US2:MD48HDCDN Metering System with Enclosure and Display

TECHNICAL SPECIFICATION SHEET

MD-48HD Networked Multi-Circuit Power Metering System, 48-Channel

usa.siemens.com/PDS

Description

Maximum flexibility for monitoring

The MD-48HD is a versatile, multi-channel electrical metering instrument, used for monitoring up to 48 electrical circuits. It uses any of the existing MD series internally-shunted, 333 mV output split-core or Rogowski Coil current transformers (CTs). Monitor any combination of up to 16 three-phase or 48 single-phase electrical devices with a single meter. With over 100 data registers, data updates every second and ANSI C12.20-2010 Class 0.2 revenue grade accuracy, the MD-48HD is well-suited for data center monitoring, tenant submetering, and accountability metering in commercial, retail, and industrial facilities

Industry-standard bacnet or modbus

The MD-48HD supports both BACnet protocol and Modbus protocol (based on SunSpec IEEE-754 floating point model).

Communications interface can be accomplished through standard serial RS-485 or Ethernet using either BACnet MS/TP, Modbus RTU, BACnet IP or Modbus TCP protocols. Additionally, the MD-48HD features two pulse inputs.

Easy installation

This meter is line-powered and designed to operate on any voltage from 90 to 600 Vac. Unique to the MD-48HD are two independent voltage inputs, allowing for the monitoring of customer-derived voltage networks. BACnet and Modbus protocols are field-selectable and any combination of split-core or flexible Rogowski Coil (RōCoil™) CTs can be used. Configure the meter prior to installation using the free ViewPoint™ HD software utility and a direct USB connection or by using the built-in web server. PhaseChek™ technology ensures proper CT-to-phase installation the first time, eliminating installation errors.

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Key Features

Electrical Metering Features

- 48 channels: Multi-circuit submeter monitors voltage, current, power, energy, and many other electrical parameters on any combination of single and/or three-phase systems.

Applications

- Real-time Power Monitoring in Commercial, Retail and Industrial environments.
- Data Centers.
- Bi-Directional Metering such as Solar Power or Co-Generation applications.
- Cost allocation and tenant submetering.
- Two independent voltage inputs allow the MD-48HD meter to be used on two systems simultaneously. CTs can be independently mapped to either voltage input.
- Line-Powered: 90 to 600V phase-to-phase power supply.
- Revenue grade; ANSI C12.20-2010 Class 0.2.
- Available with UL 94-V0 enclosure or as a circuit board on a mounting plate that helps facilitate easy, safe installation. A separate high-voltage cover offers an additional level of protection.
- Meter display option provides real-time information about the meter configuration and metered data.
- Mix-and-match a full range of Split Core or Rogowski Coil CTs, including several reve nue-grade, high accuracy CT options. PhaseChek™ confirms proper current transformer orientation.
- UL Listed (enclosure version) or UL Recognized (mounting plate version).
- CE Mark.

Building Automation System Support Features

- BACnet or Modbus protocols both available via RS-485 or Ethernet connections.
- Over 100 electrical metering data registers provide very flexible sub-metering and analysis options.
- Floating Point: IEEE-754 data format allows for bidirectional monitoring, eliminates scaling factors.
- Correlate the consumption of a variety of systems using the two dry-contact pulse inputs. Configure each input independently with custom units of measure within the ViewPoint HD software. Pulse inputs are compatible with “low speed” meters.
- The power meter hosts a Web Application that can be accessed by any smart device running a web browser. The Web Application is accessed by using the USB or Ethernet port on the meter.

Key Hardware/Software Features

Easy Deployment

Setting the MD-48HD up for a new deployment has never been easier, thanks to two features:

Network Scan

Using ViewPoint HD Software, you can now quickly scan and find all the MD-48HD and MD-12HD meters installed on the network. The results page shows each meter’s system description and even allows for some basic meter setup directly from the scan window. Use ViewPoint HD to give each meter a “friendly” name, such as “3rd Floor Utility Rm,” to identify the desired meter even faster.

Pre-Configuration

Maybe you have several meters that need to be configured the same way. Or, maybe you don’t have the meter in your possession, but need to configure it ahead of time for an installer. With

the ViewPoint HD software, you can build a meter configuration file without having a meter connected. This is especially helpful when configuration and installation occur in two separate steps.

Interval Data Recording And RTC

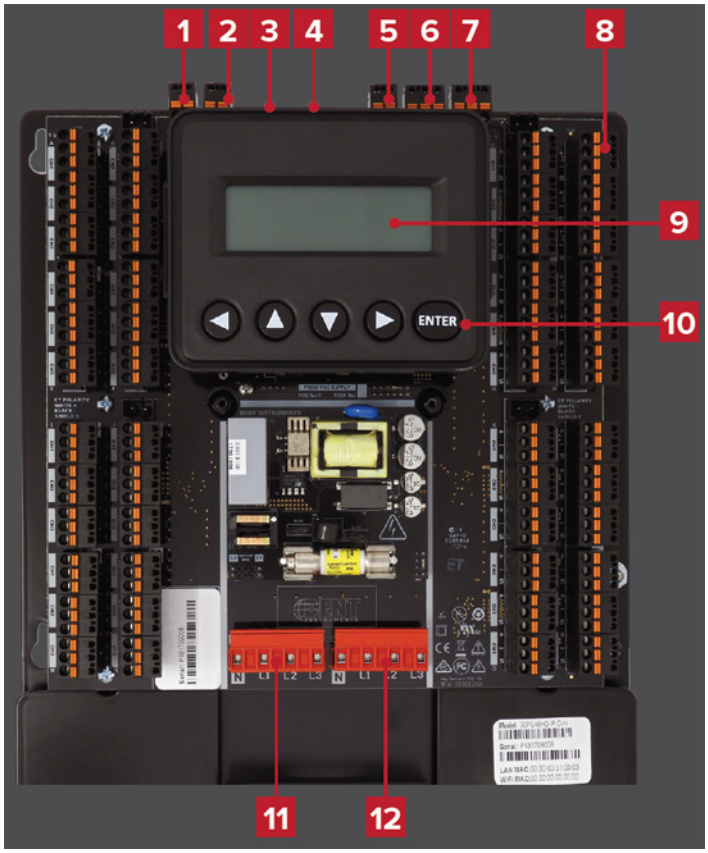
The MD-48HD meter maintains an internal log of the energy data (Net kWh) for each channel in the meter. The meter's non-volatile memory stores up to 63 days of 15-minute kWh data for downloading in the event of lost communication with the BAS or controller. The CSV data file can be downloaded through a direct USB or Ethernet connection using ViewPoint HD software and can be used to backfill any missing data. This feature works automatically in the background to record data, no configuration is required.

In addition, this meter has a capacitor-backed real-time clock (RTC) that is used to ensure an accurate time stamp on all recorded data. Unlike other systems, there is no battery to change and the capacitor retains calendar time for up to one week. The clock can be synchronized with the laptop clock during meter setup.

Alarms

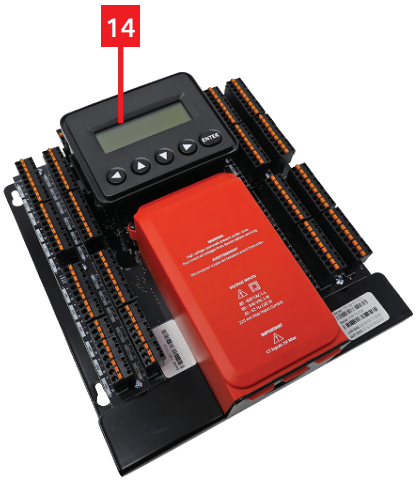
Alarms can be set on any MD-48HD meter channel via the ViewPoint HD software. Alarms are triggered by voltage or current over/under events. The persistence setting is also adjustable to allow start-up on transient. A Master Alarm relay can be hard wired to an interrupt or polling circuit within the BAS to allow for a faster alarm response than the data polling frequency.

Power Meter Components



MD-48HD Internal Diagram

1. Pulse Input 1
2. Pulse Input 2
3. Ethernet
4. USB
5. 12 Vdc output (2W)
6. RS-485
7. Alarm Output
8. CT Connections (x48)
9. Backlit display
10. Navigation buttons
11. Voltage Input 1
12. Voltage Input 2
13. High Voltage Cover (IP30)
14. 1" EMT Conduit Connections (x6)
15. ABS Plastic Enclosure



US2:MD48HDCDN
Enclosure Model (Inside)

US2:MD48HDCDN
Enclosure Model (Outside)

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E186827

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Dimensions

9.8 in width
(25.1 cm)
3.1 in depth
(8 cm)
13.3 in height
(33.7 cm)
RS48HD v1.0110
Serial: P481705011
IP: 10.75.75.123
MC:00:0D:63:31:00:01
ENTER
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MD-48HD
Networked Metering System

Specifications

Technical

Service types	Single Phase, Split Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
Meter Power	From L1 Phase to L2 Phase. 90-600 Vac RMS CAT III 50/60Hz, 500 mA AC Max. Use of 12-volt auxiliary output requires 100 Vac minimum input voltage
AC Protection	0.5A Fuse, 200kA interrupt capacity
Power Out	Unregulated 12 Vdc output, 200 mA, self-resetting fuse
Voltage Channels	90-346 Volts AC Line-to-Neutral, 600V Line-to-Line, CAT III. Two voltage reference inputs.
Current Channels	48 channels, 0.525 Vac maximum, 333 mV CTs, 0-4,000 Amps depending on CT
Maximum Current Input	150% of current transducer rating (mV CTs) to maintain accuracy. Measure up to 4000A with RōCoil CTs
Measurement Type	True RMS using high-speed digital signal processing (DSP) with continuous sampling
Line Frequency	50/60 Hz (45-70 Hz measurable range). Measurement taken L1 N.
Waveform Sampling	1.8 kHz
Parameter Update Rate	1 second
Measurements	Volts, Amps, kW, kVAR, kVA, aPF, dPF, kW demand, kVA demand, Import (Received) kWh, Export (Delivered) kWh, Net kWh, Import (Received) kVAh, Export (Delivered) kVAh, Net kVAh, Import (Received) kVARh, Export (Delivered) kVARh, Net kVARh, THD, Theta, Frequency. All parameters for each phase and element total
Accuracy	0.2% ANSI C12.20-2010 Class 0.2
Resolution	Values in IEEE-754 single precision floating point format (32 bit).
Display	Optional 4-line display, tri-color backlight (PhaseChek™)
Alarm Output	Over/Under Voltage and Current (SPDT Relay - 30 Vdc)
Pulse Inputs	Two inputs. 3.3V sourcing voltage (current limited) to customer dry contact pulse output. Max pulse rate 10 Hz (50 mSec minimum transition time).

Communications

Hardware	RS-485, Ethernet, and USB (for configuration only)
Supported Protocols	BACnet MS/TP, Modbus RTU, BACnet IP or Modbus TCP
Max Communication Length	1200 meters with Data Range of 100K bits/second or less
Communication Rate (Baud)	9600 (Default), 19200, 38400, 57600, 76800, 115200
Data Bits	8
Parity	None, Even, Odd
Stop bit	2, 1
Termination	None provided

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Mechanical

	Wire connections	12-28 AWG 600 Vac, Voltage connection must be #14 AWG or larger and 600 Vac-rated
	Mounting	Panel Mount/Enclosure
	High Voltage Cover	IP30. Included with MD-48HD Enclosure & Plate Models.
	Operating Temperature	-20° to 60°C (-4° to 140°F)
	Humidity	5% to 95% non-condensing
	Enclosure	ABS Plastic, 94-V0 flammability rating. Connections : 1" EMT conduit
	Enclosure Dimensions	(L) 33.7cm × (W) 25.1cm × (H) 8.0 cm (13.3" × 9.8" × 3.1")
	Mounting Plate Dimensions	(L) 26.2cm × (W) 24.1cm × (H) 8.0 cm (10.3" × 9.5" × 3.1")
	PCBA Dimensions	(L) 21.6cm × (W) 21.6cm × (H) 6.4 cm (8.5" × 8.5" × 2.5")

ViewPoint-HD™

	Operating system	Windows® 10, Windows® 8, Windows® 7
	Communications	USB and Ethernet standard. One USB Port required on PC
	Security	2 levels of PIN protection (Read/Write or Read-Only)
	Free ViewPoint Download Link	See ViewPoint chapter of User Manual

Certifications

	UL Listed (E186827)	Applies to indoor enclosure versions US2:MD48HDCDN Conforms to UL Std 61010-1 3rd Edition Certified to CSA Std C22.2 No. 61010-1 3rd Edition
	CE	EN 61000-6-4: Class A
	ANSI C12.20 Class 0.2	NIST Traceable Calibration

Complies With

		Directive 2014/35/EU Low Voltage (LVD) Directive 2014/30/EU Electromagnetic Compatibility (EMC) Directive 2011/65/EU Compliance (RoHS 2) Applicable Standard(s) available on Declaration of Conformity

Country of Origin

		USA

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Ordering Information

Part Number	Power Meter Description
US2:MD48HDCDN	48-Channel HD Meter with enclosure, with display

Current Transformers (CT's)	Description
US2:SCTHMC0100U	Mini Split Core 0.4 Opening 100A
US2:SCTHMC0200U	Mini Split Core 0.4 Opening 200A
US2:SCTSCS0050U	Small Split Core 0.75 Opening 50A
US2:SCTSCS0100U	Small Split Core 0.75 Opening 100A
US2:SCTSCM0100U	Medium Split Core 1.25 Opening 100A
US2:SCTSCM0200U	Medium Split Core 1.25 Opening 200A
US2:SCTSCM0400U	Medium Split Core 1.25 Opening 400A
US2:SCTSCM0600U	Medium Split Core 1.25 Opening 600A
US2:SCTSCL0600U	Large Split Core 2.00 Opening 600A
US2:SCTSCL1000U	Large Split Core 2.00 Opening 1000A
US2:SCTR161310U	Rogowski Coil Current Transformer, 16" (40 cm); 4.5" (11.5 cm) opening; 4000A
US2:SCTR241310U	Rogowski Coil Current Transformer, 24" (60 cm); 7.0" (18 cm) opening; 4000A
US2:SCTR361310U	Rogowski Coil Current Transformer, 36" (90 cm); 10.8 (28 cm) opening; 4000A

Note: Refer Current Transformer specification sheet for dimensions.
https://contractor.compas.siemens-info.com/product-family/power-quality-meters Click on MD Meter

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BACnet Protocol Implementation Conformance Statement

Products

Product	Model Number	Protocol Revision
Siemens MD-48HD Power Meters	US2:MD48HDCDN	Revision 14

Vendor Information

Siemens Industry, Inc.
Electrical Products Division
3617 Parkway Lae
Peachtree Corners, GA 30092 USA
usa.siemens.com/PDS

Product Description

Three phase ANSI C12.20-2010 Class 0.2 revenue grade power meter.
Supports BACnet MS/TP, BACnet/IP, Modbus RTU, and Modbus TCP communication protocols.

BACnet Standardized Device Profile (Annex L)

Product	Device Profile
BACnet Energy Meter	BACnet Smart Sensor (B-SS)

Supported BACnet Interoperability Building Block (BIBBs):

ReadProperty (DS-RP-B)	Execute
ReadPropertyMultiple (DS-RPM-B)	Execute
WriteProperty (DS-WP-B)	Execute
Who-Has (DM-DOB-B)	Execute
I-Have (DM-DOB-B)	Initiate
Who-Is (DM-DDB-B)	Execute
I-Am (DM-DDB-B)	Initiate

Standard Object Types Supported:

Device Object

Optional Properties	Writable Properties	Property Range Restrictions
	Object_Identifier	< 4194304
Description	Description	32 character maximum
Location	Location	32 character maximum
Max_Master	Max_Master	1-127
Max_Info_Frames	Max_Info_Frames	>= 1
	Object Name	32 character maximum

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Analog Input

Optional Properties	Writable Properties	Property Range Restrictions

Analog Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	Varies by object

Binary Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	

Positive Integer Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	Varies by object

Multi-state Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	Varies by object
State Text		

Bitstring Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	Varies by object

Character String Value

Optional Properties	Writable Properties	Property Range Restrictions
	Present_Value	32 character maximum

Structured View

Optional Properties	Writable Properties	Property Range Restrictions
	Object Name	32 character maximum

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Data Link Layer Options

Product	Options
BACnet Energy Meter	BACnet IP, (Annex J), Foreign Device
	MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800, 115200

Device Address Binding

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) o Yes **X** No

Networking Options

Product	Options
BACnet Energy Meter	None

Network Security Options

Product	Device Profile
BACnet Energy Meter	Non-secure Device - is capable of operating without BACnet Network Security

Character Sets Supported

Product	Character Sets Supported Indicating support for multiple character sets does not imply that they can all be supported simultaneously.
BACnet Energy Meter	ISO 10646 (UTF-8)

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Legal Manufacturer

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