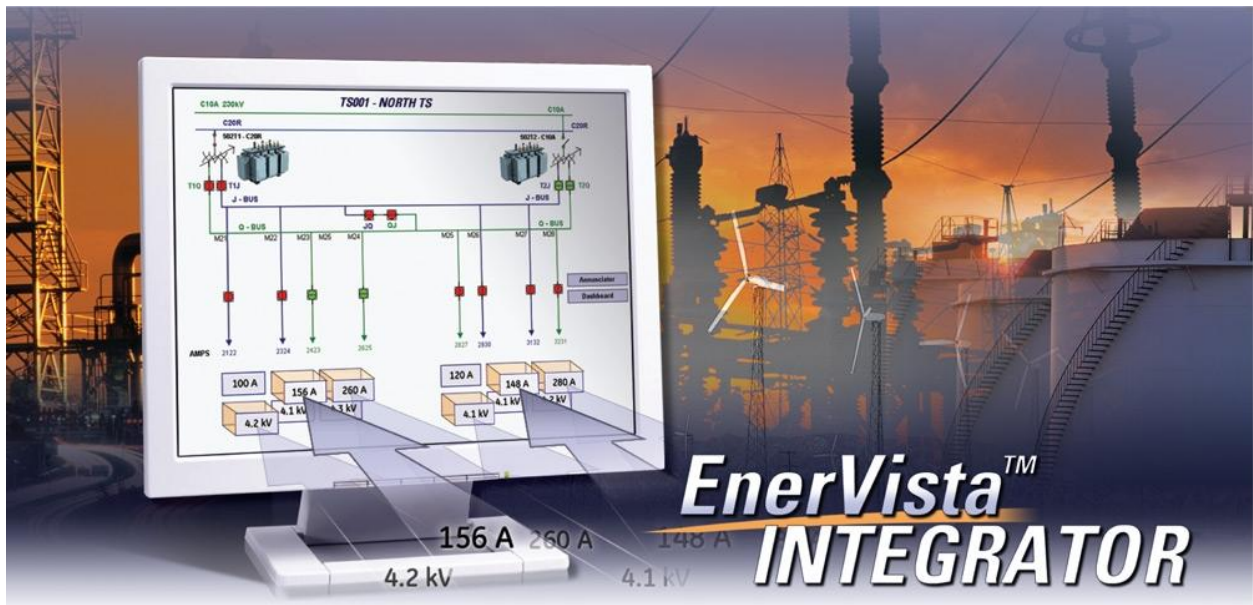




Digital Energy

# EnerVista™ Integrator v6.31



## Guideform Specifications

November 10, 2011

# 1 - Product Overview

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## 1.1 Software Scope

1. The software enables seamless integration with GE Multilin devices for new or existing automation systems through tested, pre-configured memory maps and significantly reduces the time and effort.
2. The software fulfills the following requirements:
  - Communications to devices through an easy, pre-configured setup with little customization required
  - On-Demand Viewing and Controlling of the status of devices in their small system
  - Data recording and storage of device values, events and waveforms for a power system
  - Retrieval of device information for presentation or use in other integrated systems
3. The software obtains device values, event and waveform data from device and provides the following functionality:
  - Retrieving data from any Modbus compatible device (Current, Volts, Energy, Demand, etc.)
  - Sending real time commands to any device in your system (Open/Close breaker)
  - Automatically download all events and waveforms from any GE Multilin device
  - Ability to communicate with up to 300 devices/30000 data tags (points) simultaneously
  - Capability of adding customized memory maps of other Modbus compliant devices

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## 1.2 System Project Size

1. The software can provide communications for Monitoring, Control and data retrieval for power systems that contain up to 300 electronic devices that communicate using the standard Modbus TCP/IP and Modbus RTU protocol.
2. The software can handle communications with up to 30000 points (tags) combined between all of the 300 allowable devices.
3. The software can be ordered with three options for project size, supporting projects from 1000, 5000 and 30000 data points.

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## 1.3 Multiple Installations

1. The software supports multiple installations from different network locations.
2. Separate installations of the software that link to common or different devices for communications are supported.
3. Each software installation will have its respective communication, event and waveform server performing data collection.

# 2 - Communications

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## 2.1 Preconfigured Communications for GE Multilin Devices

1. The software connects to GE Multilin devices using Modbus over RS-232, RS-485, or Ethernet.
2. The software supports communications using the standard Modbus TCP/IP and Modbus RTU protocol with GE devices and specific device firmware versions that are preconfigured for use. A list of devices that the software supports is provided in Appendix A – Supported Devices.

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## 2.2 Third Party Devices

1. The software will support the addition of memory maps for other non-GE Multilin devices that use the Modbus TCP/IP or Modbus RTU protocol. The addition of the memory maps will allow retrieval of device values.
2. The software shall support the following Modbus data formats for reading memory map locations:

Data Type	Description
Enumeration	Unsigned 16 Bit Integer (must configure enumeration list)
Floating Point	Floating Point (32 bits)
SINT16	Signed 16 Bit Integer
SINT32	Signed 32 Bit Integer (2 registers)
UINT16	Unsigned 16 Bit Integer
UINT32	Unsigned 32 Bit Integer (2 registers)
BIT	Signed 16 Bit Integer (Must define bit location)
HEX2	Hex 2 Bytes - 4 ASCII Digits
COIL_BIT	Read Coil Status
INPUT_BIT	Read Discrete Input Status

The following Modbus data formats for Forcing Coils are supported:

Data Type	Description
Force Coil	Function Code 5 – Only writing value of “1” is supported

# 3 – Data Retrieval

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## 3.1 Data Retrieval

1. The software shall retrieve monitored analog and digital points through an OPC server that is compliant to OPC DA version 3.00.
2. The software shall have Waveform and Event Server applications that communicate using servers on the OPC Interface.
3. The software Waveform Client communicates to the Waveform Server using COM as the default interface.

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## 3.2 Scan Interval Rate

1. The software shall provide a configurable scan interval in milliseconds (msec) for retrieving information from a device.

# 4 - Automatic Event/Waveform Archiving

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## 4.1 Automatic Event Retrieval

1. The software shall automatically download the Event Records from all supporting GE Multilin Devices through an Event Server and store it in a centralized, system-wide Sequence of Event Record.
2. The software will continually poll each GE Multilin Device to see if any new Events have been added to that device's Event Record. This polling is given the lowest priority for all communications going through the communication server.
3. Once a new Event has been detected, the Event Record will be downloaded by the software and stored in the centralized, system-wide Sequence of Events Record database on the installation workstation.

The following information is captured for each event:

Event Information	Description
Event Time	Time that the event occurred
Event Type	If the new event was recorded due to the operation of an element or feature within the relay, it will be given the classification Event. If the new event was recorded due to a possible problem with any of the devices in the system such as the detection of a faulty connection, it will be given the classification ALARM.
Source Name	Name of the device that recorded the event
Source Type	Type of device that recorded the event (e.g. F60, 369)
Event Cause	Indicates the cause of the event

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#### **4.2 Waveform Archiving**

1. The software shall automatically download the waveform (Oscillography) Files from all GE Multilin Devices and stored on the installation workstation repository.
2. The software will continually poll each GE Multilin Device to see if any new Waveform Files have been created. (This polling is given the lowest priority for all communications going through the communication server.) Once a new Waveform has been detected, the file will be downloaded and stored on the installation workstation repository.

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#### **4.3 Waveform Viewing**

1. The software shall provide visualization of waveform fault data from devices in a Time-based, Phasor Quality or Tabular view.
2. The software shall have the ability to convert Comma Separated Value (.csv) file formats into COMTRADE compatible files.
3. The software shall be able to merge and overlay waveforms downloaded from multiple devices
4. The software shall be able to identify harmonic content in monitored parameters.

## **5 – Recommended Products**

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### **5.1 Products**

1. The recommended software is GE EnerVista Integrator.

## 6 – EnerVista Integrator - System Requirements

Component	Requirement
Supported Operating systems	<ul style="list-style-type: none"> <li>Windows XP (Service Pack 3)</li> <li>Windows 7 -32 bit</li> </ul>
Computer and processor	<ul style="list-style-type: none"> <li>Pentium® IV 3 GHz processor or higher</li> <li>CD-ROM drive</li> <li>Mouse (minimum two buttons)</li> <li>Keyboard</li> <li>Speakers (to support audible alarms)</li> </ul>
Memory	2 GB of RAM (minimum)
Hard disk	400 MB of free hard disk space for installation (additional space required for project configuration). A SCSI hard drive is recommended. If more serial ports are required that what are available on the PC, then a port expander will be required.
Display	Minimum 17" monitor with 1280 x 1024 resolution, 16-bit color
Connectivity	Ethernet (10BASE-T)
Other	N/A

## 7 – Appendix A – Supported Devices

Device Family	Device	Firmware
ATS	MX150	5.4x, 6.0x
	MX250	5.4x, 6.0x
	MX350	1.1x
UPS	UPS, UPS LP, UPS SG	1.0
Trip Units/Switchgear	Spectra MicroVersa Trip	5.1x
	Enhanced MicroVersa Trip C	4.1x
	Enhanced MicroVersa Trip D	4.1x
	GTU (EntelliGuard TU Trip Unit)	1.0
	Entellisys	4.0x
Meters/Switches	PQM	3.3x to 3.6x
	PQMII	1.0x to 2.2x
	EPM1000*	3.8x

	EPM2000	1.0x
	EPM4000*	3.8x
	EPM5000P	3.9x
	EPM5200P	2.4x
	EPM5300P	2.4x
	EPM5350P	2.4x
	EPM6000	1.0x
	EPM9450Q	2.1x
	EPM9650Q	6.1x
	EPM9800	6.1x
	ML2400	3.0x
<b>Distribution Feeder</b>	350	1.2x
	F35	2.6x to 5.7x
	F60	2.6x to 5.7x
	F650	1.6x to 5.0x
	MIF 2	4.0
	735/737	1.5x
	750/760	3.6x to 7.2x
	G30	4.4x to 5.7x
	G60	2.6x to 5.7x
<b>Generator</b>	489	1.3x to 4.0x
<b>Distance Protection</b>	D30	3.0x to 5.7x
	D60	2.6x to 5.7x
	D90Plus	1.6x
<b>Line Current Differential Protection</b>	L30	5.6x to 5.7x
	L60	2.6x to 5.7x
	L90	2.6x to 5.7x
<b>Transformer</b>	745	2.4x to 5.1x
	T35	2.6x to 5.7x
	T60	2.6x to 5.7x
<b>Motor</b>	239	2.3x to 2.7x
	269+	6.0x
	369	1.6x to 3.3x
	469	2.5x to 5.0x
	MM200	1.0x to 1.2x
	MM300	1.2x to 1.4x
	MMII	4.0x to 5.2x
	MMIII	1.0x to 1.2x
	RRTD	1.4x, 1.5x
	SPM	2.0x, 2.1x
	M60	2.6x to 5.7x
<b>Network</b>	N60	3.4x to 5.7x
<b>Bus</b>	B30	2.6x to 5.7x
	B90	4.8x to 5.7x
<b>Specialized</b>	C30	2.6x to 5.7x
	C60	2.6x to 5.7x
	C90Plus	1.6x

<b>Misc.</b>	MRPO	1.0
	FIRETRACER	1.0
	VERSAMAX	1.0

\* EPM1000 ,EPM4000 are not available in the IED Dashboard.