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

**HF BASIC SERIAL DATASHEET**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Changelist |
| 01 | 18/04/2024 | Fabrizio Picotto | First release |

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# Scope

This document refers to the Leuze HF Basic serial device.

# Field of Application

This document applies to the device HF Basic serial device with firmware version v1.00.

# 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 | Nominal 24Vdc, range 18 … 36 Vdc |
| Power Ratings | 2W |
| Operating Frequency | 13.56MHz ± 7kHz |
| RFID Antenna | 1 x integrated |
| RFID Standard | ISO 15693, ISO 14443 A |

| Detection Zone |  |
| --- | --- |
| Distance Read Head Front | 100mm[[1]](#footnote-2) |

| Outputs |  |
| --- | --- |
| Operating Voltage | 24Vdc |
| Max Current per Output | 60mA |

| Inputs |  |
| --- | --- |
| Operating Voltage | 24Vdc |
| Max Current per Input | 8mA |

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

| Operating Conditions |  |
| --- | --- |
| Operating Temperature | -32°C … +60°C |
| Storage Temperature | -40°C … +85°C |
| Humidity | Up to 95%, non condensing |
| Protection Class | IP67 |

| Mechanical Data |  |
| --- | --- |
| Dimensions | 99.42 x 67.67 x 41.65 mm |
| Material | PC |

| Displays |  |
| --- | --- |
| Display | 1 x LED: bicolor green/red |

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

# Installation

## General Instructions

* 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 using a suitable cable as defined in electrical connections section.
* 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.

## 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.

## 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.

|  |  |
| --- | --- |
|  | Respect the notes on installation in the event that several RFID 13.56 MHz devices are operating simultaneously in the same area. |

## Fixing

Fix the device to a support (wall, column, …) using the existing four holes and choosing suitable screws.

## Mechanical Design

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

# Connections

This section provides details on the connections of the device.

Observe the following instructions before electrical installation.

|  |  |
| --- | --- |
|  | * 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 |
| --- | --- | --- |
| VCC | 1 | DC power supply, VCC |
| GND | 2 | DC power supply return path, GND |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor has to be connected between VIN and this pin, max applicable current is 8mA |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin and VCC, max applicable current is 100mA |
| PE | 5 | Protected Earth |
| NC | 6 | Not Connected |
| NC | 7 | Not Connected |
| NC | 8 | Not Connected |
| RXD | 9 | Serial RS232 receive (from host) |
| TXD | 10 | Serial RS232 transmit (to host) |
| SWIN 2 | 11 | Input 2, a clean contact or PNP transistor has to be connected between VIN and this pin, max applicable current is 8mA |
| SWOUT 2 | 12 | Output 2 |

|  |  |
| --- | --- |
|  | 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 |
| --- | --- | --- |
| VCC | 1 | DC power supply, VCC |
| GND | 2 | DC power supply return path, GND |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor has to be connected between VIN and this pin, max applicable current is 8mA |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin and VCC, max applicable current is 100mA |
| PE | 5 | Protected Earth |
| NC | 6 | Not Connected |
| NC | 7 | Not Connected |
| NC | 8 | Not Connected |
| RXD | 9 | Serial RS232 receive (from host) |
| TXD | 10 | Serial RS232 transmit (to host) |
| SWIN 2 | 11 | Input 2, a clean contact or PNP transistor has to be connected between VIN and this pin, max applicable current is 8mA |
| SWOUT 2 | 12 | Output 2, the load has to be connected between this pin and VCC, max applicable current is 100mA |

|  |  |
| --- | --- |
|  | 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 |
| --- | --- | --- |
| VCC | 1 | DC power supply, VCC |
| GND | 2 | DC power supply return path, GND |
| SWIN 1 | 3 | Input 1, a clean contact or PNP transistor has to be connected between VIN and this pin, max applicable current is 8mA |
| SWOUT 1 | 4 | Output 1, the load has to be connected between this pin and VCC, max applicable current is 100mA |
| PE | 5 | Protected Earth |
| NC | 6 | Not Connected |
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| RXD | 9 | Serial RS232 receive (from host) |
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|  |  |
| --- | --- |
|  | 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.

| Color | State | Meaning |
| --- | --- | --- |
| Red | Static on | * System error * System initialization |
| Green | Blinking 2Hz | * Antenna active, no tag detected |
| Green | Blinking 1Hz | * Antenna not active |
| Green | Static on | * Antenna active, 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.

# 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.

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