IQT4-*-R4-V1

RFID Read/Write Devices, RS-485, 13.56 MHz, ISO 15693

Manual

Your automation, our passion.

PEPPERL+FUCHS

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1 Introduction

1.1 Content of this Document

This document contains information that you need in order to use your product throughout the applicable stages of the product life cycle. These can include the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal

Note

For full information on the product, refer to the further documentation on the Internet at www.pepperl-fuchs.com.

Note

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com/device-information.

The documentation consists of the following parts:

- Present document
- Datasheet

Additionally, the following parts may belong to the documentation, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Instruction manual
- Functional safety manual
- Cybersecurity documentation
- Other documents

1.2 Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the product. The personnel must have read and understood the instruction manual and the further documentation.

Prior to using the product make yourself familiar with it. Read the document carefully.

1.3 Intended Use

Always operate the device as described in these instructions. Only in this way, the safe function of the device and the connected systems is guaranteed.

The protection of operating personnel and plant is only given if the device is used in accordance with its intended use.

1.4 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:

Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.

Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.

Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols

Note

This symbol brings important information to your attention.

Tip

This symbol brings an useful tip to your attention.

Example

This symbol provides an example of the issue described.

Action

This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

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1.5 Terms and Abbreviations

Terms

Tag	Mobile data carrier containing user data and a unique number
Fixed code	Unique and unalterable number of a tag
IQC	Pepperl+Fuchs-specific designation of tags with 13.56 MHz
ISO/IEC 15693	Standard for data transmission for a 13.56 MHz RFID system
Tag	Read/write tag; tag
AFI	Identifier for the application family; represents the application type that is solved by the tag; enables only the relevant ones to be addressed from a variety of tags
DSFI	Identifier for the data format; indicates how the data is structured in the tag memory

Abbreviations

AFI	**A**pplication **F**amily **I**dentifier
FCC	**F**ederal **C**ommunications **C**ommission
HF	**H**igh **F**requency
IC	**I**ndustry **C**anada
ISO	**I**nternational **S**tandardisation **O**rganisation
RFID	**R**adio **F**requency **Id**entification
RSSI	**R**eceived **S**ignal **S**trength **I**ndicator
PLC	**P**rogrammable **L**ogic **C**ontroller
UID	**U**nique **I**tem I**d**entifier
DSFID	**D**ata **S**torage **F**ormat **I**dentifier

2 Cybersecurity

The device is secure developed according to IEC 62443-4-1 for the application area defined here.

To ensure cybersecure operation and to protect the device, implement the following measures.

Security Context

The RFID read/write device is designed for operation via RS-485 point-to-point connection.

The Communication is realized via a proprietary, unencrypted, serial protocol.

The protocol used is an unencrypted ASCII protocol.

Physically protect the device and the application against unauthorized access.

Firmware updates are signed by Pepperl+Fuchs. This ensures protection against tampered firmware.

Maintenance and Management

Operate the device using the latest firmware. The latest firmware can be found at https://www.pepperl-fuchs.com/cybersecurity.

Check the website regularly for security advisories publications: https://www.pepperl-fuchs.com/cybersecurity.

Report incidents to the manufacturer.

Decommissioning

The device stores adjustable parameters and operating data.

To delete data, you have to physically destroy the device.

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3 Certificates and Approvals

3.1 General

This manual applies to several types and variants of the device. The applicable approvals can be found in the relevant data sheet for your device. Further approvals are available on request.

3.2 CE Marking

This product was developed and manufactured in line with the applicable European standards and directives.

Note

A Declaration of Conformity can be requested from the manufacturer or downloaded from www.pepperl-fuchs.com.

3.3 FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Attention:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note

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.

To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.

To comply with FCC RF exposure compliance requirements, the antennas used for this transmitter must be installed to provide a minimum separation distance from all persons as specified in the table below and must not be co-located or operated in conjunction with any other antenna or transmitter.

Type/Design	Minimum separation distance
IQT4-*-R4-V1	20 cm

3.4 IC Compliance Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with IC RF exposure compliance requirements, the antennas used for this transmitter must be installed to provide a minimum separation distance from all persons as specified in the table below and must not be co-located or operated in conjunction with any other antenna or transmitter.

Type/Design	Minimum separation distance
IQT4-*-R4-V1	20 cm

3.5 UL Information

The ambient temperature range is from -25 °C ... +70 °C for operation with nontransmission periods.

Nominal power supply voltage is 24 V_{DC}, voltage range is 18 V ... 30 V_{DC}. Supply must be CLASS 2.

Degree of protection (IP67) is not included in the UL approval. The degree of protection is tested by Pepperl+Fuchs SE.

Caution!

Connection cable Specifications

The device must be connected exclusively using any R/C cord (type CYJV/7 or CYJV2/8) with appropriate ratings.

4 Product Description

4.1 Product Description

Use and Application

The read/write devices are designed for reading and writing passive tags in the 13.56 MHz frequency range in accordance with the ISO15693 standard. The read/write devices have a serial RS-485 interface.

Figure 4.1 IQT4-FP-R4-V1

Figure 4.2 IQT4-F61-R4-V1

Figure 4.3 IQT4-18GM-R4-V1

4.2 Dimensions

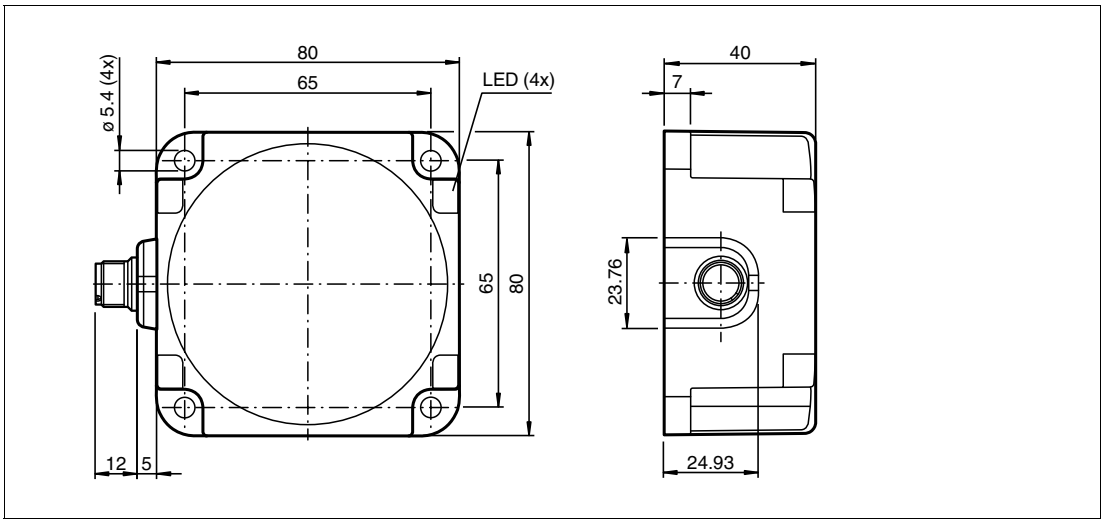

Figure 4.4 IQT4-FP-R4-V1

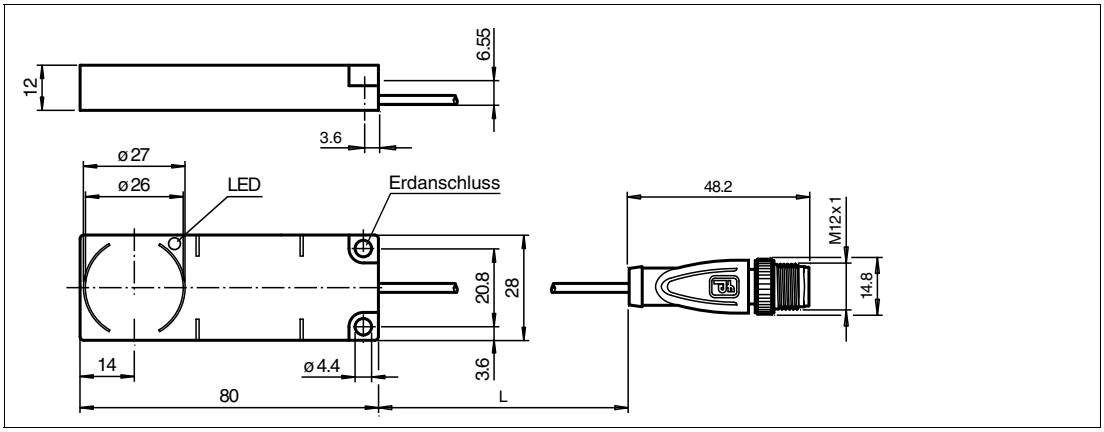

Figure 4.5 IQT4-F61-R4-V1

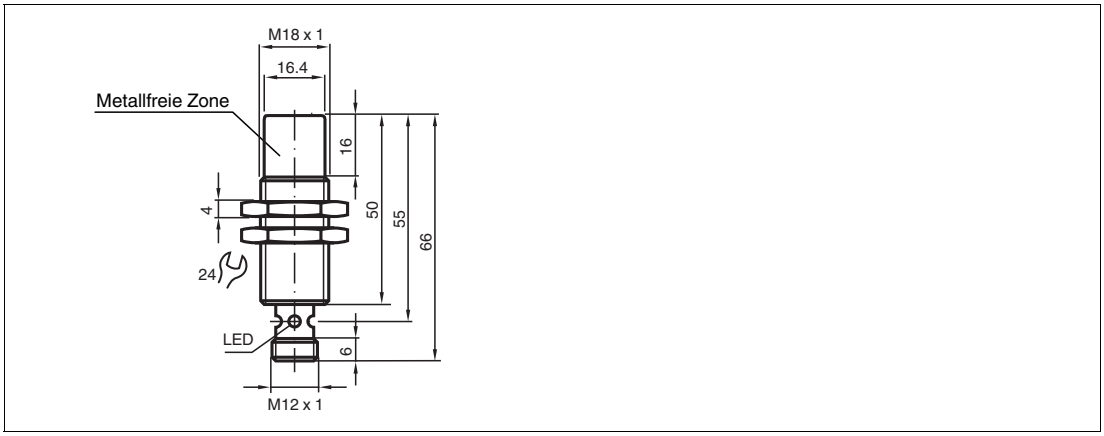

Figure 4.6 IQT4-18GM-R4-V1

4.3 Indicators

The IQT4-F61-R4-V1 and IQT4-18GM-R4-V1 RFID read/write devices have a dual LED for displaying operating and status information. The IQT4-FP-R4-V1 RFID read/write device has four LEDs for displaying operating and status information, whereby the diagonally arranged LEDs have the same meaning. The various indicators denote:

LED	Description
Green	On: Device is ready for operation Flashing quickly: Read/write attempt has been executed Flashing slowly: Status message
Orange	On: Read/write attempt was successful

4.4 Electrical Connection

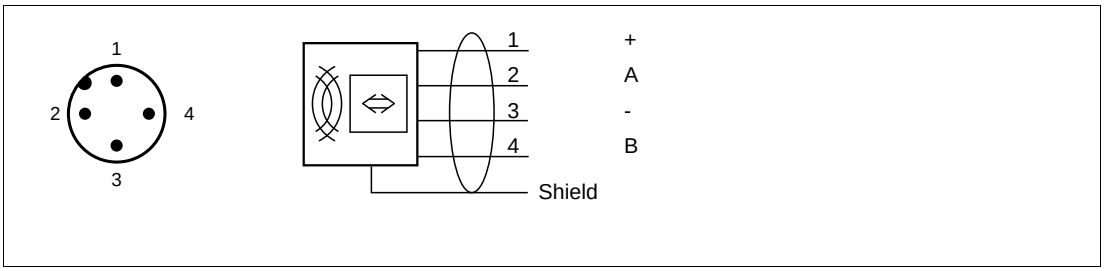

Figure 4.7

The read/write devices are connected via an M12 x 1 connector.

After connecting the supply voltage, the green LED on the device lights up. If the LED does not light up on the device, the voltage supply is not connected correctly.

4.5 Accessories

4.5.1 RFID Tags

The read/write device can access any RFID tag that is compliant with the ISO15693 standard. For an overview of possible RFID tags, see chapter 6.2. A selection of available RFID tags from Pepperl+Fuchs can be found online at www.pepperl-fuchs.com on the product page for the respective read/write device.

4.5.2 Connection Cable

Compatible shielded connection cables are available for connecting the read/write devices. A selection of available connection cables from Pepperl+Fuchs can be found online at www.pepperl-fuchs.com on the product page for the respective read/write device.

5 Installation

5.1 Storage and Transportation

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

5.2 Unpacking

Check the product for damage while unpacking. In the event of damage to the product, inform the post office or parcel service and notify the supplier.

Check the package contents against your purchase order and the shipping documents for:

- Delivery quantity
- Device type and version in accordance with the type label
- Any accessories ordered

Retain the original packaging in case you have to store or ship the device again at a later date.

Should you have any questions, please contact Pepperl+Fuchs.

5.3 Mounting

Note

The read/write device is intended for wall mounting or mounting on brackets in indoor spaces. Mount the device on a flat surface.

Attach the device using the existing mounting holes in the housing only.

Caution!

Hot surfaces

Risk of burns when handling the read/write device! Allow the device to cool for at least half an hour after it has been switched off before touching it.

Attach the IQT4-F61-R4-V1 read/write device with two screws and the IQT4-FP-R4-V1 with four screws, inserting them into the housing via the mounting holes provided. Attach the IQT4-18GM-R4-V1 read/write device using suitable mounting material, e.g., nuts or mounting aids.

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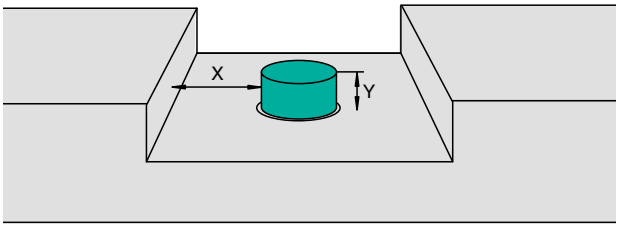
5.4 Minimum Distances

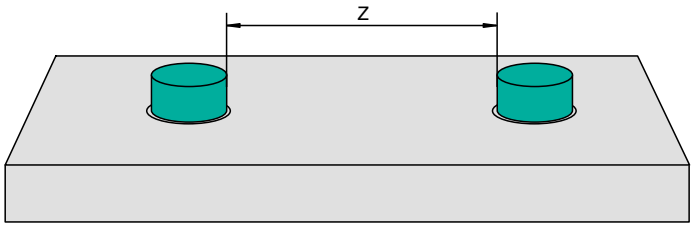
For flush mounting in metal surfaces, a lateral minimum distance X to metal must be observed.

For flush mounting in metal, a protrusion Y above the mounting surface must be observed.



Read/write device	X	Y
IQT4-18GM-R4-V1	50 mm	16 mm
IQT4-F61-R4-R4-V1	50 mm	12 mm
IQT4-FP-R4-V1	50 mm	40 mm

When mounting several RFID read/write devices next to each other, a minimum distance Z must be observed. This distance prevents the RFID read/write devices from interfering with each other.



Read/write device	Z
IQT4-18GM-R4-V1	xxx
IQT4-F61-R4-V1	xxx
IQT4-FP-R4-V1	xxx

5.5 Main and Secondary Fields

The RFID read/write devices have a main field and secondary fields. However, the secondary fields should only be used for configuration in exceptional cases because the read/write distances are very limited. Exact details of the geometries of the secondary fields cannot be provided because the values depend heavily on the operating distance and the application.

In dynamic operation, it must be taken into account that the presence of the tag may be temporarily lost when transitioning from the main field to the secondary field due to gaps between the fields.

A schematic depiction of the typical main and secondary fields of the three device versions is shown below.

Legend	Designation
1	Main field
2	Secondary field
3	Gap between fields

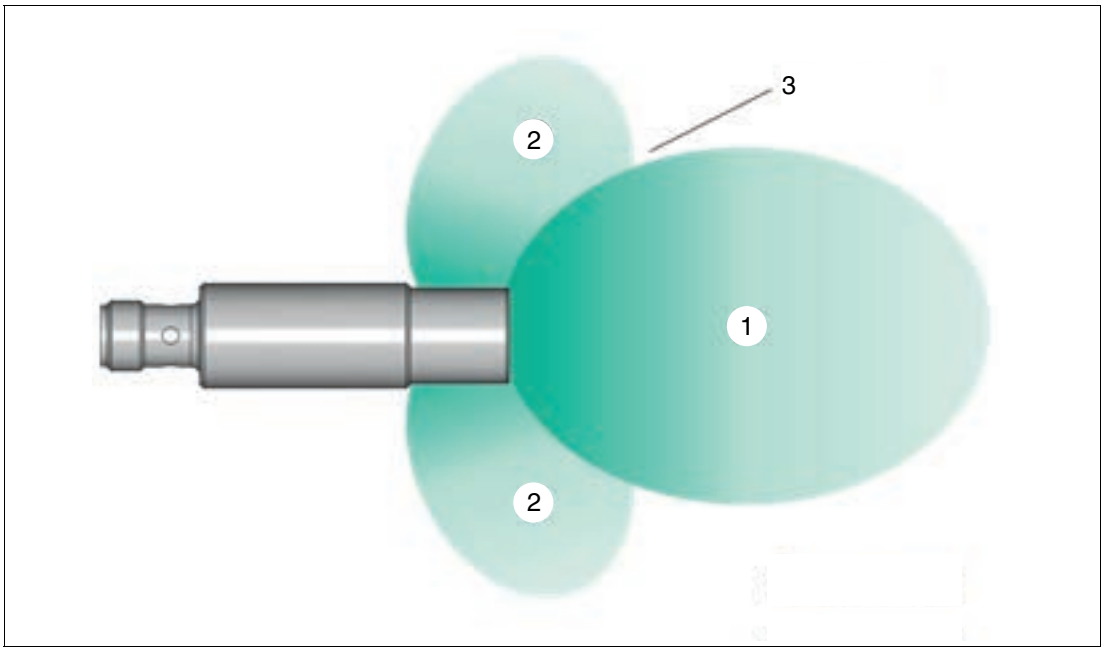


Figure 5.1 Schematic depiction of the main and secondary fields for the IQT4-18GM-R4-V1

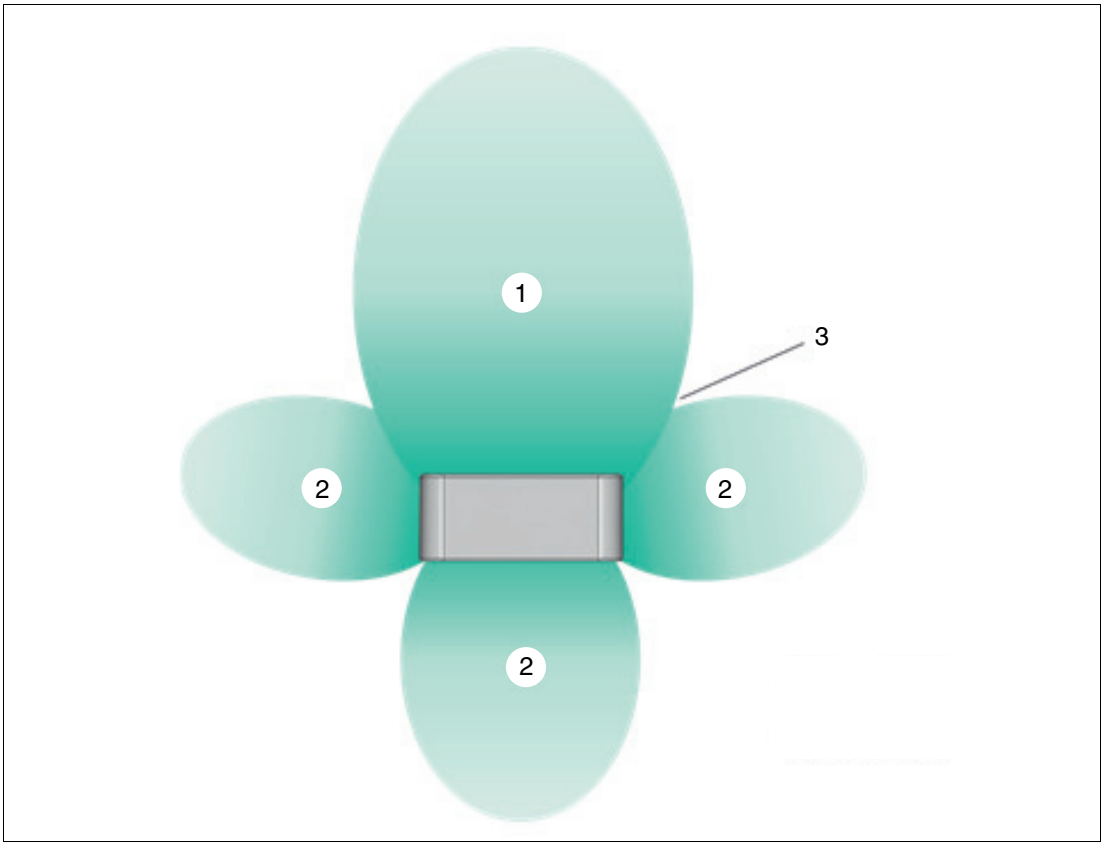


Figure 5.2 Schematic depiction of the main and secondary fields for the IQT4-F61-R4-V1

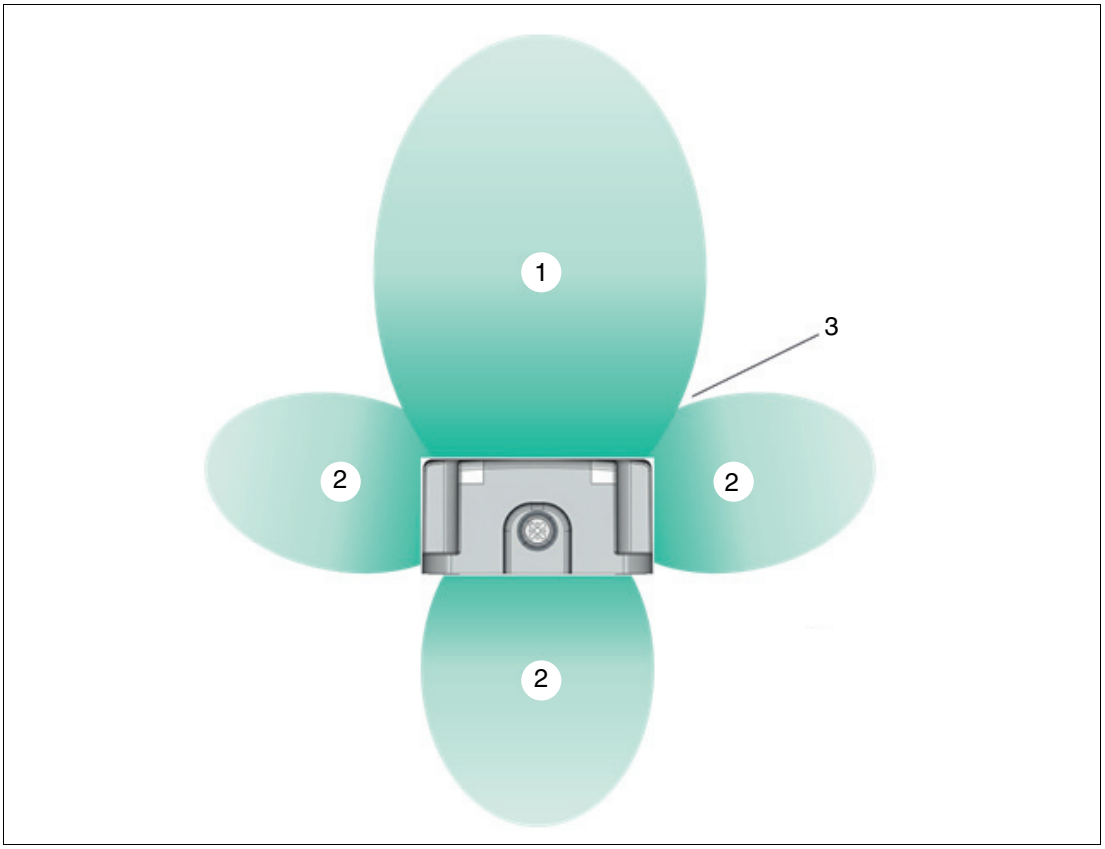


Figure 5.3 Schematic depiction of the main and secondary fields for the IQT4-FP-R4-V1

If no shielding measures have been taken, the RFID read/write device can also detect tags via one of the secondary fields.

Legend	Designation
1	Main field
2	Secondary field
3	Conveying direction
4	Tag
5	Metal shielding

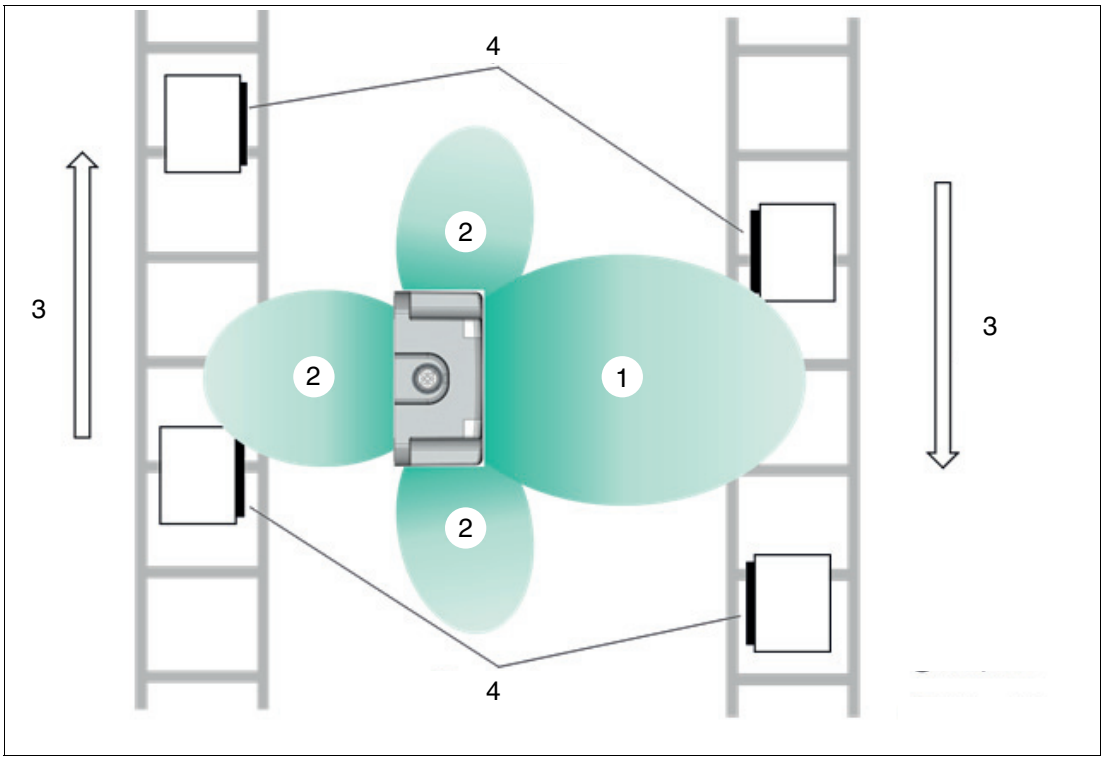


Figure 5.4 Schematic depiction of secondary fields without shielding

Metal shielding is required to prevent unwanted detection of tags via the secondary field.

Typical main and secondary fields are shown below, this time with metal shielding provided. The metal shielding prevents tags from being detected via the secondary field of the RFID read/write device.

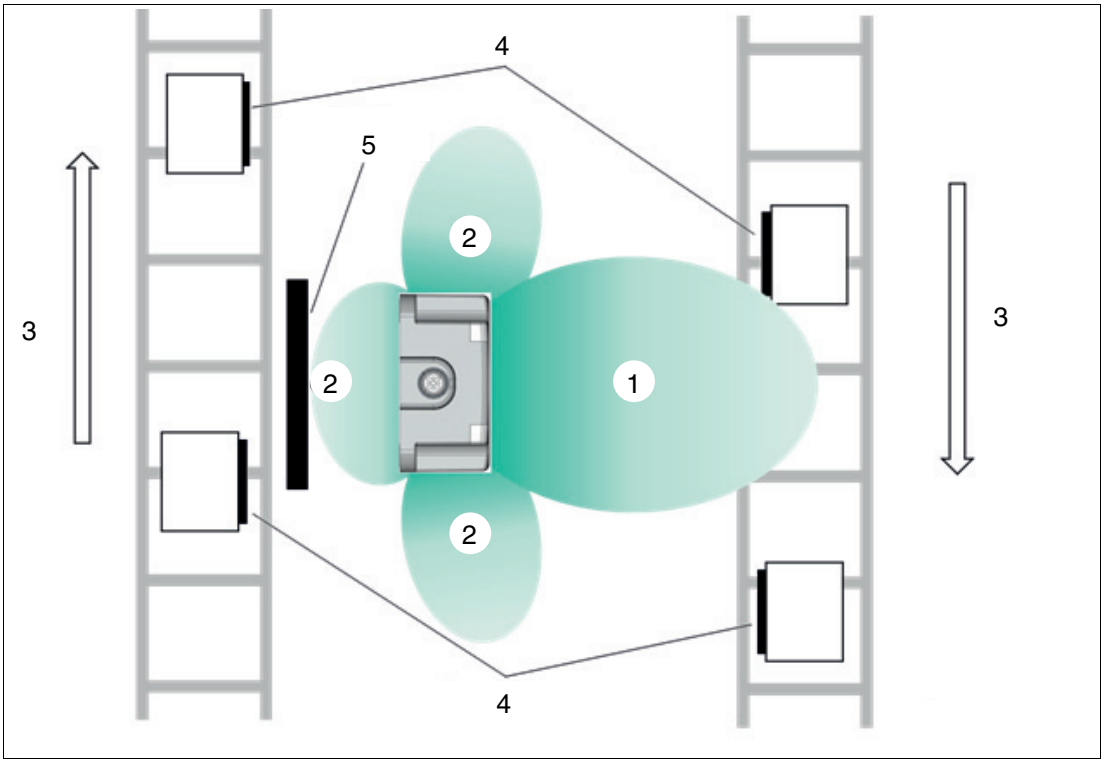


Figure 5.5 Schematic depiction of secondary fields with shielding

5.6 Ambient Temperature Range

The ambient temperature at which the devices can be operated depends on various factors, such as the operating mode and the selected transmitter radiated power.

By adjusting the operating mode or the transmitter radiated power (PT parameter), the devices can operate permanently at higher ambient temperatures because the inherent heating of the devices is reduced.

Operation with transmission pauses

PT	1	2	3	4
IQT4-18GM-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)
IQT4-F61-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)
IQT4-FP-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)

Operation with continuous transmission

PT	1	2	3	4
IQT4-18GM-R4-V1	-25 °C ... 60 °C (-13 °F ... 140 °F)	-25 °C ... 60 °C (-13 °F ... 140 °F)	-25 °C ... 50 °C (-13 °F ... 122 °F)	-25 °C ... 50 °C (-13 °F ... 122 °F)
IQT4-F61-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)
IQT4-FP-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)

Operation with continuous transmission, with forced convection

PT	1	2	3	4
IQT4-18GM-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)
IQT4-F61-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)	-25 °C ... 65 °C (-13 °F ... 149 °F)
IQT4-FP-R4-V1	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)	-25 °C ... 70 °C (-13 °F ... 158 °F)

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6 Commissioning and Operation

6.1 Definitions

6.1.1 Display

Angle brackets contain the abbreviated meaning of a command structure, e.g., <Data>

The index $_{hex}$ or .xx denotes a hexadecimal number.

hex_{ASCII} denotes a value in the hexadecimal system, specified in ASCII characters.

Example: 10_{dec} corresponds to A_{hex}; A_{ASCII} corresponds to 41_{hex}. see chapter 7.2

6.1.2 Legend

Name	Meaning
<CHCK>:	1 ASCII character, 8 bit checksum by adding together all preceding characters, without overflow.
<CR>:	1 ASCII character 13
<Data>:	<WordNum> times 4 bytes
<DataLength>:	Length of <Data> in command, 2 bytes binary
<DeviceNo>:	2 ASCII characters
<ExecCounter>:	• '-': No command active • 'Ø': Command active, no new tags read or written since last polling. • '1': Tag successfully read or written • '≥2': Several tags detected in read/write range since last polling. There is a risk that data read has not been transferred!
<ETX>:	1 ASCII character 03
<NumOfWords>:	4 ASCII characters
<ParamTyp>:	2 ASCII characters
<Status>:	1 ASCII character: • '0': Command executed successfully • '2': Switch-on message • '4': Syntax error in command • '5': No tag in the sensing range • '6': Hardware error
<ST1>:	Current status of the read/write device, 1 ASCII character
<ST2>:	Saved status since the last readout, 1 ASCII character
<SW-No>:	Application software number
<SystemCode>:	1 ASCII character, Q_{ASCII} for IQT4-*
<TagType>:	2 ASCII characters
<tcu>:	Operating time of read/write commands in hours, 4 ASCII characters
<Timeout>:	Interface timeout: An error message is sent after this time elapses. 1–3 ASCII characters, in ms.
<tsu>:	Operating time of read/write device in hours, 4 ASCII characters
<U_IN>:	Input voltage in mV, 2 ASCII characters
<UIDBitLength>:	UID length in bits, 4 ASCII characters, 0040_{ASCII} for IQT4-*

Name	Meaning
<UIDLength>:	UID length in bytes, 2 ASCII characters, 08_{ASCII} for IQT4-*
<WordAddr>:	Word start address in the tag, 4 ASCII characters, range from "0000" to "FFFF", depending on the tag type.
<WordNum>:	Number of data blocks to be read or written (each 4 bytes), 2 ASCII characters. Range from "01" to "20", depending on the tag type, (see chapter 6.2).

6.2 13.56 MHz ISO15693 Tags

The tags of an RFID system with 13.56 MHz offer significantly quicker access to the data than a comparable RFID system based on a working frequency of 125 kHz. The 13.56 MHz system is standardized through ISO15693. A great variety of tags from different manufacturers using different RFID chips is supported.

Parameterization of the associated tag type is recommended to set the RFID read/write device to the tag being used. On delivery of the RFID read/write device, tag type 20 is preset. This setting guarantees access to the read-only code of ISO15693-compliant tags. The following table shows the tag types specified and recommended for the RFID read/write device.

13.56 MHz/ISO 15693 Tag Types

Pepperl+Fuchs designation	Chip type	Manufacturer	Size of read/write memory [byte]	Size of memory block [byte]
IQC20	All tags in accordance with ISO15693	-	Depending on tag	Depending on tag
IQC21	I-Code SLI(X)	NXP	112	4
IQC22	Tag-it HF-I Plus	Texas Instruments	256	4
IQC23	my-D SRF55V02P	Infineon	224	4
IQC24	my-D SRF55V10P	Infineon	992	4
IQC27	EM4135	EM Microelectronic	288	8
IQC31	Tag-it HFI standard	Texas Instruments	32	4
IQC32	Tag-it HFI pro	Texas Instruments	32	4
IQC33	FRAM MB89R118	Fujitsu	2000	8
IQC34	FRAM MB89R119	Fujitsu	232	4
IQC35	I-Code SLI-S	NXP	160	4
IQC36	I-Code SLI-L	NXP	32	4
IQC37	FRAM MB89R112	Fujitsu	8192	32
IQC38	EM4233	EM Microelectronic	208	4
IQC50	I-Code SLIX2	NXP	316	4
IQC51	I-Code 3	NXP	300	4

Table 6.1 13.56 MHz tag types in accordance with ISO 15693

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All ISO15693-compliant tags have a unique 8-byte read-only code. The read-only code is determined by the chip manufacturer. The user can only read it and it cannot be changed. In addition, the tags have a memory for user data. This can be written with application-specific data and read. The size of the memory for user data differs according to the tag type.

The memory is divided into blocks with a length of 4 bytes. There are also exceptions with a block length of 8 bytes or 32 bytes.

The read and write commands use the "Number of bytes" and "Start address" parameters. This defines how many bytes are accessed in the memory of the user data and from which memory address this starts. If the tag type used, for example, has a block length of 4 bytes, the values of the "Number of bytes" and "Start address" parameters must be a multiple of 4. In the case of a block length of 8 or 32 bytes, they are multiples of 8 or 32.

6.3 Command Overview

The commands in the list are described in detail on the following pages.

System commands

Command name	Command abbreviation	Command description
Version	**VE**	Reads out the firmware version
Set Device Address	**SD**	Sets the device address in multidrop mode
Get Device Address	**GA**	Reads out the device address
Change Tag	**CT**	Selects the tag type
Quit	**QU**	Cancels an active enhanced command
Configure Interface	**CI**	Sets the timeout and the baud rate
Reset	**RS**	Restarts the device
Command Store	**CS**	The next command is stored in the nonvolatile memory
Get Data	**GD**	Retrieves the data from the RFID read/write device
Repeat Response	**RR**	Repeats the last telegram received on '**GD**'
Define Function	**DF**	Switches between single-drop and multidrop operating mode

Read/Write Commands

Command name	Command abbreviation	Command description
Single Read 4 Byte Blocks	**SR**	One-time read access to the user memory
Enhanced Read 4 Byte Blocks	**ER**	Permanent read access to the user memory
Single Write 4 Byte Blocks	**SW**	One-time write access to the user memory
Enhanced Write 4 Byte Blocks	**EW**	Permanent write access to the user memory
Single Write 4 Byte Blocks with Lock	**SL**	One-time write access to the user memory with subsequent write protection
Enhanced Write 4 Byte Blocks with Lock	**EL**	Permanent write access to the user memory with subsequent write protection
Fill Data Carrier	**S#**	Write access to the user memory with a fill sign
Single Read Fixcode	**SF**	One-time read access to the Fixcode (UID)
Enhanced Read Fixcode	**EF**	Permanent read access to the Fixcode (UID)
Single Get Configuration	**SG**	One-time read access to the tag configuration
Enhanced Get Configuration	**EG**	Permanent read access to the tag configuration
Single Set Configuration	**SC**	One-time write access to the tag configuration
Enhanced Set Configuration	**EC**	Permanent write access to the tag configuration
Selective Single Read Fixcode	**XSF**	One-time read access to the fixed code (UID) of a selected tag
Selective Enhanced Read Fixcode	**XEF**	Permanent read access to the fixed code (UID) of a selected tag
Selective Single Read 4 Byte Blocks	**XSR**	One-time read access to the user memory of a selected tag
Selective Enhanced Read 4 Byte Blocks	**XER**	Permanent read access to the user memory of a selected tag
Selective Single Write 4 Byte Blocks	**XSW**	One-time write access to the user memory of a selected tag
Selective Enhanced Write 4 Byte Blocks	**XEW**	Permanent write access to the user memory of a selected tag
Selective Single Write 4 Byte Blocks with Lock	**XSL**	One-time write access to the user memory of a selected tag with subsequent write protection
Selective Enhanced Write 4 Byte Blocks with Lock	**XEL**	Permanent write access to the user memory of a selected tag with subsequent write protection
Selective Single Get Configuration	**XSG**	One-time read access to the configuration memory of a selected tag
Selective Enhanced Get Configuration	**XEG**	Permanent read access to the configuration memory of a selected tag
Selective Single Set Configuration	**XSC**	One-time write access to the configuration memory of a selected tag
Selective Enhanced Set Configuration	**XEC**	Permanent write access to the configuration memory of a selected tag
Selective Fill Data Carrier	**XS#**	Write access to the user memory with fill sign of a selected tag

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Configuration Commands

Command name	Command abbreviation	Command description
Read Parameter	**RP**	Reads out device parameters
Write Parameter	**WP**	Writes device parameters

6.4 System Commands in Point-to-Point Operation (Single Drop)

Note

Command Syntax

IQT4-*-R4-V1 RFID read/write devices are set to single-drop mode at the factory. In this operating mode, the RFID read/write device first executes the respective command and then sends the response. This can take a few seconds, depending on the command.

If your RFID read/write device is not operating in multidrop mode, omit the device address (= <DeviceNo>) from the command.

Example:

Command: <CommandCode><CommandParameters><CHCK><ETX>

Response <Status><Data><CHCK><ETX>

You also have the option of replacing <CHCK><ETX> with #<CR>.

A new command can be sent only after a response to the previous command has been received.

Version (VE)

This command transfers the software version.

Command:	VE <CHCK> <ETX>
Response:	<Status> (c) P+F IDENT <Type code> <Part no.> <SW no.> <Date> <CHCK> <ETX>

Change Tag (CT)

This command configures the tag type with which the read/write unit is communicating. The delivery status is type "20".

Command:	CT <TagType> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

For supported tags, see chapter 6.2.

Using type <TagType> = "20", mixed operation using different tags is possible. However, this setting can only be used to read fixed codes (UID).

Quit (QU)

All active enhanced-buffered read or write commands are canceled.

Command:	QU <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Configure Interface (CI)

This command configures the timeout and the baud rate. The values are stored in the non-volatile memory. Any modifications become active only after a reset has been performed.

The timeout is the time after which the RFID read/write device no longer waits for characters in a command. After the timeout elapses, the user receives an error message. To deactivate the timeout, the time must be set to "0".

The number of data bits is always 8. A parity bit is not used.

Command:	CI <Timeout>, <Baud> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

The following settings are possible:

<Timeout>:	"0" ... "100" (x 100 ms, timeout in 100 ms steps)
<Baud>:	"1200", "2400", "4800", "9600", "19200", "38400", "57600", "115200"

The default values are a timeout of "0" and a baud rate of "38400".

Reset (RS)

This command restarts the device without modifying the parameters.

Command:	RS <CHCK> <ETX>
Response:	"2" <CHCK> <ETX>

Configuration Store (CS)

When <Param> = "1", the next command is stored in the non-volatile memory. This command is executed. Following a reset, this command is automatically reactivated.

If <Param> = "0", the stored command is deleted.

Command:	CS <Param> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

6.5 Read/Write Commands in Point-to-Point Operation

Single Read 4 Byte Blocks (SR)

The RFID read/write device makes precisely one attempt to read <WordNum> 32-bit words from address <WordAddr>.

Command:	SR <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Enhanced Buffered Read 4 Byte Blocks (ER)

The RFID read/write device makes continuous attempts to read <WordNum> 32-bit words from address <WordAddr>. Variable data is transferred via the interface.

When a tag leaves the sensing range, the status '05h' (read command) is output.

Command:	ER <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

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Single Write 4 Byte Blocks (SW)

The RFID read/write device makes precisely one attempt to write <WordNum> 32-bit words from address <WordAddr>.

Command:	SW <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Enhanced Buffered Write 4 Byte Blocks (EW)

The RFID read/write device repeatedly attempts to write <WordNum> 32-bit words from address <WordAddr> until successful. If successful, the status '00h' is output.

The status '05h' is only output when a tag leaves the sensing range or is not yet within the sensing range. The command remains active.

Command:	EW <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Single Write 4 Byte Blocks with Lock (SL)

This command works in the same way as a normal write command. The data is write-protected at the end of the write process, provided the tags offer this function. The write protection is permanent and cannot be undone.

Command:	SL <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Enhanced Write 4 Byte Blocks with Lock (EL)

This command works in the same way as a normal write command. The data is write-protected at the end of the write process, provided the tags offer this function. The write protection is permanent and cannot be undone.

Command:	EL <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Fill Datacarrier (S#)

The word number <WordNum> of fill signs <Fill Sign> is written to the tag from the specified start address <WordAddr>.

Command:	S# <WordAddr> <NumOfWords> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Example

S#00050002Z fills from address 0005 to 0007 with fill sign Z_{ASCII}.

Note

If <NumOfWords> is set to 0000, the read/write tag is filled to the end of the read/write tag from <WordAddr> onward.

Single Read Fixcode (SF)

The RFID read/write device makes precisely one attempt to read a fixed code.

Command:	SF <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Enhanced Buffered Read Fixcode (EF)

The RFID read/write device makes continuous attempts to read a fixed code. If successful, the status '00h' is output.

The status '05h' (read command) is output as soon as a tag leaves the sensing range. The command remains active.

Command:	EF <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Single Get Configuration (SG)

The RFID read/write device makes precisely one attempt to read the AFI or DSFID.

Command:	SG <FunctionNo> <CHCK> <ETX>
Response:	<Status> <Data 1> <Data 2> …<Data n> <CHCK> <ETX>

<FunctionNo> = 30_{hex} = '0'

<Data 1> Infoflags

<Data 2> UID (LSB)

...

<Data 9> UID (MSB)

[<Data 10> DSFID][1]

[<Data 11> AFI][1]<Default ¬[1] Font>

[<Data 12> VICC memory size, number of blocks -1][1]<Default ¬[1] Font>

[<Data 13> VICC memory size, block size in bytes - 1][1]<Default ¬[1] Font>

[<Data 14> IC Reference][1]<Default ¬[1] Font>

1. This data is only sent if the corresponding info flag is set in <Data 1> by the chip manufacturer. (See ISO15693-3:2019 Chapter 10.4.12). If no data is sent, any subsequent data will move forward accordingly.

Example

SG0 makes precisely one attempt to read the AFI or DSFID.

Meaning of the bytes in response .30.0F.BC.59.54.E8.7E.01.08.E0.00.39.F9.07.84

.30 = Status 0_{ASCII}, command has been executed without error

.0F = DSFID, AFI, VICC Memory Size, and IC Reference are supported

.BC.59.54.E8.7E.01.08.E0 = UID

.00 = DSFID

.39 = AFI

.F9 = 249_{dec}, number of blocks - 1

.07 = 7_{dec}, block size in bytes - 1

.84 = IC Reference

Enhanced Get Configuration (EG)

The RFID read/write device makes continuous attempts to read the AFI or DSFID.

Command:	EG <FunctionNo> <CHCK> <ETX>
Response:	<Status> <Data 1> <Data 2> …<Data n> <CHCK> <ETX>

<FunctionNo> = 30_{hex} = '0'

<Data 1> Infoflags

<Data 2> UID (LSB)

...

<Data 9> UID (MSB)

[<Data 10> DSFID][1]

[<Data 11> AFI][1]<Default ¬[1] Font>

[<Data 12> VICC memory size, number of blocks -1][1]<Default ¬[1] Font>

[<Data 13> VICC memory size, block size in bytes - 1][1]<Default ¬[1] Font>

[<Data 14> IC reference][1]<Default ¬[1] Font>

Single Set Configuration (SC)

The read/write device makes precisely one attempt to write the AFI or DSFID.

If the AFI or DSFID is already read-only, the response to a rewrite or write-protect operation has status 5.

Command:	SC <ConfAddr> <Data 1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

<ConfAddr> = 30_{hex} = '0' (Write AFI and Lock AFI); 31_{hex} = '1' (Write DSFID and Lock DSFID)

<Data 1> = Lock of the AFI; 00_{hex} / 30_{hex} without lock AFI, 01_{hex} / 31_{hex} with lock AFI

1. This data is only sent if the corresponding info flag is set in <Data 1> by the chip manufacturer. (See ISO15693-3:2019 Chapter 10.4.12). If no data is sent, any subsequent data will move forward accordingly.

<Data 2> = AFI value

<Data 3> = not used; 00_{hex}

<Data 4> = not used; 00_{hex}

Example

SC00900 writes the AFI with 39_{hex} without lock

Enhanced Set Configuration (EC)

The RFID read/write device makes continuous attempts to write the AFI or DSFID.

If the AFI or DSFID is already read-only, the response to a rewrite or write-protect operation has status 5.

Command:	EC <ConfAddr> <Data 1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

<ConfAddr> = 30_{hex} = '0' (Write AFI and Lock AFI); 31_{hex} = '1' (Write DSFID and Lock DSFID)

<Data 1> = Lock of the AFI; 00_{hex} / 30_{hex} without lock AFI, 01_{hex} / 31_{hex} with lock AFI

<Data 2> = AFI value

<Data 3> = not used; 00_{hex}

<Data 4> = not used; 00_{hex}

Selective Single Read 4 Byte Blocks (XSR)

This command works like the SR command, but is only executed for a selected tag.

Command:	XSR <UIDBitLength> <UID> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Selective Enhanced Read 4 Byte Blocks (XER)

This command works like the ER command, but is only executed for a selected tag.

Command:	XER <UIDBitLength> <UID> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Selective Single Write 4 Byte Blocks (XSW)

This command works like the SW command, but is only executed for a selected tag.

Command:	XSW <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Enhanced Write 4 Byte Blocks (XEW)

This command works like the EW command, but is only executed for a selected tag.

Command:	XEW <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

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Selective Single Write 4 Byte Blocks with Lock (XSL)

This command works like the SL command, but is only executed for a selected tag.

Command:	XSL <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Enhanced Write 4 Byte Blocks with Lock (XEL)

This command works like the EL command, but is only executed for a selected tag.

Command:	XEL <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Fill Tag (XS#)

This command works like the S# command, but is only executed for a selected tag.

Command:	XS# <UIDBitLength> <UID> <WordAddr> <NumOfWords> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Single Read Fixcode (XSF)

This command works like the SF command, but is only executed for a selected tag.

Command:	XSF <UIDBitLength> <UID> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Enhanced Read Fixcode (XEF)

This command works like the EF command, but is only executed for a selected tag.

Command:	XEF <UIDBitLength> <UID> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Single Get Configuration (XSG)

This command works like the SG command, but is only executed for a selected tag.

Command:	XSG <UIDBitLength> <UID> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <Data1> <Data 2> … <Data n> <CHCK> <ETX>

Selective Enhanced Get Configuration (XEG)

This command works like the EG command, but is only executed for a selected tag.

Command:	XEG <UIDBitLength> <UID> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <Data1> <Data 2> … <Data n> <CHCK> <ETX>

Selective Single Set Configuration (XSC)

This command works like the SC command, but is only executed for a selected tag.

Command:	XSC <UIDBitLength> <UID> <ConfAddr> <Data1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

Selective Enhanced Set Configuration (XEC)

This command works like the EC command, but is only executed for a selected tag.

Command:	XEC <UIDBitLength> <UID> <ConfAddr> <Data1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <CHCK> <ETX>

6.6 Configuration Commands in Point-to-Point Operation

Read Parameters (RP)

The RP command reads out configuration parameters from the RFID read/write device.

Command:	RP <SystemCode> <ParamTyp> <DataLength> <Data> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

Write Parameters (WP)

The WP command writes configuration parameters to the RFID read/write device.

Command:	WP <SystemCode> <ParamTyp> <DataLength> <Data> <CHCK> <ETX>
Response:	<Status> <Data> <CHCK> <ETX>

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6.7 System Commands in Multidrop Mode

Note

Command Syntax

IQT4-*-R4-V1 RFID read/write devices can be configured to multidrop mode. In this operating mode, the RFID read/write device responds immediately, i.e., confirms whether the device has understood the command. The device then starts to execute the command. The 'GD' command must be used to determine whether the command has actually been executed successfully (polling mode). The device address must be specified in the commands.

If your RFID read/write device is not operating in multidrop mode, omit the device address (= <DeviceNo>) from the command.

Example:

Command: <CommandCode>**<DeviceNo>**<CommandParameters><CHCK><ETX>

Response: <Status>**<DeviceNo>**<Data><CHCK><ETX>

You also have the option of replacing <CHCK><ETX> with #<CR>.

A new command can be sent only after a response to the previous command has been received.

Define Function (DF)

This command switches the system from single-drop mode to multidrop mode and vice versa:

Single-drop --> multidrop:
DF42<CHCK><ETX>

Multidrop --> single-drop:
DF<DeviceNo>41<CHCK><ETX>

After changing the operating mode, a power supply reset or an 'RS' command must be executed to activate the required operating mode.

Version (VE)

This command transfers the software version.

Command:	VE <DeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> (c) P+F IDENT <Type Code> <Part no.> <SW no.> <Date> <CHCK> <ETX>

Set Device Address (SD)

This command changes the device address in multidrop mode from <OldDeviceNo> to <NewDeviceNo>. The default device address is "FF".

Command:	SD <OldDeviceNo> <NewDeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Get Device Address (GA)

This command reads out the device address of an RFID read/write device.

Command:	GA <CHCK> <ETX>
Response:	<Status> <DeviceNo> <DeviceNo> <CHCK> <ETX>

Change Tag (CT)

This command configures the tag type with which the read/write unit is communicating. The delivery status is type "20".

Command:	CT <DeviceNo> <TagType> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

For supported tags, see chapter 6.2.

Using type <TagType> = "20", mixed operation using different tags is possible. However, this setting can only be used to read fixed codes (UID).

Quit (QU)

All active enhanced-buffered read or write commands are canceled.

Command:	QU <DeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Configure Interface (CI)

This command configures the timeout and the baud rate. The values are stored in the non-volatile memory. Any modifications become active only after a reset has been performed.

The timeout is the time after which the RFID read/write device no longer waits for characters in a command. After the timeout elapses, the user receives an error message. To deactivate the timeout, the time must be set to "0".

The number of data bits is always 8. A parity bit is not used.

Command:	CI <DeviceNo> <Timeout>, <Baud> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

The following settings are possible:

<Timeout>:	"0" ... "100" (x 100 ms, timeout in 100 ms steps)
<Baud>:	"1200", "2400", "4800", "9600", "19200", "38400", "57600", "115200"

The default values are a timeout of "0" and a baud rate of "38400".

Reset (RS)

This command restarts the device without modifying the parameters.

Command:	RS <DeviceNo> <CHCK> <ETX>
Response:	"2" <DeviceNo> <CHCK> <ETX>

Command Store (CS)

When <Param> = "1", the next command is stored in the non-volatile memory. This command is executed. After a reset or an interruption of the voltage supply, this command is automatically reactivated.

If <Param> = "0", the stored command is deleted.

Command:	CS <DeviceNo> <Param> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

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Get Data (GD)

This command retrieves the data from the RFID read/write device. Each data record is transferred only once.

Data is only available for read commands. There is no data component for write commands.

Command:	GD <DeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <ExecCounter>{<Data>}<CHCK> <ETX>

Repeat Response (RR)

This command triggers a repeat of the last telegram received on 'GD'.

Command:	RR <DeviceNo><CHCK> <ETX>
Response:	<Status> <DeviceNo> <ExecCounter>{<Data>}<CHCK> <ETX>

6.8 Read/Write Commands in Multidrop Mode

Single Read 4 Byte Blocks (SR)

The RFID read/write device makes precisely one attempt to read <WordNum> 32-bit words from address <WordAddr>.

Command:	SR <DeviceNo> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Enhanced Buffered Read 4 Byte Blocks (ER)

The RFID read/write device makes continuous attempts to read <WordNum> 32-bit words from address <WordAddr>.

Command:	ER <DeviceNo> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Single Write 4 Byte Blocks (SW)

The RFID read/write device makes precisely one attempt to write <WordNum> 32-bit words from address <WordAddr>.

Command:	SW <DeviceNo> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Enhanced Buffered Write 4 Byte Blocks (EW)

The RFID read/write device repeatedly attempts to write <WordNum> 32-bit words from address <WordAddr> until successful.

The command remains active.

Command:	EW <DeviceNo> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Single Write 4 Byte Blocks with Lock (SL)

This command works in the same way as a normal write command. The data is write-protected at the end of the write process, provided the tags offer this function. The write protection is permanent and cannot be undone.

Command:	SL <DeviceNo> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Enhanced Write 4 Byte Blocks with Lock (EL)

This command works in the same way as a normal write command. The data is write-protected at the end of the write process, provided the tags offer this function. The write protection is permanent and cannot be undone.

Command:	EL <DeviceNo> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Fill Datacarrier (S#)

The word number <WordNum> of fill signs <Fill Sign> is written to the tag from the specified start address <WordAddr>.

Command:	S# <DeviceNo> <WordAddr> <NumOfWords> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Single Read Fixcode (SF)

The RFID read/write device makes precisely one attempt to read a fixed code.

Command:	SF <DeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Enhanced Buffered Read Fixcode (EF)

The RFID read/write device makes continuous attempts to read a fixed code.

Command:	EF <DeviceNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Single Get Configuration (SG)

The RFID read/write device makes precisely one attempt to read the AFI or DSFID.

Command:	SG <DeviceNo> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Enhanced Get Configuration (EG)

The read/write head makes continuous attempts to read the AFI or DSFID.

Command:	EG <DeviceNo> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Single Set Configuration (SC)

The read/write device makes precisely one attempt to write the AFI or DSFID.

If the AFI or DSFID is already read-only, the response to a rewrite or write-protect operation has status 5.

Command:	SC <DeviceNo> <ConfAddr> <Data 1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

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<ConfAddr> = 30_{hex} = '0' (Write AFI and Lock AFI); 31_{hex} = '1' (Write DSFID and Lock DSFID)

<Data 1> = Lock of the AFI; 00_{hex} / 30_{hex} without lock AFI, 01_{hex} / 31_{hex} with lock AFI

<Data 2> = AFI value

<Data 3> = not used; 00_{hex}

<Data 4> = not used; 00_{hex}

Example

SC0100900 writes the AFI with 39_{hex} without lock on the device with address 01_{ASCII}.

Enhanced Set Configuration (EC)

The RFID read/write device makes continuous attempts to write the AFI or DSFID.

If the AFI or DSFID is already read-only, the response to a rewrite or write-protect operation has status 5.

Command:	EC <DeviceNo> <ConfAddr> <Data 1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

<ConfAddr> = 30_{hex} = '0' (Write AFI and Lock AFI); 31_{hex} = '1' (Write DSFID and Lock DSFID)

<Data 1> = Lock of the AFI; 00_{hex} / 30_{hex} without lock AFI, 01_{hex} / 31_{hex} with lock AFI

<Data 2> = AFI value

<Data 3> = not used; 00_{hex}

<Data 4> = not used; 00_{hex}

Selective Single Read 4 Byte Blocks (XSR)

This command works like the SR command, but is only executed for a selected tag.

Command:	XSR <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <Data> <CHCK> <ETX>

Selective Enhanced Read 4 Byte Blocks (XER)

This command works like the ER command, but is only executed for a selected tag.

Command:	XER <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <Data> <CHCK> <ETX>

Selective Single Write 4 Byte Blocks (XSW)

This command works like the SW command, but is only executed for a selected tag.

Command:	XSW <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Enhanced Write 4 Byte Blocks (XEW)

This command works like the EW command, but is only executed for a selected tag.

Command:	XEW <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Single Write 4 Byte Blocks with Lock (XSL)

This command works like the SL command, but is only executed for a selected tag.

Command:	XSL <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Enhanced Write 4 Byte Blocks with Lock (XEL)

This command works like the EL command, but is only executed for a selected tag.

Command:	XEL <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Fill Tag (XS#)

This command works like the EL command, but is only executed for a selected tag.

Command:	XS# <DeviceNo> <UIDBitLength> <UID> <WordAddr> <WordNum> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Single Read Fixcode (XSF)

This command works like the SF command, but is only executed for a selected tag.

Command:	XSF <DeviceNo> <UIDBitLength> <UID> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Single Read Fixcode (XEF)

This command works like the EF command, but is only executed for a selected tag.

Command:	XEF <DeviceNo> <UIDBitLength> <UID> <Fill Sign> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Single Get Configuration (XSG)

This command works like the SG command, but is only executed for a selected tag.

Command:	XSG <DeviceNo> <UIDBitLength> <UID> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <Data1> <Data 2> … <Data n> <CHCK> <ETX>

Selective Enhanced Get Configuration (XEG)

This command works like the EG command, but is only executed for a selected tag.

Command:	XEG <DeviceNo> <UIDBitLength> <UID> <FunctionNo> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <Data1> <Data 2> … <Data n> <CHCK> <ETX>

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Selective Single Set Configuration (XSC)

This command works like the SC command, but is only executed for a selected tag.

Command:	XSC <DeviceNo> <UIDBitLength> <UID> <Data1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

Selective Enhanced Set Configuration (XEC)

This command works like the EC command, but is only executed for a selected tag.

Command:	XEC <DeviceNo> <UIDBitLength> <UID> <Data1> <Data 2> <Data 3> <Data 4> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

6.9 Configuration Commands in Multidrop Mode

Read Parameters (RP)

The RP command reads out configuration parameters from the RFID read/write device.

Command:	RP <DeviceNo> <SystemCode> <ParamTyp> <DataLength> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <Data> <CHCK> <ETX>

Write Parameters (WP)

The WP command writes configuration parameters to the RFID read/write device.

Command:	WP <DeviceNo> <SystemCode> <ParamTyp> <DataLength> <Data> <CHCK> <ETX>
Response:	<Status> <DeviceNo> <CHCK> <ETX>

6.10 Parameter Overview

The following parameters can be read or written using the configuration commands Read Parameter (RP) and Write Parameter (WP):

Abbre-viation	Parameter description	Read/write	Default Value
AF	AFI Filters based on AFI for tag access	Read + write	.00 = All tags
BB	Back to Box Resets all parameters to factory settings	Write	-
CT	Tag Type (Service) Configures the tag type	Read + write	.14 (20_{dec}) = Mixed operation
DA	Device Address Configures the device address	Read + write	-
DD	Diagnosis Data (Service) Reads out the combined diagnostic data of the OH, ST, TE, and VO parameters	Read	-
DN	Device Serial Number Reads out the device serial number	Read	-
DR	Data Rate Configures the data transmission rate	Read + write	.00 = Normal
DS	Data Swap Swaps data blocks in blocks	Read + write	.01 = Compatible with IQT1
E5	Tag Lost Smoothing Configures the number of unsuccessful attempts to access a tag before a status 5 message is issued	Read + write	.05
ED	Standalone End Delimiter (Service) Selection of the end delimiter	Read + write	.00
FR	Sequence Mode (Service) Configures the behavior for write access	Read + write	xx
IF	Information Frame Mode Outputs additional information about tag access	Read + write	.00 = Off
LM	LED Masking Configures the display of operating status via LEDs	Read + write	.00 = Off
MF	Reflected Power (Service) Measures the reflected transmitter radiated power	Read	-
ND	Noise Detection Level Configures the noise threshold indicated by LED	Read + write	.32 (50_{dec})
NT	Number of Tags to Find Cancellation criterion for the read/write command	Read + write	.FF (255_{dec}) = Off
OH	Operating Hours Reads the operating hours counter	Read	-
PT	Transmission Power Configures the transmitter radiated power of the device	Read + write	.00.01 = Minimum
QV	Reply Frame Mode Configures the protocol mode	Read + write	.53 (S_{ASCII}) = Single-frame protocol

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Abbre-viation	Parameter description	Read/write	Default Value
QW	Q-Value Configures the time slots for accessing tags	Read + write	.00 = One tag
RC	Region Code (Service) Country code	Read	-
RD	Reset to Default Resets certain parameters to factory settings	Write	-
RL	RSSI Lower Limit Configures the lower RSSI threshold value	Read + write	.00
RU	RSSI Upper Limit Configures the upper RSSI threshold value	Read + write	.64 (100_{dec})
RV	SVN Revision (Service) Reads the software revision number	Read	-
SN	Serial Number (Service) Reads the microcontroller serial number	Read	-
ST	Frontend State Reads the frontend status	Read	-
T2	Application Tag	Read + write	Your automation, our passion
T3	Function Tag	Read + write	***
T4	Location Tag	Read + write	***
T5	Installation Tag	Read + write	***
TA	Tries Allowed Number of attempts to access a tag	Read + write	.02 = Two attempts
TE	Temperature Reads the device temperature	Read	-
TI	Tag ID Filter Configures the tag filter	Read + write	-
TO	Overtemperature Handling Configures the device behavior in the event of excess temperature	Read + write	.00 = Off
UB	Host Uart Baudrate (Service) Configures the baud rate	Read + write	38400_{dec}
UT	Host Uart Timeout (Service) Configures the timeout	Read + write	100_{dec}
VO	Voltages Reads internal voltage and current values	Read	-

The parameters are stored in non-volatile memory in the device.

6.11 Parameters

AFI (AF)

The AF parameter can be used to filter tags based on the AFI. Read/write commands are executed only on tags with an AFI that matches the value of the filter.

Parameter abbreviation:	AF
Default:	.00 (all tags respond)
Value range:	.00 … .FF (0_{dec} ... 255_{dec})

Example

In Point-to-Point Operation

WPQAF.00.01.39 sets the value of the AFI filter to 39 (57_{dec}).

WPQAF.00.01.00 resets the filter so that all tags respond again.

RPQAF.00.00 reads out the value of the AF parameter.

Back to Box (BB)

The BB parameter can be used to reset all settings of the RFID read/write device to the factory settings.

Parameter abbreviation:	BB
Factory setting:	See chapter 6.10

Example

In Point-to-Point Operation

WPQBB.00.00

Tag Type (CT)

The CT parameter can be used to set the tag type with which the RFID read/write device communicates.

Parameter abbreviation:	CT
Default:	.14 (20_{dec})
Value range:	.14 … .26 (20_{dec} ... 38_{dec}), .32 (50_{dec}), .33 (51_{dec})

With CT = 20_{dec}, mixed operation of different tag types is possible, whereby only the UID of the respective tag is read.

Example

In Point-to-Point Operation

WPQCT.00.01.15 sets the tag type to 21_{dec}[1].

RPQCT.00.00 reads out the currently set tag type.

1. Chiptype NXP I-Code SLIX

Note

The CT system command can be used to configure the tag type.

Device Address (DA)

The DA parameter can be used to set the device address of the RFID read/write device.

Parameter abbreviation:	DA
Default:	.FF (255_{dec})
Value range:	.00 … .FF (0_{dec} ... 255_{dec})

Example

In Point-to-Point Operation

WPQDA.00.01.01 sets the device address to 1.

RPQDA.00.00 reads out the current device address.

P+F Serial Number (DN)

The DN parameter can be used to read the serial number of the RFID read/write device.

Parameter abbreviation:	DN

Example

In Point-to-Point Operation

RPQDN.00.00 reads out the current device address.

Data Rate (DR)

The DR parameter can be used to set the data transmission rate between the RFID read/write device and the tag.

Parameter abbreviation:	DR
Default:	.00
Value range:	.00 = Normal (26 kilobit/s) .01 = Fast read mode (53 kilobit/s)[1]

1. ISO/IEC 15693-2 X2

"Fast read mode" is only supported by tag types 21, 33, 34, 37, 50, and 51 with a memory size of two blocks or more.

Example

In Point-to-Point Operation

WPQDR.00.01.01 puts the RFID read/write device into "fast read mode."

RPQDR.00.00 reads out the currently set data transmission rate.

Data Swap (DS)

The DS parameter can be used to set the orientation of the data in a block of the user memory.

Parameter abbreviation:	DS
Default:	.01
Value range:	.00 = No bytewise swapping of data in the user memory .01 = Bytewise swapping of blocks in the user memory (compatible with IQT1)

For a tag with a block size of four bytes, the data can be oriented as follows, for example.

Normal orientation, DS = 0

Data block 0				Data block 1			
Byte 0	Byte 1	Byte 2	Byte 3	Byte 0	Byte 1	Byte 2	Byte 3

Reverse orientation, DS = 1

Data block 0				Data block 1			
Byte 3	Byte 2	Byte 1	Byte 0	Byte 3	Byte 2	Byte 1	Byte 0

Example

In Point-to-Point Operation

WPQDS.00.01.00 deactivates bytewise swapping of data in the user memory.

RPQDS.00.00 reads out the current setting.

Tag Lost Smoothing (E5)

The E5 parameter sets the number of unsuccessful read/write attempts when executing an enhanced command before the device outputs a message with the status value 5. Via the message with the status 5, the device indicates that a tag has left the sensing range or could no longer be identified. This parameter is only used when performing enhanced commands. When executing single commands, the parameter has no significance. Status 0 and status A do not depend on this parameter, and are output immediately.

Parameter abbreviation:	E5
Default:	.05 (5_{dec})
Value range:	.00 ... .0A (0_{dec} ... 10_{dec})

Example

In Point-to-Point Operation

WPQE5.00.01.05 sets the number to five unsuccessful read/write attempts until a status 5 is output.

RPQE5.00.00 reads out the specified number of unsuccessful read/write attempts.

Effects of a reduced number of unsuccessful read/write attempts:

- Quicker response time in enhanced mode.
- Multiple status 5 messages in the event of unstable tag reading.

Information Frame Mode (IF)

The IF parameter can be used to output the RSSI value of a read tag as additional information if the multi-frame protocol (QV parameter) is activated.

Parameter abbreviation:	IF
Default:	.00
Value range:	.00 = Information Frame Mode deactivated .01 = Information Frame Mode activated

Example

In Point-to-Point Operation

WPQIF.00.01.01 prompts the RFID read/write device to output the additional information after each successful reading.

RPQIF.00.00 reads out the value of the IF parameter.

The additional information is output in the following format:

B <Info-Typ> <RSSI>

To distinguish the additional information from the standard output, the output starts with status B as the first ASCII character, followed by the <InfoType>, which states that it is an information frame of type .01, and the RSSI value, which is between 0_{dec} and 100_{dec}. 0 indicates a low RSSI value, 100 indicates a high RSSI value.

Meaning of the Bytes in Response .42.01.52

.42 = Status B_{ASCII} for identifying the additional information.

.01 = InfoType.

.52 = 82_{dec}, RSSI value.

LED Masking (LM)

The LM parameter can be used to set which operating status should be displayed via the LEDs of the RFID read/write device.

Parameter abbreviation:	LM
Default:	.00.00
Value range[1]:	.00.00 = All operating statuses are output via LED .00.01 = Operating status "Interference from external signals in the usage spectrum" is suppressed .00.02 = Operating status "Detuning due to surrounding metal" is suppressed .00.04 = Operating status "Excess temperature warning" is suppressed

1. Binary combinations are possible

The operating statuses "Excess temperature error" (ST = .00.08) and "Low voltage/overvoltage error" (ST = .00.10) cannot be suppressed.

Example

In Point-to-Point Operation

WPQLM.00.02.00.02 suppresses the output of "Detuning due to surrounding metal" via LED.

RPQLM.00.00 reads out the set value.

Note

The operating status of the RFID read/write device can still be read out at any time via the ST parameter.

Noise Detection Level (ND)

The ND parameter defines the threshold value (0–100 %) from which the fault LED is activated by reducing the read/write range (e.g., due to detuning). For example, if the value is set to 50_{dec}, the LED lights up as soon as the read/write distance of the device falls by 50 % from the optimal value.

Parameter abbreviation:	ND
Default:	.32 (50_{dec})
Value range:	.00 … .64 (0_{dec} ... 100_{dec})

Example

In Point-to-Point Operation

WPQND.00.01.00 sets the Noise Detection Level to 0 %.

RPQND.00.00 reads out the set value of the Noise Detection Level.

Number of Tags to Find (NT)

The NT parameter specifies the number of tags that the RFID read/write device searches for within the sensing range. Each command is repeated according to the number of Tries Allowed (TA) see "Tries Allowed (TA)" on page 53.

If the number of tags found during the repeat operations reaches or exceeds the specified NT value, all further read attempts are canceled. The command is canceled, and the data is output.

Parameter abbreviation:	NT

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Default:	.FF (255_{dec})
Value range:	.00 … .14 (0_{dec} ... 20_{dec}) .FF = Off

Example

In Point-to-Point Operation

WPQNT.00.01.05 sets the number of tags that the RFID read/write device searches for in the sensing range to five.

RPQNT.00.00 reads out the set value.

Note

If the number of tags is set to 255_{dez} (= .FF), the function is deactivated. This parameter applies to single commands and does not impact enhanced commands.

Operating Hours (OH)

You can use the OH parameter to output how long the read/write device is in operation or for how long a read/write command is executed.

Parameter abbreviation:	OH

Example

In Point-to-Point Operation

RPQOH.00.00 reads out the operating times of the RFID read/write device.

Response to a TE command:

<Status> <tsu> <tcu> <CHCK> <ETX>

Meaning of the bytes in response .30.00.00.00.93.00.00.00.03

.30 = Status 0_{ASCII}, command has been executed successfully.

.00.00.00.93 = 147_{dec} hours, operating time of the RFID read/write device.

.00.00.00.03 = 3_{dec} hours, duration of the read/write commands.

Transmission Power (PT)

The PT parameter can be used to set the transmitter radiated power of the RFID read/write device. The transmitter radiated power affects the detection range of a tag's detection zone. As the transmitter radiated power increases, the detection range for read and write access to a tag is increased.

A transmitter radiated power level of PT1 is preset in the factory setting. It is possible to set up to four power levels (PT1 … PT4) in the device. This enables a ramp to be generated for a continuous increase in the transmitter radiated power. When used in conjunction with a "Single Read" or "Single Write" command and the definition of the cancellation criterion (NT parameter), the read or write operation is canceled as soon as the set number of read/write tags is detected.

Configuring multiple transmitter radiated power levels increases the execution time of a read or write operation. This is due to the inventory runs that are executed for each power level. The NT cancellation criterion can be configured to reduce the execution time.

Parameter abbreviation:	PT
Default PT1:	.00.01
Value range:	.00.01 = Min .00.02 = Eco .00.03 = Normal .00.04 = Maximum

Example

In Point-to-Point Operation

WPQPT.00.02.00.02 sets the transmitter radiated power to "Eco".

WPQPT.00.04.00.02.00.04 generates a ramp consisting of the "Eco" and "Power" transmitter radiated powers.

RPQPT.00.00 reads out the specified transmitter radiated power.

Reply Frame Mode (QV)

The QV parameter can be used to define the output protocol.

The single-frame protocol complies with the P+F standard for LF systems IPH and HF systems IQH1. If there is more than one tag in the sensing range, status A is output as a warning.

In the multi-frame protocol, each tag that responded is output. An output beginning with status F, containing the number of responses, and stopping the command is output.

Parameter abbreviation:	QV
Default:	.53
Value range:	.53 = Single-frame protocol (S_{ASCII}) .4D = Multi-frame protocol (M_{ASCII})

Example

In Point-to-Point Operation

WPQQV.00.01.4D specifies the multi-frame protocol.

RPQQV.00.00 reads out the set output protocol.

Response to a single read command in multi-frame protocol mode:

0<UIDLength><UID><DataLength><Data><CHCK><ETX>

0<UIDLength><UID><DataLength><Data><CHCK><ETX>

F0002<CHCK><ETX>

The read command was executed, two tags responded.

For each tag, the status, the length of the UID, the UID, the length of the data, and the read data are output. Finally, the status F and the number of tag responses are output.

Q-Value (QW)

The QW parameter defines the number of tags expected in the sensing range. This setting affects the time slot when communicating with a tag to avoid collisions due to simultaneous communication between multiple tags.

Parameter abbreviation:	QW
Default:	.00
Value range:	.00 = One tag .01 = Two tags .02 = Several tags .03 = Many tags .04 = A very large number of tags

Example

In Point-to-Point Operation

WPQQW.00.01.01 sets the Q-value to 1. The RFID read/write device therefore operates with 2^1 = 2 time frames for two expected tags.

RPQQW.00.00 reads out the set Q-value.

Note

The execution time for tag access is reduced by reducing the Q-value. The Q-value influences the execution time of read/write commands.

Reset to Default (RD)

The RD parameter resets some settings of the RFID read/write device to the factory settings.

The following parameters are excluded: Device Address (DA), Info Frame Mode (IF), Reply Frame Mode (QV), UART Baud Rate (UB), UART Timeout (UT), Application Specific Tag (T2), Function Tag (T3), Location Tag (T4), and Installation Tag (T5).

You can use the BB parameter to reset all settings.

Parameter abbreviation:	RD
Factory setting:	See chapter 6.10

Example

In Point-to-Point Operation

WPQRD.00.00

RSSI Lower Limit (RL)

The RL parameter can be used to set the lower RSSI threshold value. As soon as the RSSI value of a read tag falls below the set threshold value, the tag is no longer output.

Parameter abbreviation:	RL
Default:	.00
Value range:	.00 … .64 (0_{dec} ... 100_{dec})

Legend	Designation
1	Zone A
2	RSSI threshold value
3	Zone B
4	Zone C
5	Tag
6	Read/write distance

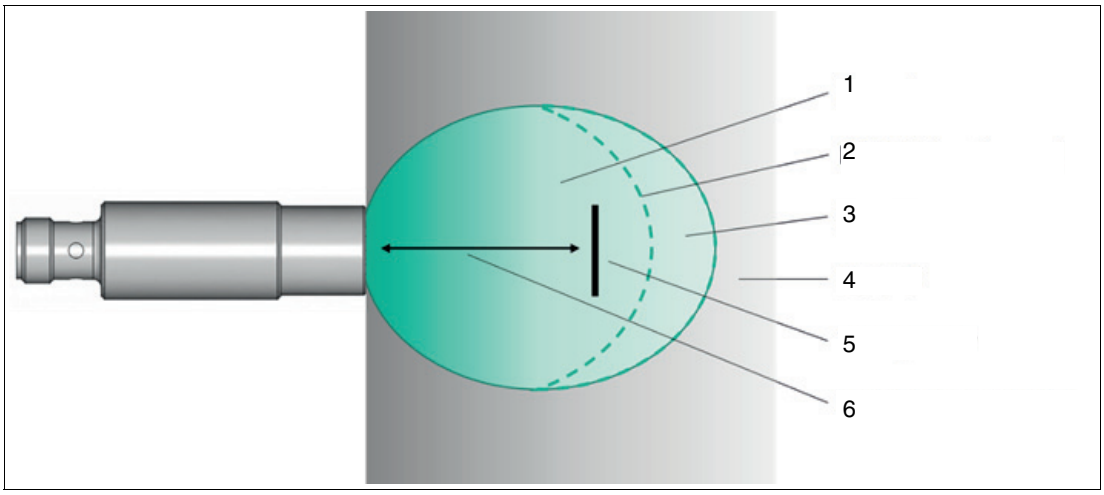

Figure 6.1 Schematic depiction of the reading range of the IQT4-18GM-R4-V1, in relation to RSSI

Zone	RSSI	Note
A	RSSI tag ≥ RSSI threshold value	The tag is in the sensing range and is output.
B	RSSI tag < RSSI threshold value	The tag is within the maximum sensing range, but is not output.
C	-	The tag is outside the sensing range.

Example

In Point-to-Point Operation

RPQRL.00.00

WPQRL.00.01.14 sets the lower RSSI threshold value to 20_{dec}.

RSSI Upper Limit (RU)

The RU parameter can be used to set the upper RSSI threshold value. As soon as the RSSI value of a read tag exceeds the set threshold value, the tag is no longer output.

Parameter abbreviation:	RU
Default:	.64
Value range:	.00 … .64 (0_{dec} ... 100_{dec})

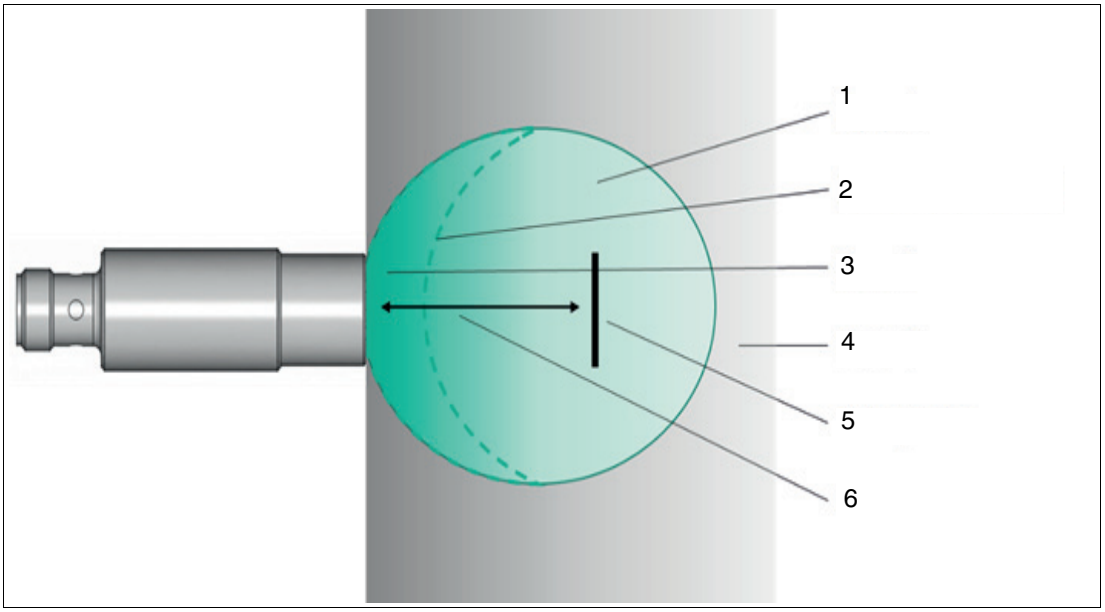

Figure 6.2 Schematic depiction of the reading range of the IQT4-18GM-R4-V1, in relation to RSSI

Zone	RSSI	Note
A	RSSI tag ≤ RSSI threshold value	The tag is in the sensing range and is output.
B	RSSI tag > RSSI threshold value	The tag is in the sensing range but is not output.
C	-	The tag is outside the sensing range.

Example

In Point-to-Point Operation

RPQRU.00.00

WPQRU.00.01.50 sets the upper RSSI threshold value to 80_{dec}.

Frontend State (ST)

The ST parameter can be used to query the operating status of the RFID read/write device.

Parameter abbreviation:	ST
Default:	-
Value range:[1]	.01= Interference from external signals in the usage spectrum, range may be limited. .02 = Detuning due to surrounding metal .04 = Excess temperature warning, internal device temperature 80 °C ... 85 °C .08 = Excess temperature error, internal device temperature > 85 °C .10 = Low voltage/overvoltage error, voltage < 17.5 V DC or > 30.5 V DC

1. Binary combinations are possible

Example

In Point-to-Point Operation

RPQST.00.00 reads out the status of the RFID read/write device.

Response to an RP command of the ST parameter:

<Status> <ST1> <ST2> <CHCK> <ETX>

returns 2 x 1 byte of status code, first byte is the current state and second byte is latched state since last readout.

Meaning of the bytes in response .30.00.02

.30 = Status 0_{ASCII}, command has been executed successfully.

.00 = No message.

.02 = Coil detuning due to metal.

Application Specific Tag (T2)

The T2 parameter can be used to mark the device with application-specific information.

Parameter abbreviation:	T2
Default:	Your automation, our passion.
Value range:	

Example

In Point-to-Point Operation

RPQT2.00.00 reads out the information of the Application Specific Tag.

WPQT2 <DataLength> <Data>

Function Tag (T3)

The T3 parameter can be used to mark the device with function-specific information.

Parameter abbreviation:	T3
Default:	***
Value range:	

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Example

In Point-to-Point Operation

RPQT3.00.00 reads out the information of the Function Tag.

WPQT3 <DataLength> <Data>

Location Tag (T4)

The T4 parameter can be used to mark the device with location-specific information.

Parameter abbreviation:	T4
Default:	***
Value range:	

Example

In Point-to-Point Operation

RPQT2.00.00 reads out the information of the Application Specific Tag.

WPQT4 <DataLength> <Data>

Installation Tag (T5)

The T5 parameter can be used to mark the device with installation-specific information (e.g., initial commissioning date or data).

Parameter abbreviation:	T5
Default:	***
Value range:	

Example

In Point-to-Point Operation

RPQT2.00.00 reads out the information of the Application Specific Tag.

WPQT5 <DataLength> <Data>

Tries Allowed (TA)

The TA parameter sets the number of access attempts during execution of a read/write operation on a tag.

Parameter abbreviation:	TA
Default:	.02
Value range:	.01 ... .0A

Example

In Point-to-Point Operation

WPQTA.00.01.01 permits one attempt. WPQTA.00.01.03 permits three attempts.

RPQTA.00.00 reads out the specified number.

Effects of increased number of read/write attempts:

- More reliable reading and writing
- Longer execution time of a command

Note

To limit the extension of the execution time caused by increasing Tries Allowed, it is recommended to parameterize the NT cancellation criterion. This will stop the command execution as soon as the set number of tags has been identified.

Temperature (TE)

The TE parameter can be used to read out the internal temperature on the microcontroller.

Parameter abbreviation:	TE

Example

In Point-to-Point Operation

RPQTE.00.00 reads out the internal temperatures of the RFID read/write device.

Tag ID Filter (TI)

The TI parameter can be used to filter tags based on the UID. Read/write commands are executed only for tags with a UID that matches the filter. The filter can be set to the entire UID or the leading bytes.

Parameter abbreviation:	TI
Value range:	0 ... 8-byte UID

Example

In Point-to-Point Operation

WPQTI.00.04.E0.08.01.48 sets the filter to tags with a UID beginning with **.E0.08.01.48**.

RPQTI.00.00 reads out the current filter.

WPQTI.00.00 resets the current filter.

Overtemperature Handling (TO)

The TO parameter defines the behavior of the RFID read/write device in the event of excess temperature. It can be used to protect the device in the event of excess temperatures.

Parameter abbreviation:	TO
Default:	.00
Value range:	.00 = Switch Off .01 = Reduce Power .02 = Reduce Duty Cycle

Value	Meaning	Description
0	Switch Off	The RFID read/write device switches off when the internal device temperature is above 85 °C. The device will switch back on when the internal temperature falls below 80 °C.
1	Reduce Power	The RFID read/write device gradually reduces the transmitter radiated power when the internal device temperature is between 80 °C and 85 °C. A reduced transmitter radiated power reduces inherent heating. The RFID read/write device switches off when the internal device temperature is above 85 °C.
2	Reduce Duty Cycle	The RFID read/write device pauses for approx. 0.5 seconds after a complete pass if the internal device temperature is between 80 °C and 85 °C. This reduces inherent heating. The length of the pause varies with the internal temperature and the duration of the executed read/write command. The RFID read/write device switches off when the internal device temperature is above 85 °C.

Caution!

The RFID read/write device cannot identify tags during a pause. It may be possible that data is not read if tags move quickly through the sensing range.

Example

WPQTO.00.01.02 sets the behavior to "Reduce Duty Cycle" in the event of excess temperature.

RPQTO.00.00 reads out the specified behavior.

Host Uart Baudrate (UB)

The UB parameter can be used to read out and set the baud rate.

Parameter abbreviation:	UB
Default:	38400_{dec}
Value range:	1200_{dec}, 2400_{dec}, 4800_{dec}, 9600_{dec}, 19200_{dec}, 38400_{dec}, 57600_{dec}, 115200_{dec}

Example

In Point-to-Point Operation

WPQUB.00.04.00.01.C2.00 sets the baud rate to 115200_{dec}.

RPQUB.00.00 reads out the specified baud rate.

Host Uart Timeout (UT)

The UT parameter can be used to read out and set the timeout.

The timeout is the time in ms after which the RFID read/write device no longer waits for characters in a command. After the timeout elapses, the user receives an error message. To deactivate the timeout, the time must be set to 0_{dec}.

Parameter abbreviation:	UT
Default:	100_{dec}
Value range:	0 ... 10000_{dec}

Example

In Point-to-Point Operation

WPQUT.00.02.03.E8 sets the timeout to 1000_{dec}.

RPQUT.00.00 reads out the specified timeout.

Voltages (VO)

The VO parameter can be used to read out the input voltage and other internal voltage and current values.

Parameter abbreviation:	VO

Example

In Point-to-Point Operation

RPQVO.00.00 reads out the internal voltage and current values

Response to an RP command of the VO parameter:

<Status> <U_IN> <…> <CHCK> <ETX>

Meaning of the bytes in response .30.5C.8C.14.86.0C.E4.8D.41.0C.AF.04.A0.04.A0

.30 = Status 0_{ASCII}, command has been executed successfully.

.5C.8C = 23692_{dec} U_IN in mV.

.14.86.0C.E4.8D.41.0C.AF.04.A0.04.A0 = Additional internal voltage and current values.

7 Appendix

7.1 Error and Status Messages

Status/ Error	Description
0	The command has been executed without error.
1	Excess temperature
2	Switch-on message, reset has been executed.
3	Reserved
4	The command is incorrect or incomplete. The parameter is not in the valid area.
5	No read/write tag in the sensing range.
6	Hardware error, e.g., error during self-test or read/write device defective
7	Internal device error.
8	Reserved
9	The programmed tag type is not compatible with the read/write device.
A	Single-frame protocol: multiple tags in the sensing range Multi-frame protocol: Multiple tags in the sensing range with the same UID
B	Output of additional information
C	Reserved
D	Reserved
E	Internal memory overflow; execute reset
F	End of an output in the multi-frame protocol,

7.2 ASCII Table

hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII	hex	dec	ASCII
00	0	NUL	**20**	**32**	**Space**	40	64	@	**60**	**96**	'
01	1	SOH	**21**	**33**	**!**	41	65	A	**61**	**97**	**a**
02	2	STX	**22**	**34**	**"**	42	66	B	**62**	**98**	**b**
03	3	ETX	**23**	**35**	**#**	43	67	C	**63**	**99**	**c**
04	4	EOT	**24**	**36**	**$**	44	68	D	**64**	**100**	**d**
05	5	ENQ	**25**	**37**	**%**	45	69	E	**65**	**101**	**e**
06	6	ACK	**26**	**38**	**&**	46	70	F	**66**	**102**	**f**
07	7	BEL	**27**	**39**	**'**	47	71	G	**67**	**103**	**g**
08	8	BS	**28**	**40**	**(**	48	72	H	**68**	**104**	**h**
09	9	HT	**29**	**41**	**)**	49	73	I	**69**	**105**	**I**
0A	10	LF	**2A**	**42**	*****	4A	74	J	**6A**	**106**	**j**
0B	11	VT	**2B**	**43**	**+**	4B	75	K	**6B**	**107**	**k**
0C	12	FF	**2C**	**44**	**,**	4C	76	L	**6C**	**108**	**l**
0D	13	CR	**2D**	**45**	**-**	4D	77	M	**6D**	**109**	**m**
0E	14	SO	**2E**	**46**	**.**	4E	78	N	**6E**	**110**	**n**
0F	15	SI	**2F**	**47**	**/**	4F	79	O	**6F**	**111**	**o**
10	16	DLE	**30**	**48**	**0**	50	80	P	**70**	**112**	**p**
11	17	DC1	**31**	**49**	**1**	51	81	Q	**71**	**113**	**q**
12	18	DC2	**32**	**50**	**2**	52	82	R	**72**	**114**	**r**
13	19	DC3	**33**	**51**	**3**	53	83	S	**73**	**115**	**s**
14	20	DC4	**34**	**52**	**4**	54	84	T	**74**	**116**	**t**
15	21	NAK	**35**	**53**	**5**	55	85	U	**75**	**117**	**u**
16	22	SYN	**36**	**54**	**6**	56	86	V	**76**	**118**	**v**
17	23	ETB	**37**	**55**	**7**	57	87	W	**77**	**119**	**w**
18	24	CAN	**38**	**56**	**8**	58	88	X	**78**	**120**	**x**
19	25	EM	**39**	**57**	**9**	59	89	Y	**79**	**121**	**y**
1A	26	SUB	**3A**	**58**	**:**	5A	90	Z	**7A**	**122**	**z**
1B	27	ESC	**3B**	**59**	**;**	5B	91	[	**7B**	**123**	**{**
1C	28	FS	**3C**	**60**	**<**	5C	92	\	**7C**	**124**	**I**
1D	29	GS	**3D**	**61**	**=**	5D	93	]	**7D**	**125**	**}**
1E	30	RS	**3E**	**62**	**>**	5E	94	^	**7E**	**126**	**~**
1F	31	US	**3F**	**63**	**?**	5F	95	_	**7F**	**127**	**DEL**

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