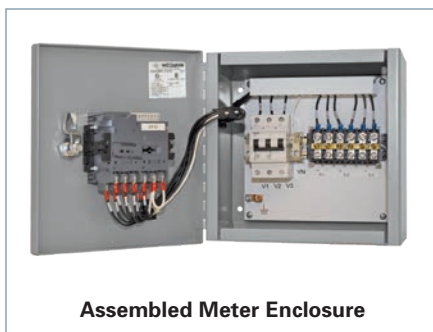




New! Thermal Monitoring System – SEM3T



Electrical Power Monitoring Software



Assembled Meter Enclosure



Power Meters

Scan to connect online to the most up-to-date version of this Section of SPEEDFAX.



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Siemens recognizes that high performance facilities make for high performance business. Energy is the lifeline of your business, and better efficiency and sustainability can have a large positive impact on your bottom line.

Energy Management and Control Systems from Siemens are complete enterprise solutions that help you manage the energy costs and availability of your business. With our advanced meters and controls, you can be sure to use only the energy you need, when you need it.

Siemens Power Distribution Solutions contribute toward achieving LEED® certification and provides the needed energy metering data for federal/local government energy reductions programs.

Features and Benefits of Siemens Power Distribution Solutions:

- | | |
|---|---|
| <ul style="list-style-type: none"> ■ Power Quality Reliability & Analysis ■ Utilities Cost Allocation & Billing ■ Utilities Usage Aggregation ■ Load Preservation ■ Equipment Monitoring ■ Facility Monitoring & Automation ■ Sequence of Event Recording ■ Preventative Maintenance ■ Electrical Asset Management | <p>Additional Products/Services</p> <ul style="list-style-type: none"> ■ Branch Circuit Monitoring ■ Sub-Billing and Cost Allocation ■ Application Engineering ■ Services Agreements ■ Network/Communication Components ■ Integration with Existing ■ SCADA/BAS Systems ■ Incorporation of Third Party Devices |
|---|---|

For Technical Assistance Contact: **1-800-333-7421**

Create Support Ticket Online:

<https://support.industry.siemens.com/my/WW/en/requests#createRequest>

Power Distribution Solutions

Intelligent Metering and Control Devices

Comparison chart







	PAC 2200	PAC 3120	MD Meter	SEM3	PAC 3200T	PAC 3220	PAC 4220
Power, energy and demand							
Voltage	100-400VLL	100-690VLL	Up to 600VLL	100-600VLL	100-400VLL	100-690VLL	100-690VLL
Voltage/current: per phase, average	●	●	●	●	●	●	●
Voltage/current: unbalance	●	●	●	●	●	●	●
Power: real(kW), reactive(kVAR), apparent(kVA), power factor, frequency	●	●	●	●	●	●	●
Energy kWh: bi-directional, import, export	●	●	●	●	●	●	●
Energy kWh: total, net	●	●	●	●	●	●	●
Demand: block, sliding window	●	●	●	●	●	●	●
Demand: thermal predicted							
Power quality analysis							
Sag(Dip)/Swell disturbances monitoring							
Rapid Voltage Change							
Voltage disturbance direction detection							
Harmonics (individual, even, odd, total) up to		THD Only			THD only	THD only	63rd
Sampling rate, maximum samples/cycle	135k	135k		60	135k	135k	204
Flicker to EN50160, IEC 6100-4-7 / 4-15							
Harmonics to EN50160, IEC 6100-4-7 / 4-15							
Subsynchronous Oscillation (SSO) monitoring							
Configurable for IEEE 519-2014, SEMI/ITIC							
Data and Waveform Logs							
Triggered by setpoint, schedule, or external signal							
Sequence-of-event logs or Alarm Logs, variable log depth				●			●
Minimum/maximum logs		●			●	●	●
Onboard Historical Logging Memory		Load profile kWh/day for 63 days. kWh/month for 24 months		8 GB (6 Months)	Load profile kWh/day for 63 days. kWh/month for 24 months		8GB storage - Load profile kWh/day, kWh/month and kWh/year for >10 years
Email Data & Event Logs				●			
Waveform recording							
Waveform in COMTRADE format with FTP							
GPS time synchronization	SNTP			NTP	SNTP	SNTP	SNTP
Time-stamps, resolution in seconds	± 1sec			1 min	± 1sec	± 1sec	± 0.1sec
Time Synch - IEEE1588/IEC61588/PTP							
Communication Ports, Protocols, display and I/O							
() = Optional							
USB ports			1				
RS-485-only ports	(1)	1	1	1		(1)	(1)
Ethernet ports	(1)		1	1	1	2	2
PROFIBUS ports						(1)	(1)
PROFINET ports						(2)	(2)
Modbus RTU Slave on serial	(1)	1	●	●		(1)	(1)
Modbus RTU Master on serial ports							
Modbus/TCP on Ethernet ports	(1)		●	●	●	●	●
Modbus TCP Master over Ethernet							
BACnet MS/TP			●				
BACnet IP on Ethernet ports			●	●			
MQTT							
SNMP				●			
DNP3							
IEC 61850							
DHCP	(●)			●	●	●	●
RSTP							
Secure protocols (HTTPS, SFTP, SSH, Secure Modbus)							(●)
Ethernet Gateway: 31 other meters accessible via RS-485							(●)
Multiple masters over Ethernet	3		2	4	3	3	12
On-board web server - Realtime, Trending	(●)			● (CSV download)	●	●	●
On-board web server - Waveform display							
Analog inputs						(1)	(1)
Analog outputs							
Digital status/counter inputs (standard/opt. add-ons)	1	2		2 / (44)	1	2 / (8)	2 / (8)
Digital relay outputs (control/pulse)	1	2	1	1	1	2 / (4)	2 / (4)
Integrated display	B/W	B/W	B/W	Optional Color		B/W	B/W
Setpoints, alarming and control							
Setpoints, alarms, minimum response time	No	●	●	●	●	●	●
Math, logic, trig, log, linearization formulas	No	and/or, ><	No	Grouping	and/or, ><	and/or, ><	and/or, ><
Multi-condition alarms	No	●	No	No	●	●	●
Email on alarms	No	No	No	No	No	No	No
Revenue Metering							
ANSI C12.20		0.5S	0.2	0.2			0.2
EN50160 Compliance Reporting							
IEC 61000-4-30 Class A/S							
IEC 62053-22 replaces IEC 60687 0.2S compliant.	●	●		●		●	●
IEC 62053-23, 24 compliant for Reactive Energy accuracy	●	●				●	●
IEC 62586-1 (new Power Quality standard)							
IEC 60687 accuracy class compliant	● (0.5)	● (0.5)		● (0.2)	● (0.5)	● (0.5)	● (0.2)
ANSI class 10, IEC 1/10 (1A nominal, 10A max)							
ANSI class 20, IEC 5/20 (5A nominal, 20A max)							
Time-of-use	●				●	●	●
Transformer/line loss compensation							

Some Features are optional, Refer to datasheets for allowable port configurations. Products meet or exceed the accuracy requirements of the standards listed; due to form factors, not all ANSI/IEC compliance tests may apply. Some products certified by third party laboratory.

Power Distribution Solutions

Intelligent Metering and Control Devices

Comparison chart

						
	Essential	Class S	Class A	9810	3VA ETU-8 †	3WA ETU-600 †
Power, energy and demand						
Voltage	100-690VLL	100-690VLL	100-690VLL	100-690VLL	80-600VLL	Up to 1000VLL
Voltage/current: per phase, average	●	●	●	●	●	●
Voltage/current: unbalance	●	●	●	●	●	●
Power: real(kW), reactive(kVAR), apparent(kVA), power factor, frequency	●	●	●	●	●	●
Energy kWh: bi-directional, import, export	●	●	●	●	●	●
Energy kWh: total, net	●	●	●	●	●	●
Demand: block, sliding window	●	●	●	●	●	●
Demand: thermal predicted	●	●	●	●		
Power quality analysis						
Sag(Dip)/Swell disturbances monitoring	●	●	●	●		●
Rapid Voltage Change		●	●			
Voltage disturbance direction detection		●	●	●		●
Harmonics (individual, even, odd, total) up to	31st, odd	63rd, odd	63rd, even & odd	63rd	THD Current and Voltage	odd to 31st
Sampling rate, maximum samples/cycle	128	256	512	1024	88	64
Flicker to EN50160, IEC 6100-4-7 / 4-15	●	●	●	●		
Harmonics to EN50160, IEC 6100-4-7 / 4-15			●	●		
Subsynchronous Oscillation (SSO) monitoring			●	●		
Configurable for IEEE 519-2014, SEMI/ITIC			●	●		
Data and Waveform Logs						
Triggered by setpoint, schedule, or external signal		●	●	●	N/A	●
Sequence-of-event logs or Alarm Logs, variable log depth		●	●	●	●	●
Minimum/maximum logs		●	●	●		●
Onboard Historical Logging Memory	64 MB	512 MB	512 MB	2 GB	Over 40 days	
Email Data & Event Logs						
Waveform recording	●	●	●	●		●
Waveform in COMTRADE format with FTP	●	●	●	●		
GPS time synchronization	PTP/NTP/IRIG-B	PTP/NTP/IRIG-B	PTP/NTP/IRIG-B	PTP/NTP/IRIG-B	SNTP	SNTP
Time-stamps, resolution in seconds	± 1 millisecond	± 1 millisecond	± 1 millisecond	± 1 millisecond	± 1 second	± 1 second
Time Synch - IEEE1588/IEC61588/PTP	●	●	●	●		
Communication Ports, Protocols, display and I/O						
() = Optional						
USB ports				2 (Not activated)	No	● (USB-C)
RS-485-only ports	1	1	1	2	(1) **only one	1, with COM150
Ethernet ports	2 (UTP)	2 (UTP)	2 (UTP)	2 (UTP)	(1)	2, with COM190
PROFIBUS ports					(1) **only one	
PROFINET ports					(1) **only one	2, with COM190
Modbus RTU Slave on serial	●	●	●	●	(1)	COM150
Modbus RTU Master on serial ports	●	●	●	●	No	
Modbus/TCP on Ethernet ports	●	●	●	●	(1)	2
Modbus TCP Master over Ethernet	●	●	●	●		
BACnet MS/TP						
BACnet IP on Ethernet ports	●	●	●	●		
MQTT	●	●	●	●		
SNMP	●	●	●	●		
DNP3	●	●	●	●		
IEC 61850	●	●	●	●		
DHCP	● (IP v4/ IP v6)	● (IP v4/ IP v6)	● (IP v4/ IP v6)	● (IP v4/ IP v6)		
RSTP	●	●	●	●		
Secure protocols (HTTPS, SFTP, SSH, Secure Modbus)				HTTPS		
Ethernet Gateway: 31 other meters accessible via RS-485	●	●	●	●		
Multiple masters over Ethernet	8	8	8	8	5	10
On-board web server - Realtime, Trending	●	●	●	●	No **Use Powerconfig	No **Use Powerconfig
On-board web server - Waveform display	●	●	●	●		
Analog inputs	(16)	(16)	(16)	(16)		
Analog outputs	(8)	(8)	(8)	(8)		
Digital status/counter inputs (standard/opt. add-ons)	3/(24)	3/(24)	3/(24)	8/(24)	0/(1)	
Digital relay outputs (control/pulse)	1/(8)	1/(8)	1/(8)	4 FA/2 RO (8 RO)	0/(4)	
Integrated display	COLOR	COLOR	COLOR	COLOR	B/W	COLOR
Setpoints, alarming and control						
Setpoints, alarms, minimum response time	1/2 Cycle	1/2 Cycle	1/2 Cycle	1/2 Cycle	●	●
Math, logic, trig, log, linearization formulas	●	●	●	●		
Multi-condition alarms	●	●	●	●	●	● (optional)
Email on alarms	●	●	●	●		
Revenue Metering						
ANSI C12.20	0.2 *	0.2 *	0.2 *	0.2		
EN50160 Compliance Reporting			●	● (Ed4)		
IEC 61000-4-30 Class A/S		S	A	● (Class A Ed3)		
IEC 62053-22 replaces IEC 60687 0.2S compliant.	●	●	●	● (0.1S)		
IEC 62053-23, 24 compliant for Reactive Energy accuracy	●	●	●	● (0.2S)		
IEC 62586-1 (new Power Quality standard)				●		
IEC 60687 accuracy class compliant	● (0.2)	● (0.2)	● (0.2)	● (0.2)		
ANSI class 10, IEC 1/10 (1A nominal, 10A max)	●	●	●	●		
ANSI class 20, IEC 5/20 (5A nominal, 20A max)	●	●	●	●		
Time-of-use	●	●	●	●		
Transformer/line loss compensation				●		

* This meter is 0.2S compliant at 5A nominal CT, and 0.5S compliant at 1A nominal CT

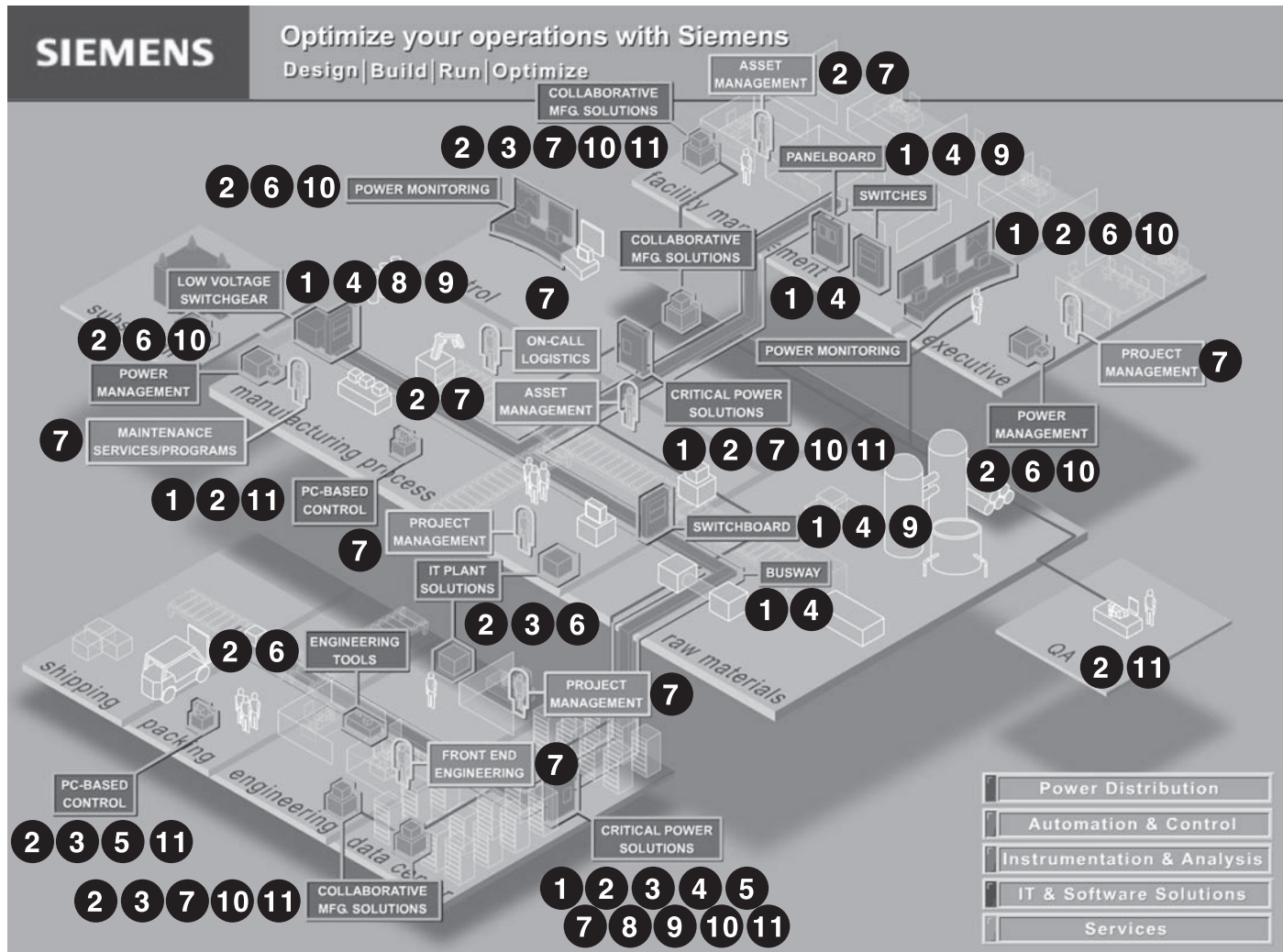
** For further information on communicating with the 3VA ETU-5/8 series reference this link: https://cache.industry.siemens.com/dl/files/267/98746267/att_867909/v1/3VA_system_manual_communication_en_en-US.pdf

† The primary function of these devices is circuit protection. Processes related to protection receive priority.

Totally Integrated Power

System Overview

General



1. Power Meters

Siemens power monitors combine the best of new technologies and proven practices. Monitor critical loads, power quality, and demand via the web directly from the meters.

2. Power Monitoring Software

WinPM.Net and Powermanager web-enabled software facilitates easy, enterprise-wide connection to power monitoring equipment, circuit breakers, and other devices from Siemens and third parties. Access information via the web with unlimited no-cost clients using built-in Web Client via your web browser.

3. Communications Networks

Utilize existing Ethernet or RS-485 communications networks to extract the information you need and get it where it needs to go.

4. Components

Current Transformers (CTs), Voltage/Potential Transformers (PTs), Power Supplies, Ethernet Switches, Protocol Converters. Siemens can provide everything required for your system.

5. Intelligent I/O

Our S7 I/O enables plug-n-play communications with Modbus devices and expands digital and analog input and output functionality of Siemens Systems.

6. Billing and Load Allocation Software

Powermanager is the simplified solution for cost allocation, billing & load/demand analysis using your web browser.

7. Engineering Services

PDS Application Engineers can help from design through commissioning of even the most demanding power quality and monitoring systems.

8. Motor Control Centers

Monitor mains and feeders for critical or power-intensive loads. Communicate with WL, VL, 3VA, and 3WA breakers, SIMOCODE, I/O and devices from other manufacturers. Use Siemens power meters to web-enable new as well as existing MCCs.

9. Low- & Medium-Voltage Switchgear

Web-enable switchgear by having Siemens power monitoring as well as breaker status and upload the information to a corporate Intranet or to the Internet. Use MeterMail™ directly from meters for alarm conditions or simple reporting.

10. Facility Management Systems

Tie into building automation systems to provide the required power and energy information. Many communications options are available ranging from legacy protocols to XML directly from the power monitors.

11. Distributed Control Systems, Automation, and SCADA/Human Machine Interface

Siemens power monitors and/or software can talk to all major vendors' systems.

Power Distribution Solutions

PAC2200 Power Meter

Reliable and Precise Monitoring of Electrical Power Systems

The **PAC2200** is a powerful compact din rail mounted power monitoring device that is suitable for use in industrial, government and commercial applications where basic metering and energy monitoring is required. The meter may be used as a standalone device monitoring over 50+ parameters or as part of an industrial control, building automation or global power monitoring system. Metering and monitoring applications range from simple analog volt and amp meter replacements to stand-alone

sub billing or cost allocation installations with multiple tariffs.

The PAC2200 provides open communications using Modbus RTU/TCP, and Mbus protocols for easy integration into any local or remote monitoring system. With a built-in web server viewing your data has never been easier. Simple configuration of the meter can be done from the front display or by using a PC with SENTRON powerconfig setup free software available for download from SIEMENS website.

Precision

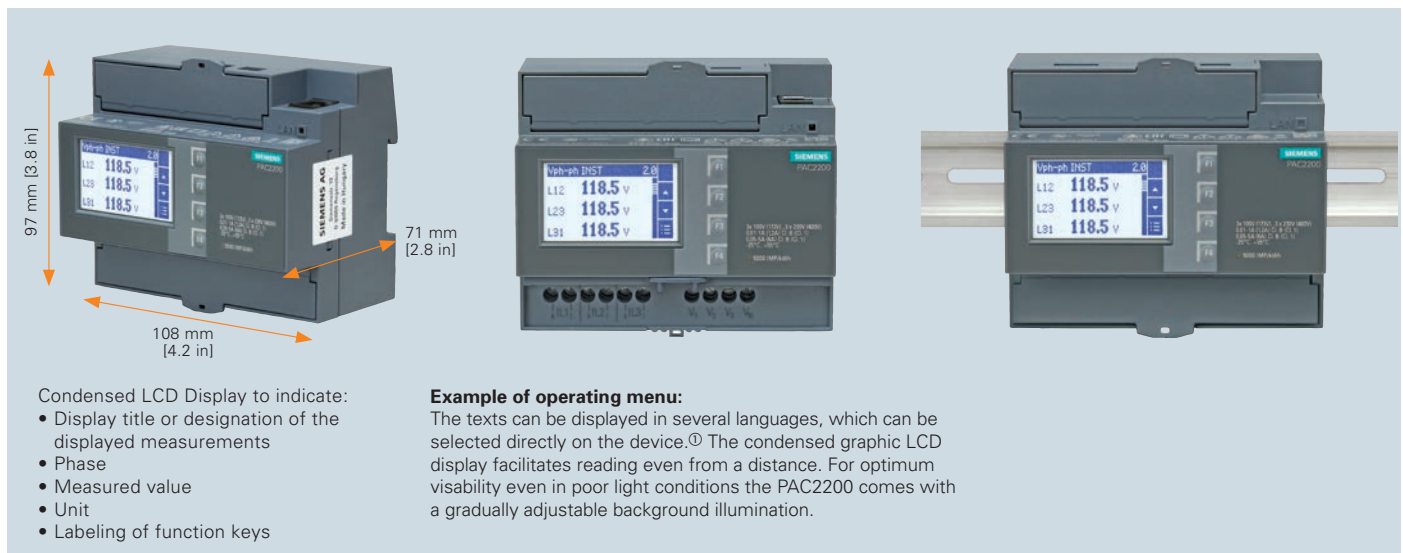
- Class 1% Accuracy
- Energy Measurement
 - Voltage +/- 0.5%
 - Current +/- 0.5%
 - Power Factor +/- .5%
 - Sampling Rate 135K/per cycle
- Revenue Accurate
 - Sub Billing
 - Cost Allocation
 - MID Certified variant for European customers
- Cost Effective

Energy Management

- Serves three masters via the TCP connection
- Energy Consumption
- Automation Integration
- Solution for LEED® credit
- Monitors Critical Equipment
- Modbus TCP/RTU
- Mbus

Reliability

- Economical Measurement
 - Commercial
 - Industrial
 - Residential
- Degree of Protection
 - Front – IP40
 - Rear – IP20
- 400VLL Connected Voltage
- Simple Retrofit Installation
- Integration with Existing Systems



Order information

Product	Catalog Number
PAC2220 Modbus RTU, L-L: 400 V, L-N: 230 V, 5 Amp, self-powered, screw terminals	7KM22002EA301DA1
PAC2220 Modbus TCP, L-L: 400 V, L-N: 230 V, 5 Amp, strd rail instr, self-powered, screw terminals	7KM22002EA301EA1
PAC2220 Modbus RTU, MID Certified, L-L: 400 V, L-N: 230 V, 5 Amp, self-powered, screw terminals	7KM22002EA301HA1
PAC2220 Modbus TCP, MID Certified ,L-L: 400 V, L-N: 230 V, 5 Amp, self-powered, screw terminals	7KM22002EA301JA1

① Languages included as standard in the meter are English, German, French, Spanish, Italian, Portuguese, Turkish, Russian and Chinese.

Power Distribution Solutions

PAC3120 Power Meter

Basic Monitoring of Electrical Power Systems

The **PAC3120** is a powerful compact power monitoring device that is suitable for use in industrial, government and commercial applications, where basic metering and energy monitoring is required. The meter may be used as a stand alone device monitoring over 100+ parameters or as part of an industrial control, building automation or global power monitoring system. Metering and monitoring applications range from simple analog volt and amp meter replacements to stand-alone sub-billing or cost allocation installations.

The PAC3120 has many features not usually found in this price class of meters. A large graphical display supports multiple languages and easy to use menus that can be used to set up the meter. The meter also has built in Modbus RTU communications via a RS485 interface. The meter comes standard with two digital inputs and two digital outputs. One output is suitable for pulse output for export/import real and reactive energy. The other output is controllable from an outside source by way of a Modbus register.

Precision

- ANSI C12.20 class 0.5
- Energy Measurement
 - Voltage +/- 0.2%
 - Current +/- 0.2%
 - Power Factor +/- 0.5%
 - Sampling Rate 135k/per cycle
- Revenue Accurate
 - Sub Billing
 - Cost Allocation
- Cost Effective

Energy Management

- Energy Consumption
- Demand Control
- Automation Integration
- Solution for LEED® credit
- Monitors Critical Equipment
- Sub Metering

Reliability

- Economical Measurement
 - Commercial
 - Industrial
 - Residential
- Degree of Protection
 - Front – IP65
 - Rear – IP20
- 690VLL Connected Voltage
- Simple Retrofit Installation
- Integration with Existing Systems

The image shows three Siemens PAC3120 power meters. The first meter on the left displays 'Vph-n INST' with three phase voltage readings: L1 at 124.8 V, L2 at 124.7 V, and L3 at 124.7 V. The second meter in the middle displays 'TOTAL S, P, Q INST' with three total readings: 7.46 kVA, 3.48 kW, and 3.09 kVar. The third meter on the right displays 'ACTIVE ENERGY' with two cumulative energy readings: T1 kWh at 000003382.59 and T2 kWh at 000000000.00. Dimensions for the first meter are shown as 96 mm (3.78 in.) in height and 96 mm (3.78 in.) in width. Below the meters, there is a section titled 'Example of operating menu' with a brief description of the display and commissioning steps.

Full Graphic LCD Display to indicate:

- Display title or designation of the displayed measurements
- Phase
- Measured value
- Unit
- Labeling of function keys

Example of operating menu
With an easy-to-read adjustable back lit LCD display, the PAC3120 can be commissioned in only two steps. After selecting the language and setting two parameters (voltage and current inputs), the meter is ready for use.①

Order information

Product	Catalog Number
PAC3120 Compression terminals AC/DC	7KM31200BA011DA0
PAC3120 Compression terminals DC Only	7KM31201BA011EA0
Adapter Plate for 4700/4720 meter cutout	93-47ADAPTER
PAC32/4200 Meter DIN Rail adapter – Meter display will not be seen	7KM9900-0YA00-0AA0
PAC32/4200 Meter DIN Rail 2-adapter – Meter display will be seen	7KM9900-0XA00-0AA0

① Languages included as standard in the meter are English, German, French, Spanish, Italian, Portuguese, Turkish, Russian and Chinese.

Power Distribution Solutions

PAC3200T Power Meter

Reliable and Precise Monitoring of Electrical Power Systems

The **PAC3200T** is a powerful compact din rail mounted power monitoring device that is suitable for use in industrial, government and commercial applications where basic metering and energy monitoring is required. The meter may be used as a standalone device monitoring over 100+ parameters or as part of an industrial control, building automation or global power monitoring system. Metering and monitoring applications range from simple analog volt and amp meter replacements to stand-alone sub billing or cost allocation installations with multiple tariffs.

The PAC3200T provides open communications using Modbus TCP protocol for easy integration into any local or remote monitoring system. With a built-in web server viewing your data has never been easier. Simple configuration of the meter can be done by using a PC with SENTRON powerconfig setup free software available for download from SIEMENS website.

Precision

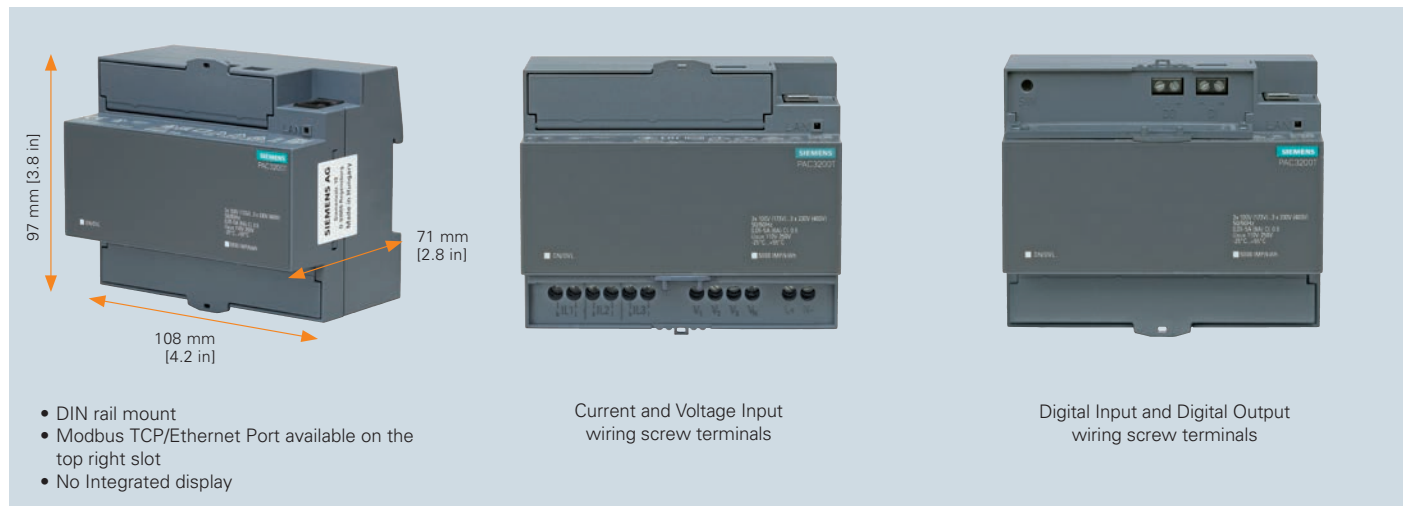
- Class 0.5% Accuracy
- Energy Measurement
 - Voltage +/- 0.5%
 - Current +/- 0.5%
 - Power Factor +/- .5%
 - Sampling Rate 135K/per cycle
 - Total Harmonic Distortion (THD)
- Revenue Accurate
 - Sub Billing
 - Cost Allocation
- Cost Effective

Energy Management

- Serves three masters via the TCP connection
- Energy Consumption
- Automation Integration
- Solution for LEED® credit
- Monitors Critical Equipment
- Modbus TCP/RTU

Reliability

- Economical Measurement
 - Commercial
 - Industrial
 - Residential
- Degree of Protection
 - Front – IP40
 - Rear – IP20
- 400VLL Connected Voltage
- Simple Retrofit Installation
- Integration with Existing Systems



Order information

Product	Catalog Number
PAC3200T DIN Rail Mount Power Meter without DISPLAY, AC/DC, Modbus TCP, L-L: 400 V, L-N: 230 V, 5 A, wide-range pwr sup. unit AC/DC, screw terminals	7KM32000CA011AA0

① Languages included as standard in the meter are English, German, French, Spanish, Italian, Portuguese, Turkish, Russian and Chinese.

Power Distribution Solutions

PAC3220 Power Meter

Reliable and Precise Monitoring of Electrical Power Systems

The **PAC3220** is a powerful compact power monitoring device that is suitable for use in industrial, government and commercial applications where basic metering and energy monitoring is required. The meter may be used as a stand alone device monitoring over 100+ parameters or as part of an industrial control, building automation or global power monitoring system. Metering and monitoring applications range from simple analog volt and amp meter replacements to stand-alone sub billing or cost allocation installations with multiple tariffs.

The PAC3220 provides open communications using Modbus RTU/TCP, PROFIBUS-DP, and PROFINET protocols for easy integration into any local or remote monitoring system. With a built-in web server viewing your data has never been easier. Simple configuration of the meter can be done from the front display or by using a PC with SENTRON powerconfig setup free software available for download from SIEMENS website.

Precision

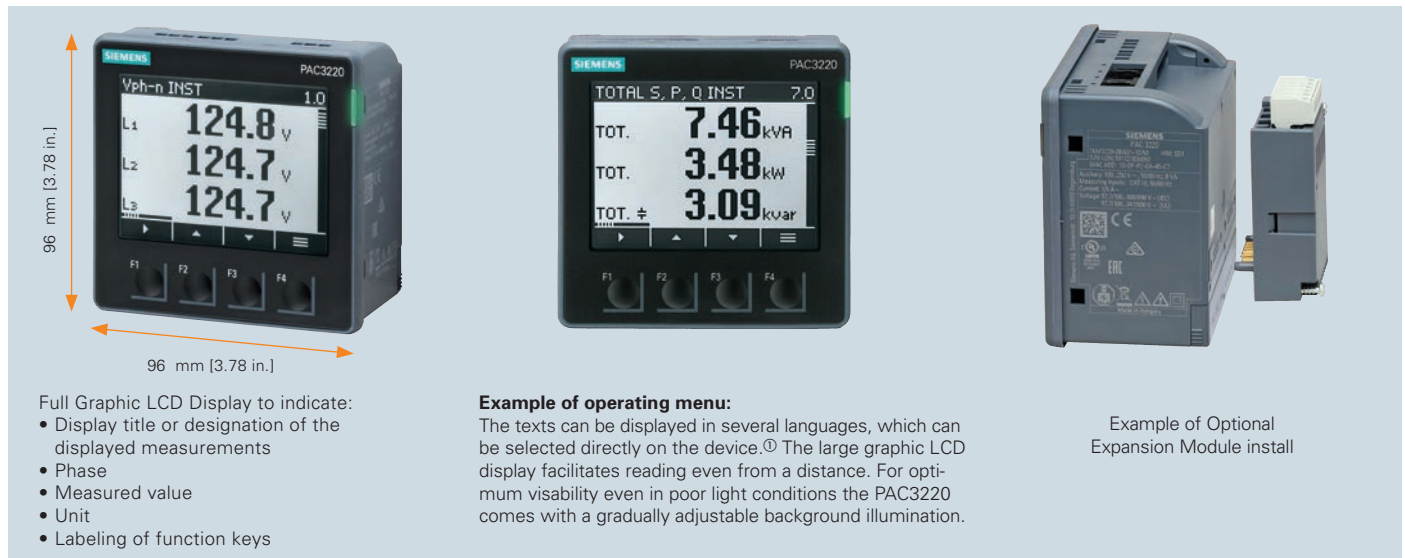
- ANSI C12.20 Class 0.5s
- Energy Measurement
 - Voltage +/- 0.2%
 - Current +/- .2%
 - Power Factor +/- .5%
 - Sampling Rate 135K/per cycle
 - Total Harmonic Distortion (THD)
- Revenue Accurate
 - Sub Billing
 - Cost Allocation
- Cost Effective

Energy Management

- Serves three masters via the TCP connection
- Energy Consumption
- Automation Integration
- Solution for LEED® credit
- Monitors Critical Equipment
- Modbus TCP/RTU
- Industrial Systems
 - PROFIBUS
 - PROFINET

Reliability

- Economical Measurement
 - Commercial
 - Industrial
 - Residential
- Degree of Protection
 - Front – IP65
 - Rear – IP20
- 690VLL Connected Voltage
- Simple Retrofit Installation
- Integration with Existing Systems



Order information

Product	Catalog Number
PAC3220 compression terminals (not suitable for use with ring tongue terminals), AC/DC	7KM32200BA011DA0
PAC3220 compression terminals (not suitable for use with ring tongue terminals), DC only	7KM32201BA011EA0
Expansion Module - PAC PROFIBUS DP	7KM93000AB010AA0
Expansion Module - PAC PROFINET	7KM93000AE020AA0
Expansion Module - PAC MODBUS RTU	7KM93000AM000AA0
Expansion Module - I(N), I(Diff), Analog for PAC 3220 or 4200	7KM92000AD000AA0
PAC3220/4200 Meter DIN Rail adapter – Display faces backwards towards standard mounting rail	7KM99000YA000AA0
PAC3220/4200 Meter DIN Rail 2-Tier adapter – Display faces forward	7KM99000XA000AA0
Power Supply. Input: 120-230V AC / 110-300V DC Output: 24 V DC 4 Amps. DIN Rail mounted.	US2:PWRSP4A
Adapter Plate for 4700/4720 meter cutout	93-47ADAPTER

① Languages included as standard in the meter are English, German, French, Spanish, Italian, Portuguese, Turkish, Russian and Chinese.

Power Distribution Solutions

PAC4220 Power Meter **NEW**

Reliable and Precise Monitoring of Electrical Power Systems

The **PAC4220** is a feature-packed power monitoring device suitable for industrial, government, and commercial applications requiring essential advanced metering, logging, Harmonics, and I/O. The meter may be used as a stand-alone device monitoring over 200 parameters or as part of industrial control, building automation, or a global enterprise-wide monitoring system.

Advanced power quality monitoring and logging applications range from single low-voltage breaker/building metering to sub-station primary feeder monitoring, sub-billing, or cost allocation installations with multiple tariffs. Whether your goal is to reduce operation costs, reduce your carbon footprint, or maintain your power assets, the PAC4220 meter should be an essential part of your power monitoring system. Advanced power quality monitoring and logging applications range from single low-voltage breaker/building metering to

sub-station primary feeder monitoring, sub-billing, or cost allocation installations with multiple tariffs. Whether your goal is to reduce operation costs, reduce your carbon footprint, or maintain your power assets, the PAC4220 meter should be an essential part of your power monitoring system.

The PAC4220 provides open communication using the standard built-in Ethernet Modbus TCP and can simultaneously communicate through Optional Modbus RTU, PROFIBUS DP, and PROFINET protocol expansion modules. This allows for easy integration into any local or remote monitoring system. With a built-in web server, viewing your data has never been easier. The gateway functionality to bring downstream device data to the electrical management system reduces installation costs by replacing other gateway devices and simplifying wiring.

Precision

- Meets the high requirements of IEC 61557-12 PMD Class III
- Metering accuracy class min. 0.2 according to 61557-12 and 0.2s acc. to IEC 62053-22
- Aggregation Values 10 Sec./ 15 Mins for all measured values
- Power Quality
 - THD Voltage | THD Current
 - Measurement up to 64th harmonic of voltage and current
- Revenue Accurate
 - Sub Billing
 - Cost Allocation
- Cost Effective

Energy Management

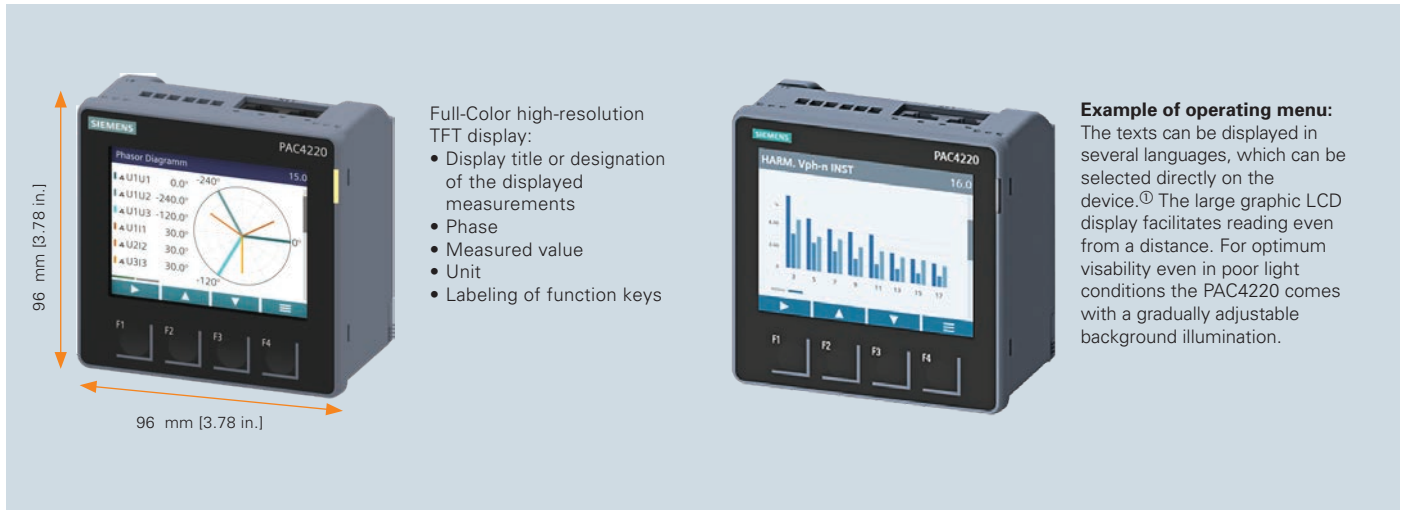
- Colored high-resolution TFT Display
- Serves twelve master's via the TCP connection
- Energy Consumption
- Min/Max and Event Logs
 - Storage Capacity – 8GB
 - Event Logging 4000 events
- Demand Control
- Automation Integration
- Modbus Gateway
- Modbus TCP/RTU
- Dual Ethernet connections
- Integrated Webserver and REST API
- Industrial Systems
 - PROFIBUS
 - PROFINET

Reliability

- Monitors Critical Equipment
- Economical Measurement
 - Commercial
 - Industrial
- Degree of Protection
 - Front – IP65
 - Rear – IP20
- Direct measurement up to 690VLL, CAT III
- Current measurement via transformer x/5 A or x/1 A, CAT III
- Customizable Displays
- Simple Retrofit Installation
- Integration with Existing Systems
- Solution for LEED® credit

Power Distribution Solutions

PAC4220 Power Meter **NEW**



Order information

Product	Catalog Number
PAC4220 Meter AC/DC, Modbus TCP, Power Monitoring Device with color graphic TFT display PMD-III acc. to IEC61557-12 active energy class 0.2 (class 0.2S acc. to IEC62053-22) 96 x 96 mm, 3-phase, 45 - 65 Hz Ue rated: 690/400 V Ie rated: x/1A or x/5A AC/DC wide-range power supply 95 to 250 V +-10% (AC), 110 to 270 V +-10% (DC) screw terminal connection control panel instrument with measurement of electrical variables apparent/active/reactive energy/cos phi /THDu/THDi/even and odd harmonics per phase up to 64.	7KM42200BA011EA0
PAC4220 meter, DC only, Modbus TCP, Power Monitoring Device with color graphic TFT display PMD-III acc. to IEC61557-12 active energy class 0.2 (class 0.2S acc. to IEC62053-22) 96 x 96 mm, 3-phase, 45 - 65 Hz Ue rated: 690/400 V Ie rated: x/1A or x/5A DC extra-low voltage power supply unit 24 to 48 V +-25% screw terminal connection control panel instrument with measurement of electrical variables apparent/active/reactive energy/cos phi /THDu/THDi /even and odd harmonics per phase up to 64.	7KM42201BA011EA0
Expansion Module - PAC PROFIBUS DP	7KM93000AB010AA0
Expansion Module - PAC PROFINET	7KM93000AE020AA0
Expansion Module - PAC MODBUS RTU	7KM93000AM000AA0
Expansion Module - PAC additional I/O	7KM92000AB000AA0
Expansion Module - I(N), I(Diff), Analog for PAC 3220 or 4200 or 4220	7KM92000AD000AA0
PAC3220/4200/4220 Meter DIN Rail adapter – Meter display will not be seen	7KM99000YA000AA0
PAC3220/4200/4220 Meter DIN Rail 2-Tier adapter – Meter display will not be seen	7KM99000XA000AA0
Power Supply. Input: 120-230V AC / 110-300V DC Output: 24 V DC 4 Amps. DIN Rail mounted.	US2:PWRSP4A
Adapter Plate for 4700/4720 legacy meter replacement cutout	93-47ADAPTER

Power Distribution Solutions

9410 Web-Enabled Power Quality & Analysis Meter

Reliable and Precise Monitoring of Electrical Power Systems

The **9410** series meters are ideally suited to local and remote monitoring of low- or high-voltage electrical installations in industrial facilities, commercial buildings, utility networks or critical power environments. Facility and operations personnel will benefit in energy-related costs while avoiding power quality conditions that can reduce equipment life and productivity.

The 9410 series meter is easy to install and use, offering integrated or remote high-visibility displays. A range of expansion modules help match features to the application and support field-upgrading of meters as required. Serial and Ethernet communication enable the meter to be used within a WinPM.Net power management system or with third-party management systems.

Precision

- ANSI C12.20 Class 0.2s
 - Energy Measurement
 - Voltage +/- .1%
 - Current +/- .1%
 - Power Factor +/- .5%
 - Sampling Rate 128, 256 or 512 per cycle
 - Individual Harmonics up to 63rd
 - Sags / Swells Detection
 - Programmable Math / Logic Function
- Revenue Accurate
 - Sub Billing
 - Cost Allocation

Energy Management

- Energy Consumption
- 9410 Waveform Capture
- Onboard Waveform Display Webpages
- Customizable Webpages
- Min/Max and Event Logs
- Demand Control
- Automation Integration
- Solution for LEED® credit
- Monitors Critical Equipment
- Modbus Gateway
- Modbus TCP/RTU
- Modbus Master
- Industrial Systems
- IEC 61850 Protocol

Reliability

- Economical Measurement
 - Commercial
 - Industrial
- Degree of Protection
 - Front – IP54, UL type 12
 - Rear – IP30
- 600V Connected Voltage
- Customizable Displays
- Email Alarms through Ethernet
- Field Addable Modules
- Simple Retrofit Installation
- Integration with Existing Systems

Functions and Characteristics

	9410 Essential	9410 Standard (Class S)	9410 Advanced (Class A)
General			
Use on LV and MV systems	✓	✓	✓
Current accuracy	0.1 % reading	0.1 % reading	0.1 % reading
Voltage accuracy	0.1 % reading	0.1 % reading	0.1 % reading
Active energy accuracy	0.2 Class	0.2 Class	0.2 Class
Number of samples/cycle or sample frequency	256 ^①	256	512
Programability	✓	✓	✓
Instantaneous RMS Values			
Current, voltage, frequency	✓	✓	✓
Active, reactive, apparent power: Total and per phase	✓	✓	✓
Power factor: Total and per phase	✓	✓	✓
Current measurement range (autoranging)	0.05 - 10A	0.05 - 10A	0.05 - 10A
Energy Values			
Active, reactive, apparent energy	✓	✓	✓
Settable accumulation modes	✓	✓	✓
Demand Values			
Current: Present and max. values	✓	✓	✓
Active, reactive, apparent power: Present and max. values	✓	✓	✓
Predicted active, reactive, apparent power	✓	✓	✓
Synchronization of the measurement window	✓	✓	✓
Setting of calculation mode: Block, sliding	✓	✓	✓

① Waveform capture is limited to 128 Samples/cycle recording.



Dimensions:

- A. Meter with integrated display panel mount into a square cutout
- B. Meter with integrated display with up to (4) I/O module
- C. Din Rail mounted meter with up to (4) I/O modules
- D. Din Rail Mounted meter with remote display

Power Distribution Solutions

9410 Web-Enabled Power Quality & Analysis Meter

Functions and Characteristics (cont.)

	9410 Essential	9410 Standard (Class S)	9410 Advanced (Class A)
Power Quality Measurements			
Harmonic distortion: Current and voltage	✓	✓	✓
Individual harmonics: Via front panel and web page	31	63	63
Waveform capture	✓ ^①	✓	✓
Detection of voltage swells & sags	✓	✓	✓
Fast acquisition: 1/2 cycle data	✓	✓	✓
IEC 61000-4-30 Class A/S	–	S	A
EN50160 Interharmonic	–	–	–
IEC 61000-4-15	–	–	–
EN 50160 compliance checking	–	✓	✓
IEEE 519 compliance checking	–	✓	✓
Disturbance Direction Detection	–	✓	✓
Rapid Voltage Change	–	✓	✓
Customizable data outputs (using logic and math functions)	✓	✓	✓
Data Recording			
Min/max of instantaneous values	✓	✓	✓
Event logs	✓	✓	✓
Trending/forecasting	–	✓	✓
SER (Sequence of event recording)	✓	✓	✓
Time stamping	✓	✓	✓
GPS synchronization (+/- 1 ms)	✓	✓	✓
Data Recorder	10	50	64
Memory Channels	160	800	1024
Storage (in Mbytes)	64	512	512

① Waveform capture is limited to 128 Samples/cycle recording.

Functions and Characteristics (cont.)

	9410 Essential	9410 Standard (Class S)	9410 Advanced (Class A)
Display and I/O			
Front panel display	✓	✓	✓
Wiring self-test	✓	✓	✓
Pulse output	1	1	1
Digital or analog inputs (max)	27 Digital 16 Analog	27 Digital 16 Analog	27 Digital 16 Analog
Digital or analog outputs (max, including pulse output)	1 Digital 8 Relay 8 Analog	1 Digital 8 Relay 8 Analog	1 Digital 8 Relay 8 Analog
Communication			
RS 485 port	1	1	1
Ethernet port	2	2	2
Serial port (Modbus, ION, DNP3)	✓	✓	✓
Ethernet port (Modbus/TCP, ION TCP, DNP3 TCP, IEC 61850)	✓	✓	✓
Ethernet gateway	✓	✓	✓
Alarm notification via email	✓	✓	✓
Rapid Voltage Change	✓	✓	✓
Customizable data outputs (using logic and math functions)	✓	✓	✓
HTTP web server	✓	✓	✓
SNMP with custom MIB and traps for alarms	✓	✓	✓
SMTTP email	✓	✓	✓
NTP time synchronization	✓	✓	✓
FTP file transfer	✓	✓	✓

Order information

9410 Series Description	9410 Essential Catalog Number	9410 Standard (Class S) Catalog Number	9410 Advanced (Class A) Catalog Number
9410 AC/DC Powered Panel meter with integrated color display, 1 DO, 3 DI, dual port Ethernet	US2:9410DCE	US2:9410DC	US2:9410DCCLA
9410 AC/DC Powered DIN rail mounted – Meter packaged with Remote display and 3 meter cable, 1 DO, 3 DI, dual port Ethernet	US2:9410RCE	US2:9410RC	US2:9410RCCLA
9410 AC/DC Powered DIN rail mounted without display, 1 DO, 3 DI, dual port Ethernet	US2:9410TCE	US2:9410TC	US2:9410TCCLA
9410 LVDC Powered Panel meter with integrated color display, 1 DO, 3 DI, dual port Ethernet, 20Vdc-60Vdc PS	US2:9410DCE24V	US2:9410D24VDC	US2:9410DCCLA24V
9410 LVDC Powered DIN rail mounted – Meter packaged with Remote display and 3 meter cable, 20Vdc-60Vdc PS. 1 DO, 3 DI, dual port Ethernet	US2:9410RCE24V	US2:9410R24VDC	US2:9410RCCLA24V
9410 LVDC Powered DIN rail mounted without display, 1 DO, 3 DI, dual port Ethernet, 20Vdc-60Vdc PS	US2:9410TCE24V	US2:9410T24VDC	US2:9410TCCLA24V
9410 Panel meter with integrated color display, 1 DO, 3 DI, dual port Ethernet. RMICAN, Measurement Canada – Ready to be Hardware/Firmware sealable. Only used in Country Canada.	—	US2:9410DCAN	—
9410 Accessories			Catalog Number
9410 Expansion I/O Module with 2 relay outputs, and 6 digital inputs (wetted)			US2:948M2DO6DI
9410 Expansion I/O Module, 2 analog outputs (4 - 20 mA, 0 - 10 VDC), and 4 analog inputs (4 - 20 mA, 0 - 30 VDC)			US2:948M2AO4AI
9410 Expansion Fiber Ethernet Module			US2:948MFIBER
Optional – Remote display, 3 meter cable, mounting hardware for 30mm hole (nut and centering pin), mounting hardware for DIN96 cutout (92x92mm) adapter plate			US2:948DISP96
Optional – 9410 Remote display cable, 10 meters			US2:948DCAB10
Optional – 9410 Remote Display Mounting Adapter kit for 4" round hole – requires 9410RC			US2:94PMAK
Replacement Hardware Kit – 9410 Voltage and Current Sealing Kit (Typically included with base meter)			US2:9410SK
Replacement Hardware Kit – 9410 METER CONNECTION Terminals & SEALING KIT			US2:94PMHWK
Replacement Hardware Kit – 9410 remote display CONNECTION Terminals & SEALING KIT			US2:94PMRDHWK
Replacement Hardware Kit – 9410 24Vdc variants CONNECTION Terminals & SEALING KIT			US2:94PMHWKDC

Power Distribution Solutions

9810 High Accuracy Advanced Power Quality and Analysis Meter

Power Quality Meter with Web Server Technology

The Siemens **9810** series high accuracy and advanced power quality meter combines accurate; 3-phase energy and power measurement with data logging, power quality analysis, e-mail, alarming, Modbus mastering, Transient detection, Disturbance Direction Detection (DDD), Pre-Event/Post-Event Waveform capture and extensive I/O capabilities in a highly flexible and modular format. Analysis results are captured in the event log, along with a time-stamp and confidence level indicating level of certainty. The 9810 base meter includes 8 digital inputs capable of providing ± 1 millisecond time stamping and 4 digital outputs. The 9810 meters support numerous protocols including Modbus, ION, DNP3, IEC 61850, HTTP, HTTPS, DLMS, FTP, SNMP, SMTP, DPWS, RSTP, PTP, NTP/SNTP, GPS, Syslog, and DHCP protocols.

Fast sampling rates and extensive memory make this the perfect choice for critical power systems making analysis of issues possible for correction and prevention. As a data accumulator, the 9810 meter can also save money and time by simplifying wiring and networking. Information from the meter and downstream devices can be displayed on the large capacitive 7" touch display or smaller 3.5" display, on customizable web pages in reports and screens.

Applications for the 9810 meter range from critical power applications such as data centers to industrial, commercial and government power and power quality monitoring systems. The 9810 meter is offered in a number of forms from single meter enclosures integrated into Siemens switchgear, switchboard and panelboards. Place this high end power quality meter throughout the power distribution system where critical information is desired. Know what is happening in your facility and get maximum efficiency.

Precision

- ANSI C12.20 Class .1s
- Energy Measurement
 - Voltage +/- .1%
 - Current +/- .1%
 - Power Factor +/- .5%
 - 9810 Sampling Rate
1024 samples per cycle
 - 9810 Individual Harmonics
up to 63rd
 - Sags / Swells Detection
 - Programmable Math /
Logic Function
- Revenue Accurate
 - Sub Billing
 - Cost Allocation

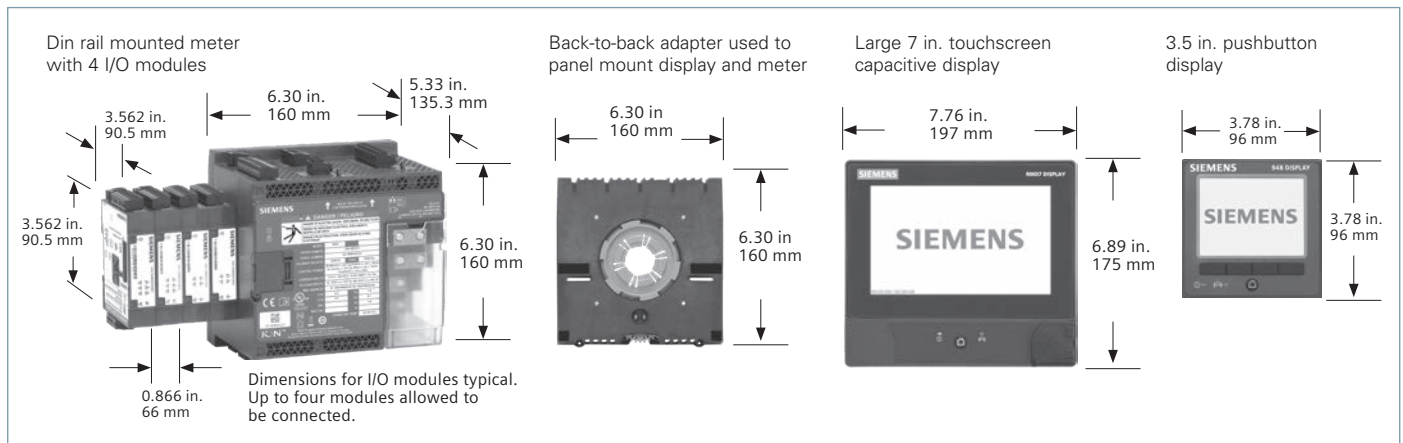
Reliability

- Economical Measurement
 - Commercial
 - Industrial
- 600V Connected Voltage
- Email Alarms
- Customizable Displays
- Password Protected
- Hardware Lockable
- Supports Copper Ethernet
- Integration with Existing Systems



Energy Management

- Energy Consumption
- Waveform Capture
- Transient Capture 17 μ s @ 60 Hz
- Disturbance Direction Detection (DDD)
- Customizable Webpages
- Extensive data logging, trending and forecasting
Non-volatile on-board logging of min/max values, energy and demand, maintenance data, alarms, and any measured parameters. Trending and short-term forecasting of energy, demand, and measured parameters.
- Demand Control
- Automation Integration
- Monitors Critical Equipment
- Modbus Master / Gateway
- Supports Multiple Protocols
- Supports Multiple Master via Ethernet

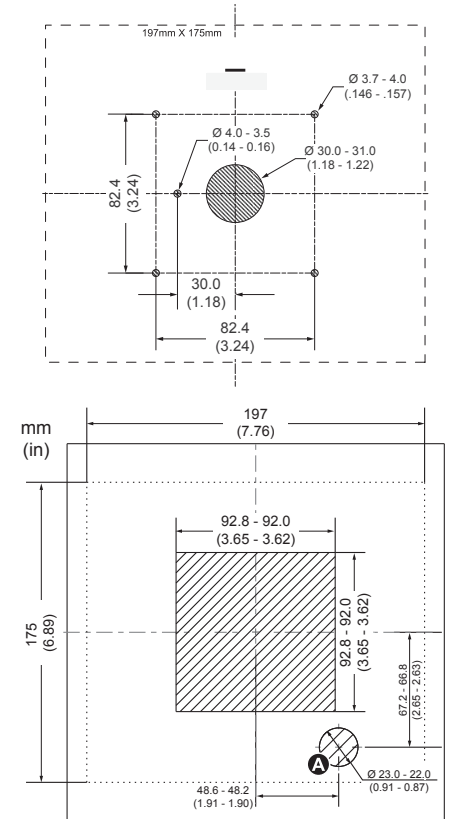


Power Distribution Solutions

9810 High Accuracy Advanced Power Quality and Analysis Meter

Order information

9810 Series Base Model	Catalog Number
9810 with 7" display (either din rail or panel mount)	US2:9810RC
9810 without display	US2:9810TC
9810RC 24VDC DIN transducer meter packaged with remote display, LVDC power supply (includes B2B adapter and 3m cable)	US2:9810R24V
9810TC 24VDC Meter without display, LVDC power supply	US2:9810T24V
9810RC LVCS DIN transducer meter packaged with remote display, LVCS current input (includes B2B adapter and 3m cable)	US2:9810RCLVCS
9810TC LVCS Meter without display, LVCS current input	US2:9810TCLVCS
9810RC LVSC 24VDC DIN transducer meter packaged with remote display, LVDC power supply, LVCS current input (includes B2B adapter and 3m cable)	US2:9810RLVCS24V
9810TC LVSC 24VDC Meter without display, LVDC power supply, LVCS current input	US2:9810TLVCS24V
Expansion Add-on Modules	Catalog Number
I/O Module-Digital (6IN/2OUT)	US2:948M2DO6DI
I/AI Module-Analog (4IN/2OUT)	US2:948M2AO4AI
9810 Expansion Fiber Ethernet Module	US2:948MFIBER
Accessories Catalog Number	Catalog Number
Large 7" display	US2:9810R7DISP
Small 3.5" display + 3M cable	US2:948DISP96
Remote display cable 10 M	US2:948DCAB10
Miscellaneous	Catalog Number
9810 Hardware Kit	US2:9810PMHWK
9810 Remote display Hardware kit	US2:9810PMRDHWK
9810 LVCS Hardware Kit	US2:9810LVCSHWK
9810 Current Input Green Connectors Hardware Kit.	US2:9810CTHWK
9810 Back to Back adapter	US2:9810BBADAPTER
9610/9510/ADR to 9810 mounting adapter	US2:9810MADAPTER



Electrical Characteristics

Measurement accuracy	Current and voltage	Class 0.1 as per IEC 61557-12
	Active power	Class 0.1 as per IEC 61557-12
	Power factor	Class 0.5 as per IEC 61557-12
	Frequency	Class 0.02 as per IEC 61557-12
	Active energy	Class 0.1 IEC 61557-12, ANSI C12.20 Class 0.1
		Reactive energy
Data update rate	1/2 cycle or 1 second	
Input-voltage characteristics	Specified accuracy voltage	57 VLN/100 VLL TO 400 VLN/690 VLL
	Impedance	5MΩ per phase
	Specified accuracy frequency	42 to 69Hz (50/60Hz nominal)
	Limit range of operation -frequency	20 to 450Hz
Input-current characteristics	Rated nominal current	1A (0.1S), 5A (0.1S), 20A (0.1ANSI)
	Specified accuracy current range	Starting Current: 1mA (No Accuracy); Accurate Range: 10mA-20A
	Permissible overload	500A rms for 1s
	Impedance	0.0003Ω per phase
	Burden	0.01 VA max at 5A
Power supply	AC	90-480V AC ±10% (50/60Hz ± 10%), 90-120V AC ±10% (400Hz)
	DC	110-480V DC ±15%
	Ride-through time (typical)	100 ms (6 cycles at 60Hz), 120V AC 400 ms (24 cycles at 60Hz), 240V AC 1200 ms (72 cycles at 60Hz), 480V AC
	Burden	Meter Only: 16.5W/38 VA max at 480V AC (50/60 Hz) Fully optioned meter: 40W/80 VA max at 480V AC (50/60 Hz)
Input/outputs	Meter Base Only	Meter Base Only 8 form A digital inputs (30V AC/60V DC) 4 form A (KY) solid state digital output (30V AC/60V, 75mA) 2 form C relay outputs (8 A at 250 V AC/ 5 A at 24 V DC)
	Optional	Digital - 6 form A digital inputs (30V AC/60V DC) 8 A at 250V AC or 5A at 24V DC Analog - 4 analog inputs (4-20mA, 0-30V DC) +2 analog outputs (4-20mA 0-10V DC)

Mechanical Characteristics

Weight	DIN rail mounted Model	1.5 kg
	I/O modules	0.140 kg
	7" Touchscreen display	0.861 kg
IP degree of protection	3.5" Display	0.300 kg
	IP 65, UL type 12: Panel mount and touchscreen display, front.	
	IP 30: Panel mount rear, DIN rail mount, I/O modules.	

Dimensions	
Panel mount model: Color remote display (2 options): 197 x 175 x 27.5 mm touchscreen 96 x 96 x 27 mm pushbutton	160 x 160 x 135.3 mm
DIN model	160 x 160 x 135.3 mm
I/O modules	90.5 x 90.5 x 22 mm
Touchscreen Display(s)	192 mm and 96 mm

Power Distribution Solutions

Enclosed Meters

Convenience and Reliability with Siemens Meter Enclosures

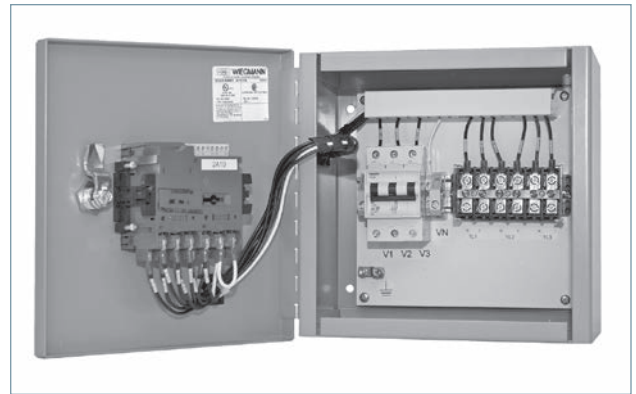
The Siemens meter enclosure offering is available to order with the PAC series meters, 9410 series power quality and 9810 series power quality meters. The enclosed meter offering provides the required energy and basic metering information needed for a typical sub-billing, cost allocation, power quality event monitoring applications, as well as providing a simple retrofit solution for any project.

With Safety being paramount, Siemens has designed the meter enclosure product offering with many safety and convenience features in mind. These include a single circuit breaker for both the control voltage & voltage taps to protect internal wiring and the power meters from damage and allowing a "single source" disconnect from outside power, separate CT shorting blocks for each meter, a grounding lug, and the Modbus serial communications will be terminated to one location for ease of network installation.

The Siemens meter enclosure solutions are delivered with all the required components pre-installed prior to shipment. All components will be mounted to a back plate in the enclosure and for applications above 240 volts, a CPT will be provided for control.

Installed in rugged Change to NEMA 1, NEMA 4, and NEMA 12 enclosures, these metering units are ideal for:

- Property Management Firms
- Government Applications
- Universities
- Corporate Campus Facilities
- Malls
- Food Courts
- Building Retrofits



Features:

- Rugged design and small footprint for easy installation
- Bright, easy-to-read LCD display
- Packaged by voltage and current ratings to accommodate any installation
- Utilizes 5A secondary current input for improved accuracy and increased compatibility

Benefits:

- Consolidate utility bills for sub-billing and energy management, bill tenants on actual usage
- Improve energy efficiency
- Aggregate energy purchases for reduced rates
- Improve productivity when coupled with Siemens software solutions or third-party billing software

Catalog Logic:

U S 2 : E N M M M M N N N V V Z Z

Example: **US2:EN322XN12V4DX**
(PAC 3220 Meter with display in a NEMA 12 enclosure for 480V application)

Meter: MMMM =
220X – PAC 2200^① **94EX** – 9410^② Essential/No PQ Compliance
32TX – PAC 3200T^① **94SX** – 9410^② Standard/Class S
312X – PAC 3120 **94AX** – 9410^② Intermediate/Class A
322X – PAC 3220 **98AX** – 9810^② Advanced/Class A
422X – PAC 4220

NEMA: NNN =
N01 – NEMA 1
N12 – NEMA 12
N04 – NEMA 4

Voltage: VV =
V2 – 240V
V4 – 480V^①
V6 – 600V^①

Integrated Display/No Display: ZZ =
DX – Integrated Display
TX – Tran unit (No display)^③

① PAC2200 and PAC3200T meters do not have 480 or 600V options
 ② 9410 & 9810 meter sold separately to include in the enclosure.
 ③ Option TX is available only for PAC 3200T

Power Distribution Solutions

Branch Circuit Monitoring/ SEM3 Embedded Metering

Space Savings, Convenience, and Reliability with Siemens Branch Circuit Monitoring



In a world where tenant square footage is a premium in commercial building designs, the area for electrical metering is being drastically reduced, and critical power is being relied upon in data centers applications, Siemens Branch Circuit Monitoring provides the solution.

The Siemens Branch Circuit Monitoring Solution utilizes the metering and monitoring technology integrated into the space saving panelboards from Siemens. When compared to the typical external wall mounted metering installations, considerable savings in space, installation costs, and data collection are realized with the Siemens Branch Circuit Monitoring Solution.

In addition, contractor labor costs for installation of sub-metering systems continues to increase. Still, building owners and property management companies must face the challenges of how to cost effectively provide tenant sub-metering in the constrained spaces.

To meet the sub-metering challenges of designers, contractors and property management companies, Siemens offers a proven cost-effective solution for Branch Circuit Monitoring/Embedded Metering. This solution combines a fully integrated metering system factory installed into the Siemens Panelboards, Switchboards, Bus Plug and remote external wall mount enclosures, which along with the required local or remote sub-billing software, provides a "Total" sub-metering system.

Siemens Branch Circuit Monitoring / Embedded Metering Solution

- Saves you money – A tenant billing system improves cash flow, allows immediate pass-on of electric rate increases and helps building owners control costs. Tenants are confident they are paying their fair share for energy use and are saving money through energy conservation.
- Fast, low-cost installation – The embedded Siemens solution provides a faster and lower cost installation compared to other external systems.
- Lower space requirements – The embedded panelboard construction design requires no additional wall space to provide tenant metering. Conventional metering requires an external metering enclosure and possibly a current transformer transition cabinet.
- Reliable and accurate – Many Siemens systems are already in operation in large commercial and residential buildings around the country. Their accuracy exceeds utility industry and government standards for revenue grade meters.
- LEED certification – Provides the energy monitoring and logging required to achieve additional LEED points.
- Automated billing – With automated billing services the responsibility to acquire the data, store the data and bill the tenants is removed from the property management company, thus saving manpower and time.
- Responsive service – With remote monitoring, continuous 24/7 monitoring can be done by the property management company or tenants. The service can also relay consumption changes to the owners for immediate investigation.

Designer and contractor benefits include:

- Much smaller footprint versus the traditional socket meter combo units
- Factory pre-wired – less installation time
- Drastically less installation wiring
- No CT installation required in the field
- All equipment fits into the standard Siemens panel design
- Additional utilities like water, air and gas can be easily integrated into the system for a comprehensive monitoring system
- Hardwire and wireless communication options
- All components factory calibrated to meet revenue metering requirements
- Additional meters can be added in the field
- UL, IEC, BTL, ANSI and CSA approved
- NY, CA, & MD State Approved Meter.
- Embedded web-server for on-site configuration and real time data view.
- Monitor 1 to 45 branch circuits.

Branch Circuit Monitoring applications include:

- Mixed Tenant & Retail
- Industrial Manufacturing
- Higher Ed
- Strip Malls
- Critical Power
- Government
- LEEDS buildings
- Airports

Please Contact Your Siemens Sales Engineer for additional information regarding Branch Circuit Monitoring / Embedded Metering

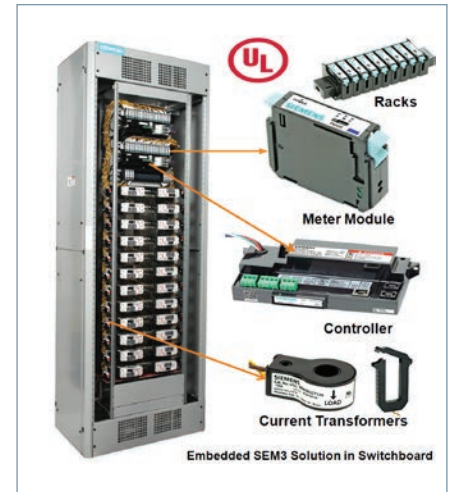
Power Distribution Solutions

Branch Circuit Monitoring/ SEM3 Embedded Micro Sub Metering

Powerful embedded metering at the source of consumption!

The new Siemens Embedded Micro Metering Module (SEM3) is a modular metering solution for energy monitoring, data analysis, and sub billing applications. The flexible design allows for low, medium, and high density metering requirements to be met efficiently and economically using only a few standardized components integrated into Siemens Panelboard and Switchboard products. SEM3 is pre-engineered to integrate into new Siemens Panelboards and Switchboards but has also been designed to be implemented in OEM and retrofit applications as well.

The SEM3 provides an innovative and cost effective metering solution that can be incorporated into existing applications such as power monitoring, building automation, and sub-billing systems. SEM3 also has the flexibility to be installed as a standalone solution with real time data available from the controller's standard built-in web pages. This metering product has two levels of accuracy to meet the market's differing requirements and price points. This versatile system allows you to meter just the loads you need without the excess hardware and space requirements of traditional or competing solutions.



Features & Benefits:

- System designed to meter up to 45 metering points
- Easy retrofit and plug-n-play expansion features
- High metering accuracy up to 0.2%; standard 1.0%
- Installed and configured in SIEMENS engineered Panel boards, Switchboards, and Bus Plugs at SIEMENS Plants. SIEMENS ONE SOLUTION!
- Built-in HTML web pages for easy configuration & real-time data monitoring for Voltage, Current, Power, Energy, Water, and, Gas
- Modbus RTU, Modbus TCP, SNMP, NTP, BACnet IP protocols
- Utilizes milliamp CT's reducing hardware and increasing safety
- Solid core CT's for high accuracy and split core CT's for easy retrofit.
- Emailing, Alarming, Trending, Totalizing, Event Logging & Data Logging
- Offline Configuration for improving Field and Factory engineering time
- 4 Language support includes English, German, French, and Spanish

Order Information

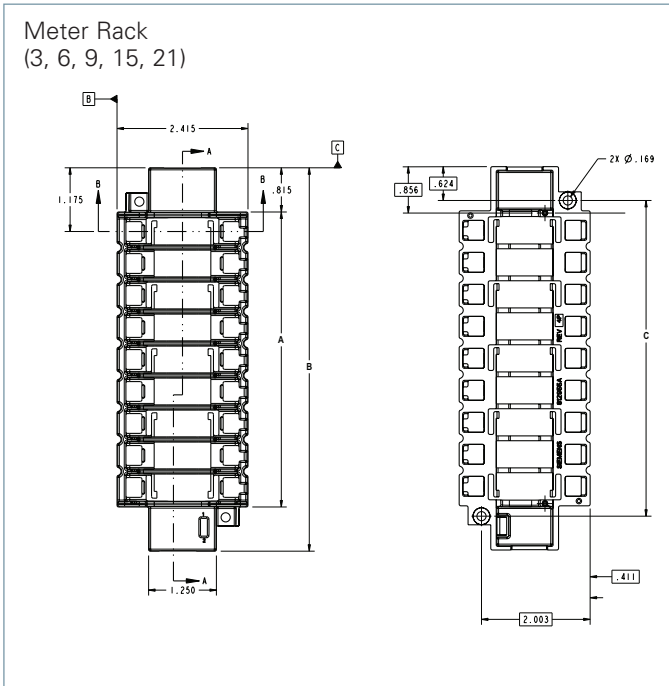
Controller	Catalog Number	
Main Controller - Directly powered from Voltage sources	US2:SEM3CONTROLLER	
Main Controller - External Power Supply input 120V/125VDC for powering up the controller. Leads are available for voltage measuring Sources. Pulse output feature is not available in this variant.	US2:SEM3CONT120V	
Meter Modules		
Meter - Standard Accuracy 1% with Pulse Output	US2:SEM3PLAMETER	
Meter - High Accuracy 0.2% with Pulse Output	US2:SEM3PHAMETER	
Meter Modules		
Meter Rack 3 Position	US2:SEM3RACK3	
Meter Rack 6 Position	US2:SEM3RACK6	
Meter Rack 9 Position	US2:SEM3RACK9	
Meter Rack 15 Position	US2:SEM3RACK15	
Meter Rack 21 Position	US2:SEM3RACK21	
Cables		
Controller to Rack Cable - 6 Inch	US2:SEM3CAB6INCH	
Controller to Rack Cable - 12 Inch	US2:SEM3CAB12INCH	
Controller to Rack Cable - 24 Inch	US2:SEM3CAB24INCH	
Controller to Rack Cable - 36 Inch	US2:SEM3CAB36INCH	
Controller to Rack Cable - 5 Foot	US2:SEM3CAB5FT	
Controller to Rack Cable - 10 Foot	US2:SEM3CAB10FT	
Controller to Rack Cable - 20 Foot	US2:SEM3CAB20FT	
Solid Core CT's		
Solid Core CT 50:0.1	US2:SEM3SCCT50	
Solid Core CT 125:0.1	US2:SEM3SCCT125	
Solid Core CT 250:0.1	US2:SEM3SCCT250	
Solid Core CT 400:0.1	US2:SEM3SCCT400	
Solid Core CT 600:0.1	US2:SEM3SCCT600	
Solid Core CT 800:0.1	US2:SEM3SCCT800	
Solid Core CT 1200:0.1	US2:SEM3SCCT1200	
Solid Core CT 1600:0.1	US2:SEM3SCCT1600	
Solid Core CT 2000:0.1	US2:SEM3SCCT2000	
Split Core CT's		
Split Core CT 50:0.1	7KT1280-5MA00	
Split Core CT 125:0.1	7KT1280-5MA01	
Split Core CT 250:0.1	7KT1280-5MA02	
Split Core CT 400:0.1	7KT1280-5MA03	
Split Core CT 600:0.1	7KT1280-5MA04	
Split Core CT 800:0.1	7KT1280-5MA05	
Split Core CT 1200:0.1	7KT1280-5MA06	
Split Core CT 1600:0.1	7KT1280-5MA07	
Split Core CT 2000:0.1	7KT1280-5MA08	

Power Distribution Solutions

Embedded Micro Metering Module™

Selection

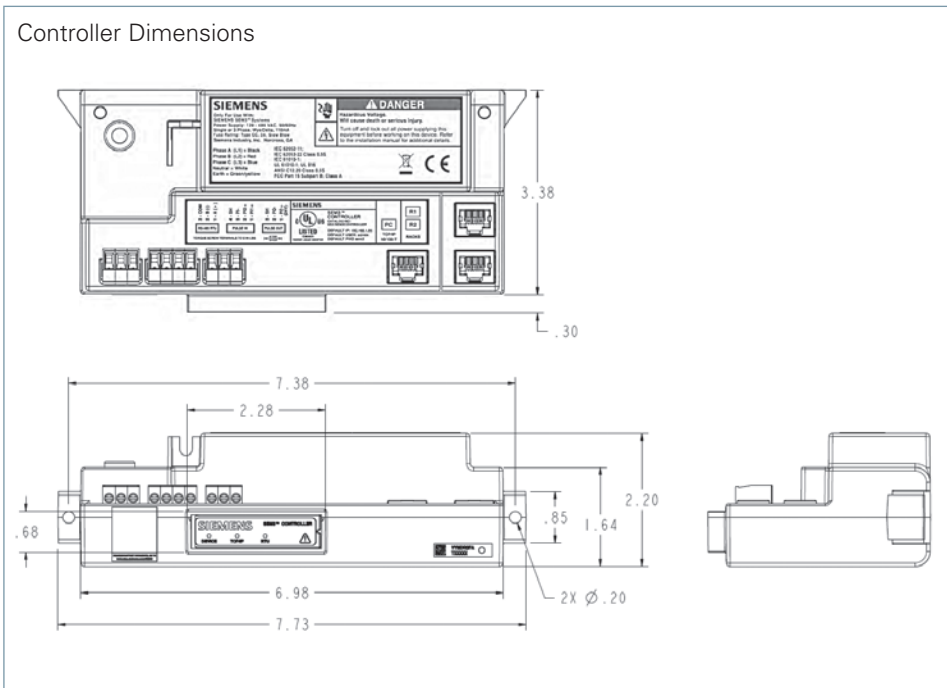
Meter Rack
(3, 6, 9, 15, 21)



Meter Rack
(3, 6, 9, 15, 21)

Catalog Number	Description	Variable Dimensions (inches)		
		A	B	C
US2:SEM3RACK3	3 position rack	1.900	3.570	2.282
US2:SEM3RACK6	6 position rack	3.670	5.340	4.050
US2:SEM3RACK9	9 position rack	5.440	7.070	5.822
US2:SEM3RACK15	15 position rack	8.980	10.610	9.362
US2:SEM3RACK21	21 position rack	12.520	14.150	12.902

Controller Dimensions



Controller

Catalog Numbers
US2:SEM3CONTROLLER
US2:SEM3CONT120V (For 120V Variant external powered, Pulse Output feature is not available in this variant)

Power Distribution Solutions

Embedded Micro Metering Module™

Selection

Current Transformer – Solid Core

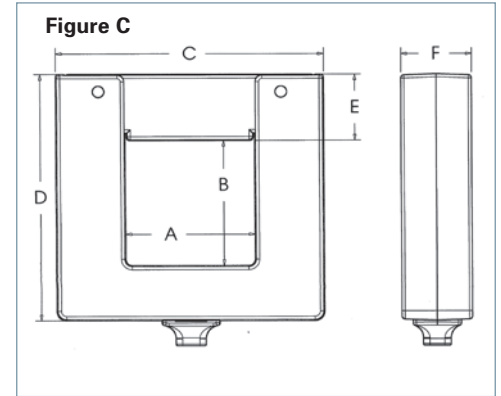
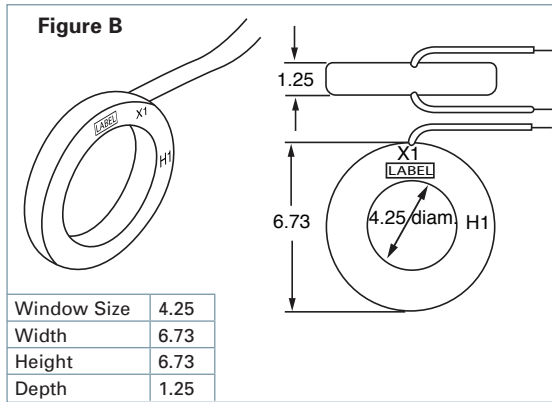
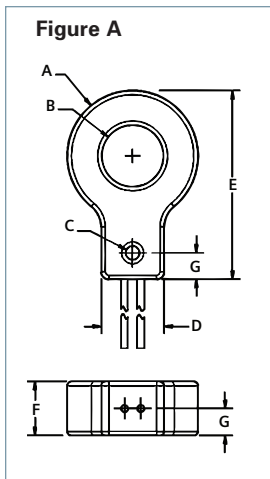
Description	Catalog Number	Dimensions (Inches)							Reference Image
		A	B	C	D	E	F	G	
Solid Core CT 50:0.1	US2:SEM3SCCT50	1.40	0.38	0.20	0.92	2.12	0.74	0.37	Figure A
Solid Core CT 125:0.1	US2:SEM3SCCT125	1.40	0.66	0.20	0.92	2.16	0.74	0.37	Figure A
Solid Core CT 250:0.1	US2:SEM3SCCT250	1.90	0.93	0.20	0.92	2.75	0.78	0.39	Figure A
Solid Core CT 400:0.1	US2:SEM3SCCT400	2.62	1.60	0.20	0.92	3.62	0.78	0.39	Figure A
Solid Core CT 600:0.1	US2:SEM3SCCT600	3.74	2.30	0.24	0.92	4.66	0.78	0.39	Figure A
Solid Core CT 800:0.1	US2:SEM3SCCT800	4.05	2.60	0.24	0.92	5.05	0.98	0.49	Figure A
Solid Core CT 1200:0.1	US2:SEM3SCCT1200	4.56	2.80	0.24	0.92	5.57	0.98	0.49	Figure A

Current Transformer – Solid Core

Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
1600A	US2:SEM3SCCT1600	171 x 171 x 29	108	6.73" x 6.73" x 1.15"	4.25"	Figure B
2000A	US2:SEM3SCCT2000	171 x 171 x 29	108	6.73" x 6.73" x 1.15"	4.25"	Figure B

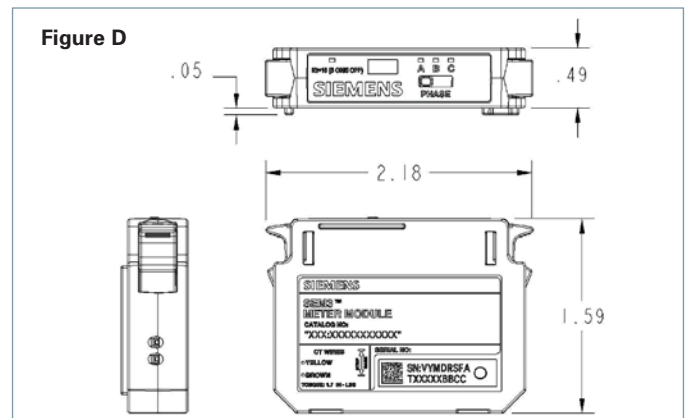
Current Transformer – Split Core

Description	Catalog Number	A	B	C	D	E	F	Reference Image
Split Core CT 50:0.1	7KT1280-5MA00	0.50	0.50	2.40	2.69	0.95	1.10	Figure C
Split Core CT 125:0.1	7KT1280-5MA01	0.75	0.75	2.40	2.69	0.83	0.94	Figure C
Split Core CT 250:0.1	7KT1280-5MA02	1.00	1.00	2.87	3.24	0.94	1.11	Figure C
Split Core CT 400:0.1	7KT1280-5MA03	1.50	1.50	3.60	3.75	1.05	1.15	Figure C
Split Core CT 600:0.1	7KT1280-5MA04	2.14	2.17	4.72	4.32	1.28	1.15	Figure C
Split Core CT 800:0.1	7KT1280-5MA05	3.00	3.14	5.56	5.27	1.21	1.16	Figure C
Split Core CT 1200:0.1	7KT1280-5MA06	3.27	3.02	6.48	5.69	1.73	1.48	Figure C
Split Core CT 1600:0.1	7KT1280-5MA07	4.50	4.50	7.68	7.14	1.59	1.48	Figure C
Split Core CT 2000:0.1	7KT1280-5MA08	4.50	4.50	7.68	7.14	1.59	1.48	Figure C



Meter Module

Description	Catalog No.	Reference Image
Meter - Standard Accuracy 1% with Pulse Output	US2:SEM3PLAMETER	Figure D
Meter - High Accuracy 0.2% with Pulse Output	US2:SEM3PHAMETER	Figure D



SEM3 System configured in Panelboards

The Siemens SEM3 system can be configured for factory installation in branch circuit monitoring applications using the Siemens COMPAS configuration tool. This option can lower the installation time of the system for the installer while providing a factory warranted solution.

The SEM3 system can be factory installed in unit space in type P2, P4, & P5 Siemens panel boards and SB1, SB2, & SB3 type Siemens switchboards. Please note P1 and P3 configurations are not available at this time and the amount of unit space needed varies depending upon the application. Please note that lead time adders will apply and may vary depending upon the configuration of the system.

SEM3 for use in Siemens Panelboards



Type P2: Enclosure

- Available in a NEMA 1, 3R, or 12 rated enclosure.
- Minimum width & depth: 24" width x 5.75" depth
- Height: Up to 74" depending on branch breaker selection
 - Addition of monitoring on some mains (primary and subfeed) may require additional box length. In these cases the box will be increased to the next size available as a standard design.
 - In cases where enclosure size is increased all multi-section panels will be increased to match the largest section.



Controller

SEM3 controller is mounted in unit space opposite of the feed location specified in COMPAS (i.e., bottom mount for top feed) and will require 3" of unit space. Each controller will be powered by direct tap connection to the panel section bus. Each controller can monitor up to 45 circuits. Applications that require monitoring more than 45 circuits will require additional controllers.



Current Transformers (CTs)

Five sizes of CTs are available for use in the P2 panel: 50, 125, 250, 400 & 600 amp. All CTs are pre-mounted to a support bracket that attaches to the base rail of the interior of the panel board. Each bracket supports a maximum of 3 CTs and is designed for the breaker selected (brackets are not interchangeable between breaker frames). Each CT will be attached to a data module that is placed in the meter racks.



Meter Racks

Each meter rack requires 3" of unit space. All meter racks will be installed next to the SEM3 controller in unit space. The COMPAS configuration tool will select the appropriate meter rack configuration according to the user's application and will use the 21 space meter rack as a default option where possible. Only one meter rack (regardless of number of positions) can be installed in 3" of unit space.

NOTE: Monitoring of 45 circuits will require 9" of unit space: two 21 position racks and one 3 position rack

Power Distribution Solutions

Embedded Micro Metering Module™

Selection

SEM3 System configured in Distribution Panels and Switchboards

The information below pertains to panelboard types P4, P5 and switchboard types SB2, and SB3. Please note SEM3 is not available for P3 panelboards or SB1 switchboards. SEM3 is available in NEMA type 1, 3R, and 12 enclosures. SEM3 specifics to P4, P4, SB2, and SB3 are:

SEM3 for use in Siemens Switchboards



Controller

SEM3 controller is mounted in unit space. For P4 and P5 panels it will be mounted opposite of the feed location specified in COMPAS (i.e., bottom mount for top feed). The controller will require 3.75" of unit space in P4/5 and SB2/3. Each controller will be powered by direct tap connection to the section bus and can monitor up to 45 circuits. Applications that require monitoring more than 45 circuits will require additional controllers. For multi-section applications each controller will only be connected to meter racks in the same section as the controller.



Current Transformers (CTs)

Six sizes of CTs are available for use in P4/5 & SB2/3 applications: 50, 125, 250, 400, 600, 1200, 1600, and 2000 amp. All CTs are pre-mounted to a support bracket that attaches to the interior. Each bracket supports a maximum of 3 CTs and is designed for the breaker selected (brackets are not interchangeable between breaker frames). Each CT will be attached to a data module that is placed in the meter racks.



Meter Racks

Each meter rack requires 3.75" of unit space. All meter racks will be installed next to the SEM3 controller in unit space. The COMPAS configuration tool will select the appropriate meter rack configuration according to the user's application and will use the 21 space meter rack as a default option where possible. Only one meter rack (regardless of number of positions) can be installed in 3.75" of unit space. For multi-section applications each rack will only be connected to data modules from CTs in that section. Racks will not be setup to monitor CTs from adjacent sections.

NOTE: Monitoring of 45 circuits will require 9" of unit space: two 21 position racks and one 3 position rack

Other Considerations

Configuration: Data modules from CTs monitoring a circuit breaker must be mounted adjacent to one another in the meter rack. Any field changes to the factory configuration must take this into account.

Start-up & Commissioning: Siemens can provide these services. Contact your local SIEMENS PDS Power Solutions Business Developer for more details.

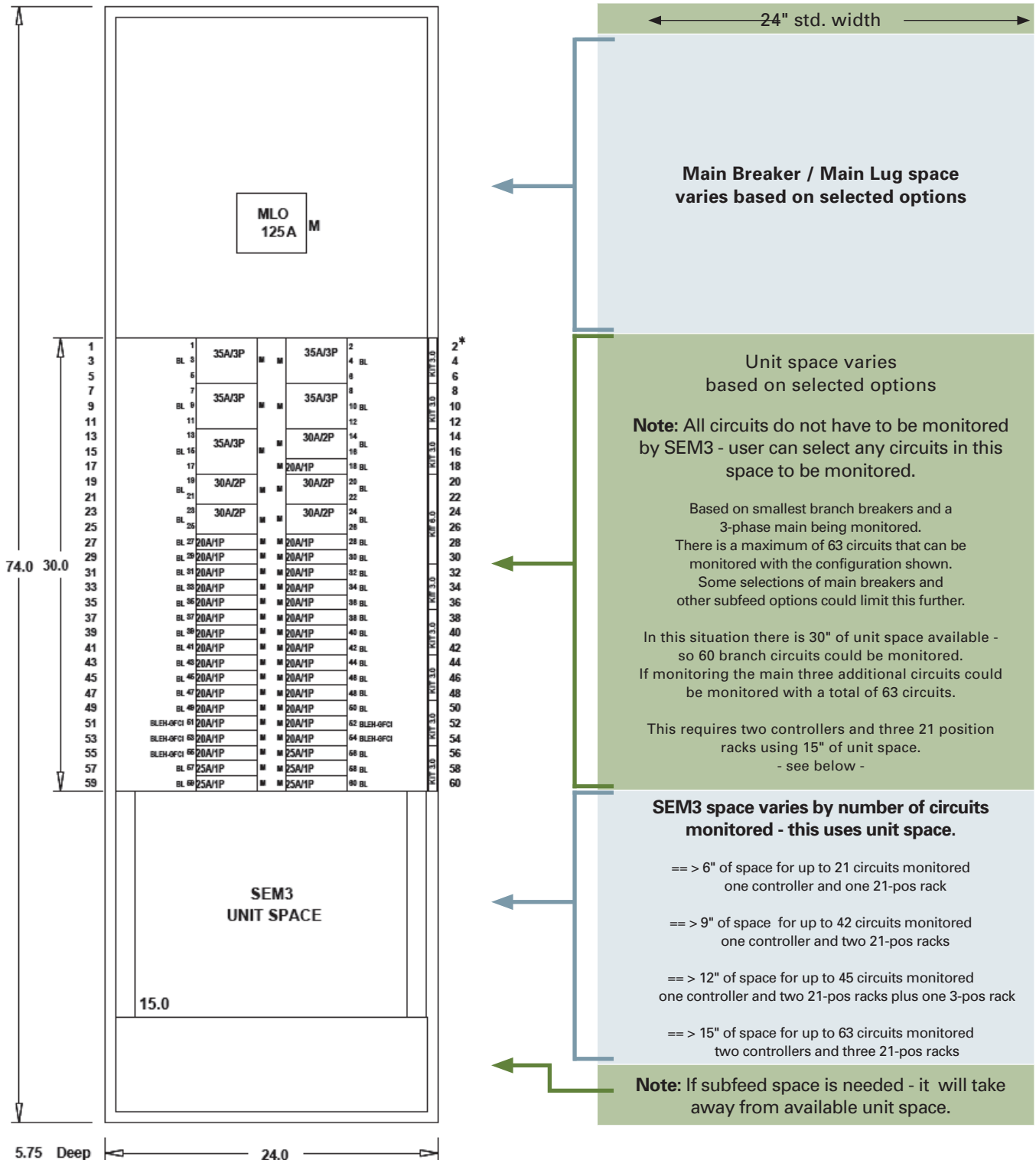
Billing Services for sub billing applications: Billing services are available. Contact your local SIEMENS PDS Power Solutions Business Developer for more details.

P2 Devices Enclosure sizes

Example P2 Panel with SEM3 Type 1 Enclosure (24" Wide x 5.75" Deep)

Enclosure heights are in 6" increments from 26" thru 74".
Enclosure heights: 26", 32", 38", 44", 50", 56", 62", 68", 74"

The COMPAS configuration tool can provide actual dimensions based on the configuration.
Example below is largest standard P2 enclosure for factory assembled panel with all small (1") branch breakers installed.

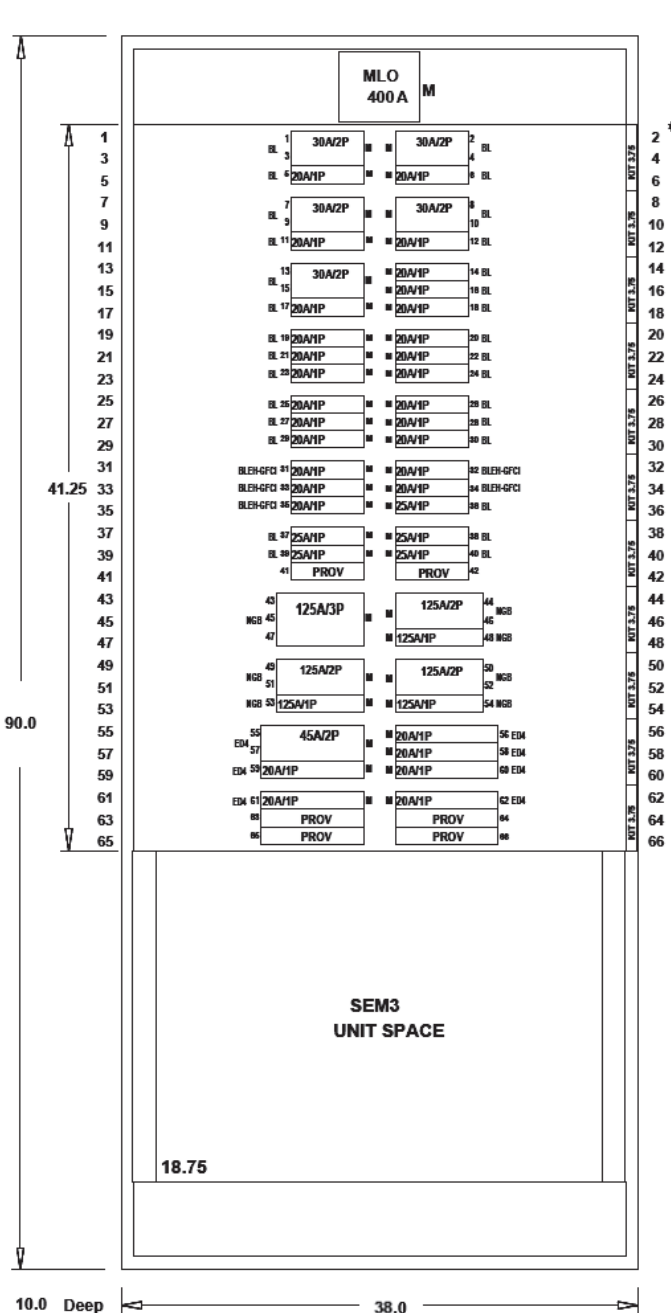


P4 and P5 Devices Enclosure sizes

Example P4 and P5 Panel with SEM3 Type 1 Enclosure P4 = (32" Wide x 10" Deep) P5 = (38" or 46" Wide x 10" Deep)

Enclosure heights are in 15" increments from 60" thru 90".
Enclosure heights: 60", 75", 90" (there are optional depths also)

The COMPAS configuration tool can provide actual dimensions based on the configuration. Example below is largest standard P4 enclosure for factory assembled panel - unit space is in 3.75" increments - up to 6 circuits can occupy each 3.75" of unit space.



← 32" std. width for P4 →

Main Breaker / Main Lug space varies based on selected options

Unit space varies based on selected options

Note: All circuits do not have to be monitored by SEM3 - user can select any circuits in this space to be monitored.

Based on smallest branch breakers and a 3-phase main being monitored. There is a maximum of 63 circuits that can be monitored with the configuration shown. Some selections of main breakers and other subfeed options could limit this further.

In this situation there is 37.5" of unit space available - so 60 branch circuits could be monitored.
If monitoring the main three additional circuits could be monitored with a total of 63 circuits.

This requires two controllers and three 21 position racks using 18.75" of unit space.
- see below -

SEM3 space varies by number of circuits monitored - this uses unit space.

- == > 7.5" of space for up to 21 circuits monitored one controller and one 21-pos rack
- == > 11.25" of space for up to 42 circuits monitored one controller and two 21-pos racks
- == > 15" of space for up to 45 circuits monitored one controller and two 21-pos racks plus one 3-pos rack
- == > 18.75" of space for up to 63 circuits monitored two controllers and three 21-pos racks

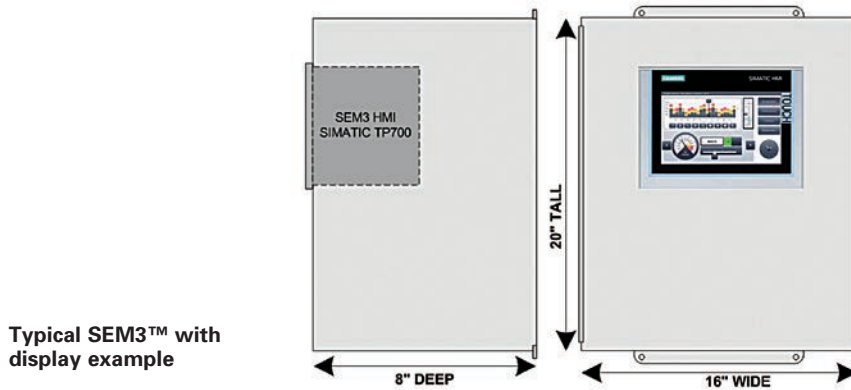
Note: If subfeed space is needed - it will take away from available unit space.

Power Distribution Solutions

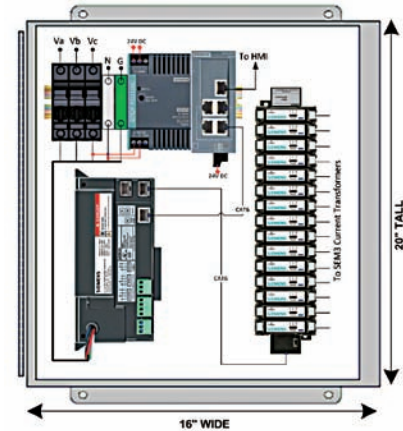
Enclosures for External Applications

Selection

Standard Enclosures for External Applications



Typical SEM3™ with display example



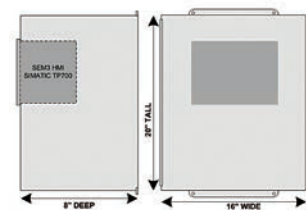
The SEM3 standalone enclosure is ideal for retrofit/external wall mount applications, as it requires minimal modification of existing systems while gaining full functionality of the SEM3 branch circuit monitoring solution. Installation of the required milliamp current transformers (CT) is minimized by utilizing the Siemens Split Core CTs ranging from 50 to 2000 Amps. See "Split Core CT" section. SEM3 standard enclosures are available with NEMA 1, 4 and 12 ratings. The

SEM3 meter enclosure is shipped with all the required components installed. The control voltage is wired to a fusible disconnect switch to protect the system and to provide a disconnect from outside power to the meter. SEM3 solid core and split core current transformers (CTs) are equipped with self-shorting features, eliminating the need for a shorting block within the enclosure or panel. The enclosure has a ground lug for equipment grounding. When the control voltage is greater than

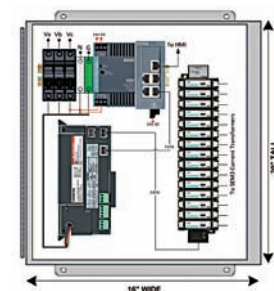
480 volts, a CPT is provided between the disconnect switch and SEM3 controller. The enclosure is pre-drilled to make mounting quick and easy. The standard enclosure comes with the controller, power supply, disconnect, meter racks, communication cables, and shorting blocks. Meter modules and CTs are added separately. As mentioned previously, the display is available as an option.

No Display Standard Enclosure for External Application – HMI, SEM3 Meter Modules, and CT's are not included

Description	Catalog Numbers
SEM3 3M ENCL Type 1 16T x 12W X 6D	US2:SEM303ENCL1
SEM3 3M ENCL Type 12 16T x 12W X 6D	US2:SEM303ENCL12
SEM3 3M ENCL Type 4 16T x 12W X 6D	US2:SEM303ENCL4
SEM3 9M ENCL Type 1 16DT x 12W X 6D	US2:SEM309ENCL1
SEM3 9M ENCL Type 12W 16DT x 12W X 6D	US2:SEM309ENCL12
SEM3 9M ENCL Type 4 16DT x 12W X 6D	US2:SEM309ENCL4
SEM3 15M ENCL Type 1 16DT x 12W X 6D	US2:SEM315ENCL1
SEM3 15M ENCL Type 12W 16DT x 12W X 6D	US2:SEM315ENCL12
SEM3 15M ENCL Type 4 16DT x 12W X 6D	US2:SEM315ENCL4
SEM3 18M ENCL Type 1 20T x 12W x 6D	US2:SEM318ENCL1
SEM3 18M ENCL Type 12W 20T x 12W x 6D	US2:SEM318ENCL12
SEM3 18M ENCL Type 4 20T x 12W x 6D	US2:SEM318ENCL4
SEM3 21M ENCL Type 1 20T x 12W x 6D	US2:SEM321ENCL1
SEM3 21M ENCL Type 12W 20T x 12W x 6D	US2:SEM321ENCL12
SEM3 21M ENCL Type 4 20T x 12W x 6D	US2:SEM321ENCL4
SEM3 30M ENCL Type 1 20T x 16W x 6.62D	US2:SEM330ENCL1
SEM3 30M ENCL Type 12W 20T x 16W x 6.62D	US2:SEM330ENCL12
SEM3 30M ENCL Type 4 20T x 16W x 6.62D	US2:SEM330ENCL4
SEM3 42M ENCL Type 1 20T x 16W x 6.62D	US2:SEM342ENCL1
SEM3 42M ENCL Type 12W 20T x 16W x 6.62D	US2:SEM342ENCL12
SEM3 42M ENCL Type 4 20T x 16W x 6.62D	US2:SEM342ENCL4
SEM3 45M ENCL Type 1 20T x 16W x 6.62D	US2:SEM345ENCL1
SEM3 45M ENCL Type 12W 20T x 16W x 6.62D	US2:SEM345ENCL12
SEM3 45M ENCL Type 4 20T x 16W x 6.62D	US2:SEM345ENCL4



SEM3 Enclosure without display



SEM3 Enclosure without meter modules installed

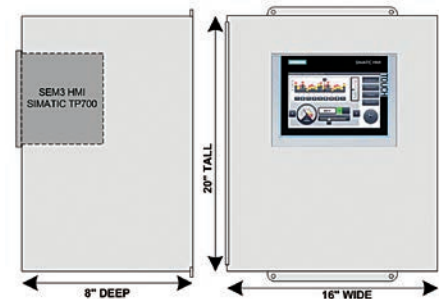
Power Distribution Solutions

Enclosures for External Applications

Selection

Standard Enclosure with HMI Display & Switch for External Application – SEM3 Meter Modules, and CT's are not included

Description	Catalog Numbers
SEM3 3M w/display/switch 16 x 16 x 6.5	US2:SEM303ENCL1DS
SEM3 3M w/display 16 x 16 x 6.5	US2:SEM303ENCL1D
SEM3 9M w/display/switch 16 x 16 x 6.5	US2:SEM309ENCL1DS
SEM3 9M w/display 16 x 16 x 6.5	US2:SEM309ENCL1D
SEM3 15M w/display/switch 20 x 16 x 8	US2:SEM315ENCL1DS
SEM3 15M w/display 20 x 16 x 8	US2:SEM315ENCL1D
SEM3 18M w/display/switch 20 x 16 x 8	US2:SEM318ENCL1DS
SEM3 18M w/display 20 x 16 x 8	US2:SEM318ENCL1D
SEM3 21M w/display/switch 20 x 16 x 8	US2:SEM321ENCL1DS
SEM3 21M w/display 20 x 16 x 8	US2:SEM321ENCL1D
SEM3 30M w/display/switch 20 x 20 x 8	US2:SEM330ENCL1DS
SEM3 30M w/display 20 x 20 x 8	US2:SEM3301ENCL1D
SEM3 42M w/display/switch 20 x 20 x 8	US2:SEM342ENCL1DS
SEM3 42M w/display 20 x 20 x 8	US2:SEM342ENCL1D
SEM3 45M w/display/switch 20 x 20 x 8	US2:SEM345ENCL1DS
SEM3 45M w/display 20 x 20 x 8	US2:SEM345ENCL1D



Remote Touch Display Enclosure Package - No SEM3 parts included

Description	Catalog Numbers
SEM3 ENCL 7" Touch Display 24 VDC/1.3 Amp Power Supply	US2:SEM3TP7SEN
SEM3 ENCL 7" Touch Display 24 VDC/1.3 Amp PS UL Listed	US2:SEM3TP7SENUL
SEM3 ENCL 7" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch	US2:SEM3TP7AEN
SEM3 ENCL 7" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch UL Listed	US2:SEM3TP7AENUL
SEM3 ENCL 9" Touch Display 24 VDC/1.3 Amp Power Supply	US2:SEM3TP9SEN
SEM3 ENCL 9" Touch Display 24 VDC/1.3 Amp PS UL Listed	US2:SEM3TP9SENUL
SEM3 ENCL 9" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch	US2:SEM3TP9AEN
SEM3 ENCL 9" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch UL Listed	US2:SEM3TP9AENUL
SEM3 ENCL 12" Touch Display 24 VDC/1.3 Amp Power Supply	US2:SEM3TP12SEN
SEM3 ENCL 12" Touch Display 24 VDC/1.3 Amp PS UL Listed	US2:SEM3TP12SENUL
SEM3 ENCL 12" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch	US2:SEM3TP12AEN
SEM3 ENCL 12" Touch Display 24 VDC/1.3 Amp PS + 8 Port Switch UL Listed	US2:SEM3TP12AENUL



Optional Loose Remote Touch Display

Description	Catalog Numbers
SEM3 7" TD 100-240VAC ^①	US2:SEM3TOUCHP7
SEM3 9" TD 100-240VAC ^①	US2:SEM3TOUCHP9
SEM3 12" TD 100-240VAC ^①	US2:SEM3TOUCHP12
SEM3 15" TD 100-240VAC ^①	US2:SEM3TOUCHP15
SEM3 19" TD 100-240VAC ^①	US2:SEM3TOUCHP19


^① Order 24VDC Power supply separate.

Power Distribution Solutions

MD Series Power Meter

MD Standalone and High Density Power Meters

Siemens Industry's MD Model Power Meters are sub metering devices designed to provide real time, accurate electricity metering to enable proper control over energy costs. The meter can capture kWh/kW energy and demand data, as well as virtually all relevant energy parameters for diagnostics and monitoring on three-phase or single-phase circuit installations. The meters' flexibility, size, and ease-of-use make them ideal tools for gathering detailed consumption information in commercial, industrial, governmental, and retail environments. The meters use direct connections to each phase of the voltage and various interchangeable current transformer (CT) options such as split-core CTs or flexible Rogowski Coils (for large loads or large cables and buss bars) to monitor current on each phase. All of Siemens' current transformers are internally shunted for intrinsically safe operation on energized conductors.

The power meters make over 75 total electrical measurements which are derived from the voltage and current inputs. Electrical load diagnostic parameters such as power factor and line frequency are captured in addition to energy and demand values. The Siemens MD Power Meters require no external power and the power supplies can accommodate service voltages ranging from 80 to 600V (phase-to-phase). The simple installation is accomplished by connecting the color-coded voltage leads and clearly labeled CTs. A three-LED indicator display confirms proper CT-to-phase installation. The meters automatically adjust for CT orientation—greatly reducing set-up time and all but eliminating installation errors.



MD Meter Series Base Model	Catalog Number
MD Meter BACnet-Modbus DIN Rail Mount with Display	US2:MD3HDRDN
MD Meter BACnet-Modbus Wall Mount Cabinet/Enclosure with Display	US2:MD3HDCDN
MD Meter BACnet-Modbus 12 Circuit Cabinet/Enclosure with Display	US2:MD12HDCDN
MD Meter BACnet-Modbus 24 Circuit Cabinet/Enclosure with Display	US2:MD24HDCDN
MD Meter BACnet-Modbus 48 Circuit Cabinet/Enclosure with Display	US2:MD48HDCDN
0.333mV Output Current Transformers	Catalog Number
50A Mini Hinged CT - 0.4" Window/Opening, 333 mV	US2:SCTHSC050U
100A Midi Hinged CT - 1" Window/Opening, 333 mV	US2:SCTHMC0100U
200A Midi Hinged CT - 1" Window/Opening, 333 mV	US2:SCTHMC0200U
Medium Split Core 1.25 Opening 400A	US2:SCTSCM0400U
Medium Split Core 1.25 Opening 600A	US2:SCTSCM0600U
Large Split Core 2.00 Opening 1000A	US2:SCTSCL1000U
0.333mV Output Rogowski Coil Current Transformers	Catalog Number
Rogowski Coil Current Transformer, 16" (40 cm); 4.5" (11.5 cm) opening; 4000A	US2:SCTR161310U
Rogowski Coil Current Transformer, 24" (60 cm); 7.0" (18 cm) opening; 4000A	US2:SCTR241310U
Rogowski Coil Current Transformer, 36" (90 cm); 10.8 (28 cm) opening; 4000A	US2:SCTR361310U

Power Distribution Solutions

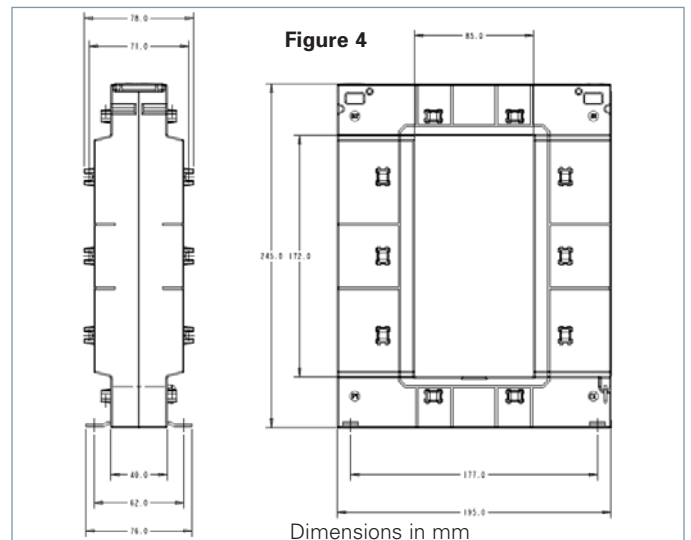
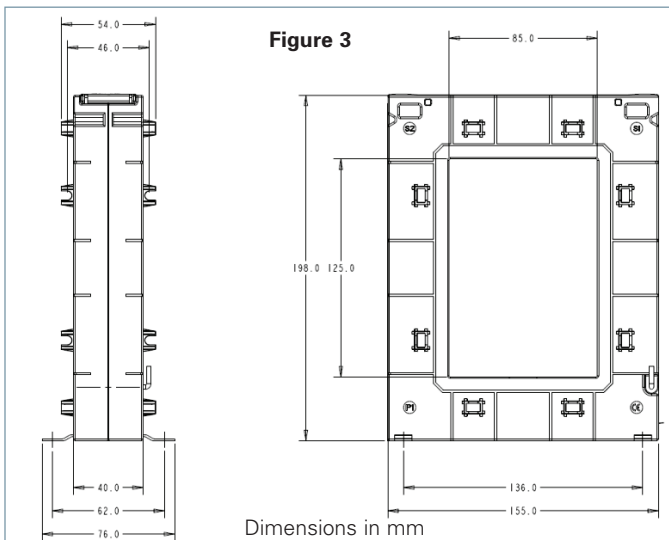
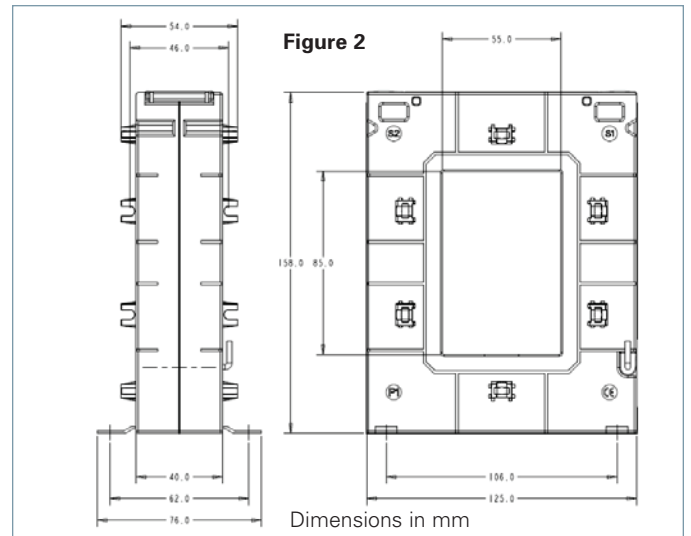
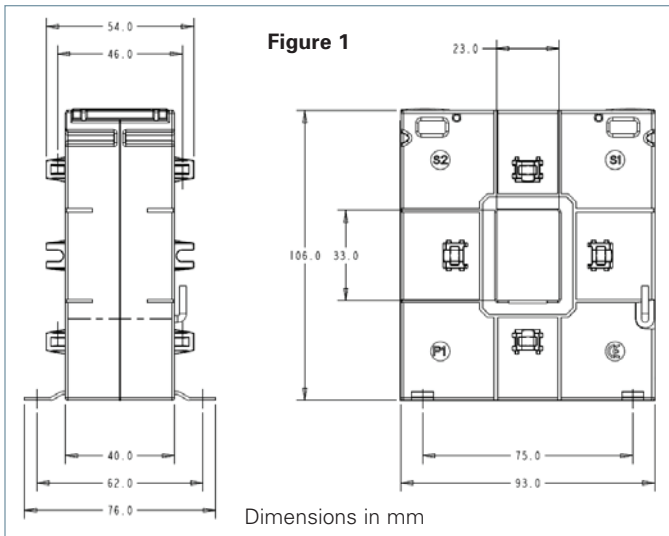
Low-voltage Current Transformers

Split core – Rectangular Window

Siemens Instrument Grade Current Transformers (CT) have a split-core construction and provide a safe 5A secondary output. These split-core current transformers allow for easy installation, retrofit, and service.

Accuracy is 0.5% for 200A and up

Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
200A	PDS-CTSC-021	106 x 93 x 40	33 x 23	4.17" x 3.66" x 1.57"	1.30" x 0.91"	Figure 1
400A	PDS-CTSC-042	158 x 125 x 40	85 x 55	6.22" x 4.92" x 1.57"	3.35" x 2.17"	Figure 2
600A	PDS-CTSC-062	158 x 125 x 40	85 x 55	6.22" x 4.92" x 1.57"	3.35" x 2.17"	Figure 2
800A	PDS-CTSC-082	158 x 125 x 40	85 x 55	6.22" x 4.92" x 1.57"	3.35" x 2.17"	Figure 2
800A	PDS-CTSC-083	198 x 155 x 40	125 x 85	7.80" x 6.10" x 1.57"	4.92" x 3.35"	Figure 3
1000A	PDS-CTSC-013	198 x 155 x 40	125 x 85	7.80" x 6.10" x 1.57"	4.92" x 3.35"	Figure 3
1200A	PDS-CTSC-123	198 x 155 x 40	125 x 85	7.80" x 6.10" x 1.57"	4.92" x 3.35"	Figure 3
1600A	PDS-CTSC-163	245 x 195 x 62	172 x 85	9.65" x 7.68" x 2.44"	6.77" x 3.35"	Figure 4
2000A	PDS-CTSC-200	245 x 195 x 62	172 x 85	9.65" x 7.68" x 2.44"	6.77" x 3.35"	Figure 4
3000A	PDS-CTSC-03R	245 x 195 x 62	172 x 85	9.65" x 7.68" x 2.44"	6.77" x 3.35"	Figure 4
4000A	PDS-CTSC-04R	245 x 195 x 62	172 x 85	9.65" x 7.68" x 2.44"	6.77" x 3.35"	Figure 4



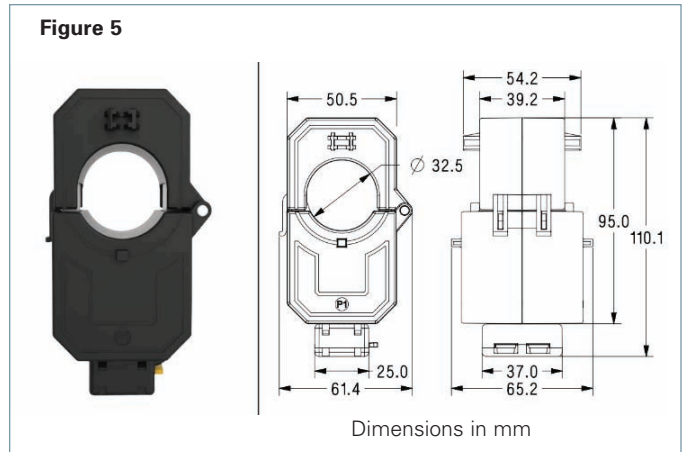
Power Distribution Solutions

Low-voltage Current Transformers

Split core – Circular Current Transformer with Rectangular Outer Case and Circular Inner Window

Siemens Instrument Grade Current Transformers (CT) have a split-core construction and provide a safe 5A secondary output. These splitcore current transformers allow for easy installation, retrofit, and service.

Accuracy is 0.5% for 300A

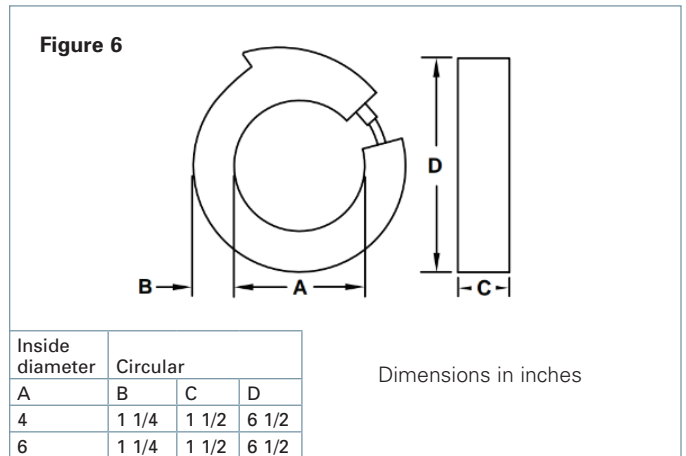


Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
300A	PDS-CTSC-031	110 x 61 x 65	32.5	4.17" x 2.40" x 2.56"	1.28"	Figure 5

Split Core – Round Current Transformer

Split-core round rubber insulated flexible CT's with 12' heavy duty leads (18 AWG) and 5A secondary output for use on low-voltage applications of 600V.

Accuracy is 3% for 200/300/400A, and 2% for 600A and 1% for 800/1200/2000A, and 0.5% for 3000/4000A



Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
200A	PDS-CTHC-024	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
300A	PDS-CTHC-034	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
400A	PDS-CTHC-044	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
600A	PDS-CTHC-064	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
800A	PDS-CTHC-084	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
1200A	PDS-CTHC-124	165.1 x 165.1 x 38.1	102	6.5" x 6.5" x 1.5"	4"	Figure 6
2000A	PDS-CTHC-206	215.9 x 215.9 x 38.1	152	8.5" x 8.5" x 1.5"	6"	Figure 6
3000A	PDS-CTHC-306	215.9 x 215.9 x 38.1	152	8.5" x 8.5" x 1.5"	6"	Figure 6
4000A	PDS-CTHC-406	215.9 x 215.9 x 38.1	152	8.5" x 8.5" x 1.5"	6"	Figure 6

Power Distribution Solutions

Low-voltage Current Transformers

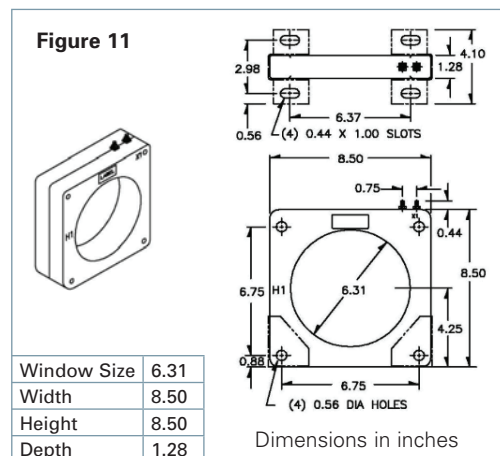
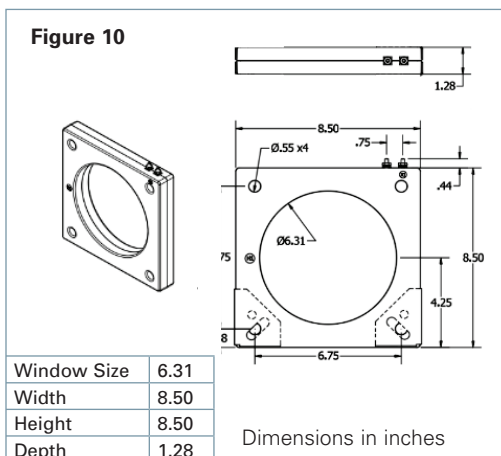
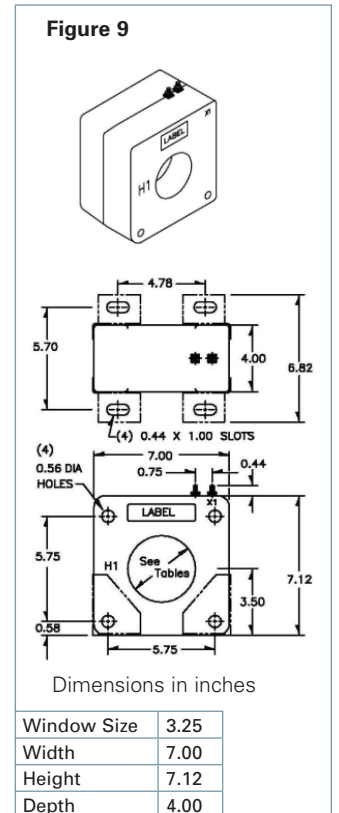
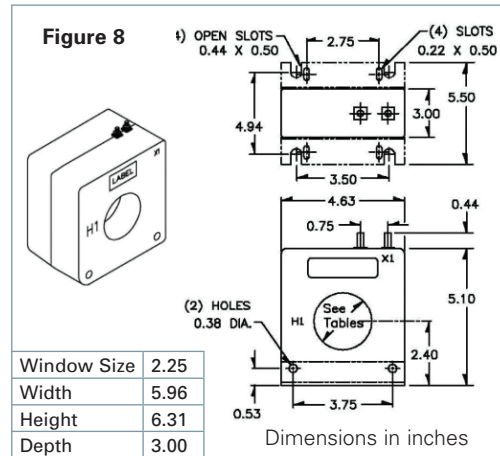
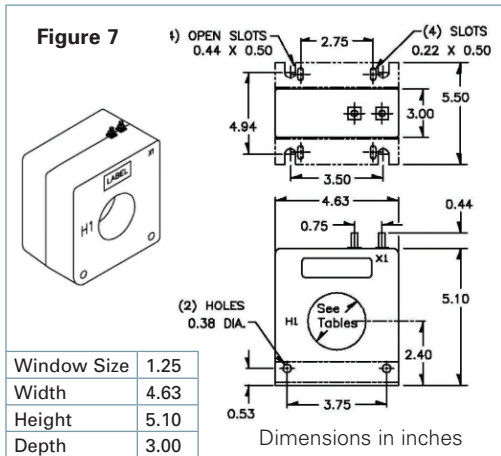
Solid-core – Square with Round Window

Siemens Instrument Grade Current Transformers (CT) are designed as solid-core construction and provide a safe 5A secondary output. Solid-core CT's come with terminals for

attaching leads. Use on low-voltage applications of 600V or less.

Accuracy is 0.6% for 100A, 0.3% for 200A and up

Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
200A	PDS-CTRC-021	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
300A	PDS-CTRC-031	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
400A	PDS-CTRC-041	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
500A	PDS-CTRC-051	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
600A	PDS-CTRC-061	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
800A	PDS-CTRC-081	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
1000A	PDS-CTRC-101	118 x 130 x 76	32	4.63" x 5.10" x 3.00"	1.25"	Figure 7
100A	PDS-CTRC-012	151 x 160 x 76	57	5.96" x 6.31" x 3.00"	2.25"	Figure 8
200A	PDS-CTRC-022	151 x 160 x 76	57	5.96" x 6.31" x 3.00"	2.25"	Figure 8
300A	PDS-CTRC-032	151 x 160 x 76	57	5.96" x 6.31" x 3.00"	2.25"	Figure 8
400A	PDS-CTRC-042	151 x 160 x 76	57	5.96" x 6.31" x 3.00"	2.25"	Figure 8
800A	PDS-CTRC-084	178 x 180 x 102	102	7.00" x 7.12" x 4.00"	4.00"	Figure 9
1000A	PDS-CTRC-104	178 x 180 x 102	102	7.00" x 7.12" x 4.00"	4.00"	Figure 9
1200A	PDS-CTRC-124	178 x 180 x 102	102	7.00" x 7.12" x 4.00"	4.00"	Figure 9
1600A	PDS-CTRC-164	178 x 180 x 102	102	7.00" x 7.12" x 4.00"	4.00"	Figure 9
2000A	PDS-CTRC-204	178 x 180 x 102	102	7.00" x 7.12" x 4.00"	4.00"	Figure 9
3200A	PDS-CTRC-326	216 x 216 x 36	160.27	8.50" x 8.50" x 1.28"	6.31"	Figure 10
4000A	PDS-CTRC-426	216 x 216 x 36	152	8.50" x 8.50" x 1.28"	6.00"	Figure 11



Power Distribution Solutions

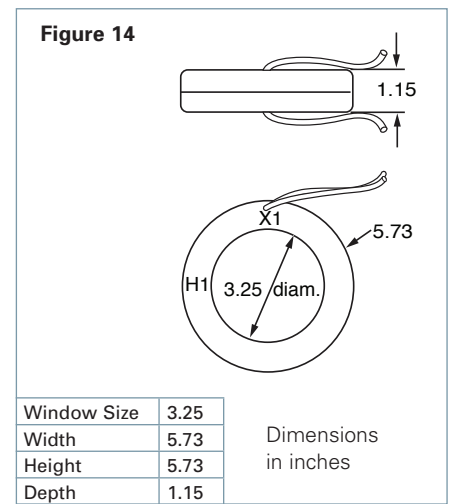
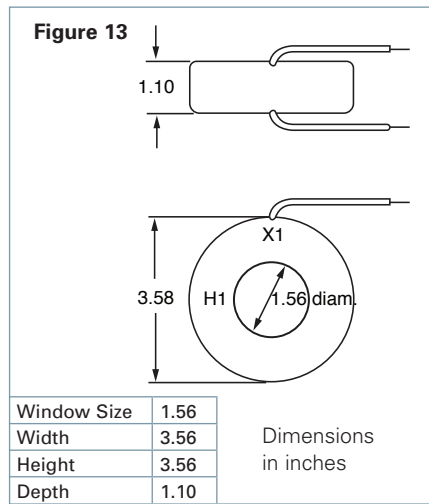
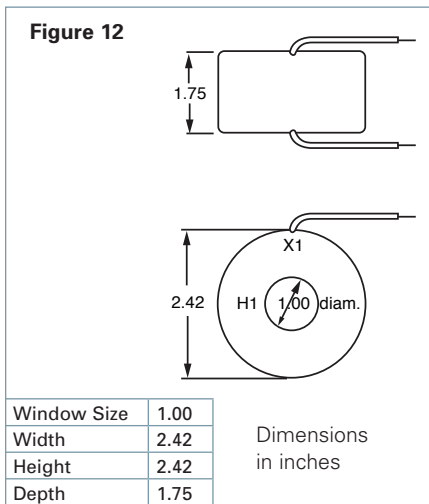
Low-voltage Current Transformers

Solid-core – Round with Round Window

The small size solid core Current Transformer (CT) are designed for tight locations and new installations providing a safe 5 amp secondary for use on voltage applications of 600V or less.

Accuracy is 1% for 100A and up

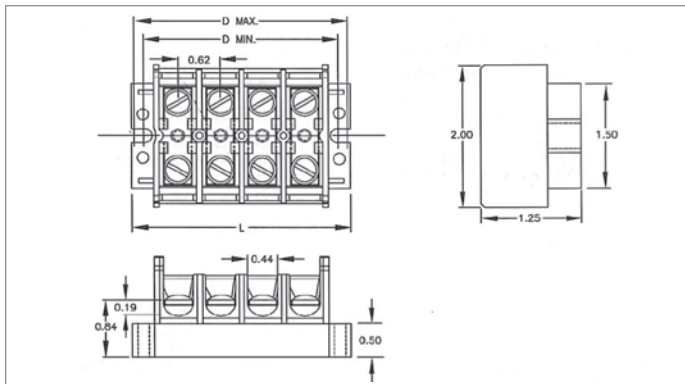
Amps	Catalog Number	Case Dimension (mm)	Window Dimension (mm)	Case Dimension (Inches)	Window Dimension (Inches)	Reference Image
100A	SMU-CT-011	61 x 61 x 44	25	2.42" x 2.42" x 1.75"	1.0"	Figure 12
200A	SMU-CT-021	61 x 61 x 44	25	2.42" x 2.42" x 1.75"	1.0"	Figure 12
250A	SMU-CT-025	61 x 61 x 44	25	2.42" x 2.42" x 1.75"	1.0"	Figure 12
300A	SMU-CT-031	61 x 61 x 44	25	2.42" x 2.42" x 1.75"	1.0"	Figure 12
400A	SMU-CT-041	90 x 90 x 28	40	3.56" x 3.56" x 1.10"	1.56"	Figure 13
600A	SMU-CT-061	90 x 90 x 28	40	3.56" x 3.56" x 1.10"	1.56"	Figure 13
800A	SMU-CT-081	90 x 90 x 28	40	3.56" x 3.56" x 1.10"	1.56"	Figure 13
1000A	SMU-CT-123	90 x 90 x 28	40	3.56" x 3.56" x 1.10"	1.56"	Figure 13
2000A	SMU-CT-02R	146 x 146 x 29	83	5.73" x 5.73" x 1.15"	3.25"	Figure 14



Shorting Block

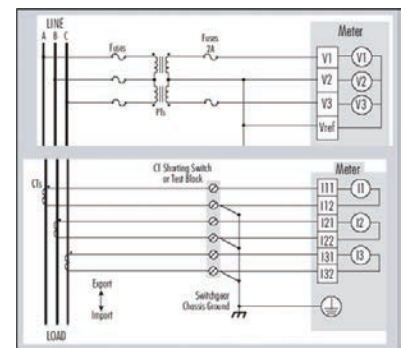
All low-voltage current transformers should be installed with a shorting block to allow for easy removal of the metering unit and to provide a safe method for disconnecting the CT signal. One shorting block is required per meter. Various size shorting blocks are available; 4, 6, and 8 pole configurations are available with four slotted shorting screws and cover. Wire size is 18-10 AWG.

Catalog Number	Mounting			
	Ckts.	L	D min.	D max.
IKU4SC	4	3.25	2.88	3.00
IKU6SC	6	4.50	4.12	4.25
IKU8SC	8	5.75	5.38	5.50
IKU12SC	12	8.25	7.88	8.00



Typical electrical meter CT and shorting block installation

This example shows a common three phase, three wire installation where three CT's and one shorting block are used.



Power Distribution Solutions

SEM3T™ — Reliable Thermal Sensing in electrical equipment

Introduction

Avoid downtime with 24/7 continuous monitoring via SIEMENS SEM3T Thermal Monitoring



For many years, scheduled infrared thermography (IR) inspections have been the accepted method for reducing risk of fire by identifying faulty or loose connections in electrical distribution systems. SEM3T is a system specifically designed to provide continuous thermal monitoring. It offers a safer, more effective way to detect thermal risks before they progress into a major failure.

The method also delivers up to a 10:1 return on investment due to avoided equipment damage and downtime.

Continuous Thermal Monitoring is now enabling safer, more efficient inspection

of energized electrical equipment, ensuring electrical asset integrity. This becomes apparent when looking at the technology comparison of SEM3T to IR windows and thermal imaging.

To meet the thermal monitoring challenges of operations owner, design engineers, and contractors, Siemens offers a proven cost-effective solution for Thermal Monitoring. This solution combines a fully integrated thermal monitoring system factory installed into the Siemens Panelboards, Switchboards, and Switchgears, which along with the required local or remote monitoring software, provides a "Total" Power and Thermal monitoring system.

Siemens Thermal Monitoring/ Embedded Monitoring Solution

- **Saves you money** – SIEMENS SEM3T thermal monitoring system specifically designed to provide 24x7 detection of hotspots at an early stage of development; thus, avoiding potential downtime resulting from Arc Flash / power outage incidents.
- **Fast, low-cost installation** – The embedded Siemens solution provides a faster and lower cost installation compared to other external systems.
- **Safety in mind** – SIEMENS thermal monitoring system is safer, more effective way to detect thermal risks before they progress into a major failure.
- **Minimum space requirements** – The embedded switchgear, switchboard and panelboard construction design requires no additional wall space to provide thermal monitoring.
- **Reliable and accurate** – SIEMENS thermal monitoring system is non-invasive reliable and easily installed thermal monitoring solution which can monitor numerous locations within low voltage apparatus including bus joints, lug landings, bus ducts, transformers, and circuit breakers. Thermal sensors can be positioned appropriately to detect ambient temperature, as well as overloaded or poorly conducting electrical connections.
- **Automated alert notifications** – With automated alert notification services the responsibility to acquire the data, store the data and analyze the data is removed from the facility management company, thus saving manpower and time.
- **Responsive service** – With remote monitoring, continuous 24/7 monitoring can be done by the facility management company or local users. The service can also relay thermal hotspot conditions changes to the owners for immediate investigation.

Designer and Contractor benefits include:

- No need to wait for inspector to scan the system to understand abnormalities
- Factory pre-wired – less installation time
- Drastically less installation wiring & cost
- Thermal sensors are calibrated to meet the accuracy standards and requirements
- All equipment fits into the standard Siemens electrical equipment design
- UL, CE (Pending) approved
- Embedded web-server for on-site configuration, real time data display, data logging, event logging, trending and alarm notifications.
- Built-in industry standard Modbus TCP communication
- Dual Ethernet ports for daisy chaining over Ethernet and Wi-Fi as an option
- Monitor 1 to 45 thermal points.
- Web pages can also be set by a user to four different languages (English, German, French, or Spanish) for configurations and real-time data display

Thermal Monitoring applications include:

- Industrial Manufacturing
- Critical Power - Data Centers and Hospitals
- Government
- LEEDS buildings
- Airports
- Higher Education

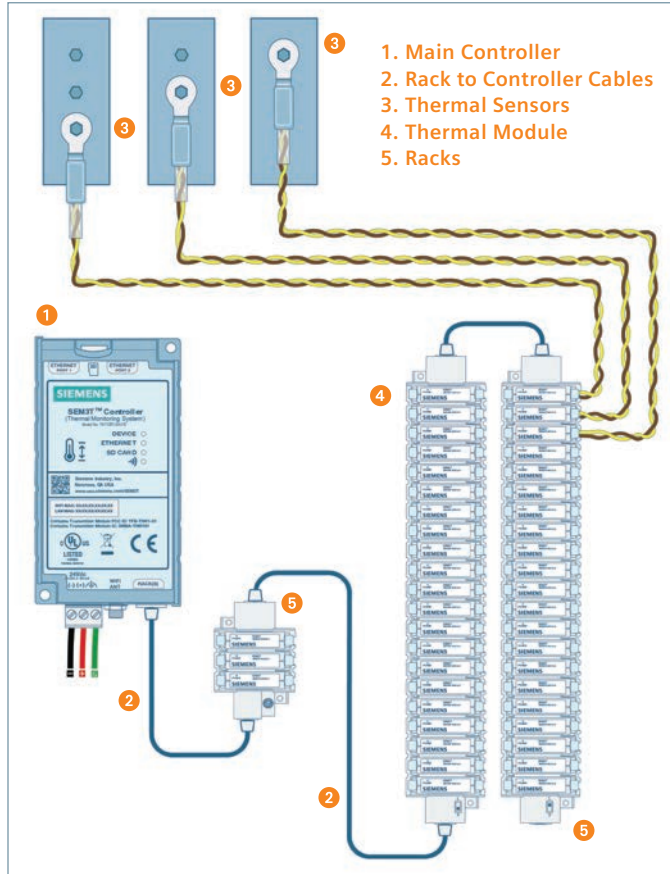
Please Contact Your Siemens Sales Engineer for additional information regarding Thermal Sensing:

Power Distribution Solutions

SEM3T

Overview

SEM3T System Overview



SEM3T Controller

SEM3T Controller can provide thermal monitoring for up to 45 Thermal points. SEM3T Controller acts as a Data Server and processes the data from the Thermal Modules. The controller can be configured to create several groups with multiple thermal points. This information either viewed in real-time or communicated to other systems through its communication interfaces. Some applications may require for more than 45 thermal points in one apparatus electrical equipment. If so, then simply add a second controller. Two controllers can monitor up to 90 thermal points. Using the available dual Ethernet ports in each controller, daisy chaining of multiple controllers in a serial fashion is achievable.

- SEM3T Controller has built-in web pages for real-time data, historical logging/trending, alarm notifications, KPI dash boards, and configurations
- Easy to integrate to Siemens MindSphere cloud platform – MindSphere ready device
- 24vdc power supply
- Optional WiFi Controller variant is available for local Configuration and viewing only
- Available standard communication protocol: Modbus TCP for integration with monitoring software system, SMTP for emailing, and NTP for network time synchronization
- Dual Ethernet (RJ45) ports for daisy chain over Ethernet
- Meets global certifications/ standards

SEM3T Thermal Module

The Thermal Module reads the address from the racks designated by its location and thermal signals from its respective thermal sensor. Each Thermal Module is an independent thermal module that samples thermal signals, processes these signals using the embedded algorithms and communicates these parameters to the controller. When the thermal module is powered and is communicating properly with the controller, the power LED will blink.

- One thermal module per thermal monitoring location
- No configuration required for the modules
- Connects directly to thermal sensors

SEM3T Thermal Sensors

Thermal Sensors are components used for thermal measurement. SEM3T product is UL listed. Thermal Sensor lead wires come with standard 10' can be extended up to 50', still maintaining the thermal output accuracy.

- Thermal Sensors are designed to work specifically with the SEM3T product
- Lead wire type: UL rated operating temperature to 200°C, 600V rated, UL style 1199, 18AWG, 10 x 30 stranded
- Primary rating: 600VAC
- Overvoltage category: CAT IV
- Operating temperature 0°C to 130°C
- Very reliable non-powered wired Sensors are designed to withstand harsh environments Thermal Sensors come in the following variants and sizes:
- 4 types Sensor Screw Ring terminals for monitoring thermal points at joint locations
- Sensor S-Ring sizes: 1/4", 5/16", 3/8", 1/2"
- Cylindrical sensor for monitoring ambient temperature Sensor C-Ring

SEM3 Racks

The SEM3 Racks are the holders for the thermal modules. Embedded within a rack is the internal addressing for the communication of thermal information from the module to the controller via Ethernet cables. A two-way DIP switch is available on the 9, 15, and 21 position racks for thermal monitoring addressing, whereas a rotary switch is available to set the addressing on 3 and 6 position racks.

- Five types of racks available
- DIP switch or rotary switch for controller to recognize module location and rack assignments

Rack to Controller Cables

The communications cables connect the SEM3 racks to the controller and daisy chain additional meter racks together in series (for 3 and/or 6 meter module racks only). Multiple lengths are available to suit a wide variety of panelboard and switchboard configurations. The data cables are insulated for 600V applications and are not standard Ethernet cables.

NOTE: See ordering information page for cable sizes and catalog numbers.

- Seven cable lengths
- 600V rated Ethernet cable. Note: Regular Ethernet RJ45 cables are rated only up to 300V and are not allowed to use for this application

Power Distribution Solutions

SEM3T

Ordering and technical data

SEM3T Controller

Ordering information

Part	Catalog Number
SEM3T Controller with Wi-Fi	7KT1281-0AA10
SEM3T Controller without Wi-Fi	7KT1281-0AA00

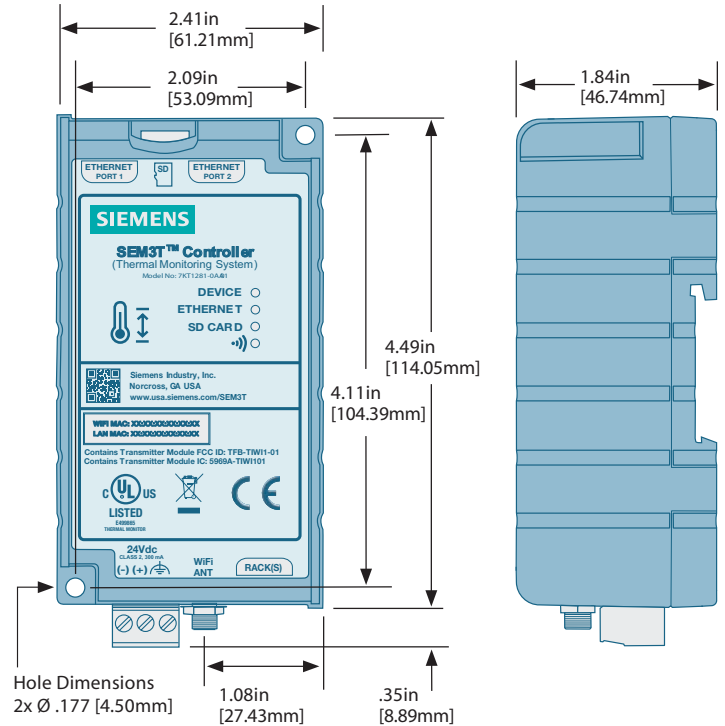
Controller

Description	Information
Altitude / Elevation	3000 Meters/9843 Feet
Humidity	Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C
Operating Temperature Range	-10°C to +65°C / 14°F to 149°F
Power Supply Requirement	UL Listed 24V DC Class II power supply.



AWG

24 V DC power supply leads	5 [.56]	.50 to 2.50	22 to 14
Thermal Sensor Leads	1.7 [.19]	0.75	18



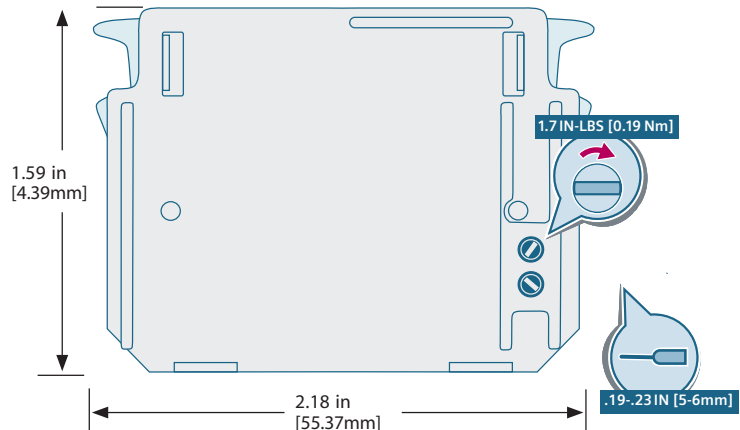
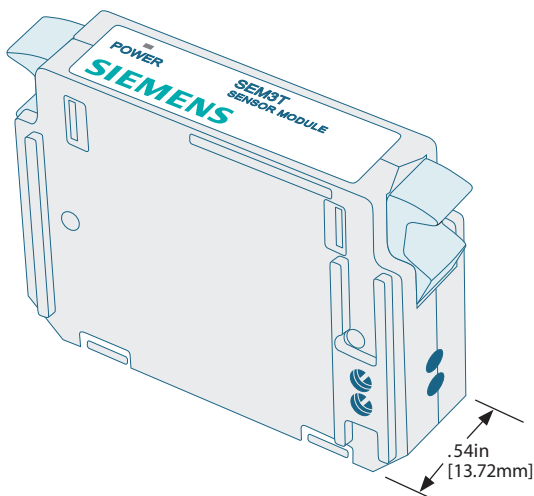
SEM3T Thermal Module

Ordering information

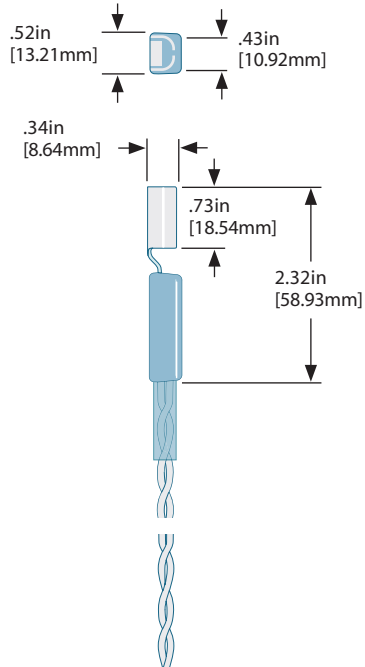
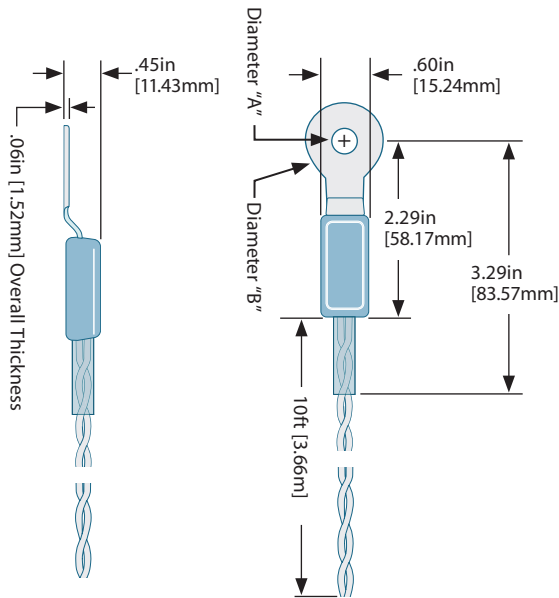
Part	Catalog Number
SEM3T Sensor Module	7KT1281-1AA00

Thermal Module

Description	Information
Altitude / Elevation	3000 Meters/9843 Feet
Pollution Degree	3 (UL 61010)
Overvoltage Category	IV (UL 61010)
Operating Temperature Range	-10°C to +65°C / 14°F to 149°F



SEM3T Thermal Sensors



Screw Ring Terminal

Dimensions inches [mm]				Torque (lb-ft) for non-lubricated threads*
Description	Catalog Number	A	B	
SEM3T sensor 1/4" terminal	7KT1281-2SA00	0.257 [6.527]	0.625 [15.875]	6 – 9
SEM3T sensor 5/16" terminal	7KT1281-2SA01	0.323 [8.204]	1.00 [25.4]	6 – 9
SEM3T sensor 3/8" terminal	7KT1281-2SA02	0.386 [9.804]	1.125 [28.575]	20 – 30
SEM3T sensor 1/2" terminal	7KT1281-2SA03	0.515 [13.081]	1.25 [31.75]	40 – 50

* Example: The SEM3T Sensor 1/4" terminal accepts a 1/4" bolt /screw and the tightening torque is 6-9 lb-ft.

Cylindrical Ring Terminal

Description	Catalog Number
SEM3T sensor cylindrical	7KT1281-2CA00

Sensor Information

Description	Information
Altitude / Elevation	3000 Meters/9843 Feet
Pollution Degree	3 (UL 61010)
Overtoltage Category	IV (UL 61010)
Operating Temperature Range	0°C to 130°C / 32°F to 266°F
Wire Type	UL rated operating temperature to 200°C, 600V rated, UL style 1199, 18 AWG, 10x30 stranded

Power Distribution Solutions

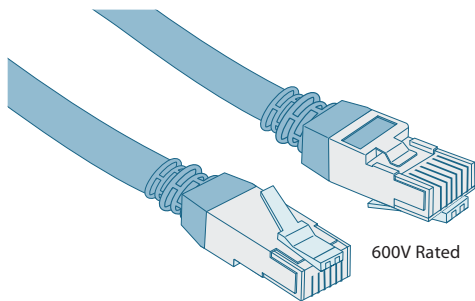
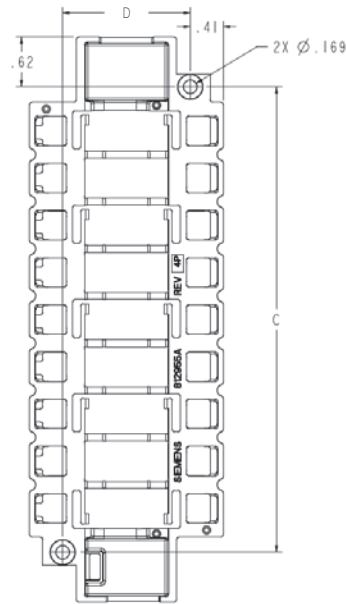
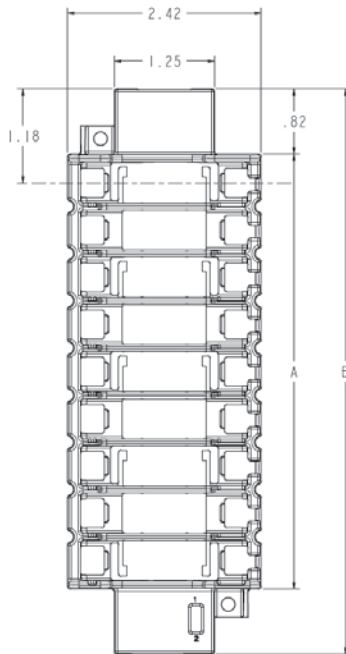
SEM3T

Ordering and technical data

Racks and Cables

Variable Dimensions inches [mm]

Catalog Number	Description	A	B	C	D
US2:SEM3RACK3	3 position rack	1.90 [48.26]	3.57 [90.68]	2.28 [57.91]	1.79 [45.46]
US2:SEM3RACK6	6 position rack	3.67 [93.22]	5.34 [135.64]	4.05 [102.87]	1.79 [45.46]
US2:SEM3RACK9	9 position rack	5.44 [138.18]	7.07 [179.58]	5.82 [147.83]	1.59 [40.38]
US2:SEM3RACK15	15 position rack	8.98 [228.09]	10.61 [269.49]	9.36 [237.74]	1.59 [40.38]
US2:SEM3RACK21	21 position rack	12.52 [318.01]	14.15 [359.41]	12.90 [327.66]	1.59 [40.38]



- 6" (152.40 mm) US2:SEM3CAB6INCH
- 12" (304.80 mm) US2:SEM3CAB12INCH
- 24" (609.60 mm) US2:SEM3CAB24INCH
- 36" (914.40 mm) US2:SEM3CAB36INCH

Product Connector Electrical Ratings

Description	Information
Controller Rack Connector	12VDC, 0.5A max
Sensor	5VDC, 0.14mA max
Module	12VDC, 12mA max
Rack - Ethernet Connector	12VDC, 0.5A max
Rack - Module Connector	12VDC, 12mA max

IP20

0... 80% up to 31° C
0... 50% at 40° C

14°... 149° F
-10°... 65° C

Power Distribution Solutions

SEM3T

Ordering information

Order Information

Controller	Catalog Number	
SEM3T Controller with Wi-Fi	7KT1281-0AA10	 with Wi-Fi without Wi-Fi
SEM3T Controller without Wi-Fi	7KT1281-0AA00	
Thermal Sensor Module		
SEM3T Sensor Module	7KT1281-1AA00	
Thermal Sensors		
SEM3T Sensor Screw Ring Terminal 1/4"	7KT1281-2SA00	
SEM3T Sensor Screw Ring Terminal 5/16"	7KT1281-2SA01	
SEM3T Sensor Screw Ring Terminal 3/8"	7KT1281-2SA02	
SEM3T Sensor Screw Ring Terminal 1/2"	7KT1281-2SA03	
SEM3T Sensor Cylindrical Ring Terminal	7KT1281-2CA00	
Accessories		
SEM3T Wi-Fi Antenna and Cable	7KT1281-8AN00	
Meter Racks		
Module Rack 3 Position	US2:SEM3RACK3	
Module Rack 6 Position	US2:SEM3RACK6	
Module Rack 9 Position	US2:SEM3RACK9	
Module Rack 15 Position	US2:SEM3RACK15	
Module Rack 21 Position	US2:SEM3RACK21	
Cables		
Controller to Rack Cable – 6 inch	US2:SEM3CAB6INCH	
Controller to Rack Cable – 12 inch	US2:SEM3CAB12INCH	
Controller to Rack Cable – 24 inch	US2:SEM3CAB24INCH	
Controller to Rack Cable – 36 inch	US2:SEM3CAB36INCH	
Controller to Rack Cable – 5 Foot	US2:SEM3CAB5FT	
Controller to Rack Cable – 10 Foot	US2:SEM3CAB10FT	
Controller to Rack Cable – 20 Foot	US2:SEM3CAB20FT	
Standard Enclosures for retrofit and external wall mount applications		
SEM3T 21 x Thermal Points ENCLOSURE NEMA Type 1 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T21ENCLN1	
SEM3T 21 x Thermal Points ENCLOSURE NEMA Type 12 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T21ENCLN12	
SEM3T 21 x Thermal Points ENCLOSURE NEMA Type 4 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T21ENCLN4	
SEM3T 45 x Thermal Points ENCLOSURE NEMA Type 1 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T45ENCLN1	
SEM3T 45 x Thermal Points ENCLOSURE NEMA Type 12 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T45ENCLN12	
SEM3T 45 x Thermal Points ENCLOSURE NEMA Type 4 – SEM3T Controller, Thermal Modules, Racks, Cables, 24VDC PS, Fusing, and Wiring	US2:SEM3T45ENCLN4	
Standard Enclosures for retrofit and external wall mount applications		
SEM3T Controller 24VDC Power Supply (Only sold with loose SEM3T Controller)	US2:SEM3T24VDCPS	

SEM3T System Configuration in Switchboards

Typical SEM3T Thermal Sensor locations in Low Voltage Switchgear.

Fig 1: Rear View of Switchgear

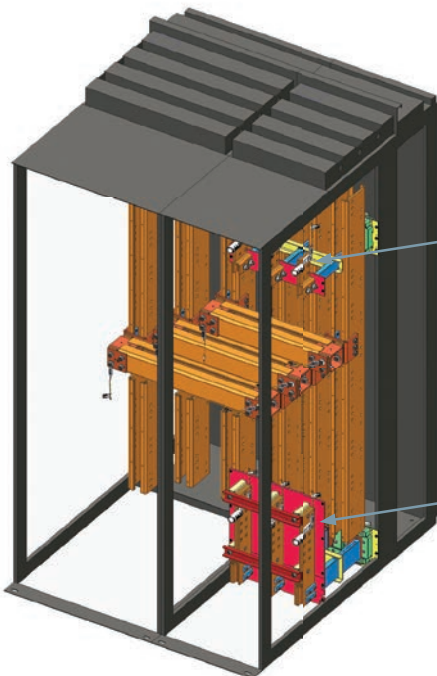
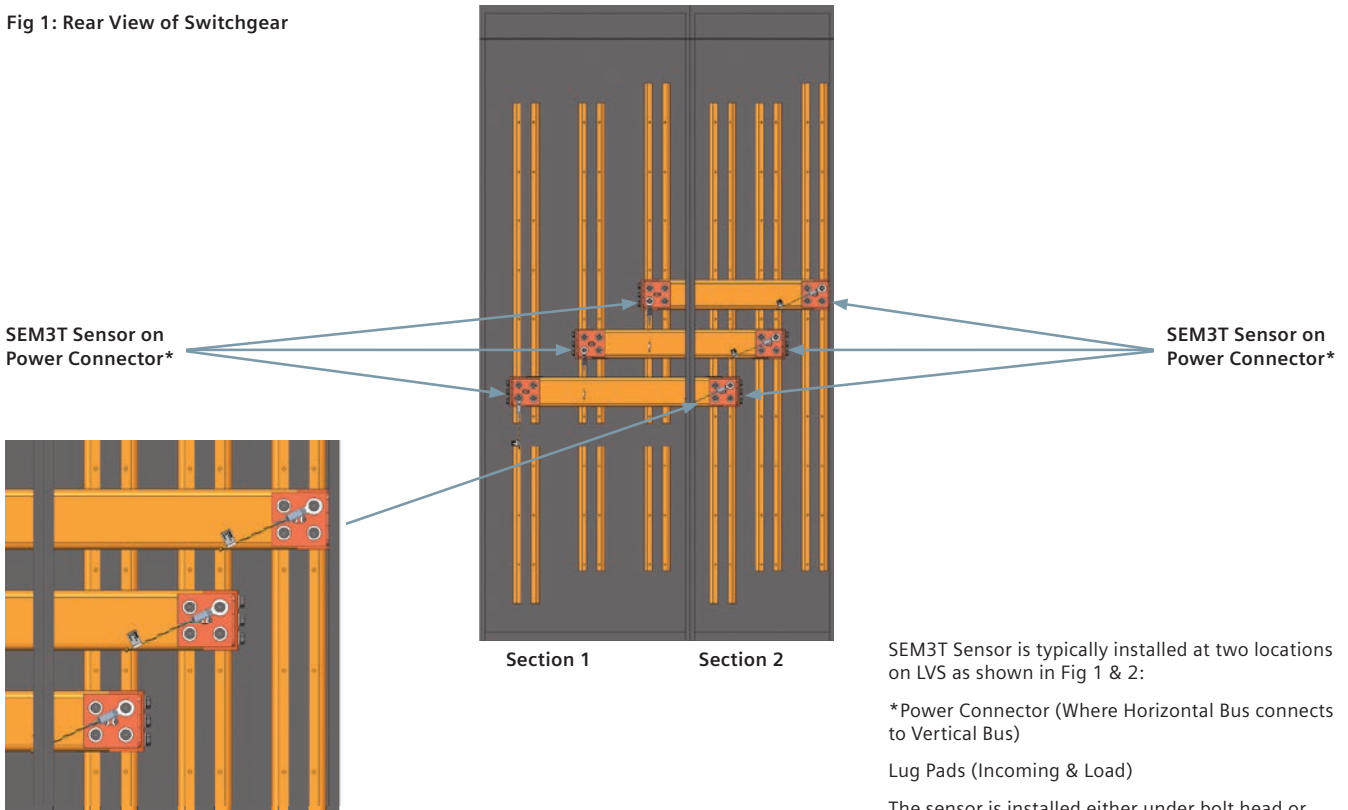
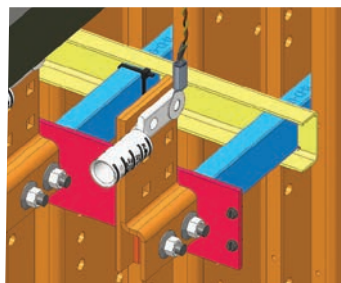
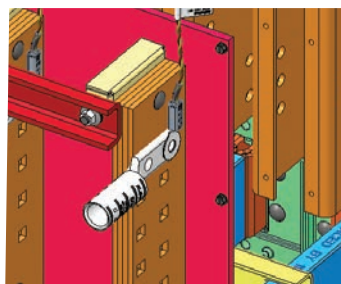


Fig 2: Rear Iso View of Switchgear



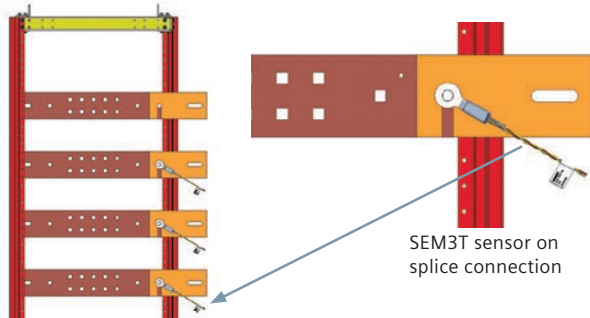
SEM3T Sensor on Lug Pads.



Mounted over the Lug

SEM3T System Configuration in Switchboards

Typical SEM3T Thermal Sensor locations in Low Voltage Switchgear.



SEM3T Sensor is typically installed at following locations on Switchboard as shown in Fig 3 & 4:

Splice

Lug Pads (Incoming & Load)

The sensor is installed either under bolt head or nut as applicable, one sensor per phase.

Fig 3: Front view of Switchboard

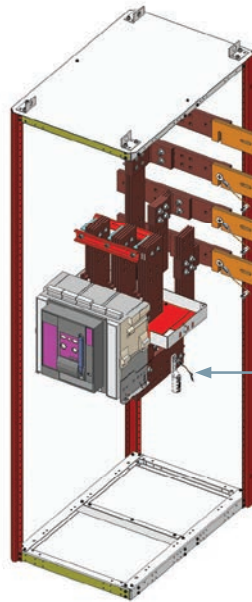
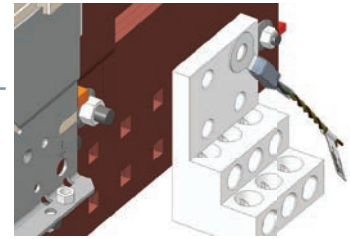
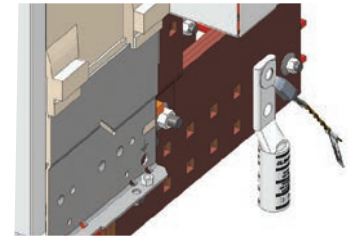


Fig 4: Front Iso view of Switchboard



SEM3T Sensor on Lug Pads, mounted over the lug

SEM3T Sensor C-Ring is installed on cable insulation for outgoing MCCB breakers. The sensor is installed with a cable zip tie.

One sensor per phase.

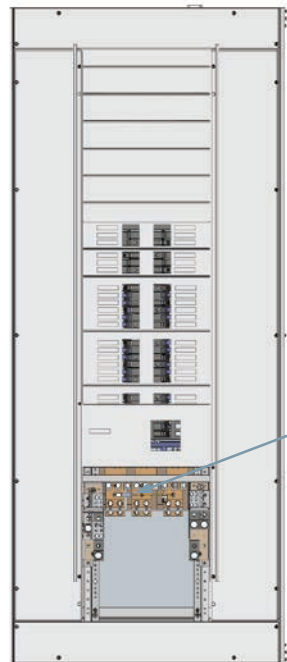
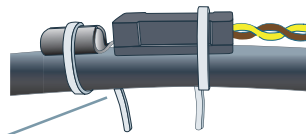


Fig 5: Front View of Panel



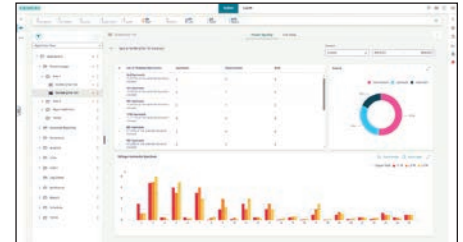
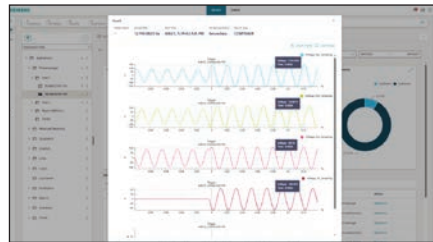
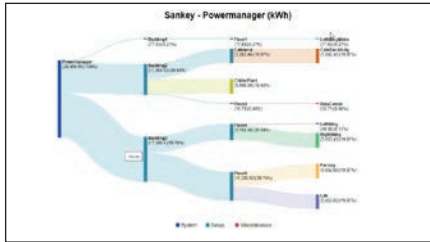
SEM3T Sensor C-Ring is installed on the cable insulation of P4, P5 Panels as shown in Fig 5:

The sensor is installed with a cable zip tie, one sensor per phase.

Power Distribution Solutions

Powermanager

**A power management system that can be customized to your needs.
View and control your facilities' infrastructure condition from anywhere.**



SENTRON Powermanager software, combined with Siemens power meters and low-voltage protective devices, provides a complete energy management solution for your business. It allows you to measure, process, analyze, store and share energy usage and status information across your entire enterprise. It offers control capabilities, comprehensive energy usage and reliability, and detailed reporting that will help you reduce energy related costs.

Cost allocation and Sub-billing Reports

Cost allocation and sub-billing functionality in the Powermanager software allows the user to track energy related costs by building, floor, tenant, feeder or location. Match virtually any fixed rate billing structure and use comprehensive multi-year scheduling and time-of-use features to manage the energy costs.

Load Studies and Asset Management

Trend power usage data to take full advantage of your electrical distribution system capacity and avoid over-design. Create usage profiles that will allow you to distribute loads and avoid demand peak which helps to identify energy leaks such as equipment running during down time.

Equipment Monitoring and Control

Powermanager allows you to meter all your utilities including gas, steam, air and water and set up general condition alarming and pre-event alarms for impending or imminent conditions. Interface with other energy management and SCADA systems through multiple communication channels and protocols like OPC.

Ordering information

Powermanager Software - Device Licenses	Catalog Number
POWERMANAGER BASIC 10 DEVICES	7KN27102CE400YC0
POWERMANAGER 20 ADTNL.DEVICES	7KN27111CE400YC0
POWERMANAGER 50 ADTNL.DEVICES	7KN27112CE400YC0
POWERMANAGER 100 ADTNL.DEVICES	7KN27113CE400YC0
POWERMANAGER 200 ADTNL.DEVICES	7KN27114CE400YC0
POWERMANAGER 500 ADTNL.DEVICES	7KN27115CE400YC0
POWERMANAGER 1000 ADTNL.DEVICES	7KN27116CE400YC0
Powermanager Software V4.x and greater versions - Add Ons and Upgrades	Catalog Number
POWERMANAGER OPT PACKAGE EXPERT	7KN27120CE400YC0
POWERMANAGER OPT PACKAGE CLIENT (2)	7KN27121CE400YC0
POWERMANAGER OPT PACKAGE CLIENT (5)	7KN27122CE400YC0
POWERMANAGER OPT PACKAGE 1 x DISTR SYS	7KN27124CE400YC0

Contact Siemens for upgrade information

Reports

Standard reports provide models of daily electricity usage so you can distribute loads and avoid demand peaks. This enables you to allocate energy consumption and/or costs to individual areas and identify expensive processes that need attention. The historic trending report compiles data from load circuits over a users predefined period. This enables the user to fully utilize the power distribution system and run at near rated tolerances.

The Powermanager software:

- Is available in a stand-alone or LAN/WAN based configuration that can also exchange information with other supervisory systems like building automation software
- Can utilize any Ethernet or serial based connections
- Is expandable from the basic monitoring application to a fully customized enterprise management system
- Is fully scalable with regard to the connected devices and to the software's function to meet current and future needs
- Ensures the seamless integration of power monitoring devices from the Siemens SENTRON PAC Series Meter, SEM3, and SENTRON WL/VL/3VA/3WA circuit breakers as well as other Modbus communicating devices
- Is designed to collect, archive, monitor, display and evaluate any kind of energy related device data
- Provides web based reporting and detailed graphics construction utilities as standard

Benefits

- Visibility and control of power flows
- Exact knowledge of the consumption profile
- Increase of energy efficiency
- Optimization of power supply contracts
- Compliance with contractual terms or regulations
- Allocation of costs to individual cost centers
- Optimization of plant maintenance
- Identification of critical systems conditions

Power Distribution Solutions

WinPM.Net Enhanced Web-Enabled Energy Management Software

Overview

WinPM.Net is a complete energy information management solution for your business allowing you to process, analyze, store and share energy usage and power quality data across your entire enterprise. It offers control capabilities, comprehensive power quality and reliability analysis and can help you reduce energy-related costs. WinPM.net allows you to manage intelligent metering and protective devices, analyze data, and decide on new courses of action to help you save money and keep your business up and running.

Its cutting-edge flexibility and compatibility means you can add one piece at a time, at your own pace, while still maintaining your original investments. Interface to your existing systems through industry-standard protocols and choose newer components as they become available.

The WinPM.Net software:

- Provides detailed analysis of the power quality and overlays waveforms to correlate phase-to-phase relationships between voltages and currents and cascading failures
- Pinpoints the sources of transients, harmonics, or sags, whether external or internal to your facility, allowing you to decide on the right corrective actions. By monitoring circuits 24 hours a day, you can develop strategies to avoid interruptions
- Provides a comprehensive graphics utility as standard to build and edit any graphical screen whether it is a standard screen or a customized one. These custom screens can display real-time and historical data, alarms, status indications, meter, relay and third party equipment information
- Supports Modbus RTU, Modbus TCP, ION, XML, OPC, FTP, and PQDIF compliant systems, so you can unify your diverse operations into one system. Interface to other energy management software, or include transducers, PLCs, and RTUs in a WinPM.net network. OPC can extract values from other software databases then combine these values with up-to-date readings from WinPM.net to perform real time calculations
- Offers easy, cost effective and fast system expansion. The system grows as your needs grow. Add one piece at a time, at your own pace, within your own budget



Cost allocation and sub-billing

Track energy-related costs by building, feeder, or tool. Match virtually any billing structure and use comprehensive multi-year scheduling and time-of-use activity profiles.

Load studies and asset management

Trend power usage data to take full advantage of your electrical distribution system capacity and avoid over-design. Create usage profiles so you can distribute loads and avoid demand peak.

Demand and power factor control

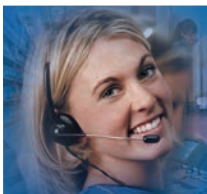
Eliminate penalties through automated power factor correction, load shedding, or peak shaving.

Equipment monitoring and control

Meter all your utilities including gas, steam, air and water. Set up alarms for pending problems, pre-alarm on impending or imminent conditions. Interface with other energy management and SCADA systems through multiple communication channels and protocols.

Secondary server

Contact Technical support for any WinPM.Net configuration requirements

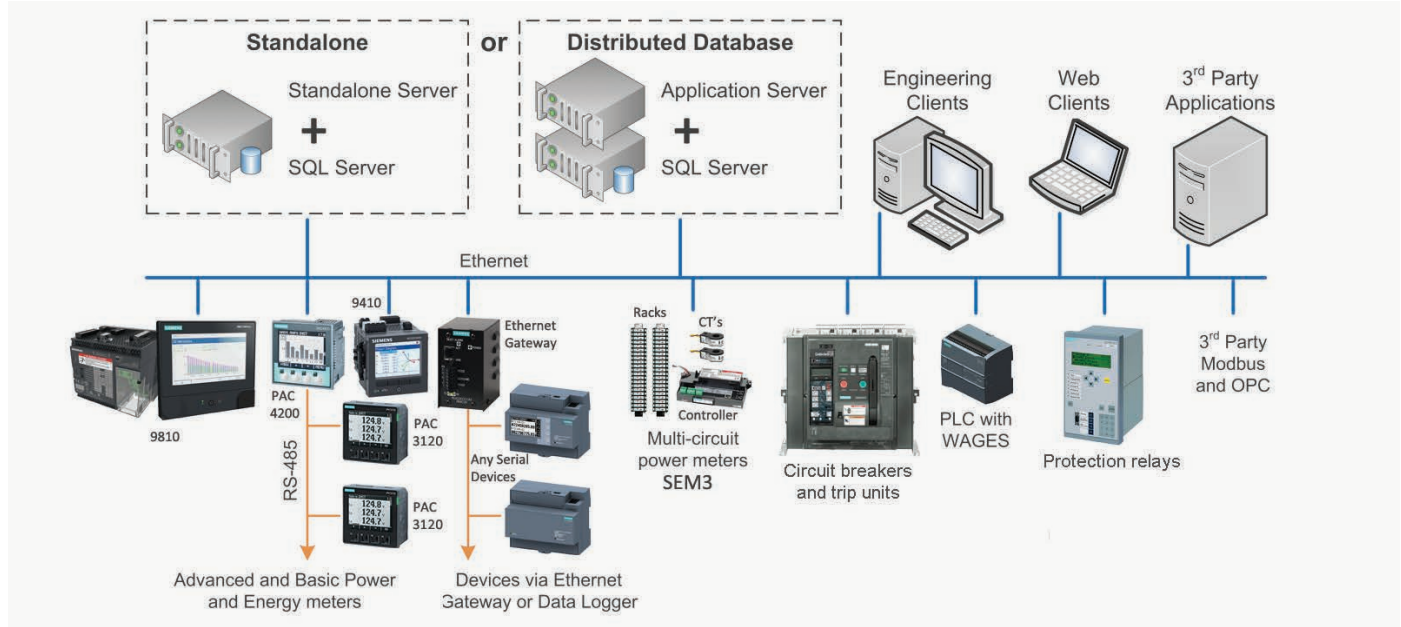


Power Distribution Solutions

WinPM.Net Enhanced Web-Enabled Energy Management Software

Ordering information

WinPM.Net 11.0



Highlights of this release

- New! Waveform analytics will be used to identify the probable cause of voltage disturbance.
- New! IEC61000-2-4 report with a custom template on 9410 and 9610
- Multi-time zone support in the Trends web app
- Gadget improvements
 - Fixed date range option for gadget view periods
 - Custom precision for numeric values
 - Watermark, Show data points & Custom font size
 - Gadget background & Chart color
 - Show how much value is above the target line (Trend gadget only)
 - Stacked column type for data series (Trend gadget only)
 - Chart zoom (Trend gadget only)
 - Donut chart type (Pie gadget only)
- New! TGML graphics support
 - TGML and Vista graphics co-exist in WinPM.Net.
 - TGML graphic editor (Windows tool)
- Custom day setting for daily, weekly, monthly, and yearly data aggregation in dashboards and reports.
- Strong password requirement for standard users
- Support of SQL server 2022
- New! PAC 2200, 3120, and 3220 device drivers are standard device types.
- PAC 4200 Harmonics real-time data display and data logging support from 31st to 64th

WinPM.Net is available in packages designed to meet almost any system or budget. It can be licensed to support as few as five devices to many hundreds of devices, and can present the information to as many users as required. With the included two Web Clients, and one full engineering client, your system is extended to everywhere you need it at no additional cost. Additional engineering, web client copies can be purchased.

Ordering Information

Software	Order Number
WinPM.NET V11.0 DVD New (Includes 5 meter device licenses, 1 Eng Client, 2 Web Clients, New! Dashboards & PQDIF)	3ZS67100CC110BA0
WinPM.NET V11.0 DVD Replacement	3ZS67100CC100BC0
Device License	
WinPM.Net V11.0 9xxx Meter Device License Limit 6 to 50	3ZS68120CC110BA2
WinPM.Net V11.0 9xxx Meter Device License Limit 51 to 100	3ZS68130CC110BA2
WinPM.Net V11.0 9xxx Meter Device License Limit 101 to 1000	3ZS68140CC110BA2
WinPM.Net V11.0 3rd Party device/Modbus/SeaBus Dev. Lic. Limit 1 to 50	3ZS68220CC110BA2
WinPM.Net V11.0 3rd Party device/Modbus/SeaBus Dev. Lic. Limit 51 to 100	3ZS68230CC110BA2
WinPM.Net V11.0 3rd Party device/Modbus/SeaBus Dev. Lic. Limit 101 to 1000	3ZS68240CC110BA2
Options	
WinPM.Net V11.0 Engineering Client License Limit 2 to 50	3ZS67220CC110BA2
WinPM.Net V11.0 Engineering Client License Limit 51 to 100	3ZS67230CC110BA2
WinPM.Net V11.0 Web Client License	3ZS67420CC110BA2
WinPM.Net V11.0 OPC Server License	3ZS67520CC110BA2
WinPM.Net SQL Server 2022 - 2 CORE License increment (***) Minimum of 4 cores per server is required (2 x 3ZS67322CC110BA0 minimum))	3ZS67322CC110BA0
Software Upgrade	

Contact your local SIEMENS D&CES Business Developer for ordering information and upgrade

Allows remote configuration of base WinPM.Net software. Excel is required for excel base reports using Reporter. Outlook is required for e-mailing reports.

Power Distribution Solutions

WinPM.Net Enhanced Web-Enabled Energy Management Software

Configuration & Operating Environment

WinPM.Net 11.0

Computer – Server Configurations

The following information describes the software requirements for WinPM.Net 11.0 software.

Client computers

Engineering Client computers require Windows 10 Professional operating systems. Web Client computers require network connectivity to a WinPM.Net primary server to access the Web Applications component of WinPM.Net.

Primary server system requirements

This guideline is based on the number of 9810/9410 meters in an Ethernet network.

≤ 50 Devices

Computer Type: Desktop
 OS: Windows 11 64 bit
 SQL: 2022 Express
 CPU: Intel Core i5 (4 core), or better
 RAM: 8+ GB
 HDD: 500+ GB
 Years of Logging: ~4 years (10 GB)
 Users: Less than 5

≤ 100 Devices

Computer Type: Desktop
 OS: Windows 11 64 bit
 SQL: 2022 Express, or SQL Server 2022 Standard
 CPU: Intel Core i7 (4 core), or better
 RAM: 16+ GB
 HDD: 500+ GB
 Years of Logging: ~2 years (10 GB)
 Users: Less than 5

≤ 250 Devices

Computer Type: Workstation
 OS: Windows 11 (64 Bit) or Windows Server 2022 standard
 SQL: Server 2022 Standard
 CPU: Server Intel Xeon Bronze (6 core), or better
 RAM: 32+ GB
 HDD: x2 500+ GB
 Years of Logging: ~2.5 years (30 GB)
 Users: Less than 10

All computers or servers must have a CD-Rom drive and it is recommended that a UPS (power supply) and at least 19" or greater monitor be used.

Operating Environment

WinPM.Net supports the following environments and software:

NOTE: The operating system and SQL Server combination you choose must be supported by Microsoft. This applies to edition, version, and 32-/64-bit.
 NOTE: Apply the latest updates to the operating system and database system before installing or upgrading WinPM.Net.

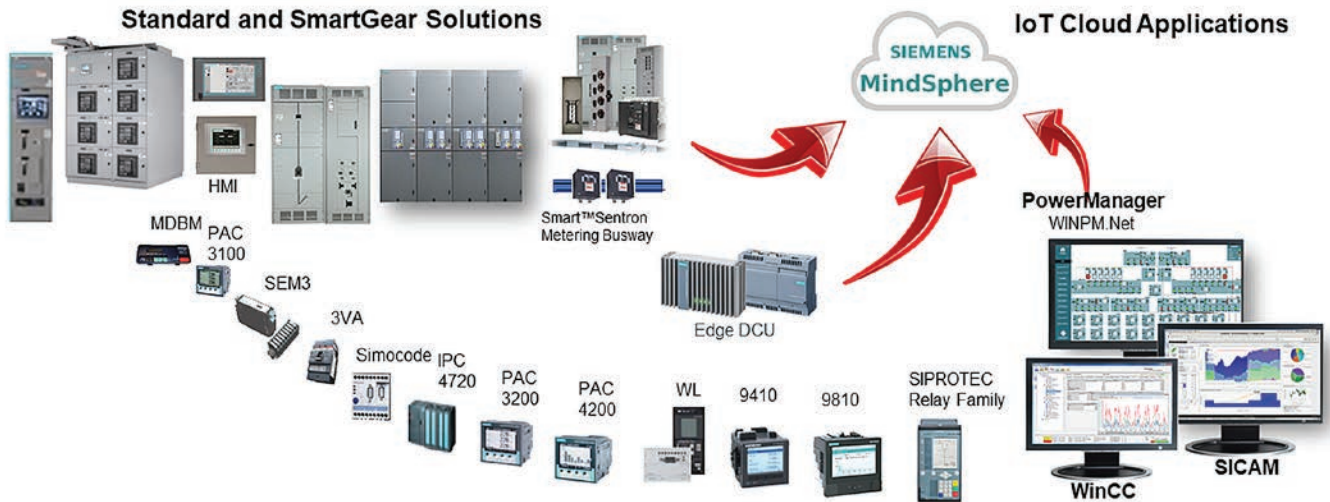
Software	Supported Versions
Operating system	Windows 10 Professional/Enterprise Windows 11 IoT Enterprise Windows 11 Professional/Enterprise Windows Server 2016 Standard Windows Server 2016 R2 Standard /Enterprise Windows Server 2019 Standard Windows Server 2022 Standard
Database system ^①	SQL Server 2014 Express SQL Server 2016 Express SQL Server 2017 Express SQL Server 2019 Express SQL Server 2022 Express (included with WinPM.Net 11.0) SQL Server 2014 Standard/Enterprise/Business Intelligence SQL Server 2016 Standard/Enterprise/Business Intelligence SQL Server 2017 Standard/Enterprise/Business Intelligence SQL Server 2019 Standard/Enterprise/Business Intelligence SQL Server 2022 Standard/Enterprise/Business Intelligence
	VMWare Workstation 10
	VMWare ESXi 7.0
	Oracle Virtual Box 5.0.4
Virtual environment ^②	Microsoft Hyper-V from Windows 10, Windows Server 2016 Citrix XenServer 6.2 Parallels Desktop 10 QEMU-KVM
Microsoft Excel	Microsoft Excel 2013, 2016, 365
Desktop Web browser	Google Chrome version 100 and later Mozilla Firefox version 71 and later Apple Safari versions 7 or 8 and later Microsoft Edge
Mobile Web browser	Safari on iOS8.3+ operating systems, Chrome on Android systems
.NET Framework	.NET 4.8

^① WinPM.Net includes a free version of SQL Server Express. You have the option to install this Express version during the installation of WinPM.Net, if you don't want to use a different SQL Server.

^② You must configure virtual environments with a supported Windows operating system and SQL Server edition. It is possible to mix virtual and non-virtual environments for WinPM.Net server and clients

Power Distribution Solutions

Digitalization for Smart Infrastructure



Cloud & IIoT Solution Offerings

The Siemens Digital Solutions & Services team offers a complete portfolio of digitally enabled products that provide access to data for customers to manage and monitor their assets, as well as analytical insights into their electrical infrastructure.

Provides:

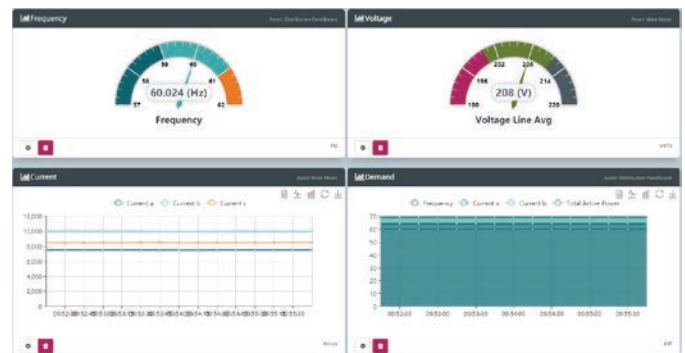
- Edge Connectivity for Cloud Applications
- Plug & Play for Siemens LP Products
- Simplified Dashboarding of Connected Assets
- Mobile, Tablet, & Desktop Compatible
- Multiple Data Export Options
- MindSphere Enabled

Edge Data Collection Unit (DCU)

- Collects field-level device data and stores locally at the edge
- Predefined asset model for automatic configuration of MindSphere assets
- Custom Dashboarding of live data
- Dual Ethernet ports for local and external networks
- Easily connect and monitor standard modbus devices
- Standard device drivers for LP equipment::
 - PAC Power Meters
 - 9410 and 9810 Power Quality Meters
 - SEM3T Thermal Monitoring
 - SEM3 Branch Circuit Monitoring
 - 3VA, 3WA, Legacy 3WL, Legacy 3VL
- Energy usage and cost breakdown for sub-billing
- One-time or scheduled data export via FTP, USB, and Email
- On-board storage options with or without local display

Cloud Connectivity and Applications

Data aggregated in the Edge DCU can be pushed to an external server or cloud platform for long-term storage. The Edge DCU also offers greater flexibility in configuring and creating a hierarchy of your assets. By doing configuration at the local level and pushing this structure to cloud platforms, such as MindSphere, it removes the need of programming the traditional MindConnect devices in the cloud, transferring the configuration files to USB, before loading directly onto hardware. Cloud connectivity empowers customers to realize value from their data by giving them access to their data outside of their facility. This allows customer to interact with



their data using applications built by Siemens experts, or develop new applications for specific requirements. Using the Siemens cloud applications, users have the ability to choose and change displays to the specific metrics of interest, view and compare time-series data of similar devices, and configure and export reports.

Power Distribution Solutions

Services



Advantages to You...

- Technical experts
- Single source supplier
- Available 24/7, 365 days a year
- Reduced total cost of ownership (TCO)
- Avoid unscheduled downtime with preventive maintenance

Service Products

Modular service products enable you to customize a technical service agreement to meet your organization's maintenance needs over the entire life cycle of your installation. Including Service products in your TSA will provide the following benefits:

- Substantial savings versus "on demand" purchases
- Optimized scaling of your maintenance organization
- Assurance that your installation is operating at maximum performance and availability

Telephone and Internet

Priority support

When you need help right now, choose the support coverage that fits your business:

- 24 hours x 7 days a week
- 8 hours x 5 days a week

Extended support

With extended support, you can request blocks of support hours for specific projects and tasks. We can customize this support service to meet your individual needs.

Remote service

Remote service provides support and diagnostics via data line to save you time and money. Technical support specialists directly access your system for real-time troubleshooting to provide maximum uptime.

Technical account liaison

A technical account liaison provides consulting and guidance on all aspects of support through familiarity with the application, your business goals and processes, and your maintenance and engineering staff.

In addition to a site visit to assess your installation and support requirements, the technical account liaison will conduct monthly reviews with your staff to ensure you are receiving maximum payback on your investment.

Field services

Block of hours

Purchase field service hours in 40 hour increments for preventative, predictive or emergency services.

Maintenance programs

Packaged maintenance programs available for:

- System performance checks
- Run diagnostics
- Analyze power quality
- Visual inspections of key system components
- Database trim and backup

Training

Operation and maintenance
Siemens training offers a broad range of educational services, providing quality and excellence to the automation industry. Targeted product and system training provides the student with practical, hands-on experience.

Customized on-site training

On-site training is excellent for large groups or when individual, one-on-one instruction is needed. When the trainer visits your facility, product training will be conducted on your specific installation. Classroom lectures, and trouble-shooting techniques specific to your installation are covered in detail during the training session.

Software update service

The software update service enables you to take advantage of enhancements to the most current software versions. A site evaluation is conducted to determine necessary upgrade requirements prior to the Software Update Service.