

SOLUM

Newton Pro

Electronic Shelf Label Datasheet

11/02/2026

Summary

This datasheet presents the general performance and specifications of Newton Pro Label for SOLUM Electronic Shelf Label (ESL) System.



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Document History

Rev.	Date	Revision History	Page
Preliminary	12/14/2023	Preliminary release	-
v1.0.0	14/03/2024	Specification modification	
v1.1.0	20/03/2024	Specification & Label modification	
v2.0.0	03/06/2024	Newton Pro design modification	
v2.1.0	05/06/2024	Freezer design / NFC location modification	
v2.2.0	27/08/2024	Standardize	
v2.3.0	17/10/2024	Freezer Tags Battery modification	9
v2.4.0	30/07/2025	Added NCC certification	
v2.4.1	23/09/2025	Deleted 6.0" model	
v2.4.2	22/10/2025	Change to 12.2" Model Name	
v3.0.0	11/02/2026	Added 3.5"(3.45"), 3.5"F (3.45") model	

1. Preface

1.1. About This Guide

This datasheet presents the specifications and general performance of SOLUM's Newton Pro Electronic Shelf Labels (ESLs) lineup.

1.2. Audience

This manual is intended for any user (IT, operations, store managers, installers, etc.) authorized to operate and install SOLUM ESLs.

1.3. Abbreviations and Acronyms

Terminology/Abbreviation	Description
GW	Gateway
ESL	Electronic Shelf Label
RF	Radio Frequency
IT	Information Technology
PoE	Power over Ethernet
TBD	To Be Decided

2. Overview

SOLUM Newton Pro Electronic Shelf Labels (ESLs) are components to a total SOLUM's ESL System. The SOLUM's ESL System consists of the ESLs, Gateway(s), Server, and optional accessories (such as the Newton Pro Remote Controller) and is used to electronically displays key information such as price and Product information, that are traditionally printed or written on paper in environments like supermarkets, warehouses, and factories.

SOLUM's Newton Pro ESLs are the industry leading solutions that Provide the longest battery life, fastest update speed, built in LEDs, built in button IP68 rating for various environments, multiple pages per ESL, and more to take the operation beyond just displaying information on the ESLs.

Newton Pro ESLs come in various sizes and colors to meet all customer use cases. They are battery powered for ease of deployment and wirelessly receive updates from SOLUM Gateway for.



Figure 1. PRODUCT LINE-UP

3. Specification

This section details the specifications of each ESL by size. ESLs are identified by the diagonal measurement of the display in inches. For example, a 2.9" ESL refers to an ESL with the diagonal display dimension of 2.9".

3.1. Product Specification

Item	Description	
Label Dimensions (W x H x D)	1.6"V	36.7 x 44.9 x 10.45 mm / 1.45 x 1.77 x 0.41 in
	1.6"H	44.9 x 36.7 x 10.45 mm / 1.77 x 1.45 x 0.41 in
	2.2"	67.0 x 37.4 x 10.45 mm / 2.64 x 1.47 x 0.41 in
	2.2"F	67.0 x 37.4 x 10.45 mm / 2.64 x 1.47 x 0.41 in
	2.6"	79.2 x 42.5 x 10.45 mm / 3.12 x 1.67 x 0.41 in
	2.6"F	79.2 x 42.5 x 10.45 mm / 3.12 x 1.67 x 0.41 in
	2.7"	76.0 x 49.5 x 10.45 mm / 2.99 x 1.95 x 0.41 in
	2.9"	85.9 x 41.3 x 10.45 mm / 3.38 x 1.62 x 0.41 in
	2.9"F	85.9 x 41.3 x 10.45 mm / 3.38 x 1.62 x 0.41 in
	3.5" (3.45")	100.2 x 49.6 x 10.45 mm / 3.94 x 1.95 x 0.41 in
	3.5"F (3.45")	100.2 x 49.6 x 10.45 mm / 3.94 x 1.95 x 0.41 in
	3.5" (3.52")	100.2 x 49.6 x 10.45 mm / 3.94 x 1.95 x 0.41 in
	3.5"F (3.52")	100.2 x 49.6 x 10.45 mm / 3.94 x 1.95 x 0.41 in
	4.2"	98.1 x 83.7 x 12.45 mm / 3.86 x 3.29 x 0.49 in
	4.3"	130.2 x 42.3 x 13.0 mm / 5.13 x 1.67 x 0.51 in

	4.5"	128.6 x 53.0 x 13.0 mm / 5.06 x 2.09 x 0.51 in
	5.8"	164.0 x 66.8 x 14.3 mm / 6.45 x 2.63 x 0.56 in
	5.8"F	164.0 x 66.8 x 14.3 mm / 6.45 x 2.63 x 0.56 in
	6.1"	133.0 x 109.0 x 14.3 mm / 5.23 x 4.29 x 0.56 in
	7.5"	125.0 x 182.9 x 14.85 mm / 4.92 x 7.2 x 0.58 in
	9.7"	170.2 x 223.6 x 14.85 mm / 6.7 x 8.8 x 0.58 in
	11.6"	192.0 x 269.1 x 15.35 mm / 7.50 x 10.6 x 0.60 in
	12.2"	216.2 x 260.0 x 15.35 mm / 8.51 x 10.23 x 0.60 in
Display Dimensions (W x H)	1.6"V	27.0 x 27.0 mm / 1.06 x 1.06 in
	1.6"H	27.0 x 27.0 mm / 1.06 x 1.06 in
	2.2"	48.1 x 26.0 mm / 1.89 x 1.02 in
	2.2"F	48.1 x 26.0 mm / 1.89 x 1.02 in
	2.6"	60.0 x 30.7 mm / 2.37 x 1.21 in
	2.6"F	60.0 x 30.7 mm / 2.37 x 1.21 in
	2.7"	57.3 x 38.2 mm / 2.25 x 1.50 in
	2.9"	67.6 x 29.6 mm / 2.66 x 1.16 in
	2.9"F	67.6 x 29.6 mm / 2.66 x 1.16 in
	3.5" (3.45")	79.5 x 37.1 mm / 3.13 x 1.46 in
	3.5"F (3.45")	79.5 x 37.1 mm / 3.13 x 1.46 in
	3.5" (3.52")	81.0 x 38.0 mm / 3.19 x 1.50 in
	3.5"F (3.52")	81.0 x 38.0 mm / 3.19 x 1.50 in

	4.2"	84.8 x 63.6 mm / 3.34 x 2.50 in
	4.3"	105.4 x 30.7 mm / 4.15 x 1.21 in
	4.5"	104.2 x 38.2 mm/ 4.10 x 1.50 in
	5.8"	139.0 x 47.7 mm / 5.47 x 1.88 in
	5.8"F	139.0 x 47.7 mm / 5.47 x 1.88 in
	6.1"	118.8 x 88.2 mm / 4.68 x 3.47 in
	7.5"	97.9 x 163.2 mm / 3.8 x 6.4 in
	9.7"	141.1 x 201.6 mm / 5.56 x 7.94 in
	11.6"	163.0 x 244.5 mm / 6.42 x 9.63 in
	12.2"	190.1 x 237.6 mm / 7.48 x 9.35 in
Display Resolution	1.6"V	200 x 200 pixels (188 dpi)
	1.6"H	200 x 200 pixels (188 dpi)
	2.2"	296 x 160 pixels (156 dpi)
	2.2"F	296 x 160 pixels (156 dpi)
	2.6"	360 x 184 pixels (152 dpi)
	2.6"F	360 x 184 pixels (152 dpi)
	2.7"	300 x 200 pixels (133 dpi)
	2.9"	384 x 168 pixels (144 dpi)
	2.9"F	384 x 168 pixels (144 dpi)
	3.5" (3.45")	480 x 224 pixels (155 dpi)
	3.5"F (3.45")	480 x 224 pixels (155 dpi)

	3.5" (3.52")	384 x 180 pixels (120 dpi)
	3.5"F (3.52")	384 x 180 pixels (120 dpi)
	4.2"	400 x 300 pixels (120 dpi)
	4.3"	522 x 152 pixels (125 dpi)
	4.5"	480 x 176 pixels (117 dpi)
	5.8"	792 x 272 pixels (144 dpi)
	5.8"F	792 x 272 pixels (144 dpi)
	6.1"	648 x 480 pixels (138 dpi)
	7.5"	480 x 800 pixels (126 dpi)
	9.7"	672 x 960 pixels (121 dpi)
	11.6"	640 x 960 pixels (100 dpi)
	12.2"	768 x 960 pixels (102 dpi)
Label Weight	1.6"V	19.20 g / 0.68 oz
	1.6"H	19.75 g / 0.70 oz
	2.2"	32.65 g / 1.15 oz
	2.2"F	32.65 g / 1.15 oz
	2.6"	38.40 g / 1.35 oz
	2.6"F	38.40 g / 1.35 oz
	2.7"	41.70 g / 1.47 oz
	2.9"	40.25 g / 1.42 oz
	2.9"F	40.25 g / 1.42 oz

	3.5" (3.45")	49.25 g / 1.73 oz
	3.5"F (3.45")	49.25 g / 1.73 oz
	3.5" (3.52")	50.00 g / 1.76 oz
	3.5"F (3.52")	50.00 g / 1.76 oz
	4.2"	89.90 g / 3.17 oz
	4.3"	70.80 g / 2.50 oz
	4.5"	90.00 g / 3.17 oz
	5.8"	131.00 g / 4.62 oz
	5.8"F	131.00 g / 4.62 oz
	6.1"	167.00 g / 5.89 oz
	7.5"	238.60 g / 8.42 oz
	9.7"	386.60 g / 13.64 oz
	11.6"	557.00 g / 19.65 oz
	12.2"	586.00 g / 20.67 oz
Viewing Angle	Nearly 180°	
Display Colors	1.6"V	●○●● BWRY (Black, White, Red, Yellow)
	1.6"H	●○●● BWRY (Black, White, Red, Yellow)
	2.2"	●○●● BWRY (Black, White, Red, Yellow)
	2.2"F	●○ BW (Black, White)
	2.6"	●○●● BWRY (Black, White, Red, Yellow)
	2.6"F	●○ BW (Black, White)

	2.7"	●○●● BWRY (Black, White, Red, Yellow)
	2.9"	●○●● BWRY (Black, White, Red, Yellow)
	2.9"F	●○ BW (Black, White)
	3.5" (3.45")	●○●● BWRY (Black, White, Red, Yellow)
	3.5"F (3.45")	●○ BW (Black, White)
	3.5" (3.52")	●○●● BWRY (Black, White, Red, Yellow)
	3.5"F (3.52")	●○ BW (Black, White)
	4.2"	●○●● BWRY (Black, White, Red, Yellow)
	4.3"	●○●● BWRY (Black, White, Red, Yellow)
	4.5"	●○●● BWRY (Black, White, Red, Yellow)
	5.8"	●○●● BWRY (Black, White, Red, Yellow)
	5.8"F	●○ BW (Black, White)
	6.1"	●○●● BWRY (Black, White, Red, Yellow)
	7.5"	●○●● BWRY (Black, White, Red, Yellow)
	9.7"	●○●● BWRY (Black, White, Red, Yellow)
	11.6"	●○●● BWRY (Black, White, Red, Yellow)
	12.2"	●○●● BWRY (Black, White, Red, Yellow)
Battery	1.6"V	Coin Battery (CR2450) X 1
	1.6"H	Coin Battery (CR2450) X 1
	2.2"	Coin Battery (CR2450) X 2
	2.2"F	Coin Battery (CR2450D) X 2

	2.6"	Coin Battery (CR2450) X 2
	2.6"F	Coin Battery (CR2450D) X 2
	2.7"	Coin Battery (CR2450) X 2
	2.9"	Coin Battery (CR2450) X 2
	2.9"F	Coin Battery (CR2450D) X 2
	3.5" (3.45")	Coin Battery (CR2450) X 2
	3.5"F (3.52")	Coin Battery (CR2450D) X 2
	3.5" (3.52")	Coin Battery (CR2450) X 2
	3.5"F (3.52")	Coin Battery (CR2450D) X 2
	4.2"	Coin Battery (CR2450) X 2
	4.3"	Battery Pack (CR2450 X 3)
	4.5"	Battery Pack (CR2450 X 3)
	5.8"	Battery Pack (CR2450 X 4)
	5.8"F	Battery Pack (CR2450D X 4)
	6.1"	Battery Pack (CR2450 X 4)
	7.5"	Battery Pack (CR2450 X 4)
	9.7"	Battery Pack (CR2450 X 5)
	11.6"	Battery Pack (CR2450 X 5)
	12.2"	Battery Pack (CR2450 X 6)
Wireless Communication	2.4 GHz Unlicensed ISM band for BLE physical layer with SOLUM Proprietary Protocol	
Communication	98 feet (30m) radius Line of Sight	

Distance		
Security	128-bit AES Encryption	
Compliance	FCC, IC, CE, UKCA, TELEC, KC, RoHS, WEEE, NCC*	
Operating Temperature	1.6"V	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	1.6"H	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	2.2"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	2.2"F**	-25°C ~ 0°C (-13°F ~ 32°F)
	2.6"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	2.6"F**	-25°C ~ 0°C (-13°F ~ 32°F)
	2.7"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	2.9"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	2.9"F**	-25°C ~ 0°C (-13°F ~ 32°F)
	3.5" (3.45")	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	3.5"F** (3.45")	-25°C ~ 0°C (-13°F ~ 32°F)
	3.5" (3.52")	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	3.5"F** (3.52")	-25°C ~ 0°C (-13°F ~ 32°F)
	4.2"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	4.3"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	4.5"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	5.8"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	5.8"F**	-25°C ~ 0°C (-13°F ~ 32°F)

	6.1"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	7.5"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	9.7"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	11.6"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
	12.2"	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH
Storage Temperature	0°C ~ 40°C (32°F ~ 104°F) @45~70% RH	

*NCC certification is limited to the 2.6" and 2.9" models.

**Freezer ESL must be used in freezer environments.

3.2. Radio (RF) Specification

Item	Parameter	Specification			Unit	Condition
		Min	Typ	Max		
Tx	Tx Power	-	4	-	dBm	
	[Carrier Frequency Offset and Drift]	-75	0	75	kHz	
	Tx Current	-	-	10	mA	Total current at max Tx Power
Rx	Receiver Sensitivity	-85	-	-	dBm	PER < 5%

3.3. NFC Specification

Item	Parameter	Specification			Unit	Condition
		Min	Typ	Max		
NFC	Read Distance	-	0.7	-	in	
		-	20	-	mm	

The NFC antenna location is shown for each ESL size.

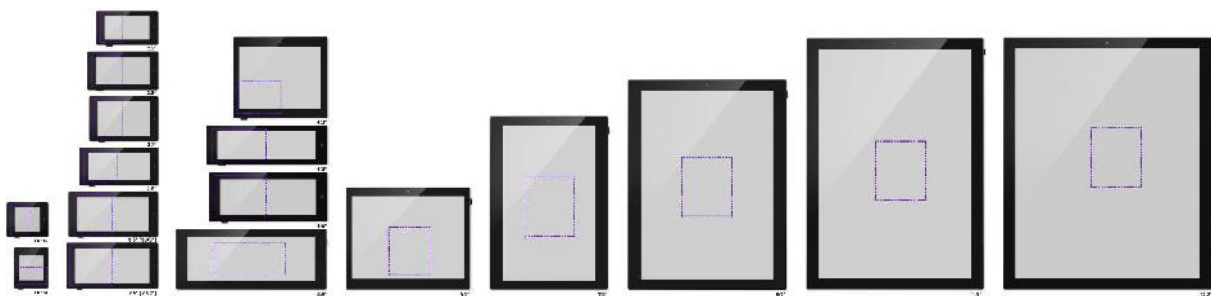


Figure 2. NFC LOCATION

3.4. Features

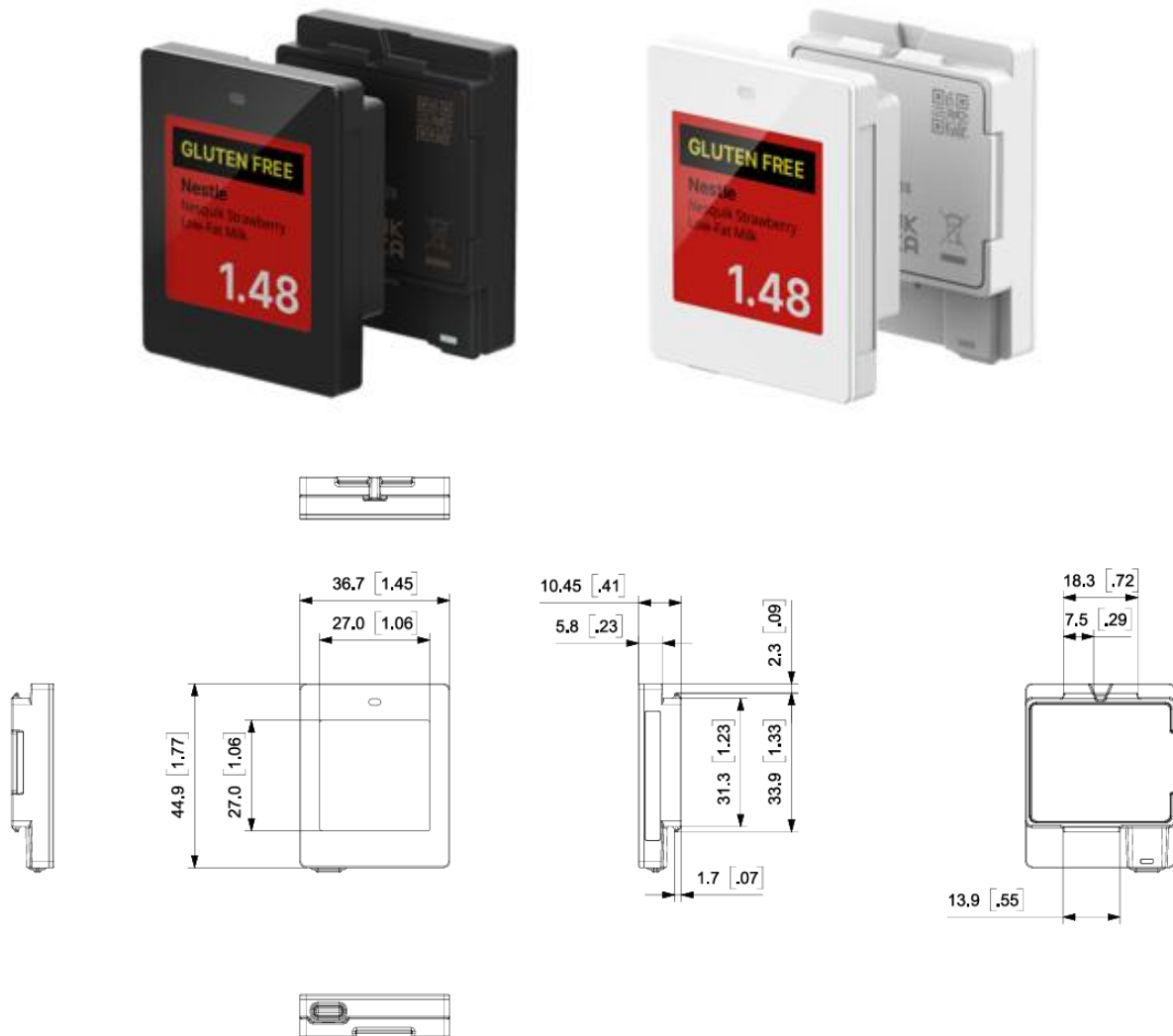
Some of the features of SOLUM ESL.

- Low power consumption
- Real-time update speed
- SOLUM Proprietary Protocol communication with SOLUM Gateway for added security

Item	Description
LED	7 colors (Red, Green, Blue, Yellow, Cyan, Magenta, White)
Usable Pages	7 pages each
NFC	Built-in Felica NFC Forum Type 3
IP Rating	IP68
Housing Bezel Color	Black, White

3.5. Mechanical Drawing

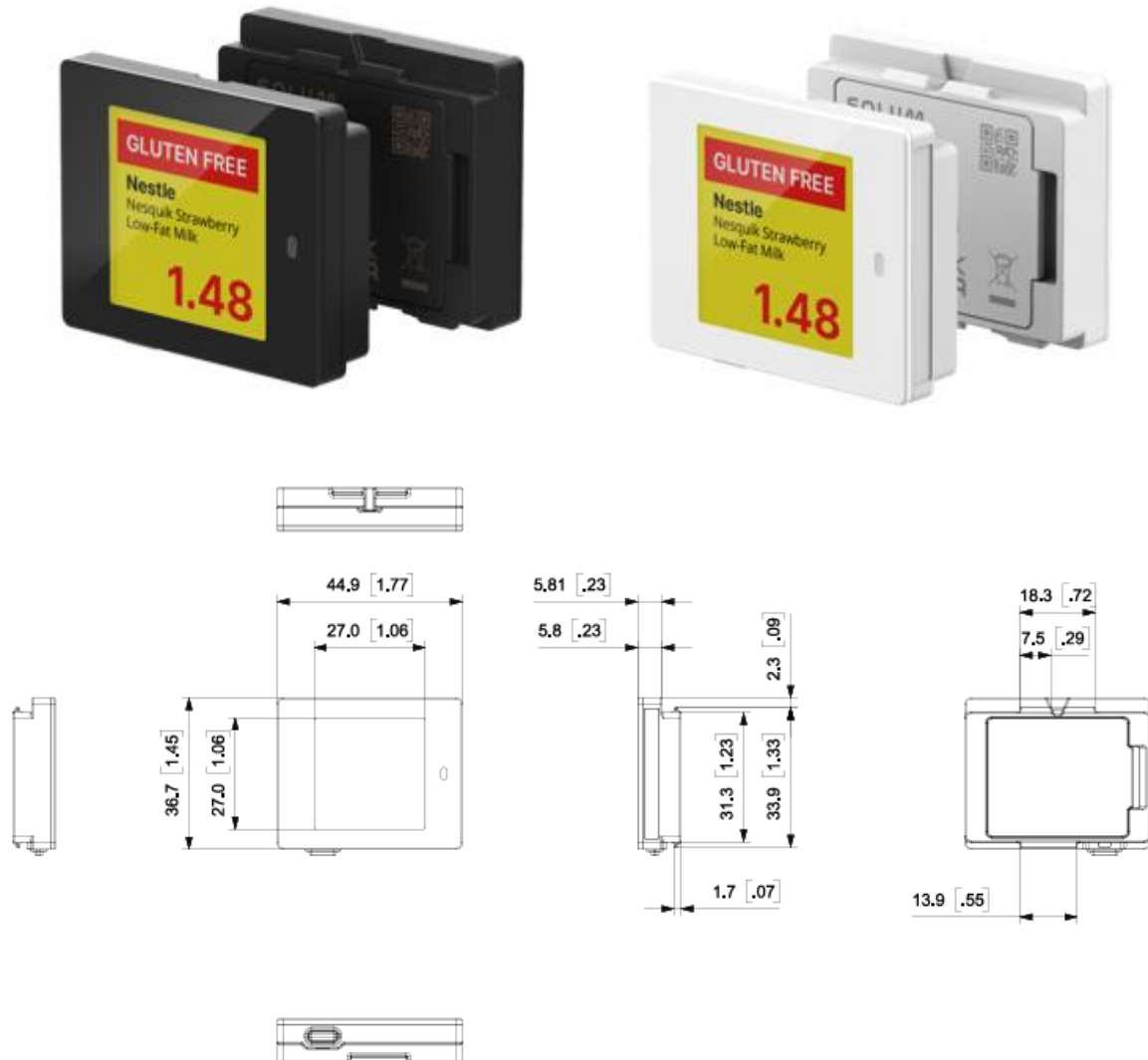
3.5.1. 1.6"V



(Unit: mm)

Figure 3. 1.6"V MECHANICAL DIMENSION

3.5.2. 1.6"H



(Unit: mm)

Figure 4. 1.6"H MECHANICAL DIMENSION

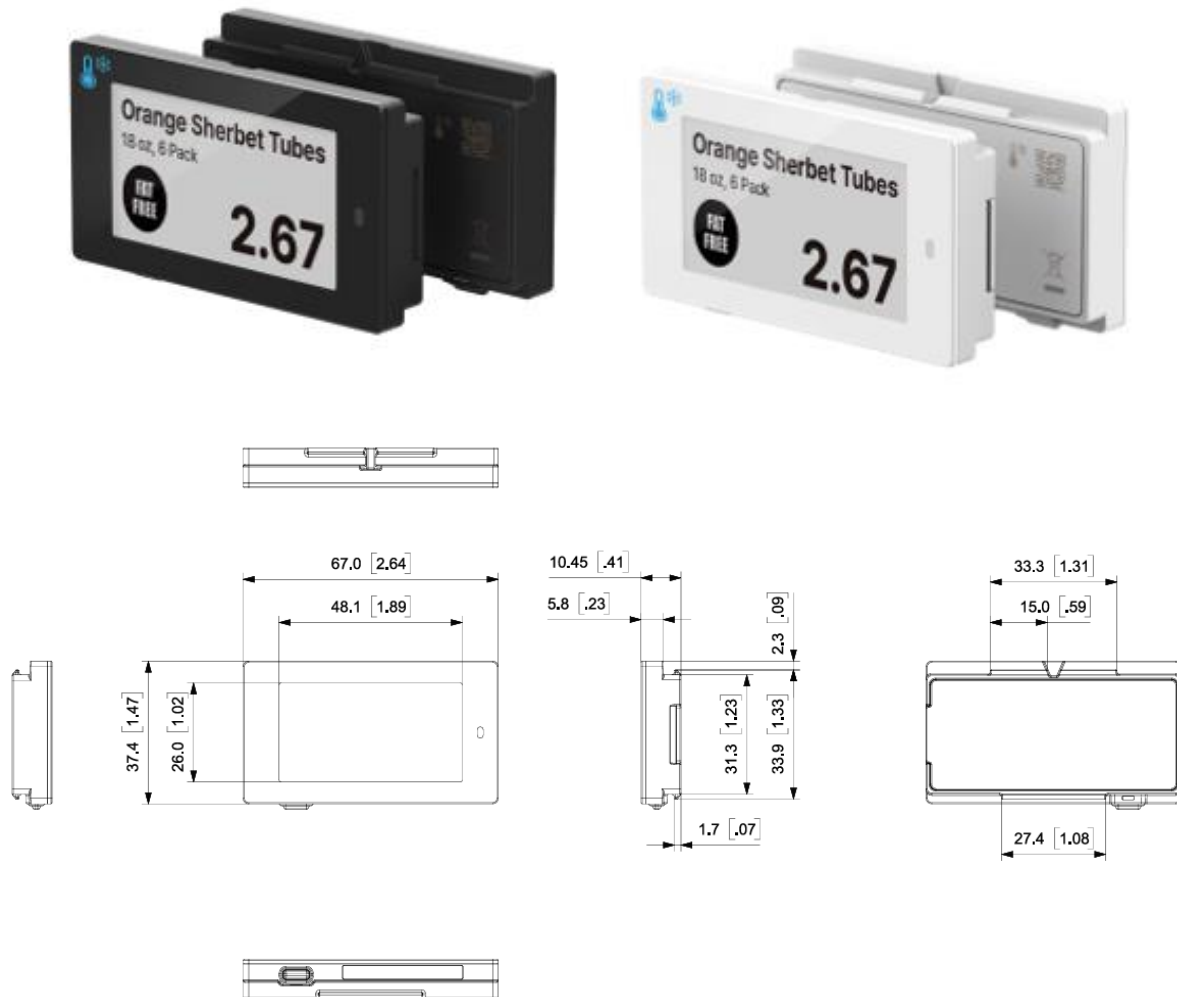
3.5.3. 2.2"



(Unit: mm)

Figure 5. 2.2" MECHANICAL DIMENSION

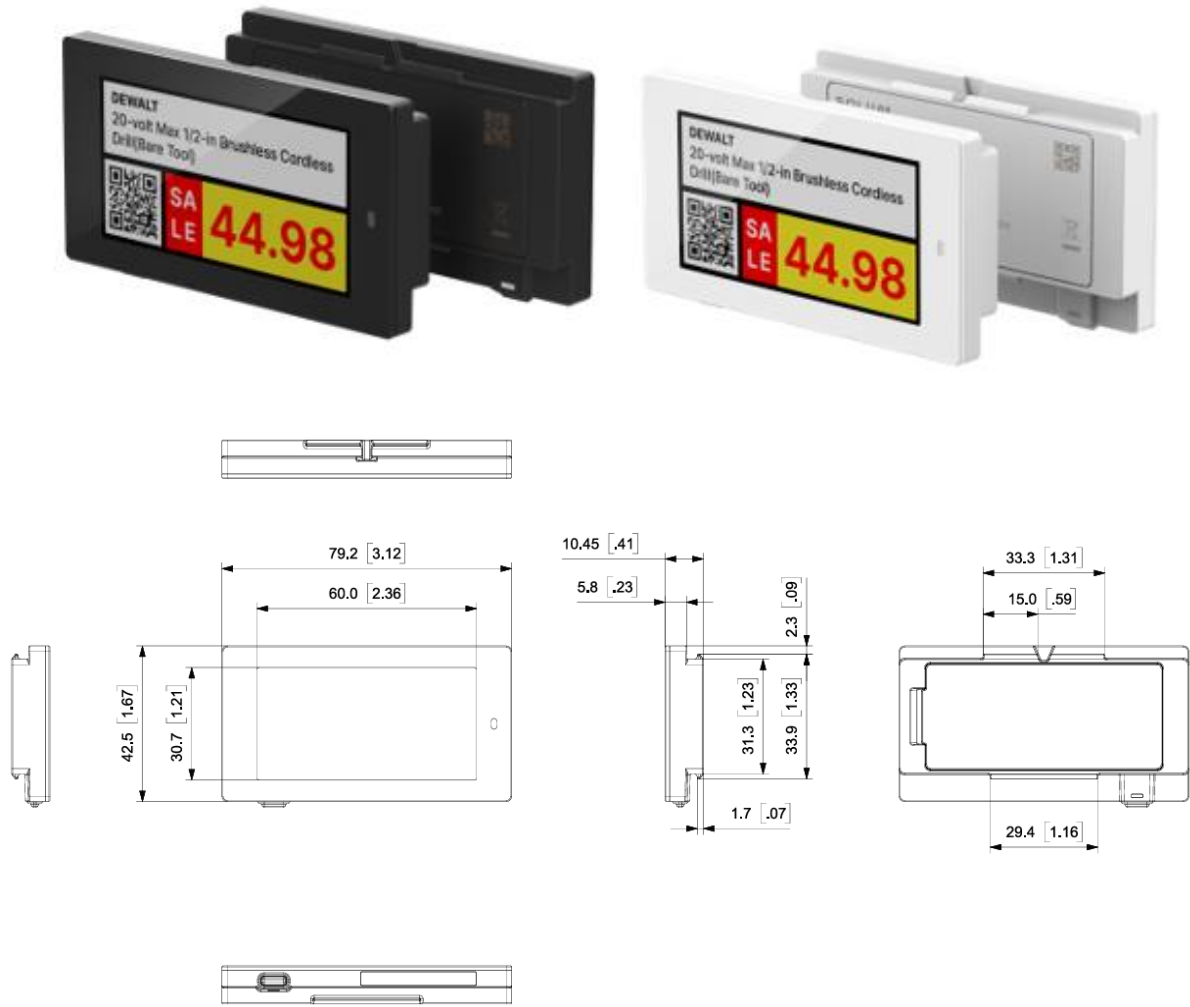
3.5.4. 2.2"F



(Unit: mm)

Figure 6. 2.2"F MECHANICAL DIMENSION

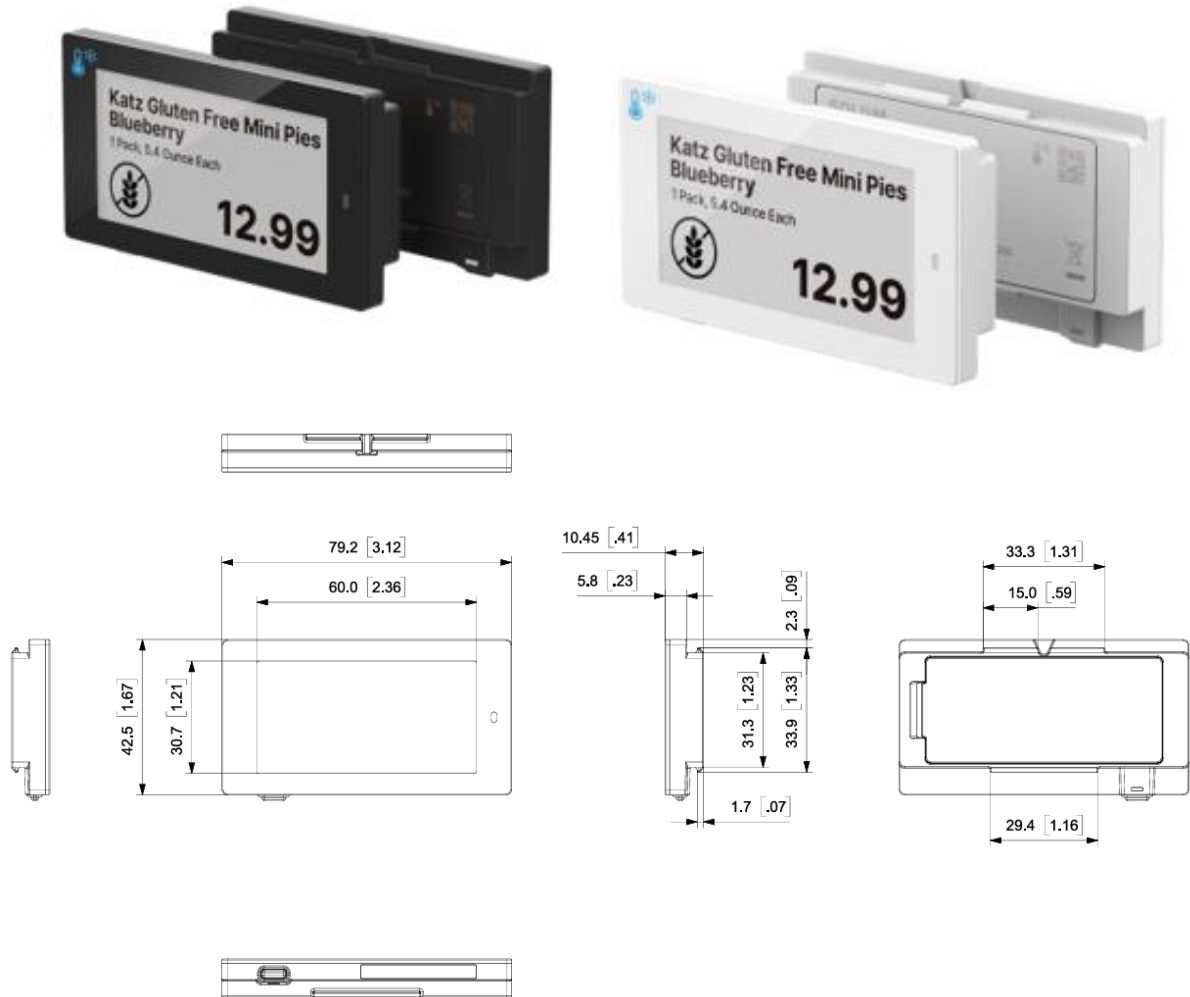
3.5.5. 2.6"



(Unit: mm)

Figure 7. 2.6" MECHANICAL DIMENSION

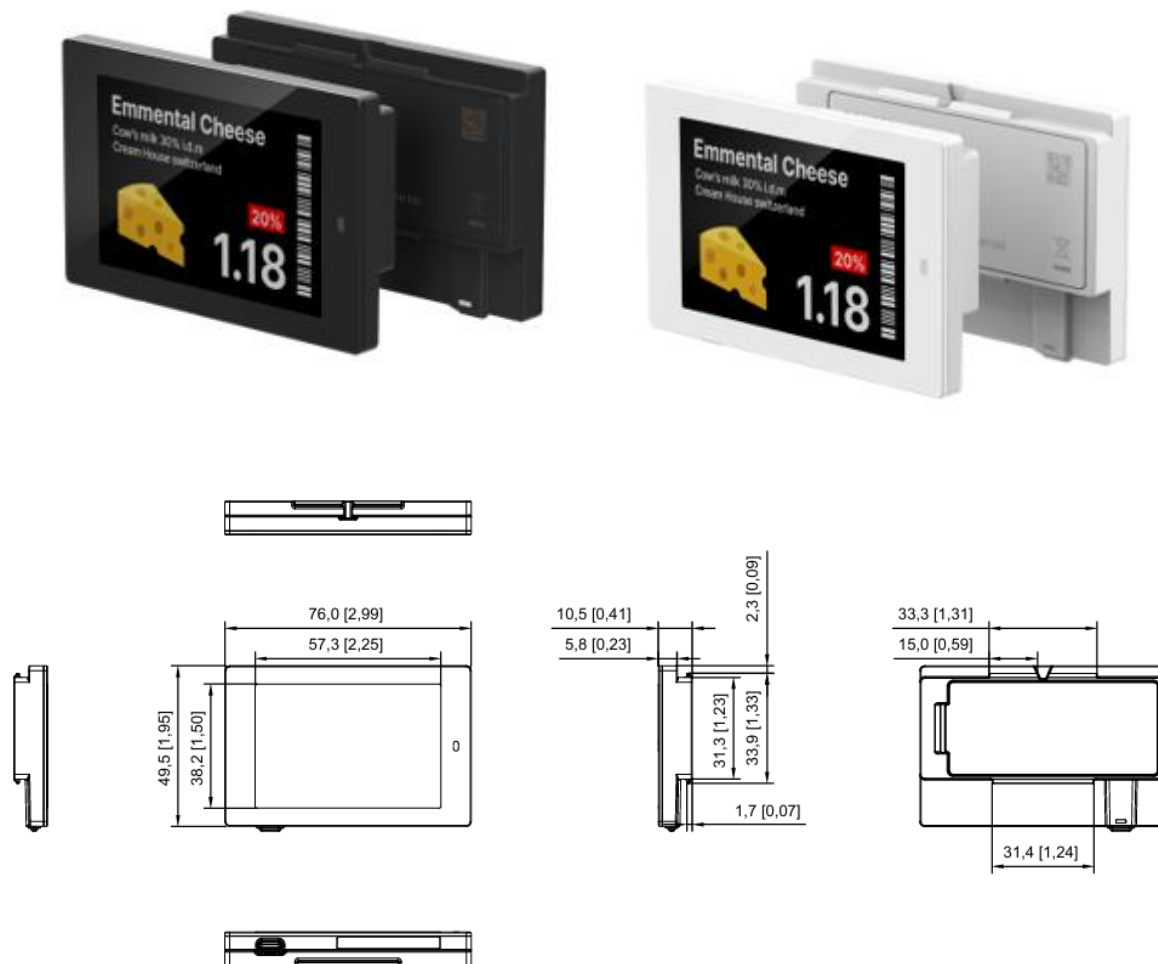
3.5.6. 2.6"F



(Unit: mm)

Figure 8. 2.6"F MECHANICAL DIMENSION

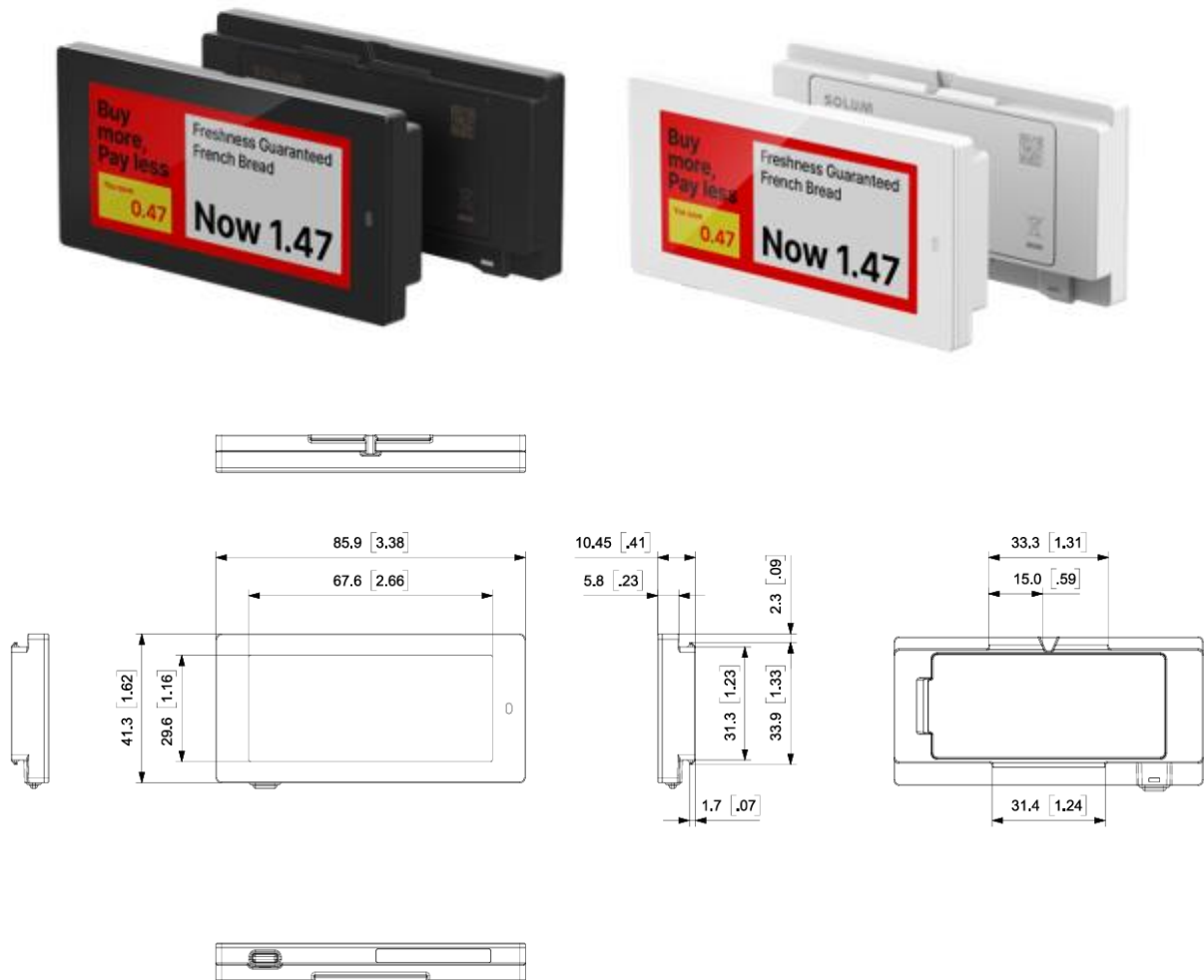
3.5.7. 2.7"



(Unit: mm)

Figure 9. 2.7" MECHANICAL DIMENSION

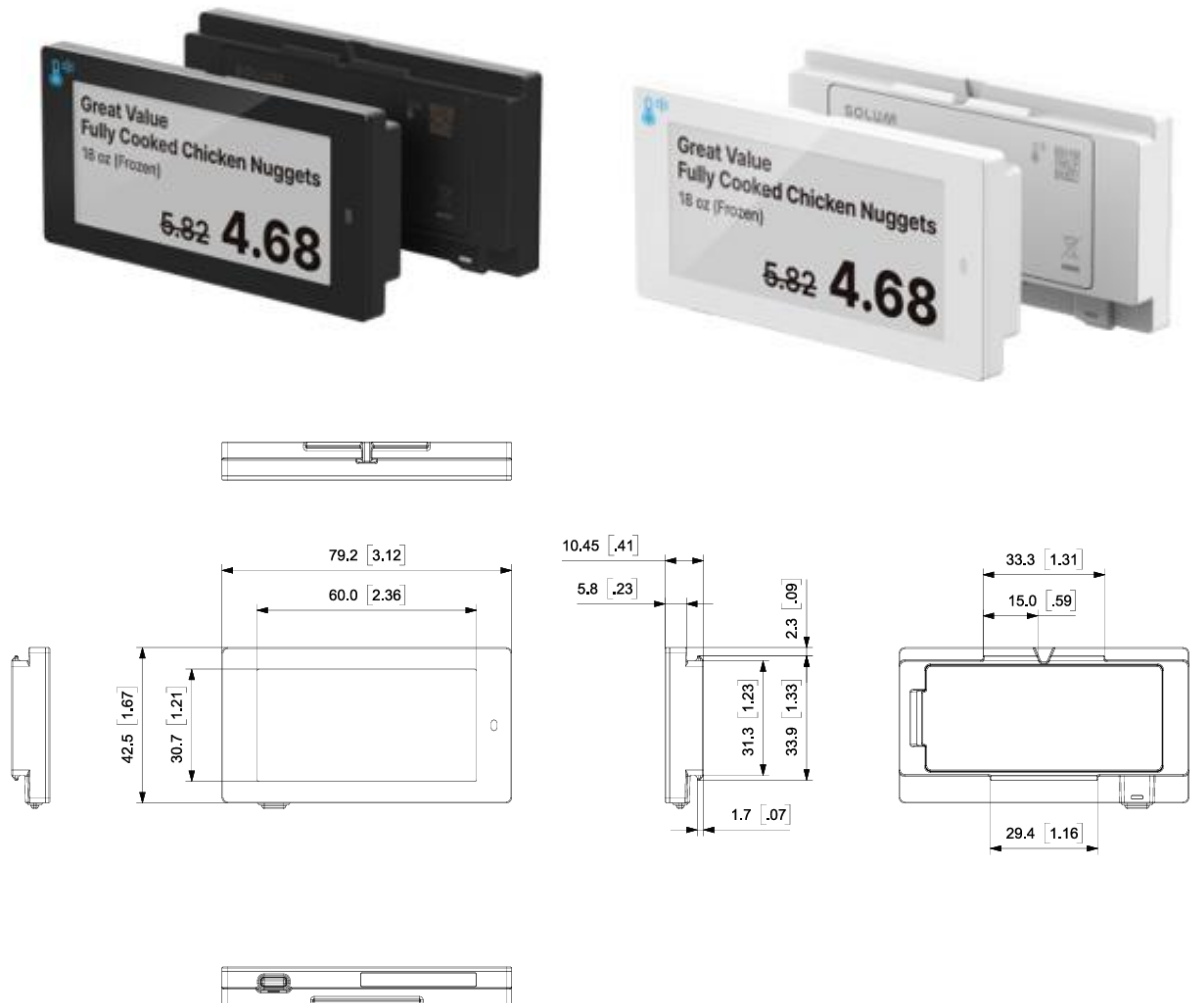
3.5.8. 2.9"



(Unit: mm)

Figure 10. 2.9" MECHANICAL DIMENSION

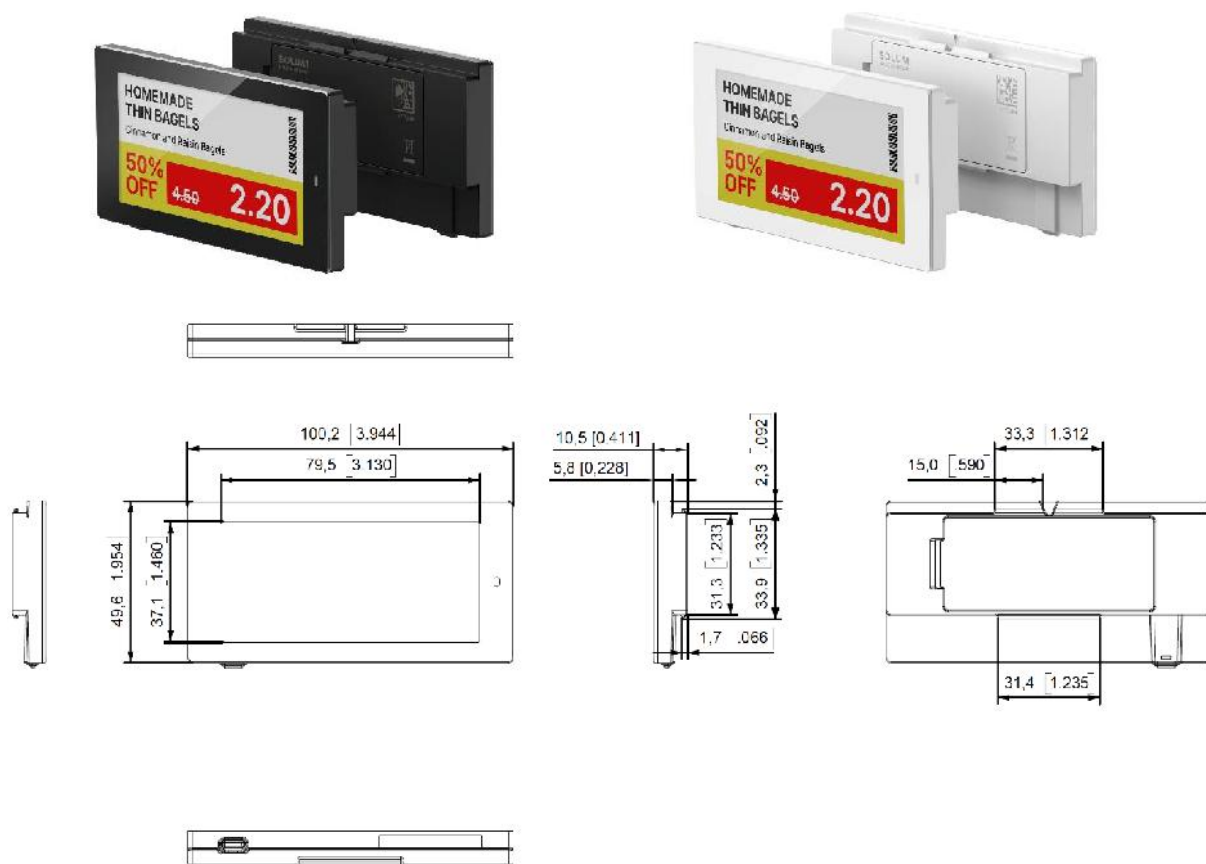
3.5.9. 2.9"F



(Unit: mm)

Figure 11. 2.9"F MECHANICAL DIMENSION

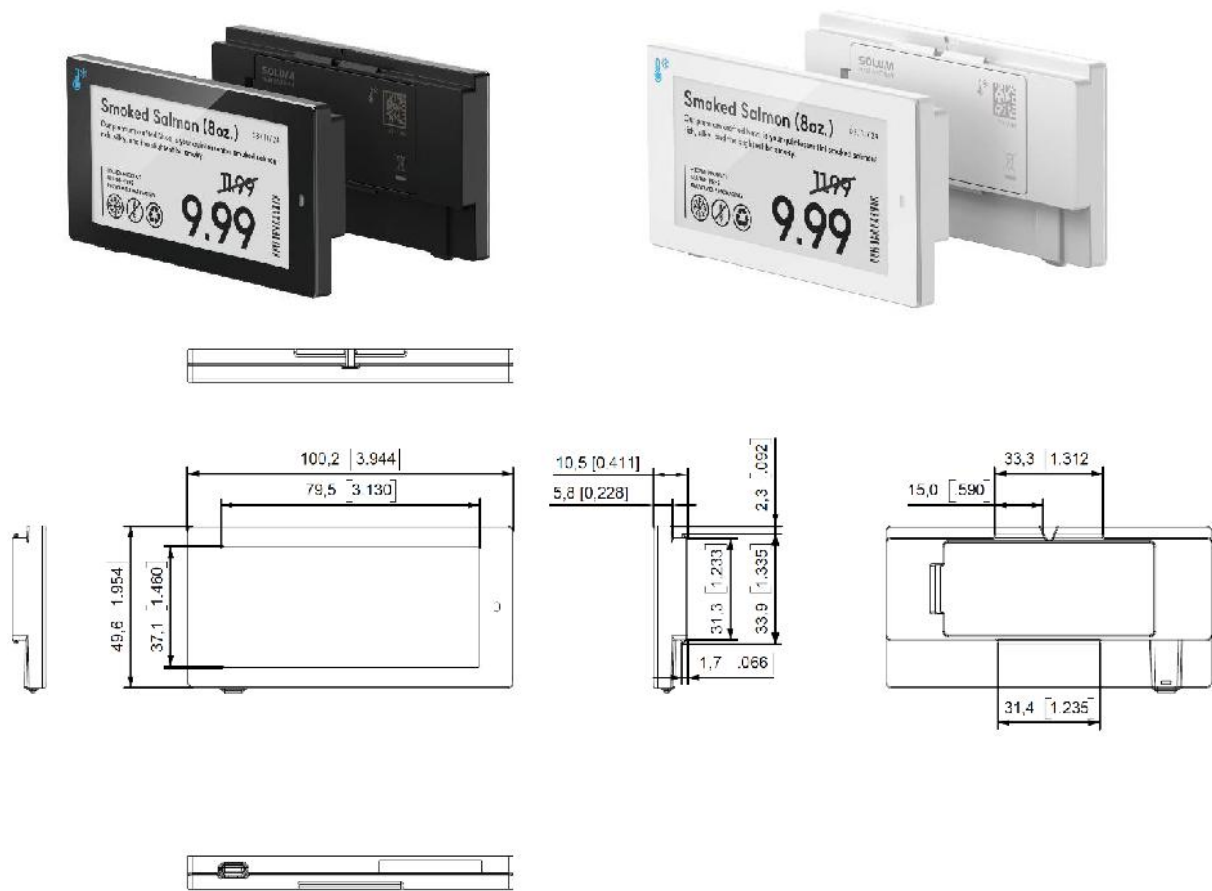
3.5.10. 3.5" (3.45")



(Unit: mm)

Figure 12. 3.5" (3.45") MECHANICAL DIMENSION

3.5.11. 3.5"F (3.45")



(Unit: mm)

Figure 13. 3.5"F (3.45") MECHANICAL DIMENSION

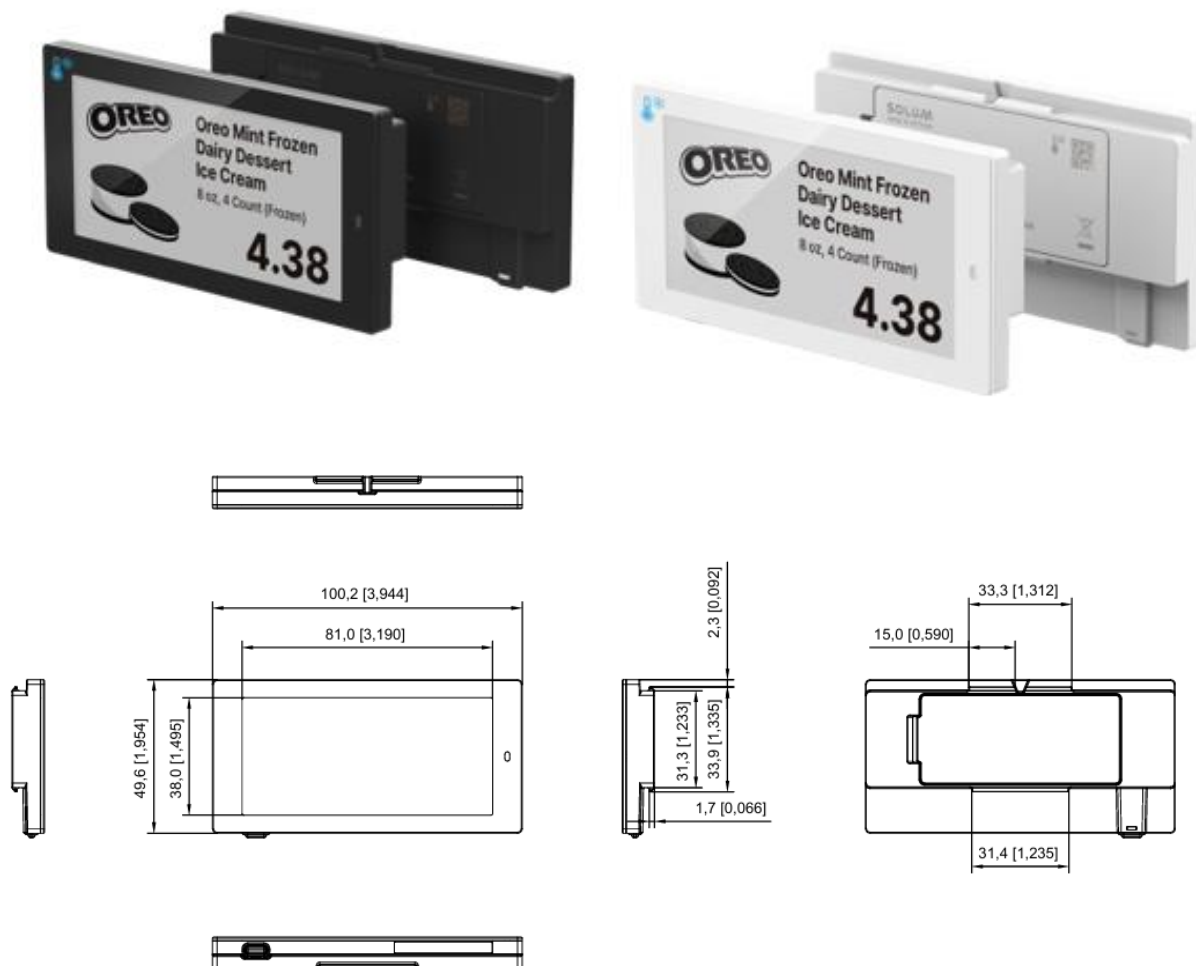
3.5.12. 3.5" (3.52")



(Unit: mm)

Figure 14. 3.5" (3.52") MECHANICAL DIMENSION

3.5.13. 3.5"F (3.52")



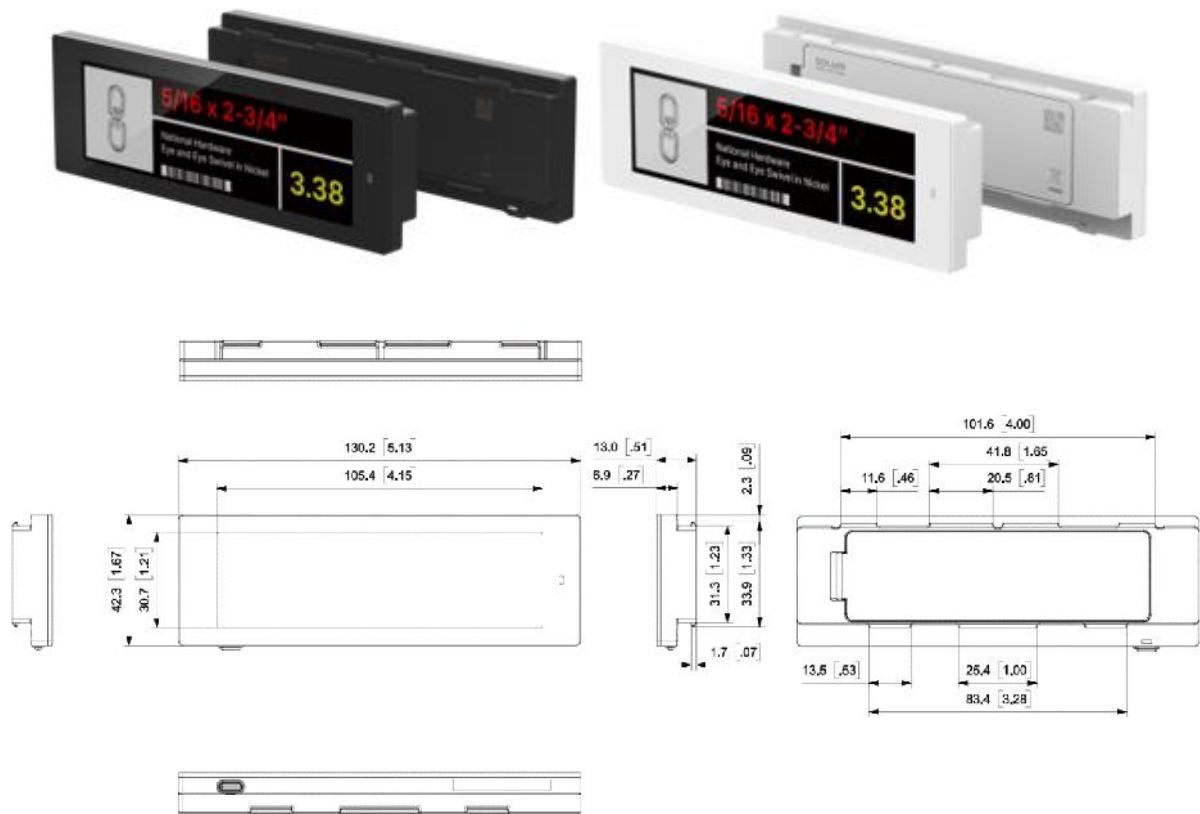
(Unit: mm)

Figure 15. 3.5"F (3.52") MECHANICAL DIMENSION

3.5.14. 4.2"



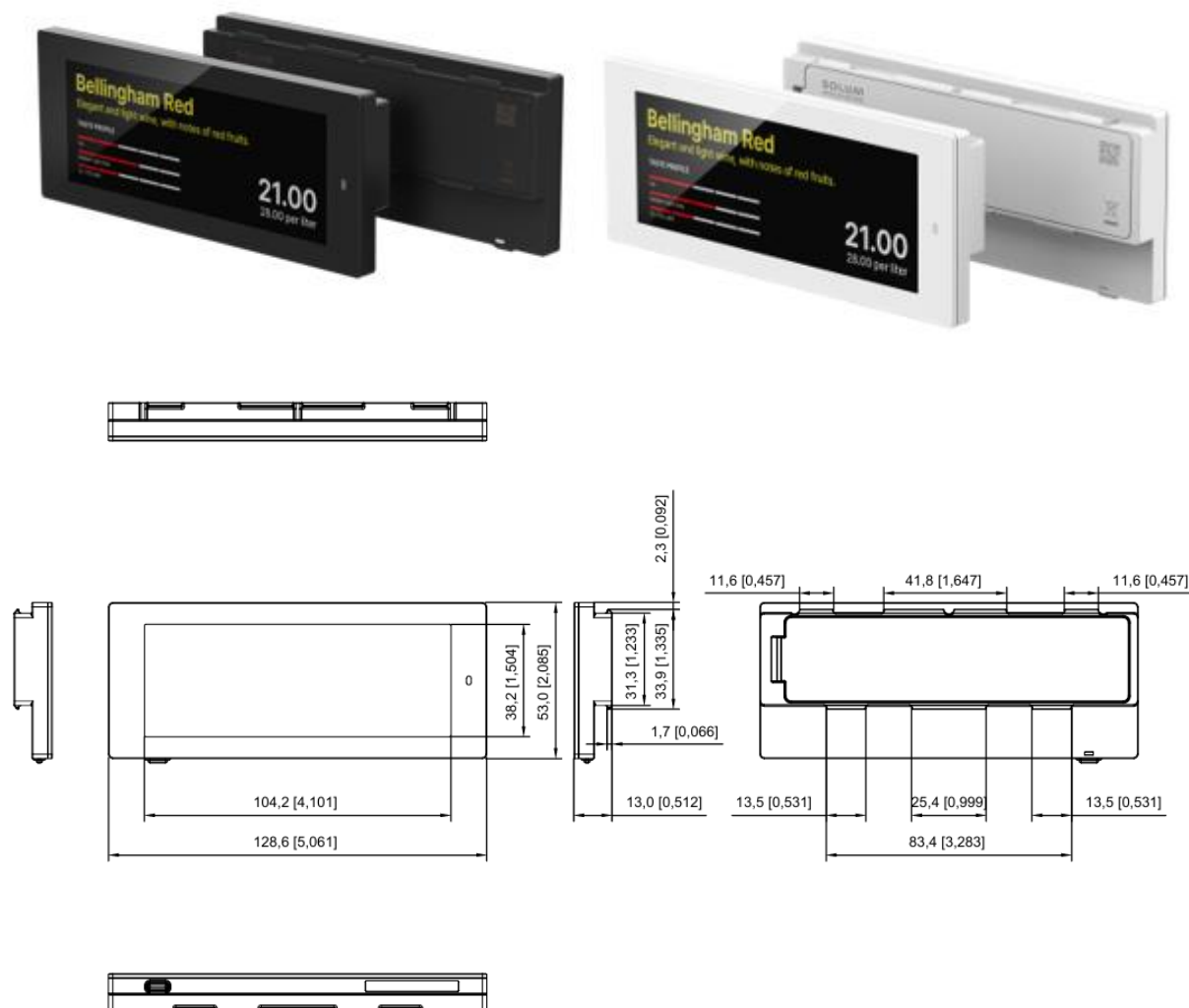
3.5.15. 4.3"



(Unit: mm)

Figure 17. 4.3" MECHANICAL DIMENSION

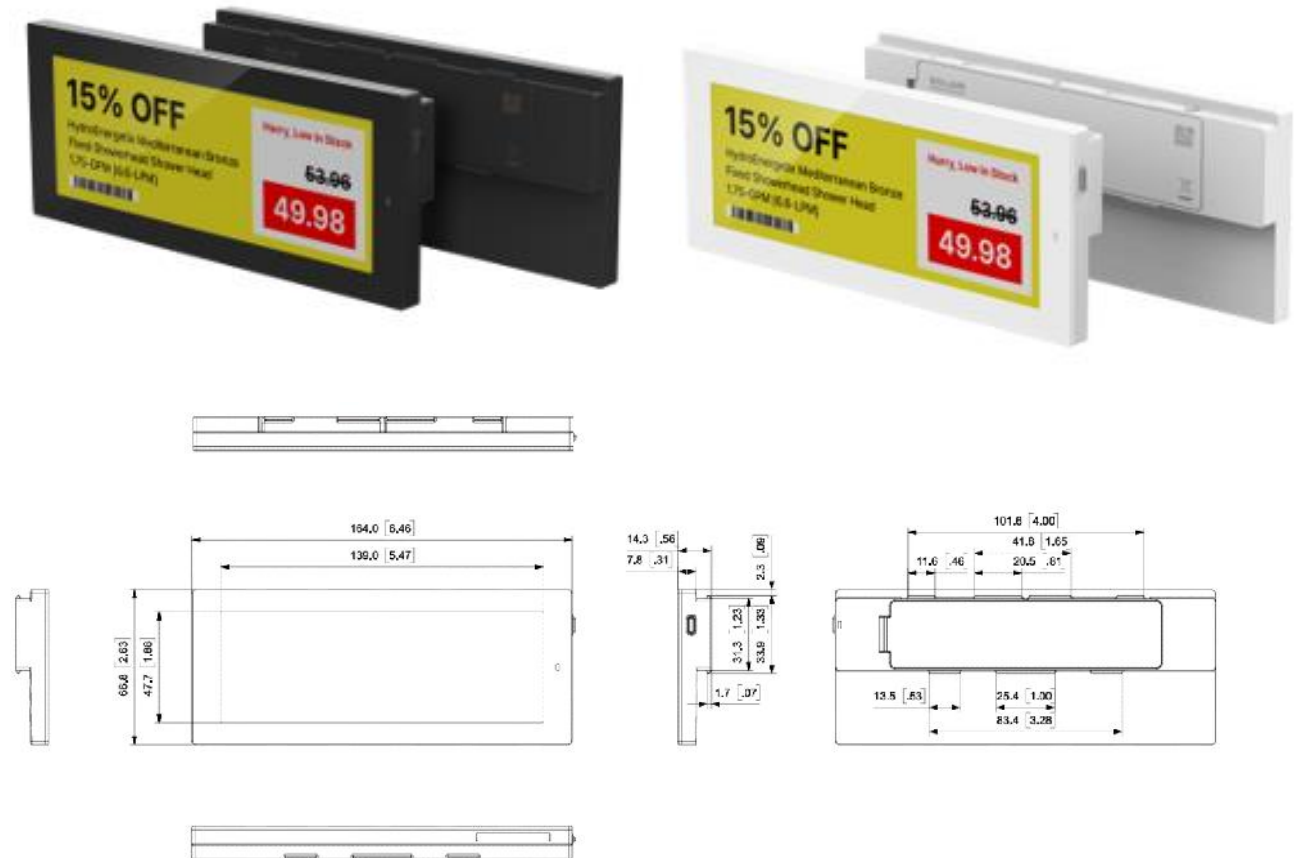
3.5.16. 4.5"



(Unit: mm)

Figure 18. 4.5" MECHANICAL DIMENSION

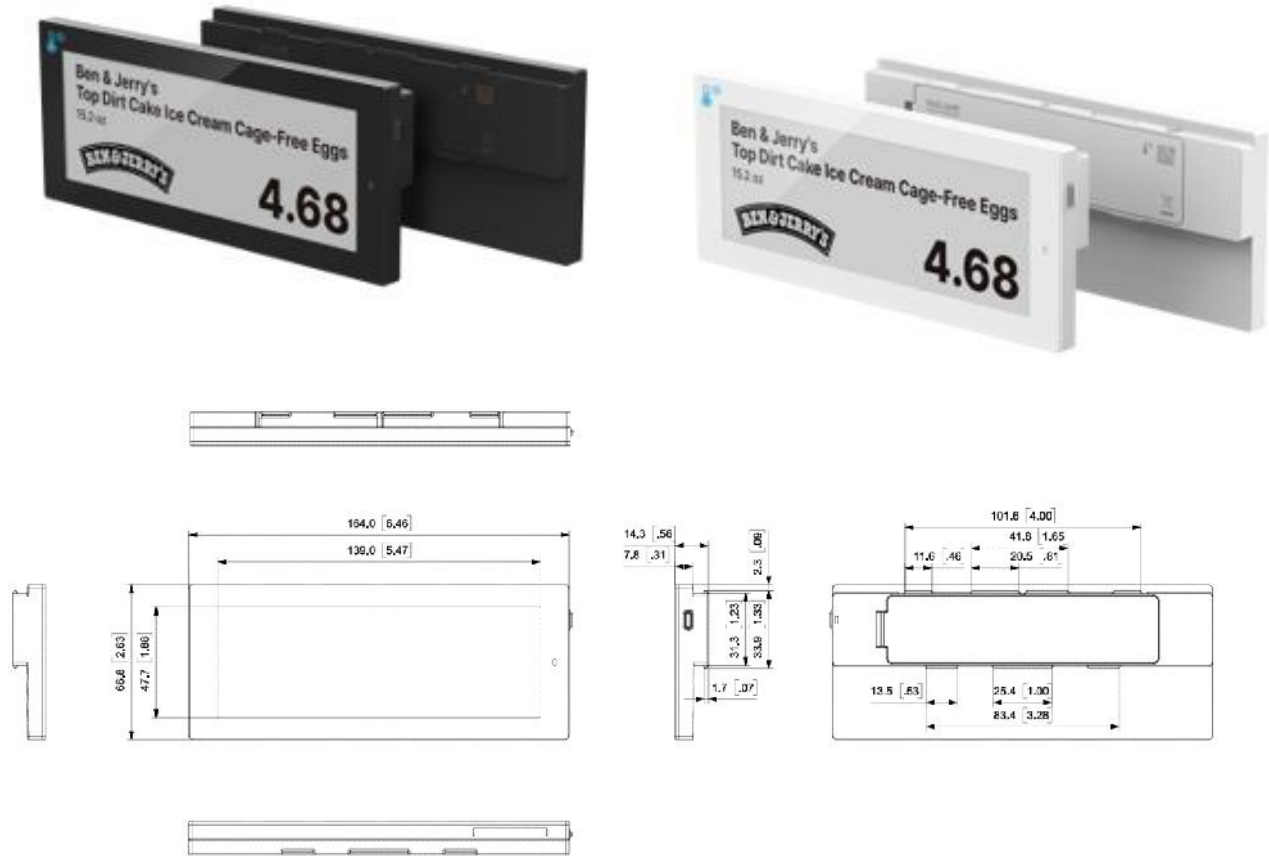
3.5.17. 5.8"



(Unit: mm)

Figure 19. 5.8" MECHANICAL DIMENSION

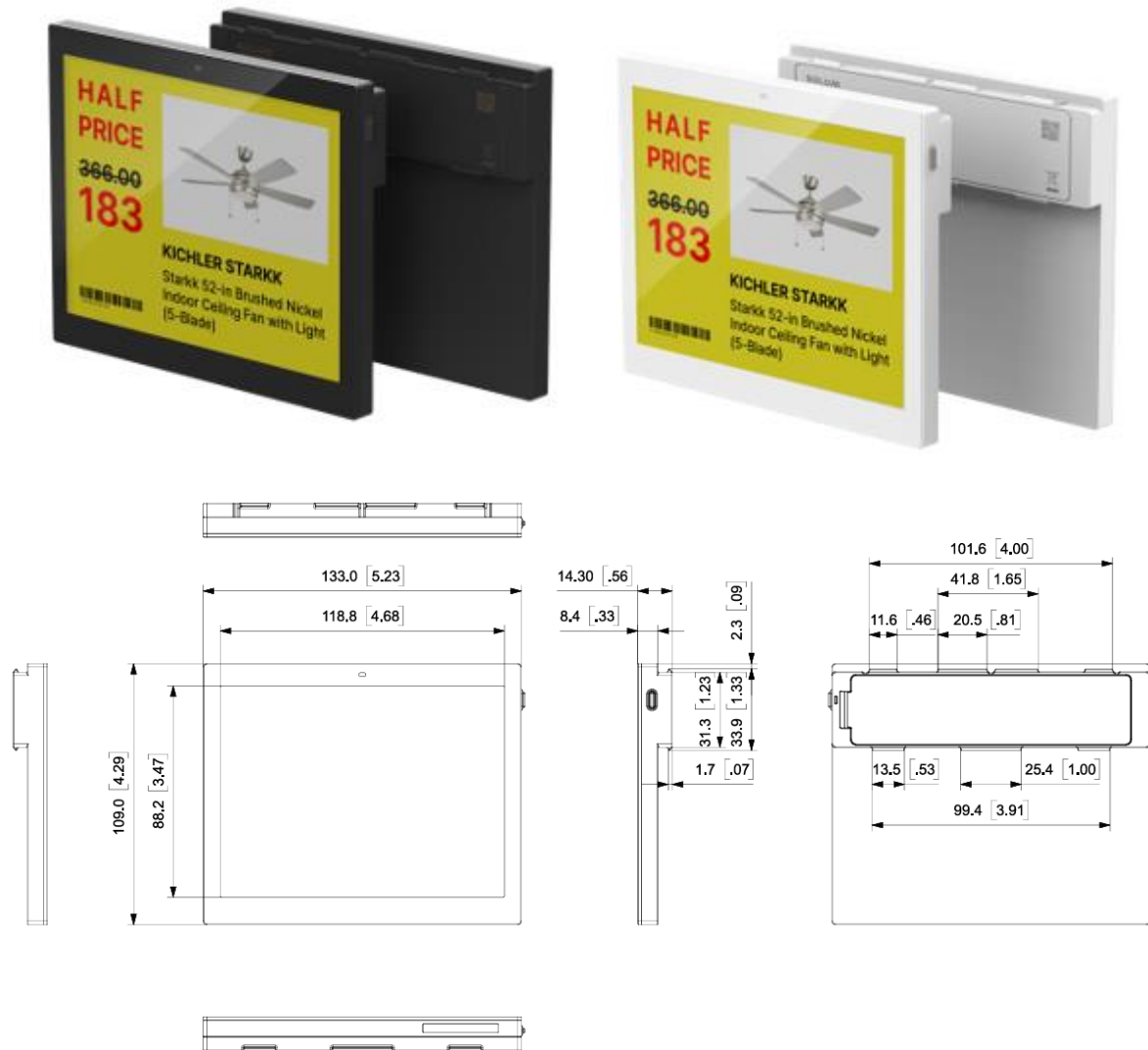
3.5.18. 5.8"F



(Unit: mm)

Figure 20. 5.8"F MECHANICAL DIMENSION

3.5.19. 6.1"



(Unit: mm)

Figure 21. 6.1" MECHANICAL DIMENSION

3.5.20. 7.5"



(Unit: mm)

Figure 22. 7.5" MECHANICAL DIMENSION

3.5.21. 9.7"



(Unit: mm)

Figure 23. 9.7" MECHANICAL DIMENSION

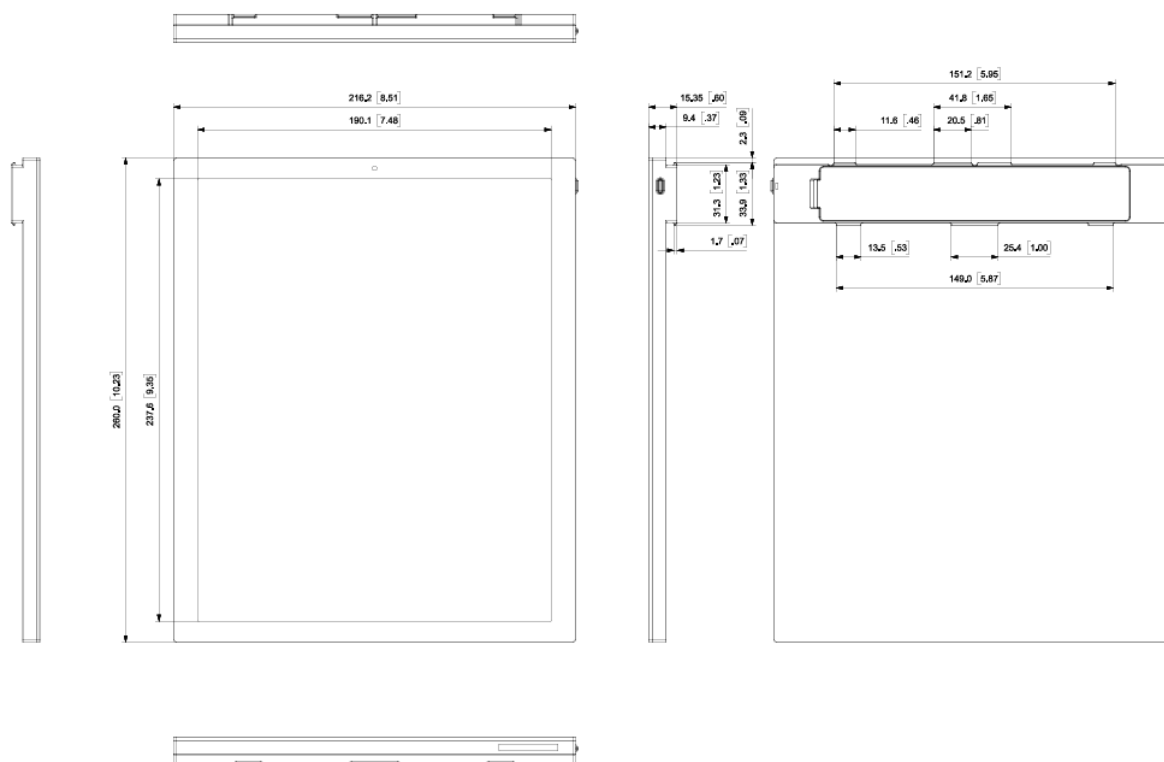
3.5.22. 11.6"



(Unit: mm)

Figure 24. 11.6" MECHANICAL DIMENSION

3.5.23. 12.2"



(Unit: mm)

Figure 25. 12.2" MECHANICAL DIMENSION

3.6. Label Marking



Figure 26. ESL LABELS (PRODUCT)

ESL-specific information can be found on the sticker label located on the back of the ESL. Information displayed includes, but is not limited to: Model, Certifications, Manufacturing Information

- Model: **EL**①②③④**6**⑤⑥⑦ (i.e. ELM35F6W4A)

- ①②③: ESL Display Size & Type
 - ✓ 016= 1.6"
 - ✓ 022= 2.2"
 - ✓ F22= 2.2"F
 - ✓ 026= 2.6"
 - ✓ F26= 2.6"F
 - ✓ 027= 2.7"
 - ✓ 029= 2.9"
 - ✓ F29= 2.9"F
 - ✓ M35= 3.5" (3.45")
 - ✓ 035= 3.5" (3.52")
 - ✓ F35= 3.5"F (3.45"), 3.5"F (3.52")
 - ✓ 042= 4.2"

- ✓ 043= 4.3"
- ✓ F45= 4.5"
- ✓ 058= 5.8"
- ✓ F58= 5.8"F
- ✓ 060=6.1"
- ✓ M75= 7.5"
- ✓ 097= 9.7"
- ✓ 116= 11.6"
- ✓ 122= 12.2"
- ④: Main IC Maker
 - ✓ F= SiLAB
 - ✓ H= Nordic
 - ✓ R= Realtek
- ⑤: Housing Color
 - ✓ B= Black
 - ✓ W= White
- ⑤: ESL Display Color
 - ✓ M= Black, White (MONO)
 - ✓ 4= Black, White, Red, Yellow (BWRY)
- ⑥: ESL Tag Type
 - ✓ A= Button, NFC, LED

Size	Model Name	
	Black	White
1.6V"	EL016F6B4A	EL016F6W4A
1.6H"	EL016F6B4A	EL016F6W4A
2.2"	EL022F6B4A	EL022F6W4A
2.2"F	ELF22F6BMA	ELF22F6WMA
2.6"	EL026F6B4A	EL026F6W4A
2.6"F	ELF26F6BMA	ELF26F6WMA
2.7"	EL027F6B4A	EL027F6W4A
2.9"	EL029F6B4A	EL029F6W4A
2.9"F	ELF29F6BMA	ELF29F6WMA
3.5" (3.45")	ELM35R6B4A	ELM35R6W4A
3.5"F (3.45")	ELF35R6BMA	ELF35R6WMA
3.5" (3.52")	EL035F6B4A	EL035F6W4A
3.5"F (3.52")	ELF35F6BMA	ELF35F6WMA
4.2"	EL042F6B4A	EL042F6W4A
4.3"	EL043F6B4A	EL043F6W4A
4.5"	ELF45F6B4A	ELF45F6W4A
5.8"	EL058F6B4A	EL058F6W4A
5.8"F	ELF58F6BMA	ELF58F6WMA
6.1"	EL061H6B4A	EL061H6W4A
7.5"	ELM75F6B4A	ELM75F6W4A
9.7"	EL097F6B4A	EL097F6W4A
11.6"	EL116F6B4A	EL116F6W4A
12.2"	EL122H6B4A	EL122H6W4A

MAC Label stickers can be found in multiple areas of the ESL. They are to be scanned for operation. If the ESL is not assigned to a product, the MAC barcode and 12-digit code will be shown on the display. Dimensions can be found in the image below.

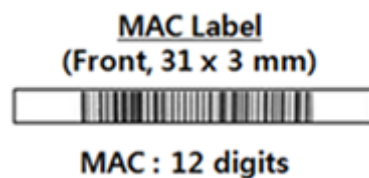


Figure 27. ESL LABELS (MAC)

3.7. Initial Display Image

ESL specific information can be found in the image of the ESL. The information displayed is not limited to : IC, FCC ID, Model, ESL Media Access and Control (MAC) Address. Information can be found in the image below.

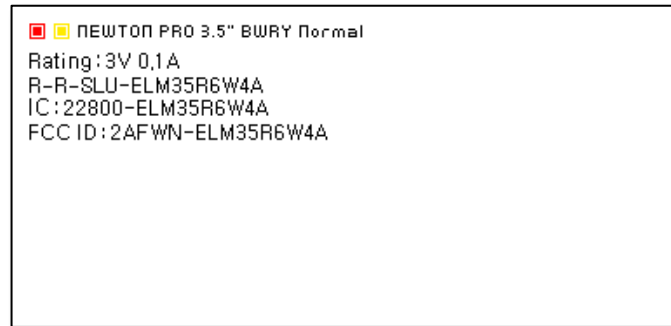


Figure 28. ESL INITIAL DISPLAY IMAGE

[Accessed by the user]

- Step1 : Enter Normal Mode using the Beeper (Accessory) function.
- Step2 : Use the Beeper (Accessory) function again to display the E-Label screen.

[E-Labeling 접근방법]

- 1 단계 : 비퍼(악세사리) 기능을 사용하여 노멀 모드로 진입합니다.
- 2 단계 : 비퍼(악세사리) 기능을 다시 사용하여 E-라벨 화면을 표시합니다.

3.8. Certifications

Each ESL has the following certifications and should be noted for your region.

Size	Model	FCC	IC	CE*	KC	TELEC	UKCA	RoHS	WEEE	NCC
1.6"V	EL016F6W4A	O	O	O	O	O	O	O	O	O
1.6"H	EL016F6W4A	O	O	O	O	O	O	O	O	O
2.2"	EL022F6W4A	O	O	O	O	O	O	O	O	
2.2"F	ELF22F6WMA	O	O	O	O	O	O	O	O	
2.6"	EL026F6W4A	O	O	O	O	O	O	O	O	O
2.6"F	ELF26F6WMA	O	O	O	O	O	O	O	O	
2.7"	EL027F6W4A	O	O	O	O	O	O	O	O	
2.9"	EL029F6W4A	O	O	O	O	O	O	O	O	O
2.9"F	ELF29F6WMA	O	O	O	O	O	O	O	O	
3.5" (3.45")	ELM35R6W4A	O	O	O	O	O	O	O	O	
3.5"F (3.45")	ELF35R6WMA	O	O	O	O	O	O	O	O	
3.5" (3.52")	EL035F6W4A	O	O	O	O	O	O	O	O	
3.5"F (3.52")	ELF35F6WMA	O	O	O	O	O	O	O	O	
4.2"	EL042F6W4A	O	O	O	O	O	O	O	O	
4.3"	EL043F6W4A	O	O	O	O	O	O	O	O	
4.5"	EL045F6W4A	O	O	O	O	O	O	O	O	
5.8"	EL058F6W4A	O	O	O	O	O	O	O	O	
5.8"F	ELF58F6WMA	O	O	O	O	O	O	O	O	
6.1"	EL061H6W4A	O	O	O	O	O	O	O	O	
7.5"	ELM75F6W4A	O	O	O	O	O	O	O	O	
9.7"	EL097F6W4A	O	O	O	O	O	O	O	O	
11.6"	EL116F6W4A	O	O	O	O	O	O	O	O	
12.2"	EL122H6W4A	O	O	O	O	O	O	O	O	

IEC 62471 standard (Photobiological Safety of Lamps and Lamp Systems) compliant

*CE: RF/EMC/LVD/RoHS2

3.8.1. FCC

FCC ID : 2AFWN-ELM35R6W4A

WARNING: This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

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

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 will be required to correct the interference at his own expense.

IMPORTANT NOTE : FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

3.8.2. IC

IC : 22800-ELM35R6W4A

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit

pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Attention: Tout changement ou modification non expressément approuvé par le fabricant peut annuler le droit de l'utilisateur à utiliser l'équipement.

exposition aux rayonnements radiofréquences. Pour se conformer aux exigences de conformité de l'exposition IC RF, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toutes les personnes.

This device complies with Industry Canada NRCs applicable to licence-exempt radio devices. The operation is authorized under the following two conditions: (1) the device shall not cause interference, and (2) the user of the device shall accept any radio interference suffered, even if the interference is likely to compromise its operation.

Caution: Any change or modification not expressly approved by the manufacturer may void the user's right to use the equipment.

exposure to radiofrequency radiation. To comply with the ICRF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

-PMN(Product Marking Name) : ESL Label

-FVIN(Firmware Version Identity Number) : V052

3.8.3. CE

We hereby declare under our sole responsibility that the electrical product above is in compliance with the essential requirements of the Radio Equipment Directive (2014/53/EU) by application of

EN IEC 62368-1:2020+A11:2020

EN 62479:2010

EN 301 489-1 V2.2.3

EN 301 489-3 V2.3.2

EN 301 489-17 V3.2.4

EN 300 328 V2.2.2

EN 300 330 V2.1.1

and the Directive (2011/65/EU) on the restriction of the use of certain hazardous substances in electrical and electronic equipment by application of EN 62321 Series.

3.8.4. NCC

根據 LP0002 低功率射頻器材技術規範_章節 3.8.2:

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。

低功率射波射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

3.8.5 KC

인증받은 자의 상호명 : 주식회사 솔루엠

제품명 : 특정소출력 무선기기(무선데이터통신시스템용 무선기기)

모델명 : ELM35R6W4A

제조사 : 주식회사 솔루엠

제조년월 : . . .

제조국가 : 한국,베트남

4. Packaging

4.1. 1.6"V

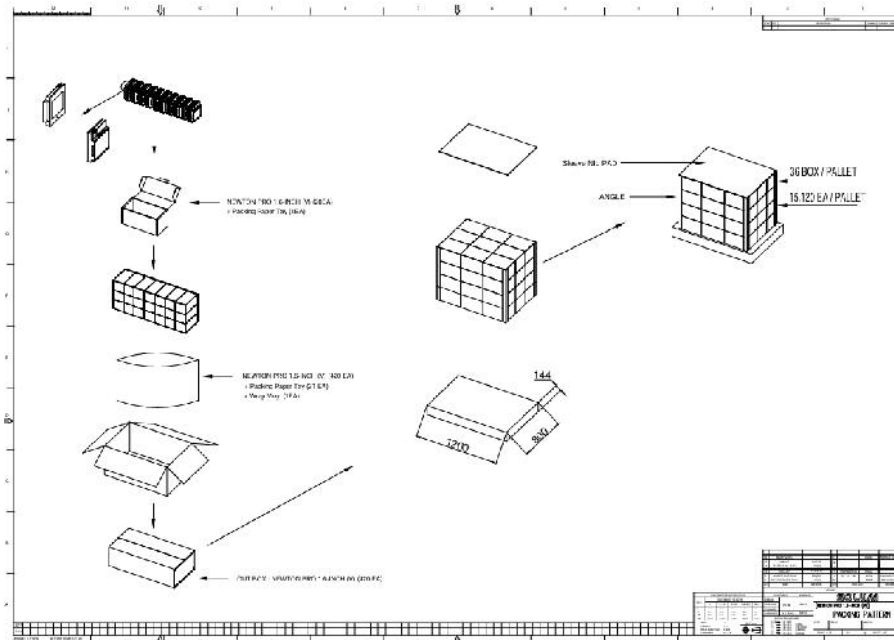


Figure 29. 1.6"V PACKING-DIAGRAM (1,200 X 800)

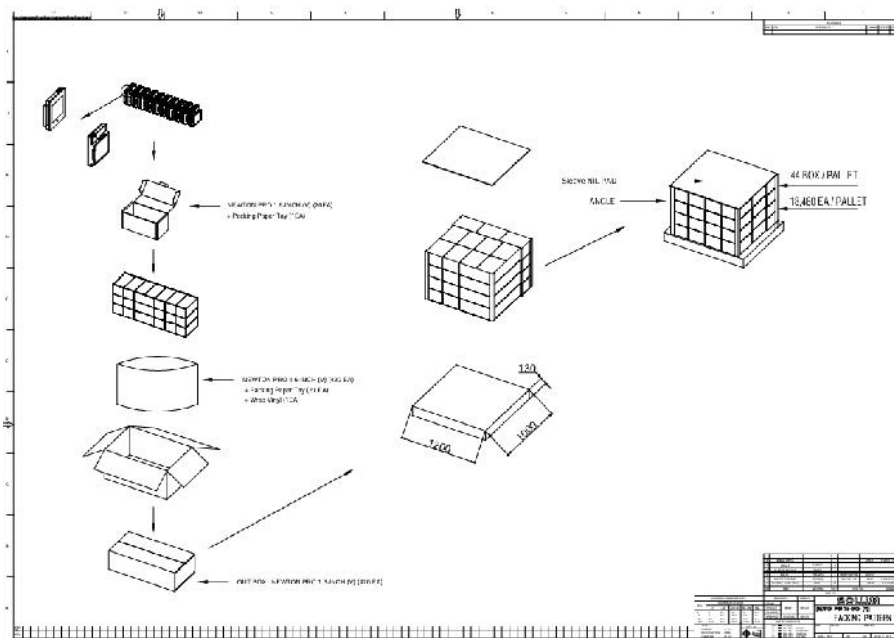


Figure 30. 1.6"V PACKING-DIAGRAM (1,200 X 1,000)

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4.3. 2.2", 2.2"F

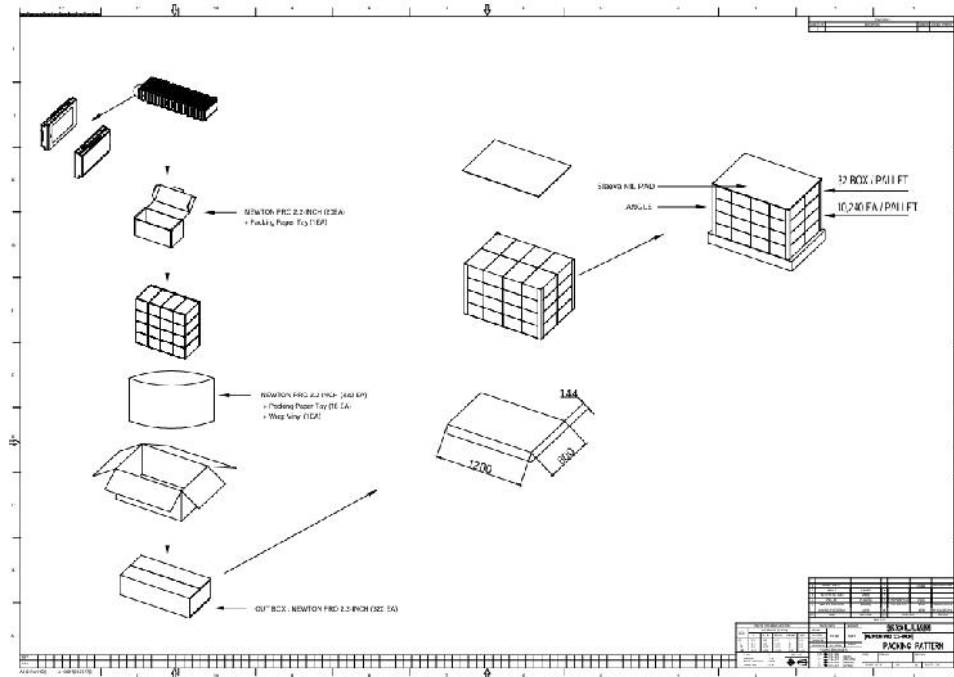


Figure 33. 2.2", 2.2"F PACKING-DIAGRAM (1,200 X 800)

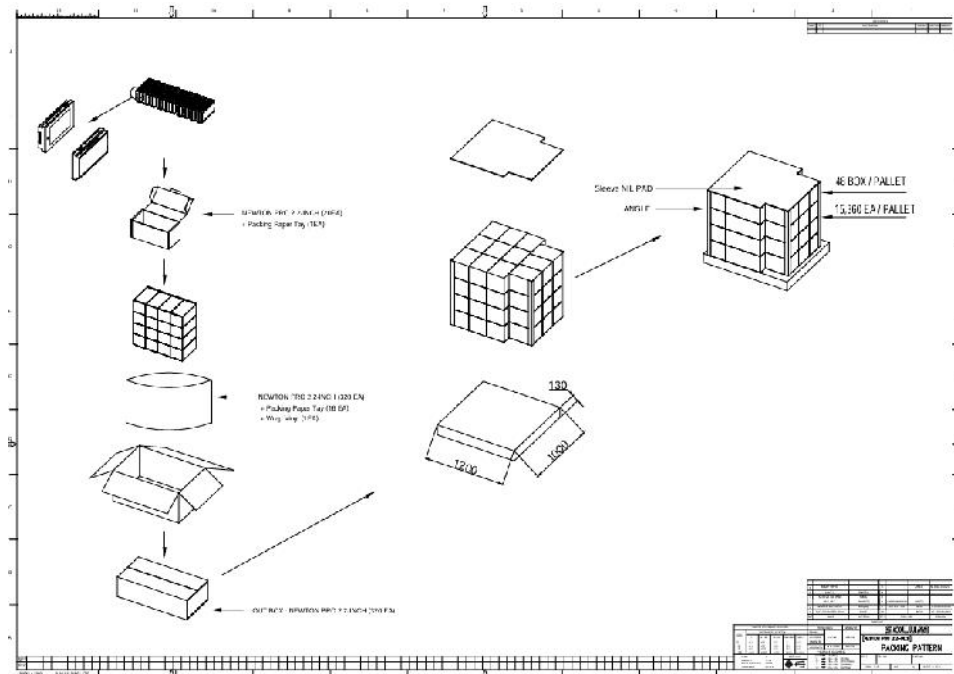


Figure 34. 2.2", 2.2"F PACKING-DIAGRAM (1,200 X 1,000)

4.4. 2.6", 2.6"F

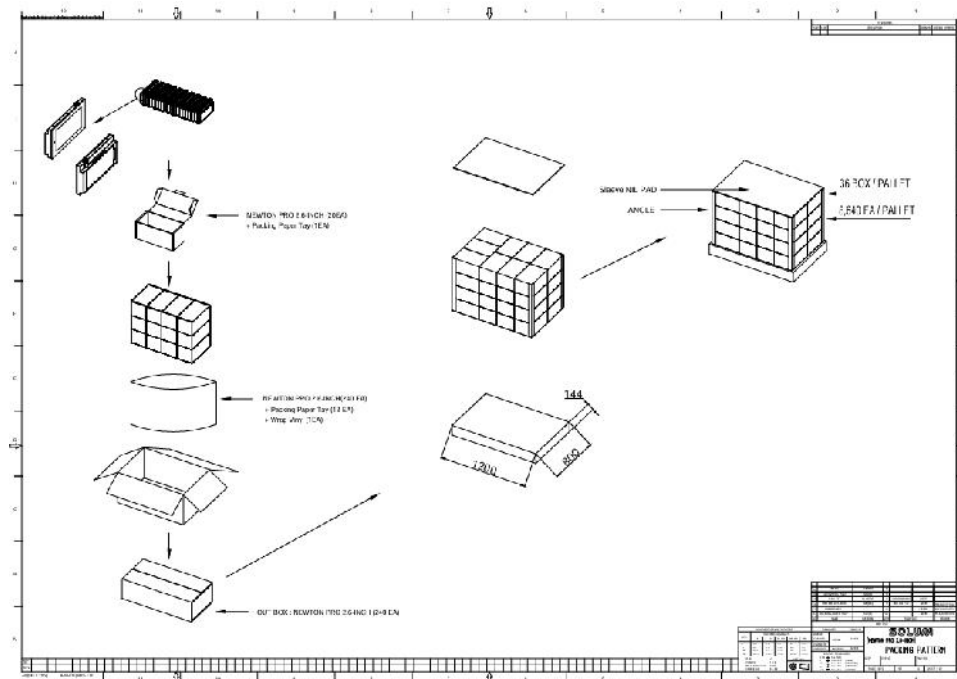


Figure 35. 2.6", 2.6"F PACKING-DIAGRAM (1,200 X 800)

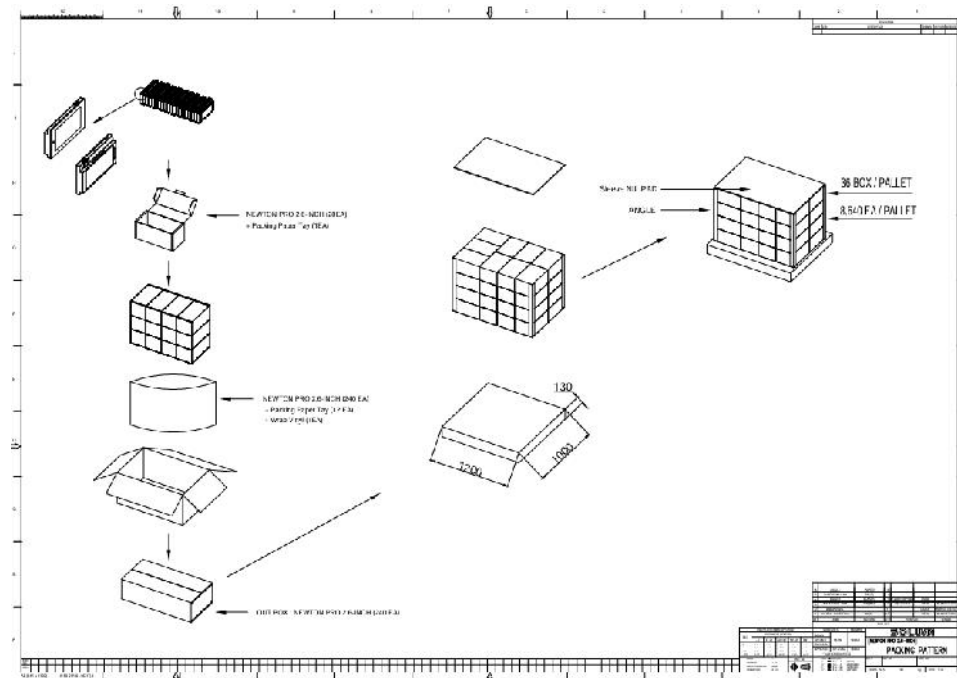


Figure 36. 2.6", 2.6"F PACKING-DIAGRAM (1,200 X 1,000)

4.5. 2.7"

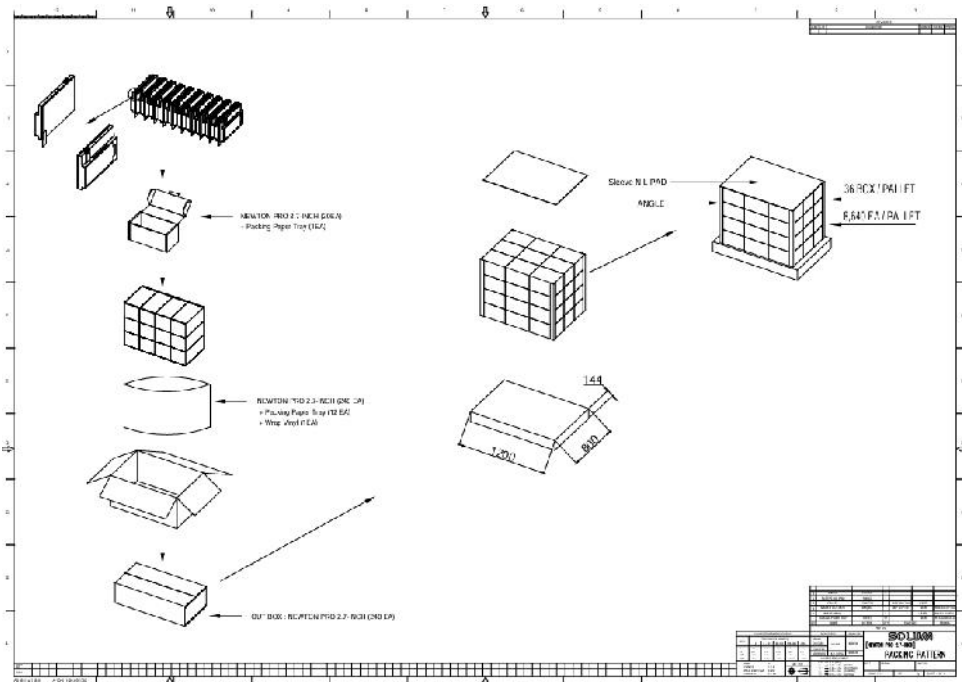


Figure 37. 2.7" PACKING-DIAGRAM (1,200 X 800)

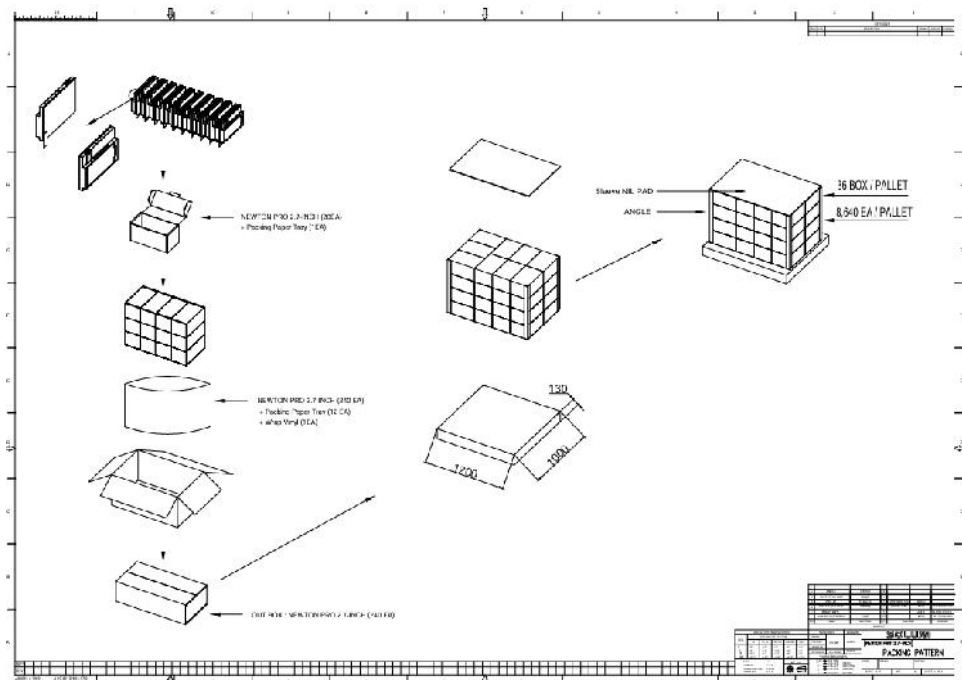


Figure 38. 2.7" PACKING-DIAGRAM (1,200 X 1,000)

[illegible]

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[illegible][illegible]

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[illegible][illegible]

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Diagram illustrating the packaging assembly process for a 4330x7 pallet.

The process involves the following components and steps:

- PACKING PAPER TAP (DEA)**: The initial material being processed.
- REGLATION PRO 4.2 (IND-1) 20 KG**: The machine used for processing the packing paper tap.
- PACKING PAPER TAP (DEA)**: The output of the first processing stage.
- REGLATION PRO 4.2 (IND-1) 20 KG**: The machine used for the second processing stage.
- PACKING PAPER TAP (DEA)**: The output of the second processing stage.
- REGLATION PRO 4.2 (IND-1) 20 KG**: The machine used for the third processing stage.
- PACKING PAPER TAP (DEA)**: The output of the third processing stage.
- REGLATION PRO 4.2 (IND-1) 20 KG**: The machine used for the final processing stage.
- PACKING PAPER TAP (DEA)**: The final output of the assembly process.

Dimensions and specifications shown in the diagram:

- 4330x7 PALLET**: The final assembly.
- 4.800 EA. PALLET**: The quantity of the final assembly.
- 1200**: Dimension of the final assembly.
- 148**: Dimension of the final assembly.
- 300**: Dimension of the final assembly.

Labels and annotations include:

- REGLATION PRO 4.2 (IND-1) 20 KG**: Machine label.
- PACKING PAPER TAP (DEA)**: Material label.
- 4330x7 PALLET**: Final assembly label.
- 4.800 EA. PALLET**: Quantity label.
- 1200**: Dimension label.
- 148**: Dimension label.
- 300**: Dimension label.

[illegible]

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4.10. 4.3"

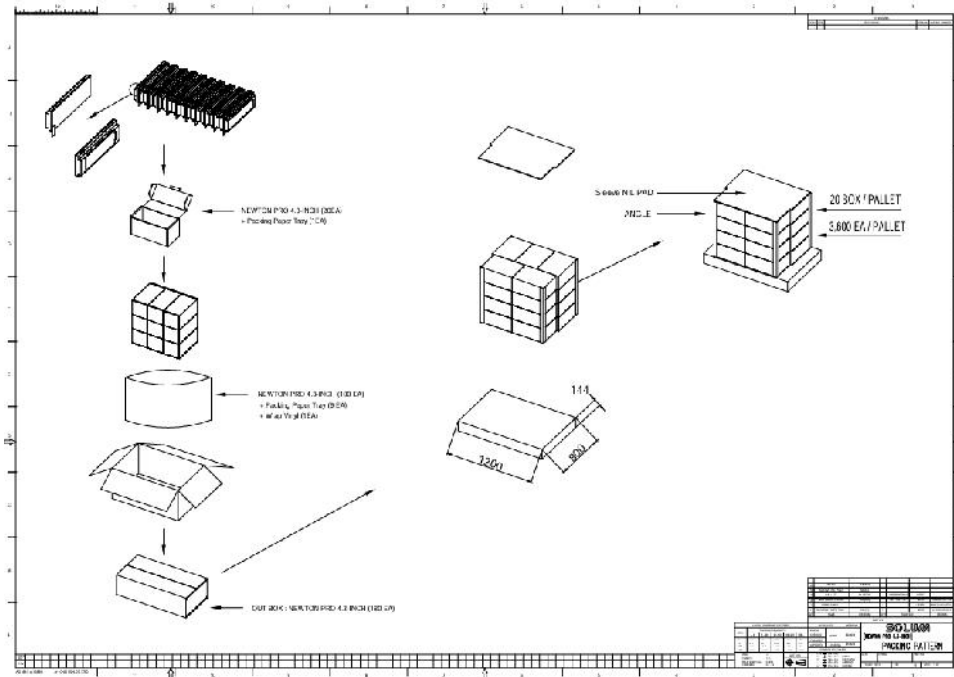


Figure 47. 4.3" PACKING-DIAGRAM (1,200 X 800)

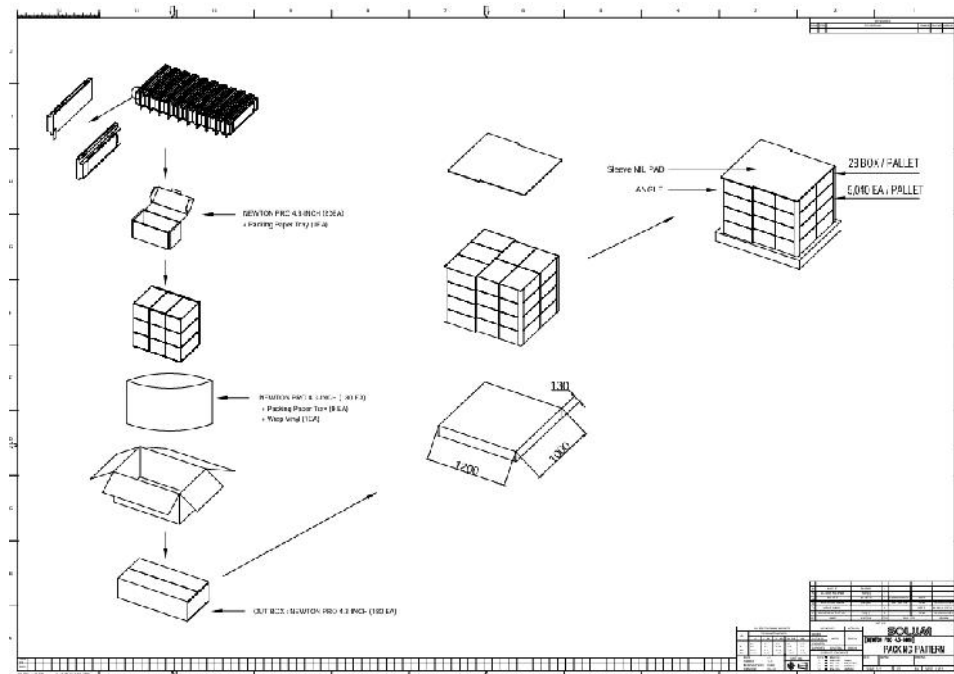


Figure 48. 4.3" PACKING-DIAGRAM (1,200 X 1,000)

4.11. 4.5"

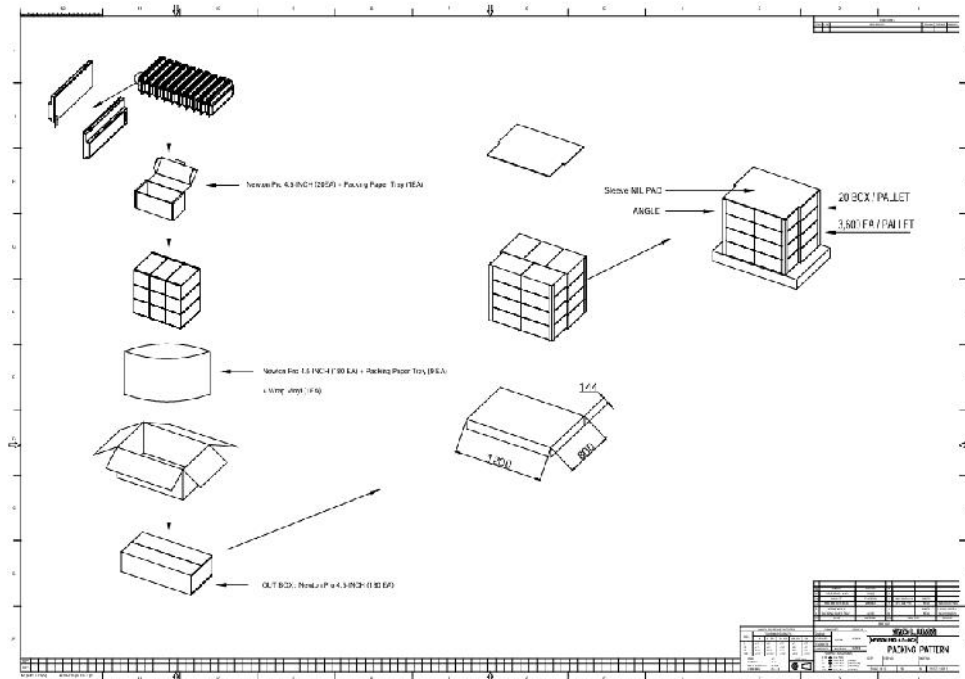


Figure 49. 4.5" PACKING-DIAGRAM (1,200 X 800)

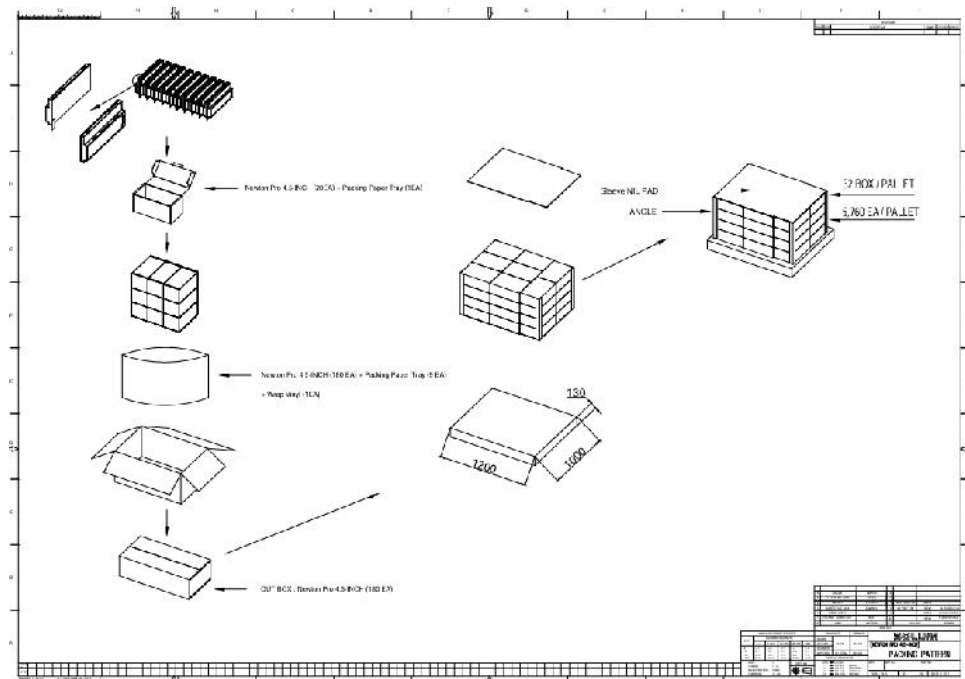


Figure 50. 4.5" PACKING-DIAGRAM (1,200 X 1,000)

4.12. 5.8", 5.8"F

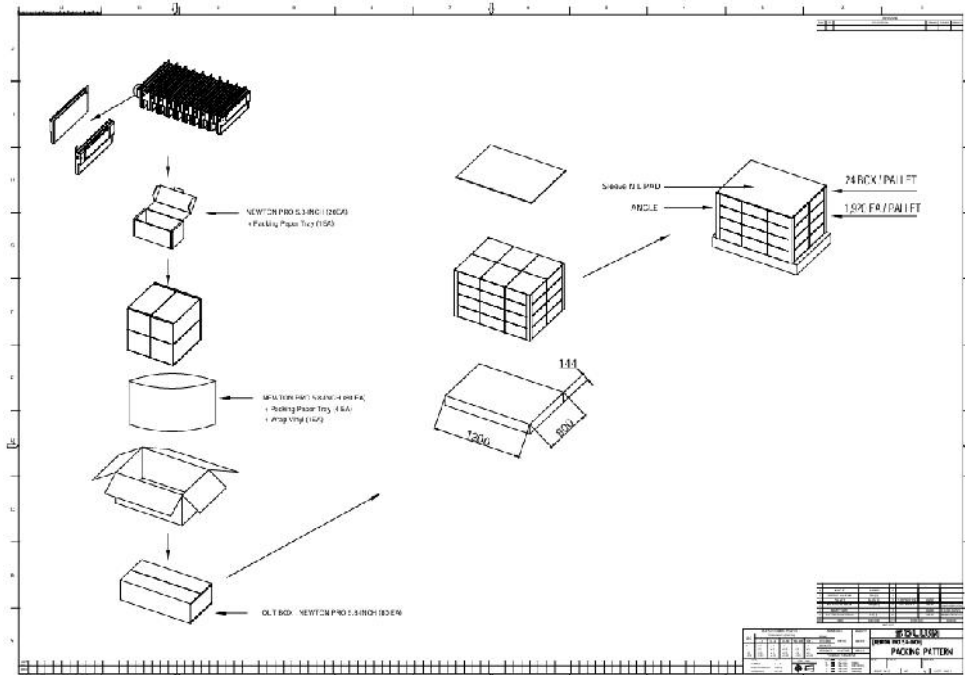


Figure 51. 5.8", 5.8"F PACKING-DIAGRAM (1,200 X 800)

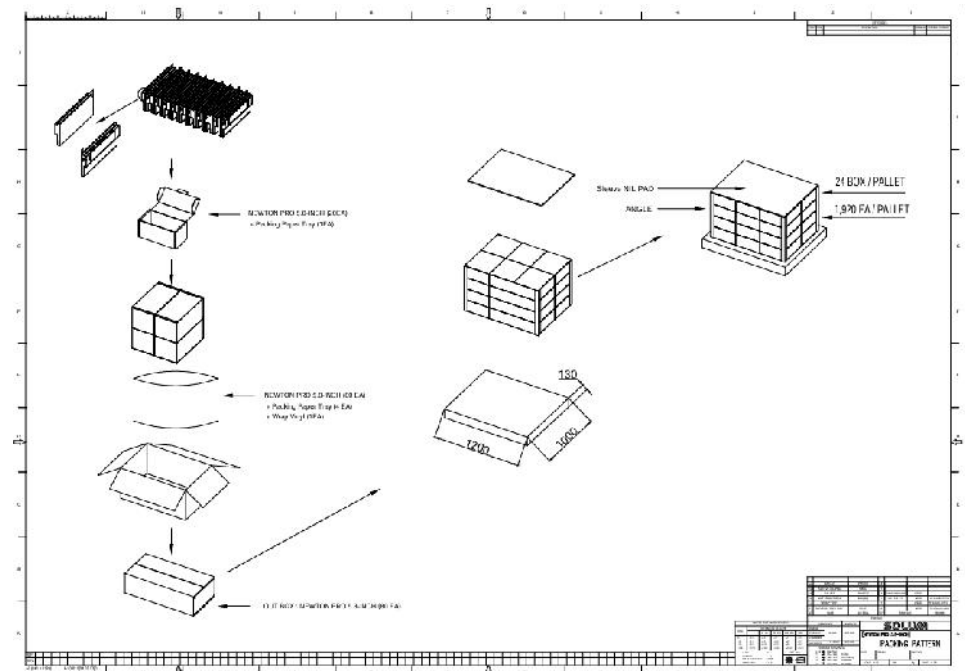


Figure 52. 5.8", 5.8"F PACKING-DIAGRAM (1,200 X 1,000)

[illegible][illegible]

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4.14. 7.5"

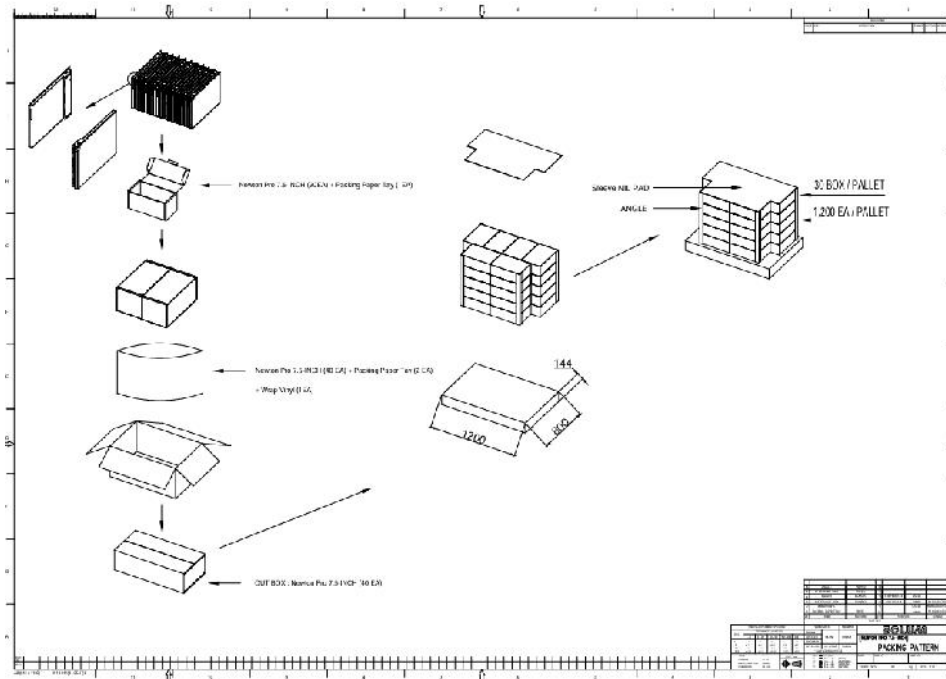


Figure 55. 7.5" PACKING-DIAGRAM (1,200 X 800)

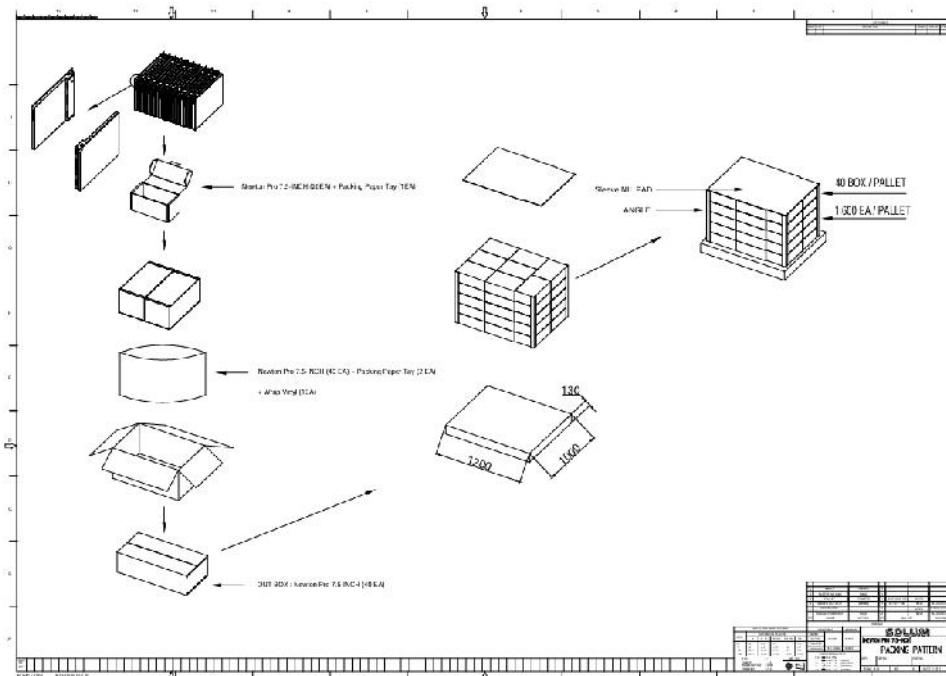


Figure 56. 7.5" PACKING-DIAGRAM (1,200 X 1,000)

The diagram illustrates the assembly of a 2' x 4' box and its placement on a pallet. The components and steps are as follows:

- Box Components:**
 - Box Body:** A large rectangular box with dimensions 5300 (length), 144 (width), and 200 (height).
 - Flaps:** Two flaps are shown, one labeled "Sleeve ML PAD" and another labeled "A 1000".
 - Box Assembly:** The box body is shown with the flaps attached, forming a complete box.
- Pallet Assembly:**
 - Pallet:** A 2' x 4' pallet is shown, with dimensions 2' x 4' and 800 x 1'.
 - Box Placement:** The assembled box is shown being placed onto the pallet.
- Dimensions and Labels:**
 - Box Dimensions:** 5300 (length), 144 (width), 200 (height).
 - Pallet Dimensions:** 2' x 4' and 800 x 1'.
 - Labels:** "Sleeve ML PAD", "A 1000", "2' BOX / PALLET", "800 EA / PALLET".

Technical drawing illustrating the packaging process for a product, showing the assembly of a box and its arrangement on a pallet.

Box Assembly:

- Material: **Material: Pte. 3.1 (B.C.) (230x) - Packing Paper 7x (B.C.)**
- Material: **Material: Pte. 3.2 (B.C.) (140x) - Packing Paper 7x (B.C.) - Vapour Airtight (T.C.)**
- Material: **Material: Pte. 3.3 (B.C.) (140x) - Packing Paper 7x (B.C.)**

Pallet Arrangement:

- Stacked boxes are arranged on a pallet.
- Dimensions: **1,200** (width), **1,200** (depth), **130** (height).
- Labels: **32 BOX / PALLET** and **1,280 EA / PALLET**.

Diagram Labels:

- Stacked Boxes:** Shows the arrangement of boxes on the pallet.
- Box Dimensions:** 1,200 x 1,200 x 130.
- Pallet Dimensions:** 1,200 x 1,200 x 130.

Legend:

- 32 BOX / PALLET**
- 1,280 EA / PALLET**

Diagram Title: **SOLAR**
PACKING PATTERN

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4.16. 11.6"

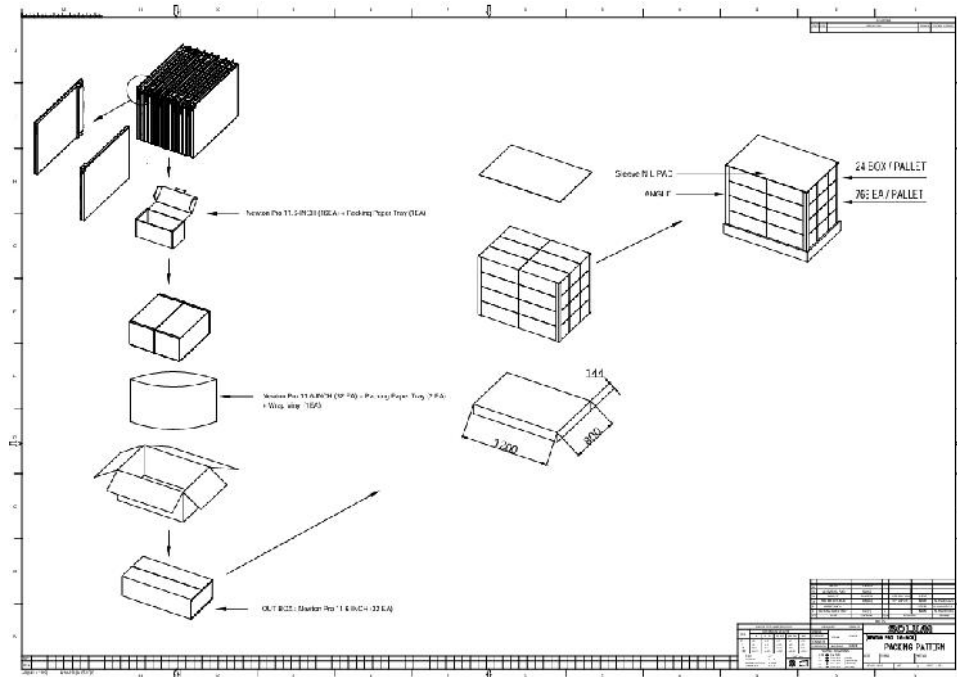


Figure 59. 11.6" PACKING-DIAGRAM (1,200 X 800)

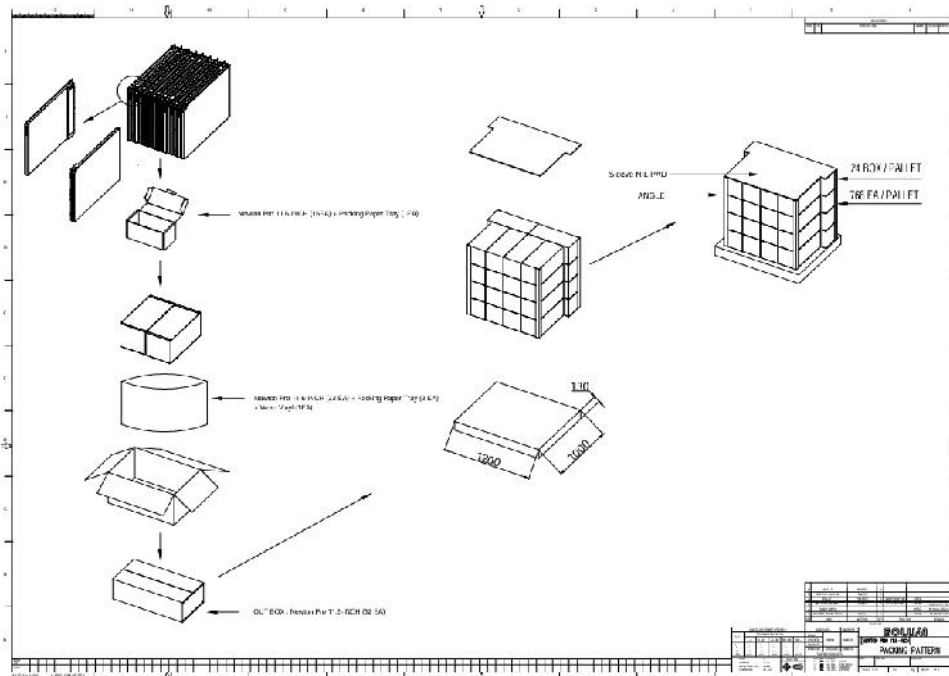


Figure 60. 11.6" PACKING-DIAGRAM (1,200 X 1,000)

Technical drawing illustrating the assembly sequence of a box, showing various components and dimensions.

Components and Dimensions:

- Newen Pro 12 INCH (30.5 CM) - Packing Paper Tray (1 EA)
- Newen Pro 12 INCH (30.5 CM) - Packing Paper Tray (1 EA)
- OUT BOX - Newen Pro 12 INCH (30.5 CM)
- Box Dimensions: 1.20m, 1.65m, 0.80m
- Boxless Packing Pattern

[illegible]

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5. Reliability Test

- High Temperature Operation
- Low Temperature Operation
- High Temperature/Humidity Operation
- High Temperature Storage
- Temperature Shock (Storage)
- ESD
- Package Drop Test
- Package Random Vibration Test

Test Item	Test Condition		Pass Criteria
High Temp Resistance	60°C / 35% (240hrs)		Normal operation after test
High Temp Operation	40°C / 35% (240hrs)		
Thermal Shock	-25°C (for 30mins) ~ 60°C (for 30mins) for 240 cycles		
High Temp & Humidity Operation	40°C / 70% (240hrs)		
Low Temp Operation	Normal ESL	0°C (240hrs)	
	Freezer ESL	-25°C (240hrs)	
ESD Test	TYP. Air ±10KV, 150pF, 330Ω, 10 times/Point		
Waterproof (IEC60529)	15cm x 15cm water tank, 1m depth of water, 30 minutes (IP68 criteria)		No water ingress into tag
RF Sensitivity (Communication Distance)	Gateway <-> Tag distance: 100 meters		Tag receives RF signal from Gateway

6. Product Handling Precautions

Provisions should be made to protect against any damage to the product caused by improper handling. The purchaser assumes any responsibility for damage to the product caused by improper handling.

Product should be stored in 0°C ~ 40°C (32°F ~ 104°F) @45~70% RH environment and should be installed within **90 days** of receipt.

6.1. Usage Environment

Take extra caution when using this RF device in the vicinity of other electronic devices and appliances. Most electronic devices and appliances use electromagnetic waves. Electromagnetic waves emitted by this RF device can affect other electronic devices and appliances.

If using the device in an explosion hazard area, follow all safety regulations, instructions, and signals.

6.2. Storage and Use

- The product is shipped in sleep mode (displaying a white screen) and can be activated by pressing the button, using an NFC remote control, or via the mobile app.
- Moisture and liquids can damage internal parts and circuit boards if allowed to enter into the device itself.
- Do not place or store the product on a sloped surface. The product may slide and fall off the surface and become damaged.
- Use the product in temperatures ranges of **0°C ~ 40°C / 32°F ~ 104°F (BWRY) or -25°C ~ 0°C / -13°F ~ 32°F (Freezer)**. Parts and circuits may be damaged if operated or stored in extreme temperature.
- The display panel needs extra care during handling.
 - Do not apply any impacts on the e-Paper display as it is fragile.
 - Continuous exposure to excessive moisture (over 70% RH) or UV shortens display lifetime.
 - Ghosting image may appear in temperature conditions of less than **15°C / 59°F for**

normal tags and -25°C / -13°F for freezer tags. (If $\Delta L^* > 2$, we call it ghosting phenomenon)

- Avoid areas with strong magnetism or subject to magnetism. Contact between the device and a magnetic object can lead to malfunctions.
- Do not place the product near heat-producing kitchen appliances like a stove or a microwave or in the vicinity of highly pressurized containers.
- External impact to the product, such as from being dropped, can damage the product.
- Twisting and bending the product can damage the exterior casing and the internal components.
- If this product operates abnormally while removing battery or replacing battery, it needs to be discharged by contacting the battery terminals (+) and (-) in the product.
- This product uses the 2.4GHz frequency band for the wireless communication network. Radio communications can be limited or affected by other applications that share the same frequency band, such as Wi-Fi, Bluetooth, Zigbee, etc.
- A prior investigation into the radio environment is strongly required for efficient and smooth installation.
- Frequent communications, updates and screen renewals may reduce battery life time.
- Low temperature environments may reduce battery life.
- FIFO (First In First Out)

6.3. Product Cleaning

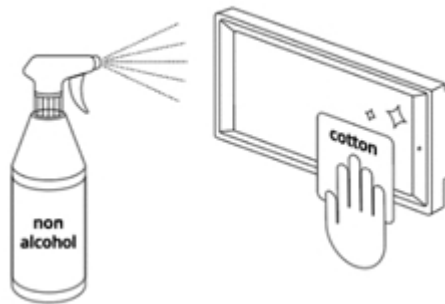
6.3.1. For Spray Cleaning:

Steps

- (1) Lightly spray all surfaces and wait a few seconds.
- (2) Gently wipe clean using a cloth or tissue.
- (3) Let the labels dry.

Notes

- Use mild, non-alcoholic detergents or glass cleaner.
- Recommend non-abrasive cloths: Microfiber, Cotton T-shirt, Cotton handkerchief, Cotton tea towel

**6.3.2. For Wet Tissue Cleaning:****Steps**

- (1) Stand or lay down the labels.
- (2) Wipe using wet tissues.
- (3) Let the labels dry.

**6.4. Battery Replacement****Audience**

- Authorized personnel with the following knowledge are allowed to replace the battery: Battery / Electronic assemblies (e.g. circuit board) / Compliance with the instruction
- ※ Note: Warranty is voided if battery is replaced by unauthorized personnel. (When batteries require replacement, please contact the authorized personnel)

Instructions

- Risk of short circuit if battery is incorrectly installed/stored.
 - Check that hands are dry before and at all times during the replacement Process.
 - Keep batteries away from children and infants.
 - Do not heat, charge, bend, drop, short-circuit and/or disassemble battery.
 - Do not mix together used and new batteries or different battery types.
- ※ Note: Battery rarely has minor stain or leak.

Steps

- (1) Open the battery cover.
- (2) Take out the batteries.
- (3) Put in the new batteries.
- (4) Check the batteries direction.
- (5) Put back in the battery cover.

Battery Direction

- Coin Battery
 - Top: (+) Positive
 - Bottom: (-) Negative



Figure 63. COIN BATTERY DIRECTION

- Battery Pack
 - Red Wire: (+) Positive
 - Black Wire: (-) Negative

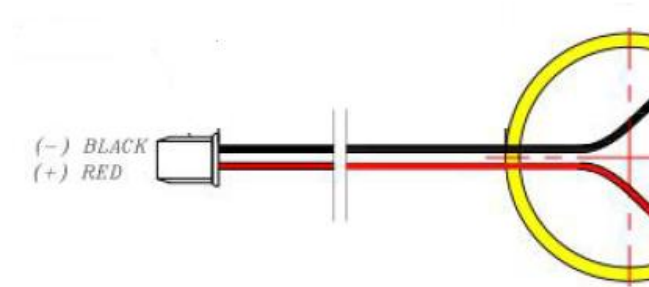


Figure 64. BATTERY PACK DIRECTION

7. Battery Handling Guide

7.1. Avoiding hazards in lithium battery handling

1. Do not short circuit (Fig. 1)

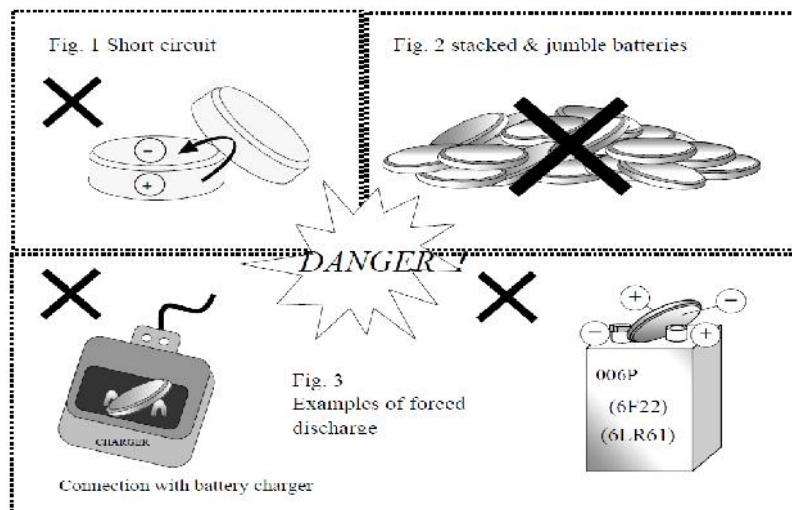
- Direct connection of plus (+) and minus (-) poles may result in leakage, heat generation, explosion and/or fire.
- Do not store and/or carry batteries with metallic items, such as a necklace.

2. Do not stack and/or jumble batteries (Fig. 2)

- Stacked and/or jumbled batteries may cause a short circuit and/or forced discharge from contact with other batteries.
- This may result in leakage, heat generation, explosion and/or fire.

3. Do not make forced discharge batteries (Fig. 3)

- On a forced discharge by an external power source, the battery voltage goes to negative and this causes gas generation in inside of the battery.
- This may result in leakage, heat generation, explosion and/or fire.



4. Do not dispose of batteries in fire

- Disposal of batteries in fire is extremely dangerous with a risk of explosion and violent flaring.

5. Do not heat batteries

- Heating batteries above 100°C/212°F may damage the resin in crimping, separator and other parts, potentially causing an electrolyte leak, internal short circuit, fire and/or explosion.

6. Do not solder directly onto batteries

- Direct soldering onto batteries may damage the resin in crimping, separator and other parts, potentially causing an electrolyte leak, internal short circuit, fire and/or explosion.

7. Do not recharge batteries

- Recharging of batteries may result in internal gas generation, causing electrolyte leak, battery swelling, fire and explosion.

8. Do not disassemble batteries

- Disassembly of batteries may generate gas that may irritate your throat.
- Lithium may also react with moisture to generate heat and fire.

9. Do not deform batteries

- Applying extreme pressure to batteries may cause deformation of the crimping and internal short circuit, causing electrolyte leak, battery swelling, fire and explosion.

10. Do not mix different type batteries

- For some applications, mixing different types of batteries or new and old batteries, can cause an over discharge due to differences in voltage and discharge capacities.
- This may lead to the risk of swelling and/or explosion.

11. Do not insert batteries with opposite polarity

- For some applications, battery insertion with opposite polarity (reverse insertion of plus and minus) may result in leakage, heat generation, explosion and/or fire.

※ Please ensure the above precautions are strictly observed by related divisions including Production, warehouse, Product technology, sales, quality, customer stores, S/I companies, part-time workers, and external service companies.