

## BF-IDU01

RFID-Reader

# BALLUFF

sensors worldwide

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## Operating Guide

### Purpose of the Device

The BF-IDU01 device is intended to read and write "EPC Global Class 1 Gen2" compliant data carriers (so called tags) via country dependent UHF radio frequencies.

### Check that you have the right device variant

This UHF system consists of a radio frequency unit and an integrated antenna according to specifications and may only be operated within the specified countries subject to all applicable national legal regulations and standards.

Check that the type label contains the correct type approval symbol for your country.

- ▶ When using the UHF system in the European Community, the provisions in ETSI standard 302 208 apply.
- ▶ When using the UHF system in the USA, the directives of the FCC, Part 15 B and 15 C, apply.
- ▶ When using the UHF system in Canada, the directives of the IC, RSS-210 apply.
- ▶ When using the UHF system in Mexico, the directives of the SCT, NOM-121-SCT1-2009 apply.
- ▶ When using the UHF system in Argentina, the directives of Resolución SC 729/80 and SC 784/87 apply.
- ▶ When using the UHF system in Brazil, the directives of the ANATEL, 506/2008 and 442/2006 apply.
- ▶ When using the UHF system in China, the directives of the RFID National Standard and GB 9254 apply.
- ▶ When using the UHF system in Japan, the directives of "Radio Law" and ARIB T106 apply.
- ▶ When using the UHF system in Australia, the directives of the Radiocommunications Class License 2000 (Item 32A) apply.

## BF-IDU01

RFID-Reader

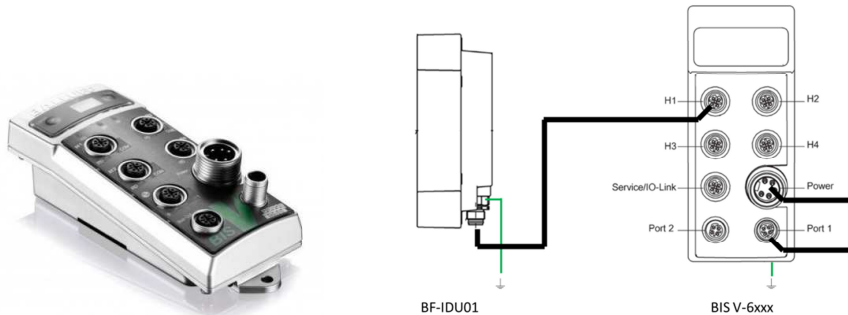
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### Connecting the Device

The device has to be connected to one of the head connectors "H1" .. "H4" of a Balluff BIS V control unit via standard 4-wire cable with M12 industry connectors. The control unit delivers power supply and controls the device over this connection.

Make an additional ground connection to the Functional Ground terminal (Symbol  $\perp$ ) either directly or using an RC combination to ground.



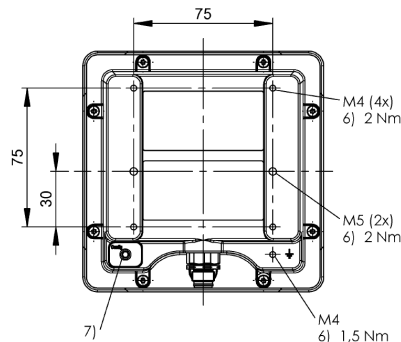
The control unit itself needs to be connected to a power supply and the customer's PLC unit. See the BIS V manual for details.

### Mounting

Before operating, the device has to be fixed mounted with at least 2 screws of M4 or M5 size in mounting holes at back side (see image).

The BF-IDU01 device may be mounted in any direction, the operating direction of the integrated antenna is towards the front containing the "BIS VU Identification Systems" label.

Optional mounting plates are available for installing the device.



The antennas of the identification system BIS U transmit ultra-high frequency electromagnetic waves. People should not remain within close range of the UHF antenna for long periods (several hours). When selecting the installation position for the BF-IDU01 device, make sure that the minimum distance between the UHF antenna and the workplace is 25 cm.

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### Setup and Operation

The BF-IDU01 device will operate when the BIS V control unit receives read or write commands from the connected PLC. See the manual of BIS V control units for how to send commands to the control unit.

The transmission power may be set up with Service Software e.g. "Balluff UHF Manager" up to the specified maximum to control the read and write range of the device.

### Status Indicators

The device will show its status using the 4 LEDs at the corners of the housing. In normal operation state the meaning of these lights are as follows:

- ▶ Green light "Power" indicates that the device is connected to the control unit and ready to operate.
- ▶ Red light "Status" (permanent) indicates that the device's temperature is outside limits, probably because the ambient temperature is too high or the device is defective.
- ▶ Red light "Status" (flashing) indicates that the devices settings are not initialized correctly. Please contact Service.
- ▶ Blue light "RF active" indicates that the device has turned radio frequency transmission on and tries to scan for tags or write or read data over the air.
- ▶ Orange light "Tag present" indicates that at least one UHF EPC Global tag could be found by the device. The light will stay on for at least 3 seconds after a successful scan.

### Electrical Data

Operating voltage $V_s$	19.2...28.8 V DC
Current draw (at 24 V DC)	$\leq$ 200 mA
ETSI-Version:	
Operating Frequency	865.0 .. 868.0 MHz
Maximum Transmit Power	25 dBm (320 mW) ERP
FCC/IC-Version (also Argentina, Mexico):	
Operating Frequency	902 .. 928 MHz
Maximum Transmit Power	27 dBm (0,5 W) EIRP
Brazil Version:	
Operating Frequency	915 .. 928 MHz
Maximum Transmit Power	27 dBm (0,5 W) EIRP
China Version:	
Operating Frequency	920.5 .. 924.5 MHz
Maximum Transmit Power	25 dBm (320 mW) ERP
Japan Version:	
Operating Frequency	916.7 .. 920.5 MHz
Maximum Transmit Power	27 dBm (0,5 W) EIRP
Australia Version:	
Operating Frequency	920 .. 926 MHz
Maximum Transmit Power	27 dBm (0,5 W) EIRP
Maximum Read Range	1000 mm
Antenna Beam Opening Angle	90° (horizontal/vertical)
Antenna Polarization	Circular LH

### Mechanical Data

Housing material	Metal / ABS / PC
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Class B: (Section 15.105)

### **FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT**

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.

(Section 15.21)

### **CAUTION:**

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

### **RF exposure warning**

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

### **For IC:**

#### **Canada, Industry Canada (IC) Notices**

This device complies with Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

#### **Canada, avis d'Industrie Canada (IC)**

Cet appareil est conforme avec Industrie Canada exemptes de licence RSS standard(s).

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

**Radio Frequency (RF) Exposure Information**

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

**Informations concernant l'exposition aux fréquences radio (RF)**

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (antennes sont supérieures à 20 cm à partir du corps d'une personne).