PLIM2000

ChargePoint® Networked Charging Station

Integrated Meter Guide

DANGER: RISK OF SHOCK. Before working with this equipment, disconnect the power to the PLIM2000 Integrated Meter. Follow standard practice and local code to de-energize the applicable circuit and lock out/tag out the disconnect before proceeding. Use a multimeter to test that power is off. Keep power off for this circuit until the work scope is completed. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

IMPORTANT: You must be a licensed electrician and complete online training to become a ChargePoint approved installer, and to get a login for ChargePoint. If you do not complete this training, you will be unable to complete the installation process.
To complete online training and become a certified installer, refer to ChargePoint University at: chargepoint.com/installers.

CAUTION: Do not use power tools during installation or servicing. Over-torquing can damage the equipment.

WARNING: Do not install or service the charging station in inclement weather. If you work in snow, rain, or wind, you must use a weather-proof shelter that covers all boxes and components.

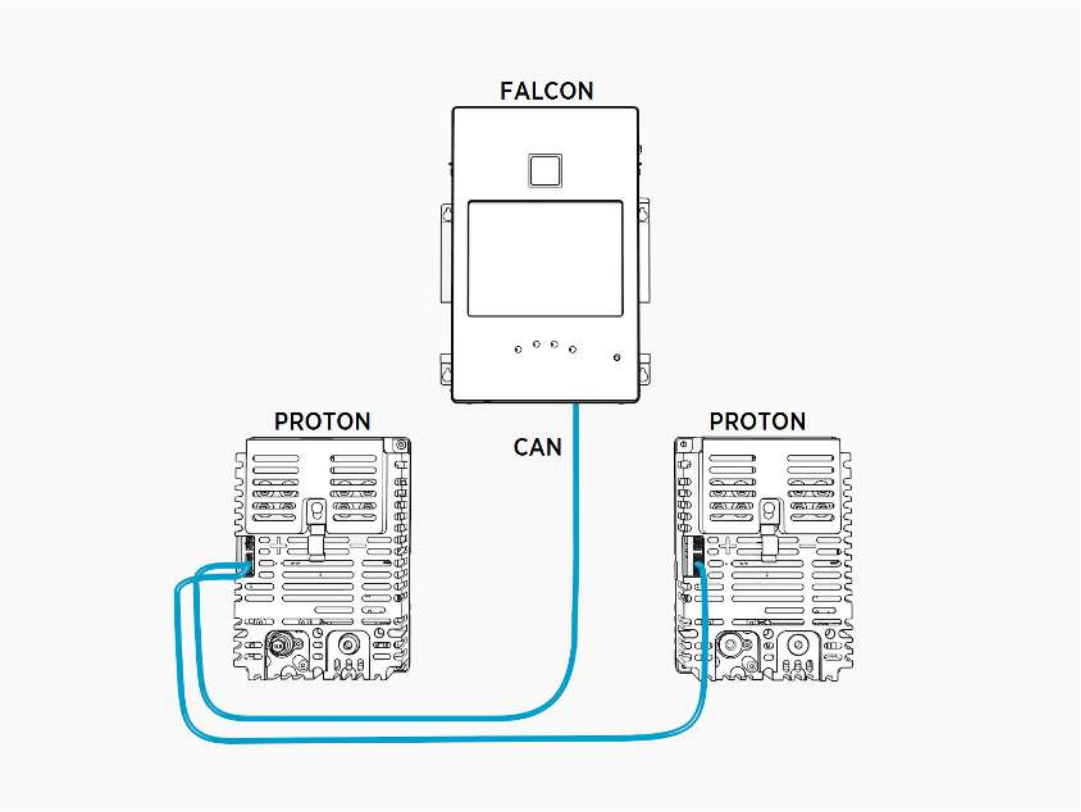
IMPORTANT: The PLIM2000 is not repairable in the field and does not contain any user-serviceable parts. In case of any error, the PLIM2000 opens internal relays and interrupts the flow of energy.

For assistance, go to chargepoint.com/support and find your region's technical support number.

PLIM2000 Integrated Meter

The PLIM2000 Integrated Meter is a multifunctional meter intended for use in the field of e-mobility. It is a DC meter capable of 500 A and 1000 V maximum. The metering device and display unit are supplied by 48 V DC on the left side (top view). If this supply is not provided, the built-in relays remain open and a current flow is not possible.

To operate the meter, the display unit and the meter have to be specially configured in meter mode. If that is the case, the display unit (which is also used by the charger) only shows two orange buttons, “Port 1” and “Port 2”. Clicking on one of these buttons connects the display to the meter units, closes the relays after 10 seconds and shows the proper meter display containing serial number, software hashes and the register entry.

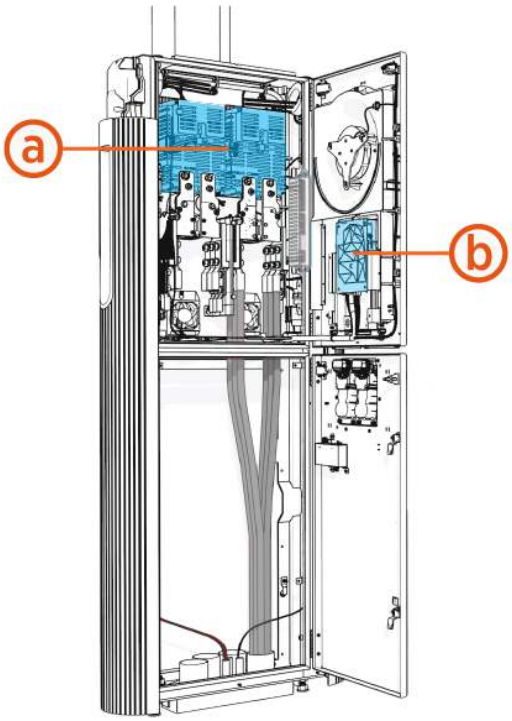


The PLIM2000 Integrated Meter is available in two configurations:

- Two Protons and one Falcon (as illustrated above)
- One Proton and one Falcon

Installation

The PLIM2000 Integrated Meter is built into Power Link 2000 charging stations. All components are powered by 48 V DC and will be connected to the Power Path assembly, which consists of a metal backplate and input current bus bars and protection devices. Those bus bars then connected to the station input DC power and the output on the top of the Proton is directly connected to the cable assembly. The installation seal is digital and broken when the station front door is opened. A lockout will be triggered and a charging session isn’t possible without interaction of trained personnel (secured by a code).



(a) Protons (meter)
(b) Falcon (display)

Metering Logic

PLIM2000 Integrated Meter current is measured using a current transformer and is transmitted to a micro controller. Voltage is measured using a ground referenced measurement before it is transformed to a micro controller.

At the internal sample rate of 100 Hz, V*I is accumulated, at energy update rate, the accumulated V*I values are converted to energy.

Fault Detection

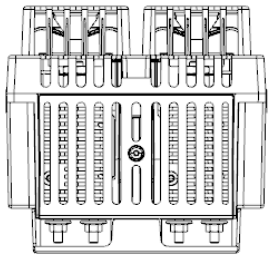
In "meter mode" the operating faults have no effect on operations. The only faults that will prevent operation lead to the meter display not being shown at all. Examples for this are wrong bootup, wrong firmware or that the Proton is not provisioned in meter mode.

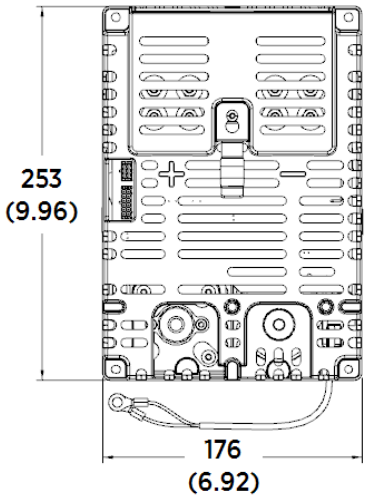
If these failures do occur, the meter must be disconnected from the main power supply by a certified ChargePoint technician. The hardware needs to be replaced.

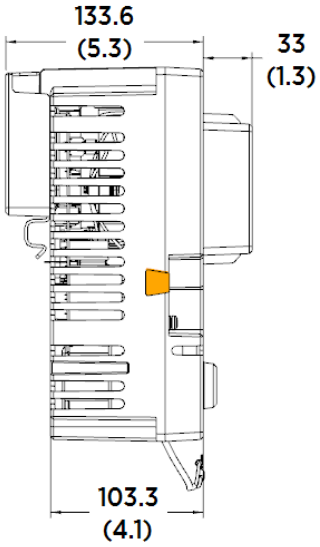
Dimensions

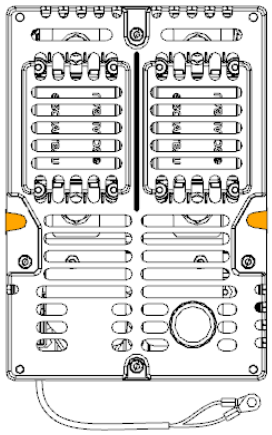
Proton

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).









Falcon

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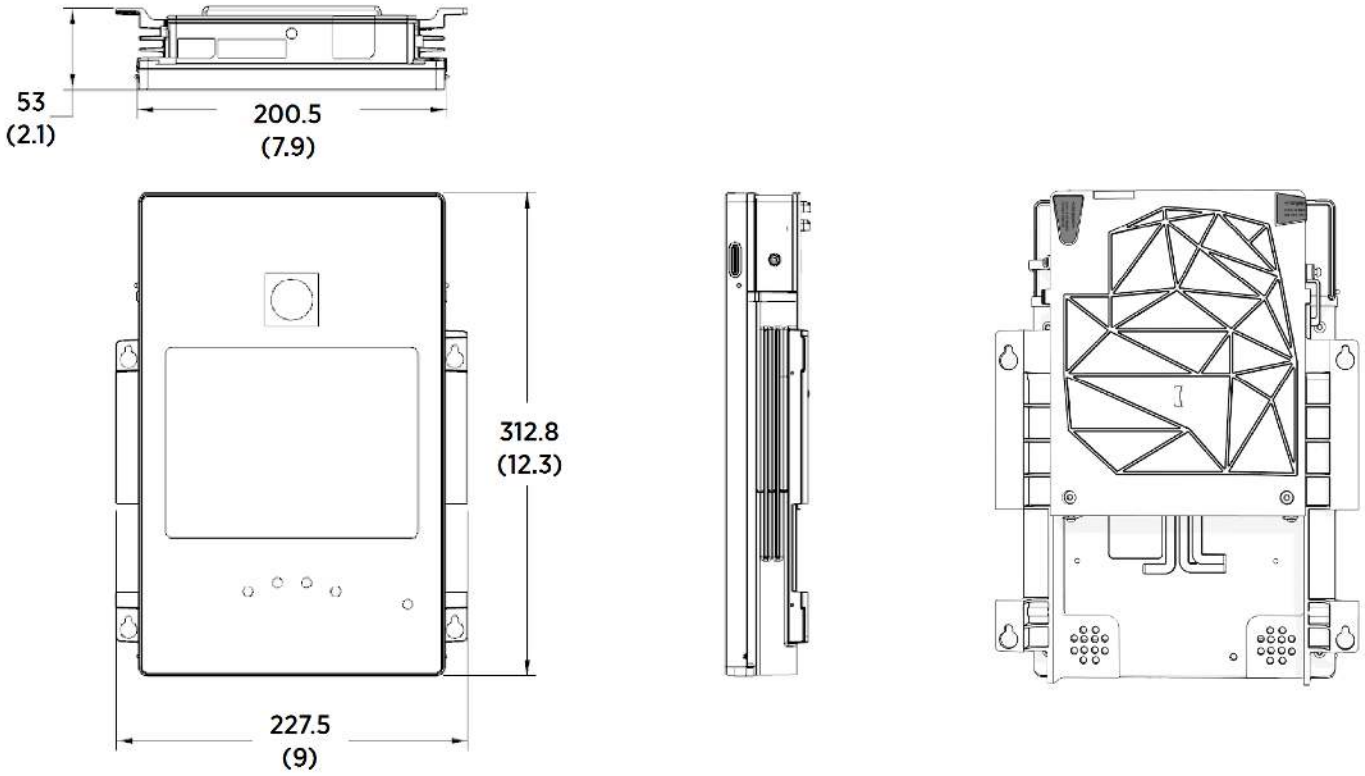
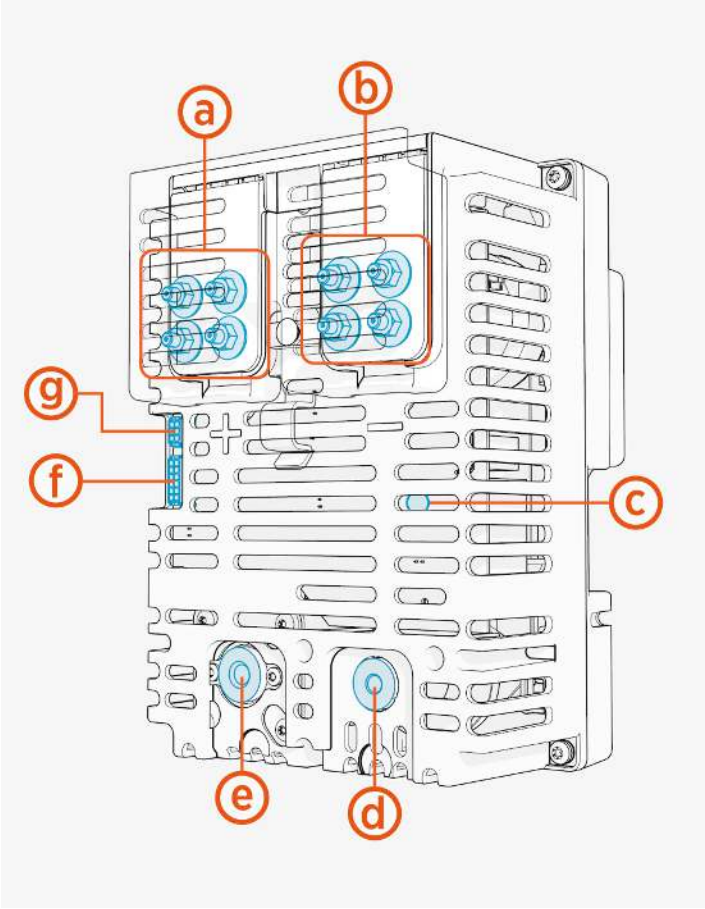
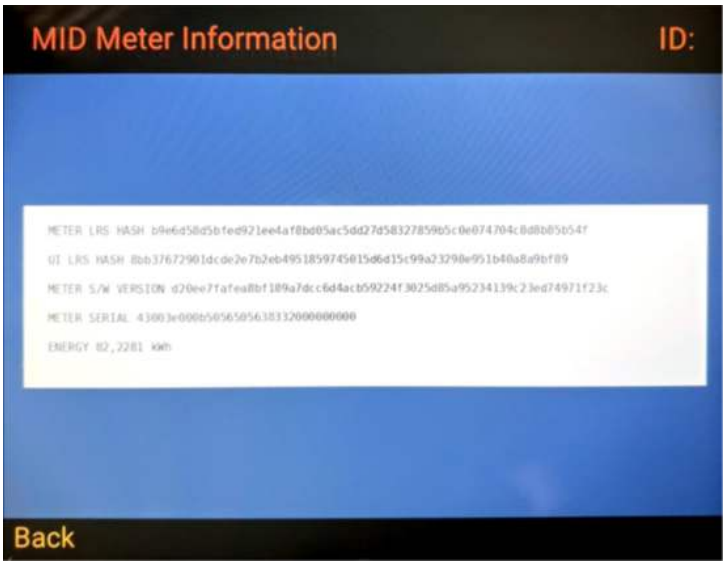


Main Connectors



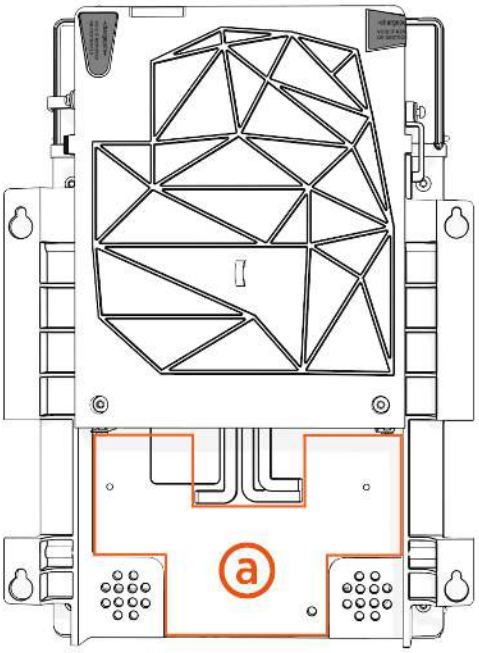
a. Positive (+) output main connector
b. Negative (-) output main connector
c. Pulse LED
d. Positive (+) input main connector
e. Negative (-) input main connector
f. CAN bus
g. 48 V DC supply

Meter Information Display



MID Type Label

The MID type label and calibration marks may be placed in the area marked **(a)** below.



The MID/MIR label includes the following:

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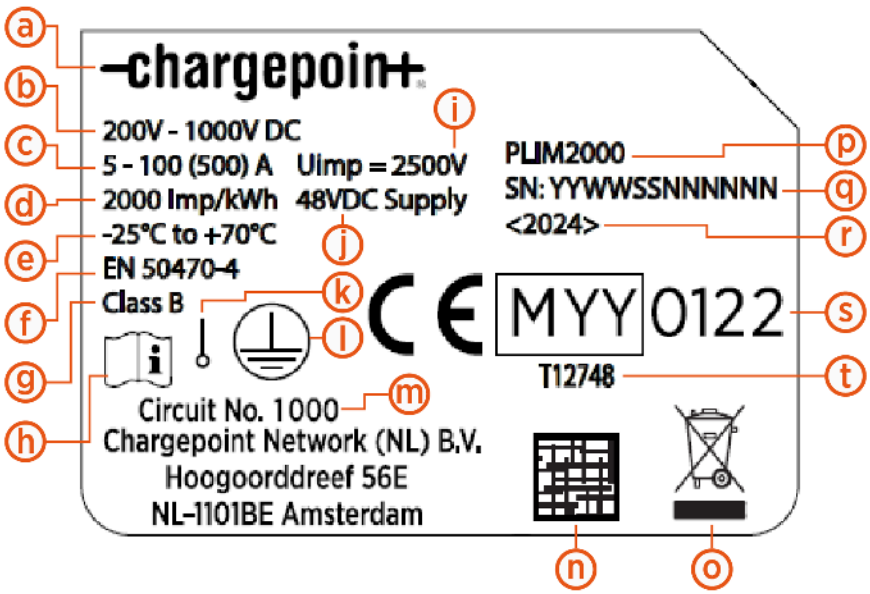

a. Customer logo
b. Reference voltage
c. Meter current values
d. LED impulse constant
e. Temperature rating
f. Applied standard
g. Accuracy class
h. Existence of manual
i. Impulse voltage
j. Needed voltage supply for PLIM2000
k. 2 wire DC system
l. Protective class
m. Number for circuit diagram
n. QR code with serial number
o. WEEE waste symbol
p. Type number
q. Serial number
r. Year of manufacture
s. CE marking, MID metrology marking, number of notified body for MID
t. MID certificate number

Data Protection

The energy data is computed and stored inside a micro controller. The micro controller does not provide a mechanism for accessing this data other than via the meter firmware. The meter firmware does not provide a mechanism for updating the energy data from an external interface. The meter firmware can be updated during production or if the seal is removed, but a secure boot mechanism is used to prevent unsigned and unauthorized firmware.

Components of the PLIM2000 have self destructive tamper proof labels applied by the manufacturer in several locations on the Proton **(a)** and Falcon **(b)**. The door of the Power Link 2000 charging station has a digital user seal which is “broken” when the station front door is opened. A lockout will be triggered and a charging session isn’t possible without interaction of trained personnel (secured by a code).

* VOID IF REMOVED OR DESTROYED

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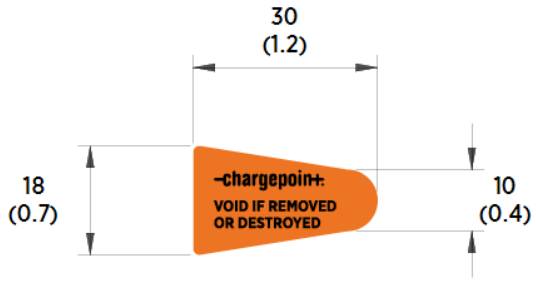
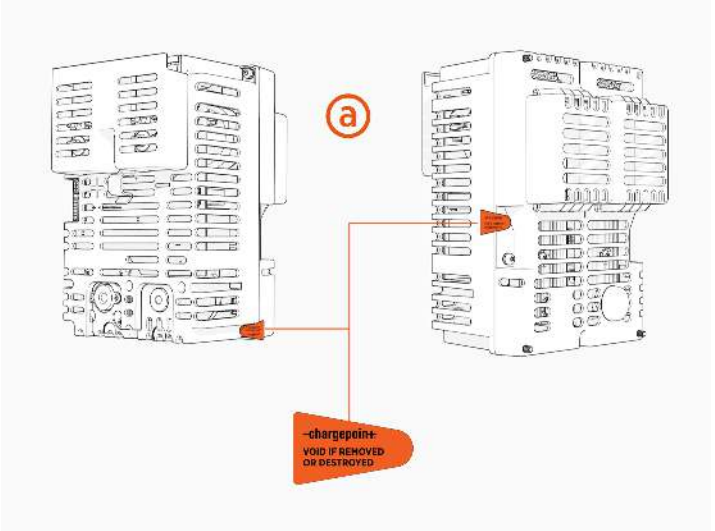
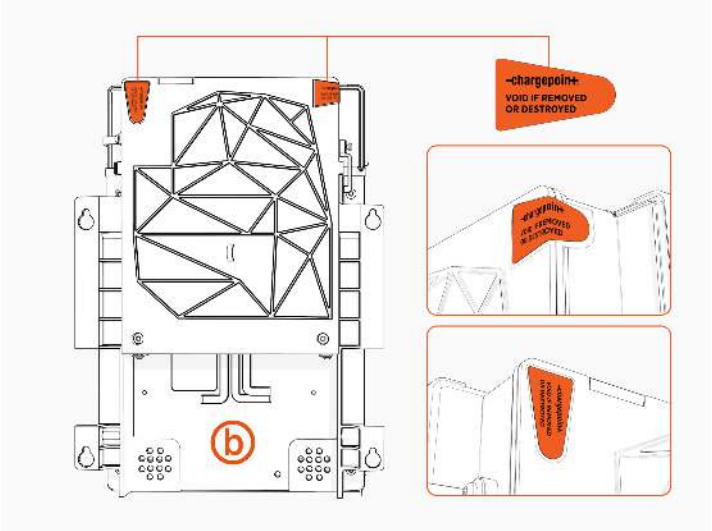
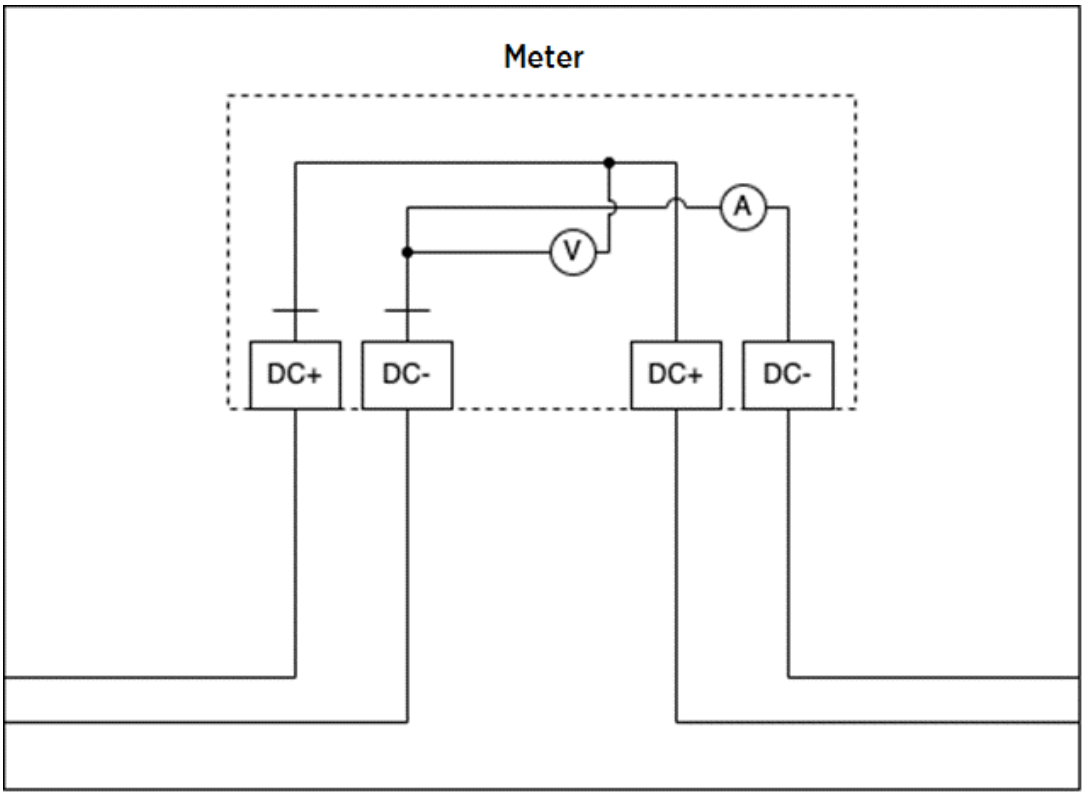






CPIM Meter Voltage and Current Circuitry

Description: Circuit number 1000



Technical Specifications

PLIM2000 Integrated Meter complies with the following standards:

EN 50470-4:2022
IEC 62052-11:2020

PLIM2000 Integrated Meter Standards

Environmental Specifications

Power	Aux Power supply 48 V DC
Power Consumption	<10 W
Ist	0.4 A
Imin	5 A
Itr	10 A

Environmental Specifications

Power	Aux Power supply 48 V DC
Iref	100 A
Imax	500 A
Un	200...1000V
Accuracy class	Active energy: Class B (EN50470-4)

Environmental Specifications (continued)

Additional Environmental Specifications

Working temperature	-25 ºC to 70 ºC
Storage temperature	-40 ºC to 80 ºC
Mechanical environment	Class M1 - 2014/32/EU - Measuring Instrument Directive Class M1 - UK SI2016 No. 1153 - Measuring Instruments Regulations
Electromagnetic environment	Class E2
Application field	Meter built in IP54 enclosure
Electrical protection	Class I
Storage and operating humidity	5% - 95% RH at 50 ºC, non-condensing for up to two years
Protection grade	IP00

Additional Environmental Specification

LED Specifications

Pulse constant	2000 imp / kWh
Color	Red

LED Specifications

Output Specifications

Pulse output	Proportionate to measured active energy (EN62052-31)

Output Specifications

Minimum Duration for Repeatability Testing (per EN 50470-5)

t	20 seconds

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