SPECIFICATIONS

CUSTOMER	:	**PTC**
SAMPLE CODE	:	**S05D00055-00**
MASS PRODUCTION CODE	:	**P05D00055-00**
SAMPLE VERSION	:	**01**
SPECIFICATIONS EDITION	:	**003**
DRAWING NO. (Ver.)	:	**LMD- P05D00055-00 (Ver.003)**
PACKAGING NO. (Ver.)	:	**PKG- P05D00055-00 (Ver.002)**

Customer Approved

Date:

Approved	Checked	Designer
林裘中 **Daniel Lin**	張慶源 **Yuan Chang**	廖志豪 **Rex Liao**

POWERTIP
2018.01.11
TWRD APR

☐ Preliminary specification for design input

■ Specification for sample approval

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History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
04/21/2017	01	001	Preliminary	-	Rex
09/14/2017	01	002	First Sample SPEC	-	Rex
01/10/2018	01	003	Second Sample SPEC Modify Total thickness.	-	Rex

Total：20Page

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4. RELIABILITY TEST

5. PRECAUTION RELATING PRODUCT HANDLING

1. SPECIFICATIONS

1.1 Features

Hardware

CPU	RISC Processor	Cortex-M4 -- STM32F429IGT6 (180MHz)
Memory	On Board RAM	8MB SDRAM
	On Board ROM	16MB SPI Flash
	External Storage	1x Micro SD (under 32G)
Display	Resolution	Up to 1024 RGB x 768
	Touch Panel	Projected Capacitive Touch
Interface	USB	1x USB2.0 Host
	COM Port	1x RS485 or RS232
	CAN BUS	2.0B Active
	Alarm	Buzzer
	Ethernet	IEEE 1588v2
	RTC	Supported
	GPIO	22pin GPIO
Power Input	DC	7V ~ 36V

Rear View
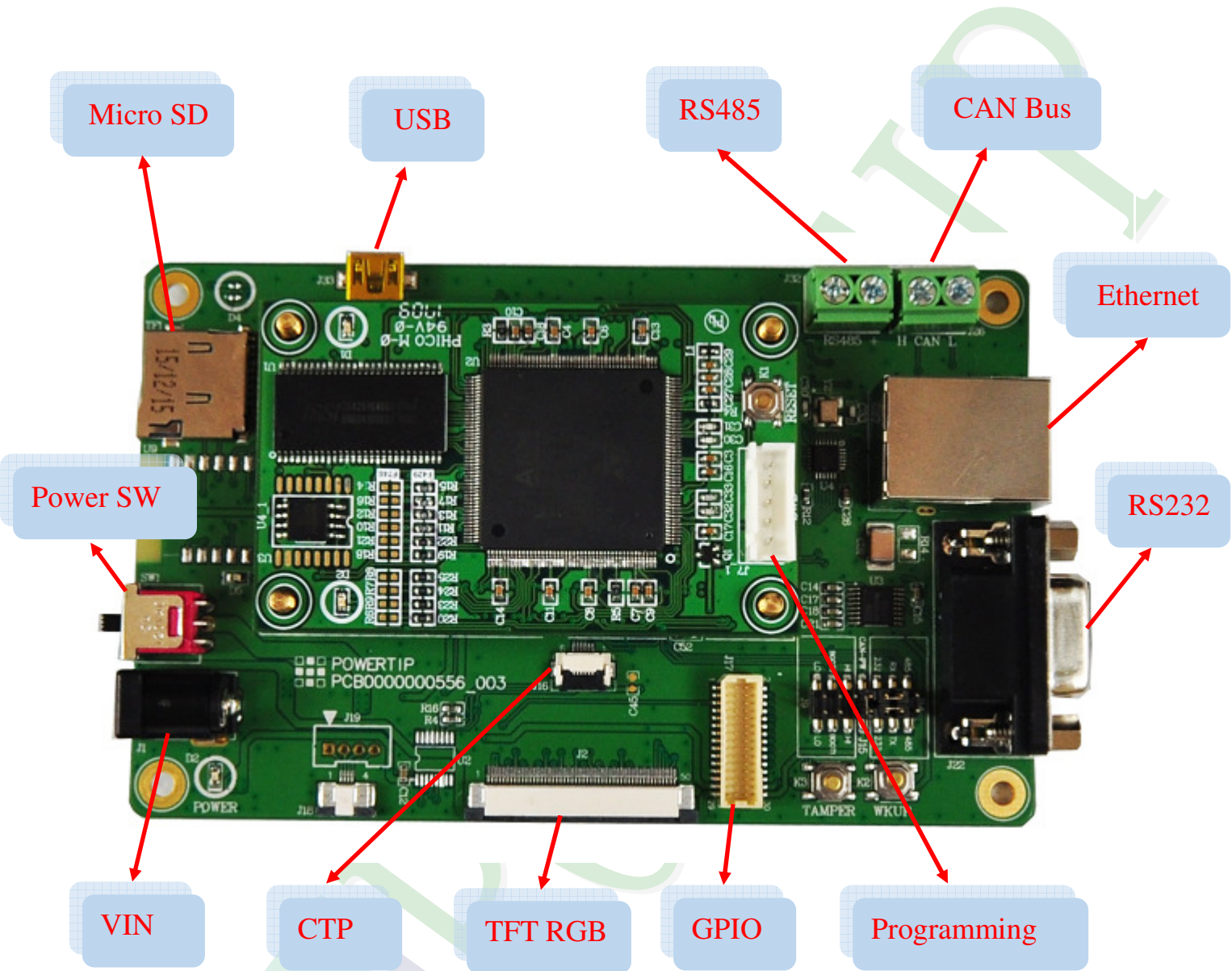
NOTE：If you have any request, please feel free to contact us.

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	128.0(W) x 75.6(L) x 22.4MAX	mm

1.3 Absolute Maximum Ratings

Ta = 25℃

Item	Symbol	Condition	Min.	Max.	Unit
Power Supply	VIN	—	-0.3	40.0	V
Operating Temperature	T_{OP}	—	-20	70	℃
Storage Temperature	T_{ST}	—	-30	80	℃
Humidity	H_D	Ta=60 ℃	10	90	%RH

1.4 DC Electrical Characteristics

Ta = 25℃

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	VIN	(1)	7	-	36	V
Power Consumption of System	P_{VIN}	VIN=9V (2)	-	-	4.1	W

Note 1: VIN is to connect to 'J1' connector at board.

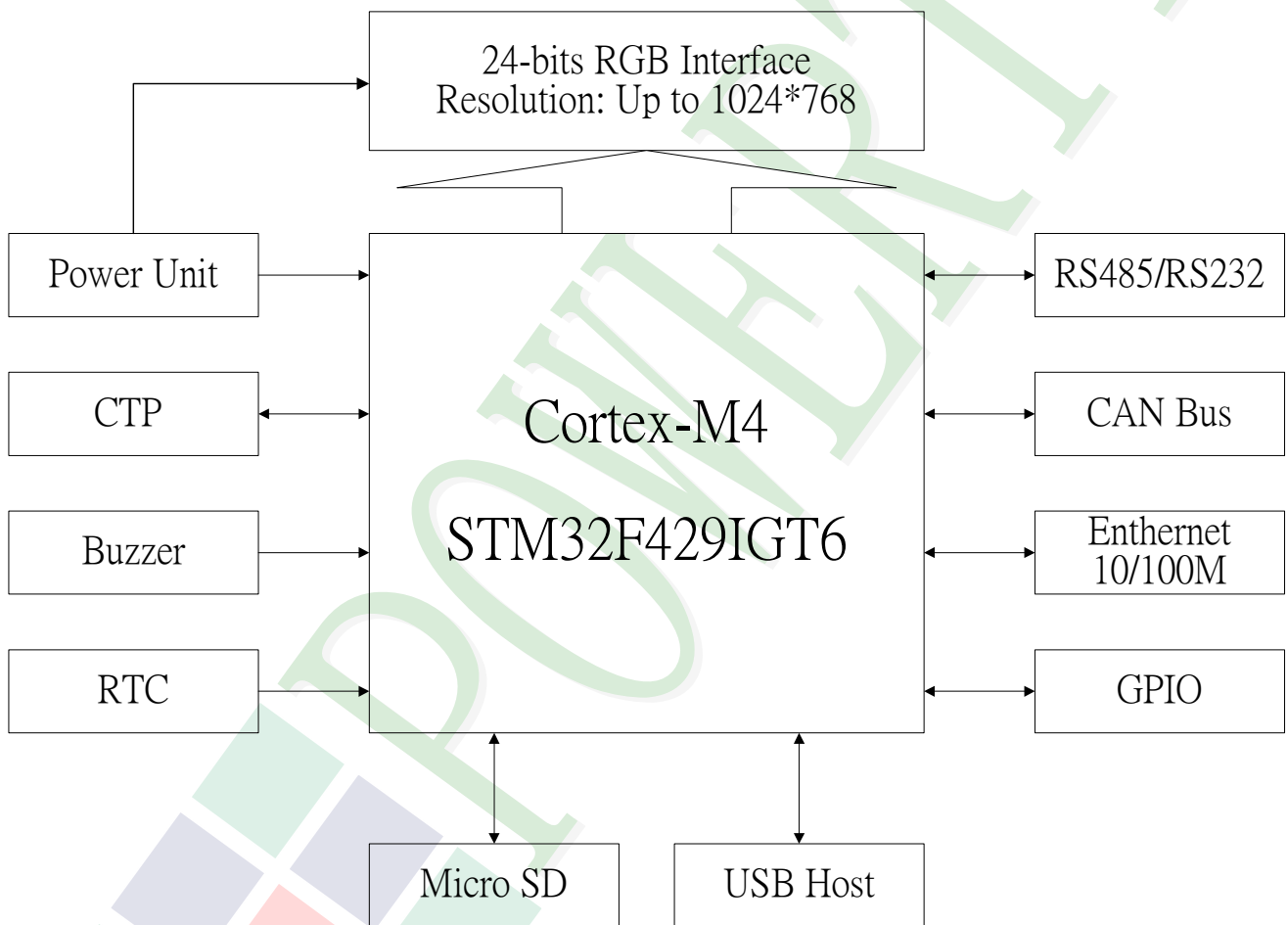2. Connect with PH800480T024-IHC (PTC Product) for test power consumption.

2. MODULE STRUCTURE

2.1 Counter Drawing

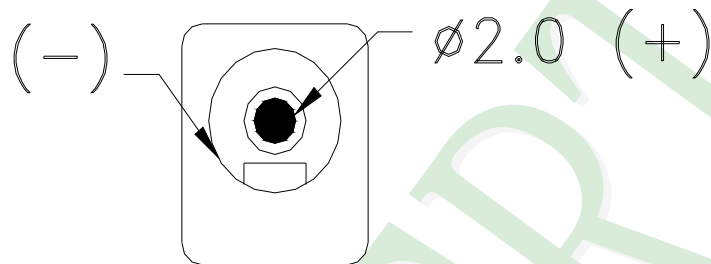### 2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram

```
                        ┌─────────────────────────────┐
                        │   24-bits RGB Interface      │
                        │  Resolution: Up to 1024*768  │
                        └─────────────────────────────┘

┌──────────────┐        ┌─────────────────────────────┐        ┌──────────────┐
│  Power Unit  │───────▶│                             │◀──────▶│ RS485/RS232  │
└──────────────┘        │                             │        └──────────────┘

┌──────────────┐        │                             │        ┌──────────────┐
│     CTP      │◀──────▶│        Cortex-M4            │◀──────▶│   CAN Bus    │
└──────────────┘        │                             │        └──────────────┘

┌──────────────┐        │       STM32F429IGT6         │        ┌──────────────┐
│    Buzzer    │◀──────▶│                             │◀──────▶│  Enthernet   │
└──────────────┘        │                             │        │   10/100M    │
                        │                             │        └──────────────┘
┌──────────────┐        │                             │        ┌──────────────┐
│     RTC      │◀──────▶│                             │◀──────▶│     GPIO     │
└──────────────┘        └─────────────────────────────┘        └──────────────┘

              ┌──────────────┐        ┌──────────────┐
              │   Micro SD   │        │   USB Host   │
              └──────────────┘        └──────────────┘
```

2.2 Interface Pin Description

J1 --- Power Supply

Pin No.	Symbol	Function
+	VIN	DC Power Supply
-	GND	Ground

J33 --- USB 2.0 Mini USB B type

Pin No.	Symbol	Function
1	5V	5V
2	D-	Data – (Data M)
3	D+	Data + (Data P)
4	NC	NC
5	GND	Ground
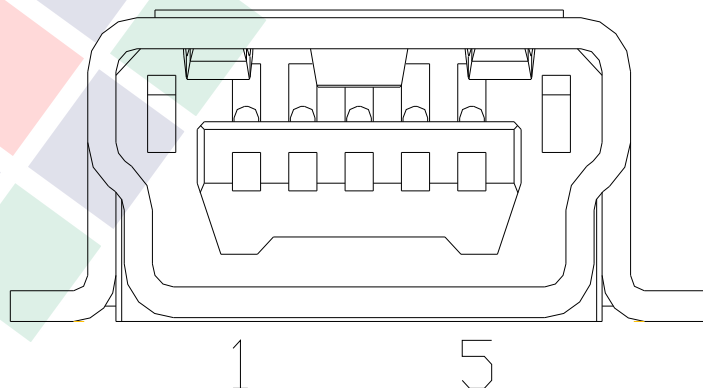
J37 --- Ethernet IEEE 1588v2

Pin No.	Symbol	Function
1	RX+	Data Receive
2	RX-	Data Receive
3	TX+	Data Transmit
4	3V3	Power Supply.
5	3V3	Power Supply.
6	TX-	Data Transmit
7	NC	Not Used.
8	GND	Ground.
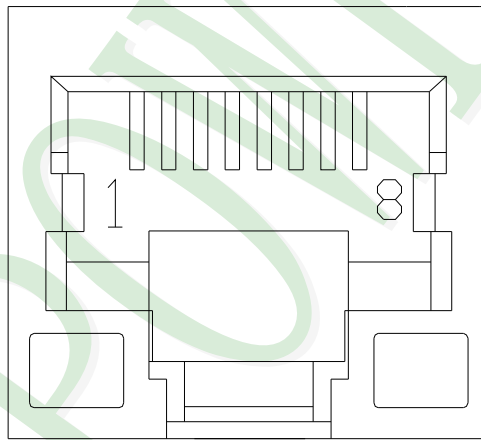
J22 --- RS232 DB9 Female Type

Pin No.	Symbol	Function
1	NC	Not Used.
2	RXD1	Transmit from STM32. Receiver for customer.
3	TXD1	Receiver for STM32. Transmit from customer.
4	NC	Not Used.
5	GND	Ground
6	NC	Not Used.
7	NC	Not Used.
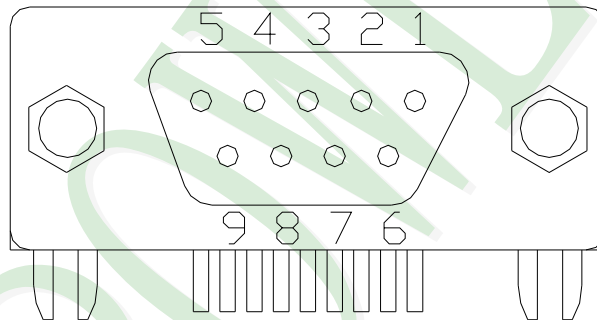
J26 --- CAN BUS

Pin No.	Symbol	Function
1	CANL	Low-Level CAN bus line.
2	CANH	High-Level CAN bus line.

J32 --- RS485

Pin No.	Symbol	Function
1	A	Non-inverting transmitter output and non-inverting receiver input.
2	B	Inverting transmitter output and inverting receiver input.

J16 --- CTP   (Pitch0.5mm 6pin Bottom contact)

Pin No.	Symbol	Function
1	GND	Ground.
2	3V3	Power Supply.
3	I2C_SCL	I2C SCL for CTP.
4	I2C_SDA	I2C SDA for CTP.
5	CTP_INT	Interrupt Signal for CTP.
6	CTP_RST	Reset Signal for CTP.

J2   --- TFT   Signal (Pitch 0.5mm 50pin Upper contact)

Pin No.	Symbol	Function
1	GND	Ground.
2	3V3	Power Supply (+3.3V).
3	3V3	Power Supply (+3.3V).
4	5V	Power Supply (+5.0V).
5	5V	Power Supply (+5.0V).
6	PWM	PWM Signal.
7	GND	Ground.
8	R0	Red Data.
9	R1	Red Data.
10	R2	Red Data.
11	R3	Red Data.
12	GND	Gground.
13	R4	Red Data.
14	R5	Red Data.
15	R6	Red Data.
16	R7	Red Data.
17	GND	Ground.
18	G0	Green Data.
19	G1	Green Data.
20	G2	Green Data.
21	G3	Green Data.
22	GND	Ground.
23	G4	Green Data.
24	G5	Green Data.
25	G6	Green Data.
26	G7	Green Data.
27	GND	Ground.
28	B0	Blue Data.
29	B1	Blue Data.
30	B2	Blue Data.

Pin No.	Symbol	Function
31	B3	Blue Data.
32	GND	Ground.
33	B4	Blue Data.
34	B5	Blue Data.
35	B6	Blue Data.
36	B7	Blue Data.
37	GND	Ground.
38	HS	Line synchronization signal. Horizontal Sync.
39	VS	Frame synchronization signal. Vertical Sync.
40	GND	Ground.
41	DE	Data Enable.
42	GND	Power Ground.
43	DCLK	Sample clock. Data will be latched at the falling edge of DCLK.
44	GND	Power ground.
45	SPI_CS	SPI /CS Signal.
46	SPI_SDA	SPI SDA Signal.
47	SPI_SCK	SPI SCK Signal.
48	DIS_CTL	Display Enable Control.
49	/RESET	Reset Signal.
50	GND	Power ground.

J17 --- GPIO Signal (Pitch 1.0mm)

Pin No.	Symbol	Function
1	PB6	Connect with STM32 pin164 (PB6).
2	PB7	Connect with STM32 pin165 (PB7).
3	PA4	Connect with STM32 pin50 (PA4).
4	PD3	Connect with STM32 pin145 (PD3).
5	PA5	Connect with STM32 pin51 (PA5).
6	PD5	Connect with STM32 pin147 (PD5).
7	PA8	Connect with STM32 pin119 (PA8).
8	PD7	Connect with STM32 pin151 (PD7).
9	PA15	Connect with STM32 pin138 (PA15).
10	PI1	Connect with STM32 pin132 (PI1).
11	PE3	Connect with STM32 pin2 (PE3).
12	PI3	Connect with STM32 pin134 (PI3).
13	PE2	Connect with STM32 pin1 (PE2).
14	PI5	Connect with STM32 pin174 (PI5).
15	PB3	Connect with STM32 pin161 (PB3).
16	PI6	Connect with STM32 pin175 (PI6).
17	PB4	Connect with STM32 pin162 (PB4).
18	PI7	Connect with STM32 pin176 (PI7).
19	PC2	Connect with STM32 pin34 (PC2).
20	PI8	Connect with STM32 pin7 (PI8).
21	PC6	Connect with STM32 pin115 (PC6).
22	PI11	Connect with STM32 pin13 (PI11).
23	GND	Power ground.
24	GND	Power ground.
25	GND	Power ground.
26	GND	Power ground.
27	3V3	Power Supply.(+3.3V)
28	3V3	Power Supply.(+3.3V)
29	5V	Power Supply.(+5.0V)
30	5V	Power Supply.(+5.0V)

J9 --- Boot Mode Setting (Pitch 2.0mm)

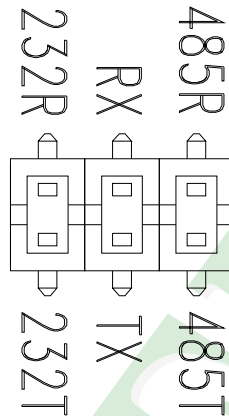| MODE	BOOST0	BOOST1
User Flash	L	X
System Memory	H	L
Embedded SRAM	H	H

Note: X—Don't Care.
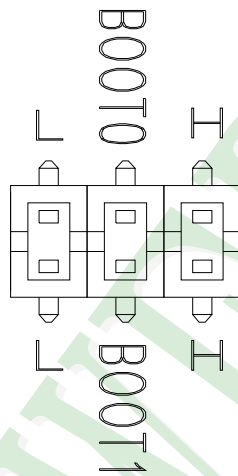
J15 --- Power Supply For RS485 and CAN BUS (Pitch 2.0mm)

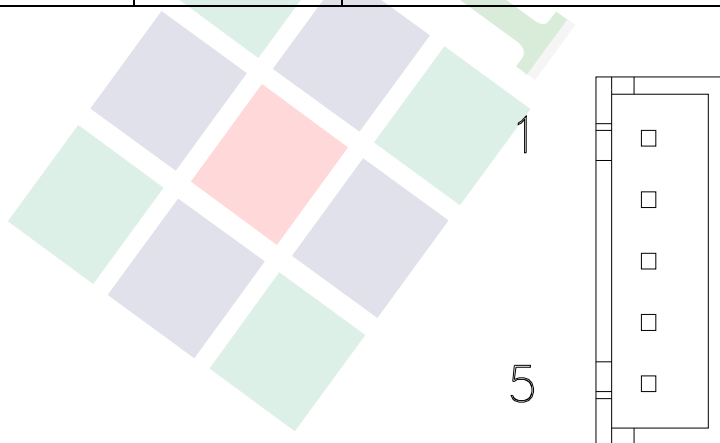Short J15 ---- +5V connect with RS485 and CAN BUS Unit.

Open J15 ---- +5V disconnect with RS485 and CAN BUS Unit.

J14 --- RS232/RS485 Mode Setting (Pitch 2.0mm)

MODE	RX	TX
RS-232	232R	232T
RS-485	485R	485T

J7 --- Programming (Pitch 2.5mm)
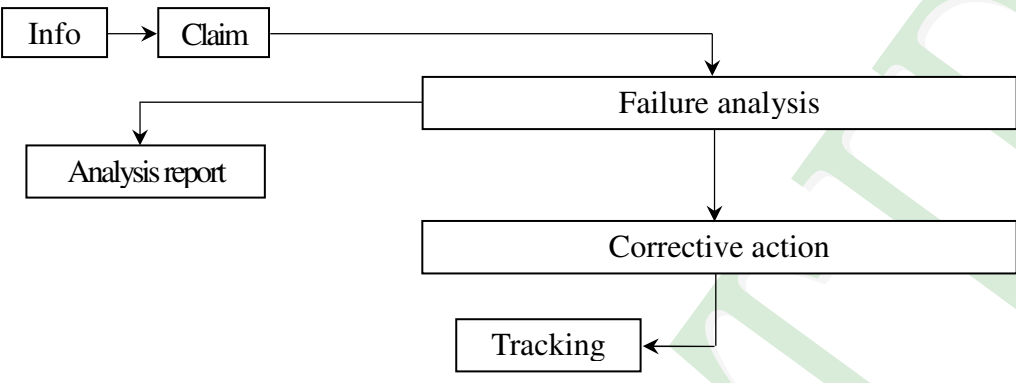
Pin No.	Symbol	Function
1	NRST	JTAG Test nReset
2	TCK	JTAG Test Clock
3	GND	Power ground.
4	TMS	JTAG Test Mode Selection
5	3V3	Power Supply (+3.3V).

3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart

Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Marketing & Design								
Sample Approval								
Pilot Run & Mass Product								
Ship Out								

Info → Survey

Request → Inquiry → Project evaluation

Project Validation (NG, OK)

Quote

Contract (NG)

Design check

Sample test

Verification (NG, OK)

Sample approval (NG, OK)

Pilot run & Reliability test

Verification (NG, OK)

Specification preparation

Mass production

Inspection (OK, NG)

Shipment

Ship out

Item	Customer	Sales	R&D	Q.A	Manufact uring	Product control	Purchase	Inventory control
Sales Service	Info → Claim ——→ Failure analysis ↓ Analysis report Corrective action ↓ Tracking							
Q.A Activity	1. ISO 9001 Maintenance Activities 2. Process improvement proposal 3. Equipment calibration 4. Education And Training Activities 5. Standardization Management							

4. RELIABILITY TEST

4.1 Reliability Test Condition

NO.	TEST ITEM	TEST CONDITION
1	High Temperature Storage Test	Keep in +70 ±2℃ 96 hrs Surrounding temperature, then storage at normal condition 4hrs.
2	Low Temperature Storage Test	Keep in −20 ±2℃ 96 hrs Surrounding temperature, then storage at normal condition 4hrs.
3	High Temperature / High Humidity Storage Test	Keep in +60℃ / 90% R.H duration for 96 hrs Surrounding temperature, then storage at normal condition 4hrs. (Excluding the polarizer)
4	Temperature Cycling Storage Test	−20℃ → +25℃ → +70℃ → +25℃ (30mins) (5mins) (30mins) (5mins) ←————— 10 Cycle —————→ Surrounding temperature, then storage at normal condition 4hrs.
5	Vibration Test (Packaged)	1. Sine wave 10～55 Hz frequency (1 min) 2. The amplitude of vibration :1.5 mm 3. Each direction (X、Y、Z) duration for 2 Hrs
6	Drop Test (Packaged)	<table><tr><td>Packing Weight (Kg)</td><td>Drop Height (cm)</td></tr><tr><td>0 ~ 45.4</td><td>122</td></tr><tr><td>45.4 ~ 90.8</td><td>76</td></tr><tr><td>90.8 ~ 454</td><td>61</td></tr><tr><td>Over 454</td><td>46</td></tr></table> Drop direction :※1 corner / 3 edges / 6 sides each 1times

5. PRECAUTION RELATING PRODUCT HANDLING

5.1 SAFETY

5.1.1   If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.

5.1.2   If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

5.2 HANDLING

5.2.1   Avoid any strong mechanical shock which can break the glass.

5.2.2   Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.

5.2.3   Do not remove the panel or frame from the module.

5.2.4   The polarizing plate of the display is very fragile. So , please handle it very carefully ,do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)

5.2.5   Do not wipe the polarizing plate with a dry cloth , as it may easily scratch the surface of plate.

5.2.6   Do not touch the display area with bare hands , this will stain the display area.

5.2.7   Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.

5.2.8   To control temperature and time of soldering is $320\pm10°C$ and 3-5 sec.

5.2.9   To avoid liquid (include organic solvent) stained on LCM .

5.3 STORAGE

5.3.1   Store the panel or module in a dark place where the temperature is $25°C$ $\pm5°C$ and the humidity is below 65% RH.

5.3.2   Do not place the module near organics solvents or corrosive gases.

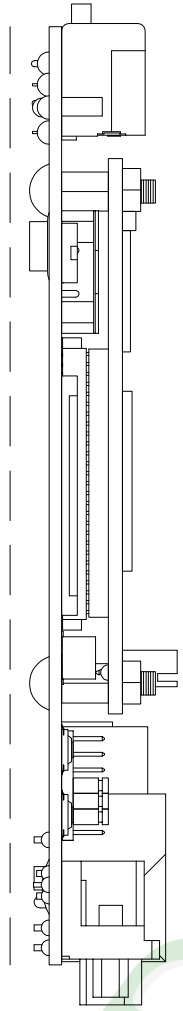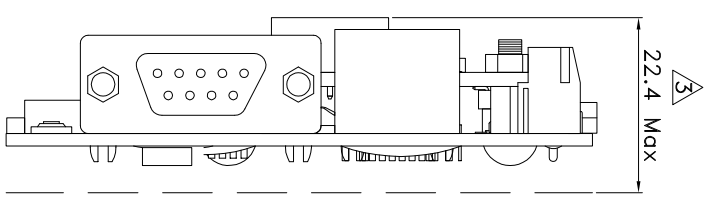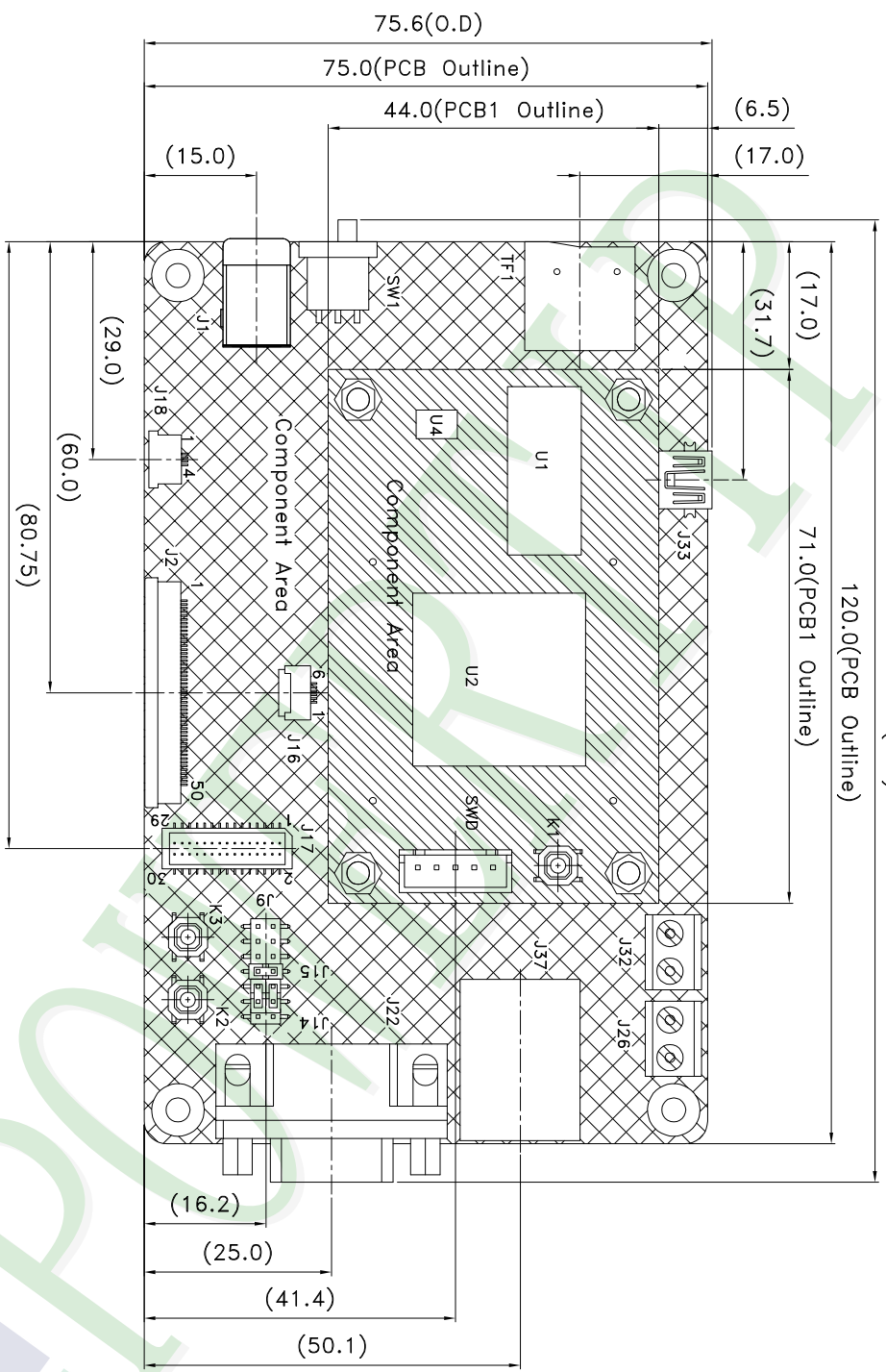5.3.3   Do not crush , shake , or jolt the module.

5.4 TERMS OF WARRANTY

5.4.1   Applicable warrant period

The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2   Unaccepted responsibility

This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment , we cannot take responsibility if the product is used in nuclear power control equipment , aerospace equipment , fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.

007					
006					
005					
004	Modify total thickness	Mandy Chang	2018/01/04		
003	Modify total thickness	Mandy Chang	2017/09/13		
002	Modify total thickness	Mandy Chang	2017/04/17		
001	NEW DRAWING				
REV	REV BY	REVISER	DATE		

PART NO: P05D00055-00

DRAWING NAME: LMD-P05D00055-00

TITLE: LCD MODULE DRAWING

75.6(O.D)
75.0(PCB Outline)
44.0(PCB1 Outline)
(6.5)
(15.0)
(17.0)
(17.0)
(31.7)
128.0±1.0(O.D)
120.0(PCB Outline)
71.0(PCB1 Outline)
(29.0)
(60.0)
(80.75)
(16.2)
(25.0)
(41.4)
(50.1)
22.4 Max

Component Area

SW1
TF1
J1
J18
J2
J1
U4
U1
J33
U2
J16
J17
SWD
J9
J15
J14
K3
K2
K1
J22
J37
J32
J26
50
29
30

POWERTIP TECHNOLOGY CORPORATION
久正光電股份有限公司

		Design	Mandy Chang	Approve	Jimmy Chen
		Check	Tina Chen		
		REVISER	Mandy Chang		

NOTES:
1. The tolerance unless classified ±0.5mm
2. Component Area

		Unit	Material	Surface	Thickness	Quantity
Page	Scale	MM				
1/1	1:1					

	Length/Min (mm)	Tolerance Precision	Precision Level
	1 ~ 4	-	-
	4 ~ 16	-	-
	16 ~ 63	-	-
	63 ~ 250	-	-
	250 ~ 1000	-	-

PT-A-054-01

1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM) △2	P05D00055-00	128.0 X 75.6 X 21.4	0.0847	36	3.0492
2	靜電袋(1)Antistatic Bag	BAG240170ARABA	240 X 170	0.0048	36	0.1728
3	氣泡袋(2)Bubble Bag	BAG170150BRABA	170 X 150	0.0045	36	0.162
4	A4隔板(3)A4 Partition	BX24500070BNBA	245 X 70 X 2.5	0.014	42	0.588
5	B4隔板(4)B4 Partition	BX29300070BLBA	293 X 70 X 2.5	0.012	24	0.288
6	海綿墊(5)Foam Rubber Cushion	OTFOAM00006ABA	290 X 240 X 10	0.02	12	0.24
7	C3內盒(6)Product Box	BX31025510AABA	310 X 255 X 100	0.263	6	1.578
8	外紙箱(7)Carton	BX52732536CCBA	527 X 325 X 360	1.092	1	1.092
9						

2.一 整箱總重量 (Total LCD Weight in carton) : △2 7.17　Kg±10%

3.單箱數量規格表 (Packaging Specifications and Quantity) :
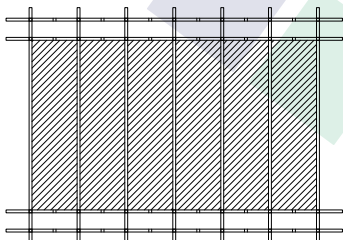(1)Quantity Of Spacer :　A4隔板　X　7 , B4隔板　X　4
(2)Total LCM quantity in carton : quantity per box　　6　　x no of boxes　　6　　=　　36

(5) 海綿墊
Foam Rubber Cushion

(1)靜電袋+(2)氣泡袋+LCM
Antistatic Bag+Bubble Bag+LCM

(3)(4)隔板
Partition
(註 Remark 1)

(5) 海綿墊
Foam Rubber Cushion

(6) C3內盒
Product Box

(7)外紙箱
Carton
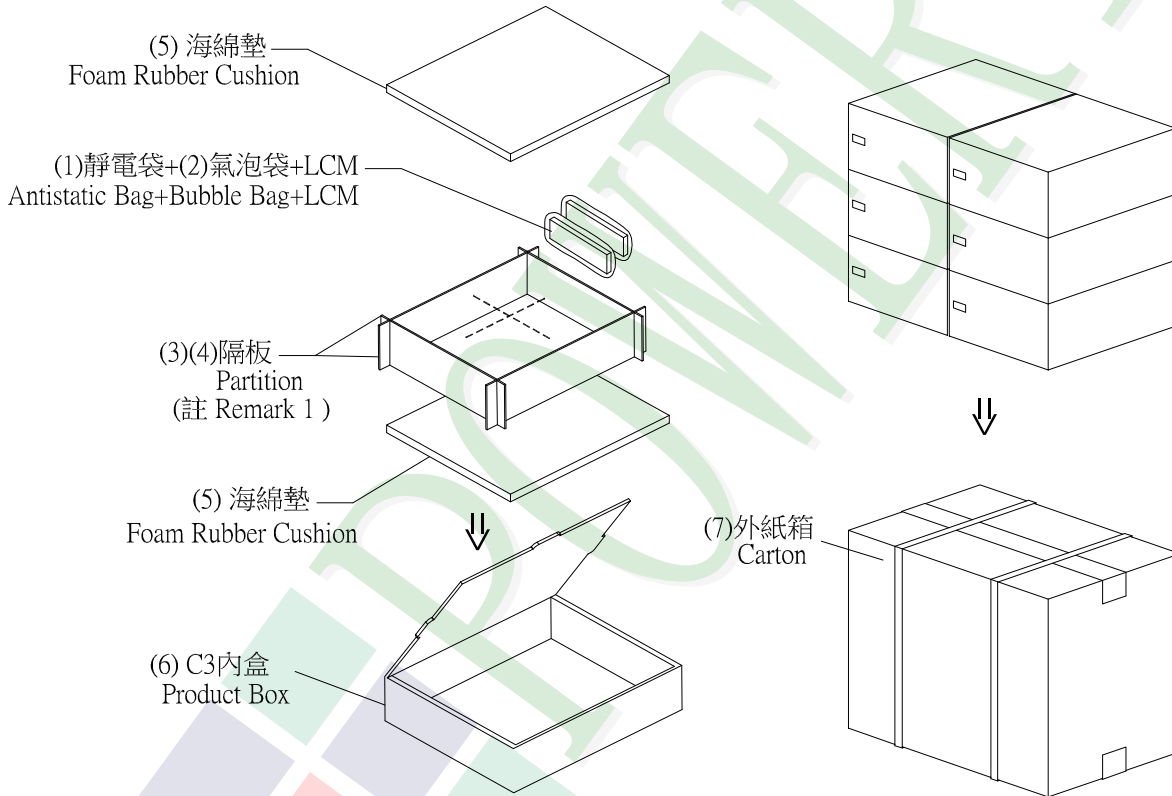
特 記 事 項 (REMARK)

1.LCM排放示意圖(前後間隔不放置):
1. LCM placed as figure showing:
 (First and last slot should be empty)

▨ 模組(LCM) X 1pcs.