

< ResponseCard XL >

1. Introduction

It is a part of educational system, students using this system can transmit answers through it to PC remotely. Then a receiving part accepts the signal from each student and passes it over to a PC. Finally, the PC saves the answers and reconstructs them.

2. Remote Keypad

It has a unique ID. It can be operated in the Presentation & Test mode.

In case of Presentation Mode, once if the number key on the keypad is selected, it transmits the unique ID and corresponding IR signal.

And regarding Test Mode, an user can store any answers in the remote keypad & the maximum stored data will be 999 and the stored answer will be transmitted to PC after downloading at IR USB Receiver.

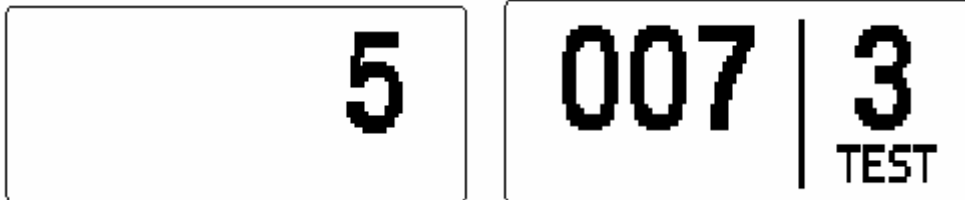


2.1 General Features

- There are two modes - Presentation mode and Test mode
- LCD display - Question Number , Answer and so on
- 15 buttons (0~9, *, ?, ↓(N), ↑(Y), T/P)
- LED - Lights when button is pressed while in Presentation Mode
 - Lights when low battery voltage is detected
- Two batteries – CR2450 (3V) x 2ea
- Non-volatile memory (EEPROM) capable of storing up to 999 single digit responses

2.2 LCD display

- 4 large digits ; 3 for Question Number and one for Answer



When Presentation mode

When Test mode

- In Test mode, a dialog display to interface with user with feedback questions such as "Leave Test Mode? (Y/N)" and "Erase Stored Data? (Y/N)"



2.3 Buttons

There are 15 buttons for education XL remote keypad.

↓(N)	↑(Y)	T/P
1/A	2/B	3/C
4/D	5/E	6/F
7/G	8/H	9/I
*	0/J	?

2.4 ID code

There are 6,291,456 possible ID combinations available.

Range: A00000 ~ FFFFFFFF

ID code is stored in a non-volatile EEPROM.

Each keypad except ↓(N), ↑(Y), T/P have unique factory programmed System ID when the Presentation mode

2.5 Presentation mode

While in "Presentation" mode, units LCD Display is completely blank, except when key is press and unit functions exactly like ResponseCard IR units. Any Transmission key (0~9, * and ?) should be “echoed” for three seconds in the

Answer field of the LCD.



LCD display is blank when Normal status



Echoed for 3 second when key is pressed

2.5.1 Setting ID

ID of each remote can be set to a desired ID code as follows:

- Press and hold both “*” and “6” buttons until LED is lit constantly.
- Press the numeric key corresponding the desired ID code.
For code “000123”, ‘0’, ‘0’, ‘0’, ‘1’, ‘2’, ‘3’ serially.
- IR remote will acknowledge by blinking LED 3 times.

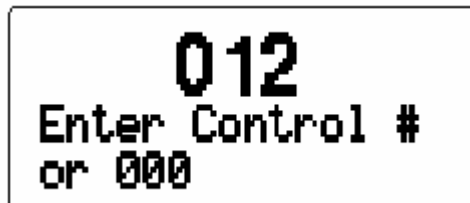
2.5.2 Revert back to factory programmed ID

ID of each remote can be reverted to an original factory programmed ID code as follows:

- Press and hold both “*” and “1” buttons until LED turns on constantly.
- IR remote will acknowledge by blinking LED 3 times.

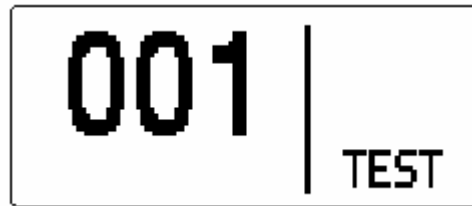
2.6 Test mode

When Mode button (T/P) is pressed, unit promptly to input control number.
When 3 digits are input, unit enters "Test" mode.

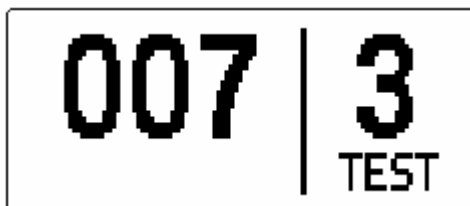


2.6.1 Operation in Test mode

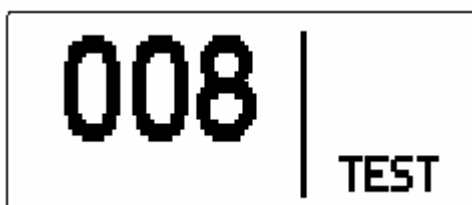
- While in Test mode, no data is transferred via IR.
- LCD displays “TEST” under Answer space.
- LCD displays to show 001 Question and Blank Answer.



- Student can use Up and Down Scroll buttons to change Question Number 001~999, enter and/or review answers already stored.
- Student can change the wanted number by themselves through Goto function.
 - a) Press '*', then the first digit will be blink for Question Number.
 - b) If press the wanted number, the next digit will be blink for Question Number.
 - c) And press the wanted number, the next will be blink for Question Number of third digit.
 - d) Press '?'. then stop to blink the digits and return to test mode.
- When any answer is entered into the unit, the answer and corresponding question number are displayed for three seconds. After three seconds the Question number field is automatically incremented and the Answer field goes blank.

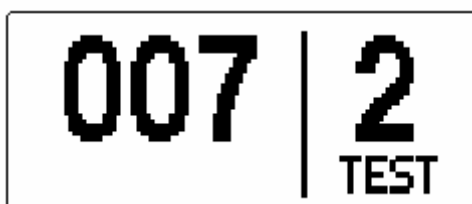


The answer is displayed for 3 second when the answer is pressed



After three seconds, the Question number field is automatically incremented

- Answers and corresponding Question numbers are stored in EEPROM until deleted by user.
- Students may return to Question numbers they have already answered or skipped, and change (i.e. enter new) answers.



- Once student has completed test, Mode button (T/P) is pressed again. Unit displays "Leave Test Mode? (Y/N)" message. If "Y" is pressed, unit switches from Test mode to Locked mode and displays "LOCK" under Answer space. While in Lock mode, units Presentation capabilities are fully functional.

Leave Test Mode?
(Y/N)

Press * & ?
to transmit
Stored Data LOCK

- Unit may not leave Lock mode until stored answers are downloaded and previously stored answers are deleted.
- Units are aimed at IR receiver and transmission/download is initiated by pressing the * and ? keys simultaneously.
- Once Unit's Test data is downloaded, Unit is permitted to re-enter Presentation mode or be downloaded again.

Press T/P
to Clear
Stored Data LOCK

Erase Stored
Data? (Y/N)

- To re-enter Presentation mode, "T/P" button is pressed. User is asked "Erase Stored Data? (Y/N)".
- If Y is pressed, all stored data is deleted and unit re-enters Presentation mode.
- If N is pressed unit remains in LOCK mode.

2.6.2 Method for transmission/download

- Units are aimed at IR receiver
- Press the "*" and "?" keys simultaneously
- When Transmit is started, unit transmits Unit ID, Control number, Number of Answers, Answers and End String via IR. Each transmission is send from answer of first question number (001) to last answer of maximum question number that have been input recently
- A LED flash as data is transmitted and goes out seconds when complete.

2.6.3 Power save mode while in Test mode

- LCD panel is displayed to blank if there is no button activity for 5 minutes while in Test mode.
- Any key press should wake unit up and the initially pressed key, which wakes the unit up, not be utilized in anyway.
- When leaving Power Save mode, unit return to exact place and state, prior to entering Power Save Mode

2.7 Range

2.7.1 Range while in Presentation mode

The nominal IR transmission distance is 13m (~ 42') when the battery is fresh.
The IR transmission distance may reduce as the battery wears out.

2.7.2 Range while in Transmission/Download

The distance is 1m (3feet) when battery is fresh.

2.8 Low Battery Indicator

The unit will indicate when the battery is low and needs to be replaced.
The unit will flash or go on LED to indicate low battery

2.9 Casing Features

Size of a remote keypad is 62x100x8.5 (WxLxH) (unit=mm)
Screw in battery cover to keep closed.
Infra-red LED is placed on front of the remote keypad
Recessed area for product label on bottom of remote keypad

2.10 Label

The device should be labeled with a firmly attached sticker displaying all the appropriate and required CE and C-TICK markings and text. The label is included the unit's model number and the particular units serial number and/or Unit ID. It should also display company name and website URL.
With Unit ID, barcode is included for manufacturing.

2.11 Certification

CE and C-TiCK is complied. But FCC verification is complied.

2.12 Electrical Specification

- (a) Carrier frequency : 38khz for infrared signal
- (b) Operating range : Max. 30m
- (c) Power Supply: 3V (CR2450 * 2ea)
- (d) Oscillation: 4Mhz resonator (M.P.U)

2.13 Dimension

65.0 x 89.5 x 9.7 (W, L, H)

3. IR USB Receiver

3.1 Code conversion

IR receiver receives and converts the IR signals transmitted by the IR transmitter in to corresponding USB signals and then turn it over to personal

computer.

3.2 Protocol from remote keypad of Presentation mode

IR receiver sends 9 bytes of data to the host PC via USB interface when a valid IR data is received. (LED lights and go off to indicate a valid data)

ID code	6 bytes
Button code	1 byte
<CR>	1 byte
<LF>	1 byte

Ex: ID "A2345F" and button '*', IR receiver will send bytes
A 2 3 4 5 F * <CR><LF>

3.3 Protocol from remote keypad for Downloading

IR receiver sends the following data to host PC via USB interface when a valid download data is received. (LED lights and go off to indicate a valid data)

- a) Start Signals ; ID, Control Number, Number of Answers
- b) Data Signals ; Answers
- c) End Signals ; <CR> <LF>

In case of the user did not select the answer , receiver send ASCII "-" to PC.

3.4 Error signal

When receiving error from TX, receiver send ASCII "!" to PC

3.5 Power Source & Management

IR receiver for USB is 5V Bus-powered from the host PC.

3.6 Electrical Specification

- (a) Power Supply: 5V Bus-powered
- (b) Carrier frequency received: 38Khz for infrared signal
- (c) Operating range : Max. 30m
- (d) Oscillation: 4Mhz resonator (M.P.U)
- (e) Oscillation: 6Mhz resonator (Serial to USB I.C)

3.7 Cable Length

The length of the cable is 10 feet and is shielded

FCC Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.