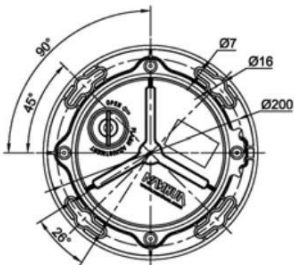
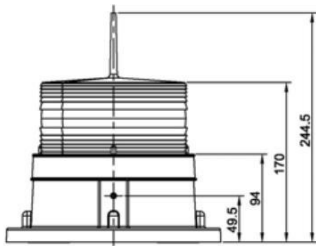


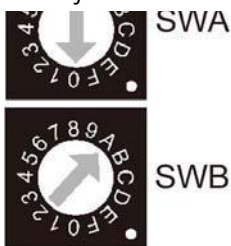
CE Patent NO. 2011-3-0324952.6



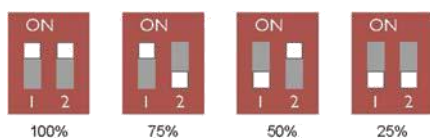
Mounting dimension (unit:mm)



Flashing rate adjustable



Intensity adjustable



**Applications**

Ideal for hazard marking, aquaculture, navigation, perimeter lighting & a host of other applications.

**Main functions and features**

- Based on LED technology, and its color complies to IALA Recommendations E-200-1.
- Integrated design, enabling a rugged and completely waterproof seal capable of prolonged and deep immersion (IP68).
- PC housing, UV resistance, shockproof and corrosion proof.
- With birds-pike.
- 256 kinds of flashing rate are available, comply with IALA.
- Intensity can be adjusted from 25%, 50%, 75% and 100% of total intensity.
- With photocell, and manual switch.
- With Steel wire to prevent falling during mounting and adjusting.
- With built in NiMH battery, easy for replace.
- No RF-radiations, EMC-Compliant.
- Extremely Reliable and cost saving.

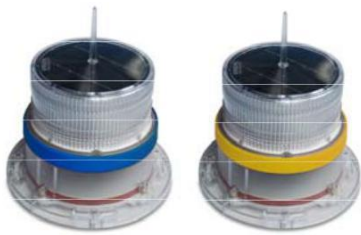
**Specifications**

Light Characteristics	
Intensity	10cd
Visible Range	>2.5nm
Available colors	Red, amber, green, blue, white
Vertical degree	>9 °
Horizontal degree	360 °
Light source	LED
LED life	≥100,000 hrs
Electrical Characteristics	
Autonomy	>20 days (12hour darkness, 12.5% duty cycle)
On/off level	300 lux±100lux
Flashing rate	complies to IALA Recommendations, total 256 available flashing rate (available steady burning)
Power Supply	
Solar module type	Multicrystalline
Output	1.8Watts
Battery type	High grade NiMH-Environment friendly
Battery capacity	3.6V/8AH
Physical Characteristics	
Integrated housing	UV resistance PC
Waterproof	IP68
Weight	1.7KG
Ambient temperature	-30°C ~ +70°C
Size	H:170mm, D:228mm
Mounting dimension	Φ200-4XM6
Customized	External power or Infrared control

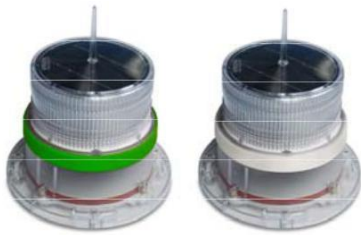
**Notice**

The part of material of products is PC (like lamp cover and lamp shell), so it cannot direct or indirect touch the organic solvent, such as industrial alcohol, banana oil, isopropyl alcohol, carbon tetrachloride, cyclohexanone and so on, otherwise, the product will be corrosion.

Other available color



blue.....yellow

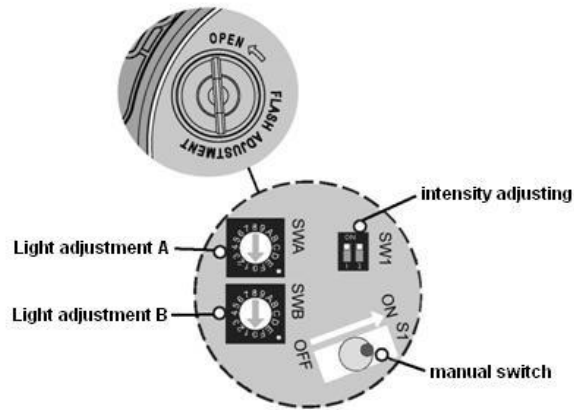


green.....white

Application



Flashing rate and intensity adjustment



- Circumgyrate stopper end to OPEN, open the stopper end, you will see manual switch, intensity adjusting switch and light adjustment switch.
  - Switch adjustment : open, toggle switch towards the ON side; off, toggle the manual switch toward the OFF side. (Note: When in the ON state, only at  $\leq 300 \text{ lx} \pm 100\text{lx}$  illumination environment, the light will work.)
  - Light adjustment : manual adjustment of the encoder SWA and SWB, each regulating group corresponds to one lighting mode.
- corresponding 250 kinds of lights below annex, (6 lighting modes can be customized.)

Lighting Code	Definition
F	Steady burning
FL	Flashing in fixed time, for example: FL(2) 5.5 S flashes twice every 5.5 seconds
Q	Flashing
VQ	Quick flashing
OC	Bright and dark light, Lighting time longer than extinguish time
ISO	Equal light, Lighting time is equal to the extinguish time
LFL	Long time, long flash
MO	Morse signals, including letters

- For example: VQ(6) + LFL 15 S. 6 times within 15 seconds then long flashes once.
- Light intensity adjustment: Manually adjust the switch SW1 1,2- two code, different locations represent different light intensity. Details can be found in light intensity value on the left section of Fig.

Installation and Operation

- Please read this manual before using this product.
- Solar navigation light must be installed in a place where sunshine can be fully received, to ensure that the solar lights can work continuously.
- Keep lamps and fixtures installed in the axis perpendicular to the mounting surface, mounting surface should be smooth and have sufficient mechanical strength.
- If first time using, the light does not burning or weak burning in dark environment, put the solar light exposure to sunlight for 12 hours, then it will be normal burning. (When recharging the light, please keep the hand switch on. If not, recharging is not available)
- If stored for long periods, manual switch should be put OFF side, and in a low humidity and dry place, every 40 days set the solar lights out exposure under sunlight to ensure the battery capacity. (Please turn on the switch when putting the light in the sun)
- The light is built in Ni-MH battery. After 450 (15 months) using, the battery capacity will decline to initial battery capacity about 80%, please change the batteries.
- Manual switch is installed at the light bottom to protect the battery during transport and storage, and factory setting state: Switch—Off, Flash code—FL3S, SWA: 1 SWB: B, Intensity—75%. Put it to ON side before installation or test, then adjust flash and intensity.

- Any questions in operation please contact us.

**Annex: Flashing rate instruction**

SWITCH		FLASH CODE	ON	OFF
SWA	SWB			
0	0	F (Steady light)		
0	1	VQ 0.5 S	0.2	0.3
0	2	VQ 0.6 S	0.2	0.4
0	3	VQ 0.6 S	0.3	0.3
0	4	Q 1 S	0.2	0.8
0	5	Q 1 S	0.3	0.7
0	6	Q 1 S	0.4	0.6
0	7	Q 1 S	0.5	0.5
0	8	Q 1 S	0.8	0.2
0	9	Q 1.2 S	0.3	0.9
0	A	Q 1.2 S	0.5	0.7
0	B	Q 1.2 S	0.6	0.6
0	C	FL 1.5 S	0.2	1.3
0	D	FL 1.5 S	0.3	1.2
0	E	FL 1.5 S	0.4	1.1
0	F	FL 1.5 S	0.5	1
1	0	FL 2 S	0.2	1.8
1	1	FL 2 S	0.3	1.7
1	2	FL 2 S	0.4	1.6
1	3	FL 2 S	0.5	1.5
1	4	FL 2 S	0.7	1.3
1	5	FL 2 S	0.8	1.2
1	6	ISO 2 S	1	1
1	7	FL 2.5 S	0.3	2.2
1	8	FL 2.5 S	0.5	2
1	9	FL 2.5 S	1	1.5
1	A	FL 3 S	0.2	2.8
1	B	FL 3 S	0.3	2.7
1	C	FL 3 S	0.4	2.6
1	D	FL 3 S	0.5	2.5
1	E	FL 3 S	0.6	2.4
1	F	FL 3 S	0.7	2.3

SWITCH		FLASH CODE	ON	OFF
SWA	SWB			
2	0	FL 3 S	1	2
2	1	ISO 3 S	1.5	1.5
2	2	OC 3 S	2	1
2	3	OC 3 S	2.5	0.5
2	4	OC 3.5 S	2.5	1
2	5	FL 4 S	0.2	3.8
2	6	FL 4 S	0.3	3.7
2	7	FL 4 S	0.4	3.6
2	8	FL 4 S	0.5	3.5
2	9	FL 4 S	0.6	3.4
2	A	FL 4 S	0.8	3.2
2	B	FL 4 S	1	3
2	C	FL 4 S	1.5	2.5
2	D	ISO 4 S	2	2
2	E	OC 4 S	2.5	1.5
2	F	OC 4 S	3	1
3	0	FL 4.3 S	1.3	3
3	1	FL 5 S	0.2	4.8
3	2	FL 5 S	0.3	4.7
3	3	FL 5 S	0.5	4.5
3	4	FL 5 S	0.9	4.1
3	5	FL 5 S	1	4
3	6	FL 5 S	1.5	3.5
3	7	ISO 5 S	2.5	2.5
3	8	LFL 5 S	2	3
3	9	OC 5 S	3	2
3	A	OC 5 S	4	1
3	B	OC 5 S	4.5	0.5
3	C	FL 6 S	0.2	5.8
3	D	FL 6 S	0.3	5.7
3	E	FL 6 S	0.4	5.6
3	F	FL 6 S	0.5	5.5

# ML201A Solar Marine Navigation Light

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SWITCH		FLASH CODE	ON	OFF
SWA	SWB			
4	0	FL 6 S	0.6	5.4
4	1	FL 6 S	1	5
4	2	FL 6 S	1.2	4.8
4	3	FL 6 S	1.5	4.5
4	4	ISO 6 S	3	3
4	5	LFL 6 S	2	4
4	6	OC 6 S	4	2
4	7	OC 6 S	4.5	1.5
4	8	OC 6 S	5	1
4	9	FL 7 S	1	6
4	A	FL 7 S	2	5
4	B	OC 7 S	4.5	2.5
4	C	FL 7.5 S	0.5	7
4	D	FL 7.5 S	0.8	6.7
4	E	FL 8 S	0.5	7.5
4	F	FL 8 S	1	7
5	0	ISO 8 S	4	4
5	1	LFL 8 S	2	6
5	2	OC 8 S	5	3
5	3	LFL 8 S	3	5
5	4	FL 9 S	0.9	8.1
5	5	FL 9 S	1	8
5	6	OC 9 S	6	3
5	7	FL 10 S	0.2	9.8
5	8	FL 10 S	0.3	9.7
5	9	FL 10 S	0.5	9.5
5	A	FL 10 S	0.8	9.2
5	B	FL 10 S	1	9
5	C	FL 10 S	1.5	8.5
5	D	LFL 10 S	2	8
5	E	LFL 10 S	3	7
5	F	ISO 10 S	5	5

SWITCH		FLASH CODE	ON	OFF
SWA	SWB			
6	0	LFL 10 S	4	6
6	1	OC 10 S	6	4
6	2	OC 10 S	7	3
6	3	OC 10 S	7.5	2.5
6	4	FL 12 S	1.2	10.8
6	5	FL 12 S	2.5	9.5
6	6	LFL 12 S	2	10
6	7	FL 15 S	1	14
6	8	LFL 15 S	4	11
6	9	OC 15 S	10	5
6	A	LFL 20 S	2	18
6	B	FL 26 S	1	25

SWITCH		FLASH CODE		ON	OFF	ON	OFF
SWA	SWB						
6	C	FL (2) 4 S		0.5	1	0.5	2
6	D	VQ (2) 4 S		0.2	1	0.2	2.6
6	E	FL (2) 4.5 S		0.3	1	0.3	2.9
6	F	FL (2) 4.5 S		0.4	1	0.4	2.7
7	0	FL (2) 4.5 S		0.5	1	0.5	2.5
7	1	FL (2) 5 S		0.2	0.8	0.2	3.8
7	2	FL (2) 5 S		0.2	1.2	0.2	3.4
7	3	FL (2) 5 S		0.4	0.6	0.4	3.6
7	4	FL (2) 5 S		0.5	1	0.5	3
7	5	FL (2) 5 S		1	1	1	2
7	6	Q (2) 5 S		0.3	0.7	0.3	3.7
7	7	Q (2) 5 S		0.5	0.5	0.5	3.5
7	8	FL (2) 5.5 S		0.4	1.4	0.4	3.3
7	9	FL (2) 6 S		0.3	0.6	1	4.1
7	A	FL (2) 6 S		0.3	0.9	0.3	4.5
7	B	FL (2) 6 S		0.3	1	0.3	4.4
7	C	FL (2) 6 S		0.4	1	0.4	4.2
7	D	FL (2) 6 S		0.5	1	0.5	4
7	E	FL (2) 6 S		0.8	1.2	0.8	3.2
7	F	FL (2) 6 S		1	1	1	3
8	0	Q (2) 6 S		0.3	0.7	0.3	4.7
8	1	FL (2) 7 S		1	1	1	4
8	2	FL (2) 8 S		0.4	0.6	2	5
8	3	FL (2) 8 S		0.4	1	0.4	6.2
8	4	FL (2) 8 S		0.5	1	0.5	6
8	5	FL (2) 8 S		0.8	1.2	2.4	3.6
8	6	FL (2) 8 S		1	1	1	5
8	7	OC (2) 8 S		3	2	1	2
8	8	OC (2) 8 S		5	1	1	1
8	9	VQ (2) 8 S		0.2	1	0.2	6.6
8	A	FL (2) 10 S		0.4	1.6	0.4	7.6
8	B	FL (2) 10 S		0.5	0.5	1.5	7.5
8	C	FL (2) 10 S		0.5	1	0.5	8
8	D	FL (2) 10 S		0.5	1.5	0.5	7.5
8	E	FL (2) 10 S		0.5	2	0.5	7
8	F	FL (2) 10 S		0.8	1.2	0.8	7.2

SWITCH		FLASH CODE		ON	OFF	ON	OFF
SWA	SWB						
9	0	FL (2) 10 S		1	1	1	7
9	1	FL (2) 10 S		1	1.5	1	6.5
9	2	Q (2) 10 S		0.6	0.4	0.6	8.4
9	3	FL (2) 12 S		0.4	1	0.4	10.2
9	4	FL (2) 12 S		0.5	1	0.5	10
9	5	FL (2) 12 S		1.5	2	1.5	7
9	6	FL (2) 15 S		0.5	1.5	2	11
9	7	FL (2) 15 S		1	2	1	11
9	8	Q (2) 15 S		0.2	0.8	0.2	13.8
9	9	FL (2) 20 S		1	3	1	15
9	A	FL (2) 25 S		1	1	1	22

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF
SWA	SWB							
9	B	Q (3) 5 S	0.5	0.5	0.5	0.5	0.5	2.5
9	C	VQ (3) 5 S	0.2	0.3	0.2	0.3	0.2	3.8
9	D	VQ (3) 5 S	0.3	0.2	0.3	0.2	0.3	3.7
9	E	VQ (3) 5 S	0.3	0.3	0.3	0.3	0.3	3.5
9	F	FL (3) 6 S	0.5	1	0.5	1	0.5	2.5
A	0	FL (2+1) 6 S	0.3	0.4	0.3	1.2	0.3	3.5
A	1	Q (3) 6 S	0.3	0.7	0.3	0.7	0.3	3.7
A	2	FL (3) 8 S	0.5	1	0.5	1	0.5	4.5
A	3	FL (3) 9 S	0.3	1	0.3	1	0.3	6.1
A	4	FL (3) 9 S	0.8	1.2	0.8	1.2	0.8	4.2
A	5	FL (3) 10 S	0.3	0.7	0.3	0.7	0.9	7.1
A	6	FL (3) 10 S	0.4	0.6	0.4	0.6	1.2	6.8
A	7	FL (3) 10 S	0.5	0.5	0.5	0.5	0.5	7.5
A	8	FL (3) 10 S	0.5	1.5	0.5	1.5	0.5	5.5
A	9	FL (3) 10 S	0.6	0.6	0.6	0.6	0.6	7
A	A	FL (3) 10 S	1	1	1	1	1	5
A	B	FL (2+1) 10 S	0.5	0.7	0.5	2.1	0.5	5.7
A	C	OC (3) 10 S	5	1	1	1	1	1
A	D	Q (3) 10 S	0.3	0.7	0.3	0.7	0.3	7.7
A	E	FL (2 + 1) 10 S	0.5	0.5	0.5	0.5	1.5	6.5
A	F	FL (3) 12 S	0.5	1.5	0.5	1.5	0.5	7.5
B	0	FL (3) 12 S	0.5	2	0.5	2	0.5	6.5
B	1	FL (3) 12 S	0.8	1.2	0.8	1.2	0.8	7.2
B	2	FL (3) 12 S	1	1	1	3	1	5
B	3	FL (2+1) 12 S	0.8	1.2	0.8	2.4	0.8	6
B	4	FL (2+1) 12 S	1	1	1	4	1	4
B	5	FL (2+1) 13.5 S	1	1	1	4	1	5.5
B	6	FL (3) 15 S	0.3	1.7	0.3	1.7	0.3	10.7
B	7	FL (3) 15 S	0.4	1	0.4	1	0.4	11.8
B	8	FL (3) 15 S	0.5	1.5	0.5	1.5	0.5	10.5
B	9	FL (2+1) 15 S	0.6	0.3	0.6	0.3	1.4	11.8
B	A	FL (2+1) 15 S	0.7	0.5	0.7	0.5	1.9	10.7
B	B	FL (2+1) 15 S	0.7	0.7	0.7	0.7	2.1	10.1
B	C	FL (2+1) 15 S	1	2	1	5	1	5
B	D	VQ (3) 15 S	0.1	0.5	0.1	0.5	0.1	13.7
B	E	FL (3) 20 S	0.5	3	0.5	3	0.5	12.5
B	F	FL (3) 20 S	0.5	1.5	0.5	1.5	0.5	15.5
C	0	FL (3) 20 S	0.8	1.2	0.8	1.2	0.8	15.2
C	1	FL (3) 20 S	1	1	1	1	1	15

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB									
C	2	VQ (4) 4 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.9
C	3	Q (4) 6 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	2.7
C	4	Q (4) 6 S	0.4	0.6	0.4	0.6	0.4	0.6	0.4	2.6
C	5	FL (4) 10 S	0.5	1	0.5	1	0.5	1	0.5	5
C	6	FL (4) 10 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	3.2
C	7	Q (4) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	6.7
C	8	FL (4) 12 S	0.3	1.7	0.3	1.7	0.3	1.7	0.3	5.7
C	9	FL (4) 12 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	8.5
C	A	FL (4) 12 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	5.5
C	B	FL (4) 12 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	5.2
C	C	Q (4) 12 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	8.7
C	D	FL (4) 15 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	8.5
C	E	FL (4) 15 S	1	1	1	1	1	1	1	8
C	F	FL (4) 15 S	1.5	0.5	0.5	0.5	0.5	0.5	0.5	10.5
D	0	FL (4) 16 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	9.5
D	1	FL (4) 20 S	0.3	3	0.3	3	0.3	3	0.3	9.8
D	2	FL (4) 20 S	0.5	1.5	0.5	1.5	0.5	1.5	0.5	13.5
D	3	FL (4) 20 S	0.5	1.5	0.5	1.5	0.5	4.5	0.5	10.5
D	4	FL (4) 20 S	1.5	1.5	1.5	1.5	1.5	1.5	1.5	9.5
D	5	Q (4) 20 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	16.5
D	6	Q (4) 28 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	24.5
D	7	FL (4) 30 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	26.5

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB											
D	8	Q (5) 7 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	2.7
D	9	Q (5) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	5.7
D	A	FL (5) 16.5 S	5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	3.5
D	B	FL (5) 20 S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	15.5
D	C	FL (5) 20 S	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	11.2
D	D	FL (5) 20 S	1	1	1	1	1	1	1	1	1	11



# ML201A Solar Marine Navigation Light

ML201A-E1-V13

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB													
D	E	Q (6) 10 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
D	F	FL (6) 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
E	0	FL (6) 15 S	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1
E	1	FL (6) + LFL 15 S	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB													
E	2	VQ (6) + LFL 10 S	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
E	3	VQ (6) + LFL 10 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
E	4	Q (6) + LFL 15 S	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8
E	5	Q (6) + LFL 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
E	6	Q (6) + LFL 15 S	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
E	7	VQ (6) + LFL 15 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB																	
E	8	VQ (9) 10 S	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
E	9	VQ (9) 10 S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
E	A	Q (9) 15 S	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8	0.2	0.8
E	B	Q (9) 15 S	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
E	C	Q (9) 15 S	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

SWITCH		FLASH CODE	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SWA	SWB											
MORSE CODE ( ) INDICATES LETTER												
E	D	MO (A) 6 S	0.3	0.6	1	4.1						
E	E	MO (A) 8 S	0.4	0.6	2	5						
E	F	MO (A) 8 S	0.8	1.2	2.4	3.6						
F	0	MO (U) 10 S	0.3	0.7	0.3	0.7	0.9	7.1				
F	1	MO (U) 10 S	0.4	0.6	0.4	0.6	1.2	6.8				
F	2	MO (U) 10 S	0.5	0.5	0.5	0.5	1.5	6.5				
F	3	MO (A) 10 S	0.5	0.5	1.5	7.5						
F	4	MO (D) 10 S	5	1	1	1	1	1				
F	5	MO (A) 15 S	0.5	1.5	2	11						
F	6	MO (U) 15 S	0.6	0.3	0.6	0.3	1.4	11.8				
F	7	MO (U) 15 S	0.7	0.5	0.7	0.5	1.9	10.7				
F	8	MO (U) 15 S	0.7	0.7	0.7	0.7	2.1	10.1				
F	9	MO (B) 15 S	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10.5	
F	A	MO (F) 15 S	0.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	10.5	