DUO-C98 / DUO-C150 / DUO-C198

Li-ion V-Mount Battery

Instruction Manual

Lithium Ion

Endura SYSTEM

Thank you for purchasing the DUO-C98 / DUO-C150 / DUO-C198 Li-ion V-Mount Battery. Prior to using the DUO-C98 / DUO-C150 / DUO-C198, we strongly recommend reading this Instruction Manual on how to best use the DUO-C98 / DUO-C150 / DUO-C198 . Please keep this manual for your reference. If you have any additional questions, please contact your local IDX office listed at the end of this manual.

Caution for safety use

Improper handling of this Li-ion battery may result in smoke, heat, fire, explosion or leakage as well as cause performance degradation or failure. Please be sure to observe the following precautions.

⚠DANGER

May cause sudden serious injury and death.

- Charge with IDX battery charger only.
- Use with professional video cameras or other video equipment. Please contact IDX for more information.
- Do not short the contact pins with any metal object. Do not carry or store with metal equipment.
- Do not expose to heat and never throw the battery in a fire.
- Do not immerse in water. Keep the battery dry and away from excessively dry or humid environments.
- Do not leave the battery exposed to excessive heat such as in a car or directly under the sun light. Do not use outside of specified temperature ranges.
- Do not solder on the contact pins directly.
- Do not attempt to open the outer casing or break apart the battery.
- Do not subject the unit to extreme physical impact or pressure, or place any object across the terminals that could cause it to short.
- Do not pierce or drill into the outer casing of the unit.
- Do not attempt to use the battery if damaged.
- Do not use the battery in a corrosive environment. Damages occur from salt water, seawater, acid, alkali, corrosive gas, etc.
- Risk of explosion if battery cells are replaced by an incorrect type.

⚠WARNING

May cause serious injury and death.

- Please note that the outside casing becomes hot when the battery is discharged in high temperatures or with high loads.
- Stop charging immediately if the battery fails to charge within the designated time. Refer to charger manuals for charge times.
- Do not use if the battery displays unusual characteristics (odd odor, discoloration, etc.) when in use, during charge or in storage.
- Keep away from fire if the battery leaks fluid or has an unusual smell.
- In case of leakage immediately wash your hands and face thoroughly with clean water and contact your IDX representative for further instructions.
- Immediately seek medical attention if battery fluid gets into contact with your eyes.

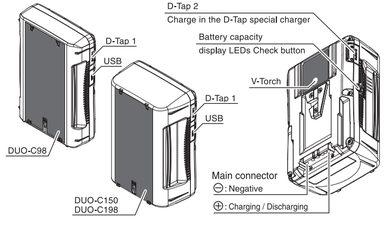
⚠CAUTION

May cause injury or damage other equipment.

- Follow instructions on charging and discharging.
- Store in cool and dry conditions.
- During long periods of inactivity, please remove the battery from the equipment.
- Do not use, store or place the battery in an electrostatic area.
- Always keep the connectors clean.

Features

- Light weight, compact, high performance Li-ion battery with a durable design.
- Five power status LED indicators accurately display remaining power capacity. [Refer to Capacity display LEDs]
- Two DC output connectors for peripheral equipments. [Refer to D-Tap] D-Tap 2 is compatible with charging.
- USB power output for charging portable devices. [Refer to USB]
- Equipped with V-Torch (LED Light) for universal purpose. (light for approx. ten seconds) [Refer to V-Torch]
- IB mode can be configured. [Refer to IB Setting]



Protection circuitry

- There are four types of protection circuits to ensure the battery is protected from Over-charge, Over-discharge, Over-current and Thermal protection. If the fuse is blown, the battery is no longer operable.
- When temperature of inside of the battery reaches 176°F (80℃), battery stops discharging automatically. Discharge will restart when the inside temperature becomes 140°F (60℃) or less.
- Please charge the battery quickly, if the over-discharge protection is activated. The battery may become unusable, if leave it without charging.

Discharging

- Please check that the total power consumption from the main, the two D-Taps and the USB connectors is less than the battery's maximum discharge power. If it exceeds the maximum discharge power, the safety protection function may be activated and it will stop discharging and may cause damage the battery. If the fuse is blown off due to an over load, the battery won't recover.
- The battery life may diminish if high loads are applied frequently.
- Battery run-time may reduce when used in extreme high and low temperatures. IDX highly recommends to use the battery in ambient temperatures of 50～104°F (10℃～40℃)
- The discharge characteristics of lithium ion batteries illustrate a steady curve until 13V. At 13V, the discharge curve sharply drops. For this reason, IDX recommends setting the camera's "Low Voltage" alarm settings to13～13.5V. Refer to battery settings on the camera's user manual.
- The battery will automatically stop discharging when the voltage reaches 11V. To extend battery life, IDX recommends to stop using before the battery reaches 12V.
- Microwave transmitters with 5W outputs or more should be kept as far away from the battery as possible. High power transmitters may disrupt or stop supplying power.
- Please be sure to remove the battery from the device after use. If a battery left mounted on the device that has large standby power, the battery's residual capacity will become lower and the over-discharge protection may be activated.
- Please do not use the batteries connected in series. This may cause the damage.

Charging

- Only charge with IDX lithium ion charger and refrain from charging with third party chargers. Please refer to the charger manual for charging method information.
- Estimated charging times may vary depending on the charger and condition of the battery. Refer to our website for more details.
- The ambient temperature range for charging is 32～104°F (0～40℃); however, 50～86°F(10～30℃) is recommended for optimizing the charging performance. When the battery is charged in temperatures 32°F(0℃) or below, it may not fully charge, even if the designated charge time has elapsed.
- Charging outside of the recommended temperature range can accelerate cell deterioration.
- Please use IDX D-Tap charger when charging the battery through the D-Tap2 connector.
- Lithium ion batteries have a slight self discharge; therefore, IDX recommends to charge prior to use.
- Can not be charged using with C-NP2E,C-VAL2E.

⚠ CAUTION The policy of IDX is to value safety above all other considerations and for this reason, the DUO batteries cannot be charged when the internal temperature of the batteries is below 32°F(0℃) or over 104°F(40℃). During use the internal temperature of all batteries rise. IDX monitor this temperature in the DUO batteries and if it is found to exceed 104°F(40℃) a protection circuit will trigger an error message on an IDX charger should charging be attempted whilst the battery is in this over temperature state. The error sign will cease once the battery is back within the correct temperature range and charging will resume.

* If the internal temperature of the battery below 32°F(0℃) or exceeds 104°F(40℃), when the battery capacity check button is pressed, the remaining capacity will be displayed with LEDs for 1 second. After that all LEDs will flash 2 times.

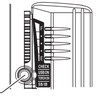
Reference time intervals for the internal temperature to drop below 104°F(40℃) following discharge. (Ambient Temperature : approx. 77°F(25℃))

DUO-C98		DUO-C150		DUO-C198	
Discharge load power	Approximate time	Discharge load power	Approximate time	Discharge load power	Approximate time
70W Discharge	20 Minutes	95W Discharge	20 Minutes	95W Discharge	25 Minutes
95W Discharge	35 Minutes	125W Discharge	35 Minutes	125W Discharge	50 Minutes
115W Discharge	45 Minutes	154W Discharge	45 Minutes	154W Discharge	60 Minutes

⚠ CAUTION The LED may not light up, if the battery is left without charging. In that case, the charger won't start charging the battery if the battery is attached, and the LED will blink. The charger will start charging and the LED will light up by putting on and taking off the battery twice over.

Capacity display LEDs

- When the check button is pressed, the LEDs will light for approximately 2.5 seconds.
- Remaining capacity is shown with five LEDs. This is displayed as 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80% 90%, and 100%.



● : Solid / ☀ : Flashing

Capacity / Display	100% ～ 90%	89% ～ 80%	79% ～ 70%	69% ～ 60%	59% ～ 50%	49% ～ 40%	39% ～ 30%	29% ～ 20%	19% ～ 10%	9% ～ 0%
F	●	☀								
•	●	●	●	☀						
•	●	●	●	●	●	☀				
•	●	●	●	●	●	●	●	☀		
E	●	●	●	●	●	●	●	●	●	☀

D-Tap

- Two D-Taps power output terminals available.
- The maximum power output is 80W.
  *Upon usage, please make sure for the maximum discharge load value of the battery. Also please note that the maximum power output of the DUO-C98 is 70W at the temperature of 95～113°F (35～45℃).
- The output voltage is a battery through.. (11～16.8V)
- Please do not use D-Tap connectors while charging the battery through the main connector. If you use D-Tap connectors while charging the battery through the main connector, it may cause a charging error or damage on the charger.
- D-Tap output can be used for IDX portable lights and monitors.
- You can charge the battery through the D-Tap2 connector only by using the IDX D-Tap charger. Please do not charge the battery through the D-Tap2 connector while charging the battery through the main connector. It may cause a charging error or damage on the charger.
- Please do not use the main, the D-Tap1 and the USB connectors while charging the battery through the D-Tap2 connector. It may cause a charging error or damage on the charger.

⚠ CAUTION Please make sure to check the ⊕ ⊖ polarity of D-Tap connector prior to plug-in.

Please confirm the shape of connector and ⊕ ⊖ polarity of plug side prior to connect with receptacle. Please do not force it when felt it is difficulty.

USB

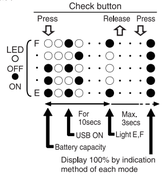
- USB connector for power supply. (DC5V / 2.3A)
- USB connector is A type. (USB Cable should be A type as well).
- To activate the USB power output, push and hold the CHECK / USB ON button for more than 3 seconds (see diagram to the right).
- USB power will turn off automatically 30 minute after the USB cable is removed.
- Do not draw power from USB while charging as it may interrupt charging, cause a charger error, or damage the charger.
- This terminal does not provide data, only power.

V-Torch (LED Light)

- Embeded LED (on rear side) will turn on the light by pressing the capacity check button two times in a row. Ten seconds later, the LED will automatically turn off the light.
- It can also turn off manually by pressing the button two times in a row while lighting.
- Please do not stare into the light directly while lighting.

IB Setting

- The SB communication function can be activated by pressing and holding the Battery capacity display LEDs check button. By activating the SB mode, the battery data can be read out from SMBus compliant equipment. Please refrain from using SB mode with equipment not compatible with SMBus protocol; Sudden power failure may occur due to communication failure.
- Configurable modes are the following two.
  ・SB mode : The battery can communicate with SMBus compliant equipment.
  ・IB mode : The battery can communicate with IDX's BMS compliant equipment through some data communication in it.
  ・The battery's default setting is in SB mode.
- Activating / Deactivating the SB mode (Activating / Deactivating the IB mode)
  ・Press the Battery capacity display LEDs check button for more than10 seconds.
  ・The top, middle, and bottom LEDs will briefly emit; the middle LED will turn off and the top and bottom (E and F) LEDs will remain lit for 3 seconds.
  ・while the 2 LEDs (E and F) are emitting, release and press the button again.
  ・When each mode is activated correctly, the LEDs will display 100%. If the LEDs do not display 100%, please restart the activation / deactivation process.
- SB mode and IB mode capacity display method
  The LED patterns will indicate the current mode.
  SB mode : the capacity display LEDs will light gradually from "E" to "F"
  IB mode : all of the capacity display LEDs will light simultaneously.
  (When the remaining capacity is 100%, 5 positions of LEDs will light simultaneously.)



Specifications

		DUO-C98	DUO-C150	DUO-C198
Cell chemistry		Li-ion		
Nominal voltage		DC 14.4V		
Capacity		6.6Ah / 96Wh *1	9.9Ah / 143Wh *1	13.2Ah / 191Wh *1
Charge voltage		DC 16.8V		
Charge current		Max 3.3A	Max 4.9A	Max 6.6A
Maximum discharge rate	≦77°F (25℃)	115W / 6.8A (16.8V) ～ 10.5A (11V) *2	154W / 9.2A (16.8V) ～ 14.0A (11V) *2	154W / 9.2A (16.8V) ～ 14.0A (11V) *2
	≦95°F (35℃)	95W / 5.7A (16.8V) ～ 8.6A (11V) *2	125W / 7.4A (16.8V) ～ 11.4A (11V) *2	125W / 7.4A (16.8V) ～ 11.4A (11V) *2
	≦113°F (45℃)	70W / 4.2A (16.8V) ～ 6.4A (11V) *2	95W / 5.7A (16.8V) ～ 8.6A (11V) *2	95W / 5.7A (16.8V) ～ 8.6A (11V) *2
Maximum discharge current	≦77°F (25℃)	9.5A	12.4A	13.0A
	≦95°F (35℃)	7.5A	10.0A	10.0A
	≦113°F (45℃)	5.7A	7.8A	8.0A
D-Tap		Output voltage	Battery through voltage (D-Tap1, D-Tap2)	
		Maximum load	80W / 4.8A (16.8V) ～ 7.3A (11V) (per D-Tap) *3	
USB		Output voltage	DC 5.0V	
		Maximum current	2.3A	
		Connector type	USB Type-A (Receptacles)	
		Auto power off	30 minutes after detection of less than 150mA	
End voltage		11V		
Battery protection circuit		Over-charge, Over-discharge, Over-current, Thermal protection		
Ambient temperature		Charge 32～104°F (0～40℃) (50～86°F (10～30℃) recommended)		
		Discharge -4～113°F (-20～45℃) (50～104°F (10～40℃) recommended)		
		Storage -4～122°F (-20～50℃) (less than 1 month)		
Dimensions	mm	97(W)×146(H)×39(D)	97(W)×146(H)×59(D)	97(W)×146(H)×59(D)
	Inches	3.82(W)×5.75(H)×1.54(D)	3.82(W)×5.75(H)×2.32(D)	3.82(W)×5.75(H)×2.32(D)
Weight	g	approx, 640	approx, 910	approx, 1,100
	lbs	approx, 1.41	approx, 2.00	approx, 2.42

*1. Measured capacity of battery is a minimum rating at 68°F(20℃).
*2. Maximum load is the sum of D-Tapx2, USB and Camera loads.
*3. The maximum power output of the DUO-C98 is 70W at the temperature of 95～113°F (35～45℃).

Storing

- Store in cool and dry conditions.
- Do not store or leave in temperatures of 122°F(50℃) or above.
- For long-term storage, please store with about 30～40% of capacity (with 2 LEDs) and recommend for re-charging every five months.
- Deterioration of battery performance will be accelerated when the battery stored in a high ambient temperature and/or stored for long period without used.

Life cycle

- Life may vary depending on frequency of use, storage and operational temperature environment.
- Life will be reduced if frequently used with high load applications.
- Life is also reduced if stored in fully charged and/or empty conditions for extended periods.

Compensation for recorded content

Recorded content cannot be compensated for if recording or playback is disabled due to a malfunction of the battery pack or other devices.

Battery recycle

This Li-ion battery can be recycled. Please follow the regulations in your country or contact your local IDX office for further details.

Li-ion Battery Air transport Compliance

The Air transport regulations for the lithium-ion batteries will be revised regularly, so please check our website before transporting the battery.
(http://idxtek.com/lithium-ion-transportation/)

EU only

Design and specifications are subject to change without notice.

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