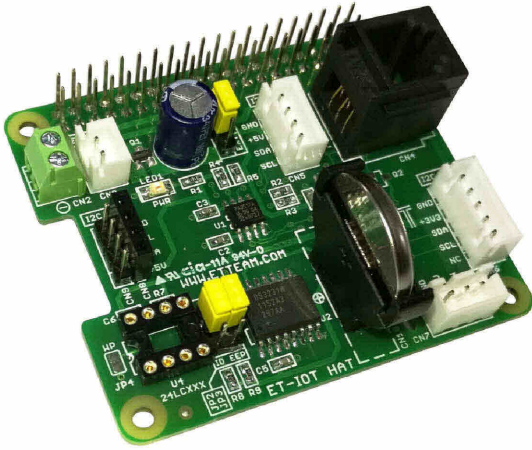
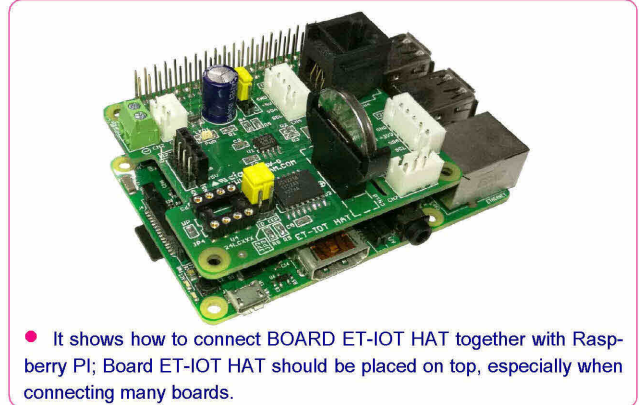


ET-IOT HAT (P-ET-A-00600)



Board ET-IOT HAT is particularly designed to connect to Board Raspberry PI via Connector 40 PIN; Board is expanded to connect to I2C BUS System in order to expand system of INPUT, OUTPUT, SENSORS, 1-WIRE System connection, and additional RTC connection.

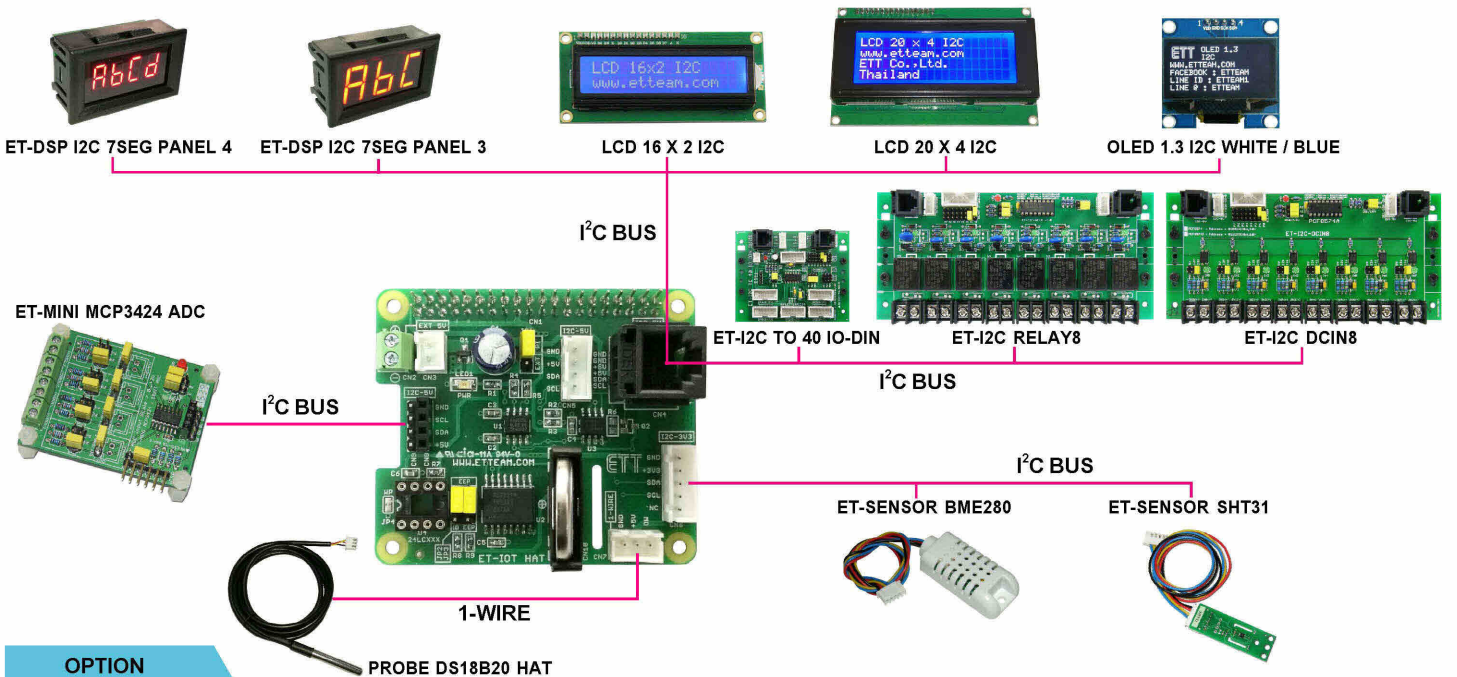




• It shows how to connect BOARD ET-IOT HAT together with Raspberry PI; Board ET-IOT HAT should be placed on top, especially when connecting many boards.

SPECIFICATIONS OF BOARD ET-IOT HAT

- Can be connected together with Board Raspberry PI as 40PIN BUS type such as Raspberry PI A, B+, PI2, PI3, PI3+
- Have PORT as I2C BUS. IC No.PCA9517 is used as I2C BUS REPEATER to change signal level from 3.3V of Raspberry PI to BUS I2C 5V; so, it can communicate to I2C devices longer
- Have 1-WIRE PORT. IC DS2482-100 changes I2C communication to 1-WIRE communication such as connecting to 1-Wire Temperature Measurement Device No.DS1820.
- Have RTC No.DS3231 provided with BATTERY 3V BACKUP on board; it is real time for Board Raspberry PI
- Have 8PIN SOCKET for connecting to EEPROM in the series of 24XX (OPTION); it is used as ID of Board or general task
- Have various types of CONNECTOR I2C; CONNECTOR FEMALE RJ 6PIN (5V), CONNECTOR WAFER 4PIN 2.50 mm. (5V) and CONNECTOR WAFER 5PIN 2.50 mm. (3.3V). It can be connected to ETT I/O Boards such as LCD 16x2 I2C, LCD 20x4 I2C, OLED 1.3 I2C, ET-DSP I2C 7SEGMENT, ET-I2C RELAY8, ET-I2C DCIN, ET-I2C TO 40 IO-DIN; or it can be used with various I2C SENSORS such as ET-SENSOR SHT31, ET-SENSOR BME280 and so on.
- CONNECTOR 1-WIRE in the format of WAFER 3PIN 2.50 mm. (5V) to connect to 1-WIRE devices such as Temperature Measurement Device "PROBE DS18B20", HAT
- External CONNECTOR POWER SUPPLY 5VDC from Board Raspberry PI; it can be WAFER 2PIN 2.50 mm. or SCREW TERMINAL BLOCK 2PIN as required
- CONNECTOR 4PIN HEADER 2.54 mm. MALE and FEMALE of PORT I2C is directly connected to Boards such as ET-MINI MCP3424 ADC (14 BIT 4CH) via CABLE HOUSING 4P-4P (OPTION)
- PCB size: 6.5 X 5.6 cm
- Aluminum Pole is OPTION, please choose the right model that fits into user's board connection
- Package of BOARD ET-IOT HAT includes...BOARD ET-IOT HAT, Document, and Example Programs, please DOWNLOAD from following link:

<http://www.etteam.com/productPi/ET-IOT%20HAT/ET-IOT%20HAT.html>



<p>OPTION</p> <ul style="list-style-type: none"> • PROBE DS18B20 HAT (P-CB-A-00046)  <p>It is Temperature Measurement Device "DS18B20" provided with 100 cm. long water-proof Cable.</p>	<ul style="list-style-type: none"> • HOUSING 4P-4P (P-CB-A-00045)  <p>It is 20 cm long HOUSING 4 PIN Cable and both Terminal is FEMALE (2.54mm.)</p>
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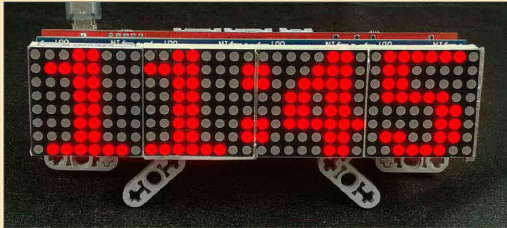
ET-MINI CLOCK 4

ET-MINI CLOCK 4 is LED Display 8X32 DOT in Red; it can be placed on the table or hanged on a wall as required. There are various types of display mode and use like displaying value of Date, Month, Year, Hour, Minute, Second, Temperature with Celsius degree, Humidity (OPTION: SENSOR ET-SENSOR AM2302), Timer, displaying flashing messages of OPEN and CLOSE, Alarm Clock, including BUZZER and CONNECTORS. Moreover, it is more special, especially the model ET-MINI CLOCK 4 PLUS and ET-MINI CLOCK 4 BOX PLUS because it tells time by voice in Thai and English. User can add more audio file of MP3 to be ringtone or alarm in MICRO SD CARD according to the specified folder's position. For more information, please read the manual.

ET-MINI CLOCK 4 controls and sets time through REMOTE IR, it is included in the package; or, it is set through GPS.

● **MODEL ET-MINI CLOCK 4 (P-ET-A-00584)**

It is bare Clock with Lego stand, no box, and no voice.



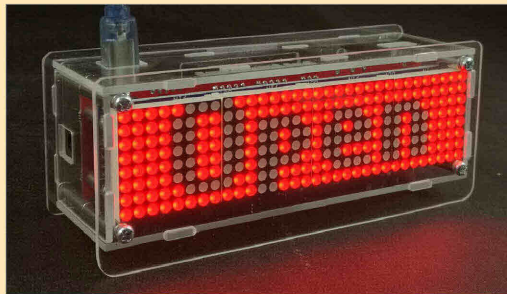
ET-MINI CLOCK 4 ... consists of



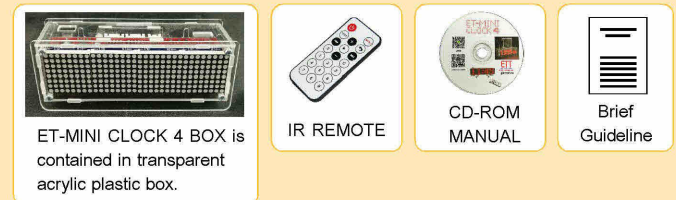
Size of ET-MINI CLOCK 4: 13.0 X 5.5 X 5.2 CM.

● **MODEL ET-MINI CLOCK 4 BOX (P-ET-A-00586)**

It is contained in transparent acrylic plastic box, no voice.



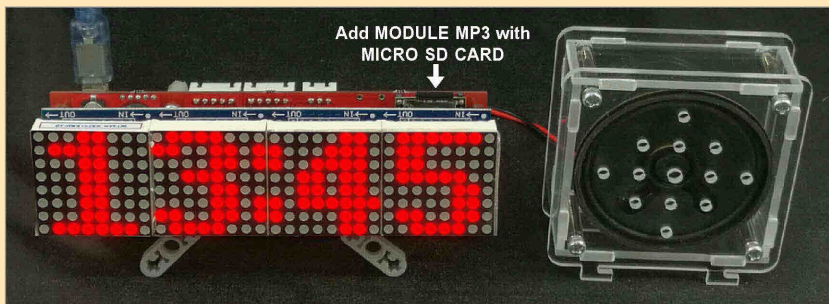
ET-MINI CLOCK 4 BOX ... consists of



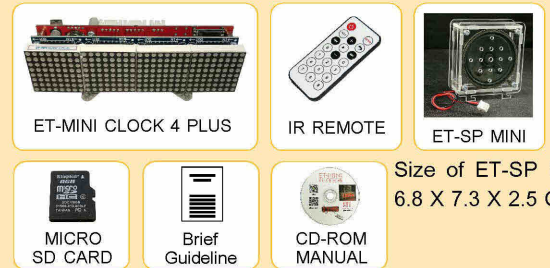
Size of ET-MINI CLOCK 4 BOX: 14.1 X 5.8 X 4.6 CM.

● **MODEL ET-MINI CLOCK 4 PLUS (P-ET-A-00585)**

It is bare Clock with Lego stand, no box; and it tells time by voice MP3, ET-SP MINI Speaker with transparent acrylic box.



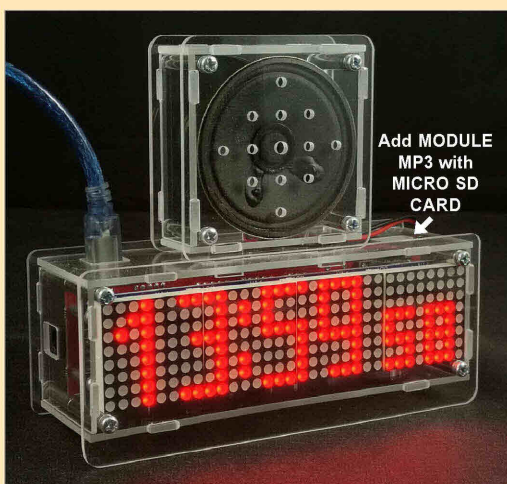
ET-MINI CLOCK 4 PLUS ... consists of



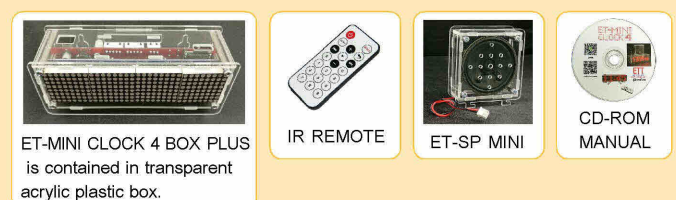
Size of ET-SP MINI: 6.8 X 7.3 X 2.5 CM.

● **MODEL ET-MINI CLOCK 4 BOX PLUS (P-ET-A-00587)**

It is contained in transparent acrylic plastic box and it tells time by voice MP3, and ET-SP MINI Speaker with transparent acrylic box.



ET-MINI CLOCK 4 BOX PLUS ... ประกอบด้วย

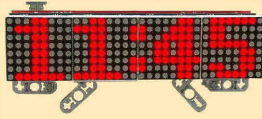


Size of ET-SP MINI: 6.8 X 7.3 X 2.5 CM.

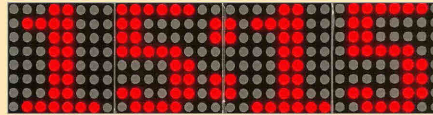
Size of ET-MINI CLOCK 4 BOX PLUS: 14.1 X 5.8 X 4.6 CM.

SPECIFICATIONS OF ALL MODELS OF ET-MINI CLOCK 4

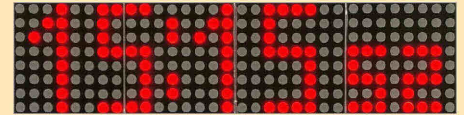
- Use DC 5V Power Supply for Clock connected via Connector MINI USB (connected from PORT USB of Computer), or connected via DC JACK TYPE J to be DC12V
- Use MCU ATMEGA328 to run and process
- Use 20-KEY IR REMOTE to command (included in package)
- Choose and set various types of display mode; Date, Time, Temperature, Humidity (OPTION: ET-SENSOR AM2302), Timer, Display flashing messages " OPEN or CLOSE "
- Use Time Base RTC No.DS3231 with BATTERY BACKUP
- DISPLAY Type is Red 4-DIGIT LED DOT MATRIX (8 X 32 DOT); Size: 13.0 x 3.2 cm.



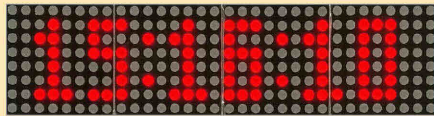
Use IR REMOTE to command



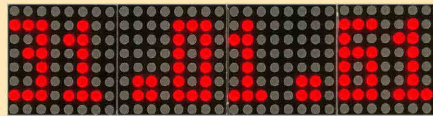
(1) Display Hour/Minute



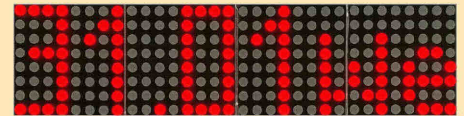
(2) Display Hour/Minute/Second Type 1



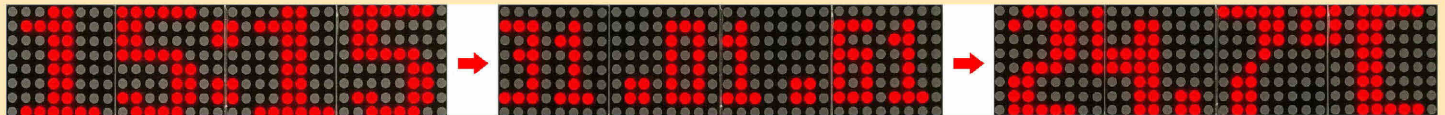
(3) Display Hour/Minute/Second Type 2



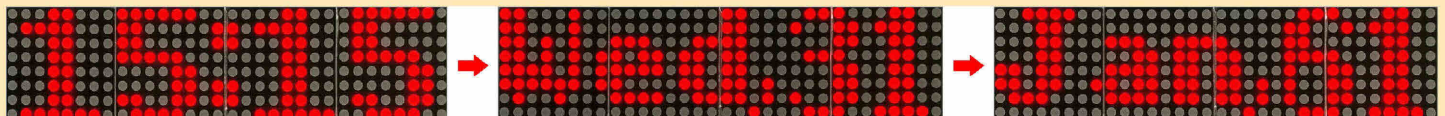
(4) Display Date/Month/Year



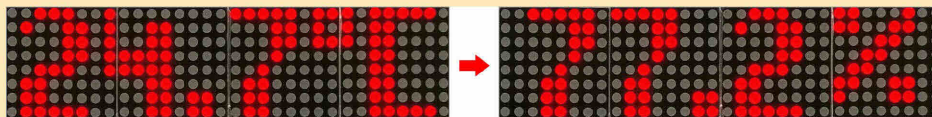
(5) Display Date/Month/Days of a week



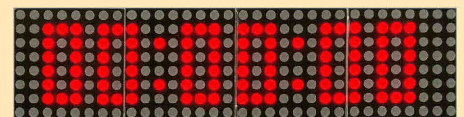
(6) Display Hour+Minute/Date+Month+Year/Temperature in Celsius Degree; each type is alternately displayed and changed every 10 second.



(7) Display Hour+Minute/ Days in a Week+Date/Month+Year; each type is alternately displayed and changed every 10 second.



(8) Display Temperature in Celsius Degree/Percentage (%) of Humidity; each type is alternately displayed and changed every 10 second.



(9) Timer: Minute/Second/1/100 Second

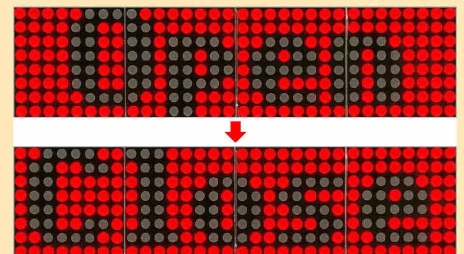
- Set 16-Level Brightness of Display
- Choose year format either Buddhist Era (B.E) or Christian Era (A.D.)
- Display Temperature value that is read from IC RTC DS3231; ERROR is +/- 3 Celsius degree
- 3 PIN 2.50mm. is OUTPUT RS232 TTL; it prints the value of Date and Time of Clock.
- 5 PIN 2.50mm. is connected to ET-SENSOR AM2302 to measure Temperature and Humidity.
- 5 PIN 2.50mm. is used as INPUT TTL to Start and Stop Timer

ADDITIONAL SPECIFICATIONS OF MODEL PLUS (VOICE)

- Add Speaker (ET-SP MINI) with Cable and transparent acrylic box
- Add MODULE MP3 with MICRO SD CARD; included 2 audio file languages (THAI/ENGLISH) to tell time, support audio file MP3, support FAT16 and FAT32
- Tell time every hours, adjust volume up to 30 levels
- PLAY/STOP/NEXT audio file MP3 in MICRO SD CARD (to listen to file song)
- Set alarm for birthday; Alarm is sounded from the audio file MP3 that is specified by user.

*** All Package of ET-MINI CLOCK 4 has included ET-IR REMOTE, Document and CD-ROM Manual.

*** DC 12V POWER SUPPLY is not included in ET-MINI CLOCK SET,



(TEST) Open or Close (Blink Invert)



● The connection between the ET-MINI CLOCK 4 with ET-SENSOR AM2302

OPTION

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



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

OUTPUT:12VDC 1A The Connector Type is FEMALE JACK 2.5mm. Inner is Cathode and Outer is Anode.

- ET- ADAPTER ROUND PLUG 12V 1A TYPE J (A-AP-A-00120)

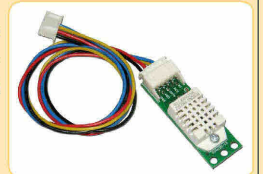


INPUT:AC 100-240VAC, 50-60 Hz, 500 mA.

OUTPUT:12VDC 1A The Connector Type is FEMALE JACK 2.5mm. Inner is Cathode and Outer is Anode.

- ET-SENSOR AM2302 (P-ET-A-00540)

SENSOR measures humidity and temperature. It uses SENSOR AM2302 (DHT22).



HUMIDITY ACCURACY (% RH) : +/- 2.0 %RH

TEMP. ACCURACY (° C) : +/- 0.5 °C

INTERFACE : SINGLE BUS

- Included Connector 5 PIN and CABLE Both Terminal 5PIN with 30cm length

ET-BIG CLOCK BOX (P-ET-A-00601)



ET-BIG CLOCK BOX is a big Electronic Clock Display that uses SUPER BRIGHTNESS Red LED, with 8 X 32 DOT.

The dimensions of the Display are 7.5 X 31.5 cm and the dimensions of the box are 10.3 X 3.2 X 4.2 cm. This wall clock can show various data such as Time, Month, Year, Temperature, and Humidity (OPTION); it is suitable for shop, home, company, or factory because it is obviously seen for a long distance. There are various formats of Clock that can be setup and changed easily by IR REMOTE such as showing Hour, Minute, Second, Date, Month, Year, Temperature, Humidity; or, it used as Stop Watch to START-STOP, or Display Board to show the message "OPEN" or "CLOSE" as required, or Alarm Clock with BUZZER to produces a beeping sound, or COUNTER 0000-9999. It is more special because it can connect 2 or more of ET-BIG CLOCK BOX together to show all the same data or show another values such as Date, Moth, Temperature, Humidity through CONNECTOR RJ45 (RS485 BUS).



(1) Show Time: Hour, Minute



(2) Show Time: Hour, Minute, Second



(3) Show Time: Hour, Minute, Second



(9) Stop Watch



(5) Show Date, Month, Days of a week



(6) Show Time, Date-Month-Year, Temperature; it alternately shows each value and changes every 10 seconds, respectively



(TEST) Show a flashing message "Close" and "Open"; when the Key is pressed each time, it alternately shows and changes between 2 messages



(7) Show Time, Days of a week-Date, Month-Year; it alternately shows each value and changes every 10 seconds, respectively



(8) Show Temperature (?C), percentage (%) of Humidity; it alternately shows each value and changes every 10 seconds, respectively (For Humidity, it has to connect to ET-SENSOR AM2302 (OPTION), otherwise, the Display shows the value as 0.0%).



● When it is used as COUNTER for counting value. When T: Target A: Actual Counting R: Remain



SPECIFICATIONS OF ET-BIG CLOCK BOX

- Use Microcontroller No.ATMEGA328 to control operation
- RTC No.DS3231 is used as Time Base with BATTERY BACKUP; the Clocks still runs during the blackout but it does not show any value on the Display
- IR REMOTE sets Time and operation easily and conveniently
- Size of red LED Display 8x32 DOT: 7.5 x 31.5 cm.
- Size of black plastic Box: 10.3 x 33.2 x 4.2 cm.
- Use DC 12V/1A at the brightest DISPLAY
- Setup 16-Level Brightness of LED; or, ON/OFF Display by IR REMOTE
- Choose and change any preferable MODE as follows;
 - Show Hour, Minute
 - Show Hour, Minute, Date, Month, Year and alternately change every 10 seconds
 - Show Hour, Minute, Date, Month, Year, Temperature and alternately change every 10 seconds
 - Show Hour, Minute, Second
 - Show Hour, Minute, Second as binary number (BINARY 8421)
 - Show flashing message OPEN/CLOSE
 - Show Temperature and Humidity (must connect to SENSOR "ET-SENSOR AM2302" (OPTION))
 - Be used as Stop Watch to show Minute, Second, 1/100 Seconds
 - Be used as COUNTER counting from 4-Digit INPUT SW. - And more
- Have Connector 3 PIN as OUTPUT by setting ALARM
- Have Connector 5 PIN as INPUT by setting SW. Timer
- Have Connector 5 PIN WAFER 2.50 mm. as I2C BUS to connect to SENSOR AM2302
- Can be connected to ET-GPS-RS485 to receive Signal GPS from satellite; it is highly accurate Time Base
- Use POWER SUPPLY 12VDC/1A as D JACK 2.5 mm. (Anode-Outer, Cathode-Inner)

- A set of ET-BIG CLOCK BOX includes ...
- 1. ET-BIG CLOCK BOX
- 2. ET-IR REMOTE KEY
- 3. ET-SWITCHING ADAPTER 12V/1A TYPE J
- 4. Document



*Please visit website: www.etteam.com to DOWNLOAD Full Manual and Example Program.



- An example illustrates how to connect 2 Displays together through CONNECTOR RJ45 BUS; the first device shows Time and the second device shows Temperature.



- It connects to ET-SENSOR AM2302 (OPTION).

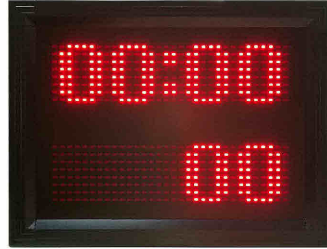


ET-BIG CLOCK BOX V2 (P-ET-A-00602)

ET-BIG CLOCK BOX V2 consists of 2 sets of big red Clock Display 8 X 32 DOT; 2 of ET-BIG CLOCK BOX are connected together and become a single display, provided with SENSOR for measuring Temperature and Humidity.



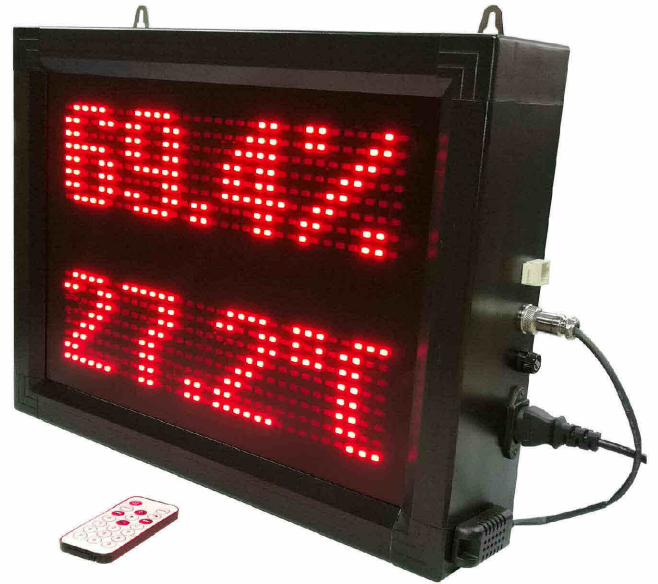
(6) Upper- Show numeric value of Date/Month
Lower- Show Time of Hour:Minute:Second



(+) Stop Watch



(TEST) Upper- Alternately Show flashing message" Open" and "Closes" by pressing this Key Lower- Show Time of Hour:Minute



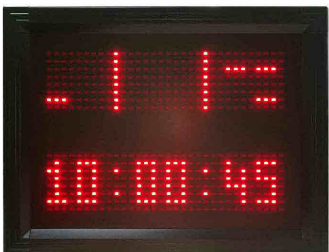
There are various display modes of Clock that can be setup as same as the Clock ET-BIG CLOCK BOX; in this case, there are 2 displays, so it can show more values as required.



(2) Upper- Show Date, Month (abbr.)
Lower- Show Time of Hour:Minute



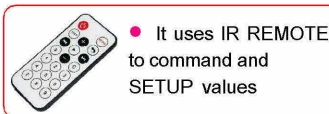
(8) Upper- Show Days of a week (abbr.)/ Date, Temperature, % of Humidity; it alternately shows each value and changes every 10 seconds. Lower- Show Time of Hour:Minute



(-) Upper- Show Time of Hour, Minute, Second as Digital Code 8421
Lower- Show Time of Hour:Minute: Second



(9) Upper- Show % of Humidity, Temperature, Date and Month (numeric value); it alternately shows each value and changes every 10 seconds. Lower- Show Time of Hour:Minute



It uses IR REMOTE to command and SETUP values



PROBE AM2301 LED 20 CM measures humidity and temperature, it is provided in the set.

SPECIFICATIONS OF ET-BIG CLOCK BOX V2

- Size of 2 red Displays 8 X 32 (256 DOT): 7.5 X 31.5 cm.
 - Dimensions of black Box: 43 X 32.3 X 9.3 cm
 - A big Clock is suitable to show Date, Time, especially in company, factory, hotels, and etc.
 - Have Connector 5 PIN as round type to connect to PROBE AM2301 LED 20 CM to measure humidity and temperature
 - Have CONNECTOR RJ45 to connect to GPS to be Time Base of Clock, it is highly accurate Clock. It has to connect to ET-GPS-RS485 (C-YA-A-00248) , ***The price is exclusive of VAT7% (OPTION).
 - Connector 3 PIN POWER is directly compatible with 220VAC
 - A set of ET-BIG CLOCK BOX V2 includes ...
1. ET-BIG CLOCK BOX V2
 2. ET-IR REMOTE KEY
 3. PROBE AM2301 LED 20 CM
 4. Cable AC LINE 3PIN 5M



*Please visit website: www.etteam.com to DOWNLOAD Full Manual and Example Program.

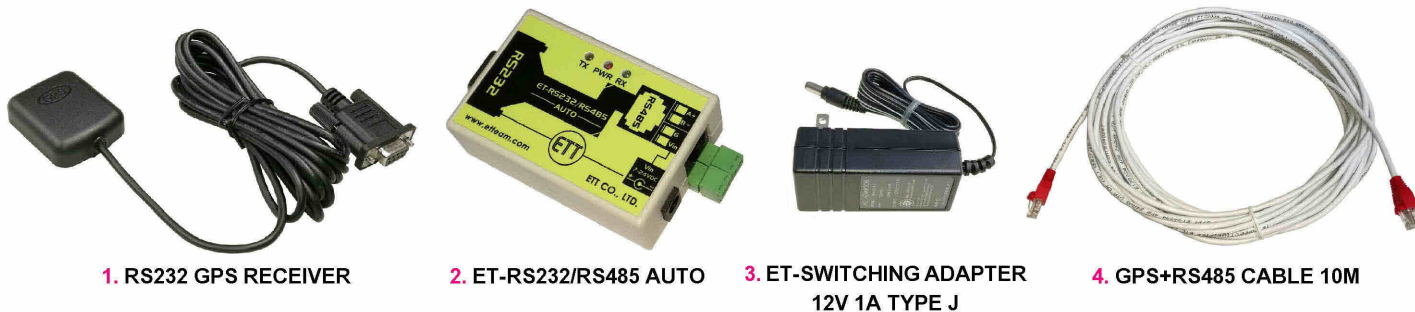
ET-GPS-RS485 (C-YA-A-00248)

ET-GPS-RS485 is Time Base System of the Clock that uses radio signal from Satellite: GPS (GLOBAL POSITIONING SYSTEM). Signal from GPS includes position of LATITUDE and LONGITUDE; moreover, it also provides highly accurate Signal GPS of Time Base with less error in mille-second. It is suitable to be used as Time Base of the Clock; or, multi-clock system that is connected together to show exact time in many places at the same time, or it is used as reference time for working place.

SPECIFICATIONS OF ET-GPS-RS485

- " RS232 GPS RECEIVER " receives Signal GPS that has OUTPUT as DB9 PIN FEMALE Signal RS232, BAUD RATE 9600, with a 3-meter long Cable
- " ET-RS232/RS485 AUTO " device converts Signal from RS232 to RS485, so it can connect Cable for a longer distance
- Connect Signal OUTPUT RS485 to multi-clock system at the same time for a 1.2 kilometer long distance (total length of all cable connection)
- Directly connect to ET-BIG CLOCK BOX, ET-BIG CLOCK BOX V2 to be used as Time Base of Clock
- A set of product provides a 10-meter long UTP LAN CABLE (GPS-RS485 CABLE 10M (P-CB-A-00048)), both terminals are RJ45 type that can be connected to ET-BIG CLOCK BOX and ET-BIG CLOCK BOX V2 directly. If user wants a longer cable than ETT has provided with a set, please additionally purchase Cable 20M, 40M (OPTION) that is connected in a format of PLUG RJ45 of both terminals.

A set of ET-GPS-RS485 includes ...



1. RS232 GPS RECEIVER

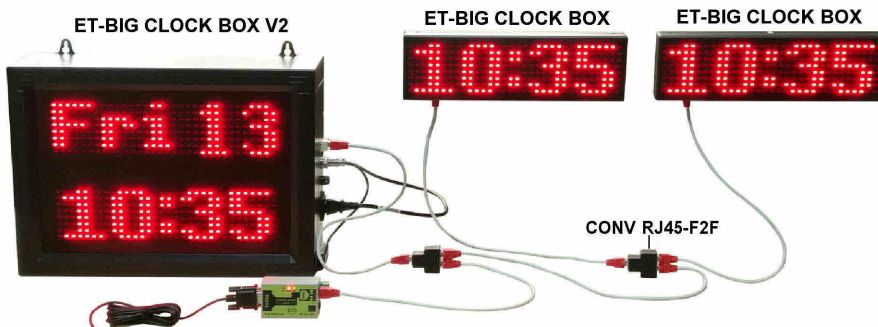
2. ET-RS232/RS485 AUTO

3. ET-SWITCHING ADAPTER
12V 1A TYPE J

4. GPS+RS485 CABLE 10M



• An example illustrates how to connect ET-BIG CLOCK BOX V2 to ET-GPS-RS485.



• An example illustrates how to connect multi-clock system; in this case, it connects ET-BIG CLOCK BOX V2 and ET-BIG CLOCK BOX to ET-GPS-RS485.

A set of ET-GPS-RS485 includes ...

1. RS232 GPS RECEIVER
2. ET-RS232/RS485 AUTO
3. ET-SWITCHING ADAPTER 12V 1A TYPE J
4. GPS+RS485 CABLE 10M
5. Document



OPTION

- RJ45 8-8 ฝู (A-CO-P-00004)



It is Header 8PIN RJ45.

- CONV RJ45-PLUG2 (A-CO-P-00036)



This COVER is connected to Cable RJ45 2-Wire together. Both terminals are Box PLUS

- CONV RJ45-F2F (A-CO-P-00032)



This COVER is connected to Cable RJ45 to extend its size; so, it can be connected more than 2-Wire. It is 3-directional PLUS Female.

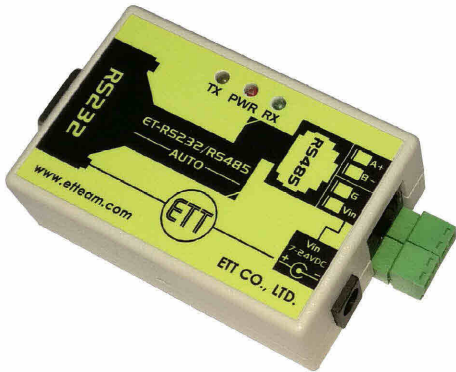
สายต่อ

- UTP LAN CABLE (P-CB-A-00047) A 1-meter long cable
- GPS-RS485 CABLE 50CM (P-CB-A-00052) A 50-cm. long Cable; both terminals are RJ45 type.
- GPS-RS485 CABLE 10M (P-CB-A-00048) A 10-meter long Cable; both terminals are RJ45 type.
- GPS-RS485 CABLE 20M (P-CB-A-00049) A 20-meter long Cable; both terminals are RJ45 type
- GPS-RS485 CABLE 40M (P-CB-A-00050) A 40-meter long Cable; both terminals are RJ45 type



ET-RS232/RS485 AUTO (P-ET-A-00608)

ET-RS232/RS485 AUTO converts signal for receiving-sending data from RS232 to RS485 (2-Wire); or, it converts signal from RS485 to RS232. Format of Signal RS485 that is converted on the side of sending and receiving data is AUTO DIRECTION CONTROL.



SPECIFICATIONS OF ET-RS232/RS485 AUTO

- SIGNAL CONVERT** : Convert Signal from RS232C to RS485 (HALF DUPLEX)
BAUD RATE : 300 bps to 115.2 kbps
CONNECTORS : RS232C as DB9 PIN MALE
 : RS485 as RJ45 8 PIN and PLUG TYPE TERMINAL BLOCK
SW.MODE : AUTO DIRECTION CONTROL for transmitting data
LED STATUS : TX, RX, POWER
DISTANCE : 4,000 feet or 1.2 kilometers long
POWER SUPPLY : DC ADAPTER SWITCHING 12VDC/1A
DIMENSIONS OF BOX : 7.5 x 2.5 x 5 cm.

A set of ET-RS232/RS485 AUTO includes ...

1. ET-RS232/RS485 AUTO
2. DC ADAPTER 2 PIN
3. Document



RS232 GPS RECEIVER (C-YA-A-00250)

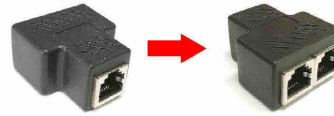
ET-RS232 GPS RECEIVER is a set of Signal GPS Receiver with antenna inside. OUTPUT is released as Signal RS232 9-PIN that can be used instantly.



SPECIFICATIONS OF RS232 GPS RECEIVER

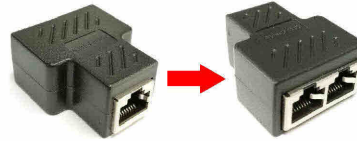
- Be a set of GPS Receiver with antenna as WATER PROOF inside
- Signal GPS releases OUTPUT as Signal RS232 DB9 PIN FEMALE, PIN 2 = TX, PIN3 = RX, PIN 5 = GND, PIN 9 = +5V
- Use a 3 meter long RS232 Cable; BAUD RATE 9600
- Use POWER INPUT 5V for running
- PROTOCOL : NMEA 0183
- GPS OUTPUT DATA : COMMAND GGA,GSA,GSV,GPRMC,VTG, GLL
- TRACKING CHANNELS : 50
- RECEIVER FREQUENCY : L1 (1575.42 MHz)
- SUPPORT DGPS (WAAS, EGNOS AND MSAS)
- TRACKING SENSITIVITY : -162 dBm
- ACQUISITION SENSITIVITY : -148 dBm
- COLD START TIME : 325 (AVERAGE)
- HOT START TIME : 1 s (AVERAGE)

CONV RJ11-F2F (A-CO-P-00033)



This CONVER is used for Connector RJ11 (6 PIN) FEMALE that will be converted into 2 of Connector RJ11 FEMALE. All 6 Pins of RJ11 are linked together; it can be expansively connected with PORT I2C of Board ET-ESP8266-RS485 or Board ET-MEGA32U4-RS485.

CONV RJ45-F2F (A-CO-P-00032)



This CONVER is used for Connector RJ45 (8PIN) FEMALE that will be converted into 2 of Connector RJ45 FEMALE. All 8 Pins of RJ45 are linked together; it can be expansively connected with PORT RS485 of Board ET-ESP8266-RS485 or Board ET-MEGA32U4-RS485.

DB9 MALE TERMINAL (A-CO-D-00043)

DB9 FEMALE TERMINAL (A-CO-D-00045)

This is a set of D-SUB COVER and DB9 PIN; the Connector type is DB9 PIN and another one side is DB9 in the format of TERMINAL SCREW. It is more convenient than regular DB9 PIN because it can wire cables easily, without soldering.

- For Model **DB9 MALE TERMINAL**, Connector DB9 PIN is Male type.
- For Model **DB9 FEMALE TERMINAL**, Connector DB9 PIN is Female type.



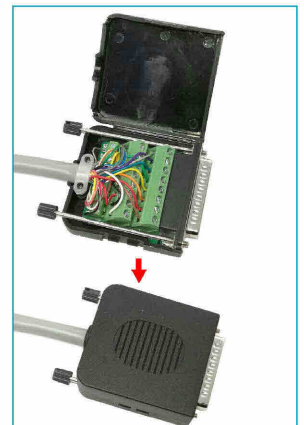
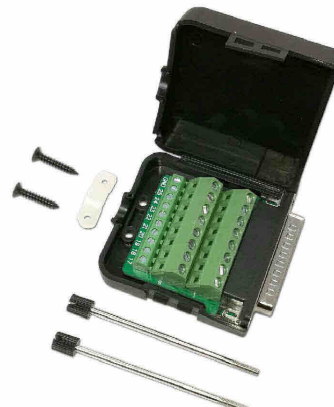
• An example shows how to wire cables and a complete set.

DB25 MALE TERMINAL (A-CO-D-00044)

DB25 FEMALE TERMINAL (A-CO-D-00046)

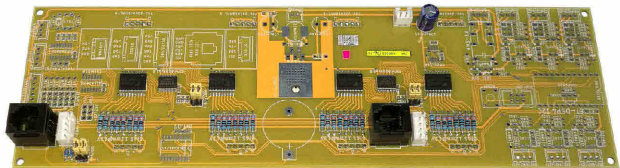
This is a set of D-SUB COVER and DB25 PIN; the Connector type is DB25 PIN and another one side is DB25 in the format of TERMINAL SCREW. It is more convenient than regular DB25 PIN because it can wire cables easily, without soldering.

- For Model **DB25 MALE TERMINAL**, Connector DB25 PIN is Male type.
- For Model **DB25 FEMALE TERMINAL**, Connector DB25 PIN is Female type.



• An example shows how to wire cables and a complete set.

ET-DSP4 I2C SLAVE (P-ET-A-00603)



ET-DSP4 I2C SLAVE is a large DISPLAY 7SEGMENT Board that use red 4-Digit LED 7SEGMENT with 2.3 inch high. It receives Command to control the Display through PORT I2C. It is easily connected to Board Microcontrollers such as ET-MEGA32U4-RS485, ET-ESP8266-RS485, BBC MICRO:BIT and etc. It is I2C Interface, so it can connect 4 Board ET-DSP4 I2C SLAVE simultaneously.

SPECIFICATIONS OF ET-DSP4 I2C SLAVE

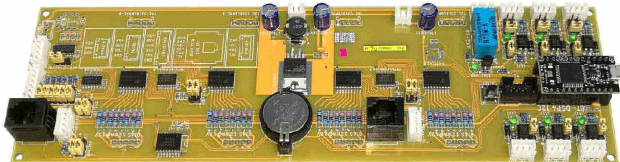
- Be red 4-Digit LED 7SEGMENT, with 2.3 inch high
- Use IC I2C No.PCF8575 to receive data and show data together with ULN2803
- Has JUMPER to setup and choose Address Positions of board; it can connect 4 Boards together
- Has 2 sets of Connector I2C BUS as 4 PIN WAFER 2.50 mm. and 2 sets of Connector I2C BUS as RJ11 6PIN FEMALE to connect in-out from board
- Use POWER +12VDC as 2 PIN WAFER 2.50 mm. for running 7SEGMENT. and +5VDC from Connector I2C BUS for running PCF8575
- Size of 4-Digit DISPLAY: 19.2 x 6.9 cm
- PCB Size: 26 x 8 cm.
- A set of **ET-DSP4 I2C SLAVE** includes ...

1. Board ET-DSP4 I2C SLAVE
2. Document

(*Please visit website: www.etteamc.com to DOWNLOAD Manual and Example Program).

ET-DSP4 I2C MASTER (P-ET-A-00604)

- Have 1-CH Circuit to receive Signal IR INFARED from IR REMOTE.



ET-DSP4 I2C MASTER is Display Board that has a more additional part than Board ET-DSP4 I2C SLAVE, especially MCU ATMEGA32U4 that can write program and command by its own board. Moreover, it includes additional devices to support applications. It can be applied to various applications such as price tag, COUNTER to count amount of car's entrance and exit.

ADDITIONAL SPECIFICATIONS OF ET-DSP4 I2C SLAVE

- MCU on board is PRO-MICRO 32U4 to command
 - ATMEGA32U, FLASH 32 KBYTE, RAM 2.5 KBYTE, EEPROM 1 KBYTE
 - USB PORT as MICRO USB on board can be used with Program Arduino for writing and developing program
- Have RTC (REAL TIME CLOCK) No.DS3231, provided with BATTERY BACKUP
- Have 1 of OUTPUT RELAY 1A/24V with CONNECTOR 3 PIN WAFER 2.50 mm.
- Have 3-CH INPUT DC as OPTO-ISOLATE to choose levels of INPUT; +5V, +12V, +24V; it is provided with 3 sets of Connector 3 PIN WAFER 2.50 mm.
- Have 3-CH INPUT DC OPTO-ISOLATE as fixed +12V; it is provided with 3 sets of Connector WAFER 2.50 mm.
- Have 1-CH Circuit to receive Signal IR INFARED from IR REMOTE.
- Have 2 sets of Connector I2C BUS as 4 PIN WAFER 2.50 mm. and 2 sets of Connector I2C BUS as RJ11 6 PIN FEMALE; it connects to I2C devices or I2C Boards.
- Have 1-CH Circuit UART that can be chose either types between
 - RS232 PORT is used with Connector 4 PIN WAFER 2.50 mm.
 - RS485 PORT is used with Connector 6 PIN WAFER 2.50 mm.
- Use POWER +12VDC as 2 PIN WAFER 2.50 mm. with Circuit SWITCHING 5V/1A from +12VDC
- Size of 4-Digit DISPLAY: 19.2 x 6.9 cm.; PCB Size: 26 x 8 cm.
- A set of **ET-DSP4 I2C MASTER** includes ...

1. Board ET-DSP4 I2C MASTER
2. Document

4P-I2C-4P (P-CB-A-00042)



- Both sides are Connector FEMALE HOUSING 4 PIN 2.50 mm.; the Cable is 20 cm. long.

RJ-I2C-RJ (P-CB-A-00041)



- Both sides are CONNECTOR RJ11; PIN 1 of one side is matching with PIN1 of another one side; the Cable is 20 cm. long.

2P-2P-30CM (P-CB-A-00051)



- Both sides are Connector FEMALE HOUSING 2 PIN 2.50 mm.; the Cable is 30 cm. long.

RJ-I2C-M (P-CB-A-00039)



- One side is CONNECTOR RJ11 and another one side is 6-CONNECTOR PIN HEADER MALE; the Cable is 20 cm. long.

RJ-I2C-F (P-CB-A-00040)



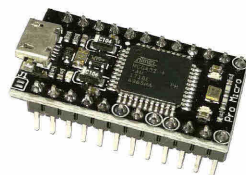
- One side is CONNECTOR RJ11 and another one side is 6-CONNECTOR PIN HEADER FEMALE; the Cable is 20 cm. long.

OPTION ET-DSP4 I2C & DSP6 I2C MASTER

CABLE USB/MICRO 1M (A-CB-A-00045)



Cable USB is 1 meter long; one terminal side is Connector TYPE A that can be connected to computer and another one side is MICRO USB TYPE B MALE that can be connected to Board PRO-MICRO 32U4.



- PRO-MICRO 32U4 is used as MCU on board.

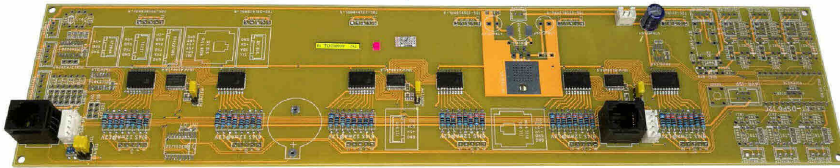
ET-IR REMOTE KEY (P-ET-A-00546)



It is mini 20-KEY IR REMOTE with Frequency 38KHz, provided with 3V BATTERY. Its dimensions are 8.65 x 4.10 x 0.75 cm.



ET-DSP6 I2C SLAVE (P-ET-A-00605)



- Have 2 sets of CONNECTOR I2C BUS as 4 PIN WAFER 2.50 mm. and 2 sets of CONNECTOR I2C BUS as RJ11 6 PIN FEMALE; it can be connected in-out from board.
- Use POWER +12VDC as 2 PIN WAFER 2.50 mm for running 7SEGMENT and +5VDC from CONNECTOR I2C BUS for running PCF8575
- Size of 6-Digit DISPLAY: 28.9 x 6.9 cm. • PCB Size: 36 x 8 cm.

A set of ET-DSP6 I2C SLAVE includes...

1. Board ET-DSP4 I2C SLAVE
2. Document

(*Please visit website: www.etteam.com to DOWNLOAD Manual and Example Program).

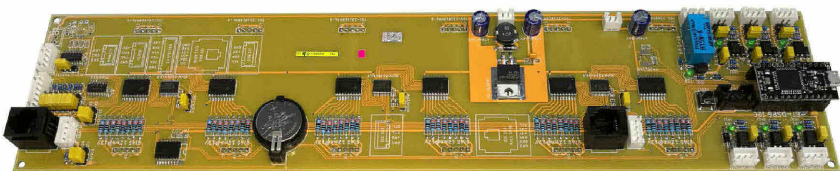
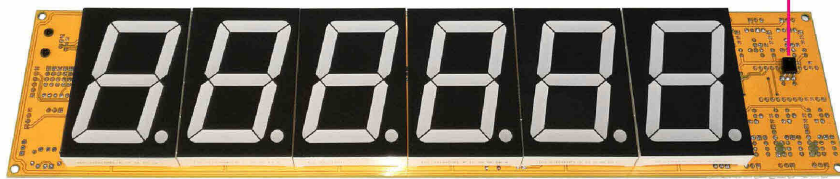
ET-DSP6 I2C SLAVE is a large DISPLAY 7SEGMENT Board that use red 6-Digit LED 7SEGMENT with 2.3 inch high. It receives Command to control the Display through PORT I2C as the same as ET-DSP4 I2C SLAVE. It is easily connected to Board Microcontrollers such as ET-MEGA32U4-RS485, ET-ESP8266-RS485, BBC MICRO:BIT and etc. It is I2C Interface, so it can connect 2 Board ET-DSP6 I2C SLAVE simultaneously.

SPECIFICATIONS OF ET-DSP6 I2C SLAVE

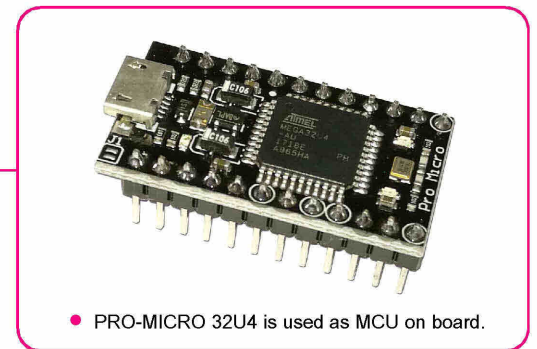
- Be red 6-Digit LED 7SEGMENT Display, with 2.3 inch high
- Use IC I2C No. PCF8575 to receive data and show data together with ULN2803
- JUMPER setup and chooses Address Positions of Board ET-DSP6 I2C SLAVE; it can connect 2 boards together

ET-DSP6 I2C MASTER (P-ET-A-00606)

- Have 1-CH Circuit to receive Signal IR INFARED from IR REMOTE.



ET-DSP6 I2C MASTER is Display Board that has a more additional part than Board ET-DSP6 I2C SLAVE, especially MCU ATMEGA32U4 that can write program and command by its own board. Moreover, it includes additional devices to support applications. It can be applied to various applications such as price tag, COUNTER to count amount of car's entrance and exit.



- PRO-MICRO 32U4 is used as MCU on board.

ADDITIONAL SPECIFICATIONS OF ET-DSP6 I2C SLAVE

- PRO-MICRO 32U4 is used as MCU on board
 - ATMEGA32U4, FLASH 32 KBYTE, RAM 2.5 KBYTE, EEPROM 1 KBYTE
 - USB PORT as MICRO USB on board can be used with Program Arduino for writing and developing program
- Have RTC (REAL TIME CLOCK) No.DS3231, provided with BATTERY BACKUP
- Have 1 of OUTPUT RELAY 1A/24V with CONNECTOR 3 PIN WAFER 2.50 mm.
- Have 3-CH INPUT DC as OPTO-ISOLATE to choose levels of INPUT; +5V, +12V, +24V; it is provided with 3 sets of Connector 3 PIN WAFER 2.50 mm.
- Have 3-CH INPUT DC OPTO-ISOLATE as fixed +12V; it is provided with 3 sets of Connector WAFER 2.50 mm.
- Have 1-CH Circuit to receive Signal IR INFARED from IR REMOTE.
- Have 2 sets of Connector I2C BUS as 4 PIN WAFER 2.50 mm. and 2 sets of Connector I2C BUS as RJ11 6 PIN FEMALE; it connects to I2C devices or I2C Boards.
- Have 1-CH UART that can be chose either types between
 - RS232 PORT is used with Connector 4 PIN WAFER 2.50 mm. - RS485 PORT is used with Connector 6 PIN WAFER 2.50 mm.
- Use POWER +12VDC as 2 PIN WAFER 2.50 mm. with Circuit SWITCHING 5V/1A from +12VDC
- Size of 6-Digit DISPLAY: 28.9 x 6.9 cm., PCB Size: 36 x 8 cm.

A set of ET-DSP6 I2C MASTER includes ...

1. Board ET-DSP6 I2C MASTER
2. Document

(*Please visit website www.etteam.com to DOWNLOAD Manual and Example Programs)



OPTION ET-DP4 I2C & DSP6 I2C

WAFER CON 2.50 mm. STRAIGHT MALE

- WAFER CON 6 PIN 2.50MM STRAIGHT (A-CO-A-00020)
- WAFER CON 5 PIN 2.50MM STRAIGHT (A-CO-A-00293)
- WAFER CON 4 PIN 2.50MM STRAIGHT (A-CO-A-00088)
- WAFER CON 3 PIN 2.50MM STRAIGHT (A-CO-A-00168)
- WAFER CON 2 PIN 2.50MM STRAIGHT (A-CO-A-00161)

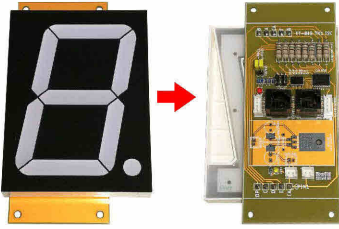


HOUSING CON 2.50 mm. FEMALE

- HOUSING CON 2.50MM 2 PIN (A-CO-A-00162)
- HOUSING CON 2.50MM 3 PIN (A-CO-A-00169)
- HOUSING CON 2.50MM 4 PIN (A-CO-A-00089)
- HOUSING CON 2.50MM 5 PIN (A-CO-A-00268)
- HOUSING CON 2.50MM 6 PIN (A-CO-A-00022)
- REFILL CON CRIMP 2.50MM (A-CO-T-00002)



ET-BIG 7X1 I2C
(P-ET-A-00597)



ET-BIG 7X1 I2C is an 1-Digit 7-SEGMENT LED DISPLAY in a big red 4-inch high Board; it receives and controls the display through PORT I2C and it can be connected to Board Microcontrollers easily such as ET-MEGA32U4-RS485 ET-ESP8266-RS485, ARDUINO BOARD, BBC MICRO:BIT. When it is connected in a format of I2C, it can connect a maximum of 8 Boards ET-BIG 7X1 I2C simultaneously.

SPECIFICATIONS OF ET-BIG 7X1 I2C

- Be 1-Digit LED 7 SEGMENT Display in a big red 4-inch high board
- I2C No.PCF8575 receives incoming data that will be displayed together with ULN2803
- JUMPER setup and chooses 8 Address Positions of Board; so, it can connect 8 Boards ET-BIG 7X1 I2C (8-Digit) simultaneously
- Have 2 sets of Connector I2C BUS as 4 PIN WAFER 2.50 mm. and 2 sets of Connector I2C BUS as RJ11 6 PIN FEMALE to be connected to board and be connected out from board.
- Use 2 sets of POWER +12VDC as 2 PIN WAFER 2.50mm. for 7SEGMENT and +5VDC from Connector I2C BUS for PCF8575
- Size of 1-Digit DISPLAY: 9 x 12.1 cm.
- PCB Size: 6.2 x 15.4 cm.

A set of ET-BIG 7X1 I2C includes...

1. Board ET-BIG 7X1 I2C
2. Document

An example shows how to connect boards together by Cable I2C BUS.



OPTION ET-BIG 7X1 I2C _ET-BIG 7X2 I2C SLAVE & MASTER

RJ-I2C-M (P-CB-A-00039)



- One terminal side is CONNECTOR RJ11 and another one side is 6 of CONNECTOR PIN HEADER MALE, with 20 cm. long.

RJ-I2C-F (P-CB-A-00040)



- One terminal side is CONNECTOR RJ11 and another one side is 6 of CONNECTOR PIN HEADER FEMALE, with 20 cm. long.

4P-I2C-4P (P-CB-A-00042)



- Both sides are CONNECTOR HOUSING 4 PIN FEMALE 2.50 mm., with 20 cm. long.

RJ-I2C-RJ (P-CB-A-00041)



- Both sides are CONNECTOR RJ11; Pin 1 of one side is matching with Pin 1 of another one side, with 20 cm. long.

2P-2P-30CM (P-CB-A-00051)



- Both sides are CONNECTOR HOUSING 2 PIN FEMALE 2.50 mm., with 30 cm. long.

WAFER CON 2.50 mm. STRAIGHT MALE

- WAFER CON 6 PIN 2.50MM STRAIGHT (A-CO-A-00020)
- WAFER CON 5 PIN 2.50MM STRAIGHT (A-CO-A-00169)
- WAFER CON 4 PIN 2.50MM STRAIGHT (A-CO-A-00088)
- WAFER CON 3 PIN 2.50MM STRAIGHT (A-CO-A-00168)
- WAFER CON 2 PIN 2.50MM STRAIGHT (A-CO-A-00161)

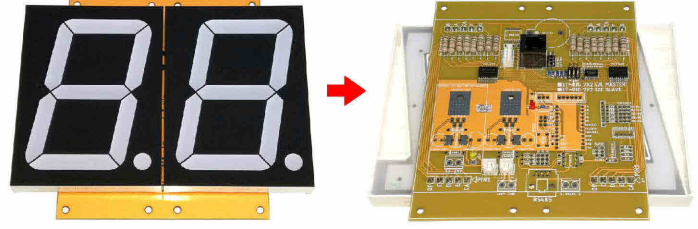


HOUSING CON 2.50 mm. FEMALE

- HOUSING CON 2.50MM 2 PIN (A-CO-A-00162)
- HOUSING CON 2.50MM 3 PIN (A-CO-A-00169)
- HOUSING CON 2.50MM 4 PIN (A-CO-A-00089)
- HOUSING CON 2.50MM 5 PIN (A-CO-A-00268)
- HOUSING CON 2.50MM 6 PIN (A-CO-A-00022)
- ไส้ CON CRIMP 2.50MM (A-CO-T-00002)



ET-BIG 7X2 I2C SLAVE
(P-ET-A-00598)



ET-BIG 7X2 I2C SLAVE is a 2-Digit 7-SEGMENT LED DISPLAY in a big red 4-inch high Board; their specifications are the same as ET-BIG 7X1 I2C.

SPECIFICATIONS OF ET-BIG 7X2 I2C SLAVE

- Be 2-Digit LED 7 SEGMENT Display in a big red 4-inch high board
- Have a set of Connector I2C BUS as 4 PIN WAFER 2.50 mm. and a set of Connector I2C BUS as RJ11 6 PIN FEMALE
- JUMPER setup and chooses 8 Address Positions of Board; so, it can connect 8 Boards ET-BIG 7X2 I2C SLAVE (16-Digit) simultaneously.
- Size of 2-Digit DISPLAY: 18.1 x 12.1 cm. • PCB Size: 13 x 15.4 cm.

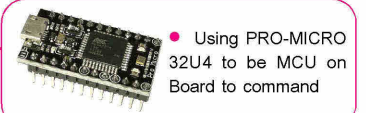
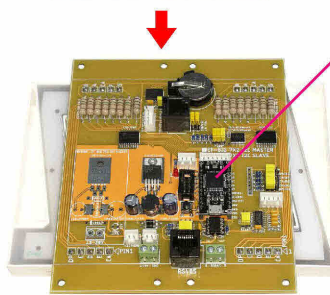
A set of ET-BIG 7X2 I2C SLAVE includes...

1. Board ET-BIG 7X2 I2C SLAVE
2. Document

ET-BIG 7X2 I2C MASTER
(P-ET-A-00599)



ET-BIG 7X2 I2C MASTER is a 2-Digit 7-SEGMENT LED DISPLAY in a big red 4-inch high Board. It uses Board ET-BIG 7X2 I2C SLAVE that is added more devices; for example, using MCU ATMEGA32U4 to write program and control operation from its own board. This board can be applied to be a price tag, COUNTER to count amount of car's entrance and exit.



- Using PRO-MICRO 32U4 to be MCU on Board to command

CABLE USB/MICRO 1M
(A-CB-A-00045)

Cable USB is 1 meter long; one terminal side is Connector TYPE A that is connected to computer and another one side is MICRO USB TYPE B MALE that is connected to Board PRO MICRO 32U4.

(OPTION)

SPECIFICATIONS OF ET-BIG 7X2 I2C MASTER

- MCU on board is PRO MICRO 32U4 to command
 - ATMEGA32U4, FLASH 32 KBYTE, RAM 2.5 KBYTE, EEPROM 1 KBYTE
 - USB PORT as MICRO BUS on board ; it can use Program Arduino for writing and developing program
 - Have RTC (REAL TIME CLOCK) No.DS3232, provided with 3V BATTERY BACKUP
 - Have CONNECTOR IDE 6 PIN under standard of AVR ISP
 - Have Circuit LINE DRIVER as RS485 HALF DUPLEX IC 75176
 - Connector 2 PIN TERMINAL 5.0 mm. RS485
 - Connector RS485 FEMALE 8 PIN RS485
 - Have Circuit LINE DRIVER RS232 IC ICL3232, CONNECTOR 4 PIN WAFER 2.50 mm.
 - Have CONNECTOR 3 PIN WAFER 2.50 mm for GPIO (D10, +5V, GND)
 - Have CONNECTOR 6 PIN WAFER 2.50 mm for GPIO (A0, A1, A2, A3, +5V, GND)
 - Have 5-JUMPER to choose and setup ID ADDRESS for setting ID of Board in case of connecting board in a format of RS485 Interface (GPIO D5-D9)
 - Use 2 sets of POWER +12VDC as 2 PIN WAFER 2.50 mm. and 2 PIN TERMINAL 5.0 mm with Circuit SWITCHING 5V/1A from +12VDC to provide for the Circuit
 - A set of ET-BIG 7X2 I2C MASTER includes ...
1. Board ET-BIG 7X2 I2C MASTER
 2. Document
- (*Please visit website: www.etteam.com to DOWNLOAD Manual and Example Program).

ET-DSP I2C 7SEGMENT DISPLAY SET

This ET-DSP I2C is a Display Set in the format of 3-DIGIT 7SEGMENT red LED(0.56inch) and 4-DIGIT 7SEGMENT red LED(0.36inch); it is connected to MCU via I2C BUS and it supports both 3.3V and 5V. This 7SEGMENT is assembled on a complete frame of display size of 48 x 29mm; it can be mounted on walls or PANEL conveniently and easily.



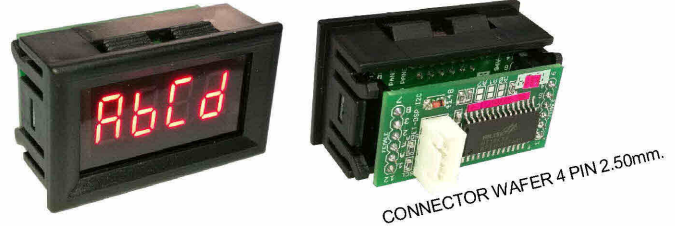
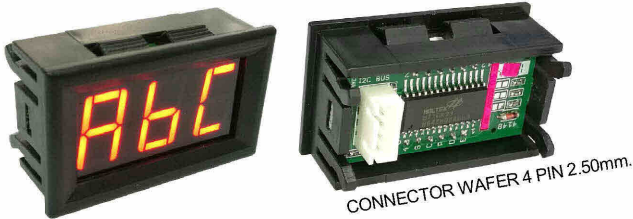
ET-DSP I2C 7SEG PANEL3 (P-ET-A-00595)

ET-DSP I2C 7SEG PANEL4 (P-ET-A-00596)

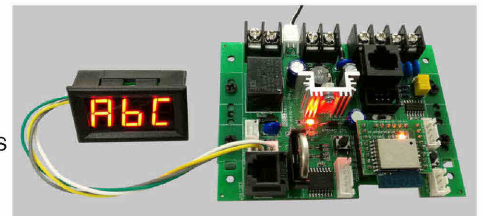
ET-DSP I2C 7SEG PANEL3 and PANEL4 is a Display Set in the format of 3-DIGIT and 4-DIGIT 7SEGMENT red LED that is provided with frame to cover the circuit and be mounted to panels easily. It is connected to MCU Boards via PORT I2C BUS such as ET-ESP8266-RS485, ET-MEGA32U4-RS485, and etc.

ET-DSP I2C 7SEG PANEL3

ET-DSP I2C 7SEG PANEL4



- PANEL3 is 3-DIGIT 7SEGMENT red LED with 0.56inch in height
- PANEL4 is 4-DIGIT 7SEGMENT red LED with 0.36inch in height
- Use IC No.HT16K33 from HOLTEK to control and adjust 16-level of Brightness for the display
- CONNECTOR WAFER 4 PIN 2.50mm. under Standard of ETT is connected via I2C BUS
- Setup 8 Address positions for I2C, so it can connect to a maximum of 8 of PANEL3 or PANEL4 in the same I2C BUS
- Use 3.3V or 5.0V POWER SUPPLY and it also is compatible with 3.3V or 5.0V I2C BUS
- Dimensions of Frame of Display: 48mm. X 29mm. X 22mm.
- Size of hole for mounting to the Frame: 45 x 26 mm.



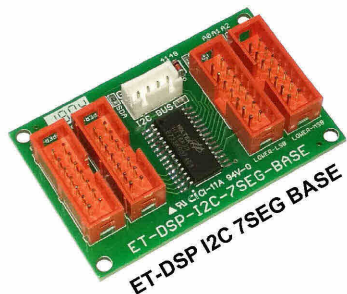
• An example shows how to connect to Board ET-ESP8266-RS485.

ET-DSP I2C 7SEG BASE (P-ET-A-00592)

ET-DSP 7SEG 3DG (P-ET-A-00593)

ET-DSP 7SEG 4DG (P-ET-A-00594)

This Display Set is in the format of 3-DIGIT and 4-DIGIT 7SEGMENT that receives data via I2C and it is connect a maximum of 32 DISPLAY Boards in the same system. This Board ET-DSP I2C 7SEG BASE is Base Board to control Board 3DG or 4DG; in this case, 4 Boards can be connected together simultaneously.



ET-DSP 7SEG 3DG

ET-DSP 7SEG 4DG



- Use IC No.HT16K33 from HOLTEK to control and adjust 16-level of Brightness
- CONNECTOR WAFER 4 PIN 2.50mm under Standard of ETT is connected via I2C BUS
- Setup 8 Address Positions of I2C ; so, it can connect a maximum of 32 3DG or 4DG DISPLAY Boards
- 4 of CONNECTOR 14PIN IDC is connected to 4 of 3DG or 4DG Display Board
- Use POWER SUPPLY 3.3V or 5.0V; it is compatible with 3.3V or 5.0V I2C BUS
- Board Size: 40.5 X 63.5 mm.

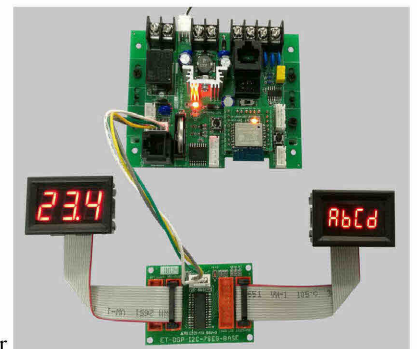
ET-DSP 7SEG 3DG is connected to Board ET-DSP I2C 7SEG BASE via CABLE 14 PIN IDC; it is 3-DIGIT 7SEGMENT red LED with 0.56 inch in height. It provides 1 of CABLE PAIR 14PIN IDC with 30cm. in length in set, and size of frame of display is 48 x 29 mm.

ET-DSP 7SEG 4DG is connected to Board ET-DSP I2C 7SEG BASE via CABLE 14 PIN IDC; it is 4-DIGIT 7SEGMENT red LED with 0.36 inch in height. It provides 1 of CABLE PAIR 14PIN IDC with 30cm. in length in set, and size of frame of display is 48 x 29 mm.

• [DOWNLOAD Manual and Example Programs, please visit http://www.etteam.com/prodDspI2C/ET-DSP_I2C/ET-DSP_I2C.html](http://www.etteam.com/prodDspI2C/ET-DSP_I2C/ET-DSP_I2C.html)
<https://goo.gl/EEKyir>



<https://goo.gl/EEKyir>



• An example shows how to connect to Board ET-ESP8266-RS485.

4P-I2C-4P (P-CB-A-00042)



Both terminals are HOUSING 4PIN 2.50mm. FEMALE type with 20cm. in length; it is used with Board ET-DSP I2C 7SEG PANEL3, ET-DSP I2C 7SEG PANEL4, ET-DSP I2C 7SEG BASE, ET-ESP8266-RS485.

WAFER CON 4 PIN 2.50MM STRAIGHT (A-CO-A-00088)



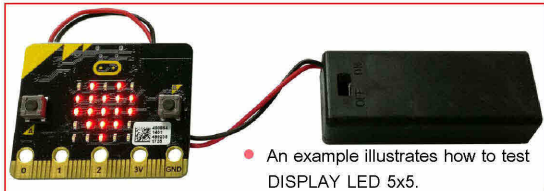
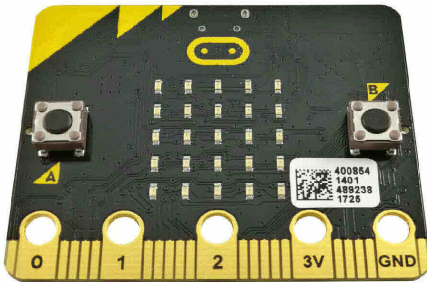
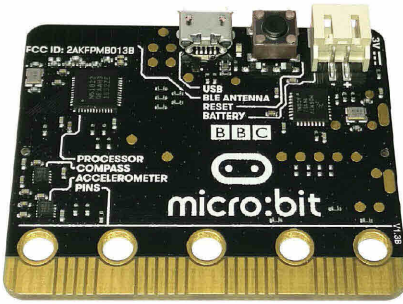
HOUSING CON 2.50MM 4 PIN (A-CO-A-00089)



REFILL CON CRIMP 2.50MM (A-CO-T-00002)



BBC MICRO:BIT (C-YA-A-00241)



• An example illustrates how to test DISPLAY LED 5x5.

Board **BBC MICRO:BIT** is a mini Board Microcontroller that is designed and made by British Broadcasting Corporation or BBC to support learning and teaching mini computers for children. It also provides languages for writing program that is easy for children such as BLOCK or more advanced languages such as JAVA SCRIPT, or PYTHON; all of these programs can be DOWNLOAD free. Moreover, Board BBC MICRO:BIT can DOWNLOAD any written program through USB PORT instantly, without purchasing any more device.

SPECIFICATIONS OF BBC MICRO:BIT

- Main MCU is No.NRF51822 from NORDIC that is 32 BIT ARM CORTEX-M0 Microcontroller, 256 KB FLASH MEMORY, 16 KB RAM, RUN FREQUENCY 16 MHz; provided with Circuit BLUETOOTH LOW ENERGY (BLE) internal board to communicate to other BLUETOOTH devices
- The second MCU is No.KL26Z from NXP/FREESCALE that is 32 BIT ARM CORTEX-M0 Microcontroller; RUN Frequency 48 MHz, FULL-SPEED USB 2.0 (OTG) to be connected to Connector USB PORT
- 3-Axis SENSOR ACCELERMETER No.MMA8652 to measure speed
- 3-Axis SENSOR MAGNETOMETER No.MAG3110 to measure magnetic field
- USB CONNECTOR MICRO USB is used as Power Supply for Board and DOWNLOAD program from computer to board
- Connector POWER 2 PIN from BATTERY 3V JST
- Red 25-DISPLAY LED as 5x5 DOT on board
- Connector I/O 23 PIN as a gold-plated SLOT PCB Pin to externally connect I/O from board
- 3 SW; 1 RESET, 2 INPUT SW.
- Use +5VDC Power Supply from Connector USB MICRO; or, +3VDC from Connector 2 PIN JST
- Board Size: 52 x 42 mm.
- A set of **BBC MICRO:BIT** includes ...

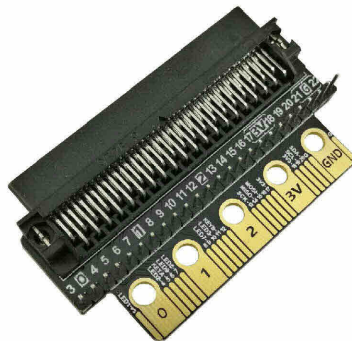


1. Board BBC MICRO:BIT
2. Plastic box

(** This product, especially this model, is imported from abroad, there is no any warranty. If customer does not accept the condition of product, please do not unseal the package and return the product to ETT to refund. **)

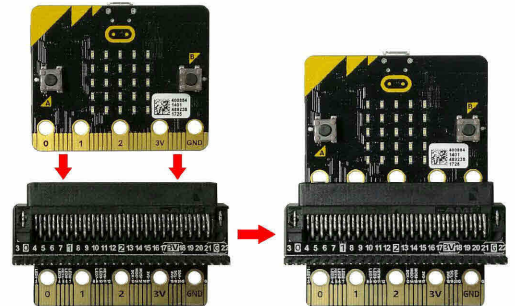


BBC MICRO:BIT GPIO (C-YA-A-00240)



It extends board in a part of SLOT I/O of Board MICRO:BIT; it is easier to connect and extend board by cables.

- Connector SLOT 80PIN is connected to PCB PIN SLOT of Board MICRO:BIT
- Connector 24-PIN HEADER 2.54 mm. connects to Pin I/O, VCC, GND from Board MICRO:BIT; it can extend board by cables easily
- SLOT PCB that is connected on MICRO:BIT GPIO has Connector SLOT I/O as same as BOARD MICRO:BIT



• Example illustrates how to connect MICRO:BIT GPIO to BOARD BBC MICRO:BIT.

BATTERY 2 X AAA HOLDER (A-BA-C-00024)



This battery holder can contain 2 AAA Batteries that are equal to 3.0VDC, provided with Connector 2 PIN to be directly connected to BOARD MICRO:BIT. Moreover, it provides SW. ON/OFF on the Battery holder.

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

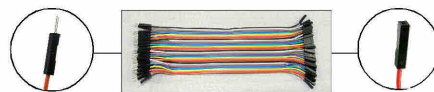


It is DC POWER SUPPLY as SWITCHING Type under Standard of TISI and UL.
INPUT : AC INPUT 220VAC 50/60 Hz 0.5A
OUTPUT : DC 5V/2.0A (10W)
 : Connector USB MICRO TYPE B MALE
 : ADAPTER is 2-legged WALL MOUNT

CABLE USB/MICRO 1 M (A-CB-A-00045)

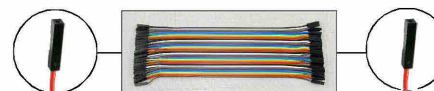


RW20MF-40SET (A-CB-A-00053)



RW20MF-40SET is a 20 CM long Cable with 40-wire; one terminal side is MALE and other one side is FEMALE

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



RW20FF-40SET is a 20 CM long Cable with 40-wire.; both terminal side are FEMALE to be connected to MALE PIN HEADER.

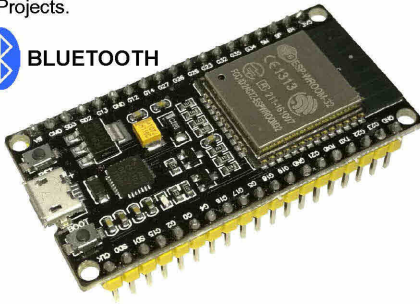
RW20MM-40SET (A-CB-A-00051)



RW20MM-40SET is a 20 CM long Cable with 40-wire; both terminals are MALE to be connected to FEMALE PIN HEADER or PROJECT BOARD.

ESP32-DEV-KIT (A-IC-M-00071)

This Board ESP32-DEV-KIT is additionally improved and developed from Board NodeMCU LUA WIFI, the new version has higher speed, more I/O, and added BLUETOOTH 4.2; so, it is more convenient to do various IOT Projects.



Característica	ESP8266	ESP32
Procesador	Tensilica LX106 32 bit a 80 MHz (hasta 160 MHz)	Tensilica Xtensa LX6 32 bit Dual-Core a 160 MHz (hasta 240 MHz)
Memoria RAM	80 kB (40 kB disponibles)	520 kB
Memoria Flash	Hasta 4 MB	Hasta 16 MB
ROM	No	448 kB
Alimentación	3.0 a 3.6 V	2.2 a 3.6 V
Rango de temperaturas	-40°C a 125°C	-40°C a 125°C
Consumo de corriente	80 mA (promedio), 225 mA máximo	80 mA (promedio), 225 mA máximo
Consumo en modo sueño profundo	20 uA (RTC + memoria RTC)	2.5 uA (10 uA RTC + memoria RTC)
Coprocador de bajo consumo	No	Si. Consumo inferior a 150 uA
WiFi	802.11 b/g/n (hasta +20 dBm) WEP, WPA	802.11 b/g/n (hasta +20 dBm) WEP, WPA
Soft-AP	Si	Si

SPECIFICATIONS OF BOARD

- Use MODEL ESP32 "ESP-WROOM-32" from ESPRESSIF that has already provided WIFI (802.11 b/g/n/e/i) and BLUETOOTH 4.2 inside the MODULE, MCU Architecture as Tensilica LX6 DUAL CORE, at a maximum speed of 240 MHz (600 DMIPS), 520 KBYTE RAM, 4 MBTE FLASH PROGRAM with PCB ANTENNA
 - Use IC USB TO UART No.CP2102 from SILICON LABS, there is no any problem about connecting to USB PORT on OS; and DOWNLOAD programs from Arduino IDE to board directly
 - Have 32 GPIO; some Pins can do more than 1 task
 - 18-CH 12-BIT A TO D, 2-CH 8-BIT D TO A
 - 10-CH CAPACITIVE TOUCH
 - 3-CH SPI
 - 3-CH UART
 - 2-CH I2C
 - 16-CH PWM
 - Support various languages
 - Arduino-ESP32 uses C Language of Arduino IDE for writing
 - LUA Language
 - PYTHON Language
 - JAVA SCRIPT Language
 - Power Supply for Board is from PORT USB 5 VDC (500 mA or higher)
 - PIN HEADER 19 x 2 (2.54 mm.)
 - PCB Size: 55 x 28 mm. Use Connector as USB MICRO Type
- *** This Board is imported from abroad, there is no any warranty for this model ***

Further Information

- For more information about Circuit and how to install ESP-DEV-KIT, please read <https://etteam.com/>
- For more information about Driver of CHIP CP2102 USB to UART to be used with Windows 7/8/8.1/10, please read <https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>
- For more information about ESP-WROOM-32, please read <https://www.espressif.com/en/products/hardware/esp32/overview>
- For more information about ESP-IDE, please read <https://github.com/espressif/esp-idf/releases>

OPTION: Cable USB/MICRO

CABLE USB/MICRO 1M (A-CB-A-00045)

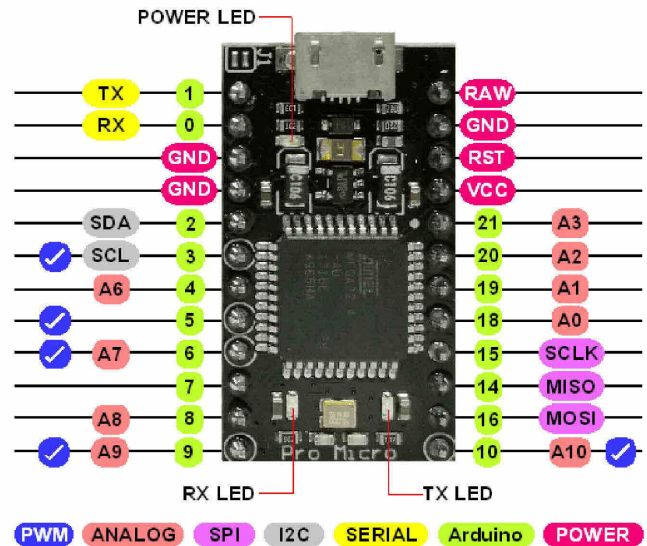
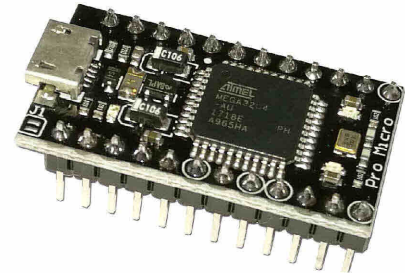


Cable USB is 1 meter long. One terminal is Connector TYPE A for connecting to computer and another one side is Connector MICRO USB TYPE B MALE for connecting to board.

PRO-MICRO 32U4

(C-YA-A-00243)

PRO-MICRO 32U4 is a complete board from abroad that uses AVR MCU; programs can be developed by C or C++ Language of Arduino. This Board version uses MCU No.ATMEGA32U4 that has USB PORT inside; so, it can connect to USB PORT of computer directly. This Board is designed as a compact, so it can be assembled and designed to be a part of I/O easily.



SPECIFICATIONS

- Use ATMEGA32U4 as TQFP 44PIN; RUN Frequency 16 MHz
- 32 KBYTE FLASH, 2.5KBYTE RAM, 1 KBYTE EEPROM
- Have USB 2.0 CONTROLLER inside MCU to connect to computer for writing and developing program by Program Arduino directly
- PIN HEADER 2x12 (2.54 mm.) is externally connected as I/O PIN
 - 4 PIN A/D 10 BIT
 - 2 PIN TX, RX TTL
 - 3 LED ON BOARD, 1 POWER, 1 TX, 1 RX
 - 12 PIN DIGITAL I/O
 - 6 PIN GND, VCC, RST, RAW
- Use MIC5219 5V to be LDO VOLTAGE REGULATORS/500mA. 12VDC INPUT MAX
- This Board from ETT does not set any JUMPER, it uses POWER SUPPLY from USB and MCU runs at 3.3V
- BORAD Size: 3.3 x 1.8 CM.

*** All Board PRO-MICRO 32U4 from ETT has already been checked and tested before sale. ***

Further Information

- For more information about Circuit, please read <http://www.etteam.com/prod2018/PRO-MICRO%2032U4/PRO-MICRO%2032U4.html>
 - For more information about PRO-MICRO, please read https://github.com/sparkfun/Pro_Micro
- *** This Board is imported from abroad, there is no any warranty for this model ***

OPTION: Cable USB/MICRO

CABLE USB/MICRO 1M (A-CB-A-00045)

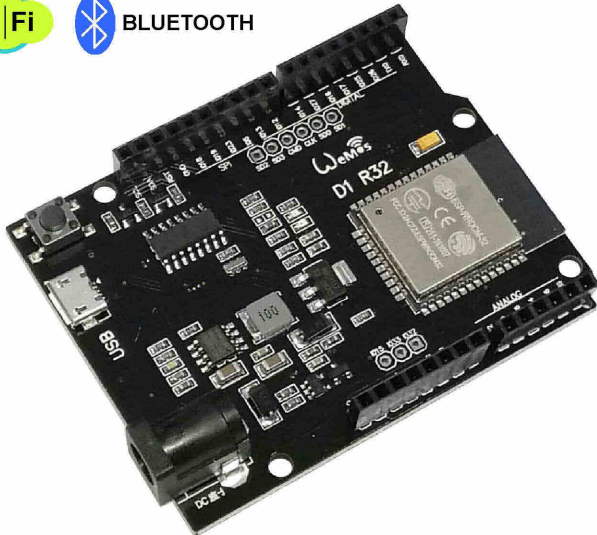


Cable USB is 1 meter long. One terminal is Connector TYPE A for connecting to computer and another one side is Connector MICRO USB TYPE B MALE for connecting to board.

WEMOS-D1-R32

(C-YA-A-00244)

WEMOSE-D1-R32 is a complete set from abroad. Board type and connective pins are the same as Board Arduino UNO; it changes MCU from AVR series to ESPRESSIF in the series of "ESP32". It provides WIFI, BLUETOOTH, more memory size for writing, higher speed, and writing program by C Language of Arduino. It can be made IOT devices easily.



- MCU on board is MODULE ESP-WROOM-32 from ESPRESSIF
 - MCU Architecture is TENSILICA LX6 as 2 DUAL CORE; RUN 240 MHz (600 DMIPS)
 - WIFI (802.11 b/g/n/e/i) and BLUETOOTH 4.2 internal MODULE
 - 4 MBYTE FLASH Program, 520 KBYTE RAM
 - 32 GPIO; some Pins can do more than 1 task
 - 18-CH 12-BIT A TO D, 2-CH 8-BIT D TO A, 10-CH CAPACITIVE TOUCH, 3-CH SPI, 3-CH UART, 2-CH I2C, 16-CH PWM
- Communicate to CHIP No.CH340 and write program into board via USB PORT; Connector USB's type is MICRO USB.
- LOGIC Level of Signal INPUT/OUTPUT is 3.3V
- Signal Level in a part of ANALOG A/D 12 BIT is 3.2V
- CONNECTOR type is the same as Arduino UNO; it can be used together with SHIELDS
- POWER SUPPLY comes from
 - USB PORT as MICRO 5VDC type (higher than 500 mA.)
 - CONNECTOR DC JACK 2.0 mm. Cathode-Outer, Anode-Inner 7-12 VDC (higher than 500 mA.)

*** All Board WEMOS-D1-R32 from ETT has already been checked and tested before sale. ***

Further Information

- For more information about Circuit and how to install ESP-DEV-KIT, please read <http://www.etteam.com/prodESP/WEMOS-D1-R32/WEMOS-D1-R32.html>
 - For more information about CH340 Drivers for Windows, Mac and Linux, please read <https://sparks.gogo.co.nz/ch340.html>
 - For more articles about ARDUINO ESP32, please read <https://github.com/espressif/arduino-esp32>
 - For more information about ESP32, please read http://espressif.com/zh-hans/support/download/documents?field_type_tid%5B%5D=keys%26
- (*** This Board is imported from abroad, there is no any warranty for this model ***)

OPTION: Cable USB/MICRO

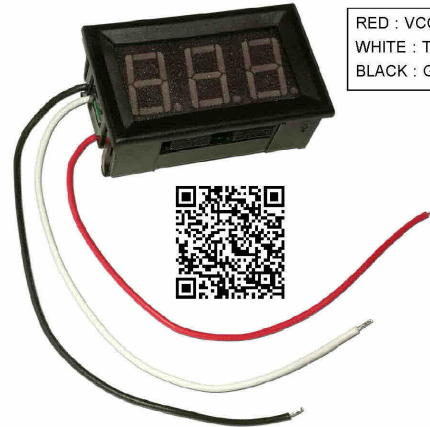
CABLE USB/MICRO 1M (A-CB-A-00045)



Cable USB is 1 meter long. One terminal is Connector TYPE A for connecting to computer and another one side is Connector MICRO USB TYPE B MALE for connecting to board.

METER 0-100V 3WIRES

(A-LE-M-00048)



RED : VCC is 4-30VDC POWER SUPPLY
WHITE : TP is INPUT for measuring 0-100VDC
BLACK : GND is GND together with VCC and TP

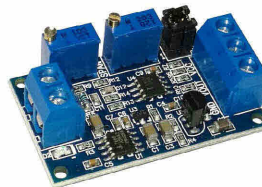


This mini METER for measuring VOLTAGE that is 3-DIGIT 7SEGMENT red LED with 0.56 inch in height to measure VOLT DC in the range of 0-100VDC. It uses 3 Wires to be POWER SUPPLY, GND, and INPUT VOLT for measurement. Frame of Display is 48 x 29 mm. and it is convenient to be installed on the cabinet or PANELs.

SPECIFICATIONS OF METER 0-100V 3WIRES

- INPUT VOLTAGE is 4-30VDC POWER SUPPLY (RED), GND (BLACK), and TP INPUT VOLT for measuring 0-100VDC (WHITE)
- RANGE of VOLTAGE measurement is 0-100VDC with 0.1 VOLT Resolution
- Size of number is 3-DIGIT 7SEGMENT red LED, with 0.56 inch in height
- A session of measuring and displaying the data is every 200ms.
- CONNECTOR WAFER 3PIN 2.50 mm. with CABLE
- Frame of Display: 48 x 29 mm.

4-20mA TO 5V (C-YA-A-00247)



This completed board set is an imported product from abroad that can convert the Current 4-20mA into 0-5V; so, it can to connect to Circuit A TO D of Board Microcontrollers conveniently, for example, it connects from SENSOR devices that have OUTPUT in the format of 4-20mA.

SPECIFICATIONS

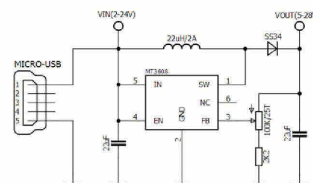
- Convert the Current in a range of 0-20mA, 4-20mA into the Voltage in the a range of 0-3.3V, 0-5V and 0-10V (NOTE: The initial value from ETT will be tested and setup as 4-20mA into 0-5V)
- Have TRIMPOT Resistor to setup ZERO and SPAN
- JUMPER is used together with TRIMPOT to setup Pin OUTPUT Voltage
- Use 7-36VDC Power Supply for Board
- Board Size: 42 x 25mm

(*** Board 4-20mA TO 5V is imported product, there is no any warranty for this model ***)

DC-DC STEP UP 2A (C-YA-A-00245)



VOLT DC that is received on the side of INPUT will be stepped up higher on the side of OUTPUT by this POWER SUPPLY Board (STEP UP); it only adjusts TRIM PORT 100K. For example, DC INPUT 3.3V is stepped up to DC OUTPUT 5.0V.



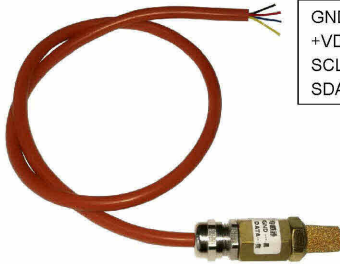
SPECIFICATIONS:	
Maximum Input Voltage	26VDC
Maximum Output Voltage	28VDC
Maximum Output Current	2A
Maximum Efficiency	97%
Switching Frequency	1.2MHz
Dimensions:	
Length	31 mm 1.2"
Width	17 mm 0.7"
Height	6.5 mm 0.3"

- Use IC MT3608 or be equivalent to 2A STEP UP
- MAXIMUM INPUT VOLTAGE 26VDC
- MAXIMUM OUTPUT VOLTAGE 28VDC
- MAXIMUM OUTPUT CURRENT 2A
- For actual use, if stepping up VOLTAGE OUTPUT is greatly higher than the VOLTAGE INPUT is, it makes the Current lower.
- VOLTAGE on the side of DC INPUT should be static.
- CONNECTOR DC INPUT is USB MICRO type and 2PIN soldering Pad
- Board size: 31 x 17 x 6.5 mm.

ET-SHT20 WATER PROOF SENSOR

(A-LE-N-00126)

ET-SHT20 WATER PROOF SENSOR ... is a waterproof Sensor to measure temperature and moisture in the air and soil (well-drained soil). This Sensor is connected through I2C Interface that is highly accurate and a tolerance of the environment. It uses IC SENSOR No.SHT20 contained in a waterproof substance and it is compatible with 3.3V. The SENSOR is a 58 mm. long; the diameter of SENSOR is 17 mm; and Cable is a 50 mm long.



GND = BLACK
+VDD = BROWN
SCL = BLUE
SDA = YELLOW



- DIGITAL INTERFACE** : I2C (3.3V) ADDRESS 7 BIT, 40H
- RELATIVE HUMIDITY ACCURACY** : +/- 3 %RH (0...100 % RH)
- TEMPERATURE ACCURACY** : +/-0.3 ?C (-40 ?C ... 125 ?C)
- RESPONSE TIME** : 8 s (RH), 5 TO 30 s (TEMPERATURE)
- RESOLUTION** : 12 BIT (RH), 14 BIT (TEMPERATURE)
- OPERATE SUPPLY VOLTAGE** : 2.1V - 3.6 VDC

A set of **ET-SHT20 WATER PROOF SENSOR** includes ...

1. SENSOR ET-SHT20
 2. Document
- (DOWNLOAD Manual and Example Programs from www.etteam.com)

SP1848-27145 PELTIER

(A-CA-R-00013)



SP1848-27145 is TERMOELECTRIC POWER GENERATOR PELTIER. This PELTIER uses a distinguished feature of a side that is supplied thermal energy; one side of PELTIER becomes heating and one side of PELTIER becomes cooling. SP1848-27145 uses another feature; if one side is heating, another one side becomes coiling and it will release Current from PELTIER that can be used for applications, projects or testing as preferred.

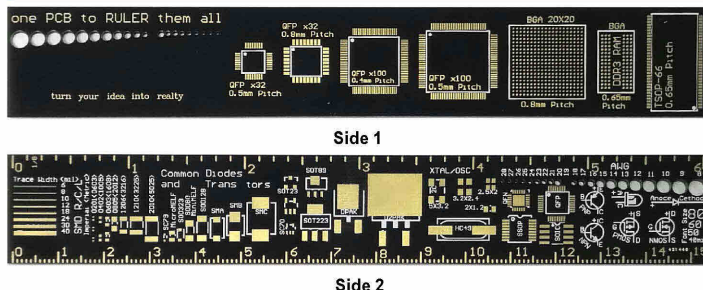
Specifications for generating Current

TEMPERATURE (อุณหภูมิ C)	20	40	60	80	100
OPEN CIRCUIT (V)	0.97	1.8	2.4	3.6	4.8
CURRENT (mA.)	225	368	469	558	669
POWER (WATT)	0.22	0.66	1.13	2.01	3.21

- MODULE SIZE: 4 x 4 x 0.4 cm.
- A cooling side is specified by letters of model but a heating side has no any letter.

* **IMPORTANT:** It has to ventilates heating from PELTIER while using device, it should not be higher than 85? C (similar to a DIODE)
* **PELTIER** can be used as cooling that consumes a maximum power of 4.8 VDC.

PCB RULER 15CM MAKERS (A-PC-E-00620)



This PCB MAKERS assists user to see various sizes of SMD device and hole sizes. The PCB ruler is a gold-plated outline on the dark background, and its size is 15x2.5 cm.

KEY 4x4 MATRIX

(A-SW-K-00105)



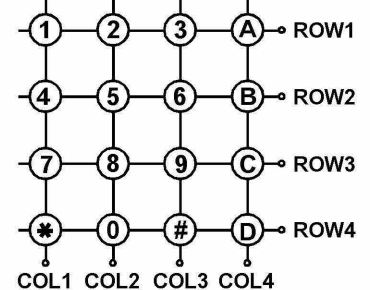
PIN 1 — 8

OUTPUT ARRANGEMENT	
OUTPUT PIN NO.	SYMBOL
1	COL 1
2	COL 2
3	COL 3
4	COL 4
5	ROW 1
6	ROW 2
7	ROW 3
8	ROW 4

General Specification

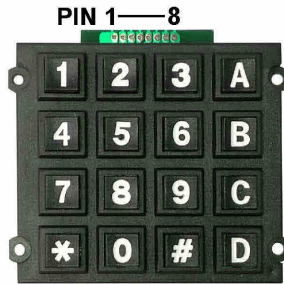
- Contact rating:20mA,24VDC
- Contact resistance:200 ohm max
- Life:1,000,000 cycles per key
- Operating Temperature: -20 °C to +60 °C
- Storage Temperature: -40 °C to +65 °C
- +3.0V to +5VDC supply voltage
- Dimension : 7 x 6.5 x 0.5 cm.

Standard Matrix Circuit Diagram



KEYPAD 4x4 BLACK

(A-SW-K-00093)



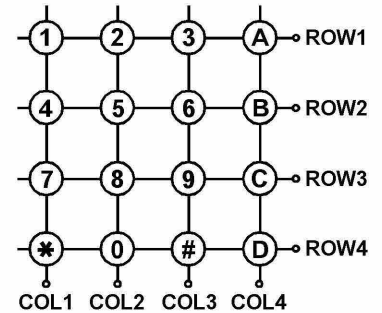
PIN 1 — 8

OUTPUT ARRANGEMENT	
OUTPUT PIN NO.	SYMBOL
1	COL 1
2	ROW 1
3	ROW 2
4	ROW 3
5	ROW 4
6	COL 1
7	COL 2
8	COL 3

General Specification

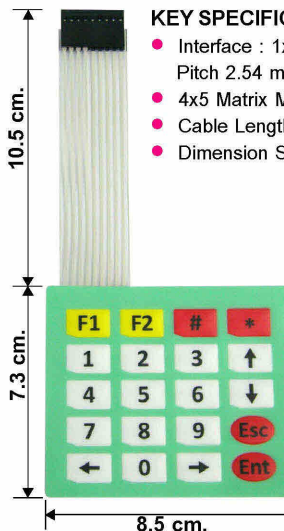
- Contact rating:20mA,24VDC
- Contact resistance:200 ohm max
- Life:1,000,000 cycles per key
- Operating Temperature: -20 °C to +60 °C
- Storage Temperature: -40 °C to +65 °C
- Dimension : 7 x 7.6 x 0.8 cm.

Standard Matrix Circuit Diagram



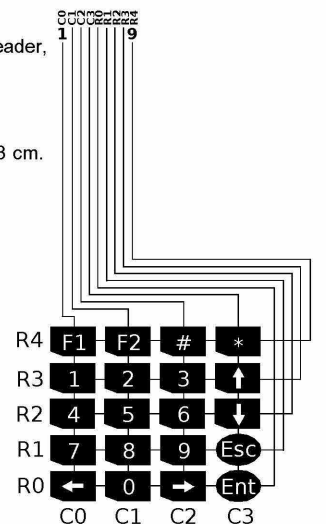
4x5 MATRIX KEYPAD

(C-YA-A-00237)

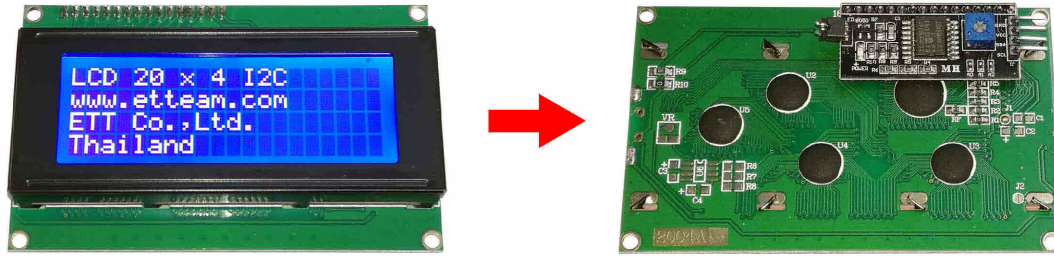


KEY SPECIFICATIONS

- Interface : 1x9 Female Header, Pitch 2.54 mm.
- 4x5 Matrix Membrane
- Cable Length 10.5 cm.
- Dimension Size : 8.5 x 7.3 cm.



LCD 20 X 4 I2C (A-LC-C-00028)

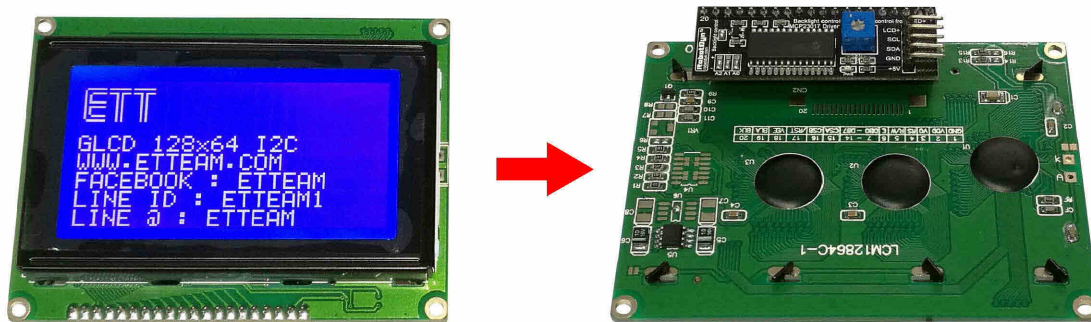


It is LCD with 20-Character 4-Line, blue BACKLIGHT and white font (STN NEGATIVE BLUE). The display is I2C Interface that saves amount of I/O of CPU when connecting with LCD. It provides example program for using with Board Arduino; for example, connecting to I2C Boards from ETT directly like ET-ESP8266-RS485, ET-MEGA32U4-RS485 and etc.

SPECIFICATIONS of LCD 20 X 4 I2C

- LCD type is 20-Character 4-Line and blue BACKLIGHT (STN NEGATIVE BLUE)
- Only use 4 Cables for I2C-BUS Interface; +5VDC, SDA, SCL, and GND. Moreover, it can connect 8-LCD together in the same I²C BUS (Must set each ADDRESS differently by choosing the soldering point).
- IC No.PCF8574A or PCF8574 is used to extend I²C PORT to connect to LCD
- PCB Size: 92 x 60mm.; Display Size: 82 x 32mm.
- Use Power Supply 5VDC, 40mA Current (BACKLIGHT is enabled (ON) while running)
- Complete set includes Board LCD, CD-ROM Manual and Example Program for using on Arduino

GLCD 128 X 64 I2C (A-LC-G-00032)



GLCD 128 X 64 I2C is 128 X 64 DOT GRAPHIC Display with Blue LED BACKLIGHT and White Character (STN NEGATIVE BLUE); the Display size is 7 X 3.8 cm. GLCD receives data through I2C that is easy and convenient to connect; it provides Example Program and LIBRARY of GLCD 128 X 64 I2C for using with Program ARDUINO.

SPECIFICATIONS of GLCD 128 X 64 I2C

- I2C-BUS Interface can be connected 8 Boards GLCD 128 X 64 I2C simultaneously in the same BUS by SET ADDRESS
- Use IC I2C BUS No.MCP23017 to connect I2C BUS to GLCD Display, provided with positions for soldering to setup ADDRESS
- User POWER SUPPLY 5VDC; be connected to I2C System as 5V, totally consume Current 43 mA when BACKLIGHT activated
- GRAPHIC LCD Resolution: 128 X 64 DOT, Display size: 7 X 3.8cm.
- Board Size: 9.3 X 7.0 cm.

CASE GLCD 128 X 64 (A-CV-D-00022)



• CASE GLCD 128 X 64 is assembled with GLCD 128 X 64 I2C.

CASE GLCD 128 X 64 I2C is a plastic CASE that is properly mounted on GLCD 128 X 64 I2C. There is a frame that can be mounted on GLCD and both edges can be inserted or installed into socket easily.

- CASE Size: 7.4 X 10.4 cm
- Black plastic frame
- 4 Nuts to mount GLCD 128 X 64 I2C

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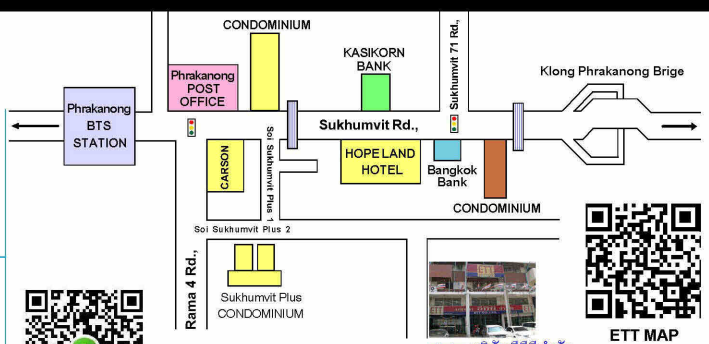
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