

Kapsch TrafficCom

Multi-Protocol Readers (MPR). Frequently Asked Questions.

How fast have the MPR readers been tested to?

The Janus MPR readers have been tested in tri-protocol operation (TDM, 6C, and SeG0) up to speeds of 100 MPH. As safety precludes us from testing at speeds above 100MPH, we can reliably extrapolate the performance of the reader at higher speeds.

What's the difference between the MPR2.3 and the MPR2.4?

The MPR2.4 is the next generation of our Janus multi-protocol, multi-channel, redundant readers. The MPR2.4 utilizes a latest generation Single Board Computer (SBC) in the CTM Module. The reader also uses the latest version of the Linux Operating System. While these changes are not visible to the end user, the MPR2.4 has a new, enhanced Graphical User Interface to enhance the user experience. Otherwise, the MPR2.4 has the same reliability, performance and feature set as the MPR2.3 and can be used interchangeably throughout your tolling system.

What is the difference between MRFMS and MRFMS+?

The MRFMS has separate Tx and Rx RF connectors and requires two RF cables to the antenna and a circulator to be used with a single antenna.

The MRFMS+ has a single RF connector and only requires a single RF cable to the antenna. The MRFMS+ also provides greater (3 dB) RF output that will allow for longer cable runs.

While both the MRFMS and the MRFMS+ have the same footprint and plug into the same reader, they are not interchangeable within the same reader. At this time, the reader must have either all MRFMS or MRFMS+ modules.

Will the MRFMS+ work in the MPR2.3?

Yes, as long as all modules within the MPR2.3 are MRFMS+.

You cannot mix MRFMS & MRFMS+ modules within a single reader at this time.

Can I simply replace my MPR2.0 or MPR2.3 MRFMS with MRFMS+?

In a MPR2.3 the MRFMS and MRFMS+ can be exchanged given any other rules about mixing and matching different modules, however, the MPR2.0 MRFMS module, while the hardware is the same as the module used in MPR2.3 the firmware is quite different so you cannot install any MRFMS+ in a MPR2.0 reader. In fact in a MPR2.0 reader, the MRFMS module has to be an MPR2.0 module.

Can MPR2.0 be upgraded to use MRFMS+, or the new GUI?

Not directly. The MPR2.0 will need to be upgraded to MPR2.3 via a software and firmware upgrade before the new GUI can be loaded.

On the next major release of MRFMS+ and MPR2.4 reader the remote update of radio firmware will be supported.

Can the MPR2.3 be upgrade to the new GUI?

Yes, however the GUI found in the MPR2.4 will be available to upgrade the MPR2.3 sometime in 2nd half of 2022.

How do I upgrade an MPR2 reader to a MPR2.3 or MPR2.4 Reader?

Reader upgrades can be performed at our factory depot by way of an RMA return or a Kapsch trained technical expert on site. Please consult our sales team for pricing and availability of our field personnel to assist.

How many MRFMS+ modules can I use in a redundant reader?

Provided you have a TDM frame in the sequence and no more than 2 other protocols, you can run 8 MRFMS+ modules in the chassis. If however you do not have the TDM frame then you can only run 5 MRFMS+ modules in the chassis. MRFMS draw less power than MRFMS+ so they are not an issue.

What is the latest version of the Reader Software and Firmware?

All readers ship from the factory with latest approved software and firmware. Previous versions of software can also be provided in the readers and RF modules to match versions deployed on your roadways. Please contact your technical representative for more information.

Can I update the reader software remotely?

Currently MPR2.3 and MPR2.4 allow the reader software to be updated remotely through the network, but not the radio (MRFMS(+)) firmware. The radios (MRFMS or MRFMS+) require a physical hard connection (e.g. to a laptop) to be upgraded. The MPR4.1 allows both the reader software and the radio firmware to be updated remotely via the network.

How many protocols can be active / in- use at one time?

Up to four protocols can be activated by the user at the same time. For highway speed tolling, Kapsch recommends a maximum of three protocols active at one time. For slower speed and stop and go tolling, more than three protocols can be activate. Because different over the air protocols have different timing requirements, it is recommended to reach out to us to discuss how best to optimize your protocol setup for your specific operations.

Why do readers need to be sync'd?

Reader deployed within 600 feet of each other need to be sync'd in order to prevent RF interference between the various channel on the readers. The Sync feature ensures the readers are optimized to work together to maximize performance and minimize interference.

Can MPR2.3 and MPR2.4 be sync'd?

Yes, the MPR2.3 can be sync'd to MPR2.4 and therefore can be used interchangeably in your toll system.

How far do readers need to be spaced to avoid the need to sync?

Minimum spacing for sync'd readers with 600 feet.

If the readers / antennas are facing in opposite directions, do they need to be sync'd?

Yes. Any readers which do not meet the minimum required 600' zone must be sync'd even if facing in the opposite direction.

What type of cable do I use to sync the readers?

Recommended Cable:

- [Belden 9730](#) or [Belden 89730](#)
- Minimum 24AWG 3-twisted pair (2 active, 1 spare), shielded, single or multiple drain

Maximum Sync Cable Length:

- 2000 feet (610 meters) max length, sum of all Readers cable segments to hub.
- 1500 feet (457 meters) max length any one Reader cable segment to hub.

What type of antenna cable do you recommend?

The cable requirements depend on the specific installation as well as the intended cable RF loss. Generally, LMR-600 or equivalent is a good general recommendation for most applications. Kapsch is happy to help determine the best cable for the specific deployment.

How do you determine when to use the various Antennas that Kapsch has in the product lineup?

Antennas are designed to meet a defined set of parameters. The antenna parameters define the application use for each antenna. A chart outlining the base parameters such as height and width of a travel lane can be found on our site. The Kapsch Team can help you choose the proper antenna for your specific application and installation.

Do the MPR readers need to be installed in a cabinet?

Most of the Kapsch readers are designed to be installed in a NEMA 4 cabinet. Our MPR4.1 Reader is built specifically to be deployed and mounted outdoors without the need of a separate cabinet.

Do the reader cabinets need HVAC?

The Readers are designed to operate from -34°C (-29°F) to +74°C (165°F) with only a fan tray circulating air through the cabinet and therefore do not need HVAC for most deployments.

Are readers field serviceable?

Yes. All Kapsch readers are serviceable in the field. Our readers are designed so the individual modules can easily and quickly be swapped out in the field to minimize downtime.

How do I initiate a warranty repair?

Warranty repair RMA's are issued through our customer service group. Please contact Customer Service to initiate an RMA.

Where can I find data sheets, manuals and other information on the Kapsch 915 products?

Information can be found at [Kapsch Sales – Components site](#) (ktcsales.net/components). Should additional information be required please contact your local Kapsch representative or contact us from our "Contact Us" link on the website.

How do I get a copy of the reader documentation including the ICD and the Operations and Maintenance Manual?

Please find our product manuals at [Kapsch Sales – Components site](#) (ktcsales.net/components).

What is the procedure/protocol if I need technical support during setup or troubleshooting?

Before contacting Kapsch Technical Support for assistance, please have a copy of the reader logs as well as the reader configuration. Both are necessary to provide the initial troubleshooting assistance.

Are your readers approved by the E-ZPass Group?

Yes, Kapsch readers are certified by the E-ZPass group to meet all performance and reliability specifications.

Are your readers OmniAir Certified?

Kapsch MPR readers have been OmniAir certified for ISO 6C operation. Please refer to the specific OmniAir certification for exact details.

Do I need a FCC license to operate this equipment?

Yes, a site license at each site that has an operating reader is required.

Why should I perform an RF spectrum survey prior to deployment?

Tolling systems exist in a harsh RF environment these days with many other technologies operating within the allotted frequency band. Those technologies are typically low power devices which are unlicensed and can pose a threat to performance of a tolling system. Spectrum surveys are a way of uncovering any potential interference threat from unauthorized systems nearby. Once the interfering signal has been identified, remediation may begin to ensure the revenue collecting toll system can operate at maximum performance.

Where are the transponders and reader manufactured?

Readers and transponders are manufactured at our state-of-the-art facility in Mississauga, Ontario, Canada.

What are the advantages and features of the various transponders?

Kapsch offers a variety of transponders matched for certain applications as well as having unique characteristics. Kapsch manufactures a whole lineup of TDM tolling transponders. TDM is the primary RF protocol for the E-ZPass Group and we offer windshield, license plate and roof mounted transponders. We also offer specialty transponders including our Flex Switchable tag for HOT applications, and a windshield Feedback Tag.

Kapsch also offers a full lineup of value priced ISO 6C tags. These tags have a label form factor and we offer a windshield and headlamp ISO6C Tag. We also have specialty ISO 6C Tags including a 3 position Switchable tag as well as a license plate mount tag.

Finally, Kapsch manufactures TDMA protocol Tags. These tags are used both in Tolling and for Weigh Station By-Pass Programs. Please contact Kapsch for a detailed overview of our entire transponder lineup

Why doesn't Kapsch offer a Multi-protocol Transponder?

Kapsch is a huge proponent of multi-protocol support for tolling, but we feel multi-protocol support is best handled by the readers and not the transponders. Our Janus MRP reader process all tolling protocols used in North America. Multi-protocol transponders tend to be expensive whereas the transponder market is generally looking for a more value priced transponder to provide to the millions of drivers on the roadways. In addition, it is easier to make changes and updates to the roadside readers than it is to the transponders deployed in driver's cars.

Kapsch TrafficCom

Kapsch TrafficCom is a globally renowned provider of transportation solutions for sustainable mobility. Our innovative solutions in the application fields of Tolling, Traffic Management, Demand Management and Mobility Services contribute to a healthy world without traffic congestion.

We have brought projects to fruition in more than 50 countries around the globe. With our one-stop solutions, we cover the entire value chain of our customers, from components to design and implementation to operation of systems.

As part of the Kapsch Group and headquartered in Vienna, Kapsch TrafficCom has subsidiaries and branches in more than 30 countries. It has been listed in the Prime Market segment of the Vienna Stock Exchange since 2007 (ticker symbol: KTCG). Kapsch TrafficCom's about 5,100 employees generated revenues of EUR 731.2 million in financial year 2019/20.

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