**PRG\_22-14 IDTRONIC LEUZE RFID SYSTEMS**

**HF BASIC SERIAL DATASHEET**



**RDH 202 00**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Changelist |
| 01 | 18/04/2024 | Fabrizio Picotto | First release |
| 02 | 25/04/2025 | Stefan Dewald | Microtypographic changes, wire colours added |
| 03 | 20/05/2024 | Fabrizio Picotto | Micro typo changes, added mechanical draw |
| 04 | 05/07/2024 | Fabrizio Picotto | Updated technical details section  Updated installation sections  Updated status display section  Updated antenna section  Added mechanical drawing section |
| 05 | 29/07/2024 | Fabrizio Picotto | Added device picture in first page |
| 06 | 30/07/2024 | Fabrizio Picotto | Added device name(s) in first page  Microtypo in scope and field of application sections |
| 07 | 11/04/2025 | Stefano Cengarle | Operating voltage updated as per spec & UL |
| 08 | 14/04/2025 | Stefano Cengarle | NEMA level, max. altitude, tightening torque, main switch suggestion added |
| 09 | 23/06/2025 | Fabrizio Picotto | Corrected I/O voltage and max current data  Added the mounting screws max tightening torque info  Reordered sections in installation section |

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# Scope

This document refers to the Leuze RDH 202 00 device.

# Field of Application

This document applies to the Leuze RDH 202 00 device with firmware version from v1.0.0.

# Definitions and Abbreviations

| Term / Abbreviation | Definition |
| --- | --- |
| **TBD** | To Be Determined |
| **UID** | Unique Identifier |

# Technical Details

This section provides details on the technical data of the device.

| Electrical Data |  |
| --- | --- |
| Operating Voltage | 24 ± 6 VDC |
| Power Ratings | 2 W |
| Protection Class | III |
| Operating Frequency | 13.56 MHz ±7 kHz |
| RFID Antenna | 1 × integrated |
| RFID Standard | ISO 15693, ISO 14443 A |

| Detection Zone |  |
| --- | --- |
| Distance Read Head Front | 120 mm[[1]](#footnote-2) |

| Outputs |  |
| --- | --- |
| Operating Voltage | 24 ± 6 VDC |
| Max Current per Output | 60 mA |

| Inputs |  |
| --- | --- |
| Operating Voltage | 24 ± 6 VDC |
| Max Current per Input | 8 mA |

| Interfaces |  |
| --- | --- |
| Communication Interface | Serial RS232 |
| Communication Protocol | Leuze protocol |

| Operating Conditions |  |
| --- | --- |
| Operating Temperature | -32 °C … +60 °C |
| Storage Temperature | -40 °C … +85 °C |
| Relative Humidity | Up to 95 %, non condensing |
| Degree of Protection | IP67 / NEMA6 |
| Maximum altitude | 2000m (sea level) |

| Test / Approvals |  |
| --- | --- |
| Radio Approval for | USA, Canada, EU/RED |
| Shock Resistance | EN 60068-2-27, Test Ea  EN 60068-2-27, Test Eb |
| Vibration Resistance | EN 60068-2-6, Test Fc |

| Mechanical Data |  |
| --- | --- |
| Design | Cubic |
| Dimensions | 99.42 mm × 67.67 mm × 41.65 mm |
| Net Weight | 120 g |
| Housing Material | Plastic |
| Housing Colour | Aluminium, RAL 9006  Red, RAL 3000 |
| Type of Fastening | Through-hole mounting |

| Displays |  |
| --- | --- |
| Display | 1 × LED: bicolour green/red |

| Electrical Connections |  |
| --- | --- |
| Connector | 1 × 12-poles male M12 A-coded |

# Installation

## General Instructions

* Several devices installed next to each other interfere if they are not correctly configured.
* Installing a device in or on metal reduces the read and write distance.
* Keep the device away from direct sunlight, high humidity, extreme temperatures, and sources of electromagnetic interference. Any combination of these conditions might degrade performance or shorten the life of the device.
* Connect the device by using a suitable cable and proper mating connector, as defined in the electrical connections section, with 0.29-0.39Nm mating torque, as per supplier [specification](https://amphenolltw.com/down.php?cn=news_content&id=78&srsltid=AfmBOoq12KKtFm0OAZSG9wSmtbUkyWnNE5a4LvK-NfZE7-SiIF0ejUuu).
* Power the device using a suitable external power supply as defined in electrical connections section. The boot sequence begins in either case when power is supplied to the device. This sequence typically completes within 5 seconds. After the boot sequence finishes, the device accepts commands, not before.
* As the device is always active, please consider installing a main switch between the power supply and the device to turn the latter off, when needed.

## Avoiding Interference

The device generates a modulated electrical field with a frequency of 13.56 MHz.

To avoid interference of the data communication:

* No other devices generating interference emission in this frequency band must be operated in its vicinity.
* Such devices are for example frequency converters and switched-mode power supplies.

If there are other devices in the same frequency band in the vicinity:

* The mounting distances between the devices should be as large as possible.
* Use the devices in alternating operation.
* Switch the HF field of the device on/off.

## Notes on Device Mounting

For installation:

* Use the existing four holes and choose suitable screws (M4) – tightening torque as per ISO 898/1, screw and bolt grade (max tightening torque 1.35Nm).
* Use a level to ensure the device is mounted horizontally (electrical connectors facing downwards).
* The required screws are not supplied with the device.

## Notes on Tag Mounting

* For installation in and on metal tags provided for this purpose must be used.
* The tag must be placed in the reading area of the device antenna. The angle of aperture and the operating distance must be adhered to.
* The orientation of the device antenna axis must correspond with the axis of the tag for best performance.

## Positioning of the Tags

|  |  |
| --- | --- |
| Immagine che contiene schizzo, disegno, diagramma, Disegno tecnico  Descrizione generata automaticamente | * Align the tag on the antenna central axis. * The distance “D” is indicated in the “Antenna” section. |

## Mechanical Design

|  |  |
| --- | --- |
| Immagine che contiene schizzo, disegno, design, illustrazione  Descrizione generata automaticamente  2  4  3  1 | 1. Status display 2. Electrical connections 3. Sensing element 4. Mounting holes |

# Connections

This section provides details on the connections of the device.

Observe the following instructions before electrical installation.

|  |  |
| --- | --- |
| Immagine che contiene Segnale stradale, triangolo, giallo, cartello  Descrizione generata automaticamente | * The device must be connected by a skilled qualified person. * Device of protection class III. * Electric supply via PELV/SELV circuits only. * Disconnect power before connecting the device. * Connect the device according to the indicated pin connection. |

## Electrical Connections

### Power Supply Connection

The power supply connection is designed as a 12-poles male M12 A-coded connector. This connector is shared with serial RS232 interface and inputs/outputs.

Immagine che contiene schizzo, cerchio, disegno, clipart

Descrizione generata automaticamente

| Pin | No | Description | DIN47100 Wire Cable Colour |
| --- | --- | --- | --- |
| VCC | 1 | DC power supply, VCC | Brown |
| GND | 2 | DC power supply return path, GND | Blue |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | White |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Green |
| PE | 5 | Protected Earth | Pink |
| NC | 6 | Not Connected | Yellow |
| NC | 7 | Not Connected | Black |
| NC | 8 | Not Connected | Grey |
| RXD | 9 | Serial RS232 receive (from host) | Red |
| TXD | 10 | Serial RS232 transmit (to host) | Purple |
| SWIN 2 | 11 | Input 2, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | Grey/Pink |
| SWOUT 2 | 12 | Output 2, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Red/Blue |

|  |  |
| --- | --- |
| Immagine che contiene strumento di scrittura, forniture per ufficio, cancelleria, Strumenti per contrassegnare  Descrizione generata automaticamente | To ensure interference-free operation, the device must be connected to an earth potential free from external voltage. |

### Serial RS232 Connection

The serial RS232 interface connection is designed as a 12-poles male M12 A-coded connector. This connector is shared with power supply and inputs/outputs.

Immagine che contiene schizzo, cerchio, disegno, clipart

Descrizione generata automaticamente

| Pin | No | Description | DIN47100 Wire Cable Colour |
| --- | --- | --- | --- |
| VCC | 1 | DC power supply, VCC | Brown |
| GND | 2 | DC power supply return path, GND | Blue |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | White |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Green |
| PE | 5 | Protected Earth | Pink |
| NC | 6 | Not Connected | Yellow |
| NC | 7 | Not Connected | Black |
| NC | 8 | Not Connected | Grey |
| RXD | 9 | Serial RS232 receive (from host) | Red |
| TXD | 10 | Serial RS232 transmit (to host) | Purple |
| SWIN 2 | 11 | Input 2, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | Grey/Pink |
| SWOUT 2 | 12 | Output 2, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Red/Blue |

|  |  |
| --- | --- |
| Immagine che contiene strumento di scrittura, forniture per ufficio, cancelleria, Strumenti per contrassegnare  Descrizione generata automaticamente | To ensure interference-free operation, the device must be connected to an earth potential free from external voltage. |

### Inputs/Outputs Connection

The inputs/ouputs connection is designed as a 12-poles male M12 A-coded connector. This connector is shared with power supply and serial RS232 interface.

Immagine che contiene schizzo, cerchio, disegno, clipart

Descrizione generata automaticamente

| Pin | No | Description | DIN47100 Wire Cable Colour |
| --- | --- | --- | --- |
| VCC | 1 | DC power supply, VCC | Brown |
| GND | 2 | DC power supply return path, GND | Blue |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | White |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Green |
| PE | 5 | Protected Earth | Pink |
| NC | 6 | Not Connected | Yellow |
| NC | 7 | Not Connected | Black |
| NC | 8 | Not Connected | Grey |
| RXD | 9 | Serial RS232 receive (from host) | Red |
| TXD | 10 | Serial RS232 transmit (to host) | Purple |
| SWIN 2 | 11 | Input 2, a clean contact or PNP transistor  has to be connected between VCC and this pin,  max applicable current is 8 mA | Grey/Pink |
| SWOUT 2 | 12 | Output 2, the load has to be connected between this pin  and VCC, max applicable current is 60 mA | Red/Blue |

|  |  |
| --- | --- |
| Immagine che contiene strumento di scrittura, forniture per ufficio, cancelleria, Strumenti per contrassegnare  Descrizione generata automaticamente | To ensure interference-free operation, the device must be connected to an earth potential free from external voltage. |

# Status Display

This section provides details on the status display of the device.

| Colour | State | Meaning |
| --- | --- | --- |
| (red) | Static on | * System error * System initialization |
| (green) | Static on | * Device ready, antenna not active |
| (yellow) | Blinking 4 Hz | * Antenna active, tag detected |
| (yellow) | Static on | * Antenna active, no tag detected |
| (off) | Static off | * Power supply is missing * Hardware defect |

# Antenna

This section provides details on the antenna of the device.

The device integrates the RFID antenna inside the case.

The read range of an RFID system always depends on various factors like antenna size, transponder size, transponder IC type, orientation between transponder and reader antenna, position of the transponder versus the reader antenna, noise environment, metallic environment, etc. Therefore, all data about read ranges can only be typical values measured under laboratory conditions. In real live applications the read range may differ from the data mentioned in the datasheet.

| Detection Zone |  |
| --- | --- |
| Distance Read Head Front | <120mm, referred to a 50x50mm white label tag, IC NXP ICODE SLIX2 |
| Distance Read Head Side | <120mm, referred to a 50x50mm white label tag, IC NXP ICODE SLIX2 |

# Maintenance, Repair and Disposal

If used correctly, no maintenance and repair measures are necessary

* The device must only be repaired by the manufacturer.
* After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.
* Keep the device free from soiling.

# Mechanical Drawings

Immagine che contiene schizzo, disegno, diagramma, Disegno tecnico

Descrizione generata automaticamente

Dimensions in mm.

1. Reading distance depends on transponder type, antenna and environmental conditions. [↑](#footnote-ref-2)