

SLM-8

8 Channel Recording Volt-Ammeter



- **3-phase voltage, current and flicker recorder**
- **Records for days, weeks or months**
- **Removable PCMCIA memory card option**
- **Creates detailed charts and reports**
- **Rugged and weatherproof design**

DESCRIPTION

The SLM-8 is a low cost, 8-channel paperless recording volt-ammeter used for measuring and recording the true RMS values of up to four voltage channels and four current channels. It is the ideal investigative tool for utility troubleshooters, service investigation groups, meter shop technicians, and facility managers to identify and document the presence of three-phase and single-phase voltage complaints utilizing associated load current information to locate the source of the problem.

True RMS, minimum RMS, maximum RMS, and flicker information may be recorded. High-speed sampling indicates events as fast as one cycle the 4 line x 20 character display is backlit for easy viewing and an LED indicates when the unit is recording. The unit comes complete with a comprehensive graph/reporting package.

The loose neutral indication feature of the SLM-8 is for use on 3-wire split phase systems utilizing V1 and V2 in the calculations for loose neutral diagnosis. If a loose neutral problem is determined, a front-panel LED labeled "Loose Neutral" lights up and remains lit until cleared. Using ms-sl Metrosoft, the loose neutral analysis criteria can be changed as required.

Removable PCMCIA Memory Card Option

The recorder can quickly retrieve data and has a base memory of 120 kb (60,000 readings) with an internal memory option of 512 kb (256,000 readings) or 1 MB (500,000 readings). As another alternative, PCMCIA memory card options are available for directly storing up to 1 MB or 2 MB on removable media.

In addition to providing longer recording times, the optional memory card systems also make it easier to retrieve data by simply being removed and plugged into a computer that allows ms-sl Metrosoft to instantaneously retrieve data. This eliminates the need to carry a computer to the SLM-8 for data extraction and with the memory card's integral battery, retains the data when removed.

APPLICATIONS

The SLM-8 measures and records three-phase voltage and current with 3-6 cycle response. It determines if the problem is from load or system side, detects/records surges and sags, and has a flicker recording mode for detecting and recording flicker events. The G.E. Flicker Curve criteria is used as a default, which can be modified if desired.

In addition to continuous voltage and current channel trending, high and low voltage limits may be individually specified and turned on, allowing the SLM-8 to record detailed information on up to 300 out-of-limit events. This information includes the date and time each event occurred, its duration, and the minimum, maximum and RMS voltage/current values for each recorded channel during the out-of-limit excursion. The SLM-8 will also indicate that one or more channels went out-of-limits by lighting and maintaining the red LED labeled Out-of-Limits on the unit's front panel.

FEATURES AND BENEFITS

- **Records for days, weeks or months** — provides the flexibility of configuring the system to suit a number of applications.
- **LEDs display surges, sags, and loose neutrals** — gives immediate on-site notification of problems.
- **Quick setup, immediate analysis** — easy to set up and use, and provides instant on-site problem analysis without a computer, allowing corrective action to be taken while in the field.
- **Self-powered operation** — instrument takes power to operate, measure, and record from any unregulated voltage input source from 90 to 600 V ac provided to the V1 input.
- **Onboard backup battery** — allows the instrument to ride through outages of up to one hour, as well as maintain recorded data for 30 days.
- **Loose neutral indication** — for use on 3-wire split phase systems utilizing V1 and V2 in the calculations for loose neutral diagnosis.

SPECIFICATIONS

Number of Channels

4 voltage, 4 current

Frequency

60 Hz

Sample Rate (per channel)

1 sample per cycle

Recording Response Time

Rising inputs: to 86% of final value in one cycle (16.7 msec); to rated accuracy in three cycles (50 msec) max.

Falling inputs: to 63% of final value in one cycle (16.7 msec); to rated accuracy in six cycles (100 msec) max.

Voltage Input Ranges

10 to 150 V, 30 to 300 V or 60 to 600 V, 720 V max

Current Input Ranges

10, 100, 1000, 3000 A clamps, 600 V rated

Resolution

0.1 V on voltage channels; 0.1 A on current channels

Maximum Crest Factor

3.5 to 1 (limited to 1500 V peak)

Memory

120 KB (60,000 readings); expandable to 1 MB internal memory (512,000 readings) or up to 2 MB (1,000,000 readings) with removable memory card option

Real-time Clock

0.01% accuracy

Storage Interval

Programmable from one cycle to 12 hours

Voltage Accuracy

True RMS $\pm 1.0\%$ F.S. through 50th harmonic
 150 V FS unit: $\pm 0.3\%$ of reading ± 0.1 V full scale
 300 V FS unit: $\pm 0.3\%$ of reading ± 0.2 V full scale
 600 V FS unit: $\pm 0.3\%$ of reading ± 0.4 V full scale

Current Accuracy

$\pm 0.3\%$ of reading ± 0.2 of full scale

Statistics Saved

True RMS, minimum, maximum and average values measured per storage interval

Recording Modes

Continuous, threshold exceedance only on high or low limits, and flicker occurrence

Communication

3-wire RS-232, bi-directional, X-on/X-off

Baud Rate

9600 bps

Display

4 line x 20 character backlit LCD. Three separate LEDs on face panel indicate recording, out-of-limit and loose neutral occurrences

Operating Controls

Four touch switches: Record, Status, Print, Line Feed

Battery

Type: internal lead acid battery, 6 V, 0.5 Ah, one-hour minimum ride-through recording time on backup battery

Data Retention: 130 days after low battery condition

Charging Time: 5 hours at 100 V ac input

Minimum Voltage for Charging and Self-powering

90 V ac on channel V1

Operating Temperature

-22 to +149° F (-30 to +65° C)

Current Test Lengths with Varied Storage Intervals and Memory Configurations

Typical RMS storage interval used to allow for varying test lengths (recording all 8 V/I channels and continuous sampling)

Test Length	Base		
	120 KB Memory	512 KB Memory	2 MB Memory
3 Days	3 Minutes	30 Seconds	10 Seconds
7 Days	9 Minutes	90 Seconds	15 Seconds
14 Days	N/A	3 Minutes	30 Seconds
30 Days	N/A	5 Minutes	1 Minute

Current Clamp Accuracy

Model	Range Amps	60 Hz	Accuracy Through*	
			10th Harmonic	50th Harmonic
CP-20CE	0.1 — 20	$\pm 2\% \pm 0.002$ A		$\pm 3.5\% \pm 0.002$ A
CP-100C	1 — 100	$\pm 2\% \pm 0.05$ A		$\pm 3.5\% \pm 0.05$ A
CP-1000WCE	50 — 1000			$\pm 0.8\%$
CP-6000BPCT	600 — 6000		$\pm 2\%$	N/A

* Accuracy is % of reading.

Current accuracy specification of recorder should be added to obtain overall current accuracy.

Case

NEMA 4X nonconductive corrosion resistant weatherproof case

Physical

Weight: 17.5 lbs (8 kg)

Dimensions

11.5 x 12.3 x 5.3 in.
(29.2 x 31.1 x 13.3 cm)

MS-SLW SOFTWARE METROSOFT® FOR WINDOWS

The SLM-8 recorder and ms-slw software are designed with ease of use as the primary objective and enables the recorder to be setup for different test conditions in a matter of seconds by simply filling out a form. Metrosoft is menu-driven and includes the following powerful features:

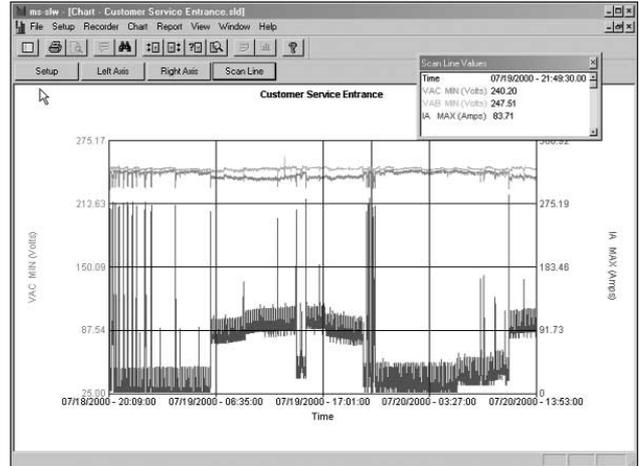
Generating Charts

Metrosoft® allows viewing multiple phases from an entire test on one graph so problems are quickly identified. For added convenience, the software will automatically compute the maximum recording time based on the selections made. The recorder memory can simultaneously store up to two different user-defined setup files and the recorder can be reprogrammed on-site to any of these setups without a computer. Once the recorder is set up for a test, it will retain the information until it is cleared and setup files may be saved on the hard drive, floppy disks or PCMCIA cards for use again.

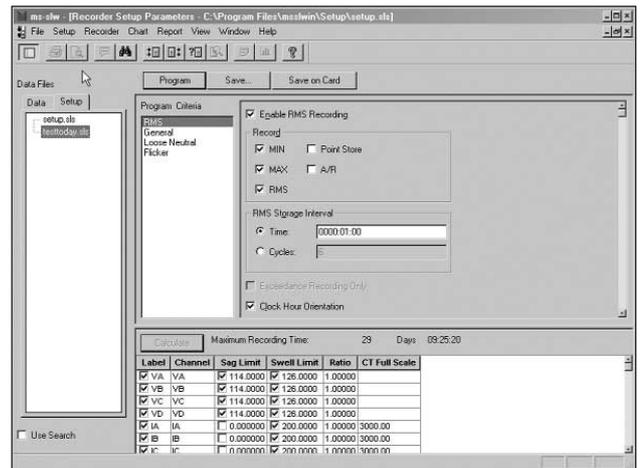
An exceptional graphing feature is the ability to zoom in on specific time periods of the graph for a closer look. A scan-line feature allows the user to move a line across the graph providing exact numbers and eliminating the need to approximate. All graphs can be cut and pasted into your documents, spreadsheets, emails, faxes, presentation tools, or printed directly for hard-copy records.

Creates Complete Reports

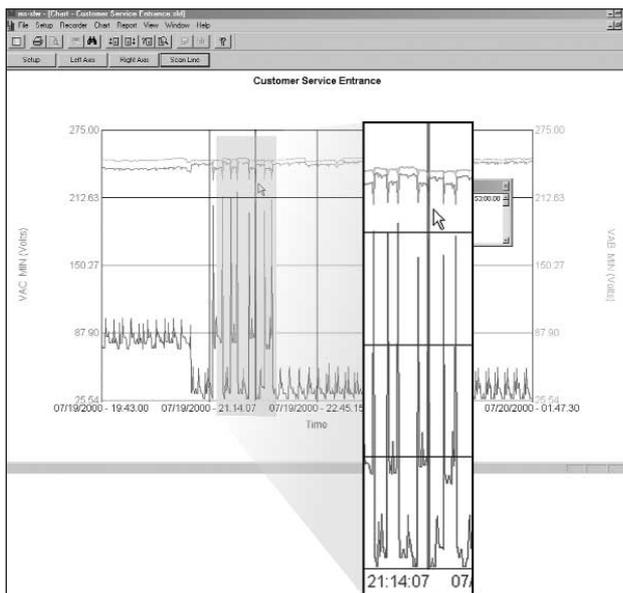
Metrosoft® generates several types of reports of the recorded data that can be viewed, printed, or exported to popular spreadsheet programs.



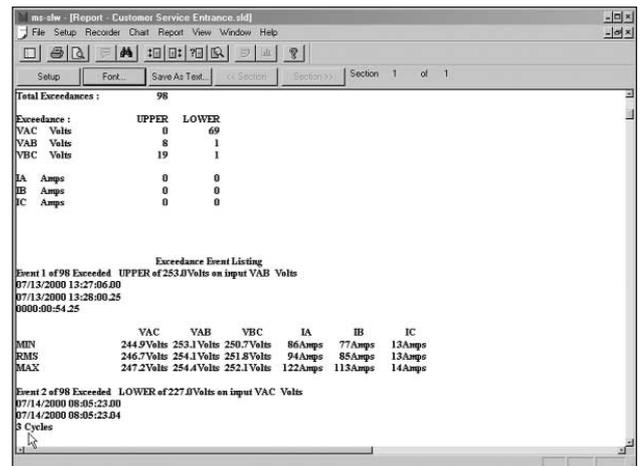
Graph of voltage/current data



Instrument configuration setup screen



Zoomed graph of voltage/current data



Out-of-Limits report

ORDERING INFORMATION

Order a SLM-8 configured to your specific application. To determine the catalog number, fill in the blanks below with the corresponding number from the detailed information boxes.

Ordering Example:

To order SLM-8 base unit with cover, 60 Hz frequency, and 1 MB internal memory, request catalog number: **SLM-8- 0 0 0 0 - 0 0 2**

Fill in these blanks with the corresponding number or letter.

SLM-8- X X X X - X X X

PCMCIA Card Adapter
0 = None 1 = Yes

Future Option
0 = Not yet available 1 = Not yet available

Future Option
0 = Not yet available 1 = Not yet available

Future Option
0 = Not yet available 1 = Not yet available

Memory
0 = 120 KB memory (60,000 readings)
1 = 500 KB memory (225,000 readings)
2 = 1 MB memory (500,000 readings)

Frequency
0 = 60 Hz only 1 = 50 Hz only

Cover
0 = Standard

Item **Cat. No.**

Options and Accessories

Starter Kits

Includes SLM-8, mm-sl-500 KB memory expansion to 500 KBytes, CA-232-01 RS-232 cable, (3) cp-1000WCE current clamps with (3) CA-PA9-7 CT adapter cables and SC-PA9 soft-sided carry case. Includes software for Windows 95/98/NT/2000 SK-SLM-8-01

Includes SLM-8, mm-sl-500 KB memory expansion to 500 KBytes, CA-232-01 RS-232 cable, (3) cp-1000WCE current clamps, (3) cp-20CE current clamps, (6) CA-PA9-7 CT adapter cables and SC-PA9 soft-sided carry case. Includes software for Windows 95/98/NT/2000 SK-SLM-8-02

Integral PCMCIA card adapter for Type 1/512KB cards. MA-SL
Maximum internal memory allowed with this option is base 120 KB

Memory Options

PCMCIA card; 1 MB (512,000 readings) MCI-1MB

PCMCIA card; 2 MB (1,000,000 readings) MCI-2MB

500 KB (225,000 readings) MM-SL-500KB

1 MB (500,000 readings) MM-SL-1MB

RS-232 computer interface cable CA-232-01

Current input extender cable, 15 ft CA-RA15E

Charging cable CA-RVA4

Calibration kit CK-RVA4

Fuse kit EF-SL

Hardware restart shorting plug HR-371

Soft-side nylon storage case SC-PA9

Metrosoft for Windows software: 32-bit application software for IBM and compatible computers. Programs recorder; provides data retrieval; generates charts, reports and data files; compatible with spreadsheet software; saves recorder setup files. Compatible with windows 95/98/NTV4.0+/2000/ME. Includes manual. 35173-1

UK
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
F +44 (0) 1304 207342

UNITED STATES
4271 Bronze Way Dallas
TX75237-1017 USA
T 800 723 2861 (USA only)
T +1 214 330 3203
F +1 214 337 3038

OTHER TECHNICAL SALES OFFICES
Valley Forge USA, Toronto CANADA,
Mumbai INDIA, Trappes FRANCE,
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