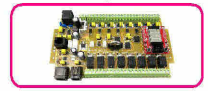# ET-ESP32-RS485 (P-ET-A-00613)

ET-ESP32-RS485 ... is a large Board Controller that includes a complete I/O devices; this Board is controlled by ESP32 the model "ESP32 WROVER" of ESPRESSIF SYSTEM to control the execution. The communications between Board and other device can be made through WIFI, BLUETOOTH, RS485, and I2C; so, it can apply this Board to various applications as required. It can write and develop program by C++ of ARDUINO and Python; moreover, this Board can be developed and applied to Board Controllers or IOT devices conveniently.
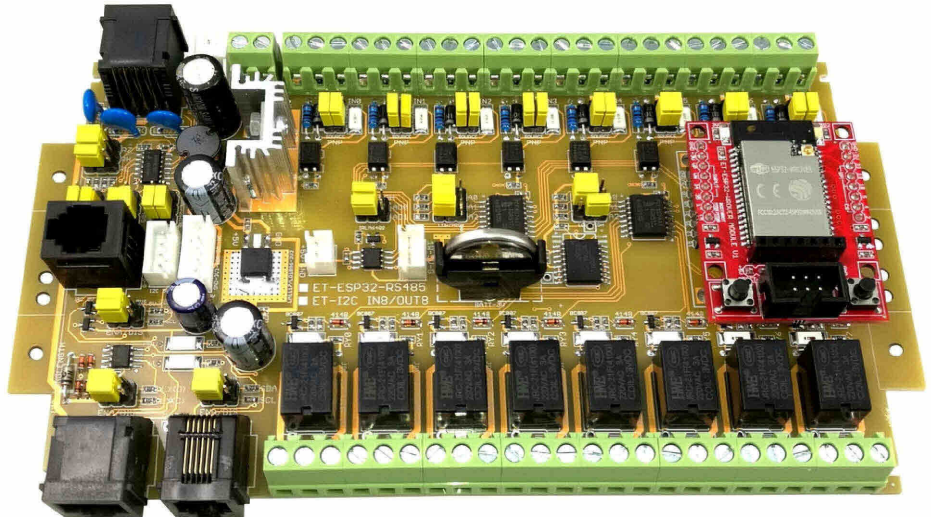
SPECIFICATIONS

- Be controlled and commanded by ESP32 WROVER; and add more I/O devices as follows;
  - SMD MODULE, ESP32-D0WDQ6, 2 CORES 32 bit LX6 MCU, 600 MIPS, 4MB SPI FLASH/ 8MB PSRAM
  - WIFI 802.11 b/g/n, 2.4GH-2.56 Hz
  - BLUETOOTH V4.2 BR/EDR AND BLE
  - HARDWARE MODULE INTERFACES SD CARD, UART, SPI, SDIO, I2C, ADC, DAC HALL SENSOR, TEMPERATURE SENSOR, 440 MHZ CRYSTAL
- PORT RS422/RS485 4-WIRE/ 2-WIRE FULL DUPLEX and Connector RJ45
- RTC (REAL TIME CLOCK) No.DS3231, provided with BATTERY 3V BACKUP
- I2C EEPROM 2KBYTE No.24LC16 ON BOARD
- PORT 1-WIRE that uses IC DS2482-100 changes the communication format from I2C to 1-WIRE; and Connector WAFER 3PIN 2.50 mm with Signal Level 5V
- SOCKET MICRO-SD on Board ESP32 that is installed beneath PCB can be connected to MEMORY MICRO-SD
- Separate 8-OUTPUT RELAY 3A (125 VAC/30VDC) provides Connector SCREW TERMINAL BLOCK 3PIN per 1 OUTPUT as NC, COM, NO; PCF8574 is used as PORT to receive Commands from I2C; and setup a maximum of 8 ADDRESS Positions of Board in BUS I2C by JUMPER
- 8-INPUT DC OPTO-ISOLATE receives 12V; choose type of INPUT either to be Contact or NPN or PNP when it is used with SENSOR devices. Provide Connector SCREW TERMINAL BLOCK 3PIN per 1 INPUT as VIN, IN, GND; PCF8574A is used as PORT to receive Commands from I2C; and setup a maximum of 8 ADDRESS Positions of Board in BUS I2C by JUMPER
- I2C BUS can be connected to both types of I2C device; if it is I2C 3.3V, it will be WAFER 5PIN 2.50mm; or, if it is I2C 5V, it will be WAFER 4PIN 2.50mm. There are 2 Connectors RJ11.
- I2C BUS LONG LENGTH is interfaced to I2C BUS for a long distance up to 20-30 meters long; it uses IC P82B715 to be BUS REPEATER I2C and there is Connector RJ45.
- Connector RS232 TTL 6 PIN IDC is used to develop and write program to ESP32; it uploads Program through PORT USB of computer by using Board ET-USB USART/ TTL (P-ET-A-00580), it costs (**OPTION**: Additional Purchase)
- There is ANTENNA WIFI as PCB on Board ESP32; or, it additionally installs external ANTENNA (it must remove the soldering from the printed line on PCB ANTENNA). If it installs external antenna inside metal box, it is MT7681 ANTENNA (A-IC-M-00061), it costs (**OPTION**: Additional Purchase)
- There is PIN HEADER FEMALE on Board ESP32 that supports additional expansion in the future like NB-IOT System by using SIM7020E, or 4G LTE System by using SIM 7000E (**OPTION**: Additional Purchase).
- Use POWER SUPPLY 12VDC for board by using IC SWITCHING 5V/1A No.LM2575-5; use the Connector POWER 2PIN as SCREW TERMINAL and WAFER 2PIN 2.50mm (it can use ET-SWITCHING ADAPTER 12V 1A TYPE B (A-AP-A-00122), it costs (**OPTION**: Additional Purchase)
- PCB Size: 19.2 x 10.5 CM (this PCB set can be mounted on Board ADAPTER RAIL DIN 35 (A-BX-E-00044), it costs (**OPTION**: Additional Purchase)
- A set of Board ET-ESP32-RS485 includes … BOARD ET-ESP32-RS485,
Document and Example Programs, DOWNLOADD from ETT's website:

OPTION : ADDITIONAL PURCHASE

ET-USB USART/TTL (P-ET-A-00580)

This Board converts Signal from USB PORT of computer PC or MAC APPLE to PORT RS232 with Signal Level as TTL; so, it is more convenient to connect to Pin MCU of Boards directly. (CABLE that is connected through USB PORT is additional purchase: OPTION). If there is no any Cable for connecting thorough USB PORT, it can use Cable USB MICRO of mobile phone as well).
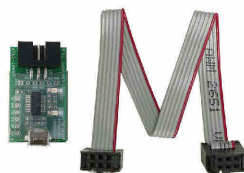
- Use IC No.FT231XS of FTDI; it reduces problem with finding DRIVER for using with OS or new OS version in the nearest future
- Connector on the side of USB PORT is MICRO USB FEMALE B TYPE and Connector on the side of RS232 TTL is 6PIN ICD MALE; and hole of PIN HEADER for connecting Signal Pin of FT231XS
- Directly develop program and connect to ET-ESP32-RS485, ET-ESP8266-RS485
- Be compatible with OS WINDOWS 98/SE/ME/2000/XP/7/8/10/LINUX/MAC OS
- A set of BOARD **ET-USB USART/TTL** includes …
  1. BOARD ET-USB USART/TTL
  2. Cable Pair 6PIN CON2 20 cm.
  3. CD-ROM DRIVER

MT7681 ANTENNA
(A-IC-M-00061)

It is cable of Antenna WIFI 24000-25000 MHz, GAIN: 3 dBi
INPUT IMPEDANCE: 50 OHM
RADIATION: OMNIDIRECTIONAL
LENGTH: 109 mm.
ANTENNA INERFACE: SMA
COAXIAL CABLE: 15 cm. SMA TO IPX

ET-SWITCHING ADAPTER 12V 1A TYPE B
(A-AP-A-00122)

It is DC POWER SUPPLY in a format of SWITCHING under TISI Standards.
INPUT : 220VAC, 50/60Hz 0.5A
OUTPUT : 12VDC 1A
**TYPE B :** Connector is HOUSING FEMALE, Pitch 2.50mm.

TYPE B

14D431KBS (A-CA-C-00011)

It is MOV that is connected to Contact RELAY; it uses AC 220V to prevent the Contact RELAY from arc.

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Fax : 02-3917216
Line ID : etteam1

ET-I2C IN8/OUT8 (P-ET-A-00614)

ET-I2C IN8/OUT8 ... uses the same PCB as ET-ESP32-RS485. It only assembles additional Circuit in a part of 8-CH INPUT OPTO, 8-CH OUTPUT RELAY, and I2C BUS LONG LENGTH that can be connect this Board I2C for a longer distance.
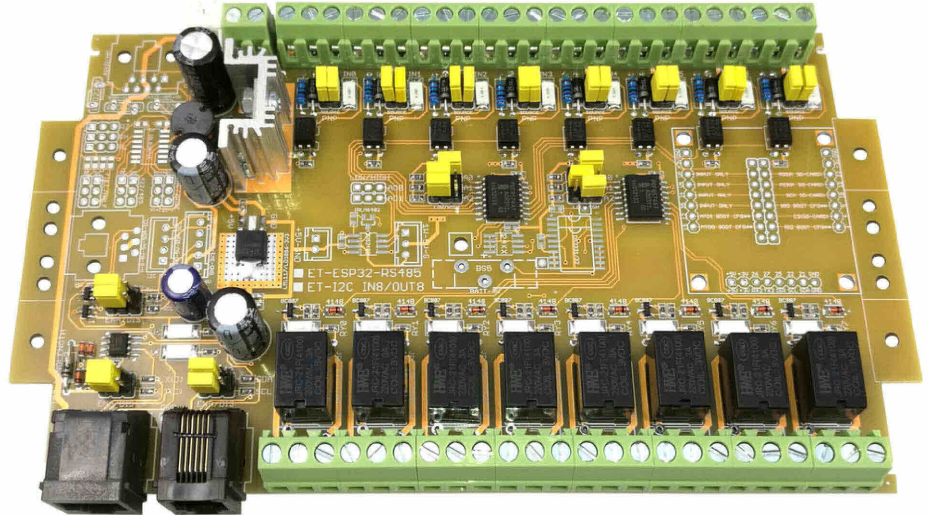

SPECIFICATIONS

- Separate 8 OUTPUT RELAY 3A(125 VAC/30VDC); provide Connector SCREW TERMINAL BLOCK 3PIN per 1 OUTPUT as NC, COM, NO; PCF8574 is used as PORT to receive Commands from I2C; setup a maximum of 8 ADDRESS Positions of Board in BUS I2C by JUMPER

- 8 INPUT DC OPTO-ISOLATE receives 12V; choose type of INPUT either to be Contact, or NPN or PNP when it is used with SENSOR devices. Provide Connector SCREW TERMINAL BLOCK 3PIN per 1 INPUT to be VIN, IN, GND; PCF8574A is used as PORT to receive Commands from I2C; and setup a maximum of 8 ADDRESS Positions of Board in BUS I2C by JUMPER.

- Connector I2C as FEMALE RJ11 6PIN can be connected to I2C Devices, it can be connected to Board ET-ESP8266-RS485, ET-MEGA32U4-RS485.
Connector I2C as LONG LENGTH FEMALE RJ45 8PIN is connected to I2C BUS for a long distance of 20 meters long. It uses IC P82B715 as BUS REPEATERS (Cable LAN UTP recommended).

- Use POWER SUPPLY 12VDC for Board by using IC SWITCHING 5V/1A No.LM2575-5. The Connector is 2PIN SCREW TERMINAL and WAFER 2PIN 2.50mm (It can use ET-SWITCHING ADAPTER 12V 1A TYPE B(A-AP-A-00122), it costs **(OPTION:** Additional Purchase). Or, if connecting from Board ET-ESP32RJ45, it uses

- POWER SUPPLY 12V from Connector RJ45 8PIN I2C as LONG LENGTH.

- PCB Size: 19.2 x 10.5 CM (this PCB set can be mounted on ADAPTER RAIL DIN35 (A-BX-E-00044), it costs *22.-. Or, it can be contained internal the BOX DIN 200 x 110 x 60 mm (A-BX-E-00051), it costs **(OPTION:** Additional Purchase)

- A set of Board **ET-I2C IN8/OUT8** includes …
1. Board ET-I2C IN8/OUT8
2. Cable RJ-I2C-RJ (P-CB-A-00041)
3. Document and Example Programs, DOWNLOAD from ETT's Website:

   http://www.etteam.com/productI2C_RS485/ET-I2C-IN8-OUT8/ET-I2C-IN8-OUT8.html

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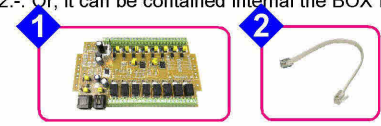
OPTION: ADDITIONAL PURCHASE

BOX DIN 200X110X60 mm   (A-BX-E-00051)

- **FRONT**
- **BACK**
- Board ET-ESP32-RS485 or ET-I2C IN8/OUT8 fits into this Box.

Dimensions of this creamy plastic box are 200 X 110 X 60 mm; it is provided with a board-holder to attach board to 2 sets of Rail DIN 35mm at the back of the box. ET-ESP32-RS485, ET-I2C IN8/OUT8 fits into this Box.

ADAPTER RAIL DIN35   (A-BX-E-00044)

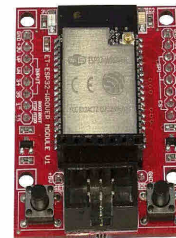It attaches to PCB Boards like ET-ESP32-RS485, ET-I2C IN8/OUT8 to Rail DIN 35 mm.

- Dimensions: 19.5mm(H) x 43.25mm(L) x 10mm (W)
- A set includes 1 of ADAPTER RAIL DIN 35mm and 2 of SCREWS

DIN35 RAIL 49CM   (A-BX-I-00061)

- RAIL is 49.7cm long can be attached to Board that has DIN 35mm.

ET-ESP32-WROVER MODULE V1   (P-ET-A-00615)   -

ESP32 WROVER controls the operation of device. SMD MODULE, ESP32-D0WDQ6, 2 CORES 32 bit LX6 MCU, 600 MIPS, 4MB SPI FLASH/ 8MB PSRAM WIFI 802.11 b/g/n, 2.4GH-2.56Hz BLUETOOTH V4.2 BR/EDR AND BLE HARDWARE MODULE INTERFACES SD CARD, UART, SPI, SDIO, I2C, ADC, DAC HALL SENSOR, TEMPERATURE SENSOR, 440 MHZ CRYSTAL

There is SOCKET MICRO SD under the Board to install memory card. Connector RS232 TTL 6PIN IDE is used to write and develop program into ESP32 by Board ET-USB USART/TTL (P-ET-A-00580). It is provided with Connector 8PIN HEADER FEMALE to expand the system; for example, connecting to SIM7020E, SIM7000E.

ESP32-WROVER

ESP32-WROVER   (A-IC-M-00080)

It only provides MODULE ESP32 WROVER and PCB ANTENNA inside; or, it chooses to connect to external ANTENNA as required. Size of MODULE is 31.4 x 18.0 mm.

RJ45 8-8 MODULAR PLUG   (A-CO-P-00004)
RJ11 6-6 MODULAR PLUG   (A-CO-P-00007)

- Modular Plug 8PIN RJ45
- Modular Plug 6PIN RJ11

UTP LAN CABLE   (P-CB-A-00047)

FLAT TELEPHONE 6 WAYS CABLE (A-CB-A-00058)

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www.etteam.com

Fax : 02-3917216

Line ID : etteam1

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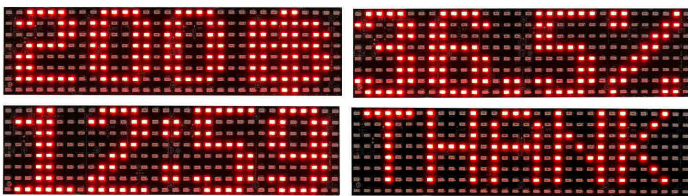# ET-DISPLAY 8X32 RED
(P-ET-A-00611)

This DISPLAY Board is 32x8 DOT SUPER BRIGHT Red LED that uses 4 of IC MAX7219 to scan its own DISPLAY, without scanned by CPU. It uses 3-Wire to control and command the operation.

31.5 cm.

7.5 cm.
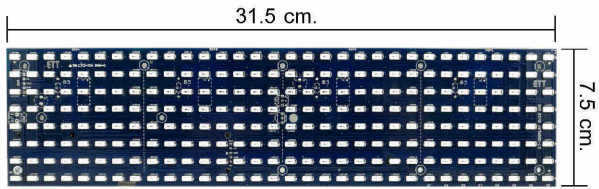
● **FRONT**

● **BACK**

● **Examples of DISPLAY**

● Use 256 of SUPER BRIGHT red LED as SMD TYPE 5730 for 32x8 DOT Display Use 4 of IC MAX7219 to execute and 3-Wire to command; CLK, CS, and DIN is connected to Signal in a format of LOGIC 5V; and adjust 16 Levels of Contrast by MAX7219

● Can be applied to be various types of DISPLAY; for example, a large DISPLAY can be applied to billboards, COUNTER DISPLAY, CLOCK, and etc.

● PCB Size: 32.0 x 8.0 cm. (DISPLAY Size: 7.5 x 31.5 cm.)

● POWER SUPPLY 5VDC (MAX mA)

● Provide Socket on board for inserting IC TSOP4838 (OPTION: Additional Purchase) to receive Signal IR to command another connective Control Boards

● Connector PIN HEADER 5PIN MALE (2.54mm.) controls Board into MAX7219; there are CLK, CS, DIN, GND, and +5V

● A set of Board **ET-DISPLAY 8X32 RED** includes …

1. Board ET-DISPLAY 8X32 RED

2. Document and Schematic

3. Example Programs, please DOWNLOAD from ETT's Website:
http://www.etteam.com/prod2018/ET-DISPLAY8X32/ET-DISPLAY8X32.html

BOX DISPLAY 8X32 BIG LED
(A-BX-E-00050)

10.3 cm.

33.2 cm.

4.2 cm.

It is a black plastic box with red FILTER; it is particularly designed for assembling together with ET-DISPLAY 8X32 RED and ET-CPU DISPLAY 8X32.

● Dimensions of Box: 10.3 x 33.2 x 4.2 cm.

ET-CPU DISPLAY 8X32
(P-ET-A-00612)

This Board CPU is designed to connect to ET-DISPLAY 8X32 RED directly; it uses MICROCONTROLLER No.ATMEGA328 on board.

ET-CPU DISPLAY 8X32

ET-DISPLAY 8X32 RED
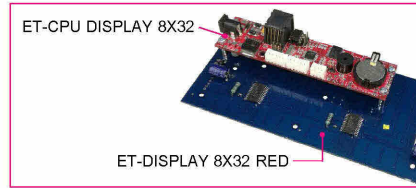
● Use ATMEGA328 32PIN TQFP to be MCU on board; RUN with FREQUENCY 16 MHz

● 32KB FLASH, 2KB RAM, 1KB EEPROM

● RTC(REAL TIME CLOCK) No.DS3231, with BATTERY 3V BACK UP

● RS485 PORT ON BOARD No.SN75176 via Connector RJ11 (6 PIN)

● 5 PIN HEADER FEMALE is connected to ET-DISPLAY 8X32 RED directly

● Connector I2C as WAFER 5 PIN (2.50mm.) with Signal Level of 5V

● Connector I/O as WAFER 5 PIN (2.50mm.) and as 3 PIN

● Develop board via Connector ISP as 6PIN (2.54mm.) under ATMEL Standards; it uses ET-AVRISP mkII (P-ET-A-00429)

● Provide POWER SUPPLY 7-30VDC for Board by using IC SWITCHING 5V/1A No.LM2575-5; Connector POWER is MALE JACK 2.5mm (it can use ET-SWITCHING ADAPTER 12V 1A TYPE J (A-AP-A-00098)

● PCB Size: 12.8 x 3.2 cm

● A set of **ET-CPU DISPLAY 8X32** includes …

1. Board ET-CPU DISPLAY 8X32

2. Document

3. Example Programs, please DOWNLOAD from ETT's WEB: www.etteam.com

TSOP4838 + CABLE 15 CM
(P-CB-A-00054)
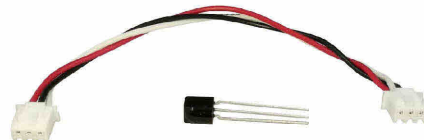
This IC No.TSOP4838 receives Signal IR, with Cable 3PIN (2.50mm.) is 15cm long and both terminals are FEMALE. This IC can be soldered on Board ET-DISPLAY 8X32 RED in case of receiving data from IR REMOTE KEY.

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

It is mini KEY IR REMOTE with Frequency 38 KHz. There are 20 keys, provided with BATTERY 3V. Dimensions are 8.65 x 4.10 x 0.75 cm.

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

This is DC POWER SUPPLY as SWITCHING under TISI Standards.

INPUT : 220VAC, 50/60Hz 0.5A

OUTPUT : 12VDC 1A

TYPE J : Connector FEMALE JACK 2.5mm; Anode-Outer, Cathode-Inner.

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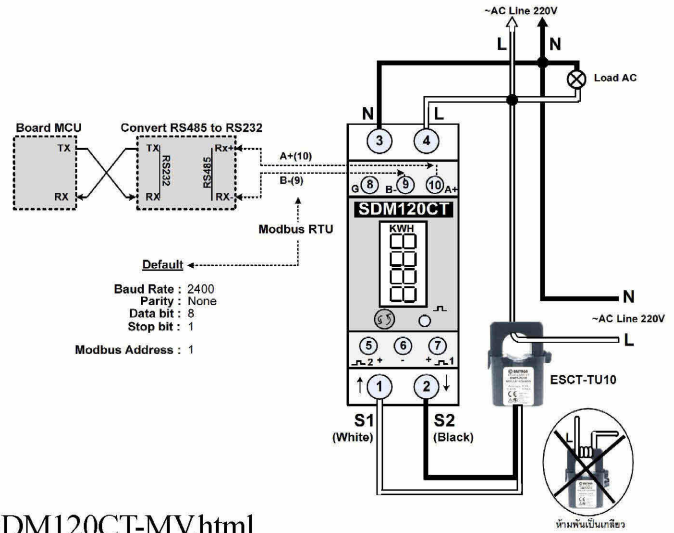
SDM120CT-MV (C-YA-A-00264)

Single - Phase Multifunction Din Rail Meter + SPLIT CORE CURRENT + MODBUS

● **DIMENSIONS**
: 119 x 62 x 17.5 mm., DIN RAIL 35 mm.

การต่อใช้งาน มิเตอร์ SDM120CT-MV กับ ESCT-TU10

http://www.etteam.com/productDIN/SDM120CT-MV/SDM120CT-MV.html

SDM120CT-MV ... is a METER Device to measure Electrical Parameters such as V, A, Hz, PF kWh, KW and etc. It is compatible with 220VAC 1-PHASE and it works together with SPLIT CORE CURRENT to connect and measure Current; so, it is more convenient because it is unnecessary to connect/disconnect Cable POWER for measuring current, it only hooks SPLIT CORE together with CABLE POWER. There is 7-SEGMENT LED DISPLAY 6-DIGIT with MENU; it can read the measuring values through LED Display directly and it can write program to read values through PORT RS485 (MODBUS) in order to apply the measuring values to collect electricity bill of dormitories or apartments or factories. Or, it can be applied to IOT projects that use Microcontroller to read and show the measuring values through the cell phone.

- Measuring Energy Range:99999.9kwh
- Display Type:Digital Only
- Max Operating Current:150A & Above
- Power Supply:AC
- Dimensions:90*67.5*17.5mm
- Voltage Range:176~276V AC
- Secondary Input:0.1V
- Power consumption:<2W/10VA
- AC voltage withstand:4KV for 1 minute
- Max. Primary Voltage:500KV

- Accuracy Class:Class 1 IEC62053-21
- Model Number:SDM120CT-MV+ESCT-TU16 50A/0.1V
- Rated Voltage:230V
- Output Voltage:220V
- DIY Supplies:Electrical
- Primary Current:5-9999A
- Starting current:0.4% of Ib
- Frequency:50/60Hz(±10%)
- Overcurrent withstand:30Imax for 0.01s

SDM120-MODBUS (C-YA-A-00260)

SDM120-MODBUS is a METER device to measure electrical Parameters such as V, A, Hz, PF, kWh, KW and etc. It is compatible with 220VAC as 1 PHASE type and there is 6-DIGIT 7-SEGMENT LCD Display with MENU. It can be connected to read the measured values directly through LCD Display. Moreover, it can write program to read value through PORT RS485 (MODBUS). It can be applied to collect electricity bill in dormitory or apartment, or applied to IOT application that uses Microcontroller to read and show the value through cell phone.

SPECIFICATIONS

VOLTAGE AC	: 176 ~ 276 VAC, SINGLE-PHASE
BASE CURRENT	: 5A, MAX 45A, MIN 0.25A
ACCURACY	: VOLTAGE 0.5% OF RANGE MAXIMUM
	: CURRENT 0.5% OF NOMINAL
	: ACTIVE POWER 1% OF RANGE MAXIMUM
	: REACTIVE POWER 1% OF RANGE MAXIMUM
MEASURES	: kWh, Kvarh, KW, Kvar, KVA, PF, Hz, V, A, and etc.
COMMUNICATION	: RS485 MODBUS RTU, 2 PULSE OUTPUT
DIMENSIONS	: 119 x 62 x 17.5 mm., DIN RAIL 35 mm.

*** For Manual and more information, please visit website www.etteam.com and download from

link: http://www.etteam.com/productDIN/SDM120-MODBUSSDM120-MODBUS.html

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Line ID : etteam1

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and price of any product without any prior notice.

2 PIN SCREW PLUG DIN35
(A-CO-C-00060)

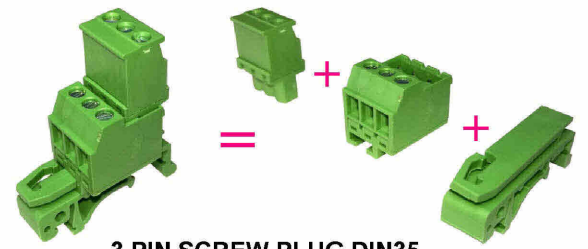## 3 PIN SCREW PLUG DIN35
(A-CO-C-00061)
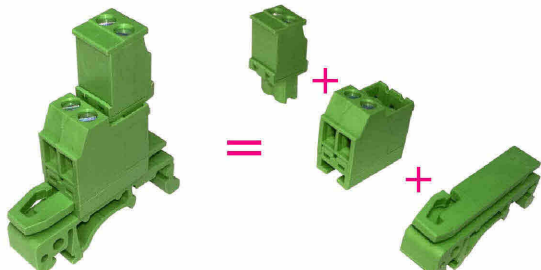
4 PIN SCREW PLUG DIN35
(A-CO-C-00062)
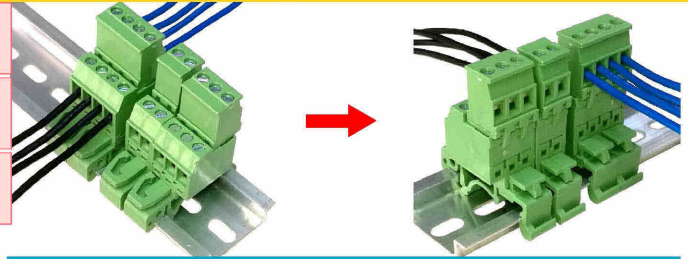
This Connector is PLUG-IN TERMINAL BLOCKS that has both MALE and FEMALE; it is more convenient to connect/disconnect the Cable because it can remove the Connector instantly, it is unnecessary to remove each Cable. Moreover, there is a pin-holder to be mounted on RAIL DIN35. Now, there are 3 available models; 2 PIN, 3 PIN, and 4PIN.
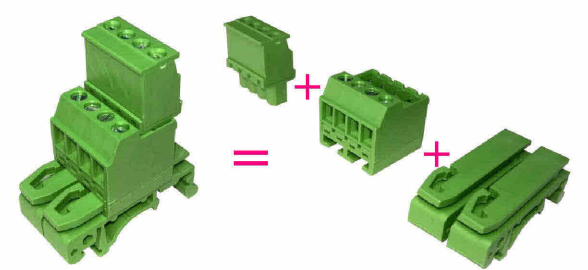
- TYPE : PLUG-IN CONDUCTOR SIZE : 21-30 AWG
- RATED VOLTAGE & CURRENT : AC300V & 16A PITCH : 5.08 mm.
- MOUNT : DIN 35 RAIL MOUNT

3 PIN SCREW PLUG DIN35

2 PIN SCREW PLUG DIN35

4 PIN SCREW PLUG DIN35

MODBUS RTU SENSOR H/T   (C-YA-A-00262)

MODBUS RTU SENSOR H/T ... is a SENSOR Device to measure temperature and humidity imported from abroad; the communication is connected via HALF DUPLEX RS485; it uses PROTOCOL as MODBUS RTU, so the connection is 1.2 kilometers long in a format of MULTI-DROP (MUST separate POWER SUPPLY); and it can set a maximum of 255 ADDRESS Positions of SENSOR.
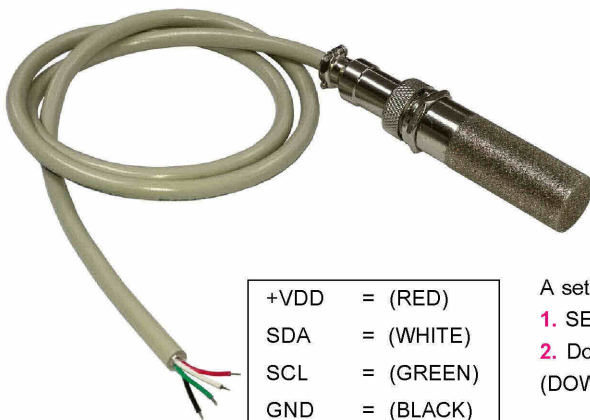
+VCC 9-36VDC =	(YELLOW)
GND =	(BLACK)
RS485-A =	(RED)
RS485-B =	(GREEN)

- SENSOR Device measures temperature and humidity; receiver-send data through PORT RS485 HALF DUPLEX by MODBUS RTU
- Range of tempura measurement: -20 to +60 Degree Celsius; and Error: +/- 0.3%
- Range of humidity measurement: 0 to 100 %RH; and Error: +/- 3% RH
- Setup a maximum of 1-255 DEVICE ADDRESS of SENSOR when connecting devices together in the same BUS (DEFAULT = 1)
- Fixed BAUDRATE 9600, N, 8, 1
- Be compatible with 9-36 VDC POWER SUPPLY, 0.3 WATT
- Dimensions: 60 x 30 x 18 (Height X Width X Depth)
- A package of MODNBUS RTU SENSOR H/T includes SENSOR and Document

(*** For more information and Example Programs for using with ET-MEGA32U4-RS485, please visit and DOWNLOAD from website: www.etteam.com)

ET-SHT31 WATER PROOF SENSOR (P-ET-A-00609)

ET-SHT31 WATER PROOF SENSOR ... is a waterproof Sensor to measure temperature and humidity in the air that is drizzling and fine mist; and measure temperature and humidity in a well-drained soil. It uses IC SENSOR No.SHT31 contained in a waterproof metallic substance. The SENSOR is a 79 mm. long; the diameter of SENSOR is 14.50 mm; and Cable is a 60 mm long.

DIGITAL INTERFACE	: I^2C (2.4 - 5.5V)
	: SENSOR IC SHT31-DIS-B
	: ADDRESS 44H
RELATIVE HUMIDITY ACCURACY	: +/- 2.0%RH (RH RANGE 0% TO 100%)
TEMPERATURE ACCURACY	: +/- 0.3 $^{\circ}$C (TEM 0 $^{\circ}$C TO 90 $^{\circ}$C)
RESOLUTION	: 16 BIT (RH), 16 BIT (TEM)
OPERATE SUPPLY VOLTAGE	: 2.4V - 5.5V

+VDD	=	(RED)
SDA	=	(WHITE)
SCL	=	(GREEN)
GND	=	(BLACK)

A set of **ET-SHT31 WATER PROOF SENSOR** includes …
1. SENSOR ET-SHT31 WATER PROOF SENSOR
2. Document and Circuit
(DOWNLOAD Manual and Example Programs from www.etteam.com)

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Company reserves the right to change the detail and price of any product without any prior notice.

E3F-5DP1-5L (A-LE-N-00129)

E3F-5DP1-5L ... It is Photoelectric Sensor Switch that consists of 2 separate devices; Sender for sending signal in a format of Infrared LED (E3F-5L) and Receiver for receiving Infrared (E3F-5DP1); both devices must be used together. The maximum distance between Sender and Receiver is 5 meter long. The Receiver has Output as Contact Switch (NO: Normal Open) that runs as PNP (Switch is connected to VDC when Signal between Sender and Receiver is interrupted by any opaque object).

● 2 Sensors are separately divided to be Receiver " **E3F-5DP1** " **(3-Wire)** and Sender " **E3F-5L" (2-Wire)**; both Sensors are used together.
● Cables
— Brown Cable (BN): 6-36 VDC Power Supply for SENSOR
— Blue Cable (BU): GND
— Black Cable (BK): OUTPUT of SENSOR E3F-5PD1
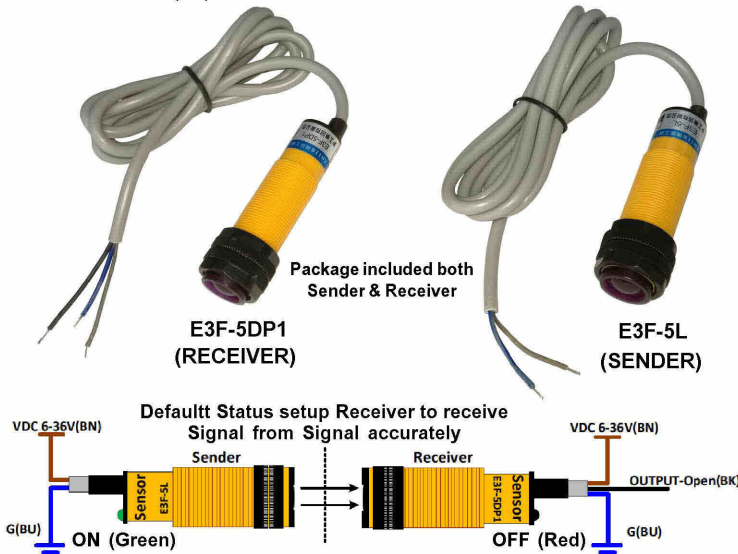
Package included both Sender & Receiver

E3F-5DP1 (RECEIVER)

E3F-5L (SENDER)

Defaultt Status setup Receiver to receive Signal from Signal accurately

VDC 6-36V(BN)   VDC 6-36V(BN)

Sender   Receiver

OUTPUT-Open(BK)

G(BU)   G(BU)

ON (Green)   **OFF (Red)**

Position for blocking signal between Sender & Receiver
It shows how to connect circuit and setup position of Sensor

● Both Sender and Receiver use 6-36VDC Power Supply (it is unnecessary to use the same voltage of Power Supply for each Sender and Receiver). The maximum distance for installing both devices is 5 meter long (+/- 10%) at 24VDC. If using 5VDC Power Supply, the maximum distance for installing both devices should be less than 2 meter long.
● Sensor detects object by blocking or interrupt light of Infrared that is beamed between Sender and Receiver.
● Sender (E3F-5L) generates light as Infrared LED (660nm).
● Receiver (E3F-5DP1) receives Infrared light, it has Output as Contact Switch (NO: Normal Open); it runs as PNP; and supplies the Current 300 mA.
● LED shows operating state of both Sender and Receiver.
● Object that is used to block or interrupt Sensor should be opaque type; the minimum diameter of object is ? 1cm with the Frequency 1 Hz (on a trial basis).
● Diameter of Sensor of both Sender and Receiver is 18 mm.

DB9 CHANGER M/M (A-CO-D-00047)

Both sides are DB9 PIN to change Connectors

● Both sides are DB9 PIN MALE
● 9 Pins of both sides must be connected pin by pin

DB9 CHANGER F/F (A-CO-D-00048)

Both sides are DB9 PIN to change Connectors

● Both sides are DB9 PIN FEMALE

DB9 CHANGER M/F (A-CO-D-00049)

Both sides are DB9 PIN to change Connectors

● One side is DB9 PIN MALE and another one is DB9 PIN FEMALE.

ET-CONV10 ARDUINO (P-ET-A-00610)

Board **ET-CONV10 ARDUINO** converts connector of Board in a family of ARDUINO from Connector as Single-Row Female type into Connector as ETT 10PIN IDC type; so, it is easier to connect and use, or it can be connected to various Boards I/O of ETT conveniently.
Moreover, it adds more circuits to the Board; 2-CH IC RS232, I2C BUS REPEATER, 1-WIRE, and SOCKET 28PIN to connect Board ET-EASY328/168 STAMP to this Board instantly.
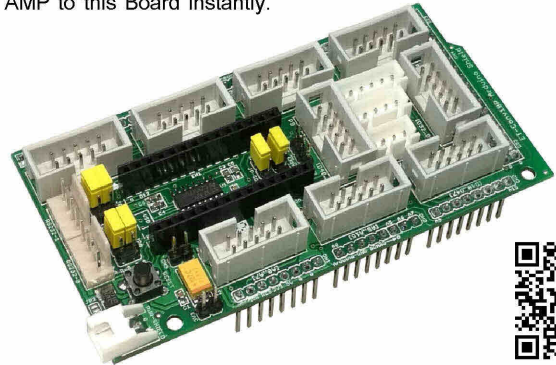
SPECIFICATIONS OF ET-CONV10 ARDUINO
● 9 of Connector I/O as ETT 10PIN IDC type support I/O of Board MCU ARDUINO UNO, MEGA 168, 328, 1280 and 2560; it converts Connector from Single-Row Female type to ETT 10PIN IDC type.
● 2-CH Connector 4PIN RS232 and IC DRIVER RS232 on board can connect Board ARDUINO to RS232 directly.
● Connector I2C as 5 PIN and 4 PIN, provided with IC PCA9517 as I2C BUS REPEATER can be connected to Signal I2C for longer distance. 5 PIN can be connected to SENSOR of ETT directly such as ET-SENSOR SHT31.
● Connector 3 PIN can be connected to 1-WIRE Device.
● Connector 28PIN FEMALE can be connected to Board ET-EASY 328/168 STAMP.
● Connector WAFER 2 PIN (2.50 mm.) receives External 5VDC Power Supply
● Size of Board: 10.1 x 5.4 cm.

MICRO:BIT GPIO BOARD
(C-YA-A-00259)

MICRO:BIT GPIO BOARD ... expands I/O of Board BBC MICRO: BIT via SLOT Terminal as I/O type in order to be connected to PROJECT BOARD; so, it can add more Circuits on PROJECT BOARD conveniently.
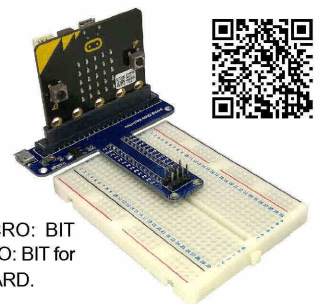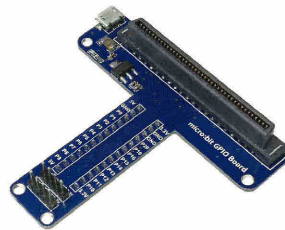
● It shows how to connect BBC MICRO: BIT GPIO V2 together with Board BBC MICRO: BIT for testing operation on Board PROJECT BOARD.

● Have 80-PIN SLOT Terminal to connect to BBC MICRO: BIT
● Have Connector MICRO USB, provided with IC REGULATOR 3.3V to supply power to GPIO BOARD and BBC MICRO: BIT (only provide power to circuit, it is unable to write any program into BBC MICRO: BIT via this Connector USB)
● 13 x 2 PIN HEADER 2.54 mm. under PCB connects to I/O of MICRO: BIT and it will be inserted into PROJECT BOARD
● 4 x 2 PIN HEADER 2.54 mm. on PCB separates I/O PIN; SCL, SDA, TXD, RXD, 3.3V, 5V, GND

PROJECT PCB M0 (C-YE-B-00015)

● This mini all-purposed PCB as PTH
● Size: 3.3 x 1.9 cm.
● Be used to connect mini circuits

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BOX DIN 200X110X60 mm
(A-BX-E-00051)

● **FRONT**   ● **BACK**

● Dimensions of this creamy plastic box are 200 X 110 X 60 mm; this box can be mounted on Rail DIN 35mm, it is provided with a board-holder on the back of the box to attach to RAIL DIN. It is suitable for PROJECT BOARD that designs and contains PCB in the box and it is easy to mount the box on RAIL DIN.
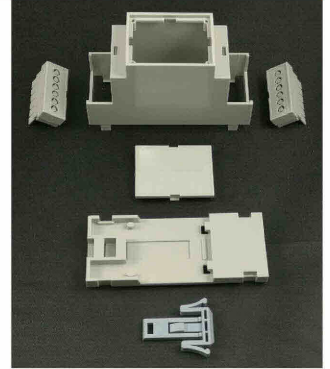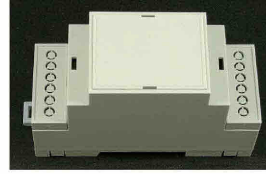

● ET-ESP32-RS485 or ET-I2C IN8/OUT8 fits into this box.

CASE RASPBERRY FAN
(A-CV-D-00028)
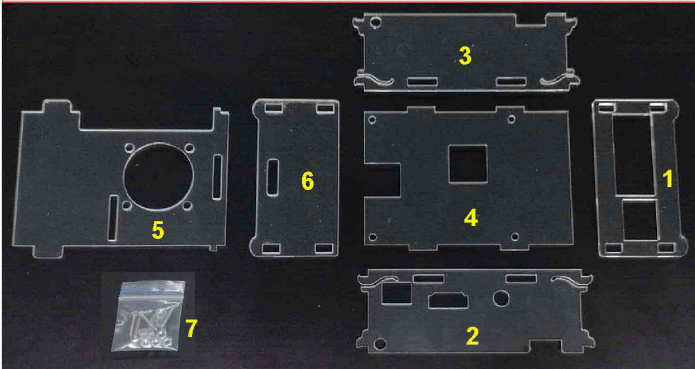
● This CASE is especially designed for RASPBERRY PI3 MOD B, RASPBERRY PI2 MOD B, RASPBERRY-MOD B+512M; it is transparent acrylic plate, with 3mm dept.
● Provide round hole to install fan to ventilate heat (it is compatible with FAN 5V 0 x 30 x 7 mm **(OPTION: Additional Purchase)**
● Easily assemble to be a box on your own.

FAN 5V 30 x 30 x 7 mm.
(A-MO-M-00151)

● Fan ventilates heat that is installed on CASE RASPBERRY FAN in order to ventilate heat of Board PASPBERRY PI well.
● Dimensions: 30 x 30 x 7 mm.

● An example shows how to use and install FAN 5V 30 x 30 x 7 mm with CASE RASPBERRY FAN and BOARD RASPBERRY PI3 MOD B.

BOX DIN DMB-4770
(A-BX-E-00036)

● Dimensions of this creamy plastic Box in a format of ABS are 90.2 x 36.3 x 57.5 mm. This Box can be mounted on DIN 35 mm, provided with a board-holder on the back of the box to attach the Box to Rail DIN. It is suitable for PROJECTS that design and contain PCB inside the box in order to mount on Rail DIN.

● The complete board after assembled the box

● The complete box after mounted on Rail DIN 35 mm.

BOX DIN DMB-4772
(A-BX-E-00038)

● Dimensions of this creamy plastic Box in a format of ABS are 90.2 x 71.0 x 57.5mm. This Box can be mounted on DIN 35 mm, provided with a board-holder on the back of the box to attach the Box to Rail DIN. It is suitable for PROJECTS that design and contain PCB inside the box in order to mount on Rail DIN.
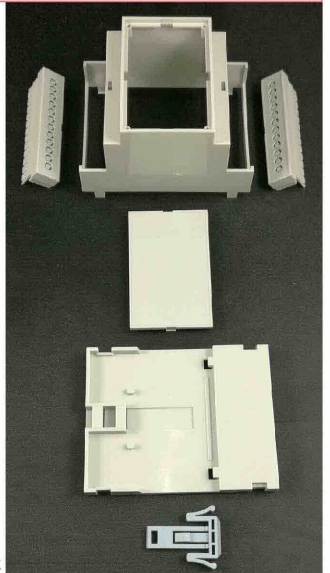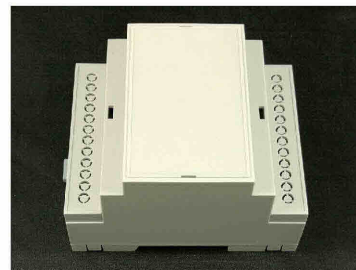
● The complete board after assembled the box

● The complete box after mounted on Rail DIN 35 mm.

DIN35 RAIL 49 CM (A-BX-I-00061)

● It is Rail DIN 35mm that can be mounted on Board, it is 49.7 cm long.

MODBUS RTU RELAY2
(C-YA-A-00265)
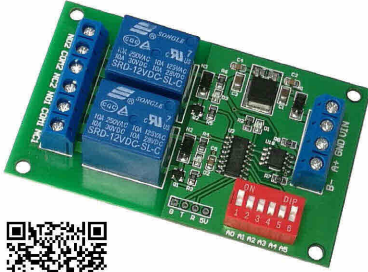
MODBUS RTU RELAY2 ... consists of 2 RELAYs ON/OFF on board that receives Commands through RS485 HALF DUPLEX. There is PROTOCAL for running in a format of MODBUS RTU and AT COMMAND. The distance of connecting signal is 1.2 kilometer long (must separate Power Supply) in a format of MULTI-DROP. It can setup a maximum of 32 ADDRESS of Board RELAY.
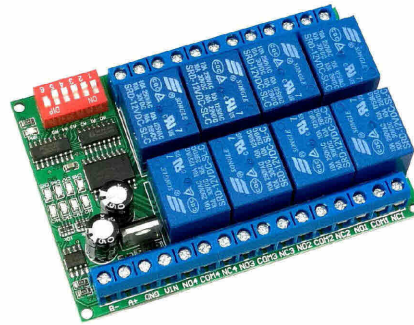
- 2 OUTPUT RELAY as 2 CONTACT (NO, NC, COM)
  - DC CONTACT RATING 10A/30VDC
  - AC CONTACT RATING 10A/220VAC
- Communicate through RS485 HALF DUPLEX by using Command MODBUS RTU PROTOCAL or AT COMMAND; it can choose any preferable command type by DIP SWITCH
- Setup 32 ADDRESS by DIP SWITCH
- BUADRATE 9600 bps, DATA 8 BIT, NONE PARITY, 1 STOP BIT
- Command is PLC type such as
  - ON/OFF: Command ON or OFF separately
  - TOGGLE: Change operation alternately
  - DELAY: Enable (ON) operation as long as user setup the setting time (0-9999 seconds) and then disable (OFF) automatically
- 2 of OUTPUT as SCREW TERMINAL BLOCK 3 PIN
- 1 of INPUT RS485 as SCREW TERMINAL BLOCK 2 PIN
- Be compatible with 12 VDC Power Supply with Connector as SCREW TERMINAL BLOCK 2 PIN
- Board Size: 4.75 x 7.9 cm.

(*** Example Programs illustrate how to be used with Board ET-MEGA32U4-RS485, can DOWNLOAD from website: www.etteam.com)
(* This product is imported from abroad, there is no any warranty ***)**

MODBUS RTU RELAY8
(C-YA-A-00268)

MODBUS RTU RELAY8 has 8 of RELAY ON/OFF on board to receive Commands through RS485 HALF DUPLEX. There is PROTOCOL as MODBUS RTU to command and the maximum distance of connecting signal is 1.2 kilometers long (separate Power Supply) in a format of MULTI-DROP. It can setup a maximum of 64 ADDRESS Positions of BOARD RELAY.

- 8 OUTPUT RELAY as 2 CONTACT (NO, NC, COM)
  - DC CONTACT RATING 10A/30VDC
  - AC CONTACT RATING 10A/220VAC
- Communicate and Command through RS485 HALF DUPLEX in a format of MODBUS RTU PROTOCOL
- Setup a maximum of 64 ADDRESS Positions by DIP SWITCH
- BAUDRATE 9600 bps, DATA 8 BIT, NONE PARITY, 1 STOP BIT
- Type of Command is PLC as follows;
  - ON/OFF: Separately turn ON/OFF
  - TOGGLE: Switch to opposite function
  - DELAY: Turn ON as long as the defined period (0-9999 seconds)
- 8 of OUTPUT as SCREW TERMINAL BLOCK 3PIN
- 1 of INPUT RS485 as SCREW TERMINAL BLOCK 2PIN
- Be compatible with 12VDC Power Supply that is Connector SCREW TERMINAL BLOCK 2PIN
- Size: 9.0 x 6.2 cm.

(*** Example Programs for using with Board ET-MEGA32U4-RS485, please DOWNLOAD from ETT's Website: http://www.etteam.com/productI2C_RS485/MODBUS_RTU_RELAY8 MODBUS_RTU_RELAY8 .html)
(* This is imported product, there is no any warranty ***)**

MODBUS RTU RELAY4/IN4
(C-YA-A-00288)

MODBUS RTU RELAY4/IN4 ... has 4 of RELAY ON/OFF and 4 of INPUT TTL(3.3V); it receives Commands through RS485 HALF DUPLEX. There is PROTOCOL as MODBUS RTU to command. The maximum distance of connecting signal is 1.2 kilometers long (separate Power Supply).

- 4 INPUT RELAY as 2 CONTACT (NO, NC, COM)
  - DC CONTACT RATING 10A/30VDC
  - AC CONTACT RATING 10A/220VAC
- 4 INPUT LOGIC TTL 3.3V (INPUT is directly connected to MCU of Board, it should not be higher than 3.3V)
- Communicate and Command through RS485 in a format of MODBUS RTU
- Setup a maximum of 32 ADDRESS Positions of Board by Setting Command
- BAUDRATE 9600 bps, DATA 8 BIT, NONE PARITY, 1 STOP BIT
- Type of Command is WRITE ON/OFF, READ status of INPUT
- Be compatible with 12VDC Power Supply that is Connector SCREW TERMINAL BLOCK 2PIN and Connector DC JACK
- Size; 7.7 x 6.7 cm.

(*** Example Programs for using with Boards, please DOWNLOAD from ETT's Website:
http://www.etteam.com/productSensor/MODBUS_RTU_RELAY4_IN4/MODBUS_RTU_RELAY4_IN4.html

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