

# Access Control System

Version 3.0

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## Hardware and Software Installation Guide

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## 1. Before installing Access Control System

### 1.1. Components

- Master Controller



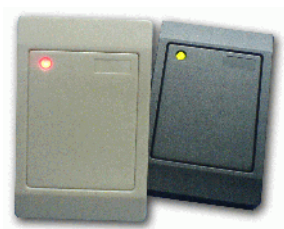
- Smart Hub



- Door Control Unit



- Card Reader



- Card Reader with display

(TA Terminal)



- USB Cable



- Ethernet Cable



- Power Cord



## 1.1. Familiarizing the system

Figure 1a. Front panel of Master controller



Figure 1b. Rear panel of Master controller

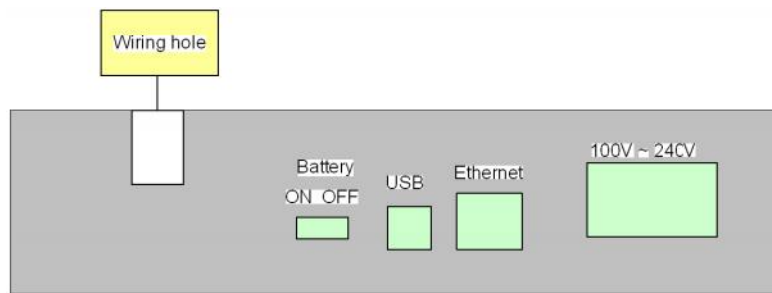


Table 1a. Panel description

Number	Item	Description
Front Panel		
1	Power	Green LED turns on when AC power is connected.
2	Online	Flashing yellow if the Master controller is in normal operation state
3	USB	LED is on when USB is connected to computer
4	Ethernet	LED is on if Ethernet is connected and detected
5	Alarm	LED is on when external alarm is active
Rear Panel		
6	Battery Switch	When internal backup battery is installed and connected, the switch can turn on/off the battery power
7	USB	USB socket to connect to PC
8	Ethernet	10 base Ethernet socket
9	Power socket	AC 100-240V Power input

## Note:

- Do not connect both USB and Ethernet at the same time. Master controller will not work properly if both are connected
- If Master controller uses internal backup battery and AC power is not connected, Power LED will turn off but Online LED will still be flashing.
- The Master controller will charge the internal battery if AC is detected whenever the battery switch turn on or off.

## 2. Hardware installation

### 2.1. Hardware overview

The following table lists the usage of hardware in the system.

*Table 2a. Device usage*






Icon	Device	Usage
	Computer	Manage access right View Reports Store transactions in database
	Master Controller	Offline operation Decision Making Temporary store transactions 4 Ports for Devices
	Smart Hub (optional)	Expand from 1 port to 8 ports
	Door Control Unit (DCU)	Control one door Connect to In and Out Readers Manual Release button input N.C./N.O. relay output to control electronic door lock
	Card Reader	Read RFID

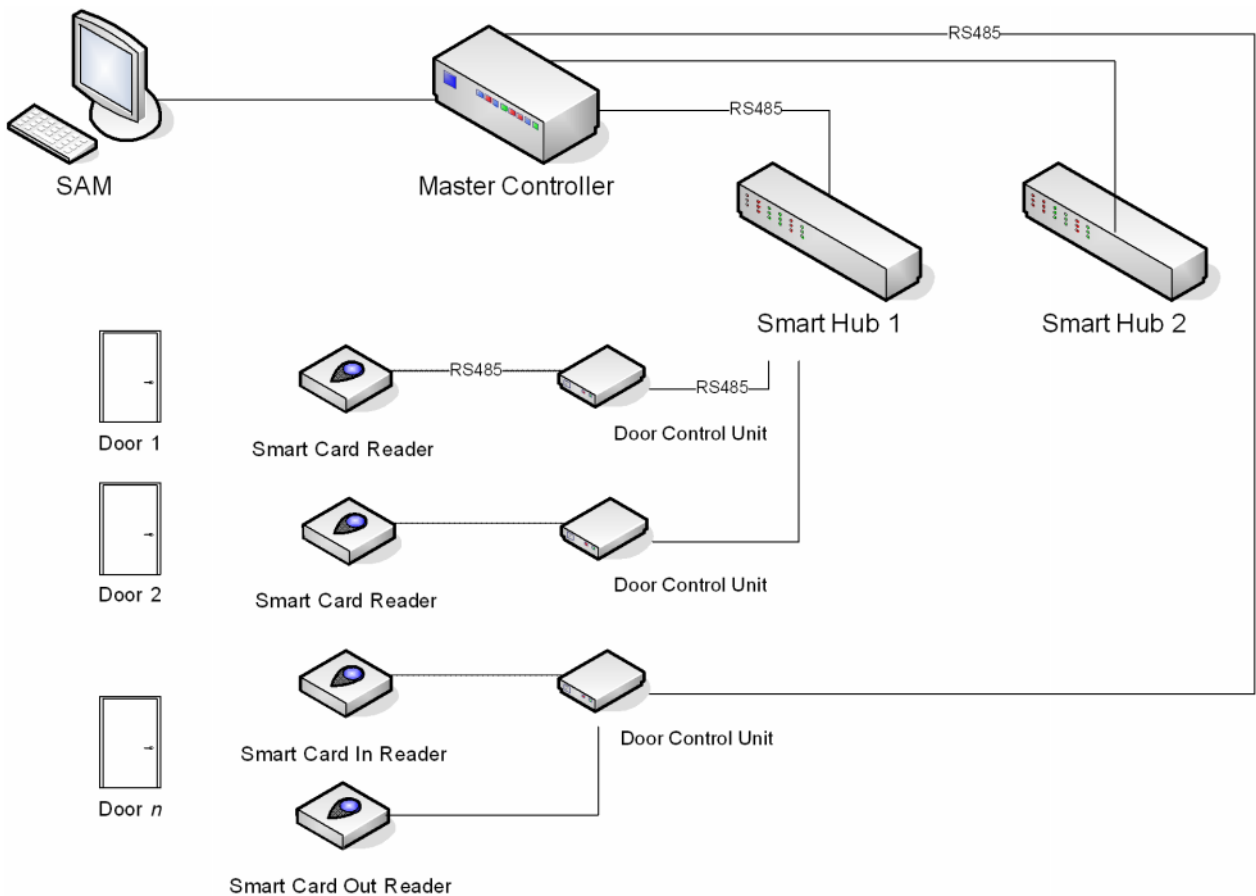
Table 2b. Cable specification

Number	Network Type	Cable Type	Maximum length (meter)	Maximum length (feet)	Baud rate
1	USB	USB	5	16.5	12 Mbps
2	Ethernet	CAT 5	100	330	10 Mbps
3	RS485	Twisted pair	1200	4000	38.4kbps

## 2.2. System wiring

Unless specified, all SmartKey devices require 12VDC (+/- 3V).

Figure 2e. System wiring



## 2.3. Master controller wiring

Master controller is used to link up the system and computer. Either USB or Ethernet can be used.

For the maximum length, please refer to table 2(b).

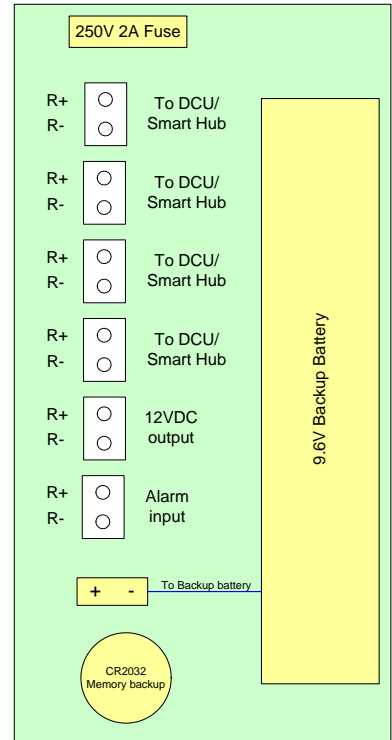
Master controller has **4 RS-485 I/O** ports for connecting to Devices. A device can be a DCU, a TA terminal, or a Smart Hub. That is one master controller can be connect up to 4 DCU (or TA terminal) without Smart Hub or connect up to 32 DCU (or TA terminal) with 4 Smart Hub. Using twisted pair wire is recommended for better RS-485 transmission.

Master controller has one 12VDC output. The maximum output for that power is 1.5A.

Note:

- Connect the Backup battery to socket before use.
- If connect Master controller to computer via Ethernet hub, please use straight cable.
- If connect the Master Controller direct to computer via Ethernet without hub, please use crossover cable.

Figure 2f. Master I/O



## 2.4. DCU wiring

Figure 2g. Door Control Unit I/O

### 2.4.1. Door Control Unit

Install the DCU near the electronic door lock. Record the serial number of the DCU because the PC software S.A.M. uses the serial number to identify the location of the unit.

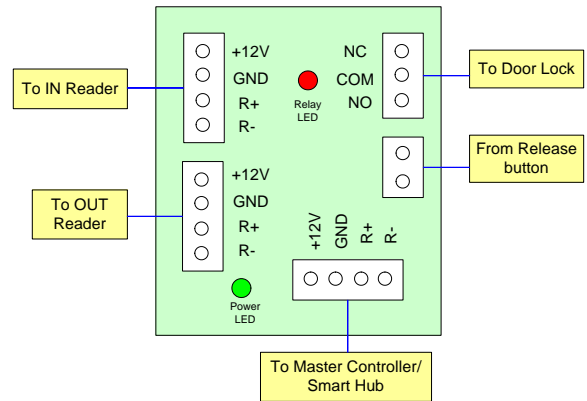
DCU has **3 RS-485 I/O** ports. Two of which are used to connect to IN-Card Reader and OUT-Card Reader. The other port is to connect to the Master Controller ( or HUB).

DCU has one release button input for exit button. Use a dry contact manual switch and connect the two terminals to the pins. DCU has a relay output for the Door lock. Normal Open (N.O.) and Normal Close (N.C.) contacts are provided.

All +12V Powers and GNDs in DCU are internally connected. Usually connect a +12VDC power to the port for Master Controller. Connect the RS-485 line to R+ and R-. Do not feed back the power and ground to the master controller.

The Power LED will turn to red when power is on; and it will turn to green when the DCU has proper communication with the master controller.

The Relay LED goes off when the relay is turned on.

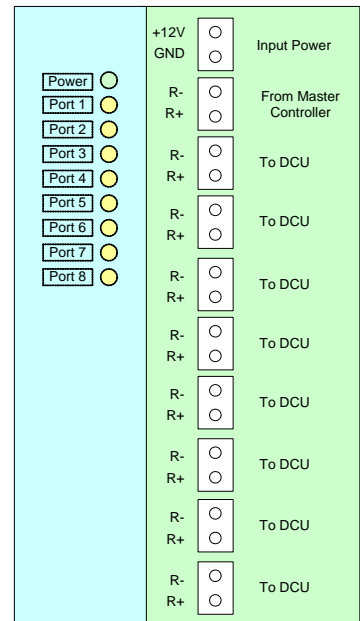


### 2.4.2. Smart Hub

Smart Hub can expand a RS-485 port from the master controller to 8 **RS-485 I/O** ports to connect with DCUs or TA terminals.

The Power LED will turn to red when power is on; and it will turn to green when the Smart Hub detected the Master controller.

Figure 2h. Smart Hub I/O



### 2.5. Power consumption

When +12VDC power supply is used.

Table 2c Devices Power

Device	Average current consumption
Smart Hub	120mA
Door Control Unit	100mA
Card Reader	50mA
Display Reader	120mA
Electric Lock*	1A

\*Please refer to manufacturer’s manual

## 3. Software Installation

### 3.1. Software overview

**Smart Access Manager (SAM)** is developed with last Microsoft .Net technology. It is based on client-server modal so that SAM can be installed on multiple computers connected to the Microsoft SQL server. For large scale modal, the Master controller is connected to SAM via Ethernet even VPN remote site.

If you have your own SQL server, you can choose to connect it during the database setup. If you do not have one, the installation disk provides the free license 'Microsoft SQL 2005 Express', and it can be installed onto a standalone PC and run.

### 3.2. Installation













#### 3.2.1. Install Smart Access Manager

1. Insert companion CD (for example E:\)
2. Execute E:\SAM\Setup.exe
3. Follow the instruction of the setup

### 3.2.2. Install Database for SAM

SAM support both MSDE 2000 and SQL 2005, for faster computer (800MHz CPU or higher), we suggest SQL 2005 Express. You can choose install either of them.

Table 3a comparison between MSDE and SQL Express

Feature	MSDE2000	SQL 2005 Express
Windows 9X, ME		
Windows 2000, XP		
Windows Server		
Windows Vista		
SQL agent		
Report Server		
Minimum processor	166 MHz	600 MHz
Minimum Memory	128 MB	192 MB
Hard disk space	44 MB	350 MB
Database size limit	2 GB	4 GB
Maximum # of processors	2	1
Maximum Memory	2 GB	1 GB
License	Free for 5 User	Free for 5 User

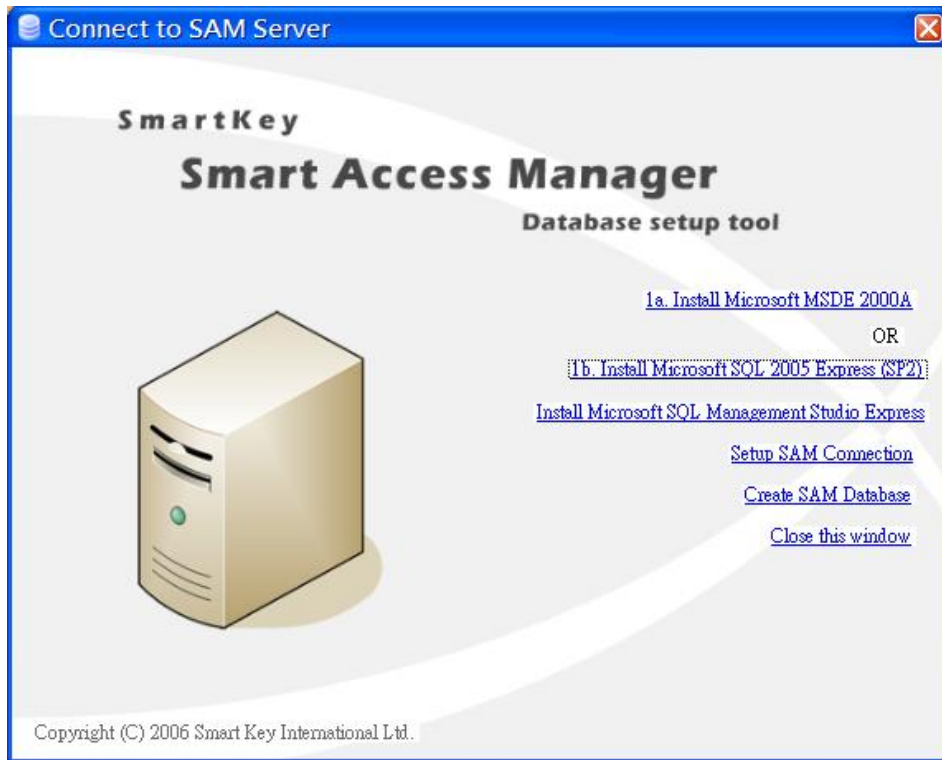
### 3.2.3. Install MSDE 2000A

1. After successful installation of SAM, a dialog (Figure 3a) appears
2. click **Install MSDE2000A** (if required)
3. Wait the install screen closed, no button is required to click.

### 3.2.4. Install Microsoft SQL 2005 Express

1. After successful installation of SAM, a dialog (Figure 3a) appears
2. click **Install Microsoft SQL 2005 Express** (if required)
3. check "I accept the licensing terms and conditions" and click **Next**
4. click **Next** until finish

*Figure 3a*



### 3.2.5. Install SAM database

(Skip this part if SAM database is already installed)

1. Click **Setup SAM Connection** as shown in Figure 3a
2. Click **Test Connection**, a message should display "Connect Success, but the database not found. Please go to next step to create new database."
3. Click **OK** of the message
4. Click **OK** as shown in Figure 3b
5. Click **Create SAM Database** as shown in Figure 3a
6. Click **Create database** as shown in Figure 3c
7. A Message should display "Create database successfully"

Figure 3b

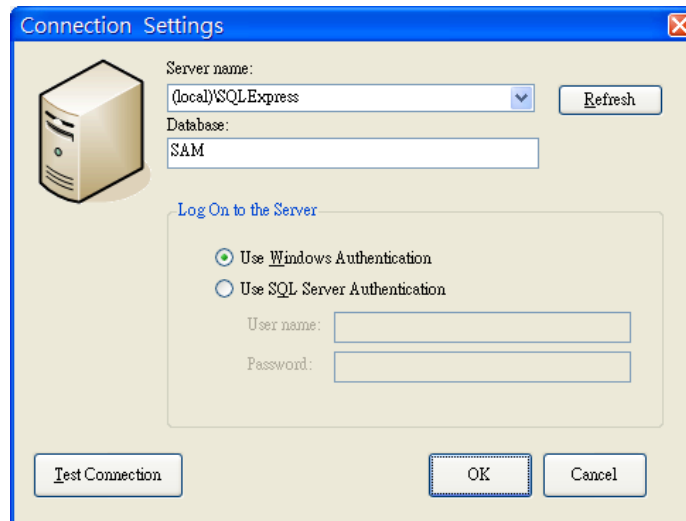
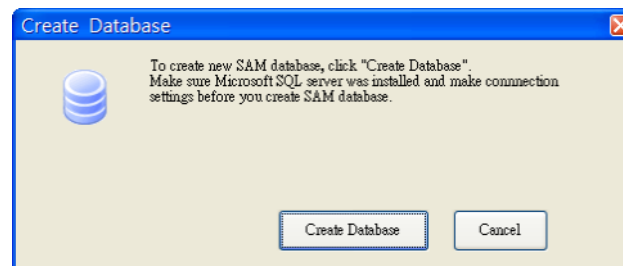


Figure 3c



### 3.2.6. Connecting to Existing database

(Repeat this part on each computer which use SAM)

1. Click **Setup SAM Connection** as shown in Figure 3a
2. Type the Server name you want to connect existing database, for example,
  - MSDE: "localhost"
  - SQL 2005 Express: "localhost\SQLEXPRESS"
3. A message should display "Connection success to database"
4. No need to create database

Note:

If you cannot connect to remote database, check

- Both the server and client computer has allow TCP port 1398 for firewall
- Check the client's access right to the database server
- Set SQL Server allow remote connection:
  - For SQL 2005 Express
    1. Click **Start\Program Files\Microsoft SQL 2005 Server\Configuration Tools\ SQL Server Surface Area Configuration**
    2. Click **Surface Area Configuration for Services and Connections** (figure 3d)
    3. Click **Remote Connection** on the **left panel** (Figure 3e)
    4. Click **Local and remote connections** and **Using TCP/IP only** on the **right panel** (Figure 3e)
    5. Click **OK** to save setting
    6. Restart windows or SQL Express services
  - For MSDE 2000A
    1. Install **Microsoft SQL Management studio express** on server
    2. Login to server via Management studio express
    3. On the left hand side **Object Explorer**, right click the server and click **Properties**
    4. Select **Connection** page on the left hand side of **Server Properties window**
    5. Check **Allow remote connection for this server** (Figure 3f)
    6. Click **OK** to save setting
    7. Restart windows or SQL Express services



Figure 3e

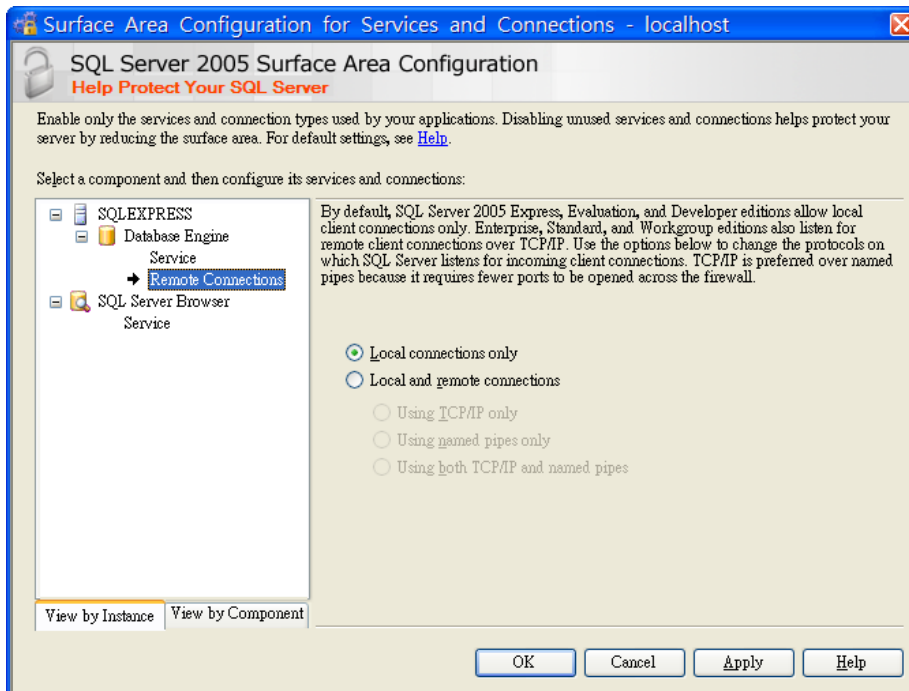


Figure 3f

