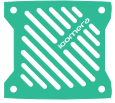


# Icomera X5

## Scalable, Future-Proof Connectivity for the Rail Transport Sector



### High-Performance Mobile Connectivity and Applications Router

A ground-breaking platform for connected vehicle solutions

- Industry leading Internet connectivity using 5G, 4G or Wi-Fi
- 10 Gbps Ethernet
- An open platform for innovation
- Optimised for video streaming
  - HD Passenger Infotainment
  - Real-time IP Video Surveillance
- Up to 4 WWAN connections
- Intel® Xeon-family processor
- Up to 2TB SSD
- Up to 16 Nano SIMs
- Secure Boot
- Industry grade IP65 aluminium chassis

Designed to meet the need for fast, reliable mobile Internet connectivity, the Icomera X5 is ideally suited to support future-proof connectivity solutions.

With the X5, operators can offer a significantly-improved passenger experience, allowing travellers to enjoy Wi-Fi with faster browsing speeds and enhanced media streaming options. The X5 can run multiple virtual applications from a single piece of hardware, providing a simple, one-box solution - Operators can cache their own video or media content onboard, perform quick, over-the-air upgrades and install new applications remotely.

### Advanced Internet Connectivity

Two versions of the X5 are available, both offered in various configurations, optimised to meet specific business requirements. Operators can utilise SureWAN™, Icomera's patented connectivity protocol for combining multiple networks in parallel, providing the fastest, most reliable connection available for passengers and systems.

**Version 1** is equipped with LTE Advanced Pro Cat-12 modems to connect the vehicle to the available cellular networks and one 802.11ac Wi-Fi card for either onboard passenger Wi-Fi or use as an additional WAN link.



**Version 2** is equipped with future proof 5G sub-6 GHz modems for maximum bandwidth and 1 x 802.11ac Wi-Fi card.

### Applications at the Mobile Edge

The Icomera X5 is the latest high-performance router to give vehicle manufacturers and operators access to Icomera's advanced X-Series platform, supporting multiple, resource-intensive applications such as passenger Wi-Fi, infotainment, and digital video surveillance simultaneously as part of a single solution.

Supported by ICONIC, Icomera's robust and scalable back-end management software, operators can easily configure, monitor and report on system performance.

### A Single Platform for Innovation

With no need for additional hardware such as media servers or video recorders, the Icomera X5 provides a powerful one-box solution. Once connected, Icomera provides an open platform for innovation; for clients, this means never being locked in to a specific technology or bound by a single communication supplier's pricing. As we move towards truly Connected Journeys, it means accelerating the delivery of cost-effective connected applications based on real-time data streams.

Please contact [sales@icomera.com](mailto:sales@icomera.com) to find out more

## Version 1.0

### X5 Connect

- Intel® Xeon-family Pentium® 1.5 / 2.1 GHz Processor, 4-core with hyper-threading
- 16 GB RAM
- 1 TB SSD
- 4 x LTE Advanced Pro, LTE Cat-12 modems
- 16 nano SIM
- 1 x 802.11ac Wi-Fi card

### X5 Advanced 1519 / 1519 +2TB

The X5 Advanced is available with either 1TB, or 2TB storage

- Intel® Xeon-family Pentium® 1.5 / 2.1 GHz Processor, 4-core with hyper-threading
- 32 GB RAM
- 4 x LTE Advanced Pro, LTE Cat-12 modems
- 16 nano SIM
- 1 x 802.11ac Wi-Fi card

### WWAN Radio

LTE-A

DC-HSPA+/HSPA+/HSPA/WCDMA

LTE bands: 1, 2, 3, 4, 5, 7, 8, 9, 12, 13, 18, 19, 20, 26, 28, 29, 30, 32, 41, 42, 43, 46, 48, 66

UMTS bands: 1, 2, 4, 5, 6, 8, 9, 19

### Antenna Connectors

- 12 x QMA for cellular and Wi-Fi
- 1 x QN for GPS

## Version 2.0

### X5 Connect

- Intel® Xeon-family Pentium® 1.5 / 2.1 GHz Processor, 4-core with hyper-threading
- 16 GB RAM
- 256GB SSD
- 4 x 5G sub-6 GHz with fallback to LTE Cat-20 modems
- 16 nano SIM
- 1 x 802.11ac Wi-Fi card

### X5 Advanced 1519 / 1519 +2TB

The X5 Advanced is available with either 1TB, 2TB storage

- Intel® Xeon-family Pentium® 1.5 / 2.1 GHz Processor, 4-core with hyper-threading
- 32 GB RAM
- 4 x 5G sub-6 GHz with a fallback to LTE Cat-20 modems
- 16 nano SIM
- 1 x 802.11ac Wi-Fi card

### WWAN Radio

- 5G sub-6 FDD and TDD, SA<sup>1</sup> and NSA operations
- 5G core network Opt. 3a/3x and Opt. 2
- 5G 4 x 4 MIMO support on Bands 1, 2, 3, 4, 7, 25, 30, 32, 41, 42, 43, 46, 48, 66
- 4G: 7 CA, up to 20 layers DL/3 CA UL, 256-QAM DL/UL
- 3G: HSPA+ Rel. 8 (DL/UL 42/11 Mbps)
- 5G bands: n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79
- LTE bands: 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29DL, 30, 32,34, 38, 39, 40, 41, 42, 46(LAA), 48(CRS), 66, 71
- WCDMA bands: 1, 2, 3, 4, 5, 6, 8, 9, 19

### Antenna Connectors

- 18 x QMA for cellular and Wi-Fi
- 1 x QN for GPS

## General Specification (version 1.0 and 2.0)

### Dimensions

258 x 267 x 77 (W x L x H mm)

### Weight

5.5 kg

### Materials

All aluminium chassis

### Power Inputs

- 50–137 VDC
- 110 VDC (nominal)

### Power Consumption

< 50 W (Normal operation)

### Interface Ports

- 2 x M12 X-coded 10 Gbps
- 1 x M12 X-coded 1 Gbps
- Power Han® PushPull

### Compliance

#### EU market:

- CE Conformity
  - RED (2014/53/EU)
  - RoHS2 (2011/65/EU)
  - RoHS3 (2015/863)
- Rail Industry Requirements
  - EN 45545 Fire Assessment
  - EN 50155 Rolling Stock (EMC, Environmental)
  - EN 50125 Environmental
  - EN 50153 Electrical Safety
- IP Rating: IP65 to EN 60529
- REACH (EC 1907/2006)

### US and Canada market:

- FCC:
  - 47 CFR FCC Part 15b, 2.1091, 15.31(h)
- ISED:
  - ICES-003 ISSUE 6 (Apr 2017)
  - RSS-102 ISSUE 5:2015
- RCM compliant for Australia

### Environmental

- Operating: -40 °C to +85 °C, as per EN50155 Tx
- Storage: -40 °C to + 85 °C

### GPS

- 72 channels
- GNSS constellations:
  - GPS / QZSS L1 C/A
  - GLONASS L10F
  - Galileo E1B/C
  - BeiDou B1
- Positional Accuracy (CEP): 2.5 m
- Acquisition (@ -147dBm)
  - Hot start: 1 s
  - Cold start: < 28 s

### Wireless Interfaces

Supports 4 cellular modems and 1 Wi-Fi card

### Network Services

- Icomera patented seamless WAN switching and aggregation
  - DHCP, DNS, VLAN, SNTP/NTP etc
- Supported Protocols
- IP (TCP/UDP) ICMP

## Application Support

Supports virtualisation technologies to allow applications to run in virtual environments. The number of virtual machines that can run on the system is subject to resource availability on the host machine.

## Cloud-Based Management Tools

Post-installation, Icomera's technology empowers you to manage your solution independently; we provide you with a suite of powerful, fully integrated cloud-based tools, designed specifically for public transport applications.

Our software allows you to remotely monitor and update systems, without any disruption – something that just isn't possible using standard office network IT tools.