OBID i-*scan*®

MONTAGE
INSTALLATION

ID ISC.MR200

(deutsch / english)

FEIG ELECTRONIC

DEUTSCH

deutsche Version

ENGLISH

english version from page **4**

Note

E N G L I S H

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Contents

ENGLISH

E N G L I S H

1   Safety Instructions / Warning - Read before start-up !

- The device may only be used for the intended purpose designed by for the manufacturer.

- The operation manual should be conveniently kept available at all times for each user.

- Unauthorized changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.

- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.

- Repairs may only be executed by the manufacturer.

- Installation, operation, and maintenance procedures should only be carried out by qualified personnel.

- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes .

- When working on devices the valid safety regulations must be observed.

E N G L I S H

E N G L I S H

2   Features of the Reader Family ID ISC.MR200

2.1   Features

The Reader is designed for reading passive data carriers, so-called „smart labels", with an operating frequency of 13.56 MHz.

The ID ISC.MR200 is suitable for any application in which medium-range read distances are required. An additional external antenna is required which must be connected to the reader.

An anti-collision function allows simultaneous reading of multiple transponders.

The Reader electronics are housed in a rigid, powder-coated aluminum enclosure with an IP54 protection rating for use outdoors. It includes two digital inputs, two digital outputs and a relay output.

The Reader has an asynchronous RS232 interface. Depending on the Reader model you can choose from between an additional asynchronous interface (RS485 for the ID ISC.MR200-A) and an Ethernet interface (ID ISC.MR200-E).

The interface on the ID ISC.MR200-A can be configured for operation on a data bus with RS485 interface. The Reader address can then be software assigned.

A DC voltage can be applied to the antenna output. This voltage powers the Dynamic Antenna Tuner (ID ISC.DAT).

2.2   Available Reader models

The following Readers are currently available:

Reader model	Description
ID ISC.MR200-A	Asynchronous interfaces RS232 and RS485
ID ISC.MR200-E	Asynchronous interface RS232 and Ethernet Interface

Table 2-1: Reader models

2.3   Scope of delivery

The following components are included in the scope of delivery:

Module type	Scope of delivery
ID ISC.MR200-A	1 x Reader ID ISC.MR200-A 3 x jumpers 2 x seal cap M16 2 x decorative cover, clip-on 2 x integrated cover stays
ID ISC.MR200-E	1 x Reader ID ISC.MR200-E 1 x jumper 4 x seal cap M12 - M25 1 x seal cap - reducer 2 x decorative cover, clip-on 2 x integrated cover stays

Table 2-2: Scope of delivery

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3   Installation and Wiring

3.1   Installation

E N G L I S H

The Reader is designed for wall mount, including outdoors. Holes are provided in the housing for wall attachment. The housing does not need to be opened for installation on a wall (see Fig. 1).
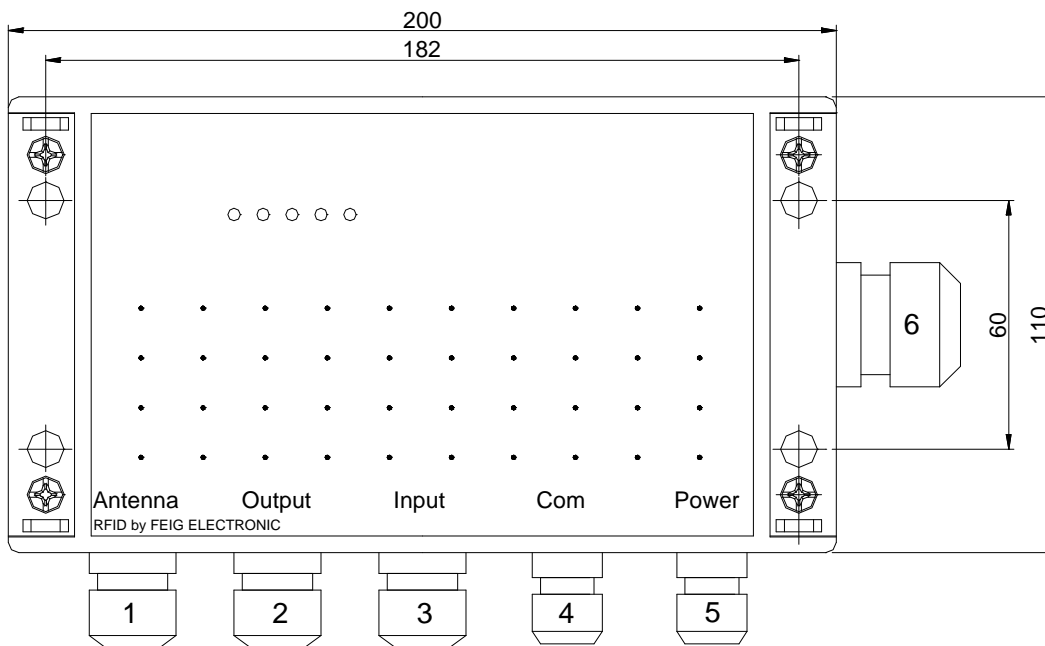
Fig. 3-1: Housing ID ISC.MR200

Cable gland	Size	Clamping range [mm]	Description
1	M 16	4.5 – 10	Antenna cable
2	M 16	4.5 – 10	Relay / Outputs
3	M 16	4.5 – 10	Inputs
4	M 12	3.5 – 7	Interface (serial)
5	M 12	3.5 – 7	Supply voltage
6	M 25	9 – 17	Ethernet Interface (model –E only)

Table 3-1: ID ISC.MR200 cable glands

3.1.1 Seal caps

The seal caps included in the scope of delivery can be used to close off unused cable fittings.

The reducing ring provided is intended for the network connection. The slotted reducer is placed over the network cable and then fixed in place in the cable gland.

3.1.2 Cover stays

The two cover stays can be used to attach the cover to the housing. The cover stays are inserted into the openings provided for this purpose.
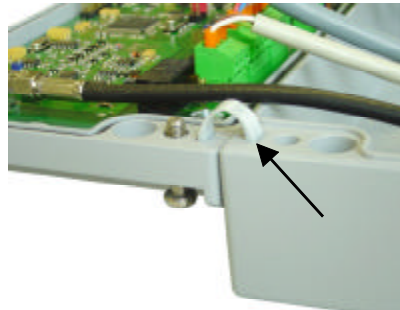
Fig. 3-2: Cover stay

3.1.3 Decorative covers

The decorative covers are attached after installing the Reader.

The slot on the long side of the cover is used for disassembling the cover. Use a screwdriver to remove the cover.

Fig. 3-3: Decorative cover

3.2 Wiring terminals

E N G L I S H
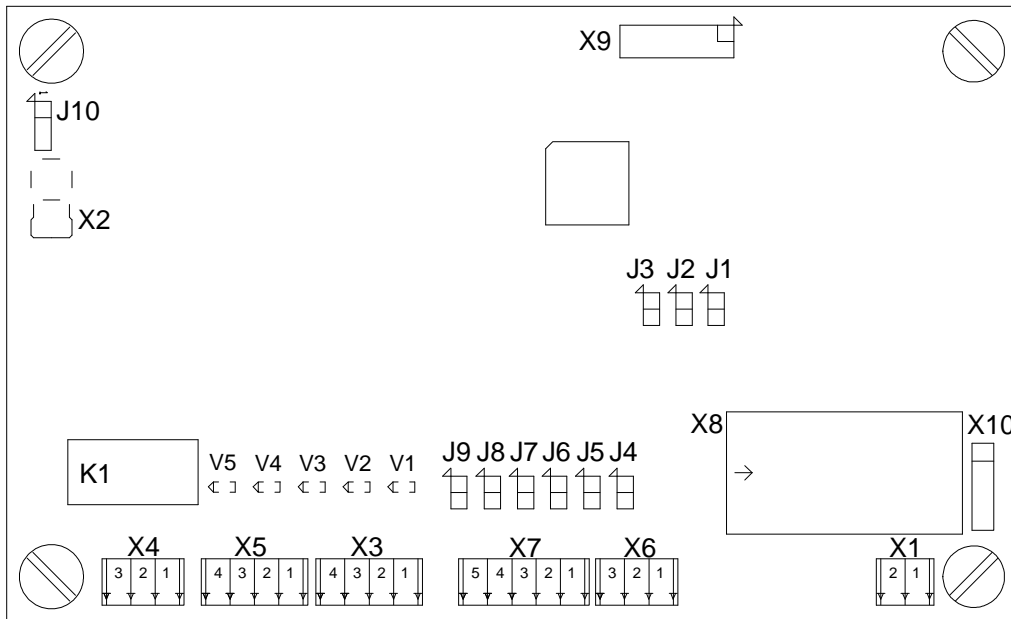
Fig. 3-4: Wiring terminals
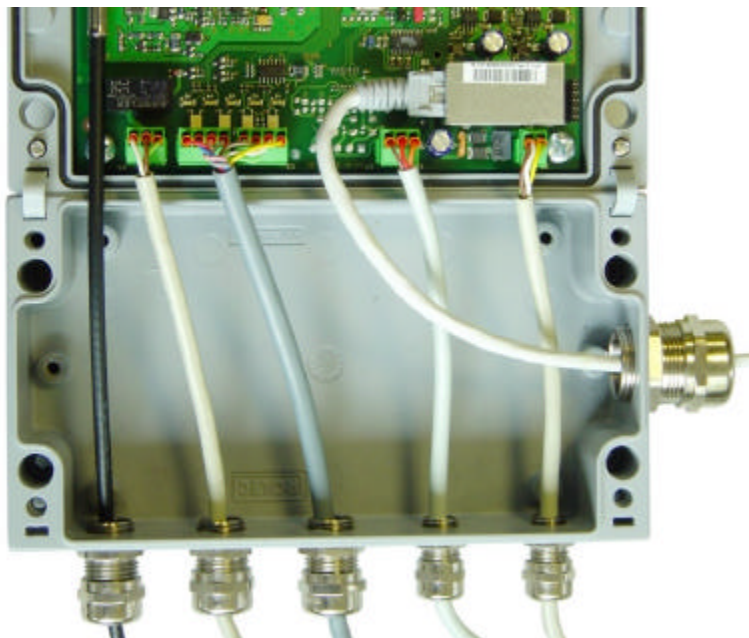
Fig. 3-5: Maximum cable configuration (shown: ID ISC.MR200-E)

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3.3   Antenna connection

An SMA socket is provided on the circuit board for connecting the external antenna.

The maximum tightening torque of the SMA sockets is 0.45 Nm.

Caution:
Greater tightening torque will destroy the connector.

| Terminal	Description
X2	External antenna connection (input impedance 50Ω)

Table 3-2: Connecting the external antenna

Notes:

- **The input impedance of the antenna should be calibrated to a value of 50 Ω± (3 ΩÐ 3°).**

- **The optimal operating Q of the antenna should be in a range of Q^O = 20...30. To determine the operating Q, the antenna must be supplied with a 50Ω source, such as a network analyzer or a frequency generator.**

- **When connecting the antenna be sure that the permissible limits specified by national code with respect to RF installations are not exceeded.**

- **To meet national code with respect to RF installations, each antenna feed line must be equipped with the supplied Æ 28 mm x 20 mm EMC ferrite ring core. The antenna line must be wrapped tightly around the EMC ferrite ring core at least 4 times. The distance between the Reader connection and the ring core should be no greater than 20 cm (see Fig. 3.2.-1).**

max. 20cm

Fig. 3-6: Antenna cable with EMC ferrite ring core

3.4   Supply voltage

Connect the 12-24 VDC supply voltage to Terminal X1.

The cable length between the power supply and the Reader module must not exceed 3 m.

E N G L I S H

Terminal	Abbreviation	Description
X1 / Pin 1	Vcc	Vcc – supply voltage
X1 / Pin 2	GND	Ground – supply voltage

Table 3-3: Supply voltage pin assignments
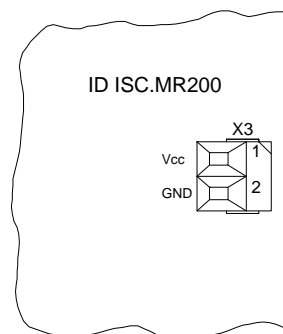
Fig. 3-7: Connecting the supply voltage

Note:

- **Reversing the polarity of the supply voltage may destroy the unit.**

Recommended power supplies :

To make full use of the performance capability of the Reader module, a sufficiently regulated and noise-free power supply (noise ripple = max. 150 mV) should be used. When using a switching power supply be sure that the internal switching frequency of the power supply is less than 300 kHz.

The power supply should be a Safety Extra-Low Voltage (SELV) type with limited power. The output power of the power supply should be at least 15 watts.

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Output voltage	12 - 24 V_{DC}
Output power	≥ 15 W
Ripple	< 150 mV_{pp}
Switching frequency	< 300 kHz

Table 3-4: Electrical specifications for external power supply

Model	Manufacturer
MPP15 AC adapter	CEAG AG / FRIWO Group Von-Liebig-Straße 11 D- 48346 Ostbevern Germany Tel.: + 49 (0) 02532/ 81-158 www.friwo.de
MiniLine ML 30.100 MiniLine ML 30.102 DIN rail mount	PULS GmbH Arabellastraße 15 D-81925 München Germany Tel.: +49 (0) 89 9278 0 www.puls-power.com

Table 3-5: Recommended power supplies

3.5 DC voltage on the RF antenna terminal X2

Jumper J10 can be used to provide DC voltage on antenna terminal X2. This DC offset is used to power the dynamic antenna tuner (ID DAT).

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Note:

- **The DC voltage is intended only for power the ID ISC.DAT dynamic antenna tuner**

- **Connecting other antennas to this DC voltage will destroy them**
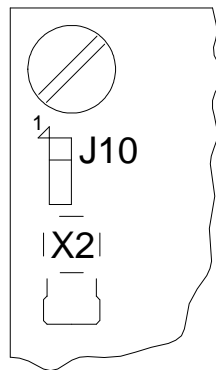
Fig. 3-8: Position Jumper J10

J10	1-2	2-3
DC voltage on antenna terminal	No (Default)	Yes

Table 3-6: Jumper J10 configuration

3.6 Inputs

3.6.1 Optocoupler

The optocoupler inputs in Terminal X5 are galvanically isolated from the Reader electronics and must therefore be externally supplied. The input LEDs for the optocouplers are switch internally with a series resistor of 500 Ω. For supply voltages of greater than 10V the input current must be limited to max. 20 mA by an additional external series resistor (see Table 3.4-1).

Terminal	Abbreviation	Description
1	IN1+	+ Input 1
2	IN1-	- Input 1
3	IN2+	+ Input 2
4	IN2-	- Input 2

Table 3-7: Optocoupler input pin assignments

Notes:
- **The inputs are configured for a maximum input current of 24 V DC and an input current of maximum 20 mA.**
- **Reversing the polarity or overloading the inputs will destroy them.**
- **The Reader supply voltage must not be used to drive the inputs, since otherwise additionally induced noise may reduce the effective reading range.**
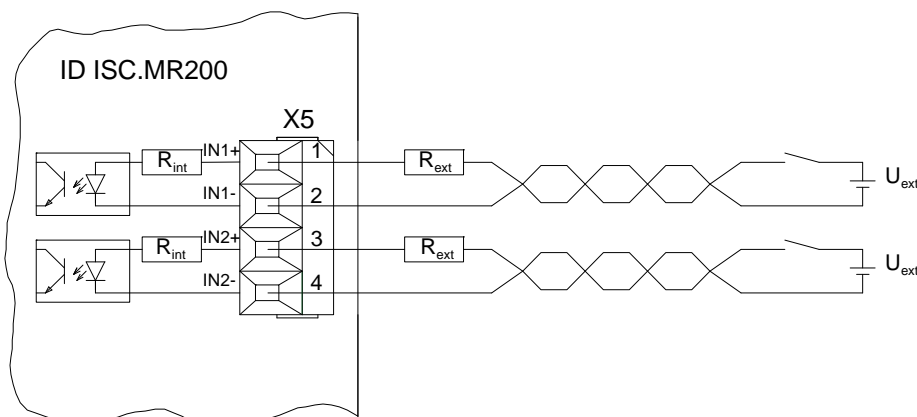
Fig. 3-9: Internal and possible external wiring of the optocoupler inputs

Fehler! Verweisquelle konnte nicht gefunden werden. shows the required external series resistances at various external voltages U_{ext}.

External voltage U_{ext}	Required external series resistor R_{ext}
5 V ... 10 V	---
11 V ... 15 V	270 Ω
16 V ... 20 V	560 Ω
21 V ... 24 V	820 Ω

Table 3-8: Required external series resistance R_{ext}

3.7 Outputs

3.7.1 Optocouplers

The transistor connections of the two optocoupler outputs, collector and emitter, are galvanically isolated from the Reader electronics and brought out with no internal circuitry to Terminal X6. The outputs must therefore be powered with an external power supply.

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Terminal	Abbreviation	Description
1	O1-C	Collector – Output 1
2	O1-E	Emitter – Output 1
3	O2-C	Collector – Output 2
4	O2-E	Emitter – Output 2

Table 3-9: Optocoupler output pin configuration

Notes:

- **The outputs are configured for max. 24 V DC / 30 mA.**

- **Reversing the polarity or overloading the outputs will destroy them.**

- **The outputs are intended for switching resistive loads only.**
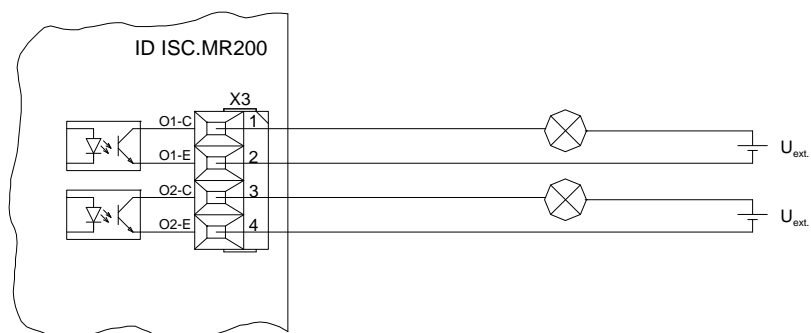
Fig. 3-10:: Internal and possible external wiring of the optocoupler outputs

3.7.2 Relay

A changeover relay is provided.

Terminal	Abbreviation	Description
1	COM	Working contact
2	NC	Normally closed
3	NO	Normally open

Table 3-10: Relay output pinouts

Notes:

- **The relay outputs are configured for max. 24 V DC / 2 A.**

- **The relay outputs are intended for switching resistive loads only. If an inductive load is used, the relay contacts must be protected by means of an external protection circuit.**
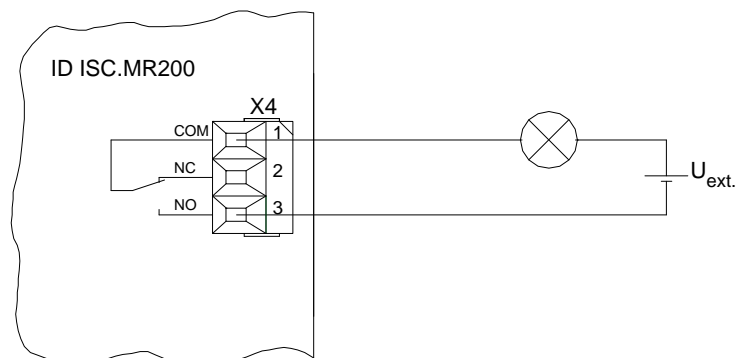
Fig. 3-11: Internal and possible external wiring of the relay output

3.8   Interfaces

3.8.1   RS232 interface

The RS232 interface is connected at Terminal X6.

The transmission parameters are configured using software protocol.

Pin assignments X6 (RS232 interface):

Terminal	Abbreviation	Description
1	GND	RS232 – GND
2	RxD	RS232 - RxD
3	TxD	RS232 - TxD

Table 3-11: RS232 interface pin assignments
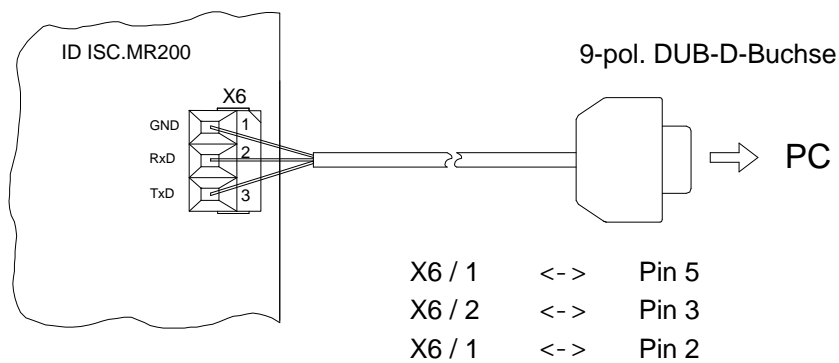
Fig. 3-12: Wiring example for connecting the RS232 interface

3.8.1.1 Wiring assignments

The RS485 interface is connected at Terminal X7.

Pin assignments X7 (RS485 interface):

Terminal	Abbreviation	Description
1	GND	RS485 – (B +) RS485 – GND
2	A-	RS485 – (A -)
3	B+	RS485 – (B +)
4	Y-	n.c.
5	Z+	n.c.

Table 3-12: RS485 interface pin assignments
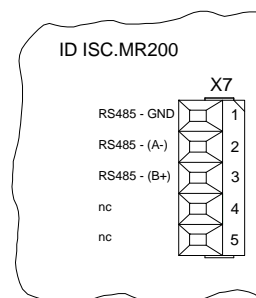
Fig. 3-13: Wiring the RSR485 interface

3.8.2 Ethernet interface(ID ISC.MR200-E)

The Reader has an integrated 10/100Tbase network interface with RJ-45 connection. Terminal X8 serves as the Ethernet port.

Cat 5 cable should be used for structured cabling. This ensures reliable operation at 10Mbps or 100Mbps.

Pin assignments X8 (network interface):

Terminal	Abbreviation	Description
1	TX+	Transmit Data +
2	TX-	Transmit Data -
3	RX+	Receive Data +
4	VETH+	n.c.
5	VETH+	n.c.
6	RX-	Receive Data -
7	VETH-	n.c.
8	VETH-	n.c.

Table 3-13: Ethernet interface pin assignments

E N G L I S H

4 Operating and Display Elements

4.1 LED´s

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Abbreviation	Description
LED V1 (green)	"RUN-LED" - Indicates proper running of the internal Reader software - Flashing frequency approx. 1 Hz
LED V2 (blue)	Diagnostic 1: RF communication / EEPROM status - Short flashing indicates errorless communication with a transponder on the RF interface - Flashes alternately with V1 after the reset following a software update - Flashes alternately with V1 if an error in reading the parameters occurred following a reset
LED V3 (yellow	Diagnostic 2: Host communication - Short flashing indicates a protocol is being sent to the host.
LED V4 (yellow)	Diagnostic 3: for future applications
LED V5 (red)	Diagnostic 4: Reader initializing / RF error - Comes on during Reader initializing following power-on or after a reset. - Comes on when there is an error in the RF section of the Reader. The error type can be read via software using the Reader Diagnostic command [0x6E].

Table 4-1: LED configuration

5   Startup

5.1   Port configuration

Both Reader ports can be used for communication. The Reader automatically detects which port is being used for communication. The RS232 port is used as a service port and thus has higher priority. If communication takes place on the RS232 port, the other port (RS485 for ID ISC.MR200-A and network port for ID ISC.MR-200-E) is disabled for a time of **10 seconds**. This lockout can be cancelled by means of a reset.

Fehler! Verweisquelle konnte nicht gefunden werden. shows the standard configuration of the RS232 port.

Baud rate	38400
Frame	8E1

Table 5-1: Standard configuration of the RS232 port

E N G L I S H

5.1.1 RS485 (ID ISC.MR200-A)

In the case of the RS485 interface, any necessary termination resistors can be enabled by inserting jumpers J4, J5 and J6.

Jumper	In	Out
J4	Pull-Up on RS485 - B	**without** Pull-Up on RS485 - B
J5	Pull-Down on RS485 - A	**without** Pull-Down on RS485 – A
J6	Termination resistor RS485 - A ⇔ RS485 - B	**without** termination resistor RS485 - A ⇔ RS485 - B

Table 5-2: RS485 termination resistors
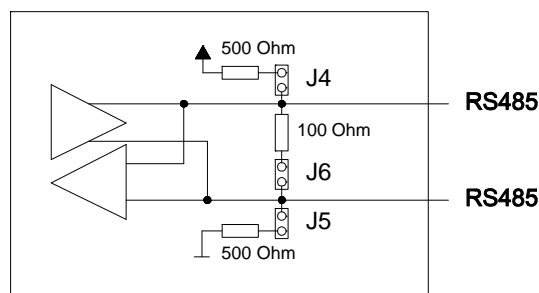

Fig. 5-1: RS485 port jumpers

5.1.1.1 Setting RS485 addresses for bus operation

The Reader allows you to assign the required bus address via software.

Addresses are assigned by the host computer. The software is used to assign addresses between "0" and "254".

Note:
Since all Readers are factory set with address 0, they must be connected and configured in succession.

5.1.2   Ethernet Interface(ID ISC.MR200-E)

The prerequisite for using TCP/IP protocol is that each device on the network have a unique IP address. All Readers have been assigned a factory default IP address.

Note:

The Readers must be connected to the network and configured in succession.

** E N G L I S H**

Fehler! Verweisquelle konnte nicht gefunden werden. shows the standard configuration of the network connection.

Network	Address
IP address	192.168.10.10
Subnet mask	255.255.255.0
Port	10001

Table 5-3: Standard configuration of the network connection

6   Technical Specifications

E N G L I S H

Mechanical Data

- **Enclosure**   Die-case aluminum, powder-coated,

                                        lockable hinged cover

- **Dimensions (W x H x D)**   200 x 110 x 60 mm

- **Weight**   1.0 kg

- **Enclosure rating**   IP 54

- **Color**   RAL 7040 (similar to window grey)

Electrical Data

- **Supply voltage**   12 VDC to 24VDC $\pm$ 5 %

                                        Noise Ripple : max. 150 mV

- **Power consumption**   max. 13 VA

- **Operating frequency**   13.56 MHz

- **Transmitting power**   1 W / 1.75W ± 1 dB

- **Degree of modulation**   20% ± 3% absolute

- **Antenna connection**   1 x SMA socket (50Ω)

- **Outputs:**
  - 2 optocoupler   24 V DC / 30 mA (galvanically isolated)
  - 1 relay (1 x changeover)   24 V DC / 2 A

  - **Inputs**
    – 2 optocoupler   max. 24 V DC/ 20 mA

  - **Interfaces**
    - ID ISC.MR200-A   RS232 and RS485
    - ID ISC.MR200-E   RS232 and Ethernet

Functional Properties

- **EEPROM (for parameters)**   10,000 write cycles

- **FLASH**   Software can be updated on interface

- **Supported transponders**
  - ISO15693 (I•Code SLI, Tag-it HFI, my-d, STM LRI512)
  - I•Code MID and EPC-Transponder

- **Address setting for interface (ID ISC.MR200-A only)**   - Software (up to 254 addresses)

- **Optical indicators**   5 LED´s for diagnosing the operating status

E N G L I S H

Ambient Conditions

- **Temperature range**
  - **Operating**   -20°C to +60°C
  - **Storage**   -25°C to +85°C

- **Vibration**   EN60068-2-6
  10 Hz to 150 Hz : 0.075 mm / 1 g

- **Shock**   EN60068-2-27
  Acceleration   : 30 g

Applicable Standards

- **RF approval**
  - **Europe**   EN 300 330
  - **USA**   FCC 47 CFR Part 15

- **EMC**   EN 301 489

- **Safety**
  - **Low Voltage**   EN 60950
  - **Human Exposure**   EN 50364

6.1 Approval

6.1.1 Europe (CE)

ENGLISH

When properly used, the RF system is in conformance with the essential requirements of Article 3 and the other relevant provisions of the R&TTE Directive 1995/5/EC of March 99.

$$C\,\epsilon$$

Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489

6.1.2 USA (FCC)

FCC ID: PJMMR200

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device.

Warning: Changes or modification made to this equipment not expressly approved by FEIG ELECTRONIC GmbH may void the FCC authorization to operate this equipment.