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EMP Series
7" Wide
Embedded Linux
Teaching Pendant

EMP

Model: EMP-W207A7-0024-207

Product Specification

DMC Co., Ltd.

<https://www.dush.co.jp/english/>

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Appendix

Outline Diagram: SM3-002118-11

1. Summary

This specification describes 7" Wide Teaching Pendant".

The product will be referred to as EMP hereinafter.

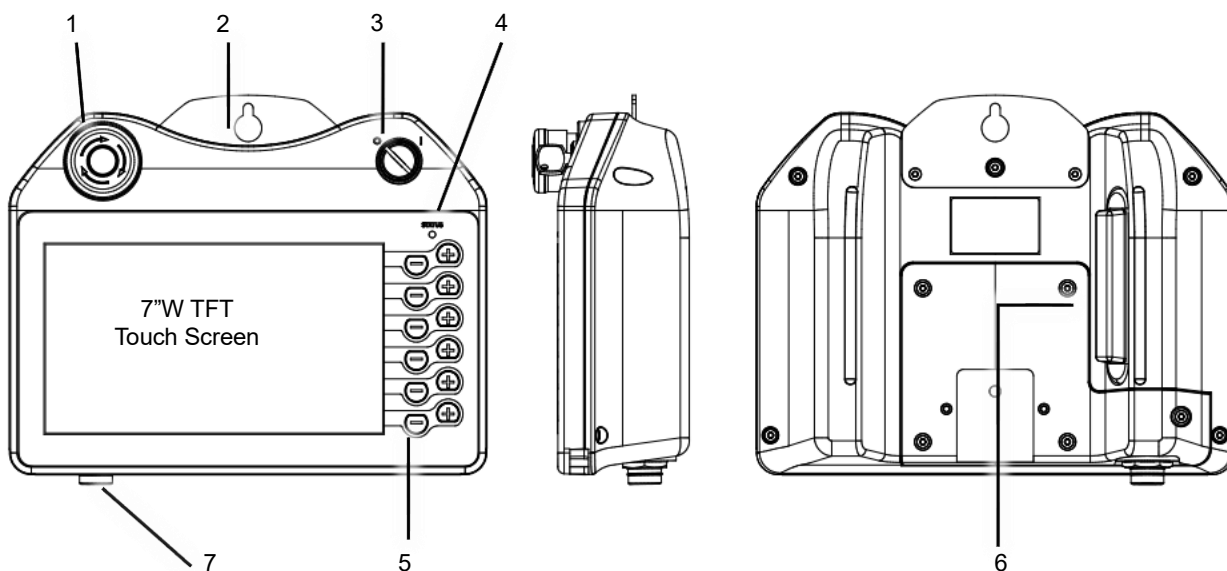
2. Product Model

Model	Specifications			
	LCD Size	Touchscreen Type	OS	Remarks
EMP-W207A7-0024-207	7"W	Analog Resistive	Linux	-

3. Packaging Specifications

Model	Specifications	Size
EMP-W207A7-0024-207	1 unis/box	315(W) x 385(D) x 170(H) mm

4. Name of part



No	Part name
1	Emergency stop switch
2	Wall hook mounting hole
3	Selector switch
4	Status LED
5	Membrane sheet key switch 12 points
6	Enable switch
7	External interface connector (Power supply, communication, and contact output interface)

5. Specifications

5-1 Functional Specifications

Items		Specifications
CPU		i.MX6UL 528MHz (ARM Cortex-A7 single core) by NXP
RAM		DDR3-SDRAM 512MB
Storage Device for OS Boot up		NAND Flash 512MB
Interface	Ethernet	10BASE-T/100BASE-TX: 1CH
	Buzzer	Equipped
	Key input	Membrane switch input 12 point
	LED for indicator	Status display LED (2-color emission) 1 point
	Switch input	Emergency stop × 1 Enable switch × 1 Select switch × 1

5-2 Display Specifications

Items		Specifications
Display	Display Type	7" Wide TFT LCD
	Resolution	800 (W)×480(H)
	Color	65,536 colors
	Backlight	LED Backlight (not replaceable)
	Brightness	330cd/m ²
	Backlight brightness adjustment	Adjustable in 16 levels
	Backlight life *1	50,000 hours average

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

5-3 Touchscreen Specifications

Items	Specifications
Type	Analog Resistive
Input Method	Finger
Maximum Multi-touch	1 point
Operating life	Continuous typing (finger input) : 1 million times

5-4 Mechanical switch specifications

5-4-1 Emergency stop switch

Items	Specifications
Model	XA1E-BV303R (IDEC)
Contacts	Break contact x 3
Contact output	For external output break contact x 2 Internal use break contact x 1
Contact rating*1	1A/DC30V (Resistive Load) 1A/DC30V (Inductive Load)
Durability	Mechanical : 250,000 times or more Electrical : 100,000 times or more 250,000 times or more (AC/DC24V 100mA)
Unlock operation	Rotation reset
Conformity standard	IEC60947-5-1、EN60947-5-1 IEC60947-5-5、EN60947-5-5 JIS C8201-5-1、UL508、UL991、NFPA79 CSA C22.2 No.14、GB14048.5

*1.Minimum Load reference value=AC/DC5V · 1mA

5-4-2 Enable switch

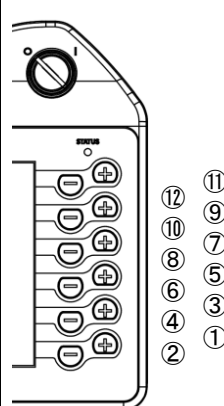
Items	Specifications
Model	HE2B-M211PB (IDEC)
Contacts	3 position contact x 2, Return contact x 1, Push monitor x 1
Contact output	For external output 3 position contact x 2 Internal use return contact x 1, Push monitor x 1
Contact rating*1	1A/DC30V (Resistive Load) 0.7A/DC30V (Inductive Load)
Durability	Mechanical : Position 1⇒2⇒1 : 1,000,000 times or more Position 1⇒2⇒3⇒1 : 100,000 times or more Electrical : 100,000 times or more
Conformity standard	IEC/EN60947-5-8 (TÜV certified) IEC/EN60947-5-1、JIS C8201-5-1 UL508 (UL recognition) CSA C22.2 No. 14 (c-UL recognition) GB14048.5 (CCC)

*1.Minimum Load reference value=AC/DC5V · 1mA (3Position switch)

5-4-3 Select switch

Items	Specifications
Model	LB1K-2T3A (IDEC)
Contacts	Transfer contact x 3
Contact output	External output break contact x 2 Internal use transfer contacts x 1
Contact rating	0.1A/DC30V (Resistive Load) 0.7A/DC30V (Inductive Load)
Durability	Mechanical : 250,000 times or more Electrical : 100,000 times or more
Notch angle	90° – 2 Notch
Notch specifications	Each position stop (manual)
Lock-out specification	All position

5-4-4 Membrane sheet key switch

Items	Specifications
Method	Membrane sheet key switch
Keyboard layout	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>① : F1 ② : F2 ③ : F3 ④ : F4 ⑤ : F5 ⑥ : F6 ⑦ : F7 ⑧ : F8 ⑨ : F9 ⑩ : F10 ⑪ : F11 ⑫ : F12</p> </div> <div style="flex: 1; text-align: center;">  </div> </div>

*Membrane sheet key switches are recognized as function key F1 – F12.

5-5 Status LED

The status LED color (2 colors)

LED color
GREEN
RED

The status LED is as follow (Default)

LED color	LED color
Power OFF	Off
Boot loader	Green
OS boot	Green
Normal	Green

*The status LED can be controlled by software

5-6 General Specifications

Items		Specifications
Power	Rated voltage	24VDC
	Voltage tolerance	24VDC±20%
	Power consumption	MAX 5W (TYP3W)
Withstand voltage		AC500V 10mA (Between power terminal and round metal connector)
Insulation resistance		DC500V 10MΩ (Between power terminal and round metal connector)

5-7 Environmental Specifications

Items	Specifications
Ambient operating temperature (Inside cabinet and display side)	0 to 40°C
Ambient storage temperature	-20 to +60°C
Ambient operating humidity	10 to 90%RH (Non-condensing. Wet-bulb temperature is 39 °C or less)
Ambient storage humidity	10 to 90%RH (Non-condensing. Wet-bulb temperature is 39 °C or less)
Dust	0.1mg/m ³ or under (Conductive dust is prohibited)
Corrosive Gas	Prohibited
Environment	Pollution Degree 2, Indoor use
Pressure resistance	800 to 1114hPa (Altitude up to 2000m)
Vibration resistance	5 to 9Hz single amplitude 3.5mm 9 to 150Hz Fixed acceleration 9.8m/s ² X,Y,Z each direction 10 times (100min) (JIS B 3502, IEC61131-2) compliant

5-8 Installation Specifications

Items	Specifications
Cooling	Natural cooling
Protective structure	IP65
Mounting method	Can be hung on the wall with original metal frame
Weight	Approx. 800 g
External Dimensions	218(W) x 173(H) x 60(D) mm
Case color	Black (DIC F132 Equivalent)

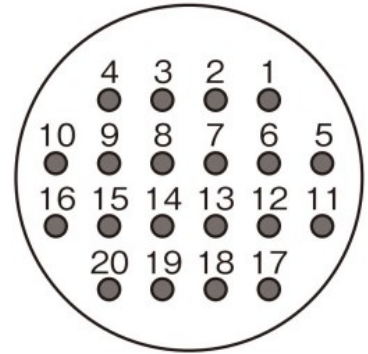
5-9 External interface

5-9-1 Power supply, communication and contact output interface (Standard)

Metal outlet: HR22-12WTRA-20PC (73) (HRS)

Contact: Gold plate

Pin	Signal	Specifications
1	LAN_RXD+	Ethernet
2	LAN_RXD-	
3	LAN_TXD+	
4	LAN_TXD-	
5	NC	Disconnected
6	S_NC1	Select contact 1
7	S_C1	(Break contact)
8	S_NC2	Select contact 2
9	S_C2	(Break contact)
10	NC	Disconnected
11	A_NC1	Emergency stop 1
12	A_C1	(Break contact)
13	A_NC2	Emergency stop 2
14	A_C2	(Break contact)
15	E_NO1	Enable contact 1
16	E_C1	(Make contact)
17	DC24V-(GND)	DC24V
18	DC24V+	
19	E_NO2	Enable contact 2
20	E_C2	(Make contact)



Pin assign

5-10 Linux OS

Linux embedded to EMP is described hereafter.

5-10-1 Application software development environment

Qt application recommended.

5-10-2 Embedded application

The below is the specification of Linux embedded to the EMP.

Items		Specifications
Glibc Version		2.23
Installation software	Qt5.7.1	GUI tool kit
	PCMan File Manager	File manager
	anthy	Conversion Engine
	GTK+	GIMP Toolkit library
	bash	Bash shell
	busybox	Program that saves Linux base command to one file
	udhcpd	DHCP client
	gdbserver	Gdb debugger that can connect to host
	Lighttpd	Web server: php and chi compatible
	x11	X Window system
	x11vnc	VNC sever/client
	LXTerminal	Terminal emulator
	ALSA	Audio mixer
	emg-setting	EMG setting tool
	florence	Screen keyboard
	leafpad	Text editor
	openssh	SSH sever
	libmodbus	Modbus library
FZLanTingHei-R-GB18030	RICHO (GB18030) font	

*For details ,Refer to the EMseries software development manual

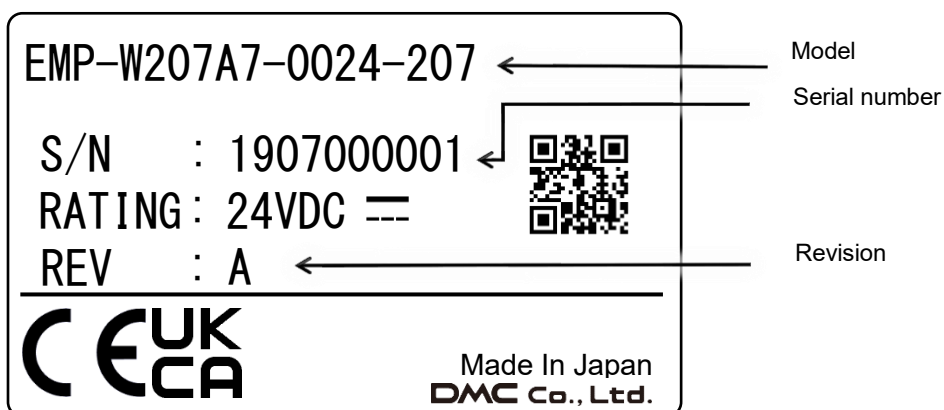
5-10-3 Supported language

The below is the supported languages on EMP.

Language	File location
Japanese	/usr/share/fonts/truetype/SourceHanSansJP-Normal.otf
English	/usr/share/fonts/truetype/ipag.ttf
Chinese (Traditional)	/usr/share/fonts/truetype/SourceHanSansTW-Normal.otf
Chinese (Simplified)※1	/usr/share/fonts/ricoh/HGJHeiMSimplified_GB18030.ttf
Hangul	/usr/share/fonts/truetype/SourceHanSansKR-Normal.otf
French	/usr/share/fonts/ttf/LiberationMono-Regular.ttf
Turkish	
Italian	/usr/share/fonts/truetype/ipag.ttf
Spanish	

*1 : Chinese government certified font

6. Product label



The above is an image of the Product label design.

The product will be labeled with the following information.

- Model name : The model of the product purchased.
- Serial number : The 10-digit control number assigned by us.
- Revision : The alphabet (1character) according to the latest shipping version.

7. Compatible Standards

7-1 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

This product is RoHS Directive of EU compliant.

Complying standard : RoHS : EN 50581 : 2012

8. List of Option

■ **Development Kit**

Model	Specification
SWDK-103	Convertor Board x 1 IS-APP Development tool x 1

■ **Option Cable**

Model	Specification
SWHC-F1-001	5m Cable x 1

9. Warranty

9-1 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.

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

9-2 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 Co., Ltd
- (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.

10. Production Discontinuance

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

11. 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/

1st Edition, June 2023

DMC Co., Ltd.

Office hours: 9:00 - 17:00 weekdays

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

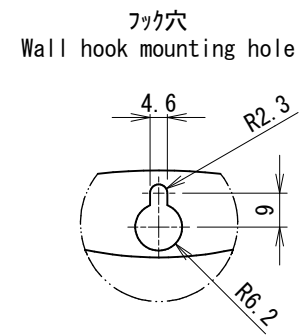
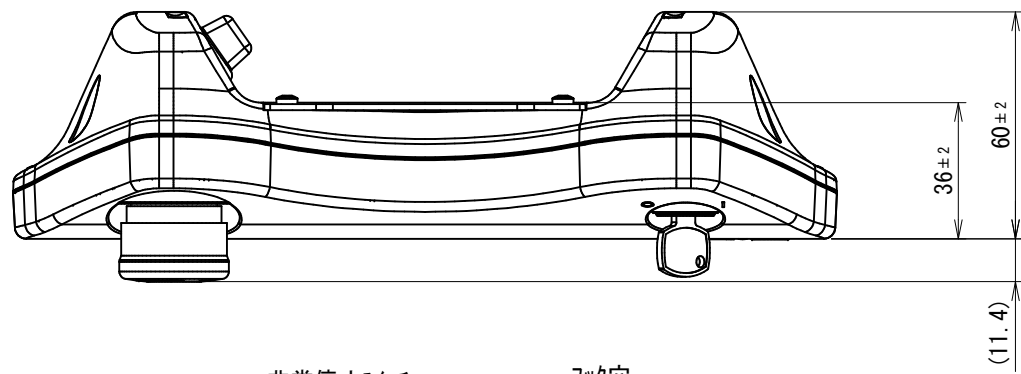
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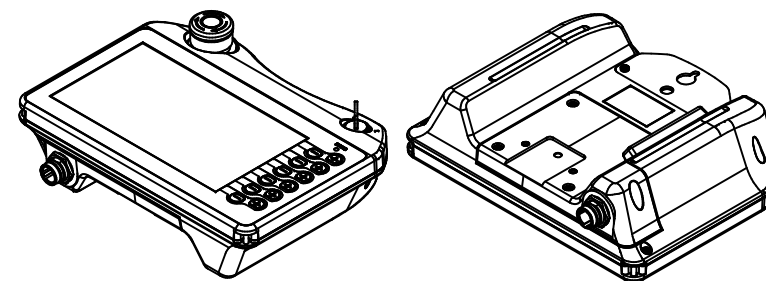
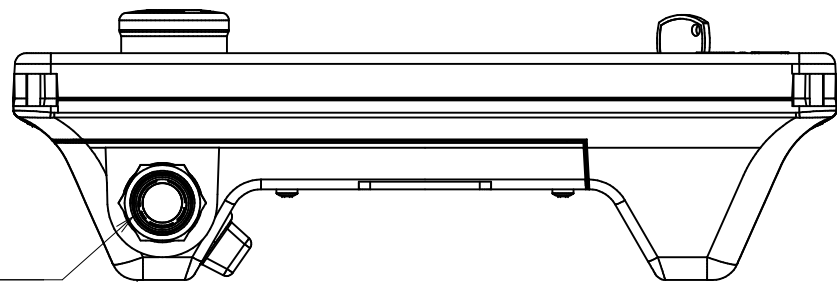
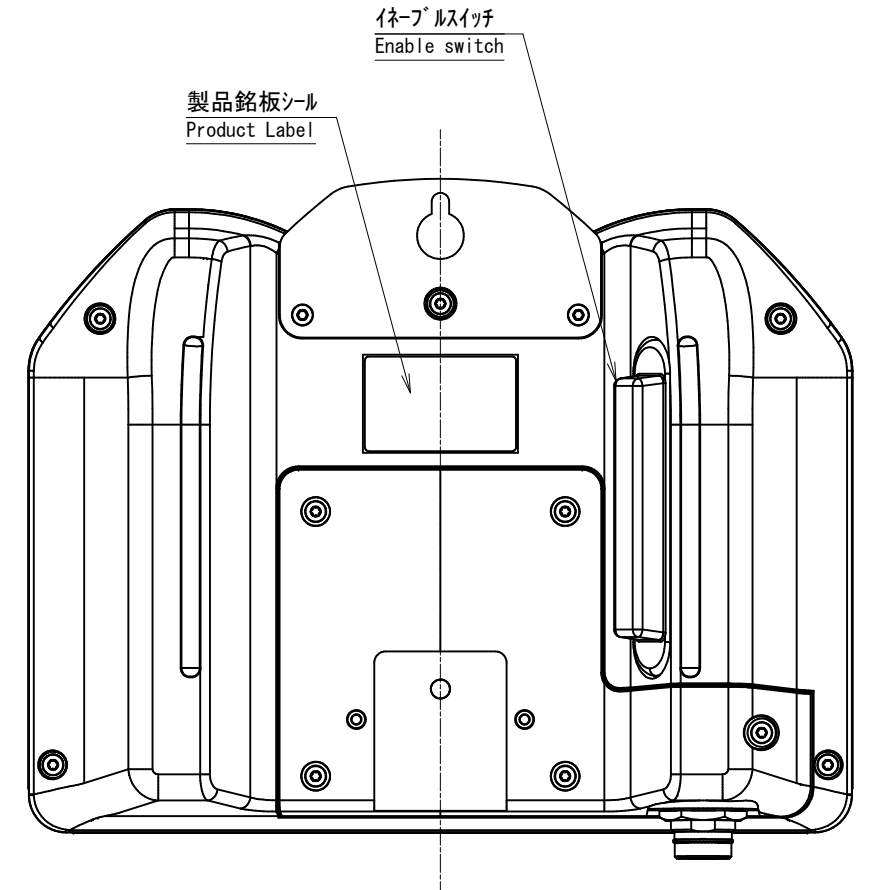
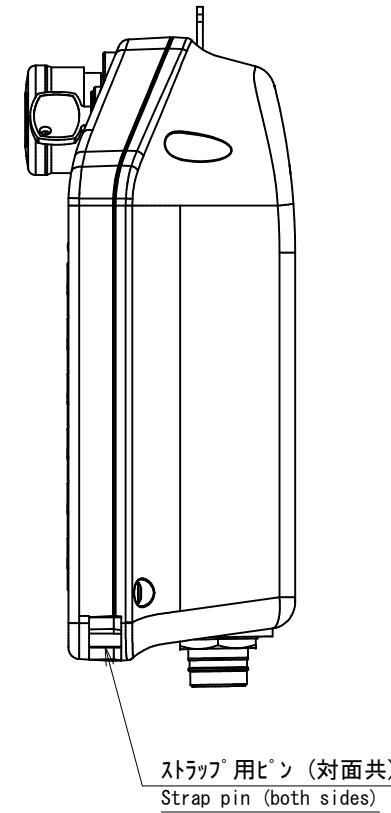
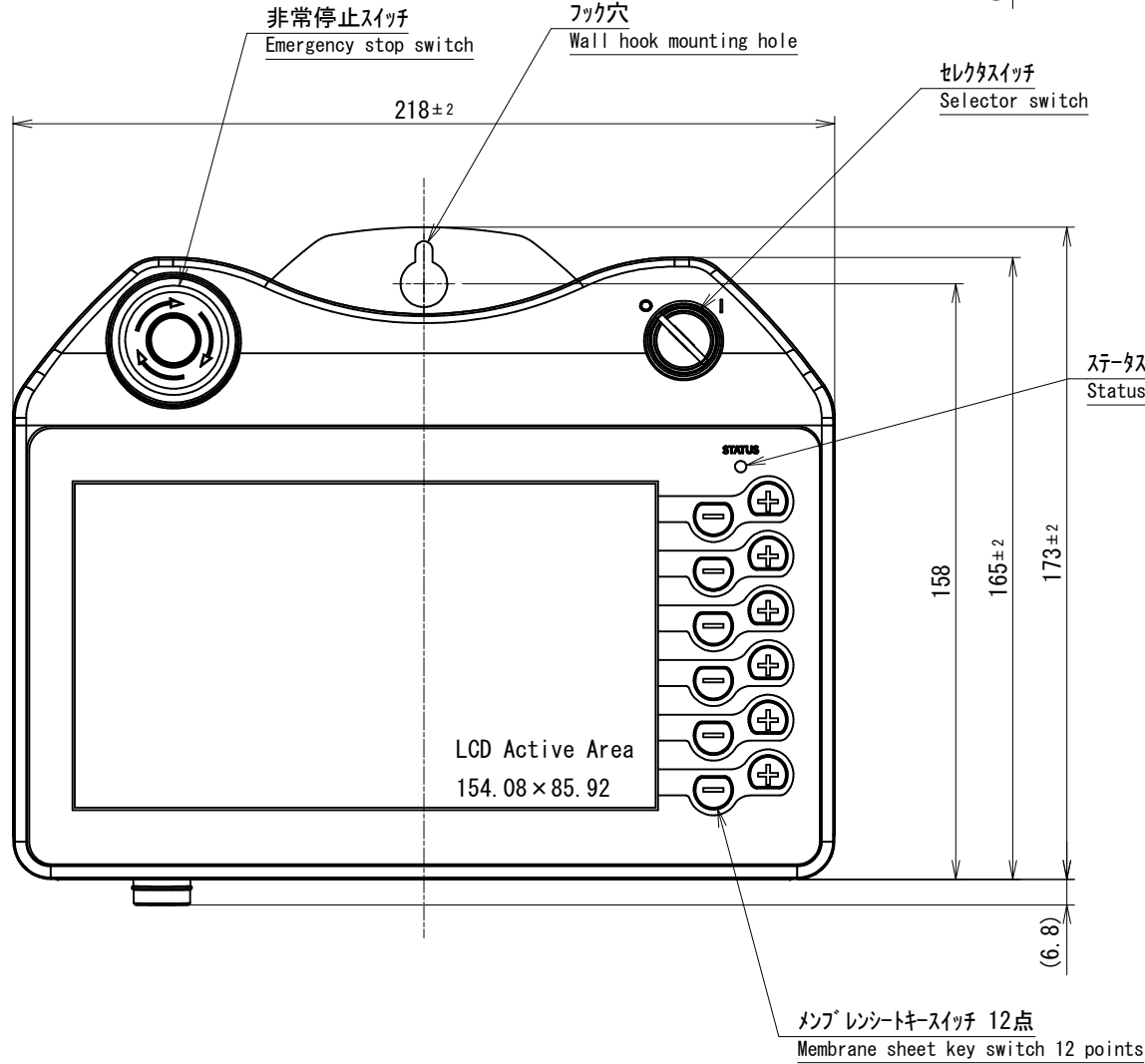
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寸法許容差 TOLERANCE	
呼び寸法 Nominal Dimensions	
L ≤ 3	±0.4
3 < L ≤ 6	±0.48
6 < L ≤ 10	±0.58
10 < L ≤ 18	±0.7
18 < L ≤ 30	±0.84
30 < L ≤ 50	±1.0
50 < L ≤ 80	±1.2
80 < L ≤ 120	±1.4
120 < L ≤ 180	±1.6
180 < L ≤ 250	±1.85
250 < L ≤ 315	±2.1
315 < L ≤ 400	±2.3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



SYM	改訂日 DATE	改訂内容 DESCRIPTION	ページ PAGE	担当 DESIGNED
	2020.03.27	新規図面登録	—	S. Yoshimoto
△	2023.06.14	表題欄社名変更、英語併記 Company name change in title block, English written together.	—	S. Takada



NOTES

- 筐体色：黒 (DIC F132相当)
Case color : Black (DIC F132 Equivalent)
- 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	2023.06.14	部署 SECTION	Technical Dept.	尺度 SCALE	CAD登録名 CAD FILE NAME	18K003-2_EMP-W207A7_OUTLINE	RoHS対応品 RoHS compliant
承認 APPROVED		検図 CHECKED	製図 DRAWN	設計 DESIGNED	製品名 MODEL	EMP-W207A7-0024-XX7	
T. Okada	S. Yoshimoto	S. Takada	S. Takada	単位 UNIT	図名 TITLE	OUTLINE	ページ PAGE
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