

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

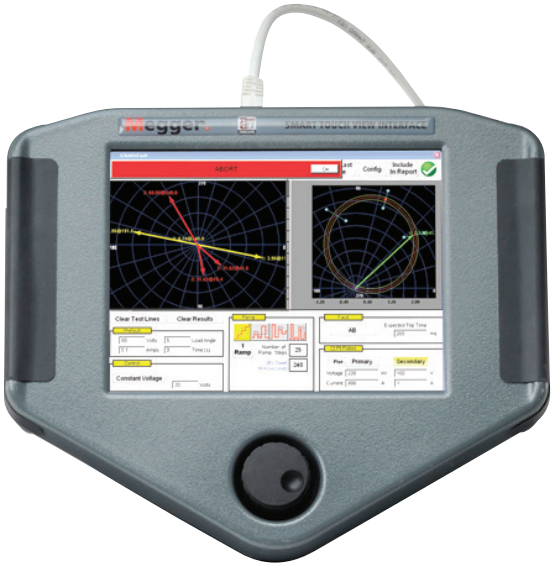
- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

STVI
Smart Touch View Interface
Handheld Controller for SMRT and MPRT Test Sets



- **Large High Resolution Color TFT LCD touch-screen intuitive smart navigation makes testing relays easier**
- **Designed for either right or left handed operation with control knob centrally located**
- **Standard Software includes Ramping, Timing, Sequencer, Impedance, Differential, Transducer Test and Meter Test.**
- **Enhanced Software includes Synchronizer, Frequency, Megger GOOSE Configurator (MGC), COMTRADE, Power Swing and SS1 File playback**

DESCRIPTION

The Smart Touch View Interface™ (STVI) is Megger's second generation of handheld controllers for the SMRT and older MPRT[1] relay test systems. The STVI, with its large, full color, new high resolution, and high definition TFT LCD touch screen allows the user to perform manual, steady-state and dynamic testing quickly and easily using the Manual or Sequencer test screens, as well as using built-in preset test routines for most popular relays.

Ergonomically designed for either right or left hand operation using the rubber cushion grips, the centrally located control knob, and the touch screen, the STVI is extremely easy to use. Use the new built-in stand for single-handed operation. The STVI uses a standard Ethernet cable, and Power Over Ethernet (POE) operation. The STVI includes non-volatile built-in data storage for saving tests and test results. Two USB ports are provided for transferring test results to an external storage device for transferring to a PC at a later stage and to possibly use a USB mouse and/or keyboard.

APPLICATION

The most significant feature of the STVI is its ability to provide the user with a very simple way to manually test, for both commissioning and maintenance, from the simple overcurrent relay to the most complex relays manufactured today. Manual operation is simplified through the use of a built-in computer operating system and the touch screen. The STVI eliminates the need for a computer when testing virtually all types of relays. Intuitive menu screens and touch screen buttons are provided to quickly and easily select the desired test function.

HERE'S HOW EASY IT IS

Manual Test Screen

On the Manual Test Screen, the pre-selected outputs are set using the touch screen, or power-up preset default values may be automatically set from the user defined System Configuration screen. The user can select from a variety of test options including manual control using the control dial, a dynamic sequence of tests to include trip and reclose operations, an automatic ramp, pulse ramp, binary search or pulse ramp binary search to determine pickup or drop out of relay contacts, or perform relay specific timing tests. By pressing the ⏻ button, the selected output indicators will change colors indicating which outputs are energized. A vector graph indicates the relative phase angles of all of the outputs. The user may select to have all output amplitudes metered to provide real time verification of all of the selected outputs, or have setting values displayed.

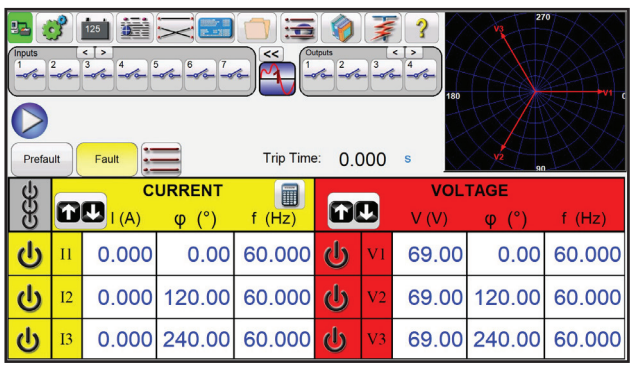


Figure 1. STVI Manual Test Screen

[1] Requires external power supply adapter

In the Manual test screen the user can set Prefault and Fault values. The user can toggle back and forth between the two values to monitor contact activity. To do a simple timing test the user can set Prefault time duration in seconds or cycles, and then press the Blue Run Test button. The Prefault values will be applied for the Prefault time, then change to the Fault values and start the Timer running. When the relay trips, it will stop the timer, and may turn selected outputs off depending on the user defined Auto-Off configuration.

System Configuration

The System Configuration screen button will allow the user to configure the SMRT hardware and RTMS software for items such as language and phase angle rotation.

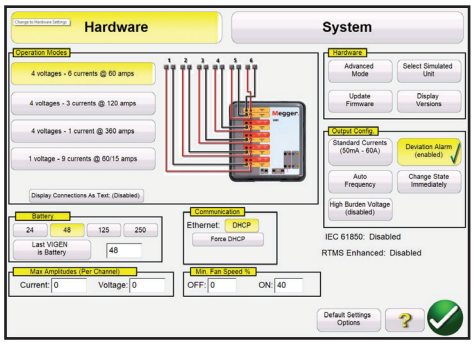


Figure 2a. System Configuration Screen – Hardware

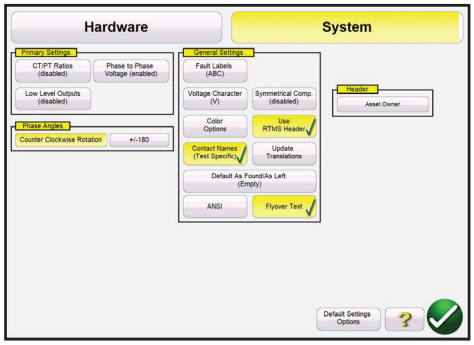


Figure 2b. System Configuration Screen - System

Under Hardware Configuration the user can select Operation Modes, Battery Simulator, Hardware, Output Configuration, Communications, set Max Amplitudes, and adjust the Fan Speed. In the System Configuration screen the user can select Primary Settings to be displayed on the test screens, set how Phase Angles are displayed, set General Settings, Auto-Save work, and enter a Header bit map to personalize test reports.

File Management

The file management display is used by the STVI hand-held controller to access files stored in the STVI's internal memory. This display will allow test files to be loaded, make or change directories, rename files and directories, delete files and directories that were created by the user. To access the File Management system, touch the File Folder button top center of the test screen.



Figure 3. File Folder Tool Bar

Ramp Selection Features

The Simple Ramp is used for doing pick up or drop out tests on any type of relay. It can be used to perform a general-purpose linear step ramp, pulse ramp, or pulse ramp binary search. Within the Simple Ramp feature a number of different ramp selections can be chosen from, like configuring Multiple ramps, Step Ramp, Pulse Ramp and Pulse Ramp Binary Search.

The Advanced Ramp has similarities to the Simple Ramp but the primary differences are the Pre-fault conditions, Start, Increment, Stop values, and the addition of the Smooth Ramp that will allow the user to perform a continuously smooth ramp with x/s increment/second values, as well as other more complex ramps.

Selecting the Manual Ramp function and selecting an amplitude to be ramped the window around the channel magnitude selected is highlighted in blue indicating that it is now set to be ramped manually using the Control Knob. The magnitude may now be ramped up or down using the default increment setting. If the user wants to ramp more than one channel, or change the increment, or change the value to be ramped (Amplitude, Phase or Frequency), on the STVI display screen press the Manual Ramp Options button (Control Knob Icon).

Timing Test Feature

There are three Timing Test features: Overcurrent, Overvoltage, and Undervoltage. The RTMS software has ANSI, IEEE and IEC standard time curve algorithms built-in. In addition, it includes time curves and time curve algorithms for hundreds of different relays selectable by manufacturer, relay model number, and curve shape (inverse, very-inverse, definite time etc.).

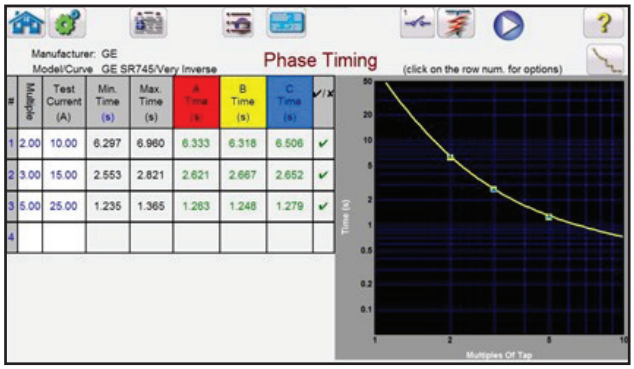


Figure 4. Timing Test Screen for G.E. SR745 Very Inverse

Sequence test

The Sequence Test screen is used for testing reclosing type relays, setting up multiple vectors and general multi-state sequencing and includes Transient Earth Fault simulation, including intermittent transients.

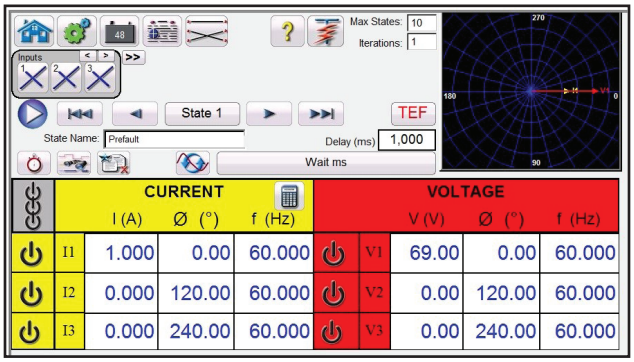


Figure 5. Example of a 10 stage Sequence test

Testing Impedance Relays

There are three Impedance test modules provided in the RTMS software. The method providing the most flexibility and complete test capability is the Click On Fault (COF). The second method is Easy Z providing more of a manual approach to performing basic impedance relay tests. For testing impedance relays with unknown or undefined characteristics the Unknown Impedance Characteristic method is used.

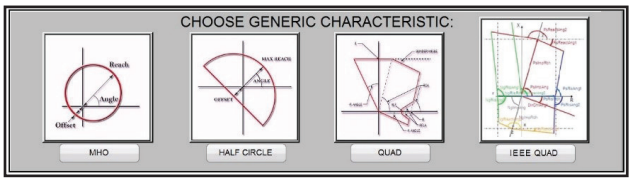


Figure 6. Generic Impedance Relay Selection Screen

Testing Differential Relays

There are three different Differential Tests, they are Transformer Differential, Generator Differential and Motor Differential. These Differential Relay modules provides a quick and easy approach to testing three-phase differential relays. To test single phase differential relays, use the Manual Test Screen. For testing the single phase harmonic restraint transformer differential use the Waveform selection in the Advanced Manual Test Screen. The different test that is performed in the Differential test screen is Stabilization Test, Timing Test, Pick-Up Test, Characteristic Slope Test, Characteristic Shot Test, 2nd Harmonic Block Test and Nth Harmonic Shot Test.

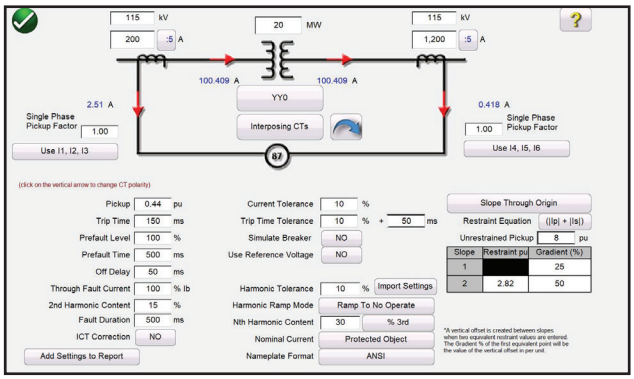


Figure 7. Example Transformer Differential Screen configuration

Transducer Test

In conjunction with the Transducer Hardware Option in the SMRT, the Transducer Test provides provides quick approach to test all types of single phase and three phase electrical transducers. The transducer hardware "T" option can be ordered with a new test set or later as a factory hardware upgrade.

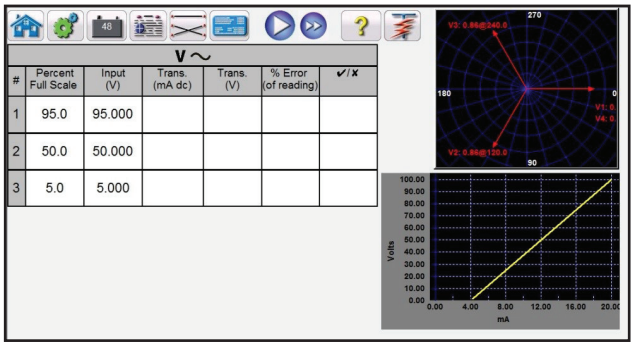


Figure 8. Example Transducer Test Screen

Meter Test

The Meter Test provides a quick and easy approach to testing the metering function of protective relays. The user simply selects the output channels similar to the manual vector test screen. Values can be in secondary (default) or Primary by clicking on the Primary Ratios windows and entering the CT and VT ratios.

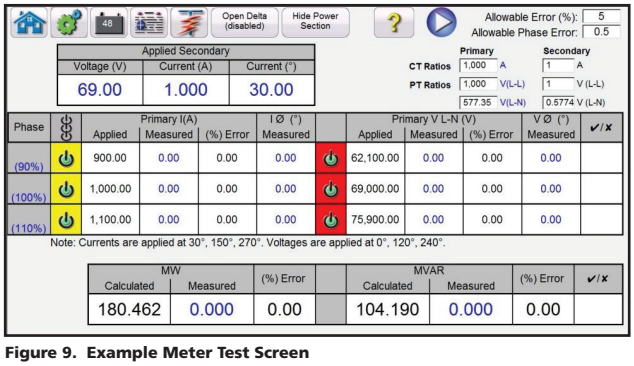


Figure 9. Example Meter Test Screen

Synchronizer Test

The Synchronizer Test is only available for SMRT units, which have the RTMS Enhanced feature enabled. These tests should be conducted in accordance with the manufacturers relay specifications. Selection of the Run Sync Check Test will provide the following Relay Settings and Configuration screen.

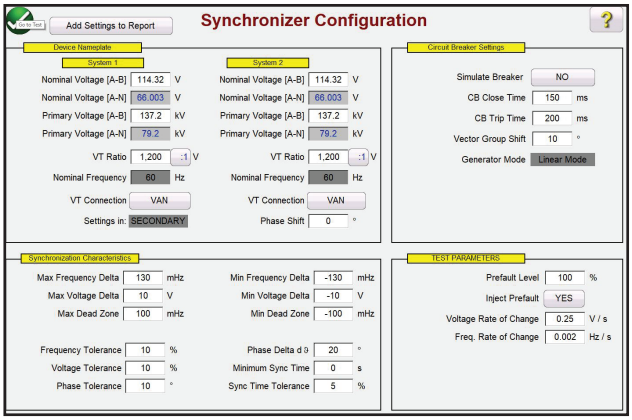


Figure 10. Example Synchronizer Test Screen configuration

Frequency Test

The Frequency Test is only available for SMRT units which have the RTMS Enhanced feature enabled. The Frequency test provides the ability to test frequency sensing relays. These tests should be conducted in accordance with the manufacturers relay specifications. The different tests to perform in the Frequency test is Under Frequency, Over Frequency and df/dt ROCOF Tests.

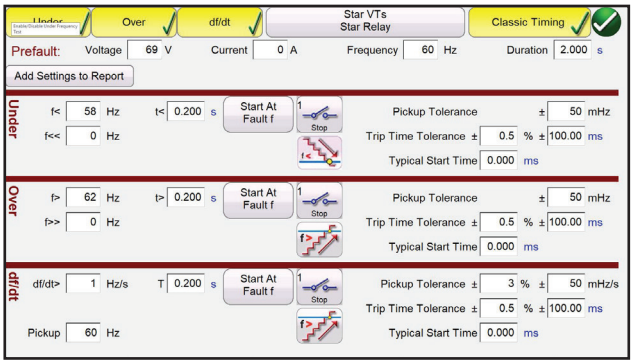


Figure 11. Frequency Setting Screen

COMTRADE Playback

The COMTRADE Playback is only available for SMRT units, which have the RTMS Enhanced feature enabled. The SMRT can perform acceptance or troubleshooting tests by replaying digitally recorded faults or simulations in the IEEE-C37.111 CONTRADE Standard format. In other words, it can recreate a fault (waveforms...) recorded by a Digital Fault Recorder, protective relays, or a simulated fault using software tools like the EMTP/ATP programs.

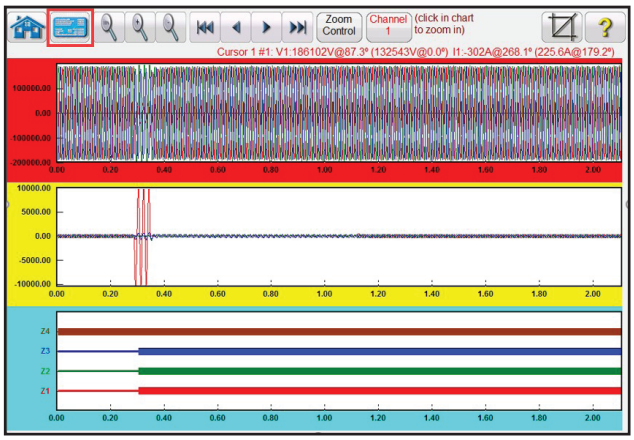


Figure 12. Example COMTRADE Analog and Digital channels for playback

Power Swing Simulator

The Power Swing Simulator is only available for SMRT units, which have the RTMS Enhanced feature enabled. The Power Swing simulation tool is similar to the Power Swing tool in the Fault Calculator, which uses two superimposing waveforms of similar frequencies to provide a smooth impedance ramp. This method is similar to a two source model in that both sources have similar frequencies and amplitudes.

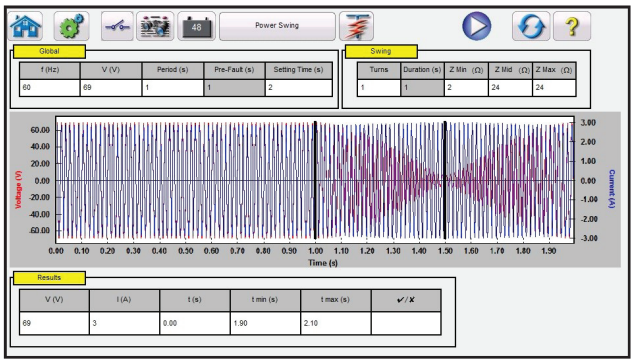


Figure 13. Example Power Swing Input Setting Screen.

SS1 File Playback

The SS1 File Playback is only available for SMRT units, which have the RTMS Enhanced feature enabled. SS1 File Playback is used for the importing of State-Sequence Files (SS1) from ASPEN and CAPE power system simulation software programs. By modeling the power system using ASPEN or CAPE, the relay can be tested dynamically using realistic system test scenarios. Navigate to the SS1 folder (requires user to create the SS1 file folder, and place the SS1 files in the folder). Use this dialog box to select an SS1 file. RTMS software will read the SS1 file and create a dynamic state-sequence playback file using the Sequencer Test feature.

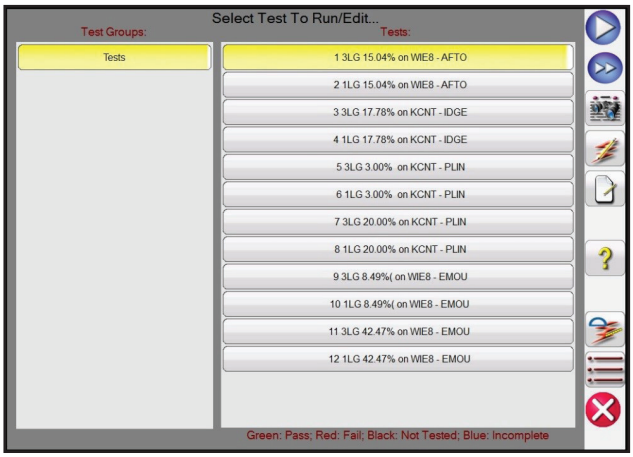


Figure 14. Example Run/Edit Test Selection Screen.

IEC 61850 Megger GOOSE Configurator (MGC)

The Megger GOOSE Configurator (MGC) is only available for SMRT units, which have the RTMS Enhanced feature enabled. The Megger GOOSE Configurator software (MGC) provides mapping of the binary inputs and outputs of the SMRT test set to the desired GOOSE messages. The GOOSE messages are read from available SCL (Substation Configuration Language) files or may be automatically detected by scanning the substation network in search of available published GOOSE messages. This scanning process is known as GOOSE "sniffing". The MGC also provides advanced network troubleshooting tasks such as comparing the GOOSE messages available on the network with the GOOSE messages described in the SCL files with GOOSE MERGE/ COMPARE functionality; this is also a powerful tool for validating the horizontal communication description (GOOSE) in the supplied SCD file at Factory Acceptance Tests (FAT) in IEC 61850 substations. This type of verification is also known as GOOSE Consistency Check. An SCL file is an XML (Extensible Markup Language) file that describes the IEDs available in one IEC 61850 substation (SCD file) or can just describe only one single IEC 61850 device (ICD, CID files). In the SCL file there are several IEC 61850 information available (logical nodes in the IEDs, GOOSE messages sent by the IEDs, GOOSE messages received by IEDs, Reporting information to SCADA etc.).

Report Option

To View the test result in any of the tests, press the Report Option button. The user can now enter appropriate information relative to the test in the Test Report header.

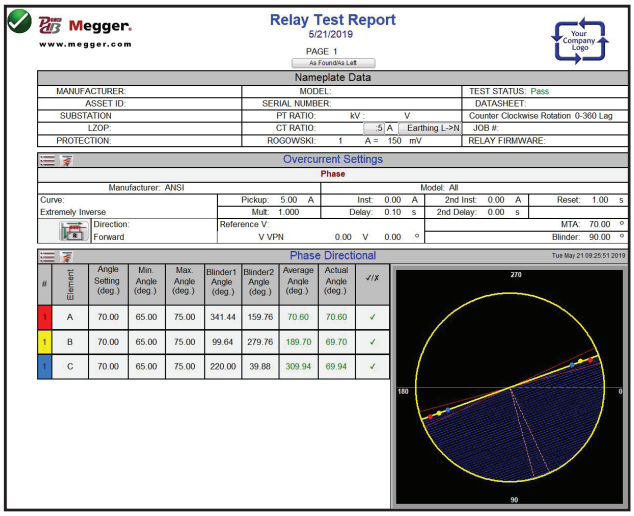


Figure 15. Example Test Report Westinghouse CO-9

Note that the software automatically compared the Operating Time to the theoretical and made a Pass Fail determination based upon the manufacturers time curve characteristic. If the recorded test point(s) is out of specification it appears red in color. If it is within specification it will be green in color. This provides excellent visual As Found reporting. Up to 5 points maybe plotted including Instantaneous trip points. If the data is imported into PowerDB reports can be generated that summarize the comments and failures of every test you perform.

FEATURES AND BENEFITS

Large Color TFT LCD touch-screen display:
The STVI features an easy to read high resolution display providing manual control of the test set, and displays measured values of voltage, current, along with phase angle and frequency even in direct sunlight. Color contrasts accentuate vital information. This reduces human error and saves time in testing relays.

Use with SMRT and MPRT relay test sets:
Operates the new SMRT as well as the older MPRT relay test sets. Universal application provides flexibility of use.

Easy to use for manual tests:
The STVI touch screen is intuitive to use, and requires no special training. Touch screen function buttons, with powerful testing tools such as auto ramp, pulse ramp, binary search, pulse ramp binary search, or the simple to use control knob may be used to determine pickup or drop out of relay contacts.

Internal memory:
The STVI provides storage of test set-up screens and test results, which reduces testing time and paper work. Saved test results can be downloaded into the PowerDB database software for report generation using the built-in USB port.

Steady-State and Dynamic test capability:
The STVI in conjunction with either the SMRT or older MPRT provides both steady-state and dynamic testing of protective relays. Set prefault, fault and simulate circuit breaker operation using the STVI sequence test screen. Perform trip and reclose timing tests with up to 9 operations including lockout. Save trip, reclose times to the internal memory and print out later. The STVI provides complex timing tests without the need of a PC.

Display screen prompts operator:
The STVI features a touch screen that prompts the user with easy to use function buttons. Single button operation and intuitive ease of use saves time in testing relays and minimizes human error.

Display screen provides eleven languages:
The STVI display screen currently prompts the user in American English, International English, Spanish, French, German, Canadian French, Russian, Simplified Chinese, Korean, Polish and Turkish.

Immediate error indication:
Audible and visual alarms indicate when amplitude or waveforms of the outputs are in error, such as shorting a voltage channel.

CONFORMANCE STANDARDS

Safety:
EN 61010-1, UL 61010-1, CSA- C22.2 #61010-1

Shock, Vibration and Transit Drop
Shock: MIL-PRF-28800F (30g/11ms half-sine)
Vibration: MIL-RFP-28800F (5-500Hz, 2.05 g rms)
Transit Drop Test: MIL-PRF-28800F (46cm, 10 impacts)

Environmental
Steady Cold: MIL-STD-810, Method 502.2
Cold Storage: MIL-STD-810, Method 502.2
Hot Storage: MIL-STD-810, Method 501.2
Steady Dry Heat: MIL-STD-810, Method 501.2

Electromagnetic Compatibility
Emissions: EN 61326-2-1, EN 61000-3-2/3

FCC Subpart B of Part 15 Class A
Immunity: EN 61000-4-2/3/4/5/6/8/11

STVI SPECIFICATION

Input Power:

The STVI draws power through the Ethernet cable using Power-Over-Ethernet (POE of 48Volts DC, 0.5Amps) from the host unit (SMRT33, 43, 46 & 410), or from an external Power Over Ethernet power supply and Ethernet interface for use with SMRT1 or MPRT units.

Communication Interfaces:
Ethernet RJ45, 10/100 Mbits/s

USB Ports: 2

Power over Ethernet:
IEEE Std 802.3 AF

Display Screen:
The TFT LCD display provides high resolution, and features Wide Viewing Angle Technology and a large screen with high luminance for reading in direct sunlight.

Dimensions: 5.13 H X 6.84 W in (128.2 H X 170.9 W mm), 8.4" Diagonal
Display: 262k Colors, backlit, TFT LCD touch screen, Anti-glare surface with hard coating, 800 Cd/m2 Luminance, 640 x 480 pixels

Temperature Range:
Operating: 32 to 122° F (0 to 50° C)
Storage: -13 to 158° F (-25 to 70° C)
Relative Humidity: 5 - 90% RH, Non-condensing

Unit Enclosure:
The STVI unit comes housed in a rugged, lightweight and ergonomic plastic enclosure. It features large rubber handles, and a built in stand for hands-off operation.

Dimensions:
11 W x 9.375 H x 1.875 D in. (275 W x 234 H x 46.8 D mm)

IEC Enclosure Rating:
IP30

Weight:
3.6 lb. (1.6 kg)

ORDERING INFORMATION

Item Description and Quantity (Qty)	Part Number
Smart Touch View Interface for SMRT33, 36, 43, 46 & 410 relay test system (1 ea)	STVI-1
Smart Touch View Interface for SMRT1 or MPRT relay test system (1 ea)	STVI-2
Included Accessories with STVI-1 (Qty)	**Part Number**
Quick Start Guide (1 ea)	81385
STVI Ethernet Cable Assy., 210 cm (7ft.) long, (1 ea)	90003-684
Included Accessories with STVI-2 (Qty)	**Part Number**
Quick Start Guide (1 ea)	81385
STVI Ethernet Cable Assy., 210 cm (7ft.) long, (2 off)	90003-684
Power Over Ethernet Power Supply for SMRT1 or MPRT (1 ea)	90001-736

UNITED STATES
4271 Bronze Way
Dallas TX 75237-1088 USA
T 800 723 2861 (USA only)
T +1 214 333 3201
F +1 214 331 7399

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

OTHER TECHNICAL SALES OFFICES
Norristown USA, Sydney AUSTRALIA, Toronto CANADA, Trappes FRANCE, Kingdom of BAHRAIN, Mumbai INDIA, Johannesburg SOUTH AFRICA and Conjure THAILAND.

ISO STATEMENT
Registered to ISO 9001:2008 Cert. no. 510006.002

STVI_DS_en_V08
www.megger.com
Megger is a registered trademark

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP