



## Kathrein Reader Firmware & Linux Version History

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# About This Guide

This document gives information on the changes and additions to the Kathrein Reader firmware.

The target group of this guide is specialist personnel who install, configure and put the reader into operation.

- ▶ For more information, visit our website [www.kathrein-solutions.com](http://www.kathrein-solutions.com).
  - The reader datasheets are available for download at the internet product page.

- ▶ Please note that the firmware and Linux are loaded in a single package for the Kathrein Gen4 Reader.
- ▶ To meet the cyber security requirements, FW 3.51.0 must be updated together with Linux version 3.51.0.
- ▶ From version 3.50 onwards, the Linux version is managed separately, since at this step the .NET support for Linux, which also allows .NET applications on the Reader Linux.
- ▶ The Linux version 3.50 can be used with all previous Reader FW versions. However, for security reasons it is recommended to always update to the latest Reader FW version.

## GEN4 READER

### Firmware & Linux Version 4.0.0

First version	M33 controller updated to version 0.5.0 <b>wpa_supplicant</b> updated to version 2.11 <b>rf controller</b> updated to version 1.0.4 <b>rfid.d</b> updated to version 3.54.0 <b>rru4configurator</b> updated to version 3.53.3 <b>OpenSSH</b> updated to version 10.2p1 <b>kbrpt</b> updated to version 3.51.3 <b>kernel</b> updated to version 'gen4-1.0.3'
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## GEN3 READER

### Firmware Version 3.51.2

Changed	<b>rfid.d</b> updated to version 3.55.0 * feature: add new communication standards "brazil (low)" and "brazil (high)" * feature: add new communication standard "guatemala (high) (short)" * feature: add handling of gpio overcurrent detection, if available * bug fix: fix parsing error on loading action lists during startup * changes: optimize internal data flow * changes: allow disabling hsm functions, if not needed * changes: firmware downgrades are denied, only updates are allowed <b>rru4configurator</b> updated to version 3.53.5 * changes: a firmware downgrade is rejected; only updates to newer firmware versions are permitted <b>OpenSSH</b> updated to version 10.2p1
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Added	<b>rru4configurator</b> updated to version 3.53.3 * chrony and chronyc added as a replacement for ntpd
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## Linux Version 3.51.3

Changed	<b>rru4configurator</b> updated to version 3.53.5 * changes: a firmware downgrade is rejected; only updates to newer firmware versions are permitted <b>OpenSSH</b> updated to version 10.2p1
Added	<b>rru4configurator</b> updated to version 3.53.5 * chrony and chronyc added as a replacement for ntpd

## Firmware Version 3.51.1

Changed	<b>rfid.d</b> updated to version 3.51.3 * bug fix: fix error on setting license <b>OpenSSH</b> updated to version 10.0p1 <b>libReaderLib</b> updated to version 4.0.1 <b>kbrpt</b> updated to version 3.51.1
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## Linux Version 3.51.1

Changed	<b>rfid.d</b> updated to version 3.51.3 * bug fix: fix error on setting license <b>OpenSSH</b> updated to version 10.0p1 <b>libReaderLib</b> updated to version 4.0.1 <b>kbrpt</b> updated to version 3.51.1 <b>rru4broadcast</b> updated to version 3.52.1 <b>hsm.d</b> updated to version 3.51.1 <b>TAGBlower App</b> updated to version 1.4.1 <b>AccessManager App</b> updated to version 1.12.1
Added	<b>traceroute</b> added

## Firmware Version 3.51.0

Changed	<b>rru4configurator</b> updated to version 3.52.0 * Extension: the hash method for the password can be queried <b>rru4broadcast</b> updated to version 3.52.0 * Change: the mode of the "FactoryDefaultRequest" command is always executed as "Erase". All user data will be deleted! * Extension: the serial number of the device is supplied with the reader search * Extension: The serial number of the device is set as default password for the "FactoryDefaultRequest" <b>libReaderLib</b> updated to version 3.51.0 <b>kbrpt</b> updated to version 3.51.0 <b>EthernetIP</b> updated to version 3.51.0
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## Linux Version 3.51.0

Changed	<p><b>rru4configurator</b> updated to version 3.52.0</p> <ul style="list-style-type: none"><li>* Extension: the hash method for the password can be queried</li></ul> <p><b>rru4broadcast</b> updated to version 3.52.0</p> <ul style="list-style-type: none"><li>* Change: the mode of the "FactoryDefaultRequest" command is always executed as "Erase". All user data will be deleted!</li><li>* Extension: the serial number of the device is supplied with the reader search</li><li>* Extension: The serial number of the device is set as default password for the "FactoryDefaultRequest"</li></ul> <p><b>libReaderLib</b> updated to version 3.51.0</p> <p><b>hsm.d</b> updated to version 3.51.0</p> <p><b>kbrpt</b> updated to version 3.51.0</p>
Added	<p><b>traceroute</b> added</p>

## Firmware Version 3.50.10

Changed	<p><b>lrru4configurator</b> updated to version 3.50.5</p>
Added	<p>New cmds for SyncReadVarAny, SyncReadVarSpecific and ASyncReadVarAny</p> <p>New cmds for GetQueryXY and SetQueryXY</p> <p>New cmd for ASyncReadDataRow</p> <p>When the reader is started, the system checks whether the build date is more recent than the set time. If so, the build date is set.</p>

## Linux Version 3.50.10

Changed	<p><b>libReaderLib</b> updated to version 3.50.7</p> <p><b>rru4configurator</b> updated to version 3.50.4</p> <p><b>OpenSSH</b> updated to version 9.9p1</p> <p><b>OpenVPN</b> updated to version 2.4.12</p>
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## Firmware Version 3.50.0

Due to the change in the cross compiler, the FW version will be continued from 3.50 onwards.

Changed	<p><b>libReaderLib</b> updated to version 3.50.7</p> <p><b>OPENSSSH</b> updated to version 9.9p1</p> <p><b>KBRP</b> updated to version 3.50.2</p> <p>Bug fixed: setting the factory default settings on Gen3 readers with activated backward compatibility</p>
Added	<p>Logrotate and the possibility to save log files</p>

## Linux Version 3.50.08

Changed	<p><b>libReaderLib</b> updated to version 3.50.02</p> <p><b>rru4configurator</b> updated to version 3.50.03</p> <p><b>OpenSSH</b> updated to version 9.7p1</p>
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Added	Support for .NET8.0 application (in addition to .NET6.0 and .NET7.0) Logrotate added and the possibility to save log files (incl. GSM log files for RRU 4570) Support of up to 5 NTP server and the check which server connection was successful
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## Firmware Version 3.14.02

Changed	<b>libReaderLib</b> updated to version 3.50.01 <b>rru4configurator</b> updated to version 3.50.03 <b>rru4broadcast</b> updated to version 3.50.01
Added	Communication Profil "SmartReaderMode" added Support of up to 5 NTP server and the check which server connection was successful

## Linux Version 3.50.00

Changed	<b>libReaderLib</b> updated to version 3.50.00 <b>rru4configurator</b> updated to version 3.50.00 Stability and security improvements, including AutoStart function for WiFi module Busybox updated to version 1.34.1 Buildroot is used as a CrossCompiler
Added	Support for .NET6.0 and .NET7.0 application

## Firmware Version 3.13.00

Changed	<b>rru4configurator</b> updated to version 3.13.00 Error in the function "SetActiveCommunicationStandardFromConfig()" fixed
Added	WrappingAlgorithm RFC3394 for HSM added

## Version 3.12.00

Changed	<b>libReaderLib</b> updated to version 3.12.00 Communication standard (country profile) adapted for Vietnam (tolling) R2000 driver: the T2 timing has been changed at RX link frequency of 320 kHz
Added	Configuration parameter for logging of 4G module

## Version 3.11.00

Changed	PoE via LLDP has been changed, to avoid unnecessary network requests
Added	The parameter "InventoryCutoffTime" has been added to control the access times with very many transponders. The user can force a change of the antenna port to increase the reading performance

## Version 3.10.00

Changed	Update of the Linux Kernel for x5xx reader - OpenSSH updated to version 8.6p1 - Busybox: the commands "chpasswd" and "su" enabled - new account "user" added. Now also admin/user deployment can be set The dial-in for 4G module has been improved, incl. the setting for the APN
Added	ExtendedResultFlag: when reading a tag UTC time can now be returned in milliseconds Support for new HSM added incl. the commands for HSMWrapAESKey, HSMWrapWrappingKey and HSMCalculateDiversifiedKey

## Version 3.09.00

Changed	<b>libReaderLib</b> updated to version 3.07.00
Added	Update of the Linux Kernel for x5xx reader Extension to improve login for mobile communication networks Dual Target Extension Protocol controll word displayed with ReaderStart Antenna list for Expert setting in ReaderStart grouped

## Version 3.07.00

Changed	<b>libReaderLib</b> updated to version 3.07.00
Added	Update of the Linux Kernel for x5xx and x4xx reader Support of unencrypted networks for WLAN configuration OpenSSH updated to version 8.1p1

## Version 3.05.06

Changed	<b>libReaderLib</b> updated to version 3.05.06
Added	the communication standard (country profile) for Paraguay

## Version 3.05.04

Changed	<b>libReaderLib</b> updated to version 3.05.04
Added	the communication standard (country profile) for El Salvador

## Version 3.05.02

Added	the communication standard (country profile) for the Philippines
Changed	if there is an error when booting, it is visualised by means of the LEDs

## Version 3.05.00

Changed	<b>rruconfigurator</b> updated to version 3.04.02
Fixed	the issue where <i>SyncWriteEPCToSingleTag</i> acted similarly to Generation 2

## Version 3.04.00

Changed	<b>libReaderLib</b> updated to version 3.04.00
Further improved	stability and performance
Changed	<b>rruconfigurator</b> updated to version 3.04.02
Added	the link quality of the connected WLAN access point is supplied with the status query
Added	more detailed error messages are issued when updating the firmware
Added	GARP packets are sent out after setting an IPv4 address
Changed	when updating the Linux firmware, the signatures of the update file are checked
Changed	when installing apps, it is possible to verify the signatures of the app file
Added	more detailed error messages are displayed when installing the apps
Changed	if the setting of the time via NTP fails, a new attempt is not made after the set interval, but after 60s at the latest; if the interval or the NTP server is changed, a new attempt is immediately made.
Changed	<b>busybox</b> updated to the 1.29.3 version
Changed	the Linux kernel has been updated to the 4.4.162 version
Fixed	the issue where the SJC algorithm has not always been able to find optimal settings in poor conditions
Fixed	the issue where the timestamp provided by the <i>GetUptimeInMilliseconds</i> function has not always been synchronous with the timestamps on the tag data
Added	the configuration parameters <i>cfgidGlobalTCPMinDelayACKTime</i> and <i>cfgidGlobalTCPMaxDelayACKTime</i>
Further improved	the inventory state machine in high tag populations
Changed	the configuration parameter <i>cfgidObservedListObservedThresholdCount</i> : the default value is 1
Changed	the error message <b>KRAIOverCurrent</b> has been deactivated
Changed	TCP timeout reduced from 15 min to approx. 100s. If the <b>kbrpt</b> loses the connection to the client during an asynchronous reading, it blocks the processing of commands for this time maximum

## Version 3.03.00

Changed	<b>kbrpt</b> updated to version 3.03.00
Fixed	the crash problem in case of the connection loss
Added	the configuration parameter <i>cfgidTagCommTransmitGetEPCsPreSelect</i> now applies to all ...Any commands
Changed	in asynchronous commands: an unread tag has no more RSSI value, no phase and no frequency
Added	a running asynchronous command is now terminated when it is recognised that the corresponding host no longer exists
Fixed	the issue where delays could occur when processing the command queue
Added	the configuration parameter <i>cfgidHostCommUseMultipleCommandQueues</i>
Added	support for ARU 8400 and ARU 8500
Fixed	the issue when receiving in-process replies
Changed	PI driver: communication accelerated
Changed	deactivated the <i>cfgidRFInterfaceScanIntervalSelfJammerCancellation</i> configuration parameter
Added	31 and 38 communication profiles

## Version 3.02.00

Fixed	a bug when carrying out the <i>...BlockPermalock...</i> command
Changed	<b>rru4broadcast</b> updated to version 3.02.00
Fixed	the issue when the cyclic check of the interfaces could lead to a deadlock

Changed	<b>rruconfigurator</b> updated to version 3.02.00
Changed	<b>GetConfig</b> delivers the configuration unfiltered – except for the Linux password and the reader settings
Changed	modifications of the WLAN configuration are taken over immediately
Added	the WLAN configuration supports networks with a hidden SSID and unencrypted networks
Changed	the Bluetooth visibility no longer switches on the module automatically
Fixed	the issue with the PoE handling over LLDP
Fixed	the issue when the subnet mask is not set correctly when changing the IP address
Added	the commands <i>ifconfig</i> and <i>route</i> to the status query
Changed	<b>kbrpt</b> updated to version 3.02.00
Changed	a reboot of the RFID controller is detected and restarts the Linux controller (behavior similar to Generation 2)
Added	more verbose output
Changed	<b>libReaderLib</b> updated to version 3.02.00
Changed	the protocol recognition during the connection corrected by means of the <i>CT_EthernetAuto</i> communication type
Fixed	the issue when a deadlock could occur in case of error when connecting to a Generation 2 reader under Linux
Added	support for the Artefato protocol
Added	functionalities for working with HSM
Added	the <i>KRAIGetSwVersion</i> command
Changed	antenna gains adapted for the ARU 3560
Fixed	the issue when the RHCP and LHCP for the WIRA 70° KRAI and WRA 7070 antennas were reversed: the RHCP and LHCP control has been corrected
Further improved	Selfjammer cancellation
Added	the reader is now able to run an inventory in Session 1 with <b>Impinj S1-Tag-Suppression [TagFocus™]</b>
Changed	no more selfjammer cancelation for pre-selects
Fixed	the issue when the configuration parameter <i>cfgidTagCommDisableTemporaryTagListOnTagPasswordAccess</i> showed no effect with the <i>SyncAuthenticateAny</i> and <i>ASyncAuthenticateAny</i> commands
Changed	the Linux kernel has been updated to the 4.4.105 version
Changed	the setting of the outputs has been accelerated
Fixed	the issue with the scaling of power measurements
Added	password protection (Generation 2 compatible) for the following commands: <i>SetCommunicationStandard</i> <i>SetPortPower</i> <i>SetPortMultiplexSequenceAndExposureTime</i> <i>SetCableLossAndAntennaGain</i> <i>SetETSIPortChannelList</i> <i>SetProfile</i> <i>SetExtendedResultFlag</i> <i>SetDefaultParameterSet</i> <i>SetActiveParameterSet</i> <i>SetParameterByConfigId</i> <i>SetTime</i> <i>LoadFactoryDefaults</i> <i>FirmwareUpdatePrepare</i> <i>SetSelSessionAndTarget</i> <i>SetInitialQ</i> <i>SetMaxAirCommErrors</i> <i>SetASyncObservedListParameters</i>
Added	the <i>SetConfigPassword</i> and <i>EnterConfigPassword</i> commands
Fixed	the issue with the memory error in the asynchronous state machine
Added	the <i>cfgidObservedListMaxNumberOfCommandAttempts</i> configuration parameter
Changed	<i>ASync...</i> commands: if pre-selects were sent, the dwell time is not used

Fixed	the issue with the timing of <i>ASync...</i> commands
Added	a dual-target mode is now available via bit 1 of the <code>cfgidTagCommQueryTarget</code> configuration parameter; If this bit is set and no select filters are active, a tag population is addressed without a resetting select alternately via target A and target B
Added	a communication standard for the Singapore low-band (866 MHz to 869 MHz)
Added	support for the WRA 7070 KRAI antenna

## Version 3.01.04

Changed	GPIO driver: setting of the outputs has been accelerated
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## Version 3.01.02

Fixed	the issue with the scaling of power measurements
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## Version 3.01.00

Fixed	the issue with the dadio driver: the driver now knows the active communication standard even before switching on the carrier for the first time
Changed	the Linux kernel has been updated to the 4.4.86 version
Fixed	the issue when the SJC algorithm sometimes caused a safety shutdown of the Rx and Tx branches
Change	no more own versions for the RFID daemon

## Version 3.00.10

Changed	the interface has been adapted for the HSM
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## Version 3.00.08

Changed	<b><i>rru4configurator</i></b> updated to the 3.00.08 version
Fixed	the issue with the PoE handlin over LLDP
Fixed	the issue when the SJC algorithm sometimes caused a safety shutdown of the Rx and Tx branches
Change	no more own versions for the RFID daemon

## Version 3.00.06

Changed	<b><i>rru4configurator</i></b> updated to the 3.00.06 version
Fixed	the issue when registering multiple DNS servers
Added	the communication standard (country profile) for Guatemala; to parameterise this communication standard, it is necessary to have at least the ReaderStart v3 version 3.00.06
Fixed	the issue with the R2000 driver: PLL lock algorithm revised. In rare cases it could happen that the R2000-PLL did not lock in the FCC frequency range

## Version 3.00.04

Changed	<b>kbrpt</b> updated to the 3.00.04 version
Added	BackwardCompatibility
Changed	OpenSSH updated to the 7.5p1 version
Changed	Ildpd updated to the 0.9.7 version
Fixed	the issue with the <i>CableLoss/AntennaGain</i> display parameters for readers with an internal antenna (ARU 3xxx)

## Version 3.00.04

Changed	<b>rru4configurator</b> updated to the 3.00.02 version
Added	the status query of a network interface returns the current IPv4 address
Fixed	the issue when entering the gateway
Changed	<b>kbrpt</b> updated to the 3.00.02 version
Added	Bluetooth functionalities for the Generation 3 readers
Changed	<b>libReaderLib</b> updated to the 3.02.00 version
Changed	protocol for Generation 3 readers: in-frame receive timeout has been increased to 5 seconds
Fixed	the issue with the memory leak in the SSH connection
Added	the <i>cfgidRFInterfaceScanIntervalSelfJammerCancelation</i> configuration parameter
Added	<b>Busybox</b> : the <i>CONFIG_LFS</i> configuration parameter for "the large file support has been activated"
Added	the <i>cfgidTagCommDisableTemporaryTagListOnTagPasswordAccess</i> configuration parameter
Added	the communication standard (country profile) for Indonesia; to parameterise this communication standard, it is necessary to have at least the ReaderStart v3 version 3.00.00

## Version 3.00.00

First firmware version.

## Contact Information

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