Ultrasonic parking space detector user manual

CE-U0#-34W2 (V1.0)

1 Overview

Ultrasonic parking space detector is a detector that uses ultrasonic reflection method to detect the presence of an object within a distance, the best detection location is installed horizontally in the ceiling, basipetal detection, best fit to install on the top of the parking space. Ultrasonic parking space detector adopts RS485 interface for remote communication.

Features:

- With three circuits relay output, can be used to control the electronic lock.
- The baud rate and address can be modified remotely.
- With two circuits power-line terminal and RS485 port terminal, easy for installation.
- With local communication tips and ultrasonic receiving exception tips.
- With wide power supply range, AC current 9-30V powered.
- Adjustable detection distance, 0.5 meters per level, the maximum distance is up to 4 meters.

2 Case Style

Parking space detector CE-U01-34W2 outline dimension: Φ100X48 mm

LED indicator light CE-LED-A outline dimension: Φ74X35 mm

Figure 1. CE-LED-A outside drawing

Figure 2. CE-U01-34W2 outside drawing

3 Part Number

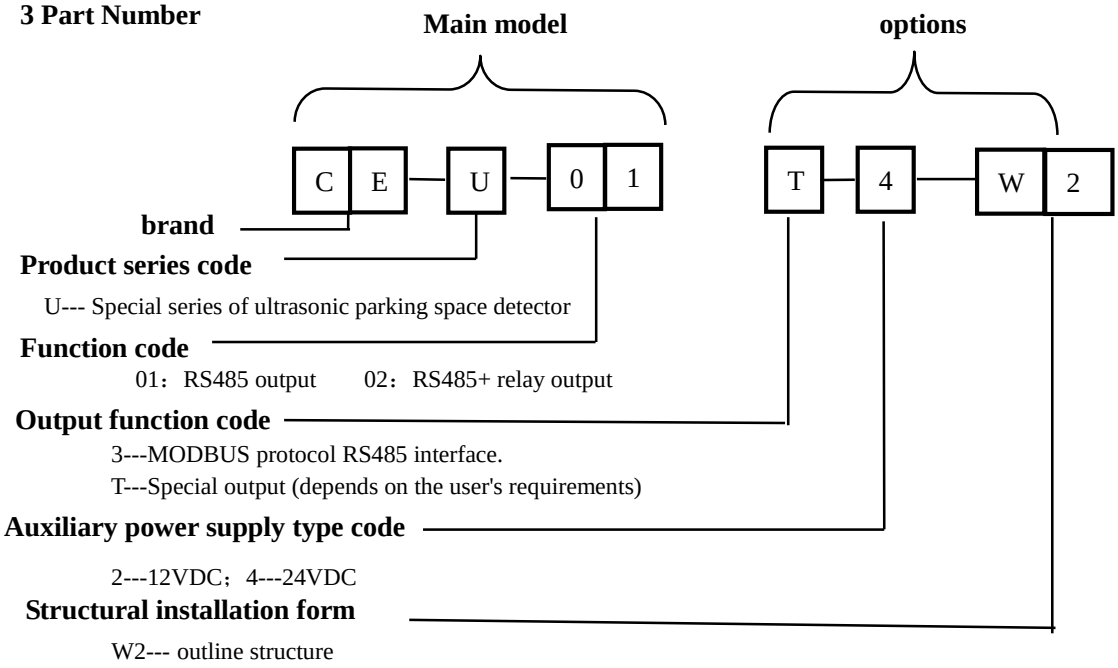

Figure3 .product model selection table

4 Specifications

Product main model	U01-34W2	U02-34W2	LED-A
Product name	Ultrasonic parking space detector	Ultrasonic parking space detector	parking space indicator light
Communication interface	RS485 interface; Address 1-63; Data format: N、8、1 Baud rate: 4800、9600 bps are optional.		
Data update cycle	3 seconds		
Temperature/ humidity	Operating temperature:-20-+60°C, humidity 95%, No dew and non-corrosive gases places.		
Auxiliary power supply	24VDC		5VDC
Power consumption	U01-T4W2 power consumption< 25mA , U02-T4W2 power consumption<50mA		
Lightning surge	power input terminal ±2KV;voltage measurement terminal±2KV; communication interface±2KV		
Output	U02-T4W2 with three circuits relay output		Red, Green double colors are highlighted
Measurement range setting	Four levels measurement range setting		

Functions	● Can set address and detection distance through dial switch, the detection distance is four levels adjustable. ● Can set address and baud rate through RS485 command. ● Make the ultrasonic indicator flashing when there is no car through RS485 command. ● ultrasonic detector is equipped with a red, green double color highlight indicator light, light is red when there is a car in the parking space, light is green when there is no car in the parking space. ● Standard MODBUS communication protocol RS485 interface communication, agreement can also be made according to the user's requirement.	

5 The whole device wiring diagram and the pin definition

5.1 Wiring board wiring diagram

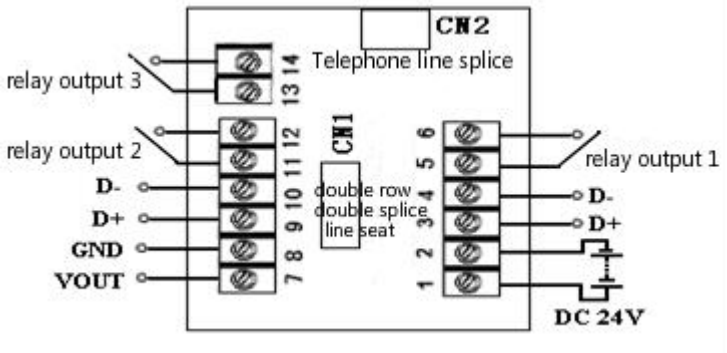

Figure 4. Wiring board wiring diagram of ultrasonic parking space detector

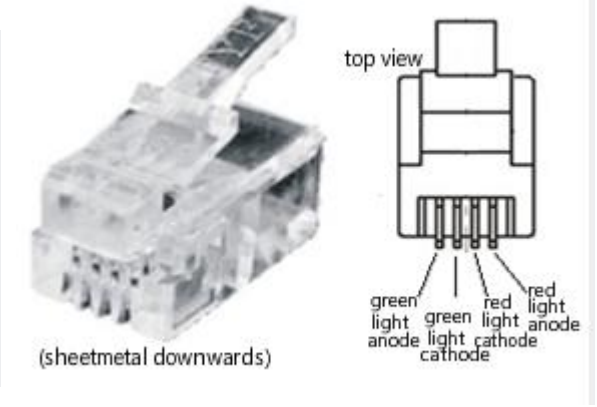

Figure 5, RJ11 crystal head wiring diagram

5.2 Pins definition as follows

Sheet 1 Connection pin definition sheet

Pin	Name	Description	Pin	Name	Description
1	VIN	power input anode	7	VOUT	power output anode
2	GND	power input cathode	8	GND	power output cathode
3	D+	RS485 interface signal anode	9	D+	RS485 interface signal anode
4	D-	RS485 interface signal cathode	10	D-	RS485 interface signal cathode
5	COM1	The first circuit relay common terminal	11	COM2	The second circuit relay common terminal
6	J1	The first circuit relay normally open terminal	12	J2	The second circuit relay normally open terminal
			13	J3	The third circuit relay normally open terminal
			14	COM3	The third circuit relay common terminal

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6. Mounting method

Use screw to fix the host (figure2 CE-U01-34W2 outline drawing) of the ultrasonic parking space detector to the probe position (the probe underside with four holes fixed disc); Pass the wiring board which connected to the host (figure4 detector wiring board diagram) insert the RJ11 crystal head that on the connecting wire (figure5 crystal head wiring diagram); Then release the connecting wire, the LED indicator light (figure1 CE-LED-A outline drawing) on the other end of the connection line is fixed in the indicator position with the screw (the indicator light underside with four holes fixed disc);

Figure1. CE-LED-A outline drawing

Figure2. CE-U01-34W2 outline drawing

7 Dial switch setting

7.1.Dial switch definition (0： OFF 1： ON)

Sheet 2 Dial switch definition sheet

B8	B7	B6	B5	B4	B3	B2	B1
Measurement range setting		Address setting					

7.2 Measurement range setting (0： OFF 1： ON)

Sheet 3 measurement range dial switch setting sheet

B8	B7	Distance (meter)
0	0	1.5
0	1	2.0
1	0	2.5
1	1	3.0

Measurement range is achieved by setting the dial switch. The dial switch setting increase 0.5 meters per step, four steps in total (see sheet3). Deduct 0.5 meters according to the actual installation height when setting the dial switch, refer to the sheet2.

Example of measurement range dial switch setting, actual installation height is 2.6 meters, deduct 0.5 meter, refer to sheet3, choose approach value 2.0 meters, set the dial switch B8 to the OFF, B7 to ON. At this moment, height is less than 2.0 meters, parking space information instruction light turns green, parking space light turns red, height is more than 2.0 meters, parking space information instruction red light is off , green light is on.

7.3 Address setting (0： OFF 1： ON)

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Sheet 4 communication address setting sheet

B6	B5	B4	B3	B2	B1	Address value
0	0	0	0	0	1	1
0	0	0	0	1	0	2
0	0	0	0	1	1	3
0	0	0	1	0	0	4
1	0	0	0	0	0	32
1	0	0	0	0	1	33
1	0	0	0	1	1	34
1	1	1	1	1	1	63

Communication address is 1-63.

8 MODBUS protocol

8.1 Data message format

(1)、Function code 03H--- To read the contents of registers from the slave equipment

The message from the master equipment

Address of the slave equipment	(01H-FFH 1 byte)
Function code	(03H 1 byte)
Address of the first register	(2 bytes)
Quantity of registers	(2 bytes)
CRC code	(2 bytes)

The correct responded message from the slave equipment

Address of the slave equipment	(01H-FFH 1 byte)
Function code	(03H 1 byte)
Byte count	(2*quantity of registers 1byte)
Data section	(contents of registers 2* quantity of registers bytes)
CRC code	(2 bytes)

(2)、Function code 06H---To set(write)data of registers of the slave equipment

The message from the master equipment

Address of the slave equipment	(01H-FFH 1byte)
Function code	(06H 1byte)
Address of the first register	(2bytes)
The data written to the registers	(2bytes)
CRC code	(2bytes)

The correct responded message from the slave equipment

Address of the slave equipment	(01H-FFH 1byte)
Function code	(06H 1byte)
Address of the register	(2bytes)

The data written to the registers (2bytes)
CRC code (2 bytes)

(3)、Function code 10H--- To set(write)data of multiple registers of the slave equipment

The message from the master equipment

Address of the slave equipment (01H-FFH 1byte)
Function code (10H 1byte)
Address of the first register (2bytes)
Quantity of registers (2 bytes)
Data section byte count (2*quantity of registers 1 byte)
The data written to the registers (2* quantity of registers 个字节)
CRC code (2 bytes)

The correct responded message from the slave equipment

Address of the slave equipment (01H-FFH 1byte)
Function code (10H 1byte)
Address of the first register (2 bytes)
Quantity of registers (2 bytes)
CRC code (2 bytes)

Note: 1) the low order byte of CRC code is before its high order byte. Address of register, quantity of registers, contents of register(Data),their high order byte is before their low order byte.

2) The length of the register is 16 bits(2 bytes).

8.2 Read write registers

The Modbus function code 30H can read the contents of all the below register addresses;

Address of register (Hex)	Contents of register	Quantity of registers	Attribute of register	Range of data
0000H	Product information	2	Read only	
0002H	Address	1	read/write	1~63 or 255 （note1）
0003H	Baudrate	1	read/write	1~3（note 2）
0004H	Status of parking space	1	Read only	0~2（note 3）
0005H	Measuring height	1	Read only	0~4000mm (note 4)
0006H	Control the relay	1	Write only	0~4(note 5)
0007H	Control the parking space indicator light	1	Write only	0~2（note 6）

Note: 1) Write address data 255, the address is set by the dial switch, write data is 1~63, address is the written data, other written data is invalidate.

2) 1 indicates 2400bps; 2 indicates 4800bps; 3 indicates 9600bps.

3) 0: No car; 1: The parking space has been parked; 2: Parking space fault.

4) Measuring height display 9999 means exceed the vehicle range.

5) Relay release: 1: relay 1 attracts gathers; 2: relay 2 attracts gathers; 3: relay 3 attracts gathers

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6) 0: Parking space indicator light flicker free; 1: Paring space indicator light red light flash; 2: Parking space indicator light green light flash.

8.3 command illustrate

Example1: read the parking space status data of product No.1

Send the command:

Address of the slave equipment	Function code	Address of the first register		Quantity of registers		CRC-L	CRC-H
01H	03H	00H	04H	00H	01H	C5H	CBH

feedback data:

Address of the slave equipment	Function code	Data section byte count	contents of registers		CRC-L	CRC-H
01H	03H	02H	00H	00H	B8H	44H

Note: Parking space status data is 0000H, that is the parking status without a car.

Example 2: modify address（The address is changed from the original No.01 to No.02）,:

Send the command:

Address of the slave equipment	Function code	Address of the first register		The data written to the registers		CRC-L	CRC-H
01H	06H	00H	02H	00H	02H	E9H	CAH

feedback data:

Address of the slave equipment	Function code	Address of the first register		The data written to the registers		CRC-L	CRC-H
01H	06H	00H	02H	00H	02H	E9H	CAH

Example 3: modify address and baud rate command illustrate (The address is changed from the original No.01 to No.02, baud rate change to 9600bps)

Send the command:

Address of the equipment	Function code	Address of the first register		Quantity of registers		Data section byte count	The data written to the registers				CRC-L	CRC-H
01H	10H	00H	02H	00H	02H	04H	00H	02H	00H	03H	93H	B7H

feedback data:

Address of the slave equipment	Function code	Address of the first register		Quantity of registers		CRC-L	CRC-H
01H	10H	00H	02H	00H	02H	E0H	08H

9 Operation attention

- The dial switch must be set in place.
- The dial switch status change is valid after 5S.
- Double 12PIN wire must be insert in place.
- Communication address is not in the range of 1~63, the detector still can control the red green light of the parking space detector indicator light switch normally, but can not communicate with node controller.

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