

Annex no. 12

Antenna Descriptions

**ID ISC.ANT1700/740-SLA /-SLB
Clear Gate**



English

Note

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FEIG ELECTRONIC GmbH
Lange Strasse 4
D-35781 Weilburg
Tel.: +49 6471 3109-0
<http://www.feig.de>

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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.



CAUTION! The Antenna-Tuner and the Antenna conductor carry voltages up to 1000V.



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.

2 Maintenance

The antenna ID ISC.ANT1700/740 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 housing.

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

- Keep the antenna clean and take care the antenna is not scratched.
- 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 of the ID ISC.ANT1700/740 SLx Antennas

The ID ISC.ANT1700/740-SLA antenna is a version with 2 DynamicTuning Board ID ISC.DAT , Long Range Reader ID ISC.LRM2500-B, 8- times Multiplexer Module ID ISC.ANT.MUX M8 and additional signal light and buzzer already mounted.

The ID ISC.ANT1700/740-SLB antenna is a version with 2 DynamicTuning Board ID ISC.DAT and signal light mounted.

Up to

- two antennas with reader and multiplexer as a single gate,
- three to four antennas with reader and multiplexer as a double gate or triple gate

can be operated.

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

The ID ISC.ANT1700/740-SLA-SLB is a „single loop“ antenna with tuner and have been optimized as transmitting and receiving antennas for the ID ISC.LRM2500 Reader. It is however also possible to operate them with other Readers at a transmission frequency of 13.56 MHz and an output impedance of 50 Ω . The read ranges indicated in this document and the tuning procedures may however then vary.

The antennas comprise the electrical antenna conductor, the housing, the ID ISC.DAT *Dynamic Antenna Tuner* and the connection cable. The antennas are factory tuned to an impedance of 50 Ω in a magnetically neutral environment at a distance of 100 cm. When installing in different ambient conditions the antenna can be retuned using the “DATuningTool” PC software. After tuning the antennas will retain their settings as long as the ambient conditions remain unchanged.

The antennas can be used for detecting both product and persons. It is suitable for installation indoors or outdoors if weather-protected.

3.1 Performance Features of the People Counter ID ISC.ANT1700/740-GPC

The product ID ISC.ANT1700/740-GPC, short form “Gate People Counter” or “GPC”, are made for mounting in the gate antennas ID ISC.ANT1700/740.

A Gate People Counter consist of a People Counter board (PC) and one Radar Detector! The product ID ISC.ANT.GPC-E Extension Radar Detector is used to extend the People Counter to a second gate aisles.

The People Counter has two counters per aisle. The values of the incoming and out going persons will be separately captured.

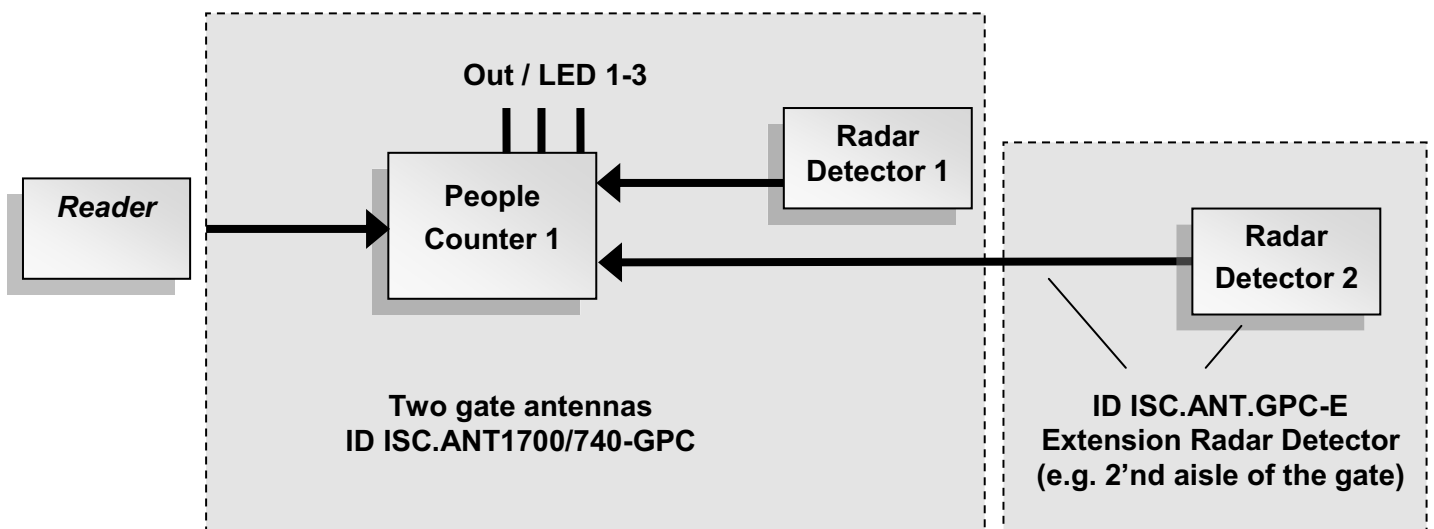


Fig. 1: Gate People Counter Structure (2-3 antennas, 1-2 gate aisles)

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

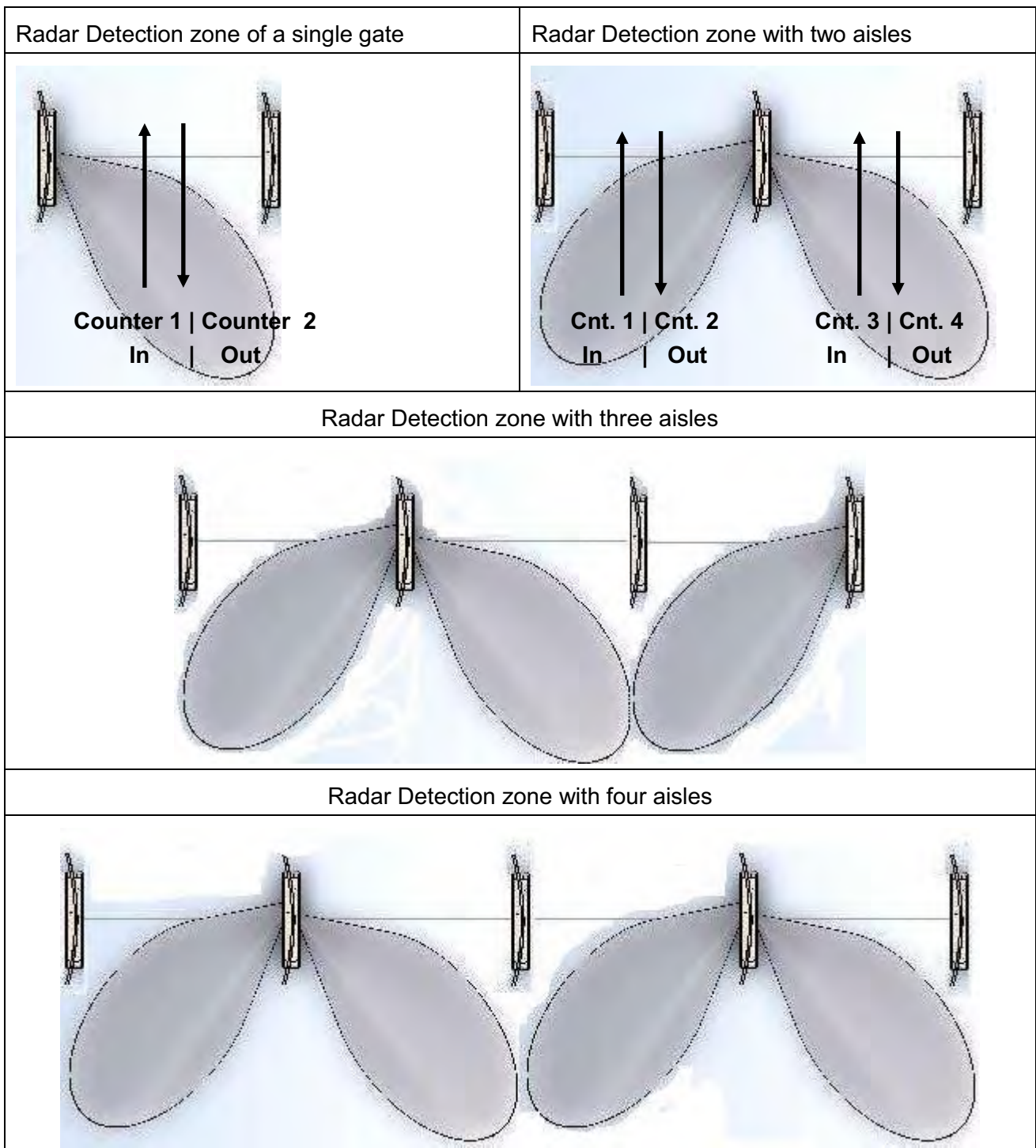


Fig. 2: Top view of the detection areas (2-3 antennas, 1-2 gate aisles)

The People Counter board and the Radar detectors are mounted in the base of the antennas. Due to the radar beam can pervade the plastic housing of the antenna, no openings a necessary.

The three digital output can be used, to enable a signal light at every gate antenna or activate an alarm buzzer in the gate antenna.

The Connection between reader and people counter takes place trough the RS485 Interface of the reader.

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

In the reader modes ISO Host or Buffered Read Mode, the host has to poll the GPC by sending protocols to the reader. Only, in the Notification Mode, the reader poll the counter values, automatically, and send data according the reader configuration to the host.

So, 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 any change of the counter values.

See also System Manual H01011-0e-ID-B.DOC

3.2 Available Antenna Types

The following products are currently available:


Antenna Type	Description	Picture
ID ISC. ANT1700/740-SLA Clear Gate	Antenna with Reader, Multiplexer , dynamic tuning board, signal light and buzzer	
ID ISC. ANT1700/740-SLB Clear Gate	Antenna with dynamic tuning board ID ISC.DAT and signal light	
ID ISC. ANT1700/740-AGP	Acrylic glass plate window for Clear antennas	
ID ISC.ANT1700/740-GPC Gate People Counter	People Counter and one piece of radar detector for antenna ID ISC.ANT1700/740 incl. Mounting and cabling set. (optional)	
ID ISC.ANT.GPC-E Extension Radar Detector	Second radar detector with cable for the second direct parallel aisle (optional)	

Table 1: Available Antenna Types and Accessories

Needed components for at the usage of the Gate People Counter:

Number of antennas	Antenna		People Counter (Optional)		Note
	ID ISC. ANT1700/740 -A	ID ISC. ANT1700/740 -B	ID ISC. ANT1700/ 740-GPC	ID ISC.ANT. GPC-E	
2 Antennas	1	1	1		
3 Antennas	1	2	1	1	
4 Antennas	1	3	2	1	

Table 2 Needed components for gates with People Counter

4 Installation and Wiring

Notes:

Before installing the antennas please read [5.1 Project Notes](#) . The spacing of the antennas in a gate depends on the antenna configuration.

If multiple antennas or gates are connected to different readers, a minimum clearance of 8 m must be kept between the antennas or gates. For shorter distances (1 m – 8 m) the readers must be synchronized. The synchronization of the readers is only possible in one of the Automatic Modes (Buffered Read, Notification or Scan Mode). Below a distance of 1.5 m the antennas must also be shielded from each other. Otherwise the read range will be significantly reduced. The antennas must have a minimum distance of 20 cm to all larger metal parts! At a distance of less than 50 cm between the antenna and metal parts the read range will be significantly reduced.

4.1 Mounting preparation

For assembly the antenna must be carefully unpacked. 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: Antenna in its packaging

2. After that the antenna has to be placed carefully again on the floor. Now you must remove the two fastening screws (hexagon socket width A/F2,5) of the antenna cover at the antenna foot and remove it upwards. **Fehler! Verweisquelle konnte nicht gefunden werden.**

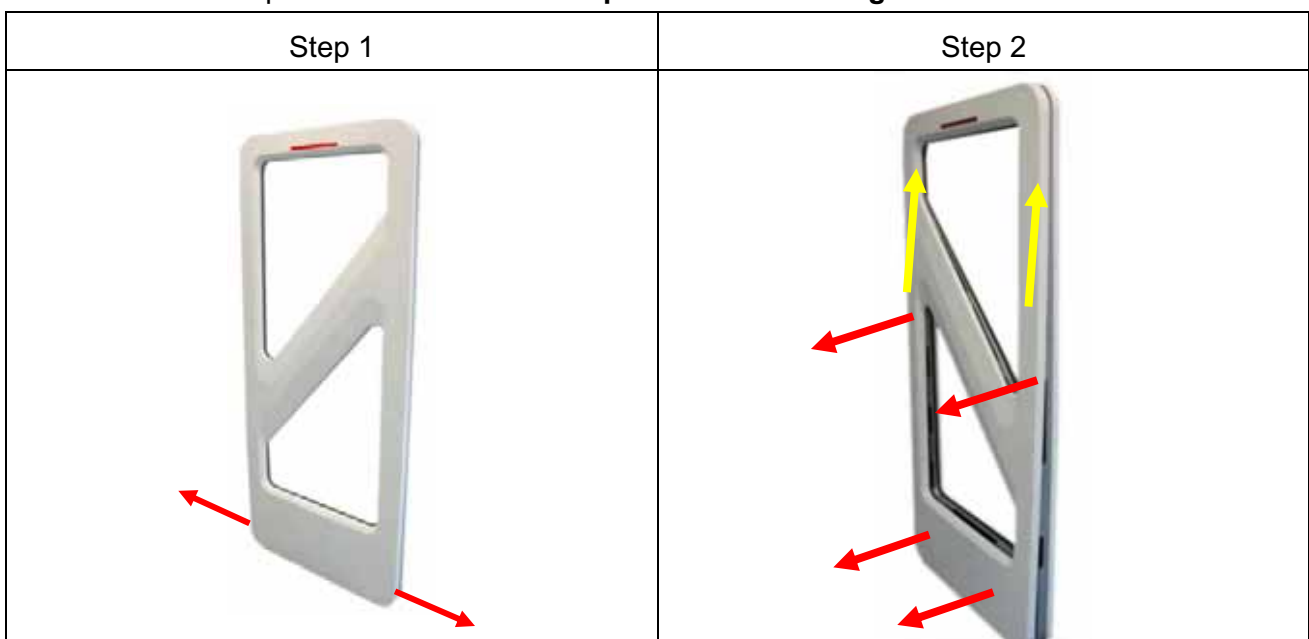


Fig. 4: Opening the antenna base

4.2 Dimensions of antenna

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

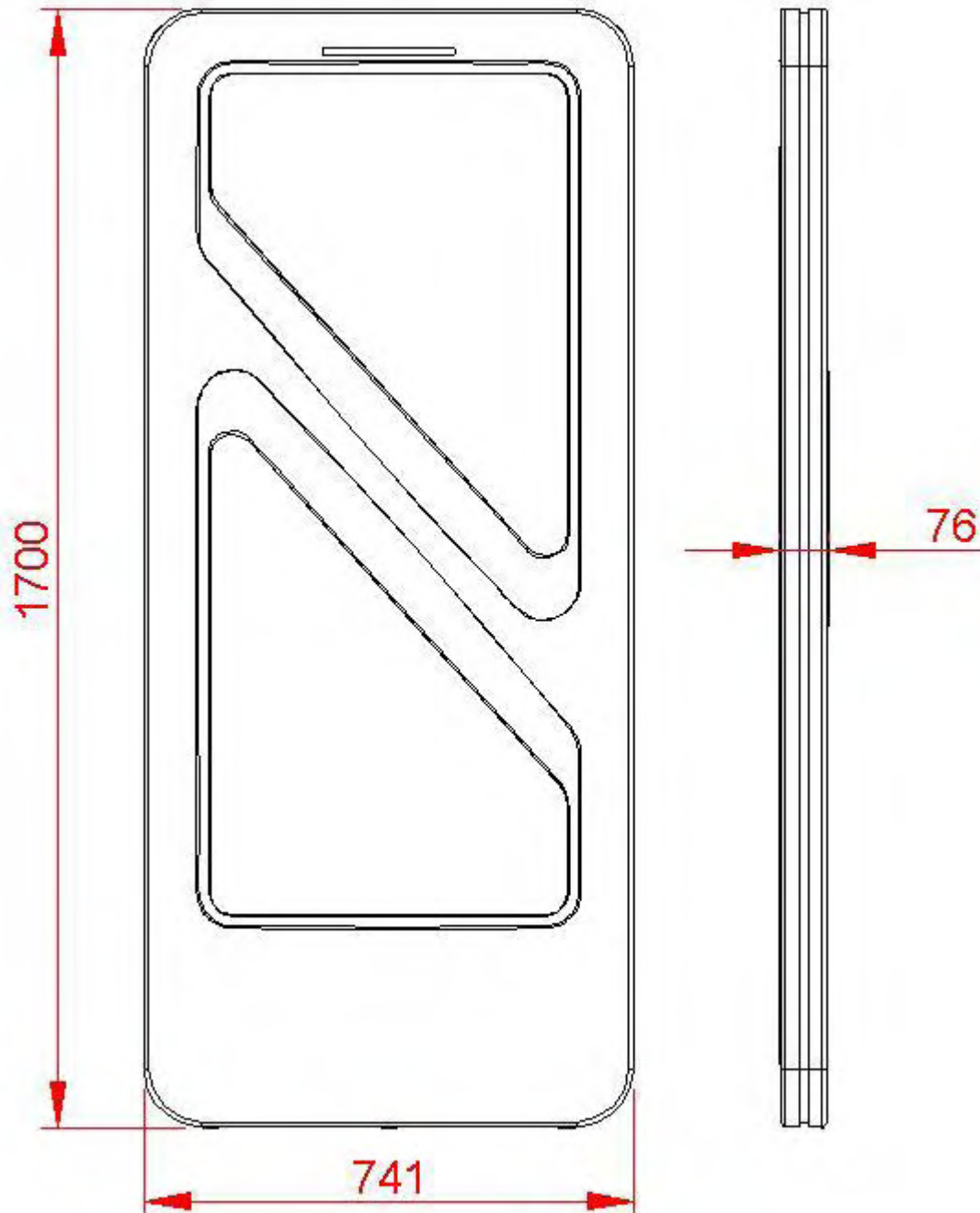


Fig. 5: Antenna outside dimensions

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

4.3 Drilling the Mounting Holes

If the position of the antennas has been marked or determined a hole template, can be used to mark and drill the mounting holes and the holes for the cable entry. The dimensions are shown in Fig. 6:

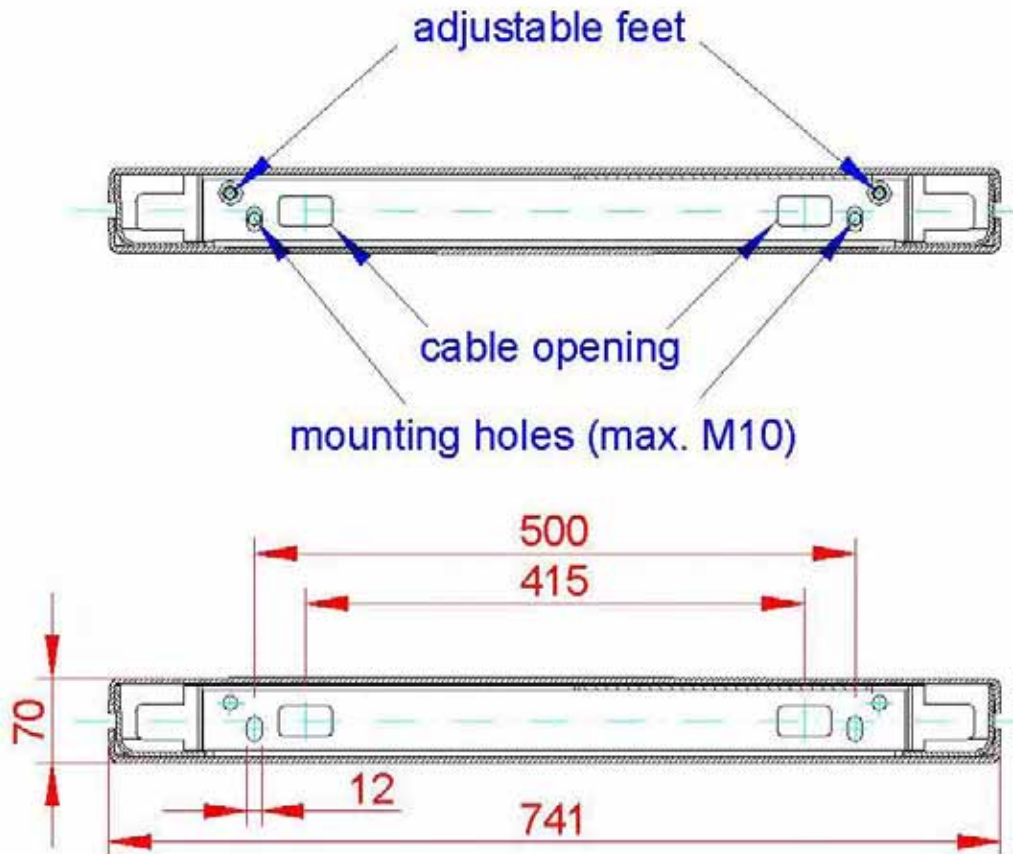


Fig. 6: Floor plate dimensions

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

The size and type of the screw 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 that they extend at least 50 mm (2.0") and a maximum of 65 mm (2.6") from the floor.

Please follow the mounting instructions of the anchor manufacturer!

Two cable openings are provided for the necessary connection cable (see Fig. 6). The cable openings are dimensioned such that up to 10 cables having a diameter of 6 mm can be passed through each opening.

We recommend routing the antenna cables through the cable opening on the Multiplexer side. All other cables such as the supply voltage and synchronization cable should be routed through the cable opening on the Reader side.

Alternatively the cables can be routed at the sides of the antenna bas like shown in Fig. 7

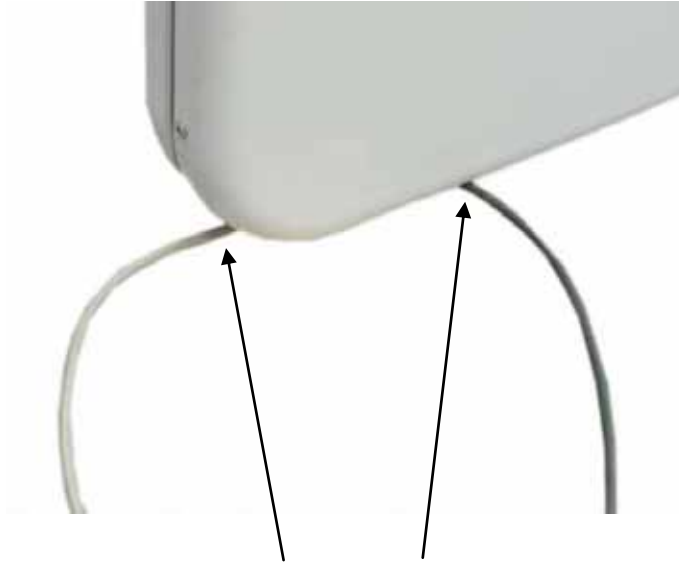


Fig. 7 Cable routing at the antenna sides

4.4 Installing the Antenna Body

The antenna will be screwed on the floor. The transverse antenna conductors in the middle of the antenna body have to face the same direction at all antennas.(Fig. 8) Use the adjusting screws (Fig. 9) to align the antenna vertically.

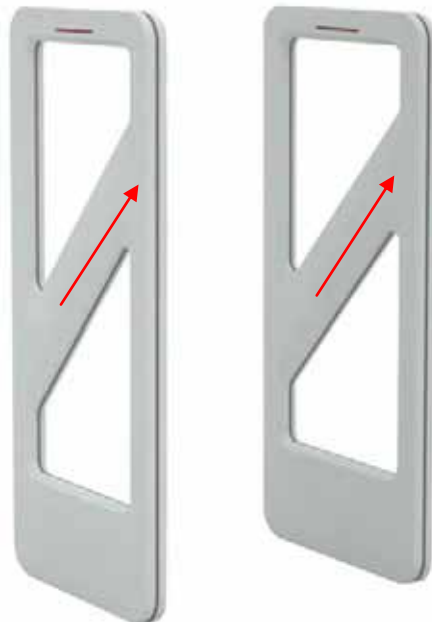


Fig. 8 Transverse conductors facing same direction



Adjusting screws (hexagon socket width A/F5)

Fig. 9: Attaching and aligning the antenna

5 Typical Antenna Configuration (Gate Antenna with two Antennas)

The standard configuration of a gate with three-dimensional tag orientation consists of one antenna ID ISC.ANT1700/740-SLA with reader and multiplexer and one antenna ID ISC.ANT1700740-SLB. If a tag moves, at horizontal line, through the gate, it can be read at least once. This ensures high reliability of the antenna system.

5.1 Project Notes

The antenna configuration as described allows detection of a tag moving horizontally through the capture 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 area of detection depends on the tag orientation.

The size of the three-dimensional capture area of the antennas is shown in the sketch below.

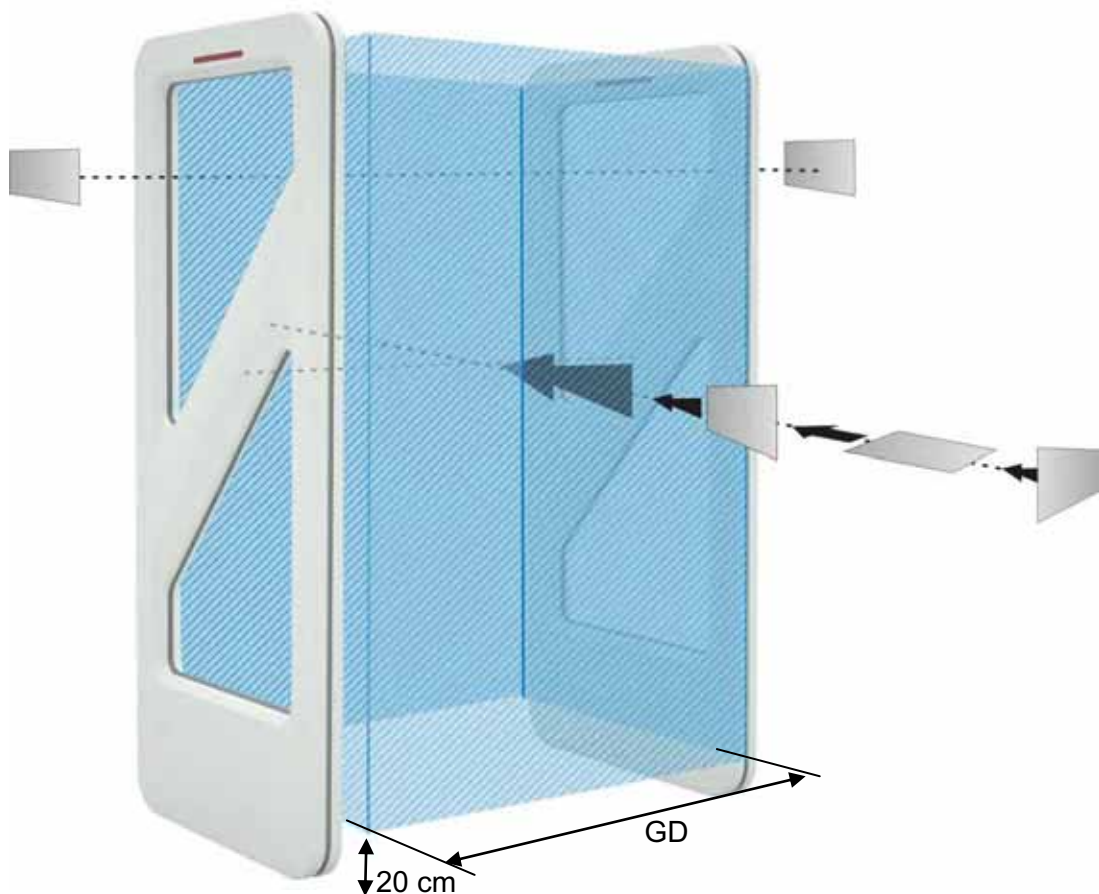


Fig. 10: Capture area and tag orientation

Notes:

Note that the entire capture area of the antenna is larger than the three-dimensional area shown in the drawing. This means there are tag orientations in which the tag can be detected outside the capture area.

To get a optimal performance the reader has to be configured and run in one of the Automatic Modes (Buffered Read, Notification or Scan Mode).

If multiple gates are arranged with short distances (1-8m) between each other, these will mutually interfere with each other. In this case, the readers for the individual gates have to be synchronized and run in one of the automatic modes.

To achieve three-dimensional capture of the tag in the capture area drawn above, the following conditions must be met:

- The gate distance GD depends on the antenna configuration (see Table 4: Design notes).
- The tags should be at least ISO card size (46 mm x 75 mm).
- The activation field strength of the tags should be less than or equal to 60 mA/m.
- The distance from tag to tag should be greater than 10 cm. If the tag to tag distance is reduced, the gate distance GD must be reduced correspondingly. This applies in particular to distances under 5 cm.
- The maximum number of tags (serial number or data) depends on the traverse speed with which the tags are brought through the capture area of the gate (see Table 4: Design notes). The number of tags may be increased in the gate distance GD is correspondingly reduced and the maximum speed adjusted accordingly.
- The antenna should be at least 50 cm from metal parts.
- The minimum distance between the antennas of a gate and antennas of RFID work station or terminals (transmitting frequency 13,56 MHz) should be:

Table 3: Minimum Distances

Transmitted output power	Minimum Distance
<0.5W	1 m
0.5W-1.0 W	2 m
1.1 W – 2.0W	3 m
> 2 W	4 m
>= 4 W	8 m

- There should be no interference of the Reader from other electrical devices in the environment. The Noise Level difference should be less than 20 mV.
- The ID ISC.LRM2500 Reader should be set to an RF power of 4 watts.
- When using ISO 15693 transponders, the Readers should be set as described in [5.2.6 Reader Configuration with Multiplexer](#).
- If multiple gates are operated at the same time at a distance of less than 8 m, the Readers must by synchronized. See Application Note *Synchronizing RFID Long Range Readers using the digital in-/outputs* (N10311-xe-ID-B.pdf).

	Gate with antenna Type SLA and Type SLB
Gate distance GD	≤ 130 cm
Number of tags at a speed of 1 m/s	
- Read serial number	16
- Read data	8

Table 4: Design notes

A minimum distance of 75cm between the two gate antennas is required.

5.2 Gate Configuration and Setup using Antennas Type -SLA and -SLB

5.2.1 Required Components

To construct the gate you need the following components:

- Qty. 1 ID ISC.ANT1700/740-SLA Clear
(incl. Qty. 1 ID ISC.NET24V-B Power Supply Unit)
- Qty. 1 ID ISC. ANT1700/740-SLB Clear
- Power cable, interface cable and connection cable for the DC power supplies (2-wire, twisted)
- Mounting materials (screws, anchors)

Optional:

- Qty. 2 ID ISC.ANT1700/740-AGP Acrylic glass plate windows for Clear antenna.

To calibrate the Reader you will need the software

- ISOStart Version 2011 Version 8.03 or higher

and for tuning the antennas the service software

- DATuningTool Version 1.10 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 a Gate antenna with Multiplexer

Connect the components as shown in Fig. 11. Almost, all cable should be mounted already. Normally, the antenna cable from antenna Type B has to be connected to OUT2 at the multiplexer and the 24V DC power supply to X11 of the terminal board only. Optional the cable of the signal light of antenna Type B has to be connected to X14 LED3 (third antenna X12 LED2) of the terminal board.

The necessary connections for the optional People Counter will be described in [6. Installation of the Gate People Counter ID ISC.ANT1700/740-GPC](#)

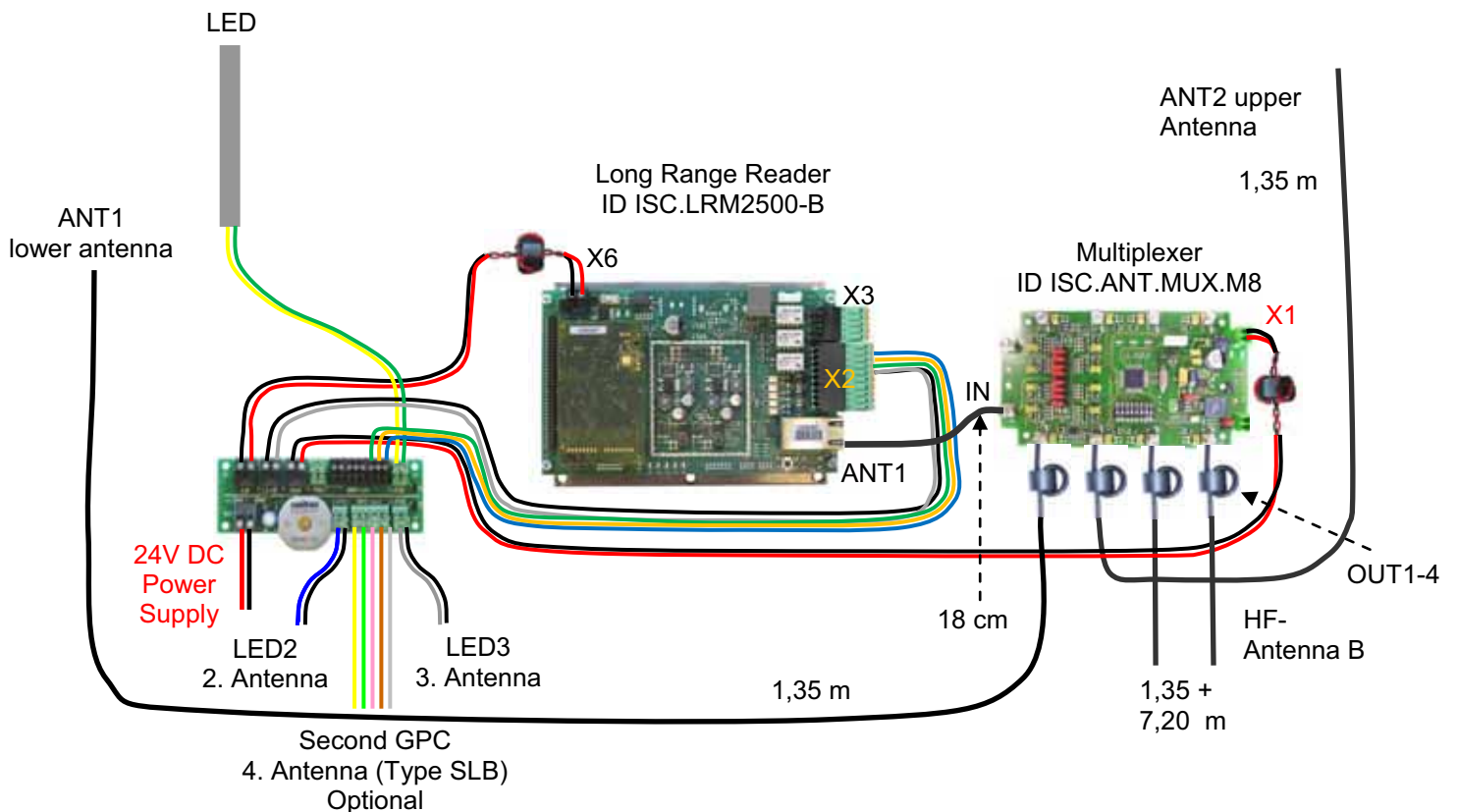


Fig. 11: Connecting the components for a gate consisting of two antennas, reader and Multiplexer



Fig. 12: Terminal board

An overview of the terminal board connections you will find in [9. Annex A](#)

Note:

- **A reverse polarity could damage the device or the In-/Outputs.**

The coax cables have fixed lengths and may not be shortened and therefore need to be tied into small loops (see Fig. 13). Tie all cables as far away from the antenna conductor as possible. The cables must never be allowed to contact the antenna conductor. The cable from antenna type B to the antenna type A should preferably be connected shortly. Unused cable lengths are possible should be tied in antenna B type.



Fig. 13: Connection of the components in an antenna Type A



Fig. 14: Tie together the cables in an antenna Type B

5.2.3 Setting the Multiplexer

Set the jumpers JP11-JP18 shown. More on setting the ID ISC.ANT.MUX.M4 Multiplexer can be found in the corresponding installation manual (M90700-xde-ID-B).

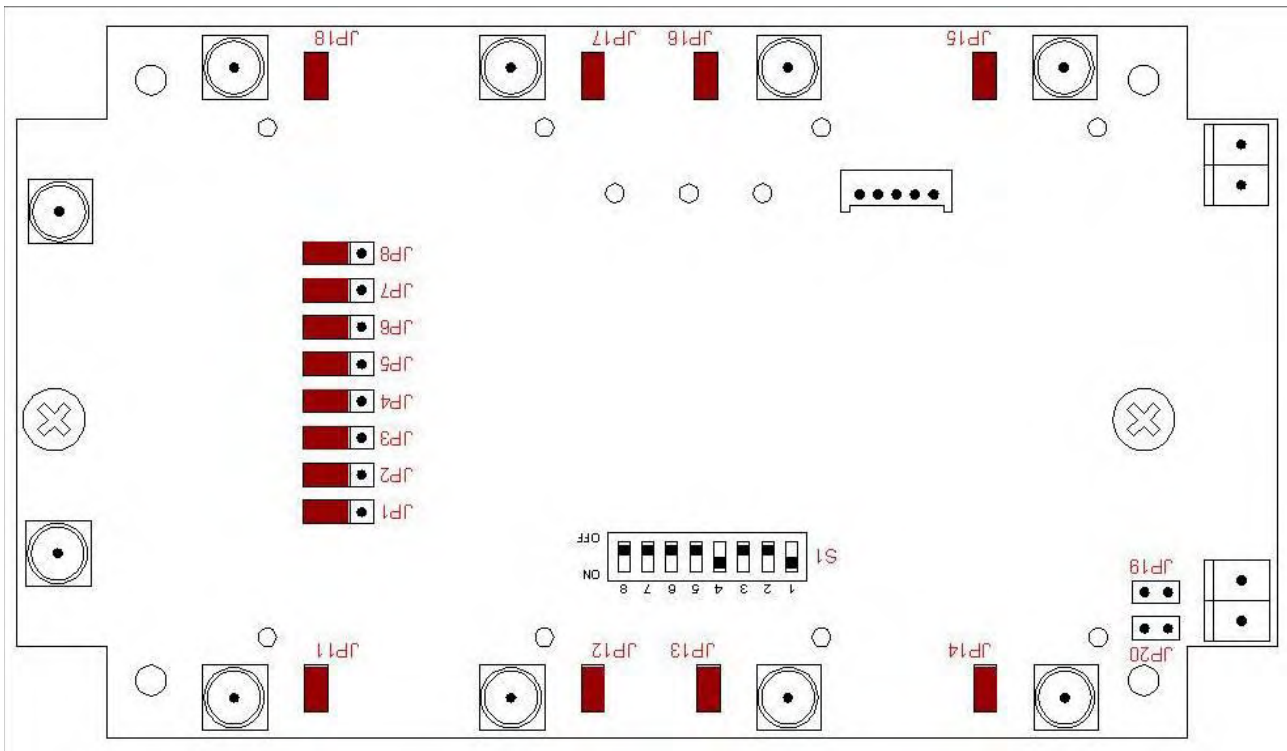


Fig. 15: Jumper positions

5.2.4 Setting the Antenna Tuner

To check the settings of the antenna tuner the antenna has to be opened. For that, remove the two fastening screws (hexagon socket width A/F2,5) at the antenna base cover and move it upwards. Fig. 16

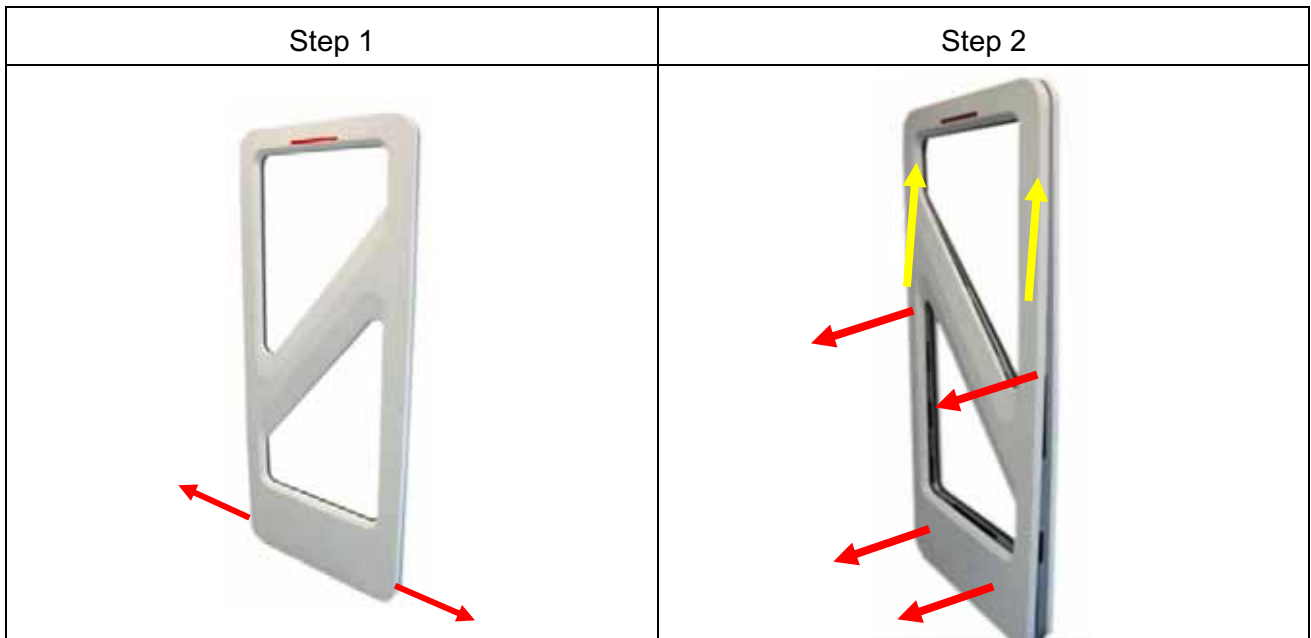
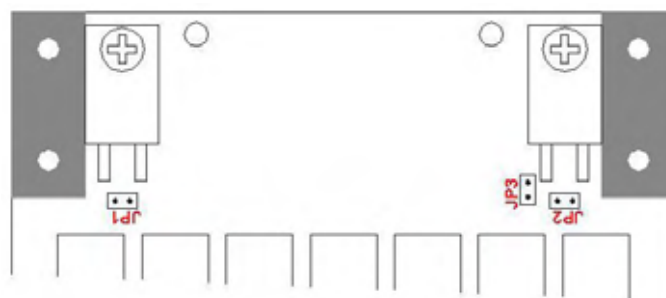


Fig. 16: Opening of the antenna base

The antennas ID ISC.ANT1700/740-SLA/SLB are factory set as follows:

Table 5: Jumper settings for Antenna Tuner

Function	Jumper	Position
1Ω Q resistor	JP1	open
2Ω Q resistor	JP2	open
Antenna switch	JP3	open
Capacitor C1	JP 11,12,13,14	open
Capacitor C2	JP 21,22 JP 23,24,25,26	open open



Verify these settings. More on setting the ID ISC.DAT antenna tuner can be found in the corresponding installation manual (M40401-xde-ID-B).

5.2.5 Interface Connections

5.2.5.1 RS 232

The RS232 interface is connected on X3.

The transmission parameters can be configured by means of software protocol.

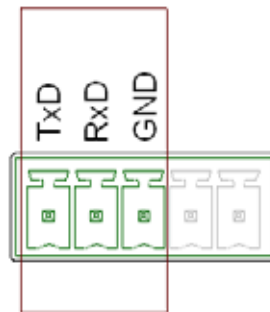


Fig. 17: RS232 interface pin-outs on X3

Acronym	Description
TxD	RS232 – (Transmit)
RxD	RS232 – (Receive)
GND	RS232 – (Ground)

Table 6: RS232 interface pin-outs

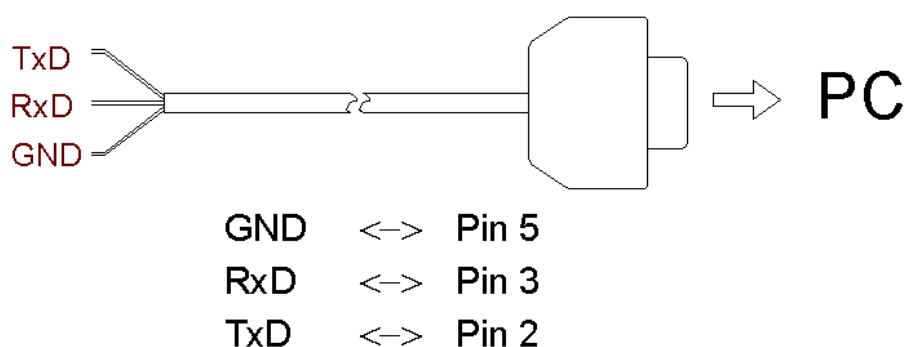


Fig. 18: Wiring example for connecting the RS232 interface

Note:

If there is an USB/RS232 converter used on the PC/Notebook side, we recommend to increase the „Char Timeout Multiplier“ parameter in the COM-Port settings from „1“ to about „5“.

5.2.5.2 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.

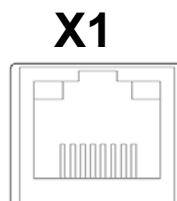


Fig. 19: LAN interface for host communication

With structured 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 7 Standard factory configuration of the Ethernet connection


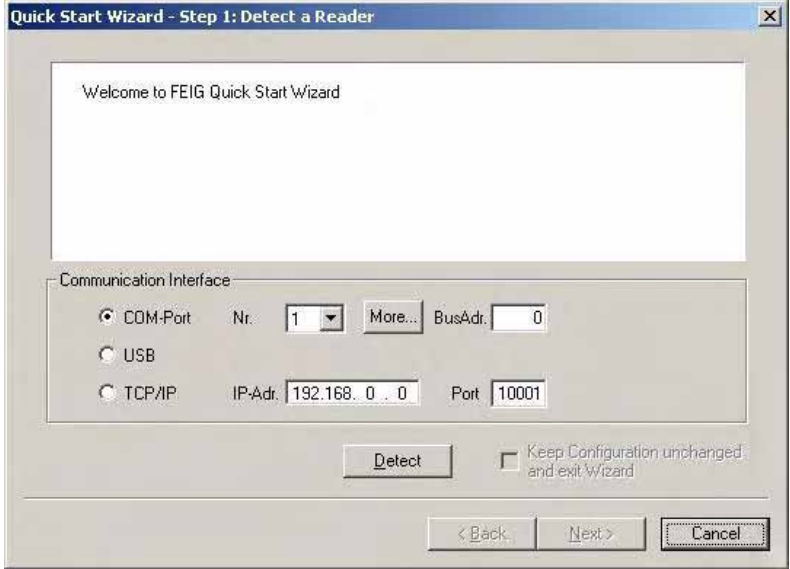


Note:

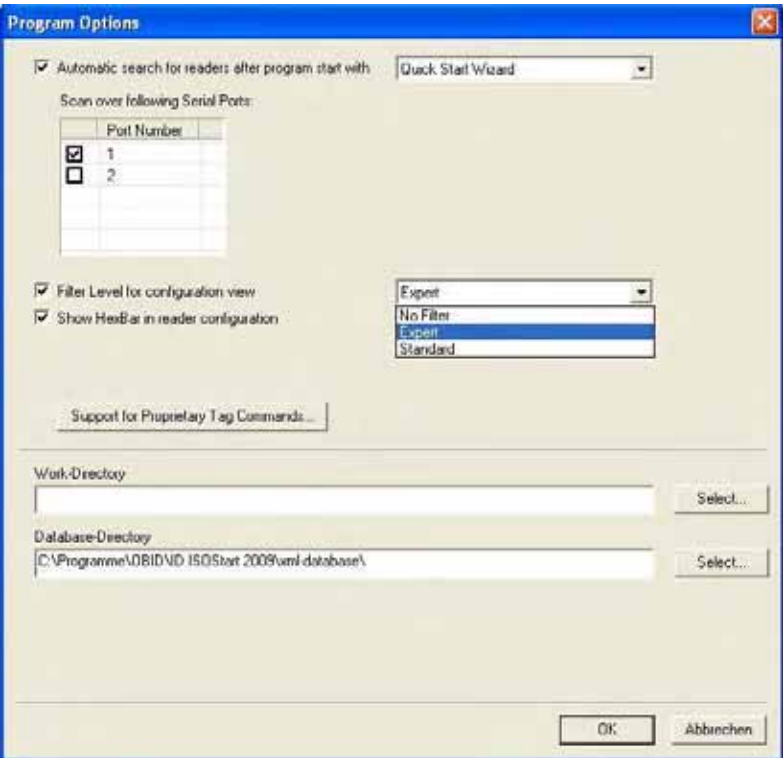

The Reader TCP/IP interface has a DHCP option.

More Information about the interfaces you will find in the manual **M01111-xde-ID-B** of the reader.


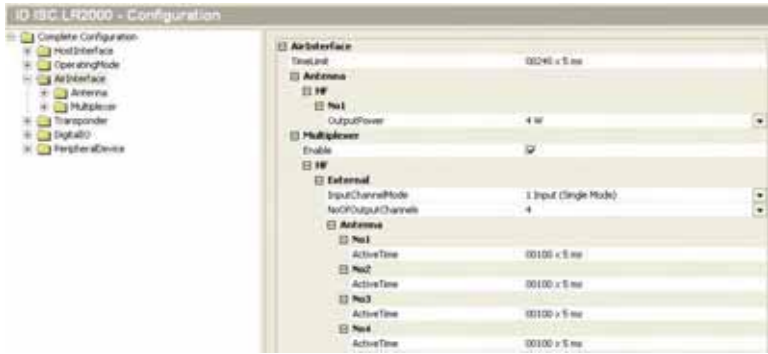

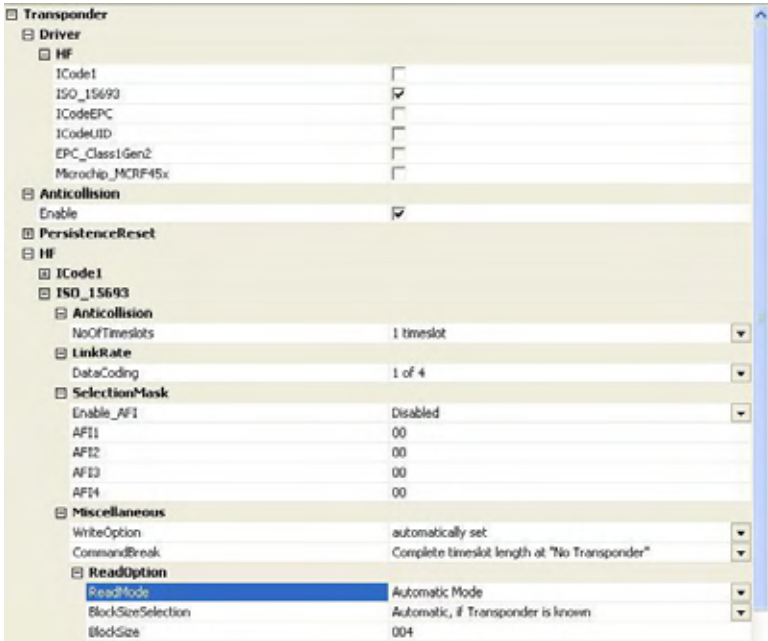

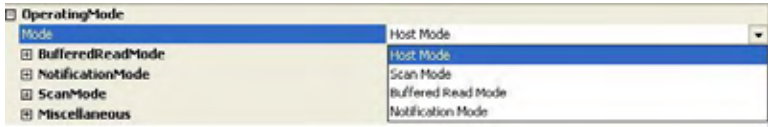

5.2.6 Reader Configuration with Multiplexer

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

Step	Action	Note
1	Start ISOStart Software	
2	Select „Detect“	
3	Select „Keep Configuration unchanged and exit Wizard“ and click on „Exit“ This has to be done at each start of ISO-Start program otherwise the configuration of the reader will be changed.	
4	Select „Options => Program“	


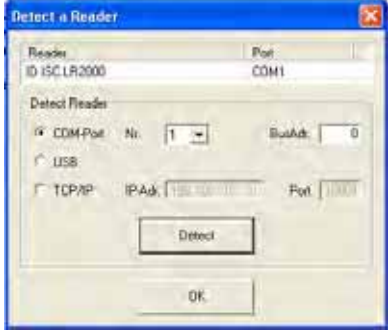
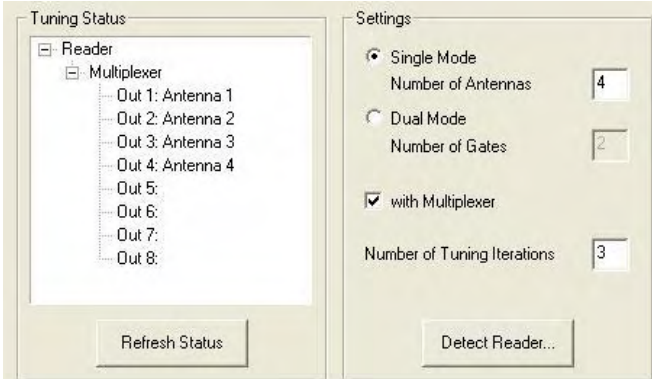

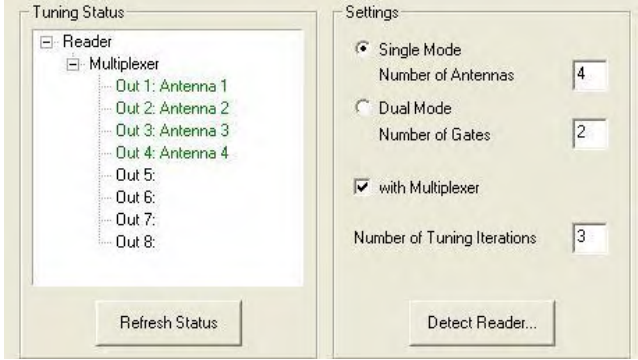

Step	Action	Note
5	Select „Expert Mode“ and confirm with OK.	
6	Select “Logical View”	

Then set the operating power, Transponder Parameters and ISO Host Mode:

Step	Action	Note
1	Select "Configuration"	
2	<p>Air Interface:</p> <p>"RF-POWER" (here 4W) „Multiplexer Enable“ „1 Input (Single Mode)“ „No of Output Channels „ (e.g. 4) „Antenna Active Time“ 100 x 5ms</p>	
3	Set by clicking on „Apply“.	
4	<p>Transponder:</p> <p>Configure the parameters as follows:</p> <ul style="list-style-type: none"> • „Driver“ – here ISO 15693 • „Anticollision“ – enable • „No of Timeslots“ – 1 timeslot • „Data Coding“ – 1 of 4 • „AFI“ – Disabled 	 <p>Note: National RF regulations may require different settings. 7 Configuring the Reader in accordance with national RF regulations</p>
5	Set by clicking on „Apply“.	
6	<p>Operating Mode:</p> <p>For antenna tuning the reader must be set to „Host Mode“.</p>	
7	Set by clicking on „Apply“.	

5.2.7 Tuning the Gate Antenna with Multiplexer

Before tuning the gate antenna, you must quit the ISOStart software. Then the gate can be tuned as follows:

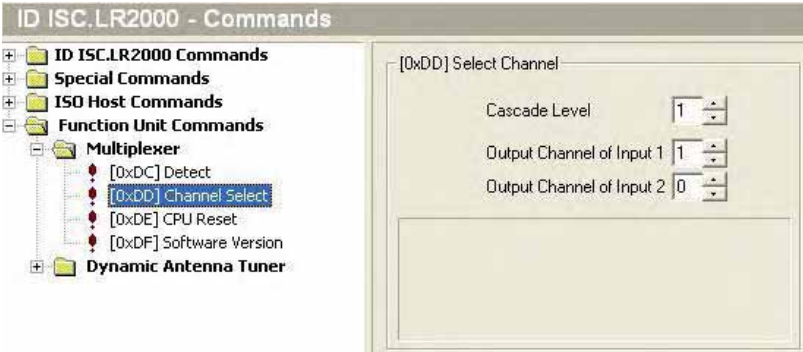



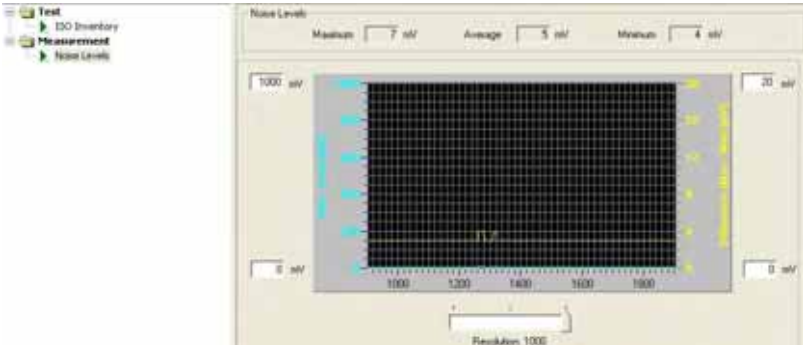
Step	Action	Note
1	Start "DATuningTool" software	 DATuningTool
2	Select "Detect Reader...". In the „Detect Reader“ window select the interface (COM-Port 1, BusAdr. 0) and then click on "Detect".	
3	Use „Settings“ to enter the configuration: Single Mode, Number of Antennas 4 Click on "with Multiplexer" Number of Tuning Iterations 3	
4	Activate „Start Tuning“ and wait until the tuning process is finished.	
5	The tuning status is displayed after each tuning pass. After successful tuning both antennas are shown in green.	
6	If this does not succeed on the first try, start the process again by clicking on „Start Tuning“	

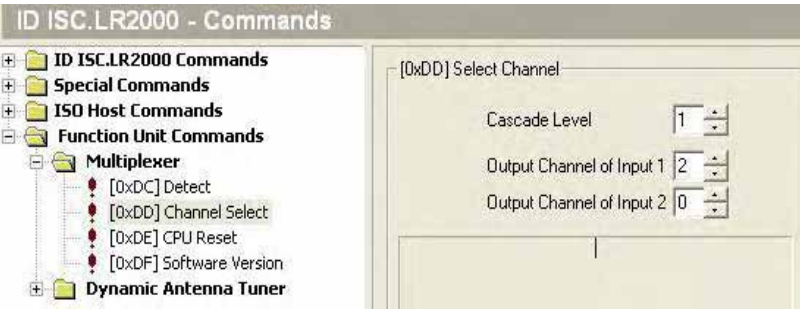


After successful tuning, close the DATuningTool.

5.3 Testing the Gate Antenna

After tuning the gate antenna, you can check for proper function using a Reader, the ISOStart service software and a Transponder. Here the Noise Level and performance of the gate are tested.

5.3.1 Checking the Noise Level

Step	Action	Note
1	Select „Function Unit Command“ „Multiplexer“ „Channel Select“ activate antenna 1. „Cascade Level = 1“ „Output Channel of Input 1 = 1“	
2	Set by clicking on “Send”	
3	Activate “Test and Measurement”	
4	Select „Noise Level“ and start by clicking on „Start“	
5	Normal Noise Level values at antenna 1: Average: < 30mV Difference (Max-Min): < 20mV	

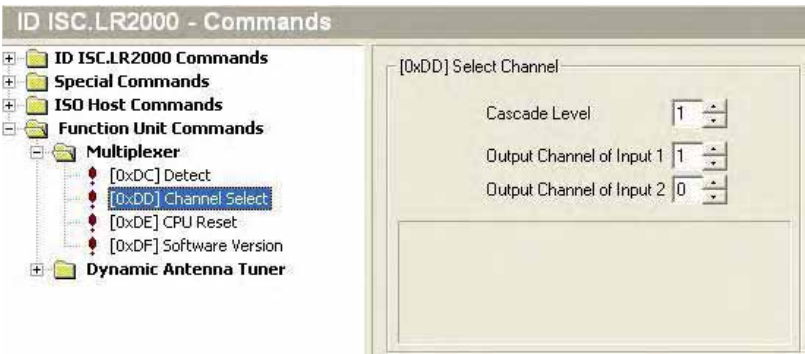


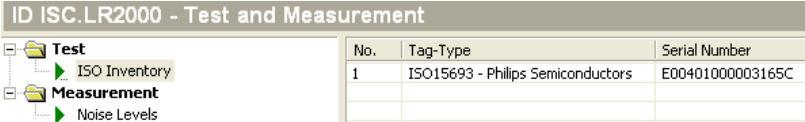

Step	Action	Note
6	Select „Function Unit Command“ „Multiplexer“ „Channel Select“ activate antenna 2. „Cascade Level = 1“ „Output Channel of Input 1 = 2“	
7	Set by clicking on „Send“.	
8	Repeat step 3 to 7 for antenna 2, 3, 4.	

If the values are not met, check the following:

- Are all cables pulled tight and do they make good contact?
- Were the ring cores installed in the antenna cable?
- Were the cables routed as specified?
- Are other RFID systems installed nearby?
- Are there large metal parts near the antenna (distance < 1.0 m)?
- Are there devices nearby which may emit noise interferences (larger machines or wireless devices)?
- Are there interferences from the mains?

To determine which devices may be disturbing the gate, briefly disconnect them from the mains.

5.3.2 Reading a Serial Number

Step	Action	Note												
1	Attach a tag to an antenna	Use adhesive tape, for example												
2	Activate antenna 1 with command: „Function Unit Commands - Multiplexer“ Parameter: „Channel Select“ „Cascade Level = 1“ „Output Channel of Input 1 = 1“ „Output Channel of Input 2 = 1“													
3	Confirm with “Send”													
4	Select „Test and Measurement“													
5	Select „ISO Inventory“ function and activate by clicking on „Start“. The serial number and tag type will be shown in the display.	 <table border="1" data-bbox="976 1144 1444 1227"> <thead> <tr> <th>No.</th> <th>Tag-Type</th> <th>Serial Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ISO15693 - Philips Semiconductors</td> <td>E00401000003165C</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Tag-Type	Serial Number	1	ISO15693 - Philips Semiconductors	E00401000003165C						
No.	Tag-Type	Serial Number												
1	ISO15693 - Philips Semiconductors	E00401000003165C												
6	Repeat Step 1 to 5 for every further antenna													

5.3.3 Testing the performance

For testing the performance you have to switch the reader to one of the Automatic Modes.

(See [0](#)

[Activating the Automatic Mode](#))

A read transponder will be displayed by a blue LED on the reader or by the LED light of the antenna. See also [5.4.1 Reader Setting for Indicator](#)

In this test the capture area of the gate antenna described in [5.1 Project Notes](#) is checked. For other tags or other configurations the indicated ranges and read areas may differ accordingly.

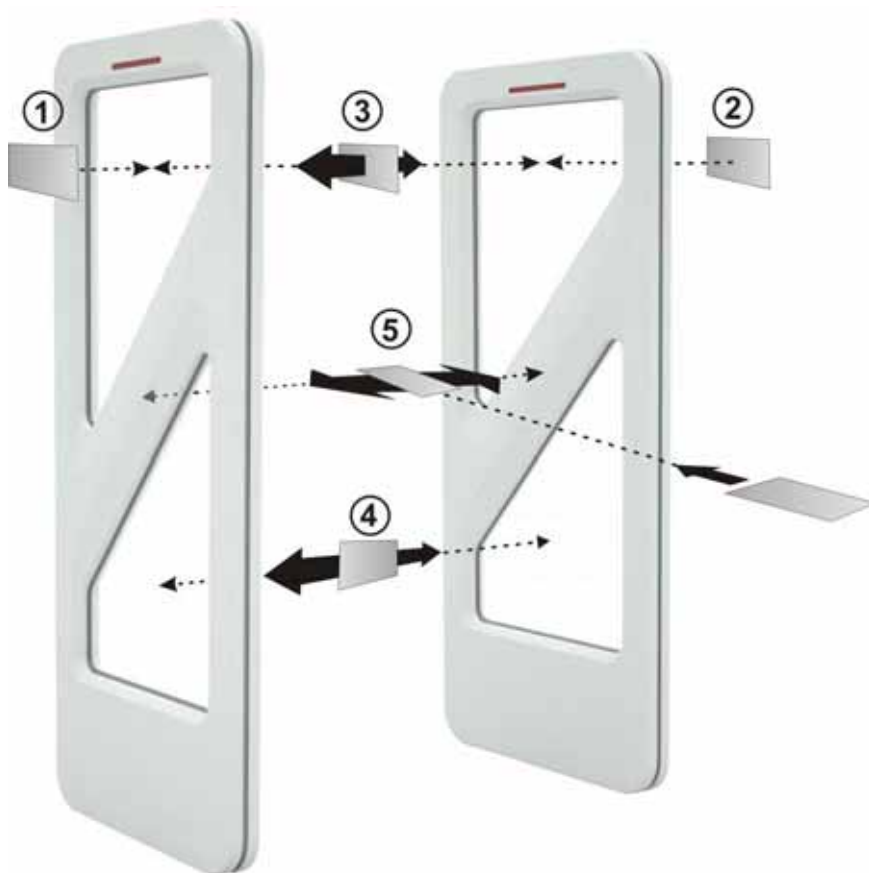


Fig. 20: Performance Test of the gate antenna

The test begins by checking the read range outside the gate (see Fig. points ① and ②), assuming the configuration and locality permit it. Start the ISO Inventory command in the ISOStart program as described in [5.3.2 Reading a Serial Number](#). If the tag is oriented parallel to the antenna towards the outside, a read range of 70 to 75 cm should be achieved.

The three tag orientations are checked inside the gate. This corresponds to the lines and orientations ③④⑤. Now slowly move the tag in the vertical and parallel direction with respect to the antenna along the line ③ from one side to the other. The tag should always be read.

Then repeat this along the line ④ in the vertical tag direction transverse to the antenna and on the line ⑤ in the horizontal tag orientation. Here again the tag should always be read.

The tag should be read within the gate when moving horizontally through the gate in all three read orientations.

If one or more „holes“ are detected, check the noise values on the Reader (see [5.3.1 Checking the Noise Level](#)).

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.
- The antennas are not properly tuned.
- Noise level too high ($V_{max} - V_{min} \geq 20$ mV)
- Transponder too insensitive, detuned or defective
- Reader improperly configured (transmitting power, transponder type, modulation, transponder parameters, etc.).
- A cable is defective or has a poor contact.
- Reader, Multiplexer or antenna defective.

5.4 Setting the Alarm indicators (Alarm sounder and Alarm LED lights)

The solution provided here presumes that the Alarm Sounder is switched through the digital output 2 (X2 Pin OUT2-C,OUT2-E), Alarm LED 1 of antenna No.1 through relay No.1 (X2, Pin REL1-COM) , Alarm LED 2 of antenna No.2 through relay No.2 (X2, Pin REL2-COM) and Alarm LED 3 of antenna No.3 through relay No.3 (X2, Pin REL3-COM) on the ID ISC.LRM2500-B reader. The pulse duration can be set (Digital IO / OUTPUT or RELAY) between 100 ms and 6553.5 s by adjusting the Reader configuration. The volume of the sounder could be adjusted by a potentiometer on the terminal board.



Fig. 21 Volume adjusting

To supply the Alarm LED lights with 24V DC the following jumper on the LRM2500 has to be set. JP7,8 and 9.

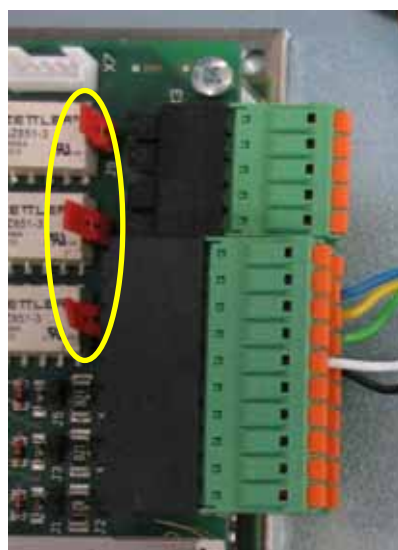





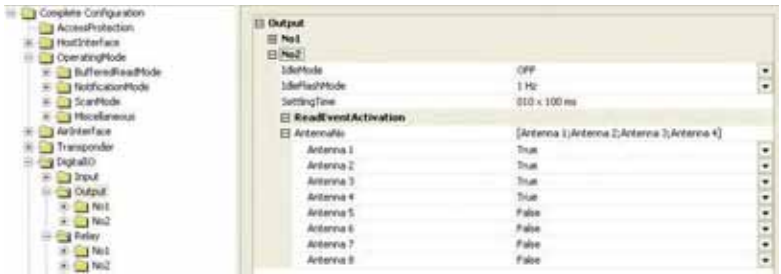


Fig. 22 Jumper settings for relay

5.4.1 Reader Setting for Indicator

The ISOStart software can be used to set the Reader configuration so that output 1 X6-1/-2 or relay X11 opens or closes when a Transponder is read.

Step	Action	Note
1	Start ISOStart Software	 ISOStart.exe
2	Select "Configuration" and click on "Read" to read the complete configuration.	 
3	Operating Mode Select Buffered Read Mode.	
4	Set by clicking on „Apply“.	
5	Digital IO: Output2 / Sounder Output Idle Mode: OFF Idle Flash Mode: 1Hz Setting Time: 10 „Setting Time“ set the duration time of output 2 for the alarm. (10 means 1 second) (e.g. 10 x 100ms) Assign Output 2 to antenna to all antennas of the set up „True“ means: Output 2 will be active if the reader read a valid transponder at the corresponding antenna.	


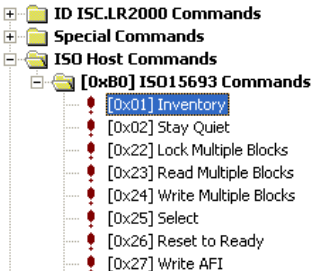
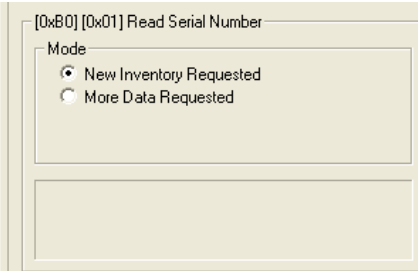

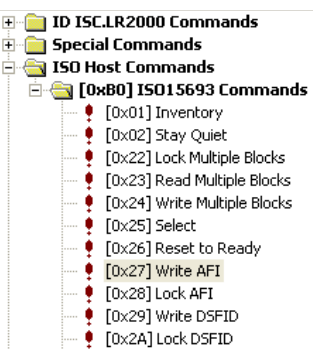
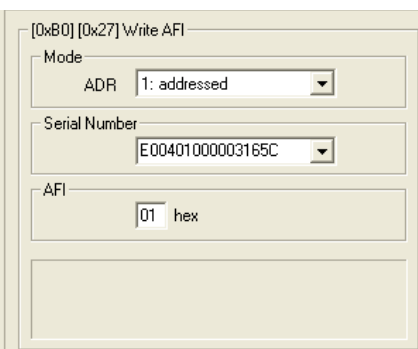

<p>6</p>	<p>Digital IO: Relay 1,2,3 / LED's</p> <p>Output Idle Mode: OFF Idle Flash Mode: 1Hz Setting Time: 10</p> <p>„Setting Time“ set the duration time of relay 1,2 and 3 for alarm. (10 means 1 second) (e.g. 10 x 100ms)</p> <p>Relay 1 to antenna 1+2, Relay 2 to antenna 3+4 and Relay 3 to antenna 5+6</p> <p>„True“ means: Relay 1,2 or 3 will be active if the reader read a valid transponder at the corresponding antenna.</p>	
<p>7</p>	<p>Set by clicking on „Apply“.</p>	
<p>8</p>	<p>Transponder</p> <p>If the alarm should occur by a transponder with valid AFI byte, you have to configure the reader as follow:</p> <p>ISO-15693 – Selection Mask Set “Enable AFI” Set the value for the AFI in field “AFI1” (e.g. 01)</p> <p>Note: Up to four different AFI values could be set.</p>	
<p>9</p>	<p>Set by clicking on „Apply“</p>	
<p>10</p>	<p>Operating Mode Data selector (EAS-Alarm)</p> <p>If the alarm should occur by an EAS, you have to configure the reader as follow: Set “EAS”</p>	
<p>11</p>	<p>Set by clicking on „Apply“</p>	

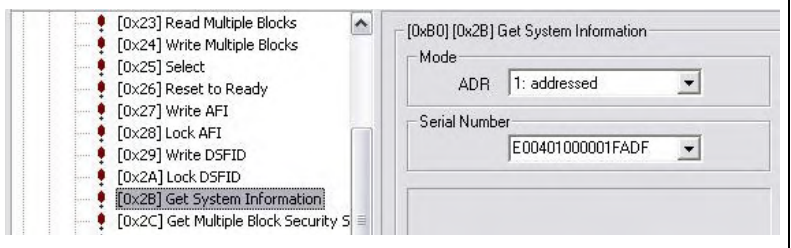
If a Gate People Counter GPC is installed, the Alarm LED lights LED 1 to 3 will be switched by the digital outputs 1 to 3 of the GPC. See page: [6 Installation of the Gate People Counter ID ISC.ANT1700/740-GPC.](#)

5.4.2 Programming a Transponder with the AFI Byte

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

The AFI byte (Application Family Identifier) is useful for this purpose, since it is contained in nearly all Transponder models in the ISO15693 family. To cancel, simply write a different code to the Transponder than for valid Transponders which trigger an alarm.

Step	Action:	Note:
1	Select „Commands“	
2	Place the Transponder in the antenna field (Antenna 1) Select [0x01] Inventory Mode: New Inventory Requested	 
3	Read UID by clicking on „Send“	
4	The serial number, DSFID and Transponder type are displayed in a window. Write down the serial number of the Transponder	<pre data-bbox="678 1245 1453 1451">[0xB0] [0x01] Read Serial Number Statusbyte: 0x00 (OK) 1 Transponder in Protocol 1. Transponder TR-TYPE....: 0x03 (ISO15693 - Philips Semiconductors) DSFID.....: 0x00 SNR.....: E00401000003165C</pre>
5	Select „[0x27] Write AFI“ ADR: 1: addressed Serial Number: Select TransponderUID AFI: Desired AFI Number (not equal to 00)	 
6	Write AFI byte on to the transponder by click on „Send“	

7	<p>To verify, read AFI byte by using the command</p> <p>[0x2B] Get System Information</p>	
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5.5 Activating the Automatic Mode




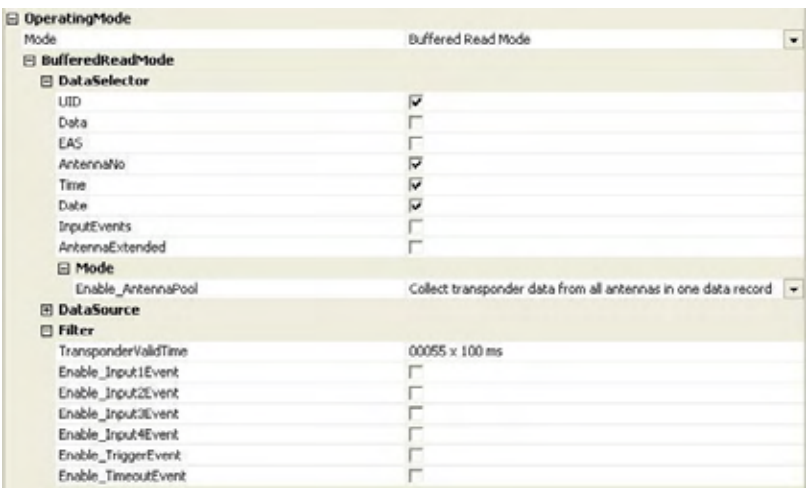

The gate must be used in one of the Automatic Modes (Buffered Read, Notification or Scan Mode) to get a maximum performance.

Which Mode is useful in your application, has to be defined in advance.

Here we describe the activation of the Buffered Read Mode.

Here the tags are read at maximum speed and the information is stored in the Reader's ring buffer. This data sets can be read by the host.

To activate „Buffered Read Mode“ proceed as follows:

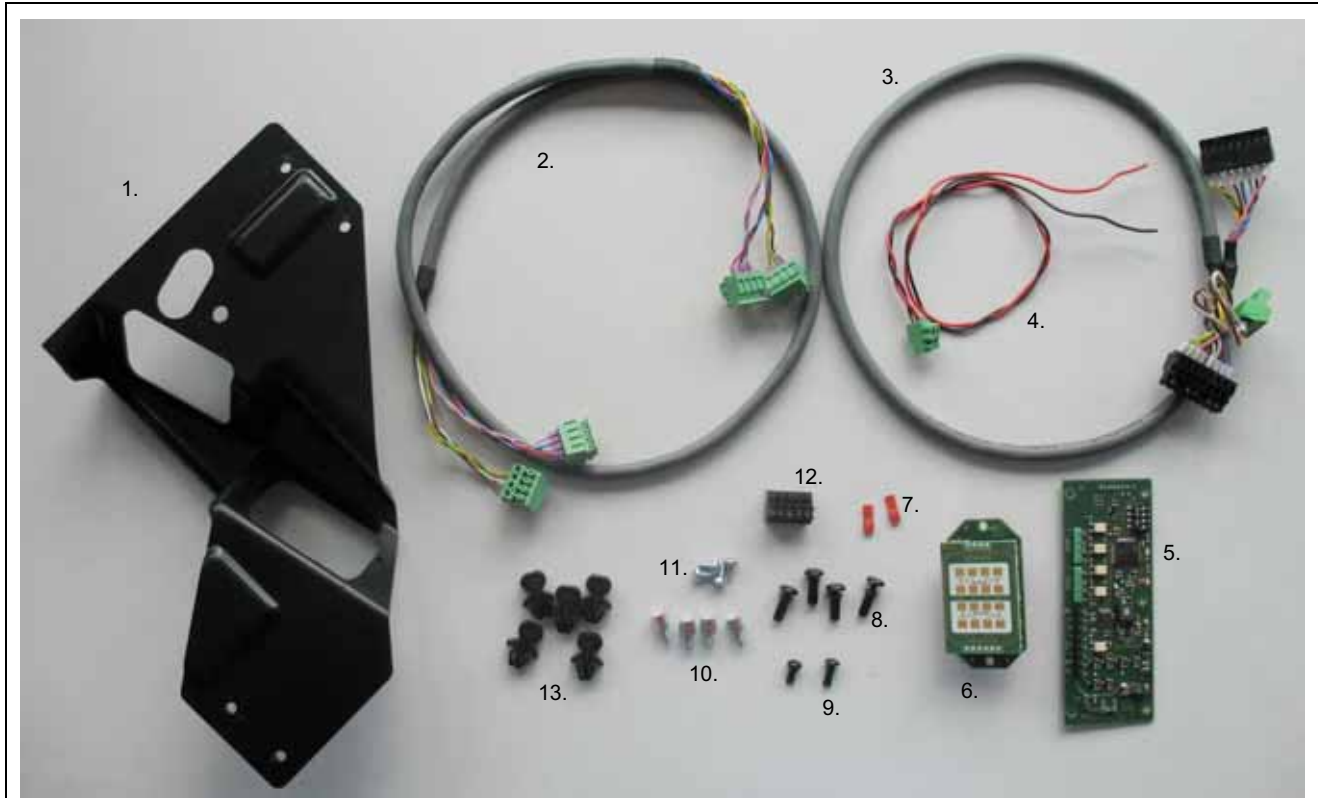
Step	Action	Note
1	Select „Configuration“	
2	<p>Operation Mode: „Mode“ - Buffered Read Mode „Data Selector“ -UID -Antenna No -Time -Date</p> <p>„Filter“ Set Transponder Valid Time. (e.g. 55 x 100ms)</p>	
3	Set clicking on „Apply“	

Note:

The configuration of the Notification or Scan Mode are similar (See System Manual of the reader)
 To test the function of the Gate in the Buffered Read Mode, the BRM Window of ISOStart or the BRMDemo program can be used. See Siehe System Manual reader LR2000

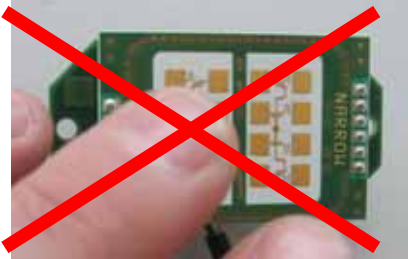

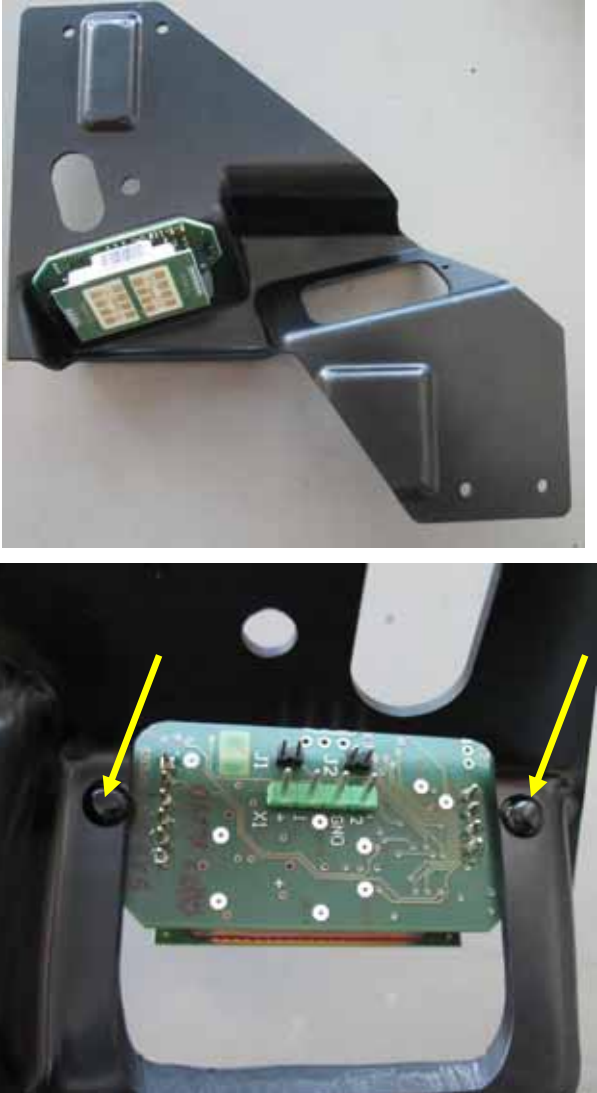
6 Installation of the Gate People Counter ID ISC.ANT1700/740-GPC



6.1 Installation and Connections

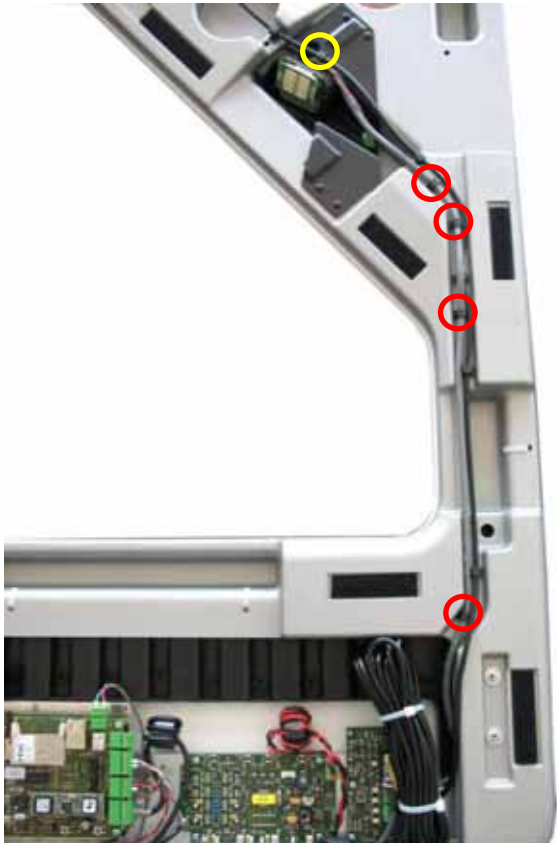





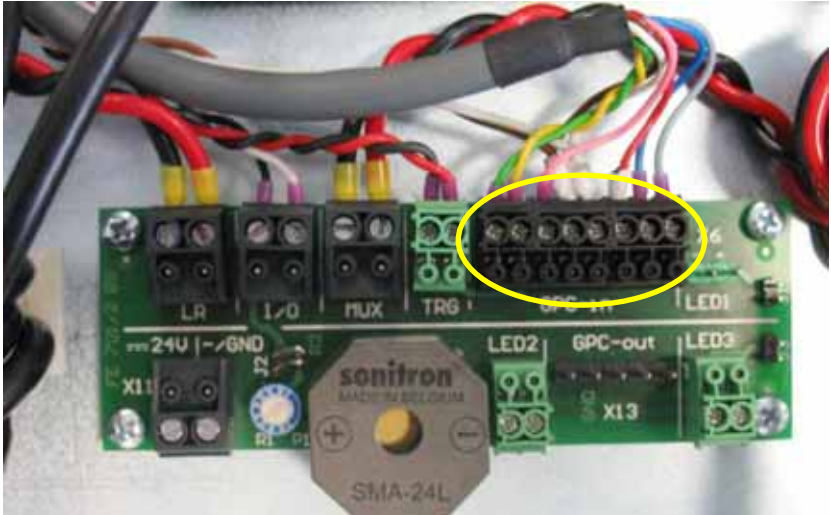
Content of the
ID ISC.ANT1700/740-GPC

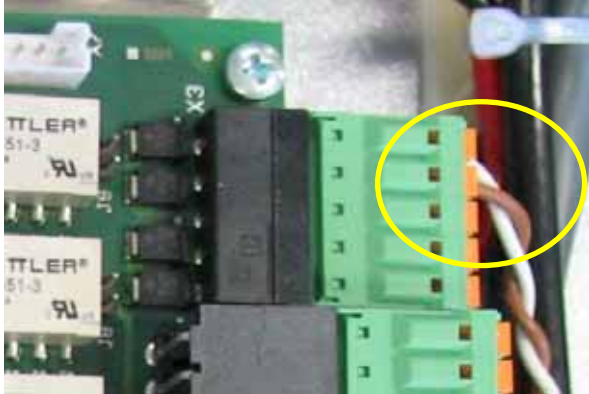


1. 1 piece mounting bracket
2. 1 piece Radar connection cable
3. 1 piece connection cable People Counter –Terminal board.
4. 1 piece Triggercable
5. 1 piece People Counter Board
6. 1 piece Radar module
7. 5 piece jumper
8. 4 piece Split rivet 4,0mm
9. 2 piece split rivet 3,0mm
10. 4 piece hexagon spacer sleeve M3x6
11. 4 piece screw M3x6
12. 1 piece 5 pin connection plug for 2. GPC
13. 5 piece cable-clip
14. 1 piece FCC / IC label

Step	Action	Note
1.	<p>Attention !!</p> <p>Note: Do not touch the antenna surface of the Radar module to avoid damaging the electronic components and soiling.</p>	
2.	<p>Set sensitivity of Radar sensor by setting jumper J1 and J2.</p> <p><u>Sensitivity:</u> JP1+2 open : Low JP1 closed: Middle JP2 closed: High JP1+2 closed: Very high Recommended Sensitivity: High</p>	
3.	<p>Install Radar module with split rivet 3,0 mm at the mounting bracket.</p>	

<p>4. Connect one plug of radar connection cable with X1 of Radar module.</p> <p>Here: yellow/white/green/brown</p> <p>The other plug will be used for the second radar sensor, in case of a gate with two aisle.</p>	
<p>5. Install the mounting bracket in the antenna with 4 pieces. split rivet 4,0 mm</p>	

<p>6.</p>	<p>Fix the cable with the cable clips beside the coax cable.</p>	 A close-up photograph of the interior of a device chassis. A black coaxial cable is being routed along the side. A yellow circle highlights a cable clip being applied to the cable. Three other red circles highlight additional clips further down the chassis. Below the chassis, a green printed circuit board (PCB) with various electronic components is visible.
<p>7.</p>	<p>Install People Counter Board with the hexagon spacers and the screws into antenna foot beside the multiplexer.</p>	 Two photographs showing the installation of a green PCB (People Counter Board) into a metal chassis. The top photo shows three red circles highlighting the locations where hexagonal spacers and screws will be used to secure the board. The bottom photo shows the board partially installed, with two red circles highlighting the screws being inserted through the board into the chassis.

<p>8. Plug Radar connection cable onto X11 Sen 1</p> <p>Here: yellow/white/green/brown</p> <p>The other plug should be connected to X12 Sen 2, but has no function at the use of only one radar sensor.</p> <p>Plug connection cable of people counter onto X1</p>	 A photograph showing a green printed circuit board (PCB) with various electronic components. A yellow circle highlights a specific connector area on the right side of the board, where several colored wires are plugged in. The board is mounted in a metal enclosure.
<p>9. Remove connector form X5 GPC-in and the three wires from X2 of the reader ID ISC.LRM2500.</p>	 A close-up photograph of a green PCB. A yellow circle highlights a connector labeled 'GPC-in' on the right side. Other labels on the board include 'LR', 'I/O', 'MUX', 'TRG', 'LED1', 'LED2', 'GPC-out', 'LED3', 'X11', 'X13', and 'sonitron MADE IN BELGIUM'.
<p>10. Plug connection cable of People Counter onto X5/GPC-IN of Terminal Board..</p>	 A close-up photograph of a green PCB, similar to the one in the previous image. A yellow circle highlights the 'GPC-in' connector. A grey SMA-24L antenna is visible in the foreground. The board is labeled with 'sonitron MADE IN BELGIUM' and 'SMA-24L'.

<p>11.</p>	<p>Connect RS485 cable to X3 of reader.</p>	
<p>12.</p>	<p>Plug 5 pin connection plug onto X13/GPC-OUT of Terminal Board.</p>	
<p>13.</p>	<p>Installing the People Counter at antennas Type B The installation must be done in the same way like at the antenna Type A. Only the RS485 cable will not be connected. This cable has to be tied together to small loops with the cable tie..</p>	
<p>14.</p>	<p>After the installation you have to stick the adhesive label of the GPC below of the type plate of the antenna</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>contains TX-Module with IC: 6633A-GPC and FCC ID: UXS-IPS154US</p> </div>

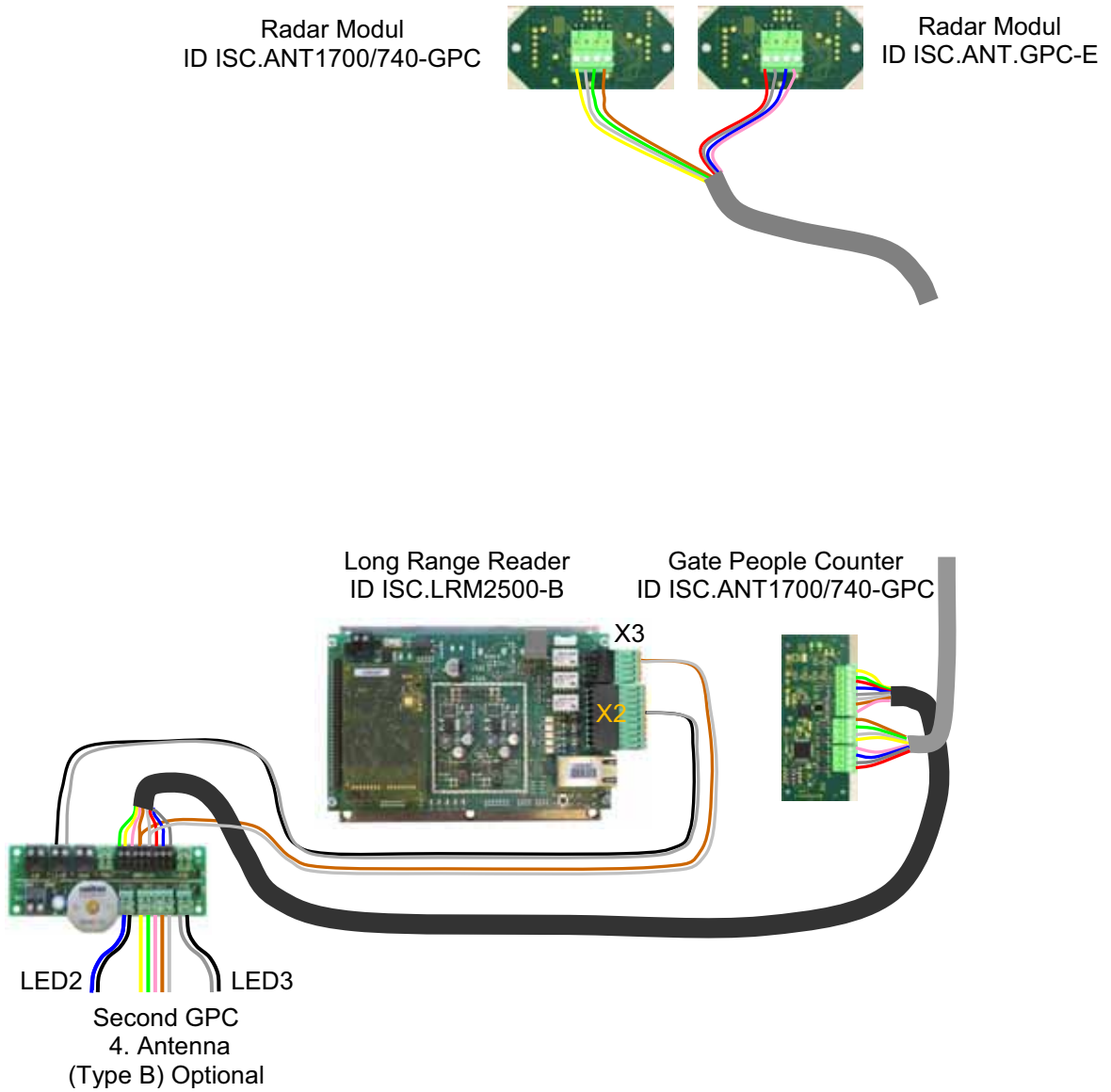
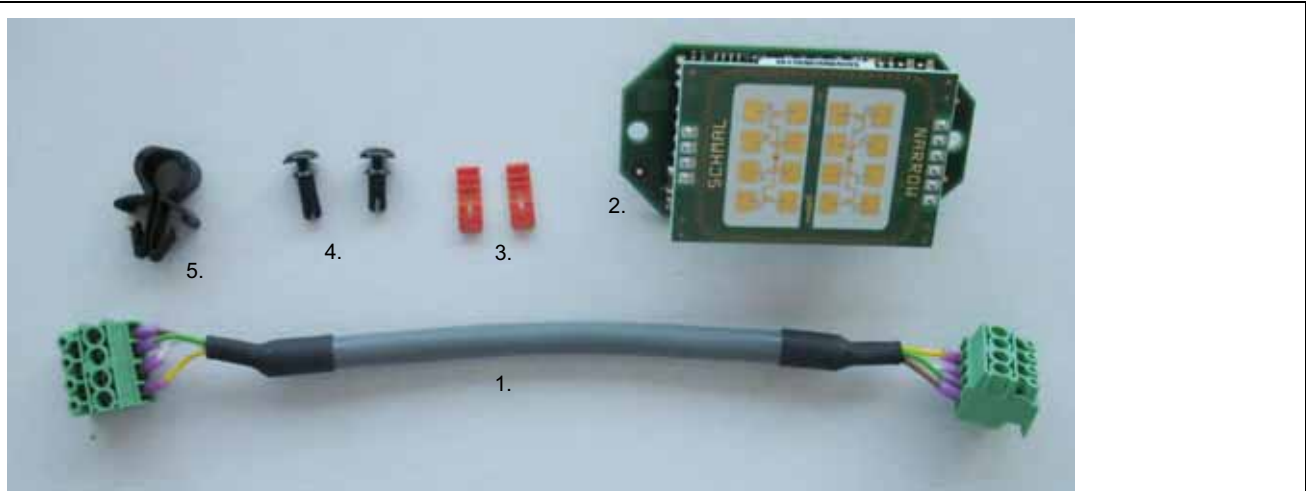
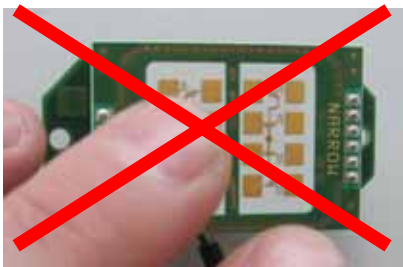



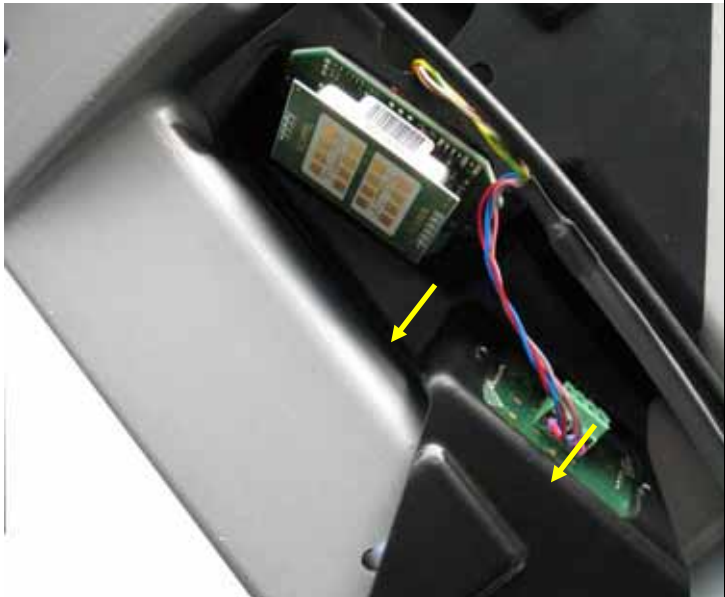


Fig. 23: Connections ID ISC.ANT1700/740-GPC

6.2 Installation ID ISC.ANT.GPC-E



<p>Content of the ID ISC.ANT.GPC-E</p>	<ol style="list-style-type: none"> 1. 1 piece Radar connection cable 2. 1 piece Radar module 3. 2 piece Jumper 4. 2 piece spilt rivet 3,0mm 5. 1 piece cable-clip
--	--

Step	Action	Note
<p>1.</p>	<p>Attention !!</p> <p>Note: Do not touch the antenna surface of the Radar module to avoid damaging the electronic components and soiling.</p>	
<p>2.</p>	<p>Set sensitivity of Radar sensor by setting jumper J1 and J2.</p> <p><u>Sensitivity:</u> JP1+2 open: Low JP1 closed: Middle JP2 closed: High JP1+2 closed: Very high Recommended Sensitivity: High</p>	

<p>3.</p>	<p>Install Radar module with split rivet 3,0mm at the back of the mounting bracket</p>	
<p>4.</p>	<p>Connect second plug of radar connection cable with X1 of Radar module. Here: red/Grey/blue/pink</p>	
<p>5.</p>	<p>Plug second plug of Radar connection cable onto X12 Sen 2</p>	

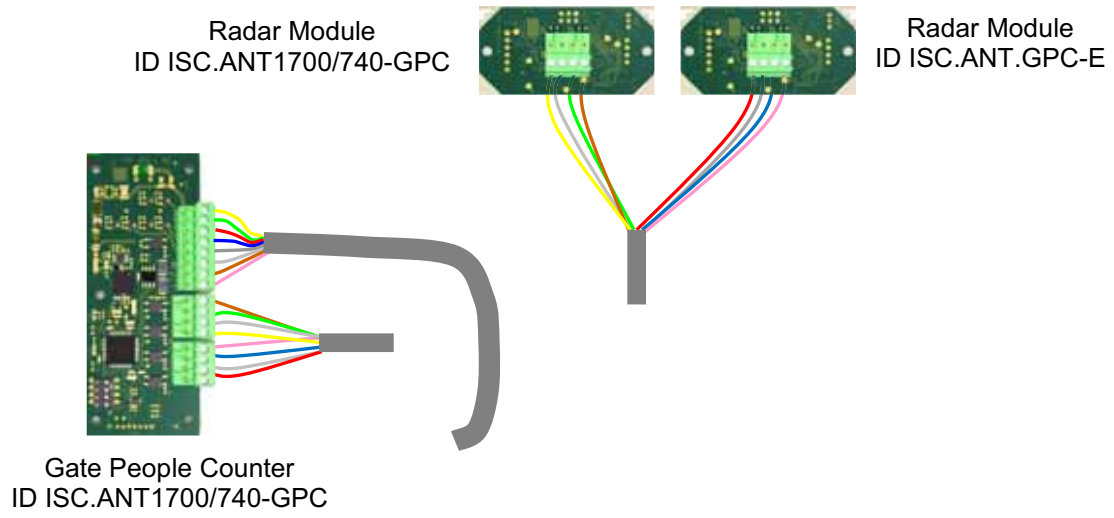


Fig. 24: Connections GPC-E 2.Radarmodule

6.3 Configuration and Test

To activate the People Counters the following settings have to be done.

Set additionally the Jumpers JP10 and J11 of Reader ID ISC.LRM2500-B to configure the RS485 interface. (see also manual M011111-xde-ID-B , page 54 and 55). The Termination has to be activated via software in the reader configuration.

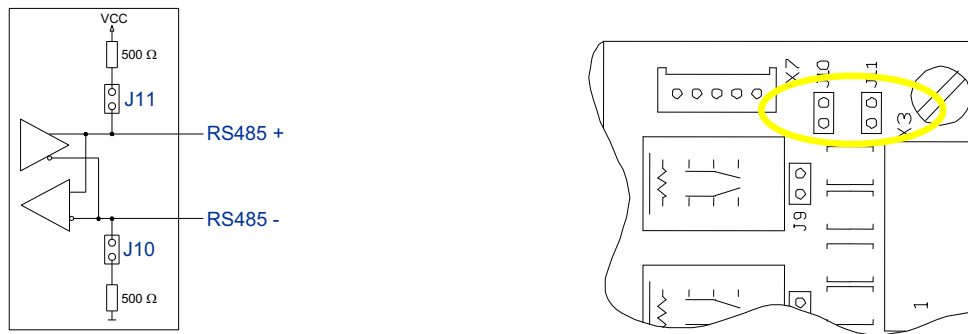


Fig. 25: Jumper settings RS485 Interface

By using several People Counters at gates with 3 to 6 aisles, you have to set the corresponding bus address. The bus address could be set by the Dip-Switch at the People Counter Board. See Fig. 26. At one reader, up to 3 People Counter (bus address 1-3) could be operated.

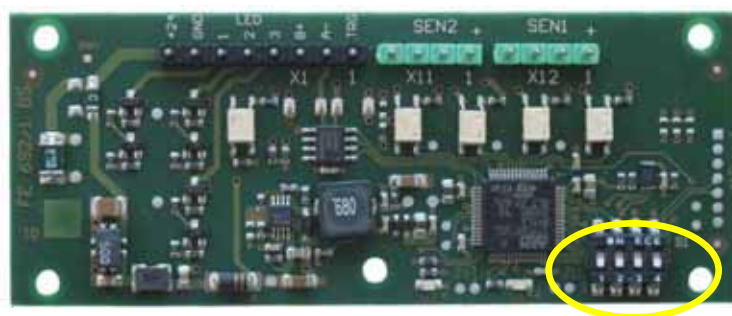


Fig. 26: Position of Dip Switch at People Counter Board

bus address	DIP-Switch S1			
	1	2	3	4
1	OFF/ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF
4	Reserved			

Table 8 Setting the bus address of People Counter

6.3.1 Connecting several People Counter

If you have to use several People Counters (max. up to 3) you could connect them parallel at the Terminal Board. For the connection you must use 5 pin shielded, twisted-pair cable. Example: LiYCY (TP) 3x2x0,25

The connection X13/GPC-Out of the first Terminal Board has to be connected to X13 GPC-out of the second and third Terminal Board of the antenna /People Counter. More details to the terminal assignment of X13 you will find in [9. Annex A](#)

e.g.

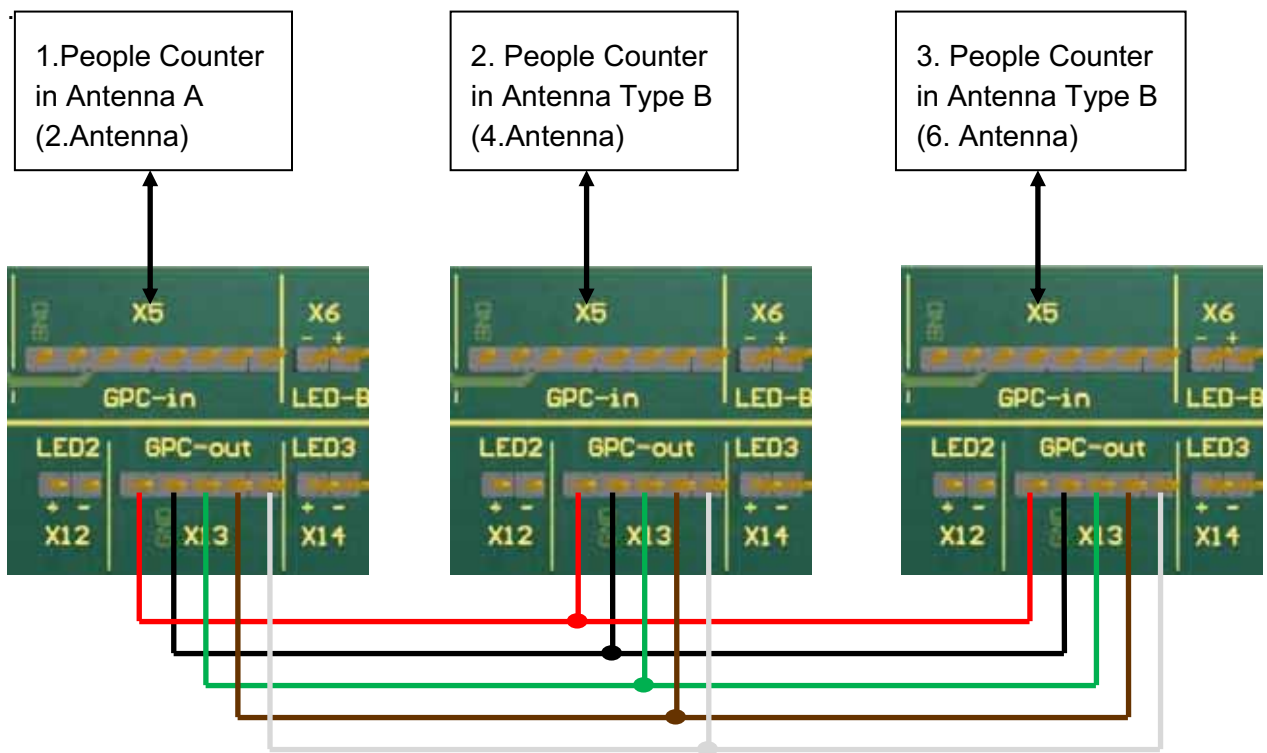





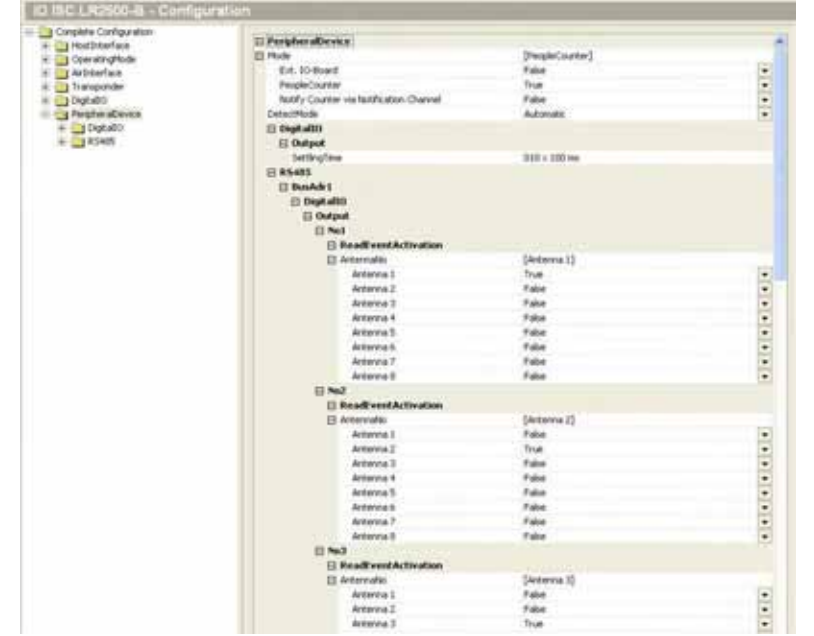








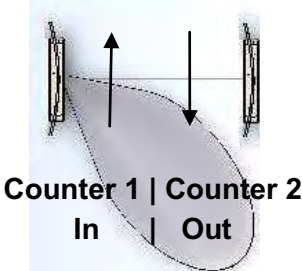
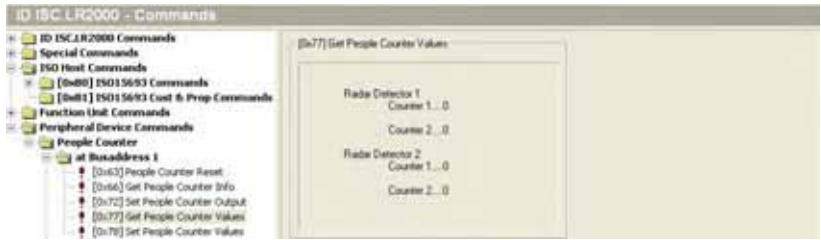

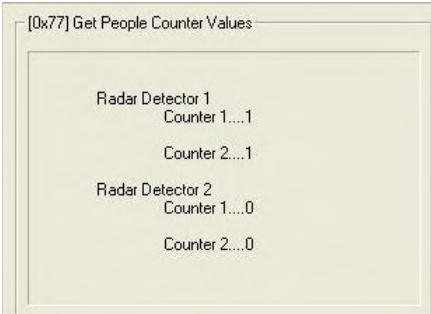


Fig. 27 Connecting the People Counters

6.3.2 Configuration and Test in ISO-Host or Buffered Read

Step	Action	Note
1	Select „Configuration“	
2	<p>Host Interface Set RS 485 to “True” „Enable Termination Resistors“</p> <p>The RS232/485 Settings should be set to: Busaddress=0, Baudrate=38400 baud, Parity = even , Number of Databits = 8, Number of Stopbits = 1</p>	
3	Confirm with „Apply“	
4	<p>Peripheral Devices</p> <p>Set People Counter to „True“ and Detection Mode for Ext. I/O-Boards to “Search up to Busaddress 1”</p>	
5	Confirm with „Apply“	
6	<p>Peripheral Device Digital IO:</p> <p>Setting Time: „Setting Time“ set the duration time for the alarm. (10 means 1 second) (e.g. 10 x 100ms)</p> <p>Assign Output 1 to antenna 1+2 Output 2 to antenna 3+4 Output 3 to antenna 5+6</p> <p>„True“ means: Output 1,2 or 3 will be active if the reader read a valid transponder on the corresponding antenna</p>	

7	Set by clicking on „Apply“.	
Test: People Counter		
8	Select „Commands“	
9	Select Command - „Get Reader Info“ - Peripheral Devices	
10	Confirm with „Send“ Number of Devices should be 1	
11	Select Command „Set People Counter Values“	
12	Confirm with „Send“	
13	Select Command „Get People Counter Values“	
14	Confirm with „Send“ All counter values should be 0	
15	Walk through the gate from both directions.	



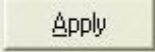
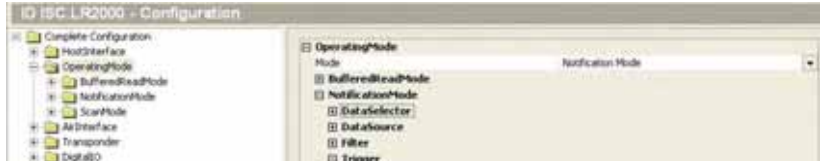
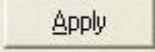
<p>16</p>	<p>Select Command „Get People Counter Values“</p>	
<p>17</p>	<p>Confirm with „Send“</p>	
<p>18</p>	<p>Counter values will be displayed.</p>	

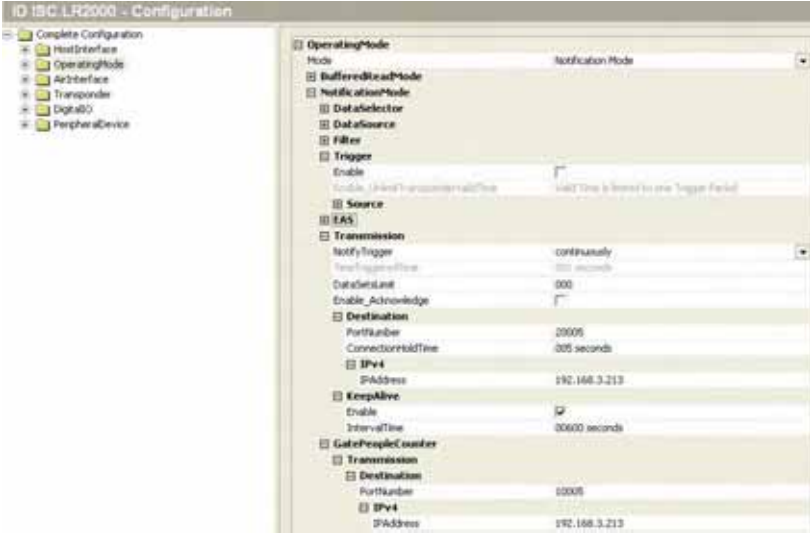


In ISO-Host or Buffered Read the People Counter has to be polled by the Host Application to get the data.

In Notification Mode the Reader sends the People Counter Data automatically to the Host.

6.3.3 Configuration and Test in Notification Mode

The following configuration has to be done:

Step	Action	Note
<p>1</p>	<p>Select „Configuration“</p>	
<p>2</p>	<p>Peripheral Devices/CFG8 Set People Counter and Notify Counter to „True“</p>	
<p>3</p>	<p>Confirm with „Apply“</p>	
<p>4</p>	<p>Operating Mode Select -Notification Mode</p>	
<p>5</p>	<p>Confirm with „Apply“</p>	

<p>6</p>	<p>Set IP Address and Port for Notification Mode</p> <p>IP Address of Host e.g. here : 192.168.3.213</p> <p>Port:20005</p> <p>Set IP Address and Port for People Counter</p> <p>IP Address of Host e.g. here: 192.168.3.213</p> <p>Port:10005</p>	 <p>The screenshot shows the 'ID ISC LR2000 - Configuration' window. The 'Operating Mode' is set to 'Notification Mode'. Under 'Source', 'IP Address' is 192.168.3.213 and 'Port' is 20005. Under 'Destination', 'IP Address' is 192.168.3.213 and 'Port' is 10005.</p>
<p>7</p>	<p>Confirm with „Apply“</p>	 <p>A single button labeled 'Apply'.</p>
<p>9</p>	<p>A Test could be done with the People Counter Sample.</p>	 <p>The screenshot shows the 'People Counter Sample' software interface. It features two detector panels, 'Detector 1 (SEN1)' and 'Detector 2 (SEN2)'. Each panel has four counters: 'Coming in (Counter 1)', 'Going out (Counter 2)', 'Difference', and 'Last Tags'. All counters show a value of 0. At the bottom, there are buttons for 'TCP-Settings', 'Reset Counter', and 'Exit'.</p>

7 Configuring the Reader in accordance with national RF regulations

Configuration of the RFID Readers and the maximum transmitting power of the antennas are affected mainly by the country-specific RF regulations. For the entire EU the limits are set forth in the R&TTE Directive and EN 300 330.

The ID ISC.ANT1700/740 antenna with the ID ISC.LRM2500 Reader, when used as intended, complies with the basic requirements of Article 3 and the other relevant clauses of the R&TTE Directive 1999/5/EG of March 1999. This means that operation in the 27 EU countries and the EFTA countries (EU countries plus Switzerland, Norway and Iceland) is possible with a maximum field strength of 60 dB μ A/m at 10 m distance.

RF approval (at a maximum field strength of 84 dB μ V/m at 30 m) for the ID ISC.ANT1700/740 antenna with ID ISC.LRM2500 Reader has been granted in accordance with FCC Part 15 for the USA and the RSS-210 for Canada

RF approval in accordance with EN 300 330 is still possible in all 46 CEPT countries.

The CEPT countries are:

Albania (ALB), Andorra (AND), Austria (AUT), Azerbaijan (AZE), Belarus (BLR), Belgium (BEL), Bulgaria (BUL), Bosnia and Herzegovina (BIH), Croatia (HRV), Cyprus (CYP), Czech Republic (CZE), Denmark (DNK), Estonia (EST), Finland (FIN), France (F), Germany (D), Greece (GRC), Hungary (HNG), Iceland (ISL), Ireland (IRL), Italy (I), Latvia (LVA), Liechtenstein (LIE), Lithuania (LTU), Luxembourg (LUX), Malta (MLT), Former Yugoslav Republic of Macedonia (MKD), Moldova (MDA), Monaco (MCO), Netherlands (HOL), Norway (NOR), Poland (POL), Portugal (POR), Romania (ROU), Russian Federation (RUS), San Marino (SMR), Slovak Republic (SVK), Slovenia (SVN), Spain (E), Sweden (S), Switzerland (SUI), Turkey (TUR), Ukraine (UKR), United Kingdom (G), Vatican City (CVA) and Yugoslavia.

The following restrictions are in effect (as of: October 2009):

1. Outside the EFTA countries RF approval must in all cases be applied for. The existing measuring protocols in accordance with EN 300 330 are generally sufficient.

When placing the antennas in service, the systems integrator must ensure that the prescribed mounting instructions are followed, the necessary Reader settings are made and permissible limits according to the national regulations are not exceeded.

The Reader needs to be configured as follows depending on the installation location:

Parameter	USA / Canada / Europe
Air Interface	
RF-Power:	maximum 4 W
RF Modulation:	15%
Transponder Parameters	
RF Modulation / ISO-MODE / MOD	10%
RF Data coding ISO-MODE:	Normal (1/256)
Timeslots ISO-MODE / NO-TS	1 or 16 Timeslots
ISO Option – BREAK:	Complete Timeslot length at „NO TAG“

8 Technical Data




8.1 Antenna ID ISC.ANT1700/740-SLA and -SLB

Mechanical Data

- **Housing** UV stabilized ABS
- **Dimensions (W x H x D)**
 - Antenna 741 mm x 1700 mm x 76 mm ± 3 mm
 - Packing 870 mm x 1800 mm x 180 mm ± 10 mm
- **Weight**
 - ID ISC.ANT1700/740-SLA Clear Approx. 19,5 kg / 24,5 kg with packing
 - ID ISC.ANT1700/740-SLB Clear Approx. 18,0 kg / 23 kg with packing
- **Enclosure rating** IP 43
- **Color**
 - Antenna frame: signal white RAL 9003
 - Antenna base: silver grey RAL 9022
- **Mounting**
 - No. of attaching points 2
 - Recommended anchors Ø 10 mm
 - Recommended minimum load capacity of the floor fastener 5000 N / anchor
- **Maximum horizontal load on the top edge of the antenna** 250 N*

Electrical Data

- **Supply Voltage** 24 V $\pm 15\%$
Noise Ripple : max. 150 mV
- **Power Consumption** max. 32 VA
- **Operating Frequency** 13,56 MHz
- **Maximum transmitting power per antenna** 4 W
- **Permissible overall transmitting power per antenna gate**
 - EU-territory (per EN 300 330) 4.0 W
 - USA (per. FCC Part 15) 4.0 W
 - Canada (per RSS 210) 4.0 W

• Outputs	
– 1 Optocoupler	24 V  / 30 mA
– 1 Optocoupler	Reader Synchronization
– 3 Relay (3 x NO)	24 V  / 1 A (LED Alarm Antenna 1-3)
• Inputs	
– 1 Optocoupler	Max. 24 V  / 20 mA
– 1 Optocoupler	Reader Synchronisation
• Interfaces	RS232 / RS485 USB Ethernet (TCP/IP)
• Protocol Modes	FEIG ISO HOST BRM (Data Filtering and Data Buffering) Scan Mode (RS 232/485) Notification Mode (TCP/IP)
• Supported Transponders	ISO 15693, ISO 18000-3-A, (EM HF ISO Chips, Fujitsu HF ISO Chips, KSW Sensor Chips, Infineon my-d, NXP I-Code , STM ISO Chips, TI Tag-it) NXP I-Code 1
• Ranges / pass-through width in gate with multiplexer	
– One tag orientation	approx. 150 / 160 cm**
– All tag orientations	approx. 120 / 130 cm***
• Antenna connection	1 x SMA plug (50 Ω)
• Antenna connector cable	
- Type SLB	RG58, 50 Ω, approx. 8,55 m long

8.2 People Counter ID ISC.ANT1700/740-GPC and ID ISC.ANT.GPC-E

Mechanical Data

• Housing	Printed Boards
• Board Dimensions (B x H x T)	
– People Counter Board	100 mm x 40 mm x 16 mm ± 1 mm
– Radar Sensor Board	60 mm x 30mm x 25 mm ± 1 mm
• Weight	
– ID ISC.ANT1700/740-GPC	ca. 200 g / 290 g (0.64 lb) with packing
– ID ISC.ANT.GPC-E	ca. 50 g / 100 g (0.22 lb) with packing
• Mounting	
– No. of attaching points	People Counter: 4 / Radar Sensor: 2

Electrical Data

• Supply Voltage	• 24 V \pm 15 % Noise Ripple : max. 150 mV
• Power Consumption	• max. 2 VA
• Operating Frequency	• 24,125 GHz
• RF-Output power	• 16 dBm (e.i.r.p.)
• Temperature range	
– Operation	–25 °C bis +55 °C
– Storage	–25 °C bis +85 °C

8.3 Approval

As per Section 7

8.3.1 Europe (CE)

8.3.1.1 Antenna ID ISC.ANT1700/7400

This RF equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC dated March 99.



Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489: Class 1

The technical data of the ID ISC.LRM2500 Reader built into the ID ISC.ANT1700/740-SLA antenna can be found in the Installation Manual which is included with the device.

8.3.1.2 People Counter ID ISC.ANT1700/740-GPC


This RF equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC dated March 99.



Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489: Class 2

8.3.2 USA (FCC) and Canada (IC)

8.3.2.1 Antenna ID ISC.ANT1700/740

Product name:	ID ISC.ANT1700/740
Antenna name:	ID ISC.ANT1700/740 Type SLA and SLB
Reader name:	ID ISC.LRM2500-B
FCC ID: IC:	PJMLRM2500 6633A-LRM2500
<p>Notice for USA and Canada</p> 	<p>This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.</p> <p>Operation is subject to the following two conditions.</p> <p>(1) this device may not cause harmful interference, and</p> <p>(2) this device must accept any interference received, including interference that may cause undesired operation.</p> <p>Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device.</p> <p>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.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :</p> <p>(1) l'appareil ne doit pas produire de brouillage, et</p> <p>(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>

Further information and technical data of the ID ISC.LRM2500-B Reader built into the ID ISC.ANT1700/740 antenna can be found in the Installation Manual which is included with the device.

8.3.2.2 People Counter ID ISC.ANT1700/740-GPC

<p style="text-align: center;">FCC ID: IC:</p>	<p style="text-align: center;">UXS-IPS154US 6633A-GPC</p>
<p>Notice for Canada</p>	<p>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. Usually this is followed by the following RSS caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :</p> <p>(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>

8.3.3 USA and Canada (UL)

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The following picture indicates the label position:



9 Annex A

9.1 Terminal assignment "Terminal Board"

Terminal	Acronym	Description
X1 / LR		24V DC Reader
X1 / Pin 1		+24 V DC Reader
X1 / Pin 2	GND	GND Reader
X2 / I/O		24V DC Input/Output
X2 / Pin 1		+24 V DC Input/Output
X2 / Pin 2	GND	GND Input/Output
X3 / MUX		24V DC Multiplexer
X3 / Pin 1		+24 V DC Multiplexer
X3 / Pin 2	GND	GND Multiplexer
X4 / TRG		Trigger People Counter 1
X4 / Pin 1	+	TRG Trigger People Counter
X4 / Pin 2	-	GND Trigger People Counter
X5 / GPC-in		Connection Cable to People Counter
X5 / Pin 1		+24V DC LED2
X5 / Pin 2		+24V DC LED3
X5 / Pin 3		n.c.
X5 / Pin 4		RS485-A
X5 / Pin 5		RS485-B
X5 / Pin 6		TRG Trigger People Counter
X5 / Pin 7		+24 V DC People Counter
X5 / Pin 8	GND	GND People Counter
X6 / LEDB		Connection LED / Alarm light B-Antenna
X14 / Pin 1	+	+24V DC LEDB
X14 / Pin 2	-	GND LEDB
X11		24V DC Power Supply
X11 / Pin 1	24V	Power Supply +24 V DC
X11 / Pin 2	- / GND	Ground – Power Supply

X12 / LED2		Connection LED / Alarm light 2. Antenna
X12 / Pin 1	+	+ 24 V DC LED2
X12 / Pin 2	-	GND LED2
X13 / GPC-out		Connection Cable to 2. People Counter
X13 / Pin 1	+	+24 V DC People Counter 2
X13 / Pin 2	GND	GND People Counter 2
X13 / Pin 3		TRG Trigger People Counter
X13 / Pin 4		RS485-A
X13 / Pin 5		RS485-B
X14 / LED3		Connection LED / Alarm light 3. Antenna
X14 / Pin 1	+	+24V DC LED3
X14 / Pin 2	-	GND LED3

Table 9: Pin-Configuration X11-X14 Terminal Board

9.2 Internal wiring

Terminal	Acronym	Description
X1 / LR		24V DC Reader
X1 / Pin 1		X13 +24 V DC Reader (red)
X1 / Pin 2	GND	X13 GND Reader (black)
X2 / I/O		24V DC Input/Output
X2 / Pin 1		Reader LR2500 X2 Pin Out2-C (white)
X2 / Pin 2	GND	Reader LR2500 X2 Pin Out2-E (black)
X3 / MUX		24V DC Multiplexer
X3 / Pin 1		X1 +24 V DC Multiplexer (red)
X3 / Pin 2	GND	X1 GND Multiplexer (black)
X5 / I/O		Relay Output
X5 / Pin 1		Reader LR2500 X2 Pin REL3-COM (blue)
X5 / Pin 2		Reader LR2500 X2 Pin REL2-COM (yellow)
X5 / Pin 3		Reader LR2500 X2 Pin REL1-COM (green)
X6 / LED 1		LED
X6 / Pin 1		LED X1 + (green)
X6 / Pin 2	GND	LED X1 - (yellow)

ID ISC.ANT1800/700 Type A and B



English

Note

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FEIG ELECTRONIC GmbH
Lange Strasse 4
D-35781 Weilburg
Tel.: +49 6471 3109-0
<http://www.feig.de>

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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.



CAUTION! The Antenna-Tuner and the Antenna conductor carry voltages up to 1000V.



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 LED light. There is a danger of injury of the eyes!**

2. Maintenance

The antenna ID ISC.ANT1800/700 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 acrylic plate.

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 of the ID ISC.ANT1800/700 Antennas

The ID ISC.ANT1800/700-A antenna is a version with integrated Dynamic Antenna Tuning Board ID ISC.DAT , Long Range Reader ID ISC.LRM2500-B, 4-times Multiplexer Module ID ISC.ANT.MUX M4, signal light and buzzer.

Additionally, one People Counter and one radar Detector are already integrated in the antenna ID ISC.ANT1800/700-A.

The ID ISC.ANT1800/700-B antenna is a version with integrated Dynamic Antenna Tuning Board ID ISC.DAT and signal light mounted, only.

Up to

- two antennas with reader and multiplexer as a single gate,
- three to four antennas with reader and multiplexer as a double gate or triple gate
- up to 8 antennas as multiple gate with up to 7 aisle at the use of the 8-times Multiplexer ID ISC.ANT-MUX M8.

can be operated.

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 ID ISC.ANT1800/700-A/B is a „figure-of-eight“ antenna with tuner and has been optimized as transmitting and receiving antennas for the ID ISC.LRM2500 Reader. It is however also possible to operate them with other readers at a transmission frequency of 13.56 MHz and an output impedance of 50 Ω . The read ranges indicated in this document and the tuning procedures may vary.

The antennas comprise the electrical antenna conductor, the housing, the ID ISC.DAT *Dynamic Antenna Tuner* and the connection cables. The antennas are tuned to the factory default to an impedance of 50 Ω in a magnetically neutral environment at a distance of 95 cm. When installing in different ambient conditions the antenna can be retuned using the “DATuningTool“ PC software. After tuning, the antennas will retain their settings as long as the ambient conditions remain unchanged.

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

3.1 Performance Features of the People Counter ID ISC.ANT1800/700-GPC

The product ID ISC.ANT1800/700-GPC, short form “Gate People Counter” or “GPC”, are made for mounting in the gate antennas ID ISC.ANT1800/700.

A Gate People Counter consist of a People Counter board (PC) and one Radar Detector! The product ID ISC.ANT.GPC-E Extension Radar Detector is used to extend the People Counter to a second gate aisles.

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

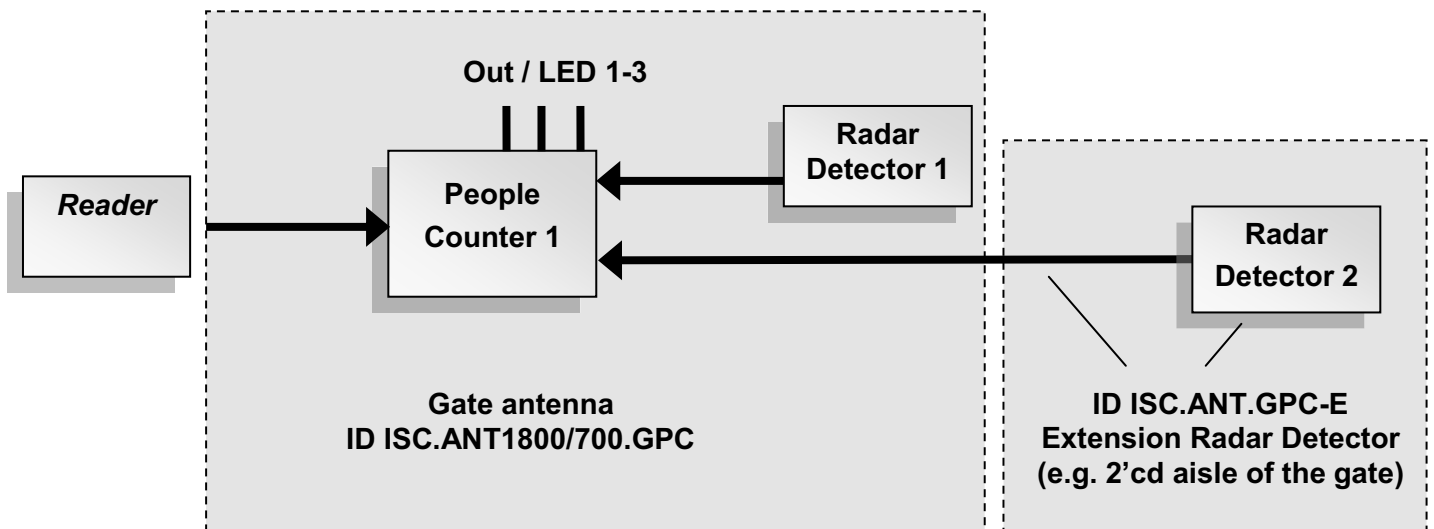


Fig. 1: Gate People Counter Structure (2-3 antennas, 1-2 gate aisles)

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.

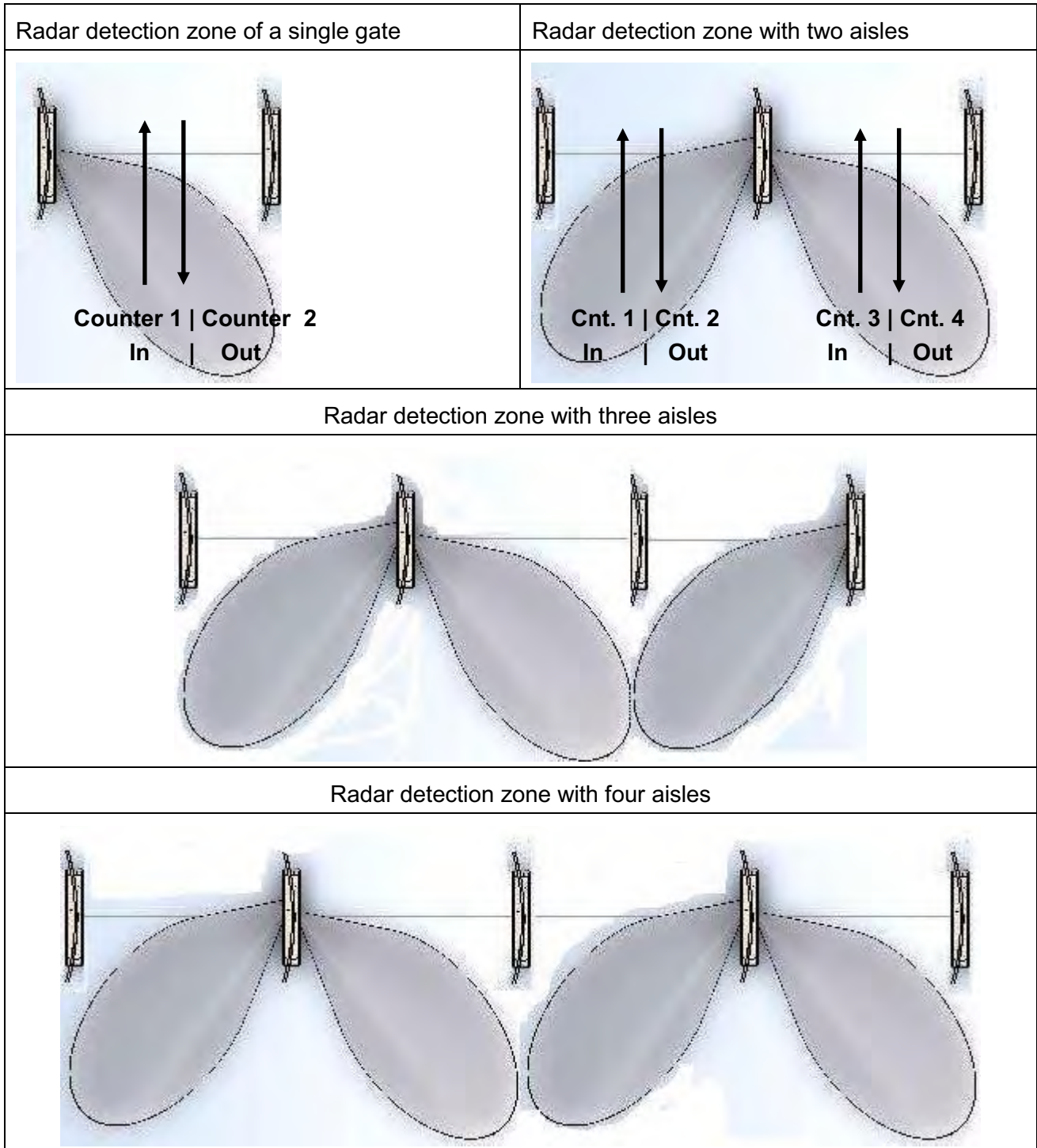


Fig. 2: Top view of the detection areas (2-3 antennas, 1-2 gate aisles)

The People Counter board and the Radar detectors are mounted in the base of the antennas. Due to the radar beam can pervade the plastic housing of the antenna, no openings a necessary.

The three digital output can be used, to enable a signal light at every gate antenna or activate an alarm buzzer in the gate antenna.

The Connection between reader and people counter takes place through the RS485 Interface of the reader, inside the antenna.

There is no need of a direct connection from the GPC 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 ISO Host or Buffered Read Mode, the host poll the GPC 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.

See also System Manual H01011-0e-ID-B.DOC

3.2 Available Antenna Types

The following products are currently available:

Antenna Type	Description
ID ISC.ANT1800/700-A Crystal Gate	Antenna with Reader, Multiplexer , dynamic tuning board, signal light, buzzer and People Counter Board with one radar detector.
ID ISC.ANT1800/700-B Crystal Gate	Antenna with dynamic tuning board ID ISC.DAT and signal light
ID ISC.ANT1800/700-GPC Gate People Counter	People Counter and one piece of radar detector for antenna ID ISC.ANT1800/700 incl. Mounting and cabling set. (optional)
ID ISC.ANT.GPC-E Extension Radar Detector	Second radar detector with cable for the second direct parallel aisle (optional)

Table 1: Available Antenna Types and Accessories

Required components to setup a gate by using the Gate People Counter:

Number of antennas	Antenna		People Counter (Optional)		Note
	ID ISC. ANT1800/700 -A	ID ISC. ANT1800/700 -B	ID ISC. ANT1800/700-GPC	ID ISC.ANT. GPC-E	
2 Antennas	1	1	0		
3 Antennas	1	2	0	1	
4 Antennas	1	3	1	1	

Table 2 Required components for gates with People Counter

4. Installation and Wiring

Notes:

Before installing the antennas please read 5.1 [Project Notes](#) . The spacing of the antennas in a gate depends on the antenna configuration.

If multiple antennas or gates are connected to different readers, a minimum clearance of 8 m must be kept between the antennas or gates. For shorter distances (1 m – 8 m) the readers must be synchronized. The synchronization of the readers is only possible in one of the Automatic Modes (Buffered Read, Notification or Scan Mode). Below a distance of 1.5 m the antennas must also be shielded from each other. Otherwise the read range will be significantly reduced. The antennas must have a minimum distance of 20 cm to all larger metal parts! At a distance of less than 50 cm between the antenna and metal parts the read range will be significantly reduced.

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 be removed from the antenna base cover. By moving the cover upwards, carefully, remove the cover from the antenna base. Fig. 4

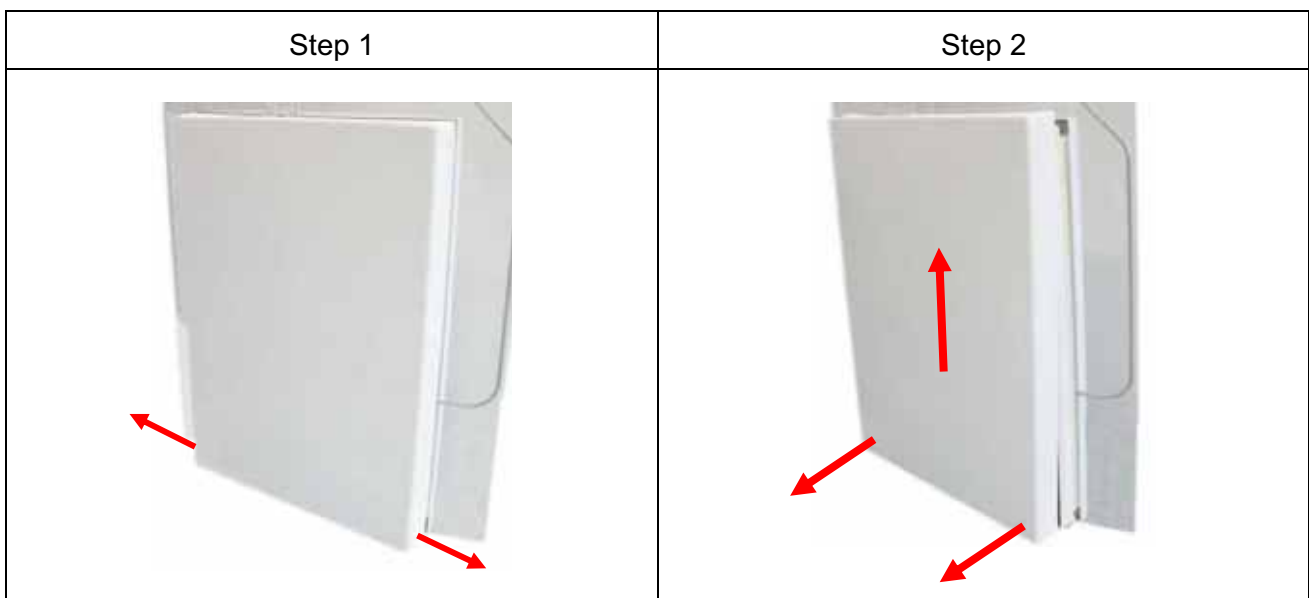


Fig. 4: Opening the antenna base

4.2 Installing the antenna

4.2.1 Dimensions of antenna

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

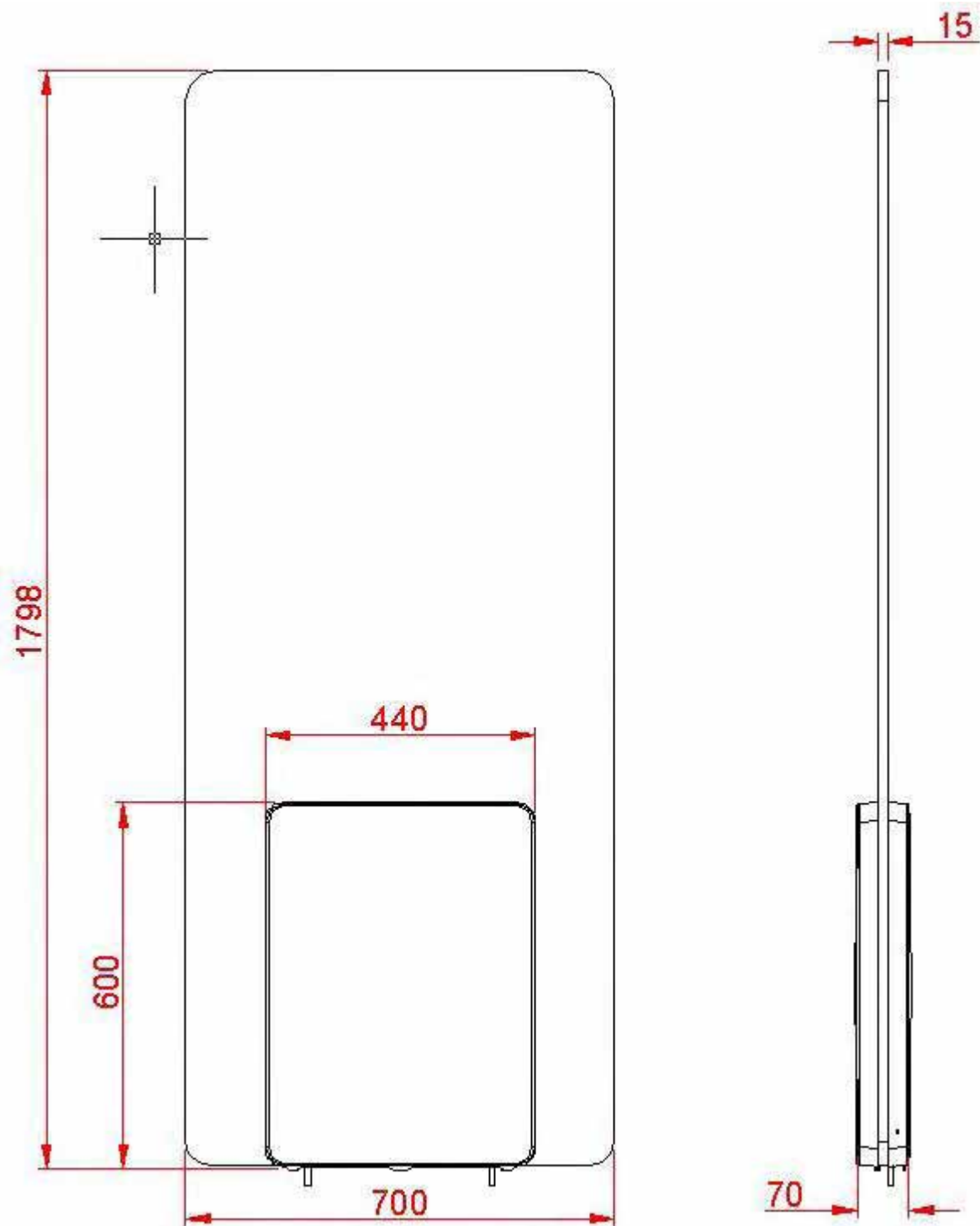


Fig. 5: Antenna outside dimensions

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. The dimensions are shown in Fig. 6:

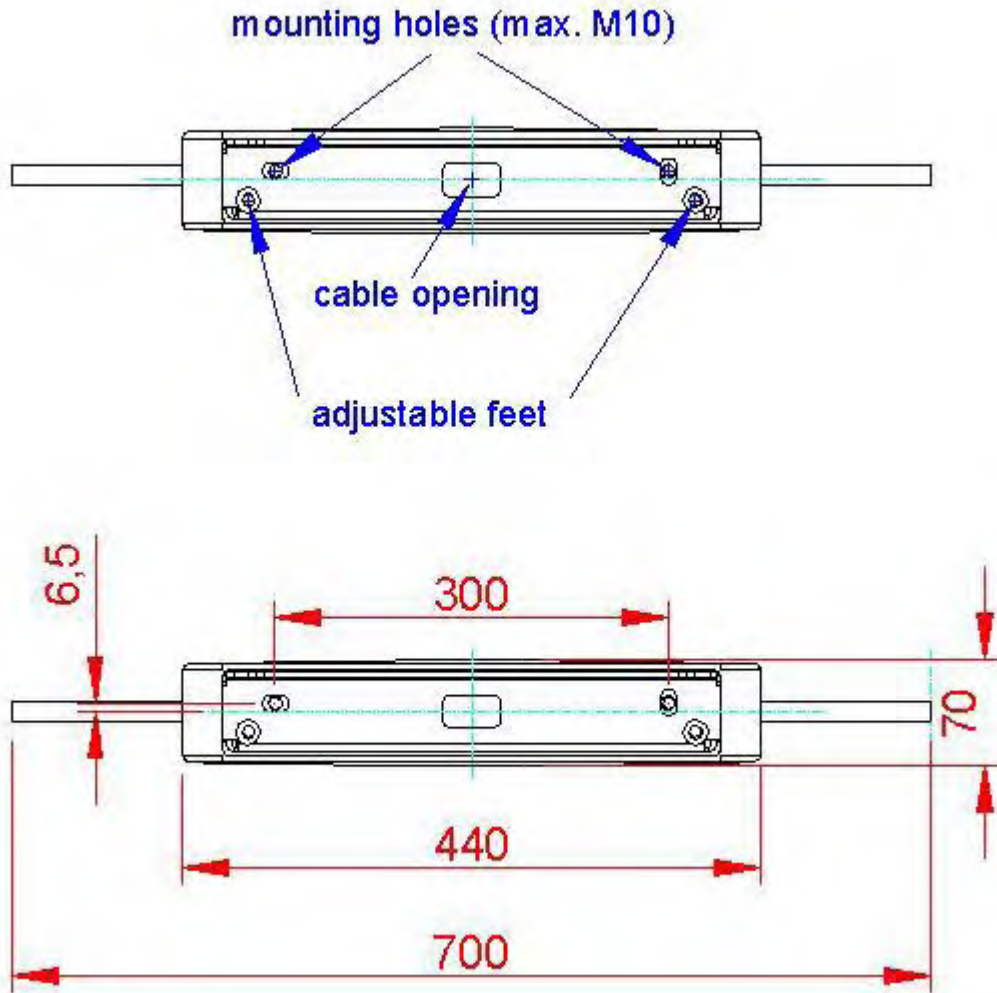


Fig. 6: Floor plate dimensions

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 jut out at least 40 mm (1.6") and maximum of 55 mm (2.2") 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). The cable opening is dimensioned such as up to 10 cables having a diameter of 6 mm can be passed through the opening.

Alternatively the cables can be routed at the sides of the antenna bas like shown in Fig. 7

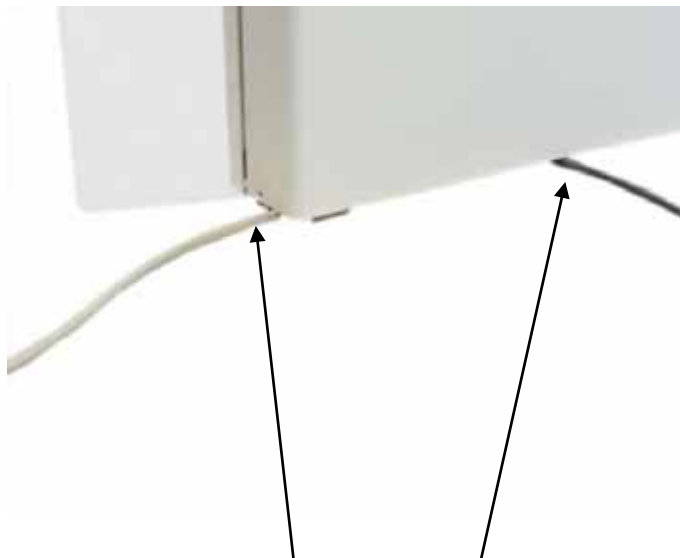


Fig. 7 Cable routing at the antenna sides

4.2.3 Installing the Antenna Base and Antenna Body

The antenna will be mounted on the floor. Please note, the antenna conductors in the middle of the antenna body have to have the same direction (Fig. 8). Afterwards, the antenna has to be aligned vertically, by using the adjusting screws (Fig. 9). Please read also [5.7.4 Using the trigger function of Gate People Counter](#)



Fig. 8 Conductors shape have to have same direction



Adjusting screws (hexagon socket width AF 4)

Fig. 9: Attaching and aligning the antenna

5. Typical Antenna Configuration (Gate Antenna with two Antennas)

The standard configuration of a gate with three-dimensional tag orientation consists of one ID ISC.ANT1800/700-A with reader and multiplexer and one ID ISC.ANT1800/700-B. If a tag moves, at horizontal line, through the gate, it can be read at least once. This ensures high reliability of the antenna system.

5.1 Project Notes

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 area of detection depends on the tag orientation.

The size of the three-dimensional reading area of the antennas is shown in the sketch below.

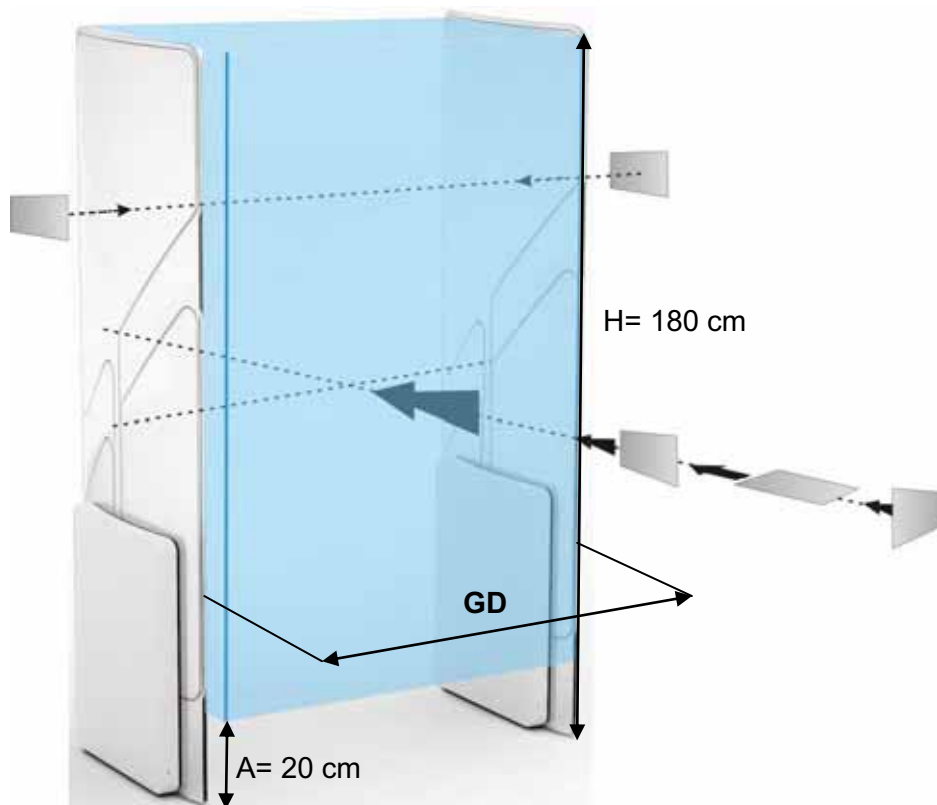


Fig. 10: Capture area and tag orientation

Notes:

Note that the entire reading area of the antenna gate is larger than the three-dimensional area shown in the drawing. This means there are tag orientations in which the tag can be detected outside the reading area.

To get a optimal performance the reader has to be configured and run in one of the Automatic Modes (Buffered Read, Notification or Scan Mode).

If multiple gates are arranged with short distances (1-8m) between each other, these will mutually interfere with each other. In this case, the readers for the individual gates have to be synchronized and run in one of the automatic modes.

By using the trigger function of the gate people counter, you have to take care about the mounting direction of the antennas/radar detector. Before mounting the antennas please read also [5.7.4 Using the trigger function of Gate People Counter](#)

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

- The gate distance (GD) depends on the antenna configuration (see Table 4:).
- The tags should be at least ISO card size (46 mm x 75 mm).
- The activation field strength of the tags should be less than or equal to 60 mA/m.
- The distance from tag to tag should be greater than 10 cm. If the tag to tag distance is reduced, the gate distance GD must be reduced correspondingly. This applies in particular to distances under 5 cm.
- The maximum number of tags (serial number or data) depends on the traverse speed with which the tags are brought through the capture area of the gate (see Table 4:). The number of tags may be increased in the gate distance GD is correspondingly reduced and the maximum speed adjusted accordingly.
- The antenna should be at least 50 cm away from metal parts.
- The minimum distance between the antennas of a gate and antennas of RFID work station or terminals (transmitting frequency 13,56 MHz) should be:

Table 3: Minimum Distances

Transmitted output power	Minimum Distance
< 0.5 W	1 m
0.5 W-1.0 W	2 m
1.1 W – 2.0 W	3 m
> 2 W	4 m
>= 4 W	8 m

- There should be no interference of the Reader from other electrical devices in the environment. The Noise Level difference should be less than 20 mV.
- The ID ISC.LRM2500 reader should be set to an RF power of 8 watts.
- When using ISO 15693 transponders, the Readers should be set as described in [5.2.6 Reader Configuration](#).

- If multiple gates are operated at the same time at a distance of less than 8 m, the Readers must be synchronized. See Application Note *Synchronizing RFID Long Range Readers using the digital in-/outputs* (N11200-xe-ID-B.pdf).

	Gate with antenna Type A and Type B
Gate distance GD	≤ 100 cm
Number of tags at a speed of 1 m/s	
- Read serial number	16
- Read data	8

Table 4: Gate distance

A minimum distance of 65cm between the two gate antennas is required.

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.ANT1800/700-A Crystal Gate (Base)
(incl. Qty. 1 ID ISC.NET24V-B Power Supply Unit)
- Qty. 1 ID ISC. ANT1800/700-B Crystal Gate
- Power cable, interface cable and connection cable for the DC power supplies (2-wire, twisted)
- Mounting materials (screws, anchors)

To calibrate the Reader you will need the software

- ISOStart Version 2011

and for tuning the antennas the service software

- DATuningTool Version 1.10 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 a Gate Antenna with Multiplexer

Connect the components as shown in Fig. 11. Almost, all cable should be mounted already. Normally, the antenna cable from antenna Type B has to be connected to OUT2 at the multiplexer and the 24V DC power supply to X11 of the terminal board only. Optional the cable of the signal light of antenna Type B has to be connected to X12 LED2 (third antenna X14 LED3) of the terminal board.

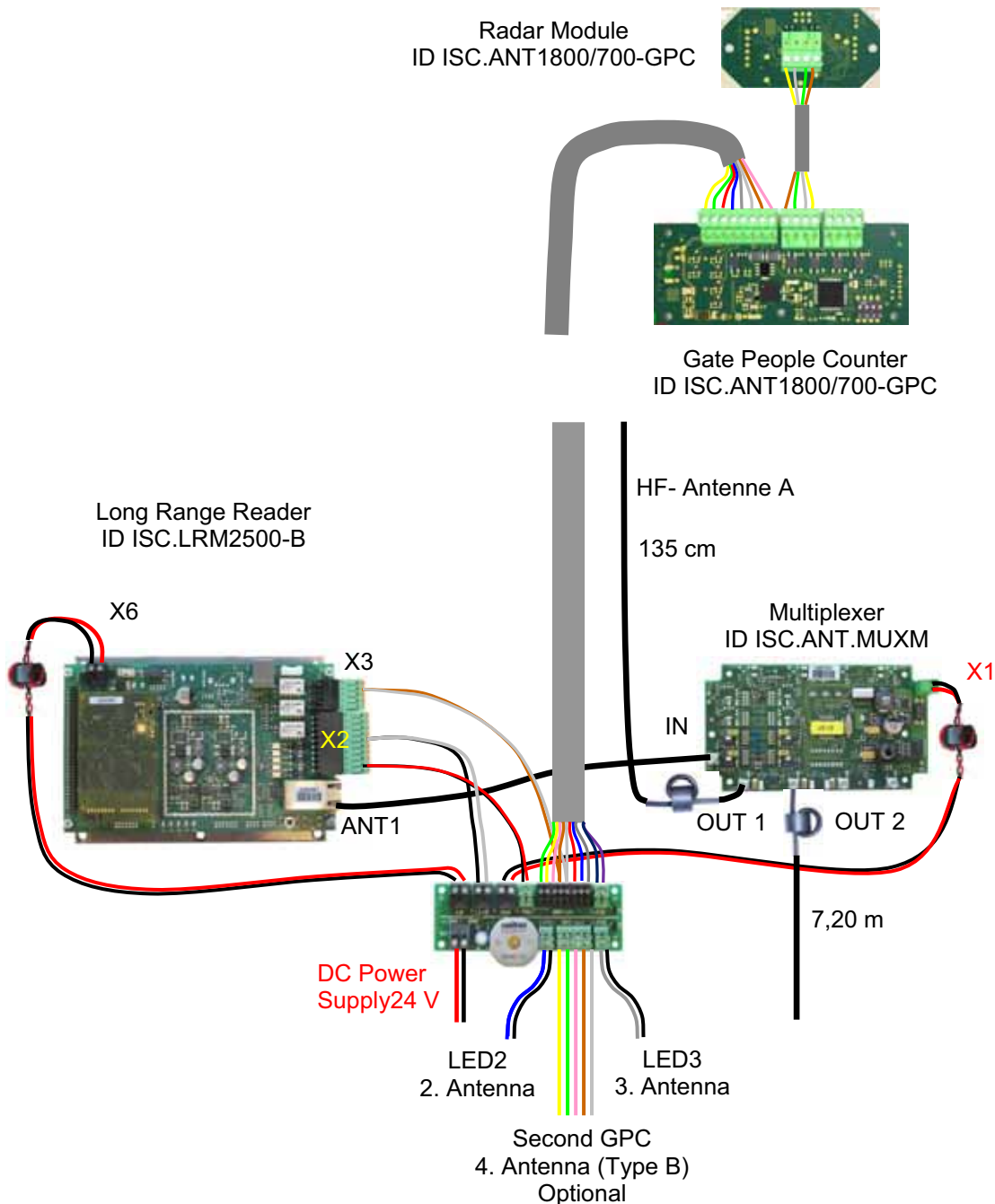


Fig. 11: Connecting the components for a gate consisting of two antennas, reader and multiplexe



Fig. 12: Terminal board

An overview of the terminal board assignment is given in [8. Annex A](#)

Note:

- A reverse polarity could damage the device or the In-/Outputs.

The coax cables have fixed lengths and may not be shortened and therefore need to be tied into small loops (see Fig. 13). Tie all cables as far away from the antenna conductor as possible. The cables must never be allowed to contact the antenna conductor. The cable from antenna type B to the antenna type A should preferably be connected shortly. Unused cable lengths are possible should be tied in antenna B type.

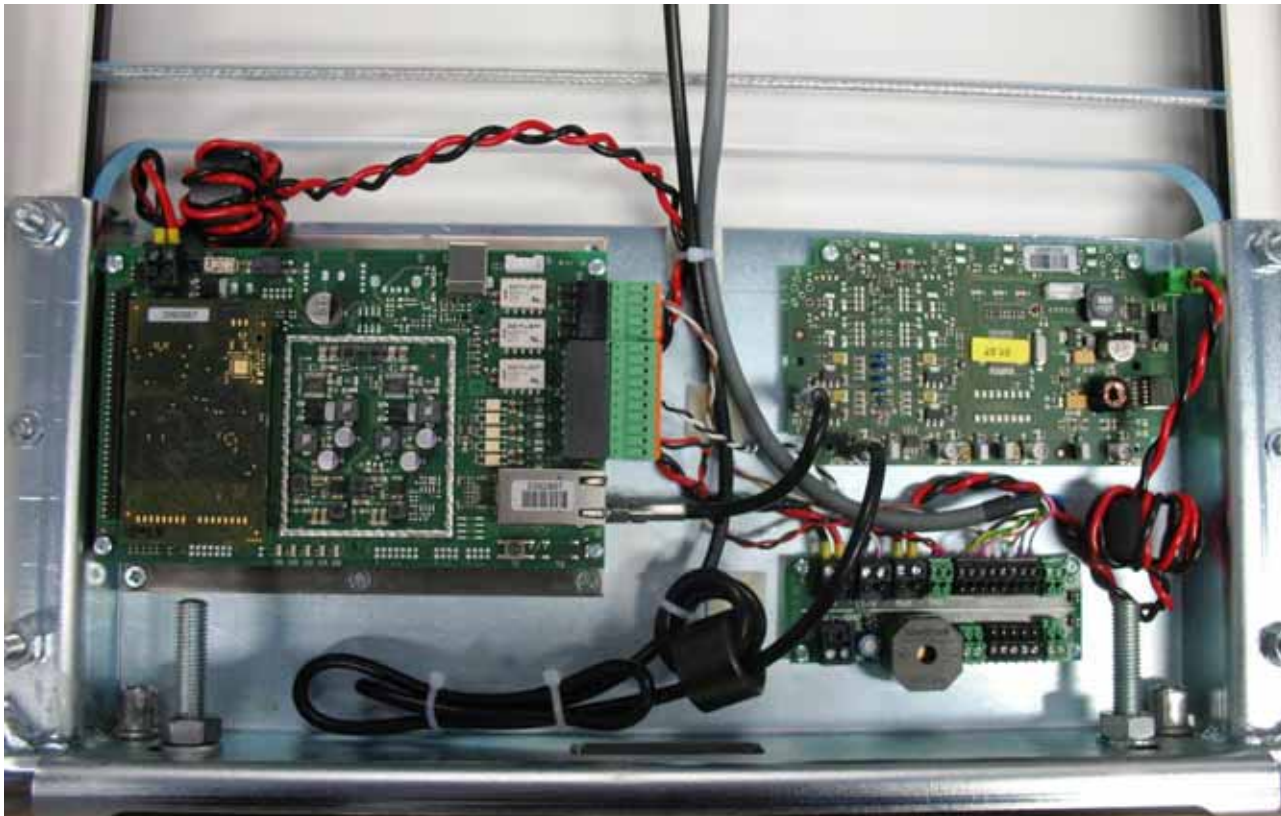


Fig. 13: Connection of the components in an antenna Type A



Fig. 14: Unused coaxial cables are tied in antenna Type B

5.2.3 Setting the Multiplexer

The jumpers JP11-JP14 should be set (factory setting) as shown. More on setting the ID ISC.ANT.MUX.M4 Multiplexer can be found in the corresponding installation manual (M90700-xde-ID-B).

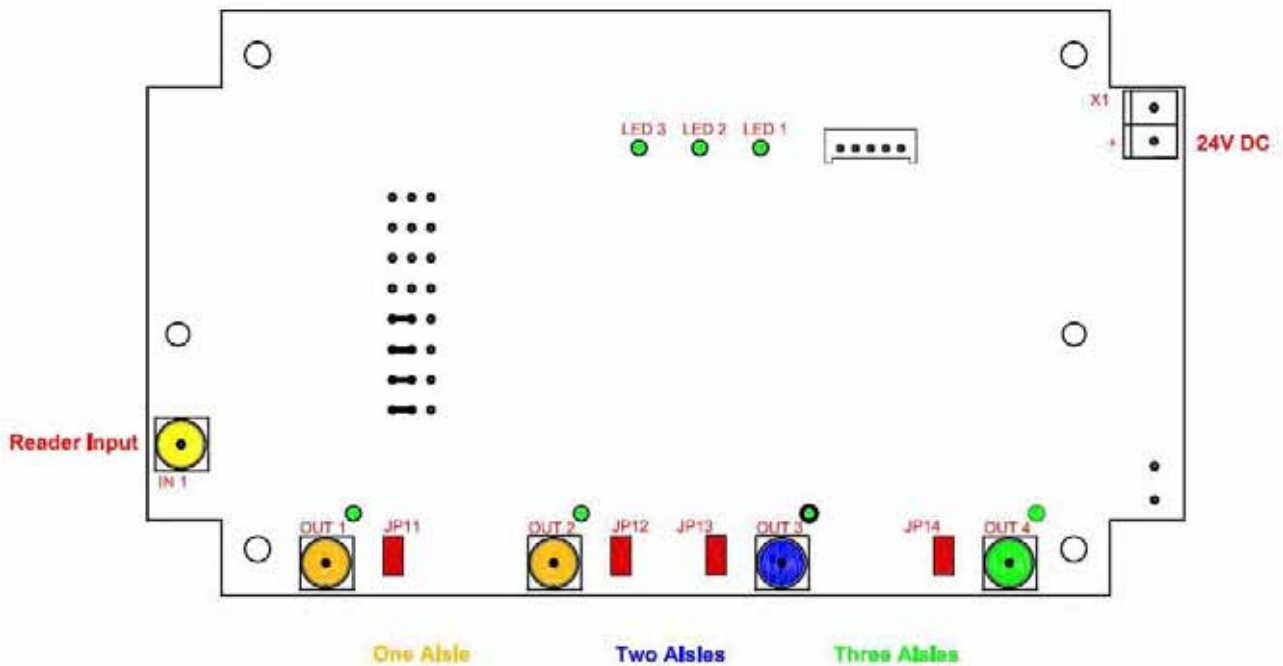


Fig. 15: Jumper positions

5.2.4 Setting the Antenna Tuner

For checking the settings of the antenna tuner the antenna base has to be opened. For this 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.

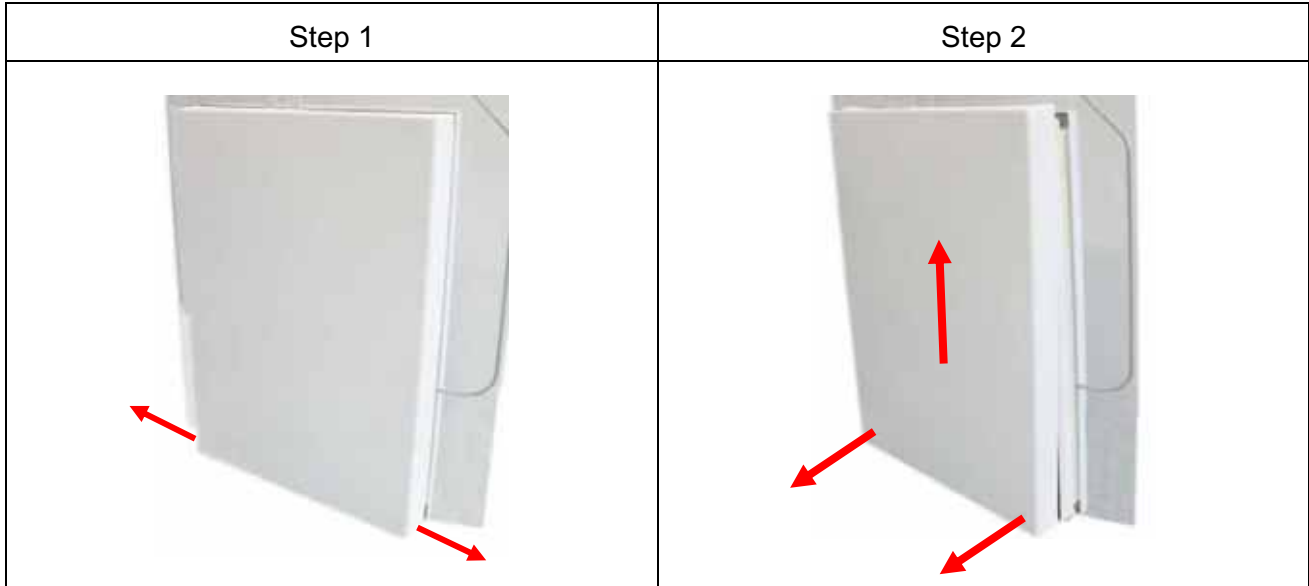
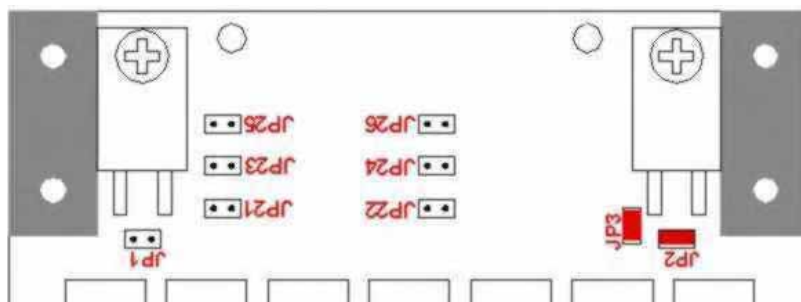


Fig. 16 Removing the antenna base covers

The jumpers JP1-JP26 of the Dynamic Antenna Tuning board should be set (factory setting) as follows:

Table 5: Jumper settings for Antenna Tuner

Function	Jumper	Position
1Ω Q resistor	JP1	open
2Ω Q resistor	JP2	closed
Antenna switch	JP3	closed
Capacitor C1	JP 11,12,13,14	open
Capacitor C2	JP21,22,23,24 25,26	open



Verify these settings. More on setting the ID ISC.DAT antenna tuner can be found in the corresponding installation manual (M40401-xde-ID-B).

5.2.5 Interface Connections

5.2.5.1 RS 232

The RS232 interface is connected on X3.

The transmission parameters can be configured by means of software protocol.

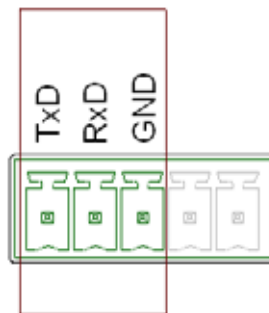


Figure 1: RS232 interface pin-outs on X3

Kurzzeichen	Description
TxD	RS232 – (Transmit)
RxD	RS232 – (Receive)
GND	RS232 – (Ground)

Table 6: RS232 interface pin-outs

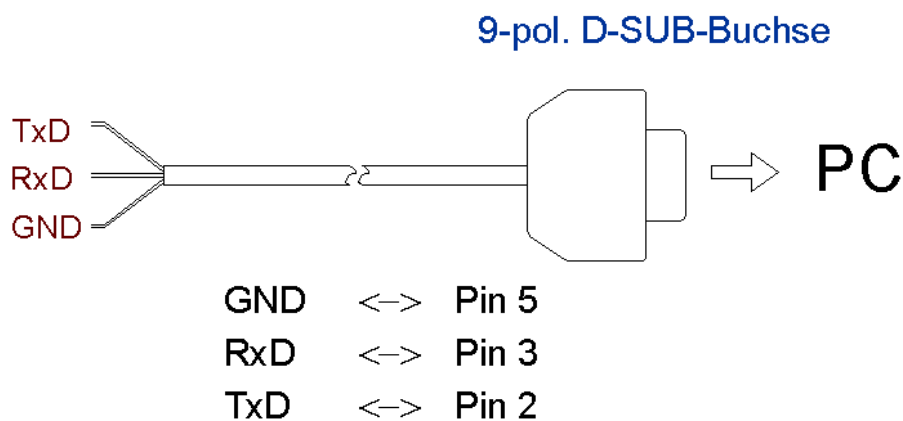


Fig. 17: Wiring example for connecting the RS232 interface

Note:

If there is an USB/RS232 converter used on the PC/Notebook side, we recommend to increase the „Char Timeout Multiplier“ parameter in the COM-Port settings from „1“ to about „5“.

5.2.5.2 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.

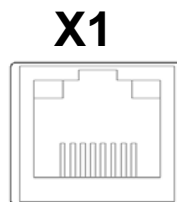


Figure 2: LAN interface for host communication

With structured 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 7 Standard factory configuration of the Ethernet connection


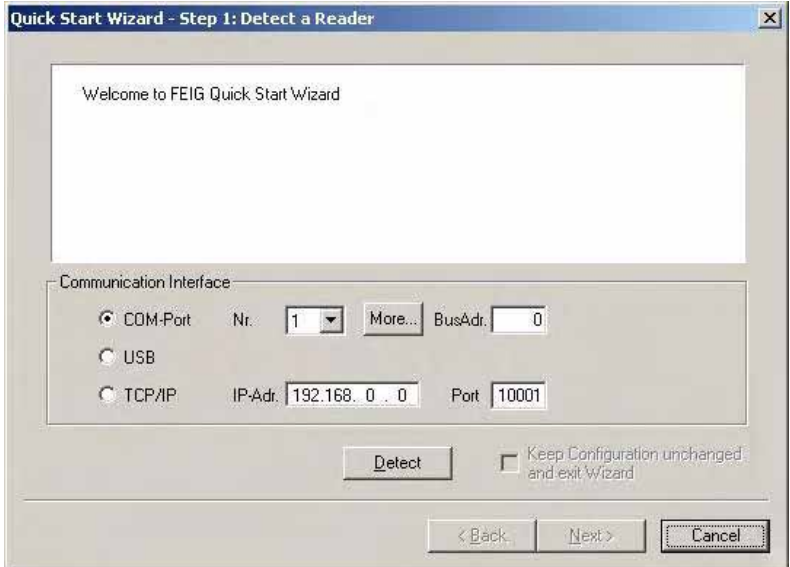
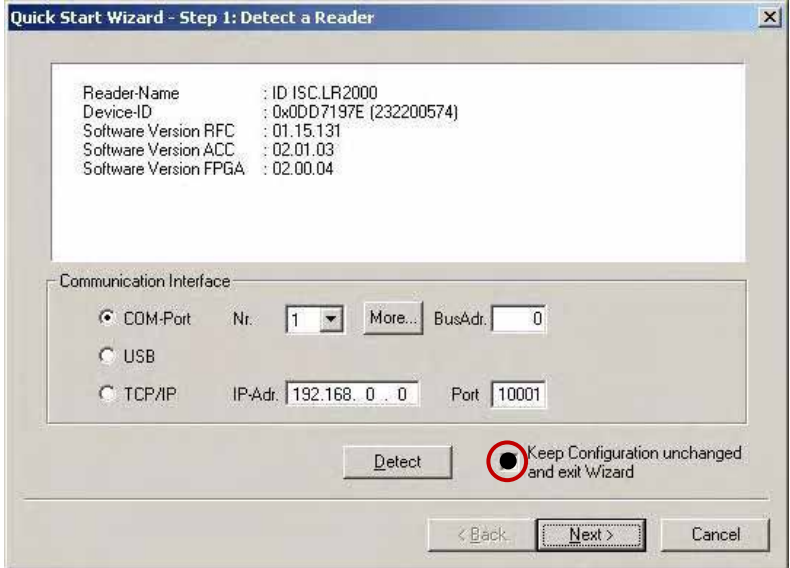

Note:

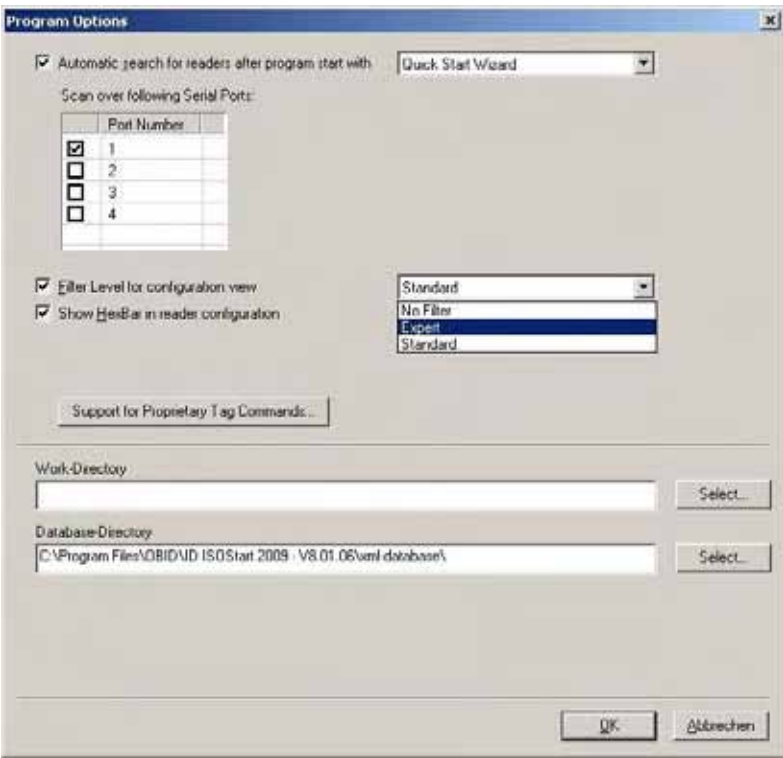

The Reader TCP/IP interface has a DHCP option.

More Information about the interfaces you will find in the manual **M01111-xde-ID-B** of the reader.


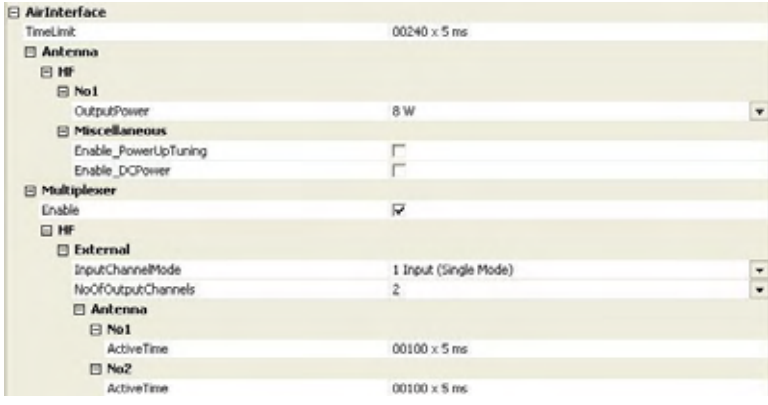
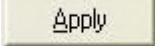
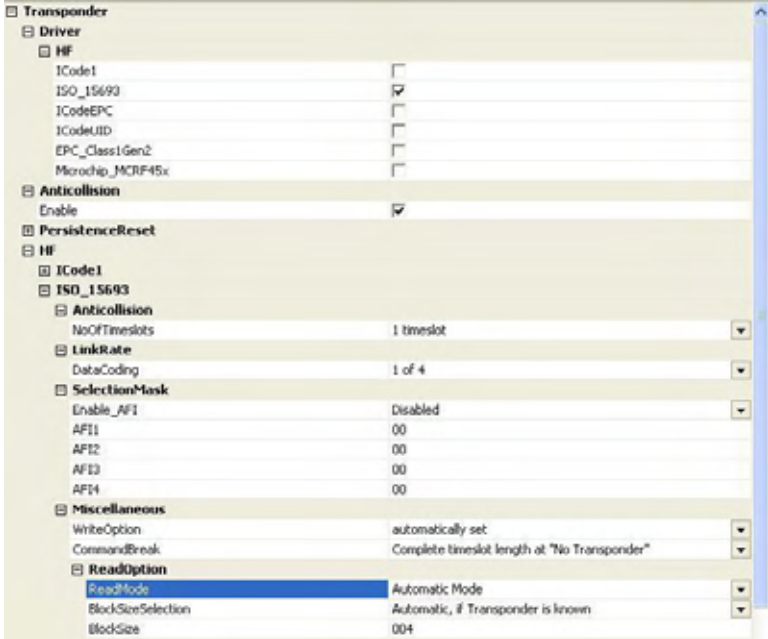
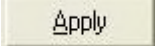
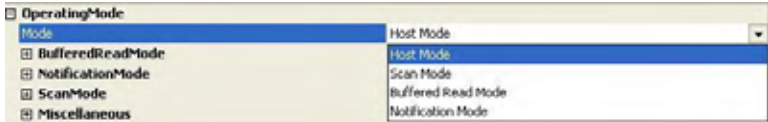
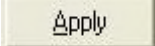
5.2.6 Reader Configuration with Multiplexer

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

Step	Action	Note
1	Start ISOStart Software	
2	Select „Detect“	
3	Select „Keep Configuration unchanged and exit Wizard“ and click on „Exit“ Note: This has to be done at each start of ISO-Start program otherwise the configuration of the reader will be changed by the wizard.	
4	Select „Options => Program“	



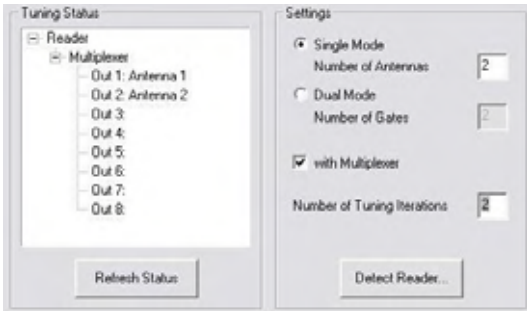

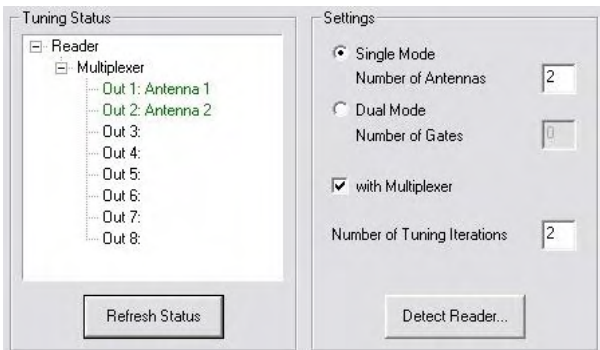

Step	Action	Note
5	Select „Expert Mode“ and confirm with OK.	
6	Select “Logical View”	

Afterwards set the operating power, Transponder Parameters and ISO Host Mode:

Step	Action	Note
1	Select "Configuration"	
2	<p>Air Interface:</p> <p>"Output -Power" = 8W „Multiplexer Enable“ „1 Input (Single Mode)“ „No of Output Channels „ (e.g. 2) „Antenna Active Time“ 100 x 5ms</p>	
3	Set by clicking on „Apply“.	
4	<p>Transponder:</p> <p>Configure the parameters as following:</p> <ul style="list-style-type: none"> • „Driver“ – here ISO 15693 • „Anticollision“ – enable • „No of Timeslots“ – 1 timeslot • „Data Coding“ – 1 of 4 • „AFI“ – Disabled 	 <p>Note: National RF regulations may require different settings. 6. Configure the reader in accordance with national RF regulations</p>
5	Set by clicking on „Apply“.	
6	<p>Operating Mode:</p> <p>For antenna tuning the reader has to be set to „Host Mode“ .</p>	
7	Set by clicking on „Apply“.	

5.2.7 Tuning the Gate Antenna

Before tuning the gate antenna, you must quit the ISOStart software. Then the gate can be tuned as follows:


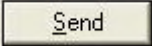


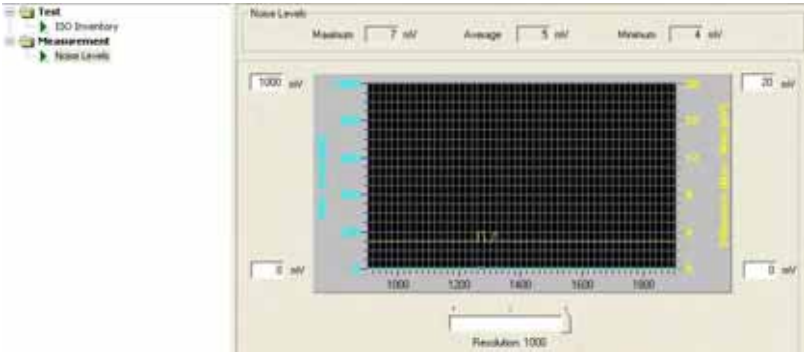
Step	Action	Note
1	Start "DATuningTool" software	 DATuningTool
2	Select "Detect Reader...". In the „Detect Reader“ window select the interface (COM-Port 1, BusAdr. 0) and then click on "Detect".	
3	Use „Settings“ to enter the configuration: Single Mode, Number of Antennas 2 Click on "with Multiplexer" Number of Tuning Iterations 3	
4	Activate „Start Tuning“ and wait until the tuning process is finished.	
5	The tuning status is displayed after each tuning pass. After successful tuning both antennas are shown in green.	
6	If this does not succeed on the first try, start the process again by clicking on „Start Tuning“	

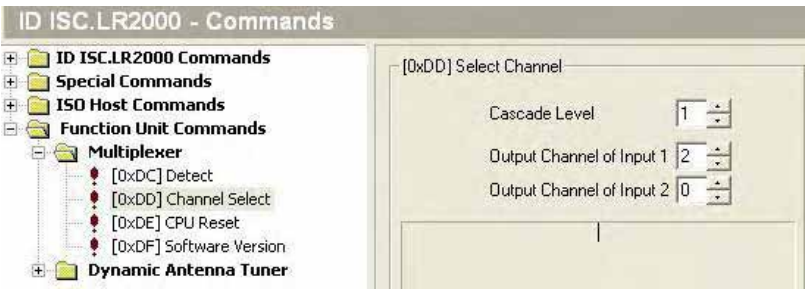


After successful tuning, close the DATuningTool.

5.3 Testing the Gate Antenna

After tuning the gate antenna, you can check for proper function using a reader, the ISOStart service software and a Transponder. Here the Noise Level and performance of the gate are tested.

5.3.1 Checking the Noise Level

Step	Action	Note
1	Activate antenna 1 with command: „Function Unit Commands - Multiplexer“ Parameter: „Channel Select“ „Cascade Level = 1“ „Output Channel of Input 1 = 1“	
2	Confirm with “Send”	
3	Activate “Test and Measurement”	
4	Select „Noise Level“ and start by clicking on „Start“	
5	Normal Noise Level values: Average: < 20mV Difference (Max-Min): < 20mV	




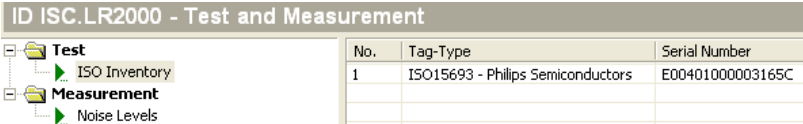

Step	Action	Note
6	Activate antenna 2 with command: „Function Unit Commands - Multiplexer“ Parameter: „Channel Select“ „Cascade Level = 1“ „Output Channel of Input 1 = 2“ „Output Channel of Input 2 = 0“	
7	Confirm with “Send”	
8	Repeat Step 3 to 5 for every further antenna	

If the values are not proper, check the following:

- Are all cables pulled tight and will contact well?
- Are the ring cores installed in the antenna cable?
- Are the cables routed as specified?
- Are other RFID systems installed closed by?
- Are there large metal parts close to the antenna (distance < 1.0 m)?
- Are there devices nearby which may emit noise interferences (larger machines or wireless devices)?
- Are there interferences from the mains?

To determine which devices may be disturbing the gate, briefly disconnect them from the mains.

5.3.2 Reading a Serial Number

Step	Action	Note												
1	Attach a tag to an antenna Here to antenna at multiplexer output 1	Use adhesive tape, for example												
2	Activate antenna 1 with command: „Function Unit Commands - Multiplexer“ Parameter: „Channel Select“ „Cascade Level = 1“ „Output Channel of Input 1 = 1“													
3	Confirm with “Send”													
4	Select „Test and Measurement“													
5	Select „ISO Inventory“ function and activate by clicking on „Start“. The serial number and tag type will be shown in the display.	 <table border="1" data-bbox="975 1218 1442 1301"> <thead> <tr> <th>No.</th> <th>Tag-Type</th> <th>Serial Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ISO15693 - Philips Semiconductors</td> <td>E00401000003165C</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Tag-Type	Serial Number	1	ISO15693 - Philips Semiconductors	E00401000003165C						
No.	Tag-Type	Serial Number												
1	ISO15693 - Philips Semiconductors	E00401000003165C												
6	Repeat Step 1 to 5 for every further antenna													

5.3.3 Testing the performance

For testing the performance you must switch the reader to one of the Automatic Modes.

[See 5.5 Activating the Automatic Mode](#)

A read transponder will be displayed by a blue LED on the reader or by the LED light of the antenna. See also [5.4.1 Reader Setting for Indicator](#)

In this test the capture area of the gate antenna described in [5.1 Project Notes](#) is checked. For other tags or other configurations the indicated ranges and read areas may differ accordingly.

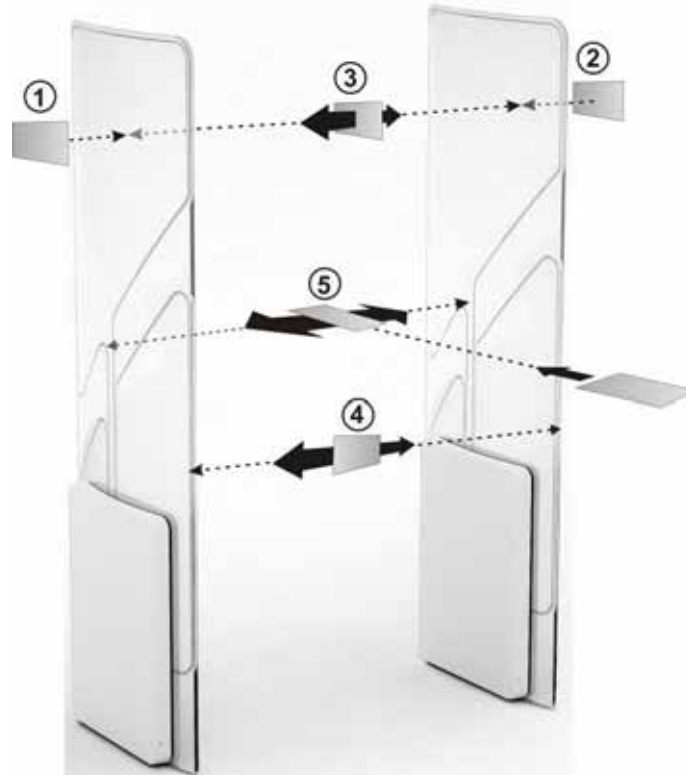


Fig. 18: Performance Test of the gate antenna

The test begins by checking the read range outside the gate (see Fig. points ① and ②), assuming the configuration and locality permit it. If the tag is oriented parallel to the antenna at the outside, a read range of 65 to 70 cm should be achieved.

The three tag orientations are checked inside the gate. This corresponds to the lines and orientations ③④⑤. Now slowly move the tag in the vertical and parallel direction with respect to the antenna along the line ③ from one side to the other. The tag should always be read.

Then repeat this along the line ④ in the vertical tag direction transverse to the antenna and on the line ⑤ in the horizontal tag orientation. Here again the tag should always be read.

The tag should be read within the gate by moving in a horizontal line through the gate in all three read orientations.

If one or more „holes“ are detected, check the noise values on the Reader (see [5.3.1 Checking the Noise Level](#)).

The following may result in faulty readings:

- Antenna improperly installed (orientation, antenna distance, check cabling)
- The torrid / ring cores are not mounted on the antenna and power cables
- Metal near the antennas is detuning or interfering with them.
- The antennas are not properly tuned.
- Noise level too high ($V_{max} - V_{min} \geq 20 \text{ mV}$)
- Transponder too insensitive, detuned or defective
- Reader improperly configured (transmitting power, transponder type, modulation, transponder parameters, etc.).
- A cable is defect or has a weak contact.
- Reader, multiplexer or antenna defect.

5.4 Setting the Alarm Kit






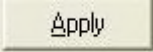


The solution provided here presumes that the alarm indicator (buzzer) is switched through the digital output 2 /X2 on the ID ISC.LRM2500-B reader and the LED 1 light through output 1 of the Gate People Counter. The pulse duration can be set (CFG2 / OUT2) between 100 ms and 65535 s by adjusting the Reader configuration. The volume of the buzzer could be adjusted by R1

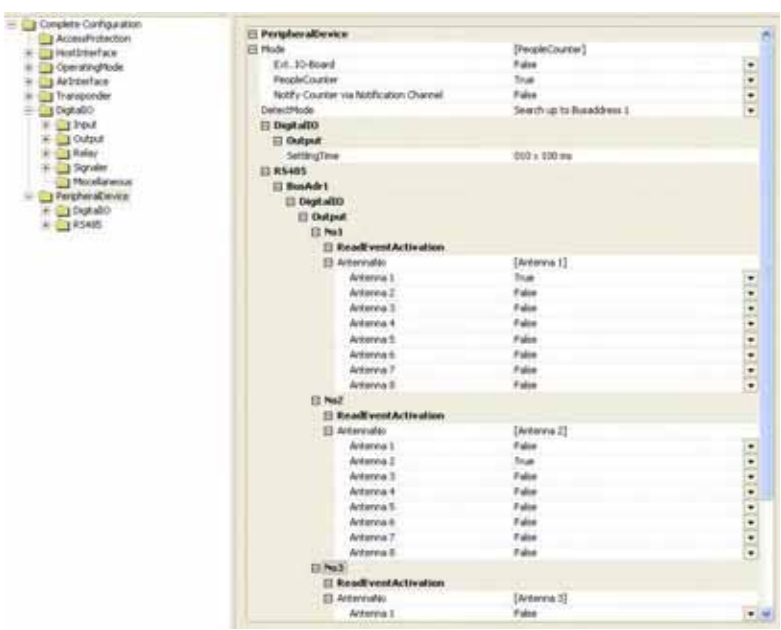
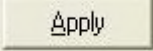
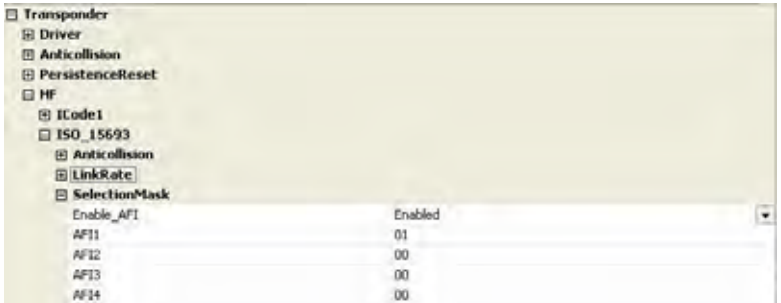

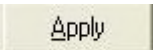


Fig. 19 Volume adjusting

5.4.1 Reader Setting for Indicator

The ISOStart software can be used to set the Reader configuration so that the output 1 X6-1/-2 opens or closes or the outputs of the People Counter closes when a Transponder is read.


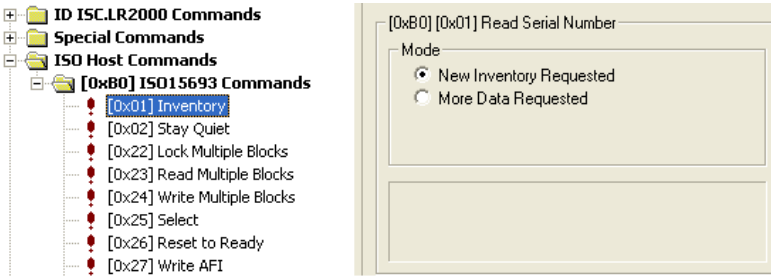

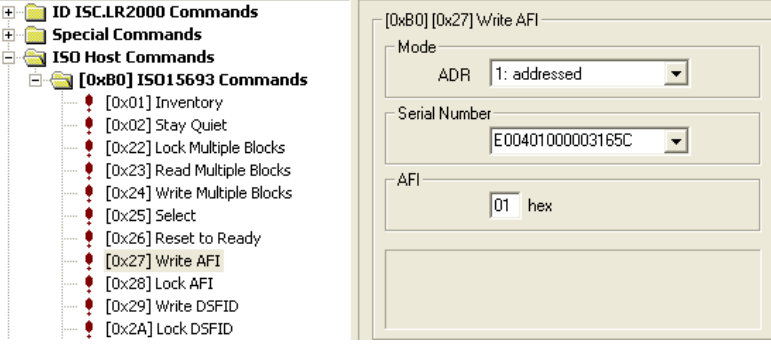

Step	Action	Note
1	Start ISOStart Software	 ISOStart.exe
2	Select "Configuration" and click on "Read" to read the complete configuration.	 
3	Operating Mode Select Buffered Read Mode.	
4	Digital IO: Output Idle Mode: OFF Idle Flash Mode: 1Hz Setting Time: with „Setting Time“ set time of output 1 for alarm duration. (10 means 1 second) (e.g. 10 x 100ms) Assign Output 2 to antenna 1+2. „True“ means: Output 1 and will be active if the reader read a valid transponder.	
5	Set by clicking on „Apply“.	
6	Ext. IO: Enable People Counter by setting to "True" Set Detect Mode to "Search up to Busaddress 1"	
7	Set by clicking on „Apply“.	

<p>8</p>	<p>Digital Outputs of People Counter</p> <p>Setting Time: with „Setting Time“ set time of the outputs for alarm duration. (10 means 1 second) (e.g. 10 x 100ms)</p> <p>Set: Output 1 for LED 1 of Antenna 1 to “True”</p> <p>Output 2 for LED 2 of Antenna 2 to “True”</p> <p>Output 3 for LED 3 of Antenna 3 to “True”</p> <p>Only the LED of the antenna which detects the Transponder will be switched on.</p>	
<p>9</p>	<p>Set by clicking on „Apply“</p>	
<p>10</p>	<p>Transponder</p> <p>If the alarm should occur by a transponder with valid AFI byte, you have to configure the reader as follow:</p> <p>ISO-15693 – Selection Mask Set “Enable AFI” Set the value for the AFI in field “AFI1” (e.g. 01) Note: Up to four different AFI values could be set.</p>	
<p>11</p>	<p>Operating Mode</p> <p>If the alarm should occur by an EAS, you have to configure the reader as follow:</p> <p>Set “EAS”</p>	
<p>12</p>	<p>Set by clicking on „Apply“</p>	

5.4.2 Programming a Transponder with the AFI 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) is useful for this purpose, since it is contained in nearly all Transponder models in the ISO15693 family. To disable, simply write a different code to the Transponder than for valid Transponders which trigger an alarm.

Step	Action:	Note:
1	Select „Commands“	
2	Place the Transponder in the antenna field (Antenna 1) Select [0x01] Inventory Mode: “New Inventory Requested “	
3	Read UID by clicking on „Send“	
4	The serial number, DSFID and Transponder type are displayed in a window. Write down the serial number of the Transponder	<pre>[0xB0] [0x01] Read Serial Number Statusbyte: 0x00 (OK) 1 Transponder in Protocol 1. Transponder TR-TYPE.....: 0x03 (ISO15693 - Philips Semiconductors) DSFID.....: 0x00 SNR.....: E00401000003165C</pre>
5	Select „[0x27] Write AFI“ ADR: 1: addressed Serial Number: Select Transponder UID AFI: Desired AFI Number (not equal to 00)	
6	Write AFI byte on to the transponder by click on „Send“	

7	<p>To verify, read AFI byte by using the command</p> <p>[0x2B] Get System Information</p>	
---	---	--

5.5 Activating the Automatic Mode

 **The gate has to be used in one of the Automatic Modes (Buffered Read, Notification or Scan Mode) to get a maximum performance. Otherwise the reading performance will be significantly reduced.**

For more information, see System Manual [H01112-0e-ID-B.pdf](#) ID ISC.LRM2500-A/B



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 (Serial, Ethernet).

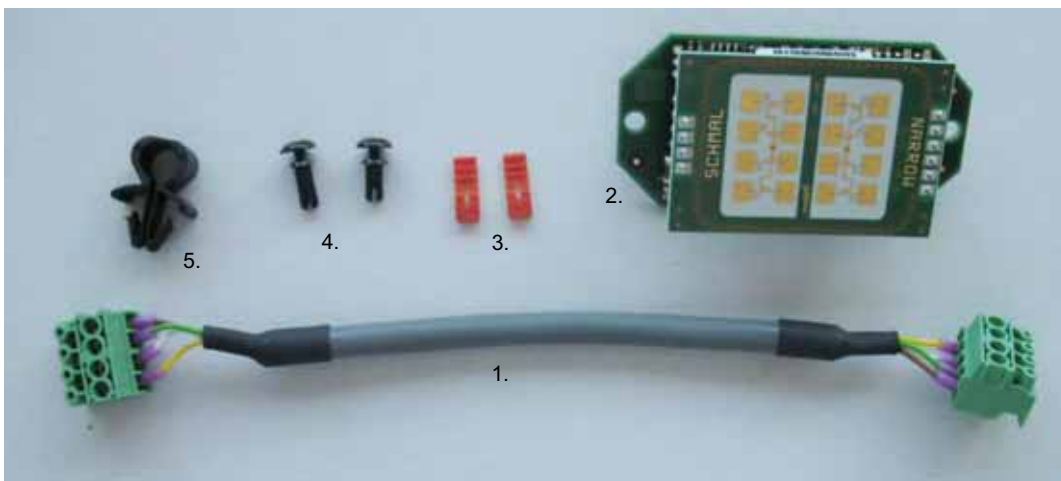
To activate „Buffered Read Mode“ proceed as follows:

Step	Action	Note
1	Select „Configuration“	 Configuration
2	<p>Operation Mode: „Mode“ - Buffered Read Mode „Data Selector“ -UID -Antenna No -Time -Date</p> <p>„Filter“ Set Transponder Valid Time. (e.g. 55 x 100ms)</p>	
3	Set clicking on „Apply“	 Apply

Note:

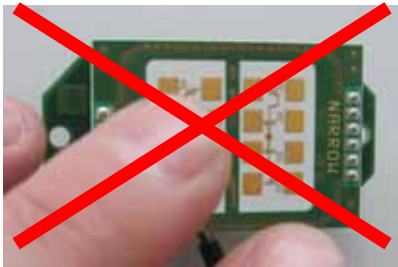

The configuration of the Notification or Scan Mode are similar (See System Manual of the reader) To test the function of the Gate in the Buffered Read Mode, the BRM Window of ISOStart or the BRMDemo program can be used.

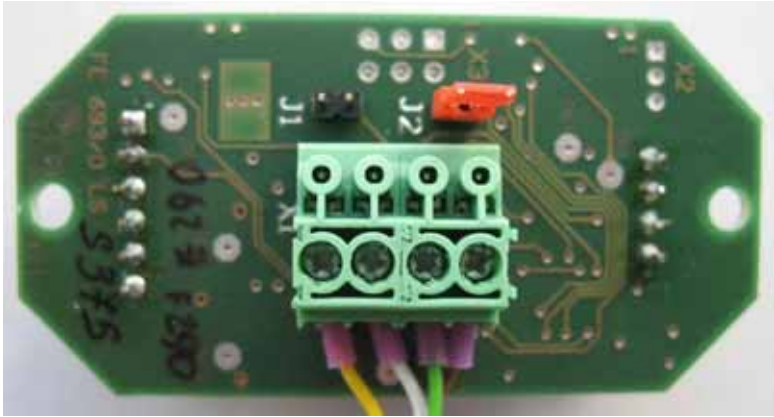

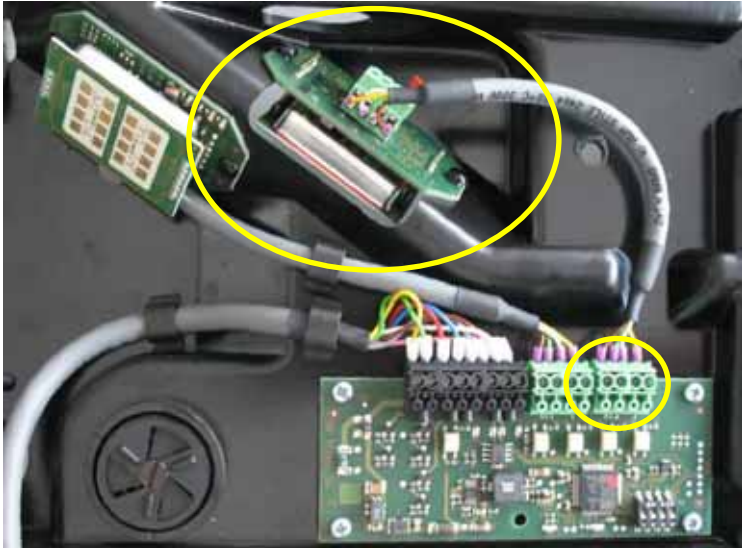
5.6 Installation ID ISC.ANT.GPC-E



Content of the ID ISC.ANT.GPC-E

- 1. 1 piece Radar connection cable
- 2. 1 piece Radar module
- 3. 2 piece Jumper
- 4. 2 piece split rivet 3,0mm
- 5. 1 piece cable-clip

Step	Action	Note
1.	<p>Attention !!</p> <p>Note: Do not touch the antenna surface of the Radar module to avoid damaging the electronic components and soiling.</p>	
2.	<p>Connect radar connection cable with X1 of Radar module.</p>	

<p>3.</p>	<p>Set sensitivity of Radar sensor by setting jumper J1 and J2.</p> <p><u>Sensitivity:</u> JP1+2 open: Low JP1 closed: Middle JP2 closed: High JP1+2 closed: Very high</p> <p>Recommended Sensitivity: High</p>	
<p>4.</p>	<p>Install Radar module with split rivet</p> <p>See also picture in Step 4</p>	
<p>5.</p>	<p>Plug Radar connection cable onto X12 Sen 2</p>	

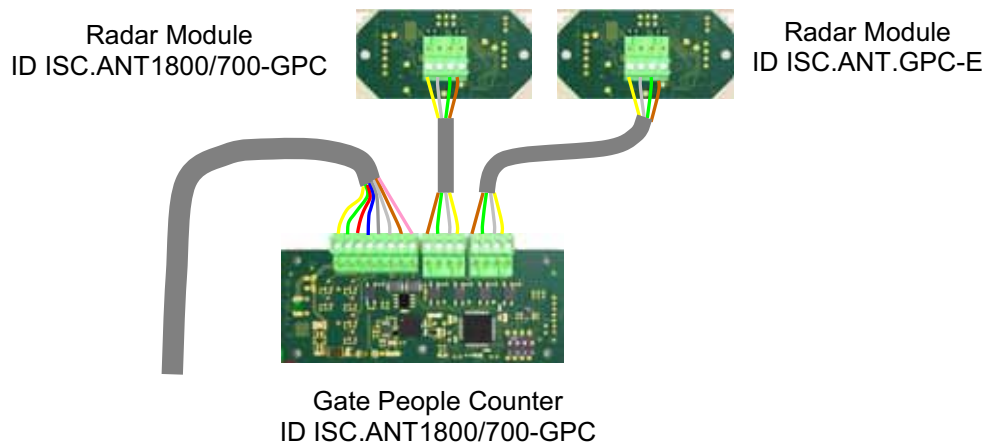


Fig. 20: Connections GPC-E 2.Radarmodule

5.7 Configuration and Test

To activate the People Counters the following settings has to be done.

Set additional the Jumpers JP10 and J11 of Reader ID ISC.LRM2500-B to configure the RS485 interface. Fig. 21 (see also manual M01111-xde-ID-B , page 54 and 55). The Termination has to be activated via software in the reader configuration.

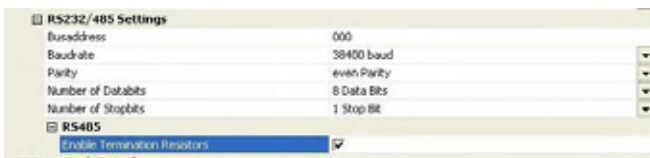
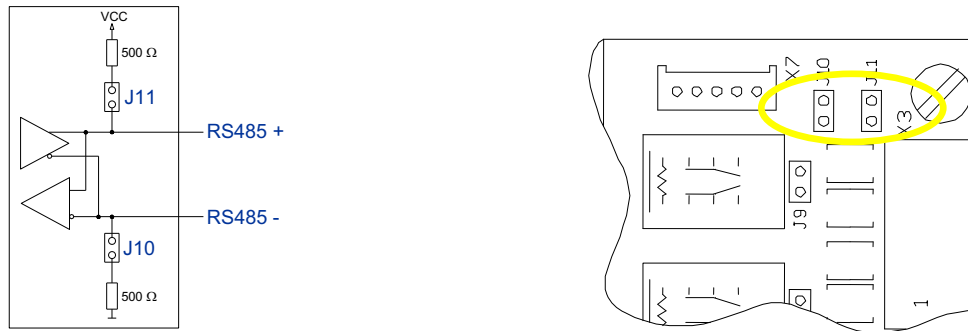


Fig. 21: Jumper settings RS485 Interface

By using several People counters at gates with 3 to 6 aisles, you have to set the corresponding bus address. The bus address could be set by the Dip-Switch at the People Counter Board. See Fig. 22. At one reader, up to 3 People Counter (bus address 1-3) could be operated.

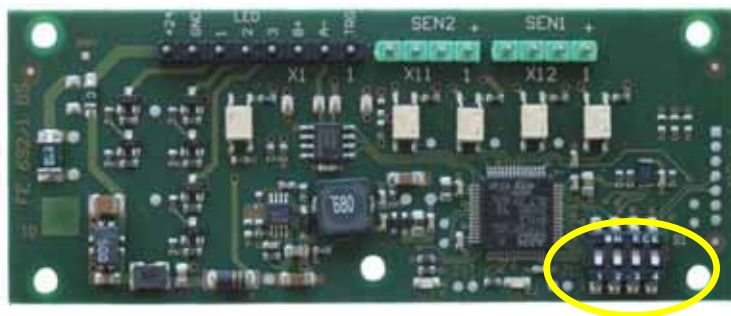


Fig. 22: Position of Dip Switch at People Counter Board

bus address	DIP-Switch S1			
	1	2	3	4
1	OFF/ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF
4	Reserved			

Table 8 Setting the bus address of the People Counter

5.7.1 Connecting several People Counter

When using several People Counters (up to 3), at one reader, have to be on the terminal board with each other in parallel. For the connection you have to use 5 pin shielded, twisted-pair cable. Example: LiYCY (TP) 3x2x0,25

The connection X13/GPC-Out of the first Terminal Board has to be connected to X13 GPC-out of the second and third Terminal Board of the antenna /People Counter. More details to the terminal assignment of X13 you will find in [8. Annex A](#)

e.g.

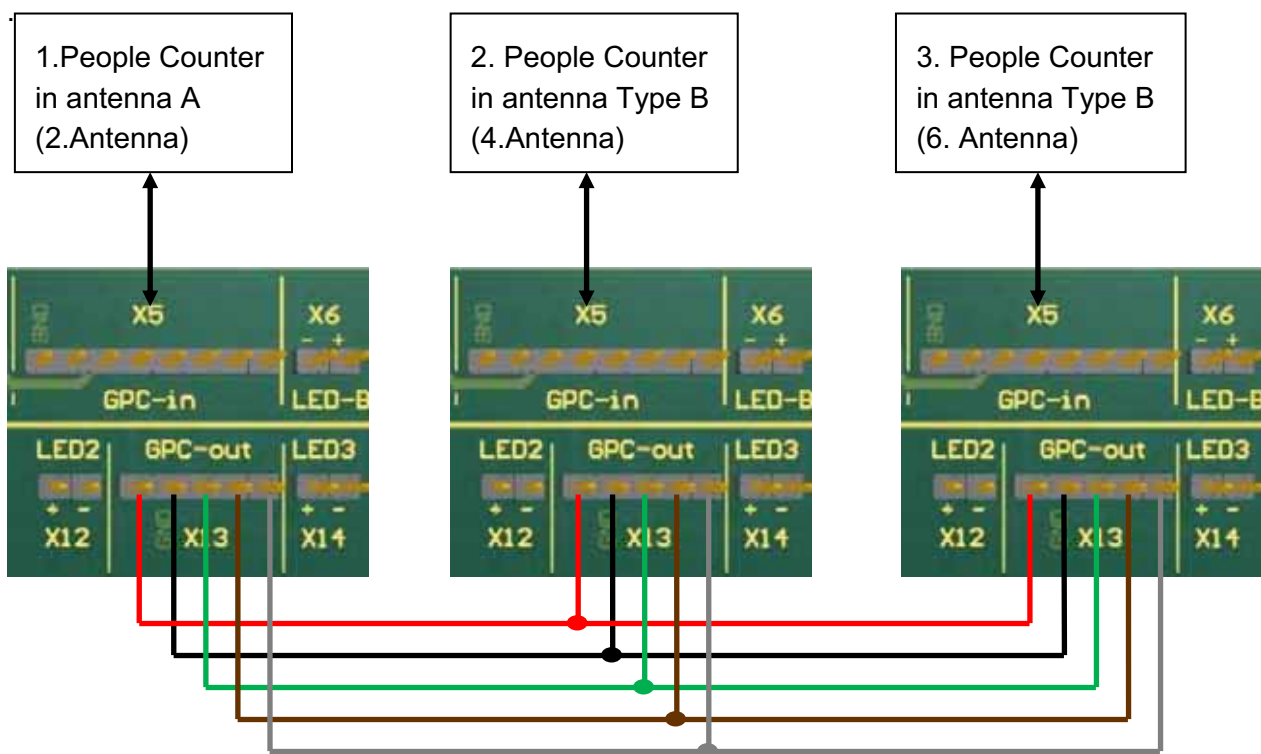




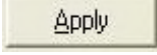
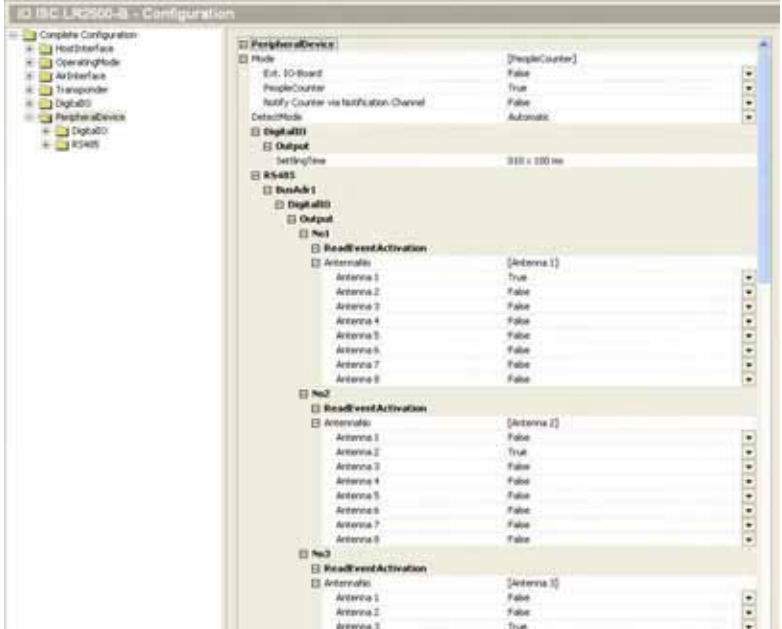




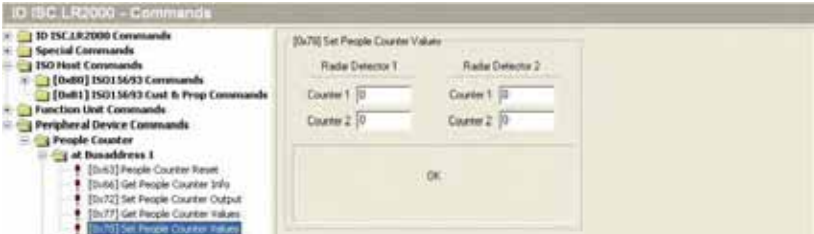

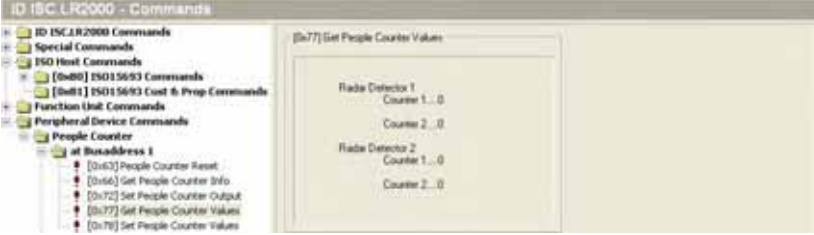

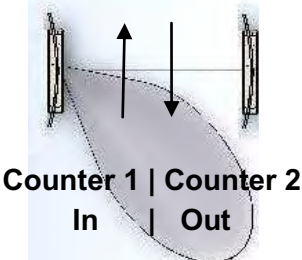


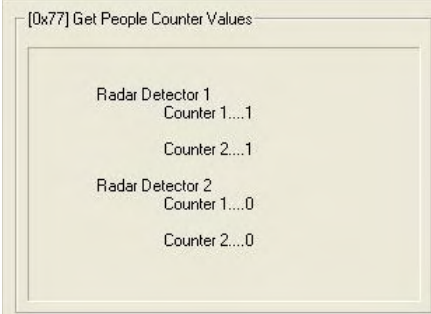


Fig. 23 Connecting the People Counters

5.7.2 Configuration and Test in ISO-Host or Buffered Read

Step	Action	Note
1	Select „Configuration“	
2	<p>Host Interface Set RS 485 to “True” „Enable Termination Resistors“</p> <p>The RS232/485 Settings should be set to: Busaddress=0, Baudrate=38400 baud, Parity = even , Number of Databits = 8, Number of Stopbits = 1</p>	
3	Confirm with „Apply“	
4	<p>Peripheral Devices</p> <p>Set People Counter to „True“ and Detection Mode for Ext. I/O-Boards to “Search up to Busaddress 1”</p>	
5	Confirm with „Apply“	
6	<p>Peripheral Device Digital IO:</p> <p>Setting Time: „Setting Time“ set the duration time for the alarm. (10 means 1 second) (e.g. 10 x 100ms)</p> <p>Assign Output 1 to antenna 1. Output 2 to antenna 2. Output 3 to antenna 3.</p> <p>„True“ means: Output 1,2 or 3 will be active if the reader read a valid transponder on the corresponding antenna</p>	

7	Set by clicking on „Apply“.	
Test: People Counter		
8	Select „Commands“	
9	Select Command - „Get Reader Info“ - Peripheral Devices	
10	Confirm with „Send“ Number of Devices should be 1	
11	Select Command „Set People Counter Values“	
12	Confirm with „Send“	
13	Select Command „Get People Counter Values“	
14	Confirm with „Send“ (All counter values should be 0)	
15	Walk through the gate from both directions.	




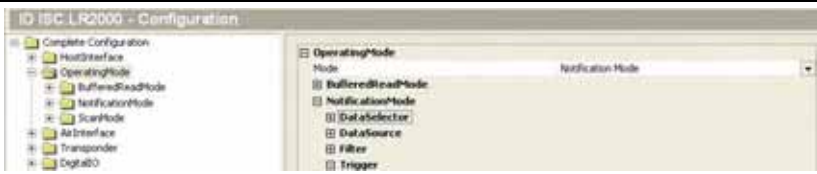
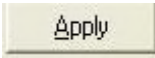
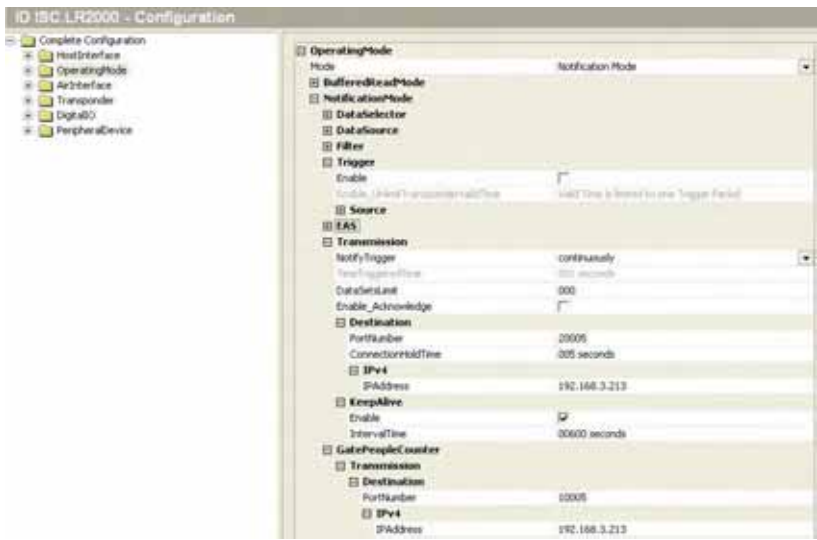

<p>16</p>	<p>Select Command „Get People Counter Values“</p>	
<p>17</p>	<p>Confirm with „Send“</p>	
<p>18</p>	<p>Counter values will be displayed.</p>	


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

In Notification Mode the Reader sends the People Counter Data automatically to the Host.

5.7.3 Configuration and Test in Notification Mode

The following configuration has to be done:

Step	Action	Note
1	Select „Configuration“	
2	Peripheral Devices/CFG8 Set People Counter and Notify Counter to „True“	
3	Confirm with „Apply“	
4	Operating Mode Select -Notification Mode	
5	Confirm with „Apply“	
6	Set IP Address and Port for Notification Mode IP Address of Host e.g. here : 192.168.3.213 Port:20005 Set IP Address and Port for People Counter IP Address of Host e.g. here: 192.168.3.213 Port:10005	
7	Confirm with „Apply“	

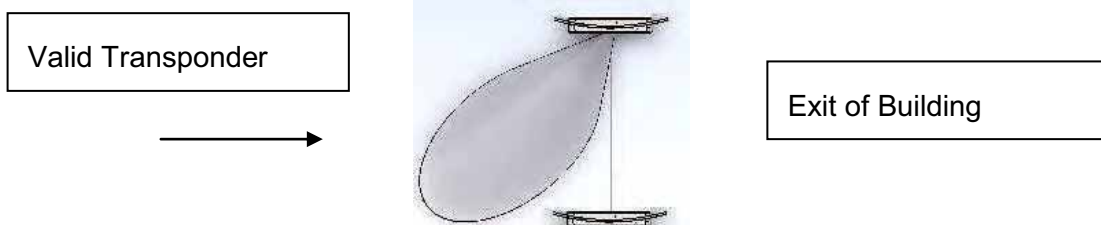
<p>9</p>	<p>A Test could be done with the People Counter Sample.</p>	 <p>The screenshot shows a software window titled "PeopleCounterSample - #100 by FEIG ELECTRONIC". It features two columns representing "Detector 1 (SEN1)" and "Detector 2 (SEN2)". Each column contains a 3D rendering of a turnstile. To the right of each turnstile are four numerical displays: "Coming in (Counter 1)", "Going out (Counter 2)", "Difference", and "Last Tags". All numerical displays show the value "0". Below the turnstile images are two empty table-like structures for "Last Tags". At the bottom of the window, there are three buttons: "TCP-Settings", "Reset Counter", and "Exit".</p>
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5.7.4 Using the trigger function of Gate People Counter

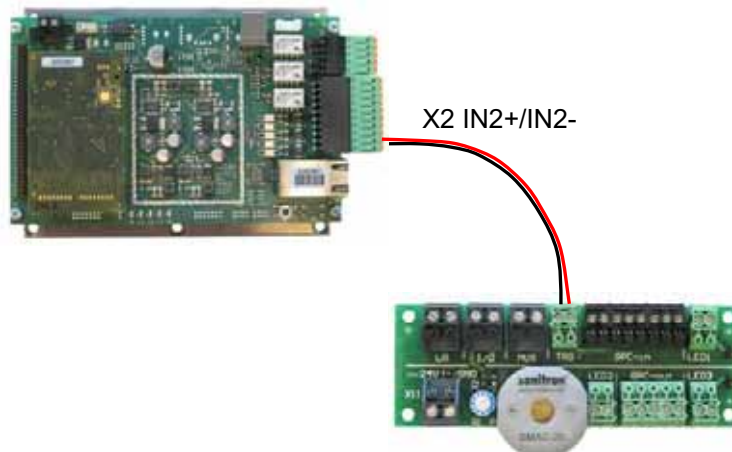



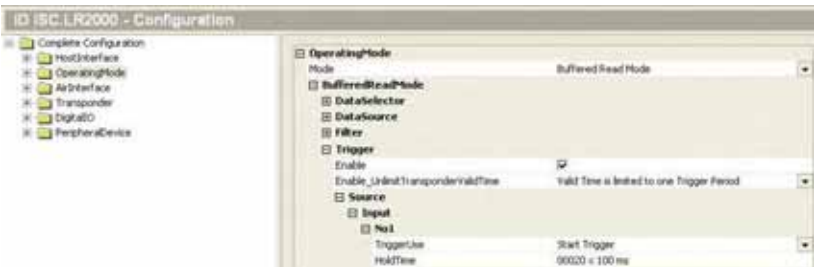
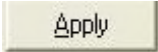

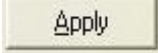
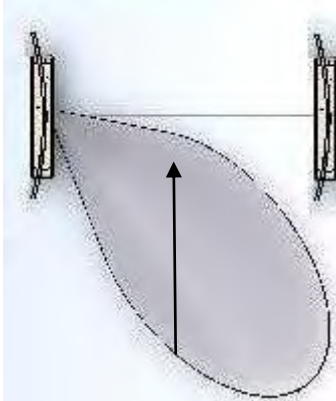
The trigger function could only be used in one of the Automatic Modes.

The trigger function works bidirectional, but a 100% safe reading of transponder is only possible from one direction. Due to this, it is necessary at the installation of the antennas, that the Radar module / Antenna faces to the direction of the transponder which could cause the alarm. At buildings (e.g. Libraries) the Radar module faces into the building. Otherwise the reading of the transponder will just be started, when the person/transponder is already in or outside the gate.



Long Range Reader
ID ISC.LRM2500-B



Step	Action	Note
1	Select „Configuration“	
2	Operating Mode Select -Buffered Read Mode or -Notification Mode	
3	Confirm with „Apply“	
4	Operating Mode Set -Trigger enable -Source Input No 2-Trigger Use set to - Start Trigger - Hold Time e.g. 20x100ms =2sec.	
5	Confirm with „Apply“	
6	Multiplexer stops switching of antennas. All Output LED's at Outputs of Multiplexer are switched off.	
7	Walk through the gate. Multiplexer/Gate will be switch on for the set time.	

6. Configure the reader in accordance with national RF regulations

Configuration of the RFID readers and the maximum transmitting power of the antennas are affected mainly by the country-specific RF regulations. For the entire EU the limits are set forth in the R&TTE Directive and EN 300 330.

The ID ISC.ANT1800/700 antenna with the ID ISC.LRM2500 Reader, when used as intended, complies with the basic requirements of Article 3 and the other relevant clauses of the R&TTE Directive 1999/5/EG of March 1999. This means that operation in the 27 EU countries and the EFTA countries (EU countries plus Switzerland, Norway and Iceland) is possible with a maximum field strength of 42 dB μ A/m at 10 m distance.

RF approval (at a maximum field strength of 84 dB μ V/m at 30 m) for the ID ISC.ANT1700/740 antenna with ID ISC.LRM2500 Reader has been granted in accordance with FCC Part 15 for the USA and the RSS-210 for Canada

RF approval in accordance with EN 300 330 is still possible in all 46 CEPT countries.

The CEPT countries are:

Albania (ALB), Andorra (AND), Austria (AUT), Azerbaijan (AZE), Belarus (BLR), Belgium (BEL), Bulgaria (BUL), Bosnia and Herzegovina (BIH), Croatia (HRV), Cyprus (CYP), Czech Republic (CZE), Denmark (DNK), Estonia (EST), Finland (FIN), France (F), Germany (D), Greece (GRC), Hungary (HNG), Iceland (ISL), Ireland (IRL), Italy (I), Latvia (LVA), Liechtenstein (LIE), Lithuania (LTU), Luxembourg (LUX), Malta (MLT), Former Yugoslav Republic of Macedonia (MKD), Moldova (MDA), Monaco (MCO), Netherlands (HOL), Norway (NOR), Poland (POL), Portugal (POR), Romania (ROU), Russian Federation (RUS), San Marino (SMR), Slovak Republic (SVK), Slovenia (SVN), Spain (E), Sweden (S), Switzerland (SUI), Turkey (TUR), Ukraine (UKR), United Kingdom (G), Vatican City (CVA) and Yugoslavia.

The following restrictions are in effect (as of: October 2009):

1. Outside the EU and EFTA countries RF approval must in all cases be applied for. The existing measuring protocols in accordance with EN 300 330 are generally sufficient.

When placing the antennas in service, the systems integrator must ensure that the prescribed mounting instructions are followed, the necessary Reader settings are made and permissible limits according to the national regulations are not exceeded.

The reader needs to be configured as follows depending on the installation location:

Parameter	USA / Canada / Europe
Air Interface	
RF-Power:	maximum 8 W
RF Modulation:	15%
Transponder	
RF Modulation / ISO-MODE / MOD	10%
RF Data coding ISO-MODE:	Fast (1/4) or Normal (1/256)
Timeslots ISO-MODE / NO-TS	1 or 16 Timeslots
ISO Option – BREAK:	Complete Timeslot length at „NO TAG“


7. Technical Data

7.1 Antenna ID ISC.ANT1800/700 Type A and B

Mechanical Data

- | | |
|---|---|
| • Housing | UV stabilized ABS and Acrylic |
| • Dimensions (W x H x D) | |
| – Antenna | 700 mm x 1798 mm x 70 mm ± 3 mm |
| – Packing | 850 mm x 1930 mm x 150 mm ± 10 mm |
| • Weight | |
| – ID ISC.ANT1800/700-A | Approx. 29 kg without /33,5 kg with packing |
| – ID ISC.ANT1800/700-B | Approx. 28 kg without /32,5 kg with packing |
| • Enclosure rating | IP 41 |
| • Colors | |
| - Antenna frame | acryl glass, clear transparent |
| - Antenna base | surface painted, white aluminum RAL 9006 |
| • Mounting | |
| – No. of attaching points | 2 |
| – Recommended anchors | Ø 10 mm |
| – Recommended minimum load capacity of the floor fastener | 5000 N / anchor |
| • Maximum horizontal load on the top edge of the antenna | 250 N* |

Electrical Data****

- | | |
|---|---|
| • Supply Voltage | 24 V  ± 15 % |
| • Power Consumption | max. 32 VA |
| • Operating Frequency | 13,56 MHz |
| • Maximum transmitting power per antenna | 8 W |
| • Permissible overall transmitting power per antenna gate | |
| – EU-territory (per EN 300 330) | 8.0 W |
| – USA (per. FCC Part 15) | 8.0 W |
| - Canada (per. RSS210) | 8.0 W |


• Outputs	
– 1 Optocoupler	24 V $\overline{\text{---}}$ / 30 mA
– 1 Optocoupler	Reader Synchronization
– 3 Relay (3 x NO)	24 V $\overline{\text{---}}$ / 1 A
• Inputs	
– 1 Optocoupler	Max. 24 V $\overline{\text{---}}$ / 20 mA
– 1 Optocoupler	Reader Synchronisation
• Interfaces	RS232 USB Ethernet (TCP/IP)
• Protocol Modes	FEIG ISO HOST BRM (Data Filtering and Data Buffering) Scan Mode (RS 232) Notification Mode (TCP/IP)
• Supported Transponders	ISO 15693, ISO 18000-3-A, (EM HF ISO Chips, Fujitsu HF ISO Chips, KSW Sensor Chips, Infineon my-d, NXP I-Code , STM ISO Chips, TI Tag-it) NXP I-Code 1
• Ranges / pass-through width in gate with multiplexer	
– One tag orientation	approx. 140 / 150 cm**
– All tag orientations	approx. 110 / 120 cm***
• Antenna connection	1 x SMA plug (50 Ω)
• Antenna connector cable	
- Type B	RG58, 50 Ω , approx. 8,55 m long

7.2 People Counter ID ISC.ANT1800/700-GPC and ID ISC.ANT.GPC-E

Mechanical Data

• Housing	Printed Boards
<ul style="list-style-type: none"> • Board Dimensions (B x H x T) <ul style="list-style-type: none"> – People Counter Board – Radar Sensor Board • Weight <ul style="list-style-type: none"> – ID ISC.ANT1800/700-GPC – ID ISC.ANT.GPC-E • Mounting <ul style="list-style-type: none"> – No. of attaching points 	<ul style="list-style-type: none"> 100 mm x 40 mm x 16 mm ± 1 mm 60 mm x 30mm x 25 mm ± 1 mm ca. 200 g / 250 g (0.55 lb) with packing ca. 50 g / 100 g (0.22 lb) with packing People Counter: 4 / Radar Sensor: 2

Electrical Data

<ul style="list-style-type: none"> • Supply Voltage • Power Consumption • Operating Frequency • RF-transmitting power • Temperature range <ul style="list-style-type: none"> – Operation – Storage 	<ul style="list-style-type: none"> • 24 V  ± 15 % Noise Ripple : max. 150 mV • max. 2 VA • 24,125 GHz • 16 dBm (e.i.r.p.) –25 °C to +55 °C –25 °C to +85 °C
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7.3 Approvals

As per Section 5.7.4

7.3.1 Europe (CE)

7.3.1.1 Antenne ID ISC.ANT1800/700

This RF equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC dated March 99.



Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489: Class 2

The technical data of the ID ISC.LRM2500 Reader built into the ID ISC.ANT1800/700-A antenna can be found in the Installation Manual which is included with the device.

7.3.1.2 People Counter ID ISC.ANT1800/700-GPC


This RF equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC dated March 99.



Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489: Class 2

7.3.2 USA (FCC) and Canada (IC)

7.3.2.1 Antenna ID ISC.ANT1800/700

Product name:	ID ISC.ANT1800/700
Antenna name:	ID ISC.ANT1800/700 Type A and Type B
Reader name:	ID ISC.LRM2500-B
FCC ID: IC:	PJMLRM2500 6633A-LRM2500
<p>Notice for USA and Canada</p> 	<p>This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.</p> <p>Operation is subject to the following two conditions.</p> <p>(1) this device may not cause harmful interference, and</p> <p>(2) this device must accept any interference received, including interference that may cause undesired operation.</p> <p>Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device.</p> <p>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.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :</p> <p>(1) l'appareil ne doit pas produire de brouillage, et</p> <p>(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>

Further information and technical data of the ID ISC.LRM2500-B Reader built into the ID ISC.ANT1800/700 antenna can be found in the Installation Manual which is included with the device.

7.3.2.2 People Counter ID ISC.ANT1800/700-GPC

<p style="text-align: center;">FCC : IC:</p>	<p style="text-align: center;">Contains: FCC ID: UXS-IPS154US 6633A-GPC</p>
<p>Notice for Canada</p>	<p>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. Usually this is followed by the following RSS caution:</p> <p>Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :</p> <p>(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>

7.3.3 USA and Canada (UL)

In preparation !

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The following picture indicates the label position:



8. Annex A

8.1 Terminal assignment "Terminal Board"

Terminal	Acronym	Description
X1 / LR		24V DC Reader
X1 / Pin 1		+24 V DC Reader
X1 / Pin 2	GND	GND Reader
X2 / I/O		24V DC Input/Output
X2 / Pin 1		+24 V DC Output 2 (Sounder / Buzzer)
X2 / Pin 2		Output 2 Emitter (Sounder / Buzzer)
X3 / MUX		24V DC Multiplexer
X3 / Pin 1		+24 V DC Multiplexer
X3 / Pin 2	GND	GND Multiplexer
X4 / TRG		Trigger People Counter 1
X4 / Pin 1	+	Input 2, TRG Trigger People Counter
X4 / Pin 2	-	Input 2 GND Trigger People Counter
X5 / GPC-in		Connection Cable to People Counter
X5 / Pin 1		+24V DC LED2
X5 / Pin 2		+24V DC LED3
X5 / Pin 3		+24V DC LED1
X5 / Pin 4		RS485-A
X5 / Pin 5		RS485-B
X5 / Pin 6		TRG Trigger People Counter
X5 / Pin 7		+24 V DC People Counter
X5 / Pin 8	GND	GND People Counter
X6 / LED1		Connection LED / Alarm light antenna
X14 / Pin 1	+	+24V DC LEDB
X14 / Pin 2	-	GND LEDB
X11		24V DC Power Supply
X11 / Pin 1	24V	Power Supply +24 V DC

X11 / Pin 2	- / GND	Ground – Power Supply
X12 / LED2		Connection LED / Alarm light 2. Antenna
X12 / Pin 1	+	+ 24 V DC LED2
X12 / Pin 2	-	GND LED2
X13 / GPC-out		Connection Cable to 2. People Counter
X13 / Pin 1	+	+24 V DC People Counter 2
X13 / Pin 2	GND	GND People Counter 2
X13 / Pin 3		TRG Trigger People Counter
X13 / Pin 4		RS485-A
X13 / Pin 5		RS485-B
X14 / LED3		Connection LED / Alarm light 3. Antenna
X14 / Pin 1	+	+24V DC LED3
X14 / Pin 2	-	GND LED3

Table 9: Pin-Configuration X11-X14 Terminal Board

8.2 Internal wiring

Terminal	Acronym	Description
X1 / LR		24V DC Reader
X1 / Pin 1		X13 +24 V DC Reader (red)
X1 / Pin 2	GND	X13 GND Reader (black)
X2 / I/O		24V DC Input/Output
X2 / Pin 1		Reader LR2500 X2 Pin Out2-C (white)
X2 / Pin 2	GND	Reader LR2500 X2 Pin Out2-E (black)
X3 / MUX		24V DC Multiplexer
X3 / Pin 1		X1 +24 V DC Multiplexer (red)
X3 / Pin 2	GND	X1 GND Multiplexer (black)
X4 / Trg		Trigger
X4 / Pin 1		LR2500 X2 Pin IN2+ (red)
X4 / Pin 2	GND	LR2500 X2 Pin IN2- (black)
X5 / GPC-in		Cable People Counter
X5 / Pin 1-8		Verbindung GPC X1
X6 / LED 1		LED
X6 / Pin 1		LED X1 + (violet)
X6 / Pin 2	GND	LED X1 - (black)