M212242EN-D

Installation Guide

CMS Industrial Cabinet
CAB100

VAISALA

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1. About this document

1.1 Version information

This document provides installation instructions and product specifications for Vaisala CMS Industrial Cabinet CAB100.

Table 1 Document versions (English)

Document code	Date	Description
M212242EN-D	May 2021	This manual. Updated sections: • Basic features and options (page 9) • Leading cables through rubber flange (page 24) • Connecting AC (mains) power (page 28) • Spare parts and accessories (page 126) Replaced section 2.4 Regulatory compliances with table *CAB100 compliance* in CAB100 specifications (page 116). Modified the note about DL4000 data loggers being delivered with default factory settings.
M212242EN-C	December 2020	Previous version. New chapters in this revision: • Supplying power to external measurement device from CAB100B (page 32) • Wiring externally powered measurement devices (page 65) Updated chapters: • Wiring and powering loop-powered measurement devices (page 62) • Vaisala Differential Pressure Transmitter PDT101 specifications (page 119) • CAB100B wiring diagrams (page 133) (wiring diagram for externally powered devices added)
M212242EN-B	June 2020	New chapters in this revision: • All chapters describing the small cabinet model CAB100A • Enclosure flanges (page 23) Updated chapters: • Installation safety (page 27) • Installing serial port server and Ethernet switch (page 100) • Spare parts and accessories (page 126)
M212242EN-A	October 2019	First version.

1.2 Related manuals

Table 2 Related manuals

Document code	Name
M212262EN	*Vaisala CMS Industrial Cabinet CAB100 Assembling Analog Channel Terminal Block Technical Note*
M212294EN	*Vaisala CMS Industrial Cabinet CAB100 Wiring Diagrams Technical Reference*
M212284EN	*Vaisala CMS Industrial Cabinet CAB100 Quick Guide*
M211284EN	*Vaisala Differential Pressure Transmitter PDT101 Quick Guide*
M211247EN	*Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT120 Quick Guide*
M211244EN	*Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT120 User Guide*
M210566EN	*Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 User Guide*
M010056EN	*Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT360 User's Guide*
M210483EN	*Vaisala Transmitter Series HMT360 Safety Guide*
M211975EN	*Vaisala viewLinc Enterprise Server Version 5.0 User Guide*
M211655EN	*Vaisala vNet PoE Network Interface Quick Start Guide*
M211700EN	*Vaisala vNet PoE Network Interface User's Guide*
90000687-88	*DIGI PortServer® TS Family Quick Start Guide*
158962 / 900260 2300	*Stahl 9001 Series Single-channel Safety Barrier Operating Instructions*
S-SM-9160-06-en-09/2015	*Stahl Type 9160/9163 Transmitter Supply Unit/Isolating Repeater Safety Manual*

Documentation by third-party instrument manufacturers is provided as is.

1.3 Documentation conventions

WARNING! Warning alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.

CAUTION! Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

Note highlights important information on using the product.

Tip gives information for using the product more efficiently.

Lists tools needed to perform the task.

Indicates that you need to take some notes during the task.

1.4 Trademarks

Vaisala® is a registered trademark of Vaisala Oyj.

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2. Product overview

2.1 Overview of Vaisala CMS Industrial Cabinet CAB100

Vaisala CMS Industrial Cabinet CAB100 is an instrument cabinet designed to integrate devices for measuring humidity, temperature, differential pressure, and other parameters. Combined with the Vaisala viewLinc Continuous Monitoring System, CAB100 is an integrated solution for real-time monitoring of cleanrooms and industrial applications in multiple industries.

CAB100 is available in 2 models, CAB100A (small enclosure) and CAB100B (large enclosure). The cabinets can be configured according to application requirements, with options for differential pressure transmitters, analog input channels for the connection of remote transmitters, and safety barriers or galvanic isolators for hazardous areas, used with intrinsically safe devices.

Figure 1 Cabinet models CAB100A (small) and CAB100B (large)

2.2 Basic features and options

Table 3 CAB100 configuration options

Property	Description/Value
Cabinet size (H × W × L)	CAB100A: 200 × 300 × 400 mm (7.87 × 11.81 × 15.75 in) CAB100B: 200 × 500 × 600 mm (7.87 × 19.69 × 23.62 in)
Powering	Power supply: • Within cabinet: 24 V DC / 2.5 A • To cabinet: 100 - 240 V AC Power over Ethernet (with loop power, without fan) [1)]
Differential pressure	1 ... 12 pcs, ±60 Pa or ±0.25 in H_2O
Analog input channels	4 ... 32 channels, 4 - 20 mA
Safety barrier	1 ... 16 pcs, 1 barrier per channel
Galvanic isolator	1 ... 12 pcs, 1 isolator per channel
Ethernet communication	CAB100A: Vaisala vNet Power over Ethernet Data Logger Interface, with PoE option via RJ45 connector CAB100B: Up to 2 serial-to-Ethernet devices via RJ45 (DIGI PortServer TS4)
Ethernet	Ethernet switch, +4 PoE IEEE 802.3af/at

1) PoE is available for CAB100A PDT101 model only.

DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

More information

- CAB100 specifications (page 116)
- Component specifications (page 119)
- Spare parts and accessories (page 126)

2.2.1 CAB100A models

CAB100A is available in 4 preconfigured models. There are 2 communication interface options for CAB100A: serial port server (for all models) or the Vaisala vNet PoE data logger interface (option for PDT101 model only).

CAB100A model	Maximum number of measurement devices per model
PDT101 model	4 PDT101 transmitters

CAB100A model	Maximum number of measurement devices per model
Analog channel model	4 analog input channels
Safety barrier model	4 safety barriers
Galvanic isolator model	4 galvanic isolators

More information

- CAB100A layout diagrams (page 138)

2.2.2 CAB100B models

CAB100B is available in 4 preconfigured models. The communication interface in all CAB100B models is a multiport serial port server.

CAB100B model	Maximum number of measurement devices per model
PDT101 model	16 PDT101 transmitters
Analog channel model	32 analog input channels
Safety barrier model	16 safety barriers
Galvanic isolator model	12 galvanic isolators

In addition to the above, mixed CAB100B models are available, with limitations. Contact your Vaisala sales representative for details. For an example configuration, see Figure 4 (page 13).

More information

- CAB100B layout diagrams (page 143)

2.3 Physical structure and components

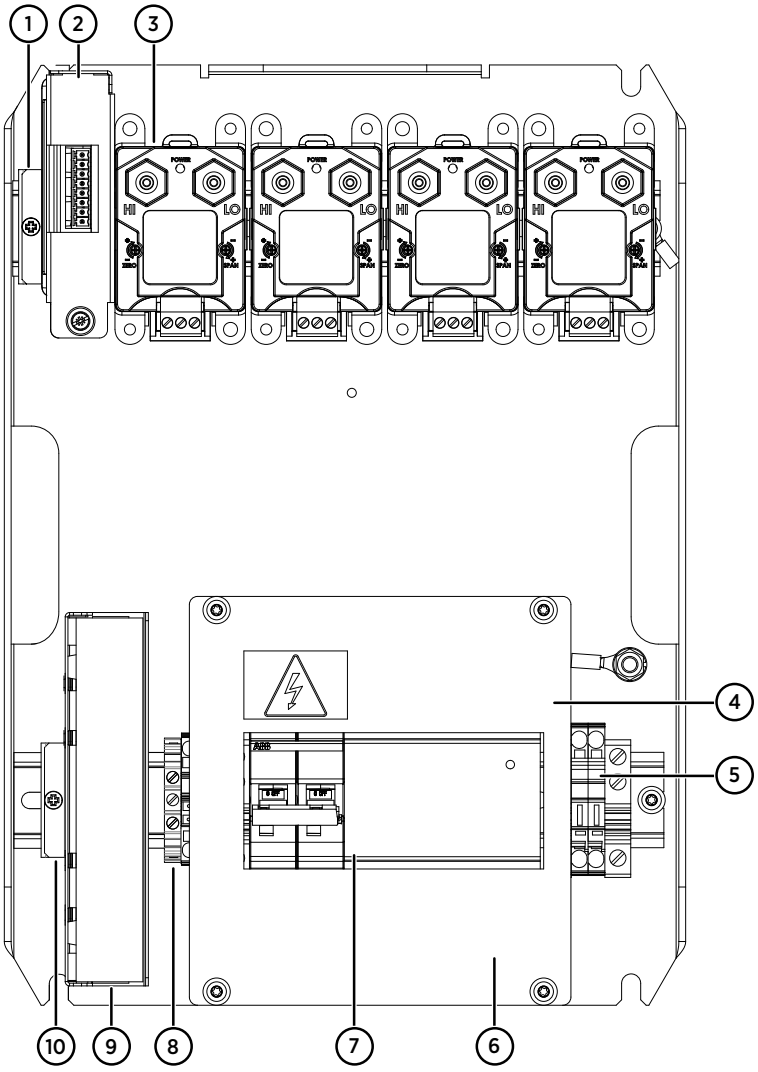


Figure 2 Main components inside CAB100A, PDT101 model with serial port server and 24 V DC power supply

1 Mounting clamp for DL4000 data logger
2 DL4000 data logger
3 PDT101 transmitters (4 pcs)
4 Cover plate
5 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
6 100 – 240 V AC mains input and grounding point (under cover plate)
7 Circuit breaker and power supply module
8 Grounding terminal block
9 Serial port server
10 Mounting clamp for serial port server

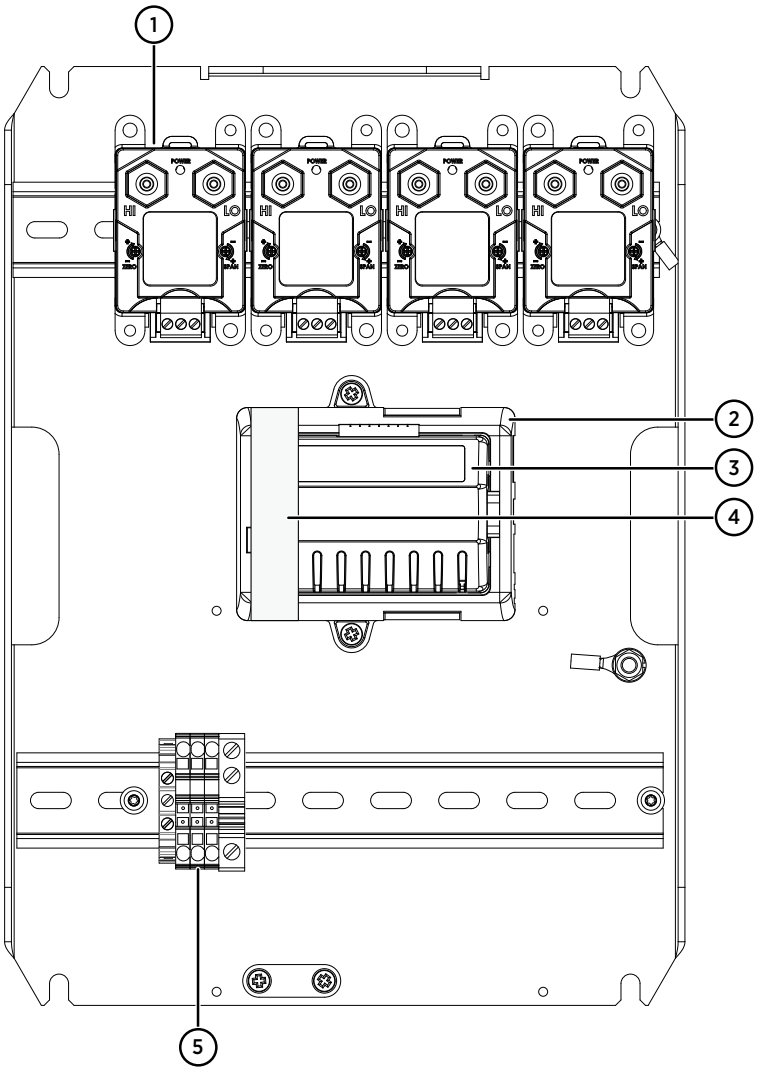


Figure 3 Main components inside CAB100A, PDT101 model with vNet PoE

1 PDT101 transmitters (4 pcs)
2 vNet PoE data logger interface
3 DL4000 data logger
4 Protective label. **Remove before installation.**
5 Grounding terminal block

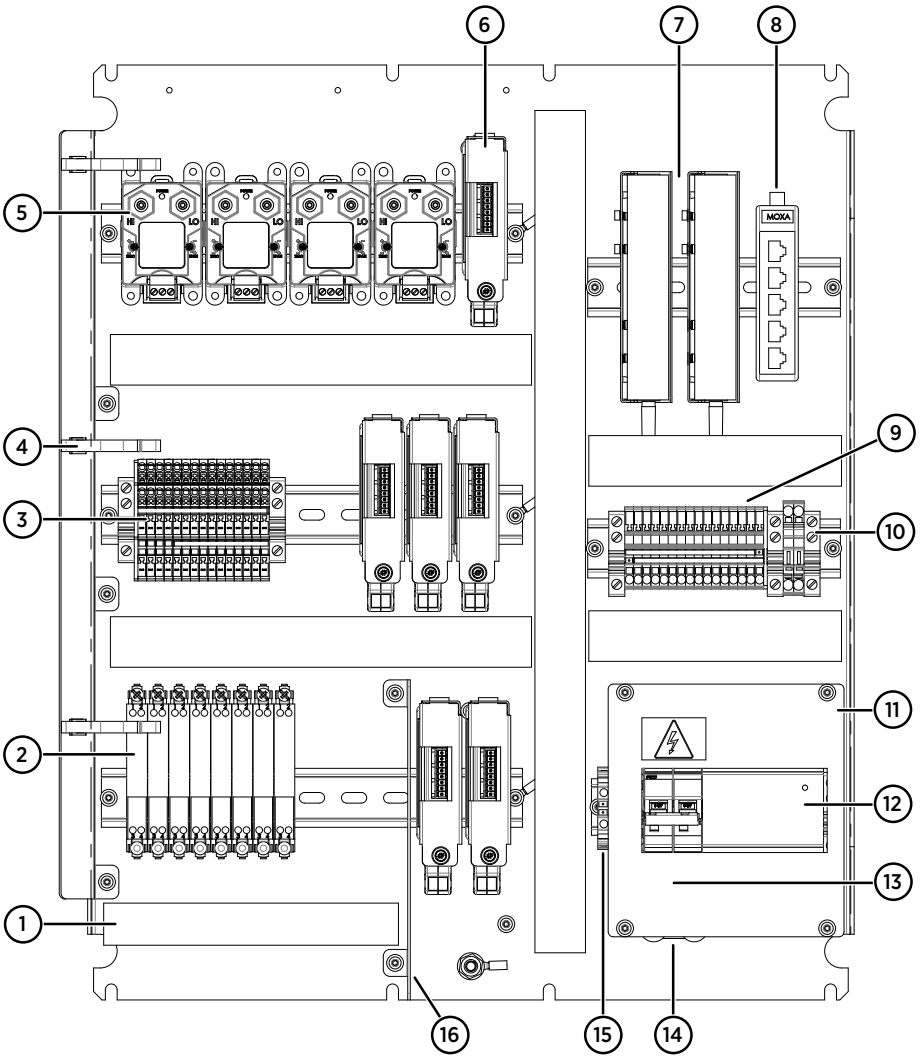


Figure 4 Main components inside CAB100B, mixed model with PDT101s, analog input channels, and safety barriers

1 Cable duct for intrinsically safe connections
2 Safety barriers (8 pcs)
3 Terminal block for analog input channels
4 Holders for tubing (3 pcs)
5 PDT101 transmitters (4 pcs)
6 DL4000 data loggers (6 pcs)
7 Serial port servers (2 pcs)
8 Ethernet switch
9 24 V DC power block
10 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
11 Cover plate
12 Circuit breaker and power supply module
13 100 – 240 V AC mains input (under cover plate)
14 Cable strain relief
15 Grounding terminal block
16 Partition plate separating intrinsically safe and non-intrinsically safe connections

For more layout diagrams of CAB100 configuration options, see CAB100A layout diagrams (page 138) and CAB100B layout diagrams (page 143).

2.3.1 Enclosures

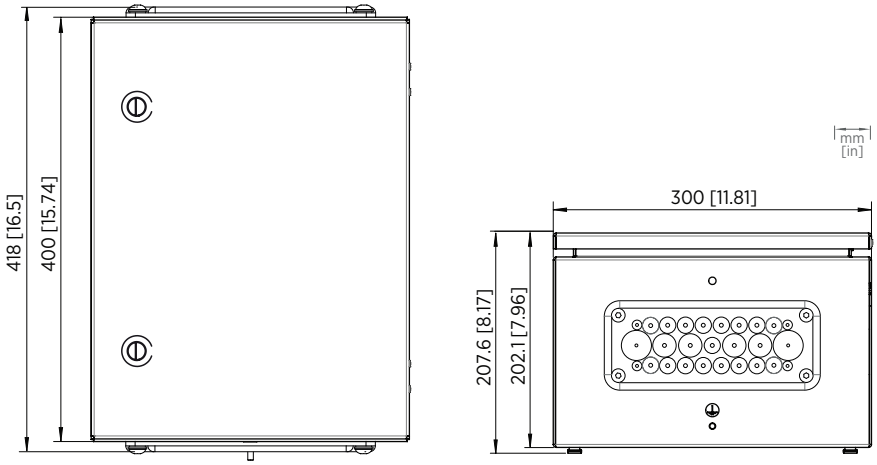


Figure 5 CAB100A enclosure dimensions

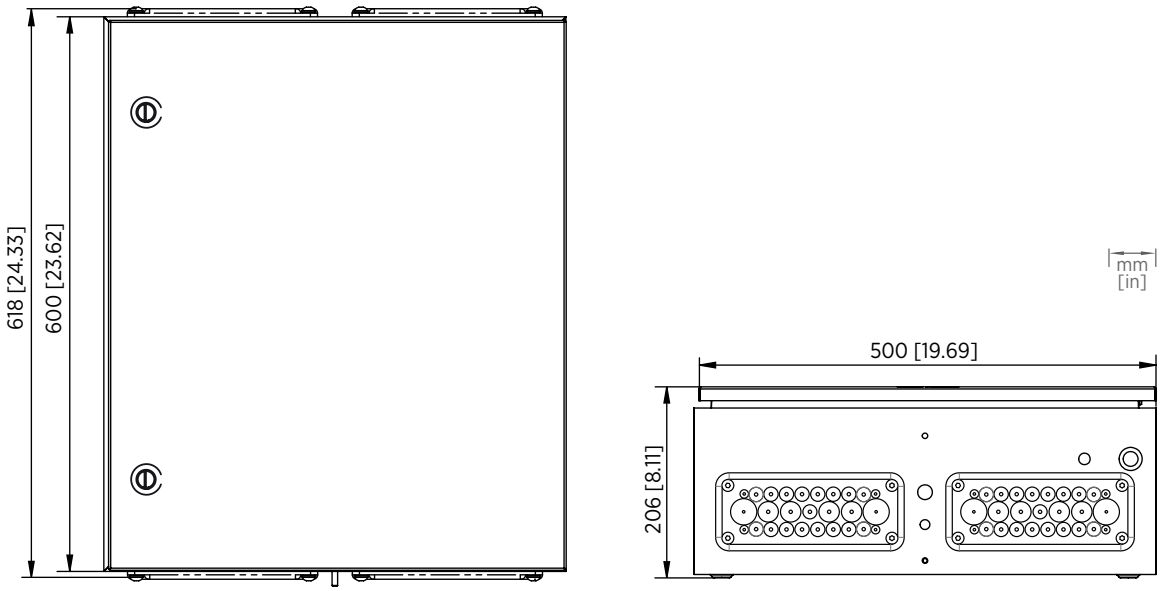


Figure 6 CAB100B enclosure dimensions

The CAB100A enclosure is made of aluminium, and has IP54 rating. The CAB100B enclosure is made of stainless steel, and has IP66/NEMA 4 rating. [1)]

1) *The IP ratings apply only when using the factory-installed top and bottom flanges in the enclosures.*

There are flanges for cable lead-through on the top and bottom of the enclosures. The top flange of both small and large cabinet is made of rubber. Stainless steel and rubber flange models are available to order for the bottom of the cabinet.

The enclosures come with a mounting frame for easy installation.

More information

- Installing CAB100A with mounting frame (page 16)
- Installing CAB100B with mounting frame (page 19)
- Enclosure flanges (page 23)
- CAB100 specifications (page 116)

3. Installing the enclosure

3.1 Installing CAB100A with mounting frame

- 4-mm Allen key
- 10-mm wrench
- Drill and 8-mm drill bits for making the installation holes
- Spirit level

CAUTION! For safety reasons, do not carry out installations alone. Safe installation requires at least 2 people.

CAUTION! CAB100 analog input channels are not surge protected. Therefore, note the following:

- The analog input channel wiring must not exceed 30 meters.
- The wiring must not come from outside the building where CAB100 is installed.

If CAB100 cannot be installed in an environment that meets the above criteria, use a suitable surge protection device that has been installed following local regulations.

CAUTION! Do not drill holes in the backplate or the enclosure. Drill shavings may damage the equipment inside the cabinet.

CAB100 is shipped with a mounting frame and installation accessories for indoor wall installation. If the screws delivered with the mounting frame are not suitable for the wall material in the installation location, use any appropriate screws to attach the frame.

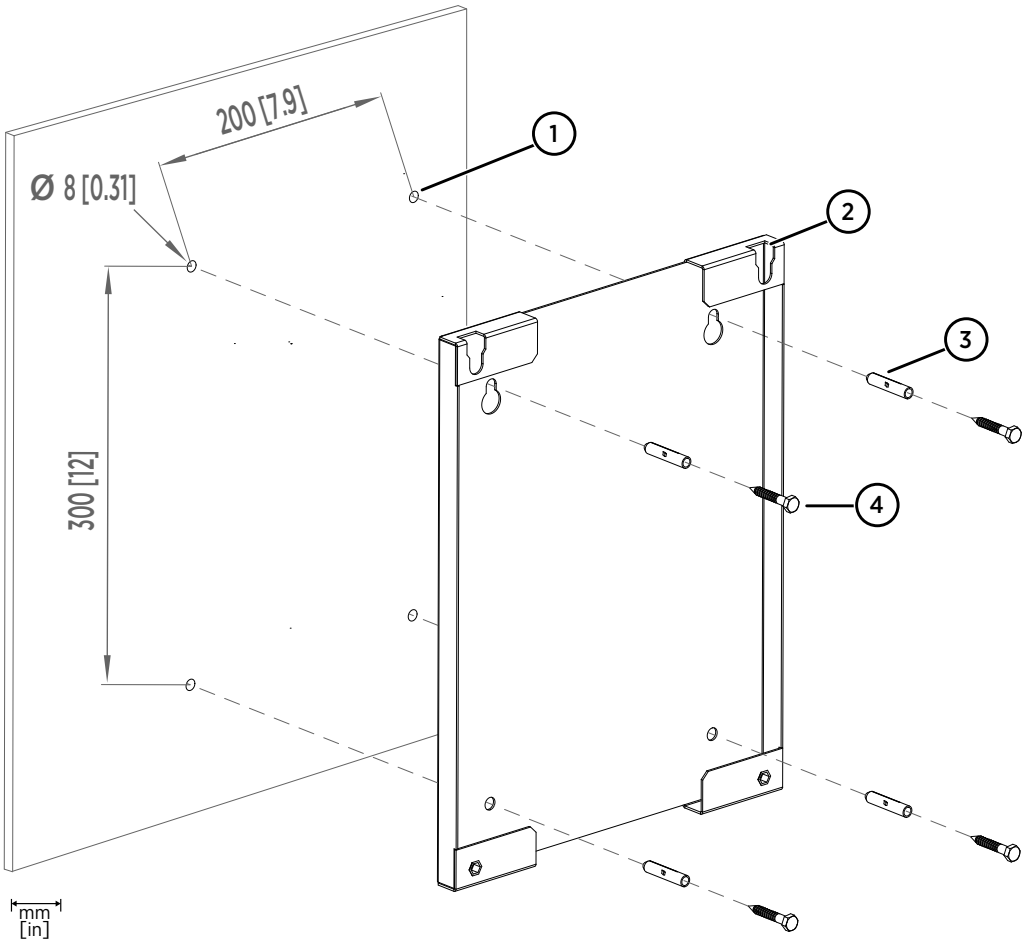
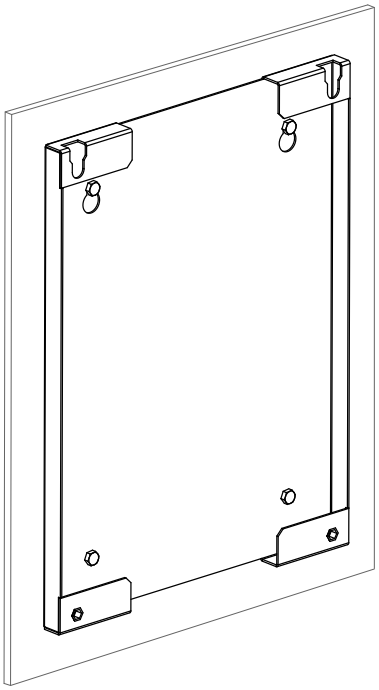


Figure 7 CAB100A wall installation accessories

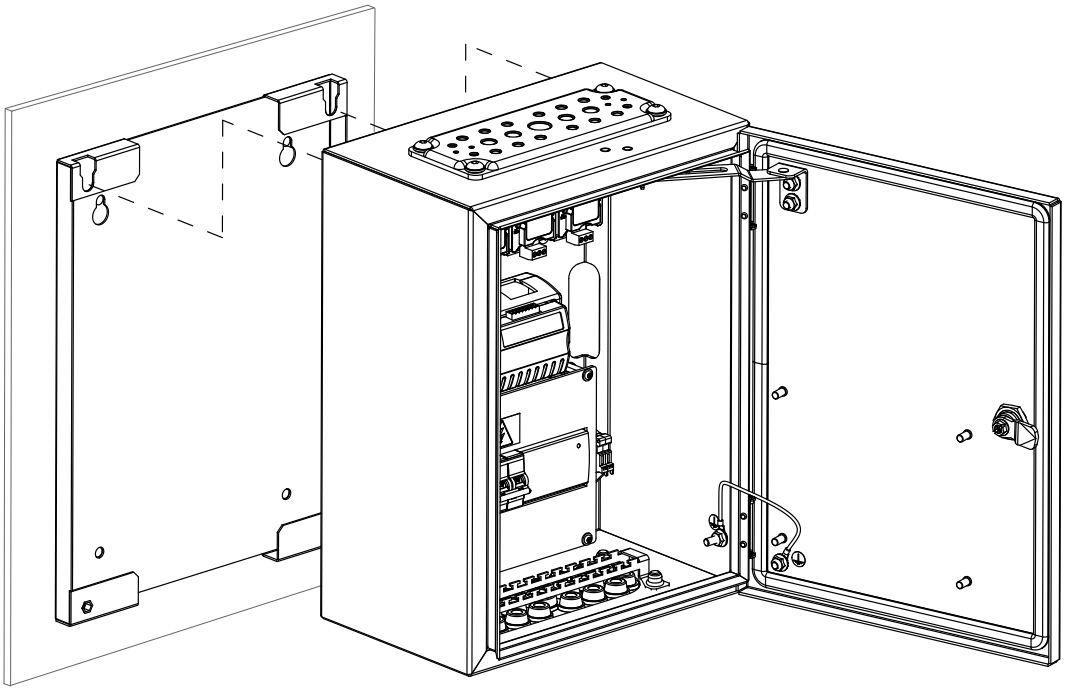
1 Hole for wall plug (4 pcs)
2 Mounting slot (2 pcs)
3 Wall plug (4 pcs)
4 Hex wood screw M6×40 DIN571 A2 (4 pcs)

1. Drill holes into the wall. Use the mounting frame as a guide.
2. Place the wall plugs into the drilled holes.

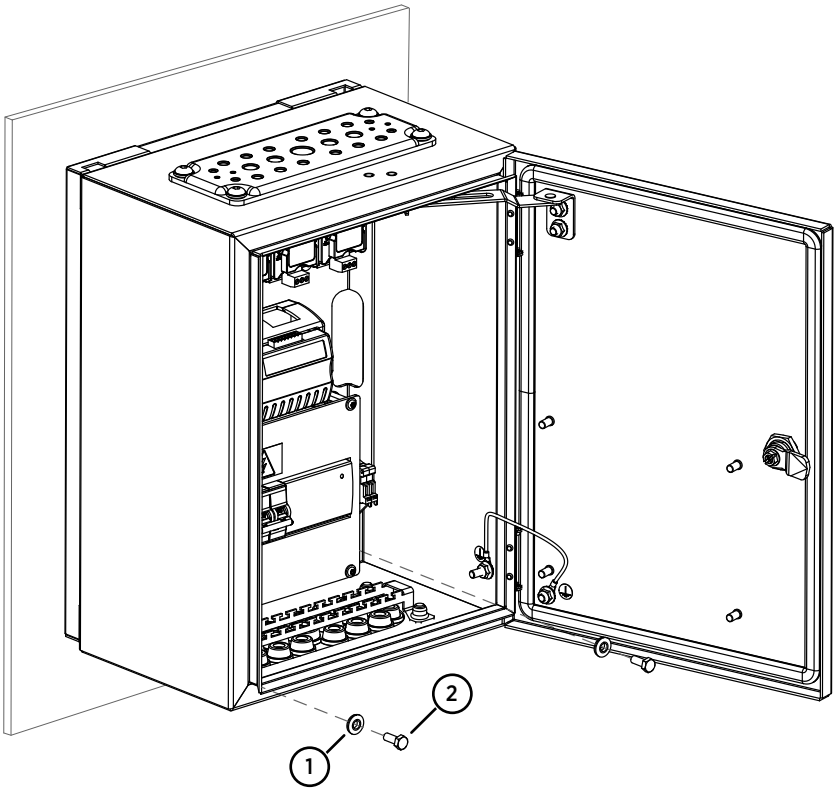
3. Attach the mounting frame to the wall with screws.



4. Lift the enclosure into place.
   Hang the enclosure onto the frame by sliding the mounting studs on the back of the enclosure into the mounting slots of the frame.



5. Attach the bottom of the enclosure to the mounting frame.



1 Washer with EPDM gasket 6.8/16×1.5/A2/EPDM (2 pcs)
2 Hex screw M6×16 ISO7380 A4 (2 pcs)

3.2 Installing CAB100B with mounting frame

- 4-mm Allen key
- 10-mm wrench
- Drill and 8-mm drill bits for making the installation holes
- Spirit level

CAUTION! For safety reasons, do not carry out installations alone. Safe installation requires at least 2 people.

CAUTION! CAB100 analog input channels are not surge protected. Therefore, note the following:

- The analog input channel wiring must not exceed 30 meters.
- The wiring must not come from outside the building where CAB100 is installed.

If CAB100 cannot be installed in an environment that meets the above criteria, use a suitable surge protection device that has been installed following local regulations.

CAUTION! Do not drill holes in the backplate or the enclosure. Drill shavings may damage the equipment inside the cabinet.

CAB100 is shipped with a mounting frame and installation accessories for indoor wall installation. If the screws delivered with the mounting frame are not suitable for the wall material in the installation location, use any appropriate screws to attach the frame.

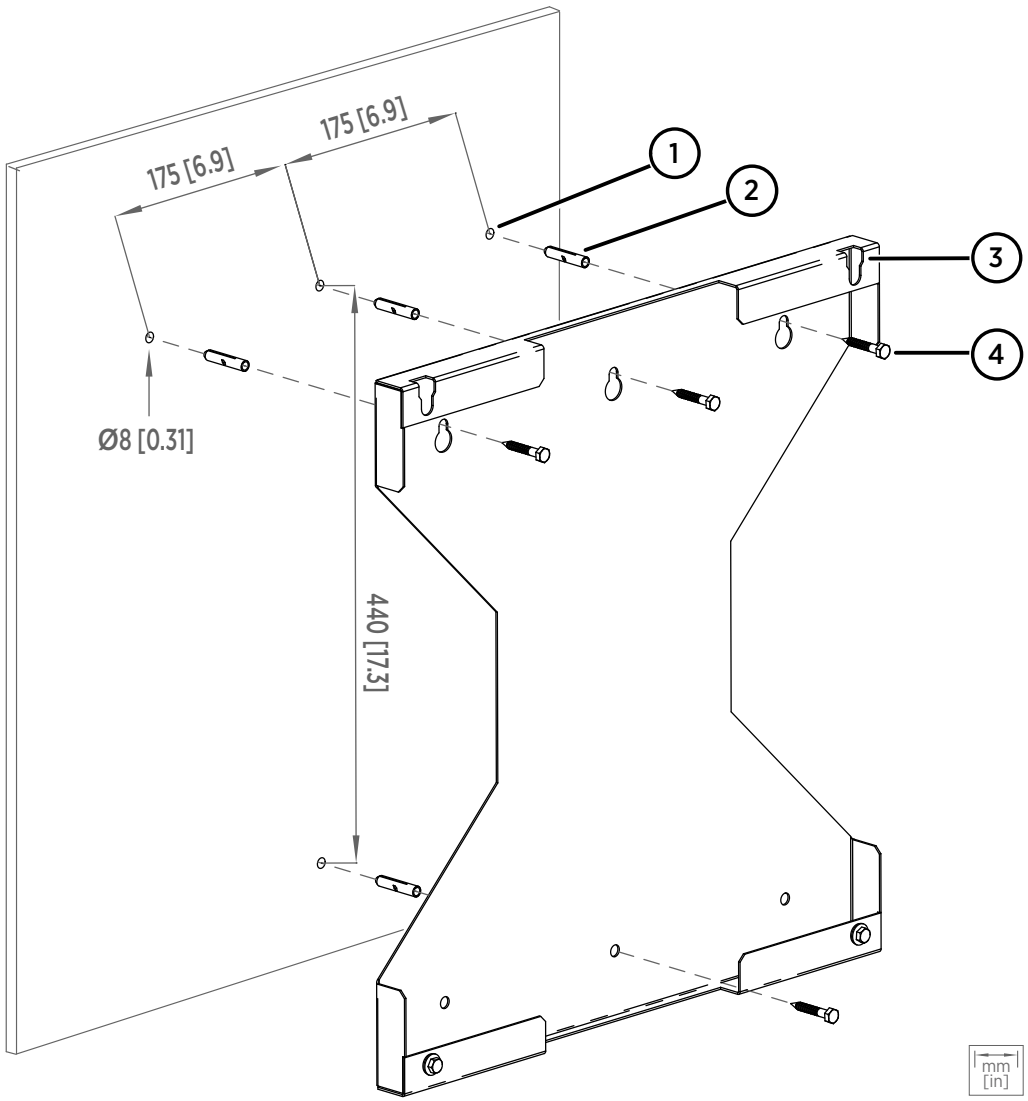
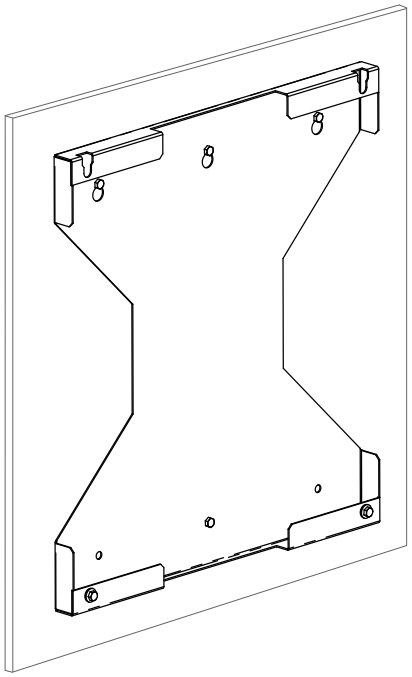


Figure 8 CAB100B wall installation accessories

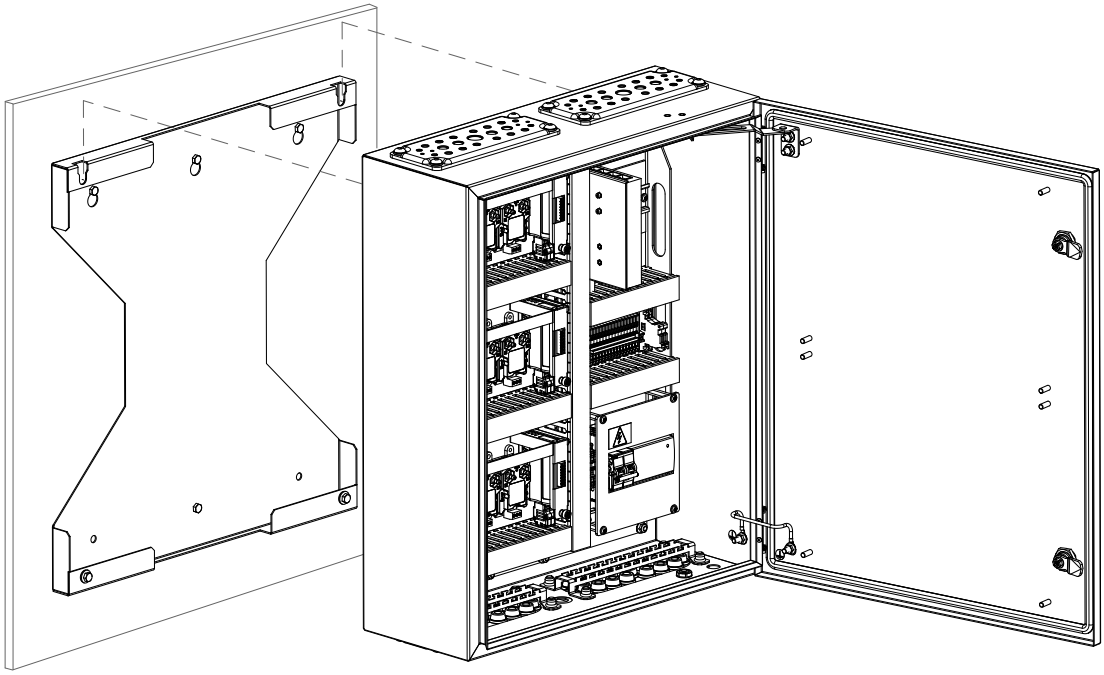
1 Hole for wall plug (4 pcs)
2 Wall plug (4 pcs)
3 Mounting slot (2 pcs)
4 Hex wood screw M6×40 DIN571 A2 (4 pcs)

1. Drill holes into the wall. Use the mounting frame as a guide.
2. Place the wall plugs into the drilled holes.

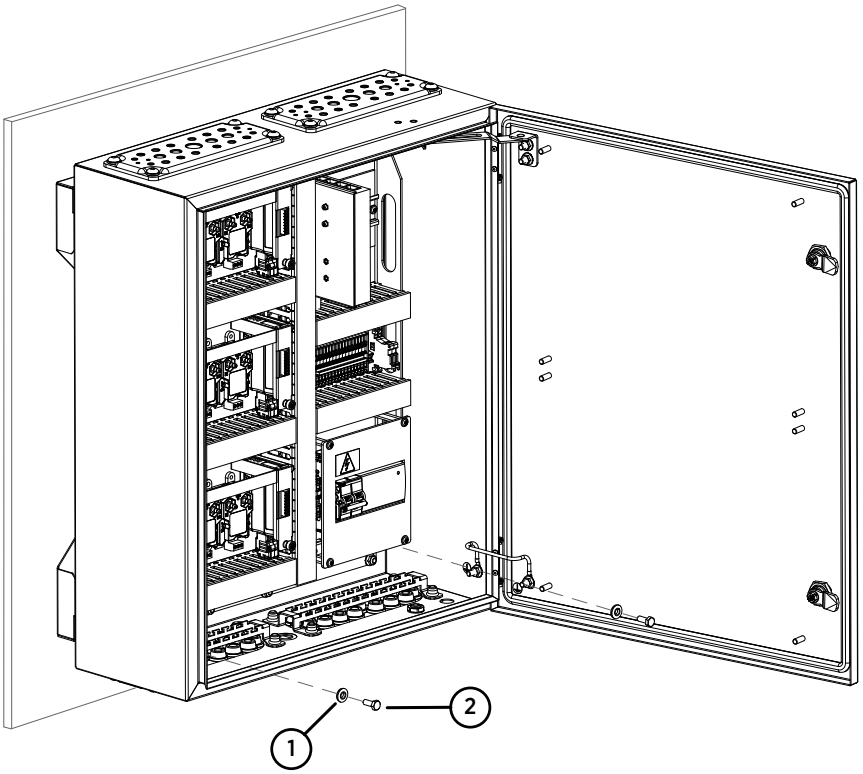
3. Attach the mounting frame to the wall with screws.



4. Lift the enclosure into place.
   Hang the enclosure onto the frame by sliding the mounting studs on the back of the enclosure into the mounting slots of the frame.



5. Attach the bottom of the enclosure to the mounting frame.



1 Washer with EPDM gasket 6.8/16×1.5/A2/EPDM (2 pcs)
2 Hex screw M6×16 ISO7380 A4 (2 pcs)

3.3 Enclosure flanges

Vaisala recommends that you lead cables, wires, and tubes into the CAB100 enclosure through the top and bottom flanges as explained in Table 4 (page 23).

Table 4 Enclosure flanges and recommended use

Number and type of flanges per cabinet model	Type of connection	Recommended flange to use
CAB100A: • 1 flange on the top and 1 on the bottom of the enclosure • Top flange is made of rubber. Rubber or stainless steel flange is available to order for the bottom.	AC (mains) cable	Top flange
	Tubes for PDT101 transmitters Ethernet PoE cable Wires for safety barriers, galvanic isolators, and external measurement devices	Bottom flange

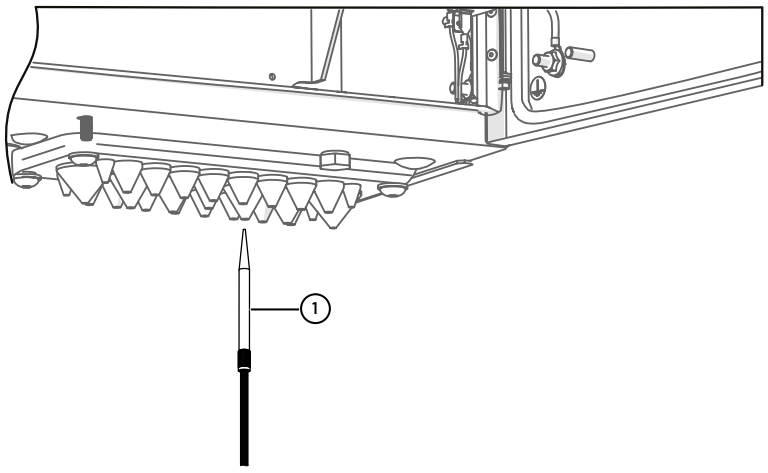
Number and type of flanges per cabinet model	Type of connection	Recommended flange to use
CAB100B: • 2 flanges on the top and 2 on the bottom of the enclosure • Top flanges are made of rubber. Rubber or stainless steel flanges are available to order for the bottom.	Tubes for PDT101 transmitters Wires for external measurement devices	Top flange
	AC (mains) cable	Bottom right-hand flange
	Wires for safety barriers and galvanic isolators	Bottom left-hand flange **only**

3.3.1 Leading cables through rubber flange

CAUTION! To preserve the IP rating of the enclosure, make sure that you lead cables through the flanges as instructed.

- Pipette
- Wire cutters
- Wire-stripping pliers

1. Lead the cables into the enclosure using the pipette provided.



1 Pipette for leading cable through rubber flange

2. Insert the pipette through one of the feed-through rondels in the flange.
3. Insert a cable and pull it through to the inside.
4. Inside the enclosure, connect the cables and wires according to the wiring diagram.

CAUTION! To avoid strain on the connector, make sure that you connect cables and wires properly. Too much strain may cause the cable or wire to fall off or damage the cable, wire, or connector.

More information

- Installation safety (page 27)
- Connecting AC (mains) power (page 28)
- Wiring diagrams (page 128)
- Layout diagrams (page 138)

3.3.2 Leading cables through stainless steel flange

CAUTION! To preserve the IP rating of the enclosure, make sure that you lead cables through the flanges as instructed.

- Wire cutters
- Wire-stripping pliers

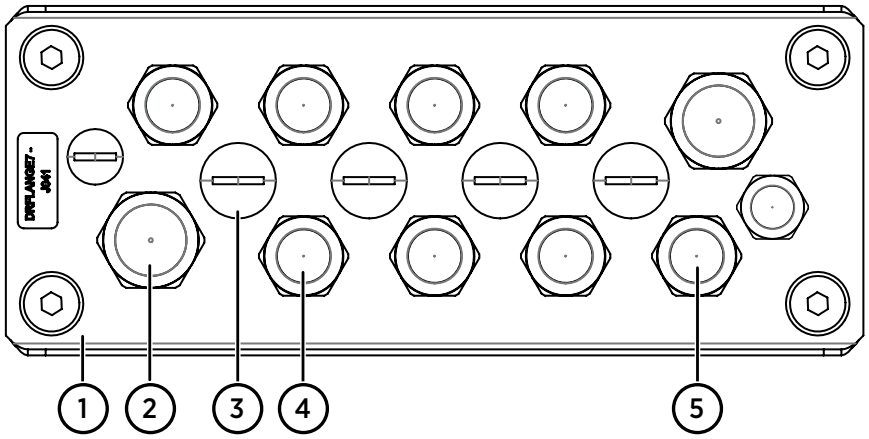


Figure 9 Stainless steel flange

1 Flange
2 Cable gland, cable diameter 7.5 … 14 mm (0.30 … 0.55 in)
3 Dummy plug M16 × 1.5
4 Cable gland, cable diameter 5 … 10 mm (0.20 … 0.39 in)
5 Cable gland, cable diameter 3 … 6.5 mm (0.12 … 0.26 in)

1. Lead the cables through the cable glands in the flange.

2. RJ45 connectors do not fit through the cable glands. Cut off the existing connector, lead the Ethernet cable through a cable gland, and attach a new cable connector to the cable. For instructions, see the connector documentation.
3. Inside the enclosure, connect the cables and wires according to the wiring diagram.

CAUTION! To avoid strain on the connector, make sure that you connect cables and wires properly. Too much strain may cause the cable or wire to fall off or damage the cable, wire, or connector.

More information

- Installation safety (page 27)
- Connecting AC (mains) power (page 28)
- Wiring diagrams (page 128)
- Layout diagrams (page 138)

4. Electrical installation

4.1 Installation safety

WARNING! Only licensed experts may install electrical components. They must adhere to local and state legislation and regulations.

WARNING! Do not open the AC/DC power supply module. There are no user-serviceable parts inside the module. If the power supply module is faulty, replace it.

WARNING! Keep away from live circuits. Operating personnel must observe safety regulations at all times.

WARNING! Ground the product and verify installation grounding periodically to minimize shock hazard.

WARNING! After disconnecting the power cable, dangerous voltages can exist for some time. To avoid injury, disconnect the power and discharge circuits before touching them.

CAUTION! CAB100 analog input channels are not surge protected. Therefore, note the following:

- The analog input channel wiring must not exceed 30 meters.
- The wiring must not come from outside the building where CAB100 is installed.

If CAB100 cannot be installed in an environment that meets the above criteria, use a suitable surge protection device that has been installed following local regulations.

CAUTION! Do not use the power block in CAB100 to power measurement devices that cannot be loop-powered. For wiring instructions of externally powered measurement devices, see Wiring externally powered measurement devices (page 65).

CAUTION! When working in explosion hazardous areas with installations involving safety barriers or galvanic isolators, ensure that you comply with the safe work procedure outlined in EN IEC 60079-14 and possible applicable local safety standards.

CAUTION! Do not modify the unit or use it in ways not described in the documentation. Improper modification or use may lead to safety hazards, equipment damage, failure to perform according to specification, decreased equipment lifetime, or the warranty becoming void.

CAUTION! For safety reasons, do not carry out installations alone. Safe installation requires at least 2 people.

More information

- Wiring diagrams (page 128)
- Layout diagrams (page 138)

4.2 Connecting AC (mains) power

WARNING! Before connecting the AC (mains) power cable, switch off the power from the main power source.

CAUTION! Before connecting power to the device, read carefully the safety notes in Installation safety (page 27).

- Screwdriver
- Wire cutters
- Wire-stripping pliers

For the AC (mains) power connection, you need an external disconnection device (for example, a detachable power cable or a mains power switch).

Note the following:

- The disconnection device must be rated 16 A or 20 A at 250 V AC, and must conform to any additional local regulations.

- The disconnection device must be visible from the cabinet, or lockable with a key to prevent accidental switching on during installation and maintenance.
- The cabinet must not block access to the disconnection device after it has been installed. The disconnection device must remain easy to operate.

The AC (mains) cable is not included in the delivery. Use an AC (mains) cable with a minimum cross-section of 3 × 0.75 mm^2 (18 AWG).

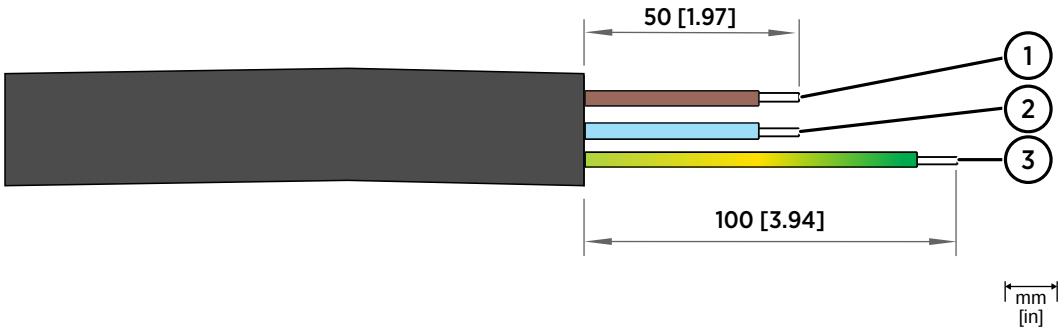
Refer to Layout diagrams (page 138) for the locations of components inside the cabinet.

1. Unscrew and remove the transparent cover plate protecting the circuit breaker and the power supply module.

2. Lead the AC (mains) cable into the enclosure.
   Lead the cable through a flange in the cabinet enclosure, following relevant safety regulations. Take note of safe areas around safety barriers or galvanic isolators inside the enclosure.

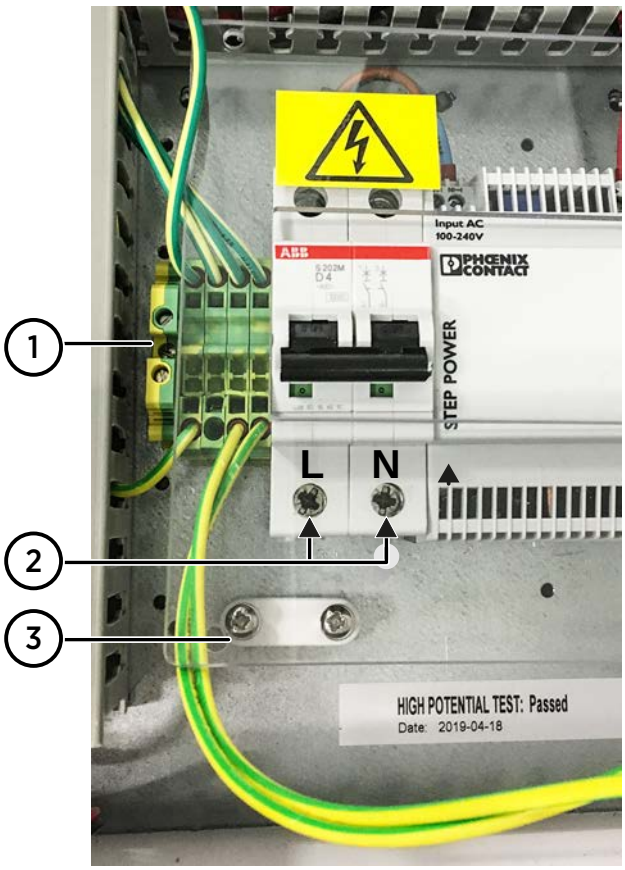
3. Strip approximately 100 mm (4 in) of the cable, and cut the phase and neutral wires to the length of approximately 50 mm (2 in). If you are using a stranded wire, add cable ferrules to the ends.

> **CAUTION!** Make sure that the grounding wire is longer than the phase and neutral wires. Under mechanical stress, the grounding wire must be the last to disconnect from the protective ground terminal.



Number in figure	Wire	Wire color (international)	Wire color (North America)	Min. ... max. wire cross-section
1	Phase L	Brown	Black	Solid wire: 0.75 ... 4 mm^2 (18 ... 12 AWG) Stranded wire: 0.75 ... 2.5 mm^2 (18 ... 14 AWG)
2	Neutral N	Blue	White	
3	Grounding PE/GND	Yellow/Green	Green	

4. Connect the phase, neutral, and grounding wires of the AC (mains) cable as indicated in the figure below.



1 Connect the (green or yellow-green) grounding wire to the grounding terminal block.
2 Connect the phase (L) and neutral (N) wires to the circuit breaker: the phase in the left-hand screw terminal and the neutral in the right-hand screw terminal.
3 Mount the AC (mains) cable to the strain relief fixture located under the circuit breaker.

5. Reattach the transparent cover plate.
6. Switch on the circuit breaker.
7. Switch on mains power.

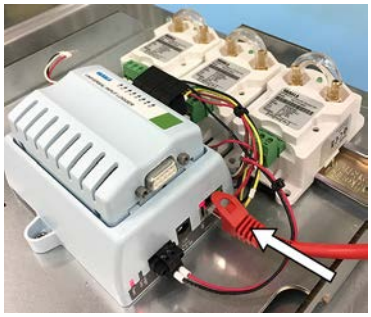
More information

- Wiring diagrams (page 128)
- Layout diagrams (page 138)

4.3 Connecting power over Ethernet to CAB100A

CAUTION! Before connecting power to the device, read carefully the safety notes in Installation safety (page 27).

1. In CAB100A PDT101 model with vNet PoE, power the cabinet by connecting your Ethernet PoE cable to the vNet device.



2. Switch on mains power.

User documentation for Vaisala vNet Power over Ethernet Data Logger Interface is available in www.vaisala.com.

More information

- Wiring diagrams (page 128)
- Layout diagrams (page 138)

4.4 Supplying power to external measurement device from CAB100B

Small screwdriver

- Small screwdriver

CAUTION! Before connecting any external measurement device to CAB100, refer to the wiring instructions in the device-specific user documentation.

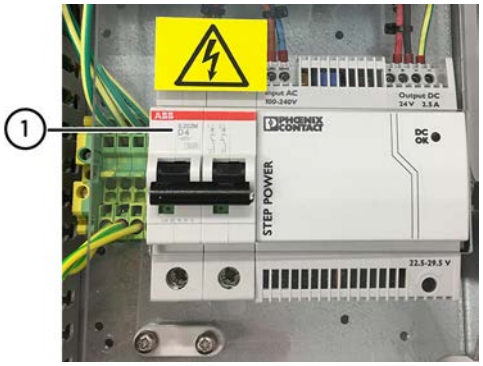
CAUTION! Do not power an external measurement device both via the CAB100 24 V DC power block and the CAB100 analog terminal block.

You can use the 24 V DC power block in CAB100 for powering measurement devices that require external powering.

For instructions on powering loop-powered devices via the CAB100 analog terminal block, see Wiring and powering loop-powered measurement devices (page 62).

To power an externally powered device from the CAB100B power block:

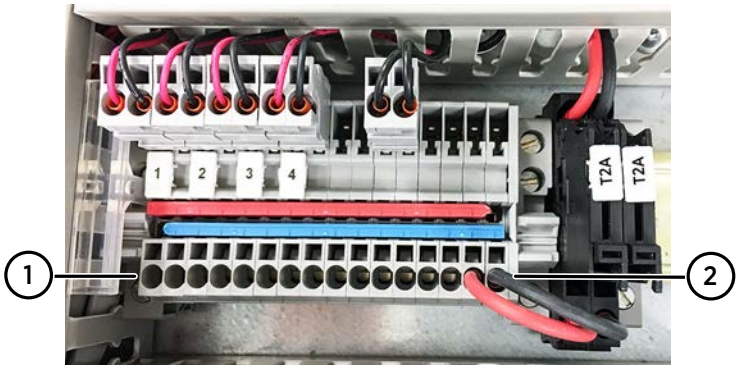
1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

2. Use the available connectors on the bottom row of the CAB100B power block for connecting the power wires of the external measurement device.
The power block is located on the right-hand side of the cabinet.

3. Connect the wires of the device in the same order as shown below: negative (black) on the right, with positive (red) on its left.
   Do not disconnect the existing power wires on the bottom row.



1 Row available for power wires of external measurement devices
2 Power wires from the CAB100B power supply module. Do not disconnect.

> **CAUTION!** Some functionalities of external measurement devices (for example, sensor purge in Vaisala probes) may increase the power consumption of the devices momentarily. When powering external devices, please make sure that the additional power requirements do not exceed the capacity of the CAB100B power supply. If in doubt, contact Vaisala for more information.

4. After connecting the power wires, reconnect power in the cabinet.
   a. Switch on the circuit breaker.
   b. Switch on mains power.

More information

- Wiring diagrams (page 128)
- Layout diagrams (page 138)

5. Adding devices to CAB100A

5.1 Expanding PDT101 transmitter installation in CAB100A

- The PDT101 transmitters you plan to install
- Small flat head screwdriver

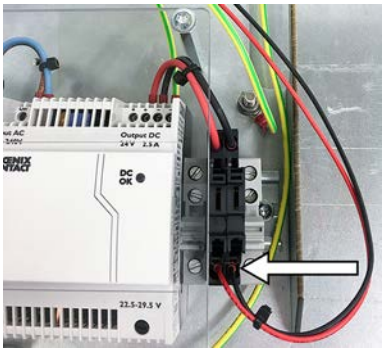
For item codes, see Spare parts and accessories (page 126).

Check the type of your PDT101 transmitters (voltage model / current model) before ordering new devices, as you cannot mix different types of PDT101 models in a cabinet installation. For more information, see Spare parts and accessories (page 126).

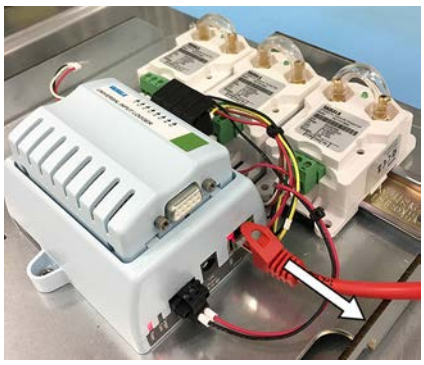
Follow the steps below to add new PDT101 transmitters to an existing set of transmitters in CAB100A. Note the different steps for 24 V DC and PoE powered models.

Refer to CAB100A layout diagrams (page 138) when planning the installation.

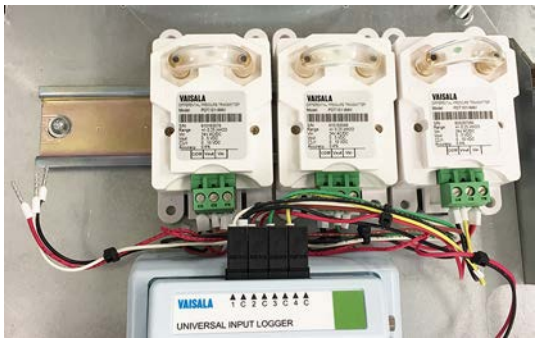
1. Switch off mains power.
2. De-energize the existing PDT101 transmitters as shown below.
3. De-energizing **24 V DC powered CAB100A model**:
   Disconnect the PDT101 power wires from the fuse terminal blocks located at the right-hand end of the power block.



4. De-energizing **vNet PoE powered CAB100A model**:
   Disconnect the Ethernet PoE cable from the vNet device.



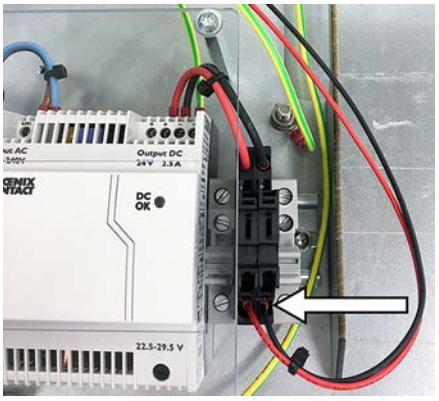
5. Mount the new PDT101 transmitter on the DIN rail.
   Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.
6. Use the existing wires in the PDT101 wire set to connect the new PDT101.
   Discard the black wire end caps before connecting the wires.



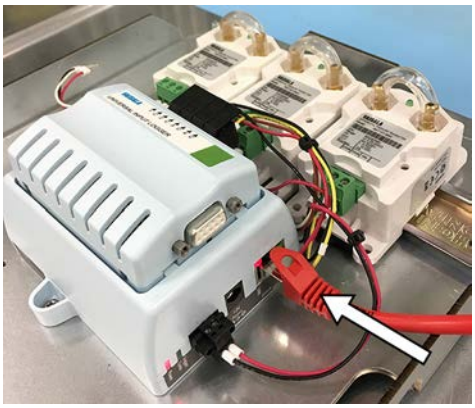
7. Fasten the wires to the screw terminal connector in the PDT101 with a small flat head screwdriver.

- Connect the black wire in the wire set to the **COM** terminal and the red wire to the **Vin** terminal of PDT101
- When connecting the third wire in the wire set to the **Vout** terminal, please observe the color of the wire coming from the DL4000 data logger connector. The PDT101 transmitters installed at the factory are connected so that the rightmost PDT101 on the DIN rail is connected to data logger channel 4. See the location of the data logger connector and channel markings next to it in step 6 above.

8. Reconnect power in **24 V DC powered CAB100A model**:
   a. Reconnect the power wires in the fuse terminal blocks.



   b. Switch on mains power.
9. Reconnect power in **vNet PoE powered CAB100A model**:
   a. Reconnect the Ethernet PoE cable to the vNet device.



   b. Switch on mains power.

More information

- PDT101 calibration (page 114)
- CAB100A wiring diagrams (page 128)
- CAB100A layout diagrams (page 138)

5.2 Expanding safety barrier installation in CAB100A

- The safety barriers you plan to install
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

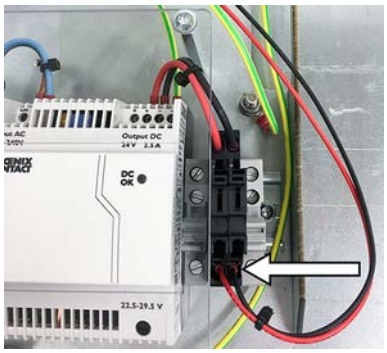
Vaisala recommends that you use the cable lead-throughs on top of the cabinet to lead the external wiring for the safety barriers into the cabinet.

The cable set for safety contains wiring for 4 safety barriers. If the number of barriers inside CAB100A totals less than 4 after installation, leave the extra wires unconnected and the wire end caps in place.

Follow the steps below to add new safety barriers to an existing set of devices in CAB100A. A maximum of 4 barriers can be housed inside CAB100A.

Refer to CAB100A layout diagrams (page 138) when planning the installation.

1. Switch off mains power.
2. De-energize the existing safety barriers.
   Disconnect the barrier power wires from the fuse terminal blocks located at the right-hand end of the power block.



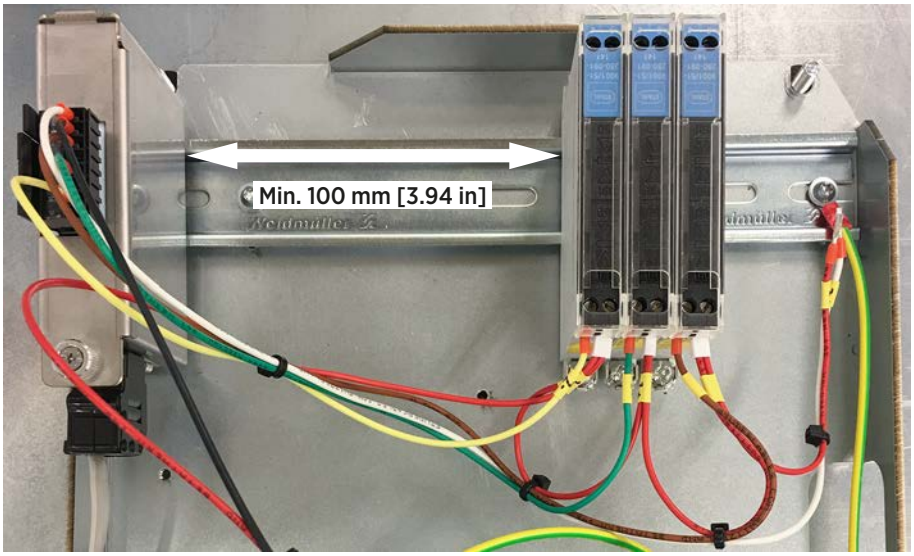
3. Take note of the wiring instructions printed on the side of the barrier. The information will be relevant when connecting wires in the intrinsically safe screw terminals of the barrier in step 6.

4. Mount the barrier on the DIN rail.

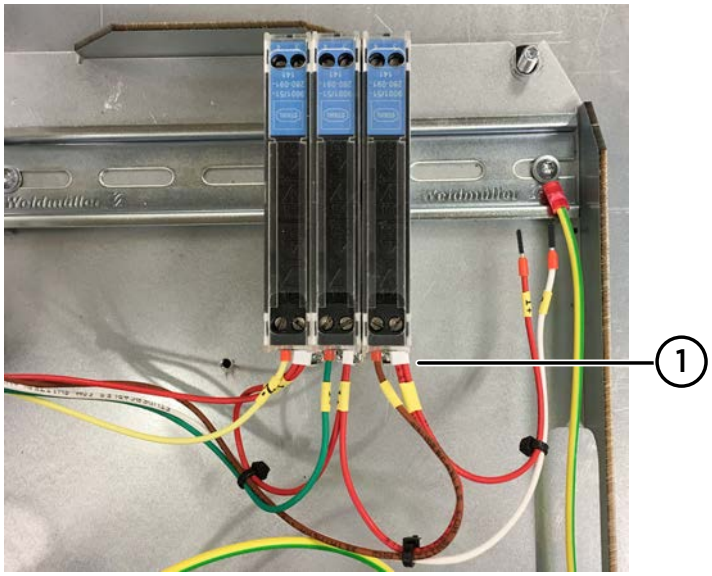
> **CAUTION!** A safety distance of minimum 100 mm (3.94 in) must remain between the DL4000 data logger and the leftmost barrier.

   a. Make sure the blue end of the device, with the intrinsically safe screw terminals, faces up towards the top of the cabinet.

   b. Rest the locking mechanism at the back of the barrier on the DIN rail and push down firmly. This will click the device into place.

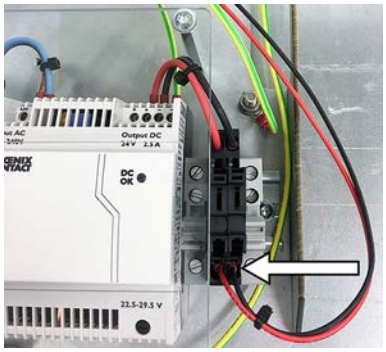


5. To connect the new barrier, use the existing barrier wires in the cable set.
   a. Discard the black wire end caps.
   b. Observing polarity, connect the wires to the connectors at the bottom of the barrier.



1 Safety barrier wires connected

6. For wiring of the intrinsically safe screw terminals at the blue end of the barrier, refer to the wiring instructions printed on the side of the barrier and the *Operating Instructions* leaflet provided in the barrier packaging.
7. Reconnect power in CAB100A.
   a. Reconnect the power wires in the fuse terminal blocks.



   b. Switch on mains power.

More information

- CAB100A wiring diagrams (page 128)
- CAB100A layout diagrams (page 138)

5.3 Expanding galvanic isolator installation in CAB100A

- The galvanic isolators you plan to install
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

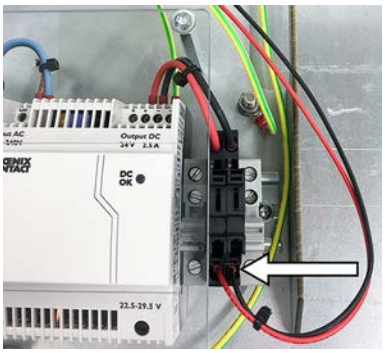
Vaisala recommends that you use the cable lead-throughs on top of the cabinet to lead the external wiring for the galvanic isolators into the cabinet.

The galvanic isolator cable contains wiring for 4 isolators. If the number of isolators inside CAB100A totals less than 4 after installation, leave the extra wires unconnected and the wire end caps in place.

Follow the steps below to add new galvanic isolators to an existing set of devices in CAB100A. A maximum of 4 isolators can be housed inside CAB100A.

Refer to CAB100A layout diagrams (page 138) when planning the installation.

1. Switch off mains power.
2. De-energize the existing isolators.
   Disconnect the isolator power wires from the fuse terminal blocks located at the right-hand end of the power block.



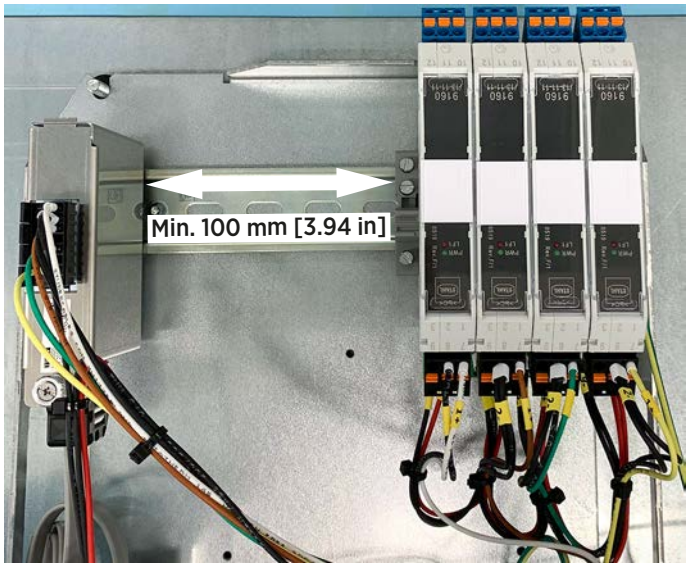
3. Take note of the wiring instructions printed on the side of the isolator. The information will be relevant when connecting wires in the intrinsically safe screw terminals of the isolator in step 6.

4. Mount the isolator on the DIN rail.

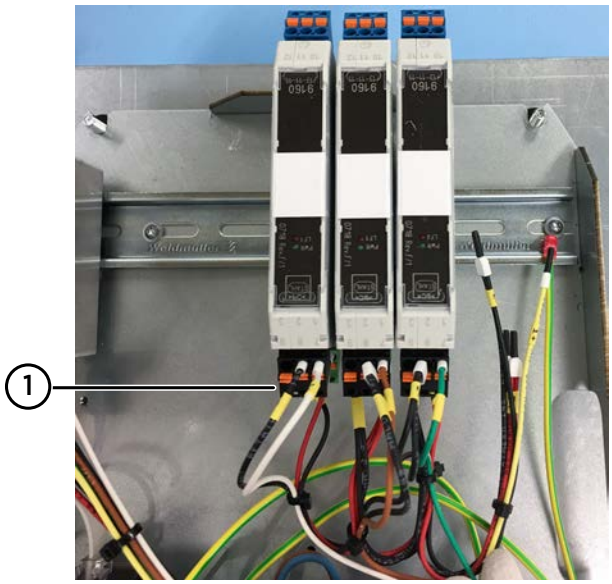
> **CAUTION!** A safety distance of minimum 100 mm (3.94 in) must remain between the DL4000 data logger and the leftmost isolator.

a. Make sure that the intrinsically safe blue screw terminals face up towards the top of the cabinet.

b. Rest the locking mechanism at the back of the isolator on the DIN rail and push down firmly. This will click the device into place.

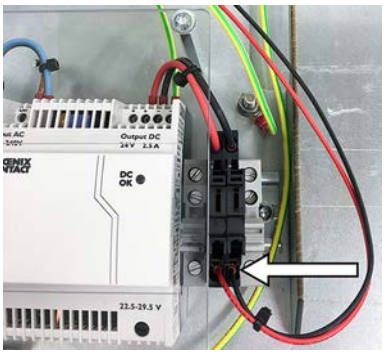


5. To connect the new isolator, use the existing wires in the isolator cable.
   a. Discard the black wire end caps.
   b. Observing polarity, connect the isolator wires to push-in terminals 1 and 2, and the power wires to terminals 7 and 9 at the bottom of the isolator.



1 Galvanic isolator wires connected

6. For wiring of the intrinsically safe screw terminals in the galvanic isolators, refer to the wiring instructions printed on the side of the isolator and the *Safety Manual* leaflet provided in the isolator packaging.
7. Reconnect power in CAB100A.
   a. Reconnect the power wires in the fuse terminal blocks.



   b. Switch on mains power.

More information

- CAB100A wiring diagrams (page 128)
- CAB100A layout diagrams (page 138)

6. Adding devices to CAB100B

6.1 Adding PDT101 transmitters as new modules to CAB100B

- Empty DIN rail in the cabinet
- The PDT101 transmitters you plan to install
- PDT Wiring Set, 1 set per 4 PDT101 transmitters. The set contains the following:
  - Cable set for PDT or safety
  - Data logger data cable
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 PDT101 transmitters
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

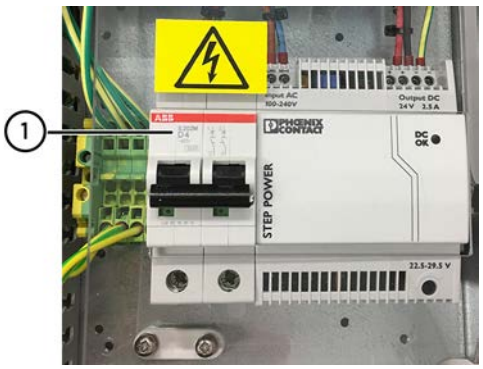
Make sure to number the data loggers as well as the cable sets and wires in the PDT Wiring Set before you install and connect them.

DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

Follow the steps below to install PDT101 transmitters as new devices to an empty DIN rail in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on expanding the number of PDT101 transmitters installed in the cabinet, see Expanding PDT101 transmitter installation in CAB100B (page 50).

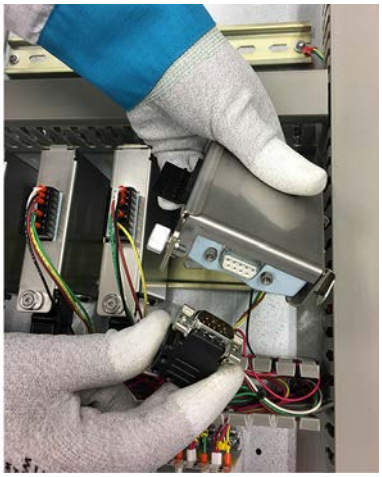
1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

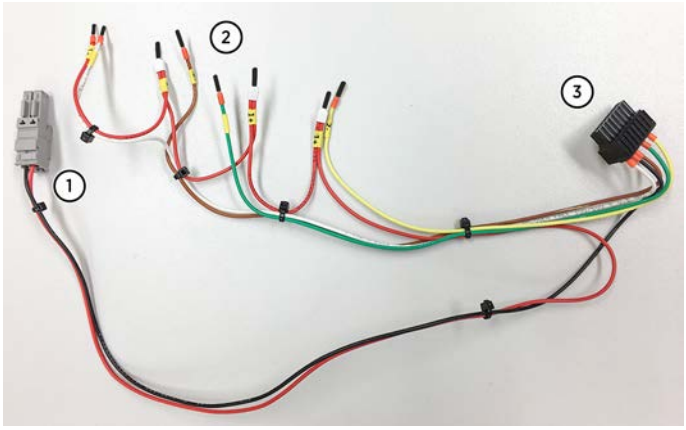
2. Remove the cable duct cover below the PDT101 mounting location.
3. Remove the long vertical cable duct cover in the middle of the cabinet.
4. Mount the new PDT101 transmitters on the DIN rail, preferably at the left end of the rail. Rest the upper part of the PDT101 locking mechanism on the DIN rail and push down firmly. This will click the device into place.
5. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

6. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.



7. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.
8. Connect the logger data cable to a free port in the serial port server.

9. Connect the PDT101 transmitters to the data logger and the power block as shown in step 10 to step 15.
   Use the cable set for PDT, which is included in PDT Wiring Set (Vaisala item code: ASM213079SP).



1 Power wires and connector
2 PDT101 wires
3 Data logger connector

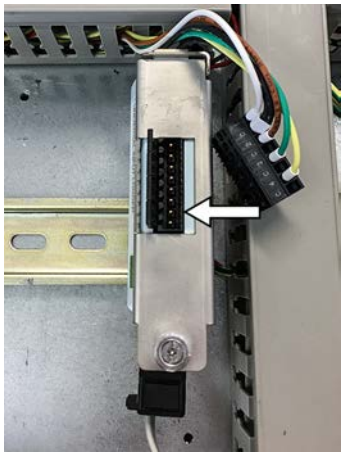
> The cable set for PDT contains wiring for 4 PDT101 transmitters. If you install only 1 to 3 PDT transmitters, leave the extra wires unconnected and the wire end caps in place.

10. Remove the end caps from the wires in the cable set for PDT.
11. Disconnect the screw terminal connector from the PDT101 by pulling it out.

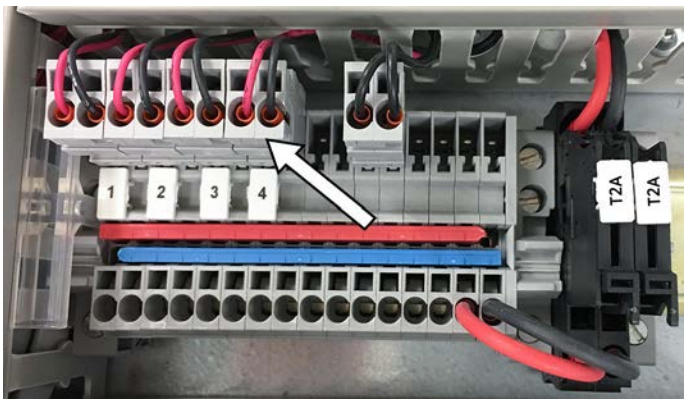
12. Observing polarity, connect the PDT101 wires to the screw terminal connector with a small flat head screwdriver.

13. Follow the terminal block label markings on the PDT101 and plug the connector back in.

14. Connect the data logger connector to the DL4000 data logger.



15. Connect the power wire connector to the power block on the right-hand side of the cabinet.



16. The new PDT101 transmitters are now mounted and connected.

1 Wires connected to PDT101 screw terminal connector
2 Data logger wires connected to data logger
3 Power wires connected to power block

17. Route the wires along the cable ducts.
18. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
19. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- PDT101 calibration (page 114)
- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.2 Expanding PDT101 transmitter installation in CAB100B

- The PDT101 transmitters you plan to install
- PDT Wiring Set (Vaisala item code: ASM213079SP), 1 set per 4 PDT101 transmitters. The set contains the following:
  - Cable set for PDT or safety
  - Data logger data cable
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 PDT101 transmitters
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

Check the type of your PDT101 transmitters (voltage model / current model) before ordering new devices, as you cannot mix different types of PDT101 models in a cabinet installation. For more information, see Spare parts and accessories (page 126).

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers. One serial port server controls the traffic of maximum 4 data loggers.

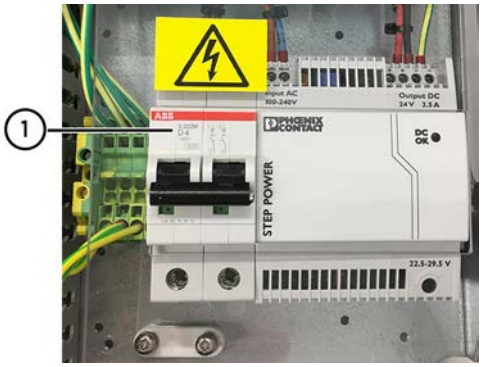
Make sure to number the data loggers as well as the cable sets and wires in the PDT Wiring Set before you install and connect them.

Follow the steps below to add new PDT101 transmitters to an existing set of transmitters in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on introducing PDT101 transmitters as new devices to an empty DIN rail in the cabinet, see Adding PDT101 transmitters as new modules to CAB100B (page 44).

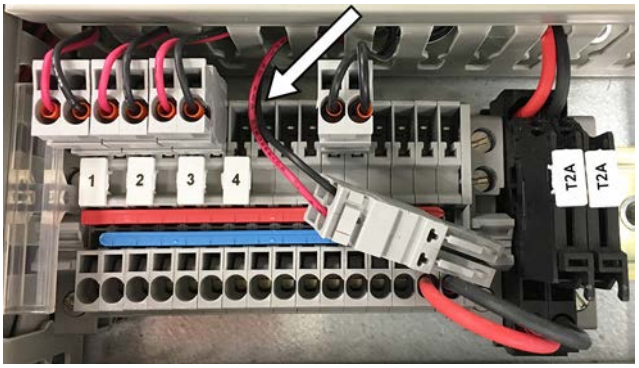
The PDT Wiring Set consists of wiring for 4 devices. Any unused wires in the Wiring Set have been placed in the cable duct at the factory. If you have, for example, 3 PDT101 transmitters installed on a DIN rail, and want to complete the set by installing a fourth one, use the existing PDT101 wires present in the cable duct.

1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

2. Disconnect the PDT101 power wire connector from the power block located on the right-hand side of the cabinet.

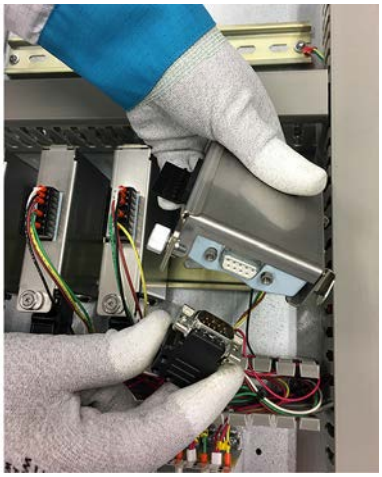


3. Remove the cable duct cover below the PDT101 mounting location.
4. Mount the DL4000 data logger (or loggers), as shown in the following steps.

Each set of 4 PDT101 transmitters requires a data logger of its own. If you are installing the second, third, or fourth transmitter to complete a set of 4, step 5 to step 8 are not relevant, as you can connect the new transmitter(s) to the existing data logger with the factory-installed cable set for PDT.

5. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

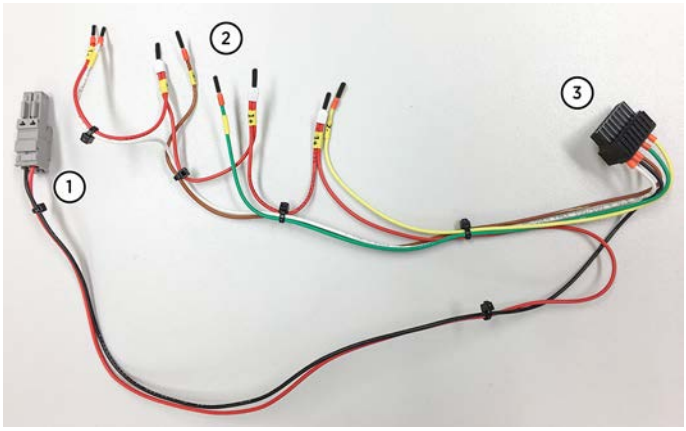
6. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.



7. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

8. Connect the logger data cable to a free port in the serial port server.

9. Mount the new PDT101 transmitter(s) on the DIN rail.
   Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.
10. Connect the PDT101 transmitters to the data logger and the power block, as shown in step 11 to step 16.
    Use the cable set for PDT, which is included in PDT Wiring Set (Vaisala item code: ASM213079SP).
    When mounting the second, third, or fourth PDT101 transmitter on the DIN rail, use the existing wires in the cable duct below the PDT101 mounting location.



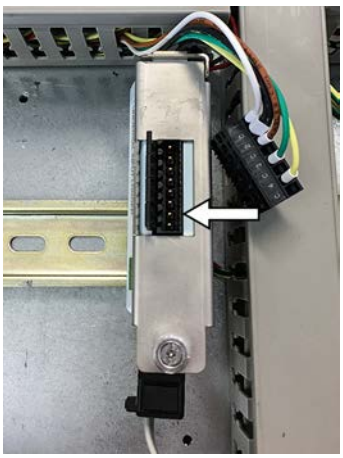
1 24 V DC power wires and connector
2 PDT101 wires
3 Data logger connector

The cable set for PDT contains wiring for 4 PDT101 transmitters. If you install only 1 to 3 PDT transmitters, leave the extra wires unconnected and the wire end caps in place.

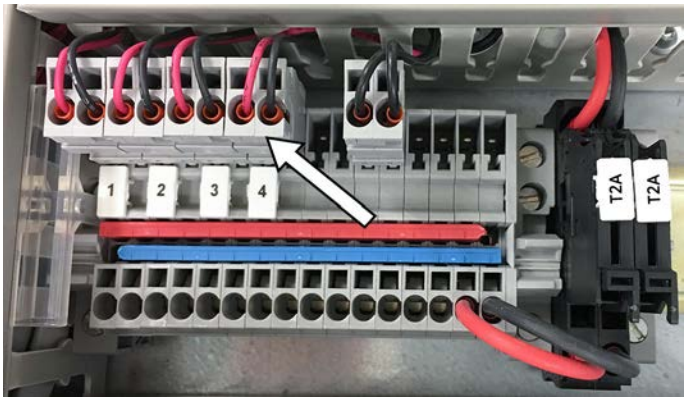
11. Disconnect the screw terminal connector from the PDT101 by pulling it out.

12. Observing polarity, connect the PDT101 wires to the screw terminal connector with a small flat head screwdriver.
13. Follow the terminal block label markings on the PDT101 and plug the connector back in.

14. Connect the data logger connector to the DL4000 data logger.



15. Remove the cable duct cover above the power block.
16. Connect the 24 V DC power connector to the power block, or reconnect any existing power wires (disconnected in step 2).



17. Route the wires along the cable ducts.
18. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
19. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- PDT101 calibration (page 114)
- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.3 Adding analog input channels to CAB100B

- Empty DIN rail in the cabinet [1)]
- Analog Wiring Set (Vaisala item code: ASM213078SP). [2)] One set contains the following:
  - Cable set, 24 V DC power block to analog terminal block
  - Cable set, data logger to analog terminal block
  - Data logger data cable
  - Data logger holder
  - Terminal block accessories for 4 analog input channels
  - Document *Vaisala CAB100 Assembling Analog Channel Terminal Block Technical Note* (M212262EN)
- DL4000 data logger(s), 1 logger per 4 analog input channels
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

Make sure to number the data loggers as well as the cable sets and wires in the Analog Wiring Set before you install and connect them.

DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

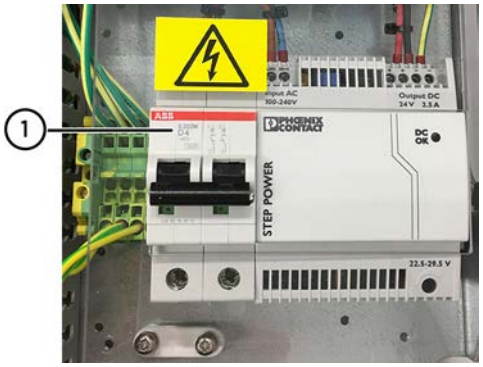
Follow the steps below to install terminal blocks for analog input channels as new devices to an empty DIN rail in CAB100B.

1) *Required only when introducing analog input channels as new devices in CAB100B.*
2) *You need 3 Analog Wiring Sets (Vaisala item code: ASM213078SP) to assemble a 12-channel terminal block.*

You can apply this installation procedure also when expanding the number of analog input channels in the cabinet. For example, to increase the number of analog input channels on a DIN rail from 4 to 12, order 2 Analog Wiring Sets and 2 data loggers.

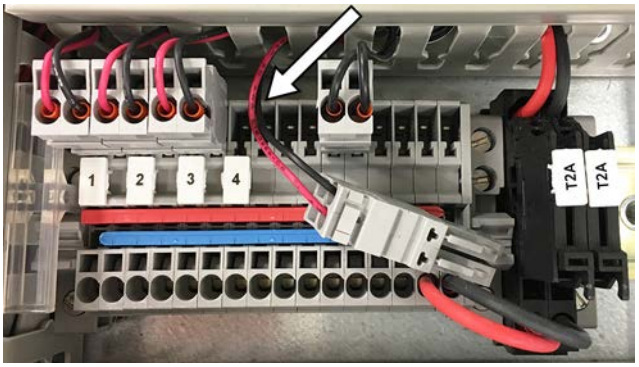
Refer to CAB100B layout diagrams (page 143) when planning the installation.

1. De-energize the cabinet:
   a. Switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

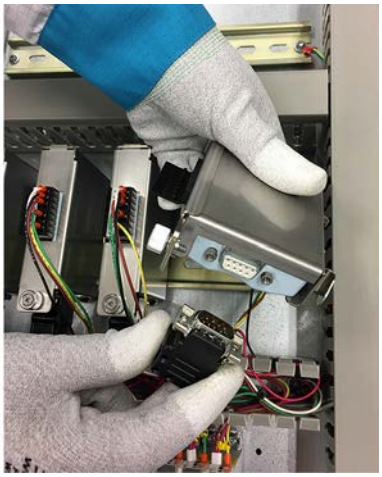
   b. **Only when expanding the analog terminal block installation on a DIN rail:** Disconnect the analog channel 24 V DC power cable connector from the power block, located on the right-hand side of the cabinet.



2. Remove the cable duct cover below the empty DIN rail reserved for the analog terminal block.
   Remove also the long vertical cable duct cover in the middle of the cabinet.
3. Assemble the new analog channel terminal block.
   See the instructions in *Vaisala CAB100 Assembling Analog Channel Terminal Block Technical Note* (M212262EN), included in the Analog Wiring Set (ASM213078SP).
4. Mount the analog channel terminal block on the DIN rail.

5. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

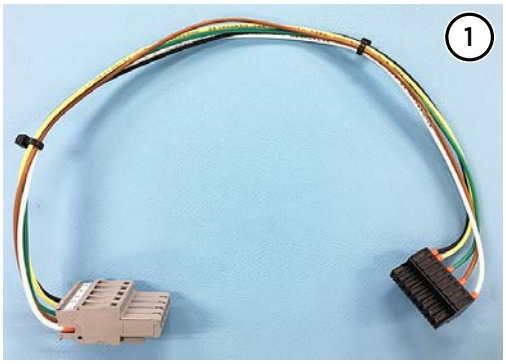
6. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.

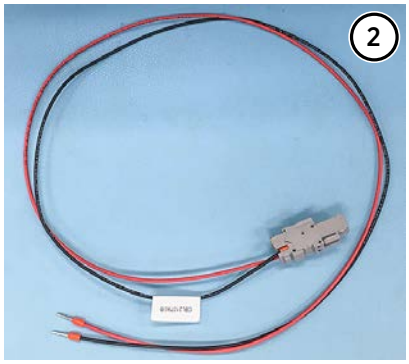


7. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

8. Connect the logger data cable to a free port in the serial port server.

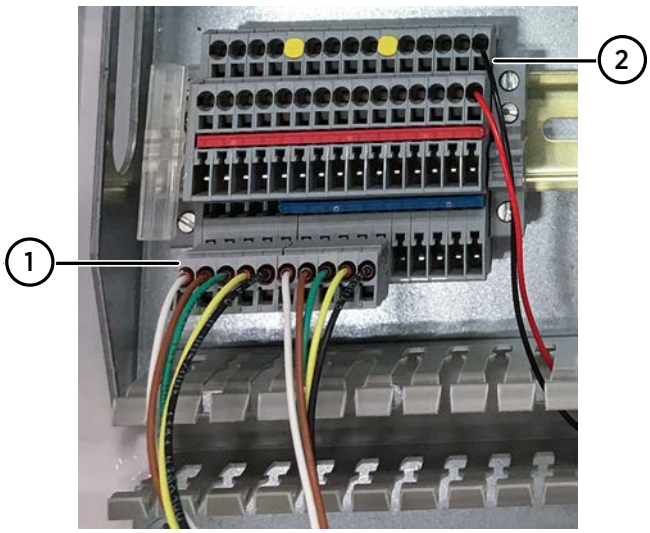
9. Connect the analog channel terminal block to the data logger and to the 24 V DC power block, as shown in step 10 to step 12 below.
   Use the cables in the Analog Wiring Set (Vaisala item code: ASM213078SP).





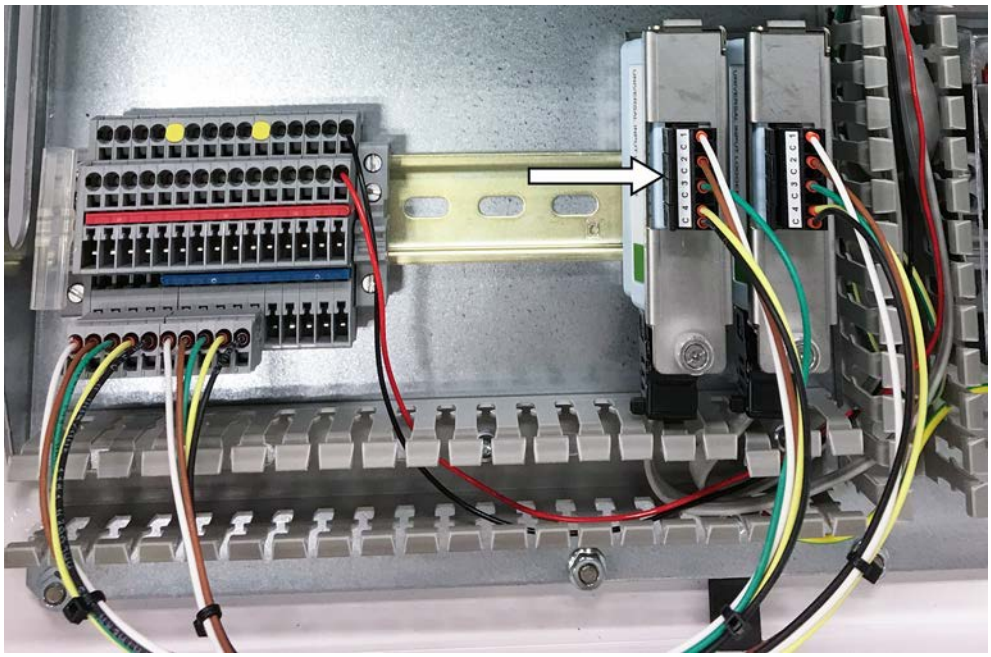
1 Cable set for connecting data logger to analog terminal block
2 Cable set for connecting 24 V DC power block to analog terminal block

10. Connect the cable sets to the analog channel terminal block.

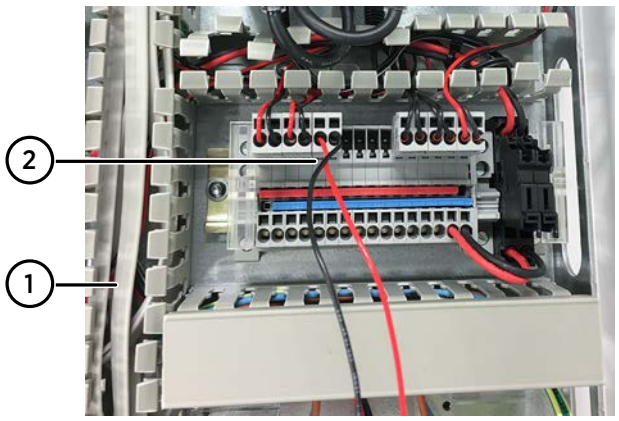


1 Logger to analog cable set
2 Power cable set

11. Connect the black terminal connector of the logger to analog cable set to the DL4000 data logger.

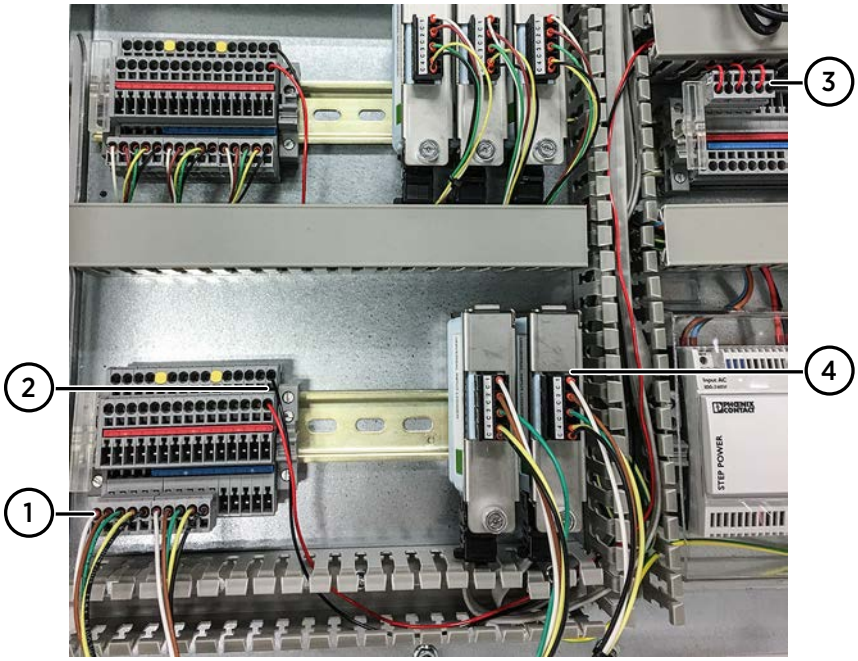


12. Connect the power cable set to the power block located on the right-hand side of the cabinet.



1 Vertical cable duct
2 Power cable set connected to power block

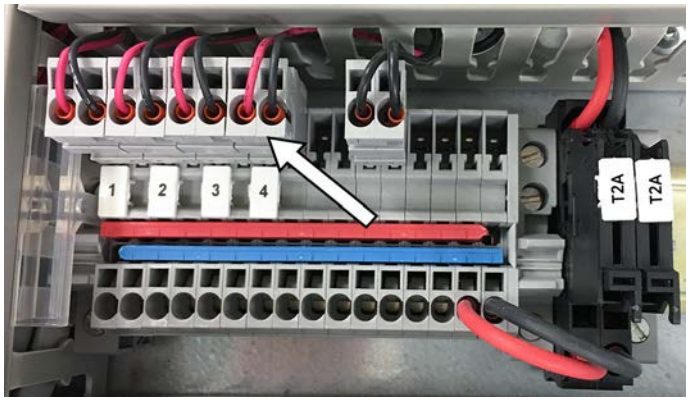
13. Route the wires along the cable ducts.
14. The new analog channel terminal blocks are now mounted and connected.



1 Logger to analog cable set connected to analog channel terminal block
2 Power cable set connected to analog channel terminal block
3 Power cable set connected to power block
4 Logger to analog cable set connected to data logger

15. Insert any extra length of wire into the cable ducts and replace the cable duct covers.

16. **Only when expanding the analog terminal block installation on a DIN rail:** Reconnect the 24 V DC power cable connector (disconnected in step 1.b) in the power block.



17. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.3.1 Wiring and powering loop-powered measurement devices

- Small screwdriver
- Wire cutters
- Wire-stripping pliers

CAUTION! CAB100 analog input channels are not surge protected. Therefore, note the following:

- The analog input channel wiring must not exceed 30 meters.
- The wiring must not come from outside the building where CAB100 is installed.

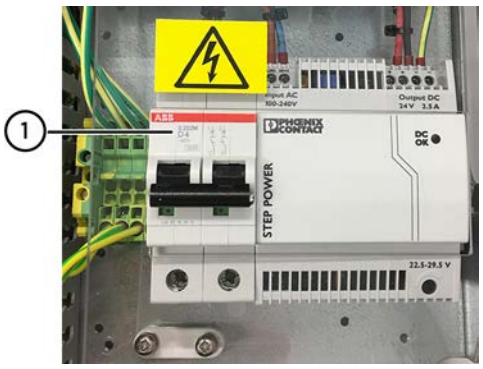
If CAB100 cannot be installed in an environment that meets the above criteria, use a suitable surge protection device that has been installed following local regulations.

CAUTION! Before connecting any external measurement device to CAB100, refer to the wiring instructions in the device-specific user documentation.

CAUTION! Loop-powered and externally powered measurement devices cannot be connected in the same analog channel terminal block.

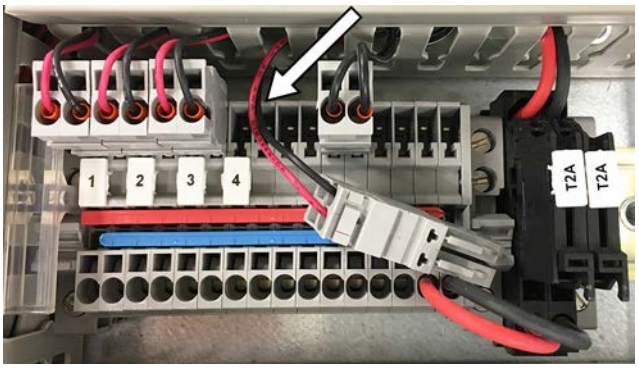
Follow the steps below to connect a loop-powered measurement device, for example Vaisala Humidity and Temperature Transmitter Series HMT120 transmitter, to the CAB100 analog terminal block. Note that once connected, the loop-powered device is powered via the CAB100 analog terminal block.

1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



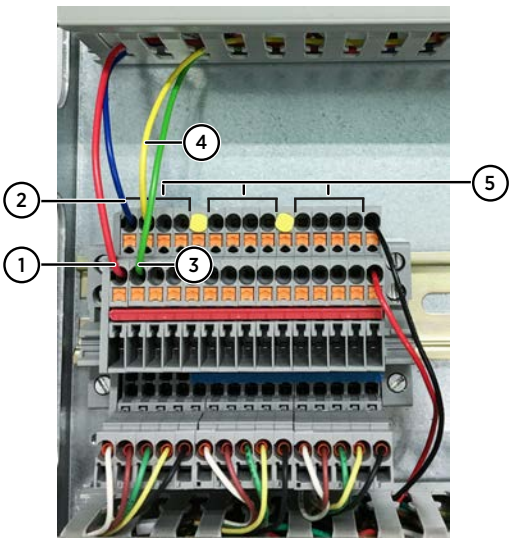
1 Circuit breaker

2. Disconnect the analog channel 24 V DC power cable connector from the power block, located on the right-hand side of the cabinet.



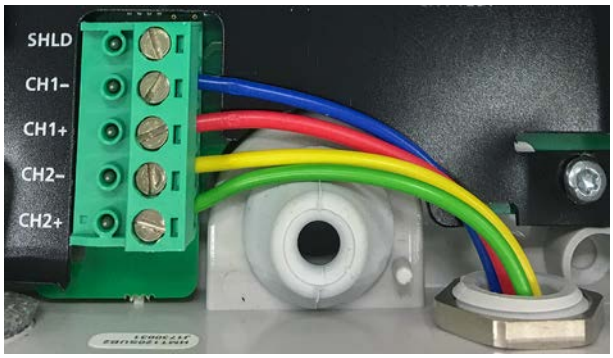
3. Strip approximately 10 mm (0.4 in) from the analog output wires of the external measurement device.

4. Insert the wires in the push-in terminals of the CAB100 analog terminal block.



1 CH1+
2 CH1–
3 CH2+
4 CH2–
5 Numbering of the terminal block connectors runs 1 ... 4 left to right

5. Connect the wires to the corresponding screw terminals inside the external measurement device (wiring inside HMT120 shown below).
   See the wiring instructions in the device-specific user documentation of the external measurement device.



6. Reconnect power in the cabinet.
   a. Switch on the circuit breaker.
   b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.3.2 Wiring externally powered measurement devices

- Red 5-pole plug-in bridges (3 pcs). The bridges are included in the CAB100B accessory bag (included in the delivery)
- Small screwdriver
- Wire cutters
- Wire-stripping pliers

CAUTION! CAB100 analog input channels are not surge protected. Therefore, note the following:

- The analog input channel wiring must not exceed 30 meters.
- The wiring must not come from outside the building where CAB100 is installed.

If CAB100 cannot be installed in an environment that meets the above criteria, use a suitable surge protection device that has been installed following local regulations.

CAUTION! Before connecting any external measurement device to CAB100, refer to the wiring instructions in the device-specific user documentation.

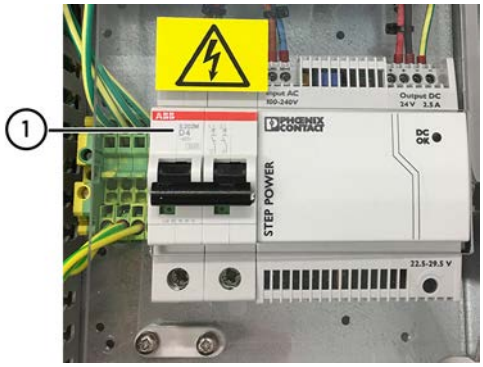
CAUTION! Loop-powered and externally powered measurement devices cannot be connected in the same analog channel terminal block.

To avoid measurement errors, make sure that the analog outputs of the external measurement device are galvanically isolated.

Follow the steps below to connect an externally powered measurement device, for example Vaisala Humidity and Temperature Transmitter Series HMT330 transmitter, to the CAB100B analog terminal block.

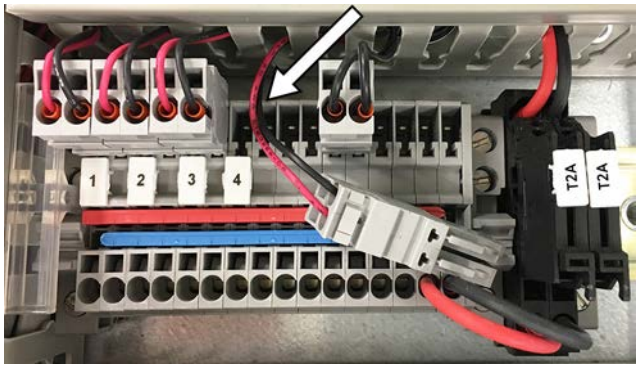
For instructions on using the 24 V DC power block in CAB100B for powering measurement devices, see Supplying power to external measurement device from CAB100B (page 32).

1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.

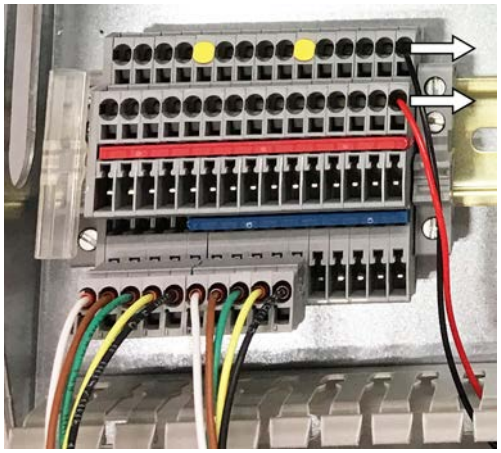


1 Circuit breaker

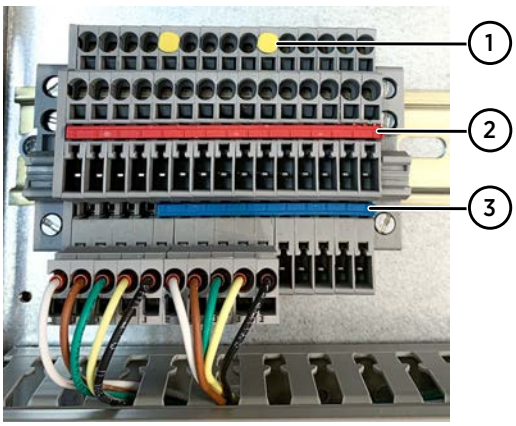
2. Disconnect the 24 V DC power cable connector of the analog terminal block from the power block.



3. Disconnect the other end of the 24 V DC power cable from the analog terminal block. Remove the 24 V DC power cable from the cabinet.

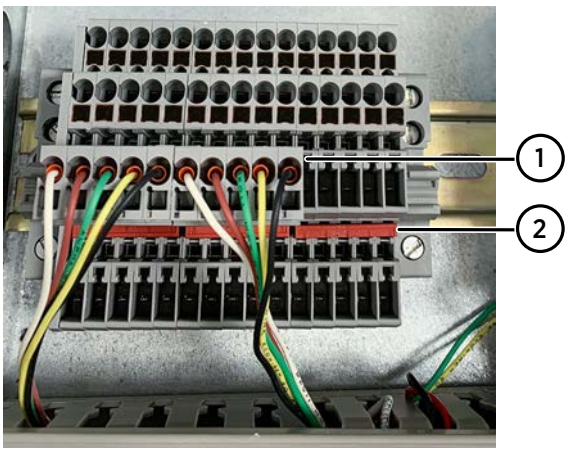


4. Remove the red and blue plug-in bridges, as well as the yellow filler plugs from the CAB100B analog terminal block.



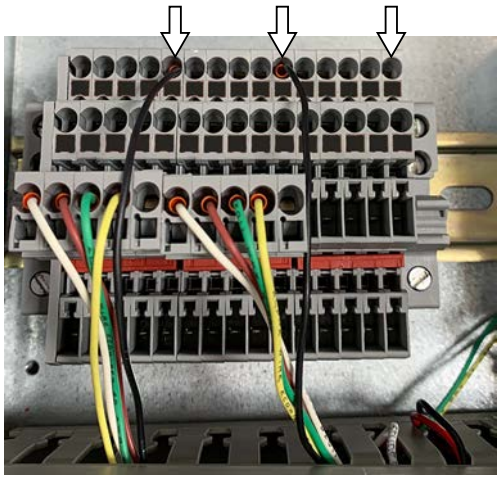
1 Filler plugs
2 Red bridge
3 Blue bridge

5. Move the data logger connector(s) to the top row of the analog terminal block. Insert 3 pcs 5-pole plug-in bridges in the row below the connector(s).



1 Data logger connectors
2 Red bridges

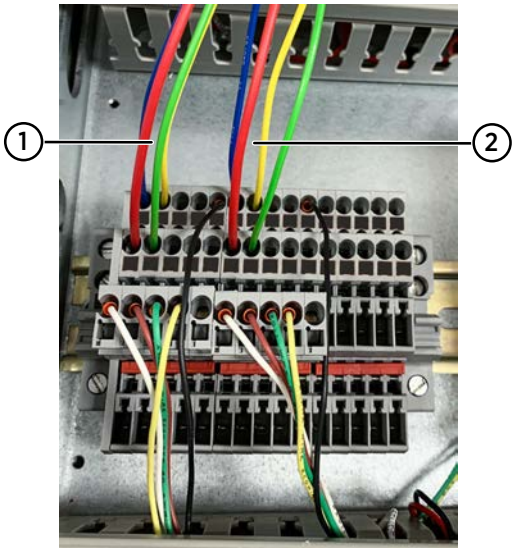
6. Remove the black wire (= common wire) from the push-in terminal of the data logger connector(s).
   Reconnect the wire to the lower (negative) row of the analog terminal block.
   Connectors #5, #10, and #15 are reserved for the common wires.



   The 4 connectors to the left of each common wire are reserved for the analog output wires of your external measurement device.

7. Strip approximately 10 mm (0.4 in) from the analog output wires of the external measurement device.

8. Connect the positive wires in the upper row and the negative wires in the lower row of the CAB100B analog terminal block.
   The following figure shows CH1 ... CH2 wires from 2 measurement devices connected.



1 CH1 ... CH2 wires from device 1
2 CH1 ... CH2 wires from device 2

9. Connect the wires to the corresponding screw terminals inside the external measurement device (for example, the HMT330 transmitter).
   See the wiring instructions in the device-specific user documentation of the external measurement device.

10. Reconnect power in the CAB100B cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.4 Adding safety barriers as new modules to CAB100B

- Empty DIN rail in the cabinet
- The safety barriers you plan to install
- Safety Barrier Wiring Set (Vaisala item code: ASM213201SP). The set contains the following:
  - Cable set for PDT or safety
  - Data logger data cable
  - Partition plate
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 safety barriers
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

The partition plate is needed for isolating the intrinsically safe area from the non-intrinsically safe area inside the cabinet.

Each set of 4 safety barriers requires a Safety Barrier Wiring Set and a data logger of its own.

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

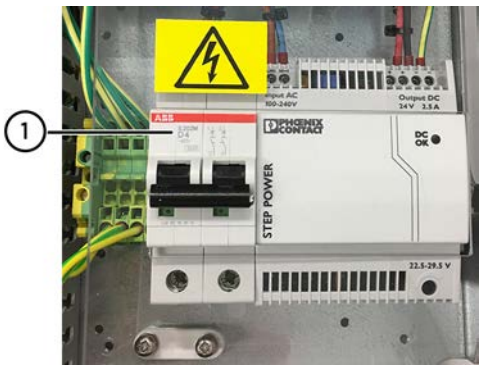
Make sure to number the data loggers as well as the cable sets and wires in the Safety Barrier Wiring Set before you install and connect them.

DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

Follow the steps below to install safety barriers as new devices to an empty DIN rail in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on expanding the number of safety barriers installed in the cabinet, see Expanding safety barrier installation in CAB100B (page 78).

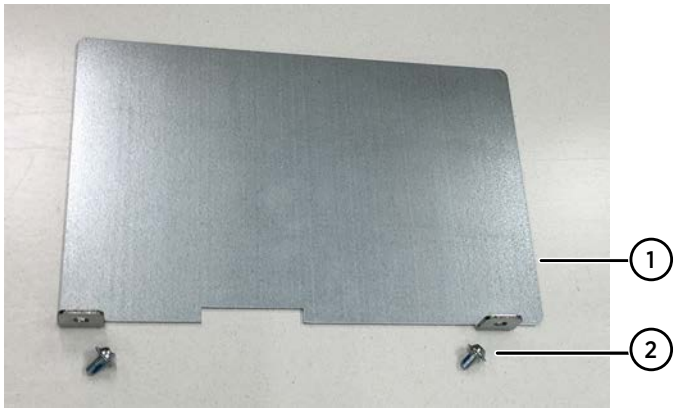
1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



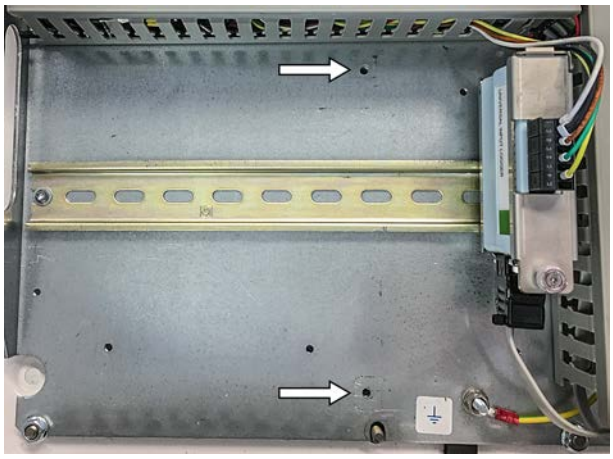
1 Circuit breaker

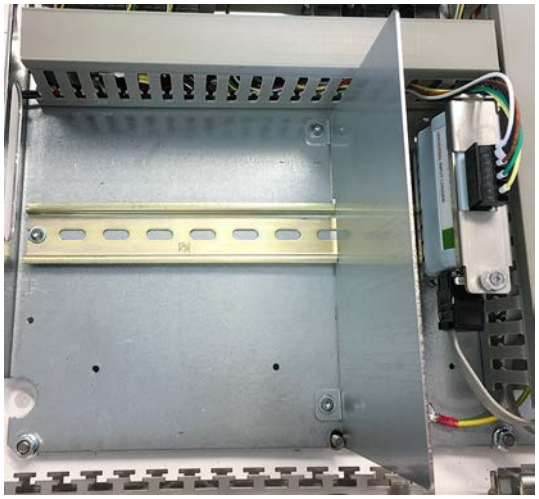
2. Remove the cable duct from the bottom left corner of the cabinet, where the safety barriers will be installed.
   Set the cable duct and the screws aside, as you will need them in step 18.

3. Mount the partition plate.
   Use the predrilled screw holes in the backplate and the screws provided in the Safety Barrier Wiring Set (Vaisala item code: ASM213201SP).



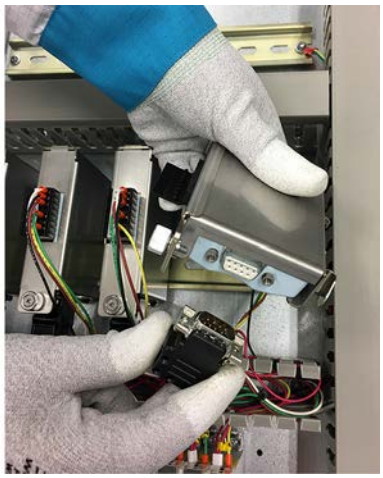
1 Partition plate
2 Mounting screw M4×8 ECO-Fix Zn TX20 (2 pcs)





4. Remove the cable duct cover above the area reserved for the safety barriers.
5. Mount the DL4000 data logger (or loggers), as shown in the following steps.
6. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

7. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.

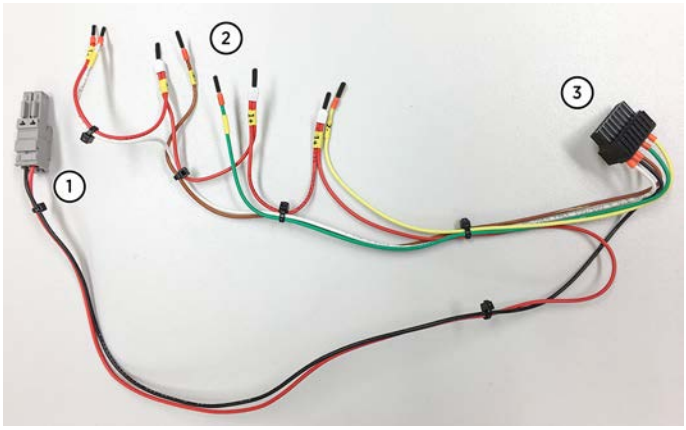


8. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

9. Connect the logger data cable to a free port in the serial port server.

10. Take note of the wiring instructions printed on the side of the safety barrier.
    The information will be relevant when connecting wires in the intrinsically safe screw terminals of the barrier (step 17).
11. Mount the barrier on the DIN rail.
    a. Make sure the blue end of the device, with the intrinsically safe screw terminals, faces down.
    b. Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.

12. Using the cable set for safety, connect the safety barriers, the data loggers, and the 24 V DC power block, as shown in step 13 to step 16.

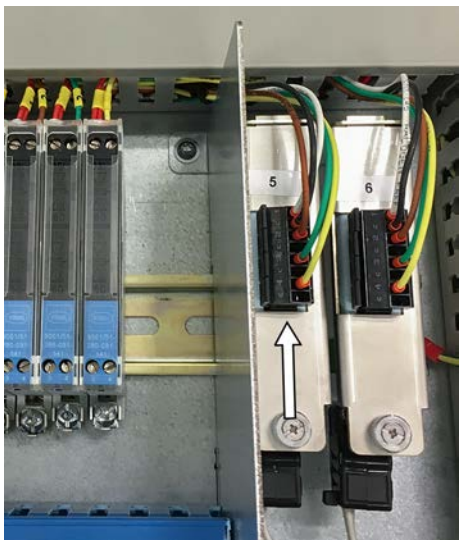


1 24 V DC power wires and connector
2 Safety barrier wires
3 Data logger connector

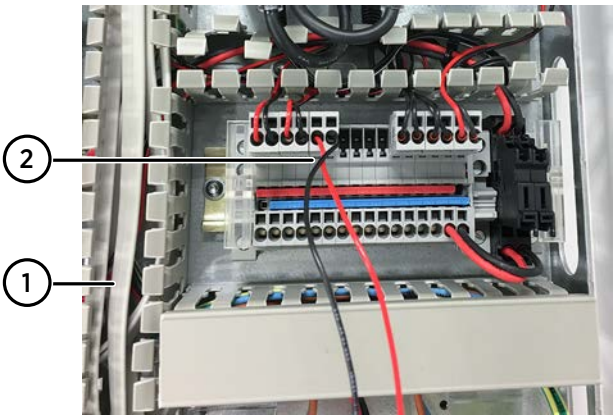
The cable set for safety contains wiring for 4 safety barriers. If you install only 1 to 3 devices, leave the extra wires unconnected and the wire end caps in place.

13. Observing polarity, connect the safety barrier wires to the connectors at the back of the barriers.

14. Connect the black terminal connector of the cable set to the DL4000 data logger.

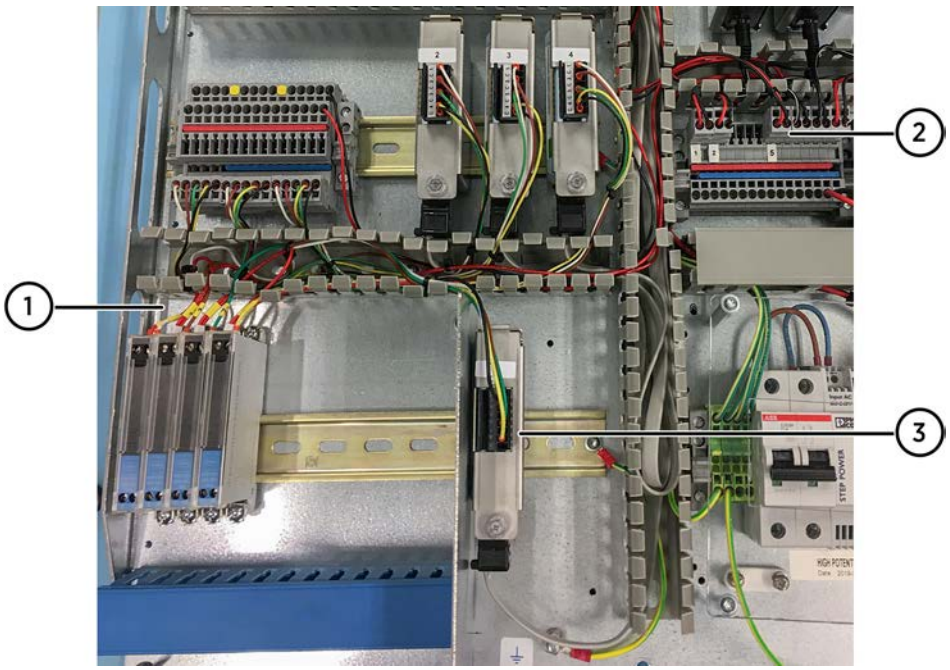


15. Connect the 24 V DC power wire connector to the power block located on the right-hand side of the cabinet.



1 Vertical cable duct
2 Power wires connected to power block

16. Route the wires along the cable ducts.



1 Safety barrier wires connected
2 Safety barrier power wires connected to power block
3 Data logger wires connected

17. For wiring of the intrinsically safe screw terminals in the barriers, refer to the wiring instructions printed on the side of the barrier and the *Operating Instructions* leaflet provided in the barrier packaging.
18. Cut the original cable duct and its cover to the appropriate length and screw it back into place, to the left of the partition plate.
    Vaisala recommends that you label the cable duct cover with the text INTRINSICALLY SAFE CONNECTIONS. Alternatively, use a blue cable duct as shown in step 16.
19. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
20. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.5 Expanding safety barrier installation in CAB100B

- The safety barriers you plan to install
- Safety Barrier Wiring Set (Vaisala item code: ASM213201SP). The set contains the following:
  - Cable set for PDT or safety
  - Data logger data cable
  - Partition plate
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 safety barriers
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

The partition plate is needed for isolating the intrinsically safe area from the non-intrinsically safe area inside the cabinet.

Each set of 4 safety barriers requires a Safety Barrier Wiring Set and a data logger of its own.

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

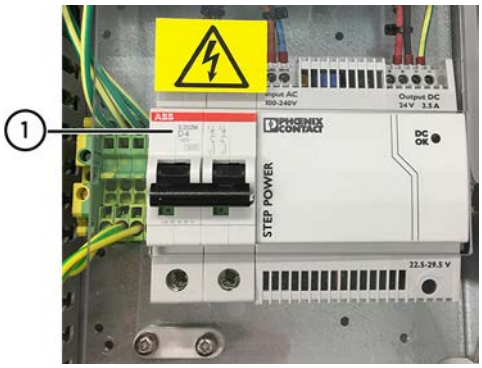
Make sure to number the data loggers as well as the cable sets and wires in the Safety Barrier Wiring Set before you install and connect them.

Follow the steps below to add new safety barriers to an existing set of devices in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on introducing safety barriers as new devices to an empty DIN rail in the cabinet, see Adding safety barriers as new modules to CAB100B (page 69).

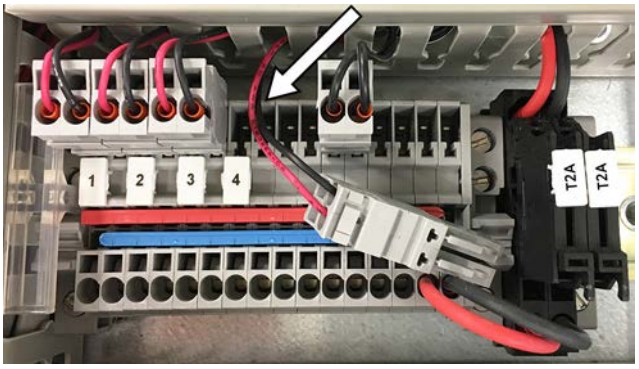
The Safety Barrier Wiring Set consists of wiring for 4 devices. Any unused wires in the Wiring Set have been placed in the cable duct at the factory. If you have, for example, 3 barriers installed on a DIN rail, and want to complete the set by installing a fourth one, use the existing barrier wires present in the cable duct.

1. De-energize the cabinet:
   a. Switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

   b. Disconnect the safety barrier power wire connector from the power block located on the right-hand side of the cabinet.

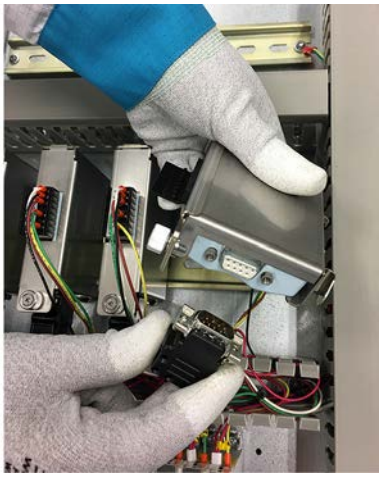


2. Remove the cable duct cover above the safety barriers.
3. Mount the DL4000 data logger (or loggers), as shown in the following steps.

> Each set of 4 safety barriers requires a data logger of its own. If you are installing the second, third, or fourth barrier to complete a set of 4, the steps to mount a new data logger are not relevant, as you can connect the new barrier(s) to the existing data logger.

4. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

5. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.

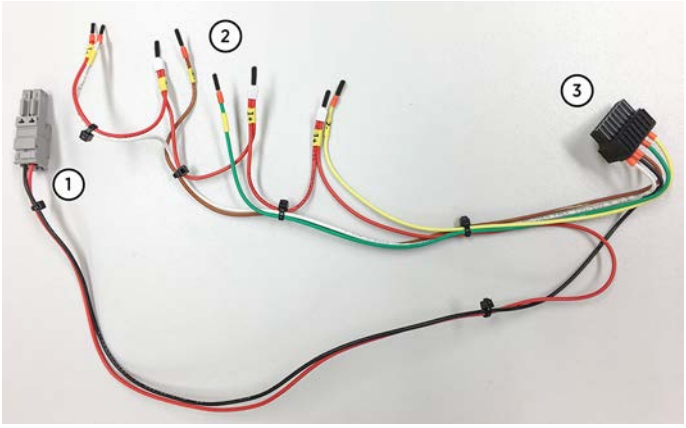


6. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

7. Connect the logger data cable to a free port in the serial port server.

8. Take note of the wiring instructions printed on the side of the safety barrier.
   The information will be relevant when connecting wires in the intrinsically safe screw terminals of the barrier (step 15).
9. Mount the barrier on the DIN rail.
   a. Make sure the blue end of the device, with the intrinsically safe screw terminals, faces down.
   b. Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.

10. Using the cable set for safety, connect the safety barriers, the data loggers, and the 24 V DC power block, as shown in step 11 to step 14.

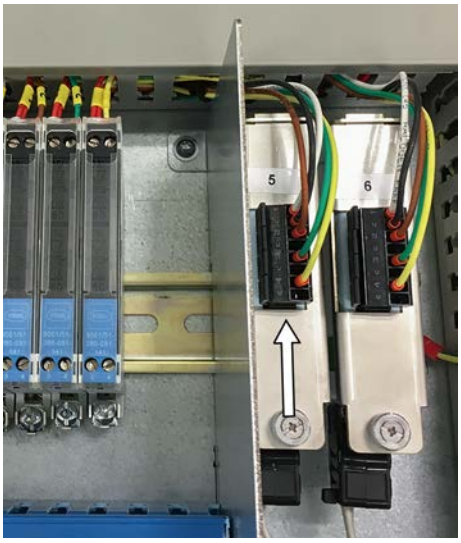


1 24 V DC power wires and connector
2 Safety barrier wires
3 Data logger connector

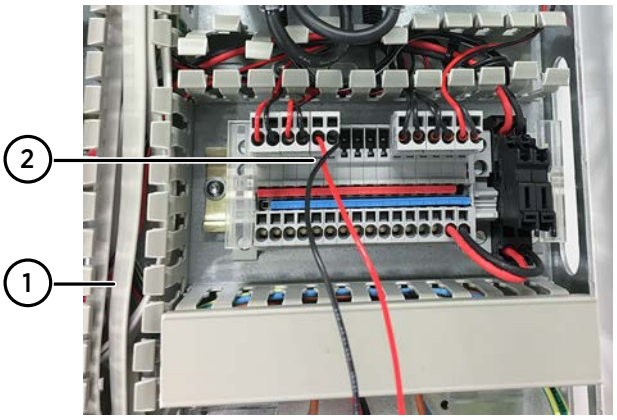
The cable set for safety contains wiring for 4 safety barriers. If you install only 1 to 3 devices, leave the extra wires unconnected and the wire end caps in place.

11. Observing polarity, connect the safety barrier wires to the connectors at the back of the barriers.

12. Connect the black terminal connector of the cable set to the DL4000 data logger.

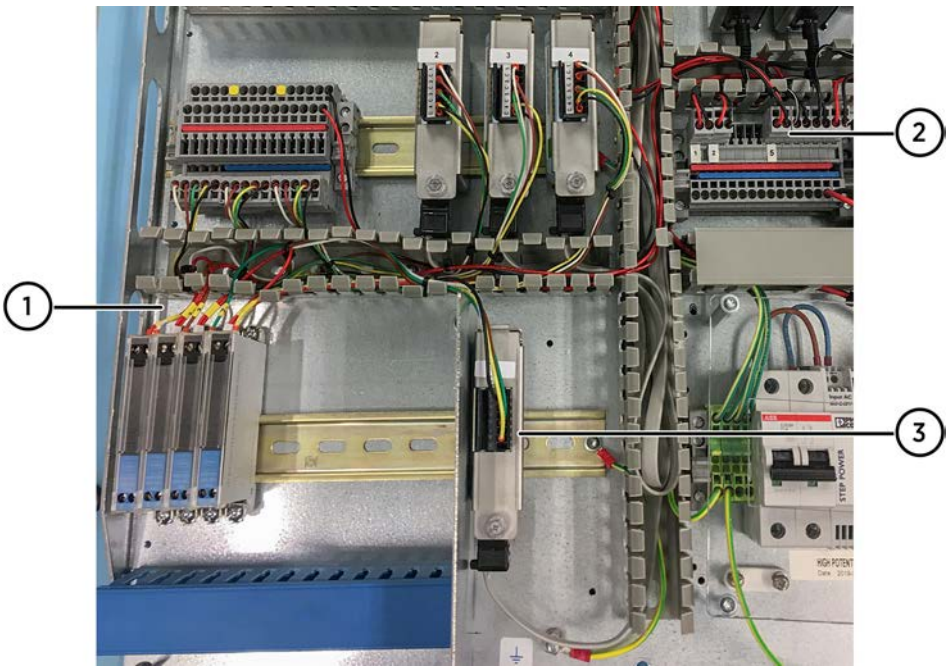


13. Connect the 24 V DC power wire connector to the power block.



1 Vertical cable duct
2 Power wire connected to power block

14. Route the wires along the cable ducts.



1 Safety barrier wires connected
2 Safety barrier power wire connected to power block
3 Data logger wires connected

15. For wiring of the intrinsically safe screw terminals in the barriers, refer to the wiring instructions printed on the side of the barrier and the *Operating Instructions* leaflet provided in the barrier packaging.
16. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
17. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.6 Adding galvanic isolators as new modules to CAB100B

- Empty DIN rail in the cabinet
- The galvanic isolators you plan to install
- Galvanic Isolator Wiring Set (Vaisala item code: ASM213143SP). The set contains the following:
  - Galvanic isolator cable
  - Data logger data cable
  - Partition plate
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 galvanic isolators
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

The partition plate is needed for isolating the intrinsically safe area from the non-intrinsically safe area inside the cabinet.

Each set of 4 galvanic isolators requires a Galvanic Isolator Wiring Set and a data logger of its own.

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

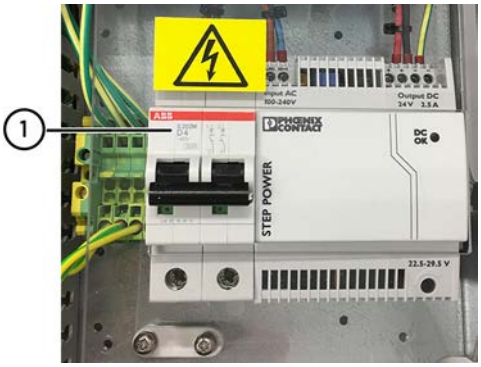
Make sure to number the data loggers as well as the cable sets and wires in the Galvanic Isolator Wiring Set before you install and connect them.

DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

Follow the steps below to install galvanic isolators as new devices to an empty DIN rail in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on expanding the number of galvanic isolators installed in the cabinet, see Expanding galvanic isolator installation in CAB100B (page 93).

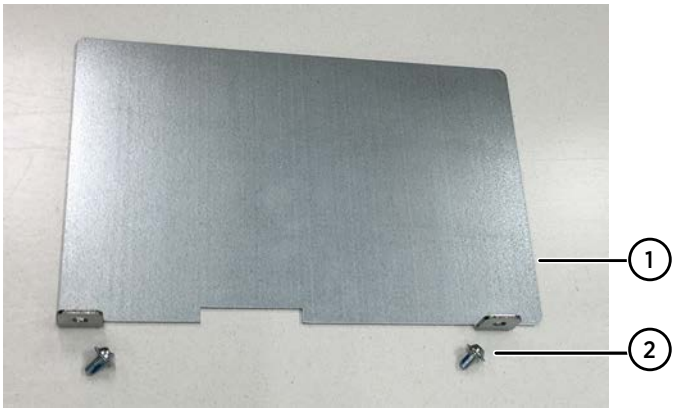
1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



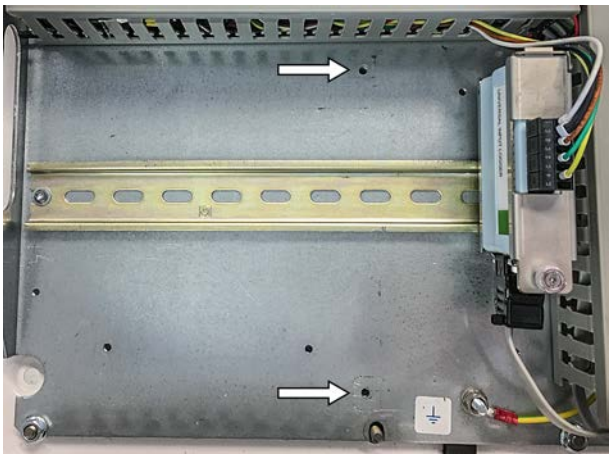
1 Circuit breaker

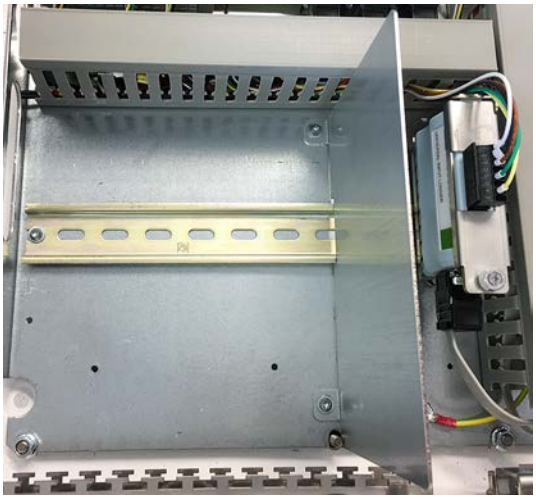
2. Remove the cable duct from the bottom left corner of the cabinet, where the galvanic isolators will be installed.
   Set the cable duct and the screws aside, as you will need them in step 18.

3. Mount the partition plate.
   Use the predrilled screw holes in the backplate and the screws provided in the Galvanic Isolator Wiring Set (Vaisala item code: ASM213143SP).



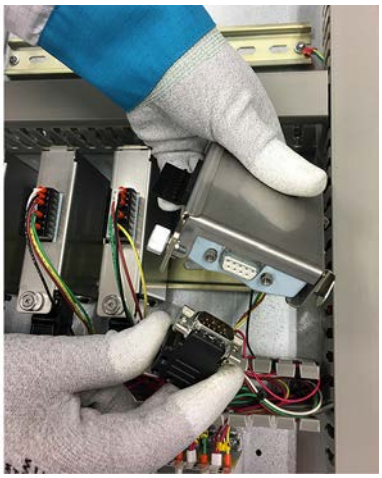
1 Partition plate
2 Mounting screw M4×8 ECO-Fix Zn TX20 (2 pcs)





4. Remove the cable duct cover above the area reserved for the galvanic isolators.
5. Mount the DL4000 data logger (or loggers), as shown in the following steps.
6. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

7. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.

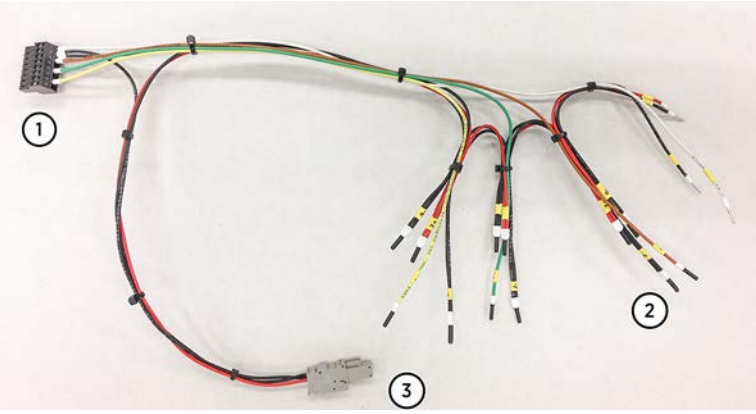


8. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

9. Connect the logger data cable to a free port in the serial port server.

10. Take note of the wiring instructions printed on the side of the galvanic isolator device. The information will be relevant when connecting wires in the intrinsically safe screw terminals of the isolator (step 17).
11. Mount the isolator on the DIN rail.
    a. Make sure the blue end of the device, with the intrinsically safe screw terminals, faces down.
    b. Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.

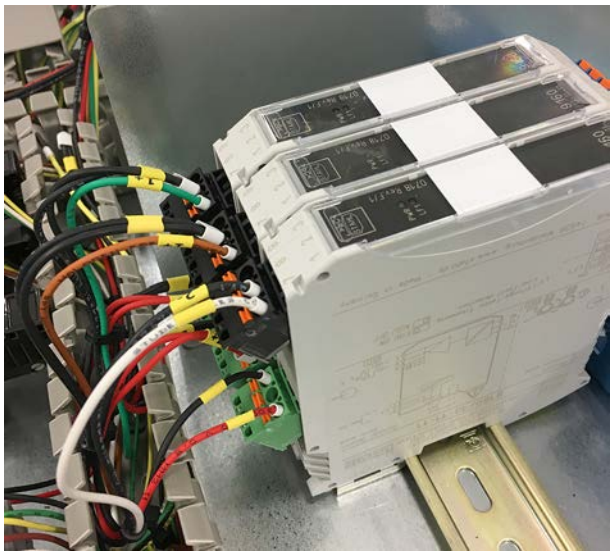
12. Using the galvanic isolator cable, connect the galvanic isolators, the data loggers, and the 24 V DC power block, as shown in step 13 to step 16.



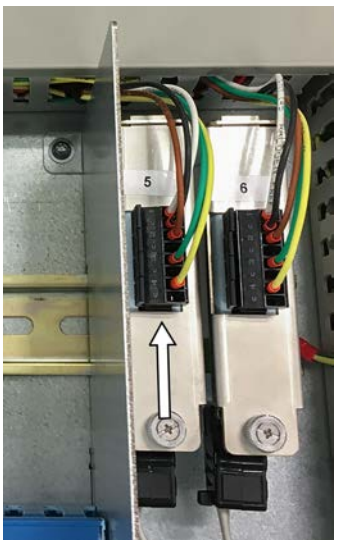
1 Data logger connector
2 Galvanic isolator wires
3 24 V DC power wires and connector

The galvanic isolator cable contains wiring for 4 isolators. If you install only 1 to 3 devices, leave the extra wires unconnected and the wire end caps in place.

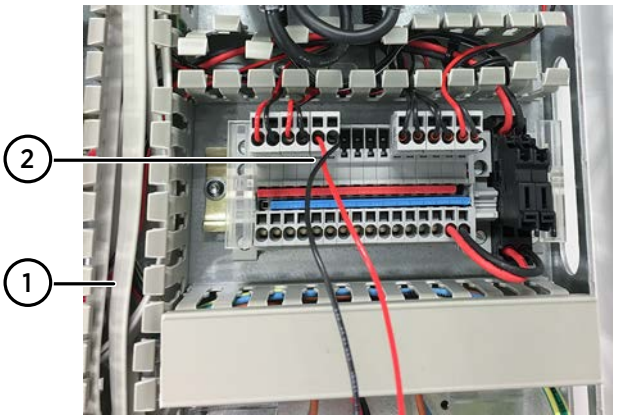
13. Observing polarity, connect the galvanic isolator wires to push-in terminals 1 and 2, and the power wires to terminals 7 and 9 at the back of the isolator.



14. Connect the black terminal connector of the cable set to the DL4000 data logger.

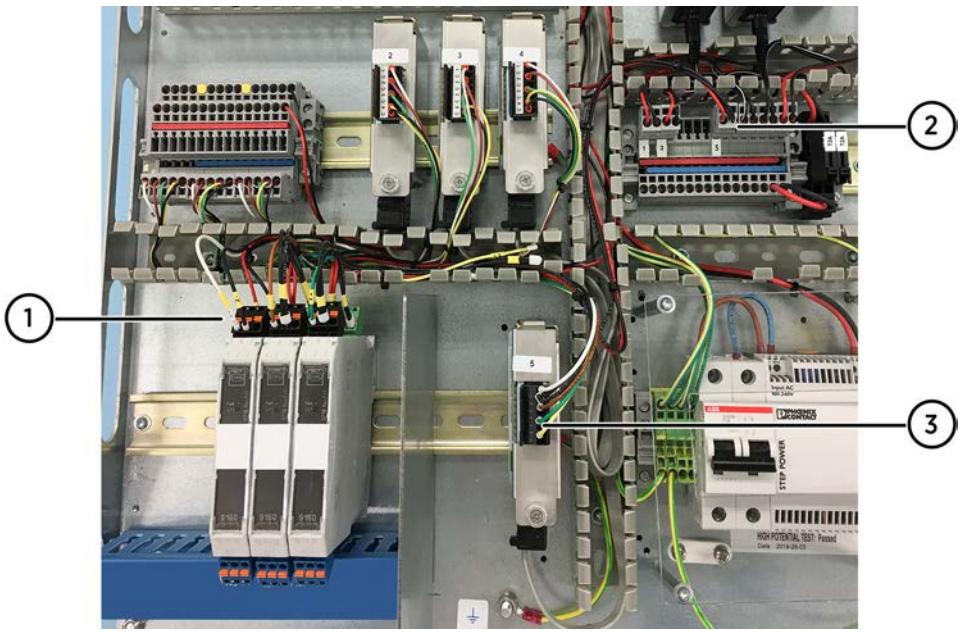


15. Connect the 24 V DC power wire connector to the power block located on the right-hand side of the cabinet.



1 Vertical cable duct
2 Power wires connected to power block

16. Route the wires along the cable ducts.



1 Galvanic isolator wires connected
2 Galvanic isolator power wires connected to power block
3 Data logger wires connected

17. For wiring of the intrinsically safe screw terminals in the isolators, refer to the wiring instructions printed on the side of the isolator and the *Safety Manual* leaflet provided in the isolator packaging.
18. Cut the original cable duct and its cover to the appropriate length and screw it back into place, to the left of the partition plate.
    Vaisala recommends that you label the cable duct cover with the text INTRINSICALLY SAFE CONNECTIONS. Alternatively, use a blue cable duct as shown in step 16.
19. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
20. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.7 Expanding galvanic isolator installation in CAB100B

- The galvanic isolators you plan to install
- Galvanic Isolator Wiring Set (Vaisala item code: ASM213143SP). The set contains the following:
  - Galvanic isolator cable
  - Data logger data cable
  - Partition plate
  - Data logger holder
- DL4000 data logger(s), 1 logger per 4 galvanic isolators
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

The partition plate is needed for isolating the intrinsically safe area from the non-intrinsically safe area inside the cabinet.

Each set of 4 galvanic isolators requires a Galvanic Isolator Wiring Set and a data logger of its own.

You can install only one type of device or measurement point (PDT101 transmitters, analog input channels, safety barriers, or galvanic isolators) per row in the cabinet.

In cabinet models with 5 to 8 data loggers, you need 2 serial port servers.
One serial port server controls the traffic of maximum 4 data loggers.

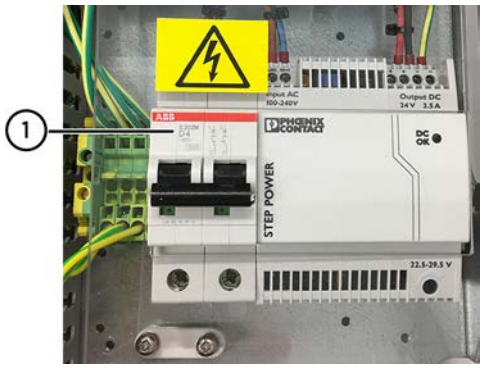
Make sure to number the data loggers as well as the cable sets and wires in the Galvanic Isolator Wiring Set before you install and connect them.

Follow the steps below to add new galvanic isolators to an existing set of devices in CAB100B. Refer to CAB100B layout diagrams (page 143) when planning the installation.

For instructions on introducing galvanic isolators as new devices to an empty DIN rail in the cabinet, see Adding galvanic isolators as new modules to CAB100B (page 85).

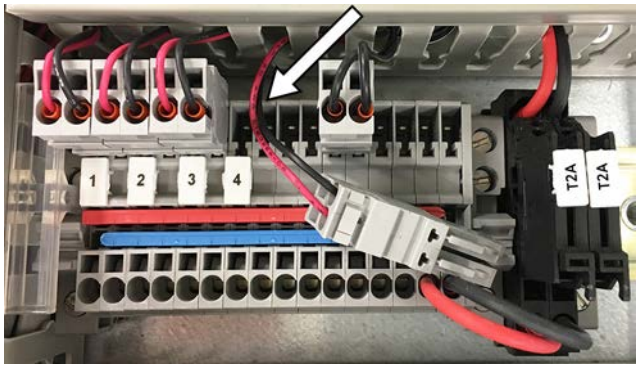
The Galvanic Isolator Wiring Set consist of wiring for 4 devices. Any unused wires in the Wiring Set have been placed in the cable duct at the factory. If you have, for example, 3 isolators installed on a DIN rail, and want to complete the set by installing a fourth one, use the existing isolator wires present in the cable duct.

1. De-energize the cabinet:
   a. Switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

   b. Disconnect the galvanic isolator power wire connector from the power block located on the right-hand side of the cabinet.

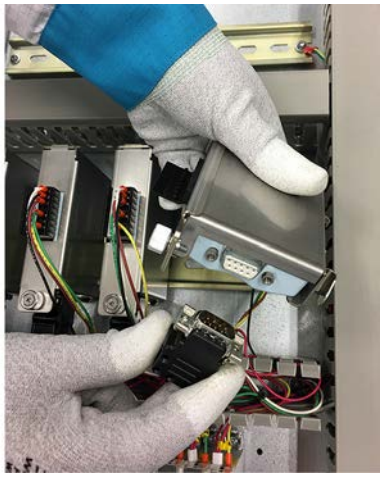


2. Remove the cable duct cover above the galvanic isolators.
3. Mount the DL4000 data logger (or loggers), as shown in the following steps.

> Each set of 4 galvanic isolators requires a data logger of its own. If you are installing the second, third, or fourth isolator to complete a set of 4, the steps to mount a new data logger are not relevant, as you can connect the new isolator(s) to the existing data logger.

4. Assemble the data logger holder.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

5. Connect the logger data cable to the RS-232 serial port in the data logger.
   Use a small flat head screwdriver to tighten the screw attached to the connector.

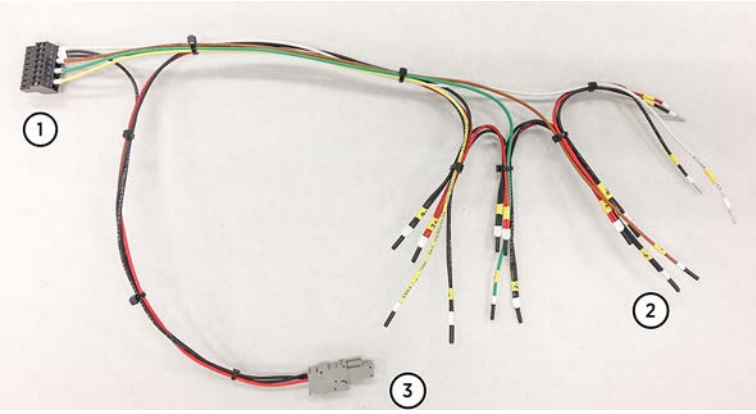


6. Mount the data logger on the DIN rail, preferably at the right-hand end of the rail.
   Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

7. Connect the logger data cable to a free port in the serial port server.

8. Take note of the wiring instructions printed on the side of the galvanic isolator.
   The information will be relevant when connecting wires in the intrinsically safe screw terminals of the isolator (step 15).
9. Mount the isolator on the DIN rail.
   a. Make sure the blue end of the device, with the intrinsically safe screw terminals, faces down.
   b. Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.

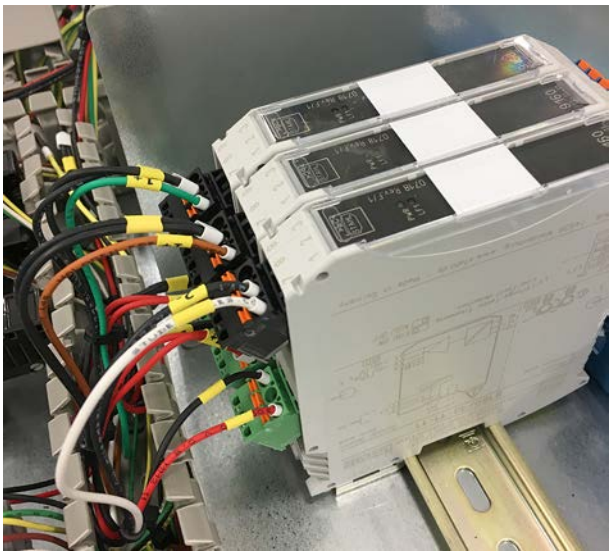
10. Using the galvanic isolator cable, connect the galvanic isolators, the data loggers, and the 24 V DC power block, as shown in step 11 to step 14.



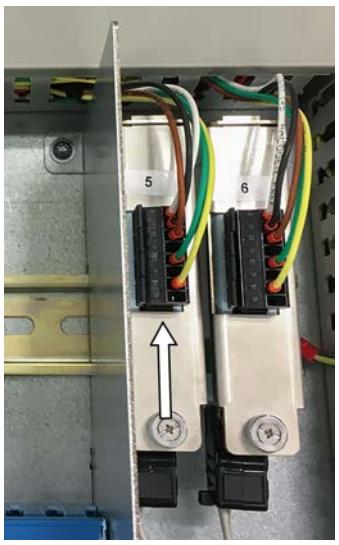
1 Data logger connector
2 Galvanic isolator wires
3 24 V DC power wires and connector

> The galvanic isolator cable contains wiring for 4 galvanic isolators. If you install only 1 to 3 devices, leave the extra wires unconnected and the wire end caps in place.

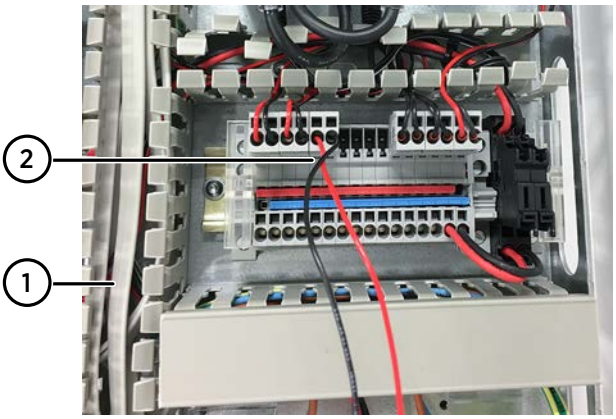
11. Observing polarity, connect the galvanic isolator wires to push-in terminals 1 and 2, and the power wires to terminals 7 and 9 at the back of the isolator.



12. Connect the black terminal connector of the cable set to the DL4000 data logger.

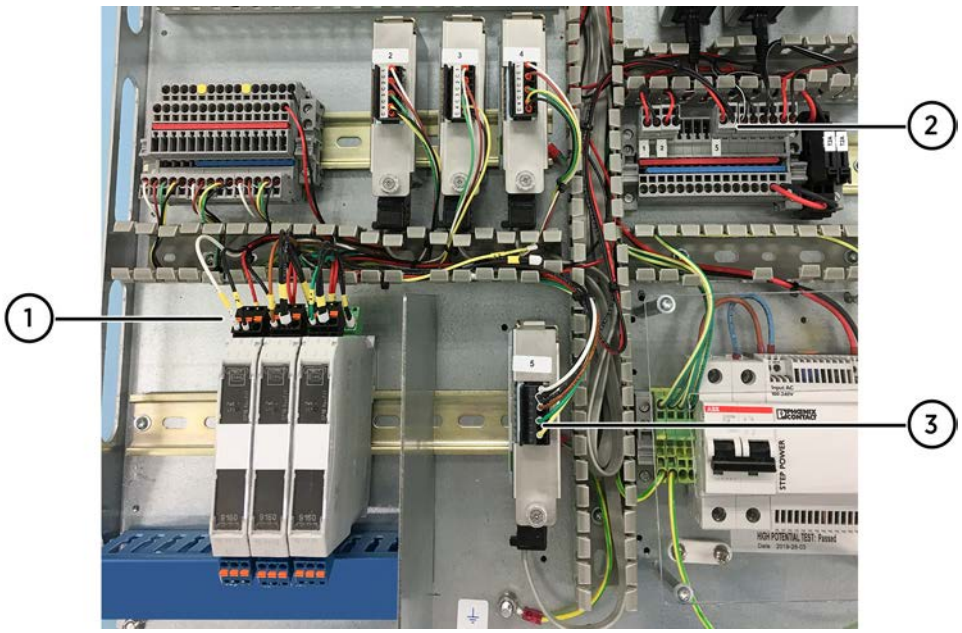


13. Connect the 24 V DC power wire connector to the power block located on the right-hand side of the cabinet.



1 Vertical cable duct
2 Power wires connected to power block

14. Route the wires along the cable ducts.



1 Galvanic isolator wires connected
2 Galvanic isolator power wires connected to power block
3 Data logger wires connected

15. For wiring of the intrinsically safe screw terminals in the isolators, refer to the wiring instructions printed on the side of the isolator and the *Safety Manual* leaflet provided in the isolator packaging.
16. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
17. Reconnect power in the cabinet.
    a. Switch on the circuit breaker.
    b. Switch on mains power.

More information

- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

6.8 Installing serial port server and Ethernet switch

- Serial port server
- Serial port server holder
- Logger data cable(s), delivered with the spare part Wiring Set for the specific cabinet model (PDT101, analog channel, safety barrier, or galvanic isolator model)
- Ethernet switch (for installation locations with only 1 Ethernet cable available)
- Short RJ45 cable for connecting 2 Ethernet switches
- Small flat head screwdriver

For item codes, see Spare parts and accessories (page 126).

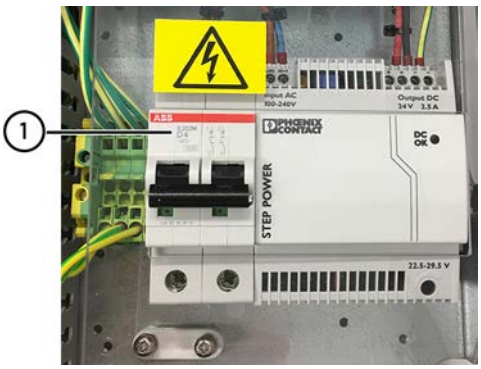
For setup instructions of the DIGI serial port server, see *DIGI PortServer® TS Family Quick Start Guide*.

When adding more measurement devices in CAB100B, you may need to add more data loggers in the installation. A second serial port server is needed when the number of data loggers exceeds 4.

For installation sites with only 1 Ethernet cable available for the 2 serial port servers, an Ethernet switch is available as an option.

To order the second serial port server, a serial port server holder, an Ethernet switch, and the cabling for them, contact Vaisala.

1. De-energize the cabinet: switch off mains power and the circuit breaker located inside the cabinet.



1 Circuit breaker

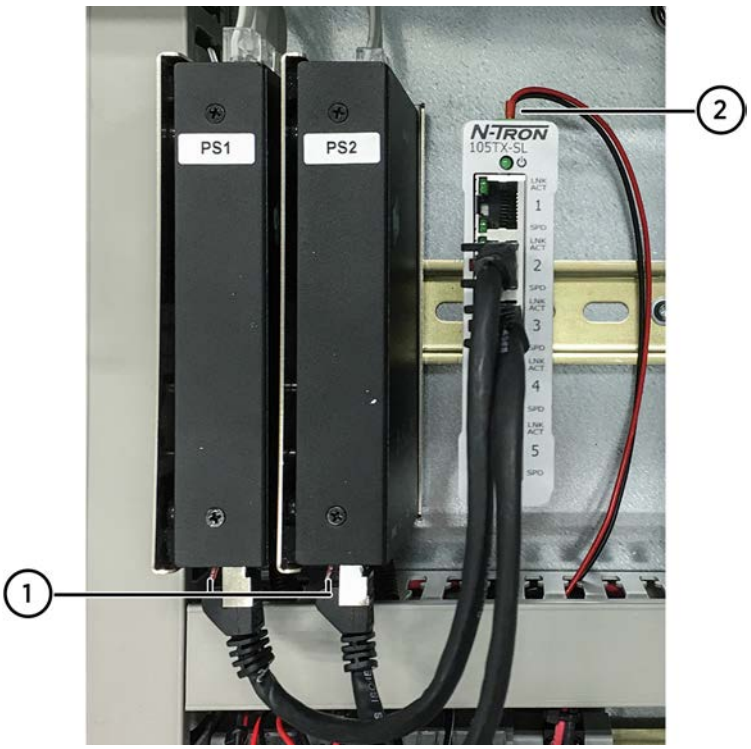
2. Dismantle the serial port server holder assembly (ASM213139SP).
   To do this, unscrew the DIN rail locking mechanism attached to the side of the assembly.
3. Mount the serial port server in the serial port server holder.
   Attach the holder to the serial port server using the 2 screws and washers provided in the packaging of the serial port server holder (ASM213139SP).

4. Reattach the DIN rail locking mechanism to the serial port server holder, as shown below. Use the original washer and screw.

1 Locking mechanism reattached to serial port server holder
2 Screws and washers provided in the serial port server holder assembly attached

5. Insert the power wires in the screw terminals of the serial port server and the Ethernet switch (if using) and tighten the screws.
For the locations of the screw terminals, see step 6.

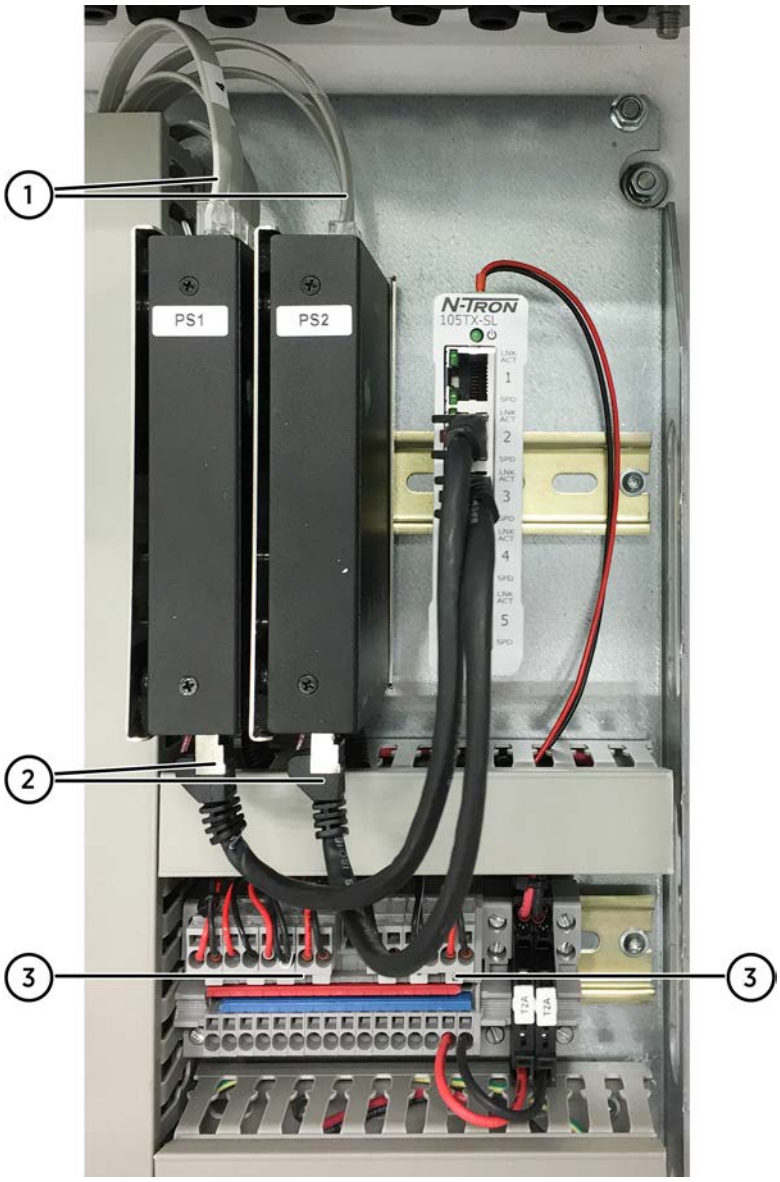
6. Mount the serial port server with its holder, and the Ethernet switch (if using), on the DIN rail.



1 Location of terminal for serial port server power wires, with wires connected
2 Location of terminal for Ethernet switch power wires, with wires connected

7. For installations including an Ethernet switch:
   Connect the serial port servers to the Ethernet switch using 2 RJ45 cables.
8. Route the power wires through the cable duct to the power block, located below the serial port server and the Ethernet switch.
   See also callouts #3 in the figure in step 9.

9. Using the logger data cables provided in the spare part Wiring Set, connect the new data logger(s) and the serial port server.
   Route the data logger data cable along the vertical cable duct from the left side of the cabinet.



1 Data logger data cables connected to serial port servers
2 Serial port servers and Ethernet switch connected with RJ45 cables
3 Power wires connected to power block

10. Insert any extra length of wire into the cable ducts and replace the cable duct covers.
11. Switch on the circuit breaker and mains power.

More information

- Third-party component specifications (page 125)
- Spare parts and accessories (page 126)
- CAB100B wiring diagrams (page 133)
- CAB100B layout diagrams (page 143)

7. Replacing devices

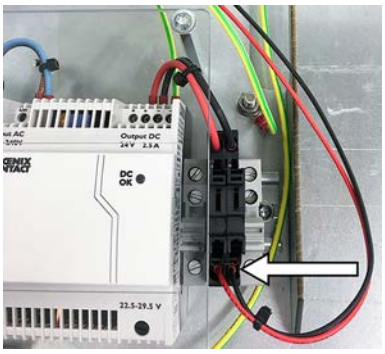
7.1 Replacing PDT101 transmitters in CAB100A and CAB100B

- Replacement PDT101 transmitters
- Small flat head screwdriver

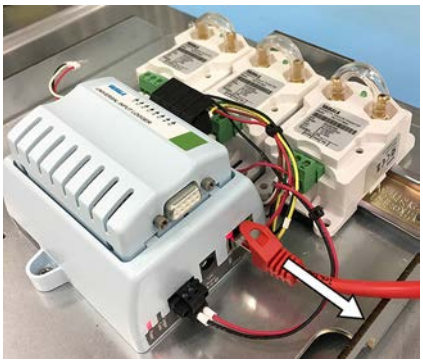
For item codes, see Spare parts and accessories (page 126).

Follow the steps below to replace calibrated or faulty PDT101 transmitters.

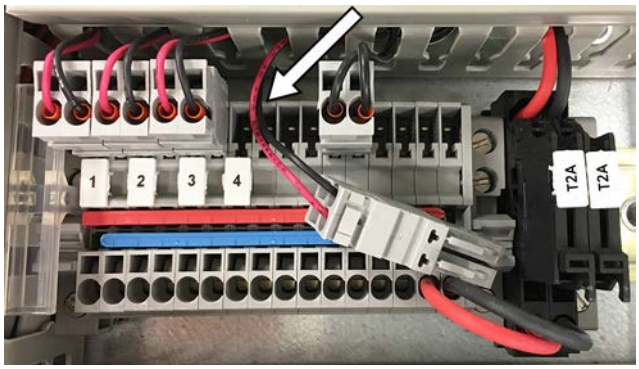
1. Switch off mains power.
2. De-energize the PDT101 transmitters as shown in the following steps.
3. De-energizing **24 V DC powered CAB100A model**:
   Disconnect the PDT101 power wires from the fuse terminal blocks located at the right-hand end of the power block.



4. De-energizing **vNet PoE powered CAB100A model**:
   Disconnect the Ethernet PoE cable from the vNet device.



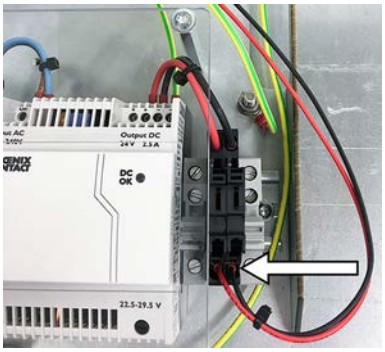
5. De-energizing **CAB100B**:
   a. Switch off the circuit breaker located inside the cabinet.
   b. Disconnect the PDT101 power wire connector from the power block located on the right-hand side of the cabinet.



6. Unplug the screw terminal connector from the PDT101 transmitter.

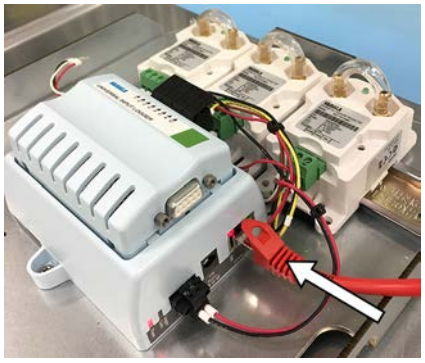
7. To release the PDT101 from the DIN rail, insert a small flat head screwdriver into the black plastic clip extending slightly below the transmitter case.

8. Force the spring clip down to release the PDT101 from the DIN rail.
9. Mount the new PDT101 on the DIN rail.
   Rest the upper part of the locking mechanism on the DIN rail and push down firmly. This will click the device into place.
10. Use the existing screw terminal connector, and plug in the connector to its mating connector in the PDT101.
11. Reconnect power in **24 V DC powered CAB100A model**:
    a. Reconnect the power wires in the fuse terminal blocks.

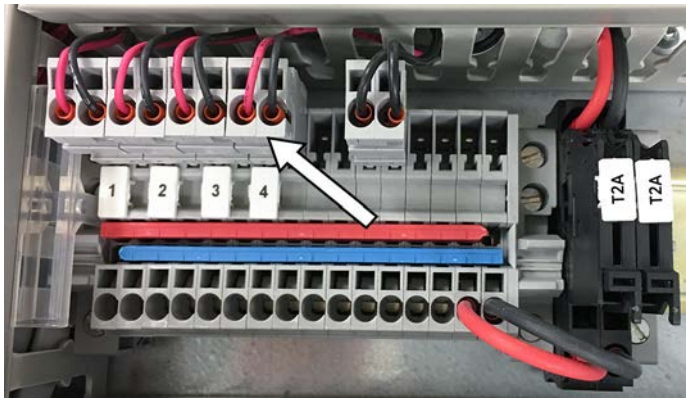


    b. Switch on mains power.

12. Reconnect power in **vNet PoE powered CAB100A model**:
    a. Reconnect the Ethernet PoE cable to the vNet device.



    b. Switch on mains power.
13. Reconnect power in **CAB100B**:
    a. Reconnect the power wires in the power block located on the right-hand side of the cabinet.



    b. Switch on the circuit breaker.
    c. Switch on mains power.
14. The new PDT101 is now mounted and connected.
    Insert any extra length of wire into the cable duct below the PDT101 and replace the cable duct cover.

More information

- PDT101 calibration (page 114)
- Wiring diagrams (page 128)

7.2 Replacing DL4000 data loggers in CAB100A and CAB100B

- Replacement DL4000 data loggers
- Small flat head screwdriver

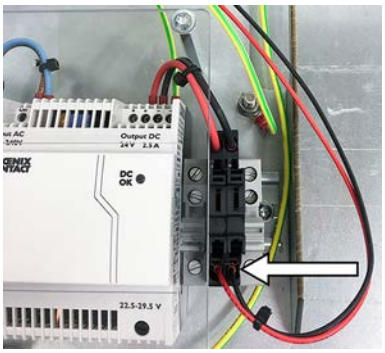
For item codes, see Spare parts and accessories (page 126).

When sending a data logger for calibration to Vaisala, you do not need to remove the data logger from the logger holder.

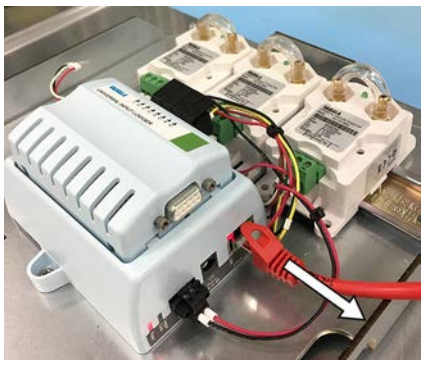
DL4000 data loggers are delivered with default factory settings. This applies both to the factory-installed data loggers and the ones delivered as spare parts. For instructions on configuring measurement units and scaling in the data loggers, see the *Vaisala viewLinc Enterprise Server User Guide* for your viewLinc version, available at www.vaisala.com/viewlinc.

Follow the steps below to replace calibrated or faulty DL4000 data loggers.

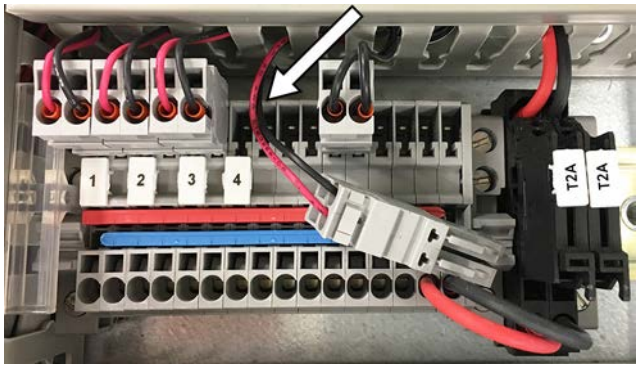
1. Switch off mains power.
2. De-energize CAB100A or CAB100B as shown in the following steps.
3. De-energizing **24 V DC powered CAB100A model**:
   Disconnect the PDT101 power wires from the fuse terminal blocks located at the right-hand end of the power block.



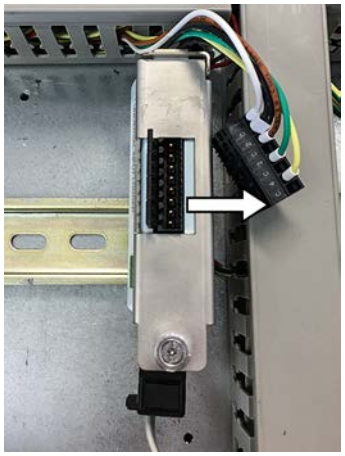
4. De-energizing **vNet PoE powered CAB100A model**:
   Disconnect the Ethernet PoE cable from the vNet device.



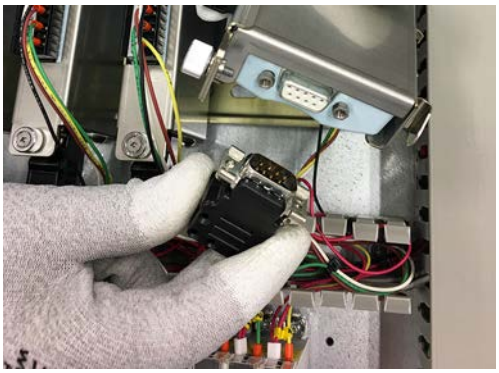
5. De-energizing **CAB100B**:
   a. Switch off the circuit breaker located inside the cabinet.
   b. Disconnect the 24 V DC power wire connector from the power block located on the right-hand side of the cabinet.



6. To unmount an existing data logger, first disconnect the data logger connector from the data logger.



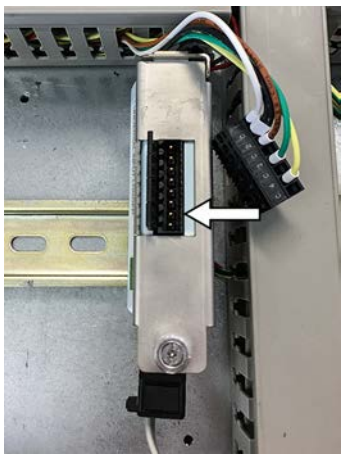
7. Unmount the logger holder from the DIN rail.
   Release the locking clip and pull out from the bottom of the holder.
8. Disconnect the logger data cable from the data logger.
   Use a small flat head screwdriver to loosen the screw attached to the connector, then pull out the connector.



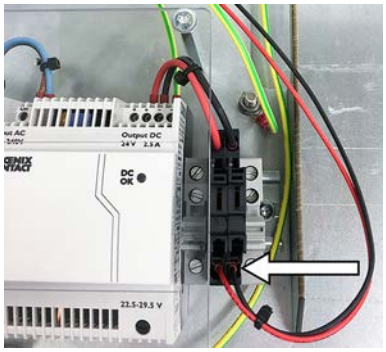
9. Assemble the data logger holder of the replacement data logger.
   a. Place the data logger in the logger holder.
   b. Fit the cover into place.
   c. Tighten the screw by hand.

10. Connect the logger data cable to the RS-232 serial port in the replacement data logger.
    Use a small flat head screwdriver to tighten the screw attached to the connector.
11. Mount the new data logger on the DIN rail.
    Rest the logger holder locking mechanism on the DIN rail and push down firmly. This will click the device into place.

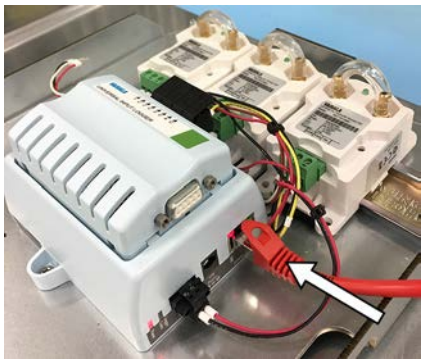
12. Reconnect the data logger connector.



13. Reconnect power in **24 V DC powered CAB100A model**:
    a. Reconnect the power wires in the fuse terminal blocks.

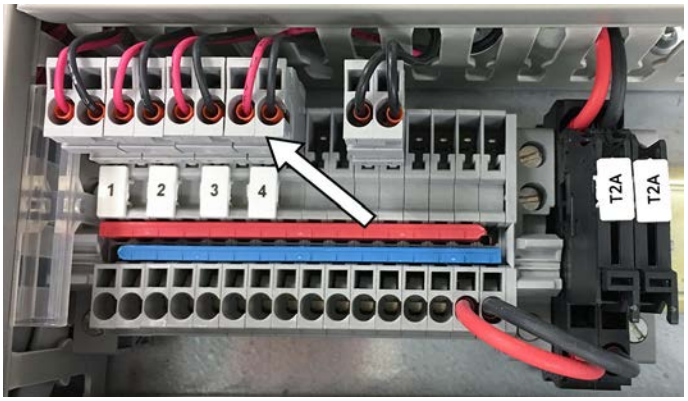


    b. Switch on mains power.
14. Reconnect power in **vNet PoE powered CAB100A model**:
    a. Reconnect the Ethernet PoE cable to the vNet device.



    b. Switch on mains power.

15. Reconnect power in **CAB100B**:
    a. Reconnect the power wires in the power block located on the right-hand side of the cabinet.



    b. Switch on the circuit breaker.
    c. Switch on mains power.

More information

- Wiring diagrams (page 128)

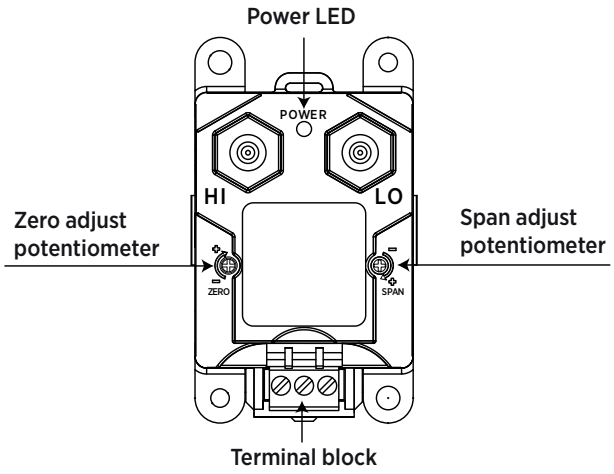
8. Maintenance

8.1 PDT101 calibration

1. Pneumatically connect the transmitter's pressure ports to each other.
   The barbed pressure connections accept O.D. 1/4 in × I.D. 1/8 in tubing.
2. Measure the analog output of the transmitter to establish the zero offset reading in the as-installed position.
3. If the reading is not at the middle of the output range (for example, 12 mA for 4 ... 20 mA output), the zero point of the transmitter has shifted.
   To remove the zero shift, adjust the transmitter as described in PDT101 adjustment (page 114).

8.2 PDT101 adjustment

- High accuracy pressure standard and high quality electrical meter for adjustment
- 2.5 mm flat head or crosshead screwdriver



1. Connect the pressure standard to the ports of the PDT101.
2. Bring the pressure to 0 % of the transmitter's span (-60 Pa or -0.25 in H_2O, depending on model).
3. Adjust the zero potentiometer (on the front, left side of the transmitter) so that the analog output value is at the low end of its range.
   Use a 2.5 mm flat head or crosshead screwdriver to turn the potentiometer.

4. Bring the pressure to 100 % of the transmitter's span (+60 Pa or +0.25 in H_2O, depending on model).
5. Adjust the span potentiometer (on the front, right side of the transmitter) so that the analog output value is at the high end of its range.

For the full PDT101 transmitter specifications and user instructions, see *Vaisala Differential Pressure Transmitter PDT101 Datasheet* (B211082EN) and *Vaisala Differential Pressure Transmitter PDT101 Quick Guide* (M211284EN), available for download at www.vaisala.com/pdt101.

8.3 Cleaning

You can clean the CAB100 enclosure by wiping with a clean cloth moistened with mild detergent.

You can use clean instrument air to gently blow out any loose dust and dirt that may accumulate over time on the measurement devices.

When cleaning, follow these precautions:

- Do not use solvents.
- Do not spray anything directly on the enclosure or the measurement devices.
- Do not immerse any part of the enclosure or a measurement device in liquid to clean it.

9. Technical data

9.1 CAB100 specifications

Table 5 CAB100 operating environment

Property	Description/Value
Operating temperature	0 ... +55 °C (+32 ... +131 °F)
Storage temperature	−40 ... +70 °C (−40 ... +158 °F)
Operating humidity	5 ... 90 %RH, non-condensing
Maximum operating altitude	2000 m (6561 ft)

Table 6 CAB100 powering specifications

Property	Description/Value
AC (mains) power	100 – 240 V AC, 50 – 60 Hz 0.5 A maximum (120 V AC)
Power supply module within cabinet	24 V DC / 2.5 A / Fused 2 A
Power over Ethernet [1)]	12 – 30 V DC IEEE 802.3af, 10Base-T
Mains fuse (nominal)	4 A
Maximum power consumption	CAB100A: 20 W CAB100B: 40 W

1) In CAB100A PDT101 model only.

Table 7 CAB100 mechanical specifications

Property	Description/Value
Materials	
Backplate	Fe/Zn
Flanges	Stainless steel AISI 316 Rubber (EPDM, Fermasil)
Cable glands	Nickel-plated brass
Enclosure	CAB100A: Aluminium, painted white CAB100B: Stainless steel AISI 316, painted white

Property	Description/Value
Outer dimensions (H × W × L)	
Enclosure and mounting frame, incl. door with lock, and top and bottom flanges	CAB100A: 243 × 300 × 418 mm (9.57 × 11.81 × 16.46 in) CAB100B: 257 × 500 × 618 mm (10.12 × 19.69 × 24.33 in)
Shipping package (approximate size)	CAB100A: 290 × 365 × 530 mm (11 × 14 × 21 in) CAB100B: 290 × 591 × 775 mm (11 × 23 × 31 in)
Weight	
CAB100A	
Fully populated cabinet and mounting frame in shipping package	Max. 10 kg (22 lb) (depending on model)
Enclosure (with backplate)	5.4 kg (12 lb)
Mounting frame only	2.1 kg (4.6 lb)
CAB100B	
Fully populated cabinet and mounting frame in shipping package	Approx. 30 kg (66 lb) (depending on model)
Enclosure (with backplate)	18.7 kg (41 lb)
Mounting frame only	2.9 kg (6.4 lb)

Table 8 CAB100 environmental compliance

Property	Description/Value
CAB100A	
IP rating [1)]	IP54: Limited protection against dust. Protected from water splashes from any direction.
Rough handling (free fall)	IEC 60068-2-31
Vibration (transportation)	IEC 60068-2-64
CAB100B	
IP rating [1)]	IP66: Dust-tight. Protected from powerful water jets from any direction. NEMA 4: Dust-tight. Protected from powerful water jets from any direction.
Rough handling (topple test)	IEC 60068-2-31
Vibration (transportation)	IEC 60068-2-64

1) *The IP ratings apply only when using the factory-installed top and bottom flanges in the enclosures.*

Table 9 CAB100 compliance

Property	Description/Value
EU directives	EMC, LVD, RoHS
EMC compatibility	EN 61326-1, basic electromagnetic environment [1] CISPR 32 / EN 55032, Class B
Electrical safety	EN/UL/IEC 61010-1, Safety requirements for electrical equipment for measurement, control, and laboratory use
Compliance marks	CE, China RoHS, RCM
Listing marks	SGS safety listed in USA and Canada [2]

1) *Excluding CAB100 analog input channels, which are not surge protected.*
2) *Applicable to CAB100B. Safety listing for CAB100A pending.*

9.1.1 Enclosure dimensions

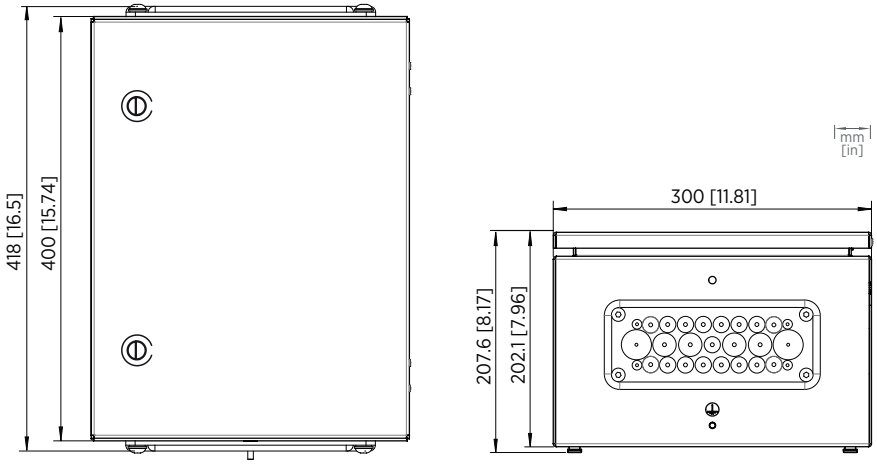


Figure 10 CAB100A enclosure dimensions

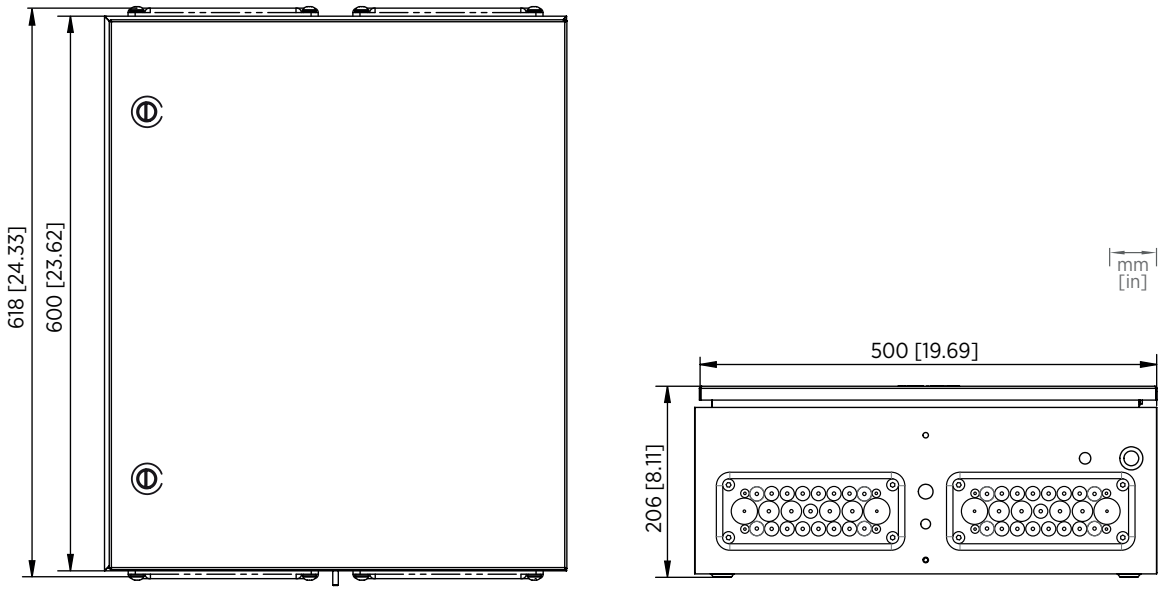


Figure 11 CAB100B enclosure dimensions

9.2 Component specifications

9.2.1 Vaisala Differential Pressure Transmitter PDT101 specifications

Table 10 PDT101 models

Model	Measurement range	Output
PDT101-P4C	±60 Pa	4 ... 20 mA
PDT101-P4V	±60 Pa	0 ... 5 V
PDT101-P4C2	±125 Pa	4 ... 20 mA
PDT101-P4V2	±125 Pa	0 ... 5 V
PDT101-W4C	±0.25 inH_20	4 ... 20 mA
PDT101-W4V	±0.25 inH_20	0 ... 5 V
PDT101-W4C2	±0.5 inH_20	4 ... 20 mA
PDT101-W4V2	±0.5 inH_20	0 ... 5 V

Table 11 PDT101 measurement performance

Property	Description/Value
Measurement ranges (bidirectional)	±60 Pa, ±125 Pa, ±0.25 inH_2O, or ±0.5 inH_2O

Property	Description/Value
Accuracy (incl. non-linearity, hysteresis, repeatability and zero/span calibration settings)	0.4 % span
Long-term stability	≤ 0.5 % span/year
Response time (10 ... 90 %)	250 ms
Warm-up time	15 s
Compensated temperature range	+2 ... +54 °C (+35.6 ... +129.2 °F)
Temperature dependence	±(0.065 Pa + 0.054 % of reading) / °C or ±(0.00015 inH_2O + 0.03 % of reading) / °F (reference 21 °C or 70 °F)
Pressure type	Differential, gauge, vacuum and compound
Overpressure	
Proof pressure Burst pressure Static pressure	1.0 bar 1.7 bar 1.7 bar
Mounting position	
Error (zero adjustable)	≤ 1 %/g (calibration in vertical position is standard)
Adjustments (front accessible)	
Zero Span	±5 % span ±3 % span

Table 12 PDT101 operating environment

Property	Description/Value
Operating temperature	−18 ... +70 °C (−0.4 ... +158 °F)
Storage temperature	−40 ... +82 °C (−40 ... +179.6 °F)
Note: If used in an electromagnetic field of 3 V/m, with narrow frequency area of 80 ... 120 Mhz, it is possible that the current output of PDT101 can deviate max. 0.8 % (with accuracy specified 0.4 %)	

Table 13 PDT101 compliance

Property	Value/Description
EMC compatibility	EN 61326-1, basic immunity test requirements
Compliance marks	CE, RCM

Table 14 PDT101 inputs and outputs

Property	Description/Value
Process connection	1/4" barbed fittings
Max. loop resistance for 4 ... 20 mA	≤ (Supply voltage - 12 V)/0.022 A
Supply current	Max. 20 mA for 4 ... 20 mA output signal
Optical process diagnostics	LED visual indicator
Electrical connection	Euro style pluggable terminal block accepts 12 ... 26 AWG wire (0.13 up to 3.31 mm^2)
Output signal	
2-wire 3-wire	4 ... 20 mA 0 ... 5 V DC (user selectable 0 ... 10 V DC)
Operating voltage	
2-wire output 4 ... 20 mA 3-wire output 0 ... 5 V DC 3-wire output 0 ... 10 V DC	12 ... 36 V DC 11.5 ... 36 V DC or 24 V AC 14 ... 36 V DC or 24 V AC

Table 15 PDT101 mechanical specifications

Property	Description/Value
Medium (measured gas)	Clean and dry air, non-conducting and non-corrosive gases
Mounting	Threaded fastener for wall mounting or DIN rail type EN 50022
IP rating	IP40
Weight	0.07 kg
Material	
Process connection Sensor element Case	Brass Silicon, aluminum, glass NEMA type 1 fire-retardant ABS 1 (meets UL94-5VA)

9.2.2 Vaisala DL4000 Universal Data Logger specifications

Table 16 DL4000 general specifications

Property	Description/Value
Operating range	−40 ... +85 °C (−40 ... +185 °F) and 0 ... 100 %RH (non-condensing)

Property	Description/Value
Interfaces	RS-232 serial USB Wifi module Ethernet and Power over Ethernet (vNet)
Weight	76 g (2.7 oz)
Size	85 × 59 × 26 mm (3.4 × 2.3 × 1 in)
Mounting	3M Dual Lock™ fasteners
PC software	Graphing & Reporting Software vLog SP for SP-series vLog VL for VL-series viewLinc for continuous monitoring & alarming OPC Server to add on to existing OPC compatible monitoring systems
Internal clock	Accuracy ±1 min/month at −25 … +70 °C (−13 … +158 °F)
Electromagnetic compatibility	FCC Part 15 and CE EN 50581:2012 EN 55032:2012/AC:2013 Class B EN 61326-1:2013
RoHS compliance	2011/65/EU
Power source	Internal 10-year lithium battery (Battery life specified with sample interval of 1 min or longer)

Table 17 DL4000 memory specifications

Property	Description/Value
Memory type	Non-volatile EEPROM
Data sample capacity	120 000 12-bit samples
Memory modes	User-selectable wrap (FIFO) or stop when memory is full. User-selectable start and stop times.
Sampling rates	User-selectable from once every 10 seconds to once a day. (Battery life specified with sample interval of 1 min or longer)
Recording span	Recording span depends upon sample interval selected and number of channels enabled. Please see table above.

Table 18 DL4000 recording span

Sample interval	Number of channels			
	1	2	3	4
10 seconds	13.8 days	6.9 days	4.6 days	3.4 days
1 minute	2.7 months	1.3 months	27.7 days	20.8 days
5 minutes	1.1 years	6.9 months	4.6 months	3.4 months
15 minutes	3.4 years	1.7 years	1.1 years	10.4 months
1 hour	13.6 years	6.8 years	4.5 years	3.4 years

Table 19 DL4000 current loop and voltage inputs

Input type	Current loop	Analog voltage
Available ranges	0 ... 20mA	0 ... 5 V DC
Resolution	5.5 µA	0.025 % F.S.
Accuracy	±0.15 % F.S. at +25 °C (+77 °F)	±0.15 % F.S. at +25 °C (+77 °F)
Input impedances	75 Ω	> 1 MΩ
Isolation	One common per logger	One common per logger
Overload protection	40 mA max. (reverse-polarity protected)	±24 V DC max. (reverse-polarity protected)

9.2.3 Vaisala vNet PoE Data Logger Interface specifications

Table 20 vNet operating environment

Property	Description/Value
Operating temperature	−25 ... +70 °C (−13 ... +158 °F)
Storage temperature	−40 ... +85 °C (−40 ... +185 °F)
Operating humidity	0 ... 90 %RH (non-condensing and not to exceed a mixing ratio of 38.5 g/kg)

Table 21 vNet inputs and outputs

Property	Description/Value
Ethernet connectivity	IEEE 802.3af (Class 1) [1], bandwidth 10Base-T
Connectivity cable	Category 5/5e RJ-45 connector 1.83 m (6 ft)

Property	Description/Value
Operating voltage [2]	12 ... 30 V DC Plugs into vNet jack labeled 12 V
Output voltage	
Model CDL-VNET-LPC	Nominal: 15 V DC Maximum: 350 mW
Power consumption	
Model CDL-VNET-LPC	Typical: 900 mW Maximum: 1.35 W
Power supply [3]	
North America	12 V DC / 0.5 A max. out 120 V AC in
International	12 V DC / 1.66 A max. out 100 ... 240 V AC in

1) *Max. PSE power reservation is 4.00 W.*
2) *Optional for use without PoE.*
3) *Included but not required when using PoE.*

Table 22 vNet mechanical specifications

Property	Description/Value
Dimensions (H × W × L)	43 × 102 × 102 mm (1.7 × 4.0 × 4.0 in)
Weight	180 g (6.3 oz)

Table 23 vNet general specifications

Property	Description/Value
Data logger compatibility	v6.00 hardware and higher Includes models VL and SP 1000, 1700, 1200, 1016, 1416, 1400, 2000, 4000
LED indicators	Link, activity, power, data logger communications
Device configuration	HTTP Web Interface PC-based configuration wizard
viewLinc Aware	Requires one vNet to be programmed with the viewLinc server IP address. Other vNets on the subnet will automatically self-configure.
Addressing	DHCP/RARP ARP-Ping Static IP for IP address assignment Net BIOS name

Property	Description/Value
Firmware	Field upgradable firmware
Compliance	
Emissions/Immunity	FCC Part 15 and CE EN 50581:2012 EN 55032:2012/AC:2013 Class B EN 61326-1:2013
Conformity	RoHs, 2011/65/EU WEEE

9.2.4 Third-party component specifications

For the technical specifications of third-party components, see the relevant documentation on the manufacturer websites listed below.

Table 24 Power supply module product information

Property	Description/Value
Product description	STEP-PS/ 1AC/24DC/2.5 power supply unit
Manufacturer	Phoenix Contact, www.phoenixcontact.com
Manufacturer part number	2868651

Table 25 Circuit breaker product information

Property	Description/Value
Product description	Miniature circuit breaker - S200M - 2P - D - 4 ampere
Manufacturer	ABB, www.new.abb.com
Manufacturer part number	S202M-D4

Table 26 Safety barrier product information

Property	Description/Value
Product description	Single-channel safety barrier, type 9001/51-280-091-141
Manufacturer	R. STAHL, www.r-stahl.com
Manufacturer part number	158524

Table 27 Galvanic isolator product information

Property	Description/Value
Product description	Transmitter supply unit Ex i field circuit, type 9160/13-11-11k

Property	Description/Value
Manufacturer	R. STAHL, www.r-stahl.com
Manufacturer part number	214896

Table 28 Serial port server product information

Property	Description/Value
Product description	DIGI PortServer® TS 4 Serial Port Server
Manufacturer	DIGI International, www.digi.com
Manufacturer part number	70002045

Table 29 Ethernet switch product information

Property	Description/Value
Product description	N-Tron® 105TX-SL unmanaged industrial Ethernet switch
Manufacturer	Red Lion, www.redlion.net
Manufacturer part number	105TX-SL

9.3 Spare parts and accessories

Table 30 CAB100 spare parts and accessories

Item	Item code	Notes
DL4000 data logger	DL4000VCNNNN	Used with PDT101 transmitter voltage models and analog input channels. Input range 0 ... 5 V DC.
DL4000 data logger	DL4000VKNNNN	Used with PDT101 transmitter current models, safety barriers, and galvanic isolators. Input range 0 ... 20 mA.
Data logger data cable	ASM213402SP	
Data logger holder for DIN35 rail	ASM213068SP	
PDT101 transmitter, voltage output model	PDT101-W4V	Used with CAB100A PoE powered models. Measurement range ±0.25 in H_2O.
PDT101 transmitter, voltage output model	PDT101-P4V	Used with CAB100A PoE powered models. Measurement range ±60 Pa.
PDT101 transmitter, current output model	PDT101-W4C	Measurement range ±0.25 in H_2O.
PDT101 transmitter, current output model	PDT101-P4C	Measurement range ±60 Pa.

Item	Item code	Notes
Safety barrier	210664SP	
Galvanic isolator	212483SP	
Serial port server	CMS-CONN-4RJ45	4-port model.
Serial port server holder for DIN35 rail	ASM213139SP	
vNet PoE data logger interface	VNETBNNN	
Analog Wiring Set: • Cable set, 24 V DC power block to analog terminal block • Cable set, data logger to analog terminal block • Data logger data cable • Data logger holder • Terminal block accessories for 4 analog input channels • Document *Vaisala CAB100 Assembling Analog Channel Terminal Block Technical Note* (M212262EN)	ASM213078SP	Needed when adding a new data logger with 4 analog channels to CAB100. Note that the data logger is not included in the Analog Wiring Set, and must be ordered separately.
PDT Wiring Set: • Cable set for PDT or safety • Data logger data cable • Data logger holder	ASM213079SP	Needed when adding PDT101 transmitters to CAB100. Note that the data logger is not included in the PDT Wiring Set, and must be ordered separately.
Safety Barrier Wiring Set: • Cable set for PDT or safety • Data logger data cable • Partition plate • Data logger holder	ASM213201SP	Needed when adding safety barriers to CAB100. Note that the data logger is not included in the Safety Barrier Wiring Set, and must be ordered separately.
Galvanic Isolator Wiring Set: • Galvanic isolator cable • Data logger data cable • Partition plate • Data logger holder	ASM213143SP	Needed when adding galvanic isolators to CAB100. Note that the data logger is not included in the Galvanic Isolator Wiring Set, and must be ordered separately.

If the spare part you need is not listed in the table, please contact Vaisala.

Information on spare parts, accessories, and calibration products is available online at www.vaisala.com and store.vaisala.com.

Appendix A. Wiring diagrams

A.1 CAB100A wiring diagrams

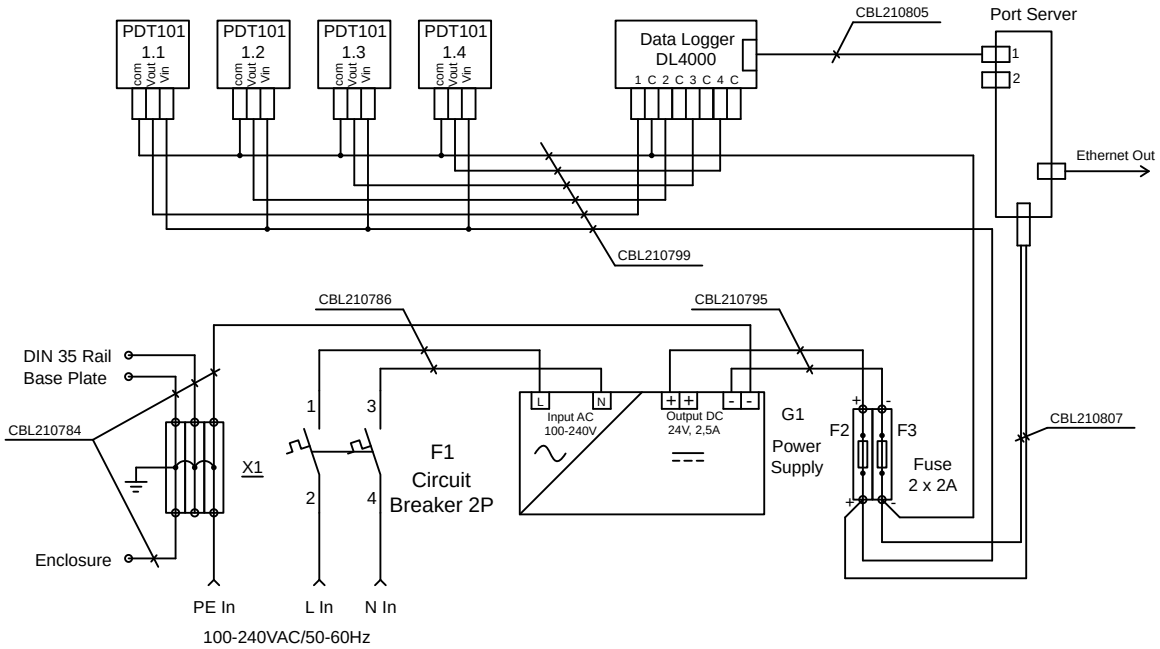


Figure 12 Wiring diagram for CAB100A PDT101 voltage model with serial port server and 24 V DC power supply

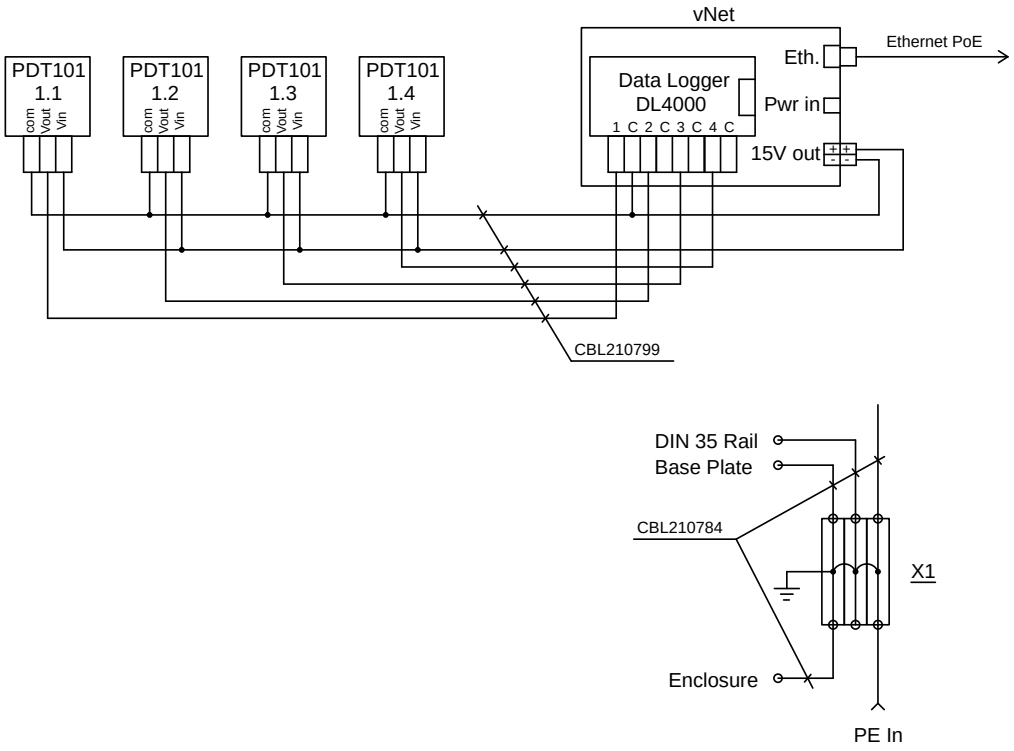


Figure 13 Wiring diagram for CAB100A PDT101 voltage model with vNet PoE

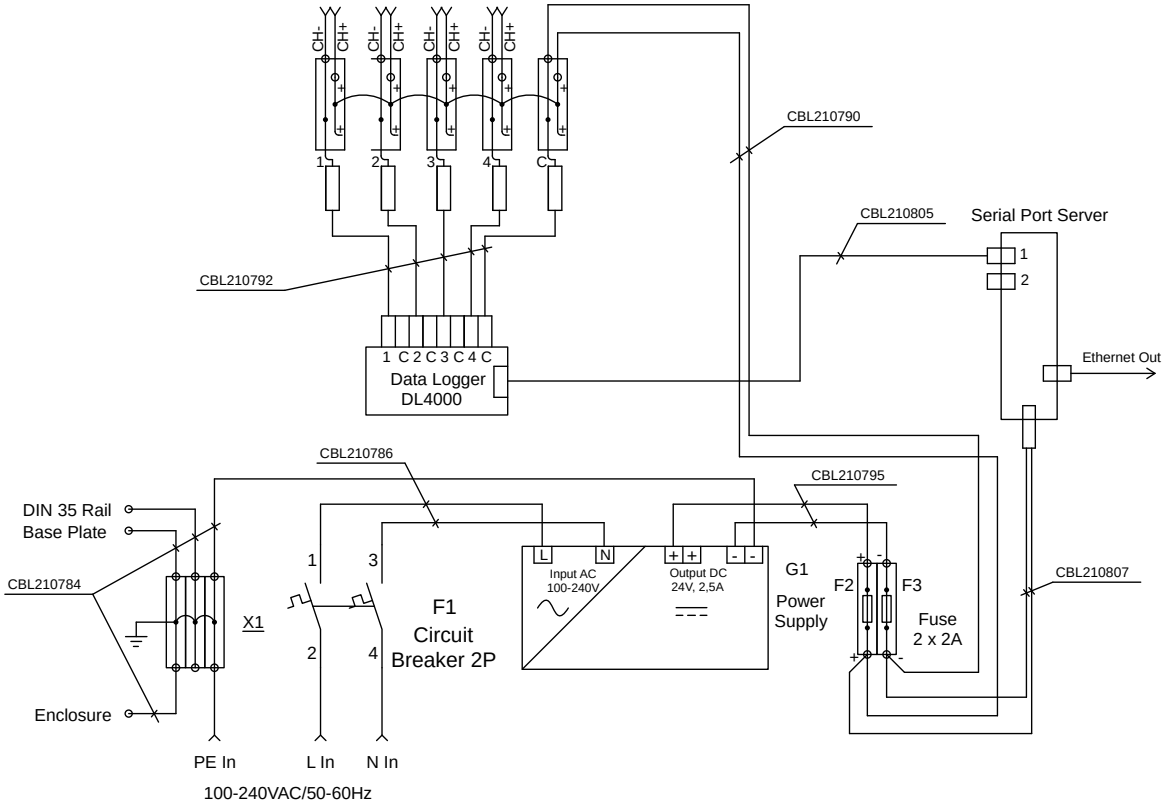


Figure 14 Wiring diagram for CAB100A analog channel model with serial port server and 24 V DC power supply

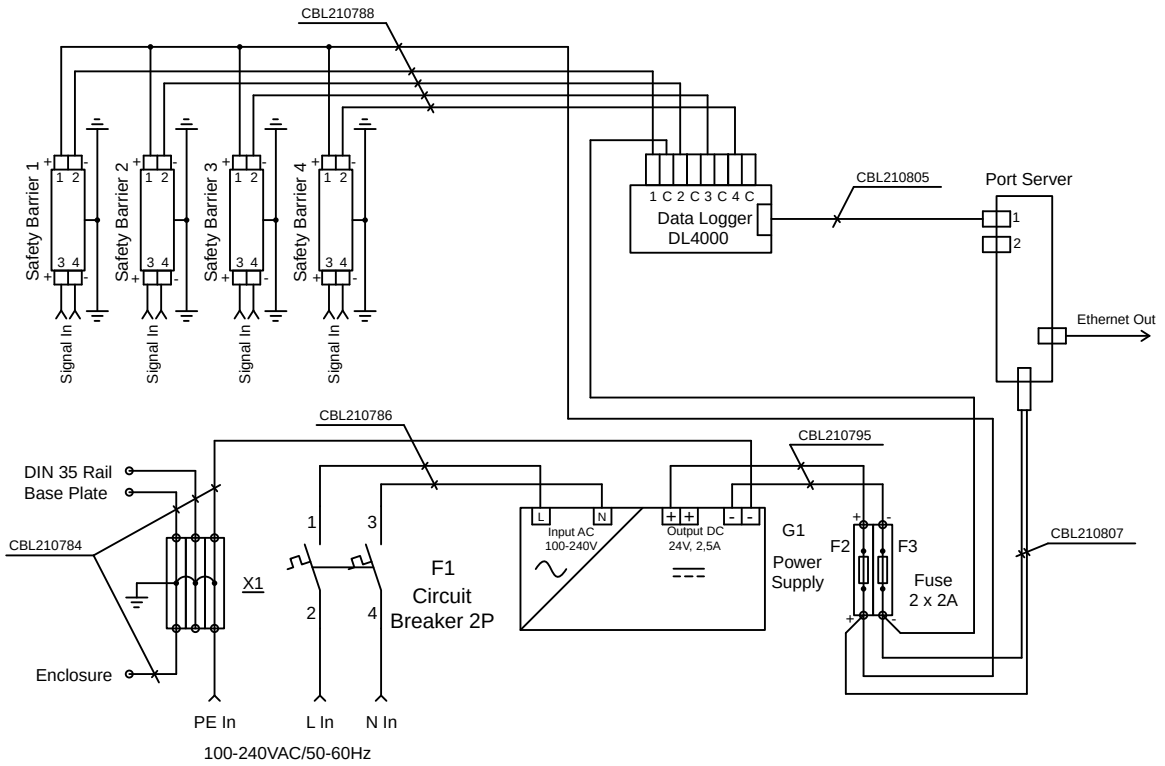


Figure 15 Wiring diagram for CAB100A safety barrier model with serial port server and 24 V DC power supply

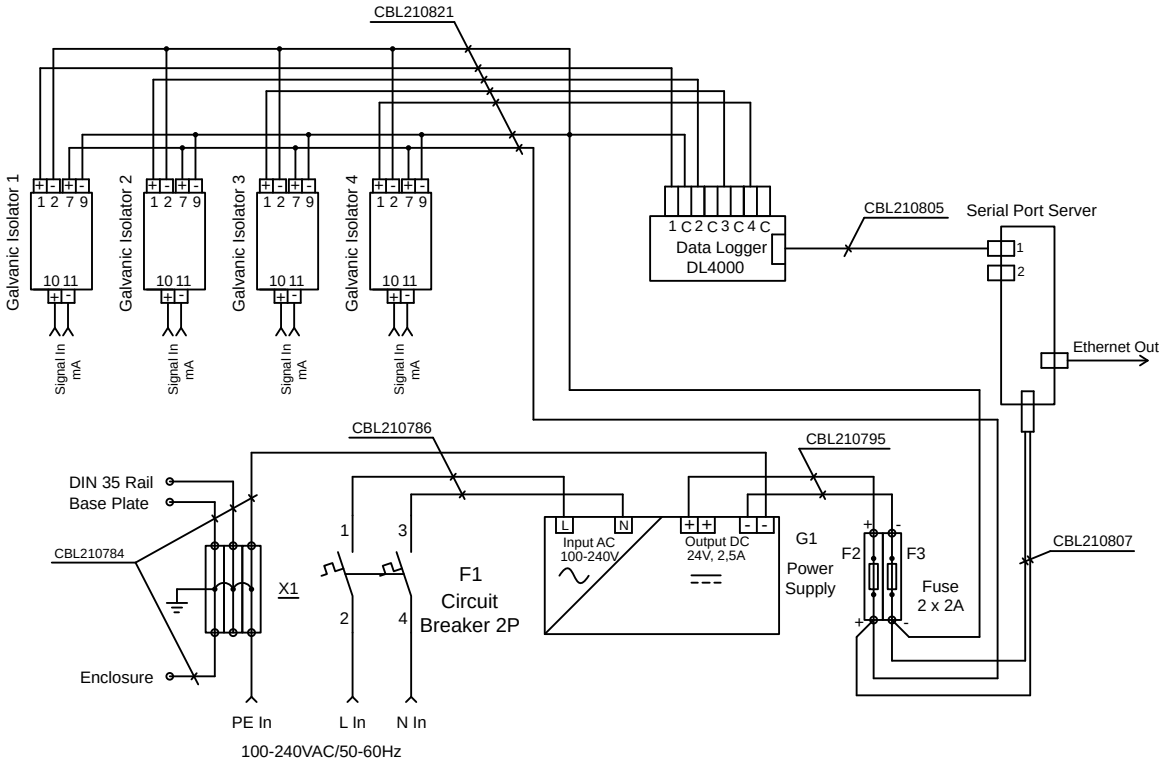


Figure 16 Wiring diagram for CAB100A galvanic isolator model with serial port server and 24 V DC power supply

A.2 CAB100B wiring diagrams

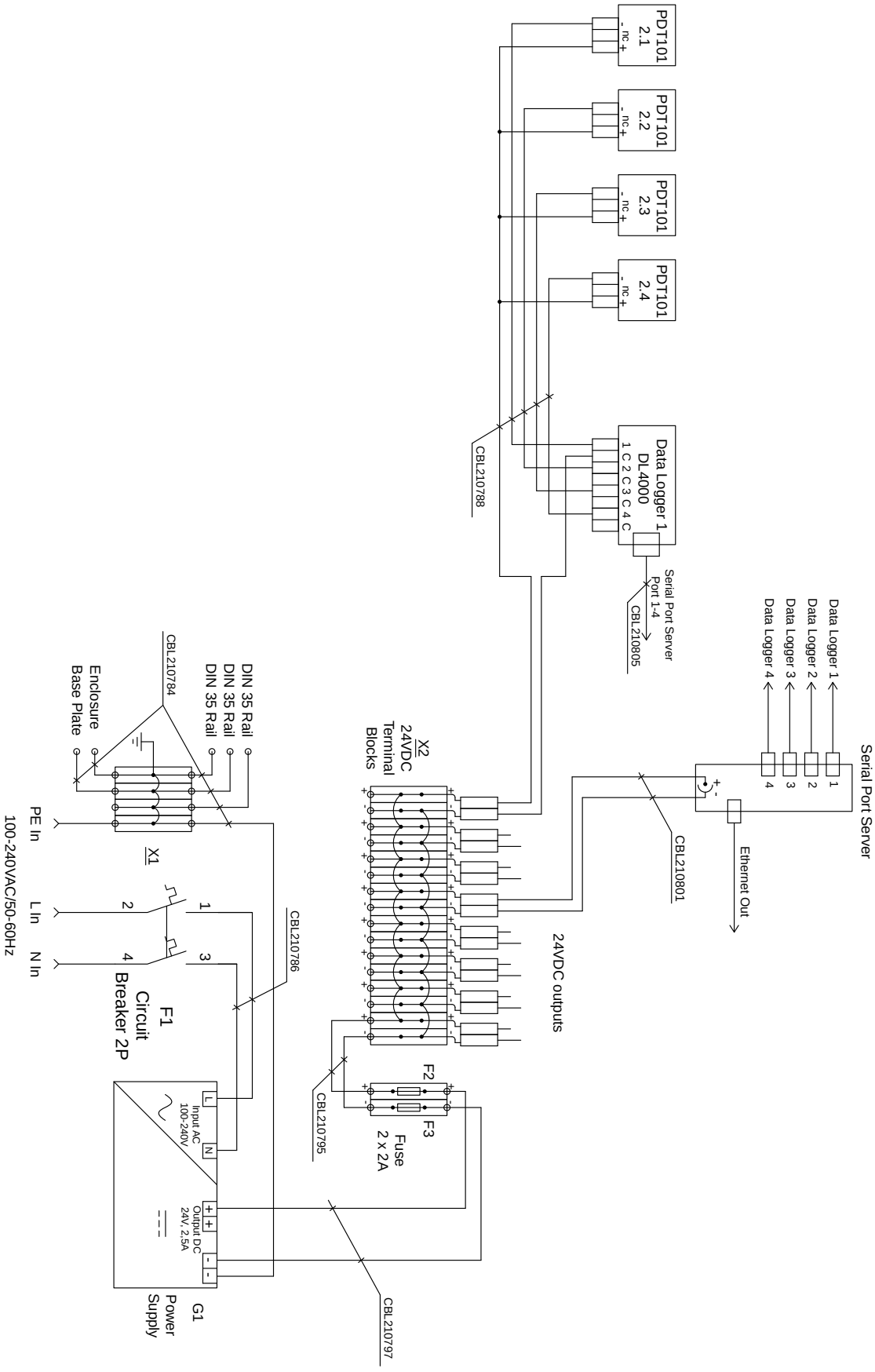


Figure 17 Wiring diagram for CAB100B PDT101 model

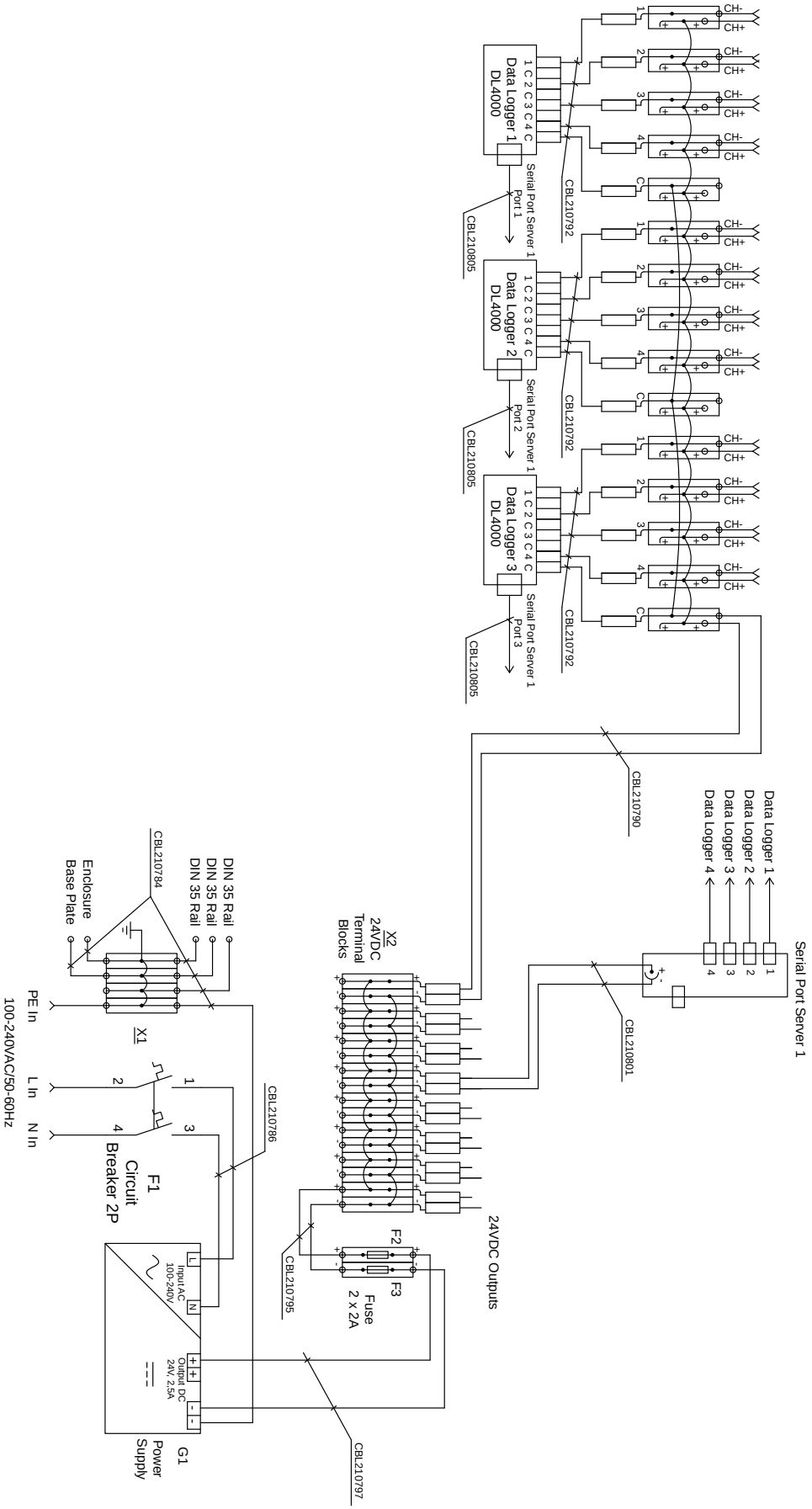


Figure 18 Wiring diagram for CAB100B analog channel model with loop-powered measurement devices

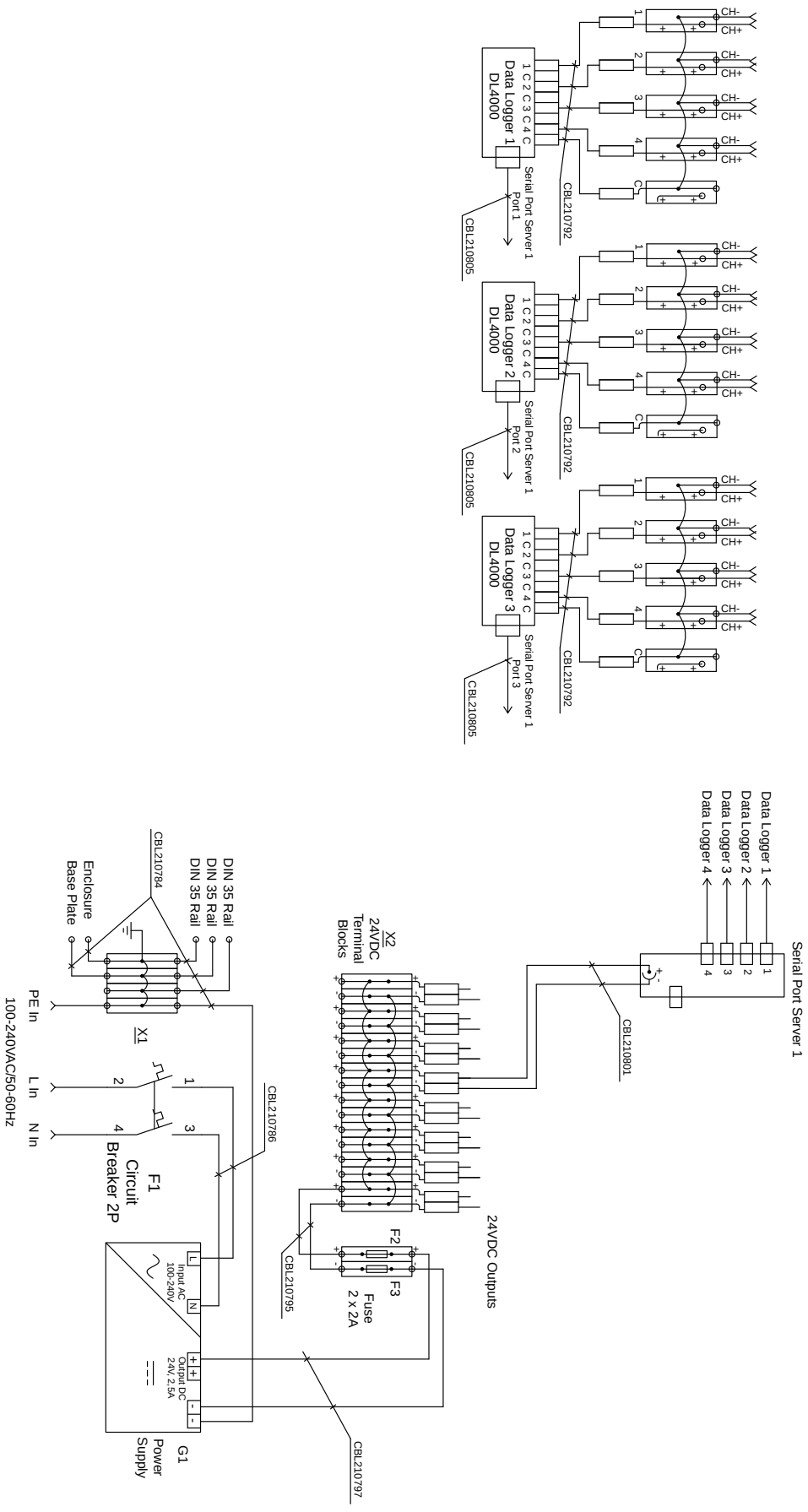


Figure 19 Wiring diagram for CAB100B analog channel model with externally powered measurement devices

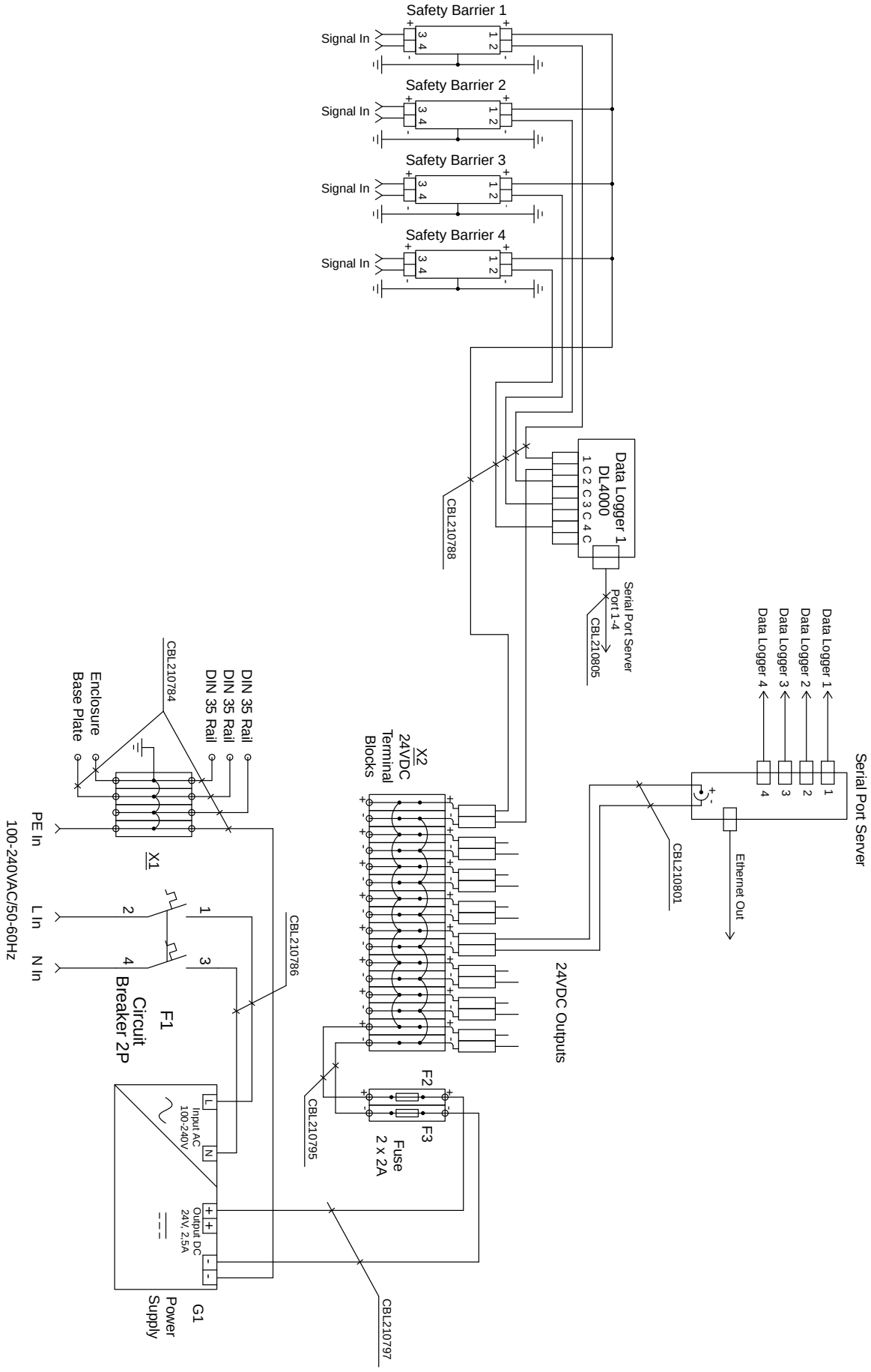


Figure 20 Wiring diagram for CAB100B safety barrier model

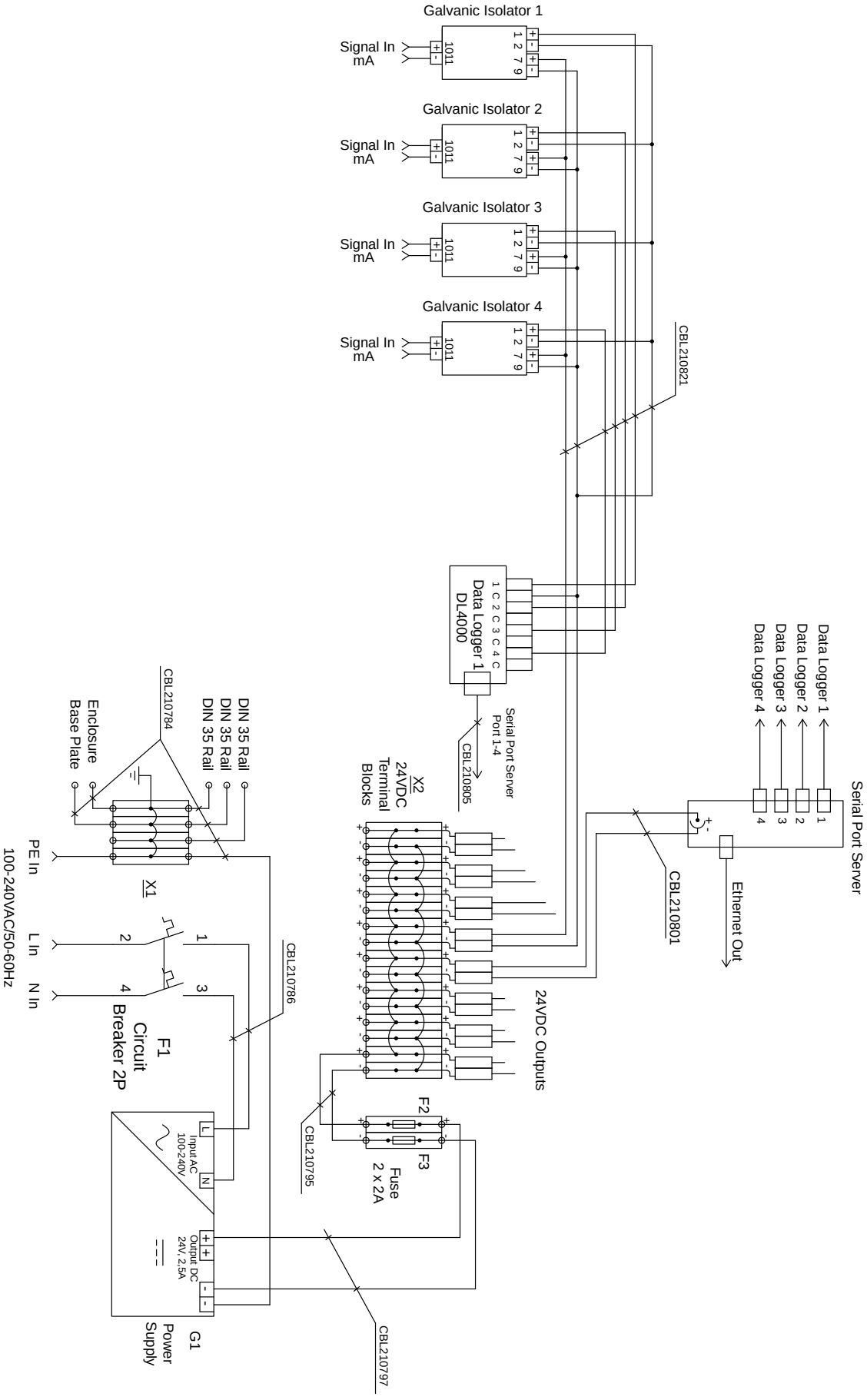


Figure 21 Wiring diagram for CAB100B galvanic isolator model

Appendix B. Layout diagrams

B.1 CAB100A layout diagrams

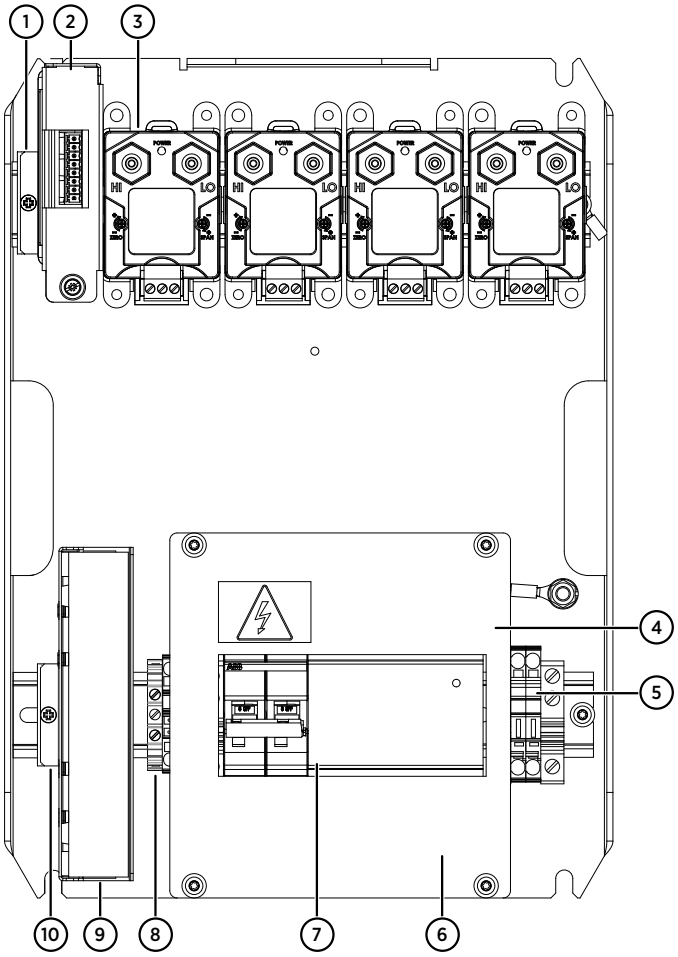


Figure 22 Main components inside CAB100A, PDT101 model with serial port server and 24 V DC power supply

1 Mounting clamp for DL4000 data logger
2 DL4000 data logger
3 PDT101 transmitters (4 pcs)
4 Cover plate
5 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
6 100 – 240 V AC mains input and grounding point (under cover plate)
7 Circuit breaker and power supply module
8 Grounding terminal block
9 Serial port server
10 Mounting clamp for serial port server

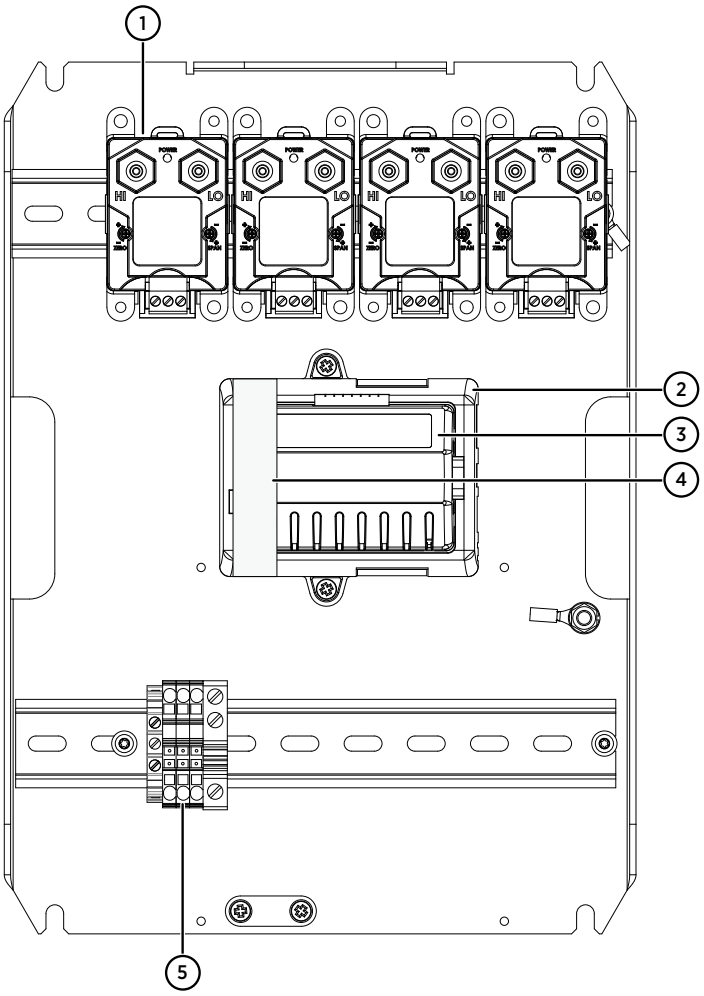


Figure 23 Main components inside CAB100A, PDT101 model with vNet PoE

1 PDT101 transmitters (4 pcs)
2 vNet PoE data logger interface
3 DL4000 data logger
4 Protective label. **Remove before installation.**
5 Grounding terminal block

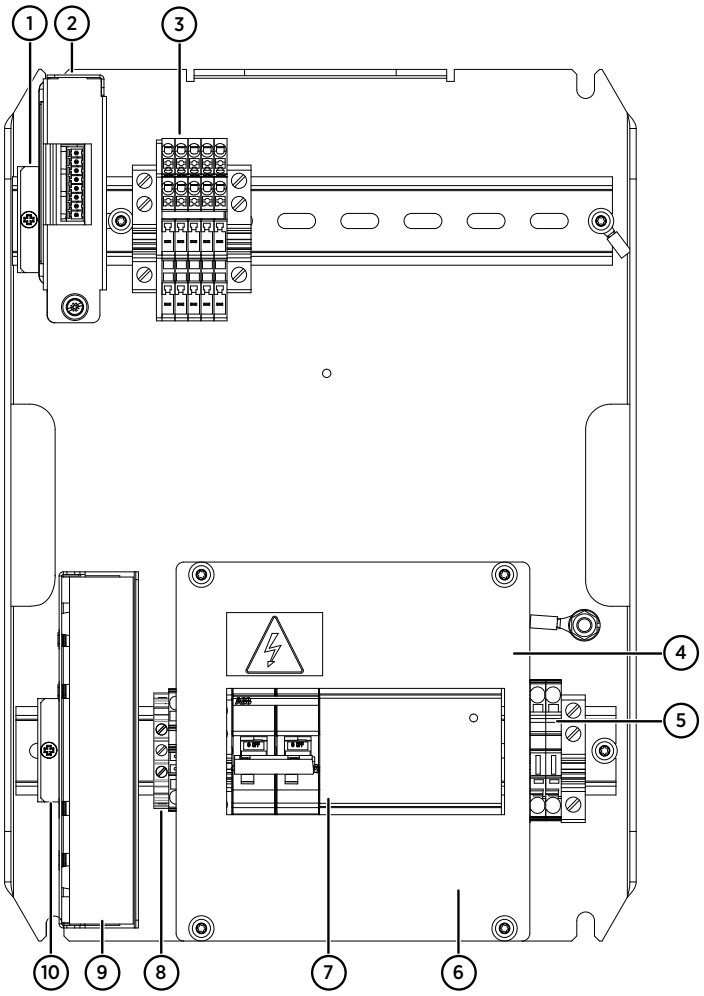


Figure 24 Main components inside CAB100A, analog channel model with serial port server and 24 V DC power supply

1 Mounting clamp for DL4000 data logger
2 DL4000 data logger
3 Terminal block for analog input channels
4 Cover plate
5 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
6 100 – 240 V AC mains input and grounding point (under cover plate)
7 Circuit breaker and power supply module
8 Grounding terminal block
9 Serial port server
10 Mounting clamp for serial port server

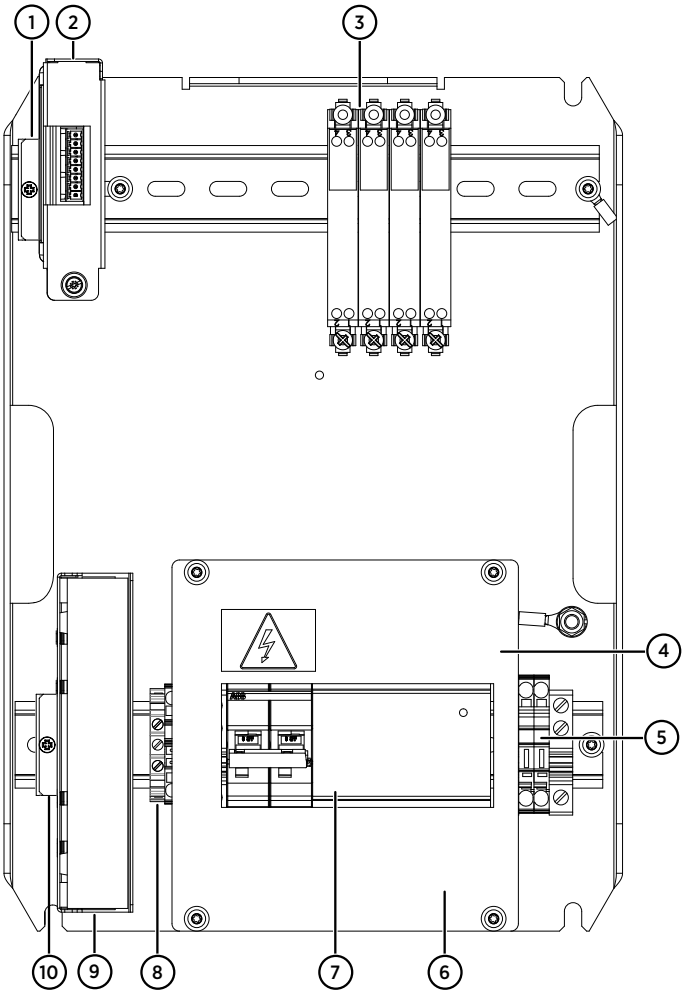


Figure 25 Main components inside CAB100A, safety barrier model with serial port server and 24 V DC power supply

1 Mounting clamp for DL4000 data logger
2 DL4000 data logger
3 Safety barriers (4 pcs)
4 Cover plate
5 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
6 100 – 240 V AC mains input and grounding point (under cover plate)
7 Circuit breaker and power supply module
8 Grounding terminal block
9 Serial port server
10 Mounting clamp for serial port server

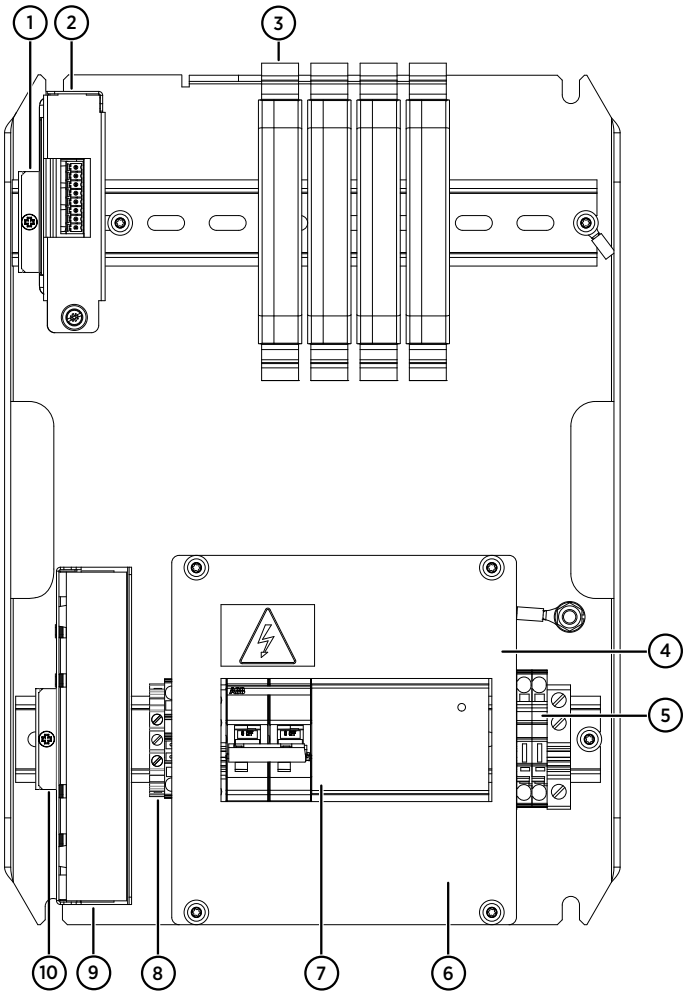


Figure 26 Main components inside CAB100A, galvanic isolator model with serial port server and 24 V DC power supply

1 Mounting clamp for DL4000 data logger
2 DL4000 data logger
3 Galvanic isolators (4 pcs)
4 Cover plate
5 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
6 100 – 240 V AC mains input and grounding point (under cover plate)
7 Circuit breaker and power supply module
8 Grounding terminal block
9 Serial port server
10 Mounting clamp for serial port server

B.2 CAB100B layout diagrams

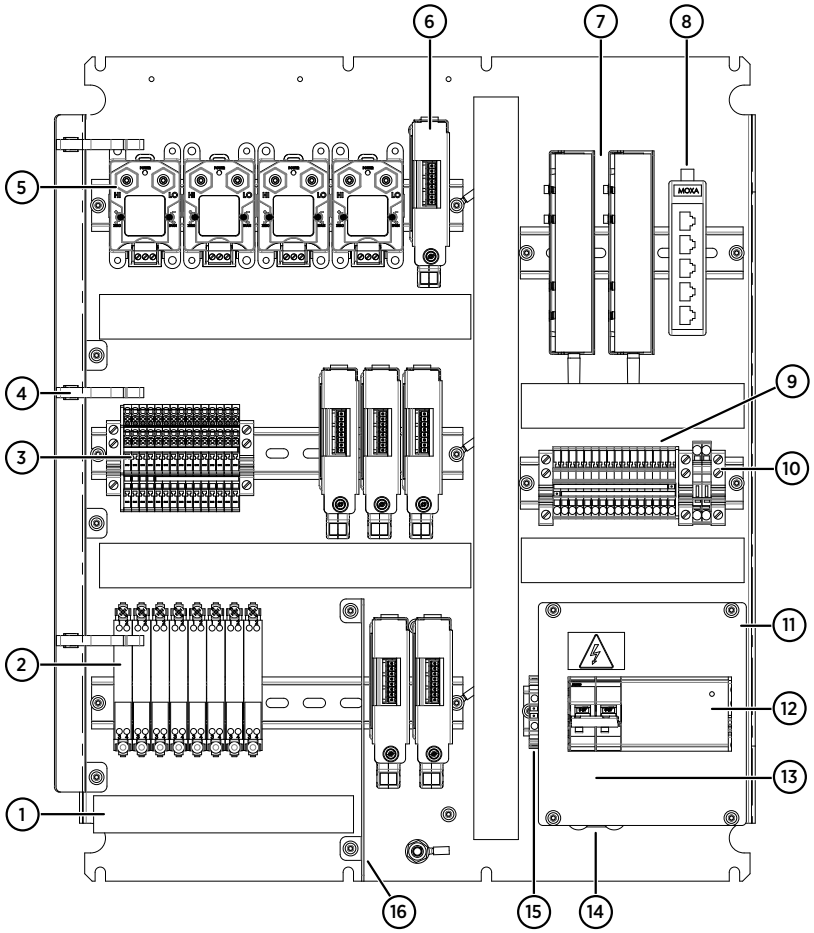


Figure 27 Main components inside CAB100B, mixed model with PDT101s, analog input channels, and safety barriers

1 Cable duct for intrinsically safe connections
2 Safety barriers (8 pcs)
3 Terminal block for analog input channels
4 Holders for tubing (3 pcs)
5 PDT101 transmitters (4 pcs)
6 DL4000 data loggers (6 pcs)
7 Serial port servers (2 pcs)
8 Ethernet switch
9 24 V DC power block
10 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
11 Cover plate
12 Circuit breaker and power supply module
13 100 – 240 V AC mains input (under cover plate)
14 Cable strain relief
15 Grounding terminal block
16 Partition plate separating intrinsically safe and non-intrinsically safe connections

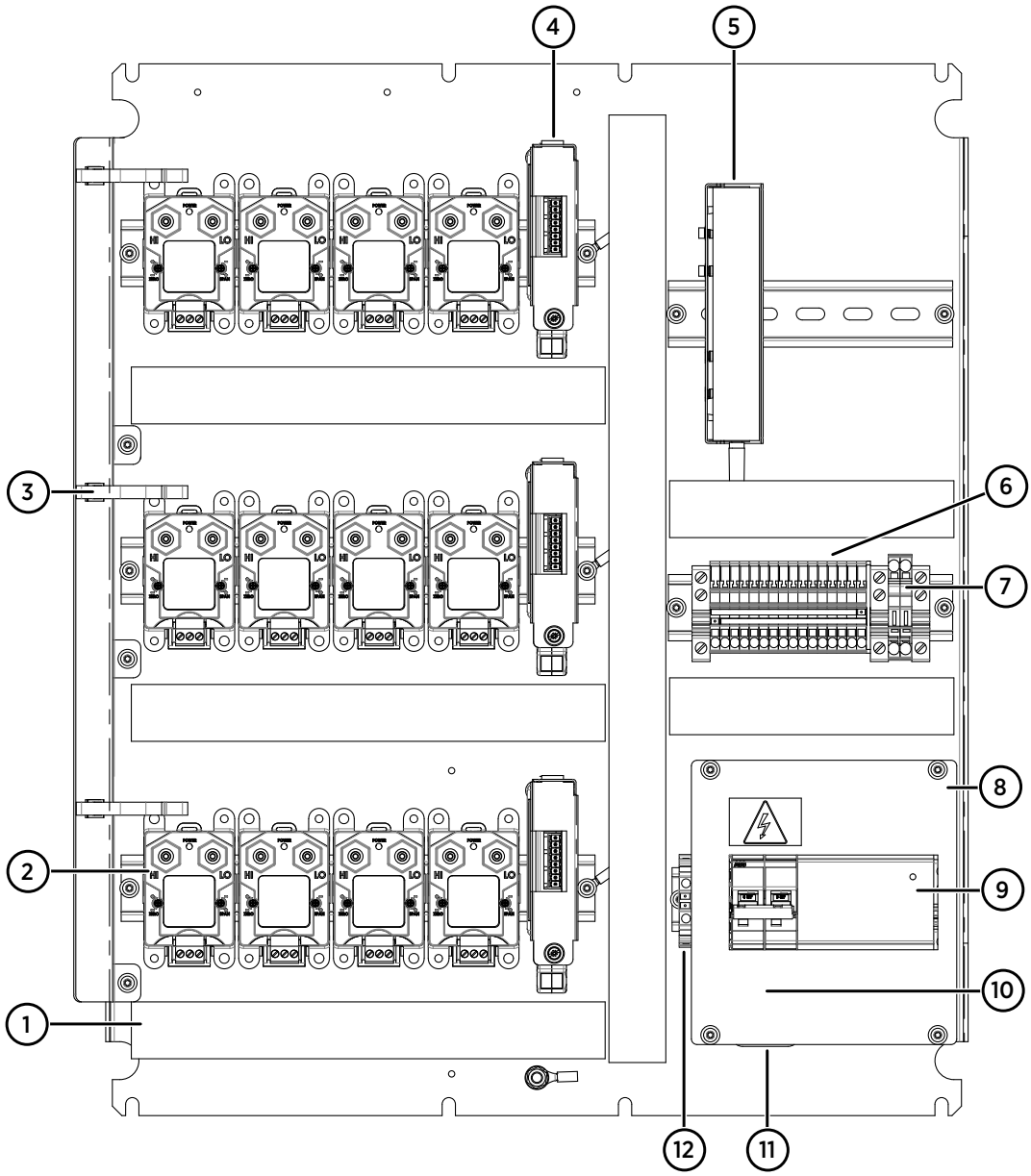


Figure 28 Main components inside CAB100B, PDT101 model

1 Cable duct
2 PDT101 transmitters (12 pcs)
3 Holders for tubing (3 pcs)
4 DL4000 data loggers (3 pcs)
5 Serial port server
6 24 V DC power block
7 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
8 Cover plate
9 Circuit breaker and power supply module
10 100 – 240 V AC mains input (under cover plate)
11 Cable strain relief
12 Grounding terminal block

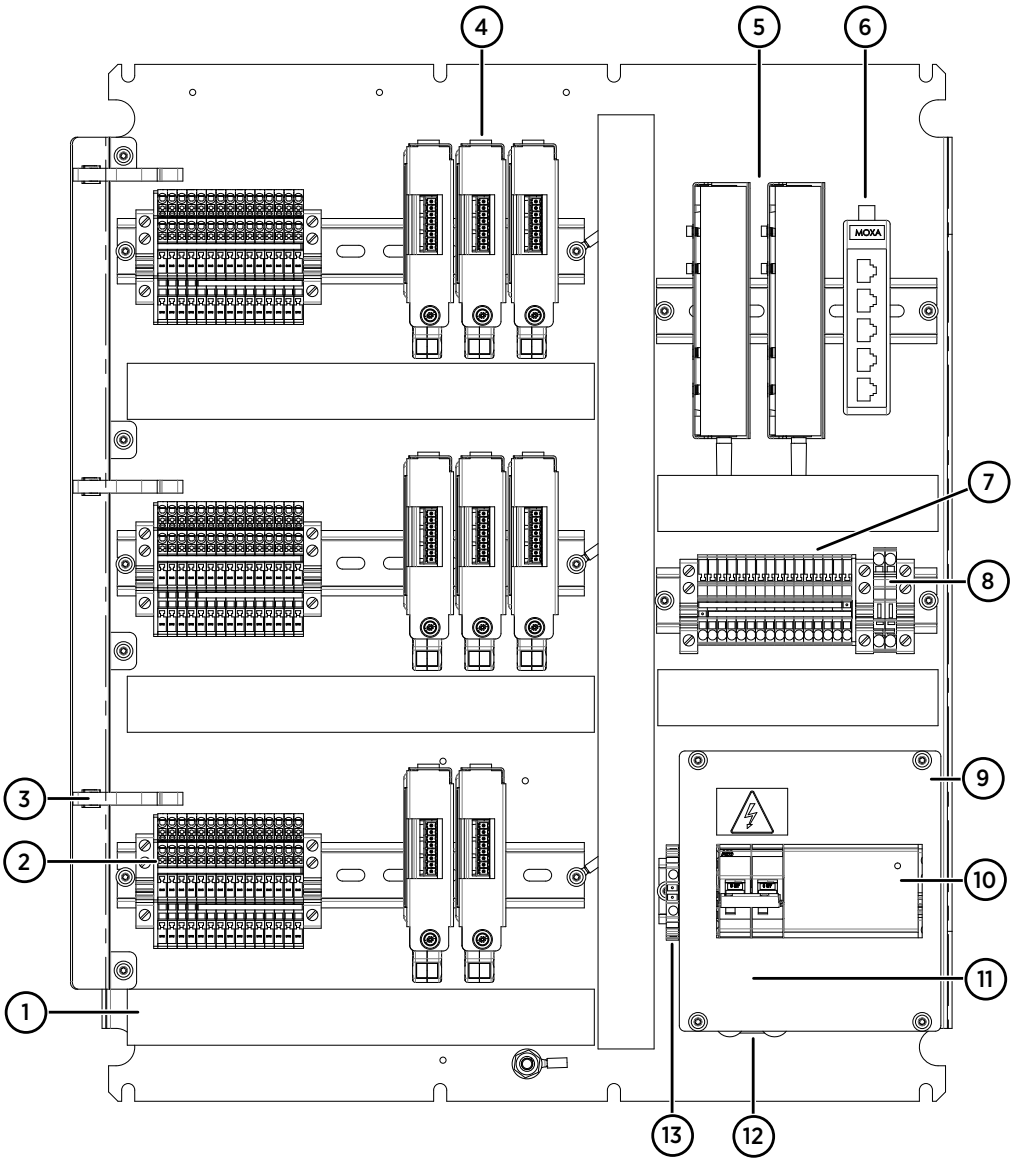


Figure 29 Main components inside CAB100B, analog channel model

1 Cable duct
2 Terminal block for analog input channels (3 pcs)
3 Holders for tubing (3 pcs)
4 DL4000 data loggers (8 pcs)
5 Serial port servers (2 pcs)
6 Ethernet switch
7 24 V DC power block
8 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
9 Cover plate
10 Circuit breaker and power supply module
11 100 – 240 V AC mains input (under cover plate)
12 Cable strain relief
13 Grounding terminal block

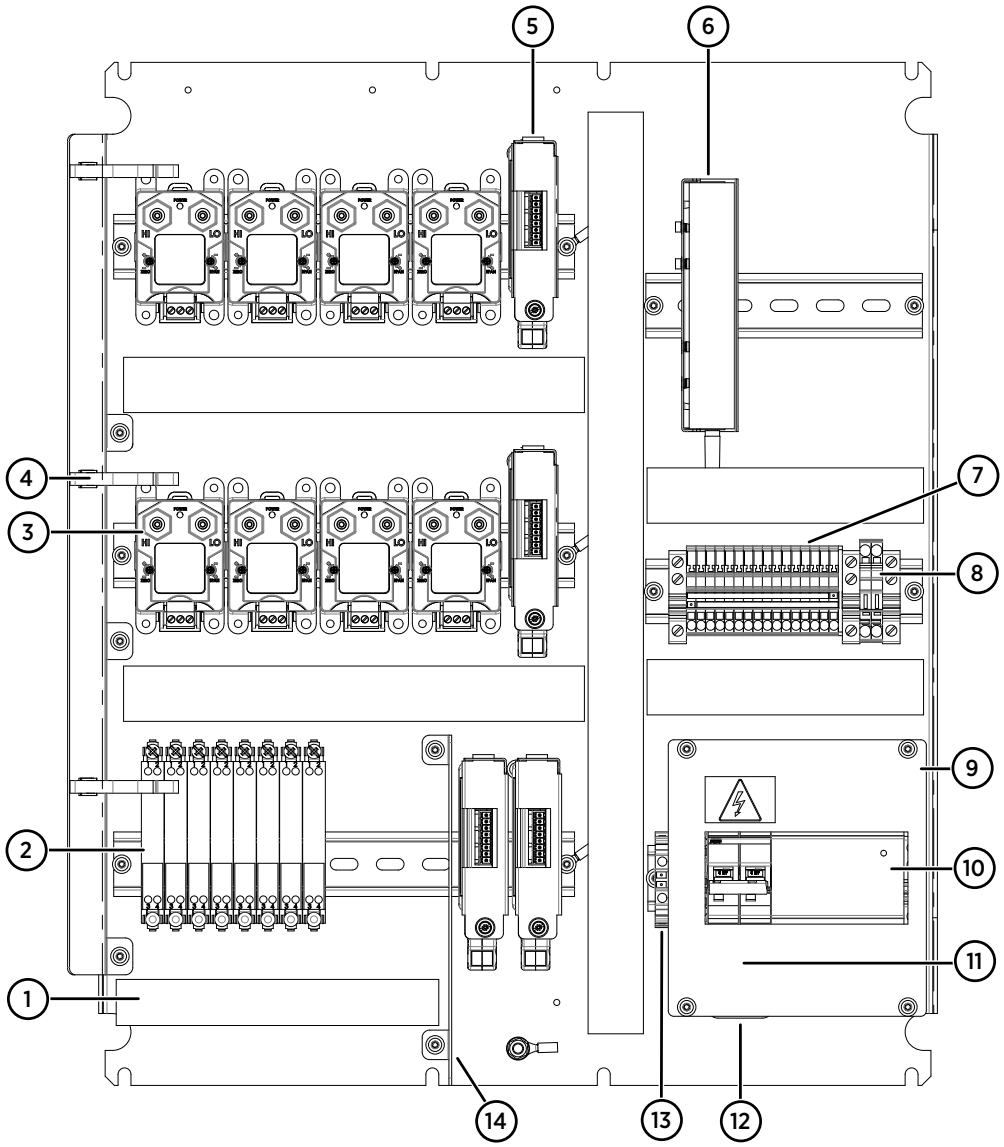


Figure 30 Main components inside CAB100B, mixed model with PDT101s and safety barriers

1 Cable duct for intrinsically safe connections
2 Safety barriers (8 pcs)
3 PDT101 transmitters (8 pcs)
4 Holders for tubing (3 pcs)
5 DL4000 data loggers (4 pcs)
6 Serial port server
7 24 V DC power block
8 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
9 Cover plate
10 Circuit breaker and power supply module
11 100 – 240 V AC mains input (under cover plate)
12 Cable strain relief
13 Grounding terminal block
14 Partition plate separating intrinsically safe and non-intrinsically safe connections

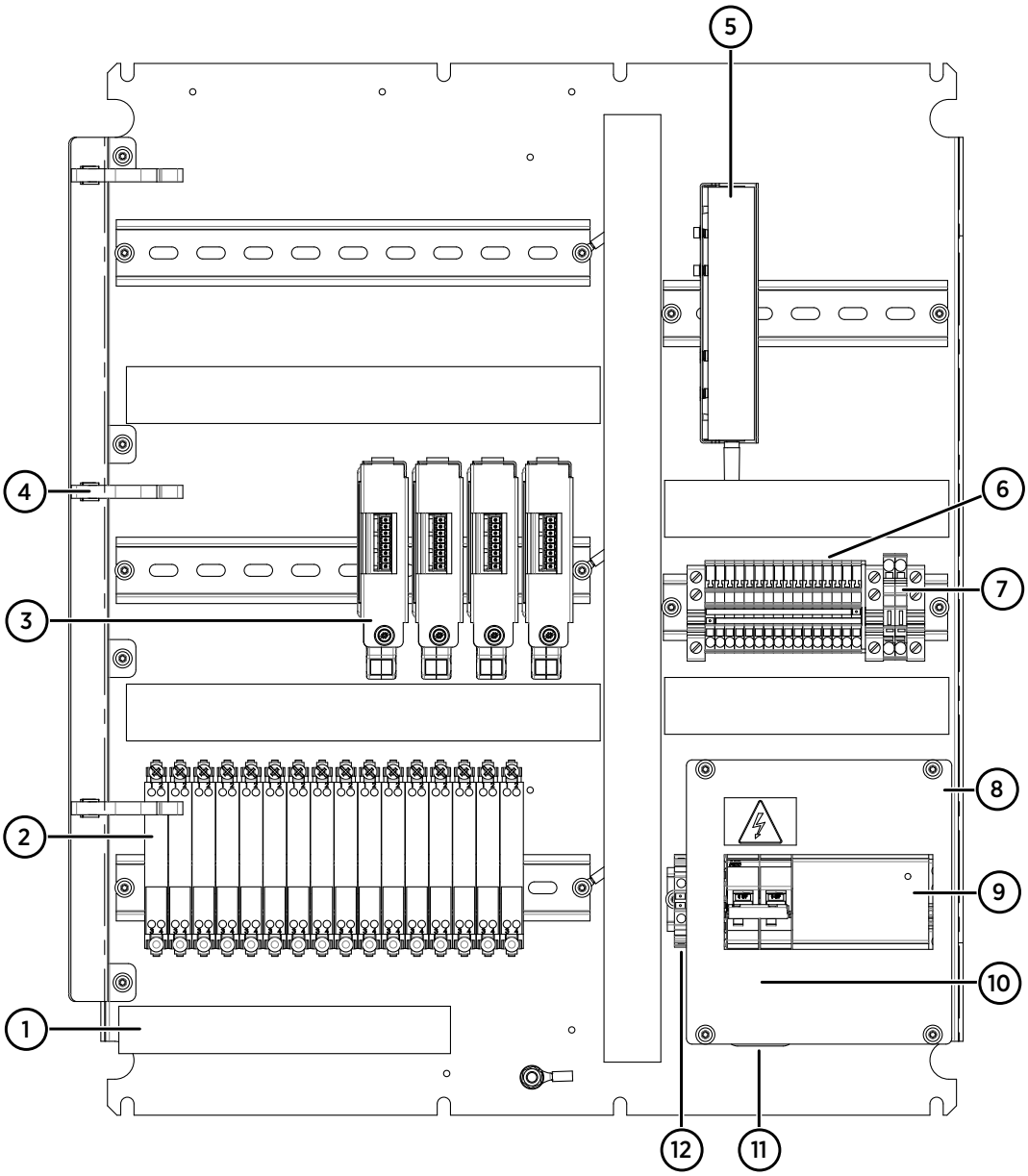


Figure 31 Main components inside CAB100B, safety barrier model

1 Cable duct for intrinsically safe connections
2 Safety barriers (16 pcs)
3 DL4000 data loggers (4 pcs)
4 Holders for tubing (3 pcs)
5 Serial port server
6 24 V DC power block
7 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
8 Cover plate
9 Circuit breaker and power supply module
10 100 – 240 V AC mains input (under cover plate)
11 Cable strain relief
12 Grounding terminal block

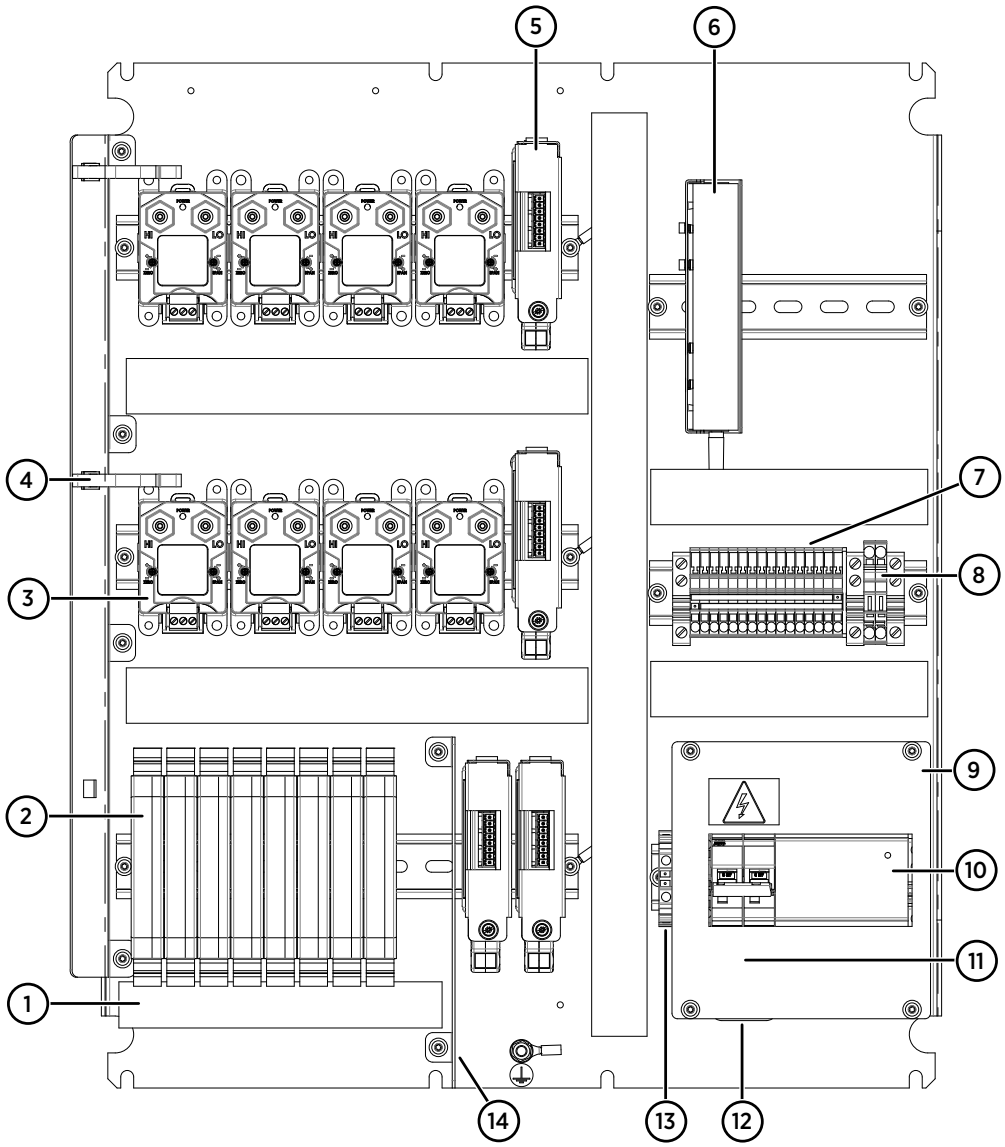


Figure 32 Main components inside CAB100B, galvanic isolator model

1 Cable duct for intrinsically safe connections
2 Galvanic isolators (8 pcs)
3 PDT101 transmitters (8 pcs)
4 Holders for tubing (3 pcs)
5 DL4000 data loggers (4 pcs)
6 Serial port server
7 24 V DC power block
8 24 V DC fuses T2.5A, 5 × 20 mm (2 pcs)
9 Cover plate
10 Circuit breaker and power supply module
11 100 – 240 V AC mains input (under cover plate)
12 Cable strain relief
13 Grounding terminal block
14 Partition plate separating intrinsically safe and non-intrinsically safe connections

Appendix C. Removing and recycling data logger battery

Vaisala data loggers contain a non-chargeable lithium primary battery. When disposing of data loggers, remove the battery first. Recycle it separately from the rest of the data logger parts.

- Pliers or wrench
- Screwdriver
- Wire cutters

1. Remove the 2 threaded nuts next to the connector on the logger body with pliers or wrench (for example, a 5 mm box wrench or an adjustable wrench).
2. Use a screwdriver or pen to open the logger housing: push down the clips in the two openings on the side of the logger (next to the ventilation grille) and pull the housing open.
3. Cut the pins that connect the battery to the circuit board from the ends of the battery.
4. Twist the battery off the circuit board. To prevent short circuits, protect the battery contacts with tape (or put the battery in a plastic bag) before putting it to the battery recycling bin.

CAUTION! The lithium inside the battery can cause a fire hazard or injury if handled incorrectly. Follow these precautions:

- Do not break the battery or attempt to open it.
- Do not expose the battery to temperatures over +100 °C (212 °F).
- Do not expose the contents of the battery to water.

Recycle the battery and the data logger electronics and housing in accordance with local waste management practices and regulations. Do not dispose of with regular household refuse.

Maintenance and calibration services

Vaisala offers comprehensive customer care throughout the life cycle of our measurement instruments and systems. Our factory services are provided worldwide with fast deliveries. For more information, see www.vaisala.com/calibration.

- Vaisala Online Store at store.vaisala.com is available for most countries. You can browse the offering by product model and order the right accessories, spare parts, or maintenance and calibration services.
- To contact your local maintenance and calibration expert, see www.vaisala.com/contactus.

Warranty

For standard warranty terms and conditions, see www.vaisala.com/warranty.

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

Technical support

Contact Vaisala technical support at helpdesk@vaisala.com. Provide at least the following supporting information as applicable:

- Product name, model, and serial number
- Software/Firmware version
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see www.vaisala.com/support.

Recycling

Recycle all applicable material.

Follow the statutory regulations for disposing of the product and packaging.

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