Slave Controller

AL2445

Description

Parcel Delivery Locker Controller with TCP/IP

The Slave Controller AL2445 is a 24 channels relay board that performs lock control in the electronic locker system. It is the interface between the main controller and the electronic locks. The slave controller operates under the control of the main controller and provides relay output to the locks, meanwhile provides report of the door status to the main. A single slave controller can control up to 24 locks, with extension board by TCP/IP interface, the system is able to control 984 locks, each corresponding to an individual mailbox or locker.

Features
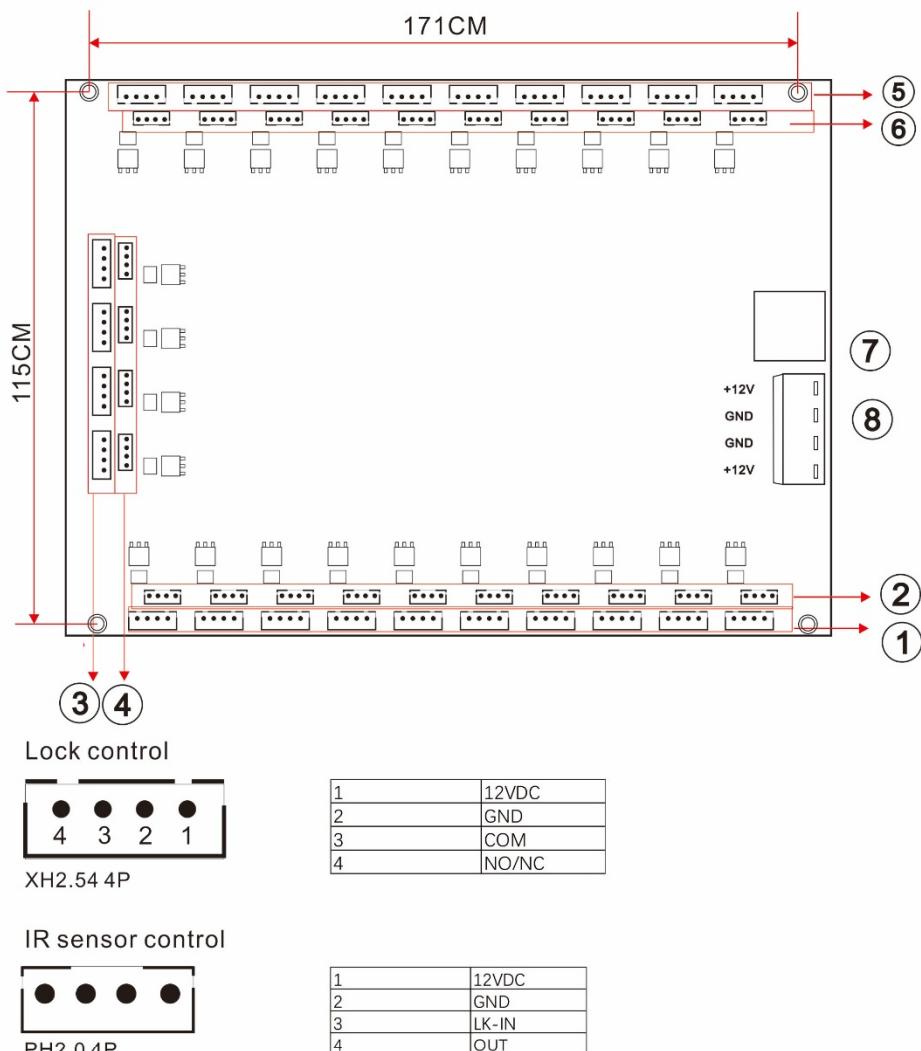
- Interface to PC via TCP/IP
- Supports up to 24 electronic locker locks
- Extendable up to 968 channels
- Allows door status reporting
- Power supply of locker locks
- Adjustable unlock time
- Development based on ARM
- Compatible with Android, Windows, Unix, Linux (Raspberry)
- Optional Modbus protocol

Specifications

Operation Voltage	12-24VDC
Power Consumption	30W
Max Load Per Channel	4A
Frequency	13.56MHAZ
Communication rate	9.6Kbps
Data reserve time	10 years
Flash memory	4G
Working Temperature	-10ºC ~ +80ºC
Working Humidity	10%-90%R.H
Atmospheric pressure	86kpa-106kpa
Dimensions LxWxH	200mm*170mm*32mm
Gross Weight	0.5kg

![eboxlock logo - www.eboxlock.com]
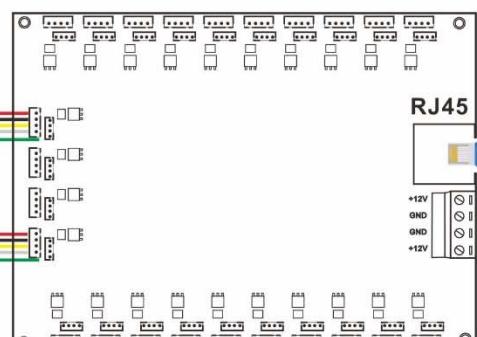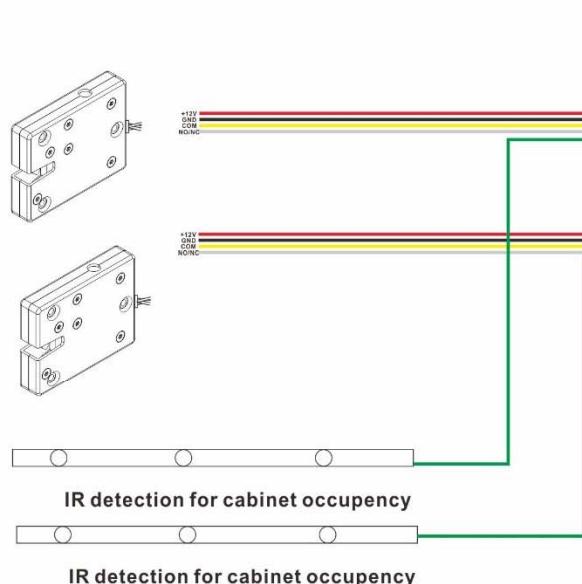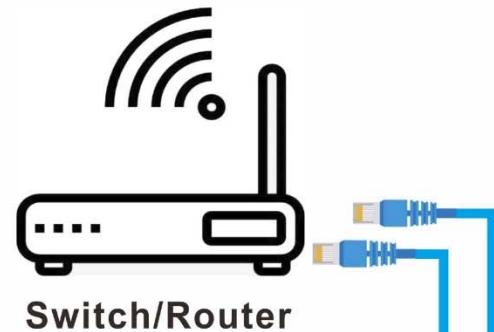
Board Layout:

Slave Controller 24 channels with TCP/IP

171CM

115CM

⑤
⑥

⑦

+12V
GND
GND
+12V

⑧

②
①

③ ④

Lock control

| 4 | 3 | 2 | 1 |

XH2.54 4P

1	12VDC
2	GND
3	COM
4	NO/NC

**IR sensor control**

PH2.0 4P

1	12VDC
2	GND
3	LK-IN
4	OUT
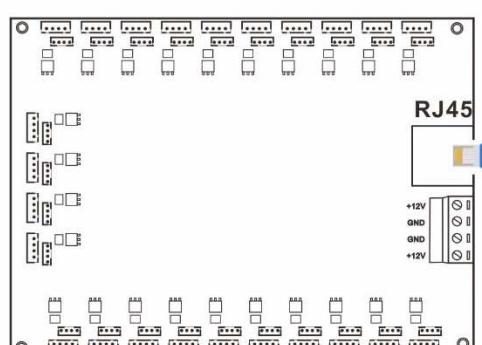
① 1-10 channels relay output for lock control from right to left

② 1-10 channels Digital Input for IR detection and alarm right to left

③ 11-14 channels relay output for lock control from down to up

④ 11-14 channels Digital Input for IR detection and alarm from down to up

⑤ 15-24 channels relay output for lock control from left to right

⑥ 15-24 channels Digital Input for IR detection and alarm left to right

⑦ RJ45

⑧ 12VDC power input

eboxlock
www.eboxlock.com

Wiring Diagram

Switch/Router

RJ45

+12V
GND
GND
+12V

Slave Controller 24 channels with TCP/IP

+12V
GND
COM
NO/NC

+12V
GND
COM
NO/NC

IR detection for cabinet occupency

IR detection for cabinet occupency

RJ45

+12V
GND
GND
+12V

Slave Controller 24 channels with TCP/IP

Setting Command:

(1)Communication Interface: LAN

Default IP：192.168.0.155

Port：6666 (The port can not be changed)

Board address: always "1"

When you send setting command, it will take 1200MS for feedback result. If you send other command during this waiting time, there will be no response.

(2) Setting IP address：

BYTE[0] '0X53'(Fixed)

BYTE[1] '0X65' (Fixed)

BYTE[2] '0X74' (Fixed)

BYTE[3] '0X49' (Fixed)

BYTE[4] '0X50' (Fixed)

BYTE[5] '0Xxx' The first byte of IP address.

BYTE[6] '0Xxx' The second byte of IP address..

BYTE[7] '0Xxx' The third byte of IP address.

BYTE[8] '0Xxx' The fouth byte of IP address.

For example, setting the IP address to be 192.168.1.100

BYTE[0] BYTE[1] BYTE[2] BYTE[3] BYTE[4] BYTE[5] BYTE[6] BYTE[7] BYTE[8]

0X53 　 　0X65 　 　0X74 　 　0X49 　 　0X50 　 　0XC0 　 　0XA8 　 　0X01

0X64

Feedback result:

BYTE[0]　 0X4F(fixed).

BYTE[1]　 0X4B(fixed).

(3) Query of board address

BYTE[0] BYTE[1] BYTE[2] BYTE[3] BYTE[4]

0X80　　0X01　　0X00　　　0X99　　0X18

Feedback result:

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01(fixed).

BYTE[2] 0X01 to 0X40,board address, max 64pcs boards

BYTE[3] 0X99 end of the data package 2(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

For example, if the board address is 1, the setting is the following:

BYTE[0] BYTE[1] BYTE[2] BYTE[3] BYTE[4]

0X80　　　0X01　　0X01　　0X99　　0X19

(4) Command of open cabinet：

BYTE[0] 0X8A frame header(fixed)

BYTE[1] 0X01 to 0X40,board address, max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no., from 1 to 24

BYTE[3] 0X11 open cabinet command(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

Feedback result：

BYTE[0] 0X8A frame header(fixed).

BYTE[1] 0X01 to 0X40,board address, max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no., from 1 to 24

BYTE[3] 0X11 is to open the cabinet,0X00 is to lock the cabinet(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

Note: the lock will take 1s to open and then there is feedback result.

For example open the first cabinet in the first group:

 to

0X8A 0X01 0X01 0X11 0X9B

Feedback

0X8A 0X01 0X01 0X11 0X9B (open)

0X8A 0X01 0X01 0X00 0X8A (close)

(5) Setting relay output time is 5S：

BYTE[0] 0X9A frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no. ,from 1 to 24.

BYTE[3] 0X88(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

feedback result：

BYTE[0] 0X9A frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no. , from 1 to 24.

BYTE[3] 0X05(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

For example: setting the first cabinet in the first group

sending ：

0X9A 0X01 0X01 0X88 0X12

feedback result：

0X9A 0X01 0X01 0X05 0X9F

(6) Setting relay output time is 1S：

BYTE[0] 0X9A frame header(fixed).

BYTE[1] 0X01 to   0X40,board address,max 64pcs boards

BYTE[2] 0X00(fixed).

BYTE[3] 0X88(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

feedback result：

BYTE[0] 0X9A frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X00(fixed).

BYTE[3] 0X05(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

sending

0X9A 0X01 0X00 0X88 0X12

feedback

0X9A 0X01 0X00 0X05 0X9E

【7】 **Command of open/close the cabinet door:**

Read a single cabinet's status BYTE[2] is 0X01 to 0X40,**Read a group cabinets' status** BYTE[2] is 0X00.

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X00 to 0X10,cabinet no. , from 1 to 24

BYTE[3] 0X33(fixed)

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

A single cabinet feedback result：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no. , from 1 to 24

BYTE[3] 0X11 is the cabinet is open,0X00 is the cabinet is closed(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

A group cabinets' feedback result：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] Channel 25-32: 8 bytes from low to high are the status of cabinet no. 25 to 32. 1 is close and 0 is open.

BYTE[3] Channel 17-24 : 8 bytes from low to high are the status of cabinet no. 17-24. 1 is close and 0 is open.

BYTE[4] Channel 9-: 8 bytes from low to high are the status of cabinet no. 9-16. 1 is close and 0 is open.

BYTE[5] Channel 1-8 : 8 bytes from low to high are the status of cabinet no. 1-8. 1 is close and 0 is open.

BYTE[6] 0X33(fixed).

BYTE[7] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3] or BYTE[4] or BYTE[5] or BYTE[6].

Read the first cabinet of the first group：

sending：

0X80 0X01 0X01 0X33 0XB3

feedback：

0X80 0X01 0X01 0X11 0X91 (the lock is open)

0X80 0X01 0X01 0X00 0X80 (the lock is close)

Read the first group cabinets：

sending：

0X80 0X01 0X00 0X33 0XB2

feedback：

0X80 0X01 0XFF 0XFF 0XFF 0XFF 0X33 0XB2

(8) Command of read IR status：

Read the status of a single cabinet BYTE[2] is 0X01 to 0X40,**Read the status of a group cabinet** BYTE[2] is 0X00.

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X00 to 0X10,cabinet no. , from 1 to 24

BYTE[3] 0X22(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

the status of a single cabinet feedback result：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X01 to 0X10,cabinet no. , from 1 to 24

BYTE[3] 0XFF is that the cabinet is occupied,0XEE is the cabinet is unoccupied(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

the status of a group cabinets feedback result：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to   0X40,board address,max 64pcs boards

BYTE[2] Channel 25-32 : 8 bit from low to high are the status of cabinet no. 25-32. 1 is unoccupied 0 is occupied.

BYTE[3] Channel 17-24 : 8 bit from low to high are the status of cabinet no. 17-24. 1 is unoccupied 0 is occupied.

BYTE[4] Channel 9-16 : 8 bit from low to high are the status of cabinet no. 9-16. 1 is unoccupied 0 is occupied.

BYTE[5] Channel 1-8 : 8 bit from low to high are the status of cabinet no. 1-8. 1 is unoccupied 0 is occupied.

BYTE[6] 0X22(fixed).

BYTE[7] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3]   or BYTE[4] or BYTE[5]   or BYTE[6].

Read the status of the first cabinet from the first group：

sending ：

0X80 0X01 0X01 0X22 0XA2

feedback：

0X80 0X01 0X01 0XFF 0X7F (lock is occupied)

0X80 0X01 0X01 0XEE 0X6E (lock is unoccupied)

Read the status of the first group：

sending ：

0X80 0X01 0X00 0X22 0XA3

feedback：

0X80 0X01 0XFF 0XFF 0XFF 0XFF 0X22 0XA3

(9) Command of read IR and door status：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] 0X00(fixed).

BYTE[3] 0X55(fixed).

BYTE[4] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3].

Group of cabinets' feedback result：

BYTE[0] 0X80 frame header(fixed).

BYTE[1] 0X01 to 0X40,board address,max 64pcs boards

BYTE[2] Channel 25-32 : 8 bytes from low to high are the status of cabinet no. 17-24. 1 is close and 0 is open.

BYTE[3] Channel 17-24: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is close and 0 is open.

BYTE[4] Channel 9-16: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is close and 0 is open.

BYTE[5] Channel 1-8: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is close and 0 is open.

BYTE[6] Channel 25-32: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is unoccupied 0 is occupied.

BYTE[7] Channel 17-24: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is unoccupied 0 is occupied.

BYTE[8] Channel 9-16: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is unoccupied 0 is occupied.

BYTE[9] Channel 1-8: 8 bytes from low to high are the status of cabinet no. 17-24. 1 is unoccupied 0 is occupied.

BYTE[10] 0X55(fixed).

BYTE[11] parity bit：equal to BYTE[0] or BYTE[1] or BYTE[2] or BYTE[3] or BYTE[4]

or BYTE[5] or BYTE[6] or BYTE[7] or BYTE[8]

or BYTE[9] or BYTE[10].

Read the status of the first group：

sending ：

0X80 0X01 0X00 0X55 0XD4

feedback：

0X80 0X01 0XFF 0XFF 0XFF 0XFF 0XFF 0XFF 0XFF 0XFF 0X55 0XD4__