DUO-150
Li-ion V-Mount Battery

Instruction Manual

Thank you for purchasing the DUO-150 Li-ion V-Mount Battery. Prior to using the DUO-150, we strongly recommend reading this Instruction Manual on how to best use the DUO-150 and recommend keeping 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.

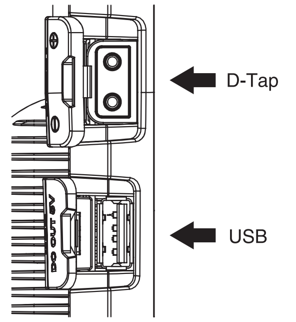
⚠CAUTION

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 displays remaining power capacity. [Refer to Capacity display LEDs]
- DC output connectors for peripheral equipments. [Refer to D-Tap]
- USB power output for charging portable devices. [Refer to USB]
- SB mode can be configured. [Refer to SB Setting]



Charging

- IDX's Lithium-ion battery should be used IDX chargers only. Refer the instruction manual for more detail.
- Estimated charging times may vary depending on the charger and condition of the battery. Refer the website or brochure for more detail.
- An ambient temperature range of charging is 32～104°F (0～40℃) however 50～86°F(10～30℃) is recommended for optimizing the charging performance. When battery charged in the 32°F(0℃) or below, it may not be fully charged even designated time has been passed.
- The battery incur small amount of self discharge therefore IDX recommend to charge prior to use.
- Voltage indication on LCD display on charger may be slight low even charge has been completed. This is due to the protection circuit and not defect of battery.

⚠ 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 0℃ or over 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 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 0℃ or exceeds 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 3 times.

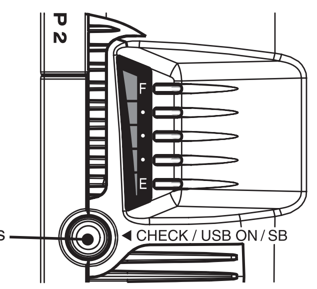
	Reference time intervals for the internal temperature to drop below 40℃ following discharge. (Ambient Temperature : approx. 30℃)
50W Discharge	5 Minutes
60W Discharge	10 Minutes
70W Discharge	20 Minutes
80W Discharge	30 Minutes
94W Discharge	40 Minutes

Discharging

- When using the battery, the total power consumption should not exceed 120W (104°F (40℃) or less). Please carefully calculate the total power consumption of the equipments connected to the battery prior to use. If power loads exceed 120W, an internal protection circuit will activate and stop discharging to protect the battery cells. Excessive power loads may generate an excessive heat which can cause the melt down of fuse to protect from severe damage of the battery.
- The battery life may be reduced if high load has been repeated frequently.
- Battery operation hour 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℃)
- Characteristic of discharge curve of Lithium Ion battery is very steady however it is sharply drops when it's reached 13V or low. For optimum use, IDX recommends that the battery alarm setting in the camera should be 13～13.5V. Refer battery manual setting of camera.
- Battery will automatically stop loading the power when the voltage reached at 12V. To extend battery life, IDX recommends stop using before battery reaches 12V.
- Microwave transmitters with 5W outputs and more output should be kept as far away from the battery as possible as it may disrupt or stop supplying power.

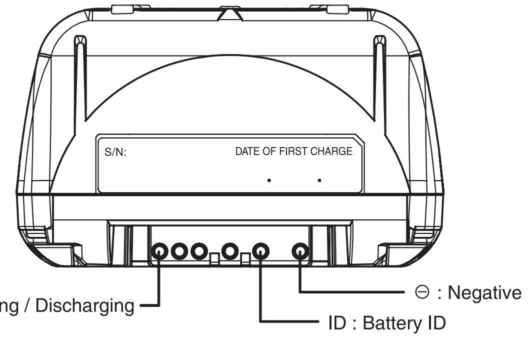
Capacity display LEDs

- Remaining capacity is shown with five LEDs. This is displayed as 20%, 40%, 60%, 80% and 100%.
- When battery capacity reaches less than 9%, the bottom Empty LED starts flashing.
- When the check button is pressed, the LEDs will light for approximately 2.5 seconds.



Capacity \ Display	E	•	•	•	F
100～80%	●	●	●	●	●
79～60%	●	●	●	●	—
59～40%	●	●	●	—	—
39～20%	●	●	—	—	—
19～10%	●	—	—	—	—
9～0%	Flashing	—	—	—	—

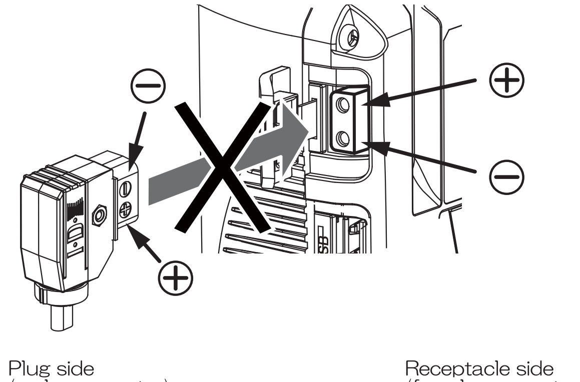
Main connector

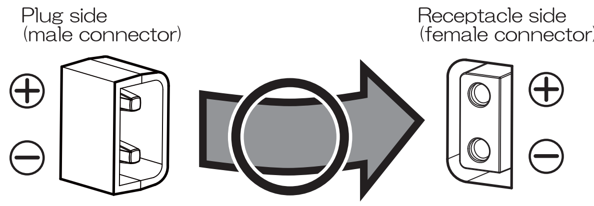


D-Tap

- Two D-Tap power output terminals available.
- A maximum power output is 50W each.
- The output voltage is a battery through. (12～16.8V)
- Do not load the power from D-tap while charging otherwise it may cause of incomplete charging , occurrence of charge error or damage to the charger.
- D-Tap output can be used for IDX portable lights and monitors.

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





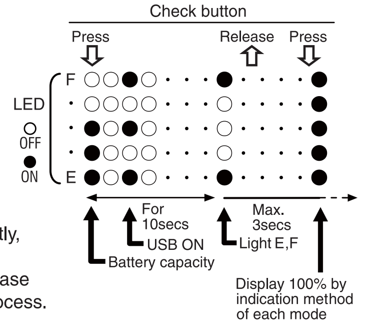
Please confirm the shape of connector and ⊕ ⊖ polarity of plug side prior to connect with receptacle. Please do not force it when felt it is difficulty.

USB

- USB connector for power supply.(DC5V/1A)
- USB connector is A type. (USB Cable should be A type as well).
- To activate the USB power output, push the CHECK/USB ON button for more than three seconds and confirm three LEDs light for three seconds. (E, middle, and F)
- USB power will turn off automatically 30 minutes after the USB cable is removed.
- USB power is inactive while battery is charging.
- This terminal does not provide data, only power.

SB 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.
- The battery's default setting is in the "Normal" mode. SB mode must be activated by the user.
- Activating / Deactivating the SB mode(Activating/ Deactivating the Normal mode)
  - Press the Battery capacity display LEDs check button for more than 10 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.



- Normal mode and SB mode capacity display method
  The LED patterns will indicate the current mode.

  Normal mode: all of the capacity display LEDs will light simultaneously.
  (When the remaining capacity is 100%, 5 positions of LEDs will light simultaneously.)

  SB mode: the capacity display LEDs will light gradually from "E" to "F"

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 thermal fuse is blown, the battery is no longer operable. When temperature of inside of the battery reached 176°F (80℃), battery stops discharging automatically. Discharge will restart when the inside temperature becomes 140°F (60℃) or less.

Specifications

- Cell chemistry : Li-ion
- Nominal voltage : DC 14.8V
- Capacity : 9.8Ah/146Wh *1
- Charge voltage : DC 16.8V
- Charge current : Max 4.9A
- Maximum discharge rate : 10A / 120W (104°F (40℃) or less) *2
  : 7.9A / 95W (104~113°F(40~45℃)) *2
- End voltage : 12V
- 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℃) (One month)
- Dimensions / Weight : 97(W) × 146(H) × 59(D)mm / approx, 1050g
  : 3.82(W) × 5.75(H) × 2.32(D)inches / approx, 2.31lbs
- D-Tap output voltage : Battery through voltage (D-Tap1, D-Tap2)
  maximum load : 50W (per D-Tap) *2
- USB output voltage : DC 5.0V
  Maximum current : 1.0A *2 (5W *2)
  connector type : USB Type-A (Receptacles)
  auto power off : 30 minutes after detection of less than 30mA

*1. Measured capacity of battery is a minimum rating at 20℃.
*2. Maximum load is the sum of D-Tap, USB and Camera loads (Total must be less than 120W).

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 20~30% of capacity 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.

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 (as of Jan 1st, 2015)

The battery is classified as Class9 Dangerous Goods product by Dangerous Goods Regulations of the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA). This battery will be required to follow certain procedures at times of shipping and/or transporting.

International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) rules and regulations:

- Battery is proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3.
- Lithium ion batteries exceeding a Watt-hour rating of 100Wh but not exceeding 160Wh.
- The Watt-hour rating must be labeled on the outside of the battery case. As for lithium ion battery, it is necessary to indicate the Watt-hour rating on the case exterior.

DUO-150 has passed the tests for United Nations Recommendations on the Transport of Dangerous Goods. DUO-150 is labeled as exceeding a Watt-hour rating of 100Wh but less than 160Wh.

For carry-on baggage

Bringing batteries on an aircraft as carry-on baggage is permitted if approved by the airline; IDX recommends checking airline rules and regulations before traveling.
If the battery is attached to equipment, it can be checked-in baggage or carry-on baggage.
Spare batteries are permitted for carry-on but are limited to 2 batteries per person.
Be sure to protect the battery terminals by covering them with tape or inserting the battery in a plastic bag.
DUO-150 cannot be checked-in and must be carried onboard.

For cargo

- Battery only (Packing Instruction 965 Section I.A)
- Battery packed with equipment (Packing Instruction 966 Section I)
  One packing can be included for a minimum quantity of battery to power equipment and spare batteries for up to 2pcs.
- Battery contained on / in equipment (Packing Instruction 967 Section I)
  - Packing must follow Class 9 Dangerous Goods regulations.
  - There is no limit to the number of batteries per package.
  - For passenger plane transportation, the package must be 11 lbs (5 kg) or less.
  - For cargo plane transportation, the package must be 77 lbs (35 kg) or less.
  - Batteries must meet the Packing Group II performance standards.
  - Use a strong cardboard box to meet Packing Group II.
  - The packages will require
    Class9 label.
    Name and address of shipper and consignee.
    Proper shipping name,
    UN number (UN3480 Lithium ion batteries or
    UN3481 Lithium ion batteries packed with equipment or
    UN3481 Lithium ion batteries contained in equipment)
  - When battery package weight exceeds 11 lbs (5 kg), the CAO label is necessary.
  - In addition, a dangerous goods declaration that contains the sender and consignee information must be submitted to the transporter.

Dangerous Good regulations are subject to change. Please comply with the most updated regulations.

for China only

环保使用期限

这些标志根据2006/2/28公布的“电子信息产品防止污染管理办法”以及“对于电子信息产品污染控制标示的要求”，是适用于在中国销售的电子信息产品的环境保护使用期限。

注意）环境保护使用期限为在正常的使用条件下有害物质等不泄漏的期限，不是保证产品功能性能的期间。

有毒有害物质的名称，含量，含有部位的标示

品名		有毒有害物质或元素					
		铅 Pb	汞 Hg	镉 Cd	六价铬 Cr^{6+}	多溴联苯 PBB	多溴联苯醚 PBDE
主体	机构部件	○	○	○	○	○	○
	电气部件	×	○	○	○	○	○

○ :表示该部件材料的所有均质材料中有毒有害物质的含量均在SJ/T11363-2006标准所规定 的限度量要求以下。
× :表示至少该部件材料有一个均质材料中该有毒有害物质的含量超过了SJ/T11363-2006标准所 规定的限度量的要求。

Design and specification are subject to change without notice. 201503

http://www.idx.tv
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EU only

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