Board ET-CONV10 Arduino Shield converts Connector of Board MCU Arduino that has the Connector in a type of Single-Row Female into a type of Block 10 Pin Male; so, it can be connected to Board I/O Interface of ETT easily and conveniently.

This Board ET-CONV10 Arduino Shield allocates an additional part of Connector RS232, I2C, 1-Wire. This Board also supports the connection with various models of Board MCU Arduino of ETT and the standard model of its own Arduino. For more information, please look at the description below;

SPECIFICATIONS OF BOARD ET-CONV10 Arduino Shield

- Connector Block 2 Pin receives external Power Supply 5V to provide power to Connectors on board, the connected Board MCU included.
- 9 of Connector I/O in a type of Block 10 Pin support I/O of Board MCU Arduino UNO, Mega 168, 328, 1280, and 2560.
- Connector RS232 in a type of 4 Pin Male 2-CH has been converted by IC Line Driver 3232 to enhance the signal level completely.
- Connector I2C 1-CH is divided into 2 sets and the connection of both sets is parallel. Firstly, 5 Pin Block type can be connected to ET-SENSOR SHT31 directly; and secondly, 4 Pin Block type can be connected to other I2C Devices. For Pin I2C (SDA, SCL), it has been connected to R-Pull Up and connected through I2C to extend the signal completely; so, it can connect Cable I2C for a longer distance.
- Connector 1-Wire 1-CH in a type of 3 Pin Block.
- Jumper is set to separate the application of I/O Pin of Connector RS232 from Connector 10Pin Block.
- Support Pin Converting of Board Arduino such as ET-EASY168 or 328 STAMP, ET-EASY MEGA1280, ET-MEGA2560 ADK, or standard models of Arduino such as Board Arduino UNO, Board Arduino MEGA, Board Arduino LEONARDO. For other standard models of Board Arduino, please carefully check if pin's arrangement on board corresponds to pin's position on Board Shield.
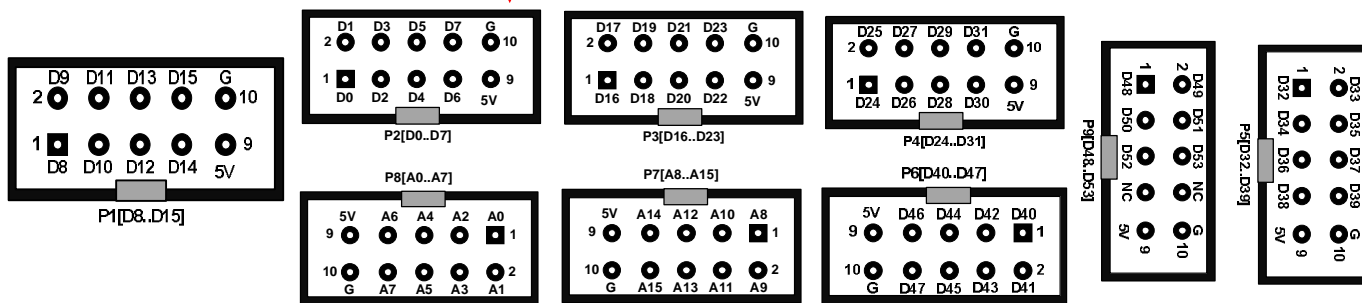
## PIN'S POSITION OF PORTS ON BOARD ET-CONV10 Arduino Shield
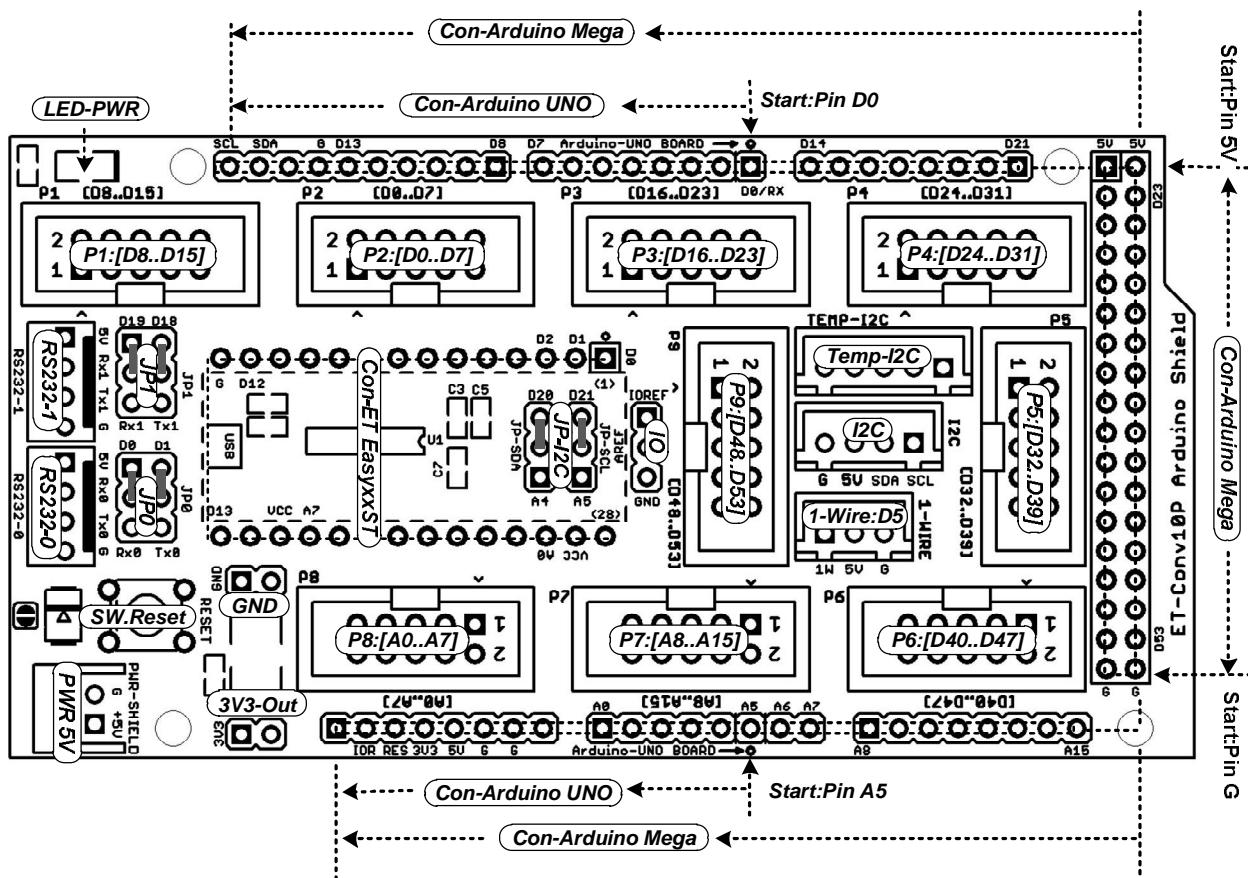
$\overline{\text{LED-PWR}}$ = LED shows status of connecting Power 5V to Connector Power of Board Shield or connecting to Power Supply of Board MCU.

P1:[D8..D15] ... **P9:[D48..D53]** = Connector I/O in a type of Block 10 Pin is directly pulled from Pin I/O of Board MCU; there are 9 Ports to support Board MCU model Mega2560; but, it only uses Port P1, P2, and P8 if it is mini model of Board MCU such as MEGA168, 328, or 32U4. Pin's arrangement of all Ports is shown below;

	D1	D3	D5	D7	G	
2						10
1						9
	D0	D2	D4	D6	5V	

P2[D0..D7]

	D17	D19	D21	D23	G	
2						10
1						9
	D16	D18	D20	D22	5V	

P3[D16..D23]

	D25	D27	D29	D31	G	
2						10
1						9
	D24	D26	D28	D30	5V	

P4[D24..D31]

	D9	D11	D13	D15	G	
2						10
1						9
	D8	D10	D12	D14	5V	

P1[D8..D15]

P8[A0..A7]

5V	A6	A4	A2	A0	
9					1
10					2
G	A7	A5	A3	A1	

P7[A8..A15]

5V	A14	A12	A10	A8	
9					1
10					2
G	A15	A13	A11	A9	

P6[D40..D47]

5V	D46	D44	D42	D40	
9					1
10					2
G	D47	D45	D43	D41	

P9[D48..D53]

P5[D32..D39]

JP1 = Jumper chooses the connection with Pin D19(Rx1), D18(Tx1) to run at Connector RS232-1 (support Board Mega1280,2560) or at Connector Port P3, please set Jumper as shown below;
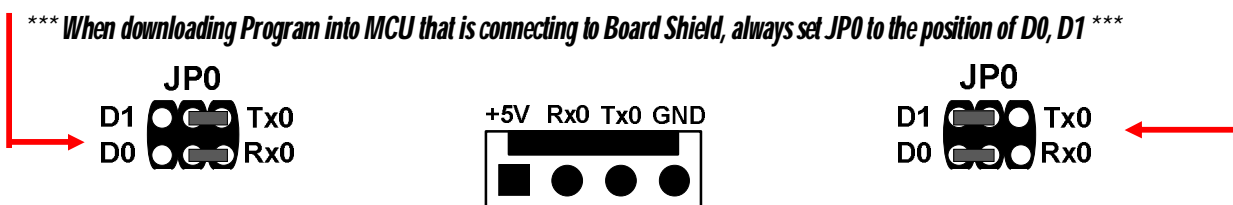
JP1
D18 — Tx1
D19 — Rx1

+5V Rx1 Tx1 GND
RS232-1

JP1
D18 — Tx1
D19 — Rx1
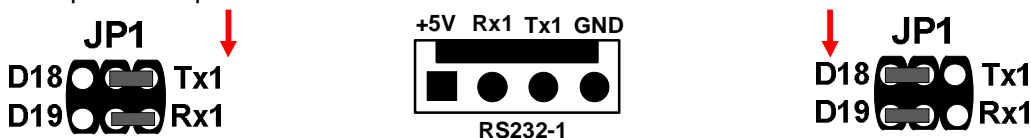
When using Connector RS232-1, set JP1 to the position of Tx1, Rx1   **When using D18, D19 at Port P3, set JP1 to the position of D18,D19**

RS232-1 = Connector RS232 is connected via Line Driver #3232 from Pin D18, D19 (support Board Mega1280, 2560). This Connector can be connected to Port RS232 of PC or Board MCU that is also connected via Line Driver. When connecting signal, it has to cross Cables between Rx and Tx; moreover, it has to set Jumper JP1 to the position of Tx1, Rx1. Pin's arrangement is shown in the picture.

JP0 = Jumper chooses the connection with Pin D0(Rx0), D1(Tx0) to run at Connector RS232-0 or at Connector Port P2; please set Jumper as follows;

*** *When downloading Program into MCU that is connecting to Board Shield, always set JP0 to the position of D0, D1* ***

JP0
D1 — Tx0
D0 — Rx0

+5V Rx0 Tx0 GND
RS232-0

JP0
D1 — Tx0
D0 — Rx0

When using Connector **RS232-0, set JP0 to the position of Tx0, Rx0**   When using D0, D1 at Port P2, setJP0 to the position of D0,D1

RS232-0 = Connector RS232 is connected via Line Driver #3232 from Pin D0, D1; this Connector can be connected to Port RS232 of PC or Board MCU that is also connected via Line Driver. When connecting signal, it has to cross Cables between Rx and Tx; moreover, it has to set Jumper JP0 to the position of Tx0, Rx0. Pin's arrangement is shown in the picture.

SW.Reset = This Switch resets the operation of Board Arduino that is connected to Board Shield.

PWR 5V = Connector Block 2 Pin in a type of horizontal receives external Power Supply 5V to supply to Board Shield and Board Arduino. If it is supplying power through Board Arduino, it is unnecessary to supply any power to to this part. Please look at the feature of Pin on the right side.

GND
+5V
PWR-SHIELD
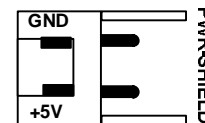
3V3-Out , **GND** = Connector Output 3.3V and Connector GND that are pulled from Board MCU Arduino; it can be connected to outside board (Board MCU must have Connector 3.3V).

IO = Connector Pin IOREF, AREF, and GND are pulled from Board MCU Arduino, theses Connectors can be connected and used as preferred. Pin arrangement is shown in the picture.

IOREF
AREF
GND

(JP-I2C) = This Jumper is set to connect Signal I/O Pin that is used as Pin I2C of Board Arduino (SDA:A4,D20 and SCL:A5,D21) to Connector Temp-I2C or Connector I2C; it is used when the connected Board Arduino has no any separate Pin I2C (SDA, SCL). However, if the connected Board has the separate Pin I2C completely, Pin I2C from Board Arduino will be directly connected to Connector I2C of Board Shield, without setting any Jumper.
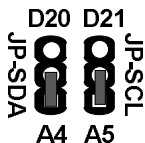
If using Connector I2C with Board Arduino "ET-Easy xxx STAMP" or, "UNO", it has to set JP-SDA, JP-SCL to the side of A4,A5.
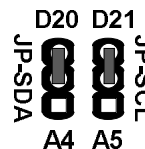
If using Connector I2C with Board Arduino "ET-Easy Mega 1280, 2560", or "MEGA", it has to set JP-SDA, JP-SCL to the side of D20,D21, respectively.

(Temp-I2C) , (I2C) = Connector I2C (5V-TTL) in a type of Block 5 Pin and Block 4 Pin that are connected in parallel; Connector 5 Pin is connected to Temp Sensor device "ET-SENSOR SHT31", and Connector 4 Pin can be connected to other I2C devices as required. When using this Connector if the connected Board Arduino has no any separate Pin I2C (SDA, SCL), it has to set Jumper JP-I2C to choose Pin I2C of Board Arduino that is connected to Board Shield in order to connect to this Connector. Pin arrangement is shown in the picture (Pin SDA and SCL has already been connected with R-Pull Up on board).
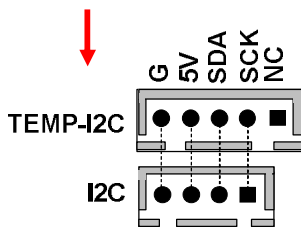
Arduino Mega328,168
SDA= A4 , SCL =A5
Arduino Mega 1280 , 2560
SDA =D20 , SCL = D21
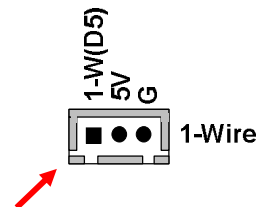
(1-Wire:D5) = Connector 1-Wire in a type of Block 3 Pin connects to 1-Wire Device; Pin is connected to Pin D5 of Board Arduino and pin arrangement is shown in the picture.

(Con-ET EasyxxST) = This is a position of Connector FEMALE (28Pin) to connect to Board MCU Arduino ET-Easy xxx STAMP. It has to turn the side of Mini-USB of Board MCU towards the side of Connector RS232 of Board Shield; next, carefully check if pin mark's position of both boards is matching and finally, slightly push down the board as shown in the picture below;

กด **Mini USB** หันออกด้านนอก
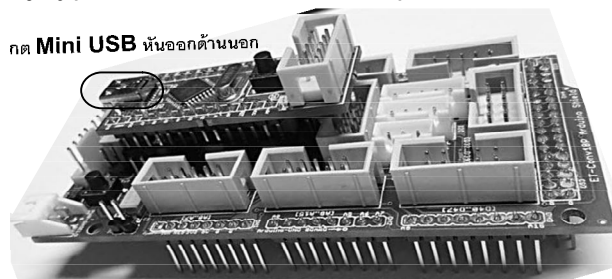
(Con-Arduino UNO) = This is position of Connector MALE to connect to Board MCU Arduino UNO. First of all, please look at Pin Mark's position on both sides of Board Shield that must correspond with Pin A5 and D0 of Board MCU Arduino; next, carefully place the board and slightly push down Pins as shown in the picture.

เริ่มต้นประกบที่ **Pin D0/Rx** เป็นหลัก

เริ่มต้นประกบที่ **Pin A5** เป็นหลัก
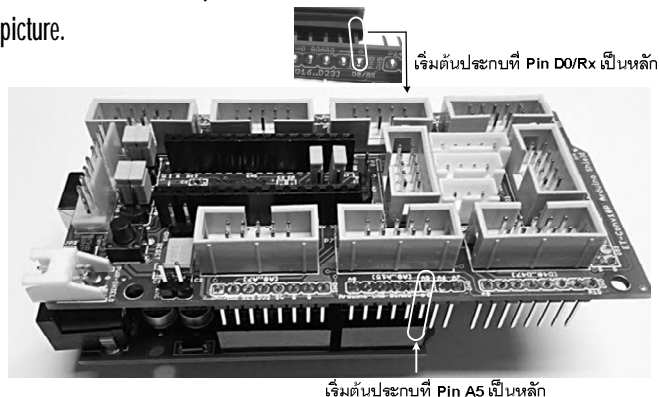
(**Con-Arduino Mega**) = This is a position of Connector MALE to connect to Board MCU Arduino ET-MEGA2560, ET-EASY1280. When connecting signal, position of Pin G and 5V on Board Shield, especially Connector 2-Row, must be corresponded with the position of Pin G and +5V of Board MCU Arduio; next, carefully place the board and slightly push down other Pins as shown in the picture.

เริ่มต้นประกบที่ Pin คู่ 5V เป็นหลัก

เริ่มต้นประกบที่ Pin คู่ GND เป็นหลัก
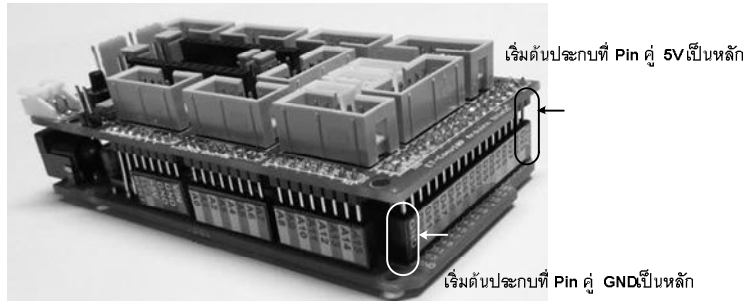
NOTE: When Board MCU Arduino is connected together with Board Shield, it can connect only one Board each time; it is not allowed to connect 2 Board MCU at the same time. Moreover, each model of Board MCU may have different pin' position, please carefully check before connecting signal.

Project Title: ET-Arduino Conv10 Shield

Sheet Title: ET-Conv10 Arduino Shield

Size: A4   REV: 1

Drawn By:

Date: 1/8/2561 10:07   Sheet: 1/1