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BACnet Power Meter - MD BM

Technical Overview

2018

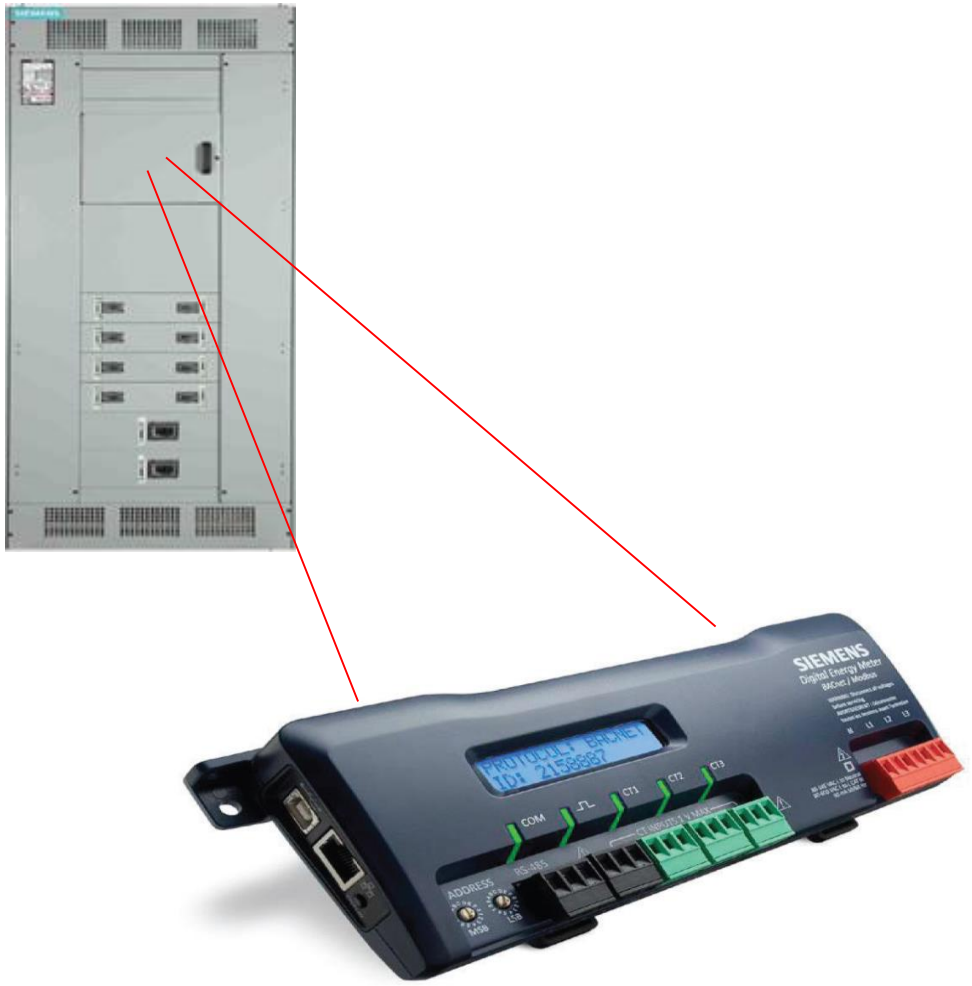
BACnet Power Meter Overview

The ***MD BM BACnet*** meter is an affordable, compact, basic power meter that can be installed in any location via Din rail or to a back plane. The target market is for Building Management Systems (BMS).

The meter is designed with a small digital display or no display. It utilizes 0.33v CT's which Siemens can provide to complete the package.

Setup is easily done in the field by the end user, contractor or Siemens personnel. Simple setup software is available for download.

Accuracy is ANSI C12.20-2010 Class 0.2



BACnet Power Meter Overview

Meter Measurements

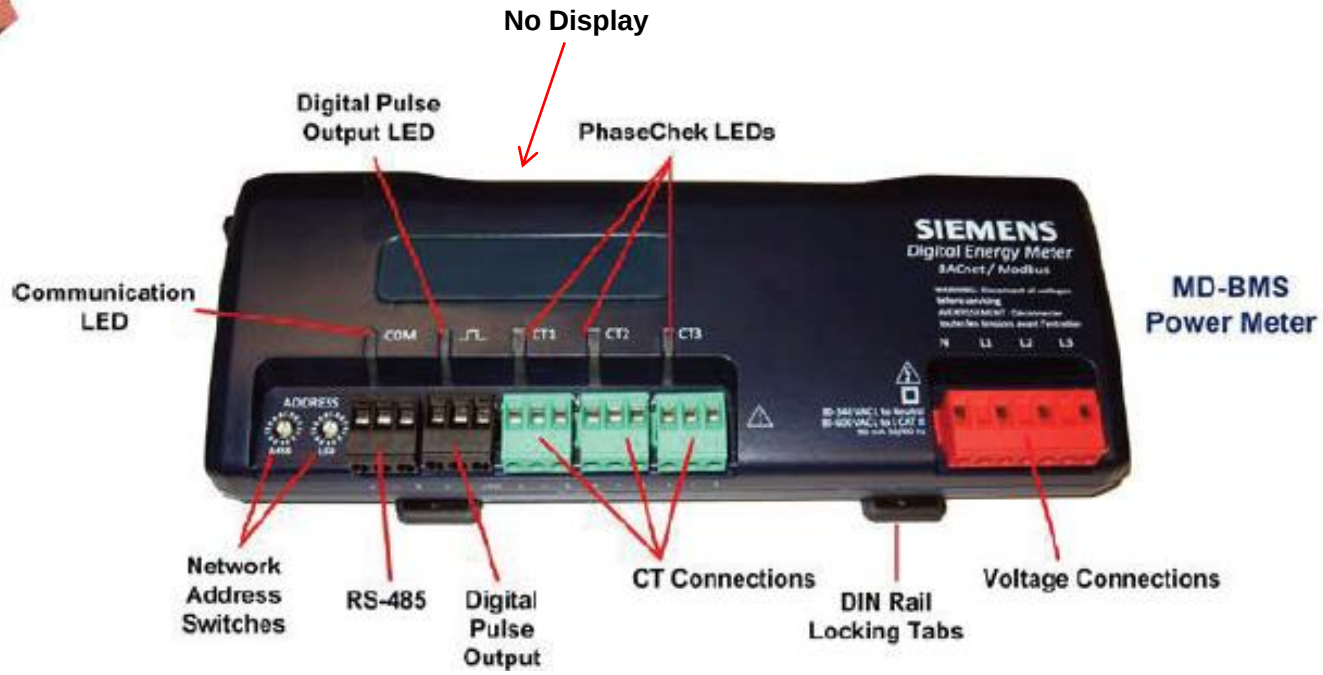
MODBUS REGISTER/BACNET OBJECT DESCRIPTIONS (PARTIAL LIST)	
System True Energy (kWh)	Individual Phase to Phase Voltages
Instantaneous Total True Power (kW)	Line Frequency (Hz)
Peak Demand (Adjustable Window) (kW)	Individual Phases True Energy (kWh)
Maximum Instantaneous Power (kW)	Individual Phases True Power (kW)
Minimum Instantaneous Power (kW)	Individual Phases Reactive Energy (kVARh)
System Reactive Energy (kVARh)	Individual Phases Reactive Power (kVAR)
System Apparent Energy (kVAh)	Individual Phases Apparent Energy kVAh)
System Apparent Power (kVA)	Individual Phases Apparent Power (kVA)
System Displacement Power Factor (dPF)	Individual Phases Apparent Power Factor (aPF)
System Apparent Power Factor (aPF)	Individual Phases Displacement Power Factor (dPF)
Average Current (Amps)	Individual Phases Current (Amps)
Average Line to Line Voltage (Volts)	Individual Phases Line to Neutral Voltages (Volts)
Average Line to Neutral Voltage (Volts)	Individual Phases Line to Line Voltages (Volts)
Multiple Meters External Data Synchronization	

Over 40 metering measurements are monitored. A complete listing is in the MD BM meter manual point listing.

BACnet Power Meter Overview

Meter Design Features

The MD BM or MD BMD power meters are designed for ease of installation and setup. Ethernet (optional) or serial communications are provided and an optional display if needed. Other key design features are shown below:



MECHANICAL	
OPERATING TEMPERATURE	-7° to 60° C (-20° to 140° F)
HUMIDITY	5% to 95% non-condensing
ENCLOSURE	PS3: ABS Plastic, 94-V0 flammability rating
WEIGHT	PS3: 357 g (12.6 ounces), exclusive of CTs
DIMENSIONS	PS3: 21.8 x 5.8 x 4.0 cm (8.6” x 5.8” x 1.6”)

BACnet Power Meter Overview

Meter Design Features

TECHNICAL	
SERVICE TYPE	Single Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
POWER	From L1 Phase to L2 Phase. 80-600VAC CAT III 50/60Hz, 70mA Max. Non-user replaceable .5 Amp internal fuse protection
VOLTAGE CHANNELS	80-346 Volts AC Line-to-Neutral, 600V Phase-to-Phase, CAT III
CURRENT CHANNELS	3 0.67 VAC max, 333 mV CTs, 0-5,000 Amps depending on CT
MAXIMUM CURRENT INPUT	200% of current transducer rating (mV CTs) Measure up to 5000A with RoCoil CTs
MEASUREMENT TYPE	True RMS using high-speed digital signal processing (DSP)
LINE FREQUENCY	50/60 or 400 Hz
WAVEFORM SAMPLING	12 kHz
PARAMETER UPDATE RATE	0.5 seconds
MEASUREMENTS.	**Volts, Amps, kW, kWh, kVAR, kVARh, kVA, kVAh, aPF, dPF.**
ACCURACY	**PS3: 0.2% (<0.1% typical) ANSI C12.20-2010 Class 0.2**
RESOLUTION	0.01 Amp, 0.1 Volt, 0.01 watt, 0.01 VAR, 0.01 VA, 0.01 Power Factor depending on scalar setting
LED INDICATORS	Bi-color LEDs (red and green): 1 LED to indicate communication,3 LEDs for correct CT-to-phase installation (per meter element).

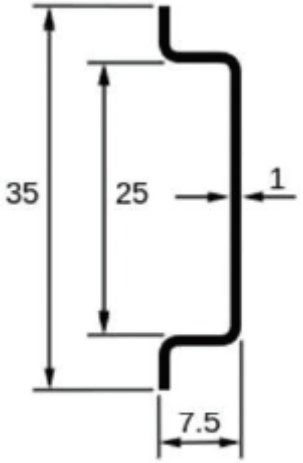
COMMUNICATIONS	
DIRECT :	User selectable Modbus or BACnet Master Slave Token Passing protocol (MS/TP). Ethernet.
MAX DISTANCE	1200 meters with Data Range of 100K bits/second or less
BAUD RATE	9600 (Modbus default), 19200, 38400, 57600, 76800 (BACnet default), 115200
DATA BITS	8
PARITY	None, Even, Odd
STOP BIT	2, 1
DATA FORMATS	Modbus or BACnet

SAFETY	
Siemens MD	UL Listed and CE Mark Conforms to UL Std 61010-1 Certified to CSA Std C22.2 No. 61010-1

BACnet Power Meter Overview

Meter Design Features – Installation / Terminations

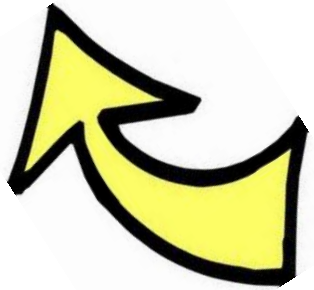
Installation is easily done using a Din Rail or mounting tab configuration with up to three 0.333v output CT's, control power and a pulse output all terminated to the front of the meter.



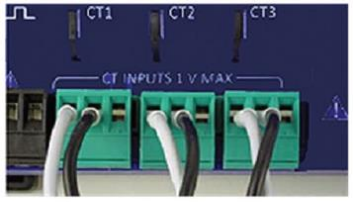
Top Hat DIN Rail
EN 50022

Mounting tabs, located at each end of meter case.

DIN rail slot on back.
Locking tabs shown here.

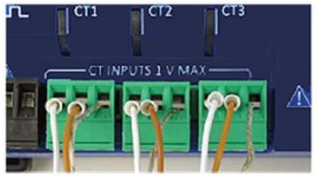


Split or Solid CT



Hinged and Split Core CT Inputs

Rogowski Coil CT



Rogowski Coil Inputs

BACnet Power Meter Overview

Meter Design Features – Current Transformers

To complete the meter package, Siemens offers the 0.333v current transformers in three styles. Solid Core, Split Core and a Rogowski core design. Each design allows for maximum flexibility and allows for a amperage range of 50 to 4000 amps

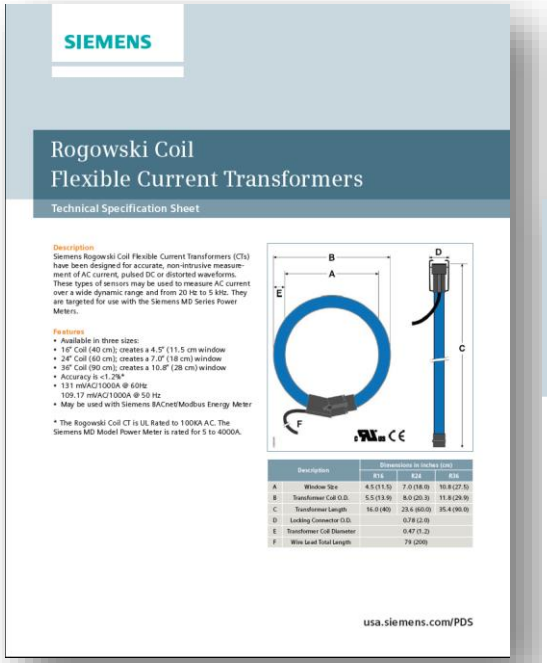
Split or Solid CT

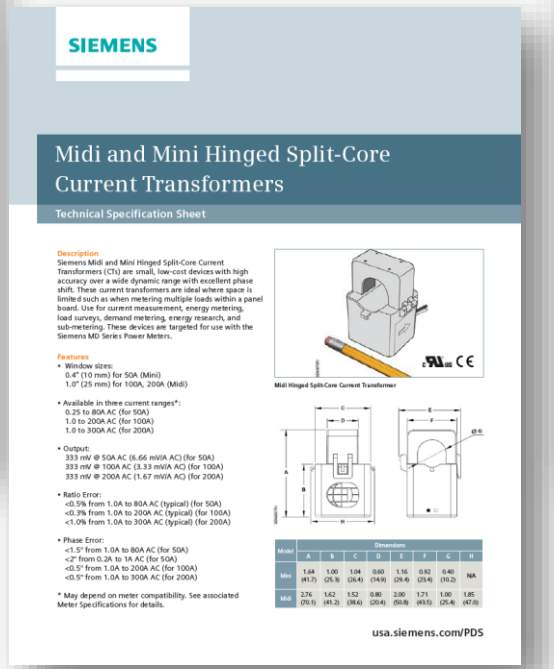
Rogowski Coil CT

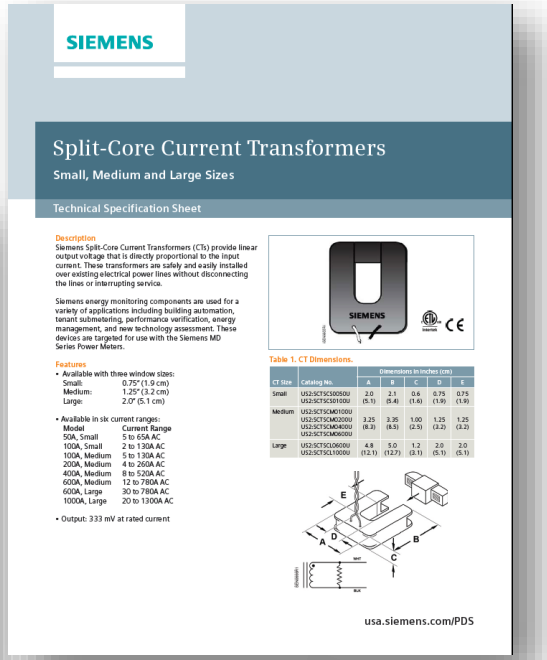
BACnet Power Meter Overview

Meter Design Features – Current Transformers

Details on amperage sizes, sizes, etc. can be found in the Siemens CT data sheets for three styles.







Small Split-Core; 0.75" (19mm) Opening; 50A
Small Split-Core; 0.75" (19mm) Opening; 100A
Medium Split-Core; 1.25" (32mm) Opening; 100A
Medium Split-Core; 1.25" (32mm) Opening; 200A
Medium Split-Core; 1.25" (32mm) Opening; 400A
Medium Split-Core; 1.25" (32mm) Opening; 600A
Large Split-Core; 2.00" (51mm) Opening; 600A
Large Split-Core; 2.00" (51mm) Opening; 1000A

BACnet Power Meter Overview

Meter Design Features – Optional Display

The MD BMD and MD BMIPD models come with a small 2 line x 16 character display that enables a user to read real-time values. Values are auto scrolling with screens changes every 2 to 3 seconds. The scrolling can be stopped by pushing the button on the side of the meter.

Pause Button

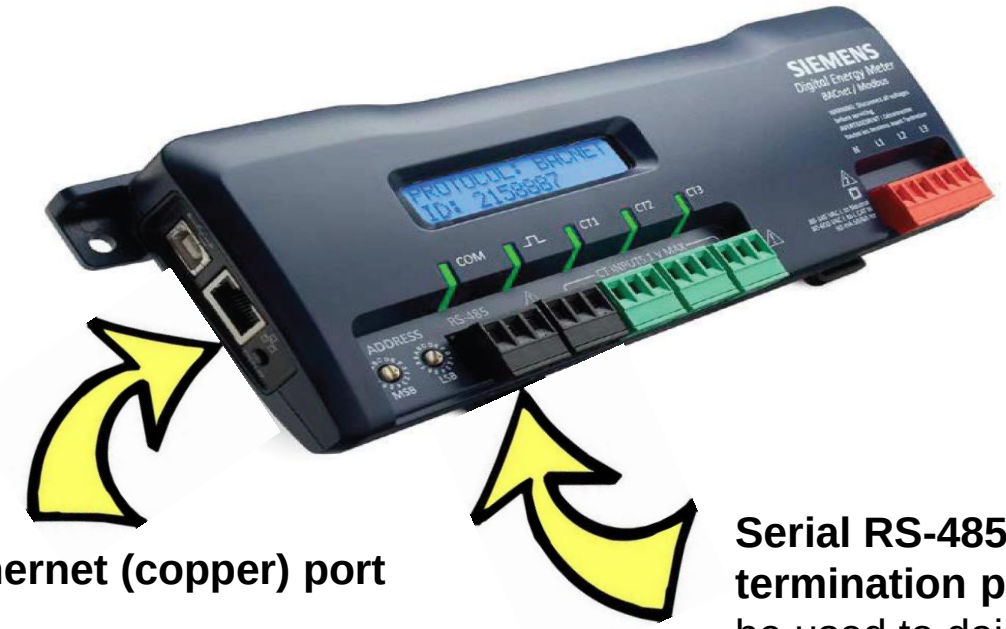
Standard Screens are:

- Serial No / Firmware
- COM Status
- IP Address
- Volts (3 Phases)
- Amps (3 phases)
- KW
- Power Factor
- Total kW / PF

BACnet Power Meter Overview

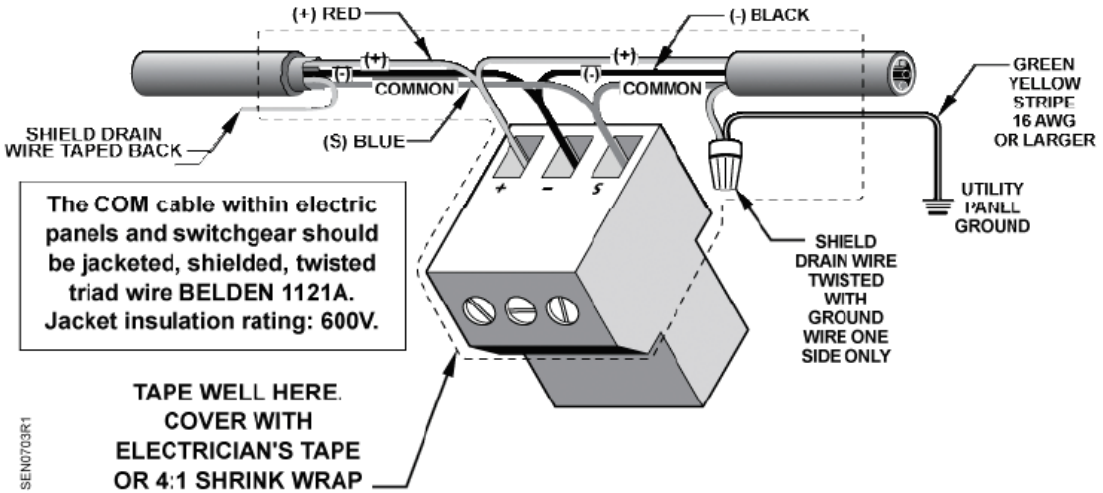
Meter Design Features - Communications

The meter supports BACnet MS/TP, BACnet IP and Modbus RTU/TCP. The pulse output can also be used to send a pulse signal to third party systems or PLC's for kWh, kVARh or kVAh.



Ethernet (copper) port

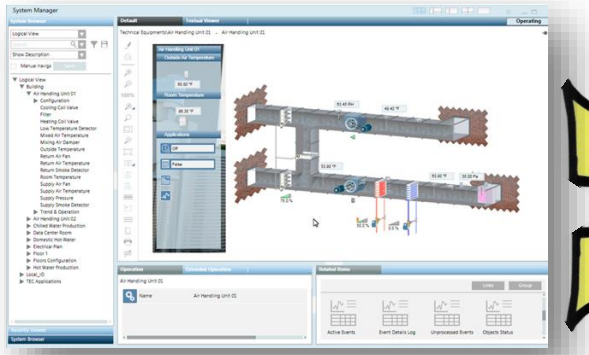
Serial RS-485 termination port. Can be used to daisy-chain meters together if needed.



BACnet Power Meter Overview

Meter Design Features – Communications Examples

Focus Market:
Building Automation Systems



RS-485 to 232 or USB converter mounted next to computer

RS-485 (2 or 4 Wire)

MD BM meters daisy chained with standard Modbus RS-485 serial

Direct connection to a computer via RS-485 serial wire (up to 4000 ft). One RS-485 string can support up to 32 meters.

BACnet IP Network

BT PXC Controller

MD BM Meters with BACnet IP

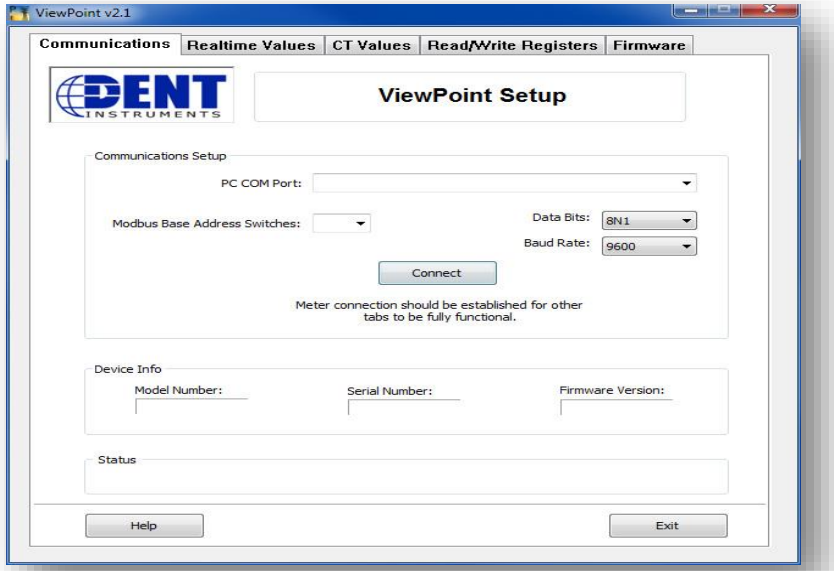
MD BM Meter with BACnet Serial

BACnet Power Meter Overview
Meter Setup Software

The Siemens BACnet meter is configured and setup using the DENT ViewPoint software utility. This software also allows viewing of all the real time meter data and update firmware if needed. Software is Free and can be downloaded from the DENT web site.

VIEWPOINT SOFTWARE	
OPERATING SYSTEM	Windows® 8, Windows® 7 (32/64 bit), Windows® Vista (32/64 bit), or Windows® XP
COMMUNICATIONS	USB to RS485 Adapter. One USB Port required. Ethernet.

To download the ViewPoint Software from DENT Instruments, Inc.,
(Make sure pop-up blockers are temporarily turned off).
Go to: www.dentinstruments.com/siemenslmv
Username: **siemens**
Password: **mdpowermeter**



Thank You

For additional information on Siemens Digital Solutions contact:

- ✓ **Technical Support line at 1-800-333-7421 (M-F) 8-5pm Eastern US.**
- ✓ **Web Support:**
  - ✓ www.usa.Siemens.com/pds
- ✓ **Request for Information / Proposal**
  - ✓ www.usa.Siemens.com/pds-request