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# GeniTec Power Product Introduction



## Get ready for the Next Generation in Mobile Healthcare Power delivery

Bytec Healthcare specializes in the design and development of DC Power Systems. Our award-winning proprietary management and control system has been developed and tested over several years and is specifically focused on the healthcare market. Our approach is to design and build the next generation of mobile power systems that not only integrate with our own carts but can lead the way in introducing a generic standard across the global market.

*"Bytec Healthcare is dedicated to developing mobile hardware platforms and battery power systems to facilitate the integration of technology, improving workflows and improving patient outcomes."*

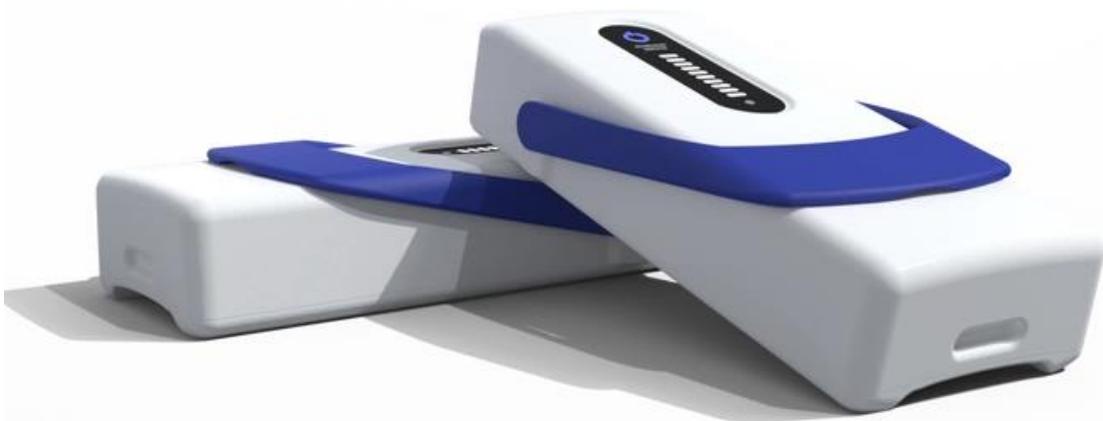
## GeniTec Power

**Technology is best when** it doesn't get in the way



Introducing a new level in performance and safety.

The Award-winning GeniTec Power System is designed not only to integrate with Bytec's range of Carts but can also serve as a cross-platform stand-alone power system throughout the healthcare environment. The system can be used to supplement existing backup systems, provide uninterrupted power supply, or to mobilize otherwise static equipment.



# A uniquely beautiful and practical design.

The system can be used to supplement existing module power, provide uninterrupted power supply, or to mobilise otherwise static equipment. The sturdy carrying handle makes the GeniTec a conveniently portable mobile power system.

## GeniTec EcoSystem

The GeniTec DC power solution has been developed in a uniquely modular way. Each component is self-contained and packed for simple integration across multiple platforms, forming an ecosystem that can be built around a standard charging platform across whole facilities.

Sub-assembly integration, retro-fix solutions and mounting options are all available to simplify adoption and use by device manufacturers and integrators.

With over 5 years of development experience and extensive testing, we have produced a robust, and safety-centric firmware and hardware platforms. We have included multiple safety gateways and redundancy, achieving UL1642, UL 2054, IEC 62133 certification, with integration into EN/IEC/ES 60601 compliance products, some of which have US FDA Class II approval.

Every detail has been considered allowing for complex use models to be implemented for a range of different applications.

# GeniTec Technology



**Capacitive touch On/Off**  
Simple on/off touch button with delay hold function to prevent accidental activation and illuminates blue when sourcing power.

**Charge Fuel Gauge**  
10 split level LED indicators to clearly see the charge levels of the battery. Changing from white to amber when levels are low.

**Anti-bacterial Agents**  
Silver-Ion technology in our additive provides a secondary defence against cross contamination. We incorporate a security agent that glows green under an invisible laser to ensure QC compliance.

**Status Indicator**  
Overload and Service indicators are visible to ensure smooth operation and safety.

**Handle**  
Our handle has been designed to easily fit in the palm of your hand, allowing the power modules to be carried comfortably.

**The Basics**



**Desiccant**  
To ensure longevity and reliability, we have included desiccant to maintain a dry internal environment following product sealing.

**Power Module Controller**  
Centralise to the Power Module operations, the controller monitors all activity on the SMBus, and the various safety sensors within the assembly, ensuring that charging, discharging and temperature are all within acceptable limited, recording logs of each event.

**NMC Technology**  
Using the latest in battery chemistry technology, offering a balance between energy density, power discharge and weight. With a stable balanced voltage, this technology provides safety, performance and extended life compared to other chemistries.

**Locking Mechanism**  
Spring locking System to keep the battery into place while on the move. Simple "snap and go" operation.

**Quality Electronics**  
Our electronic assemblies are built and tested in an ISO 13485 facility to ensure quality and traceability of build.

**Ultra Low Power**  
Newly developed ULP Ultra low power provides extended sleep time and reduces the risk of deep discharge.

**Getting Technical**

**Temperature Sensor**  
Internal ambient temperature sensor, for overall power module housing and electronics temperature control.

**Protection Control Module**  
Integrated within the battery pack, the PCM provides primary protection against overvoltage, overcharge, overcurrent and short circuit.

**EEPROM LOG Memory**  
Internal memory logs stores event-driven data which for analytical and safety monitoring.

**Battery Module Controller**  
The main controller for the Geni-Tec Battery module. Controlling its main function of delivering efficient power.

**Secondary Protection**  
A secondary level of protection from the outside world ensures fault resilience to overcharge, overcurrent and short circuit, as well as ensuring that while detached from the dock, the Power Module can be safely handled by isolating all power voltages.

**Highly Technical**

**Integrated thermistor**  
Two internal thermistors measure the internal temperature of the battery pack in specific locations acting as a safety signal, and for regulating charging rates under specific conditions to ensure safety.

**Real Time Clock**  
Onboard real-time clock allows for accurate event time stamping on recorded logs.

**Micro Processor Unit**  
The central control for all aspects of operational function. A feature-rich battery management system allows for various configurations and use.

**Impedance Tracking**  
Using the latest in impedance tracking technology to monitor charge levels, ensures a high level of accuracy irrespective of cycles and age.

**Encryption decoder**  
We do take safety and our integrity seriously. Without successful authentication protocol with a GeniTec Dock, the dock will inhibit the charging or discharge of the Power Module. This ensures that counterfeit Power Modules cannot be used.

**Even More Highly Technical**

### Lock release button

Simple to use release button making sure your battery is securely connected and can not be removed.

### Bio Plastic

Depending on the selected extrusion length our carts adjust by 300mm or 400mm in range. Standard height adjustability 865mm to 1165mm.

### Power Terminals

With split terminals dividing and separating the power source to remove direct power flow meaning its safe to touch the power will only be allowed once all terminals are active.



### Locking mechanism

With a choice of monitors available, we do encourage tested configurations but you are always free to add your own. We provide as standard a 100mm Vesa mount.

### Build Quality

Solid build to support and provide long life our docks are made

### Charging Input

You can select the ideal length of your cart, let us know what you need and we will see if we can supply.

## The Basics

### Locking mechanism

Internal locking metal mechanism, strong lock ensuring Power Modules are firmly retained in position. Part of our snap and go system.

### Protective coating

In addition to our water tight seal we still apply a protective coating, covering the entire PCB board making the board it self water resistant.

### Quality components

Designed to last. Our high-performance circuit designs focus on safety, low radiated emissions, high reliability, and zero maintenance.

### Hard Gold Contacts

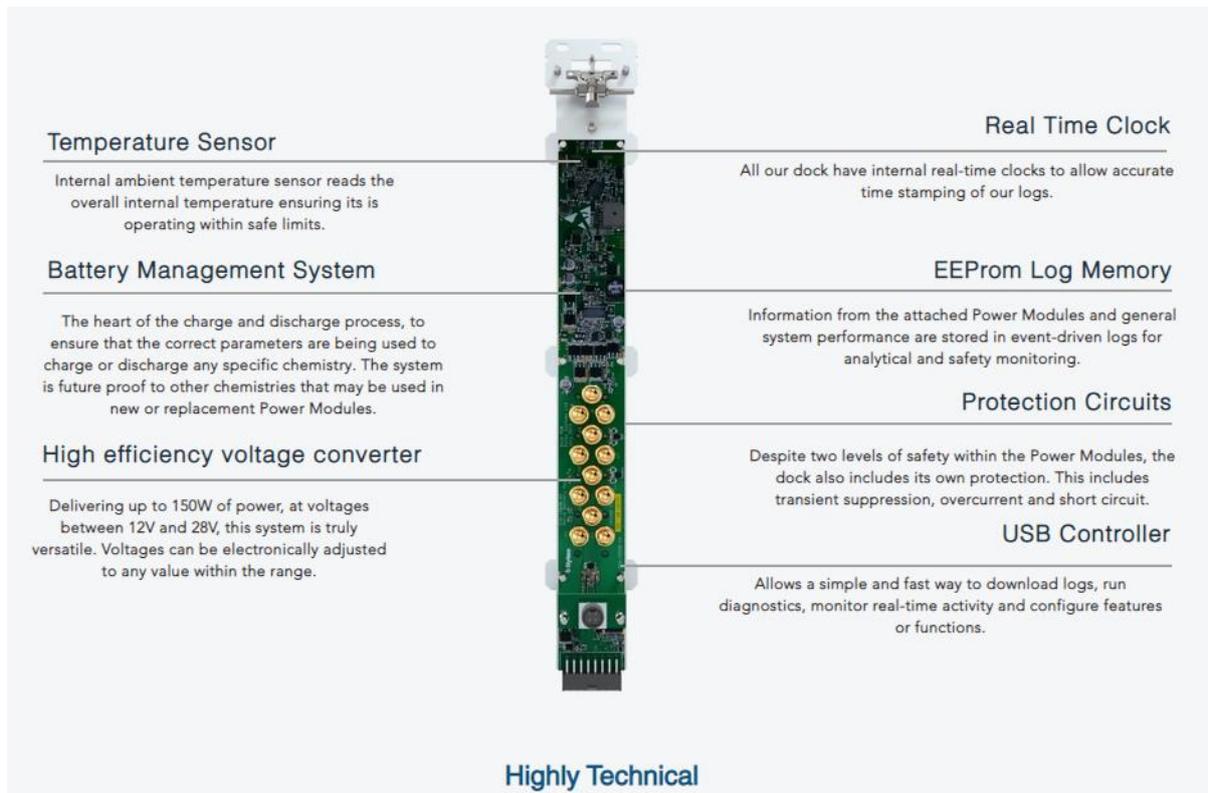
We use Hard gold contacts for unparalleled connectivity and greater service life.

### Master Dock & Slave dock

The master dock has everything it needs to deliver a reliable solution and can be supplemented with a slave dock to allow for hot swap function.



## Getting Technical



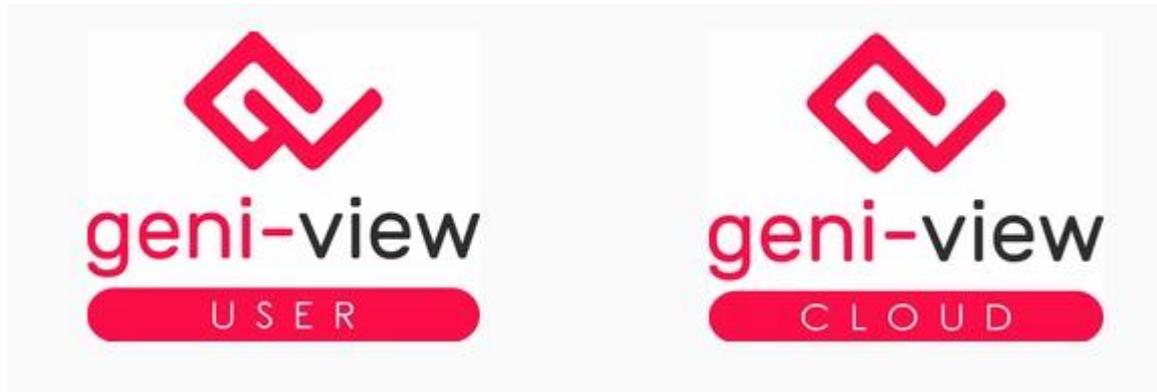
## GeniTec System Architecture

Every Power Module and every Dock Device contains forms part of a sophisticated telemetry system that provides data logging and integration into new cloud technology and IoT infrastructures.

At a local level, production logs are maintained both in the Power Module and Dock device. They provide timely alerts and maintenance warnings through on-device indicators and audible alerts, allowing the system to respond to situations without any connectivity.

Connected by USB to a PC platform, information is collected on to PC storage, and can be synchronised with a cloud-based platform. The GeniView app, with an always-on-top widget, provides a convenience screen based user experience.

Cloud based asset and monitoring platforms provide IT departments with a centralised view point of the deployed estate for preventative and pro-active maintenance and fault resolution. Users can also get connected with a notification alert system to further enhance the experience if required.



The GeniTec system incorporates a real-time clock, to allow it to record time and incident-driven event logs. Every time a battery is added or taken away, every time the system is charging or delivering power, events logs are being generated and at each event, a snapshot of the system's vital signs are recorded.

## Future Proofing

We have implemented a Smart Power Module that knows it's own chemistry, operating and charging parameters, firmware and OEM configuration. It is able to inform the Dock Device of its history which they can be configured with new settings to meet the new requirements.

This allows us to introduce future battery technologies that can work in unison with older technology on the same platform, this helps future proof our technology to become forward and backwards compatible.

This also removes the need for manual upgrade and consistent maintenance which requires engineer visits adding to the overall expense of the hospital.

## Safety and Service Life

As with any source of power, especially those with high capacity, safety plays an important role in the risk management and assessment of our designs. With one of the highest capacity Power Modules on the market, allowing for extended use times between charge, our 1000+ cycles guarantee allows for significant workflow and lifetime costs advantages.

We employ multi-level safety monitoring and single fault condition testing to ensure that safety is never compromised. We are proud to report a zero incident record, with service lives in excess of our guarantee. However, in all cases, the correct maintenance, handling and care of the Power Modules is of utmost importance.

***A charged Power Module is a happy Power Module.***

## Battery Technology

Our engineers have developed technology that achieves the best results in power delivery. This bold leap in battery technology provides a tremendous increase in efficiency and safety.



# GeniTec Chargers

## Introducing a new level in performance and safety

The Award-winning GeniTec™ Power System is designed not only to integrate with Bytec's range of Medical Carts but can also be a stand-alone power system throughout the healthcare environment. The system can be used to supplement existing module power, provide uninterrupted power supply, or to mobilize otherwise static equipment.



## Power Module Charging

The Power Modules can be charged on either a single, dual or quad bay chargers. Each Power Modules will take 160 minutes to fully charge but can reach 80% capacity in just 125 minutes.

Charging times are unaffected by the number of Power Modules fitted to a charge, or their relative state of charge. For on device charging, which is also possible with an external power adapter, the charge times may vary depending on the equipment being used.

# Battery Awareness

Learn more about power delivery and battery maintenance and safety. It is important to look after your equipment, gain useful information on how to maintain a healthy battery. With these simple steps can ensure a long-lasting battery.

## GeniTec Development Kit The possibilities are endless.

The GeniTec platform is available to all, we have brought the best power solution to the Healthcare market, and now we are working with Medical device companies, OEM partners and integrators through our development kits.

We understand the criteria needed in a healthcare environment and how our platform can be exploited across multiple applications.

With the GeniTec development kit, you are about to use our technology and apply it, we provide access to our GeniView Engineer for details analysis. With our open API, you can develop or integrate communications within your own software for total control.





## Easy Cleaning

The GeniTec battery module is the first fully submersible power module of its kind. It allows the user to easily clean the equipment, like all of our products infection control is one of our primary design objectives. The Power Module has been tested to IP65 (NEMA6).

As much as we can certify a fully submersible battery we do not encourage you to give your Power Module a bath as any damage caused to the Power Module would compromise the seals, so regular inspection is required. Rinse under running water for a quick and easy clean. We have designed the Power Module without live power terminals when disconnected from the dock.

