FASTENING & GROUNDING CLIP
FOR FRAMED MODULES AND STEEL STRUCTURES

Screwless and tool-free clipped fastening solutions provide fast and simple assembly.
It allows customers to reduce the overall cost of renewable energies.

PowAR Snap® S

COMBINED PV MODULE
FASTENING & GROUNDING CLIP

GROUND MOUNT | INDUSTRIAL & COMMERCIAL ROOFS — APPLICATIONS

FRAMED | PORTRAIT & LANDSCAPE — MODULES

BENEFITS

))) PERFORMING
Conforms to UL STD 2703 (Ed.2015)
Tested by accredited laboratories and qualified by major module manufacturers
High protection against corrosion and lightening
Grounding continuity of the string preserved when a module is dismounted for maintenance
Anti-theft designed

))) QUICK
Fastening and grounding in a single operation
1 module installed within 30 seconds(1)

))) EASY TO USE
Tool-free set up
Minimal training required
Intuitive: the "click" signals job is properly done
Friendly: no need for climbing on structure, panels can be inserted from underneath the array

))) COST SAVING
Lower overall costs of the PV installation
Lower land investment and structure savings thanks to minimized inter module gap: up to 3% more modules per available surface
Lower maintenance costs: Screw-less, no periodic torque control required
Hot spot risk reduction for PV modules thanks to elastic mechanical clamping(2)

(1) According to field tests results available on demand
(2) Mechanical shocks and daily thermal cycles often induce micro-cracks within cells, leading to hot spots and power output degradation.

ARaymond™
MORE THAN FASTENING

TECHNICAL SPECIFICATIONS

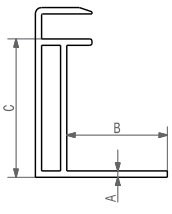



		CLIP FOR PV MODULE FASTENING	STOPPER	SLIDER REMOVAL TOOL	REMOVAL TOOL BACK ACCESS
		PowAR Snap® S	PowAR Snap® S	For roof top	For ground mount
PRODUCT DETAILS	ARTICLE N°	233147002	232579001	237942001	235216001
	MATERIAL	Steel 1.1231 - DIN EN 10132:2000 (SAE 1070 - ASTM AISI)	Steel 1.0038 - NF 10025:1990	Metal assembly	Metal assembly
	SURFACE TREATMENT	Combines an inorganic zinc-rich with basecoat with aluminum-rich organic topcoat	Combines an inorganic zinc-rich with basecoat with aluminum-rich organic topcoat	-	-
	DIMENSIONS IN MM	44x48x34	49x52x50	1100x50x140	280x130x40
	WEIGHT IN G	33,4	103	1300	500
PERFORMANCES	TEMPERATURE RESISTANCE	Conforms to UL 2703 (2015) section 17	-	-	-
	HUMIDITY RESISTANCE	Conforms to UL 2703 (2015) section 18	-	-	-
	MECHANICAL RESISTANCE	Load +5400/-2400 Pa compliant with IEC 61215-10.16:2005 Conforms to UL 2703 (2015) section 21	Max. Load 1000 daN (suitable for 6 x PV 60 cells modules loaded at 5400 Pa with a 20° tilt angle)	-	-
	CORROSION RESISTANCE	No red rust after 1000 hours salt spray acc. EN 60068-2-11:1999 Conforms to UL 2703 (2015) sections 19.1 and 19.2	No red rust after 1000 hours salt spray acc. EN 60068-2-11:1999	-	-
	GROUNDING CONTINUITY	Compliant with IEC 60439-1:2004 8.2.4.1 after 240 hours salt spray, acc. EN 60068-2-11:1999 after sulfur dioxide (SO2) acc. EN ISO 6988:1995 Conforms to UL 2703 (2015) sections 22.1a and 22.1b	-	-	-
	LIGHTNING RESISTANCE	Compliant with IEC 60439-1:2004 8.2.4.1 after 20kA/8-20µs current pulse	-	-	-
ENVIRONMENT	PV MODULE SPECIFICATIONS	Module with frame thickness A between 1,5 and 2,2mm, minimum lip length B of 16mm and minimum frame height C of 30mm (see technical drawing 1)	Module with frame	-	-
	RAIL SPECIFICATIONS	Standard Strut rails 41x41mm or 41x62mm (see technical drawing 2) or steel rails with square punch (see technical drawing 3) or with specific punch (see technical drawing 4)	Standard Strut rails 41mm wide (see technical drawing 2)	-	-
	ACCESSORIES NEEDED	-	Delivered with 2 self-threading / tapping CHC screws	-	-

Product Information disclosed in this "data sheet" can be modified without any previous notice.

PV MODULE FRAME AND RAIL SPECIFICATIONS

1



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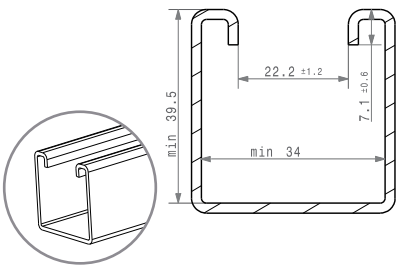

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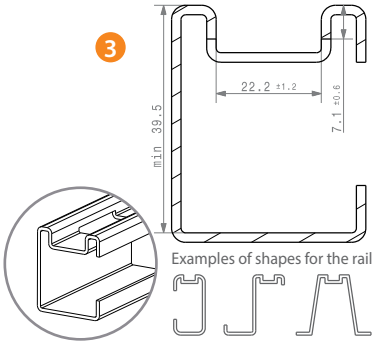
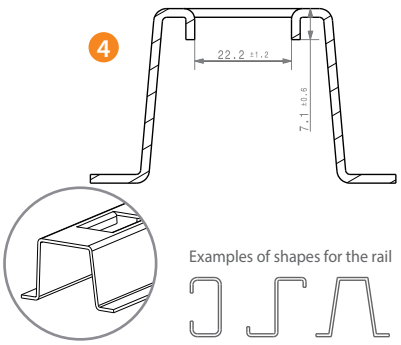


Examples of shapes for the rail

4



Examples of shapes for the rail

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ZA Technisud
38100 Grenoble
FRANCE

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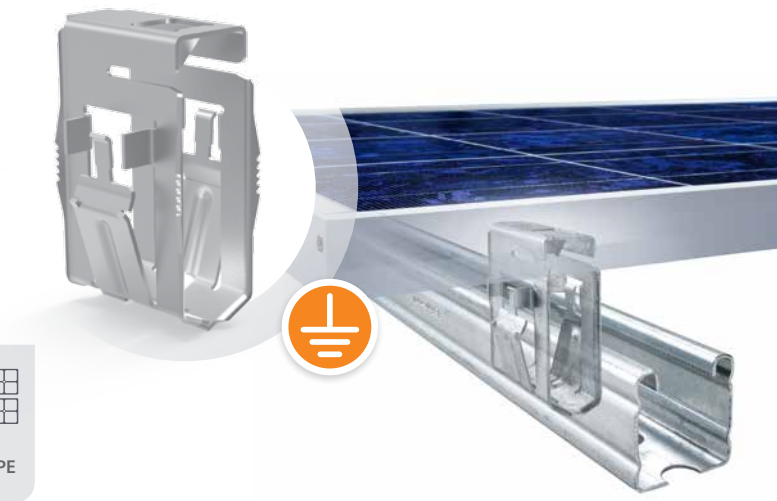
FASTENING & GROUNDING CLIP
FOR FRAMED MODULES AND STEEL STRUCTURES

Screwless and tool-free, clipped fastening solutions provide fast and simple assembly.
It allows customers to reduce the overall cost of renewable energies.

PowAR Snap® 90B

- **Now UL recognized for grounding**
- **Easy and tool-free fastener** of the module to the strut or steel rail.
- **Simply slides** onto the module frame and snaps into channeled strut or steel rail.



GROUND MOUNT

INDUSTRIAL & COMMERCIAL ROOFS

FRAMED

PORTRAIT & LANDSCAPE

APPLICATIONS

MODULES

BENEFITS

))) PERFORMING

UL recognized to UL 2703 (Ed. 2010) section 17 for temperature cycling testing.
UL recognized to UL 2703 (Ed. 2010) section 18 for humidity testing.
UL recognized to UL 2703 (Ed. 2010) section 19 for corrosive atmosphere testing.
UL recognized to UL 2703 (Ed. 2010) section 21 for mechanical load testing.
UL recognized to UL 2703 (Ed. 2010) section 22 for bonding conductor testing.

))) EASY TO USE

Tool free: low mounting effort.
Multiple access: module assembly from top or bottom.
Maintenance friendly: no torque control required.

))) COST SAVING

Fast assembly: 2 minutes per module saved[1].
Foot print reduction: for solar on-ground installations up to 3% [2].

(1) According to field tests results available on demand
(2) Clamp-less solution allowing 3 cm average space saving between each module

ARaymond
MORE THAN FASTENING

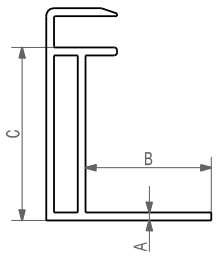
TECHNICAL SPECIFICATIONS

		CLIP FOR PV MODULE FASTENING	REMOVAL TOOL
		PowAR Snap® 90B HDG coating	PowAR Snap® 90B
Product details	ARTICLE N°	237390001	227130000 (bottom removal) 229959000 (side removal)
	MATERIAL	SAE 1050-1065 STEEL	1018 STEEL HRPO
	SURFACE TREATMENT	Hot dip galvanised 1 oz./sq.ft. Minimum (60 microns thickness)	BLACK OXIDE FINISH
	DIMENSIONS IN MM	39.2x63.3x34	-
	WEIGHT IN G	50	-
Performances	TEMPERATURE RESISTANCE	UL recognized to UL 2703 (Ed. 2010) section 17	-
	HUMIDITY RESISTANCE	UL recognized to UL 2703 (Ed. 2010) section 18	-
	CORROSION RESISTANCE	UL recognized to UL 2703 (Ed. 2010) section 19	-
	MECHANICAL RESISTANCE	UL recognized to UL 2703 (Ed. 2010) section 21	-
	GROUNDING CONTINUITY	UL recognized to UL 2703 (Ed. 2010) section 22	-
Environment	PV MODULE SPECIFICATIONS	PV module with frame thickness A between 1.5 to 2.2 mm and minimum lip length B of 16mm (see technical drawing 1)	
	RAIL SPECIFICATIONS	Standard 1 5/8" strut rail (41 x 41 or 41 x 62 mm) (see technical drawing 2), or steel rails with square punch (see technical drawing 3) or with specific punch (see technical drawing 4)	

Product Information disclosed in this "data sheet" can be modified without any previous notice.

TECHNICAL DRAWINGS

1



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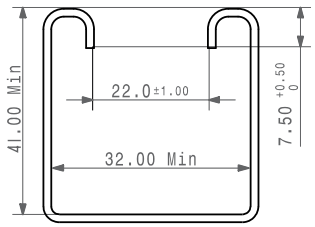

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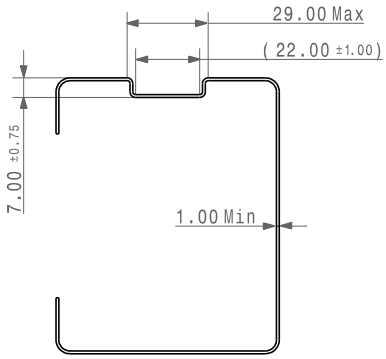
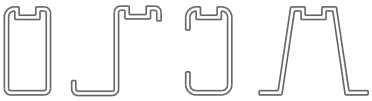


Examples of shapes for the rail



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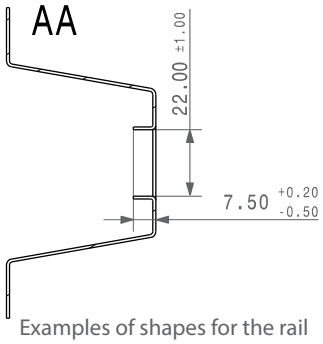

Examples of shapes for the rail

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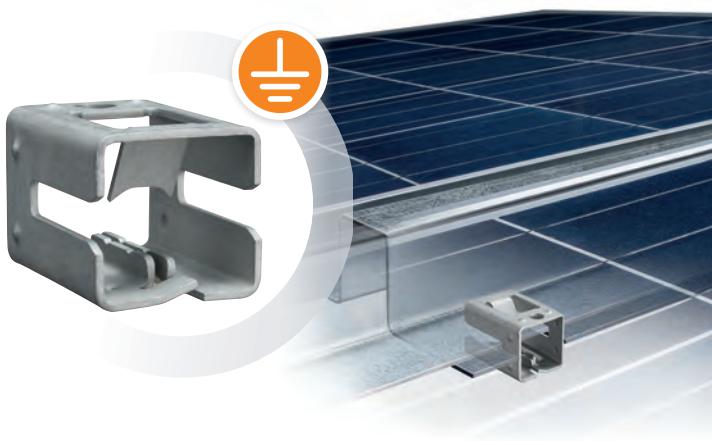
MORE THAN FASTENING

FASTENING & GROUNDING CLIP
FOR FRAMED MODULES ON TRACKERS OR GROUND MOUNT

Screwless and tool-free clipped fastening solutions provide fast and simple assembly.
It allows customers to reduce the overall cost of renewable energies.

PowAR Cinch™

COMBINED PV MODULE
FASTENING & GROUNDING CLIP



APPLICATIONS		MODULES	
TRACKER	GROUND MOUNT	FRAMED	PORTRAIT & LANDSCAPE

BENEFITS

))) PERFORMING
Tested by accredited laboratories and qualified by major module manufacturers(1).

Accreditation N° 1-0311 Scope available on www.cofrac.fr

))) QUICK
Fastening and grounding in a single operation.
1 module installed in less than 30 seconds(2).

))) EASY TO USE
Tool-free set up.
Friendly: clips can be inserted from underneath the array, no need to step on the module.
Maintenance free as no torque correction required.
Minimal training required.
Very flexible: no worry about module frame's hole and structure hole mismatch.

))) COST SAVING
Lower overall costs of the PV installation.
Lower maintenance costs: Screw-less, no periodic torque control required.
Hot spot risk reduction for PV modules thanks to elastic mechanical clamping(3).

(1) Report available on demand
(2) According to field tests results available on demand.
(3) Mechanical shocks and daily thermal cycles often induce micro-craks whithin cells, leading to hot spots and power output degradation.

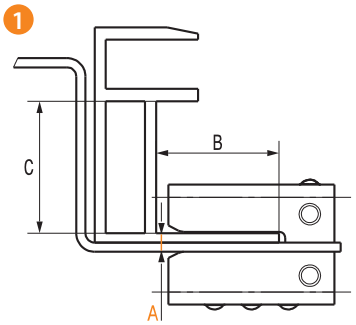
ARaymond™
MORE THAN FASTENING

TECHNICAL SPECIFICATIONS

		POWAR CINCH™ **NARROW**	POWAR CINCH™ **WIDE**
		2.3 mm <= (Thicknesses Rail + module's frame) <= 3 mm	3 mm < (Thicknesses Rail + module's frame) <= 3.8 mm
PRODUCT DETAILS	ARTICLE N°	240865	243648
	MATERIAL	Steel 1.1231- DIN EN 10132:2000 (SAE 1070 - ASTM AISI)	
	SURFACE TREATMENT*	Zn Al Flake coating	
	DIMENSIONS IN MM	27 x 19.5 x 20	
	WEIGHT IN G	13	
PERFORMANCES	MECHANICAL RESISTANCE	Load +5400/-2400 Pa compliant with IEC 61215-10.16:2005	
	CORROSION RESISTANCE	No red rust after 720 hours salt spray acc. EN 60068-2-11:1999	
	GROUNDING CONTINUITY	Compliant with IEC 604391:20014 8.2.4.1 after 240 hours salt spray, acc. to EN 60068-2-11:1999	
ENVIRONMENT	PV MODULE SPECIFICATIONS	Module with minimum lip length B of 16 mm (see technical drawing 1)	
	RAIL SPECIFICATIONS	See technical drawings 2, 3 and 4	

POWAR CINCH™ CHOICE

1



It depends on total thicknesses of rail + module frame's lip **(A)**.

POWAR CINCH™ **NARROW**

(A) MIN	2.3 mm
(A) MAX	3 mm

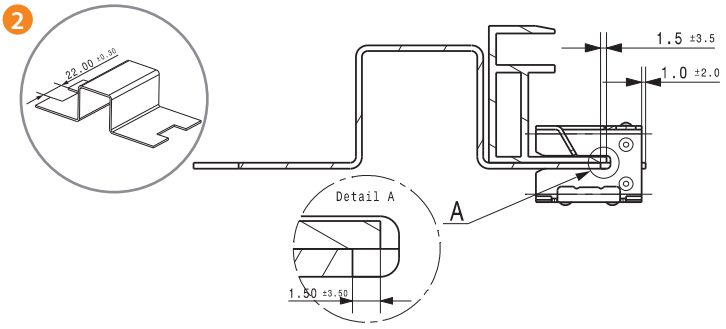
POWAR CINCH™ **WIDE**

(A) MIN	> 3 mm
(A) MAX	3.8 mm

**Other surface treatment available on demand.*

EXAMPLES OF RAIL SPECIFICATIONS

2



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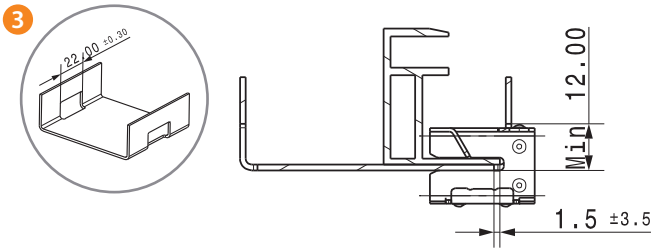

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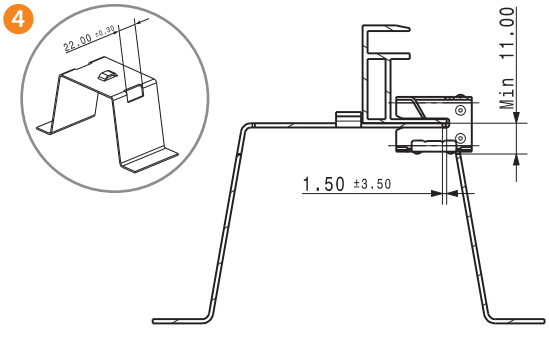

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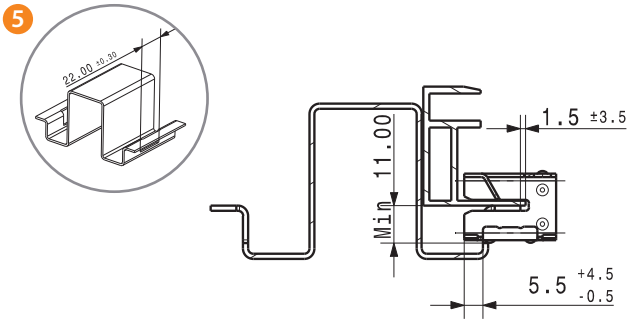


ARaymond™ MORE THAN FASTENING

CABLE ROUTING CLIPS
FOR PHOTOVOLTAIC ELECTRICAL CABLES



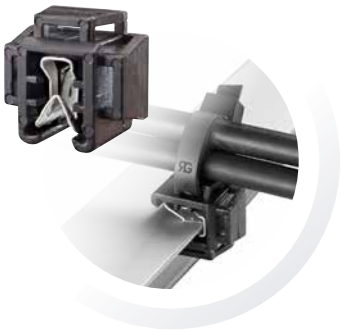
Screwless and tool-free, clipped fastening solutions provide fast and simple assembly.
It allows customers to reduce the overall cost of renewable energies.

Cable Routing Clips

- **A large scope of solutions for fixing cables** over, along or on the side of module edges or rail structures, in order to improve wirings.
- **Cable routing clips represent easy and quick solutions for cable installations.**

Multi cables parallel to the edge.
One metal piece.

Multi-directional cable routing



Multidirectional cable routing.
Plastic contact only.

BENEFITS

))) EASY TO USE
Tool free installation.

))) ROBUST
- Metal parts with surface treatment adapted to corrosive environments.
- Galvanic couple reduced with aluminum.
- With rolled edges to prevent damage to the sheath when pulling cables.
- Instant application achieved with the barb design.

))) EASE THE CABLE MAINTENANCE
Possibility to re-open the clips.

))) MULTIPURPOSE
- For supports with thicknesses from 0,7 to 4 mm: can fit on module edges or on structure.
- For cables 4, 6, 10 mm^2 section or strands.

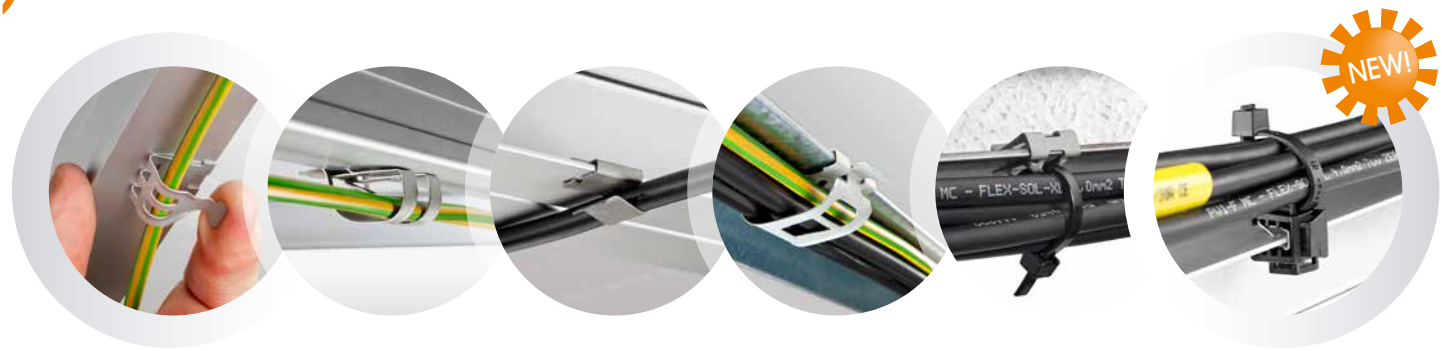
ARaymond™
MORE THAN FASTENING

TECHNICAL SPECIFICATIONS

	CLIPS MANAGING ONE CABLE			CLIPS MANAGING SEVERAL CABLES AND STRANDS		
ARTICLE N°	228185001	018690003	019659002	228187001	208738001: edge mounting adapter + 056476001: cable tie	236331000: edge mounting adapter + 056476001: cable tie
CABLE HOLDING	Metal	Metal	Metal	Metal	Metal/Plastic Any standard cable ties up to 3.6mm width	Plastic Any standard cable ties up to 5mm width
MATERIAL	C67S Steel	C67S Steel	C67S Steel	C67S Steel	C67S Steel Polyamid 6.6 (black color)	C67S Steel Housing & Tie: Polyamid 6.6 (black color) - RoHS compliant
SURFACE TREATMENT	Metal: Combines an inorganic zinc-rich with basecoat with aluminum-rich organic topcoat					-
CORROSION RESISTANCE	Metal: No red rust after 1 000 hours of Neutral salt spray according to EN ISO 9227:2012					-
CABLE ORIENTATION	Parallel to the edge	Parallel to the edge with guidance adjusted to different diameters	Perpendicular to the edge	Parallel to the edge	Multi-directional	Multi-directional
EXTERNAL DIAMETERS	Max. 8mm	From 4,5 to 10mm	From 5,7 to 7mm	Up to 16mm (or 4 cables of diam. 6mm)	With AR cable ties 3,6 x 200mm: Strand or cables with total diam. from 6 to 50mm max.	With AR cable ties 3,6x200mm: Strand or Cables with total diam. from 6 to 50 mm max.
THICKNESS RANGE OF THE SUPPORT (Module frame or structure)	2,25 to 2,75mm	0,8 to 3mm	0,7 to 2,1mm	1,5 to 2,5mm	1,5 to 4mm	1,5 to 3,5mm
POSSIBILITY TO RE-OPEN	YES	YES	YES	YES	Adapter unchanged/ New Cable tie	Adapter unchanged/ New Cable tie
QUANTITY OF PIECES PER BOX	1800	700	4000	600	208738001: 4300 056476001: 2000	236331000: 5000 056476001: 2000

Product Information disclosed in this "BROCHURE" can be modified without any previous notice.

IN SITUATION



Ref. 228185001 | Ref. 018690003 | Ref. 019659002 | Ref. 228187001 | Ref. 208738001 + Ref. 056476001 | Ref. 236331000 + Ref. 056476001

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