

SEM3[™]- EMBEDDED MICRO METERING MODULE[™]

SEM3[™] Solutions

usa.siemens.com/SEM3

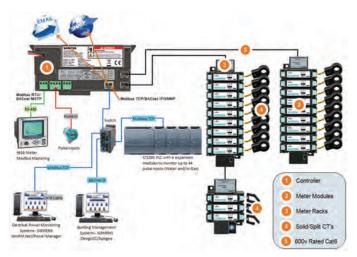




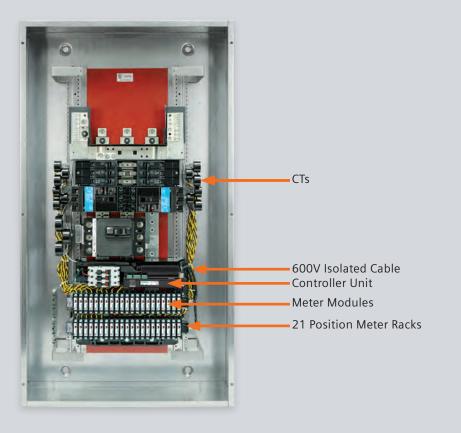
SEM3[™] - Embedded Micro Metering Module[™]

The new Siemens Embedded Micro Metering Module (SEM3) is a modular metering solution for energy monitoring, trending, 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. Consequently SEM3 can be easily integrated into new Siemens Panelboard and Switchboard products, but has also been designed to be implemented in OEM and retrofit applications as well.

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 has the flexibility to be installed as a standalone solution providing real time data through the controller's standard built-in HTML web pages. The data supplied by SEM3 is available in two accuracy classes (0.2% or 1.0%) providing options for the various market requirements. The versatile system allows you to meter the loads you need without the excess hardware and space requirements of traditional solutions.



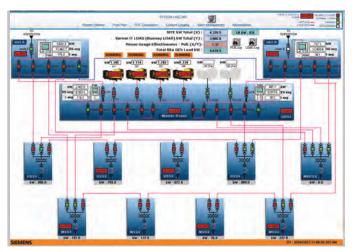
SEM3 in panel



SEM3[™] Solution Overview

To provide you with energy management solutions fitting different applications, SEM3 has been integrated with multiple energy monitoring packages. SEM3 is uniquely designed for sub-billing applications where tenant or client billing is required. It is also utilized in many energy management applications where compact, multi-metering is required. SEM3 has been integrated into many Siemens and third party applications including:

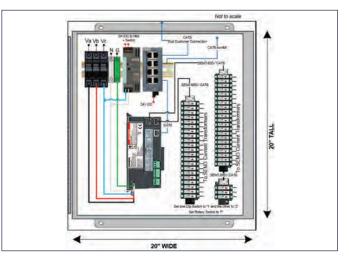
- 1. Siemens WinPM.Net Enterprise EPMS software
- 2. Siemens Powermanager Energy Management Software
- 3. Siemens Building Automation, SCADA and DCIM solutions
- 4. Siemens Simatic HMI Displays for stand-alone, local display option
- 5. Remote Enclosures for retrofit applications with pre-installed components.
- 6. Priority Submetering Solutions Inc. An OEM alliance partner for remote billing services.
- 7. Any third party system or solution that communicates Modbus TCP/IP, Modbus RTU, BACnet IP.



WinPM.Net/Powermanager

Devicité System System Alarma Monitor S	La	Select Controlle at Update 4/3/2018 12:36:08 PM
Apt_305 Kilowatt Hours	8447.86	-cPyye Malas
Average Kilowatts Total Demand	0.27	Heat Mater +
Maximum Total Kilowatts	7.42	Full Registers
Average Current	29.74	Relate to List

Local Touch Display



Multiple Standard Enclosures for Retrofit/External Wall Mount Applications

Energy Monitoring Software Solutions

WinPM.Net - Enterprise Electrical Power Monitoring Software

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 organization. It offers control capabilities, comprehensive power quality and reliability analysis and can help you reduce energy-related costs. WinPM.Net allows the user to create power usage reports, a critical feature for LEED certified and billing applications. WinPM.net allows you to manage intelligent metering and protective devices, trend 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 existing investments. Interface with your existing systems through industry-standard protocols and choose newer components as they become available.

Powermanager Software - Identifying hidden potential for energy optimization and savings

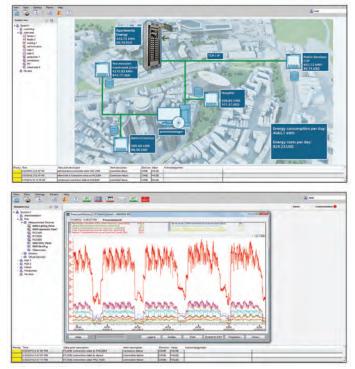
SENTRON Powermanager software, combined with Siemens power meters and low voltage protective devices, provides a complete energy management solution for your business. It allows you to measure, process, analyze, store and share energy usage and status information across your entire enterprise. It offers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

SENTRON Powermanager allows you to manage all your intelligent devices and analyze the data, allowing you to identify hidden potentials for energy optimization and overall savings. 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.

Additionally, the scalability lets you start with an easy to configure, low investment sub-metering solution which can be extended to an enterprise-wide power management system later.

To provide you with a complete energy management solution, SEM3 has been integrated with WinPM.Net energy management software allowing you to process, analyze and store your energy data. WinPM.Net allows you to monitor the real-time data from the metering devices of SEM3, as well as the system summary data. The software can log measured data for historical trending and analysis. Furthermore, the SEM3 system alarms can be configured and acknowledged in WinPM. Net software. WinPM.Net software has over fifteen PDF, Excel, and HTML standard report configurations. The following SEM3 data can be monitored in WinPM:

- Total system kWh or kVarh
- Real-time page displays the following data registers for a 1, 2 or 3-phase metering device; volts, amps, kW, kWh, and kVah
- Alarm status (under current, over current, etc.), as well as configuration/setup for each branch circuit

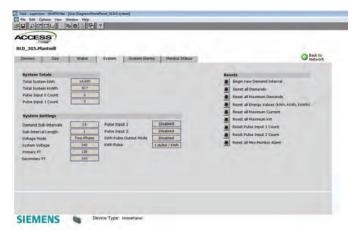


WinPM.Net Power Monitoring Software

IEMENS		5400_Main_LP		
Sector Sector	1/27/2018 12:00:00 A	M-2/3/2018 12:00:00 AM: (Server Local)		
ig5400.Main_A_SEM3				
Bidg5400	Main_A_SEM3 kW Demand Load Prolite			
180	4			
140	A a	S	EM3 En	ergy Cost F
120-	PT 0 10		20122429	0,
§ 100-	100000000000000000000000000000000000000	the second second		
80	SIEMENS	Bldg5400_Ener	gy_Cost_F	Report_TOU
40			AM - 2/1/2018 12:0	0:00 AM (Server Local)
20 1/28/2018 12:00:00 AM	Source: Bldg5400.Lights_120	01411110.000		
1/29/2018 12:00	Energy Cost	-		
The first of the	Time a	Total	Unit Cost (5)	Cost for Tariff (5)
laximum Value : 161.22 on 1/29/2018 at 1:4	Real Energy (KWh)			
Pha-5400	Off Peak	302.91		30,29
100	On Peak	302.72	0.20 SubTotal (\$)	60.54
00-			rrgy Cost Total (\$)	90.83
g 80-		Bldg5400.Lights_12	97 9960 Total (\$	90.83
40	in the second se			
20	Source: Bldg5400.Maln_A_			
	Energy Cost	and the second sec		Contraction of the
0- 1/28/2018 12:00:00 AM	Time of Real Energy (KWh)	f Uan Total	Unit Cost (\$)	Cost for Tariff (5)
1/29/2018 12:0	Off Peak	27,720.75	0.10	2,772.08
Contraction of the second second second	On Peak	24,781.75		4,956.35
laximum Value : 85.6 on 1/29/2018 at 1:45.0			SubTotal (5)	7,728.43
		En	rgy Cost Total (\$)	7,728.43
			A 9600 Total (\$)	7.728.43

I Default SEM3[™] Displays in WinPM.Net Software

Water System	System Alarma	Monitor Status	Black to Network
3 Pole			
12 33 kinh			
11 1,337 658			
602 kmb			
P1 D kmh			
pm 22 kmh			
13 tan kan			
320 kiteh			
290 km			
Pil State			
PK 289 kmh			
14 ALMA			
	971 1.327 600 040 923 800 091 9 800 091 9 800 100 9 800 11 3 800 12 3 800 13 3 800 140 3 800 150 3 800 160 1 800	371 1.12 mm 371	91 3.21 mm 44 3.21 mm 46 3.21 mm 47 3.21 mm 48 3.21 mm 49 3.21 mm 49 3.21 mm 41 3.21 mm 42 3.21 mm 43 3.21 mm 44 3.21 mm 45 3.21 mm 46 3.21 mm 47 3.21 mm 48 3.21 mm 49 3.21 mm </td



Metering Devices kWh Summary (1 Pole, 2 Pole, & 3 Pole)

ACCESS		
Devices Gas	Water System System Alarms Monitor Status	G Back to Network
	Varlage Alams Venet Seport Delay Under Vallage Alam Venet Ve	
	Phase Over Current Marriel Phase Over Current Marriel	
	Phase Over Current Marm	

System Alarms

System Total and Settings

ACCE	SS									
BLD_305. Devices	Plantmill	Water	System	System Atarms	Min	for Status				Back to Network
Monitor	Afouri Energy	Breaker - Commit	-	Monitor	Accurs Energy	Breaker Rating	Como?	Norston	Actual Enverge	Breaker Comm?
tonitor 1	Enable	30		Monitor 33	Desable	115			C. mail	
Horntor 2	Enible	50		Honitor 34	Desable	125				
t rotant	Enable	32		Henitor 35	Desable	113				
Honitor 4	Enable			Monitor 35	Disable	125				
Honitoi 5	Enable	10		Honitor 37	Disable	125				
Nonitor 6	Enable	50		Honitor 38	Disable	125				
lónitór 7	Enible	125		Manitor 39	Disable	125	19			
Honitor B	Enable	50 .		Member 40	Datable	125				
Honitor 9	Enable	30		Monitor 41	Disable	125				
fonitor 10	Enable	10		Monitor 42	Disable	323				
Monitor 11	Disable	125		Honitor 43	Disable	115				
Honitor 32	Disable	429		Horitor 44	Disable	125				
Honitor 13	Disable	121		Hontor 45	Disable	125				
Acritor 14	Disable	125		Monitor 46	Disable	125				
Horstor 15	Disable	125								

Monitoring Status

I Default SEM3[™] Displays in WinPM.Net Software

C 844 11	CESS								
Art. 2005 Priver Metter Page. 2005 Forency VMS 2014 710.2 70.2 VMS 2014 2014 2014 2014 VMS 2014 2014 2014 2014 2014 VMS 2014 2014 2014 2014 1014 VMS 2014 2014 2014 2014 1014 VM 000 0.00 1004 1004 1004 1004 VML 0.00 0.00 1004	_305.Plantmill								
PR1 PR2 PR2 VMB 227.86 228.86 446, VMB 228.86 498.66 App 4.66 6.66 6.66 469.67 90.06 499.66 869.27 Vm 0.00 6.66 6.66 469.67 90.66	evices Gas	Water	System	System Al	arms Monitor Status				G Back to Network
VMS 298-34 298-34 Avg. VMS 298-34 VMA 6.466 6.46 ánga 6.66 6.46 0.46 Avg. Corrent 0.00 6.90 <td>Apt_305 Power Meter</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Apt. 305</td> <td>Energy</td> <td></td>	Apt_305 Power Meter						Apt. 305	Energy	
NM Add		Ph 1	PhZ	Ph2					
NM EX EX<	Volts	239.38	219.36	289.36	Avg. Volts	239.36	kwith	8,448.07	
Na 6.01 6.01 fmd /k.h. 5.01 Noir 6.00 6.01 fmd /k.h. 5.01 Noir 6.00 6.01 fmd /k.h. 5.01 Noir 6.01 6.01 fmd /k.h. 5.01 Noir 6.01 6.01 fmd /k.h. 5.01 Pisse right 6.02 6.01 fmd /k.h. 5.01 Fingancy 6.00 6.00 MV it besind 6.01 Curvet Demshid 4.01 6.03 fmg /k.b. 6.00 Max Curvet Demshid 4.01 6.01 fmg /k.b. 6.00	Amps	0.05	0.05	0.85	Avg. Current	0.03	kyan	0.602.23	
NUX 0.00 0.01 0.01 100 kmR 9.81 Power Factor 0.40 0.44 10d al P 0.40 Power Factor 0.42 0.44 10d al P 0.40 Press Angle 0.42 0.44 10d al P 0.40 Tropper (1,12) 0.40 0.41 0.42 0.40 Corror Densind 0.81 0.68 0.61 0.61 Corror Densind 0.815 0.80 0.81 0.81 Max Corror Densind 0.815 0.80 0.81 0.81	kw	0.00	\$.00	0.00		6.03	AVAR25	381.79	
Anne Bass Bass <th< td=""><td>kya</td><td>0.01</td><td>0.01</td><td>0.94</td><td>Total kVA</td><td></td><td></td><td></td><td></td></th<>	kya	0.01	0.01	0.94	Total kVA				
Trans Aright 41.27 50.48 Apt_305 Demand Fréquency 45.00 56.00 MV Desaind 0.01 Correct Demand 45.05 56.00 MV Desaind 0.01 And Correct Demand 25.75 55.67 35.47 48.6 MV Desaind 0.01	KVAR	0.00	6.00	0.00					
Missure Mode	Power Factor	0.48	6.45	0.45		0.48			
Current Demand 0.01 0.05 0.02 King, kW Demand 0.00 Max Current Demand 28:73 20:47 50.47 Man, KV Demand 1.17	Phase Angle	81.27	60,48	60.08	Apt_305 Demand				
Max Current Demand 28,75 20.47 Max, KW Demand T.17	Frequency	40,00	60.00	60.00	kW Demand	0.01			
	Current Demand	0.04	0.05	0.05		8-80			
Ras Connect <u>55.77 55.77 S5.77 Nas. kw</u> <u>1.44</u>	Max Current Demand	29.73	30.47	30.47	Han, kW Demand				
	Hax Current	50.79	35.79	50.79	Har. kW	7.43			
	times and the events of			the second se					

Device Realtime Screen unique to 3 phase monitoring

D 305.Plantmill			
Devices Gas	Water System Alarma	Monitor Status	Stack to Network
Apt_305 Alarmis	Ph 1(Reset) Ph 2(Reset) Ph 3(Reset)	Setpoint Delay	
Phase Loss			
Over Current Pre-Alarm		0.00	
Over Current		0.05 O	
Over kt/		8.00 0	
Ţ			Olista
			All Devices
IEMENS	Device Type: HomePanel		

Device Alarm Screen unique to 3 phase monitoring

CESS				
305.Plantmill				
ces Gas	Water	System System Alarms	Menitor Status	Back to Network
APT_101	333 Therms	APT_401	358 Thorms	
APT_102	583 Therms	APT_402	327 Therms	
APT_103	584 Therms	APT_403	523 Therms	
AP7_104	\$92 Thems	APT_404	328 Therms	
APT_105	-set Therms	APT_405	590 Therms	
APT_201	364 Therme	APT_501	474 Therms	
APT_202	312 Therma	APT_502	392 Therms	
APT_203	636 Therms			
APT_204	540 Therms			
APT_205	316 Therms			
APT_301	603 Therms			
AP7_302	\$77 Therms			
APT_303	410 Therms			
	482 Therme			

ESS			
05.Plantmill			
en Gas	Water System	n System Alarma Monitor Status	G Back to Network
APT_101	1992 Gallons	APT_401 1812 Gallons	
APT_102	1677 Gallons	APT_402 1725 Gallons	
APT_103	1921 Gallons	APT_403 18H6 Gallons	
APT_104	1311 Gallons	APT_404 1995 Gallons	
APT_105	1405 Gallóns	APT_405 1870 Gallons	
APT_201	1022 Galliona	APT_501 1793 Gallans	
APT_202	TEX Gallons	APT_502 1360 Gallons	
APT_203	1281 Gallons		
APT_204	1950 Gallons		
APT_205	tote Gallons		
APT_301	Terr Gallons		
APT_302	1762 Gallons		
APT_303	1552 Gallone		
APT_304	1239 Gallons		
APT_305	1835 Gallons		

Gas Screen

Water Screen

SEM3[™] Display Solutions

For a local or remote display of measured data, SEM3 has been integrated with the Siemens SIMATIC touchscreen HMI. Each display can monitor up to 6 controllers, with each controller monitoring up to 45 metering points. The SIMATIC HMI display is available to integrate with Siemens Panelboards (P4 and P5) and Switchboards. The Siemens SIMATIC display is also available as a wall mount enclosure for remote monitoring. Various NEMA ratings are available.





Devices full registers

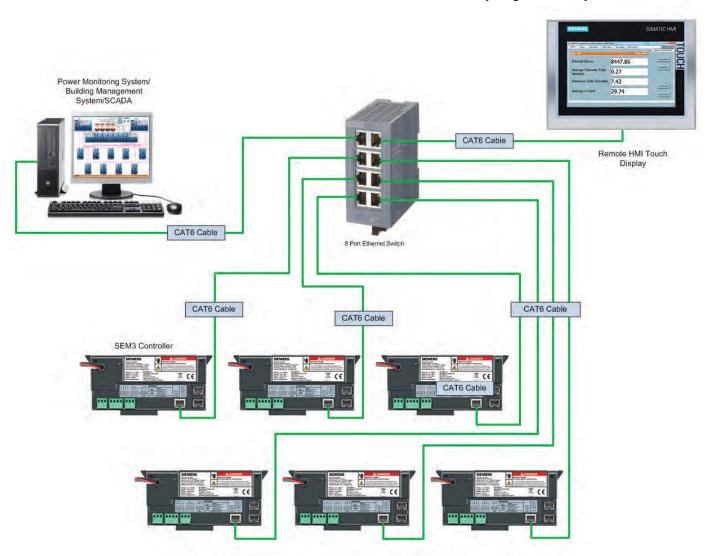
Devices mini registers

Opplant Dot Trait System Vito Sa Trait System Vito Sa Palls Input 5 Doort Sa Palls Input 5 Doort Sa	Palainget Dates Palainget Scalar	SIEMENS Embedded N Devices System	Acco Metering Module System Alarma A			Select Control	
Taal Sprins KM/B (20 Pele hyd 5 Dave (2) Pele hyd 5 Dave (2)	Pulse Input 2 Deabled	System Totals					
Public hours Down	Pulse Input 2 Deabled						
Putue Input I Down	Pulse Input 2 Deabled		24				
	Pulse Input 2 Deabled		0				
	Pulse Input 2 Deabled	Pulse Input 1 Count	0				
System Settings	Pulse Input 2 Deabled	System Settings					1.
Demand Sub-Intervels TS Public Input 1 Disabled		Demand Sub-Intervals	14	Pulse Input 1	Deabled		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Subinterval Length 1 Public Input 2 Disabled		Sub-Internal Length	þ	Pulse input 2	Deabled		
Votage Mode Two Phase kith Pulse Output Mode Descried	kitth Pulse Output Mode Disabled	Voltage Mode	Two Phase	killfn Pulse Output Mode	Deabled	-	
System Votage 240 kith Pulse T pulse kith	kith Pulse T pulse kith	System Voltage	240	ktith Pulse	1 pulse/klith		
Annual St. Contraction of the State of the S		Premary PT	120				
Penageri das		Secondary PT	120	1.0			
Annual Part (1996		Premary PT	120				
		and the second s					
		and and the	1 de				

System data

SEM3[™] Display Applications

The SEM3 controllers standard Ethernet communication feature provides a quick and easy method for connecting to a Siemens SIMATIC HMI display. The topology below highlights how SEM3 may be integrated with an external SIMATIC HMI. This network depicts the maximum number of controllers a single SIMATIC HMI may monitor, six, enabling up to 270 single phase metering points in the system. Connecting the remote display is simple, requiring only an additional CAT6 cable. In this example an eight port Ethernet switch is required to integrate the devices.



SEM3 Ethernet Network with remote display example

Note: Only up to 6 SEM3 controllers data can be displayed in Remote HMI display

Local Siemens Display Options

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 and Power Supply

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	Classifi Nov 8447.866 Classifi Nov 0.27 Classifi Nov 7.42 Names Caref 7.42 Names Caref 7.93.74
SEM3 15″ TD 100-240VAC ^①	US2:SEM3TOUCHP15	
SEM3 19″ TD 100-240VAC ^①	US2:SEM3TOUCHP19	

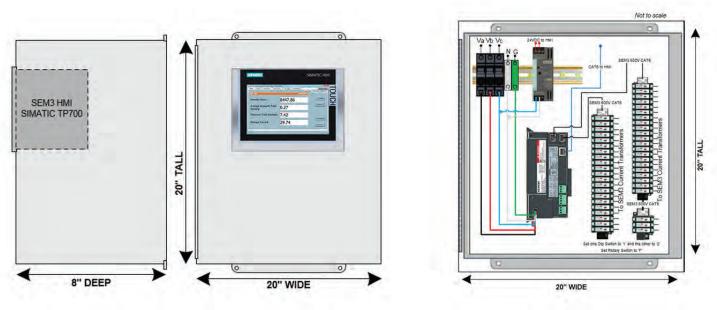
① Order 24VDC power supply separately.

Standard Enclosures for External Applications

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 CTs are self shorting, not requiring a shorting block in the enclosure/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. Meter modules and CTs are sold separately and installed in the field by qualified electricians. As mentioned previously, the display is available as an option.



Typical SEM3[™] with display example

Standard Enclosures for External Applications

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	the state
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 Enclosure
SEM3 15M ENCL Type 12W 16DT x 12W X 6D	US2:SEM315ENCL12	without display
SEM3 15M ENCL Type 4 16DT x 12W X 6D	US2:SEM315ENCL4	
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 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 Enclosure without meter modules installed
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	

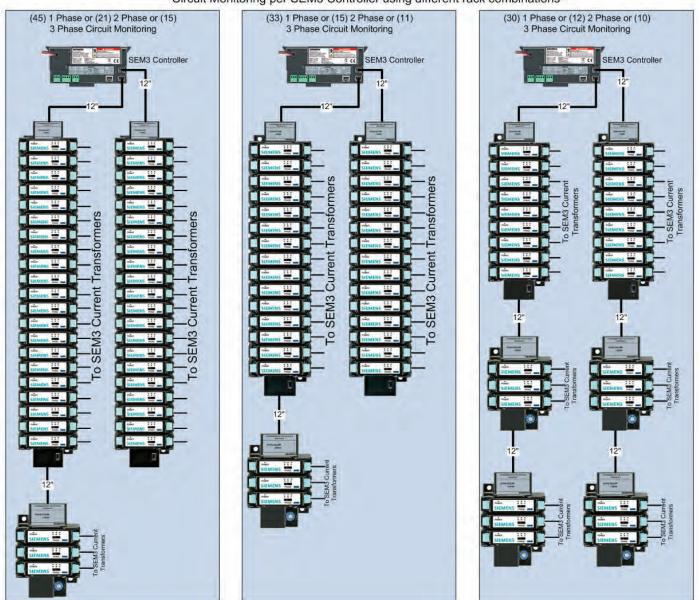
Standard Enclosure with HMI Display & Switch for External Application - SEM3 Meter Modules, and CT's are not included

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	NACE THE
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	1 DEED 20 WEEE
SEM3 15M w/display 20 x 16 x 8	US2:SEM315ENCL1D	SEM3 Enclosure with display
SEM3 21M w/display/switch 20 x 16 x 8	US2:SEM321ENCL1DS	
SEM3 21M w/display 20 x 16 x 8	US2:SEM321ENCL1D	
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	erec *

SEM3[™] Network Topology Solutions

Rack Configurations

A few common SEM3 meter rack combinations are shown below. Highlighted on the left is the maximum number of single phase circuits one SEM3 controller may monitor, 45. This configuration is common in applications where the meter points are located relatively close together, such as a panelboard. Moving from left to right, an increased level of flexibility regarding the physical meter rack positioning is observed. This increased flexibility allows for SEM3 to monitor circuits that are stretched across a larger physical area. For example, the configuration on the right would be more commonly found in a switchboard or switchgear retrofit application.



Circuit Monitoring per SEM3 Controller using different rack combinations

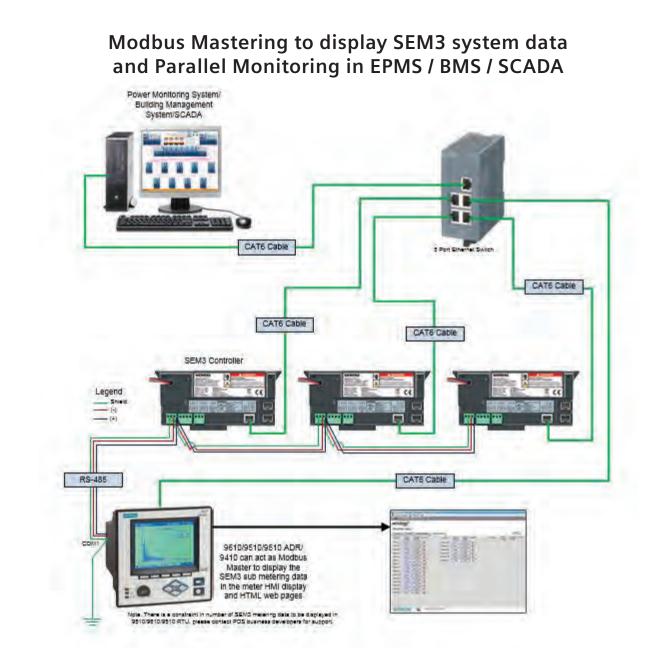
Note: 600V Isolated Ethernet cables between controller and racks are available in 6", 12", 24" and 36" lengths.

SEM3[™] Network Topology Solutions

Modbus Mastering Configurations

The system below highlights an application in which data is displayed via a centralized EPMS/BMS/SCADA system and a Siemens 9610, 9510, 9510 ADR, or 9410 meter. This monitoring scheme is ideal for critical power applications where high levels of redundancy are required as part of a predictive maintenance energy management model. In a switchgear application the 9610/9510/9410 meter can read, consolidate, display, and log the SEM3 system data. The EPMS portion of the system communicates using a CAT6 network integrated with an Ethernet switch. The Modbus master/slave communication with a 9410, 9510, 9510 ADR, or 9610 meter uses an RS-485 Ethernet network. No switch is required in this half of the system.

Please contact your PDS business developer to learn more about constraints dictating the number of SEM3 controllers a single 9610, 9510, 9510 ADR, or 9410 meter may interface with.



SEM3[™] Network Topology Solutions

Serial to Ethernet Gateway Configurations

In the system shown below, two different types of serial to ethernet gateways are employed in the communication channels between the SEM3 controller and a master monitoring system. The first subsystem uses a third party Ethernet converter to act as a gateway for the SEM3 controllers. The controllers communicate via RS-485 to an Ethernet gateway device, which in turn communicates via CAT6 to a centralized Ethernet switch. The second subsystem uses a Siemens PAC 4200, 9410, 9510 ADR or 9510/9610 meter to act as a gateway between the SEM3 controllers and master monitoring system. In this case a 5 port Ethernet switch acts to consolidate the two CAT6 signals to one, which is routed to the master monitoring system.

Power Monitoring System/ Building Management System/SCADA met Si CAT6 Cable Legend Shield 0.1 RS485 CAT 6 Cable Ethernet gateway device act as gateway to SEM3 Controllers RS-485 CAT 6 Cable 136 CAT 6 Cable '38 PAC 4200, 9410, 9510 ADR or 9510/9610 Meter act as dateway to SEM3 Controll

SEM3 Ethernet gateway pass through configurations

Solid and Split Core CTs

To ensure installation of SEM3 is a quick and simple process, Siemens offers a range of solid and split core milliamp CTs with current ratios ranging from 50 to 2000A. These milliamp CTs provide an easy and safe solution because of their self shorting design. No CT shorting blocks are needed. The split core style allows an installer to provide an easy and fast installation without removing the existing wiring in a retrofit application. Both solid and split core CTs have a standard lead length of 6 feet, but will maintain rated accuracy with lead lengths up to 500 feet.

Please contact your local sales representative to confirm availability of these components.

Solid Core CTs

Description	Catalog Numbers	Accuracy
Solid Core CT 50:01 (0.38" Window) - 100 mA Output	US2:SEM3SCCT50	0.2 or 1.0%
Solid Core CT 125:01 (0.66" Window) - 100 mA Output	US2:SEM3SCCT125	0.2 or 1.0%
Solid Core CT 250:01 (0.90" Window) - 100 mA Output	US2:SEM3SCCT250	0.2 or 1.0%
Solid Core CT 400:01 (1.60" Window) - 100 mA Output	US2:SEM3SCCT400	0.2 or 1.0%
Solid Core CT 600:01 (2.30" Window) - 100 mA Output	US2:SEM3SCCT600	0.2 or 1.0%
Solid Core CT 800:01 (2.60" Window) - 100 mA Output	US2:SEM3SCCT800	0.2 or 1.0%
Solid Core CT 1200:01 (2.80" Window) - 100 mA Output	US2:SEM3SCCT1200	0.2 or 1.0%
Solid Core CT 1600:01 [square] (4.50" Window) - 100 mA Output	US2:SEM3SCCT1600	0.2 or 1.0%
Solid Core CT 2000:01 [square] (4.50" Window) - 100 mA Output	US2:SEM3SCCT2000	0.2 or 1.0%



Solid and Split Core CTs

Split Core CTs

Description	Catalog Numbers	Accuracy
Split Core CT 50:01 (0.50 x 0.50" Window) - 100 mA Output	7KT1280-5MA00	1.00%
Split Core CT 125:01 (0.75 x 0.75" Window) - 100 mA Output	7KT1280-5MA01	1.00%
Split Core CT 250:01 (1.00 x 1.00" Window) - 100 mA Output	7KT1280-5MA02	1.00%
Split Core CT 400:01 (1.50 x 1.50" Window) - 100 mA Output	7KT1280-5MA03	1.00%
Split Core CT 600:01 (2.14 x 2.17" Window) - 100 mA Output	7KT1280-5MA04	1.00%
Split Core CT 800:01 (3.00 x 3.14" Window) - 100 mA Output	7KT1280-5MA05	1.00%
Split Core CT 1200:01 (3.27 x 3.02" Window) - 100 mA Output	7KT1280-5MA06	1.00%
Split Core CT 1600:01 (4.50 x 4.50" Window) - 100 mA Output	7KT1280-5MA07	1.00%
Split Core CT 2000:01 (4.50 x 4.50" Window) - 100 mA Output	7KT1280-5MA08	1.00%



Notes



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