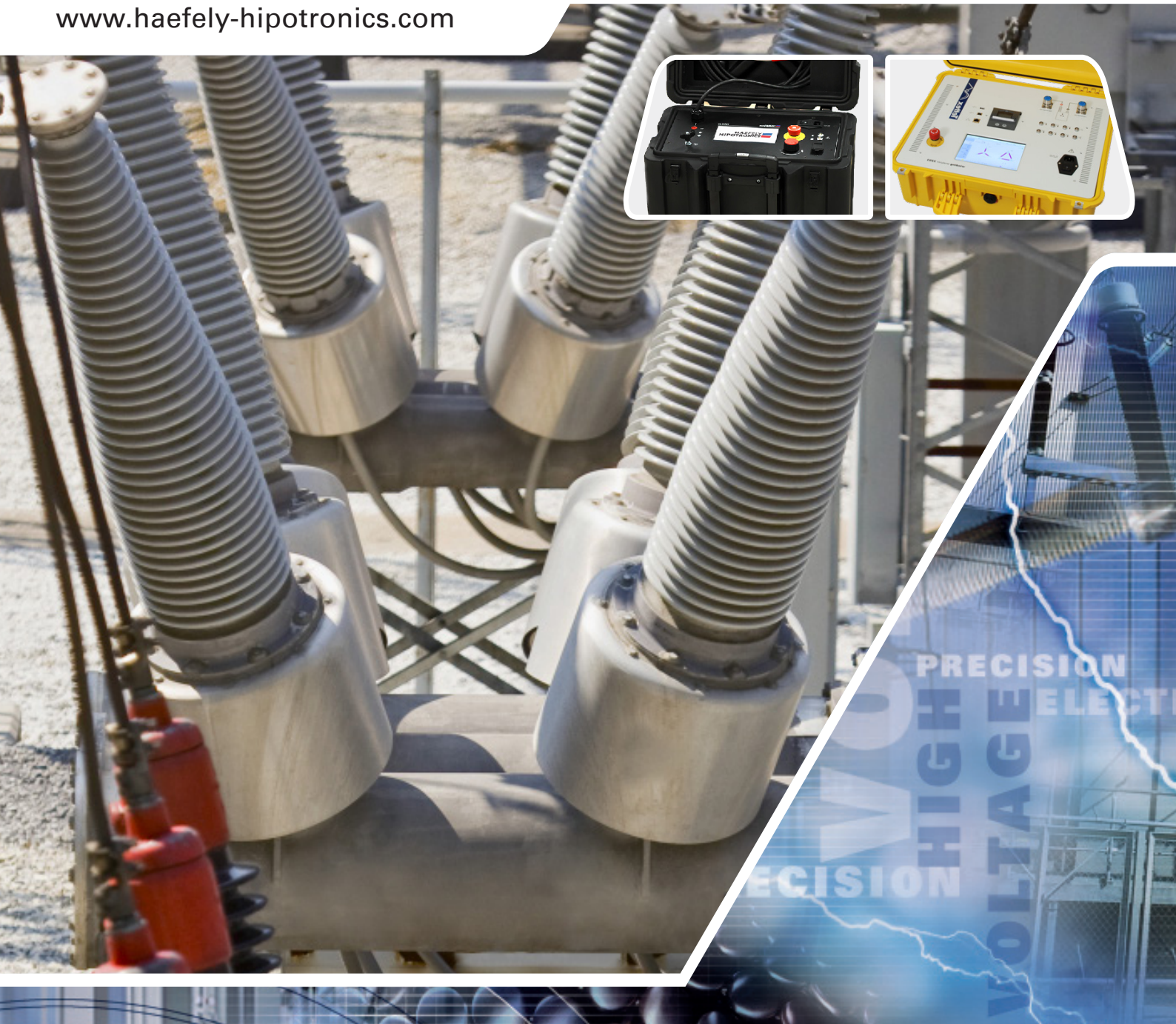


UTILITY & SUBSTATION TESTING

APPLICATION GUIDE

www.haefely-hipotronics.com





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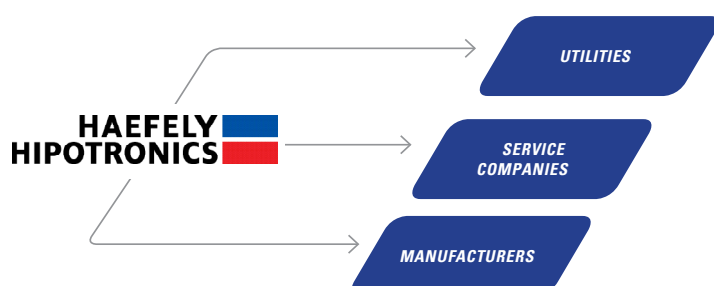
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PRODUCT LINE OVERVIEW

	HVT-DI SERIES	800 SERIES	DC SERIES	7BT60	2283	2795 / 2796	KVM SERIES	5462	5310	MIDAS	MIDAS micro
AC HIPOT	•		•	•							
DC HIPOT		•									
VACUUM BOTTLE				•							
LIQUID DIELECTRIC			•								
WINDING RESISTANCE					•						
TURNS RATIO				•	•					•	
VOLTAGE MEASUREMENT						•					
RECOVERY VOLTAGE MEASUREMENT							•				
FREQUENCY RESPONSE								•	•	•	
POWER FACTOR / C TAN δ									•	•	•

MARKET SEGMENTS

CUSTOMER BASE FOR UTILITY & SUBSTATION TESTING



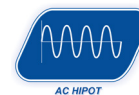
**PORTABLE AND
EFFICIENT**

AC & DC HIPOT TESTING

For utility and service companies, electrical maintenance testing is crucial for promoting and maintaining safety. The voltage withstand ability - or dielectric breakdown - of this equipment should be tested regularly to ensure insulation integrity.

Proper testing and recording of test results can detect existing issues and prevent future hazards.

		TEST VOLTAGE						
		0-30 kV	≤ 40 kV	≤ 60 kV	≤ 80 kV	≤ 100 kV	≤ 120 kV	≤ 170 kV
AC Testing HVT SERIES	30HVT-DI	•						
	60HVT-DI	•	•	•				
	100HVT	•	•	•	•	•		
	120HVT-DI	•	•	•	•	•	•	
DC Testing 800 SERIES	840PL-DC	•	•					
	880PL-DC	•	•	•	•			
	8120	•	•	•	•	•	•	
	8170	•	•	•	•	•	•	•



ACCESSORIES



Purchase our **Grounding Stick** to deenergize devices under test; it is suitable for AC or DC hipots rated up to 120 kV.



HVT-DI SERIES

DEVICES UNDER TEST

- Rubber goods
- Aerial lift trucks
- Hot sticks
- Cable
- Transformers
- Electrical switchgear
- Motors / Generators

800PL-DC SERIES



		AC TEST VOLTAGE		APPLICATIONS & FEATURES		
		0-60 kV	≤ 90 kV	VACUUM TESTING	LIQUID DIELECTRIC TESTING	PRINTABLE TEST RESULTS
TEST SEQUENCE	Manual	OC60D	•		•	
		OC90D	•	•	•	
	Automatic	OC60E	•		•	
		OC60E/P	•		•	•
		7BT60	•	•		

LIQUID DIELECTRIC TESTING

OC SERIES

The OC Series is designed to test the dielectric integrity of liquid insulation in a variety of electrical apparatus. This equipment was designed to test standards such as ASTM D877, ASTM D1816, and IEC 156.



FUNCTIONALITY

- ✓ Tests per ASTM and IEC standards
- ✓ Automatic high voltage shutdown at breakdown point
- ✓ Lightweight and portable design
- ✓ Digital memory kilovoltmeter
- ✓ Data acquisition and on-board printer options



VACUUM BOTTLE TESTING

7BT60

The 7BT60 tests the integrity of vacuum interrupters in switchgear and allows users to select desired test parameters and then watch the sequence run automatically. Once complete, the pass/fail indicator lamp provides immediate, visual indication of test results.

EASY-TO-OPERATE

- ✓ Automatic test procedure
- ✓ Center-tapped transformer
- ✓ Dwell timer
- ✓ Failure indicator
- ✓ Portable



RESISTANCE & TURNS RATIO MEASUREMENT

WINDING ANALYZER 2293

The 2293 is designed to test power transformers, distribution transformers, generators / motors, and instrument transformers.



UNMATCHED ADVANTAGES

World's first analyzer to combine:

- Winding resistance
- Turns ratio
- Demagnetization
- Heat run
- Short Circuit Impedance
- Tap Changer (DRM)
- Arbitrary Phase Shift
- Magnetic Balance



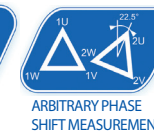
WINDING
RESISTANCE



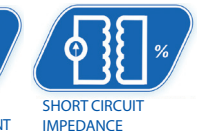
URNS RATIO



DEMAGNETISE



ARBITRARY PHASE
SHIFT MEASUREMENT



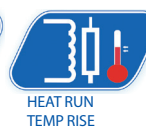
SHORT CIRCUIT
IMPEDANCE



MAGNETIC
BALANCE



HEAT RUN
COOLING CURVE



HEAT RUN
TEMP RISE



EXCITATION
CURRENT



DYNAMIC RESISTANCE
(TAP CHANGER)

TRANSFORMER TURNS RATIO METERS 2795 & 2796

This Transformer Turns Ratio (TTR) family combines mobility with user-friendly handling. Both models carry the unmatched accuracy that Tettex products are known for.

APPLICATIONS

- Power transformers
- Distribution transformers
- Instrument transformers
- Special transformers:
 - ✓ Phase-shifting
 - ✓ Rectifier
 - ✓ Arc-furnace
 - ✓ Traction



2796



2795

POWER LEVEL

	< 150 MVA	> 150 MVA
TTR 2795 (100 V)	•	
TTR 2796 (250 V)		•



URNS RATIO



ARBITRARY PHASE
SHIFT MEASUREMENT

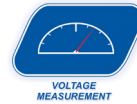
VOLTAGE MEASUREMENT

KVM SERIES

The KVM Series offers models in 100 kV, 200 kV, 300 kV, and 400 kV with the ability to function in both high and low voltage ranges for maximum accuracy.

BENEFITS

- ✓ Portable carrying case
- ✓ Battery-operated
- ✓ Fast and accurate measurements
- ✓ Useful for a wide variety of applications
- ✓ Lightweight



RECOVERY VOLTAGE MEASUREMENT

RVM 5462

The RVM 5462 measures moisture content in a transformer's oil-paper insulation, allowing the user to evaluate the degradation rate and determine the transformer's residual lifetime.

OVERVIEW

- Non-destructive test on oil-paper insulation
- Definable test procedures
- Clear indication of results, with built-in printer
- Rugged and lightweight



FREQUENCY RESPONSE ANALYSIS

FRA 5310

The Frequency Response Analyzer (FRA) is used to measure frequency response in passive elements of a transformer. These measurements produce a unique fingerprint of every transformer's mechanical geometry.

FEATURES

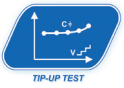
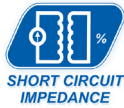
- Use of active probes for high measurement reliability and repeatability
- Integrated analysis tools
- Large touchscreen interface
- Rugged and lightweight



POWER FACTOR / C TAN δ

MOBILE INSULATION DIAGNOSTICS & ANALYZING SYSTEM (MIDAS)

The MIDAS series measures and records tan delta (dissipation factor), power factor and capacitance in various utility products. These units can be upgraded to include turns ratio measurement, frequency response analysis and short circuit impedance. The MIDAS micro 2883 is the smallest and most compact insulation set on the market. Its single-box design weighs only 25 kg / 55 lbs - making tests easy both in the factory and in the field.



**MIDAS
MICRO**



MIDAS



	OUTPUT VOLTAGE		CONTROLLER		DEVICES UNDER TEST						
	≤ 12 kV	≤ 15 kV	Laptop	Touchscreen	Rotating Machines	Power Transformers	Instrument Transformers	Bushings	Capacitors	Circuit Breakers	Surge Arrestors
MIDAS micro 2883	•			•		•		•	•	•	•
MIDAS 2881	•		•		•	•	•	•	•	•	•
MIDAS 2881G		•	•		•	•	•	•	•	•	•

TRAINING OPPORTUNITIES

TRANSFORMER DIAGNOSTICS COURSE

Sign up for our "Transformer Diagnostics" course, offered through our training program. This course is designed to help transformer manufacturers, utility and contract workers, repair companies, and research labs satisfy their testing needs.

EDUCATION IS POWER

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