The TRIPLETT Mitigator

Noise Mitigation Test Set

The Mitigator is a portable, weather-resistant, noise mitigation test set tailored to the needs of the entire Telco industry. The Mitigator, available in both 60Hz and 50Hz models, excels at measuring noise caused by excessive radiated harmonics. The Mitigator has a number of unique features such as: the "Green Window" Test, Data Logging, Analysis Mode and Peak Finder, just to name a few. All data analysis is accomplished internally and does not require additional PC support. The user-friendly Mitigator is menu driven and has a "HELP" key for continuous on-line assistance.

Once the desired test has been selected from the main menu, The Mitigator, quickly and automatically, gathers the necessary data and displays it on the LCD screen. The data gathered can be stored in one of the numerous, non-volatile, digital memories and recalled later for analysis.

The Mitigator from Triplett Corporation, there's nothing else quite like it!

Features

- Harmonic Noise Analysis
- Includes “MitView” Data Extraction & Viewing System
- Continuous On-Line Help
- Harmonic Table: 60Hz or 50Hz (depending on Model)
- Direct Access to Filters
- "Green Window" Test
- Standard Noise Measurement Features
- Digital Signal Processing Technology using High Resolution FFT
- Spectral Update Time of 7.5 Seconds
- 90dB On Screen Display
- Harmonic Current Probe Input up to 100 Amps
- Peak Finder
- Analysis Mode
- Weather Resistant
- Portable, Durable & Lightweight
- Data Logging
- Auto Dial (DTMF & Dial Pulse)
- Digital Memory
- Selectable Impedance: 600Ω, 900Ω and Bridged (600Ω or 900Ω)
- Filters: 60Hz: C-Message, 3KHz Flat, 20/F
  50Hz: Psophometer, 3KHz Flat (C.C.I.T.T.), 1/F, None
- Zoom Mode
- Geiger Mode
- Automatic Shut-Off to conserve battery life

Cat. No. 3230: Mitigator - 60Hz Version
Cat. No. 3235: Mitigator - 50Hz Version

Locate Noise Problems Quickly and Effectively

"Smokestack" LCD Readout

While in the Spectrum Mode, the LCD screen produces a "smokestack" display of vertical bars that detail the level and frequency of the harmonic noise present in the measured signal. This type of display is ideal for examining the harmonic noise commonly associated with energy radiated from the power lines of an electric utility. The LCD screen also displays other pertinent measurements, such as; Circuit Loss, Circuit Noise and Power Influence. 600 Ohm, 900 Ohm and bridging input impedances are also provided as well as selectable weightings (C-Message, 3KHz Flat & 20/F) or [Psophometer, 3KHz Flat (C.C.I.T.T.), 1/F & None].

Peak Finder

This feature enables you to move from one spectral peak to another, either in the left or right direction. This eliminates having to scroll through each and every spectral measurement just to view peaks.

"Green Window" Test

Sometimes referred to as the "Probe Wire Test", the Green Window Test is a function that enables you to gather useful information about the power line in a very simple manner. Once the power line height is entered, The Mitigator will automatically measure and compute the Ground Return I T, C-Message [PMSG] noise per mile [KM] and 60Hz [50Hz] voltage per mile [KM].

Data Logging

This feature enables you to save data over a specified amount of time at specified intervals using the internal, real-time clock. The data is stored in non-volatile memory which can be recalled and displayed on the LCD screen or printed out via the RS-232 Port and external serial printer.

Zoom Mode

In the "ZOOM" mode, the LCD screen can "zoom in" on an offending frequency, enlarge it on the screen, and display it along with adjacent frequencies on either side of it. There are three levels in the "ZOOM" Mode: Low, Medium and High.

Geiger Mode

The "GEIGER" mode allows you to select a function that acts like a Geiger counter. In this mode, The Mitigator can be used to search for the source of user-definable noise. A beeper in The Mitigator beeps faster as the source of noise increases in level. When used in conjunction with a loop coil, this function allows you to employ a "search-and-find" technique for locating the noise source. The beeper allows you to search for the noise without looking at the front panel. This is particularly helpful in situations when you are searching for a noise source while operating a motor vehicle.

Analysis Mode

The "ANALYSIS" Mode is a sub-feature of the Spectrum Mode. The Analysis Mode uses data gathered in the Spectrum Mode and enters that data into a probability matrix containing common problems that relate to power lines. The problems are then displayed in order of highest probability.

Three-Way Power Operation

The Mitigator can be powered by three different methods: an AC Power Pack, an internal rechargeable battery and a 12 volt vehicle system (cigarette lighter). Standard household current (120Vac) [47 to 63Hz, 218 to 264Vac] will power the unit through the AC Power Pack and also recharge the internal battery which will operate the unit for approximately 2 hours on a full charge. The internal battery can be completely recharged overnight. A unique topology also allows the internal battery to recharge from a 12 volt vehicle system. All three interfaces are included with The Mitigator.

MitView Data Extraction & Viewing System

Allows the user to easily save test data to a PC, or to print out the test data using a printer connected to the PC. Every image seen on the Mitigator screen, and the text files that the Mitigator normally sends to its local printer, can be can be imported to a PC. The PC can then print these images or files to a printer.

Harmonic Current Probe Input

When used with the optional Triplett Harmonic Current Probes (Model HC-10 and Model HC-100), The Mitigator will display Amps in either a spectral or an RMS format. The HC-10 allows measurements up to 10 Amps while the HC-100 allows measurements up to 100 Amps. This feature is particulary useful for evaluating telephone cable sheath current and for tuning Harmonic Suppression Reactors (HSR).

The Mitigator Specifications

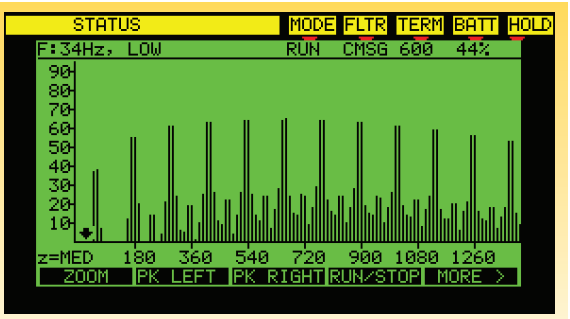
General Specs	60Hz Model	50Hz Model
LCD Frequency:		
Display Range (Low Zoom):	20Hz to 4080Hz	20Hz to 3400Hz
Resolution (Zoom Mode):		
Low:	36Hz	30Hz
Medium:	12Hz	10Hz
High:	1Hz	1Hz
Zoom Mode Window Ranges:		
Low:	4068Hz	3380Hz
Medium:	1404Hz	1150Hz
High:	117Hz	117Hz
Weighting (Filters):	C-Message, 3KHz Flat, 20/F	Psophometer, None, 1/F 3KHz Flat (C.C.I.T.T.),

The following specs are common on the 60Hz and 50Hz Models

Noise Measurement Mode Range:	
Power Influence:	20 fi 140 dBrn
Circuit Noise:	0 fi 120 dBrn
Circuit Loss:	-90 fi 30 dBm
Noise Measurement Mode Accuracy	± .5dB
Spectrum Mode Range:	0 fi 120 dBrn Line/Cir 20 fi 140 dBrn Line/PIF
Spectrum Mode Level Accuracy:	±1dB
Spectrum Mode Frequency Accuracy:	±1Hz
Update Time (Spectrum):	7.5 seconds
Update Time (Geiger):	2 seconds
Harmonic Current Probe Range:	0 - 10A, 0 - 100A
Harmonic Current Probe Resolution:	
0 to 30 Amps:	0.01 Amps
30 to 100 Amps:	0.1 Amps
LCD on Screen Display Range:	90dB
Input Impedances:	600Ω, 900Ω, Bridging (600Ω or 900Ω)
Max. Input Levels:	
Across Tip & Ring:	24VAC & 200VDC
Tip-Ring to Ground:	200VAC & 200VDC
Hold Circuit:	Electronic
Battery Life (rechargeable):	2 Hours Typical

Physical Specifications

Dimensions:	10.75" L x 9.75" W x 5" D
Display Size:	4.9" L x 2.5" H
Weight:	Approximately 10 pounds



With "MitView", all Mitigator screen images, data and text can be saved to files on a PC. Saved files can later be opened, viewed, printed or emailed.

Front Panel Functions

1) STATUS: Indicates the current menu being used.
   MODE: Indicates whether the unit is in "Run" or "Stop" mode.
   "Run" mode allows the display to be continuously updated and acquire new data.
   "Stop" mode freezes a particular display for viewing and prevents the acquisition of new data.
   FLTR: Indicates the current filter type being used.
   TERM: Indicates the current termination impedance being used.
   BATT: Provides estimate of remaining battery life.
   HOLD: Indicates whether the line hold function is on (H) or off.
2) LCD SCREEN: LCD screen with adjustable viewing angle and backlight.
3) FUNCTION Keys, F1, F2, F3, F4, F5: Each key has variable functions which will be displayed on the screen.
4) HELP Key: For continuous on-line help and instructions within the chosen application.
5) ARROW Keys: Used to move the cursor on the spectral display and the selection bar in the menu. They are also used to select telephone numbers and set the time and date.
6) EXIT Key: Used to exit from a particular function or to go to other menus.
7) FILTER Key: Used to select one of three filters to be used.
   60Hz: C-Message (CMSG), 3KHz Flat, 20/F
   50Hz: Psophometer (PMSG), 3KHz Flat (C.C.I.T.T.), 1/F, None
8) TERM Key: Used to select which termination impedance is to be used: 600Ω, 900Ω, Bridged (600Ω or 900Ω).
9) HOLD Key: Used to turn the Hold function on or off.
10) TIP, RING, GND Posts: Used to interface the phone line, loop coil or probe wire to the unit.
11) BEEPER/LOUDNESS Control: Used to adjust the beeper volume.
12) RS-232 Port: Used to interface with PC for data download via MitView Program.
13) ON/OFF Switch: A weather-proof switch used to turn the unit on or off.
14) DISPLAY/CONTRAST Control: Used to adjust the viewing angle of the display.
15) CHARGER Jack: A weather-proof jack used to connect the AC Power Pack which will power the unit and also recharge the internal battery. The jack is also used to connect the unit to a cigarette lighter adaptor.
16) CHARGER Light: Illuminates to indicate when the unit is connected to an external power source.

Accessories

		Description	Cat. No.
The MITIGATOR - 60Hz Version			3230
The MITIGATOR - 50Hz Version			3235
▲		AC Power Pack - 120 VAC (60Hz) to 12VDC	13549
	●	AC Power Pack - 220 VAC (50Hz / 60Hz) to 12VDC	13590
		AC Power Pack - 240 VAC (50Hz / 60Hz) to 12VDC	13600
▲	●	Cigarette Lighter Adaptor	2566-58
		Model 101-G Line Separator	3264
		HC-100, Harmonic Current Probe, 0-100 Amps AC	60-666
		HC-10, Harmonic Current Probe, 0-10 Amps AC	60-667
		Loop Coil (Includes Leads)	3232
		Loop Coil Leads	79-741
▲	●	Test Leads	79-736
		100 Foot Probe Wire Kit	79-737
		Carrying Case	10-3945
▲	●	Mitigator Instruction Manual	84-736
▲	●	Mitigator Applications Manual	84-735
		Loop Coil Instruction Manual	84-730
		Harmonic Current Probe Instruction Manual	84-737

▲ Included with 60Hz Mitigator
● Included with 50Hz Mitigator