AEG ID

WE MAKE ID EASY

Compact Reader ARE i2-LF

Installation guide for systems with the Profibus - DP interface

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

1 INTRODUCTION 4

2 SYSTEM OVERVIEW 5

3 GUIDELINES FOR OPERATION 5

4 INSTALLATION 6

4.1 Mounting of the housing 6

4.2 Grounding of the reader 6

4.3 Connecting of the plug 6

4.4 Connecting of the power supply 7
4.4.1 Using the service cable 7
4.4.2 Using a self assembled connecting cable 8
4.4.2.1 Assembling of the cable pipe 8
4.4.2.2 Mounting of the cable 9
4.4.2.3 Mounting of the service cable 11
4.4.2.4 Mounting of the profibus cable 12

4.5 Mounting of the external antenna / of the AMP 4 / AMP 8 14

5 VISUAL SIGNAL LAMPS 15

6 SERVICE OR MONITOR INTERFACE 16

6.1 Starting up with the service interface 16

6.2 Configuration of profibus client settings 17

6.3 Testing reader functions 18

7 COMMAND SET / STRUCTURE OF THE INSTRUCTION SET 19

7.1 General 19
7.1.1 Entering instuctions 19
7.1.2 Output format 20
7.1.2.1 Instruction specific output 20
7.1.2.2 Output after changing a parameter 20
7.1.2.3 Output at parameter query 21
7.1.3 Blank instruction 21
7.1.4 Incorrect instruction / error codes 21

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.1.5 Upper and lower case 22
7.1.6 Linefeed 22

7.2 Instructions for the hardware settings 22
7.2.1 ADR - profibus address of the reader 22
7.2.2 TERM - termination 23
7.2.3 TC – monitor function 23

7.3 Instructions for the reading settings 24
7.3.1 GT – single transponder code reading 24
7.3.2 CID – Suppression of ID Codes 24
7.3.3 CN – Suppression of No Reads 25
7.3.4 NID – Failure Protection 26
7.3.5 TOR – Maximum reading time 27

7.4 Instructions for the memory settings 27
7.4.1 VER – Reader firmware 27
7.4.2 VS – Show parameter 28
7.4.3 VSAVE – Save parameter 28
7.4.4 RST – Warm start 28
7.4.5 INIT – Warmstart with default parameters 29

8 OPERATING MODES OF THE READER 30

8.1 MD 2 - Triggered by an Software Command 30

8.2 MD 0 - Continuous Reading 31

9 STARTING UP AS PROFIBUS SLAVE 32

10 BASIC DATA EXCHANGE PROCESS 33

10.1 Selective read RD 33

10.2 Writing WD 34

11 INSTRUCTIONS 35

11.1 General Instructions 35

11.2 Special Instructions for Using a Read / Write System 36

12 CERTIFICATIONS 38

13 HOTLINE 38

14 REVISIONS 39

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

1 Introduction

This document describes the components of the Compact Reader System ARE i2 / Profibus and the procedure how to do the first set up of the reader.

The main features of the reader are listed below:

- The antenna is placed inside of the housing.
- There are algorithm available to read nearly all 125 kHz-transponders on market.
- Integrated RS232 galvanically separated Profibus DP interface with up to 12 MBit/s.
- Client addresses from 2 to 99 per coms interface.
- Integrated RS232 service interface with baud rate 19200 Bit/s.
- The allowed supply voltage is 9 to 30V DC.
- Low power consumption of reader < 3 Watt.
- High reliability for reading and writing within an industrial environment.
- Compact housing of the reader with multiple ways for mounting.
- The cabling concept of the reader is optimised to service demands.
- The protection class of the housing is IP65.
- There is a set of external antennas available to meet special application demands (X-tended version).

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

2 System overview

In the base version all electronic components of the reader are placed inside of a small plastic housing.

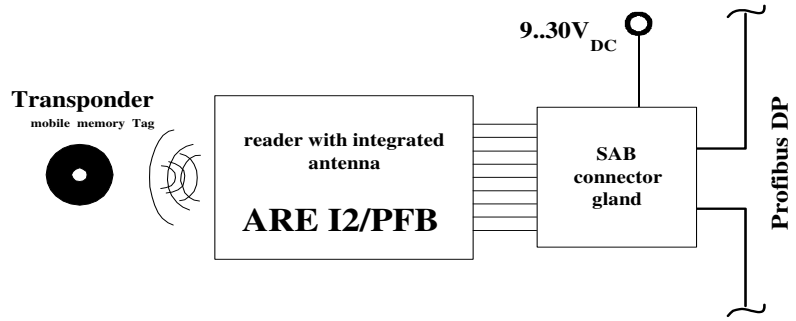


Figure 1: Concept of the reading system

By means of the integrated antenna the reader generates an alternating magnetic field, which powers the transponder. Coded signals sent back from the transponder are received and decoded by the reader. The reader is fully controlled by a master with profibus data port.

There is a version available without the integrated antenna. On this version it is possible to connect an external antenna.

3 Guidelines for operation

The steps for putting the reader into operation are as follows:

- configuration of the profibus client settings (node address, termination)
- assembly cabling, see chapter 4
- put into operation
- In order to become familiar with the reader it is helpful to activate the reader initially only over the service interface and to activate the profibus interface only as a second step.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

4 Installation

To get the specified reading performance it is necessary to do the installation carefully step by step as it is described in the following chapters. All the work must be done by well educated people.

4.1 Mounting of the housing

The reader can be mounted to any other mechanic construction. Be sure that the direction of the antenna and the transponder allow a good magnetic coupling (see chapter 11).

It is recommended to protect the housing against heavy mechanical interactions and drippy fluids.

Attention!

The antenna side of the housing must not be brought next to a metal surface. This could lead to a significant change of the properties of the antenna circuit, which in turn reduces the reading range considerably.

With the help of the plastic bars, the reader can mounted or screwed on to the most fastening elements without open the housing of the device.

4.2 Grounding of the reader

To get reliable reading results the reader must be grounded. The connector is placed at the side of the housing (6.35 mm flat contact).
To avoid EMV-problems, the cable to ground ought to be very short with low impedance.

Attention!

The topology of the ground wires must be done in the right way (according state of art).

4.3 Connecting of the plug

Attention!

Be sure that the grounding of the reader is well done and the power supply is not connected(chapter 4.2). Otherwise the electronic may be destroyed by electrostatic discharge (ESD).

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

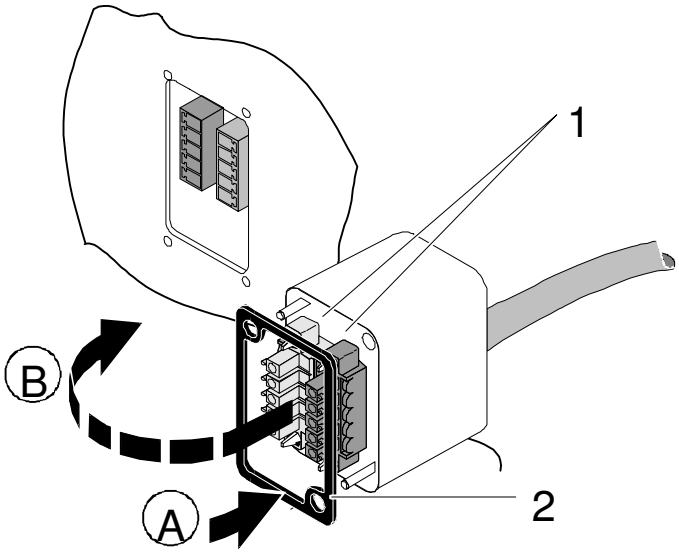


Figure 2: Connecting of the plug

- Put on the sealing 2 to the SAB Cab (A).
- Plug in the SAB Cab to the connector at the bottom of the reader device (B).

There is only one way to plug in the SAB Cab to the connector rim of the reader.

Fasten the SAB Cab with the help of the screws.

To meet the protection class of IP 65, it's necessary to apply a turning moment of 0.5 Nm to the screws.

4.4 Connecting of the power supply

Before you connect the reader to the profibus you have to configure it with the service cable (ID 70213). The reader has to be supplied with 9..30V DC. The minimum output power of the power supply has to be 3 Watt. Be sure that you use the right polarity.

4.4.1 Using the service cable

Power supply:	brown =	+ 9 .. 30 Volt
	white =	ground

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

4.4.2 Using a self assembled connecting cable

Using the following SAB cabs you can assemble your own connecting cable.

ID 70214	SAB cab with 3 pre-assembled PG9 cable pipe
ID 70215	SAB cab with 2 pre-assembled PG9 cable pipes
ID 70219	SAB cab without any cable pipe

The SAB-cab contains the connections for:

- the power supply
- the profibus-DP
- the service interface (RS232)

The allowed diameter of the cable must be in the range between ∅3.5 and ∅8mm. For this case, IP 65 is reached.

Attention!

The maximum length of the serial RS232 cable is 15m.

4.4.2.1 Assembling of the cable pipe

- Breakthrough the prepared areas at the surface of the SAB Cabs. There are two prepared areas seen at the SAB Cab: central and at one side of the cab.
- The o-ring (3) has to be assembled proberly to the cable pipe (4) to ensure the protection class IP 65.

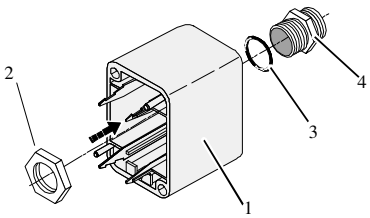


Figure 3: Assembling of the cable pipe

- Bring the nut (2) of the cable pipe inside of the SAB Cab (1).
- To fasten the nut please use the right tool (17mm).

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

4.4.2.2 Mounting of the cable

The cable must be mounted in following steps:

- Remove all inner parts from the cable pipe at the SAB Cab (1) (nut (5), cable fastener (3), pipe(4)) (see Figure 4)

- Put all the removed parts (nut (5), cable fastener (3), pipe (4),) and the cable pipe of the SAB Cab as well (1 to 4) to the cable.

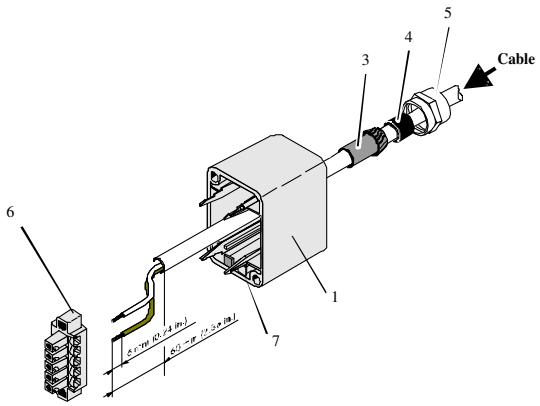


Figure 4: Mounting for the cable

- Remove the outer isolation of the cable at a length of 6 cm .

- Remove the isolation of the wires at a length of 6 mm and stick a covering hull to the litz wire.

- Put the cable to the cable pipe. The length of the cable coming out the SAB cab must long enough to do all further installation steps in an easy way.

- Stick the pipe (4) into the cable fastener (3).

- Stick the cable fastener (3) into the cable pipe.

- Connect the cables into the right places of the MINI-COMBICON-Connectors (6).

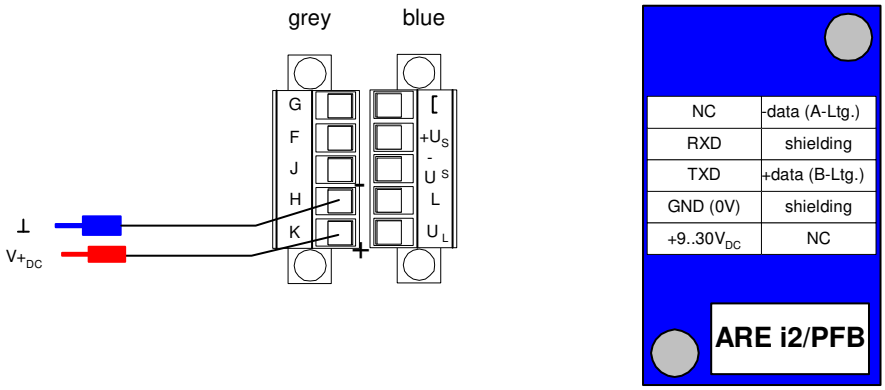
- The pin assignment is shown in the figure below.

- Put the MINI-COMBICON-Connectors into the SAB cab. Look after the color coding.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52



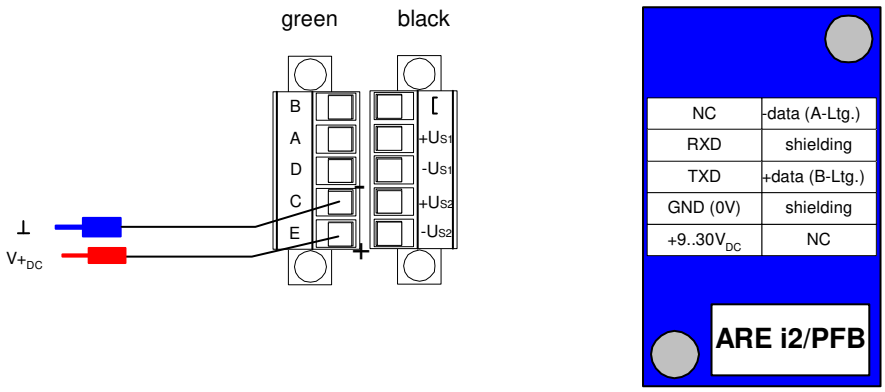


Figure 5: connector pin assignment of the power supply

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

4.4.2.3 Mounting of the service cable

The connection of the service cable is also inside of the SAB-cab. You have to use a 5 wire cable with enough profile for the intensity of current.

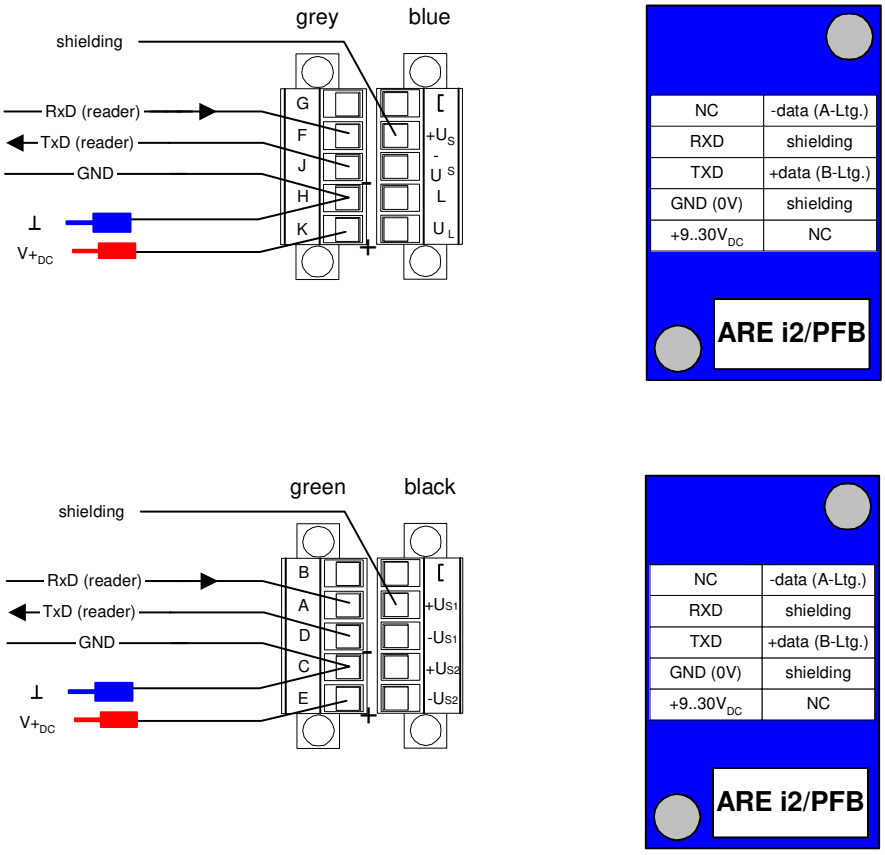


Figure 6: connector pin assignment of the service interface

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

4.4.2.4 Mounting of the profibus cable

The connectors of the profibus cable are also inside the SAB cab and are mounted as follows:

Put all the removed parts (nut (5), cable fastener (3), pipe (4),) and the cable pipe of the SAB cab as well (1 to 4) to the cable.

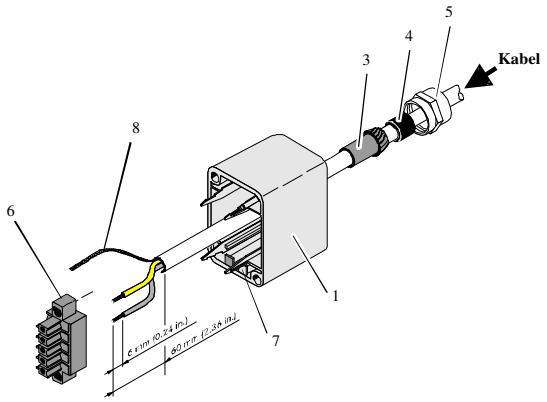


Figure 7: mounting of the profibus cable

- Remove the outer isolation of the cable at a length of 6 cm.
- Remove the isolation of the wires at a length of 6 mm.
- Put the cable to the cable pipe. The length of the cable coming out the SAB Cab must long enough to do all further installation steps in an easy way.
- Do the same analog with the second profibus cable.
- Twist the both red cables of the two profibus cables and stick a covering hull to the litz wire.
- Twist the both green cables of the two profibus cables and stick a covering hull to the litz wire.
- Stick the pipe (4) into the cable fastener (3).
- Stick the cable fastener (3) into the cable pipe.
- Connect the cables into the right places of the MINI-COMBICON-Connectors (6).
- The pin assignment is shown in the figure below.
- Put the MINI-COMBICON-Connectors into the SAB cab. Look after the color coding.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

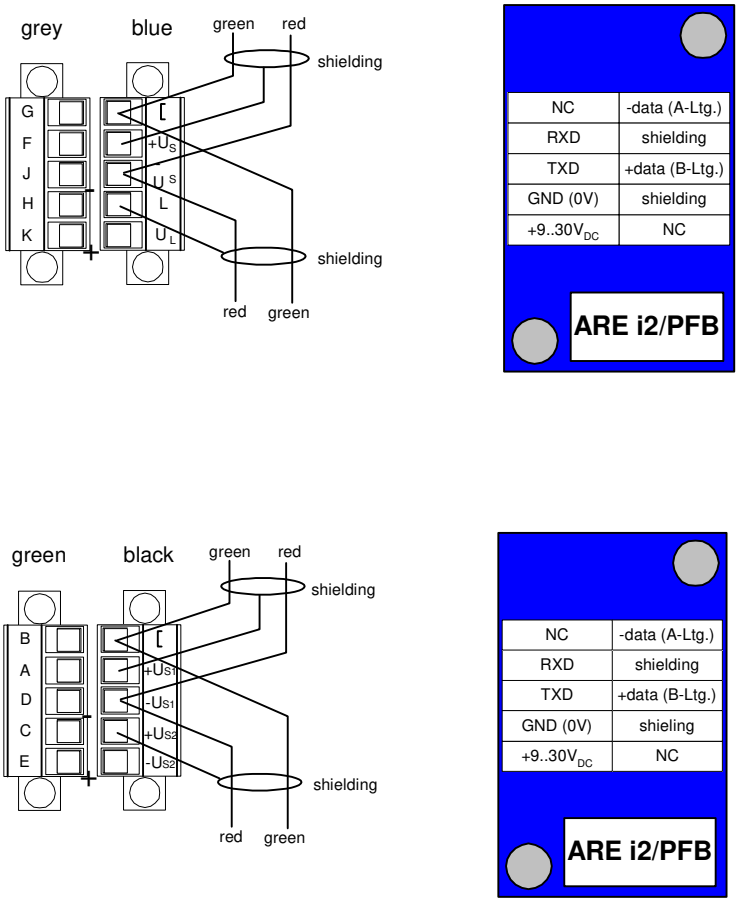


Figure 8: connector pin assignment of the profibus interface

Attention:

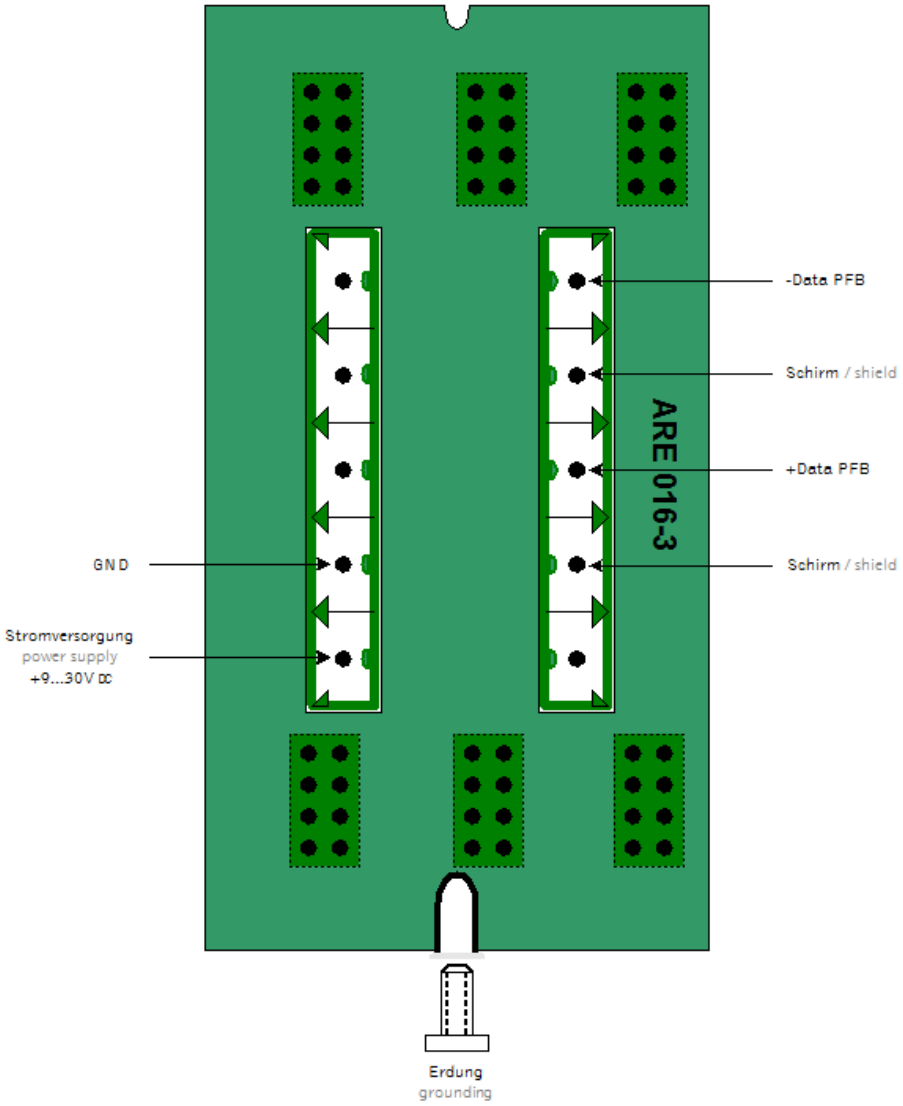
If the ARE i2 / PFB is the end of the profibus line there is just one cable to connect. For this case there is a specific SAB cab with just one PG9 cable pipe on the side available.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

ARE i2 PFB (ProfiBus)
Anschlussbelegung / pin assignment



4.5 Mounting of the external antenna / of the AMP 4 / AMP 8

If you have an i2 with external antenna the connector is on the topside of the reading device. You just have to plug the antenna into the connector and bold it on. Alternative you can connect an AMP 4 / AMP 8 with this connector, too.

You may not connect or deconnect an antenna or AMP 4 / AMP 8 while the reader is running. It can cause, that the reader hangs up.

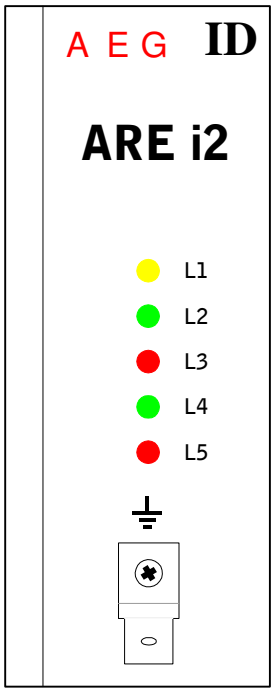
AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

5 Visual signal lamps

To show the operational state or results there are 5 LEDs at the side of the housing.



L1: twinkles, if the processor works

L2: lit, if the last reading process was successful

L3: lit, if the last reading process was not successful

L4: lit or twinkles, if the communication of the reader is ok

L5: lit, if the communication of the reader is not ok

L4-L5: twinkle alternately, if the termination is activ

Figure 9: Visual signal lamps

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

6 Service or monitor interface

Before you can use the ARE i2/PFB you have to configure it via the service interface. You have to check the following settings:

- profibus address
- termination On/Off
- monitor mode On/Off

When the monitor function is activated, data traffic between the profi bus server and the reader can be monitored and recorded on a separate monitor or display via the RS 232 interface.

Furthermore the reader can be tested with respect to is reading characteristics, bypassing the profibus interface in order to become acquainted with its functionalities and features.

By means of the service interface, the suitability of various potential mounting locations can be checked (metal present in the immediate vicinity, high EMI emissions from drives or monitors).

Reader parameters (ie. TOR time, continuous read mode etc.) entered via the service set-up are not permanently stored if the safety command (VSAVE) is entered.

Attention:

If the reader receives a message on the RS232 interface during the profibus mode, the profibus communication is stoped. If you want use the monitor function it is recommended to connect just the TxD cable.

6.1 Starting up with the service interface

Use service cable ID 70212 in order to access the service interface of the ARE i2 / PBF:

The connector gland of the cable must be mounted onto the reader housing.

The reader requires a 9..30V DC / 3Watt power supply

Caution: Make sure poles are not reversed!

brown = + 9 .. 30V$_{DC}$
white = GND

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

Start power supply. The yellow LED „L1" should be blinking. The power consumtion should be at about 75mA at 24 V.

Connect the reader via a 9-pin SUB-D plug to the com port of a notebook or other PC.

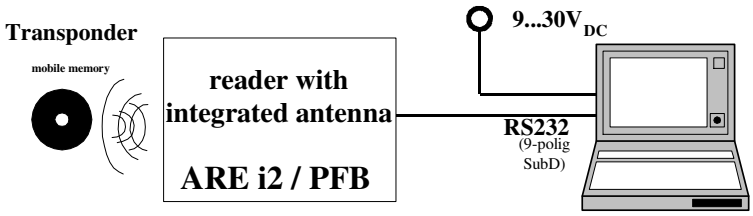


Figure 10: Suggested set up for initial operation of the ARE i2 reader

Launch terminal coms program and set to the following data transfer parameters: data bits, 1 start and 1 stop bit, no parity (this setting is frequently referred to as 8N1), baud rate 19200 baud, no data flow control (z.B. XOFF/XON).

Transmit command VER <CR> to the reader and reader should reply with the version number of the installed reader firmware (z.B. AEG ID A4 /PFB V1.04E).

6.2 Configuration of profibus client settings

Prior to operation of the ARE i2 / PFB on the Profibus, the client address of the unit on the Profibus must be set. In the event an ARE i2/PFB reader terminates the string, the termination must also be activated.

Suggestion

When termination is activated, the profibus cable must be terminated in the standardized on the ARE i2 to minimize reflections.

Caution:

In order to configure the client address and the termination, power must be supplied to the reader as indicated . The power supply must be isolated from the profibus. The reader is in the correct condition when the yellow LED „L1" blinks amd the red LED „L5" remains lit.

The current client address can be determined by querying the reader with command ADR<CR>. The reader will respond with the previously fixed client address, for instance „12", in decimal form. The desired client address, for instance 96, can be programmed into the reader using comand ADR<SP> 96<CR>. When the change was successful, the reader will reply with the new client address.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

Command TERM sets the termination of the reader.

TERM<SP>1<CR> turns termination on,

TERM<SP>0<CR> turns termination off.

After reset the new settings are active. This can be done by briefly interrupting the power supply to the reader.

6.3 Testing reader functions

Entering command GT<CR> tests the read capability of the reader. If there is no transponder in the antenna field the response is NoRead (e.g. „FFFFFFFFF" or „XXXXXXXXXX") else the response is the code of the transponder. When the NoRead response appears the red LED „L3" , or the green LED „L2" must light up.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7 Command set / structure of the instruction set

7.1 General

The command set described below defines the transfer of data on the serial interface.

The commands consist of a command code and optionally of a parameter value. Commands are terminated by the control character <CR> (13h). The control character serves as command line terminator.

Command codes and parameters, that means all letters and numerical values, are principally transmitted as a sequence of ASCII characters (the value 255 (decimal) consequently as 32H, 35H, 35H; the command RST as 52H, 53H, 54H).

7.1.1 Entering instuctions

The protocol format is as follows

Command <SP> **parameter** <CR>

The space character <SP> separates commands from parameters and the <CR> character acts as command line terminator.

For commands without parameter values (e.g. GT) the <SP> character and parameter values are omitted. The command line is as short as this:

Command <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.1.2 Output format

Generally, every input terminated by <CR> is acknowledged by the reader. The following response protocols are different:

7.1.2.1 Instruction specific output

After entering a valid command without a parameter value, the system answers by sending the parameter value and <CR>. Example:

Command: **GT** <CR>

Output: Transponder number or No Read <CR>

Command: **RST** <CR>

Output: If EC is active the boot message, else <CR>

7.1.2.2 Output after changing a parameter

After entering a valid command together with a parameter value, the system answers by sending the parameter value and <CR>. Example:

Command: **MD** <SP> **2** <CR>

Output: **2** <CR>

After entering an invalid parameter value, the system answers with the corresponding error code. Error message:

Command: **MD** <SP> **4** <CR>

Output: <NAK> **#02** <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.1.2.3 Output at parameter query

Parameter settings can be queried by sending the command without adding a parameter value. Example:

Command:	**MD** <CR>
Output:	**1** <CR>

7.1.3 Blank instruction

If a single <CR> is input, the reader answers with a single <CR>. Example:

Command:	<CR>
Output:	<CR>

Please note: If echo mode is active, a single <CR> forces the reader to output <CR> <CR> (echo plus output).

7.1.4 Incorrect instruction / error codes

If a command is not entered correctly, the reader sends one of the following error codes:

Wrong command:	<NAK> **#00** <CR>
Wrong parameter:	<NAK> **#02** <CR>
Error in the EEPROM:	<NAK> **#03** <CR>
Incorrect command:	<NAK> **#04** <CR>
Interface memory overflow:	<NAK> **#05** <CR>
Antenna failure:	<NAK> **#10** <CR>
No decoder communication:	<NAK> **#20** <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

Reader is busy, wait

Until Command is executet: <NAK> **#80** <CR>

In this operation mode the

Command is not supportet: <NAK> **#81** <CR>

7.1.5 Upper and lower case

The instruction set isn't case-sensitiv.

7.1.6 Linefeed

The reader does never send a linefeed. If you use a terminal your terminal programme can add the linefeed. You have to choose the option "displace CR with CR LF".

7.2 Instructions for the hardware settings

7.2.1 ADR - profibus address of the reader

You can query or chance the address of your reader with the command ADR. This command is only valid via the service interface. The setting is saved automatically after chance and is active after a coldstart.

Input format: **ADR** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
2-99	address

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.2.2 TERM - termination

With this command you can activate/deactivate the termination of the ARE i2. This command is only valid via the service interface. The setting is saved automatically after chance and is active after a cold-start.

Input format: **TERM** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
0	termination deactivated
1	termination activated

Output (example): **1** <CR>

7.2.3 TC – monitor function

With the command TC can you activate/deactivate the monitor function. It is only possible to send the command via the service interface.

Input format: **TC** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
0	monitor function inactive
1	monitor function active

Output (example): **0** <CR>

Note: The default value of the parameter EC depends on the particular reader.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.3 Instructions for the reading settings

7.3.1 GT – single transponder code reading

The instruction GT executes one reading and sends back the transponder code of a transponder or the No Read error code (e.g. „FFFFFFFFF" oder „XXXXXXXXX").

Input format: **GT** <CR>

Output (example): **0420212E5F** <CR>

7.3.2 CID – Suppression of ID Codes

With CID=1 **only the first** of in succession identical transponder numbers is output on the serial interface. The possibly following identical transponder numbers are suppressed, as long as no new valid transponder number is received, processed and output. NoReads do not influence the data filtering.

Input format: **CID** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
0	No suppression
1	Suppression of equal transponder numbers

Output (example): **0** <CR>

Example: A, B, C are different transponder codes, N is NoRead error code:

Sequence of reading cycles	Output sequence after filtering with CN=0 und CID=1	Output sequence after filtering with CN=1 und CID=1
N, N, ...,N, A, A, A, ...A, N,N, ...	N, N, ...,N, A, N, N, ...	A
N. N, N, A, A, A, N, A, A, B, A, C, C, C, ...	N. N, N, A, N, B, A, C, ...	A, B, A, C

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

The settings are directly effective.

Note: The internal reference number is deleted in the following conditions:

- after a cold start
- after a warm start (command line RST <CR>)
- after entering the command line CID <SP> 1 <CR>

This causes that the next transponder code is output definitely.

Note: The filter function CID picks up the results of the complete **reading cycles**, while the parameter NID proceeds from the results of single **readings**! The filter function CID has effect on the serial interface only.

CN – Suppression of No Reads

Through the setting CN=1 all NoRead results are suppressed on the serial interface.

Input format: **CN** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
0	No suppression
1	Suppression of equal transponder numbers

Output (example): **0** <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.3.3 NID – Failure Protection

NID specifies the number of identical transponder numbers, which have to appear for the result "successful reading" within a reading cycle. In the setting NID = 1, two successive readings have to show the same transponder number.

Input format: **NID** <SP> parameter <CR>

Parameter:

PARAMETER	FUNCTION
0	One out of one
1	Two out of two

Output (example): **1** <CR>

Sequence of readings	Lenght of the reading cycle	Result of the reading cycle
NoRead	1 reading	NoRead
0000125ED1, 0000125ED1	2 readings	0000125ED1
0000125ED1, 0000126ED1	2 readings	NoRead

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.3.4 TOR – Maximum reading time

Timeout for the reader. TOR is used in operation mode 2 as maximum gating time for a reading process. The length of the maximum gating time results from the equation gating_time = TOR * TB.

The time constant TB (Time Base) has always the default value 100ms.

Input format: **TOR** <SP> parameter <CR>

Default value = Tor 50

Parameter:

PARAMETER	FUNCTION
0	limits the reading process duration of exactly one reading cycle
1	limits the reading process duration to maximum 1 times TB
2	limits the reading process duration to maximum 2 times TB
...	
255	limits the reading process duration to maximum 255 times TB

Output (example): **2** <CR>

7.4 Instructions for the memory settings

7.4.1 VER – Reader firmware

With the command VER you get the actual reader firmware.

Input format: **VER** <CR>

Output (example): **V_2.08** <CR>

Note: If the EC = 1 you will get the same message after each system start.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

7.4.2 VS – Show parameter

The command VS lists all current parameter settings.

Input format: **VS** <CR>

Output (example): **EC** <SP> **0** <CR>

BD <SP> **2** <CR>

MD <SP> **2** <CR>

7.4.3 VSAVE – Save parameter

All operating parameters temporarily stored are saved permanently using VSAVE.

Input format: **VSAVE** <CR>

Output: ok <CR>

7.4.4 RST – Warm start

The command RST causes a warm start of the reader.

Input format: **RST** <CR>

Output: If EC = 1 you get the startup message, else you get <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

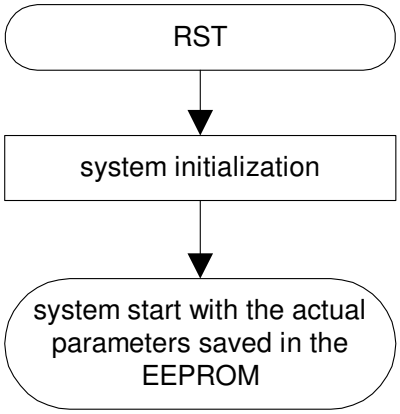


Figure 11: Workflow RST

7.4.5 INIT – Warmstart with default parameters

This command restarts the reader with the default parameters.

Input format: **INIT** <CR>

Output: If EC = 1 you get the startup message, else you get <CR>

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

8 Operating Modes of the Reader

There are two operational modes defined:

- MD 0 - continuous mode
- MD 2 - the reading process is triggered by the serial interface

In the next capters can you find a detailed functional description.

The default mode is MD 0.

8.1 MD 2 - Triggered by an Software Command

The master sends the command to read a transponder code. The reader answers with the code or an error code.

If you use "read- and writable"-transponders you just get the transponder code using the command "Get Tag" (GT).
You can execute specific commands "Read" (RD) and "Write" (WD) just in mode MD2. (capter 8)

In operating mode 2, the exciter is always turned off. Triggered by the software command (GT; RD ; WD), the exciter is activated. After successful reading or writing of a transponder number the exciter is turned off automatically.

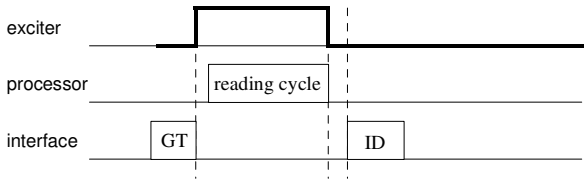


Figure 12: Software triggered reading operation

If the first reading cycle yields no result (NoRead), the on-time of the exciter is limited by the parameter TOR (time out reader): Reading cycles are continuously started until either a transponder is read successfully or the time span corresponding to the value of the parameter TOR has expired. The reader will not interrupt the last running readout cycle. If no transponder number has been read, a NoRead is output.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

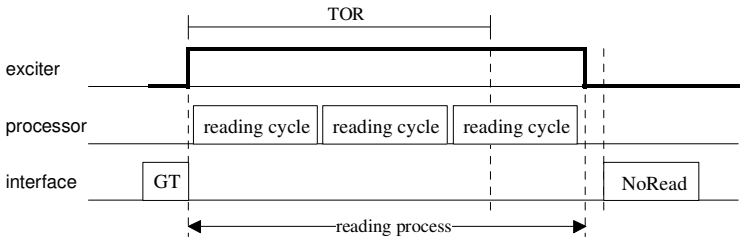


Figure 13: Software triggered reading operation with TOR>0

Please note: The TOR parameter is only active, if the GT-Command is applied. Within the time span defined by the value of TOR no NoRead will be output on the interface!

8.2 MD 0 - Continuous Reading

When operating continuously the exciter is switched on permanently. The reading cycles are initiated periodically.

After an accomplished reading cycle the reading information is evaluated. After that data (either transponder number or NoRead code) is output to the serial interface. This mode is not available in profibus mode.

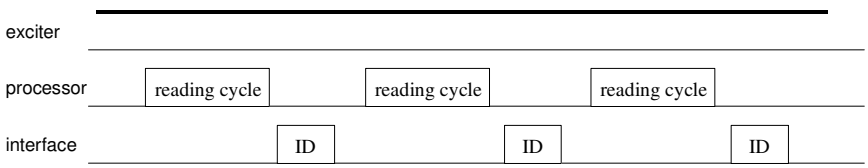


Figure 14: continuous operation

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

9 Starting up as profibus slave

- Configure the address and termination of the reader over the service interface.
- Connect the reader to the profibus DP.
- For not terminated readers the green LED "L4" should light.
- For terminated readers the green LED "L4" should blink.

Attention!

It is not possible to use more than 32 devices on one bus line. Be sure that just 2 devices are terminated in one bus line.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

10 Basic data exchange process

The master has to send a software command to start and read or write process of the reader. After doing all the necessary work at the readers site, the result of the reading or writing process or an failure code is sent back to the master.

If there is used an read/write transponder, only the serial number of the transponder will be read if the basic read command „Get Tag" („GT <CR>") is applied.
The data exchange of the whole memory can only be done, if the reader is set to the Mode 2 („selective Read (RD) " and „write (WD)").

10.1 Selective read RD

- Start the reader with the command RD plus parameters (plus <CR>). You can read out just one block (with one parameter) or several blocks (with two parameters, first and last block number).
- Wait for the answer
- Analyse the received answer: 8 characters plus <CR>. Allowed characters 0 to F.

The NoRead code is set to („XXXXXXXX").

The result of the reading process may also be seen at the LEDs.

- LED L2 lit, if there was a successful read.
- LED L3 lit, if there was a No Read.

Example: **RD** <SP> **20** <CR> read block 20

RD <SP> **16** <SP> **33** <CR> read all blocks from 16 to 33

Allowed values (block numbers of the transponder IC):

ALG0 9 (1 kBit; P4150, P4450, P4550)	3 ... 33
ALG0 6 (2 kBit; Hitag 1)	16 ... 63
ALG0 14 (2, 4; kBitEM4305, EM4569)	5 ... 15

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

10.2 Writing WD

The memory of the transponder is organised in blocks, containing 32 bits. The data of every single block must be changed separately.

- Start the reader with the command WD plus parameters (plus <CR>). The sent parameter consists of the block address and writing data (8 ASCII characters).

- Wait for the answer

- Analyse the received answer: 3 characters plus <CR>.

ACK <CR>	Writing process was successful.
NAK <CR>	Writing process was not successful.
NOT <CR>	The response of the transponder was not readable.

The result of the writing process may also seen at the LED's.

- LED L2 lit, if there was a successful write.

- LED L3 lit, if there was no successful write.

Example: **WD** <SP> **20** <SP> < **0 1 2 7 A C D F** > <CR> write to block 20

Since the Profibus firmware version PFB 1.29 there can be used a shortened write command format, this way only one PLC cycle is required to transfer the entire write command including data content to the reader. Instead of WD only W is necessary and the <SP> between WD and page is not mandatory anymore.

W 20 <SP> **0 1 2 7 A C D F** <CR> write to block 20 *)

*) short data format

Request Data Teleram															
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R	S	L	W	D	2	<SP>	0	1	2	7	A	C	D	F	<CR>
R	S	L	W	2	0	<SP>	0	1	2	7	A	C	D	F	<CR>

Allowed values (block numbers of the transponder IC):

ALG0 9 (1 kBit; P4150, P4450, P4550)	**3 ... 33**
ALG0 6 (2 kBit; Hitag 1)	**16 ... 63**
ALG0 14 (2, 4; kBitEM4305, EM4569)	**5 ... 15**

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

11 Instructions

11.1 General Instructions

To ensure the proper function of the reader the mounting has to be done according to the mounting guidelines. Furthermore the mounting place and the adjustment of the transponder are very important and have to be suitable for the antenna type (ferrit type or plane coil type).

To avoid any reduction of the reading distance, the housing must not be brought next to a metal surface. This could lead to a significant change of the properties of the antenna circuit, which in turn reduces the reading range considerably.

Avoid electromagnetic noise from other devices (e.g. mobile phones, monitors, computers, etc.).

The reading characteristic in front of the reader is not isotropic. It depends also strongly on the orientation between Reader and Transponder. To get the maximum reading distance, the orientation between reader and transponder must be well suited. The best orientation depends on the type of antenna inside of the housing (ferrite type or plane coil type) and the applied transponder (disc or glass transponder).

Arrangement to eliminate such troubles must be done specific to the application by the help of engineers of the manufacturer.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

11.2 Special Instructions for Using a Read / Write System

To transfer the data to the transponder or to control the selective read process, all standard transponders types use a 100%-pulse-gap-modulation technique.

The modulation of the magnetic field from the transponder and the write pattern done by the base station show a lot of similarities. Therefore, read write systems may interfere each other.

Because of the antenna cable transfers the energy for the antenna field it radiates also the gap modulation. Therefore they should keep also a minimum distance, and shouldn't lay parallel.

The minimum distance between two antennas mounted next to each other and the size of the interference must be determined for each application itself.

Below there are listed several parameters that will influence the size of the interaction:

- size of the antennas
- orientation of the antennas (f.e. parallel or rectangular to each other)
- size of transponder; distance between transponder and antenna
- the chronological orders for reading or writing.

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

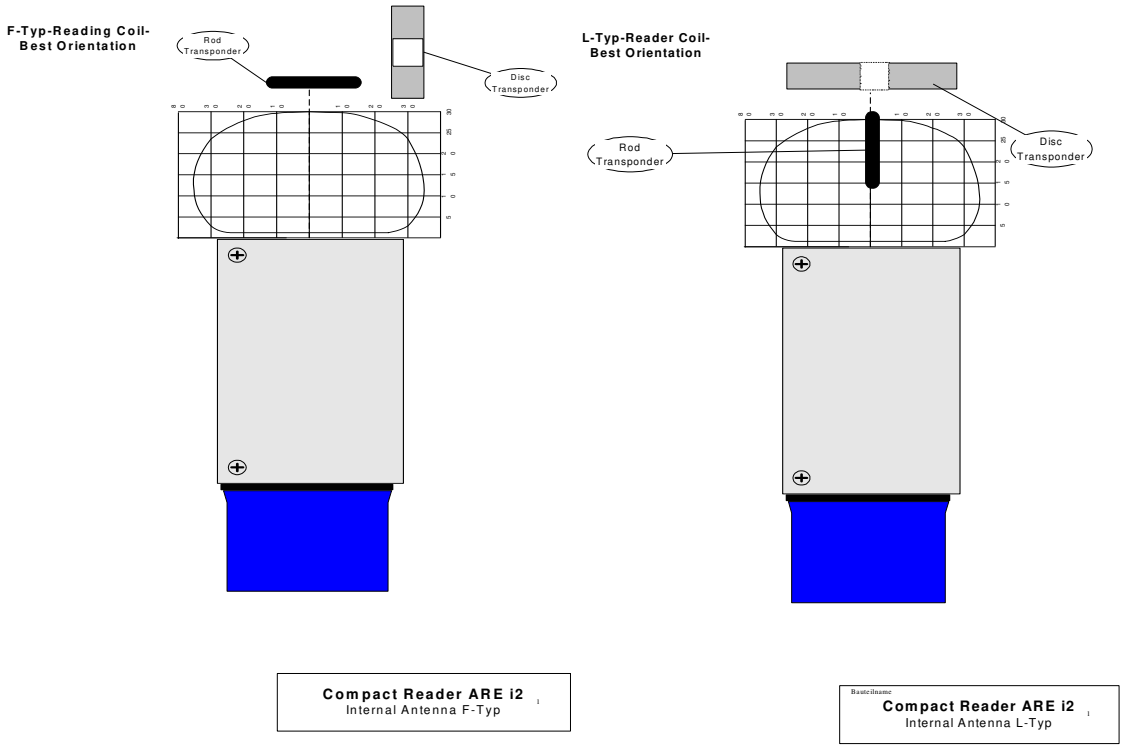


Figure 15: Orientation between transponder and reader

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

12 Certifications

By **FCC**, Federal Communications Commission

FCC IDENTIFIER	V7IAREI2
Name of Grantee	AEG Identifiaktionssysteme GmbH
Equipment Cass	Part 15 Low Power Transceiver, Rx Verified
Notes	Compact Reader ARE I2
FCC Rule Parts	15C
Frequency Range (MHZ)	0.125
Models	ARE i2 – 1X / PFB, ARE i2 – 4X / PFB

13 Hotline

If there are questions or suggestions please call the hotline:

Sales und Marketing:	+49 (0)731-140088-0
Fax:	+49 (0)731-140088-9000
e-mail:	sales@aegid.de
http://	www.aegid.de

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52

14 Revisions

19.12.01	Revision 00:	Initial edition	
09.09.03	Revision 01:	Chapter 8.2 added	
09.12.04	Revision 02:	Chapter 4.3.6.	
26.09.07	Revision 03:	Chapter 8.2 note for antenna cable added	
10.04.08	Revision 04:	New structure, based on revision 07 of the german manual	
13.01.10	Revision 05:	Chapter 4.5	(FW)
22.03.10	Revision 06:	Orientation	
12.10.10	Revision 07:	Orientation Transponder to Antenna	
07.02.11	Revision 08:	Certifications	(MK)
25.02.11	Revision 09:	Tor 50	(MM)
18.05.15	Revision 10:	Additional Error Codes	(HL)
16.01.17	Revision 11:	Pin assignment backplane	(MM)
28.08.18	Revision 12:	Power supply "minimum"	(MM)
12.02.19	Revision 13:	- Command "WD" description for short-data format "W" added - New Layout	(HL)

AEG Identifikationssysteme GmbH
Hörvelsinger Weg 47, D-89081 Ulm
P: +49 (0)731 140088-0
F: +49 (0)731 140088-9000
E-Mail: info@aegid.de, **www.aegid.de**

Geschäftsführer | Managing Director
Reiner Wagner
Sitz der Gesellschaft | Headquarters
Ulm, Germany
AEG is a registered trademark used under license from AB Electrolux (publ).
Amtsgericht | Local Court
Ulm, Germany HRB 3423
USt-IdNr. DE 183095060
Steuer-Nr. | Tax No. 88001/11616

Bankverbindung | Banking account
Sparkasse Ulm
BLZ: 630 500 00 | Kto.-Nr.: 21072952
SWIFT Code: SOLADES1ULM
IBAN-Nr.: DE 31 6305 0000 0021 0729 52