English

Installation Guide

RFID Reader UF70 Certum

The installation guide must be read prior to installation. Observe the safety instructions!
Store for future use! This documentation is not subject to revisions.
ID120026   02/2012

This installation guide corresponds with "Directive 1999/5/EC of the European Parliament and the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of the conformity".

CE

This installation guide is addressed to the company owner, who must pass it on to the personnel responsible for installation of the machine.

The plant manager must ensure that the information contained in this installation guide and in the accompanying documents has been read and understood.

The manufacturer does not assume any responsibility for injuries to persons or animals, or damage to property or to the device arising from incorrect installation or disregard or insufficient consideration of the safety criteria contained in this installation guide.
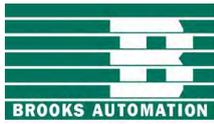
Objectives of the installation guide

This installation guide contains all the necessary safety information that must be followed for general safety and installation.

This installation guide including all safety information (as well as all additional documents) must be followed, read and understood by all persons installing the device.

Symbols and signal words

The following symbols and signal words are used in this documentation. The combination of a pictograph and a signal word classifies the respective safety information. The symbol can vary depending on the type of danger.

	Symbol	Signal word	Description
Death	⚠	DANGER	This signal word must be used if death or irreversible damage to health can occur if the hazard information is not followed.
Risk of injury and property damage	⚠	WARNING	This signal word indicates bodily injuries and property damage including injuries, accidents, and health risks.
	⚠	CAUTION	This signal word indicates a risk of property damage. In addition, there is a slight risk of injuries.
No damage	❗	ATTENTION	This signal word warns of malfunctions and may only be used if no damage to health can occur.
	❗	IMPORTANT	This signal word indicates cross-references and ways in which operations are facilitated. It excludes all risks of property damage and injury risks.

Target group

The installation guide is addressed to personnel with the following areas of responsibility:

Area of responsibility	Competence
Installation	Specialized personnel
Commissioning and decommissioning	Instructed personnel

Definition according to DIN EN 60204-1:

Instructed personnel:
Persons who have been instructed and, if required, trained by a specialist as to the tasks assigned to them, the possible risks of incorrect behavior and the required safety equipment and safety measures.

Specialized personnel:
Persons who can evaluate the work assigned to them and recognize possible risks based on their specialized training, knowledge, experience and familiarity with the relevant standards.

Further documentation

For the RFID Reader UF70 Certum a Product Manual is also available. It contains information on operation, troubleshooting, transport and storage.

Contents

Contents

1   Identification

Model   RFID Reader UF70 Certum

Serial number   00 – 0001 – UF70

Part number   TUG-E1ML-4O00-F4-00E1 ETSI version, protection class IP40
TFG-E1ML-4O00-F4-00E1 FCC version, protection class IP40
TUG-E1ML-4O00-R4-00E1 ETSI version, protection class IP65
TFG-E1ML-4O00-R4-00E1 FCC version, protection class IP65

Manufacturer

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RFID Division
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Website   www.brooks-rfid.com

For information on the label, see ➜ Device label.

Declaration of   In the Product Manual of the RFID Reader UF70 Certum you find the detailed
conformity   wording of the Europe - CE conformity.

Designated use   This product is exclusively developed for reading and writing of passive UHF transponders (e.g. EPC Class1 Gen2). Any other use of this device constitutes misuse and renders the user's authority to install and operate the device invalid.

This product is designed to be mounted and operated in an industrial setting as a built-in-device only. It is not designed to be used as a stand-alone or portable device or in a non-industrial setting, such as a household, vehicle or in the open-air.

Intended use also includes the following:

■   following all instructions in the installation guide

■   following all safety information

Before installing the device, the user should ensure that the national approval requirements for use are met.

2 Safety Instructions

This chapter gives you an overview of the following topics:

- ■ ➔ Area of application and symbols
- ■ ➔ ESD instructions
- ■ ➔ Residual risks
- ■ ➔ Additional instructions

2.1 Area of application and symbols

DANGER

Danger to life, risk of injuries or damage to property

Risks exist when disregarding the installation guide and the safety instructions therein.

Carefully read the installation guide before initial commissioning. Perform the required safety measures before initial commissioning.

Follow the general safety information as well as the special safety information given in other chapters.

The device was constructed according to state-of-the-art technology and recognized safety regulations. In order to prevent any risks to life and limb of the user, third parties or damage to the device, only use the device for its intended purpose and in perfect condition with regard to safety.

Bodily injuries and/or property damage resulting from non-compliance with the instructions given in the installation guide are the responsibility of the company operating the device or of the assigned personnel.
Malfunctions that could compromise safety must be eliminated immediately.

2.1.1 Safety symbols – in compliance with 4844-2

WARNING

Risk of injuries when disregarding safety symbols

Risks exist when disregarding warnings in the installation guide.

Please heed the warnings.

Special safety symbols in accordance with DIN 4844-2 are used in the corresponding passages in the text of this installation guide and require special attention depending on the combination of signal word and symbol.

2.1.2   Warning symbols

Warning against hazardous area

Warning against hazardous electrical voltage

Warning against electromagnetic radiation

Warning against flammable materials

Warning against potentially explosive atmosphere

Warning against electrostatically sensitive components

2.1.3   Prohibition symbols

Unauthorized access is prohibited

Fire, open flame and smoking is prohibited

Switching is prohibited

Prohibition

2.1.4   Other symbols
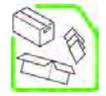
Dispose of packing material according to regulations

Recycling

Important information

Refer to manual

Disconnect from power supply

2.2 ESD instructions

CAUTION

Static electricity can damage electronic components in the device. All persons installing the device must be trained in ESD protection.

ESD protective measures must be applied when opening the device.

- ➲ Disconnect the power supply prior to removing or adding components.
- ➲ Discharge your body and all tools used prior to contacting any components on the interior of the device!
- ➲ Touch electronically sensitive parts carefully and at the corners!

2.3 Residual risks

Even if all precautions have been taken, there may be unapparent residual risks!

Adhering to the safety instructions, the intended use and the installation guide as a whole can reduce residual risks!

DANGER

Risks from electric current

Electrical energy remains in lines, equipment and devices even when the device is switched off.

Only allow qualified electricians to perform work on the electrical supply system.

2.4   Additional instructions

■   Read and understand all safety instructions prior to installing the device.

■   This documentation was written for specifically trained personnel. The installation may only be carried out by specifically trained personnel.

■   Observe all warnings. Follow all warnings on and in the device and in the documentation.

■   Install the device only in accordance with the manufacturer's instructions.

■   Use only the accessories and cables supplied by the manufacturer.

■   Do not connect the device to power supplies such as normal household electrical outlets. The device should only be connected to power supplies as specified in this document.

■   When removing a cable, only pull on the plug and not on the cable. Connect cable connectors straight and carefully to avoid damaging the contacts.

■   Never bend the antenna cables too far or subject them to mechanical forces.

BROOKS AUTOMATION

RFID Division

3 Product Specifications

This chapter gives you an overview of the following topics:

- ■ ➔ Images
- ■ ➔ Description of the components
- ■ ➔ Technical data

3.1 Images

3.1.1 Front view
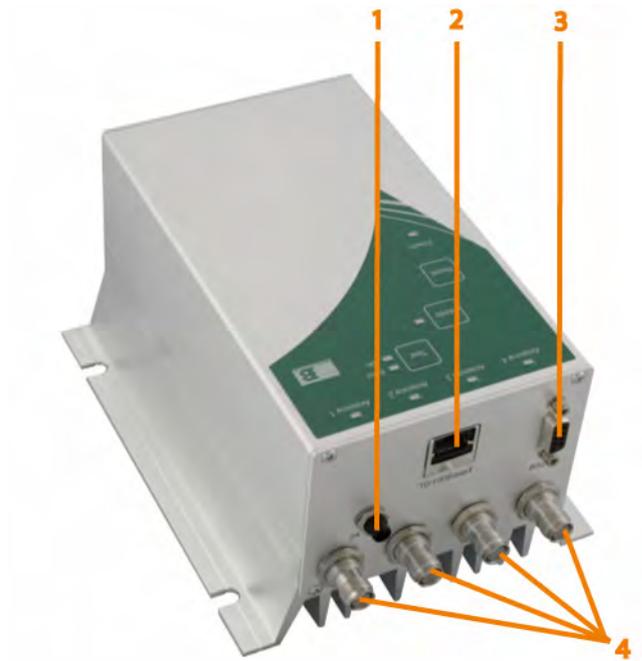
1	Power (24 V)	3	RS232 interface
2	Ethernet interface	4	4 antenna ports

3.1.2 Rear view

1   4 I/Os

3.1.3 Top view
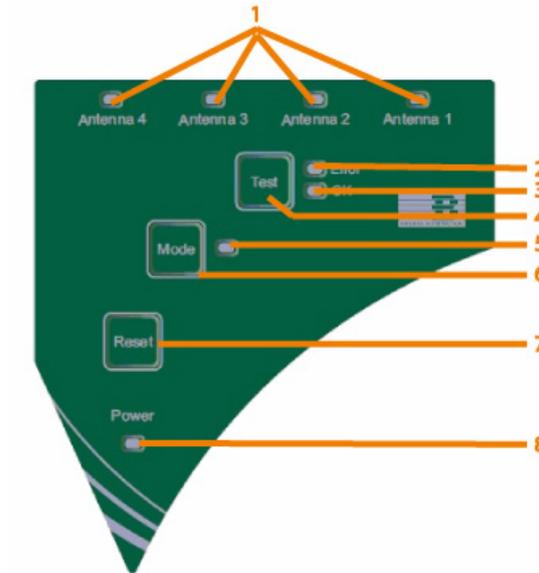
1	Antenna port LED	5	Mode LED
2	Test Error LED	6	Mode button
3	Test OK LED	7	Reset button
4	Test button	8	Power LED
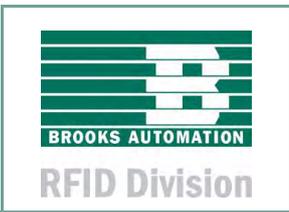
3.2   Description of the components

| Component	Description
Power LED	If the correct voltage is applied to the device, the Power LED is green and the device is operational.
Reset button	Pressing this button initiates a power-reset of the device. The reset button must be pressed for at least three seconds until all the LEDs of the foil keypad simultaneously start and the hardware reset is executed.
Mode button	If the mode button and the reset button are simultaneously pressed at a powerup reset for about 15 seconds until all the LEDs of the keypad light up for the second time, the reader will be reset to the default state (default factory setting).
Mode LED	Currently no use.
Test button	Pressing this button switches the device to the reading test mode and is used to select the antenna ports. If the button is pressed for a longer time (at least 2 seconds), then the test mode is activated (Test OK LED and Test Error LED both briefly come on) or disabled (Test OK LED and Test Error LED both go out). Briefly pressing the buttons when the test mode is activated results in switching to the next antenna port.
Test OK LED	When a transponder in the test mode can be successfully identified, this LED turns green.
Test Error LED	When a transponder in the test mode cannot be successfully identified, this LED turns red.
Antenna port LED 1 to 4	These LEDs signal the data traffic to the respective antenna ports. Once data is read or written via the antenna port 1 (above), the antenna port LED 1 (above) turns green.
Antenna port LED 1 to 4	Ports to connect the antennas.

Component	Description
I/O ports 1 to 4	A digital input and output can be connected to each antenna port. A 3 wire sensor or dry contact is possible as the input. The output can operate a LED without a series resistor or directly switch 5 V DC (Imax = 100 mA).
RS232 interface	Communications with the device can be made via the serial interface (9 pin sub-D socket). Baudrates of 1,200 Bd up to 57,600 Bd are possible.
Ethernet interface	Communications with the device can be made via the 10/100 Base T interface.
Voltage supply connection	Contact for connecting the 24 V DC voltage supply
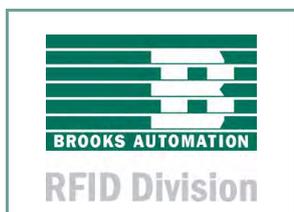
3.3   Technical data

Technical data	
Voltage	24 V DC ± 10%
Power consumption	approx. 0.8 A at 24 V
Operating temperature	-20 °C to 50 °C -4 °F to 122 °F
Storage temperature	-40 °C to 85 °C -40 °F to 185 °F
Permissible humidity at 50 °C / 122 °F	25 − 85%
Protection class	IP 40 (optional IP 65)
Housing material	Passivated aluminum
Weight	approx. 1,500 g
Air interface	ISO 18000-6C (EPC Global Class 1 Gen2)
Frequency range Europe	865 − 868 MHz
Frequency range FCC	902 − 928 MHz
Radiation power	< 2 Watt ERP
Transmitting power	programmable in 1 dB steps
Read / write range	up to 8 m
Serial interface RS232	1,200 Bd − 57,600 Bd
Ethernet interface	10/100 BaseT

3.3.1   Device label

The device label with the CE mark and part/serial number is on the device housing.
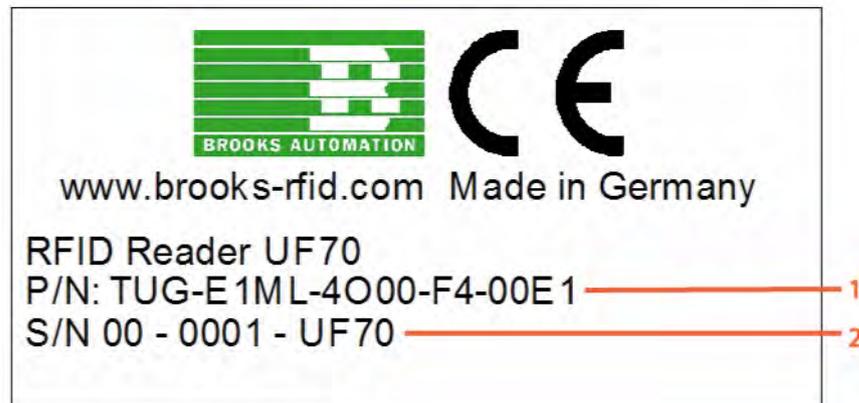
1   Part number

2   Serial number

4 Installation

This chapter gives you an overview of the following topics:

- ■ ➜ Safety instructions
- ■ ➜ Qualified installation personnel
- ■ ➜ Unpacking
- ■ ➜ Assembly of the device
- ■ ➜ Antenna installation
- ■ ➜ Power supply
- ■ ➜ Terminal connection
- ■ ➜ External input and output (optional)
- ■ ➜ Commissioning

Follow the instructions in the safety chapter

Follow the general safety instructions in the chapter ➜ Safety Instructions.

4.1 Safety instructions

CAUTION

The device is designed for indoor use in an industrial setting only.

Installation is only allowed in an interior room at a constant temperature between -20 °C / -4 °F and +50 °C / 122 °F, and a relative humidity between 25% and 85%.

Never use the device near or in water.

Never pour liquids of any type over the device. If the device should accidentally come in contact with liquid, disconnect it and have it checked by a technician.

Do not install the device near heat sources such as radiators, heat registers, stoves or other devices (including amplifiers) that generate heat.

Do not install the device in a flammable environment.

CAUTION	Never expose the device to extreme temperature fluctuations, since otherwise condensation develops in the device and causes damage.
	Do not install the device in the vicinity of voltage lines or other power lines with which they could collide (for example, when drilling), which could result in serious injuries or even death.
	The device (especially the antenna) should not be installed in the immediate vicinity of electrical equipment such as medical devices, monitors, telephones, TV sets, magnetic disks and metal objects. This could result in reduced read and write ranges.
	Never use the device in explosive areas (such as paint warehouses).
CAUTION	Do not use the device in areas where it is exposed to vibrations or shocks.
ATTENTION	The installation location must be adequately illuminated during the installation.
	Never install the device during a lightning storm.
	Verify that the installation meets the requirements of the (country-specific) FCC for human exposure to radio frequencies.

ATTENTION

When determining the installation site, keep in mind the length of the antenna wire and the read/write range of the antenna used.

4.2   Qualified installation personnel

CAUTION

Installation is to be carried out by specially trained personnel only. If you are uncertain about their qualification, contact the manufacturer.

CAUTION

Installing the device without special training can result in damage to the reader and/or connected devices.

4.3   Unpacking

The device and the accessories are packed under clean-room conditions. In order to maintain this condition, the device must also be unpacked in clean-room conditions.

Disposing of the packaging material

The packaging material consists of cardboard and foil. Dispose of these materials separately and observing the respective legal regulations of your country.

## 4.4   Assembly of the device

ATTENTION

The mounting surface must be stable, non-flammable, dry and clean.

If necessary, clean it before installing the device.

The device must be installed so that air can freely circulate vertically through the heat sink, and the operating and environmental conditions specified under ➔ Technical data are met at all times.

Installation dimensions
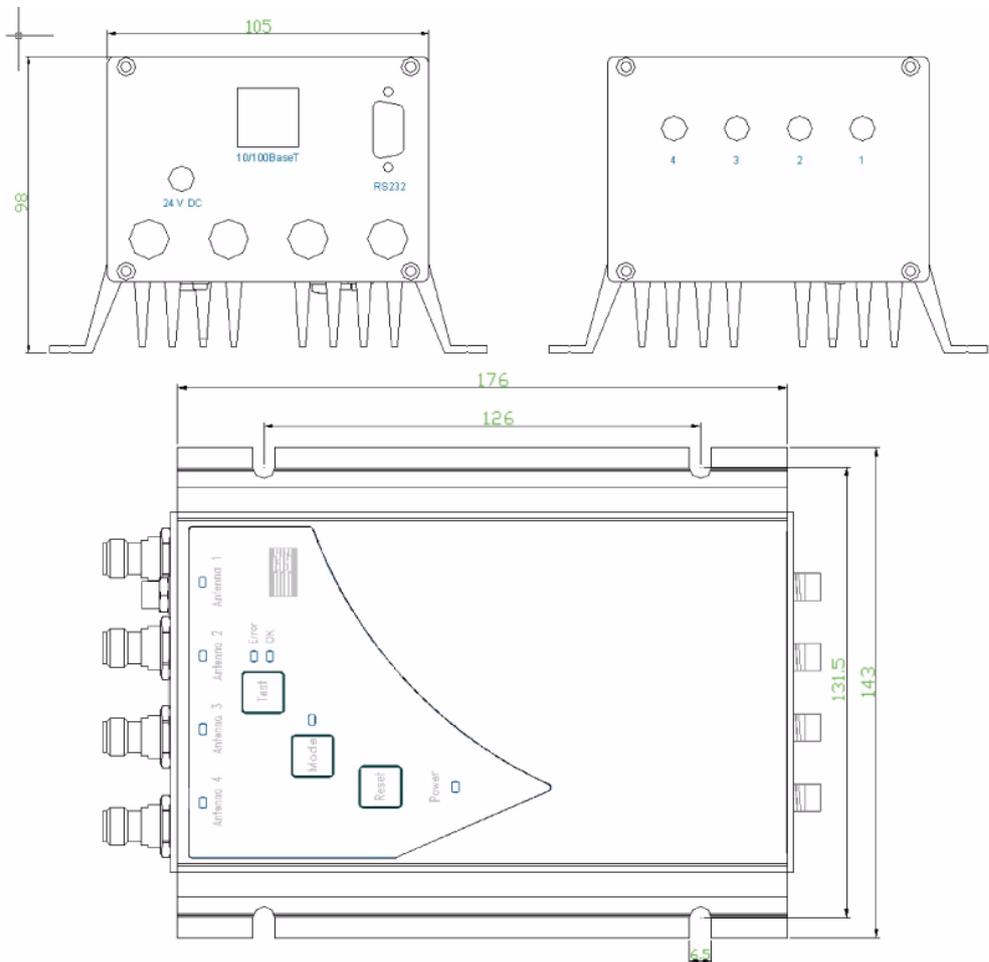
4.5   Antenna installation

ATTENTION

Consider the required read and write ranges when installing the antenna. The reader can only be used properly if the transponder is located within the individual reading/writing range of the respective antenna.

If the transponder is very close to the antenna, the transponder may be detuned by the metal of the antenna and a reading/writing is not possible. We recommend keeping a minimum distance between transponder and antenna of about 10 mm.

4.6   Power supply

DANGER

Risk of death from dangerous voltage

Risks exist when supplying the device with the incorrect voltage.

Only use cables, plugs and adapters supplied by the manufacturer.

Observe power ratings of the technical data (➜ Technical data).

The device can be connected to an internal power supply of the system or to an external power supply.

Once the device is connected to the power supply, the power LED lights up.

Pin	Signal
1	GND
2	+24 V DC
3	GND

Pins 1 and 3 are both grounded.

4.7   Terminal connection

The serial interface is a Sub-D socket (9-pin).
A normal RS232 extension cable can be used.

Pin	DB9
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

4.8　External input and output (optional)

The following I/O versions are possible:
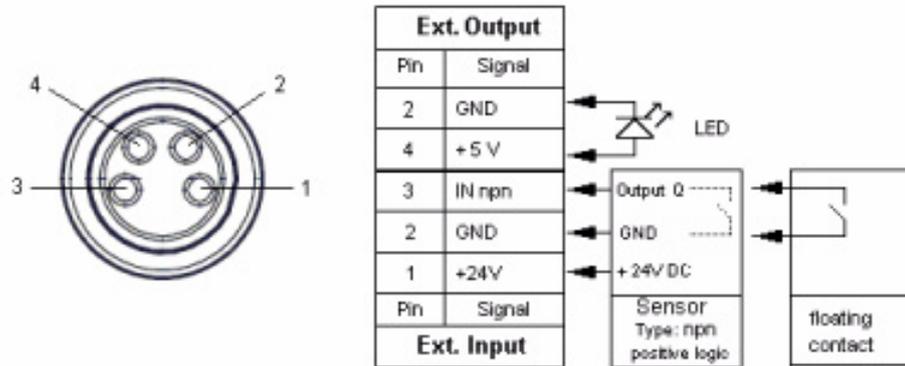
A digital input and output can be connected to each antenna port.

A 3 wire sensor or dry contact is possible as the input.
The output can operate a LED without a series resistor or directly switch 5 V DC.

4.9　Commissioning

4.9.1　Required operating conditions

To operate the reader, the following requirements must be met:

- ➲　An antenna must be connected correctly to the reader.

- ➲　Connect the power supply and switch on the device (if a POE is not used).

- ➲　The transponder must be located within the individual reading/writing range of the antenna (for testing)!

4.9.2　Parameters of the serial interface

Baudrate	57,600
Data bits	8
Stop bit	1
Parity	No

4.9.3   Parameters of the Ethernet interface

The Ethernet is connected via an Ethernet module.
Tools are available that allow the Ethernet settings to be configured.
By using Discovery Tools, all Ethernet devices located in the network can be found.
The respective device can be configured via a web server and a web browser via a double click. If the TCP / IP address is known, the web server can also be directly opened in a browser also follows:

http://xxx.xxx.xxx.xxx/

User: "root"

Password: "dbps"

xxx.xxx.xxx.xxx – currently set IP address

Login
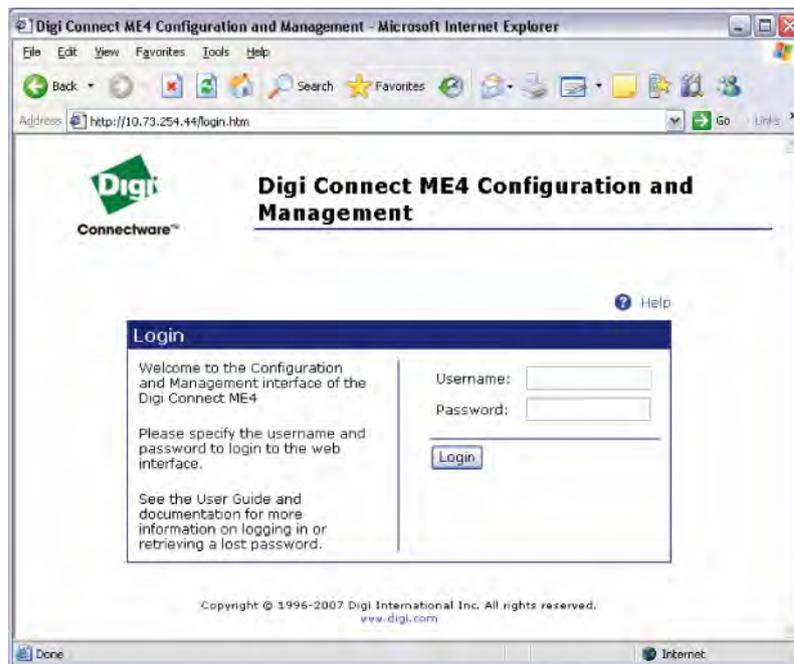
The IP address can be set via the "network" link. The settings are transferred with the "apply" button and the device is then rebooted.

Configuration
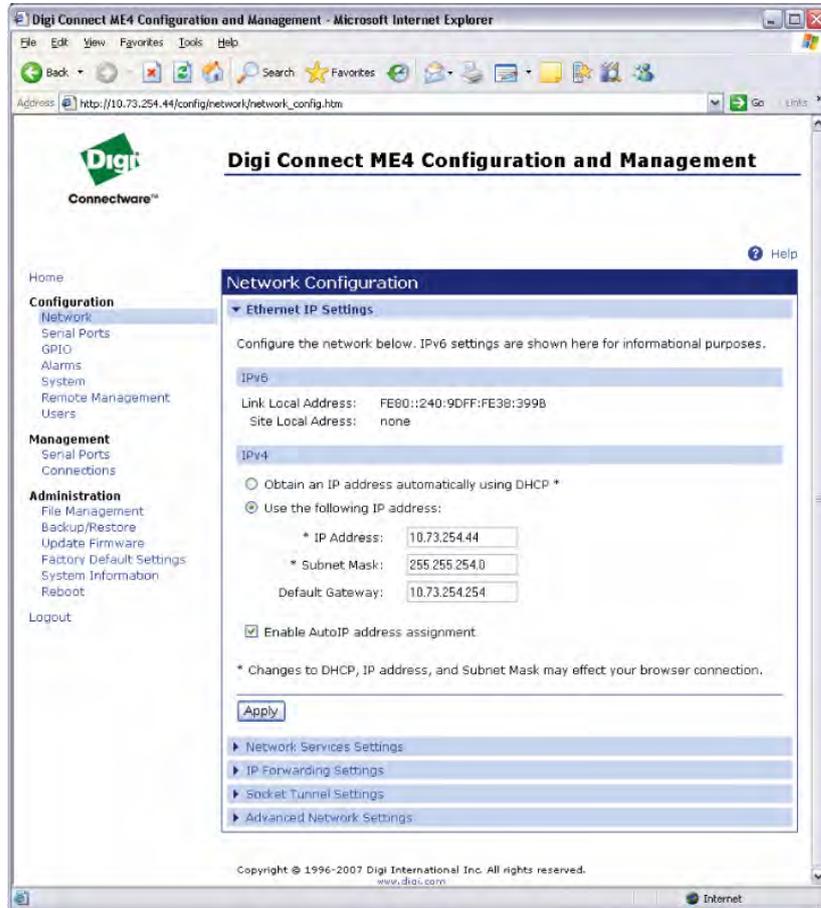
IMPORTANT

The "Factory Default Settings" must not be set under any circumstances as they are not the factory settings of Brooks. Any other settings of the Ethernet device (exept the IP address) must not be changed. Otherwise a fault-free communication cannot be guaranteed by Brooks.


Digi Device Discovery

The tool displays all devices that have a Digi Connect ME. Devices that are not in the same subnet are also displayed. The IP address can be set directly via "configure network settings". Fixed IPs or DHCPs are possible. The web server of the device can be accessed directly via the "open web interface".

Selection window
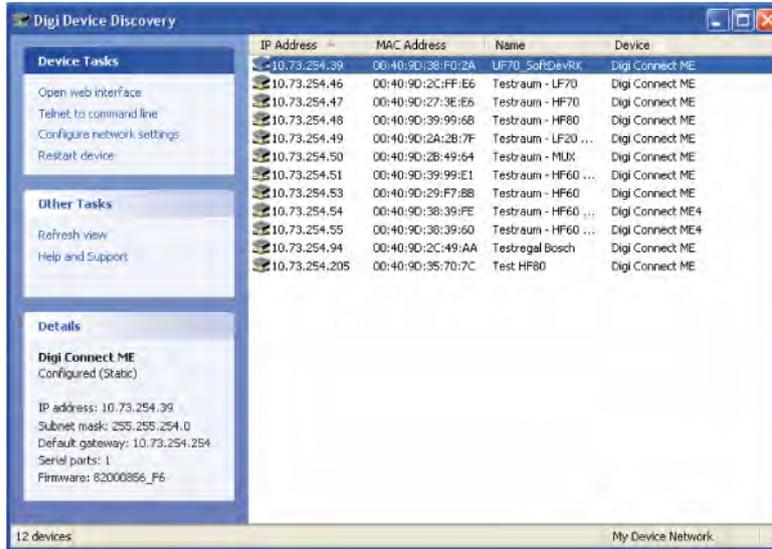
Input window
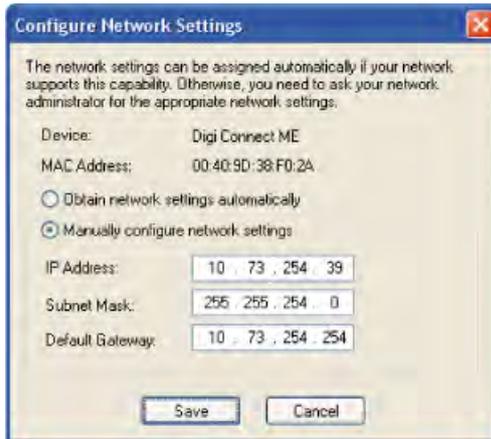
5 Service and Troubleshooting

This chapter gives you an overview of the following topics:

- ■ → Customer service
- ■ → Troubleshooting

5.1 Customer service

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Korea	+82 31 288 2500
Singapore	+65 6464 1481

5.2   Troubleshooting

Follow the instructions specified in the safety chapter

Follow the general safety instructions in the chapter ➜ Safety Instructions.

➲   The transponder reader and its components must be serviced by the manufacturer only!

➲   If errors occur, follow the instructions in the Product Manual of the RFID Reader UF70 Certum.

➲   If you are uncertain about errors and their handling, contact the manufacturer, see ➜ Customer service. Have the serial number of the transponder reader ready as shown on the label (see ➜ Device label) when contacting the manufacturer!

6 Dismantling and Disposal

This chapter gives you an overview of the following topics:

- ➜ Dismantling
- ➜ Disposal

6.1 Dismantling

- ⮌ Remove the power supply!
- ⮌ Remove all cables!
- ⮌ Loosen and remove the mounting screws!
- ⮌ Remove the device from the installation area!

6.2 Disposal

The device and its components are made of various materials.

Dispose of these materials separately, and observing the legal regulations of your country.

Do not dispose of the device in regular household waste.

Disconnect the electronic components from the case and dispose of them as follows:

- the case as scrap metal
- the electronic components, antennas and cables as electronic waste