



ET-IR REMOTE O/P V1

ET-IR REMOTE O/P is the device to receive Signal Remote from user and decode the pushed button to control ON/OFF Output in each channel that is externally connected on the Box. The Remote type that is used with the Box is generally used in the home or sold in the market. The main brand names on the Box that supports the decoder of Remote are like NEC, SONY, RC5 (Phillip), RC6, DISH, SHARP, Panasonic, JVC, SANYO, MITSUBISHI. Other brand names in the market are chosen at random to try out the operation; we found that it can be used without any problem because the format of sending the Signal IR is the same as the given brand names mentioned above. However, we do not give 100% warranty for all brand names and all models in the market because there are a lot of Remote types (sender) in the market now and we cannot test all of them.

For the Box ET-IR REMOTE O/P, there are 9 Buttons on Remote that can be setup (Learning) for the Box to control ON/OFF Output; 8-Channel for Control ON/OFF O/P-TTL (CH0-CH7) and 1-Channel for ON/OFF OUTPUT Relay (RY0). In the part of O/P TTL CH0-CH8, it can choose Logic and it can set Output to run either to be ON/OFF or Trig when user pushes the button on Remote each time.

1. SPECIFICATIONS OF MODULE ET-IR REMOTE O/P V1

- ◆ Use Power Supply DC 5V for the Box; the Box runs by MCU AVR EASY MEGA168
- ◆ Has 9-CH Output to control operation; 8-CH for Output TTL and 1-CH for Relay
- ◆ In the part of OUTPUT-TTL, it can set the operation either to run at Logic '1' or '0' by setting Jumper (have an effect on all 8-CH)
- ◆ Have LED to show status of receiving Signal IR, using SW, and operation of all 9-CH OUTPUT
- ◆ Have Buzzer to create Beep sound when pushing Remote (sender) or using SW. on the Box
- ◆ Have 3 operation modes can be chosen for OUTPUT-TTL CH0-CH7 (Default Mode0)

Mode 0 = Set the operation of OUTPUT-TTL CH0-CH7 as Toggle when pushed the button on Remote each time.

Mode 1 = Set the operation of OUTPUT-TTL CH0-CH7 as Trig when pushed the button on Remote each time.

Mode 2 = Set the operation of OUTPUT-TTL CH0-CH3 as Toggle and OUTPUT-TTL CH4-CH7 as Trig when pushed the button on Remote each time.

Any operation mode that is chosen is stored in E2PROM and it is always called when the Box Power-ON.

- ◆ Have 9 Buttons on Remote Sender (Learning) that can be setup to control OUTPUT in each channel; value of these buttons is stored in the Box. Moreover, user can setup new value of Button instead of the old one (overwrite) or clear value of all buttons.
- ◆ Use different Remote to setup buttons to control operation in each channel of OUTPUT. For example, it sets the button No.1 of Remote A to control OUTPUT-TTL CH0 and it sets the button No.1 of Remote B to control OUTPUT-TTL CH1 (Note: OUTPUT 1 Channel can set only one button to control).



- ◆ The operation of OUTPUT in each channel can be run together or run separately, depending on whatever value user sets for button to control OUTPUT in each channel. For example, if setting the same values for buttons to control OUTPUT in each channel, OUTPUT of the channels that are set by the same buttons runs at the same time when pushed the button on Remote.
- ◆ Channel OUTPUT Contact Relay (RY0) supports the Current 6A at 250V AC and 10A at 32VDC.

2. OPERATION OF BOX ET-IR REMOTE O/P

Initially after provided Power Supply DC 5V to the Box IR REMOTE, user can hear Beep sound twice and LED MEM flashes once, it means that the Box is ready to run. In the part of LED RY0, it is still in OFF Status because the OUTPUT Relay has not run yet; while LED that shows the status of OUTPUT-TTL CH0-CH7 may be ON or OFF Status and the value of OUTPUT-TTL CH0-CH7 at Connector Block 10 Pin may be either Logic '1' or Logic '0', depending on setting Jumper O/P-ACT. If setting Jumper O/P-ACT to the position of '1', it means that user sets OUTPUT-TTL CH0-CH7 to run at Logic '1'; so, the default status of OUTPUT-TTL CH0-CH7 is set as '0' and LED Status of each channel is also OFF Status. Or, if setting Jumper O/P-ACT to the position of '0', it means that user sets OUTPUT-TTL CH0-CH7 to run at Logic '0'; so, the default status of OUTPUT-TTL CH0-CH7 is set as '1' and LED Status of each channel is also ON Status. However, when setting this Jumper, there is no any effect on OUTPUT Relay (RY0).

For operation mode of OUTPUT-TTL CH0-CH7 if user has not setup any value yet, it always sets the operation to be the Default mode that is Model (Toggle). If user has already set the value, the device runs according to the chosen operation mode. After the Box is ready to run but user has not set any Learning Remote for IR Box yet, it has to set the Learning completely before use. The button value of Learning is stored in E2PROM of MCU; user can clear all or overwrite all button values as required. When setup the Learning completely, user can use Remote Control OUTPUT on the box instantly. When commanded by the Remote each time, OUTPUT-TTL CH0-CH7 runs according to the chosen operation mode, except OUTPUT Relay. The OUTPUT RELAY always runs as Toggle; when pushed Remote first time, Relay runs and it turns on LED RY0; when pushed the same button on the Remote again, Relay stops running and it also turns off LED RY0. As mentioned above, when setting operation mode and setting Jumper O/P-ACT completely, it has an effect on OUTPUT-TTL CH0-CH7 only but there is no any effect on OUTPUT Relay RY0.

This is the example operation of OUTPUT-TTL when choosing the operation mode as Mode 0 and setting Jumper O/P-ACT to the position of '1', the status of OUTPUT-TTL becomes the Default '0'. When pushed button on the Remote once, OUTPUT-TTL of the channel that is matching with the pushed button on the Remote becomes Logic '1' and it remains, and LED of the channel turns on. When pushed the same button on the Remote again, the OUTPUT-TTL of the channel sends out Logic '0' instead and LED turns off. When choosing this operation type, the Logic OUTPUT-TTL is run as Toggle according to interval of the pushed Remote of user.



This is a further example operation of OUPUT-TTL when choosing the operation mode as Mode 1 and setting Jumper O/P-ACT to the position of ‘0’, the status of OUTPUT-TTL becomes the Default ‘1’. When pushed button on the Remote once, OUTPUT-TTL of the channel that is matching with the pushed button on the Remote becomes Logic ‘0’ for 20ms and then the status of OUTPUT-TTL returns to be Logic ‘1’, and LED of the channel flashes once. When choosing this operation type and user pushed the Remote each time, OUTPUT-TTL releases Signal Trig for a while; in this case, the Signal Trig at OUTPUT-TTL may either be ‘0’ or ‘1’, depending on setting Jumper O/P-ACT of user.

NOTE! *Every time user pushes the Remote, LED IR (red) blinks to show the status of receiving Signal IR to user. When pushing Remote each time, it has to press and release the button until LED IR turns off and user can push the new one, otherwise the new pushed button has no any effect on the operation of OUTPUT.

*Please look at LED, if LED of whichever Channel that shows the status of OUTPUT-TTL turns on, it means that Pin OUTPUT-TTL of the Channel is Logic ‘1’; or, if LED of whichever Channel that shows the status of OUTPUT-TTL turns off, it means that Pin OUTPUT-TTL of the Channel is Logic ‘0’, although it sets Jumper Logic O/P either to run at Logic ‘1’ or ‘0’.

3. STRUCTURE OF BOX ET-IR REMOTE O/P

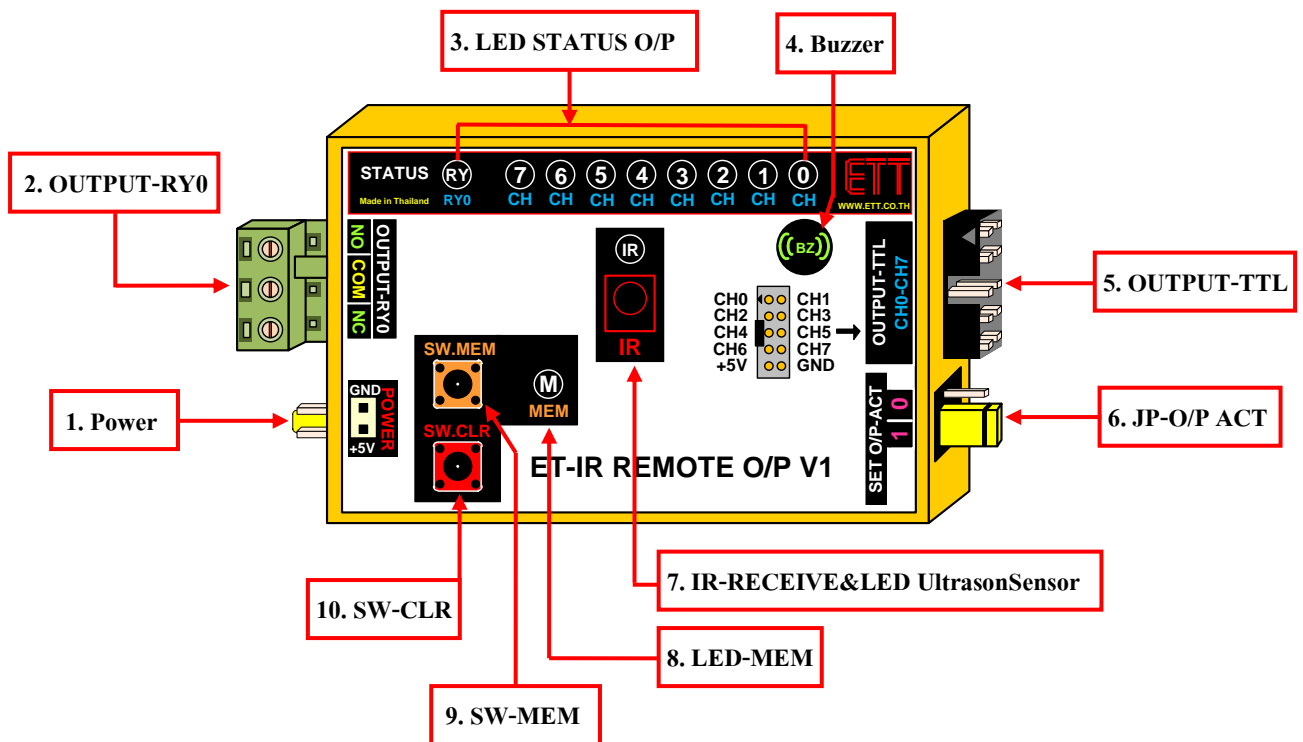


Figure shows structure of Box ET-IR REMOTE O/P V1.

1. **Power:** It is Connector Power Supply DC 5V for the Box; it has to interface Connector correctly.

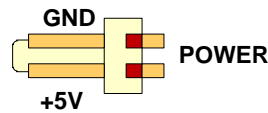


Figure 3.2 shows Connector Power Supply for ET-IR REMOTE V1.

2. **OUTPUT-RY0:** It is Connector OUTPUT RELAY 1-CH that user can interface to control devices directly. The Contact Relay is compatible with the Current 6A at 250V AC and 10A at 24V DC as shown in the figure 3.3. When commanded the RELAY to run, it combines the Contact NO and COM together.

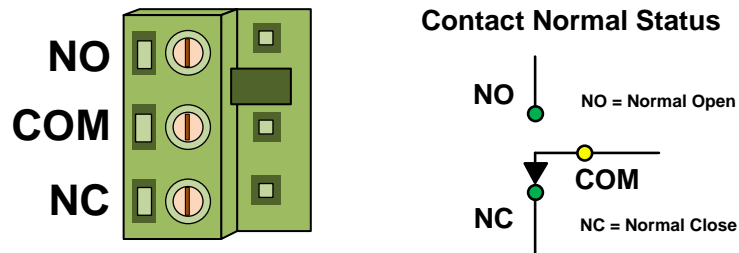


Figure 3.3 shows Connector RELAY (RY0).

3. **LED STATUS O/P:** It is LED that shows the operational status of OUTPUT-RY0 and OUTPUT-TTL (CH0...CH7). After Power-ON and it runs as the normal status, LED-RY0 turns off but LED CH0-CH7 may turn on or turn off, depending on setting Jumper O/P ACT. Please read more information of Set Jumper that has an effect on LED in the topic No.6.
4. **Buzzer:** It creates Beep sound when it received Signal from Remote or pushed the SW on the box to setup values.
5. **OUTPUT-TTL:** It is Connector OUTPUT-TTL (CG0-CH7) as Block 10Pin; it can be connected to control device or Interface Board that has Input TTL Receiver (0,5V). In this case, it uses Jumper O/P-ACT to setup status of OUTPUT-TTL (CH0-CH7) to active at Logic '0' or Logic '1' as required. Please read more information of Set Jumper that has an effect on OUTPUT-TTL in the topic No.6. The figure below shows how to arrange Pin O/P of each channel.

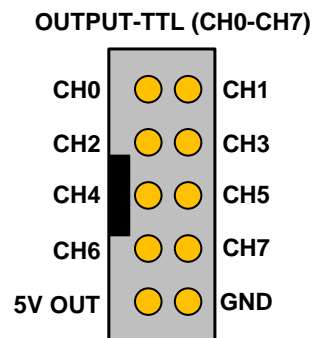
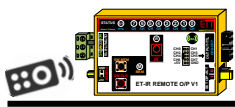


Figure 3.4 shows position of Pin O/P CH0-CH7 of Connector OUTPUT-TTL as Block 10 Pin.



NOTE! Please look at the figure above in the part of Pin 5V OUT. If the Board O/P is interfaced uses the external Power Supply, it does not use Power Supply together with Box IR, it should not interface this Pin; it only interfaces Pin Channel and GND

6. **JP-O/P ACT:** It is Jumper to choose Logic for OUTPUT TTL CH0-CH7 and it has an effect on the operation of all 8-CH OUTPUT-TTL. When setting this Jumper each time, it will be updated when the Box ET-IR REMOTE O/P is reset or Power-ON. When setting this Jumper, it has an effect on the operation of LED Status and OUTPUT-TTL CH0-CH7 as mentioned below (however, there is no any effect on the operation of LED-RY0 and OUTPUT-RY0);

- Set Jumper as '1': It sets OUTPUT-TTL (CH0-CH7) to run at Logic 1. When it is in the status of Default and the Box IR is Power-ON, this OUTPUT-TTL (CH0-CH7) releases Logic 0 and LED Status (CH0-CH7) turns off. When pushed the Remote, the result is;

When the Box IR is set to run in Mode 0 (Toggle) and pushed the Remote first time, OUTPUT-TTL of the channel that is matching with the setting button of Remote releases the Logic '1' for a while and LED Status also turns on. When pushed the same button on the Remote again, OUTPUT-TTL of the channel becomes Logic '0' and LED Status turns off instantly.

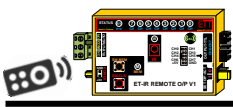
When the Box IR is set to run in Mode 1 (Trig), every time user pushes the Remote, OUTPUT-TTL of the channel that is matching with the setting button of the Remote, it releases Logic '1' for 20ms and it returns to be Logic '0'. For LED Status, it flashes once.

- Set Jumper as '0': It sets OUTPUT-TTL (CH0-CH7) to run at Logic 0. When it is in the status of Default and the Box IR is Power-ON, this OUTPUT-TTL (CH0-CH7) releases Logic 1 and LED Status (CH0-CH7) turns on. When pushed the Remote, the result is;

When the Box IR is set to run in Mode 0 (Toggle) and pushed the Remote first time, OUTPUT-TTL of the channel that is matching with the setting button of the Remote releases Logic '0' for a while and LED Status also turns off. When pushed the same button on the Remote again, OUTPUT-TTL of the channel becomes Logic '1' and LED Status turns on instantly.

When the Box IR is set to run in Mode 1 (Trig), every time user pushes the Remote, OUTPUT-TTL of the channel that is matching with the setting button of the Remote, it releases Logic '0' for 20ms and it returns to be Logic '1'. For LED Status, it flashes once.

NOTE! Every time user switches this Jumper O/P ACT to update the result of change, it has to remove Power Supply from the device first, and then re-connect Power Supply to reset the Box ET-IR REMOTE O/P.



7. **IR-RECEIVE&LED:** It is the position to receive Signal IR from Remote sender. When it receives the incoming Signal IR, the upper LED-IR alternately flashes on and off according to the interval of pushing button of user. While commanding the device, user has to wait until the LED-IR turns off completely and user can push the next Remote required, otherwise the Box IR cannot decode any pushed button.

***NOTE!** After pushed the Remote completely and the LED-IR blinked but OUTPUT-TTL or OUTPUT-RY0 does not responds any pushed button on the Remote, please check these following causes;*

- Please check if user has already set Learning for Remote on the Box IR successfully. If no, please setup the new value for Learning Remote.
- Battery of Remote (sender) may be less and has not enough to use, so the incoming Signal IR that the Box received is too less to decode.
- Position of the Remote (sender) may be improper while sending signal. For example, the position of Remote may be too far or it may slant from the Box receiver, so the Signal IR that the Box received is too less to decode.

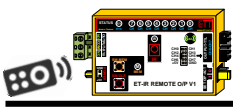
8. **LED-MEM:** It is LED to show the status of SW.MEM. For example, when user pushes SW.MEM to setup Learning Remote or to enter Setup Mode for this Box, this LED turns on. This LED turns off when it exited the Setup Mode. Moreover, this LED flashes once when user provided Power Supply to start the Box IR.

9. **SW-MEM:** There are 2 statuses as follows;

- 1) When it pushes this SW-MEM after Power-ON, it enters and exits Setup Mode (Learning) for the Box IR.
- 2) When it pushes and holds this SW.MEM for a while before Power-ON and then provides Power Supply to the Box, it enters step of choosing operation mode for the Box IR. When it pushes this SW.MEM again, it exits the step of choosing the operation mode and it enters the normal operation mode.

10. **SW-CLR:** There are 2 statuses as follows;

- 1) When it is running in this Setup Mode for Remote (Learning) of the Box IR and it pushes the SW-CLR, it clears all values of Remote buttons of O/P in every channel that user stored in E2PROM.
- 2) When it is running in mode of choosing operation mode for the Box IR and it pushes the SW-CLR, it chooses operation mode for OUTPUT-TTL (CH0-CH7). LED Status CH0-CH1-CH2 shows the current operation mode that is setup and used; when pushed this SW-CLR each time, LED moves from the current position of Operation Mode to another the next position consecutively. After setup the preferable operation mode, please push SW-MEM to exit from choosing operation mode.



4. HOW TO USE ET-IR REMOTE O/P

4.1) How to setup operation mode for OUTPUT-TTL (CH0-CH7): For this ET-IR REMOTE O/P, there are 3 operation modes that user can setup for OUTPUT-TTL (CH0-CH7) as follows;

Mode 0 = It sets the operation of OUTPUT-TTL CH0-CH7 to be Toggle when pushed button on the Remote each time. When pushed the Remote first time, OUTPUT-TTL of the channel that is matching with the setting button on the Remote releases Status ON and it remains for a while; and when user pushed the same button on the Remote again, OUTPUT-TTL of the channel returns to be Status OFF. In this case, the Status ON/OFF may be either Logic '1' or '0', depending on setting Logic by user (please look ay 4.2).

Mode 1 = It sets the operation of OUTPUT-TTL CH0-CH7 to be Trig when pushed button on the Remote each time. Every time user pushes the Remote, OUTPUT-TTL of the channel that is matching with the setting button on the Remote releases Status ON to the channel for 20ms approximately and then it returns to be Status OFF. In this case, the Status ON/OFF may be either Logic '1' or '0', depending on setting Logic by user (please look ay 4.2).

Mode 2 = This mode combines Mode 0 and Mode 1 together. In this case, it sets the operation of OUTPUT-TTL CH0-CH3 to be Toggle and the operation of OUTPUT-TTL CH4-CH7 to be Trig.

When setting this operation mode, there is no any effect on the operation of OUTPUT-RY0. This is process of setting the operation mode, please follow;

- 1) Remove Power Supply from the Box IR (Power-OFF).
- 2) Push and hold SW-MEM for a while; provide Power Supply to the Box IR (Power-ON).
- 3) User can hear Beep sound once; it means that it enters Setup Mode successfully. LED-MEM turns on and one of channels of LED Status CH0, CH1, and CH2 turns on to show the current mode that has already been set.
- 4) Push SW.CLR to choose the operation mode, please look at LED Status CH0, CH2, CH2 because it moves from channel to another channel consecutively and user can hear Beep sound while pushing SW.CLR. If user requires using any Mode, use has to push SW.CLR until user can see LED of the required channel turns on. In this case, Channel 0 replaces Mode 0; Channel 1 replaces Mode 1; and Channel 2 replaces Mode 2.
- 5) After chose the preferable operation mode successfully, please push SW-MEM again to exit the Setup Mode; user can hear Beep sound twice and LED-MEM turns off. It enters the normal mode of the Box IR and it is ready to receive the next Command from Remote. While exiting the Setup Mode, value of the chosen operation mode is stored in E2PROM and it is ready to be used.
- 6) If running the Box IR Power-ON the next time, the value of the latest mode that is set by user always be called first. If user requires changing new operation mode, it has to return and repeat the step 1 as mentioned above.

NOTE! When enters Setup Mode and does not require changing any operation mode, please push SW.MEM to exit the Setup Mode instantly.



4.2) How to setup Logic for OUTPUT-TTL (CH0-CH7): When setting Logic, it has an effect on the operation of OUTPUT-TTL (CH0-CH7) only; it can set Logic by Jumper O/P-ACT (No.6). If setting Jumper to the position of '1', it sets all 8-CH of OUTPUT-TTL to be activated by Logic '1'; or, if setting Jumper to the position of '0', it sets all 8-CH of OUTPUT-TTL to be activated by Logic '0'.

For more information of the relation between Set Jumper and operation mode of OUTPUT-TTL and LED Status CH0-CH7, please read section 3 Structure of the Box No.6 JP-O/P ACT

After set Jumper completely, user always sets the Box IR Power-ON and new value of setting Jumper will have an effect on the operation as user required.

4.3) How to setup Remote (Learning) for the Box IR: It saves Code of buttons that user requires using on Remote sender; it is stored in E2PROM of the Box IR to control OUTPUT in each channel; in this case, it can store 9 Buttons in total. After saved the Code of Buttons completely and user pushed the button on the Remote to command the Box IR, the Box IR decodes the received Signal and then compares with the saved value to check if it is matching. If yes, it commands OUTPUT of the channel to run. The extent of setting Remote is mentioned below;

- Every time user sets Remote, the first button that is pushed on the Remote always saves to control OUTPUT-TTL CH0. The next button that is pushed controls the CH1 and another Channels respectively and consecutively until it reaches Channel RY0. In this case, user can see LED STATUS of each channel turns on according to the push of the saved button on Remote. When it saves the values until it reaches the last OUTPUT channel (RY0), there is no any effect when user pushes button on the Remote.
- It cannot setup any button for OUTPUT by skipping a channel; it has to setup Button for CH0 first and then set the button for the next Channel respectively and consecutively.
- When setup Button for OUTPUT Channel, it is unnecessary to setup all channels; user can exit Setup Mode of this Remote as required. The Channel that user has already setup the button can be controlled by Remote; but any Channel that user has not setup any button yet cannot be controlled by Remote.
- If user requires editing or changing any button to control OUTPUT in each channel, user can setup new button or save new value over the old button. Any OUTPUT Channel that user has not changed or edited Button yet still uses the old button.
- User can clear all buttons that are setup for all OUTPUT Channels. When enters the Setup Mode of Remote, push SW.CLR and all buttons that are setup to control all OUTPUT Channels will be cleared completely.
- It can setup only one button to control OUTPUT in each channel by using the same Remote or the different Remote.
- It can setup the same button on the Remote to control OUTPUT in each Channel. When any OUTPUT Channel that user has setup the same button to control is commanded by Remote, the OUTPUT runs and stops running at the same time, depending on the command of Remote.



It described the extent of setting Remote above; next, it describes how to setup Remote (Learning) as follows;

- 1) Provide Power Supply to the Box IR (Power-ON), user can hear Beep sound twice and LED-MEM flashes once; in this case, it means that the Box IR is ready to receive Command from Remote.
- 2) Push SW.MEM and release, user can hear Beep sound once and LED-MEM turns on; in this case, it means that it enters mode of setting Remote successfully.
- 3) After entered the mode of setting Remote completely, user can push SW-CLR to clear all button values in E2PROM that are setup to control OUTPUT. However, user can skip this step No.4 if user does not want to clear any value.
- 4) Turn the face of Remote sender towards the Box IR and user can push button on the Remote to control the preferable OUTPUT Channel.
- 5) While pushing button on Remote and the Box IR can receive the signal from the sender successfully, LED-IR must flash on and off; user can hear Beep sound according to the push of the button; and LED Status CH0 turns on. In this case, it means that it is the first button that is setup to control OUTPUT-TTL CH0 (every time user enters Setup Mode for Remote, it always setup value of button for OUTPUT-TTL Channel 0).
- 6) When pushing the next button or the same button on the Remote, it sets button for OUTPUT-TL Channel1; in this case, user can see LED Status CH1 turns on as same as Channel 0.
- 7) When user keeps pressing the next buttons on Remote, it sets button for OUTPUT for the next channel consecutively until it reaches RY0; in this case, LED Status of OUTPUT in each channel turns on respectively and consecutively according to the push of button of each channel. After setup the button until it reaches Channel RY0, any push of button on Remote has no any effect on operation. If user does not satisfy any setting button and user requires changing the new value, user can push SW-CLR to clear all the setting buttons and then start setting new value. In this case, user can setup new button value for OUTPUT-CH0 again; or, user can push SW-MEM to exit the Setup Mode for Remote first and then push SW-MEM again to enter Setup Mode for Remote again. When setting button value by the second method, it does not delete any old button value but it saves the new button value over the old one in each OUTPUT Channel instead. If any channel has not been setup and saved new button value yet, it still is used.
- 8) It can setup the button value for all OUTPUT Channels completely, or it may setup button value for some OUTPUT Channels that are actually used such as setting only CH-0 and CH-1. After setup the button values for OUTPUT Channels completely, please push SW-MEM again to exit from Setup Mode for Remote.
- 9) After exited from Setup Mode of Remote, the button value that user setup is stored in E2PROM; LED-MEM turns off and user can hear Beep sound twice, it enters the normal status to wait for receiving Command from Remote. All LED Status will be cleared either to turn on or turn off, depending on setting Jumper O/P-ACT.
- 10) After exited from Setup Mode of Remote successfully and user requires changing or clearing all button values, please return step No.2 and then follow the instructions again.



11) After exited from the Setup Mode of Remote and user does not require changing or editing any button value, user can try using Remote to see whether the setting buttons run correctly. When ON/OFF OUTPUT in each channel, LED Status of each channel must turns on and turns off correctly according to the push of setting button on the Remote.

4.4) STEP OF START DEVICE

As mentioned in the section 4.1), 4.2) and 4.3) above, it describes how to setup values for the Box IR; now, it describes how to start this ET-IR REMOTE O/P V1 and users can effectively use this device without any problem;

- 1) Set Jumper O/P-ACT to choose Logic for OUTPUT-TTL.
- 2) Set operation mode for OUTPUT-TL, please follows the step No. 4.1 above.
- 3) Set values for Remote to control operation of OUTPUT in each Channel, please follows the step No.4.3 above.
- 4) Interface necessary devices that are used to control operation at Connector OUTPUT RY0 or OUTPUT-TTL (CH0-CH7), please look at the example No.5 below.
- 5) After setup values for the Box IR completely as mention above, please provide Power Supply to the Box IR again. When user hears Beep sound twice, it means that the Box IR is ready to receive Command from Remote; in this case, user can try pushing Remote to test the operation.

5. EXAMPLE OF INITIAL CIRCUIT CONNECTION

5.1) Use Connector OUTPUT-RY0: When pushed Remote to run RELAY, Connector NO and COM are connected together, and it makes LAMP turn on.

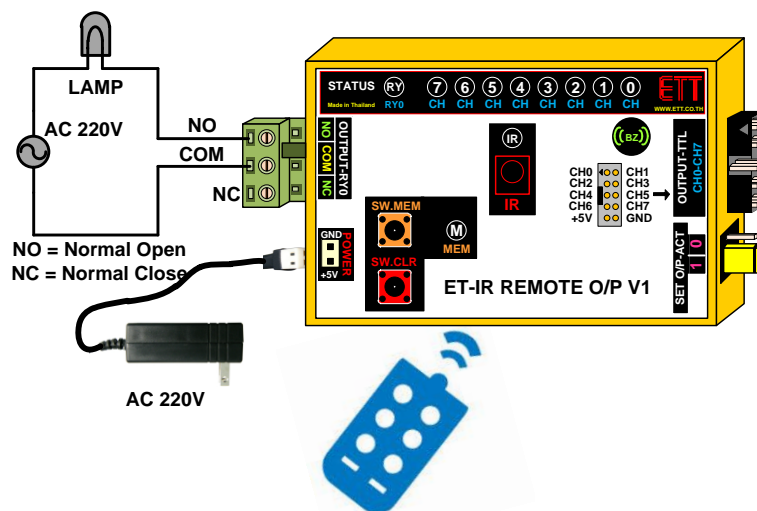


Figure 5.1 shows how to connect OUTPUT-RY0 to control ON/OFF LAMP by REMOTE.

5.2) Use Connector OUTPUT-TTL (CH0-CH7): When using this Connector to control Load that consume very high Current such as Motor or Load that consumes power higher than 5V, it requires Board Interface O/P that has Input 5V by interfacing to Connector OUTPUT-TTL. Referred to the example, it uses Module ET-BUSIO-SSRAC that has Input TTL and it is interfaced to O/P-CH0 of the Box IR. For OUTPUT of ET-BUSIO-SSRAC, it is used as Switch that is interfaced to AC220V and LAMP. When user pushed the setting button on the Remote to control CH0, user can see the LAMP turns on; when user pushed the same button on the Remote again, the LAMP turns off.

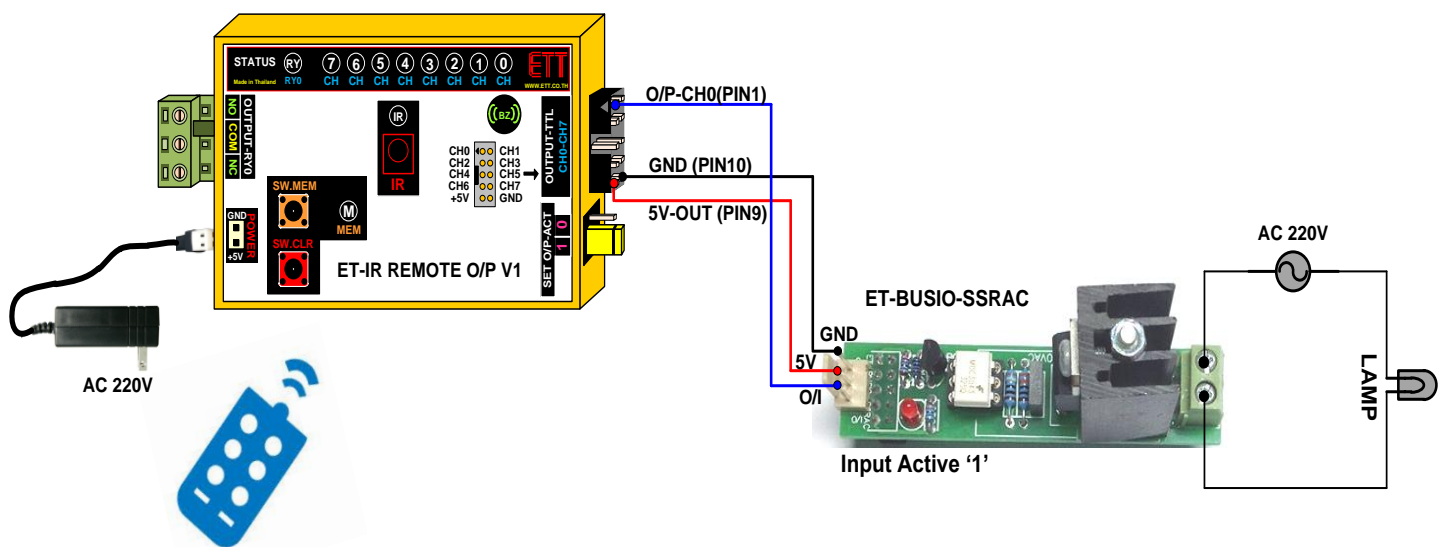
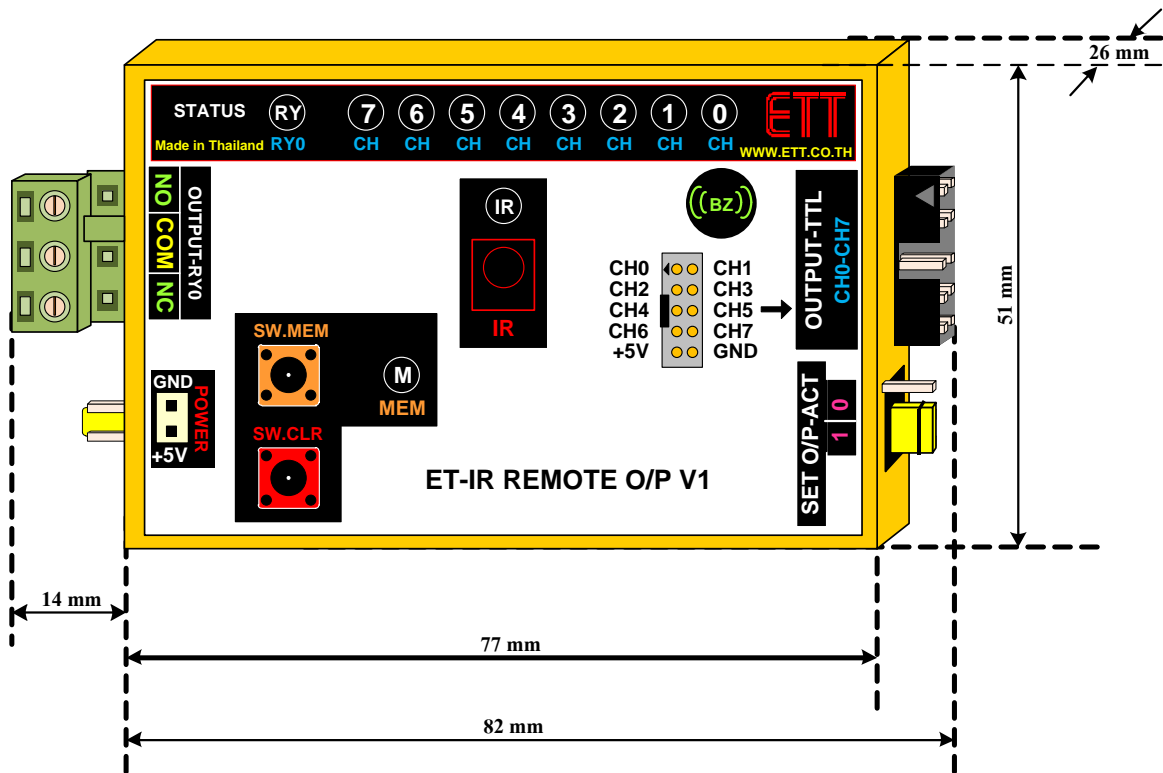
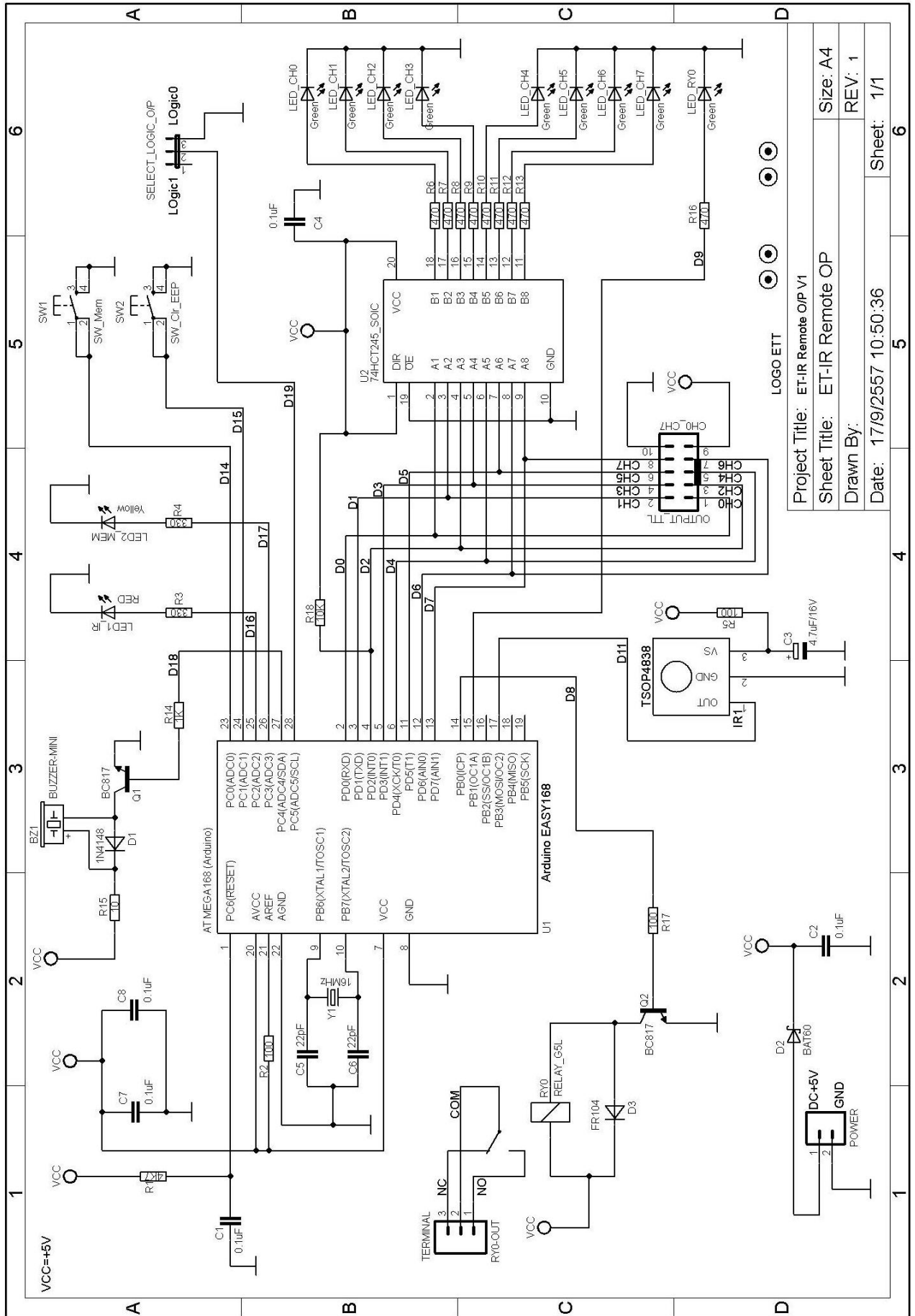
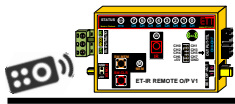


Figure 5.2 shows how to connect OUTPUT-TTL to control ON/OFF LAMP by REMOTE.



It shows size of the Box ET-IR REMOTE O/P V1.



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Figure shows Circuit of ET-IR REMOTE O/P V1.