



AE1415 PCAP Control Board Datasheet

Version 1.2
2022/08/12

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Revision History

| Rev. | Date | Summary | Remark |
|------|------------|---|-------------|
| 1.0 | 2021/11/30 | First Edition | Carol |
| 1.1 | 2022/05/16 | Control Board L0 changed to L1 version: Added RSTN pin(JL6) and GPIO pin (JP9) | William_Tai |
| 1.2 | 2022/08/12 | Corrected Part Numbers for Accessory Cables 2.0 Specifications Delete RS232 data | Carol |
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1.0 Introduction

This controller board is a high specification Projective Capacitive input (PCAP) touch panel controller product. It is developed based on the EETI MCU EXC80H60 ASIC. It can be applied in the consumer, commercial, and industrial fields.

The controller provides USB, I2C interfaces. It can support up to 15.6-inch PCAP touch screens. It also supports wide range of operating systems, such as Windows and Linux.

There are 4 connectors on this board: 60 Pins (JL5) & 40 Pins (JL4) ZIF connectors for PCAP touch screen FPC cables, 4 Pins USB (JL1) and 7 Pins I2C (JL2) connectors for host interface.

2.0 Specifications

| Parameters | Features |
|----------------------------|---|
| Controller Part Number | AE1415-L1 |
| Number of sensing line | 58 (include shielding lines) |
| Number of driving Line | 38 (include shielding lines) |
| Support touch panel size | Up to 15.6" (base on 6mm sensor channel pitch) |
| Input Voltage | 5V +/-5% |
| Interface | USB: 1.1 Full Speed I2C: up to 400KHz, Voltage Level 3.3V |
| Linearity ¹ | <= +/- 1mm (outside 3.5mm from edges) <= +/- 2mm (within 3.5mm of all edges) |
| Resolution | 16384x16384 |
| Sampling rate ² | >100 Hz |
| Reaction time | <25 ms |
| Operating Voltage | 5.0 V (Typical) |
| Operating current | <100 mA |
| Operation Temperature | -40°C ~ +85°C |
| Storage Temperature | -40°C ~ +90°C |
| Operation humidity | 95% at 60°C, RH Non-condensing |
| Operation systems support | Windows/Linux/Android |
| Utility Support | eGalaxTouchManager+ |
| RoHS compliant | Yes |
| Water resistance | Yes |

1 Requires a corresponding touch sensor design. (Sensor pitch<=5.5mm)

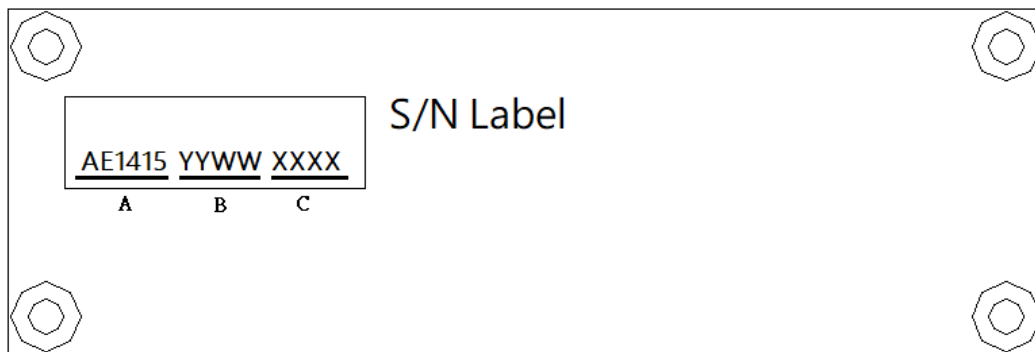
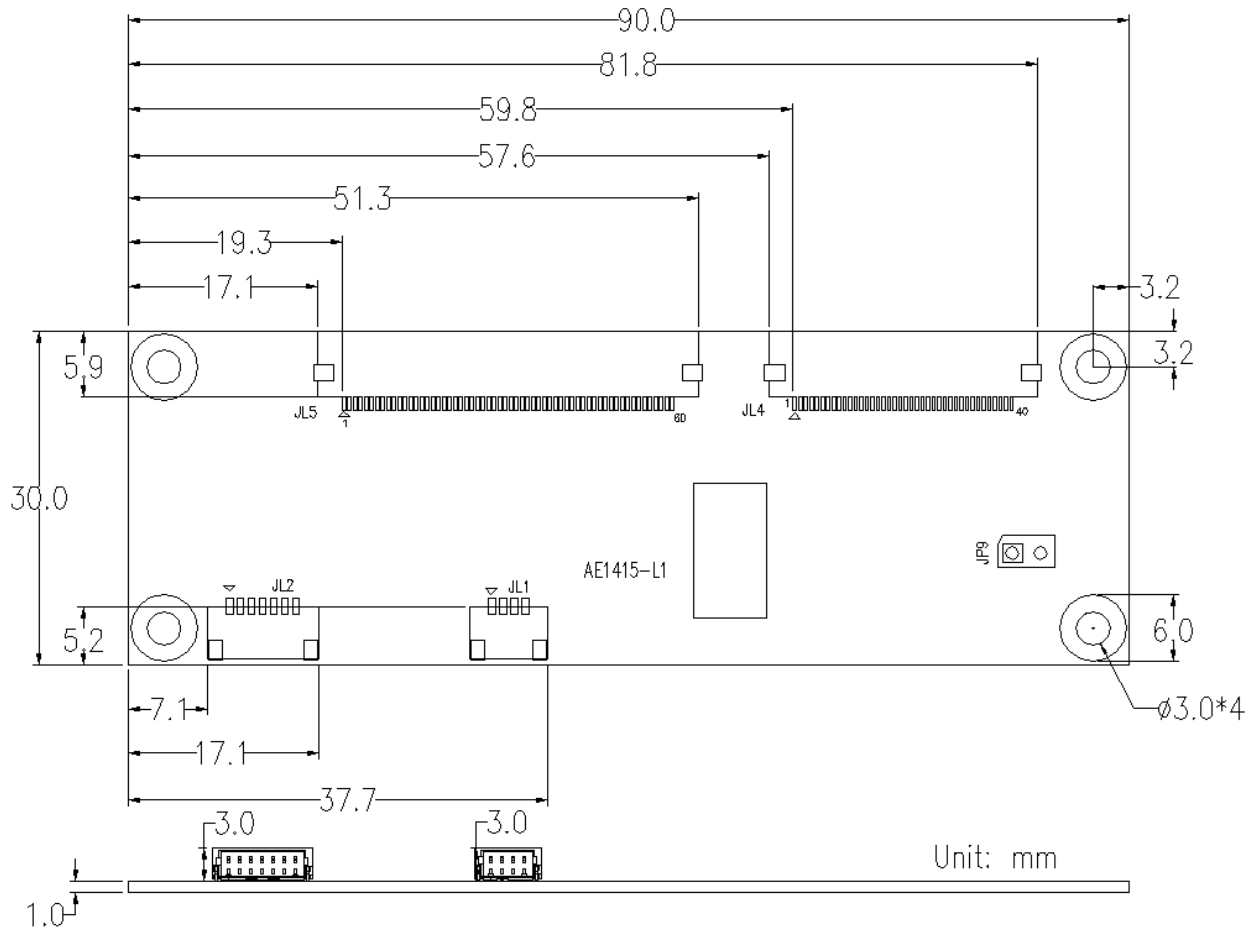
2 Report rate is varied by touch sensor channel number, cover thickness, system condition, and other parameters

Disclaimer

- Performance specification, such as report rate may be varied depends on touch sensor channel numbers, cover thickness, system condition and other parameters.
- Reference sensor channel pitch should be ranged from 5.0mm (Win10) to 8mm (Non-Win10).
- Special input performance may be influenced depends on module condition, contact material , and other operating environments, subjects including through thick glass touch, gloved-hand input, water resistance and noise immunity etc.
- Special features are required to pre-define and pre-tune during project development.

3.0 Mechanical Specification

3.1 Mechanical size



S/N Label:

- A : Product name.
- B : Last two digits of the year + week number.
- C : Serial number.

3.2 Connector information



- JL4: 0.5mm*40P, Driving Channel, ACES 5169-04001-000
- JL5: 0.5mm*60P, Sensing Channel, ACES 5169-06001-000
- JL1: 1.25mm*4P, USB Connector, ACES 50224-00401-001
- JL2: 1.25mm*7P, I2C Connector, ACES 50224-00701-001
- JP9: 2.54mm*2P, GPIO pin, Pin Header (No connect)

| Connector name | Connector function | On-board Connector | Mating connector (JST) |
|----------------|---------------------------|---|--|
| JL1 | USB | 1 x 4 locking M pin header ACES P/N: 50224-00401-001 | JST P/N: SHR-04V-S-B housing JST P/N: SSH-003T-P0.2-H crimp pin |
| JL2 | I2C | 1 x 7 locking M pin header ACES P/N: 50224-00701-001 | JST P/N: SHR-07V-S-B housing JST P/N: SSH-003T-P0.2-H crimp pin |
| JL4 | touch screen TX signal | 1 x 40 FFC / FPC conn ACES P/N: 51619-04001-001 | FPC 40 Pin/0.5mm Pitch/0.3 t |
| JL5 | touch screen RX signal | 1 x 60 FFC / FPC conn ACES P/N: 51619-06001-001 | FPC 60 Pin/0.5mm Pitch/0.3 t |
| JP9 | GPIO | 1x 2 Pin Header(No connect) | TBD |

Accessory Cables

- 94-53018-000, External USB cable
- 94-56002-000, Internal I2C cable

3.3 Pin Description

| JL4 40 Pin ZIF , PH 0.5mm ; ACES 51619-04001-000 | | | | | | | |
|--|-------------|-----|-------------|-----|-------------|-----|-------------|
| PIN | Description | PIN | Description | PIN | Description | PIN | Description |
| 1 | GND_E | 16 | TX23 | 31 | TX08 | | |
| 2 | TX37 | 17 | TX22 | 32 | TX07 | | |
| 3 | TX36 | 18 | TX21 | 33 | TX06 | | |
| 4 | TX35 | 19 | TX20 | 34 | TX05 | | |
| 5 | TX34 | 20 | TX19 | 35 | TX04 | | |
| 6 | TX33 | 21 | TX18 | 36 | TX03 | | |
| 7 | TX32 | 22 | TX17 | 37 | TX02 | | |
| 8 | TX31 | 23 | TX16 | 38 | TX01 | | |
| 9 | TX30 | 24 | TX15 | 39 | TX00 | | |
| 10 | TX29 | 25 | TX14 | 40 | GND_E | | |
| 11 | TX28 | 26 | TX13 | | | | |
| 12 | TX27 | 27 | TX12 | | | | |
| 13 | TX26 | 28 | TX11 | | | | |
| 14 | TX25 | 29 | TX10 | | | | |
| 15 | TX24 | 30 | TX09 | | | | |

| JL5 60 Pin ZIF , PH 0.5mm ; ACES 51619-06001-000 | | | | | | | |
|--|-------------|-----|-------------|-----|-------------|-----|-------------|
| PIN | Description | PIN | Description | PIN | Description | PIN | Description |
| 1 | GND_E | 16 | RX43 | 31 | RX28 | 46 | RX13 |
| 2 | RX57 | 17 | RX42 | 32 | RX27 | 47 | RX12 |
| 3 | RX56 | 18 | RX41 | 33 | RX26 | 48 | RX11 |
| 4 | RX55 | 19 | RX40 | 34 | RX25 | 49 | RX10 |
| 5 | RX54 | 20 | RX39 | 35 | RX24 | 50 | RX09 |
| 6 | RX53 | 21 | RX38 | 36 | RX23 | 51 | RX08 |
| 7 | RX52 | 22 | RX37 | 37 | RX22 | 52 | RX07 |
| 8 | RX51 | 23 | RX36 | 38 | RX21 | 53 | RX06 |
| 9 | RX50 | 24 | RX35 | 39 | RX20 | 54 | RX05 |
| 10 | RX49 | 25 | RX34 | 40 | RX19 | 55 | RX04 |
| 11 | RX48 | 26 | RX33 | 41 | RX18 | 56 | RX03 |
| 12 | RX47 | 27 | RX32 | 42 | RX17 | 57 | RX02 |
| 13 | RX46 | 28 | RX31 | 43 | RX16 | 58 | RX01 |
| 14 | RX45 | 29 | RX30 | 44 | RX15 | 59 | RX00 |
| 15 | RX44 | 30 | RX29 | 45 | RX14 | 60 | GND_E |

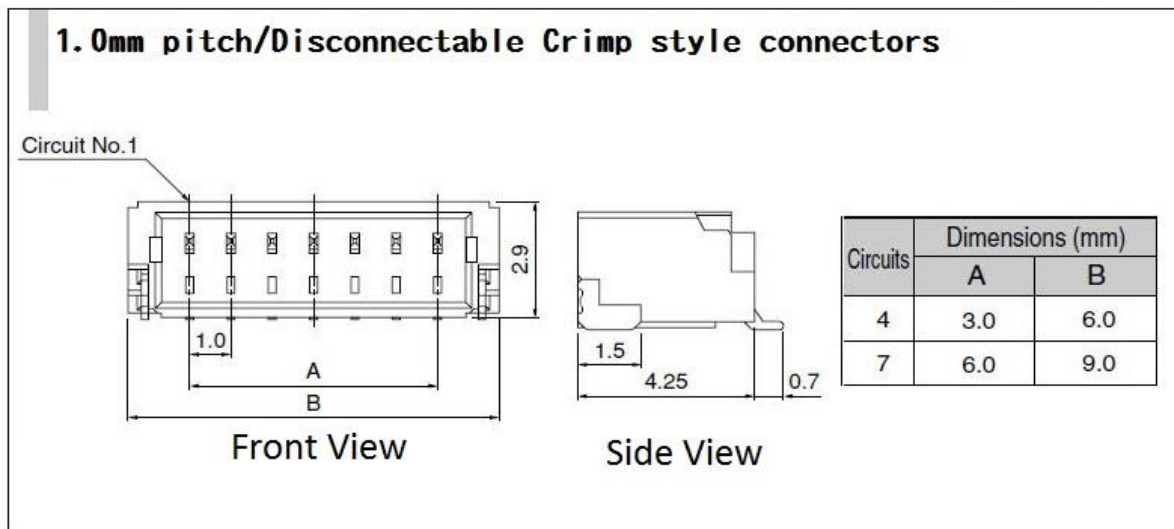
| JL1 / 4PIN / ACES 50224-00401-001 | | |
|--|------------|------------------------------------|
| PIN | USB | Description |
| 1 | VDD | Input Voltage (5V). |
| 2 | D- | D- pin of internal USB transceiver |
| 3 | D+ | D+ pin of internal USB transceiver |
| 4 | GND_E | Ground |

| JL2 / 7PIN / ACES 50224-00701-001 | | |
|--|------------|---|
| PIN | I2C | Description |
| 1 | VDD | Input Voltage (5V). |
| 2 | GND_E | Ground |
| 3 | I2C_SCL | Serial clock line for I ² C. Open drain requires an external pull-up to 3.3V. |
| 4 | I2C_SDA | Serial data line for I ² C. Open drain, requires an external pull-up to 3.3V |
| 5 | RSTN | Open-drain and active low to reset EXC80H60 and must be driven low for 1ms (min.) to be valid. Leave the pin unconnected if not used. |
| 6 | TP_EN | Pull low for disable touch function, release this pin will back to enable touch function, Leave the pin unconnected if not used. |
| 7 | I2C_INT | Processor Interrupt. This pin is active low, open drain requires an external pull-up to 3.3V. |

| JP9 / 2PIN (2.54mm*2P, GPIO pin) | | |
|---|-------------------|--|
| PIN | GPIO | Description |
| 1 | GPIO_0 (TP_EN) | Pull low for disable touch function, release this pin will back to enable touch function, Leave the pin unconnected if not used. |
| 2 | GPIO_1 (TBD) | With AP configurable function |

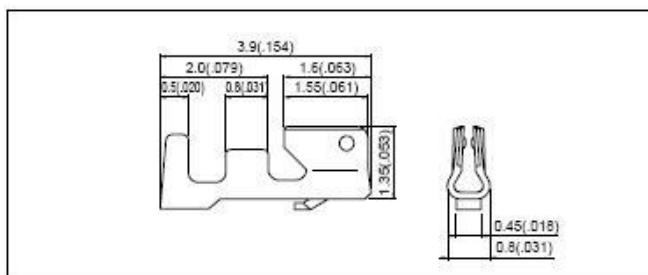
3.4 Remark

(1) JL1、JL2 Connector Specifications



(2) JL1、JL2 Mating Connector (JST) Specification :

Contact

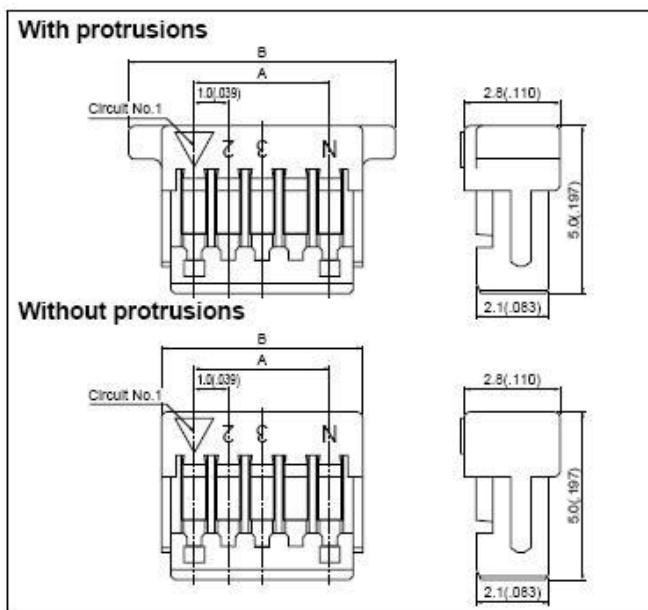


| Model No. | Applicable wire | | | Q'ty / reel |
|-----------------|-----------------|----------|--------------------------|-------------|
| | mm ² | AWG# | Insulation O.D. mm(in.) | |
| SSH-003T-P0.2-H | 0.032 to 0.08 | 32 to 28 | 0.4 to 0.8(.016 to .031) | 23,000 |

Material and Finish
Phosphor bronze, tin-plated

Note: Contact JST for gold-plated contacts.

Housing



| Circuits | Model No. | | Dimensions mm(in.) | | | Q'ty / box |
|----------|------------------|---------------------|--------------------|------------------|---------------------|------------|
| | | | A | B | | |
| | With protrusions | Without protrusions | | With protrusions | Without protrusions | |
| 2 | SHR-02V-S-B | SHR-02V-S | 1.0(.039) | 5.0(.197) | 3.0(.118) | 2,000 |
| 3 | SHR-03V-S-B | SHR-03V-S | 2.0(.079) | 6.0(.236) | 4.0(.157) | 2,000 |
| 4 | SHR-04V-S-B | SHR-04V-S | 3.0(.118) | 7.0(.276) | 5.0(.197) | 2,000 |
| 5 | SHR-05V-S-B | SHR-05V-S | 4.0(.157) | 8.0(.315) | 6.0(.236) | 2,000 |
| 6 | SHR-06V-S-B | SHR-06V-S | 5.0(.197) | 9.0(.354) | 7.0(.276) | 2,000 |
| 7 | SHR-07V-S-B | SHR-07V-S | 6.0(.236) | 10.0(.394) | 8.0(.315) | 2,000 |
| 8 | SHR-08V-S-B | SHR-08V-S | 7.0(.276) | 11.0(.433) | 9.0(.354) | 2,000 |
| 9 | SHR-09V-S-B | SHR-09V-S | 8.0(.315) | 12.0(.472) | 10.0(.394) | 2,000 |
| 10 | SHR-10V-S-B | SHR-10V-S | 9.0(.354) | 13.0(.512) | 11.0(.433) | 2,000 |
| 11 | SHR-11V-S-B | SHR-11V-S | 10.0(.394) | 14.0(.551) | 12.0(.472) | 2,000 |
| 12 | SHR-12V-S-B | SHR-12V-S | 11.0(.433) | 15.0(.591) | 13.0(.512) | 2,000 |
| 13 | SHR-13V-S-B | SHR-13V-S | 12.0(.472) | 16.0(.630) | 14.0(.551) | 2,000 |
| 14 | SHR-14V-S-B | SHR-14V-S | 13.0(.512) | 17.0(.669) | 15.0(.591) | 2,000 |
| 15 | SHR-15V-S-B | SHR-15V-S | 14.0(.551) | 18.0(.709) | 16.0(.630) | 2,000 |
| 20 | SHR-20V-S-B | - | 19.0(.748) | 23.0(.906) | 21.0(.827) | 2,000 |

Material
PBT, UL94V-0, natural (white)

Note: SHR-20V-S-B is not CSA approved.