Service Manual

Digital Camera

Model No. **DMC-FT6GA**
DMC-FT6GN
DMC-TS6P

Simplified
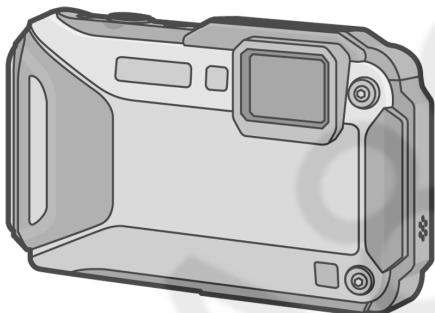
Colour
(A).........Blue Type
(R).........Red Type
(D).........Orange Type
(Z).........Camouflage Type (Except GA)

**Please use this manual together with the service manual for
Model No.DMC-FT5EG/EP/EF/EB/EE/GC/GA/GN/EA,DMC-TS5P/PC/PU/GH/GT/GD :
Order No.DSC1304010CE.**

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service
or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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Panasonic ®

1 Introduction

- The purpose of issuing this Service Manual is that to introduce the following newly added models.
  DMC-FT6GA/GN,DMC-TS6P.
- This Service Manual contains technical information which will help service personnel to understand and service the
  Digital Camera ; DMC-FT6GA/GN,DMC-TS6P.
- Since this Service Manual does not cover the same part which is already described in the Original Service Manual for
  DMC-FT6,TS6 series series, when servicing, refer to the descriptions in the Service Manual for
  DMC-FT5EG/EP/EF/EB/EE/GC/GA/GN/EA,DMC-TS5P/PC/PU/GH/GT/GD Order No.DSC1304010CE.

2 Service Navigation

2.1. How to Define the Model Suffix (NTSC or PAL model)

There are seven kinds of DMC-FT6/TS6, regardless of the colours.
- a) DMC-TS6P
- b) DMC-FT6GN
- c) DMC-FT6GA

What is the difference is that the "INITIAL SETTINGS" data which is stored in Flash ROM mounted on Main P.C.B.

2.1.1. Defining methods

To define the model suffix to be serviced, refer to the nameplate which is putted on the bottom side of the Unit.

a) DMC-TS6P
The nameplate for these models show the following Safety registration mark.

b) DMC-FT6GN
The nameplate for this model show the following Safety registration mark.

Safety registration mark

c) DMC-FT6GA
The nameplate for these models do not show any above safety registration mark.

Note:
After replacing the Main P.C.B., be sure to achieve adjustment.
The Maintenance software (DIAS) is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

2.1.2. INITIAL SETTINGS

After replacing the Main P.C.B., be sure to perform the initial settings after achieving the adjustment by ordering the following procedure in accordance with model suffix of the unit.

1. IMPORTANT NOTICE:

Before proceeding Initial settings, be sure to read the following CAUTIONS.

CAUTION 1:(INITIAL SETTINGS)

---AFTER REPLACING THE MAIN P.C.B. ---

*.The model suffix can be chosen <u>JUST ONE TIME.</u>
   (Model suffix : DMC-FT6; "GA/GN", DMC-TS6; "P")

*.Once one of the model suffix has been chosen, the model suffix lists will not be displayed,
   thus, it can not be changed.

CAUTION 2:(Stored picture image data in the unit)

This unit employs "Built-in Memory" for picture image data recording.(Approx.10MB)
After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

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2. PROCEDURES:

• Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully

• Preparation:

    1. Attach the Battery to the unit.

    2. Set to <u>PROGRAM AE</u> mode by operating the mode button.

  Note:

    If the picture mode is other than <u>PROGRAM AE</u> mode, it does not display the initial settings menu.

• **Step 1. The temporary cancellation of "INITIAL SETTINGS":**

While keep pressing "<u>UP</u> of Cursor button" and <u>MOTION PICTURE</u> button simultaneously, turn the Power on.

• **Step 2. The cancellation of "INITIAL SETTINGS":**

Press the <u>PLAYBACK</u> button.

Press "<u>UP</u> of Cursor button" and <u>MOTION PICTURE</u> button simultaneously, then turn the Power off.

• **Step 3. Turn the Power on:**

Turn the Power on.

• **Step 4. Display the "INITIAL SETTINGS" menu:**

While keep pressing <u>MENU/SET</u> and "<u>RIGHT</u> of Cursor button" simultaneously, turn the Power off.

The "INITIAL SETTINGS" menu is displayed.

There are two kinds of "INITIAL SETTINGS" menu form as follows:

[CASE 1. After replacing Main P.C.B.]

When Main P.C.B. has just been replaced, the following model suffix list is displayed as follows. (Four pages in total)
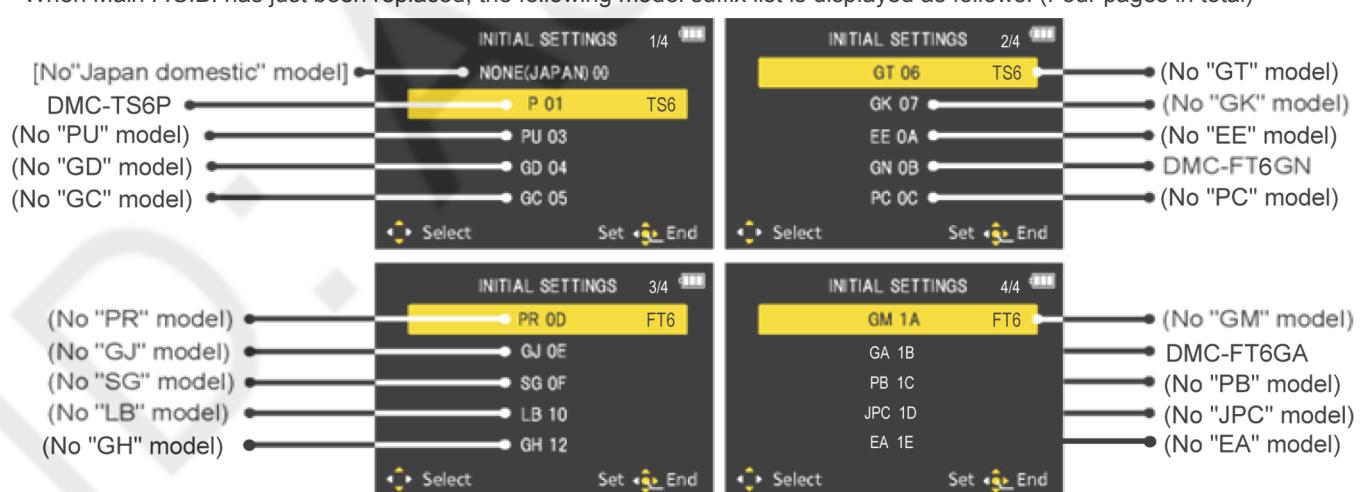
[CASE 2. Other than "After replacing Main P.C.B."]
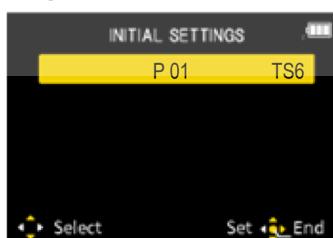
• **Step 5. Choose the model suffix in "INITIAL SETTINGS": (Refer to "CAUTION 1")**
  [Caution: After replacing Main P.C.B.]
> The model suffix can be chosen, JUST ONE TIME.
> Once one of the model suffix have been chosen, the model suffix lists will not be displayed, thus, it can be changed.
> Therefore, select the area carefully.
> Select the area with pressing "UP / DOWN of Cursor buttons".

• **Step 6. Set the model suffix at "INITIAL SETTINGS":**
  Press the "RIGHT of Cursor buttons".
  The only set area is displayed. Press the "RIGHT of Cursor buttons" after confirmation.
  (The unit is powered off automatically.)

```
INITIAL SETTINGS        ▭

       P          TS6
    O K
  CANCEL  ◀
    END   ▶
```
Press [Right] button →

LUMIX
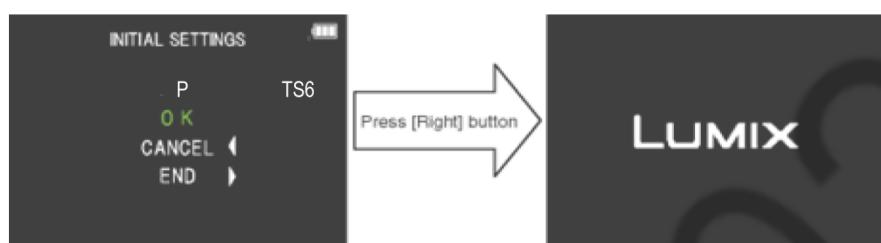
• **Step 7. CONFIRMATION:**
  Confirm the display of "PLEASE SET THE CLOCK" in concerned language when the unit is turned on again.
  When the unit is connected to PC with USB cable, it is detected as removable media.
  1) As for your reference, major default setting condition is as shown in the following table.
  Default setting (After "INITIAL SETTINGS")

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-FT6GA	PAL	English	Date/Month/Year	
b)	DMC-FT6GN	PAL	English	Date/Month/Year	
c)	DMC-TS6P	NTSC	English	Month/Date/Year	

3 Specifications

The following specification is for DMC-TS6P.
Some specifications may differ depending on model suffix.

Digital Camera:

Information for your safety

Power Source:	DC 5.1 V
Power Consumption:	1.5 W (When recording)
	1.1 W (When playing back)

Camera effective pixels	16,100,000 pixels	
Image sensor	1/2.33″ MOS sensor, total pixel number 17,500,000 pixels, Primary color filter	
Lens	Optical 4.6×zoom, f=4.9 mm to 22.8 mm (35 mm film camera equivalent: 28 mm to 128 mm)/F3.3 (Wide) to F5.9 (Tele)	
Image stabilizer	Optical method	
Focus range	Normal	30 cm (0.98 feet) to ∞
	Macro/ Intelligent auto/ Motion Picture	5 cm (0.16 feet) (Wide)/30 cm (0.98 feet) (Tele) to ∞
	Scene Mode	There may be differences in the above settings.
Shutter system	Electronic shutter+Mechanical shutter	
Minimum Illumination	Approx. 12 lx (when i-low light is used, the shutter speed is 1/30th of a second)	
Shutter speed	4 seconds to 1/1300th of a second [Starry Sky] Mode: 15 seconds, 30 seconds	
Exposure	Program AE (P)/Manual Exposure (M)	
Metering mode	Multiple	

LCD monitor	3.0″ TFT LCD (4:3) (Approx. 460,000 dots) (field of view ratio about 100%)
Microphones	Stereo
Speaker	Monaural
Recording media	Built-in Memory (Approx. 10 MB)/SD Memory Card/ SDHC Memory Card/SDXC Memory Card
Recording file format	
Still Picture	JPEG (based on "Design rule for Camera File system", based on "Exif 2.3" standard, DPOF corresponding)/MPO
Motion pictures	AVCHD/MP4
Audio compression format	AVCHD: Dolby® Digital (2 ch) MP4: AAC (2 ch)
Interface	
Digital	"USB 2.0" (High Speed)
Analog video	NTSC
Audio	Audio line output (monaural)
Terminal	
[AV OUT/DIGITAL]	Dedicated jack (8 pin)
[HDMI]	MicroHDMI TypeD
Dimensions (excluding the projecting parts)	Approx. 109.2 mm (W)×67.4 mm (H)×28.9 mm (D) [4.30″(W)×2.65″(H)×1.14″(D)]
Mass (weight)	Approx. 214 g/0.471 lb (with card and battery) Approx. 188 g/0.414 lb (excluding card and battery)

Operating temperature	−10 °C* to 40 °C (14 °F* to 104 °F)
	∗ The performance of the battery (number of recordable
	    pictures/operating time) may decrease temporarily when
	    using in a temperature between −10 °C and 0 °C (14 °F and
	    32 °F) (cold places such as ski resorts or places at high
	    altitude).

Operating humidity	10%RH to 80%RH
Language select	[ENGLISH]/[ESPAÑOL]

Bearing sensor		16 bearing detection (with angular position correction function by the 3 axes acceleration sensor, with automatic declination correction, and with automatic offset adjustment function)
Atmospheric pressure/altitude sensor		
	Atmospheric pressure	Measurement range 300 hPa to 1100 hPa, with 24 hour memory function in 1 hPa unit (every 1.5 hours)
	Altitude	Convert atmospheric pressure to altitude using ISA [International Standard Atmosphere], accuracy: −5 m (−16 feet) to +5 m (16 feet)
	Depth	Displays in 3 levels [displays 0 m (0 feet) to 13 m (43 feet) in 3 levels]
Waterproof performance		Equivalent to IEC 60529 "IPX8". [Usable for 60 minutes in 13 m (43 feet) water depth]
Crash resistance perfomance		The test method of the camera is in compliance with "MIL-STD 810F Method 516.5-Shock"∗. ∗ "MIL-STD 810F Method 516.5-Shock" is the test method standard of the U.S. Defense Department, which specifies performing drop tests from a height of 122 cm (4 feet), at 26 orientations (8 corners, 12 ridges, 6 faces) using 5 sets of devices, and passing the 26 orientation drops within 5 devices. (If failure occurs during the test, a new set is used to pass the drop orientation test within a total of 5 devices) • Panasonic's test method is based on the above "MIL-STD 810F Method 516.5-Shock". However, the drop height was changed from 122 cm (4 feet) to 200 cm (6.6 feet) dropping onto 3 cm (0.1 feet) thick plyboard. This drop test was passed. (Disregarding appearance change such as loss of paint or distortion of the part where drop impact is applied.) **There is no guarantee of not breaking or malfunctioning under all conditions.**
Withstand Load Performance		100 kgf/220.5 lbf (According to the test conditions specified by Panasonic)
Dustproof performance		Equivalent to IEC 60529 "IP6X".

Wireless transmitter

Compliance standard	IEEE 802.11b/g/n (standard wireless LAN protocol)
Frequency range used (central frequency)	2412 MHz to 2462 MHz (1 to 11ch)
Encryption method	Wi-Fi compliant WPA^{TM}/WPA2^{TM}
Access method	Infrastructure mode

Battery Charger (Panasonic VSK0800):
Information for your safety

Input:	$\sim$ 110 V to 240 V, 50/60 Hz, 0.2 A
Output:	$=\!=\!=$ 4.2 V, 0.65 A
Operating temperature:	0 °C* to 40 °C (32 °F* to 104 °F)
	$*$ The battery cannot be recharged in a temperature less than 0 °C (32 °F). (The [CHARGE] indicator blinks when the battery cannot be recharged.)

Battery Pack (lithium-ion) (Panasonic DMW-BCM13PP):
Information for your safety

Voltage/capacity:	3.6 V/1250 mAh

4 Replacement Parts List

Note: 1. * Be sure to make your orders of replacement parts according to this list.
      2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety.
When replacing any of these components, use only the same type.
      3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uf), P=uuF.
      4. The marking (RTL) indicates the retention time is limited for this item. After the discontinuation
of this assembly in production, it will no longer be available.
      5. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts
only for customers who accidentally damaged or lost their own.

E.S.D. standards for Electrostatically Sensitive Devices, refer to PREVENTION OF
ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES
section.
Definition of Parts supplier:
    1. **Parts marked with [INBD] in the remarks column are supplied from AVC-IMAGING.
Others are supplied from PAVCX.**

4.1.   Electrical Component
COMPARISON CHART :
4.1.1.   DMC-FT6GA
The following tables show the difference between original Model "DMC-FT5GA" and new model "DMC-FT6GA".

Safety	Ref No.	Original Part No. (DMC-FT5GA)	New Part No. (DMC-FT6GA)	Part Name & Descriptions		Pcs	Remarks
	FP9002	K1MY41BA0575	K1MY41BA0667	CONNECTOR	41P	1	
	FP9003	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9007	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9008	K1MY19BA0235	K1MY19BA0667	CONNECTOR	19P	1	
	IC6001	VSG1017	VSG1023	IC		1	E.S.D.
	IC6005	RS10423	RS10786	IC		1	E.S.D.

4.1.2.   DMC-FT6GN
The following tables show the difference between original Model "DMC-FT5GN" and new model "DMC-FT6GN".

Safety	Ref No.	Original Part No. (DMC-FT5GN)	New Part No. (DMC-FT6GN)	Part Name & Descriptions		Pcs	Remarks
	FP9002	K1MY41BA0575	K1MY41BA0667	CONNECTOR	41P	1	
	FP9003	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9007	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9008	K1MY19BA0235	K1MY19BA0667	CONNECTOR	19P	1	
	IC6001	VSG1017	VSG1023	IC		1	E.S.D.
	IC6005	RS10423	RS10786	IC		1	E.S.D.

4.1.3.   DMC-TS6P
The following tables show the difference between original Model "DMC-TS5P" and new model "DMC-TS6P".

Safety	Ref No.	Original Part No. (DMC-TS5P)	New Part No. (DMC-TS6P)	Part Name & Descriptions		Pcs	Remarks
	FP9002	K1MY41BA0575	K1MY41BA0667	CONNECTOR	41P	1	
	FP9003	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9007	K1MY51BA0575	K1MY51BA0667	CONNECTOR	51P	1	
	FP9008	K1MY19BA0235	K1MY19BA0667	CONNECTOR	19P	1	
	IC6001	VSG1017	VSG1023	IC		1	E.S.D.
	IC6005	RS10423	RS10786	IC		1	E.S.D.

4.2. Frame and Casing Section

COMPARISON CHART:

4.2.1. DMC-FT6GA

The following tables show the difference between original Model "DMC-FT5GA" and new model "DMC-FT6GA".

Safety	Ref No.	Original Part No. (DMC-FT5GA)	New Part No. (DMC-FT6GA)	Part Name & Descriptions	Pcs	Remarks
	22	VYK6M01	SYK1074	FRONT CASE UNIT	1	(-A)
	22	VYK6M00	SYK1073	FRONT CASE UNIT	1	(-D)
	22	-----	SYK1075	FRONT CASE UNIT	1	(-R)
	24	VEP56172A	VEP56172D	MAIN P.C.B.	1	E.S.D.
	35	VYK6D48	SYK1009	TOP CASE UNIT	1	
	35	VYK6G43	SYK1009	TOP CASE UNIT	1	
	38	L0AA01A00130	L0AA01A00174	SPEAKER	1	
	42	-----	SYK1007	REAR ALMI CASE UNIT	1	(-R)
	42	-----	SYK1008	REAR ALMI CASE UNIT	1	(-Z)
	95	-----	VMA1A19	BL HOLDER	1	

4.2.2. DMC-FT6GN

The following tables show the difference between original Model "DMC-FT5GN" and new model "DMC-FT6GN".

Safety	Ref No.	Original Part No. (DMC-FT5GN)	New Part No. (DMC-FT6GN)	Part Name & Descriptions	Pcs	Remarks
	22	VYK6M01	SYK1074	FRONT CASE UNIT	1	(-A)
	22	VYK6M00	SYK1073	FRONT CASE UNIT	1	(-D)
	22	-----	SYK1075	FRONT CASE UNIT	1	(-R)
	22	-----	SYK1076	FRONT CASE UNIT	1	(-Z)
	24	VEP56172A	VEP56172D	MAIN P.C.B.	1	E.S.D.
	35	VYK6D48	SYK1009	TOP CASE UNIT	1	
	35	VYK6G43	SYK1009	TOP CASE UNIT	1	
	38	L0AA01A00130	L0AA01A00174	SPEAKER	1	
	42	-----	SYK1007	REAR ALMI CASE UNIT	1	(-R)
	42	-----	SYK1008	REAR ALMI CASE UNIT	1	(-Z)
	95	-----	VMA1A19	BL HOLDER	1	

4.2.3. DMC-TS6P

The following tables show the difference between original Model "DMC-TS5P" and new model "DMC-TS6P".

Safety	Ref No.	Original Part No. (DMC-TS5P)	New Part No. (DMC-TS6P)	Part Name & Descriptions	Pcs	Remarks
	22	VYK6M01	SYK1074	FRONT CASE UNIT	1	(-A)
	22	VYK6M00	SYK1073	FRONT CASE UNIT	1	(-D)
	22	-----	SYK1075	FRONT CASE UNIT	1	(-R)
	22	-----	SYK1076	FRONT CASE UNIT	1	(-Z)
	24	VEP56172A	VEP56172D	MAIN P.C.B.	1	E.S.D.
	35	VYK6D48	SYK1009	TOP CASE UNIT	1	
	35	VYK6G43	SYK1009	TOP CASE UNIT	1	
	38	L0AA01A00130	L0AA01A00174	SPEAKER	1	
	42	-----	SYK1007	REAR ALMI CASE UNIT	1	(-R)
	42	-----	SYK1008	REAR ALMI CASE UNIT	1	(-Z)
	95	-----	VMA1A19	BL HOLDER	1	

4.3. Packing and Accessories Section

Safety	Ref No.	Part No.	Part Name & Descriptions	Pcs	Remarks
	200	RPFW0057	CAMERA BAG	1	
	201	VQL2Z72	COLOR LABEL	1	(-D)
	201	VQL3B09	COLOR LABEL	1	(-R)
	201	SQL0192	COLOR LABEL	1	(-Z)
⚠	203	VSK0801	BATTERY CHARGER	1	GA,GN
⚠	203	VSK0800	BATTERY CHARGER	1	P
⚠	204	-----	BATTERY PACK	1	(NOT SUPPLIED)
	205	K1HY08YY0031	USB CABLE	1	
⚠	206	K2CQ2YY00082	AC CORD W/PLUG	1	GA
⚠	206	K2CJ2YY00052	AC CORD W/PLUG	1	GN
⚠	206	K2CA2CA00025	AC CORD W/PLUG	1	P
	207	VFC4297	HAND STRAP	1	
⚠	208	SFM0088	CD-ROM(SOFT/INSTRUCTION BOOK)	1	See "Notes" GA,GN
⚠	208	SFM0087	CD-ROM(SOFT/INSTRUCTION BOOK)	1	See "Notes" P
	209	SPK0082	PACKING CASE	1	GA,GN
	209	SPK0081	PACKING CASE	1	P
	210	VPF1539	POLYETHYLENE BAG	1	GA
	210	VPF1547	POLYETHYLENE BAG	1	GN,P
⚠	211	SQT0838	BASIC O/I (ENGLISH/CHINESE(TRADITIONAL))	1	GA
⚠	211	SQT0839	BASIC O/I (VIETNAMESE)	1	GA
⚠	211	SQT0840	BASIC O/I (ENGLISH)	1	GN
⚠	211	SQT0837	BASIC O/I (ENGLISH/SPANISH)	1	P
	212	VPF1529	PROTECTION BAG	1	
	213	VMG2093	SILICONE JACKET	1	GN
	214	VQL3B08	SILICON JACKET LABEL	1	GN

5 Exploded View

[Packing Parts and Accessories Section]

Directions for putting Color Label.
* Except Blue color model, stick each color label (Ref. No. 201) inside the "color indication frame" making sure that the bottom part of the color label is even inside the color indication frame.