USB Card Reader Interface
User Manual

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The USB Reader Interface family:

Concept:

The USB Card Reader Interface allows access control card readers to be connected to a PC, in order to read the access card data into an application.
The USB Card Reader Interface emulates a USB keyboard according to the USB HID device class (Human Interface Device), which facilitates easy integration with existing application.
The USB Card Reader Interface accepts a large number of different card data format like Omron Track 2, ABA2, Wiegand 26 Bit etc.
The USB Card Reader Interface includes field programmable formats so custom specific formats can be created by the installer or end user.
The USB Card Reader firmware can be updated in the field, if new features are needed.
When the USB device is started in boot loader mode, the device will allow update of the firmware and read/write the E^2prom of the USB card reader.
The E^2prom holds the configuration data for Field Programmable Formats and the data to enable reading of Mifare® sector data.

Hardware:

USB Card Reader Interface hardware :
SBR 0814 with firmware 2.22 or later.
SBR 0904 with firmware 2.22 or later.
SBR 0951 with firmware 2.31 or later.
SBR 0962 with firmware 2.44 or later.

Software:

The following utilities are available for USB Card Reader Interface family:
USB Firmware Update Utility (sbrufu.exe)
USB Card Reader Configuration Utility (sbrucu.exe)

Boot loader Mode:

To bring a USB reader into boot loader / configuration mode one of the following procedures must be used depending on USB Reader hardware type:

SBR 0814 / SBR 0904:

- Disconnect the USB cable.
- Set DIP switch to :

1	2	3	4	5	6	7	8
Off	Off	Off	Off	Off	Off	Off	On

- Reconnect the USB cable.
- The LED will turn red and then yellow.
- The USB reader is now in boot loader / configuration mode and will be automatically detected by the USB Firmware Update Utility.

To return to normal mode of operation

- Disconnect the USB cable.
- Set DIP switch to the desired format.
- Reconnect the USB cable.

SBR 0941 / SBR 0951 / SBR 0962:

- Disconnect the USB cable.
- Press and HOLD the mode switch.
- Reconnect the USB cable.
- The LED will turn red and then yellow.
- Release the mode switch.
- The USB reader is now in boot loader / configuration mode and will be automatically detected by the USB Firmware Update Utility.

To return to normal mode of operation

- Disconnect the USB cable.
- Reconnect the USB cable.

Product versions:

Please see below table for card reader types per USB Card Reader Interface:

Reader Type	SBR 0814	SBR 0904	SBR 0951	SBR 0962
Terminal Only – Serial	-	SBR 0814 TS	-	-
Terminal Only – USB	SBR 0814 TU	SBR 0904 TU	SBR 0951 TU	-
Mifare CSN	SBR 0814 MI	SBR 0904 MI	-	-
Mifare Sector	-	SBR 0904 MIS	-	-
EM Prox	SBR 0814 EM	SBR 0904 EM	-	-
MicroProxs	SBR 0814 MP	SBR 0904 MP	-	-
HID Prox	SBR 0814 HID	-	-	SBR 0962 HID
HID iCLASS	SBR 0814 IC	-	-	SBR 0962 IC
Magstripe - Track 2	-	SBR 0904 MAG	SBR 0951 MAG	-

Card Data Format Selection:

To select the desired Card Data Format use either the DIP switch (Not available on SBR 0941, SBR 0951 or SBR 0962 or the Software Selected Format function – Please see the USB Configuration Utility Manual.

The DIP switch allows the selection of a Card Data Format and activation of control characters to be transmitted.

<u>Example:</u>

Card data received: 0xF609A4

Interface type: Wiegand

Card Data Format: Wiegand 26 Bit (ID = 35)

Required output: Card number = 01234 + 'Enter'

1 2 3 4 5 6 7 8

DIP: On, On, Off, Off, Off, On, On, Off

DIP 1 to 6 is the format ID.

DIP 7 enables 'Enter'

DIP 8 is a format specific character.

Card Data Formats:

Format	ID	Interface Type	TS	TU	MI	MIS	EM	HID	IC	MAG
Magstripe Raw	0	Clock / Data	X	X	X	-	X	-	-	X
Mifare CSN 32 Bit Hex (ISO)	1	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN 32 Bit Hex (HiSec)	2	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN 24 Bit Hex (LSB)	3	Clock / Data	X	X	X	-	-	-	-	-
Reserved	4	Clock / Data	X	X	-	-	-	-	-	-
EM Prox 32 Bit Dec	5	Clock / Data	X	X	-	-	X	-	-	-
EM Prox 32 Bit Hex	6	Clock / Data	X	X	-	-	X	-	-	-
EM Prox Roger	7	Clock / Data	X	X	-	-	X	-	-	-
EM Prox & Mifare CSN UniLock	8	Clock / Data	X	X	X	-	X	-	-	-
Mifare CSN 16 Bit Dec (LSB)	9	Clock / Data	X	X	X	-	-	-	-	-
EM Prox 40 Bit Hex	10	Clock / Data	X	X	-	-	X	-	-	-
EM Prox 16 Bit Hex (LSB)	11	Clock / Data	X	X	-	-	X	-	-	-
EM Prox 26 Bit Hex (NOX)	12	Clock / Data	X	X	-	-	X	-	-	-
Mifare CSN 32 Bit Hex (ATS)	13	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN 24 Bit Dec (LSB)	14	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN 32 Bit Dec (Reverse)	15	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN 32 Bit Hex (Reverse)	16	Clock / Data	X	X	X	-	-	-	-	-
Mifare CSN Roger	17	Clock / Data	X	X	X	-	-	-	-	-
Magstripe 34 Bit Dorade 'E'	18	Clock / Data	X	X	-	-	-	-	-	X
Mifare CSN 32 Bit Dec (Lunds Uni)	19	Clock / Data	-	X	X	-	-	-	-	-
Mifare CSN 32 Bit Dec (Nedap IP)	20	Clock / Data	-	X	X	-	-	-	-	-
EM Prox Siemens (3 + 10 Dec)	21	Clock / Data	X	X	-	-	X	-	-	-
EM Prox 26 Bit (SSI Wiegand key)	22	Clock / Data	X	X	-	-	X	-	-	-
Magstripe Programmable Format	31	Clock / Data	X	X	X	-	X	-	-	X

Format	ID	Interface Type	TS	TU	MI	MIS	EM	HID	IC	MAG
Wiegand Raw	32	Wiegand	X	X	-	x	-	x	x	-
Wiegand Raw Debug	33	Wiegand	X	X	-	x	-	x	x	-
Wiegand 26 Bit (Site + Card no.)	34	Wiegand	X	X	-	-	-	x	x	-
Wiegand 26 Bit (Card no.)	35	Wiegand	X	X	-	-	-	x	x	-
Wiegand 34 Bit (Site + Card no.)	36	Wiegand	X	X	-	-	-	x	x	-
Wiegand 34 Bit (Card no.)	37	Wiegand	X	X	-	-	-	x	x	-
Wiegand 37 Bit (Large card no.)	38	Wiegand	X	X	-	-	-	x	x	-
Wiegand 37 Bit (Site + Card no.)	39	Wiegand	X	X	-	-	-	x	x	-
Wiegand 37 Bit (Card no.)	40	Wiegand	X	X	-	-	-	x	x	-
Wiegand 32 Bit (HiSec)	41	Wiegand	X	X	-	x	-	x	x	-
Wiegand 32 Bit (I/NET)	42	Wiegand	X	X	-	x	-	x	x	-
Wiegand 37 Bit (HiSec)	43	Wiegand	X	X	-	-	-	x	x	-
Wiegand 26 Bit (Nox)	44	Wiegand	X	X	-	-	-	x	x	-
Wiegand 37 Bit (Nox)	45	Wiegand	X	X	-	-	-	x	x	-
Wiegand 26 Bit or 32 Bit Dec	46	Wiegand	X	X	-	x	-	x	x	-
Wiegand 32 or 48 Bit (ATS)	47	Wiegand	X	X	-	x	-	x	x	-
Wiegand 26 Bit Serial emulation	48	Wiegand	X	X	-	x	-	x	x	-
Wiegand 32 Bit Dec (Reverse)	49	Wiegand	X	X	-	x	-	x	x	-
Wiegand 32 Bit Hex (Reverse)	50	Wiegand	X	X	-	x	-	x	x	-
Wiegand 29 Bit (Pelco/Indala)	51	Wiegand	X	X	-	-	-	x	x	-
Wiegand 27 Bit (Pelco/Indala)	52	Wiegand	X	X	-	-	-	x	x	-
Wiegand 32 Bit (Pelco/iCLASS)	53	Wiegand	X	X	-	x	-	x	x	-
Wiegand 40 Bit MicroProxs Key7	54	Wiegand	X	X	-	-	-	-	-	-
Wiegand Programmable Format	62	Wiegand	X	X	-	X	-	x	x	-
Wiegand Programmable Format	63	Wiegand	X	X	-	X	-	x	x	-

Please see below table for applicable firmware per device:

Firmware	SBR 0814	SBR 0904	SBR 0951	SBR 0962	SBR 0971
SBR0904USB_cd2xx	Yes	Yes	Yes	No	Yes ***
SBR0904USB_w2xx	Yes	Yes	Yes	Yes	Yes ***
SBR0904SER_cd2xx	No	Option*	No	No	Yes
SBR0904SER_w2xx	No	Option*	No	No	Yes
SBR0904USBRW_3xx	No	Option **	No	Option **	No
SBR0904USBCDC_cd4xx	Yes	Yes	Yes	No	No

* Only valid for SBR 0904 TS (Interface with RS232 connection) or SBR 0971.

** Only valid for SBR 0904 MIS (Mifare sector reader onboard) or SBR 0962 IC (iCLASS reader onboard).

*** Will disable IP interface and enable USB instead.

Firmware versions USB 2.xx are USB HID Keyboard – No driver required.

Firmware versions 3.xx and 4.xx are USB CDC type (Virtual COM port) - .inf file is provided in the USBDriverPack.zip on the web site.

Revision history:

Date:	Notes:
2012-10-03	CDC type firmware added (version cd4.54)
2012-10-01	Format 22 Added (version cd2.53) and Format 8 updated (version cd2.54).
2012-01-20	Format 21 Added (version cd2.51) and Format 51/52 updated (version w2.50). Firmware has been split into two files, one for Clock/Data (Magstripe) interfacing and one for Wiegand interfacing.
2011-11-09	Format 20 (version 2.49-Serial) added.
2011-09-13	Format 19 (version 2.48) added.
2011-07-08	Format 47 (version 2.47) has been changed to allow for both LF and CR as post chars.

2011-04-06	Format 18 (version 2.45) and Format 54 (version 2.39) added. Format 46 has been changed to also accept 26 Bit data (version 2.44). Support for SBR 0961 HID Prox or HID iCLASS added (version 2.43).
2010-03-09	Format 52 (version 2.37) and Format 53 (version 2.38) added.
2010-01-29	Format 17 (version 2.35) and 62 (version 2.34) added. Software tools : file names added.
2009-12-17	Format 51 added.
2009-08-21	Format list updated.
2009-08-12	First draft.