Contents in this document may change without prior notice. Please obtain the delivery specification for the latest design.



TM Series
Panel Mount Type
LCD Touchscreen Monitor
Model "G"
Model "H"
Product Specification

10.4" TMG-310-DC00-01
TMH-310-DC00-01

12.1" TMG-312-DC00-01

TMH-312-DC00-01

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Appendix: Outline drawing (SM3-001881-14, SM3-001882-14)

1. Summary

This document describes the specifications of 10.4" and 12.1" touchscreen monitors of the TM series model "H" and "G".

These products will be referred to as "TM" hereinafter.

2. Model

Model	Specification		
	LCD size	Touch method	
TMG-310-DC00-01	10.4"	Projected capacitive type	
TMH-310-DC00-01	10.4"	Analog resistive type	
TMG-312-DC00-01	12 1"	Projected capacitive type	
TMH-312-DC00-01	12.1	Analog resistive type	

3. Items Included in Package

The following items are included in the package:

• TM 1unit

Mounting Brackets
 1set (4pcs)

Waterproof Gasket 1pc (preinstalled to unit)

Power Connector
 1pc

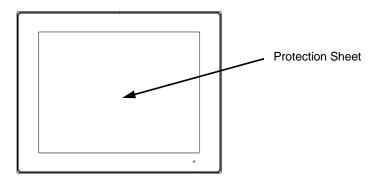
*Caution

The unit is shipped with the protection sheet already installed to the front side display.

Be sure to take the sheet off before installing.

The protection sheet may cause a drop in quality of the surface of the touchscreen depending on the storing environment of the product.

Please be sure to remove the protection sheet within 6 month after shipment.



4. Specifications

4-1 Function Specification

		-	Specifications			
	Items		10.4"		12.1"	
			TMG-310-DC00-01	TMH-310-DC00-01	TMG-312-DC00-01	TMH-312-DC00-01
	Method		TFT Active Matrix Me	ethod		
	Resoluti	on	800(W)x600(H) pixel	s SVGA	800(W)x600(H) pixe	s SVGA
	Display	Area	211.2mm(W)×158.4r	mm(H)	246mm(W)×184.5mi	m(H)
	Pixel Pitch		0.088mm(W)×0.264mm(H)		0.103mm(W)×0.308	mm(H)
LCD	Color		App. 16.77M colors		App. 16.77M colors	
Panel	View	Vertical	140°(80°/60°)		160°(80°/80°)	
Fallel	Angle	Horizontal	160°(80°/80°)		160°(80°/80°)	
	(Typ.)	Direction	From 6 o'clock direct	tion (Gray Inversion)		
	Brightne	ess (Typ.)	400 cd/m ²	320 cd/m ²	450 cd/m ²	360 cd/m ²
	Backlight		LED			
	Backlight Life (Typ.)		70,000 hours average *1			
	Analog SYNC		Separate, TTL, +/- polarity			
	Analog	RGB	Analog, positive pola	Analog, positive polarity (0-0.7Vp-p 75Ω)		
Input	Input Digital		DVI 1.0 Compliant			
Signal	l Horizontal		30KHz to 80KHz			
	Scannin	g				
	Vertical Scanning		50Hz to 75Hz			

^{*1} Time until brightness declines 50% from the initial value at maximum brightness (at ambient temperature of 25°C).

4-2 Touchpanel Specification

4-2-1 Projective Capacitive Method

	Specification			
Item	10.4"	12.1"		
	TMG-310-DC00-01	TMG-312-DC00-01		
Туре	Projective Capacitive			
Input Method	Finger			
Maximum Simultaneous Input	Two points			
Operating Life	Continuous Typing (finger input) : 50 million times			
Communication Method	USB 2.0			
	Microsoft® Windows® 7 (32bit/64bit)			
Complying OS *1	Microsoft® Windows® 8/8.1 (32bit/64bit) *2			
Complying OS	Microsoft® Windows® 10 (32bit/64bit) *2			
	Microsoft® Windows® 11 (32bit/64bit) *2			

^{*1} Windows Standard can be used with touchscreen driver. (Windows 7/8/8.1/10/11)

^{*2} Two point touch and gesture operations have been verified.

4-2-2 Analog Resistive Method

	Specification		
Item	10.4" 12.1"		
	TMH-310-DC00-01	TMH-312-DC00-01	
Туре	Analog Resistive		
Input Method	Finger or R0.8 Polyacetal pen		
Multi-touch capacity	One point		
Operating Live	Keystroke (Finger input)	: 10million times	
Operating Live	Character Input (input by pen) : 100thousnd characters		
Communication Method	USB 2.0		
	Microsoft® Windows® 7 (64bit)		
Complying OS *1	Microsoft® Windows® 8/8.1 (64bit) *2		
Complying OS *1	Microsoft® Windows® 10 (64bit) *2		
	Microsoft® Windows® 11 (64bit) *2	

^{*1} Dedicated driver installation needed.

4-3 General Specification

	Specification				
Item	10.4"		12.1"		
	TMG-310-DC00-01	TMH-310-DC00-01	TMG-312-DC00-01	TMH-312-DC00-01	
Absolute	30// DC				
Maximum Rate	30V DC				
Rated Voltage	12V DC / 24V DC				
Permissible	12V±20% / 24V±20%				
Voltage Range					
Power	MAX 10W				
Consumption	IVIAA TOVV				
USB Consumption	5V DC 50mA (Max)				
Current*					

^{*}Shows power consumption of touchscreen and touchscreen controller.

^{*2} Please contact us for operation confirmation of Windows®8/8.1/10/11

^{*}Not necessary to change 12V/24V DC.

4-4 Environmental Specification

	Specification						
Item	10.4"		12.1"				
	TMG-310-DC00-01	TMH-310-DC00-01	TMG-312-DC00-01	TMH-312-DC00-01			
Ambient Operating							
Temperature	0°C to 50°C						
(Inside cabinet and	00.000						
Display side)							
Ambient Storage	10°C to 160°C						
Temperature	-10°C to +60°C						
Ambient Operating	10%RH to 85%RH (Non-condensing, Wet bulb temperature is 39°Cor less)						
Humidity							
Ambient Storage	400/ DLI to 050/ DLI (Non condensing Wethoulb term eveture is 20°0 or less)						
Humidity	10%RH to 85%RH (Non-condensing, Wet bulb temperature is 39°Cor less)						
Dust	Prohibited						
Environment	Pollution Degree 2, I	ndoor use					
Altitude Resistance	800hPa to 1114hPa	(Altitude of 2000m or I	less)				
Vibration	Vibration 5Hz to 9Hz Single amplitude: 3.5mm						
Resistance	9Hz to 150Hz Constant Accelerated Velocity 9.8m/s ²						
	X,Y,Z each directions	s, 10 times (100 minu	ites)				
	IEC61131-2(JIS B 35	502) compliant					
RoHS	Compliant with EU R	oHS Directive (2011/6	65/EU)				

4-5 Installation Specification

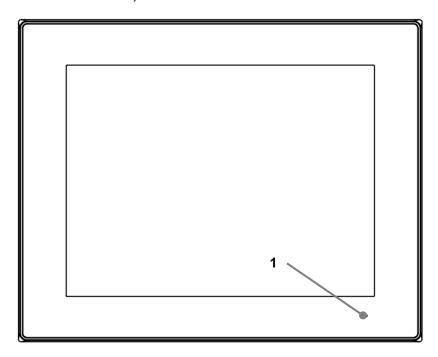
	Specification				
Item	10	.4"	12.1"		
	TMG-310-DC00-01	TMH-310-DC00-01	TMG-312-DC00-01	TMH-312-DC00-01	
Grounding	Grounding resistance	e of 100Ω , 2mm^2 [0.00	062inch ²] or thicker wi	re, or your country's	
	applicable standard.				
Structure	Protection Structure	: IP65 *1 (Only front of	display side at panel mount)		
Cooling Method	Natural Convection				
External Dimension	278(W) x 222(H) x 5	6(D)mm	314(W) x 248(H) x 5	6(D)mm	
Weight	App 2400g	App 2200g	App 2900g	App 2600g	
Panel cut-out	266 _{+0.5/-0} (W) x 210 _{+0.5/-0} (H)mm		302 _{+0.5/-0} (W) x 236 ₊	_{0.5/-0} (H)mm	
dimension					

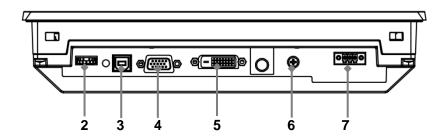
^{*1} Protection structure of front area when mounted to panel. The degree of protection provided has been confirmed, however their performance cannot be guaranteed for every environment. Especially for oils, if unit is prolonged to vaporized oil or cutting fluids with low viscosity, oil might enter from area where touchscreen has lifted, thus may need special measurements. Please check the installation environment prior to use.

Also, gaskets that have been used for a long time or have once been applied to panels, original level of protection cannot be guaranteed due to possible damage or dirt. To maintain the original level of protection, be sure to replace the gasket regularly.

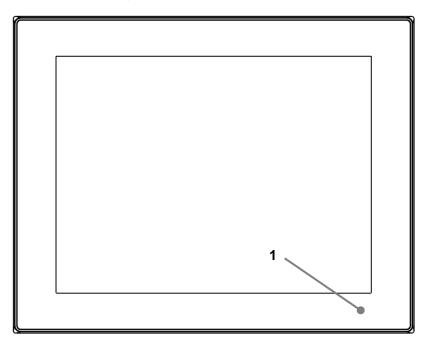
4-6 Name of Each Parts and Their Functions

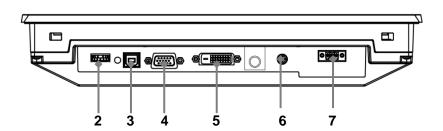
4-6-1 TMG-310-DC00-01, TMH-310-DC00-01





4-6-2 TMG-312-DC00-01, TMH-312-DC00-01





No	Name	Function
		Displays power of monitor and video input signal status
1	Chatrica LED	Green: Power ON with input signal
1	Status LED	Red: Power ON without input signal
		Unlit: Power OFF
	Dial Cuitale	Power ON/OFF
2	Dial Switch	OSD (On Screen Display) operation
3	Touchscreen Interface	USB Type-B Connector
4	Video Input (Analog)	D-SUB 15Pin (Mini) Connector
5	Video Input (Digital)	DVI Connector
6	FG Terminal	Terminal used for FG when connection between FG
0	(Function Earth Terminal)	and touchscreen cannot be made via power input.
7	Power Input	Input power (12/24V DC)

^{*}Connects the touchscreen monitor and FG by FG terminal or power input.

Coordinates input by touchscreen of model "G" may not be stable according to its installation condition.

*Dial Switch Operations

① Power ON/OFF

- Push dial switch to turn the monitor ON.
- Push and hold for more than 2 seconds to turn the monitor OFF.
 *Leave an interval of 5 seconds when repeatedly turning the power ON and OFF

② OSD Operation

- · Push the dial switch when the touchscreen is ON to display the OSD
- · Turn the switch clock-wise or counter-clock-wise to move the selected item or to adjust value.
- · Push the dial switch to set the adjusted value or to decide on the item selected.

5. Interface Connectors (Ports)

5-1 DVI (Digital Video Input)

Interface: DVI 1.0

Connector: DVI-I Female (Port specification is DVI-D)

Pin No	Signal	Pin No	Signal	Pin No	Signal
1	DATA2-	11	GND	21	NC
2	DATA2+	12	NC	22	GND
3	GND	13	NC	23	CLKa+
4	NC	14	DDC 5V	24	CLKa-
5	NC	15	GND	25	NC
6	DVI_DDC_SCL	16	HPD	26	NC
7	DVI_DDC_SDA	17	DATA0-	27	NC
8	NC	18	DATA0+	28	NC
9	DATA1-	19	GND	29	GND
10	DATA1+	20	NC	-	-

5-2 Analog RGB (Analog Video Input)

Connector: D-SUB15 Pin (mini) Female

Pin No	Signal	Pin No	Signal	Pin No	Signal
1	RED IN	6	R-GND	11	GND
2	GREEN IN	7	G-GND	12	SDA DDC
3	BLUE IN	8	B-GND	13	SYNC. H
4	GND	9	PC 5V	14	SYNC. V
5	GND	10	DET	15	SCL DDC

5-3 Touchscreen Interface (USB)

Interface: USB 2.0 Connector: USB type B

5-4 Power Connector

Connector :284539-3(Tyco Electronics)

Compliant Connector: 284510-3(Tyco Electronics)

Pin No.	Signal
1	FG *
2	-(GND)
3	+(12V/24V)

^{*}FG is connected to the M4 terminal next to the power connector.

Please connect either one to FG.

6. Main Functions

6-1 Multi-Scanning

Automatically enlarges or shrinks images to match the input and LCD display resolution.

However, because it will be processed according to the resolutions, there are possibilities of deformation of images and/or blurring of characters.

6-2 OSD Function

Input and output image adjustment can be done with the OSD (On Screen Display).

Setting will be memorized even after power is turned off and will not change unless done so intentionally. Items that can be adjusted with the OSD are as listed below.

Items that can be adjusted with the OSD

Main Menu	Sub Menu	Function	
Picture	Contrast	For adjusting the contrast	
	Brightness	For adjusting the LCD brightness	
	Sharpness	For adjusting the sharpness (smoothing)	
	Auto Adjust	For automatically optimizing the display	
Display	Phase	For adjusting the flickering/blurring	
(Valid only with	H.Position	For adjusting the horizontal position of screen	
Analog video	V.Position	For adjusting the vertical position of screen	
input)	Pixel Clock	For adjusting the frequency (clock)	
Color	Gamma	For adjusting the gamma value of screen	
	Color temp	For adjusting the color temperature of screen	
	Color Effect	For adjusting image quality	

6-3 Support Signal Timing

No	Resolution	H-Freq. (KHz)	V-Freq. (Hz)
1	640×480	31.47	59.94
2	640×480	37.86	72.81
3	640×480	37.50	75.00
4	720×400	31.47	70.09
5	800×600	35.16	56.25
6	800×600	37.88	60.32
7	800×600	48.08	72.19
8	800×600	46.88	75.00

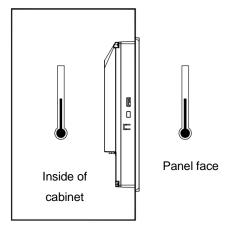
7. Installation

7-1 Mounting Conditions

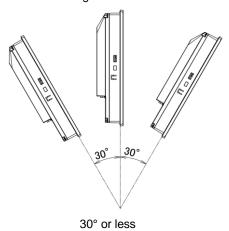
When installing to panels, be sure to have enough space for connecting and disconnecting of cables and mounting brackets.

- -Consider specification temperature between TM and the structure and parts, and be sure to have good ventilation.
- -Please use in an environment where ambient temperature and humidity during use is within their designated ranges.

(Ambient temperature is for both inside the cabinet and panel face.)



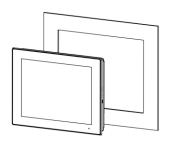
• TM should not be mounted at an angle more than 30°as illustrated in the following figure.



• When mounting the TM at an angle of more than 30 degrees or more, please use forced air cooling to ensure the temperature specification.

7-2 How to Mount

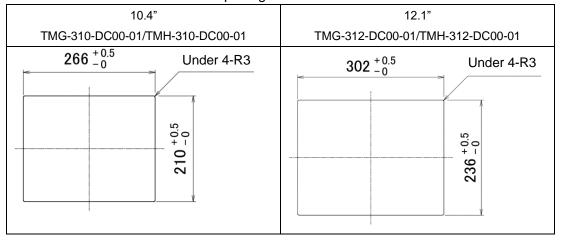
7-2-1 Instaling to Panels



Panel thickness shall be 1.6mm to 5.0mm

Panel cut-out dimension is as shown in below diagram.

Panel Opening Dimensions

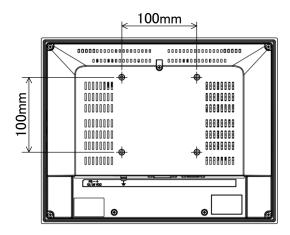


7-2-2 Attaching to "VESA" Standard Arms

TM can be installed on a commercially available Video Electronics Standards Association (VESA) MIS-D arm, stand, or apparatus that is listed to comply with the UL1678 standard.

Please refer to each arm or stand manual for attaching directions.

Dimensions of the installation holes are as shown in below diagram.



Use M4 screw at torque range of 0.7Nm to 0.8Nm when attaching.

Select M4 screws so it is 8mm or less in depth from the rear side of the TM case.

8. Product Certifications

8-1 Agency Approvals

TM is intended for use in industrial environments and, when properly installed, shall comply with the following agency approvals.

Note:

The agency approvals listed in the following table and on the Declaration of Conformities are believed to be accurate; however, the product's agency approvals should be verified by the marking on the unit itself.

Description	Agency Marking	Comments
N.A. Safety for	(Certification by
Programmable Controller	CUL) US LISTED	Underwriter's Laboratories (UL) to
		UL 61010-1; UL 61010-2-201;
		CSA C22.2 No 61010-1-12,
		No 61010-2-201
Electromagnetic Compatibility		Self-declaration in accordance with
Directive		European Directives
	7	EN61000-6-2, EN61000-6-4
European Electromagnetic		(Model"G" only)
Compatibility (EMC) for		
Industrial Control Equipment		

8-2 Government Regulations

The FCC requires the following note to be published according to FCC guidelines is intended for use in industrial environments and, when properly installed, shall comply with the following agency approvals.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at their own expense.

Changes or modifications to this unit that are not expressly approved by DMC could void the user's authority to operate the equipment.

Industry Canada requires the following note to be published:

Note: This Class A digital apparatus complies with Canadian CAN ICES-3 (A)/NMB-3 (A).

8-3 EMC Installation and Operation

Considerations

This equipment has been tested and found to comply with a minimum level of EMC performance as defined by EN 61000-6-2 and EN 61000-6-4 standards. To meet these requirements, the following installation and operation considerations were taken into account:

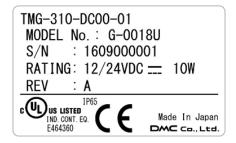
■ Shielding DVI/Analog RGB/USB cables

Although these considerations were deliberated

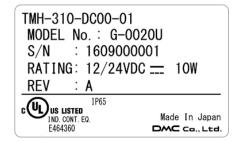
during testing, actual EMC environments vary greatly. Therefore, these considerations may not be necessary. Likewise, additional measures, such as filtering, wire separation, and cable routing, may need to be considered to ensure intended operation of the overall system

9. Product Labels

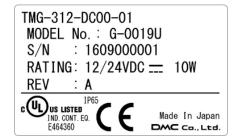
9-1 TMG-310-DC00-01



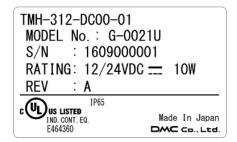
9-2 TMH-310-DC00-01



9-3 TMG-312-DC00-01



9-4 TMH-312-DC00-01



10. FCC Label

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not case harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3 (A)/NMB-3(A)

11. Warranty

11-1 Warranty Period

The warranty period is limited to 12 months (1 year) from the date of shipment. Warranty for any repair needed to the same repaired part of the same product is three months. Any defects that occur upon normal use under conditions specified herein will be repaired (factory repair) free of charge.

Any defected parts under proper use will be examined by the supplier and replaced by the new parts if the defect is considered to be caused by the supplier.

11-2 Warranty Exceptions

You will be liable for all repair fees even within the warranty period for any conditions listed below:

- (1) Any malfunctions, defects, and/or damages that occurred during transport, transfer, or mishandling by the user after delivery
- (2) Any malfunctions, defects, and/or damages caused by natural or man-made disaster.
- (3) Any malfunctions and damages caused by static electricity.
- (4) If the product is used under any condition, in any environment, or by any method other than those specified in the specifications, catalogs, manuals, notes, and/or other documents.
- (5) Any replacement of consumables.
- (6) Any malfunctions, defects, and/or damages caused by associated equipment and/or usage of inappropriate consumables and media.
- (7) If the product is repaired, remodeled, modified, or disassembled by a party other than DMC
- (8) If the product cannot be identified by a serial number.
- (9) Any malfunctions, defects, and/or damages that are to have been caused on your behalf.

This warranty covers only the product itself. Any damages, on-site repairs and replacement driven by the failure of the product will be decided upon discussion by both parties as necessary.

This product is structurally not repairable. All damaged parts are subject for replacement and freight will be charged.

12. Production Discontinuance

In the event of production discontinuance, an announcement will be made on our guidance six months prior to the last possible order reception date.

13. Others

If you have comments or questions, please feel free to contact us.

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FAQ

www.dush.co.jp/english/support/faq/

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4th Edition April 2024

DMC Co., Ltd.

Office hours: 9:00 - 17:00 weekdays

(except Saturdays, Sundays, national holidays, and year-end and New Year holidays)

URL: https://www.dush.co.jp/english/

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