

Enclosures & Components

Minibox 34

Closed and rectangular enclosure made from aluminium with numerous configuration possibilities. Due to its straightforward concept, each application becomes an individual design solution. Simple - modern.

Local Service – global resources



Elma is a global manufacturer of products for housing electronic systems. The company provides everything from components such as modular enclosures, cabinets and backplanes up to complete standard or custom system platforms. Elma also manufactures precision rotary switches. The company offers fast, flexible response to customer needs and extensive practical knowledge in tailoring solutions to specific applications.

Founded in 1960, Elma is an industry innovator in the design and manufacture of electronic enclosures and passive electronic components. With vast expertise in Eurocard-based platforms, standard architectures include AdvancedTCA, CompactPCI, MicroTCA, Rugged COTS/ATR, VME, VME64x, VPX, VXI, VXS, and more. The company also tailors customised solutions to individual applications ensuring fast and cost-effective results. As a global company, Elma has production and assembly facilities in 8 countries and has representatives in over 40 countries. Elma has a broad base of customers in diverse industries such as telecommunications, industrial control, medical electronics, defense and aerospace.

We provide products superior in quality, reliability, performance, and consistently presents new, innovative designs to the market. Elma also offers design and integration services backed by responsive and knowledgeable technical support.

Our leading quality level is reached through training of all employees and following of systematic procedures per ISO 9001 standards to which Elma has been registered.

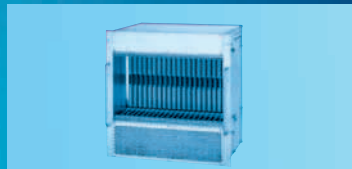
Why choose Elma?

- Flexibility** Elma tailors solutions to individual applications to ensure fast and cost-effective results.
- Experience** Extensive practical experience in packaging electronic systems is used to minimise the time taken to develop new customised solutions without compromising system performance or reliability.
- Compatibility** Because the two key electromechanical components – enclosures and backplanes – are made in-house, Elma guarantees compatibility, consistency and reliability.
- Global Resources** With manufacturing in Europe, Asia and the USA, customers benefit from local service backed by global resources.

Custom Solutions

Design Capabilities

Production Capabilities



Customisation is the standard at Elma. With an extensive offering of modular standard products as a foundation, we are able to leverage existing solutions and proven design concepts to meet any custom application. This approach ensures that Elma will provide quality, compliant solutions with significantly reduced lead time, cost and risk.

Combined with our integration capability for both embedded systems and switches, we provide a single solution to your outsourcing needs.

Allow us to take your latest product from prototype to production quickly, cost effectively and with reduced risk.

Elma has been a leader in design innovation for over 45 years. We use advanced design software and equipment to perfect your design. We can utilise our vast resource of experienced designers and engineers from facilities all over the world. The result is a superb design solution, completed to your specifications in a timely and cost-efficient manner.

From base components to fully-integrated computing systems, Elma can be your solution partner each step of the way. With production and assembly facilities worldwide, we can meet nearly any need – whether prototypes or high volumes, quickturn deliveries, or highly complex custom designs.

Custom system platforms

- Over 20 years of expertise in system design with emphasis on thermal management
- Specialists in EMC, shock/vibration, system monitoring, reliability and maintainability
- Applications for industrial and rugged environment

Custom backplanes

- Modified standards for all PICMG and VITA specifications
- NSC (non standard-based custom) design
- Proven, reliable high-speed designs with data rates up to 10 Gbps per differential pair

Custom enclosures & components

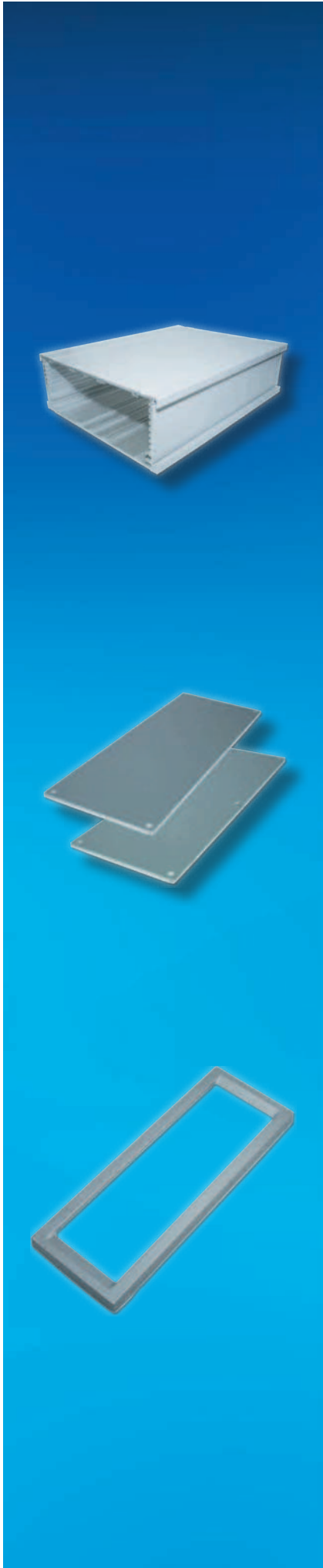
- Modified standards for IEC, IEEE, ATCA, MicroTCA mechanics or proprietary solutions
- IP protection classes
- EMC security

Custom cabinets

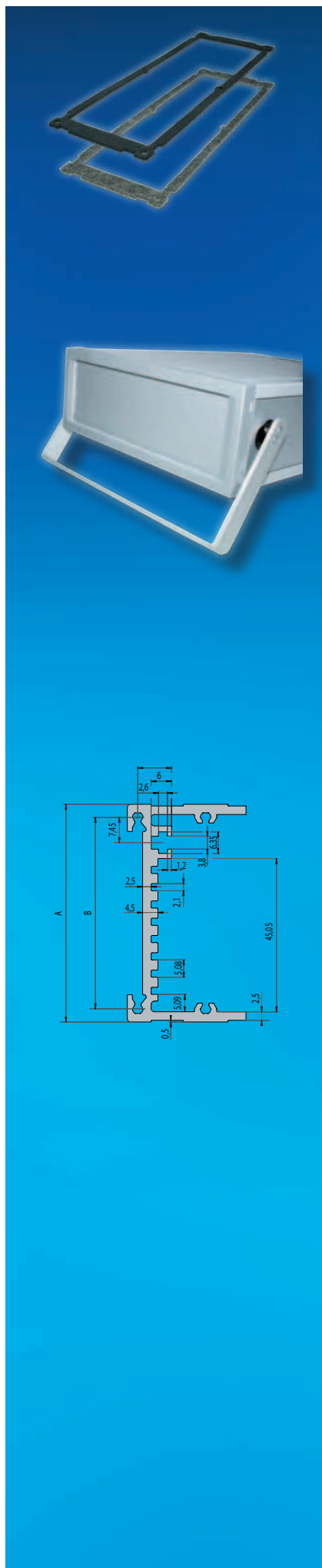
- Industrial, Rugged, Datacom/Server, or Shielded
- Highly complex or unusual configurations in any volume
- Silk screening, painting, tool making, validation testing, and agency certification

Custom rotary switches

- Modifiable switches & LEDs
- Integration of switches, panels and other components
- Custom switch bracket fabrication



5.1 Minibox 34 Overview	6
5.1.1 Complete Minibox 34 Kit's	10
5.1.2 Configuration	11
5.2 Basic Case	12
5.2.1 Basic Case	12
5.3 Front / Rear Panel	12
5.3.1 Front / Rear Panel	12
5.4 Bezel	14



5.5 Gaskets 14

5.5.1 Gaskets IP65	14
5.5.2 Gaskets IP54/EMC	15

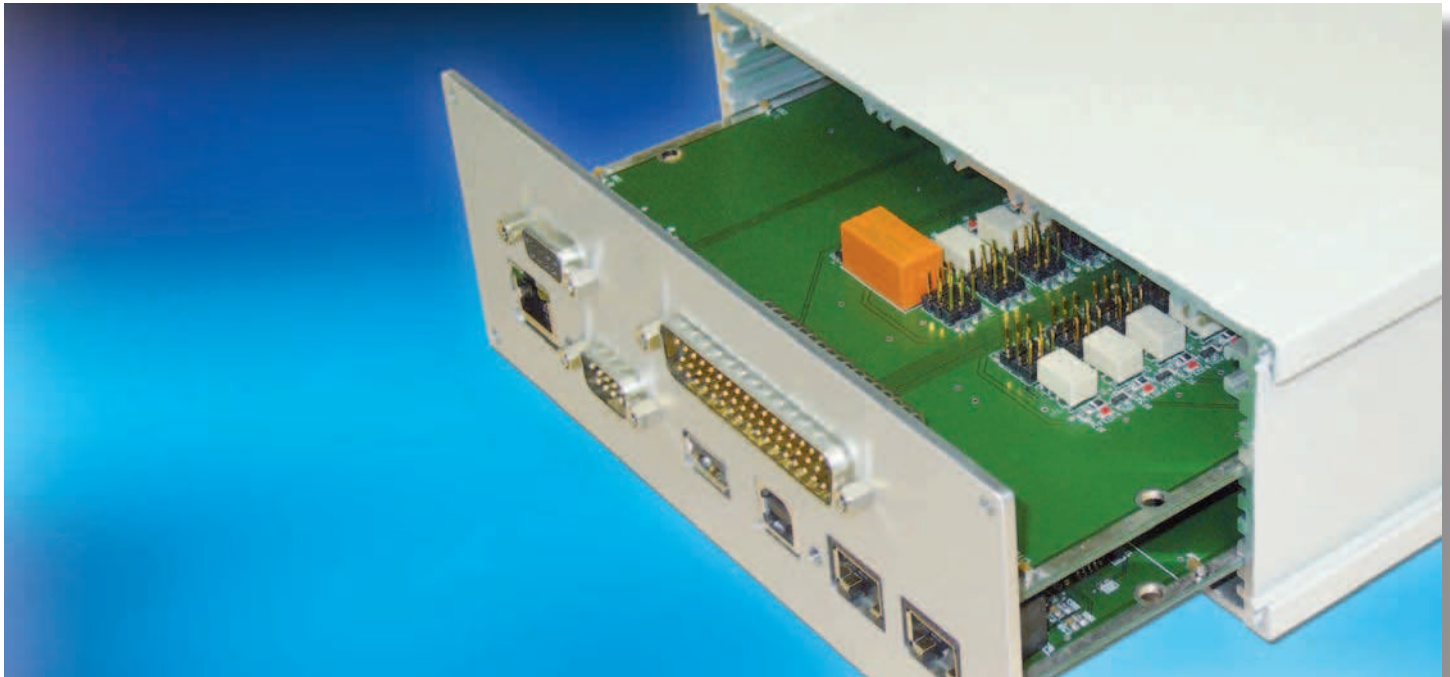
5.6 Accessories 16

5.6.1 Foot Strip	16
5.6.2 Side Panels	17
5.6.3 Carrying Handle	18
5.6.4 Dividing Extrusion	19
5.6.5 Bracket for Mounting in Consoles	20
5.6.6 Earthing Terminal	21

5.7 Dimensions / Technical Information 22

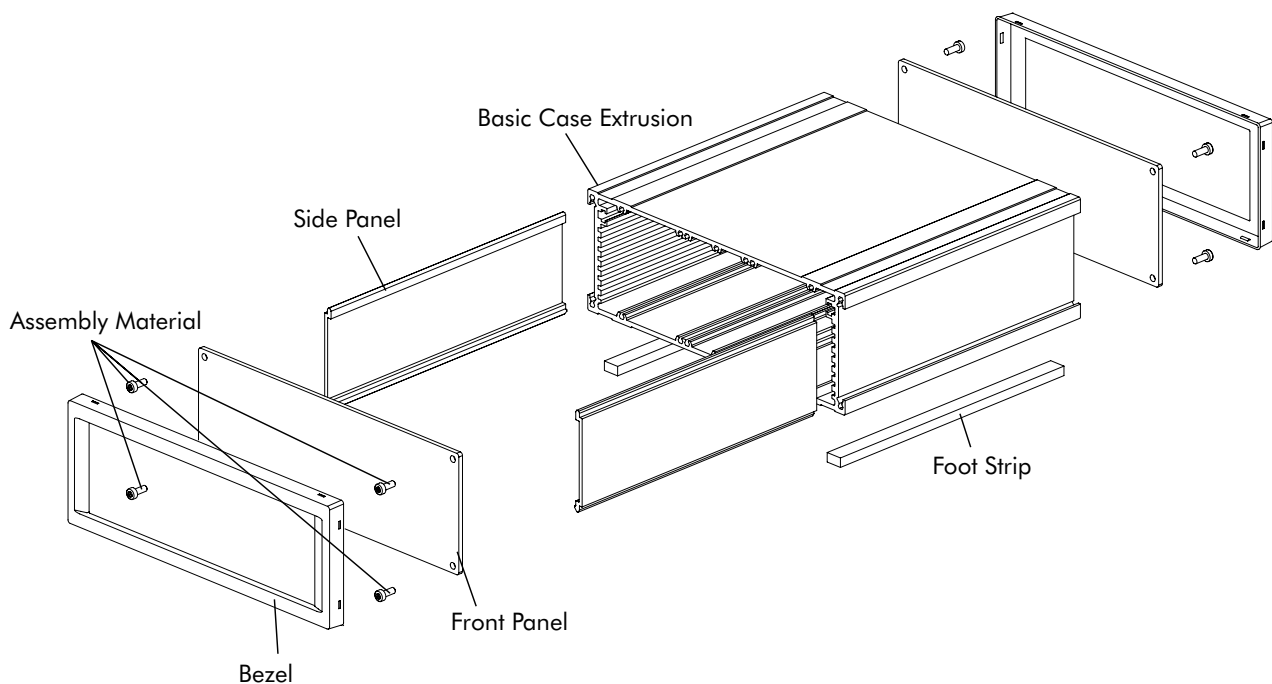
5.7.1 Cross Sections of Extrusions	22
5.7.2 Line Drawings	22
5.7.3 IP Protection Classes	23

5: Minibox 34



5.1 Minibox 34 Overview

- Minibox 34 consists of one aluminium extrusion
- Front and rear panels are mounted with 4 screws each onto the extrusion
- This easy and service friendly mounting is a characteristic of this robust and vibration proof aluminium compact case
- Bezels are attached to the front and rear for design reasons. The screws used for assembling are not visible
- Carrying and positioning handles can be locked into 3 different positions. Thus the enclosure can be positioned at an angle
- Case assembly has a high screening attenuation due to its aluminium construction
- Degree of protection of IP40 as standard
- With a special sealing set IP65 can be achieved
- Combination of IP54 and EMC gaskets allow a high protection level
- Eurocards and non-standardised devices can be mounted easily into Minibox 34
- Side panel for better design and additional assembling options
- Plug-in extrusions allow different divisions
- This compact case can be used for test & measurement devices where besides compactness, form and colour, its robust construction is important



5: Minibox 34



Robust, handy and manifold upgradable

Applications

- Measuring and testing devices
- Laboratory devices
- Train, tramway equipment

Versions

- Standrad EMC
- IP65
- IP54 and EMC combined

Description

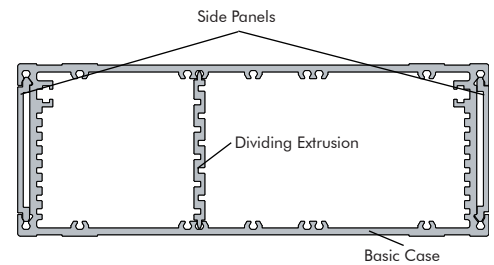
- Robust
- Compact
- Service friendly
- No visible screws
- Optional carrying handle

Thermal Solution

- Case and front / rear panels with ventilation slots on request

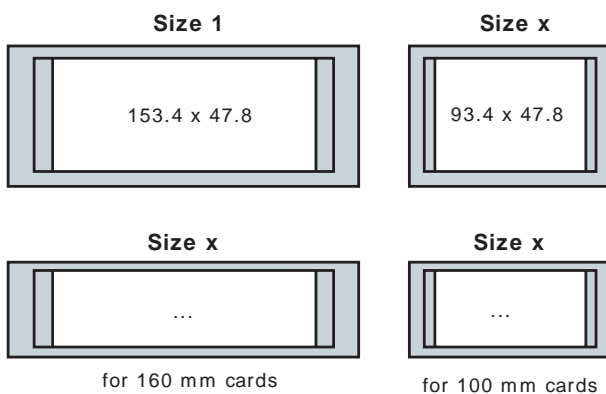
Colours

- Colours of case extrusion and side panel: white aluminium (RAL 9006)
other colours on request (MOQ: 10 pcs., no stock)
- Colour of bezel: silver



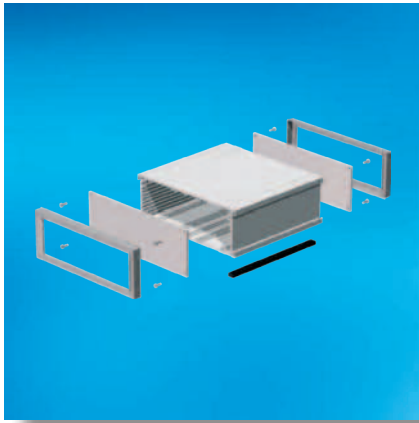
The basic case consists of one aluminium extrusion and guarantees optimal and professional packaging of your boards or components. The side panels allow assembly of additional components and the dividing extrusion offers new division possibilities.

Cases and Sizes

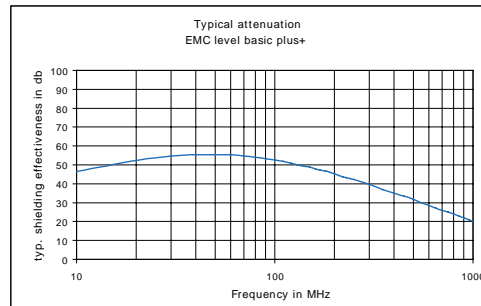


5: Minibox 34

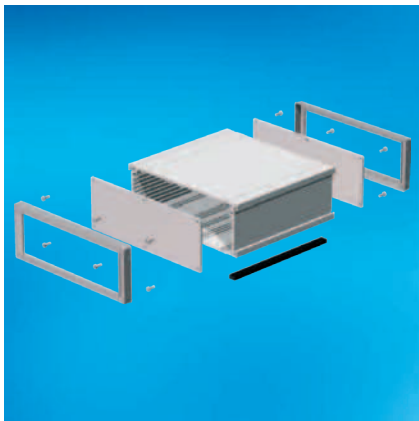
Minibox 34 Standard



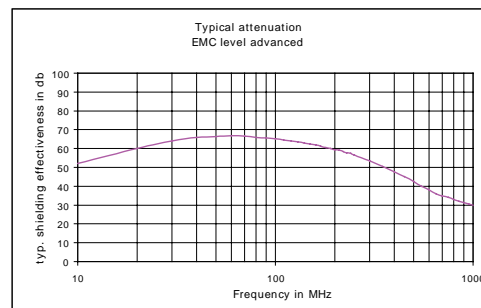
- Basic EMC Level plus+ *
- Case extrusion as well as front panels have conductive connections
- Mounting of front panels with 4 screws each
- This provides effective EMC protection



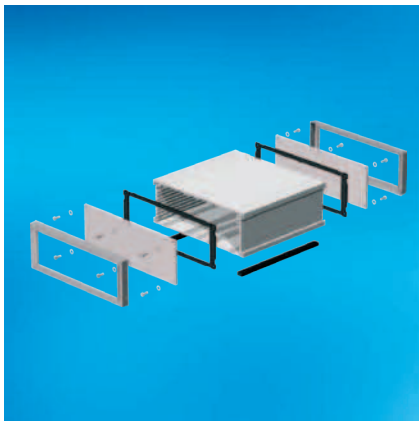
Minibox 34 EMC



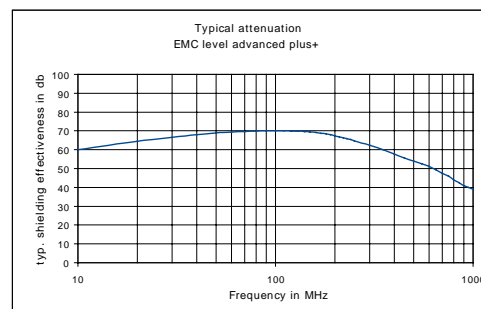
- Advanced EMC Level *
- Case extrusion as well as front panels have conductive connections
- Mounting of front panels with 6 screws each
- The EMC case for demanding applications!



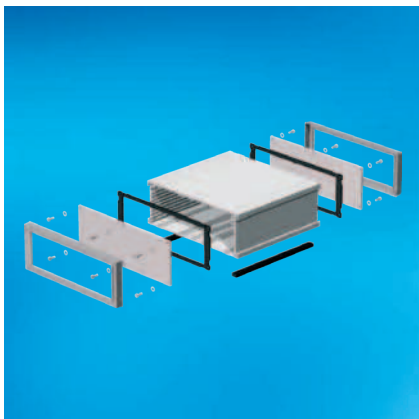
Minibox 34 IP54 and EMC



- Advanced EMC Level plus+ *
- Case extrusion and front panels mounted with 6 screws, IP54/EMC gaskets in addition
- The EMC case for demanding applications
- This version protects your electronics against splashes and dust



Minibox 34 IP65



- Case extrusion and front panels mounted with 6 screws, IP65 gaskets in addition
- This version protects your electronics against dust and water jets from a nozzle in all directions

* approximated values, no guarantee



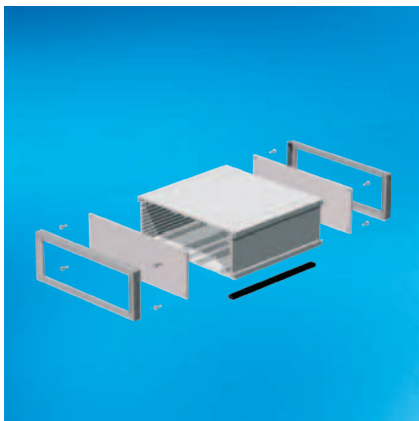
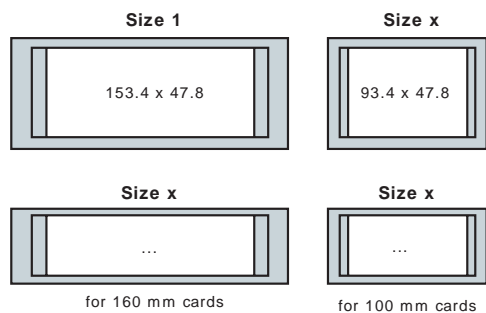
5: Minibox 34

5.1.1 Complete Minibox 34 Kit's

You may find the most commonly used complete kit's below.

With the new order structure (see "Configuration" on the next page) you have the possibility to configure your individual housing in different steps. Use this configurator or contact us for further information or help.

Cases and Sizes



5.1.1 Minibox 34 Set Basic EMC

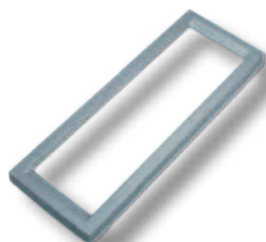
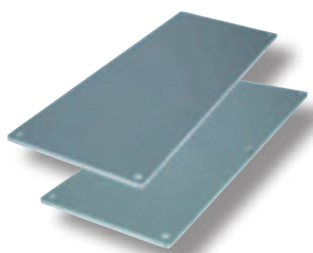
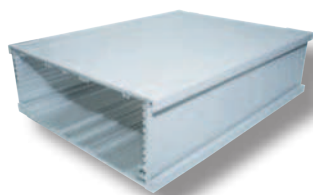
- Scope of delivery:
 - 1 basic case (detail see 5.2)
 - 2 front/rear panels with 4 fixing holes (detail see 5.3)
 - 2 bezels (detail see 5.4)
 - Assembly material (10 screws, Torx T10)
 - 1 set foot strips, 100 cm
 - 2 side panels

Case Size	Colour	Depth			
		100 mm 3.93"	160 mm 6.30"	220 mm 8.66"	233.35 mm 9.18"
1	white aluminium	101-000067	101-000068	101-000069	101-000070

5: Minibox 34

5.1.2 Configuration

- The flexible way of setting your Minibox 34 up:



5.2 Basic Case

- Type
- Depth

5.3 Front / Rear Panel

with 4 fixing holes

with 6 fixing holes

special design

5.4 Bezel

(2 pieces per case)

5.5 Gaskets

- IP 65
- EMC / IP54

5.6 Accessories

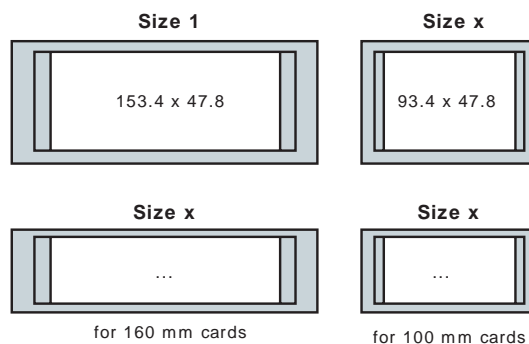
- 5.6.1 Foot Strip
- 5.6.2 Side Panel
- 5.6.3 Carrying Handle
- 5.6.4 Dividing Extrusion
- 5.6.5 Bracket
- 5.6.6 Earthing Terminal

5: Minibox 34

5.2 Basic Case

- Extruded aluminium
- Powder coated
- **Scope of delivery:**
 - 1 Case extrusion

Cases and Sizes

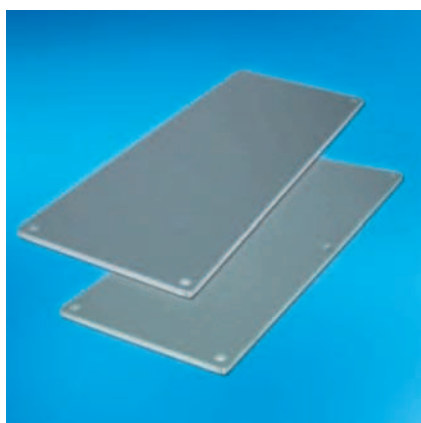


5.2.1 Basic Case

Case size	Colour	Depth			
		100 mm 3.93"	160 mm 6.30"	220 mm 8.66"	233.4 mm 9.18"
1	white aluminium	66-350-0100-00	66-350-0160-00	66-350-0220-00	66-350-0233-00

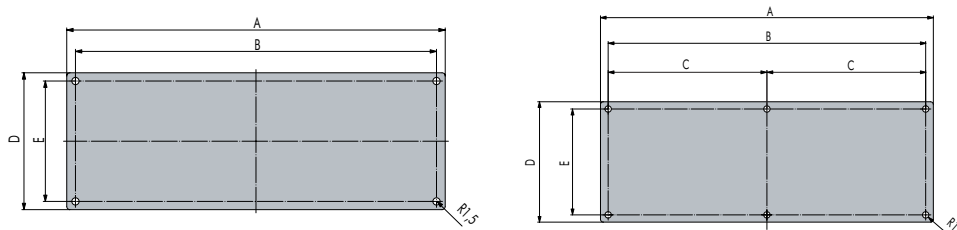
5.3 Front / Rear Panel

- The 2.5 mm (0.9") thick front panels of anodised aluminium serve both as front and rear panels
- They are screwed to the ends of the case profiles to give the snap-on bezel the required stability
- The panels are available with perforations on request
- Front panels with 6 fixing holes have to be used for higher EMC level or in combination with IP65 and IP54/EMC gaskets
- **Scope of delivery:**
 - 1 front/rear panel
- Note: for one Minibox 34 two panels have to be ordered
- Torque of mounting screws to ensure IP protection: 0.90 Nm - 1.00 Nm
- 4 or 6 screws are used per panel, see 5.3.4



5.3.1 Front / Rear Panel

Case size	With 4 fixing holes	With 6 fixing holes
1	34-11000-00	34-11001-00



Case size	A		B		C		D		E	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
1	177.1	6.97	168.8	6.65	84.4	3.32	64	2.52	56.3	2.22

5: Minibox 34

5.3.2 Rear Panel for DIN-Rail Snap-on Mounting

- Incl. riveted steel DIN-clip
- Suitable for top hat rails 35 mm, acc. to IEC 60715 or EN 50022
- **Scope of delivery:**
 - 1 rear panel
- Per rear panel 4 screws are needed, see 5.3.4

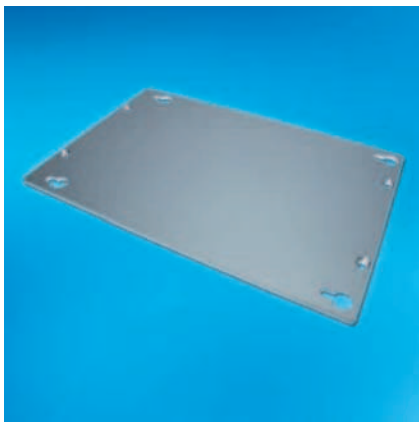


5.3.2 Rear Panel for DIN-Rail Snap-on Mounting

Description	Part-No.
Rear Panel for DIN-Rail Snap-on Mounting	34-11003-00

5.3.3 Rear Panel for Wall Mounting

- For direct wall mounting of Minibox 34
- **Scope of delivery:**
 - 1 rear panel
- Per rear panel 4 screws are needed
- Using these rear panels for wall mounting no bezel can be mounted on this side



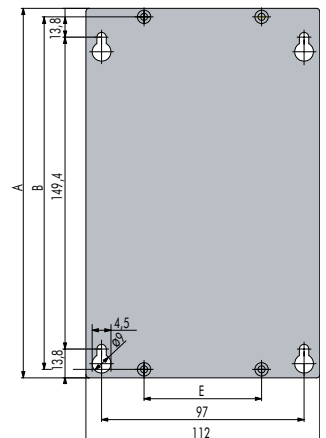
5.3.3 Rear Panel for Wall Mounting

Description	Part-No.
Rear Panel for wall mounting	34-11002-00

Assembly Material

Description	Part-No.
Countersunk screw M3 x 10, Torx T10	5470-23

Multiples of 10 must be ordered; MOQ 10pcs.



Case size	A		B		E	
	mm	inch	mm	inch	mm	inch
1	177.1	6.97	168.8	6.65	56.3	2.22

5: Minibox 34

5.3.4 Assembly Material for Front / Rear Panels

- Screws for mounting front / rear panel onto case extrusion
- **Scope of delivery:**
 - 1 cylindrical screw



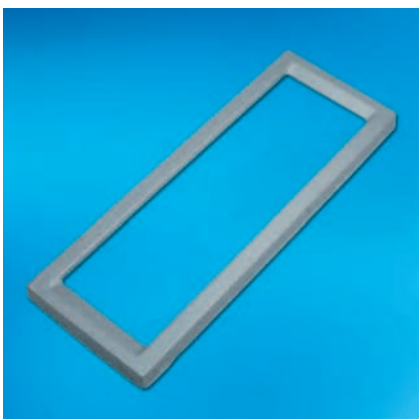
5.3.4 Assembly Material for Front / Rear Panels

Description	Part-No.
Cylindrical screw M3 x 12, Torx T10	5470-05

Multiples of 10 must be ordered; MOQ 10pcs.

5.4 Bezel

- Bezels are snapped-on front and rear side
- Bezels have a additional design function
- Screws used for assembling the case are not visible after mounting bezels
- Plastic, ABS
- **Scope of delivery:**
 - 1 plastic bezel
- Note: for 1 Minibox 34 two bezels have to be ordered



5.4 Bezel

Case size	Silver
1	34-12000-00

5.5 Gaskets

5.5.1 Gaskets IP65

- Matching the case contour
- Matching the front / rear panels with 6 fixing holes
- Foamed plastic PVC grey, UL94 V-0
- Self-adhesive seals
- **Scope of delivery:**
 - 1 gasket IP65
- For one Minibox 34 two gaskets have to be ordered
- For sealing the two middle screws plastic washers are used. These have to be ordered separately



5.5.1 Gaskets IP65

Description	Part-No.
Gasket IP65, Size 1	34-13001
Washer plastic PA	5643-21

Multiples of 10 must be ordered; MOQ 10pcs.

5: Minibox 34

5.5.2 Gaskets IP54/EMC

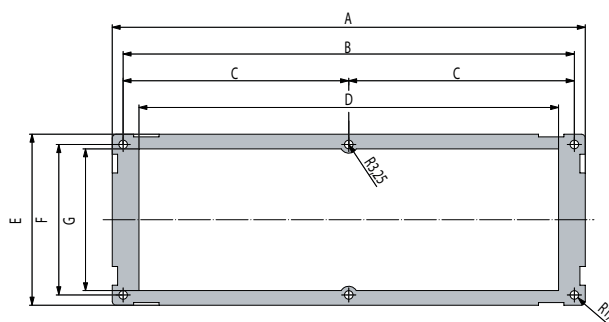
- Matching the case contour
- Matching the front / rear panels with 6 fixing holes
- Foamed conductive plastic PET-PU black, UL94 V-0
- Self-adhesive seals
- **Scope of delivery:**
 - 1 gasket IP54/EMC
- For one Minibox 34 two gaskets have to be ordered
- For sealing the two middle screws plastic washers are used. These have to be ordered separately



5.5.2 Gaskets IP54/EMC

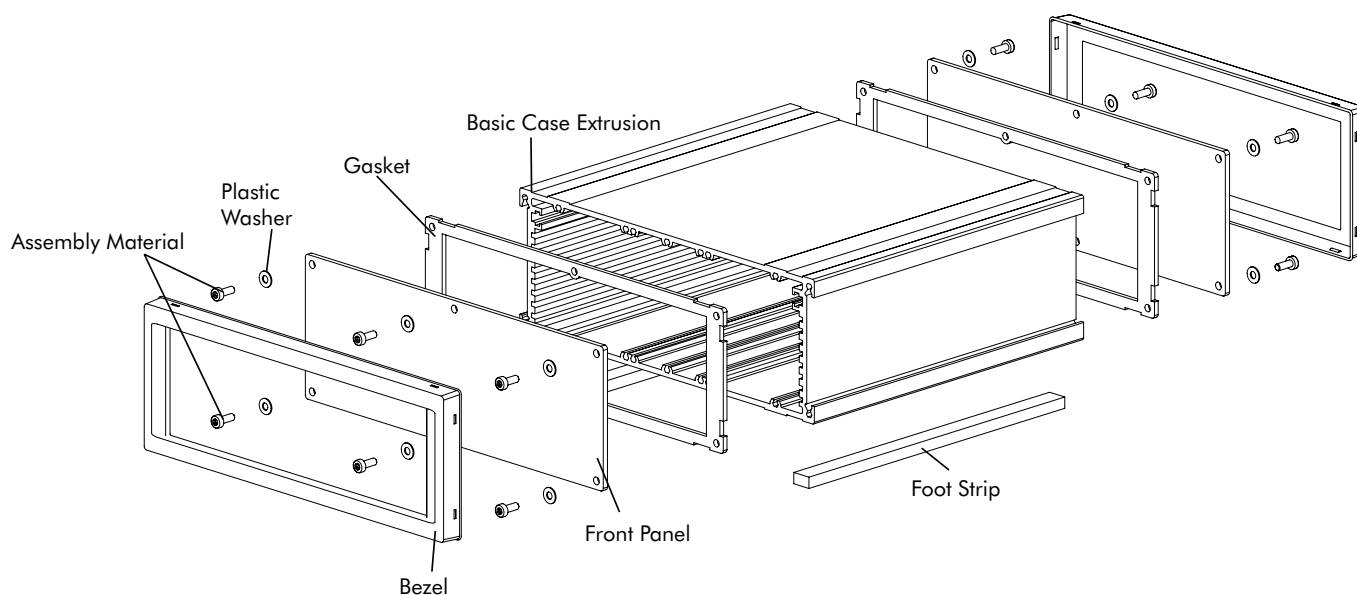
Description	Part-No.
Gasket IP54/EMC, size 1	34-13000
Washer plastic PA	5643-21

Multiples of 10 must be ordered; MOQ 10pcs.



Case size	A		B		C		D		E		F		G	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
1	177	6.97	168.8	6.65	84.4	3.32	157	6.18	64	2.52	56.3	2.22	53	2.09

Minibox 34 with IP54/EMC or IP65 Gaskets and Washers

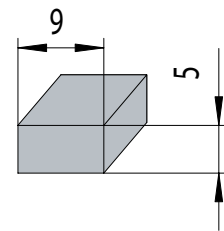




5.6 Accessories

5.6.1 Foot Strip

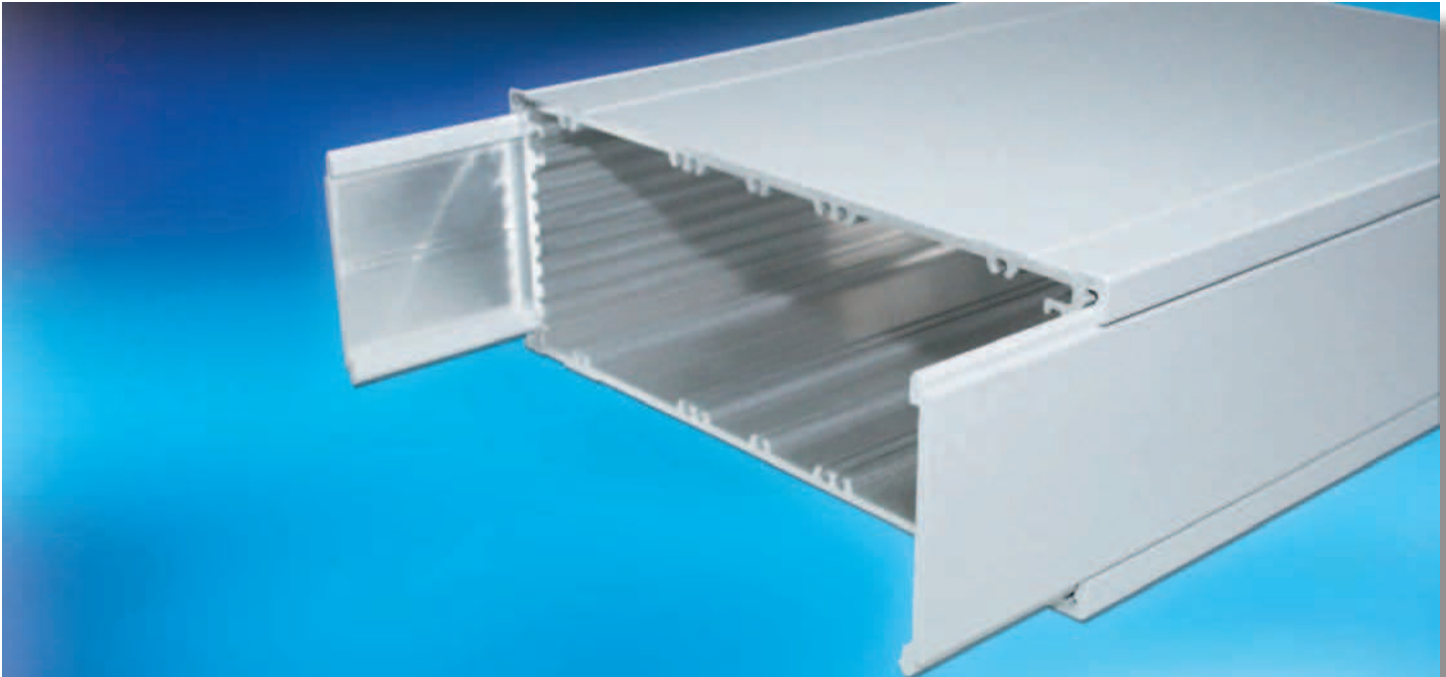
- The foot strips allow the case to be slip resistant
- Delivered in meters and can be cut to size of the case
- Matches the designated cavity
- Foam pad CR
- Self-adhesive
- 9 x 5 mm
- **Scope of delivery:**
 - 1 piece / reel foam pad
- Per case 2 foot strips have to be mounted. Recommended foot strip length is 10 mm shorter than the case's depth



5.6.1 Foot Strip

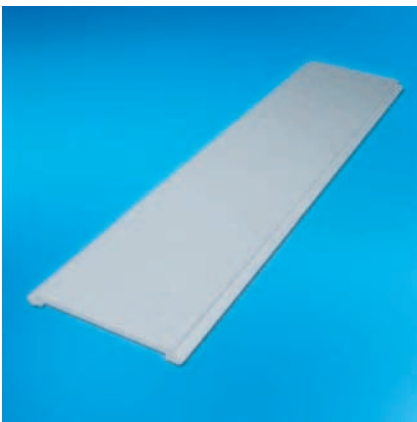
Description	Part-No.
Foot strip, foam pad CR, length 100 cm	34-13010-100
Foot strip, foam pad CR, length 1000 cm	34-13010-1000

5: Minibox 34



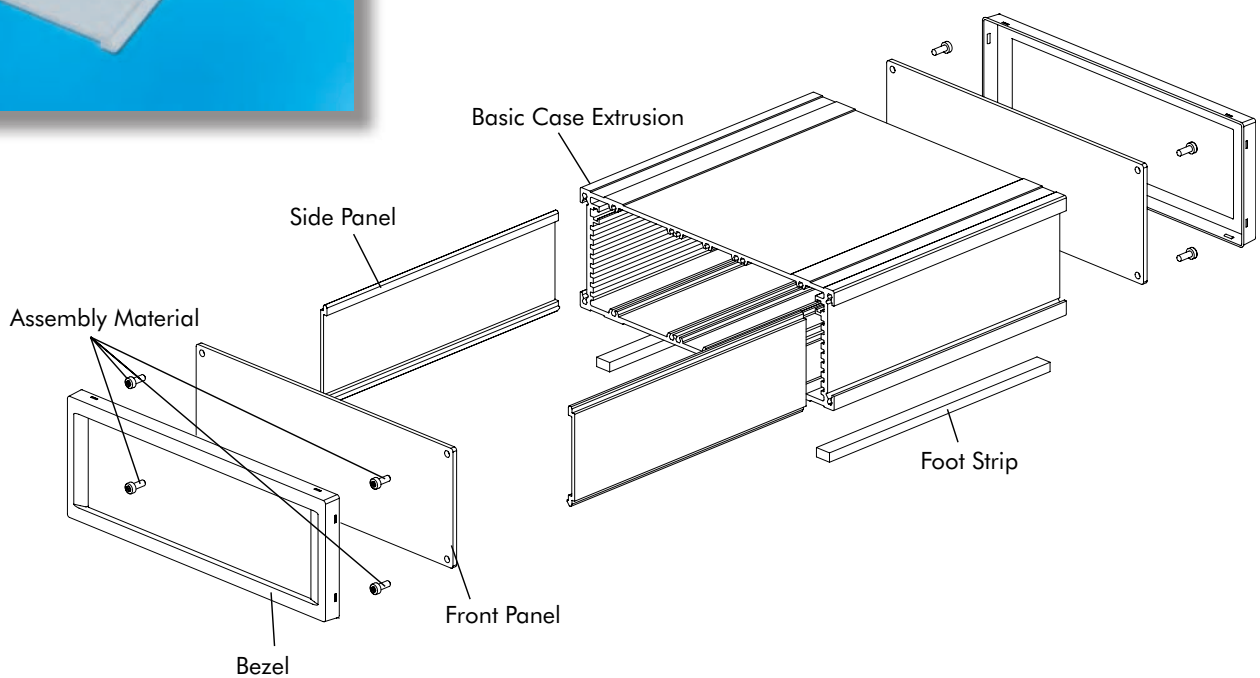
5.6.2 Side Panels

- Side panel for convenient cosmetic finishing
- Can be ordered in a custom complementary colour to the case
- Side panels are inserted into the basic case
- Material: aluminium, powdered
- **Scope of delivery:**
 - 1 side panel
- Note: for 1 Minibox 34 two side panels have to be ordered

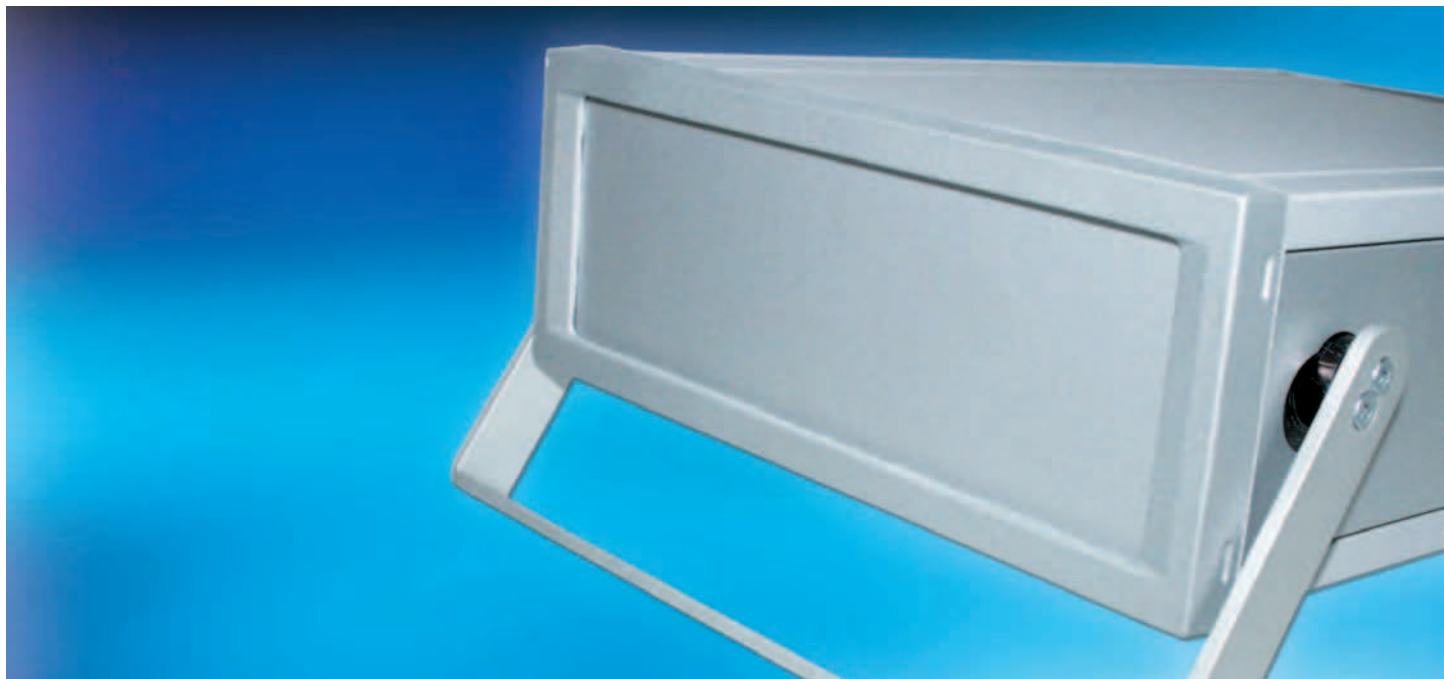


5.6.2 Side Panels

Case size	Colour	Depth			
		100 mm 3.93"	160 mm 6.30"	220 mm 8.66"	233.45 mm 9.18"
1	white aluminium	66-351-0100-00	66-351-0160-00	66-351-0220-00	66-351-0233-00

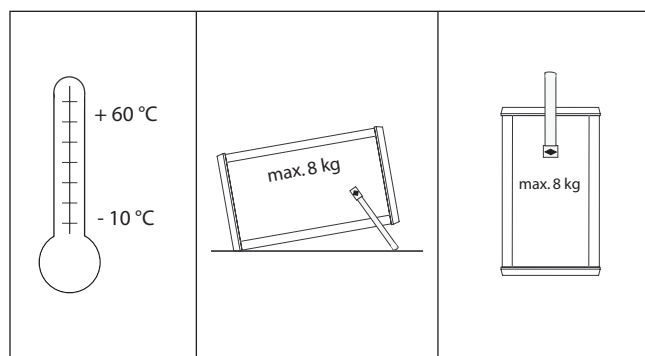


5: Minibox 34



5.6.3 Carrying Handle

- The handle is connected to the special side extrusion with the handle's adaptor and inserted into the side mounted flut
- The handle snaps into 3 different positions
- **Scope of delivery:**
 - 1 carrying / positioning handle, aluminium
 - 2 handle adaptors, plastic
 - 4 PT-countersunk screws, Torx T10
- Matching to the depth of case, 2 side panel extrusions have to be ordered separately, see below



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

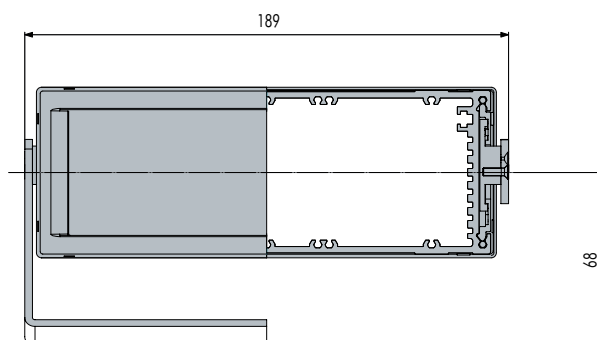
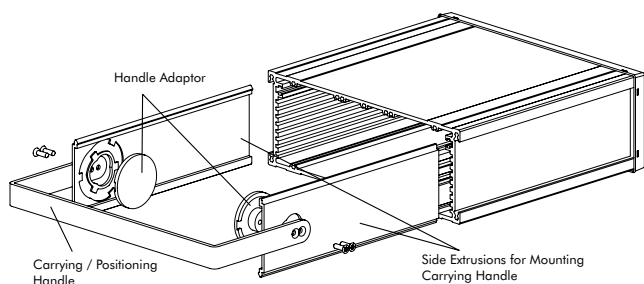


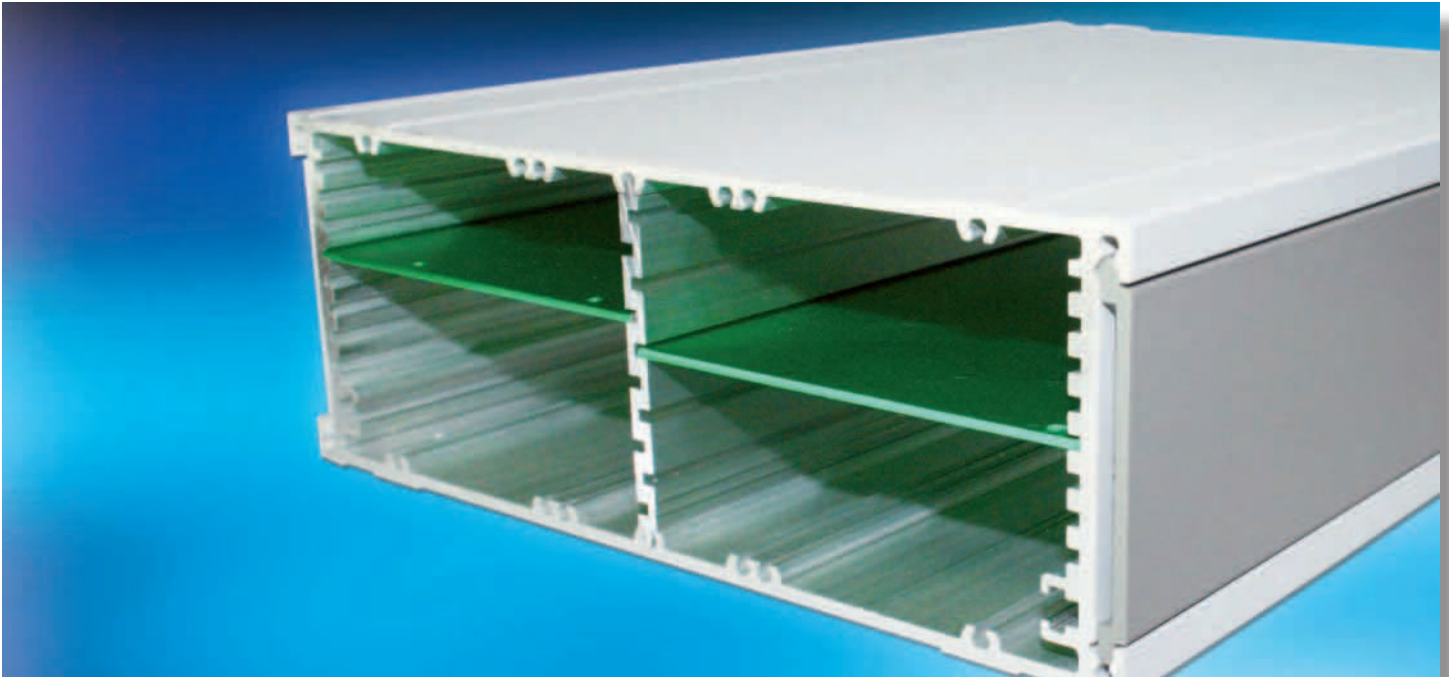
5.6.3.1 Carrying Handle

Description	Part-No.
Carrying handle set	34-13030

5.6.3.2 Side Extrusions for Mounting Carrying Handle

Case size	Colour	Depth		
		160 mm 6.30"	220 mm 8.66"	233.4 mm 9.18"
1	white aluminium	66-351-0160-02	66-351-0220-02	66-351-0233-02





5.6.4 Dividing Extrusion

- Raw aluminium extrusion
- Screwing in of a set screw allows fixing of a shorter dividing extrusion
- Can be inserted in any position at the upper and lower flutes
- With the dividing extrusion the Minibox 34 can be divided into several small divisions
- **Scope of delivery:**
 - 1 dividing extrusion aluminium, raw
- The dividing extrusion must no be longer in the case. Assembly material has to be ordered separately



5.6.4 Dividing Extrusions

Case size	Length		Part-No.
	mm	inch	
1	99.5	3.93	66-352-0100-90
	82	3.23	66-352-0082-90
	159.5	6.30	66-352-0160-90
	142	5.59	66-352-0142-90
	219.5	8.66	66-352-0220-90
	202	7.95	66-352-0202-90
	232.9	9.18	66-352-0233-90
	215.4	8.47	66-352-0215-90

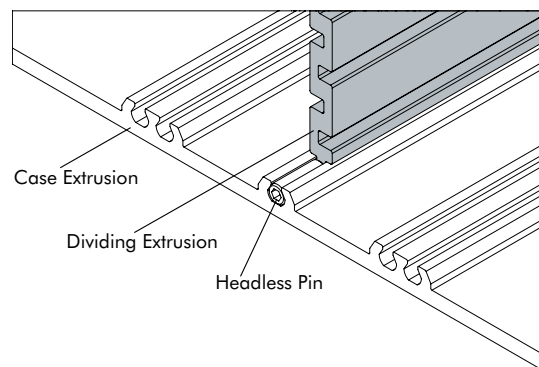
Assembly Material

- For dividing extrusions which are at least 18 mm shorter than the case extrusion

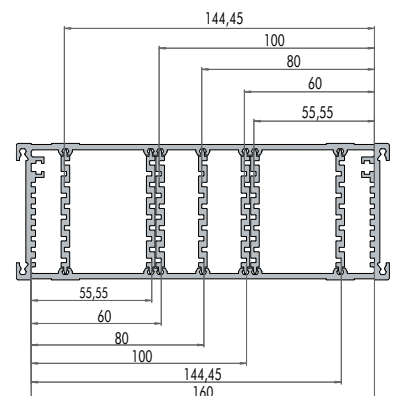
Description	Part-No.
Headless pin with internal hexagon, M3 x 8	5403-08
Hexagon key, 1.5 mm	61-520

Multiples of 10 must be ordered; MOQ 10pcs.

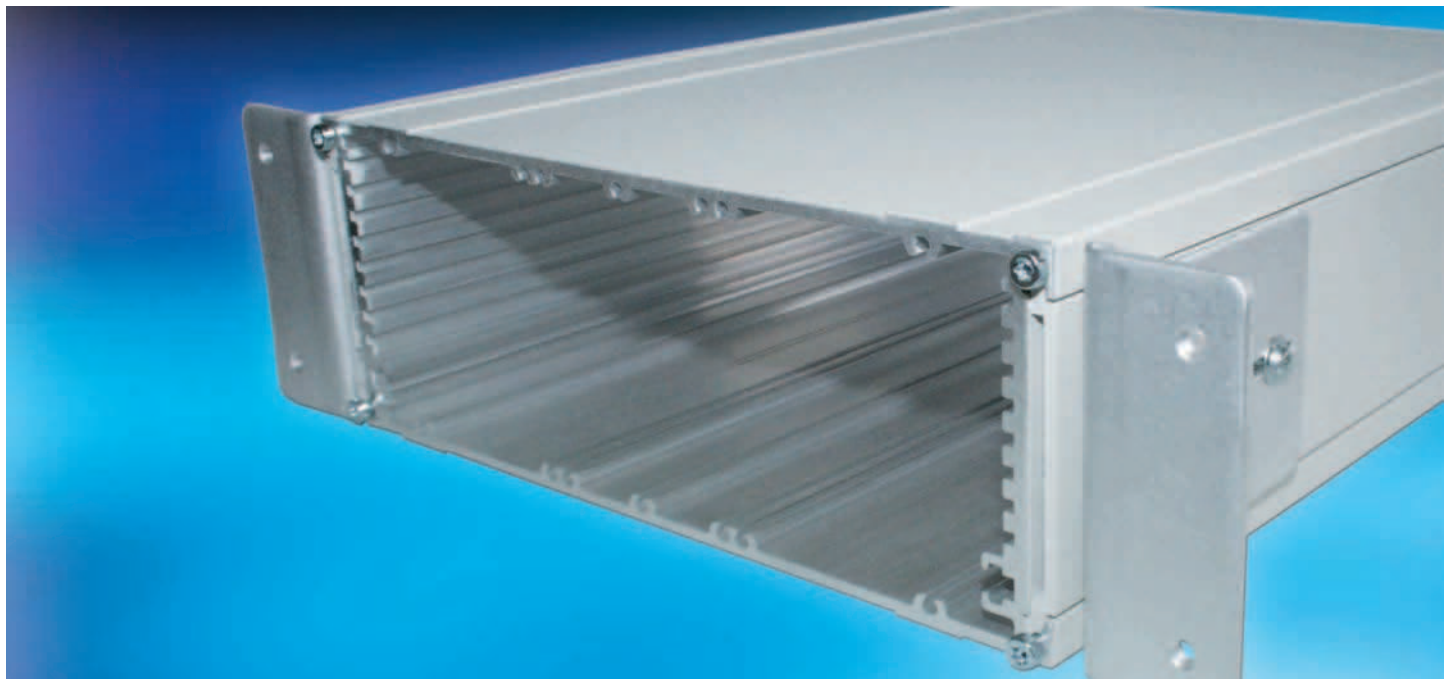
Mounting Dividing Extrusion with Headless Pin



Card Mounting Possibilities



5: Minibox 34



5.6.5 Bracket for Mounting in Consoles

- 3 mm (0.11") thick sheet aluminium mounting bracket
- Inserted into the slots on the sides of the Minibox 34 and positioned using two M4 x 6 mm set screws
- Using the mounting brackets, the compact case can be mounted into consoles, etc.
- Due to the slots in the brackets the case can be adjusted up to 12 mm in its depth
- **Scope of delivery:**
 - 2 brackets raw aluminium
 - 4 rounded head screws incl. washer, M3 x 8, Torx T10
- Matching the depth of case 2 side panel extrusions have to be ordered, see below



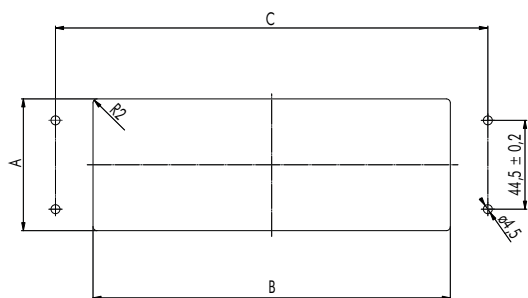
5.6.5.1 Bracket for Mounting in Consoles

Description	Part-No.
Bracket set	34-13020

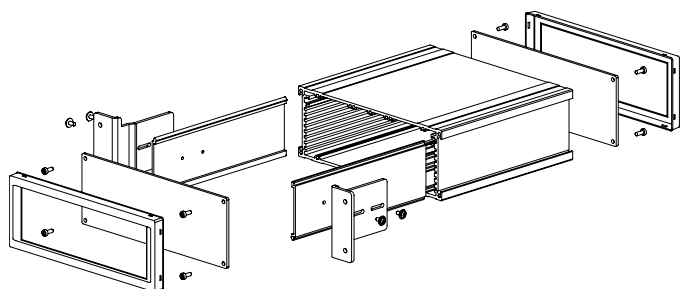
5.6.5.2 Side Extrusions for Mounting Brackets

Case size	Colour	Depth			
		100 mm 3.93"	160 mm 6.30"	220 mm 8.66"	233.4 mm 9.18"
1	white aluminium	66-351-0100-01	66-351-0160-01	66-351-0220-01	66-351-0233-01

Cut-out drawing:



Bracket mounting position:



Case size	A		B		C	
	mm	inch	mm	inch	mm	inch
1	66	2.60	179	7.05	216.6	8.52



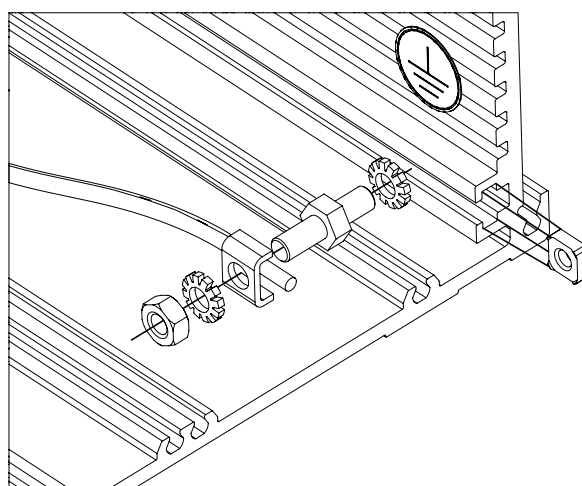
5.6.6 Earthing Terminal

- The earthing terminal facilitates grounding of the Minibox 34 in accordance with EN / VDE / SEV standard
- **Scope of delivery:**
 - 1 earthing nut M3.5
 - 1 threaded bolt M3.5
 - 1 clamping yoke
 - 2 serrated washers
 - 1 nut M3.5
 - 1 earthing symbol



5.6.6 Earthing Terminal

Description	Part-No.
Earthing terminal	33-619

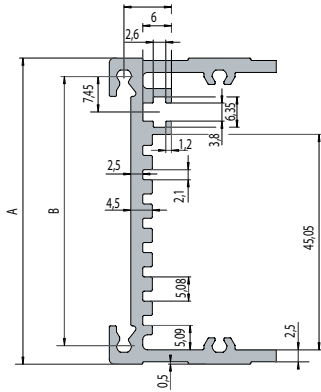


5: Minibox 34

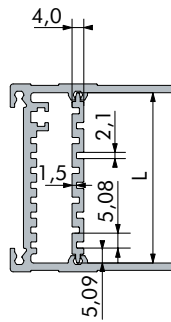
5.7 Dimensions / Technical Information

5.7.1 Cross Sections of Extrusions

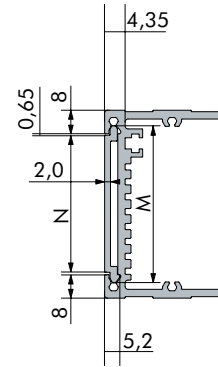
Case size 1



Dividing Extrusion Size 1

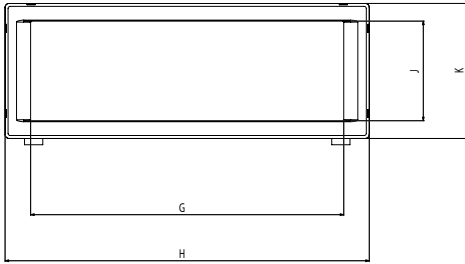


Side Extrusion Size 1

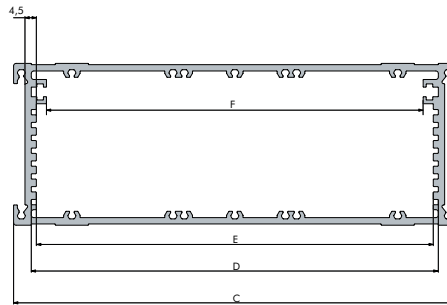


5.7.2 Line Drawings

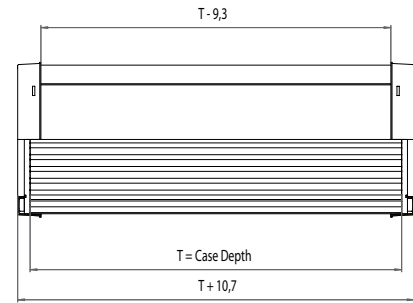
Front View



Internal Dimensions



Side View



Type		A	B	C	D	E	F	G	H	J	K	L	M	N
1	mm	64.0	56.3	175	161	157	149	154.4	179.6	49.1	66.6	58	53.5	46.7
	inch	2.52	2.21	6.89	6.34	6.18	5.86	6.08	7.07	1.93	2.62	2.28	2.10	1.84

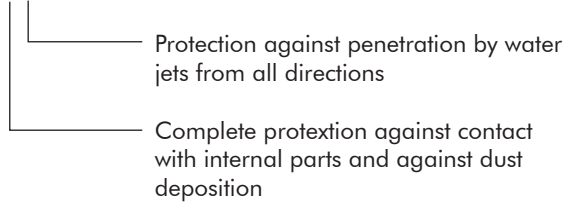
5.7.3 IP Protection Classes

- Protection against contact and foreign bodies
- Protection against water
- According to IEC 60529

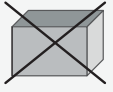
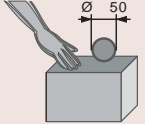
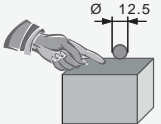
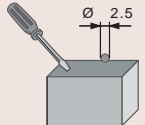
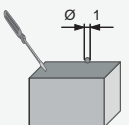


Evaluation of classification

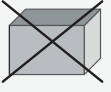
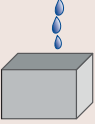
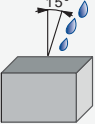
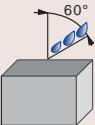
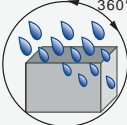
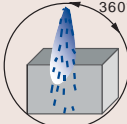
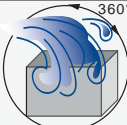
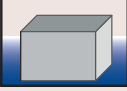

- The test results according to the standard do not entirely exclude leaks and an individual test is therefore recommended in critical cases (with the actual equipment layout)
- The protection class for cabinets and enclosures is specified by IP (International Protection) and two indices

Example IP 55



5.7.3 IP Protection Classes

First Index	Contact Protection	Foreign-Body Protection
0 	No special protection	
1 	Against large areas of body	Large foreign bodies $\varnothing \geq 50 \text{ mm (1.97")}$
2 	Against fingers or objects of similar size	Medium-sized foreign bodies $\varnothing \geq 12.5 \text{ mm (0.49")}$
3 	Against tools, wires, etc. with a thickness of $\geq 2.5 \text{ mm}$	Granular foreign bodies $\varnothing \geq 2.5 \text{ mm (0.10")}$
4 	Against tools, wires, etc. with a thickness of $\geq 1.0 \text{ mm}$	Granular foreign bodies $\varnothing \geq 1.0 \text{ mm (0.04")}$
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

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