



康舒科技

ACBEL POLYTECH INC.

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ACBEL POLYTECH INC.

CRPS 2U 1+1 Series

Power Distribution Board Specification

Model Number: R2CU4122A

AcBel PN: FSL026-7KAG

Compatible with R1C series PSU :

※ AC 550W(FSG051), 800W(FSE052), 1200W(FSF050)

※ DC 550W(FSE039), 800W(FSG058)

Revision: A

Release Date: 2021/01/19

Released by: Shan Lin

Change Date:

Changed by:

1. GENERAL SCOPE

This specification describes the performance characteristic of a DC-DC switching power distribution board (PDB) with a +12V main DC input and a +12Vsb auxiliary input. The PDB will switch into +5V, +3.3V main and +5Vsb auxiliary output and distribute +12V main output. The PDB operates with a single power supply or in 1+1 parallel. Power modules shall support hot-plug and active load share for 12V Main output. Mixed operation of different input type power modules (AC-DC and DC-DC) is allowed.

2. ELETRICAL PERFORMANCE

2.1 POWER BUS AND SIGNAL CONNECTOR

The PDB shall have a common Power Bus and signal connector complying to FCI PCE interconnect series. The exact PN for interconnect is **FCI PN 10035388-102LF (RA) or ALLTOP C21009-102H3-Y or equivalent.**

The Pin definition shall comply with chapter 11.2 and shall provide +12VDC as main input and +12Vsb DC as auxiliary input.

2.2 POWER INPUT SPECIFICATION

2.2.1 Input Voltage/Currents

The maximum input current defines the maximum possible input current to ensure the proper function of the PDB to meet all defined specifications.

INPUT VOLTAGE		INPUT CURRENT	MAX POWER
12VDC	550W	45.83A	550W
	800W	66.67A	800W
	1200W	100A	1200W
12V _{SB} DC		4A	48W

2.2.2 Line dropout (Refer to Power Module)

An Input line dropout is a transient condition defined as the line input to the power supply drops to 0 VAC at any phase of the AC line or DC line, for any length of time. During an Input dropout the power supply must meet dynamic voltage regulations requirements. An Input line dropout of any duration shall not cause dripping of the control signals and protection circuits. If the Input dropout lasts longer than the holdup time, the power supply should recover when VIN meets VIN_{recover} and meet all turn on requirements. An Input dropout of any length shall not cause any damage to the power supply.

Holdup time until Power output goes out of regulations

Loading	Main output	Standby output
80%	12mS	70mS

2.2.3 Efficiency of DC to DC converter

The efficiency of 3.3V and 5V DC to DC converter should meet the efficiency requirements. It's based on without cable no matter input is 230VAC or 115VAC:

Output Voltage	Load	Minimum Efficiency
5V	50%	94%
3.3V	50%	94%

2.2.4 AC Line Transient Specification (refer to power module)

AC line transient conditions shall be defined as “sag” and “surge” conditions.

“Sag” conditions are also commonly referred to as “brownout”, these conditions will be defined as the AC line voltage dropping below nominal voltage conditions.

“Surge” will be defined to refer to conditions when the AC line voltage rises above nominal voltage.

The power supply shall meet the requirements under the following AC line sag and surge conditions.

AC Line SAG and SURGE transient performance.

AC Line Sag (10sec interval between each sagging)

Duration	Sag	Operating AC voltage	Line frequency	Performance criteria
0 to 1/2 AC cycle	95%	Nominal AC Voltage ranges	50/60Hz	No loss of function or performance
>1 AC cycle	>30%	Nominal AC Voltage ranges	50/60Hz	Loss of function acceptable, self-recoverable
Continues	10%	Nominal AC Voltages	50/60Hz	No loss of function or performance
0 to 1/2 AC cycle	30%	Mid-point of nominal AC Voltages	50/60Hz	No loss of function or performance

2.2.5 Power Recovery

The power supply shall recover automatically (auto recover) after an Input power failure. Input power failure is defined to be any loss of Input power that exceeds the dropout criteria.

2.2.6 Input Line Leakage Current (Refer to Power module)

The maximum leakage current to ground for power supply system shall not exceed 3.5mA when tested at 230VAC Input voltages.

2.3 POWER OUTPUT SPECIFICATION

2.3.1 Output Power/Currents

The following table defines the power and current rating of the R2C power supply series. The combined output power of all outputs shall not exceed the maximum rated output power, if a combined power rating is specified. The power supply must meet both static and dynamic voltage regulation requirements.

Voltage		Min	Max	Peak
+3.3V		0.1A	18A	20A
+5V		0.1A	24A	28A
+12V	550W	0.5A	45.83A	55A
	800W	0.5A	66.67A	80A
	1200W	0.5A	100A	120A
+5Vsb		0.1A	4A	5.2A

1. Maximum continuous total DC output power should not exceed single PSU max power rating even though in 1+1 parallel condition.
2. Maximum continuous combined load on +3.3Vdc and +5Vdc outputs shall not exceed 140W.
3. Maximum peak total DC output power should not exceed 1.2 times of PSU output.

2.3.2 Voltage Regulation

The power supply shall stay within the following voltage limits when operating at steady state and dynamic loading conditions. These limits include the peak-peak ripple/noise conditions specified in paragraph 2.3.7. All outputs are measured with reference to the return remote sense (ReturnS) signal.

Parameter	MIN	NOM	MAX	Units	Tolerance
+3.3V	+3.13	+3.30	+3.47	V _{rms}	+/-5%
+5V	+4.75	+5.00	+5.25	V _{rms}	+/-5%
+12V	+11.40	+12.00	+12.60	V _{rms}	+/-5%
+5Vsb	+4.75	+5.00	+5.25	V _{rms}	+/-5%

2.3.3 Dynamic Loading

The power supply shall operate within specified limits and meet regulation requirements for step loading and capacitive loading specified below.

The load transient repetition rate shall be tested between 50Hz to 5kHz at duty cycles ranging from 10%-90%. The load transient repetition rate is only a test specification. The Δ step load may occur anywhere within the 1A and the MAX load for main output. The Δ step load may occur anywhere within the Min and the MAX load for standby

Output	△Step Load Size	Load Slew Rate	Capacitive Load
+3.3V	30% of max load	0.5 A/μs	1000 μF
+5V	30% of max load	0.5 A/μs	1000 μF
+12V	60% of max load	0.5 A/μs	2200 μF
+5Vsb	25% of max load	0.5 A/μs	1 μF

2.3.4 Capacitive Loading

The power supply shall meet all requirements with the following capacitive loading ranges.

Output	MIN	MAX	Units
+3.3V	10	12,000	μF
+5V	10	12,000	μF
+5Vsb	1	350	μF
+12V	follow PSU	follow PSU	μF

2.3.5 Maximum Load Change

The power supply shall continue to operate normally when there is a step change ≤ 1 A/μsec between minimum load and maximum load.

2.3.6 Closed loop stability

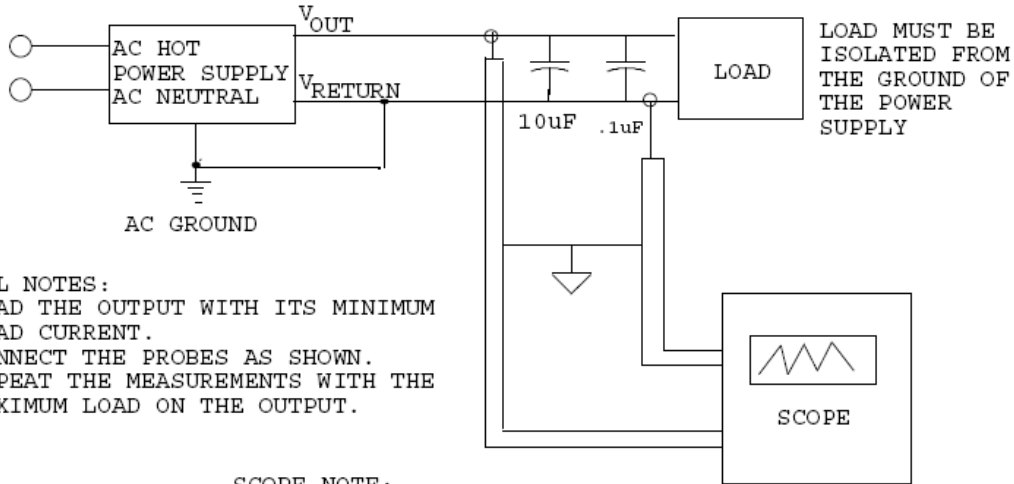
The power supply shall be unconditionally stable under all line/load/transient load conditions including capacitive load ranges specified in Section 2.3.4 and meet a minimum of: 45 degrees phase margin and -6dB-gain margin.

2.3.7 Ripple and Noise

Ripple and Noise shall be measured over a Bandwidth of 20MHz at the power supply output connector. A 0.1μF ceramic capacitor and 10μF of tantalum capacitor shall be placed at each point of measurement.

+3.3V	+5V	+5Vsb	+12V
50 mVp-p	50 mVp-p	50 mVp-p	120 mVp-p

The test set-up shall be as shown below:



GENERAL NOTES:

1. LOAD THE OUTPUT WITH ITS MINIMUM LOAD CURRENT.
2. CONNECT THE PROBES AS SHOWN.
3. REPEAT THE MEASUREMENTS WITH THE MAXIMUM LOAD ON THE OUTPUT.

SCOPE NOTE:

USE A TEKTRONIX 7834 OSCILLOSCOPE WITH 7A13 AND DIFFERENTIAL PROBE P6055 OR EQUIVALENT.

3. TIMING REQUIREMENTS

These are the timing requirements for the power supply operation. The output voltages must rise from 10% to within regulation limits (T_{vout_rise}) within 5 to 70ms. For 5Vsb, it is allowed to rise from 1 to 25ms. All main outputs shall rise positive monotonically and have a slope value between 0 V/mS to 0.1V/mS.

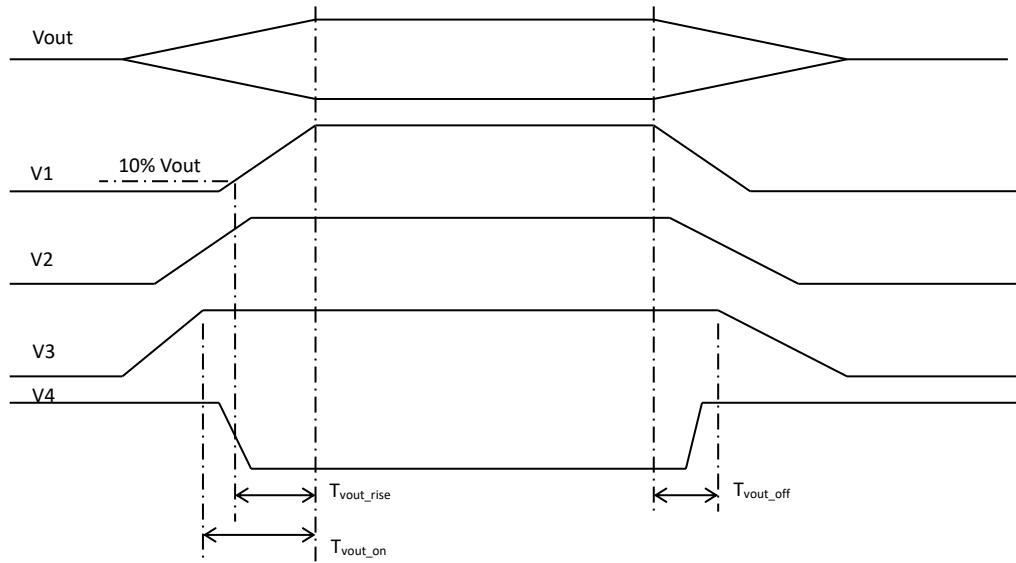
For 5Vsb output any 5ms segment of the 10% to 90% rise time waveform, a straight line draw between the end points of the waveform segment must have a slope $\geq [V_{out, nominal} / 20]V/mS$.

Each output voltage shall reach regulation within 50mS (T_{vout_on}) of each other during turn on of the power supply system. Each output voltage shall fall out of regulation within 400mS (T_{vout_off}) of each other during turn off.

Table below shows the timing requirements for the power supply being turned on and off via the input power, with PSON held low and the PSON signal, with the input power applied.

Item	Description	MIN	MAX	Units
T _{vout_rise}	Output voltage rise time for all main output	5	70	ms
	Output voltage rise time for the 5Vsb output	1	25	ms
T _{vout_on}	All main outputs must be within regulation of each other within this time.		50	ms
T _{vout_off}	All main outputs must leave regulation within this time.		400	ms

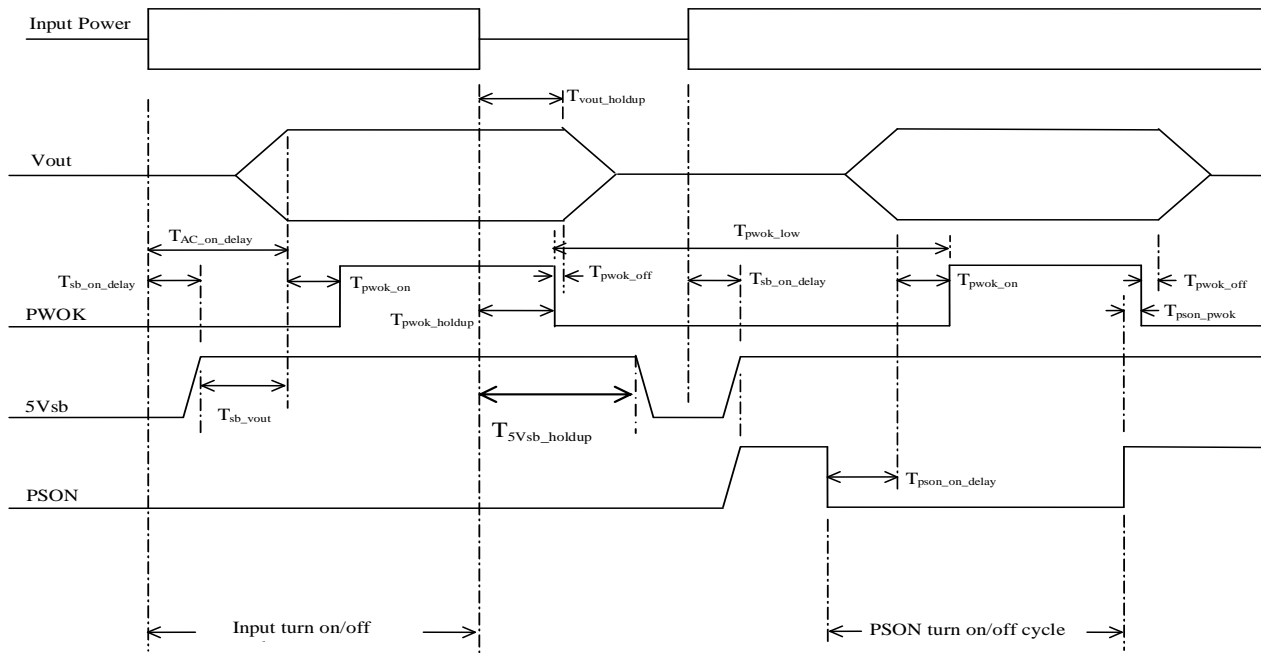
Output Voltage Timing



Turn On/Off Timing

Item	Description	MIN	MAX	UNITS
$T_{sb_on_delay}$	Delay from ac begin applied to 5Vsb begin within regulation.		1500	ms
$T_{ac_on_delay}$	Delay from AC begin applied to all output voltage begin within regulation.		2500	ms
T_{out_holdup}	Time all output voltages stay within regulation after loss of AC.	14		ms
T_{pwok_holdup}	Delay from loss of AC to de-assertion of PWOK in single PSU operation mode.	12		ms
$T_{pson_on_delay}$	Delay from PSON [#] active to output voltages within regulation limits.	5	400	ms
T_{pson_pwok}	Delay from PSON [#] de-active to PWOK begin de-asserted.		50	ms
T_{pwok_on}	Delay from output voltages within regulation limits to PWOK asserted at turn on.	100	500	ms
T_{pwok_off}	Delay from PWOK de-asserted to output voltages (3.3V, 5V, 12V) dropping out of regulation limits.	1		ms
T_{psok_low}	Duration of PWOK begin in the de-asserted state during an off/on cycle using AC or the PSON [#] signal.	100		ms
T_{sb_vout}	Delay from 5Vsb begin in regulation to O/Ps begin in regulation at AC turn on.	50	1000	ms

Turn On/Off Timing (single Power supply)



4. CONTROL AND INDICATOR FUNCTIONS

The following section defines the input and output signals from the power supply. Signals that can be defined as low true use the following convention:
Signal[#] = low true.

4.1 PSON[#] INPUT SIGNAL (POWER SUPPLY ENABLE)

The PSON[#] signal is required to remotely turn on/off the main output of the power supply. PSON[#] is an active low signal that turns on the main output power rail. When this signal is not pulled low by the system or left open, the outputs (except the Standby output) turn off. PSON[#] is pulled to a standby voltage by a pull-up resistor internal to the power supply.

PSON[#] Signal Characteristic

Signal Type	+3.3V TTL Compatible output signal	
PSON [#] = Low	ON	
PSON [#] = High or Open	OFF	
	MIN	MAX
Logic level low (power supply ON)	0V	1.0V
Logic level high (power supply OFF)	2.0V	3.46V
Source current, $V_{psn} = \text{low}$		1.1mA
Power up delay: $T_{psn_on_delay}$	5ms	400ms
PWOK delay: T_{psn_pwok}		50ms
$T_{psn} = \text{Delay PSON\# disconnect MO OFF}$		100µsec

4.2 POWER OK (PWOK OR PG) BUS

PWOK is a power good signal and shall be pulled HIGH by the power supply to indicate that all outputs are within regulation limits. When any output voltage falls below regulation limits, an internal failure or when AC power has been removed for a time sufficiently long, so that power supply operation is no longer guaranteed, PWOK will be de-asserted to a LOW state. The start of the PWOK delay time shall inhibited as long as any power supply output is in current limit.

PWOK / PG Signal Characteristics

Signal Type	+3.3V TTL Compatible output signal	
PWOK = High	Power OK	
PWOK = Low	Power Not OK	
	MIN	MAX
Logic level low voltage, $I_{sink} = 4mA$	0V	1V
Logic level high voltage, $I_{source} = 200\mu A$	2.4V	3.46V
Sink current, PWOK = low		4mA
Source current, PWOK = high		2mA
PWOK delay: T_{pwok_on}	100ms	500ms
PWOK rise and fall time		100μsec
Power down delay: T_{pwok_off}	1ms	

4.3 Optional SIGNALS

There're four option signals defined, all signal characteristic be described in form as below, those high voltage level should be pulled-up from PDB as 3.3V

option signal	PS_ON = High	PS_ON = Low	Assert during PS_ON = Low	Assert condition	de-assert condition
Alert	H	H	L	anyone PSU assert Alert (please refer to PSU SPEC)	AC cycle or PS_ON/FF cycle
Alarm	L	L	H	PDB fail or anyone PSU fail when 1+1 parallel condition	AC cycle or PS_ON =High
TTL	H	H	L	PDB fail or anyone PSU fail when 1+1 parallel condition	AC cycle or PS_ON =High
Buzzer			Beep	PDB fail or anyone PSU fail when 1+1 parallel condition	AC cycle 、 PS_ON/FF cycle or go back to 1+1 parallel normal condition
Mute	When the buzzer is enabled, this signal is shorted to ground and the buzzer will be disabled.				

5. PROTECTION CIRCUITS

Protection circuits shall cause only the power supply’s main outputs to shutdown (latch off). If the power supply latches off due to a protection circuit tripping, an AC cycle OFF for 15 second or a PSON[#] cycle HIGH for 1 second must be able to reset the power supply. The auxiliary output shall not be affected by any protection circuit, unless the auxiliary output itself is affected.

5.1 CURRENT LIMIT

The power supply shall prevent the main and auxiliary outputs from exceeding the values shown in below Table. If the main current limits are exceeded the power supply will shut down and latch off, *the auxiliary output shall be auto recover (Vsb_{AR}) after the OCP/SCP had been removed.*

Over Current Protection

Voltage	Over Current Limit (I _{out} limit)
+3.3V	110% minimum, 150% maximum
+5V	110% minimum, 150% maximum
+5Vsb (Auxiliary)AR	110% minimum, 150% maximum

5.2 OVER VOLTAGE PROTECTION

The power supply shall shutdown and latch off after an over voltage condition occurs. This latch will be cleared by toggling the PSON[#] signal or by an AC power interruption.

Over Voltage Limits

Output Voltage	MIN (V)	MAX (V)
+3.3V	3.6	4.6
+5V	5.5	6.6
+12V	follow PSU	follow PSU
+5Vsb (Auxiliary)AR	5.5	6.6

5.3 OVER TEMPERATURE PROTECTION

The PDB shall have thermal sensors to measure the internal environmental (T_{env}). The thermal sensors shall be part of a protection circuit to protect against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In a critical over temperature condition, specified in below table, the power system shall be shutdown with the exception of the *auxiliary output (Vsb_{AR})*.

The Thermal CLST shall be part of the **OTP_{AR}**.

The PDB will auto recover the power system from this condition, when the temperature is dropping within specification again.

Condition	Warning in °C	Critical in °C	Timing for SMBAlert [#] /LED
T _{env}	60	65	follow PSU

T_{env}: PDB internal Environment Temperature

6. POWER SUPPLY MANAGEMENT

6.1 I²C Bus Noise Requirement

The power supplies I²C Bus' SDA and SCL line shall be clean from noise, which might affect the proper function when utilized with other devices.

The maximum allowed line noise on SDA or SCL is 400mV.

6.2 Address Command

It shall be located at the address set by the A0 and A1 pins.

The PDB Addressing can be changed by utilizing the MFR_CONFIG_ADDRESS command.

PDB position and PSMC address	PM1 B0h/B1h	PM2 B2h/B3h
Pin A0/A1	0/0	1/0

7. ENVIRONMENTAL

7.1 TEMPERATURE REQUIREMENTS

The power supply shall operate within all specified limits over the Top temperature range.

The average air temperature difference (ΔT_{ps}) from the inlet to the outlet of the power supply shall not exceed the values shown below Table. All airflow shall pass through the power supply and not over the exterior surfaces of the power supply

ITEM	DESCRIPTION	MIN	MAX	UNITS
Top	Operating temperature range.	0	50	°C
T _{non-op}	Non-operating temperature range.	-40	70	°C

7.2 HUMIDITY

Operating: 20% to 85% relative humidity, non-condensing.

Storage: 10% to 90% relative humidity, non-condensing.

7.3 ALTITUDE

Operating: meet up to new CCC 5,000m requirement.

7.4 VIBRATION

Operating: 0.01G²/Hz at 10Hz, 0.02G²/Hz at 20Hz.

Non-Operating: 0.02G²/Hz form 20Hz to 1000Hz.

7.5 MECHANICAL SHOCK

Operating: 5G, no malfunction.

Non-operating: 50G, no damage. Trapezoidal Wave, Velocity change = 4.3m/sec. Three drops in each of six directions are applied to each of the samples.

7.6 EMI/EMC REQUIREMENTS

The power supply shall comply with FCC part 15, CRISP 22 and EN55-22; Class A for both conducted and radiated emissions. Test shall be conducted using a shielded DC output cable to a shielded load. The load shall be adjusted to 100% load. Tests will be performed full load on each output power at 120VAC, 60Hz, and 230VAC, 50Hz.

8. REGULATORY REQUIREMENTS

8.1 MAXIMUM LEAKAGE CURRENT TO GROUND

Less than 3.5mA for entire power system at 230VAC/50Hz

8.2 ELECTROSTATIC DISCHARGE

The objective of ESD test is to determine the susceptibility and immunity of products to electrostatic discharge to which the products may be exposed, when operating under all potential environmental conditions. The test conditions and setup shall conform to that outlined in CISPR24-2 and IEC 801-2 (EN55101-2).

Air discharge: 8KV not allow error.

Contact discharge: 4KV not allow error.

Note: The above test discharge time is 1 time/sec and repeats each test 10 times.

9. RELIABILITY

The MTBF of the power supply can be calculated with the Part-Stress Analysis method of Bell Core SR-332 Issue 1 using the quality factors. A calculated MTBF of the power supply shall be at least 100,000 hours at 40°C ambient with 115VAC and in full load condition.

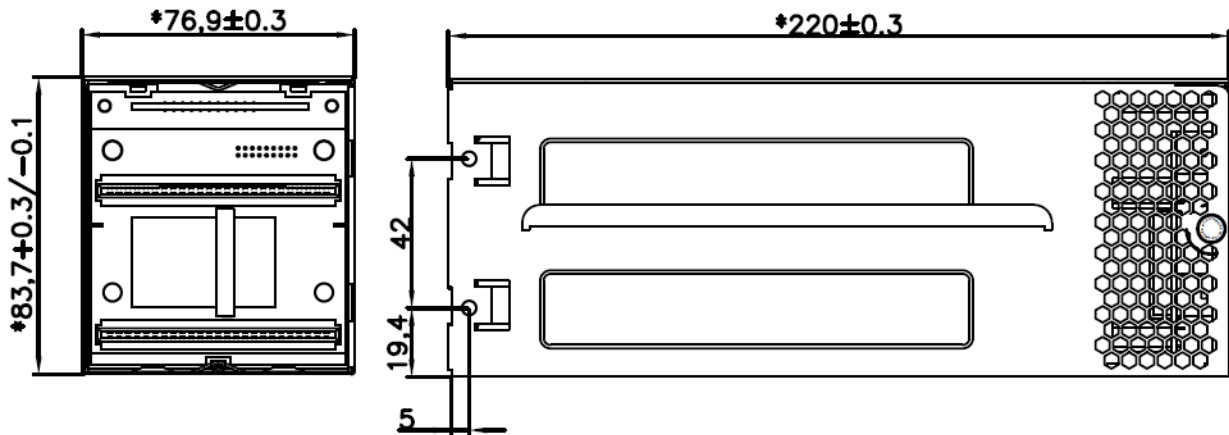
10. RoHS COMPLIANCE

The directive 2002/95/EC of the European Parliament and of the Council of the 27th January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, requires the reduction of the substances Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls (PBB), and Polybrominated Biphenyl ethers (PBDE) in electronic products by July 1, 2006. Unless otherwise noted, all materials used will be compliant with this directive and any subsequent revisions or amendments.

11.MECHANICAL DIMENSIONS

11.1 POWER DISTRIBUTION CAGE DIMENSIONS

Dimension (L x W x H): 220 x 76.9 x 84mm / 10.43 x 3.03 x 3.31inch



Note: Above drawing for reference only, detail drawing refer to mechanical drawing

11.2 DC Output connector

The power supply shall use a card edge output connection for power and signal that is compatible with a 2x25 Power Card Edge connector

**Gold finger pin assignment
OUTPUT PIN ASSIGNMENT**

PIN	SIGNAL_NAME	PIN	SIGNAL_NAME
A1	GND	B1	GND
A2	GND	B2	GND
A3	GND	B3	GND
A4	GND	B4	GND
A5	GND	B5	GND
A6	GND	B6	GND
A7	GND	B7	GND
A8	GND	B8	GND
A9	GND	B9	GND
A10	+12V	B10	+12V
A11	+12V	B11	+12V
A12	+12V	B12	+12V
A13	+12V	B13	+12V
A14	+12V	B14	+12V
A15	+12V	B15	+12V
A16	+12V	B16	+12V
A17	+12V	B17	+12V
A18	+12V	B18	+12V
A19	PMBus SDA	B19	A0 (SMBus address)
A20	PMBus SCL	B20	A1 (SMBus address)
A21	PSON [#]	B21	12VSB
A22	SMB Alert [#]	B22	CR_BUS
A23	Return Sense	B23	12V load share Bus
A24	+12V Remote Sense	B24	Present [#]
A25	PWOK	B25	NC

11.3 BRACKET OPTIONS

Per customer requirements.



康舒科技

ACBEL POLYTECH INC.

Mechanical Outline Drawing

NOTE:

1 ENCLOSURE MATERIAL :
SGCC G30(COMPLY WITH ASTM A653 G30).
72 HOURS MINIMUM WHITE RUST PROTECTION IN
SALT SPRAY (ASTM B117),MATERIAL MUST MEET
DC RESISTANCE 0.1 OHMS MAX. FOR ELECTRICAL
CONDUCTIVITY REQUIREMENTS
機殼材質:
SGCC(熱浸鋅鋼板)G30(符合ASTM A653 G30)
至少72小時鹽霧防鏽處理(ASTM B117), 材料傳導率DC阻
抗需小於 0.1 OHMS MAX

2 ALL EXPOSED EDGES MUST BE MEET HANDLING
REQUIREMENTS SPECIFIED IN UL 1439 AND DO NOT
CUT THROUGH THE FIRST LAYER OF THE TESTER
所有可能被觸碰的邊緣必須符合 UL1439 觸摸安全需求,
不可以割破檢測物的第一層

3 FAI"Ⓢ", "CPK"Ⓢ", "Ⓢ" "CRITICAL DIMENSIONS MUST
BE INSPECTED FOR EVERY SHIPMENT.
FAI"Ⓢ", "CPK"Ⓢ", "Ⓢ"表示該(尺寸/位置)為設計之重點尺寸
而且可能會有變異,每次出貨前必須檢驗合格.

4 DO NOT ALLOW SCRATCH ON THE SURFACE. EXTRUDE
PORTION SHOULD PREVENT THE DAMAGE OF THE ZINC
PLATED LAYER AND OXIDATION
表面不允許刮傷,抽孔/擠出成型部份也必須防止電鍍層有
氧化現象

5 THE MANUFACTURER SHALL NOTIFY ACBEL PRIOR TO
CHANGES IN MANUFACTURING LOCATION
製造商如需變更製造地,需事先通知ACBEL

6 THESE MATERIAL/PART/ASSEMBLY MUST BE COMPLIED
TO ACBEL SPEC "CRITERIA FOR ENVIRONMENT-
RELATED SUBSTANCES"
材質/零件/裝程均必須符合康舒"環境管理物質規範"

7 ALL REF DIMENSIONS MUST BE COMPLIED TO
MECHANICAL OUTLINE DRAWING REQUIREMENT
所有參考尺寸必須符合MO實際組裝要求

8 BARCODE LABEL, WARNING LABEL AND INFORMATION
LABEL SHOULD BE LOCATED ON NOTED SURFACE
,BEFORE ADHERING LABELS, SHEETMETAL SURFACE
MUST BE FREE OF ANY GREASE, OIL AND DIRT
標籤黏貼的位置如圖示.在黏貼前,金屬表面必須沒有任何的
油污,油,或是塵土

9 GROUND SYMBOL Ⓢ MUST BE LOCATED TO THE
PERMANENTLY MARKED NEAR PRIMARY GROUND
CONNECTION.
接地符號Ⓢ需永久的位於一次側接地處

10 MATERIAL THICKNESS: 0.7MM
MATERIAL SUPPLIER
PRIMARY SOURCE : CHINA STEEL
ALTERNATE SOURCE :
YIEH PHUI, BAO STEEL, WISCO
材料厚度: 0.7毫米
鋼板材料優先製造商:
第一優先: 中鋼
第二順位: 燐輝, 寶鋼, 武鋼

11 COVER , CHASSIS & SIDE PANEL MUST BE THE
SAME COLOR UNLESS OTHERWISE SPECIFIED.
除非有特別指示,否則上蓋、下蓋、邊板必須顏色一致

12 NET WEIGHT: 584 GRAMS ±3%
淨重 : 584 ±3%克

13 RADUS SHOULD BE R0.5MM UNLESS OTHERWISE
SPECIFIED
未標示R角皆為0.5mm.

14 SPOT WELDING & RIVETS MUST BE ABLE TO
WITHSTAND A PULLING FORCE OF 20KGF MIN.
焊接或鉚接強度需大於20KGF的拉力

15 UNIT : MM
單位 : 毫米

16 NONE-SPECIFIED DIMENSIONS MUST BE COMPLIED
TO 3D MODEL.
未標示尺寸必須符合3D模型要求.

17 SCREW THREAD MUST BE WITHSTAND THE
FOLLOWING TORQUE INDICATED :
螺紋鎖付扭轉抗力需大於下列數值:
M3 * 0.5 12KGF-CM(MIN)
M3.5 * 0.6 15KGF-CM(MIN)
#6-32 12KGF-CM(MIN)

18 STUD AND CLINCH NUT MUST BE FLUSH ON THE
NOTED SURFACE WHICH MUST BE CONFORM TO
THE FOLLOWING TORQUE INDICATED :
鉚接螺栓或螺帽,需符合下表扭力值:

THREAD CODE 螺紋編號	SHEET THICKNESS 板厚(MM)	SHEET MATERIAL 鋼板材質	
		HOT-DIPPED SHEET 熱浸鋼板	
		PUSHOUT 推出抗力 (KGF MIN)	TORQUE OUT 扭轉抗力 (KGF-CM MIN)
M3 * 0.5	0.8 ~ 1.0	47	15
#6-32		50	18
M4 * 0.7		50	30

19 METAL SURFACE AND INTERIOR SURFACE OF HOLES
TO BE FREE OF OIL, NICKS/BURRS AND RESIDUE
金屬表面與孔內部的表面不可有油, 刮痕, 刮痕/毛邊與殘渣.

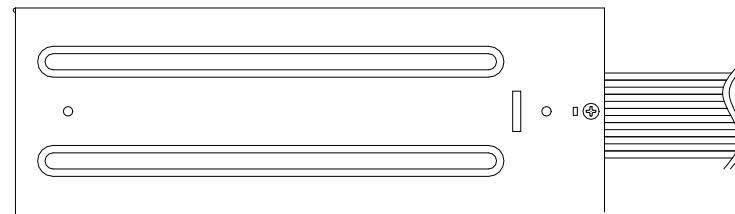
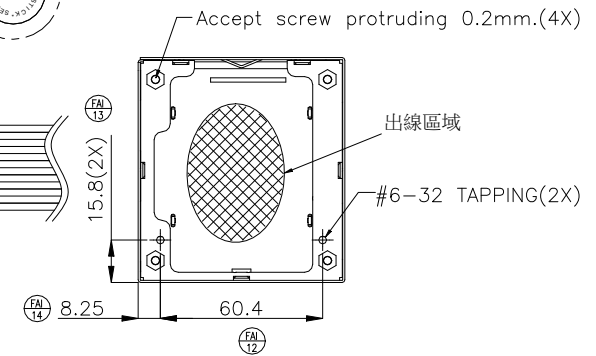
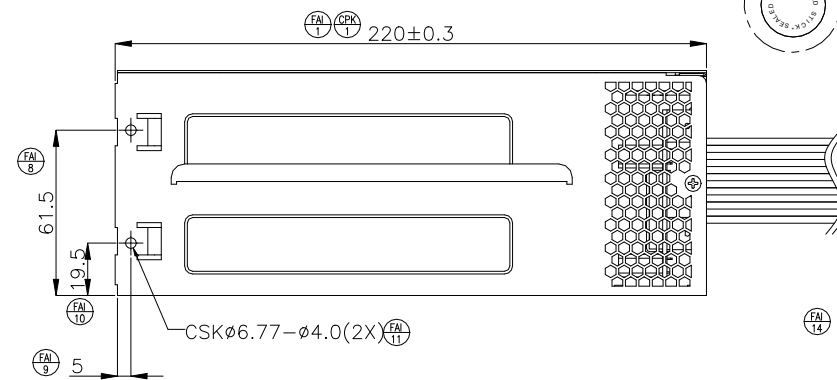
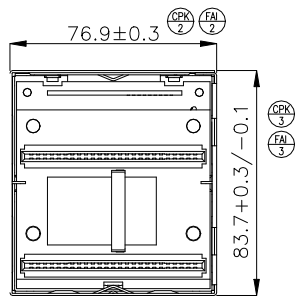
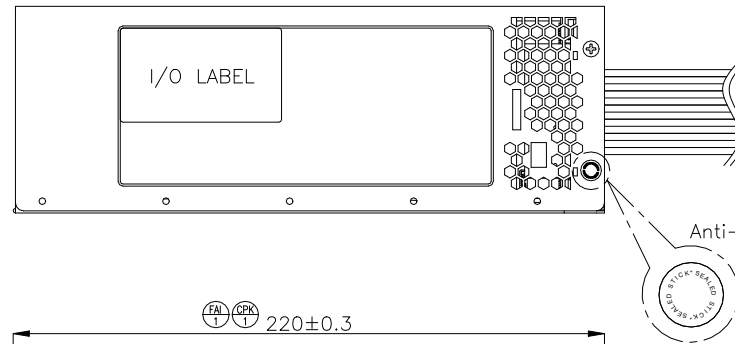
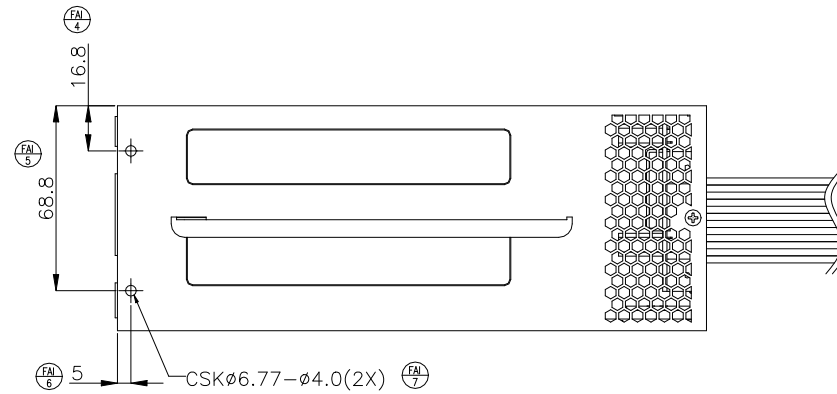


RELEASE			
正式發行圖面		REV: B	
ENG.	Lishin	APPR.	Arthur

△	CUSTOMER ADD P16 4+4 8P	02/27/24	LISHIN
A	RELEASE	06/09/22	LISHIN
1	PRIMARILY	03/08/22	LISHIN
REV	DESCRIPTION	DATE	BY

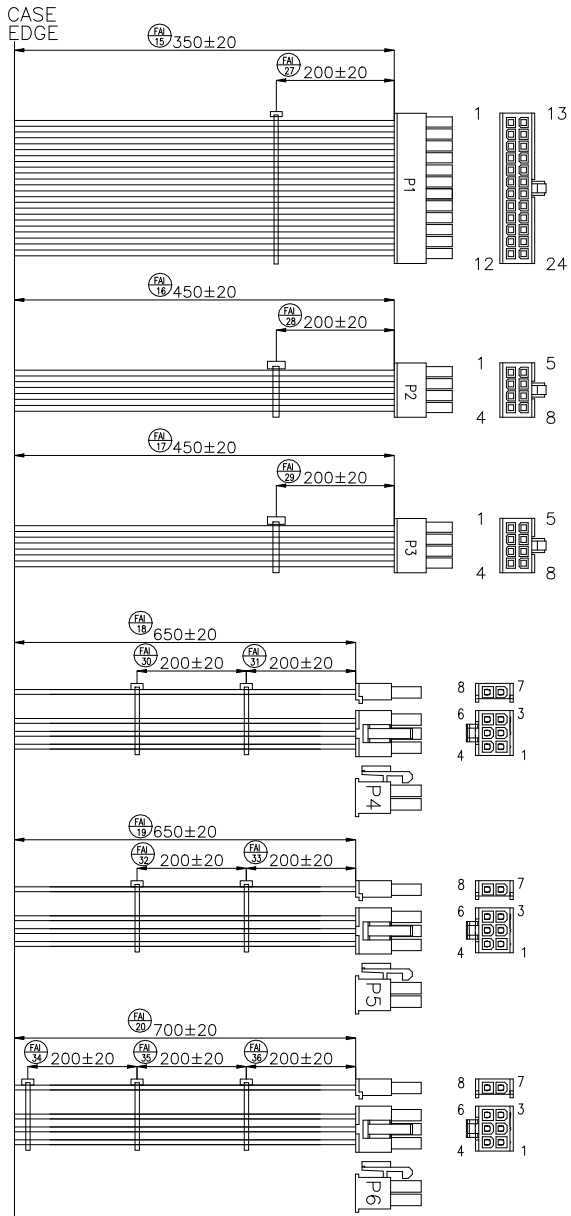
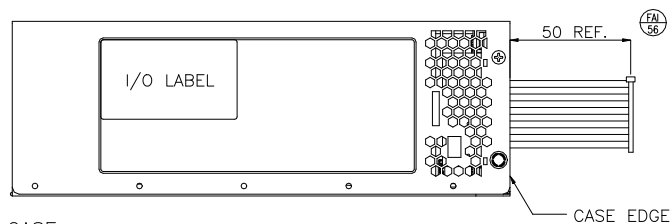
REVISIONS			
 ACBEL POLYTECH INC.	DRAWINGS & SPEC. ARE THE EXCLUSIVE PROPERTY OF ACBEL POLYTECH INC. SAID ITEMS ARE ISSUED IN STRICT CONFIDENTIAL	MODEL NO : FSL026-4QCG	
		PART NO. : MO-FSL026-4QCG	
TOLERANCES UNLESS OTHERWISE NOTED 0-8: ±0.1, 8-120: ±0.2, 120-315: ±0.3, 315-∞: ±0.5, ANGLES: ±0.2°		DWG NO. : MO-FSL026-4QCG_B	
 Metric		TITLE : MECHANICAL OUTLINE	
 THIRD ANGLE PROJECTION		DESIGNER	Lishin 02/27/24
SCALE : 1:1 SHEET 1 OF 4		CHECKED	Joe 02/27/24
		APPROVED	Arthur 02/27/24

CASE DIMENSION

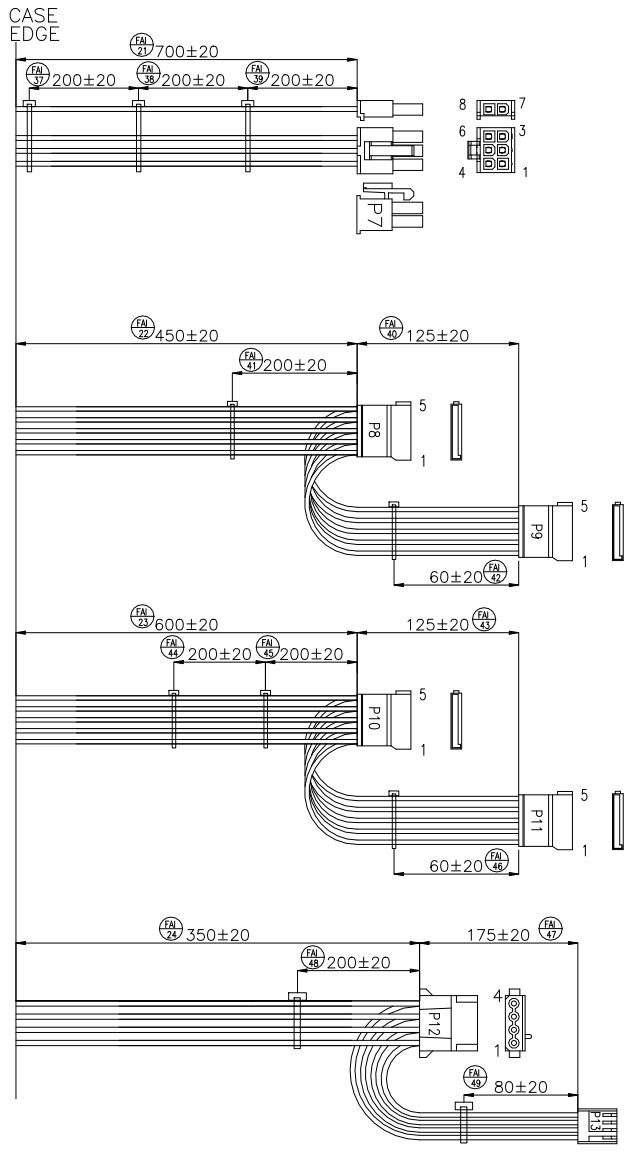


RELEASE			
正式發行圖面			REV: B
ENG.	Lishin	APPR.	Arthur

<p>ACBEL POLYTECH INC.</p>	<p>DRAWINGS & SPEC. ARE THE EXCLUSIVE PROPERTY OF ACBEL POLYTECH INC. SAID ITEMS ARE ISSUED IN STRICT CONFIDENTIAL.</p>	<p>MODEL NO: FSL026-4QCC</p>
	<p>TOLERANCES UNLESS OTHERWISE NOTED 0~6: ± 0.1, 6~120: ± 0.2, 120~315: ± 0.3, 315~: ± 0.5, ANGLES: $\pm 0.2^\circ$</p>	<p>PART NO: MO-FSL026-4QCC</p>
<p>THIRD ANGLE PROJECTION</p>	<p>SCALE: 1:1 SHEET 2 OF 4</p>	<p>DWG NO.: MO-FSL026-4QCC_B</p>
<p>0 mm 50</p>	<p>TITLE: MECHANICAL OUTLINE</p>	<p>DESIGNER: Lishin 02/27/24</p>
<p>0</p>	<p>APPROVED: Arthur 02/27/24</p>	<p>CHECKED: Joe 02/27/24</p>



CONN.	PIN	OUTPUT	COLOR	AWG
P1 MINI-FIT 24PIN	1	+3.3V	ORANGE	18
	2	+3.3V	ORANGE	18
	3	GND	BLACK	18
	4	+5V	RED	18
	5	GND	BLACK	18
	6	+5V	RED	18
	7	GND	BLACK	18
	8	PG	GRAY	22
	9	+5VSB	PURPLE	18
	10	+12V	YELLOW	18
	11	+12V	YELLOW	18
	12	+3.3V	ORANGE	18
	13	+3.3V	ORANGE	18
	14			
	15	GND	BLACK	18
	16	PS-ON	GREEN	22
	17	GND	BLACK	18
	18	GND	BLACK	18
	19	GND	BLACK	18
	20			
	21	+5V	RED	18
	22	+5V	RED	18
	23	+5V	RED	18
	24	GND	BLACK	18
P2-P3 MINI-FIT 8PIN	1	GND	BLACK	18
	2	GND	BLACK	18
	3	GND	BLACK	18
	4	GND	BLACK	18
	5	+12V	YELLOW	18
	6	+12V	YELLOW	18
	7	+12V	YELLOW	18
	8	+12V	YELLOW	18
P4-P6 PCI-E 6+2 8PIN	1	+12V	YELLOW	18
	2	+12V	YELLOW	18
	3	+12V	YELLOW	18
	4	GND	BLACK	18
	5	GND	BLACK	18
	6	GND	BLACK	18
	7	GND	BLACK	18
	8	GND	BLACK	18



CONN.	PIN	OUTPUT	COLOR	AWG
P7 PCI-E 6+2 8PIN	1	+12V	YELLOW	18
	2	+12V	YELLOW	18
	3	+12V	YELLOW	18
	4	GND	BLACK	18
	5	GND	BLACK	18
	6	GND	BLACK	18
	7	GND	BLACK	18
	8	GND	BLACK	18
P8-P11 SATA	1	+3.3V	ORANGE	18
	2	GND	BLACK	18
	3	+5V	RED	18
	4	GND	BLACK	18
	5	+12V	YELLOW	18
P12 HDD	1	+12V	YELLOW	18
	2	GND	BLACK	18
	3	GND	BLACK	18
	4	+5V	RED	18
P13 FDD	1	+5V	RED	22
	2	GND	BLACK	22
	3	GND	BLACK	22
	4	+12V	YELLOW	22

ACBEL POLYTECH INC.

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TOLERANCES UNLESS OTHERWISE NOTED
0~6:±0.1, 6~120:±0.2, 120~315:±0.3, 315~∞:±0.5, ANGLES:±0.2°

MODEL NO.: FSL026-4QCG

PART NO.: MO-FSL026-4QCG

DWG NO.: MO-FSL026-4QCG_B

TITLE: MECHANICAL OUTLINE

DESIGNER: Lishin 02/27/24

CHECKED: Joe 02/27/24

APPROVED: Arthur 02/27/24

RELEASE

正式發行圖面 REV: B

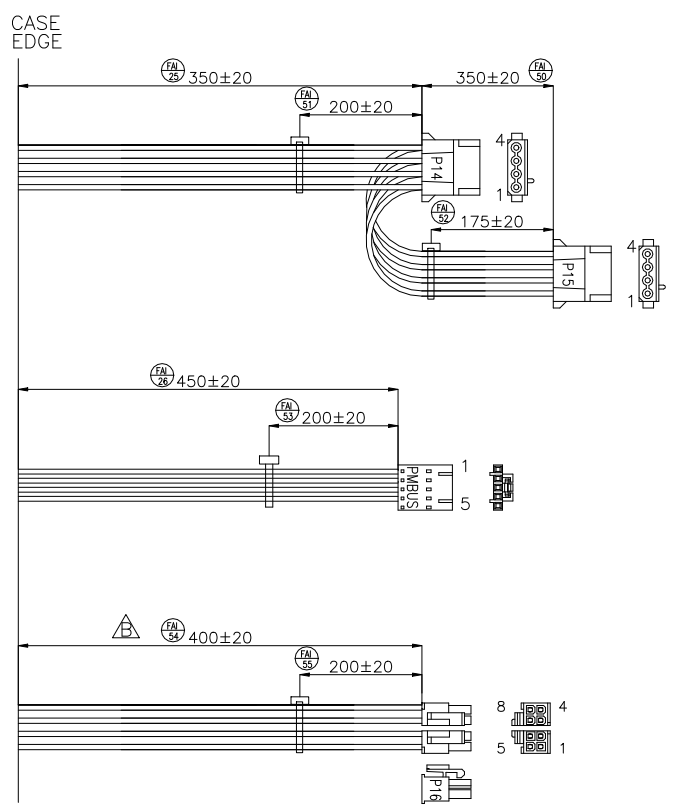
ENG. Lishin APPR. Arthur

SI Metric

0 mm 50

THIRD ANGLE PROJECTION

SCALE: 1:1 SHEET 3 OF 4



CONN.	PIN	OUTPUT	COLOR	AWG
P14-P15 HDD	1	+12V	YELLOW	18
	2	GND	BLACK	18
	3	GND	BLACK	18
	4	+5V	RED	18
PMBUS	1	I2CSCL	WHT/GRN	24
	2	I2CSDA	WHT/YEL	24
	3	PS_Alert	WHITE	24
	4	GND	BLACK	24
	5			
P16 MINI-FIT (4+4)8PIN	1	GND	BLACK	18
	2	GND	BLACK	18
	3	GND	BLACK	18
	4	GND	BLACK	18
	5	+12V	YELLOW	18
	6	+12V	YELLOW	18
	7	+12V	YELLOW	18
	8	+12V	YELLOW	18

	DRAWINGS & SPEC. ARE THE EXCLUSIVE PROPERTY OF ACBEL POLYTECH INC. SAID ITEMS ARE ISSUED IN STRICT CONFIDENTIAL.	MODEL NO : FSL026-4QCG PART NO. : MO-FSL026-4QCG
	TOLERANCES UNLESS OTHERWISE NOTED 0~6:±0.1, 6~120:±0.2, 120~315:±0.3, 315~:±0.5, ANGLES:±0.2°	DWG NO. : MO-FSL026-4QCG_B TITLE : MECHANICAL OUTLINE
DESIGNER: Lishin 02/27/24 CHECKED: Joe 02/27/24 APPROVED: Arthur 02/27/24	SCALE : 1:1 SHEET 4 OF 4	

RELEASE

正式發行圖面 REV: B

ENG.	Lishin	APPR.	Arthur
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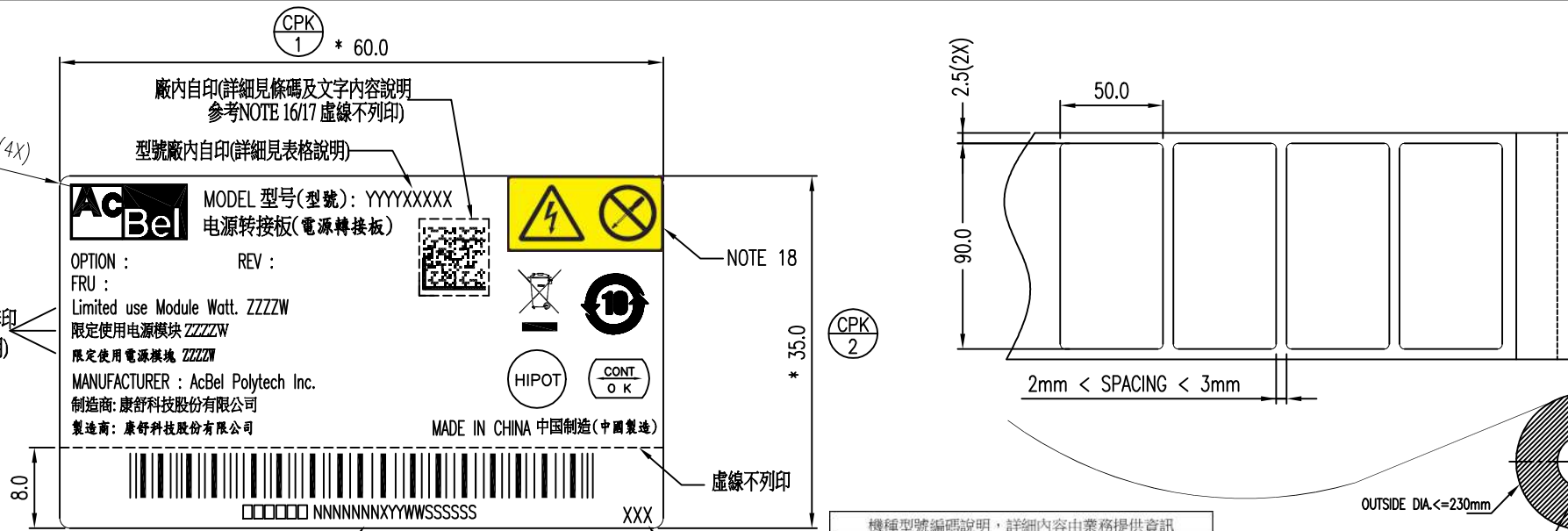


康舒科技

ACBEL POLYTECH INC.

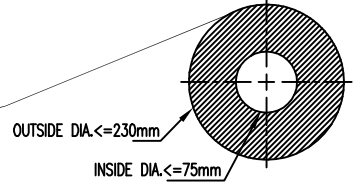
I/O Label Drawing

7 6 5 4 3 2 1



機種型號編碼說明，詳細內容由業務提供資訊

YYYY	XXXXX	ZZZW (3 or 4碼)
系列	編號	瓦特數



COILED PACKAGE DIMENSION

RELEASE			
正式發行圖面		REV: D	
ENG.	MIA	APPR.	RAY

廠內自印(詳細見條碼及文字內容說明
參考NOTE 16/17 虛線不列印)

型號廠內自印(詳細見表格說明)

AcBel MODEL 型号(型號): YYYXXXXX
电源转接板(電源轉接板)

OPTION: REV:

FRU: Limited use Module Watt. ZZZZW
限定使用电源模块 ZZZZW
限定使用電源模块 ZZZZW

MANUFACTURER: AcBel Polytech Inc.
制造商: 康舒科技股份有限公司
製造商: 康舒科技股份有限公司

MADE IN CHINA 中国製造(中國製造)

ZZZZW 廠內套印
(詳細見表格說明)

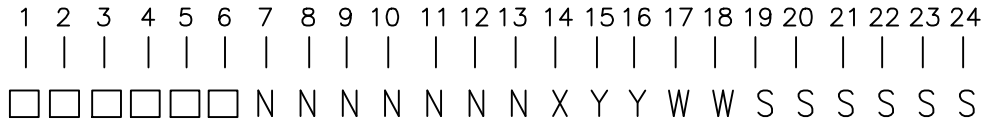
虛線不列印

廠內自印 NOTE 11
(同SN字印原則)

NOTE 18

NOTE 7

SN自印原則:



SERIAL NO 000001-999999

DATE CODE(YY: YEAR WW:WEEK
FOR EXAMPLE: 2012 13TH WEEK 則此4欄位為"1213")

MFG. FACTORY CODE:
(東莞康舒印: B; 東莞康展印: T; 武漢康舒印: W)

ID CODE (Ex.: 若機種FSA035-001G印001G)

API REVISION CONTROL CODES1印: OS1; S2印: OS2; A印: A00

API MODEL NAME (Ex.: 若機種FSA035-001G, 則印製"FSA035"於此6個欄位)

D	變更研華2維條碼原則	MIA	06/09/20
C	增加研華S/N標準	MIA	09/19/19
B	MODIFY LABEL FORMAT	TING	09/23/14
A	RELEASE	TING	06/05/14
1	PRIMARILY	TING	01/21/14
REV	DESCRIPTION	BY	DATE

 ACBEL POLYTECH INC.	<small>DRAWINGS & SPEC. ARE THE EXCLUSIVE PROPERTY OF ACBEL POLYTECH INC. SAID ITEMS ARE ISSUED IN STRICT CONFIDENTIAL</small>	MODEL NO. FSC043-7EFG
		PART NO. X01AAA-7100IA
DWG. NO :X01AAA-7100IA_D		TITLE
SEE NOTE 4		I/O LABEL
 SCALE NONE	 THIRD ANGLE PROJECTION	DESIGNER Mia 06/09/20
SHEET 1 OF 3		CHECKED Perry 06/09/20
		APPROVED Ray 06/09/20

7 6 5 4 3 2 1

7

6

5

4

3

2

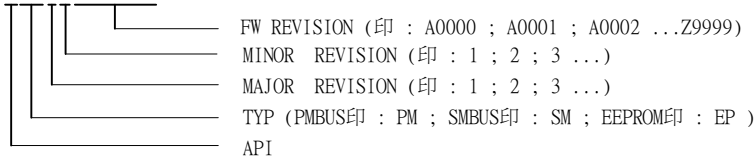
1

NOTES:

- UNIT : MM.
單位 : 毫米.
- MATERIAL :
 - FACE STOCK 底材:
WHITE POLYESTER, THICKNESS = 0.05 MM.
白霧龍50#, 厚度= 0.05毫米
 - OVERLAMINATION 保護膜
 A TRANSPARENT FILM 透明膠膜 NONE 無
 - ADHESIVE 背膠: PRESSURE SENSITIVE ACRYLIC 壓克力壓膠膠
THICKNESS 厚度= 0.025 MM
 - BACKED WITH RELEASE LINER. 背面附離型紙
 - LABEL TO BE AFFIXED TO AND MAXIMUM TEMPERATURE RATING
貼紙所貼附之材質與最大耐溫等級
 GALVANIZED STEEL 鍍鋅鋼 ALUMINUM 鋁
 NICKEL PLATED METAL 鍍鎳金屬
 ZINC PLATED METAL WITH CHROMATE POST TREATMENT
後處理之鍍鉻酸鋅金屬
 100°C 攝氏100度
- MATERIAL MUST BE UL RECOGNIZED AND COMPLY TO UL 969 STANDARD.
材質必須符合UL認證,並且遵從UL 969標準.
- LABEL MUST BE MADE BY A UL RECOGNIZED AND CSA APPROVED VENDOR.
貼紙之製造商必須是UL與CSA所認證.
- TOLERANCE : XX = +/- 0.5 XX.X = +/- 0.2 XX.XX = +/- 0.15
公差 : XX = +/- 0.5 XX.X = +/- 0.2 XX.XX = +/- 0.15
- "*"CRITICAL DIMENSION SYMBOL, SUPPLIER MUST INSPECT THIS DIMENSION FOR EVERY SHIPMENT
"*"表示該(尺寸/位置)為設計之重點尺寸,供應商每次出貨前必須檢驗合格後,方可出貨.
- ALL PRODUCTS MUST BE THE SAME AS ENGINEERING API MECHANICAL ENGINEERING APPROVED SAMPLES, ANY MODIFICATION MUST BE APPROVED BY ACBEL MECHANICAL ENGINEERING SECTION.
所有產品必須與認可的樣品一致,任何的修改都必須經由康舒機構工程師同意及認可.
- LABEL MUST CONTAIN THE VENDOR'S ID MARK LOCATED IN THE AREA INDICATED. ID MARK LETTER HEIGHT TO BE 1.5MM.
貼紙必須印製廠商代碼,代碼字高為1.5毫米.
- CHARACTER HEIGHT : 1.5 MM ,UNLESS OTHERWISE SPECIFIED.
圖面未標示之字體高度皆為 1.5 毫米
- PRINTED COLOR :
BLACK - TEXT, GRAPHICS, IMAGE, LOGO SURROUND SHAPE.
WHITE - BACKGROUND.
列印顏色 :
黑色 - 文字、圖形、圖像、標誌、外圍圖形
白色 - 背景

- THESE MATERIAL/PART/ASSEMBLY MUST COMPLY TO ACBEL SPEC"CRITERIA FOR ENVIRONMENT-RELATED SUBSTANCES".
材質/零件/製程均必須符合康舒"環境管理物質規範".
- BAR CODE FORMAT: CODE 128 / CPI : 13.64
THE NARROW ELEMENT DIMENSION (X DIMENSION) SHOULD BE WITHIN A RANGE OF 0.170MM(0.0067 INCH)
條碼格式 : CODE 128 / CPI 寬窄比 : 0.17毫米(0.0067英寸)
- BAR CODE & SN & FRU 廠內自印
- REV : XXX (S1印 : OS1 ; S2印 : OS2 ; A印 : A00)
- DATE : XYYWW 為廠內自印, 4碼 YYWW為製造週期, X為工廠代碼*
工廠代碼 : 康舒東莞廠印B, 康展東莞廠印T, 康舒武漢廠印W
- FRU自印原則

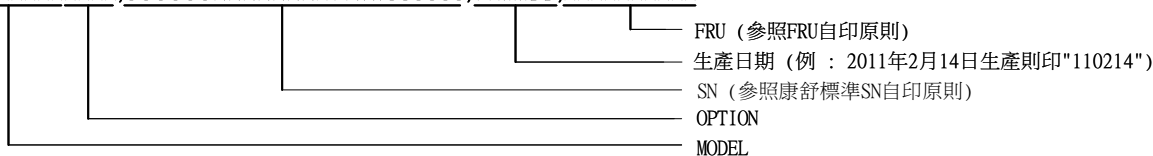
AXXSS□□□□□



16. 2維條碼自印原則

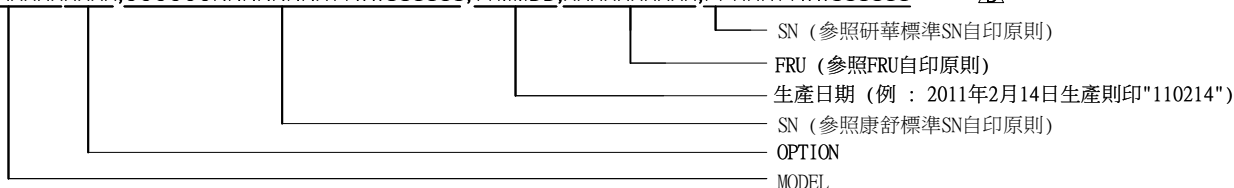
康舒標準2維條碼自印原則

XXXXXXXXXXXX;OOOOOONNNNNNNXYYWWSSSSSS;YMMDD;XXXXXXXXXX



研華標準2維條碼自印原則

XXXXXXXXXXXX;OOOOOONNNNNNNXYYWWSSSSSS;YMMDD;XXXXXXXXXX;PPRRRYWWSSSSSS

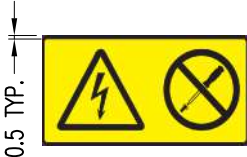


17. 條碼及文字內容說明

編碼: DATAMATRIX

18. 警告符號顏色定義如下:

- PMC Black黑色 - 文字 . 圖形 . 圖象 . 標誌
- PMC 108C黃色 - 背景



RELEASE			
正式發行圖面		REV: D	
ENG.	MIA	APPR.	RAY

- 加入工廠代碼,如康舒東莞廠生產即印製(B)如圖示,如康展東莞廠生產即印製(T);如康舒武漢廠生產即印製(W)
- USES OF RED PHOSPHORUS MATERIAL IS PROHIBITED.
禁止使用含有紅磷材料

 ACBEL POLYTECH INC.	DRAWINGS & SPEC. ARE THE EXCLUSIVE PROPERTY OF ACBEL POLYTECH INC. SAID ITEMS ARE ISSUED IN STRICT CONFIDENTIAL	MODEL NO. FSC043-7EFG
		PART NO. X01AAA-7100IA
DWG. NO :X01AAA-7100IA_D		TITLE
I/O LABEL		DESIGNER Mia 06/09/20
CHECKED Perry 06/09/20		APPROVED Ray 06/09/20

SI	TOLERANCES UNLESS OTHERWISE NOTED
Metric	SEE NOTE 4
A3	THIRD ANGLE PROJECTION
SCALE NONE	SHEET 3 OF 3

7

6

5

4

3

2

1



MODEL 型号(型号): R2CU4122A
 电源转接板(電源轉接板)



OPTION : P4QC REV : A01

FRU : APM12V0005

Limited use Module Watt. 1200W

限定使用电源模块 1200W

限定使用電源模块 1200W

MANUFACTURER : AcBel Polytech Inc.

制造商: 康舒科技股份有限公司

製造商: 康舒科技股份有限公司



MADE IN CHINA 中国制造(中國製造)



FSL026A014QCGB2318000001

TR



康舒科技

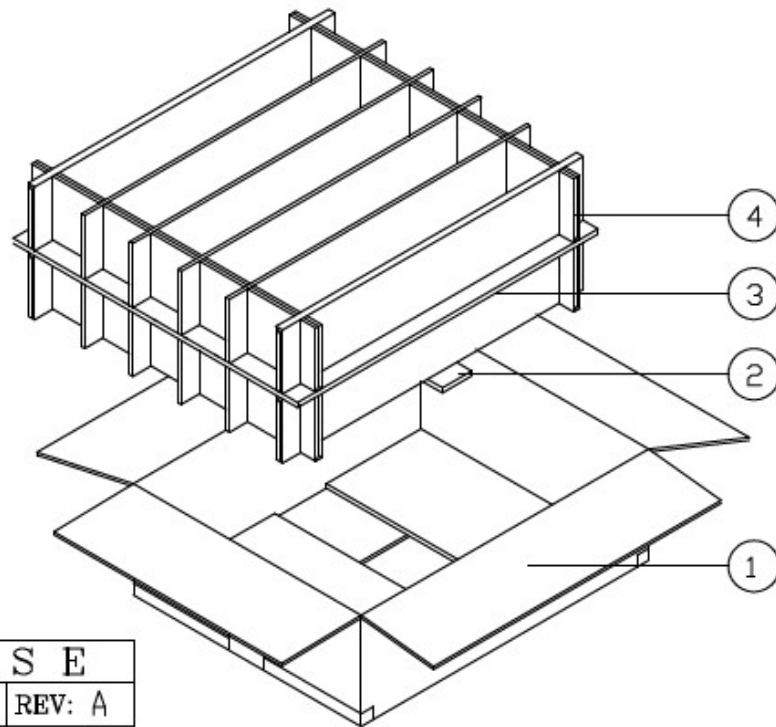
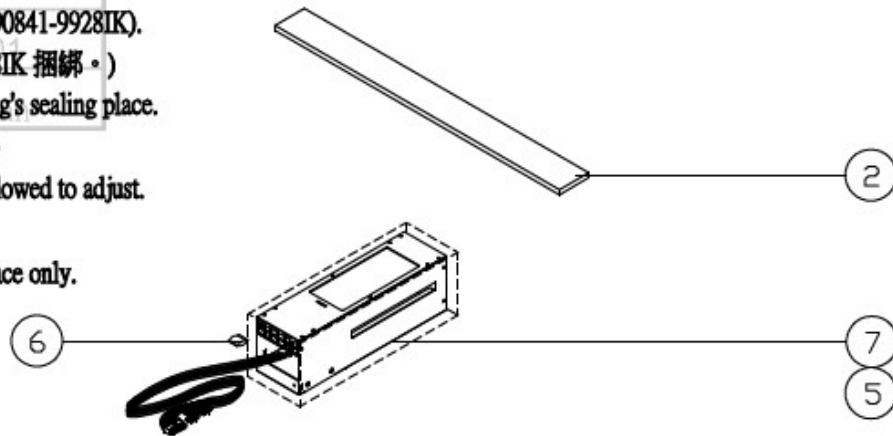
ACBEL POLYTECH INC.

Carton Drawing

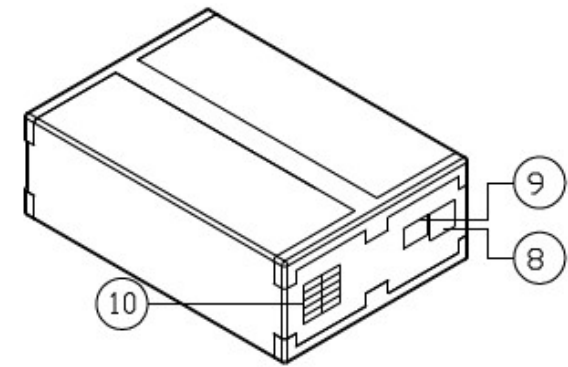
2022/06/28 08:15:23

Unit-package instruction (單體包裝說明):

- a. Tie the wire with cable-tie (R90841-9928IK).
(線材用束線帶 R90841-9928IK 捆綁。)
- b. Don't attach the tape on PE bag's sealing place.
(塑膠袋封口不要貼膠布。)
- c. The position of desiccant is allowed to adjust.
(乾燥劑位置允許調整。)
- d. The unit drawing is for reference only.
(圖示單體僅為示意。)



Note: 1. 10 units/ carton (10台/箱)



The position of serial number labels is allowed to adjust.
(序號標籤位置允許調整。)

The carton label (X01H00-1947I) should be attached before shipment.
And it is controlled by sales. (紙箱標籤 X01H00-1947I 於出貨前貼。
此紙箱標籤完全由業務控管。)

REVISIONS	DESCRIPTION	DATE
	BY	SUM
REV	A	5/30/22

RELEASE	
正式發行圖面	REV: A
ENG. <i>Lum Jian</i>	APPR. <i>Jusin Chou</i>

NO.	Q'TY	PART NO.	DESCRIPTION
10	10	X01H00-2035I	S/N BARCODE LABEL
9	1	X01H00-1947I	AIC CARTON LABEL
8	1	X01H00-1749I	CARTON LABEL
7	10	FSL026-4QCG	POWER SHELF
6	10	X1008-T9555I	DESICCATIVE
5	10	R1008-B9631I	PE BAG
4	2	X1008-D9892I-SA	PARTITION ASSEMBLY
3	1	X1008-D9952I	PAPER BOARD
2	2	X1008-D9889I	PAPER BOARD
1	1	X1008-C1716I	CARTON

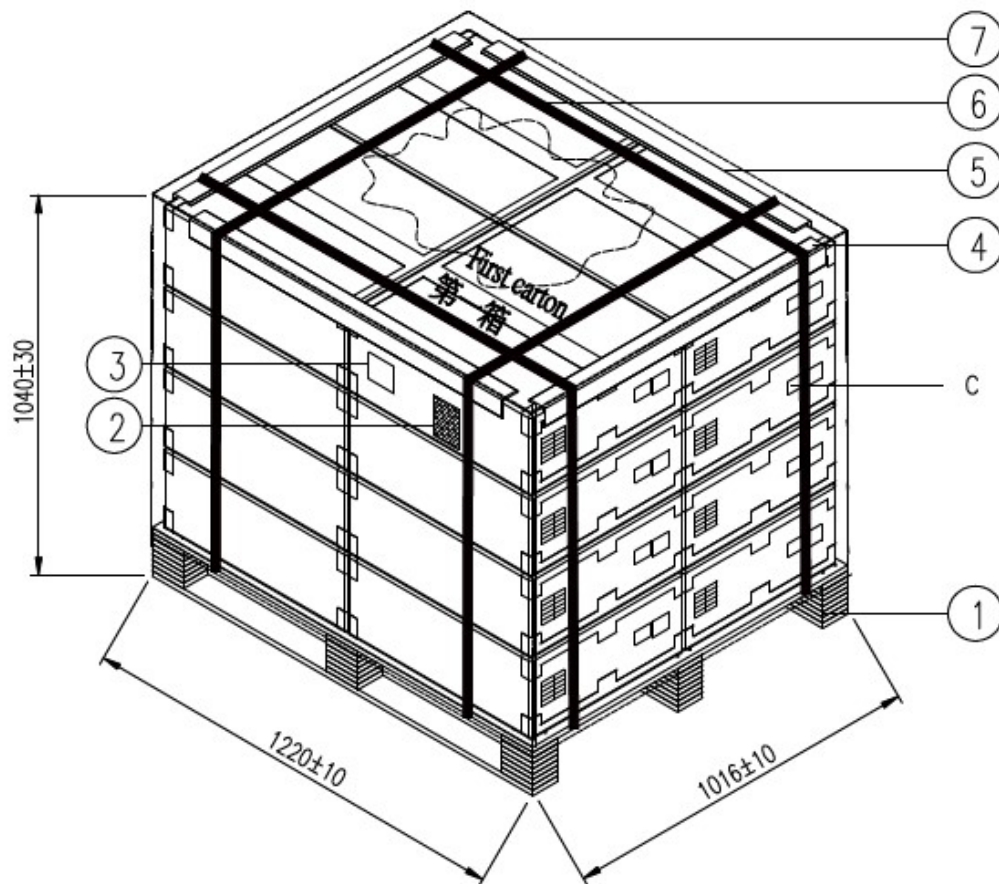
		MODEL NO. FSL026-4QCG
ACBEL POLYTECH INC.		PART NO. CA-FSL026-4QCG
		DWG. NO : CA-FSL026-4QCG_A
		TITLE : CARTON ASS'Y FOR FSL026-4QCG
		DESIGNER SUM 5/30/22
		CHECKED <i>Jusin</i> 5/30/22
		APPROVED <i>Jusin</i> 5/30/22

2022/06/28 08:16:08

The requirement of labels and instructions: (標籤與說明書要求:)

- a. The carton labels are always facing outwards. (紙箱標籤一律朝外。)
- b. If there is any instruction in packaging BOM, please place it in the first carton. (如果包裝 BOM 中有說明書，請放置第一個紙箱中。)
- c. The carton label (X01H00-1947I) should be attached before shipment. And it is controlled by sales. (紙箱標籤 X01H00-1947I 於出貨前貼。此紙箱標籤完全由業務控管。)

- Notes: 1. 10 units/ carton (10台/箱)
 2. 4 carton/ layer (4箱/層)
 3. 4 layers/ pallet (4層/棧板)
 4. 160 units/ pallet (160台/棧板)



R E L E A S E			
正式發行圖面		REV: A	
ENG.	<i>Sum Jian</i>	APPR.	<i>Justin Chou</i>

7	50M	X1008-8064I	PE FILM
6	20M	X1008-T9998I	PET PLASTIC STRIP
5	2	X1008-C8851I	EDGE PROTECTOR
4	2	X1008-C8852I	EDGE PROTECTOR
3	2	X01G50-0012I	WARNING LABEL
2	2	X01C32-1198I	SHIPPING LABEL
1	1	X1008-P9789I	PALLET

NO.	Q'TY	PART NO.	DESCRIPTION
AcBel			MODEL NO. FSL026-4QCG
ACBEL POLYTECH INC.			PART NO. PA-FSL026-4QCG
			DWG. NO : PA-FSL026-4QCG_A
 THIRD ANGLE PROJECTION			TITLE PALLET ASS'Y FOR FSL026-4QCG
DESIGNER		SUM	5/30/22
CHECKED		<i>Justin</i>	5/30/22
APPROVED		<i>Justin</i>	5/30/22

REVISIONS	DATE	BY	DATE
DESCRIPTION		SUM	5/30/22
RELEASE			
REV	A		