

Zumbach

SWISS PRIME MEASURING SINCE 1957

Spark Tester



High voltage detection of faults in the insulation or sheathing layers of electric cables

DIELECTRIC TESTING WITH THE SPARK-TEST METHOD

In-line fault testing on single wires and cables during the extrusion or rewinding process has become standard procedure today. ZUMBACH Spark Testers can be used to test the most diverse range of cable products as per international standards, like IEC 62230, UL 1581, UL 2556 and other. Integrated ports allow communication for easy integration with quality control systems (e.g. USYS).

According to various applications, ZUMBACH offers Mains Frequency, Direct Current and High-Frequency spark testers. Typically they are installed at the end of the cooling trough in extrusion lines or in rewinding processes and detect the smallest defects and bare patches in the insulation or sheathing of electrical wires and cables.

Main features

- Wide choice of test voltages: 4...15 kVac/3 kHz, 5...28 kVdc, 15/25/40 kVac
- Fault detection according to the requirements of UL 1581 and IEC 62230
- Wide range of electrode types: bead chain, ring electrodes made of bronze or carbon brushes for tubes, flat electrodes for flat/ribbon cables
- Electrodes for product diameters up to 250 mm (9.84 in.)
- Versions with one of the following interfaces (integrated within the electrode unit):
 - RS-232/-422/-485 for communication with USYS 200, USYS IPC 1e/2e or Host
 - Profibus DP
 - Ethernet TCP/IP
 - Profinet IO
 - EtherNet/IP
- Digital / analogue inputs / outputs as well as Ethernet service port are standard to all models
- Additional service interface (Ethernet) for configuration
- Encoder input to capture the fault position
- Emergency stop input
- Operating mode EXTRUSION or REWINDING: after a fault, the fault detection will be continued or the test voltage is stopped.
- Pinhole / bare patch determination

AST L – MAINS AND LOW FREQUENCY SPARK TESTER

AST L spark testers from ZUMBACH are available in three different design sizes for cable diameters up to 50, 90 or 250 mm (1.97, 3.54 or 9.84 in.). The test is carried out with sinusoidal alternating voltage and mains frequency or low frequency, adjustable from 50 up to 120 Hz. For smaller cable diameters, the test frequency can be increased, according to certain standards, in order to allow higher line speeds with the same electrode length.

All AST L models are equipped with bead chain electrodes according to UL 1581.



Max. line speeds at 50Hz

Electrode length		IEC 62230		UL 1581, UL 2556	
mm	inch	m/min	ft/min	m/min	ft/min
200	7.87	240	787	66.6	219
300	11.81	360	1181	100.0	328
400	15.75	480	1575	133.3	437
1000	39.15	1200	3937	333.0	1092

UL 1581, UL 2556: At a higher test frequency, the line speed increases proportionally.

Main data

Model	AST L 15A/25A.50	AST L 15A/25A.90	AST L 15A/25A/40A.250
Max. product diameter	50 mm (1.97 in.)	90 mm (3.54 in.)	250 mm (9.84 in.)
Output voltage	2...15 kV / 2...25 kV	2...15 kV / 2...25 kV	2...15 kV / 2...25 kV / 2...40 kV
Test frequency	50...120 Hz adjustable		
Power supply	100...127 Vac, 200...240 Vac, automatic switch over between ranges		

AST H15A – HIGH FREQUENCY SPARK TESTER

AST H 15A spark testers detect insulation faults on cables of up to 30 mm (1.18 in.) outside diameter. These high frequency models are equipped with bead chain electrodes according to UL 1581 / UL 2556. A suitable floor stand, available as an option, allows for quick and easy installation in existing production lines.

Technical main data

Max. product diameter	30 mm (1.18 in.)
Output voltage	0.5...15 kVac
Frequency	3 kHz
Power supply	Universal input 100...240 VAC, 45...63 Hz

Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
40	1.57	2400	7874	666	2185
125	4.92	7500	24606	2084	6837



DST 28A – DIRECT CURRENT SPARK TESTER

Thanks to the variety of electrodes such as bead chain, ring and flat electrodes made of bronze or carbon, the spark testers of the DST 28A series are universally usable. In addition to the testing of conventional cables, these DC voltage models are especially suitable for ribbon cables and for fault detection on plastic pipes of all kinds, including corrugated tubes. A suitable floor stand, available as an option, allows a quick and easy installation in existing production lines.

Technical main data

Max. product diameter	ø30 mm (1.18 in.) with bead chain electrodes ø40 mm (1.57 in.) or 20...75 mm (.79 x 2.95 in.) with ring electrodes 60x30 mm (2.36 x 1.18 in.) or 150x30 mm (5.9 x 1.18 in.) with flat electrode
Output voltage	1...28 kVdc
Polarity of high voltage output	Negative
Power supply	Universal input 100...240 VAC, 45...63 Hz

Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
40	1.57	2400	7874	N/A	N/A
125	4.92	7500	24606	37000-3700*	121391-12139*

* Depends on the load capacitance, values given are for 100 pF to 1 nF



DST 10 – DIRECT CURRENT SPARK TESTER

ZUMBACH's new DST 10 serie is a direct current spark tester designed to detect faults in insulation or sheathing layers of electrical cables.

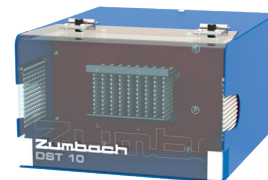
Technical main data

Output voltage	0.5...10 kVdc
Max. product diameter	Bead chain electrodes: 30 mm (1.18 in.), Flat electrode: 30 x 30 mm (1.18 x 1.18 in.)
Polarity of high voltage output	Negative
Accuracy of voltage calibration	Better than 4% at 5 and 10 kV, with 100 M Ω load resistance (accuracy limit +/- 5% of the indicated value given in IEC 62230)
Power supply	Universal input 100...240 VAC, 45...63 Hz
Dimensions (wxdxh)	300 x 350 x 190 mm (11.8 x 13.8 x 7.5 in.)

Maximum line speeds

Electrode length		IEC 62230		UL 1581 / 2556	
mm	inch	m/min	ft/min	m/min	ft/min
102	4	6120	20079	30192-3019*	99056-9905*

* Depends on the load capacitance, values given are for 100 pF to 1 nF



VISU-TOUCH – DISPLAY AND CONTROL UNIT (OPTION)

This unit allows the manual control of the electrode unit. The VISU-Touch can be affixed on the electrode unit or used separately. For applications where the spark tester is controlled via an interface, the VISU-Touch can be used as a local display.

- Graphic backlit display, signalization and keyboard
- Power supply from spark tester via Ethernet (PoE)
- Ethernet network cable cat. 6 S/FTP with RJ45 connectors



