

# TTR 2796

Fully Automated Three  
Phase 250 V Transformer  
Turns Ratio Meter

*Datasheet*



## HAEFELY

Current and voltage – our passion

Designed by



# General Description

A close collaboration with major transformer manufacturers has led to the new HAEFELY 2796 Transformer Turns Ratio Meter. It combines mobility and user-friendly handling with unmatched accuracy of up to 0.03 %. The higher test voltage of 250 V together with the high precision assures authentic results especially on large power transformers. Advanced analysis features like trending allow the user to detect problems at an early stage. The automatic winding connection identification feature aids to find the correct transformer configuration.

With the optional arbitrary phase shift software special transformers with irregular vector groups can also be measured.

During production and also in the field the TTR2796 is a highly valued diagnostic instrument. Within half a minute after connecting the measurement cables to the terminals of the transformer, the voltage ratio, turns ratio, ratio deviation, excitation current and phase deviation are displayed.

Features	Advantages
<ul style="list-style-type: none"> <li>Fully automated measurement of turns ratio, voltage ratio, phase displacement and excitation current.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Quick and reliable measurement</li> </ul>
<ul style="list-style-type: none"> <li>Higher test voltage of 250 V.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Superior transformer excitation</li> </ul>
<ul style="list-style-type: none"> <li>Accuracy up to 0.03 %.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Highest accuracy in the market</li> </ul>
<ul style="list-style-type: none"> <li>Ratios of up to 50'000 can be measured.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Wide measuring range</li> </ul>
<ul style="list-style-type: none"> <li>Measurement of phase displacement of transformers with irregular vector groups</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Wide application range in: phase shifting, rectifier, arc-furnace and traction transformers.</li> </ul>
<ul style="list-style-type: none"> <li>Automatic Winding Connection Identification (AWCI) and automatic vector group detection</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Supports quick and easy operation.</li> </ul>
<ul style="list-style-type: none"> <li>Test setups and results can be stored, recalled and printed out with the built-in printer or used for later analysis.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Quick setup with intuitive guide-through user interface.</li> </ul>
<ul style="list-style-type: none"> <li>Lightweight, rugged and compact design. Closed case is IP65 waterproof, open case is splash proof.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Allows use in harsh environment (field proof)</li> </ul>
<ul style="list-style-type: none"> <li>Safety connection control feature proofs test setup before applying test voltage.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Guarantees safety of personnel and instrument</li> </ul>
<ul style="list-style-type: none"> <li>Free external application software and automatic report generation.</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Allows data exchange and advanced analysis of results on a computer (USB connection)</li> </ul>
<ul style="list-style-type: none"> <li>Remote tap-changer switch</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Enables convenient testing of multi-tap transformers</li> </ul>

# Applications

Turns ratio, voltage ratio, phase displacement and excitation current measurements according to ANSI, IEC and AS standards on:

- Power and Distribution Transformers
- Special transformers like; phase shifting-, rectifier-, arc-furnace- and traction transformers
- Instrument Transformers

## Scope of Supply

- TTR 2796 instrument in shell case
- Cable bag
- Two 3-phase cable sets (5 m spider and two sets of clamps)
- Two 3-phase extension cable sets (10 m)
- Remote control/ data storage/ report generation software
- USB cable for remote operation
- Mains cable
- Calibration certificate and Operating Manual.

## Technical Data

Measurement			
Excitation voltage	2.5 V, 25 V, 100 V and 250 V; automatic and manual selectable		
Excitation current	Max. 1 A		
Range	Accuracy <sup>(1)</sup>		
	@ 250 V	@ 100 V	@ 25 V
0.8 ... 100	± 0.03 %	± 0.05 %	± 0.05 %
101 ... 1000	± 0.05 %	± 0.05 %	± 0.05 %
1501 ... 2000	± 0.05 %	± 0.05 %	± 0.10 %
2001 ... 4000	± 0.05 %	± 0.05 %	± 0.20 %
4001 ... 13000	± 0.15 %	± 0.25 %	n/a
13001 ... 20000	± 0.15 %	n/a	n/a
20001 ... 50000	± 0.60 %	n/a	n/a
	Range	Resolution	Typical Accuracy
Excitation current	0 ... 1 A	0.1 mA	± 0.3 % ± 2 mA
Phase Angle	± 180°	0.01°	± 0.05°
Hardware			
Display	5.2" dot matrix LCD 240 x 128 module with backlight		
Printer	Thermal strip printer, paper width 58 mm		
Software			
Memory	Stores up to 100 complete test results/ test setups		
Data formats	CSV, XML, HTML		
Interfaces	Computer: USB 2.0 client (with supplied adapter) Tap changer: 3-pole contact in/out (potential free)		
Environmental Mechanical and Power Supply			
Operating temperature	-10 °C* ... +55 °C *-10 °C typical. -5 °C guaranteed		
Storage temperature	-20 °C ... +70 °C		
Humidity	5 ... 95 % r.h. non-condensing		
Dimensions (W x D x H)	410 x 310 x 170 mm (16 x 12.2 x 7 in)		
Weight	8.8 kg (19 lb) excl. cables		
Power Supply Specs	95 ... 240 V AC, 50/ 60 Hz , Max. 1.3 A		

(1) At Excitation voltage, values valid after a warmup-time of 30 min

## Global Presence

### Europe

HAEFELY AG  
Birsstrasse 300  
4052 Basel  
Switzerland

☎ + 41 61 373 4111  
✉ [sales@haefely.com](mailto:sales@haefely.com)

### China

HAEFELY AG Representative Office  
8-1-602, Fortune Street, No. 67  
Chaoyang Road, Beijing 100025  
China

☎ + 86 10 8578 8099  
✉ [sales@haefely.com.cn](mailto:sales@haefely.com.cn)

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Current and voltage – our passion



HIGH VOLTAGE



INSTRUMENTS



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precision.  
**swiss made.**