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9410 Power Quality Meter
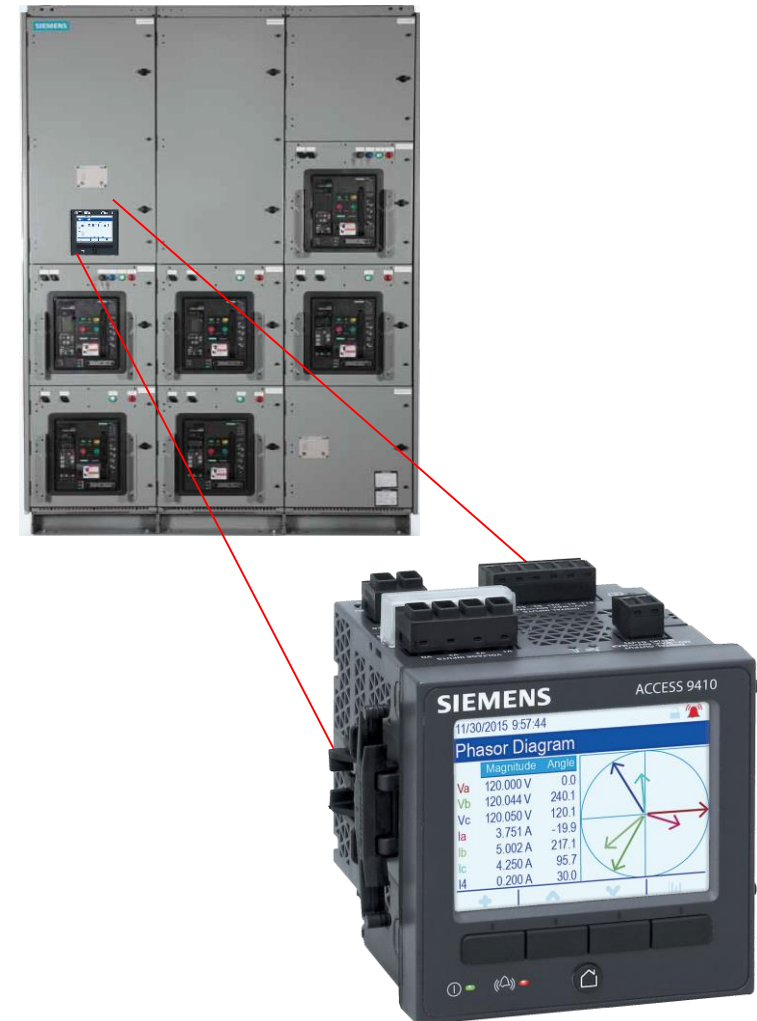
Technical Overview

2018

usa.siemens.com

9410 Power Quality Meter Overview

The **9410 Power Quality** meter is an affordable, compact, high end power quality meter that can be installed in any key metering location requiring advanced power quality features.

The meter is designed with many high end metering features such as Color display, WFC, Emailing, Modbus Mastering, Extensive 1 msec inputs, remote display and more!

Integration to Siemens EPMS software and other systems through Ethernet or Serial communications.

Accuracy is ANSI C12.20-2010 Class 0.2S, IEC 62053-22 Class, IEC 62586, EN50160 and IEC6100-4-30 Class S

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9410 Power Quality Meter Overview

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The 9410 power meter provides advanced metering and power quality features typically found in more high-end metering. Key features Include:

✓ Waveform capture (pre & post) for sag/swell events (256 samples/cycle) up to 96 cycles on all phases, with Disturbance Direction Detection to pin point the location of the fault.

✓ GPS (sequence of events recording) to 1msec for Inputs.

✓ Customizable on board data logging, event recording and email capability

✓ Customizable color display – display downstream data!

✓ Expandable I/O for both digital and analog signals – 3 standard, option up to 27

✓ Gateway (serial to Ethernet) communications available with add on Ethernet Card. Also provides web pages for meter and connected downstream devices

✓ Remote display available and non-display (tran) available

✓ Modbus RTU/TCP, and IEC61850 protocols, HTML web server, NTP and FTP transfer

✓ Email alarms, SMTP email

24 digital input setup

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Gather and act on energy and consumption data

- ✓ Precise, consistent metering
- ✓ Real energy - Class 0.2S (IEC 62053-22, ANSI C12.20 (0.2) Class 10)
- ✓ Reactive energy - Class 0.5S (IEC 62053-24)
- ✓ Measurement method - IEC 61557-12 PMD-S
- ✓ Billing flexibility
- ✓ Supports Time Of Use metering (4 seasons, 5 day types, 20 year calendar)
- ✓ Utility sealable
- ✓ Time synchronization
- ✓ WAGES metering support (input metering)

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Siemens 9410 series meter is configured for input metering as standard and can accommodate up to 27 digital inputs

✓ Digital inputs connected to pulse counting devices (gas meters, water meters, etc) for local display can be tied into the meter

✓ Use the Ethernet gateway connection to SIEMENS WinPM.Net Software to allow for remote monitoring

✓ SIEMENS WinPM.Net Power Monitoring software displays, reports and alarms the information as if connected directly to water meters, gas meters, etc.

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9410 Power Quality Meter Overview
General Meter Features Overview

Key features designed into the 9410 meter:

- ✓ Modbus RTU, Modbus TCP, XML and IEC 61850 protocols
- ✓ Color display with color alarm notifications
- ✓ Two Ethernet ports & RS-485 port as "standard"
- ✓ Ethernet-to-serial gateway
- ✓ Modbus Master functionality
- ✓ COMTRADE / FTP
- ✓ SNMP
- ✓ SNTP/NTP Time Synch (+/-1 sec)
- ✓ GPS IRIG-B Serial Time Synch (+/- 1ms)
- ✓ Standard 5amp secondary CT's – 3 phases
- ✓ Customizable displays, Custom logic and extensive I/O

Hundred's of metering measurements are monitored points. A complete listing is in the Modbus register listing in the 9410 meter manual.

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Siemens 9410 series meter is configured for maximum flexibility and expandability with four unique designs

✓ Four meter styles

- One piece – panel mount
- Two piece – remote display
- Tran (No display)
- Optional custom NEMA enclosures are also offered

Panel-mount meter

DIN rail-mount meter with remote display

Custom Enclosure Designs

DIN rail-mount meter with no display

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Unique COLOR display with clear, color coded information that provides easy to read information

✓ Integrated 320x240 VGA Color LCD

✓ Eleven standard displays with multiple sub displays and custom screens can be designed with up to 6 variables on each with ION setup

✓ Alarm notification (upper right corner), LED light and the Entire screen flashes for a high priority alarm. Red (High Level), Yellow (Med level), Blue (low level) and Gray (no alarm)

✓ Multiple languages: English, French, Spanish, Portuguese, German, Italian and Chinese

✓ Two LED indicators for Alarm and Meter Status

✓ IP 54, UL Type 12

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9410 Power Quality Meter Overview
Design Features – *Front View*

Panel mount meter

DIN-rail mount meter

1. Voltage inputs
2. Control power
3. Digital inputs
4. Digital output
5. Alarm LED
6. Status LED

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Panel mount meter

DIN-rail mount meter

1. Dual-port Ethernet for daisy chaining meters via Ethernet

2. RS-485

3. Current inputs

4. Mounting clips

5. Expansion port
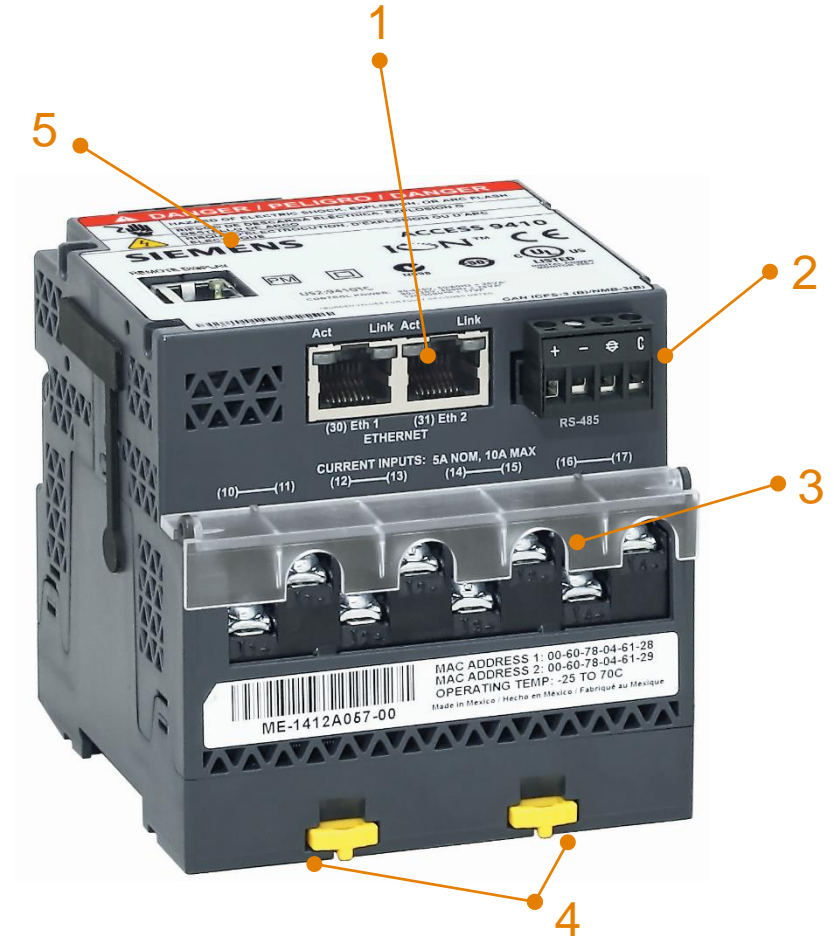
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Modular I/O options (up to four), and downloadable firmware offer unique flexibility to meet customer needs today and adapt to changing requirements tomorrow.

✓ With up to four optional modules, the 9410 can be expanded to support 27 digital inputs! Analog Input (4-20mA, 0-30V) and Output (4-20mA; 0-10V) are available.

✓ Simple plug in design requires no tools to install.

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9410 Power Quality Meter Overview
Design Features – *HTML Web Pages*

Unique HTML / XML web pages built into the meter can be displayed on a remote computer. Web pages display the 9410 meter data, downstream serial device data or Ethernet based devices!

✓ Two Integrated 10/100Base-TX RJ45 ports

✓ 8 Simultaneous Ethernet connections

✓ I/O can be displayed on Web Pages

✓ Built in FTP server location can hold custom Web pages and COMTRADE files

✓ Up to 32 serial devices allowed

9410 Web Page showing Master meter data
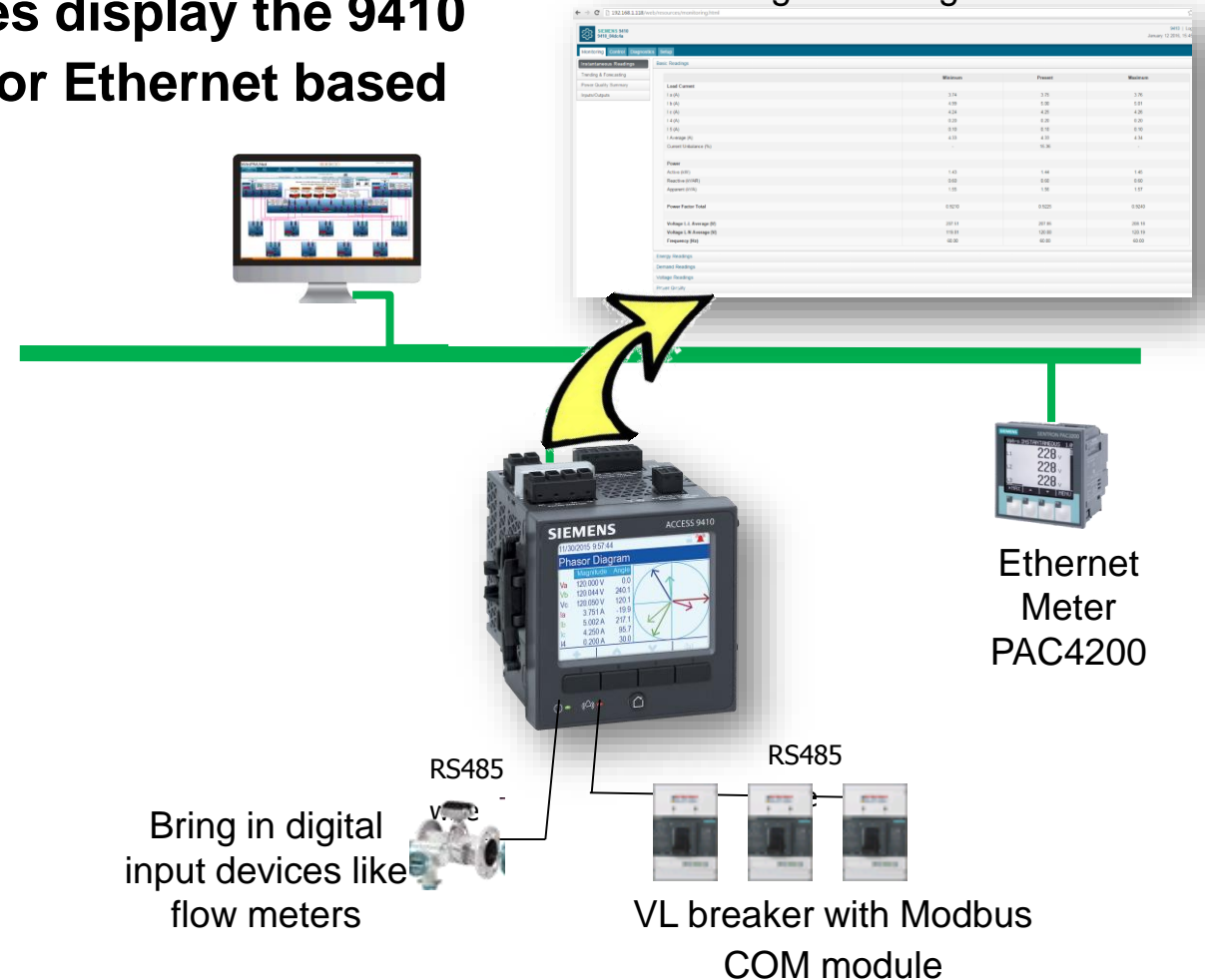
Ethernet Meter PAC4200

RS485

Bring in digital input devices like flow meters

RS485

VL breaker with Modbus COM module

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9410 Power Quality Meter Overview
Design Features – *Standard HTML Web Pages*

Standard screens include the Login, Monitoring, Control, Diagnostics, and Setup

Control Screen - Resets
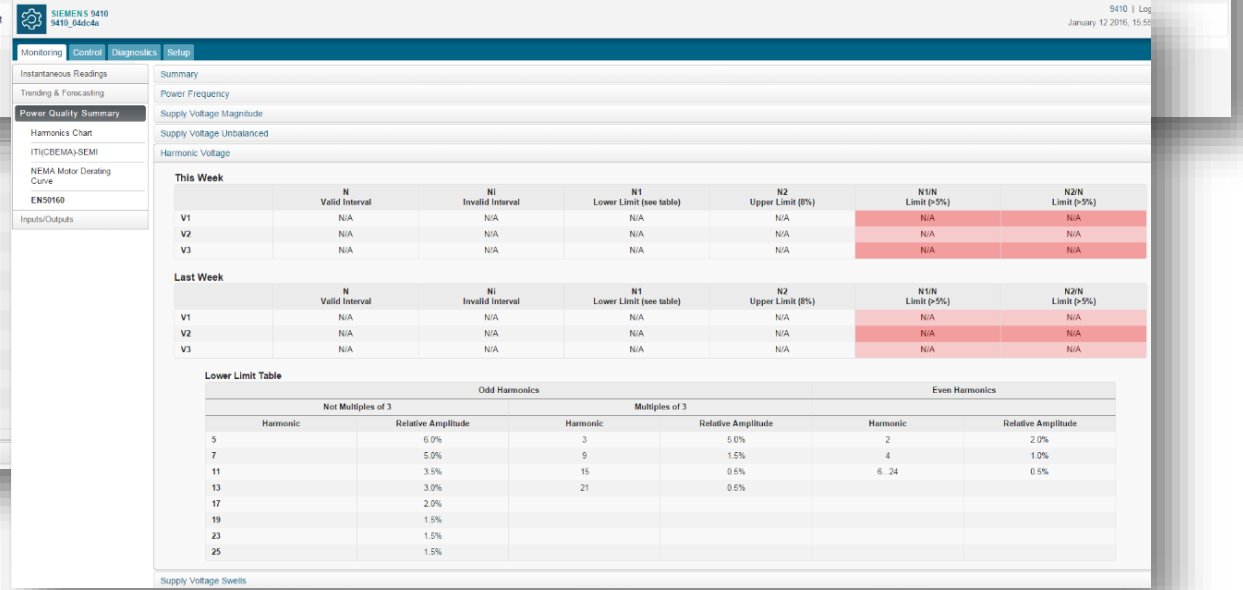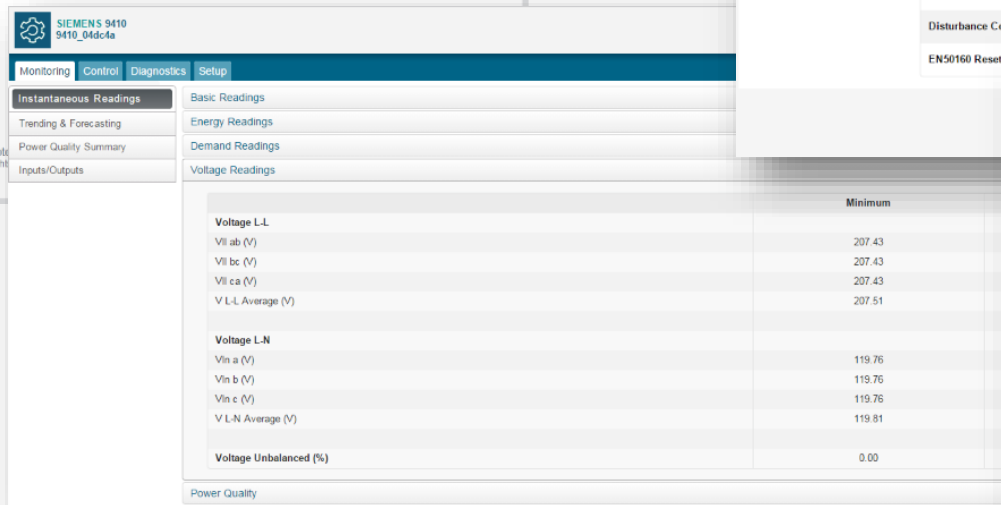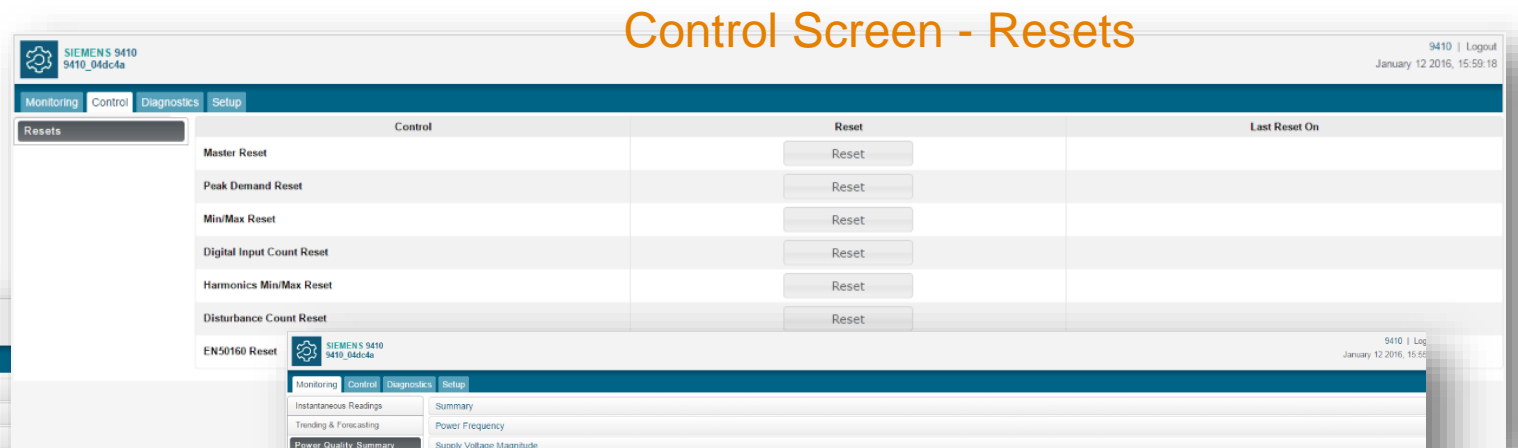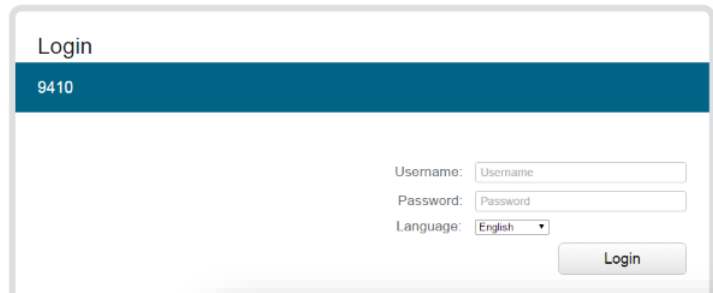
Monitoring Screen – Real time

Monitoring Screen – Week vs Week Data

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9410 Power Quality Meter Overview
Design Features – *Standard HTML Web Pages*

Standard screens include the Login, Monitoring, Control, Diagnostics, and Setup

Diagnostics Screen – Phasor

Setup Screens – Ethernet, Serial, NTP, SMTP, Basic Settings (V, Amps, Nominal V, Amps, PF) and more

Diagnostics Screens – Ethernet Port Setup, Serial Numbers, COM port setups, and Memory allocation

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9410 Power Quality Meter Overview
Modbus Mastering and Custom Displays

The **Modbus MASTER feature** allows you to log data a small amount of data from other devices in the 9410 and display that basic data on the screen.

- ✓ The 9410 display will allow up to six (6) variables on the screen at one time.

- ✓ Up to 20 custom screens can be designed.

- ✓ Great feature if a customer wants to display on the screen and internal web pages Energy usage information.

- ✓ Building the screens requires WinPM.Net or ION Setup software.

- ✓ To display and log more data, the Siemens 9510 or 9610 meter should be used.
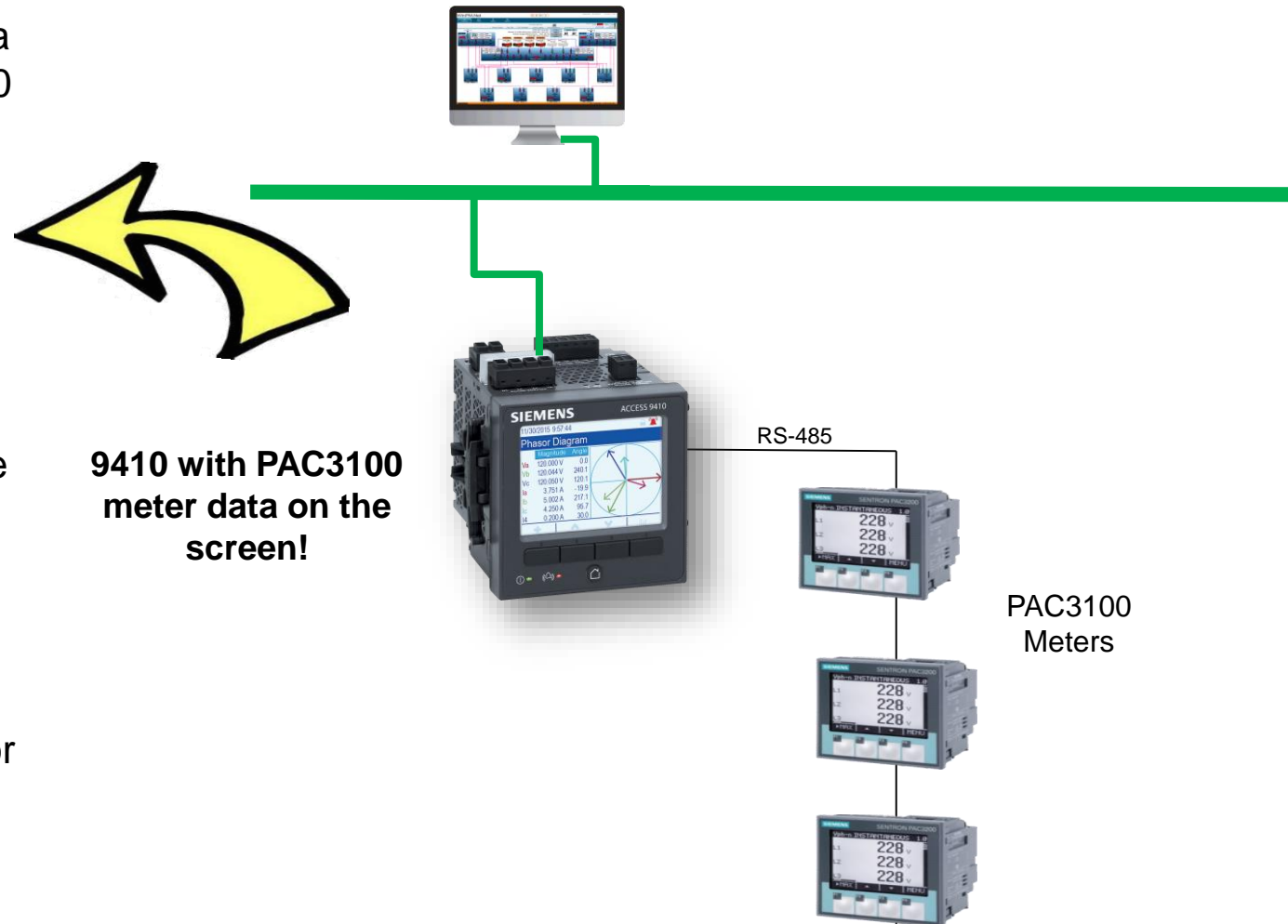
9410 with PAC3100 meter data on the screen!

RS-485

PAC3100 Meters

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Use multiple meters to determine the general location of the disturbance.

If the meter is on the building main incomer, it determines if the disturbance occurred within the building or from the utility.

If more meters are installed more detailed analysis and exact location can be determined.
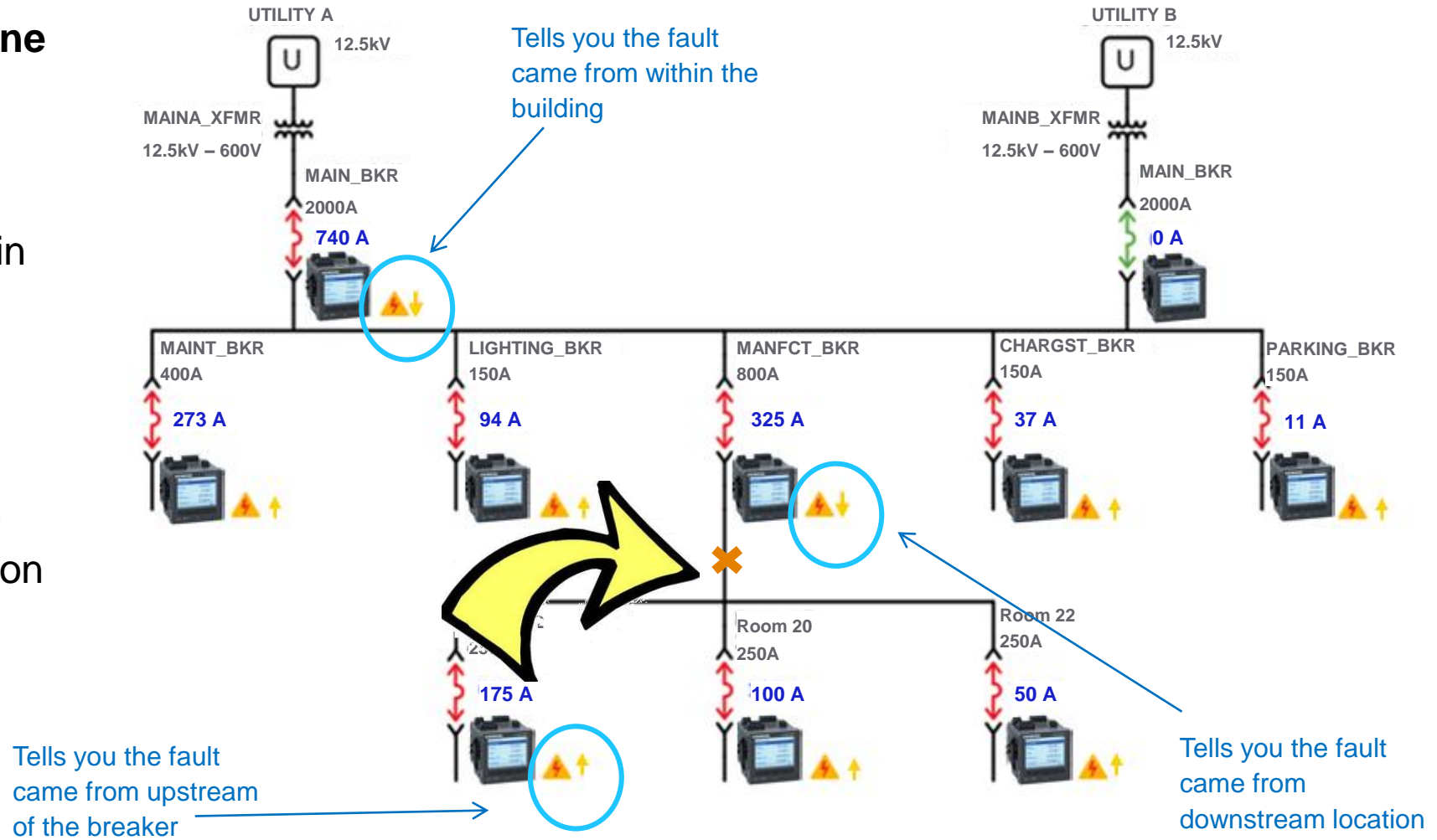
Tells you the fault came from within the building

Tells you the fault came from upstream of the breaker

Tells you the fault came from downstream location

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Custom Framework Programming is modular, powerful, flexible and can be used to create custom logic / programs without the need for a PLC.

✓ Based on a simple "building block" approach

✓ Uniquely addresses advanced monitoring and control applications

✓ Configured in ION setup software

✓ Allows for changing needs
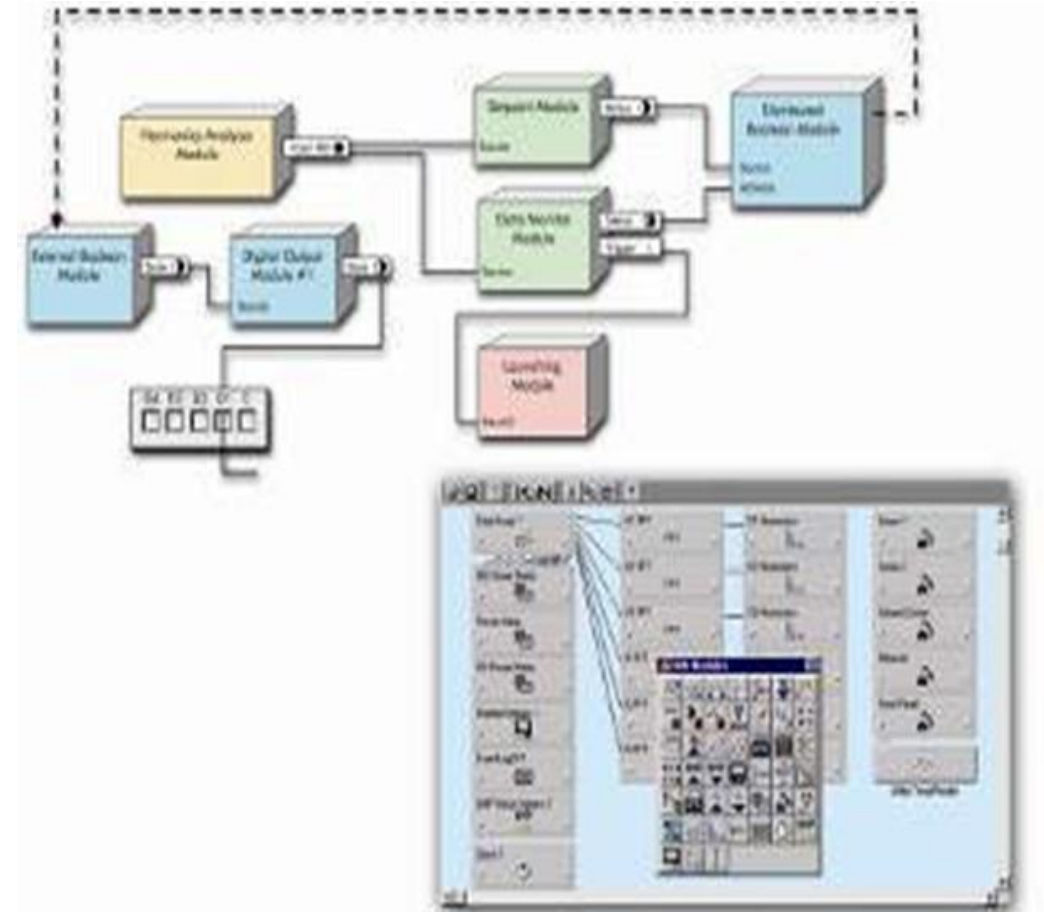
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✓ IEC 61557-12 PMD-S

✓ IEC 62586

✓ IEC 62053-22 Class 0.2S

✓ IEC 62053-24 Class 0.5S

✓ IEC 61000-4-30 Class S

✓ ANSI 12.20 Class 0.2 (accuracy)

✓ UL - C & US as per UL 61010

✓ C-tick

✓ FCC Part 15, Class B

Green premium

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9410 Power Quality Meter Overview
Communications Examples

Serial Network

RS-485 (2 or 4 Wire)

WinPM

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

9410 meters daisy chained with standard Modbus RS-485 serial
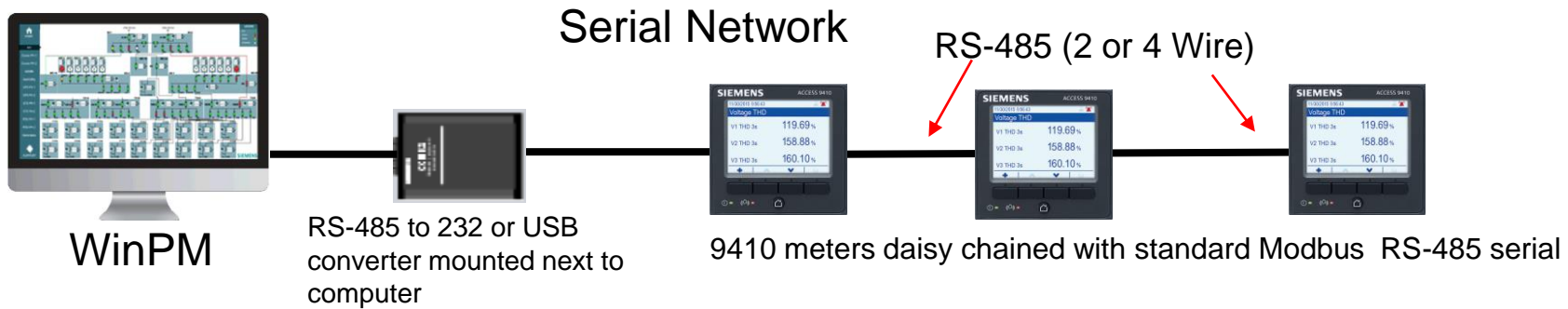
Direct connection to a computer via RS-485 serial wire (up to 4000 ft). One RS-485 string can support up to 32 meters.

Up to eight (8) Supervisory systems can ping the 9410 Ethernet meters

Ethernet Network

9410 with Ethernet connected 2nd 9410

9410 with serial link to PAC3100's

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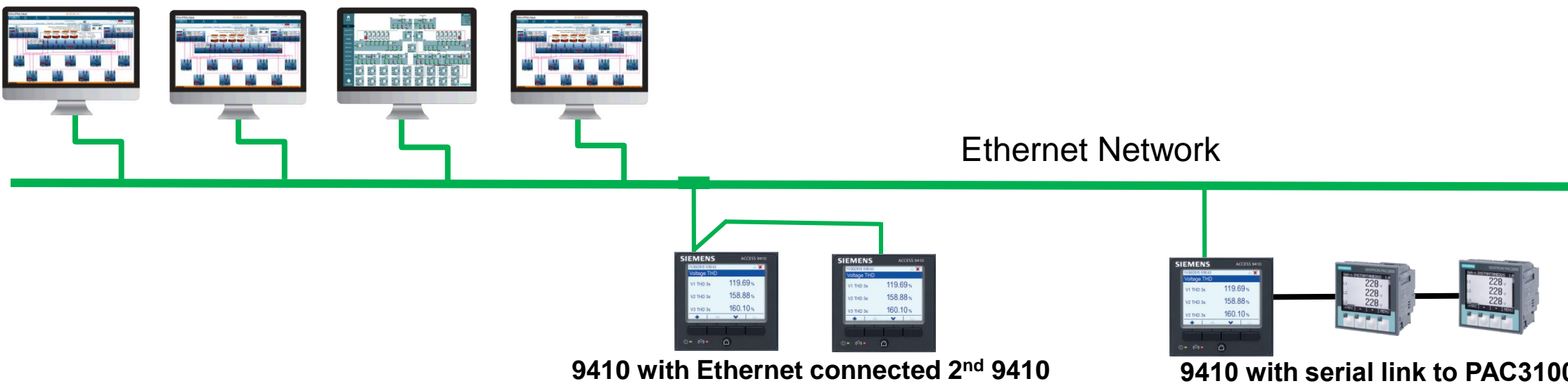
9410 Power Quality Meter Overview
Communications Examples – Daisy-Chain Ethernet!

Straight line Ethernet Daisy-Chain

✓ **Ethernet -Max. 100m length.**

✓ **Each meter has a unique IP address**
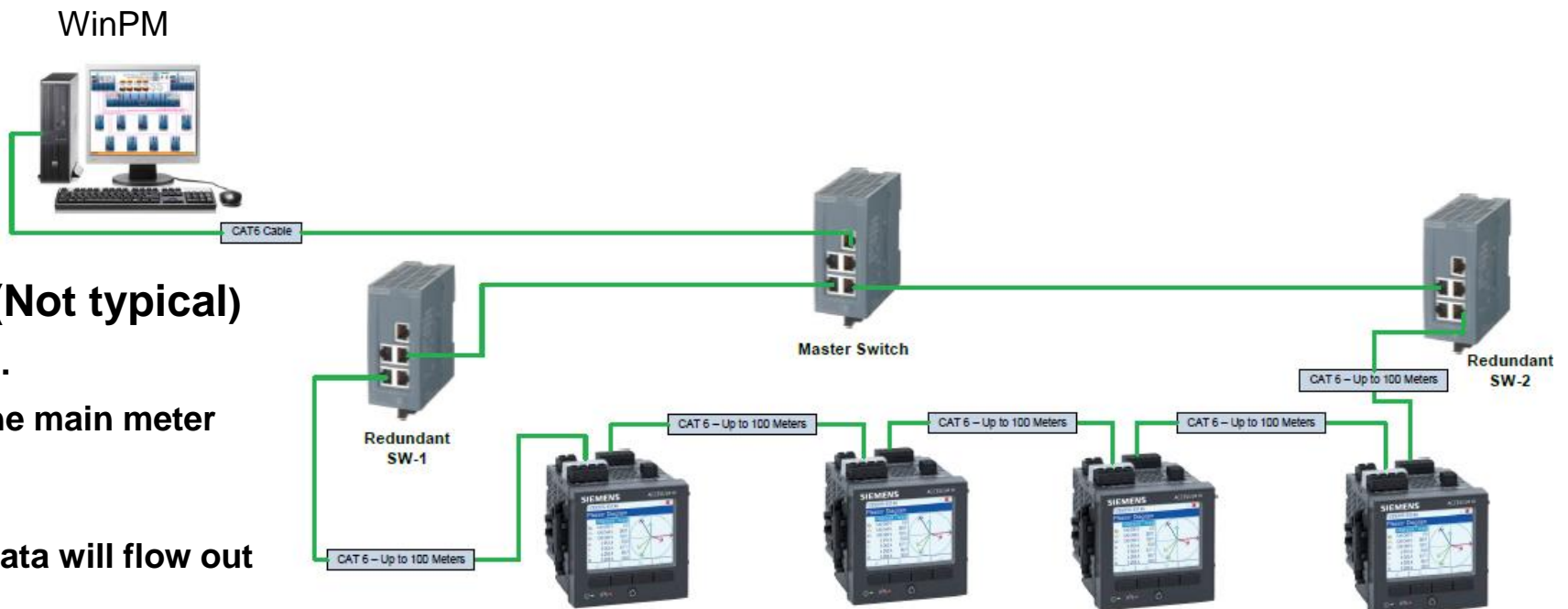
Loop Ethernet Network (Not typical)

✓ **Ethernet -Max. 100m length.**

✓ **RSTP needs to be turn on the main meter**

✓ **Each meter has a unique IP address**

✓ **Benefit – if network is cut, data will flow out the other direction**

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9410 Power Quality Meter Overview
Siemens ION Setup Software

Easy configuration with Siemens ION Setup Software:

✓ Free configuration software can be downloaded from the PDS web site.

✓ The ION Setup software will allow direct serial or Ethernet connection to any ION style meter (93xx, 9410, 9510, and 9610).

✓ It will connect to only **"one"** meter at a time and will allow setup, configuration and downloading of "any" variable in the meter. Screens are basic and do not look like the WinPM.Net software.

✓ Extensive online help menu.

✓ Quick access buttons for printing, saving, viewing and help.

✓ Easy setup for multiple meters:
- Device configuration can be stored on the PC
- Easily copy a configuration to other devices
- Offline configuration of devices and modules
- Configure I/O, logging, Alarms, Logic, etc.

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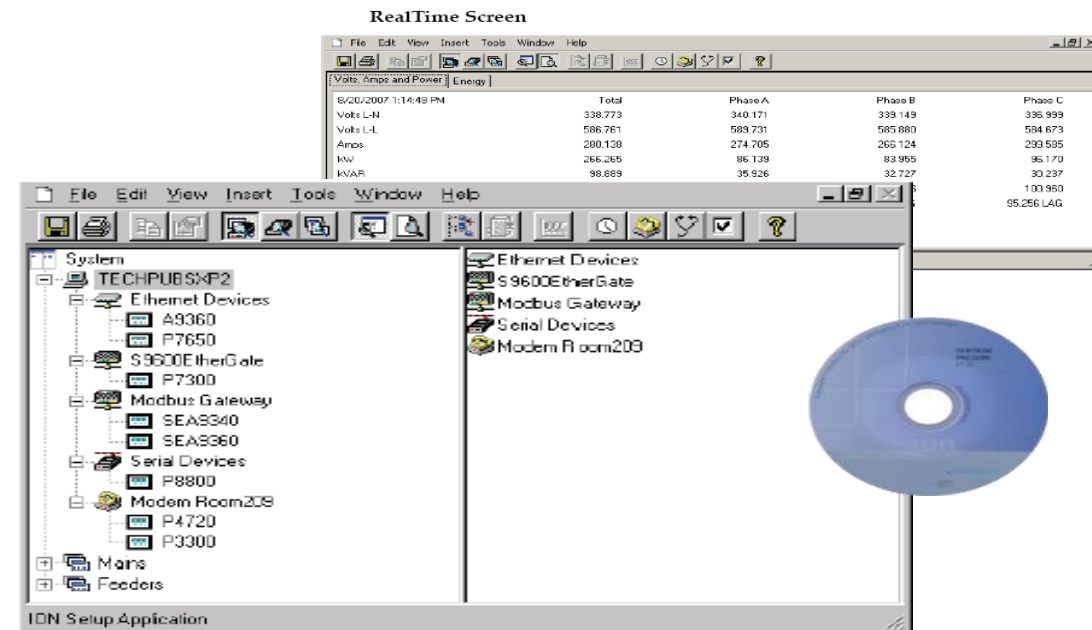
9410 Power Quality Meter Overview
Integration with Siemens WinPM.Net Software

The 9410 meter is a standard device in WinPM.Net with all the standard screens, logging, alarms, etc. that are found with other Siemens meters.

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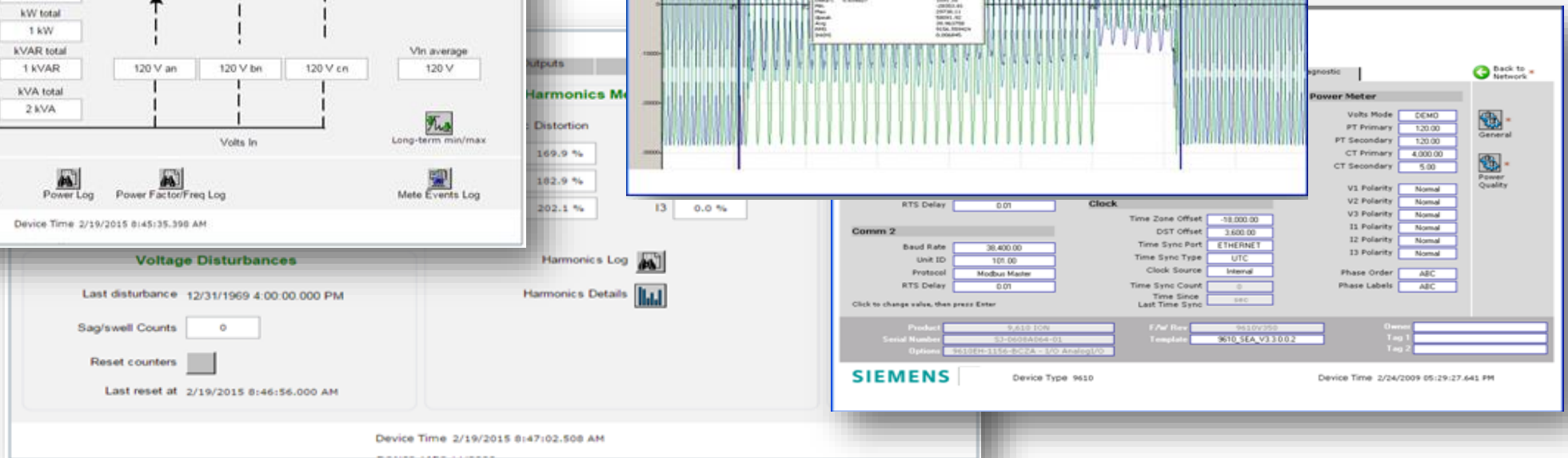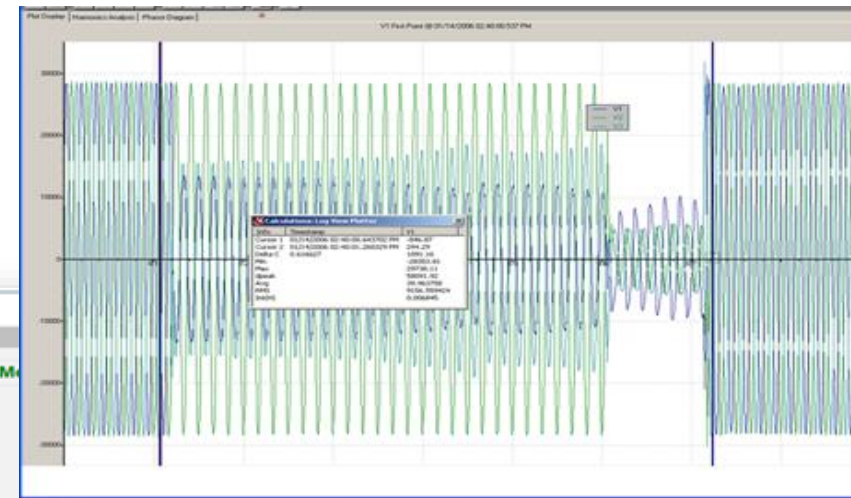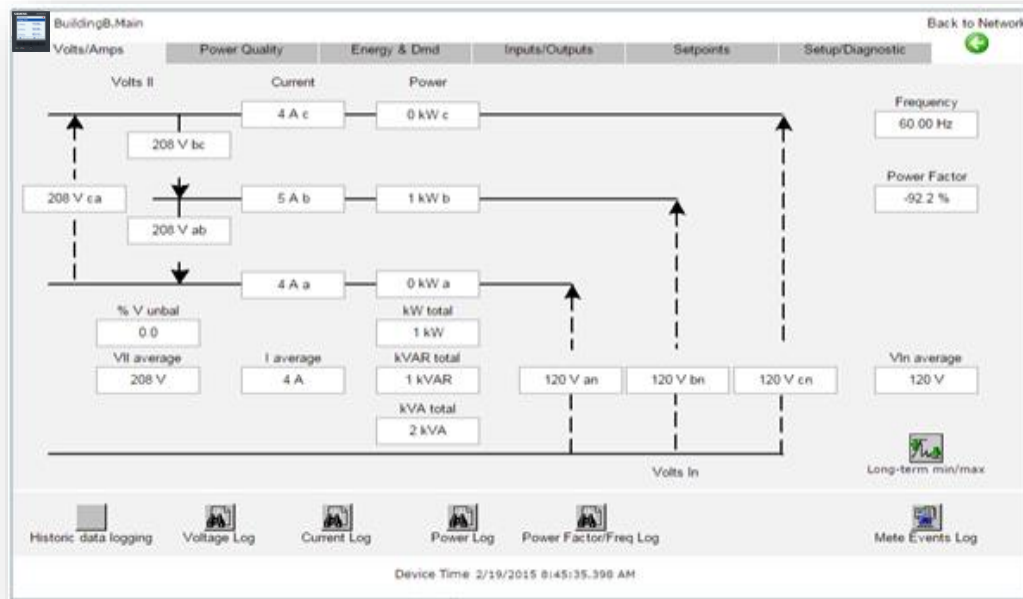
9410 Power Quality Meter Overview
Integration with Siemens WinPM.Net Software – Learning Feature!

Have the meter "learn" what your Sag/swell, Voltage, current, KW min //max are instead of guessing!

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9410 Power Quality Meter Overview
Integration with Siemens WinPM.Net Software – On line Setup & Configuration!

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Easy on-line setup of all the Analog and Digitals, along with communications, system type and more!

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9410 Power Quality Meter Overview
9410 Series part numbers

US2:9410DC

- Class 0.2S meter, dual Ethernet, load profile, extendable I/O, Power quality features, panel mount **with Integrated display**

US2:9410TC

- Class 0.2S meter, dual Ethernet, load profile, extendable I/O, Power quality features, DIN rail mount **with no display**

US2:9410RC

- **DIN rail mount meter + remote display + 3m Cable** combined in one package

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9410 Power Quality Meter Overview
Accessories part numbers

US2:948M2DO6DI

- **I/O Module** with 2 relay outputs, and 6 digital inputs (wetted)

US2:948M2AO4AI

- **I/O Module - Analog**, 2 analog outputs (4 - 20 mA, 0- 10 VDC), and 4 analog inputs (4 - 20 mA, 0 - 30 VDC)

US2:948DISP96

- Color **remote display + 3m cable**

US2:948DCAB10

- Remote display **cable**, 10 meters

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Thank You

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For additional information on Siemens Digital Solutions contact:

- ✓ **Technical Support line at 1-800-333-7421 (M-F) 8-5pm Eastern US.**

- ✓ **Web Support:**
  - ✓ www.usa.Siemens.com/pds

- ✓ **Request for Information / Proposal**
  - ✓ www.usa.Siemens.com/pds-request

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