

# **SOYAL**

**AR-721U/721K/661U**

**User's Guide**

Feb. 6, 2004

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## 1. Main Features

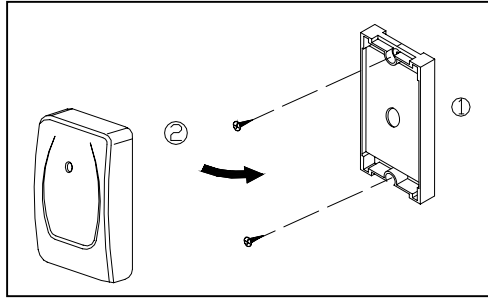
- Easily integrated with soyal or other access control systems.
- Programmable various outputs formats Wiegand, magstripe or serial.
- Built-in watchdog to prevent the system from halting
- A bi-color LED indicator and a beep sound.

Item	AR-721U	AR-721K	AR-661U
Reading Range (Depends on tags)	About 8 cm	About 15 cm	33-60 cm
Output Formats	WG 26 / 34, ABA II, ASYNC 9600, N, 8, 1		
Voltage	9-18VDC		
Current	< 1W	< 2.5W	< 4W
RF Frequency	125KHz		
Environment	-10 to +50		
LED Indicators	●	●	●
Beep Sound	●	●	●
Keypad	X	<b>12 Keys</b>	X
Material	ABS	ABS	ABS
Waterproof	Option	X	●
Dimensions (mm)	80(L)×43(W)×15(H)	112(L)×76(W)×25(H)	230(L)×230(W)×35(H)

## 2. AR-721U Installation

### 2.1 Steps

1. Use the screwdriver to screw the mounting plate on the wall.
2. Pull cable ends through the access hole in the mounting plate.  
AR-721U must be connected before power is applied to the single door controller.
3. Attach the AR-721U to the mounting plate.
4. Apply power. The red LED will flash once and the beeper will sound.



## **2.2 Installation Notice**

1. AR-721U is narrow enough to mount to most mullions and door frames.
2. Single door controller locate inside the secure area for use as an exit controller, the auxiliary reader locate exterior wall for use as an entrance reader, but not directly behind single door controller. For best reading distance, offset the single door controller and auxiliary reader by about 50 cm above and 12 m below (suggestion value).
3. Normally, AR-721U will read a Card / Key Tag at up to 8 cm. However, when AR-721U reader is mounted directly on a metal surface, the reading distance decreases slightly. To reduce this effect, install wood or plastic between the mounting surface and mounting plate, this will restore most of the reading distance.

### 2.3 Wiring

Table 1 - Color Coding			
Wire Application	Wire	Color	Description
<b>Power</b>	1	Red	DC Power 12V
	2	Black	DC Power 0V
<b>LED</b>	3	Yellow	LED Red Input ( Low Bright)
	4	Brown	LED Green Input ( Low Bright)
<b>Wiegand</b>	5	Blue	Wiegand DAT:1
	6	Green	Wiegand DAT:0
<b>Beeper</b>	7	Purple	Beeper Input ( Low Sound )
	8	White	Card Present
<b>Beeper</b>	9	Gray	Beeper Output

Output Selection				
Output	WG26	WG34	RS-232	Magnetic ( ABA )
<b>34/26</b>	Open	Close	Open	Close
<b>ABA</b>	Open	Open	Close	Close

AR-721U RS-232 Format: ( 9600,N, 8, 1 SOYAL Format )

DAT:0: TTL Inverted Serial Output.

( Can connect to PC comm port )

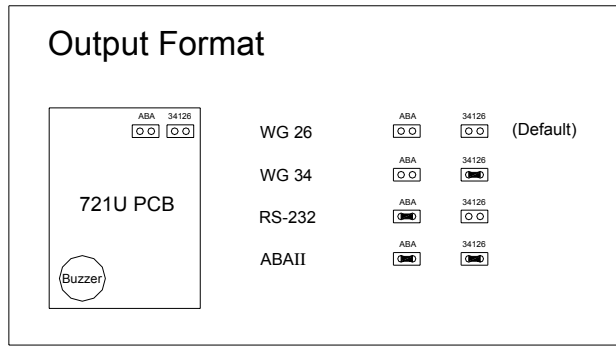
DAT:1: TTL Serial Output.

( connect to PC comm. port through RS-232 invert driver )

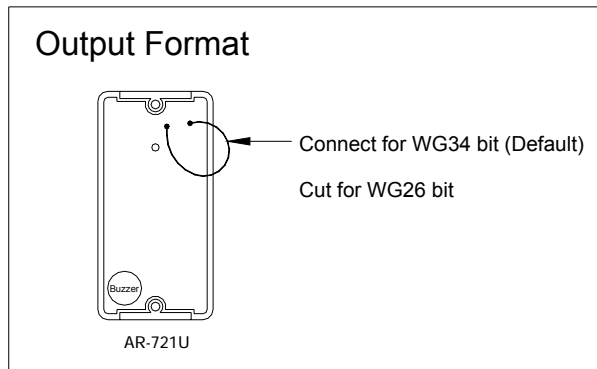


## 2.4 PCB board

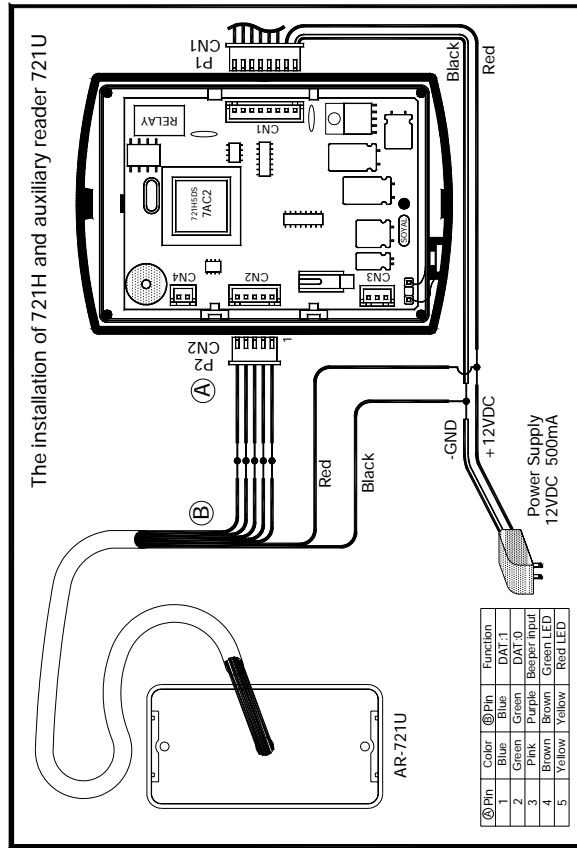
### 2.4.1 No waterproof



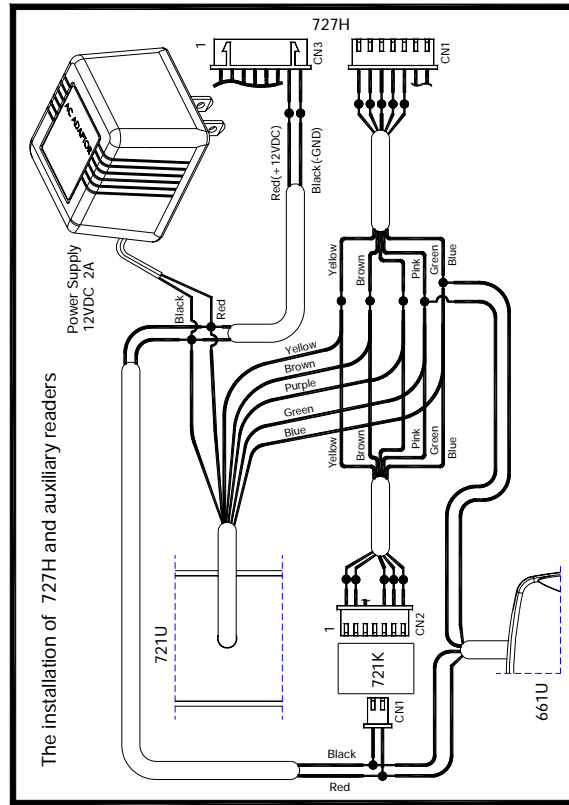
### 2.4.2 Waterproof



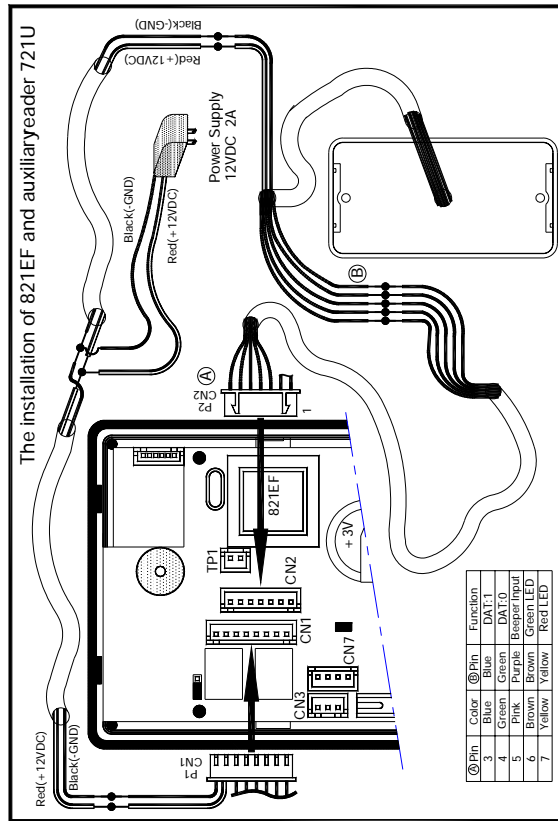
2.5 Installation diagram  
 2.5.1 AR-721U & AR-721H



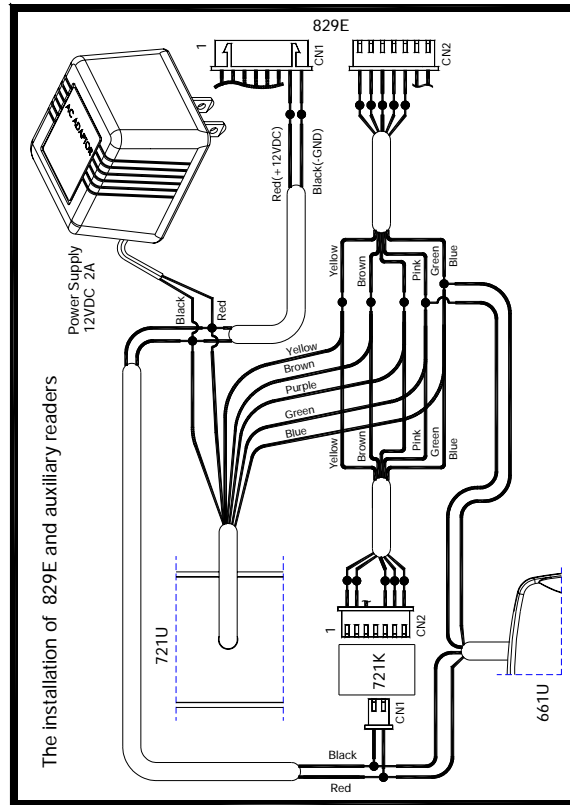
## 2.5.2 AR-721U & AR-727H



### 2.5.3 AR-721U & AR-821EF



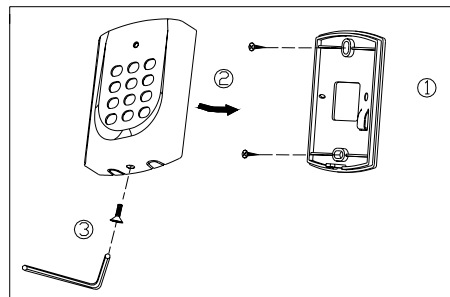
## 2.5.4 AR-721U & AR-829E



### 3. AR-721K Installation

#### 3.1 Steps

1. Use the screwdriver to screw the mounting plate on the wall.
2. Pull cable ends through the access hole in the mounting plate.  
AR-721K must be connected before power is applied to the single door controller.
3. Connect plug P1 to socket CN1 on the AR-721K circuit board.  
Connect plug P2 to socket CN2 on the AR-721K circuit board.  
Connect plug P3 to socket CN3 on the AR-721K circuit board.
4. Attach the AR-721K to the mounting plate and install screw (supplied) into the hole at the bottom with the Allen wrench (supplied).
5. Apply power. The red LED will flash once and the beeper will sound. Refer to beginning of this manual for programming.



### 3.2 Installation Notice

1. Single door controller locate inside the secure area for use as an exit controller, the auxiliary reader locate exterior wall for use as an entrance reader, but not directly behind single door controller. For best reading distance, offset the single door controller and auxiliary reader by about 50 cm above and 12 m below (suggestion value).
2. Normally, single door controller will read a Card / Key Tag at up to 15 cm. However, when single door controller or optional auxiliary reader is mounted directly on a metal surface, the reading distance decreases slightly. To reduce this effect, install wood or plastic between the mounting surface and mounting plate, this will restore most of the reading distance.
3. AR-721K can cover standard electrical boxes.

### 3.3 Wiring

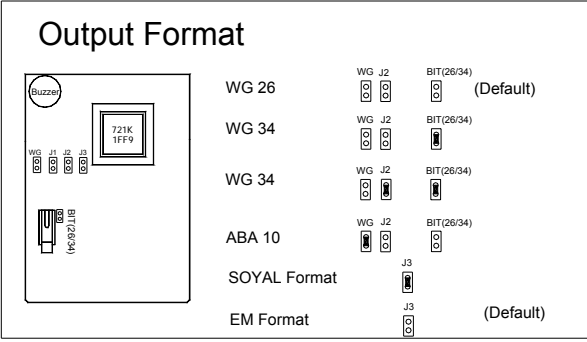
Table 1 - Connector P1 Color Coding			
Wire Application	Wire	Color	Description
Power	1	Thick Red	DC Power 12V
	2	Thick Black	DC Power 0V

Table 2 - Connector P2 Color Coding (Wiegand Read Head )			
Wire Application	Wire	Color	Description
Wiegand ABA	1	Thin Blue	Wiegand DAT:1 Input ABA Format:Clock
	2	Thin Green	Wiegand DAT:0 Input ABA Format:Data
	3	Orange	ABA Format Card Present
	4		No Connection
Beeper	5	Pink	Beeper Input ( Low Sound )
LED	6	Brown	LED Green Input ( Low Bright)
	7	Yellow	LED Red Input ( Low Bright)

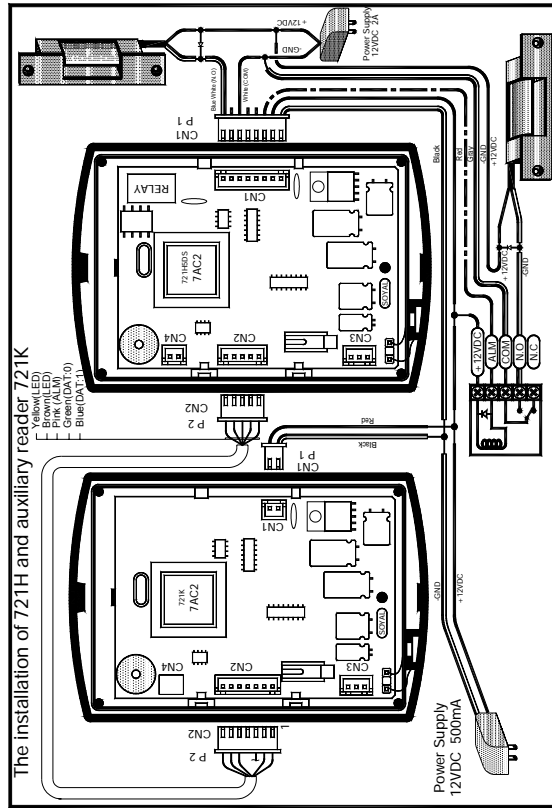


Table 3 - Connector P3 Color Coding (Tamper Switch )			
Wire Application	Wire	Color	Description
Tamper Switch	1	Red	N.C.
	2	Orange	COM
	3	Yellow	N.O.

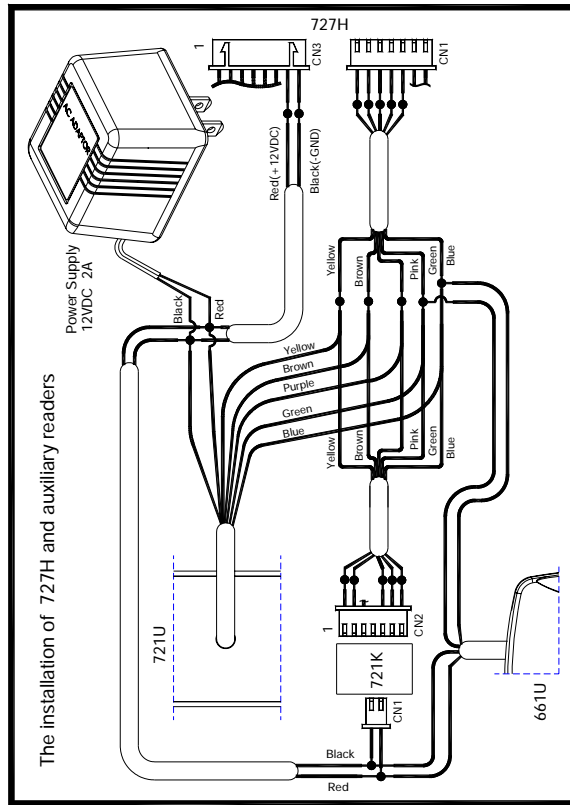
**3.4 PCB board**



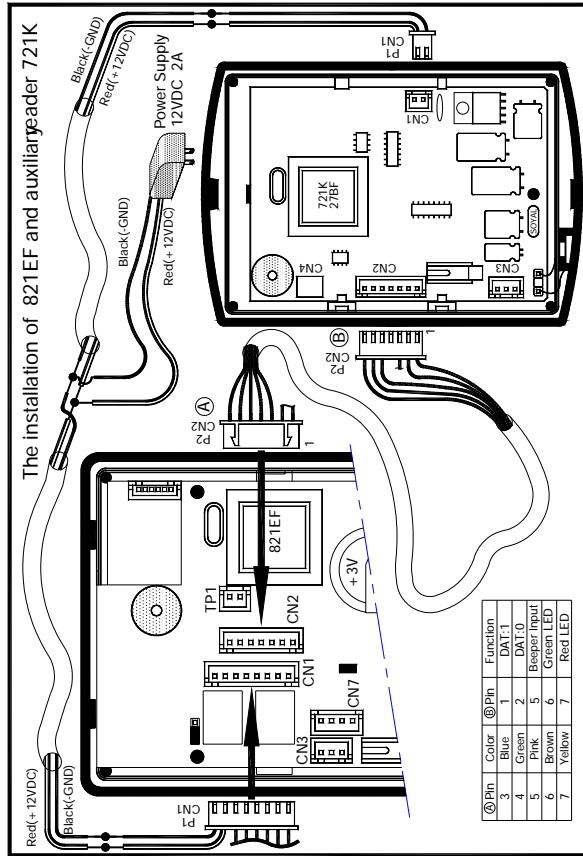
3.5 Installation diagram  
3.5.1 AR-721K & AR-721H



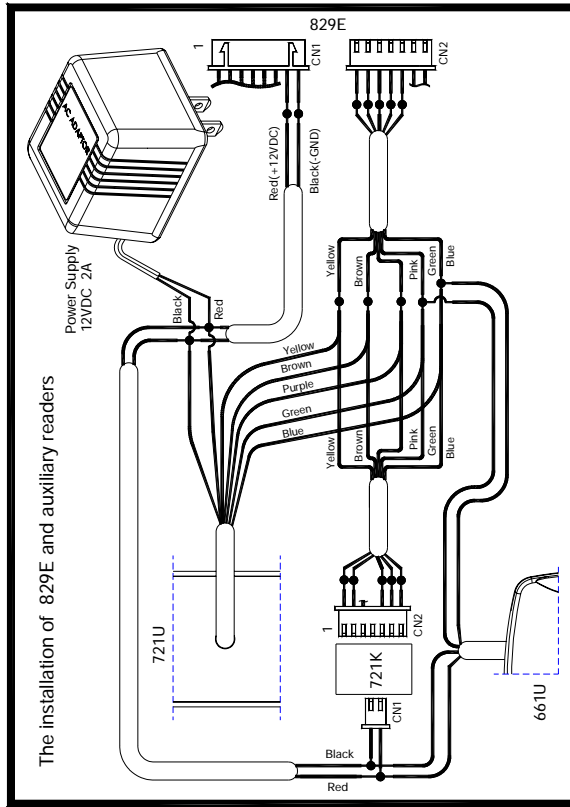
### 3.5.2AR-721K & AR-727H



### 3.5.3AR-721K & AR-821EF



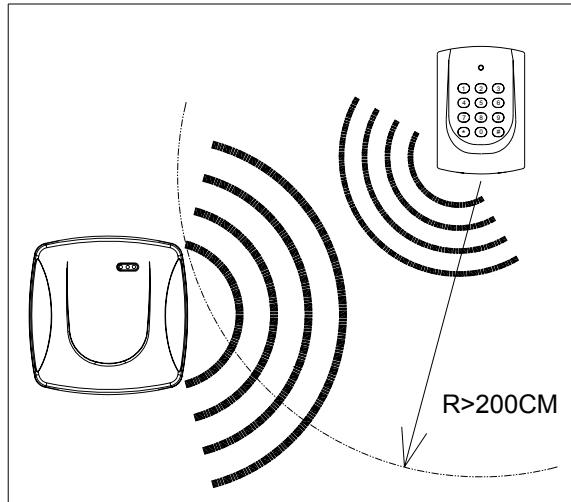
### 3.5.4AR-721K & AR-829E



## 4. AR-661U Installation

### 4.1 Installation Notice

Minimum distance between AR-661U & other proximity Reader  
( 200cm )



## 4.2 Wiring

Table - Color Coding				
Wire Application	Wire	Color	Description	Remark
Power	1	Red	12-18VDC	regulated
	2	Black	Power Ground	
Wiegand	3	Blue	Wiegand DAT:1	Open collected
	4	Green	Wiegand DAT:0	Open collected
	5	White	Card Present	
Beeper	6	Purple	Beeper Output	
Output Selection	7	Yellow	SEL1	
	8	Brown	SEL2	

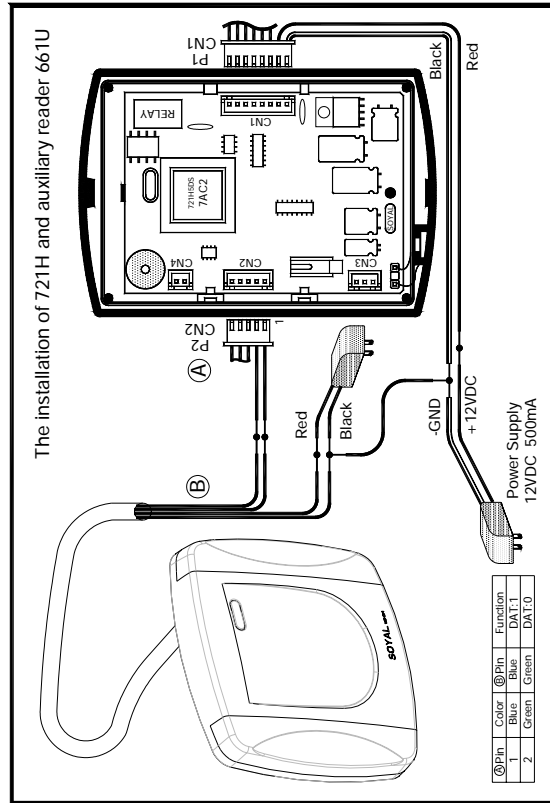
Output Selection				
Output	WG26	WG34	RS-232	WG34 + 4
SEL1	Open	Close to GND	Open	Close to GND
SEL2	Open	Open	Close to GND	Close to GND

**NOTE:**

WG34 + 4 : follow 0101 after WG34 data stream for reader identification. (Anti-pass-back)

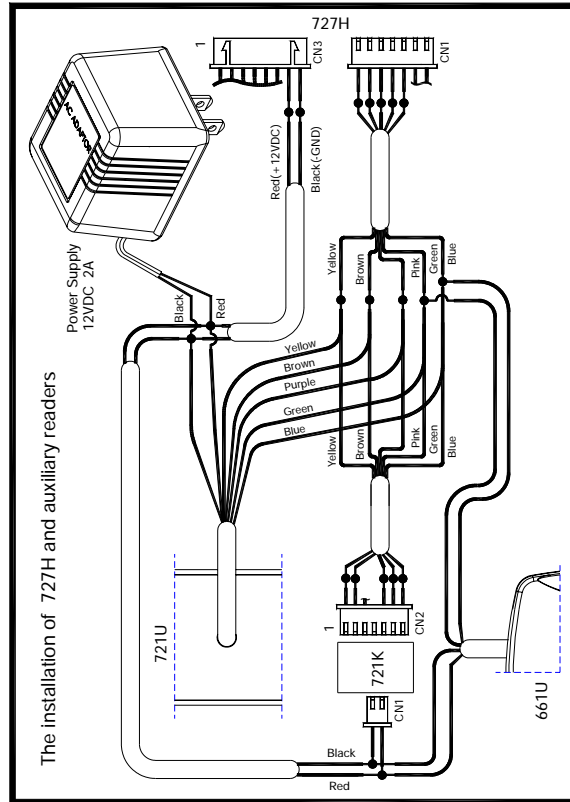
See Also: AR-721H do anti-pass-back with 2 pcs of AR-661U

4.3 Installation diagram  
 4.3.1AR-661U & AR-721H

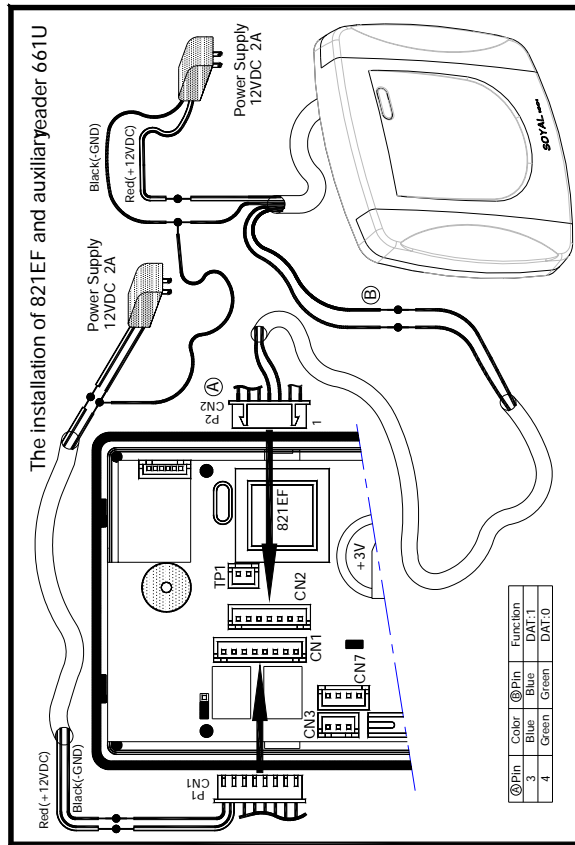




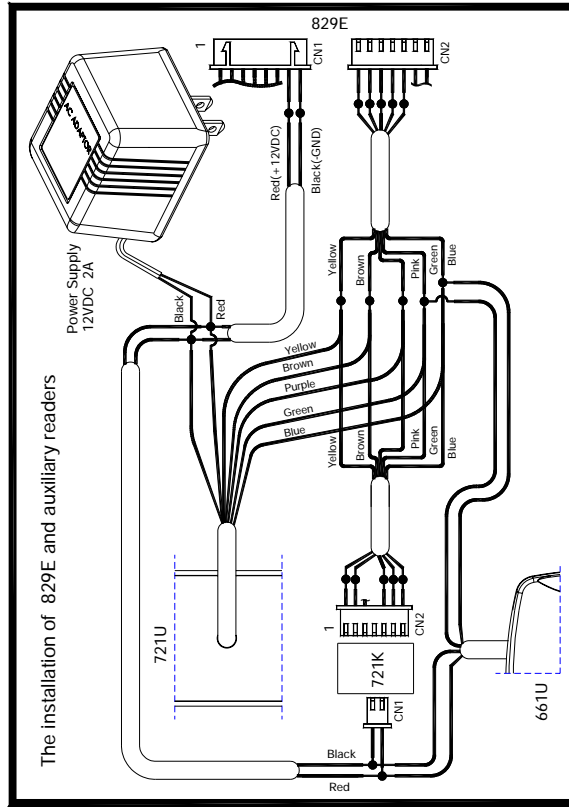
### 4.3.2AR-661U & AR-727H



### 4.3.3AR-661U & AR-821EF

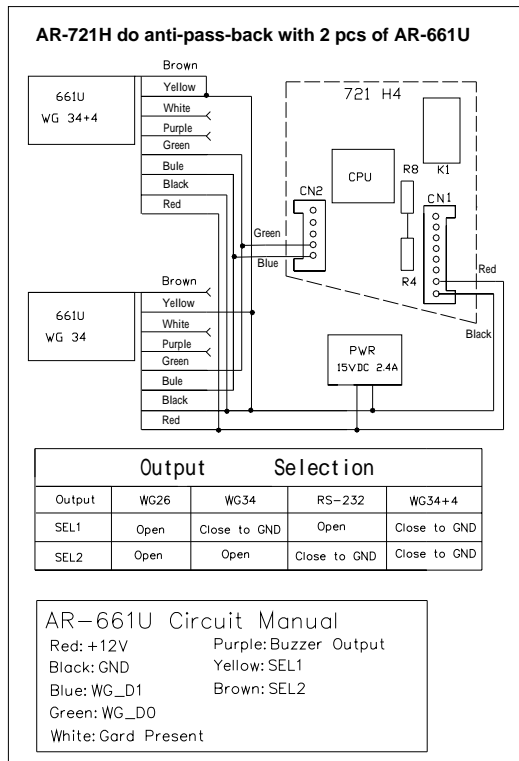


#### 4.3.4AR-661U & AR-829E

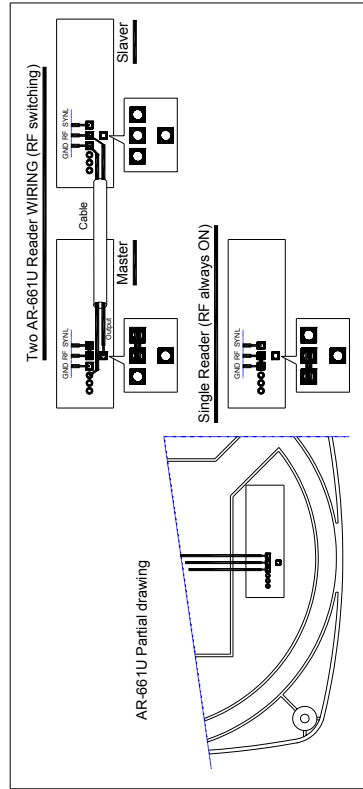


**4.4 The standalone controller do anti-pass-back with 2 pcs of AR-661U**

Standalone controller includes AR-721H, AR-727H and AR-829E.  
And here is AR-721H & 2 pcs AR-661U diagram.



When the distance between 2 pcs 661U is less than 6 meter (suggestion value), we can use the following ways to solve in order to avoid interference with each other to result in reading distance decrease.



#### 4.5 Testing table of AR-661U Reading Range depends on tags

Testing circumstances: Voltage 12V/500mA, No other jamming in 5 meters.

Item no.	Name	Sample S/N	Testing Distance (cm)	Maximum (cm)	Minimum (cm)	Average (cm)
AR-701KPC RW-2	Key-chain (R/W)	1	35	38	35	36.5
		2	37			
		3	38			
AR-2561 TRW	Thick Card (R/W)	1	56	60	55	57.5
		2	55			
		3	60			
AR-8972 ISO RW	ISO Card	1	40	42	40	41
		2	42			
AR-2563 TRL	Long distance Card (Read Only)	1	66	66	56	61
		2	65			
		3	56			

## 5. Troubleshooting

Questions	Answer
No appearance	<ol style="list-style-type: none"><li>1. Check power, if it is 9 – 18 VDC adaptor?</li><li>2. Check if the polarity is correct?</li><li>3. The unit should make a beep sound when any key on the keypad is depressed (AR-721K).</li></ol>

## 6. Return of Products

If you think that you have a defective unit, please contact the distributor who sold you the unit. All service and repairs must be done through an authorized distributor.

## **7. Warranty**

SOYAL warrants that the product(s) shall be free from manufacturing defects in materials and workmanship for a period of fifteen (15) month from the date of delivery provided that the product was properly installed and used. The foregoing warranty shall not apply to defects resulting from abuse, misuse, accident, unauthorized alteration or repair, neglect, acts of God (such as floods, fire, etc.). SOYAL shall, at its option, either repair or replace product(s) which prove to be defective within the warranty period. SOYAL will replace any product found to be defective within the first three months of purchase provided said product was properly installed and used. Distributor agrees to insure the product or assume the risk of loss or damage in transit to prepay shipping charges and to use the original shipping container or equivalent. Customers shall seek assistance from the distributor who sold you product(s). Repaired or replaced product(s) are warranted for ninety (90) days from the date of repair or replacement, or for the remainder of the original product's warranty period, whichever is longer.

Note: Don't tear a paster such as S/N: 721K-08336 on the PCB board, because it is SOYAL warranty.