

PRODUCT CATALOG 2016

The ETT Catalog 2016 includes the latest new release. For further ETT products, please look at Catalog 2014



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RASPERRY PI2-MOD B + SD8G

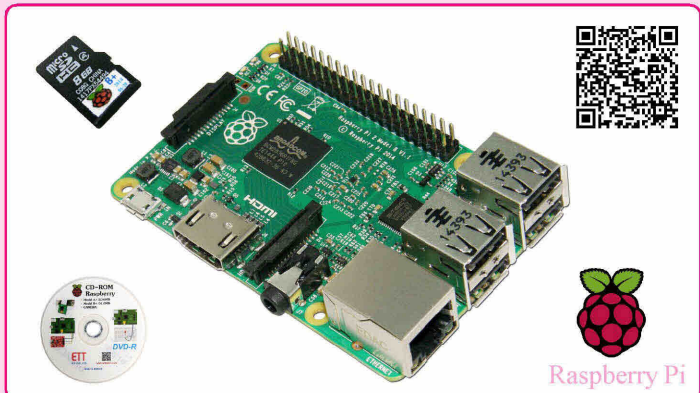
(C-YA-A-00202) ***

This is the newest **RASPERRY PI2-MOD B** with SD CARD 8G that has already been installed the Operating System of OS.

This RASPERRY PI2 is 32BIT mini Computer Board with 1GB Memory Card that can be connected with screen of computer or TV and KET BOARD, MOUSE. It can run as a computer device and it can access WEB BROWSER to play file or multimedia. It can run by the Operating Systems such as LINUX and WINDOWS 10 in the nearer future.

This RASPERRY PI2-MOD B is the newest Board RASPERRY PI2 that is developed and changed new Chip to ARMV7 QUAD-CORE 900 MHz, its speed is higher; moreover, it expands the memory from 512M to 1GB that is enough to install the Operating System of WINDOWS 10 in the nearer future.

This Board RASPERRY PI2-MOD B has the same structure and the board size as RASPERRY-MOD B+, so it can use the gadgets of the previous model version, including case.



- Use CPU BROADCOM BCM2836 ARM7 4 CORE 900 MHz that is x6 speed when compared with the previous model version
- RAM 1GB LPDDR2 SDRAM
- GPU VIDEO IV 2 CORE
- OPERATING SYSTEM BOOTS FROM MICRO SD CARD
- DIMENSION 85 x 56 x 17 mm.
- POWER SUPPLY from Connector MICRO USB SOCKET 5V/2A

CONNECTOR

- GPIO CONNECTOR** : 40 PIN HEADER 2.54mm. MALE (GPIO,UART,I2C and etc.)
- USB** : 4 PORT USB 2.0 for KEY BOARD, MOUSE
- ETHERNET** : 10/100 BASE RJ45
- VIDEO OUTPUT** : HDMI and COMPOSITE VIDEO (PAL/NTSC) 3.5 mm. 4-POLE JACK
- AUDIO OUTPUT** : HDMI and 3.5 mm. 4-POLE JACK
- CAMERA CONNECTOR** : 15 PIN MIPI CAMERA SERIAL INTERFACE (CSI-2)
- MEMORY CARD SLOT** : MICRO SD

When connecting screen via Connector HDMI, it requires

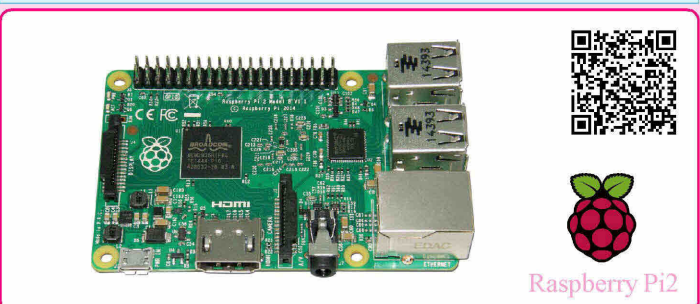
- Screen receives signal via Connector HDMI
- CABLE HDMI (CABLE HDMI/HDMI 1.8)
- KEY BOARD USB
- MOUSE USB
- POWER SUPPLY 5V with Connector MICRO USB (ET-SWITCHING ADAPTER 5V 2A TYPE U)

When connecting via RJ45 LAN, it requires

- COMPUTER
- ROUTER (DHCP SERVER)
- CABLE LAN DIRECT 2M
- POWER SUPPLY 5V with Connector MICRO USB (ET-SWITCHING ADAPTER 5V 2A TYPE U)

RASPERRY PI2-MOD B

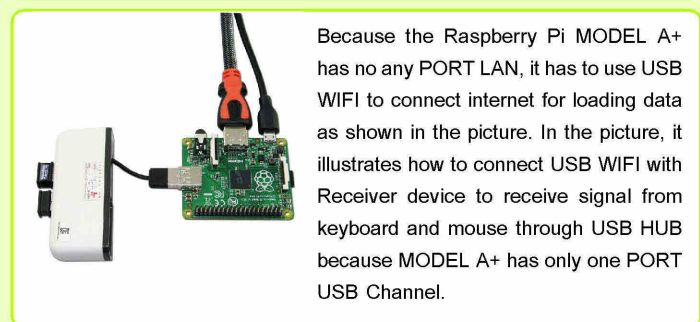
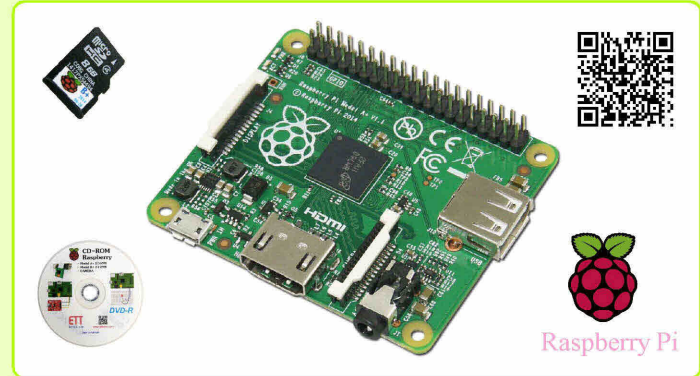
(C-YA-A-00201) ***



RASPERRY-MOD A+ -256M + SD 8G

(C-YA-A-00199) ***

This Raspberry Pi MODEL A+ 256MB with 8GB SD Card Memory is made in UK; it is 32IT minicomputer with 256 MB memory and user can install the operating systems such as LINUX, FEDORA, ARCH LINUX, RISC OS.



Because the Raspberry Pi MODEL A+ has no any PORT LAN, it has to use USB WIFI to connect internet for loading data as shown in the picture. In the picture, it illustrates how to connect USB WIFI with Receiver device to receive signal from keyboard and mouse through USB HUB because MODEL A+ has only one PORT USB Channel.

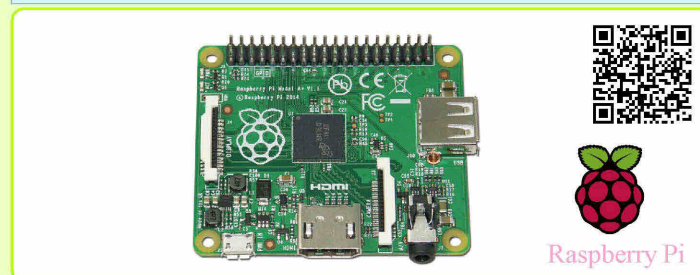
- Be cheaper and smaller than MODEL B+; Board size is 65.0 x 56.0 mm.
- Use Chip SoC BROADCOM BCM2835 that includes CPU, GPU and SD RAM in the same DIP TYPE.
- Use CPU 700 MHz ARM 11 ARM1176JZF-S CORE
- Use GPU BROADCOM VIDEO CORE IV, OPEN GL ES 2.0 OPEN VG 1080 P30 H 264
- Use MEMORY 256 MB SD RAM
- Use OPERATING SYSTEM BOOTS FROM MICRO SD CARD
- Use POWER SUPPLY FROM MICRO USB SOCKET 5V (1-2A)

CONNECTORS

- GPIO CONNECTOR** : 40PIN like MODEL B+ (GPIO cannot receive 5V, it is only compatible with 3.3V).
- USB** : 1 PORT USB 2.0
- VIDEO OUTPUT** : HDMI CONNECTOR and JACK 3.5 mm.
- AUDIO OUT** : JACK 3.5mm. and HDMI CONNECTOR
- CAMERA CONNECTOR** : 15-PIN MIPI CAMERA
- MEMORY CARD SLOT** : MICRO SD

RASPERRY-MOD A+ -256M

(C-YA-A-00198) ***



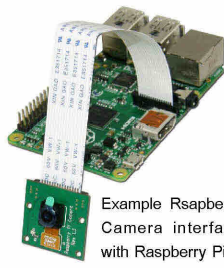
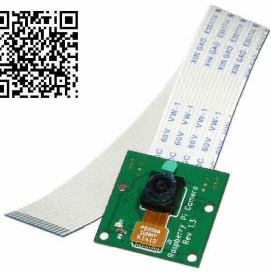
*** This Board is imported from foreign country, the circuit of the device is SMD that cannot be fixed or repaired. ETT checks all parts and circuits of board in order to make sure that it can work well before selling.

*** There is no any warranty for this product. If customer cannot accept the CONDITION, please DON'T UNSEAL and return the product to ETT in order to get money back.***



OPTION

● RASPBERRY CAMERA (C-YA-A-00200) ***

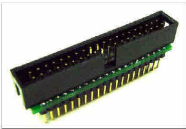


Example Raspberry Camera interface with Raspberry Pi

This MODULE CAMERA is specifically designed to use with Board Raspberry PI, it is compatible with MODEL A+, MODEL B, MODEL B+, Raspberry PI2 MOD B; moreover, it can be connected with SOCKET CAMERA as CSI BUS type.

- Board Size: 25 x 20 x 9 mm.
- 5MP Resolution (2529 x 1944 PIXELS)
- Use Sensor OMNIVISION 5647, fixed focus
- Video Camera Resolution 1080P30, 720P60 and 640x480 P 60/P90

● ET-CONV 40D (P-ET-A-00198)



● SD CARD 8 GB-MOD B+ -512M (A-CM-A-00045)



It is 8G SD MICRO that already programmed and installed the Operating System; it is compatible with Raspberry PI MOD B+, MOD A+, Raspberry PI2 MOD B.

● สาย LAN DIRECT 2 M (P-CB-A-00028)



● CABLE HDMI/HDMI 1.8M (A-CB-A-00046)



● ET-SWITCHING ADAPTER 5V 2A TYPE U (A-AP-A-00106)



It is DC POWER SUPPLY as SWITCHING type under standard of TIS and UL.

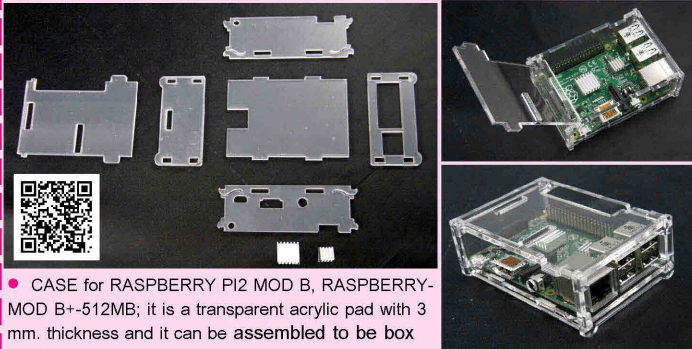
INPUT : AC INPUT 220VAC 50/60 Hz 0.5A

OUTPUT : DC 5V/2.0A (10W)

Connector USB MICRO TYPE B MALE

ADAPTER is 2 PIN WALL MOUNT.

● CASE RASPBERRY-MOD B+ (A-CV-D-00018)



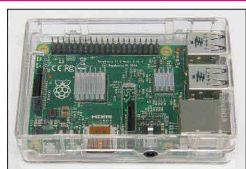
● CASE for RASPBERRY PI2 MOD B, RASPBERRY-MOD B+-512MB; it is a transparent acrylic pad with 3 mm. thickness and it can be assembled to be box easily.

● Provide HEATSINK to ventilate heat with 2 glues to stick with IC (convection)

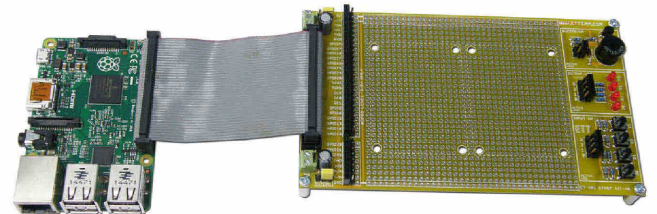
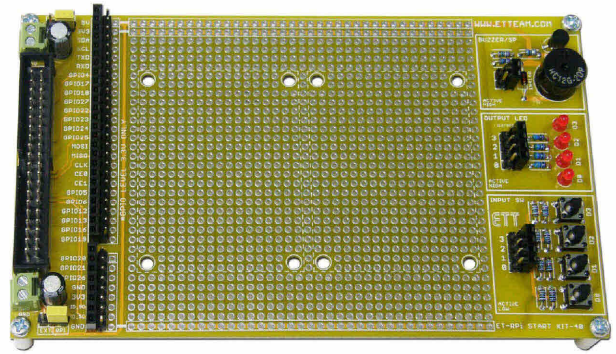
● BOX ABS PI2 V2 (A-BX-E-00037)



● CASE for RASPBERRY PI2 MOD B Provide HEATSINK to ventilate heat.



ET-RPI START KIT-40 (P-ET-A-00533)



It illustrates the connection between ET-RPI START KIT-40 and Board RASPBERRY PI.

Board ET-RPI START KIT-40 is specifically designed for use in Board RASPBERRY PI, it is more convenient to connect and test circuits.

SPECIFICATIONS of Board ET-RPI START KIT-40

- Be specifically designed for use in Board RASPBERRY PI that has Connector I/O 40 PIN such as PI MODEL A+, PI MODEL B+, PI2 MODEL B
- Connector 40 PIN of Board RASPBERRY PI is converted to HEADER MALE and HEADER FEMALE as 25 PIN and 8 PIN and it types name of I/O PIN that is more convenient to connect.

● Provide simple I/O for connection as follows;

- 4-Push Button Switch with Connector
- 4-LED 3mm. with Connector
- 1 MINI BUZZER with Connector

- Provide Connector POWER SUPPLY 5V and 3.3V from external board
- PCB Size: 15.3 x 9 cm.

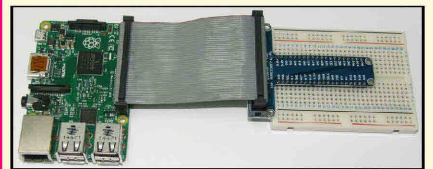
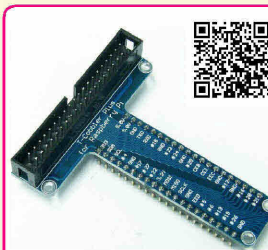
● Package of Board ET-RPI START KIT-40 includes...

1. Board ET-RPI START KIT-40
2. PAIR CABLE 40PIN CON2 with 10cm in length
3. Document



PI-CONV 40T (A-CO-A-00292)

Board PI-CONV 40T is Board CONVERTER, it converts Connector 40PIN I/O on Board RASPBERRY PI such as PI MODEL A+, PI MODEL B+, PI2 MODEL B to Connector 40PIN HEADER MALE; moreover, it types name of I/O PIN on PCB to connect with PROJECT BOARD conveniently (when it is connected from Board RASPBERRY PI 40 PIN, it requires PAIR CABLE 40 PIN (OPTION: it is not included in the package)).



It illustrates the connection between PI-CONV 40T and Board RASPBERRY PI and PROJECT BOARD.

OPTION : PAIR CABLE 40PIN

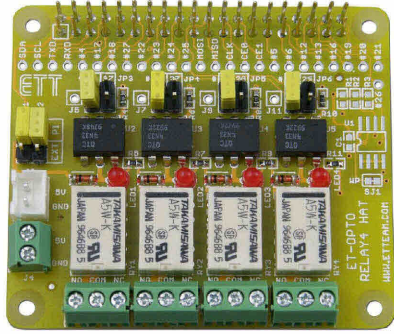
- PAIR CABLE 40PIN CON2 10CM. (P-CB-A-00036)
- PAIR CABLE 40PIN CON2 20CM. (P-CB-A-00037)
- PAIR CABLE 40PIN CON2 30CM. (P-CB-A-00038)



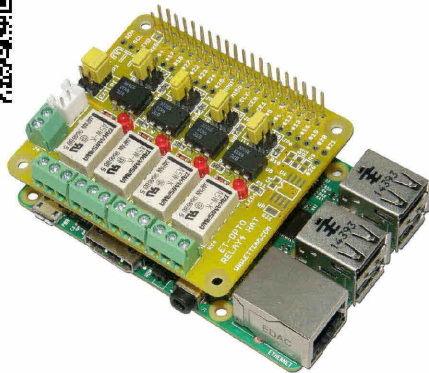


ET-OPTO RELAY4 HAT

(P-ET-A-00531)



- It illustrates how to connect **ET-OPTO RELAY4 HAT** with Board Raspberry Pi.

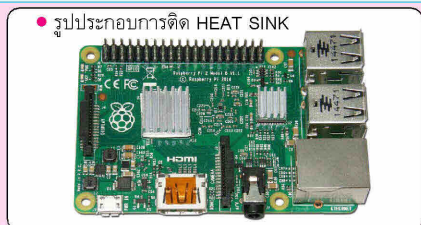
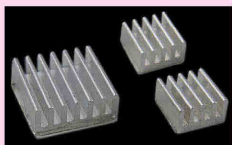


Board **ET-OPTO RELAY4 HAT** is specifically designed for use with Connector 40PIN of Board **RASPBerry PI**; it is 4-RELAY Board.

SPECIFICATIONS of Board **ET-OPTO RELAY4 HAT**

- Be compatible with Board **RASPBerry PI MODEL A, MODEL B+, PI2 MODEL B**
- Have connectible area to receive ID EEPROM (**OPTION**)
- Drive Circuit RELAY as OPTO-ISOLATION(4N33) to control and command RELAY
- Use CONTACT RELAY 5VDC 0.5A/125VAC or 1A/30VDC; and use Connector as SCREW TERMINAL BLOCK 3 PIN (NO,COM,NC)
- JUMPER chooses I/O to control all 4 RELAYS; can connect 2-RELAY Boards (8 RELAY) per 1 System
- Connector Power Supply of RELAY is provided for connecting from external board; and set JUMPER to choose Power Supply for RELAY either from internal board or external board. The Connector type is SCREW TERMINAL BLOCK 2PIN and WAFER 2.5 mm. 2PIN (it is compatible with **ET-SWITCHING ADAPTER 5V 2A TYPE B (A-AP-A-00095)**)
- Use CONNECTOR 2 x 20 PIN STACKABLE 25.5 mm. that is specifically designed; so, it can pile boards up.
- PCB size: 6.5 x 5.6 mm. Set of chromium pole is **OPTION**, please choose proper size and type of pole according to board connection.
- Board **ET-OPTO RELAY4 HAT** includes Board ET-OPTO RELAY4 HAT, Document and Example Programs.

PI HEATSINK SET (A-BX-I-00056)



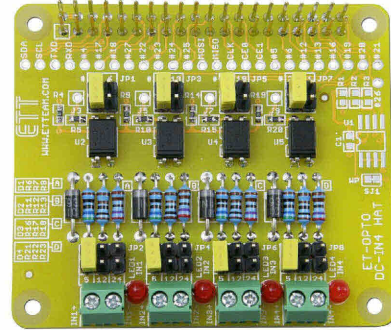
รูปประกอบการติด HEAT SINK

There are 3 HEAT SINKs in the same package with glue of its own that can be adhered to IC directly. It adheres to IC on Board **RASPBerry PI-B-512M, PI2 MODEL B, PI MODEL A, PI MODEL B+**.

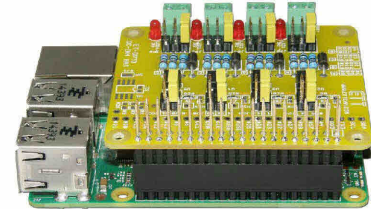
- In case of **PI-B-512M**, it is adhered to 3 positions on CHIP; CPU, LAN and POWER SUPPLY.
- In case of other **RASPBerry** versions, it is adhered to 2 positions on CHIP; CPU and LAN.

ET-OPTO DC-IN4 HAT

(P-ET-A-00532)



- It illustrates how to connect **ET-OPTO DC-IN4 HAT** with Board Raspberry Pi.



ET-OPTO DC-IN4 HAT is specifically designed for use with Connector 40PIN of Board **RASPBerry PI**; this INPUT Board is 4-CH OPTO ISOLATION.

SPECIFICATIONS of Board **ET-OPTO DC-IN4 HAT**

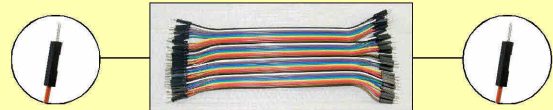
- Be compatible with Board **RASPBerry PI MODEL A, MODEL B+, PI2 MODEL B**
- Have connectible area to receive ID EEPROM (**OPTION**)
- Be used as INPUT Board to receive Signal DC; separate operation by PC817 OPTO ISOLATION; separate Power System into 4 channels.
- Set JUMPER to properly choose 3 alternative levels of INPUT; all 4-Ch is independently separated; 5VDC, 12VDC, 24VDC
- Set JUMPER to choose I/O to connect and receive all 4-CH INPUT; so, it can connect 2 INPUT Boards (8 INPUT) per 1 System
- Connector 4-CH INPUT is SCREW TERMINAL BLOCK 2 PIN
- Use CONNECTOR 2 x 20 PIN STACKABLE 25.5 mm. that is specifically long leg, so it can pile boards up.
- PCB size: 6.5 x 5.6 mm. Set of chromium pole is **OPTION**, please choose proper size and type according to board connection.
- Board **ET-OPTO DC-IN4 HAT** includes Board ET-OPTO DC-IN4 HAT, Document and Example Programs

RW20MM-40SET (A-CB-A-00051)

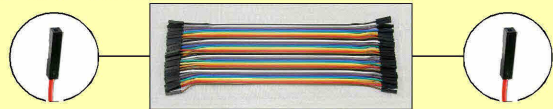
RW20FF-40SET (A-CB-A-00052)

RW20MF-40SET (A-CB-A-00053)

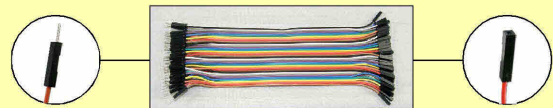
These flexible CABLEs are connected with boards or PROJECT BOARDs; it is flexible and 20cm in length. There are 3 sizes that can be properly chosen, depending on type of connection. There are 40 wires per a set.



- **RW20MM-40SET** : Both terminals are MALE with 20cm in length to connect with FEMALE PIN HREADER or PROJECT BOARD.



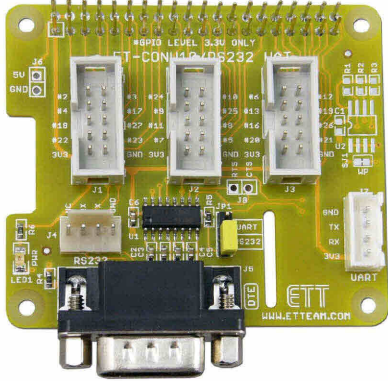
- **RW20FF-40SET** : Both terminals are FEMALE with 20cm in length to connect with MALE PIN HREADER.



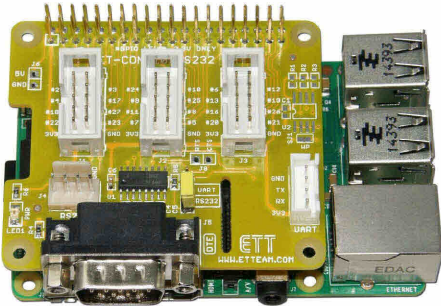
- **RW20MF-40SET** : One terminal is MALE and other one is FEMALE, it is 20cm in length.



ET-CONV10/RS232 HAT (P-ET-A-00530)



- It illustrates how to connect **ET-CONV10/RS232 HAT** with Board RASPBerry PI.



Board **ET-CONV10/RS232 HAT** is specifically designed for use with 40PIN of Board RASPBerry PI. There are 2 types of application as follows;

1. It is used as RS232 PORT.
2. It changes Connector 40PIN of RASPBerry to Connector 10PIN ETT Standard; so, it can be used with I/O Boards of ETT conveniently.

SPECIFICATIONS of Board **ET-CONV10/RS232 HAT**

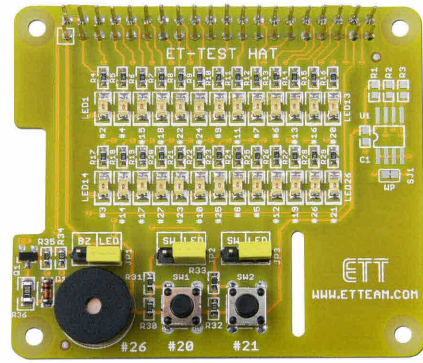
- Be compatible with Board RASPBerry PI MODEL A+, MODEL B+, PI2 MODEL B
- Have connectable area to receive ID EEPROM (OPTION)
- Have Circuit LINE DRIVER to convert level of Signal LOGIC from Board RASPBerry PI to RS232; has Connector DB9 PIN MALE and 4 PIN (ETT STANDARD).
- Have 3 of Connector IDC 10PIN (24 BIT I/O) arranged according to ETT STANDARD, it can be used with I/O Boards of ETT conveniently. NOTE: The level of Signal I/O must not be higher than 3.3V (if it is used with 5V, it requires following items;
- ET-10PIN CONV 3/5M (P-ET-A-00461), if it requires using all PORT (8BIT) as INPUT or OUTPUT.
- ET-MINI LOGIC LEVEL B1 (P-ET-A-00520), if it requires using BIDIRECTIONAL type from 3.3V to 5V or from 5V to 3.3V, all 8BIT are independently separated.
- Have Connector 2 x 20 PIN STACKABLE 25.5mm. that is specifically long leg; so, it can pile boards up.
- PCB size: 6.5 x 5.6 mm.
- Have set of chromium pole (OPTION), please choose proper size and type according to the board connection
- Board ET-CONV10/RS232 HAT includes Board ET-CONV10/RS232 HAT, Document and Example Programs

ET-10PIN CONV 3/5M (P-ET-A-00461)

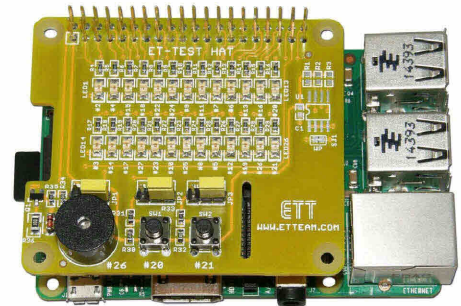


This mini board with 2 of Connector 10PIN ET BUS I/O is designed for use with PAIR Cable 10PIN conveniently. It is connected with Signal LOGIC between 5V devices with 3.3V devices by using IC 74LCX245 to be intermediate. It can setup JUMPER for all 8BIT. It can send data from 5V side to 3.3V side or from 3.3V side to 5V side by Circuit REGULATOR 3.3V. It is suitable for connecting Board MCU that is 3.3V I/O with 5V I/O Board.

ET-TEST HAT (P-ET-A-00529)



- It illustrates how to connect **ET-TEST HAT** with Board RASPBerry PI.

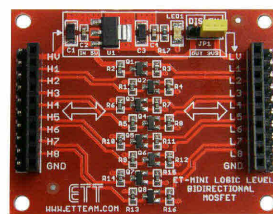


Board **ET-TEST HAT** is specifically designed to test I/O PORT of Board RASPBerry PI; it is used to test the operation or write sample program to show on LED Display or BUZZER on this board.

SPECIFICATIONS of Board **ET-TEST HAT**

- Be compatible with Board RASPBerry that has I/O PIN as 40 PIN such as RASPBerry PI MOD A+, MODEL B+, PI2 MODEL B
- Has connectable area to adjust ID EEPROM (OPTION)
- Has 26 of LED SMD to test I/O PORT of RASPBerry PI
- Has 2 of SW with JUMPER to choose the preferable operation mode
- Has 1 of BUZZER with JUMPER to test the operation
- Has Connector 2 x 20 PIN STACKABLE 25.5 mm.
- PCB size: 6.5 x 5.6 mm.
- Have set of chromium pole(OPTION), please choose proper size and type according to the board connection
- **ET-TEST HAT** includes Board ET-TEST HAT, Document and Example Programs

ET-MINI LOGIC LEVEL B1 (P-ET-A-00520)



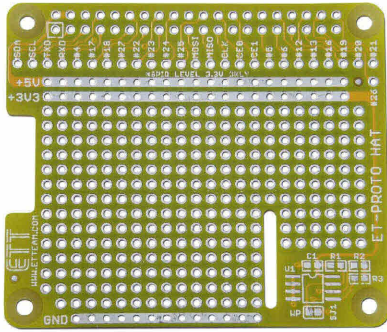
This **ET-MINI LOGIC LEVEL B1** is LOGIC LEVEL as BIDIRECTIONAL type that uses MOSFET to operate. This board connects Signal Logic between 5V devices and 3.3V devices by MOSFET. It can convert Signal LOGIC as bidirectional, so it is more convenient to use.

- Send value from Signal Logic 5V to 3.3V or from Logic 3.3V to 5V
- Have 8-CH for connection
- Be compatible with general Signal Logic I/O such SPI (not higher than 8 MHz), UART (not higher than 115200 bps), I2C (not higher than 400 KHz)
- Have IC REGULATOR 3.3V/800mA on board to supply power from 5V to 3.3V device
- Connector type is PIN HEADER 1 x 10 MALE and PIN HEADER 1 X 10 FEMALE, 2.54 mm. PITCH both sides
- PCB size: 4.4 x 5.6 mm.
- Package includes Board and document

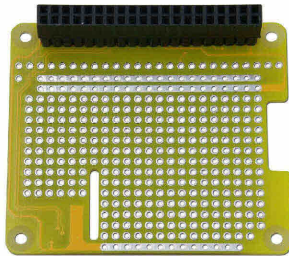




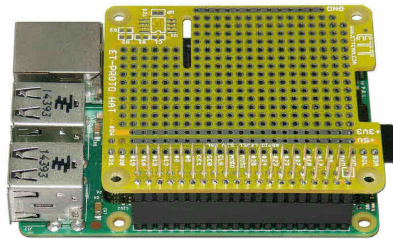
ET-PROTO HAT (P-ET-A-00564)



• It illustrates how to connect ET-PROTO HAT with Connector 2 x 20 PIN STACKABLE 25.5 mm. (This 2 x 20 PIN is not included in the PCB, it is OPTION).



• It illustrates how to connect ET-PROTO HAT, it solders 2 x 20 STACKABLE 25.5 mm. onto Board RASPBERRY PI.

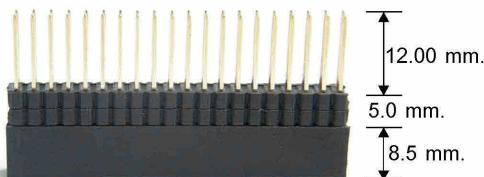


This **ET-PROTO HAT** or multi-purposed PCB as HAT (HARDWARE ATTACHED ON TOP) is specifically designed for use with Board RASPBERRY PI that has Connector 40 PIN such as PASPBERRY PI MODEL A+, RASPBERRY PI MODEL B+, RASPBERRY PI2 MODEL B; it is suitable to make prototype boards by connecting with RASPBERRY PI via Connector 40P conveniently.

SPECIFICATIONS of Board ET-PROTO HAT

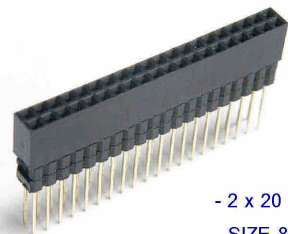
- PCB size: 6.5 x 5.6 cm.; the PCB type is PTH.
- Have connecting point of PCB 40 PIN to connect with I/O PIN of Raspberry PI
- Have connectible area for ID EEPROM (OPTION)
- Have connecting point of I/O for +5V, +3.3V, GND
- Have Connector PIN STACKABLE 2 x 20 (2 x 20 PIN STACKABLE 25.5 mm. (OPTION)

2 x 20 PIN STACKABLE 25.5 mm. (A-CO-A-00289)



It is Connector 40 PIN; one side is FEMALE and another side is MALE. It is specifically long leg that is high enough and it does not touch any device under the PCB. If it requires piling boards up, this ET-PROTO HAT is suitable.

- 2 x 20 PIN, 2.54 mm. PITCH, PIN GOLD PLATED
- SIZE 8.5/5.0/12.00 mm.



CHROMIUM POLE DIA M2.6 x 16 (P-DI-A-00005)

CHROMIUM POLE DIA M2.6 x 18 (P-DI-A-00006)

• This chromium pole DIA M2.6 x 16 is suitable to assemble at the first layer.



- One package consists of 4 sets of chromium pole, nuts and bolts both MALE and FEMALE.



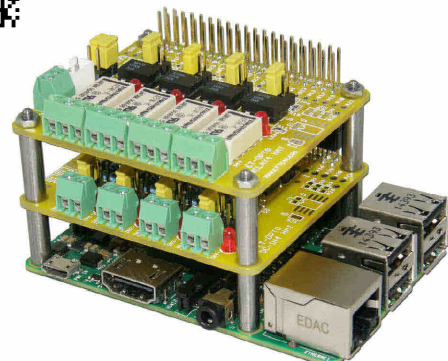
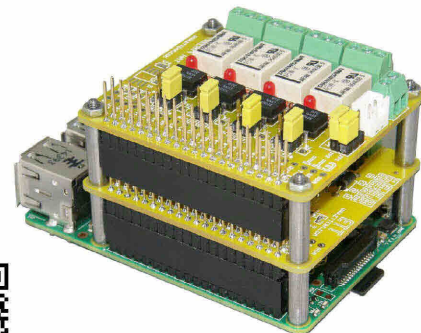
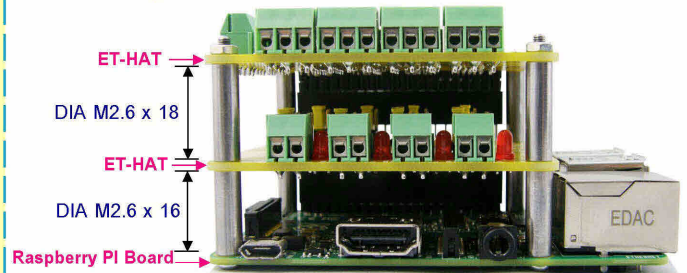
• The chromium pole DIA M 2.6 x 18 is suitable to assemble the second layer and higher.

- One package consists of 4 sets of chromium pole, nuts and bolts both MALE and FEMALE.

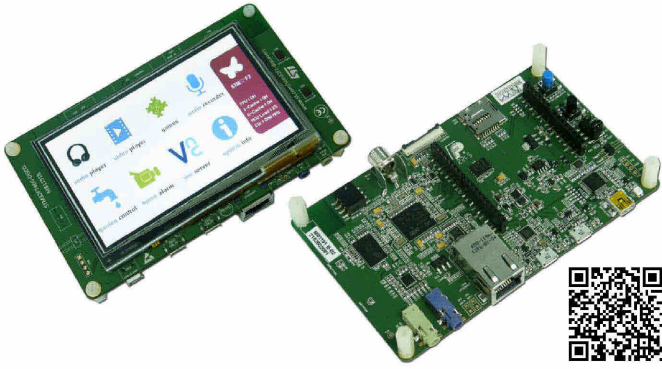
• One package of this chromium pole DIA M2.6 x 16 consists of 4 sets of chromium pole, nuts and bolts both MALE and FEMALE. It holds and fastens HAT Boards of ETT and Board RASPBERRY PI together. This set is suitable to hold and fasten the first layer between board and RASPBERRY PI (when using 2 x 20 PIN STACKABLE 25.5 mm.).

• One package of this chromium pole DIA M2.6 x 18 consists of 4 sets of chromium pole, nuts and bolts both MALE and FEMALE. It holds and fastens between HAT Boards of ETT and Board RASPBERRY PI. This set is suitable to hold and fasten the second layer and higher board and RASPBERRY PI (when using 2 x 20 PIN STACKABLE 25.5 mm.).

• It illustrates how to assemble the chromium pole between Board RASPBERRY PI and various types of Board ET-HAT.



STM32F746G-DISCO (C-YA-A-00206) ***



• This 32 BIT MICROCONTROLLER Development Kit with 4.3" TFT LCD Display in the series of STM32F746; this inexpensive board can be developed by its own via ST-LINK V2 and provides resources on board.

SPECIFICATIONS of STM32F746G-DISCO

- Use STM32F746NGH6, 32 BIT ARM CORTEX-M7, 1 MBYTES FLASH MEMORY, 340 KBYTES RAM, PACKAGE TYPE BGA216
- Provide ST-LINK V2 to be connected via USB MINI TYPE B
- 4.3" LCD with 480x272 DOT LCT-TFT with CAPACITIVE TOUCH SCREEN
- Have DCMI CAMERA CONNECTOR
- Have AUDIO LINE IN and LINE OUT JACK
- Have 2 MICROPHONES as ST MEMS
- Have 1 SW. and 1 SW.RESET
- Have 128-MBIT (16M x 8) FLASH MEMORY
- Have 128-MBIT (4M x 32) SDRAM
- Have MICRO SD CARD SOCKET
- Have USB OTG HS WITH MICRO-AB CONNECTOR
- Have USB OTG FS WITH MICRO-AB CONNECTOR
- Have RJ45 ETHERNET IEEE-802.3-2002
- Use Connector I/O under Standard of ARDUINO UNO V3
- Use 5VDC POWER SUPPLY from USB ST LINK, USB FS, USB HV, VIN from Connector ARDUINO and Connector +5V
- Provide DEMO Program, Example Programs, and Program Development; please visit and DOWNLOAD from Link: www.st.com/stm32f7-discovery

STM32F429I DISCOVERY (C-YA-A-00184) ***



This 32 BIT MICROCONTROLLER Development kit is in the series of STM32F429/439 from ST; this inexpensive Board provides ST-LINK V2 on board that is ready to develop. Board is divided into 2 parts as follows;

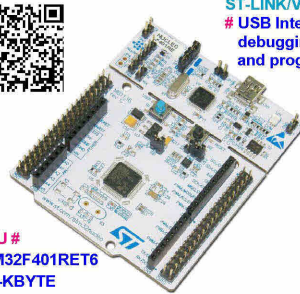


1. **ST-LINK V2** : It is used to Download and Debug into MCU STM32F429ZIT6 on board; this ST-LINK is used through PORT USB by Connector USB MINI-B on board (CABLE USB TYPE A TO B MINI is not included in the package (OPTION)).

- Connector 6PIN SWD is externally connected to DEBUG and DOWNLOAD
2. **STM32F429**
- Use MCU No.STM32F429ZIT6 32 BIT ARM CORTEX-M4F, 2 MB FLASH MEMORY, 256 KB RAM, LQFP144
 - Use +5VDC from Connector USB or external POWER 5V or 3V
 - 2.4" QVGA TFT LCD with TOUCH SCREEN ON BOARD
 - SD RAM 64 MBITS
 - SENSOR 3-AXIS DIGITAL OUTPUT No.L3GD20
 - 6-LED, 2-SW for use and RESET
 - USB OTG (CONNECTOR MICRO-AB)
 - 2 of CONNECTOR PIN HEADER 2.54mm MALE 32 x 2 under PCB for external connection

NUCLEO-F401RE (C-YA-A-00185) ***

This STM32 Development Kit from ST uses MCU in the series of STM32F4; this inexpensive board has a part of DEBUG, DOWNLOAD and MCU on board.



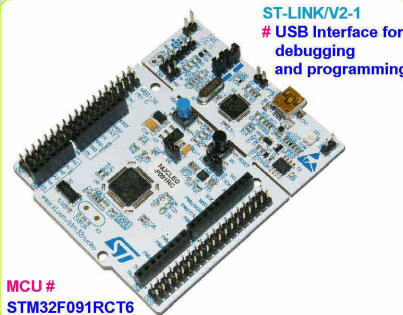
MCU #
STM32F401RET6
512-KBYTE
32 BIT MCU

ST-LINK/V2-1
USB Interface for
debugging
and programming

- In the part of DOWNLOAD and DEBUG, it is ST-LINK V2-1 to download program and debug through PORT USB MINI; moreover, there is Connector SWD to download/debug MCU outside board.
- Use MCU No.STM32F401RET0, 32 BIT ARM CORTEX M4, 512 KBYTE FLASH, 96 KBYTE RAM, LQFP64 TYPE.
- There are 2 types of Connector I/O as follows;
 - Arduino UNO 32 PIN
 - 2 of STMICRO MORPHO is PIN HEADER 19x2; there is PIN HEADER both on PCB and under PCB.
- Use Power Supply from Connector USB or connect with external Power Supply 3.5V, 5V, 7-12VDC
- 3-LED, 2-SW for use and RESET
- PCB size: 7.00 x 8.25 cm.
- Connector USB MINI Type can be connected with computer (This CABLE USB is not included in the package (OPTION); CABLE USB TO 5P MINI (A-CB-A-00044))

NUCLEO-F091RC (C-YA-A-00208) ***

This STM32 Development Kit from ST is in the series of Cortex-M0 MCU; this inexpensive board has a part of DEBUG and DOWNLOAD on Board.



MCU #
STM32F091RCT6

ST-LINK/V2-1
USB Interface for
debugging
and programming

- In the part of DOWNLOAD and DEBUG, it is ST-LINK V2-1 to download program and debug through PORT USB MINI; moreover, there is Connector SWD to download/debug MCU outside board.
- Use inexpensive MCU Cortex-M0 No.STM32F091RCT6, 256 KBYTE FLASH, 32 KBYTE ARM, and including CAN, I2C, IRDA, LIN, SPI, UART, A/D 12 BIT, D/A 12 BIT, 52 I/O
- There are 2 types of Connector I/O as follows;
 - ARDUINO UNO 32 PIN
 - 2 of ST MICRO as PIN HEADER 19x2; there is PIN HEADER both on PCB and under PCB
- Use Power Supply from Connector USB or connect with external Power Supply 3.5V, 5V, 7-12VDC through PIN HEADER
- 3-LED, 2-SW for use and RESET
- PCB size: 7.00 x 8.25 cm.
- Connector USB MINI Type can be connected with computer (This CABLE USB is not included in the package (OPTION); CABLE USB TO 5P MINI (A-CB-A-00044))

STM32L152C-DISCO (C-YA-A-00207) ***



This STM32L152C-DISCO is 32BIT MICROCONTROLLER Development Kit that replaces STM32L DISCOVERY; it changes MCU number to increase memory capacity from 128 KB to 256 KB instead. Other specifications are the same.

32 BIT ARM CORTEX-M3 as ULTRA-LOW-POWER consists of 2 main parts as follows;

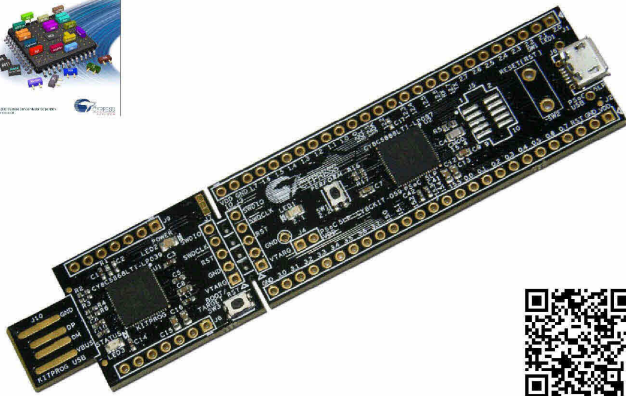
1. Test Board or Board consists of

- MCU No.STM32L152RCT6, 256 KB FLASH MEMORY, 32 KBYTE RAM, 8 KBYTE EEPROM, RUN 32 MHz, IC TYPE 64 PIN LQFP

- 6-DIGIT LCD DISPLAY 28 PIN DIP 24 (24 SEGMENT, 4 COMMANDS)
 - 4-LED, LD1 is used with USB, LD2 POWER 3.3, LD3 and LD4 come from PORT
 - LINEAR TOUCH SENSOR or 4 TOUCH SW
 - PIN HEADER 28x 2 is externally connected from MCU
2. **ST-LINK**
- Use MCU No.STM32F103 and connect with computer PC through PORT USB (Connector of Board is USB MINI Type)
 - Do IN-CIRCUIT DEBUGGER to MCU on board directly though USB PORT, without using any development kit. Moreover, it can connect Connector SWIM to external Board MCU.

(*** This product is imported, there is no warranty. ***)

CY8CKIT-059
(C-YA-A-00205) ***



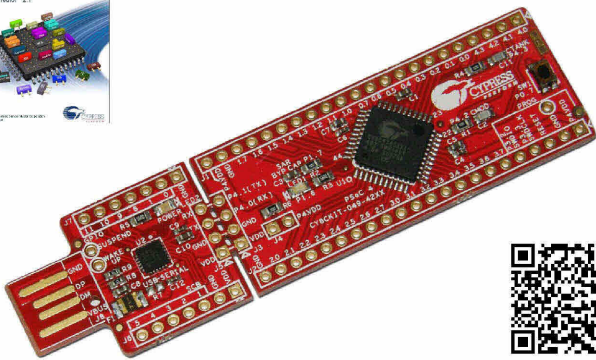
This is inexpensive and the latest Development Board for PSoC 5LP CORTEX-M3 from CYPRESS. Board has a part that connects with USB PORT(KITPROG), it can download program that is written on PC into board directly; so, it is more convenient and inexpensive.

In the part of program development, it uses PSoC CREATER (download free) to design PERIPHERAL I/O and writes program as GUI for writing circuit and Wizard for setting I/O Pin and Parameters. Moreover, it writes program by Text Editor that can link together; so, it is easier to develop program.

● The first part uses MCU CY8C5888LTI-LP097 as QFN68 type to be PSoC 5LP ARM CORTEX-M3 32 BIT, 80 MHz, 256 KB FLASH, 64 KB RAM, ADC 12 BIT, 38 I/O

- I/O CONNECTOR is PCB PIN 2.54mm. 26 x 2
- Part of KITPROG is used to program and debug into MCU via PORT USB 4 PIN PCB TYPE A
- Use POWER SUPPLY +5VDC via Connector USB PORT 4 PIN directly

CY8CKIT-049-42XX
(C-YA-A-00196) ***



This is the inexpensive Development Board for PSoC4 ARM Cortex-M0 from CYPRESS. Board has a part that connects with USB PORT, so it can load program into board directly in order to write and test program conveniently.

When developing program, it uses Program PSOC Creater to design Peripheral I/O and writes program as GUI for writing circuit and Wizard for setting I/O Pin and Parameters. Moreover, it uses Text Editor to write program that is more convenient to link and it is easier to develop program.

● The first part uses MCU CYPRESS No.CY8C4245AXI-483 to be PSOC4 ARM CORTEX-M0 32BIT, TQFP-44, 32KB FLASH, 4KB RAM, A/D 12 BIT

- I/O CONNECTOR is PCB PIN 2.54mm. 44 PIN PCB
- Part of connecting with USB PORT of Computer uses CY7C65211; it changes USB to UART to load program data to CY8C4245AXI through UART BOOT LOADER.
- CONNECTOR is 4 PIN USB that can be connected with PORT USB directly and it uses POWER SUPPLY from USB PORT.

CY8CKIT-042 (C-YA-A-00197) ***

This PSoC 4 Pioneer Kit is the learning Kit for MCU ARM Cortex M0 of Cypress. It combines the 32 Bit Processing Data and Peripheral I/O; it allows user to customize the part of Analog such as Opamp Filter Comparator ADC DAC and the part of Digital such as UART SPI I2C Timer/Counter as required. This Kit consists of the part of Programmer/Debugger and the part of MCU PSoC4 to test and write program No.CY8C4245AXI-483.



When developing program, it uses Program PSOC Creater to design Peripheral I/O and writes program as GUI for writing circuit and Wizard for setting I/O Pin and Parameters. Moreover, it uses Text Editor to write program that is more convenient to link and it is easier to develop program.

- Include part of Programmer/Debugger connects through
- USB in set, without using External Programmer Device
- Use Power Supply from USB and external Power Supply Connector is compatible with Arduino; it can be used with Arduino Shield such as Ethernet Shield
- Has 3 colored LED for testing and Push Button Switch for testing Digital I/O
- Has 5 levels of testing Capsense Slider to test and learn how to detect Touch Pad

NODEMCU LUA WIFI
(A-IC-M-00055) ***



NODEMCU LUA WIFI is development board and uses WIFI; it connects Board ESP8266 together with Circuit USB TO UART, so it is easier and more convenient to connect and develop program. Moreover, it is easier to develop a project on INTERNET OF THINGS.

SPECIFICATIONS of Board NODEMCU LUA WIFI

- Use MODULE ESP8266-12E, 4 MBYTE FLASH, WIFI MODULE
- Use IC BUS TO UART No.CP2102 from SILICON LABS; there is no any problem about connection between USB PORT on the Operating Systems (OS)
- Logic Level of INPUT/OUTPUT 3.3V
- Use Power Source from PORT USB 5 VDC or external Power Source 5-10 VDC
- Develop program by Program Arduino
- PIN HEADER 15 x 2 (2.54 mm.) is externally connected from board
- Use Connector MICRO USB
- Board Size: 25.40 x 48.26 mm.

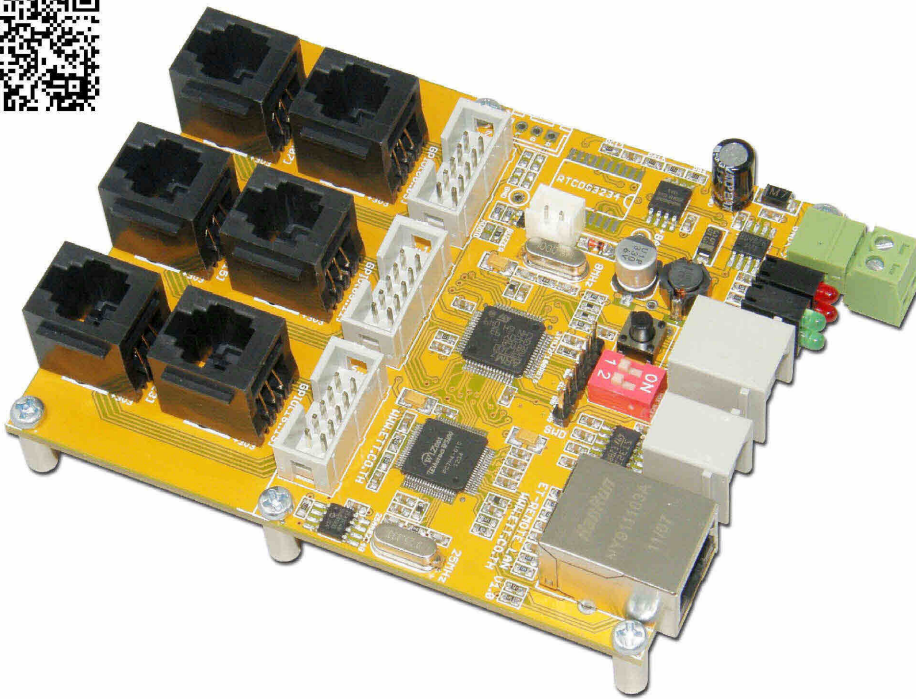
NOTE:

- For more information of Circuit and Board NODEMCU, please visit website : <https://github.com/nodemcu/nodemcu-devkit-v1.0>
- Install Arduino Core of ESP8266 to use Program Arduino for development, please visit website : <https://github.com/esp8266/Arduino>
- For Driver of Chip USB TO UART, please visit website: <https://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx>

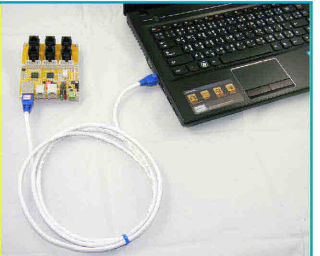
(** This is imported product, there is no any warranty. **)



ET-REMOTE LAN (P-ET-A-00507)



- Connect with PC that has direct Port LAN as Peer-to-Peer by using Cable LAN CROSS.



- Connect PC with LAN System via HUB by using Cable LAN DIRECT.

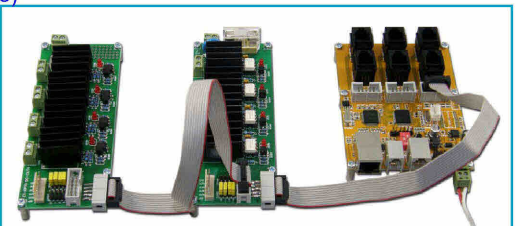


- Connect with PC via WiFi, it has to connect via Wireless Router. It connects Board with Router via Port LAN by using Cable LAN DIRECT.



This Board Microcontroller is used as 24-BIT INPUT/OUTPUT in order to connect ETHERNET LAN; MCU of Board has already provided Firmware Command. If user requires using this Board to be INPUT/OUTPUT via LAN System, it only uses and send the Command to Board in the format of TCP/IP; so, it is more convenient to use and it reduces much difficulty in developing program.

- Connect and communicate with Board via TCP/IP through ETHERNET LAN 10-BASE T/100-BASE TX, Connector RJ45 with LED
- Main MCU is ARM 32BIT CORTEX-M3, 128 KBYTE FLASH, 64-LQFP TYPE with internal Program Firmware of ETT
- Use ETHERNET CONTROLLER No.W5100 from WIZNET that has TCP/IP STACK inside
- Have HARDWARE MAC ADDRESS standard EUI-48 that has unique code, it is useful to write program in order to protect against COPY
- Have 24 BIT GPIO TTL LOGIC 3.3V
 - Can setup function of each BIT to be INPUT/OUTPUT independently
 - Can drive OUTPUT LOGIC as LOGIC 3.3V/20mA
 - Can setup POWER-ON OUTPUT LOGIC of each OUTPUT
 - Can receive INPUT LOGIC in the range of 0-5V
- Firmware contains Instruction Set that ETT wrote and provided, it performs in the format of ASCII COMMAND via TCP/IP Network
- Can setup IP ADDRESS, SUBNET MASK, TCP PORT, USER NAME, PASSWORD
- Support Mode WEB SERVER CONTROL and Mode TCP SERVER CONTROL
- Have DIP-SW to choose Operation Mode and RESTORE CONFIGURATION DEFAULT
- Have 3 of Connector 10PIN ET-BUS I/O and 6 of new Connector RJ11
- Have 1-CH UASRT RS232 in Connector 4PIN RJ9 (reserved for communicating with new ETT devices "ET-RS232/1-WIRE", it can connect with Temperature SENSOR No.DS1820/S20/B20)
- Have 1-CH SPI LOGIC TTL 3.3V Connector RJ11 (reserved, it is unused in the Firmware)
- Have 4 of LED to display the operating status of Board
- Have Connector BUZZER 2PIN 12VDC (be compatible with ET-BUZZER 12V TYPE B)
- Be compatible with Power Supply DC 8-12VDC/500mA; use Connector 2PIN PLUG-IN TERMINAL BLOCK (can modify Cable POWER DC of ET-SWITCHING ADAPTER 12V 0.5A TYPE J by cutting Jack off)
- Board ET-REMOTE LAN can be connected with I/O BOARD of ETT such as ET-OPTO AC-IN4, ET-OPTO DC-IN4, ET-OPTO AC-OUT4, ET-OPTO DC-OUT4, ET-OPTO RELAY4 and etc
- Board size: 800x10.00cm. with metal Stand 1.10CM. in height



- Example of modifying and connecting with Boards ET-OPTO I/O 4.

OPTION ซึ้อเพิ่ม

ET-SWITCHING ADAPTER 12V 1A TYPE J
(A-AP-A-00098)



INPUT:100 - 240VAC
OUTPUT:12VDC 0.5A Female Jack 2.5 mm.

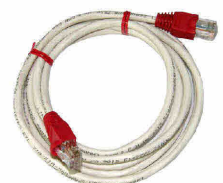
ET-BUZZER 12V TYPE B
(P-ET-A-00508)



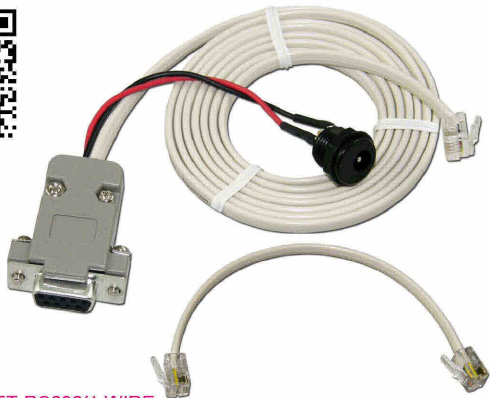
สาย LAN CROSS 2M
(P-CB-A-00027)



สาย LAN DIRECT 2M
(P-CB-A-00028)



ET-RS232/1-WIRE (P-ET-A-00512)

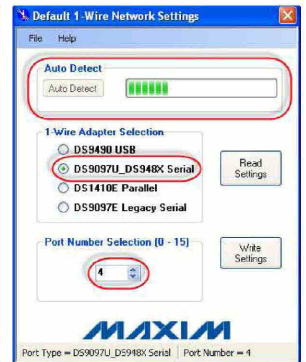
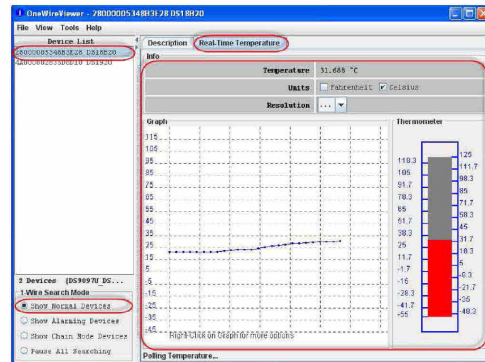


ET-RS232/1-WIRE is a connecting point for 1-WIRE device according to the standards and specification of DALLAS or MAXIM INTEGRATED; it reduces much difficulty in reading/writing data for 1-WIRE devices that require highly accurate period. This product uses IC No.DS2480B; this Chip is particularly designed for connecting with 1-WIRE device. Especially from 1-WIRE, it can be connected through PORT RS232 that is easier and more convenient to use and connect with 1-WIRE device.

There are 2 types of connection as follows;

1. **Connecting with ET-REMOTE LAN** : ETT Board that can be connected with LAN System has Connector RJ9 on Board ET-REMOTE LAN, it can be connected with ET-RS232/1-WIRE directly. Moreover, there is Command Package internal ET-REMOTE LAN for reading/writing.

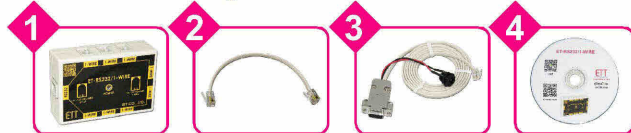
2. **Connecting with general RS232 devices** : Especially, it is connected with PORT RS232 of computer PC on OS WINDOWS 7/8 (32 BIT only). MAXIM INTEGRATED provides Software Package for customers to read, write, graph, and store data (this program has already been contained in CD-ROM of ETT).



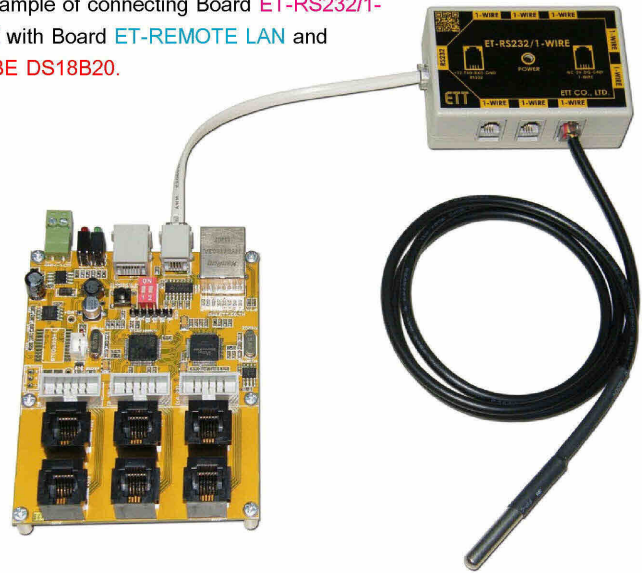
Specifications of ET-RS232/1-WIRE

- Use Chip DS2480B SERIAL PORT TO 1-WIRE DRIVER
- Be connected through PORT RS232 as NULL MODEM (RXD,TXD,GND)
- Support BAUDRATE in the range of 9600-115200 bps
- Support connection with iBUTTON devices and 1-WIRE devices
- Have 8-CH RJ9 for connecting with 1-WIRE devices
- Have Connector PORT RS232 through Connector RJ9
- Plastic box size containing ET-RS232/1-WIRE is 7.5 x 2.5 x 5 cm.
- Use POWER SUPPLY DC 7-12VDC. If using with ET-REMOTE LAN, it does not need to use any external POWER SUPPLY because it can use Power Supply from ET-REMOTE LAN directly. If using with computer PC or other devices, it should use POWER SUPPLY " ET-SWITCHING ADAPTER 12V 1A TYPE J" (A-AP-A-00098)
- ET-RS232/1-WIRE consists of...

1. Box with Circuit ET-RS232/1-WIRE
2. CABLE RJ9-RJ9-15CM
3. CABLE RS232-1-WIRE-150CM
4. CD-ROM Manual and Program



• Example of connecting Board ET-RS232/1-WIRE with Board ET-REMOTE LAN and PROBE DS18B20.



OPTION ซื้อมเพิ่มเติ่ม ใช้กับ ET-RS232/1-WIRE

• PROBE DS18B20 1M (P-ET-A-00515)



This PROBE is STAINLESS that has IC DS18B20 insides; it is shielded well and it is waterproof for 1 meter in depth. The Connector is RJ9 type to measure temperature in the range of -55°C to +125°C.

• SOCKET DS9100A & DS9100C (P-ET-A00514)



This product is used to interface and touch for reading value of iBUTTON DS1990; it is provided with Cable RJ9 with 1 meter in length. It can be connected with ET-RS232/1-WIRE directly.

• IBUTTON DS1990 & DS9093A (J-PS-A-00026)



** It cannot be used with ET-REMOTE LAN.

It is iBUTTON device that consists of...

- DS1990A-F5: It is 1-WIRE device that has its own original 64BIT numeric (16 DIGIT) insides and it uses 2.8V-6.0V Power Supply.
- DS9093A: It is black plastic holder to hold up DS1990A; so, it is more convenient to hold the device.

• ET-SWITCHING ADAPTER 12V 1A TYPE J (A-AP-A-00098)



FEMALE JACK 2.5 mm.

Under TISI Standards and UL
INPUT : AC INPUT 220VAC 50/60Hz 0.5A
OUTPUT : 12VDC 1A

ET-3G UC20 (P-ET-A-00511)

3G 800/850/900/1900/
2100 MHz

GSM 850/900/1800/
1900 MHz

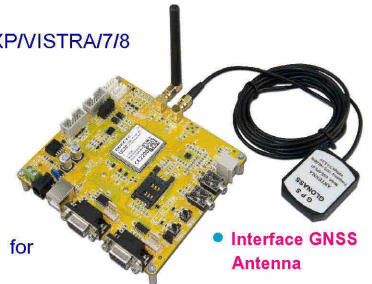


Specification of MODULE UC20G

- Be Module from QUECTEL
- Be compatible with network of UMTS/ HSPA+ and GSM/ GPRS/ EDGE
- Support Frequency in 3G(UMTS) network 800// 850/ 900/ 1900/ 2100 MHz
- Support Frequency in GSM network 850/ 900/ 1800/ 1900 MHz
- Maximum transmission of data: HSPA+ MAX 14.4 Mbps(DL)/ MAX 5.76 Mbps(UL)
- Support Protocol PPP/ TCP/ UDP/ FTP/ HTTP/ FILE/ MMS/ SMTP/ SSL/ PING
- Support AT COMMAND (COMPLIANT WITH 3GPP TS27.007, 27.005 and QUECTEL ENHANCED AT)
- Support navigation by satellite (GNSS); it is compatible with GPS (USA) and GLONASS (RUSSIA). It uses Chip GPSONE GEN8 from QUALCOMM, Protocol NMEA0183; it has to be used with ACTIVE Antenna and Power Supply 3.3V.
- INTERFACE
 - AUDIO DIGITAL AUDIO THROUGH PCM INTERFACE
 - USB 2.0 HIGH SPEED
 - UART 1 x FULL FUNCTION, 1 x DEBUG
 - ADC x 2, 15 BITS
 - RTC BACKUP REAL TIME CLOCK

ET-3G UC20 is the latest board from ETT for learning and developing the communication by mobile telephone. It uses Module UMTS/ HSPA+ UC20G from QUECTEL. It is compatible with 3G network and GSM network; moreover, there is its own GNSS network that can be compatible with GPS and GLONASS.

- Have Convertor circuit to convert LOGIC TTL from 3V to 5V. It can connect with Board Microcontroller LOGIC 5V directly if user does not need to connect through LINE DRIVER RS232.
- Have LINE DRIVER RS232 in case of connecting Board Microcontroller to ET-3G UC20 through PORT RS232 (9600-921600 bps) by Connector DB9 PIN FEMALE and Connector 4PIN ETT on board.
- Have PORT USB 2.0 (HEADER TYPE B) for communicating PORT USB to computer PC running on WINDOWS XP/VISTRA/7/8
- Have SW.ON/OFF to enable/disable operation of Module internal board
- Have SW.RESET to reset operation of Module internal board
- Have 2 REGULATE Circuits, it is compatible with external Power Supply 5VDC 2A and higher
 - Use 3.88V/3A REGULATE Circuit to supply power to Module.
 - Use 3.3V/200mA REGULATE Circuit to supply power to circuits external Module.
- Have LED to show operational status; VBAT, STATUS, SLEEP, NET MODE, NET STATUS
- Have Connector to interface with HANDSET (the part of land line to speak into and listen to), it is Connector RJ11 for speaking into
- Have Connector PORT DB9 PIN FEMALE and Connector 4 PIN ETT; 1 PORT is used as PORT RS232 and another1 PORT is used as DEBUG.
- Have 2 of Connector 10 PIN IDE from ETT to connect with PORT of Board Controller directly to send/receive data instead of PORT RS232 and it reads values and controls Module.
- Have JACK 3.5 mm. to connect with Microphone and earphone.
- Have SOCKET SIM as FULL SIZE SIM type; it supports SIM CARD 1.8V and 3.3V; moreover, there is ESD Circuit to protect SIM from damaged.
- Have 2 of SMA JACK to interface antenna of mobile phone and antenna of navigation by satellite (GNSS)
- Use POWER SUPPLY 5-12VDC for board that is Connector DC JACK 2.5 mm. (anode-outer and cathode-inner) and Connector 2 PIN TERMINAL BLOCK.

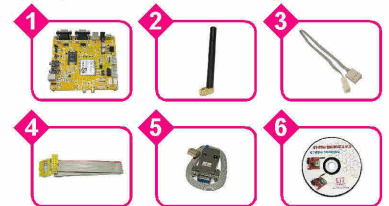


• Interface GNSS Antenna

NOTE: It should use POWER SUPPLY of ETT "ET-SWITCHING ADAPTER 5V 2A TYPE J" (A-AP-A-00093).

- Board size: 12.6 x 11.3 cm.
- ET-3G UC20 consists of ...

1. Board and MODULE UC20G
2. Antenna as L-TYPE using Frequency 800/850/900/1900/2100 MHz
3. Connector 4 PIN RS232
4. Pair Cable 10 PIN
5. Cable ET-RS232 DB9 PIN F
6. CD-ROM Manual and Program



OPTION

• ET-SWITCHING ADAPTER 5V 2A TYPE J (A-AP-A-00093)



Under TISI Standards and UL
INPUT : AC INPUT 220VAC 50/60Hz 0.5A
OUTPUT : DC 5V/2.0A (10W)

• GPS+GLONASS ANTENNA (A-IC-M-00045)

It is used with satellite in the system of GPS and GLONASS.



• GPS ANTENNA (A-IC-M-00027)

It is used with satellite in the system of GPS.



• CABLE USB 2.0 AM/BM 1.8M (A-CB-A-00043)



ET-3G UC15 (P-ET-A-00527)

SPECIFICATIONS of MODULE UC15-T (for THAILAND)

- Be Module of QUECTEL
- Be compatible with System of UMTS / HSPA and GSM / GPRS / EDGE
- Support 3G System (UMTS) 850 / 2100 MHz
- Support GSM System (2G) 850 / 900 / 1800 / 1900 MHz
- Maximum speed of transmission HSPA MAX 3.6 Mbps (DL) / MAX 384 Kbps (UL)
- Support Protocol PPP / TCP / UDP / FTP / HTTP / FILE / MMS/SMTP / SSL / PING
- Support AT COMMAND (COMPLIANT WITH 3GPP TS27.007, 27.005 and QUECTEL ENHANCED AT)
- Support SIM CARD 1.8V/3V
- PACKAGING 108 PIN LCC
- SIZE: 29.0 x 29.0 x 2.5 mm.
- SUPPLY VOLTAGE RANGE 3.3-4.3 VDC
- INTERFACE
 - AUDIO : 2 ANALOG INPUT AND OUTPUT, OPTIONAL
 - USB : 2.0 HIGH SPEED
 - UART : 1 x FULL FUNCTION
 - ADC : x2, 12 BITS
 - STATUS : INDICATION FOR POWER ON AND OFF

3G 850/2100 MHz

GSM (2G) 850/900/1800/1900 MHz



ET-3G UC15 is new release board from ETT, it is good to learn and develop mobile communication system by Module UMTS/HSPA #UC15-T of QUECTEL It is compatible with 3G(UMTS) and GSM(2G).

- For 3G System(UMTS) 850/2100 MHz, it is compatible with TRUEMOVE H 850/2100 MHz, DTAC 850/2100 MHz, AIS 2100 MHz, TOT i-MOBILE 3GX 2100 MHz.
- For GSM System(2G) 850/900/1800/1900 MHz, it is compatible with all GSM (2G) network providers.
- Have Circuit LOGIC TTL Converter to convert 3V to 5V, it can be connected with Microcontroller LOGIC 5V directly (if it is not connected via LIN DRIVER RS232).
- Have LINE DRIVER RS232 if Microcontroller is connected to ET-3G UC15 via PORT RS232 (9600-921600 bps) through Connector DB9 PIN FEMALE or Connector 4PIN ETT on board.
- Have PORT USB 2.0 (Connector TYPE B) to communicate between PORT USB and computer PC, it can run by WINDOWS XP/VISTA/7/8.
- Have SW.ON/OFF operation of Module internal board
- Have SW.RESET operation of Module internal board
- Have 2-Circuit REGULATE, it is compatible with external Power Supply 5VDC Current 2A up.
 - If using REGULATE 3.88V/3A, it is supplied to the Module.
 - If using REGULATE 3.3V/200mA, it is supplied to circuits outside the Module.
- Have LED to display state of VBAT, STATUS, NETLIGHT
- Have 2-Connector 10 PIN IDE of ETT to directly connect to PORT of Control Board; it can send/receive data instead of PORT RS232 and read data and control Module.
- Have 2-Connector 2 PIN WAFER (MALE) 2.5mm. to connect with microphone and speaker (32 OHM)
- Have SOCKET SIM FULL SIZE SIM that supports SIM CARD 1.8V and 3.3V, with Circuit ESD to protect SIM from damaged.
- Use Power Supply 5-12VDC for board. There are 2 Connector types; Connector DC JAC 2.5mm. (Anode outside, Cathode inside) and Connector 2 PIN TERMINAL BLOCK (Recommend: POWER SUPPLY of ETT " ET-SWITCHING ADAPTER 5V 2A TYPE J (A-AP-A-00093) ")
- Dimensions: 90.00 x 80.00 cm.
- ET-3G UC15 includes...

1. Board with Module UC15-T
2. Antenna L-TYPE uses Frequency 800/850/900/1900/2100 MHz
3. Cable 4 PIN RS232
4. Pair Cable 10 PIN
5. Cable ET-RS232 DB9 PIN F
6. CD-ROM Manual and Program



OPTION

ET-SWITCHING ADAPTER 5V 2A TYPE J (A-AP-A-00093)

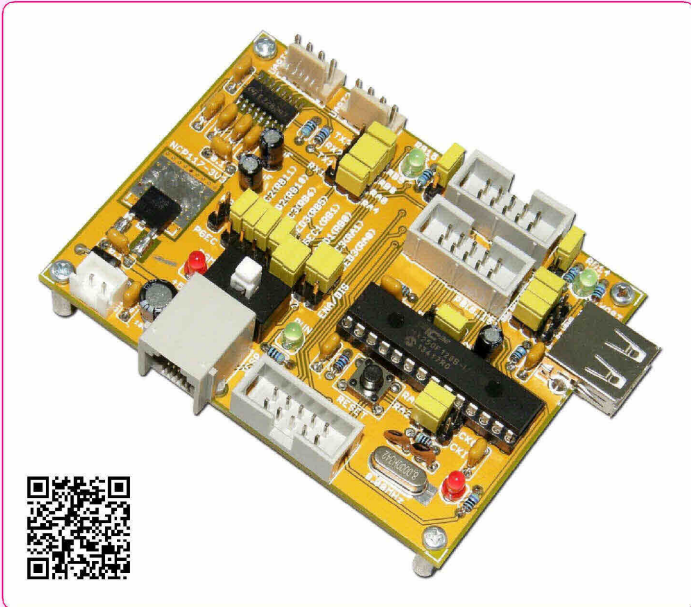
Under standard of TIS and UL
INPUT : AC INPUT 220VAC 50/60Hz 0.5A
OUTPUT : DC 5V/2.0A (10W)



CABLE USB 2.0 AM/BM 1.8M (A-CB-A-00043)



ET-BASE PIC32MX250F128B
(P-ET-A-00513)

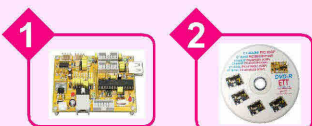


This is the latest ETT Board in the series of PIC32MX of MICROCHIP; it uses 32 BIT MCU No.PIC32MX250F128B 28- on board.

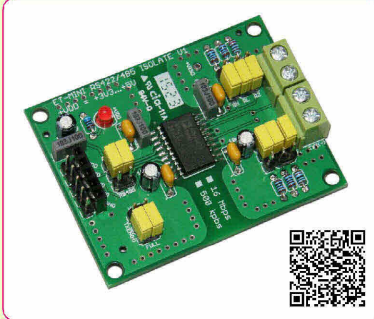
SPECIFICATIONS

- Use MCU No.PIC32MX250F128B 28 PIN DIP
 - 32 BIT CORE 50 MHz/ 83 DMIPS MIPS32M4K
 - INTERNAL OSCILLATOR 8 MHz, PHASE LOCK LOOP
 - 128 KBYTE FLASH PROGRAM, 3 KBYTE FLASH BOOT MEMORY
 - 32 KBYTE SRAM, WATCHDOG TIMER
 - 21 I/O PIN, 19 PIN REMAPPABLE I/O, 5 TIMER/ 5 CAPTURE/ 5 COMPARE, 2 UART, 2 SPI, 5 EXTERNAL INTERRUPT, 2 I2C, 9 CH ADC 10 BIT, 1 USB
 - 2.3V TO 3.6 V RUN
- Use CRYSTAL Frequency 8.00 MHz
- 2 CH CONNECTOR RS232 PORT 4 PIN ETT
- 3 of CONNECTOR I/O PORT 10 PIN ETT; RA0-4, RB0-7, RB8-15
- 2 of LED to test on board; RB14, RB15
- CONNECTOR RJ11, ICSP connects with Programmer and Debugger Device under ICSP standards of MICROCHIP; it is compatible with ICD3 or PICKIT3. For ETT product that is compatible with this board is ET-PGM PIC PK3 (P-ET-A-00463) And ET-PGM PIC PK3 PLUS (P-ET-A-00464)
- 1 SW and JUMPER choose and switch Signals to be ICSP and GPIO; and LED shows status of RUN or PROGRAM.
- 1 PORT USB HOST TYPE B with Jumper to connect/disconnect
- I/O PORT PIN of PIC32MX can receive the maximum voltage at 3.3V; except RB5-RB11, it can receive INPUT LOGIC 5V.
- +5VDC POWER SUPPLY for board with HEADER TYPE B, it is compatible with ET-SWITCHING ADAPTER 5V 2A TYPE B (A-AP-A-00095)
- PCB Size: 8.20 x 6.20 cm.
- ET-BASE PIC32 consists of ...

1. Board
2. CD-ROM Manual and Programs



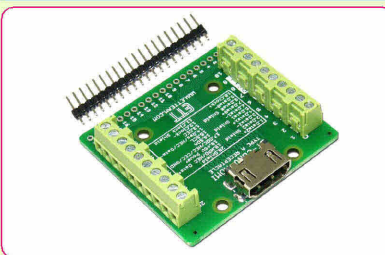
ET-MINI 422/485 ISOLATION
(P-ET-A-00528)



Board ET-MINI 422/485 ISOLATION is in the family of MINI BOARD that converts RS232(TTL) to RS232/485 as signal isolation (ISOLATED) to protect the circuit from damaged because of defective Power System or thunderbolt to the system. It reduces signal interference.

- Use IC NO.ADM2587E from ANALOG DEVICES
- Receive Signal RS232 (TTL 3V or 5V) and convert to RS422(FULL DUPLEX) or RS485(HALF DUPLEX)
- Separate Signal ISOLATED via RS232 and RS422/485 by DIGITAL ISOLATION COUPLER 2500 VRMS (1 MINUTE)
- DATA RATE for sending/receiving data is not higher than 500 kbps
- 256 Points can be connected to send/receive data in the system
- 4 PIN TERMINAL sends/receives Data RS422/485
- 5 PIN HEADER 1x5 MALE and 1x5 FEMALE in the part of TX, RX, DIR, VCC, GND on the side of RS232(TTL)
- Use POWER SUPPLY 3.3 to 5 VDC
- PCB Size: 4.4 x 5.6 cm.
- The Package includes Board and manual

ET-CONV HDMI (P-ET-A-00521)



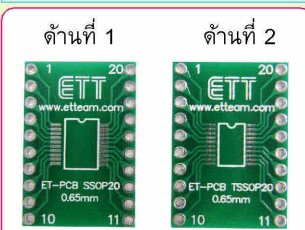
It is PCB CONVER with Header HDMI TYPE A 19PIN that is converted to Screw TERMINAL 20PIN. Moreover, user can customize and solder 20PIN HEADER MALE into PCB as required.

ET-CONV MICRO USB-B
(P-ET-A-00534)



ET-CONV MICRO USB-B is PCB CONVER that converts Connector 5 PIN MICRO USB TYPE B to PIN HEADER 2.54mm PITCH, 5-HOLE. PCB SIZE is 14.00 x 15.00 mm.

ET-PCB TSSOP20 (A-PC-E-00556)



It is PCB CONVER for IC 20PIN SSOP and 20PIN TSSOP with 0.65mm. PITCH to convert to be 20PIN DIP TYPE (15.24mm. width). PCB SIZE is 1.8 x 2.5 cm.

***This model is more special because one side of 20PIN SSOP is 5.30mm width and another one side is 20PIN TSSOP with 4.4mm width.

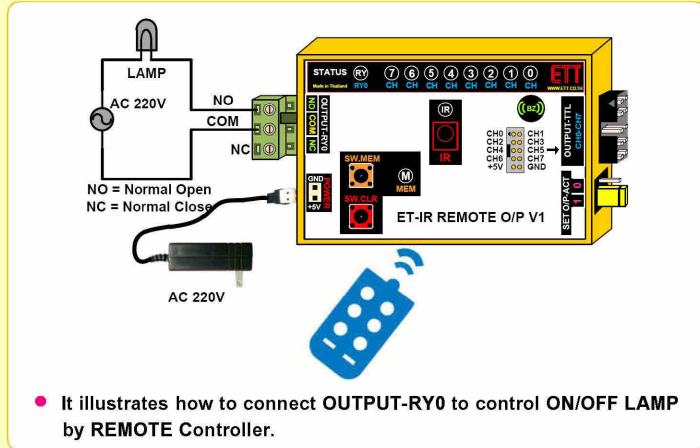
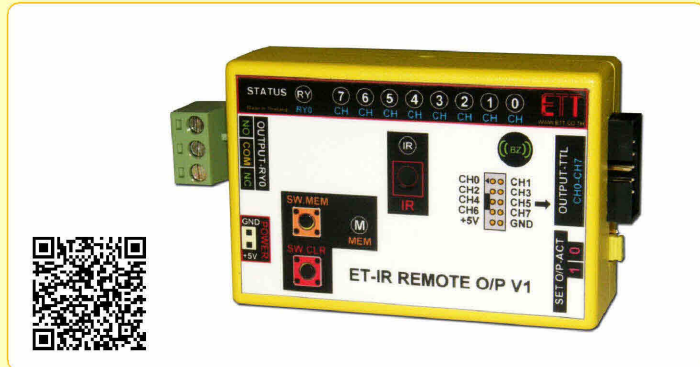
28BYJ-48-5V (A-MO-M-00143)



- Be 5-WIRE 4-PHASE STEPPING MOTOR
- POWER 5VDC : SPEED VARIATION RATIO 1/64
- STRIDE ANGLE 5.625°/64 : FREQUENCY 100 Hz
- DC RESISTANCE 50 OHM + 7% (25 °C)
- IN-TRACTION TORQUE > 34.3mN.m (120 Hz)
- 28 mm. Diameter, 19.mm Height

ET-IR REMOTE O/P V1
(P-ET-A-00519)

ET-IR REMOTE I/O V1 is the complete board that can receive signal from any general IR REMOTE to control ON/OFF devices. There is 1 of 6A RELAY inside with connector; moreover, there is 8-CH PORT OUTPUT TTL that can be separately connected with external devices.



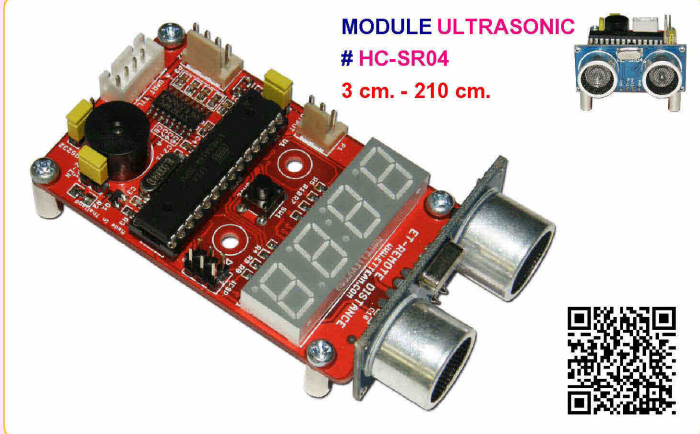
For type of REMOTE IR, it can be general REMOTE Control of TV; it has to setup the Remote(LEARNING) with the Box ET-IR REMOTE O/P V1 first to save the setup buttons for CONTROL. These REMOTE Controls are tested and warranted they are available; NEC, SONY, RC5(PHILIP), RC6, DISH, SHARP, PANASONIC, JVC, SANYO and etc.

SPECIFICATIONS of ET-IR REMOTE O/P V1

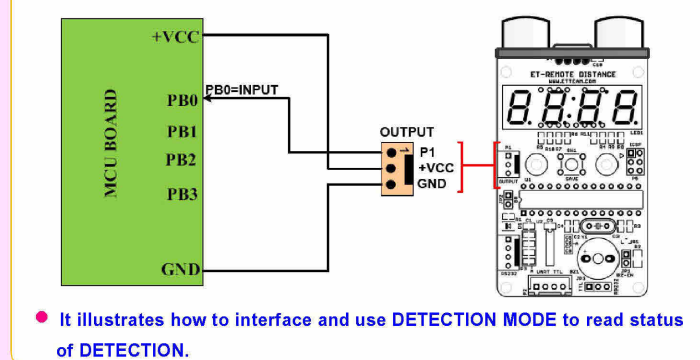
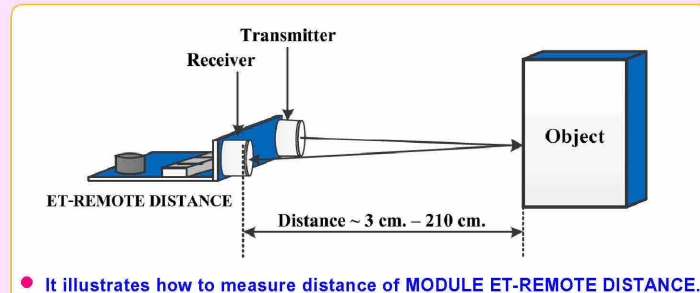
- Have 9-CH OUTPUT; 8-CH OUTPUT TTL via Connector 10PIN HEADER ETT and 1-CH 6A RELAY via Connector 3PIN PLUG-IN TERMINAL BLOCK
- Setup all 8-CH OUTPUT-TTL to operate at LOGIC 1 or LOGIC 0
- Set OUTPUT TTL CH0-CH7 to operate as TOGGLE or TRIG when pressed any button on the REMOTE Control each time
- Have LED on the box to show operational status of OUTPUT TTL CH0-CH7 and RY
- Have BUZZER to create Beep sound for operations.
- Can use different REMOTE Control to setup button for controlling operation of each CHANNEL OUTPUT
- For OUTPUT TTL 10PIN ETT, it can be connected with ETT DRIVE Boards such as ET-OPTO AC-OUT4 PLUS, ET-OPTO DC-IN4, ET-REL8, ET-SSRAC and etc.
- Use 5VDC Power Supply via Connector 2PIN WAFER 2.54 mm. (it is compatible with ETT ADAPTER "ET-SWITCHING ADAPTER 5V 2A TYPE H (A-AP-A-00094)")
- Box Size: 7.5 x 2.5 x 5 cm.
- Package of **ET-IR REMOTE O/P V1** includes
 1. Board with Box
 2. CD-ROM Manual



ET-REMOTE DISTANCE
(P-ET-A-00518)



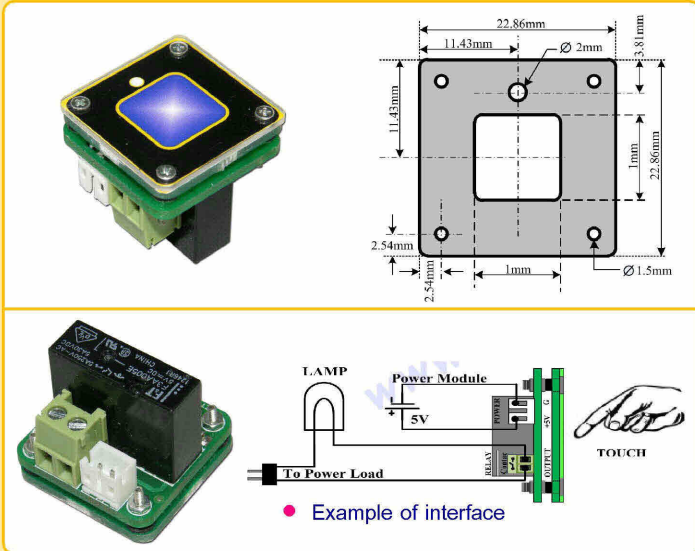
ET-REMOTE DISTANCE is the MODULE Board to measure distance by ULTRASONIC Wave "HC-SR04". It sends out Signal ULTRASONIC Wave and this ULTRASONIC Wave is reflected and sent back to CONTROLLER after touched any object; this Controller reads and converts the received signal into the value of distance (centimeter); and finally, it shows the result through LED-7 SEGMENT and PORT RS232.



- Distance measurement is in the range of 3 cm. - 210 cm. and the range of inaccuracy in the normal circumstance is +0.5 - 1.0 cm.)
- Show Distance Measurement by 7-SEGMENT red LED 4-Digit 0.4" in height; 3-digit for integer and 1-digit for decimal system in the measurement unit of centimeter
- Enable/Disable display of 7-SEGMENT LED; have EEPROM Memory insides to save and remember the status ON/OFF and Setup Distance Detection
- Have 2 Operational Modes
 1. Distance Detection Mode by the Setup value. It gives OUTPUT as LOGIC TTL when it reached the Setup value and BUZZER generates sound all the time when it almost approaches the Setup value.
 2. Read distance that is measured through PORT RS232 and PORT RS232 as TTL by ASCII COMMAND. It can read the value as ASCII CODE and HEX CODE.
- Setup 2 BAUD RATE by JUMPER; 9600 or 57600
- Use 5VDC Power Supply
- Board Size: 8.5 x 4.4 cm.
- Package of **ET-REMOTE DISTANCE** includes
 1. Board
 2. CD-ROM Manual



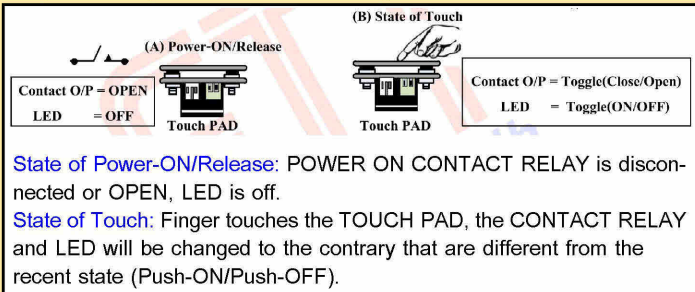
ET-TOUCH PAD1 RELAY-TOGGLE (P-ET-A-00535)



ET-TOUCH PAD1 RELAY-TOGGLE is 1-Touch Key Board that has OUTPUT as CONTACT RELAY Type.

- Be 1-Capacitive Touch Key
- Use CHIP No.IQS127D from AZOTEQ to detect touching
- Have LED to display state of touching KEY
- Use RELAY 5VDC as CONTACT RELAY 5A(30VDC), 5A(220VAC)
- Use Connector as TERMINAL SCREW 2 PIN
- Connector of 5VDC POWER SUPPLY for Board is WAFFER 2PIN (2.00mm)/Current MAX 43mA
- Board size: 22.86 x 22.86 mm. and 21.43mm in height
- The package includes

1. Board 2. Document 3. Connector HOUSING FEMALE 2PIN and crimp terminal (Connector POWER 5VD)

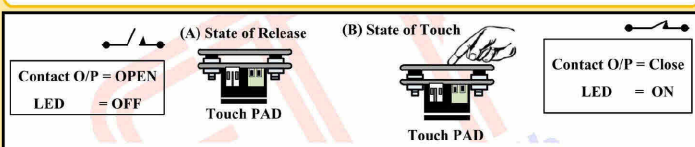


ET-TOUCH PAD1 RELAY-ACTIVE (P-ET-A-00536)

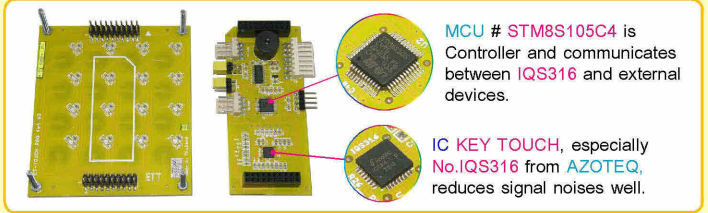


ET-TOUCH PAD1 RELAY-ACTIVE Format of Board ET-TOUCH PAD1 RELAY-ACTIVE is similar to Board ET-TOUCH PAD1 RELAY-TOGGLE, except operational format of RELAY that is Push-ON/Release-OFF.

State of Touch: When finger touches the TOUCH PAD, the CONTACT RELAY is connected and LED is ON; but, when it is not touched by finger, the CONTACT RELAY is disconnected and LED is OFF (Push-ON, Release-OFF).



ET-TOUCH PAD 4 x 4 V2 (P-ET-A-00516)



ET-TOUCH PAD 4x4 V2 is the latest Board TOUCH KEY that is developed and improved from the initial model "ET-TOUCH PAD 4x4"; it reduces signal noises that occurred because of the operation and it increases more connection and use conveniently.

- Be 16-KEY CAPACITIVE SENSING TOUCH PAD (4x4)
- Use IC No.IQS316 from AZOTEQ that is specially designed as KEY TOUCH, it reduces signal noises well
- Use MCU No.STM8S105C4 to be Controller and communicate between IQS316 and external devices
- Use 3.3VDC - 5VDC Power Supply for Board
- Show the status of pressing KEY by sound (BUZZER) and 16-LED on position of individual KEY SW.
- Set ON/OFF BUZZER and all 16-LED of individual KEY by JUMPER
- Have 2 types of OUTPUT for sending the pressed KEY CODE as follows;
 - BINARY CODE (BCD 8421): It is sent through CONNECTOR 8 PIN; Signal TTL is connected with 3.3V - 5.0V.
 - ASCII CODE: It is sent through CONNECTOR RS232. There are 2 types of RS232 for this model V2; RS232 TTL 4 PIN and RS232 with LINE DRIVER 4 PIN. It sets BAUSD RATE for sending data as 9600 bit/s.
- Have 1 special KEY; it can be used either to be normal KEY or KEY SHIF
- Key Touch Pad is made from translucent plastic with 2mm. thick
- Board size: 76.2 x 88.9 mm. (the same size as the initial model "ET-TOUCH PAD 4x4")
- **ET-TOUCH PAD 4x4 V2** includes...

1. Board ET-TOUCH PAD 4x4 V2
2. CD-ROM Manual and Example Programs

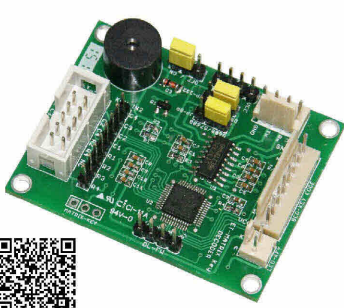
ET-TOUCH PAD 1 x 1 (P-ET-A-00517)



ET-TOUCH PAD 1x1 is Board TOUCH KEY as 1 separate TOUCH KEY; so, it is more convenient because it can fit properly into any project as required.

- Be CAPACITIVE SENSING 1-KEY TOUCH
- Use IC No.IQS127D from AZOTEQ for TOUCH Detection
- Have LED to show STATUS of TOUCH
- Use Connector 4PIN WAFER MALE 2.54 mm. that consists of PIN VDD (3.3V-5VDC), POUT, TOUT and GND
- Use Signal OUTPUT TTL. When it is normal status, the value of POUT, TOUT is LOGIC 1. When it is in the status of PROXIMITY POUT, the value is LOGIC 0. And, when it is in the status of TOUCH completely, the value of TOUT becomes LOGIC 0.
- Use 3.3V-5.0VDC Power Supply for board
- Board size: 22.86 x 22.86 mm. with transparent plastic with 1mm thick

ET-MATRIX KEY DECODER (P-ET-A-00525)



Board **ET-MATRIX KEY DECODER** is designed to scan KEY and decode the position of the pressed key without connecting CPU of Board with KEY; so, it is more convenient and easier to use.

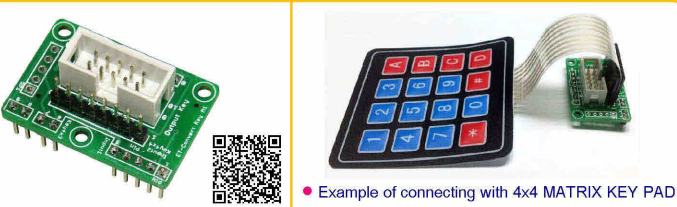
SPECIFICATIONS of ET-MATRIX KEY DECODER

- Use MCU STM8S108

- Support maximum MATRIX KEY PAD 4x4; it also supports MATRIX 4x3 or less
- 2 ways to send OUTPUT Data of pressing key
 - BINARY CODE (BCD 8421), it sends KEY CODE and state of pressing Key as Signal TTL
 - ASCII CODE, it sends KEY CODE via PORT RS232; it is RS232 TTL type and RS232 via LINE DRIVER. It sets BAUD RATE as 9600 and 57600
- When pressing KEY, it produces BEEP sound from Buzzer and LED also shows state of pressing Key
- Use POWER SUPPLY 3.3V or 5V Current 10-20mA
- INPUT from KEY SW is connected via Connector 10PIN BOX HEADER or 8PIN HEADER Single Row
- OUTPUT sends KEY SW via Connector 4 PIN HEADER, WAFER 2.54mm. 4PIN and 8PIN
- Be compatible with ET-CONV KEY M1 to convert CABLE connection and it can be connected with KEY of ETT conveniently
- PCB size is the same as ET-MINI: 4.4 x 5.6 cm
- **ET-MATRIX KEY DECODER ...** includes

1. Board
2. CD-ROM Manual/ Example Program

ET-CONV KEY M1 (P-ET-A-00526)



• Example of connecting with 4x4 MATRIX KEY PAD

ET-CONV KEY M1 is PCB with Connector to convert KEY PAD as MATRIX 4x4 and 4x3 to Connector 10PIN BOX HEADER; it is easier to connect with Connector 10PIN on Board ET-MATRIX KEY DECODER or I/O Board as 10PIN ET of ETT conveniently.

- Connect with KEY MATRIX of ETT such as 12 KEY TELEPHONE KEY PAD, KEYPAD 4x4 BLACK, 4x4 MATRIX KEY PAD
- PCB Size: 3.6 x 2.4 cm.
- **ET-CONV KEY M1 ...** includes

1. Board
2. Manual

4x4 MATRIX KEYPAD (C-YA-A-00186)



KEY SPECIFICATIONS

- MAXIMUM RATING : 24 VDC 30 mA
- INTERFACE : 8-PIN, 2.54 mm. PITCH FEMALE
- 4 x 4 MATRIX KEY MEMBRANE
- CABLE LENGTH 8.5 cm. (INCLUDE CONNECTOR) x 2.0 cm.
- WEIGHT 8 g.
- INSULATION SPEC : 100 M Ohm, 100 V
- CONTACT BOUNCE <= 5 ms.
- ON CONTACT SWITCH : 30-400 Ohm
- LIFE EXPECTANCY 1 MILLION CLOSURES
- OPERATION TEMPERATURE -20 TO +40 °C
- DIMENSION : KEY PAD 2.7 x 3.0 inch (6.9 x 7.6 cm.)
- MOUNT STYLE : PLEASE REMOVE THE ADHESIVE TAPE ON THE BACK OF THE KEY PAD AND STICK THE KEY PAD ON CLEAN SURFACE

ET-MINI PWR5/ADJ-3A (P-ET-A-00506)



เป็น 2 ชุดวงจร POWER SUPPLY แบบ STEP-DOWN VOLTAGE REGULATOR โดยมีวงจรแบบ +5VDC/3A และแบบปรับค่า VOLTAGE 1.23 - 35V/3A (ขึ้นอยู่กับ INPUT VOLTAGE ที่เข้าด้วย)



- INPUT DC POWER 7 - 35VDC
- +5VDC/3A OUTPUT ใช้ LM2576T-05
- VOLT ปรับค่าได้ 1.23 - 35V/3A OUTPUT ใช้ LM2576T-ADJ โดยใช้ VR ปรับค่า
- ขั้วต่อ INPUT DC แบบ 2 PIN PCB TERMINAL SCREW TYPE
- ขั้วต่อ OUTPUT DC แบบ 2 PIN PCB TERMINAL SCREW TYPE
- ขนาดตัวบอร์ด (W x L x D) 5.60 x 4.30 x 2.20 cm. พร้อมขาตั้งโลหะสูง 1.10 cm.

ET-SWITCHING ADAPTER 5V 2A TYPE U (A-AP-A-00106)



It is DC POWER SUPPLY as SWITCHING type under standard of TIS and UL.

INPUT : AC INPUT 220VAC 50/60 Hz 0.5A
 OUTPUT : DC 5V/2.0A (10W)
 : Connector MICRO USB TYPE B MALE

ADAPTER is 2 PIN WALL MOUNT.

S-200-5 (A-AP-A-00102)



MODEL

DC OUTPUT VOLTAGE

OUTPUT CURRENT

OUTPUT POWER

INPUT VOLTAGE

INPUT FREQUENCY

OUTPUT VOLTAGE

RISE TIME

HOLD TIME

WORK ENVIRONMENT

SAFETY COMPLIANCE

MTBF

SHELL MATERIAL

SIZE

WEIGHT

OUTPUT/INPUT CONNECTOR

S-200-5

5V DC

40 A

200 W

AC 88V-132V / AC 180-264V (VIA SWITCH)

47~ 63 Hz

ADJUSTMENT BY POTENTIOMETER 0-5VDC

FULL LOAD FOR 50 ms (TYPICAL)

FULL LOAD FOR 20 ms (TYPICAL)

- 20 ~ +55 C, 20% ~ 93% RH

IN-DOOR USE ONLY

CE / ROHS

> 50,000 HOURS

METAL CASE / ALUMINUM BASE

198 x 98 x 40 mm.

650 g

TERMINAL BLOCK 9.50 mm.

3 PIN - AC LINE (L, N, GND)

4 PIN - DC OUTPUT (COM, COM, +V, +V)

ET-TFT43-EVE (P-ET-A-00504)

TFT LCD 4.3 INCH WQVGA / 480 x 272 PIXEL 262K COLOR / RESISTIVE TOUCH / LED BACKLIGHT CHIP FT800 # GRAPHIC CONTROL, AUDIO PROCESSING & RESISTIVE TOUCH CONTROLLER



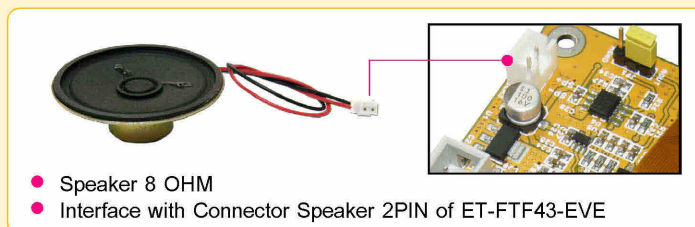
ET-TFT43-EVE is Board TFT LCD 4.3 Inch that works with CHIP FT800, it is easy to use TFT LCD. It is SPI Interface and supports both 3.3V I/O and 5V I/O. It can interface with both 3.3V MCU and 5V MCU, but, the Power Supply of board must be 5V only.

FT800 is an intermediate IC between user and TFT LCD in order to control the operation. It includes the functions of DISPLAY LCD, AUDIO and TOUCH together in the single CHIP of FT800, including GRAPHIC CONTROLLER; so, user does not need to write or create anything by self.

Specifications of Board ET-TFT43-EVE

- Use TFT LCD Display with 4.3 inch WQVGA + RESISTIVE TOUCH SCREEN, DISPLAY SIZE W x H x D = 105.60 x 67.3 x 4.0 mm., Screen Definition = 480 x 272 PIXEL, 262K COLOR, 18 BIT COLOR INTERFACE, LED BACKLIGHT
- Use SINGLE CHIP to control LCD No. FT800 that includes FUNCTIONS of GRAPHIC CONTROL, AUDIO PROCESSING and RESISTIVE TOUCH CONTROLLER together in the single CHIP. So, user can use and command the operation by the created and provided COMMANDS.
- Support 2 AUDIO SOURCES to play audio file as follows;
 1. From SOUND SYNTHESIZER: There is 58 SOUND EFFECTS that have already created in the FT800 and provided for users such as BELL
 2. From AUDIO PLAYBACK: It plays MONO AUDIO FILE in the format of 8-BIT PCM, 8-BIT ULAW or 4-BIT IMA-ADPCM. It has to send FILE from MCU and stores in the MEMORY RAM of FT800 first.
- Control and adjust VOLUME by program through REGISTER
- Can adjust the brightness of LED BACKLIGHT by program through REGISTER
- Can INTERFACE with external MCU in the format of SPI (4-Wire), it supports both 3.3V TTL and 5V TTL with the maximum CLOCK Speed of 30MHz
- Have SOCKET to insert MICRO SD CARD to use with FILES by using external MCU to control the operation
- Have POWER AMP 1W ON BOARD with Connector Speaker 2PIN (2.50mm.) (OPTION: It is used with Speaker 8 OHM, it is "ET-SP TYPE B (P-ET-A-00505)
- Use Connector 10PIN HEADER ETT for using Board ET—TFT43 EVE and it uses POWER SUPPLY +5VDC from this Connector 10PIN ET
- Board Size: 8.40 x 13.00 cm.
- **ET-TFT43-EVE ...** includes...
 1. Board
 2. CD-ROM User's Manual and Example Programs

ET-SP TYPE B (P-ET-A-00505)



- Speaker 8 OHM
- Interface with Connector Speaker 2PIN of ET-TFT43-EVE

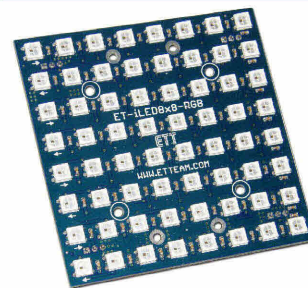
TFT 128160-1.8 (A-LC-G-00025)



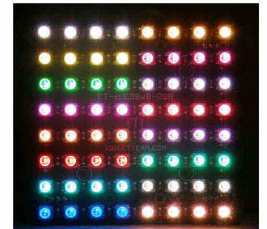
- TFT LCD ขนาดหน้าจอกว้าง 1.8 นิ้ว, 128 x 160 DOT, 18 BIT (262,144) เฉดสี
- ใช้ชิพประมวลผล ST7735 ในการควบคุมบอร์ด
- ใช้การต่อควบคุมจอ LCD แบบ SPI ทำให้ง่ายในการต่อใช้งาน
- ใช้ไฟเลี้ยงจอ 3.3V-5.5V
- มีส่วน SD CARD SOCKET พร้อมขั้วต่อใช้งาน

- 8 PIN HEADER ต่อใช้งานส่วน LCD และ 4 PIN PCB ต่อใช้งานด้าน SD CARD SOCKET
- เชื่อมต่อสัญญาณโดยตรงกับไมโครคอนโทรลเลอร์ระบบไฟ 3.3V (ในกรณีที่ไม่ใช่ไมโครคอนโทรลเลอร์ ที่เป็นระบบ 5V ต้องต่อผ่านวงจรปรับระดับแรงดัน เช่น ET-MINI LOGIC LEVEL)
- มีส่วน LED เป็น BACKLIGHT ให้กับ LCD 3.3V-5V กระแส 30-50 mA.
- ขนาด PCB 3.45 x 5.8 cm.
- **TFT 128160-1.8 ...** ประกอบด้วย
 1. จอ TFT 128160-1.8
 2. CD-ROM คู่มือ และตัวอย่างโปรแกรม

ET-iLED 8x8-RGB (P-ET-A-00510)



WS2812B LED RGB 24 BIT COLOR (16,777,216 COLOR)



ET-iLED 8x8-RGB is RGB LED Display Board that includes 64 DOT(8x8) of RGB LED by using 64 DOT of IC LED No.WS2812B as CASCADE Connection. Each LED can display high resolution of RGB up to 24 BIT COLOR or 16 million colors and light of this LED is highly bright.

Specifications of ET-iLED 8x8-RGB

- Use 5VDC to supply circuit (use 3.84A Current at the maximum)
- Only use single Cable CONTROL or 1 BIT for SERIAL NZR Communication to control Display Circuit of all 64 LED; the CASCADE Connection is more convenient to connect and control the operation.
- INPUT can be connected with TTL 5V or 3.3V by using IC 74LVC1G17 as SCHMITT-TRIGGER BUFFER
- Use IC LED No.WS2812B 5.0 x 5.0mm. 4 PIN; this IC LED includes DRIVE Circuit, LED RGB Controlling Circuit, ELECTRIC RESET Circuit, POWER LOSE RESET Circuit
- This WS2812B includes 3-color RGB LED, it can display color resolution as 24 BIT COLOR (16,777,216 colors) with 256 shades of brightness, and scanning frequency not less than 400 Hz/S
- Can connect a maximum of 16 Boards ET-iLED 8x8-RGB together (NOTE: It requires high speed CPU such as AVR, ARM, and etc. For CPU MCS51 and general PIC, it cannot be used with this Board ET-iLED 8x8-RGB)
- Light of this LED is highly consistent and it remain in the state of LATE until there is incoming DATA.
- It can connect with Board of Arduino with example program
- PCB size: 8.15 x 8.15cm. (3200 x 3200 mil.)
- Use 4 of 3-PIN PIN HEADER 2.54 mm. under PCB
- **ET-iLED 8x8-RGB** includes...
 1. Board ET-iLED 8x8-RGB
 2. CD-ROM Manual and Example Program

ET-iLED-RGB (P-ET-A-00509)

Its specification is the same as ET-iLED 8x8-RGB but this product has only one LED WS2812B.



- Use 5VDC to supply circuit (use 60mA Current at the maximum)
- Use TTL 5V INPUT
- Can connect Boards ET-iLED-RGB together not greater than 1024 Boards
- PCB size: 1.75 x 1.75cm. (700 x 700 mil.)
- Use 2 of 3-PIN PIN HEADER 2.54 mm. under PCB
- **ET-iLED-RGB** includes ...
 1. Board ET-iLED-RGB
 2. Paper and circuit (can download Manual and Example Program from website: www.etteam.com)



ET-LED 96 x 16 RGY (P-ET-A-00522)



ET-LED 96x16 RGY is all-purpose moving sign display board that uses 3-colored LED that is red, green, and yellow. It can display both Thai and English letters or all languages that are supported by OS WINDOWS. It can program text from PORT RS232 or USB FLASH DRIVE from computer PC easily; it is suitable for shops to advertise products and service publicly.

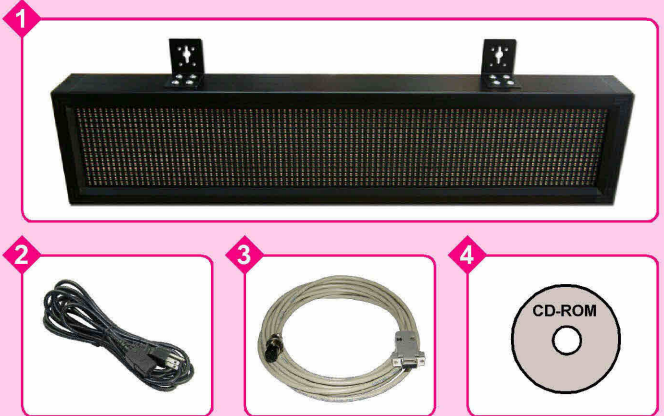
Moreover, ET-LED 96x16 RGY can be applied to be 6-gigit Clock, or show temperature and humidity measurement. (NOTE: Sensor is OPTION, user must order separately).

- Display is LED type that is 96cm in width and 16cm. in height. It is red LED and green LED; so, it can display data by 3 colors; red, green, yellow.
- Resolution is 96 x 16 DOT (1 DOT consists of 1 red LED and 1 green LED)
- Brightness of Display is 3500 CD/M2 that can be obviously seen for a long-distance
- Provide internal RTC with BATTERY 3V to show time
- There are 2 ways to edit and change text on Display; via RS232 PORT, it is directly connected with computer PC; or, via USB FLASH DRIVE, it programs and writes data into FLASH DRIVE on computer PC and remove to connect with Connector USB on ET-LED to auto LOAD text.
- Can show text in all languages that are supported by WINDOWS
- Program and write text on WINDOWS 98SE/ME/2000/XP/7/8/8.1
- Can write 200 programs to command and display data that supports the format of TEXT, GIF, JPG, JPEG, BMP and etc.
- Use 220VAC/50Hz Power Supply; it only uses indoors; it does not suggest to use outdoors.
- Board size: 103cm in width x 23cm in height x 9cm in thickness. It is made of black aluminum with 6.00kg in weight.
- Display size: 96cm in width and 16cm in height
- Package of ET-LED 96 x 16 RGY consists of...
 1. Sign Board ET-LED 96 x 16 RGY
 2. CABLE AC LINE 5M
 3. CABLE RS232 5M
 4. CD-ROM Manual, Program and Example Programs.

CONNECTOR for connecting with PROBE SENSOR Temperature, Humidity (NOTE: Sensor is OPTION, user must order separately).

There are 2 ways to edit and change text on Display; via RS232 PORT, it is directly connected with computer PC; or, via USB FLASH DRIVE.

Board Controller of ET-LED 96x16 RGY is installed internal the box.



OPTION ชื่อเพิ่มเติมการทำงาน

• PROBE DS18B20 LED 1M (P-ET-A-00523)



This PROBE is connected with ET-LED 96x16; it is IC No.DS18B20 with Cable is 1 meter in length. It is Connector STAINLESS type, water proof that measures temperature and shows data on ET-LED 96x16.

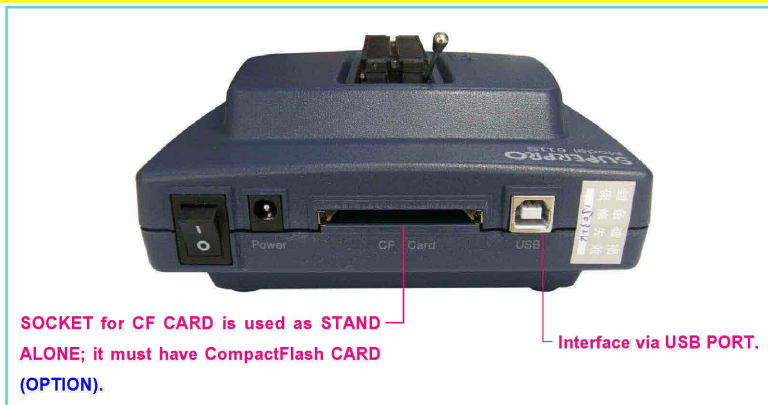
• PROBE AM2301 LED 20CM (P-ET-A-00524)



This PROBE is used with ET-LED 96x16; it is IC No.AM2301 with Cable is 20cm. in length that measures temperature and humidity and shows data on ET-LED 96x16.

SUPERPRO/611S (C-YA-P-00014)

ULTRA-HIGH-SPEED UNIVERSAL PROGRAMMER

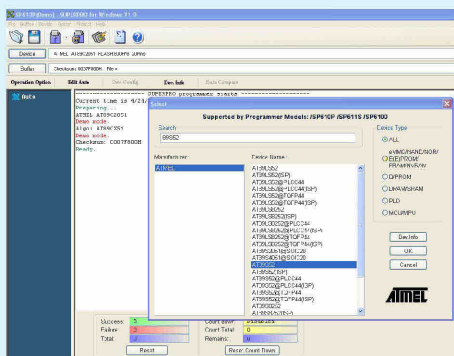


Compare time to PROGRAM and VERIFY of SUPERPRO/611S and SUPERPRO/3000U		
Device	SUPERPRO/611S Program+Verify (Sec)	Compare with SP3000U
AT28C64B	0.8 (P)+0.1 (V) = 0.9 (s)	1.2 (P)+0.8 (V) = 2.0 (s)
24AA128	2.7 (P)+1.8 (V) = 4.5 (s)	5.0 (P)+4.0 (V) = 9.0 (s)
QB25F640S33B60	29.0 (P)+14.4 (V) = 43.4 (s)	55.2 (P)+41.4 (V) = 96.6 (s)
AT89C55WD	2.5 (P)+0.4 (V) = 2.9 (s)	3.3 (P)+1.0 (V) = 4.3 (s)
S25FL064A	43.9 (P)+14.7 (V) = 58.6 (s)	72.8 (P)+41.4 (V) = 114.2 (s)
PIC16F876A	10.1 (P)+0.8 (V) = 10.9 (s)	22.1 (P)+06.2 (V) = 28.3 (s)
PIC18F442	5.1 (P)+1.1 (V) = 6.2 (s)	13.6 (P)+06.7 (V) = 20.3 (s)

• When using as STAND ALONE, it has Display and Key SW. It can run without connecting with computer but it must have CompactFlash Card (OPTION).



- When using as STAND ALONE, it can setup PASSWORD to protect IC from COPY.
- Run program on the Operating System of WINDOWS 98/ME/XP/VISTA/7



• PROGRAM

• SUPERPRO/611S includes...

1. SUPERPRO/611S
2. CD-ROM Program
3. POWER SUPPLY AC 100-240V/50-60 Hz
4. CABLE USB



SUPERPRO/611S is ULTRA-HIGH-SPEED UNIVERSAL PROGRAMMER that replaces SUPERPRO/3000U and 501S. There are 2 MODEs in one device; firstly, it can be connected with computer PC via PORT USB; and secondly, it is used as STAND ALONE MODE, it loads and copies data inside the device and it can run without connecting with computer PC.

- Be compatible with 241 IC manufacturers, 36,519 IC No. and more in the nearer future
- Be used with IC range 1.2V to 5V with circuit to protect IC from damaged when inserted on alternate side.
- Be compatible with EPROM, PAGED EPROM PARALLEL AND SERIAL EEPROM, FPGA CONFIGURATION, SERIAL PROM, FLASH MEMORY (NOR AND NAND), BPROM, NVRAM, SPLD, CPLD, EPLD, FIRMWARE HUB, MICROCONTROLLER, MCU, STANDARD LOGIC
- Use TEXT TOOL 48 PIN, it is compatible with many IC No. from 8PIN to 48 PIN; it can expand Pin size by ADAPTER to be used with more IC No. such as SSOP, PLCC (ADAPTER is OPTON, not included in the package).
- PROGRAM HIGHT-DENSITY FLASH MEMORY can copy EPROM quickly
- 6 KEY KEYPAD with DISPLAY 20 x 4 LCD BACKLIGHT and Memory Expansion as CompactFlash Memory Card
- Connect with computer via PORTT USB 2.0
- If using as STAND ALONE, it requires CompactFlash CARD (OPTION); can setup PASSWORD to protect the device from COPY. This STAND ALONE MODE is suitable for user who prepares data completely and needs to COPY many IC directly, without using computer. Moreover, it is suitable for using outdoor.
- Run by the Operating System of WINDOWS 98/ME/XP/VISTA/7
- UPDATE PROGRAM for using with newer IC No. from internet, please visit www.xeltek-cn.com or read more information of newer IC No. from this web site.