



**RFline**  
**UHF-RFID Reader 4CH**

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# 1 Introduction

## 1.1 Reference Documents

Ethernet Communication Protocol: IQLine\_UHF\_Communication Protocol\_EN\_x.y.pdf  
 Software Library Description: IQLine\_UHF\_ReaderLibrary\_EN\_x.y.pdf

## 1.2 Signal

### Multi-Colour LED

| Colour, Action              | Description       |
|-----------------------------|-------------------|
| Blue, steady ON             | Normal Function   |
| Red                         | System upgrading  |
| Red, Blinking, Purple, Blue | Power on sequence |

After Power on the LED lights in sequence: red, red + blue, red + blue + green (white), blue + green, green, off  
 Then, after a short pause, it should light steady blue.

## 1.3 Avoiding Interference

The device usually operates without any interference caused by radio communication if it is

- used as intended and,
- correctly installed.

This is an RFID device. It is part of its normal functions to emit radio waves. The operation free of radio disturbance cannot be guaranteed for each application.

If the device causes radio disturbance in an application, the following instructions will help:

- Realign the antenna.
- Change the position of the antenna.
- Increase the distance between the device and the antenna.
- Change the power supply of the device.
- Contact the support of the manufacturer.

## 1.4 Emitted Frequencies During Normal Operation

| Region        | Frequencies  |
|---------------|--|
| Europe (ETSI) | 865.7, 866.3, 866.9, 867.5 MHz   |
| USA (FCC)     | The FCC specifies frequency hopping between 902.75–927.25 MHz in 500 kHz steps. This specification states that no listen-before-talk is performed. The maximum continuous transmit time on a channel is 0.4 seconds. |

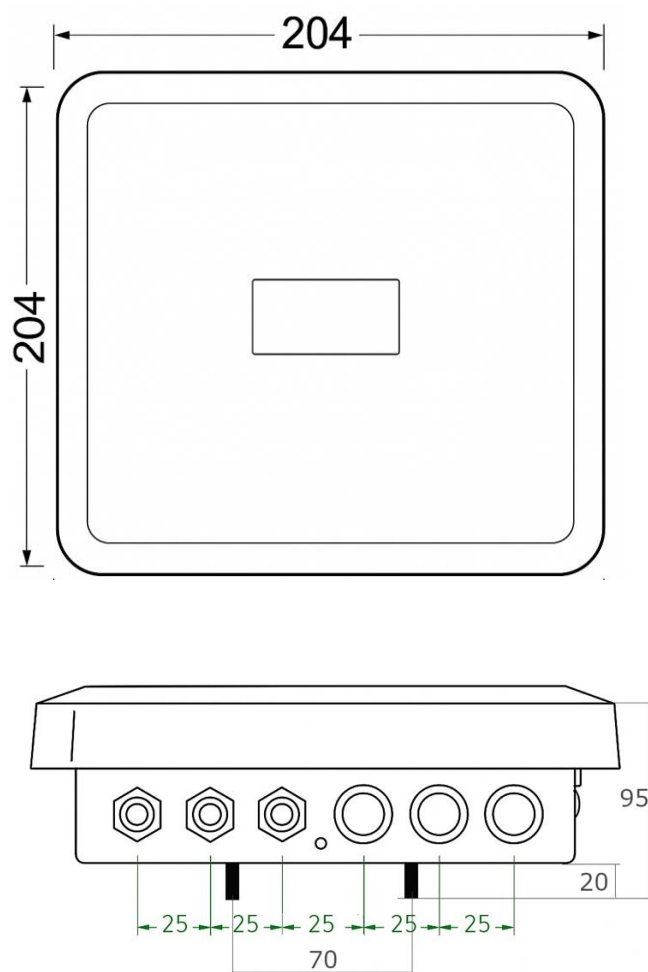
**According to ETSI EN 302208-1 only channels 4, 7, 10 and 13 (internal numerated as 1, 4, 7 and 10) could be used at high power! Other RF channels are present only for test purposes and should not be used in normal operation!**

## 1.5 Initial Operation

Initial operation is done using the test and demo software.

## 2 Mechanical Specifications

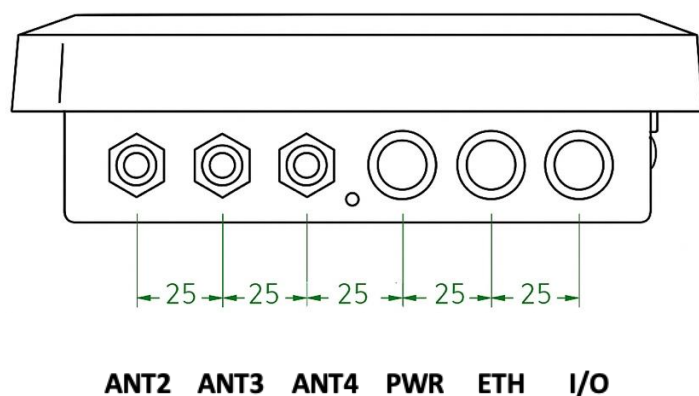
### 2.1 Overall Dimensions



### 2.2 Mounting

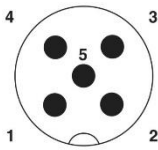
Mounting is carried out using 4 fixed studs with 70 mm spacing (center-to-center), protruding 20 mm

### 2.3 Position of Ports



### 3 Pinout

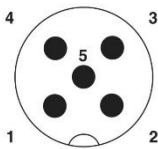
#### 3.1 Power Supply



M12 A-coded 5 pin male connector

| Pin | Signal | Description      | Colour |
|-----|--------|------------------|--------|
| 1   | PE     | Protective Earth | Brown  |
| 2   | +PWR   | 10...27 Vdc      | White  |
| 3   | -PWR   | GND              | Blue   |
| 4   |        |                  | Black  |
| 5   |        |                  | Grey   |

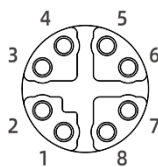
#### 3.2 Power Supply and CAN Bus



5 pin A-coded male connector

| Pin | Signal | Description      | Color  |
|-----|--------|------------------|--------|
| 1   | PE     | Protective Earth | Shield |
| 2   | +PWR   | 10...27 Vdc      | Red    |
| 3   | -PWR   | GND              | Black  |
| 4   | CAN-H  | CAN bus high     | White  |
| 5   | CAN-L  | CAN bus low      | Blue   |

#### 3.3 Ethernet



M12 X-coded 8 pin female connector

Ethernet factory presets

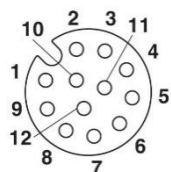
IP-Address: 192.168.5.200

Port: 3000

Device ID: 255

| Pin | Signal | Description | Pin on RJ45 | Colour       |
|-----|--------|-------------|-------------|--------------|
| 1   | D1+    |             | 1           | White/Orange |
| 2   | D1-    |             | 2           | Orange       |
| 3   | D2+    |             | 3           | White/Blue   |
| 4   | D2-    |             | 6           | Blue         |
| 5   | D4+    |             | 7           | White/Green  |
| 6   | D4-    |             | 8           | Green        |
| 7   | D3+    |             | 5           | White/Brown  |
| 8   | D3-    |             | 4           | Brown        |

### 3.4 GPIO



M12 A-coded 12 pin female connector

| Pin | Signal   | Description                    | Pair | Colour    |
|-----|----------|--------------------------------|------|-----------|
| 1   | OUT2 NO  | Relay 2 NO contact connection  | 2    | Brown     |
| 2   | IN2      | Input 2 connection             |      | Blue      |
| 3   | IN1      | Input 1 connection             |      | White     |
| 4   | –PWR     | GND                            |      | Green     |
| 5   | –PWR     | GND                            |      | Pink      |
| 6   | OUT4 NO  | Relay 4 NO contact connection  | 4    | Yellow    |
| 7   | OUT4 COM | Relay 4 COM contact connection | 4    | Black     |
| 8   | OUT3 NO  | Relay 3 NO contact connection  | 3    | Grey      |
| 9   | OUT3 COM | Relay 3 COM contact connection | 3    | Red       |
| 10  | OUT1 NO  | Relay 1 NO contact connection  | 1    | Purple    |
| 11  | OUT1 COM | Relay 1 COM contact connection | 1    | Grey/Pink |
| 12  | OUT2 COM | Relay 2 COM contact connection | 2    | Red/Blue  |

## **4 Maintenance, Repair and Disposal**

### **4.1 Maintenance**

The electronics are maintenance-free. Protect it against dirt and liquids.

### **4.2 Repair**

There are no user-serviceable parts. Do not attempt repairs. Do not allow any unauthorized service centre or personnel to repair or modify the product.

In the event your electronics fails, contact IDTRONIC GmbH via the service e-mail address:  
[helpdesk@idtronic.de](mailto:helpdesk@idtronic.de)

### **4.3 Disposal**

After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

Do not dispose of this device in normal household waste. Contact your local council for information on disposal options for electronic devices in your area.



## 5 Technical Data

| Radio Specifications |  |
|----------------------|--|
| Operating Frequency  | 840...960 MHz, Configurations for USA: 902...928 MHz (FCC), EU: 865...868 MHz (ETSI)   |
| RF TX Power          | +5...33 dBm, adjustable in steps of 1 dB   |
| RF Sensitivity       | -87 dBm  |
| RF Channel Isolation | 32 dB  |
| Reading Range        | Up to 10 meters* with internal antenna, write distance is half of the reading distance |
| RF impedance         | 50 $\Omega$  |
| Antenna              | 1 internal antenna<br>3 TNX connectors for external antennas                           |

| Supported Standards / Tags |  |
|----------------------------|--|
| ISO Standard               | ISO 168000-63 (EPC Class 1 Generation 2) |
| Read Rate                  | $\geq 900$ tags/s                        |
| Tag Cache                  | $\geq 1000$ Tags @ 12 Bytes EPC size     |
| Reader IC                  | Impinj E710                              |

| Electrical Specifications |  |
|---------------------------|--|
| Power Supply              | 10...24 Vdc, M12 male connector, 5 pin, A-coded<br>OR<br>POE power supply 802.3af or 802.3at   |
| Power Consumption         | Max. 10 W  |
| Communication Interface   | Ethernet, M12 female connector, 8 pin, X-coded   |
| GPIO                      | 4 Inputs TTL Levels:      Logic low:    < 0.8 V, minimum 0V<br>Logic high:   > 2 V, maximum 3.3 V<br><br>4 Output via relay:        1 A, 125 Vac, 24 Vdc<br>Relay life time: > 100.000 electrical switching operations |

| Mechanical Specifications |                   |
|---------------------------|-------------------|
| Overall Dimensions        | 204 × 204 × 95 mm |
| Weight                    | 1.6 kg            |
| Material                  | Aluminium, ASA    |

| Environmental Conditions |                            |
|--------------------------|----------------------------|
| Operating Temperature    | -25 °C ... +55 °C          |
| Storage Temperature      | -40 °C ... +85 °C          |
| Humidity                 | up to 95 %, non-condensing |

| SDK Information     |                         |
|---------------------|-------------------------|
| Supported OS        | Windows, Linux, Android |
| Supported Languages | C, C#/.NET, Java        |
| Demo Software       | Windows                 |

\* Reading distance depends on tag, antenna and environmental conditions

Other functions and details to be continued and upgraded.