



# IR-712A

## Quick Start Guide

Jan 2015 Version 1.1

### IR-712A - Universal IR Learning Remote Module

Package Contents:

Item \ Type	IR-712A	IR-712A-5
IR-712A	x 1	x 1
Quick Start Guide	x 1	x 1
CD	x 1	x 1
CA-IR-SH2251	x 2	
CA-IR-SH2251-5		x 2
CA-0910	x 1	x 1
Screwdriver	x 1	x 1



**Note:**

If any of these items are missed or damaged, contact the local distributors for more information. Save the shipping materials and cartons in case you want to ship in the future.

## 1. Appearance and pin assignments

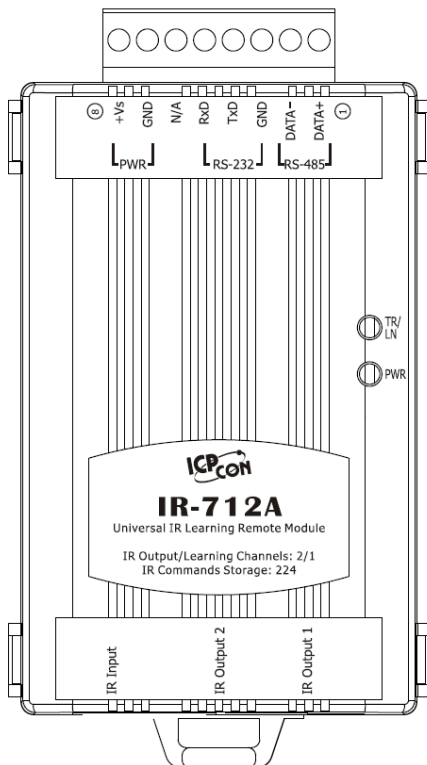


Fig.1: IR-712A front view

Table 1-1: IR-712A top connector

Screw terminal connector		
Pin No.	Description	Interface
1	DATA+	RS-485
2	DATA-	
3	GND (ground)	RS-232
4	TxD	
5	RxD	
6	N/A	N/A
7	GND (ground)	Power
8	+Vs	

Table 1-2: IR-712A IR interface

IR Interface	
IR Learning Ch.	IR Input
IR Output Ch.	IR Output 1
	IR Output 2

## 2. LED Indication

The comments of IR-712A LEDs are as follows:

LED	IR-712A Status	LED Status
TR / LN	Use RS-232 <sup>(*)</sup>	Blinks 3 times after power-on
	Use RS-485 <sup>(*)</sup>	Turned on for 3 seconds after power-on
	Serial Communication	Weakly blinking
	Emitting IR Commands	On (during emitting IR signal)
	IR Learning Mode	On
	IR Learning Finished	Off
PWR	Power is normal	On
	Power Failure	Off
ALL LEDs	Firmware Operation Mode	TR/LN => OFF; PWR => ON Note: Push DIP switch to OP position and restart IR-712A.
	Update Firmware Mode	TR/LN and PWR => blinking Note: Push DIP switch to FW position and restart IR-712A.

**\*Note: After firmware version 1.20 (inculded), there is no need to select the RS-232 or RS-485 port by the IR utility. TR/LN LED always blinks 3 times after power-on.**

## 3. Installation

In order to configure IR-712A and learn IR commands, please establish the serial communication between IR-712A and PC as the following steps:

### Step 1: Check operation mode of IR-712A

Push DIP switch to the position of normal operation mode (OP) as depicted in Fig. 2.

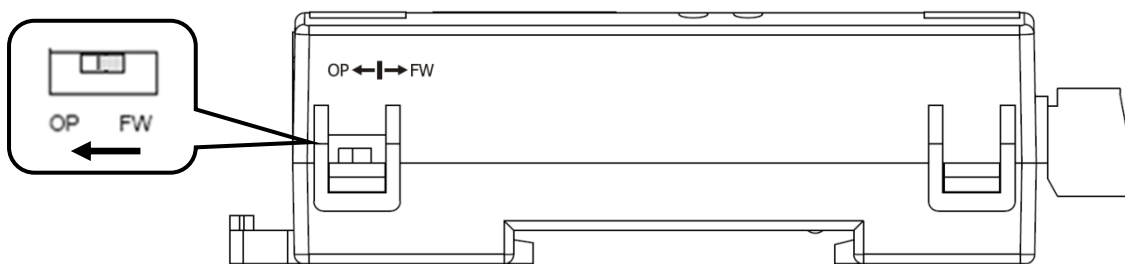


Fig. 2: Push DIP switch to OP position

## Step 2: Serial wire connection between IR-712A and PC

Users can use the RS-232 cable (CA-0910) to establish the wire connection between IR-712A and PC as shown in Fig. 3. The DB9 (9-pin) connector of CA-0910 is designed for PC COM port. USB to RS-232 converter (e.g. I-7560 or I-7561) can solve the problem if no DB9 COM port at PC side.

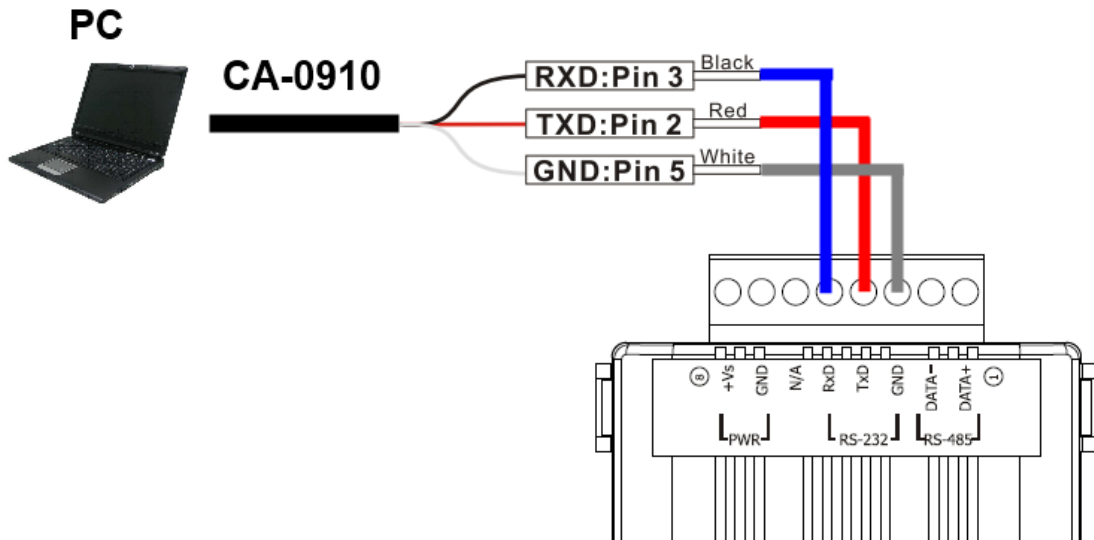


Fig. 3: Serial wire connection between IR-712A and PC

## Step 3: Power wire connection

Connect the power supply (+10 ~ +30 VDC) to the power connector of IR-712A as shown in Fig. 4. Turn on the power to run the module in normal operation mode.

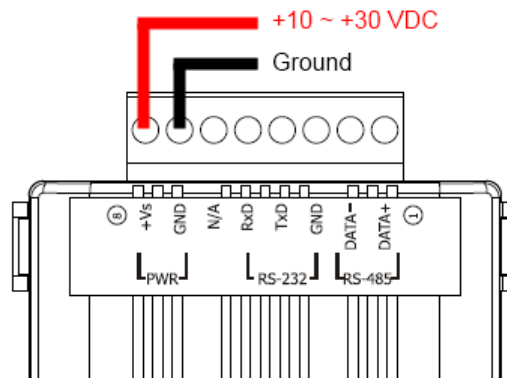


Fig. 4: Power wire connection

## Step 4: Install IR Utility

Please get the installation file of IR Utility (IR\_Util\_Setup\_v#\_#\_#\_#.zip) from the accompanied CD or Web:

**CD :** [\napdos\ir\ir\\_utility\](#)

**Web :** [ftp://ftp.icpdas.com/pub/cd/usbcd/napdos/ir/ir\\_utility/](ftp://ftp.icpdas.com/pub/cd/usbcd/napdos/ir/ir_utility/)

## 4. Learn IR Commands

### 4-1 Serial Communication Connection to IR-712A

Launch the IR Utility and select “IR-712A” in the Module combobox. Select the default communication settings: Baud rate = 115200 bps, Parity = None, Data bits = 8, Stop bits = 1, and Modbus Net ID = 1. Then, click “Connect” button to connect to the IR-712A (Fig. 5). The main configuration window for IR-712A will appear later as shown in Fig. 6. The communication settings can be changed by clicking the top menu [Setting] -> [IR-712A Basic Settings]. Click “Set Permanently” button to finish the setting.

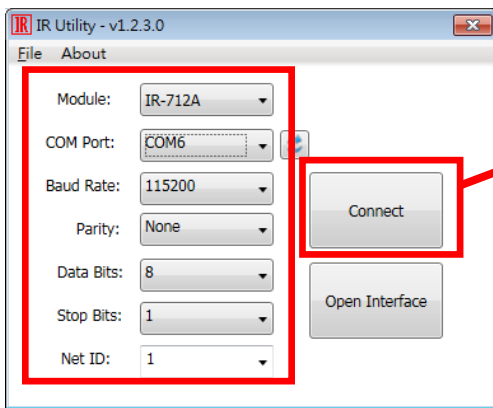


Fig. 5 Open COM

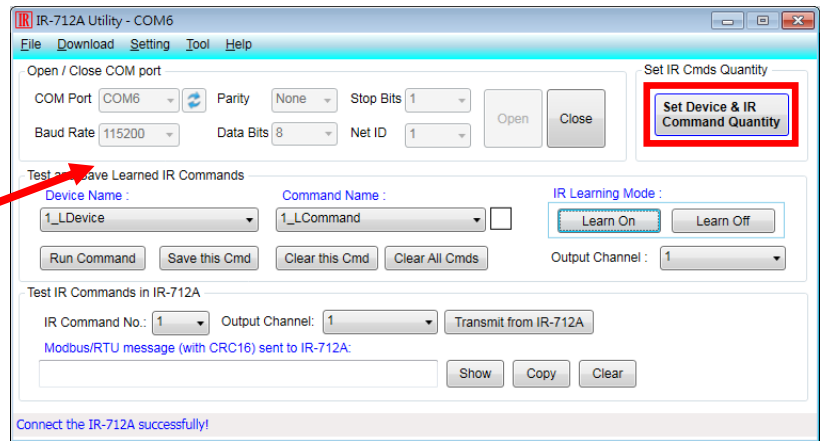


Fig. 6 Basic settings window

### 4-2 Set Device and IR Command Quantity

Please click “Set Device & IR Command Quantity” button (Fig. 7) to open the setup interface.

**Step 1** : Set device quantity (Fig. 8).

**Step 2** : Set device name and the IR command quantity for the device (Fig. 9).

**Step 3** : Set the name (i.e. comments) of each IR command (Fig. 10). The prefix number (e.g. 1\_Play) is the number of a IR command stored in IR-712A. Click OK button and go back to main window of the utility.

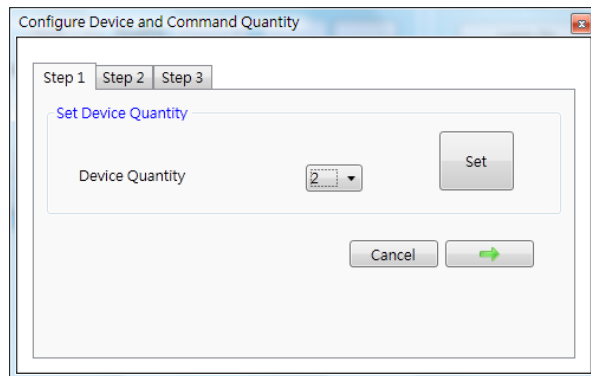
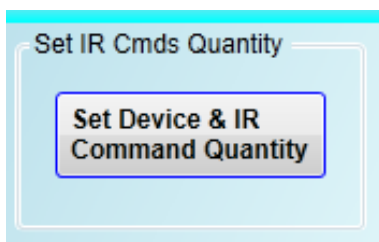


Fig. 7: Set Device and Command Quantity button. Fig. 8: Step 1 for Device quantity.

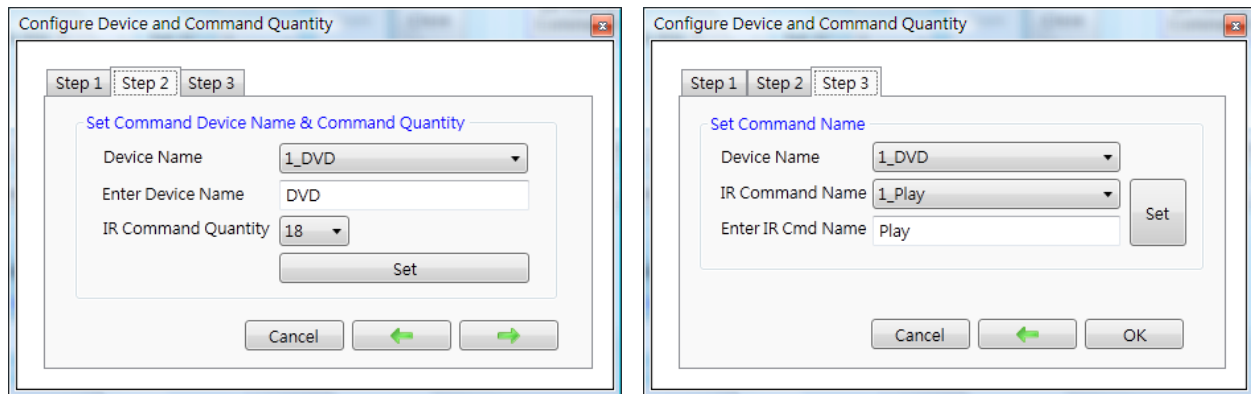


Fig. 9: Step 2 for device name & IR cmd Qty. Fig. 10: Step 3 for IR command names.

### 4-3 Learn and Test IR Commands

Learning steps are as follows and refer to Fig. 11:

- (1) Select the IR command item from “Device Name” and “Command Name” ComboBoxes.
- (2) Click “Learn On” button to enable IR learning mode where TR/LN LED is ON.
- (3) Aim the emitter head of the remote control (RC) to the “IR Input” position of IR-712A and push the RC’s button which is to be learned in a short time. The distance between IR-712A and RC should be less than 3 cm. After IR learning is finished, the TR/LN LED is OFF. The learning result is sent back to the utility.
- (4) Select the item of IR output channel combobox, e.g. IR Output 1 is selected.
- (5) Aim the IR emitter, which is plugged in IR Output 1 jack, at the IR receiver of the controlled device. Click “Run Command” button to check the effectiveness of the IR learning command. Repeat step 2 and 3 if there is no action on the device.
- (6) Click “Save this Cmd” button to save the learning data to the item of “Command Name” combobox, e.g. the item in Fig. 12 is “Play”.

Besides, the color rectangle (marked a blue dotted frame) displays the storage status of IR learning commands. The status is defined as follows:

- **Red:** Learning data is saved in the item of “Command Name”.
- **Yellow:** Get learning data form IR-712A. The data is buffered and lost when selecting other item of “Command Name”.
- **White:** No learning data saved in the current item of “Command Name”.

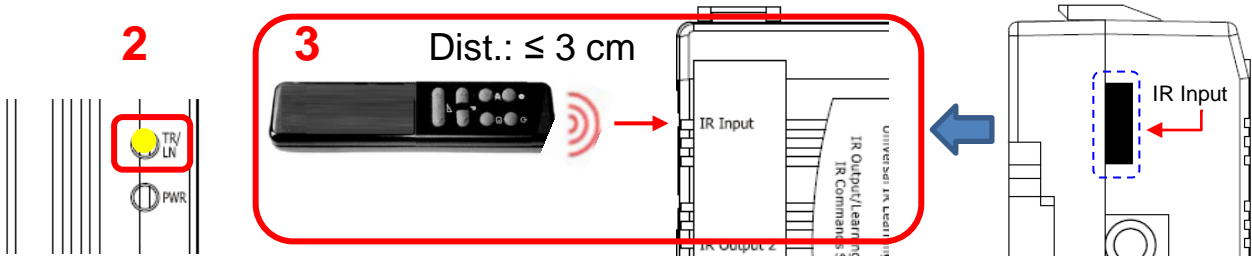
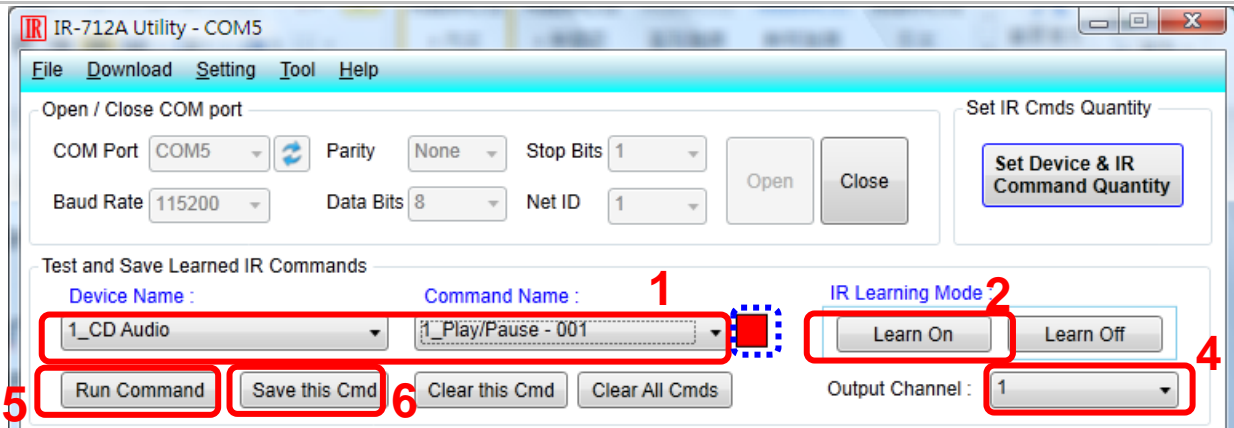


Fig. 11: IR Learning Steps

## 5. Save IR Learning Commands

After the learning steps in section 4-2, the IR learning data should be saved to a file for use in the future. In addition, the learning data should be stored in IR-712A for the convenience of remote terminal control by the system controller.

### 5-1 Save IR Learning Commands to a File

Click [File]->[Save IR Commands to file] to open the dialog of “save to file”. Save the IR learning commands to a file with file extension IRD. (\*.ird)

### 5-2 Save IR Commands to IR-712A

After IR learning or loading IR learning data from file, click Menu [Download]-> [Download IR Commands to IR-712A] to download IR commands to IR-712A.

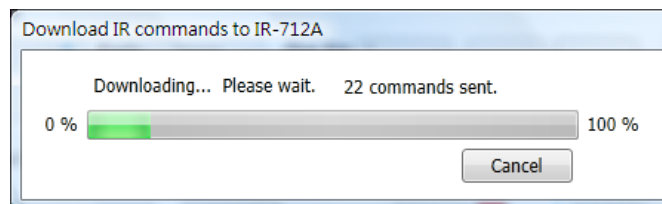


Fig. 12: Downloading IR commands to IR-712A

## 5-3 Test IR Commands Stored in IR-712A

Go to the section of “Test IR Commands in IR-712A” as shown in Fig. 13. Select the IR command No. (i.e. the prefix no. in section 4-2) and IR Output Channel. Click “Transmit from IR-712A” button to emit and test the IR commands stored in the IR-712A.

At the same time, the Modbus/RTU client message (last 2 bytes is CRC16 code) is shown in the Textbox. It is a good reference for users to command IR-712A to emit IR signals from their application program.

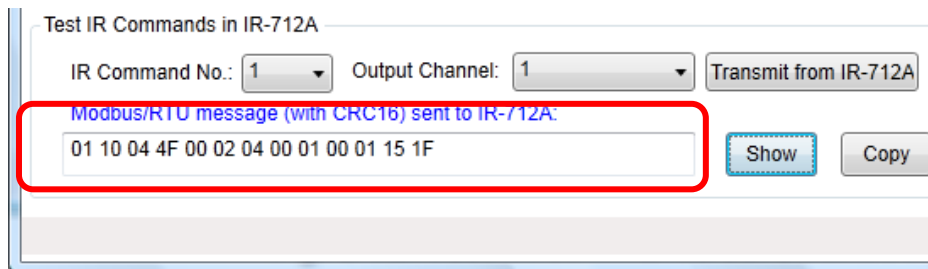


Fig. 13: Test IR commands stored in IR-712A

## 6. Load the Stored IR Commands

### 6-1 Load IR Learning Data from File

Click Menu [File]->[Load IR Commands from file] to open the “open file dialog”. Select the \*.ird file to load IR commands.

### 6-2 Load IR Commands from IR-712A

Click [Menu]-> [Download]->[Load IR Commands from IR-712A] to load IR learning commands from IR-712A, as depicted in Fig. 14.

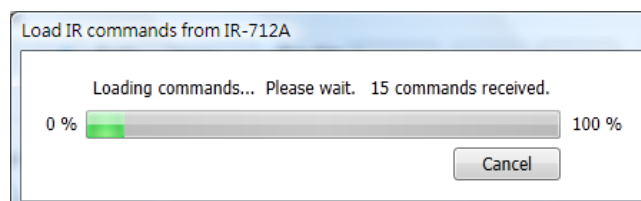


Fig. 14: Loading IR Commands from IR-712A

## 7. Modbus Registers Addresses

Modbus RTU Holding Registers (4xxxx) for IR-712A is listed in Table 7-1. Users can use FC = 6 or 16 to send Modbus commands to IR-712A according to Table 7-1. It is more convenient to take a reference to the FC16 commands on the utility described in the section 5-3. Every Modbus address (register) occupies 2 bytes.

Table 7-1: Modbus Holding Registers for IR-712A (Use FC = 6 or 16)

Start Address [4xxxx]	Description
1103 (0x44F) [41104]	The number of the IR command: 1 ~ 224 (0x01 ~ 0xE0)
1104 (0x450) [41105]	IR output channels Settable value: 0x01 ~ 0x03 ◦ The first bit represents 1 <sup>st</sup> channel. The 2 <sup>th</sup> bit represents the 2 <sup>th</sup> channel. Example <ul style="list-style-type: none"> <li>• 1<sup>st</sup> output channel : 0x01 == <u>0001</u> (Binary)</li> <li>• 1<sup>st</sup> and 2<sup>nd</sup> output channels : 0x03 == <u>0011</u> (Binary)</li> </ul>

Table 7-2 is the example of Modbus FC16 command for IR-712A to emit IR signal. In this example, the NET ID of IR-712A is 1. IR command number is 1. IR output channel is IR Output 1 and 2.

Table 7-2: An example of Modbus FC16 Command to IR-712A (hex value)

Net ID	FC*	Start Addr.	Word Count	Byte Count	IR No.	Output Ch.	CRC16
<u>01</u>	<u>10</u>	<u>04 4F</u>	<u>00 02</u>	<u>04</u>	<u>00 01</u>	<u>00 03</u>	<u>94 DE</u>

\*Note : FC is the abbreviation of "Function Code".

## 8. Support

Welcome to contact ICP DAS for product and technical support.

Email: [service@icpdas.com](mailto:service@icpdas.com)