*Designed to charge and maintain the Tailbuoy battery, and regulate power to any attached loads, from a combination of three power sources. The power sources can have a wide voltage and current range, and the Tailbuoy Charger (TBC) 3G will efficiently manage all and distribute according to the battery state and load requirements. The TBC will in addition manage all flow of data communication between connected devices and the streamer.*

Seamap's sophisticated integrated circuitry has merged multiple features and functionality, opening new possibilities to the industry, which were otherwise not possible. The TBC is suited to all deployment needs.
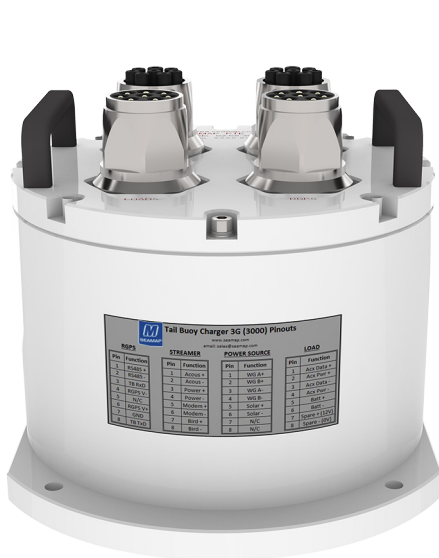
- Designed to have a very low noise profile, resulting in zero cross-feed to the streamer. Option to add additional suppressor PCB for ultimate removal of noise.

- Circuitry designed for optimal and efficient use of all available power sources, resulting in extended battery life. Over 85% efficient.

- Extremely reliable given its high tolerance for common electrical faults, such as reverse input polarity, output current overloads, short circuits, hot plug and play, water generator over-voltage.

- Simple to install and operate. Plug in and connect devices, no other effort required!

- RS232 link to BuoyLink Tailbuoy module to allow remote monitoring, control and interrogation of the TBC.

- Ability to combine 3 power sources of different voltages and power ratings into a single source to charge the battery and power the loads. Individual shut down control for each power source.

The Tailbuoy Charger 3G is essentially a proficient power and data interface unit designed around our many years of experience in the industry. It brings together a Tailbuoy battery and series of power sources, and converts them in to multiple tightly regulated DC supplies. These can be used to power any 12V device such as:

- Acoustic Modules
- Navigation and visual referencing lights
- RGPS Modules

Each output can be individually power toggled with individual shut down control for each power source. The battery charges both conventional (flooded) and sealed (VRLA) 12V batteries which have a capacity of between 10Ah to 75Ah. The charging power can be obtained from one, two or three of the following sources;

- Solar Panel (PV)
- Water Generator (WG)
- Streamer Power (TAPU)

In the absence of a battery, the Tailbuoy Charger will continue operation as a regulated DC power supply to power the loads as long as another input power source is available.

Specifications:

Parameter	MIN	TYP	MAX	UOM	Remarks
Input Voltage					
PV	18	-	60	VDC	
WG	18	-	60	VDC	
Streamer	18	40	60	VDC	
Efficiency					
PV	-	84	-	%	
WG	-	84	-	%	
Streamer	-	84	-	%	
Output Current					
PV	-	-	2.5	A	@ 15V output voltage
WG	-	-	2.5	A	@ 15V output voltage
Streamer	-	-	1.3	A	@ 15V output voltage
Others					
Battery charging unit	-	-	6.3	A	Assuming all 3 power sources are active
Battery equalize voltage	-	14.1	-	VDC	
Battery float voltage	-	13.1	-	VDC	
Current of a single load	-	-	2	A	All loads are protected by individual polyfuse
Operating Temperature	-20	-	+85	deg C	

Options:

An optional PCB to incorporate supplementary circuitry:

- Noise filtering to further suppress the inherent system noise floor – this can help where a Tailbuoy is old and more prone to electrical leakage and therefore noise.
- Electrical energy storage for high current impulse loads, such as strobe lights. To prevent signal spikes on the seismic trace.
- Electrical isolation for the RS232 communication link.

- Supports up to 4x12V loads with individual "on" & "off" control. Loads can include RGPS, Acoustics and Lights. Individual power control for each load.

- Over temperature management controls automatic shutdown of water generator input in the event of over-temperature. Other inputs remain active. Reliable operation up to +85° C

- In the absence of a battery, the TBC will continue operation as a regulated DC power supply to power the loads, provided that any input supply is available.

- Monitors the water generator rpm and heat sink temperature, via the BuoyLink software. Immediately obvious if the propeller is no longer rotating!

- Electronic monitoring of 16 vital voltage & current readings at various input and output points of the TBC. The information is accessible via the RS232 link to BuoyLink.

- Versatility and flexibility - the TBC has multiple features, creating many possibilities to cater for different deployment needs.

Additional Hardware:

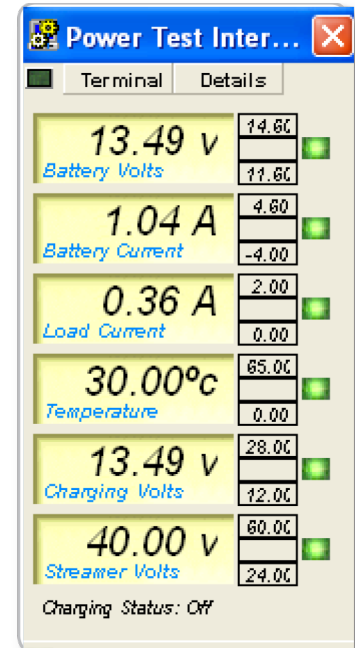| Inputs	• Syntrak Or Seal 40Vdc from the TAPU (TBC has current limiting to prevent tripping) • Any other streamer power module within the specified input range (e.g. Digistreamer) • Any solar panel, and any 12Vac or 24Vac underwater generator
Current Limit	O.7A For Streamer Cable, 3A For Water Alt
Charger	• No switching circuitry used to guarantee lowest possible noise • Two stage charging, high power and low power mode
Outputs	• Serial Data String With Battery Voltage • Charger Input • Load Current • Charge Current • Temp • Charger State • Water Alternator Status • Sent To Vessel Via BuoyLink RGPS Pod
Power Connections	• BuoyLink RGPS Module • Strobe Light • Battery • Acoustic Pod • Streamer Cable • Solar Panel Interface (Optional) • Underwater Generator (Optional)
Data Connections	• RGPS Data to Streamer Cable • Compass Acoustic Pair to Streamer Cable
Charger Dimensions	200 mm diameter x 185 mm high (incl. connectors)
Rating	IP 68, Submersible for Extended Periods
Material	Delrin (Acetal)
Safety Conditions	• Automatic shutdown on over temperature • Load output shut down in the event of fault conditions

SEAMAP BUOYLINK TAILBUOY CHARGER 3G

POWER AND DATA INTERFACE UNIT

The charger employs an 'equalise' charging method to charge the battery. It provides maximum available current to charge the battery until the 'equalise' voltage is reached. It then switches to a lower current to maintain the charge of the battery at the 'float' voltage. This charging circuit is designed to efficiently prolong the life of the battery cells, constantly maintaining the correct charge level to extend battery life and increase time between charges. The result is maximum battery longevity with minimal power input.

The electrical power supplied by the power sources is a non-consistent value. The wide range of input voltages are stabilised by the regulated DC supply before feeding into the loads. If the power sources do not have sufficient power to be made useful, the battery will continue powering the loads. Each input can be individually shut down by remote command (via BuoyLink) to prevent loading of the source, if necessary. Each output (load) can be individually power toggled.

Remote RF Link, via the BuoyLink, provides QC of the charging and tailbuoy management status, to the instrument room. The Tailbuoy Charger 3G monitors a total of 16 vital voltage and current readings at various input and output points of the Tailbuoy Charger, accessible via the RS232 communication link. All-in-one multipurpose firmware handles various modes of operation; normal, calibration and test.