SOYAL®
ACCESS CONTROL SYSTEM

AR-331H

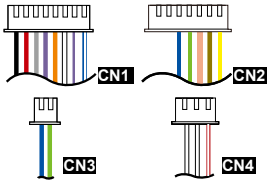
S/N Since 331HB:1707 , 331HD:1702

V171027

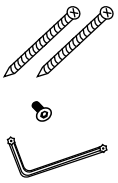
Contents

1 Product

2 Terminal Cables



3 Tools

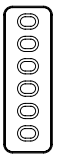


Flat Head Cap Philips Tapping Screw: 4x20

Security Torx: M3x10

Security Torx Wrenches

4 Accessories



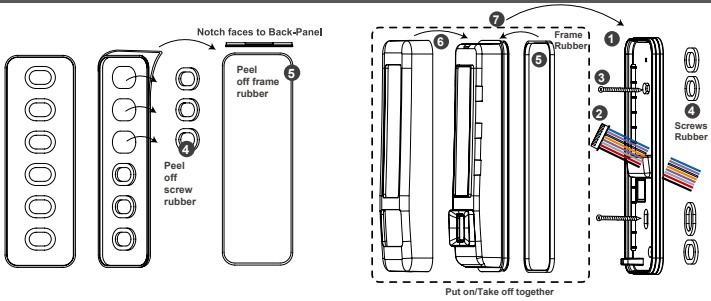
Rubber Pad

5 Optional

AR-721RB Digital Relay Board

AR-WG KEYBOARD-V2

Installation

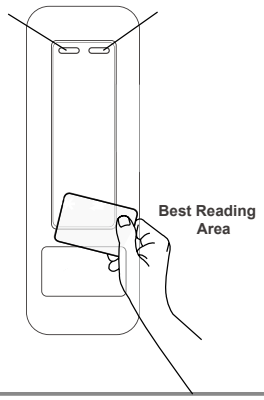


- Peel off screw hole rubbers and frame rubber from rubber pad
- Put screw rubbers on the back side of the mounting plate and pull the cables from the square hole of the mounting plate.
- Put a frame rubber on the frame groove of body
- Connect the terminal cables to the body and attach the body to the mounting plate.
- Assemble the covers with the Allen key and screws (accessories supplied).
- Turn on the power and LED will light up and blink in green.

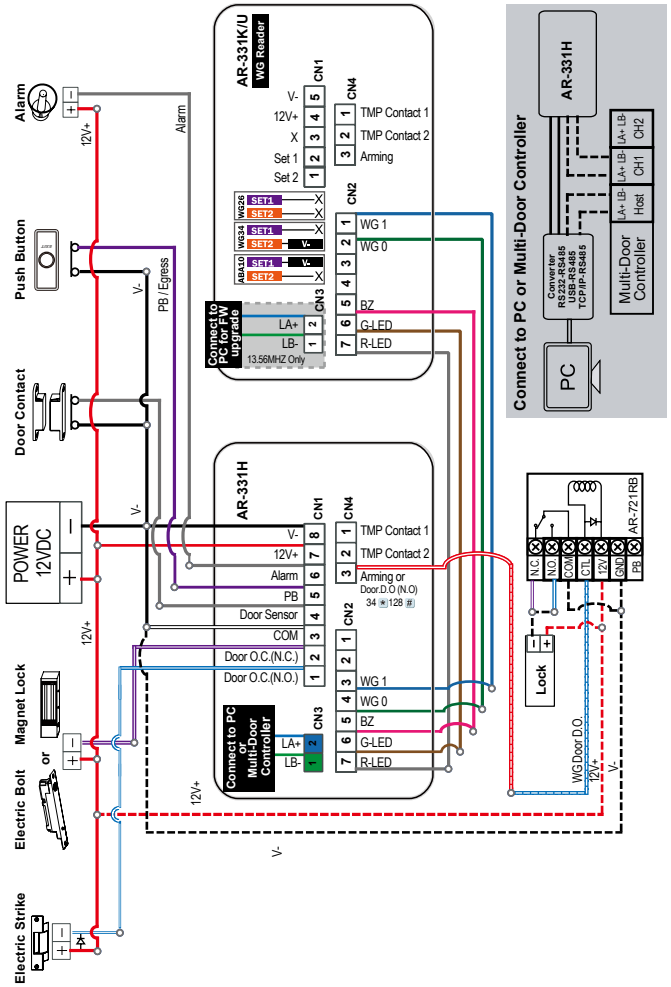
Front Panel & Indicator

Left LED	Descrption	Right LED	Descrption
Blue	Arming / Blue LED Input (Active High)	Green	Power-on/Stand-by /OK
Yellow	Yellow LED Input (Active High)	Red	Error/Alarm

While power on the device,hands off panel for 10 sec. to make sure a successful activation.



Connector Table



Cable: CN1

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

Cable: CN2

Wire Application	Wire	Color	Description
WG Keybard	1	White	Reserved for BR-WG-KEYBOARD
	2	White	Reserved for BR-WG-KEYBOARD
Wiegand	3	Thin Blue	Wiegand DAT: 1 Input
	4	Thin Green	Wiegand DAT: 0 Input
Beeper	5	Pink	Beeper Output 5V/100mA, Low
LED	6	Brown	Green LED Output 5V/20mA, Max
	7	Yellow	Red LED Output 5V/20mA, Max

Cable: CN3

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

Cable: CN4

Wire Application	Wire	Color	Description
Anti-Tamper Switch	1	White	Tamper Contact 1
	2	White	Tamper Contact 2
Arming	3	Red-White	Arming Output (34*000#) / Digital Door Output (34*128#)

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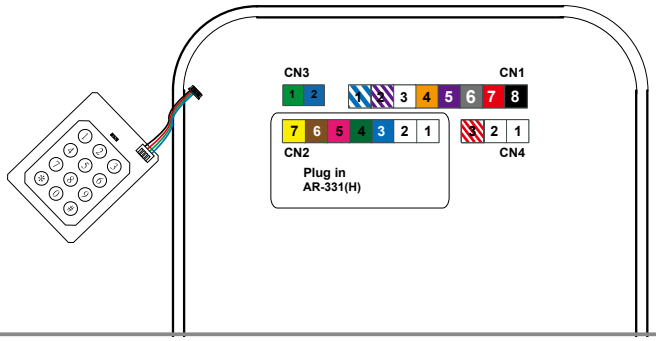
External WG keyboard (Only for S/N:1707 and After)

※ If you want to program system on AR-331(H) directly, please order WG keyboard then install it according to the following pattern.



- Plug AR-331(H) into CN2 connector on the mainboard
- Refer to command list and start to operate AR-331(H).

Adding and Deleting Tag

M4/M8

- **Add a Single Tag or Random tags**

  Input *123456# (or Master Code) → 19*UUUUU*00001# → Present the tag(s) to Access Controller (single tag or random tags one by one)→ Done

  [e.g.] Add 2 random cards to User Addresses No. 100 and No. 101:

  Enter program mode → 19*00100*00001# → Present the tags one by one → Done

- **Add a batch of Sequential tags**

  Input *123456# (or Master Code) → 19*UUUUU*QQQQQ# → Present the tag (only use the tag with the **lowest number**) → OK

  [e.g.] Add 20 pcs sequential tags (62312~62331) to User Address NO.101 ~ NO.120:

  Enter program mode → 19*00101*00120# → Close Tag into RF Area (only use the tag **NO.62312**) → OK

- **Delete Single Tag**

  Input *123456# (or Master Code) → 10*SSSSS9EEEEE#

  [e.g.] Delete User Address: 00058

  Enter program mode → 10*00058900058#

- **Delete a batch of Tags**

  Input *123456# (or Master Code) → 10*SSSSS9EEEEE#

  [e.g.] Delete User Address: 00101~00245

  Enter program mode → 10*00101900245#

- **Delete All Tags**

  Input *123456# (or Master Code) → 29*29*#

Tag Information (125kHz) ※ For Mifare tags, the separator between Site Code & Card Code is comma ",".

M6 ※In this mode, User Address = Card Code

- **Add Tags**

  Input *123456# (or Master Code) → 11*SSSSS*EEEEE# → OK

  [e.g.] Add User Address: 00100~01254

  Enter program mode → 11*00100*01254# → OK

- **Delete Tags**

  Input *123456# (or Master Code) → 10*SSSSS*(or 9)EEEEE# → OK

  [e.g.] Delete a tag with card code 62362

  Enter program mode → 10*62362*62362# → OK

- **Delete All Tags**

  Input *123456# (or Master Code) → 29*29*#

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Operation process

A. Enter / Exit Program Mode

- **Enter the program mode**

  Input * 123456 # or * PPPPPP #

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

- **Exit the program mode**

  Input * #

- **Master Code modification**

  Enter program mode → 09 * PPPPPPRRRRRR # [Input the 6-digit new master code twice.]

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

B. Change the Node ID of Controller

Enter program mode → 00 * NNN # [Node ID: 001~254; if the access controller is connected to AR-716E, its Node ID will be 001~016.]

C.Set up M4/M6/M8

Enter program mode → 04 * N # [N=4/6/8]

D. Set up the password

- **M4/M8: Private PIN**

  Card or PIN: Enter program mode → 12 * UUUUU * PPPP # [e.g. User Address: 00001 and pass code: 1234, input 12 * 00001 * 1234 #]

  Card and PIN: Enter program mode → 13 * UUUUU * PPPP # [e.g. User Address: 00001 and pass code: 1234, input 13 * 00001 * 1234 #]

- **M6: Public PIN**

  Card or PIN: Enter program mode → 15 * PPPP # [Input 4-digit PIN, default value: 4321; PPPP=0000: cancel the function of simply inputting PIN to get access]

  Card and PIN: Enter program mode → 17 * PPPP # [Input 4-digit PIN, default value: 1234; PPPP=0000: access mode will be "Card Only"]

E. Double Door Control (M4/M8)

Controller with a reader to perform the "Double Door Control".

Enter program mode → 28 * 064 # [064= Double Door Control]

F. Anti-pass-back (M4/M8)

Usually, anti-pass-back is commonly applied to parking areas in order to prevent from multi-entry with one card at a time, or to locations that need entry and exit control.

- **Enable controller**

  Enter program mode → 20 * DDD # [128= Anti-pass-back(0=Disable; 1=Enable)/ 064=Entrance/Exit(0=Exit; 1=Entrance).]

  [e.g.] Enable Anti-pass-back, and set to Exit door= (128 x 1) + (064 x 0) = 128

  Enter program mode → 20 * 128 # (Please refer to function default value for details.)

- **Enable card**

  Enter program mode → 26 * SSSSS * EEEEE * N #

  [SSSSS= Starting User Address; EEEEE= Ending User Address; N=0(control)/ 1(Not control)/ 2(reset)]

  [e.g.] Enable the anti-pass-back function of User Address from 00152 to 00684: 26 * 00152 * 00684 * 0 #

  [e.g.] The anti-pass-back function of User Address 00154 has been enabled. After presenting the card to get in, the user doesn't present the card to leave. When s/he tries to present the card to get in again, since the in-in sequence violates the anti-pass-back rule, s/he will be rejected. To solve this problem, you can reset it as follows. Enter program mode → 26 * 00154 * 00154 * 2 # → Reset

G. Auto-Open Time Zone

Door will remain open after the first flashing card. There are 2 time zones supported when Standalone, and 63 time zones when connected to AR-716E.

- **Enable/Disable auto-open time zone**

  Enter program mode → 20 * 004 # [004= enable Auto-Open Time Zone; 000= disable Auto-Open Time Zone]

- **Enable/Disable auto open door without presenting card**

  Enter program mode → 24 * 001 # [001= enable Auto-Open Time Zone; 000= disable Auto-Open Time Zone]

- **Set up auto-open time zone**

  Enter program mode → 08 * N * HHMMhhmm * 7123456H #

  N: 2 sets of auto-open zone (N=0=1st set; N=1=2nd set)

  HHMMhhmm=Staring time to ending time (e.g. 08301200=08:30 to 12:00)

  7123456H= 7 days of a week (Sun/Mon/Tue/Wed/Thu/Fri/Sat) + Holiday (H= 0: disable; 1: enable); Holidays can be set via 701Client software.

  [e.g.] To set the second time zone as 9:30 AM to 4:20 PM, Monday, Wednesday and Friday: 08 * 1 * 09301620 * 01010100 # → Done

H. Lift control

Connect with AR-401RO16B to control access floors of users.

- **Enable**

  Enter program mode → 24 * 002 # [002= enable lift control]

- **Single floor**

  Enter program mode → 27 * UUUUU * FF #

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

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

- **Multi floors**

  Enter program mode → 21 * UUUUU * S * FFFFFFFF #

  [UUUUU=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:

  Enter program mode → 21 * 00168 * 0 * 00100000 # → 21 * 00168 * 2 * 00001000 #

Please refer to below floor chart

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

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I. Setting Up the Arming

- **Alarm conditions:**
  1. Arming is enabled
  2.Alarm system connected
- **Application:**
  1. Door open too long: Door is open longer than door relay time plus door close time.
  2. Force open (Opened without a valid user card): Access by force or illegal procedure.
  3. Door position abnormal: Arming is enabled and the power is suddenly off then on.
- **Enable/Disable Arming status (for M4/M8; default value of arming PWD is: 1234) :**

Standby Mode	
After door open	Do not open the door
The normal procedure to open door → **Input 4-digit arming PWD** #	* → **Input 4-digit arming PWD** → **Present a valid card**
Enter Program Mode	
Enable: Enter program mode → * * #	**Disable:** Enter program mode → * #

※ **[The normal procedure to open door] can refer to [Access Mode].**

Function Default Value

AR-331(H)

20 * DDD # ※Default Value

Function	Selection		Value	Application
Time Attendance	※0: Yes	1: No	001	Networking
Auto Relock	※0: Disable	1: Enable	002	Networking/Standalone
Auto Open	※0: Disable	1: Enable	004	Networking/Standalone
Exit by RTE Button	0: Disable	※1: Enable	016	Networking/Standalone
Master Controller of Network	※0: Slave	1: Mater	032	Networking
Entrance/Exit	※0: Exit	1: Entrance	064	Networking
Anti-pass-back	※0: Disable	1: Enable	128	Networking

24 * DDD # ※Default Value

Function	Selection		Value	Application
Auto Open without Presenting in Auto-open Time Zone	※0: Disable	1: Enable	001	Networking/Standalone
Alarm Output/ Lift Control	※0: Alarm Output	1: Lift Control	002	Networking/Standalone
Stop Alarm by pressing RTE Button or Closing the Door	0: None	※ 1: Yes	064	Networking/Standalone
Doorbell	※0: Disable	1: Enable	128	Networking/Standalone

28 * DDD # ※Default Value

Function	Selection		Value	Application
Double Door Control	※0: Disable	1: Enable	064	Networking/Standalone
Force Open Alarm Output	0: Disable	※1: Enable	128	Networking/Standalone

Select the desired function, Weighted Value = Selection Index (0 or 1) x Value.
[e.g.] DDD (total weighted value of all functions): Enable "Auto Open" + "Exit by RTE Button" + "Anti-pass-back"=1*004 + 1*016 + 1*128=148; As a result of that, the command will be 20 * 148 #.

M4 / M6 / M8

Mode	Networking/ Standalone	User Capacity	Access Mode	Auto-show Duty time	Event log Capacity	120 Holidays	Duress Function	Time Zone	Lift Control	Anti-pass-back
M4	Networking/ Standalone	3,000	1.Card only 2.Card and PIN (4-digit PIN)+ # 3.User Address (5-digit) + PIN (4-digit Private PIN) + #	Yes	3,000	Yes	Yes	11	32	Yes
M6	Standalone	65,535	1.Card only (using 17* command to set Arming PWD as 0000) 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	Networking/ Standalone	3,000	1.Card only 2.Card and PIN (4-digit Private PIN)+ # 3.Card or PIN (4-digit Private PIN)	Yes	3,000	Yes	Yes	11	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).

Factory Reset by its commands

- **When the device is Standalone (not networking)**
  Enter program mode → 20 * 016 # → 24 * 064 # → 26 * 00000 * 01023 * 1 # → 28 * 000 # → 29 * 29 * #
  ※Note: if the Master Code has been changed, factory reset won't restore the Master Code to 123456.

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Command List

Function	Command	Description	Mode
Enter program mode	* PPPPPP #	PPPPPP=Master Code, default value=**123456**	M4/M6/M8
Exit program mode	* #		M4//M6M8
Exit program mode and enter arming mode	* * #		M4/M8
Node ID setting (Connected to 716E)	00 * NNN #	NNN=Node ID of Access Controller (range: 001~016)	M4/M8
Node ID setting (Connected to the PC directly without 716E)	00 * NNN * VVV * nnn #	NNN=Node ID of Access Controller (range: 001~254) VVV=Virtual 716E Node ID, nnn=Door number (range:001~254)	M4/M8
Mifare tag / card format (Optional)	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.	M4/M8
Door Relay Time setting	02 * TTT #	TTT=Door relay time 000= Output continuously 001~600=1~600 sec. 601~609=0.1~0.9 sec.	M4/M6/M8
Alarm Relay Time setting	03 * TTT #	TTT=Alarm relay time 000= Output continuously 001~600=1~600 sec.	M4/M6/M8
Control mode setting	04 * N #	N=4: M4; N=6: M6; N=8: M8	M4/M6/M8
Arming Delay Time setting	05 * TTT #	TTT=the buffer time before entering arming mode 001~600=1~600 sec.	M4/M6/M8
Alarm Delay Time setting	06 * TTT #	TTT=the buffer time before the alarm is activated 001~600=1~600 sec.	M4/M6/M8
Master card (Administrator) setting	07 * SSSSS * EEEEE #	SSSSS-EEEEE=00000-01023 (00000-03000 for COR-980); SSSSS=Starting User Address; EEEEE=Ending User Address	M4/M8
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.	M4/M6/M8
Master code setting	09 * PPPPPPRRRRRR #	PPPPPP=6-digit new master code RRRRRR=Reconfirm the new master code	M4/M6/M8
Suspend / Delete tag	10 * SSSSS * EEEEE # **(M6)** 10 * SSSSS 9 EEEEE # **(M4/M8)**	*=Suspend 9=Delete; SSSSS=Starting User Address, EEEEE=Ending User Address	M4/M6/M8
Add a batch of sequential cards by inputting card number (M6)	11 * SSSSS * EEEEE #	SSSSS=Starting card number EEEEE=Ending card number	M6
Recover the suspended cards	11 * SSSSS * EEEEE #	SSSSS=Starting User Address EEEEE=Ending User Address	M4/M8
Set the access mode of the user at the designated User Address as "Card or PIN"	12 * UUUUU * PPPP #	Access mode: **Card or PIN**; UUUUU=User Address; PPPP=4-digit private PIN (0001~9999); **0000**=**Card Only** for this user	M4/M8
Set the access mode of the user at the designated User Address as "Card & PIN"	13 * UUUUU * PPPP #	Access mode: **Card & PIN**; UUUUU=User Address; PPPP=4-digit private PIN (0000~9999)	M4/M8
Arming Pulse Time setting	14 * TTT #	TTT=Arming output time; 000=output continuously 001~250=0.1~2.5 sec.	M4/M8
M4/M8:Duress code setting **M6:Public PIN setting** for access mode "Card or PIN"	15 * PPPP #	PPPP=4-digit duress code (0001~9999; default value=**4321**; **0000**=disable the function of simply inputting PIN to get access in M6)	M4/M6/M8
Card number modification	16 * UUUUU * SSSSSCCCCC #	UUUUU= User Address; SSSSS=5-digit site code; CCCCC=5-digit card code	M4/M8
M4/M8:Arming PWD setting **M6:Public PIN setting** for access mode "Card & PIN"	17 * PPPP #	PPPP=4-digit Arming PWD (0001~9999; default value=**1234**; **0000**= access mode will become "**Card Only**" in M6)	M4/M6/M8
Door Close Time	18 * TTT #	TTT=Door Close Time: 001~600=1~600 sec.; default value: 15 sec.	M4/M6/M8
Add card by presenting(M4/M8)	19 * UUUUU * QQQQQ #	UUUUU=User Address; QQQQQ=Card quantity (**00001**: for adding a single card or a batch of random numbering cards)	M4/M8
Reader additional setting	20 * DDD #	Please refer to function default value for details.	M4/M6/M8
Lift control setting: multi-floor	21 * UUUUU * S * FFFFFFFF #	UUUUU=User Address, S=4 sets of lift control (0~3); FFFFFFFF=8 assigned floor (F=0: Disable, 1: Enable)	M4/M8
Add/Delete tag by presenting (M6 only)	22 * N #	N=0(Delete tag); N=1(Add tag)	M6
AR-401RO16B Lift Relay Activated TM	23 * NNN * TTT #	NNN=site number, TTT= relay time: 000~600=1~600 sec.	M4/M8
Controller parameter setting	24 * DDD #	Please refer to function default value for details.	M4/M6/M8
Controller time clock setting	25 * YYMMDDHHmmss #	YYMMDDHHmmss: Year/ Month/ Day/ Hour/ Min./ Sec.	M4/M6/M8
Anti-pass-back (Enable user)	26 * SSSSS * EEEEE * N #	SSSSS=Starting User Address; EEEEE=Ending User Address; N=0: Enable; N=1: Disable; N=2: Reset	M4/M8
Lift control setting: single floor	27 * UUUUU * FF #	UUUUU=User Address; FF=Floor (01~32 floor)	M4/M8
Double Door Control / Force Open Alarm	28 * DDD #	Please refer to function default value for details.	M4/M6/M8
Delete all tags / Delete all parameter setting	29 * 29 * # / 29 * 20 * #	Delete all user data / Delete all parameters	M4/M6/M8
Enable the security trigger signal (with AR-721RB)	34 * 128 #	Change the "Arming" (in PIN3 of CN4) to the security trigger signal, when controller is connected with AR-721RB.	M4/M6/M8