



SKIDATA[®]
KUDELSKI GROUP

Freemotion.Gate

Instructions for Installation
V1.3

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Freemotion.Gate

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**Declaration of conformity**

The devices mentioned in this documentation have been developed, constructed and manufactured in compliance with one or more of the following EU Directives:

EMC Directive 89/336/EEC, amended by 91/263/EEC, 92/31/EEC and 93/97/EEC

Freemotion.Gate contains one or more RF modules 'sd678' or 'sd705' and/or 'sd728' as built-in components. These RF modules are subject to R&TTE Directive 1999/5/EC and have separate EU Declarations of Conformity.

EMC compliant operation of the overall system must be ensured by –

- keeping network lines within required length limits
- proper installation of network lines
- proper connection of network cable screens
- regular inspections and proper maintenance of system devices subject to the EMC Directive

Manufacturer's Note:

The devices mentioned in this Documentation have been developed, designed and manufactured in accordance with the following EU Directive:

Machine Directive 98/37/EC

Operation of these devices is only permitted if the overall system in which they are installed and run complies with all requirements of EU Directive 98/37/EC (Machine Directive).

The devices mentioned in this Documentation that carry a UL® mark have been certified in accordance with the following standards:

- UL 325 (for USA)
- CSA C22.2 No. 247-92 (for Canada)



The following regulations apply expressly to all UL certified devices:

Any converting, upgrading or other modification of a UL certified device automatically voids its UL certification. A UL certification can apply only to devices in their original condition that have been properly installed in accordance with the appropriate installation instructions and applicable local regulations.

To retain UL certification of a retroactively modified device, an "On-Site Certification" must be obtained from Underwriters Laboratories Inc. (UL) by and at the expense of the device owner.

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1.2 Introduction

1.2.1 About this Documentation

This Manual contains setup and installation instructions for Freemotion.Gate.

The setup instructions in this Manual describes simple installation steps that may be performed by trained operating personnel.

Repairing of defects is not covered in this Manual. In the event of a system fault, please contact SKIDATA with a detailed description of the fault(s) encountered.

It is strongly recommended to read this manual before installing the device to learn about its main functions and requirements.

1.2.2 Transfer of documentation

Legitimate recipients of relevant technical documentation are required to refrain from passing on these documents to third parties, and from copying or storing them electronically, except for personal use.

1.2.3 Staff Trainings

Setup and installation work may only be carried out by trained maintenance personnel. The information provided in this Manual cannot replace proper training of operating and maintenance staff.

1.3 Layout and Symbols

Throughout this documentation, important sections and notes will be highlighted using special print styles and symbols.

1.3.1 Print styles

- Step-by-step instructions and enumerations are printed in the form of bulleted lists.

Important information is framed in a box. These text passages provide either special instructions or warnings against potential danger to the operator or device.

1.3.2 Symbols

The following symbols are used throughout the manual:



Warning against injury or damage.



Information about the proper use of a component, or important explanations or instructions.

1.4 Special Notes on Safety and EMC

Freemotion.Gate has been tested to ensure operational security. Potential remaining risks will be pointed out in system training courses and in this Manual.

- Technical work such as the installation of connections, setup, maintenance and adjustment of devices may only be carried out by certified electricians who are properly trained in accident prevention.
- The devices may only be used for the purpose intended by their manufacturer.
- Any unauthorised modification of the devices, as well as the use of spare parts or add-on devices not approved by the manufacturer may cause electric shock and/or other personal injuries. SKIDATA will under no circumstances assume any liability for resulting damage, personal or otherwise.
- The technician or project leader in charge is personally responsible to ensure that the device is set up and connected in accordance with any applicable technical rules and regulations in force at the installation site. This obligation applies in particular (but is not restricted to) cable dimensions, fusing, grounding, cut-off, disconnection, insulation control and excess-current cut-out.
- It is recommended to wear protective footwear during installation, as the devices are particularly heavy.

1.4.1 Danger from rotating parts

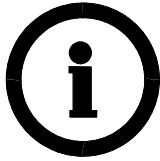
- When carrying out maintenance or service work, there is a certain danger of bruising from moving parts. It is therefore essential that the device is disconnected from the power supply and protected against accidental re-activation before performing technical work on it.



Warning: Avoid touching any of these moving parts while the device is powered on.

1.4.2 Electrical safety

- Electrical work may be carried out exclusively by trained electricians.

**Important note:**

Electrical installation and maintenance work may only be carried out by certified electricians with proper qualifications. Power connections must be hard-wired. Ensure full compliance with all applicable national and international rules and directives regarding electric connections, and all applicable safety regulations.

1.4.3 Danger from high temperatures

Warning: After disconnecting the device from the power supply, let it cool down before proceeding with service or maintenance work.

1.4.4 Warranty and liability

SKIDATA shall in no case accept any warranty or liability for personal or material damages arising from causes including, but not limited to, the following:

- Inappropriate use of the devices in question
- Improper installation
- Lack of appropriate safety and warning measures in and around danger areas
- Irregular or insufficient maintenance
- Use of material not approved by SKIDATA AG
- Failure to meet constructional or renovational requirements
- Insufficient training of operating staff
- Any constructional, technical or other modifications; any interference with and/or additions to the system carried out without the prior explicit approval of SKIDATA
- Natural catastrophes, impact of foreign bodies, vandalism, and acts of God

1.5 Glossary

DKZ

Turnstile (mechanism)

One-arm or Single-Arm

Single-arm turnstile gate mechanism

Turnstile Drum

Two-arm or Three-arm turnstile gate

Lane

A passage gate with reader and gate antennas; the antennas may be those of the proximate reader on the right or the termination reader (RD-FRMO/BASE-RIGHT).

Access Gate

Several access lanes in a row, all connected to a MIZ (MiniCentral)

MIZ

MiniCentral; controls and monitors the access gate

FRMO base unit (RD-FRMO/BASE):

Base reader unit with Antenna (standard version), Turnstile and Electronic Control Box

Electronic Control Box

Houses the main part of the electronic assembly, including CPU module, graphics module, barcode module, etc.

Torque

Effort for tightening screws in newton metre (N m).

Fig. 1: Freemotion.Gate 'Open'

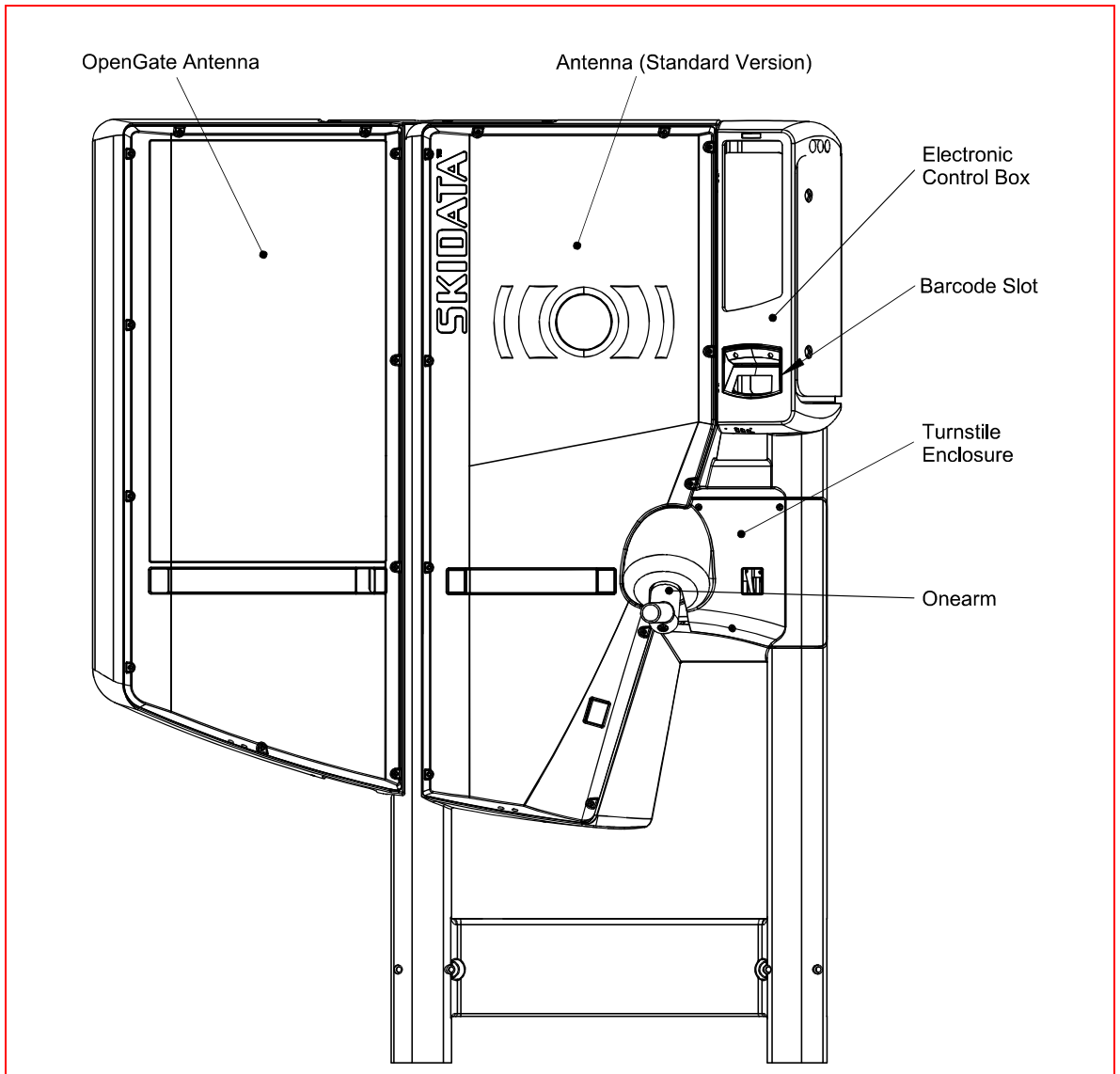
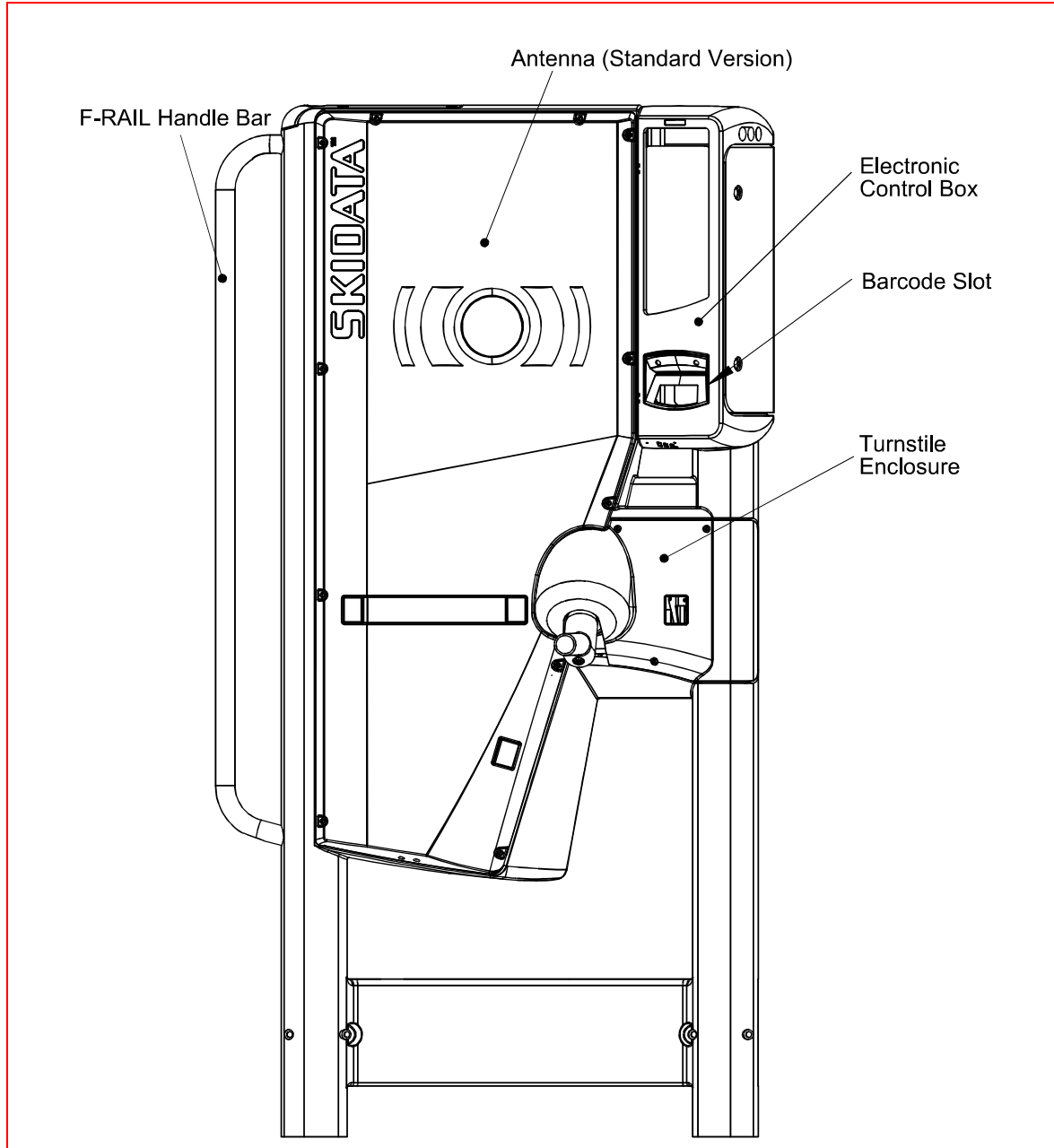


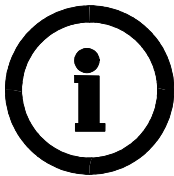
Fig. 2: Freemotion.Gate



1.6 Installation Planning

1.6.1 Introduction

The devices must be mounted on support stands (RD-FRMO/FOOT), which may be either installed on a base plate or on a foundation provided by the operator.



Important note: The operator of the access system is responsible for posting appropriate signs and indicators informing users of the need to approach the turnstile at an appropriately slow speed.

Example: Stick-on label or sign: "**Walking Pace**" or "**Slow Down**"



Important note: This unit does not provide any panic hardware feature and as such it cannot be used as an emergency exit!

1.6.2 Reader Cabling

Fig. 3: Access with n lanes

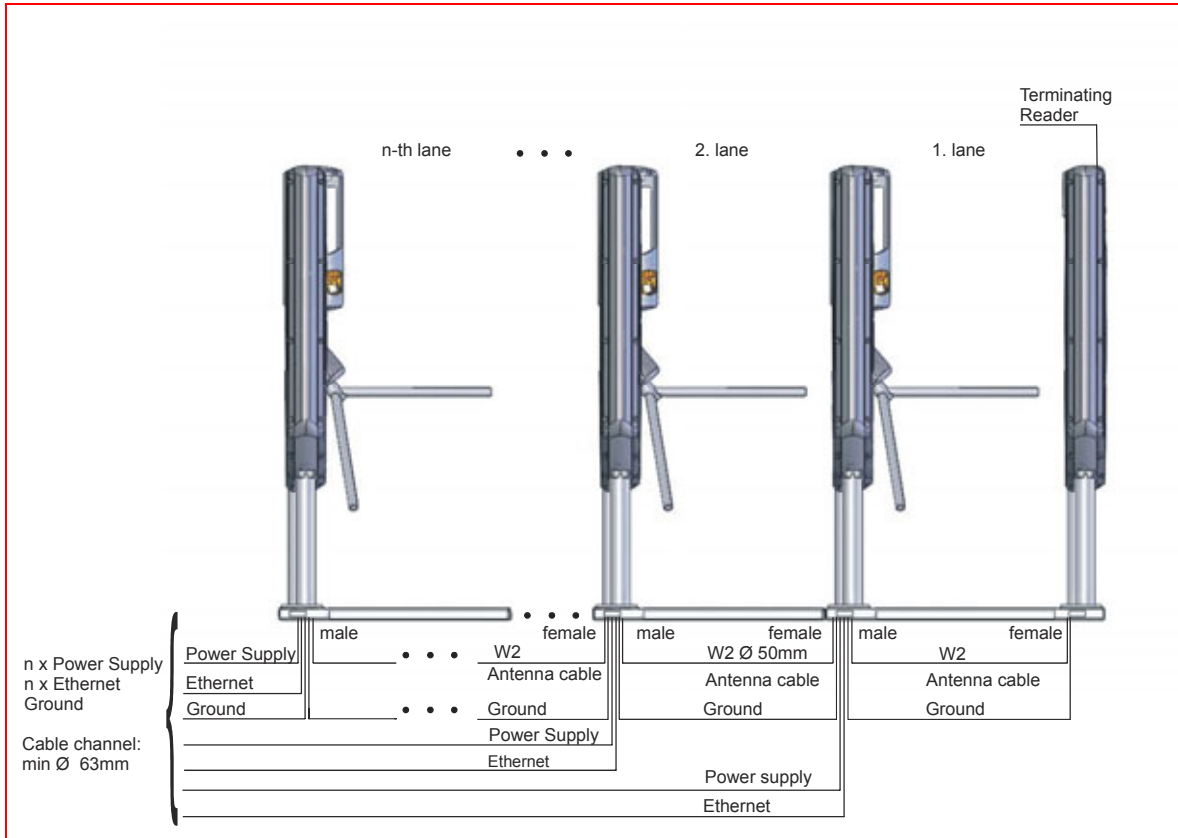
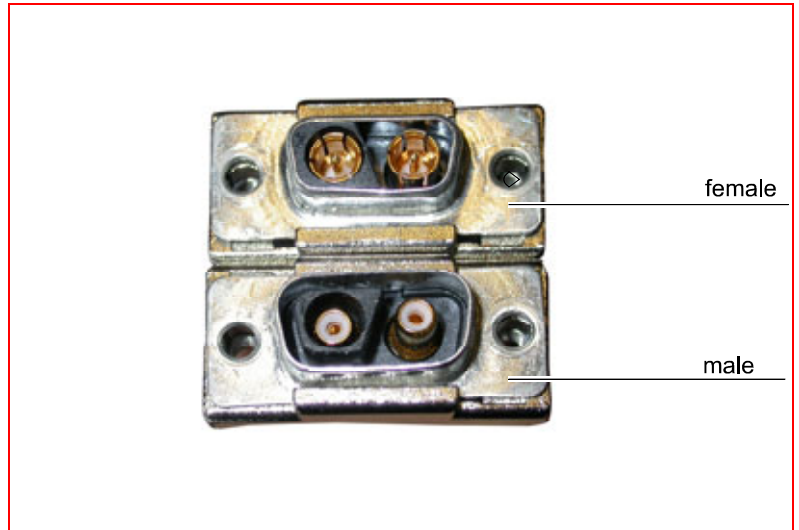


Fig. 4: Connector of External Antenna cable W2 (may vary)



To prepare the reader for installation, it is necessary to ensure an appropriately dimensioned cable channel leading from the power supply to the readers and connecting the individual readers.

- Power supply to reader: min. \varnothing 63 mm
- Reader to reader: min. \varnothing 50 mm

Use the following cables for each reader:

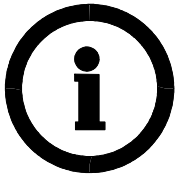
- External antenna cable (W2) for connecting readers to each other (supplied with support stand "RD-FRMO/FOOT").
- Power supply lead
- Ethernet network cable (min. CAT 5e)
- Ground wire

The power supply and network cables must be threaded through the support stands and the holes in the base plates to each individual reader. The external antenna cable must be connected through from one reader to the next.

NOTE: It is recommended to guide the external antenna cables through first, because of the size of the connectors.

The required cross-sectional area of the 24 V power supply cable with respect to cable length is as follows:

- < 20 m: (2x) 2.5 mm²
- < 30 m: (2x) 4.0 mm²
- < 40 m: (4x) 2.5 mm²
- < 60 m: (4x) 4.0 mm²

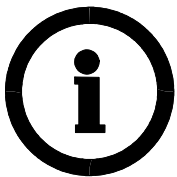


Important note: Cable lengths must be dimensioned in a way that an excess length of at least 1m on each location of the reader for connecting the cables inside the reader is left.

Ground wire

The device must be grounded with an appropriately dimensioned cable. At the device side, this cable must be fitted with a ring cable lug (M8) and attached to the central earthing point inside the support stand.

When installing the device, remember that the cable channels of the installation platform can only accommodate cables up to 20 x 60 mm². When using cables with a large cross-sectional area, it may be necessary to guide them to each reader individually from below.



Important note: When mounting the device on a foundation, ensure that the cable channel is sufficiently dimensioned.

Each reader must be connected individually; also, the external antenna cable must be guided from reader to reader (see Fig. 3).

1.6.3 Power Supply

Each device (except RD-FRMO/BASE-RIGHT) requires its own power supply adapter (Puls QS10.241). This is available in two different versions:

- Desktop version inside a housing (not for US)
- Version for installation inside a closed switchboard

All power supply adapters for installation inside a switchboard must be separable from the power supply by means of an automatic cut-out. Ideally, each device should have its own cut-out, as this simplifies maintenance considerably.



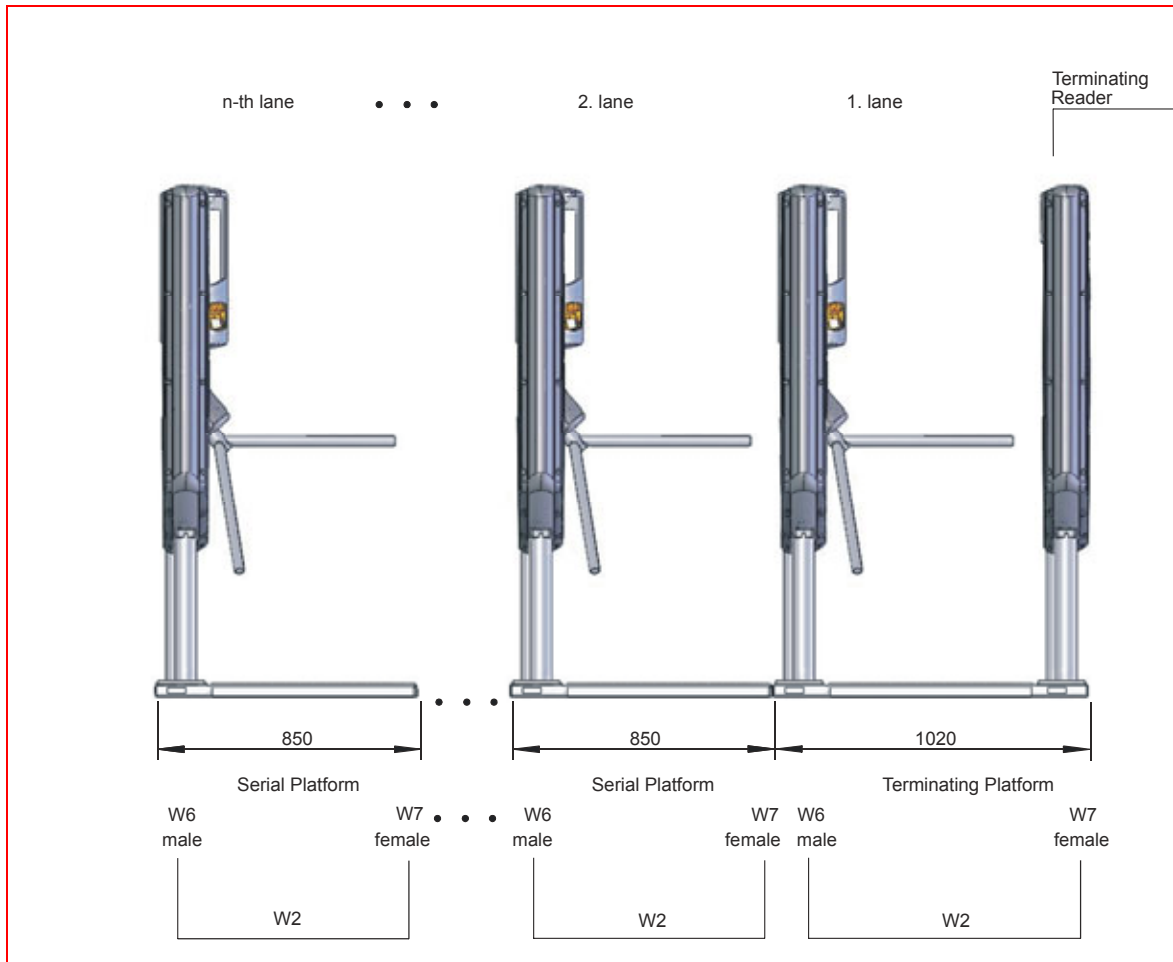
Important note: Power supply units intended for installation inside a switchboard may only be installed by a qualified electrician. (Installation instructions of the power supply adapter).

It is necessary to ensure that the following conditions are met:

- Ambient temperature: max. +60°C
- Switchboard must conform to pollution degree 2

1.6.4 Platform Arrangement (dimensions in mm)

Fig. 5: Arrangement and dimensions of platforms



The floor mounting platforms have a depth of 880 mm and are required for installation on support stands.

There are two basic versions:

- A termination platform for each first lane of a gate (left = RD-FRMO/BASE ; right = RD-FRMO/BASE-RIGHT)
- A serial platform for each additional lane (left = RD-FRMO/BASE)

1.6.5 Installation on Foundation or Plinth

Installation on Foundation

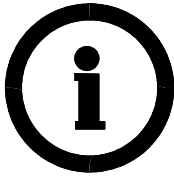
- When placing cable ducts ensure that the cross-sectional area is sufficiently dimensioned (see Fig. 3).
- Cable ducts for the external antenna cable (W2) are also required between each reader.

Installation on Plinth

- The openings at the bottom of the support stands must be protected against snow getting in.

1.7 Setup and Installation

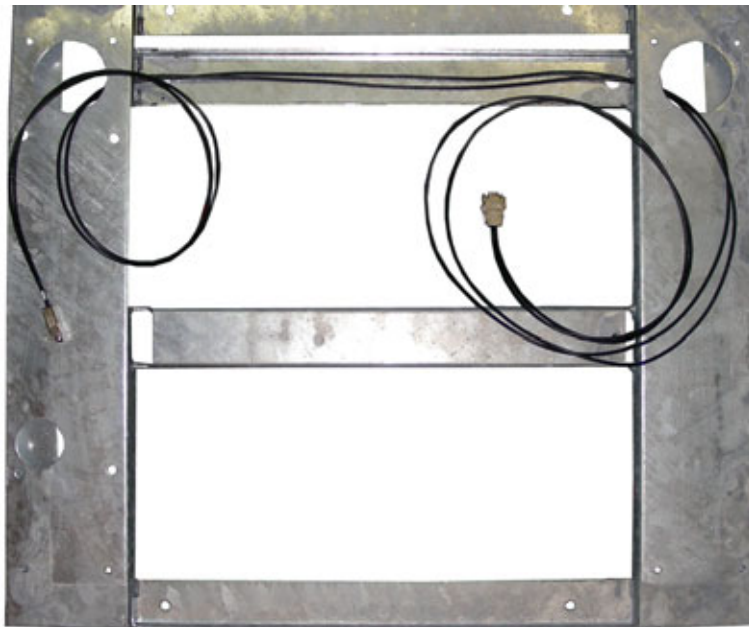
When installing multiple readers, it is recommended to start from the right hand side with the termination reader so as to avoid mixing up the connections of the antenna cable (W2).



Important note: Unless stated otherwise, all illustrations show the gate arrangement with installed reader in the direction of passage.

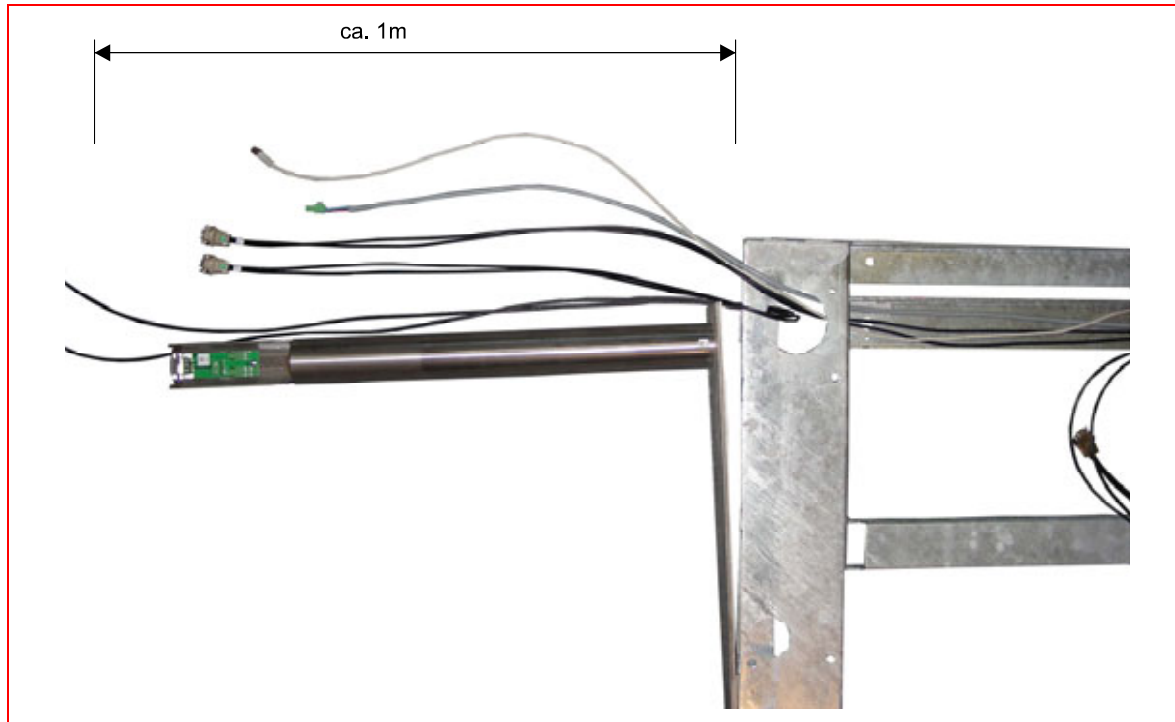
1.7.1 Aligning the Platform and Placing Cables

Fig. 7: Platform and Antenna cable W2

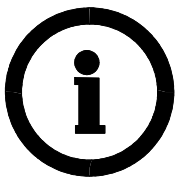


- Ensure that the platform is levelled on the ground for maximum stability, then remove the step-on plate.
- Guide the external antenna cable W2 through the built-in cable channel on the proper side (left = male; right = female)
- Pull the other cables (power supply, ethernet, ground) through the cable channel towards the left opening, leaving approximately 1 m of cable slack.

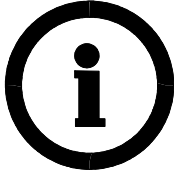
Fig. 8: Support stand with required cable slack



- Remove the protective cap from the support stand.
- Guide the cable through the tube to the connection board (sd701).
- Plug the cable into connection board sd701 as follows.
- Place any cable excess inside the cable channel in the form of loops.



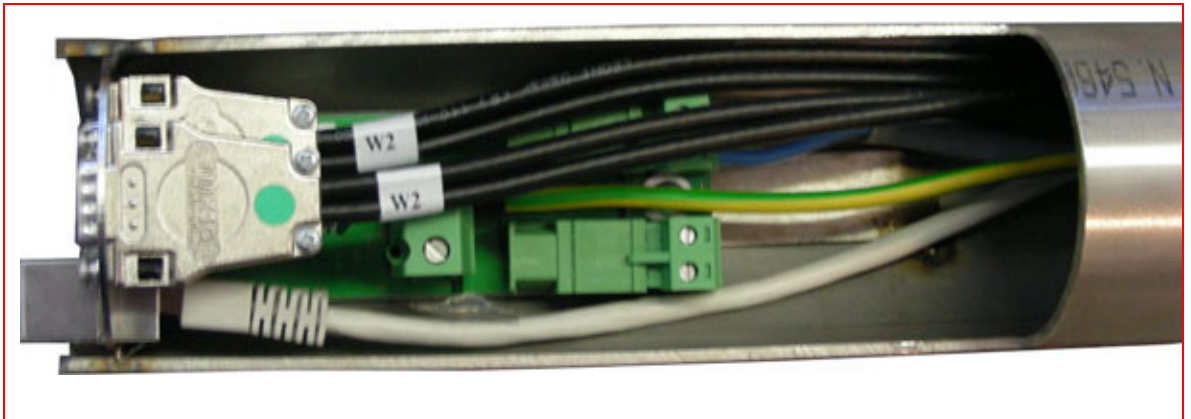
Important note: In multi-lane arrangements, don't forget the W2 external antenna cable for the next lane.



Important note: Always keep the protective caps of the support stands; screw them on as a weather protection in case no reader is installed.

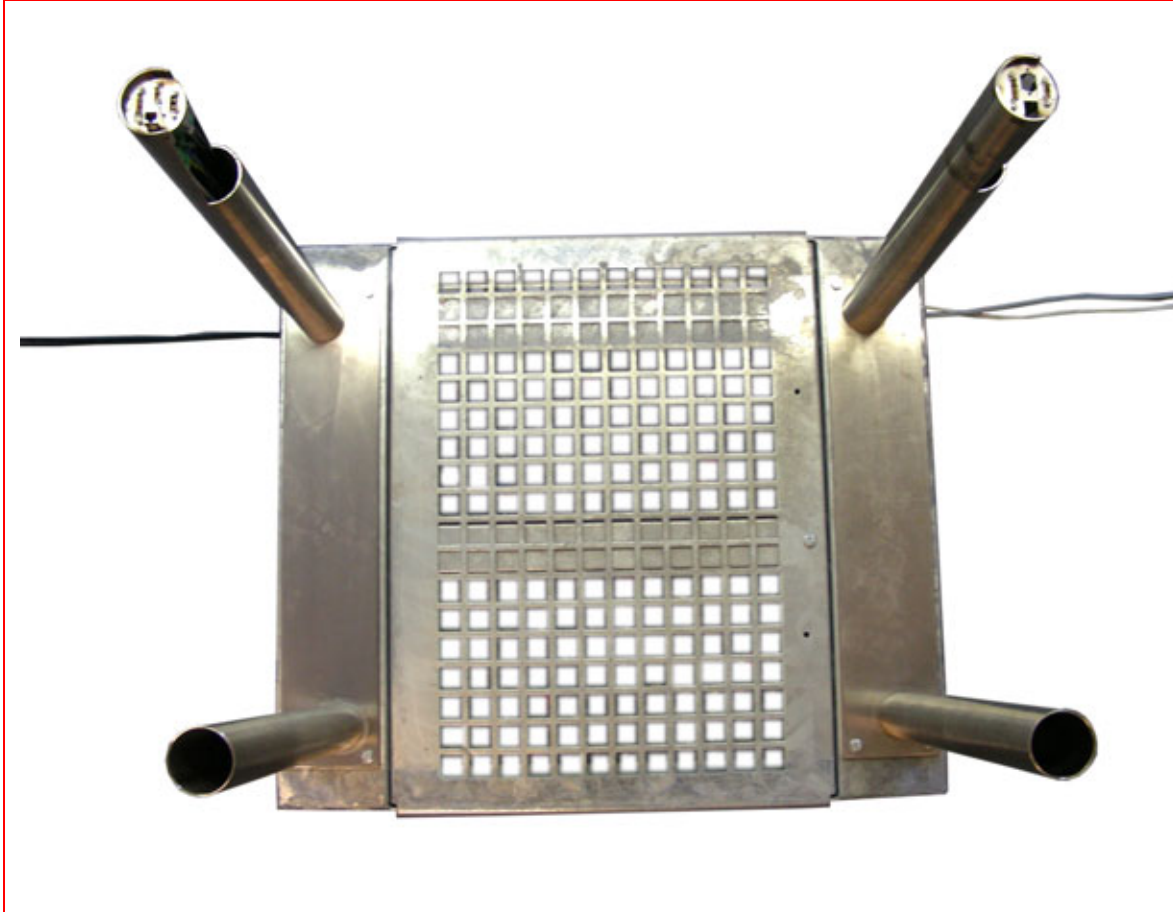
1.7.2 Connecting and Installing a Support Stand

Fig. 9: Support stand - cabling (may vary depending on arrangement)

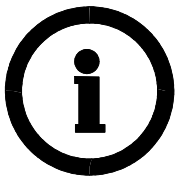


- Power supply: Power supply is provided by way of two connectors in parallel (this allows for two cables to be installed to increase the cross-sectional area). The polarity of the power connectors is indicated on the board (right: + and left: – on both connectors).
- Ground (PE) The ground connector is located directly above the power supply connector. This is not a plug-in connector; the connection must be made directly at the circuit board.
- Ethernet: Attach the Ethernet coupler to the connector card and plug in the Ethernet cable at the bottom.
- External antenna cable (W2): Attach the connector casings of the antenna cables also at the bottom of the mounting plate, using the corresponding locking screws (the exact position is irrelevant).

Fig. 10: Termination platform with support stands



- Roll the cable slack into loops and tuck it into the support stand tube; next, screw the support stands to the platform using four fastening screws per stand. (Torque: 21 N m)

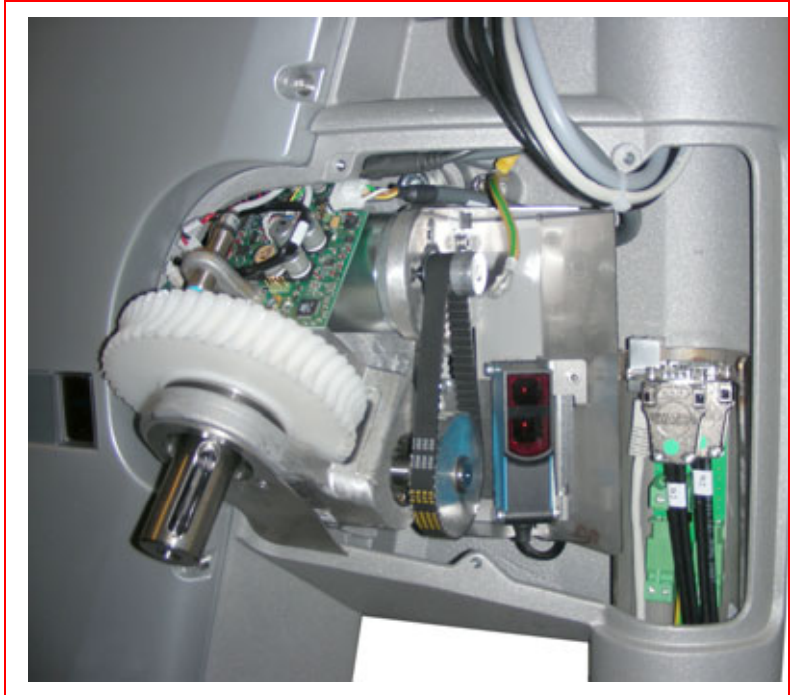


Important note: Always make sure that the cables are not bruised or damaged.

1.7.3 Preparing Reader Installation

- Take the reader out of its packaging.
- Remove the turnstile cover
- Take the cable form out and pull it through the opening at the top, taking care not to damage the cables when attaching the reader.

Fig. 11: Turnstile enclosure (open)



1.7.4 Installing the Reader

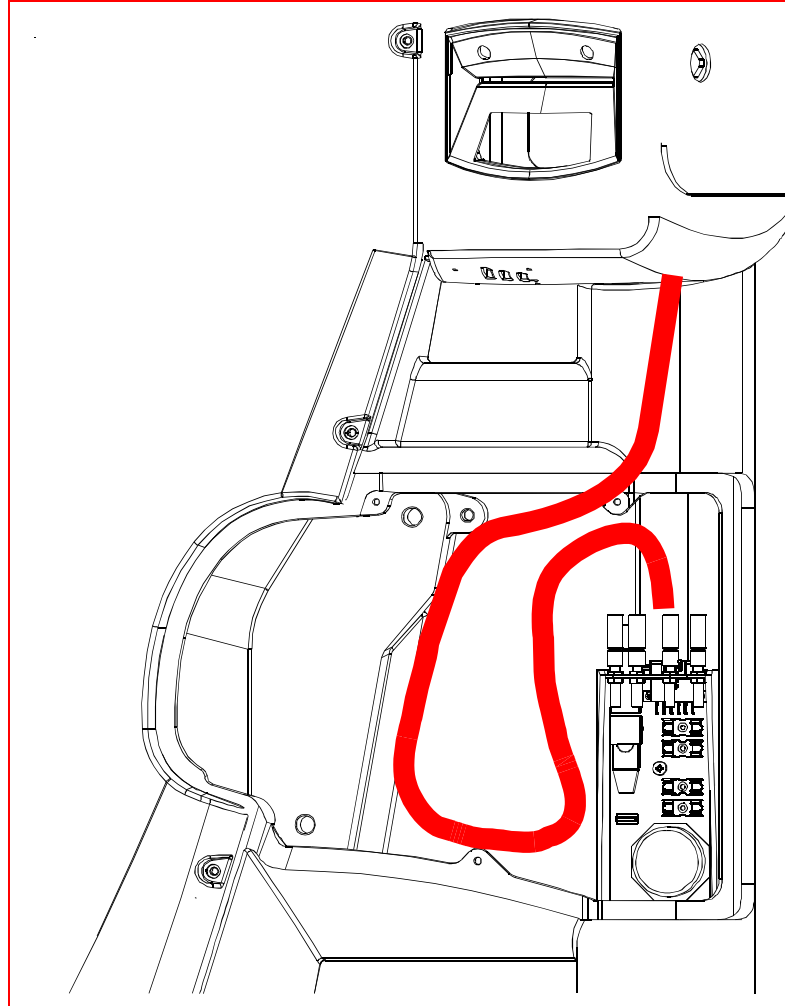
- With the help of at least another person, lift the reader over the support stand, making sure that it is properly aligned (with the turnstile side over connection board sd701 inside the support stand).
- Slowly lower the reader, keeping it as straight as possible to avoid tilting it.



Warning: Be careful to avoid injury from bruising!

1.7.5 Place the Cable Harness inside the Turnstile.

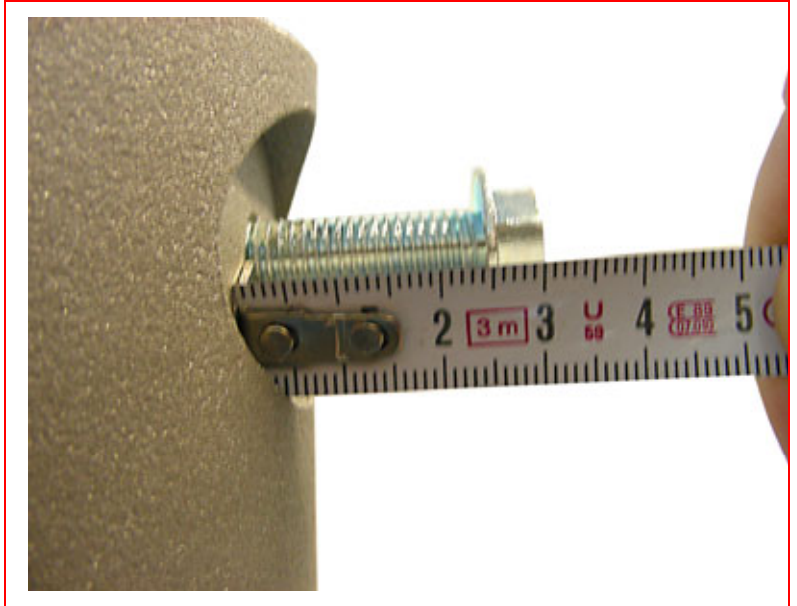
Fig. 12: Cable form inside turnstile enclosure



- Place the cable harness behind the gearing cover plate in the shape of an S (see illustration) so that the connectors reach the corresponding sockets inside the support stand.
- Ensure proper functioning, even when using the height adjuster. Make sure the cables are not kinked or bruised.
- Attach all connectors and ensure that they are fully locked into place (there is no danger of confusing the connections, providing external antenna cable W2 has been installed correctly).

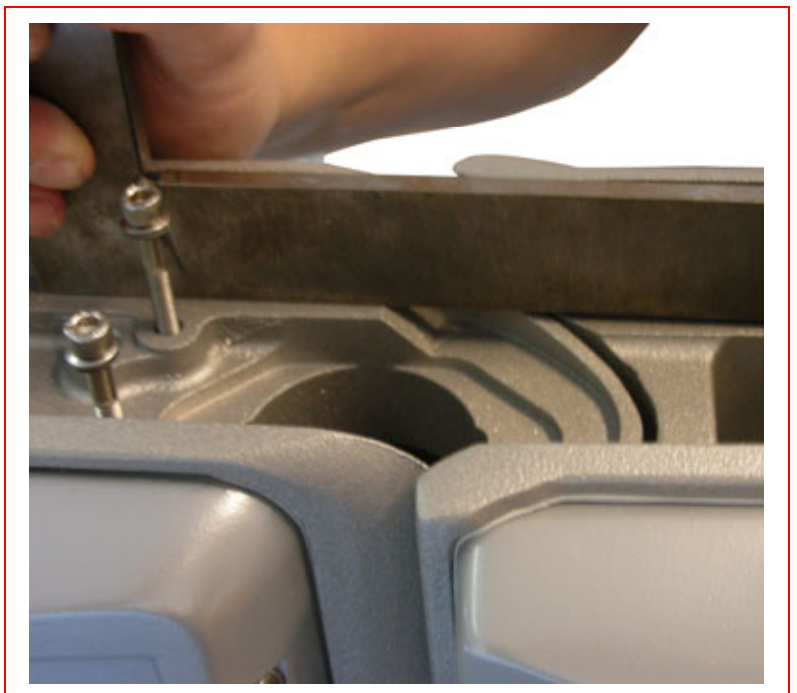
1.7.6 Mounting the Open Gate Antenna (option)

Fig. 13: Locking screw for Open Gate antenna



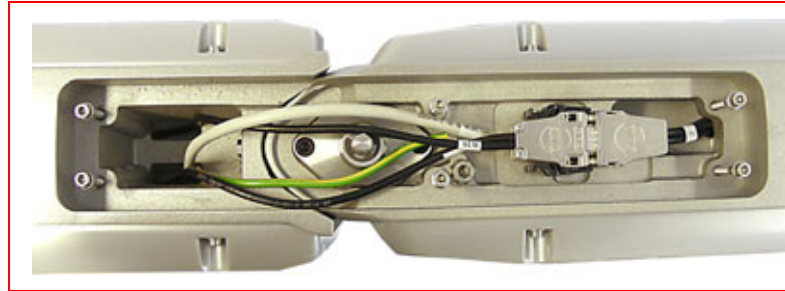
- Fix the long screw on the upper side and leave an excess of approx. 25 mm.
- Fix the short screw on the lower side and leave an excess of approx. 20 mm.
- Hang the Open Gate antenna on its hinges at the bottom, then at the top screw.

Fig. 14: Reader – Top view, without Open Gate cover



- The Open Gate antenna must be aligned so that it is flush with the standard reader (check with a set square or a similar flat object – see Fig. 14).
- Attach the Open Gate antenna using the two locking screws. (Torque: 10,5 N m)

Fig. 15: Open Gate cabling



- Connect the plug-in connectors to the reader on top and guide the cables along the left and right side of the (optional) height adjuster.
- Fasten the ground wire using the grounding screw.
- Put on the gate cover and fasten it using the six screws (Torque: 5 N m); make sure that the cables are not squeezed or bruised.
- Ensure proper fitting of the sealing profile inside the gate cover.

1.7.7 Mounting the Handle Bar (optional)

- Using two screws (supplied), fasten the handle bar to the front side of the reader.
- Attach the cover (standard version) for the reader antenna on top of the reader, making sure it seals the enclosure tightly.
- Ensure that the sealing profile of the standard cover fits properly.

1.7.8 Powering On and Testing

Fig. 16: Electronic Control Box door (open)



- Open the door of the electronic control box by turning the locks on both sides by 90° (1/4 turn).
- Switch on the power supply.
- Set the power switch to the ON position; the reader should power up.

Fig. 17: Freemotion.Gate with termination reader and Open Gate on termination platform



When the function test has completed successfully:

- Power off the reader.
- Close the door of the electronic control box.
- Install the turnstile cover (do not forget the ground wire; Torque: 5 N m).
- Hinge the step plate into place at the left hand side of the floor plate and fasten it with a screw on the right hand side.
- Attach the turnstile drum/arm and screw it into place.
- Lift the reader to the desired height (up to 40 cm max.) and fasten both screw clamps (left and right) on the support feet. (Torque: 20 N m)

1.8 Disassembling the Reader

To disassemble the Reader, proceed as follows:

- Power off the reader.
- Switch off the power supply adapter.
- Remove the Open Gate antenna.
- Remove the turnstile drum (a single-arm turnstile may remain installed, but needs to be folded down).
- Unfasten and remove the turnstile cover.
- Disconnect the cable form, take it out and pull it through the opening below the electronic control box.
- Unfasten the clamps at the support feet.
- With the help of another person, lift the reader off the support stand, taking care not to tilt it.



Warning: Be careful to avoid injury from bruising: Readers without comfort height adjusters should be held securely by one person while the other unfastens the clamps.

- Store the cable form inside the turnstile enclosure and re-attach the cover.
- Store the reader (and Open Gate wing) properly and securely in its packaging.
- Protect the support stand and connections against weather influence by using the protecting caps.

1.9 Table of torque

Components	Screwtype	Torque
OpenGate-Antenna	2 x M8	10,5 N m
Screw Clamps	4 x M8	20 N m
Cover Standard	4 x M5	5 N m
Cover OpenGate	6 x M5	5 N m
Cover Turnstile	3 x M5	5 N m
Support stand	4 x M10	21 N m