

# Radio Frequency Identification (RFID) – HF and UHF





RF systems from SICK make products into “smart objects” that carry all product-relevant data themselves. Whereby it is irrelevant whether the data is changed “on the fly” during the running process or is written on the smart label as final data. Whatever the case, they are the suitable read/write devices for decentralised control processes.

#### Content

Product overview	Page 152
RFI341 (HF)	Page 154
RFI641 (UHF)	Page 156

# SICK

# RFID →

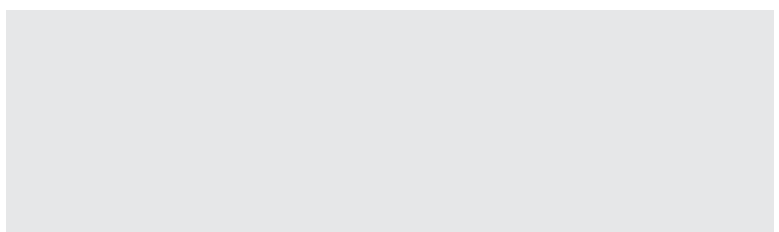
# Radio Frequency Identification (RFID) – (HF)



PRODUCT	RFI341	RFA331	RFA341
<b>Reading ranges</b>	<p>Theoretically achievable reading/writing distance. Dependent on the antenna, output power, transponder type and environment.</p>	<p>Reading/writing distance for 2 W transmitter power measured with ISO-transponder (card) in an optimal environment.</p>	<p>Reading/writing distance for 2 W transmitter power measured with ISO-transponder (card) in an optimal environment.</p>
<b>Application areas</b>	<ul style="list-style-type: none"> <li>• High-bay warehouse management</li> <li>• Tote and pallet handling</li> <li>• Automotive parts</li> <li>• Commissioning</li> </ul>		
<b>Technical data</b>	<p>Radio frequency: 13.56 MHz                      Transmitter power (TX): 2 x 2 W (splitter)                      Number of antennas: Max. 2                      Operating voltage: 115 ... 230 V AC                      Data interfaces: RS-232                      Switching inputs/outputs: 2 x IN/2 x OUT                      Dimensions (L, W, H): 400/200/120 mm</p> <p>Weight: 7.6 kg                      Enclosure rating: IP 65</p>	<p>13.56 MHz                      Max. 4 W</p> <p>300/210/33 mm                      200/200 mm (effective area)                      1.1 kg                      IP 40/67</p>	<p>13.56 MHz                      Max. 4 W</p> <p>450/400/71 mm                      400/400 mm (effective area)                      1.7 kg                      IP 65</p>
<b>Special features</b>	<ul style="list-style-type: none"> <li>• RF interrogator (reader/writer for passive transponders)</li> <li>• Compatible with ISO/IEC 15693, ISO 18000-3 Mode 1</li> <li>• Simultaneous reading of max. 50 transponders per second</li> </ul>	<ul style="list-style-type: none"> <li>• Compact high performance antenna for mid range</li> </ul>	<ul style="list-style-type: none"> <li>• Compact high performance antenna for long range</li> </ul>
<b>Accessories</b>	<ul style="list-style-type: none"> <li>• RFI341 Demo Software for PC</li> <li>○ RDT400 Remote Diagnostic Software</li> <li>○ CDB420, CDM420 connection modules</li> <li>○ Gateways for PROFIBUS, DeviceNet and Ethernet</li> <li>○ High-quality, writable ISO transponders RFT331 (card, IP 67) or RFT321 (coin, IP 68)</li> </ul>	<ul style="list-style-type: none"> <li>○ Plastic profile</li> </ul>	<ul style="list-style-type: none"> <li>○ Plastic profile</li> <li>○ Mounting bracket</li> </ul>

NOTE: Other reading ranges, frequencies and transponders available on request

- Standard
- Optional





# RFI341

## Long range RFID Interrogator (13.56 MHz)



The RFI341 Interrogator is an ISO-15693 standard compatible 13.56 MHz transponder read/write unit. Based on the high output and high input sensitivity – dependent on the antenna and transponder type used – a reading performance with a single antenna of max. 1.2 m can be achieved. The anticollision feature enables the detection of max.

50 tag ID's simultaneously within one second.

The interrogator contains an internal splitter. That enables the use of two antennas simultaneously. Because of this feature the interrogator is well suited for use in high speed conveyor belt applications (e.g. in combination with totes).

### Your benefits:

- Read security in high speed conveyor applications
- Simultaneously reading of max. 50 tags per second
- Compliance to ISO 15693 enables reading of transponders from alternative sources
- Different antenna concepts possible
- Use of photoelectric switches for interrogator trigger possible

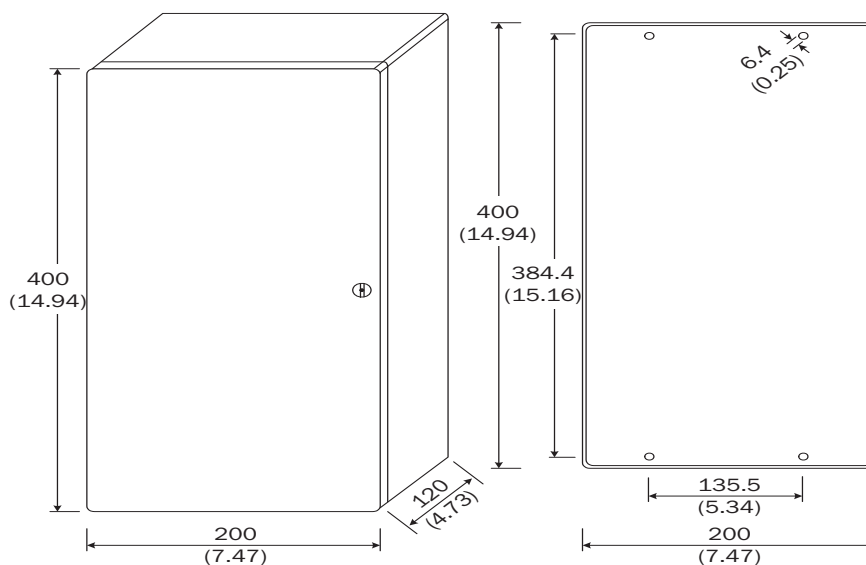
### The RFI341 at a glance:

- 13.56 MHz RFID system
- Supports ISO 15693 compatible transponders
- 2 antennas use
- RS-232 data interface

## Technical data

<b>Type</b>	<b>RFI341-1520</b>
Air interface	
Frequency	13.56 MHz
Standard	ISO 15693 (others on request), ISO 18000-3 "Mode 1"
Antenna	
Sending performance	2 x 2 W (at 50 Ohm), splitter configuration
Optical indicators	2 (Power, Tag Data)
Data interface	RS-232 (Ethernet via CDM420 with CMF400-3101)
Data transfer rate	9,600/19,200/38,400/57,600/115,200 Bd
Protocol	STX/ETX
Switching inputs	2 x, $V_{in} = 24$ V DC, for e.g. triggering via photoelectric switches
Switching outputs	2 x, open collector ( $R_i = 100$ Ohm), $V_{OUTmax} = 36$ V, $I_{OUTmax} = 30$ mA
Electrical connections	Terminal strip, BNC connectors (antenna)
Power supply voltage	230 V AC 50 Hz (115 V AC 50 to 60 Hz)
Current consumption	< 1 A
Housing	Metal
Dimensions	400 mm x 200 mm x 120 mm
Enclosure rating	IP 65
CE approval	To EN 301489-1, -3/to EN 60950/to EN 50364/to EN 50357
Radio approval	To EN 300330 (with released antennas), FCC Part 15 in preparation
Operating/storage temperature	0 ... 50 °C/ -20 °C ... 70 °C

## Dimensional drawings



## Order information

Type	Description	Order no.
RFI341-1520	13.56 MHz Long Range Read/write device (ISO 15693) incl. splitter for 2 antennae	1028572
RFA341-3520	13.56 MHz Long Range antenna	1028857
RFA331-1020	13.56 MHz Standard Mid Range antenna	1028858

Other configurations on request.

# RFI641

## UHF interrogator for maximum demands



The RFI641 Interrogator defines new standards in Auto-ID using RFID. With the combination of efficient hardware and intelligent software the RFI641 can be deployed world-wide. The common protocols like EPCGlobal and ISO 18000-6 are supported and the RFI641 is also upgradeable by firmware updates to ensure compatibility for future protocols or protocol changes.

The RFI641 is dedicated for data acquisition of material flows, portal applications as well as applied to the conveyor. Long reading range, high reading rate and fast data transfer rate enable the RFI641 to acquire large amounts of passive transponders applied to objects or package at the same time. The modular concept allows the RFI641 to be deployed flexible and cost effective to PLC or SCM/ERP-Systems.

### Your benefits:

- World-wide deployment
- Quick and simple installation
- Configuration via Web browser (PC)
- Hosting of user applications
- Internal data filtering
- Flexible data output format
- Switching inputs for trigger
- Switching outputs for process control

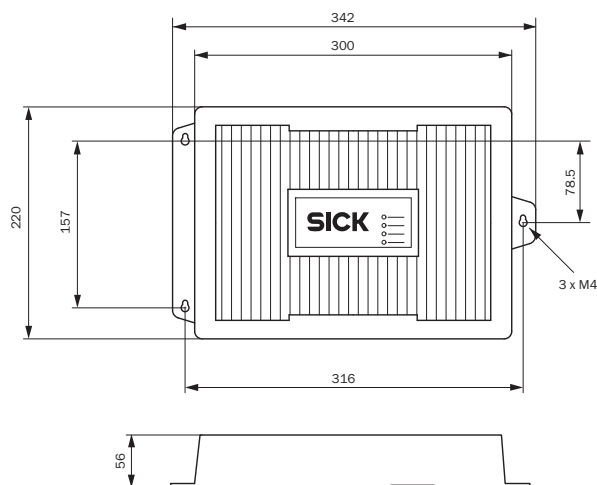
### The RFI641 at a glance:

- Up to 4 antennas connectable
- 2 data interfaces (Ethernet and RS-232)
- Programmable digital inputs and outputs
- Large input voltage range
- Large operating temperature range

## Technical data

Type	RFI641	RFA641
Frequency range	860 ... 960 MHz (Europe and USA)	860 ... 960 MHz (Europe and USA)
Standards	EPC Gen2, ISO 18000-6 B and ISO 18000-6 C	
RF output power	+ 33 dBm	
Digital inputs	4x, Optokoppler, $V_{\max} = 25$ V DC	
Digital outputs	4x, Open Collector, 5 ... 25 V, 1 W max.	
Operating voltage	100 ... 240 V AC via external power supply unit	
Antenna connection	TNC (Reverse polarity)	N socket
Ethernet	10/100 Mbit Full/Half Duplex	
RS-232	115 kBaud	
Software	Firmware, upgrades possible	
Polarisation		Circular polarised
VSWR		< 1,3:1
Gain		7 dBi $\pm$ 1 dBi
Housing	Aluminium with mounting flanges	
Dimensions (L x W x H)	220 mm x 300 mm x 56 mm	254 mm x 253 mm x 56 mm
Enclosure rating	IP 40	IP 54
Weight	2.95 kg	0.47 kg
Ambient operating temperature	-20 °C ... +60 °C	-20 °C ... +70 °C
Rel. humidity	5 % ... 95 % non-condensing	

## Dimensional drawings



## Order information

Type	Description	Order no.
RFI641-0422	Interrogator with external power supply unit and CD-ROM (software + manuals)	6034315
RFA641-3440	Antenna for RFI641	6034316
RFT661-5653	Tag, 96 Bit	6034277
RFT661-4654	Tag for Metall, 96 Bit	6034437

## Accessories

Accessories can be found on Page 237