



Advanced Card Systems Limited

Card and Reader Technologies

A background image showing a person's hands interacting with a card reader device. The person is wearing a blue wristband and is holding a card. The device is a light-colored, rectangular unit with a card slot. The image is slightly blurred and has a semi-transparent white box overlaid on it.

Technical Specifications

ACF30 Floppy Bay Smart Card Reader





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1.0. Introduction

The **ACF30** is the ideal solution for easy integration of a smart card reader into the desktop environment. It uses the same electronic circuit as the **ACR30** and has the same versatility and cost-effectiveness that have always been associated with ACS smart card readers. Available in both USB and RS-232 serial interface, it uses the PC's internal power supply, and can be configured in several ways to suit the customer's preference.

Similar to ACR30, ACF30 Smart Card Reader/Writer is also simple to use and install. It is ideal for electronic commerce, home banking or e-purse facilities, secure computer access or any of a multitude of other applications.





2.0. Features

- Read and write all microprocessor cards (MCU) with T=0 and T=1 protocols
- Read and write popular memory card types
- Certificate of conformance: ISO 7816-1/2/3, PC/SC, CE, FCC, Microsoft WHQL, EMV certified, and NETS
- ISO7816-1/2/3 compatible smart card interface
- Supports commonly used memory cards (I2C, SLE4406, SLE4418/28, SLE4432/42)
- Support PPS (Protocol and Parameters Selection) with 9600 – 96000 bps in reading and writing smart cards
- RS-232 interface or USB interface to PC with simple command structure



3.0. Supported Card Types

3.1. MCU Cards

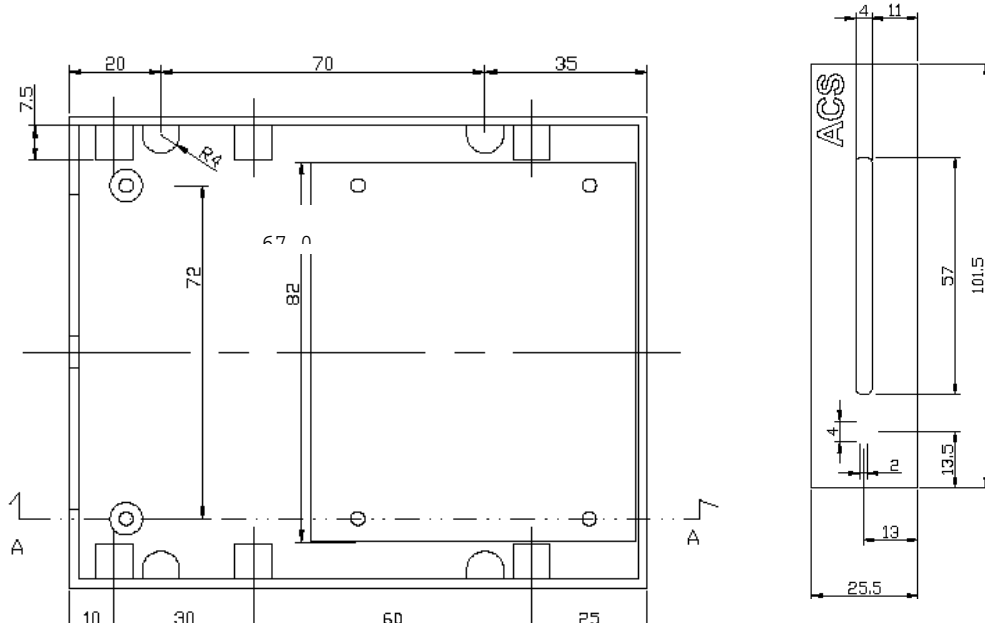
The ACR30 can operate MCU card with T=0 and T=1 protocol. The table presented in Appendix A (reference manual) explains which card type selection value must be specified for the various card types supported by the reader.

3.2. Memory-Based Smart Cards (Synchronous Interface)

- '104' type EEPROM non-reloadable token counter cards, including:
- GPM103, SLE 4406, SLE4436, SLE5536, ST1305, ST1335
- Cards following the I²C bus protocol (free memory cards) such as Atmel AT24C01/02/04/08/16, SGS-Thomson ST14C02C,14C04C
- SLE4432/4442 intelligent 256 bytes EEPROM with write protect function: SLE 4432, SLE 4442
- SLE 4418/4428 intelligent 1K bytes EEPROM with write-protect function: SLE 4418, SLE 4428



4.0. Technical Specification



Power supply

Supply voltage Regulated 5V DC
 Supply current < 100mA (without smart card)

Serial Communication Interface

Type RS-232C, five lines: RxD, TxD, CTS, DTR, GND
 Power source From PS/2 mouse interface
 Speed 9600 – 115200 bps

Universal Serial Bus Interface

Type USB v1.1, four lines: +5V, GND, D+ and D-
 Power source From USB
 Speed 1.5 Mbps (Low Speed)

Smart Card Interface

Standard ISO 7816 1/2/3, T=0 and T=1
 Supply current max. 50mA
 smart card read / write speed 9600 – 96000 bps
 Short circuit protection +5V / GND on all pins

The presence of the smart card power supply voltage is indicated through a green LED on the reader

CLK frequency 3.6864 / 4 MHz
 Card connector sliding contacts (8 contacts)
 Card insertion cycles min. 100,000

Case

Dimension above
 Color Standard



Operating Conditions

Temperature0 - 50° C

Humidity40% - 80%

Standard/Certifications

EMV Level 1, ISO7816-1/2/3, PC/SC, CE, FCC, NETS, Microsoft WHQL 98, ME, 2K, NT, XP

OS

Windows 98, ME, 2K, NT(serial), XP

OEM

OEM-Logo possible, customer-specific colors, casing, and card connector



5.0 Interfacing Scheme

The floppy-based reader is designed to be mounted or integrated into a standard PC Chassis. So the top plastic cover is not required. The power of the reader is obtained through the internal switching power supply of the PC. Basically, the floppy-based reader is the same as an ACR30 reader.

The size is the same as a standard 3"1/2 floppy driver. No top plastics cover. Screw holes will be provided.

A "4 pins mini power socket (M)" is provided on the PCB reader for the power interface. (The socket is the same as the one used in a 3"1/2 floppy driver). A 2x5 pins header socket is provided on the PCB of the reader for connecting to the communication port through the use of an appropriate extension cable.

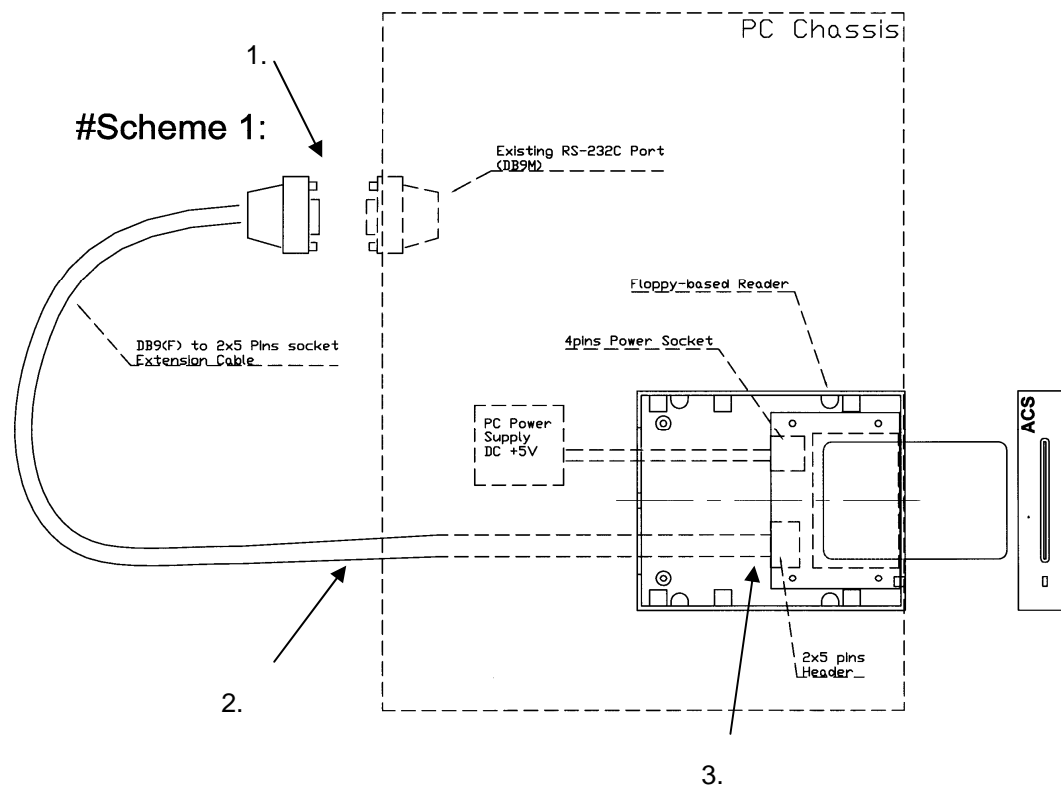
Serial Interface is supported. USB Interface can also be supported provided that an USB extension cable is provided. But it only applies to Scheme 4. The ACR30 circuitry is used. Memory Cards and SAM are not supported. There are four possible interface schemes for the floppy-based reader.

Scheme 1:

RS232 reader, using one extension cable coming out from the back of PC.

One extension cable is required:-

- A flat cable with a "2x5 pins plug, 2.54mm pitch" on the one side while the other side is connected to a "DB9(F) connector".



Wiring Procedures:

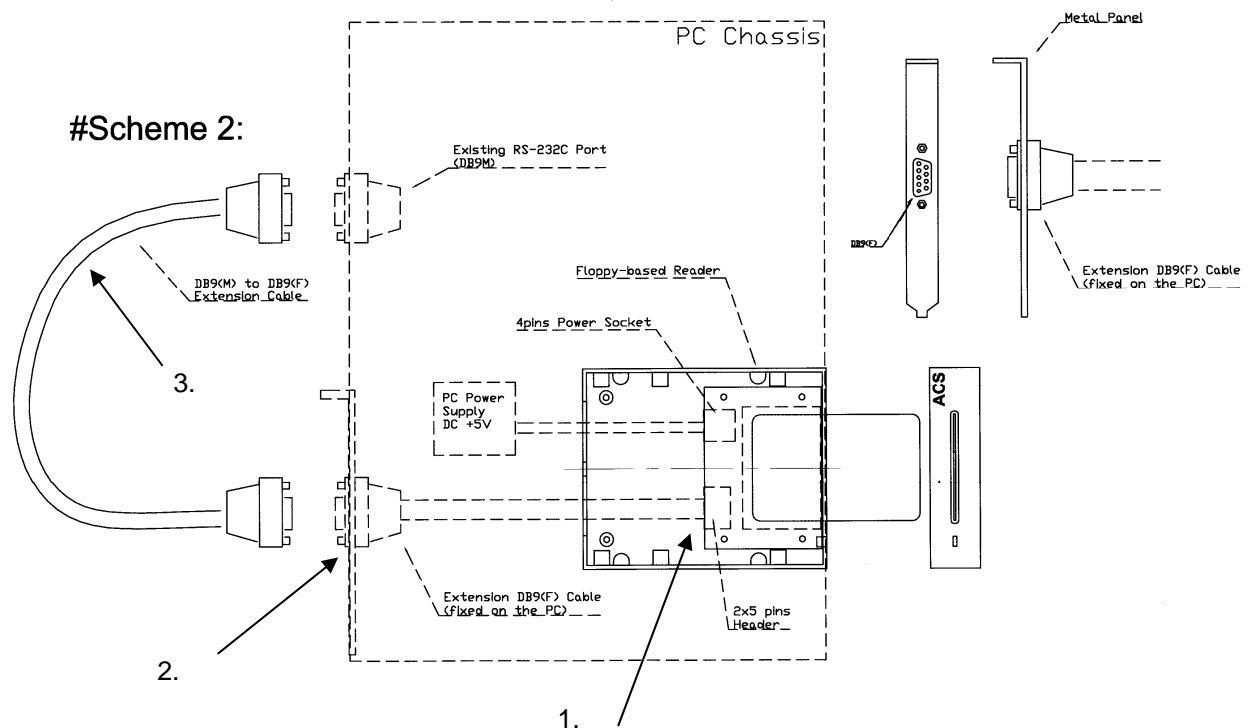
1. First, connect the DB9(F) of the extension cable to any unused Serial Port externally.
2. Second, let the **2x5 pins Plug** go through the slot hole of the PC Chassis.
3. Finally, connect the **2x5 pins Plug** of the flat cable into the 2x5 pins header on the PCB of the reader.

Scheme 2:

RS232 reader cable linked to a metal panel, another cable linked to the RS232 port.

Two extension cables are required:

- A flat cable with a “**2x5 pins plug, 2.54mm pitch**” on the one side while the other side is connected to a “**DB9(F) connector with metal panel**”.
- A serial extension cable “**DB9(F) to DB9(M)**”



Wiring Procedures:

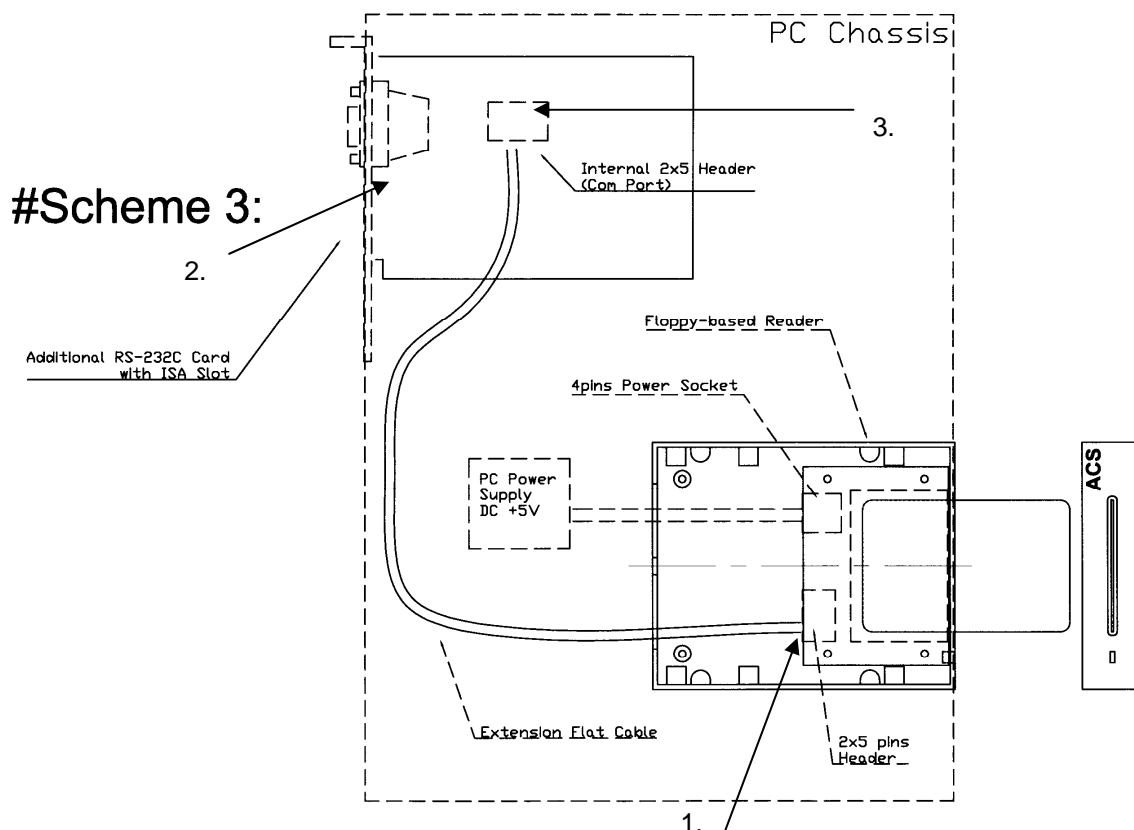
1. First, connect the **2x5 pins Plug** of the flat cable into the 2x5 pins Header on the PCB of the reader.
2. Second, fix the **“DB9(F) with metal panel”** on the slot hole of the PC Chassis.
3. Finally, connect any unused Serial Port and the **“DB9(F) with metal panel fixed on the PC Chassis”** together with the “serial extension cable”

Scheme 3:

RS232 reader, using an additional RS-232C Card

An extension cable and a RS-232C card are required:-

- A flat cable with **“2x5 pins plug, 2.54mm pitch”** on both sides.
- An additional RS-232C Card is required. Only one serial port is required. However, many RS-232C cards come with 2 serial ports.



Wiring Procedures:

1. First, connect the **2x5 pins Plug** of the flat cable into the 2x5 pins Header on the PCB of the reader.
2. Second, plug the provided RS-232C card into any available ISA slot of the motherboard.



3. Finally, connect the **2x5 pins Plug** at the another end of the same flat cable into the 2x5 pins header socket on the additional RS-232C card.

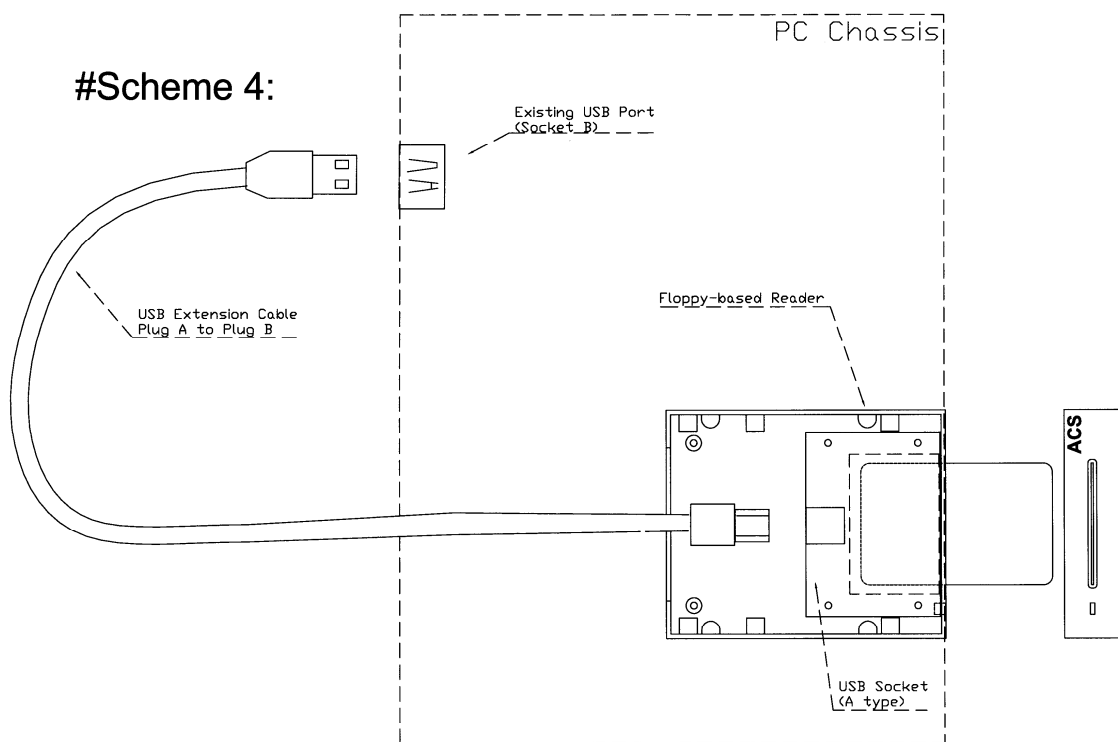
#Remarks: Card Slot Interface must be taken into consideration, because few motherboards nowadays still support ISA slots!

Scheme 4:

USB reader, using one extension cable coming out from the back of PC

One extension cable is required:

- A cable with a “**USB Plug A**” on the one side while the other side is connected to a “**USB Plug B**”.



Wiring Procedures

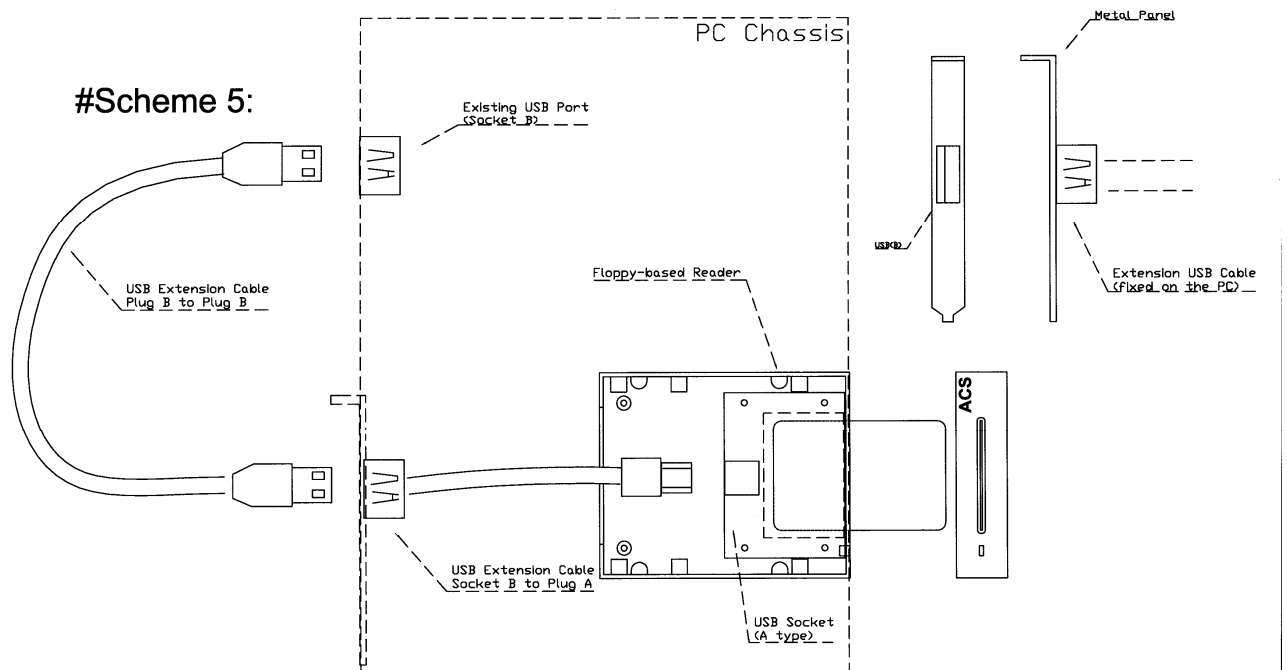
1. First, connect the **USB Plug A** of the flat cable into the **USB Socket A** on the PCB of the reader.
2. Second, let the **USB Plug B** go through the slot hole of the PC Chassis.
3. Finally, connect the **USB Plug B** of the extension cable to any unused USB Port externally.

Scheme 5:

USB reader, cable linked to a metal panel, another cable linked to the USB port.

Two extension cables are required:-

- A cable with a “**USB Plug A**” on the one side while the other side is connected to a “**USB**



Socket B with metal panel”.

- A USB extension cable “**USB Plug B to USB Plug B**”

Wiring Procedures:

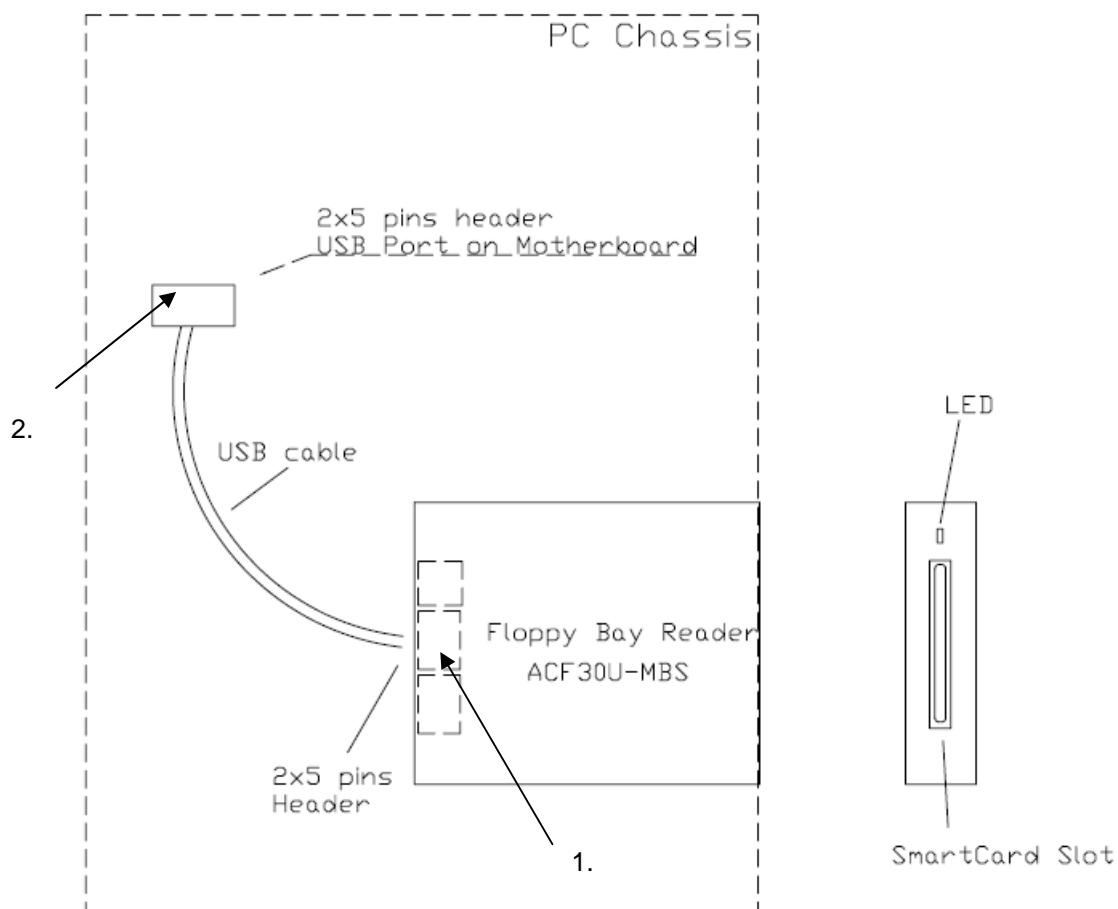
1. First, connect the **USB Plug A** of the cable into the USB Socket A on the PCB of the reader.

2. Second, fix the “**USB Socket B with metal panel**” on the slot hole of the PC Chassis.
3. Finally, connect any unused USB Port and the “**USB Socket B with metal panel fixed on the PC Chassis**” together with the “USB extension cable”.

Scheme 6: USB reader, Internal USB extension cable.

One special USB extension cable is required:-

- A shielded USB cable with “**2x5 pins plug**” on both ends.



Wiring Procedures:

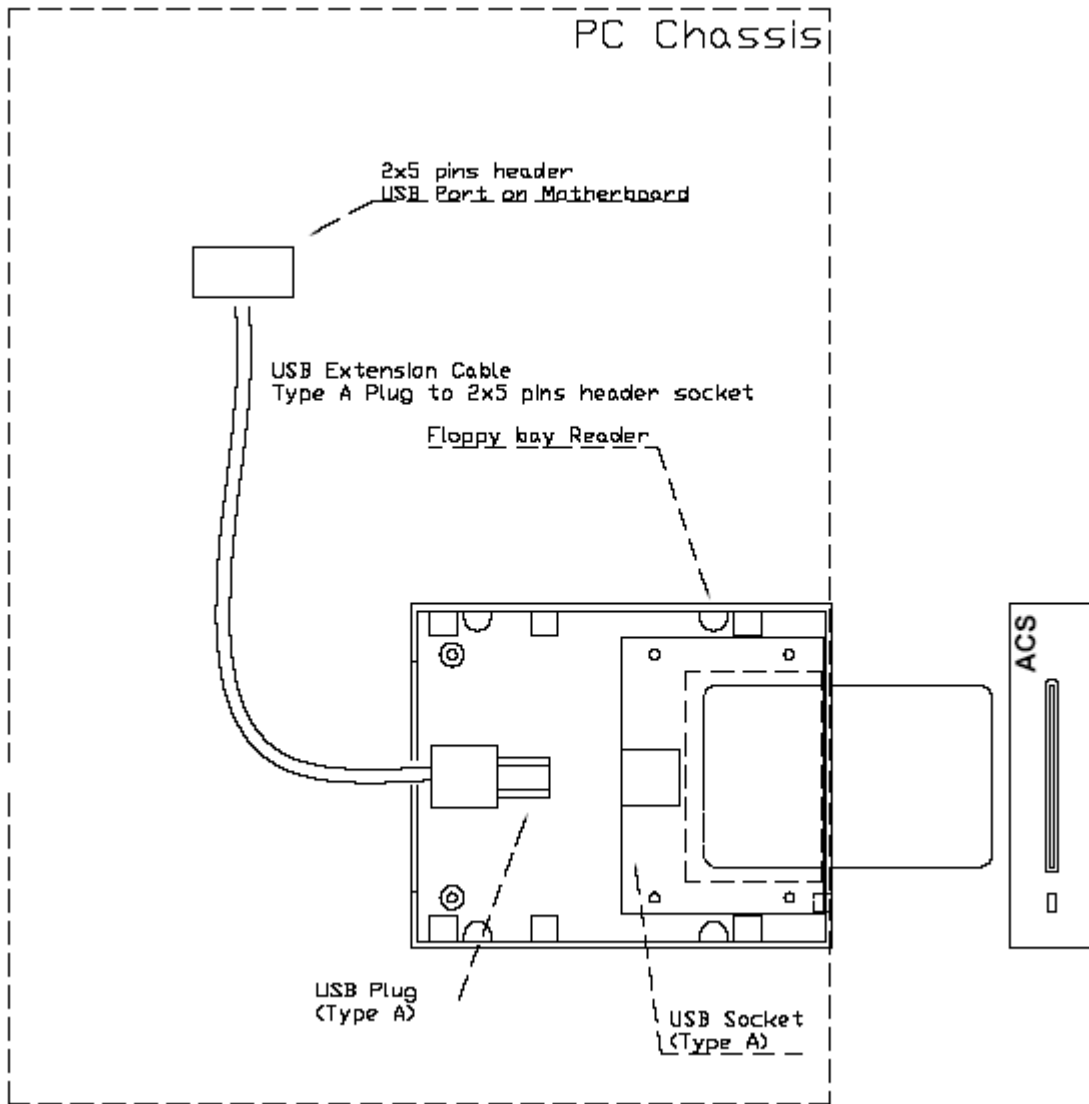
1. First, connect the one end (**2x5 pins plug**) of the USB cable into the **2x5 pins header** of the reader.
2. Second, connect the other end (**2x5 pins plug**) of the USB cable into the internal USB port (**2x5 pins header**) on the motherboard.

N.B. Please pay attention to the plug orientation.

Scheme 7: USB reader, Internal USB extension cable.

One special USB extension cable is required:

- A shielded USB cable with “**2x5 pins plug**” on one end and a type A plug on the other end.



Wiring Procedures:

1. First, connect the one end (**Type A plug**) of the USB cable into the **Type A header** of the reader.
2. Second, connect the other end (**2x5 pins plug**) of the USB cable into the internal USB port (**2x5 pins header**) on the motherboard.

N.B. Please pay attention to the plug orientation.