

AR500U

Dual technology long range reader – IR and 433 Mhz



Introduction

Worry your hand get wet or exposed to robbery treat when winding down windows to flash card? Wanted a super long range reader that can automatically open barrier gate without requiring you to flash card? AR500U is the ultimate hand free reader that can solve all your problems.

AR500U is the ultimate best RFID long range reader that can penetrate solar film to allow “truly hands-free” operation and no need to wind down windows.

AR500U can accurately limit reading coverage within desired zone and direction to totally eliminate undesired reading from trailing car, adjacent lane or behind reader. This ensures accurate reading 1 car at a time. Off the air, AR500U can read maximum 7 meters.

Ideal for any parking access application. AR500U is the most highly affordable solution available in the market today.

Features

1) Absolute directional

AR500U uses Infrared rays to define its reading zone. Tag will only wake up when they are within the IR coverage. Tags that are outside the IR coverage will not be wake up for reading. IR is only emitted in front of the reader at 60° angle. Therefore only tag at the front will be read. Tags that are outside the IR range - behind reader, adjacent car lane, trailing cars queue will not be read. AR500U is the first in the world that offer absolute directional and accurately controlled reading range.

2) Extended battery life on tag/transponder

Tag/transponder remained in standby mode (sleeping) all the time with minima power consumption. When tag enters the infrared zone, it will be activated and power is turned on automatically to send out tag number. When tag leaves the IR zone, it will return back to standby mode. This greatly extends life time of battery. Battery can be purchased from any electronic store and changed easily.

3) Adjacent lane automatic differentiation

AR500U can be programmed with different ID code for entry and exit. AR500U will only respond to the tag activated by the same reader (same ID code). This allows AR500U to be installed side-by-side at the center of entry and exit lane. AR500U will automatically differentiate the tag read from entry or exit lane by checking ID code returned by tag. This greatly increases reading accuracy for adjacent multi-lane application.

4) Card number automatic validation

AR500U read cards' number continually. Same card number will not be send via our Wiegand interface again. Reader will wait 7 sec before the same card number is sent out again. Different card number is sent out every 2 sec continuously.

5) Standard Wiegand Interface Output

AR500U send out standard Wiegand26 (xxx,xxxxx) and Wiegand34 (xxxxx, xxxxx) format to access controller. Most controllers in market can support WG26/34 and therefore can be integrated with AR500U.

The numbers from tag/transponder will be sent out as it is without any alteration. Some controllers will perform alteration on tag number received. This will cause number displayed by controller to be different from number printed on tag. Please check with controller supplier to verify this issue before purchasing AR500U.

6) Variable tag / transponder to meet your budget

When AR500U support 2 types of tags

CCD100 - Mini tag for lower budget. Medium signal strength for low end solar film (60-80% penetration).

CCD200 - Transponder for premium budget. Allow insert proximity card EM or Mifare type. Highest signal strength. Capable to penetrate medium to high end solar film (80-90%) penetration.

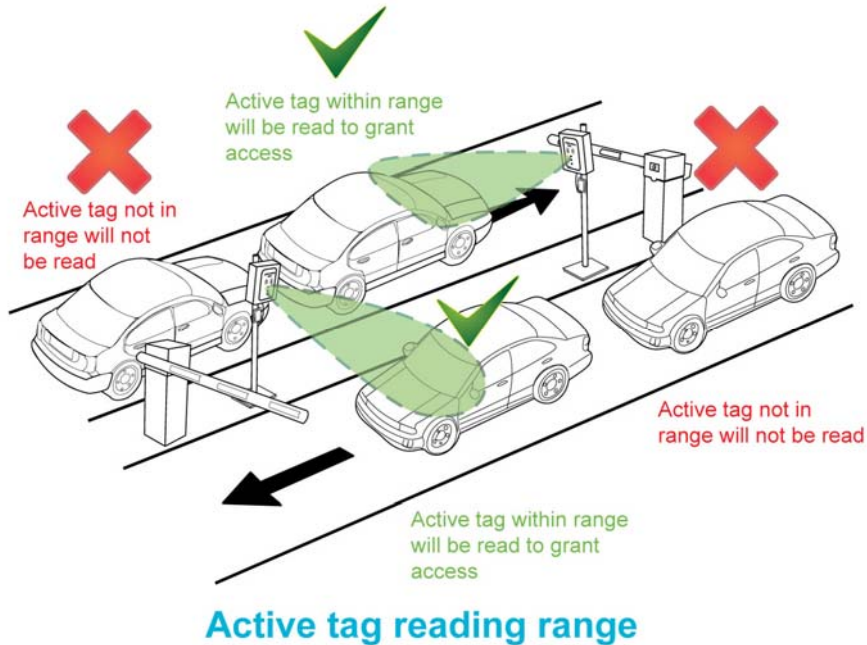
You can choose which type of tag/transponder to suit your budget and need. If you are using high end solar film then CCD200 will be the best choice to maintain hands free operation. If you are using low end solar film, then CCD100 will be the lower budget solution for you.

CCD200 is tested to penetrate most type of commercial solar film available in the market. However CCD200 does not guarantee to be able to penetrate most ALL type of solar film in the world.

Operating Principle

Every AR500U is programmed with an ID code. AR500U continuously sends out 60 degree infrared signal containing wake-up code and ID code. As soon as the dormant active tag enters into the scope of infrared signal, it will wake up to sent its card number and ID code to AR500U via microwave 433 MHz. When AR500U receives the data, it will validate the ID code if it is the same as its own code.

If the ID code is matching, it will be considered as a valid data and card number will be sent out via Wiegand interface. If ID code is not matching, data received will be deleted and no output on Wiegand interface. This ensures that each reader reads back tag waken by the same reader. Tag waken up by other reader will be ignored. If the same tag number is read back again and again within 7 sec, it will not be sending out to Wiegand interface. If there is a new tag number read, it will be send out to Wiegand interface immediately.



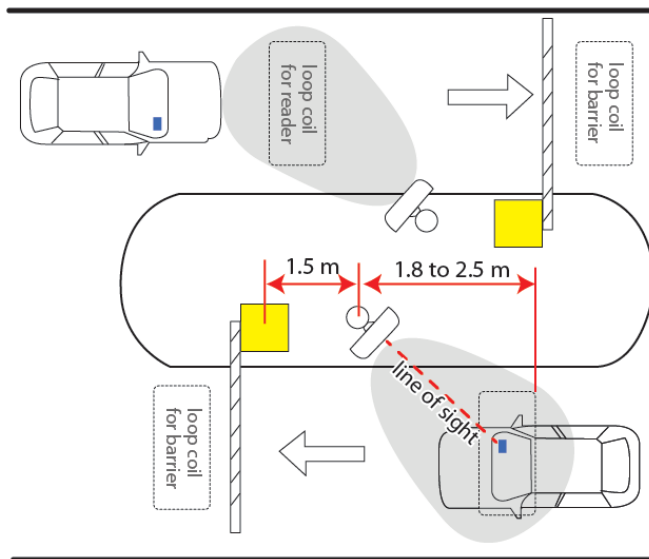
Reader specification

RF Receive frequency	433 MHZ
IR Sending Frequency	38 Khz
IR Read Angle	60°
Output Format	Wiegand26, Wiegand34
Data Rate	9600bps (RS232)
Voltage	DC9V~18V, Optimum 12V
Read Range	Max 7 meters Depends on type tag/transponder, battery life and metal content intensity in solar film.
ID code	6 unique ID code to support maximum 6 multiple adjacent lanes
Operating Humidity	10% to 90% relative humidity
Operating Temperature	-10°C to 80°C
Dimension (mm)	250 x 260 x 65 (WxHxD)
Weight	4 Kg

Installation requirement

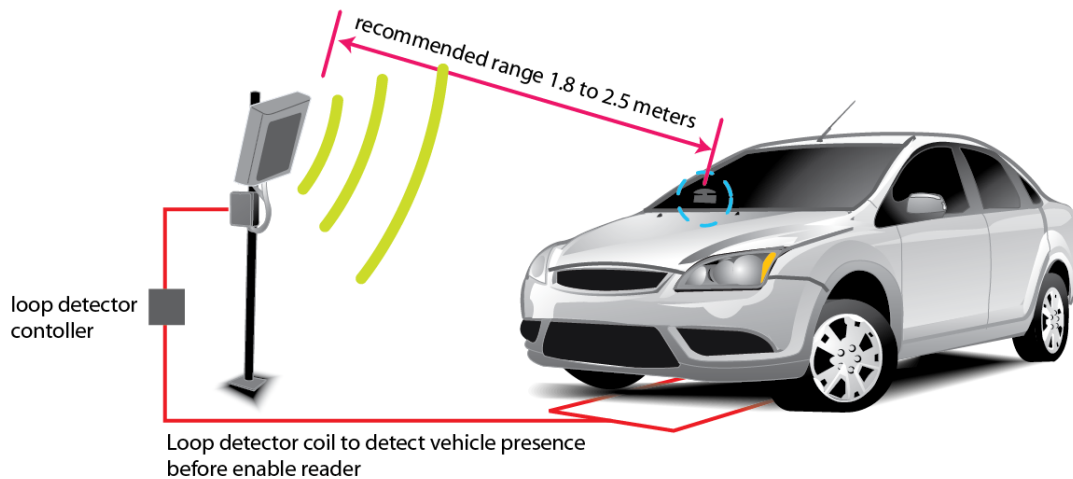
AR500U is suggested to install 1.8m to 2.5 meter from vehicle to achieve MAXIMUM penetration of solar film at any site condition. However the actual reading range achieved at site will depends on remaining battery life, type of tag used, type of solar film on vehicle and noise interference presence at site.

Recommended installation layout for best penetration performance

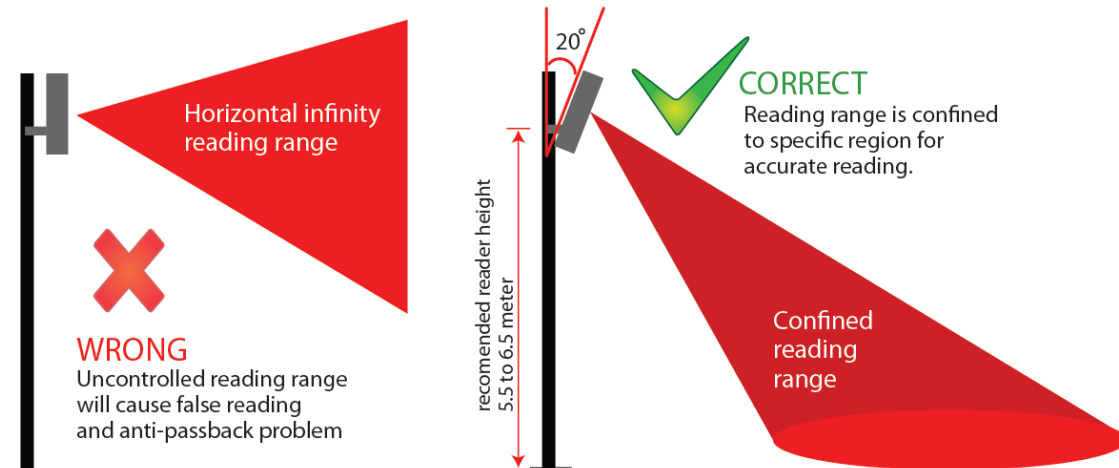


To achieve maximum reading range, we recomend no need to install loop detector for reader. If due to site condition, loop must be installed, loop coil must be within AR500u's reading zone. Improper placement of loop coil will reduce effective reading range of AR500u.

Transponder / tag inside the car must be tilted toward AR500U to achieve straight line of sight for maximum penetration. It is recomend to install transponder / tag on the same side for entry and exit to achieve consistent reading angle.

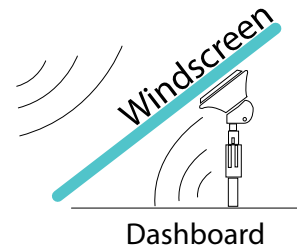


As shown below, the angle between the card reader and the pole is about 20° degrees. The front of the reader tilts 20° degree to the direction of incoming car.



Active tag CCD 100

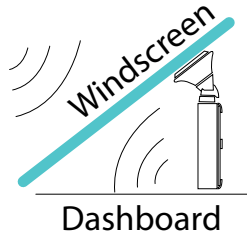
CCD100 tag is perfect for low budget requirement. It comes with a sucker bracket to easily attach / detach from windshield glass. The bracket works similar to GPS bracket. CCD100 is using standard coin battery that is readily available from any electronic store. If the range seemed like unusually short, please change the battery.



Replaceable battery

Active transponder CCD200

Transponder will read card number from proximity card and send out to AR500U via 433 MHz. The card number send out by transponder will be the same as printed on the card. It is suggested to remove the proximity card from transponder when not using. Transponder will totally shutdown its power when there is no proximity card inserted to save battery life. CCD200 is a good solution for "One-Card-Total" solution with door access. When get down from car, proximity card can be removed from transponder and used on doors access. When get onto car, card can be inserted back into transponder for long range reading. CCD200 can also be used to upgrade existing site that are already using normal card access - the same proximity card can be used back, just need to add AR500U and CCD200 transponder to achieve long range reading. CCD200 support 125 KHz EM or 13.56 Mhz mifare proximity card. CCD200 is using standard coin battery that is readily available from any electronic store. If the range seemed like unusually short, please change the battery. CCD200 install onto windshield using double sided adhesive.



Replaceable battery

Proximity card can be slotted at the back

Technical specification for tag and transponder

	CCD100 Mini Tag	CCD200 Transponder
RF sending frequency	433 Mhz	
RF sending power	<1milli watt	
IR Receiving Angle	60° degree	
IR Receiving frequency	38 Khz	
Read/Write Speed	≥100kbit/Sec (8km/hr)	
Off air max reading range (no solar film)	4 meter	7 meter
Signal strength	Low	Highest - maximum penetration of solar film
Reading Card number	Internal tag number	External proximity card 125 khz EM or Mifare card
Standby Current	≤10uA	≤10uA
Working Current	≤2mA	
Working Voltage	2.5 to 3.6 VDC	2.5 to 3.6 VDC
Battery type	2 pcs x 2032/3V button cell	2 pcs x 2450 coin cell (universal battery)
Working temperature	-10°C to 75°C	
Dimension (mm)	58 x 45 x 6	81 x 46 x 16

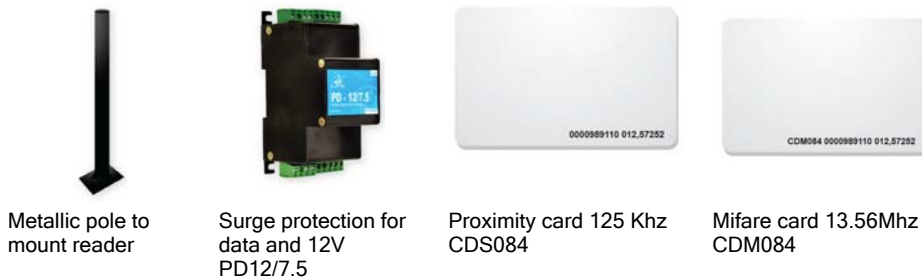
Ordering information

AR500U system supports different type of tags.

Model	Description
AR500Ua	Long range reader.
CCD100a	Mini tag A, sucker bracket and 2 x battery.
CCD200E	Transponder to support EM 125Khz proximity card. Card not included.
CCD200M	Transponder to support 13.56 Mhz proximity card. Card not included.

** Strongly recommended to install proper surge protection to protect 12V and data line output from damaged by outdoor lightning surge.*

Accessories



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