

# Transformer testing

## MI 3280 Digital Transformer Analyser



The MI 3280 Digital Transformer Analyser is a portable, battery (Li-ion) powered test instrument intended for diagnosing of turn ratio, phase deviation, excitation current and winding resistance of single and three phase transformers. It has an excellent IP protection: IP65 (case closed), IP54 (case open) allowing the use of the instrument in harsh environments. The operation is straightforward and clear to enable the user to operate the instrument without the need for special training. For advanced users the AUTO SEQUENCES and visual tests are available.

High Voltage Insulation / Continuity / Earth

### MEASURING FUNCTIONS

Available functions and features offered by the Digital Transformer Analyser:

- Turn ratio measurement of single and three phase transformers;
- Phase deviation between high voltage and low voltage winding;
- Excitation current;
- Winding resistance measurement of single and three phase transformers (Power Transformers up to 1,6 MVA).

### KEY FEATURES

- A 4.3" color LCD display with touch screen offers easy-to-read results and all associated parameters.
- The operation is straightforward and clear to enable the user to operate the instrument without the need for special training.
- Test results can be stored on the instrument.

- PC software that is supplied as a part of standard set enables transfer of measured results to PC where they can be analysed or printed.
- Built-in help screens for referencing on site.
- Autotest sequences.
- Built-in charger and rechargeable batteries as standard accessory.
- BT communication with PC, Android tablets and smart phones via built-in BT.
- PC SW Metrel ES Manager for creation of test structures and uploading, downloading of test results, autotest editor and report creation.
- High degree of protection IP 65 (case closed), IP 54 (case open).

### APPLICATION

- Three phase and single phase power transformers.
- Voltage transformers.
- Current transformers.

### STANDARDS

#### Functionality

- C57.12.70
- IEC 60076-1

#### Electromagnetic compatibility

- EN 61326

#### Safety

- EN 61010 - 1
- EN 61010 - 2 - 030
- EN 61010 - 2 - 033
- EN 61010 - 031

#### Li-ion battery pack

- IEC 62133

## TECHNICAL SPECIFICATION

Function		Measuring range	Resolution	Accuracy
TURN RATIO <i>r, rA, rB, rC</i>	Excitation voltage 80 V	0.8000 ... 9.9999	0.0001	±(0.2% of reading + 2 digits)
		10.000 ... 99.999	0.001	±(0.2% of reading + 2 digits)
		100.00 ... 999.99	0.01	±(0.2% of reading + 2 digits)
		1000.0 ... 1999.9	0.1	±(0.5% of reading + 2 digits)
	Excitation voltage 40 V	2000.0 ... 3999.9	0.1	±(0.5% of reading + 2 digits)
		4000.0 ... 8000.0	0.1	±(1.0% of reading + 2 digits)
		0.8000 ... 9.9999	0.0001	±(0.2% of reading + 2 digits)
		10.000 ... 99.999	0.001	±(0.2% of reading + 2 digits)
	Excitation voltage 10 V	100.00 ... 999.99	0.01	±(0.2% of reading + 2 digits)
		1000.0 ... 1999.9	0.01	±(0.5% of reading + 2 digits)
		2000.0 ... 3999.9	0.1	±(0.5% of reading + 2 digits)
		4000.0 ... 8000.0	0.1	n/a
	Excitation voltage 5 V	1000.0 ... 8000.0	0.1	n/a
		0.8000 ... 9.9999	0.0001	±(0.2% of reading + 2 digits)
		10.000 ... 99.999	0.001	±(0.2% of reading + 2 digits)
		100.00 ... 999.99	0.01	±(0.5% of reading + 2 digits)
Excitation voltage 1 V	1000.0 ... 8000.0	0.1	n/a	
	10.000 ... 99.999	0.001	±(0.5% of reading + 2 digits)	
	100.00 ... 999.99	0.01	n/a	
EXCITATION CURRENT <i>i, iA, iB, iC</i>	Test frequency 55, 65 or 70 Hz	0.10 mA ... 9.99 mA	0.01 mA	±(2 % of reading + 0.20 mA)
		10.0 mA ... 99.9 mA	0.1 mA	±(2 % of reading + 2 digits)
		100 mA ... 999 mA	1 mA	±(2 % of reading + 2 digits)
		1.00 A ... 1.10 A	0.01 A	±(2 % of reading + 2 digits)
PHASE DEVIATION <i>ϕ<sub>i</sub>, ϕ<sub>B</sub>, ϕ<sub>C</sub></i>	Test frequency 55, 65 or 70 Hz	-180.00 ... 180.00 °	0.01°	±(0.05°)
WINDING RESISTANCE <i>R, RA, RB, RC</i>	Test current 10 mA ... 1000 mA	1.0 mΩ ... 999.0 mΩ	0.1 mΩ	±(2 % of reading + 3 digits)
		1.000 Ω ... 9.999 Ω	0.001 Ω	±(2 % of reading + 2 digits)
		10.00 Ω ... 99.99 Ω	0.01 Ω	±(2 % of reading + 2 digits)
		100.0 Ω ... 999.9 Ω	0.1 Ω	±(2 % of reading + 2 digits)
GENERAL	Battery power supply	14.4 V DC (4.4Ah Li-ion)		
	Battery charging time	typical 4.5 h (deep discharge)		
	Mains power supply	90-260 VAC, 45-65 Hz, 100 VA (300 V CAT II)		
	Protection classification	reinforced insulation		
	Measuring category	50 V CAT IV		
	Pollution degree	2 		
	Degree of protection	IP 65 (case closed), IP 54 (case open)		
	Dimensions (w x h x d)	360 x 160 x 330 mm		
	Weight	8.8 kg, (with battery and accessories)		

## ORDERING INFORMATION



- Instrument MI 3280
- 4 wire test lead with banana, 4 pcs
- Large Kelvin test crocodile, 8 pcs
- USB cable
- Mains cable
- Soft carrying bag
- Metrel ES Manager BASIC license\*
- Instruction manual
- Calibration certificate

\*Metrel ES Manager can be downloaded free of charge from Metrel Web server.

## OPTIONAL ACCESSORIES

Photo	Order No.	Acc. description
	A 1593	Large Kelvin test crocodile
	A 1757	Large kelvin test clip 65 mm
	A 1814	Fastening rope 1 m with carabiner hook
	S 2126 5M	Set of test leads with big Kelvin clamps
	S 2126 10M	
	A 1815 2M5	Test lead HO-H1
	A 1815 5M	
	A 1815 10M	
	A 1816 2M5	Test lead H2-H3
	A 1816 5M	
	A 1816 10M	
	A 1817 2M5	Test lead X0-X1
	A 1817 5M	
	A 1817 10M	
	A 1818 2M5	Test lead X2-X3
	A 1818 5M	
	A 1818 10M	

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Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery.  
Subject to technical change without notice.