

di-GPS®

Eco ProFessional PF1-M

digital images GPS receiver

Users Guide

Ver 1.1

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 ProFessional PF1-M GPS receiver (digital images GPS).

di-GPS® ECO ProFessional PF1-M GPS receiver (hereafter “ECO PF1-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 PF1-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 searching with -165dBm sensitivity. ECO PF1-M GPS repeats the last fixed position when no GPS signal is available or the unit is out of GPS coverage with real UTC date/time.

ECO PF1-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 PF1-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.

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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 GPS unit immediately and send the unit to Dawn Technology Limited for inspection. For more information, please visit our web site at www.di-gps.com.

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WARNING / PRECAUTION FOR USE (II)

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.



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PART NAMES OF ECO PF1-M GPS

A – Status LED

B – Connector to DSLR camera

C – 10 pin remote terminal cover

D – Locking nut

E – 10 pin remote terminal



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CONNECTING ECO PF1-M GPS AND REMOTE CONTROL SOCKET



Attach the strip to the eyelet of camera. Insert the ECO PF1 GPS to the 10 pin remote terminal of the DSLR camera body. Tighten the locking nut.



An optional Nikon remote control accessories (MC-30, MC-36) can be connected to the 10 pin remote terminal of ECO PF1 GPS for remote shutter release. Remove the 10 pin remote terminal cover before using the Nikon remote control accessories.

NOTE

- ECO PF1-M GPS cannot be turned on when the camera is not connected.
- Please refer to user manual of your DSLR for more information on taking photographs with a GPS receiver.
- Be sure to turn off your camera before disconnecting ECO PF1-M GPS. Do not connect or disconnect ECO PF1-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 PF1-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.
- Re-place the cover on the camera when the terminal is not in use.

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POWER SUPPLY

ECO PF1-M GPS is not equipped with battery and On/Off switch. Power is supplied from the camera's battery via 10 pin connector.

The power On/Off is controlled by the camera, the GPS turn on when the camera's metering system is on, the GPS turn off when the camera's metering system is off.

CAMERA SETTING

In the camera setting, the **GPS** item in the setup menu contains two options as below:

Auto Meter-Off⁽¹⁾ – Enable

When select **GPS > Auto meter-off > Enable** in the Setup menu, the exposure meters will be turned off automatically according to the time specified⁽²⁾ in the camera menu. This reduces the drain on the battery but may prevent GPS data from being recorded if the exposure meters are not activated until immediately before the picture is taken. Check that the **GPS** icon is displayed before shooting.

Remark

(1) **Auto meter-off** is only available for D4, D3, D3s, D3x, D800, D800E, D700, D300 and D300s and is not available for D2X, D2XS, D2HS and D200.

(2) Time specified will be overridden by **Auto Meter-off delay** function in the camera when GPS data cannot be acquired in the specified time. **Auto Meter-off delay** allows the camera time to acquire GPS data, the delay is extended by up to one minute after exposure meters are activated or the camera is turned on.

Auto Meter Off – Disable







Exposure meters will not turn off while a GPS unit is connected. GPS data will always be recorded. The drain on the camera battery can be reduced by turn off the camera when not in use.

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RECORDING GPS DATA (I)

Connect ECO PF1-M GPS to the camera and turn the camera on.

If ECO PF1-M GPS is properly connected, the LED of ECO PF1-M GPS will start blinks and a **GPS** icon will be displayed on the LCD panel / LCD monitor. The blinking LED means the GPS receiver is searching for a signal. The **GPS** icon will stop blinking once signal has been established and the camera is ready for record the current position.

STATUS LED (on GPS)	GPS ICON (on camera)	DESCRIPTION
 Blinks	 Blinks Icon	<ul style="list-style-type: none"> • No fix, Signal searching • No Last Position Memory output • No GPS data will be recorded in the photos
 Blinks	 Icon Steady	<ul style="list-style-type: none"> • No fix, Signal searching • Last Position Memory output with current UTC date/time to the camera until new fix available • Last fixed GPS position will be recorded to the photos.
 Steady On	 Icon Steady	<ul style="list-style-type: none"> • Fix available • ECO PF1-M GPS continuously sends the current GPS position to the camera.

NOTE

- LED on ECO PF1-M GPS only represents the status of ECO PF1-M GPS, but not the reception of GPS data to the camera.
- GPS data is only recorded when **GPS** icon displayed on the LCD panel / LCD monitor of DSLR camera. Please make sure that the **GPS** icon is displayed before shooting.

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RECORDING GPS DATA (II)

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 and includes precise orbital position of every satellite in the system.

At the initial stage, ECO PF1-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 PF1-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 PF1-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 PF1-M GPS will use these information for positioning if not enough information from satellites, this function will be helpful for positioning weak signal environment.

Before the **EASY™** function works properly, ECO PF1-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 PF1-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 PF1-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 PF1-M GPS should be disconnected from the camera if the camera will not be used for a long period of time.

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LAST POSITION MEMORY (“LPM”)

ECO PF1-M GPS is able to provide the **last known GPS position with current UTC date / time** 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.

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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 Without aid 10 meters (50%CEP) DGPS (SBAS, WAAS, EGNOS, MASA) 5 meters (50%CEP) 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: 19mA acquisition, 17mA tracking
Protocol	Baud rate 4,800 bps Output message NMEA 0183
Interface	Nikon 10 pin connector direct connect to Nikon DSLR cameras
Physical Characteristics	Dimension 40mm*25mm*22mm Weight: 14g Operating Temperature -10°C to +45°C Operating Humidity: 5% to 90%, No Condensing

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WARRANTY

- Dawn Technology Limited guarantees its product, which is determined to be defective or faulty materials and workmanship, for a period of one year after the date of purchase. 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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