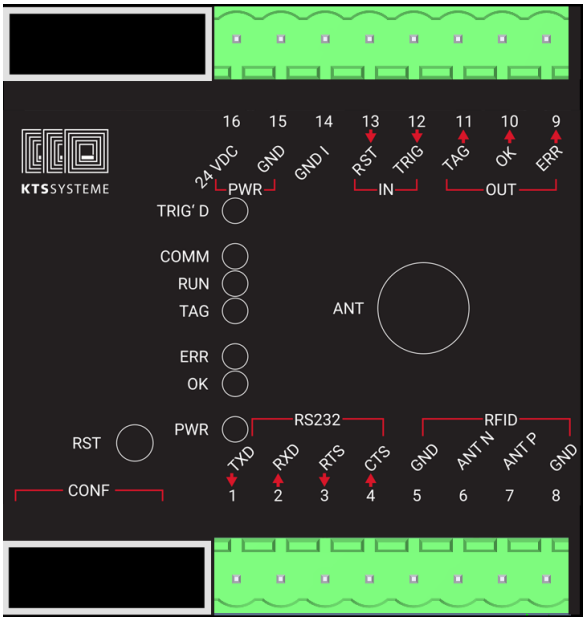
KTSSYSTEME




# DIN Rail Reader

Industrial RFID Reader

The KTS DIN Rail Reader is an industrial class component designed for use in production environments. With a standard 24VDC power input and an industry standard RS232 serial communications interface, it is ready out of the box for integration into state of the art production lines and security applications.

The central component of the DIN Rail Reader is a microcontroller-based RFID module containing a custom RFID transceiver circuit that runs on the proven KTS RFID firmware stack. The RFID transceiver includes a powerful RF front-end with up to +23dBm (200mW) of output power. A standard KTS 13.56MHz RFID antenna can be connected through either the single ended 50Ω coaxial connector (SMA) or the 100Ω balanced output. The reader supports ISO15693 and ISO14443A/B, with additional modes such as NFC tag emulation available upon request.

For harsh environments with extreme EMC challenges, the DIN Rail Reader can be fitted with optional bandpass filtering in the RFID signal path.

KTS provides a substantial support package for the DIN Rail Reader, including extensive implementation information and software packages for management and configuration. We also offer design and development services for integration of the DIN Rail Reader into existing and future projects on both hardware and software fronts.

# Technical Specifications

| Technical Specifications | |
|---|---|
| **Product type** | Industrial RFID Reader for DIN Rail Mounting |
| **Operating frequency** | 13.56 MHz |
| **Antenna connection** | Single-ended 50Ω SMA connector on front panel<br>Balanced 100Ω output on side terminal blocks |
| **RF output power** | Up to +23dBm / 200mW |
| **Power supply** | 24VDC |
| **Power consumption** | 100mA avg. @ 24VDC |
| **RFID standard support** | ISO 15693, ISO14443A/B |
| **Anticollision** | Supported |
| **Standard host interface** | Standard RS232 on side terminal blocks |
| **Configuration interface** | USB 2.0 via standard µUSB connector for Tag-2-Image or AT command configuration |
| **CDC instruction set** | Extensive AT-style command set for scanning, reading and writing tags as well as configuration |
| **Product certifications** | Pending RED certification, CE |
| **RF shield** | Optional laser-etched Board Level Shield (Shown on Pg. 1) |
| **Mounting options** | Standard DIN Rail Mount according to IEC/EN 60715 |
| **Dimensions** | 67.5 x 76.5 x 50.5 mm [LxWxH] (Front panel surface)<br>67.5 x 76.5 x 60.5 mm [LxWxH] (With SMA connector) |
| **Weight** | 120g |
| **Order number** | RFIDDRR1356 |

# Typical Applications

- Production line RFID deployment
  - Product labelling & identification
  - Counterfeit protection
  - Materials management
- Access control systems
- Logistics tracking
- Tool & asset tracking

# User Interface & Connections

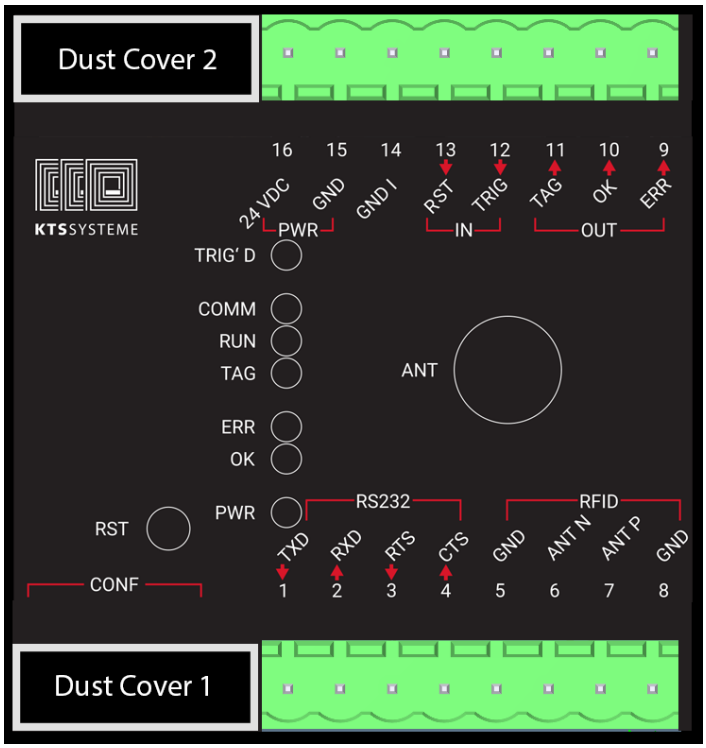



*Figure 1: Front coverlay with connections and user interface elements*

**Terminal Block Connections**

| Pin Description | | | |
|---|---|---|---|
| **Pin** | **Function** | **Description** | **Parameters & Add. Info** |
| 1 | TXD | RS232 Transmit Output | Standard RS232 serial interface |
| 2 | RXD | RS232 Receive Input | Standard RS232 serial interface |
| 3 | RTS | RS232 Ready-to-Send Output | Standard RS232 serial interface |
| 4 | CTS | RS232 Clear-to-Send Input | Standard RS232 serial interface |
| 5 | GND | RFID Signal GND | Connected to main GND internally |
| 6 | ANT N | Balanced RFID Output | Differential 100Ω signalling |
| 7 | ANT P | Balanced RFID Output | Differential 100Ω signalling |
| 8 | GND | RFID Signal GND | Connected to main GND internally |
| 9 | ERR | ERROR Status Output | Standard 24V GPIO level |
| 10 | OK | OK Status Output | Standard 24V GPIO level |
| 11 | TAG | RFID Tag Detected Output | Standard 24V GPIO level |
| 12 | TRIG | TRIGGER input | Active High, Referenced to GND I |
| 13 | RST | RESET input | Active High, Referenced to GND I |
| 14 | GND I | Isolated input GND | GND reference for TRIG and RST input pins – connected to PWR GND internally by default |
| 15 | GND | Power GND | Power supply GND input – equipped with input filtering components |
| 16 | 24 VDC | Positive Supply Voltage | Power supply positive input – equipped with input filtering components |

**Status LEDs**

| LED Description | | |
|---|---|---|
| **LED** | **Description** | **Parameters & Add. Info** |
| PWR | Power LED | On when the DIN Rail Reader is connected to a power source |
| OK | OK LED | Lights to acknowledge receipt of a command via serial interface |
| ERR | Error LED | Lights to show an error status |
| TAG | Tag detection LED | Lights to show an RFID tag is within reading range |
| RUN | Run status LED | Lights to show device controller is running |
| COMM | Communication activity LED | Lights to show RS232 communication activity |
| TRIG'D | Trigger Received LED | Lights to acknowledge receipt of a trigger signal |

**Additional UI Elements & Connectors**

| UI Element Description | | |
|---|---|---|
| **Element** | **Description** | **Parameters & Add. Info** |
| RST | Reset Button | Resets the DIN Rail Reader's main microcontroller |
| CONF (Dust Cover 1) | Config connector cover | Dust cover for configuration interface connector – Connect to Windows PC with standard µUSB cable for configuration |
| ANT | Single ended RFID output | Standard coaxial SMA connector with 50Ω impedance |
| Unlabeled (Dust Cover 2) | Fuse, GND jumper & reset | Dust cover for access to GND I connection jumper (placed by default), main device fuse F1 and emergency reset button (anologous to RST button) |

# Usage Notes

### Power Supply

The DIN Rail Reader requires a supply voltage of 24VDC. Connection to terminal block pins 15 (GND) and 16 (24 VDC) is mandatory. Do not use GND connections other than terminal block pin 15 for power supply GND connection.

### Input Signal Ground Isolation

The GPIO inputs TRIG and RST are referenced to an isolated communication GND node accessible on terminal block pin 14 (GND I). This separate GND node allows the implementation of fully isolated, potential-free inputs on TRIG and RST if required.

By default, GND I is connected to the main device GND via a jumper. Removal of the jumper is required for potential-free inputs. For access to this jumper, remove the dust cover adjacent to the KTS Systeme logo.

### RS232 Serial Interface

The RS232 interface implements an AT-style command set for configuration and commands. See the *AT Command Reference Guide* on http://rfid.kts-systeme.de/downloads/

### USB Interface

The USB interface implements the same AT-style command set as the serial communication interface. The USB connector is a debugging and configuration connector which allows direct access to the DIN Rail Reader without the need to attach a full RS232-enabled host.

#### USB Driver

The DIN Rail Reader USB interface is compatible with the standard KTS driver package, available at http://rfid.kts-systeme.de/downloads/.

#### KTS Tag2Image

The DIN Rail Reader can also be accessed through the KTS Tag2Image RFID Asset Management System.

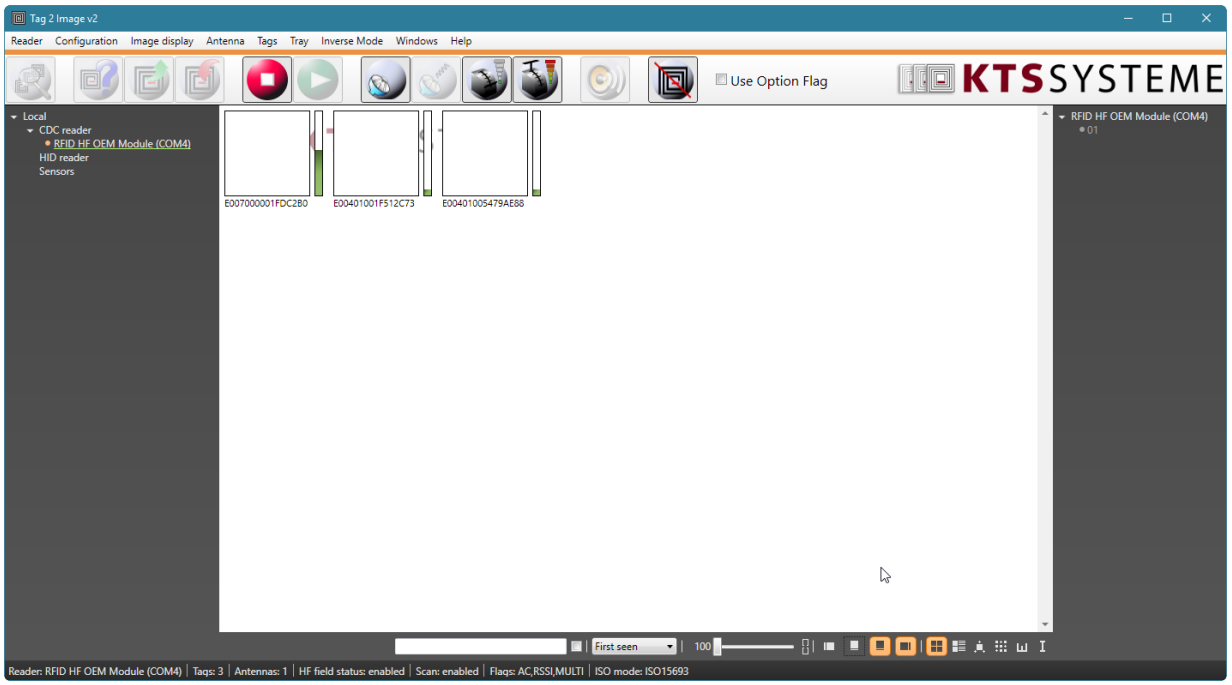



*Figure 2: KTS Tag2Image*