

# MICRO CHARGER

## V-MOUNT & GOLD MOUNT

### USER GUIDE



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**PAG Ltd.**

Epsom Downs Metro Centre  
Units 9 & 10  
Waterfield  
Tadworth  
Surrey KT20 5LR  
United Kingdom

E: [sales@paguk.com](mailto:sales@paguk.com)  
T: +44 (0)20 8543 3131  
[www.paguk.com](http://www.paguk.com)

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*Thank you for choosing the PAG Micro Charger.  
Please read the important safety information  
and instructions before using your charger.*

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# 1. Key Features

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Micro Charger



AC to DC Converter/  
Power Supply Unit



USB Power Lead



In-Car Power Lead

- The world's smallest broadcast battery charging kit.
- Power from a variety of 5-20V DC sources.
- Designed for light travel - the charger and accessories fit easily in your camera bag.
- Compatible with V-Mount Li-Ion batteries manufactured by PAG & Sony.
- Compatible with Gold Mount Li-Ion batteries manufactured by PAG.
- Charges multiple Mini PAGlink or PAGlink batteries simultaneously.
- Fully charges one 99Wh battery in 4 hours.
- Includes Power Supply Unit (AC to DC converter) and detachable plug for country of use.
- Includes DC power lead for in-vehicle charging via the cigarette lighter socket.
- Includes DC power lead for connection to a USB (2A) charger.

## 2. Safety Information

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- 2.1 When used correctly, the Micro Charger is a safe method of charging Li-Ion batteries within the range specified in Section 3.2. However, incorrect treatment of the charger and its accessories could present a safety hazard. Please read these important safety and operating instructions before using the PAG Micro Charger.

**WARNING:**



- 2.2 **IMPORTANT:** The Power Supply Unit is designed for use on 100-240V, 50-60Hz AC supplies. AC supply connection to the charger should be made using only the Power Supply Unit and plug supplied with this charger. **NOTE: The Power Supply Unit supplied with the previous Micro Charger Model 9710 is not suitable for Models 9713 & 9713V.**
- 2.3 The Micro Charger is designed for 5-20V DC input only. Connection to DC supplies should be made using only the power leads supplied with the charger. The USB charger connection must be 2A or more.
- 2.4 Protect any power leads from being walked on or pinched.
- 2.5 Disconnect the charger from the AC supply during lightning storms or when unused for long periods of time.
- 2.6 **WARNING: INDOOR USE ONLY.** To reduce the risk of fire or electric shock, do not expose the charger to rain or moisture.

- 2.7 Although the charger is reverse polarity protected, extreme care should always be taken not to short circuit the battery itself. Rechargeable batteries can deliver power at a very high rate, and short circuiting even a partially charged battery could result in a fire or personal injury.
- 2.8 Do not disassemble the charger. There are no user-serviceable parts inside. Incorrect reassembly may result in a safety hazard.
- 2.9 If any part of the charger has been damaged, if it has been exposed to moisture, rain or liquid, or if it does not operate normally, you should seek advice from your nearest Authorised PAG Service Centre, as detailed in section 5, Servicing.



**ELECTRIC SHOCK:** This symbol appears where the information relates to the risk of electric shock.



**WARNING:** This symbol appears where the information relates to an issue of personal safety.

## 3. Specifications

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### 3.1 Models covered by these instructions:

Micro Charger Model 9713V (V-Mount).  
Micro Charger Model 9713 (Gold Mount).

### 3.2 Range of Batteries Charged:

**Model 9713V** is designed for charging the following V-Mount Li-Ion batteries, individually or linked:

- PAGlink & Mini PAGlink
- PAG L90 Slim
- PAG L95e, L96e & L96T
- Sony V-Mount Li-Ion

**Model 9713** is designed for charging the following Gold Mount Li-Ion batteries, individually or linked:

- PAGlink & Mini PAGlink
- PAG L95e, L96e & L96T

### 3.3 Charging Multiple PAGlink Batteries:

PAGlink allows up to 8 batteries to be linked for charging, and Mini PAGlink allows up to 10. However, the maximum number of fully-discharged batteries that can be fully-charged in a 12 to 16 hour period, using the Micro Charger, is as follows:

<b>50Wh batteries</b>	<b>8</b>
<b>94-99Wh batteries</b>	<b>4</b>
<b>150Wh batteries</b>	<b>2</b>

Any mix of Gold Mount PAGlink & Mini PAGlink batteries can be linked for charging. The batteries can be in any state of charge. Any mix of V-Mount PAGlink batteries, and any mix of V-Mount Mini PAGlink batteries can also be linked for charging, but V-Mount PAGlink and Mini PAGlink batteries cannot be linked to each other.

### 3.4 Main Charge Program:

Li-Ion voltage-charge program.

### 3.5 Recovery Charge:

This special program will automatically recover a PAG Li-Ion battery where the output has been shut down.

### 3.6 Self Test Program:

The internal microprocessor constantly monitors the battery under charge as well as the operation of the charger's own functions which will be shut down to a safe condition should any of the tests fail.

### 3.7 Input:

Charger: DC 5-20V. Connector: 2.1mm DC, any polarity. Power Supply Unit: AC 100-240V ~ autoselected. Frequency 50-60 Hz. Maximum power consumption 35W.

### 3.8 Output Protection:

Protected against short circuit and open circuit.

### 3.9 Power Input Failure Protection:

Should power failure occur during a charging program, or whilst the charger is connected, it will shut down to a safe condition.

# 3. Specifications

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## 3.10 Charger Display:

LED indication is provided of battery absent, battery charging, charge completion and a faulty battery. The charger is fully automatic in operation and there are no user controls.

## 3.11 State of Charge Indication:

Each battery indicates its individual state of charge, during charging, via its own display.

## 3.12 Operating Temperature Range:

0°C to +40°C (+32°F to +104°F).

## 3.13 Dimensions (L x W x D):

### Model 9713V V-Mount Micro Charger:

73 x 62 x 31mm (2.9" x 2.5" x 1.23").

### Model 9713 Gold Mount Micro Charger:

73 x 62 x 33mm (2.9" x 2.5" x 1.25").

## 3.14 Weight

**Both Models:** 75g (2.6oz).

## 3.15 Typical Battery Charging Times:

From fully-discharged to fully-charged (approximate only).

	PSU	In-Car	USB (2A)
50Wh	2 hours	2 hours	5 hours
100Wh	4 hours	4 hours	10 hours
150Wh	6 hours	6 hours	15 hours
200Wh	8 hours	8 hours	-
250Wh	10 hours	10 hours	-
300Wh	12 hours	12 hours	-
350Wh	14 hours	14 hours	-
400Wh	16 hours	16 hours	-

## 4. Operating Instructions

### 4.1 Powering the charger from an AC input:

The charger is supplied with a Power Supply Unit that automatically accepts AC input in the range 100-240V (See Specification 3.7). Connection of the charger to an AC supply should be made using only the Power Supply Unit included, fitted with the power plug supplied, or one of the alternative power plugs available from PAG or its resellers:

Model 9713J	USA/Japan	Model 9713U	UK
Model 9713E	Europe	Model 9713A	Australia



Fig. 1. Fit the appropriate plug to the Power Supply Unit and connect the PSU to a suitable AC supply (100-240V See Specification 2.7).



Fig. 2. Connect the Power Supply Unit to the Micro Charger.

**IMPORTANT: The Micro Charger must be powered-up before connection to the battery.**



## 4. Operating Instructions

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*Fig. 3A. Slide the V-Mount Micro Charger over the contacts on the rear of the V-Mount battery.*



*Fig. 3B. Slide the Gold Mount Micro Charger over the contacts on the rear of the Gold Mount battery.*

### 4.2 Using the DC Power Leads

The charger can be powered from DC inputs in the range 5 to 20V, such as a 12V vehicle battery (via a dashboard lighter socket) or a USB charger (2A). Connection to the DC input should only be made using the DC power leads supplied.

## 4. Operating Instructions

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Connect the DC power lead to the Micro Charger (*See Fig. 2*). Plug the male connector into the lighter socket on the vehicle dashboard, or plug the USB connector into the socket on the USB charger (2A). Slide the charger over the contacts on the rear of the battery (*See Fig. 3*).

**4.3** The Micro Charger may be disconnected from the supply at any time in complete safety, and without damage to the charger or any of the batteries connected.

**4.4** On power-up, the charger will automatically run a self-test program and then the Recovery Charge program. Any batteries that do not require the Recovery Charge program will begin charging automatically.

**4.5 Key to the Micro Charger colour LED status indication:**

**RED (constant):** No batteries connected.

**ORANGE (flashing):** Charging. The state-of-charge of each battery will be indicated on its individual display.

**ORANGE/GREEN (flashing):** The charging process has reached its final stage and the batteries can be removed.

**GREEN (constant):** All the batteries connected have received as much charge as they can safely accept.

**RED (flashing):** The battery is faulty (see 4.7).

**4.6** Batteries may be removed, and others connected at any time, without affecting the operation of the charger. If a new battery is connected, the charging sequence will be initiated automatically. The most discharged battery will be addressed first. The order in which batteries are connected is therefore immaterial; the charger will ensure that all the batteries are fully-charged in due course.

**4.7** If the charger detects a severely faulty battery while the charging program is running, the battery status indicator will flash **RED**. This could be caused by one of several conditions, such as a very old or damaged battery, a short circuit battery, an excessively high or low voltage battery, or an excessively high or low supply voltage. The charger is reset by disconnecting it from the supply.

**4.8** The charger will not recognise the connection of a battery that has a voltage substantially outside of its range.

**4.9** If the internal protection circuit of a PAG Li-Ion battery should turn-off for any reason, the battery display will not operate, and there will be no voltage at the battery terminals. The Micro Charger incorporates a Recovery Charge program which will automatically turn the protection circuit back on again.

**4.10** If power fails during operation, the charger will shut down safely; no damage will occur to either the charger or the batteries. When the power is restored the charger will default to the main charge program.

# 5. Servicing

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- 5.1 The PAGlink Micro Charger contains advanced electronics that do not require periodic maintenance; consequently there are no user-serviceable parts inside.
- 5.2 **WARNING:** To avoid the risk of electric shock, do not disassemble the charger's Power Supply Unit. Refer all servicing or repairs to an authorised PAG service centre.

Qualified electronics engineers who wish to gain access to internal assemblies should note that parts of the power circuit retain a high voltage even after the AC supply has been disconnected. Wait for a period of five minutes following disconnection before commencing disassembly, and be aware of charged capacitors.

- 5.3 Seek advice if the charger is not operating normally or if any of the following situations occur:
- The charger is correctly connected to the power and the display is not functioning.
  - The charger ceases to operate after entering fail-safe shutdown mode (allow it to cool before reconnecting to the supply).
  - The charger has been damaged or suffered a blow.
  - The charger has been exposed to moisture, rain or any other liquid.

## Contact an authorised PAG Service Centre:

### Europe & Middle East: Aspectra

Spoorhaven 78, 2651 AV, Berkel en Rodenrijs, The Netherlands  
Tel: +31 (10) 5140680, Email: [info@aspectra.nl](mailto:info@aspectra.nl)

### UK & RoW: PAG Ltd.

Epsom Downs Metro Centre, Units 9 & 10, Waterfield, Tadworth, Surrey, KT20 5LR, United Kingdom  
Tel: +44 (0)20 8543 3131, Email: [support@paguk.com](mailto:support@paguk.com)

### The Americas: PAG America (part of the Carr Distribution Group)

18 Center Street, Ramsey, NJ 07446, USA  
Tel: +1 631 300 8215 , Email: [sales@pagamerica.com](mailto:sales@pagamerica.com)

## 6. Guarantee

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- 6.1** Notwithstanding any provision of any agreement the following guarantee is exclusive: PAG Limited guarantees each Micro Charger it manufactures to be free of defects in material and workmanship under use and service for **TWO YEARS** from the date of purchase. This guarantee extends only to the original purchaser. This guarantee shall not apply to fuses or any product or parts which have been subject to misuse, neglect, accident or abnormal conditions of operation.
- 6.2** In the event of failure of a product covered by this guarantee, PAG Limited will repair and calibrate equipment returned to an authorised service facility within the period of the guarantee, provided the guarantor's examination discloses to its satisfaction the product was defective. The guarantor may, at its option, replace the product in lieu of repair. With regard to any equipment returned within this period, said repairs or replacements will be made without charge. If the failure has been caused by misuse, neglect, accident or abnormal conditions of operation, repairs will be billed at a nominal cost. In such a case, an estimate will be submitted before work is started, if requested.
- 6.3** The foregoing guarantee is in lieu of all other guarantees, express or implied, including but not limited to any implied guarantee or merchantability, fitness or adequacy for any particular purpose or use. PAG Limited shall not be liable for any special, incidental, or consequential damages, whether in contract, tort, or otherwise.