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# *ACS-10V(P)-MF*

## *Access Control Reader*

### User's Manual



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## Document Revision

<b>Version</b>	<b>Date</b>	<b>Description of changes</b>
1.0	2016/05/06	First Release Revision
1.1	2017/03/15	Add communication example

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## 1. Introduction

Access Control systems are one of the most important infrastructures for a safe, secure society. ACS-10V(P)-MF is an access control reader that supports RFID induction of access control. It integrates three functions of door access control, voice guidance and floor control all in one, suitable for use in community door access and elevator control. ACS-10V(P)-MF supports Ethernet and RS-485 communication interface and provides anti-sabotage sensor and door position detection function which can consolidate the security of access control systems and effectively enhance the service quality of management.

The ACS-10VP-MF has integrated Power-over-Ethernet (PoE), it allows power and data to be carried over a single Ethernet cable, so a device can operate solely from the power it receives through the data cable. This innovation allows greater flexibility in office design, higher efficiency in systems design, and faster turnaround time in set-up and implementation. The ACS-10VP-MF feature true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) using both Ethernet pairs (Category 5 Ethernet cable).

When using ACS-10VP-MF module, you can choose ICP DAS “PoE” Switch – “NS-205PSE” as the power source, NS-205PSE automatically detects the connected devices whether they are PoE devices or not. This mechanism ensures NS-205PSE to work with both PoE and non-PoE devices coordinately at the same time.

## 1.1 Features

- Supports card type: Mifare
- Built-in Voice message function
- Supports Ethernet / RS-485 interface
- Built-in RTC and WDT
- Supports electronic lock control and door position detection
- Provides access records
- Max card capacity : 8000 cards
- Supports elevator floor control (max. 16F)

## 1.2 Applications



## 1.3 Specifications

Table 1-1: System Specifications

Models	ACS-10V-MF	ACS-10VP-MF
<b>CAN Bus</b>		
Baud rate(bps)	1M	-
Specification	ISO-11898-2, CAN 2.0A/B	-
<b>UART</b>		
COM	RS-485(D+, D-)	
Baud rate(bps)	9600	
Format	N, 8, 1	
<b>Ethernet</b>		
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto MDIX)	
Connector	RJ-45 with LED indicator	
PoE	-	Yes

<b>Digital Input</b>		
Channels	4	2
Input type	Dry Contact (Source), Wet Contact (Sink, Source)	
<b>Relay Output</b>		
Channels	2	
Output Type	Form C	
Contact Rating	0.5A 120VAC / 2A 30VDC	
<b>Micro Switch</b>		
Channels	1	
Circuit arrangement	SPDT	
Contact Rating	6A 125/250VAC	
<b>RFID</b>		
Supported Card	Mifare S50	
Standard	ISO 14443 A	
<b>Keypad</b>		
Supported	No	
<b>Power</b>		
Reverse Polarity Protection	Yes	
Powered from CN1 Connector	10 ~ 30 VDC	-
Powered from PoE	-	Yes, IEEE 802.3af, Class 1
Consumption	2.0W	1.7W
<b>Mechanical</b>		
Installation	Wall Mounting (Suitable for the outlet box in United States)	
Dimensions	83mm x 120mm x 28mm (W x L x H)	
<b>Environment</b>		
Operating Temperature	-20°C ~ +60°C	
Storage Temperature	-30°C ~ +80°C	
Humidity	10% ~ 90%, non-condensing	

## 2. Hardware

### 2.1 Front Panel

The front panel of the ACS-10V(P)-MF module contains the RFID induction area and status LEDs.

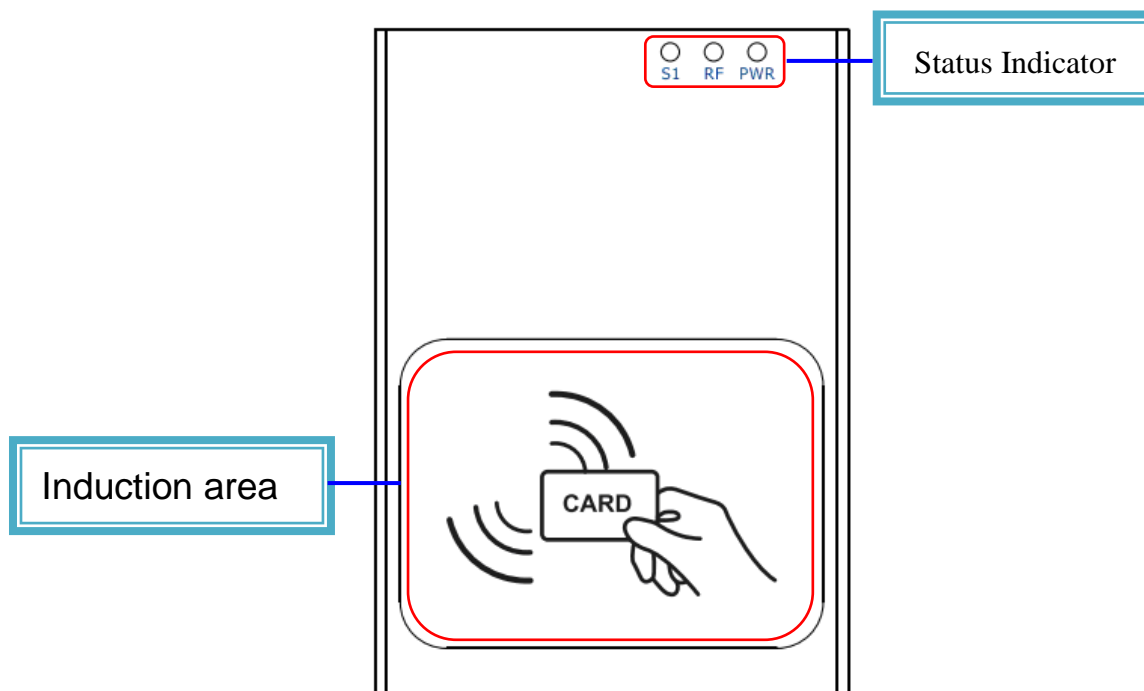


Figure 2-1: Front Panel of the ACS-10V(P)-MF

#### 2.1.1 LED Indicator

Table 2-1: System Status Indicator

System Status Indicator		
LED	Module Status	LED Status
PWR	Default IP operation mode	Blink per 100 ms
	Camera control module connection failed	Blink per 1000 ms
	Elevator control module 1 connection failed	Blink per 2000 ms
	Elevator control module 2 connection failed	Blink per 3000 ms
	Power failure	Off
RF	RFID induction	Blink
	Firmware update mode	Blink per 500 ms
	Idle	Off
S1	Data transmission	Blink
	Idle	Off



## 2.2 Back Panel

The back panel of the ACS-10V(P)-MF module contains the Ethernet port and power, signal connectors.

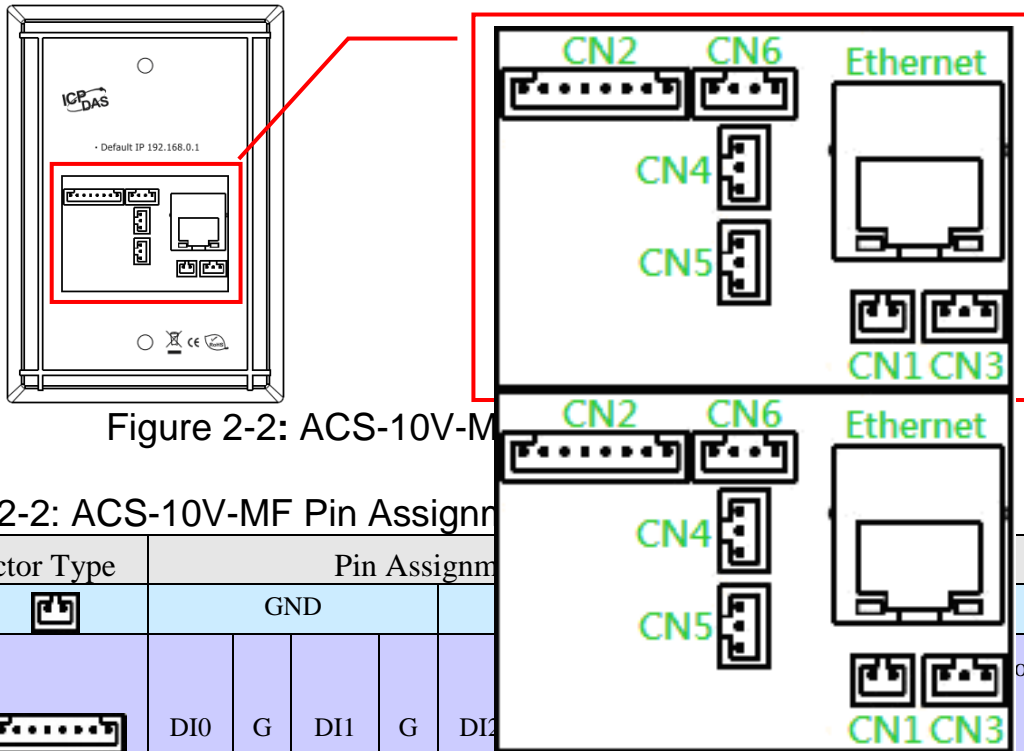




Figure 2-2: ACS-10V-MF Back Panel

Table 2-2: ACS-10V-MF Pin Assignment

Connector Type		Pin Assignment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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CN2		DI0	G	DI1	G	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10	DI11	DI12	DI13	DI14	DI15	DI16	DI17	DI18	DI19	DI20	DI21	DI22	DI23	DI24	DI25	DI26	DI27	DI28	DI29	DI30	DI31	DI32	DI33	DI34	DI35	DI36	DI37	DI38	DI39	DI40	DI41	DI42	DI43	DI44	DI45	DI46	DI47	DI48	DI49	DI50	DI51	DI52	DI53	DI54	DI55	DI56	DI57	DI58	DI59	DI60	DI61	DI62	DI63	DI64	DI65	DI66	DI67	DI68	DI69	DI70	DI71	DI72	DI73	DI74	DI75	DI76	DI77	DI78	DI79	DI80	DI81	DI82	DI83	DI84	DI85	DI86	DI87	DI88	DI89	DI90	DI91	DI92	DI93	DI94	DI95	DI96	DI97	DI98	DI99	DI100	DI101	DI102	DI103	DI104	DI105	DI106	DI107	DI108	DI109	DI110	DI111	DI112	DI113	DI114	DI115	DI116	DI117	DI118	DI119	DI120	DI121	DI122	DI123	DI124	DI125	DI126	DI127	DI128	DI129	DI130	DI131	DI132	DI133	DI134	DI135	DI136	DI137	DI138	DI139	DI140	DI141	DI142	DI143	DI144	DI145	DI146	DI147	DI148	DI149	DI150	DI151	DI152	DI153	DI154	DI155	DI156	DI157	DI158	DI159	DI160	DI161	DI162	DI163	DI164	DI165	DI166	DI167	DI168	DI169	DI170	DI171	DI172	DI173	DI174	DI175	DI176	DI177	DI178	DI179	DI180	DI181	DI182	DI183	DI184	DI185	DI186	DI187	DI188	DI189	DI190	DI191	DI192	DI193	DI194	DI195	DI196	DI197	DI198	DI199	DI200	DI201	DI202	DI203	DI204	DI205	DI206	DI207	DI208	DI209	DI210	DI211	DI212	DI213	DI214	DI215	DI216	DI217	DI218	DI219	DI220	DI221	DI222	DI223	DI224	DI225	DI226	DI227	DI228	DI229	DI230	DI231	DI232	DI233	DI234	DI235	DI236	DI237	DI238	DI239	DI240	DI241	DI242	DI243	DI244	DI245	DI246	DI247	DI248	DI249	DI250	DI251	DI252	DI253	DI254	DI255	DI256	DI257	DI258	DI259	DI260	DI261	DI262	DI263	DI264	DI265	DI266	DI267	DI268	DI269	DI270	DI271	DI272	DI273	DI274	DI275	DI276	DI277	DI278	DI279	DI280	DI281	DI282	DI283	DI284	DI285	DI286	DI287	DI288	DI289	DI290	DI291	DI292	DI293	DI294	DI295	DI296	DI297	DI298	DI299	DI300	DI301	DI302	DI303	DI304	DI305	DI306	DI307	DI308	DI309	DI310	DI311	DI312	DI313	DI314	DI315	DI316	DI317	DI318	DI319	DI320	DI321	DI322	DI323	DI324	DI325	DI326	DI327	DI328	DI329	DI330	DI331	DI332	DI333	DI334	DI335	DI336	DI337	DI338	DI339	DI340	DI341	DI342	DI343	DI344	DI345	DI346	DI347	DI348	DI349	DI350	DI351	DI352	DI353	DI354	DI355	DI356	DI357	DI358	DI359	DI360	DI361	DI362	DI363	DI364	DI365	DI366	DI367	DI368	DI369	DI370	DI371	DI372	DI373	DI374	DI375	DI376	DI377	DI378	DI379	DI380	DI381	DI382	DI383	DI384	DI385	DI386	DI387	DI388	DI389	DI390	DI391	DI392	DI393	DI394	DI395	DI396	DI397	DI398	DI399	DI400	DI401	DI402	DI403	DI404	DI405	DI406	DI407	DI408	DI409	DI410	DI411	DI412	DI413	DI414	DI415	DI416	DI417	DI418	DI419	DI420	DI421	DI422	DI423	DI424	DI425	DI426	DI427	DI428	DI429	DI430	DI431	DI432	DI433	DI434	DI435	DI436	DI437	DI438	DI439	DI440	DI441	DI442	DI443	DI444	DI445	DI446	DI447	DI448	DI449	DI450	DI451	DI452	DI453	DI454	DI455	DI456	DI457	DI458	DI459	DI460	DI461	DI462	DI463	DI464	DI465	DI466	DI467	DI468	DI469	DI470	DI471	DI472	DI473	DI474	DI475	DI476	DI477	DI478	DI479	DI480	DI481	DI482	DI483	DI484	DI485	DI486	DI487	DI488	DI489	DI490	DI491	DI492	DI493	DI494	DI495	DI496	DI497	DI498	DI499	DI500	DI501	DI502	DI503	DI504	DI505	DI506	DI507	DI508	DI509	DI510	DI511	DI512	DI513	DI514	DI515	DI516	DI517	DI518	DI519	DI520	DI521	DI522	DI523	DI524	DI525	DI526	DI527	DI528	DI529	DI530	DI531	DI532	DI533	DI534	DI535	DI536	DI537	DI538	DI539	DI540	DI541	DI542	DI543	DI544	DI545	DI546	DI547	DI548	DI549	DI550	DI551	DI552	DI553	DI554	DI555	DI556	DI557	DI558	DI559	DI560	DI561	DI562	DI563	DI564	DI565	DI566	DI567	DI568	DI569	DI570	DI571	DI572	DI573	DI574	DI575	DI576	DI577	DI578	DI579	DI580	DI581	DI582	DI583	DI584	DI585	DI586	DI587	DI588	DI589	DI590	DI591	DI592	DI593	DI594	DI595	DI596	DI597	DI598	DI599	DI600	DI601	DI602	DI603	DI604	DI605	DI606	DI607	DI608	DI609	DI610	DI611	DI612	DI613	DI614	DI615	DI616	DI617	DI618	DI619	DI620	DI621	DI622	DI623	DI624	DI625	DI626	DI627	DI628	DI629	DI630	DI631	DI632	DI633	DI634	DI635	DI636	DI637	DI638	DI639	DI640	DI641	DI642	DI643	DI644	DI645	DI646	DI647	DI648	DI649	DI650	DI651	DI652	DI653	DI654	DI655	DI656	DI657	DI658	DI659	DI660	DI661	DI662	DI663	DI664	DI665	DI666	DI667	DI668	DI669	DI670	DI671	DI672	DI673	DI674	DI675	DI676	DI677	DI678	DI679	DI680	DI681	DI682	DI683	DI684	DI685	DI686	DI687	DI688	DI689	DI690	DI691	DI692	DI693	DI694	DI695	DI696	DI697	DI698	DI699	DI700	DI701	DI702	DI703	DI704	DI705	DI706	DI707	DI708	DI709	DI710	DI711	DI712	DI713	DI714	DI715	DI716	DI717	DI718	DI719	DI720	DI721	DI722	DI723	DI724	DI725	DI726	DI727	DI728	DI729	DI730	DI731	DI732	DI733	DI734	DI735	DI736	DI737	DI738	DI739	DI740	DI741	DI742	DI743	DI744	DI745	DI746	DI747	DI748	DI749	DI750	DI751	DI752	DI753	DI754	DI755	DI756	DI757	DI758	DI759	DI760	DI761	DI762	DI763	DI764	DI765	DI766	DI767	DI768	DI769	DI770	DI771	DI772	DI773	DI774	DI775	DI776	DI777	DI778	DI779	DI780	DI781	DI782	DI783	DI784	DI785	DI786	DI787	DI788	DI789	DI790	DI791	DI792	DI793	DI794	DI795	DI796	DI797	DI798	DI799	DI800	DI801	DI802	DI803	DI804	DI805	DI806	DI807	DI808	DI809	DI810	DI811	DI812	DI813	DI814	DI815	DI816	DI817	DI818	DI819	DI820	DI821	DI822	DI823	DI824	DI825	DI826	DI827	DI828	DI829	DI830	DI831	DI832	DI833	DI834	DI835	DI836	DI837	DI838	DI839	DI840	DI841	DI842	DI843	DI844	DI845	DI846	DI847	DI848	DI849	DI850	DI851	DI852	DI853	DI854	DI855	DI856	DI857	DI858	DI859	DI860	DI861	DI862	DI863	DI864	DI865	DI866	DI867	DI868	DI869	DI870	DI871	DI872	DI873	DI874	DI875	DI876	DI877	DI878	DI879	DI880	DI881	DI882	DI883	DI884	DI885	DI886	DI887	DI888	DI889	DI890	DI891	DI892	DI893	DI894	DI895	DI896	DI897	DI898	DI899	DI900	DI901	DI902	DI903	DI904	DI905	DI906	DI907	DI908	DI909	DI910	DI911	DI912	DI913	DI914	DI915	DI916	DI917	DI918	DI919	DI920	DI921	DI922	DI923	DI924	DI925	DI926	DI927	DI928	DI929	DI930	DI931	DI932	DI933	DI934	DI935	DI936	DI937	DI938	DI939	DI940	DI941	DI942	DI943	DI944	DI945	DI946	DI947	DI948	DI949	DI950	DI951	DI952	DI953	DI954	DI955	DI956	DI957	DI958	DI959	DI960	DI961	DI962	DI963	DI964	DI965	DI966	DI967	DI968	DI969	DI970	DI971	DI972	DI973	DI974	DI975	DI976	DI977	DI978	DI979	DI980	DI981	DI982	DI983	DI984	DI985	DI986	DI987	DI988	DI989	DI990	DI991	DI992	DI993	DI994	DI995	DI996	DI997	DI998	DI999	DI1000	DI1001	DI1002	DI1003	DI1004	DI1005	DI1006	DI1007	DI1008	DI1009	DI1010	DI1011	DI1012	DI1013	DI1014	DI1015	DI1016	DI1017	DI1018	DI1019	DI1020	DI1021	DI1022	DI1023	DI1024	DI1025	DI1026	DI1027	DI1028	DI1029	DI1030	DI1031	DI1032	DI1033	DI1034	DI1035	DI1036	DI1037	DI1038	DI1039	DI1040	DI1041	DI1042	DI1043	DI1044	DI1045	DI1046	DI1047	DI1048	DI1049	DI1050	DI1051	DI1052	DI1053	DI1054	DI1055	DI1056	DI1057	DI1058	DI1059	DI1060	DI1061	DI1062	DI1063	DI1064	DI1065	DI1066	DI1067	DI1068	DI1069	DI1070	DI1071	DI1072	DI1073	DI1074	DI1075	DI1076	DI1077	DI1078	DI1079	DI1080	DI1081	DI1082	DI1083	DI1084	DI1085	DI1086	DI1087	DI1088	DI1089	DI1090	DI1091	DI1092	DI1093	DI1094	DI1095	DI1096	DI1097	DI1098	DI1099	DI1100	DI1101	DI1102	DI1103	DI1104	DI1105	DI1106	DI1107	DI1108	DI1109	DI1110	DI1111	DI1112	DI1113	DI1114	DI1115	DI1116	DI1117	DI1118	DI1119	DI1120	DI1121	DI1122	DI1123	DI1124	DI1125	DI1126	DI1127	DI1128	DI1129	DI1130	DI1131	DI1132	DI1133	DI1134	DI1135	DI1136	DI1137	DI1138	DI1139	DI1140	DI1141	DI1142	DI1143	DI1144	DI1145	DI1146	DI1147	DI1148	DI1149	DI1150	DI1151	DI1152	DI1153	DI1154	DI1155	DI1156	DI1157	DI1158	DI1159	DI1160	DI1161	DI1162	DI1163	DI1164	DI1165	DI1166	DI1167	DI1168	DI1169	DI1170	DI1171	DI1172	DI1173	DI1174	DI1175	DI1176

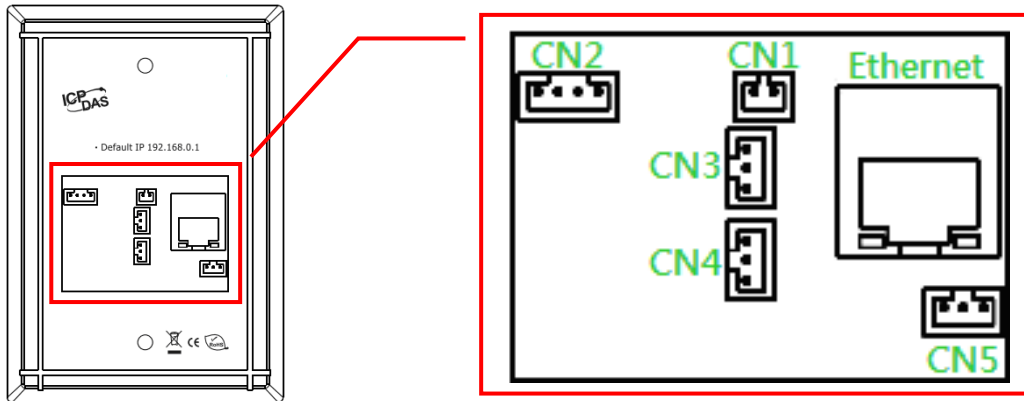







Figure 2-3: ACS-10VP-MF Connector Assignment

Table 2-3: ACS-10VP-MF Pin Assignment

Connector Type		Pin Assignment				Description
CN1		D+		D-		RS-485(D+/D-) Baud Rate (bps): 9600 Parity: NONE Data Bits: 8 Stop Bits: 1
CN2		DI0	G	DI1	G	DI0(Door position detection) DI1(Electric lock trigger) (Digital Input, Dry Contact)
CN3		NC				Electronic lock control (Relay Output)
		COM				
		NO				
CN4		NC				Door position alarm output (Relay Output)
		COM				
		NO				
CN5		COM	NO	NC		Anti-sabotage detection (Relay Output)

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## 2.3 Dimensions

The following diagrams provide the dimensions of the ACS-10V(P)-MF module and can be used as a reference when defining the specifications for any custom enclosures. All dimensions are in millimeters.

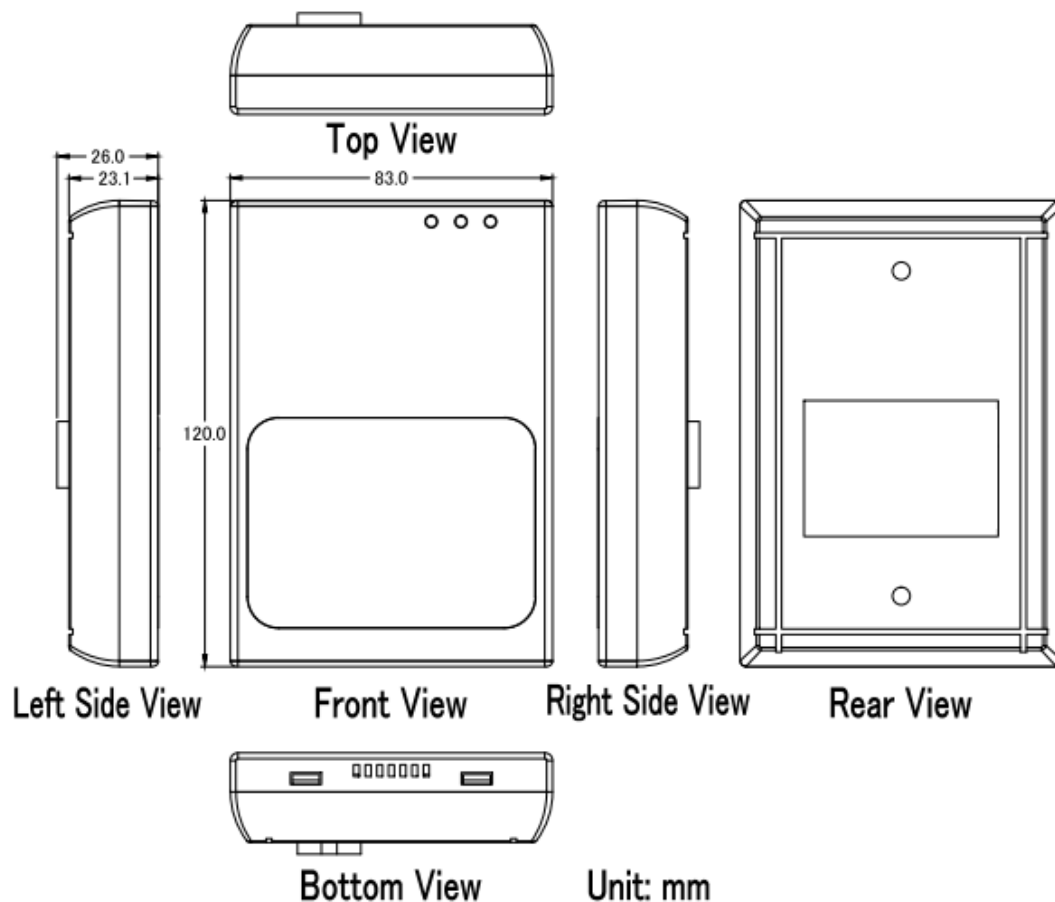


Figure 2-4: Dimension of the ACS-10V(P)-MF Module

## 2.4 Hardware Connections

### 2.4.1 Power and I/O wiring architecture

ACS-10V(P)-MF series modules provide a variety of communication interfaces to suit a range of applications. Below is a description of the configuration for simple applications using the ACS-10V(P)-MF.

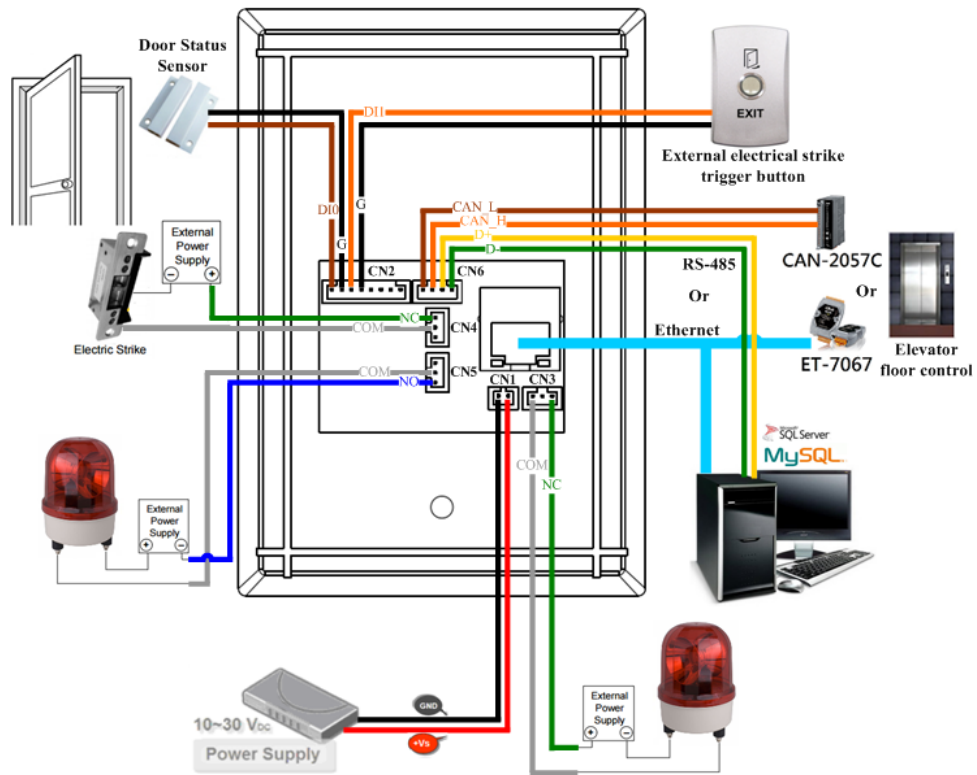


Figure 2-5: ACS-10V-MF Power and I/O wiring architecture

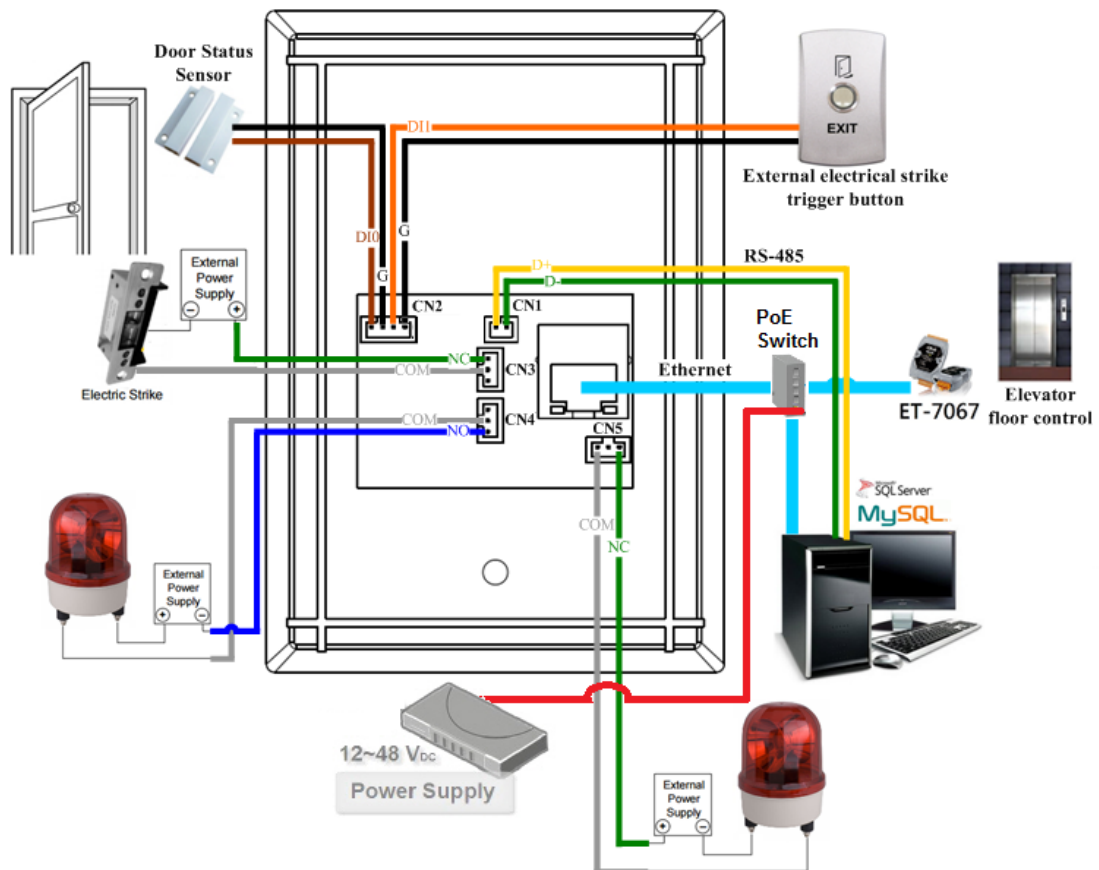


Figure 2-6: ACS-10VP-MF Power and I/O wiring architecture

## 2.4.2 I/O connection

Input Type	ON	OFF
Relay Contact (Dry)		
Open Collector (Dry)		
Output Type	Relay ON	Relay OFF
FormC		

Figure 2-7: Wire connection

## 2.5 Jumper Settings

### 2.5.1 Terminator Resistor Settings

According to the ISO 11898 specifications, the CAN Bus network must be terminated by two terminal resistors (120Ω) for proper operation, as shown in the below figure.

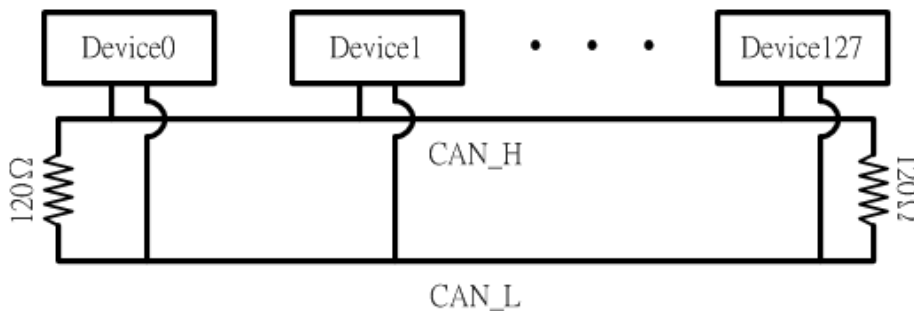




Figure 2-8: Terminal Resistor

Therefore, the ACS-10V-MF module supplies a jumper for users to activate the terminal resistor or not. If users want to use this terminal resistor, please open the ACS-10V-MF cover and use the JP3 to activate the 120Ω terminal resistor built in the module, as the Table 2-4. Note that the default setting is active.



Table 2-4: Terminal Resistor Jumper (ACS-10V-MF)

Jumper Position	
Enable (default)	Disable
	

## 2.5.2 Operation Mode Settings

ACS-10V(P)-MF module supplies a jumper for users to select the firmware operation or firmware update mode of the module.

Table 2-5: Operation Mode Setting Jumper (ACS-10V(P)-MF)

Jumper Position	
Firmware operation mode (default)	Firmware update mode
	

## 2.6 Firmware update method

There are three ways to make the product enters "Firmware update mode", please refer to the following settings mode. When ACS-10V(P)-MF is in firmware update mode, the RF LED will blink per 500 ms. Users can update the firmware of the ACS-10V(P)-MF module by the Ethernet interface.

Item	Setting Mode
1	Press and hold the No.0 key for 10 seconds
2	Press and hold the No.0 key, and reset the power of ACS-10V(P)-MF
3	Set the JP2 to the "Firmware update mode" position as Table 2-5, and reset the power of ACS-10V(P)-MF

Please follow the below steps to complete the firmware updating process.

Step1. Make the product enters "Firmware update mode".

Step2. Network configuration of computer.

Entry the **IP address** as "192.168.0.x", where "x" is a number that between 1 and 254 **except 1**, **Subnet mask** as "255.255.0.0". Finally, press "OK" button.

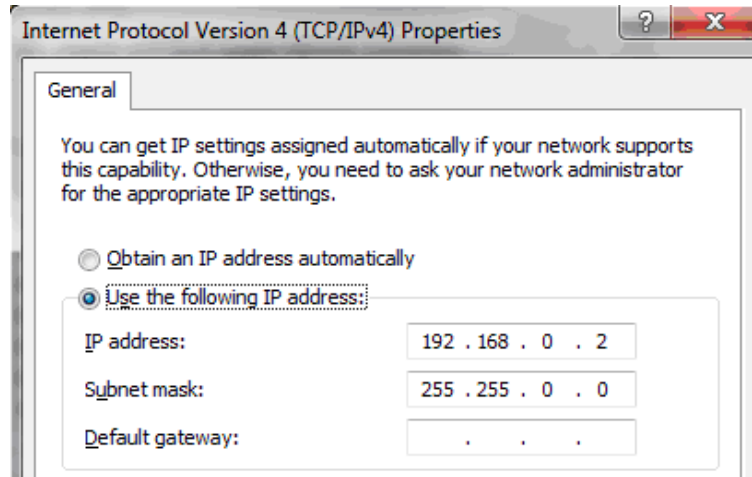
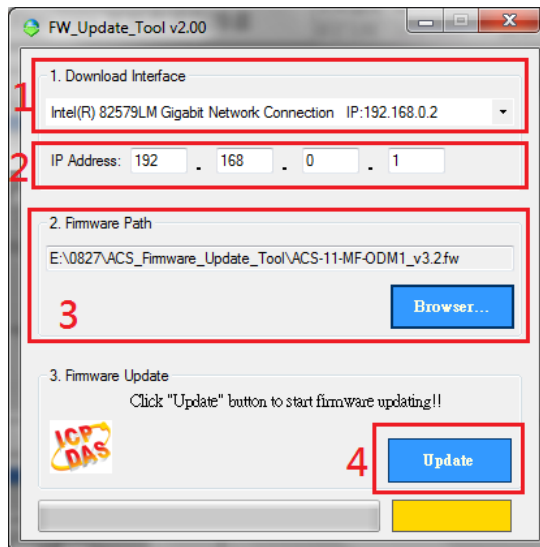


Figure 2-9: Network configuration

Step3. Establish a network connection between PC and ACS-10V(P)-MF

Step4. Launch the firmware update tool "FW\_Update\_Tool\_v2.00.exe"

1. Select the connection network interface of ACS-10V(P)-MF
2. Set IP address as: IP 192.168.0.1
3. Click "**Browser**" button to choose firmware file (ACS-11-MF\_vx.fw)
4. Click "**Firmware Update**" button to start firmware updating process
5. After firmware update is complete, please reset the power of ACS-10V(P)-MF



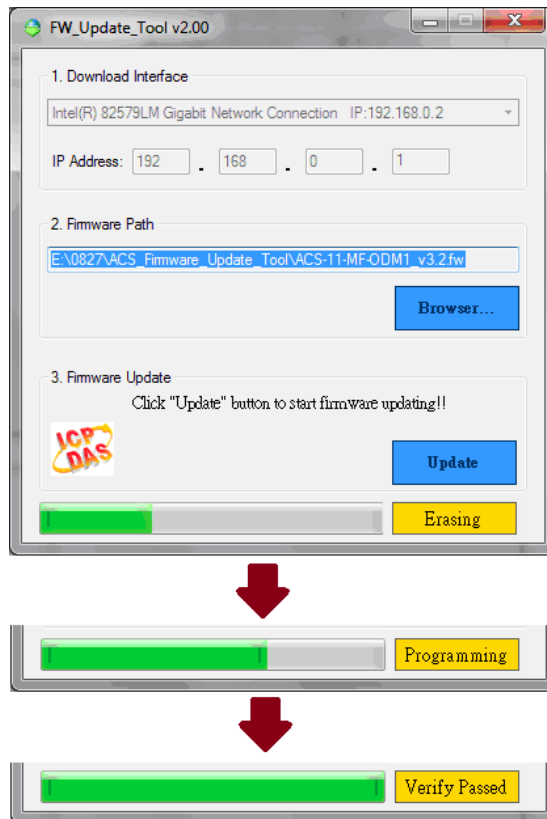


Figure 2-10: Firmware update process



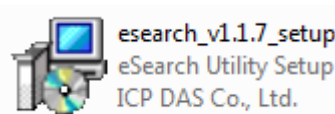
---

## 3. Software

### 3.1 Installing the eSearch Utility

The eSearch Utility is a useful tool that provides a quick and easy way to configure the Ethernet settings to the ACS-xxx-MF from a PC.

Step 1 : Install the eSearch Utility tool



The eSearch Utility can be obtained either from the companion CD at: CD:\Napdos\Software\eSearch\

Or from the ICP DAS FTP site at:

<http://ftp.icpdas.com/pub/cd/tinymodules/napdos/software/esearch/>

Step 2 : Follow the instructions in the Setup Wizard to complete the installation. After the installation has been completed, a new short cut for the eSearch Utility will be displayed on your desktop.



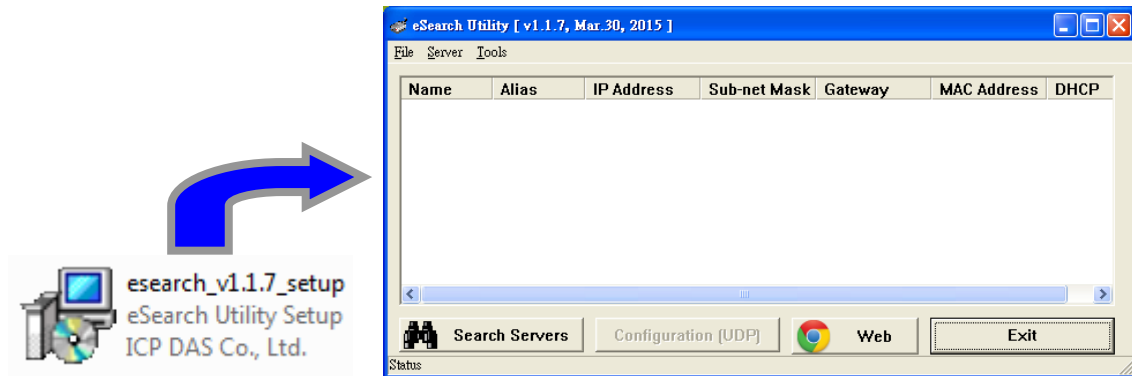
### 3.2 Using the eSearch Utility to Assign an IP Address

The factory default IP settings are as follows:

Item	Default
IP Address	192.168.0.1
Subnet Mask	255.255.0.0
Gateway	192.168.0.254(Fixed)

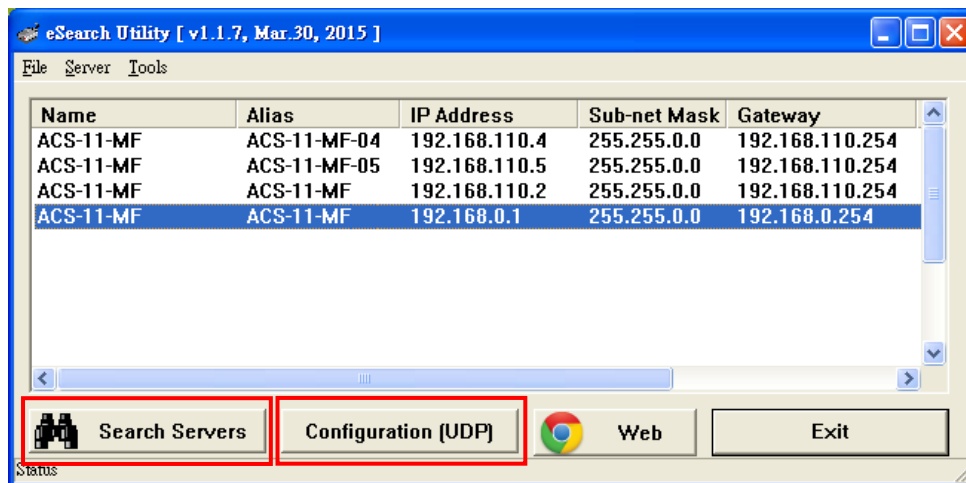
Step 1 : Run the eSearch Utility

Double-click the "eSearch Utility" shortcut on your desktop.



Step 2 : Press the "Search Servers" button to search for your module

After pressing the "Search Servers" button, the utility will perform a search of all ACS-xxx-MF modules on your network.



Step 3 : Click the "ACS-xxx-MF" item for which you want to change the IP setting and then click the "configuration(UDP)" button.

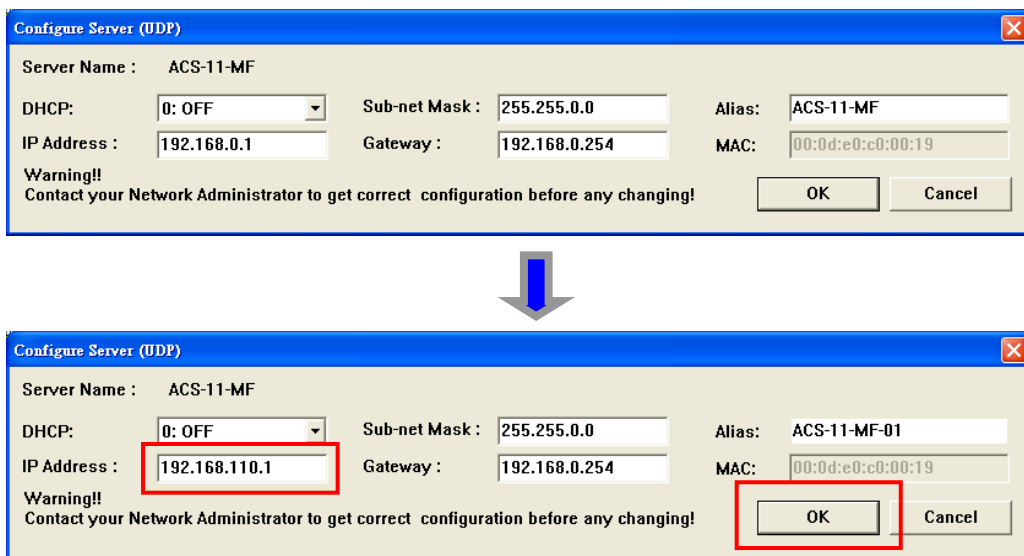
All ACS-xxx-MF series module are IP-based devices that may not be suitable for your network using the default IP address. Therefore, you must first assign a new IP address to the ACS-xxx-MF series module depending on your network settings.

---

After the search has been completed, click the name of the module, and then click the "configuration(UDP)" button to open the Configuration Server dialog.

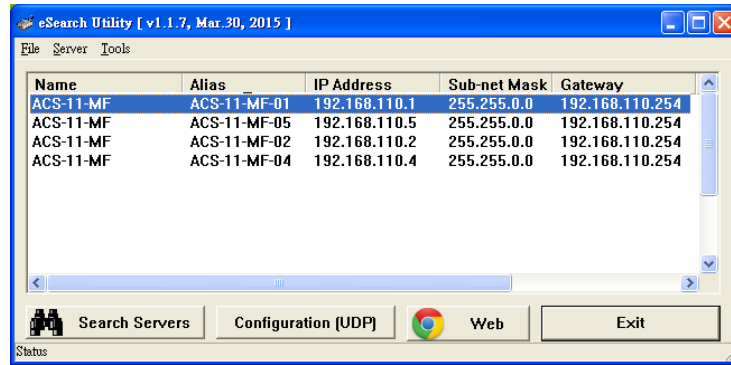
Step 4 : Assign a new IP address and then click the "OK" button

Contact your Network Administrator to obtain the correct network configuration information. Modify the network settings as necessary and then click the "OK" button. The ACS-xxx-MF series module will use the new settings immediately. (ACS-xxx-MF doesn't support DHCP function)



Step 5 : After save the settings, ACS-xxx-MF will automatically reboot and then press the "Search Servers" button to check the IP settings

After completing and saving the settings, ACS-xxx-MF will automatically reboot and then use the eSearch Utility to perform another search for the module to make sure that the IP settings are correct. See Step 2 for details.



### 3.3 Web Configuration

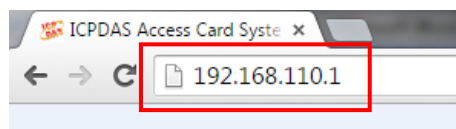
The ACS-xxx-MF series contains an advanced web configuration system that provides users with access to ACS-xxx-MF series applications through a standard web browser.

Step 1 : Open a browser

Use a standard internet browser to view the ACS-xxx-MF web pages, such as Google Chrome, Mozilla Firefox and Internet Explorer are reliable and popular internet browsers that can be used to configure ACS-xxx-MF series module.

Step 2 : Enter the URL address for the ACS-xxx-MF

If you haven't changed the default IP address of the ACS-xxx-MF module, please refer to section 3.2. Using the "eSearch Utility" to assign an IP address to configure it.



Step 3 : Enter the Login Password

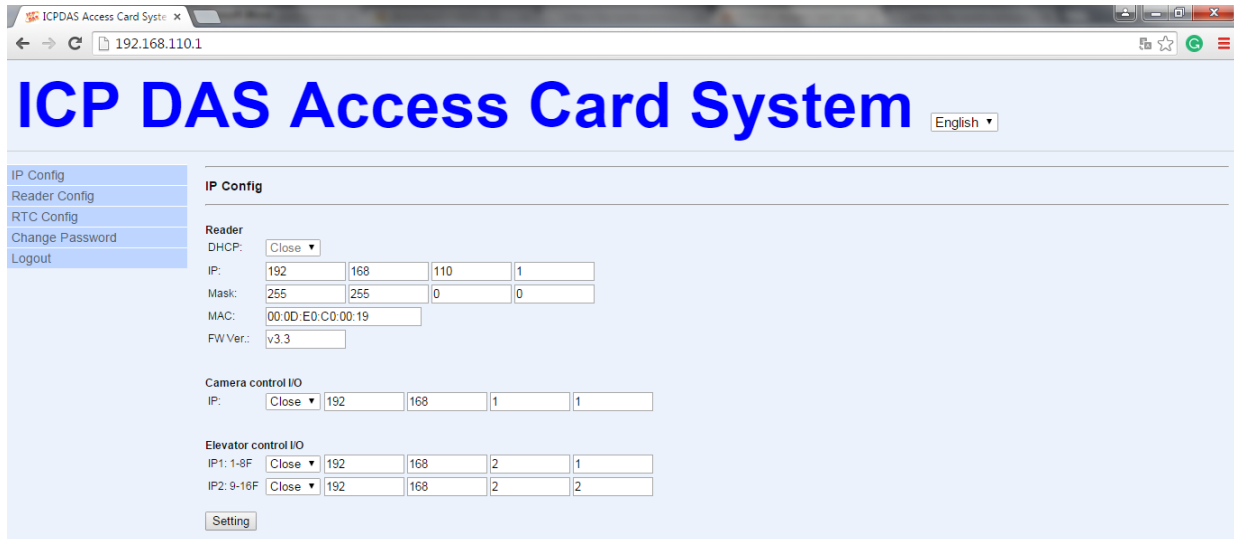
After entering the IP address, the main login dialog page will be displayed prompting you to enter a password. The factory default password is as follows; Click the "Submit" button to continue.

Item	Default
Password	Admin



Step 4: Log in to the ACS-xxx-MF web server

After logging into the ACS-xxx-MF web server, the "IP Config" page will be displayed.



The first section provides basic information related to the ACS-xxx-MF series module hardware and software including the Firmware version, MAC Address and IP Address, etc.

### 3.3.1 IP Address Configuration

Clicking the "IP Config" tab will display the network and control I/O connection setting of camera and elevator settings page allowing you verify the current settings and configure the IP address parameters, configure the general parameters for the ACS-xxx-MF device, each of which will be described in more detail below.

## Network Configuration

Reader

DHCP:  ▾

IP:

Mask:

MAC:

FW Ver.:

The following table provides an overview of the parameters contained in the Network Configuration section:

Item	Description
DHCP	<b>Open:</b> Dynamic Host Configuration Protocol (DHCP) is a network application protocol that automatically assigns an IP address to each device(ACS-xxx-MF does not support this feature)
	<b>Close(Default):</b> Static IP: If there is no DHCP server installed in your network, you can configure the network settings manually.
IP	Each ACS-xxx-MF device connected to the network must have its own unique IP address. This parameter is used to assign a specific IP address (Default:192.168.0.1)
Mask	This parameter is used to assign the subnet mask for the ACS-xxx-MF device. The subnet mask indicates which portion of the IP address is used to identify the local network or subnet. (Default:255.255.0.0)
MAC	This parameter is used to show the MAC address of the ACS-xxx-MF, which must be in the format FF-FF-FF-FF-FF-FF.
FW Ver.	Firmware version of the ACS-xxx-MF

## Camera and elevator control I/O connection IP Configuration

In addition to the card access control function, ACS-xxx-MF series modules also support floor control and camera control functions. Users can enable this feature in these setting contents.

**Camera control I/O**

IP: Close ▾

**Elevator control I/O**

IP1: 1-8F Close ▾

IP2: 9-16F Close ▾

The following table provides an overview of the parameters contained in the Camera and Elevator control I/O connection IP Configuration section.

#### Camera control I/O

Item	Description
IP	This parameter is used to assign a specific IP address of the tET-P2R2 that can control the camera with the external trigger signal. (Default:192.168.1.1)
Open/Close	Open: Enable this function Close: Disable this function (Default: Close)

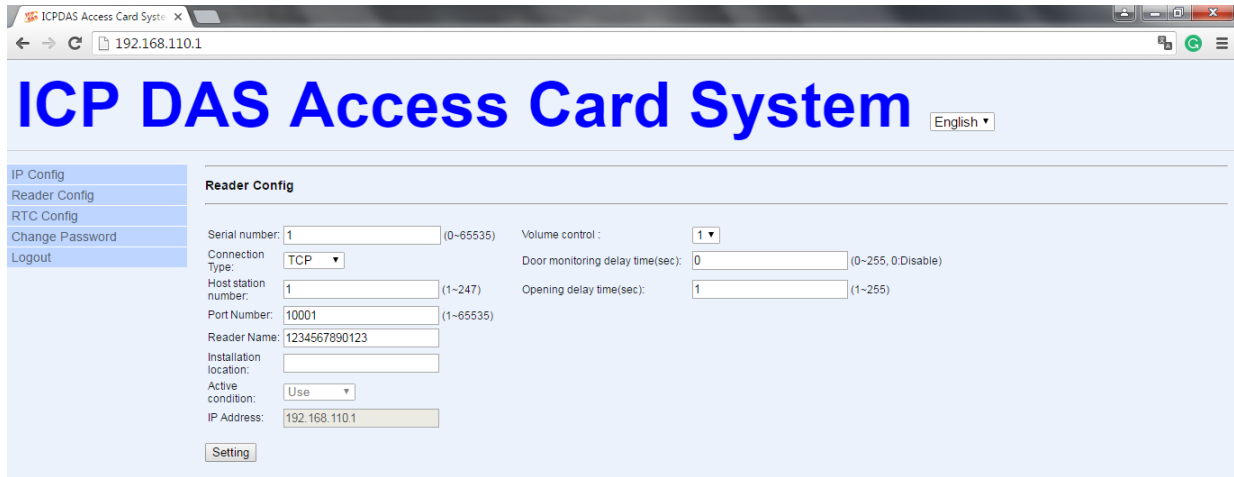
#### Elevator control I/O

Item	Description
IP1: 1-8F	This parameter is used to assign a specific IP address of the ET-7067 that can control the elevator (1F to 8F) for building floor control. (Default:192.168.2.1)
IP2: 9-16F	This parameter is used to assign a specific IP address of the ET-7067 that can control the elevator (9F to 16F) for building floor control. (Default:192.168.2.2)
Open/Close	Open: Enable this function Close: Disable this function (Default:Close)

### 3.3.2 Reader Configuration

Clicking the "Reader Configure" tab will display the settings page

allowing you verify the current settings and configure the general parameters for the ACS-xxx-MF device, each of which will be described in more detail below.

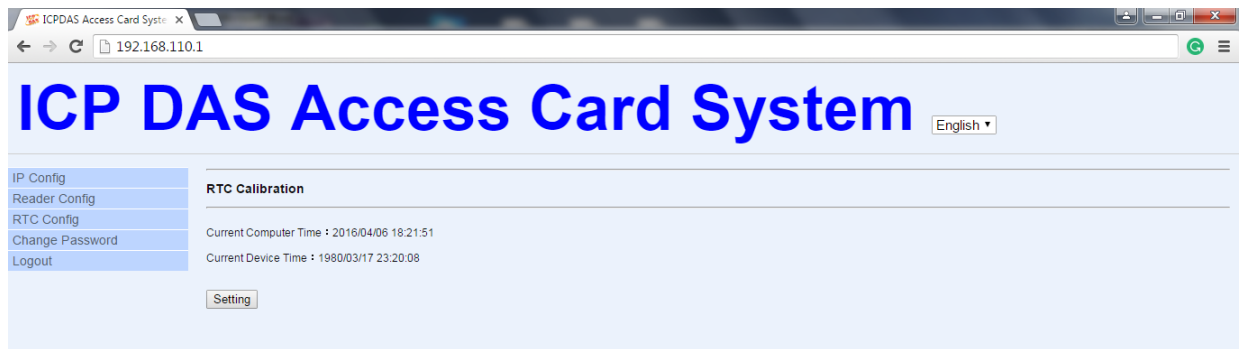


Item	Description
Serial Number	Serial number assigned to each unit and is used to track project. (Default:1) (Range:0~65535)
Connection Type	Select the connection interface. (Default:TCP)
Host station number	The station Identifier in RS-485 connection type application. (Default:1) (Range:1~247)
Port number	Communication port number of ACS-xxx-MF. (Default:10001) (Range:1~65535)
Reader Name	The module information indicates the name of the alias that is used to identify the module.
Installation location	The module information indicates the installation location that is used to identify the module.
IP Address	Display the IP address of the module.
Volume control	Volume control settings of the module. (Default:3) (Range:1~5)
Door monitoring delay time(sec)	If the time is reached, but the door is still not closed (DI 0 is on), then the relay(CN5) will be triggered. (Default:5)
Opening delay time(sec)	Relay(CN5) trigger time to open the electric lock. (Default:1)



### 3.3.3 RTC Configuration

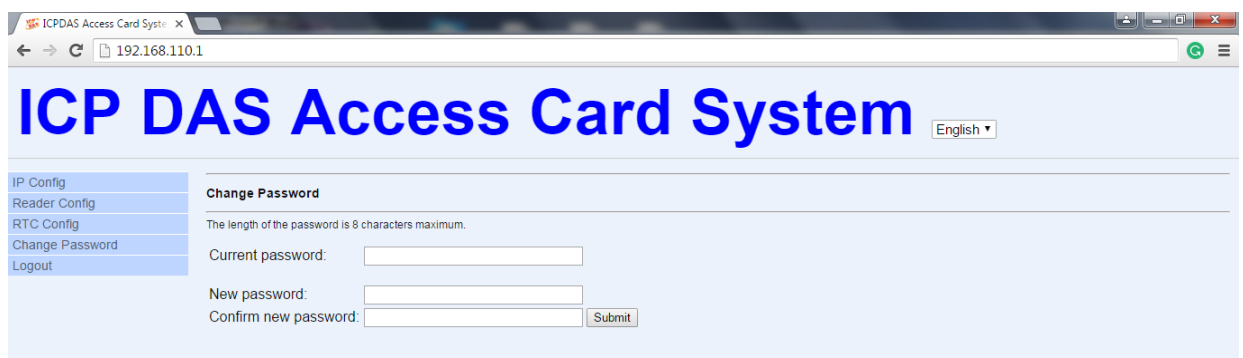
Clicking the "RTC Configure" tab will display the settings page allowing you verify the current system time settings of the ACS-xxx-MF device.



Item	Description
RTC Calibration	Reference computer time to set the system time of the module

### 3.3.4 Change Password Configuration

Clicking the "Change Password" tab will display the settings page allowing you change the login password settings of the ACS-xxx-MF device.



Item	Description
Change Password	Enter the Current password, New password and Confirm password information and then click the "Submit" button to finish configuring.

---

## 3.4 Installation

Before use, associated software configuration, the steps described as follows :

### Step 1: Install and setup MySQL operating environment

01. Download the XAMPP installation files as the following link, and install on computer. XAMPP is an easy to install Apache distribution containing MySQL, PHP.

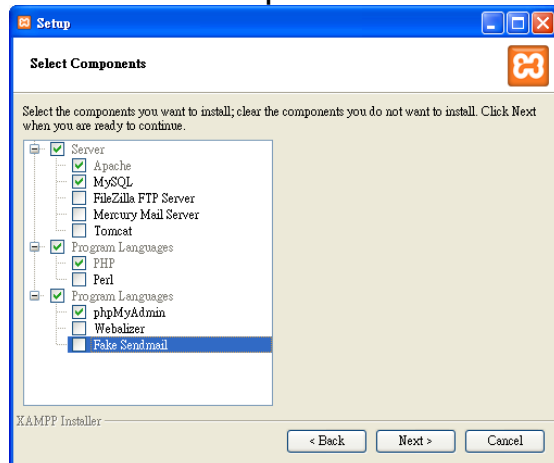
<http://sourceforge.net/projects/xampp/files/XAMPP%20Windows/>

Note. Windows XP or Windows 2003: Install version 1.8.2 of XAMPP that includes PHP version 5.4 or earlier.

Installation includes:

- a. Apache web server
- b. MySQL database
- c. PHPMyAdmin web database management program

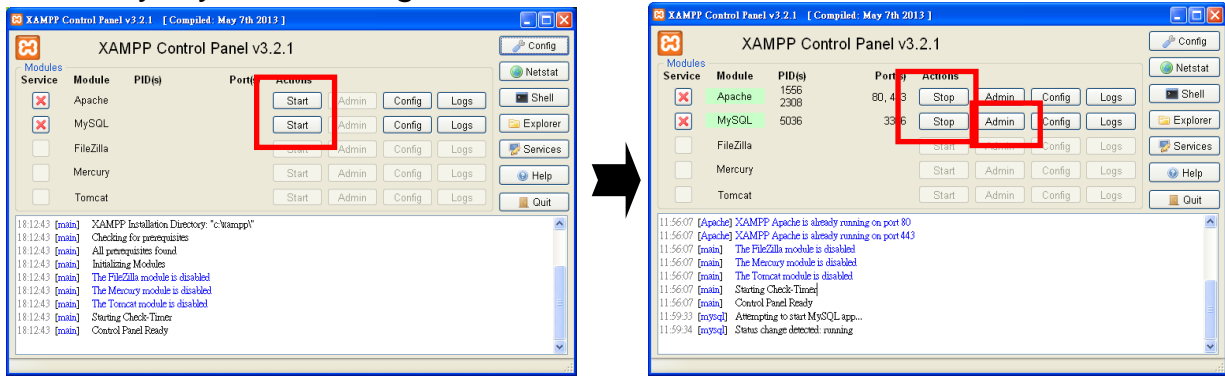
### 02. Select Components to install



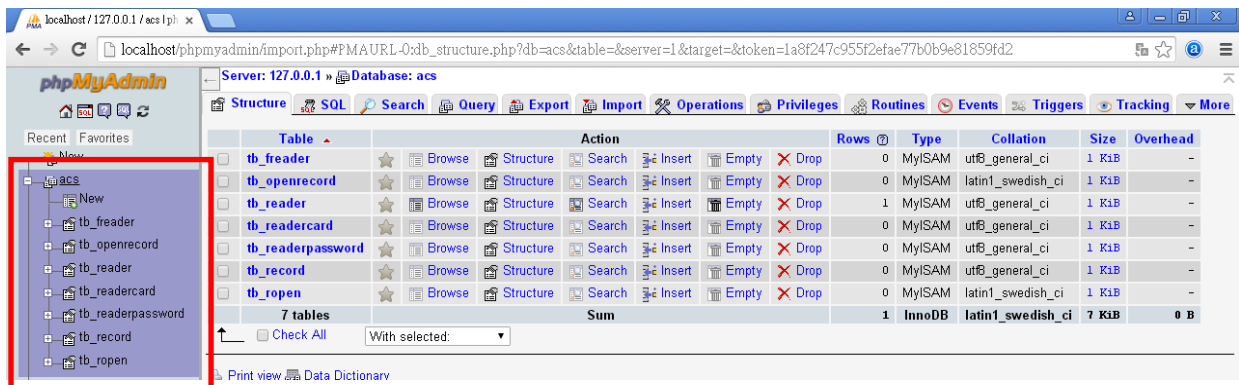
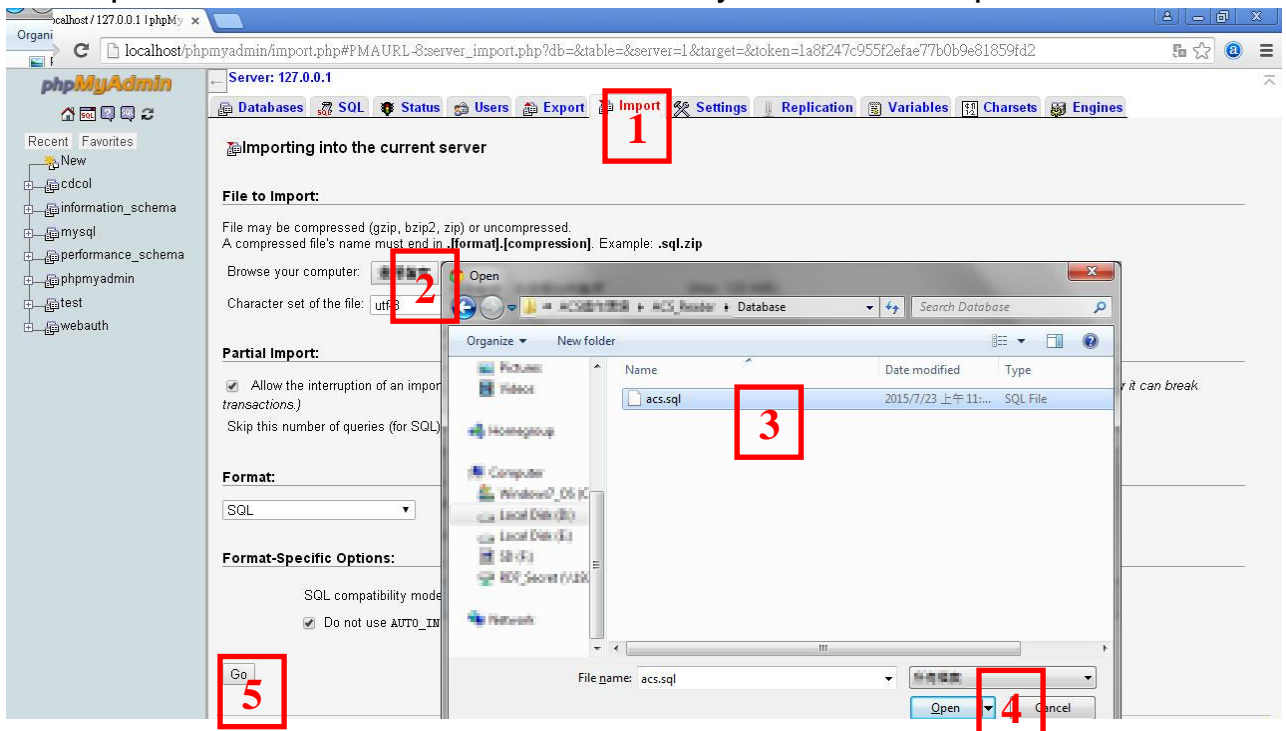
### 03. Completing the XAMPP setup



- 04. Launch XAMPP control panel and start Apache and MySQL service
- 05. Entry MySQL management environment



- 06. Import database file of access control system – acs.sql

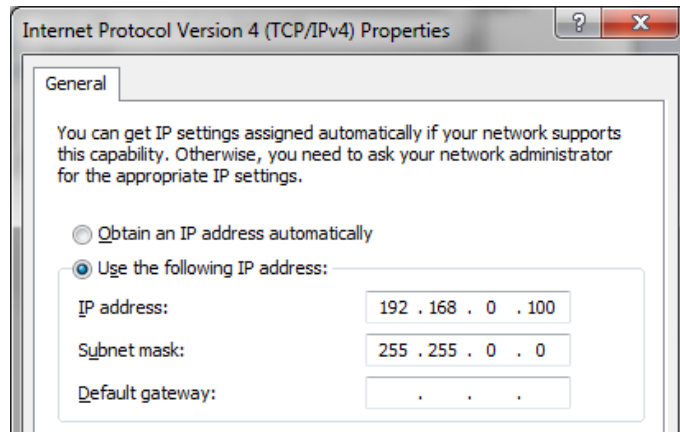


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## Step 2: Network setup

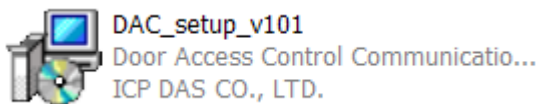
### 01. Network configuration and connection

- a. Entry the **IP address** as "192.168.0.x", where "x" is a number between 1 and 254 **except 1**, **Subnet mask** as "255.255.0.0". Finally, press "OK" button.



- b. Establish a network connection between PC and ACS-xxx-MF

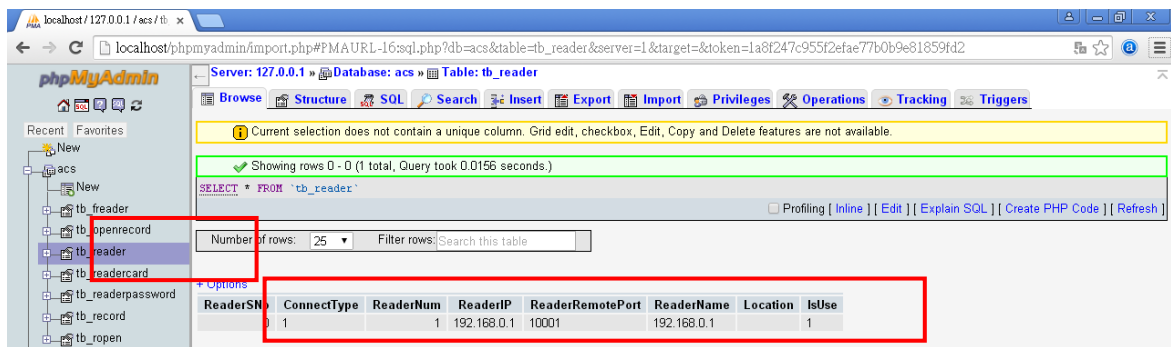
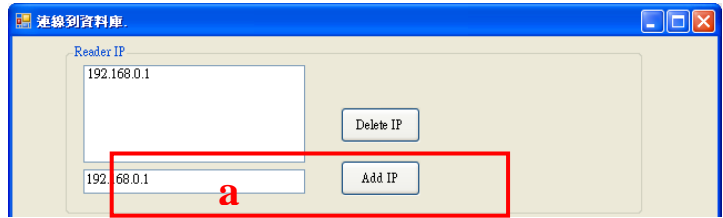
## Step 3: Install Door Access Control Communication Program



## Step 4: Configure Mifare card UID in the database

### 01. Launch Database Communication Program (RFIDCardReader\_DB.exe)

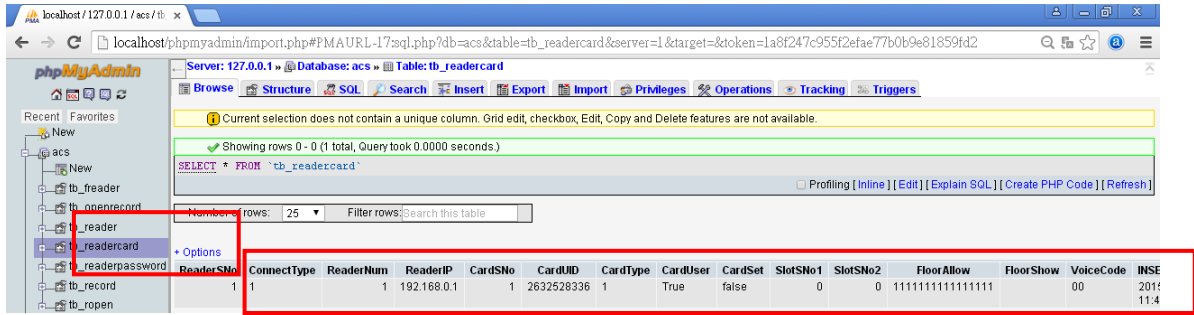
a. Fill and Add ACS-xxx-MF IP address: 192.168.0.1



- a. Fill card UID: 2632528336
- b. Fill voice number: 00
- c. Select ACS-xxx-MF IP address: 192.168.0.1
- d. Fill floor control selection: 1111111111111111(16F.....1F)
- e. Add/Modify UID

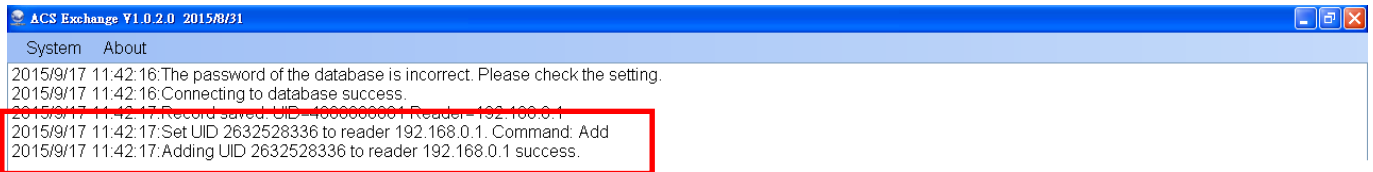


f. It will automatically add the card UID to the database



## 02. Launch Door Access Control Communication Program (RFIDCardReader.exe)

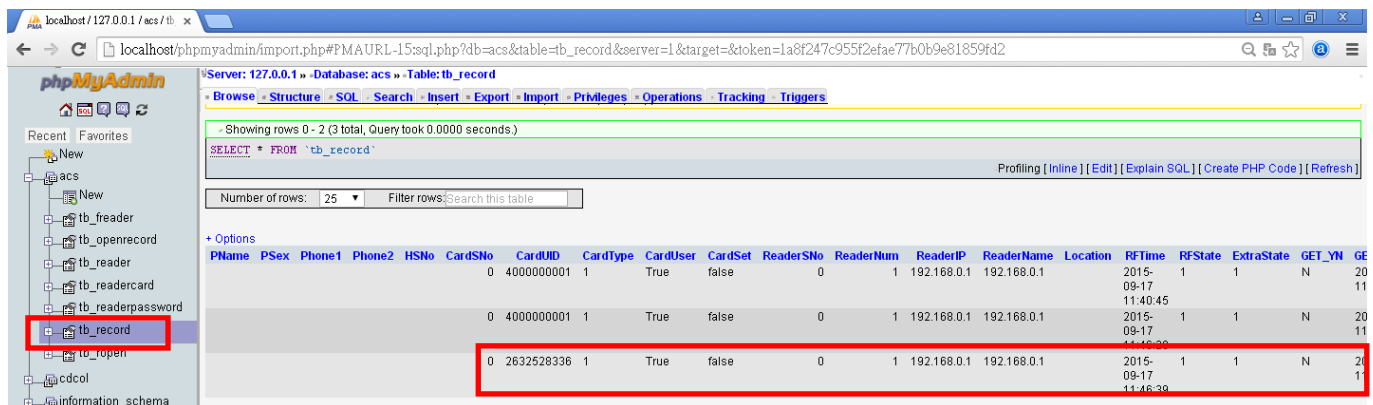
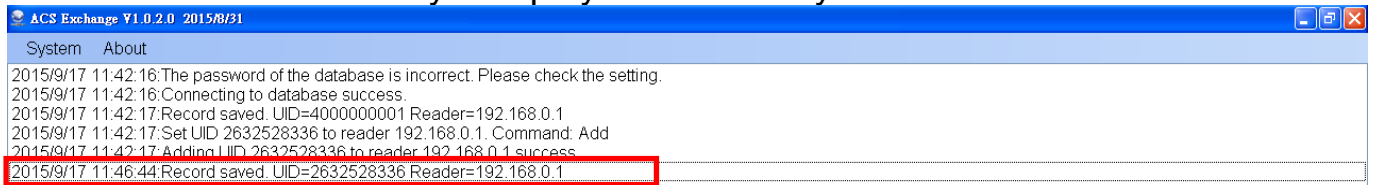
a1. The program will automatically add the card UID to the ACS-xxx-MF



a2. Place the Mifare card close to the ACS-xxx-MF

a3. ACS-xxx-MF will read the card UID and return to database via Door Access Control Communication Program

a4. Since the card UID is allowed, so ACS-xxx-MF will open the electronic lock relay and play card correctly voice



## 4. Communication command Example

After the establishment of the Ethernet wire connection between the PC and the ACS-11(P)-MF, please follows the sections below to learn how to configure the ACS-11(P)-MF.

### 4.1 Communication settings

The default ACS-11(P)-MF communication port number is 10001.

### 4.2 Command List

#### 4.2.1 Add Card Number

Function Code	Data Length	UID (8 byte)	Reserve (1 byte)	Elevator Floor Selection (2 byte)	Elevator Floor Open Time (1 byte)	Voice Code (2 byte)	Reserve (2 byte)	CRC H	CRC L
0x05	0x10		0x01				0x00 0x01		

UID: 0x9CEBA860 00000000(2632689760), if the data length is less than 8 bytes, please fill the remaining data fields to zero.

Elevator Floor Selection: 0x01 0x80 (1~8F, 9~16F; in this case 1F and 16F is allowed)

Elevator Floor Open Time: 0x05 (5 Second)

Voice Code: 0x30 0x31 (The 01 Voice Code)

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL

---

0xAE	0x01	0x01		
------	------	------	--	--

Response: Full number of cards

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x02		

### Example

Request: 05 10 9C EB A8 60 00 00 00 00 01 01 80 05 30 31 00 01 7A A9

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

Response: AE 01 02 8D 86 (Full)

## 4.2.2 Delete Card Number

Function Code	Data Length	UID (8 byte)	CRCH	CRCL
0x06	0x08			

UID: 0x9CEBA860 (2632689760), if the data length is less than 8 bytes, please fill the remaining data fields to zero.

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

### Example

Request: 06 08 9C EB A8 60 00 00 00 00 7E 33

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)



### 4.2.3 Delete All Cards' Number

Function Code	Data Length	Reserve (2 byte)	CRCH	CRCL
0x07	0x02	0x44 0x45		

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

#### Example

Request: 07 02 44 45 1B 9D

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

### 4.2.4 Card Number Inquiry

Function Code	Data Length	UID (8 byte)	CRCH	CRCL
0x0A	0x08			

UID: 0x9CEBA860 (2632689760), if the data length is less than 8 bytes, please fill the remaining data fields to zero.

Response (Have this card)

Function Code	Data Length	UID (8 byte)	Elevator Floor Selection (2 byte)	Voice Code (2 byte)	CRCH	CRCL
0xAA	0x0C					

UID:0x9CEBA860 (2632689760) , if the data length is less than 8 bytes, please fill the remaining data fields to zero.

Elevator Floor Selection: 0x01, 0x80 (1~8F, 9~16F; in this case 1F and 16F is allowed)

Voice Code: 0x30 0x31 (The 01 Voice Code)

Response (No such card)

Command	Len	Result	CRCH	CRCL
0x80	0x1	0x80		

Example

Request: 0A 08 9C EB A8 60 00 00 00 00 00 D4

Response: AA 0C 9C EB A8 60 00 00 00 00 01 80 30 31 d8 b8 (Have this card)

Response: 80 01 80 80 AA (No such card)

4.2.5 Add Password Number

Function Code	Data Length	Password (8 byte)	Reserve (1 byte)	Elevator Floor Selection (2 byte)	Elevator Floor Open Time (1 byte)	Voice Code (2 byte)	Reserve (2 byte)	CRC H	CRC L
0x42	0x10		0x01				0x00 0x01		

Password: 0x01020304 (1234), the password data length is 4 byte, please fill the remaining data fields to zero

Elevator Floor Selection: 0x01, 0x80 (1~8F, 9~16F; in this case 1F and 16F is allowed)

Elevator Floor Open Time: 0x05 (5 Second)

Voice Code: 0x30 0x31 (The 01 Voice Code)

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

Response: Card is full

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x02		

---

### Example

Request: 42 10 01 02 03 04 00 00 00 00 01 01 80 05 30 31 00 01 E2 04

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

Response: AE 01 02 8D 86 (Full)

## 4.2.6 Delete Password Number

Function Code	Data Length	Password (8 byte)	CRCH	CRCL
0x43	0x08			

Password: 0x01020304 (1234), the password data length is 4 byte, please fill the remaining data fields to zero

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

### Example

Request: 43 08 01 02 03 04 00 00 00 00 3A 94

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

## 4.2.7 Delete All Passwords' Number

Function Code	Data Length	Reserve (2 byte)	CRCH	CRCL
0x44	0x02	0x44 0x45		

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

Example

Request: 44 02 44 45 5B 68

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

### 4.2.8 Inquire Access Record

Function Code	Data Length	Reserve (2 byte)	CRCH	CRCL
0x27	0x02	0x52 0x54		

Response: Success

Function Code	Data Length	UID (8 Byte)	Access Time (7 Byte)	Access Type	CRCH	CRCL
0x88	0x10					

UID: 0x9CEBA860 (2632689760), if the data length is less than 8 bytes, please fill the remaining data fields to zero.

Access Time: 0x07 E0 04 12 0A 24 30

Year	0x07 0xE0 (2016)
Month	0x04 (4)
Day	0x12 (18)
Hour	0x0A (10)
Minute	0x24 (36)
Second	0x30 (48)

Access Type:

Legal	0x01
Invalid Card Number	0x02
Invalid Verification Key	0x03
Invalid Password	0x04
Door Position Detection Error	0x05
RFID Sensor Error	0x06

Elevator Control Error	0x07
Camera Control Error	0x08

Response: No Record

Function Code	Data Length	Result	CRCH	CRCL
0x80	0x01	0x80		

Example

Request: 27 02 52 54 90 01

Response: 88 10 9C EB A8 60 00 00 00 00 07 E0 04 12 0A 24 30 01 9E C7

Response: 80 01 80 80 AA (No Record)

#### 4.2.9 Delete Access Record

Function Code	Data Length	Reserve (2 byte)	CRCH	CRCL
0x28	0x02	0x52 0x54		

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

Example

Request: 28 02 52 54 7E D5

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

#### 4.2.10 Delete All Access Records

Function Code	Data Length	Reserve (2 byte)	CRCH	CRCL
0x52	0x02	0x44 0x45		

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

#### Example

Request: 52 02 44 45 65 54

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

#### 4.2.11 Configure System Time

Function Code	Data Length	System Time (7 Byte)	CRCH	CRCL
0x10	0x07			

System Time: 0x07 E0 04 12 0A 24 30

Year	0x07 0xE0 (2016)
Month	0x04 (4)
Day	0x12 (18)
Hour	0x0A (10)
Minute	0x24 (36)
Second	0x30 (48)

Response: Success

Function Code	Data Length	Result	CRCH	CRCL
0xAF	0x01	0x01		

---

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

Example

Request: 10 07 07 E0 04 12 0A 24 30 6E A5

Response: AF 01 01 DE 81 (Success)

Response: AE 01 01 EE B6 (Fail)

#### 4.2.12 Check Door Position

Function Code	Data Length	Reserve	CRCH	CRCL
0x50	0x02	0x52 0x54		

Response

Function Code	Data Length	Status	CRCH	CRCL
0xAF	0x01			

Status: 1=>Close, 2=>Open

Response: Fail

Function Code	Data Length	Result	CRCH	CRCL
0xAE	0x01	0x01		

Example:

Request: 50 02 52 54 C8 12

Response: AF 01 01 DE 81 (Close)

Response: AF 01 02 BD B1 (Open)

Response: AE 01 01 EE B6 (Fail)

---

## 4.3 CRC Calculation (CCITT-16)

(C# Example)

```
public static byte[] HexStringToByteArray(string hexString)
{
    if (hexString.Length != 4) hexString = "0" + hexString;

    byte[] HexAsBytes = new byte[hexString.Length / 2];

    for (int index = 0; index < HexAsBytes.Length; index++)
    {
        string byteValue = hexString.Substring(index * 2, 2);
        HexAsBytes[index] = byte.Parse(byteValue, NumberStyles.HexNumber,
        CultureInfo.InvariantCulture);
    }
    return HexAsBytes;
}

private byte[] CRC_16(byte[] data, int DataLength)
{
    uint CRC_Polynomial = 0x1021;
    uint CRC_Init = 0xFFFF;
    for (int i = 0; i < DataLength; i++)
    {
        CRC_Init = CRC_Init ^ ((uint)data[i] << 8);
        for (int j = 0; j < 8; j++)
        {
            if (System.Convert.ToBoolean(CRC & 0x8000))
                CRC_Init = (CRC_Init << 1) ^ CRC_Polynomial;
            else
                CRC_Init = (CRC_Init << 1);
        }
    }

    return HexStringToByteArray(Convert.ToString((UInt16)(CRC ^ 0xFFFF), 16));
}
```



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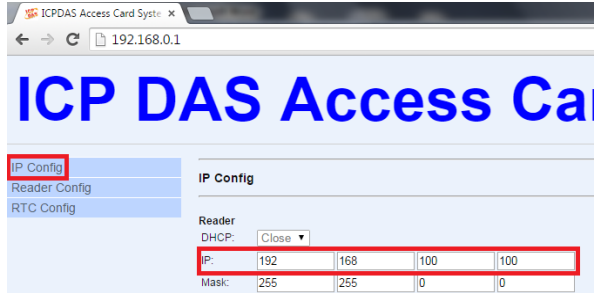
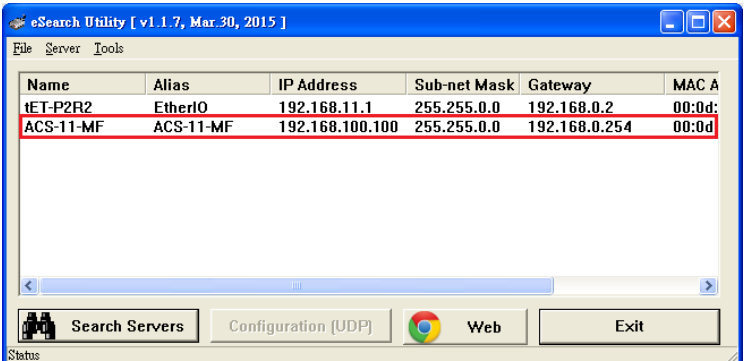
Example :

Input: 0xAF, 0x01, 0x01

Data length: 3

Output : 0xDE(CRCH), 0x81(CRCL)

## Troubleshooting

Item	Problem Description	Solution
1	Power Failure (PWR LED Off)	1. Please return to the ICP DAS for inspection and repair
2	Cards can not be used	1. Make sure cards support Mifare S50 standard (ISO 14443-A) 2. EM and HID cards are not supported
3	How to find out IP address of ACS-xxx-MF?	<p>1. Entry the default IP operation mode            Step1. Press and hold the No. 1 key            Step2. Reset the power of ACS-xxx-MF            Step3. Now the PWR led flashes and IP address is "192.168.0.1"            Step4. Enter the settings web page then find out IP address</p>  <p>2. Use eSearch Utility            Step1. Launch eSearch.exe            Step2. Press "Search Servers" button then find out IP address</p> 

### ● Technical Support

If you have problems about using the ACS-xxx-MF series module, please contact ICP DAS Product Support.

Email: [service@icpdas.com](mailto:service@icpdas.com)