



IR-712-MTCP

Quick Start Guide

Jun 2015 Version 1.1

IR-712-MTCP - Universal IR Learning Remote Module

Package Contents:

Item \ Type	IR-712-MTCP	IR-712-MTCP-5
IR-712-MTCP	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
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

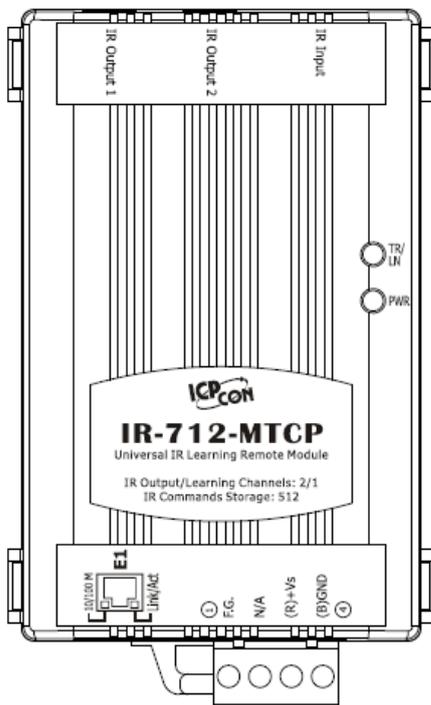


Fig.1-1 IR-712-MTCP front view

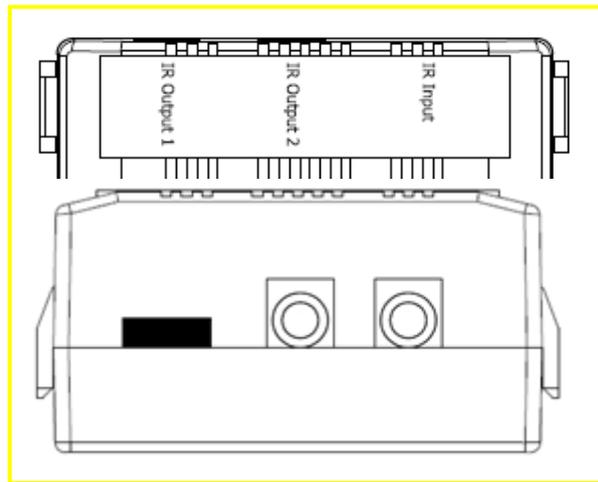


Figure 1-2 IR output channels

Table 1-1 IR-712-MTCP terminal

Interface	Pin
Ethernet	E1
Power	GND
	+Vs
Frame Ground	F.G.

2. Installation

Please follow the steps below to establish the communication between IR-712-MTCP and PC.

Step 1: Check operation mode of the IR-712-MTCP

Push DIP switch to the position of normal operation mode (OP) as depicted in Fig. 2-1.

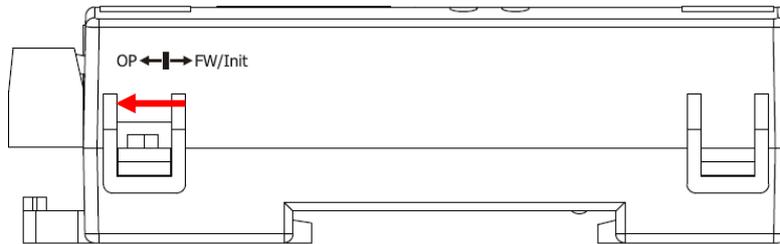


Figure 2-1 Push DIP switch to OP position

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

Users can use the Ethernet cable to establish the wire connection between IR-712-MTCP and PC directly or by a Ethernet switch as shown in Fig. 2-2. Plug the IR emitter cable CA-IR-SH2251 in the IR Output 1 jack.

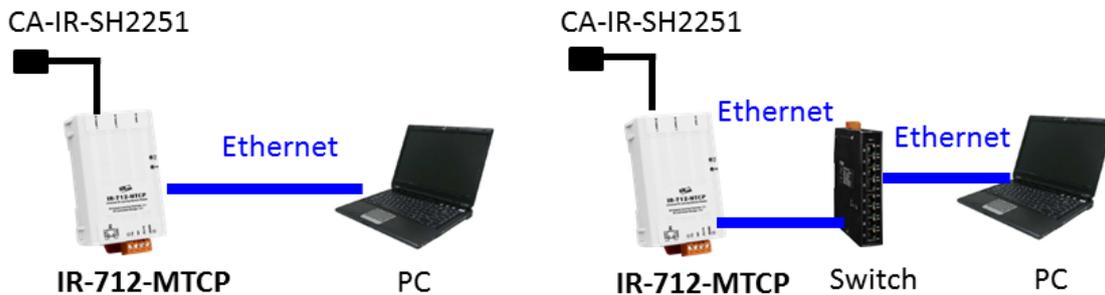


Figure 2-2 Communication wire connection between the IR-712-MTCP and PC

Step 3: Power wire connection

Connect the power supply (+10 ~ +30 VDC) to the power connector of IR-712-MTCP as shown in Fig. 2-3. Turn on the power to run the module in normal operation mode.

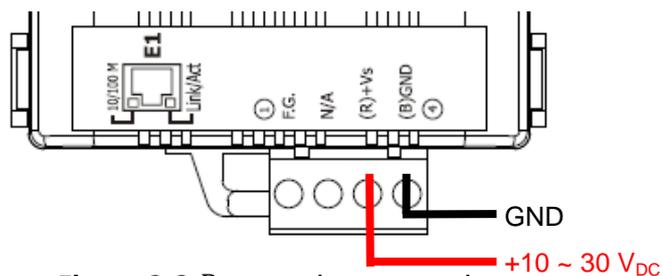


Figure 2-3 Power wire connection

Step 4: Install IR Utility

Please get the utility installation file (IR_Util_Setup_v#_#_#_#.zip) from the CD or Web:

CD : \napdos\ir\ir-utility\

Web: ftp://ftp.icpdas.com/pub/cd/usbcd/napdos/ir/ir-utility/

■ **Windows OS needs .NET Framework 4.5 environment (Web installer):**

<http://www.microsoft.com/en-US/download/details.aspx?id=30653>

Step 5: Search the Module and Connect

Launch the IR utility and follow the 5 steps below.

- (1) Select the IR-712-MTCP in the “Module” combobox.
- (2) Click the “Search Modules” button.
- (3) Click OK button after selecting the “Network Interface” to the IR-712-MTCP.
- (4) Mouse double clicking the row of the searched IR-712-MTCP.
- (5) Enter the main window of the IR-712-MTCP utility with communication connected.

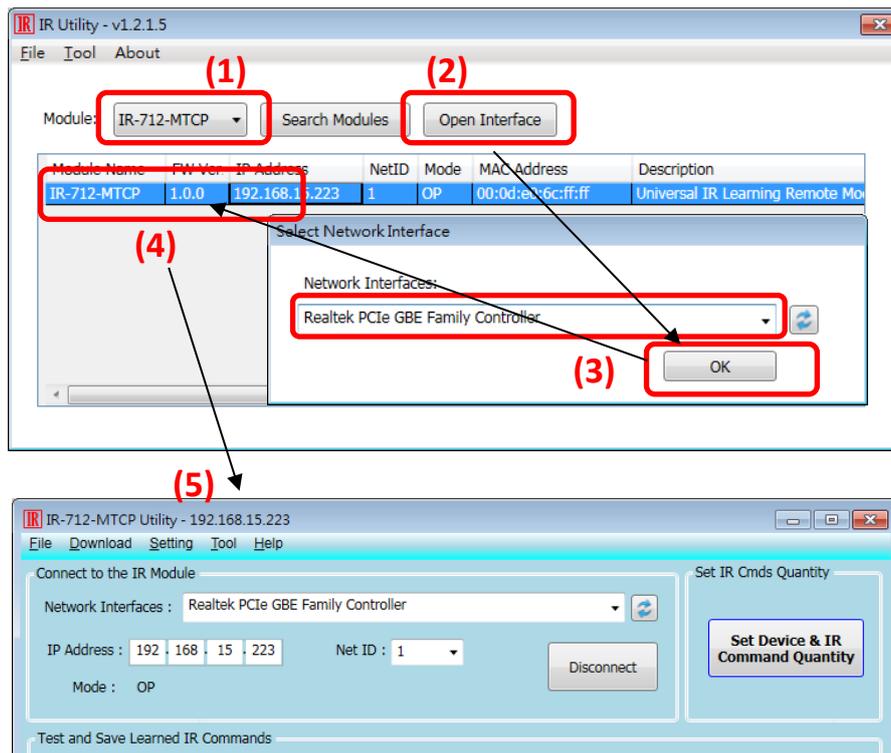


Figure 2-4 Steps of connecting the IR-712-MTCP

3. Learn IR Commands

3-1 Set Device and IR Command Quantity

Please click “Set Device & IR Command Quantity” button (Fig. 3-1) to open the setup interface.

Step 1: Set device quantity (Fig. 3-2).

Step 2: Set device name and the IR command quantity for the device (Fig. 3-3).

Step 3: Set the name (i.e. comments) of each IR command (Fig. 3-4). The prefix number (e.g. 1_Play) is the number of a IR command stored in IR-712-MTCP. Click OK button and go back to main window of the utility.

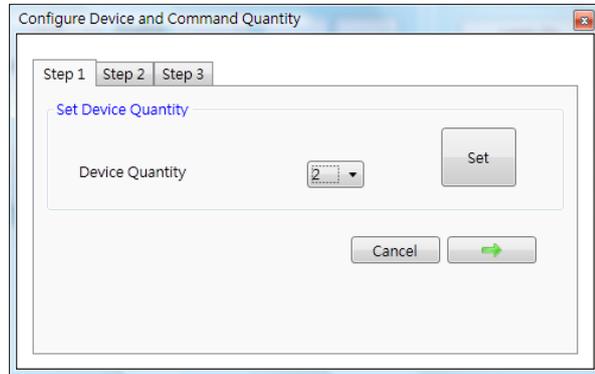
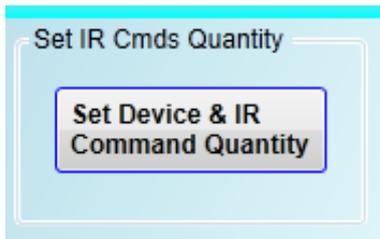


Fig. 3-1 Set Device and Command Quantity button. **Fig. 3-2** Step 1 for Device quantity.

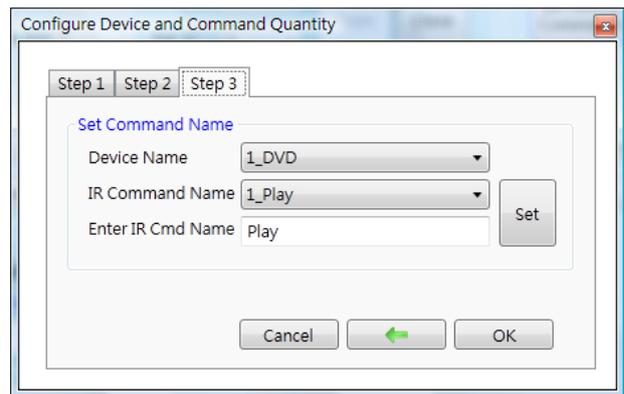
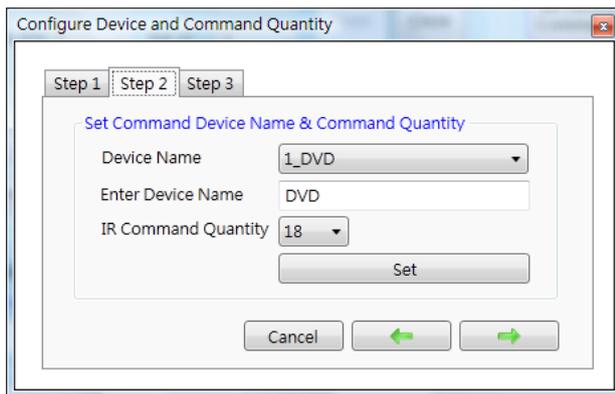


Fig. 3-3 Step 2 for device name & IR cmd Qty. **Fig. 3-4** Step 3 for IR command names.

3-2 Learn and Test IR Commands

Learning steps are as follows and refer to Fig. 3-5:

- (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-712-MTCP and push the RC’s button which is to be learned in a short time. The distance between IR-712-MTCP 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. “1” means that 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. 3-5 is “Play”.

Repeat the step (1) ~ (6) for learning all IR commands. 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-712-MTCP. 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”.

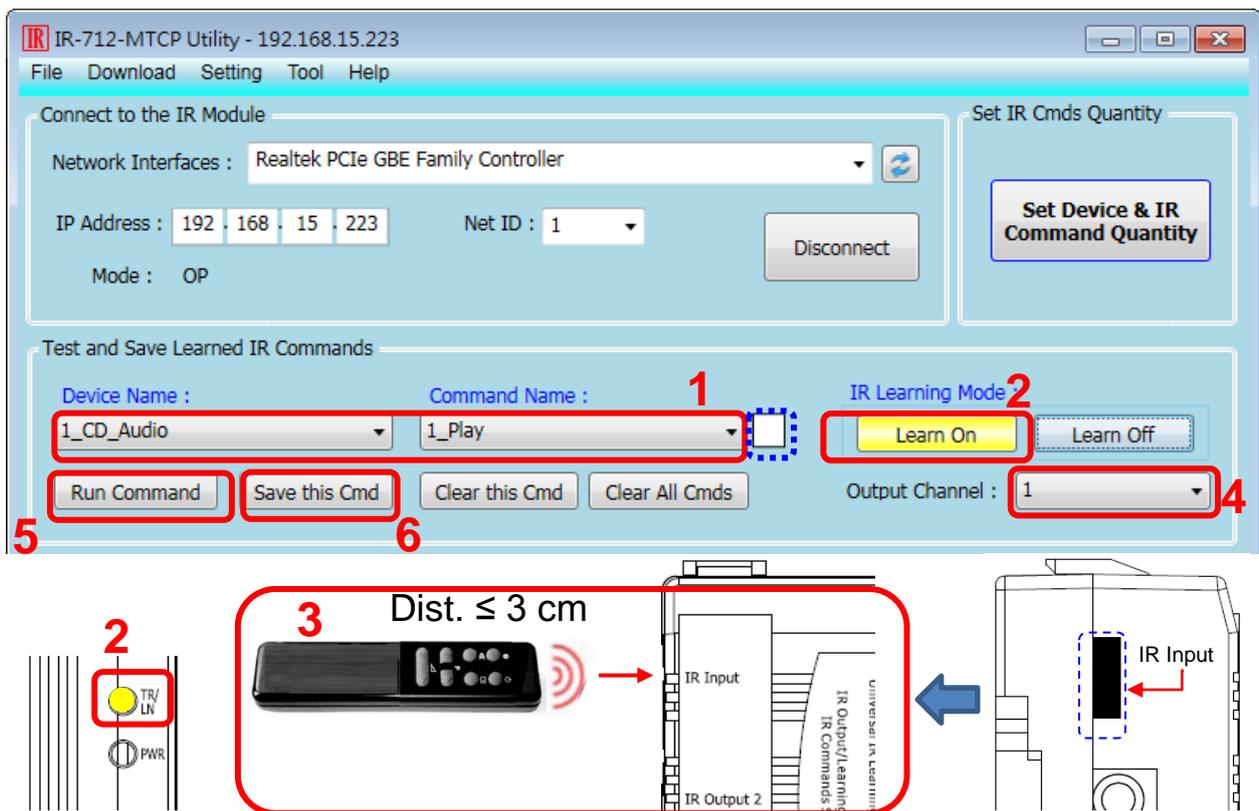


Figure 3-5 Steps of IR learning

4. Save IR Learning Commands

After the learning steps in section 3-1, the IR learning data can be saved to a file for use in the future. In addition, the learning data should be stored in the IR-712-MTCP for the remote terminal control

by the Modbus Clients.

4-1 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)

4-2 Save IR Commands to IR-712-MTCP

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

4-3 Test IR Commands Stored in IR-712-MTCP

Go to the section of “Test IR Commands in IR-712-MTCP” as shown in Figure 4-1. Select the IR command No. (i.e. the prefix no. in section 3-1) and IR Output Channel. Click “Transmit from IR-712-MTCP” button to emit and test the IR commands stored in the IR-712-MTCP. At the same time, the Modbus/TCP client message is shown in the underneath textbox. It is a convenient reference for users to command IR-712-MTCP to emit IR signals from their application program.

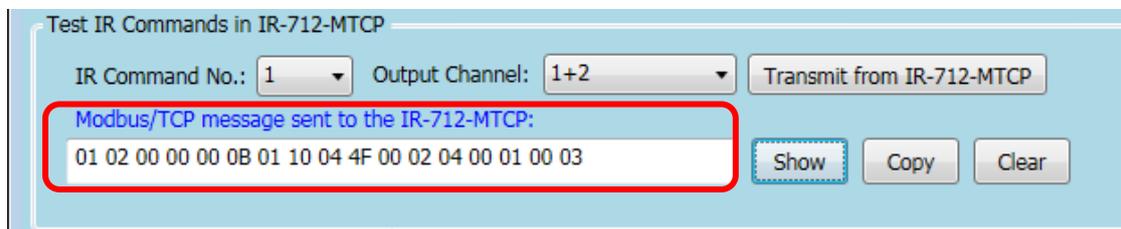


Figure 4-1 Test IR commands stored in IR-712-MTCP

5. Load the Stored IR Commands

5-1 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.

5-2 Load IR Commands from IR-712-MTCP

Click [Menu]-> [Download]->[Load IR Commands from IR-712-MTCP] to load IR learning commands from IR-712-MTCP.

6. Modbus Registers for IR-712-MTCP

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

Table 6-1 *Modbus Holding Registers in the IR-712-MTCP*

Start Address [4xxxx]	Description
1103 (0x44F) [41104]	The number of IR command (1 ~ 512)
1104 (0x450) [41105]	<p>IR output channels. Valid value: 0x01 ~ 0x03 ◦ The first bit (LSB) of the value represents the 1st channel. The 2th bit represents the 2th channel.</p> <p>Example:</p> <ul style="list-style-type: none"> • The 1st output channel : 0x01 == <u>01</u> (Binary) • The 1st and 2nd output channels : 0x03 == <u>11</u>(Binary)

Table 6-2 is the example of a Modbus FC16 command to emit IR signal from the IR-712-MTCP. (Modbus ID:1, IR command No.:1, IR output channel: 2)

Table 6-2: *An example of Modbus FC16 Command for the IR-712-MTCP*

Request		Response	
Field Name	Hex Value	Field Name	Hex Value
MBAP Header	01	MBAP Header	01
	02		02
	00		00
	00		00
	00		00
	0B		06
Unit Identifier (Net ID)	01	Unit Identifier (Net ID)	01
Function Code	10	Function Code	10
Starting Address Hi	04	Starting Address Hi	04
Starting Address Lo	4F	Starting Address Lo	4F
Word Count Hi	00	Word Count Hi	00
Word Count Lo	02	Word Count Lo	02
Byte Count	04	--	--
IR command number Hi	00	--	--
IR command number Lo	01	--	--
IR output channel Hi	00	--	--
IR output channel Lo	02	--	--

7. LED Indication

There are two LEDs in the IR-712-MTCP to show different states:

Table 7-1 *Default basic settings of the IR-712-MTCP*

LED	IR-712-MTCP state	LED state
TR / LN	Emitting IR signal	ON during emitting IR
	IR learning mode ON	ON
	IR learning mode OFF	OFF
PWR	Power is normal.	ON
	Power is failed.	OFF
	MBTCP client connection	Blinks once every 2 seconds.
All LEDs	OP mode	TR/LN LED is OFF and PWR LED is ON. Note: Push the DIP switch to the OP position and power cycle the module.
	FW / Init mode	TR/LN & PWR LED are both blinking 6 seconds after power cycling. After that, TR/LN is OFF and PWR is ON. ° Note: Push the DIP switch to the FW/Init position and power cycle the module.

8. Support

Welcome to contact ICP DAS for product and technical support.

Email: service@icpdas.com