AE1415 PCAP Control Board

Datasheet

Version 1.2

2022/08/12

Table of Contents

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

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℃～+85℃
Storage Temperature	-40℃～+90℃
Operation humidity	95% at 60℃, 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)

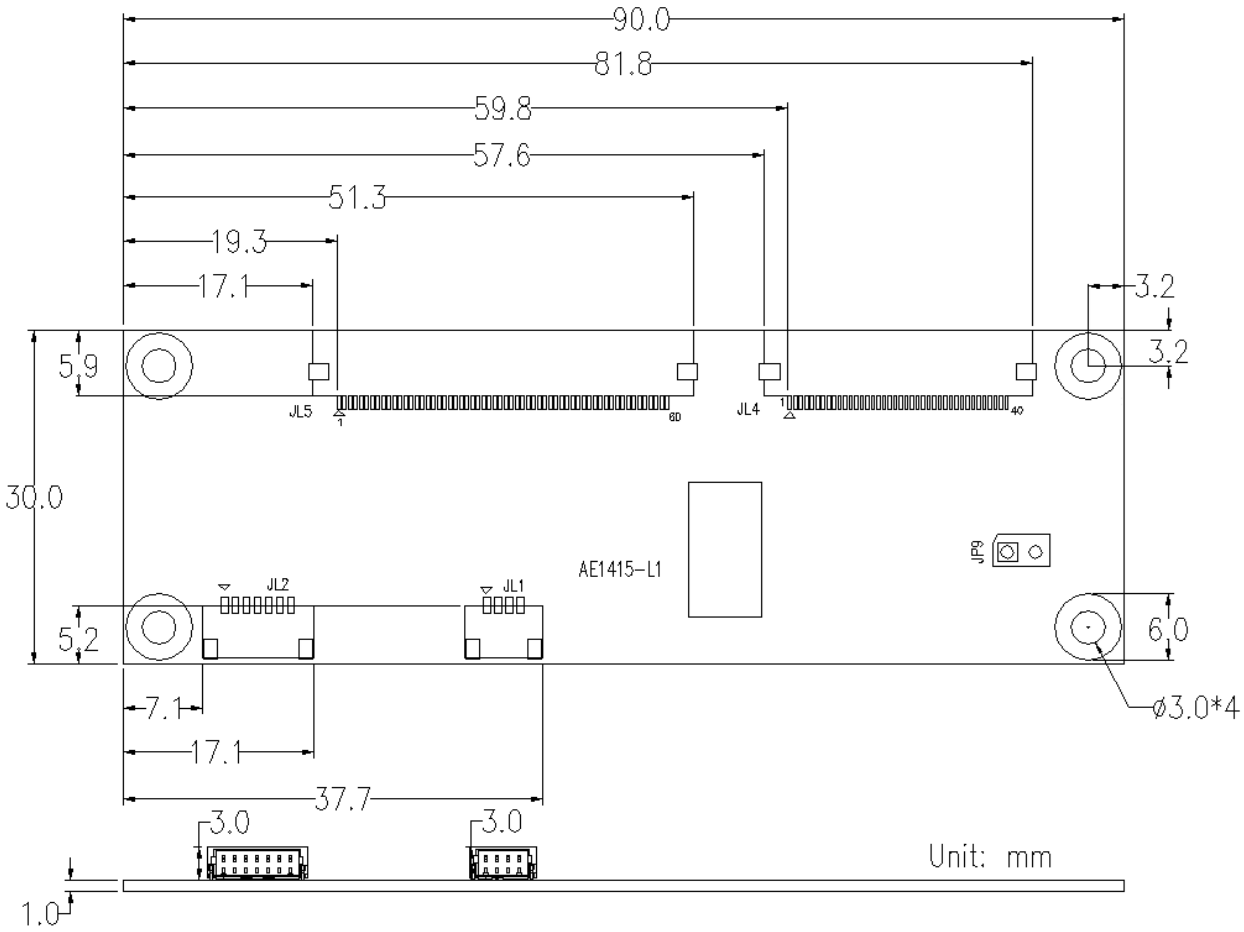
2 Report rate is varied by touch sensor channel number, cover thickness, system condition, and other parameters

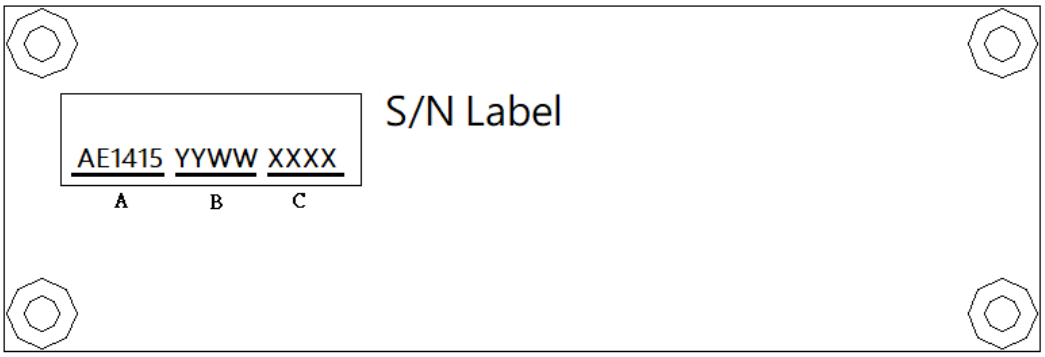
Disclaimer

- 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





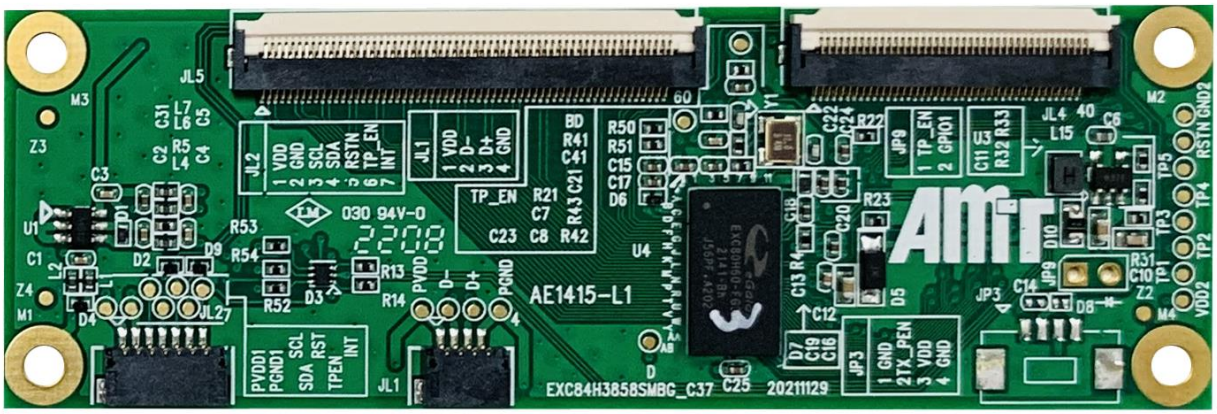
S/N Label:

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

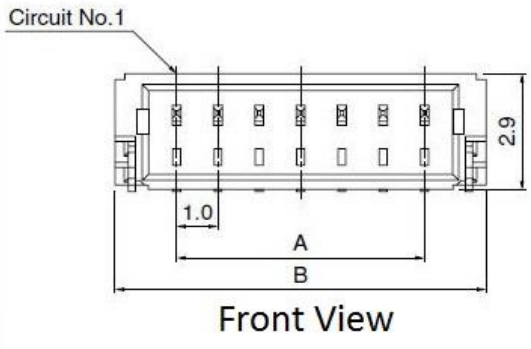
JL2 / 7PIN / ACES 50224-00701-001		
PIN	**I2C**	Description
1	VDD	Input Voltage (5V).
2	GND_E	Ground
3	I2C_SCL	Serial clock line for I²C. Open drain requires an external pull-up to 3.3V.
4	I2C_SDA	Serial data line for I²C. Open drain, requires an external pull-up to 3.3V
5	RSTN	Open-drain and active 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

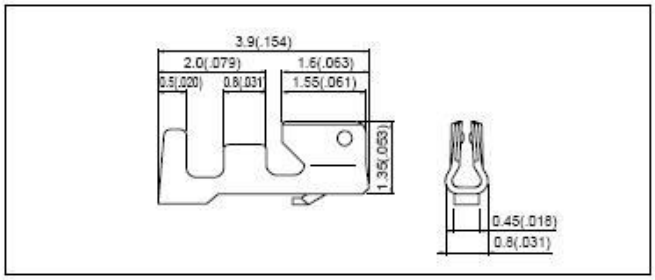
1.0mm pitch/Disconnectable Crimp style connectors



Circuits	Dimensions (mm)	
	A	B
4	3.0	6.0
7	6.0	9.0

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

Contact

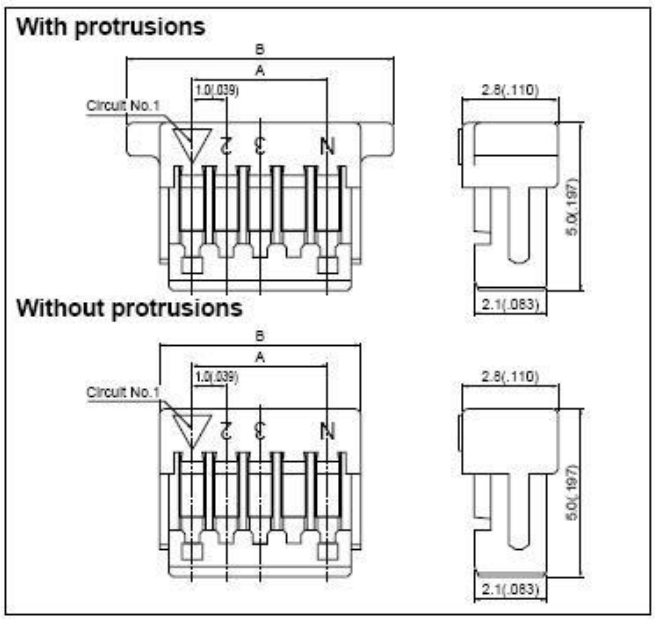


Model No.	Applicable wire			Q'ty / reel
	mm²	AWG#	Insulation O.D. mm(in.)	
SSH-003T-P0.2-H	0.032 to 0.08	32 to 28	0.4 to 0.8(.016 to .031)	23,000

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

Meterial
PBT, UL94V-0, natural (white)

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