

# A NEW GENERATION

## HVA28/28TD - Universal VLF High Voltage Test Set with integrated TD Diagnostics

It is well known that DC "proof" (or hipot) testing of aged extruded cable such as XLPE and EPR is potentially damaging to the cable insulation, causing premature failure of the cable under service conditions. Space charges that develop during DC testing present potential safety hazards to operators and may damage the cable or attached equipment if not discharged correctly.

In addition, DC testing has been found to be ineffective in detecting all but the most serious defects in cables.

Acceptance or maintenance hipot/proof testing using VLF high voltage sinusoidal AC allows the operator to efficiently detect serious cable insulation defects, before they result in an in-service failure, without affecting those healthy sections of the cable that still have remaining service life.

Sinusoidal VLF testing can support effective dielectric diagnostic measurements that are not possible with DC voltages.

### • 30 kV • VLF • DC • Jacket/Sheath • Fault Conditioning

#### SAFETY FEATURES

- Short circuit protected
- 50Hz 12kV feedback protection
- Status display of all important safety functions and messages
- Safe, easy to use operation with emergency off and key switch lock-out
- Fully integrated discharged circuit to safely ground the DUT (Device Under Test) after testing
- Zero start interlock
- Zero voltage switching



#### OPERATIONAL FEATURES

- The smallest, lightest, most advanced universal high voltage test instrument available, ideally suited for a variety of applications.
- VLF (0.1Hz), DC ( $\pm$ ), Cable Fault Conditioning (Burning), and Sheath/Jacket Testing modes all included.
- VLF: the proven and accepted replacement for the traditional DC Hipot or "proof" test for solid dielectric cables such as XLPE and EPR.
- Fully automatic or manual cable test sequences complying with International Standards/Guides such as IEEE 400.2, VDE 0276, CENELEC, HD620 S1, NEN 3620, SANS 10198 and IEC 60060-3.
- Meets all your cable testing requirements.
- True symmetrical sinusoidal, load independent, output waveform across the full load range.
- Real-time Display of actual output wave form.
- Easy to use, ergonomic, menu guided, large backlit user interface.
- Rugged, one piece portability.
- Large output load capability (up to 12 $\mu$ F)
- Automatic and integrated load capacitance measurement with optimum frequency selection.
- Storage of test results for later retrieval or download to a PC/Laptop.
- No oil or arcing contacts that require routine maintenance.
- Short circuit protected with active arc management regulation that avoids the tripping of conventional HV test equipment when a dielectric failure occurs.

#### APPLICATIONS

- Cables: XLPE, PE, EPR, PILC etc.
- Capacitors
- Switchgear
- Transformers
- Rotating Machines (IEEE 433)
- Insulators
- Bushings

## DESIGN

The HVA28 / HVA28-TD is an ultra-compact and lightweight (14kg) VLF Test set which exceeds the performance of much larger units.

- The HVA28-TD has integrated Tan Delta (TD) Diagnostics,.
- The HVA28 / HVA28-TD is protected by a watertight, crushproof and dust proof case (IP67).
- The HVA28 / HVA28-TD offers manual and automatic testing plus diagnostic sequences and a large colour display simplifies operation.
- The HVA28 / HVA28-TD features both electronic and mechanical discharging of devices under test (DDD®), a 12kV feedback protection system and an unlimited duty cycle (dry system – no oil used) completing the performance of this outstanding HV System.
- Apart from the variable frequency VLF output, the operator can also select dual polarity DC and cable jacket or sheath testing output modes.
- The applied test voltage, current, capacitance, resistance and time are displayed and recorded.
- The instrument is easily programmable allowing the operator to setup or select test sequences in either automatic or manual mode.
- The HVA28 is capable of testing 0.5µF (Approx. 1500m of cable) at 0.1Hz and 23kV rms. The frequency of the output can also be reduced allowing even larger capacitance loads to be tested. At 0.02Hz, approx. 7620m of cable can be tested.
- To assist the operator, the instrument will automatically calculate the optimum frequency to be selected for larger loads.
- The load independent, symmetrical output waveform avoids the potentially destructive space charge effects caused by DC polarization that occurs in aged extruded cables such as XLPE / PE / EPR, causing them to fail prematurely when exposed to conventional high voltage DC or from a test instrument with large non-symmetrical output waveforms.
- Should a breakdown occur during testing, the actual voltage at which it occurred is displayed and recorded. If cable burning (fault conditioning) mode is activated, the fault resistance can be conditioned to allow easier and less stressful fault location techniques to be applied.
- The results are stored in the instrument's onboard memory allowing easy retrieval and download to a PC or USB drive.

## TECHNICAL DATA

|                                 |   |   |
|---------------------------------|---|---|
| Input Voltage                   | 100 – 240 V 50/60 Hz (400 VA)   |   |
| Output Voltage                  | Sinusoidal: 0 – 28 kV peak, 20 kV rms<br>DC: ± 0 – 28 kV<br>Squarewave: 28 kV                     | Accuracy: ± 1 %<br>Resolution: 0,1kV  |
| Output Current                  | 0 – 20 mA (Resolution 1 µA) Accuracy: ± 1 %   |   |
| Resistance Range                | 0.1 MΩ .....5 GΩ  |   |
| Output Frequency                | 0.01.....0.1 Hz in steps of 0.01 Hz (default 0.1Hz) – auto frequency selection                    |   |
| Output Load                     | 0.5 µF @ 0.1 Hz @ 20kV rms<br>5.0 µF @ 0.01 Hz @ 20 kV rms  | 10.0 µF maximum Capacitance <sup>1</sup><br><sup>1</sup> At lower frequency and voltage |
| Sheath Test                     | Unmax 10 kV<br>Duration 1 min – 15 min  | Trip Current 0.1 mA – 5.0 mA  |
| Sheath Fault Location           | Unmax 10 kV<br>Duration 1 min – 60 min  | Pulse/Period 1:3/4 s, 1:5/4 s, 1:5/6 s,<br>1:9/6 s                                      |
| Output Modes                    | AC (VLF) symmetrical and load independent across full range<br>DC (positive or negative polarity) | Burn / Fault Condition or Fault Trip Mode<br>Jacket / Sheath Testing                    |
| Protection                      | 50 Hz 12 kV Feedback Protection / Dual Discharge Device (internal)                                |   |
| Memory                          | 50 test records stored  |   |
| Metering                        | Voltage and Current (True RMS and/or peak), Capacitance, Resistance, Time, Flashover Voltage      |   |
| TD measurement optimal accuracy | ± 1 x 10 <sup>-4</sup>  |   |
| Duty                            | Continuous - no thermal limitation for operating time.  |   |
| HV Cable                        | 5m with Alligator clamps on end   |   |
| Computer Interface              | Bluetooth - standard, USB - standard  |   |
| Temperature                     | Storage: -25 °C to + 70 °C, Operating: -5 °C to + 45 °C   |   |
| Dimensions (LxWxH)              | Peli Case 1430; 430 x 240 x 340 mm  |   |
| Weight                          | 14 kg   |   |

## ORDER CODES

| PRODUCT DESCRIPTION | PART NO. |
|---------------------|----------|
| *Standard HVA28     | SH0219   |
| *Standard HVA28TD   | SH0216   |

### OPTIONAL ADD-ONS

|  |                                  |
|--|----------------------------------|
| PD 30 Partial Discharge system                                       | SH0220                           |
| Protective cover set   | GH0505                           |
| Vacuum bottle test firmware upgrade (DC)                             | GH0601                           |
| Discharge stick 60kV 1440R 9kJ                                       | GH0604                           |
| Special leads available in various voltages, lengths, and connectors | GH0501/2/3/4 and<br>GH0506/20/21 |

### \*STANDARD DELIVERY INCLUDES:

- HVA28 / HVA28TD Test System
- 5m HV cable
- Earth cable
- USB memory stick
- HVA Control Centre Software
- Operating manual