**RRU 4500 - Gen 4**
ETSI 52010678 / FCC 52010682

**RRU 4560 - Gen 4**
ETSI 52010679 / FCC 52010683

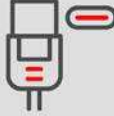**RRU 4570 - Gen 4**
ETSI 52010680 / FCC 52010684

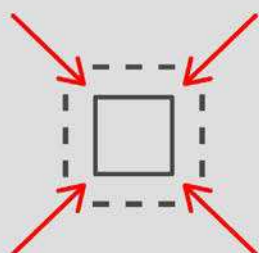| | |
|---|---|
| **10x** higher RX sensitivity | **1100** tags / second |
| USB-C | |
| Cyber Security | RFID |

**Smart Reader Mode**

**40%** Lower power consumption than Gen3 Reader

52 % smaller footprint
66% smaller volume

**IP68**

Multi port

**©KRAI** 10x higher switching speed

Web Interface

Linux

Scalable RFID performance based on the Impinj Ex 10 chip family

**RRU** 4 Port RFID Reader Unit

Wi-Fi

Bluetooth SPP

**5G**

GNSS

The 4th generation of Kathrein RFID readers builds on experience and innovation. The well-known flexibility of the previous reader families is paired with the latest technology and innovative power to solve the upcoming requirements for IoT applications.

Our customers and partners can rely on the fact that the 4th generation of Kathrein readers is also software compatible. At the same time new features and functions have been added that were previously missing on the market.
Based on the Impinj Ex10 chipset, the Kathrein RFID readers are the most versatile and high-performance units for all IoT applications and harmonize with Kathreins´s RFID antenna series.

## Features

- Ruggedized high-end RAIN RFID reader
- Powerful IoT gateway with wireless host functionality
- Enhanced RF design
- Reduced power consumption for green IT installation
- 4 external antennas (up to 32 antennas via ©KRAI)
- +33 dBm port power
- ©KRAI 1.0 / 2.0 antenna support
- GPIO
- PoE
- Basic computing module
- Embedded dual-core 800 MHz PC
- Open source Linux OS
- Advanced LED visualisation
- IP68 outdoor use
- Type approval for Europe, US and RoW

## Key Applications

- Logistics & Supply Chain

- Manufacturing & Automotive

- Intelligent Transportation Systems

- Healthcare

**RFID UHF Reader Systems** | Page 3 of 7
**4th generation**

**KATHREIN**

**RFID UHF Reader Systems** | Page 4 of 7
**4th generation**

**KATHREIN**

## General Specification RFID Reader Unit RRU Reader Family

| Type | | ETSI Version RRU 4500 \| RRU 4560 \| RRU 4570 | FCC Version RRU 4500 \| RRU 4560 \| RRU 4570 |
|---|---|---|---|
| Order number | | 52010678 \| 52010679 \| 52010680 | 52010682 \| 52010683 \| 52010684 |
| **RFID** | | | |
| Frequency range SW defined ratio | [MHz] | 865 – 868 915 – 921 [1] | 902 – 928 |
| Impedance antenna port | [Ohm] | 50 | |
| Max. TX power conducted | [dBm] | +33 | |
| Max. TX power radiated | [dBm EIRP] | +33 e.r.p. +36 e.r.p. [1] | + 36 EIRP |
| Max. RX sensitivity | [dBm] | –93 | |
| Max. read range [2] | [m] | 32 | |
| Max. write range [2] | [m] | 22 | |
| Max. read rate [2] | [tags/s] | 1100 | |
| Number of antenna ports | | 4, TNC-R | |
| **Power supply** | | | |
| Local supply | [VDC] | +10 to +30 | |
| Power connector | | M12, A-coded, 4-pole | |
| Remote feed [3] | [VDC] | Power over Ethernet PoE according to 802.3af (36–57) | |
| Ethernet connector | | M12, X-coded, 8-pole | |
| **Power consumption** | | | |
| Local supply @ 33 dBm | [W] | < 15 | |
| Remote feed with PoE @ 31.5 dBm | [W] | < 12.5 | |
| **Ethernet** | | | |
| Number of ethernet ports | | 1 | |
| Data rate | [Mbit/s] | 10/100 | |
| Ethernet connector [4] | | M12, X-coded, 8-pole | |
| **Multi-Protocol Port** | | | |
| Protocol type | | RS 232 / RS 485 / customized | |
| Data rate | [Mbit/s] | up to 12 | |
| MPP connector | | M12, A-coded, 5-pole | |
| **Servcice Port** | | | |
| USB mode [5] | | Full speed, data only, USB 2.0; USB on the go, customized | |
| USB type | | USB C (w/o power supply) | |

| Type | | ETSI Version RRU 4500 \| RRU 4560 \| RRU 4570 | FCC Version RRU 4500 \| RRU 4560 \| RRU 4570 |
|---|---|---|---|
| Order number | | 52010678 \| 52010679 \| 52010680 | 52010682 \| 52010683 \| 52010684 |
| **Wifi** | | **only with RRU 4560** | |
| Supported standards | | 802.11 a, b, g, n | |
| 2.5 GHz band | [GHz] | 2.412 – 2.484 | |
| Max TX power (depends on country) | [dBm] | max. 17.3 | |
| 5 GHz band | [GHz] | 4.910 – 5.825 | |
| Max TX power (depends on country) | [dBm] | max. 18 | |
| Max. channel bandwidth | [MHz] | max. 40 | |
| Antenna connector | | SMA | |
| External antenna alignment | [°] | 0 ... 90 | |
| **Bluetooth** | | **only with RRU 4560** | |
| Frequency range | [GHz] | 2.402 – 2.480 | |
| Operating mode | | BT serial port profile | |
| Antenna connector | | SMA | |
| External antenna alignment | [°] | 0 ... 90 | |
| **Mobile communication** | | **only with RRU 4570** | |
| Supported standards | | 2G / 3G / 4G / 5G-ready | |
| Frequency range GPRS/EDGE | [MHz] | 900/1800 | |
| Frequency range UMTS/HSPA | [MHz] | 800/1800/2100 | |
| Frequency range 4G | [MHz] | 800/900/1800/2100/2600 | |
| Frequency range 5G | [MHz] | 700/800/900/1800/1900/2100/2600 | |
| Max TX power (depends on country) | [dBm] | max. 33 | |
| Global localization | | | |
| Localization systems | | GPS, GLONASS, Galileo | |
| **©KRAI** | | | |
| Cmd duration Gen3 mode | [ms] | 100 | |
| Cmd duration Gen4 mode | [ms] | 10 | |
| Frequency | [kHz] | 22 | |
| Supply voltage (output) | [V] | 5 | |
| Max. current per port | [mA] | 100 | |
| **LED visualization** | | | |
| Freely programmable | | 7 | |
| Status LED power on | | 1 | |

**RFID UHF Reader Systems** | Page 5 of 7
**4th generation**

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**4th generation**

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| Type | | ETSI Version | FCC Version |
|---|---|---|---|
| | | **RRU 4500 \| RRU 4560 \| RRU 4570** | **RRU 4500 \| RRU 4560 \| RRU 4570** |
| **Order number** | | **52010678 \| 52010679 \| 52010680** | **52010682 \| 52010683 \| 52010684** |
| **GPIO** | | | |
| Digital inputs | | 4 | |
| Digital outputs | | 4 | |
| Operating mode 1 | | DC-isolate | |
| Operating mode 2 | | not DC-isolate | |
| 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 | |
| **Embedded PC** | | | |
| Processor | | iMX7 ARM Cortex-A7 dual core @ 1200 MHz | |
| Flash memory eMMC | [GByte] | 8 | |
| RAM DDR3 | [GByte] | 1 | |
| Operating system | | Linux | |
| **General** | | | |
| Shock | | ETSI EN 300 019-2-3 V2.1.2<br>IEC 60068-2-27 | |
| Total shock response spectrum | | Type 3.3 | |
| Vibration | | ETSI EN 300 019-2-3 V2.1.2<br>IEC 60068-2-64 | |
| Weight | [kg] | 1.5 | |
| Degree of protection | | IP68 | |
| Temperature range | | | |
| Operating | [°C] | −40 to +60 | |
| Storage | [°C] | −40 to +85 | |
| Dimensions (L x W x H) | [mm] | 160 x 270 x 50 | |
| Standards | | ISO 18000-6C<br>EPC Gen2 V2<br>UCODE DNA EN 29167-10<br>ETSI reader: EN302208-2 V2.1.1, EN301489-3,<br>EN50364, EN62368-1, EN60529,<br>FCC reader: FCC Part15, UL, IC | |

1) European Upper Band; selectable by customer for external antennas only,
   check whether operation is permitted in your country
2) Depends on the environment and the transponder properties
3) In PoE mode, the transmission power is reduced to 31.5 dBm.
   Use cable length < 100 m.
   Make sure to use a Cat 6 cable or higher.
   Note that the internal supply of GPIO-VCC-pin is not possible with PoE
4) PoE and Ethernet connection via one socket
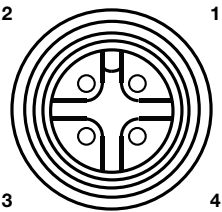5) USB-C is a separate interface for service purposes

> **Dimensions [mm]**

**KATHREIN**
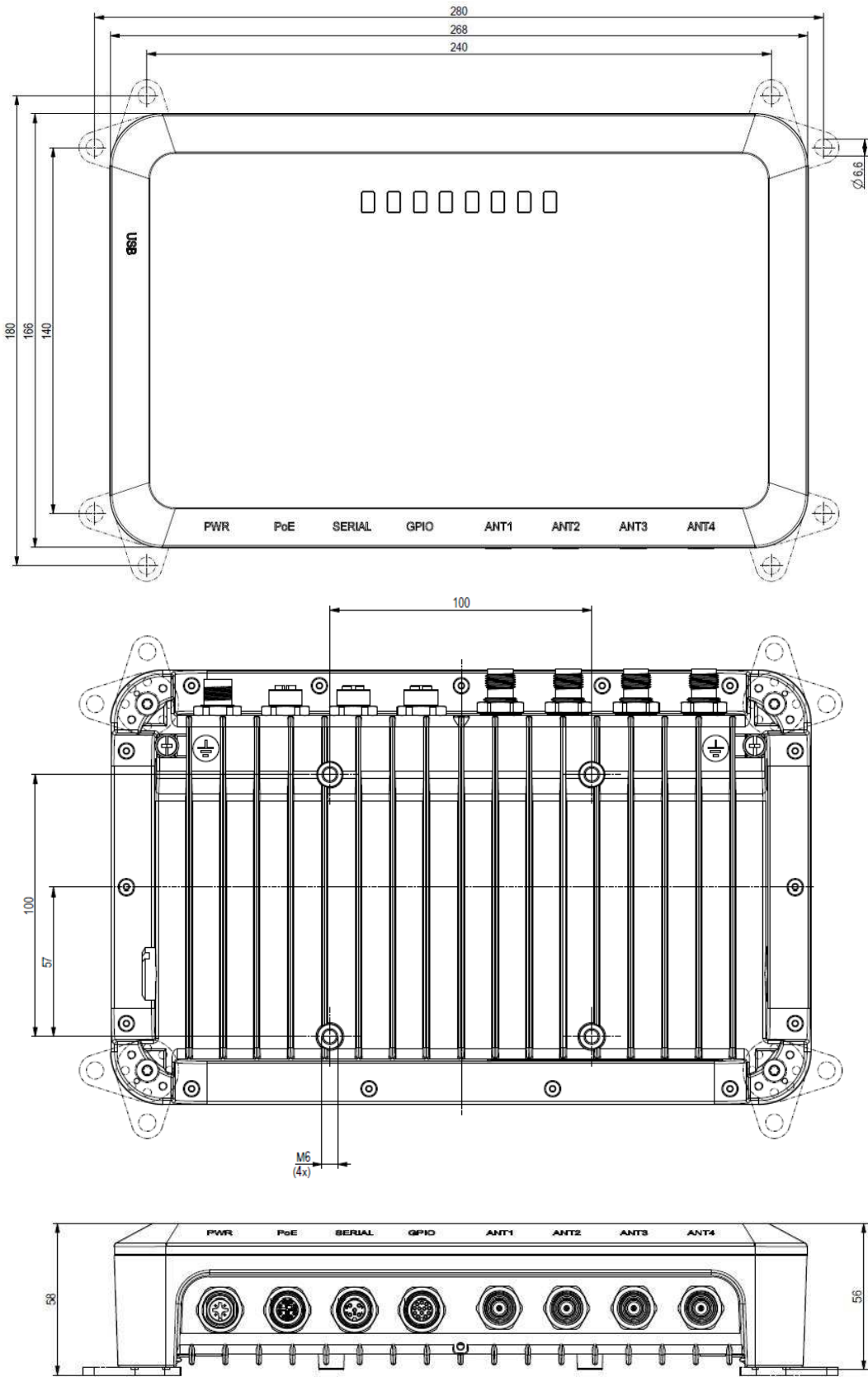
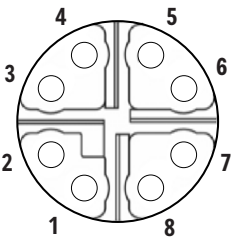# Connectivity

## 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+ | Mode A |
| 2 | TX- | Mode A |
| 3 | RX+ | Mode A |
| 4 | RX- | Mode A |
| 5 | | Mode B |
| 6 | | Mode B |
| 7 | | Mode B |
| 8 | | Mode B |

## GPIO

M12, A-coded, 12-pin, female
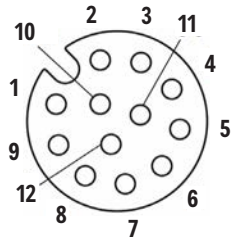


**Pinout general purpose input output**

| 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 |

## Multi protocol port connector

M12, A-coded, 5-pin, male
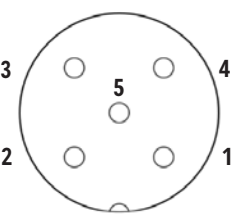


**Pinout power supply**

| Pin | Allocation |
|-----|------------|
| 1 | RS 232 /TX |
| 2 | RS 232 /RX |
| 3 | RS 485 /A |
| 4 | RS 485 /B |
| 5 | GND |

936B350/-/0325 | Subject to changes.