Viewpoint Monitoring

Viewpoint Monitoring is a simple-to-use and full-featured monitoring and data recording software package for small systems. Viewpoint Monitoring provides a complete HMI package with the following functionality:

- Plug & Play Device Monitoring
- System Single-Line Monitoring & Control
- Annunciator Alarm Screens
- Trending Reports
- Automatic Event Retrieval
- Automatic Waveform Retrieval

Viewpoint Maintenance

Viewpoint Maintenance provides tools that will create reports on the operating status of the relay, simplify the steps to download fault and event data, and reduce the work required for cyber-security compliance audits. Tools available in Viewpoint Maintenance include:

- Settings Security Audit Report
- Device Health Report
- Single Click Fault Data Retrieval

EnerVista Integrator

EnerVista Integrator is a toolkit that allows seamless integration of Multilin devices into new or existing automation systems. Included in EnerVista Integrator is:

- OPC/DDE Server
- Multilin Drivers
- Automatic Event Retrieval
- Automatic Waveform Retrieval

Features

489 FRONT

489 STATUS INDICATORS
- 489 status
- Generator status
- Output relays

NUMERIC KEYPAD
Numeric keys allow for simple entry of setpoint values. Control keys allow simple navigation through setpoint and actual value message structures. Help key provides context sensitive help messages

VALUE KEYS
Value Up, and Value Down keys to change setpoint values

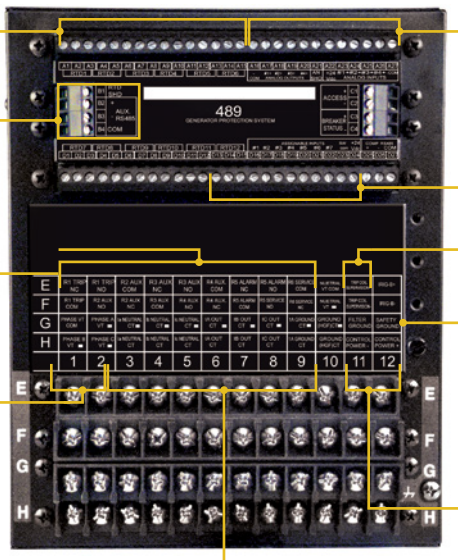
PROGRAM PORT INTERFACE
RS232 for connection to a computer, 9600 baud

LARGE DISPLAY
Forty character display for viewing setpoints and actual value mess-ages. Diagnostic messages are displayed when there is a trip or alarm condition. Default messages are displayed after a period of inactivity.

CONTROL AND PROGRAMMING KEYS
Menu, Escape, Reset, Enter, Menu Up, and Menu Down keys for complete acess without a computer.

DRAWOUT HANDLE
With provision for a wire lead seal to prevent unauth-orized removal

489 REAR



RTD INPUTS
Twelve RTD inputs are individually field programmable to measure platinum, nickel, or copper type RTDs.

RS485 COMMUNICATIONS Two independent RS485 communication ports may be accessed simultaneously using Modbus RTU and DNP 3.0 protocol at baud rates up to 19200 bps.

OUTPUT RELAYS
Six, trip duty, form C output relays may be assigned to trip, alarm and control functions.

VT INPUTS
Four VT inputs provide wye or open delta system voltage sensing as well as neutral voltage sensing.

ANALOG SIGNALS
Four isolated 4-20 mA analog outputs may be used to replace costly transducers. They may be field programmed to reflect any measured parameter.

Four 0-1 or 4-20 mA analog inputs may be used to monitor any transducer signal. Possible applications include vibration and field current monitoring.

DIGITAL INPUTS
Access jumper input provides setpoint programming security. Breaker status input tells 489 if the generator is online or offline. Seven assignable digital inputs may be field programmed for a variety of functions including tachometer.

TRIP COIL SUPERVISION
Monitors the trip circuit for continuity when the generator is online and alarms if that continuity is broken.

GROUND
Separate safety and filter ground.
All inputs meet C37.90 EMI, SWC, RFI interference immunity.

AC/DC CONTROL POWER
Universal power supply
90-300 VDC 70-265 VAC

CT INPUTS
Seven CT inputs provide three-phase output, three-phase neutral and ground current sensing.

Technical Specifications

PROTECTION

OVERCURRENT ALARM

Pick-up Level:	0.10 to 1.50 x FLA in steps of 0.01 average phase current
Time Delay:	0.1 to 250.0 s in steps of 0.1
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	±100 ms or ±0.5% of total time

OFFLINE OVERCURRENT

Pick-up Level:	0.05 to 1.00 x CT in steps of 0.01 of any one phase
Time Delay:	3 to 99 cycles in steps of 1
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	+50ms at 50/60 Hz

INADVERTENT ENERGIZATION

Arming Signal:	undervoltage and/or offline from breaker status
Pick-up Level:	0.05 to 3.00 x CT in steps of 0.01 of any one phase
Time Delay:	no intentional delay
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	+50 ms at 50/60 Hz

PHASE OVERCURRENT

Voltage Restraint:	Programmable fixed characteristic
Pick-up Level:	0.15 to 20.00 x CT in steps of 0.01 of any one phase
Curve Shapes:	ANSI, IEC, IAC, Flexcurve, Definite Time
Time Delay:	0.000 to 100.000 s in steps of 0.001
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	+50 ms at 50/60 Hz or ±0.5% total time

NEGATIVE SEQUENCE OVERCURRENT

Pickup Level:	3 to 100% FLA in steps of 1
Curve Shapes:	$I2^2t$ trip defined by k, definite time alarm
Time Delay:	0.1 to 100.0 s in steps of 0.1
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	±100ms or ± 0.5% of total time

GROUND OVERCURRENT

Pickup Level:	0.05 to 20.00 x CT in steps of 0.01
Curve Shapes:	ANSI, IEC, IAC, Flexcurve, Definite Time
Time Delay:	0.00 to 100.00 s in steps of 0.01
Pickup Accuracy:	as per Ground Current Input
Timing Accuracy:	+50 ms at 50/60 Hz or ±0.5% total time

PHASE DIFFERENTIAL

Pickup Level:	0.05 to 1.00 x CT in steps of 0.01
Curve Shapes:	Dual Slope
Time Delay:	0 to 100 cycles in steps of 1
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	+50 ms at 50/60 Hz or ±0.5% total time

GROUND DIRECTIONAL

Pickup Level:	0.05 to 20.00 x CT in steps of 0.01
Time Delay:	0.1 to 120.0 s in steps of 0.1
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	±100 ms or ±0.5% of total time

HIGH-SET PHASE OVERCURRENT

Pickup Level:	0.15 to 20.00 x CT in steps of 0.01
Time Delay:	0.00 to 100.00 s in steps of 0.01
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	±50 ms at 50/60 Hz or ±0.5% total time

UNDERVOLTAGE

Pickup Level:	0.50 to 0.99 x rated V in steps of 0.01
Curve Shapes:	Inverse Time, definite time alarm 1
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	as per Voltage Inputs
Timing Accuracy:	±100 ms or ±0.5% of total time
Elements:	Trip and Alarm

PROTECTION

OVERVOLTAGE

Pick-up Level:	1.01 to 1.50 x rated V in steps of 0.01
Curve Shapes:	Inverse Time, definite time alarm
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	as per Voltage Inputs
Timing Accuracy:	±100 ms or ±0.5% of total time

VOLTS/HERTZ

Pick-up Level:	1.00 to 1.99 x nominal in steps of 0.01
Curve Shapes:	Inverse Time, definite time alarm
Time Delay:	0.1 to 120.0 s in steps of 0.1
Pickup Accuracy:	as per voltage inputs
Timing Accuracy:	±100 ms at ? 1.2 x Pickup ±300 ms at < 1.2 ´ Pickup

VOLTAGE PHASE REVERSAL

Configuration:	ABC or ACB phase rotation
Timing Accuracy:	200 to 400 ms

UNDERFREQUENCY

Required Voltage:	0.50 to 0.99 x rated voltage in Phase A
Block From Online:	0 to 5 sec. in steps of 1
Pickup Level:	20.00 to 60.00 in steps of 0.01
Curve Shapes:	1 level alarm, two level trip definite time
Time Delay:	0.1 to 5000.0 sec. in steps of 0.1
Pickup Accuracy:	±0.02 Hz
Timing Accuracy:	±100 ms or ±0.5% of total time

OVERFREQUENCY

Required Voltage:	0.50 to 0.99 x rated voltage in Phase A
Block From Online:	0 to 5 sec. in steps of 1
Pickup Level:	25.01 to 70.00 in steps of 0.01
Curve Shapes:	1 level alarm, 2 level trip definite time
Time Delay:	0.1 to 5000.0 s in steps of 0.1
Pickup Accuracy:	±0.02 Hz
Timing Accuracy:	±100 ms or ±0.5% of total time

NEUTRAL OVERVOLTAGE (FUNDAMENTAL)

Pick-up Level:	2.0 to 100.0 V secondary in steps of 0.01
Time Delay:	0.1 to 120.0 s in steps of 0.1
Pickup Accuracy:	as per Neutral Voltage Input
Timing Accuracy:	±100 ms or ±0.5% of total time

NEUTRAL UNDERVOLTAGE (3RD HARMONIC)

Blocking Signals:	Low power and low voltage if open delta
Pickup Level:	0.5 to 20.0 V secondary in steps of 0.01 if open delta VT; adaptive if wye VT
Time Delay:	5 to 120 s in steps of 1
Pickup Accuracy:	
at ≤20.0 V secondary:	as per Neutral Voltage Input
Timing Accuracy:	±3.0 s

Technical Specifications

LOSS OF EXCITATION (IMPEDANCE)

Pickup Level:	2.5 to 300.0 Ω secondary in steps of 0.1 with adjustable impedance offset
Time Delay:	0.1 to 10.0 s in steps of 0.1
Pickup Accuracy:	as per Voltage and Phase Current Inputs
Timing Accuracy:	±100 ms or ±0.5% of total time

DISTANCE (IMPEDANCE)

Pickup Levels:	0.1 to 500.0 Ω secondary in steps of 0.1 50 to 85° reach in steps of 1
Time Delay:	0.0 to 150.0 s in steps of 0.1
Pickup Accuracy:	as per Voltage and Phase Current Inputs
Timing Accuracy:	150 ms ±50 ms or ±0.5% of total time

PROTECTION

REACTIVE POWER

Block From Online:	0 to 5000 s in steps of 1
Pickup Level:	0.02 to 1.50 x rated Mvar (positive and negative)
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	see power metering
Timing Accuracy:	±100ms or ±0.5% of total time

REVERSE POWER

Block From Online:	0 to 5000 s in steps of 1
Pickup Level:	0.02 to 0.99 x rated MW
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	see power metering
Timing Accuracy:	±100 ms or ±0.5% of total time

LOW FORWARD POWER

Block From Online:	0 to 15000 s in steps of 1
Pickup Level:	0.02 to 0.99 x rated MW
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	see power metering
Timing Accuracy:	±100 ms or ±0.5% of total time

PULSE OUTPUT

Parameters:	+ kwh, +kvarh, -kvarh
Interval:	1 to 50000 in steps of 1
Pulse Width:	200 to 1000 ms in steps of 1 ms RTDS 1 TO 12
Pickup:	1 to 250°C in steps of 1
Pickup Hysteresis:	2°C
Time Delay:	3 sec.

OVERLOAD / STALL PROTECTION / THERMAL MODEL

Overload Curves:	15 Standard Overload Curves Custom Curve Voltage Dependent Custom Curve
Curve Biasing:	Phase Unbalance Hot/Cold Curve Ratio Stator RTD Online Cooling Rate Offline Cooling Rate Line Voltage
Overload Pickup:	1.01 to 1.25
Pickup Accuracy:	as per Phase Current Inputs
Timing Accuracy:	±100 ms or ±2% of total time

DIGITAL INPUT

GENERAL INPUT A TO G (DIGITAL INPUT)

Configurable:	Assignable Digital Inputs 1 to 7
Time Delay:	0.1 to 5000.0 s in steps of 0.1
Block From Online:	0 to 5000 s in steps of 1
Timing Accuracy:	±100 ms or ±0.5% of total time

SEQUENTIAL TRIP (DIGITAL INPUT)

Configurable:	Assignable to Digital Inputs 1 to 7
Pickup Level:	0.02 to 0.99 x rated MW in steps of 0.01 Low Forward Power / Reverse Power
Time Delay:	0.2 to 120.0 s in steps of 0.1
Pickup Accuracy:	see power metering
Timing Accuracy:	±100 ms or ±0.5% of total time

FIELD BREAKER DISCREPANCY (DIGITAL INPUT)

Configurable:	Assignable to Digital Inputs 1 to 7
Time Delay:	0.1 to 500.0 s in steps of 0.1
Timing Accuracy:	±100 ms or ±0.5% of total time

TACHOMETER (DIGITAL INPUT)

Configurable:	Assignable to Digital Inputs 4 to 7
RPM Measurement:	100 to 7200 RPM
Duty Cycle of Pulse:	>10%
Pickup Level:	101 to 175 x rated speed in steps
Time Delay:	1 to 250 s in steps of 1
Timing Accuracy:	±0.5 s or ±0.5% of total time

ANALOG INPUTS

PHASE CURRENT INPUTS

CT Primary:	10 to 50000 A
CT Secondary:	1 A or 5 A (must be specified with order)
Conversion Range:	0.02 to 20 x CT
Accuracy:	at < 2 x CT: ±0.5% of 2 x CT at > 2 x CT: ±1% of 20 x CT
Burden:	Less than 0.2 VA at rated load
CT Withstand:	1 second at 80 times rated current 2 seconds at 40 times rated current continuous at 3 times rated current

GROUND CURRENT INPUTS

CT Primary:	10 to 10000 A (1 A / 5 A CTs)
CT Secondary:	1 A / 5 A or 50:0.025 (HGF CTs)
Conversion Range:	0.02 to 20 x CT for 1 A / 5 A CTs 0.0 to 100 A pri. for 50:0.025 CTs(HGF)
50:0.025 CT	± 0.1 A at < 10 A
Accuracy:	± 1.0 A at ³ 10 to 100 A
1A/5A CT	at < 2 x CT: ±0.5% of 2 x CTat > 2 x CT:
Accuracy:	±1% of 20 x CT

GROUND CT	INPUT	BURDEN	
		VA	Ω
1A/5A	1 A	0.024	0.024
	5 A	0.605	0.024
	20 A	9.809	0.024
50:0.025	0.025 A	0.057	90.7
HGF	0.1 A	0.634	90.7
	0.5 A	18.9	75.6

GROUND CT		WITHSTAND TIME	
CT	1 SEC	2 SEC.	CONTINUOUS
1A/5A	80 x CT	40 x CT	3 x CT
50:0.025 HGF	N/A	N/A	150 mA