理義科技股份有限公司
LIYITEC INCORPORATED

Engineering Specification

工程規格書

Conform to HSF

Customer (客戶代號)	:
Product (產品名稱)	: Touch Panel Controller : 觸控面板控制板
Model (型號)	: 4141-2F02-12173
Customer Model (客戶型號)	: 2BAD721S001（Z0559）
Customer Product Name (客戶品名)	: CTL BD SKD ASSY (4141-2F02-12173,LIYI)
FW (分位)	: PCAP81X84_A1NV_v00_T2_12p1_Liyitec_URI_DThqa.X84
Date (日期)	: Aug-18-2026

Confidential

Customer Approval 客戶承認欄
Date of Signature 承認日期：_____ 設計驗證工程課 2026 -08- 24 發行 理義科技股份有限公司

Approved 核准	Reviewed 核對	Prepared 製作
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禾瑞亞科技股份有限公司
eGalax_eMPIA Technology Inc.

Document ID: ECS-056-20221109-1

EXC81H4254STAG

Projected Capacitive Touchscreen

Controller Board

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eGalax	eGalaxTouch Manager
eGalaxWorks	eGalaxPCBTester
eGalaxPen	eGalaxStylus

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Revision History

Document ID	Date	Revision Description
ECS-056-20220810-1	2022/08/10	Preliminary
ECS-056-20220902-1	2022/09/02	Added I2C connector pin assignment
ECS-056-20221109-1	2022/11/09	Revised Operating / Storage temperature to -40°C~85°C

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EXC81H4254STAG

Projected Capacitive Touchscreen Controller Board

The EXC81H4254STAG is a projected capacitive (PCAP) touch screen controller that is powered by EETI's high performance chip EXC81H84. By integrating the advantages of mutual capacitance sensing technology, built-in high driving voltage transceiver and a powerful MCU, this controller incorporates the most desired features to boost the noise immunity and support high demand applications in most categories.

OS	Version	Interfaces
Windows	Windows 11, 10, 8, 7, XP Windows Embedded, WEC2013, WEC7, WinCE6	RS232 / USB / I²C
Linux	Support Kernel 2.4.x / 2.6.x / 3.x.x / 4.x.x / 5.x.x, and most Linux distribution versions, including Ubuntu, Debian, Fedora, Red Hat, CentOS, SuSE (OpenSuSE), Arch, Slackware, etc.	RS232 / USB / I²C
Android	2.3.x upwards (from Gingerbread to the latest Android version)	RS232 / USB / I²C
Mac	macOS9 to the latest 12.x.x	USB

* macOS9 support only Resistive Touch Controllers

Features

- USB, RS232, and I²C interface
- Noise immunity
- Support advanced water resistance
- Support active stylus
- Support RS232 flow control
- Support OGS, SITO, DITO, G/F, G/F/F, G/G, and mesh sensors.
- Comprehensive driver support
- eGalaxTouchManager plus tool support
- API support
- RoHS compliant

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Specifications:

Circuit Board Dimension	33mm x 82.5mm x 7.5mm
Channels of Panel	Max.Tx:42 Rx:54 channels (include shielding pin)
Input Voltage	5V±10%
Operating Temperature	-40 to 85 ℃
Storage Temperature	-40 to 85 ℃
Relative Humidity	95% at 60 ℃, RH Non-condensing
Accuracy and Linearity[1]	<= +/- 1mm (outside 3.5mm from edges) <= +/- 2mm (within 3.5mm of all edges) (Refer to Win10 Touch Requirement)
Interface	USB 1.1 Full Speed (USB 2.0 compliant full speed) RS232: No parity,8 data bits,1 stop bit, baud rate 115200bps, support hardware flow control I²C: up to 400KHz, Voltage level 3.3V
Regulatory approvals	CE, FCC-B
ESD	Air Discharge±8kV, Contact Discharge±4kV
Resolution	16384 x 16384 resolution
Power consumption (mA)	Active Mode: Typically <90mA
Report rate[2] (points/sec)	> 100 Hz
Response time	Average < 25ms

[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

- For products that require Windows logo certification (WHQL), please contact your supplier for a specifically designed touch module.
- Special input performance can vary depending on module conditions, contact materials, sizes and subjects, including thick glass touch, gloved-hand input, water resistance, noise immunity, etc.
- Special features need to be pre-defined and pre-tuned during project development.

Accessory Cables

- ETP-CB-SXU00, External USB cable
- ETP-CB-SXU01, Internal USB cable
- ETP-CB-SXR17, External RS232 cable

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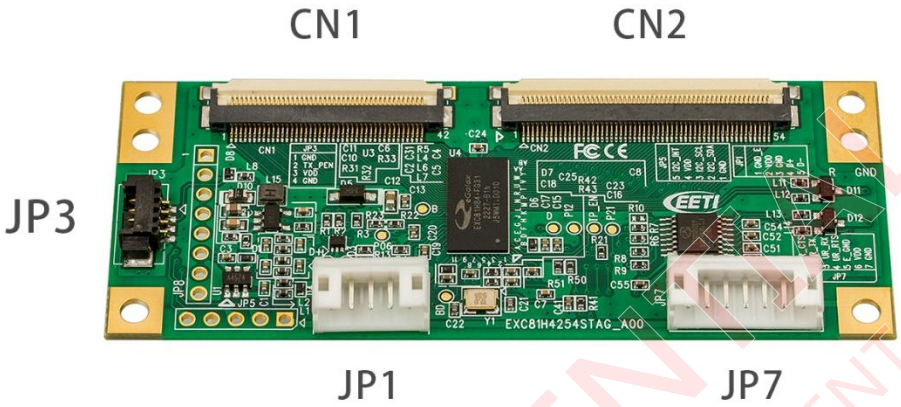
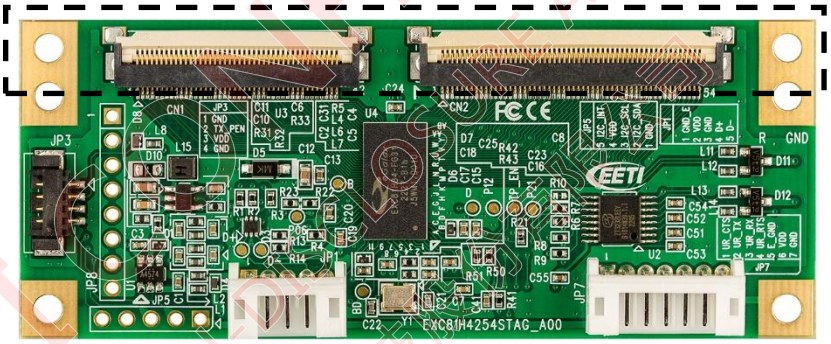
Product Photo



Connector CN1/CN2



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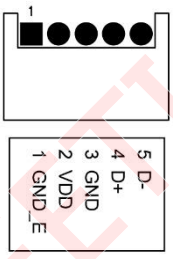
FPC Pin Description

CN1					
PN		PN		PN	
1	TX_S2	21	TX20	41	TX0
2	TX39	22	TX19	42	TX_S0
3	TX38	23	TX18		
4	TX37	24	TX17		
5	TX36	25	TX16		
6	TX35	26	TX15		
7	TX34	27	TX14		
8	TX33	28	TX13		
9	TX32	29	TX12		
10	TX31	30	TX11		
11	TX30	31	TX10		
12	TX29	32	TX9		
13	TX28	33	TX8		
14	TX27	34	TX7		
15	TX26	35	TX6		
16	TX25	36	TX5		
17	TX24	37	TX4		
18	TX23	38	TX3		
19	TX22	39	TX2		
20	TX21	40	TX1		

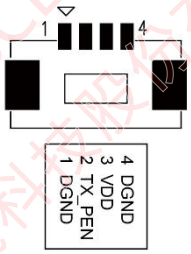
CN2					
PN		PN		PN	
1	RX_S1	21	RX32	41	RX12
2	RX51	22	RX31	42	RX11
3	RX50	23	RX30	43	RX10
4	RX49	24	RX29	44	RX9
5	RX48	25	RX28	45	RX8
6	RX47	26	RX27	46	RX7
7	RX46	27	RX26	47	RX6
8	RX45	28	RX25	48	RX5
9	RX44	29	RX24	49	RX4
10	RX43	30	RX23	50	RX3
11	RX42	31	RX22	51	RX2
12	RX41	32	RX21	52	RX1
13	RX40	33	RX20	53	RX0
14	RX39	34	RX19	54	RX_S0
15	RX38	35	RX18		
16	RX37	36	RX17		
17	RX36	37	RX16		
18	RX35	38	RX15		
19	RX34	39	RX14		
20	RX33	40	RX13		

Connector Pin Configuration

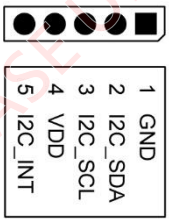
JP1 USB Connector



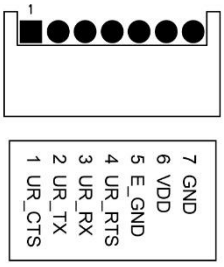
JP3 GPIO Connector



JP5 I2C Connector



JP7 RS232 Connector



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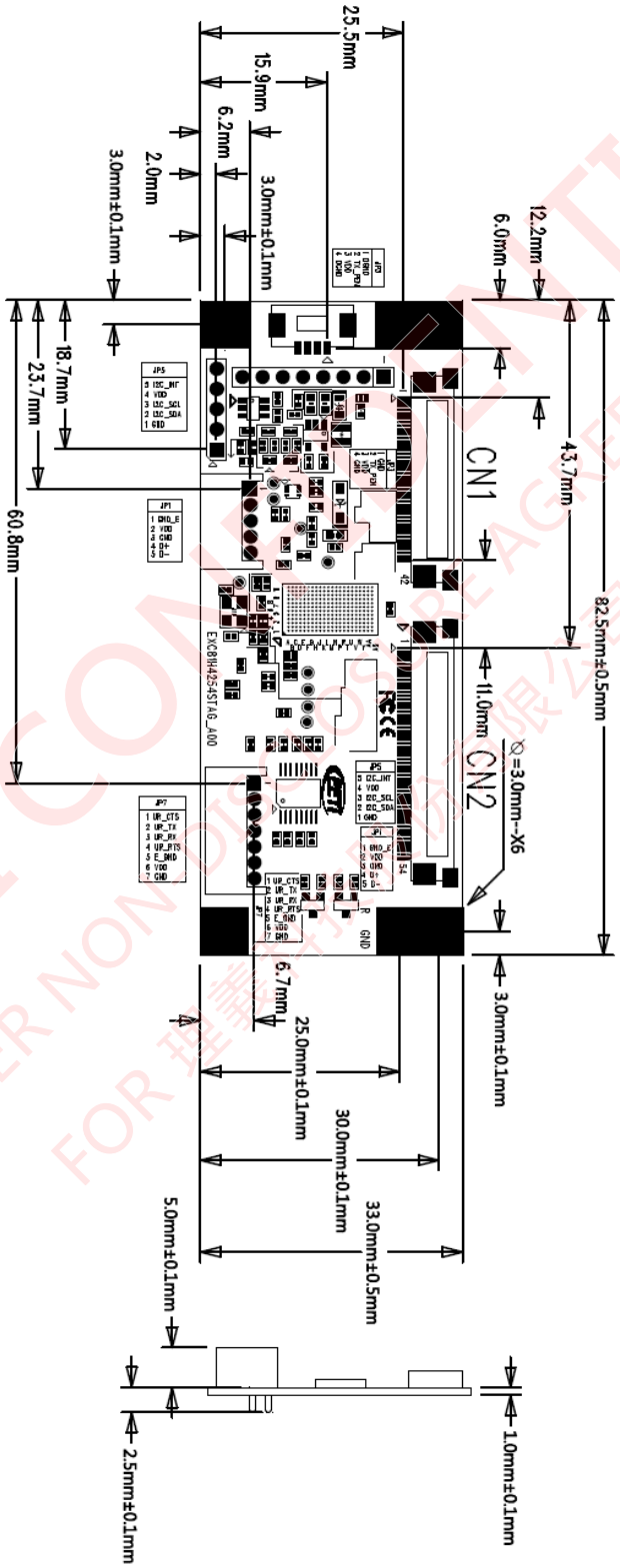
Mechanical Specification



*Dimensions without individual tolerance are ±0.10mm

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