

- mica -

User manual for MICA ML-600/601/602 lamps

OPERATING TIMES

(Table A1)

The operating times here refer to a fully loaded battery and full brightness:

With a 2.4 W bulb	With a 4W bulb
4h20min	2h40min

The signalling LEDs will remain in operation for more than 12 hours with a fully charged battery.

ACCESSORIES FOR MLC

1. Wire for connecting to a cigarette lighter (01112)
2. IL-1 AC/DC adapter 230 VAC / 12VDC (11270)
3. IL-4 AC/DC adapter 230 VAC / 12VDC for five charging stands (11322)
4. IL-5 automatic exchanger for five charging stands (11311)

TECHNICAL DATA FOR ML LAMPS

Bulbs: 6.0V / 2.4 W or 4W / PX13.5
 Battery: (ML-600) NiMH 6 V 1800mAh
 (ML-601/602) NiMH 6V 1350mAh
 Electronics: 8-bit microcontroller
 Lens: 41.5x 3 mm, toughened glass
 Reflector: Aluminum
 Operation temperature: -20...+45°C (lamp)
 Operating time: > 4h @ 2.4W full power
 Enclosure class: IP 54, splash-proof
 Dimensions (h x w x d): 120 x 64 x 55mm with belt clip
 Weight: ca. 315g (ML-600) & ca. 275g (ML-601/602)

TECHNICAL DATA FOR MLC CHARGING STAND

Quick charge voltage: 750mA
 Maintenance charge voltage: 100mA
 Charging temperature range: +10°C ...+40°C
 Quick charging time: 2h 45min
 Maximum charging time: 4h (in fault situation for security reasons)
 Conditions for ending charging: -dV, Tmax ≤45°C, tout ≤4h
 Feed voltage for charging stand: 12VDC ... max. 30VDC
 Weight of charging stand: ca. 170g

BATTERY DISPOSAL

A used battery is classified as hazardous waste! Please make sure that the battery is properly disposed of in accordance with instructions from the authorities. Do not dispose of the battery by burning it.

WARRANTY CONDITIONS

Warranty period for the lamp and the battery is one year. The warranty period begins when the lamp is purchased. The warranty covers manufacturing and raw material defects in line with general warranty conditions. Under the warranty period, the lamp may be serviced by an authorized MICA service agent only. If you need the lamp to be serviced under the warranty, please contact the retailer from whom you purchased your MICA lamp.

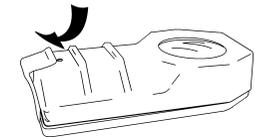
OTHER MICA LAMPS

For more information, please contact Mica Elektro Oy directly or visit our web site at www.mica.fi

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Prior to use, remember to attach the battery wire to the printed circuit board!

The battery must always be charged full prior to using the lamp.



TO USER

Manufactured in Finland, MICA ML is a small yet effective rechargeable product family for demanding professional use. The frames are splash and shock proof. The lamps' bright light pattern is achieved by using a high halogen and an aluminum reflector. At best, the lamps' operating time is three hours with a 4W bulb and a fully loaded NiMH battery.

Please read this manual carefully in order to secure your lamp a long service life.

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TAKING INTO USE

Prior to use: Open the lamp and attach the battery wire to the printed circuit board!

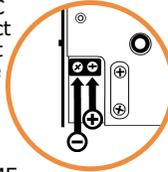
1. INSTALL CHARGING STAND MLC

The stand may not be placed on a platform manufactured of a highly flammable material and its voltage feed must be continuous, you may not break it with a timer, for example!

-Choose a suitable installation place and mount the MLC charging stand with two screws.

-Connect the power feed wire (use either a vehicle battery or a MICA IL-1 AC/DC adapter) in the charging stand's round quick coupling. Alternatively, you can connect the feed wire in the screw terminals on the back of the stand (be sure to connect the plus and the minus poles correctly and finally tighten the cable clamp; please see the figure!)

-The red light **L1** will show that you have correctly connected the feed voltage and that the MLC charging stand is ready to be used.

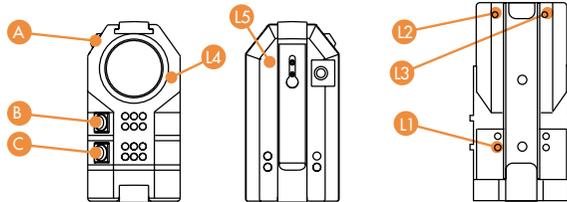


2. CHARGE THE LAMP FOR AT LEAST 4 HOURS BEFORE USING IT THE FIRST TIME

The battery of a new lamp is always empty. Please note that the lamp will not offer its full operating time until after it has been charged and discharged ca. 5 - 10 times. During the first five times you use it, it is important that you completely drain out the battery.

USE OF LAMP, SWITCHES AND SIGNAL LIGHTS

The lamp has the following switches and signal lights:



Here is a short introduction to the switch and lighting functions of the MICA ML versions:

ML-600 is a model equipped with stepless power adjustment. The lamp will be lit with full power when the main switch **A** is pushed for a short period of time. When you keep the switch pushed down, the light output will be automatically adjusted from dim to bright. When you release the switch, the lamp will burn with the adjusted brightness.

ML-601 is a signaling lamp equipped with a red LED and a halogen bulb. Switch **A** is an on/off switch for the bulb and switch **B** for the LED. You can adjust brightness of the halogen bulb steplessly by holding switch **A** down a bit longer. Then, the light output will be adjusted from dim to bright.

ML-602 is a signaling lamp equipped with a red and a green LED and a halogen bulb. The halogen bulb will be lit to full power when switch **A** is pushed down for a short period of time. Switches **A**, **B** and **C** are the on/off switches for their groups. When pushing a switch to position on, the light for the previous group will be turned off. You can adjust brightness of the halogen bulb steplessly by holding switch **A** down a bit longer. Then, the light output will be adjusted from dim to bright.

COMMON FUNCTIONS FOR THE MICA ML SERIES LAMPS

- The safety light function is a standard in all of the MICA ML models. When in the safety mode, the lamp will be turned on if there is a disruption in power feed. The safety light function can be activated by placing the lamp on the charging stand and by pressing the main switch **A** once. Green LED4 indicates the safety light mode and the LED also shows that the bulb is okay.

- Operation times are given in Table A1.

- Stepless brightness adjustment (halogen bulb).

- The lamp will warn you when the battery charge is low: the red warning light **L5** at the top of the lamp will be lit ca. 15...20 minutes before the battery is empty and the lamp will be shut down.

- Control electronics will automatically turn off the lamp prior to deep discharge of the battery.

- After use, the lamp must be stored on the MLC charging stand.

- There is a spare halogen bulb inside the lamp's frame (please see "replacing bulb").

CHARGING IN MICA MLC CHARGING STAND

The MLC charging/holding stand is to be used with ML lamps only. The battery will be charged from empty to full in approximately two hours. The smart charging technology guarantees optimal and safe charging in any situation. Feed voltage must be taken from a MICA IL-1 AC/DC adapter or a 12/24V vehicle battery.

1. The red light **L1** will be lit when the charging stand is attached to proper feed voltage.
2. The ML lamp must be placed on the MLC charging stand. When charging begins, orange light **L2** marked "charging" will come on. The lamp will be automatically turned off when it is placed in the MLC charging stand.
3. When the battery is fully charged, the green light **L3** marked "ready" will be lit (and the light **L2** will be turned off). At that time, the lamp is ready to be used and the charging stand will switch to the maintenance charging mode.
4. The lamp must always be stored in the charging stand in order for it to be ready for use at all times. The MICA MLC quick charging stand will not overcharge the battery of the lamp.

Prior to any maintenance actions, be sure to detach the battery connector from the printed circuit board!

REPLACING BULB

1. Free the lamp's locking bolt and lift the back cover off.
2. Turn the bulb contact slide to the side (please see the figure attached).
3. Turn the black bulb locking cap open and remove the faulty bulb.
4. Install the new bulb (be sure not to touch the bulb glass with your bare hands).
5. Turn the locking cap back on, secure it tightly.
6. Turn the bulb contact slide back over the bulb contact.
7. Adjust the light pattern by turning the metal bushing.
8. Carefully secure the frame halves back against each other (don't forget the gasket) and lock the back cover with the locking bolt.



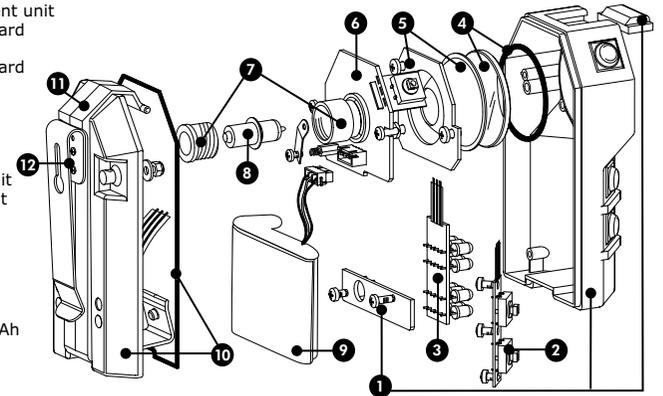
REPLACING BATTERY PACKAGE

It is time to replace the battery when the operating time remains clearly shorter than that given in "Table A1".

1. Open the lamp and carefully detach the battery connector from the printed circuit board.
2. Carefully lift off the battery (mind the wires; note the two-sided tape on the bottom).
3. Place the new battery in its place in between the plates and press it so that it touches the bottom of the frame. Note! The cushion on the back side of the battery must be placed in between the battery and the back cover; be sure not to damage the battery wires when doing this.
5. Attach the battery wire to the printed circuit board, check that the polarity is correct! Close the lamp's back cover.

Spare parts for ML-600 series lamps:

- 1 H0071-1 ML-601 cover unit, orange
H0071-2 ML-600 cover unit, yellow
H0071-3 ML-602 cover unit, yellow
- 2-H0072-1 ML-601 switch replacement unit
H0072-2 ML-602 switch replacement unit
- 3-H0073-1 ML-601 printed wiring board
12 red LED
H0073-2 ML-602 printed wiring board
6 red/6 green LED
- 4-H0074-1 Lens and gasket
- 5-H0075-1 Reflector and installation plate with screws
- 6-H0076-1 ML-600 electronics unit
H0076-2 ML-601FIN electronics unit
H0076-3 ML-601DB electronics unit
H0076-4 ML-602 electronics unit
- 7-H0077-1 Bulb light pattern adjustment bushing
- 8 H0032-1 Bulb Px 13.5 2.4 W
H0032-2 Bulb Px 13.5 4.W
- 9--H0079-1 600 battery 1800 mAh
H0079-2 601/602 battery 1350 mAh
- 10-H0080-1 Back cover, orange
H0080-2 Back cover, yellow
- 11-H0081-1 Back cover locking band
- 12-H0082-1 Belt clip, basic model
H0082-2 Belt clip, railway model



Spare parts for MICA MLC charging stand:

- H0085_2 Plastic cover and top bolt
- H0086_1 Back plate and receptacle
- H0087_1 Bottom bolt
- H0088_2 Printed circuit board