



乾坤富實業有限公司  
ENDRICH Co., Ltd.

# 12S28P Battery Tray

## Specification with Nano-LFP Cells

Attend to:

Accepted by Customer	
Title	
Signature (Date)	

ENDRICH Co., Ltd.			
Approved By (Date)	Check By (Date)	Check By (Date)	Originator (Date)



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### 1. Scope:

This specification describes 12S28P battery tray for high voltage energy storage system(ESS). It is using NanoLFP cell manufactured by LithiumWerks. The pack could only be series connected to thousand voltage.

### 2. Battery Pack Specification

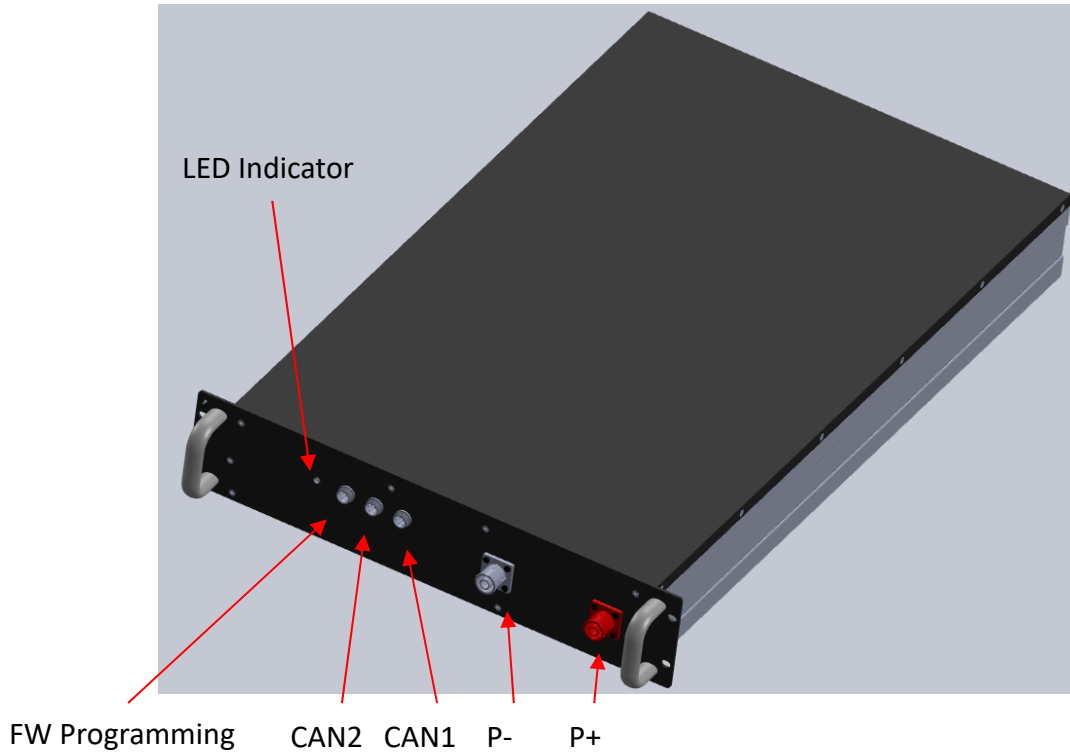
Item	Function	Specification	Comment
1.	Cell Type	NanoLFP 2.5Ah	
2.	Pack Configuration.	12S28P	
	Nominal Voltage	39.6Vdc	
	End of Discharge Voltage	30Vdc	
3.	Nominal Capacity	70000 mAh	
4.	Charging Method	CC-CV Mode	
	Charging Voltage	43.2Vdc	
	Charging Current	210 A	
5.	Max. Discharge Current	250 A	For 10 sec
6.	Max. Cont. Discharge Current	210A	
7.	Charge Temperature	5°C~45°C	
8.	Discharge Temperature	-10°C~55°C	
9.	Storage Temperature	-30°C~60°C	
10.	Dimension	564 x 850 x 113(mm)	WxLxH (exclude connector & handle)
11.	Weight	60kg	
12.	Withstanding HiTester	Leakage <0.1mA, @3500V,60Sec	
13.	Insulation	500V,>300MΩ	
14.	IP Level	IP44	Indoor Use

### 3. Terminals

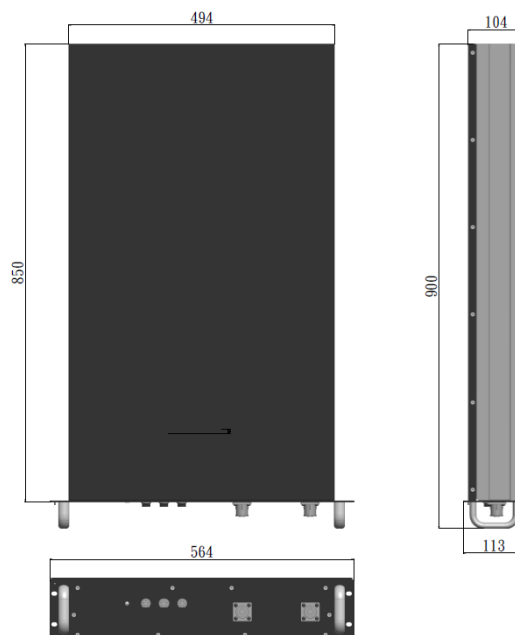
Item	Function	Specification	Comment
1.	Pack +	Pack Positive Terminal	SLPIRCBPSR1
2.	Pack-	Pack Negative Terminal	SLPIRCBPSB0
3.	Communication & Power 1	CAN 1 communication & 24V Power	701 - 5Pin Cord Plug
4.	Communication & Power 2	CAN 2 communication & 24V Power	701 - 5Pin Cord Plug
5.	Firmware Programming		701 - 6Pin Cord Plug

#### 4. Communication & Power Pin Assignment

Item	Function	Specification	Comment
1.	CAN H	CAN communication	
2.	CAN L	CAN communication	
3.	CAN G	CAN communication	
4.	2V +	External power supply	
5.	24V-	External power supply	



#### 5. Dimension



## 6. LED Indicator

No.	LED States	Battery States Description	Note
1	Green	Normal	
2	Yellow	Communication Failure	
3	Yellow Blink	Protection Trigger	

## 7. Charge State of Battery Pack Before at Delivery

The battery shall be shipping in 30%~50% charged state.

## 8. Handling Instructions

### HANDLING INSTRUCTIONS FOR LITHIUM ION RECHARGEABLE BATTERY

Please read and follow the handling instructions for the battery before use.

Improper use of the battery may cause heat, fire explosion, damaged or capacity deterioration of the battery.

01. Do not place or leave the battery and equipment in the reach of infants so that they are not able to swallow or mistreat the battery by mistake. In case of ingestion, consult with a doctor immediately.
02. Do not let leaked electrolyte come into contact with eyes or skin. In such a case, immediately wash the area of contact with clean water and seek help from a doctor. If not treated soon, prolonged contact may cause serious injury.
03. Do not put the battery into a fire. Do not use it or leave it in a place near fire, heaters, or high temperature sources. In such a case, the insulator in the battery may be melted, the safety vent and structure may be damaged, or the electrolyte may catch fire, all of which may cause heat generation, explosion, or fire.
04. Do not submerge the battery in water, or wet the battery. If the protecting device assembled in the battery is damaged, the battery may be charged with an abnormal current and voltage and may cause a chemical reaction within the battery, which may result in the cause of heat generation, explosion, or fire of the battery.
05. Do not use any battery charger not specified by end product, also follow the charge conditions specified by end product. If the battery is charged under other conditions (a high temperature, a high voltage / current, or an altered charger) not specified by end product, the battery may become over-charged with an excessive current and cause heat, explosion, or fire with abnormal chemical reactions.
06. Do not use, charge, or leave the battery near fire or in a car under the blazing sun. Such a high temperature may cause damage of the protecting device in the battery, which may result in an abnormal reaction, and then heat generation, explosion, or fire.
07. Do not connect the battery reversed in positive (+) and negative (-) terminals in the charger or equipment. In case the battery is connected and charged reversely, it may cause heat generation, explosion, or fire due to an abnormal chemical reaction.

08. Do not let the battery terminals (+ and -) contact a wire or any metal (like a metal necklace or a hairpin) with which it carried or stored together. In such a case, the battery will be shorted and cause an excessive current, which may result in heat generation, explosion, or fire.
09. Do not connect the battery directly to an electric outlet or cigarette heater socket in car. With a high voltage applied, the battery may overheat, explode, or cause fire.
10. Do not throw or drop the battery. Strong impact may damage the protecting device, which may cause an abnormal chemical reaction during charging and result in heat generation, explosion, or fire of the battery.
11. Do not drive a nail in, hit with a hammer, or stamp on the battery. In such a case, the battery may be deformed and shorted, witch which may cause heat generation, explosion, or fire of the battery.
12. Do not solder the battery directly. Heat applied during soldering may damage the insulator of the safety vent and mechanism, which may result in heat generation, explosion, or fire of the battery.
13. Do not disassemble or alter the battery. The battery employs a safety mechanism and a protecting device in order to avoid any danger.  
If these are damaged, heat, explosion or fire may be caused.



#### CAUTION

01. Do not put the battery in a microwave or a pressure cooker.  
Sudden heat may damage the seal of the battery and may cause heat generation, explosion, or fire of the battery.
02. Do not use the battery with other maker's batteries, different types and / or models of batteries such as dry batteries, nickel-metal hydride batteries, or nickel-cadmium batteries, or new and old lithium ion batteries together.  
In such a case, over-discharge during use, or over-charge during charge may occur abnormal chemical reactions and may cause heat generation, explosion, or fire of the battery.
03. Do not leave the battery in a charger or equipment if it generates an odor and / or heat, changes color and / or shape, leaks electrolyte, or causes any other abnormality.  
In such a case, immediately take the battery out of the charge or equipment and keep it away from fire, otherwise, the battery might overheat, explode, or cause fire.
04. Discontinue charging after specified charging time even if the charge is not complete, otherwise, the battery might cause heat generation, explosion, or fire.
05. Do not use the battery in the place where the static electricity (more than the limit of the manufacturer's guarantee) occurs. Otherwise, the protecting device in the battery might be damaged and cause heat generation, explosion, or fire.
06. Do not use the battery in other than the following conditions; otherwise, the battery might cause heat generation, damage, or deterioration of its performance.

# 9. Appendix A – Power Connector

**GENERAL TOLERANCE**

DIM. RANGE	0.5 - 3	> 3 - 6	> 6 - 30	> 30 - 120	> 120 - 400
TOLERANCE	±0.1	±0.1	±0.2	±0.3	±0.5

**CUSTOMER DRAWING**

**DIMENSION A**

**DIMENSION WIRE SIZE**

22.8 REF.	50MM2
25.8 REF.	70MM2
28.8 REF.	85MM2
	95MM2

**MFG PART NUMBER: CIO-73019I- ( ) ( ) ( ) ( )**

BASE NUMBER  
COLOR, SEE TABLE  
PIN TYPE, SEE TABLE  
SEALING, SEE TABLE  
KEYWAY, SEE TABLE

**CODE NUMBER REFERENCE: SLPIRC ( ) P ( ) ( ) ( )**

BASE NUMBER  
PIN TYPE, SEE TABLE  
PANEL MOUNT  
SEALING, SEE TABLE  
COLOR, SEE TABLE  
KEYWAY, SEE TABLE

ITEM	DESCRIPTION	CODE NUMBER	MFG NUMBER
COLOR	ORANGE	O	0
	BLACK	B	1
	RED	R	2
PIN TYPE	50MM <sup>2</sup> CRIMP	50C	5
	70MM <sup>2</sup> CRIMP	70C	7
	85MM <sup>2</sup> CRIMP	85C	8
	95MM <sup>2</sup> CRIMP	95C	8
BUSBAR	BUSBAR	B	1
	SCREW	T	2
SEALING	IP67(MATED)	S	0
	NO SEALING	N	1
	90°	O	0
KEYWAY	180°	1	1
	60°	2	2
	120°	3	3
	150°	4	4

**SPECIFICATIONS**

CURRENT RATING	200A MAX FOR 50MM <sup>2</sup> 250A MAX FOR 70MM <sup>2</sup> 300A MAX FOR 85MM <sup>2</sup> 350A MAX FOR 95MM <sup>2</sup>
OPERATING VOLTAGE	1000V DC
OPERATING TEMPERATURE	-40° C-125° C
CONTACT RESISTANCE	0.5mΩ
PROTECTION CLASS	IP67 (MATED)

2. IF CHOOSE NO SEALING TYPE, WILL BE NO O-RING AND GASKET.

1. THE REFERENCED PRODUCT IS IN COMPLIANCE WITH THE MAXIMUM CONCENTRATION VALUES (MCV'S) AS SET BY RoHS 2.0 DIRECTIVE 2011/65/EU AND ANNEX II AMENDMENT DIRECTIVE (EU)2015/863.

**AMPHENOL INDUSTRIAL OPERATIONS**  
10.3MM SURLOK PLUS RECEPTACLE

**MFG PART NUMBER: CIO-73019H**

**GENERAL TOLERANCE**

DIM. RANGE	0.5 - 3	> 3 - 6	> 6 - 30	> 30 - 120	> 120 - 400
TOLERANCE	±0.1	±0.1	±0.2	±0.3	±0.5

**CUSTOMER DRAWING**

**DIMENSION A**

**DIMENSION WIRE SIZE**

13.6±0.3MM	FOR 50MM <sup>2</sup>
15.5±0.3MM	FOR 70MM <sup>2</sup>
18.2±0.3MM	FOR 85MM <sup>2</sup>
18.2±0.3MM	FOR 95MM <sup>2</sup>

**MFG PART NUMBER: CIO-73019O- ( ) ( ) ( ) ( )**

BASE NUMBER  
COLOR, SEE TABLE  
WIRE RANGE, SEE TABLE  
SEALING, SEE TABLE  
KEYWAY, SEE TABLE

**CODE NUMBER REFERENCE: SLPPC ( ) B ( ) ( ) ( )**

BASE NUMBER  
WIRE RANGE, SEE TABLE  
WITH BACKSHELL  
SEALING, SEE TABLE  
COLOR, SEE TABLE  
KEYWAY, SEE TABLE

ITEM	DESCRIPTION	CODE NUMBER	MFG NUMBER
COLOR	ORANGE	O	0
	BLACK	B	1
	RED	R	2
WIRE RANGE	50MM <sup>2</sup>	50	5
	70MM <sup>2</sup>	70	7
SEALING	IP67(MATED)	S	0
	NO SEALING	N	1
KEYWAY	90°	O	0
	180°	1	1
	60°	2	2
	120°	3	3
	150°	4	4

**SPECIFICATIONS**

CURRENT RATING	200A MAX FOR 50MM <sup>2</sup> 250A MAX FOR 70MM <sup>2</sup> 300A MAX FOR 85MM <sup>2</sup> 350A MAX FOR 95MM <sup>2</sup>
OPERATING VOLTAGE	1000V DC
OPERATING TEMPERATURE	-40° C-125° C
CONTACT RESISTANCE	0.5mΩ
PROTECTION CLASS	IP67 (MATED)

3. 50mm<sup>2</sup> AND 70mm<sup>2</sup> AND 85mm<sup>2</sup> WIRE CRIMP PLUG USE THE SAME CRIMP DIE AS 95mm<sup>2</sup>. SUPPLIED WITH A PRE-ASSEMBLED CRIMP REDUCER FOR 50mm<sup>2</sup> AND 70mm<sup>2</sup> SIZE.

2. IF CHOOSE NO SEALING TYPE, WILL BE NO O-RINGS AND GROMMET.

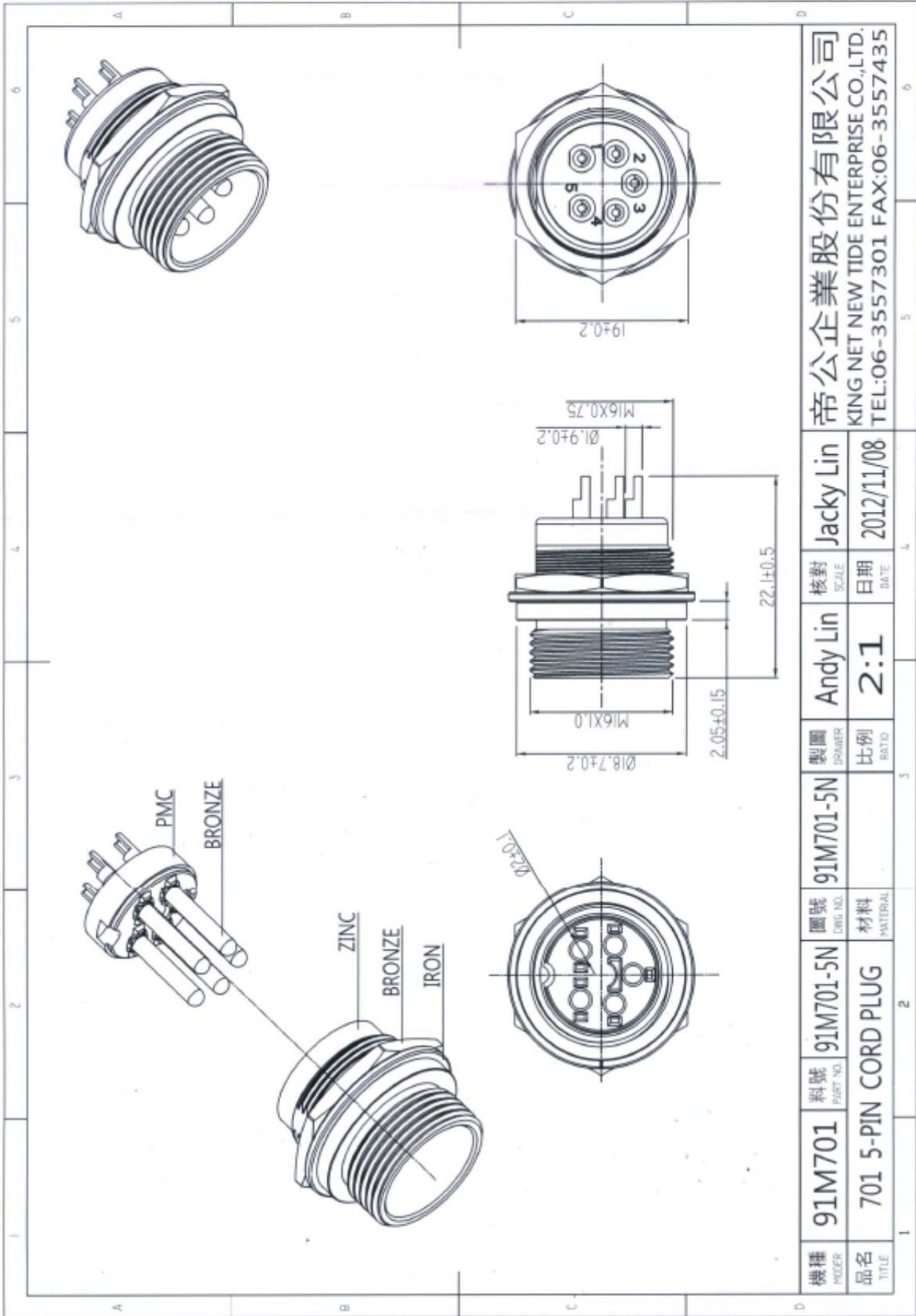
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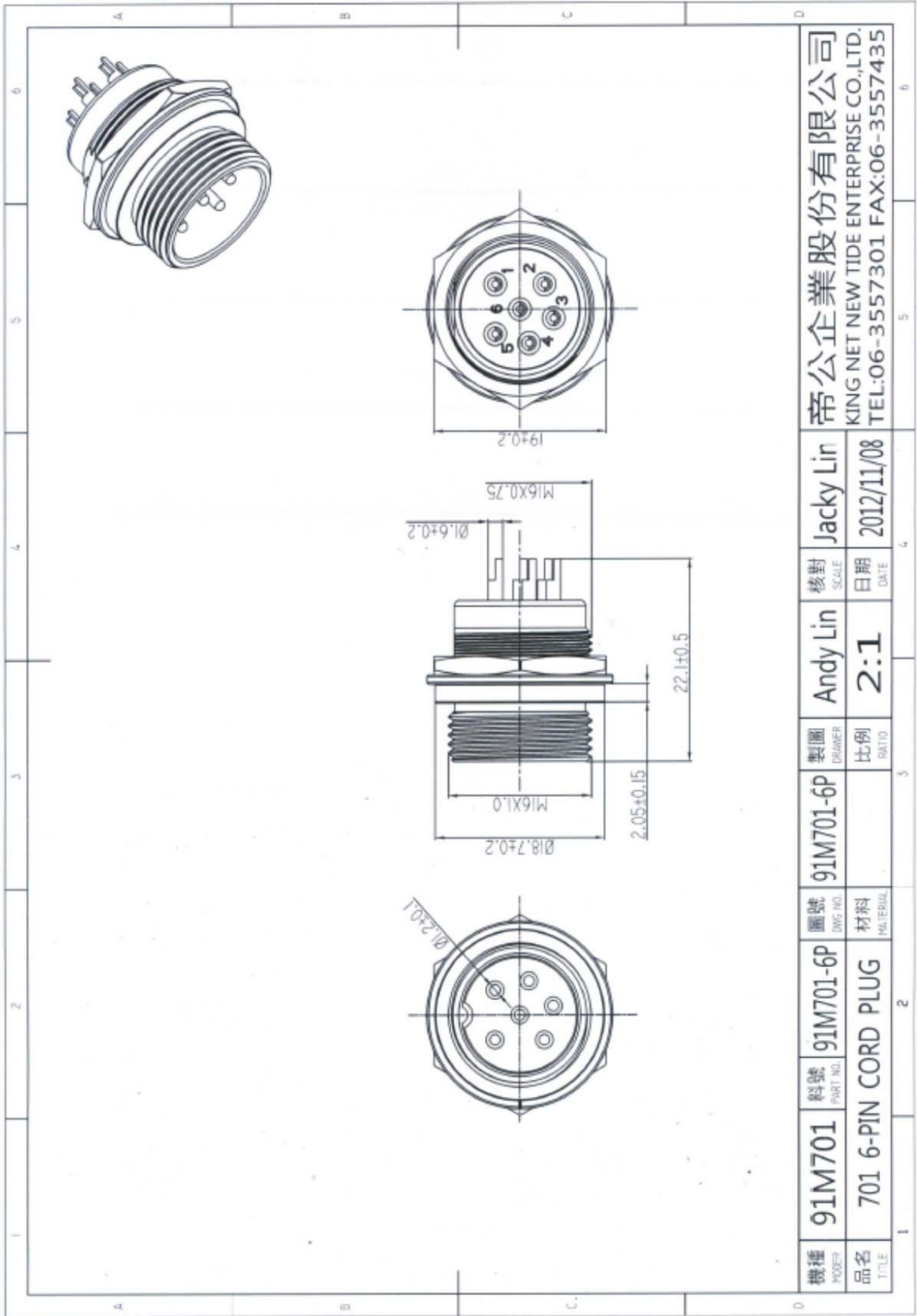
**AMPHENOL INDUSTRIAL OPERATIONS**  
10.3MM SURLOK PLUS PLUG, RIGHT ANGLE

**MFG PART NUMBER: CIO-73019O- ( ) ( ) ( ) ( )**



# 10. Appendix A – Communication Connector





機種 MODEL	91M701	料號 PART NO.	91M701-6P	圖號 DWG NO.	91M701-6P	製圖 DRAWER	Andy Lin	核對 SCALE	Jacky Lin	帝公企業股份有限公司 KING NET NEW TIDE ENTERPRISE CO.,LTD. TEL:06-3557301 FAX:06-3557435
品名 TITLE	701 6-PIN CORD PLUG			材料 MATERIAL		比例 RATIO	2:1	日期 DATE	2012/11/08	