SPECIFICATION

FANSO

ER26500H 3. 6V

Electrical characteristics

（Typical values relative to cells stored for one year at +30 ℃ max）

- **Nominal capacity** — 9000mAh
  Discharged capacity at 2mA, +25℃, 2. 0V cut off

- **Open circuit voltage** — 3. 66V

- **Max. recommended continuous current** — 100mA
  Discharged to 2. 0V at + 25℃ permitting 50% of the norminal capacity to be acheived

- **Max. Pulse capability** — 200mA
  200mA,0.1 second pulses every 2 minutes,drained with 50%,2mA at 25 ℃ from undischarged cells with 20μA base current,yield voltage readings above 2.7V, the value may vary according to the pulse characteristics,the temperature and the cell's previous history

- **Operating temperature rang** — −55 ℃~+85 ℃

STORAGE:

Stored in clean, dry and cool circumstances（the temperature should be 20 degress or lower, less than 30 degress）

WARNING:

Don’t charge, crush, disassemble, expose contents to water, heat above 100℃ or may lead to explosion , burn or poison goods leakage . Discarded battery should be buried deeply to the ground .

Key features

- High and stable operating voltage
- Long shelf life
  Anual self-discharge rate lower than 1% at +25℃
- Long operating life
- High energy density（700wh/kg）
- Wide operating temperature rang
- Stainless steel can and cover
- Hermetic glass-to-metal sealing
- Non-flammable electrolyte
- Compliant with IEC 86-4 safety standard

UL Component Recognition
File Number MH46165

Main applications

- Public instrument
- Alarms or security equipment
- Memory backup
- GPS tracking
- Car electronics
- Professional electronic equipment
- Real time clock

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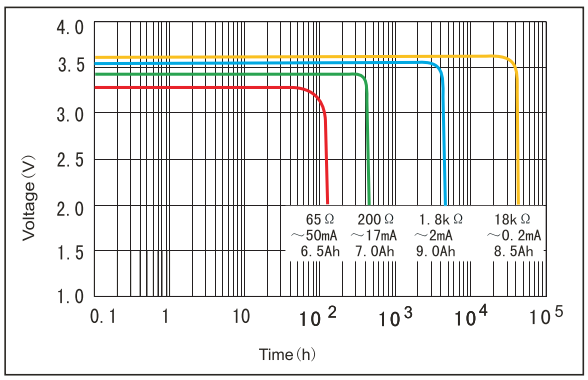
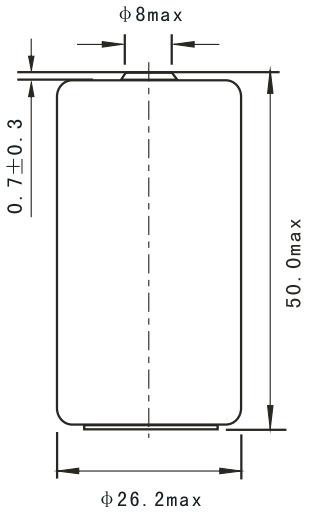
ER26500H 9000mAh

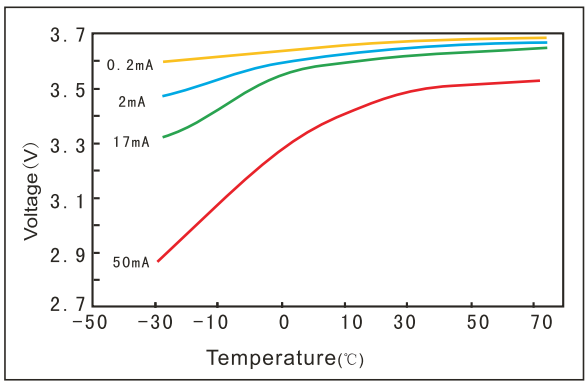
Discharge characteristics at 25℃





Dimensions in mm
Weight:53g

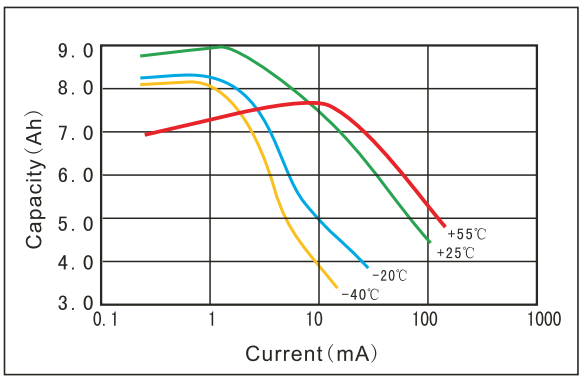
Voltage vs Temperature curve



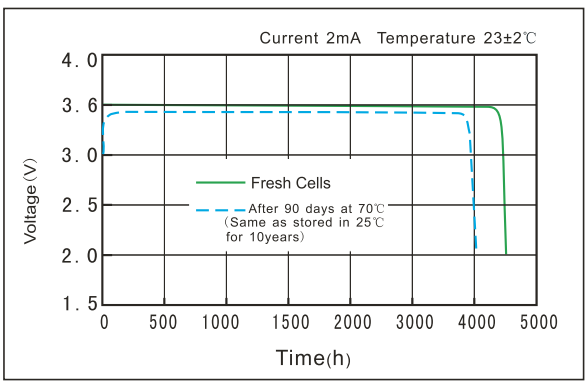
Available Terminations	
-/P*	Axial pin
-/T /PT2*	Radial Pin
-/PT /TP*	Polarized Tab

(*): Reference to Standard Terminals for Single Cells

Capacity vs Current curve(cut off with 2.0V)



Discharge characteristics after storage



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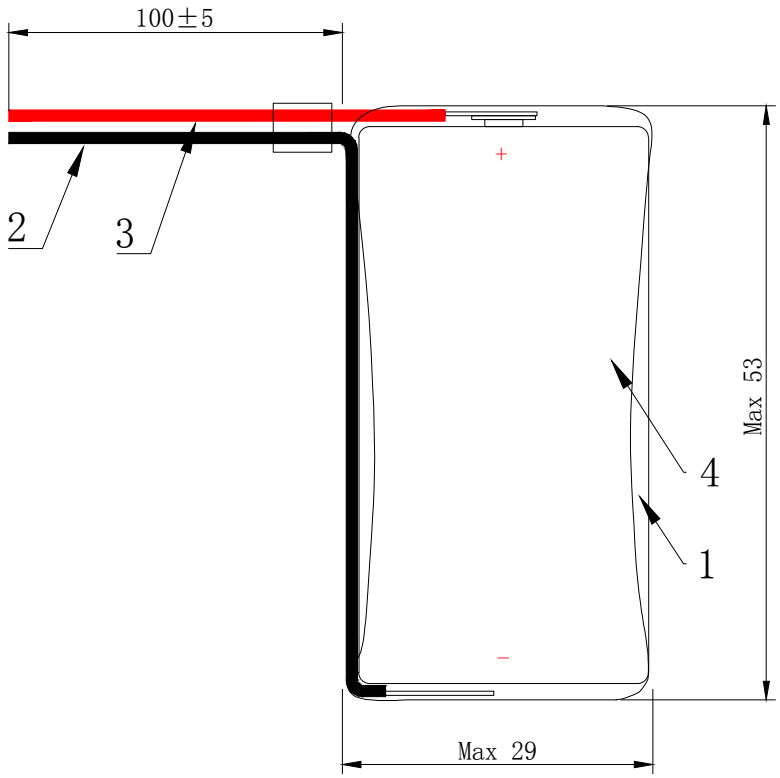
标记	日 期	变更内容描述	担 当



ITEM FANSO ER26500H-LD

NO.	MATERIAL	SPECIFICATION	QTY	MARK
4	Sleeve	折径75.5*0.06,PVC	1	grey
3	Cable	UL1007-24# red	1	
2	Cable	UL1007-24# black	1	
1	Cell	ER26500H	1	FANSO标

FANSO Wuhan FANSO Technology Co.,Ltd								drawing	
Property of FANSO, copy is prohibited				material			version	A/0	
tolerance	design	贺明明	technique				unit	mm	
X :±0.3 X.X :±0.2 X.XX :±0.1 angle :±0.5°	drawing	贺明明	quality		drawing number				
	audit		approval		technical status	C	视图方向		
	standard		date	2020-08-07	scale	1:1	第 1 张 共 1 张		

TECHNICAL SPECIFICATION

Lithium Thionyl Chloride Battery

Model: ER26500H

Established date: 5th July 2022

	Position	Signature	Date
Draft	Product Engineer		
Checked	Technical Manager		
Approved	Chief Engineer		

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Version Record

Version	Reviser	Established Date	Version	Revise page	Revised reason
0	Zhang Peng	5th July 2022	A/0	all	Release

1. Scope

The document applies to ER26500H ($Li/SOCl_2$) battery pack supplied by FANSO TECHNOLOGY CO.,LTD. Specify quality, test method, performance, quality assurance and matters need attention etc..

2. Battery type

Lithium Thionyl Chloride

3. Battery system characteristics

Table 1 General characteristics

No.	Item	Characteristic	Remarks
1	Nominal Voltage	3.6V	
2	Nominal Capacity	8500mAh	23±3℃,2mA,2.0V cut off
3	Max. constant current	100mA	
4	Max. pulse discharge current	200mA	
5	Operate temperature	-55~85℃	Operation under higher temperature than ambient temperature may lead to reduced capacity and lower voltage reading at the beginning of pulses. If continuous high temperature over +40℃ or low temperature down to -20℃ usage conditions, please consult FANSO.
6	Dimension	Φ25.7mm*H50.0mm	See attached dimension image
7	Weight	About 48.5g	
8	Annual self-discharge rate	⩽1%	At 23±3℃ and humidity 65±10% RH long time storage

Table 2　Typical electrical performances

No.	Item	Characteristic	Remarks
1	Open Circuit Voltage	⩾3.64V	23±3℃,by three and half digital meter
2	Load voltage	⩾3.20V	23±3℃,50mA/62Ω, discharge 3s
3	Capacity 1	5800mAh/116h	23±3℃,50mA/62Ω,2.0V cut off, cathode up-right
4	Capacity 2	7000mAh/700h	23±3℃,10mA/330Ω,2.0V cut off, cathode up-right

4. Appearance and structure

4.1 Appearance

ER26500H Cell appearance, no scratch, swelling, deformation, corrosion, electrolyte leakage and other defects.

4.2 Structure

ER26500H is “bobbin design” cell, whose cathode is cylindrical in shape.

Hermetic is ensured by a glass-to-metal sealing technology.(under a standard helium pressure, leakage rate ⩽10^{-8}Pa·m^3/sec).

5.2 Product mark

5.2.1 Battery’s label specification

① type　② nominal voltage　③ positive and negative electrode mark

④ date code　⑤ safety warning

5.2.2 Date code:

Date code will be marked on the sleeve of battery.

Method: MM YY "MM" stand for: month; "YY" stand for: year

5. Incoming inspection

As for the customer's incoming inspection, FANSO recommended sampling according to GB2828.1-2012 standard.

Table 3 Acceptability quality level

No	Item	Technical request	Check level	AQL
1	Dimension	2-6	S-2	0.65
2	Appearance	2-8	II	1.0
3	Open circuit voltage	3-1	II	0.4
4	Load voltage	3-1	II	0.4

Table 4 Sampling amount

Lot size	Sampling amount
≤3200	32
3200~10000	50
>10000	80

Note:Unless other specified, the above items should be tested within 45 days since receipt of the battery.

6. Capacity judgment

6.1 If the average capacity is not less than the standard value specified in Table 2, and no battery below 90% of the value, the battery capacity is qualified.

6.2 If the average capacity is lower than the standard value specified in Table 2, and some battery below 90% of the value, do re-sample test, If the average capacity is not less than the standard value specified in Table 2, and no battery below 90% of the value, the battery capacity is qualified.

6.3 if the average capacity is lower than the standard value specified in Table 2 and some battery below 90% of the value during the second test, the battery capacity is unqualified.

7. Safety and environmental performance

7.1 Environmental performance

7.1.1 Altitude Simulation

A test battery shall be stored for 6h at an absolute pressure of 11.6KPa(1.68psi) and a temperature of 20±3℃（68±5°F）

Pass/Fail criteria: there shall be no leakage,no venting, no short-circuit, no rupture, no explosion and no fire during this test.

7.1.2 Thermal Cycling

A test battery shall be stored for at least 6h at test temperature of 72℃, followed by storage for at least 6h at temperature of -40℃. The maximum time for transfer to each temperature shall be 30 min. Each test and battery shall undergo this procedure 10 times. This is then followed by storage of at least 24h at ambient temperature.

Pass/Fail criteria: there shall be no leakage,no venting, no short-circuit, no rupture, no explosion

and no fire during this test.

7.1.3 Free fall

A test batteries shall be dropped from 1.0m height onto a concrete surface. Each test battery shall be dropped six times, a prismatic battery once form each of its six faces.

Pass/Fail criteria: there shall be no venting, no explosion and no fire during this test and within the 1h of observation.

7.1.4 Vibration test

Test batteries shall be firmly secured to the platform of vibration machine without distorting them and in such a manner as to faithfully transmit the vibration. Battery vibration frequency is to be varied at the rate of 1 hertz per minute between 10 and 55 hertz, and return in not less than 90 or more than 100 minutes. The battery is to be tested in three mutually perpendicular directions

Pass/Fail criteria: there shall be no leakage,no venting, no short-circuit, no rupture, no explosion and no fire during this test.

Warning:

The description of the following abuse tests is for demonstration purposes only. During handling and application of lithium batteries, abusive conditions must be avoided. Any application or test requiring performance beyond the limits given hereby must be approved by Fanso.

7.2 Safety test

7.2.1Thermal abuse

A test battery shall be placed in an oven and the temperature raised at a rate of 5℃/min to a temperature of 130℃ at which the battery shall remain for 10 min.

Pass/Fail criteria: there shall be no explosion and no fire during this test.

7.2.2 Impact

A test battery is placed on a smooth flat surface. A 5/8 in. (15.8 mm) diameter steel bar was placed across the center of the sample. The length of the bar should be at least as long as the width of the sample. A 9.1±0.1 kg weight is dropped from a height of 24 ± 1 in. (610 ± 25 mm) on to the sample.

Pass/Fail criteria: there shall be no excessive temperature rise,no explosion and no fire during this test and within the 6h of observation.

7.2.3 Crush test

A test battery is crushed between two flat hard surfaces (i.e. steel). The crushing was continued until a force of 3000 pounds (13kN±0.78kN) was applied by hydraulic piston with a diameter of 32mm. press continue until pressure reach up to 17.2Mpa. Once the maximum pressure was obtained, it was released.

Pass/Fail criteria: there shall be no excessive temperature rise,no explosion and no fire during this test and within the 6h of observation.

7.2.4 Forced discharge

Each battery shall be force discharged at ambient temperature by connecting it in series with at 12V DC power supply at an initial current equal to the maximum continuous discharge current specified by the manufacture. The specified discharge current is obtained by connecting a resistive load of

appropriate size and rating in series with the test cell and the direct current power supply.Each battery shall be forced discharged for a time interval equal to its rated capacity divided by the initial test current.

Pass/Fail criteria: there shall be no explosion and no fire during this test and within the 7 days after the test.

7.2.5 External Short-circuit

The test battery shall be stabilized at an external case temperature of 55℃ and then subjected to a short-circuit condition with a total external resistance of less than 0.1Ω at 55℃. This short-circuit condition is continued for at least 1h after the battery external case temperature has returned to 55℃.The test sample shall be observed for a further 6h.

Pass/Fail criteria: there shall be no excessive temperature rise,no rupture,no explosion and no fire during this test and within the 6h of observation.

7.2.6 Abnormal recharging

The test battery shall be subjected to a charging current of three times the current Ic, specified by the manufacturer by connecting it in opposition to a dc-power supply. The specified charging current is to be obtained by connecting a resistor of the specified size and rating in series with the battery.

The test time is calculated from the formula:

$$Tc=2.5*C/(3*Ic)$$

In which:

Tc——charge time, hour, Tc≥7Hour;

C——Nominal capacity, Ah;

Ic——Max. charging current, mA. ER26500H maximum charge current is 0.015A.

Pass/Fail criteria: The samples shall be no explosion or catch fire.

8. Safety terms

8.1 Before use, do not remove the battery from the original packaging.

8.2 Do not scattered placed the battery together in order to avoid accidental short circuit.

8.3 Do not heat the battery above 100 ℃ or incinerated.

8.4 Do not recharge the battery.

8.5 Do not mixed with different brand, model or type batteries.

8.6 Do not mix the new and used batteries.

8.7 Do not disassembly or open battery.

8.8 Do not short circuit the battery or reversely contact the positive and negative terminals.

8.9 Do not solder on the battery surface.

8.10 Do not test environment and safety under extrusion without any protection.

8.11 Do not use or store batteries under wet conditions without protection.

8.12 Batteries are not allowed to be used excessively in the equipment without setting the cut-off voltage. After reaching the cut-off voltage, it should be removed from the equipment immediately to stop working.

8.13 Stop using if the battery is found to have heat, odor, discoloration, deformation, or other abnormalities during using or storage.

8.14 Batteries used should be handled in accordance with local environmental regulations and

buried deep underground or into brine.

8.15 If the liquid is splashed on the skin, eyes and clothes, rinse immediately with plenty of water, and then seek medical care immediately.

9. Storage

9.1 Batteries should be used and stored away from static electricity

9.2 Batteries shall be stored not exceeding 30 DEG C and relative humidity of 45% - 75%.

9.3 Keep the battery away from the heat source, away from corrosive gas, avoid direct sunlight, and make sure the storage area is clean, cool, dry and ventilated.

9.4 The battery packing carton height shall not exceed 1.5 meters, and the wooden box shall not exceed 3 meters.

9.5 Batteries should keep the original storage state when not using, after removing the packaging, the battery should not be piled up irregularly.

10. Transportation

10.1 Battery meets the tests and criteria requirements of UN Manual, Part III, subsection 38.3.

10.2 Batteries should be protected against sunlight, fire, rain, immersion, and corrosive substances in transportation.

10.3 Handling and loading should be with care.

10.4 For long transportation, such as shipping, should be kept away from the engine. And in summer should not be prolonged in an airless environment.

11. Effective

11.1 Because the voltage passivation is the basic feature of lithium thionyl chloride battery, if the

batteries will not install within 3 months, we suggest to activate the battery before using. please consult the FANSO for activation scheme.

11.2 In practical applications, customer should be responsible for the compatibility and reliability of the battery and the device.

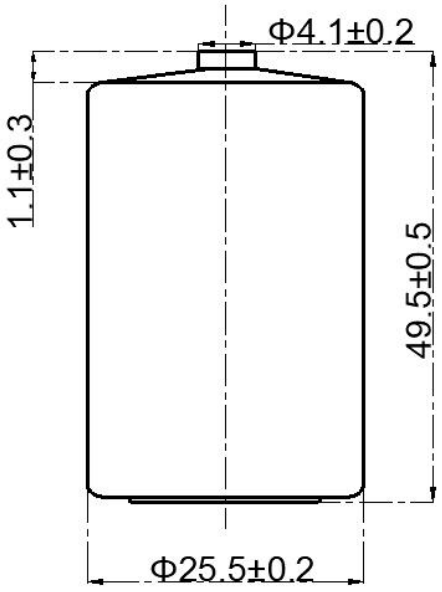
11.3 In any of the following circumstances, FANSO will not take any responsibility: the client’s fails of appropriate treatment, operation, installation, testing, maintenance and inspection of the battery, or do not follow the instructions provided in the specification, notes, terms, and other FANSO instructions.

11.4 This specification is accepted after 6 months from the date of issues if not be refunded.

12. Statement

If you have any questions on the product specifications, please contact with Wuhan Fanso Technology Co. ltd. Fanso reserves the right to amend the product specification.

13. Battery dimension (unit of size: mm)



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DE – Passivation

This document serves to guide our clients how to prevent FANSO 3.6V Li-SOCL2 ER series battery from being passivated by means of pulsing the battery at a regular time, As well as how to activate the passivatd batteries before starting to use them by pre - discharging.

Below is the specific pulse mode applied to different cells to avoid the passivation during storage ;

Battery model	Pulse current	Pulse time	Pulse frequency	loading voltage(1~12months)
ER14250H	5~10mA	3~5 sec.	1time/1~2tweek	1.2K Ω ≥3.30V（5sec.）
ER14505H	20~30mA	3~5 sec.	1time/1~2tweek	200 Ω ≥3.10V（5sec.）
ER18505H	20~30mA	3~5 sec.	1time/1~2tweek	200 Ω ≥3.20V（5sec.）
ER26500H	50~80mA	3~5 sec.	1time/1~2tweek	100 Ω ≥3.20V（5sec.）
ER34615H	50~100mA	3~5 sec.	1time/1~2tweek	56 Ω ≥3.00V（5sec.）
ER14505M	50~100mA	3~5 sec.	1time/1~2tweek	33 Ω ≥3.10V（5sec.）
ER26500M	100~150mA	3~5 sec.	1time/1~2tweek	10 Ω ≥3.10V（5sec.）
ER34615M	100~200mA	3~5 sec.	1time/1~2tweek	8.2 Ω ≥3.10V（5sec.）

In general, FANSO recommend not to store the battery for more than 6 months upon receiving them from us, during the storage, the battery should be kept at a ventilated room with temperature less than 23 degree to slow the passivation process and maitain a low self-discharge rate, any higher temperture would expedite the passviation process as well as increase the self - discharge rate.

To activate the passivated batteries, we suggest pre – discharge the batteries with a relatively low continuous loading current for 20 minutes approximately to consume its capacity as little as possible， below is the discharge current or loading resistance applied for each cell in specific ;

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Battery model	loading current	discharge time	Norminal loading voltage
ER14250H	5~10mA	20 minutes	1.2K Ω ≥3.30V
ER14505H	20~30mA	20 minutes	200 Ω ≥3.10V
ER18505H	20~30mA	20 minutes	200 Ω ≥3.20V
ER26500H	50~80mA	20 minutes	100 Ω ≥3.20V
ER34615H	50~100mA	20 minutes	56 Ω ≥3.00V
ER14505M	50~100mA	20 minutes	33 Ω ≥3.10V
ER26500M	100~150mA	20 minutes	33 Ω ≥3.10V
ER34615M	100~200mA	20 minutes	33 Ω ≥3.10V