

An Intelligent Battery System Designed for Modern Acquisition Demands



PAGlink in action (photo courtesy of Damian Wilson, UKIP).

PAG has developed a new system of high-power linking batteries, designed to power all types of digital video camera used for broadcast news acquisition, video production and digital cinematography.

PAGlink is the first battery system that allows you to link as many as eight Lithium-Ion batteries, in parallel, for charge or discharge. Linking batteries and combining their capacities greatly extends the run-time for power-hungry modern professional cameras, and allows currents of up to 12A to be drawn for simultaneously powering the camera and its accessories.

More Power Required

Developments in camera technology have seen an increase in the power demands being made on Li-Ion batteries. In addition, there is a greater number of camera accessories to be powered simultaneously. The cameras alone are likely to have a power consumption of 40W to 50W, and the accessories can increase the total power consumption to around 100W.

Many companies, including PAG, have introduced larger Li-Ion batteries that have capacities greater than 160 watt-hours. These batteries have been banned by air transport authorities from passenger aircraft, because they are considered potentially dangerous.

Lithium Manganese batteries that allow higher currents to be drawn are offered by some companies as a solution, but this technology is significantly more expensive.

Made for High Loads

The PAGlink connector system incorporates high-current pin contacts, rather than the blade contacts used by other manufacturers. The pin contacts contribute to the higher current capability of the batteries. Up to 12A can be drawn from PAGlink batteries when linked, or 8A individually. Other manufacturers' systems have a current-draw capability of only 10A maximum, when linked.

Smaller and Lighter Batteries



PAGlink batteries are smaller and lighter for their capacity than those of other manufacturers. Individually, PAGlink batteries offer approximately 96 watt-hours capacity (14.8V 6.5Ah). They mount to the camera via the Sony V-Mount connector. Three linked PAGlink batteries, weighing less than 2.2kg, create a single power source of 288 watt-hours (more than four and a half hours run-time for a camera that consumes 60W).

Power More Camera Accessories



PAGlink is the first battery system where power is also available from the battery linking contacts. The power can be accessed by attaching the PAGlink PowerHub which is used to power audio, lighting, monitoring and transmission accessories. The PowerHub can be used sandwiched between two PAGlink batteries, to maintain the system's hot-swap feature, or connected to the rear PAGlink battery on the camera, to allow an accessory bracket to be mounted to its face. The PowerHub provides four 12V DC outputs via D-Tap connectors (other connector types, such as PP90 and Hirose, will be available). The interchangeable plug-in connectors allow you to reposition the output to the left or right side of the camera. A USB output module (1 amp) is also included for charging your smartphone or powering suitable accessories.

Run-Time for All Batteries



Uniquely, all PAGlink batteries feature built-in run-time indication, expressed in hours and minutes, relative to the power consumption of the camera set-up. The run-time prediction is recalculated if the power consumption is increased or decreased. When the batteries are linked, the individual displays provide total run-time data for the combined batteries, and capacity data for the individual packs. All PAGlink batteries maintain an accurate state-of-charge display by tracking their performance, and adjusting calibration values to compensate for the ageing of the cells.

PAGlink Battery Reader



A PAGlink Battery Reader is available that will read data stored in the battery's microprocessor.

The Reader is slid onto the battery contacts and will automatically display the battery state of charge as a percentage. Pressing the up and down buttons will reveal the next or the previous category. The categories are as follows:

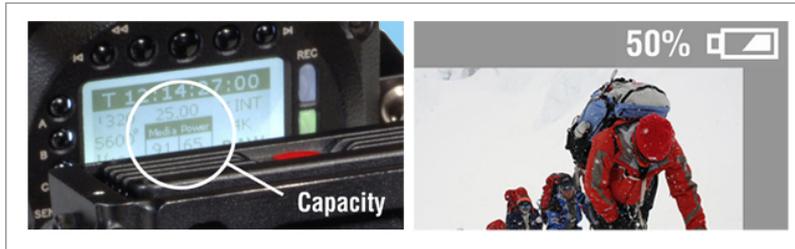
1. State of charge as a percentage
2. Available capacity in ampere-hours
3. Cell temperature in degrees Celsius
4. Number of charge/discharge cycles
5. Voltage
6. Full capacity in ampere-hours
7. Date of birth (manufacture)
8. Software version

This information is extremely useful for tracking battery usage and performance. 'Software version' will help tell you if the battery is running the latest program.

Programmable in the Field

PAGlink batteries and chargers are externally programmable and can be easily updated in the field, by the user, via a software update tool, available from PAG or your PAG dealer. This feature ensures that your batteries are future proof.

In-Viewfinder Battery Status



PAGlink batteries will display their charge status as a percentage of available capacity in the viewfinders of cameras designed to accept this data. Different data standards are used by camera and battery manufacturers; PAGlink batteries automatically adjust the data output standard to support the following: SMB (Sony), I²C (IDX) and analogue 0V to 5V (Anton/Bauer). They can also be programmed by the user to provide capacity data in the viewfinders of RED cameras. When the batteries are linked, the data displayed in the viewfinder is for the combined capacity available.

Linked Battery Charging - An Industry First



PAGlink PL16 Charger

The PAGlink system allows up to eight batteries to be charged whilst linked, which is an industry first. PAG has introduced a compact, two-position charger that will simultaneously charge up to 16 PAGlink batteries (8 on each position), efficiently and automatically, from any state of charge. Eight fully-discharged PAGlink batteries will be fully charged in 10 hours. Priority is given to batteries that are more discharged. Fully charged batteries turn off automatically and independently. The charge status of each battery is shown on its own display, so that you can see at a glance which batteries are ready for use.



PAGlink Micro charger

Additionally, PAG has introduced an ultra-compact charger which will fit in any kit bag, and suit any budget. The PAGlink Micro Charger will charge two linked batteries in approximately 8 hours, or one battery, to 80% charged, in approximately 3 hours.

The previous generation of PAG chargers can be used without modification, to charge PAGlink batteries whilst linked. Alternatively, the V-Mount Li-Ion chargers of other reputable manufacturers are also suitable. In order to charge whilst linked, non-PAGlink chargers require that batteries are within 40% state-of-charge of each other.

Improved Low Temperature Performance

Batteries, and cameras for that matter, do not perform well at sub-zero temperatures. It is important that they are not left in extremely cold environments overnight or exposed to them during use. PAGlink batteries have an enhanced low temperature performance that means they will still operate at -20°C , however, the optimum battery discharge temperature is $+10^{\circ}\text{C}$ to $+45^{\circ}\text{C}$.

Replaceable Linking Mechanism



A unique feature of PAGlink batteries is the design of the battery linking mechanism. If linked batteries suffer an excessive mechanical blow the linking mechanism will allow them to separate safely, protecting the battery packs from irreparable damage.

The battery linking mechanism can be replaced, without opening the sealed battery case. It is a mandatory requirement for Li-Ion batteries to be sealed in order to preserve the original build standard of the UN certified device, and for this reason Li-Ion batteries should never be tampered with, let alone recycled.

Although PAGlink batteries are designed to survive the rigours of everyday use in a professional environment, it is common sense to handle batteries with care and to avoid subjecting them to severe impact.

Flight-Friendly

The 96 watt-hour PAGlink battery packs have been independently tested in accordance with UN transport safety regulations, and are IATA compliant for shipping on passenger aircraft in hand luggage, without quantity restriction.

The Industry's Best Value Battery System

PAGlink is a high-quality battery system that is competitively priced. PAG's total battery design philosophy ensures that you achieve the longest possible working life from your PAGlink batteries. Some customers have reported good capacity from their PAG Li-Ion batteries even after 7 years use. This is well in excess of the industry average life. PAG guarantees its Li-Ion batteries for 2 years, with no restrictions on the conditions of use. When the already attractive price is divided by the number of years service provided, we believe that PAG batteries offer the best value for money in the industry.

International Patents Applied For