

Small Form Factor Cases – Interscale M

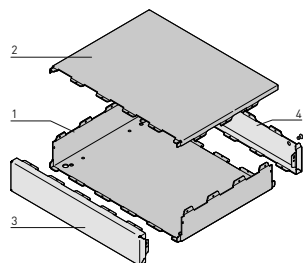
Interscal M passive or convection cooled



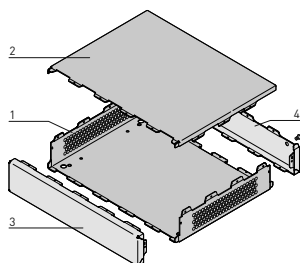
02613002



02613014



02613050



02613051

Plain case

Perforated case

- Available plain or perforated for forced cooling with fans
- Modular case consisting of 4 easy to assemble parts
- Integrated EMC protection
- Ingress protection IP 30 (plain version)
- Color RAL 7016
- Small form factor or 19" rack mount
- Rigid construction only requires two screws
- Other dimensions, cutout shapes or locations, and screen printing available

Delivery includes (assembled)

Item	Qty	Description
1	1	Base with 2 side panels (plain or perforated), St, 1 mm, ALZn coated, RAL 7016 (anthracite gray); 19"-angle, 1,5 mm St, ALZn coated, RAL 7016 (only on 19" version case)
2	1	Top cover, AL, 1 mm, RAL 7016
3	1	Front panel, AL, 1 mm, RAL 7016
4	1	Rear panel, AL, 1 mm, RAL 7016
5	1	User manual

Order Information

Desktop cases						19" cases					
Height	Width	Depth	Desktop case plain	Desktop case perforated		Height	Width	Depth	19" case plain	19" case perforated	
U	mm	mm	mm	Part no.	Part no.	U	mm	mm	mm	Part no.	Part no.
1	43.65	132.55	132.55	14820-133	—	1	43.65	443.70	221.45	14821-105	14826-105
1	43.65	132.55	177.00	14820-134	—	1	43.65	443.70	310.35	14821-107	14826-107
1	43.65	221.45	177.00	14820-154	14825-154	2	88.10	443.70	221.45	14821-205	14826-205
1	43.65	221.45	221.45	14820-155	14825-155	2	88.10	443.70	310.35	14821-207	14826-207
1	43.65	310.35	221.45	14820-175	14825-175	3	132.55	443.70	221.45	14821-305	14826-305
1	43.65	399.25	221.45	14820-195	14825-195	3	132.55	443.70	310.35	14821-307	14826-307
1	43.65	399.25	310.35	14820-197	14825-197						
2	88.10	221.45	177.00	14820-254	14825-254						
2	88.10	221.45	221.45	14820-255	14825-255						
2	88.10	310.35	221.45	14820-275	14825-275						
2	88.10	399.25	221.45	14820-295	14825-295						
2	88.10	399.25	310.35	14820-297	14825-297						
3	132.55	310.35	221.45	14820-375	14825-375						
3	132.55	399.25	221.45	14820-395	14825-395						
3	132.55	399.25	310.35	14820-397	14825-397						

Accessories

Mounting plate with built-in fan holder and fans	Page 5.124	Plastic feet	Page 5.134
Fan holder with fans	Page 5.125	Rubber feet	Page 5.134
Horizontal rail mounting bracket	Page 5.132	Mounting plate for PCBs	Page 5.135
Wall or Desktop mounting bracket	Page 5.132	Flexible rail system for mounting PCBs	Page 5.135
Plastic tip-up feet	Page 5.133	Adhesive studs for mounting PCBs	Page 5.136
Stacking aid	Page 5.133	Assembly tool	Page 5.137

Small Form Factor Cases – Interscale M

Interscale M for Embedded NUC



02615019

- Perforated side panels for passive cooling (convection)
- Compliant with the SDT.03 embedded NUC standard
<http://www.sget.org/standards.html>
- Modular case consisting of 3 easy to assemble parts; body, top cover and front panel
- Rigid construction requires only two screws
- Board mounting studs installed
- Integrated EMC protection
- Color RAL 7016
- Max. heat dissipation without fan about 8 Watt
- Cutouts specific for IES (<http://en.ies.de/>) MB95 embedded NUC board
- Other dimensions, cutout shapes or locations and screen printing available



Delivery includes (assembled)

Item	Qty	Description
1	1	Base with 2 side panels (perforated) and rear panel, Al, 1 mm, RAL 7016 (anthracite gray)
2	1	Top cover, Al, 1 mm, RAL 7016
3	1	Front panel, Al, 1 mm, RAL 7016
4	1	Pre-installed 7016 studs with M2.5 Torx T8 screws for board mounting
5	1	User manual

Order Information

Height mm	Width mm	Depth mm	Part no.
34.00	112.00	106.50	14820-701

Accessories

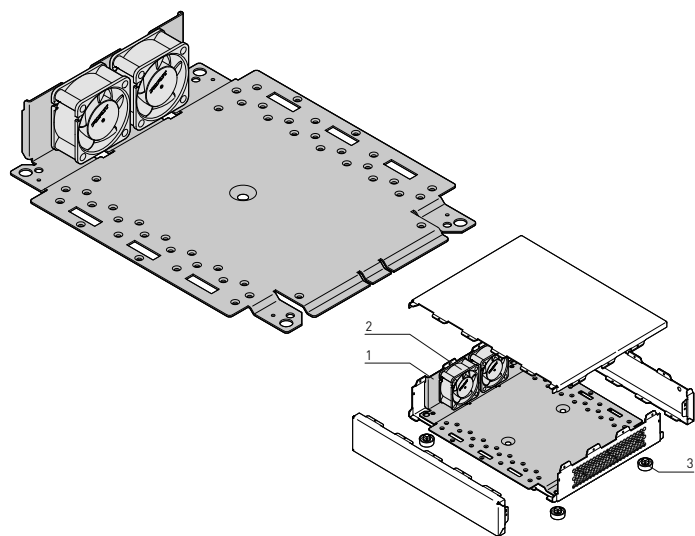
Horizontal rail mounting bracket	Page 5.132
Wall or Desktop mounting bracket	Page 5.132
Rubber feet	Page 5.134
Assembly tool	Page 5.137
Screwdriver	Page 5.137

Note

- Only the listed Interscale accessories are compatible

Small Form Factor Cases – Interscale M

Mounting plate with built-in fan holder and fans



02613059

02613053

Illustration shows desktop case

- Mounting plate (raised 4 mm) with integrated fan holder including fan kit for perforated case versions
- Fans are simple to fit to the mounting plate using vibration-damping fixing material
- Mounting plate fixes into desktop case with 4 plastic feet or into 19" case with 4 screws

Delivery includes

Item	Qty	Description
1	1	Mounting plate with fan holder, St, 1 mm, AlZn coated
2		For fan size and quantity see order Information
3a	4	Desktop cases: Plastic feet, PC, UL 94 V-0, black
3b	4	19" case (width 444 mm): countersunk screw
4	1	Assembly kit and user manual

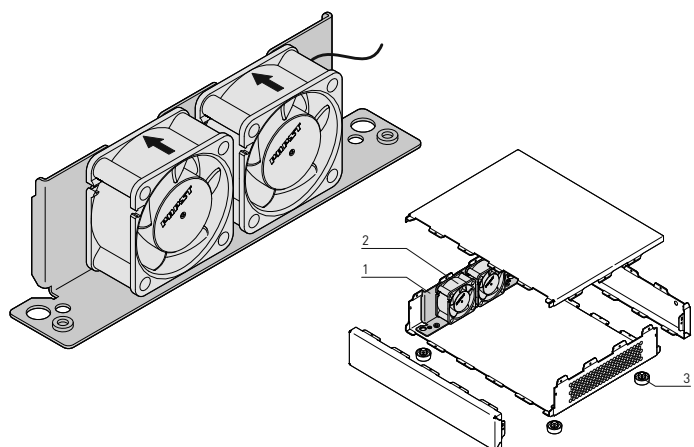
Order Information

	For case height	For case width	For case depth	Fan holder with fans					Part no.	
	U	mm	mm	mm	Height mm	Width mm	Depth mm	Fan dimensions mm	Number of fans	
Desktop cases	1	43.65	221.45	177.00	41.15	214.95	173.00	40 x 40 x 20	2	24827-154
	1	43.65	221.45	221.45	41.15	214.95	217.45	40 x 40 x 20	3	24827-155
	1	43.65	310.35	221.45	41.15	303.85	217.45	40 x 40 x 20	3	24827-175
	1	43.65	399.25	221.45	41.15	392.75	217.45	40 x 40 x 20	3	24827-195
	1	43.65	399.25	310.35	41.15	392.75	306.35	40 x 40 x 20	5	24827-197
	2	88.10	221.45	177.00	85.60	214.95	173.00	80 x 80 x 25	1	24827-254
	2	88.10	221.45	221.45	85.60	214.95	217.45	80 x 80 x 25	1	24827-255
	2	88.10	310.35	221.45	85.60	303.85	217.45	80 x 80 x 25	1	24827-275
	2	88.10	399.25	221.45	85.60	392.75	217.45	80 x 80 x 25	1	24827-295
	2	88.10	399.25	310.35	85.60	392.75	306.35	80 x 80 x 25	2	24827-297
	3	132.55	310.35	221.45	130.05	303.85	217.45	119 x 119 x 25	1	24827-375
	3	132.55	399.25	221.45	130.05	392.75	217.45	119 x 119 x 25	1	24827-395
	3	132.55	399.25	310.35	130.05	392.75	306.35	119 x 119 x 25	2	24827-397
19" cases	1	43.65	443.70	221.45	41.15	437.20	217.45	40 x 40 x 20	3	24827-105
	1	43.65	443.70	310.35	41.15	437.20	306.35	40 x 40 x 20	5	24827-107
	2	88.10	443.70	221.45	85.60	437.20	217.45	80 x 80 x 25	1	24827-205
	2	88.10	443.70	310.35	85.60	437.20	306.35	80 x 80 x 25	2	24827-207
	3	132.55	443.70	221.45	130.05	437.20	217.45	119 x 119 x 25	1	24827-305
	3	132.55	443.70	310.35	130.05	437.20	306.35	119 x 119 x 25	2	24827-307

- For technical data of fans see page 5.125

Small Form Factor Cases – Interscale M

Fan holder with fans



02613060

02613054

Illustration shows desktop case

- Fan holder for mounting on bottom of case
- Fans are simple to fit to the fan holder using vibration-damping fixing material
- Fan holders fix into desktop case with 2 plastic feet or into 19" case with 2 screws

Delivery includes

Item	Qty	Description
1	1	Fan holder with fan openings, St, 1 mm, AlZn coated
2		For fan size and number see Order Information
3a	4	Desktop cases: Plastic feet, PC, UL 94 V-0, black
3b	2	19" case (width 444 mm): countersunk screw
4	1	Assembly kit and user manual

Order Information

	For case height			For case width			For case depth			Fan holder with fans			Part no.
	U	mm	mm	mm	mm	mm	mm	mm	mm	Height mm	Width mm	Depth mm	
Desktop cases	1	43.65	221.45	177.00						41.15	28.50	145.00	24828-104
	1	43.65	221.45	221.45						41.15	28.50	189.45	24828-105
	1	43.65	310.35	221.45						41.15	28.50	189.45	24828-105
	1	43.65	399.25	221.45						41.15	28.50	189.45	24828-105
	1	43.65	399.25	310.35						41.15	28.50	278.35	24828-107
	2	88.10	221.45	177.00						85.60	31.00	145.00	24828-204
	2	88.10	221.45	221.45						85.60	31.00	189.45	24828-205
	2	88.10	310.35	221.45						85.60	31.00	189.45	24828-205
	2	88.10	399.25	221.45						85.60	31.00	189.45	24828-205
	2	88.10	399.25	310.35						85.60	31.00	278.35	24828-207
	3	132.55	310.35	221.45						130.05	31.00	189.45	24828-305
	3	132.55	399.25	221.45						130.05	31.00	189.45	24828-305
19" cases	3	132.55	399.25	310.35						130.05	31.00	278.35	24828-307
	1	43.65	443.70	221.45						41.15	28.50	189.45	24828-105
	1	43.65	443.70	310.35						41.15	28.50	278.35	24828-107
	2	88.10	443.70	221.45						85.60	31.00	189.45	24828-205
	2	88.10	443.70	310.35						85.60	31.00	278.35	24828-207
	3	132.55	443.70	221.45						130.05	31.00	189.45	24828-305
	3	132.55	443.70	310.35						130.05	31.00	278.35	24828-307

Note

- Fan holder cannot be used in conjunction with the mounting plate (instead use mounting plate with integrated fan holder)
- For technical data of fans see page 5.125

Technical data of DC axial fans



01108005

Illustration shows fan with dimensions 119 x 119 x 25 mm

Fan dimensions	40 x 40 x 20 mm	80 x 80 x 25 mm	119 x 119 x 25 mm
Nominal voltage	12 VDC	12 VDC	12 VDC
Airflow volume	10 m ³ /h	69 m ³ /h	170 m ³ /h
Noise level	18 dB(A)	32 dB(A)	43 dB(A)
Power consumption	0.9 W	2 W	5.3 W
Ambient temperature	- 20 ... +70 °C		
Terminal (AWG 28, TR 64, stripped and tin-plated)	Cable length 310 mm		
Approvals	VDE, CSA, UL		

Small Form Factor Cases – Interscale C

Interscale C for embedded NUC, Conduction cooled



Application: Case with connectors

02615021



Application: Case with connectors

02615009

- Integrated heat sink on top cover with 5 mm heat fins
- Compliant with the SDT.03 embeddedNUC standard
<http://www.sget.org/standards.html>
- Modular case consisting of 3 easy to assemble parts; body, top cover and front panel
- Rigid construction requires only two screws
- Board mounting studs installed
- Integrated EMC protection
- Color RAL 7016
- Cutouts specific for IES (<http://en.ies.de/>) MB95 embedded NUC board
- Other dimensions, cutout shapes or locations, and screen printing available



Delivery includes (assembled)

Item	Qty	Description
1	1	Base with 2 side panels and rear panel, Al, 1 mm, RAL 7016 (anthracite gray)
2	1	Top cover with integrated heat sink, Al, 1 mm, RAL 7016
3	1	Front panel, Al, 1 mm, RAL 7016
4	1	Pre-installed M2.5 studs with Torx T8 screws for board mounting
5	1	User manual

Order Information

Height mm	Width mm	Depth mm	Part no.
43.65	112.00	106.50	14830-002
Accessories			
Flexible Heat Conductor (FHC), 20 mm			Page 5.130
Aesthetic Design Elements			Page 5.130
Rubber feet			Page 5.134
Assembly tool			Page 5.137
Screwdriver			Page 5.137

Note

- Only the listed Interscale accessories are compatible

Small Form Factor Cases – Interscale C

Interscale C for Mini-ITX



Application: Case with connectors

02615011



Application: Case with connectors

02615010

- Integrated heat sink on top cover with 10 mm or 20 mm heat fins
- Modular case consisting of 3 easy to assemble parts; body, top cover and front panel
- Rigid construction requires only four screws
- Board mounting studs installed
- Integrated EMC protection
- Color RAL 7016
- Cutout for Mini ITX I/O panel, power connector (Phoenix Contact, 0710028) and power switch (Schurter, MCS 18 Front)
- Other dimensions, cutout shapes or locations, and screen printing available

Delivery includes (assembled)

Item	Qty	Description
1	1	Base with 2 side panels and rear panel, Al, 1 mm, RAL 7016 (anthracite gray)
2	1	Top cover with integrated heat sink, Al, 1 mm, RAL 7016
3	1	Front panel, Al, 1 mm, RAL 7016
4	4	Pre-installed M3 studs with Torx T8 screws for board mounting
5	1	User manual

Order Information

Height	Width	Depth	With 10 mm fins	With 20 mm fins
mm	mm	mm	Part no.	Part no.
94.00	184.00	189.00	14830-005	14830-006

Accessories

Flexible Heat Conductor (FHC), 70 mm	Page 5.131
Aesthetic Design Elements	Page 5.130
Horizontal rail mounting bracket	Page 5.132
Wall or Desktop mounting bracket	Page 5.132
Plastic tip-up feet	Page 5.133
Rubber feet	Page 5.134
Assembly tool	Page 5.137
Screwdriver	Page 5.137

Note

- Only the listed Interscale accessories are compatible

Small Form Factor Cases – Interscale C

Aesthetic Design Elements

- Designs created to compliment the various heat fin heights
- Compatible with all Interscale C enclosures

Order Information

	For case width mm	Colour, finish	Heat fin height		
			5 mm	10 mm	20 mm
			Part no.	Part no.	Part no.
For embedded NUC case	112	Blue (RAL 5010)	24830-010	–	–
	112	Red (RAL 3027)	24830-011	–	–
	112	Silver (RAL 9006)	24830-012	–	–
For Mini-ITX case	184	Blue (RAL 5010)	–	24830-013	24830-016
	184	Red (RAL 3027)	–	24830-014	24830-017
	184	Silver (RAL 9006)	–	24830-015	24830-018

Flexible Heat Conductor (FHC), 20 mm

- Patent pending conduction cooling solution for small form factor electronics
- Conductor block expands/contracts vertically to compensate for tolerance stack up and optimizes surface contact and pressure along the thermal path; eliminates the need for a thermal gap pad
- Provides industry leading conduction cooling performance, 10 % improvement over current conduction cooling methods
- Designed for Intel, AMD, Via, Freescale, NVidia and Texas Instrument processors that employ a BGA socket
- Secured to PCB with thermally conductive adhesive tape
- Compatible with Interscale C enclosures

Delivery includes (assembled)

Item	Qty	Description
1	1	Flexible heat conductor, assembled; thermal grease included
2	1	Adhesive tape, thermally conductive

Order Information

Height	Width mm	Depth mm	Part no.
19.75 ± 1.5 mm	22	22	24830-005



Small Form Factor Cases – Interscale C

Flexible Heat Conductor (FHC), 70 mm



02615017

- Patent pending conduction cooling solution for small form factor electronics
- Conductor block expands/contracts vertically to compensate for tolerance stack up, and optimizes surface contact and pressure along the thermal path; eliminates the need for a thermal gap pad
- Provides industry leading conduction cooling performance, 70 % improvement over current conduction cooling methods
- Designed for ATX/ITX/Mini ITX & COM using Intel core-i processors and AMD processors with the following sockets:
Intel: LGA775, LGA1150, LGA1155, LGA1156, LGA1366, LGA2011
AMD: AM2, AM2(+), AM3, AM3(+), FM1, FM2, FM2(+)
- Secured to PCB with mounting brackets, sold separately
- Compatible with Interscale C enclosures

Item	Qty	Description
1	1	Flexible heat conductor, assembled; thermal grease included
2	1	Frame, Al

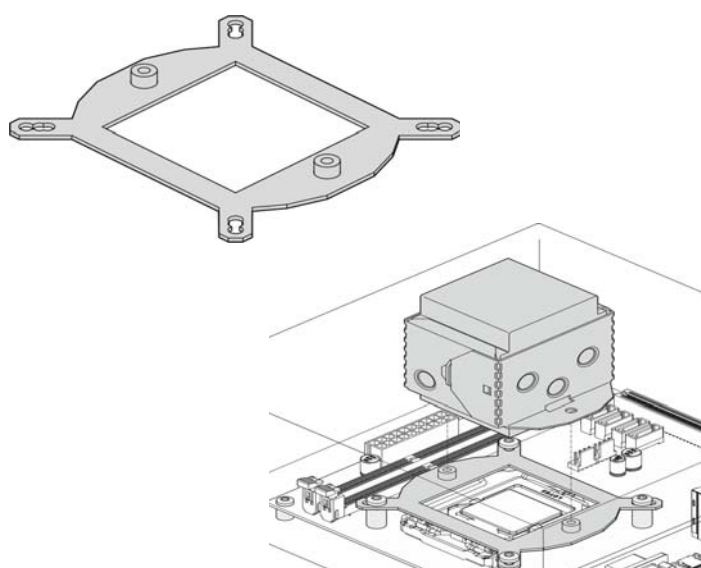
Order Information

Height	Width mm	Depth mm	Part no.
68.50 ± 2.5 mm	50	50	24830-001
Accessories			
Intel mounting brackets for 70 mm FHC			24830-002
AMD mounting brackets for 70 mm FHC			24830-003

Note

- Please order the mounting bracket (Intel or AMD, listed under accessories) to assemble the FHC to the board

Mounting brackets for 70 mm FHC



02615053

02615054

Bracket for Intel

Application: Intel mounting bracket

- Designed to secure the 70 mm Flexible Heat Conductor to PCB
- Utilizes keep out zones to not interfere with other board components
- Designed for ATX/ITX/Mini ITX & COM using Intel core-i processors and AMD processors with the following sockets:
Intel: LGA775, LGA1150, LGA1155, LGA1156, LGA1366, LGA2011
AMD: AM2, AM2(+), AM3, AM3(+), FM1, FM2, FM2(+)

Delivery includes (assembled)

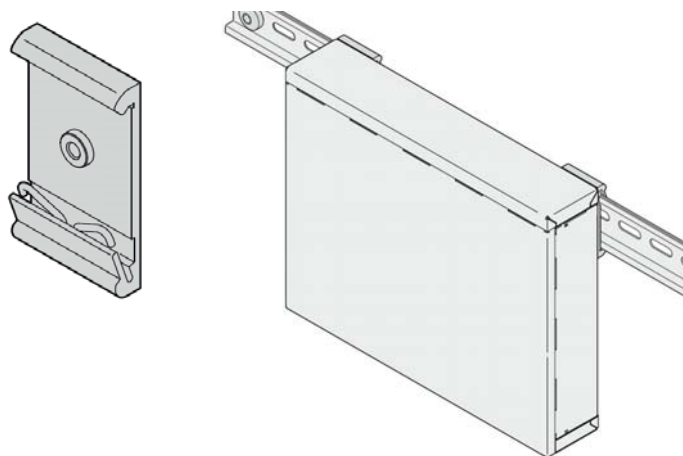
Item	Qty	Description
1	1	Mounting bracket with associated hardware

Order Information

Description	Part no.
Intel mounting brackets for 70 mm FHC	24830-002
AMD mounting brackets for 70 mm FHC	24830-003

Small Form Factor Cases – Interscale Accessories

Clip for horizontal rail mounting



02613069 Example: Clip for horizontal rail mounted on case 02613070

- The clip can be used to fix the case to a horizontal rail
- The clip is bolted to the case instead of the feet and can then be fitted onto the rail

Delivery includes

Item	Qty	Description
1	2	Clip, Al profile, clear anodized, width 30 mm, 52 mm, snap mounting for 35 mm DIN rails EN 50022; M4 self-clinching nut
2	2	Screw, T20, M4 x 6
3	1	User manual

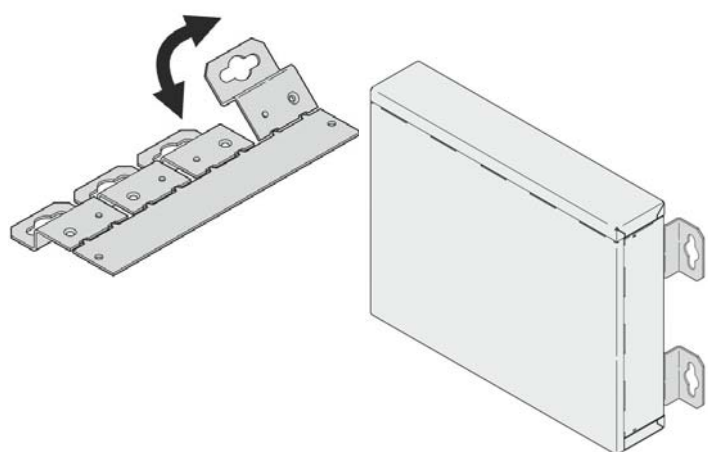
Order Information

Description	Qty/PU piece	Part no.
Clip for horizontal rail mounting	2	24820-002

Note

- Not compatible with embedded NUC cases or Interscale M 19" cases

Wall or Desktop mounting bracket



02615052 Example: Mounting bracket mounted on the case 02615051

- Bracket for wall or desktop mounting
- Provides 14 mm clearance from mounting surface for cable management
- Able to assemble / disassemble case while mounted

Delivery includes

Item	Qty	Description
1	4	Mounting bracket, St, 1.5 mm, finish AlZn

Order Information

Description	Qty/PU piece	Part no.
Wall or Desktop mounting bracket	4	24820-005

Note

- Not compatible with embedded NUC cases or Interscale M 19" cases

Small Form Factor Cases – Interscale Accessories

Plastic tip-up feet



01810004

- Can be used instead of standard feet
- Carrying capacity: 25 kg per foot
- Mounting holes in bottom of casing

Delivery includes (kit)

Item	Qty	Description
1	4	Foot, PA, UL 94 V-0
2	4	Anti-slip protection, TPE
3	2	Tip-up device, PA, UL 94 V-0
4	1	Assembly kit

Order Information

Description	Qty/PU piece	Part no.
Tip-up feet, anthracite, similar to RAL 7016	4	20603-002

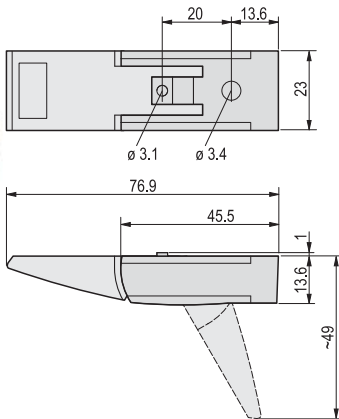
Note

- Not compatible with embedded NUC cases or Interscale M 19" cases



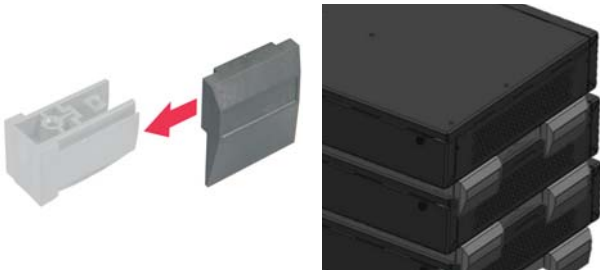
Application example

02613008



02906050

Stacking aid



01810005

Application example
Interscale M

02613020

- Stacking aid is clipped onto tip-up feet (please order tip-up feet separately)

Delivery includes (kit)

Item	Qty	Description
1	4	Stacking aid, PA ,UL 94 V-0

Order Information

Description	Qty/PU piece	Part no.
Stacking aid, anthracite, similar to RAL 7016	4	20603-003

Accessories

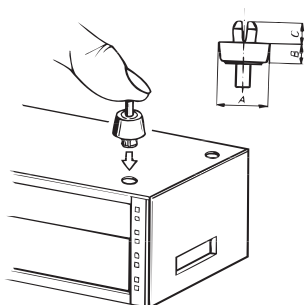
Plastic tip-up feet anthracite, similar to RAL 7016, 4 pieces	20603-002
---	------------------

Note

- A plastic tip-up feet are required for mounting, please order separately
- Not compatible with Interscale M 19" cases, Interscale M for embedded NUC cases or Interscale C cases

Small Form Factor Cases – Interscale Accessories

Plastic feet



02613010

A4-330

Illustration shows mounting of feet

Dimensions			Hole diameter
A	B	C	
mm	mm	mm	mm
16	7.2	4	7

- Plastic feet with rubberized base
- Toolless installation; fixed by pressing in the expanding pin

Delivery includes

Item	Qty	Description
1	1	Plastic foot, PC, UL 94 V-0, black, with anti-slip protection

Order Information

Description	Qty	Part no.
Plastic feet	SPQ 50 ¹⁾	60224-009
Plastic feet	PU 4 ²⁾	24820-004

1) SPQ (standard pack quantity): Part number includes 1 piece, but delivery is exclusively made in standard pack quantity (SPQ);

please order at least the SPQ quantity or a multiple

2) PU - Part no. includes one packing unit (PU); delivery is exclusively made in PU

Note

- Not compatible with Interscale M 19" cases, Interscale M for embedded NUC cases or Interscale C cases

Rubber feet



02615020

- Toolless installation; secures via adhesive
- Compatible with all Interscale M cases and Interscale C cases

Delivery includes (assembled)

Item	Qty	Description
1	4	Rubber feet, height 2.2 mm, Ø 7.9 mm

Order Information

Description	Part no.
Rubber feet	21102-025

Small Form Factor Cases – Interscale Accessories

Mounting plate for PCBs

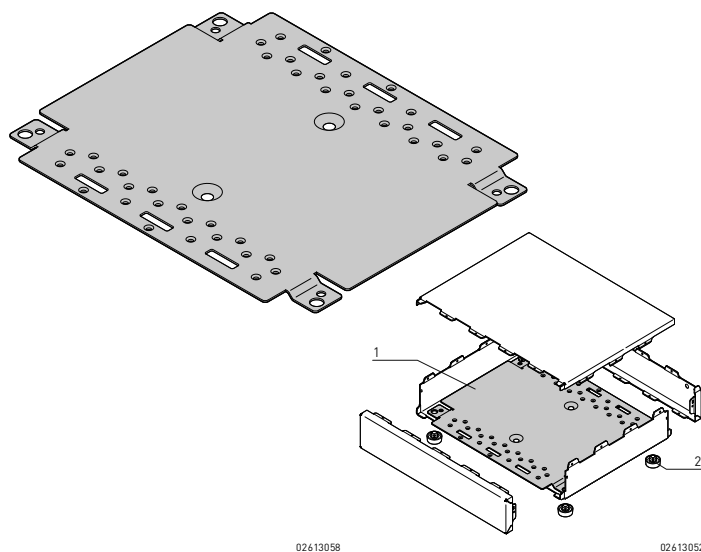


Illustration shows desktop case

- Mounting plate (raised 4 mm) for mounting individual components
- Mounting plate fixes into desktop case with 4 plastic feet or into 19" case with 4 screws

Delivery includes

Item	Qty	Description
1	1	Mounting plate, St, 1 mm, AlZn coated
2a	4	Desktop cases: Plastic feet, PC, UL 94 V-0, black
2b	4	19" case (width 444 mm): Countersunk screw
3	1	Assembly kit and user manual

Order Information

For case width mm	For case depth mm	Mounting plate		Part no.
		Width mm	Depth mm	
132.55	132.55	124.33	128.55	24822-033
132.55	177.00	124.33	173.00	24822-034
221.45	177.00	213.23	173.00	24822-054
221.45	221.45	213.23	217.45	24822-055
310.35	221.45	302.13	217.45	24822-075
399.25	221.45	391.03	217.45	24822-095
399.25	310.35	391.03	306.35	24822-097
443.70	221.45	435.48	217.45	24822-005
443.70	310.35	435.48	306.35	24822-007

Note

- Not compatible with Interscale M 19" cases, Interscale M for embedded NUC cases or Interscale C cases

Flexible rail system for mounting PCBs

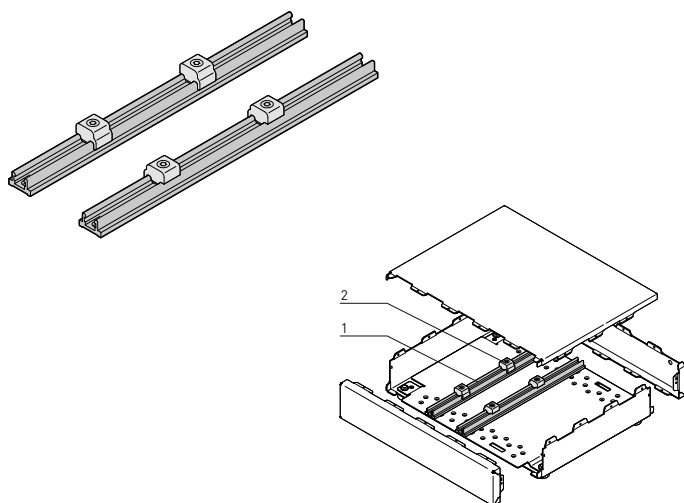


Illustration shows PCB holder mounted on the mounting plate

- Board support is bolted onto mounting plate
- PCB (board thickness 1.4 ... 2.6 mm) can be positioned flexibly

Delivery includes

Item	Qty	Description
1	2	PCB fastening, Al extrusion, clear anodized, width 13.5 mm, height 8.7 mm, for length see Order Information
2	4	PCB support, Al diecast, clear anodized, for board thickness from 1.4 ... 2.6 mm
3	1	Assembly kit and user manual

Order Information

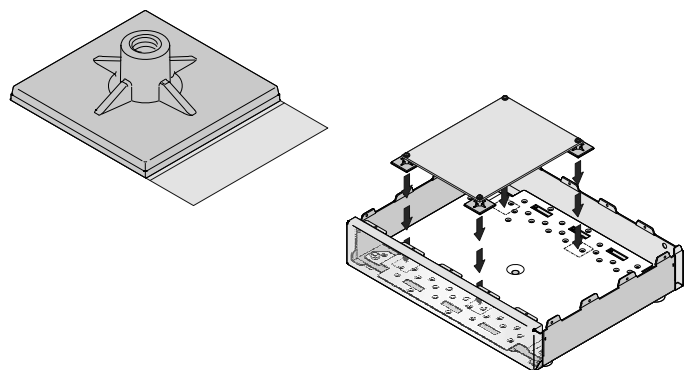
For case depth mm	PCB support for mounting plate Length mm	Part no.
132.55	128.55	24827-023
177.00	173.00	24827-024
221.45	217.45	24827-025
310.35	306.35	24827-027

Note

- Not compatible with Interscale M 19" cases, Interscale M for embedded NUC cases or Interscale C cases

Small Form Factor Cases – Interscale Accessories

Adhesive studs for mounting PCBs



02613067

Example: board mounting with adhesive base

02613068

- For individually fixing e.g. PCBs or smaller components
- Base is affixed with adhesive foil; acts as a spacer. The component to be fixed is bolted to the base with the screw
- Fixes onto mounting plate or direct onto bottom of case

Delivery includes

Item	Qty	Description
1	10	Adhesive base, plastic, 19 x 19 mm
2	10	Screw, Torx, T8
3	10	Washer, A2.7
4	1	User manual

Order Information

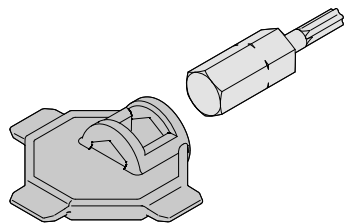
Description	Height mm	Part no.
Adhesive base	5	24827-005
Adhesive base	7	24827-007
Adhesive base	9	24827-009

Note

- Not compatible with Interscale M 19" cases, Interscale M for embedded NUC cases or Interscale C cases

Small Form Factor Cases – Interscale Accessories

Assembly tool



02613064

- Plastic tool with bit can be used for bolting together and opening the case
- Compatible with all Interscale M and C enclosures

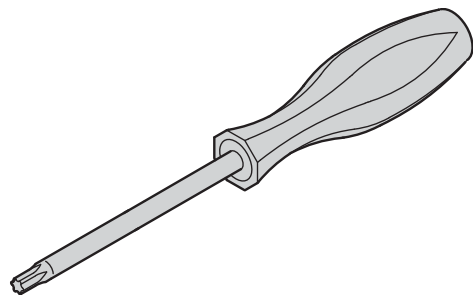
Delivery includes

Item	Qty	Description
1	1	Assembly tool (plastic)
2	1	Bit, Torx, T10

Order Information

Description	Part no.
Assembly tool	24820-001

Screwdriver



AZA45925

- Used for securing PCBs to studs
- Compatible with all Interscale M and Interscale C enclosures

Order Information

Description	Part no.
Torx screwdriver, M2.5, T 8 Torx	64560-026