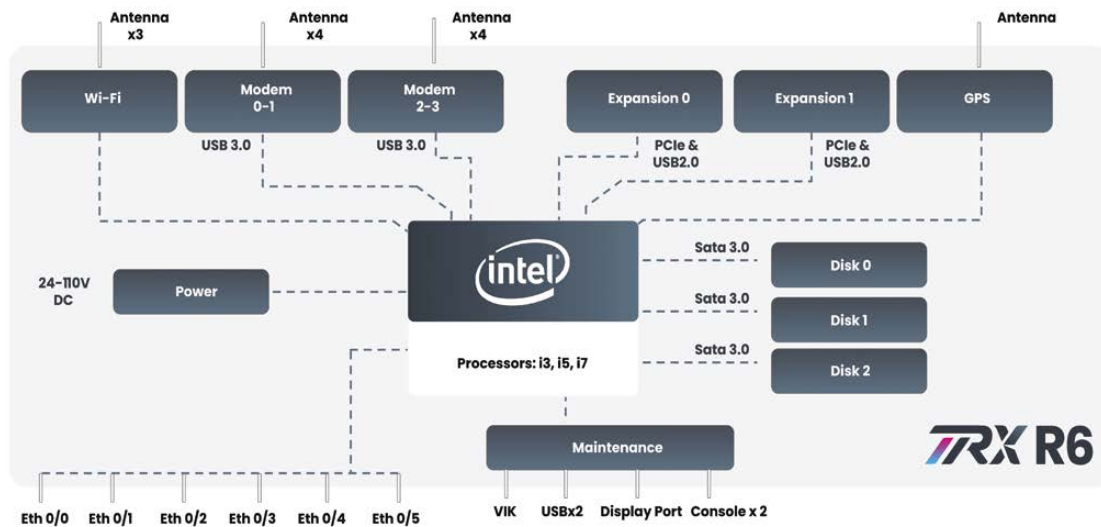
- EN50155:2017 Railway Applications - Electronic Equipment Used on Rolling Stock (EN50155: Heat, Cold, Insulation, Vibration, and Shock), EN60068-2-1, EN60068-2-2, EN60068-2-30
- EN61373:2017 Railway Applications - Rolling Stock Equipment, Shock and Vibration
- EN50121-3-2:2017 Railway Applications - Electromagnetic Compatibility - Part 3-2 Rolling Stock - Apparatus
- EN45545-2:2015 Railway Applications - Fire Protection of Railway Vehicles - Part 2
- EN55032 Electromagnetic Compatibility of Multimedia Equipment
- RED compliant
- IP54 ingress protection
- RoHS 2 compliant
- FCC/CE

TRX R6

Open Platform Architecture



TRX R6 open hardware architecture, underpinned by Intel CPU



Modular by design, easy to add or update capabilities at any time



Rear view of TRX R6 showing three modem/expansion slots with support for up to six 4G modems. Easily add capability or update modem capabilities at any time.

A range of expansion boards are as follows:



Multi-modem carrier (supports up to six 4G modems)



Single-modem carrier



10 GbE interface



MVB serial interface

TRX R6

Software Support



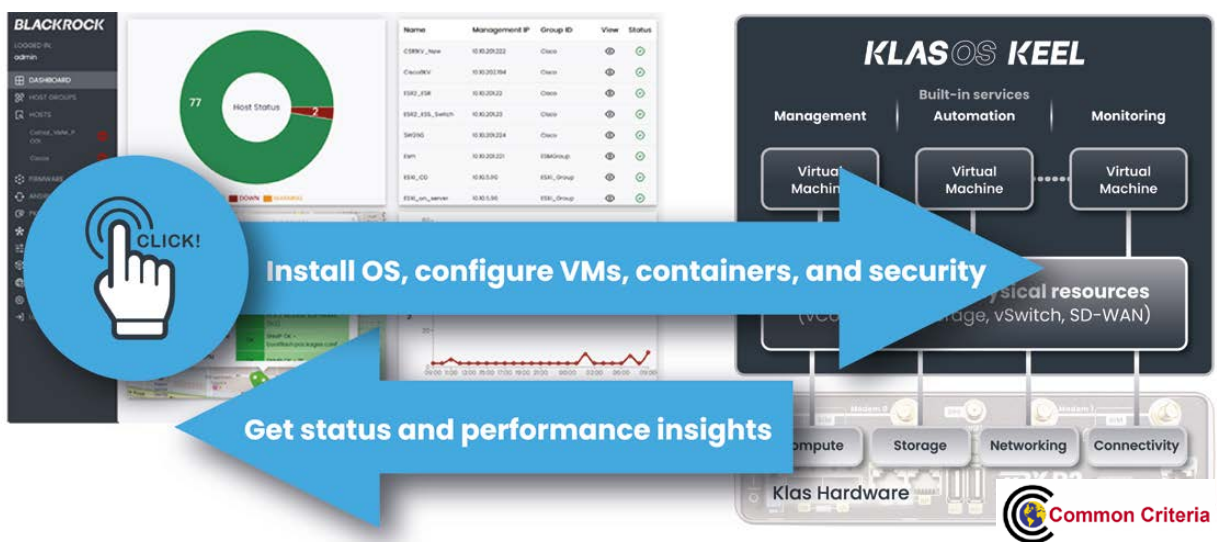
KlasOS Keel, an intelligent edge OS for transportation systems

Keel is a lightweight, Linux-based open source OS developed for TRX R6. Keel provides an integrated KVM-based hypervisor, routing and virtualized switching, firewall, and SD-WAN capabilities, providing a secure virtualization environment for onboard systems.

The integrated KVM-based hypervisor supports sharing of the TRX R6 physical resources of compute, storage, networking, connectivity, and pass-through of serial periphery, such as USB, CAN, and MVB, to the hosted virtual machine, simplifying the deployment of passenger and operational services.

Learn more – <https://www.klasgroup.com/keel/>

Blackrock, automation to simplify transportation IT infrastructure management at scale



Blackrock is an Ansible IT automation service that integrates provisioning, monitoring, and update management as one system for easier operational management of transportation IT infrastructure.

Blackrock integrates Ansible agentless automation, Klas and custom Ansible playbooks and collections, Nagios IT monitoring, and Grafana visualization as a single, easy-to-use web service, making it easy to track the status of the complete fleet of IT infrastructure.

Learn more – <https://www.klasgroup.com/blackrock/>