

Interface Specification

FBS-14789

Cicero RFID Interface Specification

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1 Introduction

This document describes how Cicero LMS and Cicero Mobile (in the following just called "Cicero") interacts with RFID hardware.

The target group for this document is vendors of RFID equipment and employees at the library that would like to understand the technical details of how Cicero interacts with the RFID hardware.

Background knowledge and technical details about RFID in general, for example how properties are assigned to an RFID tag and what properties are used in this context, is not in the scope of this document. The protocols used in the communication with the RFID server applications are also not in scope.

1.1 References

Reference	Description	Link
[Configuration of RFID scanner]	Configuration of RFID-scanner	https://cicerocconnect.zendesk.com
[Cicero solution architecture]	Description of the Cicero solution architecture, including error handling for third party integrations	Ask Systematic for the document if needed.

2 Supported vendors

2.1 Cicero LMS

Cicero supports integration with RFID hardware from six vendors in Cicero LMS:

Vendor	Supported RFID server version
TAGVision	4.1.3.6
Lyngsoe Systems	1.1.4.1
Bibliotheca	1.3.10
P.V. Supa GoodStuff	1.21
Deichman	1.1.0
Nexbib	1.2.5.0

2.2 Cicero Mobile

Cicero supports integration with RFID hardware from five vendors in Cicero Mobile:

Vendor	Supported RFID server version
TAGVision	1.57.0.0 (mkStaffStation)
Lyngsoe Systems	6.1.8495 (GoodStuff v2)
Deichman	1.1.0
Nexbib	1.2.5.0
Bibliotheca	1.31.005.0 (Bibliotheca staffConnect link) Note: It is required to have "Danish Item" enabled as a Tag Data Format in the software.

3 How the integration works

Cicero does not interact directly with the RFID hardware, but interacts by TCP socket communication with an RFID server application installed on the client PC. The RFID server application is provided by the RFID hardware vendor and handles the communication with the hardware, which is a read-write unit and an antenna.

On the client PC an RFID driver and the RFID server application must be installed and the RFID hardware be connected to the client PC. Driver, RFID server application and configuration (including licensing) and the RFID hardware is provided by the RFID hardware vendor.

When all these components are in place, Cicero must be configured to be able to communicate with the RFID server application. See [Configuration of RFID scanner] for how to configure the connection to the RFID server application.

The interaction with the RFID server application is initiated from Cicero in different scenarios:

- Activating / deactivating read of RFID tags
- Writing an item number to an RFID tag
- Testing the connection to the RFID server application

The interaction works slightly different depending on the RFID vendor as there is no standard protocol for the communication. For details about a protocol contact the vendor.

The sections below describe more details about the individual scenarios.

3.1 Activating / deactivating read of RFID tags

In Cicero, reading of the RFID tags on materials is initiated by the user by placing the materials on the RFID scanner. Read commands for each material in range of the RFID hardware antenna are sent from the RFID server application to Cicero.

Each read command holds an item number from an RFID tag and a completeness indicator. The item number is used to lookup a material and Cicero sends a reply to the RFID server application for each received read command. The reply is used to activate or deactivate the security property of an RFID tag.

Cicero supports reading from material sets, i.e. sets of materials with the same item number. The completeness indicator tells whether all parts of a material are present in range of the antenna.

The table below shows in what areas it is possible to read from RFID tags, and what security action is taken:

Action in Cicero	Security property
Checkin	Security is deactivated, if the material is auto loaned during checkin, otherwise security is activated.
Checkin (offline)	Security is activated.
Checkout	Security is deactivated.
Checkout (offline)	Security is deactivated.
Forward loan	Security is deactivated.
Booking fulfilment	Security is deactivated.
Material receipt	Security is activated.
Interlibrary loan search	Security is deactivated.

3.2 Writing an item number to an RFID tag

Writing an item number to an RFID tag is “programming” the RFID tag, for example a new RFID tag on a material.

In the Bibliotheca and TAGVision protocols, the command takes two arguments: Item number and item count. In the Lyngsoe and Deichman protocol the command takes only one argument: Item number. The server then automatically detects the number of tags in range of the antenna and writes to them as a set.

In Cicero, “programming” of RFID tags is done from the material details area by clicking the “Skriv til RFID tag”/“Write to RFID tag” button. See [Configuration of RFID scanner] for details about how to do this.

Activating and deactivating the security property of the RFID tag is also part of “programming” the tag. When programming an RFID tag the security property is assigned a value depending on the material state:

Material state	Security property
Available Lost	Security is activated.
Discarded	Security is deactivated.
Otherwise	Security property is not changed.

3.3 Testing the connection to the RFID server application

Testing the connection to the RFID server application is done as part of configuring the connection. For details about configuring the connection see [Configuration of RFID scanner].

The various protocols support an initial command, which is send to the RFID server application. A specific command is expected in the reply and is interpreted as a successful connection test.

4 Error handling

Error handling strategy “User/system expects result of invocation of data from external system” described in [Cicero Solution Architecture] applies.

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