CDVI
WIRELESS

1 Introduction — A10U49 - UHF READER U4Go

General description

A10U49 is a high performance UHF RFID integrated reader.

It supports fast tag read/write operation with high identification rate. It can widely applied in many RFID application systems such as logistics, access control, anti-counterfeit and industrial production process control system.

Working principle

The reader A10U49 generates continuously a RF signal in the band 902 - 928 MHz.

When a passive tag (card, sticker or car plate type), carried by an user or fixed on a vehicle enters in the RF field, generated by the reader, a small perturbation occurs: the tag replies with an encrypted signal, that includes its s/n and more information. These are then detected by the reader which transmits the signal to the decrypting I/F device, that makes them available in wiegand format or activate a relay.

The wiegand signal can be read by an Access Control System that gives the final authorization to the user.

The reader comes with the corresponding I/F device which has a RF receiver built-in, operating at 433,92 MHz, with a memory for 100 remote controls, type Erone 128.

The remote control can be used as an alternative means of identification from longer range, with the very high security level given by the 128 bit rolling code, encrypted AES128

2 U4Go Range

Part-name	Part-Number	Description
A10U48	F0103000125	READER UHF LONG RANGE U4GO 865 MHz
A10U49	F0103000126	READER UHF LONG RANGE U4GO 902 MHz
A6U48	F0103000127	READER UHF 6M U4GO 865 MHz
A6U49	F0103000128	READER UHF 6M U4GO 902 MHz
ATU48	F0103000129	ADHESIVE TAG U4GO
CHU4GO	F0103000031	CARD HOLDER U4GO
CTU48	F0103000132	CARD TAG U4GO
PTU48	F0103000134	CAR PLATE TAG U4GO
RXU4GO128	F0103000137	I/F RECEIVER U4GO - 128

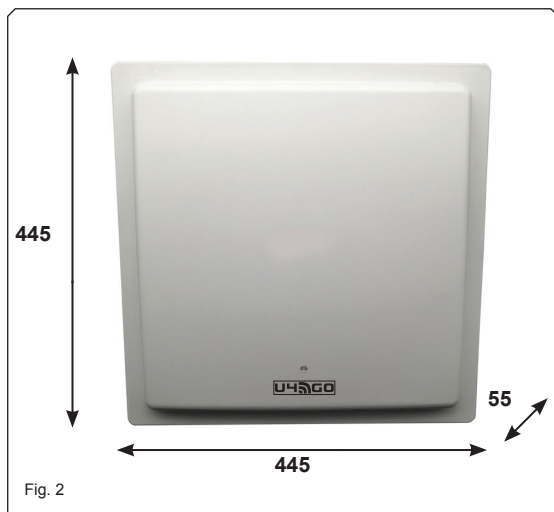## 3 Technical specifications : Reader

445
445
55

Fig. 2

Operating frequency range..................902 - 928 MHz
Transmission type ....FHSS
Detection range in open space............10 m (*)
Rated Power supply (Ta=25°C)..........9 Vdc (8V min,12V max)
Current consumption (average)...........350 mA
Max current consumption ....650 mA
Operating temperature ....-20°C ÷ +55°C
Storage temperature ....-20°C ÷ +75°C
Weight ....2,4 Kg.
Protocol tag supported ISO18000-6B, ISO18000-6C
....EPC C1G2)
RF output power.................................up to 30 dBm (adjustable)
Output RS-485
Dimensions..445 x 445 x 55 mm

(*) Effective distance depends on antenna, tag and environment

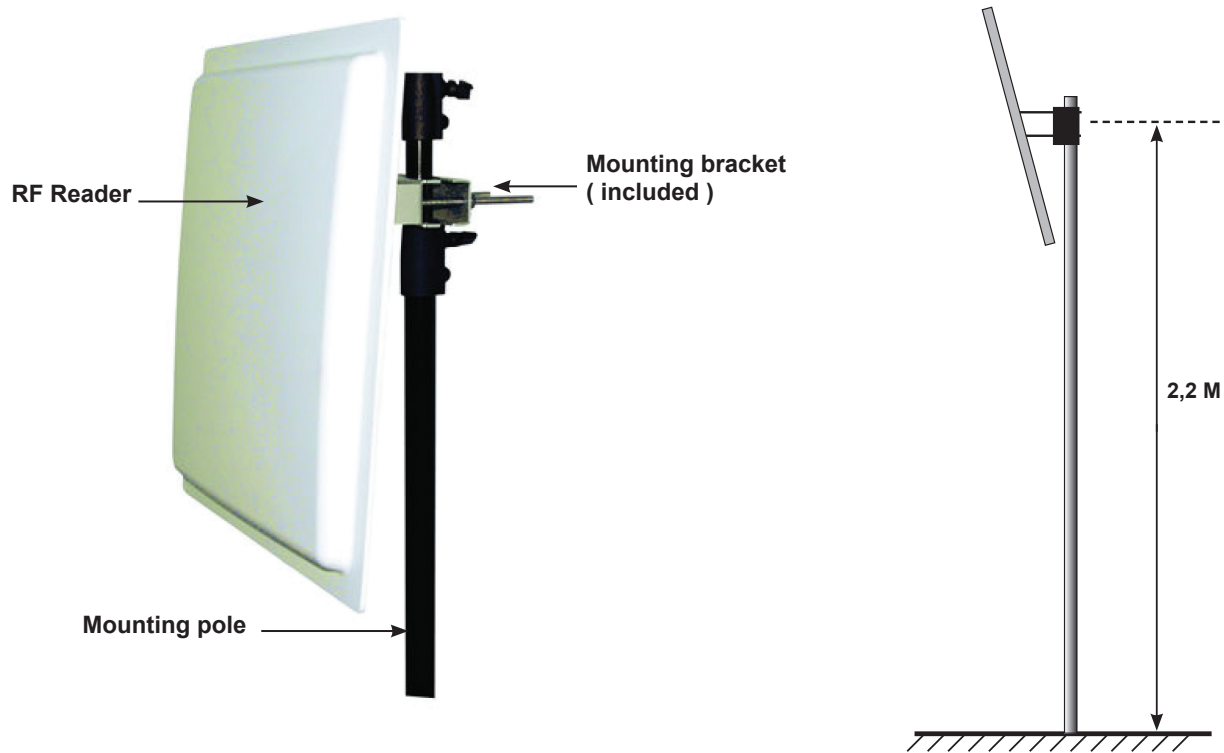## 4 Technical specifications : I/F w/built-in radio receiver

Fig. 2

123
81,5
41,5
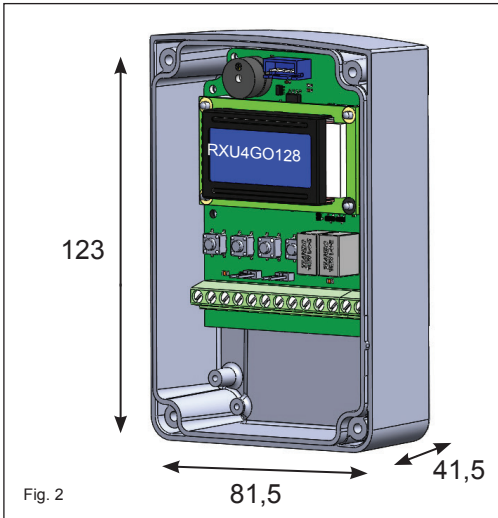
Operating frequency ....433,92 MHz
Demodulation ....GFSK
Sensitivity (for good signal) ....-115 dBm
Power supply:...12/24 Vac/dc
Current consumption (@12 Vdc)..............from 25 to 50 mA (max)
Encryption..Rolling code w/encoding AES128
Input RS-485
Outputs...Relay, Wiegand
Wiegand protocols supported.....................26 - 30 - 44 bit
Memory capacity ....7560 tags
....100 remote controls
Relays...2 x 24 VA - max 48Vdc
Relay operating mode ....pulse , step, delayed
Delay ....from 1 sec. to 23 h : 59 min
Retransmission period over wiegand bus...from 100 mS to 2 Sec.
Relay pulse ....300 mS
Operating temperature: ....-10 ÷ +60°C
Enclosure IP protection: IP55
Dimensions:...120 x 80 x 40 mm
Weight ....65 gr.

5 Transmitters Erone 128

Part-name	Part-Number	Description
S3TR128E2	F1002000089	TRANSMITTER ERONE 128 2 CH
S3TR128E4	F1002000090	TRANSMITTER ERONE 128 4 CH

6 Mounting the reader

RF Reader

Mounting bracket
(included)

Mounting pole

2,2 M

7 Mounting the I/F receiver

Drill the placing surface with ø6 tool and insert the 2 plugs

Then fix the support with the screws provided

Option A) make a hole (ø11 mm) on the bottom of the box and pass the cables throught

Option B) Use of PG7 cable glands (not provided)

Fig. 3

8 Connections

RXU4GO128

RF Reader

Data 2

Power 2

Relays 4

Wiegand 3

Power supply (included) 2 3 230 Vac

9 Wirings

Fig. 4

Buzzer

Connector for backup memory

Backlit LCD Display

CDVI U4Go

P1, P2 : navigate the menu

P4 : back to upper level

P3 : enter the menu (4 sec.) or confirm the choice

Pull-UP Wiegand

J2 ON = 9V

J2 OFF = 5V

P1 P2 P3 P4

RF Reader

SEA433

R1 R2 RG58

Orange
Purple
Black
Red

(1)

A
B

(2)

D1
D0   Wiegand BUS
GND

BLACK GND   (3)
RED +12dc

L1

3

230 Vac

Power supply (included).
NOTE: for indoor installations only.

Example 1: TX reception

5	5	6	7	1	4	3	5
R	1	a	b	c	d	R	2

TX Serial number

Button activated
a, b, c or d

Relay activated

Example 2 : Status of the relays

R	1							
P	U	L	S	E				

Relay 1 : Pulse

R	1							
S	T	E	P					

Relay 1 : Step

R	2							
0	0	:	0	1	:	0	5	

Relay 2 : Timed

R	2							
D	I	S	A	B	L	E	D	

Relay 2 : Disabled

Delay setting

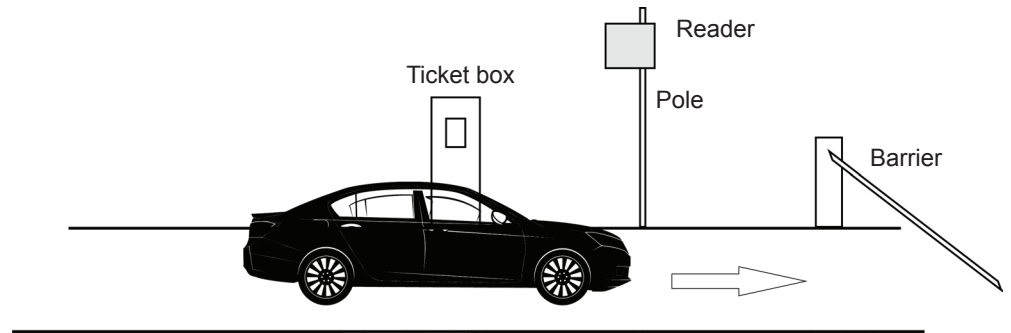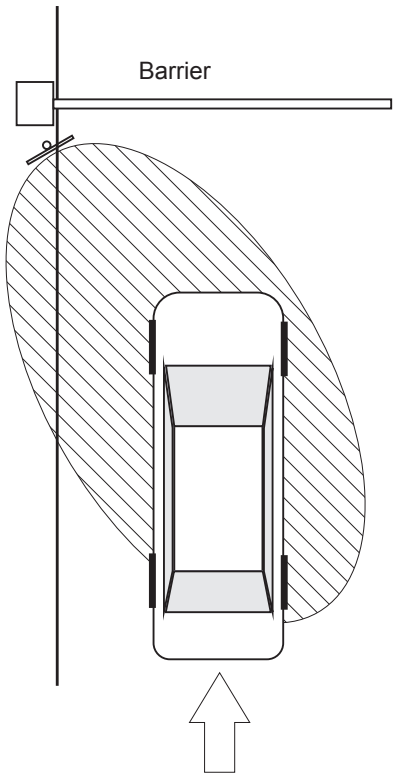| h	h		m	m		s	s
0	0	:	0	0	:	0	1

The factory value for the timing is 1 sec. Use P1 to scroll the digits and P2 to confirm

Ref	Description	Wire type	Optional extension size	Maximum length
(1)	Cable from reader (0,7m)	2 conductors (RS485 bus)	24AWG (0,51 mm^2)	1220 m
		2 conductors (Power supply)	18AWG (1,02 mm^2)	L1 = 32 m MAX
(2)	Wiegand BUS	3 conductors Belden 9553	22AWG (0,64 mm^2) to 18AWG (1,02 mm^2)	150 m
(3)	Power supply	2 conductors	18AWG (1,02 mm^2)	L1 = 32 m MAX

10 Compatible UHF Tags

P/N	Description	Image	Suitable way
ATU48	ADHESIVE TAG U4GO		Stick on the surface of the glass
CTU48	CARD TAG U4GO		1) fixed with card holder 2) handheld by user
PTU48	Plate TAG U4GO		fixed on the surface of the metal

11 Side installation

Barrier

Ticket box

Reader

Pole

Barrier

12 Over-head installation

Control room

Ticket box

Reader

Holder for overhead installation

Barrier
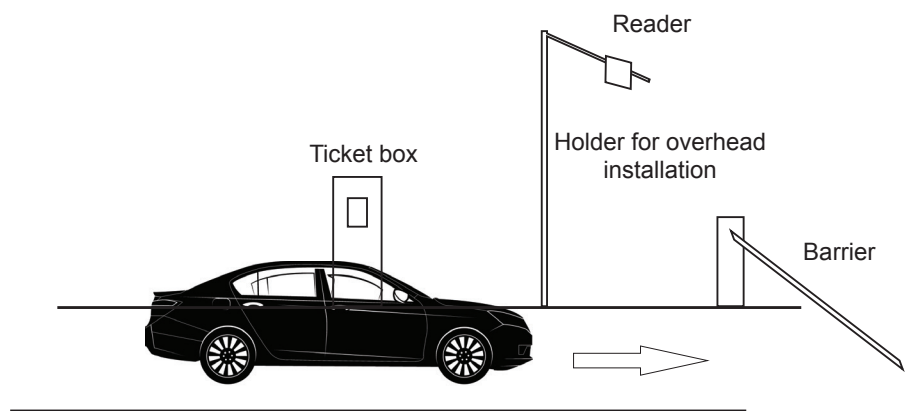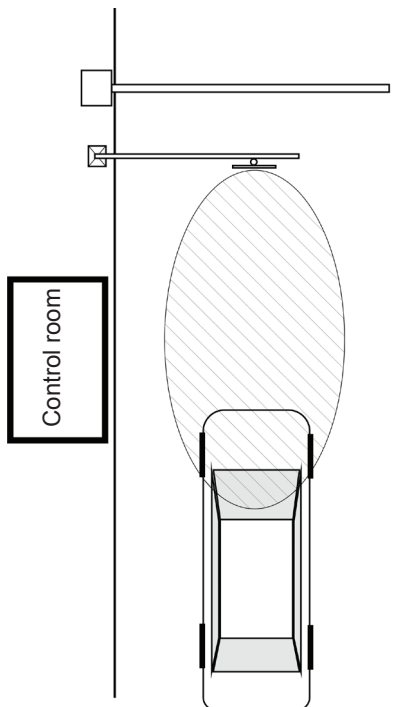
13 Getting started

When the antenna installation is complete, it is necessary to determine whether the interface device must activate the relays or simply sends in wiegand the serial numbers of tags.
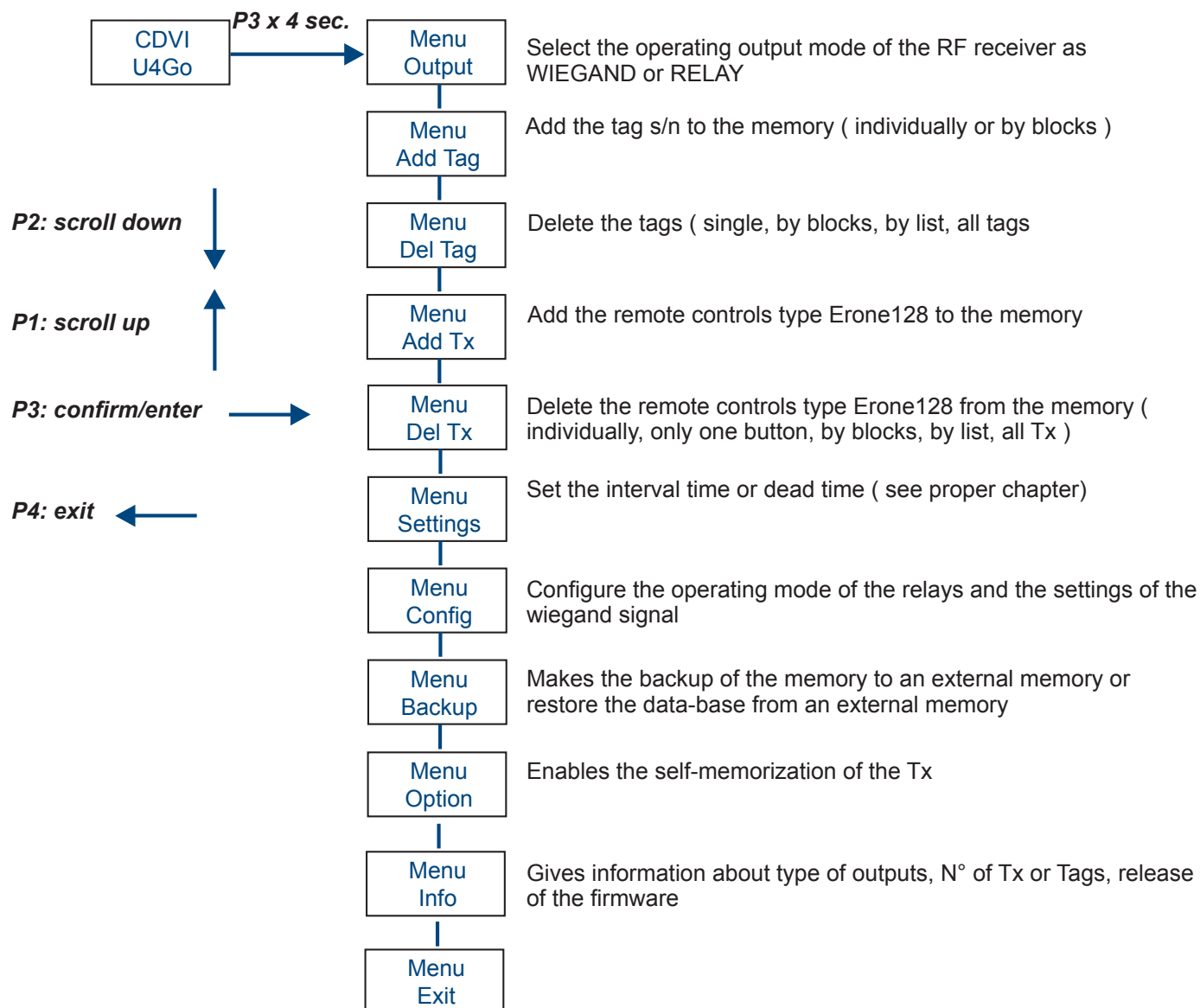
Relay output: the serial numbers of the tags must be stored (see. Add Card). the memory can hold up to 7560 cards;

Wiegand output: if the interface device is connected to an access control panel, through the Wiegand bus, the pairing of the cards is not necessary and therefore there is *no memory limi*t.
However, if the SELECTIVE OPERATION MODE is set, the memorization of a single tag will effect the wiegand communication, on which will pass the s/n of the only tags memorized.

Furthermore, if the installation requires the use of Erone 128 remote controls, which will be decoded by the built-in receiver, the remote controls must be memorized: the memory contains 100 transmitters. Erone - S3TR128E2, S3TR128E4

14 Programming / Navigation menu

P3 x 4 sec.

CDVI U4Go

P2: scroll down

P1: scroll up

P3: confirm/enter

P4: exit

Menu Output — Select the operating output mode of the RF receiver as WIEGAND or RELAY

Menu Add Tag — Add the tag s/n to the memory (individually or by blocks)

Menu Del Tag — Delete the tags (single, by blocks, by list, all tags

Menu Add Tx — Add the remote controls type Erone128 to the memory

Menu Del Tx — Delete the remote controls type Erone128 from the memory (individually, only one button, by blocks, by list, all Tx)

Menu Settings — Set the interval time or dead time (see proper chapter)

Menu Config — Configure the operating mode of the relays and the settings of the wiegand signal

Menu Backup — Makes the backup of the memory to an external memory or restore the data-base from an external memory

Menu Option — Enables the self-memorization of the Tx

Menu Info — Gives information about type of outputs, N° of Tx or Tags, release of the firmware

Menu Exit

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15 Add Tag [Single]

For adding a tag (card, plate, sticker) enter the option "Add Tag" of the main menu and "Add Tag again".

m	e	n	u				
A	d	d		T	a	g	

→

A	d	d		T	a	g	

W	a	i	t		T	a	g
0	0	0	0	0	0	0	0

Show the Tag to the reader

Type the S/N of the tag : enter the number using P1 or P2, shift left with P4

16 Add Tag [Block]

For adding a block of tags (card, plate, sticker) enter the option "Add Tag" of the main menu and "Add Tag Block".

m	e	n	u				
A	d	d		T	a	g	

A	d	d		T	a	g	
B	l	o	c	k			

→

H	o	w		m	a	n	y
T	a	g	?		0	0	0

Type the number of tag to memorize

1	0	0		T	a	g	?
N	o				Y	e	s

Confirm (P1 for shift and P3 to confirm

W	a	i	t		T	a	g
0	0	0	0	0	0	0	0

Show the Tag to the reader

Type the S/N of the first tag of the block tag : enter the number using P1 or P2, shift left with P4

17 Delete Tag [Single]

For deleting a tag (card, car-plate, sticker) enter the option "Add Tag" of the main menu and "Delete Tag".

m	e	n	u				
D	e	l		T	a	g	

→

D	e	l	e	t	e		
T	a	g					

W	a	i	t		T	a	g
0	0	0	0	0	0	0	0

Show the Tag to the reader

Type the S/N of the tag : enter the number using P1 or P2, shift left with P4

C	o	n	f	i	r	m	?
N	o				Y	e	s

Confirm (P1 for shift and P3 to confirm)

18 Delete Tag [Multiple]

For deleting many tags you can do it by block, selecting them from a list, or delete the full memory.

```
menu
Del  Tag
```
→
```
Delete
Tag
```
→
```
Wait  Tag
00000000
```

Show the Tag to the reader

Type the S/N of the tag : enter the number using P1 or P2, shift left with P4

```
Delete
Block
```
→
```
Wait  Tag
00000000
```

Show the Tag to the reader

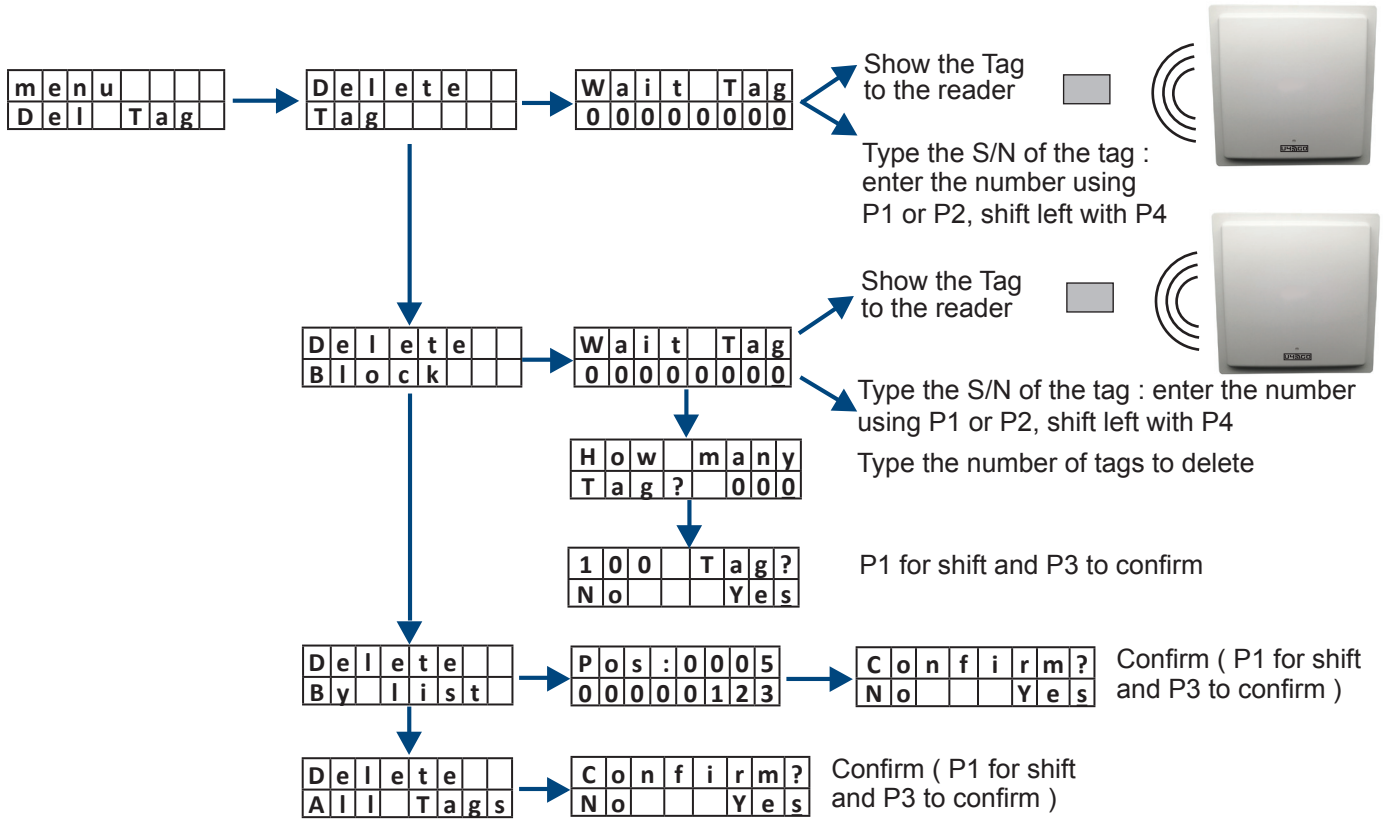Type the S/N of the tag : enter the number using P1 or P2, shift left with P4

```
How  many
Tag?  000
```
Type the number of tags to delete

```
100  Tag?
No     Yes
```
P1 for shift and P3 to confirm

```
Delete
By  list
```
→
```
Pos:0005
00000123
```
→
```
Confirm?
No     Yes
```
Confirm (P1 for shift and P3 to confirm)

```
Delete
All  Tags
```
→
```
Confirm?
No     Yes
```
Confirm (P1 for shift and P3 to confirm)

19 Add Tx

ATTENTION: The memorization of a TX, even just one, sets the SELECTIVE OPERATING MODE.
That means that from that time on, the interface device filters and sends on wiegand the serial numbers the only TX memorized (100 TX)

Add RF transmitters to the memory (up to 100)

```
menu
Add  Tx
```
→
```
Add  to
Relay  1
```
→
```
Wait  Tx
00000000
```

Press any button of the Tx to add

Type the S/N of the Tx : enter the number using P1 or P2, shift left with P4

```
Add  to
Relay  2
```
→ same as Relay 1

```
Add  Tx
```
→
```
Wait  Tx
00000000
```

Press any button of the Tx to add

Type the S/N of the Tx : enter the number using P1 or P2, shift left with P4

Once entered the S/N, the system will make the following association:
button A --> Relay 1
button B --> Relay 2

```
Add
Block
```
→
```
How  many
Tx?  000
```
Type the number of Tx to add

```
Wait  Tx
00000000
```

Press the button of the first Tx of the block

Type the S/N first Tx of the block

20 | Del Tx

Delete RF transmitters from the memory (single or multiple

menu							
D	e	l		T	x		

Allows to specify which button activate the relay 1 or the relay 2

D	e	l	e	t	e		
T	x						

W	a	i	t		T	x	
0	0	0	0	0	0	0	0

Press any button of the Tx to delete

Type the S/N of the Tx : enter the number using P1 or P2, shift left with P4

D	e	l	e	t	e		
B	u	t	t	o	n		

W	a	i	t		T	x	
0	0	0	0	0	0	0	0

Press any button of the Tx to delete

Type the S/N of the Tx : enter the number using P1 or P2, shift left with P4

R	e	l	a	y		1	
-	B	-	D				

R	e	l	a	y		2	
A	-	C	-				

Press P1 to add a Button and P2 to delete it, confirm with P3, shift back with P4

D	e	l	e	t	e		
B	l	o	c	k			

W	a	i	t		T	x	
0	0	0	0	0	0	0	0

Press any button of the first Tx of the block to delete

Type the S/N of the first Tx of the block to delete enter the number using P1 or P2, shift left with P4

D	e	l	e	t	e		
b	y		L	i	s	t	

P	o	s	:	0	0	0	5
0	0	0	0	0	1	2	3

Press P1 to scroll the list and P3 to confirm

C	o	n	f	i	r	m	?
N	o				Y	e	s

D	e	l	e	t	e		
A	l	l		T	x		

C	o	n	f	i	r	m	?
N	o				Y	e	s

21 | Settings

menu							
S	e	t	t	i	n	g	s

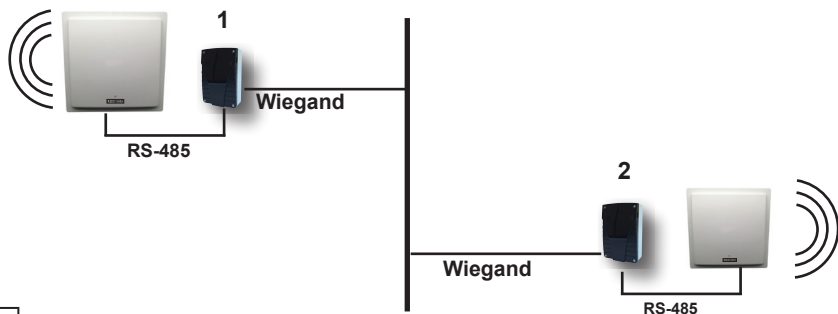| S	e	t	t	i	n	g	s
I	n	t	e	r	v	a	l

Sets the interval time between 2 next trains of bits carrying the S/N of the tag detected by the reader, as long as the tag stands in the field generated by the UHF reader. Values available : [0, 5, 10, 20, 30 Sec.]

S	e	t	t	i	n	g	s
D	e	a	d	T	i	m	e

Set the "deadtime" that is the time in which a tag, once carried out, must remain outside the detection field to be detected again. Avaliable values [0, 1, 2, 3, 4, 5, 6, 7, 8 , 9 Sec.]

S	e	t	t	i	n	g	s
A	d	d	r	e	s	s	

Sets the address of the reader : [0 - 9]. Factory value = 1
A different address of the reader can be used when 2 readers with the corresponding I/F are connected on the same wiegand BUS.
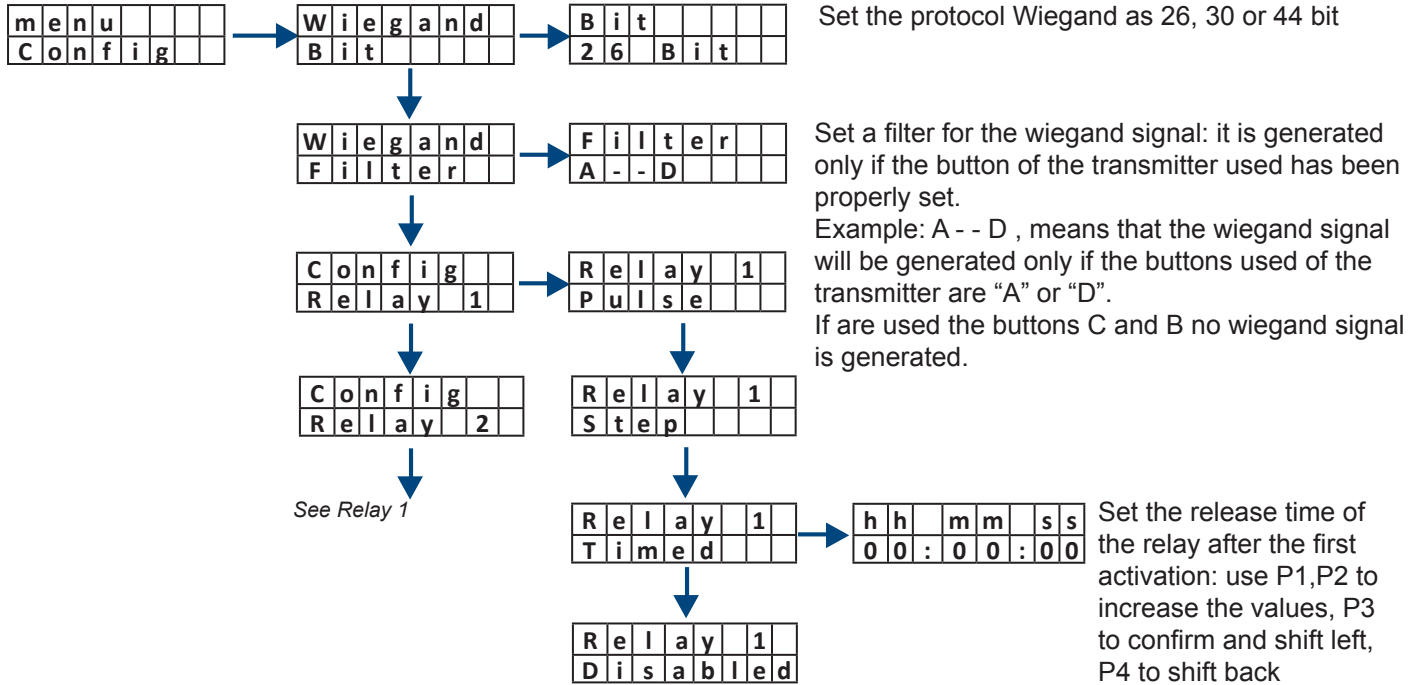
1

Wiegand

RS-485

2

Wiegand

RS-485

D	e	l	e	t	e		
S	e	t	t	i	n	g	s

Sets the receiver to the factory defaults.

22   Config

If the output is "Wiegand" set the wiegand protocol (26, 30 or 44 bit) and a filter on the Tx buttons
If the output is "Relay" set the operating mode of the 2 relays as Pulse, Step, Timed or Disabled)

m	e	n	u				
C	o	n	f	i	g		

→

W	i	e	g	a	n	d	
B	i	t					

→

B	i	t					
2	6		B	i	t		

Set the protocol Wiegand as 26, 30 or 44 bit

W	i	e	g	a	n	d	
F	i	l	t	e	r		

→

F	i	l	t	e	r		
A	-	-	D				

Set a filter for the wiegand signal: it is generated only if the button of the transmitter used has been properly set.
Example: A - - D , means that the wiegand signal will be generated only if the buttons used of the transmitter are "A" or "D".
If are used the buttons C and B no wiegand signal is generated.

C	o	n	f	i	g		
R	e	l	a	y		1	

→

R	e	l	a	y		1	
P	u	l	s	e			

C	o	n	f	i	g		
R	e	l	a	y		2	

See Relay 1

R	e	l	a	y		1	
S	t	e	p				

R	e	l	a	y		1	
T	i	m	e	d			

→

h	h		m	m		s	s
0	0	:	0	0	:	0	0

Set the release time of the relay after the first activation: use P1,P2 to increase the values, P3 to confirm and shift left, P4 to shift back

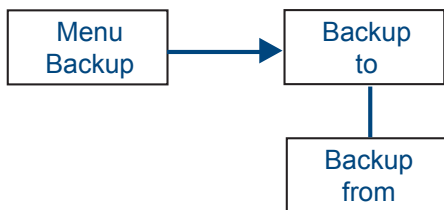| R	e	l	a	y		1	
D	i	s	a	b	l	e	d

23   Backup

Allows to save the full internal data-base into an external memory or restore the data-base from an external memory
1) Plug-in the memory into the proper connector
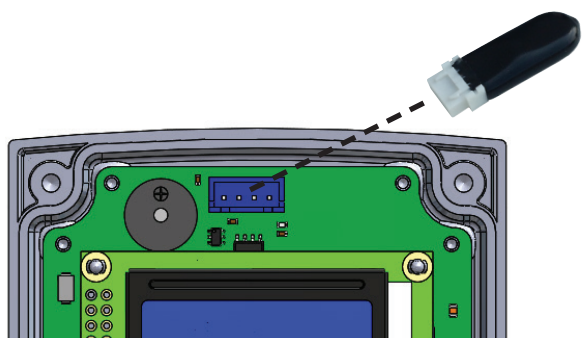
Red Rubber Memory = 512 Kbit

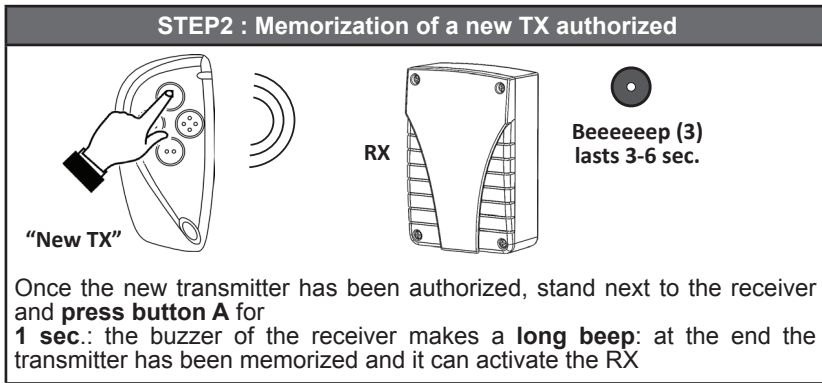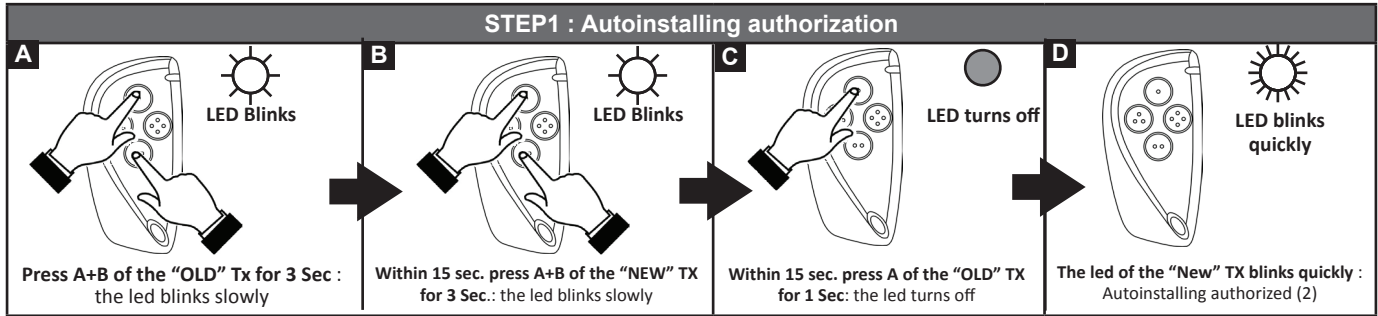2) Enter the backup menu and select the option desired.

Menu Backup → Backup to

Backup from

⚠ **ATTENTION:** the restore from an external memory will cause the overwriting of the all the data of the internal memory.

24 Option

The menu Option allows to enable (ON) or disable (OFF) the "Autoinstalling feature" **:** adding a new transmitter without accessing to the receiver. You need to use a transmitter already memorized for authorizing the autoinstalling function on a new unit. NOTE : at least one transmitter must be memorized in the receiver.

Take 2 transmitters ("old" and "new") and hold next each other. (1)

STEP1 : Autoinstalling authorization

A
LED Blinks

Press A+B of the "OLD" Tx for 3 Sec :
the led blinks slowly

B
LED Blinks

Within 15 sec. press A+B of the "NEW" TX
for 3 Sec.: the led blinks slowly

C
LED turns off

Within 15 sec. press A of the "OLD" TX
for 1 Sec: the led turns off

D
LED blinks
quickly

The led of the "New" TX blinks quickly :
Autoinstalling authorized (2)

STEP2 : Memorization of a new TX authorized

RX

Beeeeeep (3)
lasts 3-6 sec.

"New TX"

Once the new transmitter has been authorized, stand next to the receiver and **press button A** for
1 sec.: the buzzer of the receiver makes a **long beep**: at the end the transmitter has been memorized and it can activate the RX

NOTES :
(1): The "old" transmitter must be already memorized in the receiver
(2): The autoinstalling feature, if enabled on the receiver (Option=ON), is limited to 15 attempts.
If you press any button of the new transmitter out of the reception range of the receiver more that 15 times, the autoinstalling property stops and the procedure must be repeated.

(3): The beep of the receiver confirms the memorization: it will take 3-6 sec. to happen according to the number of transmitters stored.

25 Wiegand Output

The I/F - receiver converts in wiegand format both the S/N of the tags UHF and the S/N of the radio transmitters Erone 128 bit. The architecture of the wiegand signal is different according to the number of bits set (26, 30 or 44 bit).

25.1 Wiegand UHF

Wiegand 26

Bit 1	Bit 2 - 5	Bit 6 - 25	Bit 26
Even Parity (1 bit)	[4 bit Address] (*)	[20 bit S/N]	Odd Parity (1 bit)

Wiegand 30

Bit 1	Bit 2 - 5	Bit 6 - 29	Bit 30
Even Parity (1 bit)	[4 bit Address]	[24 bit S/N]	Odd Parity (1 bit)

Wiegand 44

Bit 1-4	Bit 5 - 8	Bit 9 – 40	Bit 41 - 44
0000 (fixed)	[4 bit Address]	[32 bit S/N]	LRC (**)

(*) Is the address of the receiver set in the Settings submenu (see par. 21)

(**) Longitudinal Redundancy Check

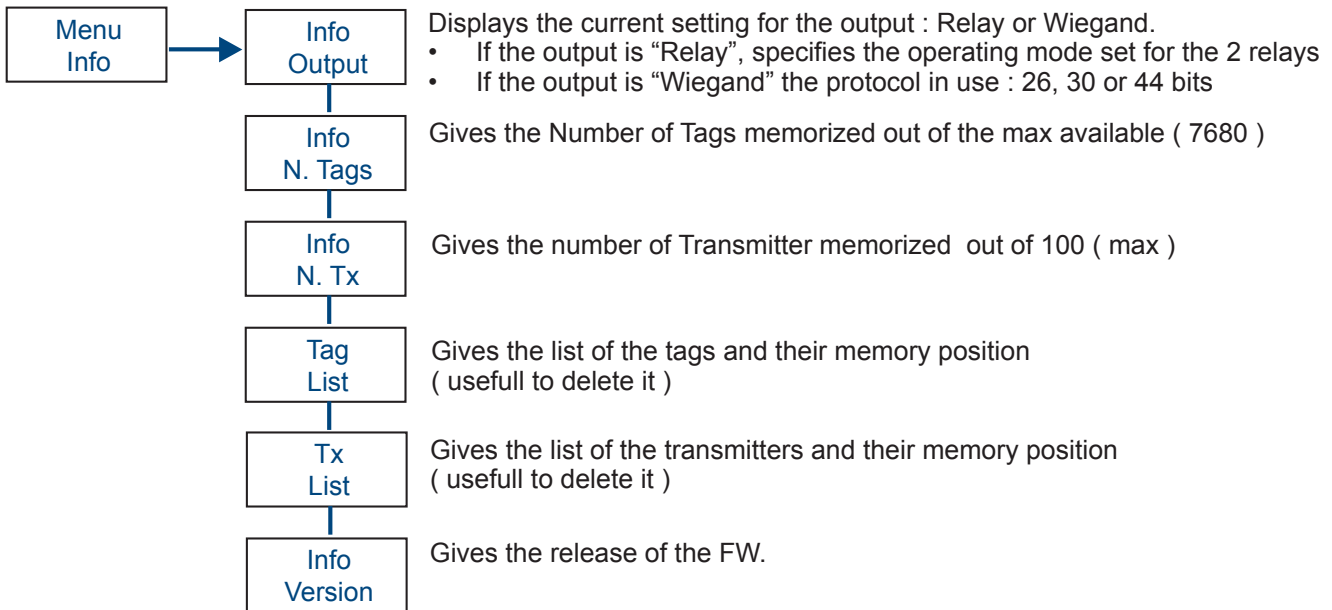## 25.2 Wiegand S/N of the radio transmitters

Wiegand 26

Bit 1	Bit 2 - 5	Bit 10 - 25	Bit 26
Even Parity (1 bit)	[4 bit Button] (*)	[20 bit S/N]	Odd Parity (1 bit)

Wiegand 30

Bit 1	Bit 2 - 5	Bit 6 - 29	Bit 30
Even Parity (1 bit)	[4 bit Button] (*)	[24 bit S/N]	Odd Parity (1 bit)

Wiegand 44

Bit 1-4	Bit 5 - 8	Bit 9 - 40	Bit 41 - 44
0000 (fixed)	[4 bit Button] (*)	[32 bit S/N]	LRC (**)

(*) Code of the 4 buttons of a transmitter expressed in hex format, according to the table below

Button	Code
A	1010
B	1011
C	1100
D	1101

(**) Longitudinal Redundancy Check

26   Info

Menu Info → Info Output	Displays the current setting for the output : Relay or Wiegand. • If the output is "Relay", specifies the operating mode set for the 2 relays • If the output is "Wiegand" the protocol in use : 26, 30 or 44 bits
Info N. Tags	Gives the Number of Tags memorized out of the max available (7680)
Info N. Tx	Gives the number of Transmitter memorized out of 100 (max)
Tag List	Gives the list of the tags and their memory position (usefull to delete it)
Tx List	Gives the list of the transmitters and their memory position (usefull to delete it)
Info Version	Gives the release of the FW.

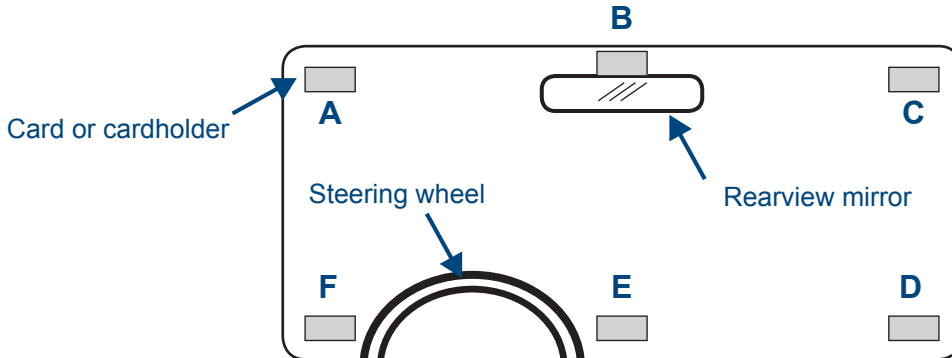## 27 Installation of the tags

For vehicles without metalized windshield, you can choose one of the six places showed on the figure below to install (A - F).
For vehicles with pre-configured metalized windshield, it should have a reserved area that is not metalized for RFID tags according to the European Standard, so choose the position B.
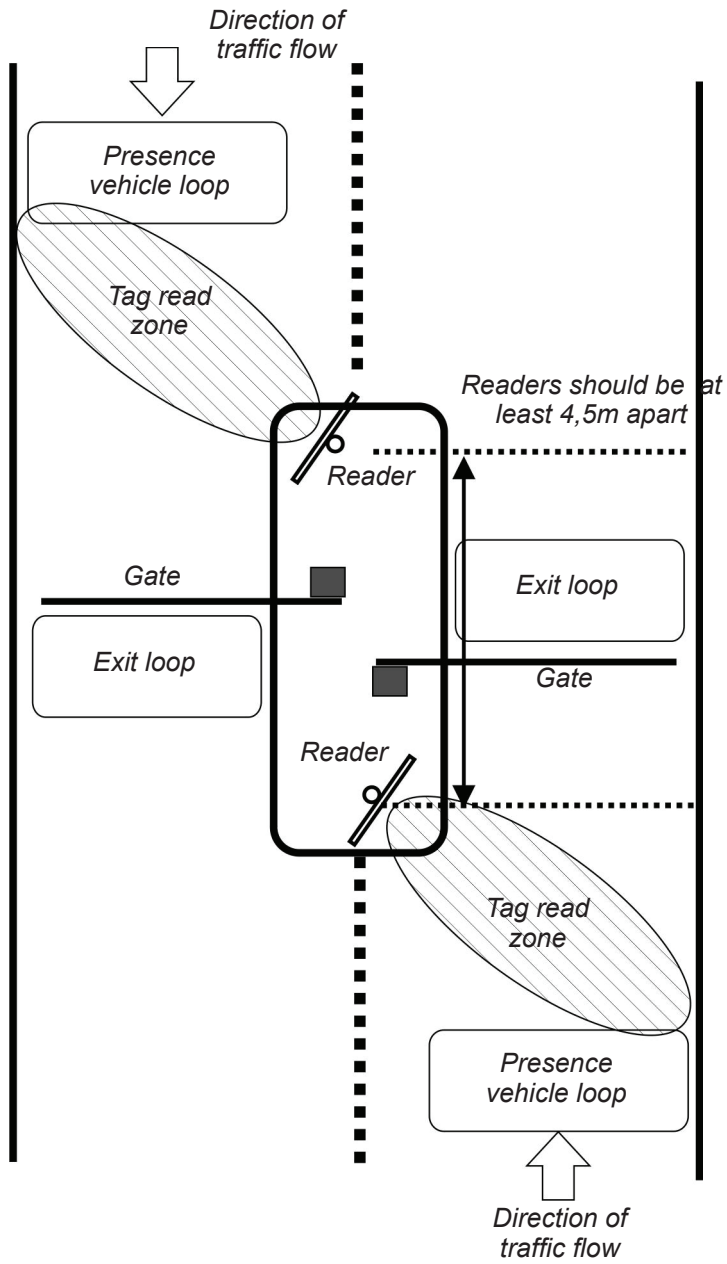

For optimum performance, choose A or F if the reader is in the left position of the windshield, or the position C or D if the reader is on the right position of the windshield.
Choose position B or E if the antenna is in the overhead of the traffic line.

REMARK : *when there is a metalized windshield, the read range of the reader will be affected. Please test the performance before installation !*

28 Parking garage application

Direction of
traffic flow

Presence
vehicle loop

Tag read
zone

Readers should be   at
least 4,5m apart

Reader

Gate

Exit loop

Exit loop

Gate

Reader

Tag read
zone

Presence
vehicle loop

Direction of
traffic flow

29   Holding the card by hand

The best position of the reader can be searched, in the first step holding the card by hand.

Attention: the card is very sensitive to the human hand.
The performance of detection can drastically change according to the way of holding the cards.
Look at the following images to understand the best holding way of the card

Hold the card with the outstretched arm, away from the body.
If the card is hold near the body the performances can decrease a lot.
A card held in the wallet cannot be detected.
A card in touch with the clothes cannot be read.

30   Installation of the sticker ATU48

The sticker position should be similar to the card, as described above.
Best use on the surface of a window or headlights.
IMPORTANT: the sticker, once fixed, cannot be rip off and reused.

Please test the performances before installation

31   Installation of the Licence plate PTU48

Use only for licence plate. Use the screws to fix the tag on the bottom of the licence plate

Please test the performances before installation

32   Declaration of Conformity

Hereby, CDVI Wireless Spa, declares that the radio equipment type A10U49 complies with the Standard 47 CFR FCC Part 15, subpart B. The full text of the Declaration of conformity is available at the following internet address: www.erone.com.

GUARANTEE

The warranty period for this product is 24 months, beginning from the manufacturer date. During this period, if the product does not work correctly, due to a defective component, the product will be repaired or substituted at our discretion. The guarantee does not cover the plastic container integrity. After-sale service is supplied at the factory.

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