Specification

MODEL: **F3**

Prepared By/Date: 01/03/2020
Checked By/Date:
Approved By/Date: 05/20/2022

Customer NO.
Customer Approval
Signature:
Date:
Company Name:
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Amendment Records

Revision	Description	Prepared by	Approved by	Date
A/00	First Publish			01/03/2020
A/01	Added function can charge LiFePO4 battery			05/10/2022

Special Requirement

Customer should propose their special requirement and communicate with Soshine in advance. If there were some application or operation conditions are different from this specification, Soshine may change the design or product according to customer's special requirement.

No.	Special Requirement	Standard
1		
2		
3		
4		

1 Scope

This specification is applies to describe the related charger product in this specification and the charger supplied by Soshine only, as well as product conditions of use and risk warnings.

2 Model：F3

3 Product Information

Model F3 is a quick universal charger, Used for Ni-MH / Ni-CD / Li-ion / LiFePO4 rechargeable battery (flat top / button top). It can charge for 1 cell of AAA/10440, AA/14500 rechargeable battery..

4 Charger Specification

4.1 Charger specification

No.	Items		Specifications	Remark
4.1.1	Input	Voltage	DC5V	USB TYPE- C
4.1.2		Power	DC 5V/1A～2A	≤5W
4.1.3	Output	Charging current @ Ni-NH / NI-CD	1000mA	
4.1.4		Charging current @ Li-ion / LiFePO4	500mA	
4.1.5		Absolute Charging Voltage @ Ni-MH	about 1.45V	The end voltage is judged according to -ΔV 5～10mV
4.1.6		Absolute Charging Voltage @ Li-ion	4.20V±0.1	
4.17		Absolute Charging Voltage @ LiFePO4	3.60V±0.1	
4.1.8		Charger mode@ Li-ion / LiFePO4	CC / CV	Constant Current, Constant Voltage
4.1.9		Charger mode@ Ni-MH	-DELTA V	-ΔV 5～10mV
4.1.10	Protection	Over charge protection	apply	
4.1.11		Short circuit protection	apply	
4.1.12		Output reverse protection	apply	
4.1.13		Max charging time control	8 Hours	
4.1.14	Temperature and relative humidity Range	Operation temperature	0℃ to +60℃	Surface Temperature
4.1.15		Charging temperature control	Temperature rise at 25℃	
4.1.16		Storage temperature	-20℃ to +65℃	60±25%R.H.
4.1.17		Operation relative humidity	20%～90%	
4.1.18	Safety	EU	CE	Certifications
4.1.19		United States	UL	Certificates
4.1.20			ROHS	Certifications
4.1.21	MTBF		40,000 hours	Temperature at 25℃
4.1.22	Power efficiency		85%	Full load
4.1.23	Size		L74*W38*H17	
4.1.24	Weight		18g	

4.2 LED Indication

NO.	LED indicator		Charging conditions
4.2.1		1 LED Red	Power on, Li-ion /Ni-MH Mode
4.2.2		1 LED Yellow	Power on, LiFePO4/NiMH Mode
4.2.3		Green	Charging in progress
4.2.4		5 LEDs turn green	Charging completed
4.2.5		5 LEDs turn green (Flashing)	Bad and single-use battery

5 Charger Performance Test Criteria

5.1 **Appearance inspection by visual**

There shall be no such defect as rust, Surface scratches and stains, which may adversely affect commercial value of charger.

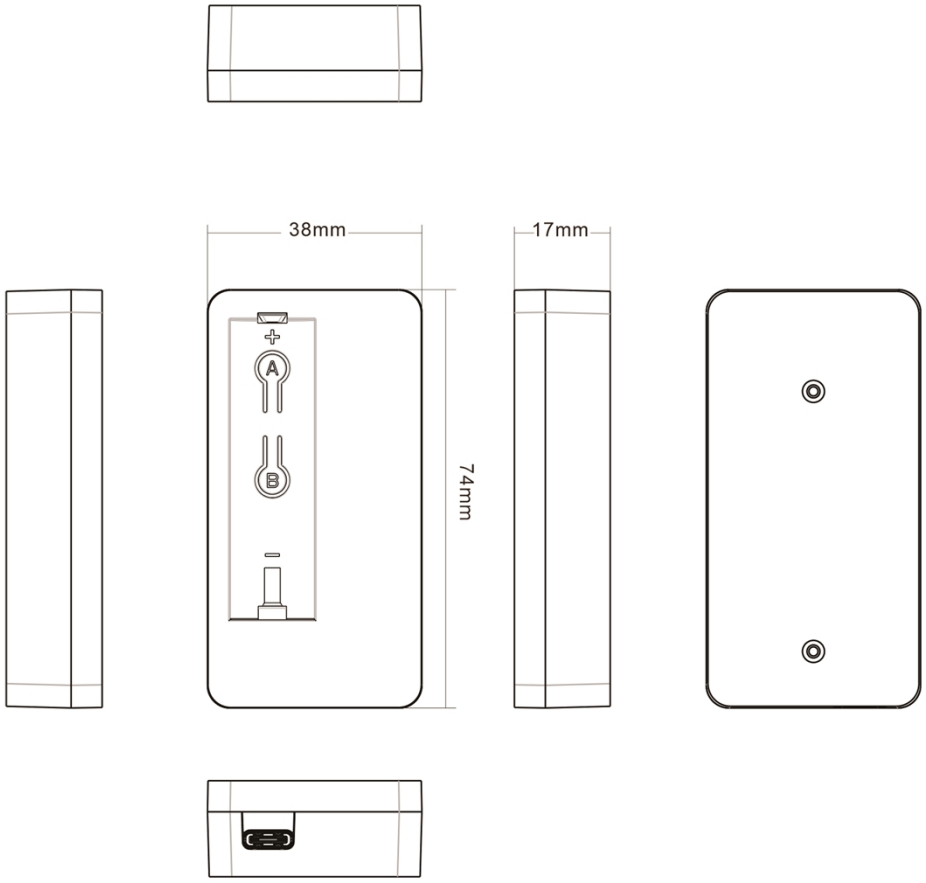
5.2 **Environmental test condition**

Unless otherwise specified, all test stated in this product specification are conduct at below test condition Temperature: 20℃~25℃, Relative Humidity:60%±25% R.H.

5.3 **Charger electrical characteristics**

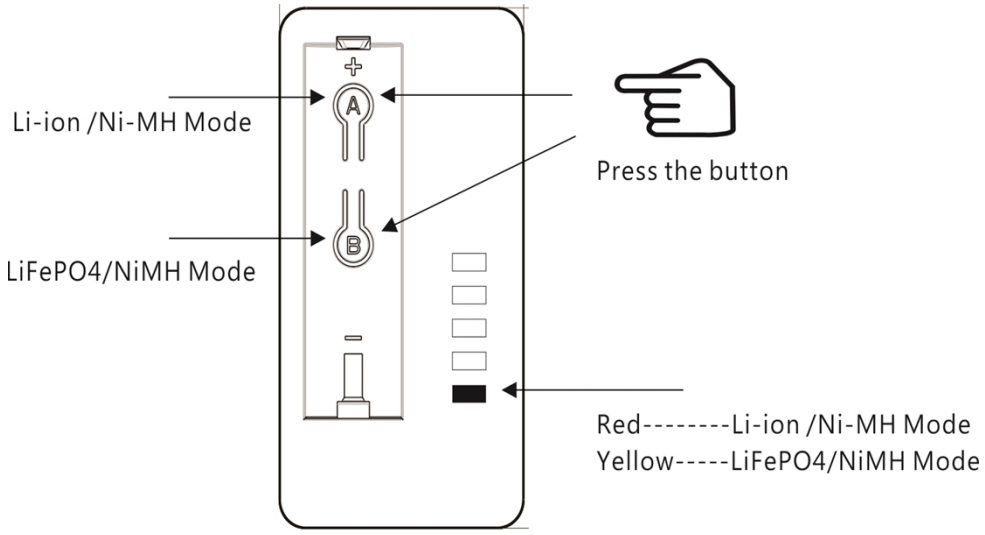
No	Items	Test Method and Condition	Criteria
5.3.1	Input current test	Put 1 piece 1.2V AA (voltage is less than 1.2V) Ni-MH of battery and inset 5V2A power to Charger. Measurement input current.	Input current less than 1.0A for above test.
5.3.2	Current test	Input 5V2A power to the charger, Put 1.2V AA Ni-MH（voltage is less than 1.2V）1 piece or 3.7V（Voltage is less than 3.9V）14500 Li-ion 1 piece and series with ampere meter in it. Then record current.	The AA of battery output current is 1000±150mA or 14500 of battery output current is 1000±150mA.
5.3.3	Battery efficiency test	Put 1.2V AA Ni-MH（voltage is less than 1.2V）1 piece or 3.7V（Voltage is less than 3.9V）14500 Li-ion 1 piece and input 5V2A power to Charger. Use 0.2C test discharging capacitance of battery when battery Saturation after 30 minutes.	At least three cycles for above test, discharging capacitance or Rating capacitance of battery shall be max than 98% at each time.
5.3.4	Vibration test	Fixed the charger to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The charger shall be vibrated for 30 minutes per axis of XYZ axes.	(1) Charger is no break. (2) Normal functional test shall be satisfied after the test.
5.3.5	Drop Test	Falling height: 100cm natural falling to concrete floor Falling direction: 6 sides Drops: 1 drop for each side	(1) Charger is no break. (2) Normal functional test shall be satisfied after the test.

6 Charger Dimensions



NO	Items	Units: mm
1	Length,	L 74±0.2
2	Width	W 38±0.2
3	Height	H 17±0.2

7 Charging Mode



8 Charger Construction:

NO	Items	Materials
1	Circuitry type	Switching Mode
2	Display	5 LEDs
3	PCB	UL 94V-0, FR-1
4	Housing	ABS + Fireproof materials

The outside size must be meeting the tolerance range of drawing mark.

9 CAUTIONS IN USE

To ensure proper use of the charger please read the manual carefully before using it.

.Handling

- **Battery must be charged in appropriate charger only.**
- Do not use the battery mixed with other different make, type, or model batteries.
  Prohibiting charging for 1.5V Alkaline or Carbonic battery, otherwise it will cause leakage or explosion.
- Do not disassemble or deform the charger.
- It can be used in-door only. Be care about rain.
- Don't use it in the environment of high temperature or wetting.
- Keep out of the reach of children.
- Do not leave battery in charger over 24 hours

Storage: Store the charger in a cool, dry and well-ventilated area.

Disposal: Regulations vary for different countries. Dispose of in accordance with local regulations.

10 Period of Warranty

The period of warranty is 12 months from the date of shipment. Guarantees to give a replacement in case of charger with defects proven due to manufacturing process instead of the customer abuse and misuse.

11 Storage of the Charger

The charger should be stored at temperature Range -20℃ to +65℃, humidity Range 5 ~ 80% R.H.

12 Considerations for Charging Methods

Battery life is limited. When the battery internal resistance is more than 250% of the initial resistance, they should stop using the battery. Any violation of the requirements will be exempt from Soshine's quality guarantee responsibility which based on product sales contract and this specification.

13 About Battery Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

14 Note

Any other items which are not covered in this specification shall be agreed by both parties.