di-GPS®

Eco ProSumer PS10-M

digital images GPS receiver

Users Guide

Ver 1.21

Please visit our website **www.di-gps.com** for the latest version of the user guide

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INTRODUCTION

Thank you for purchasing **di-GPS®** Eco ProSumer PS10-M series GPS receiver (digital images GPS).

di-GPS® Eco ProSumer PS10-M series GPS receiver (thereafter "Eco PS10-M GPS") is specially designed for a DSLR (Digital Single-lens Reflex) camera. It provides real time position (latitude, longitude, elevation) and the precise time (UTC time) information to your DSLR camera. It records the locations to each digital image file so that you will never forget the exact location where you took the pictures.

Eco PS10-M GPS has built with the latest third generation MTK MT3339 ultra low power consumption GPS engine. It supports up to 66 channels of satellite tracking with -165dBm sensitivity. Eco PS10-M GPS repeats the last fixed position(1) when no GPS signal is available or the unit is out of GPS coverage with real UTC date/time.

Eco PS10-M GPS allows you to save your present location data to your digital image file. Its State-Of-The-Art technology provides extremely fast TTFF (Time-To-First-Fix), unrivaled high sensitivity and superior performance in virtually any outdoor environment. Eco PS10-M GPS receiver can work in a place where GPS was not possible before: in the woods, under very heavy foliage, canyons, terrain obstructions, in cities with densely populated high-rise buildings and even inside a train or a car, with no external antenna required. It is designed to meet the rigorous demands of today's digital photographers.

Note (1) : Not applicable to Nikon Coolpix P7700

WARNING / PRECAUTION FOR USE (I)

- Keep out of reach of children. This device contains small parts that may pose a choking hazard. Consult a physician immediately if a child swallows any part of this device.
- Under no circumstances should you attempt to disassemble the product and repair it yourself. Doing so may result in electric shock or product malfunction. Should the product break open as the result of a fall or other accident, send the unit to Dawn Technology Limited for inspection. For more information, please visit our web site at www.di-gps.com.
- Do not handle with wet hands or immerse in or expose to water or rain. Failure to observe this precaution could result in fire or electric shock.
- Do not use in the presence of flammable gas. Failure to observe this precaution could result in explosion or fire.
- Do not expose to flame or excessive heat.
- Do not expose to high temperatures.
- Do not leave the device in a closed vehicle under the sun or in other areas subject to extremely high temperatures. Failure to observe this precaution could result in fire or in damage to the casing or internal parts.
- Turn off immediately in the event of malfunction. Should you notice smoke or an unusual smell coming from this device, remove the 10 pins connector immediately and send the unit to Dawn Technology Limited for inspection. For more information, please visit our web site at www.di-gps.com.

Important WARNING

Do not put the camera to the bag with the GPS at the bottom (as shown in the picture below). Failure to do so may cause permanent damage to the GPS unit and/or the camera's terminal.

PART NAMES OF ECO PS10-M GPS

A – Power Mode Switch

B – Status LED

C – Connector to DSLR camera

D – Shutter release socket (2.5mm)

CONNECTING ECO PS10-M GPS TO CAMERA

Direct connect Eco PS10-M GPS to the accessory terminal of the DSLR camera body.

How the strip be attached

Remote control accessory can be connected to the 2.5mm remote terminal of Eco PS10-M GPS for remote shutter release.

NOTE

- Eco PS10-M GPS cannot be turned on when the camera is not connected.
- Please refer to user guide of your DSLR for more information on taking photographs with a GPS receiver.
- Be sure to turn off your camera before disconnecting Eco PS10-M GPS. Do not connect or disconnect Eco PS10-M GPS while the camera is on. Failure to observe this precaution could cause a malfunction of the camera.
- Do not carry the camera by Eco PS10-M GPS or subject the camera or the unit to physical shocks while the unit is connected. Failure to observe this precaution could result in physical damage of the unit or the camera's GPS terminals.
- Re-place the caps on the camera when the terminals are not in use.

CONNECTING ECO PS10-M GPS TO CAMERA

Connect the DSLR camera and Eco PS10-M GPS as described below.

1. Turn off the camera.

2. Remove the cap from the accessory terminal on the camera body.

3. Attach the Eco PS10-M GPS directly to the accessory terminal on camera. Do not use any extension cord.

4. Switch the power mode to “On” or “Auto”.

5. Turn the camera on.

6. If Eco PS10-M GPS is properly connected, the camera will display a blinking icon on the top control panel / LCD monitor of DSLR camera. It means Eco PS10-M GPS is searching for a signal. The icon will stop blinking once signal has been established and Eco PS10-M GPS is ready for supplying the current position.

7. Eco PS10-M GPS will automatically detect the connection of the camera. It cannot be turned on when the camera is not connected whatever the power mode switch is set to "On" or "Auto". Both "On" and "Auto" mode only function when the camera is properly connected.

RECORDING GPS DATA (I) – D SERIES

When Eco PS10-M GPS connects to **Nikon D600, D90, D3100, D3200, D5000, D5100, D5200, D7000 and D7100 :-**

STATUS LED (on Eco PS10-M)	GPS ICON (on camera)	DESCRIPTION
 Flashing	 Flashing Icon	• **No fix, Signal searching** • No Last Position Memory Output • **No GPS data** will be recorded in the photos
 Flashing	 Icon Steady	• **No fix, Signal searching** • **Last Position Memory output** with current UTC date/time to the camera until new fix is available, **Altitude: 0m** • **Last fixed GPS position will be recorded to the photos**
 Steady On	 Icon Steady	• **Fix available** • Eco PS10-M GPS continuously sends the **current GPS position** to the camera.

NOTE

- LED on Eco PS10-M GPS only represents the status of Eco PS10-M GPS, but not the reception of GPS data to the DSLR camera.
- GPS data are only recorded when GPS icon displayed on the LCD panel / LCD monitor of DSLR camera. Please make sure that GPS icon is displayed before shooting.

RECORDING GPS DATA (I) – Z SERIES

For Z6, Z7, Z6ii, Z7ii, Z6iii

Connect ECO PF-2 GPS to the camera and turn the camera on.

MENU button -> setup menu -> Location Data -> Position

("Position" can access only when GPS/GNSS device is connected)

STATUS LED (on GPS)	Location data in "Position"	DESCRIPTION
 Blinks	Latitude : ---°--.---' Longitude : ---°--.---' Altitude : --m UTC : --/--/----	• **No fix, Signal searching** • No Last Position Memory output • **No GPS data** will be recorded in the photos
 Blinks	Latitude : N 35°36.371' Longitude : E 39°43.696' Altitude : 0m UTC : 19/01/2024 16:25:32	• **No fix, Signal searching** • **Last Position Memory output** with current UTC date/time to the camera until new fix is available, **Altitude: 0m** • **Last fixed GPS position** will be recorded to the photos
 Steady On	Latitude : N 35°36.371' Longitude : E 39°43.696' Altitude : 35m UTC : 17/09/2024 17:42:46	• **Fix available** • ECO PF-2 GPS continuously sends **the current GPS position** to the camera.

NOTE

- LED on ECO PF-2 GPS only represents the status of ECO PF-2 GPS but not the reception of GPS data to the camera.
- Location data is only recorded when valid location data display in the Location Data -> Position. Please check the Location Data before shooting.
- The location data provided in the above table is for illustrative purposes only and does not reflect the actual data displayed on your camera.

RECORDING GPS DATA (II)

When Eco PS10-M GPS connects to **Nikon Coolpix P7700 :-**

STATUS LED (on Eco PS10-M)	GPS ICON (on camera)	DESCRIPTION
 Flashing	 Icon in Red colour	• **No fix, Signal searching** • No Last Position Memory Output • **<u>No GPS data</u>** will be recorded in the photos.
 Steady On	 or  Icon in white colour	• **Fix available** • Eco PS10-M GPS continuously sends the **<u>current GPS position</u>** to the camera.

NOTE

- LED on Eco PS10-M GPS only represents the status of Eco PS10-M GPS, but not the reception of GPS data to the camera.
- GPS data are only recorded when  ,  or  icon displayed on shooting screen of camera. Please make sure that  ,  or  icon is displayed before shooting.

RECORDING GPS DATA (III)

Each satellite broadcasts a digital message that contains two types of information. One type is ephemeris data, which includes the assigned serial number of the satellite, the status of the satellite (healthy or faulty), current date and time. The second type is almanac data which includes precise orbital position of every satellite in the system.

At the initial stage, ECO PS10-M GPS needs all these data for the position fixed. It usually takes a minute to few minutes to receive all data. An open sky outdoor environment will enable faster acquisition process. It will take a longer time at a weak signal environment. Once Eco PS10-M GPS locks to the satellites, it will take a few seconds for reacquisition even at weak signal environment.

The **EASY™** function is Embedded Assist System for quick positioning. Eco PS10-M GPS will calculate and predict automatically the single emperies (Max. up to 3 days) when power on, and save the predict information into the memory, Eco PS10-M GPS will use these information for positioning if no enough information from satellites, this function will be helpful for positioning weak signal environment.

Before the **EASY™** function works properly, Eco PS10-M GPS needs to collect enough information from satellites. The GPS usually needs 1-2 minutes to collect all information from satellites after the first fix. Please let the GPS turn on for 1-2 minutes after the first fix for the first time of use.

Eco PS10-M GPS has a memory backup capacitor inside. The capacitor can provide about two minutes power to the internal memory after disconnect from the camera of changing battery. To avoid the lost of ephemeris data in the internal memory, Eco PS10-M GPS should be connected to the camera all the time. The internal memory only consumes a very small amount of energy, it will not affect the battery life of the camera. As the ephemeris data only be good for 3 days maximum, Eco PS10-M GPS should be disconnected from the camera if the camera will not be used for a long period of time.

POWER MODE SWITCH (I)

When Eco PS10-M GPS connects to **Nikon D600, D90, D3100, D3200, D5000, D5100, D5200, D7000 and D7100:-**

POWER MODE	DESCRIPTION
 ON	• Eco PS10-M GPS is **"<u>on</u>"**, no matter the camera is on or off. • It sends current GPS location to the camera when locked to satellites. • Last Position Retention ("LPR") function enabled.
 AUTO	***When metering system active:*** • Eco PS10-M GPS turns **<u>on</u>** automatically. • It sends current GPS location to the camera when locked to satellites. ***When metering system inactive:*** • Eco PS10-M GPS turns **<u>off</u>** automatically.
 OFF	• Eco PS10-M GPS in **<u>off</u>** state.

POWER MODE SWITCH (II)

When Eco PS10-M GPS connects to **Nikon Coolpix P7700** :-

<table>
<tr><th>POWER MODE</th><th>DESCRIPTION</th></tr>
<tr><td> 
ON</td><td rowspan="2">When P7700 is ON:

• Eco PS10-M GPS turns <u>on</u> automatically.
• It sends current GPS location to the camera when locked to satellites.

When P7700 is OFF:

• Eco PS10-M GPS turns <u>off</u> automatically.</td></tr>
<tr><td> 
AUTO</td></tr>
<tr><td> 
OFF</td><td>• Eco PS10-M GPS in <u>off</u> state.</td></tr>
</table>

LAST POSITION RETENTION ("LPM")

Eco PS10-M GPS is able to provide the **last known GPS position with current UTC date / time** [(1)] to the DSLR camera even if there is the GPS signal is lost or the unit is out of the GPS coverage.

- **No fix** will be reported when no GPS position. The camera's GPS icon will flash and no GPS data will be recorded.
- **A first fix** is needed during initialization before the LPR works properly.
- Current GPS position will immediately be reported to the camera once the new fix available.
- Last known GPS position with current UTC date / time will be continuously reported when the GPS signal is lost, the unit is out of GPS coverage, until there is a good position fix.
- The last known position will be saved to internal memory every 5 seconds. The GPS unit has a built-in power backup capacitor. The capacitor provides about two minutes power to the internal memory / internal clock running after disconnecting from the camera. When the power of internal capacitor exhausted, the GPS unit will report no GPS position. The camera's GPS icon will flash and no GPS data will be recorded.

Note (1) : Not applicable to Nikon Coolpix P7700

SPECIFICATIONS

General	Chipset MTK MT3339 Frequency L1, 1575.42 MHz C/A code 1.023 MHz chip rate Channels 66 channels all-in-view tracking
Sensitivity	Acquisition -148dBm (Cold Start), -165 dBm tracking
Accuracy (Open Sky)	Position 10 meters, 2D RMS 5 meters, 2D RMS, WAAS enabled Velocity 0.1 m/s Time 1us synchronized to GPS time
Datum	WGS-84
Acquisition Time (Open sky, stationary requirements)	Reacquisition Less than 1 sec., average Hot start 1 sec., average Warm start 33 sec., average Cold start 35 sec., average (No. of SVs>4, C/N>40dB, PDop<1.5)
Dynamic Conditions	Altitude: Maximum 18,000m Velocity: Maximum 515m/s Acceleration: Maximum 4G
Power Source	Powered from DSLR camera via 10 pin connector Current consumption: 21mA acquisition, 19mA tracking
Protocol	Baud rate 4,800 bps Output message NMEA 0183
Interface	Nikon rectangle 10 pin connector direct connect to Nikon DSLR cameras
Physical Characteristics	Dimension 53mm*23mm*14mm Weight: 18g Operating Temperature -10°C to +45°C Operating Humidity: 5% to 90%, No Condensing

WARRANTY

- Dawn Technology Limited provides a one-year warranty from the date of purchase, covering any defects in materials or workmanship. During the one-year warranty, Dawn Technology will repair or replace the product free of charges. Please keep your original invoice as proof of purchase.
- Customers who have products covered under the warranty are required to contact Dawn Technology Limited by e-mail for troubleshooting issues before returning product.
- Customer should responsible for shipping and insurance charges for returning the product to Dawn Technology Limited.
- Charges will be imposed for repair product, which is out of warranty coverage or invalid warranty.
- The guarantee is not valid if defect is due to damage caused by incorrect use, poor maintenance or if alterations or repairs have been carried out by persons not authorized by Dawn Technology Limited.
- For the device to be used correctly, the user should strictly adhere to all instructions included in the user guide and should abstain from any actions or uses that are described as undesired or which are warned against in the user guide.

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