

di-GPS® Mini 3-MTK series **digital images GPS receiver**

Users Guide

Ver 3.0

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



CONTENTS

CONTENTS	1
INTRODUCTION	2
WARNING / PRECAUTION FOR USE.....	3
PART NAMES OF M3-MTK GPS.....	4
CONNECTOR CABLE OF M3-MTK GPS.....	5
M3-MTK GPS PROVIDES TWO MOUNTING METHODS	6
HOW TO CONNECT M3-MTK GPS TO CAMERA BODY (1).....	7
HOW TO CONNECT M3-MTK GPS TO CAMERA BODY (2).....	8
POWER MODE SWITCH (1).....	9
POWER MODE SWITCH (2).....	10
GPS STATUS LED INDICATOR FOR M3-MTK GPS FIX (1)	11
GPS STATUS LED INDICATOR FOR M3-MTK GPS FIX (2)	12
LAST POSITION RETENTION (“LPR”)	13
SPECIFICATIONS.....	14
WARRANTY.....	14

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000,
D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN
THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE
UNITED STATES AND/OR OTHER COUNTRIES.

INTRODUCTION

Thank you for purchasing **di-GPS®** Mini 3-MTK series GPS receiver (digital images GPS).

di-GPS® Mini 3-MTK series GPS receiver (thereafter “M3-MTK 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.

M3-MTK 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. M3-MTK 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.

M3-MTK 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. M3-MTK 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

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

WARNING / PRECAUTION FOR USE

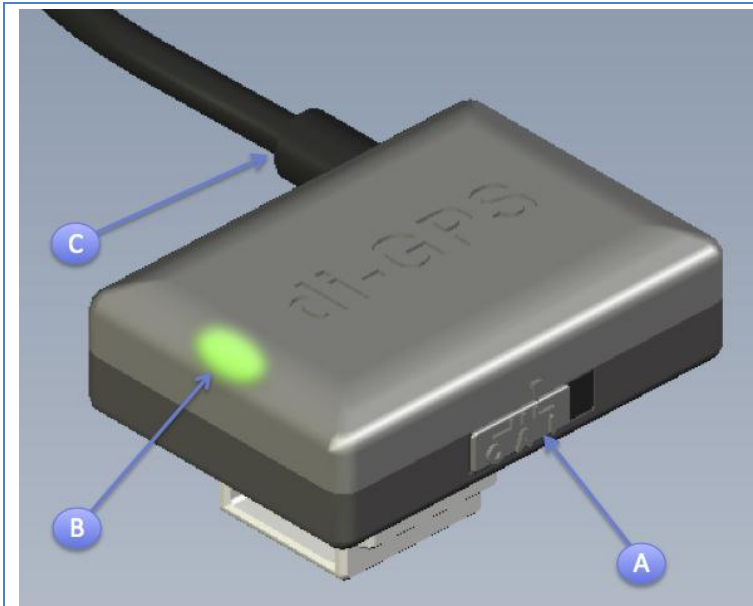
- Keep out of reach of children. This device contains small parts that may pose a choking hazard. Consult a physician immediately if a child swallows any part of this device.
- Under no circumstances should you attempt to disassemble the product and repair it yourself. Doing so may result in electric 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.

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

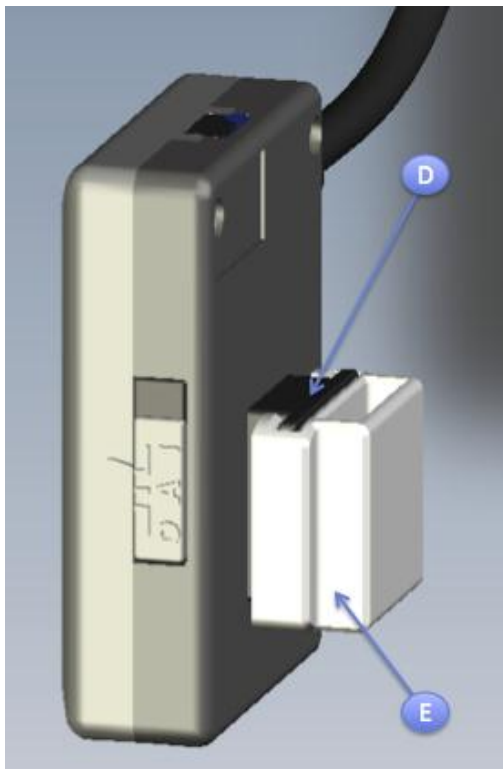
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

PART NAMES OF M3-MTK GPS



- A – Power Mode Switch
- B – Status LED
- C – Cable to DSLR camera



- D – Flash Accessory Shoe Mount
- E – Camera Strap Mount

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000,
D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN
THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE
UNITED STATES AND/OR OTHER COUNTRIES.

CONNECTOR CABLE OF M3-MTK GPS

M3-MTK GPS in three different models:

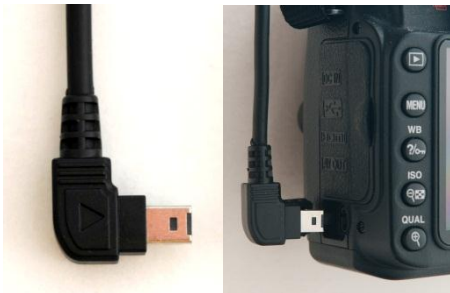
1. di-GPS® M3-MTK-S3

with circular 10 pin connector for D3, D3S, D3X, D4, D700, D800, D800E, D300, D300S, D2XS, D2X, D2HS, D200 & Fujifilm S5 Pro



2. di-GPS® M3-MTK-S9

with "L" shape rectangular 10pin connector for D90



3. di-GPS® M3-MTK-S5

with "L" shape rectangular 10pin connector for D600, D3100, D3200, D5000, D5100, D7000 and P7700



DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

M3-MTK GPS PROVIDES TWO MOUNTING METHODS

It can be mounted on the flash accessory shoe or attached to the camera strap.

Diagram 1 : M3-MTK GPS mounted on the flash accessory shoe



Diagram 2 : M3-MTK GPS attached to the camera strap with strap mount accessory



DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000,
D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN
THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE
UNITED STATES AND/OR OTHER COUNTRIES.

HOW TO CONNECT M3-MTK GPS TO CAMERA BODY (1)

Connect the DSLR camera and M3-MTK GPS as described below.

1. Turn off the camera.
2. Remove the cap from the 10 pin remote terminal on the camera body.
3. Connect the 10 pin connector of M3-MTK GPS to the 10 pin remote terminal on camera. Do not use any extension cord. For exact cable connector of different models, please refer to Page 5 – Connector Cable of M3-MTK GPS.
4. Switch the power mode to “On” or “Auto”.
5. Turn the camera on.
6. If M3-MTK GPS is properly connected, the camera will display a blinking icon on the top control panel. It means M3-MTK GPS is searching for a signal. The icon will stop blinking once signal has been established and M3-MTK GPS is ready for supplying the current position.
7. M3-MTK 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.
8. 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, M3-MTK 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 M3-MTK GPS locks to the satellites, it will take a few seconds for reacquisition even at weak signal environment.

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

HOW TO CONNECT M3-MTK GPS TO CAMERA BODY (2)


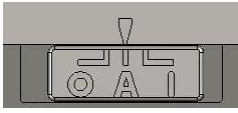
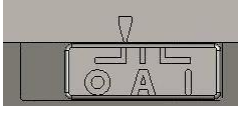
NOTE

- M3-MTK GPS cannot be turned on when the camera are 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 M3-MTK GPS. Do not connect or disconnect M3-MTK GPS while the camera is on. Failure to observe this precaution could cause a malfunction of the camera.
- Do not carry the camera by M3-MTK GPS or subject the camera or cord to physical shocks while the cord is connected. Failure to observe this precaution could result in physical damage of the cord.
- Re-place the caps on the camera when the terminals are not in use.

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

POWER MODE SWITCH (1)

When M3-MTK GPS connects to **Nikon D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000** :-

POWER MODE	DESCRIPTION
 <p>ON</p>	<ul style="list-style-type: none"> M3-MTK GPS is "on", 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.
 <p>AUTO</p>	<p>When metering system active:</p> <ul style="list-style-type: none"> M3-MTK GPS turns on automatically. It sends current GPS location to the camera when locked to satellites. <p>When metering system inactive:</p> <ul style="list-style-type: none"> M3-MTK GPS turns off automatically.
 <p>OFF</p>	<ul style="list-style-type: none"> M3-MTK GPS in off state.


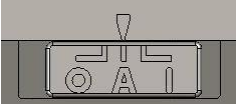
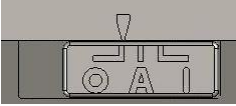
DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

POWER MODE SWITCH (2)

When M3-MTK GPS connects to **Nikon Coolpix P7700** :-

POWER MODE	DESCRIPTION
 <p>ON</p>	<p>When P7700 is ON:</p> <ul style="list-style-type: none"> • M3-MTK GPS turns on automatically. • It sends current GPS location to the camera when locked to satellites. <p>When P7700 is OFF:</p> <ul style="list-style-type: none"> • M3-MTK GPS turns off automatically.
 <p>AUTO</p>	
 <p>OFF</p>	<ul style="list-style-type: none"> • M3-MTK GPS in off state.







DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

GPS STATUS LED INDICATOR FOR M3-MTK GPS FIX (1)

When M3-MTK GPS connects to **Nikon D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000** :-

STATUS LED (on M3-MTK)	GPS ICON (on camera)	DESCRIPTION
 Flashing	 Flashing Icon	<ul style="list-style-type: none"> • No fix, Signal searching • <u>No GPS data</u> will be recorded in the photos.
 Flashing	 Icon Steady	<ul style="list-style-type: none"> • No fix, Signal searching • M3-MTK GPS continuously sends the <u>last known position</u> with current UTC date / time to the camera until new fix available. (only available in "ON" mode)
 Steady On	 Icon Steady	<ul style="list-style-type: none"> • Fix available • M3-MTK GPS continuously sends the <u>current GPS position</u> to the camera.

NOTE

- LED on M3-MTK GPS only represents the status of M3-MTK GPS, but not the reception of GPS data to the DSLR camera.
- GPS data are only recorded when **GPS** icon displayed on the top of LCD panel of DSLR camera. Please make sure that **GPS** icon is displayed before shooting.






DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.







FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

GPS STATUS LED INDICATOR FOR M3-MTK GPS FIX (2)

When M3-MTK GPS connects to **Nikon Coolpix P7700** :-

STATUS LED (on M3-MTK)	GPS ICON (on camera)	DESCRIPTION
 Flashing	 Icon in Red colour	<ul style="list-style-type: none"> • No fix, Signal searching • <u>No GPS data</u> will be recorded in the photos.
 Steady On	 or  Icon in white colour	<ul style="list-style-type: none"> • Fix available • M3-MTK GPS continuously sends the <u>current GPS position</u> to the camera.

NOTE

- LED on M3-MTK GPS only represents the status of M3-MTK 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.

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

LAST POSITION RETENTION (“LPR”)

M3-MTK 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 report when the GPS signal is lost, the unit is out of GPS coverage, until there is a good position fix.
- The LPR function works only in “ON” power mode, the last known position will be cleared once the power turns off.

Note (1) : Not applicable to Nikon Coolpix P7700

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

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 cable Current consumption: 21mA acquisition, 19mA 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 48mm*34mm*14mm Weight: 50g Operating Temperature -10°C to +45°C Operating Humidity: 5% to 90%, No Condensing

* Specifications are subject to change without any notice.

WARRANTY

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.

NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.

FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.

- 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.

Information in this document is subject to change without notice. Dawn Technology Limited reserves the right to change or improve their products and to make changes in the content without obligation to notify any person or organization of such changes or improvements.

DI-GPS® IS A REGISTERED TRADEMARK OR A TRADEMARK OF DAWN TECHNOLOGY LIMITED.
NIKON D2HS, D2X, D2XS, D200, D3, D3S, D3X, D300, D300S, D600, D700, D800, D90, D3100, D3200, D5000, D5100, D7000 AND P7700 ARE REGISTERED TRADEMARK OR A TRADEMARK OF NIKON CORPORATION IN THE UNITED STATES AND/OR OTHER COUNTRIES.
FUJIFILM AND S5 PRO ARE REGISTERED TRADEMARK OR A TRADEMARK OF FUJIFILM U.S.A., INC. IN THE UNITED STATES AND/OR OTHER COUNTRIES.