



THE INTELLIGENT V-MOUNT BATTERY SYSTEM



INTERNATIONAL PATENTS APPLY

## PAGLINK FOR BROADCAST, PRODUCTION & CINEMA

**PAGlink is a system of smaller, lighter intelligent V-Mount Li-Ion batteries, that can be linked for charge or discharge. The system has been designed after consultation with leading camera manufacturers and broadcasting organisations to meet the demands of modern broadcast acquisition, video production and digital cinematography.**

PAGlink batteries are the smallest and lightest in the industry; they have the highest energy density of any V-Mount batteries available.

PAGlink is the only system that allows you to link multiple batteries, in any state of charge. Up to 8 batteries can be linked for charge or discharge. Linking enables you to keep the camera running at vital moments, it allows capacities to be combined, greatly extending run-time, and provides a high-current draw of up to 12A, ideal for powering a camera and multiple accessories simultaneously. PAGlink batteries incorporate heavy duty contacts, engineered for high-load applications.



## LINK MULTIPLE INTELLIGENT BATTERIES

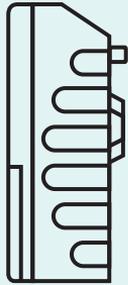
PAGlink batteries are available in 96 Watt-hour or 150 Watt-hour capacities. Even though they have 50% greater capacity, PL150 batteries are identical in size to the PL96 range. The different models can be linked for charge or discharge.

Two or more batteries can be linked on your camera. Three linked batteries, with an individual capacity of 150Wh, weighing less than 2.4kg, create a single power source of 450Wh. Batteries can be hot-swapped for continuous power, which means no more time-wasting camera reboots.

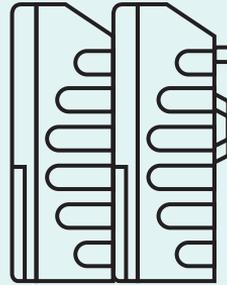
### **Patented PAGlink Technology**

When linked, the intelligent batteries form a high-speed network, allowing them to communicate with each other, as well as the camera or charger. The battery that is directly connected to the camera becomes the 'master' and automatically determines which batteries are most suitable to bring on-line for discharge, according to their charge status. Output is managed safely and efficiently by the system; batteries do not discharge into one another.

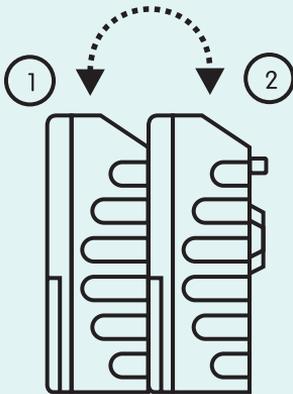
INTERNATIONAL PATENTS APPLY



One Battery  
96Wh 8A

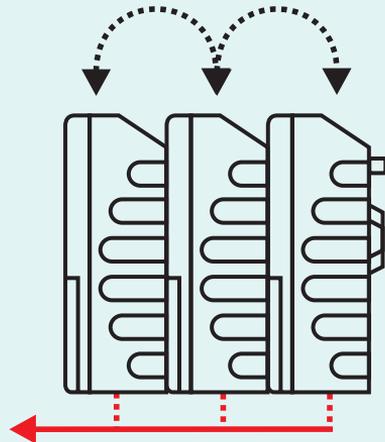


Two Batteries  
192Wh 12A



The batteries communicate digitally at high-speed and report their state of charge

The battery with one or more on its tail becomes The Master ( 1 ) and controls all other connected batteries



The Master sees the load and then decides which batteries to connect to the bus bar to meet the demand  
Note: the batteries do not discharge into one another

## CAMERA RUN-TIME AT YOUR FINGERTIPS

### Run-Time & Capacity indication

All PAGlink batteries feature built-in run-time and capacity indication. You can choose between the more convenient numeric display of the PAGlink Time Battery, or the 5-light indicator of the lower-cost e-series battery. Both show battery capacity as a percentage. When batteries are linked, the display provides run-time for the total of all the batteries, and capacity for the individual packs. The different battery versions can be mixed, enabling you to link a Time Battery to an e-series battery and benefit from the numeric run-time display.

### Camera data system compatibility

PAGlink is the only battery system that automatically communicates with multiple camera data systems. This enables linked batteries to communicate their collective state of charge for display in the camera viewfinder or LCD. The batteries adapt automatically to each system they encounter, or they can be easily programmed by the user for specific systems, such as the one used by Red cameras.

## Numeric Run-Time & Capacity Display

When the batteries are linked, run-time is shown for the total of all connected batteries, while capacity is shown for each individual battery.



Two button presses on-load displays run-time in hours and minutes



One button press on or off-load shows remaining capacity as a percentage



A fully charged battery indicates as above



A fully discharged battery indicates as above

## 5-Light Run-Time & Capacity Indicator

Capacity is displayed as a percentage (each LED = 20%) 1 LED flashing = less than 10%. When the batteries are linked, run-time is shown for the total of all connected batteries, while capacity is shown for each individual battery.



Two button presses on-load activates the time display. The 'HRS' LED flashes twice.



The number of hours is indicated by the number of lit LEDs: 1 LED = 1 hour.



The 'MINS' LED then flashes twice.



The number of minutes is indicated: 1 LED = 10 mins.

## CHOOSE THE MOST CONVENIENT CAPACITY FOR YOU

### Battery Capacity & Air Transportation

The PAGlink system has been conceived so that you can fly with all the high-capacity Li-Ion battery power that you need. PAG offers 96Wh batteries that can be transported on passenger aircraft, without quantity restriction.

For those who demand more power from fewer batteries, PAG has introduced 150Wh batteries that offer 50% more capacity, but with no increase in battery size. There is a quantity allowance of two 150Wh batteries per person, when you fly, in addition to any 96Wh batteries.

***Remember, Li-Ion batteries must NOT be checked in with your hold luggage, they must be carried in your cabin luggage.***



All PAG Li-Ion batteries are tested to UN standards by an independent authority, in accordance with air transport regulations. All PAG batteries are labelled with their relevant UN Test Number and quantity allowance. A copy of the UN Test Report can be obtained from PAG, if required by the carrier.

## PAGLINK PL96 SERIES



Time  
Battery

**PL96T**  
Model 9304

- \_ 96 Watt-Hours, 14.8V 6.5Ah
- \_ Max discharge 8A (12A when linked)
- \_ Numeric run-time and capacity display
- \_ 133 x 84 x 50mm / 0.73kg



e-series  
battery

**PL96e**  
Model 9303

- \_ 96 Watt-Hours, 14.8V 6.5Ah
- \_ Max discharge 8A (12A when linked)
- \_ 5-light run-time and capacity indicator
- \_ 133 x 84 x 50mm / 0.73kg

## PAGLINK PL150 SERIES



Time  
Battery

**PL150T**  
Model 9309

- \_ 150 Watt-Hours, 14.8V 10Ah
- \_ Max discharge 8A (12A when linked)
- \_ Numeric run-time and capacity display
- \_ 133 x 84 x 50mm / 0.77kg



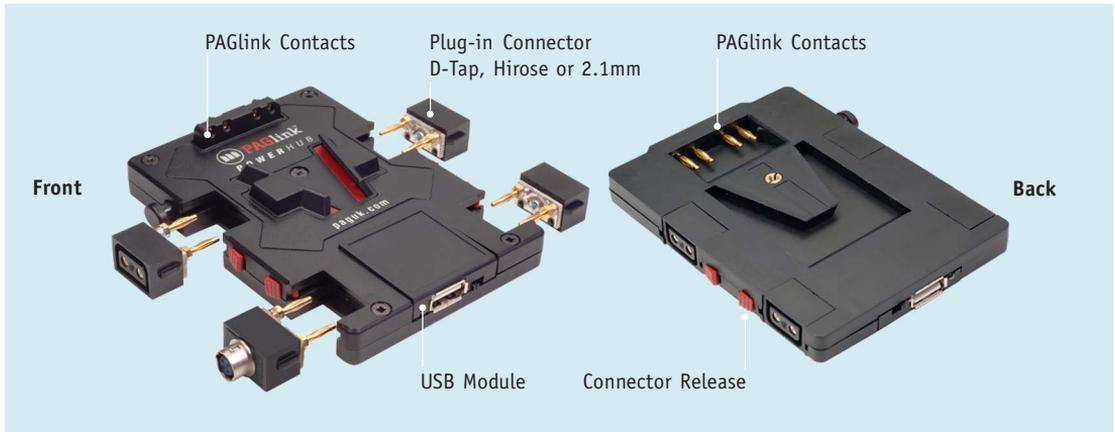
e-series  
battery

**PL150e**  
Model 9308

- \_ 150 Watt-Hours, 14.8V 10Ah
- \_ Max discharge 8A (12A when linked)
- \_ 5-light run-time and capacity indicator
- \_ 133 x 84 x 50mm / 0.77kg

## MORE OUTPUTS FOR ACCESSORIES

PAGlink batteries provide power from their linking contacts that can be accessed via the **PAGlink PowerHub**. This low-profile unit can be used to power 12V DC camera accessories such as a camera light. The PowerHub sits between two PAGlink batteries to maintain the hot-swap capability. It provides four outputs via D-Tap connectors that are interchangeable with Hirose or 2.1mm (PP90) options. The plug-in connectors allow you to reposition the output to the left or right side of the camera. A USB module (1 Amp) is incorporated for 5V accessories or for charging your smartphone.



### **PAGlink PowerHub Model 9709** ▶

*Dimensions (W x H x D): 83 x 112 x 12mm deep (between batteries)*

*Weight: 100g*



## FAST, EFFICIENT, LINKED BATTERY CHARGING

Linked battery charging is an industry first, developed by PAG, and unique to the PAGlink system. PAGlink batteries are intelligent; they control their own charging and discharging. PAGlink chargers will charge simultaneously up to 8 PAGlink batteries, from any state of charge, on each position. The 2-position **PAGlink PL16** will charge up to 16 batteries, and the 4-position PL16+ will charge up to 32 , without user intervention. 8 fully-discharged batteries will be fully-charged in less than 12 hours. Now all your batteries can be charged overnight without you having to wake-up to swap them over.



The charge status of each battery is shown on its individual capacity indicator. The most discharged batteries are given priority. When charging batteries that have a numeric display, the characters can be rotated for legibility with a single press of the display button. Over-discharged batteries can be recovered prior to charging. PAGlink batteries can also be charged, individually or linked, using the V-Mount Li-Ion chargers of other reputable manufacturers.

**PAGlink PL16 Charger Model 9707 ▶**

*Overall dimensions (H x W x D): 75 x 210 x 190mm Weight: 1.4kg*



## ULTRA-COMPACT AND LOW-COST TRAVEL CHARGER

The **PAGlink Micro Charger** is the world's first single-position, multi-battery, V-Mount charger, that will fit in your coat pocket. When you want to charge PAGlink batteries on location and travel light, the Micro Charger is the answer.

Up to 4 linked PAGlink batteries can be charged simultaneously using the Micro Charger. It is also suitable for charging sequentially non-linking V-Mount Li-Ion batteries manufactured by PAG and Sony. 1 fully discharged 96Wh battery will be fully charged in approximately 4 hours. Two 96Wh batteries will be fully-charged in 8 hours. The charge status of each battery is shown on its individual capacity indicator.

The charger clips over the battery contacts, and can be powered using its plug-in Power Supply Unit which features interchangeable plug adaptors for use worldwide (AC input 100-240V). The charger can also be powered from other 5-20V DC sources, such as a 12V vehicle battery or a 2A USB charger. The PSU and DC power leads required to power the charger are included in the kit.

***PAGlink Micro Charger Model 9713V*** ▶

*Charger dimensions: 72 x 63 x 33mm, Weight: 75g*



## MANAGE YOUR BATTERY INVENTORY WITH EASE

Managing your batteries efficiently requires knowledge of their condition and history. Information such as the number of charge/discharge cycles, date of manufacture and the software version is vital. PAG has made this easier for you with the compact and lightweight PAGlink Battery Reader, which displays the following data stored in the battery microprocessor:

- |                                       |                            |
|---------------------------------------|----------------------------|
| 1 State of charge, as a percentage    | 5 Voltage                  |
| 2 Available capacity in ampere-hours  | 6 Full capacity            |
| 3 Cell temperature in degrees Celsius | 7 Date of manufacture      |
| 4 Number of charge/discharge cycles   | 8 Battery software version |

The Battery Reader can also be used to read data stored in PAG's latest non-linking V-Mount Li-Ion batteries as well as Sony Professional Info batteries.

**PAGlink Battery Reader Model 9647 ▶**

*Size: 77 x 52 x 28mm, Weight: 50g*



## PAGLINK BATTERY SPECIFICATIONS & CHARGE TIMES

### **Battery Connection System:**

V-Mount.

### **Cells:**

Premium-grade, sealed, rechargeable, cylindrical Lithium-Ion cells.

### **Construction:**

High-impact polycarbonate injection mouldings designed to protect the cells from impact damage. The battery case is sealed to maintain the integrity of the UN approved construction.

### **Latching Mechanism:**

The PAGlink contact block and latching mechanism on the rear of the battery are separate to the battery case and can be replaced if damaged.

### **Voltage:**

14.8V nominal. 12 cells connected in series/parallel. Each cell has a nominal voltage of 3.7V.

### **Capacity (PL96 Batteries Models 9303 & 9304):**

Nominal 6.5 Ampere-hours (96 Watt-hours).

### **Capacity (PL150 Batteries Models 9308 & 9303):**

Nominal 10 Ampere-hours (150 Watt-hours).

### **Output Current:**

The rated maximum continuous output current for linked batteries is 12 Amperes. The rated maximum continuous output current for individual batteries is 8 Amperes.

### **PAGlink Connection Feature:**

The PAGlink connection uses high-current pin contacts.

It is recommended that no more than 3 batteries are linked for use on-camera, although it is possible to link up to 8 batteries off-camera and for charging.

When linked, PAGlink batteries form a high-speed network, allowing the batteries to communicate with each other. They report to the camera or charger as one large battery. The system will automatically select the most suitable batteries for discharge, according to their charge status. Batteries do not discharge into each other.

The PAGlink system ensures that the maximum output from linked batteries is kept to a safe level.

### **Protection:**

The battery incorporates a multi-layered electronic protection system that guards against over-current, over-voltage, under-voltage, over-temperature and under-

temperature. The protection system circuit is conformally-coated to protect it, and ensure operation of the safety systems in the event of damage to the battery.

### **Charging:**

PAGlink PL16 chargers will charge up to 8 linked batteries, from any state of charge, on each position. The charge times given are for fully-discharged 96Wh batteries to fully charged. 150Wh batteries will take 50% longer.

### **PAGlink PL16 Charger & 96Wh batteries:**

	1	2 hrs	30 mins
(1 + 1)	2	3 hrs	
(2 + 2)	4	6 hrs	
(3 + 3)	6	9 hrs	30 mins
(4 + 4)	8	11 hrs	45 mins
(8 + 8)	16	24 hrs	

### **PAGlink Micro Charger & 96Wh batteries:**

1	4 hrs
2	8 hrs
3	12 hrs
4	16 hrs

PAGlink Batteries can also be charged using V-Mount Li-Ion chargers of reputable manufacture. Linked batteries may need to be within 40% state of charge of each other to be fully-charged.

### **Operating Temperature Range:**

Charging: 0°C to +45°C (Optimum +10°C to +40°C)

Discharging: -20°C to +50°C (Optimum +10°C to +40°C)

Storage: -10°C to +40°C (Optimum 0°C to +20°C)

### **Viewfinder Information Display**

PAGlink supports four battery status standards for the communication of capacity data to the camera viewfinder: SMB (Sony), I<sup>2</sup>C (IDX), reversed SMB (RED) and analogue 0V to 5V (Anton Bauer). The batteries adjust automatically when connected to the camera.

### **Firmware Updates:**

Battery firmware can be updated in the field by the user, in a matter of seconds, via the battery contacts.

### **Dimensions (all models):**

133mm (high) x 84mm (wide) x 50mm (deep)

### **Weight:**

9303 & 9304: 0.726kg

9308 & 9309: 0.766kg



**POWER** | INNOVATION | **QUALITY**

PAG is one of the broadcast industry's longest established global providers of innovative portable power solutions. Founded in 1968, and based in London, England, PAG is the original designer and manufacturer of the world's most technologically advanced batteries, chargers, power adaptors and on-board camera lights. The company's international customer base includes broadcasting organisations, video production and equipment hire companies, freelancers, cinematographers, professional videographers, the military and civil authorities.

**PAG Ltd.**  
565 Kingston Road  
London SW20 8SA, UK

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

---

**Distributor:**