

# XC-RF700 User' s Manual



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## Catalog

1 Safety Instructions .....	1
2 Performance Features .....	1
2.1 Performance Features .....	1
2.2 Available Reader Types .....	2
3 Installation .....	2
4 Terminals .....	2
4.1 Antenna Connection .....	3
4.2 Power Supply .....	3
4.2.1 Power Supply via DC+24V .....	3
4.2.2 Power Supply via PoE .....	3
4.3 Interfaces .....	4
4.3.1 Ethernet Interface .....	4
4.3.2 Serial Port .....	4
4.3.3 GPIO .....	5
4.3.3.1 Digital Inputs .....	5
4.3.3.2 Digital Outputs .....	6
5 Specifications .....	6
5.1 RF Interface .....	6
5.2 Data/Control Interface .....	7
5.3 Power Supply .....	7
5.4 Mechanical .....	7
5.5 Ambient Conditions .....	7
6 Radio Approval .....	8

# 1 Safety Instructions

1. The device may only be used for the intended purpose designed by for the manufacturer.
2. The operation manual should be conveniently kept available at all times for each user.
3. Unauthorized changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
4. The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
5. Repairs may only be executed by the manufacturer.
6. Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
7. Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
8. When working on devices the valid safety regulations must be observed.
9. This device is not suitable to be used in places where children are present. Prevent children access to the device.
10. Equipment is intended for use only in restricted access area.
11. Special advice for carriers of cardiac pacemakers:

Although this device doesn't exceed the valid limits for electromagnetic fields you should keep a minimum distance of 25 cm between the device and your cardiac pacemaker and not stay in an immediate proximity of the device respective the antenna for some time.

## 2 Performance Features

### 2.1 Performance Features

The Reader has been developed for reading passive data carriers, using an operating frequency in the UHF range.

## 2.2 Available Reader Types

Table 2-1: Available Reader Types

Reader type	Description
XC-RF862-EU	Device version for Europe
XC-RF862-FCC	Device version for USA
XC-RF862-CN	Device version for China

## 3 Installation

The Reader is designed for wall-mount, including outdoors. Holes for mounting on a wall are provided in the housing.

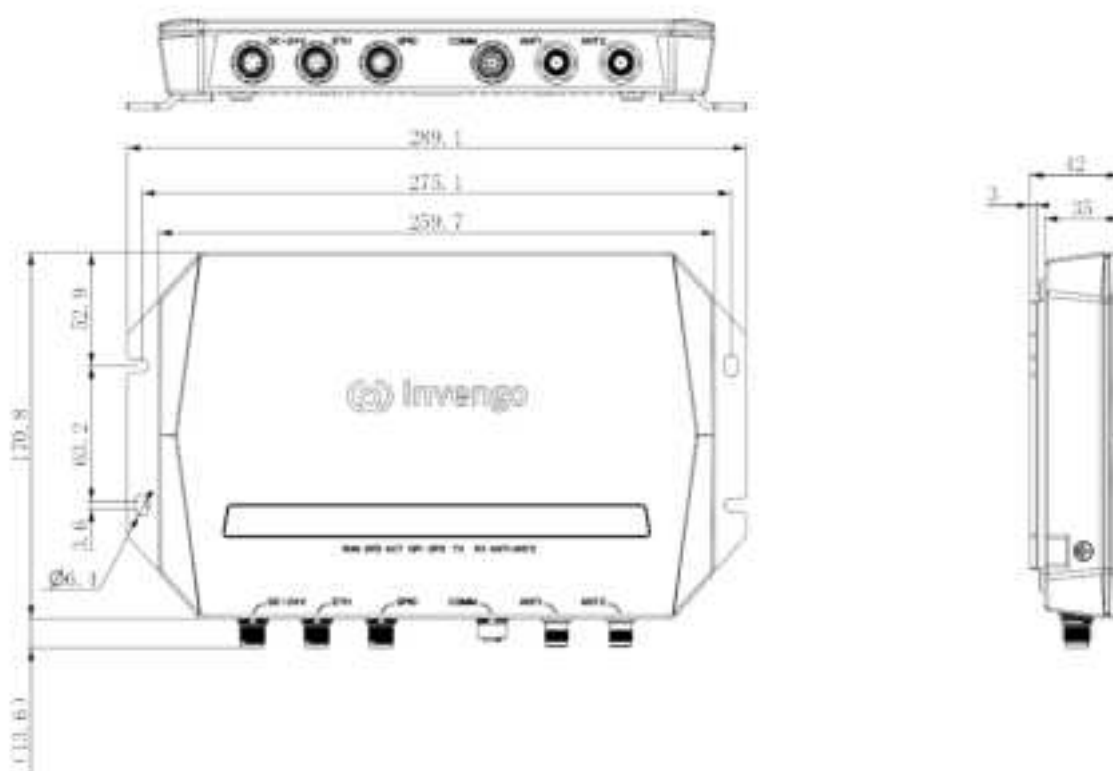


Fig. 3-1: Installation Drawing

## 4 Terminals

On the lower side of the reader housing the different cable connectors are positioned.

Table 4-1 Connection terminals

Connector	Description
ANT 1-2	Connection of the external antennas with RP_TNC(Impedance 50Ω)
DC+24V	Power supply 24VDC

ETH	10/100 Base-T network connection with M12-A Code-Male-8Pin (with PoE+)
RS232/RS422	RS232/RS422 interface
GPIO	Digital input and output

## 4.1 Antenna Connection

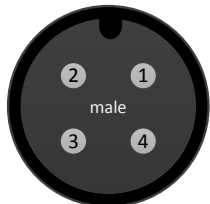
The external RP-TNC antenna connectors are positioned on the higher side of the reader.

## 4.2 Power Supply

### 4.2.1 Power Supply via DC+24V

The supply voltage of 24V DC has to be connected to Terminal DC+24V.

Table 4-2 Pin assignment for power supply

Terminal	Abbreviation	Description	Schematic diagram
Pin 1&2	VCC	VCC – supply voltage 24VDC	
Pin 3&4	GND	Ground – supply voltage	

CAUTION:

.Reversing the polarity of the supply voltage may destroy the device.

### 4.2.2 Power Supply via PoE


The reader can be powered via the LAN connector on ETH with the use of a PoE “Power over Ethernet” power supply according to IEEE802.3at, Class4 (30/25,5Watt). The DC supply can be achieved via the free pin’ s 4, 5 and 7, 8 (Midspan-Power). Also a “Phantom Powering” (Inline-Power) via the signal pin’ s 1,2,3, and 6 is possible. Depending on the cable cross-section the following cable distances can be used.

## 4.3 Interfaces

### 4.3.1 Ethernet Interface

The Reader has an integrated 10/100 Base-T network port for a M12-A Code-Male-8Pin connector. Connection is made on ETH and has an automatic “Crossover Detection” according to the 100Base-T Standard.

Table 4-3 Ethernet Port pin-outs

Terminal	Abbreviation	Schematic diagram
Pin 1	PoE4_5	
Pin 2	PoE7_8	
Pin 3	PoE7_8	
Pin 4	TX-	
Pin 5	RX+	
Pin 6	TX+	
Pin 7	PoE4_5	
Pin 8	RX-	

With structured cabling CAT 5 cables should be used. This ensures a reliable operation at 10 Mbps or 100Mbps.

The prerequisite for using TCP/IP protocol is that each device has a unique address on the network. All Readers have a factory set IP address.


Table 4-4 Default configuration of the Ethernet connection

Network	Address
IP-Address	192. 168. 9. 23
Subnet-Mask	255. 255. 255. 0
DHCP	OFF

### 4.3.2 Serial Port

The Reader has an RS422 and an RS232 port for a M12-A Code-Female-8Pin connector.

Table 4-5 Serial Port pin-outs RS232 & RS422


Terminal	Abbreviation	Schematic diagram
Pin 1	RS232_RX	
Pin 2	RS232_GND	
Pin 3	RS232_TX	
Pin 4	RS422Y	
Pin 5	RS422Z	
Pin 6	RS422_GND	
Pin 7	RS422B	
Pin 8	RS422A	

### 4.3.3 GPIO

The Reader has an GPIO port for a M12-A Code-Male-10Pin connector.

The optocouplers on Terminal GPIO are galvanically isolated from the Reader electronics and must therefore be externally supplied.

Table 4-6 GPIO Port pin-outs

Terminal	Abbreviation	Schematic diagram
Pin 1	GP01B	
Pin 2	GP01A	
Pin 3	GP02B	
Pin 4	GP02A	
Pin 5	GPI1+	
Pin 6	GPI1-	
Pin 7	GPI2+	
Pin 8	GPI2-	
Pin 9	NC	
Pin 10	NC	

#### 4.3.3.1 Digital Inputs

Optocouple input:

The input LED associated with the optocoupler is connected internally to a series resistor of  $680\Omega$ .

For supply voltages of greater than 17V the input current must be limited from 5mA to 25 mA by means of an additional series resistor.

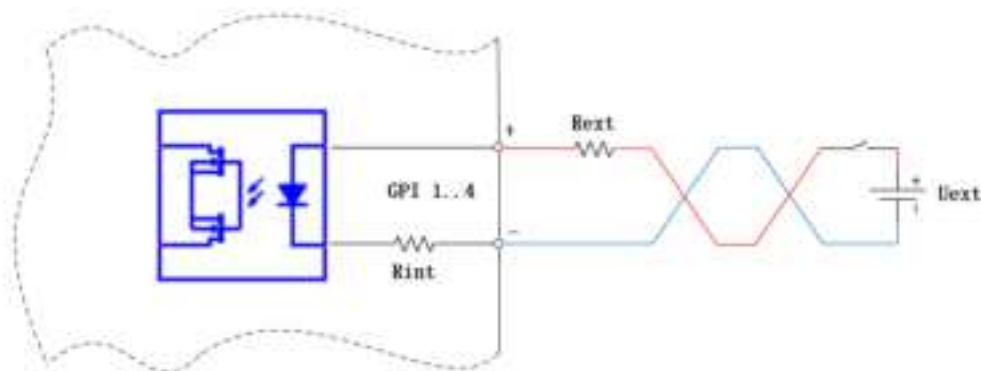


Fig.4-1: Internal and possible external wiring of the optocoupler inputs

Table 4-7 The necessary external resistors for various external voltages

External voltage (Uext)	Required external series resistor (Rext)
5V...17V	---
18V...24V	Recommend: $1K\Omega$ /0.25W Usable range: $(470\Omega \cdots 2.2K\Omega)$ /0.25W

NOTE:

.The input is configured for a maximum input voltage of 5V – 24V DC and an input current of max. 25mA.

.Polarity reversal or overload on the input will destroy it.

#### 4.3.3.2 Digital Outputs

Optocoupler output:

The MOSFET connections of the optocoupler output are galvanically isolated from the Reader electronics and are carried to the outside without any internal ancillary circuitry on Terminal. The output must therefore be powered by an external power supply.

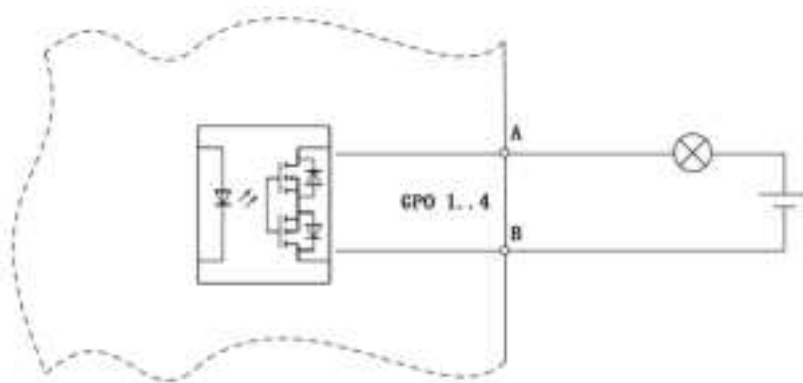


Fig.4-2: Internal and external wiring of the optocoupler outputs

CAUTION:

The output is configured for max. 30V AC/DC @ 1000mA.

Overload on the output will destroy it.

The output is intended for switching resistive loads only.

## 5 Specifications

### 5.1 RF Interface

- 1) Tag Protocols: EPC global UHF Class 1 Gen2 / ISO18000-63
- 2) Antenna Connectors: 2 x RP-TNC @ 50  $\Omega$
- 3) RF Power Output: +11dBm ~ +33dBm
- 4) Rx Sensitivity: -80dBm
- 5) Frequency Range: 920 ~ 925MHz @SRRC  
902 ~ 928MHz @FCC  
865 ~ 868MHz @ETSI



## 5.2 Data/Control Interface

- 1) Data Interfaces: 1 x M12 (10/100 Base-T Ethernet)  
1 x RS422, 1 x RS232  
1 x USB Type A
- 2) GPIO Interfaces: 1 x M12-A Code-Male-8Pin connector  
2 x GP0, 2 x GPI

## 5.3 Power Supply

- 1) Power Supply: 24VDC (12V ~ 30V) or PoE+
- 2) Power Consumption: 15W (max)

## 5.4 Mechanical

- 1) Housing: Aluminum Casting
- 2) Dimension (W x H x D): 289.1mm x 184.4mm x 42mm
- 3) Weight: 1.6kg
- 4) Ingress Protection: IP67
- 5) Color: Black

## 5.5 Ambient Conditions

- 1) Temperature Range:  
Air Operation : -25°C ~ +70°C  
Storage: -40°C ~ +85°C
- 2) Humidity: 5 % to 95 % non-condensing

## 6 Radio Approval

### FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.