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EF1: Explosion-proof LED Flashlight

To meet the demand of market, SYSMAX has developed EF1 explosion-proof LED Flashlight. It is suitable for various flammable and explosive sites and underwater operations, serving as portable lighting for electric power industry, metallurgical industry, petroleum industry, railway, army, fire fighting, factories and mines.

1. Structural Features

- 1.1 With flameproof enclosure and the highest explosion-proof grade, it can be used in various flammable and explosive places for a long time.
- 1.2 Maintenance-free LED with high luminous efficacy is used as light source and its life is more than 100 thousands hours.
- 1.3 Working light, strong light and super-strong light are optional, which can be switched by turning the magnetic knob.
- 1.4 High-energy and memory-free battery is characterized by large capacity, no pollution, excellent charging, discharging performance and low self-discharge rate.
- 1.5 The shell is made of imported high hardness alloy, with excellent performance of strike resistance and impact resistance.
- 1.6 It is small, light and easy to carry. Various carrying styles are available, such as held by hand, carried by shoulder, etc.

2. Functional Features

Model: EF1

- 2.1 The product is lightweight as new techniques are adopted to reduce the burden of operators while carrying and transporting it.
- 2.2 Super long runtime, working light, strong light and super-strong light are optional for users.

3. Instructions

- 3.1 Working light, strong light and super-strong light are optional for users
- 3.2 The mode is selectable based on one's needs.


4. Technical Specifications

Item	Parameters		Value	Unit
1	Rated voltage		3.6	V
2	Rated capacity		3.4	Ah
3	LED	Current	Working light	<10
4			Strong light	1000
5			Super-strong light	3000
6	Continuous operating time		Working light	≥ 420
7			Strong light	≥ 4
8			Super-strong light	≥ 1.2
9	Working life		≥ 100000 h	H
10	Charging time		<4	H
11	Weight		0.25	Kg
12	Power		10	W
13	Dimensions		40*40*152	mm
14	Ambient temperatures		$-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$	$^{\circ}\text{C}$
15	Connection mode of battery and circuit board		Directly connect	

5. Notes

- 5.1 During transportation or carrying, please ensure the product is safe from impact in case of accidental activation.
- 5.2 When it is operated in a high temperature environment, the rising temperature of flashlight is normal.
- 5.3 The maintenance of flashlight must be carried out by professional person in safe locations. Please use the battery supplied by our company when exchanging battery (The battery has the circuit which can prevent battery from over-charging, over-discharging and polarity reversal. In this way, battery can operate without leakage.).
- 5.4 Flashlight should be stored in the dry and well ventilated warehouse, the storage temperature is $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$ and the relative humidity is not more than 85%.
- 5.5 Maintenance of battery for an unused product (for more than three months) : Discharge the battery completely, and then charge it fully.
- 5.6 The battery should be taken out from the flashlight for charging, and should be operated in the safe environments. The input voltage is 100~240V. Output voltage is 4.2V and open circuit voltage is 4.2V.
- 5.7 Do not open the product when an explosive atmosphere is present.
- 5.8 The using environment of the products is higher than the second kind of environment pollution.
- 5.9 Products used for emergency lighting in dangerous environment with explosive gas or steam, as well as a variety of indoor and outdoor operation (electric power, metallurgy, railway, port, municipal and other industries) factory yard, venue and railway tunnels, bridges, etc.. Ambient temperatures: $-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$.
- 5.10 The head has been tightened in the factory with a special tool whose tightening torque is 150N.m. Disassembly tool is not provided, thus users cannot open the head.
- 5.11 The tailcap has been tightened in the factory with a special tool whose tightening torque is 100N.m. The tool for tightening the tailcap is provided, users can use the tool to open or tighten the tailcap in non-explosive atmospheres.

6. Warnings

- 6.1 Avoid direct eye exposure.
- 6.2 DO NOT disassemble the flashlight, as it may cause potential troubles.
- 6.3 DO NOT crash and strike the flashlight.
- 6.4 Keep the flashlight away from fire sources.
- 6.5 Please recycle the discarded flashlight together rather than throwing them away without disposing.
- 6.6 Explosion-proof Mark:  II 2 G Ex d IIC T6 Gb
- 6.7 Explosion-proof Certificate No: LCIE 16 ATEX 3006
- 6.8 DO NOT open when an explosive gas atmosphere is present.
- 6.9 DO NOT charge in explosive atmosphere.
- 6.10 Use the specific charger of SYSMAX to charge.
- 6.11 IP Code: IP54.

7. Trouble shooting

- 7.1 The flashlight does not light or the output is dim.
Reason: The power level of battery is low.
Solution: Check if the charger is good, if yes, you may proceed with charging.

8. Executive Standards

- GB 3836.1-2010 Explosive atmospheres-Part 1: Equipment-General requirements
- GB 3836.2-2010 Explosive atmospheres-Part 2: Equipment protection by flame-proof enclosure"d"
- IEC60079-0:2011 Explosive atmospheres-Part 0: Equipment-General requirements
- IEC60079-1:2011 Explosive atmospheres-Part 1: Equipment protection by flame-proof enclosure"d"
- EN60079-0:2012 Explosive atmospheres-Part 0: Equipment-General requirements
- EN60079-1:2012 Explosive atmospheres-Part 1: Equipment protection by flame-proof enclosure"d"

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EF1: LED 防爆手电筒说明书

本公司结合市场需要,最新研制开发出的 EF1: LED 防爆手电筒,可为各种易燃易爆场所、水下工作以及电力、冶金、石油、石化、铁路、部队、消防及各工矿企业作移动照明使用。

1、结构特性

- 1.1 隔爆型最高防爆等级,可在各种易燃易爆场所安全工作。
- 1.2 采用固态免维护 LED 光源,光效高、聚光好,平均使用寿命长达 10 万小时。
- 1.3 具有工作光、强光、超强光三种光设计,磁力旋钮可进行自由转换。
- 1.4 高能无记忆电池,容量大、无污染、充放电性能优异,自放电率低。
- 1.5 外壳采用进口高硬度合金材料,具有极高的抗强力碰撞和冲击能力。
- 1.6 外型美观,体积小、重量轻,携带方便。

2、功能特性

型号规格: EF1

- 2.1 采用新技术、新工艺,灯具重量轻,减轻了作业人员携带、运输的负担。
- 2.2 超长照明时间,具有工作光、强光、超强光三档照明功能。

3、使用与操作

- 3.1 产品分为工作光、强光、超强光三档工作模式;
- 3.2 客户根据自身需求,调节产品工作时的模式;

4、技术规格

序号	参数名称		数值	单位	
1	工作电压		3.6	V	
2	额定容量		3.4	Ah	
3	光源	电流	工作光	<10	
4			强光	1000	
5			超强光	3000	
6	连续放电时间	工作光	≥ 420	H	
7			强光	≥ 4	H
8			超强光	≥ 1.2	H
9	工作寿命		≥ 10000 h	H	
10	充电时间		<4	H	
11	重量		0.25	Kg	
12	功率		10	W	
13	尺寸		40*40*152	mm	
14	工作环境温度		-20°C \leq Ta \leq +40°C	°C	
15	电池与电路板连接方式		串联		

5、注意事项

- 5.1 携带或运输时,应保证产品的开关免受外物触碰,以防止在运输途中开关误动。
- 5.2 在环境温度较高的场所连续放电时,灯具表面略有升温,此属正常现象。
- 5.3 维修灯具必须是专业人员在安全场所进行。更换电池时,必须使用我司提供的专用电池(内有保护板,带充放电保护及防反接功能,从而保证电池不会产生泄露)。
- 5.4 手电筒储存在干燥和通风良好的仓库中,储存环境温度为 0°C ~+40°C,相对湿度不大于 85%。
- 5.5 如产品超过三个月未使用,需进行电池保养,电池按先放完电,后充满电的次序做一个充放电循环。
- 5.6 电池充电必须从灯具中取出方可进行,且必须在非危险环境下充电。充电器输入电压为 100V~240V。输出电压 4.2V,开路电压 4.2V。
- 5.7 在爆炸性环境中不要打开产品。
- 5.8 产品使用环境高于污染环境等级 2 类。
- 5.9 产品使用在含有爆炸性气体或蒸汽危险环境中,以及各种室内外作业(电力、冶金、铁路、港口、市政等行业)厂区、场站、场馆及铁路隧道、桥涵等所作应急照明使用。工作环境温度: -20°C \leq Ta \leq +40°C。

- 5.10 头盖部分,已在工厂用专用工具拧紧,拧紧力矩 150N.m,产品出厂时不提供配套拆卸工具,用户在使用中不能打开头盖。
- 5.11 尾盖部分,已在工厂用专用工具拧紧,拧紧力矩 100N.m,产品出厂时提供配套工具,用户在非危险场所可以使用此工具打开尾盖或拧紧尾盖。逆时针打开,顺时针拧紧。

6、安全警示

- 6.1 产品在工作时不能直接对人眼睛照射,否则强光会损伤人的视力。
- 6.2 严禁随意拆卸产品的零部件,严禁在危险场所使用缺少零件的产品,否则会影响其安全性及可靠性。
- 6.3 严禁摔打产品
- 6.4 严禁将产品靠近或投入火源中。
- 6.5 报废的产品应集中处理,不得随意丢弃。
- 6.6 防爆标志: Ex d II C T5 Gb
- 6.7 防爆证号: CE20.1359
- 6.8 禁止在危险区域打开灯具。
- 6.9 禁止在危险区域向灯具充电。
- 6.10 使用我司提供的专用充电器。
- 6.11 外壳防护等级: IP54。

7、简单故障处理方法

- 7.1 灯具不亮或者亮度不够
原因: 电池电量不足。
处理方法: 检查充电器是否正常,然后给灯具进行充电。

8、产品执行标准

GB 3836.1-2010 爆炸性环境 第 1 部分: 设备 通用要求

GB 3836.2-2010 爆炸性环境 第 2 部分: 由隔爆外壳“d”保护的设

IEC60079-0:2011 爆炸性环境 - 第 0 部分: 通用要求

IEC60079-1:2011 爆炸性环境 - 第 1 部分: 由隔爆外壳“d”保护的设

EN60079-0:2012 爆炸性环境 - 第 0 部分: 通用要求

EN60079-1:2012 爆炸性环境 - 第 1 部分: 由隔爆外壳“d”保护的设