

Idesco Order Guide

This guide will assist you when you are placing an order.

Its main purpose is to help you to send out an order which is complete. Your order will be processed faster and you will receive the order confirmation without delays.

Please read through this document carefully, it will prove to be a valuable help in placing orders and prevent a long delay because of follow ups.

Pages 2 and 3

On these pages you can see a step by step guide. The checklist will help you to place a complete order. At the end you need to mention the configuration card and, in case of Mifare sector readers, the keys.

Concerning the Mifare sector readers, we have two default "transportation keys". These keys are used while shipping and storing the readers.

The transportation keys are:

Access 8 CM	FFFFFFFF
Access 8CM t	414343455353

Pages 4 and 5

You can find an overview of all the 7C and 8CMt configurations which are available.

If you are not sure which configuration is yours please do not hesitate to contact the sales department at Idesco Oy.

It is possible that none of the configurations are suitable to your needs (you are a new customer, you have a new system, it is a very specific project with special settings...).

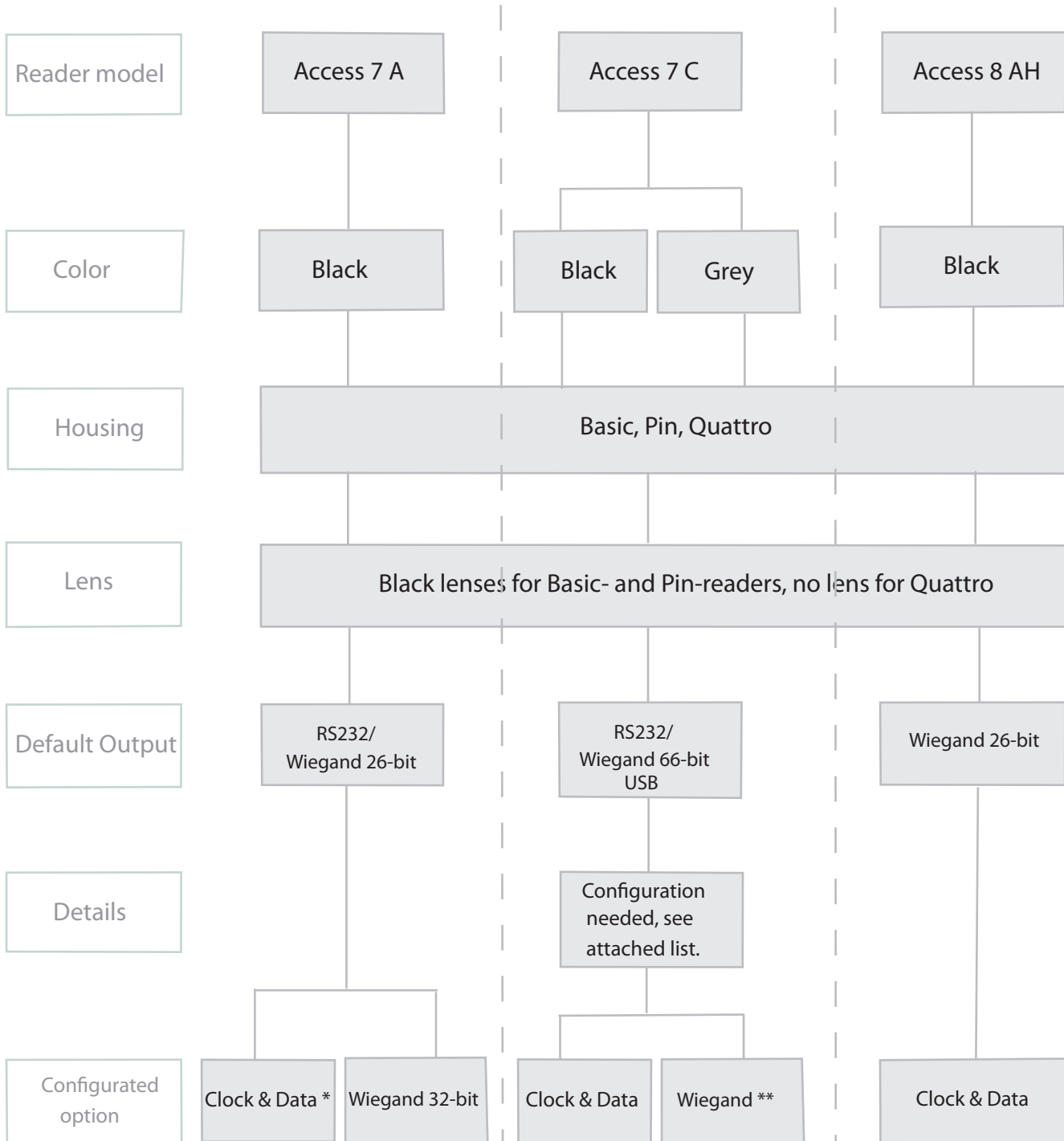
That is not a problem; please contact our sales department and we will provide you with the correct support in order to create a new configuration for you.

Page 6 and onwards

You will find an overview of all the default configurations of our reader models. In case the default configuration is what you are looking for, it is of course not necessary to mention a configuration card number. Simply "default configuration" will do.

Step by step guide

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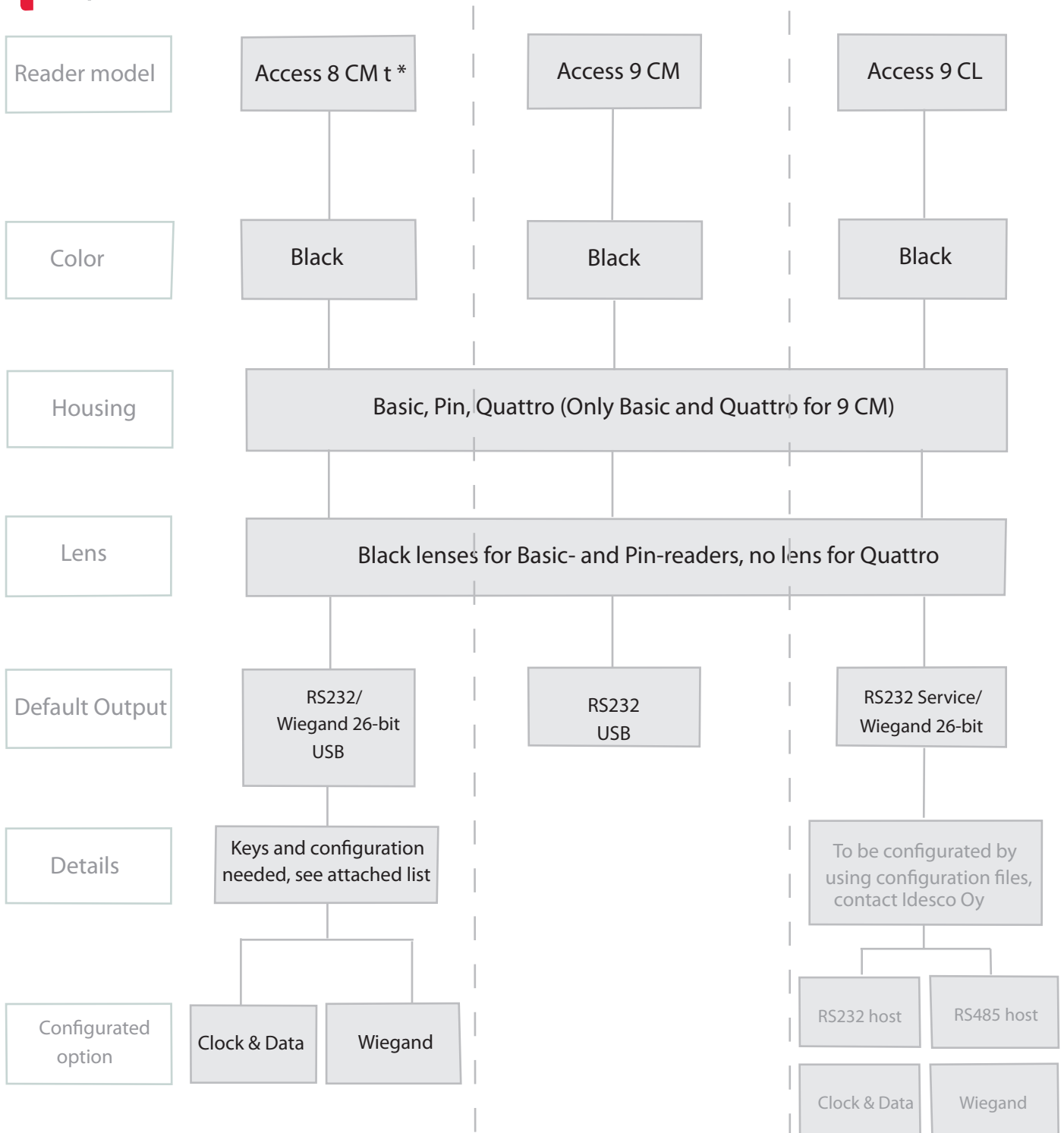


* Not in Access 7 A pin reader

** From 24- to 66-bit, see attached configuration list

Step by step guide

2/2



* Access 8 CM: Contact Idesco Oy

Configuration overview

Access 7 C

Conf_number	W/CD	Datalength	Parity	Re-read	Buzzer and LED	Pin-code	RS232/USB	Timings			
								1	2	3	4
7 CW/C2	Wiegand	66-bit	on	3 sec	8	8 beep on	Format 1	640	640	640	640
7 CD	CD	64-bit	on	3 sec	8		Format 1	70	270	130	150
7 CW 26b	Wiegand	26-bit	on	3 sec	8	8 beep on	Format 1	100	2100	100	2100
7 CW s	Wiegand	66-bit	on	1 sec	8	8 beep on	Format 1	500	500	500	500
Conf_1	Wiegand	37-bit	on	3 sec	8	6 beep off	Format 2	500	500	500	500
Conf_2	Wiegand	66-bit	on	3 sec	8	4 beeb on	Format 1	500	500	500	500
Conf_3	Wiegand	34-bit	on	3 sec	8	8 beep on	Format 1	80	1000	80	1000
Conf_4	Wiegand	26-bit	on	3 sec	8	26 beep on	Format 1	100	2000	100	2000
Conf_5	Wiegand	26-bit	on	3 sec	8	4 beeb on	Format 1	100	1000	100	1000
Conf_6	Wiegand	26-bit	on	3 sec	8	8 beep on	Format 1	100	1000	100	1000
Conf_7	Wiegand	34-bit	on	3 sec	8	off	Format 1	100	1000	100	1000
Conf_8	CD	BCD 10	on	3 sec	8		Format 1	70	530	210	320
Conf_9	CD	BCD 13	on	3 sec	8		Format 1	110	700	300	400
Conf_10	Wiegand	34-bit	on	3 sec	8	8 beep on	Format 1	500	500	500	500
Conf_11	Wiegand	34-bit	on	3 sec	8	off	Format 1	500	500	500	500
Conf_12	Wiegand	32-bit	off	3 sec	8	8 beep on	Format 1	100	1000	100	1000
Conf_13	Wiegand	34-bit	on	3 sec	8	8 beep on	Format 1	70	940	70	940
Conf_14	Wiegand	66-bit	on	3 sec	8	off	Format 1	70	940	70	940
Conf_15	Wiegand	26-bit	on	3 sec	2	off	Format 1	100	1000	100	1000
Conf_16	CD	40-bit	on	3 sec	2	4 beeb on	Format 1	50	250	170	110
Conf_17	Wiegand	58-bit	on	3 sec	8	8 beep on	Format 1	70	940	70	940
Conf_18	Wiegand	50-bit	on	3 sec	8	8 beep on	Format 1	70	940	70	940
Conf_19	Wiegand	66-bit	on	3 sec	8	8 beep on	Format 1	100	900	100	900
Conf_20	Wiegand	32-bit	off	3 sec	8	8 beep on	Format 1	640	640	640	640
Conf_21	Wiegand	32-bit	off	1 sec	8	8 beep on	Format 1	70	2000	70	2000
Conf_22	Wiegand	32-bit	off	3 sec	6	8 beep on	Format 1	70	2000	70	2000
Conf_23	Wiegand	34-bit	on	3 sec	9	off	Format 1	100	1000	100	1000
Conf_24	Wiegand	34-bit	on	3 sec	0	off	Format 1	100	1000	100	1000
Conf_25	Wiegand	32-bit	off	3 sec	8	8 beep on	Format 1	70	2000	70	2000
Conf_26	CD	BCD 13 16 LZ	on	3 sec	6	4 beeb on	Format 1	150	850	420	420
Conf_27	Wiegand	32/56/64-bit	off	1 sec	8	8 beep on	Format 1	100	2000	100	2000
Conf_28	CD	64-bit	on	3 sec	0		Format 1	70	270	130	150
Conf_29	Wiegand	34-bit	on	0 sec	8	8 beep on	Format 1	80	1000	80	1000
Conf_30	Wiegand	56-bit	off	3 sec	8	8 beep on	Format 1	100	2000	100	2000
Conf_31	Wiegand	34-bit	on	3 sec	8	8 beep on	Format 1	100	1000	100	1000
Conf_32	CD	64-bit	on	3 sec	9	4 beeb on	Format 1	70	270	130	150
Conf_33	Wiegand	34-bit	on	3 sec	6	8 beep on	Format 1	100	1000	100	1000
Conf_34	Wiegand	66-bit	on	3 sec	2	8 beep on	Format 1	100	1000	100	1000
Conf_35	Wiegand	26-bit	on	3 sec	8	off	Format 1	50	2000	50	2000
Conf_36	Wiegand	64-bit	off	3 sec	8	8 beep on	Format 1	50	2000	50	2000
Conf_37	CD	40-bit	on	3 sec	8	8 beep on	Format 1	70	270	130	150
Conf_38	Wiegand	32-bit	off	3 sec	8	8 beep on	Format 1	70	930	70	930

Invert ID: off
RS485 addr: 0

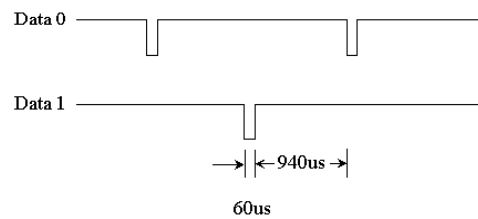
Default configurations

Access 7 A Wiegand 26-bit

Default Output W26-bit
 PEEEEEEEEEEEEEOOOOOOOOOOOOPO
 PE = Even parity
 E = Bits counted into even parity
 O = Bits counted into odd parity
 PO = Odd parity

Wiegand Timing

DATA0 and DATA1 outputs are used for transmission. DATA0 is used for output 0-bits and DATA1 for 1-bits. Each pulse has active time of 60 us, followed by a delay of 940 us. This gives a total bit time of 1 ms. The pulse is active when the open collector output is in the conductive state. In case of no communication both pins are normally high.



Byte Coding

Byte length is five (5) bits. The first four (4) bits are used for information and the fifth is odd parity calculated from information bits. The bit order is LSB first.
 Example: 2 -> 01000b.

Output string format

10 leading Zeros > SS 14DataDigits ES LRC < 10 Trailing Zeros
 SS = Start Sentinel, example: 11010
 ES = End Sentinel, example: 11111
 LRC = Longitudinal Redundancy Check.

To overcome the problem of transmitting data with 'F' characters that would be seen as a terminator (11111) the data is converted into an ordinary numerical base 10 string. See example below.

The hexadecimal code of a transponder being 00004567AF will be converted into 00000004548527. Note that this string is always 14 digits long and is calculated as follows, referred to the initial hexadecimal value:

$$(F * 160 + A * 161 + 7 * 162 + 6 * 163 + 5 * 164 + 4 * 165 + 0 * 166 + 0 * 167 + 0 * 168 + 0 * 169) = 15 + 160 + 1792 + 24576 + 327680 + 4194304 + 0 + 0 + 0 + 0 = 00000004548527)$$

Longitudinal Redundancy Check

LRC is calculated by XORing all data bits (excluding start, stop and CR/LF).

Default configurations

Access 7 A RS232

Default Output RS232

Communication

RS-232 connection is in accordance with standards. Communication is done at 9600 bauds, no parity, 8 databits, 1 start bit, 1 stop bit. Both of RxD- and TxD –lines must always be connected.

Output string format

<STX>SSSSSSSSSSCC<CR><LF><ETX>

where

Data LengthDescription

S 10 bytes Serial number

C 2 bytesLRC-checksum, explained later. Only 4 information bits are used

Control characters in ASCII:

STX = 02

LF = 10

CR = 13

ETX = 03

Checksum calculation

Checksum is calculated by XOR:ing all bytes of serial number leading the checksum itself. ASCII characters are converted to binary values before calculation (example 'A'-> 1010b).

Example of a string with the correct checksum: <STX>01026A72FFE4<CR><LF><ETX>

Default configurations

Access 7 C Wiegand 66-bit

Data String Format

Output string has the format OSSSSSSS...SSSSSSSE

Data	Length	Description
O	1 bit	Odd parity calculated from 36 first bits of the serial number *)
S	64 bits	Serial number in binary form
E	1 bit	Even parity calculated from 36 last bits of the serial number *)

*) 4+4 bits in the middle is used to both parity bits

Data is sent MSB first. The first bit sent is Odd parity.

O D0D1...D26D27 D28D29D30D31D32D33D34D35 D36D37... D62D63 E
 |----- Odd parity -----|
 |----- Even parity -----|

D0 : First data byte bit 7.

D1 : First data byte bit 6.

...

D7 : First data byte bit 0

D8 : Second data byte bit 7.

...

Only two parity bits of totally 66 bits are not enough to guarantee a reliable error detection. This communication mode is recommended only on 'noise free' environment and short distances, for example inside chassis.

Wiegand timing

WIE0 and WIE1 outputs are used for transmission. WIE0 is used to output 0-bits and WIE1 for 1-bits. Each pulse has active time of 640 us, followed by delay of 640 us. This gives total bit time of 1,3 ms. Pulse is active when the open collector output is in the conductive stage.

Default configurations

Access 7 C RS232/USB Format 1

The USB interface uses a virtual COM port driver. The message format is similar to the one described here.

RS 232/USB formats

Communication settings: 9600 bauds, no parity, 8 databits, 1 start bit, 1 stop bit.

RS 232/USB Format 1

Output string has a format:

BSSSSSSSSSSSSSSSS=PPPPMTC<LF><CR>

where

Data	Length	Description
B	1 byte	Start character, constant 'B'
S	16 bytes	Serial number
=	1 byte	Separation character, constant '='
P	4 bytes	constant 0000h
M	1 byte	Tag type 1=Mifare, 2=ICODE, 3=PICO, 4=ISO 15693, 5=FeliCa, 6=Topaz
T	1 byte	End character, constant 'T'
C	1 byte	LRC-checksum

All transmitted characters are ASCII characters.

Mifare Standard has a serial number length of 32 bits, remaining 8 characters are always zeroes.

Checksum calculation

Checksum is calculated by XOR:ing all 4-bit bytes leading the checksum itself. ASCII characters are converted to binary values before calculation (example 'A'-> 1010b). Constants are interpreted to checksum calculation values as follows:

'B' = 0x05
'=' = 0x05
'T' = 0x05

Tag type is converted as follows:

'1' = 0x00
'2' = 0x01
'3' = 0x01
'4' = 0x02
'5' = 0x02
'6' = 0x03

Detailed information on calculation can be requested from Idesco Oy.

Default configurations

Access 7 C RS232/USB Format 2

The USB interface uses a virtual COM port driver. The message format is similar to the one described here.

RS 232/USB Format 2

Output string has a format:
 BBDDDDDDDDDDCC

where

Data	Length	Description
BB	2 bytes	Start character
DD	10 bytes	Serial number
CC	2 bytes	LRC checksum

All transmitted characters are ASCII characters.

Output string example:

MIFARE card ID number B5402BA2:

The card's ID number is only 32 bits long, so additional zeroes are added to the original data.

RS 232 message seen by the host:

00016A80574486 <CR><LF>

00 = Start character

86 = Checksum (Please see example below)

Remove the checksum and change the data to binary characters:

0000 0000 000 0 0001 0110 1010 1000 0000 0101 0111 0100 0100

0000 0000 000 p dddd dddd dddd dddd dddd dddd dddd ddd p

The first eight bits are zeroes. p = parity bits (first even parity, last odd parity)

Remove the first 11 bits from the left

0 0001 0110 1010 1000 0000 0101 0111 0100 0100

Then drop both parity bits

0001 0110 1010 1000 0000 0101 0111 0100 010

This leaves 35 bits of the card number data.

000 1011 0101 0100 0000 0010 1011 1010 0010 = B5402BA2 hex

Checksum calculation example

Data 00 016A805744 86

Add together the ASCII-coded hex characters (6 bytes, from 00 to 44) and include the last eight bits to the result.

The result is the checksum.

Default configurations

Access 8 AH Wiegand 26-bit

The default 26-bit wiegand output data has a following format. Bits are described as sent:

1:	even parity of bits 2..13 (12 bits total)
2-25:	3 least significant bytes of serial number
26:	odd parity of bits 14..25 (12 bits total)

Wiegand timings

Reader timings can be changed by using command cards.

Pulse length:

20 s – 100 s (10 s steps)

Default time: 50 s

Pulse delay:

200 s – 20 ms (100 s steps)

Default time: 2 ms

Default configurations

Access 8 CM t Wiegand 26-bit, RS 232 and USB

The reader can be configured to use wiegand or clock and data output format. Wiegand output is used as a default output format. The reader sends card data out also through the RS 232 serial communication line. In case the USB interface is used, it uses a virtual COM port driver.

Default wiegand data length

As a default reader is sending out the data in the 26- bit format. Data is read from the sector 15 and from block 0. First three bytes are read out from the block and parity bits are added to this 24- bit data. Hence the RS 232 settings and message structure are identical.

The following is an example about the 26-bit wiegand output format structure:

Output string has the format:

ESSSSSSS...SSSSSSSO

Data	Length	Description
E	1 bit	Even parity calculated from 12 first bits of data string
S	24 bits	Data in binary form
O	1 bit	Odd parity calculated from 12 last bits of data string

Data is sent MSB first. First bit sent is Even parity.

E D0D1.....D10D11D12D13.....D22D23 O
 |----Even parity----| ----- Odd parity -----|

D0 : First data byte bit 7.

D1 : First data byte bit 6.

...

D22 : Last data byte bit 1

D23 : Last data byte bit 0

Default wiegand data timings

WIE0 and WIE1 outputs are used for transmission. WIE0 is used for output 0-bits and WIE1 for 1-bits.

Default parameters

The reader has default parameters where each pulse has active time of 70 us, followed by a delay of 930 us. This gives the total bit time of 1 ms.

RS 232/USB

RS 232 data string can also be configured. The user can configure what bytes from the Mifare sector are send out. Note, that only the full bytes are send out.

RS-232 connection is electrically according to the standard. Communication is done at 9600 baud, no parity, 8 databits, 1 start bit, 1 stop bit.

Default configurations

Access 9 CM and Access 9 CL

ACCESS 9 CM RS 232/USB

The USB interface uses a virtual COM port driver. The message format is similar to the one described here.

General

The reader supports RS 232 output format. Default settings for serial communications are 9600 bauds, no parity, 8 databits, 1 start bit, 1 stop bit.

Baudrate can be changed with baud command.

RS 232 output format

Output string has a format: Data <CR> <LF>

Data is sent out as it is written to the card.

ACCESS 9 CL RS232 SERVICE and Wiegand 26-bit

In the default mode the reader is using 26-bit Wiegand as a default interface. The Service interface is using 9600 baud RS 232 by default. Both Host and Service interfaces can be configured to use different formats and interfaces.

Wiegand 26-bit

The default 26-bit Wiegand output data has the following format. The bits are sent in the same way:

- 1: even parity of bits 2..13 (12 bits total)
- 2-25: 3 least significant bytes of serial number
- 26: odd parity of bits 14..25 (12 bits total)