

CATALOGO PRODOTTI 2024

GFP **RACK
POOL**



SUB-RACK 19"
ARMADI RACK 19"
DISSIPATORI E CLAMPS
TORNERIA
OFFICINA MECCANICA
GALVANICA
SERIGRAFIA

TRADITION AND INNOVATION, TODAY AND TOMORROW

GFP

**RACK
POOL**



MADE IN ITALY





● *Componenti meccanici per elettronica*

Siamo produttori specializzati nella meccanica per elettronica.

Forniamo rack 19", rack da tavolo, lavorazione di pannelli in genere, soprattutto su specifica del cliente (customer), custodie 19", cestelli, cassette schermate e/o aerate, il tutto secondo le norme europee. Realizziamo inoltre lavorazioni meccaniche di precisione su macchine a controllo numerico (cnc) per produrre contenitori su misura per le applicazioni elettroniche. Produciamo moltissimi accessori in materiale plastico per le applicazioni elettroniche come guide schede, impugnature, estrattori schede, blocca schede, rondelle, piedini fissi - alzabili e moltissime minuterie per il fissaggio pannelli e schede elettroniche. L'azienda possiede un parco macchine all'avanguardia composto da Piegatrici, Impianto Taglio Laser, Punzonatrici, Fresatrici CNC e un Impianto Galvanico per i trattamenti di anodizzazione e surtec 650 per servire vari settori industriali. Forniamo un servizio di serigrafia.

Siamo un polo di riferimento in continua evoluzione



Taglio Laser



Presse

Fresatrici a CNC



Impianto Galvanico



Punzonatrici



- *Divisione armadi per elettronica*

GFP RACK POOL ha lanciato la produzione di armadi per elettronica e di quadri elettrici sia secondo standard richiesti dal mercato, sia a disegno del cliente.

Numerosi sono gli accessori che accompagnano l'armadio: Ruote, Piedini, Guide, Staffe interne, Infiniti accessori per servire il cliente con un pacchetto prodotti sempre più completo e all'avanguardia.

Siamo esperti nell'integrazione elettronica e nel cablaggio di sistemi elettronici, riusciamo a fornire il sistema finito partendo dal progetto meccanico fino al sistema integrato funzionante. Un ciclo dalla A alla Z.

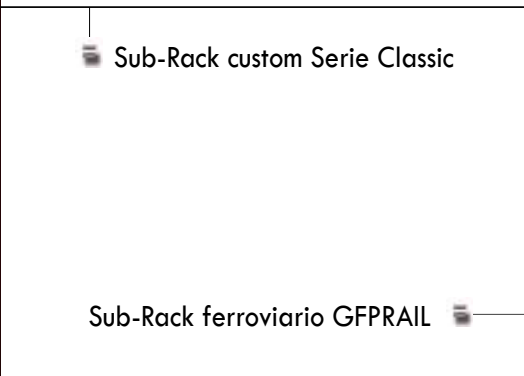


Sub-Rack custom Serie Classic



Sub-Rack Serie Bench

Sub-rack altezza e profondità Custom



Sub-Rack ferroviario GFPRAIL



Sub-Rack Serie Classic



Sub Rack EMC/RFI

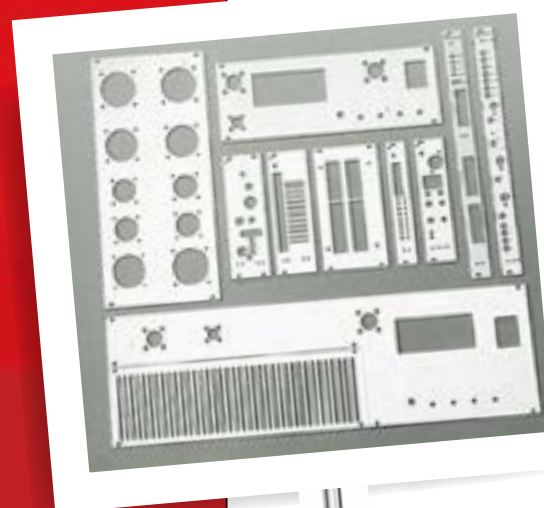


Sub-Rack Serie Light



Componenti EMC/RFI

Lavorazione pannelli frontali



**GFP RACK
POOL**

Cassetto 3U/6U



Armadio da muro modello SAT



Armadio da muro modello LIB

Contenitori in metallo

Clamps

Lavorazioni su fresatrici CNC



Carpenteria leggera

Armadio modello "POOL"

Lavorazioni meccaniche

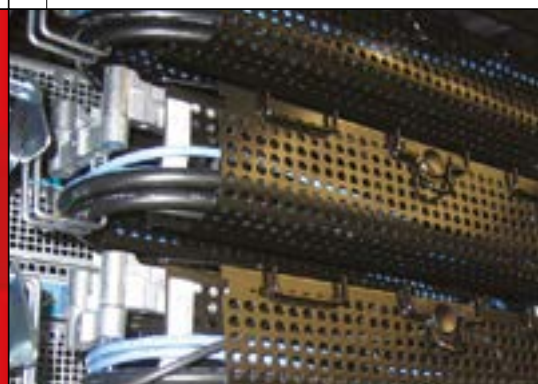


Lavorazioni su dissipatori in alluminio



Dissipatori in alluminio

Integrazione e Cablaggio



Torneria

Lavorazioni meccaniche



Armadio modello "MAR"



Armadio modello "SUN"



Serigrafia



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TRADITION AND INNOVATION, TODAY AND TOMORROW







Sub-Rack 19" GFPRAIL:

Front, rear and center rails Future

There are two extruded channels for self forming M4 screws to mount the rails to the side plates.

Front and rear rails include incremented holes for mounting of guide rails.

Center rails do not include incremented holes and are only used for mounting of backplanes, either directly or indirectly, or Z-rails and perforated rails. The center rails are used in 6 U subracks.

• Front rail standard

For mounting plug-in units or front panels

Material: Aluminum extrusion, alodined

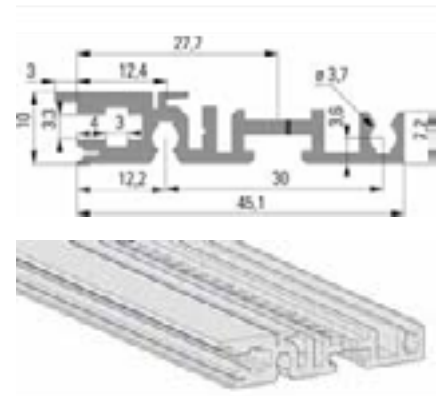
Scope of Delivery: Front rail standard 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

- Horizontal rails are secured with two screw

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 00
84 HP	-	23 10 02 02



• Dual rear rail

*With integrated thread channel M3

Material: Aluminum extrusion, alodined

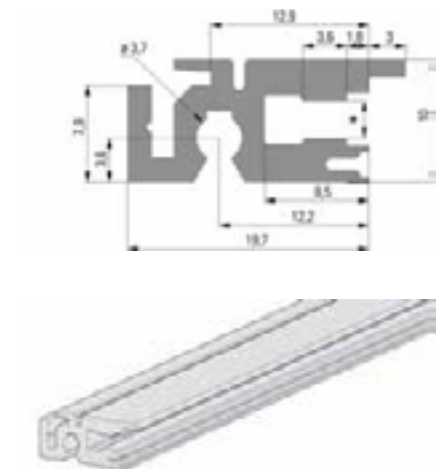
Scope of Delivery: Dual rear rail 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Notes:

- Horizontal rails are secured with one screw
- Required for applications with dual cover plate
- Maximum torque 0.75 Nm (6.6 lbs)

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 09
84 HP	-	23 10 02 11



• Rear rail basic unit E for cover plate

For direct mounting of backplane or perforated rail

Material: Aluminum extrusion, alodined

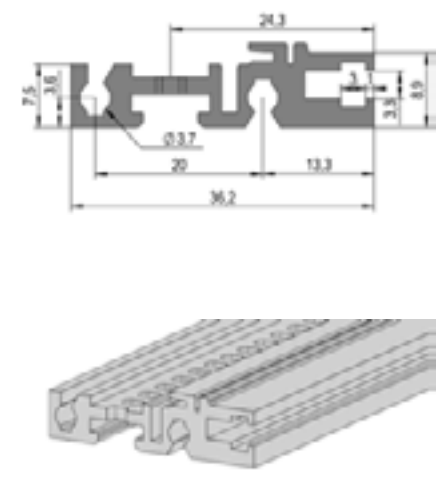
Scope of Delivery: Rear rail basic unit E 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Notes:

- Horizontal rails are secured with two screws on each side
- Only for Eurocards 220 mm
- Required for applications with cover plate

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 30
84 HP	-	23 10 02 32



Sub-Rack 19" GFPRAIL:

Front, rear and center rails Future

• Rear rail basic unit E

For direct mounting of backplane or perforated rail

Material: Aluminum extrusion, alodined

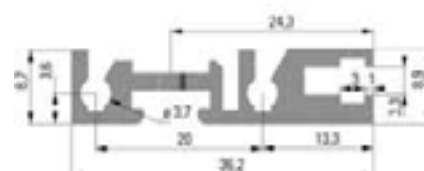
Scope of Delivery: Rear rail basic unit E 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Horizontal rails are secured with two screw

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 21
84 HP	-	23 10 02 23



• Center rail basic unit E

For direct mounting of backplane or perforated rail

Material: Aluminum extrusion, alodined

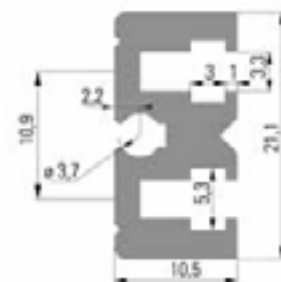
Scope of Delivery: Center rail basic unit E 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Horizontal rails are secured with two screw

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 24
84 HP	-	23 10 02 26



• Rear rail basic unit C

With integrated connector fixation according to IEC 60603-2

Material: Aluminum extrusion, alodined

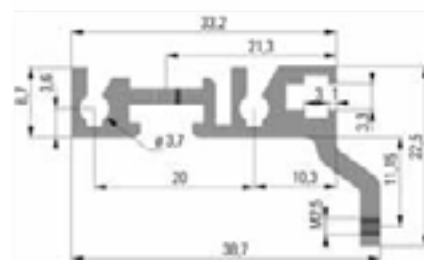
Scope of Delivery: Rear rail basic unit C 1 PU (5 pcs)

Delivery Form: In units for self-assembly

Note:

– Horizontal rails are secured with two screw

W	COD. Anodized	COD. Alodined
42 HP	-	23 10 02 18
84 HP	-	23 10 02 20



Side plates Future

For mounting horizontal rails, mounting brackets, corner brackets and covers.
Dimples on the side plates ease assembly and prevent unwanted torsion of the rails.

• Side plate Future

Depending on the choice of mounting brackets, for configuration of standard Future 19" subracks, EMC spring shielding concept or EMC fabric shielding concept.

Material: Aluminum, 2 mm, alodined

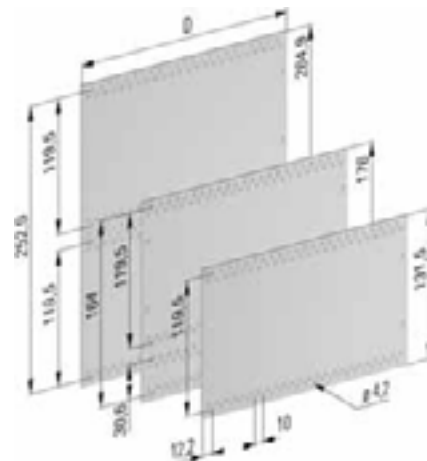
Scope of Delivery: Side plate 1 pc

Delivery Form: In units for self-assembly

Note:

– Horizontal rail mountable in 10-mm increment

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	23 10 01 79	23 10 01 70	23 10 01 73	23 10 01 76
4 U	-	23 10 01 71	23 10 01 74	23 10 01 77
6 U	23 10 01 80	23 10 01 72	23 10 01 75	23 10 01 78



• Side plate Future, tox joined for EMC spring shielding concept

For configurations according to EN 50155 (shock and vibration resistant)

Material: Side plate aluminum, 2 mm, alodined Mounting brackets and corner bracket (3/2 mm) with groove for EMC spring shielding concept, aluminum extrusion, alodined

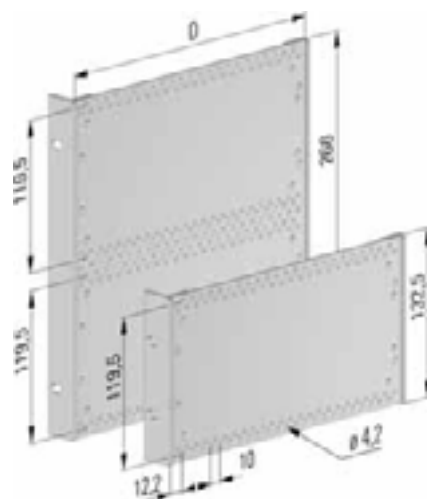
Scope of Delivery: Side plate, mounting bracket and corner bracket, tox joined

Delivery Form: In units for self-assembly

Note:

- Horizontal rails mountable in 10-mm increment
- Horizontal rails must be secured with two screws on each side
- EMC springs must be ordered separately

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	-	23 10 01 90	23 10 01 93	23 10 01 96
6 U	-	23 10 01 92	23 10 01 95	23 10 01 98



• Side plate Future IEEE, rear I/O, euroboard 160/80 mm

For configuration of 19" subracks Future according to IEEE 1101.1/IEEE 1101.10 with Rear I/O (160/80 mm)

Material: Aluminum, 2 mm, alodined

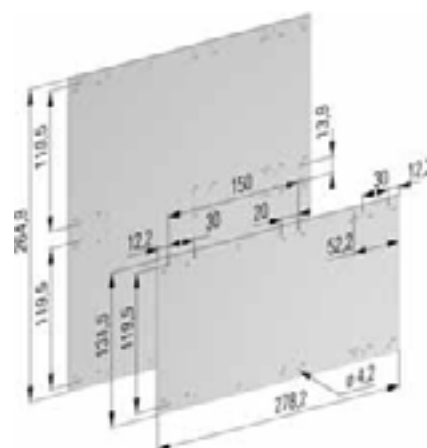
Scope of Delivery: Side plate 1 pc

Delivery Form: In units for self-assembly

Note:

– Horizontal rails can be fixed with two screws

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	-	23 10 01 97	-	-
6 U	-	23 10 01 99	-	-



19" mounting brackets Future

Mounted to the front of the subrack, the brackets enable installation of the subrack in a 19" case or cabinet.
Includes recess for front rail.

• 19" mounting brackets Future, standard

Without groove, upgrade with shielding material not possible.

Either with or without handle holes.

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting brackets without groove 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Handles must be ordered separately

H	Without handle holes	With handle holes
3 U	80 41 10 03	80 41 10 04
4 U	-	-
6 U	80 41 10 08	80 41 10 07



• 19" mounting brackets Future with groove for EMC spring shielding concept

With groove for mounting EMC springs

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting bracket with groove 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– EMC springs must be ordered separately

H	Without handle holes	With handle holes
3 U	23 10 01 60	-
4 U	23 10 01 61	-
6 U	23 10 01 62	-



• 19" mounting brackets Future with bar for EMC fabric shielding concept

With bar for mounting self adhesive EMC fabric D shape

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting bracket with bar 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– EMC fabrics D shape must be ordered separately

H	Without handle holes	With handle holes
3 U	23 11 01 60	-
4 U	-	-
6 U	23 11 01 61	-



Corner brackets Future

For facing the rear of the subrack. Includes recess for front rail.
 The total depth of the subrack expands by 3 mm with the corner brackets assembled.

- Corner bracket Future, standard*

Without groove, upgrade with shielding material not possible.
Material: Aluminum extrusion, alodined
Scope of Delivery: Corner bracket without groove 1 PU (10 pcs)
Delivery Form: In units for self assembly

H	Variant without groove
3 U	80 41 10 20
4 U	-
6 U	80 41 10 21



- Corner bracket Future with groove for EMC spring shielding concept*

With groove for mounting EMC springs
Material: Aluminum extrusion, alodined
Scope of Delivery: Corner bracket with groove 1 PU (10 pcs)
Delivery Form: In units for self-assembly

Note:
 – EMC springs must be ordered separately

H	Variant with groove
3 U	23 10 01 65
4 U	23 10 01 66
6 U	23 10 01 67



- Corner bracket Future with bar for EMC fabric shielding concept*

With bar for mounting self-adhesive EMC fabric D shape
Material: Aluminum extrusion, alodined
Scope of Delivery: Corner bracket with bar 1 PU (10 pcs)
Delivery Form: In units for self-assembly

Note:
 – EMC fabrics D shape must be ordered separately

H	Variant with bar
3 U	23 11 01 65
4 U	-
6 U	23 11 01 67



Cover plates

Cover plates mechanically protect the built-in components and/or protect against electromagnetic interference. The perforation in the cover plates ensures adequate ventilation of the electronics.

• Cover plate – Future

- For covering the card cage
- Mounting and shielding with self-clipping contact clips
- Vibration resistance can be enhanced by additionally screwing the contact clips to the side plate
- Perforation Rv4-5, air through put 58%
- $W1 = W + 4 \text{ mm}$

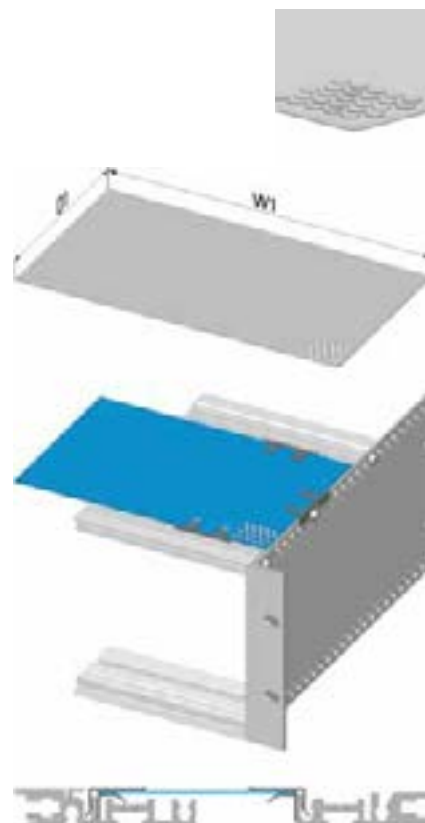
Material: Aluminum 1 mm, alodined

Scope of Delivery: Cover plate 1 pc

Delivery Form: In units for self-assembly

Note: – Contact clips for cover plate must be ordered separately

W	Card depth = 160 mm D1 = 119 mm	Card depth = 220 mm D1 = 179 mm
42 HP	23 10 02 40	23 10 02 42
84 HP	23 10 02 41	23 10 02 43



• Cover plate dual – Future

- For covering the entire depth (D)
- Mounting and shielding with self-clipping contact clips
- Vibration resistance can be enhanced by additionally screwing the contact clips to the side plate
- Perforation Rv4-5, air through put 58%

Material: Aluminum 1 mm, alodined

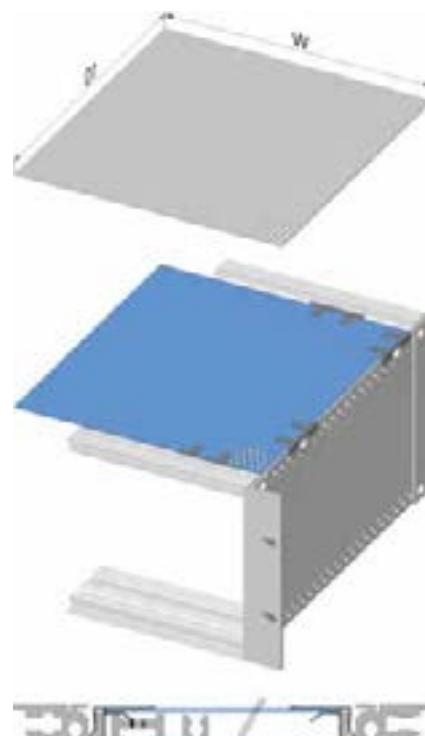
Scope of Delivery: Cover plate 1 pc

Delivery Form: In units for self-assembly

Note:

- Can only be used in combination with rear rail with integrated thread groove
- Contact clips for cover plate must be ordered separately

W	D = 244 mm D1 = D - 39.7 mm	D = 304 mm D1 = D - 39.7 mm	D = 364 mm D1 = D - 39.7 mm
42 HP	23 10 02 44	23 10 02 46	23 10 02 48
84 HP	23 10 02 45	23 10 02 47	23 10 02 49



Cover plates

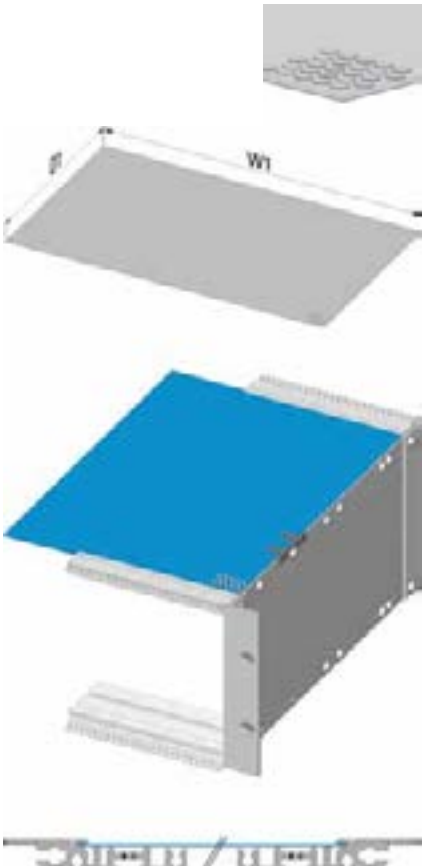
• Cover plate dual II – Future

- For covering the entire depth (D)
- Covers slide into the grooves of the horizontal front rails
- Mounting and shielding with self-clipping contact clips
- Vibration resistance can be enhanced by additionally screwing the contact clips to the side plate
- Perforation Rv4-5, air through put 58%
- $W1 = W + 4 \text{ mm}$
- Material:** Aluminum 1 mm, alodined
- Scope of Delivery:** Cover plate 1 pc
- Delivery Form:** In units for self-assembly

Note:

- Depicted side view shows application with IEEE rails (Rear I/O 160/80)
- Contact clips for cover plate must be ordered separately

		D = 278 mm		
W	D = 244 mm	D1 = 252.9 mm	D = 304 mm	D = 364 mm
		(Rear I/O 160/80)		
84 HP	23 10 02 81	23 10 02 80	23 10 02 82	23 10 02 83

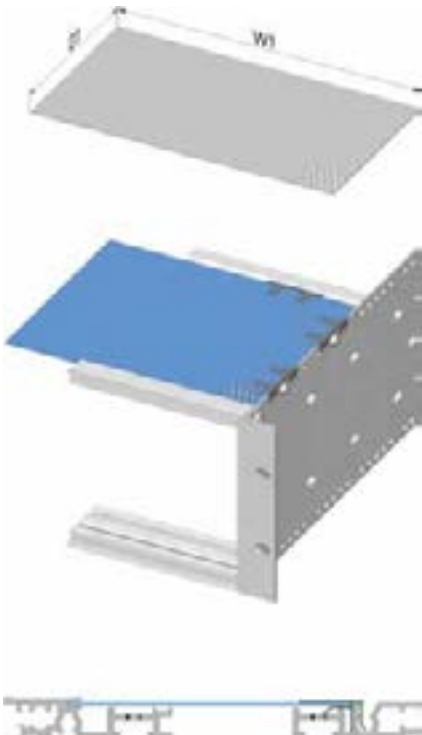


• Cover plate – FutureX

- For covering the card cage
- Mounting and shielding with self-clipping contact clips
- Vibration resistance can be enhanced by additionally screwing the contact clips to the side plate
- Perforation Rv4-5, air through put 58%
- $W1 = W + 4 \text{ mm}$
- Material:** Aluminum 1 mm, alodined
- Scope of Delivery:** Cover plate 1 pc
- Delivery Form:** In units for self-assembly

Note: – Contact clips for cover plate must be ordered separately

W	Card depth = 160 mm D1 = 146.3 mm	Card depth = 220 mm D1 = 206.3 mm
42 HP	23 10 02 72	23 10 02 74
84 HP	23 10 02 73	23 10 02 75



Cover plates

Cover plates mechanically protect the built-in components and/or protect against electromagnetic interference. The perforation in the cover plates ensures adequate ventilation of the electronics.

- *Handle – Future/FutureX, Series 75/76/77*

Suitable for 19" subracks

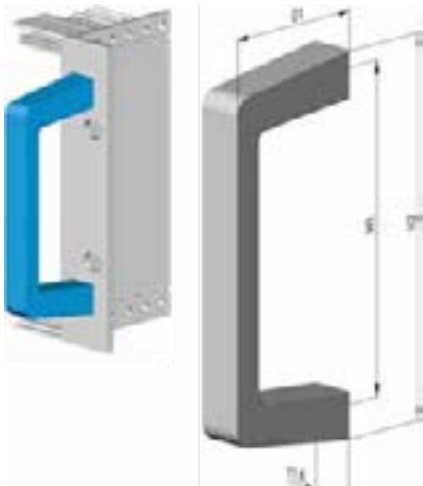
Material: Aluminum extrusion, anodized

Scope of Delivery:

Handle 1 pc

Assembly kit 1 pc

Delivery Form: In units for self-assembly



H	H1	H2	D1	Order no.
2 U	55.0 mm	69.0 mm	40 mm	79 36 00 00
3U	88.0 mm	102.0 mm	40 mm	79 36 01 00
-	120.0 mm	134.0 mm	40 mm	79 36 03 00
4U	133.5 mm	147.5 mm	40 mm	79 36 05 00
5U	180.0 mm	194.0 mm	40 mm	79 36 04 00
6/9U	235.0 mm	249.0 mm	40 mm	79 36 02 00

FRONT PANELS

● // Application

Our front panel program enables you to customassemble your product using a variety of options.

We offer an extensive portfolio of products ranging from partial front panels, front panels for plug-in-modules with various handle options and for various stability and shielding requirements to 19" front panels.

Cutouts, color coating and inscriptions can be added at any time in accordance with your individual requirements.

● // Configuration example

The diagram shows a typical front panel assembly using the example of a front panel for plug-in-modules

- 1 Front panel
- 2 Metal sleeve*
- 3 Collar screw*
- 4 Cylinder head screw*
- 5 Hexagon nut*
- 6 Board holder*
- 7 Countersunk head screw*
- 8 Handle*
- 9 Identification plate*

Parts marked with * are not included in the scope of delivery of the basic unit, i.e. must be ordered separately.

● // Notes on standards, units of measurement and mounting / overall dimensions

Inner and outer dimensions

- IEC 60297-3-101
- IEC 60297-3-102
- IEC 60297-3-103
- IEEE 1101.11

Unit of height U

Measurement unit for height in 19" rack systems

1 U = 44.45 mm

Increment unit HP

Measurement unit for width in 19" rack systems

1 HP = 5.08 mm

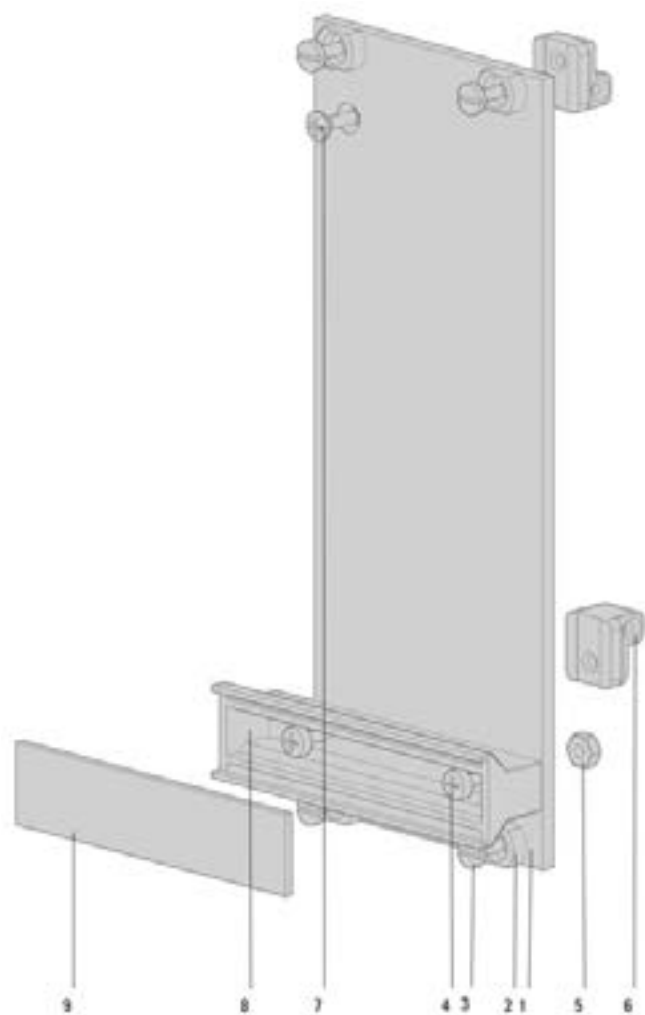
Dimensions specified in ordering tables

The dimensions, in particular those given in U and HP, are specified in relation to the application:

Height $H = (n(U) \times 44.45 \text{ mm}) - 4.8 \text{ mm}$

Usable width $W = (n(HP) \times 0.3 \text{ mm})$

The depth D (in mm) indicates the total depth of the case without handles, connectors, etc.



Cover plates

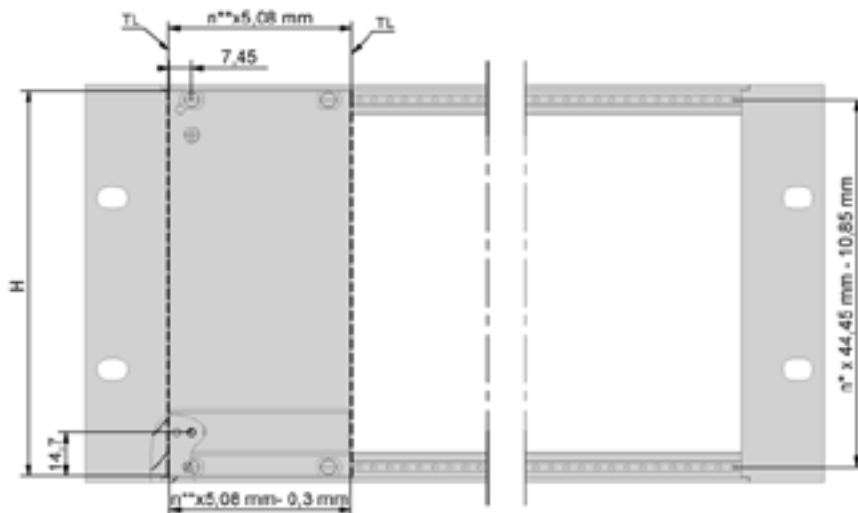
• Mounting dimensions (mm)

	H
3 U	= 128.5
4U	= 173.0
6U	= 261.9

* (U)

** (HP)

TL (partition line)



• Dimensions for plug-in modules (mm)

D1*	D2 ± 0.4**	D3 ± 0.4***	D4 ± 0.4****
80.00	89.93	91.93	91.74
100.00	109.93	111.93	111.74
160.00	169.93	171.93	171.74
220.00	229.93	231.93	231.74
280.00	289.93	291.93	291.74

* PCB depth

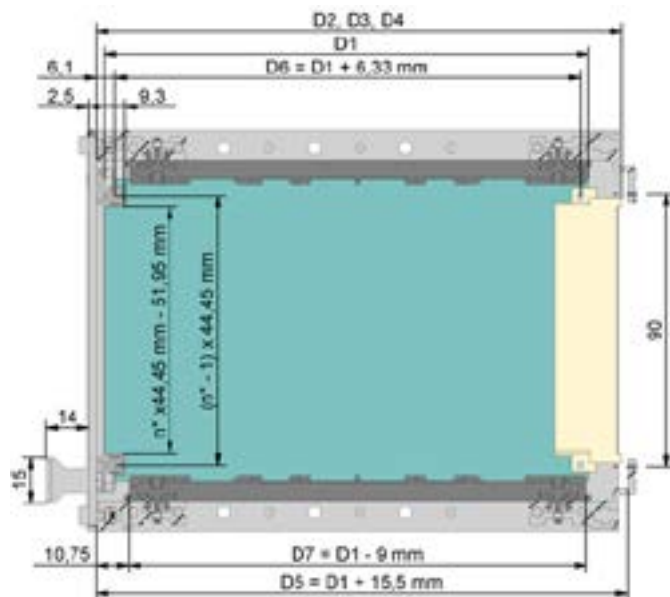
** Insertion depth for IEC 60603-2 connectors, styles B, C, D and IEC 61076-4-113

*** Insertion depth for IEC 60603-2 connectors, styles F, G, H

**** Insertion depth for IEC 61076-4-101 connectors

D = overall depth

D5 = mounting depth in 19" rack



• // Manufacturing tolerances

All parts are subject to POLYRACK's factory specifications, whereby:
Extrusion specifications comply with DIN EN 12020-1

Punched parts comply with DIN ISO 6930-1/6930-2 and DIN 6932

Plastic parts comply with DIN 16742

Front Panels

- *Front panel, standard*

Material: Aluminum 2.5 mm

Scope of delivery: Front panel 1 pc

Delivery form: In units for self-assembly

Note:

– Assembly hardware must be ordered separately



U	HP	Clear anodized cutting edges raw	Front anodized rear alodined
3 U	2 HP	79 41 20 15	-
3 U	3 HP	79 41 20 19	-
3 U	4 HP	79 41 20 23	79 41 54 00
3 U	5 HP	79 41 20 27	79 41 54 18
3 U	6 HP	79 41 20 31	79 41 54 01
3 U	7 HP	79 41 20 35	79 41 54 19
3 U	8 HP	79 41 20 39	79 41 54 02
3 U	10 HP	79 41 20 43	79 41 54 03
3 U	12 HP	79 41 20 47	79 41 54 04
3 U	14 HP	79 41 20 51	-
3 U	16 HP	79 41 20 55	-
3 U	20 HP	79 41 20 59	-
3 U	21 HP	79 41 20 63	-
3 U	42 HP	79 41 20 67	79 41 54 05
3 U	63 HP	79 41 20 71	79 41 54 06
3 U	84 HP	79 41 20 75	79 41 54 07
4 U	42 HP	79 41 20 79	-
4U	63 HP	79 41 20 83	-
4U	84 HP	79 41 20 87	-
6 U	2 HP	79 41 20 91	-
6 U	3 HP	79 41 20 95	-
6 U	4 HP	79 41 20 99	79 41 54 08
6 U	5 HP	79 41 21 03	-
6 U	6 HP	79 41 21 07	79 41 54 09
6 U	7 HP	79 41 21 11	-
6 U	8 HP	79 41 21 15	79 41 54 10
6 U	10 HP	79 41 21 19	79 41 54 11
6 U	12 HP	79 41 21 23	79 41 54 12
6 U	14 HP	79 41 21 27	-
6 U	16 HP	79 41 21 31	-
6 U	20 HP	79 41 21 35	-
6 U	21 HP	79 41 21 39	-
6 U	21 HP	79 41 21 43	79 41 54 13
6 U	63 HP	79 41 21 47	79 41 54 14
6 U	84 HP	79 41 21 51	79 41 54 15

• Front panel, Future

Material: Aluminum 2.5 mm, front anodized / rear alodined

Scope of delivery: Front panel 1 pc

Delivery form: In units for self-assembly

Note:

– Assembly hardware must be ordered separately

U	HP	Order no.
3 U	4 HP	23 10 03 00
3 U	6 HP	23 10 03 01
3 U	8 HP	23 10 03 02
3 U	10 HP	23 10 03 03
3 U	12 HP	23 10 03 04
3 U	42 HP	23 10 03 05
3 U	84 HP	23 10 03 07
6 U	4 HP	23 10 03 08
6 U	6 HP	23 10 03 09
6 U	8 HP	23 10 03 10
6 U	10 HP	23 10 03 11
6 U	12 HP	23 10 03 12
6 U	42 HP	23 10 03 13
6 U	84 HP	23 10 03 15



• Front panel, U extrusion

Material: Aluminum extrusion, front anodized / rear alodined

Scope of Delivery: U extrusion front panel 1 pc

Delivery Form: In units for self-assembly

Note:

– Assembly hardware must be ordered separately

U	HP	Order no.
3 U	4 HP	23 10 08 00
3 U	6 HP	23 10 08 01
3 U	8 HP	23 10 08 02
3 U	10 HP	23 10 08 03
3 U	12 HP	23 10 08 04
6 U	4 HP	23 10 08 20
6 U	6 HP	23 10 08 21
6 U	8 HP	23 10 08 22
6 U	10 HP	23 10 08 23
6 U	12 HP	23 10 03 24



Front Panels

• Front panel, bottom-hinged / side-hinged with hinge extrusion

Material: Aluminum 2.5 mm, surface anodized / cutting edges raw, hinge parts aluminum anodized

Scope of Delivery: Front panel 1 pc Hinge parts with assembly hardware 1 pc

Delivery Form: In units for self-assembly

Note:

– Assembly hardware must be ordered separately



U	HP	Bottom-hinged	Side-hinged
3 U	42 HP	79 00 00 91	79 00 00 67
3 U	63 HP	79 00 00 95	79 00 00 71
3 U	84 HP	79 00 00 99	79 00 00 75
6 U	42 HP	79 00 01 03	79 00 00 79
6 U	63 HP	79 00 01 07	79 00 00 83
6 U	84 HP	79 00 01 11	79 00 00 87

• Front panel, bottom-hinged / side-hinged with hinge element

Material: Aluminum 2.5 mm, hinge parts PA 6

Scope of delivery

Front panel, bottom-hinged:

Front panel 1 pc

Hinge element top 1 pc

Hinge element bottom 1 pc

Hinge joint 2 pcs

Assembly hardware for hinge elements 1 pc

Front panel, side-hinged:

Front panel 1 pc

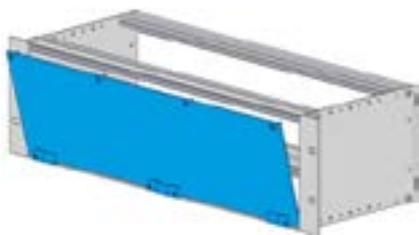
Hinge element top 1 pc

Hinge element bottom 1 pc

Hinge joint 2 pcs

Assembly hardware for hinge elements 1 pc

Delivery form: In units for self-assembly



Note:

– Can only be used in combination with rear rail with integrated thread groove

– Contact clips for cover plate must be ordered separately

U	HP	Bottom-hinged, anodized cutting edges raw	Bottom-hinged, front anodized, rear alodined	Side-hinged anodized/cutting edges raw	Side-hinged, front anodized, rear alodined
3U	84 HP	79 23 50 00	79 23 50 01	79 23 50 02	79 23 50 03
6U	84 HP	79 23 50 10	79 23 50 11	79 23 50 12	79 23 50 13

Accessories

• Card guide EK 80 mm – Future

For board depth 80 mm or for Rear I/O applications according to IEEE 1101.1/IEEE 1101.10

Material: PPO

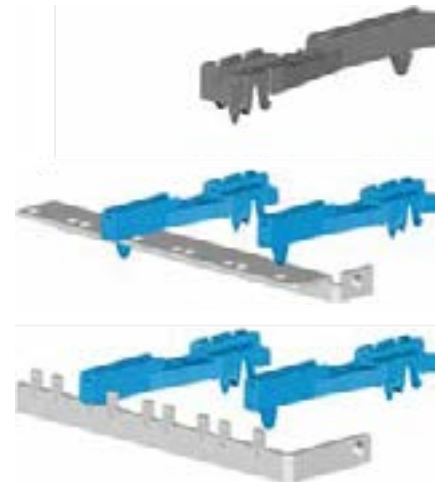
Scope of Delivery: Card guide, 1 set (top/bottom) 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Notes:

- Can in addition be secured with screws
- Mounting of EMC springs possible
- Board holder for Rear I/O applications required (see below)

Card depth	Groove width	Color	Standard	Heavy duty version
80 mm	2.0 mm	Black	23 10 04 42	-



• Board holder Rear I/O EK 80 mm – Future

Board depth 80 mm for Rear I/O applications according to IEEE 1101.1/IEEE 1101.10

The Board holder is available in 2 versions:

- Type 1 card guides are clipped in (suitable for heavy modules)
- Type 2 card guides are suspended (enhances air flow)

Material: Aluminum 1.5 mm, raw

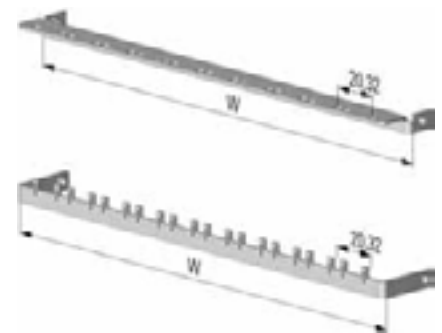
Scope of Delivery: Board holder 1 pc

Delivery Form: In units for self-assembly

Note:

- Only for EB 80 mm card guide
- Can only be used in connection with side plate Future IEEE, Rear I/O application
- Card guides can be mounted in 4 HP increments
- Assembly components are included in assembly kit 19" subrack Future IEEE, Rear I/O

Card depth	Groove width	Color	Standard	Heavy duty version
80 mm	2.0 mm	84 HP	23 10 02 81	23 10 02 82



• Card guide – Future/FutureX

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

- Can in addition be secured with screws
- Mounting of EMC springs possible

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Black	23 10 04 29	23 10 04 02
160 mm	2.0 mm	Grey	23 10 04 34	-
160 mm	2.4 mm	Black	-	23 10 04 43
220 mm	2.0 mm	Black	-	23 10 04 03



Accessories

• Card guide *Al-Rail – Future/FutureX*

Material: Aluminum rail ALMgSi 0.5 raw

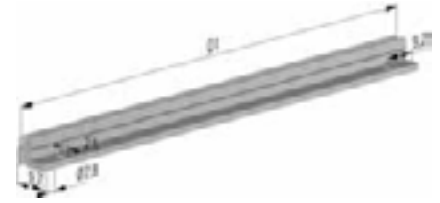
Scope of Delivery: Card guide rail 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– Can only be secured with screws

Card depth	Groove width	D1	Standard	Heavy duty version
220 mm	2.0 mm	202 mm	-	23 10 04 40
280 mm	2.0 mm	262 mm	-	23 10 04 41



• Card guide *EK 280 mm – FutureX*

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self- assembly

Note:

– Can only be clipped into position

Card depth	Groove width	Color	Standard	Heavy duty version
280 mm	2.0 mm	Black	-	23 10 04 37



• Card guide *4.4" – FutureX/Series 75/76/77*

For board height 4.4" (111.7 mm)

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– Can only be clipped into position

Card depth	Groove width	Series	Color	Standard	Heavy duty version
160 mm	2.0 mm	FutureX	Black	79 31 05 00	-
220 mm	2.0 mm	FutureX	Black	79 31 06 00	-
160 mm	2.0 mm	Series 75/76/77	Black	79 31 03 00	-



• Card guide *1/2 HP/IEEE – FerroRAIL*

For mounting in 1/2 HP offset according to IEEE 1101.1/IEEE 1101.10 applications.

For mounting Compact PCI power supplies and SMD plug-in modules.

Material: PC

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– Can in addition be secured with screws

– Mounting of EMC springs possible

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Green	23 10 04 38	-



• Card guide – FerroRAIL

Material: PC

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

- Can in addition be secured with screws
- Mounting of EMC springs possible

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Grey	-	23 10 04 04
220 mm	2.0 mm	Grey	-	23 10 04 05



• Card guide – Series 75/76/77

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

- Screw-on heavy-duty version
- Mounting of EMC springs only possible with heavy-duty version

Card depth	Groove width	Color	Standard	Heavy duty version
100 mm	2.0 mm	Black	79 31 40 00	-
160 mm	2.0 mm	Black	79 31 00 00	79 31 04 00
220 mm	2.0 mm	Black	-	79 31 12 00



• Card grid – Series 75/76/77

Card grid, 7-fold in 4-HP increments

Material: PPO

Scope of Delivery: Card grid 1 PU (25 pcs)

Delivery Form: In units for self-assembly

Note:

- Can only be clipped into position

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Black	79 31 91 00	-



• Card guide, 3-piece

3-piece card guide for individual board depth

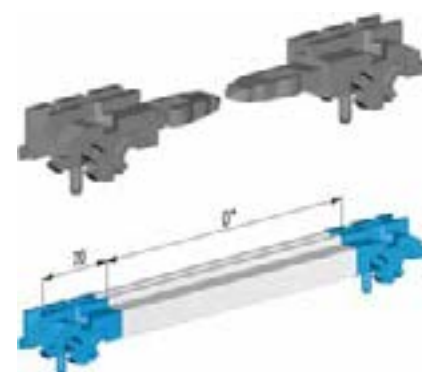
Material/Scope of Delivery: See ordering table

Delivery Form: In units for self-assembly

Note:

- End pieces can in addition be secured with screws
- Not possible to mount EMC springs

Version	Groove width	Material	Color	Scope of Delivery	Order no.
End pieces (pair)	2.0 mm	PPO	Black	1 PU (50 pair)	79 31 62 00
Card guide rail	2.0 mm	Aluminum	Anodized	2750 mm	90 16 00 00
Card guide rail	2.0 mm	ABS	Black	2750 mm	90 42 40 01



EMC/ESD shielding material

To ensure that the electronic products function satisfactorily in their electromagnetic environment, i.e. to guarantee the electromagnetic compatibility (EMC) of the products, shielding material is required subject to the electronics and the ambient conditions. Shielding material EMC springs / gaskets are used to establish contact with mechanical components and thus protect plug-in units and electronics against radio frequency interference. ESD springs / screws are used to discharge static electricity ("ESD" is abbreviation for "electrostatic discharge").

• ESD spring

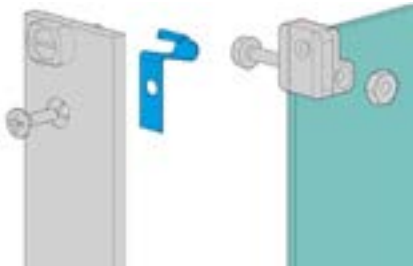
Material:
Copper-beryllium

Scope of Delivery:
ESD spring 1 pc

Order no.
79 21 70 02

Delivery Form:
In units for self-assembly

Note:
– is screwed to board holder.



• EMC spring

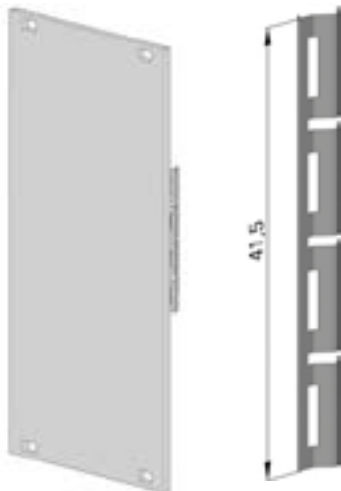
Is inserted into the groove in the mounting bracket, corner bracket or front panel using a tool. Can be used left or right

Material:
Spring steel 0.3 mm

Scope of Delivery:
EMC spring 1 PU (50 pcs)
Mounting aid (optional) 1 pc

Delivery Form:
In units for self-assembly

Note:
– The number of springs can be determined on an individual basis subject to the degree of shielding required.



Version	Order no
EMC Spring	23 10 04 24
Mounting aid	23 10 04 28

• EMC shielding fabric

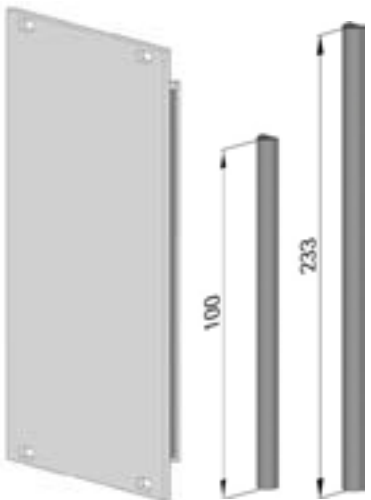
EMC shielding D is affixed to the edge of the mounting bracket, corner bracket or front panel. Can be used left or right.

Material
Conductive fabric, 1.5 x 2 mm, CuNi coated

Scope of delivery
EMC shielding fabric 1 PU (10 pcs)
by length (L = 1000 mm) 1 pc

Delivery form
In units for self-assembly

Notes
– Single sided adhesive (peel-off film)
– Thermal resistance: -40°C to +100°C
– Fire resistance rating: UL 94V0



H	Order no
3U	23 10 04 30
6U	23 10 04 31
by length (1000 mm)	23 10 04 32



Product information

The Future series is designed for different shielding concepts and applications and can be individually configured.
The securing of the stable rails with two screws as well as the tox joined version of the side plates allows the use of the subrack in harsh environments (vibration resistance).
The positioning of the rails in the 10-mm increments permits dual mounting.

- Notes:**
- “Vibration resistant” version: LES-DB of Deutsche Bahn (German Rail) compliant
 - “IEEE” version: Front rail(s) with pitch hole pattern according to IEEE 1101.10



	Basic units	H in U			W in HP		D in mm			
	Basic units	3	4	6	84	180	244	378	304	364
- Standard		●	-	●	●	●	●	-	●	●
- Vibration resistant		●	-	●	●	-	●	-	●	●
- Vibration resistant, EMC spring shielding concept		●	-	●	●	-	●	-	●	●
- IEEE, EMC fabric shielding concept		●	●	●	●	●*	●	-	●	●
- Rear I/O 160/80, EMC fabric shielding concept		●	-	●	●	-	-	●	-	-

* 4 U not available

Single components

Side plates
Horizontal rails
19" mounting brackets
Corner brackets

Accessories

Threaded inserts	
Card guides	Please check series reference
Board retainers	Please check series reference
Isolating strips	
Z-rails	
Perforated rails	
Covers	Please check series reference
Protective hoods	Please check series reference
Coding blocks and coding pins IEEE	
EMC/ESD shielding material	Please check concept
Handles	
Accessories	Please check series reference
Split vertical PCB mount	
Horizontal PCB mount	

Front, rear and center rails Future

- *Front rail IEEE*

For mounting plug-in units according to IEEE 1101.1/IEEE 1101.10

Material: Aluminum extrusion, alodined

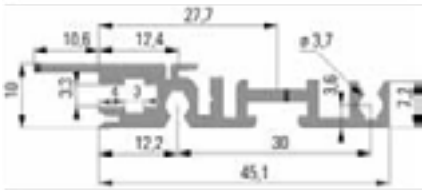
Scope of Delivery: Front rail IEEE 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

- Horizontal rails are secured with two screws
- Corners notched

W	Anodized	Anodized
42 HP	-	23 10 02 06
84 HP	-	23 10 02 08



- *Rear rail basic unit B*

For mounting backplane (indirectly) or Z-rail

Material: Aluminum extrusion, alodined

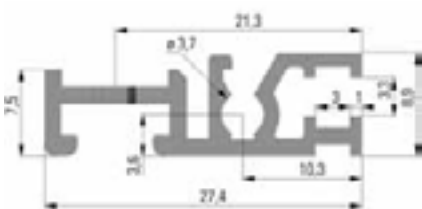
Scope of Delivery: Rear rail basic unit B 1 PU (10 pcs)

Delivery Form: In units for self- assembly

Note:

- Can only be clipped into position

W	Anodized	Anodized
42 HP	-	23 10 02 27
84 HP	-	23 10 02 29



Front, rear and center rails Future

Board retainers are used to secure the boards in the subrack, typically in applications without front panel

Note:

- Fire protection classification
PC: NF F 16-101/102 class F1, I2
PPO: UL 94 V0



• Board extractor

Used singly

Material

PC

Scope of Delivery

- Board extractor 1 pc
- Cylindrical pin 1 pc

Delivery Form

In units for self assembly

Notes

- Mounting either bottom or top board extractor
- Board extractor and board retainers can be used in combination



Order no.

79 3115100

• Board retainer Series 83/84

Used singly

Material

See ordering table

Delivery Form

In units for self assembly

Scope of Delivery

- Board retainer 1 PU (50 pcs)



Series	Color	Material	Order no.
Series 83/84	Black	PPO	79 31 53 00

• PB locking rail

Enables interlocking of all assembled plug-in boards

Delivery Form

In units for self assembly

Material

Aluminum extrusion, anodized/cutting edges raw

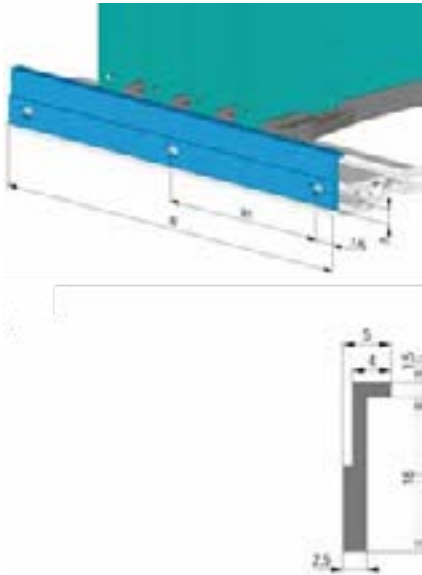
Notes

- Can be mounted on all 19" subracks
- Sleeve hole (W1 = 215.8 mm) only at 84 HP

Scope of Delivery

- PB locking rail 1 pc
- Assembly kit Type A 1 pc
- Rail (L = 2700 mm) 1 pc
- Cylindrical pin 1 pc

W	Order no.
42 HP	90 11 11 00
63 HP	90 11 13 00
84 HP	90 11 12 00
2700 mm	90 11 10 00



Threaded inserts

For mounting plug-in modules and backplanes to horizontal rails.

- *Threaded inserts*

Material: Steel 5 x 2 mm, white zinc plated

Scope of Delivery: Threaded insert 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Choice of M2.5 or M3 thread

W	Thread M2.5	Thread M3
20 HP	79 32 18 00	79 33 18 00
42 HP	79 32 14 00	79 33 14 00
63 HP	79 32 16 00	79 33 16 00
84 HP	79 32 17 00	79 33 17 00



Isolating strips

Enable isolated mounting of the backplane to the rear rail B and set the standard insert depth.
Mounting clips secure the isolating strips.

- *Isolating strips*

Material: ABS

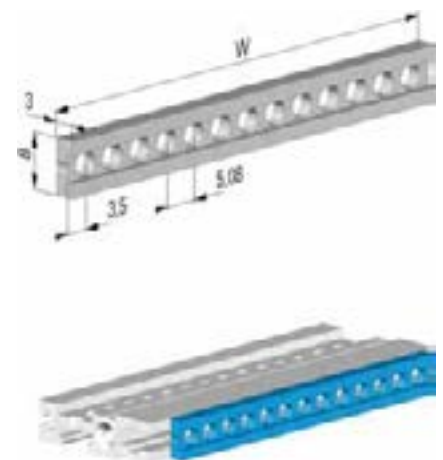
Scope of Delivery: Isolating strip 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Fire protection classification UL 94 V0

W	Color	Order no.
20 HP	Grey	79 38 04 00
42 HP	Grey	79 38 01 00
63 HP	Grey	79 38 03 00
84 HP	Grey	79 38 02 00



- *Mounting clips for isolating strips*

For positioning and securing the isolating strips and threaded inserts

Material: ABS

Scope of Delivery: Mounting clip 1 PU (100 pcs)

Delivery Form: In units for self-assembly

Note:

– Fire protection classification UL 94 V0

Color	Order no
Grey	79 51 50 00



Side plates Future

For mounting horizontal rails, mounting brackets, corner brackets and covers.
Dimples on the side plates ease assembly and prevent unwanted torsion of the rails.

• Side plate Future

Depending on the choice of mounting brackets, for configuration of standard Future 19" subracks, EMC spring shielding concept or EMC fabric shielding concept.

Material: Aluminum, 2 mm, alodined

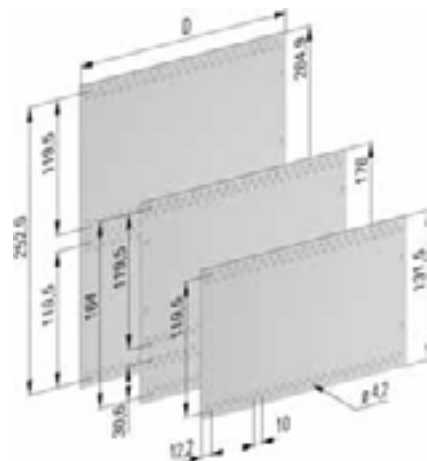
Scope of Delivery: Side plate 1 pc

Delivery Form: In units for self-assembly

Note:

– Horizontal rail mountable in 10-mm increment

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	23 10 01 79	23 10 01 70	23 10 01 73	23 10 01 76
4 U	-	23 10 01 71	23 10 01 74	23 10 01 77
6 U	23 10 01 80	23 10 01 72	23 10 01 75	23 10 01 78



• Side plate Future, tox joined for EMC spring shielding concept

For configurations according to EN 50155 (shock and vibration resistant)

Material: Side plate aluminum, 2 mm, alodined Mounting brackets and corner bracket (3/2 mm) with groove for EMC spring shielding concept, aluminum extrusion, alodined

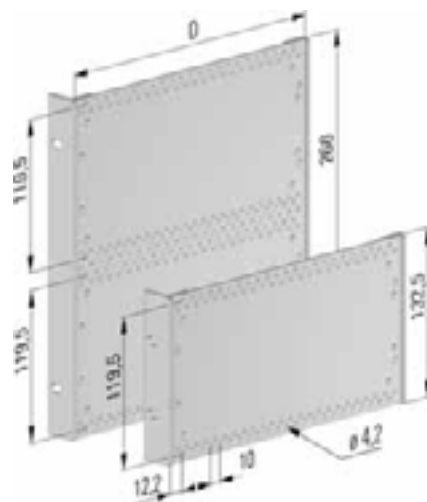
Scope of Delivery: Side plate, mounting bracket and corner bracket, tox joined

Delivery Form: In units for self-assembly

Note:

- Horizontal rails mountable in 10-mm increment
- Horizontal rails must be secured with two screws on each side
- EMC springs must be ordered separately

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	-	23 10 01 90	23 10 01 93	23 10 01 96
6 U	-	23 10 01 92	23 10 01 95	23 10 01 98



• Side plate Future IEEE, rear I/O, euroboard 160/80 mm

For configuration of 19" subracks Future according to IEEE 1101.1/IEEE 1101.10 with Rear I/O (160/80 mm)

Material: Aluminum, 2 mm, alodined

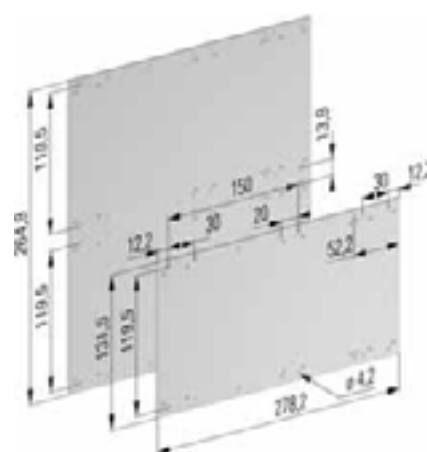
Scope of Delivery: Side plate 1 pc

Delivery Form: In units for self-assembly

Note:

– Horizontal rails can be fixed with two screws

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	-	23 10 01 97	-	-
6 U	-	23 10 01 99	-	-



Side plates FutureX

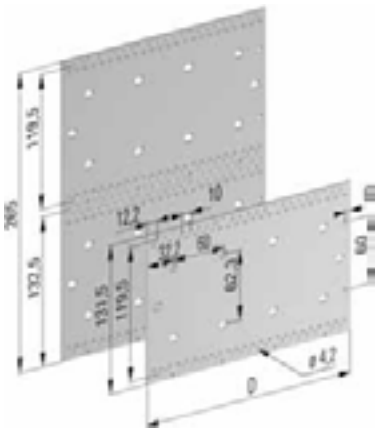
For mounting horizontal rails, mounting brackets, corner brackets and covers.
Dimples on the side plates ease assembly and prevent unwanted torsion of the rails.

- Side plate *FutureX*

Material: Aluminum, 2 mm, alodined
Scope of Delivery: Side plate 1 pc
Delivery Form: In units for self-assembly

Note:
– Horizontal rails mountable in 10-mm increment
– Insert nuts must be ordered separately

H	D = 180 mm	D = 244 mm	D = 304 mm	D = 364 mm
3 U	23 11 02 34	23 11 02 35	23 11 02 36	23 11 02 37
6 U	23 11 02 38	23 11 02 39	23 11 02 40	23 11 02 41



19" mounting brackets Future

Mounted to the front of the subrack, the brackets enable installation of the subrack in a 19" case or cabinet. Includes recess for front rail.

• 19" mounting brackets Future, standard

Without groove, upgrade with shielding material not possible.

Either with or without handle holes

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting brackets without groove 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– Handles must be ordered separately

H	Without handle holes	With handle holes
3 U	80 41 10 03	80 41 10 04
4 U	-	-
6 U	80 41 10 08	80 41 10 07



• 19" mounting brackets Future with groove for EMC spring shielding concept

With groove for mounting EMC springs

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting bracket with groove 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– EMC springs must be ordered separately

H	Without handle holes	With handle holes
3 U	23 10 01 60	-
4 U	23 10 01 61	-
6 U	23 10 01 62	-



• 19" mounting brackets Future with bar for EMC fabric shielding concept

With bar for mounting self adhesive EMC fabric D shape

Material: Aluminum extrusion, alodined

Scope of Delivery: Mounting bracket with bar 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

– EMC fabrics D shape must be ordered separately

H	Without handle holes	With handle holes
3 U	23 11 01 60	-
4 U	-	-
6 U	23 11 01 61	-



Cover plates

Cover plates mechanically protect the built-in components and/or protect against electromagnetic interference. The perforation in the cover plates ensures adequate ventilation of the electronics.

• Handle – Future/FutureX, Series 75/76/77

Suitable for 19" subracks

Material: Aluminum extrusion, anodized

Scope of Delivery:

Handle 1 pc

Assembly kit 1 pc

Delivery Form: In units for self-assembly

H	H1	H2	D1	Order no.
2 U	55.0 mm	69.0 mm	40 mm	79 36 00 00
3U	88.0 mm	102.0 mm	40 mm	79 36 01 00
-	120.0 mm	134.0 mm	40 mm	79 36 03 00
4U	133.5 mm	147.5 mm	40 mm	79 36 05 00
5U	180.0 mm	194.0 mm	40 mm	79 36 04 00
6/9U	235.0 mm	249.0 mm	40 mm	79 36 02 00



• Cover plate – FutureX

– For covering the card cage

– Mounting and shielding with self-clipping contact clips

– Vibration resistance can be enhanced by additionally screwing the contact clips to the side plate

– Perforation Rv4-5, air through put 58%

$W1 = W + 4 \text{ mm}$

Material: Aluminum 1 mm, alodined

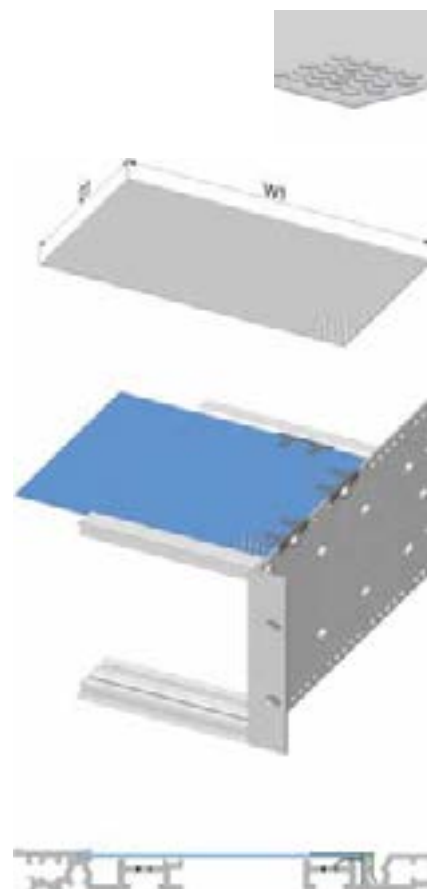
Scope of Delivery: Cover plate 1 pc

Delivery Form: In units for self-assembly

Note:

– Contact clips for cover plate must be ordered separately

W	Card depth = 160 mm	Card depth = 220 mm
	D1 = 146.3 mm	D1 = 206.3 mm
42 HP	23 10 02 72	23 10 02 74
84 HP	23 10 02 73	23 10 02 75



Coding elements

Coding elements are used for labeling slots or subracks in order to prevent mistakes and hence protect the electronicz.

- Mounting block for coding pins – Future/FerroRAIL

For mounting coding pins used in IEEE applications and, in conjunction with the EMC spring, to provide contact of the board to the horizontal front rail.

Material: See ordering table

Scope of Delivery: Coding block 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Notes

- Is mounted in the horizontal front rail in front of the card guide
- Can be used in 4 HP increments
- EMC spring can be mounted
- Fire protection classification

PC: NF F 16-101/102 class F1, I2

PPO: UL 94 V0

Position	Color	Material	Order no.
Top	Black	PPO	23 10 01 50
Top	Red	PPO	23 10 04 35
Top	Grey	PC	23 10 04 06
Top	Green	PC	23 10 04 08
Bottom	Black	PPO	23 10 01 51
Bottom	Red	PPO	23 10 04 36
Bottom	Grey	PC	23 10 04 07
Bottom	Green	PC	23 10 04 09



- Coding pins IEEE – Future/FerroRAIL

Coding pins are mounted to the coding block to prevent mistakes in plugging the slots.

Material: PA

Scope of Delivery: Coding pin IEEE 1 PU (50 pcs)

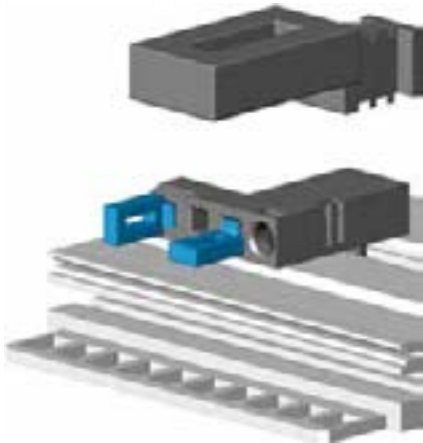
Delivery Form: In units for self-assembly

Note:

- Can be turned in 4 positions
- Fire protection classification

PA: UL 94 V0

Color	Order no.
Red	23 10 01 57



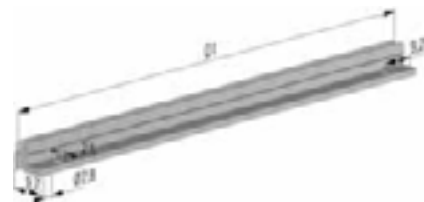
Accessories

• Card guide Al-Rail – Future/FutureX

Material: Aluminum rail ALMgSi 0.5 raw

Scope of Delivery: Card guide rail 1 PU (50 pcs)

Delivery Form: In units for self-assembly



Note:

– Can only be secured with screws

Card depth	Groove width	D1	Standard	Heavy duty version
220 mm	2.0 mm	202 mm	-	23 10 04 40
280 mm	2.0 mm	262 mm	-	23 10 04 41

• Card guide EK 280 mm – FutureX

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self- assembly



Note:

– Can only be clipped into position

Card depth	Groove width	Color	Standard	Heavy duty version
280 mm	2.0 mm	Black	-	23 10 04 37

• Card guide 4.4" – FutureX/Series 75/76/77

For board height 4.4" (111.7 mm)

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly



Note:

– Can only be clipped into position

Card depth	Groove width	Series	Color	Standard	Heavy duty version
160 mm	2.0 mm	FutureX	Black	79 31 05 00	-
220 mm	2.0 mm	FutureX	Black	79 31 06 00	-
160 mm	2.0 mm	Series 75/76/77	Black	79 31 03 00	-

• Card guide 1/2 HP/IEEE – FerroRAIL

For mounting in 1/2 HP offset according to IEEE 1101.1/IEEE 1101.10 applications.

For mounting Compact PCI power supplies and SMD plug-in modules.

Material: PC

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly



Note:

– Can in addition be secured with screws

– Mounting of EMC springs possible

Card depth	Groove width	Series	Color	Standard	Heavy duty version
160 mm	2.0 mm	FutureX	Black	79 31 05 00	-

Accessories

• Card guide – FerroRAIL

Material: PC

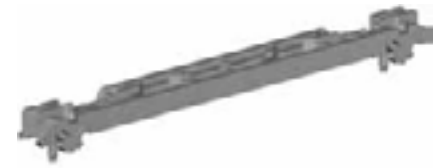
Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

- Can in addition be secured with screws
- Mounting of EMC springs possible

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Grey	-	23 10 04 04
220 mm	2.0 mm	Grey	-	23 10 04 05



• Card guide – Series 75/76/77

Material: PPO

Scope of Delivery: Card guide 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

- Screw-on heavy-duty version
- Mounting of EMC springs only possible with heavy-duty version

Card depth	Groove width	Color	Standard	Heavy duty version
100 mm	2.0 mm	Black	79 31 40 00	-
160 mm	2.0 mm	Black	79 31 00 00	79 31 04 00
220 mm	2.0 mm	Black	-	79 31 12 00



• Card grid – Series 75/76/77

Card grid, 7-fold in 4-HP increments

Material: PPO

Scope of Delivery: Card grid 1 PU (25 pcs)

Delivery Form: In units for self-assembly

Note:

- Can only be clipped into position

Card depth	Groove width	Color	Standard	Heavy duty version
160 mm	2.0 mm	Black	79 31 91 00	-



• Card guide, 3-piece

3-piece card guide for individual board depth

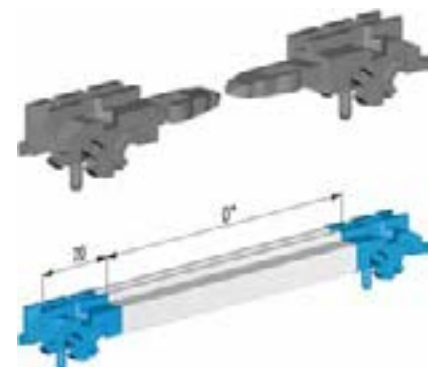
Material/Scope of Delivery: See ordering table

Delivery Form: In units for self-assembly

Note:

- End pieces can in addition be secured with screws
- Not possible to mount EMC springs

Version	Groove width	Material	Color	Scope of Delivery	Order no.
End pieces (pair)	2.0 mm	PPO	Black	1 PU (50 pair)	79 31 62 00
Card guide rail	2.0 mm	Aluminum	Anodized	2750 mm	90 16 00 00
Card guide rail	2.0 mm	ABS	Black	2750 mm	90 42 40 01



EMC/ESD shielding material

To ensure that the electronic products function satisfactorily in an electromagnetic environment, i.e. that the electromagnetic compatibility (EMC) of the products is guaranteed, additional shielding material may be required, depending on the electronics and the ambient conditions.

EMC springs/fabrics are used to make contact with mechanical components and thus provide EMC/ESD shielding material shielding for the plug-in units and electronics against high-frequency radiation.

ESD springs/screws are used for the discharge of static electricity. ("ESD" abbreviation for "Electrostatic Discharge")

• Shielding material EMC spring – Future/FutureX/FerroRAIL

Is mounted in the groove of the mounting bracket, corner bracket or front panel with a special assembly tool.

Can be mounted left or right.

Material: Spring steel 0.3 mm

Scope of Delivery:

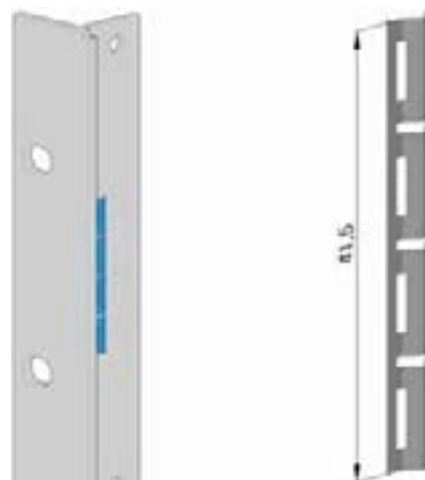
EMC spring 1 PU (50 pcs)

Assembly tool (optional) 1 pc

Delivery Form: In units for self-assembly

Note:

– The number of springs can be determined individually, depending on the degree of shielding required



Version	Order no.
EMC spring	23 10 04 24
Assembly too	23 10 04 28

• Shielding material EMC fabric – Future/FutureX

The self-adhesive EMC fabric D shape can be used on mounting brackets, corner brackets or front panels. It can be positioned left or right.

Material: Fabric Foam 1.5 x 2 mm, CuNi plated

Scope of Delivery:

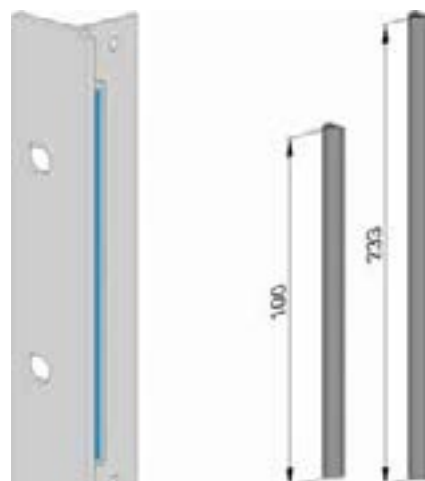
EMC fabric 1 PU (10 pcs)

By the meter (L = 1000 mm) 1 pc

Delivery Form: In units for self-assembly

Note:

– One-sided self-adhesive (peel-off film)
 – Temperature resistance: -40°C up to +100°C
 – Fire protection classification: UL 94V0



H	Order no.
3 U	23 10 04 30
6 U	23 10 04 31
By the meter (1000 mm)	23 10 04 32

EMC/ESD shielding material

• EMC contact clip for cover plate – Future/FutureX/FerroRAIL

For self-clipping mounting of cover plates and protective hoods.

The more clips are used, the better the subrack shielding properties.

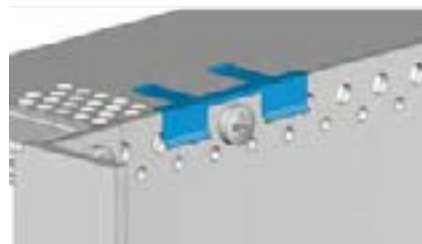
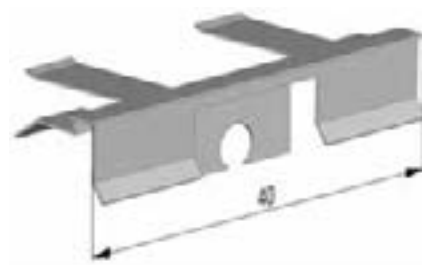
Material: Spring steel 0.3 mm

Scope of Delivery: EMC contact clip 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– To enhance vibration resistance use also pan head screw DIN 7985 M4 x 8 A2



Order no.

23 10 01 55

• Contact screw M2.5 for front panel grounding

The contact screw mounted into the threaded insert provides electrical contact between the anodized front panel and the horizontal front rail.

Material: Silver steel 1.2210, hardened

Scope of Delivery: Contact screw 1 PU (100 pcs)

Delivery Form: In units for self-assembly

Note:

- One-sided self-adhesive (peel-off film)
- Temperature resistance: -40°C up to +100°C
- Fire protection classification: UL 94V0



Order no.

79 51 50 49

EMC/ESD shielding material

- *ESD spring for card guide*

Mounted in the card guides it allows an electrostatic discharge of the board to the subrack.

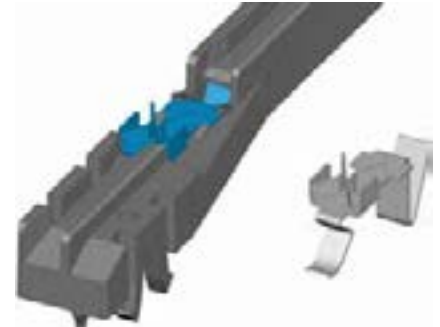
Material: Tin bronze, tin-plated

Scope of Delivery: ESD spring 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– Only for card guides with mounting groove for ESD spring



Order no.

79 41 71 02

- *ESD spring alignment pin*

The ESD spring alignment pin is mounted into the coding block and enables electrostatic discharge of the board via the IEEE extractor handle with ESD pin.

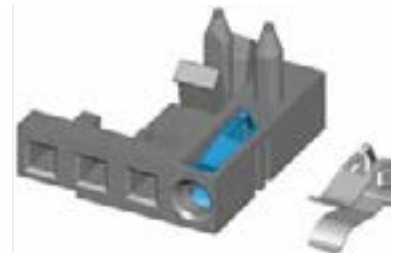
Material: Tin bronze, pewtered

Scope of Delivery: ESD spring 1 PU (50 pcs)

Delivery Form: In units for self-assembly

Note:

– Only for IEEE extractor handle with ESD pin



Order no.

23 10 01 52

Identification strips

Identification strips are used for labeling the slots.
The slot position is viewable through a hole in the front panel.

• Identification strips

Mounted in the card guides it allows an electrostatic discharge of the board to the subrack.

Material: Mounted (self adhesive) in the groove of the horizontal rail

Scope of Delivery: Identification strips 1 PU (10 pcs)

Delivery Form: In units for self-assembly

Note:

- One-sided self-adhesive (peel-off film)
- Cannot be used in horizontal front rails of the series Future or FerroRAIL
- Slot increment: 1 slot = 4 HP



84 HP	Imprint	Order no.
Front side	1 - 84 HP (HP increment)	79 37 00 00
Rear side	84 - 1 HP (HP increment)	79 37 10 00
Front side	1 - 21 (slot increment)	79 37 04 21
Rear side	21 - 1 (slot increment)	79 37 14 21

Accessories

• Hinge extrusion kit

for customized bottom-hinged or side-hinged front panels in conjunction with front rails in 19" environments.

Hinge extrusion with assembly hardware

Material

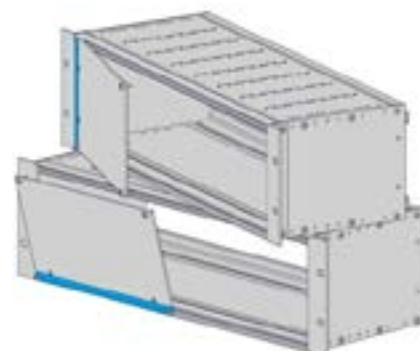
Aluminum extrusion, anodized
Hinge joints, aluminum anodized

Scope of delivery

Hinge extrusion 1 pc
Hinge joint left 1 pc
Hinge joint right 1 pc
Assembly hardware 1 pc

Delivery form

In units for self-assembly



H	W	Bottom-hinged	Side-hinged
	42 HP	79 00 01 13	
	63 HP	79 00 01 14	
	84 HP	79 13 00 00	
3U			79 14 00 00
6U			79 14 09 00

• Hinge element kit

for customized bottom-hinged or side-hinged front panels in conjunction with front rails in 19" environments.

Hinge elements with assembly hardware

Material

Hinge parts PA 6

Scope of delivery

Hinge elements, bottom-hinged
Hinge element left 2 pcs
Hinge element right 2 pcs
Hinge joint 3 pcs
Assembly hardware for hinge elements 1 pc

Hinge elements, side-hinged

Hinge element top 1 pc
Hinge element bottom 1 pc
Hinge joint 2 pcs
Assembly hardware for hinge elements 1 pc

Delivery form

In units for self-assembly



Bottom-hinged	Side-hinged
79 21 01 40	79 21 01 41

Accessories

• Extractors

Extractor handle, bottom, lockable, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- With 3 U just one extractor handle is needed at the bottom

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 11 02 42



Extractor handle, top, lockable, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- The top extractor handle is standardly used from 6 U onwards

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 11 02 43



Extractor handle, bottom, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- With 3 U just one extractor handle is needed at the bottom

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 10 01 53



Accessories

• Extractors

Extractor handle, top, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- The top extractor handle is standardly used from 6 U onwards

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 10 01 54



Telecom extractor handle, bottom, lockable, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- With 3 U just one extractor handle is needed at the bottom

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 11 02 44



Telecom extractor handle, top, lockable, with ESD contact pin

Material

Handle, plastic, RAL 9005
Socket, zinc die-cast

Delivery form

In units for self-assembly

Notes

- Can only be used in conjunction with front rail with incremented holes
- The top extractor handle is standardly used from 6 U onwards

Scope of delivery

Extractor handle, mounted 1 pc
Assembly kit 1 pc

Order no.

23 11 02 45



Micro switch

Scope of delivery

Micro switch 1 pc
Assembly kit 1 pc

Delivery form

In units for self-assembly

Order no.

23 11 02 46

Accessories

• Handles

The handles are mounted to the front panels for plug-in-modules. They facilitate insertion and extraction of the front panels. Molded handles are equipped with inscription plates for labeling purposes.

Extractor handles are used for higher insertion and extraction forces. The extractor handles are prepared for mounting of the coding clips with ESD contact pin.

Molded handle

Material

Molded handles made of Noryl (UL-94 V 1).
Identification plate made of aluminum clear anodized.

Scope of delivery

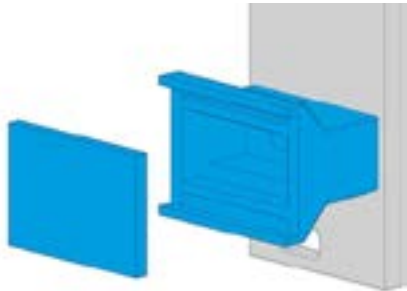
Molded handle 1 pc
Identification plate 1 pc

Delivery form

In units for self-assembly

Notes

- The identification plates are simply snapped on to the molded handles
- Assembly hardware must be ordered separately



W	Gray	Black
3 HP	79 35 01 00	79 35 10 00
4 HP	79 35 02 00	79 35 11 00
5 HP	79 35 03 00	79 35 12 00
6 HP	79 35 04 00	79 35 13 00
7 HP	79 35 05 00	79 35 14 00
8 HP	79 35 06 00	79 35 15 00
10 HP	79 35 07 00	79 35 16 00
12 HP	79 35 08 00	79 35 17 00

Molded handle

Material

Molded handles made of Noryl (UL-94 V 1).
Identification plate made of aluminum clear anodized.

Scope of delivery

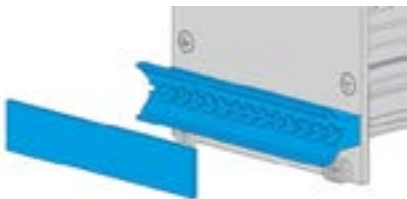
Molded handle 1 pc
Identification plate 1 pc

Delivery form

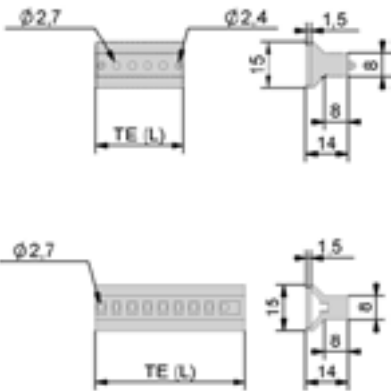
In units for self-assembly

Notes

- The identification plates are simply snapped on to the molded handles
- Assembly hardware must be ordered separately



W	Gray	Black
14 HP	79 35 19 00	79 35 22 00
16 HP	79 35 25 00	79 35 26 00
21 HP	79 35 20 00	79 35 23 00
28 HP	79 35 21 00	79 35 24 00
42 HP	79 35 09 00	79 35 18 00



Accessories

- Board holders

Front panels for plug-in-modules are mechanically connected to the PC boards by means of the board holder.

Board holder, one-piece

Material

PA 6, fiber glass 30%, black

Scope of delivery

Board holder, one-piece 1 pc

Delivery form

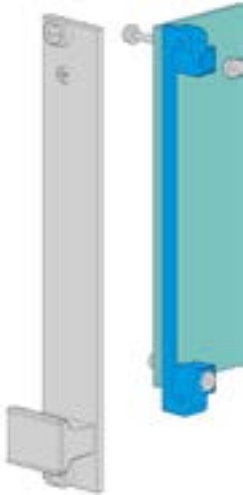
In units for self-assembly

Notes

- One-piece, for Eurocard height H = 100 mm
- Order 2 for 6 U
- Assembly hardware must be ordered separately

Order no.

79 30 00 00



Board holder – Front panels

Material

Zinc die-cast

Scope of delivery

Board holder 1 pc

Delivery form

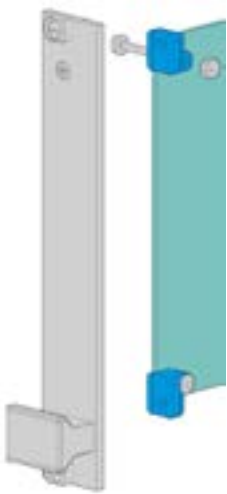
In units for self-assembly

Notes

- With M2.5 threads for front-panel and PC board mounting
- Assembly hardware must be ordered separately

Order no.

79 30 02 00



Accessories

Usage		Description	Version material	Standard	Front panels	Front Panels for Plug-in Modules	19" Front Panels	Order no	PU
Mounting of horizontal rails		Cylinder head screw with Torx T20, self-locking	M4 x 20 mm Steel nickle-plated	ISO 7049		•		79 91 02 01	1 PU (100 pcs)
		Cylinder head screw with low head	M4 x 12 mm Steel zinc-plated	DIN 7984			•	79 91 02 00	1 PU (100 pcs)
		Posidrive pan head screw, self-locking	M4 x 12 mm Steel nickle-plated	Similar to DIN 7985			•	79 91 01 00	1 PU (100 pcs)
Individual mounting to side plate		Insert nut	M4 Stainless steel			•		79 91 41 00	1 PU (10 pcs)
Mounting of subrack to 19" rack		Pan head screw with Torx T30	M6 x 16 mm Stainless steel	ISO 14583	•	•	•	79 91 85 00	1 PU (100 pcs)
		Posidrive pan head screw	M6 x 16 mm Steel nickle-plated	DIN 7985	•	•	•	79 91 23 00	1 PU (100 pcs)
		Plastic washer	d = 6.8 mm PP black		•	•	•	79 91 30 00	1 PU (100 pcs)
		Cage nut	M6 Steel zinc-plated		•	•	•	79 91 31 00	1 PU (100 pcs)
Mounting of card guide		Countersunk screw with Phillips head	2.5 x 6 mm Steel zinc-plated	WN 1413	•	•	•	79 51 50 48	1 PU (100 pcs)
		Posidrive pan head screw	M2.5 x 12 mm Steel nickle-plated	DIN 7985	•	•	•	79 91 13 00	1 PU (100 pcs)
Mounting of Z-rails, perforated rails		Posidrive pan head screw	M2.5 x 8 mm Steel nickle-plated	DIN 7985	•	•	•	79 91 08 00	1 PU (100 pcs)

Accessories

Usage		Description	Version material	Standard	Front panels	Front Panels for Plug-in Modules	19" Front Panels	Order no	PU
Mounting collar screws to front pane		Posidrive pan head screw	M2.5 x 8 mm Steel nickle-plated	DIN 7985	•	•	•	23 10 03 26	1 PU (100 pcs)
Mounting collar screws to front pane		Posidrive pan head screw	M2.5 x 8 mm zinc-plated	DIN 7985	•	•	•	79 91 87 00	1 PU (100 pcs)
Mounting collar screws to front panel		Posidrive pan head screw	M2.5 x 12 mm Steel nickle-plated	DIN 7985	•	•	•	79 91 13 00	1 PU (100 pcs)
Mounting molded handles to front pane		Posidrive pan head screw	M2.5 x 12 mm zinc-plated	DIN 7985	•	•	•	79 91 88 00	1 PU (100 pcs)
Mounting molded handles to front panel		Posidrive pan head screw	KA3.0 x 12 mm Steel zinc-plated	PT®	•	•	•	79 51 50 47	1 PU (100 pcs)
Mounting board holder to front pane		Hexagon nut	M2.5 Steel nickle-plated	DIN 934	•	•	•	79 91 07 00	1 PU (100 pcs)
Mounting board holder to front panel		Pan head screw with Torx T20, self-locking	M4 x 6 mm Stainless steel	similar to DIN 7985	•	•		23 10 03 30	1 PU (100 pcs)
Mounting board holder to front panel		Posidrive pan head screw, self-locking	M4 x 6 mm Steel nickle-plated	DIN 7985			•	79 91 21 00	1 PU (100 pcs)
Mounting front panel to subrack		Cylinder head screw with Torx T20, self-locking	M4 x 20 mm Steel nickle-plated	ISO 7049		•		79 91 02 01	1 PU (100 pcs)
		Cylinder head screw with low head	M4 x 12 mm Steel zinc-plated	DIN 798			•	79 91 02 00	1 PU (100 pcs)
Mounting threaded inserts		Threaded inserts with lace	M4 x 20 mm Stainless steel zinc-plated	DIN 914	•	•	•	79 91 89 00	1 PU (100 pcs)

Accessories

Usage		Description	Version material	Standard	Front panels	Front Panels for Plug-in Modules	19" Front Panels	Order no	PU
Mounting 19" front panels to case / cabinet		Pan head screw with Torx T30	M6x16 stainless steel	ISO 14583			•	79 91 85 00	1 PU (100 pcs)
Mounting 19" front panels to case / cabinet		Cross-recessed pan head screw	M6x16 steel, nickel-plated	DIN 7985			•	79 91 23 00	1 PU (100 pcs)
Mounting 19" front panels to case / cabinet		Plastic washer	d = 6.8mm PP black				•	79 91 30 00	1 PU (100 pcs)
Mounting 19" front panels to case / cabinet		Cage nut	M6 steel zinc-plated				•	79 91 31 00	1 PU (100 pcs)
Mounting front panel to subrack		Knurled collar screw	M2-5 steel nickel-plated		•	•		79 51 50 01	1 PU (100 pcs)
Mounting front panel to subrack		Knurled collar screw	M2.5 steel black alodined		•	•		79 51 50 02	1 PU (100 pcs)
Mounting front panel to subrack		Slotted collar screw	M2.5 steel nickel-plated		•	•		79 51 50 03	1 PU (100 pcs)
Mounting front panel to subrack		Slotted collar screw	M2.5 steel black alodined		•	•		79 51 50 04	1 PU (100 pcs)
Mounting front panel to subrack		Cross-recessed collar screw	M2.5 steel nickel-plated		•	•		79 51 50 05	1 PU (100 pcs)
Mounting front panel to subrack		Cross-recessed collar screw	M2.5 steel black alodined		•	•		79 51 50 06	1 PU (100 pcs)
Mounting front panel to subrack		Combined slotted/cross-recessed collar screw	M2-5 steel nickel-plated		•	•		79 51 50 07	1 PU (100 pcs)

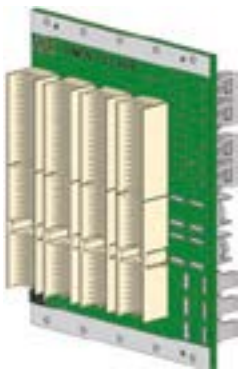
Accessories

Usage		Description	Version material	Standard	Front panels	Front Panels for Plug-in Modules	19" Front Panels	Order no	PU
Mounting collar screws to front pane		panel Metal sleeve	M2.5 steel nickel-plated		•	•		79 51 50 10	1 PU (100 pcs)
Mounting collar screws to front pane		panel Plastic sleeve	M2.5 gray		•	•		79 51 40 01	1 PU (100 pcs)
Mounting collar screws to front panel		panel Plastic sleeve	M2.5 black		•	•		79 51 40 02	1 PU (100 pcs)
Mounting molded handles to front pane		Cross-recessed countersunk head screw	M2.5x14 A2	DIN 965		•		79 91 34 00	1 PU (100 pcs)
Mounting molded handles to front panel		front panel Square nut	M2.5 steel zinc-plated	DIN 562		•		79 91 35 00	1 PU (100 pcs)
Mounting board holder to front pane		Cross-recessed raised countersunk head screw	M2.5x8 steel nickel-plated	DIN 966		•		79 91 05 00	1 PU (100 pcs)
Mounting board holder to front panel		Cross-recessed raised countersunk head screw	M2.5x8 steel black zinc-plated	DIN 966		•		79 91 82 00	1 PU (100 pcs)
Mounting board holder to front panel		panel Hexagon nut	M2.5 steel nickel-plated	DIN 934		•		79 91 07 00	1 PU (100 pcs)
Mounting front panel to subrack		Quick-release fastener				•		79 91 50 00	1 PU (100 pcs)
Mounting hinges to subrack		Square nut with plastic slide	M2.5			•		79 91 09 00	1 PU (100 pcs)
Mounting hinges to subrack		Square nut with plastic slide	M3			•		79 91 12 00	1 PU (100 pcs)

Backplane

Product information

The CompactPCI is based on a PICMG standard and thanks to its reliability and robust design is suitable for use in industrial environments. Here the classical PCI bus is transposed to a 19"-compliant platform.



Standards

- PICMG specification 2.0 R3.0 core specification, 2.1 R2.0 compliant
- Hot swap specification
- 2.9 R1.0 system management specification
- JTAG interface, 33 and 66MHz configurable (up to max. 5 slots)
- Connector class 2
- Power connections M4, ATX and HDD connectors

Scope of delivery

- Backplane fully equipped and tested (connection / interface test)
- Screw/plug-in connectors for power input
- Stabilization bars with 6U

Delivery form

In units for self-assembly

Note

- Different layouts or number of slots available on request

Overview

Product Information	Page
Configuration example	...
Surface finishing	...
Dimension diagrams	...

Basic Units	H	Slots	Data Size		System Slot		Rear I/O	Page
			32 Bit	64 Bit	R	L		
- CompactPCI 3U	3U	max 8	●	●	●	○	○	...
- CompactPCI 6U	6U	max 8	●	●	●	○	○	...

○ On request

Accessories	Page
Isolating strips	...
Assembly components	...

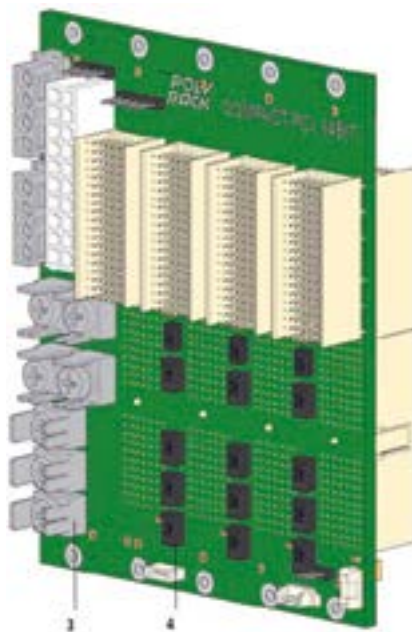
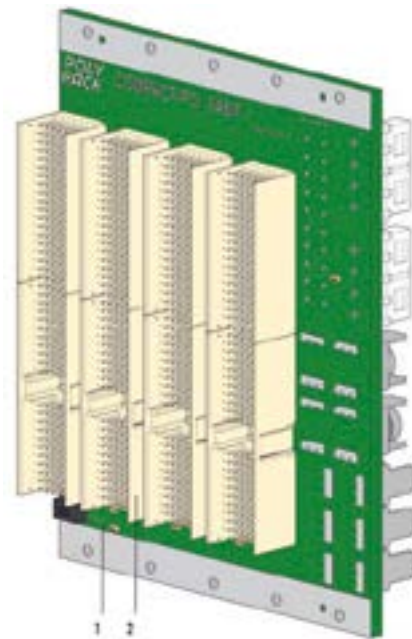
• Configuration example

The diagram shows the configuration of a CompactPCI 3U

- 1 Printed circuit board
- 2 Connector
- 3 Power elements
- 4 Components

Surface finishing

PC board = immersion tin



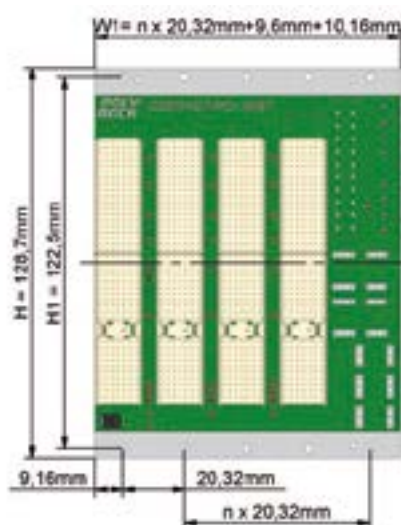
Basic units

The basic units differ with regard to data size and the position of the system slot.

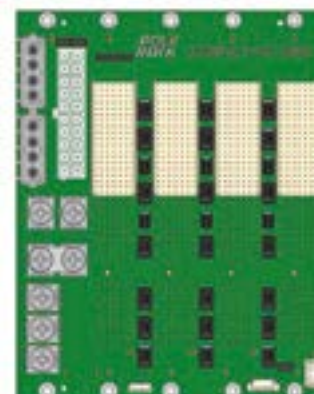
• Dimension diagrams

CompactPCI 3U front view

W1 = total width
n = number of slots
PCB thickness = 3.20 mm

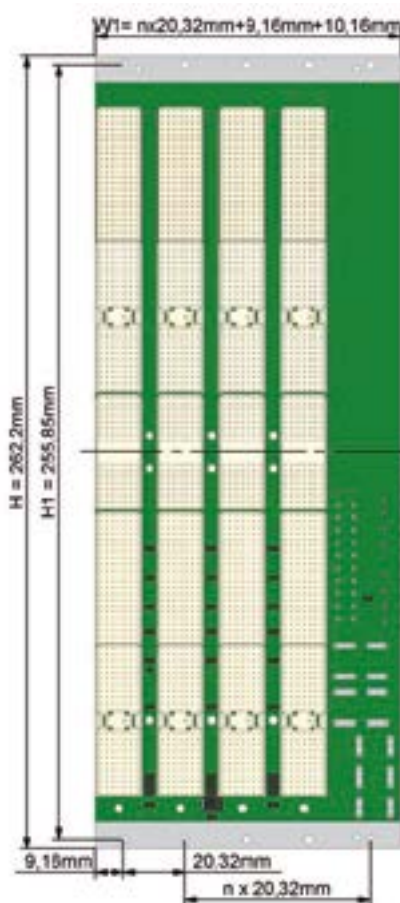


CompactPCI 3U rear view

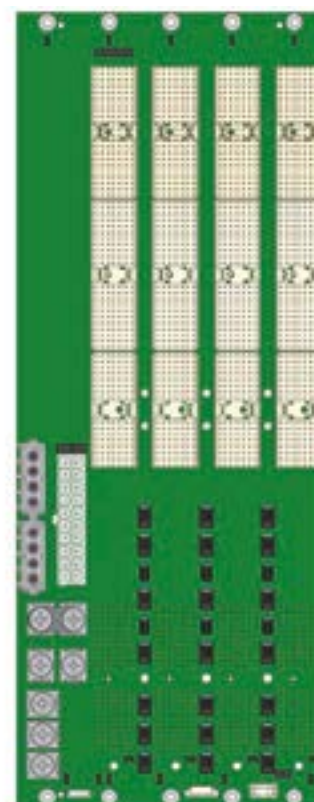


CompactPCI 6U front view

W1 = total width
n = number of slots
PCB thickness = 3.20 mm



CompactPCI 6U rear view



● CompactPCI 3U

32 bit or 64 bit, system slot either right or left **Note** Rear I/O only with 32 bit version

Scope of delivery

Backplane, fully equipped

Terminal screws M4

for power input elements - 1 pc

Delivery form

In units for self-assembly

Notes

- Number of layers = 10
- Number and configuration of power elements on request



Ordering table

Model	Slots	32 Bit	32 Bit	64 Bit	64 Bit
		System slot right	System slot left	System slot right	System slot left
CPCI-3U, 4 slot, 32bit, 64bit, S*	4	64 23 00 01	64 23 00 06	64 23 00 11	
CPCI-3U, 5 slot, 32bit, S*	5		64 23 00 07		
CPCI-3U, 6 slot, 32bit, S*	6	64 23 00 03			
CPCI-3U, 7 slot, 32bit, S*	7	64 23 00 04			
CPCI-3U, 8 slot, 32bit, 64bit, S*	8	64 23 00 05	64 23 00 10	64 23 00 15	

* according to table

● CompactPCI 6U

64 bit, system slot either right or left, with Rear I/O

Scope of delivery

Backplane, fully equipped

Terminal screws M4

for power input elements - 1 pc

Delivery form

In units for self-assembly

Notes

- Number of layers = 10
- Number and configuration of power elements on request



Ordering table

Model	Slots	64 Bit	64 Bit
		System slot right	System slot left
CPCI-6U, 4 slot, 64bit, S*	4	64 23 00 21	
CPCI-6U, 6 slot, 64bit, S*	6	64 23 00 23	64 23 00 28
CPCI-6U, 8 slot, 64bit, S*	8	64 23 00 25	64 23 00 30

* according to table

Fan Trays

Product information

Our fan trays are designed as circulation fans, they draw the air in from below and blow it into the assemblies located above.

You can choose between various models and can at all times upgrade the fan to convert to forced heat dissipation of individual subracks (also when several subracks are stacked one above the other).



Standards

- Isolation test in accordance with EN 60950
- Protection class (AC): 1
- Overvoltage category: 2
- IP rating: IP20
- Protection against contact: EN292, T1 and T2

Overview

Product Information	Page
Configuration example	...
Surface finishing	...
Technical specifications of components	...
Dimension diagrams	...

Series

Basic Units	Operating voltage		Power line connector	Fan failure	System Slot	ON/OFF switch	Connected Power inlet	Page
	AC	DC			Temperature regulation			
- FT01-1	•			-	-	-		...
- FT01-2	•		•	-	-	•	•	...
- FT02-1		•		-	-	-		...
- FT01-2		•		•	•	-		...

Accessories	Page
Pressure fan conversion kit	...
Power cables	...
Assembly components	...

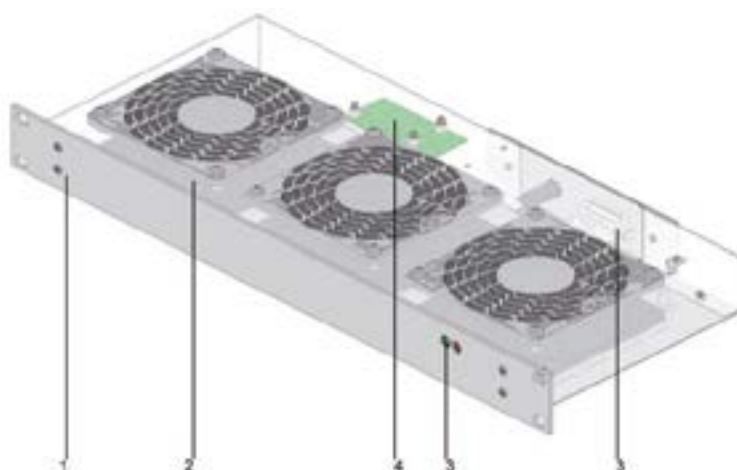
• Configuration example

The diagram shows the configuration of a series FT02-2 fan tray

- 1 Mechanical components
- 2 Fan
- 3 Wiring, with operating and connecting elements
- 4 Monitoring electronics

Surface finishing

- Main structure stainless steel 4016
- Front panels = front anodized / rear alodined



Technical specifications of components

Model	Dimension	Fan performance	Noise	Use		Note
				FT01-1	FT01-2	
AC	119 x 119 x 38 mm	100 m ³	32dB(A)	●	●	115V version available on request

Model	Dimension	Fan performance	Noise	Use		Note
				FT02-1	FT02-2	
DC	119 x 119 x 32 mm	170 m ³	45dB(A)	●		
DC	119 x 119 x 32 mm	85 - 170 m ³	45dB(A)		●	Speed temperature-controlled, FAIL signaling

Basic units

The basic units differ with regard to operating voltage (AC or DC) and configuration

• FT01-1 and FT01-2 Dimension diagrams

FT01-1 front view



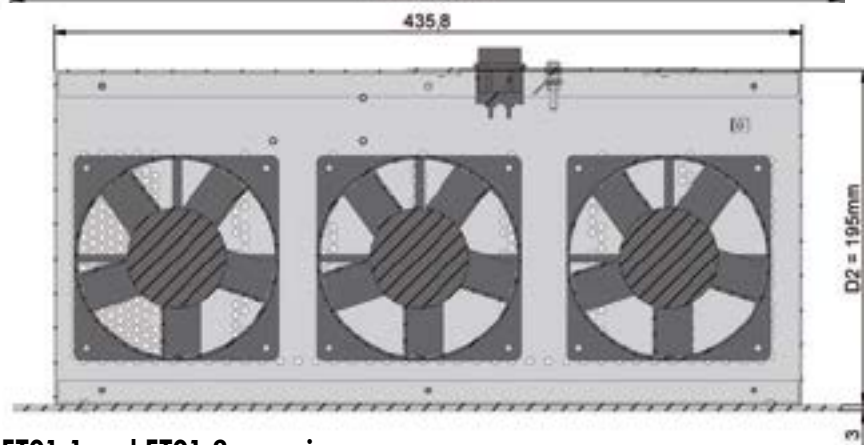
FT01-2 front view



FT01-1 and FT01-2 top view

D2 = mounting depth in 19" rack (without allowance for power components etc.)

Power inlet not included in FT01-1



FT01-1 and FT01-2 side view

Power inlet not included in FT01-1



FT01-1 and FT01-2 rear view

Power inlet not included in FT01-1

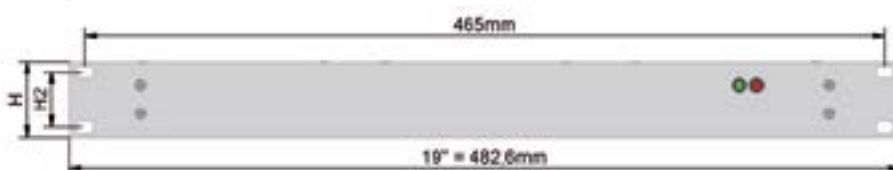


• FT02-1 and FT02-2 Dimension diagrams

FT02-1 front view



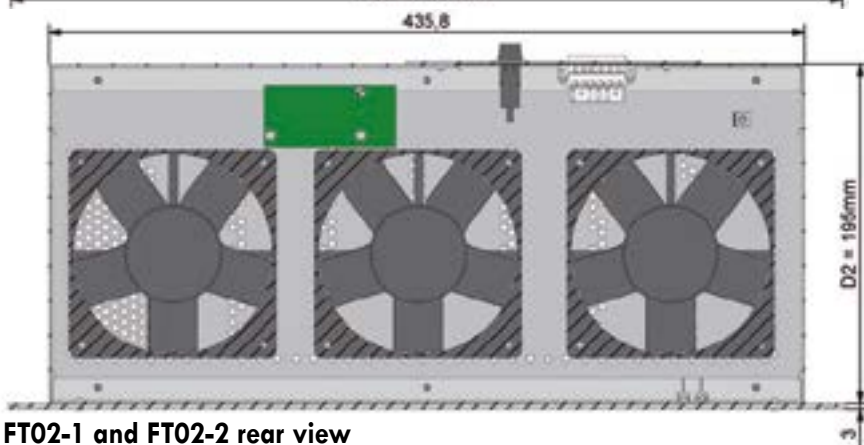
FT02-2 front view



FT02-1 and FT02-2 top view

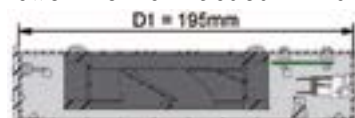
D2 = mounting depth in 19" rack (without allowance for power components etc.)

Power inlet not included in FT02-1



FT02-1 and FT02-2 side view

Power inlet not included in FT02-1



FT02-1 and FT02-2 rear view



● FT01-1

Application-optimized version for use with AC voltage supply

Scope of delivery

Mechanical parts - 1 pc

Fans - 3 pcs

Wiring and connecting elements 1 pc

Delivery form

Fully assembled and functionality and safety tested



Ordering table

Model	Operating voltage	Power consumption	Number of fans	ON/OFF switch	I _{max} power inlet	Order no
FT01-1	230 VAC / 50Hz	15 W	3	-	-	68 28 20 02

● FT01-2

As FT01-1, but with power switch and power inlet

Scope of delivery

Mechanical parts 1 pc

Fans 3 pcs

Wiring and connecting elements 1 pc

ON/OFF switch 1 pc

Power inlet 1 pc

Delivery form

Fully assembled and functionality and safety tested

Note

– Power inlet, switched



Ordering table

Model	Operating voltage	Power consumption	Number of fans	ON/OFF switch	I _{max} power inlet	Order no
FT01-2	230 VAC / 50Hz	15 - 20W	3	●	max. 5A	68 28 20 22

● FT02-1

Application-optimized version for use with DC voltage supply

Scope of delivery

Mechanical parts 1 pc

Fans 3 pcs

Wiring and connecting elements 1 pc

Delivery form

Fully assembled and functionality and safety tested



Ordering table

Model	Operating voltage	Power consumption	Number of fans	Monitoring electronics Fan failure	Temperature regulation	Order no
FT02-1	24VDC	15 W	3	-	-	68 28 40 01

● FT02-2

As FT02-1, but with temperature and speed regulation

Scope of delivery

Mechanical parts 1 pc

Fans 3 pcs

Wiring and connecting elements 1 pc

Monitoring electronics 1 pc

Delivery form

Fully assembled and functionality and safety tested



Ordering table

Model	Operating voltage	Power consumption	Number of fans	Monitoring electronics Fan failure	Temperature regulation	Order no
FT02-2	24VDC	16 W	3	●	●	68 28 40 11

Divisione Custom

• *Presentazione*

L'evoluzione del mercato dell'elettronica, nel quale siamo presenti come produttori di contenitori da 40 anni, ha portato l'utilizzatore dei nostri subracks a utilizzare soluzioni "customizzate" in molte applicazioni.

Diventa così importante anche per noi seguire il Cliente nelle sue esigenze di produrre una soluzione meccanica a disegno.

Siamo specializzati nel "vestire" con contenitori a disegno, anche tutte quelle schede elettroniche con dimensioni fuori dallo standard eurocard.

Il nostro Ufficio Tecnico può Consigliarvi e Progettare assieme a Voi, o per conto Vostro su vostre indicazioni, delle soluzioni ad Hoc.

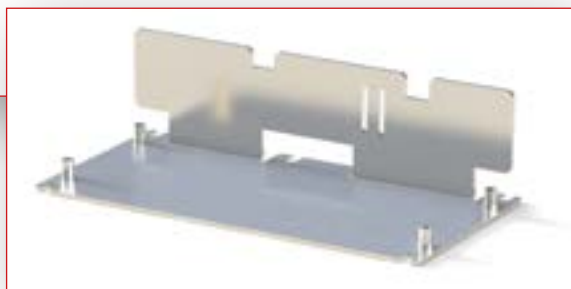
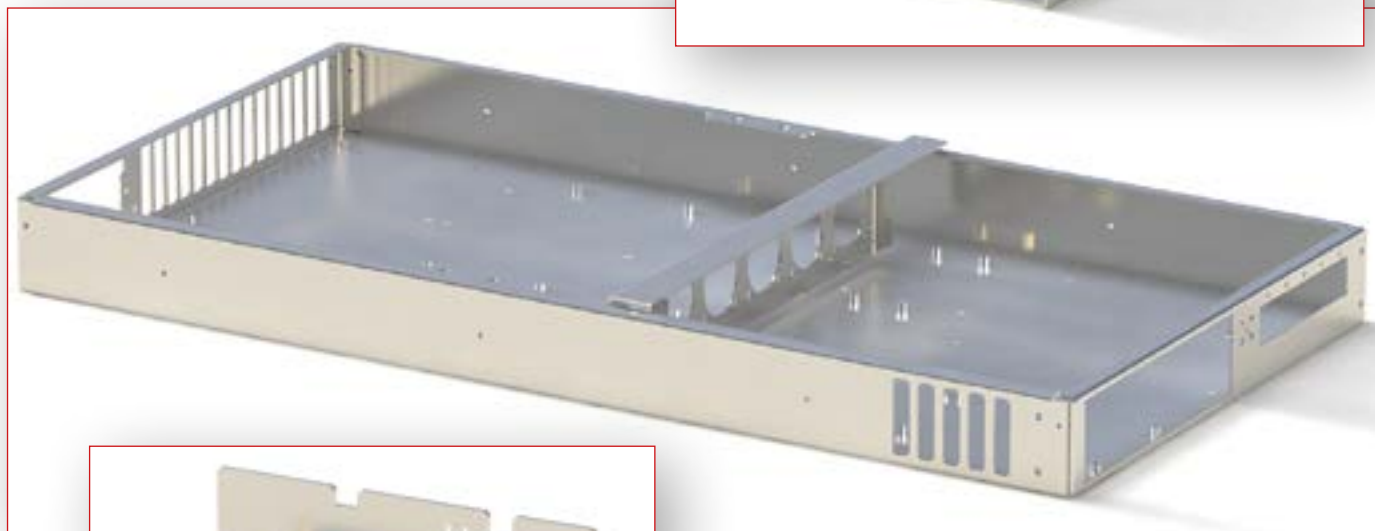
Possiamo comunicare attraverso delle Bozze e dei disegni tecnici, costruendo insieme la soluzione ideale.

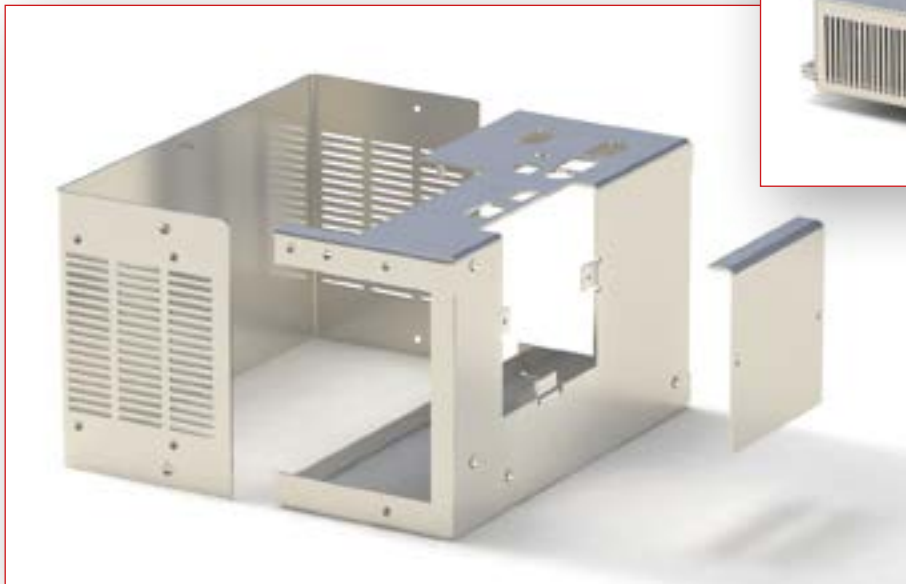
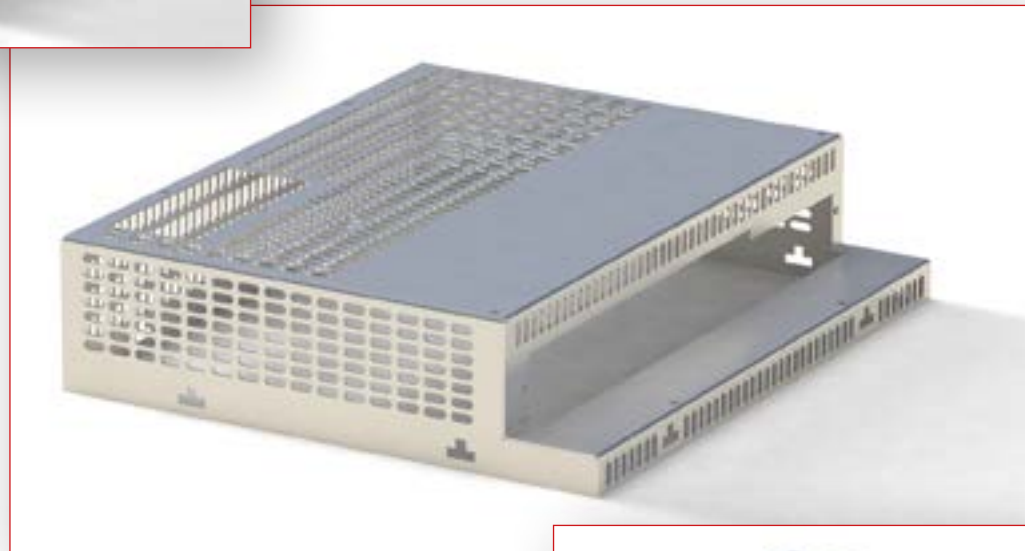
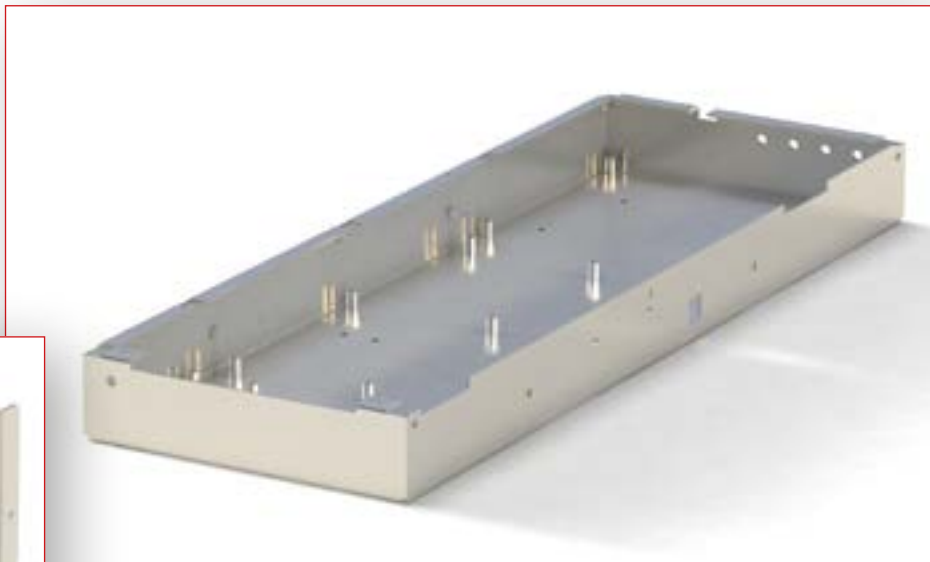
Comunichiamo con qualsiasi formato di disegno o di immagine:

.PDF .DWG .DXF .JPEG .STEP .IGES e molti altri...

I contenitori costruiti partendo dalla lamiera, vengono prodotti utilizzando un parco macchine all'avanguardia, considerate inoltre che vengono trattati superficialmente e serigrafati all'interno dei nostri stabilimenti.

Vi ringraziamo per opportunità di collaborazione...









TORNERIA

TORNERIA

TORNERIA

Presentazione

La nostra torneria è al servizio della clientela per la produzione di innumerevoli tipologie di lavorazioni per grandi, medie e piccole serie, nonché la realizzazione di pezzi particolarmente complessi, puntando sempre alla qualità ed all'affidabilità dei prodotti e alla massima soddisfazione del cliente.

In questi ultimi anni siamo riusciti nell'impresa di organizzare un gruppo di lavoro attento alla ricerca ed allo sviluppo di tecnologie produttive innovative. La nostra torneria si è consolidata anche per l'incremento del parco macchine e l'installazione di impianti particolarmente evoluti.

Sono stati raggiunti significativi traguardi che, uniti ad una particolare sensibilità nel risolvere problemi specifici, assicurano alla nostra clientela un elevato grado di affidabilità e qualità.

Soddisfiamo qualsiasi richiesta del cliente: I reparti produttivi e l'ufficio Controllo Qualità sono dotati di moderne ed efficienti attrezzature, aggiornate e rinnovate di frequente al fine di rispondere efficacemente alle esigenze produttive.

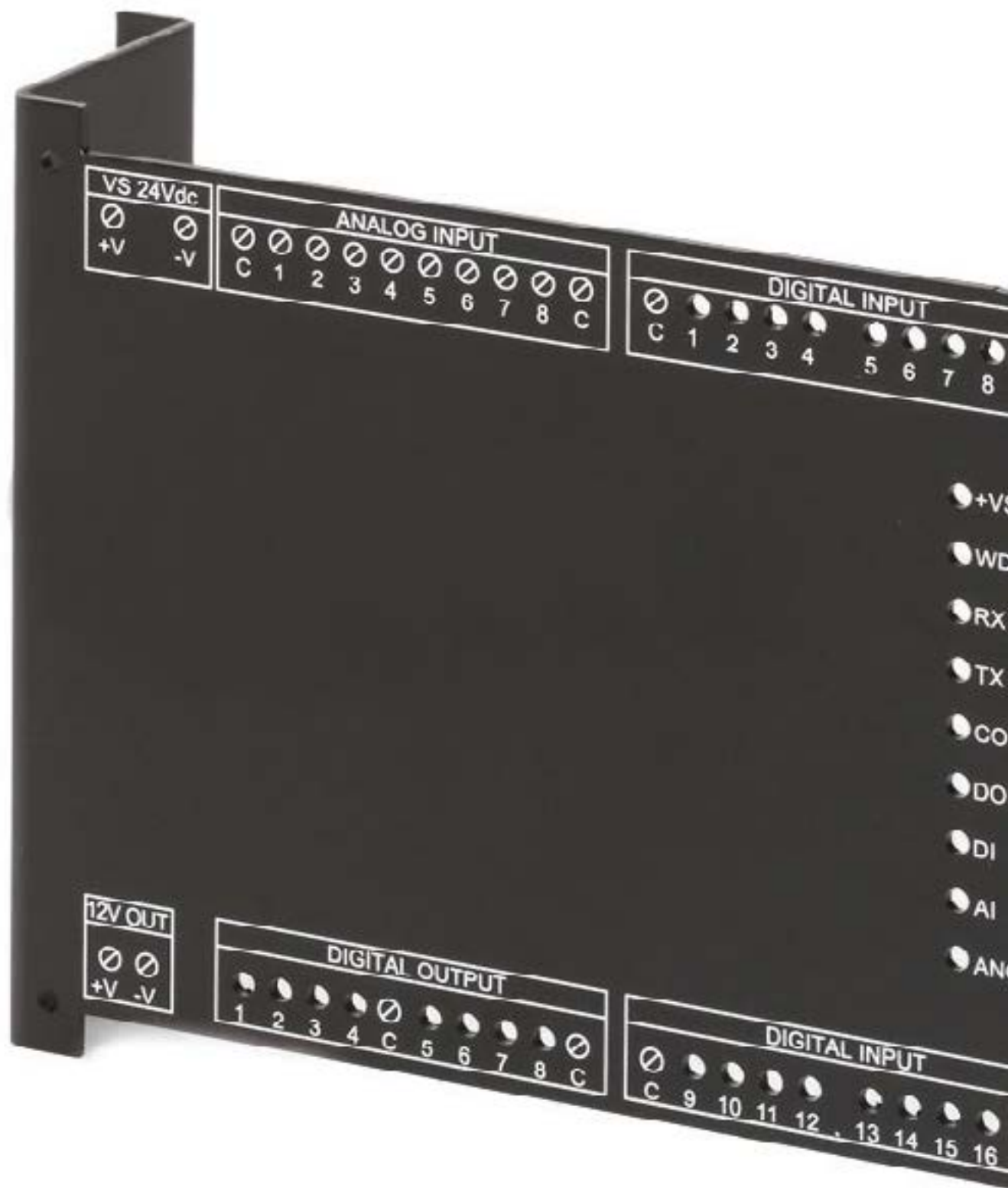
Gli obiettivi che ci siamo dati sono:

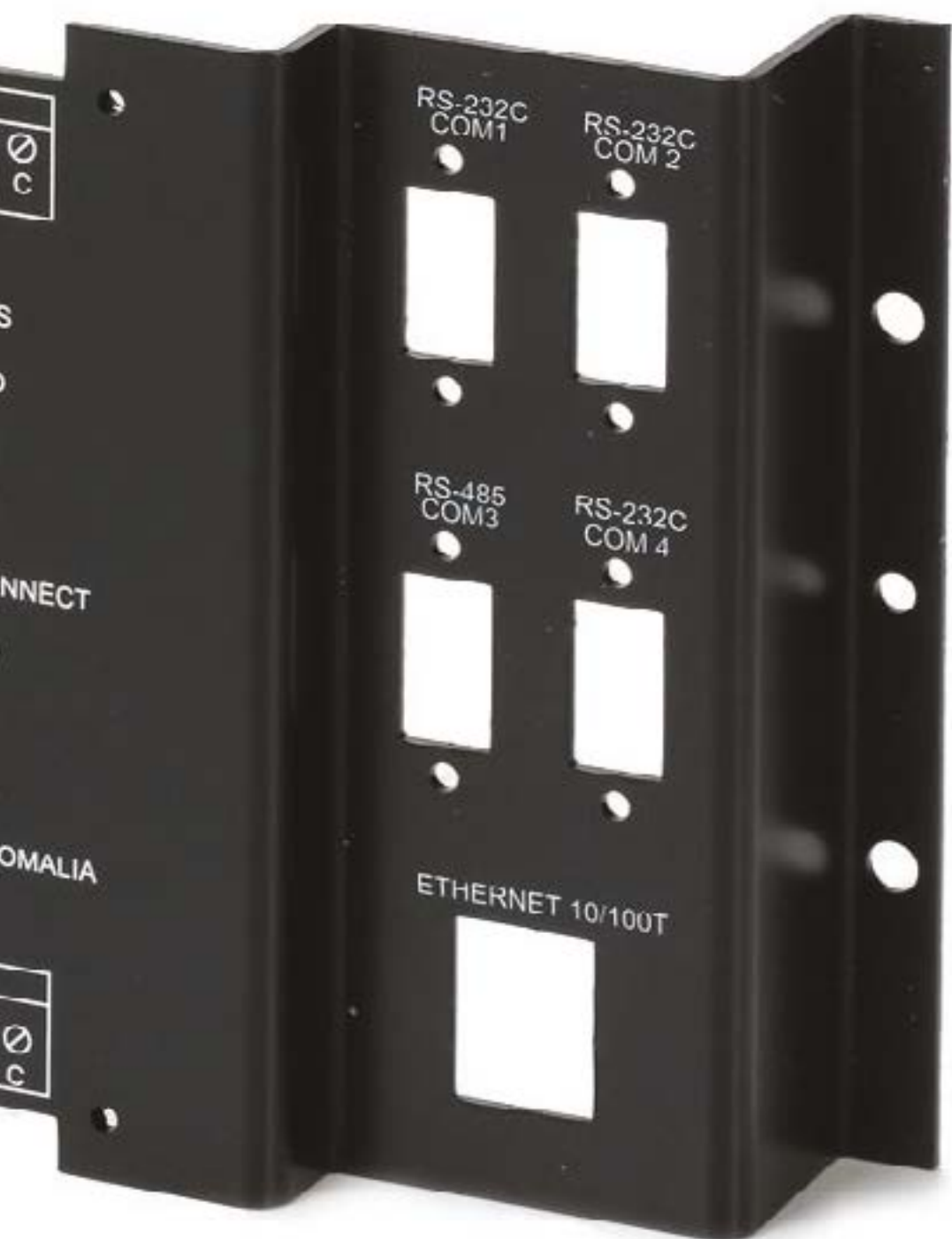
- Fornitura di prodotti con percentuale di difetti tendente a zero;
- Costruzione di particolari che soddisfino esigenze ben definite di impiego, con particolare cura dell'estetica e della funzionalità;
- Riduzione dei costi della non qualità;
- Ottimizzazione dei tempi di fornitura.

Per il raggiungimento di questi obiettivi, siamo costantemente impegnati al miglioramento della nostra organizzazione ed in continui studi per il perfezionamento dei cicli produttivi di fabbricazione e di controllo.









OFFICINA MECCANICA

OFFICINA MECCANICA

RACK
POOL

GFP

Service

OFFICINA MECCANICA

Presentazione

La nostra officina meccanica opera nel settore delle lavorazioni meccaniche di tornitura e fresatura metalli ad alta precisione per conto terzi.

Il nostro scopo sono la qualità ed affidabilità dei prodotti, requisiti di base nel settore meccanico.

La nostra officina si avvale di un parco macchine nuovissimo ed altamente specializzato e personale qualificato che consentono con grande flessibilità di soddisfare le richieste della clientela e di realizzare parti meccaniche destinate ai più vari settori. Continui aggiornamenti tecnologici e professionali, hanno reso la nostra officina una struttura produttiva sempre più flessibile e orientata alla soddisfazione del cliente. L'organizzazione aziendale, l'attenta gestione delle commesse, la continua ricerca della qualità, rendono l'impresa una realtà aziendale affidabile ed in linea con le esigenze di mercato.

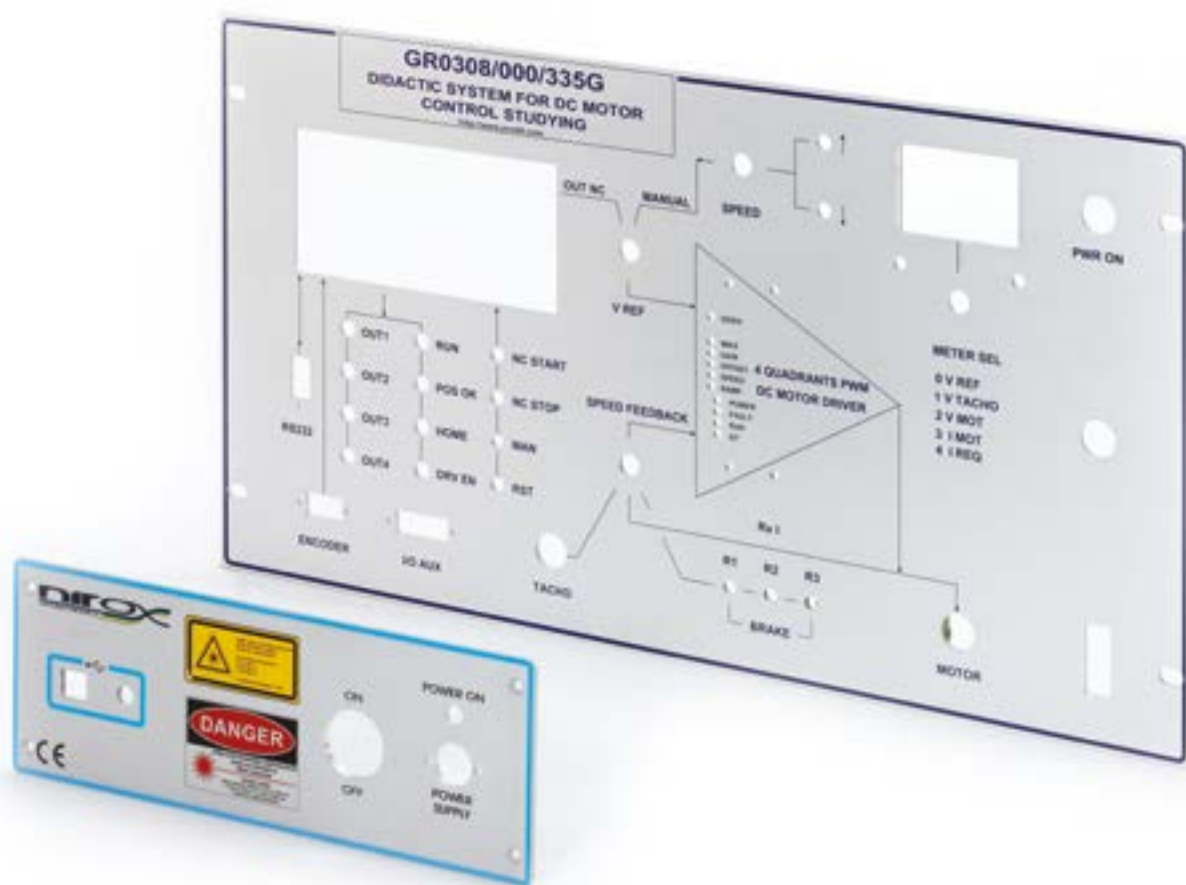


Lavorazioni Possibili:

- *Punzonatura - Taglio Laser - Piegatura - Fresatura - Tornitura - Tranciatura - Taglio - Infinite Customizzazioni*









TRATTAMENTI GALVANICI

TRATTAMENTI GALVANICI

Service



RACK
POOL

TRATTAMENTI GALVANICI

Presentazione

Da anni la nostra azienda opera nel campo della componentistica meccanica e siamo specializzati nei trattamenti superficiali dell'alluminio e delle sue leghe.

GFP RACK POOL garantisce, per ogni tipologia di trattamento e per ogni fase del relativo ciclo, la massima cura e rispetto per gli standard richiesti, siamo particolarmente attenti alle esigenze di mercato e riteniamo di fondamentale importanza la soddisfazione del cliente, attraverso l'adozione di una corretta e costante politica di assicurazione e controllo della qualità.

Per il raggiungimento di questi obiettivi, siamo costantemente impegnati al miglioramento della nostra organizzazione ed in continui studi per il perfezionamento dei cicli produttivi e di controllo.

I processi di Ossidazione Anodica detta anche Anodizzazione e Passivazione vengono effettuati immergendo i pezzi da trattare nelle apposite vasche. Le fasi dei trattamenti vengono presentate di seguito:

● Ossidazione Anodica

L'**Ossidazione Anodica** (detta anche Anodizzazione) è un processo elettrochimico mediante il quale uno strato protettivo di ossido di alluminio si forma sulla superficie del pezzo trattato.

Il trattamento consente di proteggere l'alluminio dall'aggressione degli agenti atmosferici, aumentare la durezza superficiale, aumentare la resistenza all'usura e all'abrasione, fornire un moderato isolamento termico e migliorare altre caratteristiche come l'incollaggio.

Fasi del trattamento:

- Preparazione:

Fissaggio dei pezzi da trattare su appositi telai;

- Sgrassaggio:

Rimozione dei residui di grasso;

- Satinatura chimica:

Rende opaca/semilucida ed omogenea la superficie rimuovendo i residui di lavorazione;

- Neutralizzazione:

Neutralizza l'alcalinità residua e rimuove la patina;

- Ossidazione anodica:

Consente la formazione del caratteristico strato protettivo di ossido d'alluminio;

- Fissaggio;

Assicura la chiusura dei pori rendendo lo strato anodico vetroso ed impermeabile, aumentandone così la resistenza alla corrosione e alla perdita di colorante;

- Asciugatura:

Viene effettuata in forno con aria forzata;

- Smontaggio e imballaggio:

I pezzi vengono rimossi ed imballati o inviati alle successive fasi lavorative.



● **Passivazione Surtec 650**

La Passivazione SurTec 650 è una passivazione incolore con Cromo Trivalente che raggiunge elevati gradi di resistenza alla corrosione: il processo resiste a 336 h in nebbia salina semplice e 150 h in nebbia salina acetica, rispettando le normative MIL-DTL 81706B e MIL-DTL-5541F. Il prodotto presenta bassa resistenza elettrica (< 5000 Ohm per pollice² MIL-DTL-81706B) e resiste a elevate temperature lasciando inalterate le proprietà protettive.

E' la soluzione ideale in quanto le performance tecniche sono simili a quelle della cromatazione gialla, inoltre il trattamento con Surtec 650 è completamente atossico.

Fasi del trattamento:

- Preparazione:

Fissaggio dei pezzi da trattare su appositi ganci;

- Sgrassaggio:

Rimuove i residui di grasso;

- Satinatura chimica:

Rende opaca/semilucida ed omogenea la superficie rimuovendo i residui di lavorazione;

- Neutralizzazione:

Neutralizza l'alcalinità residua e rimuove la patina;

- Cromatazione incolore:

Bagno in cromo trivalente per la formazione del film protettivo conduttivo;

- Lavaggio:

I pezzi trattati vengono accuratamente lavati in acqua demineralizzata;

- Asciugatura:

Viene effettuata in forno con aria forzata;

- Smontaggio e imballaggio:

I pezzi vengono rimossi ed imballati o inviati alle successive fasi lavorative.

Offriamo inoltre un servizio di:

● **Zincatura**

la zincatura è il processo con cui viene applicato un rivestimento di zinco sul manufatto metallico per proteggerlo dalla corrosione.

● **Nichelatura**

Lo scopo del trattamento è quello di modificare le caratteristiche superficiali dei materiali lavorati mediante l'applicazione di un sottile strato di nichel.

● **Argentatura**

L'argentatura è eseguita in elettrotecnica per favorire i contatti elettrici e a spessore.

● **Cataforesi**

La verniciatura in cataforesi è un trattamento superficiale di verniciatura in grado di conferire a elementi in ferro, acciaio e altre leghe (conduttori di corrente) una notevole resistenza alla corrosione; è caratterizzata dal deposito uniforme di una resina epossidica o acrilica sulla superficie dell'elemento, assicurando per lungo tempo una straordinaria protezione.

● **Materiali e finiture**

Per richiedere il trattamento galvanico o il tipo di materiale / finitura desiderati è sufficiente aggiungere i seguenti suffissi
I codice articolo:

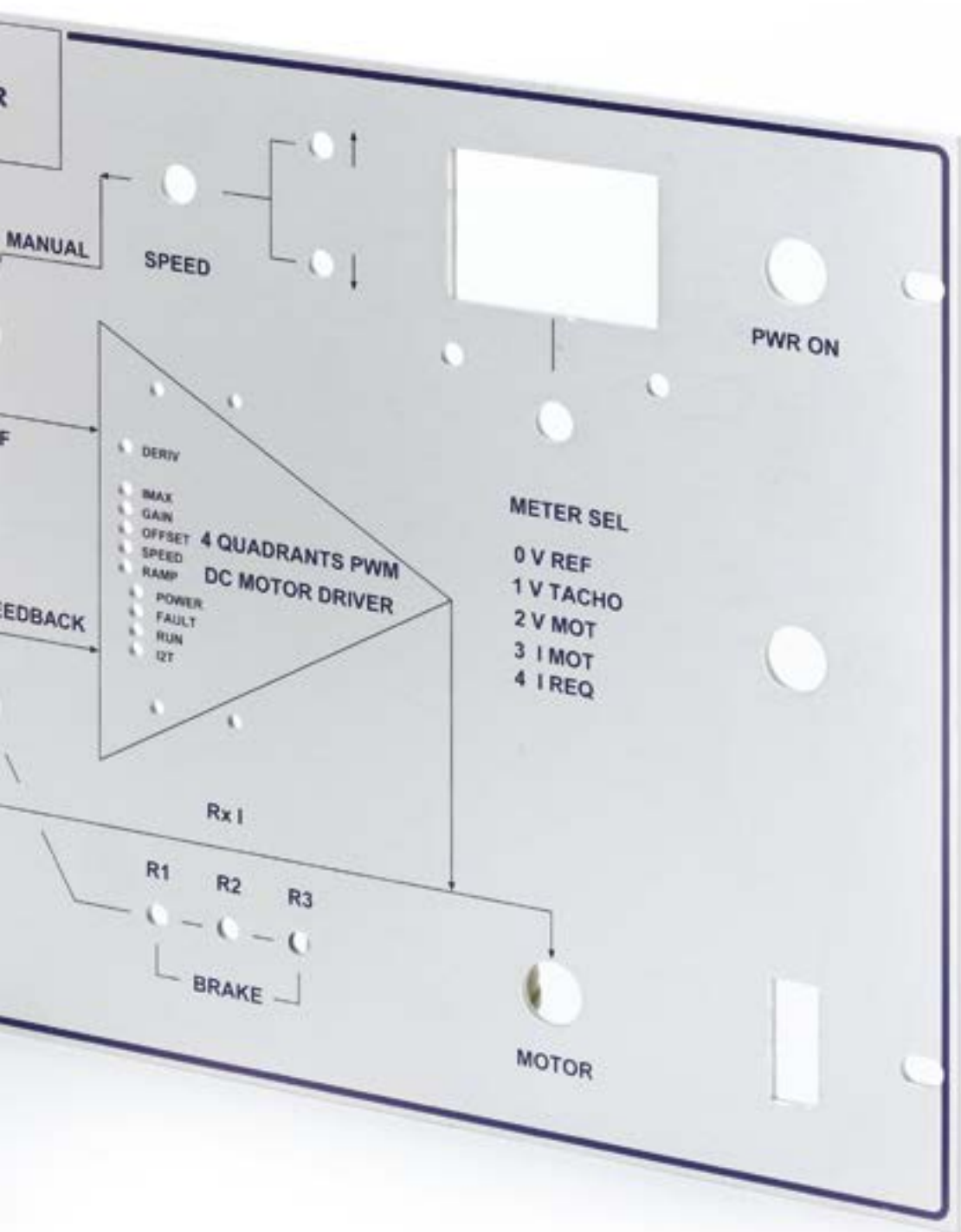
Trattamenti per alluminio:

BN= ANODIZZATO NATURALE/GRIGIO - BC= ANODIZZATO NERO - BA= SURTEC 650

Trattamenti per ferro:

D= PLASTIFICATO MARRONE - E= PLASTIFICATO GRIGIO CHIARO - F= PLASTIFICATO GRIGIO SCURO - G= PLASTIFICATO AZZURRO - H= PLASTIFICATO NERO - Ni = NICHELATO - Z= ZINCATO





SERIGRAFIA

SERIGRAFIA

SERIGRAFIA

Presentazione

All'interno della nostra sede di Polavento disponiamo di un evoluto reparto grafico, dotato di macchinari all'avanguardia, per mezzo del quale possiamo compiere qualsiasi lavoro di serigrafia e/o tampografia.

- **Serigrafia**

La serigrafia o stampa serigrafica è una tecnica di stampa di immagini e grafiche su qualsiasi supporto o superficie mediante l'uso di un tessuto (tessuto di stampa), facendo depositare dell'inchiostro su un supporto attraverso le aree libere del tessuto.

Il termine "serigrafia" deriva dal latino "seri" (seta) e dal greco "grapho" (scrivere), dato che i primi tessuti che fungevano da stencil erano di seta.

Una volta disegnato o trasferito lo stencil sul telaio (mediante varie tecniche), questo viene posto sul supporto scelto, l'inchiostro viene poi posizionato sulla parte alta del telaio e con una spatola di gomma, altrimenti detta racla, viene spalmato sull'intero telaio, comprese ovviamente le aree aperte al substrato.

L'inchiostro passa attraverso gli spazi aperti e si deposita sul supporto (alluminio, ferro, ecc...).

Il telaio viene quindi rimosso e il supporto viene fatto asciugare.

Il telaio può essere riusato dopo essere stato pulito.





• Tampografia

La stampa tampografica o stampa a tampone (in inglese Pad_printing) è un procedimento di stampa indiretto, che permette di riprodurre, in modo semplice e con elevata fedeltà e risoluzione, disegni, scritte e decori sia su superfici piane che su superfici concave, convesse o comunque irregolari.

Sostanzialmente si potrebbe definire come un sistema che permette di trasferire immagini e grafiche 2D su oggetti e superfici 3D.

Per mezzo di un tampone morbido e flessibile un film di inchiostro indelebile viene trasferito da una piastra incisa in acciaio o in fotopolimero (cliché tampografico) sulla superficie del supporto. La superficie di stampa può essere non planare grazie al tampone di stampa morbido che si può adattare facilmente alle diverse forme su cui viene pressato.

La tampografia permette di stampare con una definizione superiore alla serigrafia, consentendo la riproduzione dei tratti più sottili con nitidezza, anche a più colori e stampando “bagnato su bagnato”.

Si possono infatti ottenere ottime stampe anche in quadricromia, utilizzando retinature sui cliché (soprattutto quelli in fotopolimero), simili a quelli utilizzati per la litografia.

Questo processo di stampa può essere usato anche per depositare materiali funzionali come inchiostri conduttivi, adesivi e lubrificanti.



TRADIZIONE ED INNOVAZIONE, OGGI E DOMANI
PER PRODOTTI E SERVIZI SEMPRE PIÙ COMPLETI ED AVANZATI



**GFP RACK
POOL**



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