全漢企業股份有限公司
FSP TECHNOLOGY INC.

台灣 桃園市建國東路22號
NO.22, Jianguo E,Rd., Taoyuan City, Taiwan, R.O.C.
TEL:+886-3-375-9888 FAX:+886-3-375-6966

SPECIFICATION

FSP600-1PCH01F-C

R&D	CHECK	APPROVED	REV
George	Hanson	HB	X1

Electrical Specification

History

Rev.	Description	Date	Author
1.	**Initial draft version**	2024/1/5	George

Electrical Specification

Electrical Requirements

General description:
This power supply is designed for charging the batteries and is available on on-board configurations. Optional CAN bus communication ensure seamless device integration, and AC/DC cabling is completely customizable.

1. Input :

ITEM	CONDITION	SPECIFICATION
1.1 Rated Input Voltage	Continuously	115Vac ~ 240Vac
1.2 Input Voltage Range	Continuously	90Vac ~ 264Vac
1.3 Input Frequency Range	Continuously	47Hz ~ 63Hz
1.4 Efficiency	230Vac/50Hz	≥ 93%
1.5 Inrush Current	230Vac	Should be less than rating of critical components < 80A
1.6 Power Factor	230Vac	≥ 0.90

2. Output:

※Measured at the output connector.

ITEM	CONDITION	SPECIFICATION
2.1 Max. Charging Voltage	58.8V±1%	
2.2 Output Voltage Ripple And Noise	The measuring is done by 20MHz bandwidth limited oscilloscope and terminated output with a 47uF electrolytic capacitor in parallel with a 0.1uF /100V ceramic capacitor.	≤ 500mVp-p for reference *Test results base on actual battery pack
2.3 Pre-Charge Current Mode	Pre-charge voltage 28V ~ 42V	1A ± 0.5A @ Pre-charge voltage ± 1% *Based on characteristics of the battery
2.4 Constant Current Mode	Charge voltage 42.1V ~ 58.4V	10A ± 0.5 @ Charge voltage ± 1% *Refer figure 2-1
2.5 Constant Voltage Mode	Max. charge voltage	58.8V ± 1%

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2.6 Full Charge Switch Off	Terminate Charge 800mA	0.8A ± 0.1A
2.7 Reverse Current	Current from battery into charger when AC power off	< 0.5mA
2.8 Battery Voltage For Charger	Charger wake up	> 28V
2.9 Charge I/V Curve	Presetting as below I/V curve *Refer figure 2-1	Standard charger profile
2.10 LED Indicator	Power : Green1 Charging: Orange Error : Red	Power : AC power on Charging : Charging Error : Error or protection *Refer figure 2-2
2.11 Charge Flow Chart	figure 2-3	*Refer figure 2-3
2.12 CAN_H	CAN bus (Option)	*Refer figure 2-4
2.13 CAN_L	CAN bus (Option)	*Refer figure 2-4

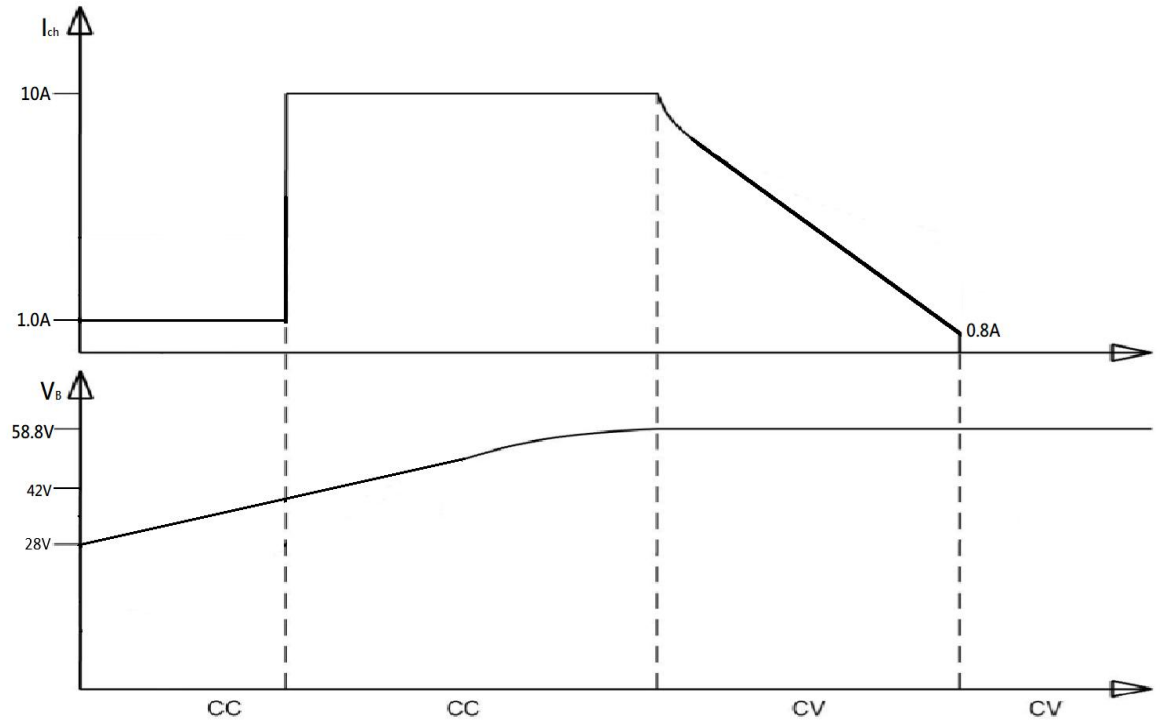


Figure 2-1

Name	Description
AC Power On	The gree1 (Power) LED turn on.
Precharge mode	The orange (Chargeing) LED flashes every 1s.
Charging	The orange (Chargeing) LED turn on.
Charger Errors	The red (Error) LED turn on. Charge cycle is not finish

Figure 2-2

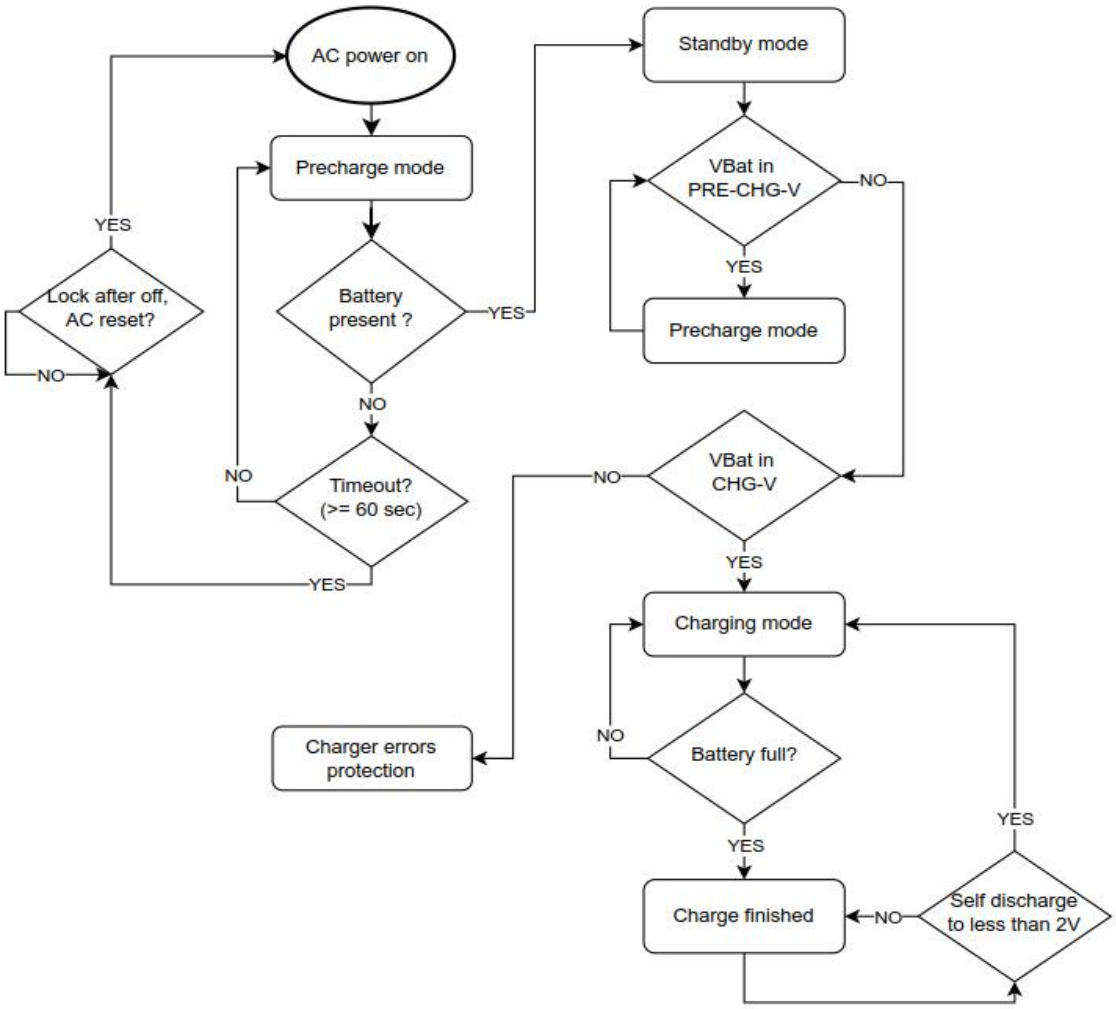
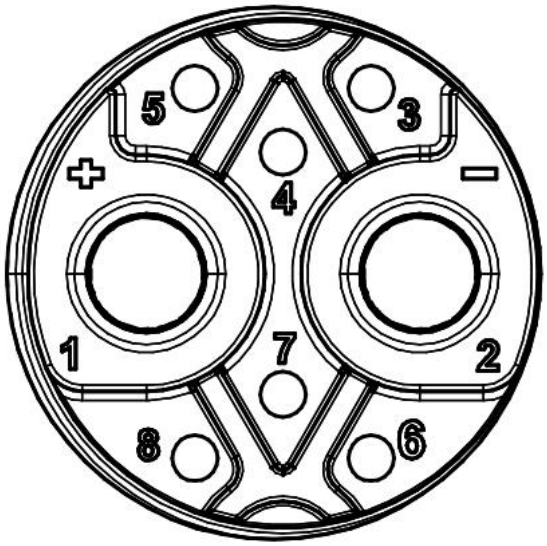


Figure 2-3



CONN NO.	FUNCTION
1	+ VBAT
2	- VBAT
3	NC
4	NC
5	NC
6	CAN_H
7	CAN_L
8	GND

Figure 2-4

3. Protection:

ITEM	CONDITION	SPECIFICATION
3.1 Short Circuit Protection	When an internal fault occurs or an external fault (overload or short circuit) is applied to the power supply, the power supply shall shut down. It will be required to reset the system by removing the AC mains input.	Latch and no damage
3.2 Over Voltage Protection	OVP > 59.5V	Latch and no damage
3.3 Maximum Charge Time Protection	Error signal to system (only with CAN bus connection)	Default 8 hours
3.4 Thermal Protection	The power supply will shut down during over temperature condition and returns back to normal operation when the power supply is cooled down and require remove the AC mains input to reset the system	Latch and no damage

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4. Environment:

ITEM	CONDITION	SPECIFICATION
4.1 Cooling	FAN cooling	FAN size 40mm * 40mm 2 pcs
4.2 Temperature	Operating Storage	-15°C to +40°C *Refer figure 4-1 -40°C to +85°C
4.3 Relative Humidity	Operating	- 15°C / 0% RH +40°C / 75% RH
	Storage	-40°C / 0% RH +85°C / 95% RH
4.4 Vibration	IEC60068-2-64	Normal operation shall be continued
4.5 MTBF	At maximum load and +25°C ambient, SR-332	> 50000 hours

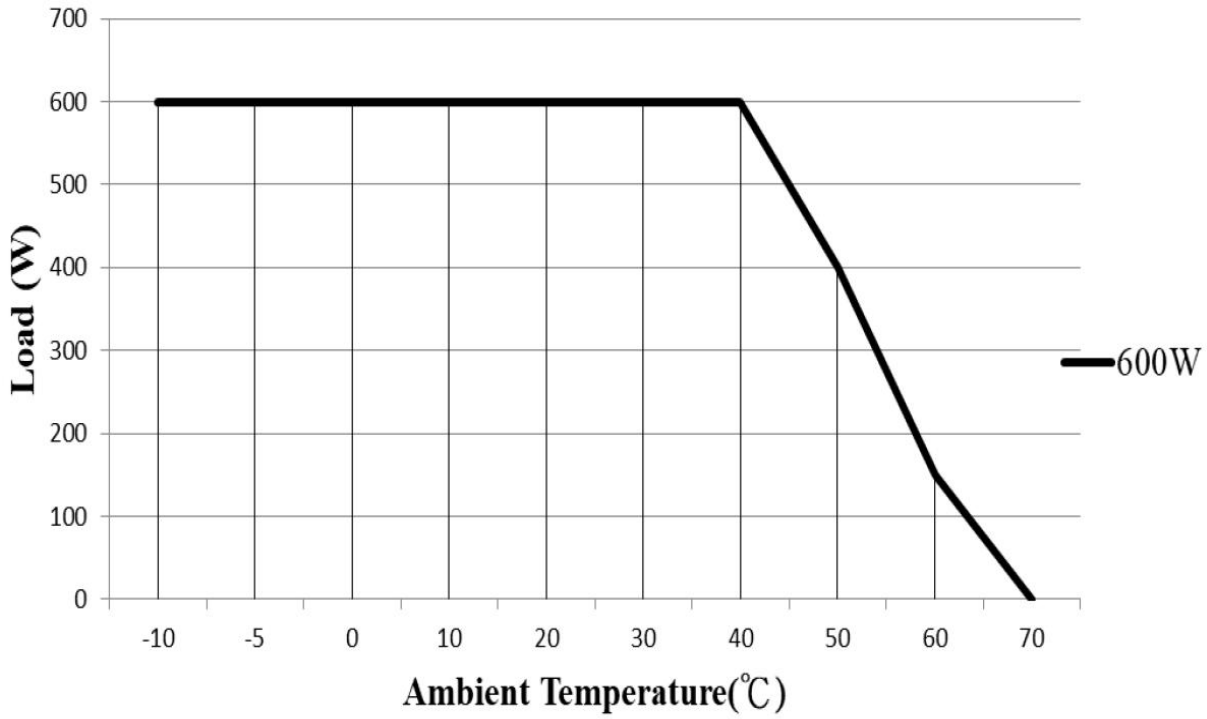

Figure 4-1

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5. Safety & EMC:

ITEM	CONDITION	SPECIFICATION
5.1 Safety Standard	IEC/EN 60335-1 IEC/EN 60335-2-29 UL1012 CAS107.1	
5.2 EMC Emissions	CISPR 14-1 EN55014-1 EN61000-3-2 EN61000-3-3	
5.3 EMC Immunity	IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-11	

6. Mechanical:

ITEM	CONDITION	SPECIFICATION
6.1 Dimension (Length x Width x Height)	245mm * 135mm * 61mm	
6.2 Weight		TDB
6.3 Input Socket	AC Inlet C14	
6.4 Output Cable	Connector Chogori Mate60 series	Mate60 2+6
6.5 Protection Class	IP20	

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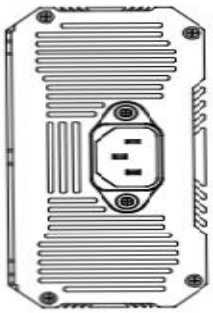
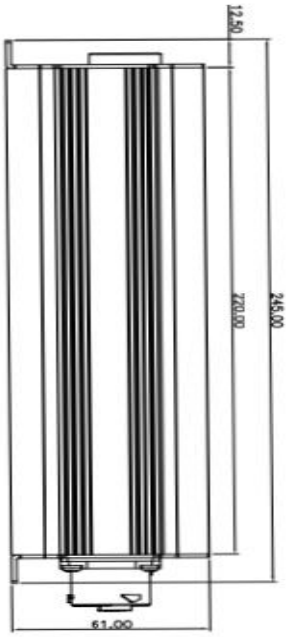
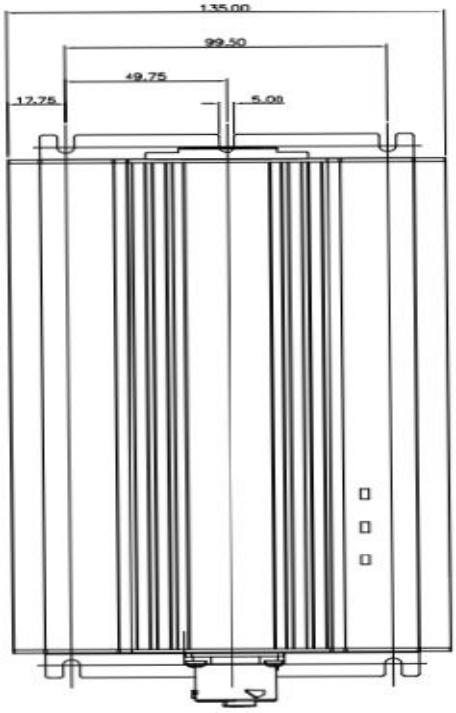
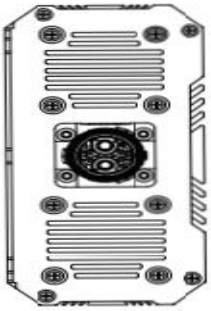
DRAWING:









7. CAN Communication: (Option)

a. CAN Parameters

Name	Value
Identifier length	11-Bits, Standard format
Byte Order	Little Endian (LSB has lower address)
Bit Timing	Compliant with ISO11898-1 (CAN 2.0B)
Baud Rate	500kbs
Time Quanta (TQ)	100ns
Bit time	2000ns

b. Key message of 140h

Data	Byte	bit	value	unit	Resolution	Remark
Charger Current	0	0-8	0-30	A	0.5	
Charger Voltage	1-2	0-16	0-60	V	0.1	
Reserved	3-4					
Reserved	6-7					

c. Key message of 500h

Data	Byte	bit	value	unit	Resolution	Remark
Charger Current	0-1	0-15	0-15	A	0.01	
Charger Voltage	2-3	0-15	0-60	V	0.01	
Reserved	4-7					

d. Key message of 510h

Data	Byte	bit	value	unit	Resolution	Remark
Error Code	0-1	0-16	0-FFFF	1	1	TBD
Charger_Temperature	2	0-8	-15 ~ 240	℃	1	
Reserved	6-7					