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

EM Series Gesture Model

7”Wide Embedded Panel Computer

EMG7

Model: EMG7-W207A8-0024-x11-01

EMG7-W207A8-0024-107-01

Product Specification

DMC Co., Ltd.
https: //www.dush.co.jp/english/

12A4A2-00007E-10

Table of Contents

1. Summary

This specification describes the 7”W LCD projected capacitive panel computer.

OS line up is Windows Embedded Compact7 or Embedded Linux

The panel computer will be referred to as EMG7 hereinafter.

2. Product Model

Specification	Model
Windows Embedded Compact7 Panel computer	EMG7-W207A8-0024-011-01
Windows Embedded Compact7 + Indusoft CE view Panel computer with Indusoft	EMG7-W207A8-0024-111-01
Embedded Linux Panel computer	EMG7-W207A8-0024-107-01

3. Packaged Contents

The following items are included in the package:

- EMG7 1 unit
- Mounting Bracket (IS-TK-01) 1 set (4 pcs)
- Battery 1 pc
- Protective Sheet 1 pc
- Gasket 1 pc (Pre-installed to unit)
- Power Connector 1 pc
- Serial Port Connector 1 pc
- Installation Guide 2 pcs(1 English version and 1 Japanese version.)
- Packaging List 2 pcs(1 English version and 1 Japanese version.)

4. Specification

4-1 Functional specification

Item		Specifications
CPU		NXP i.MX535 1GHz
RAM		DDR3-SDRAM 512MB
ROM		NAND Flash 512MB
Battery Backup SRAM		512KB
Interface	Serial	RS232C (COM1)：x 1 (5-pin connector)
	Ethernet	10BASE-T/100BASE-TX：x 1
	SD Card *1	SD/SDHC card slot : x 1
	USB Host *2	USB2.0 : x 2 (TYPE-A connector) USB devices that can be used : keyboard, mouse (HID Class), USB memory (Mass Storage Class)
	USB Device	USB2.0 : x 1 (mini TYPE-B connector)
	Audio	Line Output : x 1 (φ3.5 JACK) MIC Input : x 1 (φ3.5 JACK)
	Buzzer	On-board Buzzer
	RTC*4	RTC with a battery backup Error at the time of backup :±65 seconds/month (Conditions: ambient temperature 25 ℃)

*1. Does not guarantee accurate operation for all SD memory cards available in the market.

*2. Does not guarantee accurate function for all USB devices available in the market.

*3. Can only be used for connecting with Microsoft® Windows Mobile Device Center®. Embedded Linux version EMG 7 is recognized as USB Mass Storage class

*4. Above chart shows RTC with battery back-up embedded on the EMG7.
EMG7 normally uses timer inside of the CPU for time display. If time according to specification is needed, please refer to RTC built-in the EMG7.
When using in system where time error becomes a problem, please set to correct time on a regular basis.

4-2 Display Specifications

Item		Specifications
Display	Type	7-inch Wide TFT LCD
	Resolution	800(W) X 480(H)
	Color	65,536 colors
	Backlight	LED (not replaceable)
	Brightness	310 cd/m^2
	Backlight brightness adjustment*1	Adjustable in 16 levels
	Backlight life *2	70,000 hours average

*1. 4 levels of adjustment is possible by the EMG tool.

*2. Time until brightness declines by 50% from the initial value at maximum brightness in ambient temperature of 25℃.

4-3 Touch Screen Specification

Item	Specifications
Type	Projected capacitive
Input Type	Finger
Multi-touch	Two points *1
Operating life	Continuous typing (finger input):50 million times

*1. Application for two point simultaneous input must be created by customer.

Note: Touch screen operations will become unstable depending on the installation environment due to its characteristics. In order to use it correctly, perform calibration for sensitivity sensor of touch screen when building into a device.
Also, if at any time the touch screen operations become unstable due to changes in the setting environment or installation, perform sensitivity sensor calibration.
If there is moisture on the touch screen surface, it may not operate properly.
When moisture there is on the surface, please wipe it dry before use.

4-4 General Specification

Item		Specifications
Power	Rated voltage	24VDC
	Voltage tolerance	24VDC ± 20%
	Power consumption	15W or under（Typ. 7W） *1
	FG Connection	FG (Frame GND) and SG (Signal GND) are connected internally. FG (Frame GND) and GND are not connected.

*1. Power consumption of the unit only. Please consider the power consumption of the USB device when using the USB.

Note: When gentle power source is used for rising and falling of power, it may not operate properly.
Also, when rebooting EMG7, leave it off for a while after turning off; do not turn the power back on immediately. It may not start up accurately.

4-5 Environmental Specification

Item	Specifications
Ambient operating temperature (Inside cabinet and display side)	0℃ to 55℃
Ambient storage temperature	-10℃ to +60℃
Ambient operating humidity	10%RH to 85%RH (non-condensing. Wet-bulb temperature is 39 ℃ or less)
Ambient storage humidity	10%RH to 85%RH (non-condensing. Wet-bulb temperature is 39 ℃ or less)
Dust	Prohibited
Corrosive Gas	Corrosive gas Prohibited
Environment	Pollution Degree 2, Indoor use
Pressure resistance	800hPa to 1114hPa (Altitude up to 2000m)
Vibration resistance	IEC61131-2(JIS B 3502) compliant 5Hz to 9Hz Single amplitude 3.5mm 9Hz to 150Hz Fixed acceleration 9.8m/s^2 X,Y,Z directions for 10times(100min.)

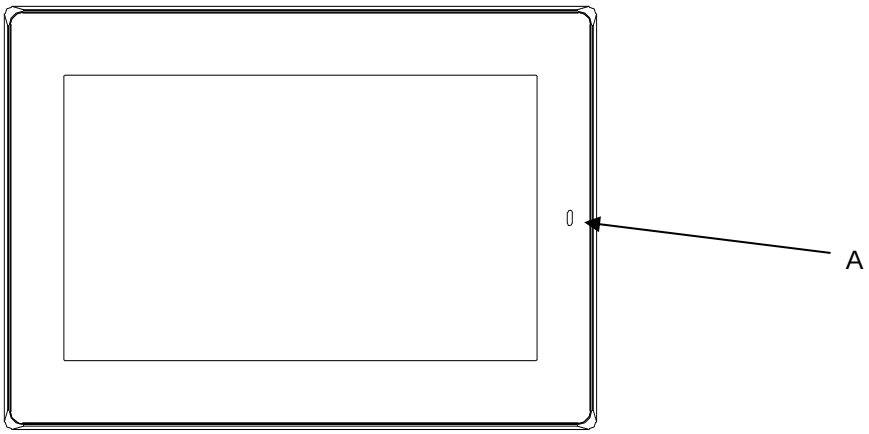
4-6 Installation Specification

Item	Specifications
Grounding	Grounding resistance of 100Ω, 2mm^2 [0.0062inch^2] or thicker wire, or your country's applicable standard.
Structure	Protection Structure: IP65 *1 (Front side only when mounted to panel) Installation : Panel mounting
Cooling	Natural cooling
Weight	Approx. 700g (unit only)
External Dimensions	192 (W) mm x 137 (H) mm x 36 (D) mm
Panel Cutout Dimensions	183.5 $^{+0.5/-0}$ (W) mm x 128.5 $^{+0.5/-0}$ (H) mm
Color	Black

*1. Protection structure of the front part of the unit when installed to a panel. Although it has been tested under conditions equivalent to the standards shown in the specification, use under all environments are not guaranteed. Especially for oils defined in the test, in cases where EMG7 is prolonged to vaporized oils or cutting fluids with especially low viscosity, oil might enter the front area through an area where touch screen has lifted and 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 installed to panels, the original level of the protection cannot be guaranteed. To maintain the stable, original protection level, we recommend replacing the installation gasket regularly.

4-7 Names of Parts

4-7-1 Front

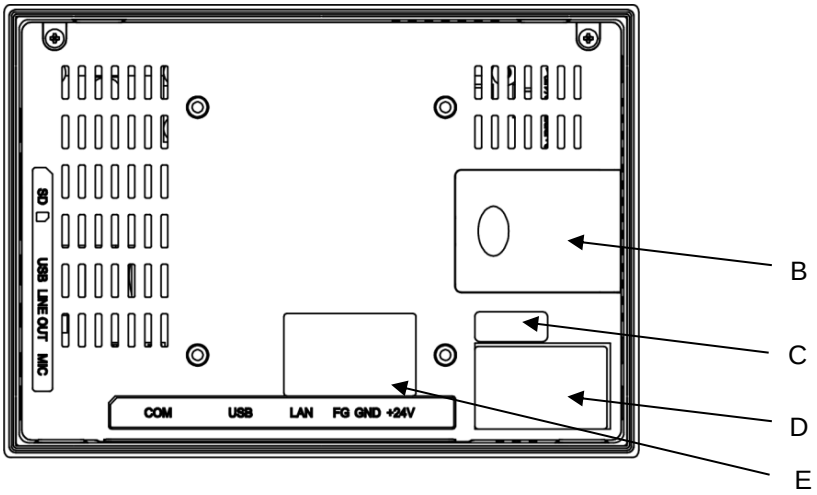


A) Status LED

The status LED displays the state of the EMG by the LED color shown below:

LED State	EMG State
Off	Power not applied
Amber, steady	OS starting
Green, steady	Normal operating state
Green, blinking	Backlight off (Normal Operation)

4-7-2 Back



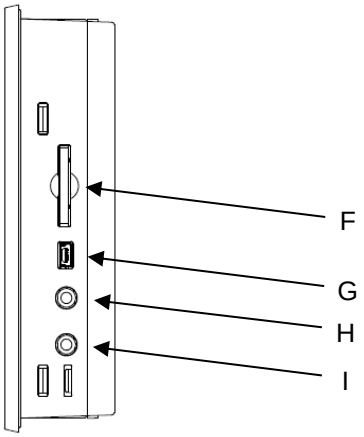
B) Battery cover

C) License label (Note: Only Windows Embedded Compact7 Model)

D) Product label

E) FCC label

4-7-3 Right

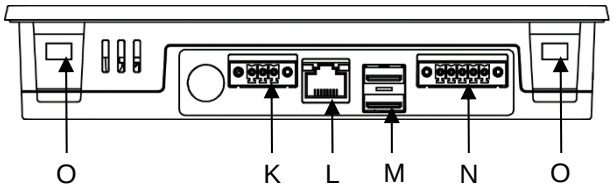


F) SD Card Slot
G) USB Device
H) Audio Interface (LINE OUT)
I) Audio Interface (MIC IN)

4-7-4 Top

J) Mounting Holes

4-7-5 Bottom



K) Power Input
L) Ethernet
M) USB Host
N) Serial Port (COM1）
O) Mounting Holes

4-8 External Interface

4-8-1 SD Card Slot

Connector : SD / SDHC memory card (Push-in/push-out method)

Corresponding media : SD/SDHC memory card

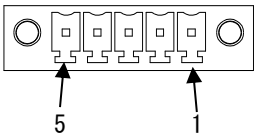
Maximum capacity : 32GB

4-8-2 Serial Port (COM 1)

Serial port : RS232C

Connector : Euro terminal connector (<Tyco Electronics> 284539-5)

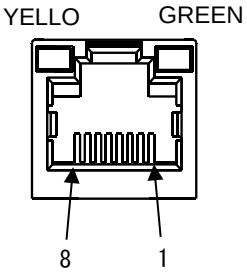
Recommended cable connector : (<Tyco Electronics>284510-5) *Included as accessory.

PIN No.	Signal	Schematic
1	TXD	
2	RXD	
3	RTS	
4	CTS	
5	SG	

4-8-3 Ethernet

Ethernet : 10BASE-T/100BASE-TX

Connector : RJ-45

PIN No.	Signal	Schematic
1	TX+	
2	TX-	
3	RX+	
4	NC *1	
5	NC *1	
6	RX-	
7	NC *1	
8	NC *1	

*1. NC is ‘not connected’.

Status LED

LED State	State
On, Green	LINK/ACT
On, Yellow	SPEED

Compatible cable : Above category 5

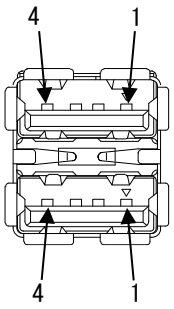
4-8-4 USB Host Port

Interface : USB2.0

Number of Ports : 2

Connector : Type-A connector

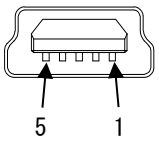
Maximum supply current: 0.5A / Port

PIN No.	Signal (All ports common)	Schematic
1	USB_VCC	
2	D-	
3	D+	
4	SG	

4-8-5 USB Device Port

Interface : USB2.0

Connector : Type-B Mini connector

PIN No.	Signal	Schematic
1	USB_VCC	
2	D-	
3	D+	
4	NC *1	
5	SG	

*1. NC is ‘not connected’.

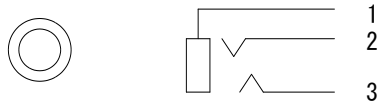
4-8-6 Audio Interface (LINE OUT)

Interface : LINE OUT (Stereo)

Connector : φ3.5 Stereo JACK

Maximum output level : 1Vrms

Use built-in amplifier when connecting to speakers.

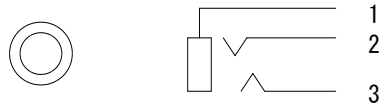
PIN No.	Signal	Schematic
1	SG	
2	Lineout R	
3	Lineout L	

4-8-7 Audio Interface (MIC IN)

Interface : MIC IN (Mono)

Connector : φ3.5 Stereo JACK

Maximum input level : 250mVrms

PIN No.	Signal	Schematic
1	SG	
2	NC *1	
3	MIC	

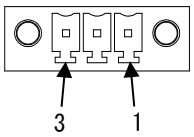
*1. NC is 'not connected'.

4-8-8 Power Connector

Interface : 24VDC IN

Connector : Euro terminal connector (<Tyco Electronics>284539-3)

Recommended cable connector : (<Tyco Electronics>284510-3) *Included as accessory.

PIN No.	Signal	Schematic
1	FG	
2	GND	
3	+24VDC	

4-9 Software Specification

The EMG7 line up is Windows® Embedded Compact 7 or Embedded Linux

4-9-1 Windows® Embedded Compact7

The following tools can be used for application software development.

・Microsoft® Visual Studio®.NET 2008*1

*1. SDK (provided) must be built into above listed tools when developing applications.

Microsoft® Windows Mobile Device Center can be used with USB device port of EMG7.

USB client can be can be used as communication port.

Specification for Windows ®Embedded Compact 7 of Microsoft ® will follow that of Microsoft ®.

4-9-2 Embedded Linux

The following tool is recommended for application software development.

・Qt

Linux Specifications

Item		Specifications
Glibc Version		2.23
Installed software	Qt5.7.1	GUI Tool kit
	PCMan File Manager	File manager
	uim	Japanese input method
	anthy	Conversion engine
	GTK+	GIMP Toolkit library
	bash	Bash shell
	busybox	The program stored Linux basic command
	udhcpc	DHCP Client
	gdbserver	gdb debugger connected from host
	ntpclient	Sync time by NTP
	Lighttpd	Web Server (php,cg supported)
	x11	X Window System
	x11vnc	VNC Server/Client
	LXTerminal	Terminal emulator
	ALSA	Audio mixer
	emg-setting	EMG setting tool
	florence	Screen keyboard
	leafpad	Text editor
	evince	PDF viewer
	openssh	SSH server
	libmodbus	Modbus library

*For details, please refer to the EM series software

In the EMG7 embedded Linux version, it is possible to install our InfoSOSA as an HMI application.

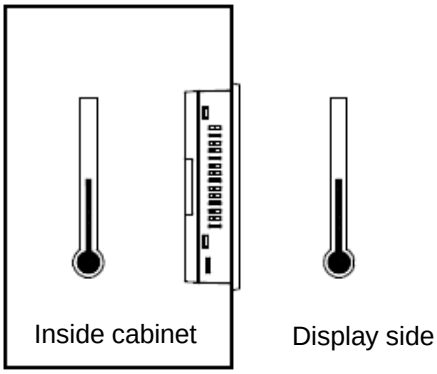
To use as InfoSOSA, please purchase the development kit

For details of InfoSOSA please refer to the InfoSOSA Reference Manual.

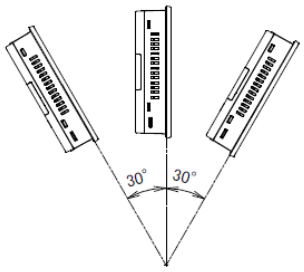
5. Installation

5-1 Installing Condition

- When mounting the EMG7 to panels, be sure to have enough room for inserting and removing SD cards, cables, and mounting brackets.
- Be sure that the ambient operation temperature (0℃ to 55℃) and the ambient humidity (10%RH to 85%RH. Wet-bulb temperature is 39 ℃ or less))are within their designated ranges.
- “Ambient operation temperature” indicates both the display side and inside of cabinet where the EMG7 will be installed.



- EMG7 should be mounted perpendicular, but if it should be mounted in an angle, the angle shall not be more than 30 degrees from the vertical position shown in the illustration below:

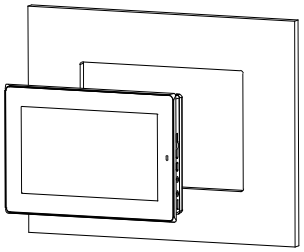


30° or less

- When installing the EMG7 in a slanted panel of angle 30 degrees or more, please use forced air cooling to ensure the temperature specification.

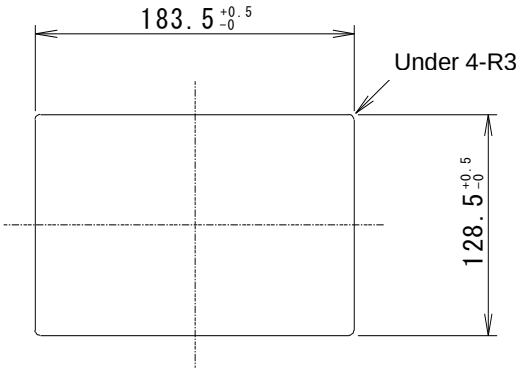
5-2 Mounting

5-2-1 Panel Mounting



The EMG7 may be mounted in panels of thickness 1.0mm to 5.0mm

Panel cut dimension is as shown below:



The material of the mounting panel, please use the metal.

Be recommended panel thickness range, depending on material and size,

may not maintain the strength when an impact is applied.

Please do take into account, such as reinforcement in the environment impact, such as join.

There is a possibility of personal injury or product damage when dropped product,

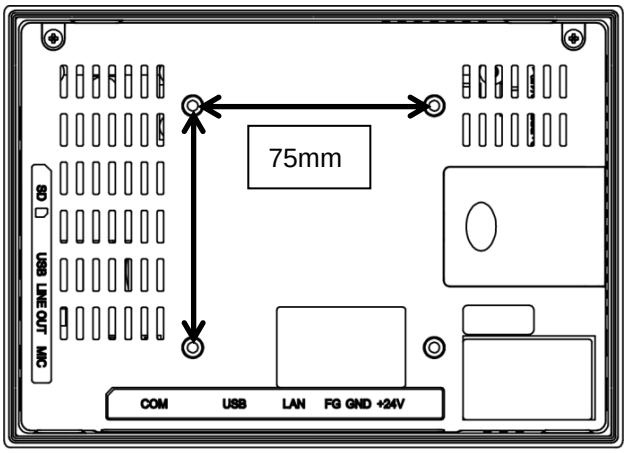
Please be careful not to drop.

5-2-2 Mounting to a VESA Arm

EM 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.

Refer to manual of arm or stand for installation procedures.

Mounting hole dimension is as below



Use M4 screws to mount.

The tightening torque range is 0.7 to 0.8Nm.

M4 screws used should be 6mm or less in length

6. Compatible Standards

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

6-1 UL Standard

This product is UL standard compliant

UL standard No.	UL Registration Model No.	UL File No.
UL 61010-1 / UL 61010-2-201 CSA C22.2 No 142–M1987;	G-0001UA	E464360

6-2 CE Marking

This product is EMC Directive of EU compliant

Complying standard : EMI:EN 61000-6-4:2007+AI:2011
EMS:EN 61000-6-2:2005

6-3 RoHS Directives

This product is RoHS Directive of EU complaint.

6-4 FCC

The FCC requires the following note to be published according to FCC guidelines:

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).

7. List of Option

■ Mounting brackets

Model	Description
IS-TK-01	4pcs

■ Development kit

Model	Description
SWDK-101	Power supply unit Software development environment(DVD)

*The option for EMG7-W207A8-0024-107-01（Linux Model）
This is needed when using InfoSOSA application.

8. Warranty

8-1 Warranty Period

The warranty period is limited to12 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.

The replacement is subject to be included in the next lot.

8-2 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.

9. Production Discontinuance

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

10. Others

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

North South America area

✉ technical-global@dush.co.jp

Asia Pacific area

✉ technical-global-asia@dush.co.jp

Europe, Middle East, Africa area

✉ technical-global-eu@dush.co.jp

FAQ

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

10th Edition October, 2023

DMC Co., Ltd.

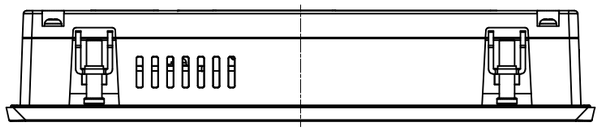
Office hours: 9:00 - 17:00 weekdays

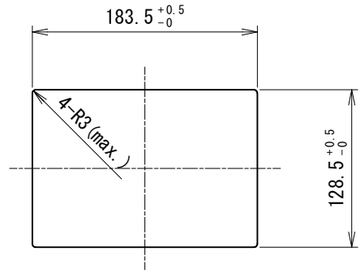
(except Saturdays, Sundays, national holidays, and year-end and New Year holidays)

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

寸法許容差 TOLERANCE	
呼び寸法 Nominal Dimensions	
L≦3	±0.4
3<L≦6	±0.48
6<L≦10	±0.58
10<L≦18	±0.7
18<L≦30	±0.84
30<L≦50	±1.0
50<L≦80	±1.2
80<L≦120	±1.4
120<L≦180	±1.6
180<L≦250	±1.85
250<L≦315	±2.1
315<L≦400	±2.3
400<L≦500	±2.5

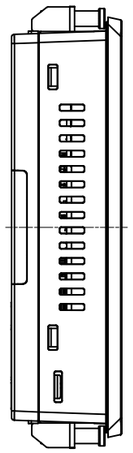
SYM	改訂日 DATE	改 訂 内 容 DESCRIPTION	ページ PAGE	担当 DESIGNED
	2016,09,01	新規図面登録 New Diagram Registration	—	S.Yoshimoto
⚠1	2023,04,18	表題欄社名変更 Company name change in title block.	—	S.Takada

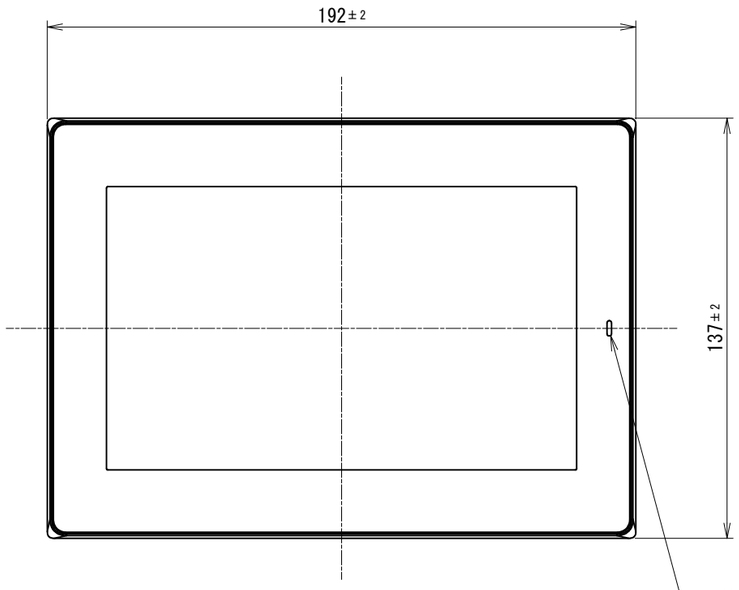


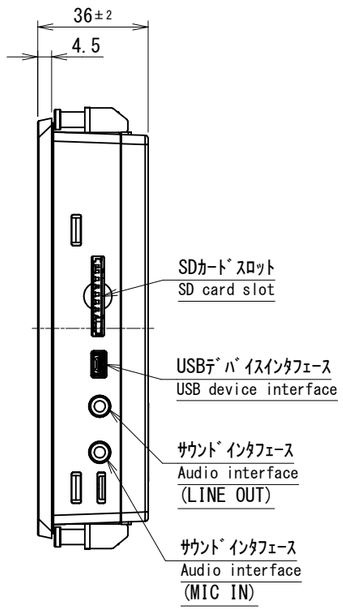


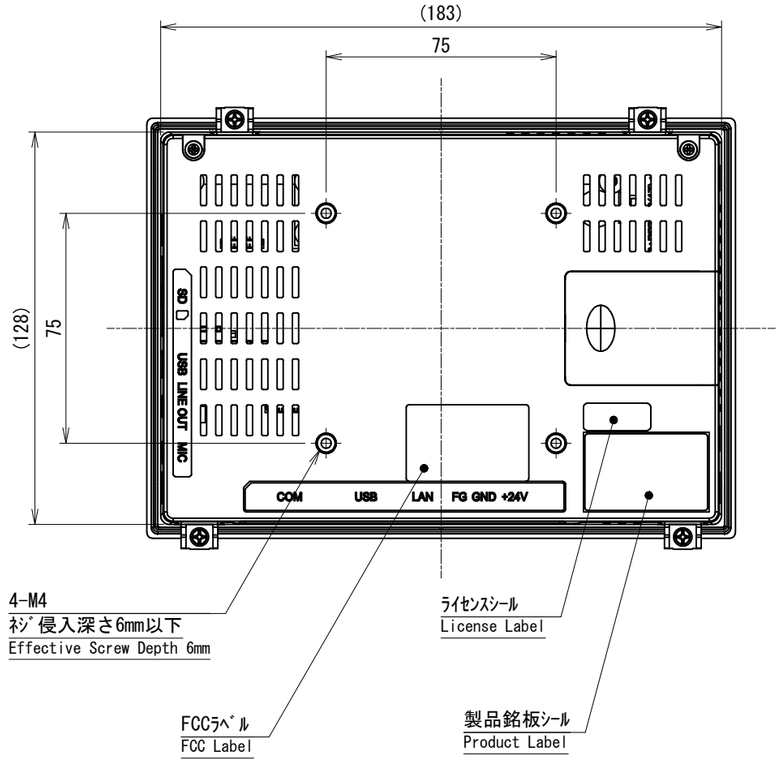
パネル開口寸法 (S=1:5)
Panel Cutout Dimensions (S=1:5)

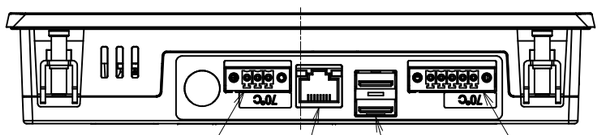
NOTES
1. 誤動作の恐れがある為、パネル開口寸法をお守り下さい。
又、取付けパネルには、反り、傷、凹凸のないものを使用して下さい。
To prevent malfunctions, panel opening dimension shall strictly be as specified.
Be sure to use installation panels without warpage, scratches, and dents.











NOTES
1. 指示なき寸法公差は一般寸法公差とする。
Tolerance shall be of general dimensional tolerance unless specified otherwise.

製図日 ISSUED	2023,04,18	部署 SECTION	Technical Dept.	尺度 SCALE	CAD登録名 CAD FILE NAME	11K015-4_EMG7-W207A8_OUTLINE	RoHS対応品 RoHS compliant
承認 APPROVED	検図 CHECKED	製図 DRAWN	設計 DESIGNED	1:2	製品名 MODEL	EMG7-W207A8-0024-XXX-01	
				単位 UNIT	図名 TITLE	OUTLINE	ページ PAGE 1/1
T.Okada	S.Yoshimoto	S.Takada	S.Takada	mm			
DMC Co., Ltd.			A3		図番 DWG No.	SM3-001905-11	