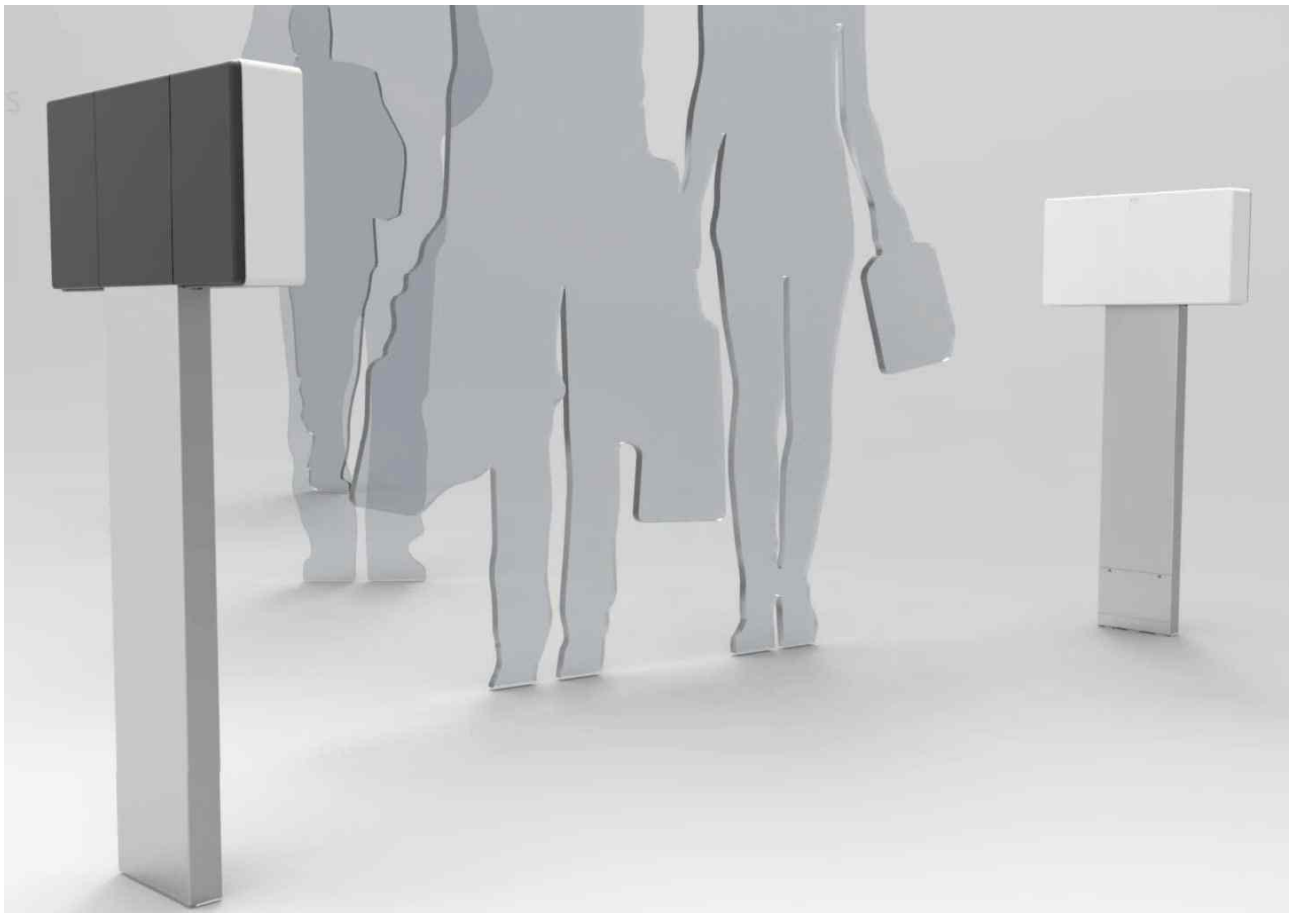
IDENTIFICATION

INSTALLATION

ID ISC.ANT.U500/270
Type GA and GB UHF-Gate



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FEIG ELECTRONIC

Note

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General information's regarding this document

- The sign "☞" indicates extensions or changes of this manual compared with the former issue.
- If bits within one byte are filled with "-", these bit spaces are reserved for future extensions or for internal testing- and manufacturing-functions. These bit spaces must not be changed, as this may cause faulty operation of the reader.
- The following figure formats are used:
  0...9: for decimal figures
  0x00...0xFF: for hexadecimal figures,
  b0...1 for binary figures.
- The hexadecimal value in brackets "[ ]" marks a control byte (command).

Contents

1 Safety Instructions / Warning - Read before Start-Up !

- The device may only be used for the intended purpose designed by for the manufacturer.
- The operation manual should be conveniently kept available at all times for each user.
- 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.
- 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.
- Repairs may only be executed by the manufacturer.
- Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes .
  - When working on devices the valid safety regulations must be observed.
- Please observe that some parts of the device may heat severely.
- Before touching the device, the power supply must always be interrupted. Make sure that the device is without voltage by measuring. The fading of an operation control (LED) is no indicator for an interrupted power supply or the device being out of voltage!
- For installation and dismantling you should wear suitable safety gloves, because parts of antenna housing could be sharp-edged.

The Antenna is not water proof and should not be exposed to rain or humidity.
Under extreme circumstances water could seep into the antenna and damage the electronic circuits.

Special advice for wearers 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 reader’s antennas for any length of time.

- **CAUTION! Do not look directly into the Alarm LED light. There is a danger of injury of the eyes!**

2 Maintenance

The antenna ID ISC.ANT.U500/270 is a design product with high quality surfaces, and should always be handled with caution. The antenna was designed to work reliably and flawlessly for years without special maintenance.

Attention! The surfaces should be cleaned with a clean, soft cloth dampened in a dishwashing liquid – water solution. The use of alcohol, spirit, thinners, glass cleaners or other harsh cleaning liquids is prohibited and will damage the surface.

To improve the durability and the appearance, please follow the instructions below:

- Keep the antenna clean and take care the antenna is not scratched. Also regularly apply specific antistatic products for acrylic surfaces.
- Regularly remove dust and other impurities with a soft cloth and a solution of water with a little dishwashing liquid.
- Keep the antenna dry. All kinds of moisture should be avoided during operation and storage. Precipitation, humidity and liquids contain minerals that will corrode electronic circuits and damaging transparent plastic parts.
- Protect the antenna from high temperatures. Mount the antenna away from heaters and other heat sources. Operation under direct sunlight can cause extreme high temperatures and a fading cause of the surface.
- Avoid storing or operating the antenna at dirty or wet locations. The surfaces or electronic components may be-damaging.
- Handle the device with care. Shocks may break internal circuit boards.
- Do not try to open the antenna during operation or outside maintenance periods. Non-professional management can result in damage to the device.

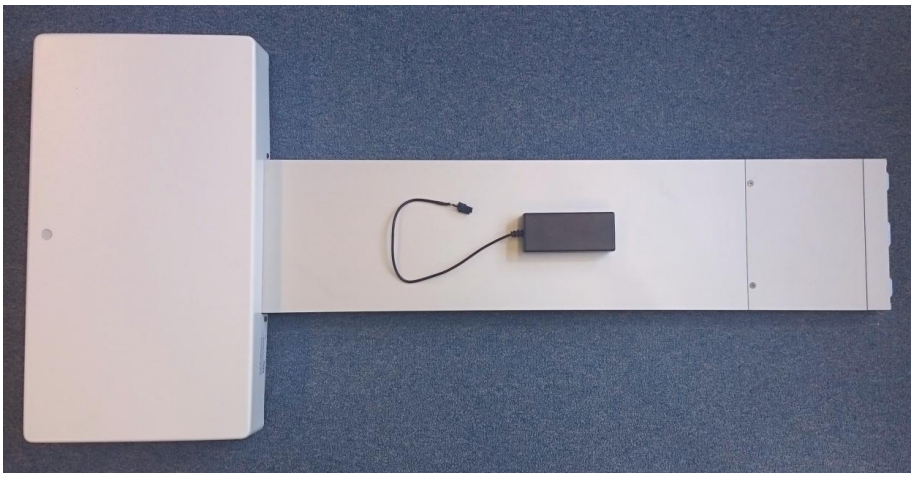
If any device not working properly, please contact the appropriate representative.

3 Performance Features

3.1 Scope of delivery

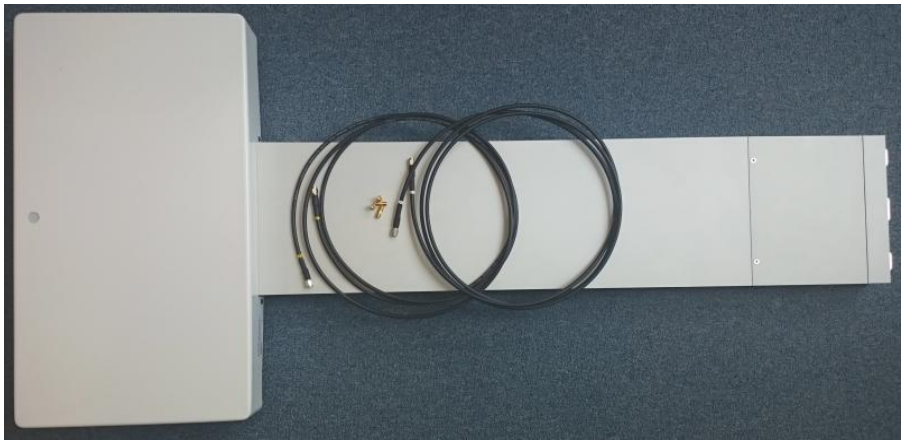
3.1.1 Antenna ID ISC.ANT.U500/270 Type GA

- Antenna ID ISC.ANT.U500/270 incl. UHF Reader Module and People Counter with alarm LED and Buzzer.
- Wide range power supply ID ISC.NET24V-B 100-240V/ 24V
  (without power cable with IEC plug)
- Mounting Instruction



3.1.2 Antenna ID ISC.ANT.U500/270 Type GB

- Antenna ID ISC.ANT.U500/270 incl. LED
- 2 Antenna connector cable H155 Low loss, about 3m long



3.2 Performance Features of the ID ISC.ANT.U500/270 Antennas

The ID ISC.ANT.U500/270-GA antenna is a version with integrated Long Range Reader ID ISC.LRU1002 additional Alarm LED light, Alarm buzzer and People Counter UPC .

The ID ISC.ANT.U500/270-GB antenna is a version with integrated Alarm LED light mounted.

Depending on the antenna configuration, one, two or all three read orientations of the Smart Tags and various aisle widths (gate widths) are possible.

The antennas can be used for detecting both product and persons. It is for indoors use, only.

3.3 Performance Features of the People Counter (ID ISC.UPC)

A Gate People Counter consist of a People Counter board (PC) and one Infra red sensor.

The People Counter has one counters per aisle. The values of the incoming and outgoing persons will be separately captured.

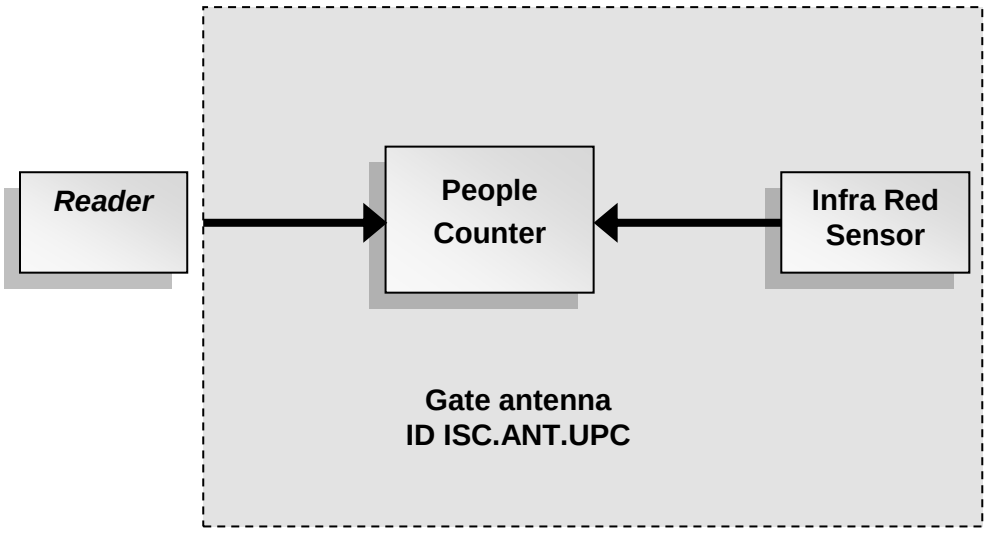


Fig. 1: Gate People Counter Structure

A change of the counter values will be stored in the EEPROM of the People Counter board. By sending the command “0x78 Set People Counter” the values could be set/reset to the needed value.

The capacity of the counter is 0..4 294 967 295 for each direction.

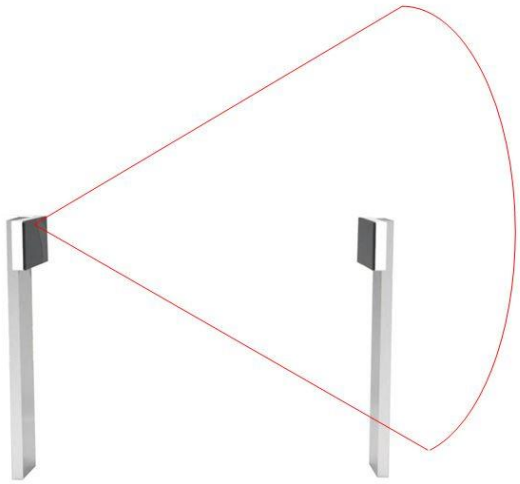
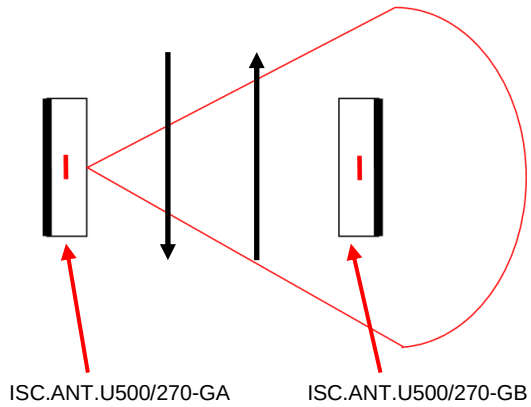
Infra red detection zone of a single gate (side view)	Infra red detection zone of a single gate (top view)
	

Fig. 2: Views of the detection area

The People Counter board and the Infra red Sensor is mounted in the housing of the antenna type ID ISC.ANT.U500/270-GA.

There is no need of a direct connection from the UPC to the Host. All commands from the Host to the People Counters are embedded in the Pickyback command of the reader.

Generally, there are two possibilities to get the actual people counter values. Either the Host poll the People Counter periodically or in the Notification Mode of the reader, the reader send a notification protocol at every change.

In Buffered Read Mode, the host poll the UPC by sending protocols. Only, in the Notification Mode, the reader poll the counter values, automatically, and send data according the reader configuration to the host.

3.4 Available Antenna Types

The following products are currently available:

Antenna Type	Description
ID ISC.ANT.U.500/270-GA FCC Order No. 4884.000.00	Antenna with Reader, Multiplexer , Alarm LED light, Alarm Sounder, people counter and 24 VDC power supply.
ID ISC.ANT.U500/270-GB FCC Order No. 4885.000.00	Antenna with Alarm LED light
ID ISC.ANT.U500/270-GA EU Order No. 4888.000.00	Antenna with Reader, Multiplexer , Alarm LED light, Alarm Sounder, people counter and 24 VDC power supply.
ID ISC.ANT.U500270-GB EU Order No. 4887.000.00	Antenna with Alarm LED light

Table 1: Available Antenna Types and Accessories

4 Installation and Wiring

Notes:

Before installing the antennas please read 5.1 ***Project Notes Antenna***. The gate is designed for a gate width of about 1.6m.

4.1 Mounting Preparation

For the assembly of the antenna it has to be carefully unpacked and the antenna base to be opened. This is done as described in the following steps:

1. Place the packed antenna on the floor with the top side facing up. Carefully open the box and then remove the antenna.

Fig. 3: Packed Antenna

2. Afterwards, the antenna has to be placed carefully on the floor again. Now, the two fastening screws (hexagon socket width AF 2,5) have to remove of the antenna base cover. By moving the cover upwards, carefully, remove the cover from the antenna base. Fig. 4

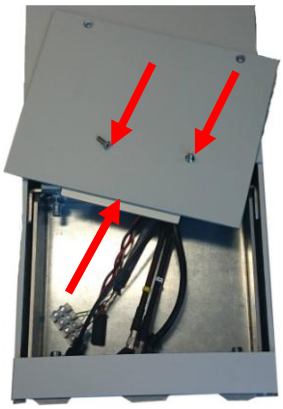
Step 1	Step 2
	

Fig. 4: Opening the antenna base

4.2 Installing the antenna

4.2.1 Dimensions of antenna

The overall dimensions of the antenna are shown in Fig. 5

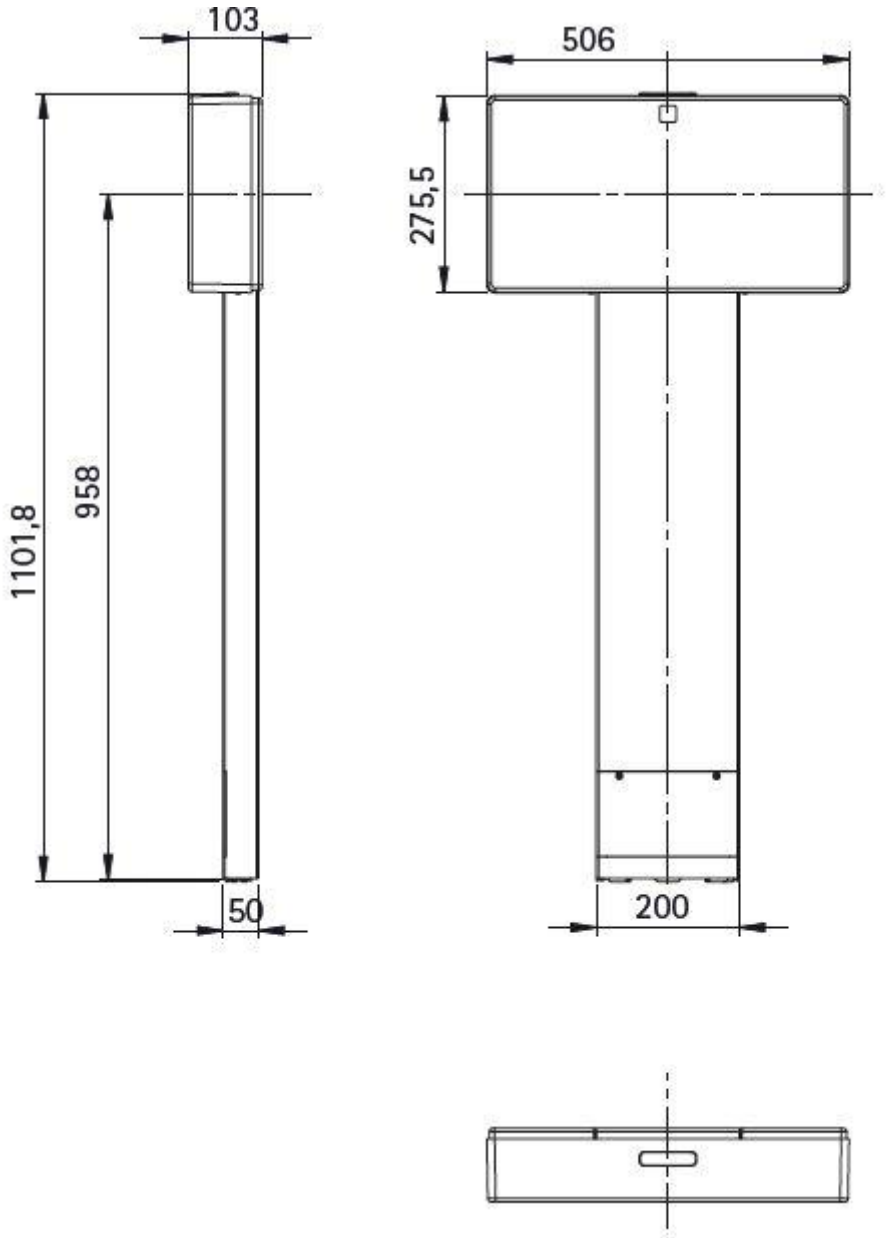


Fig. 5: Antenna outside dimensions

All dimensions are in mm with general tolerance according to ISO 2768 m (mean).

4.2.2 Drilling the Mounting Holes

If the position of the antennas has been marked or determined, the mounting holes and the holes for the cable entry, can be marked and drilled for the antenna foot.

The dimensions are shown in Fig. 6:

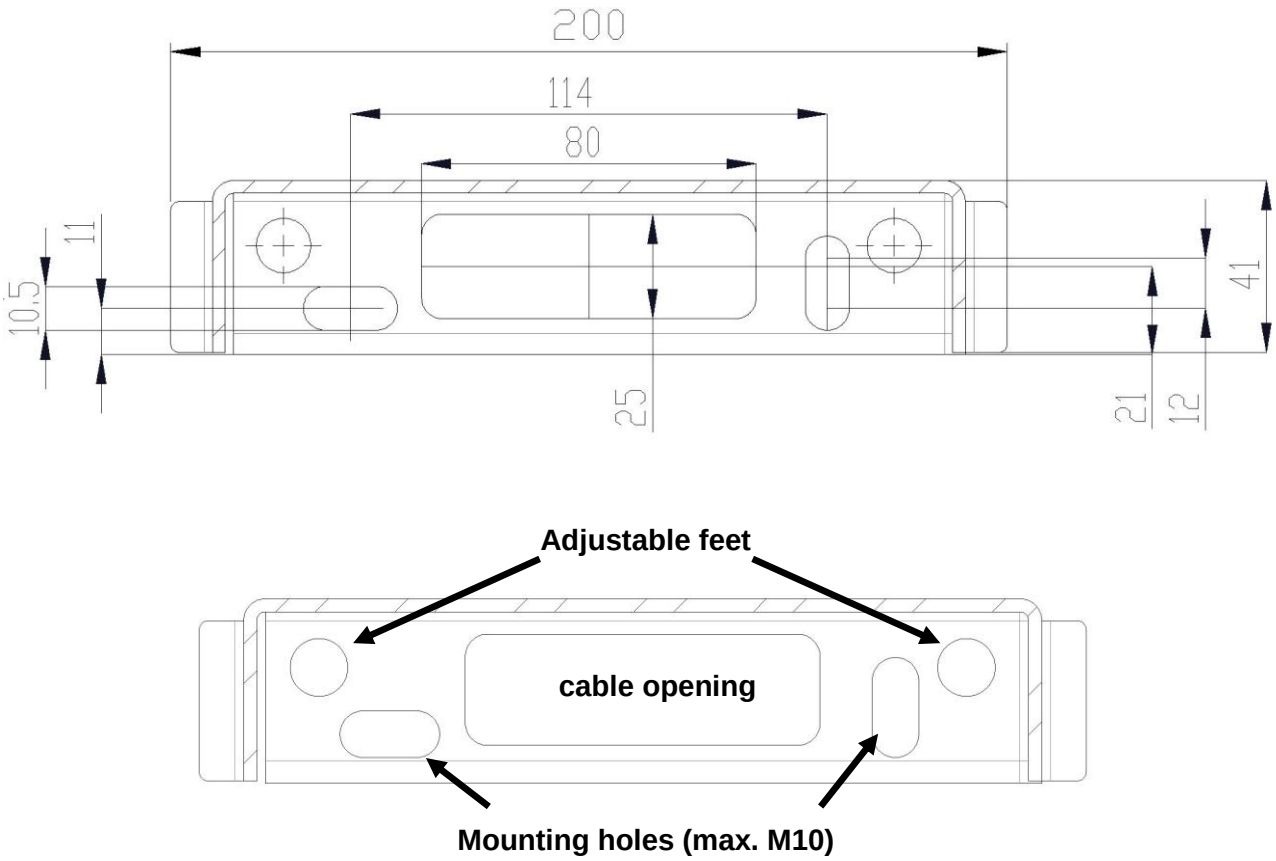


Fig. 6: Floor plate dimensions

All dimensions are in mm with general tolerance to ISO 2768 m (middle).

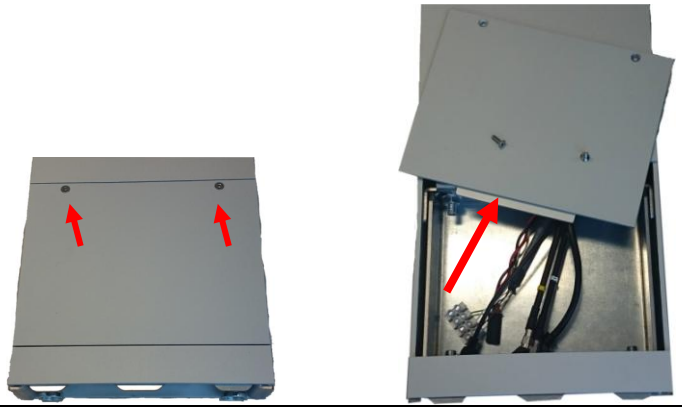
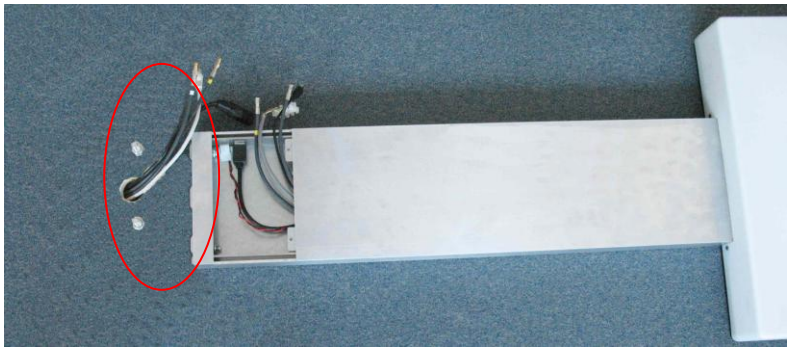
The size and type of the anchors depends considerably on the strength of the base or floor. The anchors should be capable of withstanding a permissible load of at least 5 kN per anchor for all load directions (e.g. for concrete floor Hilti HVA anchors with HAS-(E) M8 threaded rod or Hilti HIS-N M8 (5/16”) threaded inserts). The size of the mounting holes in the antenna is 10 mm (.39”). The length of the anchors or bolts should be selected such so they just look out at least 35 mm (1.4”) and maximum of 40 mm (1.6”) of the floor.

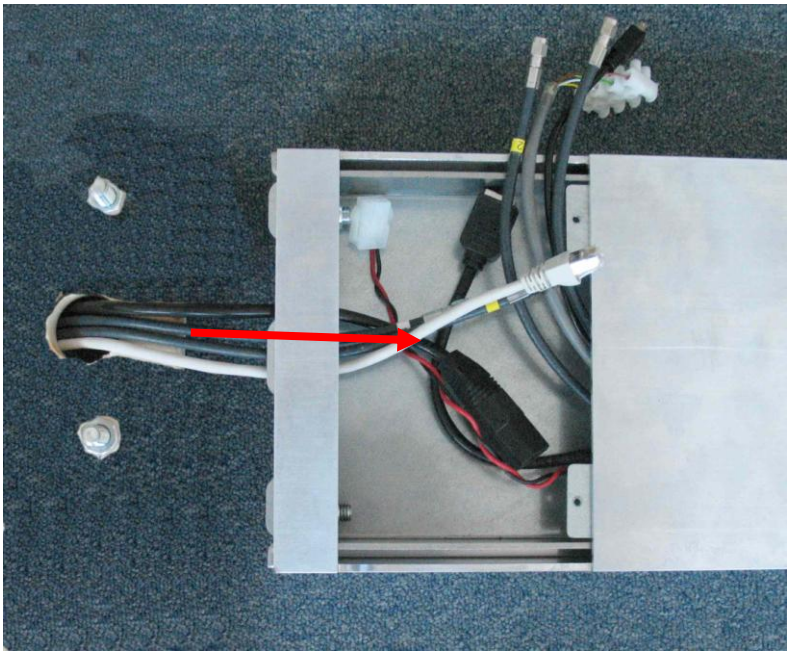
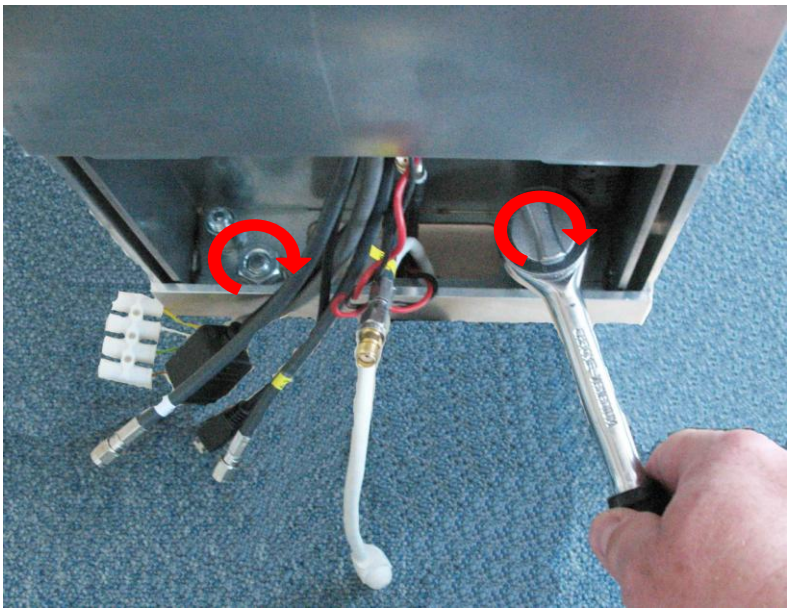
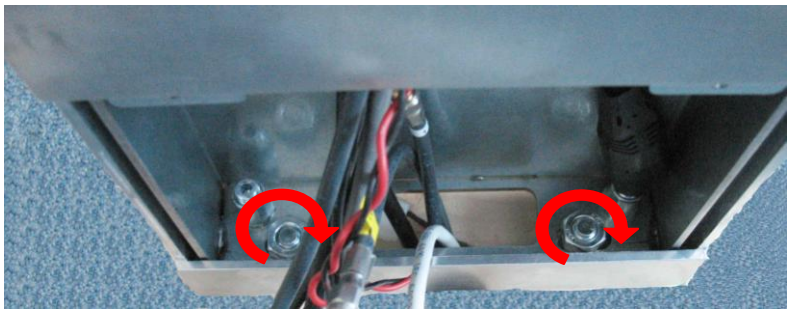
Please follow the mounting instructions of the anchor manufacturer!

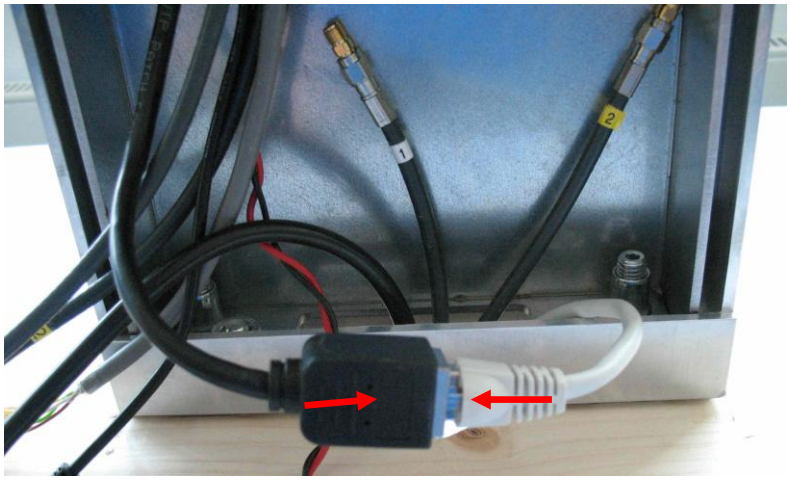
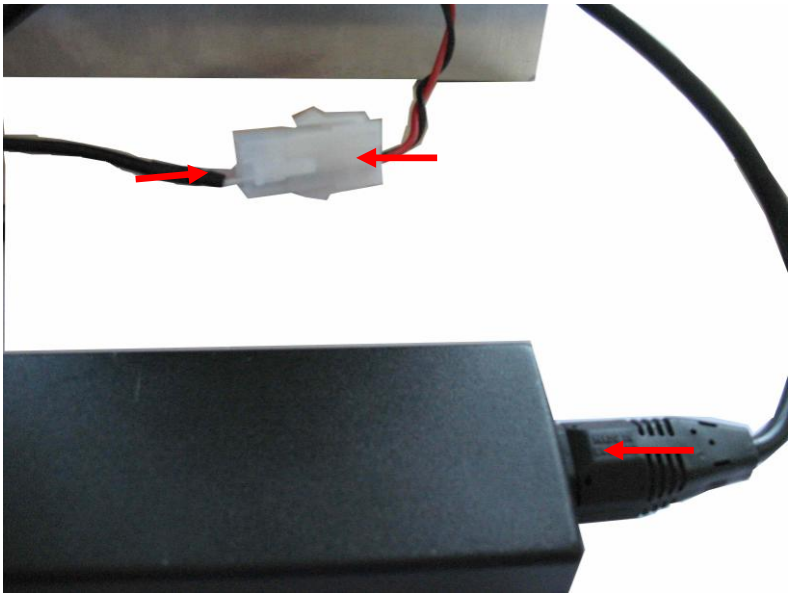
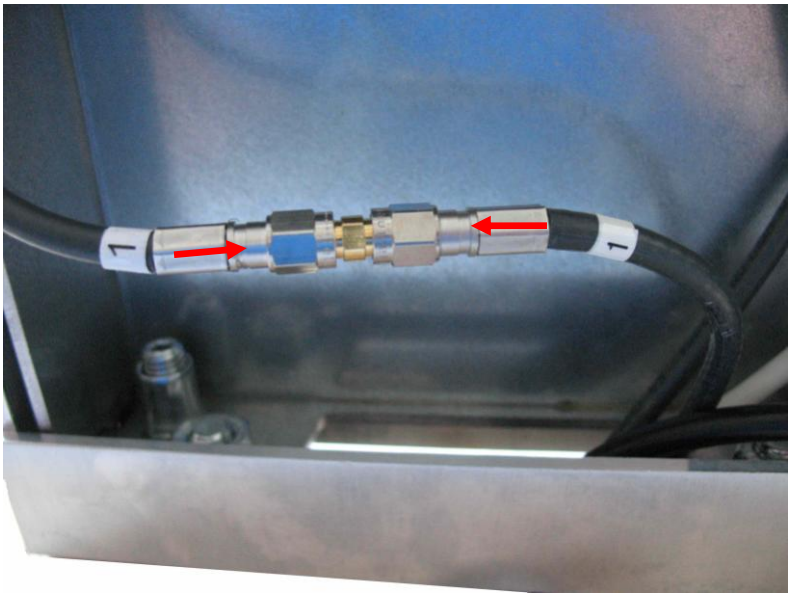
A cable opening is provided for the necessary connection cable (see Fig. 6).

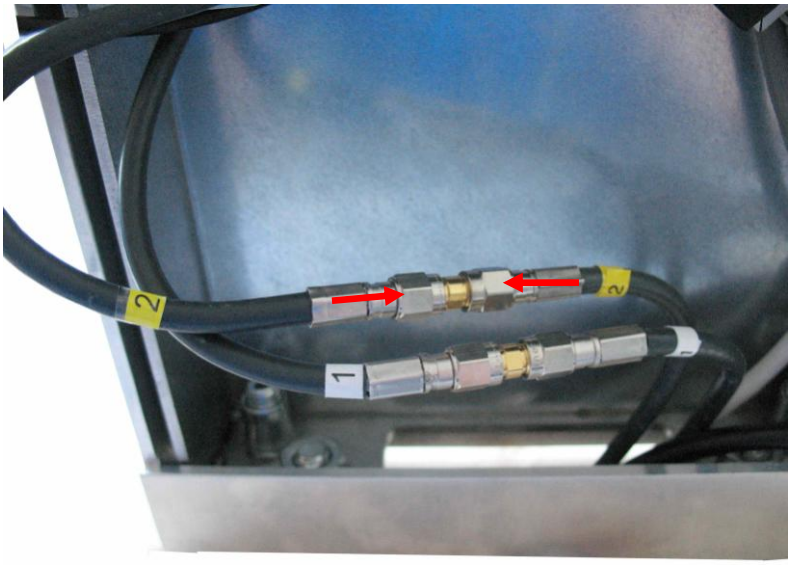
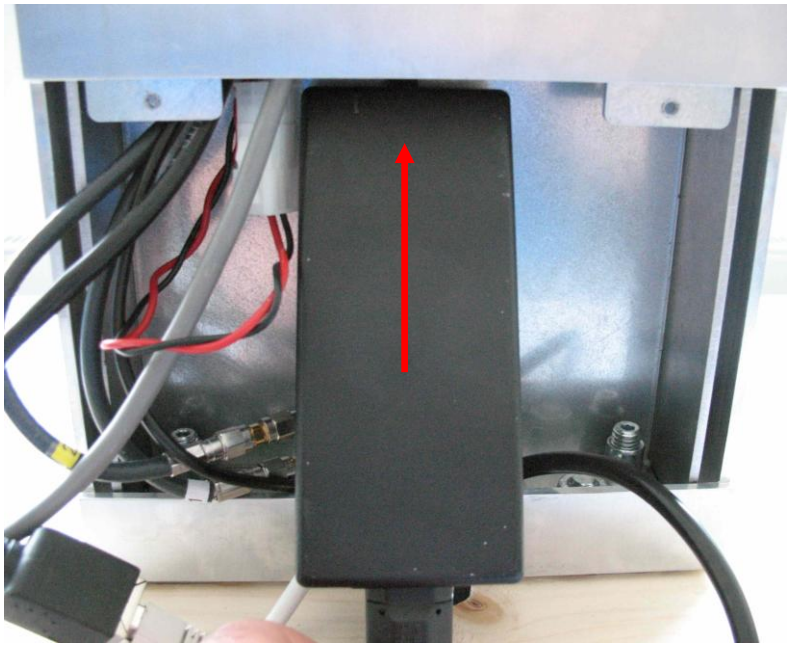
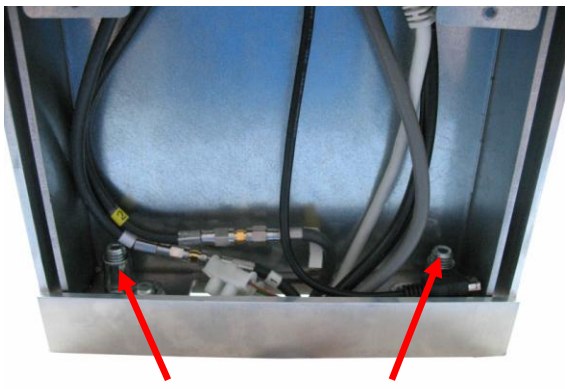
4.2.3 Installing the Antenna on the floor

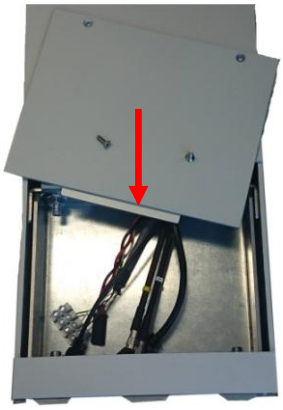
The antenna will be mounted on the floor. Please note, the open side of the steel foot should face towards the middle of the aisle.

Step	Action	Note
1	Do not open the antenna body ! Open and remove the antenna cover at the antenna foot.	
2	Open and remove the antenna cover at the antenna foot.	
3	Place the antenna carefully with the cable opening in the foot beside the cables and the mounting anchors.	

Step	Action	Note
4	Put the cables through the cable opening.	
5	Put the antenna with the mounting holes on the anchors and screw it tight.	 

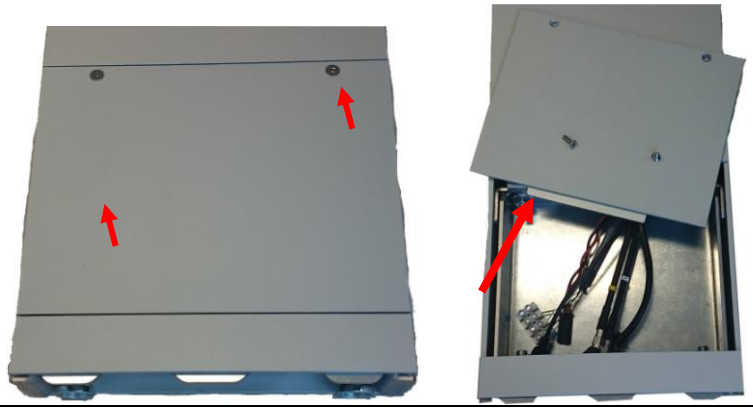
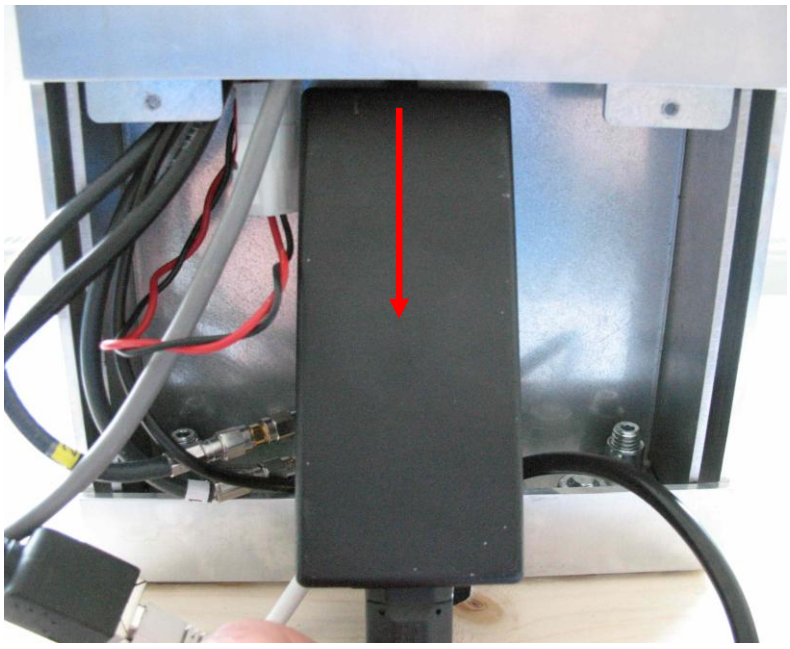
Step	Action	Note
6	Connect the cables of the interface and the power supply.	 
7	Connect the antenna cables to the corresponding antenna cables of antenna B 1 with 1 2 with 2	

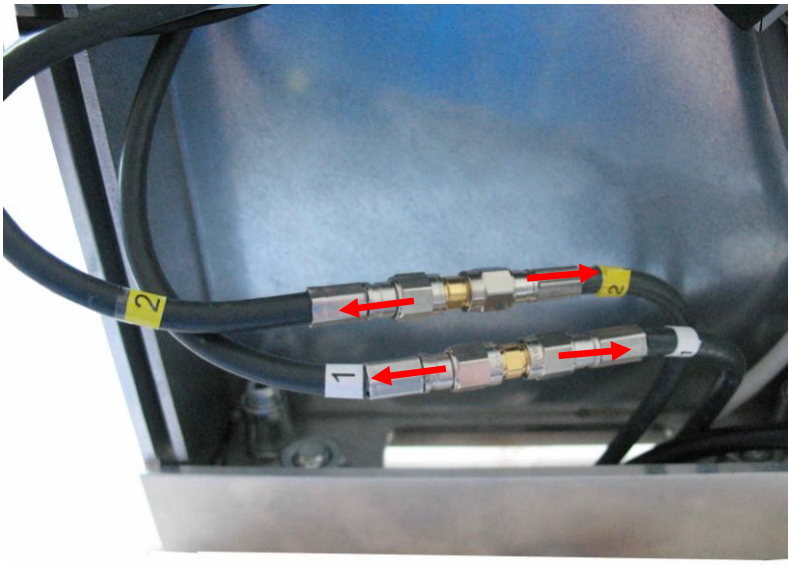
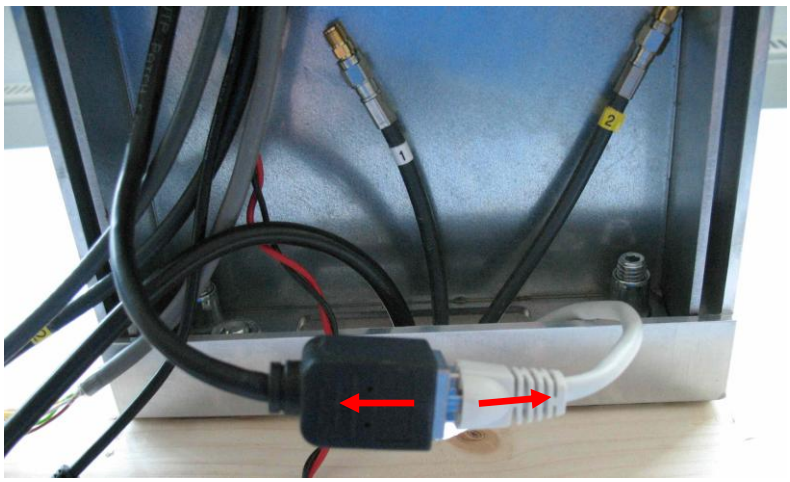
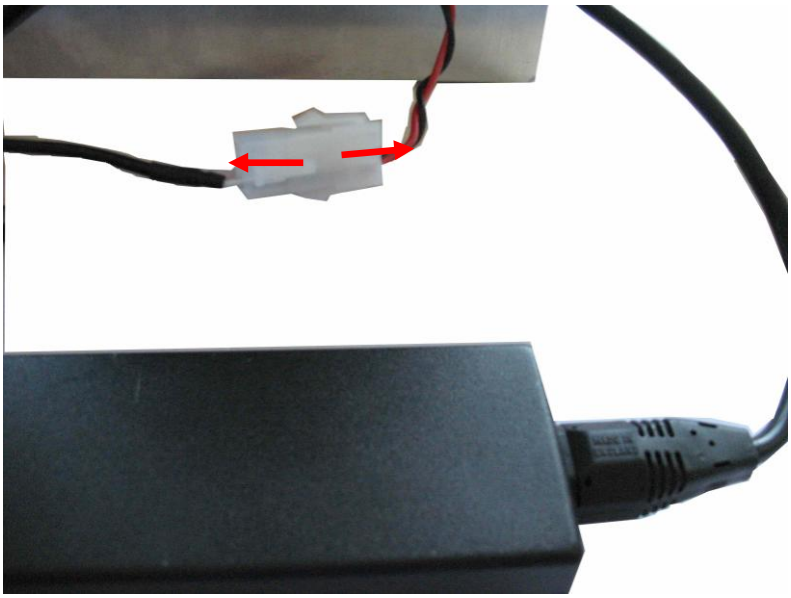
Step	Action	Note
		
8	Put the power supply into the antenna foot.	
9	If needed the antenna could be adjusted vertically with the adjustable feet.	

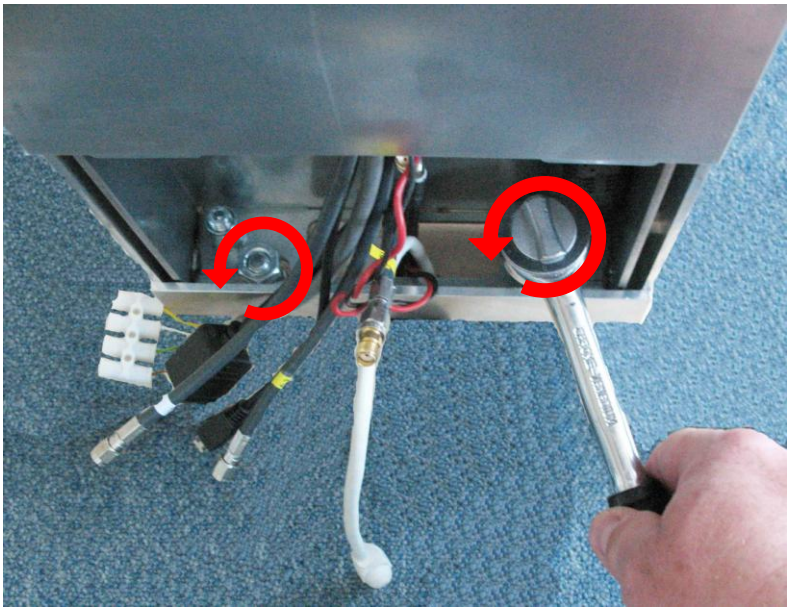
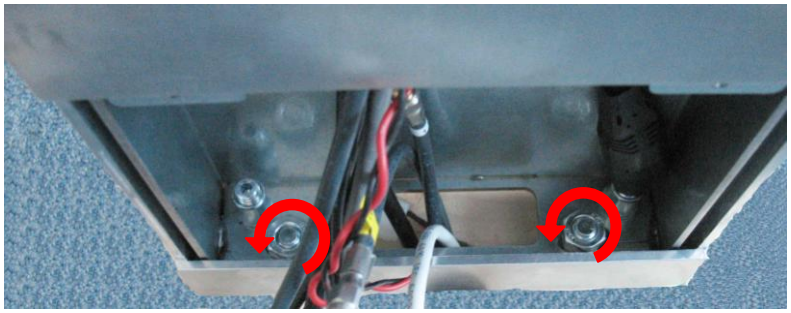
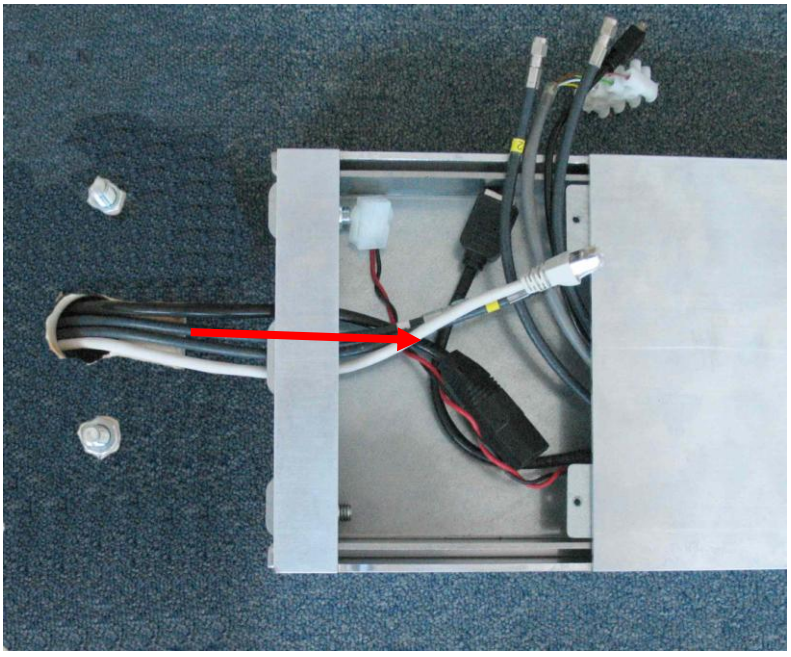
Step	Action	Note
10	Close the antenna with the antenna cover.	 

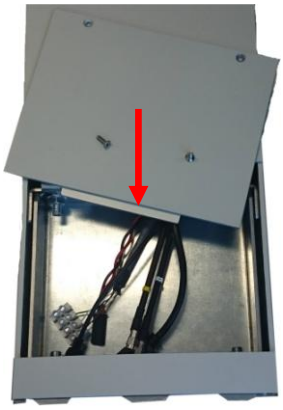
4.2.4 Disassembly of the Antenna from the Antenna foot (for replacement/repair)

The antenna will be mounted on the floor. Please note, the open side of the steel foot should face towards the middle of the aisle.

Step	Action	Note
1	Do not open the antenna body !	
2	Open and remove the antenna cover at the antenna foot.	
3	Pull out the power supply of the aluminium foot.	

Step	Action	Note
3	Disconnect all cables in the antenna foot.	  

Step	Action	Note
4	Unscrew the screw nuts in the antenna foot.	 
5	Pull the antenna with the thread bolts and the cables out of the antenna foot.	

Step	Action	Note
6	Close the antenna with the antenna cover.	 
7	If antenna must be sent for repair, it must be sent complete with cables and power supply.	

5 Typical Antenna Configuration (Gate with two Antennas)

The standard configuration of a gate with three-dimensional tag orientation consists of one ID ISC.ANT.U500/270-GA antenna with reader and one ID ISC.ANT.U500/270-GB. If a tag moves, at horizontal line through the gate, it can be detected with a high reliability.

5.1 Project Notes Antenna

The antenna configuration as described allows detection of a tag moving at a horizontal line, through the reading area of the gate. The tag orientation is non-critical. The tags are detected along a horizontal axis of motion in certain regions within the antennas.

The reading area of the antennas is shown in the sketch below. The distance between the antennas is about 1.5m. An alarm is triggered at passing the gate, typ. at moving further behind the gate center line.

Fig. 7: Capture area, gate distance about 1.5m

Notes: Note that the entire reading area of the antenna gate is larger than the three-dimensional area shown in the drawing (Fig. 7). This means tags can be detected outside the reading area.

To get an optimal performance the reader has to be configured and run in one of the Automatic Modes (Buffered Read or Notification Mode). See 5.5 Activating the Automatic Mode

To achieve three-dimensional reading of the tag in the reading area drawn above (Fig. 7), the following conditions must be fulfilled:

- Use of modern sensitive tags
- Tags in general get detuned when put e.g. into books. So special tags for books have to be used which provide a corresponding certain pre-tuning
- Tag length not below 9cm
- The antenna should be at least 50 cm away from any metal parts and more than 1m for larger metal parts

Supplementary equipment (e.g. light barrier, lighting, etc.) or cables, mounted directly on the antenna or in the immediate vicinity of the antenna can interference with the functioning of the system. A minimum distance of 20 cm is required.

Metal walls and metal doors should be a few meters away from the gate.

5.2 Gate Configuration and Setup using Antennas

5.2.1 Required Components

To set up the gate you need the following components:

- Qty. 1 ID ISC.ANT.U500/270-GA
  (incl. Qty. 1 ID ISC.NET24V-B Power Supply Unit)
- Qty. 1 ID ISC. ANT.U500/270-GB
- Power cable, interface cable LAN TCP/IP
- USB to USB mini cable
- Mounting materials (screws, anchors)

To configure the Reader you will need the software

- ISOStart 2017 Version 10.00.01 or higher

on a personal computer running under Microsoft® Windows®. The service can be downloaded at the Download Area of the Homepage www.feig.de.

5.2.2 Configuration of the Gate Antennas

Almost, all cable should be mounted already. Normally, the antenna cable 1+2 from antenna Type GB has to be connected antenna cable 1+2 at the type GA antenna 1:1

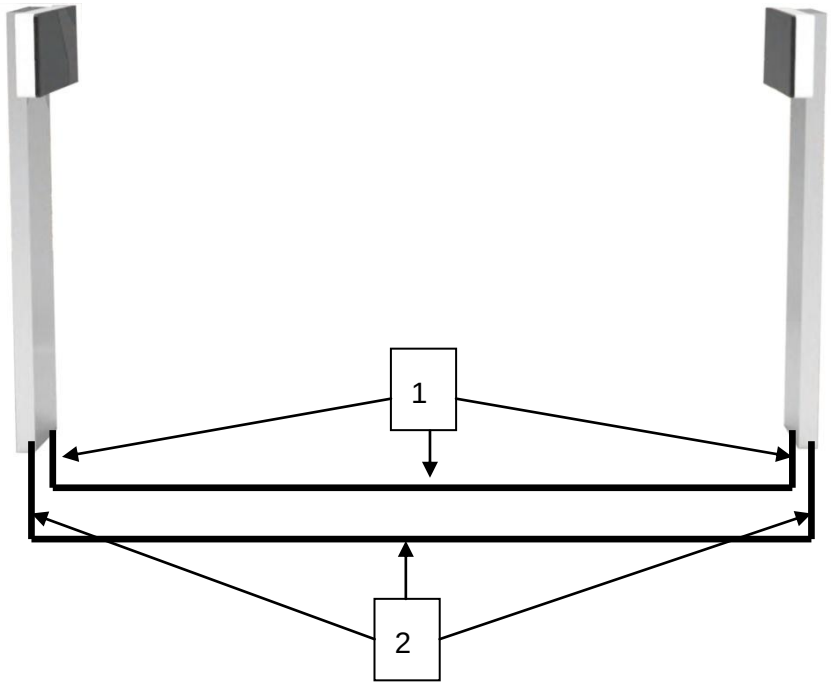


Fig. 8: Connecting the components for a gate consisting of two antennas

If the antenna cables from antenna type A to antenna type B have not been connected in the right way or there is an error, the Alarm LED of antenna type A will flash after start up. If cables are connected right , the alarm LED of both sides will be switched on shortly.

The cable from antenna type GB to the antenna type GA should preferably be connected shortly. Unused cable lengths are possible and should be tied in antenna B type..

Fig. 9: Unused coaxial cables are tied in antenna Type B

5.2.3 Interface Connections

5.2.3.1 LAN / TCP/IP

The Reader has an integrated 10 / 100 Base-T network port for an RJ-45. Connection is made on X1 and has an automatic “Crossover Detection” according to the 1000 Base-T Standard.

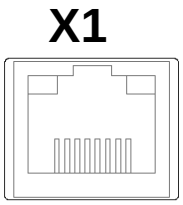


Fig. 10: LAN interface for host communication

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

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.

Network	Address
IP-Adresse	192.168.10.10
Subnet-Mask	255.255.255.0
Port	10001
DHCP	OFF

Table 2 Standard factory configuration of the Ethernet connection

Note:

The Reader TCP/IP interface has a DHCP option.

.

5.2.3.1 USB Mini Interface on connector X3

The reader is equipped with a USB on-the-go interface. This can either be used to connect the reader to a host system or by means of a special on-the-go adaptor for connection of a USB memory stick to the reader. In both cases the connection is carried out via terminal X3. The pinout is standardized.

Figure 1: USB-Interface for host communication

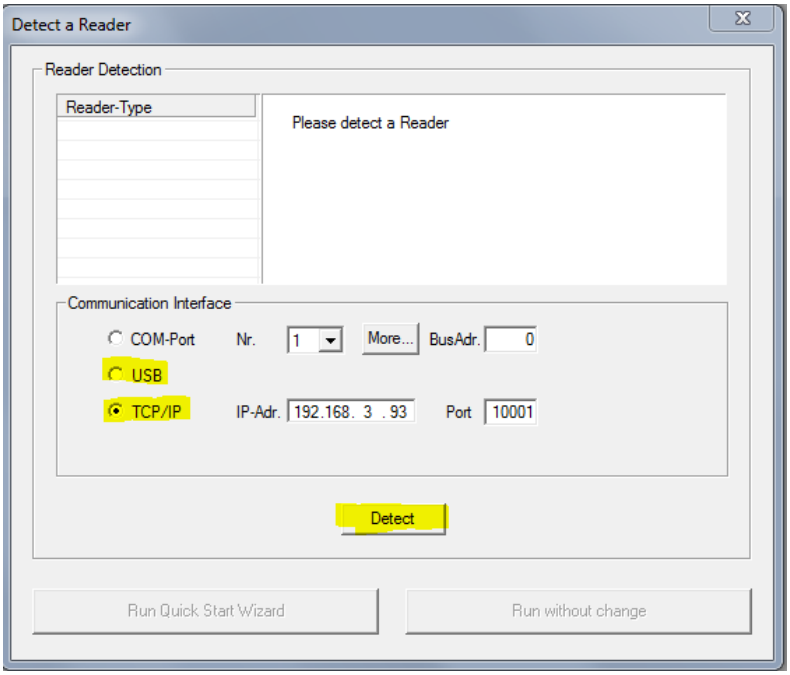
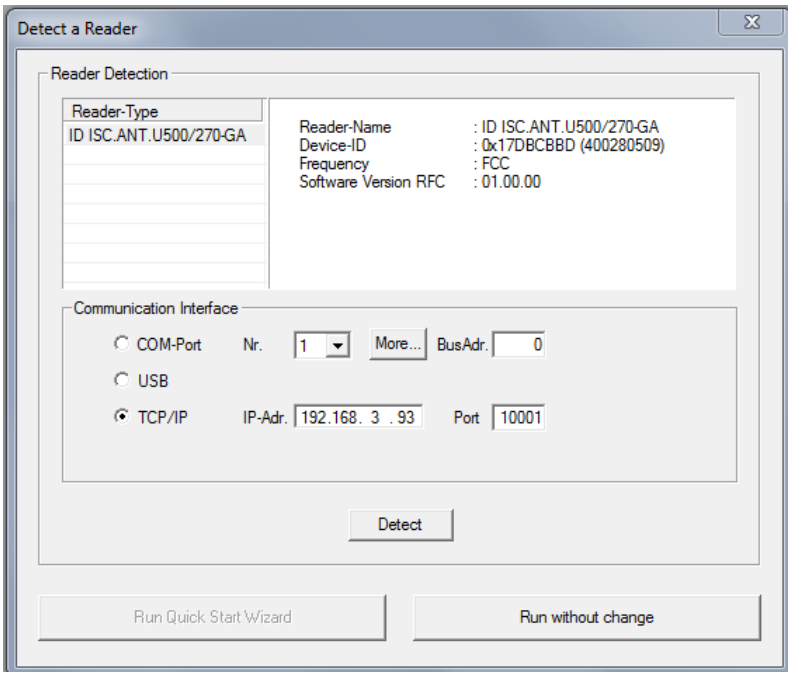
A standard shielded USB-cable can be used for connection of the reader to a host system. The data rate is reduced to 12 Mbit (USB full speed).

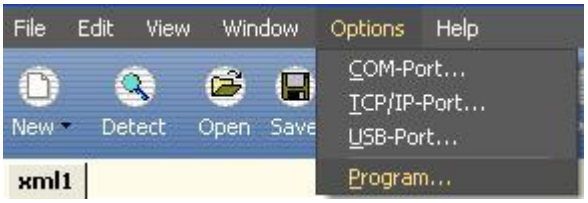
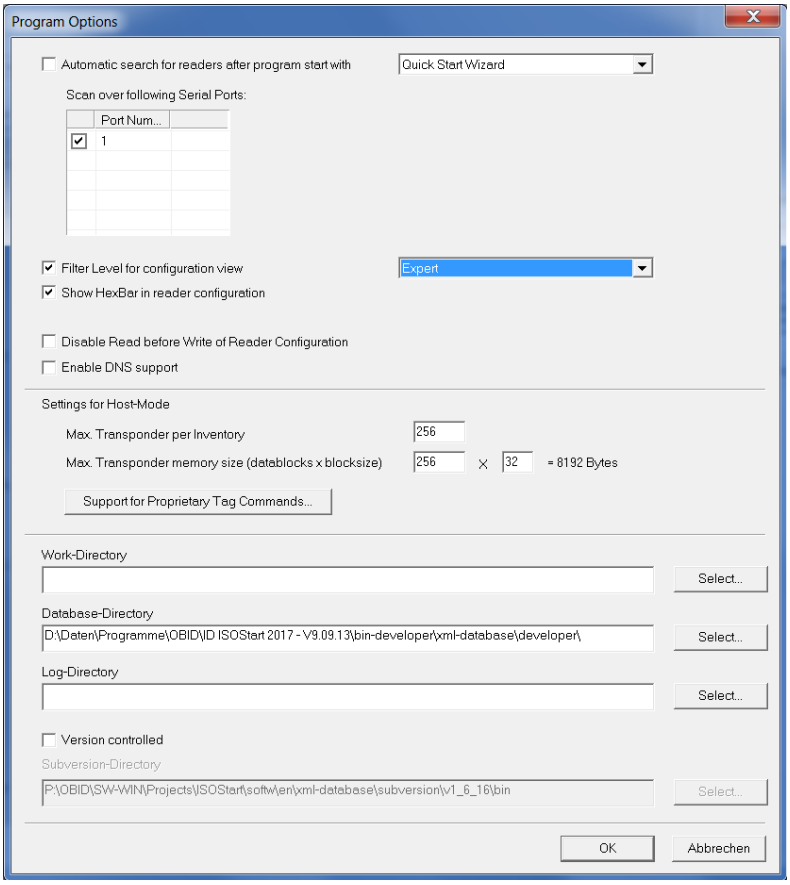
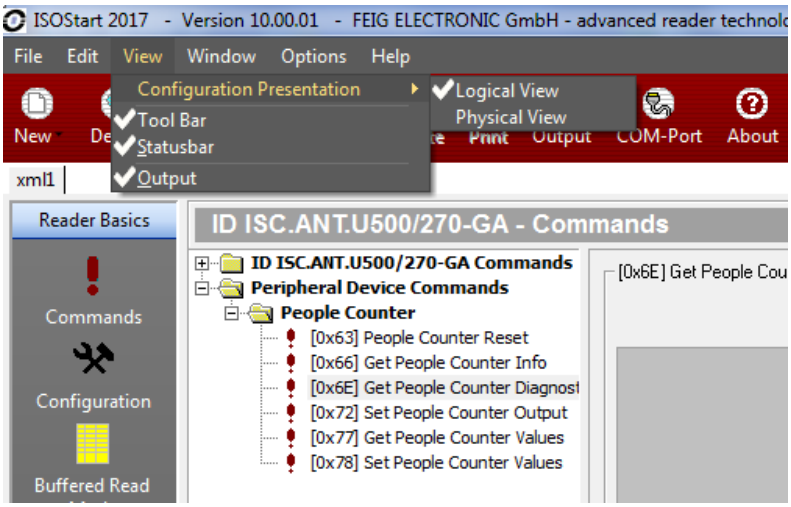
NOTE:

The length of the USB-cable can have a max. of 4 m (˜150 inch). It is not allowed to use longer cables.

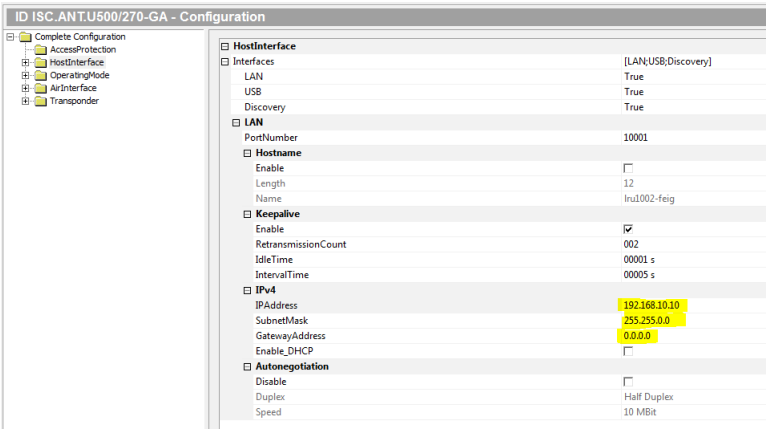
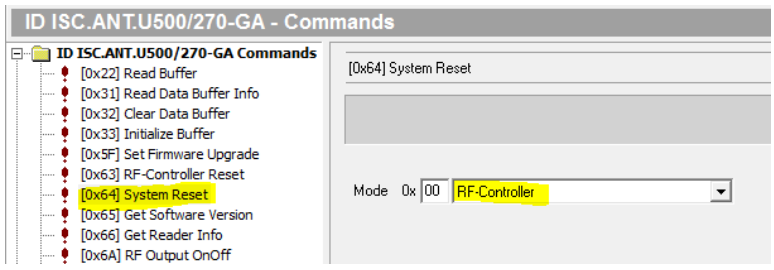
5.2.4 Reader/Antenna Configuration

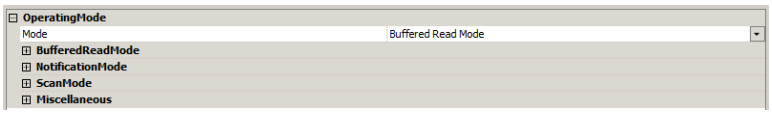
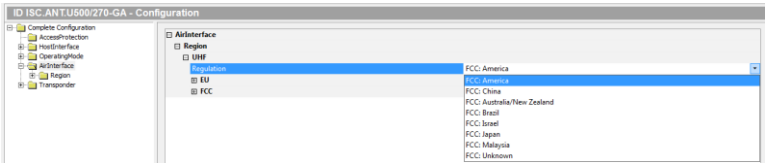
To configure the antennas, open the ISOStart software and read out the current configuration of the Reader:

Step	Action	Note
1	Start ISO Start Software	
2	Select **„Detect“** Use USB Port or default TCP/IP address 192.168.10.10 Port 10001 to detect reader.	
3	Select **„Run without change“** Note: This has to be done at each start of ISO-Start program.	

Step	Action	Note
4	Select „Options => Program“	
5	Select **„Expert Mode“** and confirm with OK.	
6	Select **“Logical View”**	

Afterwards set the Interface settings and the operating mode:

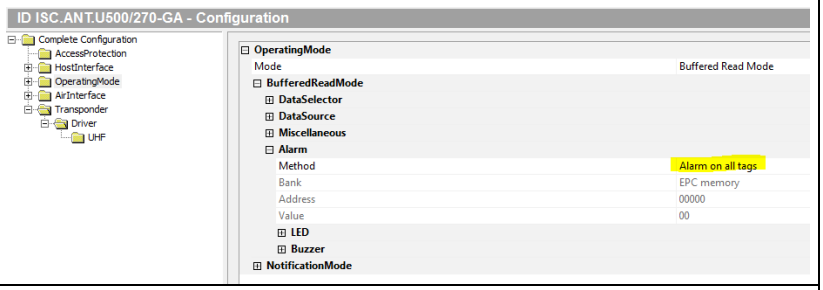
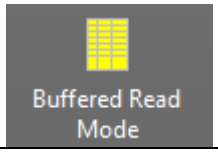
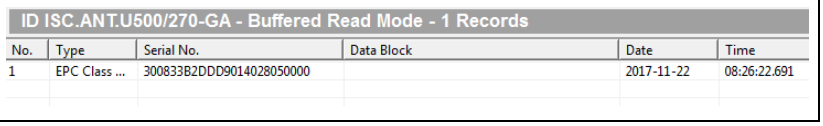
Step	Action	Note
1	Select **“Configuration”**	
2	Select -**HostInterface** **-LAN** Set LAN settings.	
3	Set by clicking on **„Apply“.**	
4	Select command **“System reset”**	
5	Confirm with **“Send”**	

6	Select **-Operating Mode** **-Mode** Set to Buffered Read Mode	
7	Set by clicking on **„Apply“.**	
8	Select **-Air Interface** **-Region** Set right **“Region”.**	
9	Set by clicking on **„Apply“.**	

5.3 Testing the Gate Antenna

After configuring and installing the gate antenna, you can check for proper function using a reader, the ISOStart service software and a Transponder.

5.3.1 Reading a Serial Number

Step	Action	Note
1	Attach a tag to an antenna or in the gate	Use adhesive tape, for example
2	Select **-Operating Mode** **-Alarm** **-Method** Set "Alarm on all tags"	
3	Select **„Buffered Read Mode“** window.	
4	Click on **“Start”** Button	
5	Transponder in the gate will be displayed (and others in detection range)	

5.3.2 Testing the performance

An alarm will be notified by the Alarm LED light of the antenna and the Alarm buzzer. See also 5.4.1 Reader Setting for Alarm Indicators

In this test the capture area of the gate antenna is checked. For different tags or other configurations the ranges and read areas may differ.

Regarding used tags please refer *to* 5.1 *Project Notes Antenna*.

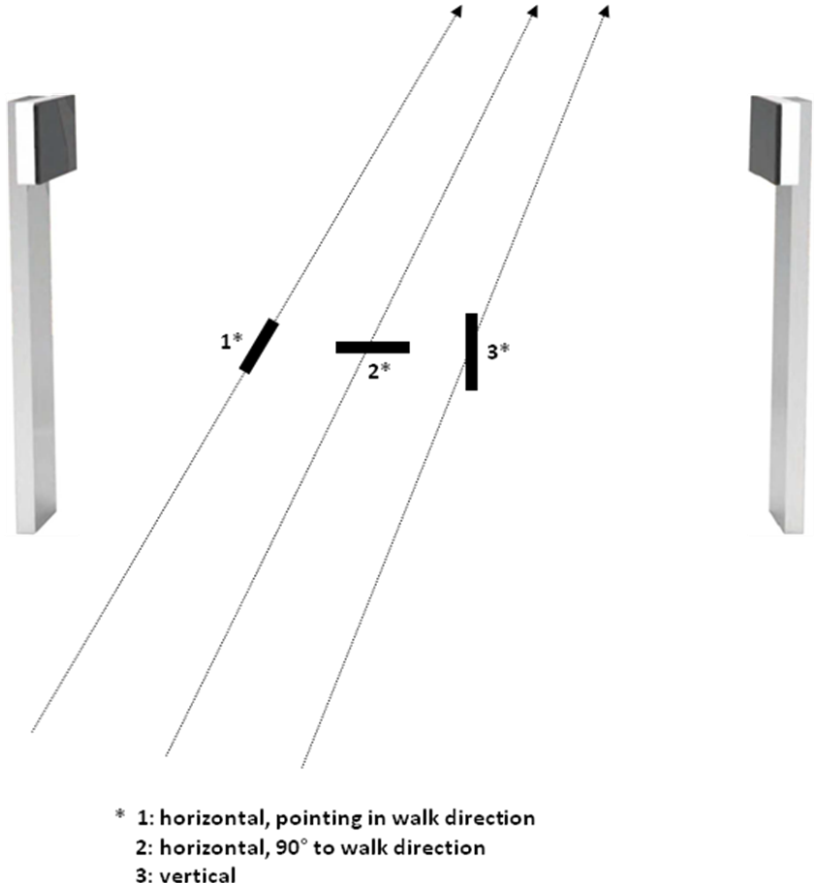


Fig. 11: Performance Test of the gate antenna

There is a big difference between an RF gate an the UHF gate. For UHF it is not sufficient that a tag is detected. The UHF gate has to detect the moving through the gate. So the test should start at least 1,75m upfront the gate and the tag has to be moved up to at least 1.75m behind the gate.

The possible 3 tag orientations can be tested - horizontal in walk direction, horizontal 90° to walk direction and vertical.

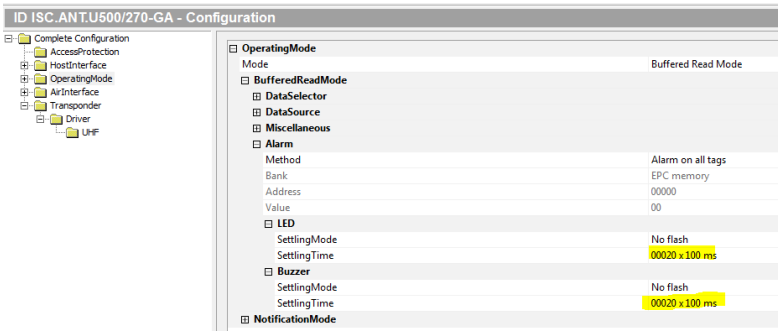
The following may result in faulty readings:

- Antenna improperly installed (orientation, antenna distance, check cabling)
- Metal near the antennas is detuning or interfering with them.
- Transponder too insensitive, detuned or defective , see as well *5.1* Project Notes Antenna.
- Reader improperly configured (transmitting power, transponder type, modulation, transponder parameters, etc.).
- A cable is defect or has a weak contact.
- Reader or antenna defect.

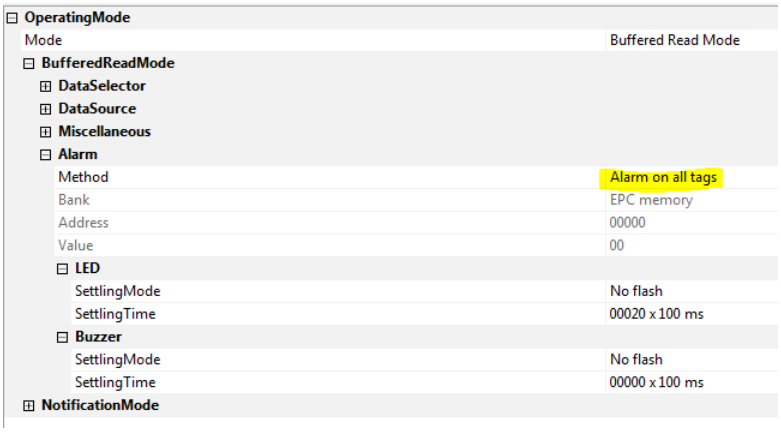
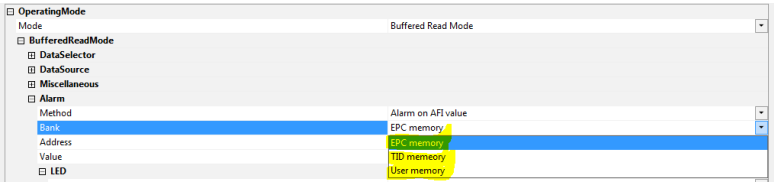
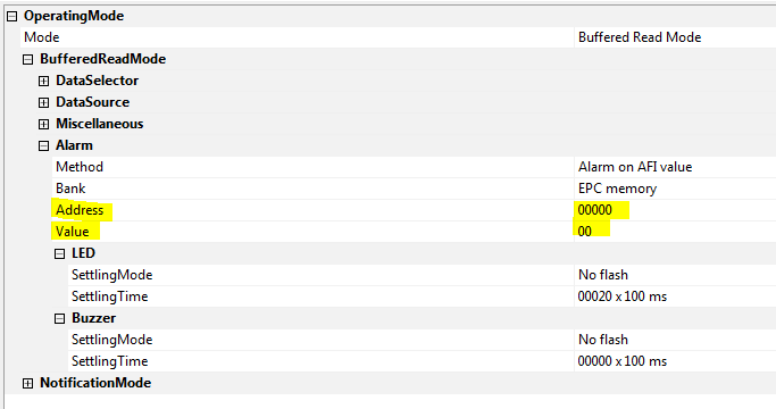
5.4 Setting the Alarm Indicators (Alarm buzzer and Alarm LED lights)

5.4.1 Reader Setting for Alarm Indicators

The Alarm buzzer and the Alarm LED of antenna type GA and GB is constructed by the UPC.
Via ISOStart software can be set different parameters for Alarm LED and/or Alarm Buzzer.

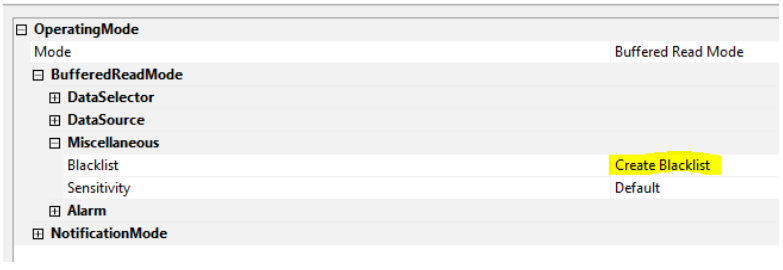
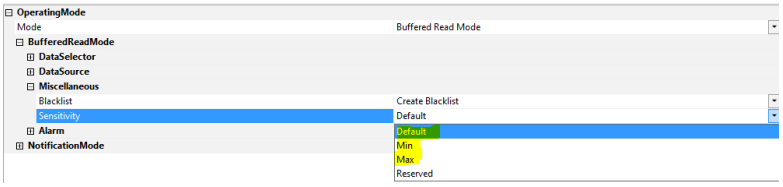
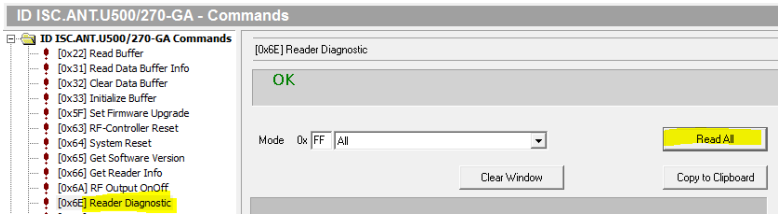
Step	Action	Note
1	Start ISOStart Software	
2	Select “Configuration” and click on “Read” to read the complete configuration.	 
3	**Operating Mode** Setting Time: with **„Setting Time“** set time of LED and Buzzer for alarm duration. (20 means 2 seconds) (e.g. 20 x 100ms)	
4	Set by clicking on „Apply“.	

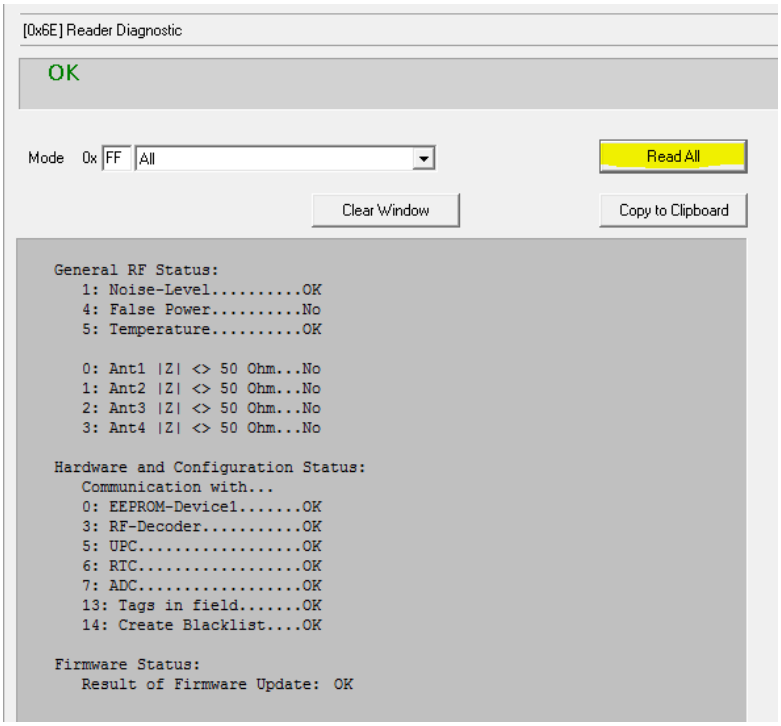
5.4.2 Reader Setting for Alarm conditions

Step	Action	Note
1	Start ISOStart Software	
2	Select “Configuration” and click on “Read” to read the complete configuration.	 
3	**Select** **-Operating Mode** Select **“Alarm Method”** Select **“Bank”** if **“Alarm on AFI value”** is selected then Set **“Alarm address”** and **“Alarm value”**	  
4	Set by clicking on „Apply“.	

5.4.3 Reducing false Alarms

By creating a blacklist, all transponders placed in the surrounding of the gate will be read and stored in the blacklist, this will reduce/avoid false alarms.

Step	Action	Note
1	Start ISOStart Software	
2	Select **"Configuration"** and click on **"Read"** to read the complete configuration.	 
3	Select **-Operating Mode** Select **"Create Blacklist"** Select **"Sensitivity"** Transponders will never alarm, also not if they move through the gate	 
4	Set by clicking on **„Apply".**	
5	The Blacklist will be created after a "Power On" or "System Reset" command of the reader/gate.	Up to 100 Transponder can be stored in the Blacklist. If more than 100 Transponder are detected an error will be displayed.
6	Select **"Commands"**	
7	Select **"ID ISC.ANTU500/270-GA Commands"** **"Reader Diagnostic"** **"Read All"** Button	
8	Confirm with **„Send"**	

9	Among other information a blacklist overflow is indicated	

5.4.4 Programming a Transponder with the AFI or Alarm Byte

If the Transponders will remain on the object when leaving the storage location, they must first be disabled. This is generally done by writing to a particular area of the Transponder.

The AFI byte (Application Family Identifier) or Alarm Byte is useful for this purpose, since it is can be set in nearly all Transponder models. To disable, simply write a different code to the Transponder than for valid Transponders which trigger an alarm.

For UHF the position of the AFI Byte is not fixed. The configuration is described in 5.4.2 Reader Setting for Alarm conditions.

To set this AFI or Alarm Byte at the transponder a separate Reader/Antenna has to be used which supports this functions.

5.5 Activating the Automatic Mode

The gate has to be used in one of the Automatic Modes (Buffered Read or Notification Mode) to get a maximum performance.

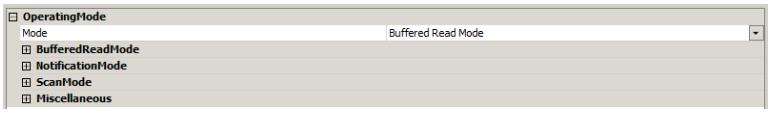
For more information, see System Manual ID ISC.LRU1002

Which mode the most suitable is for your application has to be defined in advance.

In this example it is described how to activate the Buffered Read Mode.

In the automatic modes, the tags are read at maximum speed and the information is stored in the ring buffer of the reader. Data set can be read by the host.
Due to the automatic alarm features at the automatic mode, the reader/gate can also run without any interface connection (USB, Ethernet).

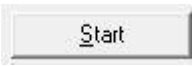
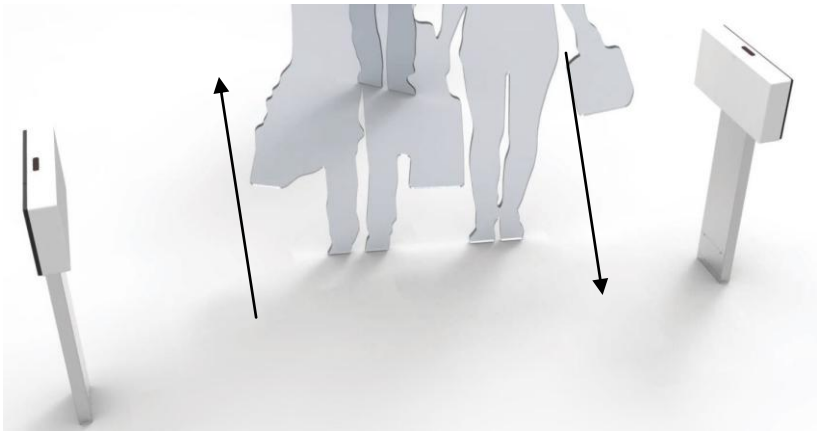
To activate „Buffered Read Mode“ proceed as follows:

Step	Action	Note
1	Select **„Configuration“**	
2	Select **-Operating Mode** **-Mode** Set to Buffered Read Mode	
3	Set clicking on „Apply“	

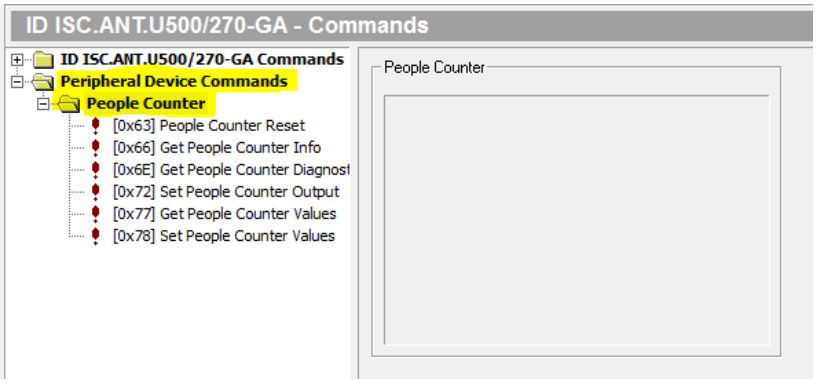
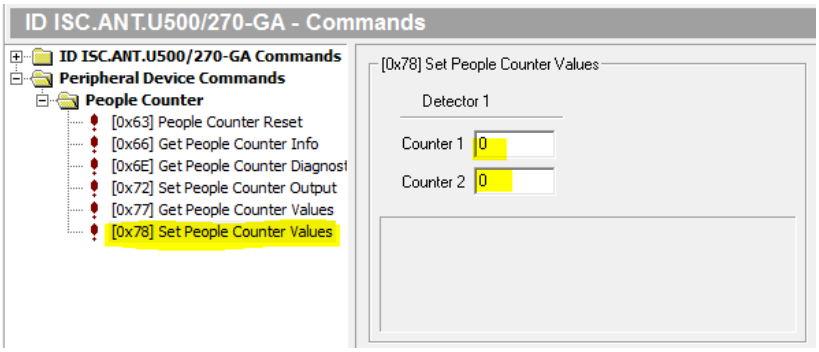
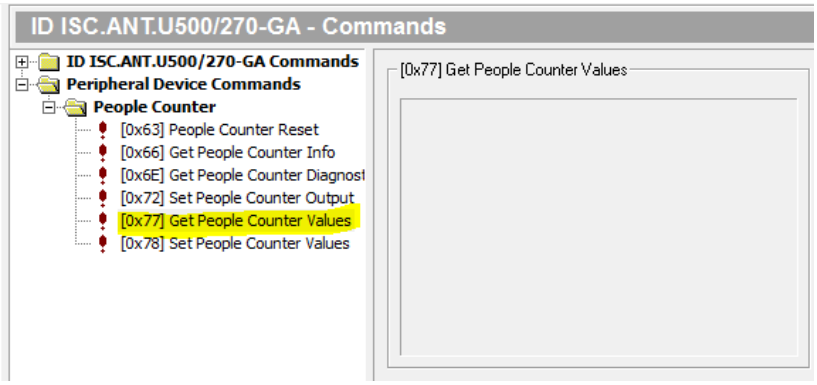
Note:

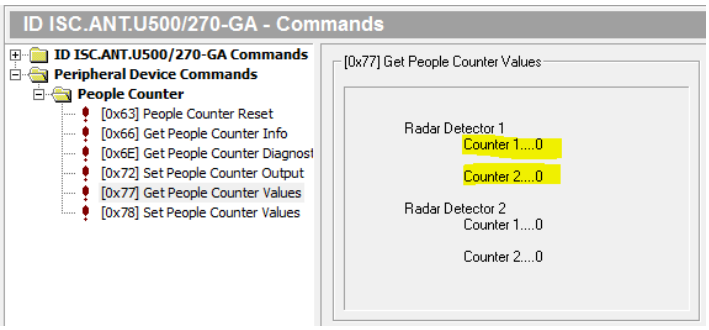
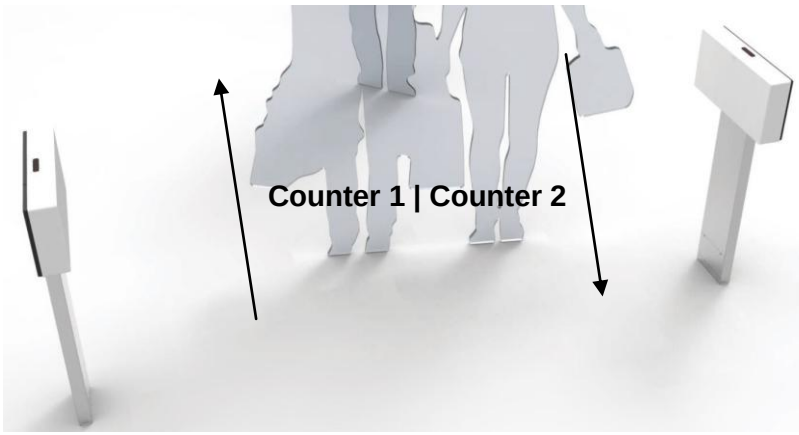
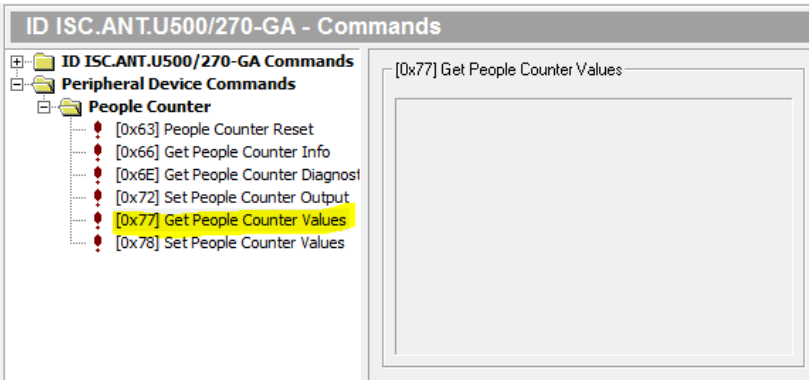
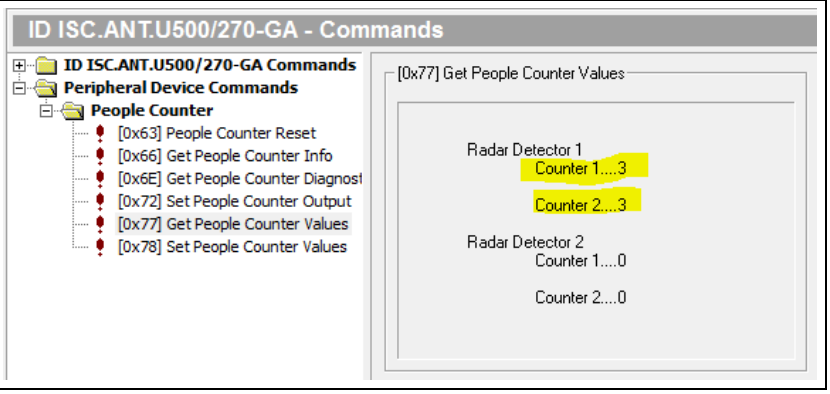
The configuration of the Notification Mode is similar. 5.5.3 Configuration and Test in Notification Mode
To test the function of the Gate in the Buffered Read Mode, the BRM Window of ISOStart program can be used.

5.5.1 Testing the Gate in Buffered Read Mode

1	Select **"Buffered Read Mode"**	
2	Click on **"Start"**	
3	Walk through the gate from both directions with a valid transponder.	
4	Transponder data will be displayed.	ID ISC.ANT.U500/270-GA - Buffered Read Mode - 1 Records No. | Type | Serial No. | Data Block | Date | Time 1 | EPC Class ... | 300833B2DDD9014028050000 | | 2017-11-22 | 08:26:22.691

5.5.2 Testing the People Counter in Buffered Read Mode

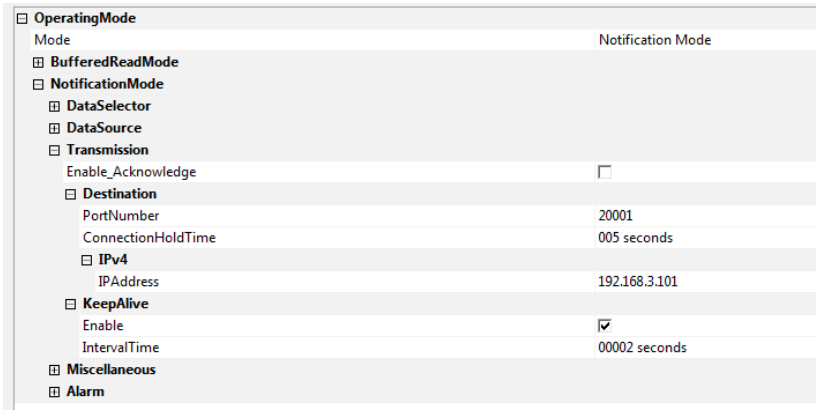
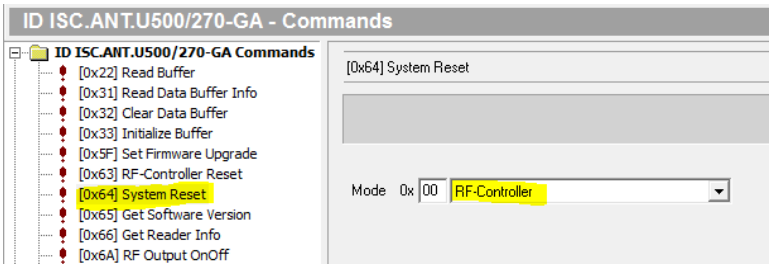
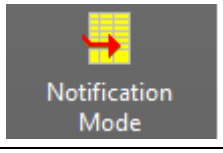
Step	Action	Note
1	Select **„Commands“**	
2	Select **“Peripheral Device Commands”** **"People Counter"**	
3	Select Command **„Set People Counter Values“** with setting "0"	
4	Confirm with **„Send“**	
5	Select Command **„Get People Counter Values“**	
6	Confirm with **„Send“**	

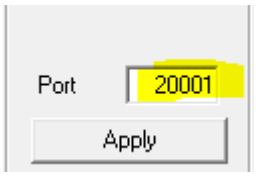
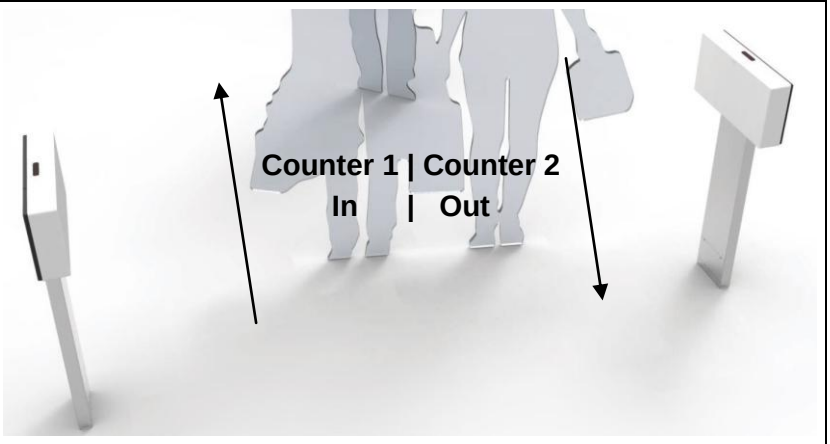
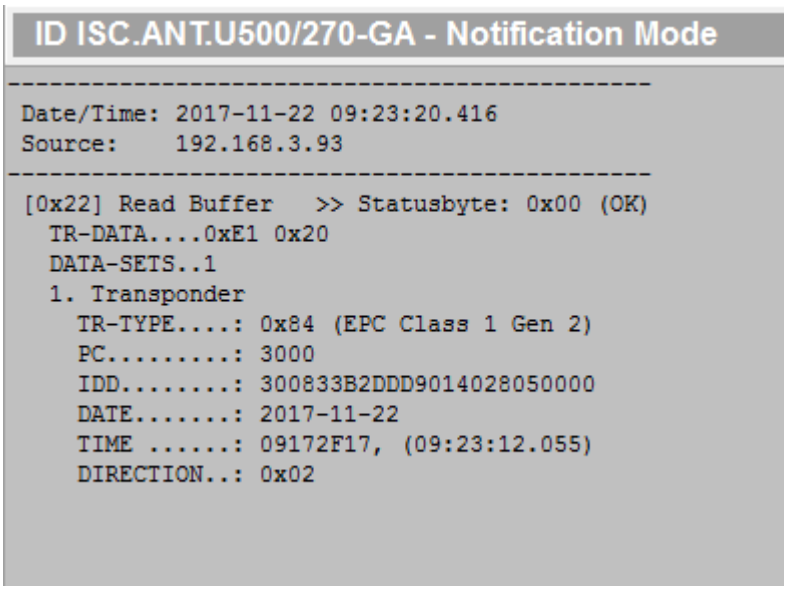
	All counter values should be 0 then	
7	Walk through the gate from both directions.	
8	Select Command **„Get People Counter Values“**	
9	Confirm with **„Send“**	
10	Counter values different to 0 will be displayed	

In Buffered Read Mode the People Counter has to be polled by the Host Application to get the data.

5.5.3 Configuration and Test in Notification Mode

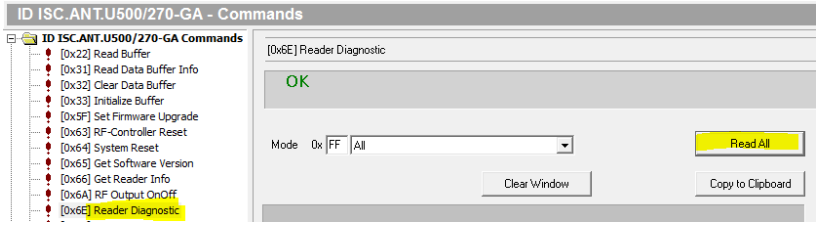
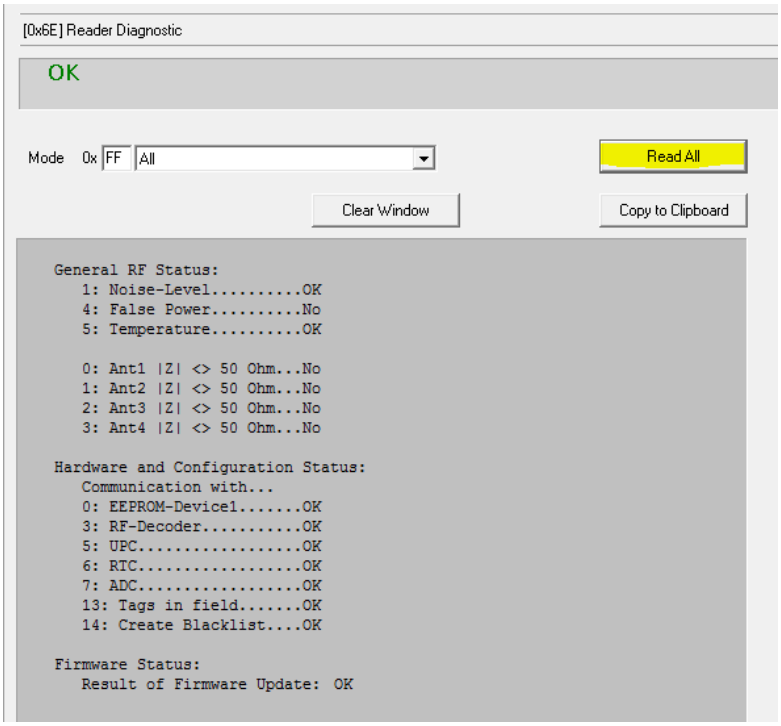
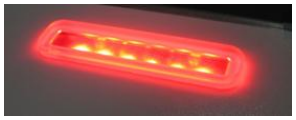
In Notification Mode the Reader sends the People Counter Data automatically to the Host.
The following configuration hast o be done:

Step	Action	Note
1	Select **„Configuration“**	
2	**Operating Mode** Select -Notification Mode	
3	Confirm with **„Apply“**	
6	**Set Destination IP Address and Port for Notification Mode** IP Address of Host e.g. here: 192.168.3.101 20001	
7	Confirm with **„Apply“**	
8	Select **“Commands”**	
9	Select Command **“System Reset”**	
10	Confirm with **„Send“**	
11	Select **“Notification Mode”**	

12	Set right Port number, e.g. 20001; value defined from Computer that shall receive the gate data The same TCP/IP Address and Port Address is valid for the Notification Channel of the People Counter and Notification Channel of the data Click on **"Apply"**	
13	Walk through the gate from both directions with a valid transponder.	
14	Transponder data and counter values will be displayed.	

5.6 Reader Diagnostic

An error of the reader/gate will be displayed by the diagnostic LED in the type GA antenna.
Detailed information about the error could be analyzed with the ISO-Start program.

Step	Action	Note
	Reader Diagnostic	
1	Select **"Commands"**	
2	Select **"ID ISC.ANTU500/270-GA Commands"** **"Reader Diagnostic"**	
3	Confirm with **„Read All"**	
4	Status of errors will be displayed	
5	Error signaling over alarm LEDs	

<table>
<tr><th>Step</th><th>Action</th><th>Note</th></tr>
<tr><td></td><td></td><td>Coding:
<table>
<tr><th>Error</th><th>Priority 1:Low, 4: High</th><th>Signalling</th><th>Reset Error</th><th>Alarm output</th></tr>
<tr><td>Blackliste full</td><td>1</td><td>LED ANT-B blinking w. 2Hz</td><td>CPU Reset</td><td>Tag alarm still visible on LED-A LED-B blinking</td></tr>
<tr><td>Too many tags in field</td><td>2</td><td>LED ANT-B blinking w. 2Hz</td><td>automatic</td><td>Tag alarm still visible on LED-A LED-B blinking</td></tr>
<tr><td>Internal Reader error (ASIC Comm.)</td><td>2</td><td>LED ANT-B blinking w. 2Hz</td><td>CPU Reset</td><td>Tag alarm still visible on LED-A LED-B blinking</td></tr>
<tr><td>No communication with People Counter - PCB</td><td>3</td><td>LED ANT-B blinking w. 4Hz</td><td>CPU Reset, Command to UPC</td><td>Tag alarm still on LED-A if possible; LED-B blinking</td></tr>
<tr><td>Antenna or ant. cable problem</td><td>4</td><td>LED ANT-B blinking w. 8Hz</td><td>automatic</td><td>Tag alarm still visible on LED-A LED-B blinking</td></tr>
</table></td></tr>
<tr><td>6</td><td>Error signaling over special diagnostic LEDs of A side</td><td> 
Coding:
<table>
<tr><th>LED green</th><th>LED red</th><th>LED blue (Comm.)</th><th>UPC / LED Board</th><th>Integrated Reader</th></tr>
<tr><td>bl.</td><td>off</td><td>-</td><td>OK</td><td>OK</td></tr>
<tr><td>bl.</td><td></td><td>-</td><td>OK</td><td>Reader error</td></tr>
<tr><td>off</td><td>bl.</td><td>off</td><td>UPC offline, no requests from reader</td><td>Reader error or cable to UPC defective</td></tr>
<tr><td>off</td><td></td><td>off</td><td>UPC or sensor board error</td><td>-</td></tr>
<tr><td>-</td><td>-</td><td></td><td>UPC is receiving valid protocols from reader</td><td>-</td></tr>
</table></td></tr>
<tr><td>7</td><td>If the antenna cables from antenna type A to antenna type B have not been connected in the right way or there is an error, the Alarm LED of antenna type A will flash after start up.</td><td>  </td></tr>
</table>

6 Configure the reader in accordance with national RF regulations

To achieve the optimum reading performance it might be sensible to increase the reader output power compared to the default settings given in 5.2.4. The maximum allowed power depends on the used reader type (EU / FCC) and the regulation in the country were the reader is used.

For performance reasons set antennas 2 and 4 to ~ 40% higher output power than 1 and 3 to compensate the cable loss from A antenna to B antenna. If for example ant. 1 & 3 have 0.5W, then set ant. 2 & 4 to 0.7W.

6.1.1 EU reader according to EN 302 208

According to the standard EN 302 208 the maximum radiated power is 2 W e.r.p. (Effective Radiated Power) in countries of the European Union. The in the reader configured output power P_{out} depends on the antenna gain in dBi and the attenuation of the antenna cable. If a circular polarized antenna is used the antenna gain [dBic] can be reduced by 3dB. At a linear polarized antenna the maximum linear antenna gain [dBi] must be used.

$$\mathbf{P_{Out} = P_{erp} - Antenna\ Gain + Cable\ loss + 2{,}1dB^{**}}$$

** Correction Factor to convert the radiated power from e.r.p to e.i.r.p.

Antenna: 9dBic, circularly polarised

Cable loss: A side: 0m cable → 0dB loss for A side

B side: cable type = Belden H155 with attenuation of 0.3dB/m

cable length = 2.2m + A/B interconnection of typ. 2.5m = 4.7m

total cable loss = 0.3dB/m * 4.7m = 1.4dB (lin. factor 1.45)

(according to the cable loss B side TX power can be set 45% higher than A side)

For EU region the max. allowed reader output power is:

- **0.8W for antennas 1 and 3 (A side)**
- **1.1W for antennas 2 and 4 (B side)**

The reader is set to the following output power.
These settings could not be changed by the user !

EU region (max. 2 W e.r.p)		
	Recommended Reader Power	
	Ant. 1 Ant. 3	**Ant. 2 Ant. 4**
RF power setting in ISOStart	**0.5 W**	**0.7 W**

6.1.2 FCC Reader according to FCC 47 Part 15

According to the FCC approval, Title 47, Part 15 the maximum output power of the reader is limited to 1 W (30dBm). The maximum radiated power of the antenna must not be more than 4 W e.i.r.p, (corresp. to 36dBm e.i.r.p or 33.75 dBm e.r.p. resp).

As for ID ISC.ANT.U500/270-FCC:

Antenna: 9dBic, circularly polarised

Cable loss: A side: 0m cable → 0dB loss for A side

B side: cable type = Belden H155 with attenuation of 0.3dB/m

cable length = 2.2m + A/B interconnection of typ. 2.5m = 4.7m

total cable loss = 0.3dB/m * 4.7m = 1.4dB (lin. factor 1.45)

(according to the cable loss B side TX power can be set 45% higher than A side)

According to FCC 47 Part 15 the max. allowed reader output power is:

- **1 W for antennas 1 and 3 (A side)**
- **1.4 W for antennas 2 and 4 (B side)**

The reader is set to the following output power.
These settings could not be changed by the user !

USA/Canada (max. 4 W e.i.r.p, max. 1 W conducted)		
	Recommended Reader Power	
	Ant. 1 Ant. 3	**Ant. 2 Ant. 4**
RF power setting in ISOStart	**0.5 W**	**0.7 W**

6.1.3 USA (FCC)

6.1.3.1 Antenna ID ISC.ANTU500/270 GA/GB

Product name:	**ID ISC.ANTU500/270-GA/-GB**
Antenna name:	**ID ISC.ANTU500/270 Type GA / GB**
Reader name:	**ID ISC.LRU1002**
FCC ID:	
Notice for USA	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. Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Further information and technical data of the ID ISC.LRU1002 Reader built into the ID ISC.ANTU500700 antenna can be found in the Installation manual of the reader.

7 Technical Data

7.1 Antenna ID ISC.ANT.U500/270 Type GA and GB

Mechanical Data

• Housing	UV stabilized ABS
• Antenna foot	Aluminum
• Dimensions (W x H x D)	
– Antenna	506 mm x 1102 mm x 103 mm ± 3 mm
– Packing	560 mm x 1160 mm x 163 mm ± 10 mm
• Weight	
– ID ISC.ANT.U500/270 Type GA	Approx. 12 kg without / 14,5 kg with packing
– ID ISC.ANT.U500/270 Type GB	Approx. 10 kg without / 12 kg with packing
• Enclosure rating	IP 41
• Color	Antenna Housing: white and black Antenna foot: aluminum
• Mounting	
– No. of attaching points	2
– Recommended anchors	∅ 10 mm
– Recommended minimum load capacity of the floor fastener	5000 N / anchor
• Maximum horizontal load on the top edge of the antenna	200 N*

Electrical Data

• Supply Voltage	24 V ⎓ ± 15 % Noise Ripple : max. 150 mV
• Power Consumption	max. 32 VA
• Operating Frequency	865 - 870 MHz EU , 902 – 928 MHz FCC
• Gain, typ.	9dBic
• Bandwidth	3dB
• Polarization	Circular
E-Plane	65°
H-Plane	65°

• Maximum transmitting power per antenna	2 W but consider limit due to national RF regulations
• Permissible overall transmitting power per antenna gate	
– EU-territory (per EN 302 208)	0.8 W for Ant. 1 and 3 1.1 W for Ant. 2 and 4
– USA (per. FCC Part 15)	1.0 W for Ant. 1 and 3 1.4 W for Ant. 2 and 4
• Outputs	
– 1 Optocoupler	Reader Synchronization
• Inputs	
– 1 Optocoupler	Reader Synchronization
• Interfaces	USB mini Ethernet (TCP/IP)
• Protocol Modes	BRM (Data Filtering and Data Buffering) Notification Mode (TCP/IP)
• Supported Transponders	EPC Class 1 Generation 2 ISO 18000-6-C (Upgrade Code required) Further transponder types on request possible
• Ranges / pass through width	160cm
• People Counter Capacity	
– 1 x direction 1 / In	0..4 294 967 295
– 1 x direction 2 / Out	0..4 294 967 295
• Antenna connection	2 x SMA plug (50 Ω)
• Antenna connector cable	
- Type GB	H155 low loss, 50 Ω, approx. 2.5 m long

Ambient Conditions

- **Temperature range**
  - **– Operating** **0°C to +55 °C**
  - **– Storage** **–25 °C to +80 °C**