

**SIEMENS**

Hardware Installation Manual

**SINAMICS**

**SINAMICS DCM**

Mounting kit to increase the degree of  
protection to IP20

Edition

02/2021

[www.siemens.com/drives](http://www.siemens.com/drives)



# SIEMENS

## SINAMICS

### DCM

### Mounting kit to increase the degree of protection to IP20

Hardware Installation Manual

Preface

Ordering data

1

Description

2

Assembling

3

(Type) test

4




Appendix

A

# Legal information

## Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

## Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

## Proper use of Siemens products

Note the following:

 <b>WARNING</b>
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

## Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

## Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

# Preface

 **DANGER**

**Failure to observe the general safety instructions and residual risks**

If the general safety instructions and remaining risks are not observed, accidents can occur involving severe injuries or death.

- Comply with the general safety instructions in Chapter 1 of the SINAMICS DCM DC Converter Operating Instructions.
- Take special care to ensure that the unit is brought into a no-voltage condition and locked out before carrying out any work.

---

**Note**

If you want additional information or if exceptional problems arise that are not addressed in sufficient detail in this Hardware Installation Manual, you can request the required information from your local Siemens office.

We would also like to point out that the contents of this Hardware Installation Manual are neither part of nor modify any prior or existing agreement, commitment or contractual relationship. The Purchase Agreement contains the complete and exclusive obligations of Siemens, including the warranty provisions. Any statements contained in this Hardware Installation Manual neither expand nor restrict the scope of these contractual warranty conditions.

---

## Service

You can find information on our services and regional contact persons in the Internet - (<https://support.industry.siemens.com/sc/ww/en/sc>)

## Technical Support

Our technical support can provide you with technical assistance for products, systems, and solutions:

Service (<https://support.industry.siemens.com/sc/ww/en/sc>)

## Central hotlines for SINAMICS DCM technical support

European and African time zone	Service Request ( <a href="https://support.industry.siemens.com/My/ww/en/requests#createRequest">https://support.industry.siemens.com/My/ww/en/requests#createRequest</a> )	
America time zone	<b>24-hour hotline: +1 800 333 7421</b>	
	Tel.: +1 423 262 2960 Fax: +1 423 262 2200 email ( <a href="mailto:support.america.automation@siemens.com">mailto:support.america.automation@siemens.com</a> )	8:00 to 17:00 Eastern Standard Time
Asia/Australia time zone	Tel.: +86 1064 757575 Fax: +86 1064 747474 email ( <a href="mailto:support.asia.automation@siemens.com">mailto:support.asia.automation@siemens.com</a> )	7:30 to 17:30 Beijing local time

## SINAMICS DCM documentation available

### SINAMICS DCM DC Converters Operating Instructions

contains all information on ordering, installation, connecting, commissioning, maintaining, description of functions, and service

### SINAMICS DCM Control Modules Operating Instructions

contains all information on ordering, installation, connecting, commissioning, maintaining, description of functions, and service

### SINAMICS DCM List Manual (for DC converters and control modules)

Contains parameter list, function diagrams, list of faults and alarms

### SINAMICS free function blocks, function description

Includes a general description, list of parameters, the function block diagrams as well as the list of faults and alarms.

## Manuals and application notes on the Internet

The manuals and application documents are also available in the Internet:

Manuals (<https://support.industry.siemens.com/cs/ww/en/ps/13298/man>)

The list of general conditions available there include current supplements to the manuals. The notes included in the general condition lists have a higher priority than the statements made in the manuals.

# Table of contents

- Preface ..... 3
- 1 Ordering data ..... 7
- 2 Description..... 9
- 3 Assembling ..... 13
- 4 (Type) test..... 17
- A Appendix ..... 19





## Ordering data

Table 1-1 Ordering data

Article	Article number
Mounting kit to increase the degree of protection to IP20 for 15 A to 30 A units	6RX1800-0MA00
Mounting kit to increase the degree of protection to IP20 for 60 A to 280 A units	6RX1800-0MA01
Mounting kit to increase the degree of protection to IP20 for 400 A to 600 A units	6RX1800-0MA02
Mounting kit to increase the degree of protection to IP20 for 720 A to 850 A units	6RX1800-0MA03

The mounting kits are supplied packed in a cardboard box. A product packaging label is attached to the cardboard box.

Avoid heavy vibration and severe shocks during transportation, e.g. when the cabinet is lowered into position.

Follow the instructions on the packaging concerning transportation, storage, and proper handling.

If you discover any damage that has occurred in transit, please inform your shipping agent immediately.

The packaging can be disposed of in accordance with local regulations for cardboard packaging.



## Description

### Degree of protection IP20 according to IEC 60529

The degree of protection indicates protection against touching and penetration of solid objects and/or water.

SINAMICS DCM units are delivered with degree of protection IP00 and therefore offer no protection against touching or penetration. The mounting kit for units with a rated DC current up to 850 A help you to achieve degree of protection IP20 on the system side.

Degree of protection IP20 offer protection against touching with the finger and penetration of solid objects greater than 12.5 mm dia, but no protection against water.

### Degree of protection IP20 is achieved when the subsequent installation rules are observed

- Degree of protection IP20 is only achieved after completely installing the unit, including all unit covers that are provided, installing the mounting kit for degree of protection IP20 and wiring up the unit.
- Cables must be used to establish the power connections for the armature circuit. The use of connection busbars is not permitted.
- The radius of the cable lugs for power connections is restricted by the mounting kit.
- For units with rated DC currents from 720 A to 850 A, the protective conductor must be connected on both sides of the housing.
- For units with rated DC currents from 60 A to 280 A, the protective ground must be connected using an M8 screw.
- If several 270 mm units are connected in a row, an additional clearance of 5 mm must be observed between the units.
- The units must be mounted on a continuous surface that as a minimum corresponds to the unit contours (including the mounting kit). UL approval only applies for installation in a control cabinet.
- The minimum diameters stated in the cable diameter table must be observed.
- For mounting kits, frame sizes B, C, D the appropriate fixtures must be selected; all cable openings >12,5 mm must be equipped.

### The following points must also be observed

- The top cover of the unit can be removed without using any tools when shipped from the factory. As a consequence, degree of protection IP20 would not be able to be completely complied with. On the system side, it must be carefully ensured that the cover cannot be removed without having to use tools. For example, this can be realized by additionally attaching a bracket above the cover or establishing a snap connection using a cable tie.
- The mounting kit increases the lateral dimensions of units from 400 A by approx. 2 mm in each case.
- The cabinet builder must carefully check the final degree of protection IP20; the unit itself has degree of protection IP00.

---

#### Note

This mounting kit does not provide protection against direct contact according to IEC 61800-5-1:2007.

---

### Technical data

The environmental classes and ambient temperatures for the mounting kit correspond to those of the SINAMICS DCM (see SINAMICS DCM Operating Instructions, Chapter 4).

### Electronics connections (connections onf the CUD)

The maximum permissible cable diameter is 10 mm (further information is provided in the SINAMICS DCM Operating Instructions).

### Power connections (armature and excitation circuit)

The power connections must be established with at least single, as a maximum with double insulation; the protective conductor with single insulation. The specified (nominal) diameters refer to the outside diameters and, due to manufacturing tolerances, should be interpreted as guide values. The field connection cables must have diameters up to 8 mm.

---

#### Note

The scope of delivery includes installation parts for two different cable diameters:

- Fixture 1: Pos. 9 to 11
- Fixture 2: Pos. 12 to 14

The reducers may be cut out to adapt the cable diameters. Care must be taken to avoid sharp edges that could damage the insulation of the cables.

---

Table 2- 1 Units with armature current from 15 to 30 A (frame size A)

Connection	Cable diameter
1U1, 1V1, 1W1 (line connection)	Ø 0.0 mm ... Ø 10.0 mm
1C1, 1D1 (armature connection)	Ø 0.0 mm ... Ø 10.0 mm
Protective conductor	Ø 0.0 mm ... Ø 7.0 mm

Table 2- 2 Units with armature current from 60 to 280 A (frame size B)

Connection	Cable diameter, Set 1	Cable diameter, Set 2
1U1, 1V1, 1W1 (line connection)	Ø 0.0 mm ... Ø 16.0 mm	Ø 16.0 mm ... Ø 21.0 mm
1C1, 1D1 (armature connection)	Ø 0.0 mm ... Ø 16.0 mm	Ø 16.0 mm ... Ø 21.0 mm
Protective conductor	Ø 0.0 mm ... Ø 13.0 mm	Ø 14.0 mm ... Ø 17.0 mm

Table 2- 3 Units with armature current from 400 to 600 A (frame size C)

Connection	Cable diameter, Set 1	Cable diameter, Set 2
1U1, 1V1, 1W1 (line connection)	Ø 15.0 mm ... Ø 19.0 mm	Ø 19.0 mm ... Ø 23.0 mm
1C1, 1D1 (armature connection)	Ø 18.0 mm ... Ø 21.0 mm	Ø 22.0 mm ... Ø 26.0 mm
Protective conductor	Ø 15.0 mm ... Ø 19.0 mm	Ø 17.0 mm ... Ø 22.5 mm

Table 2- 4 Units with armature current from 720 to 850 A (frame size D)

Connection	Cable diameter, Set 1	Cable diameter, Set 2
1U1, 1V1, 1W1 (line connection)	Ø 15.0 mm ... Ø 19.5 mm	Ø 20.0 mm ... Ø 24.0 mm
1C1, 1D1 (armature connection)	Ø 15.0 mm ... Ø 19.5 mm	Ø 20.0 mm ... Ø 24.0 mm
Protective conductor	Ø 15.0 mm ... Ø 20.0 mm	Ø 16.0 mm ... Ø 21.5 mm



# Assembling

---

**Note**

The mounting kit to increase the degree of protection up to IP20 can only be correctly installed when the unit has already been installed and wired up.

---

** WARNING****Risk of death if the warning notes are not carefully complied with**

The units are operated at high voltage levels.

The power and control terminals may be live even when the motor is not running.

Connecting the unit incorrectly can lead to it being damaged or destroyed.

When handling the unit while it is open, remember that live parts are exposed. The unit must only be operated with the front covers provided by the factory in place.

The TSE capacitors may continue to carry dangerous voltage levels following disconnection. For this reason, the unit should not be opened until an adequate period of time has elapsed.

The units listed here contain dangerous rotating machine parts (fans) and control rotating mechanical parts (drives). Failure to follow these operating instructions may result in death, serious physical injury, or extensive material damage.

Death, serious injury, or substantial material damage can result if these warning notices are not observed.

- The manufacturer can only guarantee correct functioning of the unit and accept any liability for damage if the unit has been installed and commissioned by professionals and the content of the Operating Instructions have been carefully complied with.
- Only qualified personnel who are familiar with all the safety instructions in these Operating Instructions, as well as the mounting, installation, operating and maintenance instructions, may carry out work on these units.
- The equipment must be in a no-voltage state before you carry out any work.

## Installation steps

---

**Note**

The pages referenced are technical drawing, which are included in the Appendix.

---

### Installing the left and right covers and rails

1. Position the left cover (Pos. 1) from the inside onto the threaded bolts and fasten it using M5 locking nuts (Pos. 197).
2. Insert the straight rail (Pos. 7) and slanted rail (Pos. 8, only for frame size D) by pushing them between the connected cables and use one M4×12 combination screw for each (Pos. 109) at Pos. 1 to hold them.
3. Position the right cover (Pos. 2) onto the threaded bolts and fasten it using M5 locking nuts (Pos. 197).
4. Attach the rails ((Pos. 7 and Pos. 8) with a further M4×12 combination screw (Pos. 109). Make sure that all screws and nuts are tightened to the specified torque.

### Installing the cover with cable rests and shield clamps

1. Insert the front cover (Pos. 6) into the cover with cable rests (Pos. 3) and use expanding rivets (Pos. 174) to fasten it from outside to inside (pre-assembly).
2. Attach the pre-assembled cover with cable rests (Pos. 3 + Pos. 6 + Pos. 174) to the side covers (Pos. 1 and Pos. 2) using M4×12 combination screws (Pos. 109). Apply the correct tightening torque.
3. Snap shield clamps (Pos. 160) over the cables into the cover (Pos. 3) as required.
4. Use cable ties to fasten the cables to the cover (Pos. 3).

### Attaching the bottom cover (cables in front, center and rear)

1. Attach the cable at the front (Pos. 9 or Pos. 12), for frame size D cover with cable at the center (Pos. 10 or Pos. 13) and cover with cable at the rear (Pos. 11 or Pos. 14) to the side covers (Pos. 1 and Pos. 2) using 4 M4×12 combination screws (Pos. 109) each. Apply the correct tightening torque.

---

#### Note

- Pos. 9 and Pos. 11 apply unaltered for frame size A (see schematic on page 2)
  - For frame size B, use either Pos. 9 and Pos. 11 for small cable diameters or Pos. 12 and Pos. 14 for large cable diameters. If necessary, remove the break-out pieces in the cable openings to match the cable outlets to the actual cable diameters (see graphic diagram on Page 5).
  - For frame size C, use either Pos. 9 and Pos. 11 for small cable diameters or Pos. 12 and Pos. 14 for large cable diameters. If necessary, remove the break-out pieces to access the cable openings for the protective ground cable. (see the diagram on Page 8).
  - For frame size D, use either Pos. 9, Pos. 10 and Pos. 11 for small cable diameters or Pos. 12, Pos. 13 and Pos. 14 for large cable diameters. Use all covers as supplied without making any changes. (see the diagram on Page 12).
- 

### Installing the side covers

1. For frame sizes C and D, use 6 expanding rivets each (Pos. 174) to fasten the side covers (Pos. 5) to unit side walls on both sides, working from the outside to the inside.



### Attach the upper cover using cable ties

To fully reach degree of protection IP20, the upper cover must only be able to be released using tools. For example, this can be realized by establishing a snap connection using a 5 mm wide cable tie.



Figure 3-1 For example, this can be realized by establishing a snap connection using a cable tie.

Fully equipped unit (frame size C with installed mounting kit to increase the degree of protection to IP20)



Figure 3-2 Example of an installed mounting kit to increase the degree of protection to IP20

## (Type) test

### Final test of the degree of protection

After the mounting kit has been installed, a type test must be performed to ensure that a degree of protection IP20 has been reached.



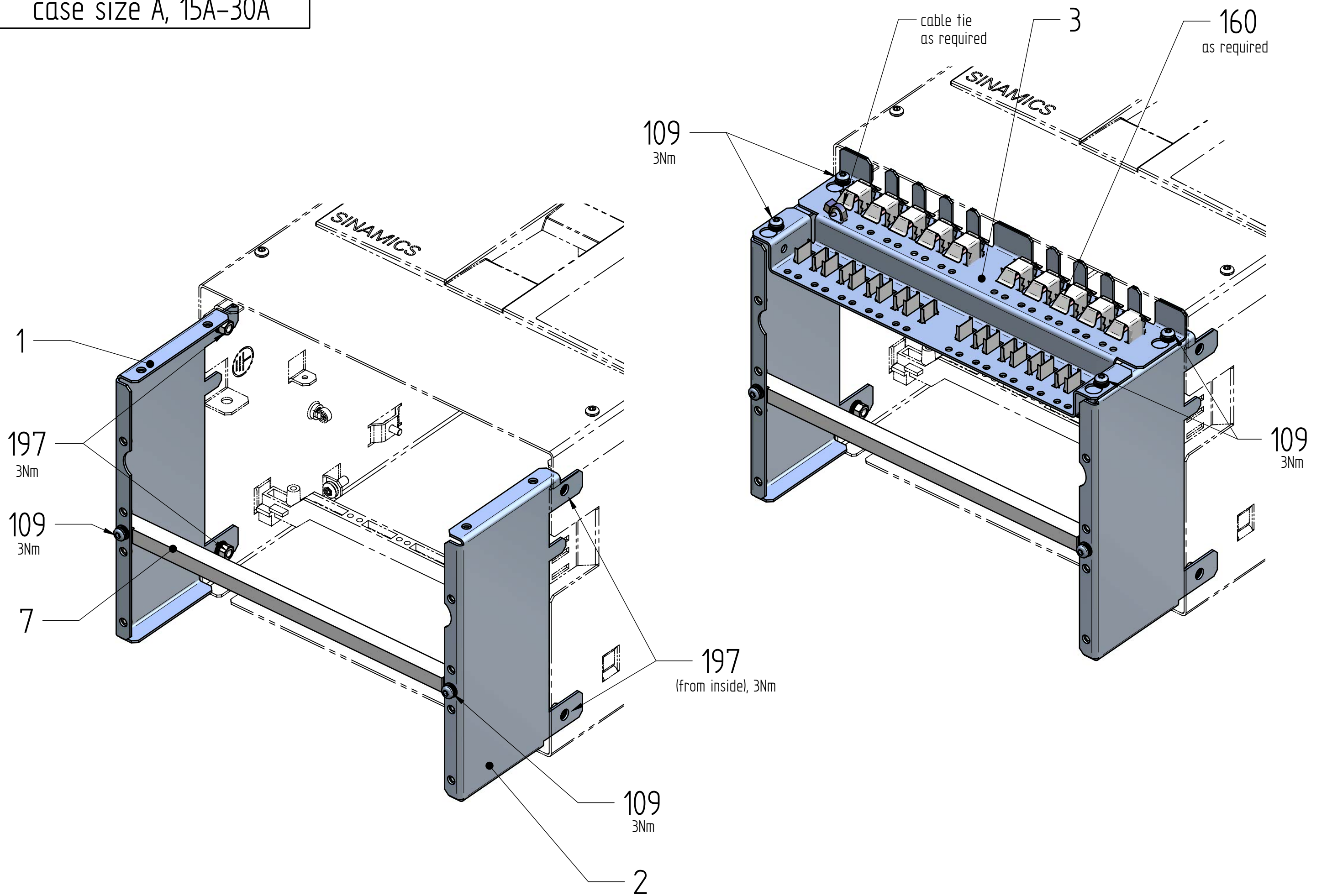
# A

## Appendix

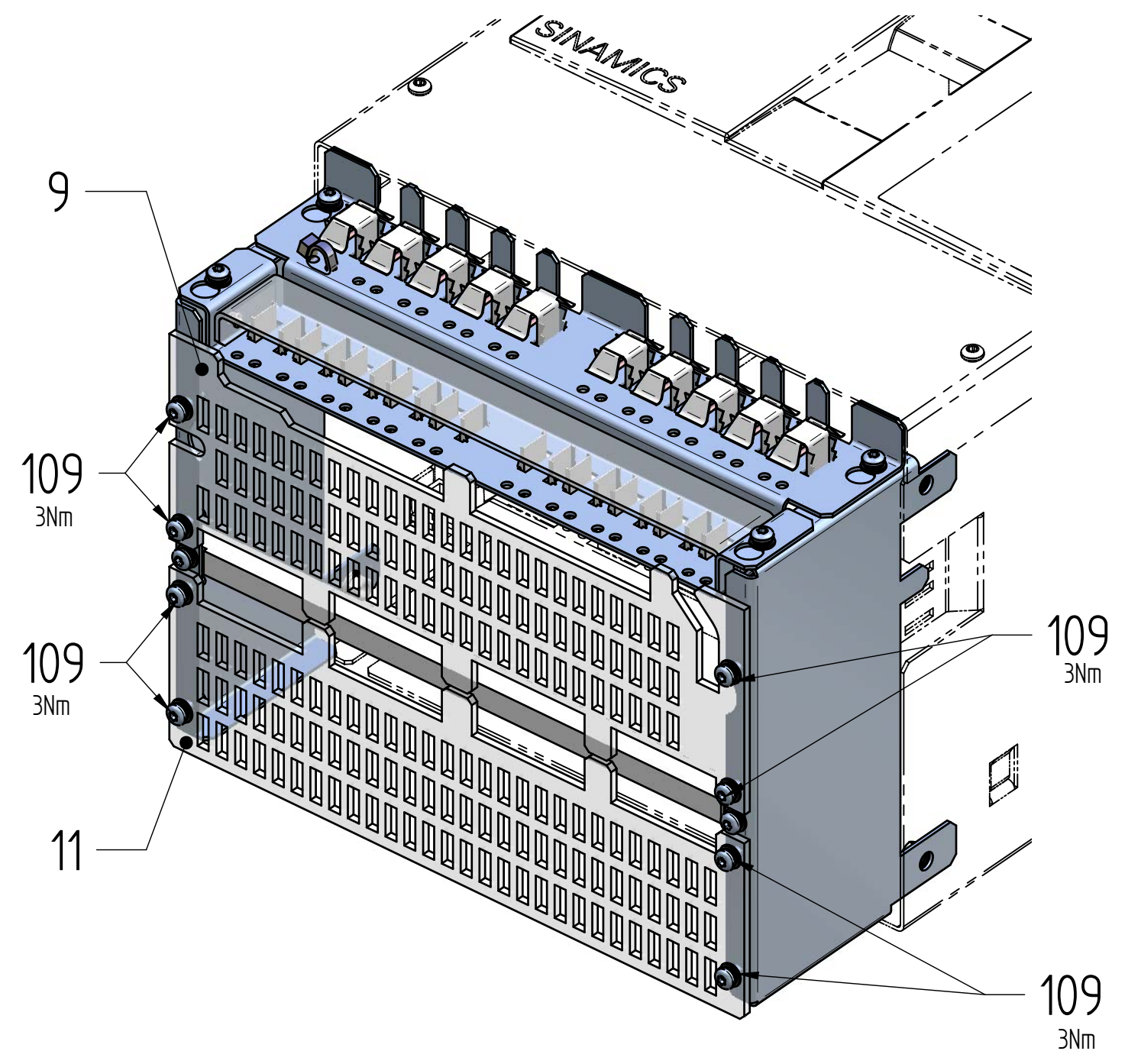
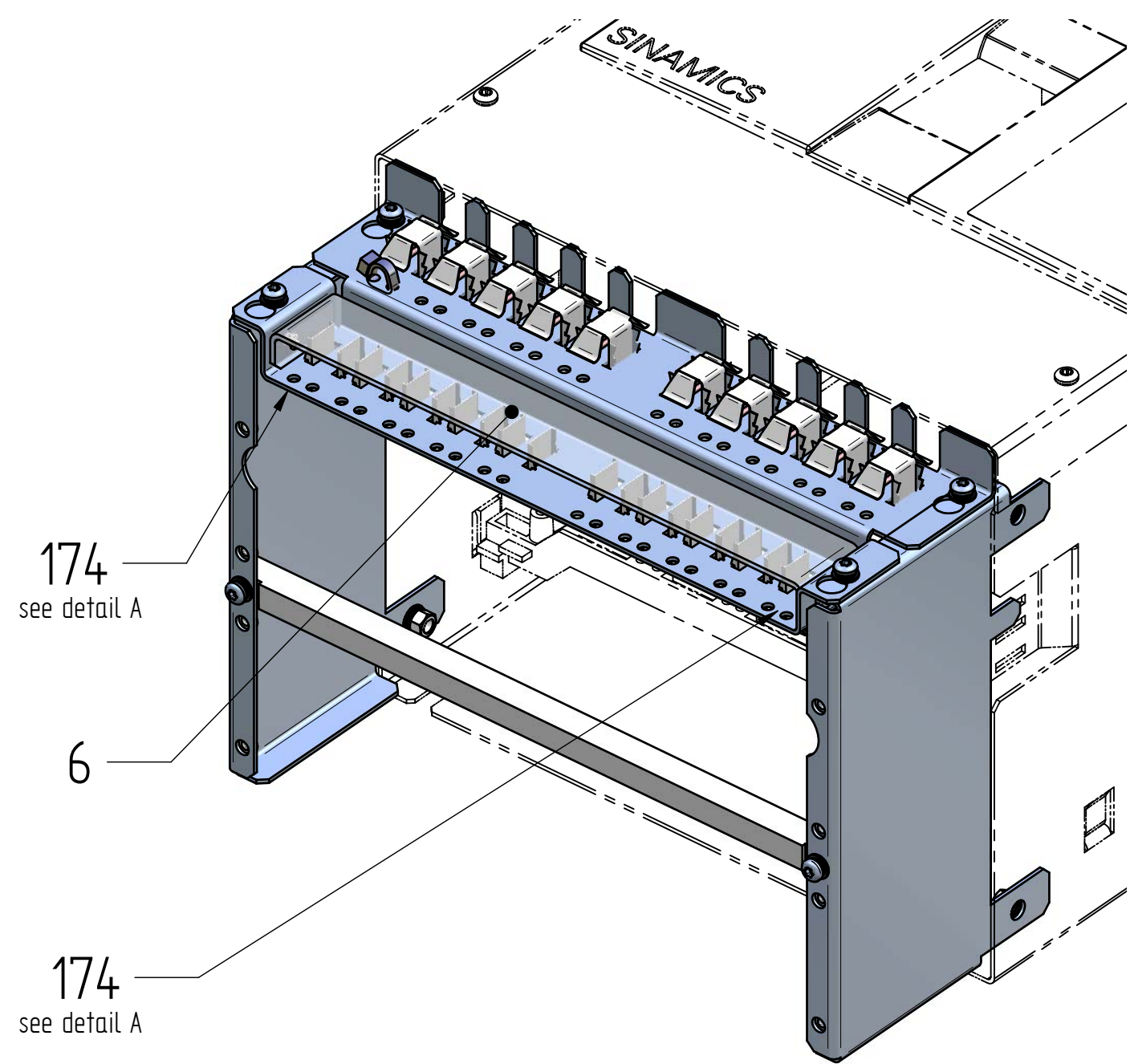
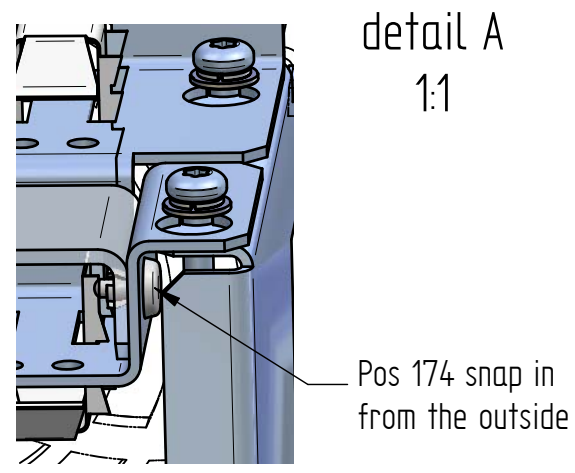
The following 13 pages contain technical drawings (including remarks and part numbers) to facilitate proper installation.

For further information, please refer to the Chapter "Installation".

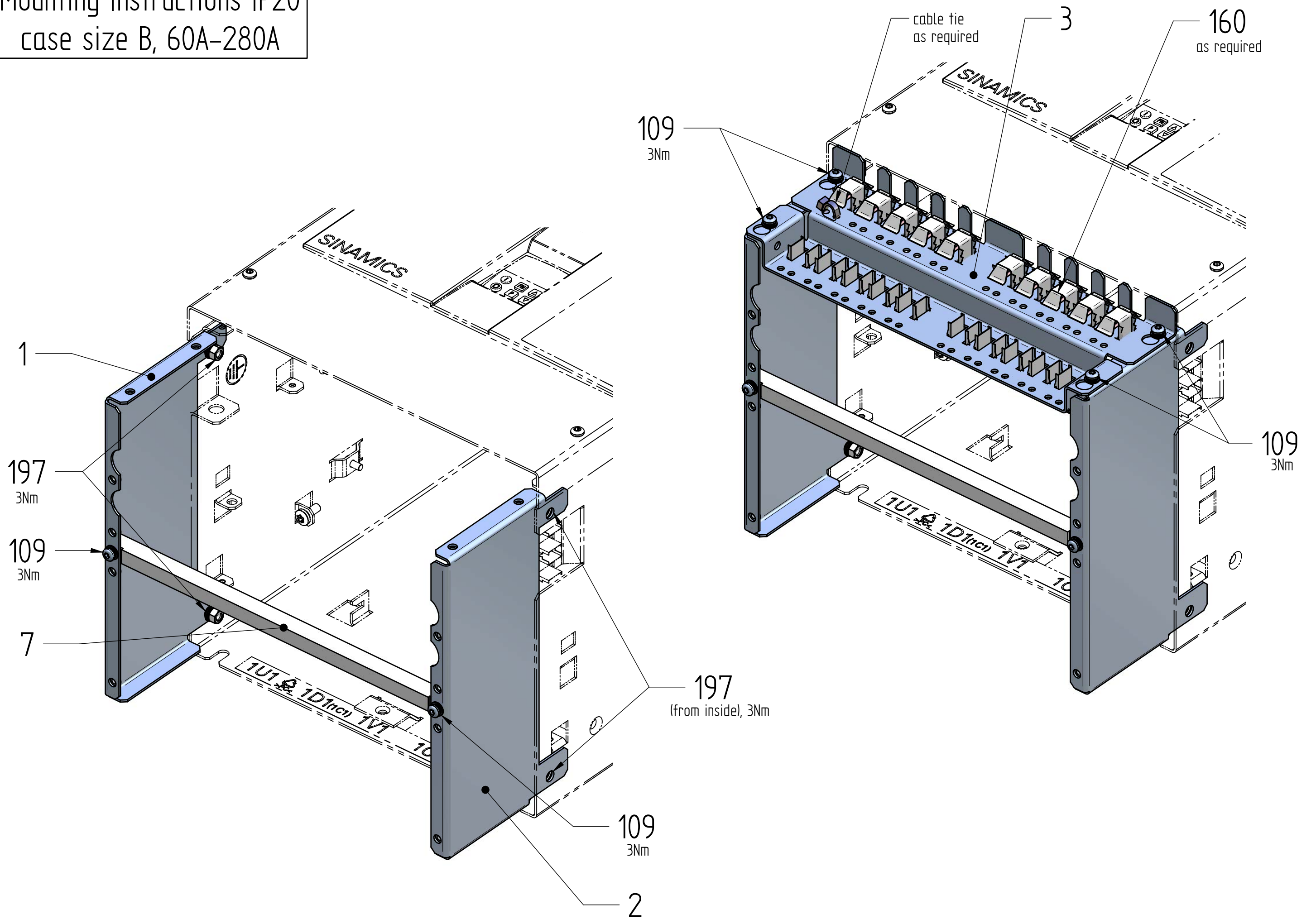
Mounting Instructions IP20  
case size A, 15A-30A



Mounting Instructions IP20  
case size A, 15A-30A

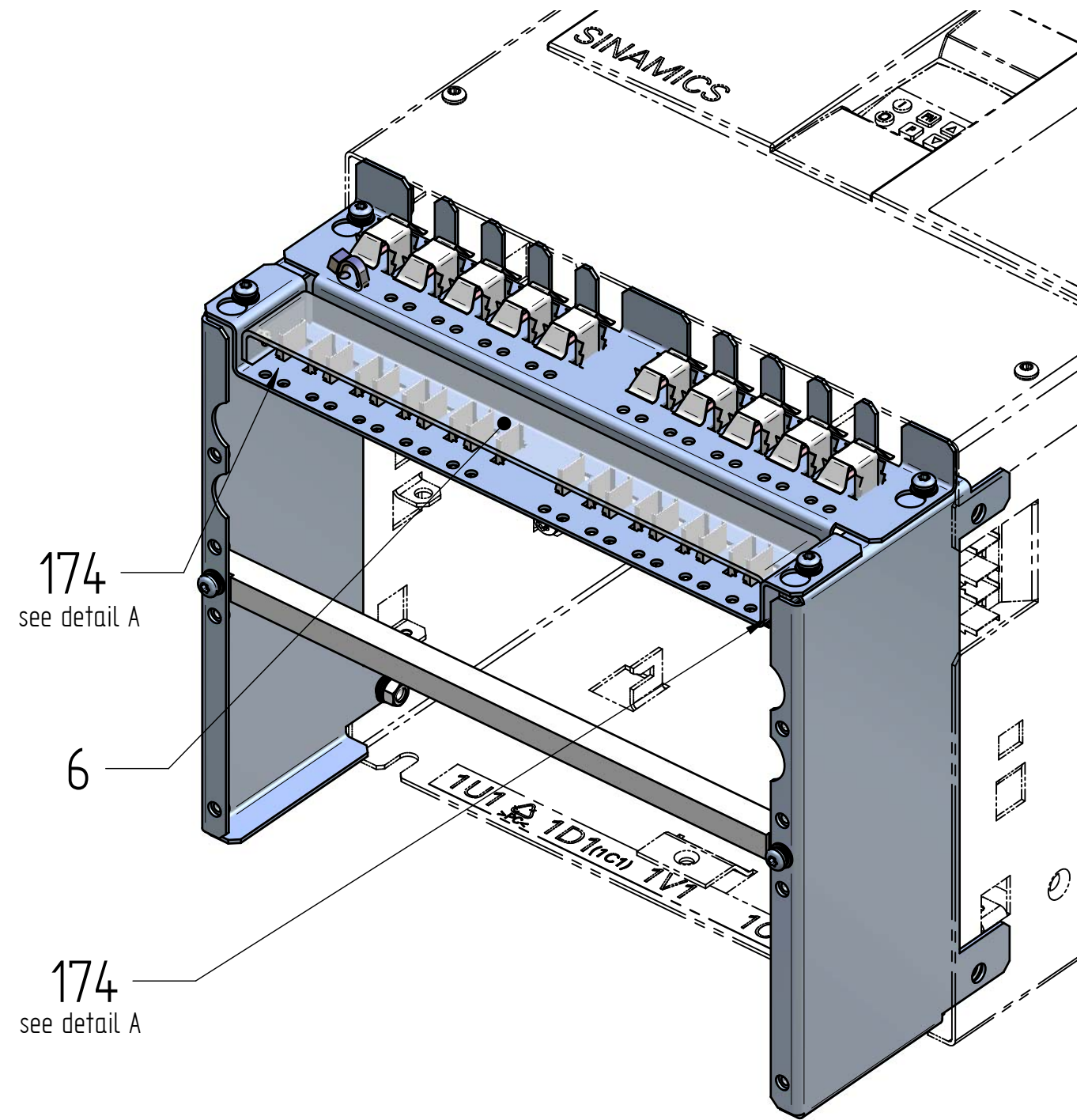


Mounting Instructions IP20  
case size B, 60A-280A

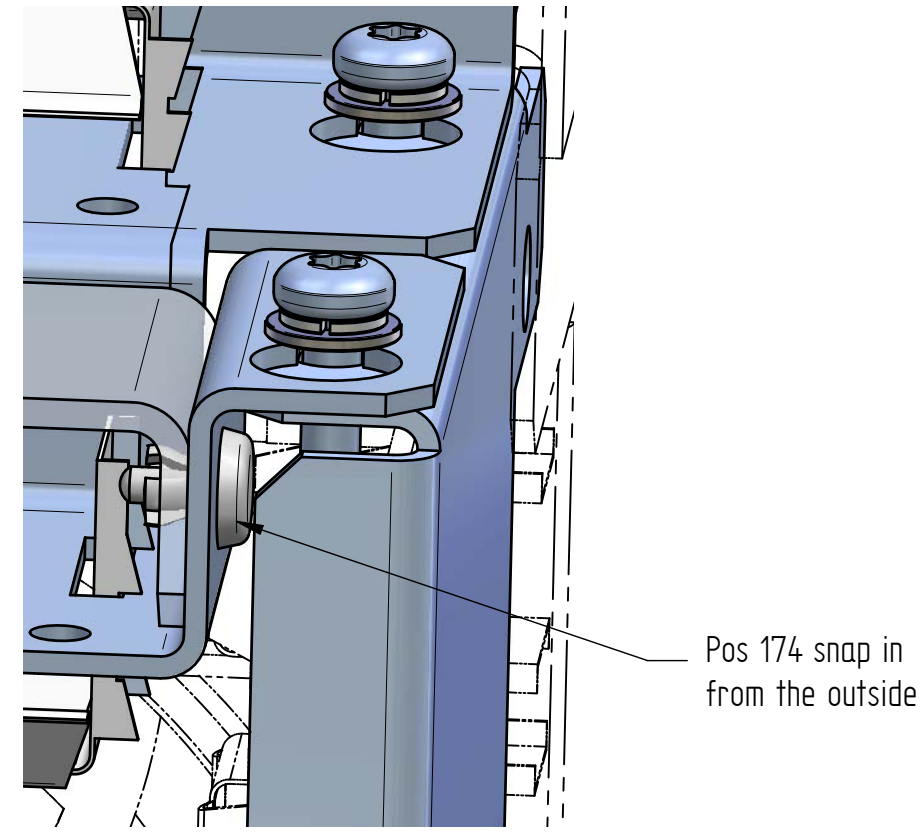




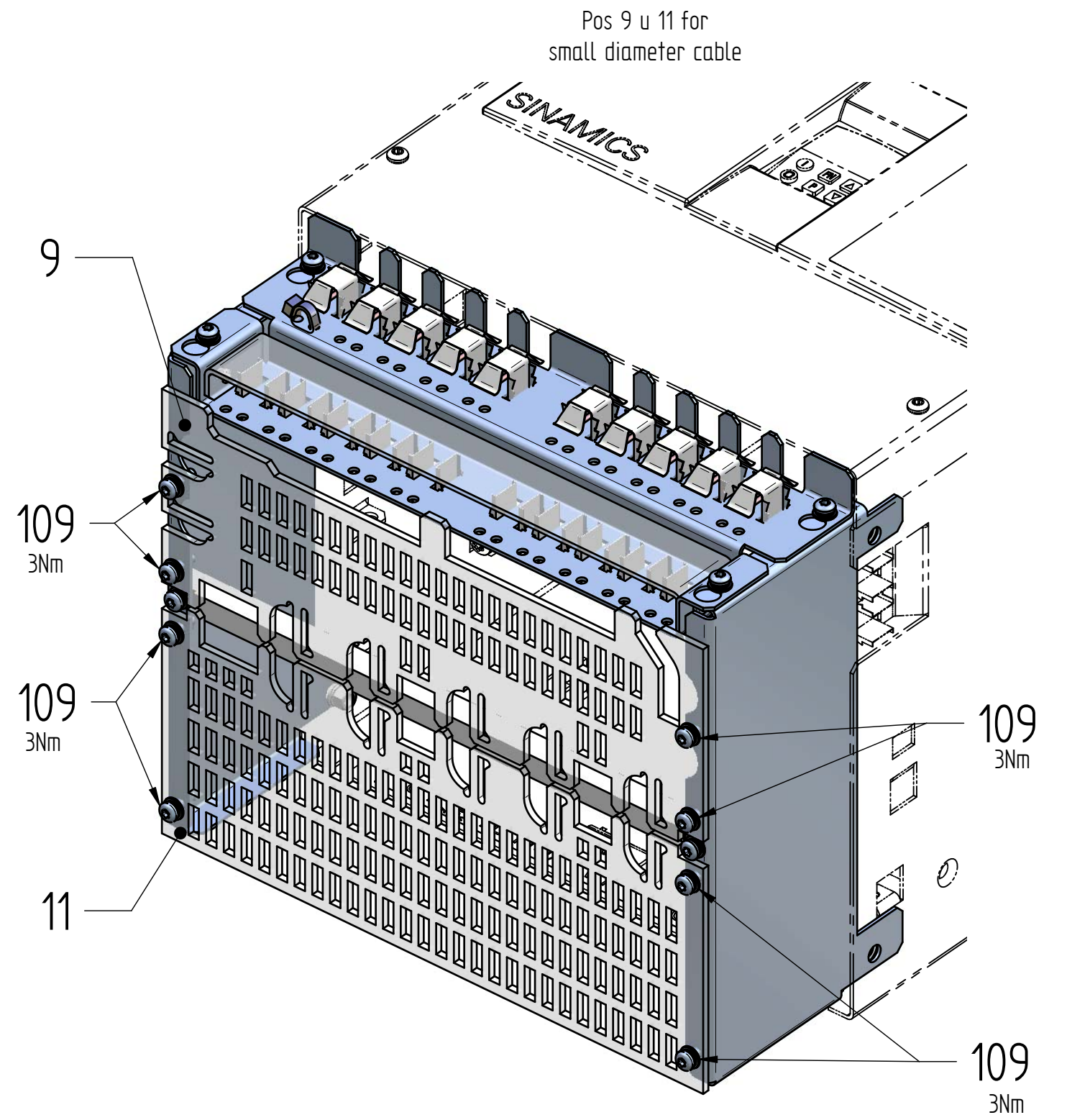
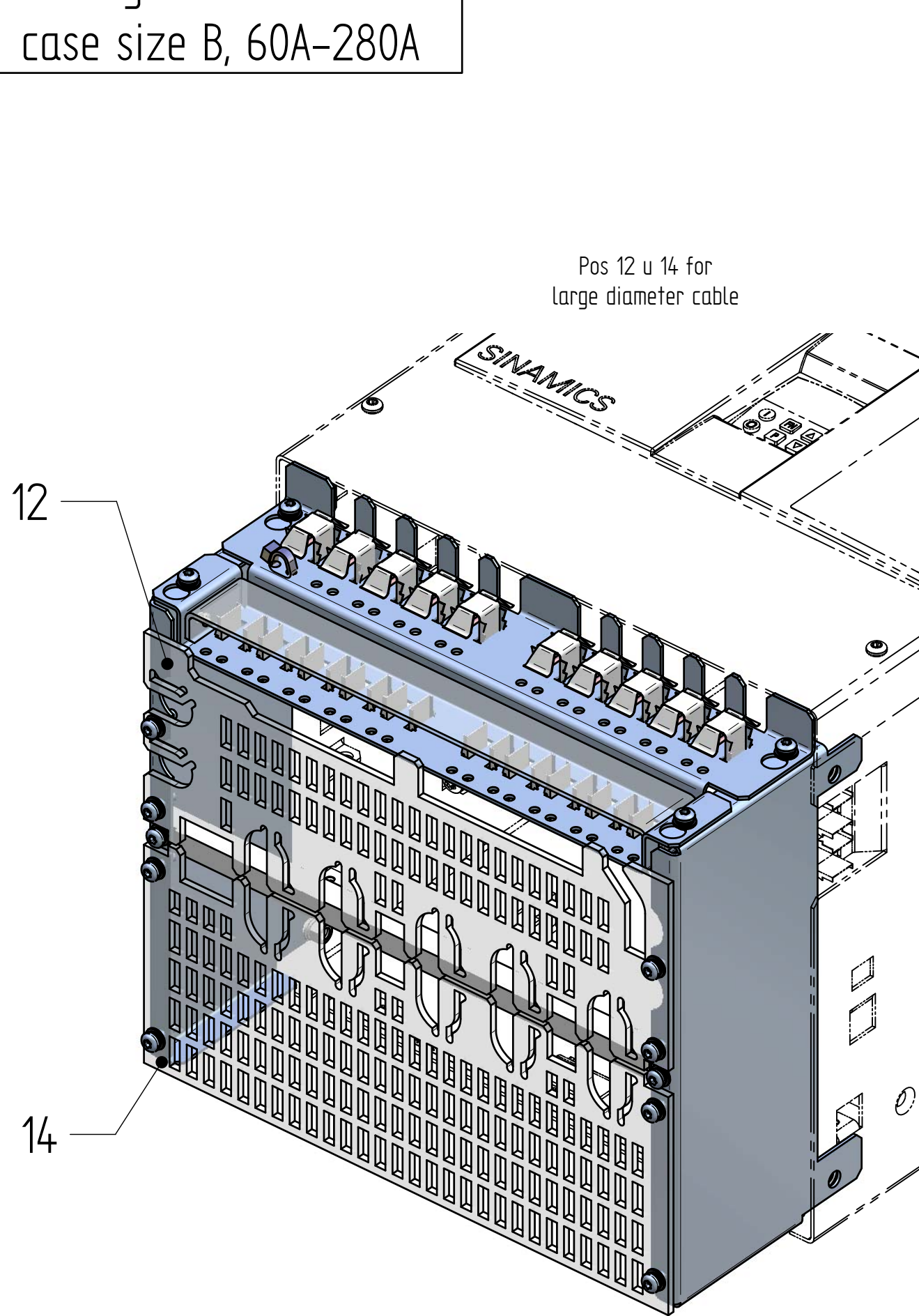
Mounting Instructions IP20  
case size B, 60A-280A



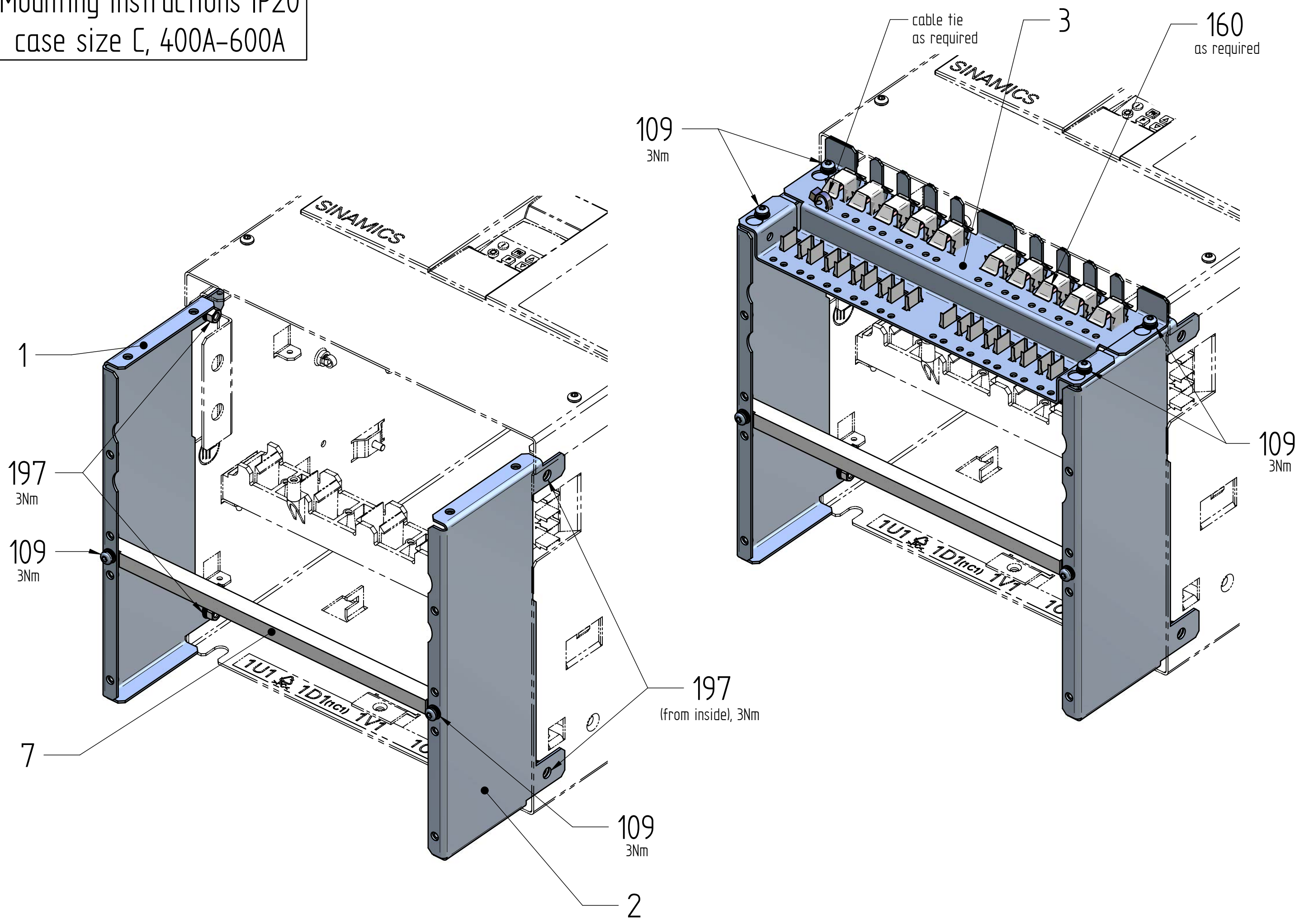
detail A  
2:1



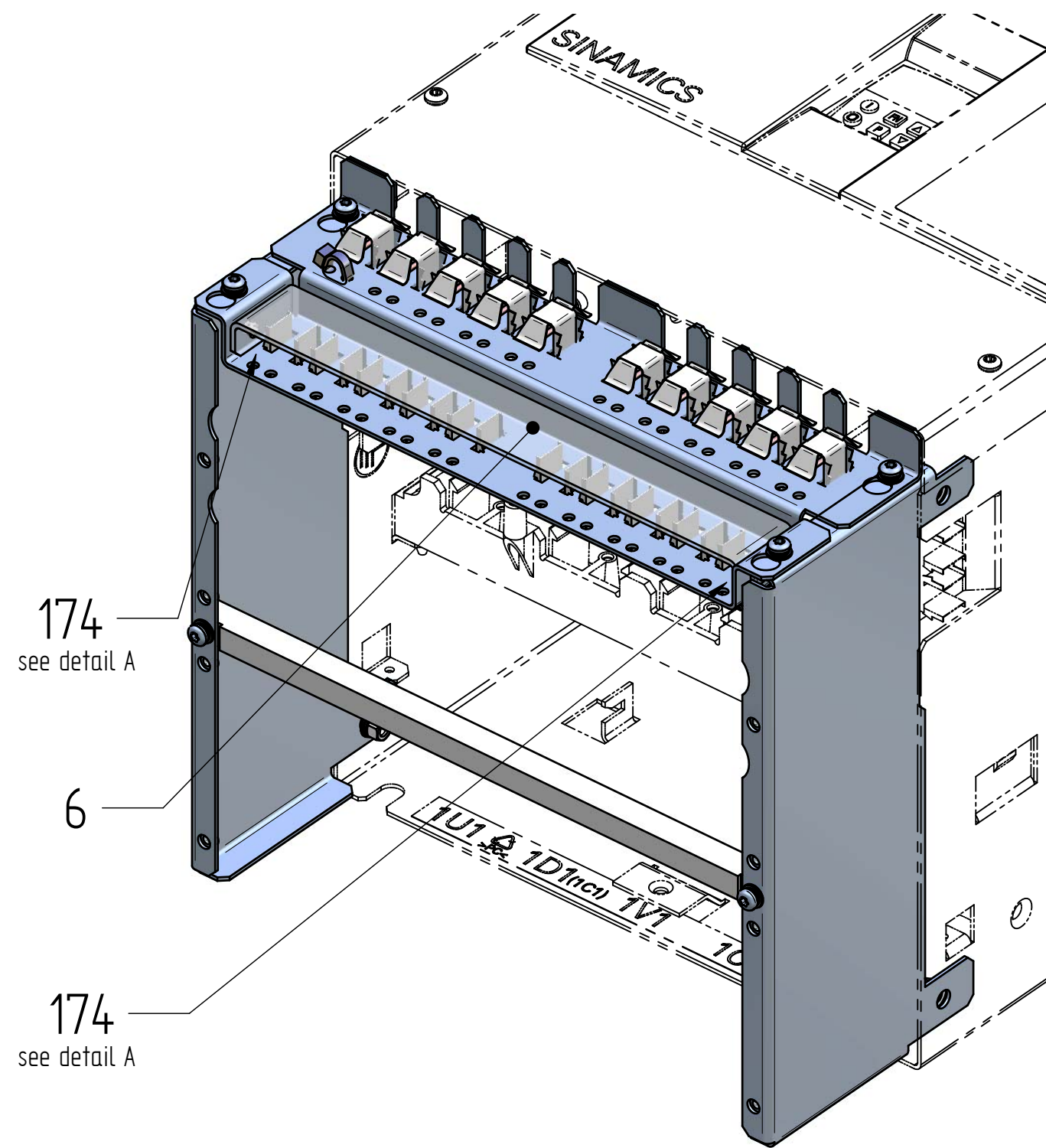
Mounting Instructions IP20  
case size B, 60A-280A



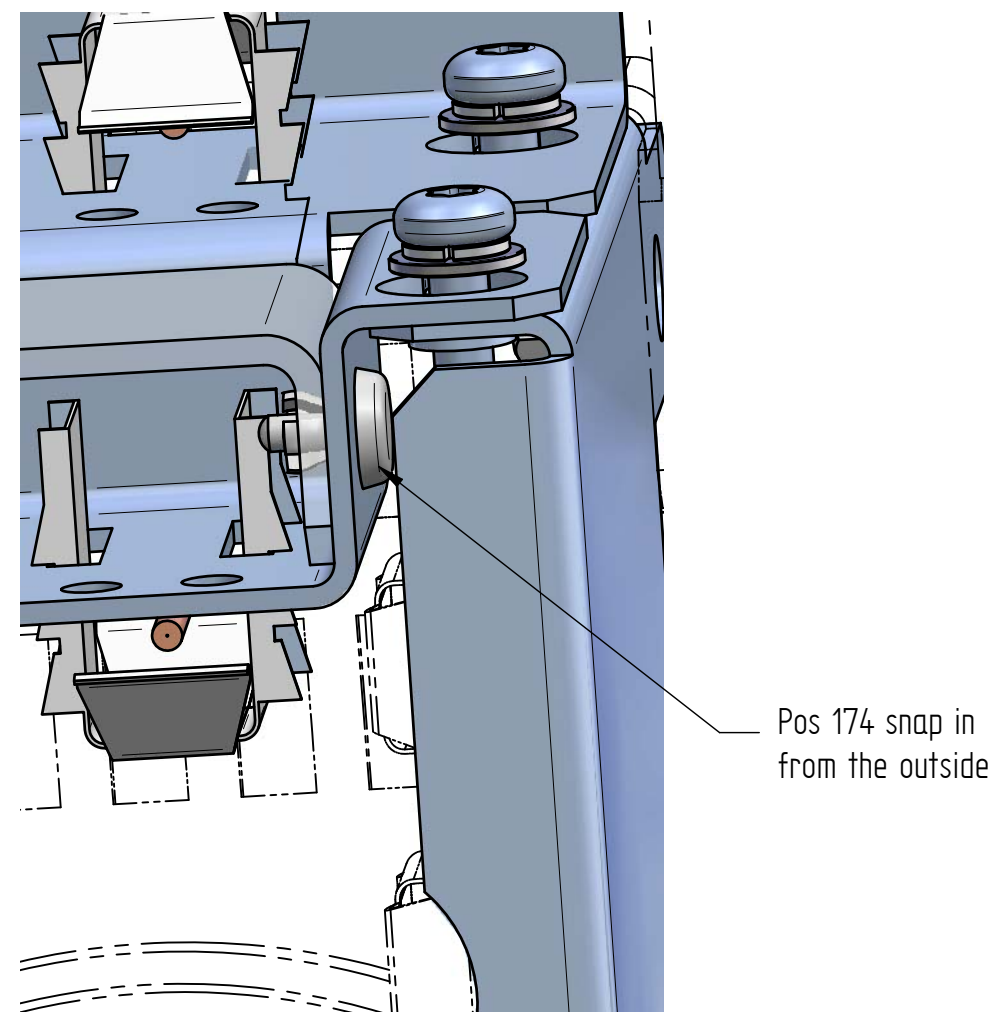
Mounting Instructions IP20  
case size C, 400A-600A



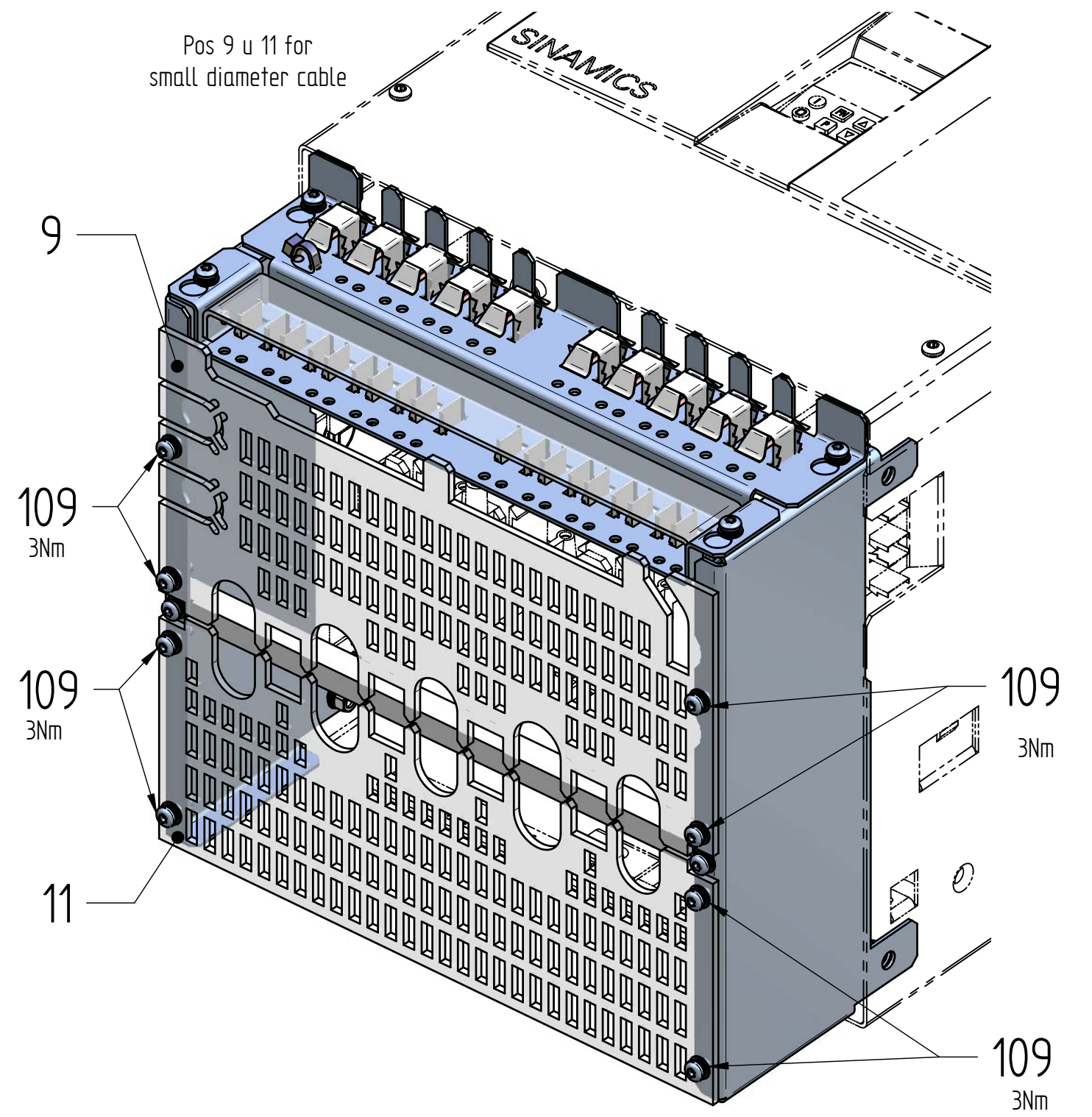
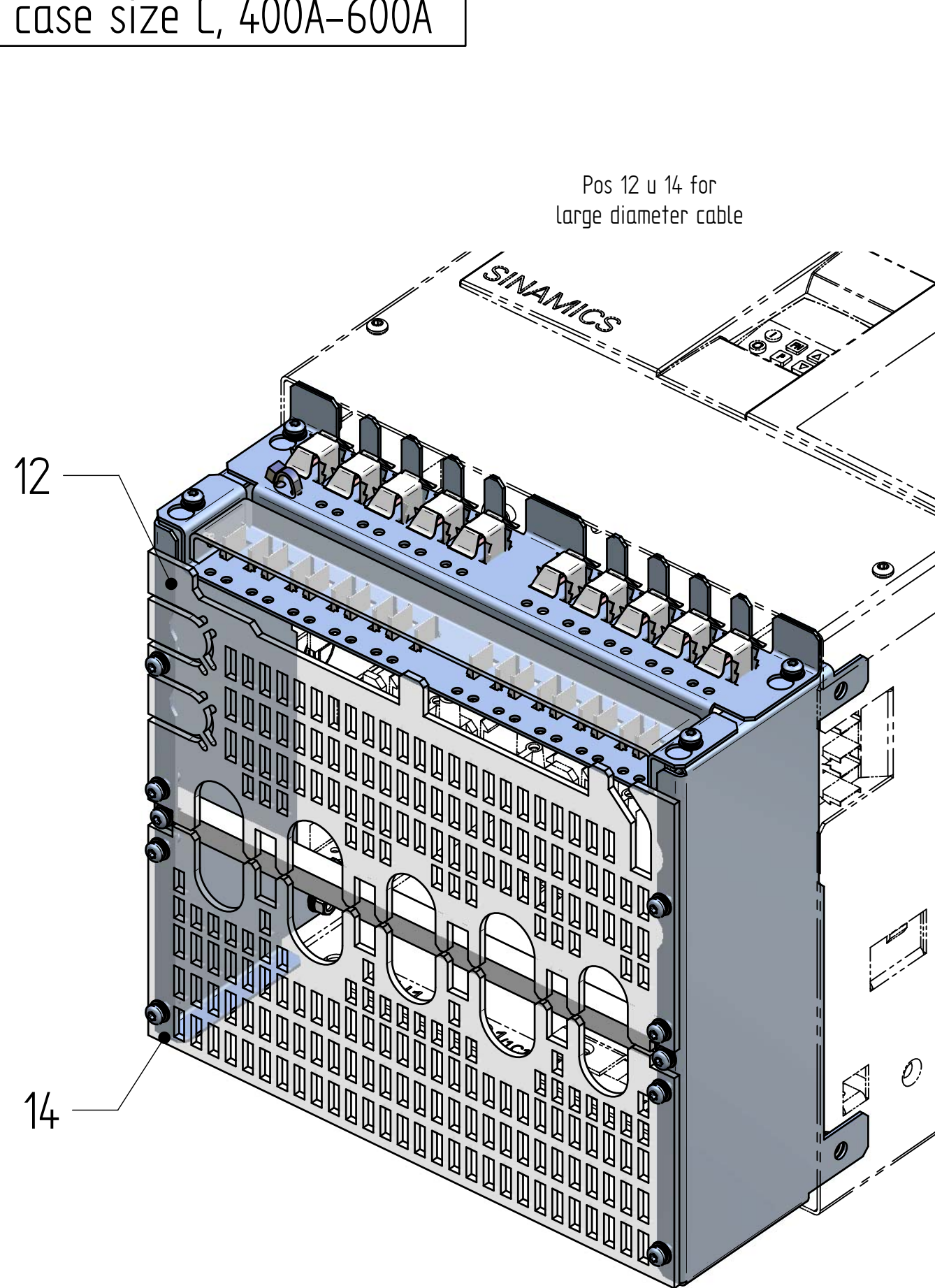
Mounting Instructions IP20  
case size C, 400A-600A



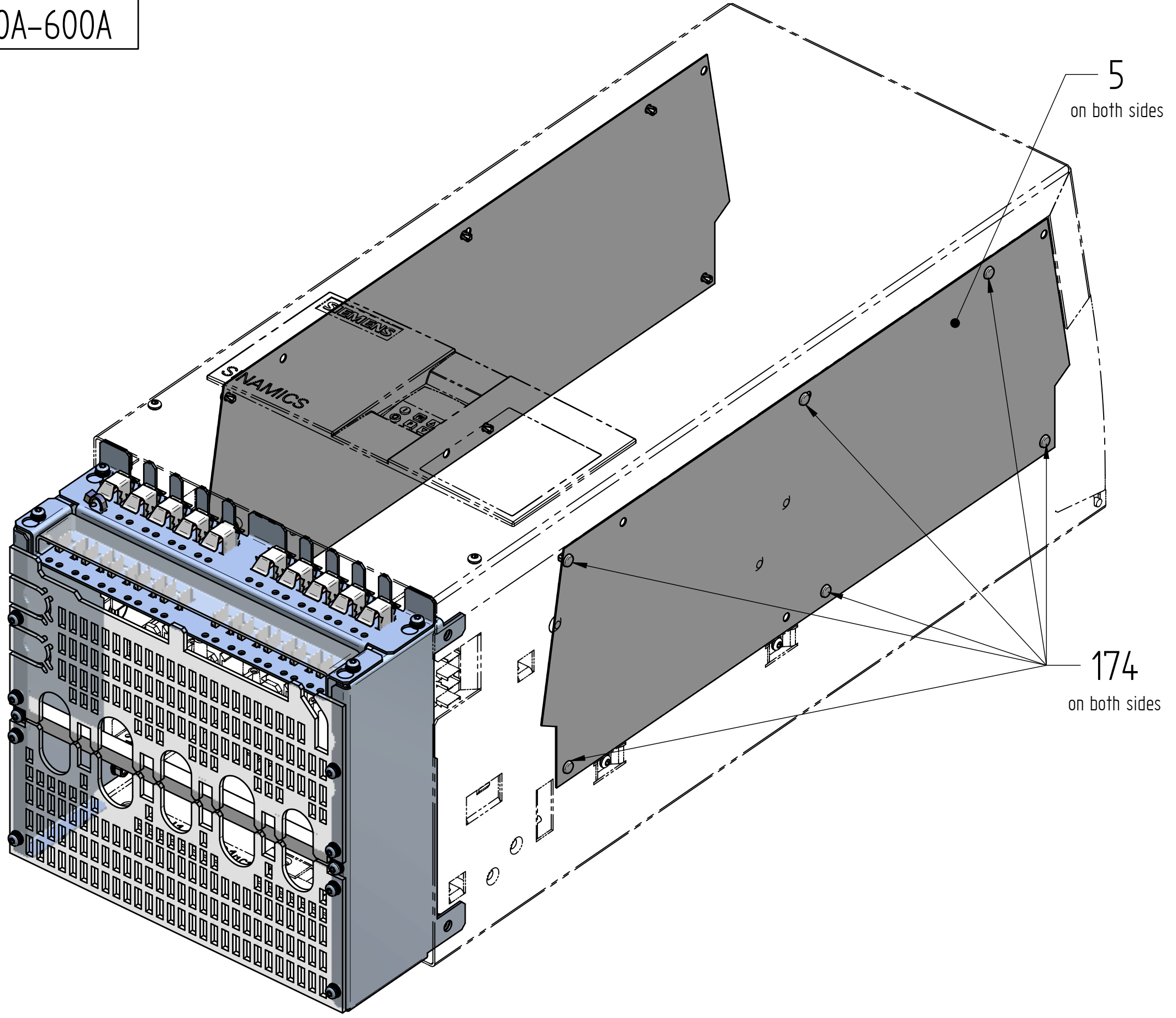
detail A  
2:1



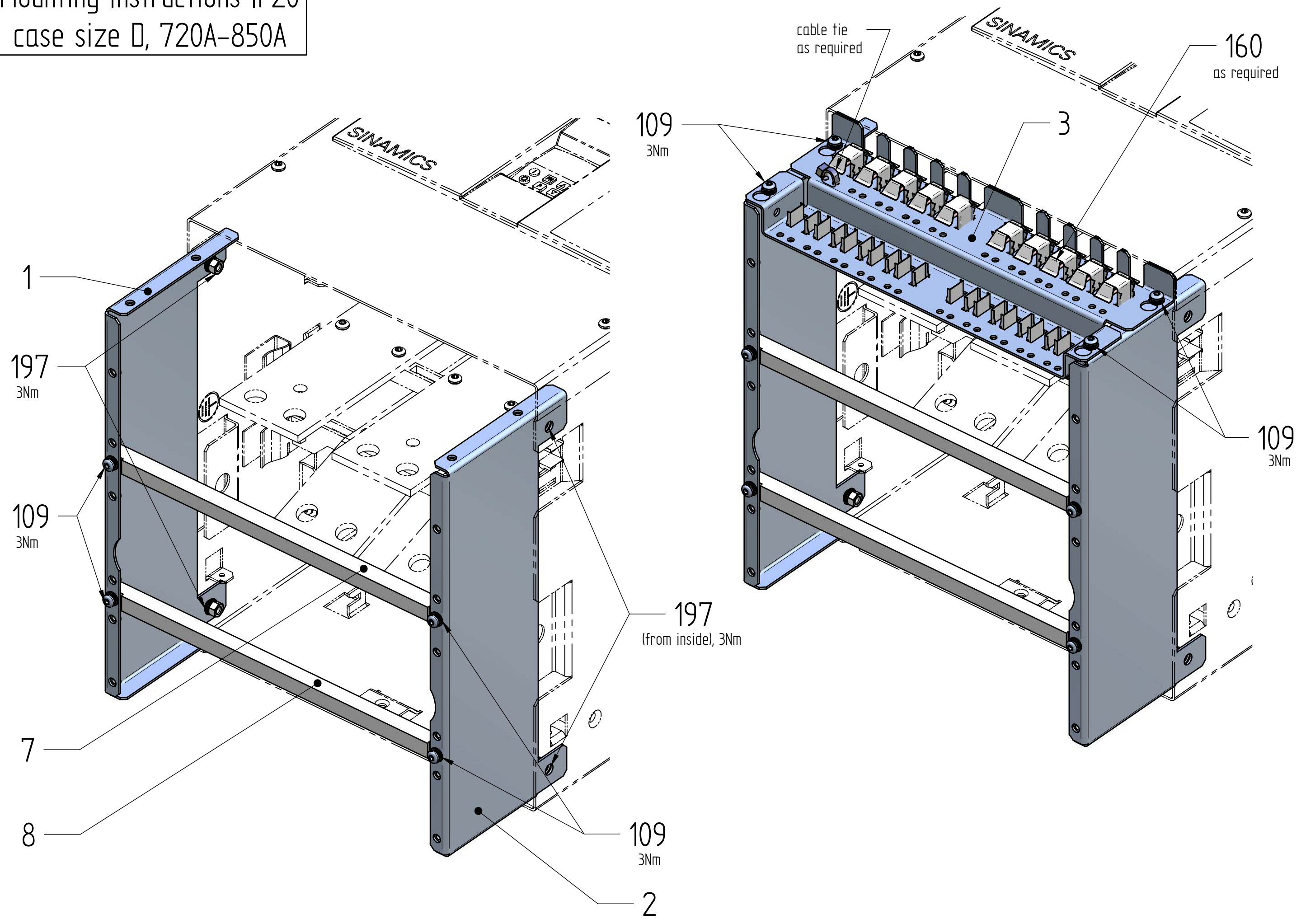
Mounting Instructions IP20  
case size C, 400A-600A



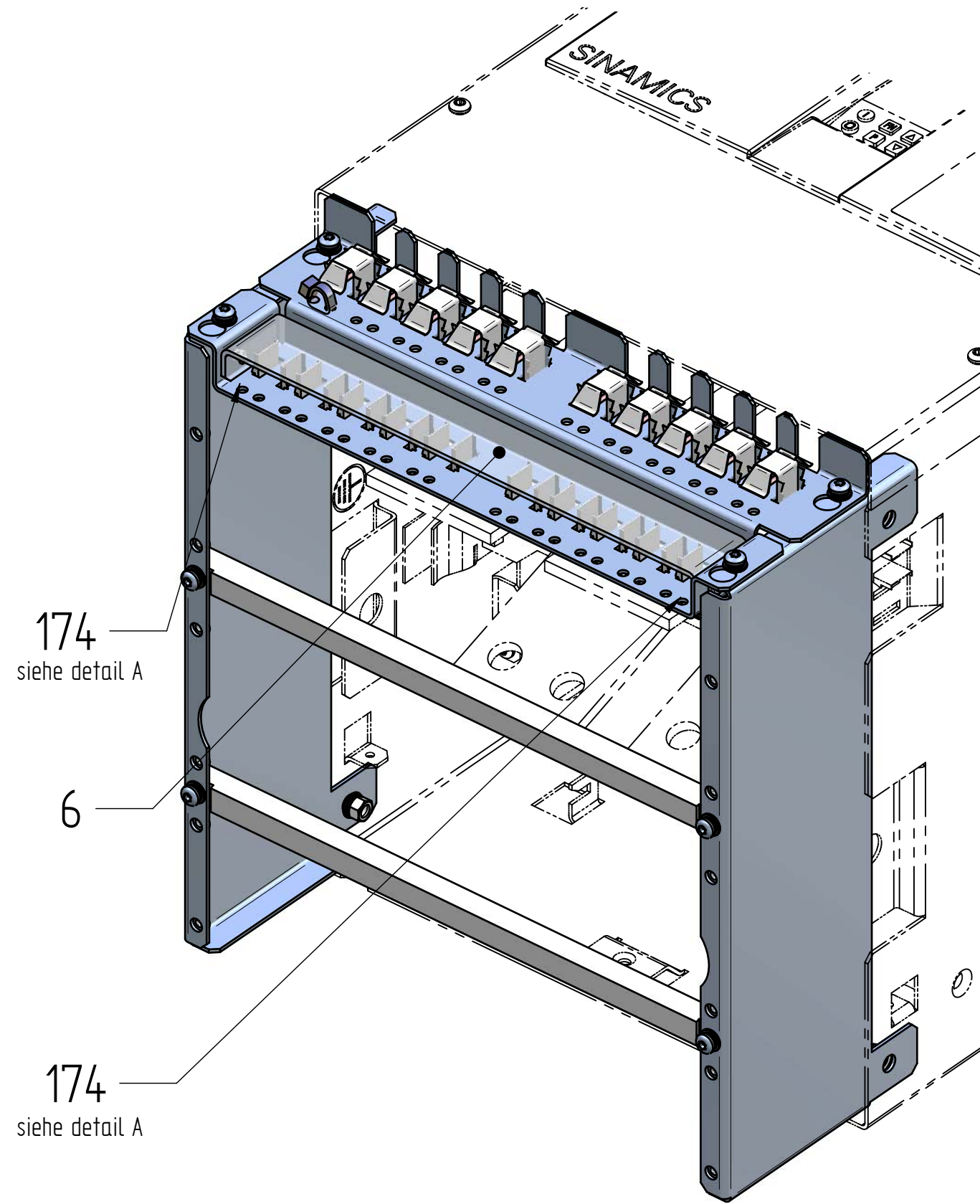
Mounting Instructions IP20  
case size C, 400A-600A



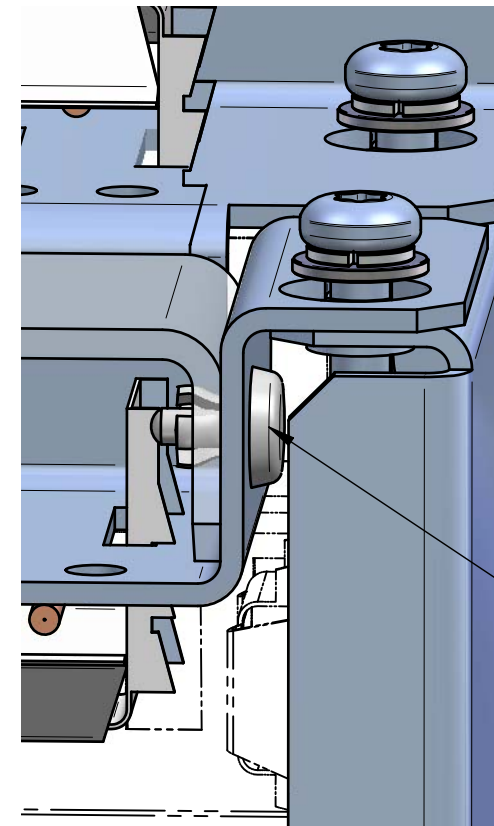
Mounting Instructions IP20  
case size D, 720A-850A



Mounting Instructions IP20  
case size D, 720A-850A

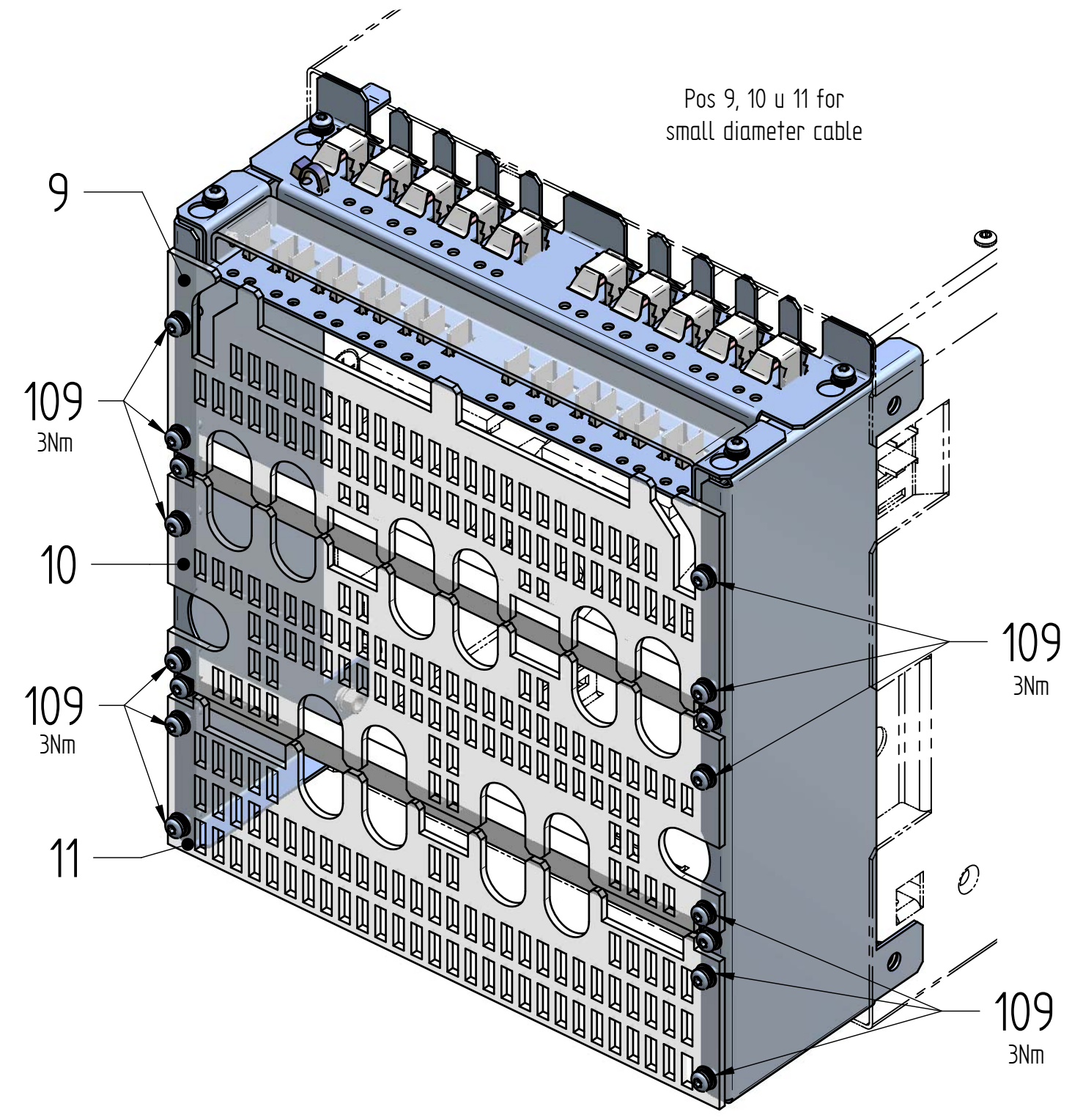
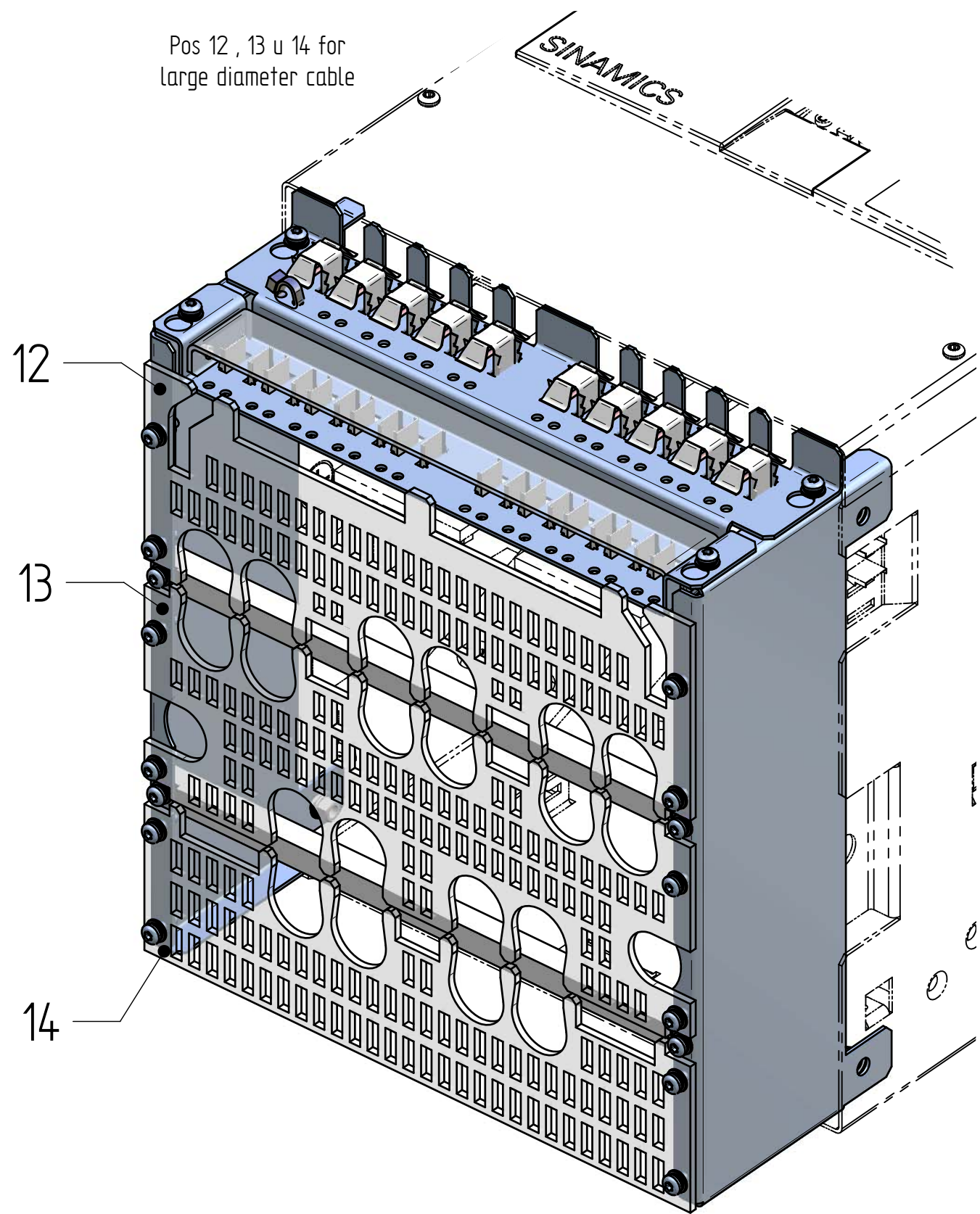


detail A  
2:1

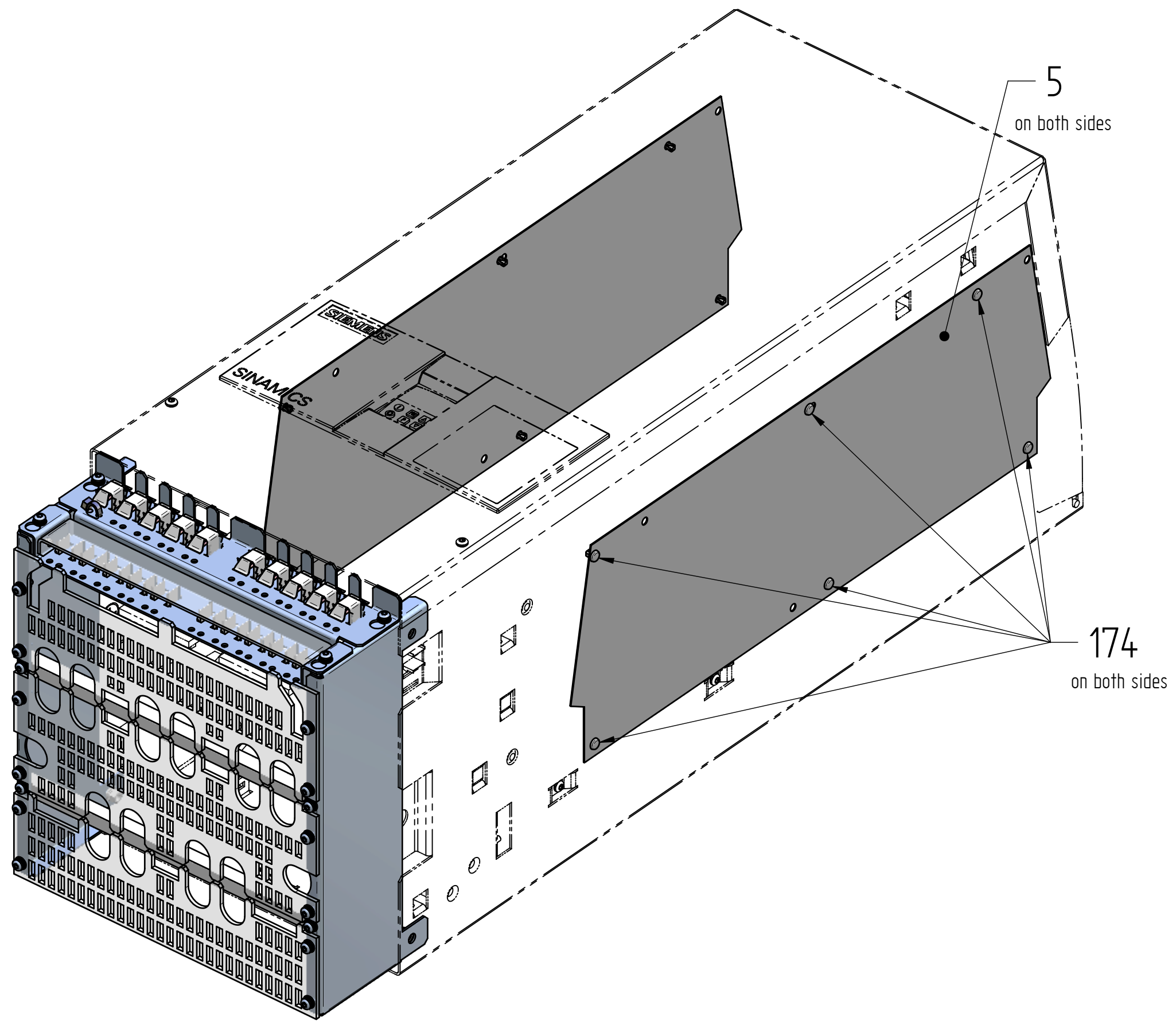




# Mounting Instructions IP20 case size D, 720A-850A



Mounting Instructions IP20  
case size D, 720A-850A





## Further information

Siemens:

[www.siemens.com](http://www.siemens.com)

Industry Online Support (service und support):

[www.siemens.com/online-support](http://www.siemens.com/online-support)

IndustryMall:

[www.siemens.com/industrymall](http://www.siemens.com/industrymall)

Siemens AG  
Digital Industries  
Motion Control  
Postbox 3180  
91050 Erlangen  
Germany

Scan the QR-Code  
for product  
information

