

The Kathrein RAIN RFID reader RRU 7700 is the leading IoT device for all professional ITS solutions, in vehicle identification in harsh environments. The Kathrein ITS reader offers modularity for high-speed identification and end-to-end security at the same time.

With its best-in-class +33 dBm UHF RFID unit and PoE+ powering capability, the reader is the first choice for vehicle identification in harsh environments. Based on the latest RFID standards, such as EPC Gen2v2/ISO 18000-63, Kathrein RRU 7700 reader supports all market-leading transponder chips for security, authentication and encoding.

This makes the reader compliant to the Crypto Suite requirements for road tolling of ISO/IEC 29167-10. The reader fulfill as well the performance test for ISO/IEC 18046-2 and conformance test for ISO/IEC 18047-6.



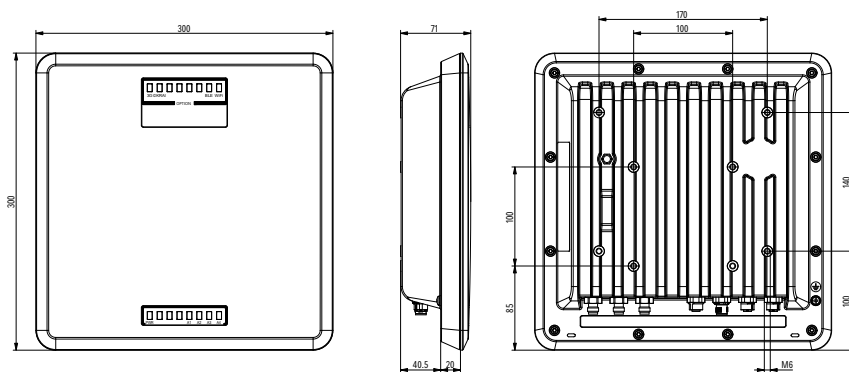
Features

- high-speed vehicle identification
- accelerated data decoding
- efficient key handling on edge level with embedded High Secure Memory (HSM) module
- Crypto Suite compliant for road tolling ISO/IEC 29167-10
- compliant with ISO/IEC 18046-2 performance test and ISO/IEC 18047-6 conformance test
- ruggedised high-end RAIN RFID reader
- powerful IoT gateway
- enhanced RF design
- 4 antenna ports
- +33 dBm port power
- GPIO
- PoE+
- basic computing module
- embedded dual-core 800 MHz PC
- open source Linux OS
- advanced LED visualisation
- IP67 outdoor use
- type approval for Europe, in preparation vor US

Key Applications

- Smart City Applications
- Vehicle Identification
- Tolling Applications
- Electronic Vehicle Registration

Dimensions [mm]



Note

Risk of material damage!

- Make sure that the depth at which the screws are put into the housing of the reader does not exceed 10 mm (the tightening torque is 5 Nm).

General Specifications

| Type | | ETSI Version RRU 7700 | FCC Version RRU 7700 |
|-----------------------------------|-------------------------|--|---|
| Order number | | 52010592 | 52010594 |
| RFID | | | |
| Frequency range | [MHz] | 865–868 | 902 - 928 MHz 915 - 921 MHz European Upper Band |
| Impedance antenna port | [Ohm] | 50 | |
| Max. TX power conducted | [dBm] | 33 | 30 (33 dBm with extended cable length) |
| Max. TX power radiated | [dBm ERP] [dBm EIRP] | 33 | 36 |
| RX sensitivity | [dBm] | typ. -80 | |
| Number of antenna ports | [R-TNC] | 4 | |
| Standards | | EN302208-2 V2.1.1, EN301489-3, EN50364, EN62368-1, EN60529, EPC Gen2 V2 | FCC Part15, UL, IC, EPC Gen2 V2 (in preparation) |
| | | UCODE DNA, ISO/IEC 29167-10; ISO/IEC 18046-2; ISO/IEC 18047 | |
| ITS functionality | | | |
| Vehicle identification | | high-speed identification mode; selectable by SW ¹⁾ | |
| Data transmission (air interface) | | Profile optimized data throughput ¹⁾ | |
| Key Handling | | on edge level, with embedded High Secure Memory (HSM) module | |
| Voltage | | | |
| Local supply | [VDC] | +10 to +30 | |
| Connector | | M12, A-coded, 4-pole | |
| Remote feed | [VDC] | PoE+ according to 802.3at (35–57) <ul style="list-style-type: none"> Make sure that the router/switch supports 30 W in the static mode. Use the cable the length of which does not exceed 100 m. Make sure to use a Cat 6 cable or a higher level cable. Note that the internal supply of GPIO-VCC-pin is not possible with PoE+. | |
| Connector | | M12, X-coded, 8-pole, port 1 only | |
| Power consumption | | | |
| Local supply | [W] | 25.4 | |
| Remote feed | [W] | 25.4 | |
| Embedded PC | | | |
| Processor | | ARMv7-A based processor, 2 cores @ 800 MHz | |
| Flash memory (eMMC) | [Gbyte] | 8 | |
| RAM DDR3 | [Gbyte] | 1 | |
| Operating system | | Linux | |
| Ethernet | | | |
| Number of Ethernet ports | | 2 | |
| Data rate | [Mbit/s] | 10/100 | |
| Connector | | M12, X-coded, 8-pole | |

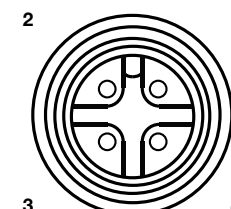
¹⁾ For the high-speed identification mode, please make sure that this mode is allowed in the respective country.

➤ General Specifications

| Type | ETSI Version RRU 7700 | FCC Version RRU 7700 |
|-------------------------------|--------------------------|--|
| Order number | 52010592 | 52010594 |
| LED visualisation | | |
| Freely programmable | | 12 |
| Fixed | | 1 (power LED) |
| GPIO | | |
| Type | | 4 inputs, 4 outputs (double insulation possible) |
| Max. input voltage | [V] | 30 |
| Max. output voltage | [V] | 30 |
| Max. current per output port | [mA] | 500 |
| Max. current over all outputs | [mA] | 1500 |
| Connector | | M12, A-coded, 12-pole |
| RFID controller | | |
| Processor | | ARMv7-A based processor with 600 MHz |
| Flash memory eMMC | [Gbyte] | 4 |
| RAM DDR2 | [Mbyte] | 128 |
| Operating system | | Linux |
| Mechanical properties | | |
| Weight | [kg] | 4.26 |
| Degree of protection | | IP67 |
| Operating temperature range | [°C] | -20 to +55 |
| Storage temperature range | [°C] | -40 to +85 |
| Dimensions (L x W x H) | [mm] | 300 x 300 x 71 |

➤ Power Supply

M12, A-coded, 4-pin, male

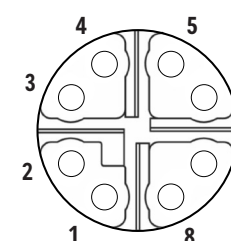


Pinout Power Supply

| Pin | Allocation |
|-----|------------|
| 1 | +24 V DC |
| 2 | GND |
| 3 | GND |
| 4 | +24 V DC |

➤ Ethernet

M12, X-coded, 8-pin, female

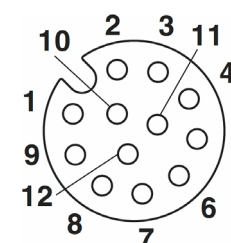


Pinout communication PoE+

| Pin | Data | PoE |
|-----|------|------------|
| 1 | TX+ | PoE Mode A |
| 2 | TX- | PoE Mode A |
| 3 | RX+ | PoE Mode A |
| 4 | RX- | PoE Mode A |
| 5 | | PoE Mode B |
| 6 | | PoE Mode B |
| 7 | | PoE Mode B |
| 8 | | PoE Mode B |

➤ GPIO

M12, A-coded, 12-pin, female

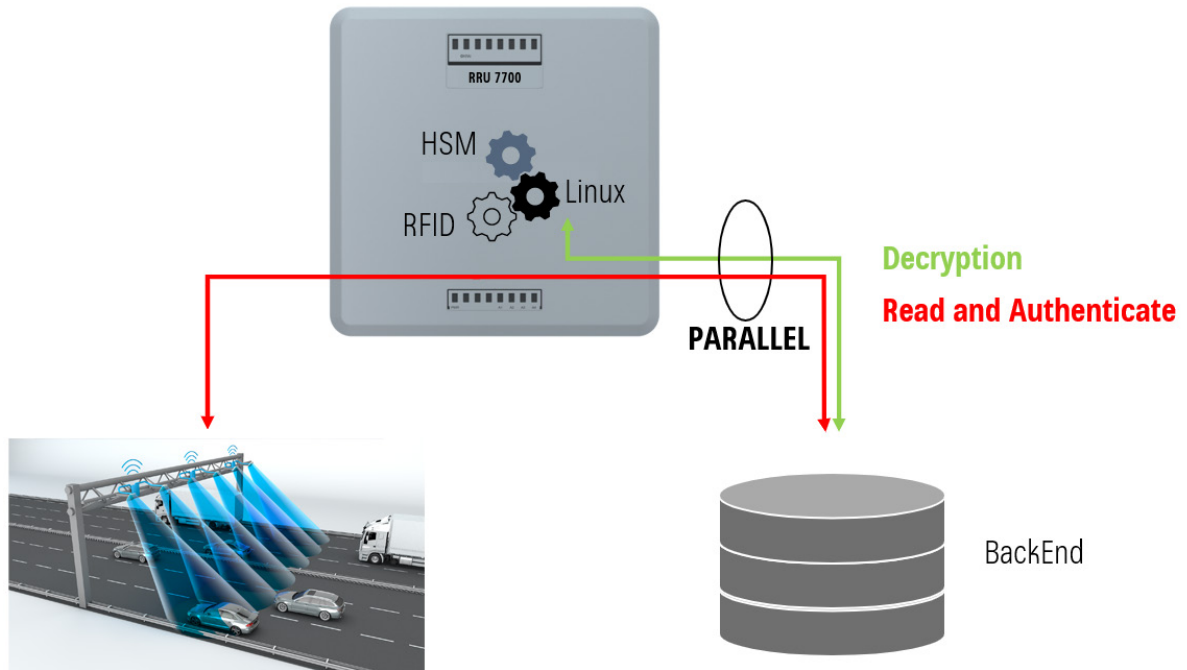


Pinout general purpose input output

| Pin | Allocation | Pin | Allocation |
|-----|------------|-----|------------|
| 1 | OUT_CMN | 7 | UB |
| 2 | OUTPUT_1 | 8 | OUTPUT_4 |
| 3 | INPUT_3 | 9 | OUTPUT_3 |
| 4 | INPUT_CMN | 10 | OUTPUT_2 |
| 5 | INPUT_1 | 11 | INPUT_2 |
| 6 | GND | 12 | INPUT_4 |

> Feature of the Kathrein High Secure Memory (HSM-)Modul

Data Encryption and Key Handling with the enhanced HSM of RRU 7700:



Data Decryption:

- Read and Authenticate in parallel
- High Secure handling and transmission of the keys
- High Speed decryption up to 300 km/h

Key Diversification:

- Unique key for each transponder
- Key handling inside HSM