Intelligent Transportation Systems

100% Identification Technology
Kathrein is a leading international specialist for reliable, high-quality communication technologies.

We are an innovation and technology leader in today's connected world. Our ability to provide solutions and services enables people all over the world to communicate, access information and use media, whether at home, at the office or on the road.

We cover a broad spectrum: from mobile communication and RFID solutions, to satellite reception, broadband and broadcast technology, to transmission and reception systems in vehicles.

As a hidden champion and family-owned enterprise, we have been working on the technologies of tomorrow since 1919. We take pride in our dedicated employees and our passion for customers and quality.

Find out more about us at www.kathrein.com
**RFID Solutions in ITS Infrastructure**

The highly increasing road traffic and transport requires intelligent and smart traffic solutions. Kathrein can help to control traffic flow in urban areas in order to reduce emissions. Based on our cost-effective passive RFID technology, the powerful and dynamic ITS network fulfils all future smart city requirements and saves infrastructure costs.

**Kathrein Is Focusing on the Following Core Applications**

- **ETC**: Electronic Toll Collect
- **AVI**: Parking Infrastructure
- **ITS**: Intelligent Transportation Systems
- **EVR**: Electronic Vehicle Registration
RFID Solutions in the ITS Infrastructure

According to the latest ISO 18000-63 passive RFID standard, Kathrein provides all necessary key components like:

- RFID high-performance ©KRAI reader
- RFID wide-range antennas
- RFID security windshield and vehicle plate transponders
- RFID integration and device management software platform (© CrossTalk)

Readers

- UHF Reader: RRU 4000 Series
- UHF Reader: ARU 3000 Series
- UHF Reader: M-ARU Series

Antennas

- Wide Range: WIRA 30°/70°
- Wide Range: WIRA 40°/40°
- Wide Range: WIRA 70°/70°

Transponders

- IDePlate and IDeSTIX

Software

Integration and Device Management Software Platform © CrossTalk
Free Flow Solution

The intelligent solution provides a real-time system with filtering, processing and monitoring, which runs directly on the reader hardware. The communication to backend systems or cloud services can be established with the integrated LAN, Wi-Fi and 3G interfaces.

For free flow identification, it is recommended to use the RRU4 series with up to 4 external antenna ports.

Wide Range Antennas

<table>
<thead>
<tr>
<th>Application</th>
<th>WIRA 30°/70° Linear</th>
<th>WIRA 30°/70° Circular</th>
<th>WIRA 40°/40° Linear</th>
<th>WIRA 70°/70° Circular</th>
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</thead>
<tbody>
<tr>
<td>High Speed Identification</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lane Selective Read Zone</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multiple Lane Coverage</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Licence Plate Transponders</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Windshield Lable Transponders</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Antenna Pattern and Parameters for Free Flow Installation

**Side view**

- Wide Range: WIRA 40°/40°
- Wide Range: WIRA 30°/70°

**Top view**

- Radiated Power: 2 W ERP
- 4 W EIRP
- Antenna Height: 5.5 m
- Antenna Downtilt: 70°
- Max. Netw. Cable Length: 85 m*
- Max. Antenna Cable: 15 m
- Max. Speed: 250 km/h**
- Transponders IC: UCODE 7
  UCODE DNA
  EM 4423
  Monza Series
  Higgs Series

* The maximum length of category 6 Ethernet (CAT6e) cable should not exceed 85 metres. ** max. 2 antennas per reader
**Barrier/Gate Solution**

The stand-alone solution provides basic access control with white-/blacklist filtering and application running directly on the reader hardware. The configuration and log data can be shared over the integrated LAN, Wi-Fi and 3G interfaces.

For barrier or gate based identification like in toll plazas, it is recommended to use the ARU 3000 series with integrated wide-range 70° antenna.

<table>
<thead>
<tr>
<th>Application</th>
<th>ARU4 Series</th>
<th>M-ARU Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Speed Identification</td>
<td>✓</td>
<td></td>
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<tr>
<td>Lane Selective Read Zone</td>
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<td></td>
</tr>
<tr>
<td>Multiple Lane Coverage</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Licence Plate Transponders</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Windshield Lable Transponders</td>
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<td>✓</td>
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<tr>
<td>Hands-free Access</td>
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</table>
Antenna Pattern and Parameters for Barrier/Gate Installation

The maximum length of category 6 Ethernet (CAT6e) cable should not exceed 85 metres.

### Reader Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated Power</td>
<td>0.5 W ERP, 1 W EIRP</td>
</tr>
<tr>
<td>Antenna Height</td>
<td>2.5 m</td>
</tr>
<tr>
<td>Antenna Downtilt</td>
<td>20°</td>
</tr>
<tr>
<td>Max. Netw. Cable Length</td>
<td>85 m*</td>
</tr>
<tr>
<td>Max. Antenna Cable</td>
<td>15 m</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>50 km/h</td>
</tr>
<tr>
<td>Transponders IC</td>
<td>UCODE 7, UCODE DNA, EM 4423, Monza Series, Higgs Series</td>
</tr>
</tbody>
</table>

* The maximum length of category 6 Ethernet (CAT6e) cable should not exceed 85 metres.
AVI Parking Infrastructure

Installation and Settings

The maximum length of category 6 Ethernet (CAT6a) cable should not exceed 85 metres.
Stand-alone Solution

Automated vehicle identification (AVI) is one of the key markets that Kathrein Solutions is focusing on. AVI includes free flow identification, plaza and parking applications. For parking applications, Kathrein provides a specially configured software for access control named AccessManager. Based on the Kathrein-reader embedded Linux operating system, AccessManager allows to create easy access solutions without any programming skills – only four steps are needed to manage authorisation: assigning rights to create user groups, defining reading zones and starting points and determining outputs. In combination with digital inputs and outputs (GPIO), AccessManager allows any upstream and downstream mechanical peripherals like barriers or gates. In addition to the recorded permissions, each read event can be stored in a log file. The subscriber identifier or name and the exact time will be recorded in an SQLite database. This information can be retrieved for a desired duration. In this case, the access is via a remote connection or locally as a CSV or XML file. The duration or parking time can then be analysed.

Scan the code below to get directly to the software portal:

Please use the QR code or the link on the right to get to the software portal. The full version can be activated by setting a licence key, which can be acquired by contacting rfid-sales@kathrein-solutions.com.

Electronic Vehicle Registration

Intelligent Parking Interfaces

Kathrein offers different interfaces to integrate RFID into existing parking infrastructure solutions. With the provided SKIDATA app, Kathrein readers can be integrated seamlessly into a SKIDATA backend system.
Intelligent Parking

Mobility is one of the key factors and a basic requirement for modern societies and economies. With the overwhelming success of car sharing services like “car2go”, “ParkNow” and “evopark”, the need for automated identification is getting more important than ever. Kathrein is the key provider for next generation smart city solutions.

Internet of Things

Kathrein significantly boosts the safety and efficiency of traffic and freight management in logistics environments.