

# Enclosures and Components

PRODUCT CATALOGUE

SYSTEM SOLUTIONS

ENCLOSURES AND COMPONENTS

ROTARY SWITCHES

## ENCLOSURES AND COMPONENTS

### TABLE OF CONTENTS

<b>CUSTOMER-SPECIFIC SOLUTIONS</b>	<b>5</b>
<b>DESIGN AND COMPACT CASES</b>	<b>7</b>
UNIBOX 14	8
STYLEBOX 15 E-MOTION	26
ID-BOX 16	58
ID-CASE 18	60
COMPACT CASE 20	62
GUARDBOX 33	66
GUARDBOX EASY	82
VARIETYBOX 35	88
ELOS BOX 54	92
<b>CHASSIS AND SUBRACKS</b>	<b>99</b>
SLIMKIT 10	102
SLIMKIT 10 FTTX	108
ECOKIT 11	109
MAGIC-KIT 11   SPIRIT-KIT 11	118
SYSTEMKIT 12K	126
SYSTEMKIT 12K RAIL	150
<b>TECHNICAL INFORMATION</b>	<b>156</b>

For accessories for these products, see the separate accessories catalogue.





## Customer-specific solutions

Our engineers have the necessary know-how and resources to realize the special requirements of our customers quickly and affordably.

## CUSTOMER-SPECIFIC SOLUTIONS

### BECAUSE WE ARE "YOUR SOLUTION PARTNER"

Elma Electronic AG is a global provider of solutions for the construction of enclosure systems. The product range extends from components for 19" to modular enclosures, control cabinets and complete systems. The flexibility in customer requests as well as the many years of experience in the development and production of components and systems distinguish Elma as a reliable partner. In the areas of design and manufacture of enclosures for electronic applications, Elma is a leader and innovator, and well known and valued by customer for VME / VME64x, VXI, VXS, PXI, cPCI, ATCA applications and products in harsh environments.

With its headquarters in Switzerland and partners around the world, Elma is able to respond quickly to customer requirements with high-quality solutions. Elma has a broad customer base in a wide variety of industries such as telecommunications, industrial automation, railways, medical and defense technology. The products are always characterized by the highest quality, reliability and performance.

### DESIGN ENCLOSURE PLATFORMS FOR OPTIMAL DIFFERENTIATION

The excellent product design supports customers in optimally positioning their own products in their markets and differentiating them visually. This ensures that the customer's high-quality technology can also be used in the appropriate shell and feel. The modular system of the enclosure platforms enables an individual design for each customer-specific solution.



## Design and Compact Cases

The perfect enclosure for any application.

## DESIGN AND COMPACT CASES

- › Design and feel can be adapted to customer requirements
- › Desktop, tower version or wall mounting
- › Available with or without EMC protection
- › Different IP protections
- › Robust versions available
- › Enclosures for mobile use
- › Suitable for 19" applications according to IEC60297

## TYPE COMPARISON

	UNIBOX 14	STYLEBOX 15 E-MOTION	ID-BOX 16	ID-CASE 18	COMPACT CASE 20	GUARDBOX 33	GUARDBOX 33 EASY	VARIETYBOX 35	ELOS BOX 54
19" standard according to IEC60297, DIN41494 (for the card slot)	x	x				x			x
Accessible from all sides	x								
Suitable as a desktop case	x	x	x	x	x	x	x	x	
Suitable as a slide-in enclosure (19" subrack)	x	x							
Suitable as a tower variant		x							
Suitable for wall mounting						x			x
Robust design					x	x			x
Design applications		x	x	x	x				
Vibration and shock resistant							x		
Suitable for mobile use	x	x	x		x	x			
Customizable								x	
High EMC protection		x	x	x	x	x			x
Higher IP protection						x			
SEE PAGE	8	26	58	60	62	66	82	88	98



## DESIGN AND COMPACT CASE

### UNIBOX 14

#### Product description

##### MAIN FEATURES

The Unibox 14 be used as a subrack or as a desktop enclosure. The box has dimensions according to IEC60297 and versatile expansion options. The extruded aluminum frame works as a subrack as well as an enclosure (with easy-to-assemble powder coated metal sheets). The card can be installed at the front or rear.



- › Usable as subrack or desktop enclosure
- › Dimensions according to IEC60297
- › Different adaptation options
- › Extruded aluminum frame can be used as a subrack or enclosure
- › Subracks can also be installed in cabinets with a cover panel
- › Card installation from the front or rear
- › When using telescopic or guide rails, only the width 81 HP can be used
- › For installing plug-in modules according to DIN41494 or IEC 60297
- › Recessed mounting with a pitch of 7.5 mm is possible
- › With cover plates suitable for use in vibration applications

##### PRODUCT VARIETY

- Subracks as desktop or 19" version
- Cover plates perforated or solid
- Can be used without cover plates

##### POSSIBLE CUSTOMIZATIONS

- Width: 42, 63 or 84 HP
- Height: 2, 3, 4, 6 or 7 U
- Depth: 232.6 to 532.6 mm

##### TYPICAL APPLICATIONS

- Laboratory equipment
- Test and measurements device
- Configurations with card slots

## DESIGN AND COMPACT CASE

### UNIBOX 14

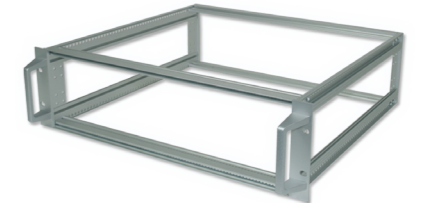
#### Executions

##### SETS

UNIBOX 14 FRAME SET

Scope of delivery:

- 2 height extrusions front and rear
- 4 front and rear extrusions
- 4 depth extrusions
- 2 handles 9 mm
- 1 label strip
- 1 set assembly material
- Tapped strips, front / rear panel and cover panels have to be ordered separately



Frame without 19" height extrusions, with handles:

Height	Width	Depth			
		232.6 mm 9.15"	292.6 mm 11.51"	412.6 mm 16.24"	532.6 mm 20.96"
2 U	42 HP	14B522	-	-	-
	84 HP	-	14B123	14B125	-
3 U	42 HP	14B532	14B533	-	-
	63 HP	14B432	14B433	-	-
	84 HP	-	14B133	14B135	14B137
4 U	84 HP	14B142	14B143	14B145	14B147
6 U	84 HP	-	14B163	14B165	-

Frame with 19" height extrusions, with handles:

Height	Width	Depth			
		232.6 mm 9.15"	292.6 mm 11.51"	412.6 mm 16.24"	532.6 mm 20.96"
2 U	84 HP	14B022	14B023	14B025	-
3 U	84 HP	14B032	14B033	14B035	14B037
4 U	84 HP	14B042	14B043	14B045	14B047
6 U	84 HP	14B062	14B063	14B065	14B067
7 U	84 HP	-	-	14B075	14B077

Tapped strips:

- Steel, zinc-plated
- Suitable for frames Unibox 14
- Scope of delivery: 1 tapped strip

Size	42 HP	63 HP	84 HP
M2.5 / 2 x 6 mm	61-464	61-469	61-468



# DESIGN AND COMPACT CASE

## UNIBOX 14

### Executions

#### SETS

##### UNIBOX 14 COVER PANEL SET

Scope of delivery:

- 1 top cover panel, solid, RAL7035 fine structure silk gloss
- 1 bottom cover panel with feet, solid, RAL7035 fine structure silk gloss
- 2 side panels, solid, RAL7035 fine structure silk gloss
- 1 set trim strips, RAL7035 fine structure silk gloss
- 1 set rubber bands
- 1 set assembly material



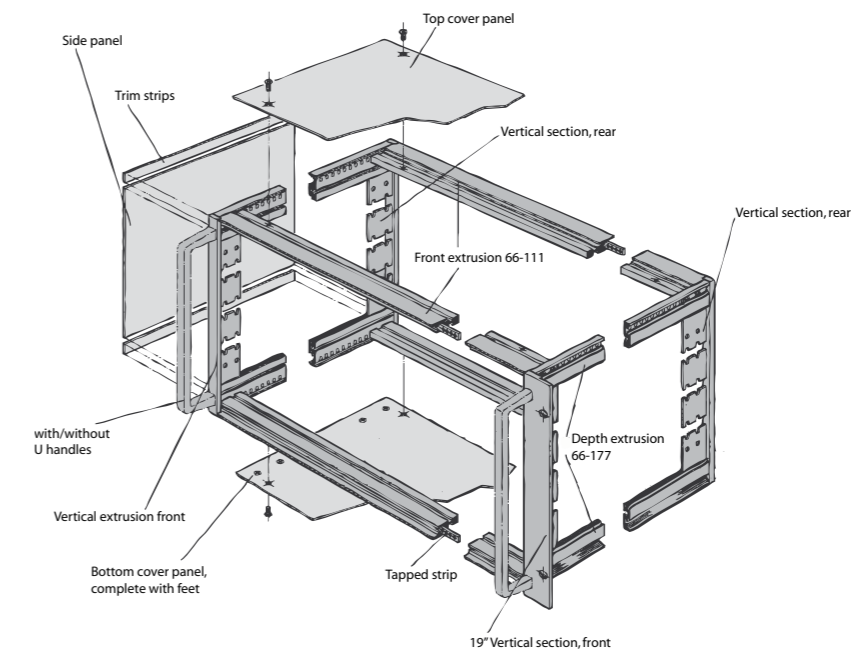
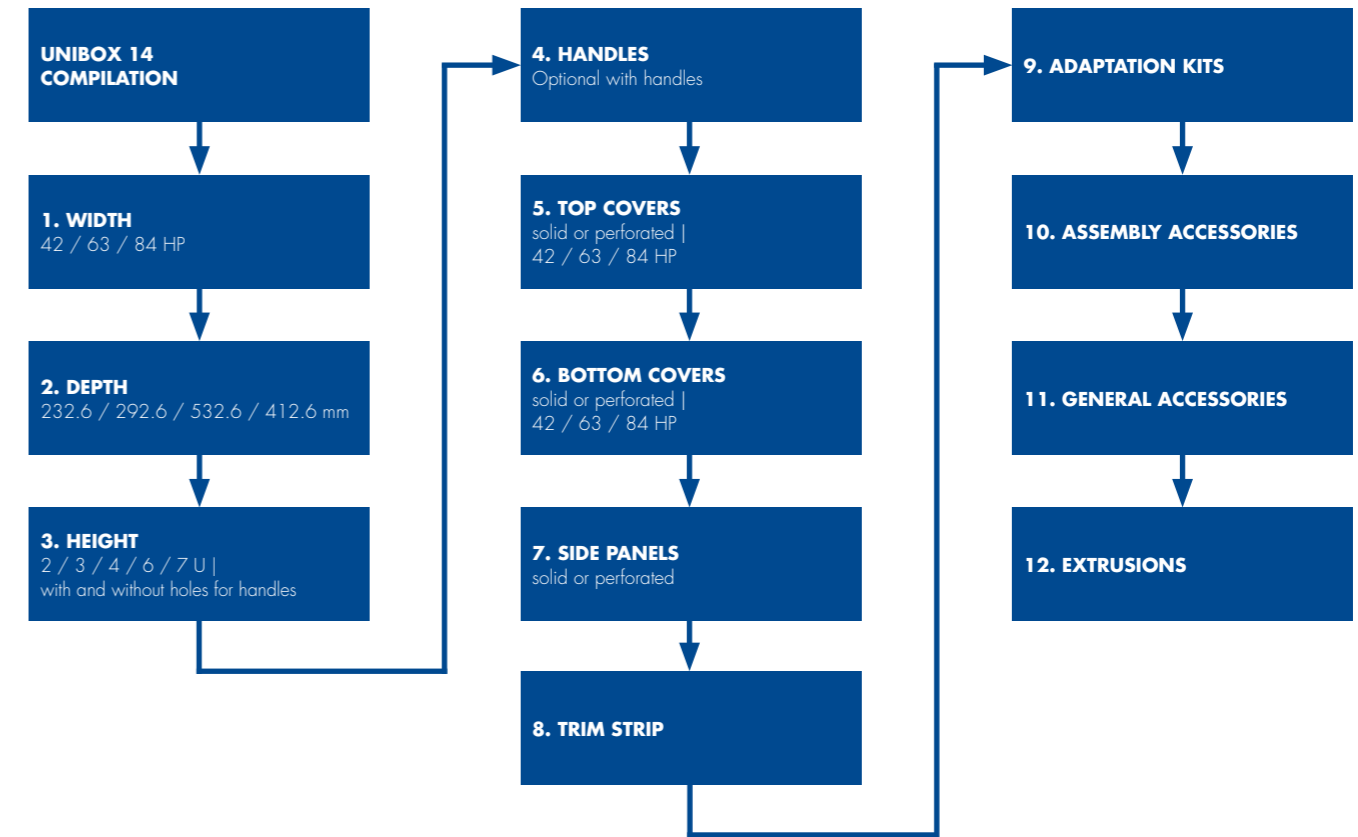
Height	Width	Depth			
		232.6 mm	292.6 mm	412.6 mm	532.6 mm
2 U	42 HP	140Z422-10	140Z423-10	-	-
	63 HP	140Z322-10	140Z323-10	140Z325-10	-
	84 HP	140Z122-10	140Z123-10	140Z125-10	-
3 U	42 HP	140Z432-10	140Z433-10	140Z435-10	-
	63 HP	140Z332-10	140Z333-10	140Z335-10	-
	84 HP	140Z132-10	140Z133-10	140Z135-10	140Z137-10
4 U	42 HP	140Z442-10	140Z443-10	140Z445-10	-
	63 HP	140Z342-10	140Z343-10	140Z345-10	-
	84 HP	140Z142-10	140Z143-10	140Z145-10	140Z147-10
6 U	42 HP	140Z462-10	140Z463-10	140Z465-10	-
	63 HP	140Z362-10	140Z363-10	140Z365-10	-
	84 HP	140Z162-10	140Z163-10	140Z165-10	140Z167-10
7 U	84 HP	-	-	140Z175-10	140Z177-10

# DESIGN AND COMPACT CASE

## UNIBOX 14

### Product structure

#### CONFIGURATION



# DESIGN AND COMPACT CASE

## UNIBOX 14

### Product structure frame

#### WIDTH

Scope of delivery:

- 4 front / rear extrusions
- 4 tapped strips M2.5
- Assembly material: 1 set of Phillips screw M4 x 10 (63-109)

42 HP	63 HP	84 HP
14M001	14M002	14M003

Label strips:

Scope of delivery	42 HP (01-42/42-01)	63 HP (01-63/63-01)	84 HP (01-84/84-01)
2 pieces each (marked ascending and descending)	63-142	63-143	63-046

#### HEIGHT

Scope of delivery:

- 2 height extrusions (2 sets have to be ordered separately for front and rear)

Description	2 U	3 U	4 U	6 U	7 U
Slim without holes for handle	14M004	14M005	14M006	14M007	14M008
Slim with holes for handle	14M009	14M010	14M011	14M012	14M013
19" height extrusions without holes for handle	14M014	14M015	14M016	14M017	14M018
19" height extrusions with holes for handle	14M019	14M020	14M021	14M022	14M023

#### HANDLES

Scope of delivery:

- 1 handle (2 handles per enclosure and 2 screws per handle have to be ordered separately)

Description	2 U	3 U	4 U	6 U	7 U
9 mm	60-527	60-528	60-529	60-531	60-529
Universal handle (for 19" height extrusions only)		60-553	60-554	60-556	60-554
Screw cross slotted countersunk		1 piece		5342-10	

#### DEPTH

Scope of delivery:

- 4 depth extrusions

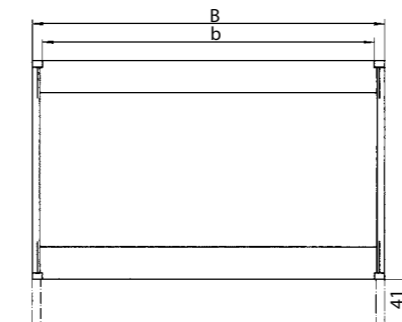
232.6 mm 9.15"	292.6 mm 9.15"	412.6 mm 16.24"	532.6 mm 20.96"
14M024	14M025	14M026	14M027

# DESIGN AND COMPACT CASE

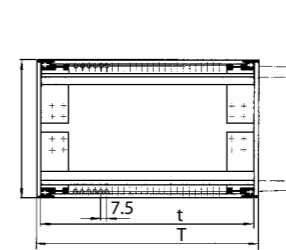
## UNIBOX 14

### DIMENSION DRAWINGS FOR SUBRACK WITHOUT 19" HEIGHT EXTRUSIONS

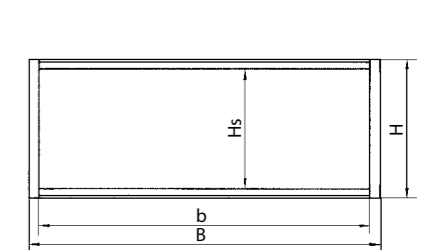
Front view



Side view

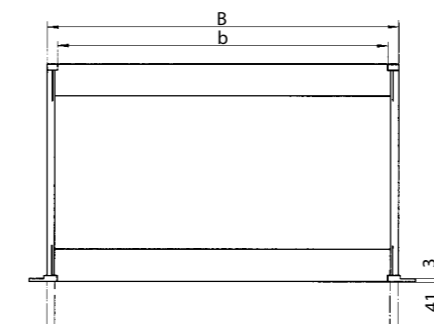


View from above

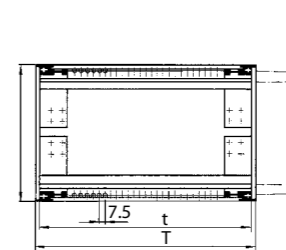


### DIMENSION DRAWINGS FOR SUBRACK WITH 19" HEIGHT EXTRUSIONS

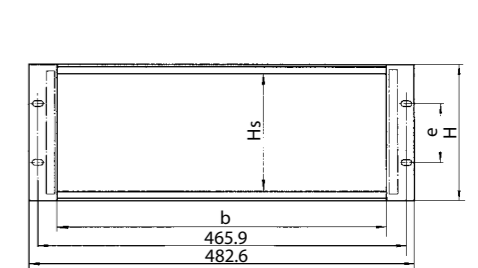
Front view



Side view



View from above



Width, height and depth for dimension drawings with and without 19" height extrusions:

Width	B mm	B inch	b mm	b inch
42 HP	234.32	9.22	213.32	8.39
63 HP	341	13.42	320	12.59
84 HP	447.68	17.62	426.68	16.79

Height	H mm	H inch	Hs mm	Hs inch
2 U	88.05	3.46	68.05	2.67
3 U	132.50	5.21	112.50	4.42
4 U	176.95	6.96	156.95	6.17
6 U	265.85	10.46	245.85	9.67
7 U	310.30	12.21	290.30	11.42

Depth	T mm	T inch	t mm	t inch
244.6	9.62	232.6	9.15	
304.6	11.99	292.6	11.51	
424.6	16.71	412.6	16.24	
544.6	21.44	532.6	20.96	

## DESIGN AND COMPACT CASE

### UNIBOX 14

#### Product structure cover panel

##### TOP COVERS

- One sided powder coated sheet aluminum 1.5 mm
- Perforated available for better ventilation

Scope of delivery:

- 1 top cover panel

Description	Width	Depth			
		232.6 mm	292.6 mm	412.6 mm	532.6 mm
Solid, powder coated, RAL7035	42 HP	140-817-10	140-818-10	140-820-10	-
Perforated, powder coated, RAL7035		140-817-11	140-818-11	140-820-11	-
Solid, powder coated, RAL7035	63 HP	140-812-10	140-813-10	140-815-10	-
Perforated, powder coated, RAL7035		140-812-11	140-813-11	140-815-11	-
Solid, powder coated, RAL7035	84 HP	140-802-10	140-803-10	140-805-10	140-828-10
Perforated, powder coated, RAL7035		140-802-11	140-803-11	140-805-11	140-828-11
Solid, powder coated, RAL7035, cranked	84 HP	-	140-702-10	140-704-10	140-706-10
Perforated, powder coated, RAL7035, cranked		-	140-702-11	140-704-11	140-706-11

Assembly material:

- For mounting 1 top and bottom cover onto the frame

Description	Part No.
1 set of cross recessed screws	63-111
1 set of cross recessed screws for cranked version M3 x 6	63-195

##### BOTTOM COVERS

- One sided film powder coated sheet aluminum 1.5 mm
- Perforated available for better ventilation
- With attached feet

Scope of delivery:

- 1 bottom cover panel

Description	Width	Depth			
		232.6 mm	292.6 mm	412.6 mm	532.6 mm
Solid, powder coated, RAL7035	42 HP	140-867-10	140-868-10	140-870-10	-
Perforated, powder coated, RAL7035		140-867-11	140-868-11	140-870-11	-
Solid, powder coated, RAL7035	63 HP	140-862-10	140-863-10	140-865-10	-
Perforated, powder coated, RAL7035		140-862-11	140-863-11	140-865-11	-
Solid, powder coated, RAL7035	84 HP	140-852-10	140-853-10	140-855-10	140-848-10
Perforated, powder coated, RAL7035		140-852-11	140-853-11	140-855-11	140-848-11
Solid, powder coated, RAL7035, cranked	84 HP	-	140-766-10	140-768-10	140-770-10
Perforated, powder coated, RAL7035, cranked		-	140-766-11	140-768-11	140-770-11

Assembly material:

- For mounting top and bottom cover onto the frame

Description	Part No.
1 set of cross recessed screws M3 x 8	63-111
1 set of cross recessed screws for cranked version M3 x 6	63-195

## DESIGN AND COMPACT CASE

### UNIBOX 14

##### SIDE PANELS

Scope of delivery:

- 1 side panel
- Order 2 times for complete enclosure (left and right side)

Description	Width	Depth				
		2 U	3 U	4 U	6 U	7 U
Solid, powder coated, RAL7035	232.6	140-30-902-1	140-30-907-1	140-30-912-1	140-30-922-1	-
Solid, powder coated, RAL7035	292.6	140-30-903-1	140-30-908-1	140-30-913-1	140-30-923-1	140-30-962-1
Perforated, powder coated, RAL7035		140-752-1	140-783-1	140-793-1	140-759-1	-
Solid, powder coated, RAL7035	412.6	140-30-905-1	140-30-910-1	140-30-915-1	140-30-925-1	140-603-10
Perforated, powder coated, RAL7035		140-754-1	140-785-1	140-795-1	140-761-1	-
Solid, powder coated, RAL7035	532.6	-	140-30-988-1	140-30-989-1	140-30-991-1	140-613-10
Perforated, powder coated, RAL7035		-	140-787-1	140-797-1	140-763-1	-

##### TRIM STRIPS

Scope of delivery:

- 4 trim strips

Description	Depth			
	232.6 mm	292.6 mm	412.6 mm	532.6 mm
Solid, powder coated, RAL7035	140-30-932-1	140-30-933-1	140-30-935-1	140-30-944-1

##### ASSEMBLY MATERIAL

Description	Depth	Part No.
Rubber gasket (set of 8 pieces)	232.6 mm	63-096
1 set rubber gasket (set of 8 pieces)	292.6 mm	63-097
1 set rubber gasket (set of 8 pieces)	412.6 mm	63-099
1 set rubber gasket (set of 8 pieces)	532.6 mm	63-141

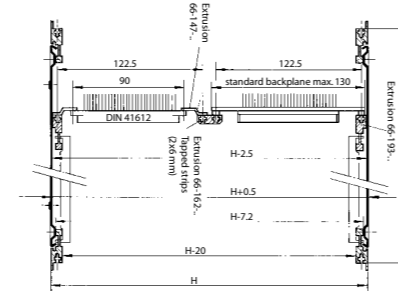


**Product structure cover panel**

**DIMENSION DRAWINGS**

COVER PANEL FORMED FOR ACCOMODATION OF BACKPLANE

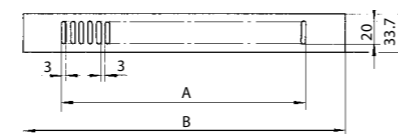
H	U	mm	inch
3		132.5	5.21
4		176.95	6.96
6		265.85	8.71
7		310.3	10.46



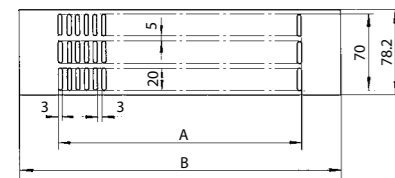
SIDE PANEL FOR CROSSFLOW VENTILATION

Depth t	A		B		
	mm	inch	mm	inch	
292.6	11.51	225	8.85	292.3	11.5
412.6	16.24	345	13.58	412.3	16.23
532.6	20.96	465	18.3	523.3	20.95

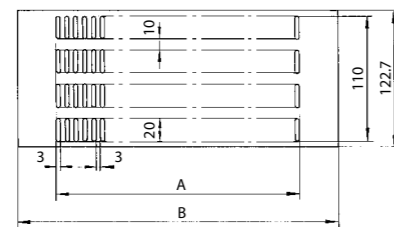
Side panel 2 U



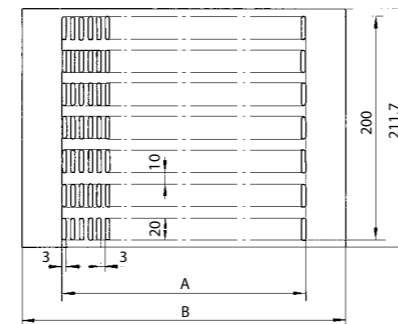
Side panel 3 U



Side panel 4 U



Side panel 6 U



**Adaptation kits**

Adaptation kits are used to subdivide the basic frame both in depth and height. Tapped strips have to be ordered separately.

Information for adaptation kits a - e: 14-xxx- x for mounting:  
 0 = standard extrusion, 66-144 / 66-124  
 6 = backplane mounting 66-193 (isolated)

**ADAPTATION KIT A**

Range of application:

- Single Eurocards | depth 160 to 400 mm
- Connector to IEC60603-2 / DIN41617 / MIL-C-21097
- Backplanes, modules, cassettes, plug-in units
- Crossflow ventilation with 3 U fan module
- Drive mechanism receptacles 3 1/2" | 5 1/4"
- Horizontal mounting of single, double, triple Eurocards



Scope of delivery:

- 2 internal extrusion
- 1 set assembly material

Description	84 HP
Front mounting of single Eurocards	14-910-0
	14-910-6

Other widths on request

**ADAPTATION KIT B**

Range of application:

- Single Eurocards | depth 160 to 400 mm
- Connector to IEC60603-2
- Backplanes, modules, cassettes, plug-in units
- Vertical ventilation with 1 U fan module
- Crossflow ventilation with 3 U fan module
- Drive mechanism receptacles 3 1/2" | 5 1/4"
- Horizontal mounting of single, double, triple Eurocards



Scope of delivery:

- 3 internal extrusions
- 1 front extrusion
- 2 depth dividers
- 1 set assembly material

Description	Depth		84 HP
	mm	inch	
Front mounting of single Eurocards (4 U) with possibility of crossflow ventilation	292.6	11.51	14-910-0
	412.6	16.24	14-910-6

## DESIGN AND COMPACT CASE

### UNIBOX 14

### Adaptation kits

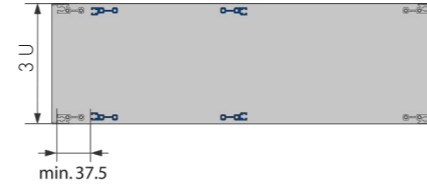
#### ADDITIONAL EXTRUSIONS RECESSED CARD MOUNTING

Range of application:

- Recessed mounting of Eurocards without individual front panels

Scope of delivery:

- 2 internal extrusions
- 1 set assembly material (for recessed card mounting 2 sets are necessary)



Description	84 HP
Frame width	14-910-0

#### TAPPED STRIPS

Scope of delivery:

- 1 tapped strip (steel, zinc-plated)

For use with extrusions 66-144, 66-124:

Size	42 HP	63 HP	84 HP
M2.5 / 2 x 6 mm	61-464	61-469	61-468

For use with extrusion 66-193:

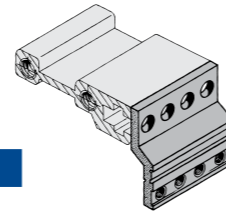
Size	42 HP	63 HP	84 HP
M2.5 / 1.8 x 5 mm	61-464	61-469	61-468

#### EDGE CONNECTOR EXTRUSION

EDGE CONNECTOR EXTRUSION 66-145-XX | STANDARD EXTRUSION 66-144

Scope of delivery:

- 1 aluminum extrusion, clear passivated (conductive)



Description	8 HP	18 HP	28 HP	42 HP	63 HP	84 HP
Edge connector IEC60603-2	66-145-40	66-145-41	66-145-42	66-145-63	66-145-65	66-145-52

Assembly material:

Description	Part No.
Assembly material M3 (for 2 supplementary extrusions)	63-214

EDGE CONNECTOR EXTRUSION 66-147-XX | BACKPLANE EXTRUSION 66-193

Scope of delivery:

- 1 aluminum extrusion, clear passivated (conductive)

Description	8 HP	18 HP	28 HP	42 HP	63 HP	84 HP
Edge connector IEC60603-2	66-147-40	66-147-41	66-147-42	66-147-63	66-147-65	66-147-52

Assembly material:

Description	Part No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

## DESIGN AND COMPACT CASE

### UNIBOX 14

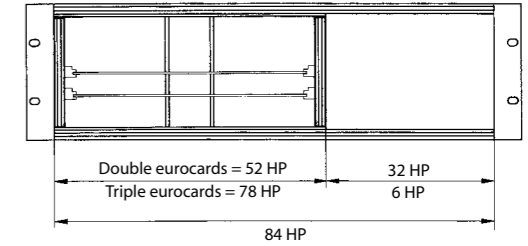
### Assembly accessories

#### HORIZONTAL INSTALLATION KIT

- Double Eurocards (6 U)
- Card depth independent
- Can be installed recessed with additional internal extrusions
- Top and bottom cover plate when no overall fan front panel (has to be ordered separately)

Scope of delivery:

- 4 distance plates (2 front / rear)
- 4 internal extrusions (2 front / rear)
- 1 center extrusion
- 6 tapped strips M2.5
- 1 set assembly material



Mounting height	Usable height	IEC60603-2	Backplane	Cover plate top	Cover plate bottom
2 U	12 HP	-	14-961-60	21N604-90	21N605-90
3 U	20 HP	14-971-30	14-971-60	21N602-90	21N602-90
4 U	28 HP	-	14-981-60	21N602-90	21N603-90
6 U	48 HP	-	14-991-60	21N606-90	21N607-90



### Accessories

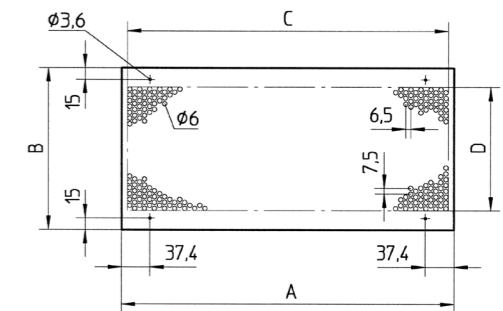
#### PERFORATED COVER PLATES

- 1 mm aluminum sheet, perforated
- Fixing on front and internal extrusions
- Thread available in front and internal extrusions
- Provides mechanical protection for the card area

Scope of delivery:

- 1 perforated cover plate

Width	Card depth	A	B	C	D	Part No.
42 HP	160 mm 6.3"	217.64 mm 8.56"	149 mm 5.86"	207.5 mm 8.16"	107.25 mm 4.22"	11-701
	220 mm 8.66"	217.64 mm 8.56"	209 mm 8.22"	207.5 mm 8.16"	159.75 mm 6.28"	11-702
84 HP	160 mm 6.3"	431 mm 16.96"	149 mm 5.86"	415.5 mm 16.35"	107.25 mm 4.22"	11-706
	220 mm 8.66"	431 mm 16.96"	209 mm 8.22"	415.5 mm 16.35"	159.75 mm 6.28"	11-707
	280 mm 11.02"	431 mm 16.96"	269 mm 10.59"	415.5 mm 16.35"	212.25 mm 8.35"	11-708



Assembly material:

Description	Scope of delivery	Part No.
Cross recessed screw M3 x 6	8 pieces / pack	63-195
	1 piece	61-283

Cover plates for card depths 300 and 400 mm on request

**Assembly accessories**

**MOUNTING CHASSIS**

FOR FULL DEPTH

- For mounting non-standard modules and components
- Fixed directly to the depth extrusion
- Aluminum 2 mm, raw

Scope of delivery:

- 1 mounting chassis
- Fastening: Depth < 230 mm with 4 screws | > 230 mm with 6 screws

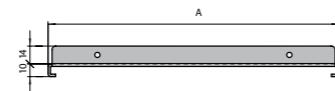


Frame depth		Chassis depth A		Part No.		
mm	inch	mm	inch	42 HP	63 HP	84 HP
232.6	9.15	168	6.61	14M028	14M029	14M030
292.6	11.52	228	8.97	14M031	14M032	14M033
412.6	16.24	318	12.52	-	14M034	14M035
532.6	20.96	423	16.65	-	-	14M036

Scope of delivery assembly material:

- 4 cross recessed cylinder head screw M4 x 6
- 4 earthing nut M4
- 4 retaining ring 2 mm

Description	Part No.
Assembly material for mounting chassis	63-314



**MOUNTING CHASSIS**

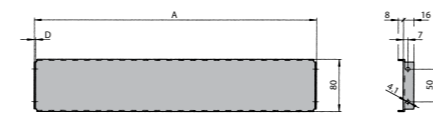
- For mounting non-standard modules and components
- Fixed directly to the depth extrusion
- Drilling pattern of 200 mm mounting tray allows single, double and triple Euro cards to be attached with standard profiles

Scope of delivery:

- 1 mounting chassis

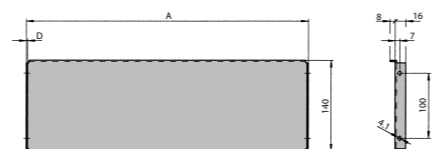
Mounting chassis depth 80 mm:

Enclosure width	A		D		Part No.
	mm	inch	mm	inch	
84 HP	431.5	16.98	2	0.07	14-832



Mounting chassis depth 140 mm:

Enclosure width	A		D		Part No.
	mm	inch	mm	inch	
63 HP	324.9	12.79	1.5	0.05	14-834
84 HP	431.5	16.98	2	0.07	14-836



**General accessories**

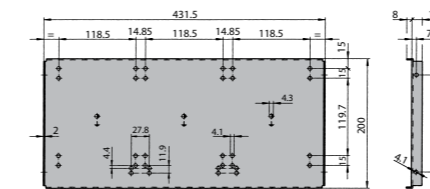
**MOUNTING CHASSIS**

MOUNTING CHASSIS

Mounting chassis depth 200 mm:

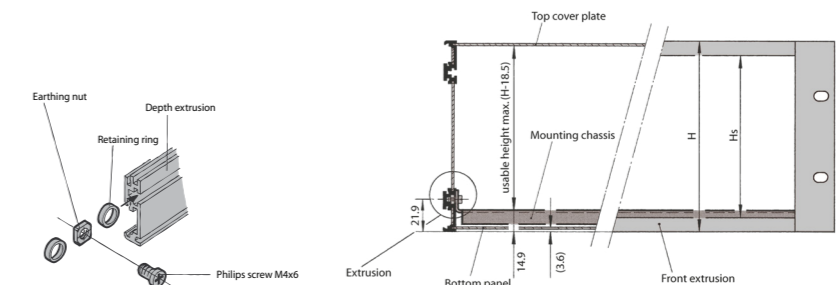
- The hole pattern allows single, double and triple Eurocards to be mounted

Enclosure width	A		B		C		D		Part No.
	mm	inch	mm	inch	mm	inch	mm	inch	
84 HP	431.5	16.98	23.15	0.91	15	0.59	2	0.07	14-840



Assembly material:

Description	Part No.
Mounting chassis	63-314
Earthing nut M4	61-695
Retaining ring 2 mm	61-015
Phillips screw M4 x 6	5340-06



	2 U	3 U	4 U	5 U	6 U	7 U	8 U	9 U	10 U	12 U	
H	mm	88.05	132.50	176.95	221.40	265.85	310.30	354.75	399.20	443.65	532.55
	inch	3.46	5.21	6.96	8.71	10.46	12.21	13.96	15.71	17.46	20.96
Hs	mm	68.05	112.50	156.95	201.40	245.85	290.30	334.75	379.20	423.65	512.55
	inch	2.67	4.42	6.17	7.92	9.67	11.42	13.17	14.92	16.67	20.17

**EARTHING SET**

- Enable subtracks and enclosures to be earthed in conformance with VDE / SEV

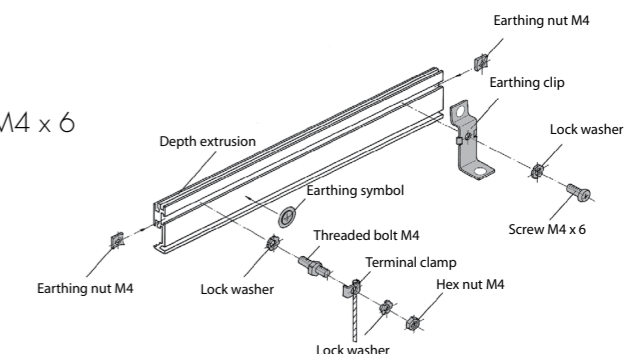
Scope of delivery:

- 1 earthing nut M4
- 1 Threaded bolt M4
- 1 terminal clamp
- 2 lock washer
- 1 nut M4
- 2 retaining rings 2 mm
- 1 earthing symbol

Additional set for Unibox 14 with cover plates:

- 2 earthing nut M4
- 2 lock washer
- 4 retaining rings 2 mm
- 2 earthing clips
- 2 cross recessed screws M4 x 6

Description	Part No.
Earthing set for subtracks without cover plates	63-172
Earthing set for subtracks with cover plates	63-173



# DESIGN AND COMPACT CASE

## UNIBOX 14

### Extrusions

#### FRONT EXTRUSIONS

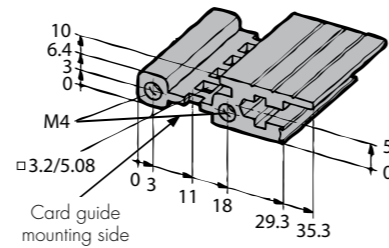
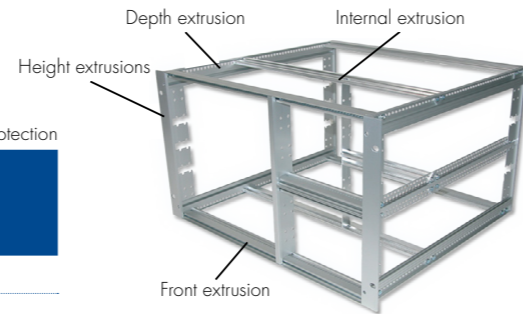
FRONT EXTRUSION 66-111 | IEC

Scope of delivery:

- 1 front extrusion without assembly material

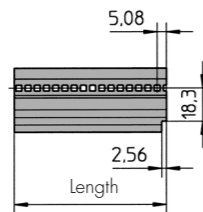
\*EMC protection

Length HP	mm		Part No.			
	mm	inch	clear anodized	black anodized	clear passivated*	raw
21	111.8	4.40	66-111-26			
28	147.3	5.80	66-111-25			
32	167.6	6.80	66-111-62			
42	218.4	8.60	66-111-60		66-111-75	
63	325.1	12.80	66-111-61		66-111-76	
81	416.6	16.40	66-111-22		66-111-77	
84	431.8	17.00	66-111-23	66-111-56	66-111-78	66-111-28
	1350.0	53.15				66-111-19



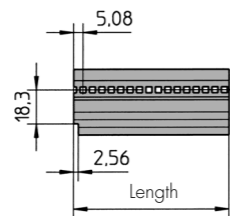
Height divider right:

Length HP	mm	inch	Part No. anodized
8.5	43.18	1.7	66-111-71
12.5	63.82	2.54	66-111-72



Height divider left:

Length HP	mm	inch	Part No. anodized
8.5	43.18	1.7	66-111-81
12.5	63.82	2.54	66-111-82



#### HEIGHT EXTRUSIONS

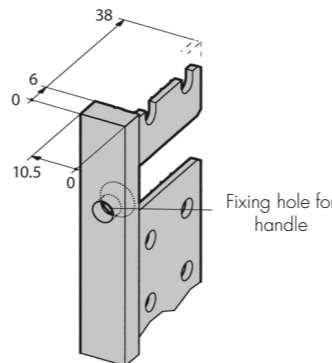
HEIGHT EXTRUSIONS 66-173

- Slim version with / without fixing hole for handle

Scope of delivery:

- 1 height extrusions without assembly material

Length U	mm		Part No. (clear   anodized)	
	mm	inch	without fixing hole	with fixing hole
2	88.1	3.46	66-173-20	66-173-21
3	132.5	5.20	66-173-22	66-173-23
4	177.0	6.96	66-173-24	66-173-25
5	221.5	8.72	66-173-26	66-173-27
6	265.9	10.46	66-173-28	66-173-29



# DESIGN AND COMPACT CASE

## UNIBOX 14

#### HEIGHT EXTRUSIONS

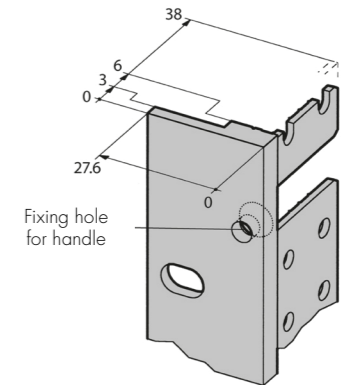
HEIGHT EXTRUSIONS 66-179

- With / without fixing hole for handle
- 19" height extrusions for 84 HP

Scope of delivery:

- 1 height extrusions without assembly material

Length U	mm		Part No. (clear   anodized)	
	mm	inch	without fixing hole	with fixing hole
2	88.1	3.46	66-179-22	66-179-32
3	132.5	5.20	66-179-23	66-179-33
4	177.0	6.96	66-179-24	66-179-34
5	221.5	8.72	66-179-25	66-179-35
6	265.9	10.46	66-179-26	66-179-36
7	310.3	12.20	66-179-27	66-179-37
8	354.8	13.96	66-179-28	66-179-38
9	399.2	15.71	66-179-29	66-179-39

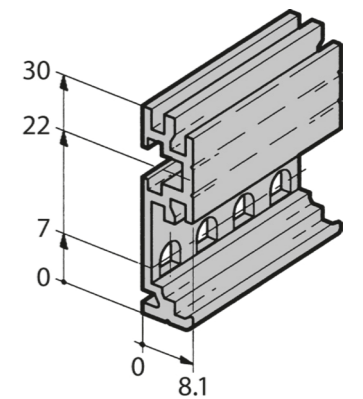


#### DEPTH EXTRUSIONS

Scope of delivery depth extrusion 66-177:

- 1 depth extrusion without assembly material

Length mm	inch	Part No. clear   anodized
232.6	9.15	66-177-21
292.6	11.51	66-177-22
352.6	13.55	66-177-23
412.6	16.24	66-177-24
532.6	20.96	66-177-26

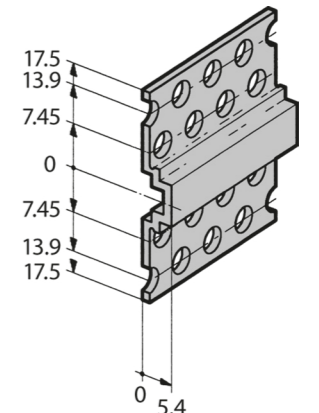


Scope of delivery depth extrusion 66-176:

- 1 depth extrusion without assembly material

Length mm	inch	Part No.* clear   passivated
292	11.49	66-176-22
412	16.22	66-176-24
532	20.94	66-176-26

\*EMC protection



# DESIGN AND COMPACT CASE

## UNIBOX 14

### Extrusions

#### INTERNAL EXTRUSIONS

##### STANDARD INTERNAL EXTRUSION 66-144

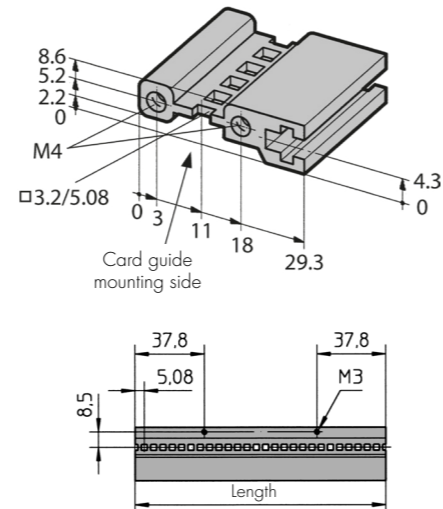
- Standard extrusion for mounting supplementary edge connector extrusions in subracks and enclosures

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Part No.	
	mm	inch	clear   passivated*	raw
42	218.4	8.60	66-144-60	
63	325.1	12.80	66-144-61	
81	416.6	16.40	66-144-22	
84	431.8	17.00	66-144-23	
1350.0	53.14			66-144-19

\*EMC protection



##### 66-193 FOR INSULATED BACKPLANE MOUNTING

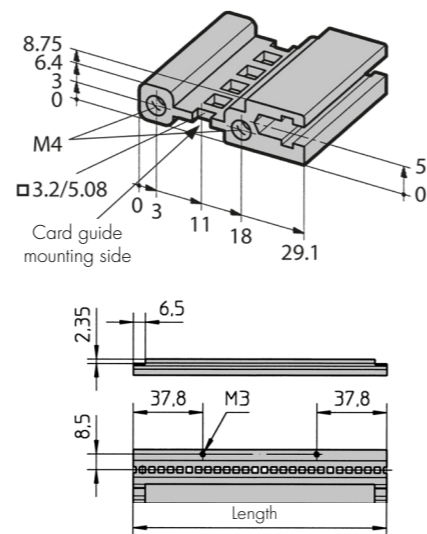
- For mounting backplanes in subracks
- Rabbet to accept 1.8 x 5 mm tapped strips
- To use with insulation strips 66-901

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Part No.	
	mm	inch	clear   passivated*	raw
81	416.6	16.4	66-193-24	
84	431.8	17	66-193-25	

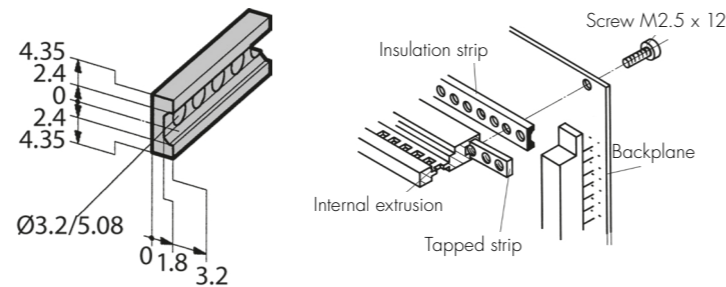
\*EMC protection



##### INSULATING STRIPS 66-901

- Plastic gray
- In use with extrusions 66-112, 66-192, 66-193, 66-288

Length	HP		Part No.	
	mm	inch	clear   passivated*	raw
42	216.44	8.52	66-901-20	
63	323.12	12.72	66-901-21	
81	414.56	16.32	66-901-22	
84	429.8	16.92	66-901-23	



Mounting with insulation strips:

Description	Part No.
Cross recessed cylinder head earthing screws M2.5 x 12	5325-12

# DESIGN AND COMPACT CASE

## UNIBOX 14

#### INTERNAL EXTRUSION

##### 66-194 FOR CONDUCTIVE BACKPLANE MOUNTING

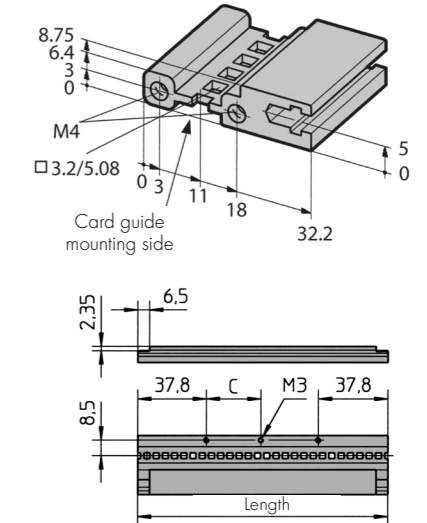
- For mounting backplanes without an insulating strip
- Rabbet to accept 1.8 x 5 mm tapped strips

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Holes n x C	Part No.	
	mm	inch		clear   passivated*	raw
81	416.6	16.4	2 x 170.48	66-194-24	
84	431.8	17	2 x 178.1	66-194-25	

\*EMC protection



#### EDGE CONNECTOR EXTRUSIONS

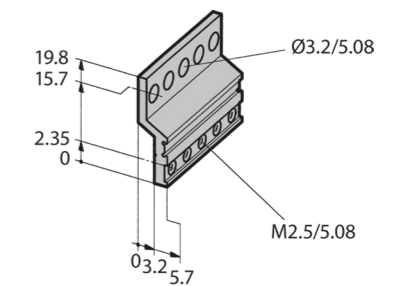
- Supplementary edge connector extrusion for IEC60603-2 connectors
- Matches to 66-144, 66-133 and 66-124

Scope of delivery edge connector extrusion 66-145:

- 1 edge connector extrusion without assembly material

Length	HP		Part No.	
	mm	inch	clear   passivated*	raw
8	40.6	1.59	66-145-40	
18	91.4	3.59	66-145-41	
28	142.2	5.6	66-145-42	
42	213.4	8.4	66-145-63	
63	320	12.6	66-145-65	
81	411.5	16.2	66-145-22	
84	426.7	16.8	66-145-52	
1350	53.14			66-145-19

\*EMC protection

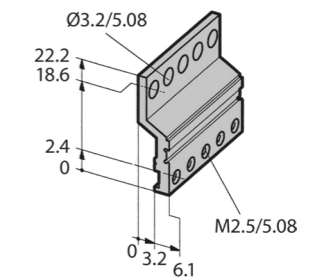


Scope of delivery edge connector extrusion 66-147:

- 1 edge connector extrusion without assembly material

Length	HP		Part No.	
	mm	inch	clear   passivated*	raw
8	40.6	1.59	66-147-40	
18	91.4	3.59	66-147-41	
28	142.2	5.6	66-147-42	
42	213.4	8.4	66-147-63	
63	320	12.6	66-147-65	
81	411.5	16.2	66-147-22	
84	426.7	16.8	66-147-52	
1350	53.14			66-147-19

\*EMC protection



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### Product description

Stylebox 15 e-motion is a portable desktop case according to the 19" standards. It is a platform that was built according to the IEC60297 standard. The scalable EMC protection, color and design variants make it the first choice for high-end electronics. The top design, the variety of sizes and variants as well as the wide range of accessories create ideal conditions for a variety of applications such as controls, measuring devices or computer systems.

- › Case system: 4 longitudinal aluminum profiles and 2 side walls as a supporting frame sheet steel cladding
- › The front of the case can be fitted as required with cover brackets, front handles or 19" fixing brackets - this permits subsequent conversion from a desktop case to a 19" module unit and vice-versa
- › Mounting dimensions according to IEC60297
- › Numerous accessories
- › Internal mounting chassis
- › Horizontal and vertical insertion of Eurocard PCBs
- › Elegant design

### PRODUCT VARIETY

- Cover plates bolted to the side
- Front of the enclosure can be equipped with cover brackets, front handles or 19" fixing brackets
- Colorless passivated inside of the cladding
- Longitudinal profiles colorless passivated (enable a large area contacting for optimal EMC protection)
- Top and bottom plates on the contact surfaces color-free
- Optional EMC seals for increased EMC protection
- Optional folding feet for use in installation angles

STYLEBOX 15 E-MOTION



### POSSIBLE CUSTOMIZATIONS

- Different sizes
- Colors: White, silver (other colors on request)
- Customizations
- Standard or customized front panels
- Optional scalable EMC shielding
- Rear I/Os possible

### TYPICAL APPLICATIONS

- 19" subrack Systems (e.g. for IEC or IEEE controller cards)
- Measurement and test instruments
- Laboratory or field instruments
- Medical equipment

## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### Types

#### SIZES

- Height: 2 to 7 U
- Width: 42 | 63 | 84 HP
- Depth: 245, 305, 395 or 500 mm

Height	Width		
	42 HP	63 HP	84 HP
2 U			
3 U			
4 U			
6 U			
7 - 9 U (on request)			

Depth  245 mm 9.64"  305 mm 12.00"  395 mm 15.55"  500 mm 19.68"

### EXECUTIONS

Table case with cover brackets

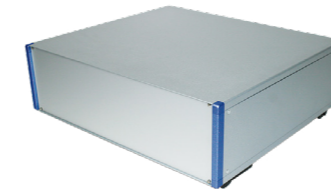


Table case with front handle



Table case with bow handle



19" slide-in enclosure with front handles



19" slide-in enclosure without front handles



## DESIGN - AND COMPACT CASE

### STYLEBOX 15 E-MOTION

## Types

### COLORS

- White
- Silver
- Other colors on request

### SPECIAL FEATURES

- Increased EMC shielding on request
- Rear inputs and outputs

### CUSTOMIZATIONS

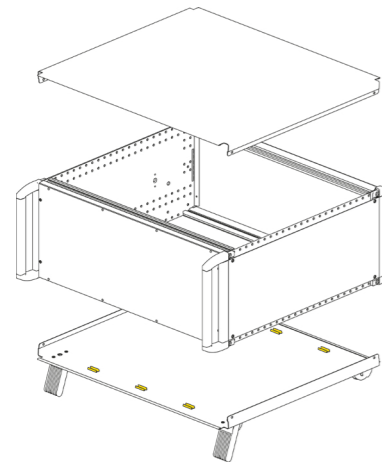
- Standardized or customized front panels
- Customized front and rear panels on request

### EMC VARIANTS

#### EMC CONSTRUCTION AND CONFIGURATION

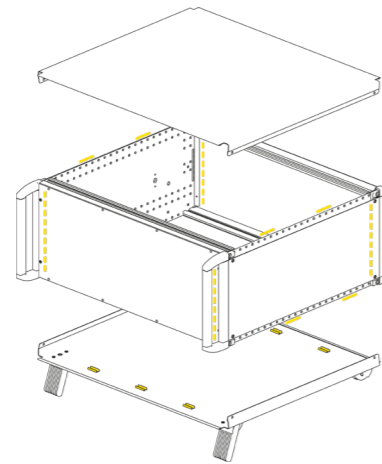
##### Basic level

Size: 4 U x 84 HP x 395 mm  
Standard front panel  
(cover panels perforated and unperforated)



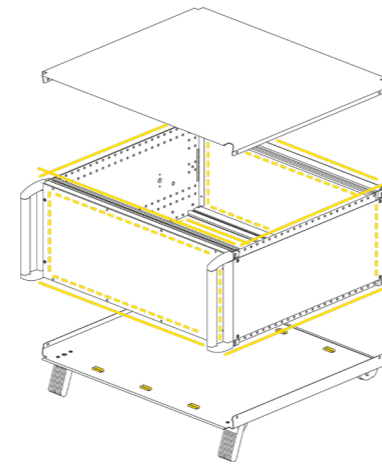
##### Advanced level

Size: 4 U x 84 HP x 395 mm  
EMC front panels and gasket kit  
(cover panels perforated and unperforated)



##### Superior level

Size: 4 U x 84 HP x 395 mm  
EMC front panels and gasket kit  
(cover panels perforated and unperforated)



## DESIGN - AND COMPACT CASE

### STYLEBOX 15 E-MOTION

### EMC PROTECTION

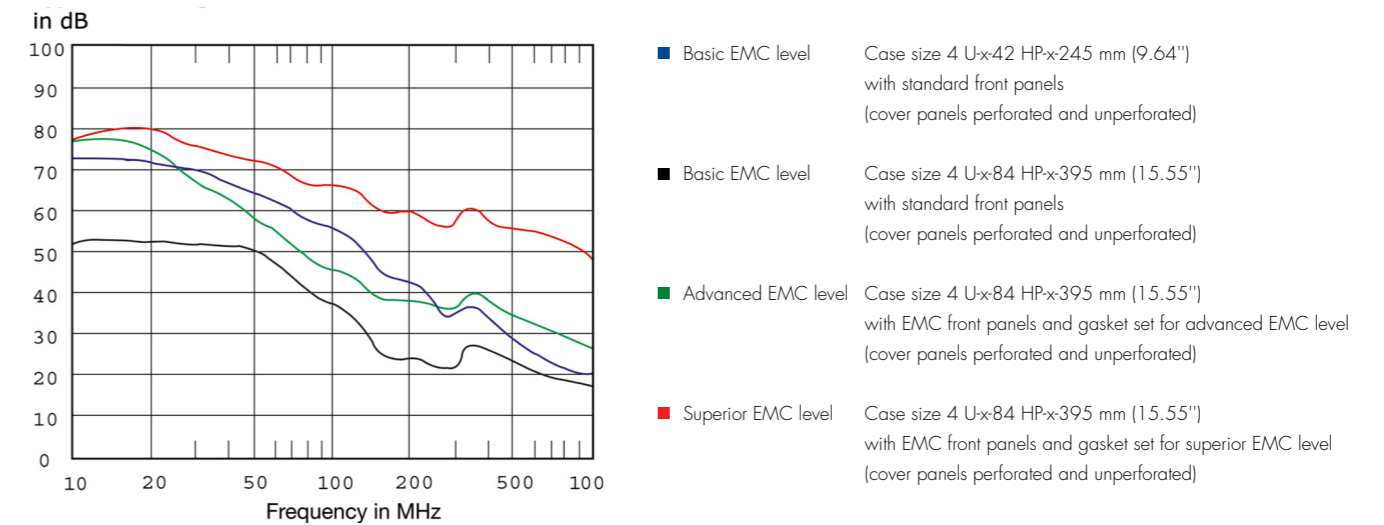
Electromagnetic compatibility is the ability of a system to operate in the intended environment without causing or suffering unacceptable degradation of performance due to unintentional electromagnetic radiation or response. The EMC characteristics of a system therefore consist of an appropriate immunity from interference (noise immunity) and a limited emission of interference (noise emission).

Elma's EMC concept describes three levels of electromagnetic shielding performance (performance level). The attenuation levels will simplify the selection of sub racks for the user. Test setup: The first measurement E1 is without the enclosure. The next measurement E2 is made with the transmitting antenna installed inside the enclosure. The difference between the received signal without and with the enclosure represents the shielding effectiveness in dB.

Performance level	30 - 230 MHz	230 - 1000 MHz	1000 - 2000 MHz
1 Elma Basic level	20 dB	10 dB	0 dB
2 Elma Advanced level	40 dB	30 dB	20 dB
3 Elma Superior level	60 dB	50 dB	40 dB

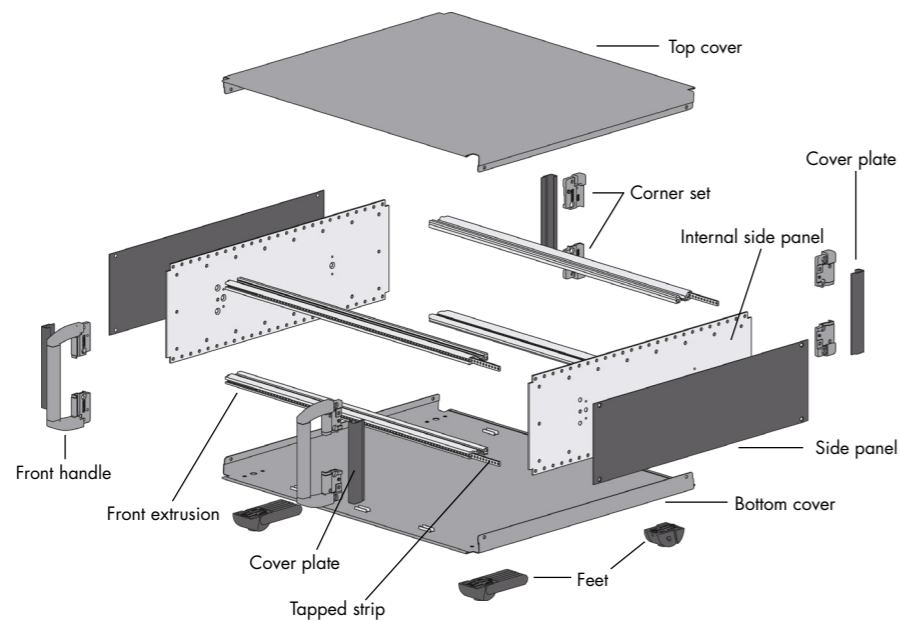
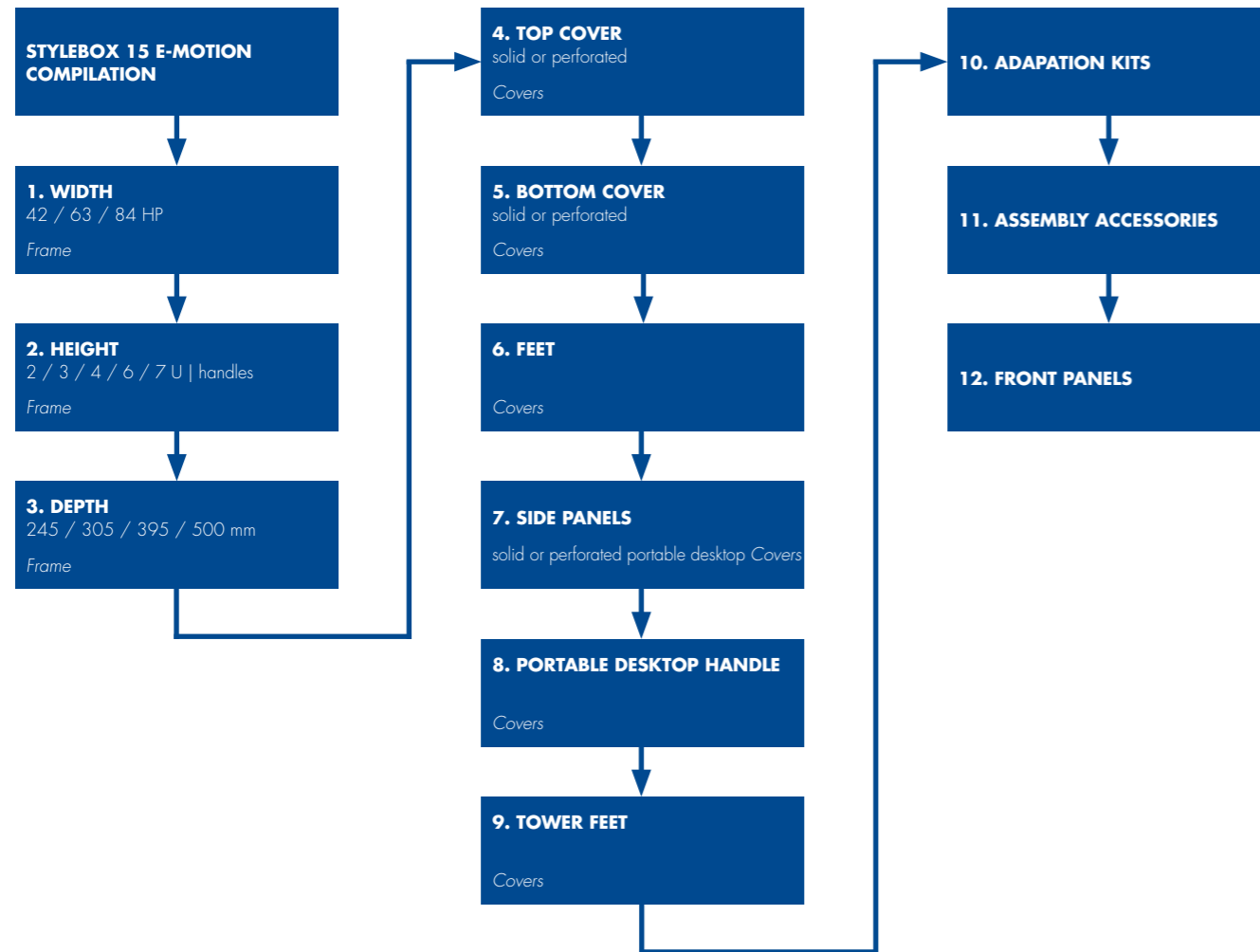
The standard configuration will provide you with a basic (Stylebox 15 Standard or e-motion) or an advanced EMC level (Stylebox 15 smart). If you require an advanced or superior EMC level for your system, you need to order additional EMC parts.

#### TYPICAL ATTENUATION



**Product structure**

**CONFIGURATION**



**WIDTH**

- Aluminum profile, electrically conductive

Scope of delivery:

- 4 front / rear extrusions
- 4 tapped strips M 2.5
- 1 set of 16 screws torx T20 (M4 x 10)



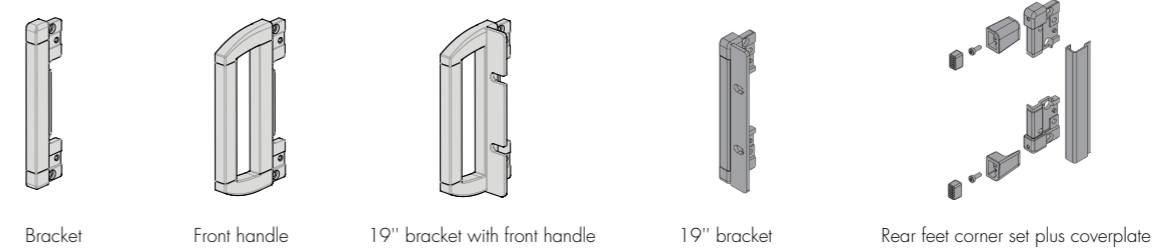
Description	42 HP	63 HP	84 HP
IEC application	15S035	15S036	15S037
IEEE application	15S007	15S008	15S009

**BEZELS**

- 19" version do not allow additional cover brackets
- Profiles and die-cast parts: Aluminum, powder coated or wet painted, contact area conductive

Scope of delivery:

- 1 brackets
- 4 pieces have to be ordered (for front and rear side)



Description	Color	2 U	3 U	4 U	6 U
Bracket	White	15-242-70	15-243-70	15-244-70	15-246-70
	Silver	15-242-80	15-243-80	15-244-80	15-246-80
for design front panel	White	15-242-01-70	15-243-01-70	15-244-01-70	15-246-01-70
	Silver	15-242-01-80	15-243-01-80	15-244-01-80	15-246-01-80
Front handle	White	15-222-70	15-223-70	15-224-70	15-226-70
	Silver	15-222-80	15-223-80	15-224-80	15-226-80
for design front panel	White	15-22-01-70	15-223-01-70	15-224-01-70	15-226-01-70
	Silver	15-222-01-80	15-223-01-80	15-224-01-80	15-226-01-80
19" bracket	White	15-232-70	15-233-70	15-234-70	15-236-70
	Silver	15-232-80	15-233-80	15-234-80	15-236-80
for design front panel	White	15-232-01-70	15-233-01-70	15-234-01-70	15-236-01-70
	Silver	15-232-01-80	15-233-01-80	15-234-01-80	15-236-01-80
19" bracket	White	15-182-70	15-183-70	15-184-70	15-186-70
	Silver	15-182-80	15-183-80	15-184-80	15-186-80
for design front panel	White	15-212-70	15-213-70	15-214-70	15-216-70

For 7 to 9 U:  
Multi-part handle  
on request



## DESIGN - AND COMPACT CASE

### STYLEBOX 15 E-MOTION

## Product structure

### SUPPORT FEET

Support feet and according bezels

Description	Color	2 U	3 U	4 U	6 U
Rear Feet	Black	15S090	15S090	15S090	15S090
Plus cover panel	White	66-686-060-70	66-686-105-70	66-686-149-70	66-686-238-70
	Silver	66-686-060-80	66-686-105-80	66-686-149-80	66-686-238-80

### DEPTH

- Internal side panel 2 mm aluminum, clear passivated

Scope of delivery:

- 1 internal side panel
- 2 pieces have to be ordered (for left and right side)



Height	245 mm 9.64"	305 mm 12.00"	395 mm 15.55"	500 mm 19.68"
2 U	15-520	15-522	15-524	-
3 Z	15-530	15-532	15-534	15-536
4 U left	15-540	15-542	15-544	15-546
4 U right	15-541	15-543	15-545	15-547
6 U	-	15-562	15-564	15-566
7 U	-	15-572	15-574	15-576

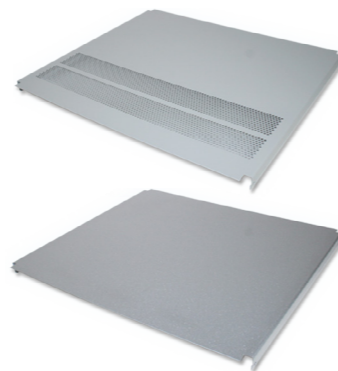
### TOP COVER

- Symmetrical construction: Perforation can be used at front or rear
- 0.75 mm sheet steel powder coated or wet painted, contact area conductive

Scope of delivery:

- 1 top cover

Description	Width	Depth			
		245 mm 9.64"	305 mm 12.00"	395 mm 15.55"	500 mm 19.68"
Solid, white	42 HP	15B201-70	15B202-70	15B203-70	15B204-70
Solid, silver		15B201-80	15B202-80	15B202-80	15B202-80
Perforated, white		15B201-71	15B202-71	15B203-71	15B204-71
Perforated, silver		15B201-81	15B202-81	15B203-81	15B204-81
Solid, white	63 HP	15B206-70	15B207-70	15B208-70	15B209-70
Solid, silver		15B206-80	15B207-80	15B208-80	15B209-80
Perforated, white		15B206-71	15B207-71	15B208-71	15B209-71
Perforated, silver		15B206-81	15B207-81	15B208-81	15B209-81
Solid, white	84 HP	15B210-70	15B212-70	15B213-70	15B214-70
Solid, silver		15B210-80	15B212-80	15B213-80	15B214-80
Perforated, white		15B210-71	15B212-71	15B213-71	15B214-71
Perforated, silver		15B210-81	15B212-81	15B213-81	15B214-81



## DESIGN - AND COMPACT CASE

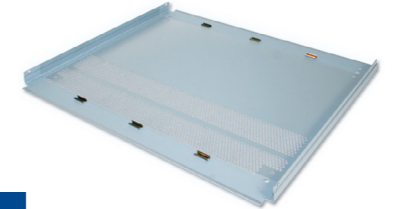
### STYLEBOX 15 E-MOTION

### BOTTOM COVER

- Symmetrical construction: Perforation at front or rear
- 0.75 mm sheet steel powder coated or wet painted, contact area conductive

Scope of delivery:

- 1 bottom cover with mounted feet



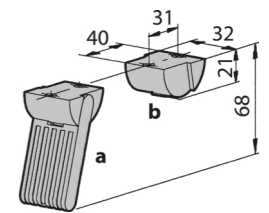
Description	Width	Depth			
		245 mm 9.64"	305 mm 12.00"	395 mm 15.55"	500 mm 19.68"
Solid, white	42 HP	15B301-70	15B302-70	15B303-70	15B304-70
Solid, silver		15B301-80	15B302-80	15B303-80	15B304-80
Perforated, white		15B301-71	15B302-71	15B303-71	15B304-71
Perforated, silver		15B301-81	15B302-81	15B303-81	15B304-81
Solid, white	63 HP	15B306-70	15B307-70	15B308-70	15B309-70
Solid, silver		15B306-80	15B307-80	15B308-80	15B309-80
Perforated, white		15B306-71	15B307-71	15B308-71	15B309-71
Perforated, silver		15B306-81	15B307-81	15B308-81	15B309-81
Solid, white	84 HP	15B310-70	15B312-70	15B313-70	15B314-70
Solid, silver		15B310-80	15B312-80	15B313-80	15B314-80
Perforated, white		15B310-71	15B312-71	15B313-71	15B314-71
Perforated, silver		15B310-81	15B312-81	15B313-81	15B314-81

### FEET

- With and without tilt feet
- Glass-fiber reinforced plastic, UL94 V-0
- Including screws 3.5 x 8 size T10
- Up to 30 kg carrying capacity per set

Scope of delivery:

- 2 + 2 case feet, incl. rubber inserts NBR
- 8 countersunk PT-screws torx T10 (3.5 x 8)



Description	Color	Part No.
Case feet 2 x a + 2 x b	light grey (RAL 7035)	63K524
Case feet 2 x a + 2 x b	Black (RAL 9005)	63K526
Case feet 2 x a + 2 x b	Dark grey (special)	63K525

### TOWER FEET

- Plastic and aluminum (mounted direct onto side panel)

Scope of delivery:

- 4 round feet, Ø 40 mm
- 4 round head screws with integrated washer torx T10 (M3 x 8)

Description	Part No.
Set of tower feet	63-880



# DESIGN - AND COMPACT CASE

## STYLEBOX 15 E-MOTION

### Product structure

#### PORTABLE DESKTOP HANDLE

Scope of delivery:

- 2 adapters
- 2 side parts, black
- 1 handle extrusion, soft feel
- Assembly material, torx



Height	42 HP	63 HP	84 HP
2 HP	15S050	15S051	15S052
3 and 4 HP	15S053	15S054	15S055

#### SIDE PANELS

- Side panel 2 mm aluminum, clear passivated



Scope of delivery:

- 1 inner side wall
- 2 pieces have to be ordered (for left and right side)

Description	Depth		Height				
	mm	inch	2 U	3 U	4 U	6 U	7 U
Solid, white	245	9.64	15B601-70	15B606-70	15B610-70	-	-
Solid, silver			15B601-80	15B606-80	15B610-80	-	-
Solid, white for portable desktop			15B657-70	15B661-70	15B665-70	-	-
Solid, silver for portable desktop			15B657-80	15B661-80	15B665-80	-	-
Solid, white	305	12.00	15B602-70	15B607-70	15B612-70	15B622-70	15B627-70
Solid, silver			15B602-80	15B607-80	15B612-80	15B622-80	15B627-80
Solid, white for portable desktop			15B658-70	15B662-70	15B667-70	-	-
Solid, silver for portable desktop			15B658-80	15B662-80	15B667-80	-	-
Solid, white	395	15.55	15B603-70	15B608-70	15B613-70	15B623-70	15B628-70
Solid, silver			15B603-80	15B608-80	15B613-80	15B623-80	15B628-80
Solid, white for portable desktop			15B659-70	15B663-70	15B668-70	-	-
Solid, silver for portable desktop			15B659-80	15B663-80	15B668-80	-	-
Solid, white	500	19.68	-	15B609-70	15B614-70	15B624-70	15B629-70
Solid, silver			-	15B609-80	15B614-80	15B624-80	15B629-80
Solid, white for portable desktop			-	15B664-70	15B669-70	-	-
Solid, silver for portable desktop			-	15B664-80	15B669-80	-	-

#### ASSEMBLY MATERIAL FOR 1 SIDE PANEL

Description	Part No.
4 countersunk screws torx T10 (M3 x 6)	63K800

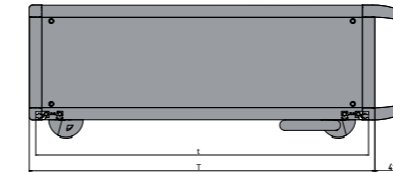
# DESIGN - AND COMPACT CASE

## STYLEBOX 15 E-MOTION

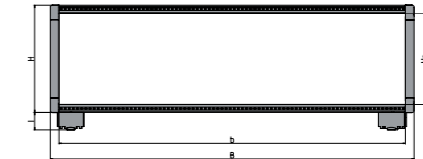
### Drawings and dimensions

#### DIMENSION DRAWINGS

SIDE VIEW



FRONT VIEW



U	Height H		Height Hs	
	mm	inch	mm	inch
2	88.05	3.46	68.05	2.67
3	132.50	5.21	112.50	4.42
4	176.95	6.96	156.95	6.17
6	265.85	10.46	245.85	9.67
7	310.3	12.21	290.30	11.43

Depth T		Depth t	
mm	inch	mm	inch
245	9.64	232.6	9.15
305	12.00	292.6	11.51
395	15.55	382.6	15.06
500	19.68	487.6	19.19

HP	Width B		Width b	
	mm	inch	mm	inch
42	235.2	9.25	213.4	8.4
63	341.9	13.46	320.1	12.6
84	448.6	17.66	426.8	16.8

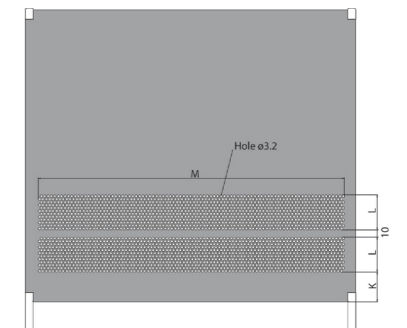
Feet type	Feet l	
	mm	inch
e-motion	21.5	0.89

TOP VIEW

Air flow

HP	Depth	M	K	L
	mm	mm	mm	mm
42	245 / 305 / 395 / 500	208	40	47.2
63	245 / 305 / 395 / 500	323	40	47.2
84	245 / 305 / 395 / 500	415	40	47.2

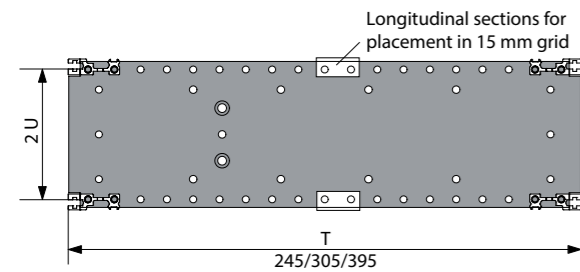
HP	Depth	M	K	L
	inch	inch	inch	inch
42	9.64 / 12 / 15.55 / 19.68	8.18	1.57	1.85
63	9.64 / 12 / 15.55 / 19.68	12.71	1.57	1.85
84	9.64 / 12 / 15.55 / 19.68	16.33	1.57	1.85



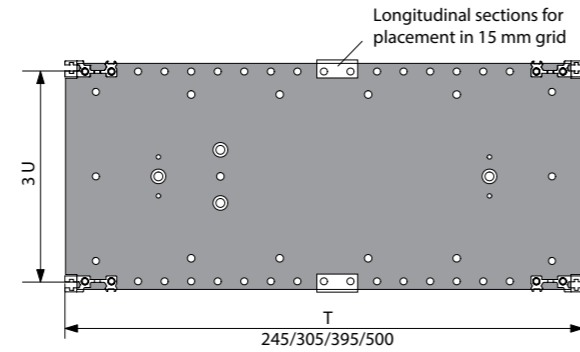
**Drawings and dimensions**

**SIDE PANELS**

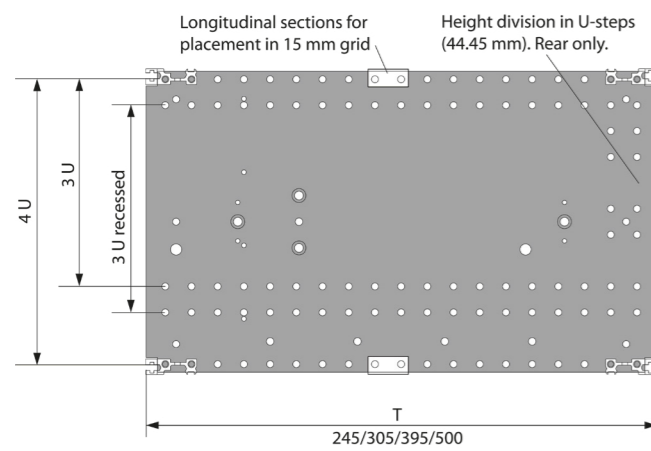
2 U



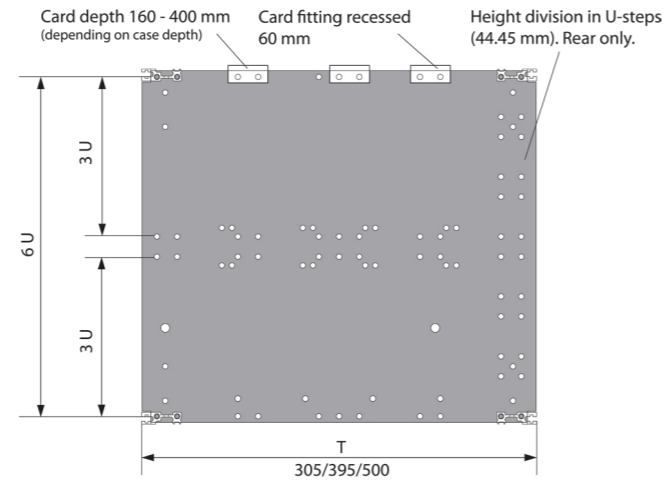
3 U



4 U



6 U



**Adaptation kits**

**INFORMATION**

Adaptation kits are used to subdivide both depth and height. The adaptation kits for the flush or recess mounted circuit boards or cassettes include the necessary internal extrusions and assembly materials.

Information for adaptation kits a - f: 15-xxx- for mounting:  
 6 = Extrusion 66-193, for insulated backplane mounting  
 7 = Extrusion 66-194, for conductive backplane mounting

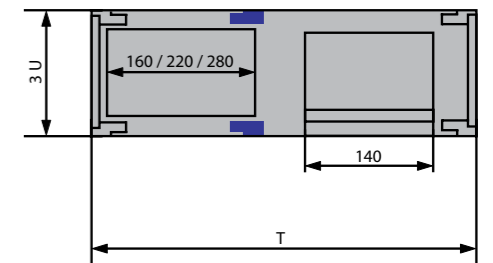
**ADAPTATION KITS A**

Range of application:

- Single Eurocard with depth 160 to 280 mm
- Backplanes
- Modules, cassettes, plug-in units
- Set for horizontal mounting of single, double triple Eurocard, with depth 160 to 280 mm
- Crossflow ventilation with 3 U fan module
- Drive mechanism receptacles 3 1/2" | 5 1/4"

Scope of delivery:

- 2 internal extrusions
- 2 insulating strips (only 15K0xx - 6)
- 2 tapped strips M2.5
- 1 set assembly material, torx



Description	42 HP	63 HP	84 HP
Flush front-mounting of single Eurocards	15K041-6	15K031-6	15K011-6
	15K041-7	15K031-7	15K011-7

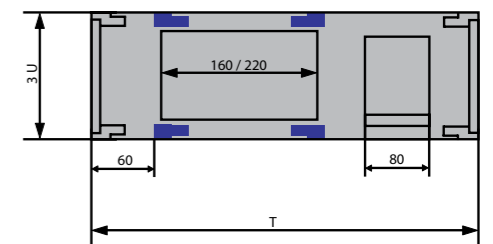
**ADAPTATION KITS B**

Range of application:

- Recessed mounting of single Eurocards, with depth 160 to 220 mm
- Without individual front panels
- Backplanes

Scope of delivery:

- 4 internal extrusions
- 2 insulating strips (only 15K0xx - 6)
- 2 tapped strips M2.5
- 1 set assembly material, torx



Description	42 HP	63 HP	84 HP
Recessed mounting of single Eurocards without front panels	15K042-6	15K032-6	15K012-6
	15K042-7	15K032-7	15K012-7

## DESIGN - AND COMPACT CASE

### STYLEBOX 15 E-MOTION

#### ADAPTATION KITS C

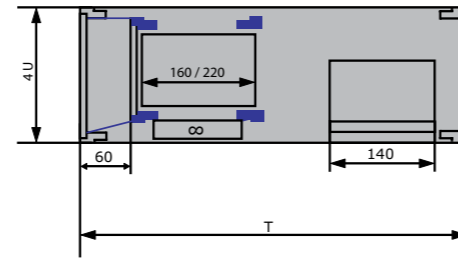
Reduction kit  $1/3$  U +  $2/3$  U for 60 mm recessed mounting

Range of application:

- Recessed mounting of single Eurocards, with depth 160 to 220 mm
- With or without individual front panels
- Max. fan height 26 mm
- Backplanes
- Modules, cassettes, plug-in units
- Drive mechanism receptacles  $5\frac{1}{4}$ "

Scope of delivery:

- 2 internal extrusions
- 2 longitudinal extrusions 66-111 (IEC) or 66-677 (IEEE)
- 2 insulating strips (only 15K0xx - 6)
- 1 auxiliary cover top
- 1 auxiliary cover bottom
- 4 tapped strips M2.5
- 1 set assembly material, torx



\*only bottom part ( $2/3$  U) is perforated

Description	HP	Part No.	
		IEC	IEEE
Adaptation kit reduction, solid, without fan panel	84	15K053-6	15K060-6
		15K053-7	15K060-7
Adaptation kit reduction, perforated*, without fan panel		15K054-6	15K061-6
		15K054-7	15K061-7
Adaptation kit reduction, perforated*, with fan panel		15K055-6	15K062-6
		15K055-7	15K062-7

#### ADDITIONAL FAN PLATE

Scope of delivery:

- 1 fan plate
- 8 milled edge screws torx T10 (M3 x 5)

Description	Part No.
Additional fan plate incl. 1 set assembly material	12K737

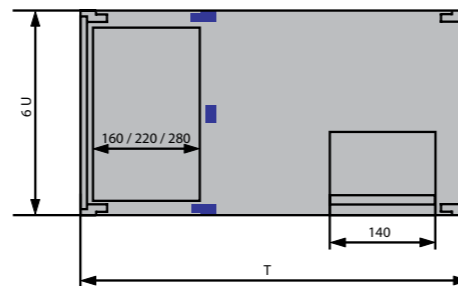
#### ADAPTATION KITS D

Range of application:

- Double Eurocards with depth 160 to 280 mm
- Backplanes
- Modules, cassettes, plug-in units
- Drive mechanism receptacles  $3\frac{1}{2}$ " |  $5\frac{1}{4}$ "

Scope of delivery:

- 2 internal extrusions
- 1 centre extrusion
- 4 insulating strips
- 4 tapped strips M2.5
- 2 set assembly material, torx



Description	42 HP	63 HP	84 HP
Flush front-mounting of double Eurocards	15K044-6	15K034-6	15K014-6

## DESIGN - AND COMPACT CASE

### STYLEBOX 15 E-MOTION

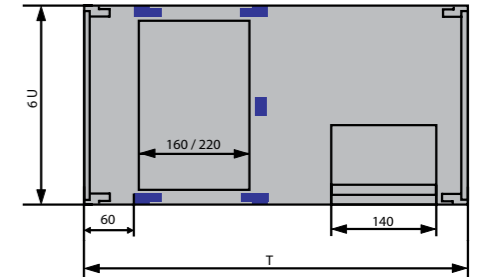
#### ADAPTATION KITS E

Range of application:

- Recessed mounting of double Eurocards, with depth 160 to 220 mm
- Without individual front panels
- Backplanes

Scope of delivery:

- 4 internal extrusions
- 1 centre extrusion
- 4 insulating strips
- 4 tapped strips
- 2 set assembly material, torx



Description	42 HP	63 HP	84 HP
Recessed mounting of double Eurocards without front panels	15K045-6	15K035-6	15K015-6

#### ADAPTATION KITS F

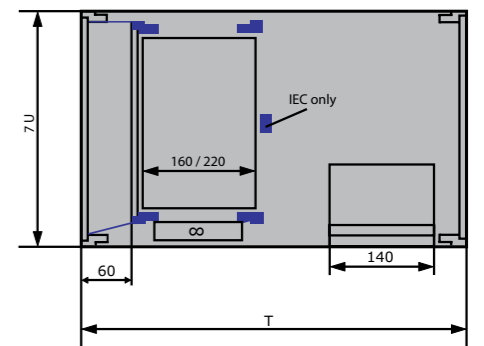
Reduction kit  $1/3$  U +  $2/3$  U for 60 mm recessed mounting

Range of application:

- Recessed mounting of double eurocards with depth 160 to 220 mm
- With or without individual front panels
- Max. fan height 26 mm
- Backplanes
- Modules, cassettes, plug-in units
- Drive mechanism receptacles  $5\frac{1}{4}$ "

Scope of delivery:

- 2 internal extrusions
- 2 longitudinal extrusions 66-111 (IEC) or 66-677 (IEEE)
- 2 insulating strips (only -6 and IEE, if -6 and IEC 4 strips needed)
- 1 centre extrusion (only IEC)
- 1 auxiliary cover top
- 1 auxiliary cover bottom
- 4 tapped strips M2.5 (6 pieces for IEC)
- 1 set assembly material, torx



\*only bottom part ( $2/3$  U) is perforated

Description	HP	Part No.	
		IEC	IEEE
Adaptation kit reduction, solid, without fan panel	84	15K053-6	15K060-6
		15K053-7	15K060-7
Adaptation kit reduction, perforated*, without fan panel		15K054-6	15K061-6
		15K054-7	15K061-7
Adaptation kit reduction, perforated*, with fan panel		15K055-6	15K062-6
		15K055-7	15K062-7

#### ADDITIONAL FAN PLATE

Scope of delivery:

- 1 fan plate
- 8 milled edge screws torx T10 (M3 x 5)

Description	Part No.
Additional fan plate incl. 1 set assembly material	12K737

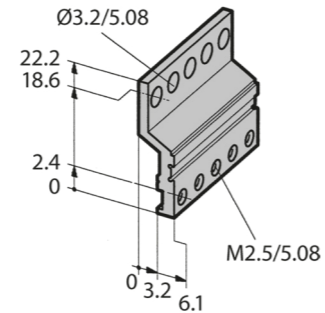
## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EDGE CONNECTOR EXTRUSION

Scope of delivery:

- 1 aluminum extrusion, clear passivated (conductive)

Length HP	mm		inch		Part No.	
	mm	inch	clear passivated (EMV version)	raw		
8	40.6	1.59	66-147-40			
18	91.4	3.59	66-147-41			
28	142.2	5.60	66-147-42			
42	213.4	8.40	66-147-63			
63	320.0	12.60	66-147-65			
81	411.5	16.20	66-147-22			
84	426.7	16.80	66-147-52			
	1350.0	53.14				66-147-19



ASSEMBLY MATERIAL

Description	Part No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

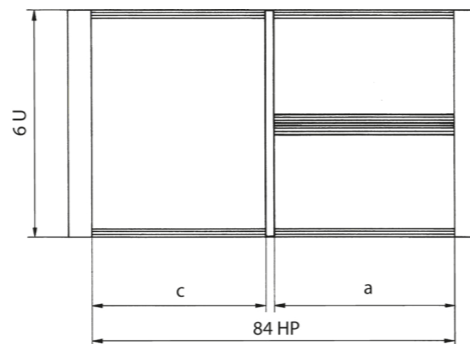
## Accessories

### WIDTH DIVISION FOR 6 U CONSTRUCTION

Scope of delivery:

- 1 divider extrusion front
- 1 divider extrusion rear
- 2 longitudinal extrusions
- 2 internal extrusions
- Assembly material:
  - 16 cylinderhead screws torx T20 (M4 x 10)
  - 4 cylinderhead screws torx T10 (M3 x 12)

Nominal width		Part No.	
6 U (c)	2 x 3 U (a)	IEC60297	IEEE1101.10
50 HP	32 HP	12K959-2	12K959-3
40 HP	42 HP	12K949-2	12K949-3



### TAPPED STRIPS FOR FRONT EXTRUSIONS

Scope of delivery	Description	Part No.
1 piece tapped strip	M2.5 32 HP = 162.56 mm	61-463
1 piece tapped strip	M2.5 42 HP = 213.36 mm	61-464

## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

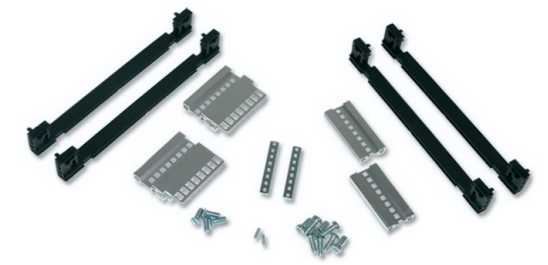
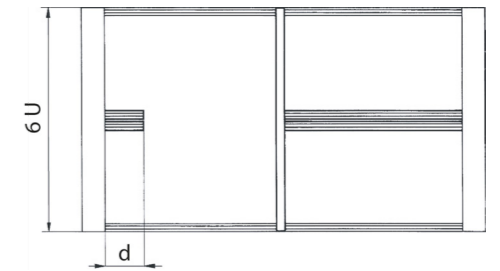
### EMC WIDE DIVISIONS SMALL

- For dividing 6 U systems
- Direct mounting onto the height extrusion and side panel
- For width of 4 and 8 HP
- Other sizes on request

Scope of delivery:

- 2 divider extrusions front
- 2 divider extrusions rear
- 2 tapped strips M2.5
- 8 cylinder head screws M4 x 10
- 4 slotted countersunk screws M4 x 10
- 2 set screws for fixing of tapped strips M2.5 x 8
- 2 card guides 160 mm (4 pieces for 8 HP version)

Description	Part No. d = 4 HP	Part No. d = 8 HP
Front sub division vertical small IEEE	80-504-11	80-508-11
Front sub division vertical small IEC	80-204-11	80-208-11



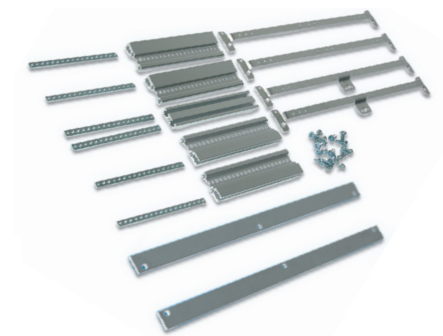
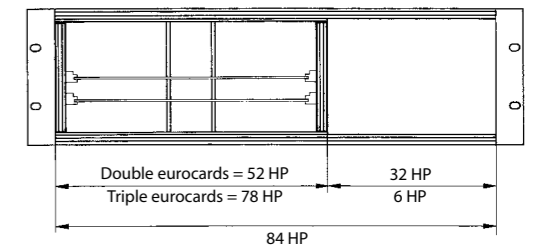
### HORIZONTAL CARD MOUNTING KITS FOR DOUBLE EUROCARDS

- For double Eurocards (6 U)
- The horizontal card mounting kit can be fitted recessed by using two additional extrusions
- If no overall fan plates is used, the top and bottom cover plate has to be ordered separately
- Fan front panels, card guides and front panels see below

Scope delivery:

- 4 distance plates (2 front | 2 rear)
- 4 longitudinal extrusions (2 front | 2 rear)
- 1 centre extrusion
- 6 tapped strips M2.5
- 1 set assembly material
- Top and bottom cover plate has to be ordered separately

Mounting height	Usable height	Backplane	Cover plate	
			top	bottom
3 U	20 HP	14K971-60	21N602-90	21N602-90
4 U	28 HP	14K981-60	21N602-90	21N603-90
6 U	48 HP	14K991-60	21N606-90	21N607-90



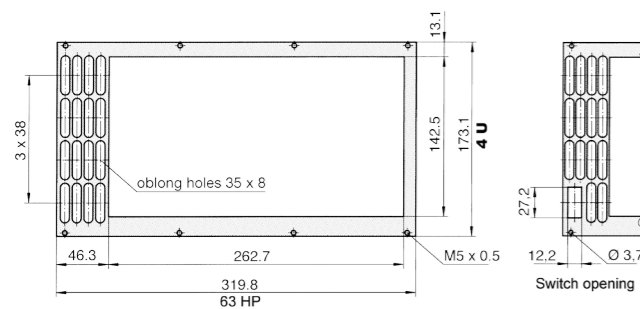
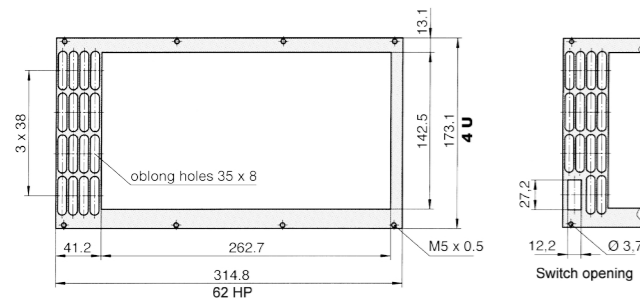
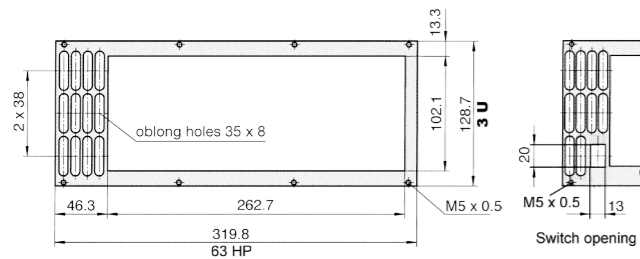
## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### FAN FRONT PANELS FOR HORIZONTAL MOUNTING KITS

- For horizontal mounting of double Eurocards
- Aluminum 2.5 mm, clear anodised (non-conductive)
- With cutout for power switch

Scope of delivery:

- 1 perforated fan front panel



	Height	Width	Air passage		Part No.
			mm <sup>2</sup>	sq. in	
Without switch opening	3 U	63 HP	3195	4.95	21N363-07
With switch opening	3 U	62 HP	2662	4.12	21N363-02

	Height	Width	Air passage		Part No.
			mm <sup>2</sup>	sq. in	
Without switch opening	4 U	62 HP	4260	6.6	21N462-01
With switch opening	4 U	62 HP	3727	5.77	21N462-02

	Height	Width	Air passage		Part No.
			mm <sup>2</sup>	sq. in	
Without switch opening	4 HE	63 TE	4260	6.6	21N463-07
With switch opening	4 HE	63 TE	3727	5.77	21N463-02

### FRONT PANEL SCREWS

- Set of 10 screws
- With threaded or press-fit bush
- 8 screws are necessary per front panel

Description	Part No.
Recessed round head screw, M2.5 x 11.3 with threaded bush M5 x 0.5	63-129
Recessed round head screw, M2.5 x 11.3 with press-fit bush Ø 3.7	63-444

## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

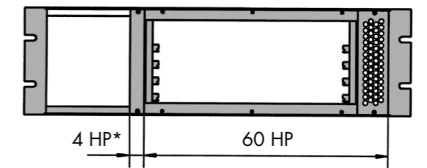
### EMC HORIZONTAL CARD MOUNTING KIT FOR DOUBLE EUROCARDS (6 U)

- For 160 mm card depth
- For backplane mounting with insulating strips
- Fan slot on the right side of the horizontal installation kit

Lieferumfang:

- 1 connector plate
- 2 + 14 card guides
- 2 cover plates
- 2 longitudinal extrusions
- 2 internal extrusions
- 4 insulating strips
- 1 fan plate without fan
- 4 tapped strips M2.5
- 1 set of assembly material
- 1 set of EMC gaskets
- 14 ESD clips and 14 ESD springs (IEEE version only)

Height	Nominal height	Part No.	
		IEEE	IEC
4 U	28 HP	14K987-60	14K986-60



\*This space is necessary for the air flow. Assemble blind panel or monitoring module



### EMC FRONT SUB DIVISION

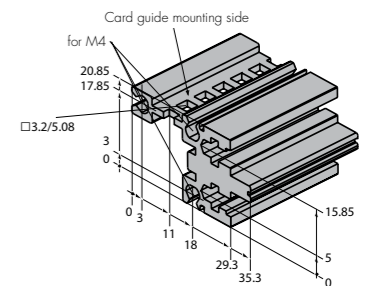
#### EMC FRONT SUB DIVISION HORIZONTAL IEC FOR CARD GUIDES

- For sub division of front and rear
- Card guides can be applied on one side
- EMC level: Superior
- Only one special extrusion needed
- Easy and quick assembly
- Cost effective solution
- Delivered as a kit
- Usable width: 84 HP
- Other sizes on request

Scope of delivery:

- 1 front double extrusion IEC-special, clear passivated
- 2 tapped strips M2.5
- 4 cylinder head screws torx T0 (M4 x 10)

Description	Part No.
EMC front sub division horizontal IEC for card guides	63K837-24



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EMC FRONT SUB DIVISION

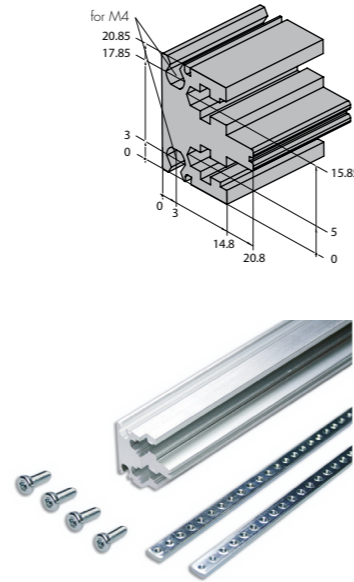
#### EMC FRONT SUB DIVISION HORIZONTAL IEC

- For sub division of front and rear
- No possibility of mounting card guides
- EMC level: Superior
- Only one special extrusion needed
- Easy and quick assembly
- Cost effective solution
- Delivered as a kit
- Usable width: 84 HP
- Other sizes on request

#### Scope of delivery:

- 1 front double extrusion IEC-special, clear passivated
- 2 tapped strips M2.5
- 4 torx cylinder head screws M4 x 10 (T20)

Description	Part No.
EMC front sub division horizontal IEC	63K837-22



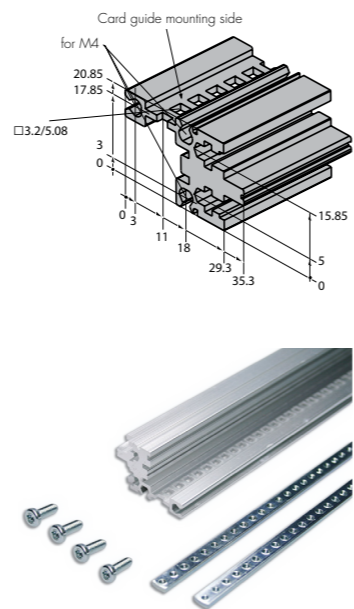
#### EMC FRONT SUB DIVISION HORIZONTAL IEEE FOR CARD GUIDES

- EMC level: Superior
- Only one special extrusion needed
- Card guides can be applied
- Easy and quick assembly
- Cost effective solution
- Usable width: 84 HP
- Other sizes on request

#### Scope of delivery:

- 1 front double extrusion IEEE-special clear passivated
- 2 tapped strips M2.5
- 4 cylinder head screws torx T20 (M4 x 10)

Description	Part No.
EMC front sub division horizontal IEC for card guides	63K837-23



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EMC FRONT SUB DIVISION

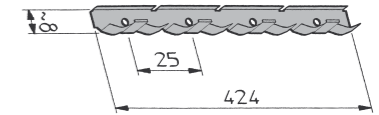
#### HF SPRING

- Stainless steel
- Snapped-in on the extrusion

#### Scope of delivery:

- 2 HF spring 84 HP

Description	Part No.
1 set of 2 HF spring 84 HP	7739-14-4



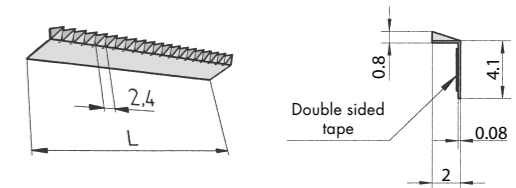
#### EMC CONTACT STRIPS

- BeCu galvanized
- For front panels, fixing on extrusion
- Self-adhesive

#### Scope of delivery:

- 2 EMC contact strips

Width	Length		Part No.
	mm	inch	
84 HP	424.2	16.7	63-836-70



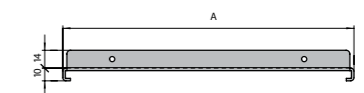
### MOUNTING CHASSIS FULL DEPTH

- For mounting non-standard modules and components
- Mounting chassis is fixed directly on the side panels
- Aluminum 2 mm, raw

#### Scope of delivery:

- 1 mounting chassis (depth: < 230 mm can be mounted with 4 screws | > 230 mm with 6 screws)

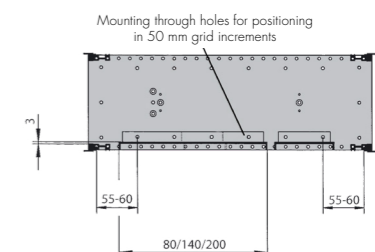
Case depth	Chassis depth A		Part No.			
	mm	inch	42 HP	63 HP	84 HP	
245	9.64	168	6.61	14M028	14M029	14M030
305	12	228	8.97	14M031	14M032	14M033
395	15.55	318	12.52	-	14M034	14M035
500	19.68	428	16.65	-	-	14M036



#### Scope of delivery for assembly material:

- 4 cylinder head screw torx T20 (M4 x 6)
- 4 earthing nut M4

Description	Part No.
Assembly material for mounting chassis	63K861



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### MOUNTING CHASSIS FOR MOUNTING OF POWER SUPPLIES, ETC.

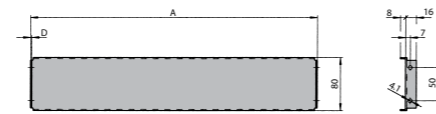
CHASSIS DEPTH 80 MM

Case Width	A		D		Part No.
	mm	inch	mm	inch	
84 HP	431.5	16.98	2	0.08	14-832

Scope of delivery for assembly material:

- 4 cylinder head screw torx T20 (M4 x 6)
- 4 earthing nut M4

Description	Part No.
Assembly material for mounting chassis with torx-screws	63K861



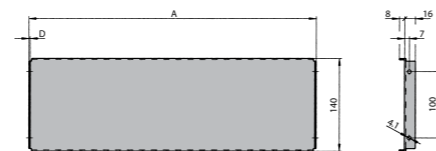
CHASSIS DEPTH 140 MM

Case Width	A		D		Part No.
	mm	inch	mm	inch	
42 HP	218.2	8.59	1.5	0.06	14-833
63 HP	324.9	12.79	1.5	0.06	14-834
84 HP	431.5	16.98	2	0.08	14-836

Scope of delivery for assembly material:

- 4 cylinder head screw torx T20 (M4 x 6)
- 4 earthing nut M4

Description	Part No.
Assembly material for mounting chassis with torx-screws	63K861



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### MOUNTING CHASSIS FOR HORIZONTAL MOUNTING OF EUROCARDS

CHASSIS DEPTH 200 MM

- The hole pattern allows single, double and triple Eurocards to be mounted

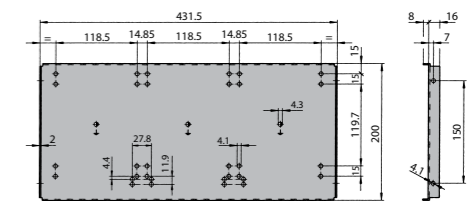
Case width	Part No.
84 HP	14-840

ASSEMBLY MATERIAL

Scope of delivery:

- 4 cylinder head screw torx T20 (M4 x 6)
- 4 earthing nut M4

Description	Part No.
Assembly material for mounting chassis with torx-screws	63K861



MOUNTING SET FOR ONE EUROCARD

Scope of delivery:

- 2 front extrusions
- 2 internal extrusions
- Card guides (2 to 6 pieces)
- 2 tapped strips
- Assembly material

Extrusion length		Part No.
4.5 HP	IEC	80-204-11
8.5 HP	IEC	80-208-11
12.5 HP	IEC	80-212-11
4.5 HP	IEEE	80-504-11
8.5 HP	IEEE	80-508-11

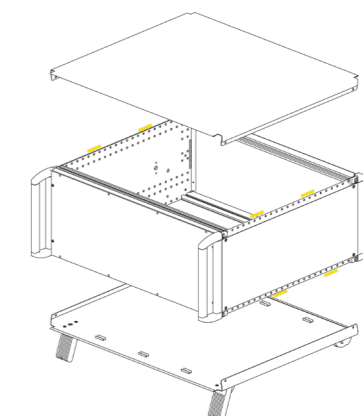
### EMC SHIELDING

GASKETS FOR ADVANCED EMC LEVEL

- Vertical gaskets for cover plates (partial)
- To achieve an advanced EMC level
- No additional gaskets for width necessary

Depth gaskets for covers:

Case depth	Scope of delivery		Part No.
	mm	inch	
245	9.64	4 self-adhesive HF gaskets L = 30 mm	63-836-07
305	12.00	4 self-adhesive HF gaskets L = 30 mm	63-836-07
395	15.55	8 self-adhesive HF gaskets L = 30 mm	63-836-08
500	19.68	12 self-adhesive HF gaskets L = 30 mm	63-836-09





## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EMC SHIELDING

#### GASKETS FOR SUPERIOR EMC LEVEL

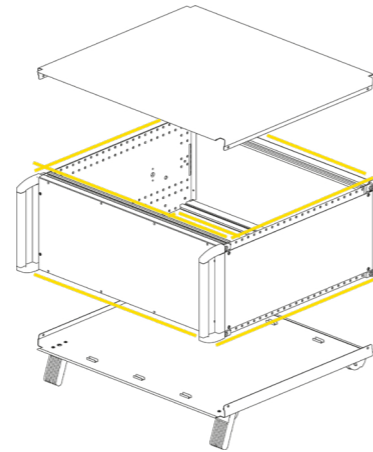
- Vertical and horizontal gaskets for cover plates
- To achieve superior EMC level
- Order 1 set each for width and depth

Width gaskets for covers:

Width	Scope of delivery	Part No.
42 HP	4 self-adhesive HF gaskets L = 216.5 mm	63-836-20
63 HP	4 self-adhesive HF gaskets L = 323 mm	63-836-21
84 HP	4 self-adhesive HF gaskets L = 430 mm	63-836-23

Depth gaskets for covers:

Depth	Scope of delivery		Part No.
	mm	inch	
245	9.64	4 self-adhesive HF gaskets L = 195 mm	63-836-10
305	12.00	4 self-adhesive HF gaskets L = 255 mm	63-836-11
395	15.55	4 self-adhesive HF gaskets L = 345 mm	63K836-04
500	19.68	4 self-adhesive HF gaskets L = 445 mm	63K836-05



### EMC DESIGN FRONT PANEL

- For front panels, pushing on side panel
- For additional increase of EMC to advanced level
- Aluminium, clear passivated

Scope of delivery:

- 2 EMC front extrusion
- 2 EMC springs
- Assembly material (2 screws torx T8, adhesive foil)



Case height	Part No.
2 U	7820-93
3 U	7820-94
4 U	7820-90
6 U	7820-102

### EMC CONTACT STRIPS (ADVANCED EMC LEVEL)

- For front panels, fixing on extrusion
- Self-adhesive

Scope of delivery:

- 2 contact strips

Width	Length	Part No.
42 HP	212.1 mm	63-836-67
63 HP	318.1 mm	63-836-68
84 HP	424.2 mm	63-836-70

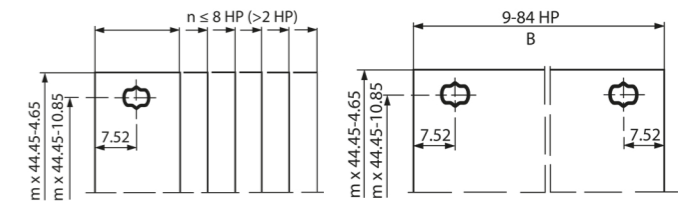


## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### FRONT PANELS

#### FLAT FRONT PANELS

- For subracks and enclosures, solid
- Aluminum 2.5 mm, clear anodised (non-conductive)
- 1 HP and 2 HP are divider extrusions (not flat panels)



Scope of delivery:

- 1 flat front panel

Flat front panels for subracks and enclosures, solid:

Width HP	B		Height			Part No.			
	mm	inch	1 U 39.8 mm	ca. 1 U* 42.15 mm	2 U 84.2 mm	3 U 128.7 mm	4 U 173.1 mm	6 U 262 mm	
2	10.0	0.39	—	—	—	21N302	—	21N602	
3	15.2	0.59	—	—	—	21N303	21N403	21N603	
4	20.1	0.79	—	—	—	21N304	21N404	21N604	
5	25.2	0.99	—	—	—	21N305	21N405	21N605	
6	30.3	1.19	—	—	—	21N306	21N406	21N606	
7	35.3	1.38	—	—	—	21N307	21N407	21N607	
8	40.4	1.59	—	—	—	21N308	21N408	21N608	
10	50.6	1.99	—	—	—	21N310	21N410	21N610	
11	55.7	2.19	—	—	—	21N311	—	—	
12	60.7	2.38	—	—	—	21N312	21N412	21N612	
14	70.9	2.79	—	—	—	21N314	21N414	21N614	
16	81.1	3.19	—	—	—	21N316	21N416	21N616	
20	101.4	3.59	—	—	—	21N320	21N420	21N620	
21	106.5	4.19	—	—	—	21N321	21N421	21N621	
28	142.0	5.59	—	—	—	21N328	—	21N628	
32	162.3	6.38	—	—	—	21N332	21N432	—	
42	213.1	8.38	—	—	21N242	21N342	21N442	21N642	
52	263.9	10.38	—	—	—	21N352	21N452	21N652	
63	319.8	12.59	—	—	21N263	21N363	21N463	21N663	
81	411.3	16.19	—	—	21N281	21N381	21N481	21N681	
84	426.5	16.79	21N184	21N084*	21N284	21N384	21N484	21N684	

\* Coverplates for 1 U fan opening

Front panel screws:

- Set of 10 screws, M2.5 x 11.3, with screw retainer

Description	Part No. (10 pieces)
Screws torx M2.5 x 11.3, with plastic screw retainer	63K159
Milled edge screws recessed M2.5 x 11.3, with plastic screw retainer	63-159

## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EMC FRONT PANELS

#### EMC FILLER PANELS WITH EMC GASKET

- High stability (U-profile)
- Extruded aluminum
- Pressed-in centring pin and bushes M2.5
- Front side clear anodised | rear side conductive

Scope of delivery:

- 1 EMC front panel incl. pressed-in centering pin and bushes M2.5 (pressed-in)

EMC front panels:

Width	Part No.		
	3 U	4 U	6 U
4 HP	66-514-73	66-514-74	66-514-76
5 HP	66-515-73		66-515-76
6 HP	66-516-73	66-516-74	66-516-76
8 HP	66-518-73	66-518-74	66-518-76
9 HP	66-519-73		66-519-76
10 HP	66-520-73		66-520-76
12 HP	66-522-73	66-522-74	66-522-76
14 HP	66-534-73		66-534-76



EMC gasket (stainless steel):

Height	Part No.		
	1 piece	10 pieces	100 pieces
3 U	81-062-03	81-062-03-1	81-062-03-2
4 U	81-062-04	81-062-04-1	81-062-04-2
6 U	81-062-06	81-062-06-1	81-062-06-2

Front panel screws:

- Front panel width < 9 HP = 2 screws  
≥ 10 HP = 4 screws

Description	Part No.
Screw torx T8 (M2.5 x 11.3)	5443-08
Round head screw, cross recessed M2.5 x 12.7	61-287

### EMC FRONT PANELS

#### EMC FILLER PANELS WITHOUT EMC GASKET

- Front panel standard, solid
- Front clear anodised | rear conductive
- Basic EMC level

Scope of delivery:

- 1 front panel incl. press-fit bushes M2.5 (pressed-in)

EMC filler panels without gasket:

Width	Part No.		
HP	3 U	4 U	6 U
4	21B304		
10	21B310		
12	21B312		
16	21B316	21B416	
21	21B321	21B421	21B621
42	21B342	21B442	21B642
63	21B363	21B463	
84	21B384	21B484	21B684



Front panel screws:

- Front panel width < 9 HP = 2 screws  
≥ 10 HP = 4 screws

Description	Part No.
Screw torx T8 (M2.5 x 11.3)	5443-08
Round head screw, cross recessed M2.5 x 12.7	61-287

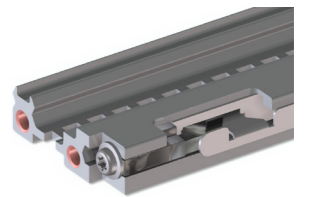
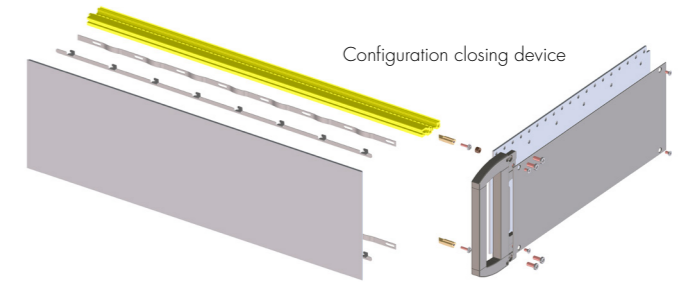
## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### EMC DESIGN FRONT PANEL

- Aluminum 2.5 mm (conductive)
- Front panel without visible screws
- Closes the front and rear side of the chassis with big shielding effect
- Contact between flat front panel and chassis is made with an EMC gasket

Scope of delivery:

- 1 EMC design front panel
- 2 plate slider
- 2 holder
- 2 locking device
- 2 filister head screw M2.5 x 40



Width	Part No.			
	2 U	3 U	4 U	6 U
42 HP	24B242	24B342	24B442	24B642
63 Hp	24B263	24B363	24B463	24B663
84 HP	24B284	24B384	24B484	24B684

### EMC FLAT FRONT PANELS SUPERIOR EMC LEVEL

Scope of delivery:

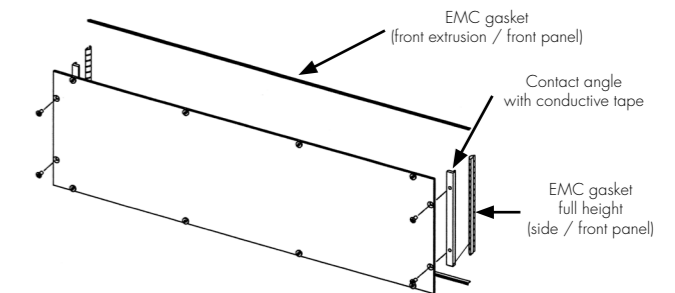
- 1 EMC flat front panel
- Contact angle, incl. screws
- EMC gasket for contact angle, front extrusion, front panel

Width	Part No.			
	2 U	3 U	4 U	6 U
42 HP	21D242	21D304		
63 HP	21D263	21D310	21D463	
84 Hp	21D284	21D384	21D484	21D684

Front panel screws:

- Front panel width 42 HP = 4 screws
- Front panel width 63 HP = 6 screws
- Front panel width 84 HP = 8 screws

Description	Part No.
Torx screws M2.5 x 11.3 size T8 with press-fit bush	63K480
Screw recessed M2.5 x 11.3 with press-fit bush	63-444
Screw cross recessed M2.5 x 12.7 with press-fit bush	63-480



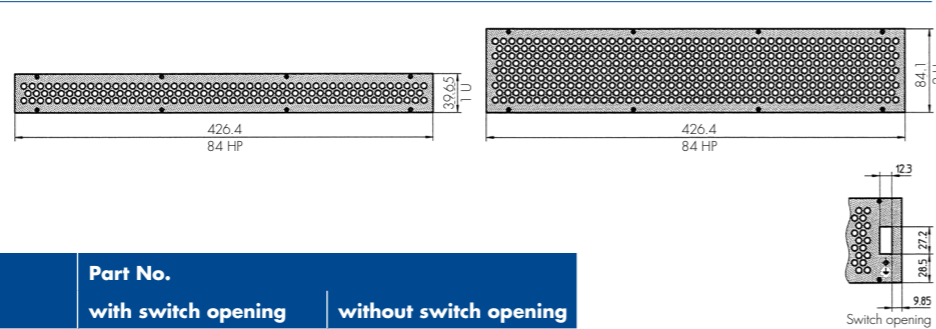
## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### PERFORATED EMC FRONT PANEL

- Front anodised, rear conductive
- Advanced EMC level
- Width: 84 HP

Scope of delivery:

- Perforated flat front panel



Height	Air passage	Part No.	
		with switch opening	without switch opening
1 U	39.65 mm   1.56"	4'100 mm <sup>2</sup>	21C18401
2 U	84.1 mm   3.31"	12'300   11'700 mm <sup>2</sup>	21C28401   21C28402

Front panel screws:

Description	Part No. 10 pieces
Screws torx T8 (M2.5 x 11.3) with press-fit bush	63K480
Screws recessed M2.5 x 11.3 with press-fit bush	63-444
Screws cross recessed M2.5 x 12.7 with press-fit bush	63-480

### FAN FRONT PANELS

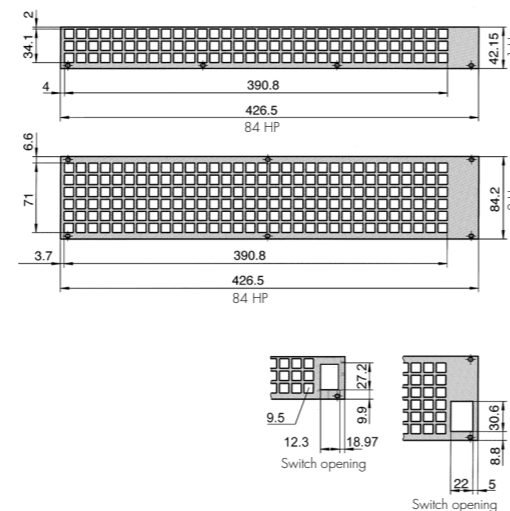
FAN FRONT PANELS 84 HP FOR VERTICAL VENTILATION

- Fan front panel: Perforated and designed with optimum air flow rate
- Available with or without switch cut-out (switch opening 22 x 30.6 mm)
- Aluminum 2.5 mm, clear anodised (non-conductive)

Scope of delivery:

- 1 perforated fan front panel

Description	Height	Air passage	Part No.
		mm <sup>2</sup>   sq. inch	
Without switch opening	~ 1 U	8664   13.42	21N08401
With switch opening	~ 1 U	8664   13.42	21N08402
Without switch opening	2 U	17328   26.85	21N28401
With switch opening	2 U	17328   26.85	21N28402



Front panel screws:

- Set of 10 screws, M2.5 x 11.3
- With screw retainer
- Fan front panel ~1 U = 4 screws | 2 U = 6 screws

Description	Part No. 10 pieces
Screws torx (M2.5 x 11.3) with plastic screw retainer	63K159
Milled edge screws recessed M2.5 x 11.3, with screw retainer	63-159

## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### FAN FRONT PANELS

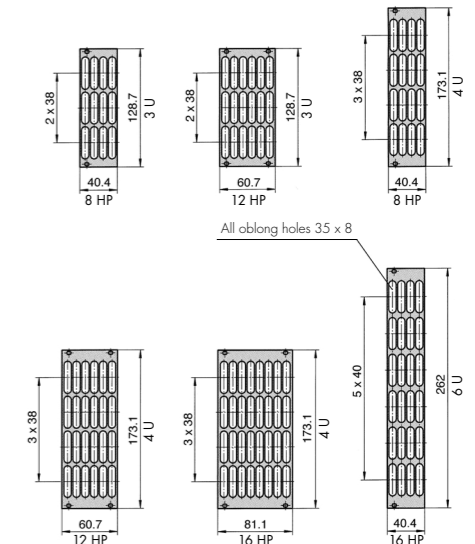
FAN FRONT PANELS FOR HORIZONTAL VENTILATION

- Aluminum 2.5 mm, clear anodised (non-conductive)

Scope of delivery:

- 1 perforated fan front panel

Height	Width	Air passage		Part No. 1 piece
		mm <sup>2</sup>	sq. inch	
3 U	8 HP	3'195	4.95	21N30801
	12 HP	4'793	7.42	21N31201
4 U	8 HP	4'260	6.6	21N40801
	12 HP	6'390	9.9	21N41201
	16 HP	8'520	13.2	21N41601
6 U	8	6'390	9.9	21N60801
	12 HP	9'586	14.85	21N61201



Front panel screws:

- Set of 10 screws, M2.5 x 11.3
- With screw retainer
- Fan front panel width up to 8 HP = 2 screws | ≥ 12 TE = 4 screws

Description	Part No. 10 pieces
Screws torx (M2.5 x 11.3) with plastic screw retainer	63K159
Milled edge screws recessed M2.5 x 11.3, with screw retainer	63-159

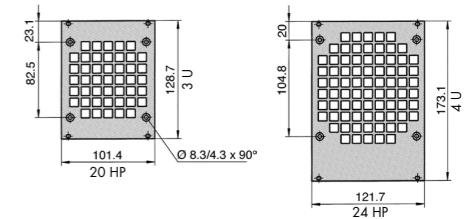
FAN FRONT PANELS FOR DIRECT FAN MOUNTING

- Aluminum 2.5 mm, clear anodised (non-conductive)

Scope of delivery:

- 1 perforated fan front panel

Description	Height	Width	Air passage		Part No.
			mm <sup>2</sup>	sq. inch	
Without switch opening	3 U	20 HP	4051	6.27	21N32004
	4 U	24 HP	7022	10.88	21N42403



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### FAN FRONT PANELS

FAN FRONT PANELS FOR DIRECT FAN MOUNTING

Front panel screws:

- Set of 10 screws, M2.5 x 11.3
- With screw retainer

Description	Part No. 10 pieces
Screws torx (M2.5 x 11.3) with plastic screw retainer	63K159
Milled edge screws recessed M2.5 x 11.3 with plastic screw retainer	63-159

Assembly material for fan mounting:

Description	Part No. 10 pieces
Countersunk screw, recessed M4 x 10	5342-10
Hexagonal nut M4, 0.8D	5620-51

### HINGED FRONT PANELS

- Hinges are attached to the front extrusions of the subrack or case
- Aluminum 2.5 mm, clear anodised (non-conductive)

Scope of delivery:

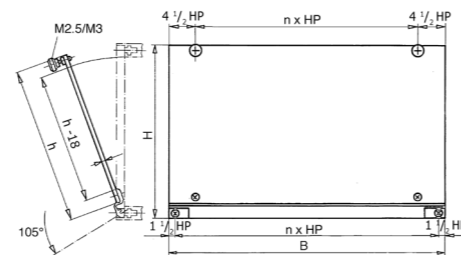
- 1 Front panel
- Hinge extrusion
- Assembly material M2.5, incl. hinges

Width	Part No.		
	3 U	4 U	6 U
63 HP	25N363-19	25N463-19	
84 HP	25N384-19	25N484-19	25N684-19

Dimensions:

Nominal width HP	Width B		Width b	
	mm	inch	mm	inch
63 HP	320.04	12.60	319.8	12.59
84 HP	426.72	16.80	426.5	16.79

Nominal height U	Height H		Height h	
	mm	inch	mm	inch
3 U	128.7	5.07	117	4.61
4 U	173.15	6.81	161.4	6.35
6 U	262.05	10.31	250.3	9.85



## DESIGN - AND COMPACT CASE STYLEBOX 15 E-MOTION

### BOTTOM-HINGED FRONT PANELS

EMC TOP / BOTTOM-HINGED FRONT PANELS

- Width: 84 HP
- Optimum protection from electromagnetic interference
- Aluminum 2.5 mm
- Front anodised | rear conductive

Scope of delivery:

- 1 EMC front panel
- Hinge extrusions
- Assembly material M2.5, incl. hinges
- EMC gaskets

EMC-Level	Part No.		
	3 U	4 U	6 U
Advanced	25C384-11	25C484-11	25C684-11
Superior	25D384-11	25D484-11	25D684-11

### SIDE-HINGED FRONT PANELS

- Aluminum 2.5 mm, clear anodised (non-conductive)

Scope of delivery:

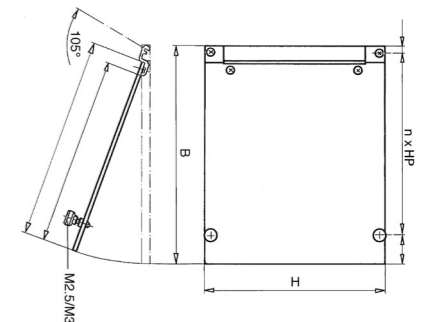
- 1 front panel
- Hinge extrusion
- Assembly material M2.5, incl. hinges

Width HP	Part No.		
	3 U	4 U	6 U
42	25N342-29		
63	25N363-29		
84	25N384-29	25N484-29	25N684-29

Dimensions:

Nominal Width HP	Width B		Width B		Width b	
	mm	inch	mm	inch	mm	inch
42	213.36	8.4	213.1	8.39	201	7.91
63	320.04	12.6	319.8	12.59	307.7	12.11
84	426.72	16.8	426.5	16.79	414.3	16.31

Nominal height U	Height H	
	mm	inch
3	128.7	5.06
4	173.15	6.81
6	262.05	10.31



# DESIGN - AND COMPACT CASE

## STYLEBOX 15 E-MOTION

### HEAT SINK FRONT PANELS

- For subracks and enclosures
- Width 42 HP
- Cooling fins in pitch of 1 1/2 HP
- Aluminum anodised or clear passivated
- EMC version with mounted brackets for slide in of EMC gaskets 81-062-xx
- Customised versions on request



Scope of delivery:

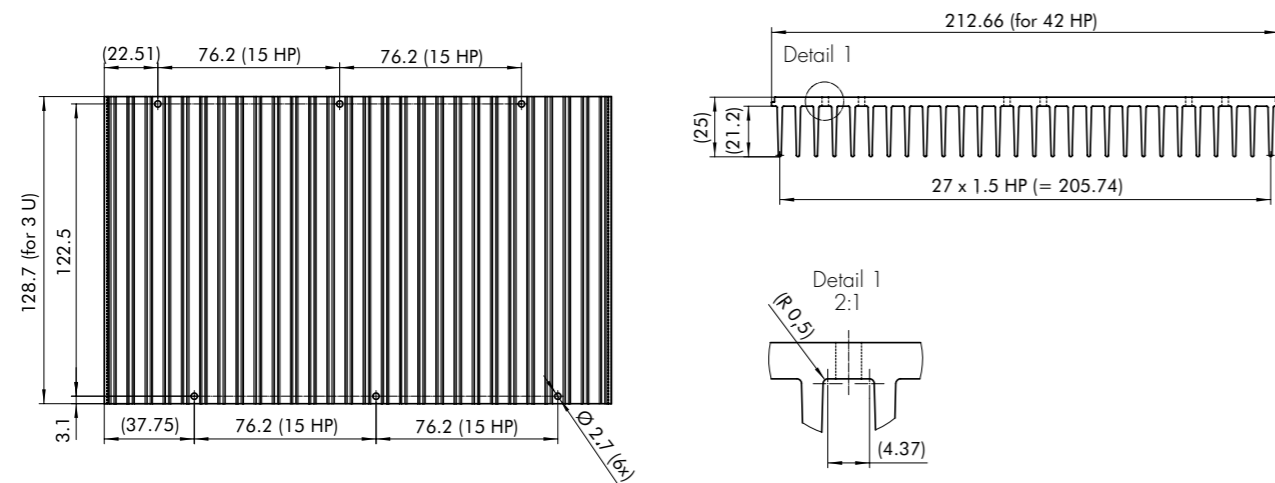
- 1 heat sink front panel M2.5 incl. hinges

Assembly Material:

Description	Surface	Width	Height	Part No.
Heat sink front panel	clear anodised	42 HP	3 U	66-100-71
Heat sink front panel	black anodised	42 HP	3 U	66-100-72
EMC heat sink front panel	clear passivated	42 HP	3 U	21F342

Description	Part No. (1 piece)
Cylinder head screw torx T8 (M2.5 x 10)	5470-09
Cross recessed cylinder head screw M2.5 x 10	5325-10

Drawing heat sink front panel 66-100-71:



### EMC GASKET

Scope of delivery:

- Stainless steel

Height	Length		Part No. (1 piece)
	mm	inch	
3 U	101.6	4	81-062-03



Further general accessories can be found in the brochure "General accessories" or on request.

## DESIGN AND COMPACT CASES

### ID-BOX 16

### Product description

#### MAIN FEATURES

The iD-Box 16 is a versatile housing for high-quality electronic components. It is a standard-independent system, which is not only based on the individual wishes of the end customer, also adapts its size to the requirements as well as the needs of the application.

Assembling this product is easy. In addition, Elma offers you fully integrated system solutions.



- Standard-independent enclosure system
- Ergonomic HMI-Interface
- Selectable dimensions
- Flexible mounting options
- High design aesthetics
- EMV level: Basic or Advanced
- Thermal analysis on request
- Ingress protection: IP40
- reddot award 2014 winner

#### POSSIBLE CUSTOMIZATIONS

- Individual colour combination
- Customer-specific design front and rear panel
- Customer-specific HMI interface
- Mounting options of electronics
- EMC level: Basic or Advanced

#### TYPICAL APPLICATIONS

- Test and measurement technology
- Sensor technology
- Medical equipment
- Testing and calibrating devices
- Optical and mechanical measuring systems

### Performance

#### SIZES

Customizable sizes:

- Size L
- Size M
- Size S
- Size XS

#### COLOR

- Standard: Blue, green and red
- Customization on request
- Selectable for base plate, over, frame, front and rear panel

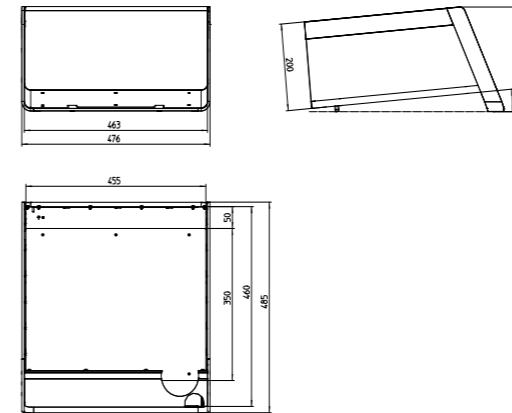
## DESIGN AND COMPACT CASES

### ID-BOX 16

### Drawings and dimensions

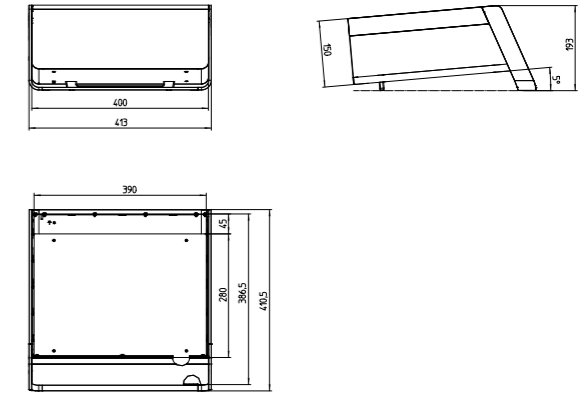
#### SIZE L

- Part number: red: 16-10000-01  
blue: 16-10000-02  
green 16-10000-03



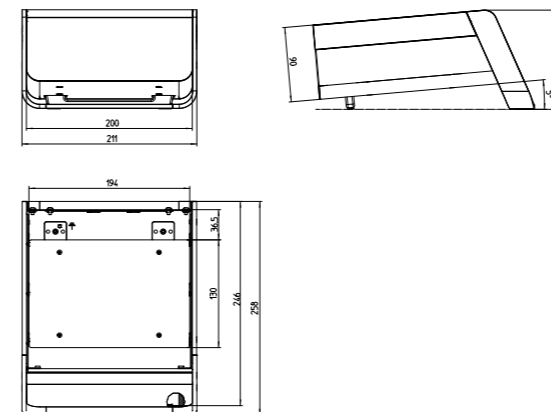
#### SIZE M

- Part number: red: 16-10001-01  
blue: 16-10001-02  
green 16-10001-03



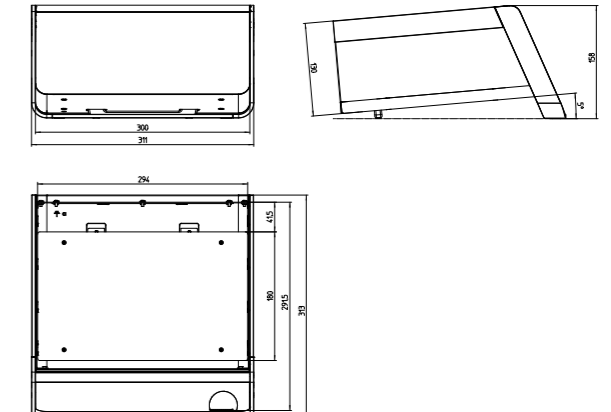
#### SIZE S

- Part number: red: 16-10003-01  
blue: 16-10003-02  
green 16-10003-03



#### SIZE XS

- Part number: red: 16-10002-01  
blue: 16-10002-02  
green 16-10002-03



### Scope of delivery

- 1 enclosure, powder coated
- 1 radius profile, powder coated
- 1 aluminium front panel
- 1 rear panel, powder coated
- 1 handle, coated
- 2 bezels, coated
- 1 feet, coated
- 2 earthing bolts
- 1 mounting plate

## DESIGN AND COMPACT CASES

### ID-CASE 18

#### Product description

##### MAIN FEATURES

With the iD-Case 18, every technical device stands out from the crowd. Thanks to the easily removable cover, access to the electronics is easy and thus minimizes the assembly effort to a minimum. The four sizes of the case offer a lot of freedom for customer-specific design. With the foldable feet, the front can be positioned vertically or inclined 20° to the installation surface. This means that the device can be operated optimally, both standing and sitting.

- Exceptional design and high design aesthetics
- Ergonomic operation
- Four standard sizes
- Different color combinations
- Easily accessible inside the enclosure
- EMC protection: Basic or Advanced

##### POSSIBLE CUSTOMIZATIONS

- Different colors
- Enhanced EMC protection

##### TYPICAL APPLICATIONS

- Test and measurement technology
- Laboratory and medical equipment
- Control units



## DESIGN AND COMPACT CASES

### ID-CASE 18

#### Executions

##### SIZES

- Size XS: 75 x 173 x 253 mm
- Size S: 90 x 208 x 288 mm
- Size M: 110 x 258 x 360 mm
- Size L: 140 x 308 x 450 mm

##### COLORS

Body:

- Pastel orange (RAL 2003)
- White green (RAL 6019)
- Pastel blue (RAL 5024)

Base and front:

- Light gray (RAL 7035)
- Traffic white (RAL 9016)

Other colors on request.

##### EMC PROTECTION

Depending on customer needs, EMC protection is scalable:

- Basis: Conductively connected enclosure parts, without an additional EMC seal
- Advanced: Conductively connected enclosure parts, with additional EMC seals

##### COOLING

- Thermal analysis: Heat dissipation and stress tests already in the design phase
- Convection cooling: Large range of built-in fan solutions
- Convection-free solution: We would be happy to advise you on your individual application needs

##### ELECTRONIC INTEGRATION (INSIDE THE ENCLOSURE)

- Integration directly on the enclosure base
- Optional mounting plates possible
- Power supply
- Wiring

## DESIGN AND COMPACT CASES

### COMPACT CASE 20

#### Product description

##### MAIN FEATURES

An attractive look in the environment makes working more beautiful and therefore more efficient. The compact design enclosure Compact Case 20 packs all the technology perfectly, because it is a flexible, robust and high-quality aluminum case for measuring devices, control and service applications. It is suitable for both stationary and mobile use. The Compact Case 20 is available in three versions and several sizes. Scalable in depth, it offers perfectly adapted internal and external dimensions.

- › Attractive design
- › Aluminum sheet enclosure
- › Extruded black anodized side and clear anodized cover panels
- › Four standard heights with different depths
- › Standard, comfort and rugged versions
- › Only one type and size of screw
- › Rugged version with covers made of elastomer, NBR 80 shore (RAL9005)
- › Optional EMC protection
- › Stackable

##### PRODUCT VARIETY

- Standard | Comfort | Rugged
- 2 plastic covers in PC | ABS for elevated aesthetic requirements
- 4 rugged covers in elastomers for heavy loads
- Optionally with increased EMC shielding (superior level)

##### POSSIBLE CUSTOMIZATIONS

- Size
- EMC protection
- Front and rear panels

##### EMC PROTECTION

The standard version of Compact Case 20 offers conductively connected enclosure parts without additional seals. To increase the EMC shielding, optional versions with EMC gaskets are available.



##### TYPICAL APPLICATIONS

- Test and measuring devices
- Medical equipment
- Audio and studio equipment
- Applications in harsh environments

## DESIGN AND COMPACT CASES

### COMPACT CASE 20

#### Embedded Version

The Compact Case 20 embedded is a robust and high-quality aluminum design housing for applications in the measurement, control and service areas. It is suitable for both stationary and mobile use. Thanks to the ribbed profile, the housing has a non-slip design and also ensures heat dissipation. The inclusion of square nuts allows for easy attachment of electronics or those components that require a heat sink.

It ensures reliable function - in the laboratory, treatment technology, in the audio sector as well as in the industrial sector.

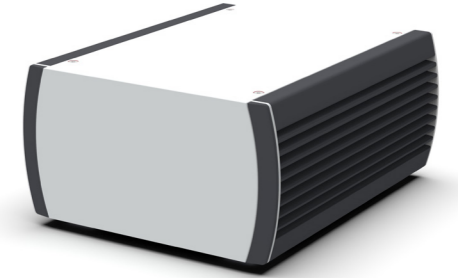
- › Two different standard heights: XS and S
- › Three design variants for the front panels: Standard, Comfort, Rugged
- › Groove for square nuts for fastening built-in components
- › Stackable
- › EMC-protection optional

##### Product variants

- › 3 variants: Standard, Comfort, Rugged
- › Optional with increased EMC protection (Superior Level)
- › Variable depths and widths

##### Applications

- › Audio Converters
- › Embedded Controller
- › Mess- und Überwachungsgeräte





## DESIGN AND COMPACT CASES

### COMPACT CASE 20 EMBEDDED

#### Product variants

##### Standard versions

- > 4 standard sizes with depths from 150 to 300 mm
- > Other sizes on request

Sizes	Dimensions (W x H x D)	Compact case 20		
		Standard	Comfort	Rugged
XS	130 x 60 x 150 mm	20C-100-150	20C-101-150	20C-102-150
S	170 x 90 x 200 mm	20C-200-200	20C-201-200	20C-202-200
M	240 x 120 x 250 mm	20C-300-250	20C-301-250	20C-302-250
L	300 x 150 x 300 mm	20C-400-300	20C-401-300	20C-402-300



##### Embedded version

- > 4 standard sizes with depths from 150 to 300 mm
- > Other sizes on request

Sizes	Dimensions (W x H x D)	Compact case 20 embedded					
		Standard	Comfort	Rugged	Standard EMC	Comfort EMC	Rugged EMC
XS	130 x 60 x 150 mm	20C-105-150	20C-106-150	20C-107-150	20E-105-150	20E-106-150	20E-107-150
S	170 x 90 x 200 mm	20C-205-200	20C-206-200	20C-207-200	20E-205-200	20E-206-200	20E-207-200



##### Colors

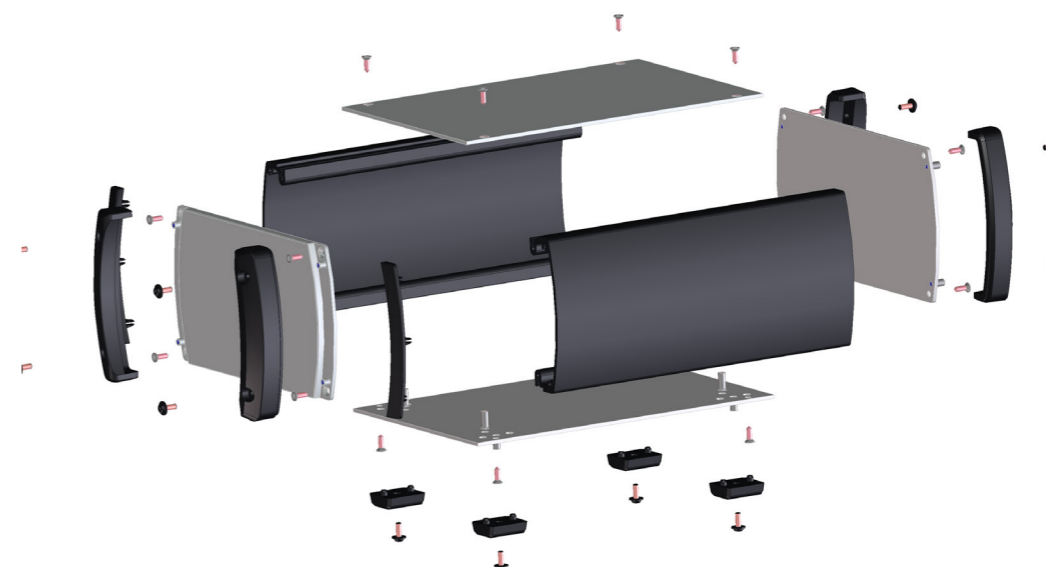
- > Aluminum: Silver with black anodized side panels
- > Comfort and Rugged versions with additional plastic covers
- > Other colors on request

## DESIGN AND COMPACT CASES

### COMPACT CASE 20 EMBEDDED

#### Product setup

##### Compact case 20



##### Compact Case 20 embedded



## DESIGN AND COMPACT CASES

### GUARDBOX 33

### Product description

#### MAIN FEATURES

The Guardbox 33 is an aluminum enclosure with a timeless design in various sizes and executions. In addition to handiness, shape and color, it impresses with its robust construction. Even in the standard version of the box with ventilation slots, it achieves IP30 and can be upgraded to IP65 without openings (protected against dust and water jets). The enclosure also offers excellent EMC shielding.



- › Sturdy
- › Different sizes | scalable depth
- › No visible screws
- › Optional EMC shielding
- › Heat dissipation with optional ventilation slots
- › Mounting kits for Eurocards
- › Checked for shock and vibration according to EN50155 | EN61373
- › Adjustable folding feet
- › Optional handles

#### PRODUCT VARIETY

- Standard versions (6 different sizes)
- IP54 combined with EMC protection
- IP65

#### POSSIBLE CUSTOMIZATIONS

- Depth
- Different colors
- Handles
- Special mounting options (e.g. wall mounting or installation)

#### TYPICAL APPLICATIONS

- Test and measurement equipment
- Laboratory and service equipment
- Equipment on train, trams, etc.

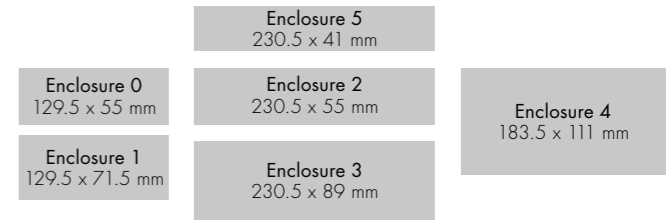
## DESIGN AND COMPACT CASES

### GUARDBOX 33

### Executions

#### SIZES

- Enclosure 0: 129.5 x 55 mm
- Enclosure 1: 129.5 x 71.5 mm
- Enclosure 2: 230.5 x 55 mm
- Enclosure 3: 230.5 x 89 mm
- Enclosure 4: 183.5 x 111 mm
- Enclosure 5: 230.5 x 41 mm



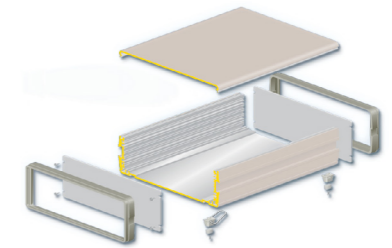
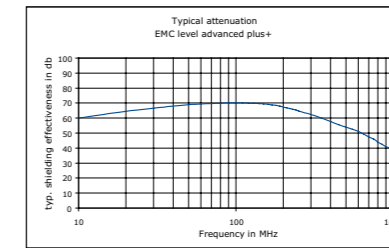
Tailored to customers needs, the Guardbox 33 is available in six different sizes.

#### EXECUTIONS

##### STANDARD

Scope of delivery:

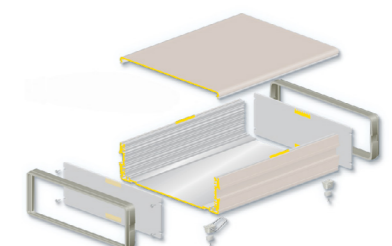
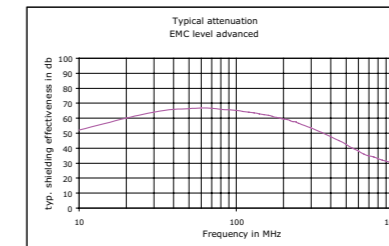
- EMC level basic plus+
- Top and bottom extrusions as well as front panels have conductive connections (this protects electronics from interference)



##### EMC PROTECTION

Scope of delivery:

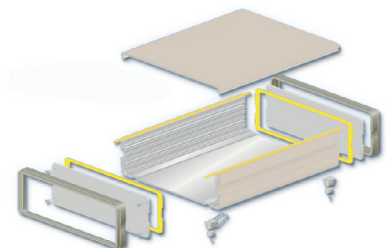
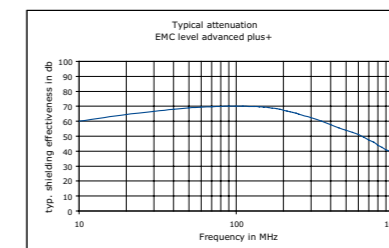
- EMC level advanced
- Standard enclosure and EMC gasket set
- EMC enclosure for demanding applications



##### IP54 AND EMC PROTECTION

Scope of delivery:

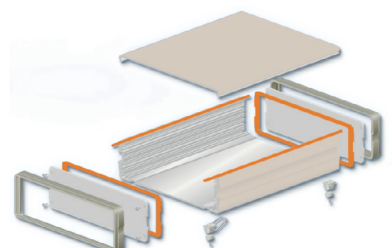
- EMC level advanced plus+
- Standard enclosure and IP54 / EMC set
- EMC enclosure for demanding applications
- Protects electronics from splash water and dust



##### IP65

Scope of delivery:

- Protects electronics against dust and water jets from all directions



# DESIGN AND COMPACT CASES

## GUARDBOX 33

### COLOR (POWDER COATING)

- Bottom and cover: light gray (RAL 7035), black (RAL 9005), stone gray (RAL 7032), other colors on request (MOQ: 10 pieces, no stock)
- Frame: light gray (RAL 7035), black (RAL 9011), stone gray (RAL 7030)

### COMPLETE ENCLOSURE SETS

Complete enclosure with EMC base level. The sets contain all necessary parts.

Scope of delivery:

- 1 basic enclosure without air perforation
- 2 frames
- 2 front / rear panels without air perforation
- 1 set assembly material

Enclosure	Color	Depth			
		120 mm 4.72"	180 mm 7.08"	240 mm 9.44"	300 mm 11.81"
0	Black	33E012-25	33E018-25	33E024-25	-
0	light gray	33E012-45	33E018-45	33E024-45	-
1	Black	33E112-25	33E118-25	33E124-25	-
1	light gray	33E112-45	33E118-45	33E124-45	-
2	Black	-	-	33E224-25	33E230-25
2	light gray	-	-	33E224-45	33E230-45
3	Black	-	-	33E324-25	33E330-25
3	light gray	-	-	33E324-45	33E330-45
4	Black	-	33E418-25	33E424-25	33E430-25
4	light gray	-	33E418-45	33E424-45	33E430-45
5	Black	-	33E518-25	33E524-25	-
5	light gray	-	33E518-45	33E524-45	-

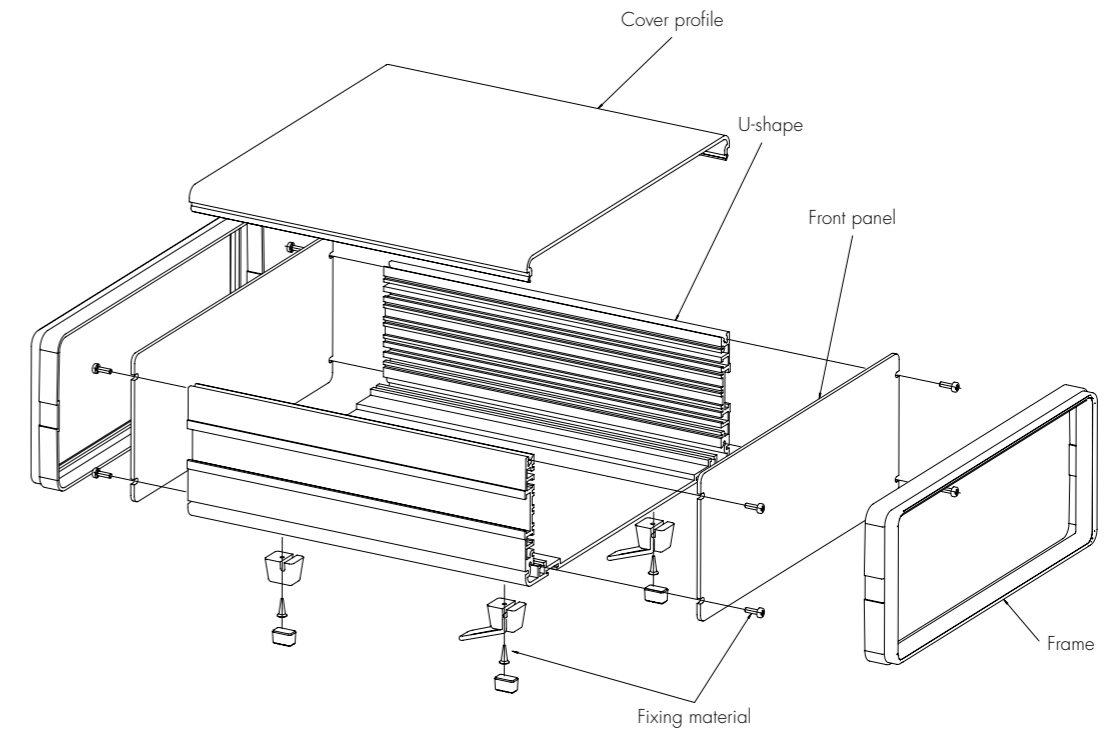
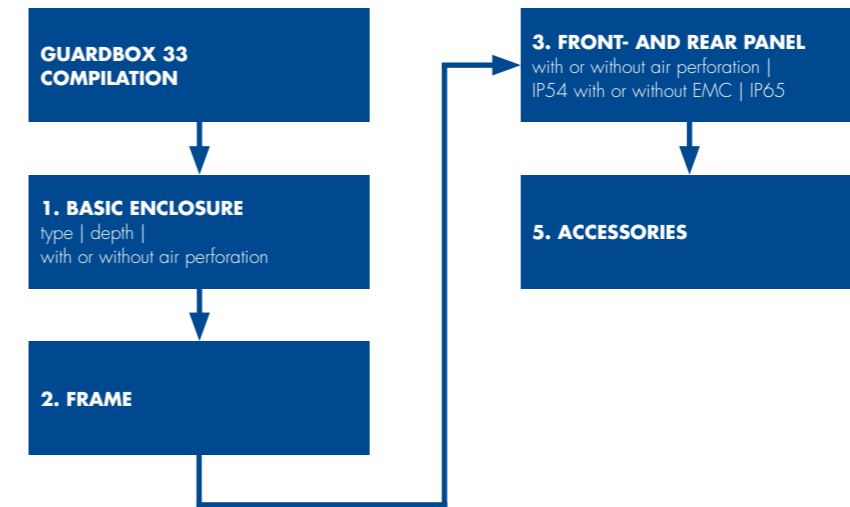


# DESIGN AND COMPACT CASES

## GUARDBOX 33

### Product structure

### CONFIGURATION



## DESIGN AND COMPACT CASES

### GUARDBOX 33

#### BASIC ENCLOSURE

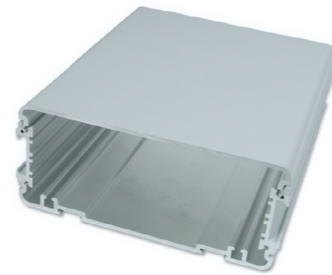
- Aluminum profile
- Powder coated
- With or without air perforation slots in bottom

Scope of delivery:

- 1 U-shaped bottom
- 1 cover

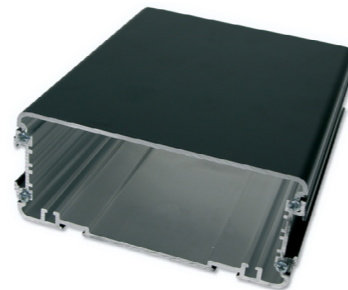
Basic enclosure light gray:

Enclosure	Without air perforation				With air perforation		
	Depth mm	120	180	240	300	240	300
Depth inch	4.72	7.08	9.44	11.81	9.44	11.81	
0	33E717	33E721	33E725				
1	33E705	33E709	33E713				
2			33E733	33E737	33E734	33E738	
3			33E757	33E761	33E758	33E762	
4		33E777	33E781	33E785	33E782	33E786	
5		33E741	33E744				



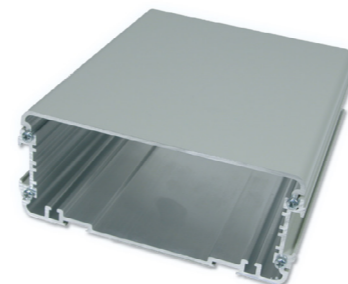
Basic enclosure black:

Enclosure	Without air perforation				With air perforation		
	Depth mm	120	180	240	300	240	300
Depth inch	4.72	7.08	9.44	11.81	9.44	11.81	
0	33E717-06	33E721-06	33E725-06				
1	33E705-06	33E709-06	33E713-06				
2			33E733-06	33E737-06	33E734-06	33E738-06	
3			33E757-06	33E761-06	33E758-06	33E762-06	
4		33E777-06	33E781-06	33E785-06	33E782-06	33E786-06	
5		33E741-06	33E744-06				



Basic enclosure stone gray:

Enclosure	Without air perforation				With air perforation		
	Depth mm	120	180	240	300	240	300
Depth inch	4.72	7.08	9.44	11.81	9.44	11.81	
0	33E717-00	33E721-00	33E725-00				
1	33E705-00	33E709-00	33E713-00				
2			33E733-00	33E737-00	33E734-00	33E738-00	
3			33E757-00	33E761-00	33E758-00	33E762-00	
4		33E777-00	33E781-00	33E785-00	33E782-00	33E786-00	
5		33E741-00	33E744-00				



## DESIGN AND COMPACT CASES

### GUARDBOX 33

#### FRAME

- Protects the entire enclosure
- High quality plastic, UL94 V-0

Scope of delivery:

- 1 plastic frame
- For one Guardbox 33 two frames have to be ordered



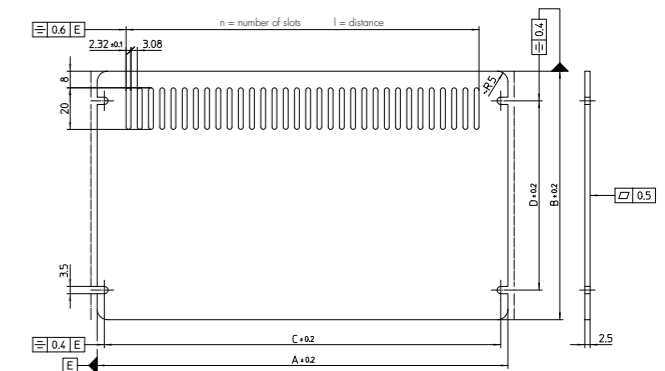
Enclosure	Light gray	Black	Stone gray
0	33-000-03	33-000-06	33-000
1	33-001-03	33-001-06	33-001
2	33-002-03	33-002-06	33-002
3	33-003-03	33-003-06	33-003
4	33-004-03	33-004-06	33-004
5	33-005-03	33-005-06	33-005

#### FRONT / REAR PANEL

- Front / rear panel of 2.5 mm (0.9") anodised aluminum
- Screwed on the front of the enclosure profiles (give the frame a required stability)
- With or without air perforation
- IP54 / EMC protection and IP65

Scope of delivery:

- 1 front / rear panel with or without air perforation (for one two front / rear panels have to be ordered)
- IP54 / EMC protection and IP65 set: 1 front, 1 rear panel, 2 self-adhesive seals, sealing hose, washers
- Torque of mounting screws (IP protection): 0.7 to 0.75 Nm



Enclosure	Without air perforation	With air perforation	Without air perforation IP65	Without air perforation IP54 / EMC
EMC level	Basic advanced	Basic	-	Advanced plus
0	33E400-50	33E400-51	33-520	33E520
1	33E401-50		33-521	33E521
2	33E402-50	33E402-51	33-522	33E522
3	33E403-50	33E403-51	33-523	33E523
4	33E404-50	33E404-51	33-524	33E524
5	33E405-50		33-525	33E525

Enclosure	A		B		C		D		n	l
	mm	inch	mm	inch	mm	inch	mm	inch		
0	142.3	5.60	63.5	2.50	137.0	5.39	35	1.37	24	126.52
1	142.3	5.60	80	3.14	137.0	5.39	51.5	2.02	24	126.52
2	243.3	9.57	63.5	2.50	238.4	9.38	35	1.37	40	212.92
3	244.4	9.62	97.5	3.83	238.4	9.38	69	2.71	40	212.92
4	197.5	7.77	119.5	4.70	190.6	7.50	91	3.58	32	169.72
5	243.3	9.57	49.5	1.94	238.4	9.38	21	0.82	-	-

**REPLACEMENT SEALS IP54 / EMC**

- Foamed plastic conductive PET-PU black, UL94 V-0
- Self-adhesive seals

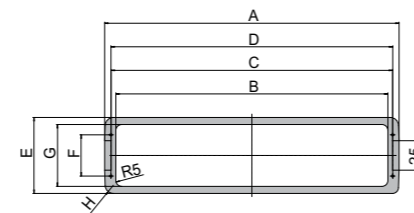
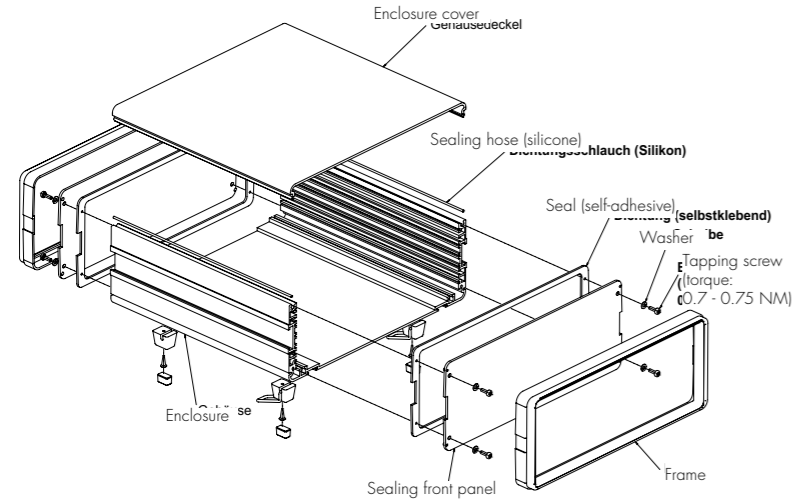
Enclosure	Part No.
0	33E510
1	33E511
2	33E512
3	33E513
4	33E514

**REPLACEMENT SEALS IP65**

- Foamed plastic PCV gray, UL94 V-0
- Self-adhesive seals

Enclosure	Part No.
0	33-510
1	33-511
2	33-512
3	33-513
4	33-514

Enclosure	A		B		C		D		E		F		G		H	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
0	149	5.86	130	5.11	137	5.39	138	5.43	64.5	2.53	35	1.37	52.5	2.06	R6.5	0.25
1	149	5.86	130	5.11	137	5.39	138	5.43	81	3.18	51.5	2.02	69	2.71	R6.5	0.25
2	250	9.84	231	9.09	239	9.40	239	9.40	64.5	2.53	35	1.37	52.5	2.06	R7	0.27
3	251	9.88	231	9.09	239	9.40	240	9.44	98	3.85	69	2.71	86	3.38	R7	0.27
4	204	8.03	184	7.24	191	7.51	193	7.59	120.5	4.74	91	3.58	108.5	4.27	R7.5	0.29
5	249.5	9.82	231	9.09	239	9.40	239	9.40	50	1.96	21	0.82	38	1.49	R7	0.27



**Assembly Material**

One set with all necessary materials for mounting one Guardbox 33.

Scope of delivery:

- 4 feet (2 folding feet, UL94 V-0) incl. screws
- 4 tapping screws to assemble the enclosure
- Assembly material for internal extension (10 screws M3 x 8, 10 screw nut M3, 10 nut holders)

Enclosure	Light gray	Black	Stone gray
0 - 4	33-640	33-620	33-621
5	33-641	33-624	33-622

**ASSEMBLY INSTRUCTIONS**

Scope of delivery:

- Detailed assembly instruction (1 page)

Description	Part No.
EMC protection	33E100
Standard, IP65 and IP54 / EMC protection	33-200

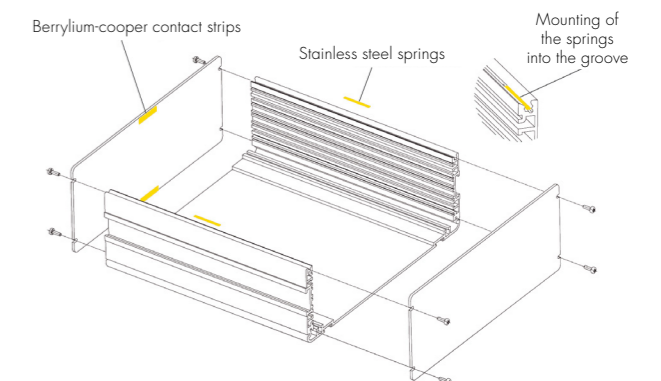
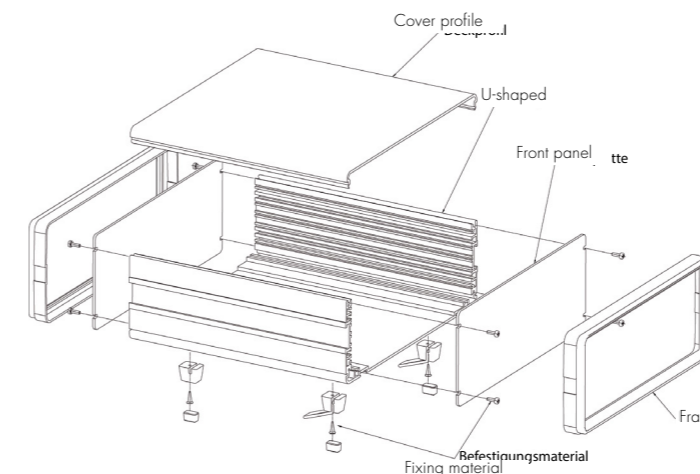
**SUPPLEMENTARY EMC GASKET SET**

- For EMC level advanced, when using no air perforations
- For EMC level basic, when using air perforations
- Increased EMC level by approximate 10 dB

Scope of delivery:

- 4 beryllium-cooper contact strips
- 2 stainless steel springs

Enclosure	Description	Part No.
0 - 5	Increased by approx. 10 dB	33-642



**Accessories**

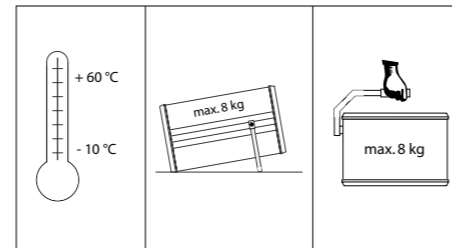
**CARRYING HANDLES**

- Powder-coated zinc die-cast
- Handle piece: Black polyurethane, UL94 V-0
- Handle can be attached to any position on the side of the groove
- Handle is 90° detent (carrying position has a slight detent)
- According to the enclosure in two widths available

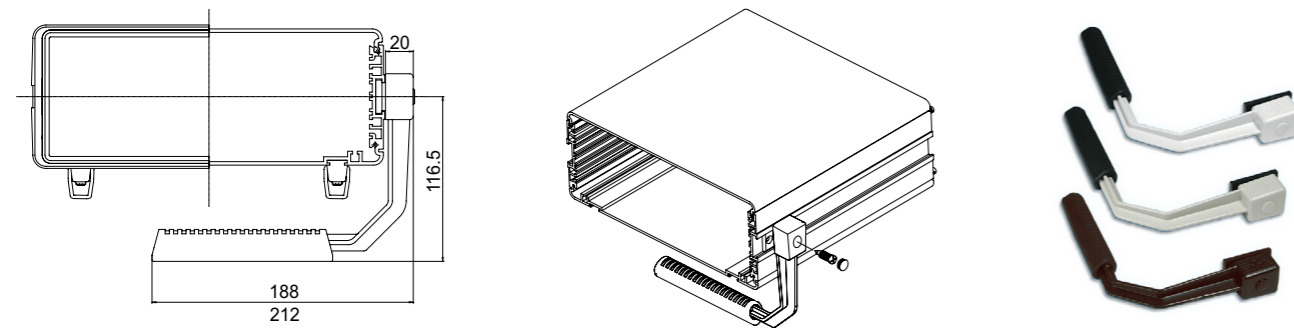
Scope of delivery:

- 1 pre-assembled handle with assembly material

Color	Part No. 212 mm (8.34") for enclosure 2 and 3	Part No. 188 mm (7.40") for enclosure 4
Light gray	33-635	33-636
Black	33-645	33-646
Stone gray	33-630	33-631



Carrying capacity depends on distribution of load and handling. Decreases with dynamic stress.



**BRACKET FOR MOUNTING IN CONSOLES**

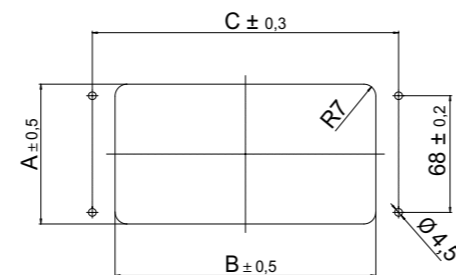
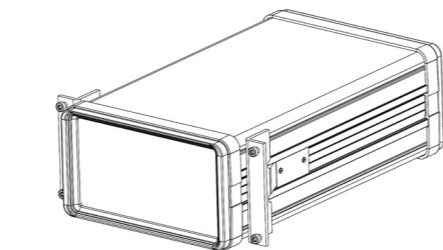
- Mounting brackets of 3 mm (0.11") aluminum sheet
- Angles are pushed to the side of the grooves and with 2 grub screws each M4 x 6 mm positioned
- With mounting brackets as a built-in enclosure in control panels etc. usable

Scope of delivery:

- 2 mounting brackets
- 4 screws M4 x 6 mm

Description	Part No.
For enclosure 0 - 4	33-650

Enclosure	A		B		C	
	mm	inch	mm	inch	mm	inch
0	65	2.55	152	5.98	178.5	7.02
1	81.5	3.2	152	5.98	178.5	7.02
2	65	2.55	253	9.96	279.5	11
3	99	3.89	254	10	280.5	11.02
4	121	4.76	207	8.14	233.5	9.19



**HANDLE CHANNEL AND FOOT SLOT NUT**

- Sliding blocks expand the fastening options
- Handle channel stones are pushed into the side groove of the enclosure
- Foot slot nut are used instead of the feet

Scope of delivery:

- Sliding blocks incl. screws

Enclosure	Description	Scope of delivery	Part No.
0 - 4	Handle groove	1 piece	33-665
0 - 5	Foot groove	4 pieces	33-666



**SINGLE EUROCARDS MOUNTING SETS**

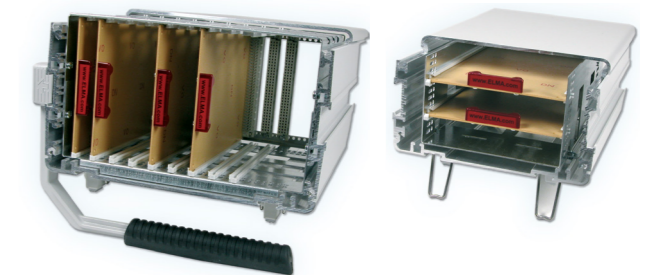
- For the installation of Eurocards 100 x 160 mm (3.93 x 6.29") with connectors according to IEC60603-2
- Card carrier 1 mm (0.03") galvanized sheet steel for the installation of the enclosure 0 - 4
- Other use: Vertical mounting of cards in enclosure size 4 (fastening lugs have to be removed)

Scope of delivery:

- 1 card carrier
- Assembly material in set
- A mounting plate has to be ordered if cards are to be mounted horizontally in enclosure sizes 2, 3 and 4

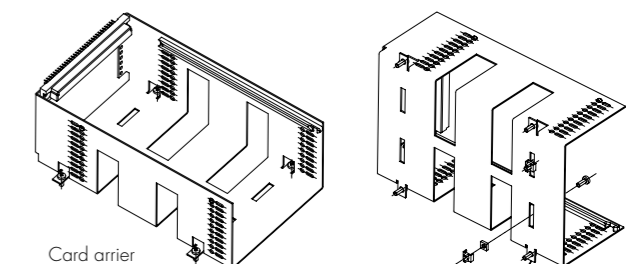
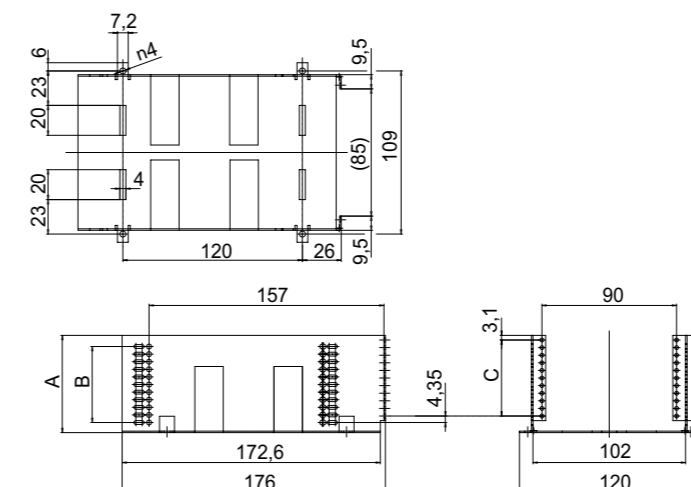
Enclosure	Mounting of cards	Part No.
1, 3 and 4	horizontal	33-205
0 and 2	horizontal	33-204
4	vertical	33-210

Other versions on request



Card mounting horizontally:

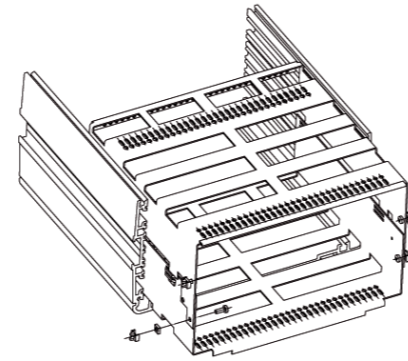
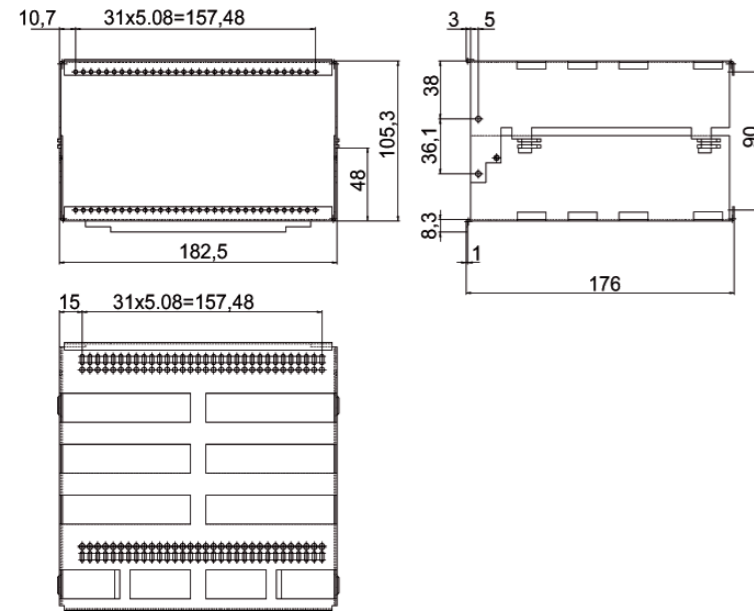
Enclosure	A		B		C		D	
	mm	inch	mm	inch	mm	inch	mm	inch
0 and 2	49.76	1.95	7 x 5.08	0.2	7 x 5.08	0.2	41.76	1.64
1, 3 and 4	65	2.55	10 x 5.08	0.2	10 x 5.08	0.2	57	2.24



Fastening lugs (cards mounted vertically)  
Note: For vertical mounting of cards in enclosure size 4, fastening lugs have to be removed

**SINGLE EUROCARDS MOUNTING SETS**

Card mounting vertically | enclosure 4



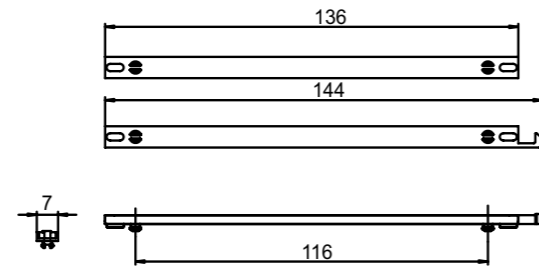
**CARD GUIDES**

- In each pair, one card guide is fitted with a card locking mechanism
- Light gray UL94 V-0

Scope of delivery:

- Card guides in pairs

Enclosure size	Part No.
160 mm (6.29")	61-034



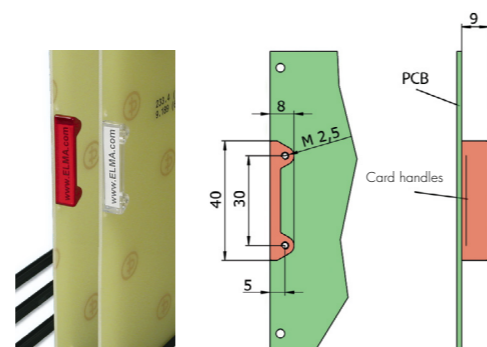
**CARD HANDLES**

- Card handles made of transparent plastic for better access and labeling of the plug-in plates

Scope of delivery:

- 1 card handle
- Two screws per card handle M2.5 x 5 are needed (ordered separately)

Description	Color	Part No.
Card handle	clear	1091-51
	red	1091-54
Cylindrical screw M2.5 x 5		5571-05
Cylinder head screw torx T8 (M2.5 x 5)		5470-07



**MOUNTING SET FOR PLUG-IN UNITS (SINGLE EUROCARDS)**

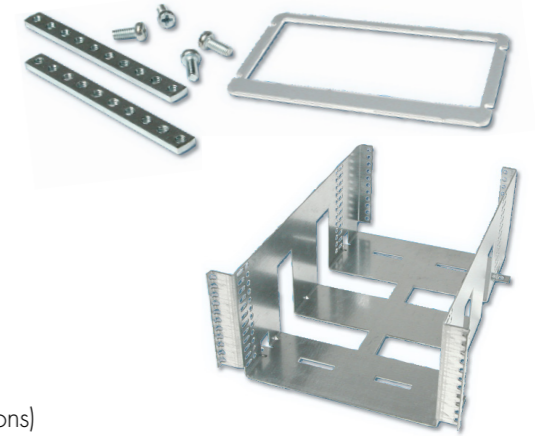
- Galvanised sheet steel plug-in sub-unit allowing 3 U plug-in units (Eurocards 100 x 160 mm with IEC60603-2 connectors and flat or extruded front panels) to be mounted horizontally in the Guardbox 33
- Installation height 12 HP
- Enclosure front panel 129.2 x 61 mm (5.08 x 2.40") is made from 2.5 mm thick anodised sheet aluminum

Scope of delivery:

- 1 plug-in card carrier sub-unit
- 1 front panel with opening for enclosure 1
- Assembly material for sub-unit

Mounting set for plug-in units (single Eurocards):

Description	Part No.
Complete sub-unit for enclosure 1	33-207



Sub-unit for enclosure 3 and 4:

- The sub-unit can also be used for enclosure 3 and 4. (front panel can be manufactured with openings to your own specifications)
- The corresponding mounting plate must be ordered to install the plug-in block

Description	Part No.
Plug-in block	33-210
Assembly material for plug-in unit	33-616

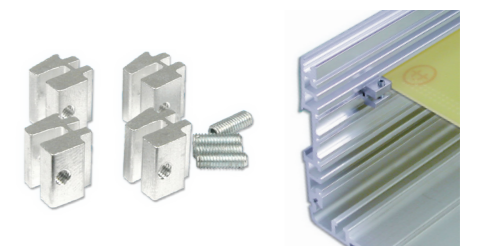
**CARD STOP SET**

- Card stoppers are used for card fixation of double Eurocards, if these are installed directly in enclosures 2, 3 and 5

Scope of delivery:

- 4 card stopper made of aluminum profile
- 4 hexagon socket set screws
- 1 hexagon socket key

Enclosure	Part No.
0-5	33-618



**MOUNTING PLATES**

- Mounting plates of 2 mm (0.07") thick sheet aluminum
- Dimensions correspond to the respective enclosure size
- Position of the slots allows various mounting arrangements and good air circulation
- The mounting plate is screwed to the grooved enclosure profile

Scope of delivery:

- 1 mounting plate, aluminum raw
- Assembly material included in the basic set



Enclosure	Part No. 180 mm   7.08 inch	Part No. 240 mm   9.44 inch	Part No. 300 mm   11.81 inch
0 and 1	33-313	33-314	
2, 3 and 5		33-324	33-325
4		33-344	

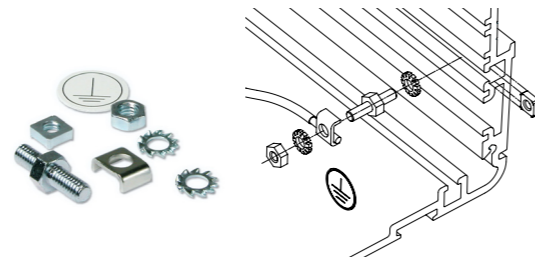
**EARTHING TERMINAL**

Front panel screws:

- Earthing terminal enables EN / VDE / NIV-compliant earthing

Scope of delivery:

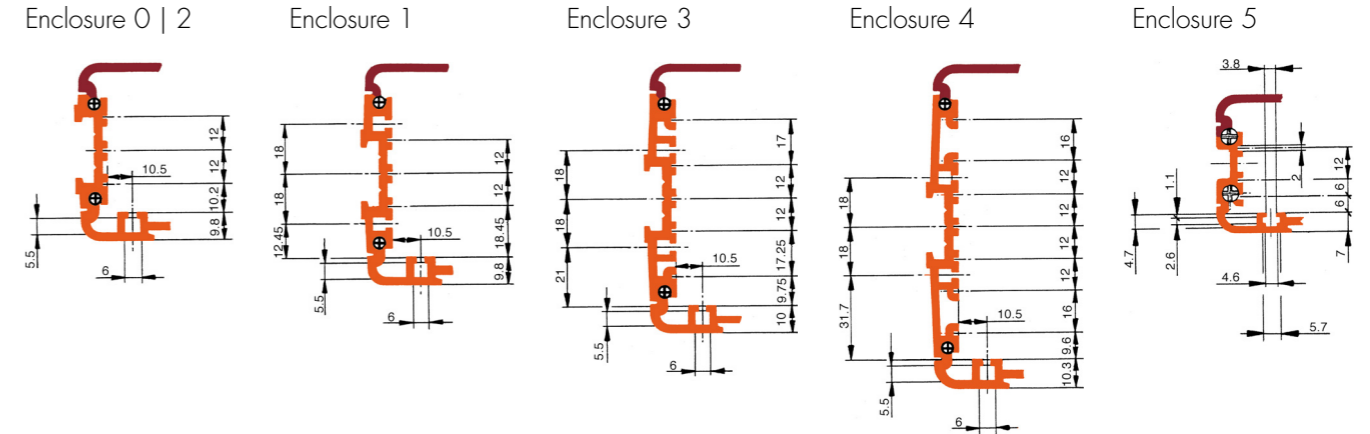
- 1 earthing nut M3.5
- 1 threaded bolt M3.5
- 1 clamp bracket
- 2 serrated washers
- 1 nut M3.5
- 1 earthing symbol



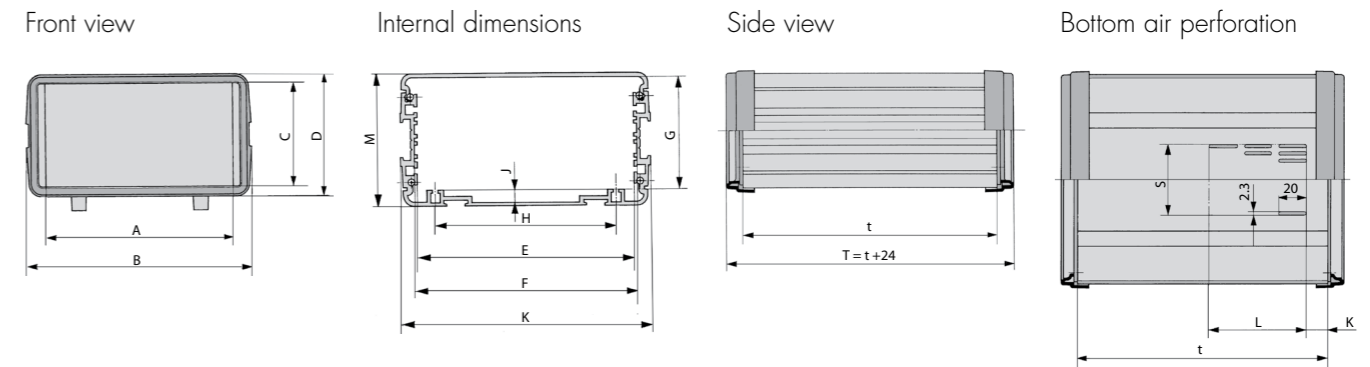
Enclosure	Description	Part No.
0-5	Earthing terminal	33-619

**Drawings and dimensions**

**CROSS SECTIONS OF EXTRUSIONS**



**DIMENSION DRAWINGS**



Type	A	B	C	D	E	F Nominal mass	F Board mass	G	H	J	K	M ±0.5	S	L t = 240   9.44"	L t = 300   11.81"	t = 120   4.72"	t = 180   7.08"	t = 240   9.44"	t = 300   11.81"	
0	mm inch	129.5 5.1	155.5 6.12	55 2.16	69 2.71	130 5.12	134 5.27	133 5.23	51.7 2.03	109 4.29	7.5 0.29	151 5.94	64 2.52			✓	✓	✓		
1	mm inch	129.5 5.1	155.5 6.12	71.5 2.81	85.5 3.37	130 5.12	134 5.27	133 5.23	68.4 2.69	109 4.29	7.5 0.29	151 5.94	80.5 3.17			✓	✓	✓		
2	mm inch	230.5 9.07	256.5 10.1	55 2.16	69 2.71	231 9.09	235 9.25	233.35 9.18	51.7 2.03	210 8.26	7.5 0.29	252 9.92	64 2.52	148.1 5.83	45 1.77				✓	✓
3	mm inch	230.5 9.07	257.5 10.14	89 3.5	103 4.05	231 9.09	235 9.25	233.35 9.18	85.5 3.36	210 8.26	7.5 0.29	253 9.96	98 3.86	148.1 5.83	45 1.77	70 2.75			✓	✓
4	mm inch	183.5 7.22	210.5 8.29	111 4.37	125 4.92	184 7.24	188 7.4	186.6 7.34	106.9 4.21	163 6.41	7.5 0.29	206 8.11	120 4.72	104.9 4.13	70 2.75			✓	✓	✓
5	mm inch	230.5 9.07	256.5 10.1	41 1.61	56 2.2	231 9.09	235 9.25	233.35 9.18	43 1.69	210 8.26	4.7 0.18	249.5 9.82	50 1.97					✓	✓	



**Norms**

**IP PROTECTION CLASSES**


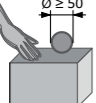
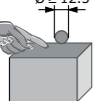
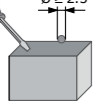
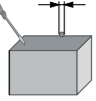
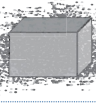

- Protection against contact and foreign bodies according to IEC60529
- Protection against water according to IEC60529


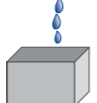

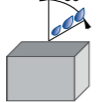
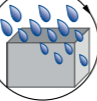
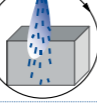



Evaluation of classification:

- The test results according to the standard do not entirely exclude leaks and an individual test is therefore recommended in critical cases (with the actual equipment layout)
- The protection class for cabinets and enclosures is specified by IP (International protection) and two indices

**Example IP55**

- Protection against penetration by water jets from all directions
- Complete protection against contact with internal parts and against dust deposition

First index	Contact protection	Foreign body protection
0 	No special protection	
1 	Against large areas of body	Large objects Ø ≥ 50 mm (1.97")
2 	Against fingers or objects of similar size	Medium-sized objects Ø ≥ 12.5 mm (0.49")
3 	Against tools, wires, etc. with a thickness of > 2.5mm	Small objects Ø ≥ 2.5 mm (0.10")
4 	Against tools, wires, etc. with thickness > 1mm	Grain-like objects Ø ≥ 1.0 mm (0.04")
5 	Complete protection	Dust-protected: Dust deposits are permitted, but their volume must not affect the function of the unit
6 	Complete protection	Dust-proof

Second index	Water protection
0 	No special protection
1 	Against water dripping vertically
2 	Against water dripping at an angle (up to 15° from the vertical)
3 	Against spray water (any direction up to 60° from the vertical)
4 	Against spray water from all directions
5 	Against water jets from a nozzle in all directions
6 	Against inundation
7 	Against immersion
8 	Against submersion

**Tests**

**ENVIRONMENTAL AND MECHANICAL TESTS**

The Guardbox 33 was tested after the following tests:

- Vibration EN50155 (EN61373)
- Shock EN60068-2-27
- IP protection IEC60529
- Salt spray test DIN50021

Detail information to environmental and mechanical tests:

Tests	Information
Vibration EN50155 (EN61373, category 1, class B)	Eff. acceleration: 7.9 m / s <sup>2</sup>   Duration: 5 h / axis Frequency: 5 to 150 Hz Axis of stimulation: X, Y, Z
Shock EN60068-2-27	Shockform: Halfsinus Acceleration: 150 m / s <sup>2</sup>   Duration: 11 ms Number of shocks: 3 / axis   Total shocks: 18
IP protection IEC60529	IP65: Guardbox 33 with IP65 sealing set IP54: Guardbox 33 with IP54 / EMC sealing set
Salt spray test DIN50021	Salt concentration: 5 g / l   Duration: 96 h Temperature: +35 °C

## DESIGN AND COMPACT CASES

### GUARDBOX 33 EASY

#### Product description

##### MAIN FEATURES

The Guardbox 33 easy is a small, but very robust enclosure that is available in different sizes. The bottom is shaped as a U-profile and thus gives the enclosure a stable hold. The lid is fixed with the front and back plate fastening. With its inner guide rails, it easily accommodates PCBs (Eurocard format or other components). A wide range of accessories enables an optimal adaptation to any application. The vibration-proof housing is characterized by its simple structure and ease of servicing.



- > Sturdy
- > Handy
- > Service friendly
- > Single or double Eurocards
- > Adjustable folding feet
- > Optional handle
- > Box, front and back plates completely anodized

##### PRODUCT VARIETY

- 6 different sizes

##### POSSIBLE CUSTOMIZATIONS

- Mounting plates
- Single or double Eurocards

##### TYPICAL APPLICATIONS

- Test and measurement equipment
- Laboratory and service equipment
- Equipment on train, trams, etc.

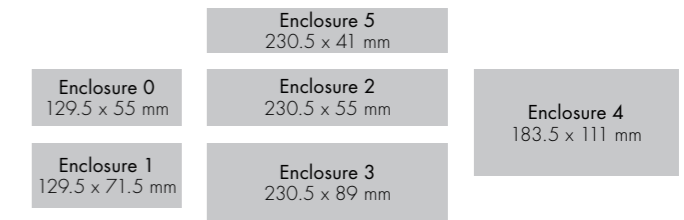
## DESIGN AND COMPACT CASES

### GUARDBOX 33 EASY

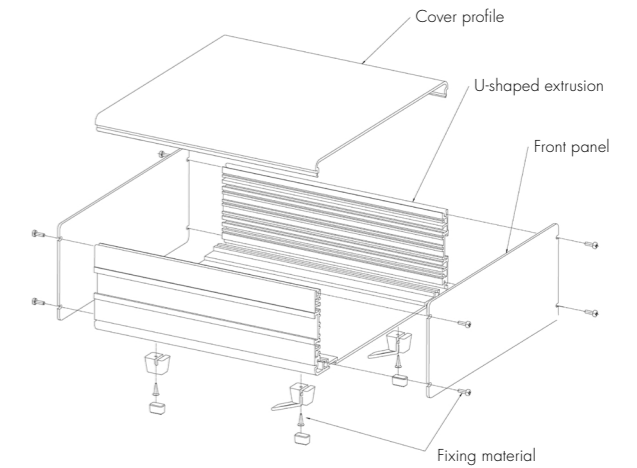
#### Executions

##### SIZES

- Enclosure 0: 129.5 x 55 mm
- Enclosure 1: 129.5 x 71.5 mm
- Enclosure 2: 230.5 x 55 mm
- Enclosure 3: 230.5 x 89 mm
- Enclosure 4: 183.5 x 111 mm
- Enclosure 5: 230.5 x 41 mm



Tailored to customers needs, the Guardbox 33 easy is available in six different sizes.



##### GUARDBOX 33 EASY SET

Scope of delivery:

- 1 basic case anodized
- 2 front / rear panels clear anodized
- 1 set with 4 feet (2 rocking, UL94V-0) incl. screws

Enclosure	Surface	Depth			
		120 mm 4.72"	180 mm 7.08"	240 mm 9.44"	300 mm 11.81"
0	clear anodized	33-012-55	33-018-55	33-024-55	-
1	clear anodized	33-112-55	33-118-55	33-124-55	-
2	clear anodized	-	-	33-224-55	33-230-55
3	clear anodized	-	-	33-324-55	33-330-55
4	clear anodized	-	33-418-55	33-424-55	33-430-55
5	clear anodized	-	33-518-55	33-524-55	-

##### COLORS

- Clear anodized
- Other colors on request

## DESIGN AND COMPACT CASES

### GUARDBOX 33 EASY

#### Accessories

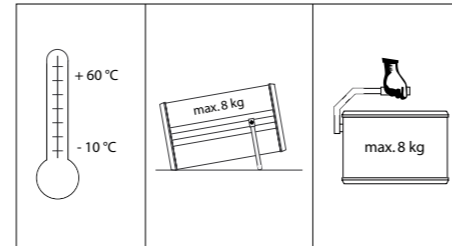
##### CARRYING HANDLES

- For Guardbox 33 easy enclosure sizes 1 to 4
- Side parts made of plastic black
- Handle extrusion in aluminium, anodized black
- Handle can be attached at any position on the lateral groove
- Handle latches every 30°

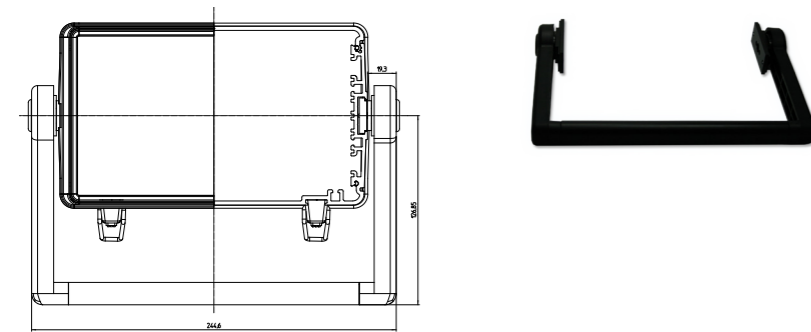
Scope of delivery:

- 1 pre-assembled handle with assembly material

Description	Part No.
Bow handle black for enclosure 0 and 1	33-647
Bow handle black for enclosure 2 and 3	33-648
Bow handle black for enclosure 4	33-649



Carrying capacity depends on weight distribution and handling, it also decreases with dynamic stress.



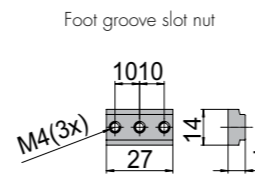
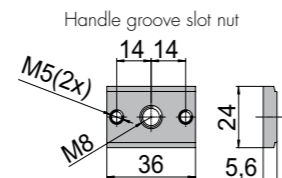
##### SLIDING BLOCKS FOR HANDLE SLOTS AND FEET SLOTS

- The sliding blocks provide an optional means of attachment
- The blocks are inserted in the handle slot on the side of the case respectively in place of the feet slot
- Feet nuts are used instead of the feet

Scope of delivery:

- Sliding blocks incl. screws

Enclosure	Description	Scope of delivery	Part No.
0 - 4	Handle groove set	1 piece	33-665
0 - 5	Foot groove set	4 pieces	33-666



## DESIGN AND COMPACT CASES

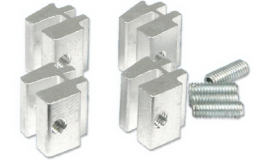
### GUARDBOX 33 EASY

##### CARD STOP

- Card stoppers serve to additionally fix the double Eurocards if they are installed directly in the enclosure 2, 3 and 5

Scope of delivery:

- 4 extruded card stoppers
- 4 hexagon socket set screws
- 1 hexagon socket key



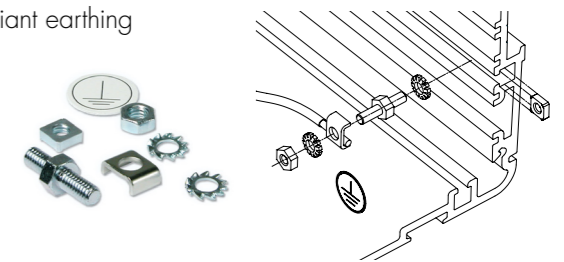
Enclosure	Part No.
0 - 5	33-618

##### EARTHING TERMINAL

- Protective earthing terminal facilitates enable EN / VDE / NIV-compliant earthing

Scope of delivery:

- 1 earthing nut M3.5
- 1 threaded bolt M3.5
- 1 clamp bracket
- 2 serrated washers
- 1 nut M3.5
- 1 earthing symbol



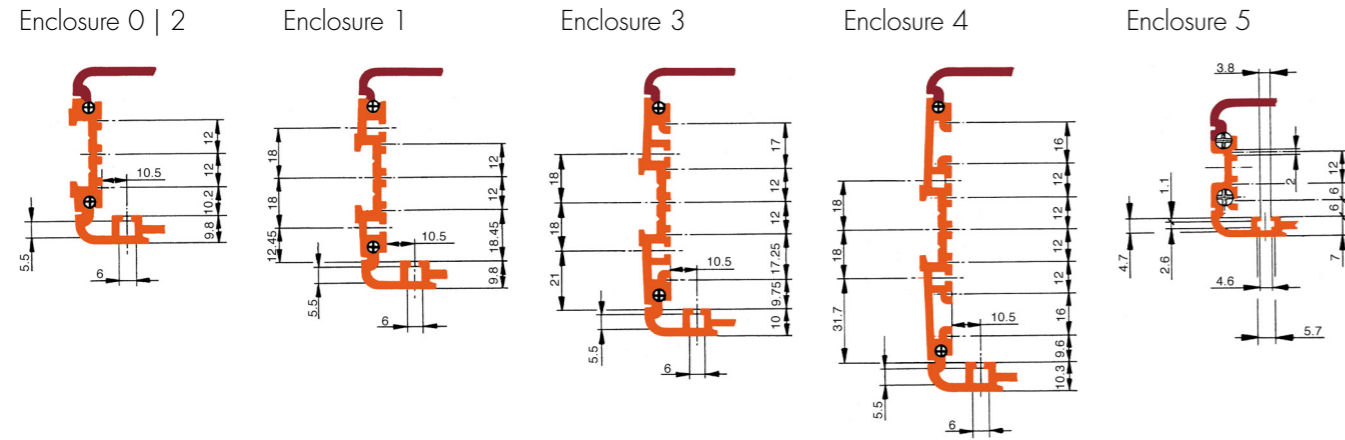
Enclosure	Description	Part No.
0 - 5	Earthing terminal	33-619

# DESIGN AND COMPACT CASES

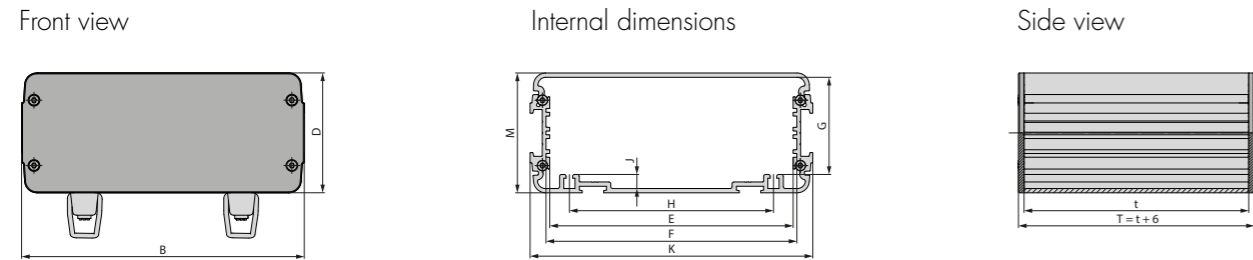
## GUARDBOX 33 EASY

### Drawings and dimensions

#### CROSS SECTIONS OF EXTRUSIONS



#### DIMENSION DRAWINGS



Type		A	B	C	D	E	F Nominal mass	F Board mass	G	H	J	K	M ±0.5	t = 120   4.72"	t = 180   7.08"	t = 240   9.44"	t = 300   11.81"
														✓	✓	✓	✓
0	mm inch	129.5 5.1	155.5 6.12	55 2.16	69 2.71	130 5.12	134 5.27	133 5.23	51.7 2.03	109 4.29	7.5 0.29	151 5.94	64 2.52	✓	✓	✓	
1	mm inch	129.5 5.1	155.5 6.12	71.5 2.81	85.5 3.37	130 5.12	134 5.27	133 5.23	68.4 2.69	109 4.29	7.5 0.29	151 5.94	80.5 3.17	✓	✓	✓	
2	mm inch	230.5 9.07	256.5 10.1	55 2.16	69 2.71	231 9.09	235 9.25	233.35 9.18	51.7 2.03	210 8.26	7.5 0.29	252 9.92	64 2.52			✓	✓
3	mm inch	230.5 9.07	257.5 10.14	89 3.5	103 4.05	231 9.09	235 9.25	233.35 9.18	85.5 3.36	210 8.26	7.5 0.29	253 9.96	98 3.86			✓	✓
4	mm inch	183.5 7.22	210.5 8.29	111 4.37	125 4.92	184 7.24	188 7.4	186.6 7.34	106.9 4.21	163 6.41	7.5 0.29	206 8.11	120 4.72		✓	✓	✓
5	mm inch	230.5 9.07	256.5 10.1	41 1.61	56 2.2	231 9.09	235 9.25	233.35 9.18	43 1.69	210 8.26	4.7 0.18	249.5 9.82	50 1.97		✓	✓	

## DESIGN AND COMPACT CASES

### VARIETYBOX 35

#### Product description

##### MAIN FEATURES

The Varietybox 35 consists of 4 structurally identical corner profiles and 6 flat sheets. The multifunctional corner profiles and flat sheets are made of aluminum. Thanks to the simple structure, assembly is extremely fast. The Varietybox 35 is a cost-effective solution and easy to modify.



- › Multifunctional corner extrusion made from aluminum
- › Flat plates made from aluminum sheet metal 2 mm
- › Fast assembly (1 to 2 min)
- › Very cost effective solution
- › Easy to modify
- › IP40 (without ventilation slots) | IP30 (with ventilation slots)
- › EMC level basic when using clear passivated corner extrusions
- › Hard and wear resistant solution when using anodized corner extrusions

##### PRODUCT VARIETY

- Predefined standard or custom sizes

##### POSSIBLE CUSTOMIZATIONS

- Variable sizes
- Anodized or passivated

##### TYPICAL APPLICATIONS

- Test and measurement equipment
- Control instruments
- Service equipment

## DESIGN AND COMPACT CASES

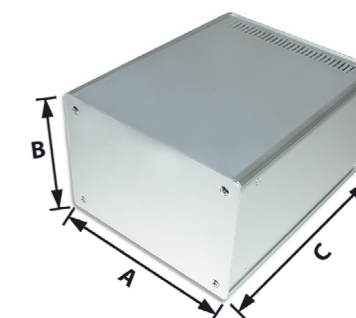
### VARIETYBOX 35

#### Executions

##### SIZES

Standard dimensions:

A		B		C	
mm	inch	mm	inch	mm	inch
74	2.91	74	2.91	64	2.52
104	4.09	104	4.09	94	3.70
125	4.92	125	4.92		
134	5.27	134	5.27	124	4.88
194	7.63	194	7.63	184	7.24
254	10.0			244	9.60
258.35	10.17	258.35	10.17		
314	12.36	314	12.36	304	11.96



Other dimensions available on request

##### COLORS

- Profiles: Black or clear anodized
- Customizations on request

##### MULTIFUNCTIONAL CORNER EXTRUSION

- Functions symmetrical
- Can be mounted twisted
- Size: approx. 30 mm
- Outer radius 5 mm
- Material: Aluminum
- Different colours (anodized or painted)
- Conductive or wear resistant

- Take-up of sheet metal 1.5 or 2 mm
- Mounting through insertion
- Use of flat sheet metal
- Different materials, surfaces, colors



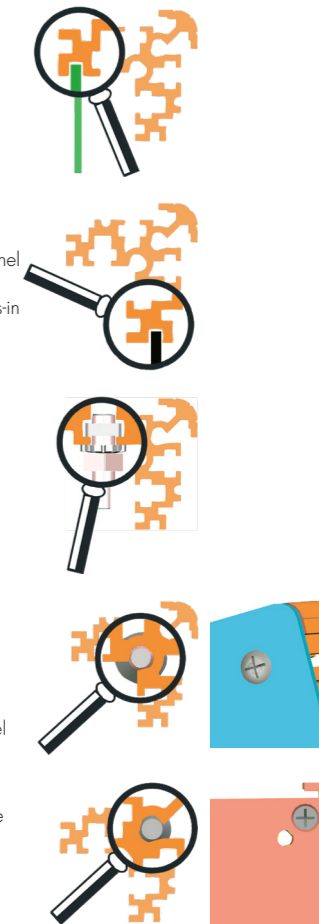
- Groove for direct insertion of PCB's
- Sufficient space for double sided PCB's
- Simple insertion until the card stopper

- Groove for direct sliding of a mounting panel or a PCB
- Sufficient place for feet as well as for press-in nuts, screw heads, etc.

- Mounting of an earthing terminal M3.5
- Secure connections to the ground

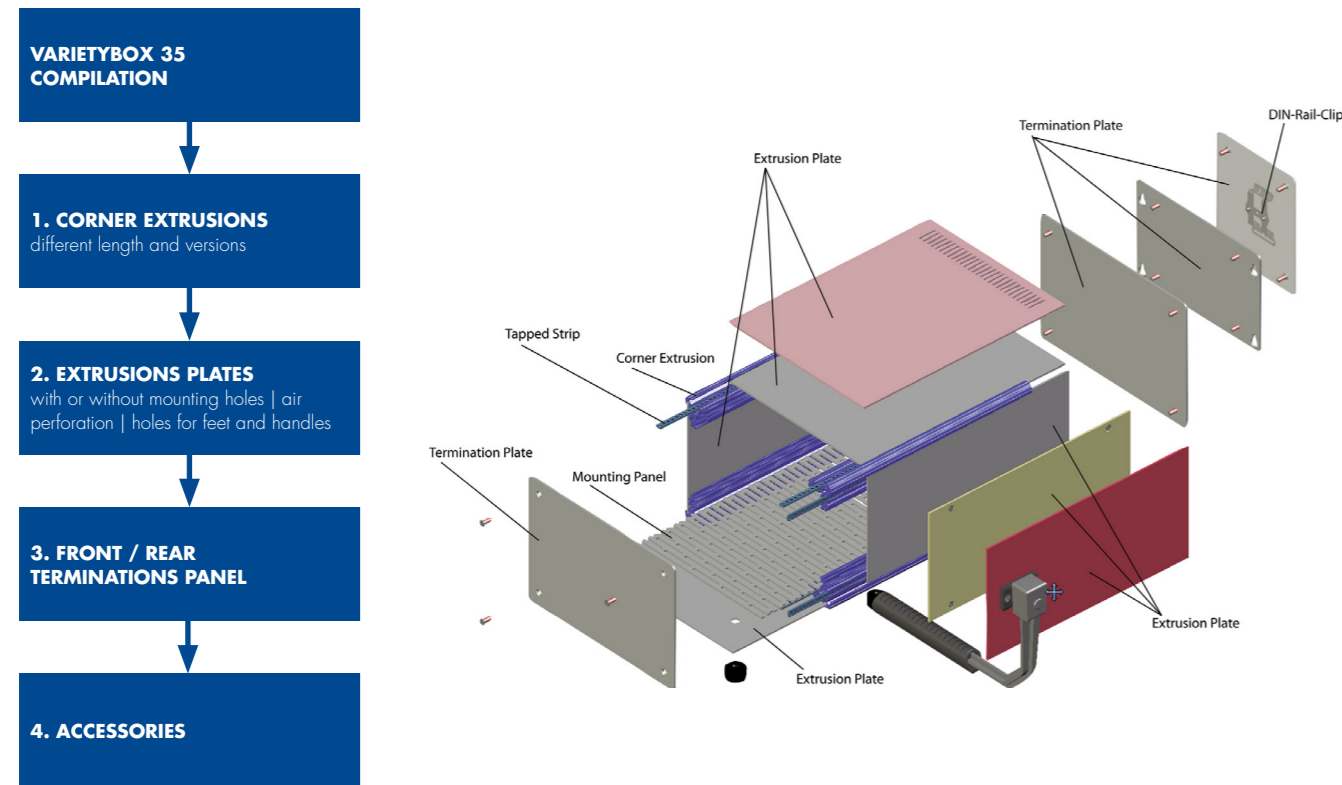
- Hole for direct mounting of the end plates
- Mounting with 4 screws M4
- Use of flat sheet metal
- Different materials, surfaces, colors
- End plates als can be used as a side panel (by relating the whole box by 90°)

- Hole for direct mounting of an intermediate plate
- For additional stability
- For integration of further features



**Product structure**

**CONFIGURATION**

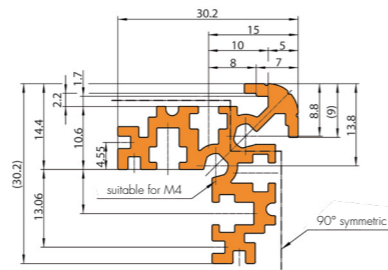


**CORNER EXTRUSIONS**

- Extruded aluminum
- Versions: Clear anodized / black anodized / clear passivated (conductive)
- 7 different length
- Other sizes, colors and surface treatments on request

Scope of delivery:

- 1 corner extrusion
- For one Varietybox 35 are 4 corner extrusions necessary (order separately)



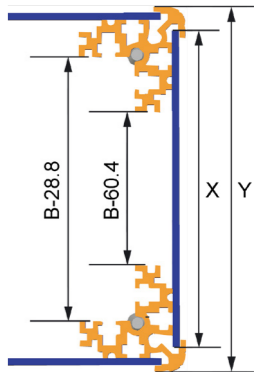
Length	Part No.					
	mm	inch	clear anodized	black anodized	clear passivated	raw
60	2.36		66-244-060-1	66-244-060-2	66-244-060-3	
90	3.54		66-244-090-1	66-244-090-2	66-244-090-3	
120	4.72		66-244-120-1	66-244-120-2	66-244-120-3	
180	7.08		66-244-180-1	66-244-180-2	66-244-180-3	
240	9.44		66-244-240-1	66-244-240-2	66-244-240-3	
300	11.81		66-244-300-1	66-244-300-2	66-244-300-3	
1350	53.15		66-244-1350-1	66-244-1350-2	66-244-1350-3	66-244-100

**EXTRUSIONS PLATES**

- Without holes inserted into extrusion
- With or without air perforation
- With or without holes for mounting feet
- With holes for screwing (for more stability and for direct access)
- Material: Aluminum 2 mm | front clear anodized | rear conductive
- Other sizes, colors and surface treatments on request

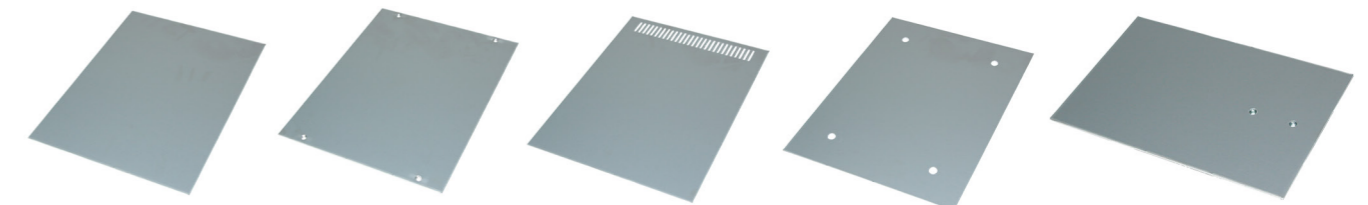
Scope of delivery:

- 1 extrusion plate
- For one Varietybox 35 are 4 extrusions plates necessary (order separately)



If extrusion plate size is (X)...		...then use terminations panel size (Y)	
mm	inch	mm	inch
60	2.36	74	2.91
90	3.54	104	4.09
120	4.72	134	5.27
180	7.08	194	7.63
240	9.44	254	10.0
300	11.81	314	12.36

Without holes    With mounting holes    With air perforation    With holes for feet    With holes for handles



**EXTRUSION PLATES WITHOUT HOLES**

- For simple insertion into the corner extrusions

Scope of delivery:

- 1 extrusion plate

Dimensions		Part No.
mm	inch	
60 x 60	2.36 x 2.36	35-20001
60 x 90	2.36 x 3.54	35-20002
60 x 120	2.36 x 4.72	35-20003
60 x 180	2.36 x 7.08	35-20004
60 x 240	2.36 x 9.44	35-20005
90 x 90	3.54 x 3.54	35-20036
90 x 120	3.54 x 4.72	35-20006
90 x 180	3.54 x 7.08	35-20007
90 x 240	3.54 x 9.44	35-20008

Dimensions		Part No.
mm	inch	
120 x 120	4.72 x 4.72	35-20009
120 x 180	4.72 x 7.08	35-20010
120 x 240	4.72 x 9.44	35-20012
120 x 300	4.72 x 11.81	35-20041
180 x 180	7.08 x 7.08	35-20013
180 x 240	7.08 x 9.44	35-20014
180 x 300	7.08 x 11.81	35-20042
240 x 240	9.44 x 9.44	35-20016
240 x 300	9.44 x 11.81	35-20037
300 x 300	11.81 x 11.81	35-20038

For mounting of single / double Eurocards:

Dimensions		Part No.
mm	inch	
111.00 x 180	4.37 x 7.08	35-20011
244.35 x 180	9.62 x 7.08	35-20015

**Product structure**

**EXTRUSION PLATES**

EXTRUSION PLATE WITH MOUNTING HOLES

- For more stability
- Removable for maintenance and accessibility

Scope of delivery:

- 1 extrusion plate

Dimensions		Effective dimensions		Part No.
mm	inch	mm	inch	
120 x 120	4.72 x 4.72	117.5 x 120	4.62 x 4.72	35-20017
120 x 180	4.72 x 7.08	117.5 x 180	4.62 x 7.08	35-20018
120 x 240	4.72 x 9.44	117.5 x 240	4.62 x 9.44	35-20019
180 x 120	7.08 x 4.72	177.5 x 120	6.98 x 4.72	35-20020
180 x 180	7.08 x 7.08	177.5 x 180	6.98 x 7.08	35-20021
180 x 240	7.08 x 9.44	177.5 x 240	6.98 x 9.44	35-20022
240 x 120	9.44 x 4.72	237.5 x 120	9.35 x 4.72	35-20023
240 x 180	9.44 x 7.08	237.5 x 180	9.35 x 7.08	35-20024
240 x 240	9.44 x 9.44	237.5 x 240	9.35 x 9.44	35-20025

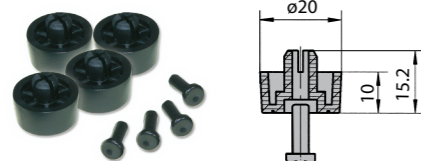
EXTRUSION PLATE WITH AIR PERFORATION

- For thermal optimisation
- IP30 is ensured with air perforation

Scope of delivery:

- 1 extrusion plate

Dimensions		Part No.
mm	inch	
120 x 300	4.72 x 11.81	35-20044
180 x 240	7.08 x 9.44	35-20026
180 x 300	7.08 x 11.81	35-20046
240 x 180	9.44 x 7.08	35-20027
240 x 240	9.44 x 9.44	35-20028
300 x 300	11.81 x 11.81	35-20045



Assembly material:

Description	Length   effective length	Part No.
Cross recessed countersunk screw M3 x 6		5332-06
Countersunk screw torx T10 (M3 x 6)		5470-22
Tapped strip 2 x 6 mm, M3	120 / 106.2 mm	61-457
Tapped strip 2 x 6 mm, M3	180 / 212.9 mm	61-428
Tapped strip 2 x 6 mm, M3	240 / 212.9 mm	61-454
Square nut M3		5621-40
Plastic glider		61-015
Set screw for fixing of tapped strips M3 x 6		5413-06

EXTRUSION PLATE WITH HOLES FOR FEET

- For mounting of enclosure feet

Scope of delivery:

- 1 extrusion plate

Dimensions		Part No.
mm	inch	
180 x 240	7.08 x 9.44	35-20029
180 x 300	7.08 x 11.81	35-20043
240 x 240	9.44 x 9.44	35-20030
240 x 300	9.44 x 11.81	35-20039
300 x 300	11.81 x 11.81	35-20040

Enclosure feet:

- Black plastic, UL94 V0
- Easy and fast mounting
- Mounting without tools
- Scope of delivery: Set 4 pieces plastic feet incl. push rivet

Description	Part No.
Set of enclosure feet, black (RAL 9005)	63-528
Set of enclosure feet, light gray (RAL 7035)	63-529

**EXTRUSIONS PLATES**

EXTRUSION PLATE WITH HOLES FOR HANDLES

- For mounting a handle

Scope of delivery:

- 1 extrusion plate

Dimensions		Part No.
mm	inch	
90 x 180	3.54 x 7.08	35-20031
90 x 240	3.54 x 9.44	35-20032
120 x 180	4.72 x 7.08	35-20033
120 x 240	4.72 x 9.44	35-20034
180 x 240	7.08 x 9.44	35-20035



Carrying handle:

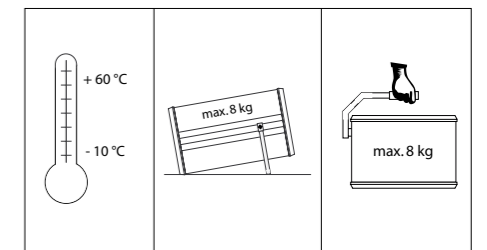
- Zinc die-cast, powder-coated
- Handle piece: Black polyurethane, UL 94V-0
- Handle is 90° detent (carrying position has a slight detent)
- Following the enclosures sizes there are handles available in two widths
- Scope of delivery: Pre-assembled handle with assembly material

Color	Part No. 212 mm   8.34"	Part No. 188 mm   7.40"
Black	33-645	33-646

Assembly material for handle:

- 2 screws per 1 handle

Description	Part No.
Cross recessed countersunk screw M4 x 10	5342-10
Countersunk screw torx T20 (M4 x 10)	5470-26



Carrying capacity dependent on distribution of load and handling.

**Product structure**

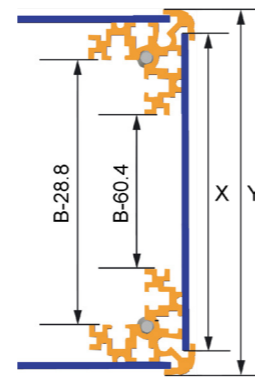
**FRONT / REAR TERMINATIONS PANEL**

- Aluminum sheet metal 2 mm
- Front clear anodized | rear conductive
- Other sizes, colors and surface treatments on request

Scope of delivery:

- 1 front / rear terminations panel
- For one Varietybox 35 are 2 terminations panel (1 front / 1 rear) necessary

If extrusion plate size is (X)...		...then use extrusion plate size (Y)	
mm	inch	mm	inch
60	2.36	74	2.91
90	3.54	104	4.09
120	4.72	134	5.27
180	7.08	194	7.63
240	9.44	254	10.0
300	11.81	314	12.36



**TERMINATION PLATES STANDARD**

Scope of delivery:

- 1 termination plate
- Per termination plate 4 screws are needed (order separately)

Dimensions		Part No.
mm	inch	
74 x 74	2.91 x 2.91	35-10001
74 x 104	2.91 x 4.09	35-10002
74 x 134	2.91 x 5.27	35-10003
74 x 194	2.91 x 7.63	35-10004
74 x 254	2.91 x 10	35-10005
104 x 104	4.09 x 4.09	35-10006
104 x 134	4.09 x 5.27	35-10007
104 x 194	4.09 x 7.63	35-10008
104 x 254	4.09 x 10	35-10009
134 x 134	5.27 x 5.27	35-10010
134 x 194	5.27 x 7.63	35-10011
134 x 254	5.27 x 10	35-10012
134 x 314	5.27 x 12.36	35-10022
194 x 194	7.63 x 7.63	35-10024
194 x 254	7.63 x 10	35-10013
194 x 254	7.63 x 12.39	35-10023
254 x 254	10.00 x 10	35-10019
254 x 314	10.00 x 12.36	35-10020
314 x 314	12.36 x 12.36	35-10021

**TERMINATIONS PANEL FOR EUROCARDS MOUNTING**

- Direct sliding of single / double Eurocards

Scope of delivery:

- 1 terminations panel
- Per terminations panel 4 screws are needed (order separately)

Dimensions		Description	Part No.
mm	inch		
125 x 104	4.92 x 4.09	single Eurocards	35-10014
258.35 x 104	10.17 x 4.09	double Eurocards	35-10016

**FRONT / REAR TERMINATIONS PANEL**

**TERMINATIONS PANEL FOR DIN-RAIL MOUNTING**

- Incl. riveted steel DIN-clip
- Suitable for top hat rails 35 mm according to IEC60715 / EN50022

Scope of delivery:

- 1 terminations panel
- Per terminations panel 4 screws are needed (order separately)

Dimensions		Description	Part No.
mm	inch		
125 x 104	4.92 x 4.09	DIN-Rail mounting	35-10015
258.35 x 104	10.17 x 4.09	DIN-Rail mounting	35-10017



**TERMINATIONS PANEL FOR WALL MOUNTING**

Scope of delivery:

- 1 terminations panel
- Per terminations panel 4 screws are needed (order separately)

Dimensions		Part No.	
mm	inch	mm	inch
104 x 164	4.09 x 6.45	104 x 134	35-10018

Other dimensions and arrangements on request



**SCREWS FOR MOUNTING TERMINATIONS PANEL**

- Small head
- Per termination panel 4 screws are needed and 8 screws per Varietybox 35 (order separately)

Description	Part No.
Countersunk screw torx T10 (M4 x 10)	5441-54
Countersunk screw torx T10 (M4 x 10), black	5441-57



## DESIGN AND COMPACT CASES

VARIETYBOX 35

### Accessories

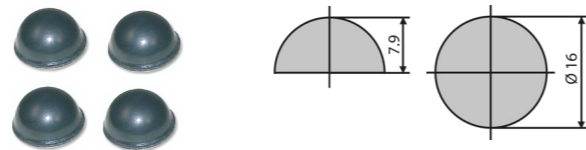
#### BUMPON (SELF ADHESIVE FEET)

- Self adhesive bumpon
- Black polyurethane, UL94 HB

Scope of delivery:

- 1 bumpon

Description	Part No.
Bumpon	7650-52



#### SEALING GASKET

- For EMC-sealing from extrusion to extrusion plates
- For higher IP-protection (upon request, still in engineering process)
- Firmer securing of non-screwed extrusion plates
- Conductive sealing

Scope of delivery:

- 1 sealing gasket (conductive or non-conductive)

Description	Part No.
Sealing gasket conductive, length 700 mm	33E025
Sealing gasket non-conductive, length 1'000 mm	33-025



#### MOUNTING PLATES

- Mounting plates made of 2 mm (0.07") thick sheet aluminum
- Dimensions correspond to the respective mounting terminations panel
- Position of the slots allows various mounting arrangements and good air circulation
- Mounting plate is screwed to corner extrusion with M3 nut and screw in 4 places

Scope of delivery:

- 1 mounting plate, aluminum raw



End plate width		Mounting plate dimensions		Part No.
mm	inch	mm	inch	
194	7.63	160 x 116.5	6.30 x 4.72	35-30004
254	10	220 x 116.5	8.66 x 4.72	35-30007
254	10	220 x 176.5	8.66 x 7.08	35-30008
314	12.36	280 x 296.5	11.02 x 11.67	35-30012
314	12.36	280 x 116.5	11.02 x 4.72	35-30014

Other sizes on request

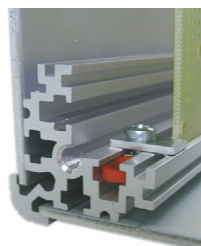
#### CARD STOP

- Card stop are used for card or mounting plate fixation when directly inserted

Scope of delivery:

- 1 card stopper aluminum
- 1 cross recessed screw M3 x 6
- 1 square nut M3
- 2 plastic gliders

Description	Part No.
Straight version	35-00001
Angled version	35-00002



## DESIGN AND COMPACT CASES

### ELOS BOX 54

#### Product description

ElosBox 54 is an embedded enclosure for one to three controller cards. The aluminium profile housing has been specially developed for the industrial use of embedded controller cards. Depending on the version, up to 3 IEEE cards can be used. In addition to up to 3 slots for controller cards, the "box" can be equipped with a suitable mounting plate (e.g. CompactPCI) and a suitable power supply.

The basic version, in combination with front and rear panels, allows controller cards with connectors or operating elements to be mounted. The use of special seals also makes it possible to achieve higher IP classes with this version.

Optionally, the enclosure allows heat dissipation via ventilation holes or actively with a fan. It also provides excellent EMC protection.

- Compact dimensions
- For 1 to 3 Controller boards
- IEEE profiles for plug-in modules (optional)
- Optional EMC protection
- Matching backplanes and power supplies on request
- Special depths available on request

#### MAIN FEATURES

- Pressed extruded profile on aluminium base panel
- Black coloured, other colours optionally available
- Optional built-in profiles and threaded strips for IEEE plug-in units
- Optional front and rear panels

ElosBox 54



#### PRODUCT VARIATIONS

- Standard enclosure with holes for front and rear panel
- IEEE version with profiles for card guides and plug-in modules
- Optionally with ventilation holes

#### TYPICAL APPLICATIONS

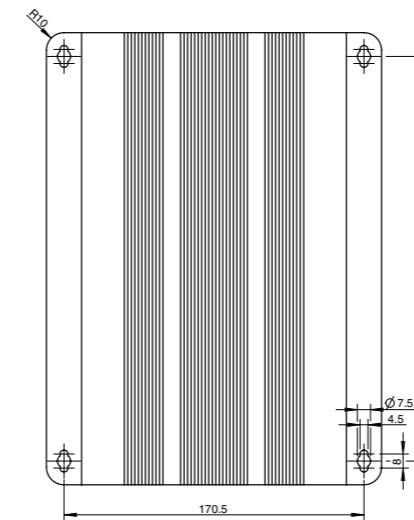
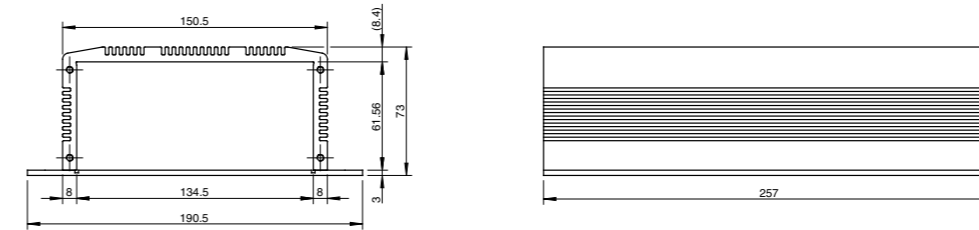
- Controller for passenger information
- Miniserver
- Control computer

## DESIGN AND COMPACT CASES

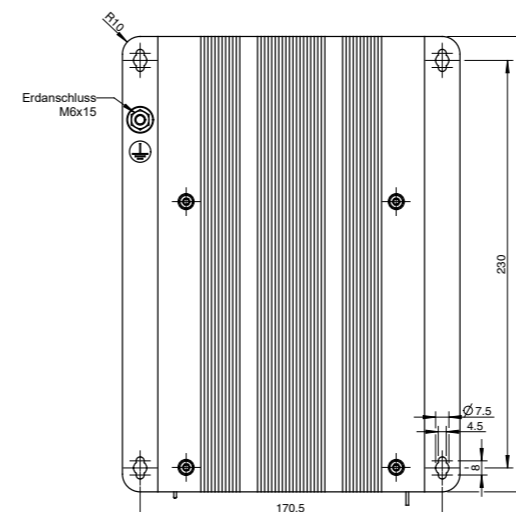
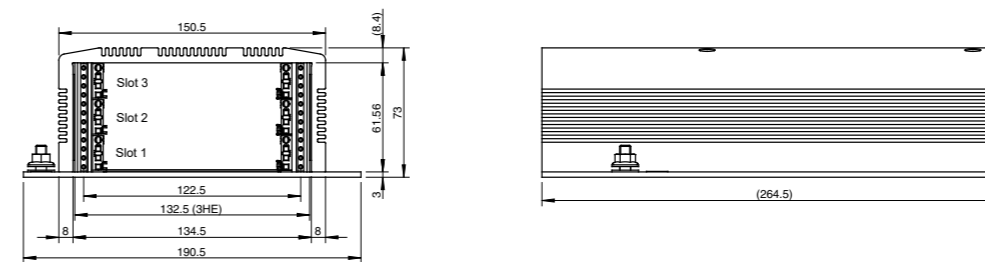
### ELOS BOX 54

#### Dimensions

##### ELOSBOX 54 BASIC ENCLOSURE



##### ELOSBOX 54 IEEE-ENCLOSURE



## DESIGN AND COMPACT CASES

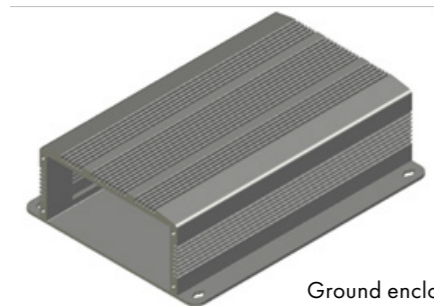
ELOS BOX 54

### Part numbers

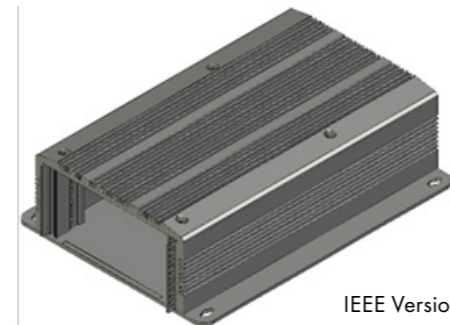
#### PRODUCT VARIATIONS

- Ground panel
- Enclosure powder-coated, black RAL 9005
- Assembly material
- IEEE profiles & threaded inserts for 19" sub-assemblies (IEEE version only)

ITEM DESCRIPTION	ITEM NUMBER
ElosBox 54 Ground Enclosure 73mm 190.5mm 257mm	54E-100-257
ElosBox 54 Ground Enclosure with ventilation holes 73mm 190.5mm 257mm	54E-101-257
ElosBox 54 Ground Enclosure 73mm 190.5mm 257mm	54E-110-257
ElosBox 54 Ground Enclosure with ventilation holes 73mm 190.5mm 257mm	54E-111-257



Ground enclosure



IEEE Version

## DESIGN AND COMPACT CASES

ELOS BOX 54

### Accessories

ITEM DESCRIPTION		ITEM NUMBER
Front-/ rear plane 1 piece incl. 4 fastening screws		54E-800 (2 pieces required for both sides)
Seals ElosBox 54 EMV-IP		Seals for front & rear panel (397 mm): 54E-900 (2 pieces required)  Depth seals (257 mm): 54E-901 (2 pieces required)
Seals ElosBox 54 IP		Seals for front & rear panel (397 mm): 54E-902 (2 pieces required)  Depth seals (257 mm): 54E-903 (2 pieces required)
Insulation foil Mylar type A 0.125 mm 95x160 mm self-adhesive		54E-910

# Chassis and Subracks

19" technology in precision.

## CHASSIS AND SUBRACKS

19" subracks are all based on the standard IEC 60297. Thanks to decades of experience, the characteristics of the individual families have been optimized for different applications. The flexible structure of the subrack systems with individual extension kits allows a customer-specific configuration. Due to the high level of integration and wide range of accessories, all components fit together perfectly.

The scalable, robust 19" subracks, PCB housings or slide-in chassis are suitable for use in almost any kind of environment: Industrial automation, test and measurement technology, transport, energy, defense, communication and medicine. Of course, the enclosures support standards like IEC, IEEE or AdvanvedTCA.

- > IEC 60297 conform
- > Modular construction
- > Customized solutions on request
- > Large range of accessories

### TYPE COMPARISON

<b>SLIMKIT 10</b>	The 19" system enclosure with 1 U combines flexibility with comprehensive EMC protection. It can be used as a 19" rack or desktop case. It is made of sheet metal and a customizable aluminum front panel.	<b>PAGE 100</b>
<b>SLIMKIT 10 FTTX</b>	The Slimkit 11 FTTX was specially developed for applications in the field of fiber optic distribution systems. Customer-specific adjustments can be easily implemented on the basis of this platform.	<b>PAGE 106</b>
<b>ECOKIT 11</b>	The Ecokit is a shielded subrack with side panels made of aluminum. A cost-effective solution for circuit board assembly systems with Eurocard depths of 160, 220 or 280 mm.	<b>PAGE 109</b>
<b>MAGIC-KIT 11   SPIRIT-KIT 11</b>	These two shielded subracks are ideal for IEC applications (Magic-Kit) or for IEEE applications (Spirit-Kit). The EMC subracks are made of sheet steel for extremely fast assembly and EMC shielding without seals.	<b>PAGE 118</b>
<b>SYSTEMKIT 12K</b>	The best basis for every customer-specific 19" subrack for cPCI, VME or VME64 with high environmental expectations. It has many advantages such as EMC shielding or climatic and mechanical resistance.	<b>PAGE 126</b>
<b>SYSTEMKIT 12K RAIL</b>	Based on the Systemkit 12K, the Systemkit 12K Rail has been specially designed and tested for applications in the railway sector. It meets all technical requirements according to EN50155.	<b>PAGE 150</b>

General accessories can be found in the brochure "General accessories" or on request.

## CHASSIS AND SUBRACKS

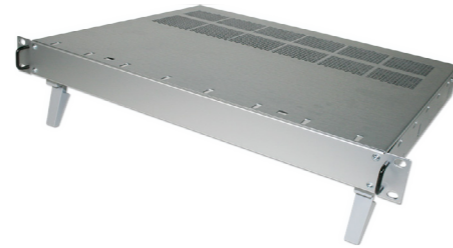
### SLIMKIT 10

#### Product description

##### MAIN FEATURES

The 19" | 1 U basic subrack impresses with its diverse application options. Through the addition of rear panel, cover and mounting chassis, it can be expanded to a completely closed enclosure.

The Slimkit 10 adapts to customer-specific requirements really simply thanks to EMC properties and almost unlimited combinations.



- › Front panel: Aluminum
- › Frame construction: Pre-galvanized sheet steel
- › Vibration-proof
- › EMC shielding without gaskets
- › Fast assembly
- › Easy access
- › Front / rear panel can be removed for mechanical processing

##### PRODUCT VARIETY

- 19" insert variants
- Desktop variants
- With or without ventilation openings

##### TYPICAL APPLICATIONS

- Telecommunications
- Audio and radio equipment
- Signal converters
- Test and measurement equipment

#### Executions

##### SIZES

- Width: 19" (enclosure width 440.5 mm)
- Height: 1 U (2 U on request)
- Depth: 240 or 360 mm

##### COLORS

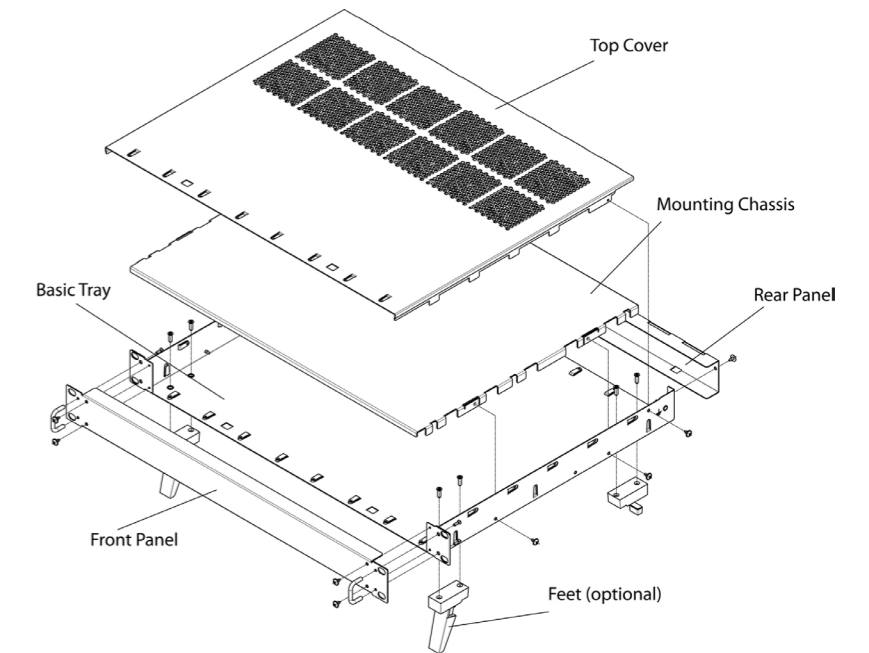
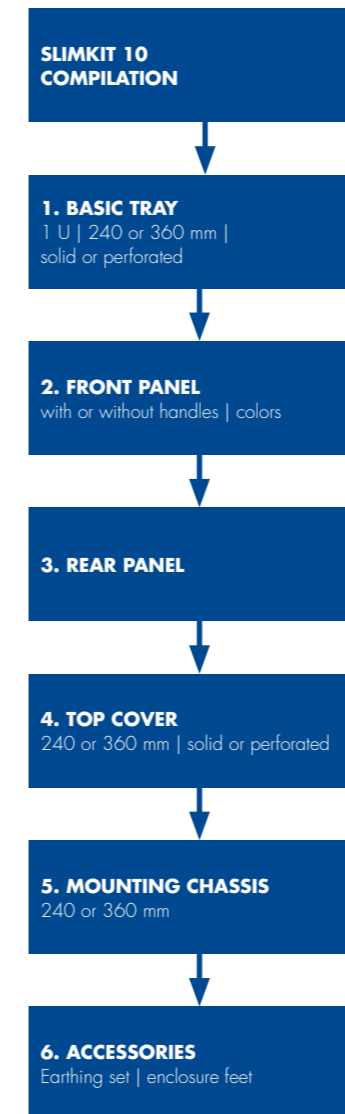
- Pre-galvanized sheet steel
- Front panel aluminum

## CHASSIS AND SUBRACKS

### SLIMKIT 10

#### Product structure

##### CONFIGURATION



## CHASSIS AND SUBRACKS

### SLIMKIT 10

#### Product structure

##### BASIC TRAY

- 0.75 mm pre-galvanized sheet steel
- With holes for fastening of mounting chassis, feet, earthing terminals, front / rear panel, top cover

Scope of delivery:

- Basic tray
- Assembly material for mounting front / rear panel, mounting chassis, top cover (12 round head SHEETtracs® screws torx T10 (3 x 6))



Height	Depth		Perforation	Air passage		Part No.
	mm	inch		mm <sup>2</sup>	sq. inch	
1 U	240	9.45	Solid	-	-	10-91100-00
1 U	240	9.45	Perforated	18095	28.04	10-91101-00
1 U	360	14.17	Solid	-	-	10-91110-00
1 U	360	14.17	Perforated	21714	33.65	10-91111-00

##### FRONT PANEL

- 1 mm aluminum
- Front: Clear anodized | powder coated black (RAL 9005) | powder coated light gray (RAL 7035)
- Rear: Conductive
- With or without black handles
- Customized front panels on request

Scope of delivery:

- Front panel
- Handle set (2 black U-handles, 4 countersunk screws torx T8 (M2.5 x 8))
- Assembly material included in the basic tray set



Height	Front	Handles	Part No.
1 U	Clear anodized	With	10-46100-00
1 U	Clear anodized	Without	10-451-00
1 U	Black powder coated	With	10-46160-00
1 U	Black powder coated	Without	10-451-60
1 U	Light gray powder coated	With	10-46130-00
1 U	Light gray powder coated	Without	10-451-30

## CHASSIS AND SUBRACKS

### SLIMKIT 10

##### REAR PANEL

- 0.75 mm pre-galvanized sheet steel
- Customized rear panel on request

Scope of delivery:

- Rear panel
- Assembly material included in the basic tray set



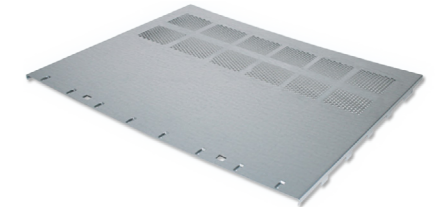
Description	Part No.
Slimkit 10 rear panel 1 U	10-901-00

##### TOP COVER

- 0.75 mm pre-galvanized sheet steel
- Customized rear panel on request

Scope of delivery:

- Top cover
- Assembly material included in the basic tray set



Depth	Perforation		Air passage		Part No.
	mm	inch	mm <sup>2</sup>	sq. inch	
240	9.45	Solid	-	-	10-920-00
240	9.45	Perforated	18095	28.04	10-920-01
360	14.17	Solid	-	-	10-920-10
360	14.17	Perforated	21714	33.65	10-920-11

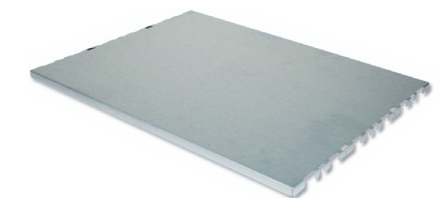
##### MOUNTING CHASSIS

- Inclusion of components
- Mounting chassis 240 mm can be mounted with depth 360 mm
- 1.25 mm pre-galvanized sheet steel
- Mounting chassis with customized cut outs on request

Scope of delivery:

- Mounting chassis
- Assembly material included in the basic tray set

Description	Part No.
Slimkit 10 mounting chassis 240 mm	10-930-50
Slimkit 10 mounting chassis 360 mm	10-931-50



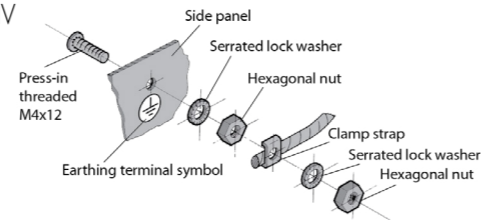
**Accessories**

**EARTHING SET**

- Enables enclosures to be grounded in conformance with EN / VDE / NIV

Scope of delivery:

- 1 press-in threaded bolt M4
- 2 serrated lock washers
- 2 nuts M4
- 1 clamp
- 1 protective conductor symbol



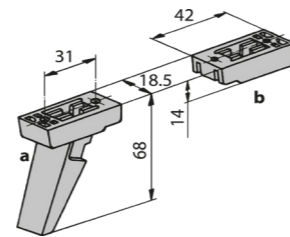
Description	Part No.
Earthing set according to EN / VDE / SEV	63-174

**ENCLOSURE FEET**

- Folding feet / non-folding feet
- Color: Light gray (RAL 7035), black (RAL 9005)
- Fiberglass reinforced plastic, UL94 V-0
- Up to 30 kg load capacity per set

Scope of delivery:

- 1 set of feet
- Assembly material: 8 cross recessed countersunk PT-screw 3.5 x 8

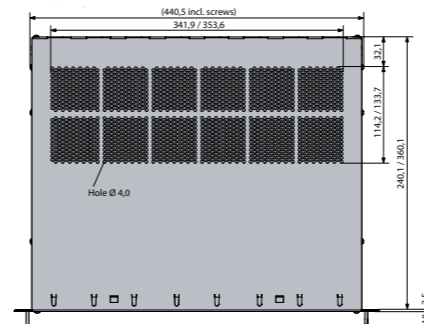


Description	Color	Part No.
Enclosure feet 4 x b	Light gray (RAL 7035)	63-019
Enclosure feet 4 x b	Black (RAL 9005)	63-321
Enclosure feet 2 x a + 2 x b	Light gray (RAL 7035)	63-018
Enclosure feet 2 x a + 2 x b	Black (RAL 9005)	63-320

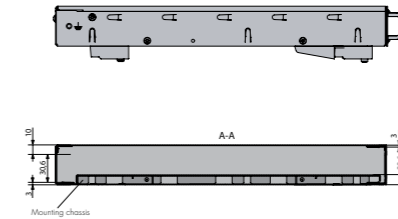
**Drawings and dimensions**

**DIMENSION DRAWINGS**

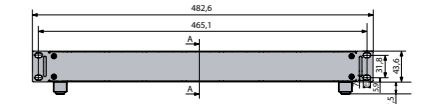
VIEW FROM ABOVE



SIDE VIEW



FRONT VIEW

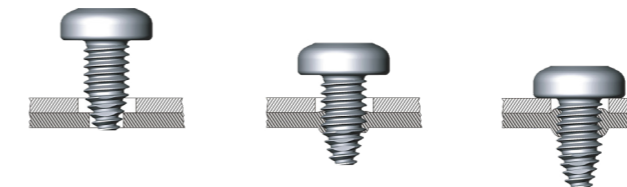


**ASSEMBLY SHEETTRACS® SCREW**

- For a secure thin sheet metal joint with pre-hole

Description	Material	Part No.
Torx T10 (3 x 6)	Steel, zinc-plated	5477-01

- Initial position
- Thread grooving
- Tightening



## CHASSIS AND SUBRACKS

### SLIMKIT 10 FTTX

#### Product description

Cable end distributor for fiber optic cables in the 19" | 1 U format. The customizable rack was specially designed for the division of fiber optic cables. The pull-out drawer allows a convenient maintenance of the cables and serves as a generous storage space for the packaging of radii of the glass fibers. Thanks customized expansion variants, different plug connections and labels are possible.



- › Light construction
- › Installation in every 19" chassis or rack system
- › Variable depth thru movable 19" angle bracket
- › Provided to hold splice trays or LVV-cable termination
- › Telescopic and tiltable pull-out tray
- › With cable storage
- › Option of cable fastening and entry prepared
- › Front resettable

#### PRODUCT VARIETY

Description	Part No.
Fiber optic Slimkit10-FTTx distributor for splice trays	10-200
Fiber optic Slimkit10-FTTx divider for optic cable terminator	10-210

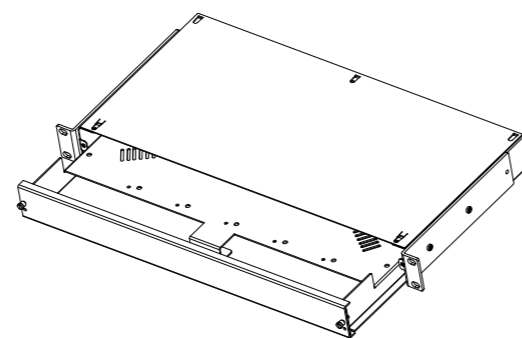
#### Executions

##### SIZES

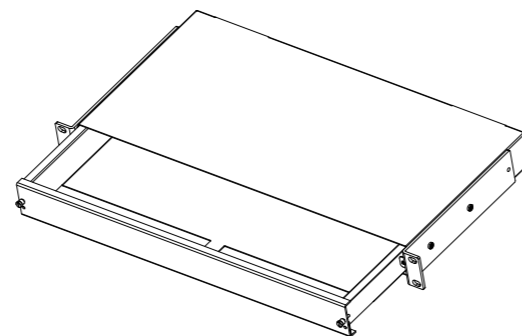
- 1 U | 19" | 220 mm depth

##### SCOPE OF DELIVERY

- Steel sheet enclosure SVZ
- Front profile aluminum
- Reusable cardboard packaging



Fiberoptic distributor for splice trays



Distributor for termination of fiber optic cable

## CHASSIS AND SUBRACKS

### ECOKIT 11

#### Product description

The Eokit is a subrack with side panels of aluminum. It is a cost-effective solution for Eurocards systems with depths of 160, 220 or 280 mm

The special shapes on the side wall make it possible to securely fasten the front extrusions with only half as many screws.



- › Side walls are of 2 mm aluminum
- › 19" height extrusions with 3 mm overlay (standard only)
- › With cover plates suitable for use with vibrations exposure
- › Side wall with integrated 19" mounting bracket

#### PRODUCT VARIETY

- Standard: 19" mounting brackets with height extrusions
- Integrated: 19" mounting brackets integrated in side panel

#### TYPICAL APPLICATIONS

- Simple electronics
- Applications in 19" cabinets

#### Executions

##### SIZES

- Height: 3 or 6 U
- Width: 42 or 84 HP
- Depth: 216 or 336 mm

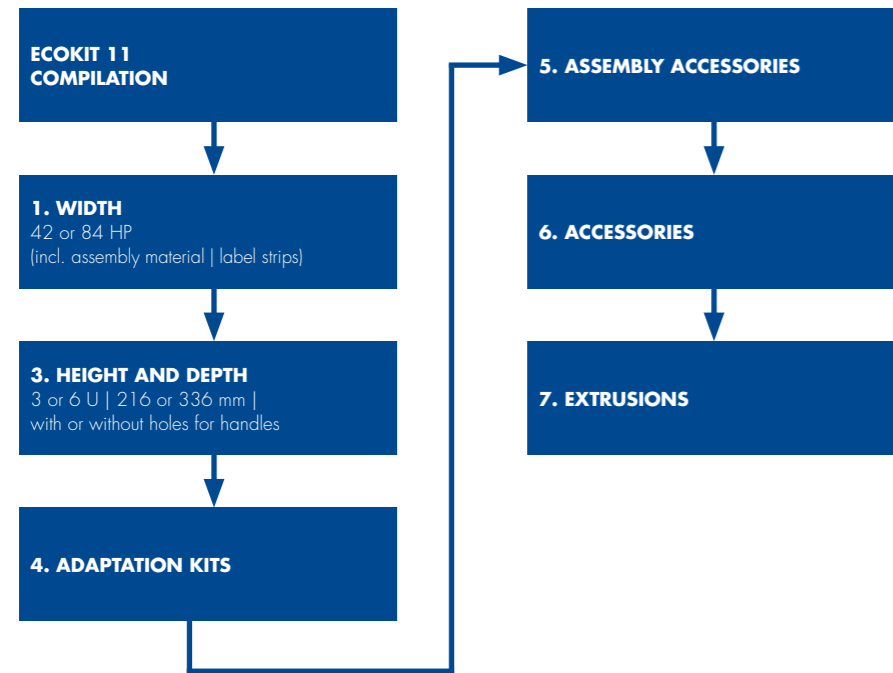
##### COLOR

- Aluminum clear anodized



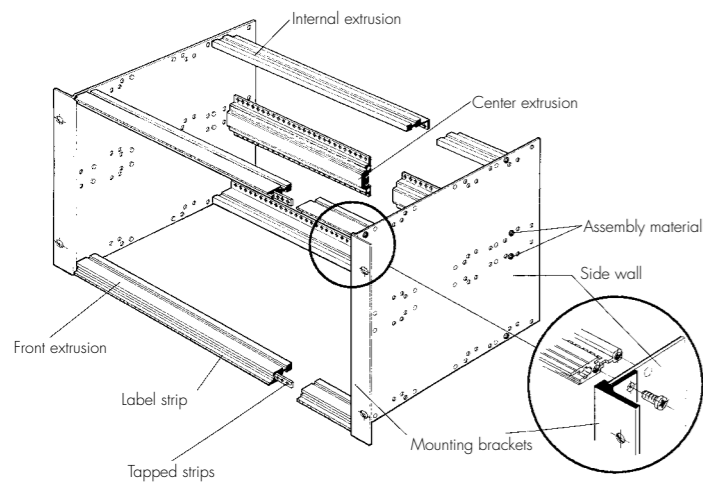
**Product structure**

**CONFIGURATION**

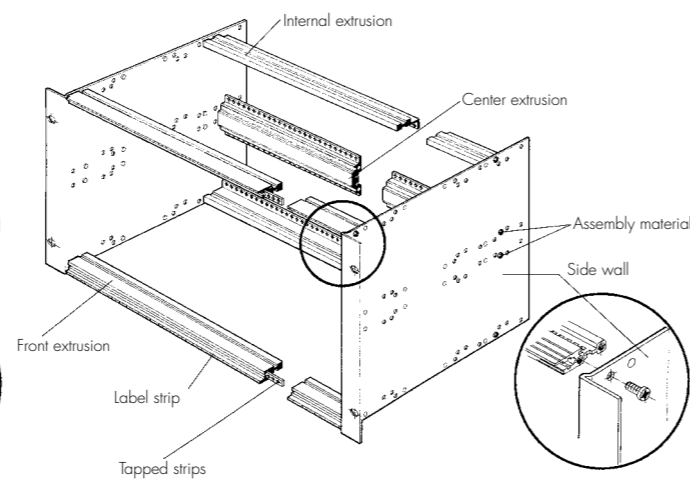


**CONSTRUCTION EXAMPLES**

ECOKIT 11 STANDARD



ECOKIT 11 INTEGRATED



**WIDTH**

- Width: 42 or 84 HP
- Other widths on request
- Set with or without center extrusion

Scope of delivery:

- 2 front extrusions, aluminum, clear anodized
- 4 tapped strips M2.5 (6 for version with center extrusion)
- 2 internal extrusions
- 1 center extrusion (version with center extrusion only)
- Insulating strips (for backplane mounting only)
- Assembly material (torx screws)



Description	42 HP	84 HP
Standard set without center extrusion	11E101	11E103
Set insulated backplane mounting without center extrusion	11E104	11E106
Standard set with center extrusion	11E107	11E109
Set insulated backplane mounting with centre extrusion	11E110	11E112

Label strip:

- 1 label strip consisting of 4 single tapes

Scope of delivery	42 HP (01-42 / 42-01)	84 HP (01-84 / 84-01)
2 pieces each (upper and lower)	63-142	63-046

**HEIGHT AND DEPTH**

- Standard: 19" height extrusions separately
- Integrated: 19" mounting brackets integrated in side panel
- Other heights and depths on request

Scope of delivery:

- 2 side walls, 2 mm aluminum, raw (integrated: Clear anodized)
- 2 height extrusions, aluminum, clear anodized (standard version only)

Height	Description	Depth	
		216 mm   8.50"	336 mm   13.22"
3 U	Standard without holes for handles	11E201	11E203
	Standard with holes for handles	11E204	11E206
	Integrated without holes for handles	11E207	-
6 U	Standard without holes for handles	11E209	11E211
	Standard with holes for handles	11E212	11E214
	Integrated without holes for handles	11E215	-

**Product structure**

**HANDLES**

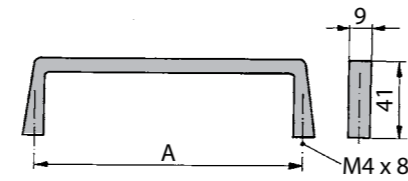
U-HANDLE OF ALUMINUM

- Aluminum, anodized
- Width: 9 mm

Scope of delivery:

- 1 aluminum handle
- 2 countersunk screw torx T20 (M4 x 10)

Height	A		Part No.
	mm	inch	
3 U	88.9	3.5	60-573
6 U	222.3	8.75	60-576



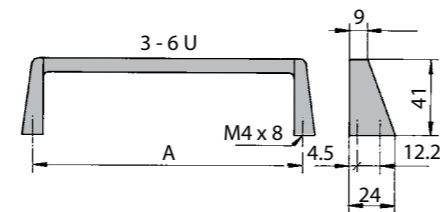
DIE CAST ALUMINUM HANDLE

- Universal handle
- White aluminum, wet painted (RAL 9006)

Scope of delivery:

- 1 aluminum handle
- 2 countersunk screws torx T20 (M4 x 10)

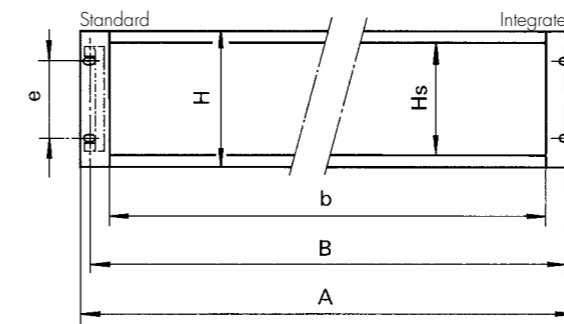
Height	A		Part No.
	mm	inch	
3 U	88.9	3.5	60-563
6 U	222.3	8.75	60-566



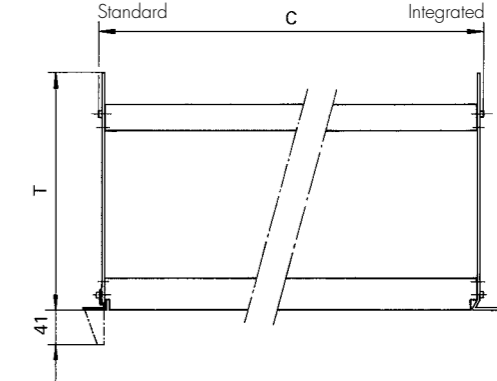
**Drawings and dimensions**

**LINE DRAWING**

FRONT VIEW



VIEW FROM ABOVE



Height	Depth		Width						
	U	H	Hs	T	HP	A	B	b	C
3	3	132.5 mm 5.21"	112.5 mm 4.43"	216   336 mm 8.5   13.22"	42	269.2 mm 10.60"	252.5 mm 9.94"	213.3 mm 8.40"	226.8 mm 8.93"
6	6	265.85 mm 10.47"	245.85 mm 9.68"	216   336 mm 8.5   13.22"	84	482.6 mm 19.00"	465.9 mm 18.34"	426.7 mm 16.80"	440.2 mm 17.33"

**Adaptation kits**

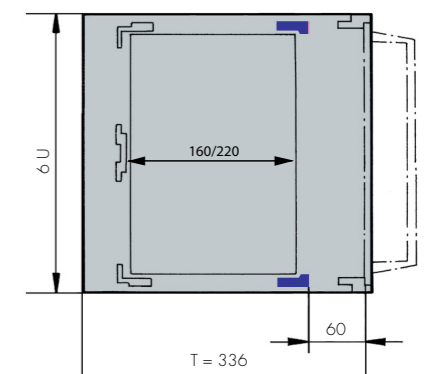
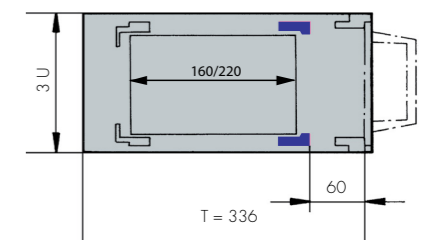
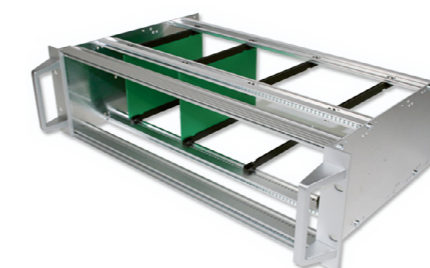
**RECESSED CARD INSTALLATION KIT**

- For recessed mounting of Eurocards (without front panels)

Scope of delivery:

- 2 internal extrusions
- 2 tapped strips M2.5
- Assembly material (8 cylinder head screws with torx T20 (M4 x 10))

Description	Width	Part No.
Mounting for recessed Eurocards (without front panels)	84 HP	11E530



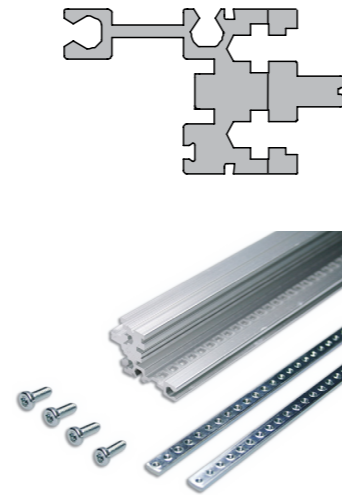
**Adaptation kits**

**FRONT SUB DIVISION HORIZONTAL IEC FOR CARD GUIDES**

- For sub division of front
- Possibility to mount card guides
- Built on a special extrusion
- Easy and quick assembly
- Cost effective solution
- Delivered in set form
- Usable width 84 HP
- Other widths on request

Scope of delivery:

- 1 piece passivated front sub division extrusion
- 2 pieces tapped strips M2.5
- 4 pieces cylinder head screws torx T20 (M4 x 10)



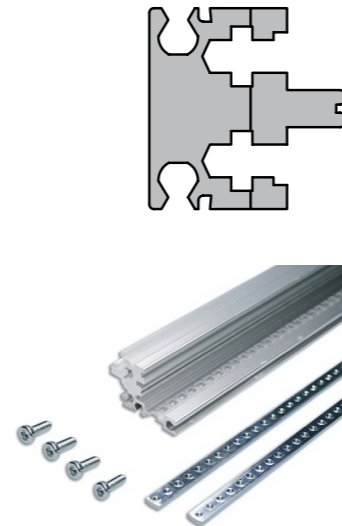
Description	Part No.
EMC front sub division horizontal IEC for card guides	63K837-24

**FRONT SUB DIVISION HORIZONTAL IEC**

- For sub division of front
- Without possibility of using card guides
- Built on a special extrusion
- Easy and quick assembly
- Cost effective solution
- Delivered in set form
- Usable width 84 HP
- Other widths on request

Scope of delivery:

- 1 piece passivated front sub division extrusion
- 2 pieces tapped strips M2.5
- 4 pieces cylinder head screws torx T20 (M4 x 10)

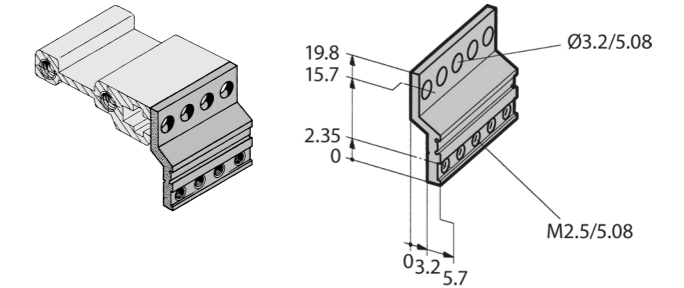


Description	Part No.
EMC front sub division horizontal IEC	63K837-22

**EDGE CONNECTOR EXTRUSION**

- Suitable for standard extrusion 66-144
- Edge connector extrusion without assembly material

Length HP	mm		inch		Part No.	
	mm	inch	clear passivated*	raw		
8	40.6	1.59	66-145-40			
18	91.4	3.59	66-145-41			
28	142.2	5.6	66-145-42			
42	213.4	8.4	66-145-63			
63	320	12.6	66-145-65			
81	411.5	16.2	66-145-22			
84	426.7	16.8	66-145-52			
	1350	53.14				66-145-19



\*electrically conductive

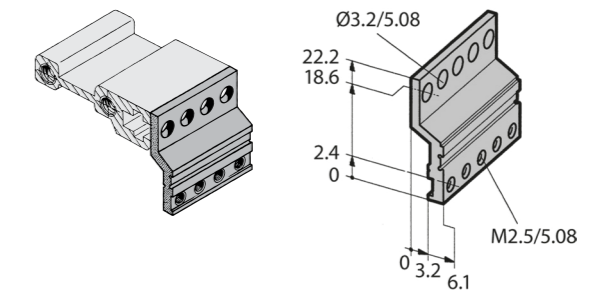
Assembly material:

Description	Part No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

**EDGE CONNECTOR EXTRUSION**

- For use with a backplane mounting extrusion 66-193
- Edge connector extrusion without assembly material

Length HP	mm		inch		Part No.	
	mm	inch	clear passivated*	raw		
8	40.6	1.59	66-147-40			
18	91.4	3.59	66-147-41			
28	142.2	5.6	66-147-42			
42	213.4	8.4	66-147-63			
63	320	12.6	66-147-65			
81	411.5	16.2	66-147-22			
84	426.7	16.8	66-147-52			
	1350	53.14				66-147-19



\*electrically conductive

Assembly material:

Description	Part No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

**Assembly accessories**

**FRONT SUB DIVISION VERTICAL 6 | 3 U**

- Single and double Eurocards (6 U)

Scope of delivery:

- 1 divider extrusion front
- 1 divider extrusion rear
- 2 front extrusions
- 2 internal extrusions
- 1 set assembly material (cross recessed)

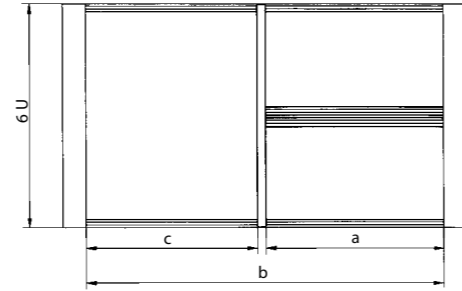
Front sub division vertical 6 | 3 U:

- Other versions on request

Width a	Width b		Part No.
	42 HP	84 HP	
32 HP	c = 8 HP	c = 50 HP	11-959-2

Tapped strips for front extrusion:

Scope of delivery	Description	Part No.
1 piece tapped strip	Tappes stripe M2.5, 32 HP	61-463



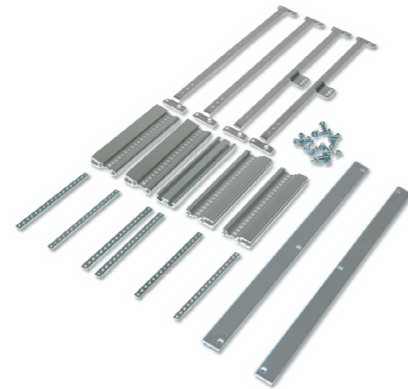
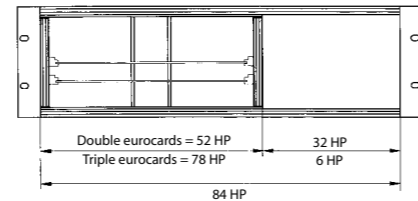
**HORIZONTAL CARD MOUNTING KIT**

- Double Eurocards (6 U)
- Independent of card depth
- Top and bottom cover plate when no overall fan front panel is used (has to be ordered separately)

Scope of delivery:

- 4 distance plates (2 in front | 2 rear)
- 4 front extrusion (2 in front | 2 rear)
- 1 center extrusion
- 6 tapped strips M2.5
- 1 set assembly material (torx)

Mounting height	Usable height	Backplane	Cover plate top	Cover plate bottom
3 U	20 HP	14K971-60	21N602-90	21N602-90
6 U	48 HP	14K991-60	21N606-90	21N607-90



**Accessories**

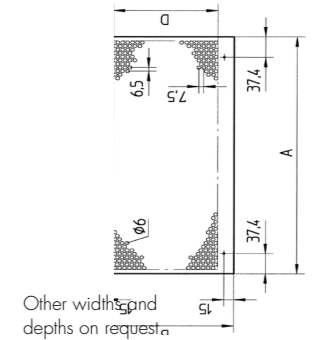
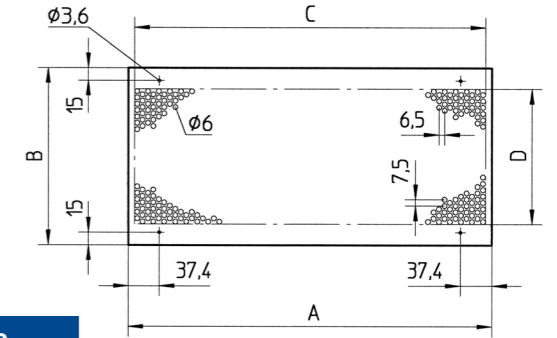
**PERFORATED COVER PLATES**

- 1 mm sheet aluminum, perforated
- Fastening on longitudinal and internal extrusion
- Thread in front and internal extrusion available
- Mechanical protection for the card area
- Cover plates for card depths 300 and 400 mm on request

Scope of delivery:

- 1 perforated cover plates

Enclosure width	Enclosure depth	A	B	C	D	Part No.
42 HP	160 mm 6.30"	217.64 mm 8.56"	149 mm 5.86"	207.5 mm 8.16"	107.25 mm 4.22"	11-701
	220 mm 8.66"	217.64 mm 8.56"	209 mm 8.22"	207.5 mm 8.16"	159.75 mm 6.28"	11-702
84 HP	160 mm 6.30"	431 mm 16.96"	149 mm 5.86"	415.5 mm 16.35"	107.25 mm 4.22"	11-706
	220 mm 8.66"	431 mm 16.96"	209 mm 8.22"	415.5 mm 16.35"	159.75 mm 6.28"	11-707
	280 mm 11.02"	431 mm 16.96"	269 mm 10.59"	415.5 mm 16.35"	212.25 mm 8.35"	11-708



Other widths and depths on request

Assembly material:

Description	Scope of delivery	Part No.
Cross recessed screw M3 x 6	8 pieces / pack	63-195
	1 piece	61-283
Cylinder head earthing screw torx T10 (M3 x 6)	1 piece	5443-04

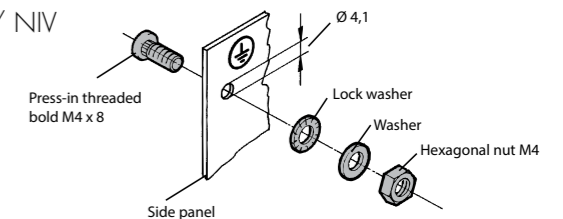
**GROUNDING SET**

- Enables enclosures to be grounded in conformance with EN / VDE / NIV

Scope of delivery:

- 1 threaded bolt M4 x 8
- 1 sealing ring
- 1 lock washer
- 1 hexagonal nut M4

Description	Part No.
Earthing set according to EN / VDE / SEV	63-127



Further general accessories can be found in the brochure "General accessories" or on request.

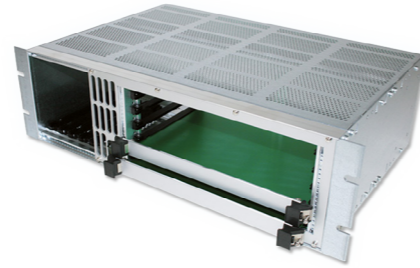
## CHASSIS AND SUBRACKS

### MAGIC-KIT 11 | SPIRIT-KIT 11

#### Product description

##### MAIN FEATURES

Magic- and Spirit-Kit 11 are EMC shielded subracks for IEC or IEEE applications. Both subracks impress with their simple and cost-effective structure with excellent EMC capability. Sheet steel side walls ensure extremely fast assembly and EMC protection without seals.



- › Advanced EMC shielding without gaskets (standard)
- › Internal adaption parts freely accessible
- › Quick assembly
- › Sheet steel, pre-galvanised
- › Vibration-proof
- › Dimensions and adaptations according to IEC 60297
- › Suitable for IEC 60297 (Magic-Kit 11) or IEEE 1101.10 (Spirit-Kit 11)

##### PRODUCT VARIETY

- › Magic-Kit 11 according to IEC 60297
- › Spirit-Kit 11 according to IEEE 1101.10
- › Numerous accessories
- › Vertical and horizontal card mounting

##### POSSIBLE CUSTOMIZATIONS

- Several depths
- 3 or 6 U
- Individual interior design

##### TYPICAL APPLICATIONS

- Electronics in a protected EMC environment
- Application in invisible areas (cabinet installation)
- Cost sensitive projects

## CHASSIS AND SUBRACKS

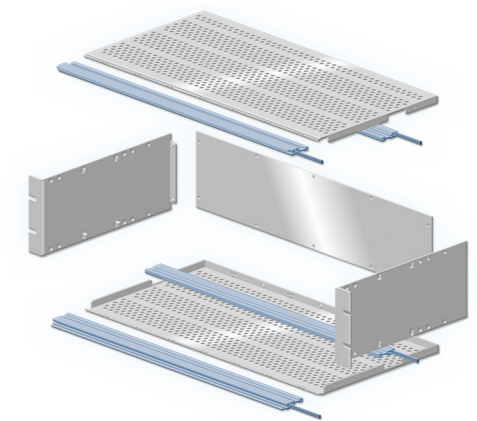
### MAGIC-KIT 11 | SPIRIT-KIT 11

#### Executions

##### SIZE

Height	Width: 84 HP	
	Magic-Kit 11	Spirit-Kit 11
3 U		
6 U		

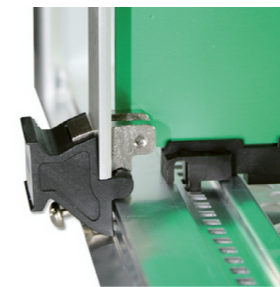
□ 240 mm | 9.44"    ■ 300 mm | 11.81"    ■ 390 mm | 15.35"



##### EXECUTIONS

###### MAGIC-KIT 11

Front extrusions according to IEC 60297 specifications



###### SPIRIT-KIT 11

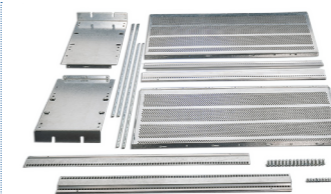
Front extrusions according to IEEE 1101.10 and CompactPCI specifications, designed for plug-in units with high forces



##### ASSEMBLY INSTRUCTIONS

###### QUICK ASSEMBLY

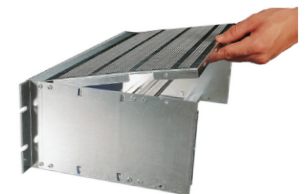
1. Open the package and lay out the parts.



2. Screw together the two side panels, four extrusions and four tapped strips - and the frame is ready.



3. Insert top and bottom cover, tighten four screws.



4. The EMC subrack is fully assembled without additional gaskets.



**EMC PROTECTION**

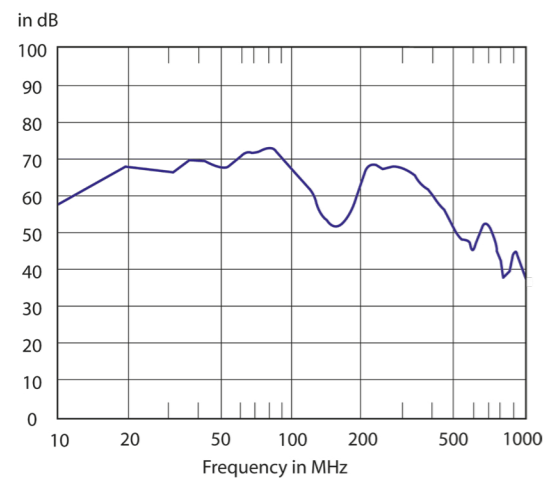
Electromagnetic compatibility is the ability of a system to operate in the intended environment without causing or suffering unacceptable degradation of performance due to unintentional electromagnetic radiation or response. The EMC characteristics of a system therefore consist of an appropriate immunity from interference (noise immunity) and a limited emission of interference (noise emission).

Elma's EMC concept describes three levels of electromagnetic shielding performance (performance level). The attenuation levels will simplify the selection of subracks for the user. Test setup: The first measurement E1 is without the enclosure. The next measurement E2 is made with the transmitting antenna installed inside the enclosure. The difference between the received signal without and with the enclosure represents the shielding effectiveness in dB.

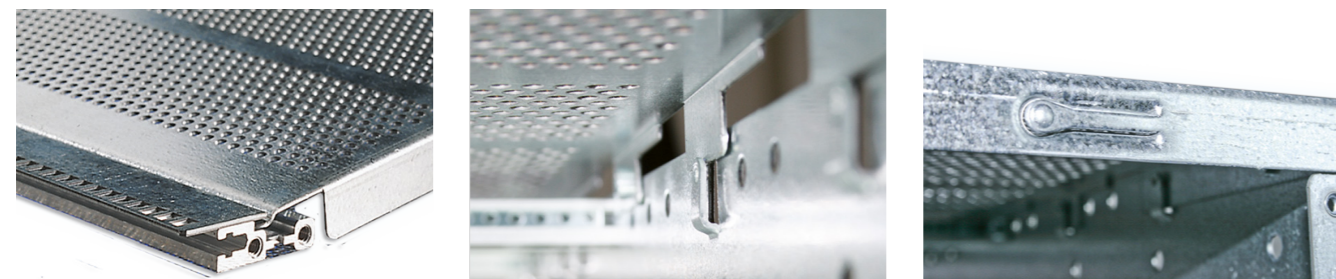
Performance level	30 - 230 MHz	230 - 1000 MHz	1000 - 2000 MHz
1 Elma Basic level	20 dB	10 dB	0 dB
2 Elma Advanced level	40 dB	30 dB	20 dB
3 Elma Superior level	60 dB	50 dB	40 dB

The standard configuration will already provide an advanced EMC level. Upon request, a superior level can be worked out in cooperation with the Elma engineering.

**TYPICAL SHIELDING EFFECTIVENESS**



By means of standard snap-fit and screw connections suitable for demanding applications.



**Product structure**

**BASIC CASE**

- EMC level: Advanced (standard)
- Top and bottom covers fully perforated
- Aluminium extrusions, electrically conductive
- Side plates, top and bottom covers of pre-galvanised sheet steel



Scope of delivery:

- 2 side panels
- 2 front extrusions
- 2 internal extrusions
- 4 tapped strips (6 pieces for 6 U)
- 2 insulating strips (for backplane, insulated mounting only); 4 pieces for 6 U
- 2 top / bottom covers, perforated
- Assembly material
- EMC gasket for front / side
- 1 double extrusion (6 U only)

Rear panel has to be ordered separately

Magic-Kit 11 (IEC 60297)

Height	Width	Backplane mounting	Depth		
			240 mm / 9.44"	300 mm / 11.81"	390 mm / 15.35"
3 U	84 HP	Insulated	11A131-6	11A132-6	11A133-6
3 U	84 HP	Conductive	on request	on request	11A133-7
6 U	84 HP	Insulated	-	11A162-6	on request
6 U	84 HP	Conductive	on request	11A162-7	11A163-7

Spirit-Kit 11 (IEEE 1101.10 and CompactPCI)

Height	Width	Backplane mounting	Depth		
			240 mm / 9.44"	300 mm / 11.81"	390 mm / 15.35"
3 U	84 HP	Insulated	11B131-6	11B132-6	on request
3 U	84 HP	Conductive	11B131-7	11B132-7	on request
6 U	84 HP	Insulated	11B161-6	on request	on request
6 U	84 HP	Conductive	on request	on request	11B163-7

Rear Panel:

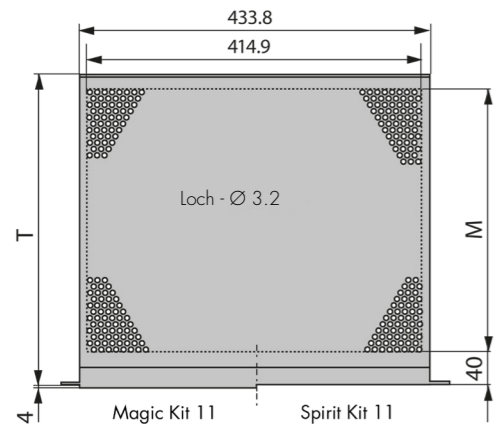
- Galvanized sheet steel
- Scope of delivery: 1 rear panel (assembly material included in case)

Height	Description	Part-No.
3 U	Rear panel	22-384
6 U	Rear panel	22-684

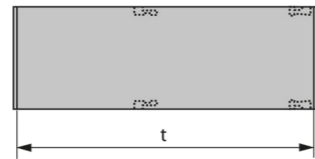
**Drawings and dimensions**

**DIMENSION DRAWINGS**

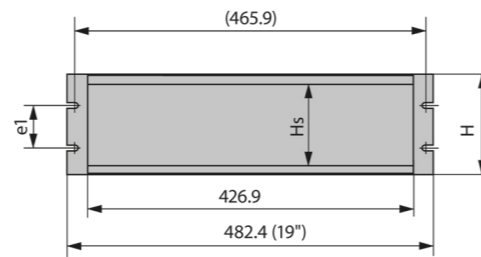
TOP VIEW



SIDE VIEW



FRONT VIEW



Height HE	mm		inch		Hs		e1	
	mm	inch	mm	inch	mm	inch	mm	inch
3 HE	132.5	5.21	112.5	4.42	57.2	2.25		
6 HE	265.85	10.46	245.85	9.67	190.55	7.5		

Depth T	mm		inch	
	mm	inch	mm	inch
240	9.44	232.6	9.15	
300	11.81	292.6	11.51	
390	15.35	382.6	15.06	

Air flow

Depth	mm		inch		Air flow	
	mm	inch	mm	inch	mm <sup>2</sup>	sq. inch
240	9.44	186.8	7.35	28953	44.87	
300	11.81	244	9.6	37638	58.33	
390	15.35	333.2	13.11	52115	80.77	

**Adaptation Kit**

**ADAPTION KIT FOR RECESSED CARD INSTALLATION**

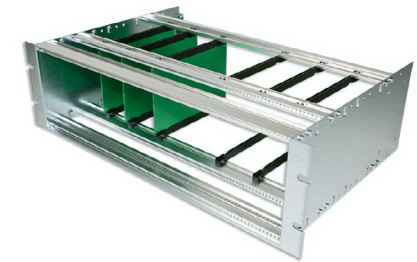
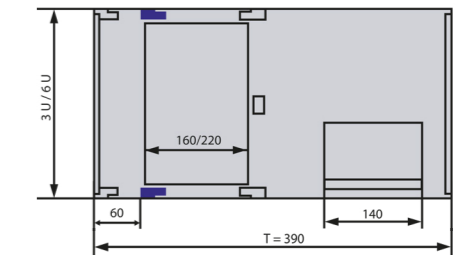
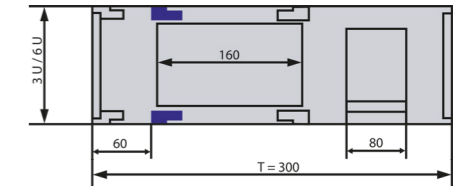
Range of application:

- Recessed mounting of single / double eurocards depth 160 to 220 mm
- Without individual front panels

Scope of delivery:

- 2 internal extrusions
- 2 tapped strips
- 1 set assembly material

Description	Part-No.
Recessed mounting of single / double eurocards without front panels	11-530

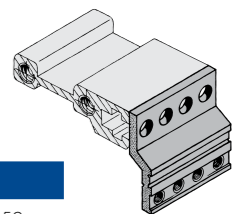


**EDGE CONNECTOR EXTRUSION 66-147**

- For use with extrusions for backplanes 66-193

Scope of delivery:

- 1 aluminium extrusion, clear passivated (conductive)



Description	8 HP	18 HP	28 HP	42 HP	63 HP	84 HP
For edge connector, IEC 60603-2	66-147-XX	66-145-41	66-145-42	66-145-63	66-145-65	66-145-52

Assembly material

Description	Part-No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

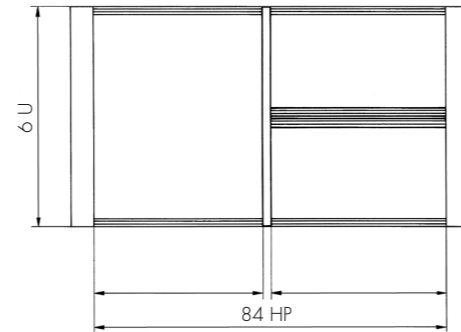
**Assembly Accessories**

**FRONT SUB DIVISION VERTICAL FOR 3 U | 6 U**

- Allows both single and double eurocards to be mounted together in a 6 U Magic- and Spirit-Kit 11

Scope of delivery:

- 1 divider extrusion front
- 1 divider extrusion rear
- 2 front extrusions
- 2 internal extrusions
- 1 assembly material



Nominal width		Part-No.
6 U (c)	2 x 3 U (a)	IEC 60297
50 HP	32 HP	11-959-2

Tapped strips for front extrusion

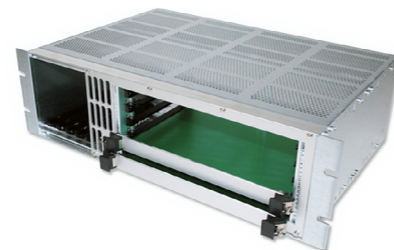
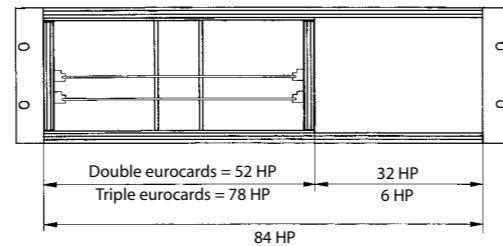
Scope of delivery	Description	Part-No.
1 piece tapped strip	M2.5 32 TE = 162.56 mm	63-214

**HORIZONTAL CARD MOUNTING KIT FOR DOUBLE EUROCARDS | 6 HE**

- For double eurocards (6 U)
- Independent of card depth

Scope of delivery:

- 4 distance plates (2 front / 2 rear)
- 4 length extrusions (2 front / 2 rear)
- 1 centre extrusion
- 6 tapped strips M2.5
- 1 set assembly material
- Top and bottom cover plate, when no overall fan front panel is used (have to be ordered separately)



Mounting height	Usable height	IEC 60603-2	Backplane	Cover plate top*	Cover plate bottom*
3 HE	20 TE	14-971-30	14-971-60	21N602-90	21N602-90

\* Assembly material for cover plate see below

Front panel screws:

- For cover panel
- Delivery scope: Set of 10 screws (incl. screw retainer)

Description	Part-No.
Torx screw T8 (M2.5 x 11.3) with plastic screw retainer	63K159
Rounded head screw recessed M2.5 x 11.3 with plastic screw retainer	63-159

**MOUNTING CHASSIS**

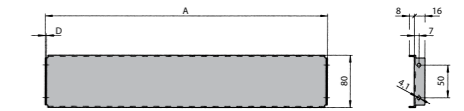
- For mounting non-standard modules and components
- Mounting chassis is fixed directly to the side panel

Scope of delivery:

- 1 mounting chassis
- 1 set of assembly material (4 earthing nuts, 4 screws M4 x 6)

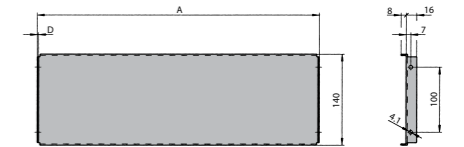
Mounting chassis depth 80 mm:

Frame width	A		D		Part-No.
	mm	inch	mm	inch	
84 TE	431.5	16.98	2	0.08	14-832-50



Mounting chassis depth 140 mm:

Frame width	A		D		Part-No.
	mm	inch	mm	inch	
84 TE	431.5	16.98	2	0.08	14-836-50



**EMC CONTACT STRIPS (ADVANCED EMC LEVEL)**

- Fixing on extrusion (for front panels)
- Self-adhesive

Scope of delivery:

- 2 contact strips

Width	Length	Part-No.
84 TE	424.2 mm	63-836-70

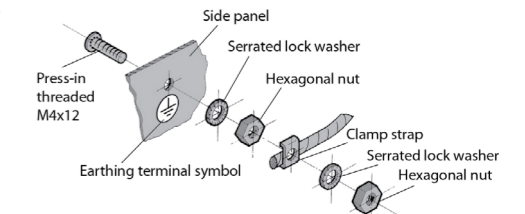


**EARTHING SET**

- Enables enclosures to be earthed in conformance with EN / VDE / SEV

Scope of delivery:

- 1 press-in threaded bolt M4
- 2 serrated lock washers
- 2 nuts M4
- 1 clamp
- 1 protective conductor symbol



General accessories can be found in the brochure "General accessories" or on request.



## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K

#### Product description

##### MAIN FEATURES

The Systemkit 12K is a high quality subrack system that high flexibility with wide functionality united. Completely made of aluminum, it already offers significant advantages in a standard version such as...



- › Choice between VME, VME64x or cPCI application
- › Possibility for rear I/O mounting
- › EMC level: Basic (already in the basic version without additional EMC parts)
- › RoHS compliant
- › Different heights and depths available
- › Accessory sets for individual expansion
- › Customizations on request

##### PRODUCT VARIETY

- › Additional dimensions for special card depths
- › Combination of rear I/O and recessed card mounting
- › Horizontal and vertical divisions
- › Increased EMC protection with optional gaskets
- › Special equipment on request
- › Various sizes and colors
- › Individual interior design

#### Executions

##### SIZES

- 3 to 9 U (height units)
- 84 HP
- Depth: 289 to 500 mm

##### COLORS

- Clear passivated
- Colors on request

## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K

##### SPECIAL FEATURES

The Systemkit 12K was tested according to the following norms:

- |             |              |                     |              |
|-------------|--------------|---------------------|--------------|
| ▪ Vibration | EN60068-2-6  | ▪ Damp heat, cyclic | EN60068-2-30 |
| ▪ Shock     | EN60068-2-27 | ▪ Cold              | EN60068-2-1  |
| ▪ Dry heat  | EN60068-2-2  | ▪ Salt spray test   | DIN50021     |

##### EMC PROTECTION

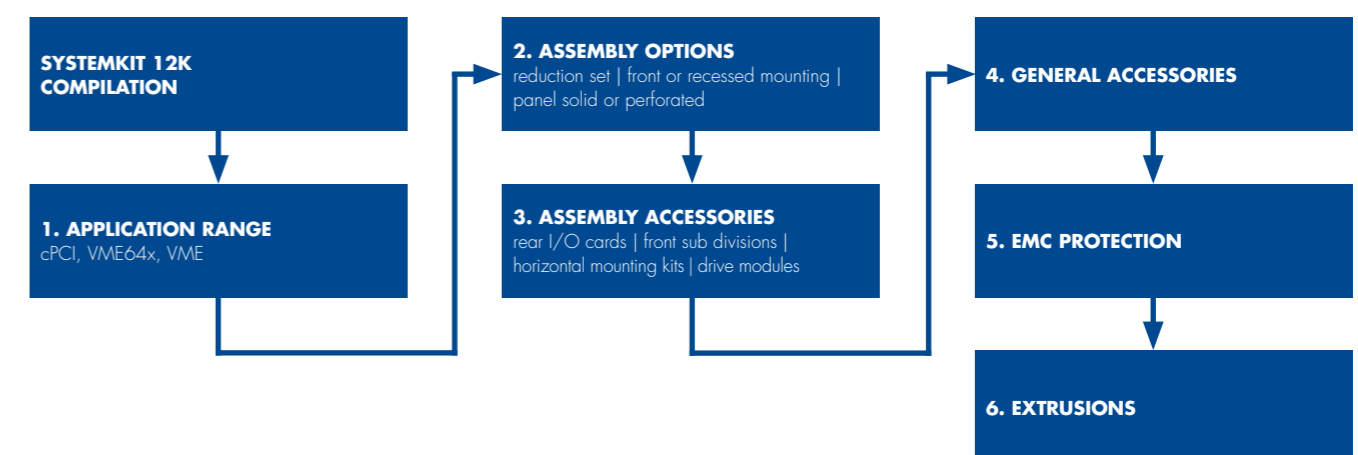
Electromagnetic compatibility is the ability of a system to operate in the intended environment without causing or suffering unacceptable degradation of performance due to unintentional electromagnetic radiation or response. The EMC characteristics of a system therefore consist of an appropriate immunity from interference (noise immunity) and a limited emission of interference (noise emission). Elma's EMC concept describes three levels of electromagnetic shielding performance (performance level). The attenuation levels will simplify the selection of sub racks for the user. Test setup: The first measurement E1 is without the enclosure. The next measurement E2 is made with the transmitting antenna installed inside the enclosure. The difference between the received signal without and with the enclosure represents the shielding effectiveness in dB.

Performance level	30 - 230 MHz	230 - 1000 MHz	1000 - 2000 MHz
1 Elma Basic level	20 dB	10 dB	0 dB
2 Elma Advanced level	40 dB	30 dB	20 dB
3 Elma Superior level	60 dB	50 dB	40 dB

The standard configuration will provide you with a basic EMC level. If you require an advanced or superior EMC level for your system, you need to order additional EMC parts.

#### Product structure

##### CONFIGURATION



**Basic set-up**

**CPCI (IEEE1101.10 / IEEE101.11) STANDARD CONFIGURATIONS\*\***

	3 U		4 U			6 U			7 U			9 U	
	Height Depth Width	289 mm 19"	400 mm 19"	289 mm 19"	400 mm 19"	500 mm 19"	289 mm 19"	400 mm 19"	500 mm 19"	289 mm 19"	400 mm 19"	500 mm 19"	400 mm 19"
<b>Part No.</b>	12K001	12K041	12K002	12K003	12K004	12K008	12K042	12K043	12K011	12K012	12K013	12K021	12K022
<b>Card size</b>	3 U	3 U	3 U	3 U	3 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U
<b>Card depth</b>	160 mm	160 mm 220 mm	160 mm	160 mm 220 mm	160 mm 220 mm	160 mm	160 mm 220 mm	160 mm 220 mm	160 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm
<b>Rear I/O card depth*</b>	80 mm	-	80 mm	80 mm	80 mm	80 mm	-	-	80 mm	80 mm	80 mm	80 mm	80 mm
<b>Max. slot</b>	21	21	21	21	21	21	21	21	21	21	21	21	21
<b>Front mounting</b>	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible
<b>Recessed mounting</b>	-	-	possible	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	possible	possible	possible	possible
<b>Height reduction</b>	-	-	possible	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	possible	possible	possible	possible
<b>Base material</b>	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum
<b>Surface treatment</b>	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive
<b>Possible EMC level</b>	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced

**VME (IEEE1101.10 / IEEE101.11) STANDARD CONFIGURATIONS\*\***

	3 U		4 U				6 U			7 U				9 U	
	Height Depth Width	291 mm 19"	400 mm 19"	291 mm 19"	371 mm 19"	400 mm 19"	500 mm 19"	291 mm 19"	400 mm 19"	500 mm 19"	291 mm 19"	371 mm 19"	500 mm 19"	500 mm 19"	400 mm 19"
<b>Part No.</b>	12K023	12K024	12K025	12K026	12K027	12K028	12K029	12K030	12K031	12K032	12K033	12K034	12K035	12K036	12K037
<b>Card size</b>	3 U	3 U	3 U	3 U	3 U	3 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U
<b>Card depth</b>	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm
<b>Rear I/O card depth*</b>	-	-	-	160 mm	160 mm	160 mm	-	-	-	-	160 mm	160 mm	160 mm	160 mm	160 mm
<b>Max. slot</b>	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
<b>Front mounting</b>	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible
<b>Recessed mounting</b>	-	-	possible	-	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	-	possible	possible	possible	possible
<b>Height reduction</b>	-	-	possible	possible	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	possible	possible	possible	possible	possible
<b>Base material</b>	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum
<b>Surface treatment</b>	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive
<b>Possible EMC level</b>	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced

**VME (IEC60297) STANDARD CONFIGURATIONS\*\***

	3 U				4 U			6 U			7 U				9 U	
	Height Depth Width	291 mm 19"	400 mm 19"	500 mm 19"	291 mm 19"	371 mm 19"	400 mm 19"	500 mm 19"	291 mm 19"	400 mm 19"	500 mm 19"	291 mm 19"	371 mm 19"	500 mm 19"	500 mm 19"	400 mm 19"
<b>Part No.</b>	12K019	12K020	12K044	12K038	12K005	12K006	12K007	12K039	12K009	12K010	12K040	12K014	12K015	12K016	12K017	12K018
<b>Card size</b>	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U	3 / 6 U
<b>Card depth</b>	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm	160 mm 220 mm
<b>Rear I/O card depth*</b>	-	-	-	-	160 mm	160 mm	160 mm	-	-	-	-	160 mm	160 mm	160 mm	160 mm	160 mm
<b>Max. slot</b>	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
<b>Front mounting</b>	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible	possible
<b>Recessed mounting</b>	-	-	-	possible	-	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	-	possible	possible	possible	possible
<b>Height reduction</b>	-	-	-	possible	possible	possible	possible	possible (3 U)	possible (3 U)	possible (3 U)	possible	possible	possible	possible	possible	possible
<b>Base material</b>	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum
<b>Surface treatment</b>	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive	conductive
<b>Possible EMC level</b>	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced	advanced

\*Rear I/O possible when front cards 160 mm only. No recessed mounting possible in combination with rear I/O.  
\*\*Other configurations are available as customizations.

# CHASSIS AND SUBRACKS

## SYSTEMKIT 12K

### Application

#### CPCI | VME64X | VME 19" BASIC SET

Scope of delivery:

- 2 side walls
- 4 front extrusions
- 4 tapped strips M2.5
- 1 set assembly material (16 cylinder head screw torx T20 (M4 x 10))



cPCI application (IEEE1101.10 | IEEE1101.11):

Depth	3 U 132.5 mm	4 U 177.0 mm	6 U 265.9 mm	7 U 310.3 mm	9 U 399.2 mm
289 mm	12K001	12K002	12K008	12K011	-
400 mm	12K041	12K003	12K042	-	12K021
500 mm	-	12K004	12K043	-	-

VME64x application (IEEE1101.10 | IEEE1101.11)

Depth	3 U 132.5 mm	4 U 177.0 mm	6 U 265.9 mm	7 U 310.3 mm	9 U 399.2 mm
291 mm	12K023	12K025	12K029	12K032	-
400 mm	12K024	12K027	12K030	12K034	12K036
500 mm	-	-	12K031	12K035	12K037

VME application (IEC60297)

Depth	3 U 132.5 mm	4 U 177.0 mm	6 U 265.9 mm	7 U 310.3 mm	9 U 399.2 mm
291 mm	12K019	12K038	12K039	12K040	-
371 mm	-	12K005	-	-	-
400 mm	12K020	12K006	12K009	12K015	12K017
500 mm	12K044	12K007	12K010	12K016	12K018

#### INTERNAL EXTRUSIONS

##### INTERNAL EXTRUSIONS FOR INSULATED BACKPLANE MOUNTING

Scope of delivery:

- 2 internal extrusions
- 2 tapped strips M2.5
- 2 insulating strips
- Assembly material (8 cylinder head screw torx T20 (M4 x 10))



Description	Part No.
Insulated mounting of backplane	12K506

# CHASSIS AND SUBRACKS

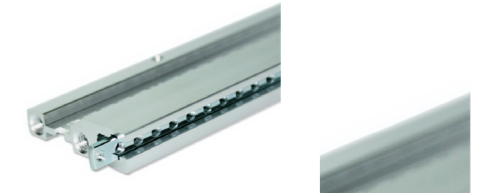
## SYSTEMKIT 12K

#### INTERNAL EXTRUSIONS

##### INTERNAL EXTRUSIONS FOR CONDUCTIVE BACKPLANE ASSEMBLY

Scope of delivery:

- 2 internal extrusions
- 2 tapped strips M2.5
- Assembly material (8 cylinder head screws torx T20 (M4 x 10))



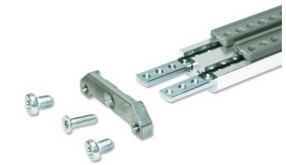
Description	Part No.
Non-insulated mounting of backplane	12K507

##### DOUBLE EXTRUSIONS FOR INSULATED BACKPLANE MOUNTING

- For 6 U cards only
- Stiffener for VME monolithic backplanes
- Fixing for J1 and J2 backplanes

Scope of delivery:

- 1 double extrusion
- 2 tapped strips
- 2 insulating strips
- Assembly material (8 x torx T20 (M4 x 6) | 2 x torx T20 (M3 x 10) | 2 x adapter)



Description	Part No.
1 set double extrusion for insulated backplane mounting	12K508

##### DOUBLE EXTRUSIONS FOR CONDUCTIVE BACKPLANE ASSEMBLY

- For 6 U cards only
- Stiffener for VME monolithic backplanes
- Fixing for J1 and J2 backplanes

Scope of delivery:

- 1 double extrusion
- 2 tapped strips
- Assembly material (8 x torx T20 (M4 x 6) | 2 x torx T20 (M3 x 10) | 2 x adapter)



Description	Part No.
1 set double extrusion for non-insulated backplane mounting	12K509

**Range of application**

**HEIGHT EXTRUSIONS FOR 19" VERSION**

- Not suitable for telescopic rail mounting
- Handles and EMC gaskets see below

Scope of delivery:

- 2 19" height extrusions (front)
- 2 height extrusions (rear)

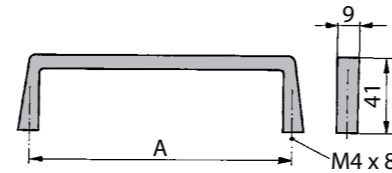
Height	Part No.				
	3 U	4 U	6 U	7 U	9 U
	12K200	12K201	12K202	12K203	12K204



**ALUMINUM HANDLE 9 MM (ANODIZED)**

Scope of delivery:

- 1 handle for height extrusions
- Assembly material
- Per subrack 2 handles have to be ordered

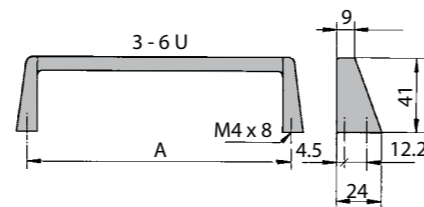


Sizes	3 U	4 U	6 U	7 U	9 U
Handle size (A)	3 U   88.9 mm	4 U   133.4 mm	6 U   222.3 mm	4 U   133.4 mm	6 U   222.3 mm
Part No.	60-573	60-574	60-576	60-574	60-576

**DIE CAST ALUMINUM HANDLE (WET PAINTED RAL 9006)**

Scope of delivery:

- 1 handle for height extrusions
- Assembly material
- Per subrack 2 handles have to be ordered



Sizes	3 U	4 U	6 U	7 U	9 U
Handle size (A)	3 U   88.9 mm	4 U   133.4 mm	6 U   222.3 mm	4 U   133.4 mm	6 U   222.3 mm
Part No.	60-563	60-564	60-566	60-564	60-566

**HEIGHT EXTRUSIONS FOR 19" VERSION (FROM TELESCOPIC RAILS)**

HEIGHT EXTRUSIONS FOR ASSEMBLY OF TELESCOPIC RAILS

Scope of delivery:

- 2 19" height extrusions (front)
- 2 height extrusions (rear)
- 2 die cast aluminum handles
- Assembly material (4 countersunk screw torx T20 (M4 x 10))

Height	Part No.
3 U	12K400
6 U	12K402

Other heights on request



**TELESCOPIC RAILS SET (LOAD CAPACITY UP TO 60 KG / PAIR)**

Scope of delivery:

- 2 telescopic rails
- Mounting bracket and assembly material for mounting into cabinet and on module

Max. withdraw	Usable depth		Part No.
	min.	max.	
511.2 mm	463 mm	681.8 mm	65-051
596.4 mm	564.6 mm	783.4 mm	65-052
719.6 mm	666.2 mm	885 mm	65-053

Rugged telescopic rails, load capacity up to 90 kg / pair on request



**Assembly options**

**REDUCTION SET**

REDUCTION KIT 1/3 U + 2/3 U FOR FRONT MOUNTING | SOLID

- Material: Aluminum 1.5 mm, conductive, depth independent (to be used in conjunction with the bottom / top panel)
- For 160 mm card depth, 4 U enclosure (Eurocards) | 7 U enclosure (double Eurocards)

Scope of delivery:

- 1 adapter top (1/3 U), 1 adapter bottom (2/3 U) incl. fan plate
- 1 set assembly material (6 x torx T10 (M3 x 8) | 4 x torx T20 (M4 x 10))

Description	Part No.
Reduction set solid incl. fan panel	12K732



### Assembly options

#### REDUCTION SET

##### ADDITIONAL FAN PLATE

Scope delivery for additional fan plate (for easy access and maintenance of the fans):

- 1 fan plate
- 8 milled edge screw torx T10 (M3 x 5)

Description	Part No.
Fan plate incl. assembly material	12K737

##### REDUCTION KIT 1/3 U + 2/3 U FOR 60 MM RECESSED MOUNTING

- Material: Aluminum 1.5 mm, conductive, depth independent (to be used in conjunction with the bottom / top panel)
- For 60 mm recessed mounting, 160 mm card depth, for 4 U enclosure (Eurocards) | for 7 U enclosure (double Eurocards)

Scope of delivery:

- 1 adapter top (1/3 U), 1 adapter bottom (2/3 U) incl. fan plate
- 1 set assembly material (6 x torx T10 (M3 x 8) | 4 x torx T20 (M4 x 10))

Part No. perforated*	Part No. solid
12K500	12K501

\*only bottom part (2/3 U) is perforated

Scope of delivery for additional fan plate (for easy access and maintenance of the fans):

- 1 fan plate
- 8 milled edge screw torx T10 (M3 x 5)

Description	Part No.
Fan plate incl. assembly material	12K737

##### REDUCTION KIT 1/3 U + 2/3 U FOR FRONT MOUNTING

- Material: Aluminum 1.5 mm, conductive, depth independent (to be used in conjunction with the bottom / top panel)
- For 4 U enclosure (Eurocards) | for 7 U enclosure (double Eurocards)

Scope of delivery:

- 1 adapter (2/3 U)
- No assembly material needed
- Per subrack 2 pieces (4 pieces with rear I/O) are required

#### Part No. solid

12K710 perforated version on request



#### REDUCTION SET

##### REDUCTION KIT 1/2 U + 1/2 U FOR 60 MM RECESSED MOUNTING

- Material: Aluminum 1.5 mm, conductive, depth independent (to be used in conjunction with the bottom / top panel)
- For 4 U enclosure (Eurocards) | for 7 U enclosure (double Eurocards)

Scope of delivery:

- 1 adapter bottom (1/2 U)
- 1 set assembly material (2 cylinder head screw torx T20 (M4 x 10))
- Per subrack 2 pieces have to be used
- Note: The depth independent 1/2 U adapter are to be used in conjunction with the bottom / top panel

#### Part No. solid

12K730 perforated version on request



#### BOTTOM / TOP PANEL

##### SOLID

- Material: Aluminum 1.5 mm, conductive
- EMC level: Basic

Scope of delivery:

- 1 bottom / top panel solid
- 1 set assembly material (18 cylinder head screw torx T10 (M3 x 6))

Depth	Part No.
289 mm	12K746
291 mm	12K720
371 mm	12K722
400 mm	12K723
500 mm	12K724



##### PERFORATED

- Material: Aluminum 1.5 mm, conductive
- EMC level: Basic

Scope of delivery:

- 1 bottom / top perforated
- 1 set assembly material (18 cylinder head screw torx T10 (M3 x 6))

Depth	Part No.
289 mm	12K749
291 mm	12K725
400 mm	12K728
500 mm	12K729



**Assembly accessories**

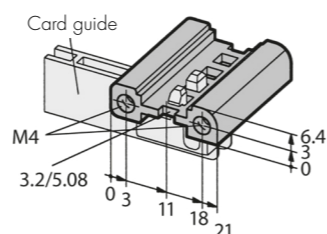
**REAR I/O CARD MOUNTING**

- For 80 mm card depth (cPCI) | 160 mm card depth (VME and VME64x)

Scope of delivery:

- 2 internal extrusion for rear I/O card mounting
- Assembly material (4 cylinder head screw torx T20 (M4 x 10))

Description	Part No.
Internal extrusion for rear I/O card mounting	12K504



**FRONT SUB DIVISION**

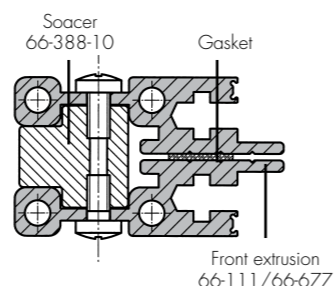
EMC FRONT SUB DIVISION HORIZONTAL FOR 84 HP SUBRACKS

- EMC level: Advanced
- Fastening: Card guides be applied on upper and lower card cage side

Scope of delivery:

- 2 front extrusion
- 1 EMC gasket
- 3 spacers
- 1 set assembly material (8 cylinder head screw torx T20 (M4 x 10) | 6 cylinder head screw torx T10 (M3 x 6))
- 2 tapped strips M2.5

Part No. VME	Part No. cPCI / VME64x
63K837-84	63K837-85



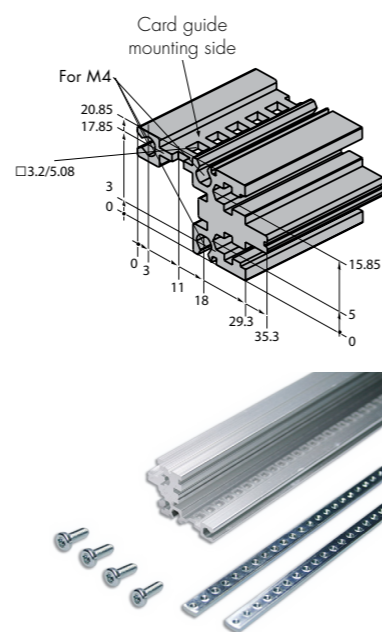
EMC FRONT SUB DIVISION HORIZONTAL IEC FOR CARD GUIDES

- For sub division of front and rear
- Card guide can be mounted on one side
- EMC level: Superior
- Only one special extrusion needed | easy and quick assembly | delivered in set
- Usable width: 84 HP
- Other sizes on request

Scope of delivery:

- 1 front double extrusion special, clear passivated
- 2 tapped strips M2.5
- 4 cylinder head screw torx T20 (M4 x 10)

Description	Part No.
EMC front sub division horizontal IEC for card guides	63K837-24



**FRONT SUB DIVISION**

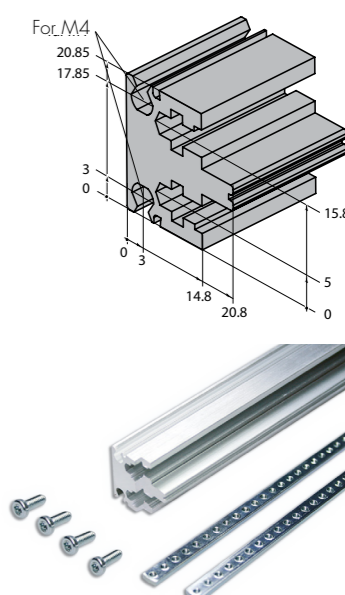
EMC FRONT SUB DIVISION HORIZONTAL IEC

- For sub division of front or rear
- Without possibility of mounting card guides
- EMC level: Superior
- Only one special extrusion needed | easy and quick assembly | delivered in set
- Usable width: 84 HP
- Other sizes on request

Scope of delivery:

- 1 front double extrusion IEC special, clear passivated
- 2 tapped strips M2.5
- 4 cylinder head screw torx T20 (M4 x 10)

Description	Part No.
EMC front sub division horizontal IEC	63K837-22



**FRONT SUB DIVISION**

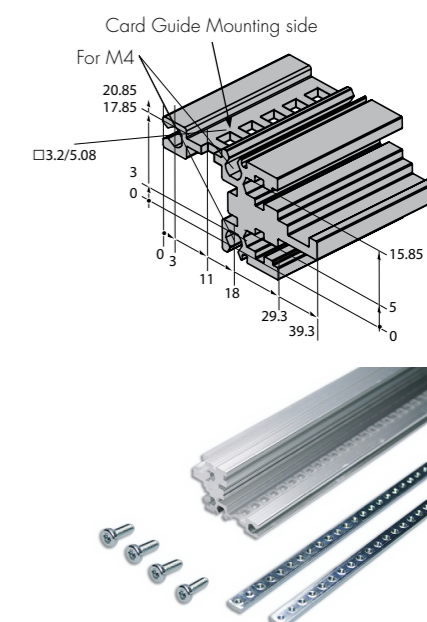
EMC FRONT SUB DIVISION HORIZONTAL IEEE FOR CARD GUIDES

- EMC level: Superior
- Only one special extrusion needed
- Card guides can be mounted on one side
- Easy and quick assembly
- Usable width: 84 HP
- Other sizes on request

Scope of delivery:

- 1 front double extrusion IEEE special, clear passivated
- 2 tapped strips M2.5
- 4 cylinder head screw torx T20 (M4 x 10)

Description	Part No.
EMC front sub division horizontal IEEE	63K837-23



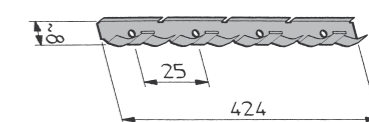
**HF SPRING**

- Stainless steel
- Snapped-in on the extrusion

Scope of delivery:

- 2 HF spring 84 HP

Description	Part No.
1 set with 2 HF springs 84 HP	7739-14-4



**Assembly accessories**

**FRONT SUB DIVISION**

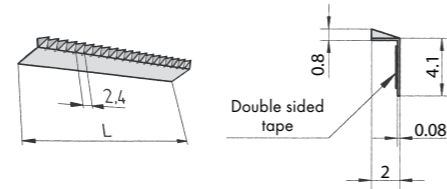
EMC CONTACT STRIPS

- BeCu galvanized
- For front panels, fixing on extrusion
- Selfadhesive

Scope of delivery:

- 2 EMC contact strips

HP	Length mm	inch	Part No.
84	424.2	16.7	63-836-70



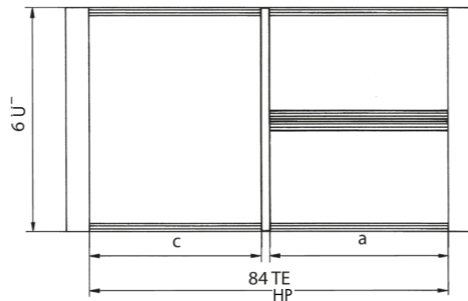
**FRONT SUB DIVISION**

FRONT SUB DIVISION VERTICAL FOR 6 U SYSTEM | 6 U ASSEMBLY

- For the partial sub division of 6 U in 2 x 3 U

Scope of delivery:

- 1 divider extrusion front
- 1 divider extrusion rear
- 2 front extrusions
- 2 internal extrusions
- Assembly material (16 cylinder head screw torx T20 (M4 x 10) | 4 cylinder head screw torx T10 (M3 x 12))



Nominal width 6 U (c)	Nominal width 2 x 3 U (a)	Part No. IEC60297	Part No. IEEE1101.10
50 HP	32 HP		12K959-3
40 HP	42 HP	12K949-2	

Tapped strips for front extrusion:

Scope of delivery	Description	Part No.
1 piece tapped strip	M2.5, 32 HP = 162.56 mm	61-463
1 piece tapped strip	M2.5, 42 HP = 213.36 mm	61-464

**HORIZONTAL INSTALLATION KITS**

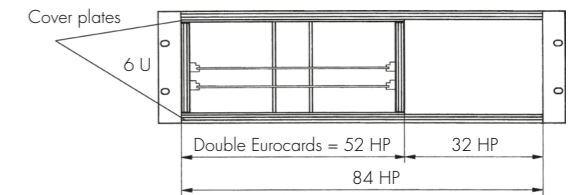
HORIZONTAL INSTALLATION KIT FOR DOUBLE EUROCARDS

- Suitable for 6 U and VME
- Card depth independent
- Mounting width: 52 HP

Scope of delivery:

- 1 set incl. assembly material

Height   Nominal width	Part No.	Part No. for cover plate top	Part No. for cover plate bottom
3 U   20 HP	14K971-60	21N602-90	21N602-90
4 U   28 HP	14K981-60	21N602-90	21N603-90
6 U   48 HP	14K991-60	21N606-90	21N607-90



Front panel screws:

- Set with 10 screws, with screw retainer

Description	Part No.
Screw torx T8 (M2.5 x 11.3) with plastic screw retainer	63K159
Rounded head screw recessed M2.5 x 11.3 with plastic screw retainer	63-159

**HORIZONTAL INSTALLATION KITS**

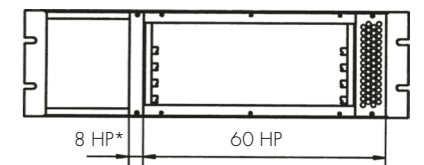
HORIZONTAL EMC INSTALLATION KIT FOR DOUBLE EUROCARDS

- Suitable for 6 U
- Card depth 160 mm
- Backplane mounting
- The fan module must be installed on the right side (fan not included in the scope of delivery)

Scope of delivery:

- Card mounting kit incl. fan tray and connector (incl. assembly material)

U	Nominal height	Part No. cPCI	Part No. VME64x
4	28 HP	14K987-60	14K988-60



\*Space is necessary for the air flow. Assemble blind panel.



General accessories can be found in the brochure "General accessories" or on request.

## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K

#### Assembly accessories

##### HORIZONTAL INSTALLATION KITS

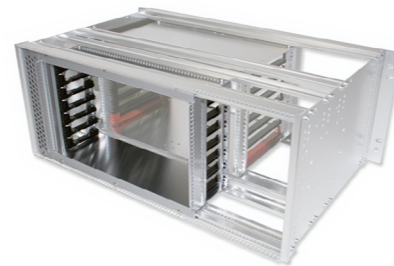
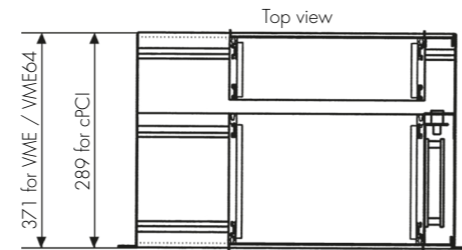
HORIZONTAL EMC INSTALLATION KIT FOR REAR I/O EUROCARDS

- Suitable for rear I/O double Eurocards (6 U)
- Card depth 80 mm (cPCI) | 160 mm (VME and VME64x)
- Backplane mounting

Scope of delivery:

- 1 set incl. assembly material and cover on side

U	Nominal height	Part No. cPCI	Part No. VME64x
4	28 HP	14K988-10	14K990-10



#### EMC protection

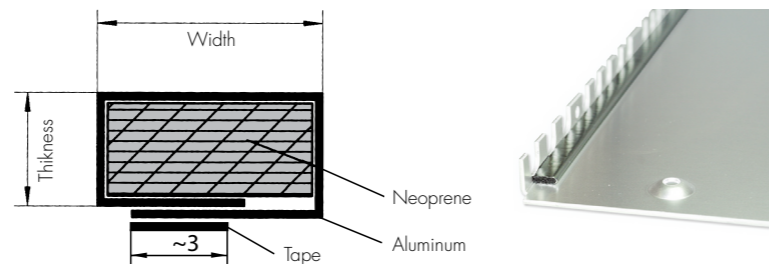
##### EMC SET FOR BOTTOM / TOP PANEL

DEPTH | EMC LEVEL: ADVANCED

Scope of delivery:

- 4 EMC gasket for depth

Depth	Part No.
289 / 291 mm	63K836-15
371 mm	63K836-16
400 mm	63K836-04
500 mm	63K836-05

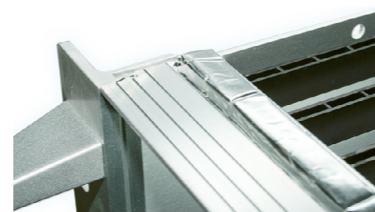


WIDTH | EMC LEVEL: ADVANCED

Scope of delivery:

- 4 EMC gasket for width

Description	Part No.
4 gaskets, 4 x 7 mm x 84 HP, when using height reduction kits at front and rear	63K836-01
4 gaskets, 6 x 7 mm x 84 HP, use without height reduction kits (only extrusions)	63K836-02
2 gaskets, 6 x 7 mm x 84 HP   2 gaskets 4 x 7 mm x 84 HP, when using only one height reduction kit at front or rear	63K836-03



## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K

#### EMC protection

##### EXTRUSION FOR RECESSED EMC MOUNTING | EMC LEVEL: BASIC

- Interior fitting: Extrusion bolts with side walls
- Application: Recessed installation of front panel
- Can be used in conjunction with EMC sets and gasket to achieve advanced EMC level

Scope of delivery:

- 2 EMC extrusions
- 8 cylinder head screw torx T8 (M2.5 x 4)

System height	Extrusion height	mm	Part No.
4 U	~3 U	140	63K608
7 U	~6 U	280	63K609



##### EMC GASKET FOR HEIGHT EXTRUSIONS | FRONT PANEL | EMC LEVEL: ADVANCED

- Front or recessed mounting
- 1 front panel per slots
- Application: Height extrusions front / rear, front panel
- Gasket is installed onto the extrusion
- When using an EMC gasket in connection with a card, the gasket must be selected in the card depth
- When a height reduction is used, choose height between reductions
- Can be used in conjunction with EMC sets to achieve advanced EMC level



U	mm	1 piece
3	101.6	81-062-03
4	146.05	81-062-04
6	234.95	81-062-06
7	279.4	81-062-07
9	368.3	81-062-09

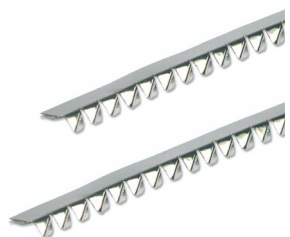
##### EMC CONTACT STRIPS | EMC LEVEL: ADVANCED

- For front panels, fixing on extrusion
- Self-adhesive

Scope of delivery:

- 2 contact strips

HP	Length	Part No.
42	212.1 mm = 8.48"	63-836-67
84	424.2 mm = 16.97"	63-836-70





### Accessories

#### MOUNTING CHASSIS

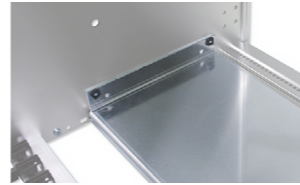
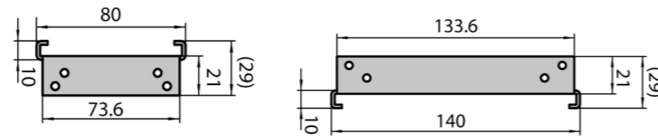
REINFORCED:

- Aluminum 2 mm

Scope of delivery:

- Mounting chassis 85 HP (431.8 mm)
- Assembly material (4 earthing nuts M4, 4 cylinder head screw torx T20 (M4 x 6))

Description	Part No.
Depth: 140 mm	14K836-50



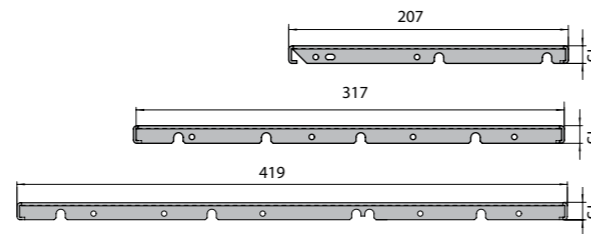
MOUNTING CHASSIS FULL DEPTH

- Mounting non-standard modules and components
- Mounting chassis is fixed directly on the side panel
- Aluminum 2 mm, raw

Scope of delivery:

- 1 mounting chassis

Subrack depth		Mounting chassis depth		Part No.
mm	inch	mm	inch	
289 / 291 mm	11.37 / 11.45	207 mm	8.15	14K850
400 mm	15.74	317 mm	12.48	14K851
500 mm	19.68	419 mm	16.49	14K852



Assembly material:

- 4 cylinder head screw torx T20 (M4 x 6) and 4 earthing nut M4
- Mounting chassis depth 207 mm can be mounted with 4 screws (317 mm with 8 screws, 419 mm with 10 screws)

Description	Part No.
Assembly material for mounting chassis with torx screw	63K861

#### FRONT PANELS

EMC FLAT FRONT PANELS

- Aluminum 2.5 mm (conductive)
- Closes the front or rear of the subrack with very high shielding effectiveness
- Contact between the flat front panel and the enclosure is made via EMC gaskets

FLAT FRONT PANEL EMC LEVEL ADVANCED

Scope of delivery:

- 1 EMC flat front panel
- 1 contact angle incl. screws (4 + 6 U version only)
- 1 EMC gasket for contact angle (4 + 6 U version only)

Width	Part No. 1 U	Part No. 2 U	Part No. 3 U	Part No. 4 U	Part No. 6 U
42 HP			21C342		
63 HP		21C263	21C363	21C463	
84 HP	21C184	21C284	21C384	21C484	21C684

Front panel screws:

- Front panel width 42 HP = 4 screws
- Front panel width 63 HP = 6 screws
- Front panel width 84 HP = 8 screws

Description	Part No. (10 pieces)
Screw torx T8 (M2.5 x 11.3) with press-fit bush	63K480
Screw recessed M2.5 x 11.3 with press-fit bush	63-444
Screw cross recessed M2.5 x 12.7 with press-fit bush	63-480

FLAT FRONT PANEL EMC LEVEL SUPERIOR

Scope of delivery:

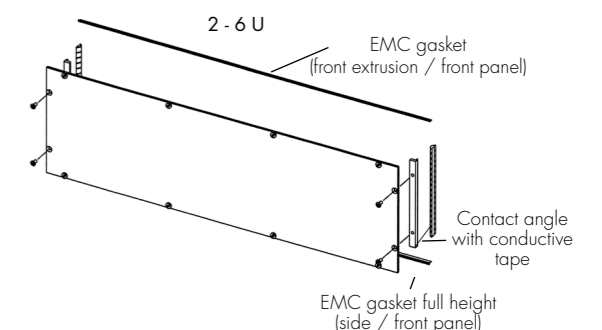
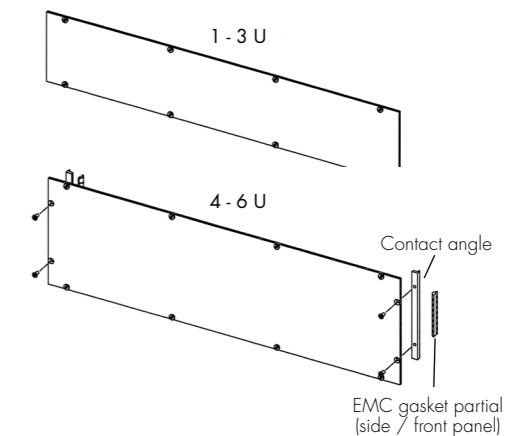
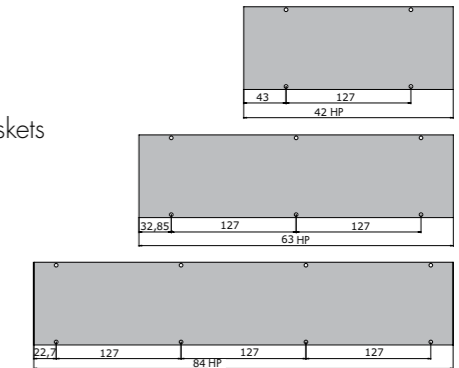
- EMC flat front panel
- Contact angle, incl. screws
- EMC gasket for contact angle and front extrusion / front panel

Width	Part No. 2 U	Part No. 3 U	Part No. 4 U	Part No. 6 U
84 HP	21D284	21D384	21D484	21D684

Front panel screws:

- Front panel width 42 HP = 4 screws
- Front panel width 63 HP = 6 screws
- Front panel width 84 HP = 8 screws

Description	Part No. (10 pieces)
Screw torx T8 (M2.5 x 11.3) with press-fit bush	63K480
Screw recessed M2.5 x 11.3 with press-fit bush	63-444
Screw cross recessed M2.5 x 12.7 with press-fit bush	63-480



# CHASSIS AND SUBRACKS

## SYSTEMKIT 12K

### Accessories

#### FRONT PANEL

##### PERFORATED EMC FRONT PANEL

- Front anodized | rear conductive
- EMC level: Advanced
- Width: 84 HP

##### Scope of delivery:

- 1 perforated flat front panel

Height	Air passage		Part No. without switch opening
1 U	39.65 mm	1.56"	4'100 mm <sup>2</sup> 21C184-01
2 U	84.1 mm	3.31"	12'300 / 11'700 mm <sup>2</sup> 21C284-01

##### Front panel screws:

Description	Part No. (10 pieces)
Screw torx T8 (M2.5 x 11.3) with press-fit bush	63K480
Screw recessed M2.5 x 11.3 with press-fit bush	63-444
Screw cross recessed M2.5 x 12.7 with press-fit bush	63-480

##### EMC FILLER PANEL WITHOUT EMC GASKET

- Front panel standard, solid
- Front clear anodized | rear conductive
- EMC level: Basic

##### Scope of delivery:

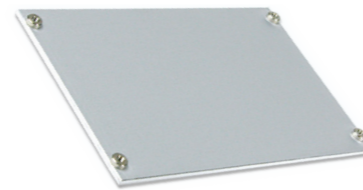
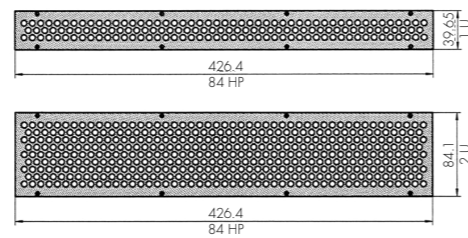
- 1 front panel incl. press-fit bushes M2.5 (pressed-in)

Width	Part No. 3 U	Part No. 4 U	Part No. 6 U
4 HP	21B304		
10 HP	21B310		
12 HP	21B312		
16 HP	21B316	21B416	
21 HP	21B321	21B421	
42 HP	21B342	21B442	21B642
63 HP	21B363	21B463	
84 HP	21B384	21B484	21B684

##### Front panel screws:

- Front panel width: Up to 9 HP = 2 screws |  $\geq 10$  HP = 4 screws

Description	Part No.
Screw torx T8 (M2.5 x 11.3)	5443-08
Round head screw, cross recessed M2.5 x 12.7	61-287



# CHASSIS AND SUBRACKS

## SYSTEMKIT 12K

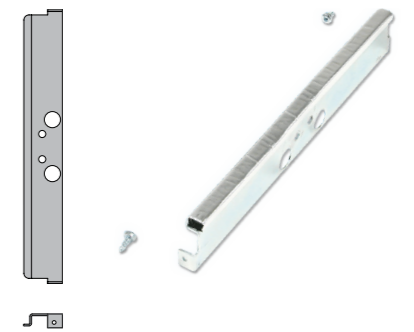
#### FRONT PANEL

##### SPACER FOR EMC FRONT PANEL FLAT

##### Scope of delivery:

- 1 spacer incl. gasket
- 2 sheet metal screw torx T10 (2.9 x 6.5)

Height	Part No.
3 U	81K023
4 U	81K024
7 U	81K027



#### FLAT FRONT PANELS

- For subracks and enclosures, solid
- Aluminum 2.5 mm, clear anodized (non-conductive)

##### Scope of delivery:

- 1 flat front panel

\*Coverplates for 1 U fan opening

Width	B		Part No.								
	mm	inch	1 U 39.8 mm	ca. 1 U* 42.15 mm	2 U 84.2 mm	3 U 128.7 mm	4 U 173.1 mm	6 U 262.0 mm	7 U 306.5 mm	9 U 395.4 mm	
2 HP <sup>1</sup>	10	0.39	-	-	-	21N302		21N602	-	-	
3 HP	15.2	0.59	-	-	-	21N303	21N403	21N603	-	-	
4 HP	20.1	0.79	-	-	-	21N304	21N404	21N604	-	21N904	
5 HP	25.2	0.99	-	-	-	21N305	21N405	21N605	-	-	
6 HP	30.3	1.19	-	-	-	21N306	21N406	21N606	-	-	
7 HP	35.3	1.38	-	-	-	21N307	21N407	21N607	-	-	
8 HP	40.4	1.59	-	-	-	21N308	21N408	21N608	-	-	
10 HP	50.6	1.99	-	-	-	21N310	21N410	21N610	-	-	
11 HP	55.7	2.19	-	-	-	21N311	-	-	-	-	
12 HP	60.7	2.38	-	-	-	21N312	21N412	21N612	-	-	
14 HP	70.9	2.79	-	-	-	21N314	21N414	21N614	-	-	
16 HP	81.1	3.19	-	-	-	21N316	21N416	21N616	-	-	
20 HP	101.4	3.59	-	-	-	21N320	21N420	21N620	-	-	
21 HP	106.5	4.19	-	-	-	21N321		21N621	-	-	
28 HP	142	5.59	-	-	-	21N328	-	21N628	-	-	
32 HP	162.3	6.38	-	-	-	21N332	21N432	-	-	-	
42 HP	213.1	8.38	-	-	21N242	21N342	21N442	21N642	-	-	
52 HP	263.9	10.38	-	-	-	21N352	21N452	21N652	-	-	
63 HP	319.8	12.59	-	-	21N263	21N363	21N463	21N663	-	-	
81 HP	411.3	16.19	-	-	21N281	21N381	21N481		-	-	
84 HP	426.5	16.79	21N184	21N084*	21N284	21N384	21N484	21N684	21N784	21N984	

<sup>1</sup> 2 HP subdivision profile (no front panel)

##### Front panel screws:

- Set of 10 screws with screw retainer

Description	Part No. (10 pieces)
Screw torx T8 (M2.5 x 11.3) with plastic screw retainer	63K159
Rounded head screw recessed M2.5 x 11.3 with plastic screw retainer	63-159

**Extrusions**

**FRONT EXTRUSIONS**

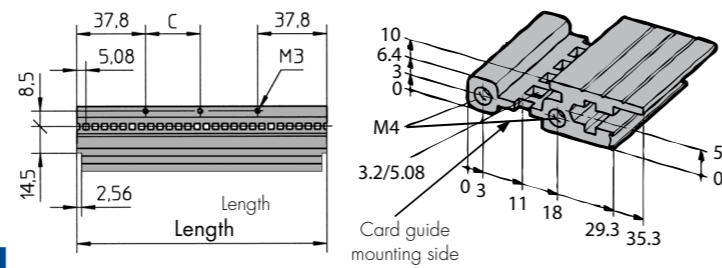
FRONT EXTRUSION VME

- Systemkit 12K front
- Accept 2 x 6 mm tapped strips

Scope of delivery:

- 1 front extrusion without assembly material

Length	HP		Holes	Part No.
	mm	inch	n x C	clear passivated
84	431.8	17	4 x 89.05	66-111-153



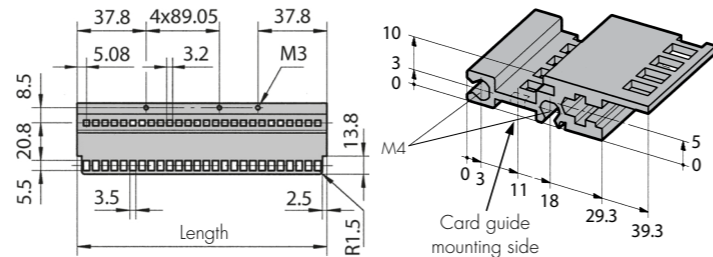
FRONT EXTRUSION CPCI | VME64X

- Front division profile according to IEEE standard
- Accept 2 x 6 mm tapped strips

Scope of delivery:

- 1 front extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	431.8	17	66-677-33



**INTERNAL EXTRUSIONS**

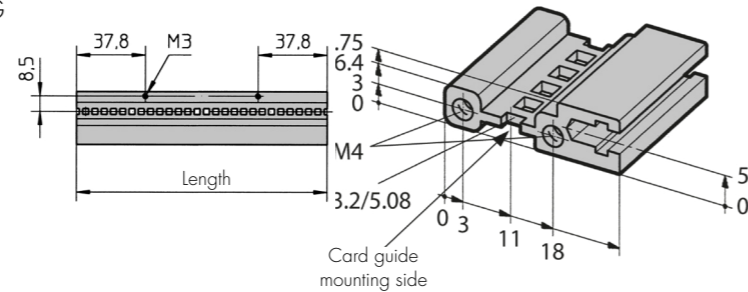
66-193 FOR INSULATED BACKPLANE MOUNTING

- For mounting backplanes in subracks
- Accept 1.8 x 5 mm tapped strips

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	431.8	17	66-193-23



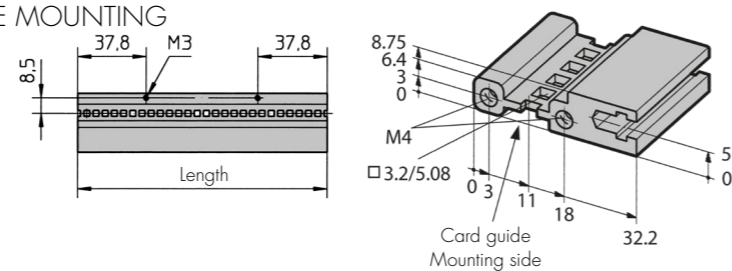
EXTRUSION 66-194 FOR CONDUCTIVE BACKPLANE MOUNTING

- For mounting backplanes without an insulating strip
- Accept 1.8 x 5 mm tapped strips

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	431.8	17	66-194-23



**INTERNAL EXTRUSIONS**

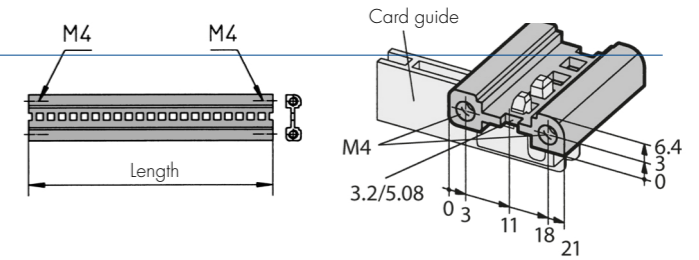
INTERNAL EXTRUSION 66-138 FOR CARD GUIDES

- For mounting card guides from rear I/O
- Tapped strip not required

Scope of delivery:

- 1 internal extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	431.8	17	66-138-23



DOUBLE EXTRUSION 66-192 FOR INSULATED BACKPLANE MOUNTING

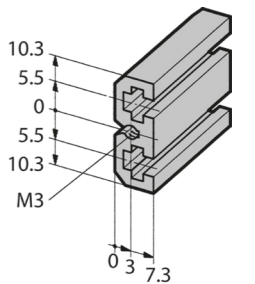
- For mounting backplanes, matches to 66-193, 66-288
- For use with insulating strips
- Accept 2 x 6 mm tapped strips

Scope of delivery:

- 1 extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	426.7	16.79	66-192-23

Assembly material with adapter:  
63-175 (63K175 with torx)



DOUBLE EXTRUSION 66-195 WITHOUT USE OF THE INSULATING STRIPS

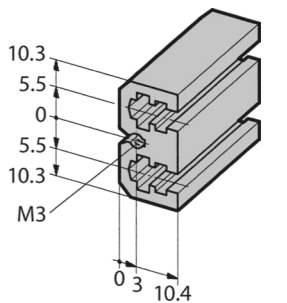
- For mounting backplanes without insulating strips
- Matches to 66-194, 66-289, 66-290
- Accept 2 x 6 mm tapped strips

Scope of delivery:

- 1 extrusion without assembly material

Length	HP		Part No.
	mm	inch	clear passivated
84	426.7	16.77	66-195-23

Assembly material with adapter:  
63-175 (63K175 with torx)



**Extrusions**

**INTERNAL EXTRUSIONS**

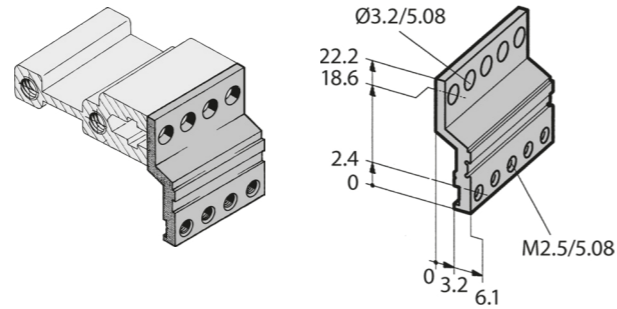
EDGE CONNECTOR EXTRUSION 66-147

- For use with extrusions for backplanes 66-193

Scope of delivery:

- 1 edge connector extrusion without assembly material

Length			Part No.	
HP	mm	inch	clear passivated*	raw
8	40.6	1.59	66-147-40	
18	91.4	3.59	66-147-41	
28	142.2	5.6	66-147-42	
42	213.4	8.4	66-147-63	
63	320	12.6	66-147-65	
81	411.5	16.2	66-147-22	
84	426.7	16.8	66-147-52	
	135	53.14		66-147-19



\*conductive for EMC protection

Assembly material:

Description	Part No.
Assembly material M2.5 (for 2 supplementary extrusions)	63-214

**INTERNAL EXTRUSIONS**

INSULATING STRIPS 66-901

- Plastic gray
- In use with extrusions 66-112, 66-192, 66-193, 66-288

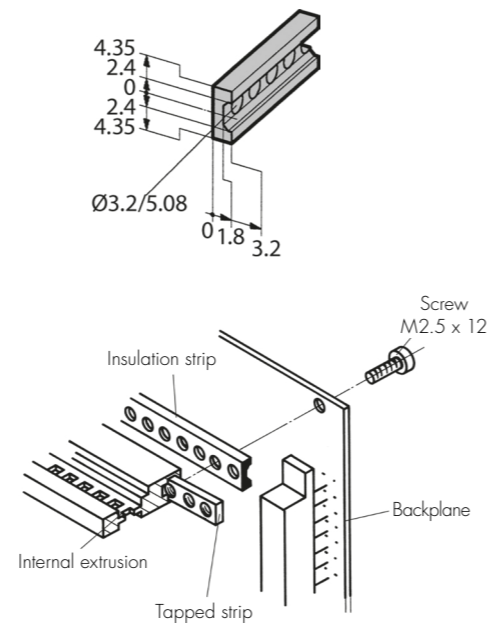
Scope of delivery:

- 1 insulating strip without assembly material

Length			Part No.	
HP	mm	inch		
42	216.44	8.52	66-901-20	
63	323.12	12.72	66-901-21	
81	414.56	16.32	66-901-22	
84	429.8	16.92	66-901-23	

Assembly material:

Description	Part No.
Cross recessed cylinder head earthing screw M2.5 x 12	5325-12



**HEIGHT EXTRUSIONS**

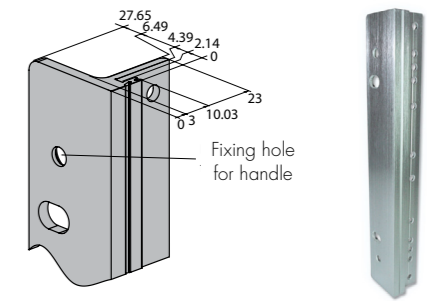
19" HEIGHT EXTRUSIONS 66-275

- For standard side wall 2 mm
- Shape to direct mounting of the EMC gasket 81-062-XX

Scope of delivery:

- 1 height extrusions without assembly material

Length			Part No. (clear passivated)	
U	mm	inch	with fixing hole	without fixing hole
3	132.5	5.2	66-275-23	66-275-33
4	177	6.96	66-275-24	66-275-34
6	265.9	10.46	66-275-26	66-275-36
7	310.3	12.21	66-275-27	66-275-37
9	399.2	15.71		66-275-39



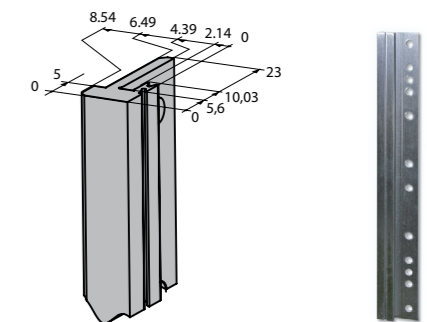
HEIGHT EXTRUSIONS 66-274

- For standard side wall 2 mm
- Shape to direct mounting of the EMC gasket 81-062-XX

Scope of delivery:

- 1 height extrusions without assembly material

Length			Part No. (clear passivated)	
U	mm	inch		
3	132.5	5.2	66-274-23	
4	177	6.96	66-274-24	
6	265.9	10.46	66-274-26	
7	310.3	12.21	66-274-27	
9	399.2	15.71	66-274-29	



HEIGHT EXTRUSIONS 66-274 WITH CUT-OUT FOR TELESCOPIC RAILS

- For standard side wall 2 mm with cut-out for telescopic rails
- Shape to direct mounting of the EMC gasket 81-062-XX

Scope of delivery:

- 1 height extrusions without assembly material

Length			Part No. (clear passivated)	
U	mm	inch	left	right
3	132.5	5.2		66-274-63
4	177	6.96		66-274-64
6	265.9	10.46	66-274-66	66-274-76
7	310.3	12.21	66-274-67	66-274-77
9	399.2	15.71	66-274-69	66-274-79

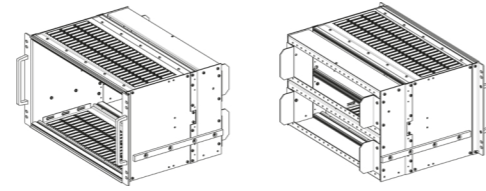


## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K RAIL

#### Product description

Based on the Systemkit 12K, the 12K Rail was specially designed and tested for applications in the railway sector. It thus fulfills all technical requirements according to EN50155.



- › Tested for SNCF approval
- › Tested according to NF F61-005 and NFF 60-002 / NF F67-012

#### PRODUCT VARIETY

- › 3 and 6 U
- › 21 T
- › 320 mm for card depth 160 and 220 mm

#### POSSIBLE CUSTOMIZATIONS

- › Can be combined with components from the Systemkit 12K (e.g. EMC protection)

#### TYPICAL APPLICATIONS

- › Rolling stock in railway section

## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K RAIL

#### Subrack

##### SYSTEMKIT 12K RAIL SNCF | UNSHIELDED

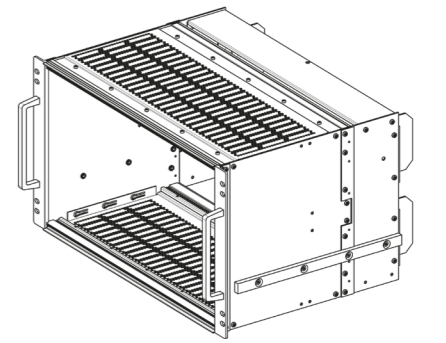
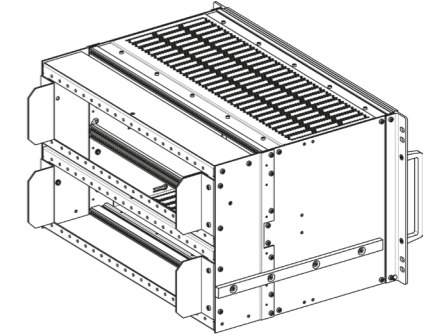
- SNCF listing No. 1306/058
- Tested according to NF F61-005 and NFF 60-002 / NF F67-012
- 3 and 6 U, 21 T, 320 mm for board depth 160 and 220 mm

Delivery of scope:

- 2 side panels
- 2 side panels extrusions
- 2 external guide rails
- 2 front extrusions
- 2 internal extrusions
- 2 height extrusions
- 2 insulation strips (4 pieces for 6 U)
- 1 double extrusion (6 U only)
- 4 tapped strips (6 pieces for 6 U)
- 1 rear frame (2 pieces for 6 U)
- 2 protection brackets SNCF (4 pieces for 6 U)
- 2 handles
- Assembly material (Torx)

Description	Part No.
Systemkit 12K Rail SNCF 3 U x 84 HP (21 T) x 320 mm	12KR384-10
Systemkit 12K Rail SNCF 6 U x 84 HP (21 T) x 320 mm	12KR684-10

Note: 1 T = 4 HP = 20.32 mm,  
Version 9 T (36 HP) available on request



#### BOTTOM / TOP PANEL AT THE FRONT

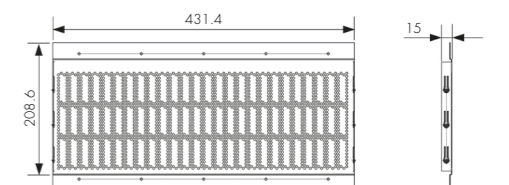
- To shield and protect the sub rack
- Material: Aluminium 1 mm
- Incl. EMC contacts

Delivery of scope:

- 1 bottom / top cover panel
- Assembly material (10 Torx screws M3 x 6)

Description	Part-No.
Bottom / top panel perforated 84 HP (21 T)   208.6 mm (card depth 220 mm)	12KR100
Bottom / top panel perforated 84 HP (21 T)   148.6 mm (card depth 160 mm)	12KR102

Note: 1 T = 4 HP = 20.32 mm,  
Version 9 T (36 HP) available on request



## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K RAIL

#### Subrack

##### SYSTEMKIT 12K RAIL SNCF | UNSHIELDED

BOTTOM / TOP PANEL AT THE REAR

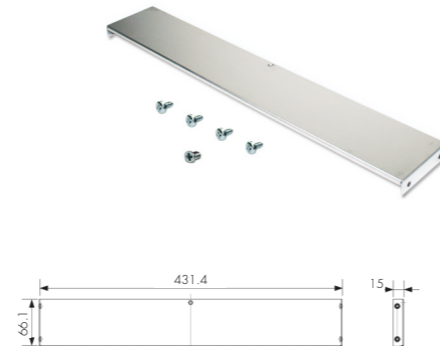
- SNCF-specific protection
- Material: Aluminium 1 mm

Delivery of scope:

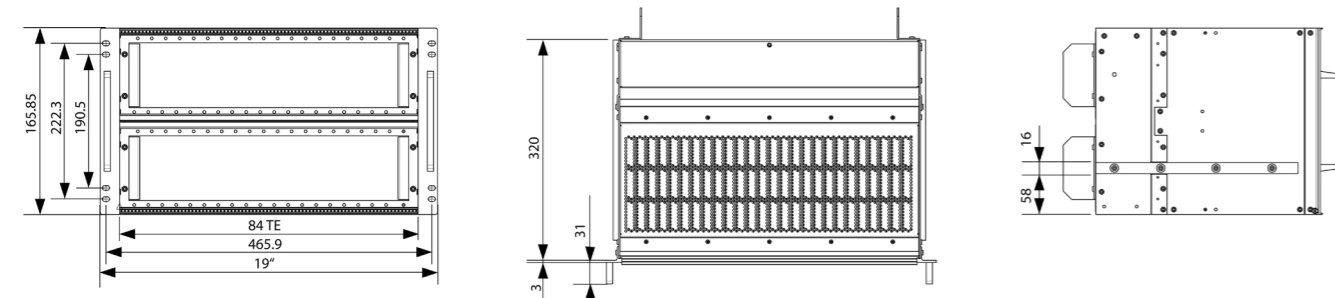
- 1 bottom / top cover panel
- Assembly material (4 x Torx M4 x 6, 1 x countersunk cross recessd M4 x 5)

Description	Part No.
Bottom / top panel at the rear, solid, 66.2 mm	12KR101

Note: 1 T = 4 HP = 20.32 mm,  
Version 9 T (36 HP) available on request



##### DRAWING SYSTEMKIT 12K RAIL SNCF | 6 HE



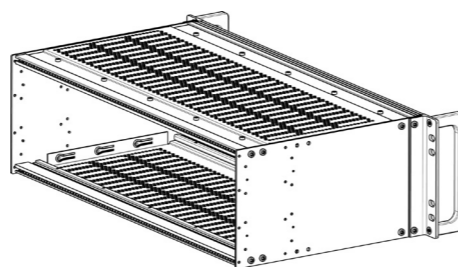
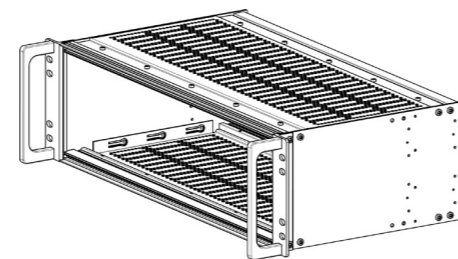
##### SYSTEMKIT 12K RAIL EN50155 | UNSHIELDED

- Subrack according to IEC and IEEE (CompactPCI) EEE version needs additional bottom / top panels
- Tested according to EN50155
- 3 and 6 U, 84 HP, 240 mm for card depth 160 and 220 mm

Delivery of scope:

- 2 side panels
- 2 front extrusions
- 2 internal extrusions
- 2 height extrusions
- 1 double extrusion (6 U IEC only)
- 4 tapped strips (6 pieces assembly material (Torx))
- 2 handles
- Assembly material (Torx)

Description	Part No.
Systemkit 12K Rail EN50155   3 U x 84 HP x 240 mm 4 I IEC	12KR384-20
Systemkit 12K Rail EN50155   6 U x 84 HP x 240 mm 4 I IEC	12KR684-20
Systemkit 12K Rail EN50155   3 U x 84 HP x 240 mm 4 I IEEE	12KR384-21
Systemkit 12K Rail EN50155   6 U x 84 HP x 240 mm 4 I IEEE	12KR684-21

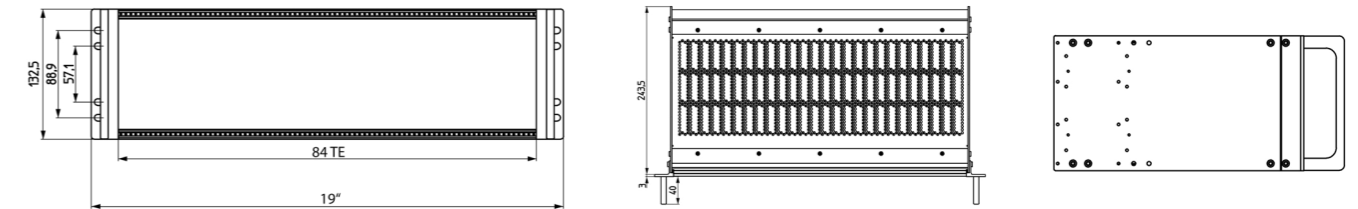


## CHASSIS AND SUBRACKS

### SYSTEMKIT 12K RAIL

##### SYSTEMKIT 12K RAIL EN50155 | UNSHIELDED

DRAWING SYSTEMKIT 12K RAIL EN50155 | 3 HE



##### BOTTOM / TOP PANEL FOR EMC SHIELDING

FOR SYSTEMKIT 12K RAIL SCNF AND EN50155

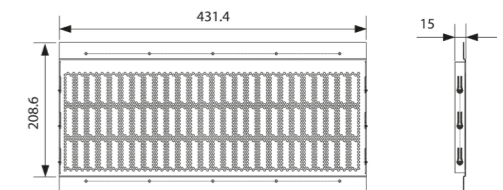
- To shield and protect the subrack
- Material: Aluminium, 1 mm
- Incl. EMC contacts

Scope of delivery:

- 1 bottom / top cover panel
- Assembly material (10 Torx screws M3 x 6)

Description	Part No.
Bottom / top panel perforated 84 HP (21 T), 208.6 mm (card depth 220 mm)	12KR100
Bottom / top panel perforated 84 HP (21 T), 148.6 mm (card depth 160 mm)	12KR102

Note: 1 T = 4 HP = 20.32 mm,  
Version 9 T (36 HP) available on request



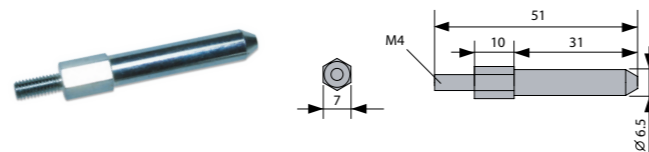
# CHASSIS AND SUBRACKS

## SYSTEMKIT 12K RAIL

### Accessories

#### CODING STUD

- For SNCF back frame
- Galvanised steel



Description	Part No.	
	1 piece	100 pieces
Coding stud	61-217	61-217-2

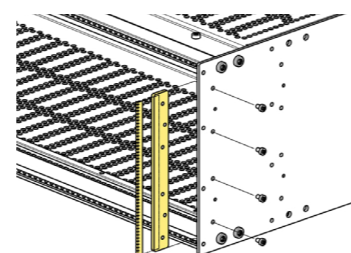
#### EMC SHIELDING MATERIAL

##### BACKPLANE SHIELDING | VERTICAL

- Backplane can be used as a shielding rear panel
- For horizontal contact the internal extrusion has to be mounted without insulation strips
- Carrying plate has to be mounted directly on the side panel

Scope of delivery:

- 2 carrying plates, aluminium, conductive incl. assembly material (Torx)
- 2 EMC contact strips
- For 6 U are 2 sets required



Description	Part No.
Set backplane shielding   vertical   3 U	12KR110

##### EMC CONTACT STRIPS

- For front panels, fixing on extrusion
- Self-adhesive
- Scope of delivery: 2 contact strips



Width	Length	Part No.
42 HP	212.1 mm	63-836-67
63 HP	318.1 mm	63-836-68
84 HP	424.2 mm	63-836-70

##### EMC GASKET | FOR HEIGHT EXTRUSION TO FRONT PANEL

- One slot per front panel
- Application: height extrusion front/rear, front panel
- Gasket slides onto extrusion



Height	mm	Part No.		
		1 piece	10 pieces	100 pieces
3 U	101.6 mm	81-062-03	81-062-03-1	81-062-03-2
6 U	234.95 mm	81-062-06	81-062-06-1	81-062-06-2



# Dimensions and Technical Information

## TECHNICAL INFORMATION DIMENSIONS

### Dimensions

#### CONVERSION TABLES

CONVERSION TABLE U ASSEMBLY HEIGHTS (NOMINAL HEIGHT)

U	mm	inches	U	mm	inches	U	mm	inches
1	44.45	1.75	19	844.55	33.25	37	1644.65	64.75
2	88.90	3.50	20	889.00	35.00	38	1689.10	66.50
3	133.35	5.25	21	933.45	36.75	39	1733.55	68.25
4	177.80	7.00	22	977.90	38.50	40	1778.00	70.00
5	222.25	8.75	23	1022.35	40.25	41	1822.45	71.75
6	266.70	10.50	24	1066.80	42.00	42	1866.90	73.50
7	311.15	12.25	25	1111.25	43.75	43	1911.35	75.25
8	355.60	14.00	26	1155.70	45.50	44	1955.80	77.00
9	400.05	15.75	27	1200.15	47.25	45	2000.25	78.75
10	444.50	17.50	28	1244.60	49.00	46	2044.70	80.50
11	488.95	19.25	29	1289.05	50.75	47	2089.15	82.25
12	533.40	21.00	30	1333.50	52.50	48	2133.60	84.00
13	577.85	22.75	31	1377.95	54.25	49	2178.05	85.75
14	622.30	24.50	32	1422.40	56.00	50	2222.50	87.50
15	666.75	26.25	33	1466.85	57.75	51	2266.95	89.25
16	711.20	28.00	34	1511.30	59.50	52	2311.40	91.00
17	755.65	29.75	35	1555.75	61.25	53	2355.85	92.75
18	800.10	31.50	36	1600.20	63.00	54	2400.30	94.50

U ASSEMBLY HEIGHT CONVERSION TABLE (EFFECTIVE HEIGHT FOR FRONT PANEL DRAWERS)

U	mm	inches	U	mm	inches	U	mm	inches	U	mm	inches
1	43.05	1.71	6	265.90	10.46	11	488.05	19.21	16	710.40	27.96
2	88.10	3.46	7	310.30	12.21	12	532.60	20.96	17	754.85	29.71
3	132.55	5.21	8	354.75	13.96	13	577.05	22.71	18	799.30	31.46
4	177.00	6.96	9	399.20	15.71	14	621.50	24.46			
5	221.45	8.71	10	443.65	17.46	15	665.05	26.21			



# TECHNICAL INFORMATION

## DIMENSIONS

### CONVERSION TABLES

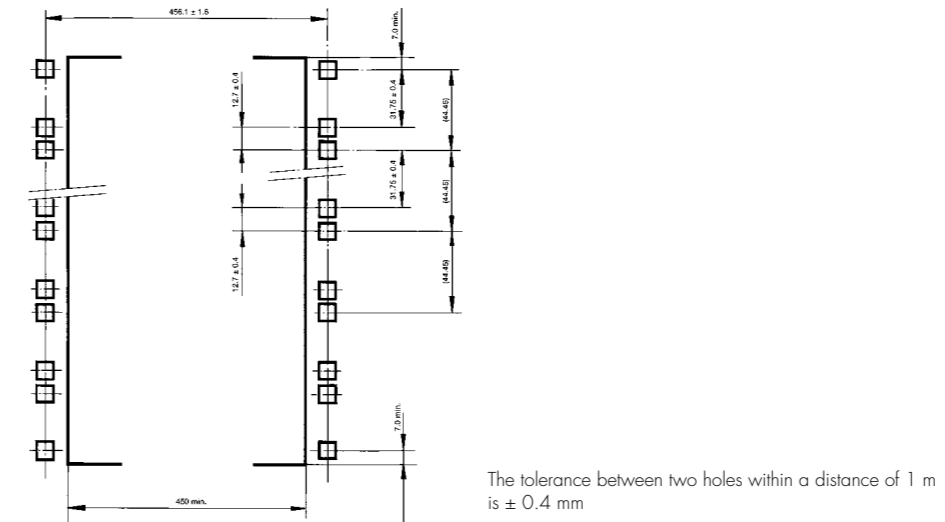
CONVERSION TABLE WIDTH SUBDIVISION DEPTH

Depth	mm	inches	Depth	mm	inches	Depth	mm	inches
1	5.08	0.20	29	147.32	5.80	57	289.56	11.40
2	10.16	0.40	30	152.40	6.00	58	294.64	11.60
3	15.24	0.60	31	157.48	6.20	59	299.72	11.80
4	20.32	0.80	32	162.56	6.40	60	304.80	12.00
5	25.40	1.00	33	167.64	6.60	61	309.88	12.20
6	30.48	1.20	34	172.72	6.80	62	314.96	12.40
7	35.56	1.40	35	177.80	7.00	63	320.04	12.60
8	40.64	1.60	36	182.88	7.20	64	325.12	12.80
9	45.72	1.80	37	187.96	7.40	65	330.20	13.00
10	50.80	2.00	38	193.04	7.60	66	335.28	13.20
11	55.88	2.20	39	198.12	7.80	67	340.36	13.40
12	60.96	2.40	40	203.20	8.00	68	345.44	13.60
13	66.04	2.60	41	208.28	8.20	69	350.52	13.80
14	71.12	2.80	42	213.36	8.40	70	355.60	14.00
15	76.20	3.00	43	218.44	8.60	71	360.68	14.20
16	81.28	3.20	44	223.52	8.80	72	365.76	14.40
17	86.36	3.40	45	228.60	9.00	73	370.84	14.60
18	91.44	3.60	46	233.68	9.20	74	375.92	14.80
19	96.52	3.80	47	238.76	9.40	75	381.00	15.00
20	101.60	4.00	48	243.84	9.60	76	386.08	15.20
21	106.68	4.20	49	248.92	9.80	77	391.16	15.40
22	111.76	4.40	50	254.00	10.00	78	396.24	15.60
23	116.84	4.60	51	259.08	10.20	79	401.32	15.80
24	121.92	4.80	52	264.16	10.40	80	406.40	16.00
25	127.00	5.00	53	269.24	10.60	81	411.48	16.20
26	132.08	5.20	54	274.32	10.80	82	416.56	16.40
27	137.16	5.40	55	279.40	11.00	83	421.64	16.60
28	142.24	5.60	56	284.48	11.20	84	426.72	16.80
						85	431.80	17.00

# TECHNICAL INFORMATION

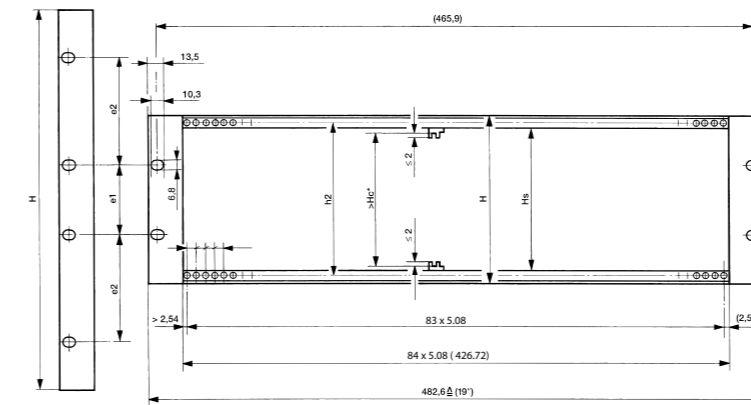
## DIMENSIONS

### DIMENSIONS 19" FRAME

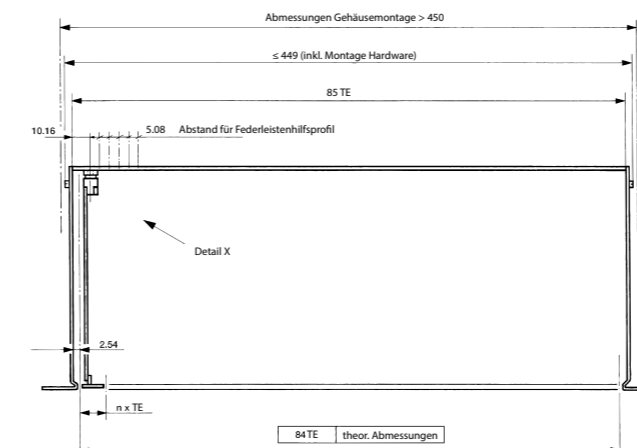


### DIMENSIONS SUBRACK

FRONT VIEW



LAYOUT

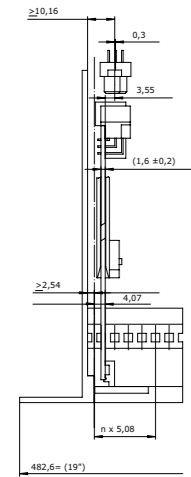


# TECHNICAL INFORMATION

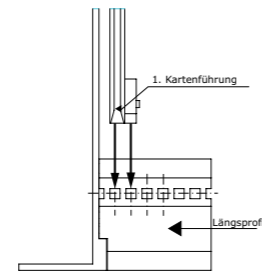
## DIMENSIONS

### POSITION

POSITION OF THE 1ST PLUG-IN UNIT (DETAIL X)



POSITION OF THE 1ST CARD GUIDE



### HEIGHT UNITS

Nominal height U	H		e1		e2		h2		Hs	
	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
1 U	43.6	1.71	31.75	1.25	-	-	33.6	1.32	23.6	0.92
2 U	88.05	3.46	76.2	3	-	-	78.05	3.07	68.05	2.67
3 U	132.5	5.21	57.15	2.25	-	-	122.5	4.82	112.5	4.42
4 U	176.95	6.96	101.6	4	-	-	166.95	6.57	156.95	6.17
5 U	221.4	8.71	146.1	5.75	-	-	211.4	8.32	201.4	7.92
6 U	265.85	10.46	190.5	7.5	-	-	255.85	10.07	245.85	9.67
7 U	310.3	12.21	57.15	2.25	88.9	3.5	300.3	11.82	290.3	11.42
8 U	354.75	13.96	76.2	3	101.6	4	344.75	13.57	334.75	13.17
9 U	399.2	15.71	120.6	4.74	101.6	4	389.2	15.32	379.2	14.92
10 U	443.65	17.46	165.1	6.5	101.6	4	433.65	17.07	423.65	16.67
11 U	488.1	19.21	146.1	5.75	133.3	5.24	478.1	18.82	468.1	18.42
12 U	532.55	20.96	190.6	7.5	133.3	5.24	522.55	20.57	512.55	20.17

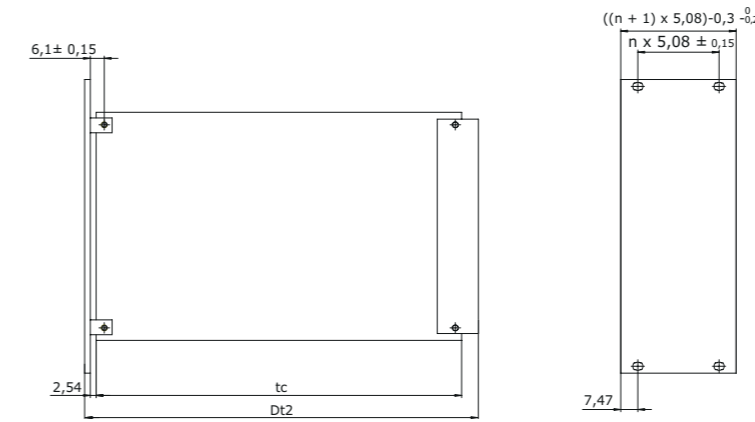
# TECHNICAL INFORMATION

## DIMENSIONS

### Dimensions

### DIMENSIONS PLUG-IN ASSEMBLY

WITH FRONT PANEL AND CONNECTORS ACCORDING TO IEC 60297



### in mm

Type Connector	Gauge	tc 160 mm	tc 220 mm	tc 280 mm	tc 340 mm	tc 400 mm
B C D E M Q R S	Di2	169.93 ± 0.4	229.93 ± 0.4	289.93 ± 0.4	349.93 ± 0.4	409.93 ± 0.4
F G H H E V	Di2	171.93 ± 0.4	231.93 ± 0.4	291.93 ± 0.4	351.93 ± 0.4	411.93 ± 0.4

### in inches

Type Connector	Gauge	tc 160 mm	tc 220 mm	tc 280 mm	tc 340 mm	tc 400 mm
B C D E M Q R S	Di2	6.69 ± 0.01	9.05 ± 0.01	11.41 ± 0.01	13.77 ± 0.01	16.13 ± 0.01
F G H H E V	Di2	6.76 ± 0.01	9.13 ± 0.01	11.49 ± 0.01	13.85 ± 0.01	16.21 ± 0.01

tc = Card depth  
Dt2 = Subrack depth gauge

### GENERAL CARD SIZES | ALL DIMENSIONS ACCORDING TO IEC 60297-3

Nominal Height	Card height Hc 1		Card depth (tc)				
	mm	inches	80 mm   3.15"	100 mm   3.93"	160 mm   6.29"	200 mm   8.66"	280 mm   11.02"
2 HE	55.55	2.18	X	X	X	X	X
3 HE	100	3.93	X	X	X*	X*	X
4 HE	144.45	5.68	X	X	X	X	X
5 HE	188.9	7.43	X	X	X	X	X
6 HE	233.35	9.18	X	X	X*	X*	X
7 HE	277.8	10.93	X	X	X	X	X
8 HE	322.25	12.68	X	X	X	X	X
9 HE	366.70	14.43	X	X	X*	X*	X
10 HE	411.15	16.18	X	X	X	X	X
11 HE	455.60	17.93	X	X	X	X	X
12 HE	500.05	19.68	X	X	X	X	X

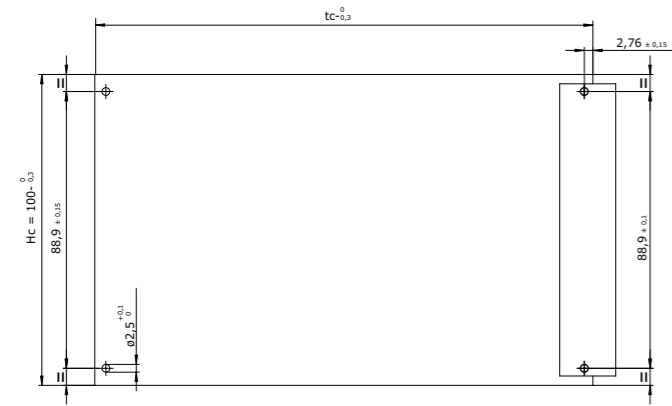
All combinations of the above dimensions are theoretically possible. However, the marked combinations (\*) should be preferred.

# TECHNICAL INFORMATION

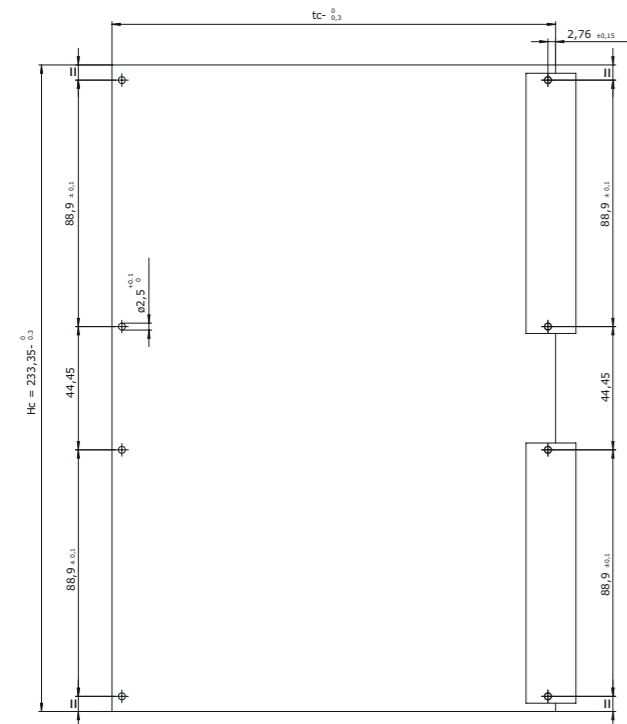
## DIMENSIONS

### DIMENSIONS PLUG-IN ASSEMBLY

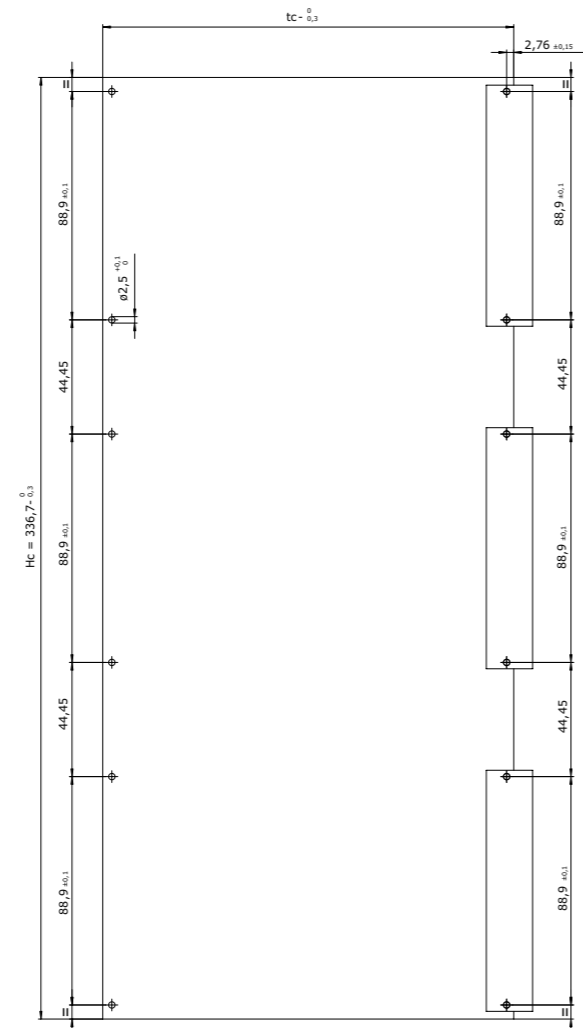
DIMENSION DRAWING FOR (HC) 100 MM (FOR 3 U) | DERIVED FROM THE IEC 60297 STANDARD FOR CONNECTORS



DIMENSION DRAWING FOR (HC) 233.35 MM (FOR 6 U) | DERIVED FROM THE IEC 60297 STANDARD FOR CONNECTORS



DIMENSION DRAWING FOR (HC) 366.7 MM (FOR 9 U) | DERIVED FROM THE IEC 60297 STANDARD FOR CONNECTORS

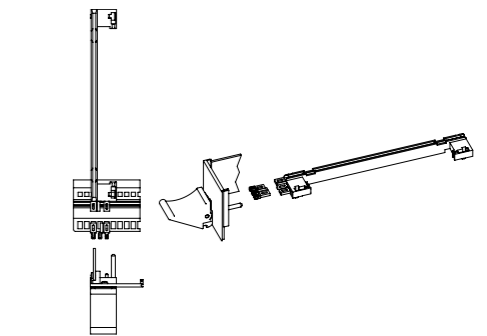
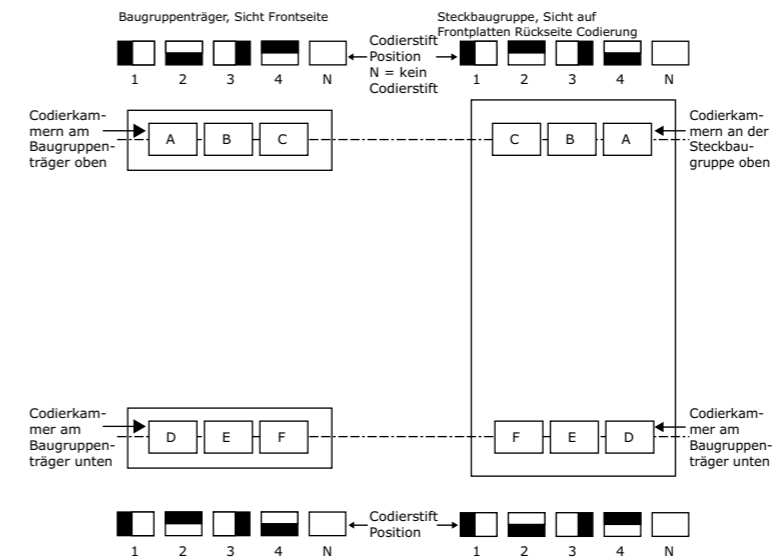


# TECHNICAL INFORMATION

## DIMENSIONS

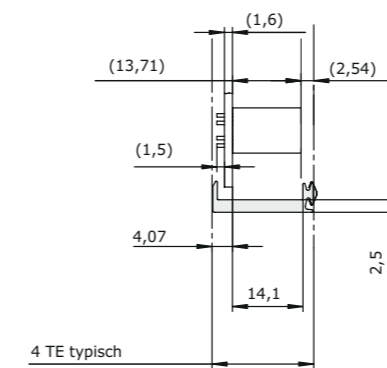
### DIMENSIONS PLUG-IN ASSEMBLY

CODING KEY

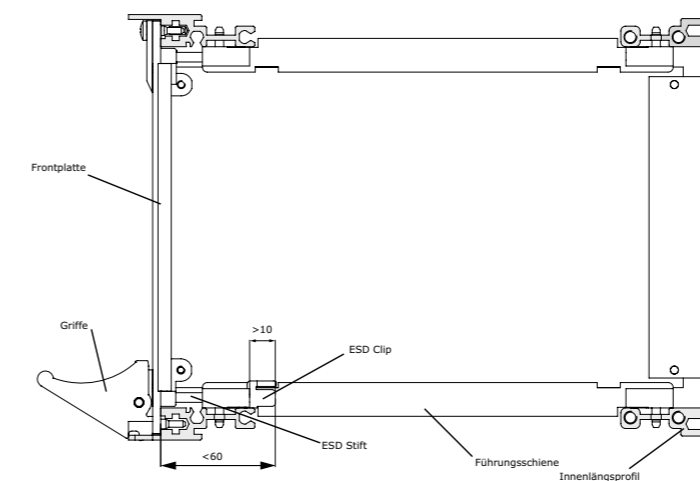


Note: The corresponding keying cavities on the backplane and plug-in board have the same letters. The numbering structure of the coding pins as shown here was chosen with the purpose that the chambers with the identically mounted pins do not block when inserting a plug-in module. If the corresponding chambers are equipped with differently mounted pins, the plug-in unit will be blocked and cannot be inserted. On the front of the subrack / plug-in module are the letters A, B, C below and D, E, F above. The order on the back is mirrored.

ARRANGEMENT RELATIONSHIP EMC FRONT PANEL / PRINTED CIRCUIT BOARD



ARRANGEMENT RELATIONSHIP EMC FRONT PANEL / PRINTED CIRCUIT BOARD




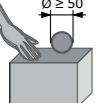
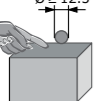
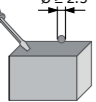
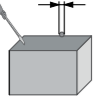
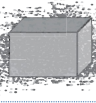

**Type of protection**


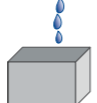
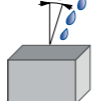
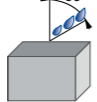
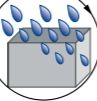
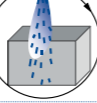



**IP PROTECTION**

- Protection against contact and contaminants according to IEC60529
- Liquid ingress protection according to IEC60529
- Evaluation of the classification:
  - The test results according to the standard do not completely rule out leaks, so an individual test (with the actual device configuration) is recommended in critical cases
  - The degree of protection for cabinets and housings is specified with IP (International Protection) and two code numbers

**Example IP55**

- Protection against water ingress from water jets from all directions
- Complete protection against touching internal parts and protection against dust deposits

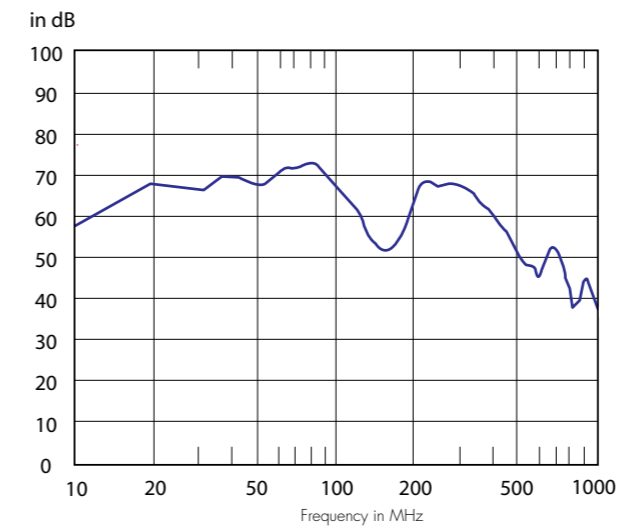
First order	Against touch	Against foreign bodies
0 	No special protection	
1 	Any large surface of the body	Protection against solid objects greater than $\varnothing \geq 50$ mm (1.97")
2 	Fingers or similar objects	Protection against solid objects greater than $\varnothing \geq 12.5$ mm (0.49")
3 	Tools, thick wires, etc. with a thickness of $> 2.5$ mm	Protection against solid objects greater than $\varnothing \geq 2.5$ mm (0.10")
4 	Most wires, slender screws, large pins etc. mit einer Dicke $> 1$ mm	Protection against solid objects greater than $\varnothing \geq 1.0$ mm (0.04")
5 	Full protection	Dust protection: Dust deposits are permitted, but must not endanger the function of the device.
6 	Full protection	Dustproof

Second order	Against water
0 	No special protection
1 	Dripping water
2 	Against diagonally falling dripping water (up to 15° deviation from the vertical)
3 	Against spray water (any direction up to 60° deviation from the vertical)
4 	Against splashing water from all directions
5 	Against water jets from a nozzle from all directions
6 	Against flooding
7 	Against immersion
8 	Against submersion

**EMC PROTECTION**

Elma has recognized the increasing importance of electromagnetic compatibility (EMC) and now has a wide range of protective measures and accessories to offer your electronics good protection.

**Typical attenuation (curve) EMC level superior**

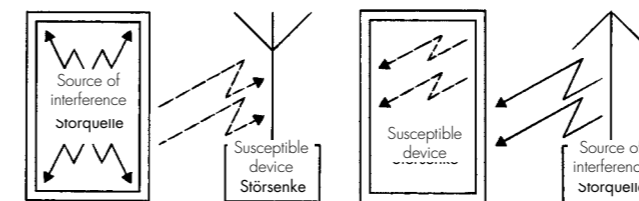


**Typical attenuation (curve) EMC level superior**

Electromagnetic compatibility is the ability of a system to operate without interference in its operating environment and not to interfere with it. Thus, the EMC characteristics of a system consist of adequate immunity (immunity) and limited emission of interference (immunity).

**Cause and containment of EMC problems**

The operation of many electrical and electronic devices, e.g. devices with microprocessors, involves the switching of voltages or currents. This creates electromagnetic fields. These propagate from the electronic components into space and couple into cables. The figure shows the effect of a housing shield. It protects the sensitive electronics from external interference and limits the emission of interference.



**Two types of shielding**

An enclosure acts as a barrier between the interferer and the victim. The intensity of the waves is dampened and further propagation is prevented. The shielding attenuation describes the effectiveness of the metal shield. It is defined as the logarithm of the ratio of the field strength outside and inside the enclosure.

$$\text{Shielding attenuation} = 20 \log \frac{E_A}{E_i} \quad \text{or} \quad 20 \log \frac{H_A}{H_i}$$

Damping value	Shielding factor	Weakening
40 dB	100:1	99.0 %
60 dB	1 000:1	99.9 %
80 dB	10 000:1	99.99 %

- $E_A$  = Electric field outside the housing
- $E_i$  = Electric field inside the housing
- $H_A$  = Magnetic field outside the housing
- $H_i$  = Magnetic field inside the housing

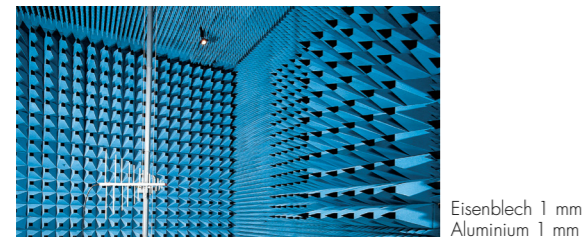
The overall shielding consists of the absorption loss and the reflection loss. The absorption attenuation is caused by the energy dissipation in the screen material. It is directly proportional to the material thickness. In the lower frequency range, adequate shielding can only be achieved through absorption damping. The return loss is caused by reflections of the electromagnetic wave on the surface of the shielding material. A distinction is made between the reflection loss in the near field (distance from the source of interference  $< \lambda/2\pi$ ) and far field (distance from the source of interference  $> \lambda/2\pi$ ).

$$\lambda = \frac{c}{f}$$

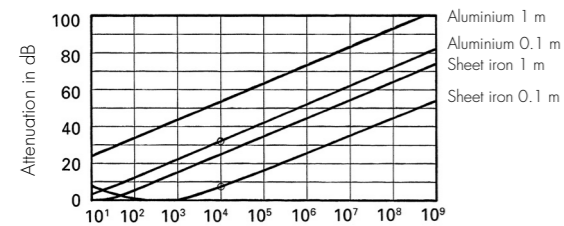
$\lambda$  = Wavelength of the interference signal in m  
 $c$  = Speed of light  $3 \times 10^8$  m/s  
 $f$  = Frequency in Hertz

Example of determining the total shielding effectiveness of a shield made of 1 mm thick sheet iron and 1 mm thick sheet aluminum at a frequency of 10 kHz and a distance of 0.1 m from the source of interference.

### Absorption attenuation



### Reflection attenuation in the near field



Absorptionsdämpfung	Aluminium	10 dB
	Iron	6 dB
	Aluminium	32 dB
Overall screening attenuation	Iron	25 + 6 = 31 dB
	Aluminium	32 + 10 = 42 dB

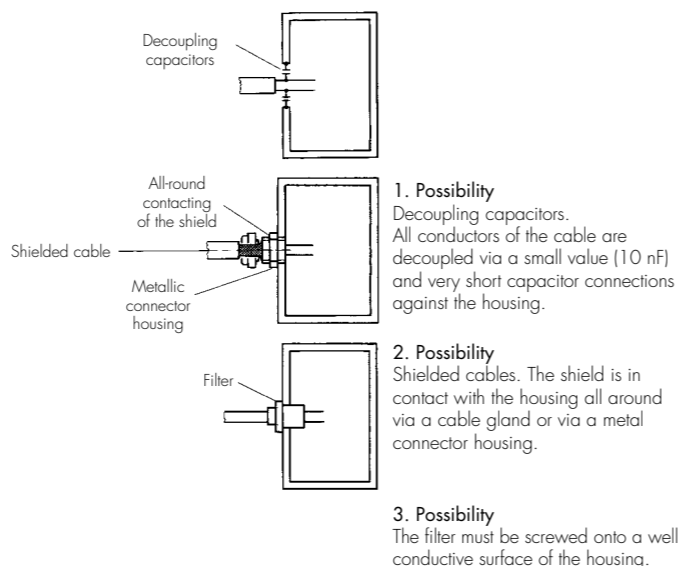
The aluminum sheet screen has an attenuation of 11 dB, i.e. 3.5 times better than the iron sheet screen.

### Entries of cables

Great attention must be paid to cable entries in housings. Errors in the routing of cables can lead to the desired shielding effect failing almost completely. The following options are available for correctly routing the incoming cables.

### Case openings

The ideal shielding can be achieved by inserting the electronics in a metal housing that is welded on all sides. In practical applications, however, this is only possible in the rarest of cases. Openings are necessary for the operation and display of the electronics, for the passage of cables, for the dissipation of heat loss and for the installation and removal of components. In order to prevent a reduction in attenuation, the individual parts of the housing must be conductively connected. Without conductive seals or contacting via contact points that are close together (e.g. screws), slots are created which, due to their length, create antenna effects. Slot lengths shorter than 1/20th of the wavelength only slightly affect the shielding of a housing. For devices that are exposed to particularly strong radiation, the slit length should be kept less than 1/50th of the wavelength.



### Protection classes

#### EMC PROTECTION

##### EMC seals

The most important function of an EMC gasket is to reduce the transition impedance from one part of the housing to the other. The smaller the junction impedance, the better the seal. The contact impedance depends on the surface resistance of the housing parts, the adaptability of the seal, the contact pressure and the conductivity of the seal. It is extremely important that the EMC seal functions in extreme environmental conditions, e.g. damp heat, etc.

##### Elma EMC Concept

The Elma EMC concept is based on three levels of attenuation. As a result, specific needs can be covered at low cost and, if necessary, modules can be retrofitted. The three levels differ in the different lengths of slots between the defined contact points. The slot lengths (create antenna effect) determine the HF tightness.

##### EMC Level Basic

- All housing parts are conductively connected to each other
- Long slits
- For applications in the low frequency range

##### EMC Level Superior

- All housing parts are conductively connected to each other
- Slits closed by EMC gaskets
- For applications in the high frequency range

##### EMC Level Advanced

- All housing parts are conductively connected to each other
- Slot lengths shortened by additional contact points
- For applications in the medium frequency range

The shielding effect of a housing remains a theoretical consideration as long as the built-in components, cable bushings and housing openings are not taken into account. However, the measured damping values of the Elma housing provide basic information about their quality. For most applications, a housing is sufficient whose components are connected to one another with good conductivity. Equipment for data processing (digital technology) produces practically no interference in the frequency range  $>100$  MHz and does not respond to interference in this frequency range, provided the printed circuit boards have been carefully designed. Final results only show measurements on completely dismantled, wired and connected devices. Good electromagnetic compatibility is the result of a well thought-out concept.

**The weakest element determines the overall immunity!**

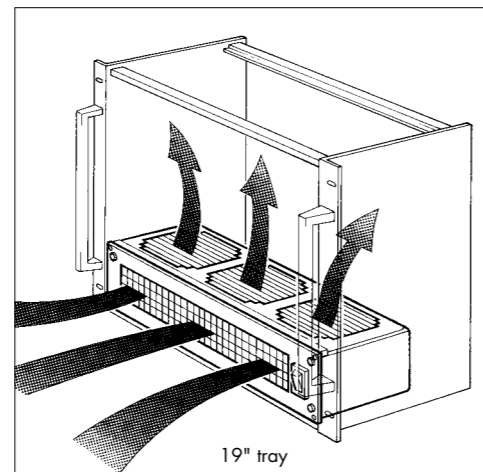
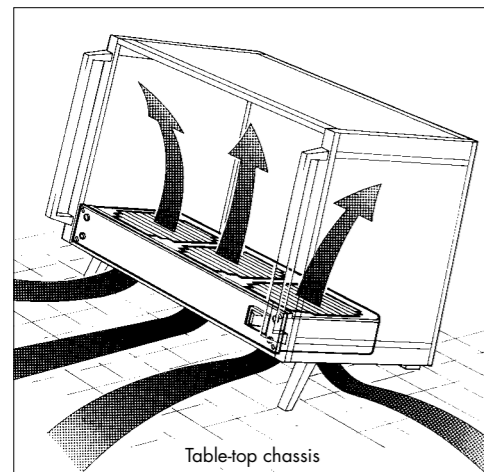
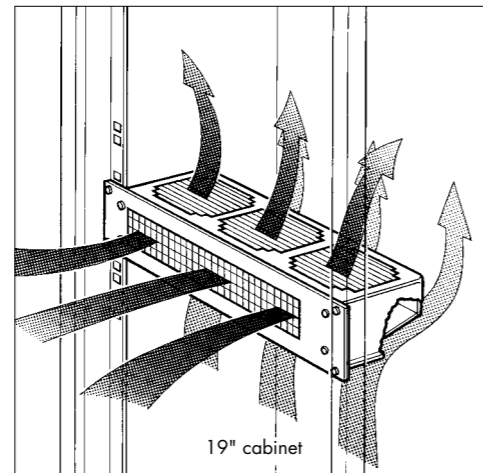
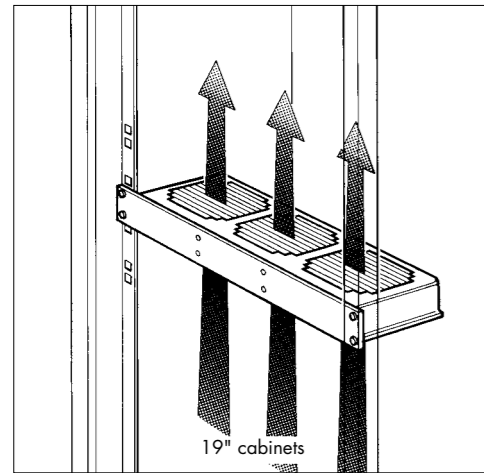
# TECHNICAL INFORMATION

## DIMENSIONS

### Cooling

#### ACTIVE AIR COOLING = SECURITY FOR YOUR COMPONENTS

In order to dissipate the heat generated in electronic devices, simple convection is often no longer sufficient. The trend towards miniaturization and high packing densities easily lead to the maximum permissible temperature being exceeded, which has a significant impact on the service life of the electronic components. A significant improvement can be achieved by "active air cooling". Important requirements placed on air cooling are low noise levels and the possibility of partial cooling. Elma offers you the optimal solution with the comprehensive range of fan trays for 19" cabinets as well as for 19" subracks and desktop housings



# TECHNICAL INFORMATION

## DIMENSIONS

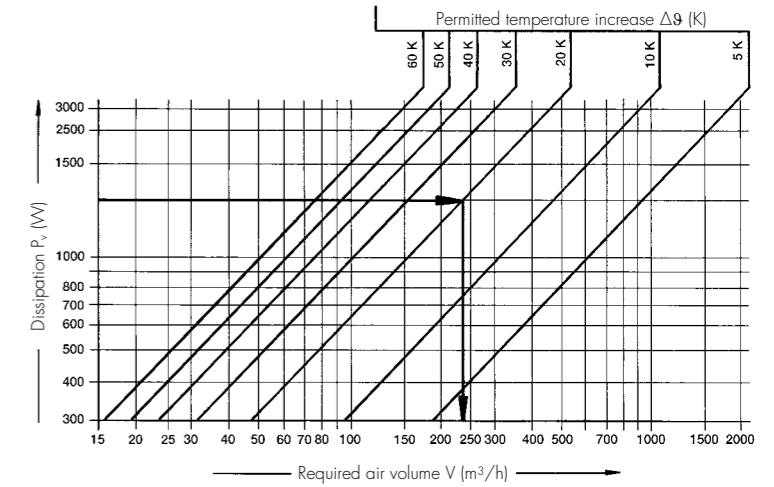
#### TECHNICAL INFORMATION

The cooling air volume flow "V" required for cooling an electrical device depends on the power loss "P<sub>V</sub>" generated in the device and the temperature difference "Δθ" between the permissible operating temperature of the components θ<sub>B</sub> and the ambient temperature θ<sub>U</sub> of the device.

The required cooling air volume flow at a given operating temperature of the components can be determined to a good approximation using the following equation:

$$V = \frac{3.1 \cdot P_V}{\Delta\theta}$$

- V (m<sup>3</sup>/h) = Cold air volume flow
- P<sub>V</sub> (W) = Dissipation
- Δθ (K) = Temperature difference θ<sub>B</sub> - θ<sub>U</sub>
- 3.1 = Constant from  $\frac{1}{C_p \cdot \varphi}$
- C<sub>p</sub> = Isobaric specific heat capacity (0.27  $\frac{Wh}{kg \cdot K}$ )
- φ = Air density (1.20  $\frac{kg}{m^3}$ ) bei 20 °C

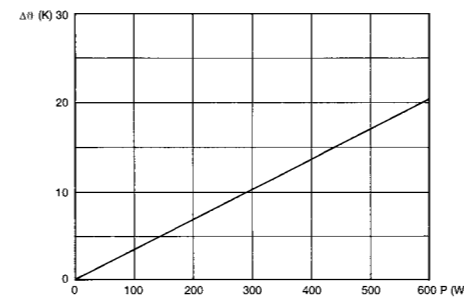


#### FAN TRAYS

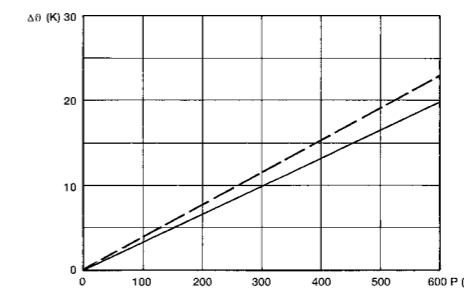
The fan trays were tested in an Elma type 14 case. 21 double Euro cards with approx. 25 watt power loss per card at a distance of 4 HP (1 HP = 5.08) formed the framework for the performance test of our fan trays. A possible Δθ depending on the power loss P can be determined on the diagrams below.

$$\Delta\theta = \theta_{\text{Circuit b}} - \theta_{\text{environment}}$$

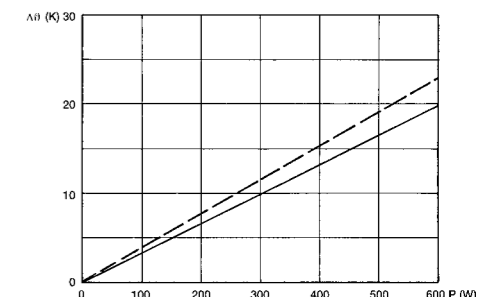
Fan tray 1 HE | vertical air intake (3 fans 69-430-20)



Fan tray 2 U | vertical air intake (3 fans 1925-79)



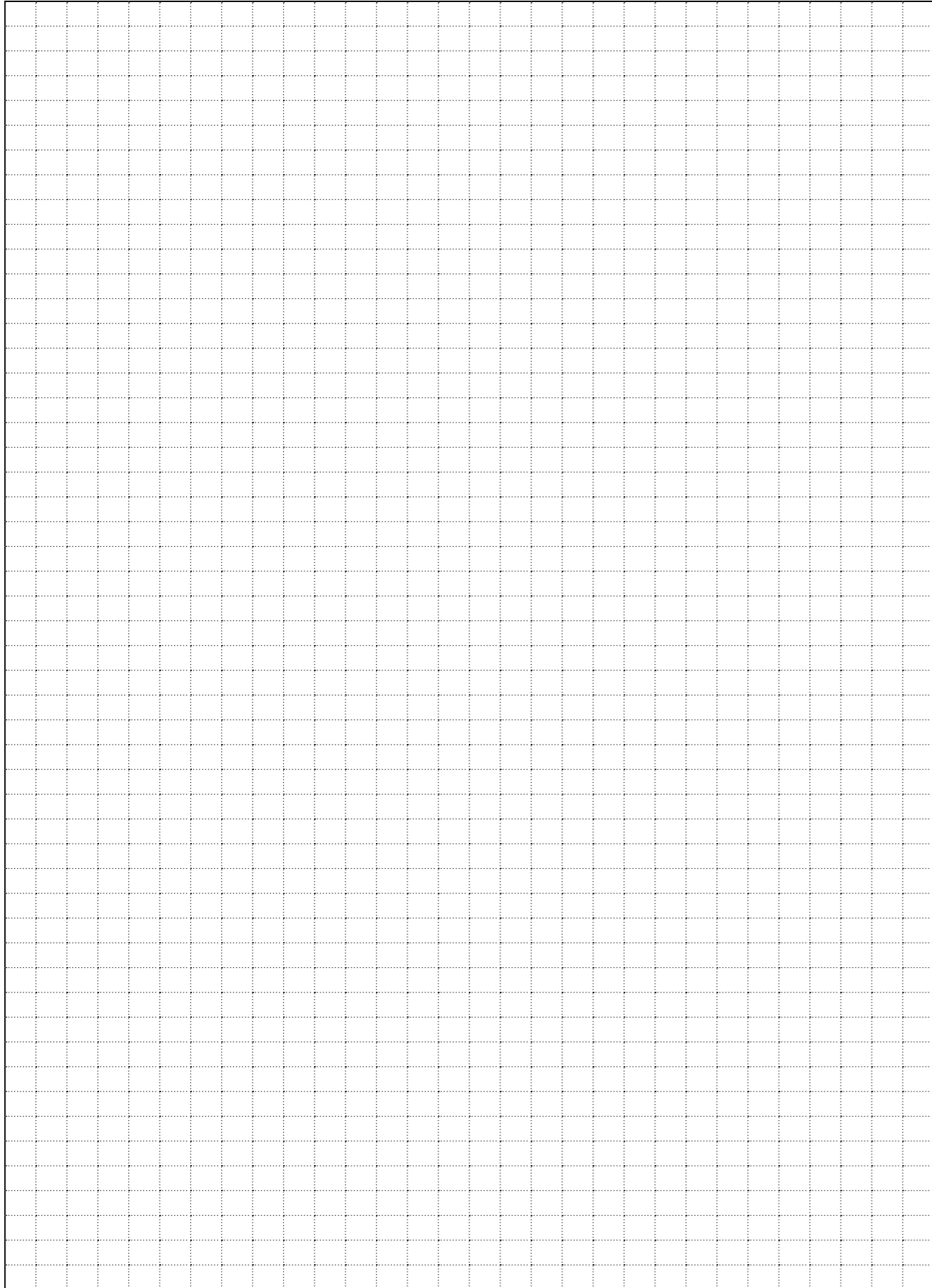
Fan tray 2 U | horizontal air intake (3 fans 1925-79)

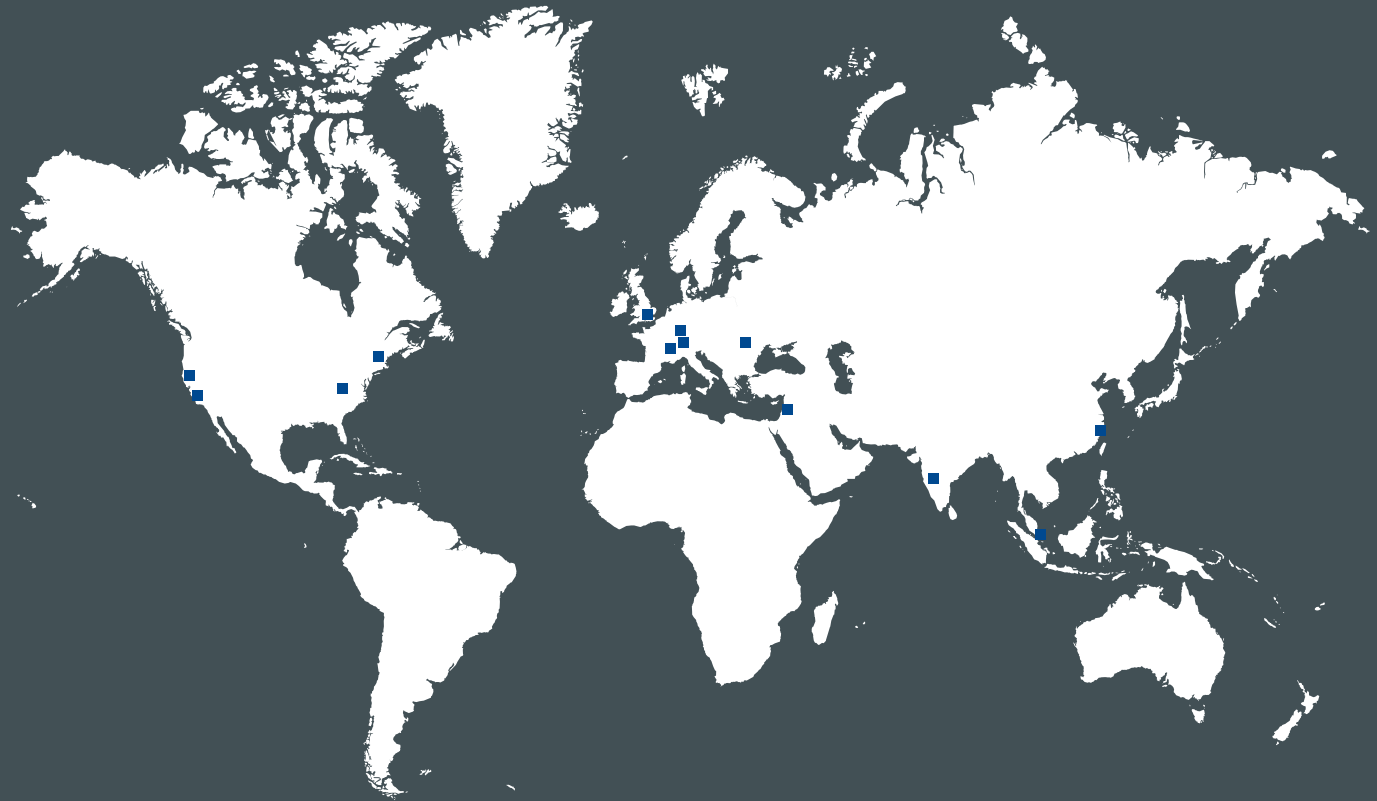


--- with filter  
— without filter

## TECHNICAL INFORMATION

### NOTES





**Elma Electronic AG,  
Switzerland**

Hofstrasse 93  
CH-8620 Wetzikon  
T: +41 44 933 41 11  
F: +41 44 933 42 15  
sales@elma.ch

**Elma Electronic GmbH,  
Germany**

Stuttgarter Strasse 11  
D-75179 Pforzheim  
T: +49 7231 97 34 0  
F: +49 7231 97 34 97  
info@elma.de

**Elma Electronic France SA**

16 rue Hannah Arendt  
F-67200 Strasbourg  
T: +33 3 88 56 72 50  
sales@elma-electronic.fr

**Elma Electronic UK Ltd.**

Solutions House  
Priory Business Park  
Fraser Road  
Bedford MK44 3BF  
Great Britain  
T: +44 1234 838822  
F: +44 1234 836650  
sales@elma.co.uk

**Elma Electronic Romania SRL**

Chisoda, DN 59 km8 + 550m  
RO-307221 Judetul Timis  
T: +40 374 480 400  
F: +40 256 249 820  
sales@elma.ch

**Elma Electronic Israel Ltd.**

34, Modi'in St., I.Z.Sgula  
IL-49271 Petach-Tikva  
T: +972 3 930 50 25  
F: +972 3 931 31 34  
sales@elma.co.il

**Elma Electronic Inc., USA**

44350 S. Grimmer Blvd  
Fremont, CA 94538, USA  
T: +1 510 656 3400  
F: +1 510 656 3783  
sales@elma.com

**Optima Stantron, USA**

2305 Newpoint Parkway  
Lawrenceville, GA 30043, USA  
T: +1 770 496 4000  
F: +1 770 496 4026  
sales@elma.com

**Elma Electronic Private Ltd.,  
India**

Green Arch  
3rd Phase 1st Main  
J.P. Nagar  
Bangalore 560078  
sales@elma.com

**Elma Electronic Technology  
(Shanghai) CO., LTD., China**

No. 11 Building, No198  
Chang Jian Road,  
Bao Shan District  
CN-200949 Shanghai  
T: +86 21 5866 5908  
F: +86 21 5866 5918  
sales@elmachina.com

**Elma Asia Pacific Pte. Ltd.,  
Singapore**

8 Ubi Road 2  
# 07-14 Zervex Building  
SG-408538 Singapore  
T: +65 6479 8552  
F: +65 6479 8662  
sales.elmaap@elma.com

**Your Partner**