

A1800 ALPHA® meter special installation instructions

3-element meters used for 3-wire delta service applications

General

This leaflet contains special installation instructions for 3-wire delta services temporarily using 3-element A1800 ALPHA meters normally designed for 4-wire wye applications. This is not recommended for general use; however, when necessary for emergency requirements, this IL provides suggestions and cautions for making these connections.

All meters are calibrated and tested before shipment. For proper installation, accuracy, and maximum life of the meter, use the following special installation procedures.

Note that this is a non-standard wiring configuration and requires special caution when meters are used at normal line voltages. The following DANGER statement on safety when changing batteries must be observed!



Dangerous voltages are present

Use authorized utility procedures to install and service metering equipment. Dangerous voltages are present! Equipment damage, personal injury, or death can result from wiring an ungrounded meter and improperly grounded metering transformers if proper safety precautions are not followed.

Use circuit closing devices on any current transformer secondaries. Full primary line voltage can exist across the open, un-shortened secondary terminals of current transformers. Equipment damage, personal injury, or death can result if circuit closing devices are not used.

When 3-element meters designed for 4-wire wye connections are used to meter 3-wire delta services as described in this document, the voltage at the battery terminals will be at line voltage level. **Always** de-energize the meter by removing all voltage connections from the main terminals before connecting or installing a battery. Batteries should **never** be replaced when the meter is connected at normal line voltages—either with direct connections or through voltage transformers.

When 3-element meters are connected for 3-wire delta services, **never use external batteries or other external power supplies to energize a meter that could be connected to line voltages.** If such external power supply connections are made and line voltage is applied to the meter terminals, the voltage at the terminals used for an optional external battery connection will be at the line voltage. Connecting a battery or external DC power supply to these points when using this connection will place any such connected device at full line voltage, creating the risk of a short-circuit, a dangerous high-voltage, or both!

Failure to observe these statements could result in serious injury or death!

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Installation

See “Wiring diagrams” on page 6.

1. Determine the meter installation location. Make certain class and service connections are compatible before installing the meter.
2. Make certain that the meter hanger, located on the base of the A1800 ALPHA meter, is in the desired position. Sliding the hanger down to the hidden position will hide the top supporting screw.
3. Use at least an M6 screw for the top supporting position and hang the meter on it, making sure it is level. The meter will operate correctly in any position, but failing to mount the meter in a proper vertical position will place the other mounting holes at the wrong place on the mounting panel.
4. Use at least an M6 screw in each of the bottom supporting positions to secure the A1800 ALPHA meter enclosure; the mounting holes are 7.1 mm in diameter.

▲ WARNING

Before wiring the meter into the power circuit, use authorized utility procedures to install proper ground connections on all appropriate VT and CT circuits and on the meter ground terminals. Also, be certain that CTs on energized lines are securely short-circuited either with circuit-closing test switches or with properly installed connectors. Dangerous voltage can be present. Equipment damage, personal injury, or death can result from wiring an ungrounded meter or mishandling improperly grounded metering transformer circuits.

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5. Install the ground connections.

NOTICE

A1800 ALPHA meter terminals are designed for optimum use with copper wiring. For direct connect-rated meters, aluminum wiring can be used. If so, it is extremely important to use proper aluminum wiring practices. Aluminum wiring compound or wiring paste (grease) should be used when attaching the bottom-connected terminals. Tighten the connections, allow them to relax for a few minutes, then tighten them again. This will minimize the cold-flow effects of aluminum cable. Failure to observe correct practices for installing aluminum wiring could lead to overheating of the terminals, equipment failures, or damaging fires. Where possible, Elster recommends copper-compatible meter terminals and aluminum wire. Such adapters also can provide for use of larger aluminum conductors than can otherwise be used in the terminals of the A1800 ALPHA meter.

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6. Ensure that primary or system voltages are either disconnected from a power source or that utility safety practices for handling live circuits are strictly followed.
 7. If applicable, ensure that any current transformers are de-energized with no high-voltage primary voltage connected to their primaries and no primary current circulating through them. If primary current and voltage are present in the current transformers, it is extremely important to verify that their safety shorting connections are in place on all secondary winding connections prior to handling CT connections to the meter.
 8. Wire the meter using color-coded wire according to locally applicable standards. The terminal block dimensions on the A1800 ALPHA meter support cable sizes of approximately 5 mm in diameter for transformer rated connections (10 mm in diameter for direct connect).
 9. After wiring the meter and making any communication and relay connections, assemble the terminal cover and apply power.

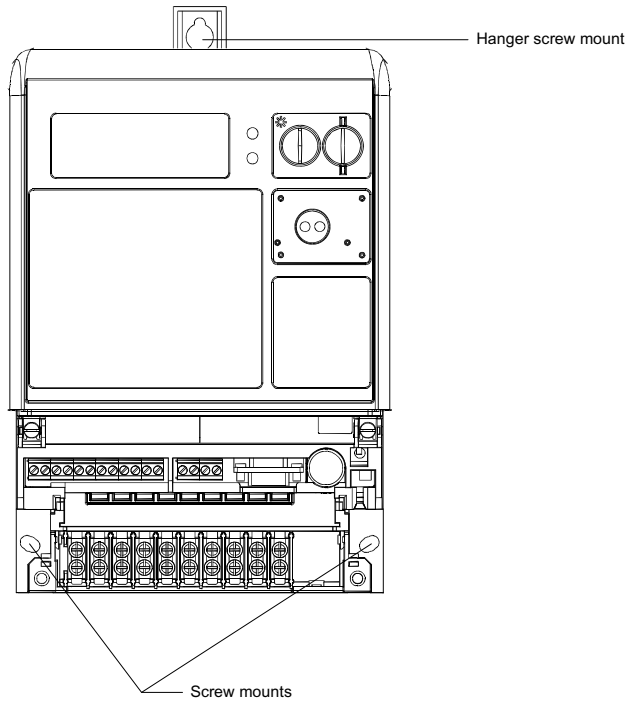
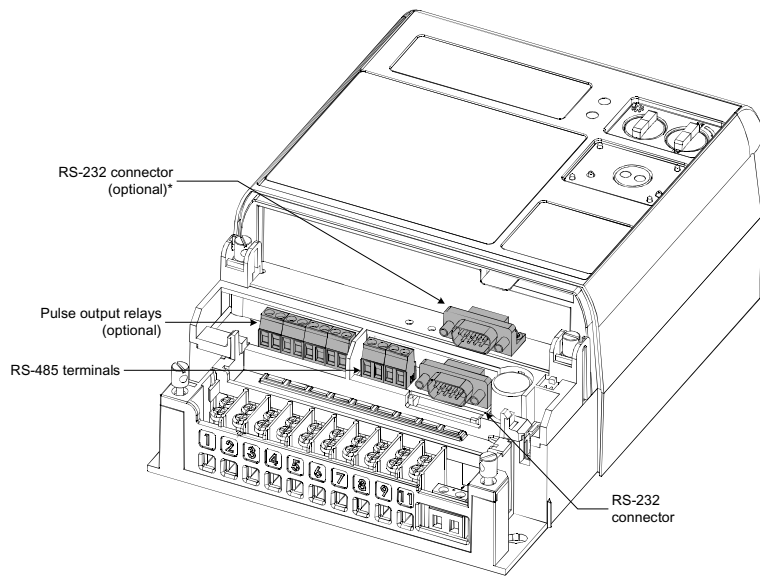
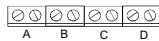


Figure 1. A1800 ALPHA meter mounting screw locations



*Present when optional second communication port is installed

Pulse output relay default values

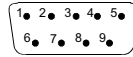


- A = Wh del
- B = varh del
- C = Wh rec
- D = varh rec

RS 485 connections

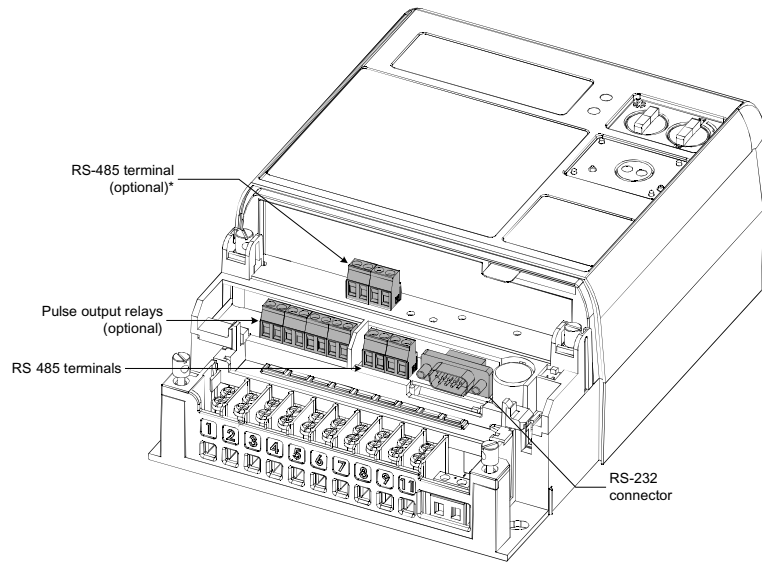


RS-232 connector



- 1 = NC
- 2 = Rx
- 3 = Tx
- 4 = DTR
- 5 = GND
- 6 = DSR
- 7 = RTS
- 8 = NC
- 9 = NC

Figure 2. A1800 ALPHA meter with RS-232 as second communication port



*Present when optional second communication port is installed

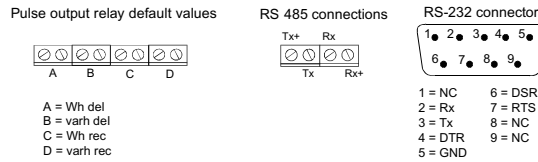


Figure 3. A1800 ALPHA meter with RS-485 as second communication port

Installing a TOU battery

The TOU battery is replaceable without breaking the meter seal. Use only Elster-recommended TOU batteries. See your Elster representative for details.



Dangerous voltage are present

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Use circuit closing devices on any current transformer secondaries. Equipment damage, personal injury, or death can result if circuit closing devices are not used.

When 3-element meters designed for 4-wire wye connections are used to meter 3-wire delta services as described in this document, the voltage at the battery terminals will be at line voltage levels. **Always** de-energize the meter by removing all voltage connections from the main terminals before connecting or installing a battery. Batteries should **never** be replaced when the meter is connected to normal line voltages—either with direct connections or through voltage transformers.

Failure to observe these warnings could result in serious injury or death!

Before installing the battery, the A1800 ALPHA meter must have been energized for at least 1 minute within the preceding 60 minutes. This ensures that the super capacitor is properly charged and that the battery is not immediately drained upon installation. If this is not done, then the battery may be damaged and the meter may not function properly. While the meter is powered, verify that the LCD is active and functioning.

To install the battery:

1. If the meter has not been energized for at least 1 minute during the previous 60 minutes, energize the meter for 1 minute. If the meter has been energized for at least 1 minute during the previous 60 minutes, proceed to step 2.
2. De-energize the meter.
3. Remove the terminal cover screws and seals.
4. Remove the terminal cover to expose the battery well.

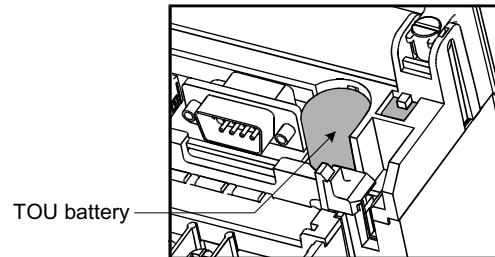


Figure 4. Battery well and connector

5. Slide the battery leads into the connector to the right of the battery well.
6. Place the battery firmly in the battery well with the leads down.
7. Replace the terminal cover.
8. Energize the meter and verify that the LCD becomes active and functioning properly. Verify that the low battery symbol on the LCD is not displayed.
9. Replace the terminal cover screws and seals.
10. Reprogram the meter and clear the errors, as necessary.

Metercat programming considerations

The A1800 ALPHA meter has an optional smart autolock feature that is described in the technical manual. This feature may not work as desired in a meter that was initially configured as a 4-wire meter and is installed in a 3-wire installation (that is, the meter may not be configured to find and lock on a 3-wire installation and will result in displaying an error code on the LCD). To eliminate this smart autolock feature issue you may encounter in 4-wire meters that may be installed in 3-wire installations:

- In the Basic Settings panel of the Service Test tab, set the Service Test Mode to None. This setting will turn off the smart autolock feature.
- If the smart autolock feature is desired, set the following parameters in the Service Test tab:
 - a. In the Basic Settings panel, set the Service Test Mode to Smart Auto Lock.
 - b. In the Advanced Settings panel, set the Meter Configuration to Portable. Delete all service connections except for the service types that exist in your service territory.

Reprogram the meter with the modified service test component.

Wiring diagrams

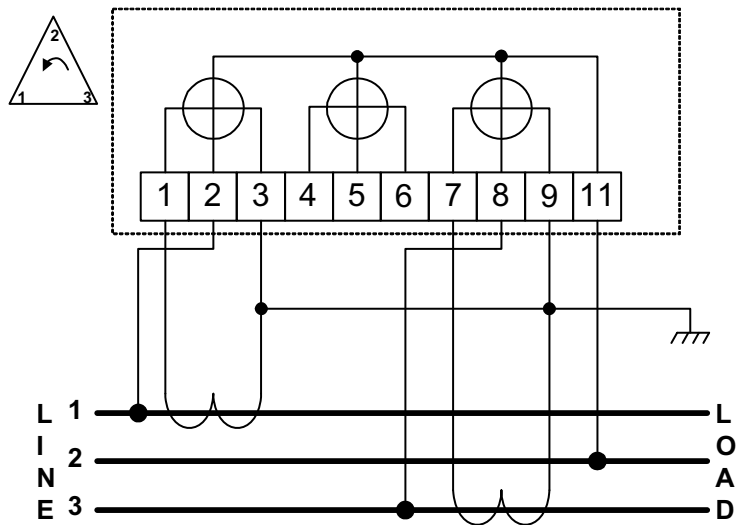


Figure 5. 3-wire delta system temporarily wired using 3-element meter with sequential connections and configured for 4-wire wye connections, using 2 current transformers and direct line connections

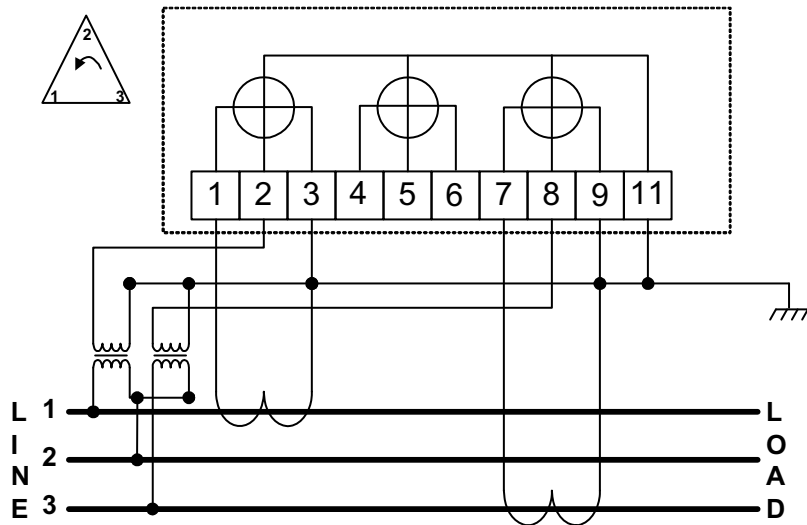


Figure 6. 3-wire delta system temporarily wired using 3-element meter with sequential connections and configured for 4-wire wye connections, using 2 current transformers and 2 voltage transformers

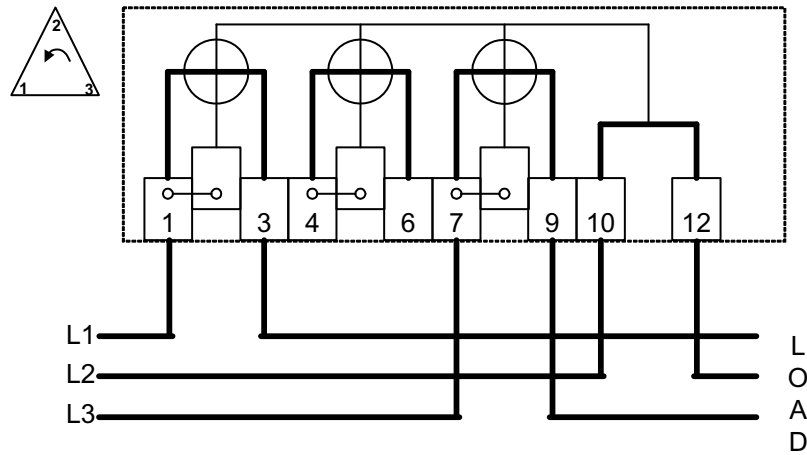


Figure 7. 3-wire delta system temporarily wired using a direct connect 3-element meter

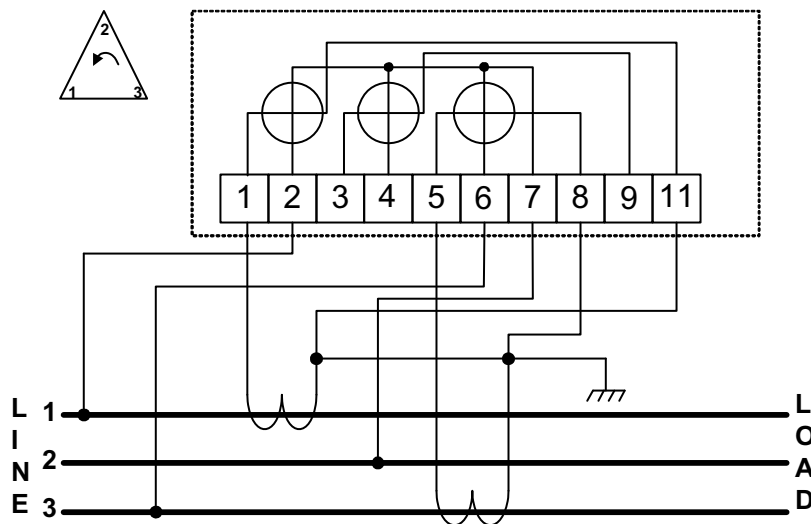


Figure 8. 3-wire delta system temporarily wired using a 3-element meter with symmetrical connections, 2 current transformers, and direct line voltage connections

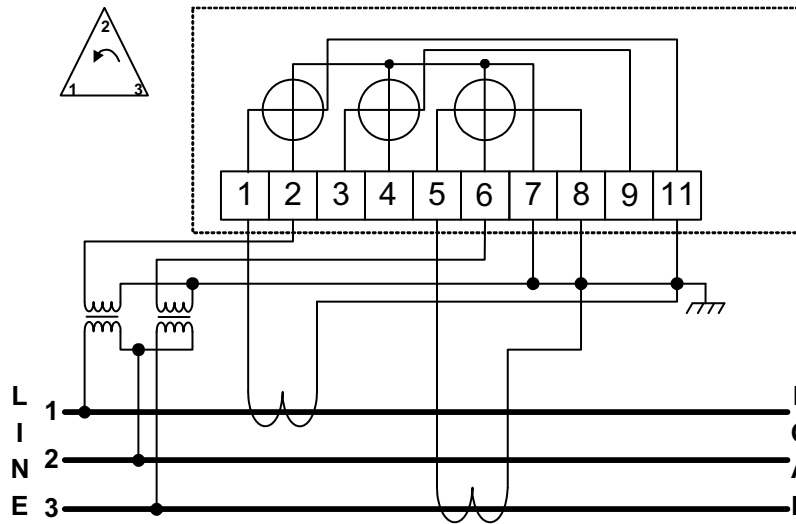


Figure 9. 3-wire delta system temporarily wired using 3-element meter with symmetrical connections, 2 current transformers, and 2 voltage transformers

Mounting dimensions

The A1800 ALPHA meter has the mounting dimensions shown in the following figures.

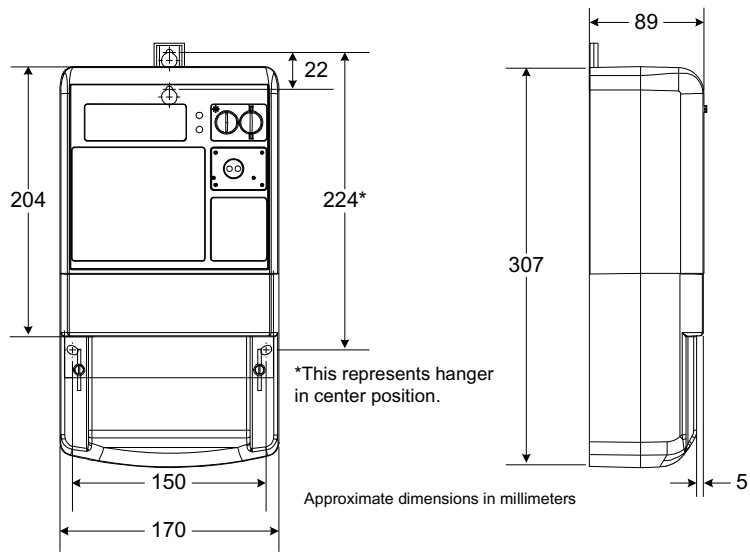


Figure 10. A1800 ALPHA meter, standard terminal cover

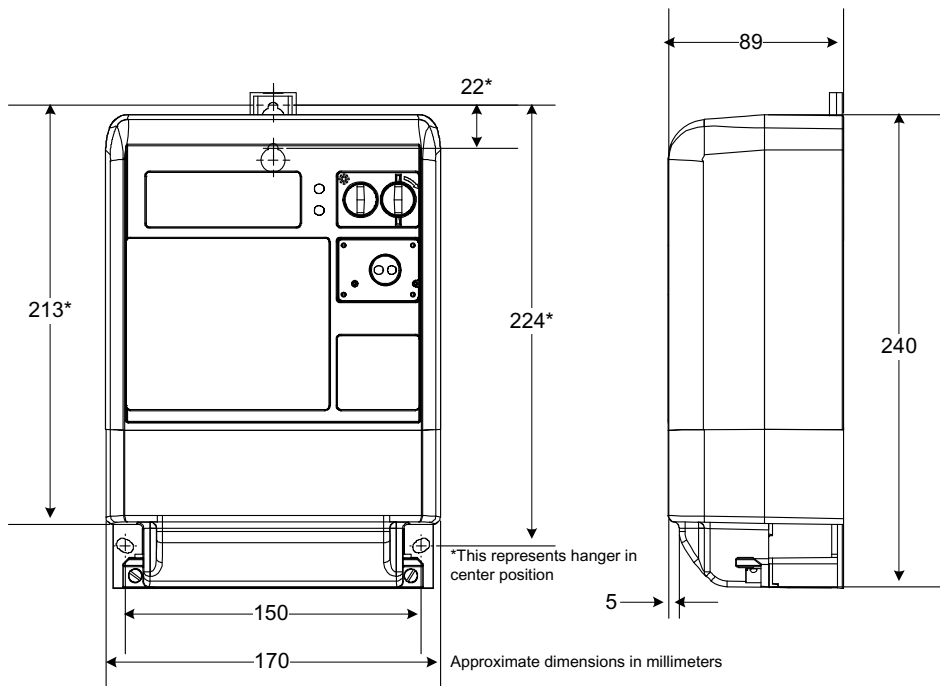
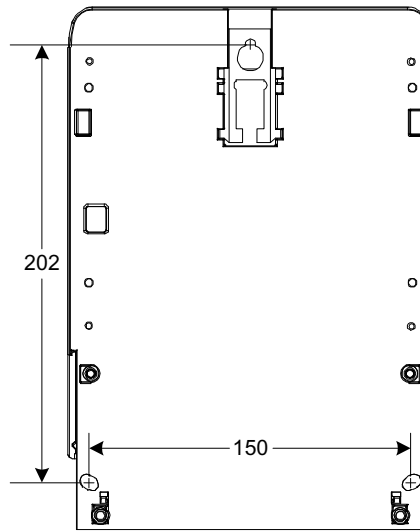
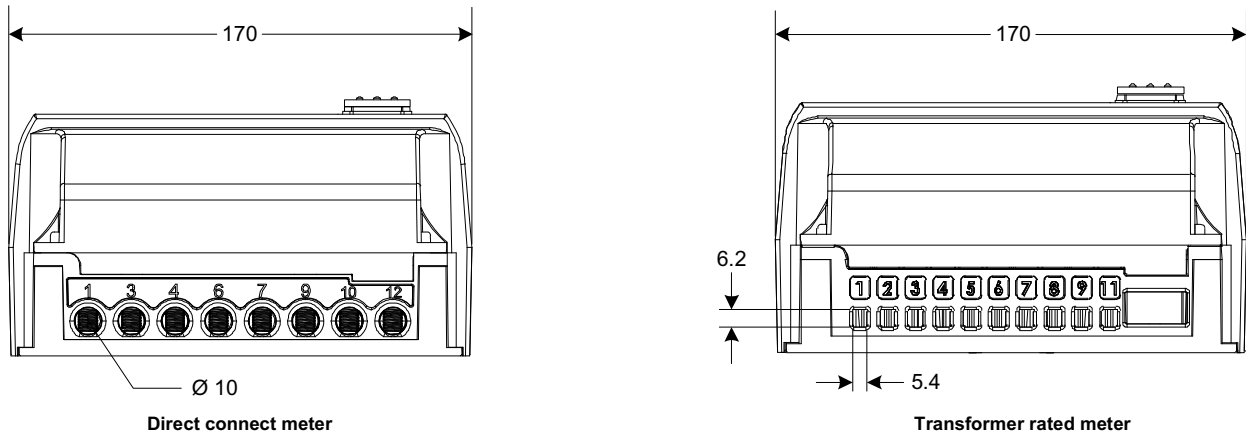


Figure 11. A1800 ALPHA meter, short terminal cover



Approximate dimensions in millimeters.

Figure 12. A1800 ALPHA meter dimensions, back of meter



Approximate dimensions in millimeters.

Figure 13. A1800 ALPHA meter, bottom view (direct connect and transformer rated)

Notes:

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