



EMC  
Shielding  
Effects



**Technical Data**

Protection class: IP40  
Operating temperature: -10°C ~ +60°C

- LCE series is an EMC shielded version of LC hand-held plastic case coated internally with DOTITE conductive paint (acrylic paint mixed with nickel filler).
- Designed with beveled edges and rounded corners, and manufactured from flame-resistant ABS UL94V-0 material.
- Recommended to be used as measurement instruments, testing devices, wireless communication gadgets, medical equipment, and so on.

**Components**

No.	Part name	Pcs	Material	Color / Finish	Conductive paint
1	Top cover	1	ABS UL94V-0	Dark gray	DOTITE
2	Bottom cover	1	ABS UL94V-0	Dark gray	DOTITE
3	Panel	1	ABS UL94V-0	Dark gray	DOTITE
4	Self-tapping screw	4	Steel M2.6	Black trivalent chromate	—

**Accessories (Optional parts)**



Silicone cover LCTP • LCSC series  
See page LCTP-1 ~ LCSC-1



Tapping standoff TPS series  
See page TPS • MT-1



PCB mounting screw EM-2.3  
See page EM • MR-1



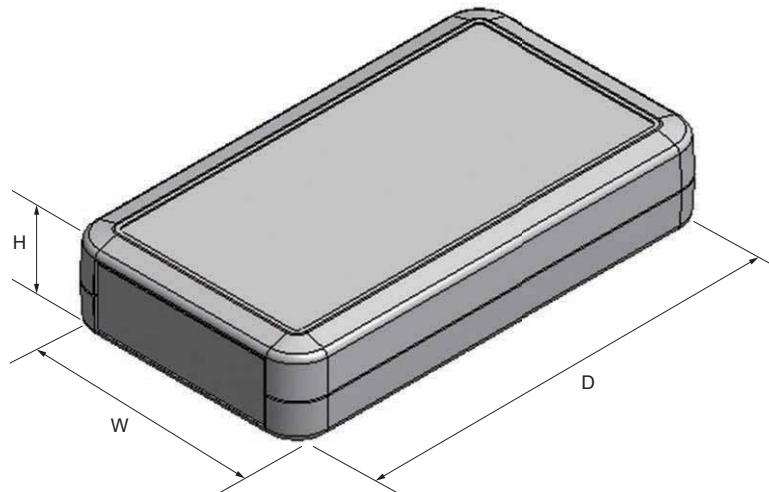
TORX screw MR series  
See page EM • MR-1



Suspension bracket WM series  
See page WM-1

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

■ Refer to page LCT · LCS · LC · LCE-5 ~ LCT · LCS · LC · LCE-8 for detailed internal enclosure dimensions.



**Product no. / Dimensions**

	Product no.	W	H	D	Included screws	Weight (g)
<b>NEW</b>	LCE115 -N -D	69	19.5	115	Countersunk M2.6-14 x 4 pcs	72.5
<b>NEW</b>	LCE115H -N -D	69	28	115	Countersunk M2.6-18 x 4 pcs	84
<b>NEW</b>	LCE135 -N -D	76	27	135	Countersunk M2.6-18 x 4 pcs	97
<b>NEW</b>	LCE145H -N -D	96	35	145	Countersunk M2.6-18 x 4 pcs	137
<b>NEW</b>	LCE165H -N -D	80	35	165	Countersunk M2.6-18 x 4 pcs	139

**CONDUCTIVE PAINT CUSTOMIZATION AVAILABLE for LC series.**

The LCE series are a selected few models of the LC series, customized with conductive paint.  
Other LC series enclosures not listed can also be customized with conductive paint.

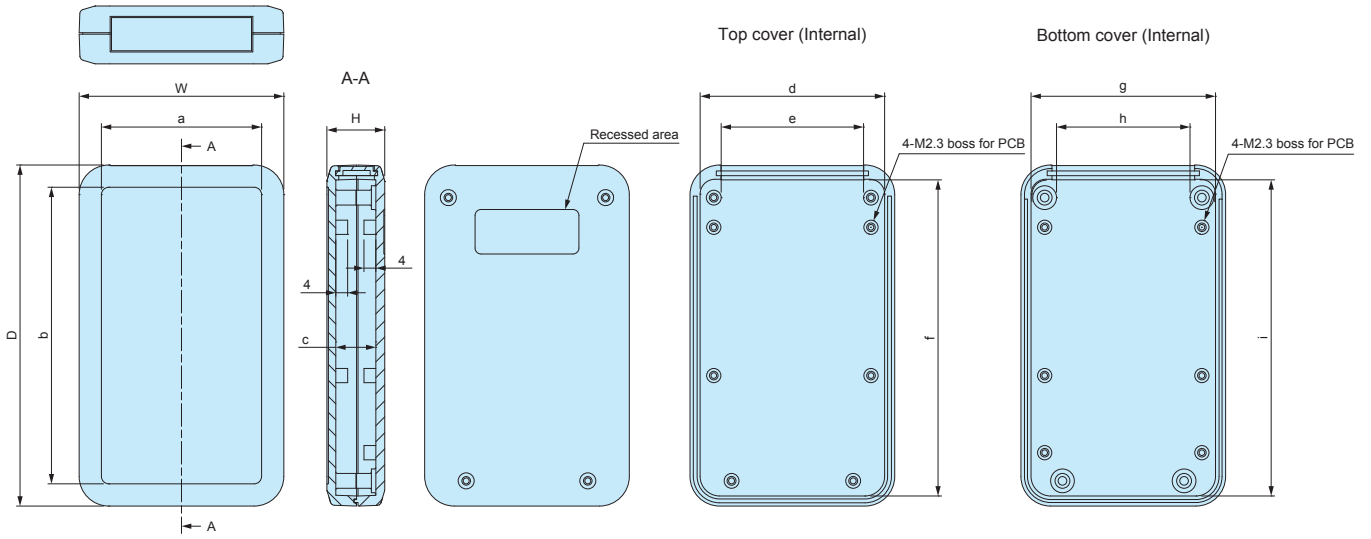
Contact us for more details.  
E-mail : [sales@takachi-el.co.jp](mailto:sales@takachi-el.co.jp)



**LCT • LCS (Case only) / LC • LCE Dimensions**

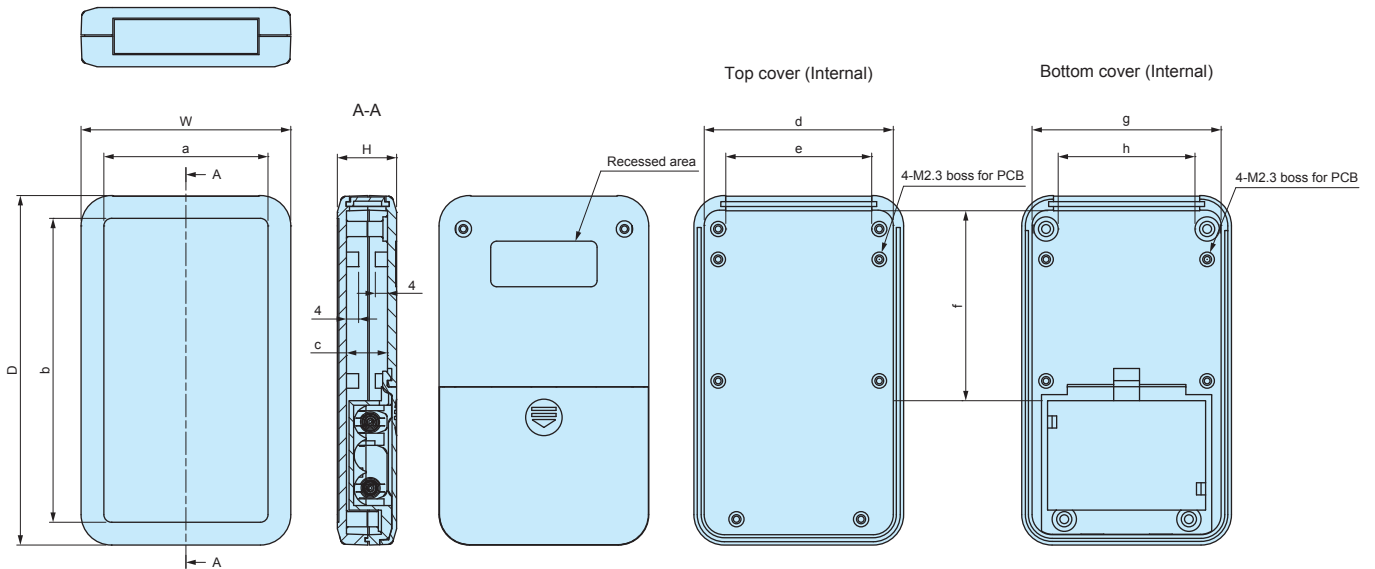
■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

LC / LCE / LCS / LCT115-N  
LC / LCE / LCS / LCT115H-N



Product no.	W	H	D	a	b	c	d	e	f	g	h	i
LC • LCE • LCS • LCT115 -N	69	19.5	115	54	100	13.5	61.5	47	106.1	61.6	44	106.1
LC • LCE • LCS • LCT115H-N	69	28	115	54	100	22	60.9	47	105.5	61.5	44	106.1

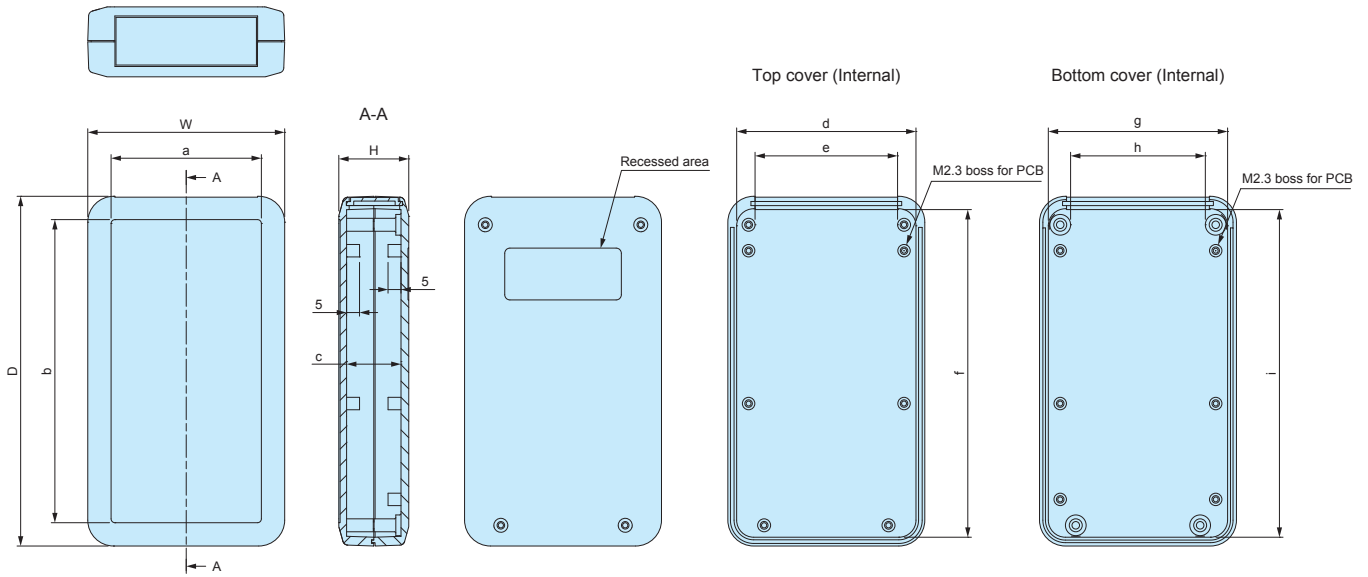
LC / LCS / LCT115-F2 • LC / LCS / LCT115H-F2  
LC / LCS / LCT115-F3 • LC / LCS / LCT115H-F3  
LC / LCS / LCT115H-M2 • LC / LCS / LCT115H-9V



Product no.	W	H	D	a	b	c	d	e	f	g	h
LC • LCS • LCT115 -F2	69	19.5	115	54	100	13.5	61.5	47	73.3	61.6	44
LC • LCS • LCT115 -F3	69	19.5	115	54	100	13.5	61.5	47	62.3	61.6	44
LC • LCS • LCT115H-F2	69	28	115	54	100	22	60.9	47	73.3	61.6	44
LC • LCS • LCT115H-F3	69	28	115	54	100	22	60.9	47	62.3	61.6	44
LC • LCS • LCT115H-M2	69	28	115	54	100	22	60.9	47	65.1	61.6	44
LC • LCS • LCT115H-9V	69	28	115	54	100	22	60.9	47	66	61.6	44

LC / LCE / LCS / LCT135-N  
LC / LCS / LCT135H-N

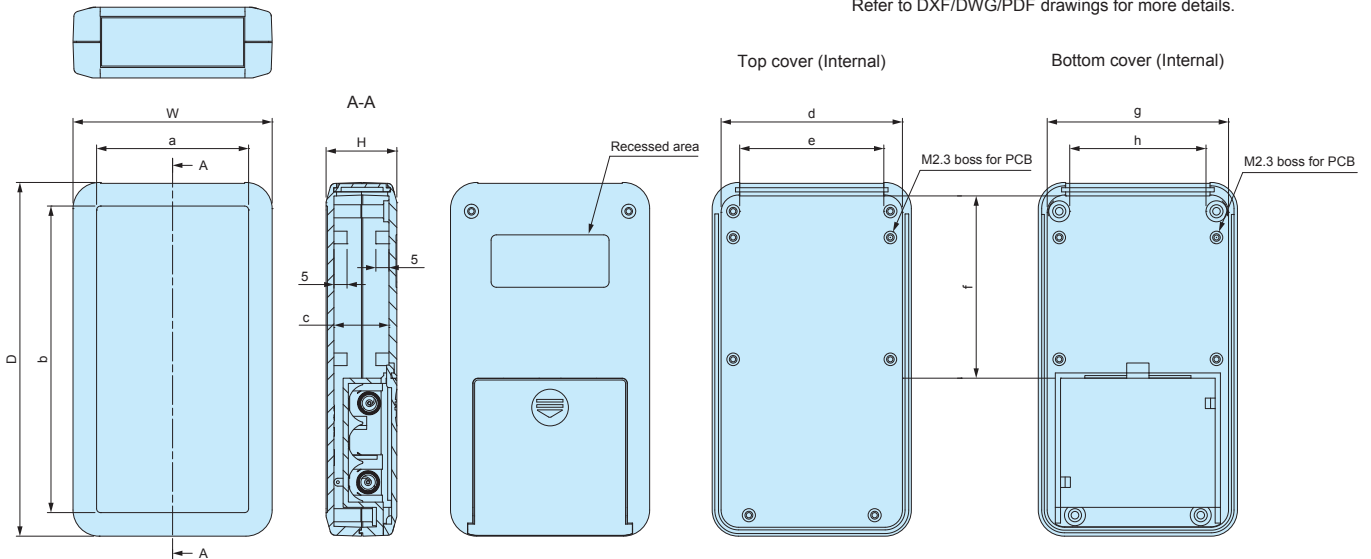
※ Number of PCB bosses vary by model.  
Refer to DXF/DWG/PDF drawings for more details.



Product no.	W	H	D	a	b	c	d	e	f	g	h	i
LC • LCE • LCS • LCT135-N	76	27	135	58	117	21	68.2	55	125.8	68.3	51	125.9
LC • LCS • LCT135H-N	76	35	135	58	117	29	67.7	54	125.3	68.3	51	125.9

LC / LCS / LCT135-F4 • LC / LCS / LCT135H-F4 • LC / LCS / LCT135-M2 • LC / LCS / LCT135H-M2  
LC / LCS / LCT135-M3 • LC / LCS / LCT135H-M3 • LC / LCS / LCT135-9V • LC / LCS / LCT135H-9V

※ Number of PCB bosses vary by model.  
Refer to DXF/DWG/PDF drawings for more details.



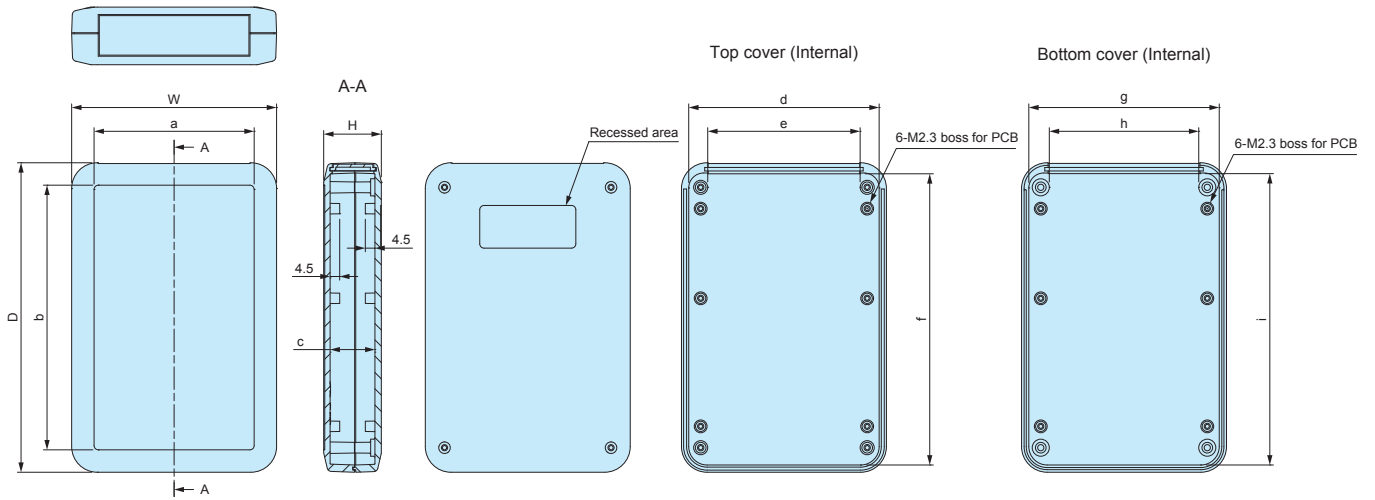
Product no.	W	H	D	a	b	c	d	e	f	g	h
LC • LCS • LCT135 -F4	76	27	135	58	117	21	68.2	55	69.4	68.3	51
LC • LCS • LCT135 -M2	76	27	135	58	117	21	68.2	55	84.5	68.3	51
LC • LCS • LCT135 -M3	76	27	135	58	117	21	68.2	55	69.4	68.3	51
LC • LCS • LCT135 -9V	76	27	135	58	117	21	68.2	55	84.5	68.3	51
LC • LCS • LCT135H-F4	76	35	135	58	117	29	67.7	54	69.4	68.3	51
LC • LCS • LCT135H-M2	76	35	135	58	117	29	67.7	54	84.5	68.3	51
LC • LCS • LCT135H-M3	76	35	135	58	117	29	67.7	54	69.4	68.3	51
LC • LCS • LCT135H-9V	76	35	135	58	117	29	67.7	54	84.5	68.3	51



**LCT • LCS (Case only) / LC • LCE Dimensions**

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

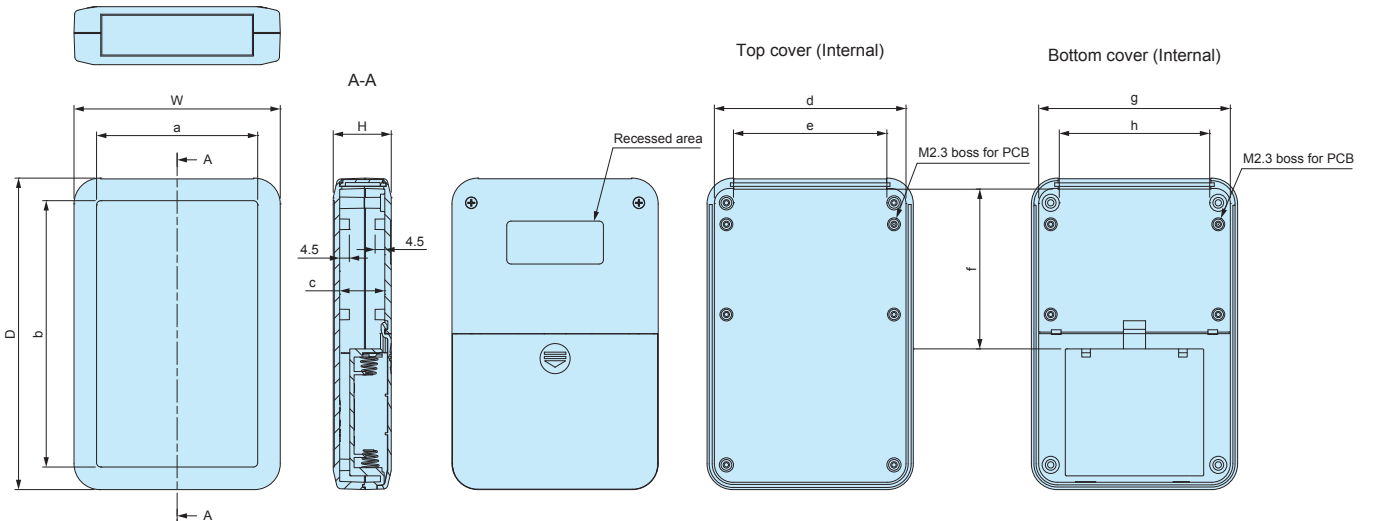
LC / LCS / LCT145S-N  
LC / LCS / LCT145-N  
LC / LCE / LCS / LCT145H-N



Product no.	W	H	D	a	b	c	d	e	f	g	h	i
LC • LCS • LCT145S-N	96	20	145	75	124	14	88.3	71.4	135.9	87.9	68.9	135.5
LC • LCS • LCT145 -N	96	27	145	75	124	21	87.8	71.4	135.4	87.9	68.9	135.5
LC • LCE • LCS • LCT145H-N	96	35	145	75	124	29	87.2	71	134.8	87.9	68.9	135.5

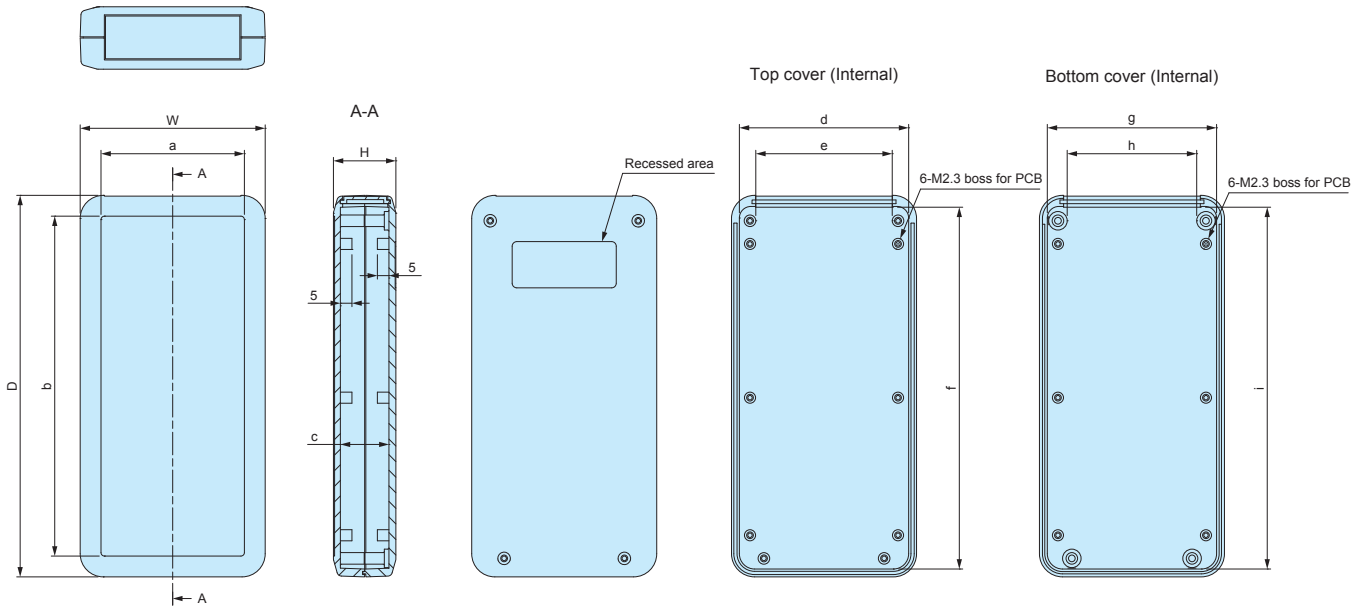
LC / LCS / LCT145S-F6 • LC / LCS / LCT145-F6 • LC / LCS / LCT145H-F6  
LC / LCS / LCT145-M2 • LC / LCS / LCT145H-M2  
LC / LCS / LCT145-M4 • LC / LCS / LCT145H-M4

※ Number of PCB bosses vary by model.  
Refer to DXF/DWG/PDF drawings for more details.



Product no.	W	H	D	a	b	c	d	e	f	g	h
LC • LCS • LCT145S -F6	96	20	145	75	124	14	88.3	71.4	78.4	87.9	68.9
LC • LCS • LCT145 -F6	96	27	145	75	124	21	87.8	71.4	78.4	87.9	68.9
LC • LCS • LCT145 -M2	96	27	145	75	124	21	87.8	71.4	97.4	87.9	68.9
LC • LCS • LCT145 -M4	96	27	145	75	124	21	87.8	71.4	74	87.9	68.9
LC • LCS • LCT145H -F6	96	35	145	75	124	29	87.2	71	78.4	87.9	68.9
LC • LCS • LCT145H-M2	96	35	145	75	124	29	87.2	71	97.4	87.9	68.9
LC • LCS • LCT145H-M4	96	35	145	75	124	29	87.2	71	74	87.9	68.9

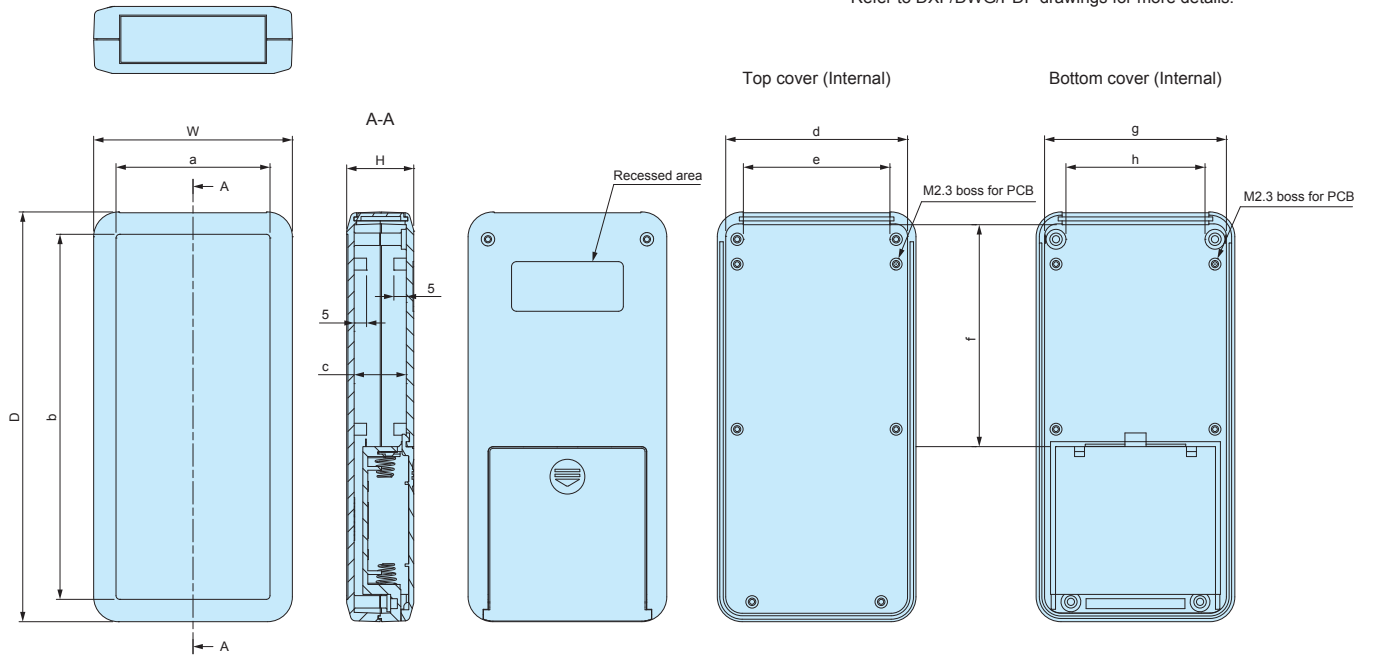
LC / LCS / LCT165-N  
LC / LCE / LCS / LCT165H-N



Product no.	W	H	D	a	b	c	d	e	f	g	h	i
LC • LCS • LCT165-N	80	27	165	62	147	21	72.2	58	155.8	72.3	55	155.9
LC • LCE • LCS • LCT165H-N	80	35	165	62	147	29	71.7	58	155.3	72.3	55	155.9

LC / LCS / LCT165-M4  
LC / LCS / LCT165H-M4

※ Number of PCB bosses vary by model.  
Refer to DXF/DWG/PDF drawings for more details.



Product no.	W	H	D	a	b	c	d	e	f	g	h
LC • LCS • LCT165 -M4	80	27	165	62	147	21	72.2	58	89.2	72.3	55
LC • LCS • LCT165H-M4	80	35	165	62	147	29	71.7	58	89.2	72.3	55

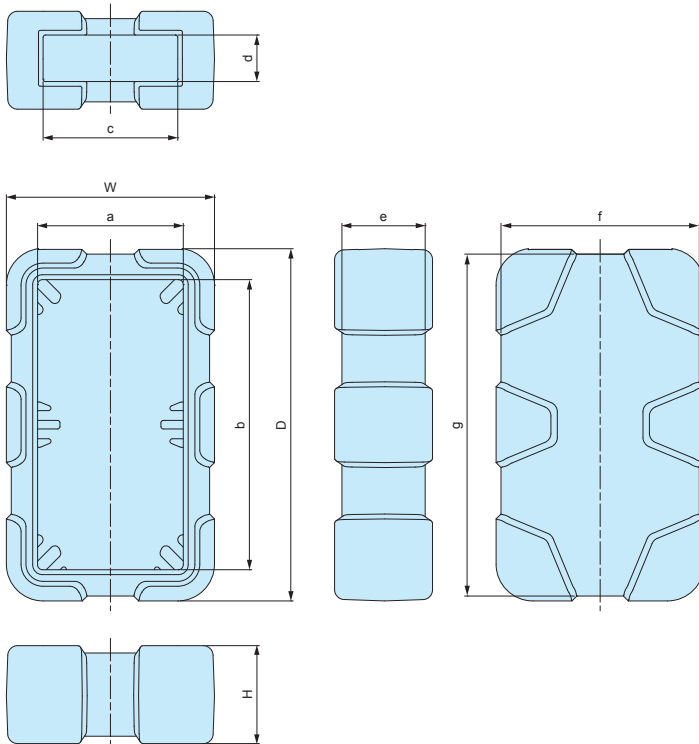
# LCTP SERIES

# SHOCK-PROOF SILICONE COVER

## Color Type



- Shock-proof silicone cover for LC series. New sizes now available!
- Custom color is available from 500pcs per order batch. For custom color order, please specify **PANTONE®**, RGB color number or provide your sample color.
- Drawings below are reference examples only. DXF/DWG/PDF drawings available on our website.



## APPLICATION EXAMPLE

**ULTRASONIC HARDNESS TESTER**  
Product by NOVOTEST (Ukraine)



## Components

Part name	Material	Color
Silicone cover	Silicone	Orange • Green • Navy • Dark gray • Light gray

## Product no. / Dimensions

■ Please suffix color code at the end of the product number.

Product no.	W	H	D	a	b	c	d	e	f	g	Suitable case	Weight (g)
LCTP115 -□	76	28	121.9	55.5	101.5	48.3	12	24	72	117.8	LC115	53.5
LCTP115H -□	76	36.5	121.9	55.5	101.5	48.3	20.5	32.5	72	117.8	LC115H	61
LCTP135 -□	85	40	143.9	59.5	118.5	55	19	34	81	139.7	LC135	115.5
LCTP135H -□	85	48	143.9	59.5	118.5	55	27	42	81	139.6	LC135H	124
LCTP145S -□	105	33	153.9	76.5	125.5	71	12	27	101	149.9	LC145S	129.1
LCTP145 -□	105	40	153.9	76.5	125.5	71	19	34	101	149.7	LC145	137.5
LCTP145H -□	105	48	153.9	76.5	125.5	71	27	42	101	149.7	LC145H	147
LCTP165 -□	89	40	173.9	63.5	148.5	59	19	34	85	169.7	LC165	143
LCTP165H -□	89	48	173.9	63.5	148.5	59	27	42	85	169.6	LC165H	151.5

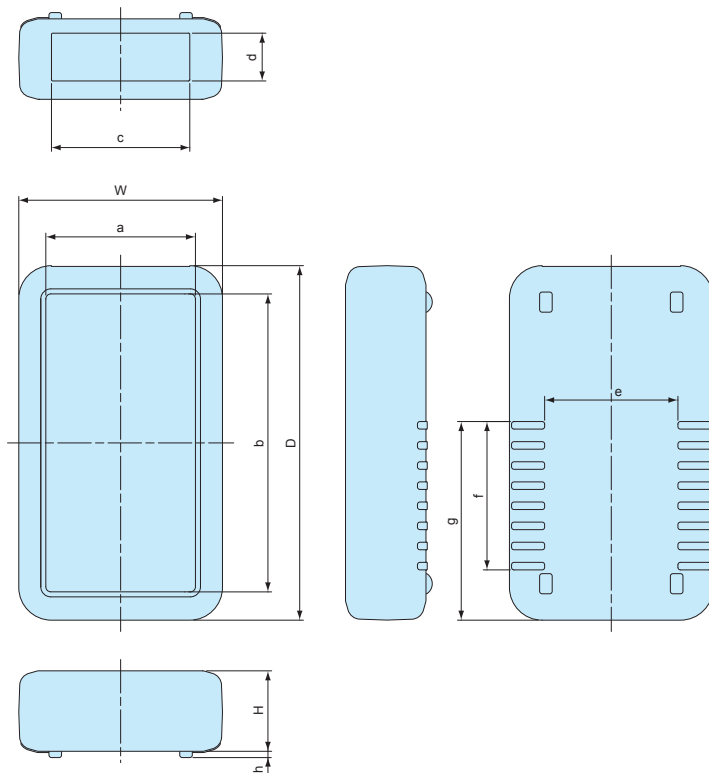
# LCSC SERIES

# SILICONE COVER

## Color Type



- Silicone cover for LC Series.
- Custom color is available from 500pcs per order batch. For custom color order, please specify **PANTONE®**, RGB color number or provide your sample color.
- Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



## APPLICATION EXAMPLE

### TEMPERATURE SURVEILLANCE SENSOR

Product by SENFIO (Brazil)



## Components

Part name	Material	Color
Silicone cover	Silicone	Red • Yellow • Green • Blue • Navy • Dark gray • Light gray

## Product no. / Dimensions

■ Please suffix color code at the end of the product number.

Product no.	W	H	D	a	b	c	d	e	f	g	h	Suitable case	Weight (g)
LCSC115 -□	74	24	120	55.5	101.5	48.3	12	46	44.5	60.5	2	LC115	43
LCSC115H-□	74	32.5	120	55.5	101.5	48.3	20.5	46	44.5	60.5	2	LC115H	50
LCSC135 -□	81	32	141	59.5	118.5	55	19	53	59	79	2.5	LC135	70
LCSC135H-□	81	40	141	59.5	118.5	55	27	53	59	79	2.5	LC135H	75.5
LCSC145S-□	101	25	151	76.5	125.5	71	12	71	59	81	2.5	LC145S	73.4
LCSC145 -□	101	32	151	76.5	125.5	71	19	71	59	81	2.5	LC145	81
LCSC145H-□	101	40	151	76.5	125.5	71	27	71	59	81	2.5	LC145H	89
LCSC165 -□	85	32	171	63.5	148.5	59	19	53	67	92	2.5	LC165	82.5
LCSC165H-□	85	40	171	63.5	148.5	59	27	53	67	92	2.5	LC165H	86



EMC  
Shielding  
Effects



- PFE series is an EMC shielded version of the PF series network plastic box coated internally with DOTITE conductive paint (acrylic paint mixed with nickel filler).
- Flat designed plastic case with detachable panels.
- Made of flame-resistant ABS UL94V-0.
- Equipped with built-in bosses for PCB mounting.
- Suitable for Wi-Fi access point, measuring equipment, controller or various other applications for desktop, wall mounting use and so on.

**Technical Data**

Protection class: IP40  
Operating temperature: -10°C ~ +60°C

Included screws  
PFE20-4-13 model : M3-8 x 4 pcs  
PFE other models : M2.5-8 x 4 pcs

**Components**

No.	Part name	Pcs	Material	Color / Finish	Conductive paint
1	Top cover	1	ABS UL94V-0	Off-white	DOTITE
2	Bottom base	1	ABS UL94V-0	Off-white	DOTITE
3	Panel	2	ABS UL94V-0	Off-white	DOTITE
4	Self-tapping screw	4	Steel	Nickel plated	—
5	Rubber feet	4	Elastomer	Dark gray	—

**Accessories (Optional parts)**



Tapping standoff TPS series  
See page TPS • MT-1



PCB mounting screw EM series  
See page EM • MR-1



TORX screw MR series  
See page EM • MR-1



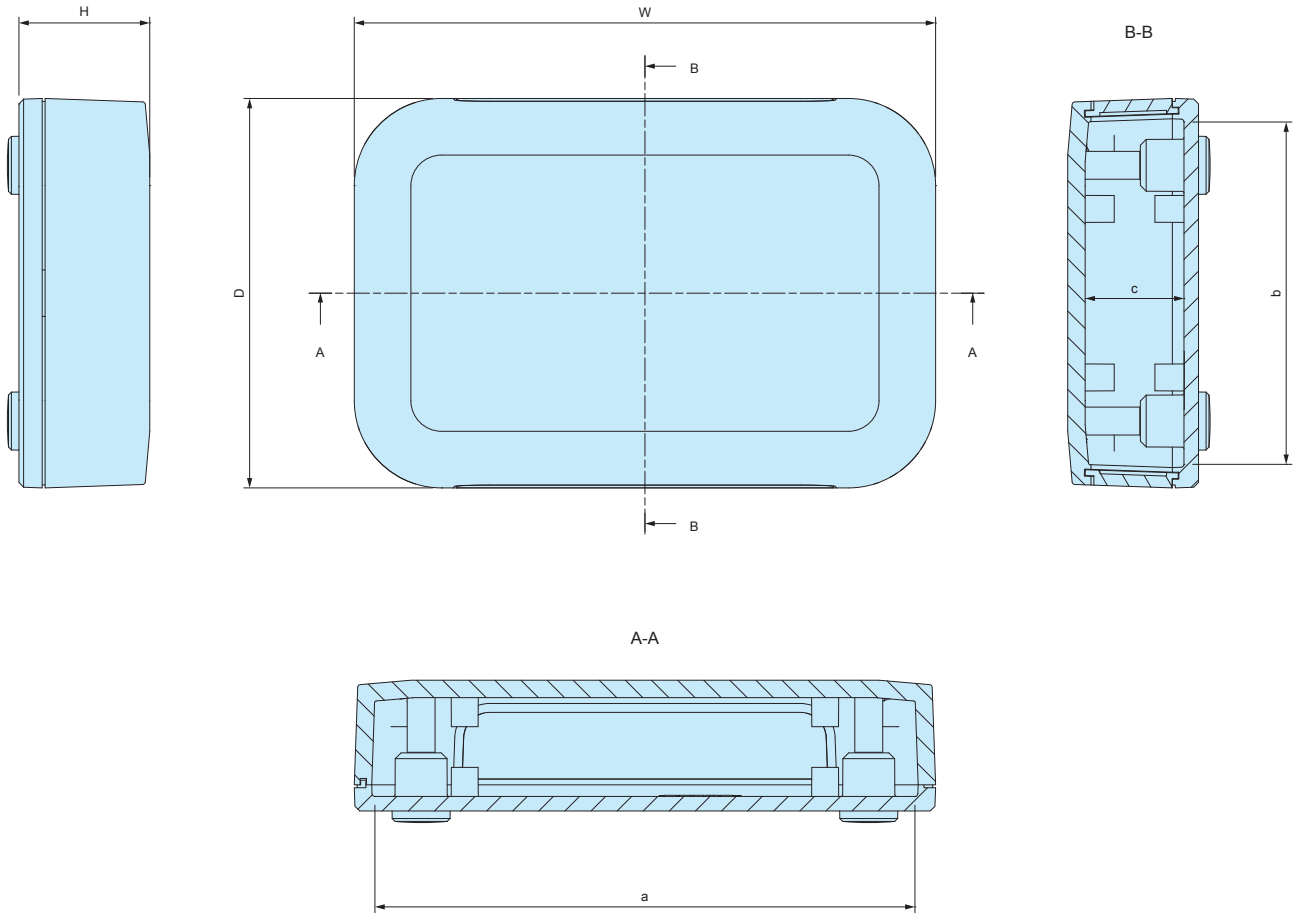
Suspension bracket WM series  
See page WM-1



Tilt leg TLW series  
See page TLW-1

**PFE dimensions**

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



※Refer to DXF/DWG/PDF drawings for the numbers of PCB bosses on each size of enclosures.

**Product no. / Dimensions**

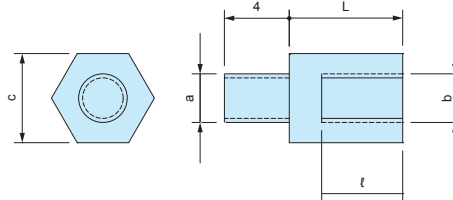
Product no.	Dimensions						Screw	Weight (g)
	W	H	D	a	b	c		
<b>NEW</b> PFE13-4-9W	125	40	85	116	75	34.5	M2.5-8 x 4 pcs	114
<b>NEW</b> PFE15-3-10W	150	30	100	142	90	24	M2.5-8 x 4 pcs	152
<b>NEW</b> PFE15-5-15W	150	45	150	141	139	39	M2.5-8 x 4 pcs	244.5
<b>NEW</b> PFE20-4-13W	200	40	135	191.5	124.5	34	M3-8 x 4 pcs	274.5

TPS SERIES

TAPPING STANDOFF



- Tapping screw head allows for easy installation onto existing enclosure boss mount.
- 3 different sizes available : M2.3, M2.6 and M3 size.



Product no. / Dimensions

■ Material / Finish : Brass / Unfinished

Product no.	Screw size (a)	Screw size (b)	c	L	ℓ	Pack of	Recommended enclosure models	
TPS-M2.3-4	M2.3	M2.3	5	4	3	4	WH series • PFE series LC • LCE • LCS • LCT series PF • PFF series (M2.3 boss models) TW • TWN • TWF series (M2.3 boss models) WP series (M2.3 boss models)	
TPS-M2.3-5	M2.3	M2.3	5	5	3	4		
TPS-M2.3-6	M2.3	M2.3	5	6	4	4		
TPS-M2.3-7	M2.3	M2.3	5	7	5	4		
TPS-M2.3-8	M2.3	M2.3	5	8	6	4		
TPS-M2.3-10	M2.3	M2.3	5	10	6	4		
TPS-M2.3-12	M2.3	M2.3	5	12	6	4		
TPS-M2.6-4	M2.6	M2.6	5	4	3	4		PF • PFF series (M2.6 boss models) WP series (M2.6 boss models)
TPS-M2.6-5	M2.6	M2.6	5	5	3	4		
TPS-M2.6-7	M2.6	M2.6	5	7	5	4		
TPS-M2.6-10	M2.6	M2.6	5	10	6	4		
TPS-M2.6-12	M2.6	M2.6	5	12	6	4	SU • OP series TWS • TW • TWN • TWF series (M3 boss models)	
TPS-M3-4	M3	M3	5.5	4	3	4		
TPS-M3-5	M3	M3	5.5	5	3	4		
TPS-M3-6	M3	M3	5.5	6	4	4		
TPS-M3-7	M3	M3	5.5	7	5	4		
TPS-M3-8	M3	M3	5.5	8	5	4		
TPS-M3-10	M3	M3	5.5	10	6	4		
TPS-M3-12	M3	M3	5.5	12	6	4		



- Please use a suitable sized socket driver to both secure and loosen the tapping standoff.



MT SERIES

PCB MOUNTING SCREWS for TPS



- PCB mounting Screws for TPS tapping standoffs.

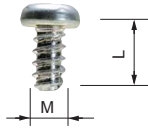
Product no. / Dimensions

Product no.	M	L	Head style	Material	Finish	Pack of
<b>NEW</b> MT2.3-4	2.3	4	Pan	Steel	Trivalent chromate	20
<b>NEW</b> MT2.3-6	2.3	6		Steel	Trivalent chromate	20
<b>NEW</b> MT2.6-4	2.6	4		Steel	Trivalent chromate	20
MT3-4	3	4		Steel	Trivalent chromate	20



EM SERIES

PCB MOUNTING SCREW



- Self-tapping screws for mounting PCB on bosses or standoffs.
- EM-3-6 self-tapping screws are suitable for mounting 1.6mm or thicker PCB.

Product no. / Dimensions

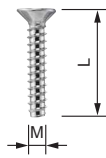
Product no.	M	L	Material	Finish	Suitable enclosures	Pack of
EM-1.6	1.6	4	Steel	Trivalent chromate	WC • CSS • CS • PS (M1.6 size)	50
EM-2	2	5	Steel	Trivalent chromate	PS • TW • TWN • TWF • WP (M2 size)	50
EM-2.3	2.3	6	Steel	Trivalent chromate	WH • LC • LCT • LCS • LCE • PFE WSC (Top cover bosses) PF • PFF (M2.3 size) TW • TWN • TWF (M2.3 size) WP (M2.3 size)	50
<b>NEW</b> EM-2.3-8	2.3	8	Steel	Trivalent chromate	WSC (Bottom base bosses)	50
EM-2.6	2.6	6	Steel	Trivalent chromate	PF • PFF • WP (M2.6 size)	50
EM-3	3	5	Steel	Trivalent chromate	SU TWS • TW • TWN • TWF (M3 sizes)	50
EM-3-6	3	6	Steel	Trivalent chromate		50

MR SERIES

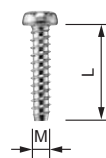
TORX SCREW



Countersunk head



Pan head



With pin



★ Without pin



★ : MR1.6-6S, MR-2S, MR2.6-10□, and MR3-14□ are without pin.

Product no. / Dimensions

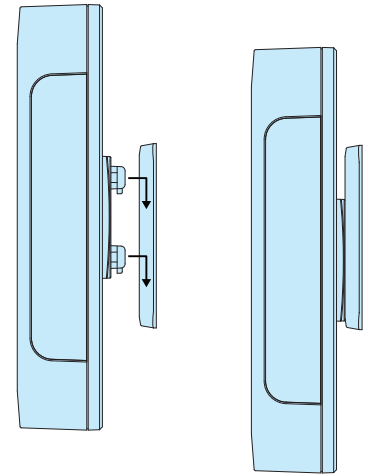
★Mark = Without pin

Product no.	M	L	head no.	Head style	Material	Finish	Suitable enclosures	Pack of
MR1.6-6S★	1.6	6	T3	Pan	Steel	Nickel plated	CS • CSS	20
MR2.5-8PS	2.5	8	T8	Pan	Steel	Nickel plated	PF • PFE • PFF (M2.5 size)	20
MR2.6-10S★	2.6	10	T8	Countersunk	Steel	Nickel plated	TW • TWN (M2.6 models) TWF (M2.6 models)	20
MR2.6-10B★	2.6	10	T8	Countersunk	Steel	Black trivalent chromate	MX • MXA • MXB • MXF (M2.6 models)	20
MR2.6-12PS	2.6	12	T8	Pan	Steel	Nickel plated	LCT • LCS • LC115-F2 / F3 LCT • LCS • LC145S-F6	20
MR2.6-14PS	2.6	14	T8	Pan	Steel	Nickel plated	LCT • LCS • LC115H-F2 / F3 / M2 / 9V LCT • LCS • LC135-F4 / M2 / M3 / 9V LCT • LCS • LC135H-F4 / M2 / M3 / 9V LCT • LCS • LC145-F6 / M2 / M4 LCT • LCS • LC145H-F6 / M2 / M4 LCT • LCS • LC165-M4 LCT • LCS • LC165H-M4	20
MR2.6-14S	2.6	14	T8	Countersunk	Steel	Nickel plated	LCT • LCS • LC115-N / F2 / F3 LCT • LCS • LC145S-F6 / 145S-N LCE115-N TW • TWN7-2-11 / 7-4-11 / 7-5-11 TWF7-2-11 / 7-4-11 / 7-5-11 / 8-2-8 / 8-4-8	20
MR2.6-18S	2.6	18	T8	Countersunk	Steel	Nickel plated	LCT • LCS • LC115H-N / F2 / F3 / M2 / 9V LCT • LCS • LC135-N / F4 / M2 / M3 / 9V LCT • LCS • LC135H-N / F4 / M2 / M3 / 9V LCT • LCS • LC145-N / F6 / M2 / M4 LCT • LCS • LC145H-N / F6 / M2 / M4 LCT • LCS • LC165-N / M4 LCT • LCS • LC165H-N / M4 LCE115H-N • LCE135-N • LCE145H-N • LCE165H-N	20
MR3-8PS	3	8	T10	Pan	Steel	Nickel plated	PF • PFE • PFF (M3 size)	20
MR3-14S★	3	14	T10	Countersunk	Steel	Nickel plated	TW • TWN (M3 models) TWF (M3 models)	20
MR3-14B★	3	14	T10	Countersunk	Steel	Black trivalent chromate	MX • MXA • MXB • MXF (M3 models)	20
MR-2S★	3	10	T10	Countersunk	Steel	Nickel plated	HEN	20

WM SERIES

SUSPENSION BRACKET

How to install

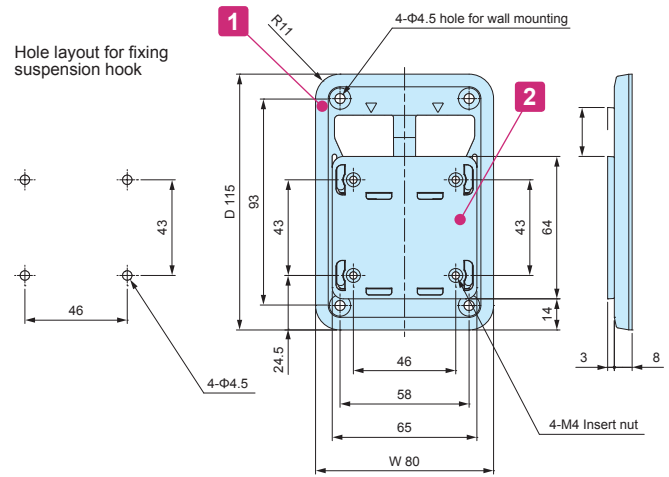
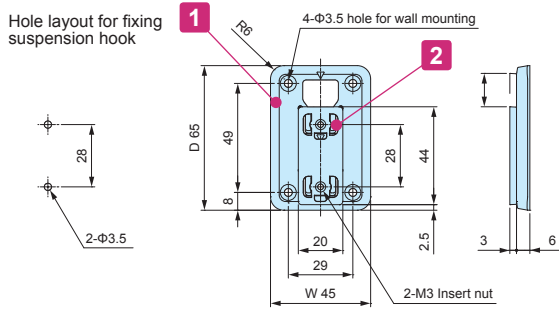


- Plastic wall mounting bracket. Easy attachment and removal.
  - Large and small brackets are available.
  - Applicable not only for the PF series, but also other plastic/metal enclosures with a panel thickness of 0.8 ~ 3.5mm.
  - To attach the suspension hook onto the enclosure, hole milling is required.
- 
- The max load values listed are static load values only. Use caution when handling.
  - Please be aware of the insertion direction of the suspension hook against the mounting base when attaching.

Technical Data
Max load : 2 kg - WM-1 5 kg - WM-2

WM-1

WM-2



■ DXF/DWG/PDF drawings available on our website.

Components

No.	Part name	Pcs	Material	Color / Finish
1	Mounting base	1	PC + ABS UL94HB	Off-white • Dark gray
2	Suspension hook	1	PC + ABS UL94HB	Off-white • Dark gray
-	Insert nut	2 / 4	Brass	Unfinished
-	Screw	2	M3-8 Steel binding = WM-1	Nickel plated
-	Screw	4	M4-8 Steel binding = WM-2	Nickel plated

Product no. / Dimensions

Product no.		Dimensions		Mountable thickness	Weight (g)
● Off-white	● Dark gray	W	D		
WM-1W	WM-1D	45	65	t0.8 ~ t3.5	11.5
WM-2W	WM-2D	80	115	t0.8 ~ t3.5	48

NMG SERIES

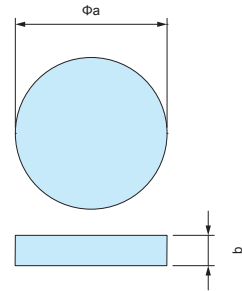
NEODYMIUM MAGNET



Round magnet



- Material / Finish: Neodymium / Nickel plated
- Please attach using a strong adhesive.



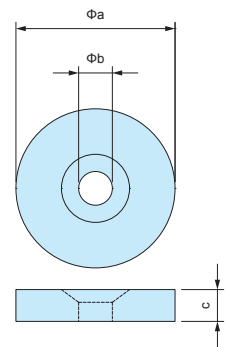
Components

Product no.	a	b	Weight (g)	Flus Density	Adsorption
NMG3-15N	15	3	4	214.4 mT	2.44 kgf
NMG3-20N	20	3	7.1	170.7 mT	3.26 kgf
NMG5-22N	22	5	11.4	247.2 mT	5.91 kgf
NMG5-25N	25	5	18.4	221.9 mT	6.89 kgf

Round magnet with countersunk hole



- Please fasten with a screw.



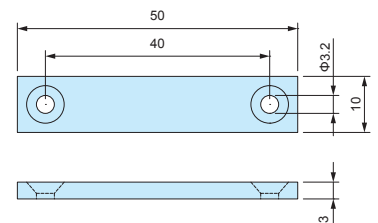
Components

Product no.	a	b	c	Countersunk size	Weight (g)	Flus Density	Adsorption
NMG3-15M3	15	3.2	3	M3	3.8	214.3 mT	2.33 kgf
NMG3-20M3	20	3.2	3	M3	6.9	170.6 mT	3.17 kgf
NMG5-22M4	22	4.3	5	M4	13.7	247.2 mT	5.68 kgf
NMG5-25M5	25	5.3	5	M5	17.6	221.9 mT	6.58 kgf

Rectangular magnet with countersunk holes



- Please fasten with a screw.



Components

Product no.	a	b	c	Countersunk size	Weight (g)	Flus Density	Adsorption
NMG3-50M3	50	10	3	M3	11.3	210.0 mT	9.1 kgf

Example 1 The magnetic force remains strong even through plastic.

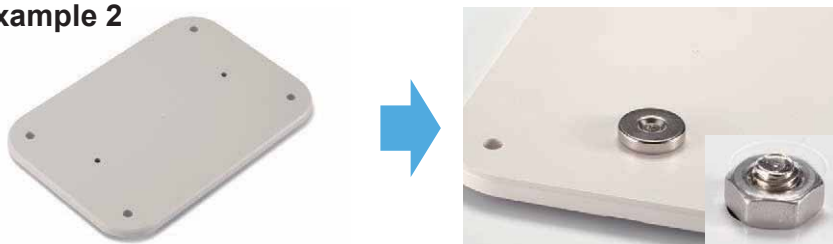


Make recessed pocket on the inside wall.

Glue on.

Attach onto a metallic surface.

Example 2



Make holes

Fasten with a screw and nut.

Attach onto a metallic surface.

**CAUTION: Handle with care to avoid personal injury or damage to the magnet.**



# TLW SERIES TILT LEG



Application Example

- Double shot injection molded feet with soft and well-designed rounded shape.
- Non-slip design with Elastomer (TPE) pad.
- Available in 3 different color combinations on TLW-46 models, and 2 different color combinations on TLW-70 models.

Technical Data
Max load : 7kg

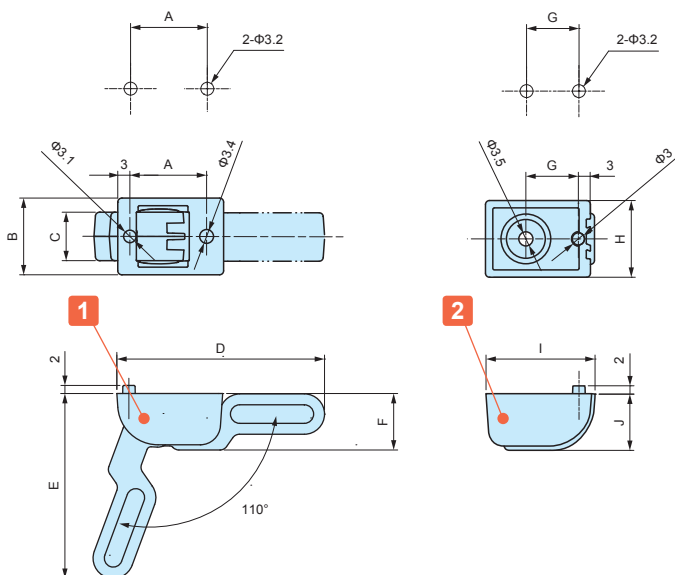
### Components

No.	Part name	Pcs	Material	Color / Finish
1	Front feet	2	PC+ABS UL94V-0, TPE	Black & Black • Navy & Gray • Light gray & Gray
2	Rear Feet	2	PC+ABS UL94V-0, TPE	Black & Black • Navy & Gray • Light gray & Gray
-	Washer head screw	4	Steel M3-6	Black Trivalent chromate
-	Nut	4	Steel M3	Black Trivalent chromate

- Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

Mounting hole (Front)

Mounting Hole (Rear)



- Possible to be installed on both plastic and aluminum enclosures.

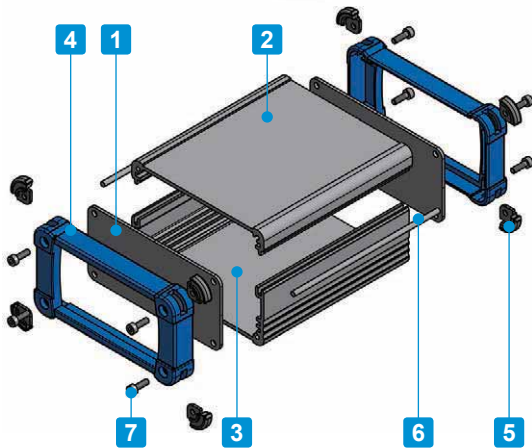


### Product no. / Dimensions

Product no.	A	B	C	D	E	F	G	H	I	J	Color (plastic)	Color (TPE)	Weight (g)
TLW-46BB	19	19	12	51.2	45.9	14	13	19	27	14	Black	Black	23
TLW-46NG	19	19	12	51.2	45.9	14	13	19	27	14	Navy	Gray	23
TLW-46LG	19	19	12	51.2	45.9	14	13	19	27	14	Light gray	Gray	23
<b>NEW</b> TLW-70BB	30	25	16	75.4	69	21.5	20	25	39	21.5	Black	Black	59
<b>NEW</b> TLW-70LG	30	25	16	75.4	69	21.5	20	25	39	21.5	Light gray	Gray	59



EMC  
Shielding  
Effects



- Corner guards are designed to be both aesthetically pleasing, and impact resistant.
- Available in 67 different sizes and 8 different color combinations.
- EMC shielding is achieved by having the unfinished inner sides of the top/bottom covers and panels, as well as the fabric-over-foam gasket in contact with one another.

Included screws  
 EXPE 7-□, 9-□ models : M2.5-8 x 8 pcs  
 EXPE12-□, 15-□ models : M3-10 x 8 pcs  
 EXPE20-□ models : M4-12 x 8 pcs  
 EXPE24-□ models : M5-12 x 8 pcs  
 ※Hexagonal wrench included.

Components

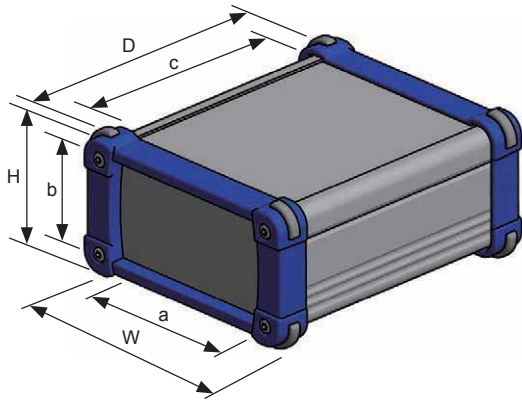
No.	Part name	Pcs	Material	Color / Finish
1	Panel	2	Aluminium A1100P	Silver / Painted (outside) • Unfinished (inside)
2	Top cover	1	Extruded aluminium A6063S-T5	Silver / Painted (outside) • Unfinished (inside)
3	Bottom cover	1	Extruded aluminium A6063S-T5	Silver / Painted (outside) • Unfinished (inside)
4	Exterior frame	2	PC+ABS UL94V-0	Black • Gray / Unpainted Indigo • Navy • Yellow • Orange • Red / Painted
5	Corner guard	8	Silicone	Black • Dark gray
6	Fabric-over-foam gasket	2	Conductive fabric : TPE	Metallic gray
7	Screw	8	Stainless steel	Unfinished

■ See page 149 ~ 152 for Top / Bottom cover dimensions.

Color Type

Code	S B Silver / Black	S G Silver / Gray	S I Silver / Indigo	S N Silver / Navy
Color				
Code	S L Silver / Lime	S Y Silver / Yellow	S O Silver / Orange	S R Silver / Red
Color				





■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

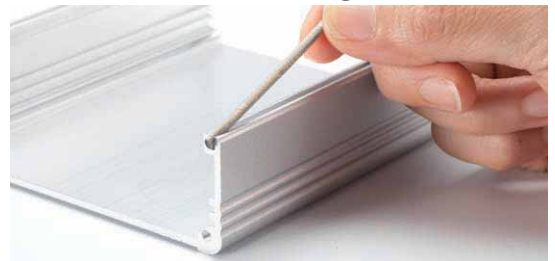
**Product no. / Dimensions**

■ Please suffix color code at the end of the product number.

Product no.	Dimensions (External)			Dimensions (Internal)		
	W	H	D	a	b	c
EXPE 7- 3- 6□□	69	34	60	47	19.6	46
EXPE 7- 3- 9□□	69	34	87	47	19.6	73
EXPE 7- 3-11□□	69	34	110	47	19.6	96
EXPE 7- 4- 6□□	69	44	60	47	29.6	46
EXPE 7- 4- 9□□	69	44	87	47	29.6	73
EXPE 7- 4-11□□	69	44	110	47	29.6	96
EXPE 7- 6- 6□□	69	59	60	47	44.6	46
EXPE 7- 6- 9□□	69	59	87	47	44.6	73
EXPE 7- 6-11□□	69	59	110	47	44.6	96
EXPE 9- 4- 7□□	89	39	70	67	24.6	56
EXPE 9- 4-10□□	89	39	100	67	24.6	86
EXPE 9- 4-13□□	89	39	130	67	24.6	116
EXPE 9- 5- 7□□	89	49	70	67	34.6	56
EXPE 9- 5-10□□	89	49	100	67	34.6	86
EXPE 9- 5-13□□	89	49	130	67	34.6	116
EXPE 9- 6- 7□□	89	64	70	67	49.6	56
EXPE 9- 6-10□□	89	64	100	67	49.6	86
EXPE 9- 6-13□□	89	64	130	67	49.6	116
EXPE12- 4- 9□□	116	41	90	89	24	74
EXPE12- 4-13□□	116	41	130	89	24	114
EXPE12- 4-18□□	116	41	176	89	24	160
EXPE12- 6- 9□□	116	56	90	89	39	74
EXPE12- 6-13□□	116	56	130	89	39	114
EXPE12- 6-18□□	116	56	176	89	39	160
EXPE12- 7- 9□□	116	71	90	89	54	74
EXPE12- 7-13□□	116	71	130	89	54	114
EXPE12- 7-18□□	116	71	176	89	54	160
EXPE15- 5-11□□	151	46	110	107.4	29	93
EXPE15- 5-15□□	151	46	150	107.4	29	133
EXPE15- 5-20□□	151	46	200	107.4	29	183
EXPE15- 6-11□□	151	61	110	107.4	44	93
EXPE15- 6-15□□	151	61	150	107.4	44	133
EXPE15- 6-20□□	151	61	200	107.4	44	183
EXPE15- 8-11□□	151	81	110	107.4	64	93
EXPE15- 8-15□□	151	81	150	107.4	64	133
EXPE15- 8-20□□	151	81	200	107.4	64	183
EXPE15-10-11□□	151	101	110	107.4	84	93
EXPE15-10-15□□	151	101	150	107.4	84	133
EXPE15-10-20□□	151	101	200	107.4	84	183

Product no.	Dimensions (External)			Dimensions (Internal)		
	W	H	D	a	b	c
NEW EXPE20- 6-14□□	199	56	140	132	35	120
NEW EXPE20- 6-19□□	199	56	192	132	35	172
NEW EXPE20- 6-25□□	199	56	245	132	35	225
NEW EXPE20- 6-30□□	199	56	300	132	35	280
NEW EXPE20- 7-14□□	199	74	140	132	53	120
NEW EXPE20- 7-19□□	199	74	192	132	53	172
NEW EXPE20- 7-25□□	199	74	245	132	53	225
NEW EXPE20- 7-30□□	199	74	300	132	53	280
NEW EXPE20- 9-14□□	199	94	140	132	73	120
NEW EXPE20- 9-19□□	199	94	192	132	73	172
NEW EXPE20- 9-25□□	199	94	245	132	73	225
NEW EXPE20- 9-30□□	199	94	300	132	73	280
NEW EXPE20-12-14□□	199	119	140	132	98	120
NEW EXPE20-12-19□□	199	119	192	132	98	172
NEW EXPE20-12-25□□	199	119	245	132	98	225
NEW EXPE20-12-30□□	199	119	300	132	98	280
NEW EXPE24- 6-17□□	244	64	170	177	43	147
NEW EXPE24- 6-23□□	244	64	230	177	43	207
NEW EXPE24- 6-29□□	244	64	290	177	43	267
NEW EXPE24- 6-35□□	244	64	350	177	43	327
NEW EXPE24- 9-17□□	244	89	170	177	68	147
NEW EXPE24- 9-23□□	244	89	230	177	68	207
NEW EXPE24- 9-29□□	244	89	290	177	68	267
NEW EXPE24- 9-35□□	244	89	350	177	68	327
NEW EXPE24-11-17□□	244	114	170	177	93	147
NEW EXPE24-11-23□□	244	114	230	177	93	207
NEW EXPE24-11-29□□	244	114	290	177	93	267
NEW EXPE24-11-35□□	244	114	350	177	93	327

**How to install a shield gasket**



■ Insert fabric-over-foam gasket into the joint-grooves on the bottom cover.



■ Ensure that a small portion of the fabric-over-foam gasket protrudes out in order to maintain a connection with the end panel.



Following models are suitable for placement of a Mini-ITX board.

- EXPE20-7-19□□
- EXPE20-9-19□□
- EXPE20-12-19□□



EMC Shielding Effects



- EMC shielding is achieved by having the unfinished inner sides of the top/bottom covers and panels, as well as the fabric-over-foam gasket in contact with one another.
- Equipped with flanged frame for easy wall mounting.
- Available in 67 different sizes and 3 different color combinations.

Included screws  
 EXEF 7-□, 9-□ models : M2.5-8 x 8 pcs  
 EXEF11-□, 15-□ models : M3-10 x 8 pcs  
 EXEF20-□ models : M4-12 x 8 pcs  
 EXEF24-□ models : M5-12 x 8 pcs  
 ※Hexagonal wrench included.

Components

No.	Part name	Pcs	Material	Color / Finish
1	Panel	2	Aluminium A1100P	Silver / Painted (outside) • Unfinished (inside)
2	Top cover	1	Extruded aluminium A6063S-T5	Silver / Painted (outside) • Unfinished (inside)
3	Bottom cover	1	Extruded aluminium A6063S-T5	Silver / Painted (outside) • Unfinished (inside)
4	Flanged frame	2	PC+ABS UL94V-0	Black • Gray / Unpainted Navy / Painted
5	Fabric-over-foam gasket	2	Conductive fabric : TPE	Metallic gray
6	Screw	8	Stainless steel	Unfinished

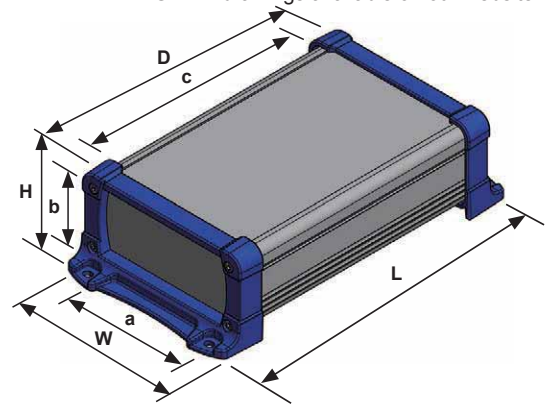
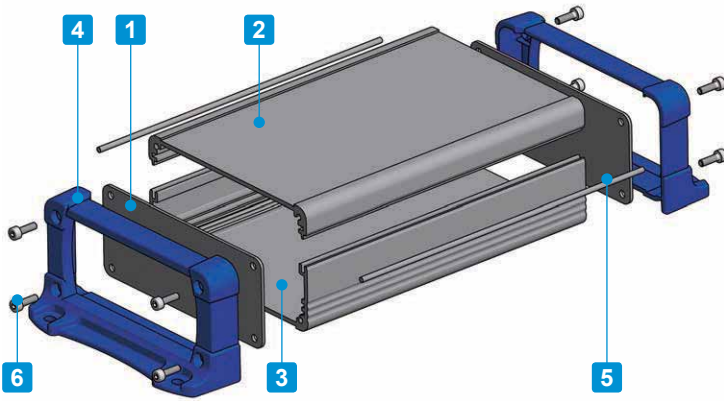
■ See page 149 ~ 152 for Top / Bottom cover dimensions.

Color Type

Code	S/B Silver / Black	S/G Silver / Gray	S/N Silver / Navy
Color			



■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



■ Please suffix color code at the end of the product number.

Product no. / Dimensions

Product no.	Dimensions (External)				Dimensions (Internal)		
	W	H	D	L	a	b	c
NEW EXEF 7- 3- 6□□	66	34	60	84	47	19.6	46
NEW EXEF 7- 3- 9□□	66	34	87	111	47	19.6	73
NEW EXEF 7- 3-11□□	66	34	110	134	47	19.6	96
NEW EXEF 7- 4- 6□□	66	44	60	84	47	29.6	46
NEW EXEF 7- 4- 9□□	66	44	87	111	47	29.6	73
NEW EXEF 7- 4-11□□	66	44	110	134	47	29.6	96
NEW EXEF 7- 6- 6□□	66	59	60	84	47	44.6	46
NEW EXEF 7- 6- 9□□	66	59	87	111	47	44.6	73
NEW EXEF 7- 6-11□□	66	59	110	134	47	44.6	96
NEW EXEF 9- 4- 7□□	86	39	70	95.8	67	24.6	56
NEW EXEF 9- 4-10□□	86	39	100	125.8	67	24.6	86
NEW EXEF 9- 4-13□□	86	39	130	155.8	67	24.6	116
NEW EXEF 9- 5- 7□□	86	49	70	95.8	67	34.6	56
NEW EXEF 9- 5-10□□	86	49	100	125.8	67	34.6	86
NEW EXEF 9- 5-13□□	86	49	130	155.8	67	34.6	116
NEW EXEF 9- 6- 7□□	86	64	70	95.8	67	49.6	56
NEW EXEF 9- 6-10□□	86	64	100	125.8	67	49.6	86
NEW EXEF 9- 6-13□□	86	64	130	155.8	67	49.6	116
NEW EXEF11- 4- 9□□	113	41.5	90	121.8	89	24	74
NEW EXEF11- 4-13□□	113	41.5	130	161.8	89	24	114
NEW EXEF11- 4-18□□	113	41.5	176	207.8	89	24	160
NEW EXEF11- 6- 9□□	113	56.5	90	121.8	89	39	74
NEW EXEF11- 6-13□□	113	56.5	130	161.8	89	39	114
NEW EXEF11- 6-18□□	113	56.5	176	207.8	89	39	160
NEW EXEF11- 7- 9□□	113	71.5	90	121.8	89	54	74
NEW EXEF11- 7-13□□	113	71.5	130	161.8	89	54	114
NEW EXEF11- 7-18□□	113	71.5	176	207.8	89	54	160
NEW EXEF15- 5-11□□	148	47	110	149.2	107.4	29	93
NEW EXEF15- 5-15□□	148	47	150	189.2	107.4	29	133
NEW EXEF15- 5-20□□	148	47	200	239.2	107.4	29	183
NEW EXEF15- 6-11□□	148	62	110	149.2	107.4	44	93
NEW EXEF15- 6-15□□	148	62	150	189.2	107.4	44	133
NEW EXEF15- 6-20□□	148	62	200	239.2	107.4	44	183
NEW EXEF15- 8-11□□	148	82	110	149.2	107.4	64	93
NEW EXEF15- 8-15□□	148	82	150	189.2	107.4	64	133
NEW EXEF15- 8-20□□	148	82	200	239.2	107.4	64	183
NEW EXEF15-10-11□□	148	102	110	149.2	107.4	84	93
NEW EXEF15-10-15□□	148	102	150	189.2	107.4	84	133
NEW EXEF15-10-20□□	148	102	200	239.2	107.4	84	183

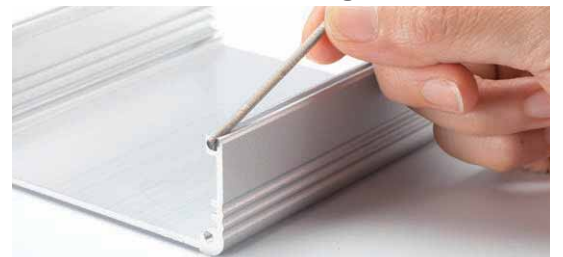
Product no.	Dimensions (External)				Dimensions (Internal)		
	W	H	D	L	a	b	c
NEW EXEF20- 6-14□□	195	57	140	188.6	132	35	120
NEW EXEF20- 6-19□□	195	57	192	240.6	132	35	172
NEW EXEF20- 6-25□□	195	57	245	293.6	132	35	225
NEW EXEF20- 6-30□□	195	57	300	348.6	132	35	280
NEW EXEF20- 8-14□□	195	75	140	188.6	132	53	120
NEW EXEF20- 8-19□□	195	75	192	240.6	132	53	172
NEW EXEF20- 8-25□□	195	75	245	293.6	132	53	225
NEW EXEF20- 8-30□□	195	75	300	348.6	132	53	280
NEW EXEF20-10-14□□	195	95	140	188.6	132	73	120
NEW EXEF20-10-19□□	195	95	192	240.6	132	73	172
NEW EXEF20-10-25□□	195	95	245	293.6	132	73	225
NEW EXEF20-10-30□□	195	95	300	348.6	132	73	280
NEW EXEF20-12-14□□	195	120	140	188.6	132	98	120
NEW EXEF20-12-19□□	195	120	192	240.6	132	98	172
NEW EXEF20-12-25□□	195	120	245	293.6	132	98	225
NEW EXEF20-12-30□□	195	120	300	348.6	132	98	280
NEW EXEF24- 7-17□□	240	65	170	218.6	177	43	147
NEW EXEF24- 7-23□□	240	65	230	278.6	177	43	207
NEW EXEF24- 7-29□□	240	65	290	338.6	177	43	267
NEW EXEF24- 7-35□□	240	65	350	398.6	177	43	327
NEW EXEF24- 9-17□□	240	90	170	218.6	177	68	147
NEW EXEF24- 9-23□□	240	90	230	278.6	177	68	207
NEW EXEF24- 9-29□□	240	90	290	338.6	177	68	267
NEW EXEF24- 9-35□□	240	90	350	398.6	177	68	327
NEW EXEF24-12-17□□	240	115	170	218.6	177	93	147
NEW EXEF24-12-23□□	240	115	230	278.6	177	93	207
NEW EXEF24-12-29□□	240	115	290	338.6	177	93	267
NEW EXEF24-12-35□□	240	115	350	398.6	177	93	327



Following models are suitable for placement of a Mini-ITX board.

- EXEF20-8-19□□
- EXEF20-10-19□□
- EXEF20-12-19□□

How to install a shield gasket



■ Insert fabric-over-foam gasket into the joint-grooves on the bottom cover.

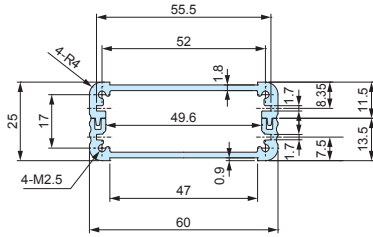


■ Ensure that a small portion of the fabric-over-foam gasket protrudes out in order to maintain a connection with the end panel.

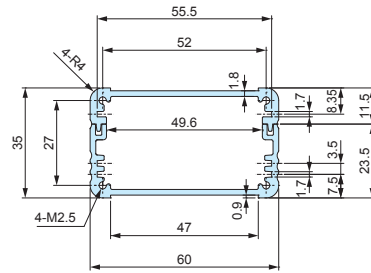
EXP • EXPE • EXW • EXPF • EXEF • EXWF • EX top / bottom covers

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

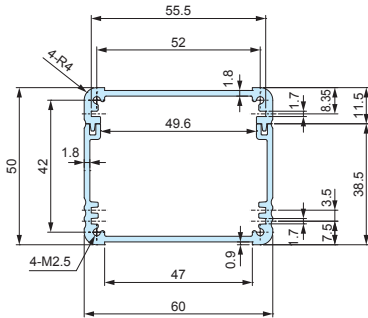
EXP • EXPE • EXW • EXPF • EXEF • EXWF7-4-□  
EX6-3-□



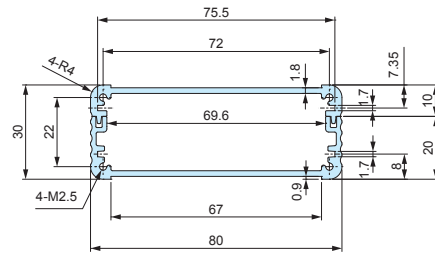
EXP • EXPE • EXW • EXPF • EXEF • EXWF7-4-□  
EX6-4-□



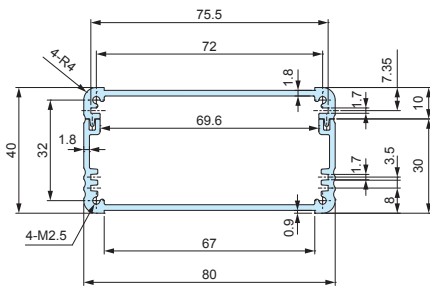
EXP • EXPE • EXW • EXPF • EXEF • EXWF7-6-□  
EX6-5-□



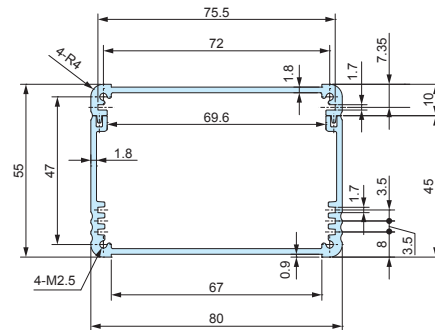
EXP • EXPE • EXW • EXPF • EXEF • EXWF9-4-□  
EX8-3-□



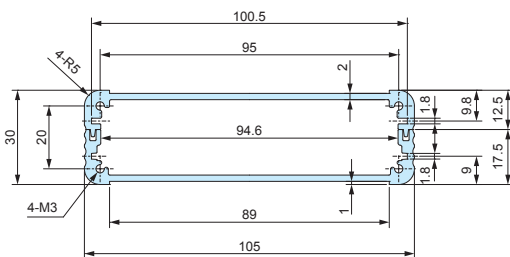
EXP • EXPE • EXW • EXPF • EXEF • EXWF9-5-□  
EX8-4-□



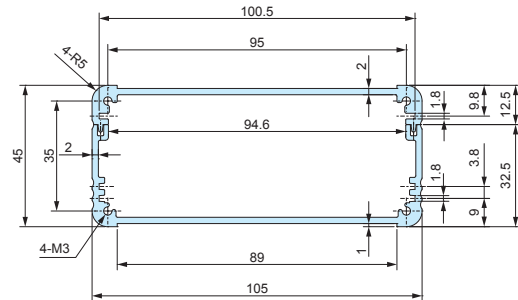
EXP • EXPE • EXW • EXPF • EXEF • EXWF9-6-□  
EX8-6-□



EXP • EXPE • EXW12-4-□  
EXPF • EXEF • EXWF11-4-□  
EX11-3-□



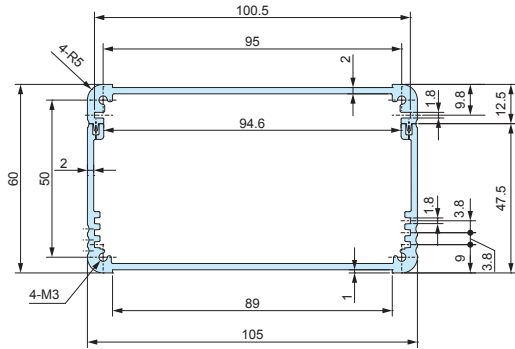
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EXPF • EXEF • EXWF11-6-□  
EX11-5-□



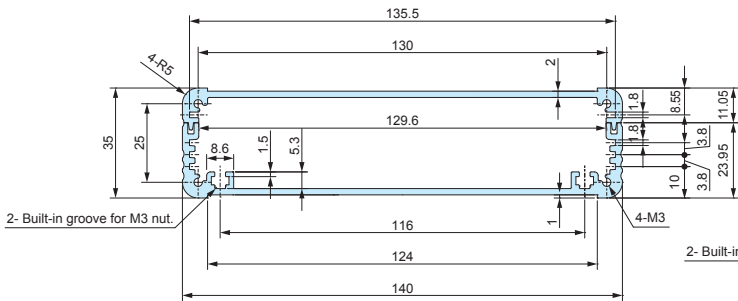
EXP • EXPE • EXW • EXPF • EXEF • EXWF • EX top / bottom covers

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

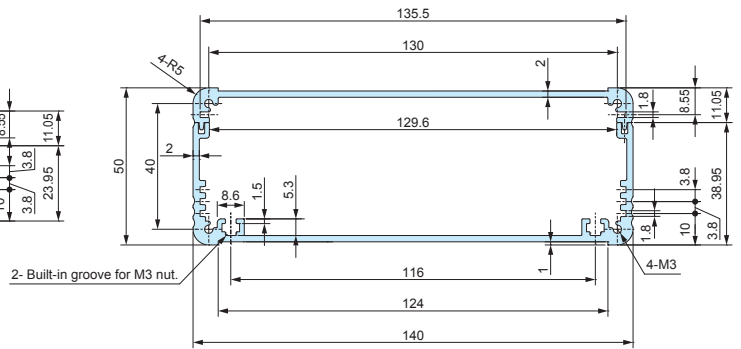
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EXPF • EXEF • EXWF11-7-□  
EX11-6-□



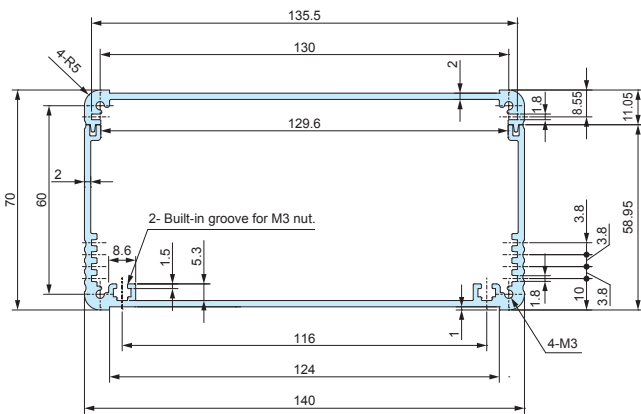
EXP • EXPE • EXW • EXPF • EXEF • EXWF15-5-□  
EX14-4-□



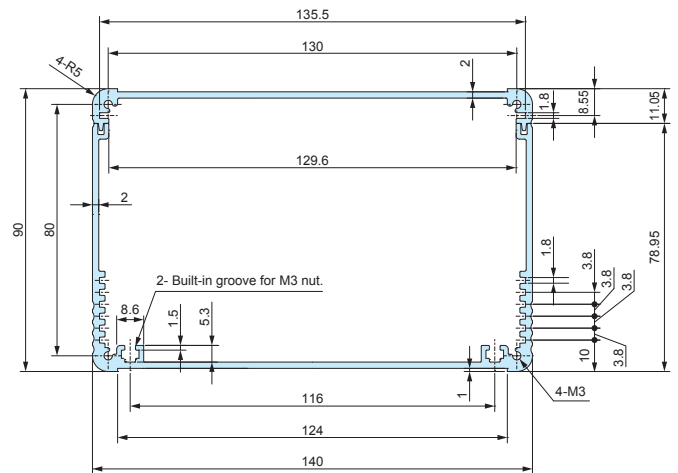
EXP • EXPE • EXW • EXPF • EXEF • EXWF15-6-□  
EX14-5-□



EXP • EXPE • EXW • EXPF • EXEF • EXWF15-8-□  
EX14-7-□



EXP • EXPE • EXW • EXPF • EXEF • EXWF15-10-□  
EX14-9-□

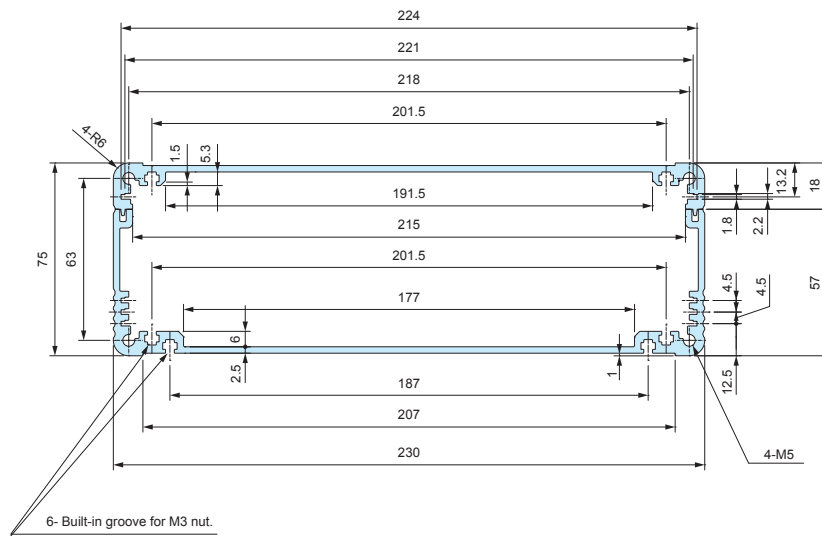




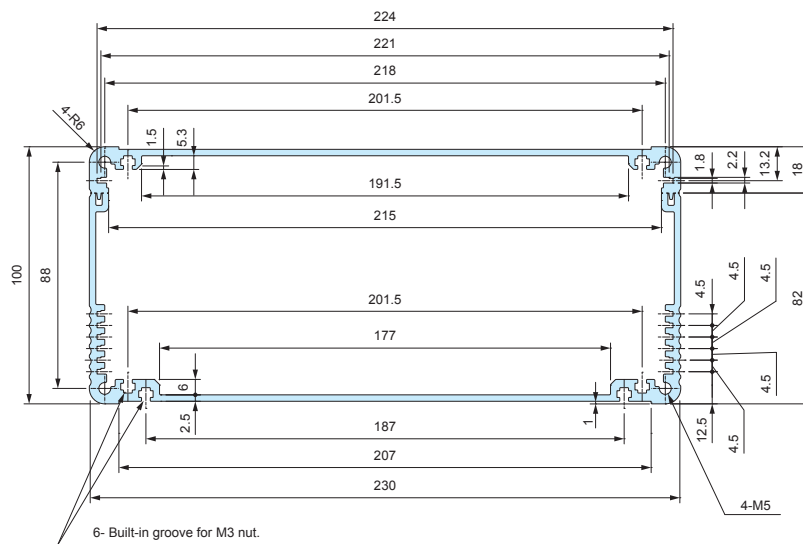
EXP • EXPE • EXPF • EXEF • EXWF • EX top / bottom covers

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

EXP • EXPE • EXPF • EXEF • EXWF24-9-□  
EX23-8-□

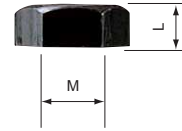
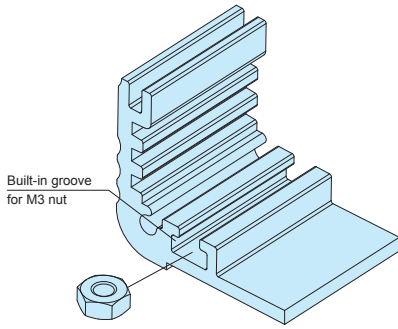


EXP • EXPE24-11-□  
EXPF • EXEF • EXWF24-12-□  
EX23-10-□



**MT-3N**

**SLIDING NUT for EXP • EXPE • EXW • EXPF • EXEF • EXWF • EX**



**Product no. / Dimensions**

Product no.	M	L	Material	Finish	Pack of
MT-3N	3	2.4	Steel	Black trivalent chromate	50

- Sliding nut can be used on all EXP • EXPE • EXW • EXPF • EXEF • EXWF • EX models with width 140mm or larger bottom covers, as well as with width 230mm top covers.

**EXEG SERIES**

**EMC SHIELDING FABRIC-OVER-FOAM GASKET for EXPE • EXEF**



- EMC shielding fabric-over-foam gasket for EXPE • EXEF series.

**Suitable Enclosure**

Product no.	Suitable enclosure
EXEG-2.5	EXPE7-□ • 9-□ • 12-□ • 15-□ / EXEF7-□ • 9-□ • 11-□ • 15-□
EXEG-3.2	EXPE20-□ • 24-□ / EXEF20-□ • 24-□



EMC Shielding Effects

**Product no. / Dimensions**

Product no.	Φ	Material	Color	Sales unit
EXEG-2.5	2.5	Wire mesh gasket • TPE	Metallic gray	500mm x 1 pc
<b>NEW</b> EXEG-3.2	3.2	Wire mesh gasket • TPE	Metallic gray	500mm x 1 pc

Length tolerance = +/- 10%

**APPLICATION EXAMPLE EX series**

**PREMAIN POWER AMPLIFIER**

Product by AY-densi (Japan)



**USB EDGE NODE**

Product by SHINWA (Japan)





Application Example

- Double shot injection molded feet with soft and well-designed rounded shape.
- Non-slip design with Elastomer (TPE) pad.
- Available in 3 different color patterns.

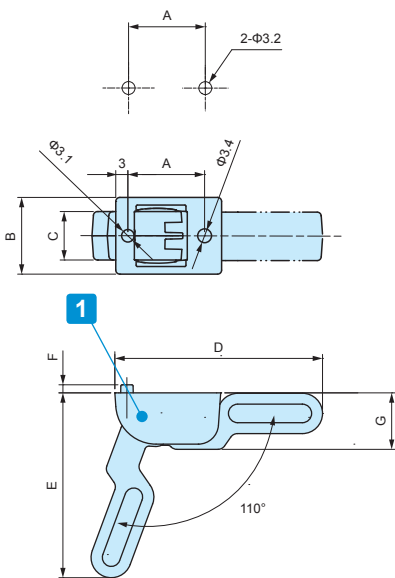
Technical Data
Max load : 7kg

**Components**

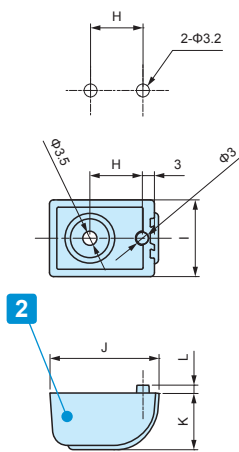
No.	Part name	Pcs	Material	Color / Finish
1	Front feet	2	PC+ABS UL94V-0, TPE	Black & Black • Navy & Gray • Light gray & Gray
2	Rear Feet	2	PC+ABS UL94V-0, TPE	Black & Black • Navy & Gray • Light gray & Gray
-	Washer head screw	4	Steel M3-6	Black Trivalent chromate
-	Nut	4	Steel M3	Black Trivalent chromate

- Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

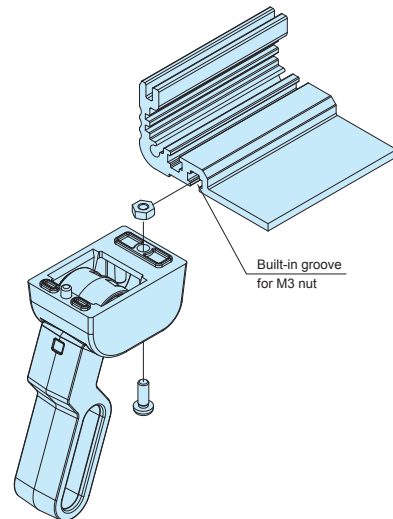
Mounting hole (Front)



Mounting Hole (Rear)



- Possible to install on Built-in groove with M3 nut for all EXP • EXPE • EXW • EX • EXH models with width 185mm or larger bottom covers.
- TLW-70E models are exclusively for width 185mm or larger bottom covers.



**Product no. / Dimensions**

Product no.	A	B	C	D	E	F	G	H	I	J	K	L	Color (plastic)	Color (TPE)	Weight (g)
TLW-46BB	19	19	12	51.2	45.9	2	14	13	19	27	14	2	Black	Black	23
TLW-46NG	19	19	12	51.2	45.9	2	14	13	19	27	14	2	Navy	Gray	23
TLW-46LG	19	19	12	51.2	45.9	2	14	13	19	27	14	2	Light gray	Gray	23
<b>NEW</b> TLW-70EBB	30	25	16	75.4	69	3	21.5	20	25	39	21.5	3	Black	Black	59
<b>NEW</b> TLW-70ENG	30	25	16	75.4	69	3	21.5	20	25	39	21.5	3	Navy	Gray	59
<b>NEW</b> TLW-70ELG	30	25	16	75.4	69	3	21.5	20	25	39	21.5	3	Light gray	Gray	59



# AWA SERIES HEAT-SINK ALUMINIUM ENCLOSURE

AWA series is an aluminium enclosure that has a frame with heat-sink fins on both sides. Furthermore, the enclosure is also conductive, which provides a shielding effect.

By machining the panels, the unit becomes extremely suitable to be used as high-end audio, or as an industrial equipment.

## APPLICATION EXAMPLE

### INDUSTRIAL IoT INTERFACE DEVICE

Product by SEE Système Radio (France)



## INDUSTRIAL FANLESS PC



## AUDIO AMPLIFIER



## WIDE-BAND SOLID STATE OPTICAL AMPLIFIER

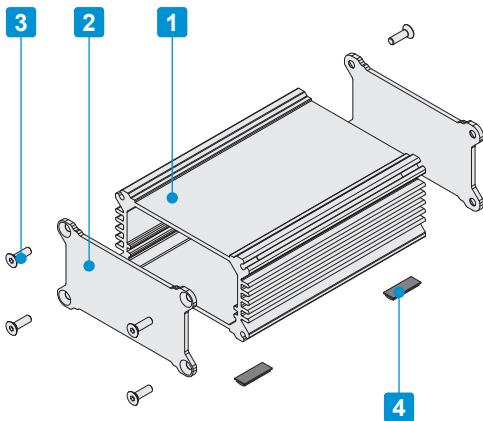
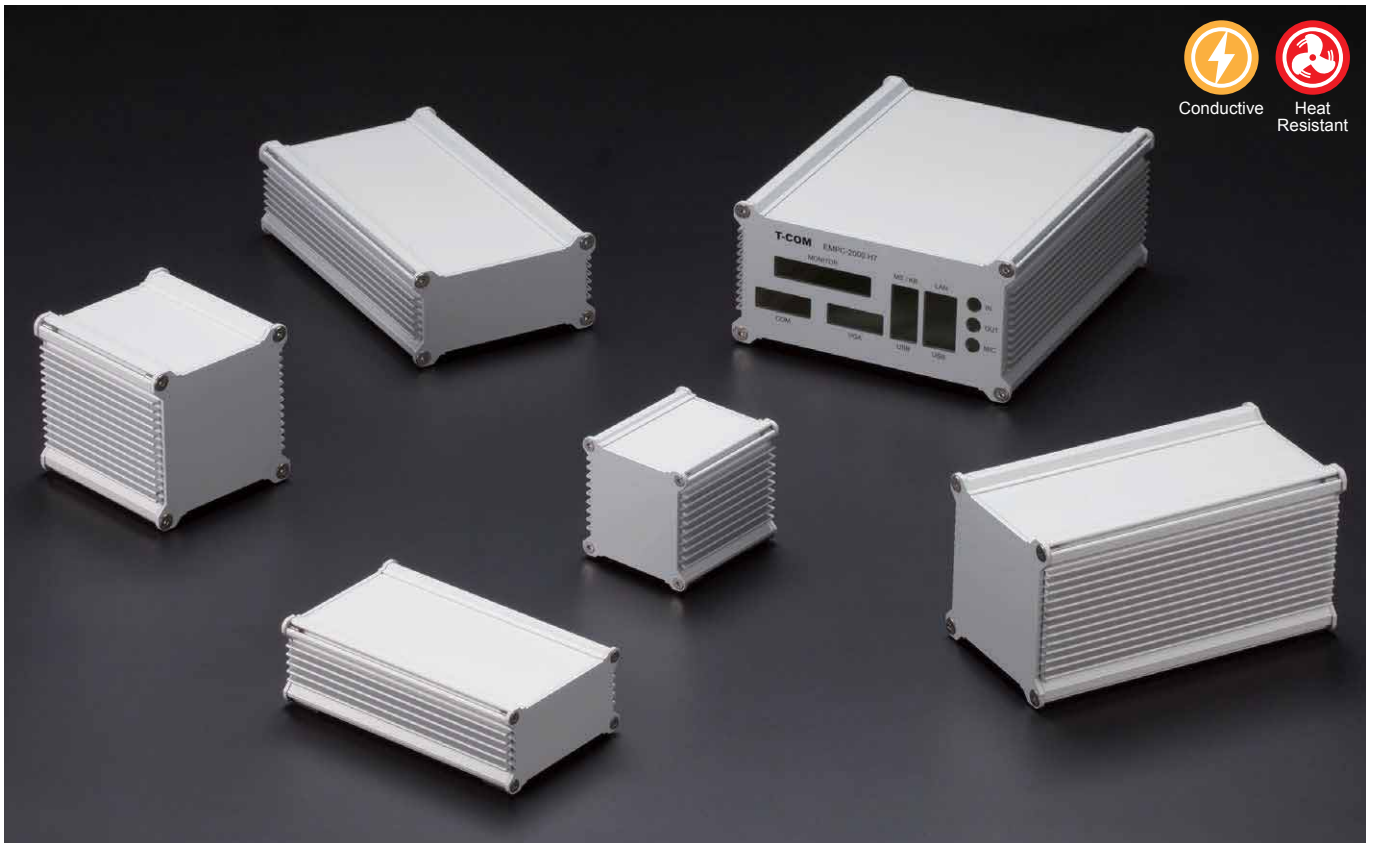
Product by Spectra Quest Lab. (Japan)



## CUSTOMIZATION

CNC milling available for customization on AWA series.  
See website for more details.





- Extruded aluminium frame manufactured with heat-sink sides.
- Silver anodized end panels makes for a luxurious finish.
- Conductivity is achieved by utilizing the contact between the unfinished end panels side, and the unfinished ends of the frame.
- PCB or chassis can be horizontally mounted by sliding into an inner-grooved body frame.
- Suitable for industrial fanless PC, measuring instrument, digital audio amplifier and so on.

Included screws :  
 AWA5-3, 6-6, 8-4 models : Hex countersunk M3-10 x 8 pcs  
 AWA8-8, 10-5, 12-7, 15-8 models : Hex countersunk M4-10 x 8 pcs  
 AWA20-8 models : Hex countersunk M5-10 x 8 pcs  
 ※Hexagonal wrench included.

**Component**

No.	Part name	Pcs	Material	Color / Finish
1	Body frame	1	Extruded aluminium A6063S-T5	Silver / Anodized
2	End panel	2	Aluminium A1050P	Silver / Anodized (outside) : Unfinished (inside)
3	Hex socket screw	8	Stainless steel	Unfinished
4	Rubber feet	4	Polyurethane	Black

**Accessories (Optional parts)**

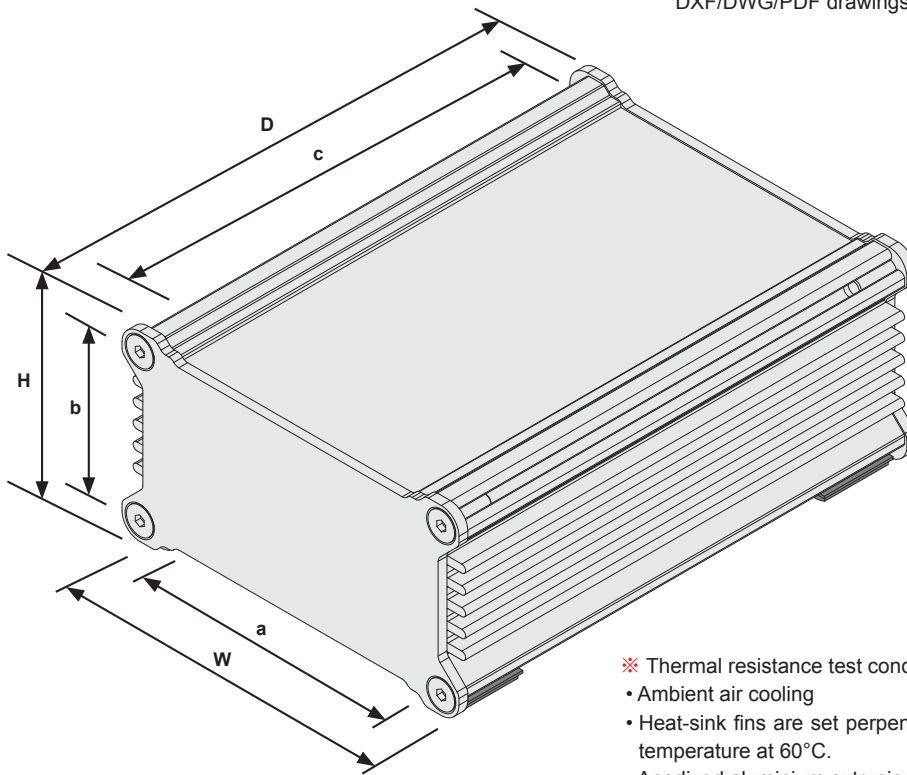


Mounting plate AWC series  
See page 170



Aluminium isolation feet AFS • AFM series  
See page AFS • AFM-1 ~ AFS • AFM-2

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



- ※ Thermal resistance test condition
- Ambient air cooling
  - Heat-sink fins are set perpendicular to the ground with temperature at 60°C.
  - Anodized aluminium extrusion
  - Heat source is applied on the opposite side (inner side) of the fins.

Product no. / Dimensions

Product no.	Dimensions (External)			Dimensions (Internal)			※ Thermal resistance rate (°C/W)	Weight (g)
	W	H	D	a	b	c		
AWA 5-3- 5SS	52	32	53.2	39	22.5	49.2	11.2	69.5
AWA 5-3- 7SS	52	32	73.2	39	22.5	69.2	9.18	90.5
AWA 5-3-10SS	52	32	98.2	39	22.5	94.2	7.64	116.5
AWA 5-3-12SS	52	32	123.2	39	22.5	119.2	6.63	142.5
AWA 6-6- 7SS	61	61	68	47	51	64	4.41	156
AWA 6-6-10SS	61	61	98	47	51	94	3.5	212
AWA 6-6-14SS	61	61	138	47	51	134	2.83	286
AWA 6-6-19SS	61	61	188	47	51	184	2.33	379
AWA 6-6-24SS	61	61	238	47	51	234	2.02	471.5
AWA 8-4- 8SS	76	41	78	62	31	74	5.97	154
AWA 8-4-10SS	76	41	103	62	31	99	5.01	195
AWA 8-4-13SS	76	41	128	62	31	124	4.37	236.5
AWA 8-4-16SS	76	41	163	62	31	159	3.76	294
AWA 8-8- 9SS	82	82	86	66.5	66.5	81	3.1	319.5
AWA 8-8-11SS	82	82	111	66.5	66.5	106	2.63	392.5
AWA 8-8-16SS	82	82	156	66.5	66.5	151	2.12	523.5
AWA 8-8-21SS	82	82	206	66.5	66.5	201	1.79	669.5
AWA 8-8-26SS	82	82	261	66.5	66.5	256	1.54	829.5
AWA10-5-10SS	102	52	95.6	86.5	36.5	90.6	4.52	288.5
AWA10-5-14SS	102	52	135.6	86.5	36.5	130.6	3.62	387.5
AWA10-5-18SS	102	52	175.6	86.5	36.5	170.6	3.08	486
AWA10-5-23SS	102	52	225.6	86.5	36.5	220.6	2.64	609
AWA12-7- 9SS	115.7	67	90.6	100.2	51.5	85.6	3.6	354
AWA12-7-12SS	115.7	67	125.6	100.2	51.5	120.6	2.93	460
AWA12-7-17SS	115.7	67	165.1	100.2	51.5	160.1	2.47	579.5
AWA12-7-20SS	115.7	67	200.6	100.2	51.5	195.6	2.18	687
AWA15-8-12SS	152	77	120.6	136.5	61.5	115.6	2.64	565.5
AWA15-8-16SS	152	77	160.6	136.5	61.5	155.6	2.2	712
AWA15-8-21SS	152	77	210.6	136.5	61.5	205.6	1.86	895.5
AWA15-8-26SS	152	77	260.6	136.5	61.5	255.6	1.63	1,079
AWA20-8-15SS	202.4	77.4	153.8	186.5	61.5	147.8	2.3	854.5
AWA20-8-19SS	202.4	77.4	193.8	186.5	61.5	187.8	1.99	1,025
AWA20-8-24SS	202.4	77.4	243.8	186.5	61.5	237.8	1.72	1,238
AWA20-8-29SS	202.4	77.4	293.8	186.5	61.5	287.8	1.54	1,451.5



# AW · AWN · AWP IP67 ALUMINIUM ENCLOSURE

AW · AWN · AWP series are highly functional aluminium enclosures which are IP67 rated with heat dissipating heat-sink fins.

34 sizes available. Standard, Flanged, Shielding, and Silicone protector types are available. Suitable for LED power supply, industrial camera, controller or measuring instrument where waterproof and cooling performance are crucial.

## APPLICATION EXAMPLE

### LIQUID LEVEL SENSOR

Product by Watty Corporation (Japan)



### HEAVY DUTY PORTABLE HARDNESS TESTER

Product by DEMEQ (Argentina)



### RADIO-CONTROLLED ELECTRONIC EXPLODER

Product by CODETEL (France)



### OUTDOOR LED POWER SUPPLY



### OPTICAL PHASE INTERROGATOR (OPI) DEVELOPMENT KIT

Product by Broadcom Limited (USA)



### FBG DATA LOGGER

Product by NAGANO KEIKI (Japan)



### DATA LOGGER with 3G MODEM REPORT FUNCTION

Product by mSolution (Hong Kong)



### PIN HOLE DETECTOR

Product by SANKO ELECTRONIC LABORATORY (Japan)



### PD ANNUNCIATOR

Product by ndb Technologies (Canada)



### DC CONVERTER



### CUSTOM LENGTH AVAILABLE

Flexible frame length from 50mm to 700mm in 1mm intervals.

No minimum order quantity and short lead time for small quantity order.



# AW SERIES

# IP67 FLANGED ALUMINIUM ENCLOSURE



- IP67 and heat dissipation enclosure. Designed with flanged end panels.
- PCB or chassis is mounted by sliding it horizontally into an inner-grooved body frame.
- Designed for a tough environment where waterproof and heat countermeasures are required.
- Suitable for outdoor use such as LED power supply and junction boxes.

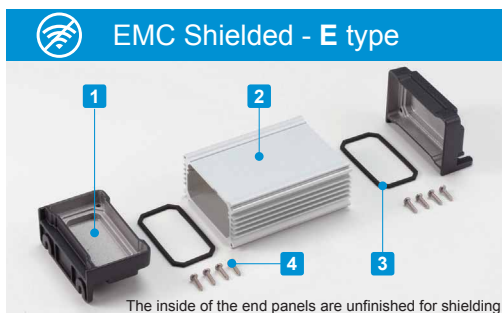
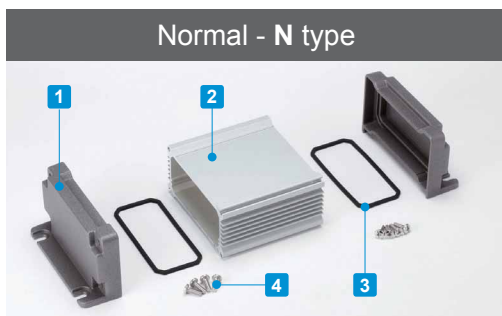
Technical Data
Protection class: IP67
Operating temperature: -40°C ~ +105°C
Recommended torque: 1.0N • m (10kgf • cm)

### Normal N type Components

No.	Part name	Pcs	Material	Color / Finish
1	Flanged end panel	2	Diecast aluminium ADC12	Metallic gray • Black / Powder coated
2	Body frame	1	Extruded aluminium A6063S-T5	Silver • Black / Anodized
3	Gasket	2	Silicone	Black
4	Screw	8	Stainless steel	Unfinished

### EMC Shielded E type Components

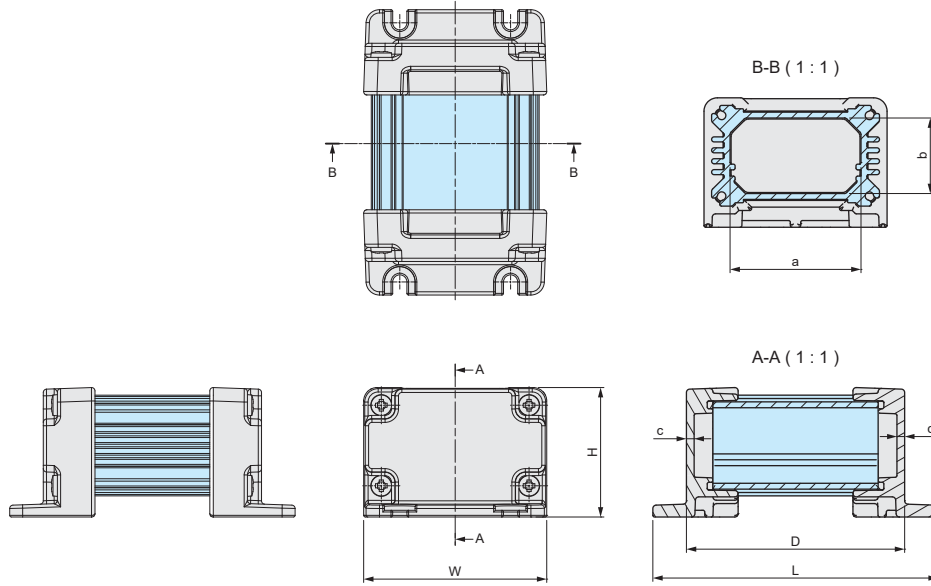
No.	Part name	Pcs	Material	Color / Finish
1	Flanged end panel	2	Diecast aluminium ADC12	Silver • Black / Painted (unfinished inside)
2	Body frame	1	Extruded aluminium A6063S-T5	Silver • Black / Anodized
3	Gasket	2	Silicone	Black
4	Screw	8	Stainless steel	Unfinished





AW dimensions

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



Product no. / Dimensions

■ Please suffix color code at the end of the product number.

Product no.	W	H	D	L	a	b	c	Weight (g)
AW 5-4- 7□□□	54.6	38.6	65	85	39	22.5	2.3	128.5
AW 5-4- 9□□□	54.6	38.6	85	105	39	22.5	2.3	149
AW 5-4-11□□□	54.6	38.6	110	130	39	22.5	2.3	175
AW 5-4-14□□□	54.6	38.6	135	155	39	22.5	2.3	201.5
AW 7-7- 8□□□	65.8	70.8	80	106	47	51	2.5	294.5
AW 7-7-11□□□	65.8	70.8	110	136	47	51	2.5	350
AW 7-7-15□□□	65.8	70.8	150	176	47	51	2.5	424.5
AW 7-7-20□□□	65.8	70.8	200	226	47	51	2.5	517
AW 7-7-25□□□	65.8	70.8	250	276	47	51	2.5	610
AW 8-5- 9□□□	80.8	50.8	90	116	62	31	2.5	289.5
AW 8-5-12□□□	80.8	50.8	115	141	62	31	2.5	330.5
AW 8-5-14□□□	80.8	50.8	140	166	62	31	2.5	372
AW 8-5-18□□□	80.8	50.8	175	201	62	31	2.5	429.5
AW 9-9-10□□□	86.3	92	100	129	66.5	66.5	3	560.5
AW 9-9-13□□□	86.3	92	125	154	66.5	66.5	3	633.5
AW 9-9-17□□□	86.3	92	170	199	66.5	66.5	3	764.5
AW 9-9-22□□□	86.3	92	220	249	66.5	66.5	3	910.5
AW 9-9-28□□□	86.3	92	275	304	66.5	66.5	3	1,071
AW11-6-11□□□	106.3	62	110	139	86.5	36.5	3	526.5
AW11-6-15□□□	106.3	62	150	179	86.5	36.5	3	625
AW11-6-19□□□	106.3	62	190	219	86.5	36.5	3	723.5
AW11-6-24□□□	106.3	62	240	269	86.5	36.5	3	847
AW12-8-11□□□	120	77	105	134	100.2	51.5	3	614.5
AW12-8-14□□□	120	77	140	169	100.2	51.5	3	720.5
AW12-8-17□□□	120	77	179.5	208.5	100.2	51.5	3	840
AW12-8-22□□□	120	77	215	244	100.2	51.5	3	947.5
AW16-9-14□□□	156.3	87	135	164	136.5	61.5	3	945.5
AW16-9-18□□□	156.3	87	175	204	136.5	61.5	3	1,092.5
AW16-9-23□□□	156.3	87	225	254	136.5	61.5	3	1,275.5
AW16-9-28□□□	156.3	87	275	304	136.5	61.5	3	1,459
AW21-9-17□□□	206.3	87	170	199	186.5	61.5	3	1,303
AW21-9-21□□□	206.3	87	210	239	186.5	61.5	3	1,473.5
AW21-9-26□□□	206.3	87	260	289	186.5	61.5	3	1,686.5
AW21-9-31□□□	206.3	87	310	339	186.5	61.5	3	1,899.5

Accessories (Optional parts)



Mounting plate □AWC series  
See page 170



Hexagon socket head screw HCS series  
See page 170



Cable gland  
See cable gland pages



Pole mounting bracket SSK series  
See page SSK-M-1 ~ SSK-M-3



Protective vent PMF series  
See page PMF-1 ~ PMF-3

# AWN SERIES

# IP67 HEAT-SINK ALUMINIUM ENCLOSURE



- IP67 and heat dissipation enclosure design. Selectable in both Normal or EMC Shielded type.
- The extruded aluminium frame and diecast aluminium panels makes it extremely suitable to be used in harsh environments where waterproofing and heat dissipation is essential.
- PCB or chassis can be mounted by sliding it horizontally into inner-grooved body frame.
- Suitable for measuring instruments, industrial control box, and industrial camera housing, among others.

Technical Data
Protection class: IP67
Operating temperature: -40°C ~ +105°C
Recommended torque: 1.0N • m (10kgf • cm)

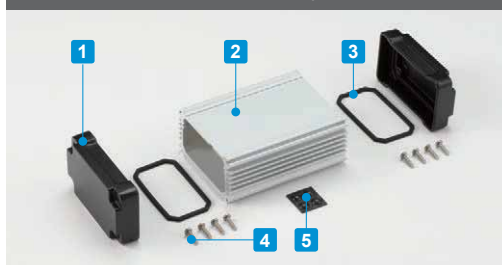
### Normal N type Components

No.	Part name	Pcs	Material	Color / Finish
1	End Panel	2	Diecast aluminium ADC12	Metallic gray • Black / Powder coated
2	Body frame	1	Extruded aluminium A6063S-T5	Silver • Black / Anodized
3	Gasket	2	Silicone	Black
4	Screw	8	Stainless steel	Unfinished
5	Rubber feet	4	Polyurethane	Black

### EMC Shielded E type Components

No.	Part name	Pcs	Material	Color / Finish
1	End Panel	2	Diecast aluminium ADC12	Silver • Black / Painted (unfinished inside)
2	Body frame	1	Extruded aluminium A6063S-T5	Silver • Black / Anodized
3	Gasket	2	Silicone	Black
4	Screw	8	Stainless steel	Unfinished
5	Rubber feet	4	Polyurethane	Black

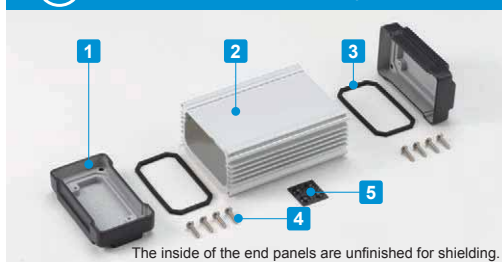
### Normal - N type



### Color type



### EMC Shielded - E type

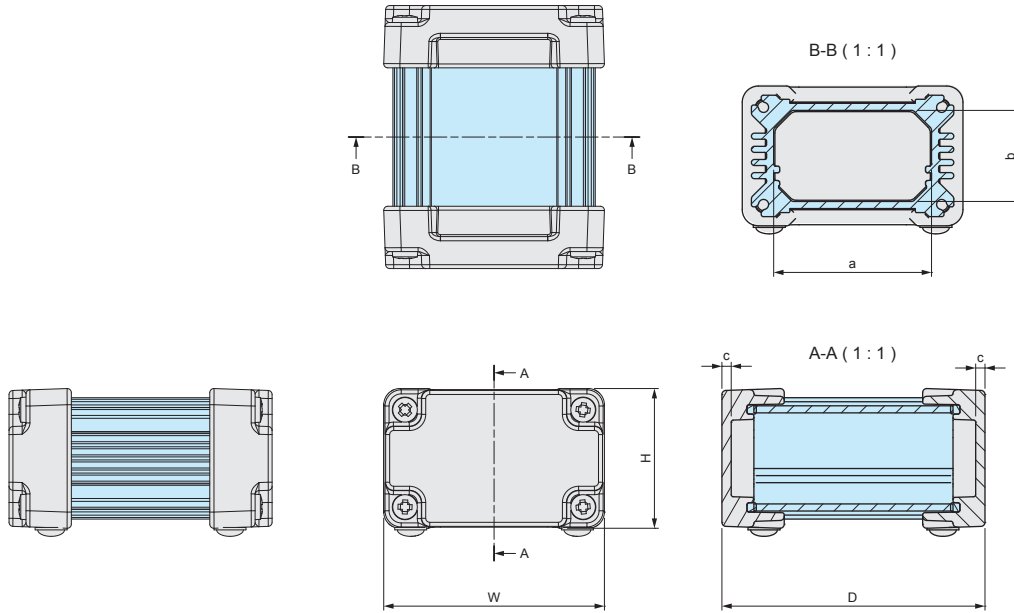


### Color type



**AWN dimensions**

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



**Product no. / Dimensions**

■ Please suffix color code at the end of the product number.

Product no.	W	H	D	a	b	c	Weight (g)
AWN 5-4- 7□□□	54.6	34.6	65	39	22.5	2.3	118.5
AWN 5-4- 9□□□	54.6	34.6	85	39	22.5	2.3	139
AWN 5-4-11□□□	54.6	34.6	110	39	22.5	2.3	165
AWN 5-4-14□□□	54.6	34.6	135	39	22.5	2.3	191.5
AWN 7-7- 8□□□	65.8	65.8	80	47	51	2.5	272.5
AWN 7-7-11□□□	65.8	65.8	110	47	51	2.5	328
AWN 7-7-15□□□	65.8	65.8	150	47	51	2.5	402.5
AWN 7-7-20□□□	65.8	65.8	200	47	51	2.5	495
AWN 7-7-25□□□	65.8	65.8	250	47	51	2.5	588
AWN 8-5- 9□□□	80.8	45.8	90	62	31	2.5	259.5
AWN 8-5-12□□□	80.8	45.8	115	62	31	2.5	300.5
AWN 8-5-14□□□	80.8	45.8	140	62	31	2.5	342
AWN 8-5-18□□□	80.8	45.8	175	62	31	2.5	399.5
AWN 9-9-10□□□	86.3	86.3	100	66.5	66.5	3	521.5
AWN 9-9-13□□□	86.3	86.3	125	66.5	66.5	3	594.5
AWN 9-9-17□□□	86.3	86.3	170	66.5	66.5	3	725.5
AWN 9-9-22□□□	86.3	86.3	220	66.5	66.5	3	871.5
AWN 9-9-28□□□	86.3	86.3	275	66.5	66.5	3	1,032
AWN11-6-11□□□	106.3	56.3	110	86.5	36.5	3	479.5
AWN11-6-15□□□	106.3	56.3	150	86.5	36.5	3	578
AWN11-6-19□□□	106.3	56.3	190	86.5	36.5	3	676.5
AWN11-6-24□□□	106.3	56.3	240	86.5	36.5	3	800
AWN12-8-11□□□	120	71.3	105	100.2	51.5	3	590.5
AWN12-8-14□□□	120	71.3	140	100.2	51.5	3	696.5
AWN12-8-17□□□	120	71.3	179.5	100.2	51.5	3	816
AWN12-8-22□□□	120	71.3	215	100.2	51.5	3	923.5
AWN16-9-14□□□	156.3	81.3	135	136.5	61.5	3	871.5
AWN16-9-18□□□	156.3	81.3	175	136.5	61.5	3	1,018.5
AWN16-9-23□□□	156.3	81.3	225	136.5	61.5	3	1,201.5
AWN16-9-28□□□	156.3	81.3	275	136.5	61.5	3	1,385
AWN21-9-17□□□	206.3	81.3	170	186.5	61.5	3	1,261
AWN21-9-21□□□	206.3	81.3	210	186.5	61.5	3	1,431.5
AWN21-9-26□□□	206.3	81.3	260	186.5	61.5	3	1,644.5
AWN21-9-31□□□	206.3	81.3	310	186.5	61.5	3	1,857.5

**Accessories (Optional parts)**



Mounting plate AWC series  
See page 170



Hexagon socket head screw HCS series  
See page 170



Cable gland  
See cable gland pages



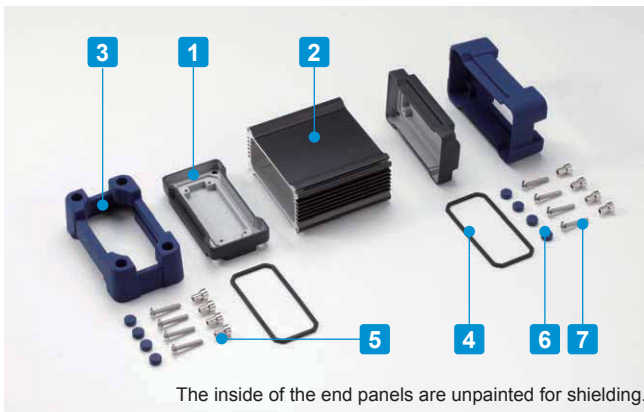
Silicone protector AWSP series  
See page 169

# AWP SERIES

# IP67 ALUMINIUM ENCLOSURE with SILICONE PROTECTOR



Technical Data
Protection class: IP67
Operating temperature: -40°C ~ +105°C
Recommended torque: 1.0N • m (10kgf • cm)



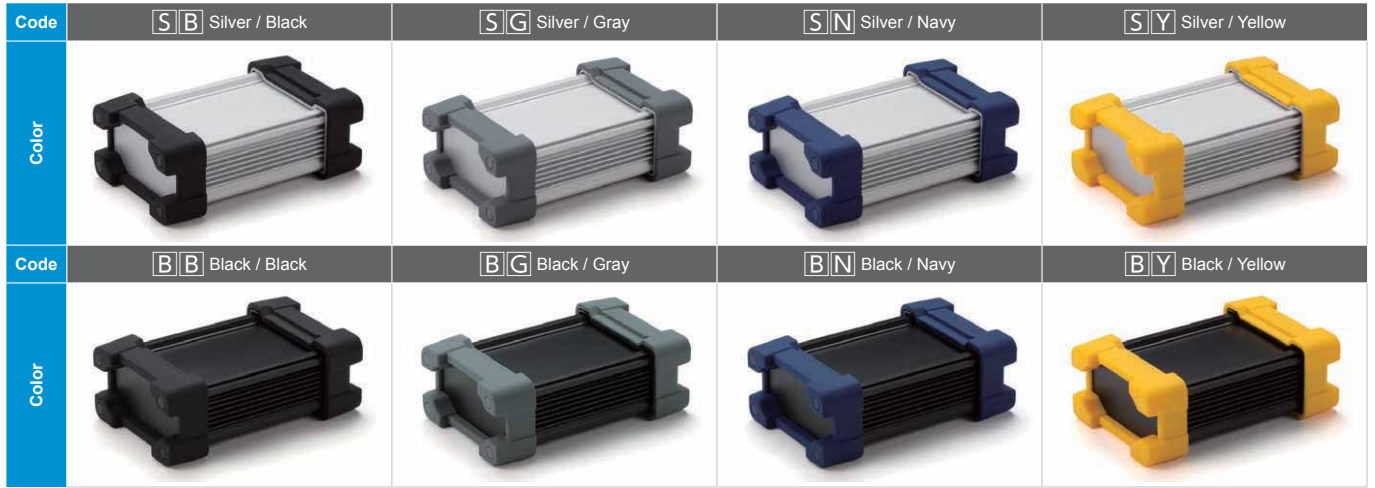
- Strong impact resistant enclosure with tough silicone boot protectors.
- Specifically designed with heat dissipation effect, EMC shielding and IP67 rating.
- PCB or chassis can be horizontally mounted by sliding into an inner-grooved body frame.
- Available in 30 sizes and 8 different color combinations. Selectable from a total of 240 different combinations.
- Suitable for measuring instruments, industrial control box, industrial camera housing, etc.

### Components

No.	Part name	Pcs	Material	Color / Finish
1	End panel	2	Diecast aluminium ADC12	Silver • Black / Painted (unfinished inside)
2	Body frame	1	Extruded aluminium A6063S-T5	Siver • Black / Anodized
3	Protector	2	Silicone	Black • Gray • Navy • Yellow
4	Conductive gasket	2	Conductive silicone	Black
5	Spacer	8	Brass	Nickel plated
6	Blind cap	8	Silicone	Black • Gray • Navy • Yellow
7	Screw	8	Stainless steel	Unfinished



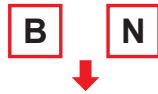
Color Type



Ordering Number

For example, in case of ordering AWP7-7-8 size, Black enclosure and Navy silicone protector.

Product no. : AWP7-7-8



Put a color code SB, SG, SN, SY, BB, BG, BN or BY.

- ※ Thermal resistance test condition
- Ambient air cooling
- Heat-sink fins are set perpendicular to the ground with temperature at 60°C.
- Anodized aluminium extrusion
- Heat source is applied on the opposite side (inner side) of the fins.

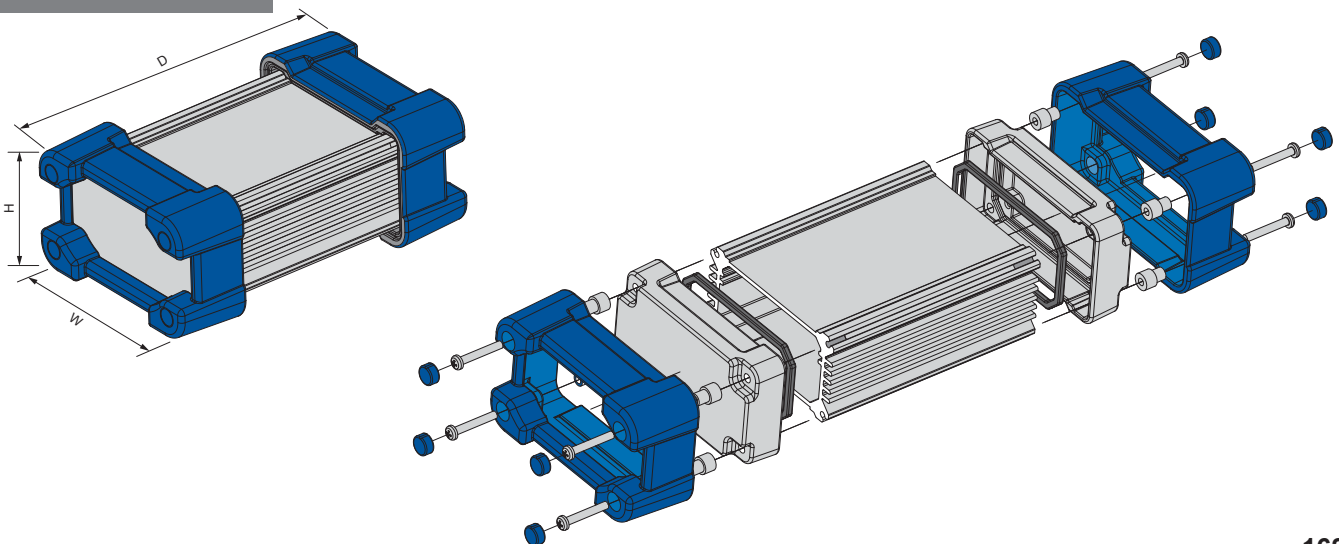
Product no. / Dimensions

Product no.	W	H	D	※Thermal resistance rate (°C/W)	Weight (g)
AWP 7-7- 8□□	72.4(65.8)	73.6(65.8)	104 (80)	4.41	363.5
AWP 7-7-11□□	72.4(65.8)	73.6(65.8)	134(110)	3.5	419
AWP 7-7-15□□	72.4(65.8)	73.6(65.8)	174(150)	2.83	493.5
AWP 7-7-20□□	72.4(65.8)	73.6(65.8)	224(200)	2.33	586
AWP 7-7-25□□	72.4(65.8)	73.6(65.8)	274(250)	2.02	679
AWP 8-5- 9□□	87.4(80.8)	53.6(45.8)	114 (90)	5.97	353.5
AWP 8-5-12□□	87.4(80.8)	53.6(45.8)	139(115)	5.01	394.5
AWP 8-5-14□□	87.4(80.8)	53.6(45.8)	164(140)	4.37	436
AWP 8-5-18□□	87.4(80.8)	53.6(45.8)	199(175)	3.76	493.5
AWP 9-9-10□□	93.9(86.3)	95.1(86.3)	130(100)	3.1	693
AWP 9-9-13□□	93.9(86.3)	95.1(86.3)	155(125)	2.63	766
AWP 9-9-17□□	93.9(86.3)	95.1(86.3)	200(170)	2.12	897
AWP 9-9-22□□	93.9(86.3)	95.1(86.3)	250(220)	1.79	1,043
AWP 9-9-28□□	93.9(86.3)	95.1(86.3)	305(275)	1.54	1,203.5
AWP11-6-11□□	113.9(106.3)	65.1(56.3)	140(110)	4.52	652.5
AWP11-6-15□□	113.9(106.3)	65.1(56.3)	180(150)	3.62	751.5
AWP11-6-19□□	113.9(106.3)	65.1(56.3)	220(190)	3.08	850
AWP11-6-24□□	113.9(106.3)	65.1(56.3)	270(240)	2.64	973
AWP12-8-11□□	127.6(120)	80.1(71.3)	135(105)	3.6	778.5
AWP12-8-14□□	127.6(120)	80.1(71.3)	170(140)	2.93	885
AWP12-8-17□□	127.6(120)	80.1(71.3)	209.5(179.5)	2.47	1,004.5
AWP12-8-22□□	127.6(120)	80.1(71.3)	245(215)	2.18	1,112
AWP16-9-14□□	163.9(156.3)	90.1(81.3)	165(135)	2.64	1,094
AWP16-9-18□□	163.9(156.3)	90.1(81.3)	205(175)	2.2	1,240.5
AWP16-9-23□□	163.9(156.3)	90.1(81.3)	255(225)	1.86	1,424
AWP16-9-28□□	163.9(156.3)	90.1(81.3)	305(275)	1.63	1,607.5
AWP21-9-17□□	213.9(206.3)	90.1(81.3)	202(170)	2.3	1,571.5
AWP21-9-21□□	213.9(206.3)	90.1(81.3)	242(210)	1.99	1,742
AWP21-9-26□□	213.9(206.3)	90.1(81.3)	292(260)	1.72	1,955.5
AWP21-9-31□□	213.9(206.3)	90.1(81.3)	342(310)	1.54	2,168.5

■ ( ) value = enclosure dimension.

AWP dimensions

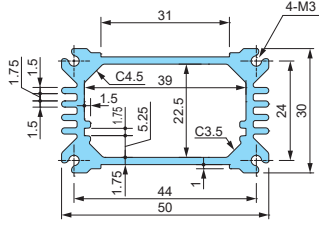
■ DXF/DWG/PDF drawings available on our website.



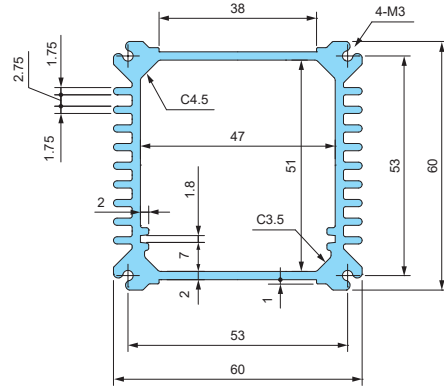
AW • AWN • AWP • AWA frame

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

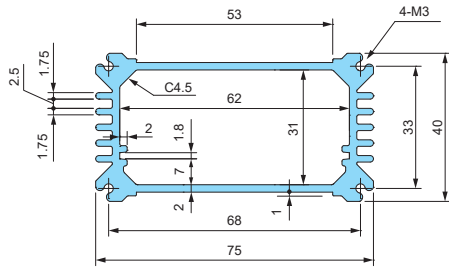
AW/AWN5-4-□  
AWA5-3-□



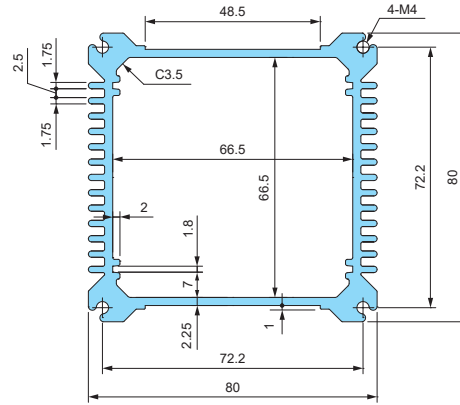
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AWA6-6-□



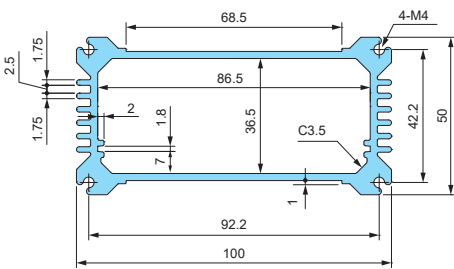
AW/AWN/AWP8-5-□  
AWA8-4-□



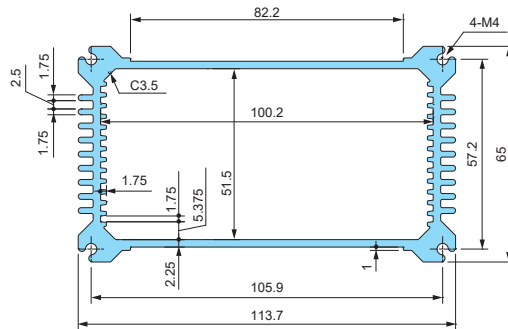
AW/AWN/AWP9-9-□  
AWA8-8-□



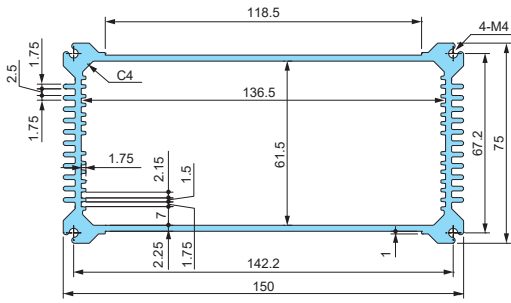
AW/AWN/AWP11-6-□  
AWA10-5-□



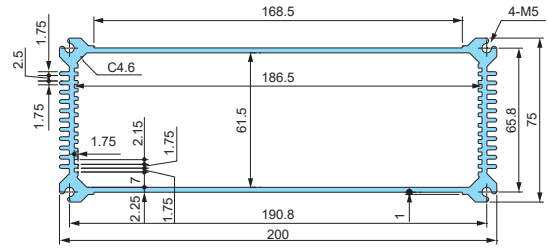
AW/AWN/AWP12-8-□  
AWA12-7-□



AW/AWN/AWP16-9-□  
AWA15-8-□



AW/AWN/AWP21-9-□  
AWA20-8-□



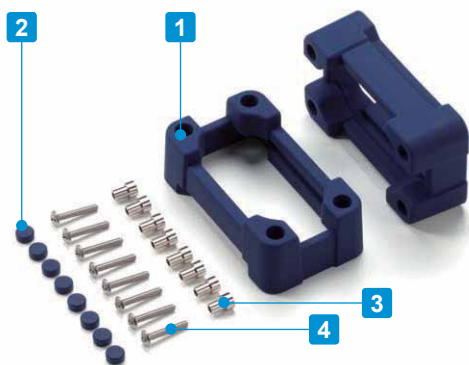
- ※ Thermal resistance test condition
- Ambient air cooling
  - Heat-sink fins are set perpendicular to the ground with temperature at 60°C.
  - Anodized aluminium extrusion
  - Heat source is applied on the opposite side (inner side) of the fins.

Product no.				Frame	※Thermal resistance rate (°C/W)
AW 5-4- 7	AWN 5-4- 7	—	AWA 5-3- 5	49.2	11.2
AW 5-4- 9	AWN 5-4- 9	—	AWA 5-3- 7	69.2	9.18
AW 5-4-11	AWN 5-4-11	—	AWA 5-3-10	94.2	7.64
AW 5-4-14	AWN 5-4-14	—	AWA 5-3-12	119.2	6.63
AW 7-7- 8	AWN 7-7- 8	AWP 7-7- 8	AWA 6-6- 7	64	4.41
AW 7-7-11	AWN 7-7-11	AWP 7-7-11	AWA 6-6-10	94	3.5
AW 7-7-15	AWN 7-7-15	AWP 7-7-15	AWA 6-6-14	134	2.83
AW 7-7-20	AWN 7-7-20	AWP 7-7-20	AWA 6-6-19	184	2.33
AW 7-7-25	AWN 7-7-25	AWP 7-7-25	AWA 6-6-24	234	2.02
AW 8-5- 9	AWN 8-5- 9	AWP 8-5- 9	AWA 8-4- 8	74	5.97
AW 8-5-12	AWN 8-5-12	AWP 8-5-12	AWA 8-4-10	99	5.01
AW 8-5-14	AWN 8-5-14	AWP 8-5-14	AWA 8-4-13	124	4.37
AW 8-5-18	AWN 8-5-18	AWP 8-5-18	AWA 8-4-16	159	3.76
AW 9-9-10	AWN 9-9-10	AWP 9-9-10	AWA 8-8- 9	81	3.1
AW 9-9-13	AWN 9-9-13	AWP 9-9-13	AWA 8-8-11	106	2.63
AW 9-9-17	AWN 9-9-17	AWP 9-9-17	AWA 8-8-16	151	2.12
AW 9-9-22	AWN 9-9-22	AWP 9-9-22	AWA 8-8-21	201	1.79
AW 9-9-28	AWN 9-9-28	AWP 9-9-28	AWA 8-8-26	256	1.54
AW11-6-11	AWN11-6-11	AWP11-6-11	AWA10-5-10	90.6	4.52
AW11-6-15	AWN11-6-15	AWP11-6-15	AWA10-5-14	130.6	3.62
AW11-6-19	AWN11-6-19	AWP11-6-19	AWA10-5-18	170.6	3.08
AW11-6-24	AWN11-6-24	AWP11-6-24	AWA10-5-23	220.6	2.64
AW12-8-11	AWN12-8-11	AWP12-8-11	AWA12-7- 9	85.6	3.6
AW12-8-14	AWN12-8-14	AWP12-8-14	AWA12-7-12	120.6	2.93
AW12-8-17	AWN12-8-17	AWP12-8-17	AWA12-7-17	160.1	2.47
AW12-8-22	AWN12-8-22	AWP12-8-22	AWA12-7-20	195.6	2.18
AW16-9-14	AWN16-9-14	AWP16-9-14	AWA15-5-12	115.6	2.64
AW16-9-18	AWN16-9-18	AWP16-9-18	AWA15-8-16	155.6	2.2
AW16-9-23	AWN16-9-23	AWP16-9-23	AWA15-8-21	205.6	1.86
AW16-9-28	AWN16-9-28	AWP16-9-28	AWA15-8-26	255.6	1.63
AW21-9-17	AWN21-9-17	AWP21-9-17	AWA20-8-15	147.8	2.3
AW21-9-21	AWN21-9-21	AWP21-9-21	AWA20-8-19	187.8	1.99
AW21-9-26	AWN21-9-26	AWP21-9-26	AWA20-8-24	237.8	1.72
AW21-9-31	AWN21-9-31	AWP21-9-31	AWA20-8-29	287.8	1.54



**AWSP SERIES**

**SILICONE PROTECTOR**

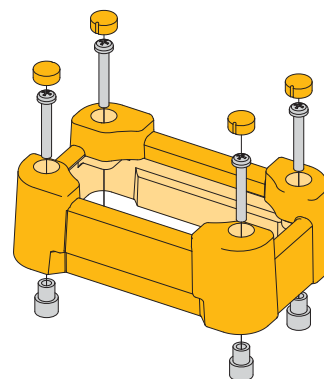
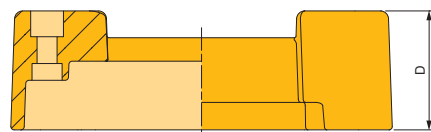
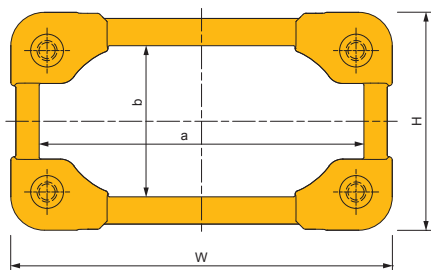
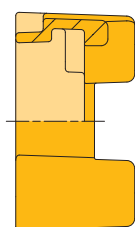


**Color Type**

Code	B Black	G Gray	N Navy	Y Yellow
Color				

- Silicone protector for AWN series.
- Protect switches and/or connectors on end panels from impact when dropped, etc.

**AWSP dimensions**



**Components**

No.	Part name	Pcs	Material	Color / Finish
1	Protector	2	Silicone	Black • Gray • Navy • Yellow
2	Blind cap	8	Silicone	Black • Gray • Navy • Yellow
3	Spacer	8	Brass	Nickel plated
4	Screw	8	Stainless steel	Unfinished

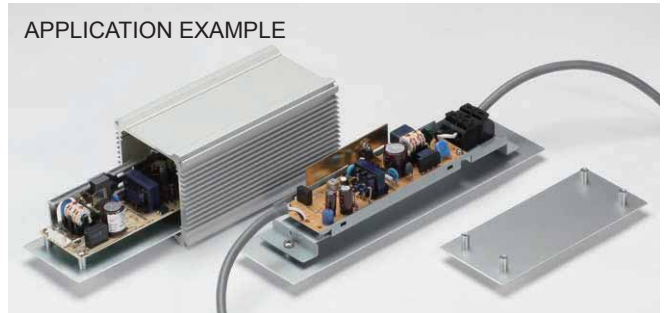
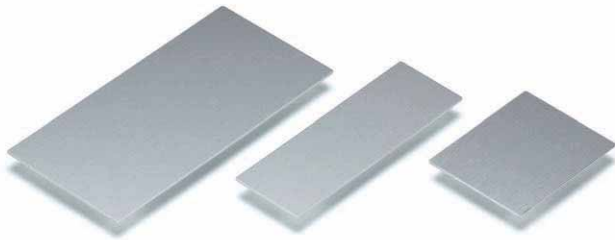
**Product no. / Dimensions**

■ Please suffix color code at the end of the product number.

Product no.	W	H	D	a	b	Screw size	Suitable enclosure	Weight (g)
AWSP 7-7□	72.4	73.6	31	58.4	56.6	M3	AWN 7-7-□	99
AWSP 8-5□	87.4	53.6	31	73.4	36.6	M3	AWN 8-5-□	100.5
AWSP 9-9□	93.9	95.1	35.5	76.9	75.1	M4	AWN 9-9-□	184.5
AWSP11-6□	113.9	65.1	35.5	96.9	45.1	M4	AWN11-6-□	186
AWSP12-8□	127.6	80.1	35.5	110.6	60.1	M4	AWN12-8-□	201
AWSP16-9□	163.9	90.1	35.5	145.9	69.1	M4	AWN16-9-□	235
AWSP21-9□	213.9	90.1	39.5	192.9	66.1	M5	AWN21-9-□	333

**AWC SERIES**

**ALUMINIUM MOUNTING PLATE**

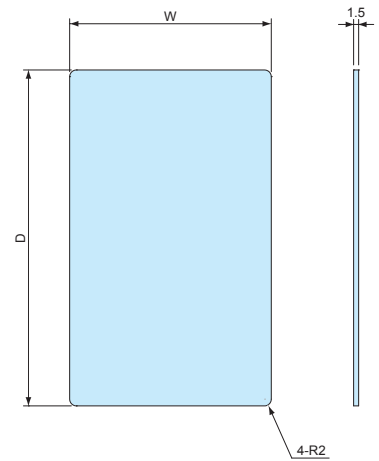


- Material: Aluminium A1050P t=1.5 / Silver anodized
- Mounting plate for AW, AWN, AWP, and AWA series enclosures.
- Utilize for mounting PCB, power supply, terminal blocks, etc.

■ DXF/DWG/PDF drawings available on our website.

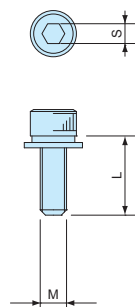
**Product no. / Dimensions**

Product no.	W	D	Suitable enclosure
AWC 5- 7	38.9	49.2	AW • AWN 5-4-7 • AWA 5-3-5
AWC 5- 9	38.9	69.2	AW • AWN 5-4-9 • AWA 5-3-7
AWC 5-11	38.9	94.2	AW • AWN 5-4-11 • AWA 5-3-10
AWC 5-14	38.9	119.2	AW • AWN 5-4-14 • AWA 5-3-12
AWC 7- 8	47	64	AW • AWN • AWP 7-7-8 • AWA 6-6- 7
AWC 7-11	47	94	AW • AWN • AWP 7-7-11 • AWA 6-6-10
AWC 7-15	47	134	AW • AWN • AWP 7-7-15 • AWA 6-6-14
AWC 7-20	47	184	AW • AWN • AWP 7-7-20 • AWA 6-6-19
AWC 7-25	47	234	AW • AWN • AWP 7-7-25 • AWA 6-6-24
AWC 8- 9	61.8	74	AW • AWN • AWP 8-5-9 • AWA 8-4-8
AWC 8-12	61.8	99	AW • AWN • AWP 8-5-12 • AWA 8-4-10
AWC 8-14	61.8	124	AW • AWN • AWP 8-5-14 • AWA 8-4-13
AWC 8-18	61.8	159	AW • AWN • AWP 8-5-18 • AWA 8-4-16
AWC 9-10	66.5	81	AW • AWN • AWP 9-9-10 • AWA 8-8-9
AWC 9-13	66.5	106	AW • AWN • AWP 9-9-13 • AWA 8-8-11
AWC 9-17	66.5	151	AW • AWN • AWP 9-9-17 • AWA 8-8-16
AWC 9-22	66.5	201	AW • AWN • AWP 9-9-22 • AWA 8-8-21
AWC 9-28	66.5	256	AW • AWN • AWP 9-9-28 • AWA 8-8-26
AWC11-11	86.5	90.6	AW • AWN • AWP11-6-11 • AWA10-5-10
AWC11-15	86.5	130.6	AW • AWN • AWP11-6-15 • AWA10-5-14
AWC11-19	86.5	170.6	AW • AWN • AWP11-6-19 • AWA10-5-18
AWC11-24	86.5	220.6	AW • AWN • AWP11-6-24 • AWA10-5-23
AWC12-11	100.2	85.6	AW • AWN • AWP12-8-11 • AWA12-7-9
AWC12-14	100.2	120.6	AW • AWN • AWP12-8-14 • AWA12-7-12
AWC12-17	100.2	160.1	AW • AWN • AWP12-8-17 • AWA12-7-17
AWC12-22	100.2	195.6	AW • AWN • AWP12-8-22 • AWA12-7-20
AWC16-14	136.3	115.6	AW • AWN • AWP16-9-14 • AWA15-8-12
AWC16-18	136.3	155.6	AW • AWN • AWP16-9-18 • AWA15-8-16
AWC16-23	136.3	205.6	AW • AWN • AWP16-9-23 • AWA15-8-21
AWC16-28	136.3	255.6	AW • AWN • AWP16-9-28 • AWA15-8-26
AWC21-17	186.1	147.8	AW • AWN • AWP21-9-17 • AWA20-8-15
AWC21-21	186.1	187.8	AW • AWN • AWP21-9-21 • AWA20-8-19
AWC21-26	186.1	237.8	AW • AWN • AWP21-9-26 • AWA20-8-24
AWC21-31	186.1	287.8	AW • AWN • AWP21-9-31 • AWA20-8-29



**HCS SERIES**

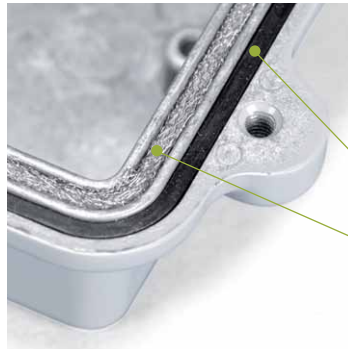
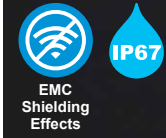
**HEXAGON SOCKET HEAD SCREW**



- Hexagon socket head screws for fastening the end panels of AW and AWN enclosures.
- Utilize for tamper-resistance functionality or for an elegant sleek look.

**Product no. / Dimensions**

Product no.	M	L	S	Material	Pack of
HCS3-12S	3	12	2.5	Stainless steel	8
HCS4-12S	4	12	3	Stainless steel	8
HCS5-12S	5	12	4	Stainless steel	8



Technical Data
Protection class : IP67
Operating temperature : -40°C ~ +105°C
Recommended torque : 1N • m

Silicone gasket (waterproof)

Stainless steel mesh gasket (EMC Shielding)

- A double gasket construction allows both IP67 protection and EMC shielding to be possible.
- 13 different sizes available with 2 different finish types.
- Suitable for CATV terminal, fiber optic transmitter, FA controller, and so on.
- Available in powder coated model and unfinished model.

## APPLICATION EXAMPLE

### CATV OPTICAL NODE



LPWA OUTDOOR GATEWAY



WIFI ACCESS POINT

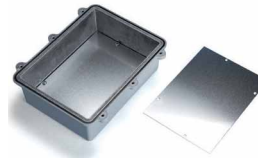
Accessories (Optional parts)



Mounting bracket HQF series  
See page HQ-7



Pole Mounting bracket SSK series  
See page SSK-M-1 ~ SSK-M-3



Mounting plate HQP series  
See page HQ-8



Mounting screw MT series  
See page HQ-7



Cable gland  
See cable gland pages



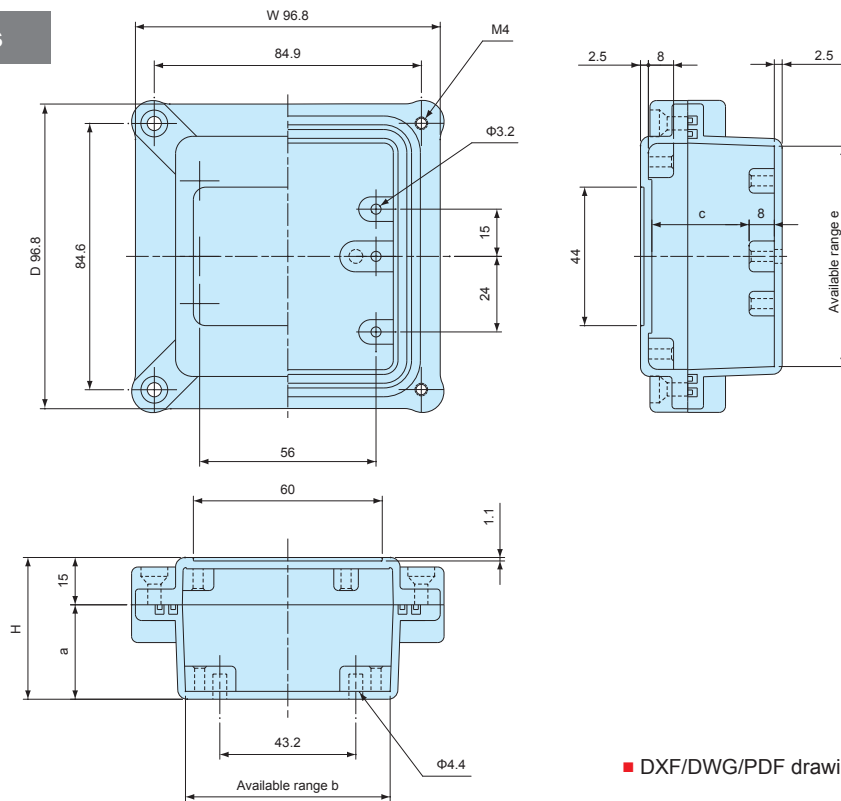
Protective vent PMF series  
See PMF pages

Product no. / Dimensions

Product no.		Dimensions			Weight (g)
● Light gray	○ Unfinished	W	D	H	
HQ10-10- 5G	HQ10-10- 5N	96.3	96.8	45	302
HQ10-10- 7G	HQ10-10- 7N	96.8	96.8	67	335
HQ15-10- 5G	HQ15-10- 5N	150	100	50	442
HQ15-10- 8G	HQ15-10- 8N	150	99.5	75	494
HQ16-16- 6G	HQ16-16- 6N	162	162	55	626
HQ16-16- 8G	HQ16-16- 8N	162	162	80	715
HQ19-10- 5G	HQ19-10- 5N	192	96	45	507
HQ19-10- 7G	HQ19-10- 7N	192	96	67	590
HQ20-15- 5G	HQ20-15- 5N	200	150	50	753
HQ20-15- 8G	HQ20-15- 8N	200	150	75	849
HQ26-18- 6G	HQ26-18- 6N	262	181.5	55	961
HQ27-17- 7G	HQ27-17- 7N	274.2	173.2	66	1,129
HQ27-17-10G	HQ27-17-10N	274.2	172.7	100	1,287

HQ dimensions

HQ10-10-5  
HQ10-10-7



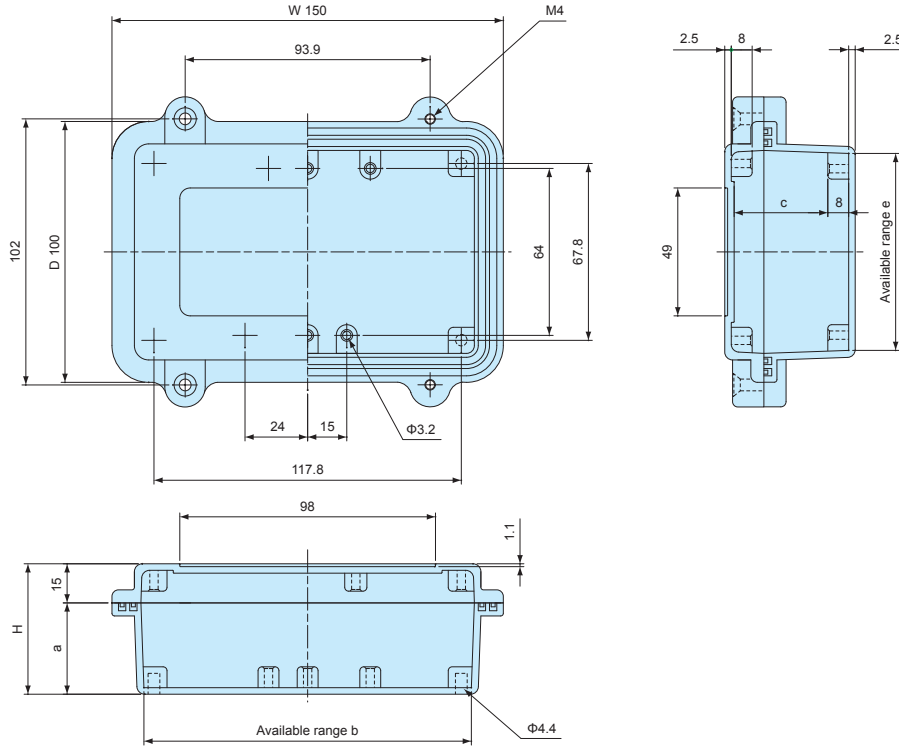
■ DXF/DWG/PDF drawings available on our website.

Product no.	W	D	H	a	b	c	e
HQ10-10- 5	96.3	96.8	45	30	64	30.9	69
HQ10-10- 7	96.8	96.8	67	52	64	52.9	69

**HQ dimensions**

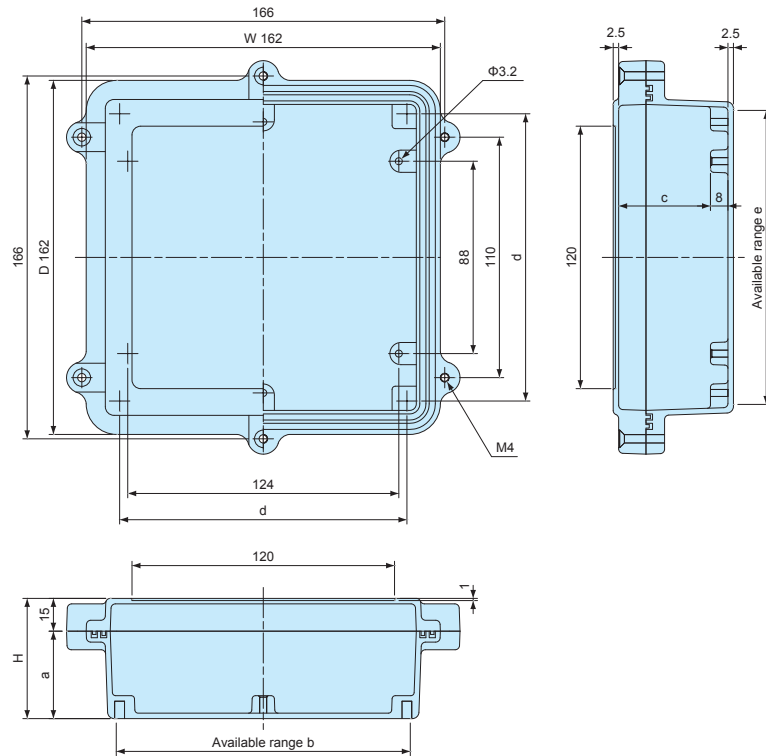
■ DXF/DWG/PDF drawings available on our website.

HQ15-10-5  
HQ15-10-8



Product no.	W	D	H	a	b	c	e
HQ15-10- 5	150	100	50	35	125.5	35.9	75.5
HQ15-10- 8	150	99.5	75	60	123.7	60.9	73.7

HQ16-16-6  
HQ16-16-8

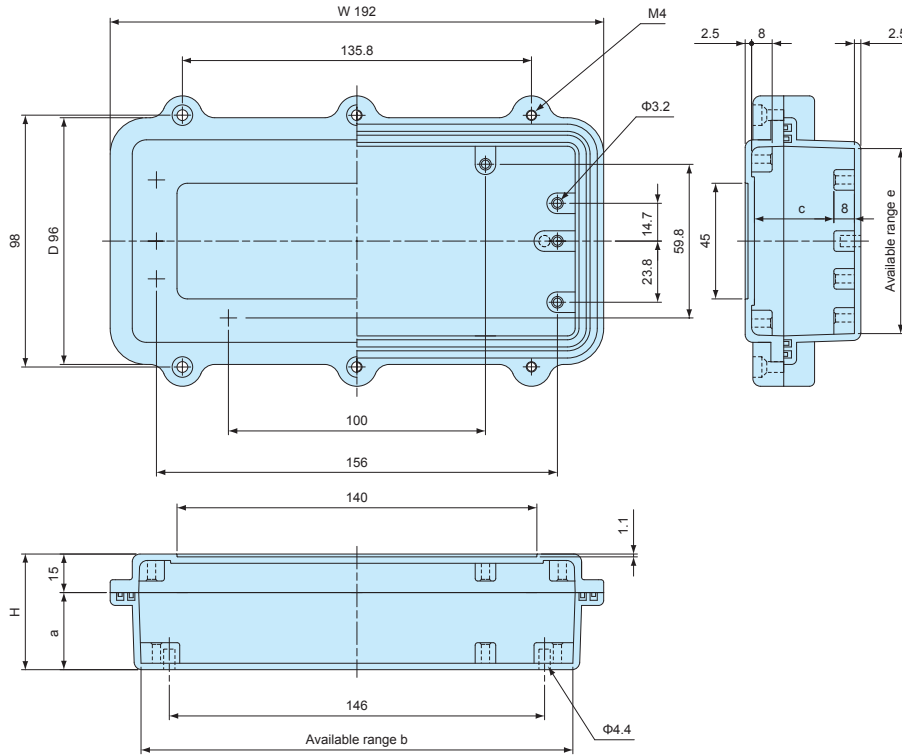


Product no.	W	D	H	a	b	c	d	e
HQ16-16- 6	162	162	55	40	134.5	42	131.41	134.5
HQ16-16- 8	162	162	80	65	132.7	67	129.66	132.7

HQ dimensions

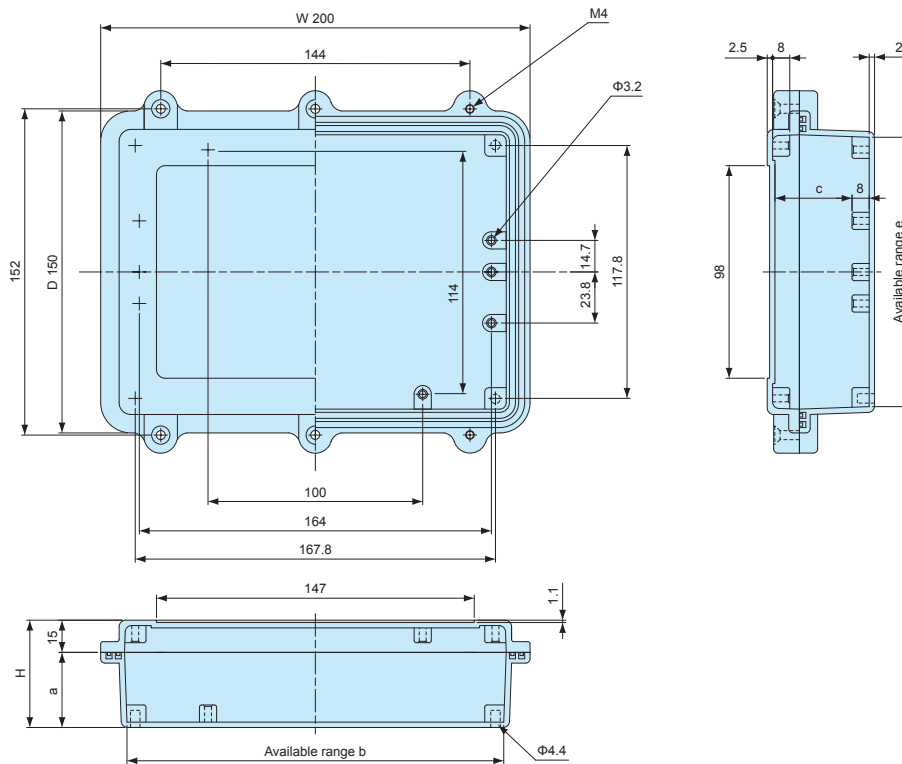
■ DXF/DWG/PDF drawings available on our website.

HQ19-10-5  
HQ19-10-7



Product no.	W	D	H	a	b	c	e
HQ19-10- 5	192	96	45	30	168	30.9	72
HQ19-10- 7	192	96	67	52	166.6	52.9	70.6

HQ20-15-5  
HQ20-15-8

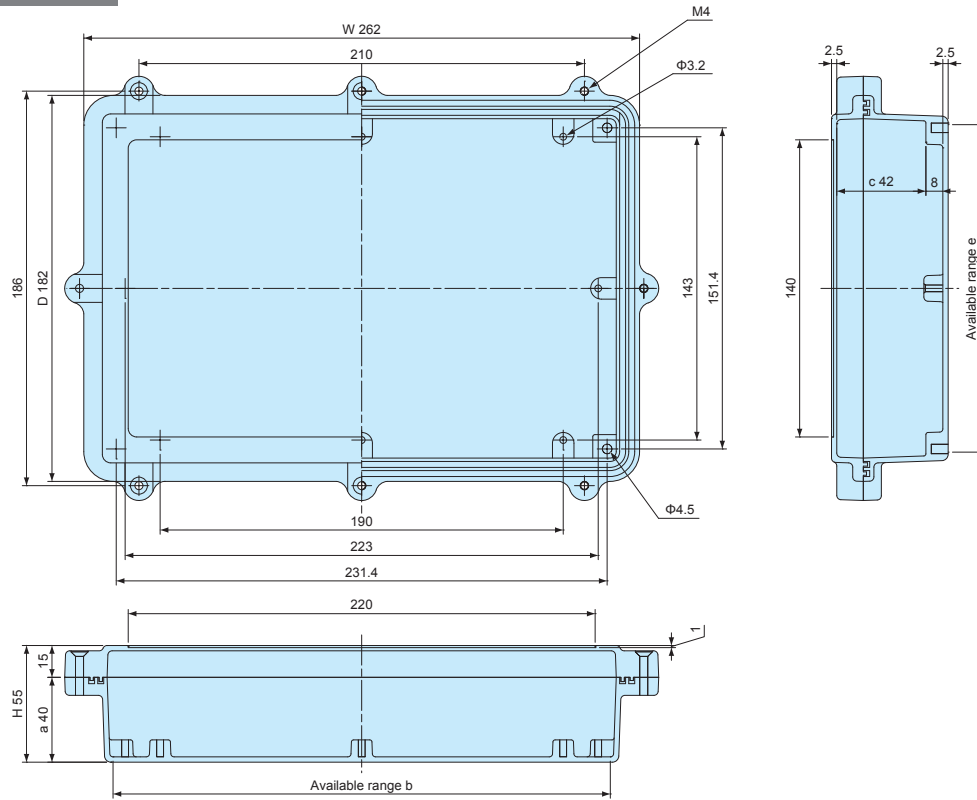


Product no.	W	D	H	a	b	c	e
HQ20-15- 5	200	150	50	35	175.5	35.9	125.5
HQ20-15- 8	200	150	75	60	173.7	60.9	123.7

**HQ dimensions**

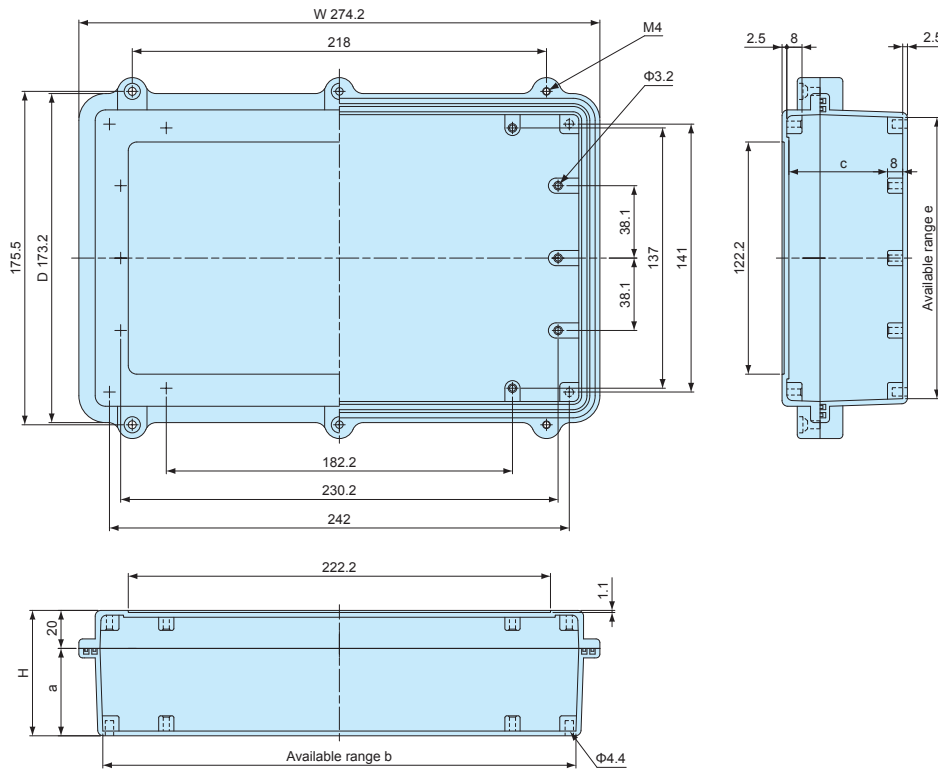
■ DXF/DWG/PDF drawings available on our website.

HQ26-18-6



Product no.	W	D	H	a	b	c	e
HQ26-18- 6	262	181.5	55	40	234.4	42	154.4

HQ27-17- 7  
HQ27-17-10



Product no.	W	D	H	a	b	c	e
HQ27-17- 7	274.2	173.2	66	46	249	51.9	148
HQ27-17-10	274.2	172.7	100	80	249	85.9	148

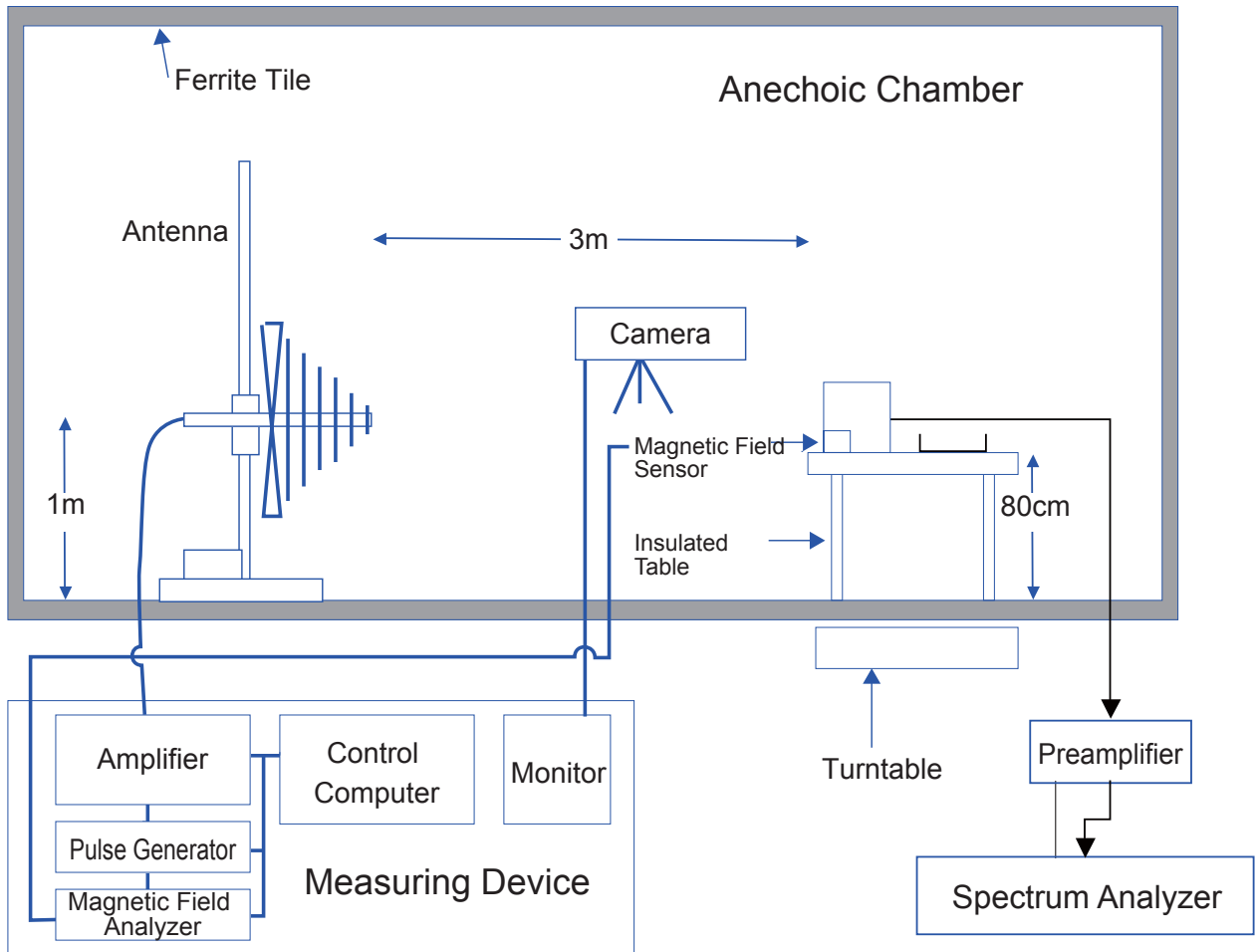
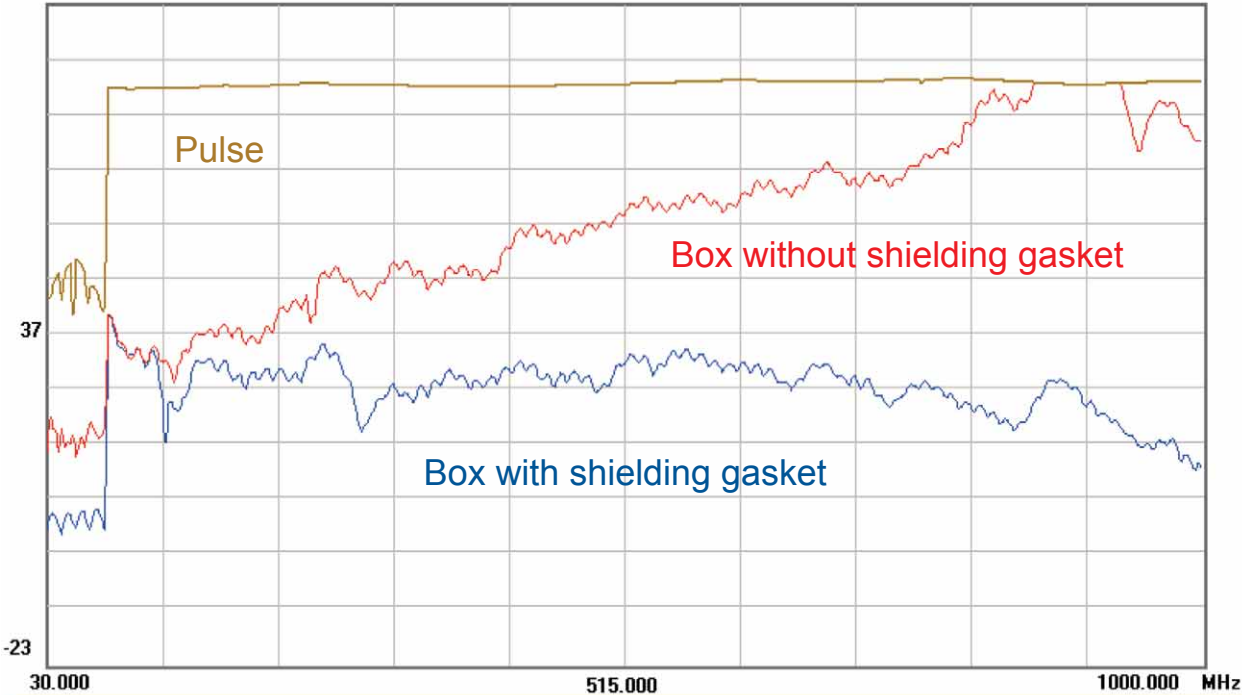


# EMI SHIELDING TEST DATA

Test Result  
by Gestek

97.0 dBuV/m

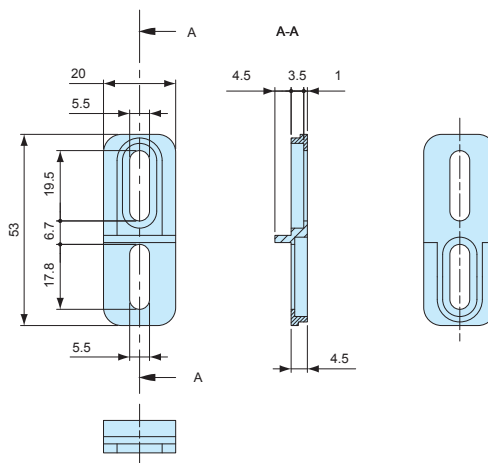
Date : 2007/12/20



**HQF SERIES**

**MOUNTING BRACKET for HQ**

■ DXF/DWG/PDF drawings available on our website.



**Components**

Part name	Pcs	Material	Color / Finish
Mounting bracket	4	Diecast aluminium ADC12	Powder coated • Unfinished
Screw	4	Stainless steel	Unfinished

**Product no. / Feature**

Product no.	Color / Finish	Suitable box	Pack of
HQF-1G	Light gray / Powder coated	HQ all models	4
HQF-1N	Unfinished	HQ all models	4

**MT SERIES**

**MOUNTING SCREW for HQ**

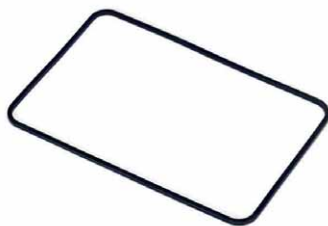


**Product no. / Feature**

Product no.	Material	Color / Finish	Pack of
MT3.5-8K	Steel	Trivalent chromate	4

**HQG SERIES**

**WATERPROOF GASKET for HQ**



**Product no. / Suitable box**

Product no.	Suitable box
HQG1010	HQ10-10-□
HQG1510	HQ15-10-□
HQG1616	HQ16-16-□
HQG1910	HQ19-10-□
HQG2015	HQ20-15-□
HQG2618	HQ26-18-□
HQG2717	HQ27-17-□

■ Material : Silicone

**HQE SERIES**

**SHIELDING GASKET for HQ**



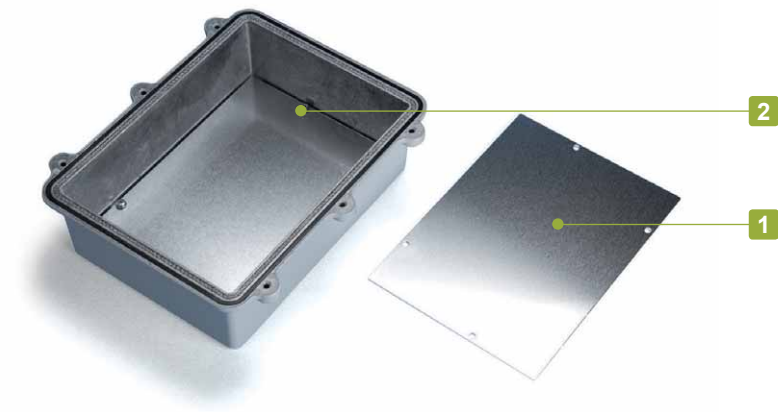
**Product no. / Suitable box**

Product no.	Suitable box
HQE1010	HQ10-10-□
HQE1510	HQ15-10-□
HQE1616	HQ16-16-□
HQE1910	HQ19-10-□
HQE2015	HQ20-15-□
HQE2618	HQ26-18-□
HQE2717	HQ27-17-□

■ Material : Stainless steel • Silicone (White)

## HQP SERIES

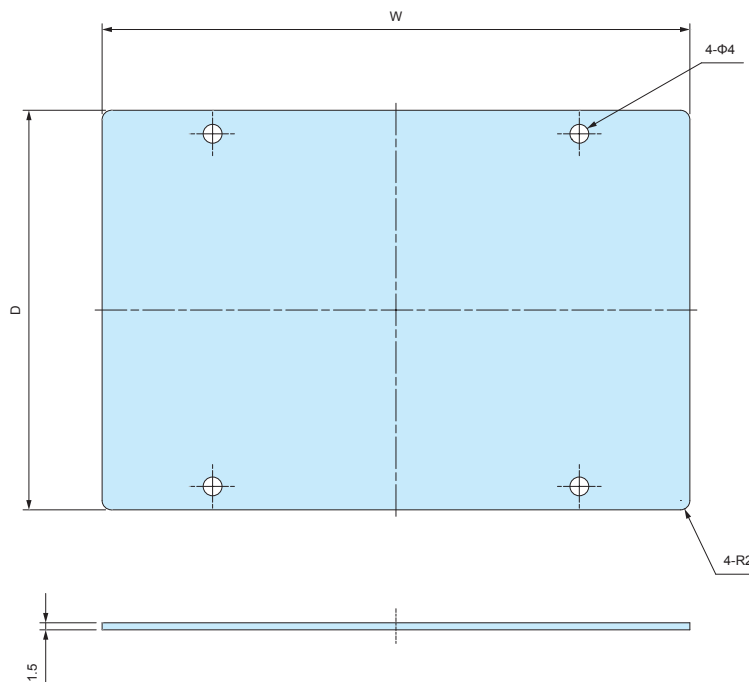
## MOUNTING PLATE for HQ



## Components

No.	Part name	Pcs	Material	Color / Finish
1	Mounting plate	1	Aluminium A1050P t = 1.5	Unfinished
2	Screw (MT3.5-8K)	4	Steel	Trivalent chromate

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.

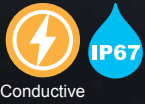


## Product no. / Dimensions

Product no.	W	D	Suitable box
HQP10-10	63	68	HQ10-10-5 • HQ10-10-7
HQP15-10	122	72	HQ15-10-5 • HQ15-10-8
HQP16-16	132	132	HQ16-16-6 • HQ16-16-8
HQP19-10	166	70	HQ19-10-5 • HQ19-10-7
HQP20-15	172	122	HQ20-15-5 • HQ20-15-8
HQP26-18	235	155	HQ26-18-6
HQP27-17	248	147	HQ27-17-7 • HQ27-17-10

# BDN SERIES

# IP67 DIECAST ALUMINIUM BOX



### Technical Data

Protection class: IP67  
 Operating temperature: -40°C ~ +105°C  
 Recommended torque: 1.0N • m (10kgf • cm)



- 8 different sizes available for both light gray powder coated and unfinished models.
- O-ring gasket is good for maintaining both waterproof and dustproof functionality.
- Shock resistant diecast aluminium box.
- Conductivity can be achieved by utilization of the contact between the unfinished inner surfaces (only applicable to "N" type).

### Components

No.	Part name	Pcs	Material	Color / Finish
1	Top cover	1	Diecast aluminium ADC12	Light gray • Silver / Powder coated • Unfinished
2	Base	1	Diecast aluminium ADC12	Light gray • Silver / Powder coated • Unfinished
3	O-ring gasket	1	Silicone	Black
4	Screw	4	Stainless steel	Unfinished
5	Earthing screw	2	Steel M4-5	Copper plated

### Accessories (Optional parts)



Wall mounting bracket  
 CK series  
 See page 296



Mounting plate  
 FTB series  
 See page FTB-1



DIN-Rail  
 FDR series  
 See page FDR-1 ~ FDR-2

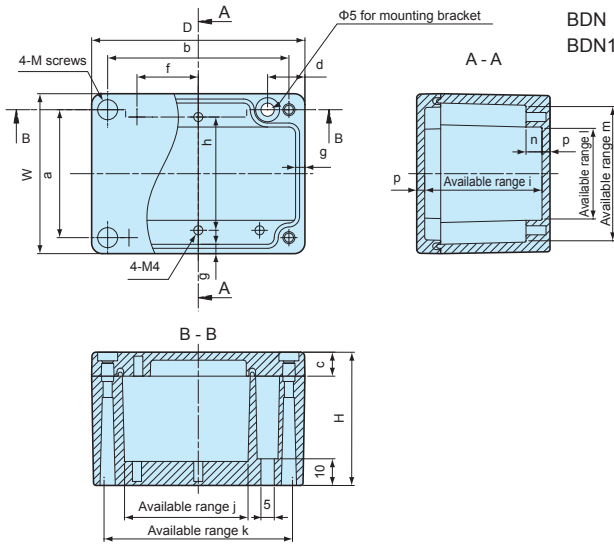


Cable gland  
 See cable gland pages

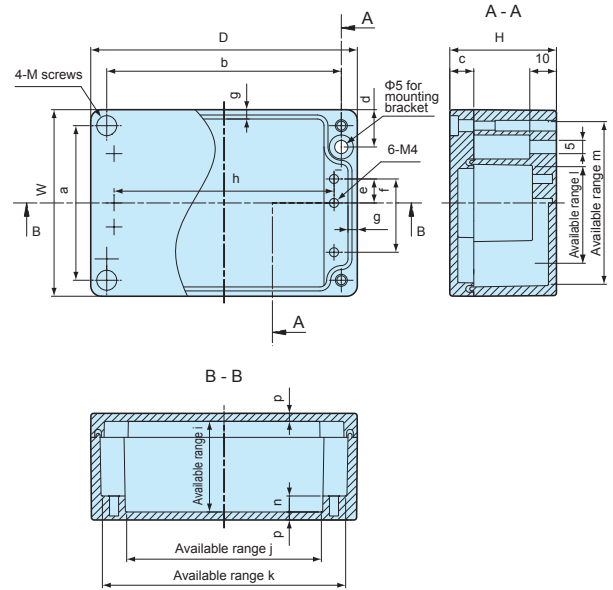
**BDN dimensions**

■ DXF/DWG/PDF drawings available on our website.

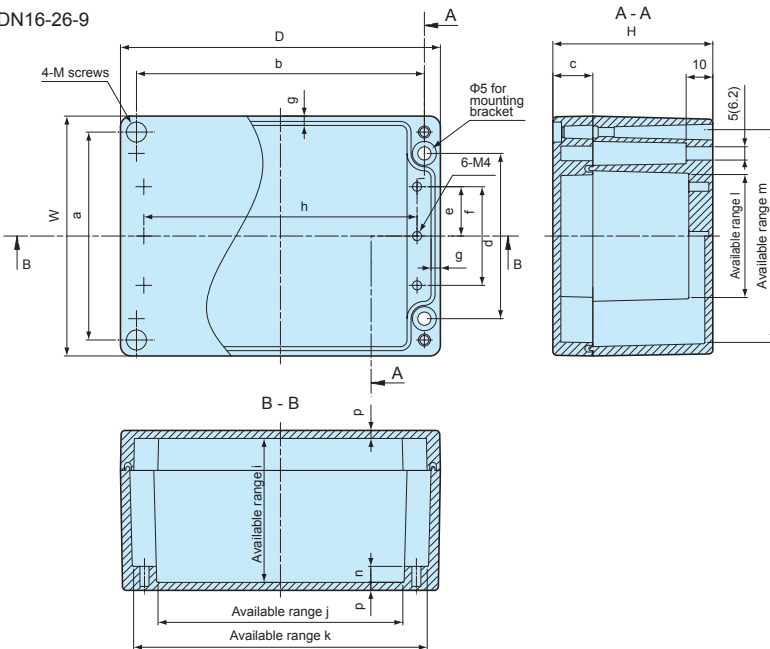
BDN 6-8-5



BDN 7-10-4  
BDN 9-13-5  
BDN11-16-6



BDN 9- 9-6  
BDN10-14-7  
BDN12-22-8  
BDN16-26-9



Dimension in ( ) = BDN12-22-8  
BDN16-26-9

**Product no. / Dimensions**

Product no.		Dimensions						Weight (g)
● Light gray	● Unfinished Conductive	W	D	H	a	b	c	
BDN 6- 8-5G	BDN 6- 8-5N	60	80	50	48	68	9	240
BDN 7-10-4G	BDN 7-10-4N	70	100	40	58	88	9	250
BDN 9- 9-6G	BDN 9- 9-6N	90	90	60	78	78	15	395
BDN 9-13-5G	BDN 9-13-5N	90	130	50	78	118	9	420
BDN10-14-7G	BDN10-14-7N	100	140	70	88	128	15	635
BDN11-16-6G	BDN11-16-6N	110	160	60	98	148	15	640
BDN12-22-8G	BDN12-22-8N	120	220	80	105	205	20	1,155
BDN16-26-9G	BDN16-26-9N	160	260	90	140	240	20	2,145

Product no.		Dimensions												
● Light gray	● Unfinished Conductive	d	e	f	g	h	i	j	k	ℓ	m	n	p	M
BDN 6- 8-5G	BDN 6- 8-5N	14	-	23	3.5	42.5	44	45	71	33	51	6	3	M4
BDN 7-10-4G	BDN 7-10-4N	14	11	31	3	85	34	75	92.5	38	62.5	6	3	M4
BDN 9- 9-6G	BDN 9- 9-6N	62	18.5	37	3.5	72	54	62	80	45	80	6	3	M4
BDN 9-13-5G	BDN 9-13-5N	14	19	47.5	3.5	112.5	44	104	121	56	81	6	3	M4
BDN10-14-7G	BDN10-14-7N	72	24	48	3.5	121	64	111	130	56	90	6	3	M4
BDN11-16-6G	BDN11-16-6N	14	29	67.5	3.5	142.5	54	134	151	76	101	6	3	M4
BDN12-22-8G	BDN12-22-8N	84.6	28	56	3.9	196	74	183	206	62	105	6	3	M5
BDN16-26-9G	BDN16-26-9N	110	36	72	4.8	230	82	216	247	87	146	9	4	M6

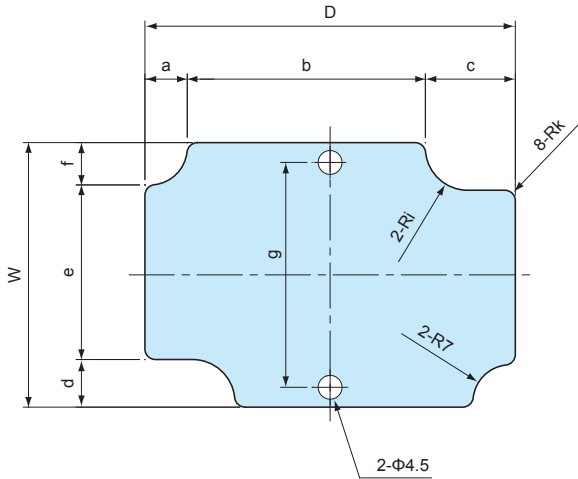


**FTB SERIES**

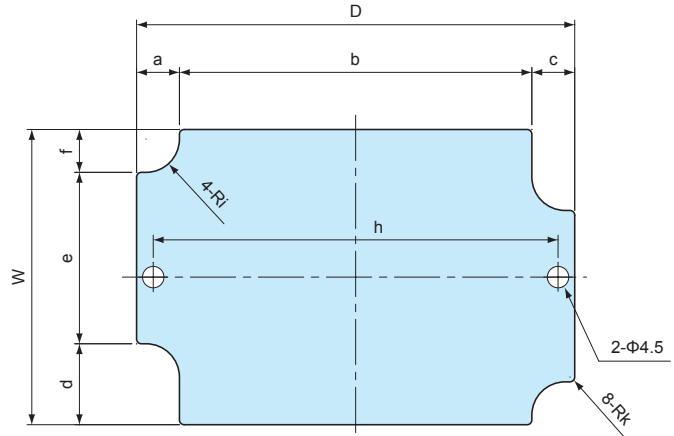
**MOUNTING PLATE for BDN**



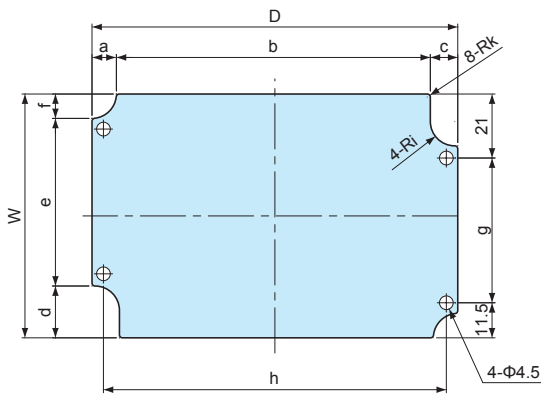
FTB 5-7



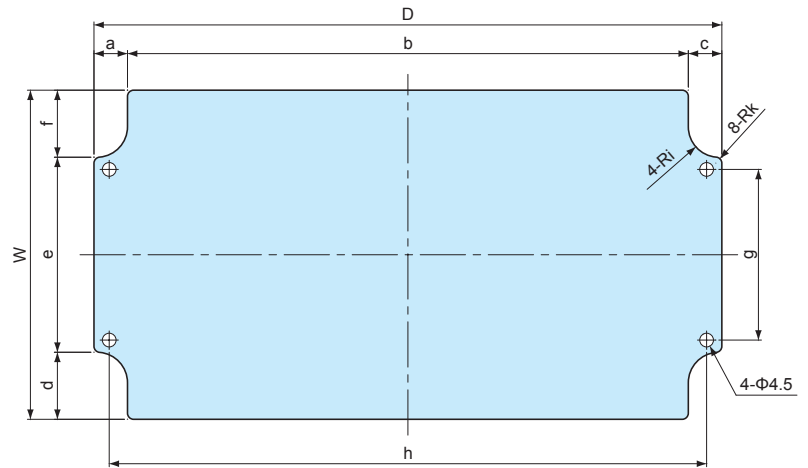
FTB 6-9



FTB 8-12  
FTB10-15



FTB 8- 8 FTB10-20  
FTB 9-13 FTB14-24



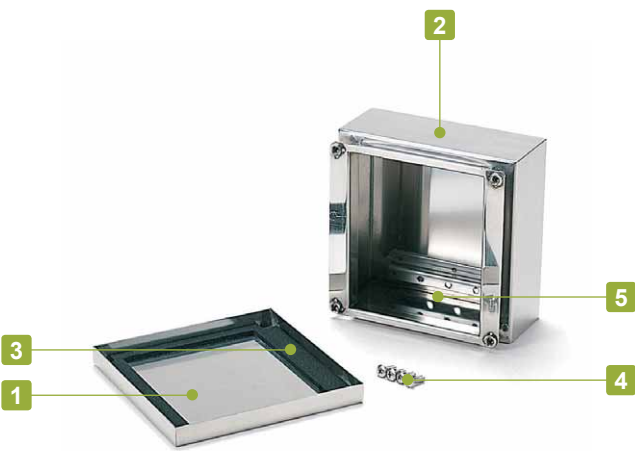
Material	Color / Finish
Aluminium A1050P t = 1.5	Silver / Anodized

**Product no. / Dimensions**

Product no.	Suitable box	W	D	a	b	c	d	e	f	g	h	i	k
FTB 5- 7	BDN 6- 8-5	50	70	8	45	17	9	33	8	42.5	-	8	2
FTB 6- 9	BDN 7-10-4	62	92	9	74	9	17	36	9	-	85	7	1
FTB 8- 8	BDN 9- 9-6	80	80	9	62	9	17	46	17	37	72.5	8	2
FTB 8-12	BDN 9-13-5	80	120	8	103	9	17	55	8	47.5	112.5	8	1
FTB 9-13	BDN10-14-7	89	129	9	111	9	17	55	17	48	121	8.5	2
FTB10-15	BDN11-16-6	100	150	8	133	9	17	75	8	67.5	142.5	8	1
FTB10-20	BDN12-22-8	108	206	11	184	11	22	64	22	56	196	10	2
FTB14-24	BDN16-26-9	144	244	15	214	15	30	84	30	72	230	12	3

**SSB SERIES**

**IP65 STAINLESS STEEL BOX - SCREWED TYPE**



Technical Data
Protection class: IP65
Operating temperature: -40°C ~ +90°C
Recommended torque: 2N • m

- IP65 enclosure, cover screw type.
- Made of stainless steel (SUS304) for superior weather and corrosion resistance.
- Conductive box for EMC shielding.
- Polished finish.

**Components**

No.	Part name	Pcs	Material	Color / Finish
1	Cover	1	Stainless steel SUS304 t = 1.2	Polished finish
2	Body	1	Stainless steel SUS304 t = 1.2	Polished finish
3	Gasket	1	EPDM	Black
4	Screw (M5-12 Truss head)	4	Stainless steel	Unfinished
5	Z-Mounting bracket	2	Stainless steel SUS304 t = 1.5	Unfinished

Accessories (Optional parts)



Mounting plate SSC series  
See page SSC • FDR-1



Cable gland  
See cable gland pages



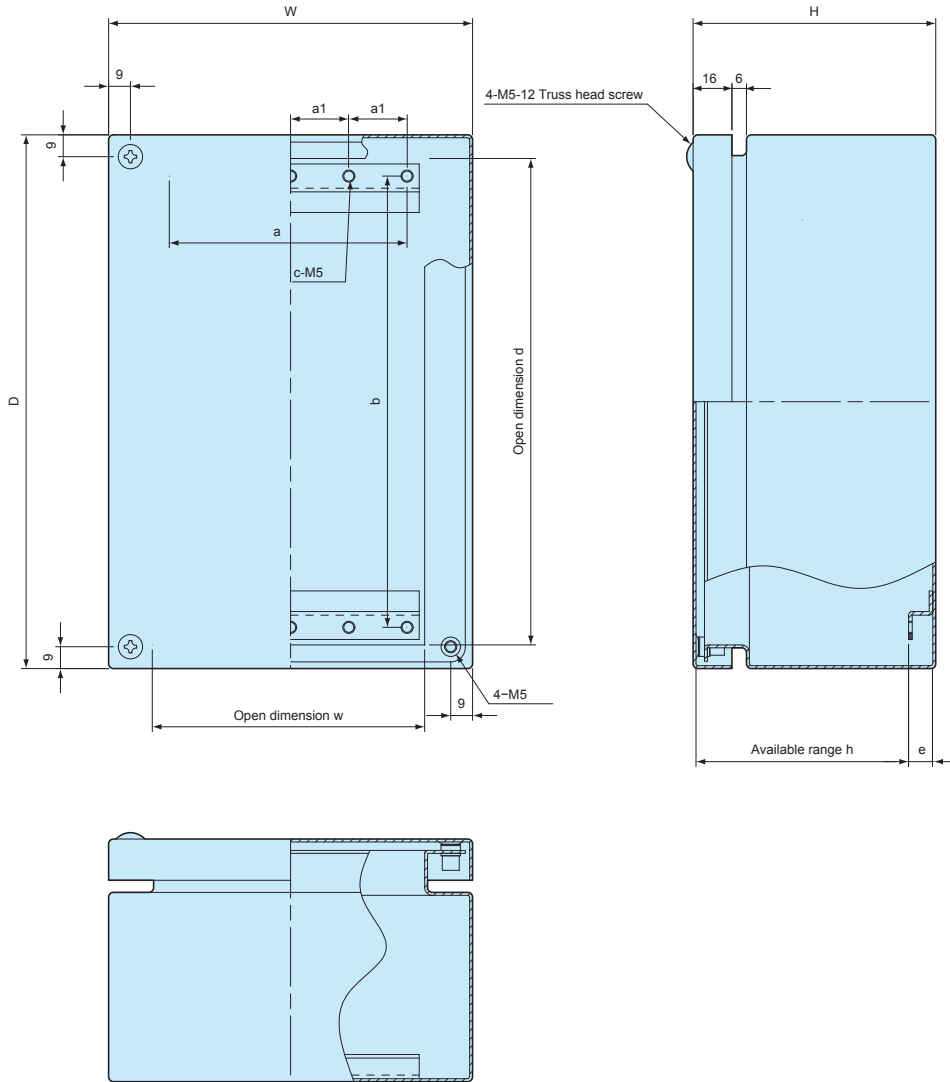
Pole mounting belt PKB series  
See page PKB-1



Pole mounting bracket SSK series  
See page SSK-M-1 ~ SSK-M-3

SSB dimensions

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



Product no. / Dimensions

Product no.	W	D	H	w	d	h	a	a1	b	c	e	Weight (kg)
SSB121508	120	150	80	80.5	130.5	67.6	66	33	116	6	10	0.9
SSB151508	150	150	80	110.5	130.5	67.6	96	24	116	10	10	1.1
SSB152206	150	220	60	110.5	200.5	51.1	96	24	186	10	6.5	1.3
SSB152210	150	220	100	110.5	200.5	87.6	96	24	186	10	10	1.6
SSB202010	200	200	100	160.5	180.5	87.6	146	36.5	166	10	10	1.8
SSB202806	200	280	60	160.5	260.5	51.1	146	36.5	246	10	6.5	1.9
SSB202812	200	280	120	160.5	260.5	107.6	146	36.5	246	10	10	2.5
SSB223312	220	330	120	180.5	310.5	107.6	166	41.5	296	10	10	2.9
SSB304015	300	400	150	260.5	380.5	137.6	246	61.5	366	10	10	4.7

# SSM SERIES

# IP65 STAINLESS STEEL BOX - LATCH-HINGED TYPE



Technical Data
Protection class: IP65
Operating temperature: -40°C ~ +90°C

- IP65 enclosure with easy open/close key latch/hinge.
- Made of stainless steel (SUS304) for superior weather and corrosion resistance.
- Conductive box for EMC shielding.
- Polished finish.
- Key latch for tamper-proof purposes.

### Components

No.	Part name	Pcs	Material	Color / Finish
1	Cover	1	Stainless steel SUS304 t = 1.2	Polished finish
2	Body	1	Stainless steel SUS304 t = 1.2	Polished finish
3	Hinge	2	Stainless steel SUS304 t = 1.2	Barrel finish
4	Gasket	1	EPDM	Black
5	Latch (with key)	2	Stainless steel SUS304 t = 1.2	Barrel finish
6	Z-Mounting bracket	2	Stainless steel SUS304 t = 1.5	Unfinished
7	Key	2	Steel SPCC	Nickel plated

Accessories (Optional parts)



Mounting plate SSC series  
See page SSC • FDR-1



Cable gland  
See cable gland pages



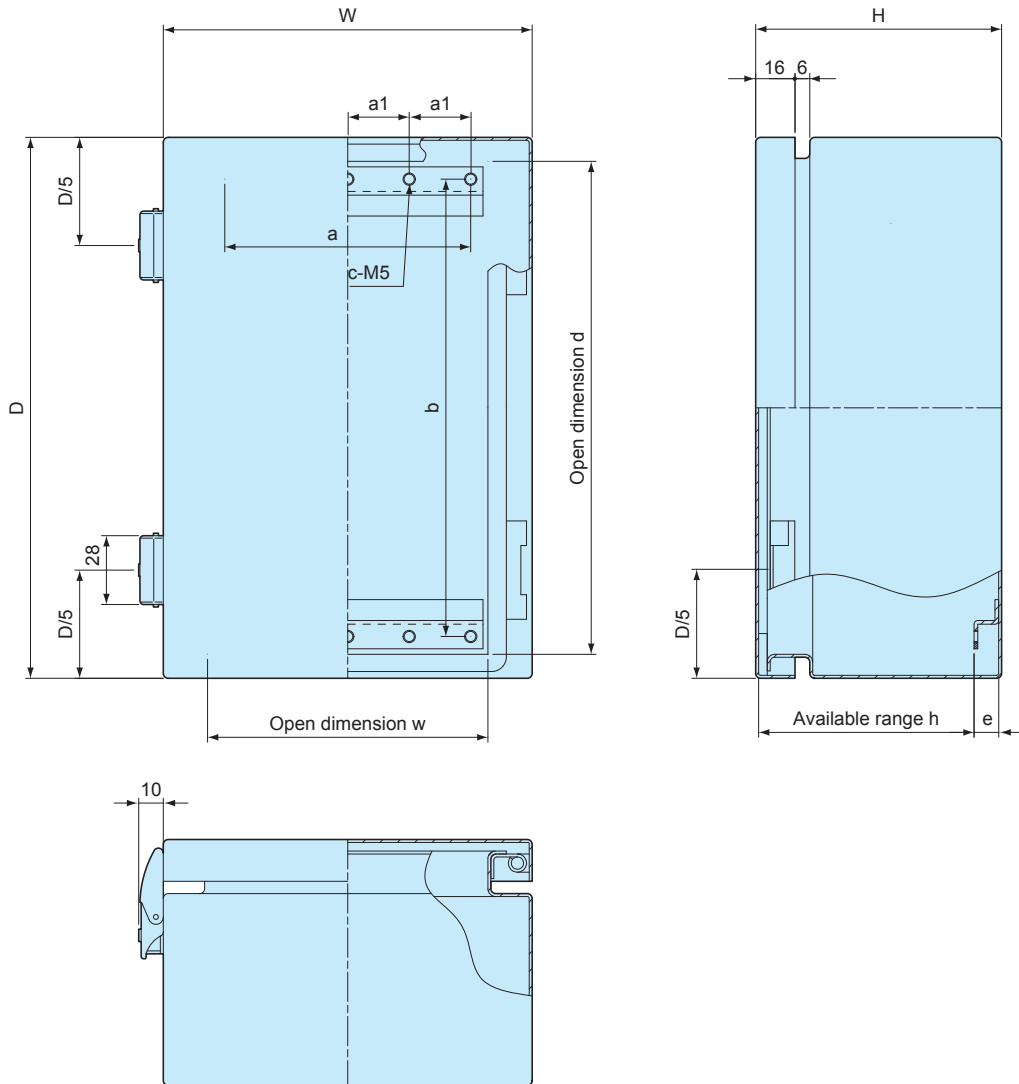
Pole mounting belt PKB series  
See page PKB-1



Pole mounting bracket SSK series  
See page SSK-M-1 ~ SSK-M-3

SSM dimensions

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



Product no. / Dimensions

Product no.	W	D	H	w	d	h	a	a1	b	c	e	Weight (kg)
SSM121508	120	150	80.5	84	130.5	68.1	66	33	116	6	10	1.0
SSM151508	150	150	80.5	114	130.5	68.1	96	24	116	10	10	1.2
SSM152206	150	220	60.5	114	200.5	51.6	96	24	186	10	6.5	1.4
SSM152210	150	220	100.5	114	200.5	88.1	96	24	186	10	10	1.7
SSM202010	200	200	100.5	164	180.5	88.1	146	36.5	166	10	10	1.9
SSM202806	200	280	60.5	164	260.5	51.6	146	36.5	246	10	6.5	2.0
SSM202812	200	280	120.5	164	260.5	108.1	146	36.5	246	10	10	2.6
SSM223312	220	330	120.5	184	310.5	108.1	166	41.5	296	10	10	3.0
SSM304015	300	400	150.5	264	380.5	138.1	246	61.5	366	10	10	4.8

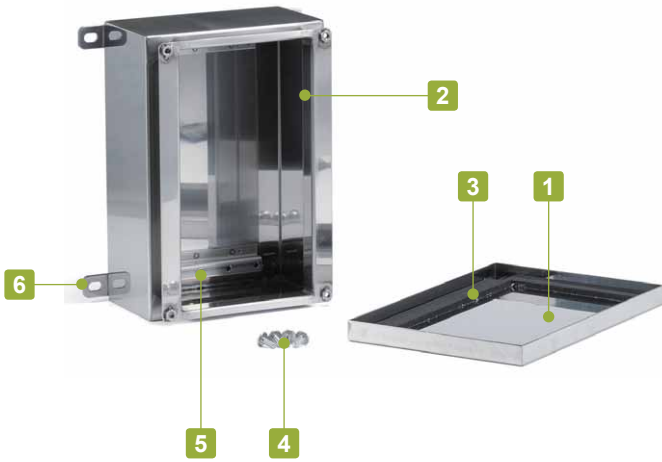


SLB SERIES

IP65 WALL MOUNT STAINLESS STEEL BOX - SCREWED



Technical Data
Protection class: IP65
Operating temperature: -40°C ~ +90°C
Recommended torque: 2N • m



- IP65 wall mount enclosure, cover screw type.
- Made of stainless steel (SUS304) for superior weather and corrosion resistance.
- Conductive box for EMC shielding.
- Polished finish.
- Equipped with wall mounting bracket.

Components

No.	Part name	Pcs	Material	Color / Finish
1	Cover	1	Stainless steel SUS304 t = 1.2	Polished finish
2	Body	1	Stainless steel SUS304 t = 1.2	Polished finish
3	Gasket	1	EPDM	Black
4	Screw (M5-12 Truss head)	4	Stainless steel	Unfinished
5	Z-Mounting bracket	2	Stainless steel SUS304 t = 1.5	Unfinished
6	Wall mount bracket	4	Stainless steel SUS304 t = 2.0	Barrel finish



# SLM SERIES

# IP65 WALL MOUNT STAINLESS STEEL BOX - LATCH-HINGED



Technical Data
Protection class: IP65
Operating temperature: -40°C ~ +90°C



- IP65 wall mount enclosure with easy open/close key latch/hinge.
- Made of stainless steel (SUS304) for superior weather and corrosion resistance.
- Conductive box for EMC shielding.
- Polished finish.
- Key latch for tamper-proof resistance
- Equipped with wall mounting brackets.

### Components

No.	Part name	Pcs	Material	Color / Finish
1	Cover	1	Stainless steel SUS304 t = 1.2	Polished finish
2	Body	1	Stainless steel SUS304 t = 1.2	Polished finish
3	Hinge	2	Stainless steel SUS304 t = 1.2	Barrel finish
4	Gasket	1	EPDM	Black
5	Latch (with key)	2	Stainless steel SUS304 t = 1.2	Barrel finish
6	Z-Mounting bracket	2	Stainless steel SUS304 t = 1.5	Unfinished
7	Key	2	Steel SPCC	Nickel plated
8	Wall mount bracket	4	Stainless steel SUS304 t = 2.0	Barrel finish

Accessories (Optional parts)



Mounting plate SSC series  
See page SSC • FDR-1



DIN-Rail FDR series  
See page SSC • FDR-1



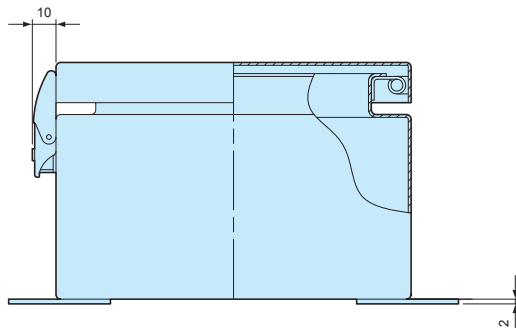
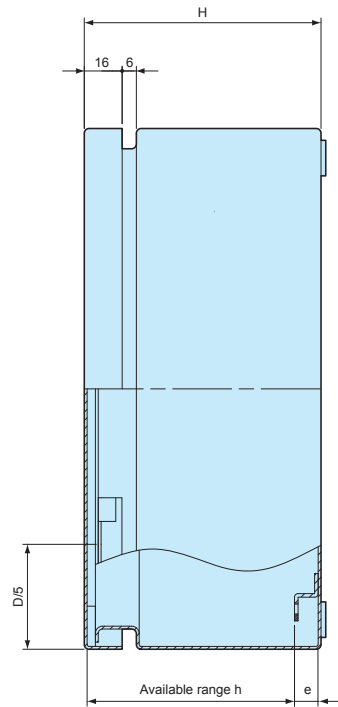
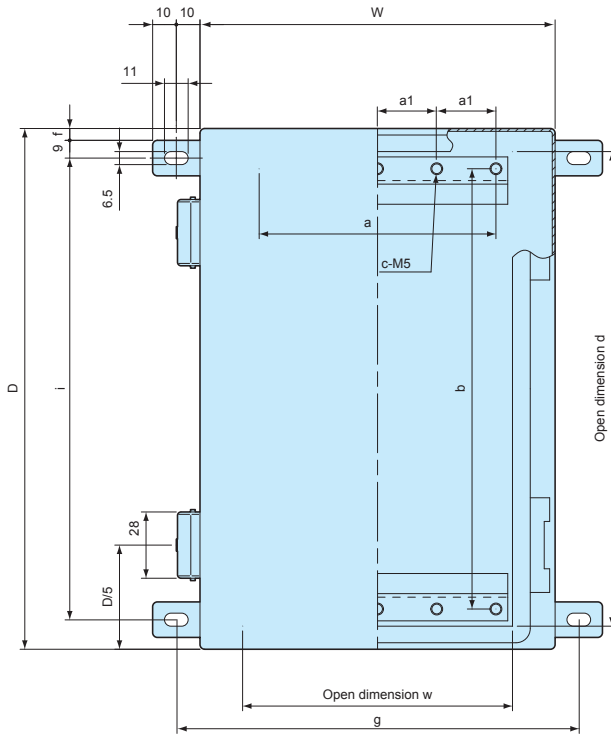
Replacement gasket SSM-G series  
See page SSM-G • SSB-G-1



Cable gland  
See cable gland pages

SLM dimensions

■ Drawings below are reference examples only.  
DXF/DWG/PDF drawings available on our website.



■ Wall mounting brackets are welded on.

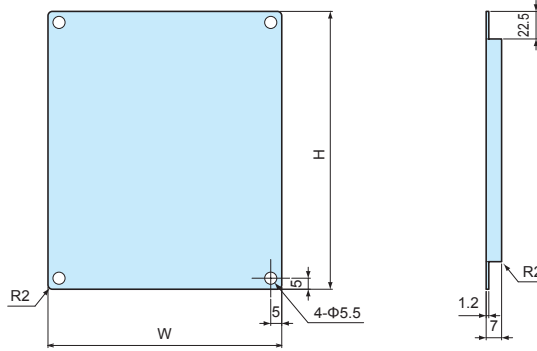
Product no. / Dimensions

Product no.	W	D	H	w	d	h	a	a1	b	c	e	f	g	i	Weight (kg)
SLM121508	120	150	80.5	84	130.5	68.1	66	33	116	6	10	3.5	140	125	1.0
SLM151508	150	150	80.5	114	130.5	68.1	96	24	116	10	10	3.5	170	125	1.2
SLM152206	150	220	60.5	114	200.5	51.6	96	24	186	10	6.5	3.5	170	195	1.4
SLM152210	150	220	100.5	114	200.5	88.1	96	24	186	10	10	3.5	170	195	1.7
SLM202010	200	200	100.5	164	180.5	88.1	146	36.5	166	10	10	3.5	220	175	1.9
SLM202806	200	280	60.5	164	260.5	51.6	146	36.5	246	10	6.5	3.5	220	255	2.0
SLM202812	200	280	120.5	164	260.5	108.1	146	36.5	246	10	10	3.5	220	255	2.6
SLM223312	220	330	120.5	184	310.5	108.1	166	41.5	296	10	10	5	240	302	3.1
SLM304015	300	400	150.5	264	380.5	138.1	246	61.5	366	10	10	5	320	372	4.9

SSC SERIES

MOUNTING PLATE for SSM • SLM • SSB • SLB

■ DXF/DWG/PDF drawings available on our website.



Product no. / Dimensions

Product no.	W	H	Suitable box
SSC1215	76	126	SSM • SLM • SSB • SLB 1215
SSC1515	106	126	SSM • SLM • SSB • SLB 1515
SSC1522	106	196	SSM • SLM • SSB • SLB 1522
SSC2020	156	176	SSM • SLM • SSB • SLB 2020
SSC2028	156	256	SSM • SLM • SSB • SLB 2028
SSC2233	176	306	SSM • SLM • SSB • SLB 2233
SSC3040	256	376	SSM • SLM • SSB • SLB 3040

■ Material / Finish : Steel SECC t = 1.2 / Zinc coated Included screws : M4-8 Pan head with spring washer / Trivalent chromate x 4 pcs

FDR SERIES

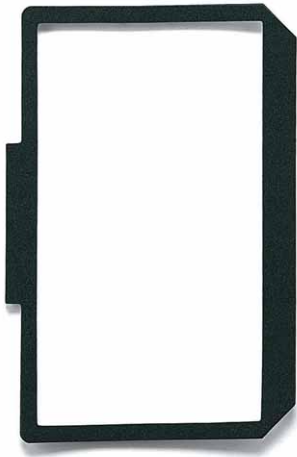
DIN-RAIL



Product no. / Dimensions

Product no.	L	Suitable box
FDR- 128	128	SSM • SLM • SSB • SLB 1215 / 1515
FDR-B176	176	SSM • SLM • SSB • SLB 2020
FDR-B196	196	SSM • SLM • SSB • SLB 1522
FDR-B256	256	SSM • SLM • SSB • SLB 2028
FDR-B303	303	SSM • SLM • SSB • SLB 2233
FDR-B376	376	SSM • SLM • SSB • SLB 3040

■ Material / Finish : Extruded aluminium A6063S-T5 / Silver anodized

**SSM-G** SERIES**GASKET for SSM • SLM**

■ DXF/DWG/PDF drawings available on our website.

**Product no. / Dimensions**

Product no.	Suitable box
SSM-G1215	SSM • SLM 1215
SSM-G1515	SSM • SLM 1515
SSM-G1522	SSM • SLM 1522
SSM-G2020	SSM • SLM 2020
SSM-G2028	SSM • SLM 2028
SSM-G2233	SSM • SLM 2233
SSM-G3040	SSM • SLM 3040

■ Material : EPDM t = 5.0

**SSB-G** SERIES**GASKET for SSB • SLB**

■ DXF/DWG/PDF drawings available on our website.

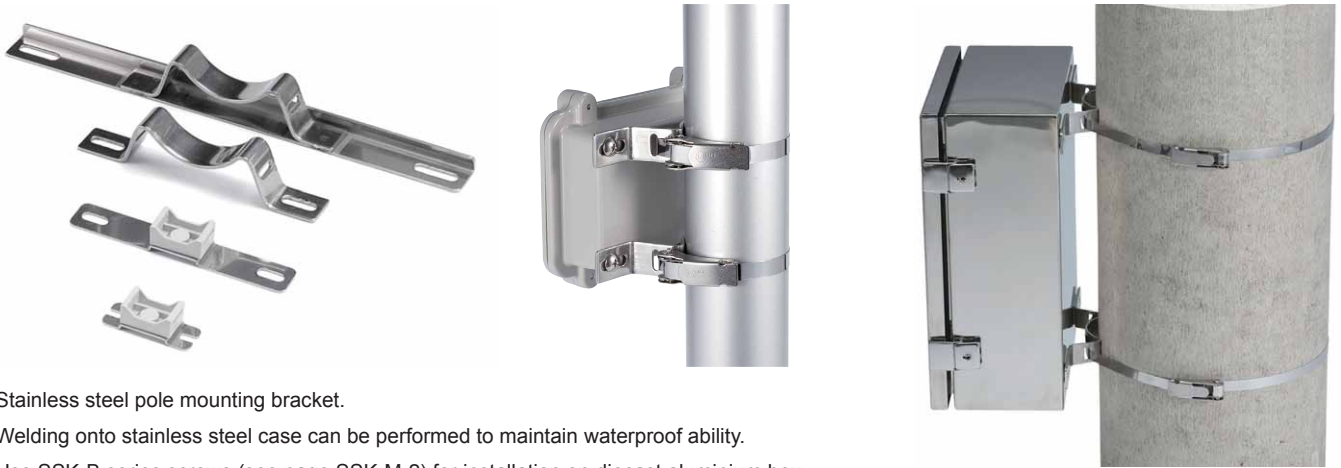
**Product no. / Dimensions**

Product no.	Suitable box
SSB-G1215	SSB • SLB 1215
SSB-G1515	SSB • SLB 1515
SSB-G1522	SSB • SLB 1522
SSB-G2020	SSB • SLB 2020
SSB-G2028	SSB • SLB 2028
SSB-G2233	SSB • SLB 2233
SSB-G3040	SSB • SLB 3040

■ Material : EPDM t = 5.0



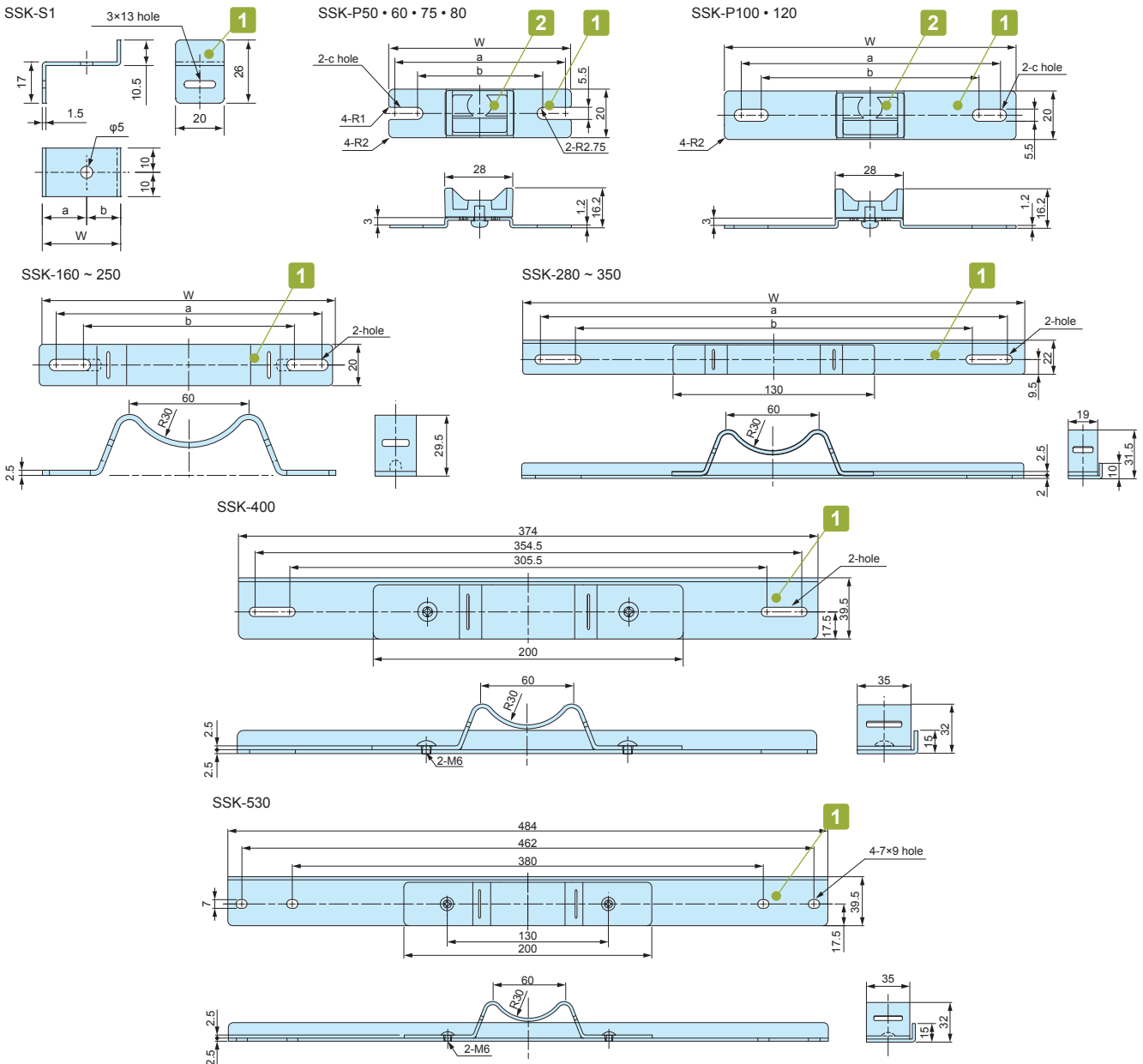
**SSK SERIES POLE MOUNTING BRACKET**



- Stainless steel pole mounting bracket.
- Welding onto stainless steel case can be performed to maintain waterproof ability.
- Use SSK-B series screws (see page SSK-M-2) for installation on diecast aluminium box.
- Use PKB mounting belt (see page PKB-1) for installation onto a pole.

**SSK dimensions**

■ DXF/DWG/PDF drawings available on our website.



Components

No.	Part name	Pcs	Material	Color / Finish
1	Bracket	2	Stainless steel SUS304	Barrel finish
2	Mounting bracket (SSK-P models only)	2	ASA UL94HB	White gray

Product no. / Dimensions

Product no.	W	a	b	c	Suitable mounting belt	Pack of
SSK-S1	32.25	18.25	14	—	PKB-10PM, 10P, PKB-10S	4
SSK-P50	50	44.5	37.5	5.5× 9	PKB-10PM, 10P, PKB-10S	2
SSK-P60	60	54.5	47.5	5.5× 9	PKB-10PM, 10P, PKB-10S	2
SSK-P75	75	69.5	55.5	5.5×12.5	PKB-10PM, 10P, PKB-10S	2
SSK-P80	80	74.5	64.5	5.5×10.5	PKB-10PM, 10P, PKB-10S	2
SSK-P100	100	88.1	76.5	5.5×11.3	PKB-10PM, 10P, PKB-10S	2
SSK-P120	120	106.5	88.5	5.5×14.5	PKB-10PM, 10P, PKB-10S	2
SSK-160	142	129.5	106.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-170	152	142.3	101	—	PKB-10PM, 10P, PKB-10S	2
SSK-200	174	161.5	112.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-210	192	180.5	131.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-250	230	215.5	166.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-280	260	244.5	195.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-300	280	264.5	215.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-350	324	302.5	253.5	—	PKB-10PM, 10P, PKB-10S	2
SSK-400	374	354.5	305.5	—	PKB-20S	2
SSK-530	484	462	380	7×9	PKB-20S	2

**SSK-B** SERIES

**MOUNTING SCREW SET for SSK**

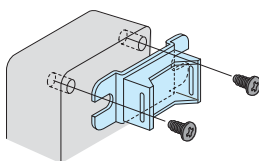
- Mounting screw set for use with SSK pole mounting bracket.
- See below chart for appropriate screw / box combination.
- Material / Finish : Stainless steel / Unfinished.

Product no. / Dimensions

Product no.	Included screws	Suitable box	Pcs
SSK-B4-15N	M4-15 Pan head with nut	AW5-4-7 ~ AW8-5-18	4
SSK-B4-25N	M4-25 Pan head with nut	BDN9-9-6, BDN10-14-7	4
SSK-B5-8T	M5-8 Binding head tapping	HQ series	4
SSK-B5-15N	M5-15 Pan head with nut	AW9-9-10 ~ AW21-9-31	4
SSK-B5-25N	M5-25 Pan head with nut	BDN12-22-8, BDN16-26-9	4

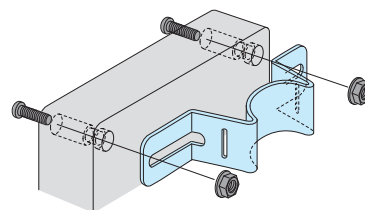
- Installation Example

**M5 thread fastening**



SSK-B5-8T

**M4/M5 Pan head with nut fastening**



SSK-B4-15N    SSK-B4-25N  
 SSK-B5-15N    SSK-B5-25N  
 SSK-B5-35N    SSK-B6-40N

# POLE MOUNTING BRACKET / SCREW SET MATCHING CHART

## BDN series

	Box Product no.	SSK Product no.		Screw set Product no.
		Vertical mount	Horizontal mount	
BDN	9-9-6	SSK-P75	SSK-P100	SSK-B4-25-N
	10-14-7	SSK-P80	SSK-160	SSK-B4-25-N
	12-22-8	SSK-P100	SSK-250	SSK-B5-25-N
	16-26-9	SSK-160	SSK-280	SSK-B5-25-N

## HQ series

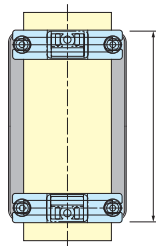
	Box Product no.	SSK Product no.		Screw set Product no.
		Vertical mount	Horizontal mount	
HQ	10-10-5 • 10-10-7	SSK-P50	—	SSK-B5-8T
	15-10-5 • 15-10-8	SSK-P80	SSK-160	SSK-B5-8T
	15-11-3	SSK-P100	SSK-160	SSK-B5-8T
	16-16-6 • 16-16-8	SSK-170	SSK-170	SSK-B5-8T
	19-10-5 • 19-10-7	—	SSK-200	SSK-B5-8T
	20-15-3 • 20-15-5 • 20-15-9	SSK-160	SSK-210	SSK-B5-8T
	26-18-6	SSK-200	SSK-280	SSK-B5-8T
	27-17-7 • 27-17-10	SSK-170	SSK-280	SSK-B5-8T

## SSM • SSB series ■ Installation should be done by welding.

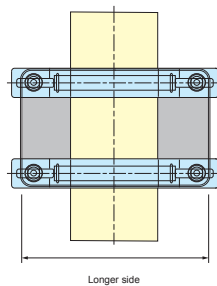
	Box Product no.			SSK Product no.	
				Vertical mount	Horizontal mount
SSM SSB	121508			SSK-S1	—
	151508	152206	152210	SSK-160	—
	202010	202806		SSK-210	—
	202812	223312			
	304015			SSK-300	—

■ SSK bracket is different depending on mount type (Vertical or Horizontal).

**Vertical mount**  
(Longer vertical side)



**Horizontal mount**  
(Longer horizontal side)



## AW series

	Box Product no.	SSK Product no.		Screw set Product no.
		Vertical mount	Horizontal mount	
AW	5-4-7	—	SSK-P100	SSK-B4-15N
	5-4-9	—	SSK-P120	SSK-B4-15N
	5-4-11	—	SSK-160	SSK-B4-15N
	5-4-14	—	SSK-200	SSK-B4-15N
	7-7-8	SSK-P50	SSK-P120	SSK-B4-15N
	7-7-11	SSK-P50	SSK-160	SSK-B4-15N
	7-7-15	SSK-P50	SSK-210	SSK-B4-15N
	7-7-20	SSK-P50	SSK-250	SSK-B4-15N
	7-7-25	SSK-P50	SSK-300	SSK-B4-15N
	8-5-9	SSK-P75	SSK-160	SSK-B4-15N
	8-5-12	SSK-P75	SSK-160	SSK-B4-15N
	8-5-14	SSK-P75	SSK-200	SSK-B4-15N
	8-5-18	SSK-P75	SSK-250	SSK-B4-15N
	9-9-10	SSK-P75	SSK-160	SSK-B5-15N
	9-9-13	SSK-P75	SSK-170	SSK-B5-15N
	9-9-17	SSK-P75	SSK-250	SSK-B5-15N
	9-9-22	SSK-P75	SSK-280	SSK-B5-15N
	9-9-28	SSK-P75	SSK-350	SSK-B5-15N
	11-6-11	SSK-P100	SSK-160	SSK-B5-15N
	11-6-15	SSK-P100	SSK-210	SSK-B5-15N
	11-6-19	SSK-P100	SSK-250	SSK-B5-15N
	11-6-24	SSK-P100	SSK-300	SSK-B5-15N
	12-8-11	SSK-P120	SSK-160	SSK-B5-15N
	12-8-14	SSK-P120	SSK-200	SSK-B5-15N
	12-8-17	SSK-P120	SSK-250	SSK-B5-15N
	12-8-22	SSK-P120	SSK-280	SSK-B5-15N
	16-9-14	SSK-160	SSK-200	SSK-B5-15N
	16-9-18	SSK-160	SSK-250	SSK-B5-15N
	16-9-23	SSK-160	SSK-280	SSK-B5-15N
	16-9-28	SSK-160	SSK-350	SSK-B5-15N
	21-9-17	SSK-210	SSK-250	SSK-B5-15N
	21-9-21	SSK-210	SSK-280	SSK-B5-15N
	21-9-26	SSK-210	SSK-350	SSK-B5-15N
21-9-31	SSK-210	SSK-400	SSK-B5-15N	

**PKB SERIES**

**POLE MOUNTING BELT**



PKB-10PM, 10P

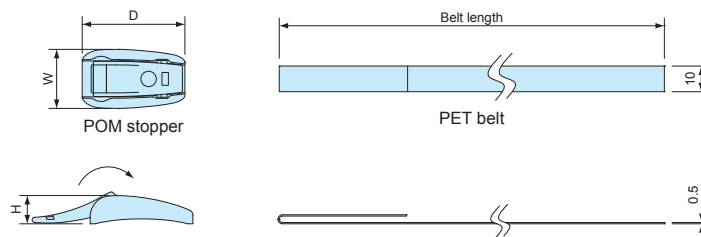


PKB-10S, 20S

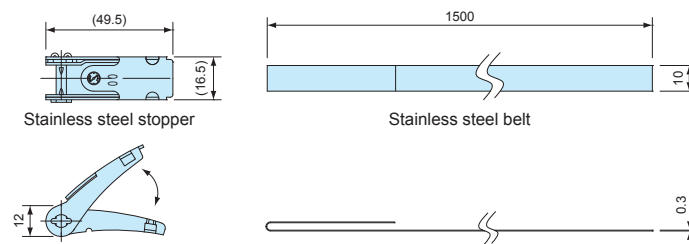
- New shorter belt type PKB-10PM is available for  $\phi 25$  to  $\phi 60$ mm poles. Other belt types are for  $\phi 60$  to  $\phi 400$ mm poles.
- Designed for one time use only (not reusable).
- Strong stainless steel clamping type and easy installation plastic type are available.
- Use SSK mounting bracket for installation onto a pole.
- Drawings below are reference examples only. DXF/DWG/PDF drawings available on our website.

**PKB dimensions**

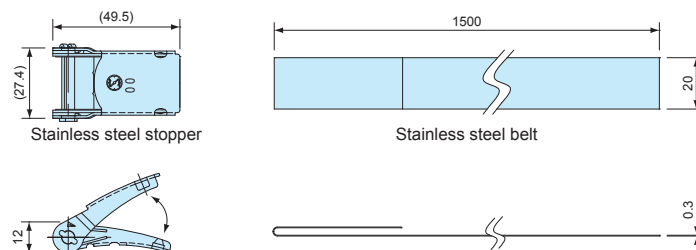
PKB-10PM, 10P



PKB-10S



PKB-20S



**Components**

Part name	Pcs	Material	Color / Finish
Stopper	2	POM • Stainless steel SUS304	Black • Barrel finish
Belt	2	PET • Stainless steel SUS430	Gray • Bright Annealed finish

**Product no. / Dimensions**

Product no.	W	D	H	Belt material	Belt length	Tensile strength (horizontal)	Weight (g)	Pack of
<b>NEW</b> PKB-10PM	24	23	11	PET	500mm	0.8kN	14	2
PKB-10P	23	40	11	PET	1,500mm	1.3kN	31.8	2
PKB-10S	—	—	—	Stainless steel	1,500mm	1.4kN	101.6	2
PKB-20S	—	—	—	Stainless steel	1,500mm	2.9kN	182.2	2

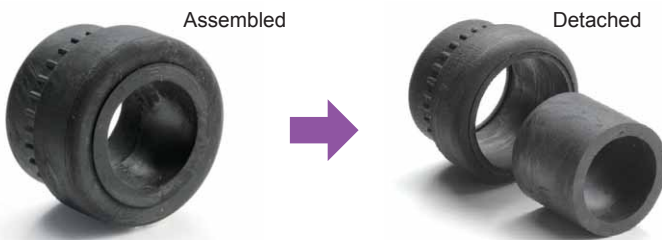
# AGE SERIES

# EMC SHIELDED CABLE GLAND



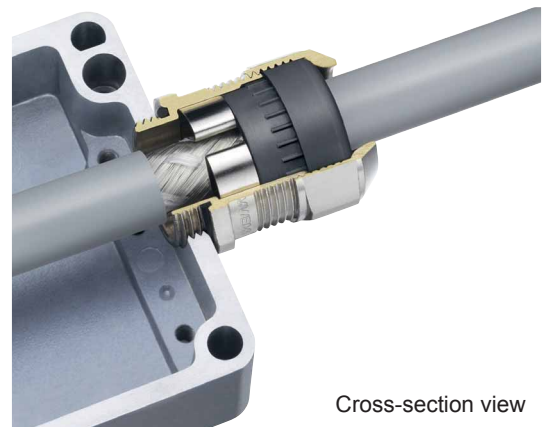
- Optimal contact spring provides excellent shield contact and the smallest possible transfer impedance.
- Clawed lock nut makes a good EMC shield contact possible on conductive enclosures.
- Shape of the contact spring not only allows for a large clamping range to the shield but also enables easy and faster installation and re-installation.
- 2-piece detachable sealing inserts can be adapted to the wider existing cable diameter on site. (AGE12 available only with 1-piece sealing insert)

Technical Data	
Protection class :	IP68 2bar / 30min, IP69K
	20m depth immersion in 30 minutes
Operating temperature :	-60°C ~ +100°C
	Compliant with IEC62444 Var. A



### Cable Range

No.	Sealing insert type	
	Assembled	Detached
AGE16-10.5	Φ 6 ~ Φ 7.5	Φ 7.5 ~ Φ10.5
AGE20-15	Φ 8 ~ Φ10.5	Φ10.5 ~ Φ15
AGE25-20	Φ12.5 ~ Φ15	Φ15 ~ Φ20
AGE32-25	Φ17 ~ Φ20	Φ20 ~ Φ25

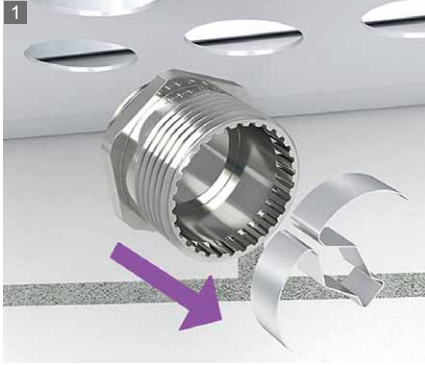


Cross-section view

### Components

No.	Part name	Material	Color / Finish
1	Cap	Brass	Nickel plated
2	Sealing insert	TPE	Black
3	Connector	Brass	Nickel plated
4	Contact spring	Stainless steel	Unfinished
-	O-Ring	NBR	Black
5	Lock-nut	Brass	Nickel plated

**INSTALLATION Instruction**



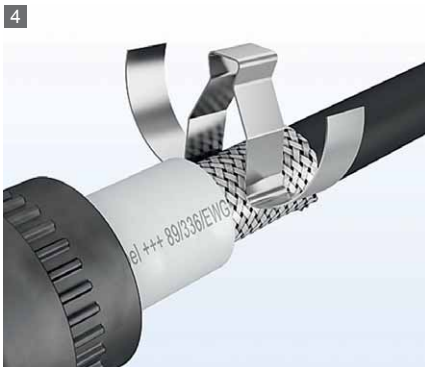
1 Remove the contact spring from the connector.



2 Install the connector onto the enclosure.



3 Strip the cable.



4 Clip the contact spring on the shielded cable.



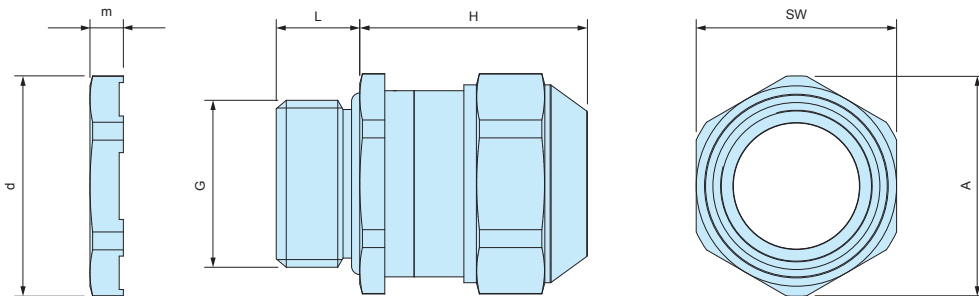
5 Pass the cable through the Sealing insert and cap.



6 Tighten the cap to complete.

**AGE dimensions**

■ DXF/DWG/PDF drawings available on our website.



**Product no. / Dimensions**

Product no.	G		Cable range		L	H Max	SW	A	d	m	Pack of
	Thread size	Mounting hole	Min	Max							
AGE12-5	M12×1.5	Φ12.2	3.5	5.0	10	22	15	16.5	16.5	3.5	1
AGE12-6.5	M12×1.5	Φ12.2	5.0	6.5	10	22	15	16.5	16.5	3.5	1
AGE16-10.5	M16×1.5	Φ16.2	6.0	10.5	10	25	18	20	21	3.5	1
AGE20-15	M20×1.5	Φ20.2	8.0	15.0	10	27	24	26.5	26.5	4	1
AGE25-20	M25×1.5	Φ25.2	12.5	20.0	11	33	30	33	33	4	1
AGE32-25	M32×1.5	Φ32.3	17.0	25.0	13	34	36	39.5	39.5	5	1

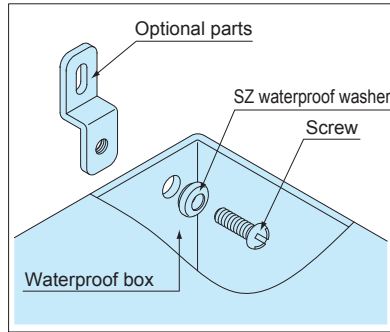
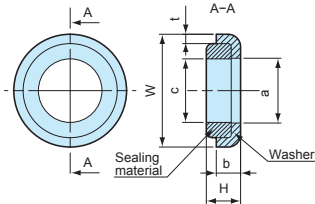


**SZ SERIES**

**WATERPROOF WASHER**



- Waterproof washer for screwing onto waterproof boxes.
- NBR sealing material has superior oil resistance (N models only) .
- Silicone sealing material has wider operating temperature with superior temperature and water resistance (S models only).



Technical Data
Water pressure resistance: M3 ~ M10 : 200kg/cm <sup>2</sup> 5min M12 ~ M16 : 100kg/cm <sup>2</sup> 5min

■ Shape of the sealing material vary by product.

**Product no. / Dimensions**

Product no.	W	H	a	b	c	t	Washer material	Sealing material	Color	Screw size	Pack of
SZ- 3N	7	2.7	3.2	2.2	3.1	0.5	SUS304	NBR	Black	M 3	1
SZ- 3S	7	2.7	3.2	2.2	3.1	0.5	SUS304	Silicone	Brown	M 3	1
SZ- 4N	8	2.8	4.2	2.1	4.1	0.5	SUS304	NBR	Black	M 4	1
SZ- 4S	8	2.8	4.2	2.1	4.1	0.5	SUS304	Silicone	Brown	M 4	1
SZ- 5N	9.5	3.6	5.2	2.7	5.1	0.8	SUS304	NBR	Black	M 5	1
SZ- 5S	9.5	3.6	5.2	2.7	5.1	0.8	SUS304	Silicone	Brown	M 5	1
SZ- 6N	11.5	4	6.2	3	6.2	1	SUS304	NBR	Black	M 6	1
SZ- 6S	11.5	4	6.2	3	6.2	1	SUS304	Silicone	Brown	M 6	1
SZ- 8N	15.2	3.8	8.2	3.2	8.2	1	SUS304	NBR	Black	M 8	1
SZ- 8S	15.2	3.8	8.2	3.2	8.2	1	SUS304	Silicone	Brown	M 8	1
SZ-10N	18	5.3	10.2	4	10.2	1.5	SUS304	NBR	Black	M10	1
SZ-10S	18	5.3	10.2	4	10.2	1.5	SUS304	Silicone	Brown	M10	1
SZ-12N	24	6.1	14.2	4.8	12.2	1.5	SUS304	NBR	Black	M12	1
SZ-12S	24	6.1	14.2	4.8	12.2	1.5	SUS304	Silicone	Brown	M12	1
SZ-16N	30	6.8	18.4	5.3	16	1.9	SUS304	NBR	Black	M16	1
SZ-16S	30	6.8	18.4	5.3	16	1.9	SUS304	Silicone	Brown	M16	1

PMF-12M

STAINLESS STEEL PROTECTIVE VENT

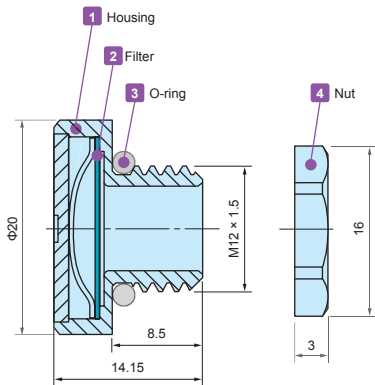
★ ★ NEW

IP68 IP69K

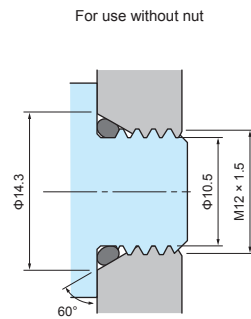


- Stainless steel protective vent for superior durability and chemical resistance.
- IP68 protection class (water depth 2 meters / 60 mins) and -40°C ~ +125°C operating temperature range allows it to be used in various environments.
- Suitable for enclosures with capacities of 20 liters or under.
- For outdoor use, installation on the side of the enclosure unit is recommended.

PMF-12M dimensions

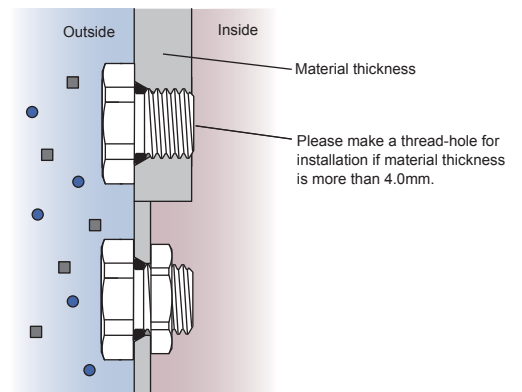


Hole milling drawings



- While φ12.2mm through-hole is sufficient for installation, 60° angle tapered hole is recommended to prevent deformation of the O-ring.

Installation drawings



- If used with a lock nut, material thickness should not exceed 4.0mm.

Technical Data

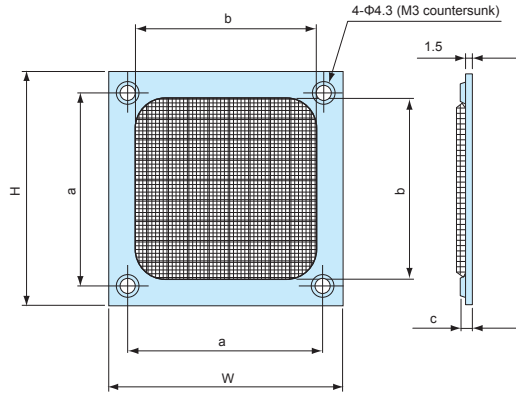
Airflow	1600ml / min (dp = 7 kPa)
Recommended Torque	0.6 ~ 1.2 N · m
Certifications	IEC60529 (Protection class test) : IP66 • IP67 • IP68 • IP69K IEC60068-2-1, 2, 14 (Heat resistance test) : -40°C ~ +125°C IEC60068-2-78 (Humidity test) : 85°C • 85% humidity • 1000 hours IEC60068-2-64 (Vibration test)

Product no. / Dimensions

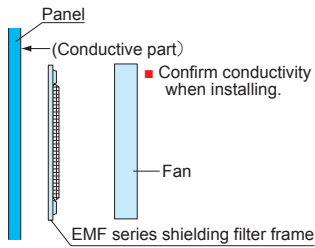
Product no.	Material				G		Nut SW
	1 Housing	2 Filter	3 O-ring	4 Nut	Thread size	Mount hole	
PMF-12M	Stainless steel	PTFE	Silicone	Brass • Nickel plated	M12 x 1.5	φ12.2	15

**EMF SERIES**

**EMC SHIELDED FILTER FRAME**



■ Use for EMC shielding on the hole for cooling fan.



**Components**

Frame material	Filter material	Mesh
Aluminium / Unfinished	Stainless steel	30

■ Mesh 30 = 30 openings in a 1 square inch area (25.4 x 25.4mm).

**Product no. / Dimensions**

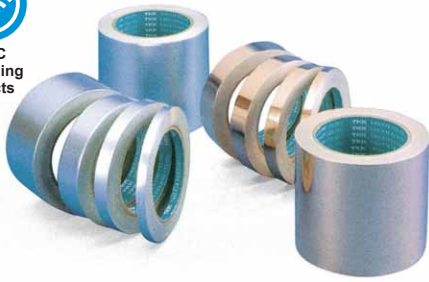
Product no.	W	H	a	b	c	Matching fan size (mm)
EMF- 60	59.5	59.5	50	46	3.5	60.0 x 60.0
EMF- 80	83.8	83.8	71.5	68.8	4	80.0 x 80.0
EMF- 90	92	92	82.5	78	3.5	92.0 x 92.0
EMF-120	119	119	104.8	104.5	3.7	120.0 x 120.0

**CUS,CUL,ALS,ALL SERIES**

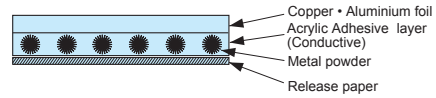
**CONDUCTIVE COPPER • ALUMINIUM FOIL TAPE**



EMC  
Shielding  
Effects



■ **Construction**



■ **Characteristic**

Contents	Copper	Aluminium
Foil thickness (µm)	35	50
Adhesive layer thickness (µm)	60	60
Overall thickness (µm)	95	110
Adhesive force (gf/25mm) 180° peel test on SUS	1300	1300
Contact resistance value (Ω/25mm/2kgf)	0.003	0.005

- Flexible copper and aluminium tape.
- Conductive adhesive layer maintains conductivity.
- Copper tape can be soldered onto a metal foil.
- Copper and aluminium tape are UL510 (FR) certified products.

**Usage**

- Grounding and shielding for enclosures.
- Grounding and shielding for cable harnesses or connectors.
- EMI shielded room.
- Can be used for measuring shield characteristics in an emergency situation.

**COPPER FOIL TAPE**

**Product no. / Dimensions**

Product no.	Width	Length
CUS- 8T	8.0	2m
CUS-13T	13.0	2m
CUS-25T	25.0	2m
CUL- 8T	8.0	20m
CUL-13T	13.0	20m
CUL-25T	25.0	20m
CUL-50T	50.0	20m

**ALUMINIUM FOIL TAPE**

**Product no. / Dimensions**

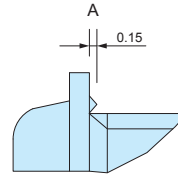
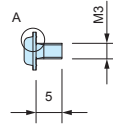
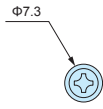
Product no.	Width	Length
ALS- 8T	8.0	2m
ALS-13T	13.0	2m
ALS-25T	25.0	2m
ALL- 8T	8.0	20m
ALL-13T	13.0	20m
ALL-25T	25.0	20m
ALL-50T	50.0	20m

**EV3-5S**

**CONDUCTIVE SCREW**



Conductive



- When tightened, protrusions on the underside of the screw head will shave away at painted or anodized surface to expose the base material for achieving conductivity.

**Product no. / Dimensions**

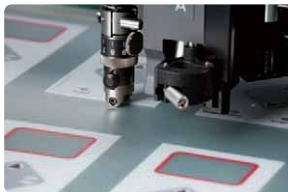
Product no.	M	L	Material	Finish	Pack of
EV3-5S	3	5	Steel	Nickel plated	20

# DIGITAL PRINTED OVERLAY



## 3 reasons for low initial costs

Reason 1



**Cutting process**



Avoiding the cost for cutting die manufacturing via our in-house cutting plotter.

Reason 2

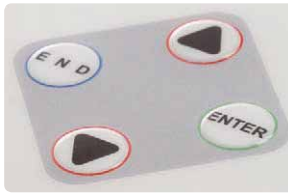


**Printing process**



Saving the cost for print plates via utilization of our in-house digital inkjet printer.

Reason 3



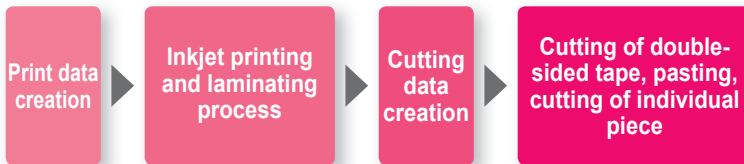
**Embossing process**



Reducing the cost for the embossing die via our new die manufacturing process.

## Comparison of current and previous manufacturing methods

Current



Previous





# PRODUCTION PROCESS



1. Inkjet printing on film



2. Laminating



3. Cutting double-sided tape



4. Sticking double-sided tape on printed film



5. Cutting the sheet to size



6. Embossing



7. Machining on enclosure



8. Sticking overlay sheet onto enclosure



9. Complete

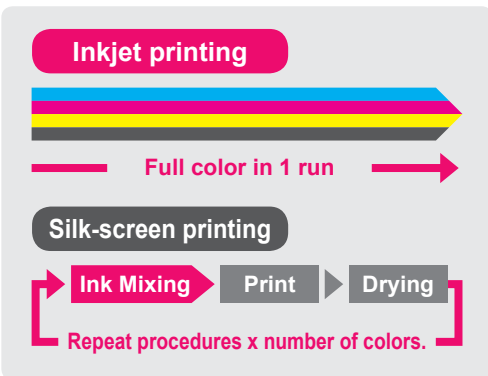
# CUSTOMIZATION EXAMPLE



# INKJET PRINTING



Full color digitally designed image can be printed in 1 run.  
No cost difference regardless of the number of colors used.



**Low printing cost**  
Full color print possible in small quantities

**Inkjet printing**    1 run only for full color print

**Printing cost Full color**

**Silk-screen printing**    Printing cost x number of colors

Printing cost Color 1	Printing cost Color 2	Printing cost Color 3	Printing cost Color 4
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# High quality printing of photo image and color gradation.

Print photo images in maximum 1,800 x 1,800 dpi quality.

Pictures, logos and unique designs with color gradation can be recreated in a high quality print.



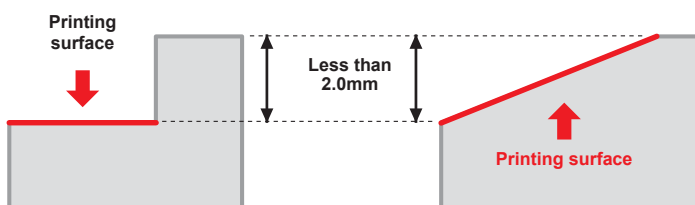
## Maximum printable enclosure size



## Printable on surfaces with height differential

Printing is possible on recessed, sloped and rounded sections.

Gap difference is less than 2.0mm.



\*Not suitable if height difference is more than 2.0mm.



Printed example



# CNC MACHINING

CNC milling is a form of computer controlled machining. Similar in operation to drilling and cutting, it is able to create various hole styles and shapes by using a rotating cutting tool to bore into the object.



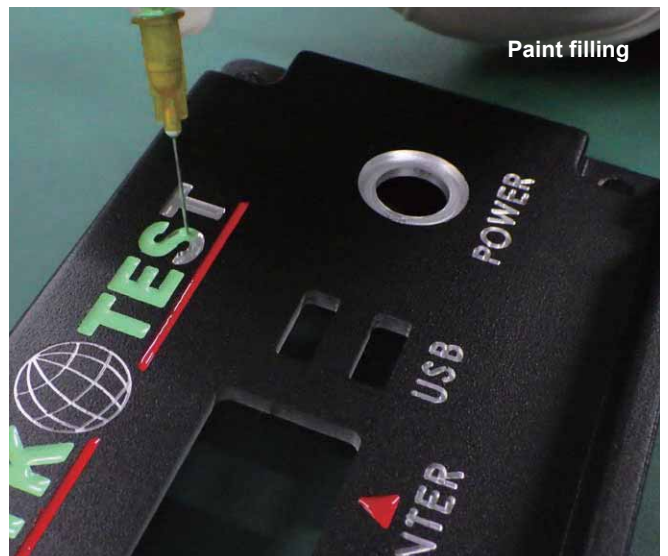
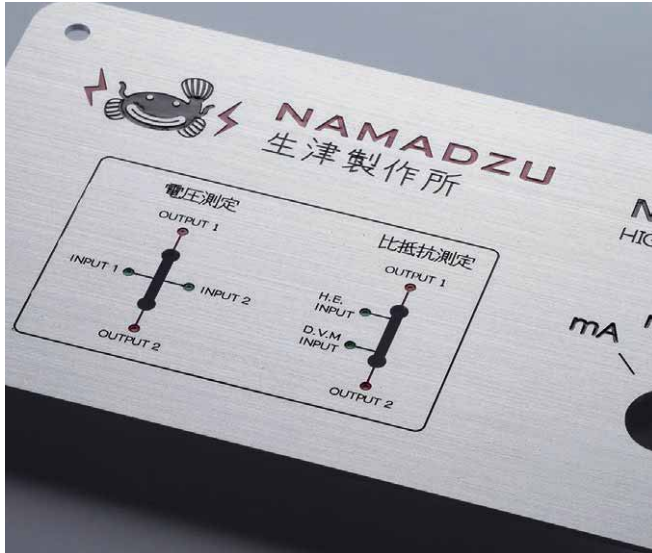
- Mainly used for plastic, aluminium die-cast, and aluminium extrusion material types.
- Able to perform milling for various shapes and sizes.
- Recommended for small quantity customization.





# ENGRAVING

By having the drill-head slightly milling the surface, the engraving of fine text or complex designs is able to be performed on a variety of surfaces, be it flat, curved, and so on. Suitable for small batch print, and/or simple lettering. Font shall be similar to VAG Rounded font type.



# LASER CUTTING

Laser cutting utilizes a laser to perform cutting on an object, allowing various types and shapes of holes to be cut.

New fiber laser machine allows the processing of aluminium sheets with both high precision and speed. Processing of Pure Aluminium 1050 is also possible with minimal burr as compared to conventional CO<sup>2</sup> laser machines, which causes excessive burring.



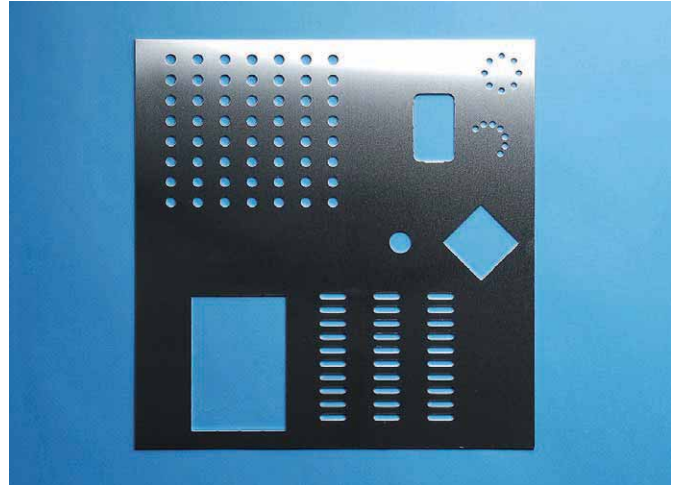
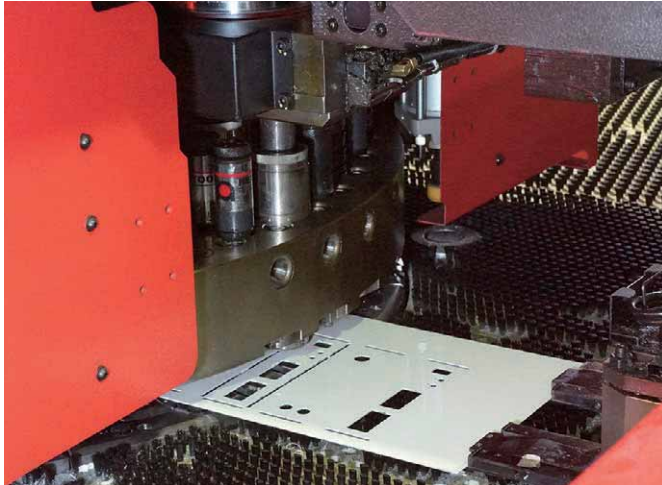


# PUNCHING PRESS

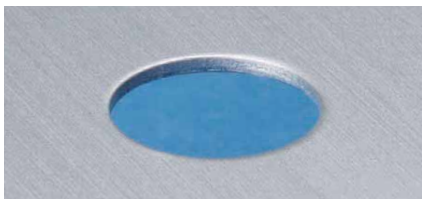
What is punching press? It is a type of machine press used to cut holes in material via the use of various sized die sets.

Punching press allows the realization of high cost performance due to its high speed automated turret punching process, which significantly reduces machining lead-time.

Due to its ability to create designated sized holes by means of rapid multiple hole punches, this enables it to punch holes of various sizes and types quickly and efficiently.

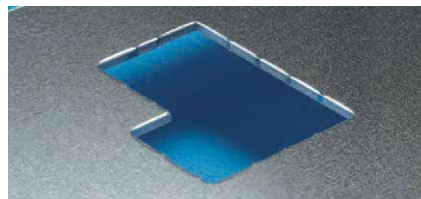


## Circular hole



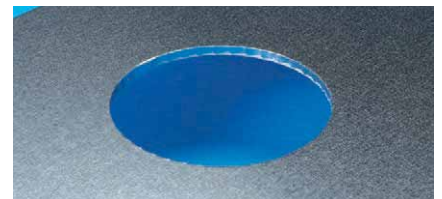
Circular holes as small as 1.0mm in diameter can be punched.

## Nibbling press (rectangle)



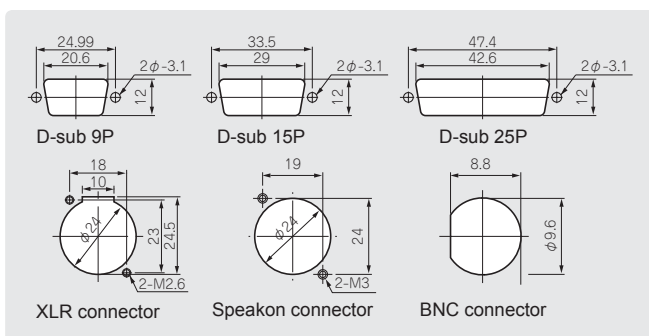
Complex or large rectangular shapes can be punched out with multiple presses.

## Nibbling press (round)

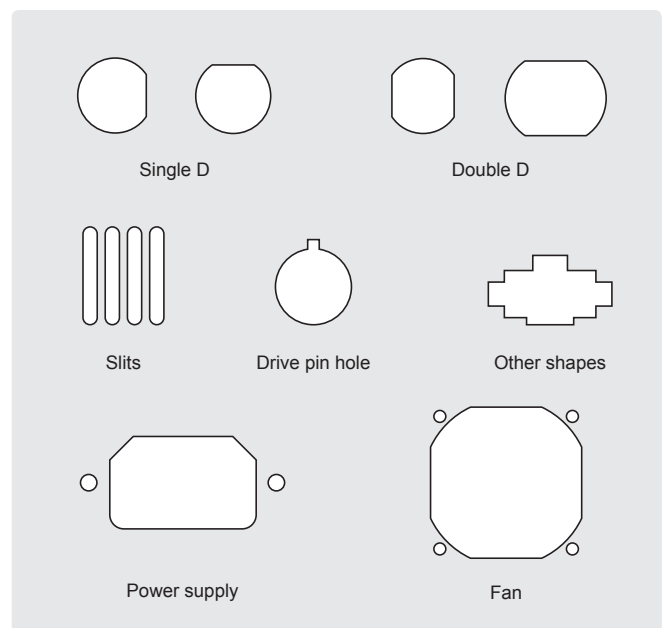


Punching of large circular holes with multiple smaller die strokes.

## Common connector shapes



## Unique shapes



## Burring punch



Increasing surface area on a thin metallic sheet for screw threads to bore into.

