

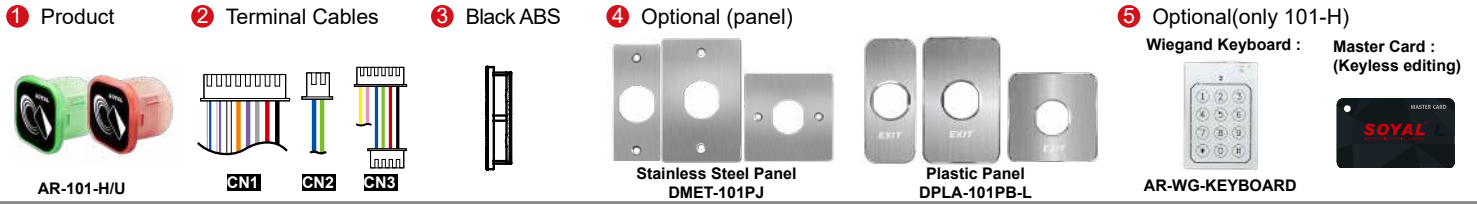
# Smart Mini Access Controller / Ultra-mini dual-band RS485/WG Proximity Reader AR-101-H / AR-101-U



## Table of Contents

<b>01. Content</b> .....	01
<b>02. Feature</b> .....	01
<b>03. Connector Table</b> .....	01
<b>04. Installation with Stainless Steel Panel</b> .....	02
<b>05. Diagram</b> .....	02
<b>06. About Master Card</b> .....	03
<b>07. Mode4 / Mode6 / Mode8</b> .....	03
<b>08. Operation process</b> .....	03
• 8-1. Enter/ Exit Program Mode	
• 8-2. Set up the password [Only for connect to external K-series reader]	
• 8-3. Lift control	
• 8-4. Setting Up the Arming [Only for connect to external K-series reader]	
<b>09. Compound Command Function List</b> .....	05
<b>10. Factory Reset</b> .....	05
<b>11. Command List</b> .....	06

## 01. Content



## 02. Feature

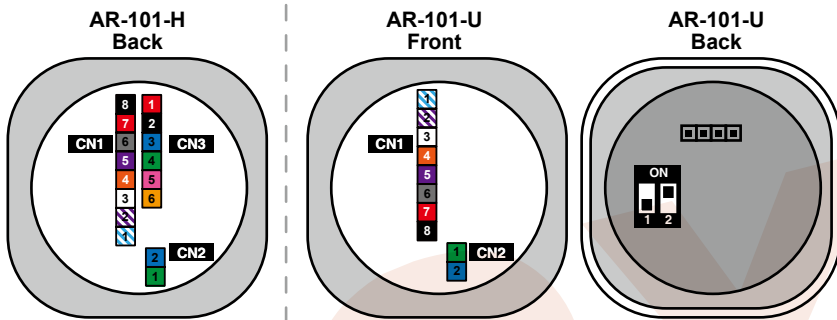
### AR-101-H

- Selectable working frequencies: 13.56MHz
- Including the input of door contact, offering the alarm system of both door opening too long and being forced to open
- Built-in Multi-Output: Door Lock/ Alarm/ Security trigger signal
- Have the "MASTER CARD" functions, convenient operation
- Mini Flush-Mounted design gives neat installation
- Elegant design with colorful Edge Indicator

### AR-101-U (RS485/WG)

- Selectable working frequencies: 125KHz/13.56MHz
- From the DIP switch to select to be RS485 or WG output reader
- Flexible to integrate with SOYAL or other access control system
- Interface of the Proximity Reader have WG26/34 (By order)
- Elegant design with colorful Edge Indicator
- Flush-Mounted Design gives neat installation

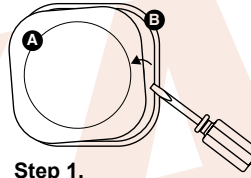
## 03. Connector Table



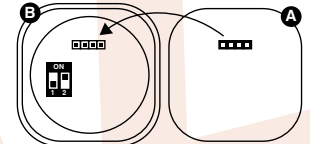
※ Dip-switch is only available for AR-101-U

\* Dip-switch must adjust at 2nd layer of mainboard. Highly suggest to fixed WG34/26 before order

How to adjust dip-switch:



**Step 1.**  
Open lightly the upper board cover with screwdriver



**Step 2.**  
Adjust the DIP switch according to the function and put upper cover back on the upper board

### AR-101-H CN1 8PIN Cable

Function	Wire	Color	Description
Lock Relay	1	Blue White	(N.O.) DC24V1Amp
	2	Purple White	(N.C.) DC24V1Amp
	3	White	(COM) DC24V1Amp
Door Contact	4	Orange	Negative Trigger Input
Exit Switch	5	Purple	Negative Trigger Input
Alarm	6	Gray	Transistor Output Max. 12V/100mA (Open Collector Active Low)
Power	7	Thick Red	DC 9~24V
	8	Thick Black	DC 0V

### AR-101-H CN3 4PIN Cable

Function	Wire	Color	Description
Wiegand Reader/ Ex. Keyboard	1	Thick Red	DC 9~24V
	2	Thick Black	DC 0V
	3	Thick Blue	Wiegand DAT:1 Input
	4	Thick Green	Wiegand DAT:0 Input
	5	pink	---
	6	Yellow	---

### AR-101-H/U CN2 2PIN Cable

Function	Wire	Color	Description
RS-485	1	Thick Green	RS-485(B-)
	2	Thick Blue	RS-485(A+)

### AR-101-U Dip-switch & CN1 8PIN Cable

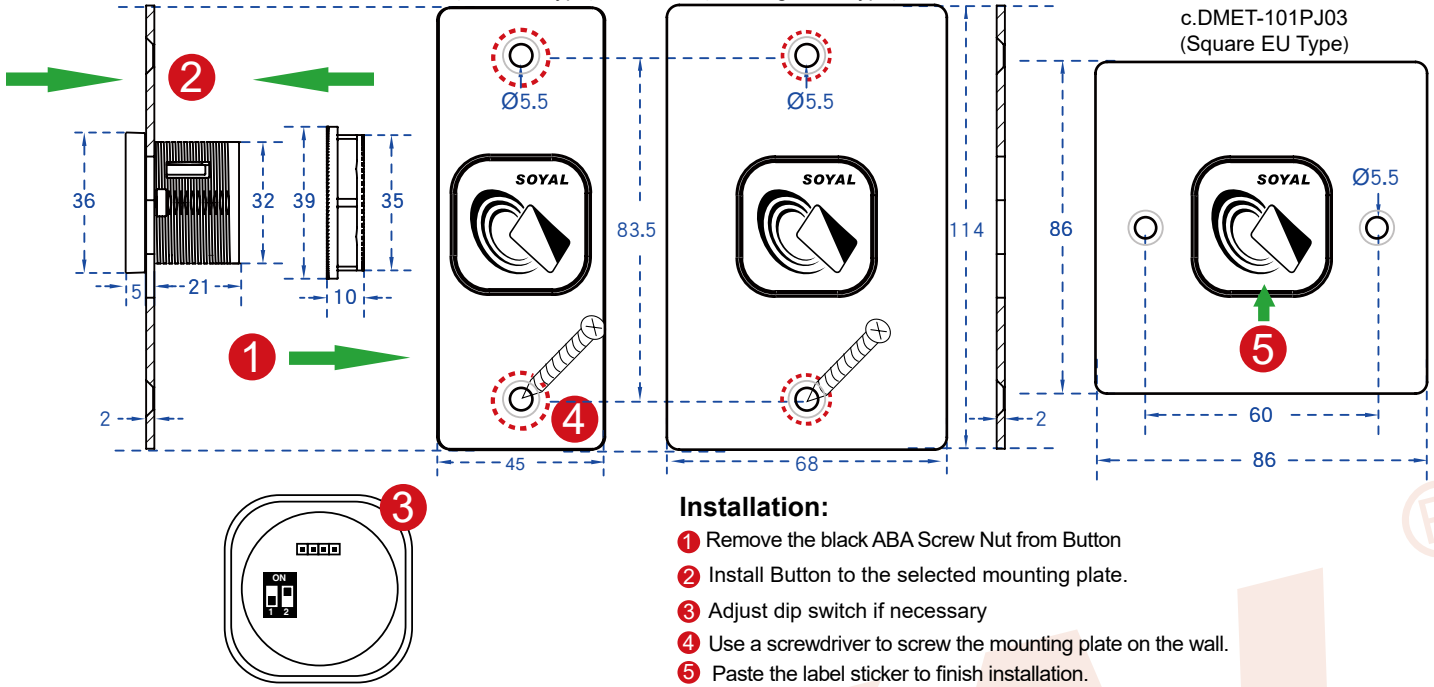
	Wire	Color	Function		Description
			RS-485 Mode/ Polling Mode (Connected to AR-716-E16)	WG Mode	
Dip-switch-SW1	---	---	ON	OFF	
Dip-switch-SW2	---	---	ON	ON	
Description	---	---	Auto-open Time Zone		WG34 (default) WG26
			Auto Open with swiping 1st valid card at Auto-open Time Zone	Auto-open door at auto open zone	
CN1 Cable	1	Blue White	---	WG Output	WG DATA 1 Output
	2	Green White	---		WG DATA 0 Output
	3	White	Door Lock Output	---	Transistor Output Max. 24V/1.5A (Open Collector Active Low)
	4	Orange	Door Sensor	LED R	Negative Trigger Input
	5	Purple	Exit Button	LED G	Negative Trigger Input
	6	Gray	Buzzer	---	Transistor Output Max. 12V/100mA (Open Collector Active Low)
	7	Thick Red	Power	---	DC 12V
	8	Thick Black		---	DC 0V

## 04. Installation with Stainless Steel Panel

a.DMET-101PJ01 (Slim US Type)

b.DMET-101PJ02 (Rectangle US Type)

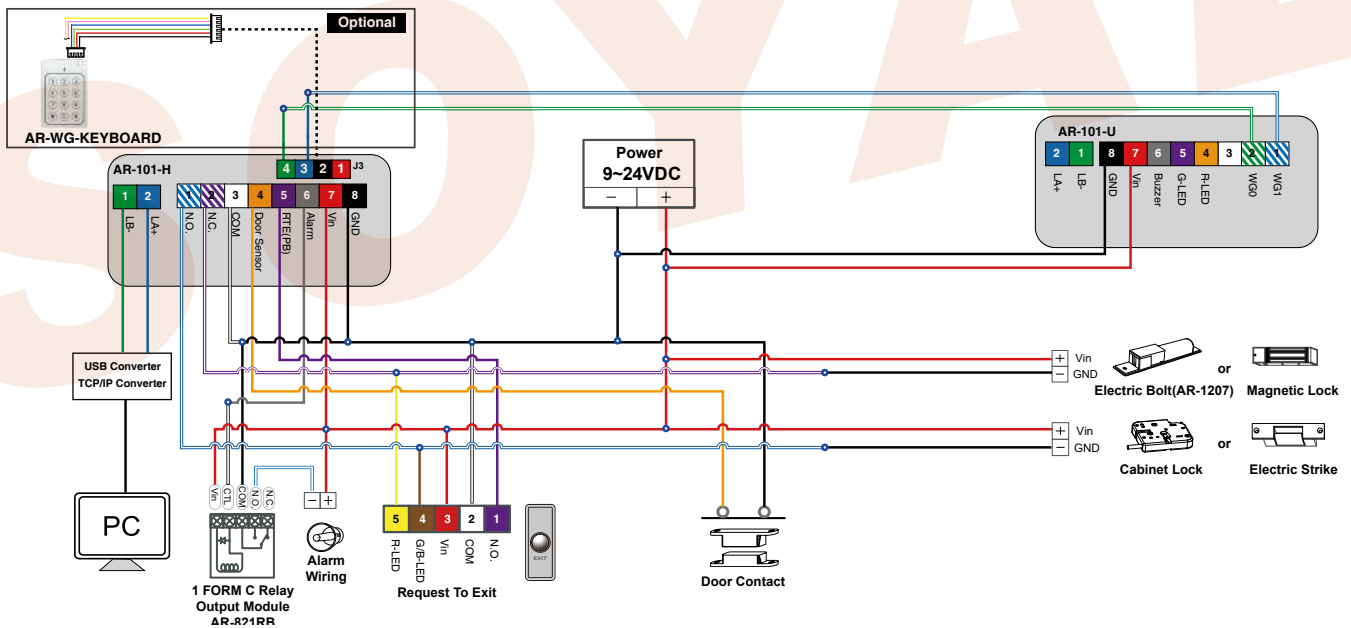
c.DMET-101PJ03 (Square EU Type)



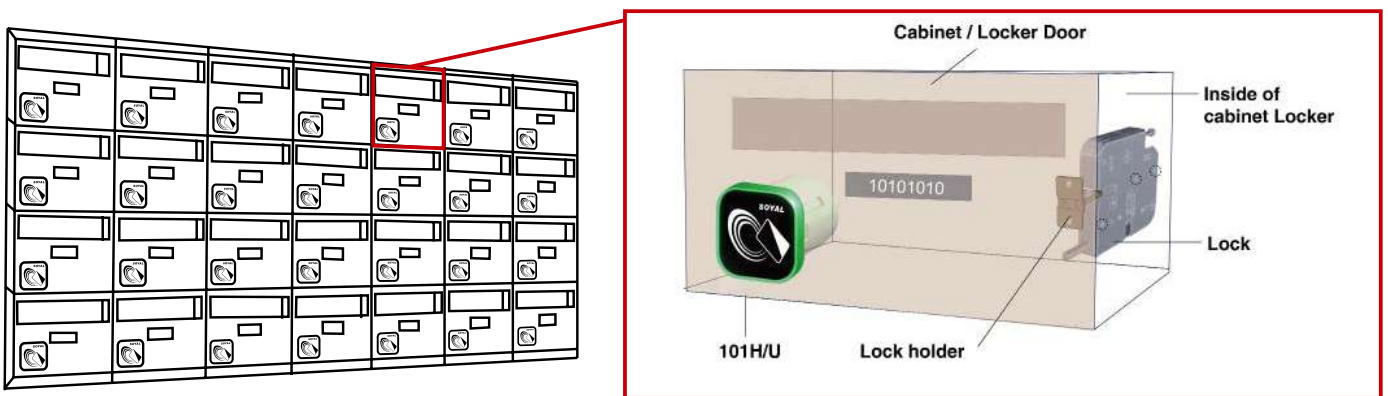
### Installation:

- 1 Remove the black ABA Screw Nut from Button
- 2 Install Button to the selected mounting plate.
- 3 Adjust dip switch if necessary
- 4 Use a screwdriver to screw the mounting plate on the wall.
- 5 Paste the label sticker to finish installation.

## 05. Diagram



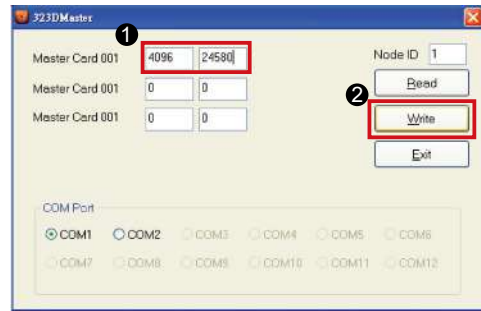
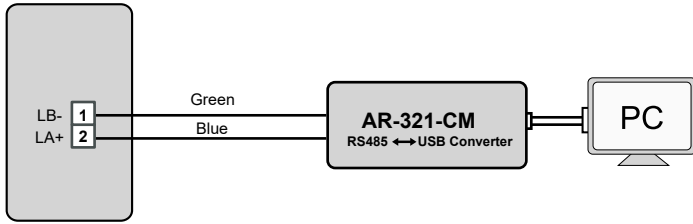
## Application



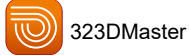
## 06. About Master Card (Below programming is for AR-101-H only)

### MASTER CARD Setting for keyless editing

- Plug in **22** cable, the wire connection is as below figure. After connection, then have power transmission to controller.



- Use the MASTER CARD software



- Input the MASTER CARD number, and press [Write].
- Cut off and then transmit the power, the master card number will be activated.
- Present the card, and the reader will flash green light 3 times and sound 3 beeps. Then the card becomes MASTER CARD and accesses programming mode. If MASTER CARD is presented again, it will exit programming mode.

### Adding Tag

1. Present Master Card
2. After 3 short beeps [Access programming mode]
3. Present the new card or cards one by one till finished the adding.
4. Present Master Card [Exit programming mode]

### Deleting All Tags

1. Present Master Card
2. After 3 short beeps [Access programming mode]
3. 1 long warning beep after 2sec.
4. 5 short beeps after 5sec: cards cleared

Once MASTER CARD is presented after one warning beep, all card data will be cleared.

## 07. Mode4 / Mode6 / Mode8

Mode	Networking/ Stand-Alone	User Capacity	Access Mode	Auto-show Duty time	Event log Capacity	120 Holidays	Anti force	Time Zone	Lift Control	Anti-pass- back
M4	Networking/ Stand-Alone	1,024	1. Card only 2. Card and PIN (4-digit PIN)+ # 3. Card or User address (5-digit) + Individual PIN (4-digit individual PIN) + #	Yes	1,200	Yes	Yes	No	32	Yes
M6	Stand-Alone	65,535	1. Card only 2. Card and PIN (4-digit public PIN= Arming PWD)+ # 3. Card or PIN (4-digit public PIN= Duress code)	No	No	No	No	No	No	No
M8 (Default Value)	Networking/ Stand-Alone	1,024	1. Card only 2. Card and PIN (4-digit individual PIN)+ # 3. Card or PIN (4-digit individual PIN)	Yes	1,200	Yes	Yes	No	32	Yes

- ※ **M6**: the user capacity can be 65535 because it only reads 5-digits **CARD CODE**, while in **M4/M8** it reads both **SITE CODE** and **CARD CODE**(10 digits).
- ※ **Mode 6**, the number of users up to 65535, since it reads **CARD CODE**(5 digits) only, unlike that Mode4/Mode8 read **SITE CODE** and **CARD CODE**(10 digits). **If Access Mode setting to use the PIN**, it need to external the K-series Readers.
- ※ Default Card UID Length is 4 (Could not change by command and only be able to change by customized firmware)
- ※ **Set up M4/M6/M8** : Enter program mode → 04 \*N# [N=4/6/8]

(Note: The modification of controller mode between M4/M8(networking) and M6(standalone) will reset the data, user data will be required to rebuild.)

## 08. Operation process

### 8-1. Enter/ Exit Program Mode

- Enter the program mode

Input \*123456# or \*PPPPPP#

[e.g.] The Default Value= 123456, if already changed the Master Code= 876112, input \*876112# → program mode accessed

- Exit the program mode

Input \* #

- Master Code modification

Access programming mode → 09 \*PPPPPPRRRRRR# [Input the 6-digit new master code twice.]

[e.g.] Set the Master code to be 876112, input \*123456# → 09 \*876112876112#

## 8-2. Set up the password [Only for connect to external K-series reader]

### • M4/M8: Individual pass code

**Card or PIN:** Access programming mode → 12 \* UUUUU \* ??? # [e.g. User address: 00001 and pass code: 1234, input 12 \* 00001 \* 1234 #]

**Card and PIN:** Access programming mode → 13 \* UUUUU \* ??? # [e.g. User address: 00001 and pass code: 1234, input 13 \* 00001 \* 1234 #]

### • M6: Public pass word

**Card or PIN:** Access programming mode → 15 \* ??? # [Input 4-digit pass code, default value: 4321]

**Card and PIN:** Access programming mode → 17 \* ??? # [Input 4-digit pass code, default value: 1234; PPPP=0000: change into Card Only]

**The default value of access function of M6 is Card and PIN, it will have 3 beeps for hinting you input PIN number after card presentation. Access function modification please refer the table below:**

Access Mode	Command		Description
Card and PIN	17 * ??? #	15 * 0000 #	???=4-digit PIN(0001~9999 ; default value=1234)
Card only	17 * 0000 #	15 * 0000 #	
Card or PIN	17 * 0000 #	15 * ??? #	???=4-digit PIN(0001~9999 ; default value=4321)

## 8-3. Lift control

Connect with **AR-401RO16B** to control floors which the user will be able to access.

### • Enable

Access programming mode → 24 \* 002 # [002= enable lift control]

### • Single floor

Access programming mode → 27 \* UUUUU \* FF #

UUUU=User Address FF=Floor number (01~32 floor)

[e.g.] User address NO. 45, allow to access the 24th floor: 27 \* 00045 \* 24 #

### • Multi floors

Access programming mode → 21 \* UUUUU \* S \* FFFFFFFF #

[UUUU=User address S: 4 sets of lift control (Input: 0~3) FFFFFFFF: 8 floors setting (F=0=Disable, F=1=Enable)]

[e.g.] User address NO. 168, only to the 6th and the 20th floor:

Access programming mode → 21 \* 00168 \* 0 \* 00100000 # → 21 \* 00168 \* 2 \* 00001000 #

Set	Floor/ Stop							
	F	F	F	F	F	F	F	F
0	8	7	6	5	4	3	2	1
1	16	15	14	13	12	11	10	9
2	24	23	22	21	20	19	18	17
3	32	31	30	29	28	27	26	25

## 8-4. Setting Up the Arming [Only for connect to external K-series reader]

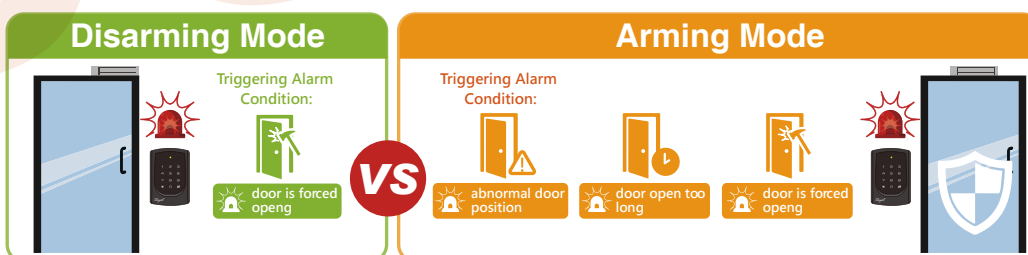
In the security management of access control system, the controller or reader status is divided into Standby Mode or Disarming Mode and Arming Mode. The conditions for triggering the alarm in these two modes is different, as shown in the following comparison:

### • Alarm conditions:

1. Door is forced open

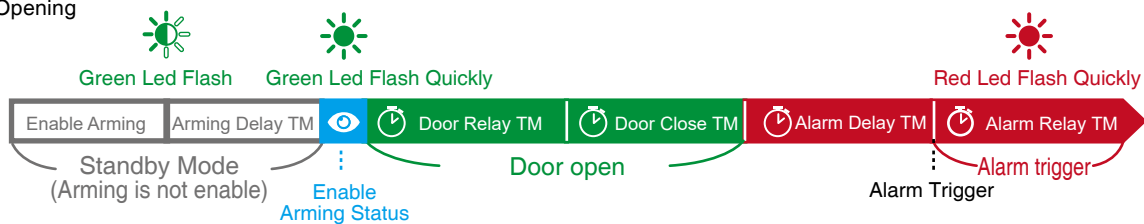
### • Application:

- Door open too long:** Door is open longer than door relay time plus door close time.
- Force open** (Opened without a valid user card): Access by force or illegal procedure.
- Door position abnormal:** Arming is enabled and the power is suddenly off then on.

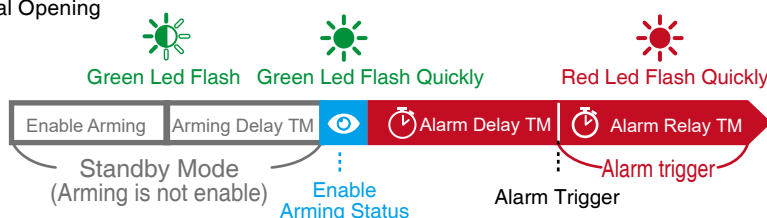


### • Arming Setting and Alarm Trigger Procedure :

1. Normal Opening



2. Abnormal Opening



• **Enable/Disable Arming status (for M4/M8):**

Enter Programming Mode
<b>Enable:</b> Enter program mode → * * #
<b>Disable:</b> Enter program mode → * #

<b>Without Enter Programming Mode (Standby Mode): Enter Arming Code</b> (default value of arming PWD is: 1234)
<b>After door open :</b> The normal procedure to open door → <b>Input 4-digit arming PWD</b> → #
<b>Do not open the door :</b> * → <b>Input 4-digit arming PWD</b> → <b>Present a valid card</b>

- ※ [The normal procedure to open door] can refer to [Access Mode].
- ※ Read the [Command List-Arming /Duress Function Setting] below to modify arming PWD.
- ※ M6 is Standalone Mode, the mode is without Arming /Duress Function.

**More Details:**

- [SOYAL Security Related Function](#)

**09. Compound Command Function List**

**Weighted Value Manual :**

**Step 1:**

Select the "Function" that you need for each Compound Command category (20 \*, 24 \*, etc)

**Step 3:**

Subtract the "Value" of each Option with Selection.  
**Function = [0(deactive)\*Value] ; [1(activate)\*Value]**

**Step 2:**

"Selection" of the function that you need is either have 0 or 1 value.

**Step 4:**

Add up all of the Function per Compound Command (20 \*, 24 \*, etc)

**Table 9-1. 20 \* ??? #** ※Default Value

Function	Selection		Value	Application
	0	1		
Attendance	※0: Yes	1: No	001	Networking
Auto Re-lock	※0: Disable	1: Enable	002	Networking/Stand-Alone
Auto Open	※0: Disable	1: Enable	004	Networking/Stand-Alone
Door open button input	0: Disable	※1: Enable	016	Networking/Stand-Alone
Master Controller of Network	※0: Slave	1: Mater	032	Networking

Selection= 0(none value)/ 1(1 x each value)

[e.g.] ??? value of Enable "Auto Open" + "Exit by Push Button" + "Anti-pass-back"

= (0x1)+(0x2)+(1x4)+(1x16)+(0x32)+(0x64)+(1x128)=148 ; As a result of that, the command will be 20 \* 148 #

**Table 9-2. 24 \* ??? #** ※Default Value

Function	Selection		Value	Application
	0	1		
Auto-open door without cards at auto open zone	※0: Disable	1: Enable	001	Networking/Stand-Alone
Alarm Output/ Lift Control	※0: Alarm Output	1: Lift Control	002	Networking/Stand-Alone
Stop Alarm by door close or by push button	0: None	※ 1: Yes	064	Networking/Stand-Alone

**Table 9-3. 28 \* ??? #** ※Default Value

Function	Selection		Value	Application
	0	1		
Dual Door Control	※0: Disable	1: Enable	064	Networking/Stand-Alone
Force Open Alarm Output	※0: Disable	1: Enable	128	Networking/Stand-Alone

**Table 9-4. 34 \* ??? #** ※Default Value

Function	Selection		Value	Application
	0	1		
Enable the RF after door sensor closed to GND	※0: Deactivate	1: Activate	001	Networking/Standalone
Invalid card to activate alarm relay	※0: Deactivate	1: Activate	002	Networking/Standalone
Turn off all sounds of beeper	※0: Deactivate	1: Activate	003	Networking/Standalone
Mute the sounds of egress button (RTE)	※0: Deactivate	1: Activate	004	Networking/Standalone
Reserved	※0: Deactivate	1: Activate	016	Networking/Standalone
Keep beeing while arming is enabled	※0: Deactivate	1: Activate	032	Networking/Standalone
Door relay connected to AR-721RB (suited to models without relay built-in)	※0: Deactivate	1: Activate	064	Networking/Standalone
Arm relay connected to AR-721RB (suited to models with relay built-in)	※0: Deactivate	1: Activate	128	Networking/Standalone

**10. Factory Reset**

Reset User Data	Reset User Data & Controller Parameter (incl. Master Code)	Reset User Data & Controller Parameter (incl. Master Code) & Reset Parameter Setting- SOR
Enter program mode → 29 * 29 * # → Exit the programming mode	Enter program mode → 29 * 20 * # → Exit the programming mode	Enter program mode → 29 * 21 * # → Exit the programming mode

※ If forgotten the current Master Code, Reset through software tools is required. Please refer to the FAQ for more detail : [How to change or reset different kinds of Controller Settings, including Master Code, Parameter Setting and User Data?](#)



## 11. Command List

	Function	Command	Description
Master Code Setting	Enter program mode	* P P P P P #	P P P P P=Master Code, default value=123456
	Master code setting	09 * P P P P P R R R R R #	P P P P P=6-digit new master code R R R R R=Reconfirm the new master code
Card Setting Commands	Suspend tag	10 * S S S S * E E E E #	* =Suspend 9 =Delete;
	Delete tag	10 * S S S S 9 E E E E #	S S S S=Starting User Address ; E E E E=Ending User Address
	Add a batch of sequential cards by inputting card number (M6)	11 * S S S S * E E E E #	S S S S=Starting card number E E E E=Ending card number
	Recover the suspended cards(M4/M8)	11 * S S S S * E E E E #	S S S S=Starting card number ; E E E E=Ending card number
	Card number modification(M4/M8)	16 * U U U U U * S S S S C C C C #	U U U U U= User Address; S S S S S=5-digit site code; C C C C C= 5-digit card code
	Add card by presenting(M4/M8)	19 * U U U U U * Q Q Q Q Q #	U U U U U=User Address; Q Q Q Q Q=Card quantity (00001: for adding a single card or a batch of random numbering cards)
	Add/Delete tag by presenting(M6)	22 * N #	N=0(Delete tag); N=1(Add tag)
	Delete all tags	29 * 29 * #	
	Enable/Disable Door open for any Tag	0 #	After enabling Door Open For Any Tag, all cards in same frequency as controller can pass directly.
Additional Card Function Setting	Mifare tag / card format (Optional) (M4/M8)	01 * N #	N:0=ISO14443A ; 1=ISO14443B 2=ISO15693 ; 3=I Code1 ; 4=I Code2 PS.1. Please select the transmission standard first. 2. Ensure both reader and card using the same transmission standard.
	Administrator Card setting (M4/M8)	07 * S S S S S * E E E E E # (07 * Starting User Address * Ending User Address #)	S S S S S-E E E E E=00000-00255 (Administrator Card can enter the program mode after present the card and press in 3 seconds, also can exit program mode by present the card.)
	Enable the security trigger signal ( with AR-721RB)	34 * ??? #	Change the "Arming" to the security trigger signal, when controller is connected with AR-721RB. Please refer to <a href="#">Compound Command Function List</a> for details.
Access Mode Setting	Control mode setting	04 * N #	N=4: M4; N=6: M6; N=8: M8
	Card or PIN (M4/M8) Modify the PIN with user address, change the pass mode into Card or PIN	12 * U U U U U * ??? #	Pass by Card or PIN; U U U U U=User Address; ???=4-digit PIN (0001~9999); 0000=Set as card only
	Card and PIN (M4/M8) Modify the PIN with user address, change the pass mode into Card and PIN	13 * U U U U U * ??? #	Pass by Card and PIN; U U U U U=User Address; ???=4-digit PIN (0000~9999)
	Card or PIN(M6) Set up the mutual PIN in Card or PIN mode	15 * ??? #	???=4-digit PIN(0001~9999 ; default value=4321)
	Card and PIN(M6) Set up the mutual PIN in Card and PIN mode	17 * ??? #	???=4-digit PIN(0001~9999 ; default value=1234) 0000= Set as card only
Arming /Duress Function Setting (M4/M8 applicable , but not M6)	Setting duress PWD(M4/M8)	15 * ??? #	???=4-digit PIN(0001~9999 ; default value=4321) ※The Duress Code 0000 means that disable Duress Function and the default value is set as 0000 already.
	Setting arming PWD(M4/M8)	17 * ??? #	???=4-digit PIN(0001~9999 ; default value=1234)
Node ID Setting	Node ID setting (Connected to 716E)(M4/M8)	00 * N N N #	N N N=Node ID of Access Controller (range: 001~016)
	Node ID setting (Connected to the PC directly without 716E) (M4/M8)	00 * N N N * V V V * n n n #	N N N=Node ID of Access Controller (range: 001~254) V V V=Virtual 716E Node ID, n n n=Door number (range:001~254)
Time /Delay Setting	Door Relay Time setting	02 * T T T #	T T T=Door relay time 000= Output continuously 001~600=1~600 sec. 601~609=0.1~0.9 sec.
	Alarm Relay Time setting	03 * T T T #	T T T=Alarm relay time 000= Output continuously 001~600=1~600 sec.
	Arming Delay Time setting	05 * T T T #	T T T=the buffer time before entering arming mode 001~600=1~600 sec.
	Alarm Delay Time setting	06 * T T T #	T T T=the buffer time before the alarm is activated 001~600=1~600 sec.
	Arming Pulse Time setting	14 * T T T #	T T T=Arming output time; 000=output continuously 001~250=0.1~2.5 sec.
	Door Close Time	18 * T T T #	T T T=Door Close Time: 001~600=1~600 sec.; default value: 15 sec.
	Controller time clock setting	25 * Y Y M M D D H H m m s s #	Y Y M M D D H H m m s s=Year/ Month/ Day/ Hour/ Min./ Sec.
	Same tag reading interval time	31 * T T T T #	T T T T=10~6000 (Base on 10ms, range from 10 to 6000; default value: 1 sec.: 0100)

	Function	Command	Description
Controller Additional Function Setting	Reader additional setting	20 * ??? #	Please refer to <a href="#">Compound Command Function List</a> for details.
	Controller parameter setting	24 * ??? #	
	Double Door Control / Force Open Alarm	28 * ??? #	
	Auto-open time zone setting	08 * N * HHMMhhmm * 7123456H #	N= 0 (1st time zone) / 1 (2nd time zone) HHMM= Starting time; hhmm= ending time (i.e.: 08301600=08:30 to 16:00) 7123456H= 7 days of week (Sun/Mon/Tue/Wed/Thu/Fri/Sat)+ Holiday(H= 0: disable; 1: enable); Holidays can be set by 701Client software.
Anti-pass-back (Enable user)	26 * SSSSS * EEEEE * N #	SSSSS=Starting User Address; EEEEEE=Ending User Address; N=0: Enable; N=1: Disable; N=2: Reset	
Enable/Disable keypad lock	* # (simultaneously)	After enabling keypad lock function, press any button will only has two beeps and no reaction. Disable the keypad lock function will bring controller keypad function back to normal. (only Keypad Controllers have this function ex. AR-721-H; Touch Keypad Controllers do not have this function ex. AR-725-H)	
Lift Control Setting	Controller parameter setting	24 * 002 #	
	Lift control setting: multi-floor(M4/M8)	21 * UUUUU * S * FFFFFFFF #	UUUUU=User Address, S=4 sets of lift control (0~3); FFFFFFF=8 assigned floor(F=0: Disable, 1: Enable)
	AR-401RO16 Lift Relay Activated TM (M4/M8)	23 * NNN * TTT #	NNN=site number, TTT= relay time: 000~600=1~600 sec.
	Lift control setting: single floor(M4/M8)	27 * UUUUU * FF #	UUUUU=User Address; FF=Floor (01~32 floor)
Exit Program Mode	Exit program mode	* #	
	Exit program mode and enter arming mode(M4/M8)	* * #	
<p>※ More Details : <a href="#">Introduction of New Function Commands for Enterprise E Controller and Home H Controller</a></p>			