

Designing and Handling Guideline for CX90MW6-16P

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1. Revision History

Revision History	Description of Revisions	Handled by	Date	Remarks
0.1	Draft version	Y.B.PARK	Aug., 05, 2021	-
1.0	Released drawing(RE-2-2139)	Y.B.PARK	Feb., 02, 2023	-
1.1	Released drawing(RE-2-2149)	Y.G.KIM	Feb., 16, 2023	-
1.2	Released drawing(RE-2-2164)	Y.G.KIM	Feb., 28, 2023	-
1.3	Released drawing(RE-2-2267)	Y.B.PARK	June, 01, 2023	-

2. Introduction

2.1 Purpose

The guidelines are intended to provide information on product features and how to handle them.

Guidelines are intended to provide general information and do not limit your design or guarantee results in all situations.

2.2 Scope

Guidelines describe basic design information, recommended device dimensions, and regulatory requirements.

These guidelines will be revised from time to time to reflect changes in technology and production capacity.

2.3 Reference Specification

- Universal Serial Bus Type-C Cable and Connector Specification

Revision 2.1 May 2021

3. Product Information

3.1 Product Feature

- 1) Waterproof type USB Type-C Connector
 - * Meet the requirements of the IPX8 standard
- 2) 6A current rating for quick charging.
- 3) USB 2.0 High-speed(480Mbps) transmission.
- 4) Improved peeling strength using 6 THR* mounting posts.
 - * Through-Hole-Reflow
- 5) Reversible plug orientation ensures easy insertion.
- 6) Compliant to USB specification (USB Type-C compliant interface connector)

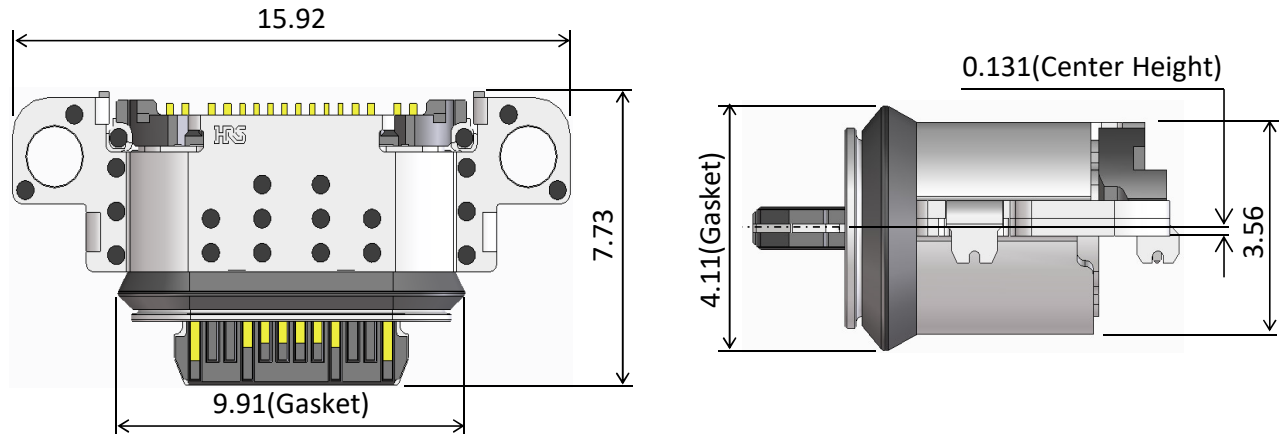
3.2 Specification

No. of Contacts	16
P.C.B Mounting type	Mid-Mount
Soldering type	Single row SMT
Current rating	DC 1.5A Max. for each power pin (i.e. A1, A4, A9, A12, B1, B4, B5, B9, B12) DC 0.25 A for the other pins
Voltage rating	48V AC/DC
Operating Temperature	-40°C ~ +105°C (Including Temp.rise), 95% RH MAX
Storage Condition	-10°C ~ +60°C (With Packing), 15% ~ 70% RH
Contact Resistance	40mΩ Max. (Initial)
Withstanding Voltage	100V AC for 1 minute
Insulation Resistance	100MΩ Min. (500V DC)
Mating Cycles	10,000 times
Insertion/ Extraction Force	Insertion: 5~20N, Extraction: 8~20N (Initial), 6~20N (After test)

Note

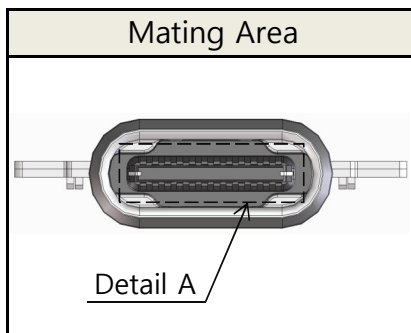
- * Storage conditions apply to original packaging only, void if opened. Warranty period is 12month max. in the storage conditions above and calculated by manufacture date code.

3.3 Product Size



Width	15.92
Length	7.73
Height	3.56
Center Height	0.131

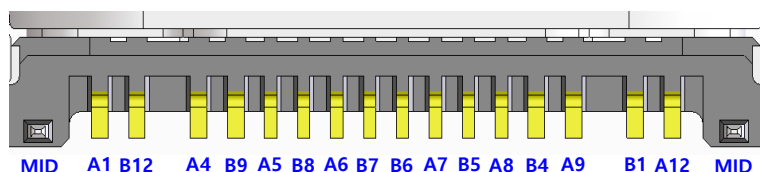
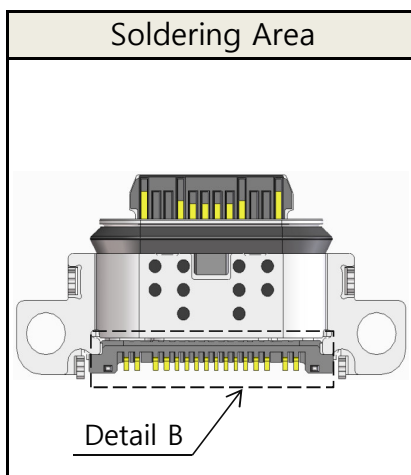
3.4 Pin Assignment



A1		A4	A5	A6	A7	A8	A9		A12
GND		Vbus	CC1	D+	D-	SBU1	Vbus		GND
GND		Vbus	SBU2	D-	D+	CC2	Vbus		GND
B12		B9	B8	B7	B6	B5	B4		B1

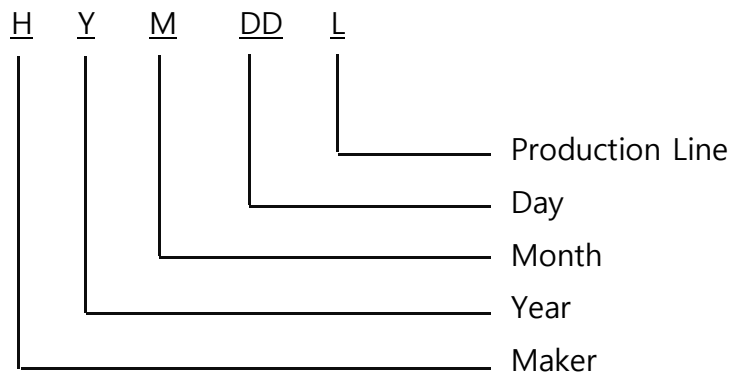
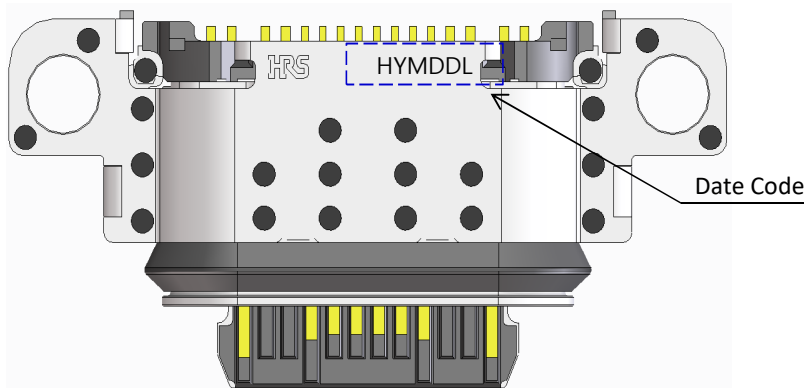


Detail A



Detail B

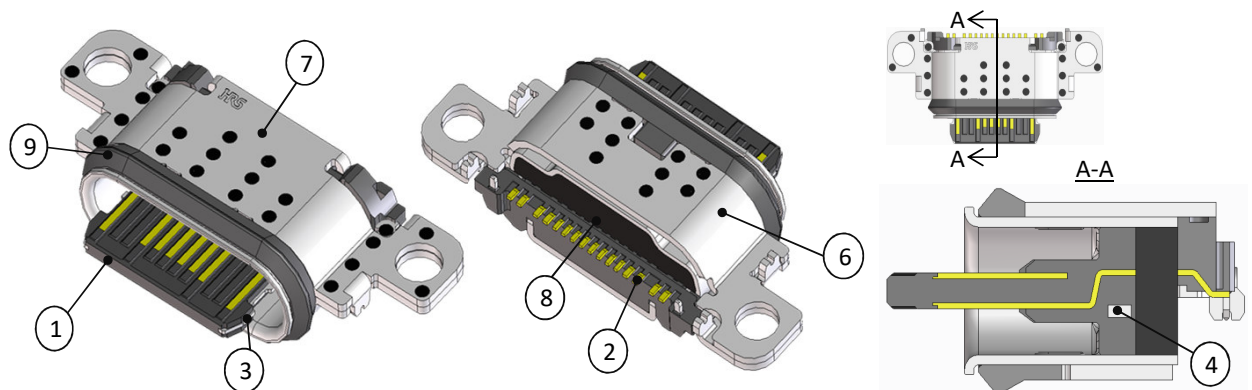
3.5 Manufacturing Date Code System



Maker		Year		Month		Day		Production Line	
Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark
Hirose Korea	H	2020	0	Jan.	1	1st	01	SAMPLE	S
		2021	1	Feb.	2	2nd	02	Manual #1	1
		2022	2	Mar.	3	3rd	03	Manual #2	2
		2023	3	Apr.	4	4th	04	Manual #3	3
		2024	4	May	5	5th	05	Manual #4	4
		2025	5	Jun.	6	6th	06	...	...
		2026	6	Jul.	7	7th	07	Auto #1	A
		2027	7	Aug.	8	8th	08	Auto #2	B
		2028	8	Sep.	9	9th	09	Auto #3	C
		2029	9	Oct.	A	10th	10	Auto #4	D
		2030	0	Nov.	B	11th	11	Auto #5	E
		...	...	Dec.	C	...	...	...	...

3.6 Part List

No	Part	Materials	Finish / Color
1	Insulator	Thermoplastic	UL94V-0, Black Color
2	Contact	Copper Alloy	Contact, Lead Area : Gold over Nickel plated Non-Contact Area : Nickel plated
3	Mid plate	Stainless Steel	Nickel plated
4	Hold plate	Stainless Steel	Cleansing
5	Main shell	Stainless Steel	Cleansing
6	Lower shell	Stainless Steel	Nickel plated
7	Upper shell	Stainless Steel	Nickel plated
8	Potting	Silicone	Black Color
9	Gasket	Silicone	Gray Color



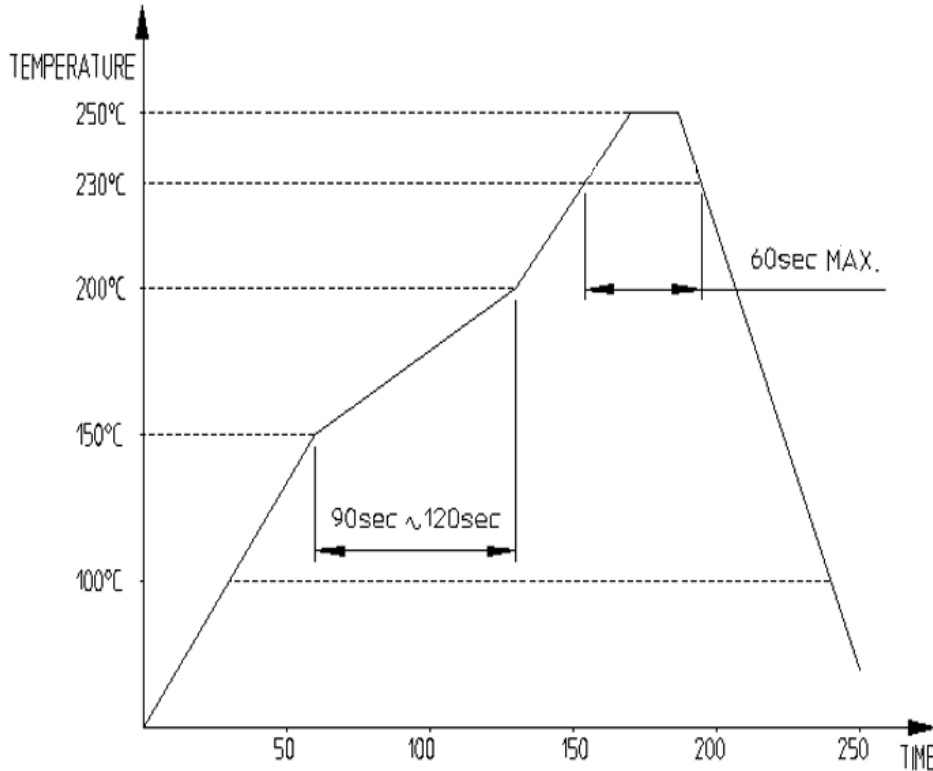
3.7 Configuration of Product Name

CX 90 M W 6 - 16 P
 ① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	CX	CX Series
②	Soldering Type	90	Right angle SMT
③	Mounting Type	M	Mid-mount
④	Special specifications	W	Waterproof
⑤	Serial No	6	None or 1,2,3...
⑥	Contact No	16	16 position
⑦	Contact Type	P	Male contacts

4. Notice for Soldering

4.1 Recommended Reflow Temperature Profile



- Profile measuring point

The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.

- Reflow cycles

Up to 2 cycles of reflow soldering are possible under the same

* Temperature between 1st and 2nd reflow must be cooled down to room temperature.

- Reflow heating method and condition

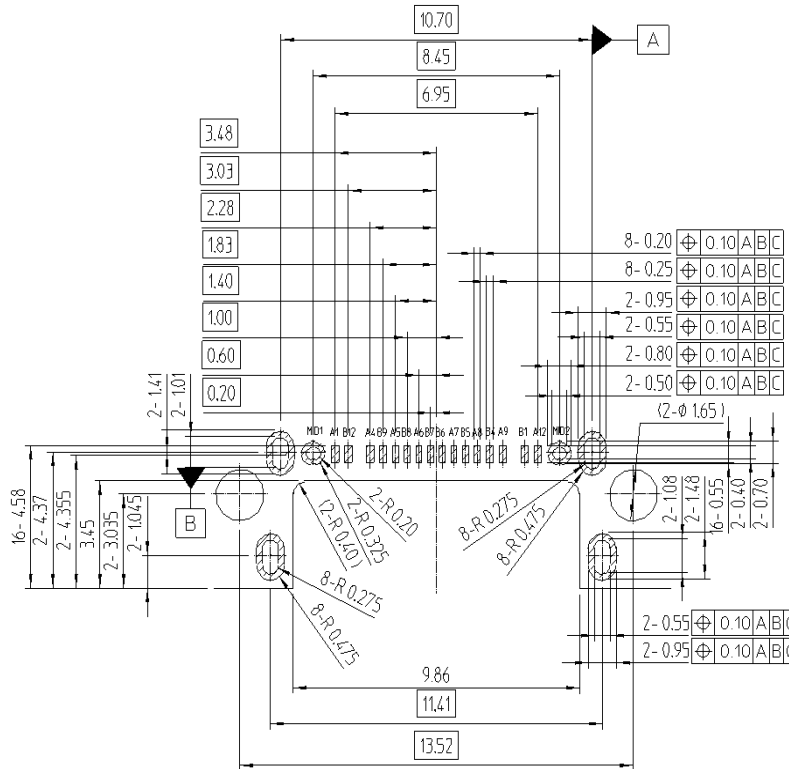
Far-infrared heater and hot convective blowers used in combination, normal atmosphere, or nitrogen atmosphere.

- Top surface of the contact leads may not covered by solder depending on reflow condition.

4.2 PCB Designing

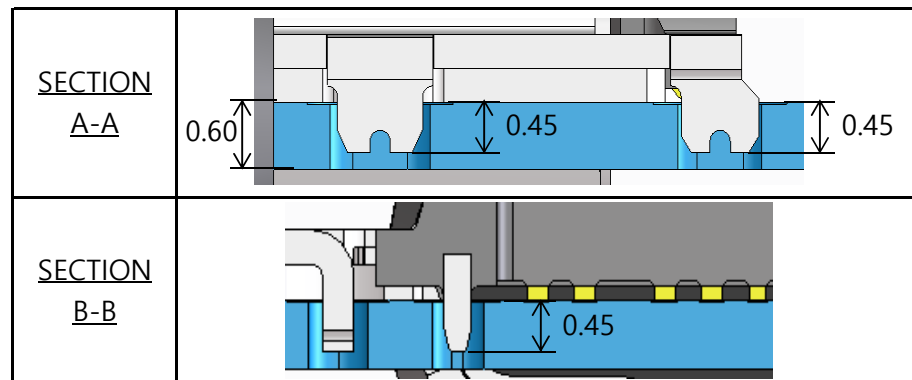
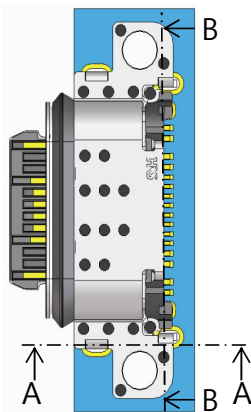
RECOMMENDED PCB LAYOUT (TOP-VIEW)

(REFERENCE ONLY)



4.3 PCB Thickness

Recommended PCB thickness is 0.6 ± 0.05 mm considering 0.45 ± 0.1 mm of PIP leg length.



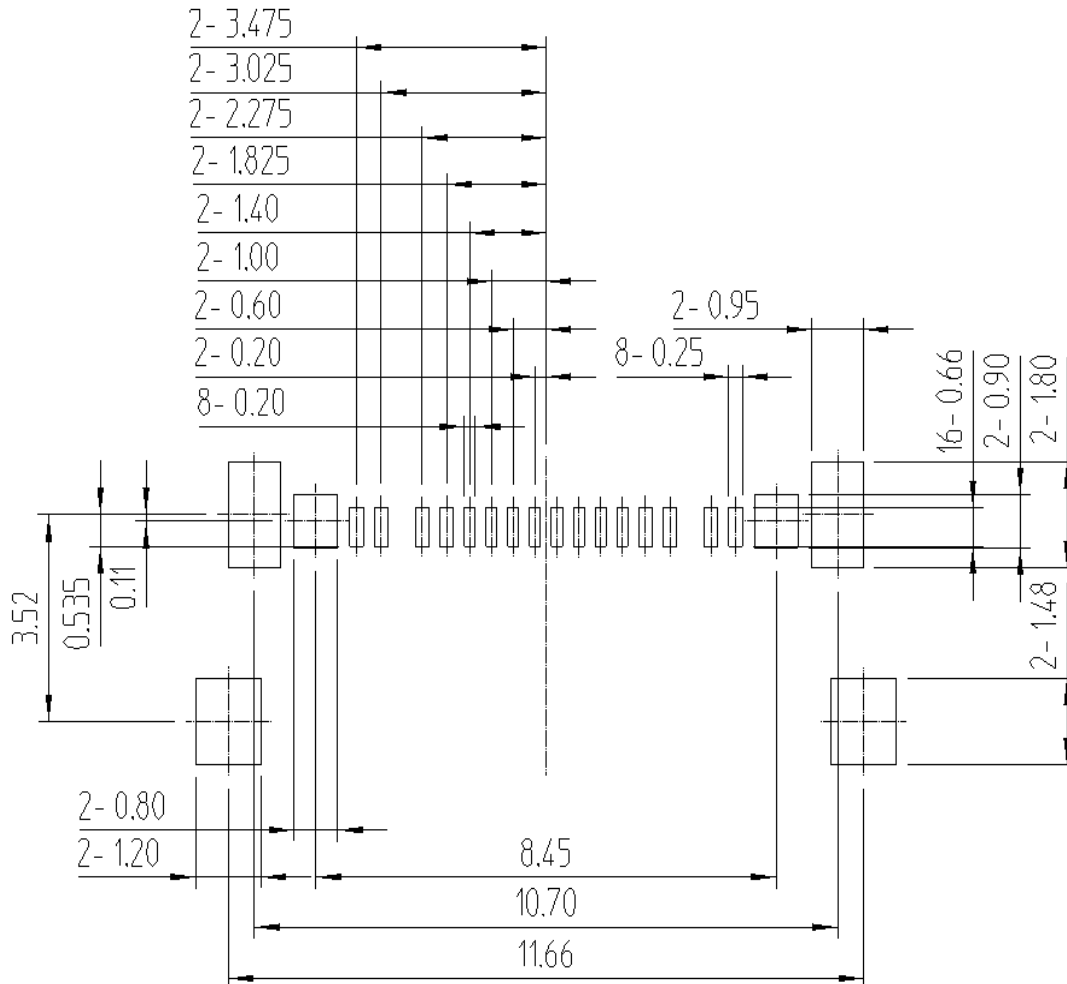
Section A-A

Section B-B

The PIP leg can be protruded to the bottom side of PCB in case the PCB thickness is less than the PIP leg length.

4.4 Metal Mask Designing

RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)



Note

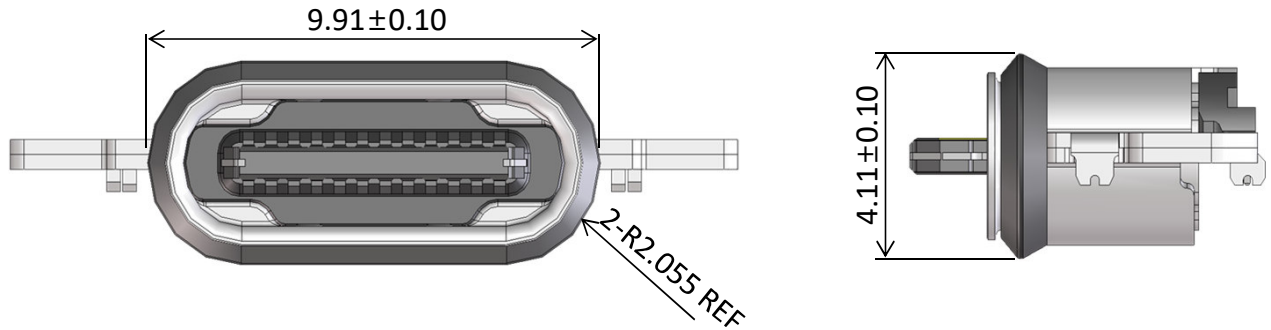
- * Recommended metal mask thickness is 0.1mm. Above metal mask dimensions are suggested based on 0.6mm of PCB thickness. Please adjust the metal mask opening size in case of thicker PCB than recommended because the lack of solder amount at the PIP holes can be happened.

4.5 Solder Paste

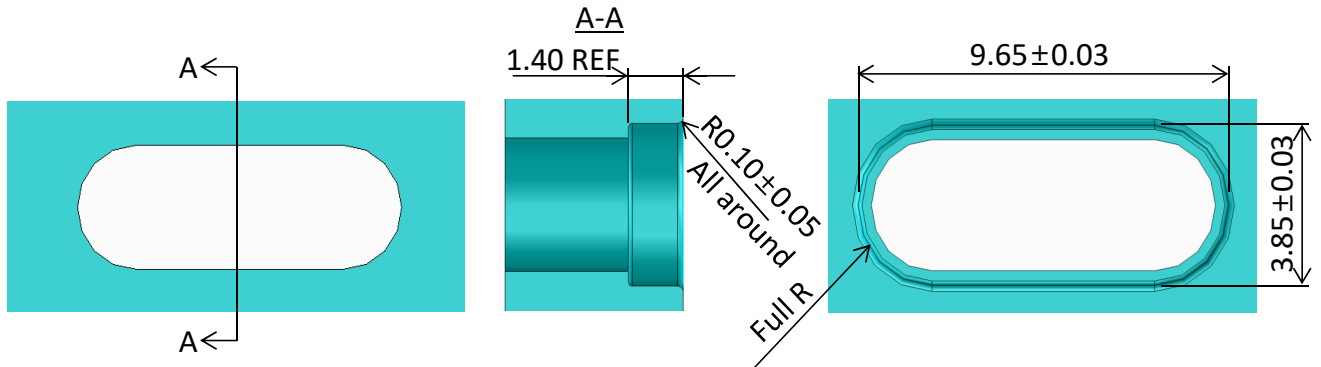
Lead-free solder paste

5. Set Chassis Design Guide

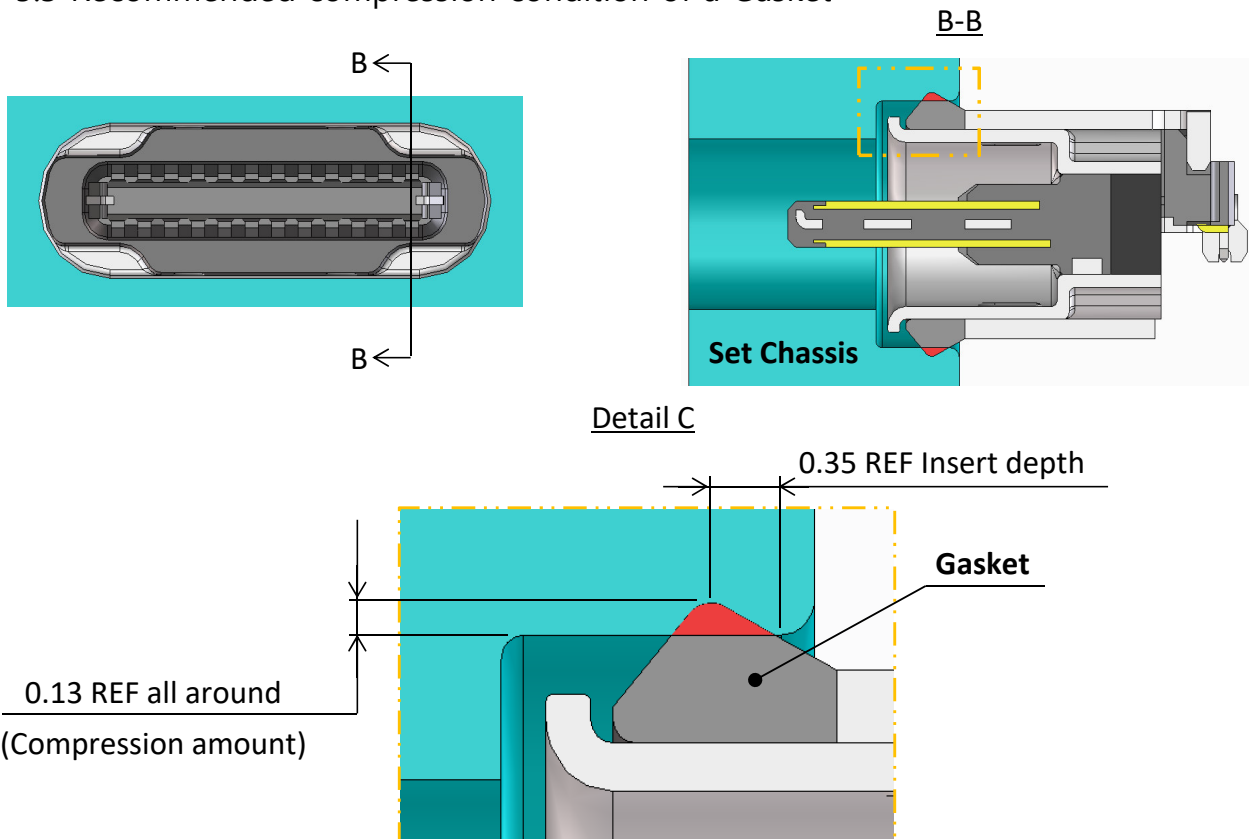
5.1 Connector with a Gasket



5.2 Recommended dimensions of the device chassis



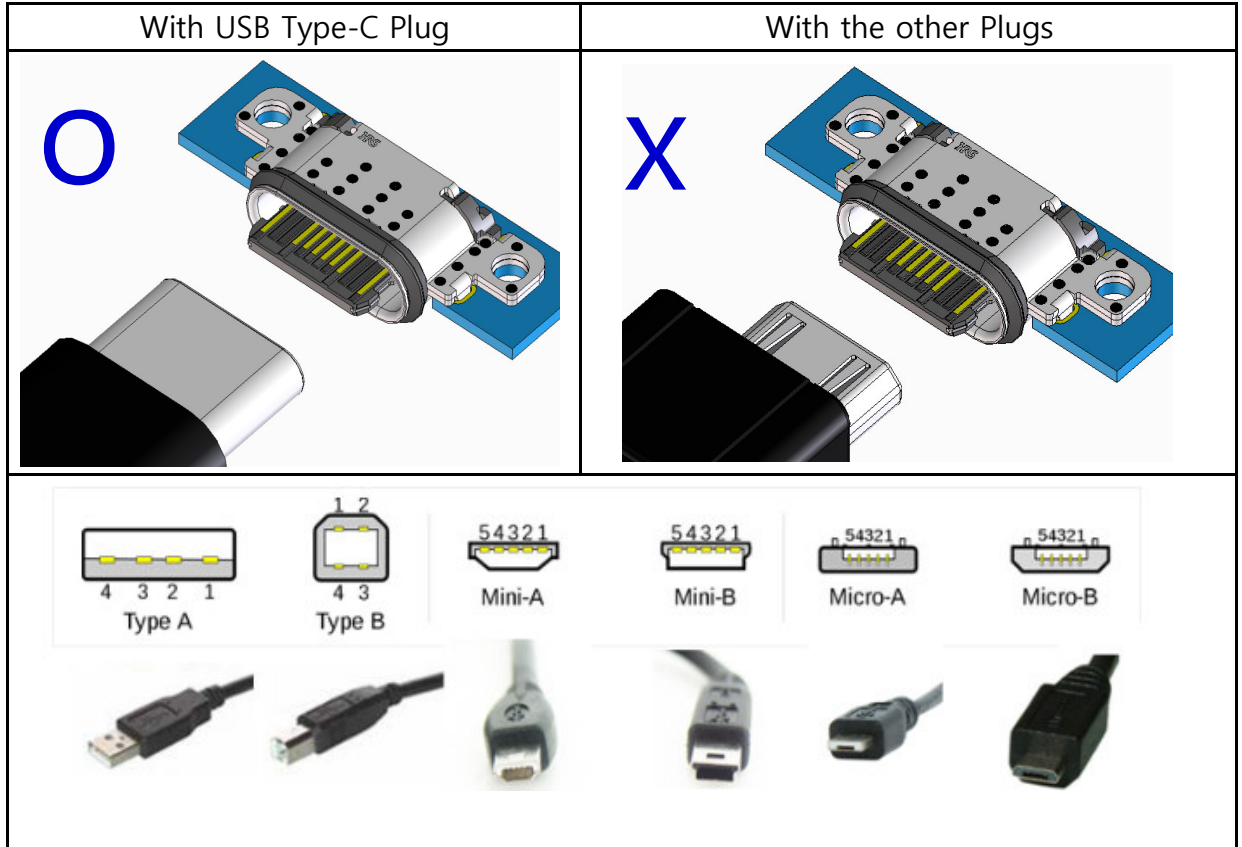
5.3 Recommended compression condition of a Gasket



6. Notice for Connector Handling

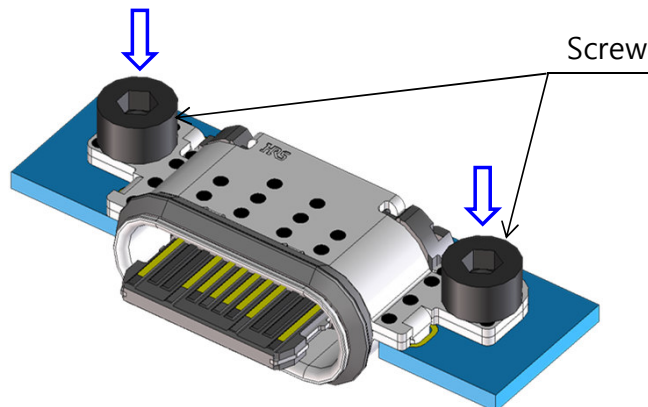
6.1 Mating Plug

Please use USB Type-C Plug only.



6.2 Recommended Screw

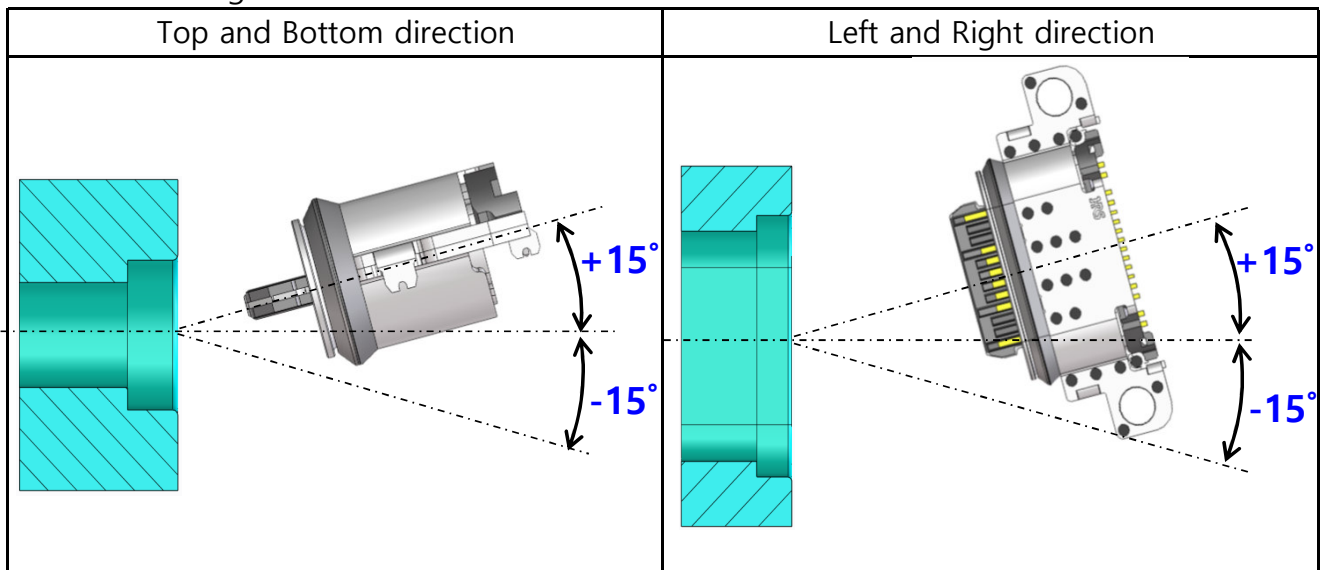
The recommended Screw size is M1.4.



7. Connector Installation Guideline

15° max. of angular position or 0.13mm max. of shifted conditions are available during assembly process which the connector is inserted into the set chassis. Then, the connector should be back to the center position without angular condition after finishing the assembly process in order to make the waterproof performance stable.

※ Maximum angle when assembled in to the set chassis



※ Maximum shifted amount when assembled in to the set chassis

