Technical Data NT 637-3

Test points				
Type test point cards	RM60	RM80	RM100 / RM16	RM120
Max. number of test points base unit	512		256	
Test point interface	Female connector DIN 41612, 64-way		Female connector DIN 41612, 32-way	
Other				
Power supply	100 – 240 VAC (50 - 60 Hz)			
Dimensions (W x H x D)	345 mm x 275 mm x 395 mm			
Weight	approx. 11 kg			
Environmental conditions	Temperature range: operation: +10 °C – +40 °C storage: +10 °C – +60 °C			
	Relative humidity: 30 % – 70 %, non-condensing			
Operating	Control software NT Control, executable on a PC (not part of the delivery) with operating system Microsoft Windows® 7 Pro up to Windows® 10 Pro (country variant German or English)			
	Clearly designed operator interface, customizable			
	Transparent test procedures, extensive graphical fault description			
	Detailed printouts of the test results on all printers supported by Windows®			
	Report, label and lot printing			
	Remote maintenance			
Programming	Autoprogramming of golden patterns			
	Test program editors			
	Test point naming in several formats, output format selectable			
	Individual test procedure programming with Sax Basic Engine			
	Correction value determination for R, C, L and Z (option)			
	Function test (option)			
	AC/DC stimulus sources (option)			
	Voltage measurement / external voltage detection (option)			
	Test program selection via I/O card (option)			
	UNICAD-converter for CAD- and Excel link-data (option)			
	Downward compatible to existing test programs in the ATX-format			
	Temperature and humidity logging, 0 - 100 % rel. humidity ±2 %, -40 – 80°C ±0.3 K (option)			
Diagnosis	Self-diagnosis for the measurement electronics and the test point cards			
Interfaces	Network			
	Serial interfaces RS232 / USB 2.0			
	3 x I/O, digital, 24 V, D-Sub 15-way			
	Interface for warning lamp red-green, foot switch, test result lamp			
	Pin number probe for test point identification			
	Safety loop for the protection of the work place			
	I/O interface with 8, 16 or 24 opto-decoupled inputs and potential-free outputs (option)			
	RJ12 interface for the connection of an optional temperature and humidity sensor			
	External LCR measuring bridge and digital multimeter (option)			
Scope of delivery	NT 637-3, main cable, pin number probe, USB flash drive with NT Control and documentation in PDF format			

Measurement electronics MT20

Low voltage test	
Test voltage	1 – 25 V programmable in steps of 1 V (±3 %, min. 0.2 V)
Test current	max. 25 mA
Threshold continuity test	1 Ohm – 1 kOhm (±5 %, min. 1 Ohm)
Threshold short-circuit test	20 kOhm – 1 MOhm (±5 %) Option: up to 5 MOhm (±20 % at test voltages ≥ 20 V)
Component test	
Resistors	1 Ohm – 1 MOhm (±5 %, min. 1 Ohm) Option: up to 5 MOhm (±20 % at test voltages ≥ 20 V)
Capacitors	10 nF – 20 mF (±10 %) Option: from 100 pF (±10 %, ±20 pF)
Diodes	Forward voltage: < 1.0 V Reverse voltage: max. 25 V
Zener diodes	Forward voltage: < 3.0 V Zener voltage: max. 20 V (±10 %)
LEDs	Forward-Voltage: < 4.0 V Reverse voltage: max. 25 V
Suppressor diode	Break-down voltage: 3 V – 23 V (±10 %)

Measurement electronics MT1500DC

High voltage test

Test voltage	RM60 / RM100 / RM16	40 – 1000 VDC (±2 %); in steps of 1 V
	RM80 / RM120	40 – 1500 VDC (±2 %); in steps of 1 V
Test current	max. 2 mA (safety current limited according to EN 61010)	
Testing times	Rise time 0 – 60000 ms; in steps of 10 ms Dwell time 0 – 60000 ms; in steps of 10 ms	
Insulation test	500 kOhm – 2 GOhm Option: up to 10 GOhm (not valid for Distributed Test Systems or unearthed operation) in steps of 500 kOhm	
Dielectric strength test	Fast recognitions of voltage breakdowns at test voltages ≥ 200 V (arc detections)	

Accuracy in dependence of the voltage:

Voltage	500 kOhm – 500 MOhm	> 500 MOhm – 2 GOhm	> 2 GOhm – 10 GOhm
1500 V	2 %	5 %	15 %
≥ 1000 V	2 %	5 %	≥ 15 %
≥ 500 V	2 %	≥ 15 %	≥ 15 %
	500 kOhm – 100 MOhm	**> 100 MOhm – 2 GOhm**	**> 2 GOhm – 10 GOhm**
≥ 100 V	2 %	≥ 15 %	≥ 15 %

High current test

Test current	50 mA – 2 A (1 A with RM16); in steps of 10 mA
Test voltage	max. 22 VDC
Test times	Dwell time 0 – 60000 ms; in steps of 100 ms
Threshold continuity test	500 mOhm – 10 Ohm, ±2 %, min. 200 mOhm 10 Ohm – 1 kOhm, ±5 % (dwell time ≥ 100 ms) in steps of 500 mOhm
Four-wire measurement 1 mOhm (option)	1 mOhm – 1000 Ohm; in steps of 1 mOhm ±2 %, min. 1 mOhm at test current ≥ 1 A ±5 %, min. 5 mOhm at test current < 1 A, min. 50 mOhm

Resolution	Measuring range
13 µOhm	at 2 A test current: 100 µOhm – 50 mOhm
245 µOhm	at 2 A test current: 50 mOhm – 1 Ohm
4,9 mOhm	at 2 A test current: 1 Ohm – 11 Ohm
0.045 % of measured value	if test current of 2 A is not reached due to voltage limitation: 11 Ohm – 1000 Ohm

Note: The measuring ranges change depending on the specified test current.

Four-wire measurement
100 µOhm (option)

100 µOhm – 1000 Ohm; minimum step size 100 µOhm

Measuring range 100 µOhm – 1 mOhm:
Measurement accuracy absolute ±20 % at test current 2 A
Repeating accuracy ±10 µOhm
Measuring time: min. 4.8 s

Measuring range 1 mOhm – 1000 Ohm:
±2 %, min. 1 mOhm at test current ≥ 1 A
±5 %, min. 5 mOhm at test current < 1 A, min. 50 mOhm

Resolution	Measuring range
1 µOhm	at 2 A test current: 100 µOhm – 50 mOhm
16 µOhm	at 2 A test current: 50 mOhm – 1 Ohm
305 µOhm	at 2 A test current: 1 Ohm – 11 Ohm
0.0028 % of measured value	if test current of 2 A is not reached due to voltage limitation: 11 Ohm – 1000 Ohm

Note: The measuring ranges change depending on the specified test current.

Not suitable for unearthed operation.

Short time interruptions AMC (option)	Interruptions ≥ 1 µs	
Component test		
Varistors		
Varistor voltage	RM60 / RM100 / RM16	40 – 900 VDC
	RM80 / RM120	40 – 1300 VDC
Test current	1 mA	
Surge arrestors		
Breakdown voltage	RM60 / RM100 / RM16	100 – 900 VDC
	RM80 / RM120	100 – 1300 VDC
Ramp	100 V/s or 1000 V/s	

Measurement electronics option MT2000 (3 mA / 6 mA)

Dielectric strength test		
Voltage type:	**AC, 50 Hz / 60 Hz**	
Test voltage	RM60 / RM100 / RM16	100 – 750 VAC (±5 %, min. 10 V); in steps of 5 V
	RM80 / RM120	100 – 1060 VAC (±5 %, min. 10 V); in steps of 5 V
Short circuit current	MT2000-3mA	max. 2.1 mA_{eff}, 3 mA_p (±5 %); non-programmable; safety current limited according to EN 50191
	MT2000-6mA	max. 4.2 mA_{eff}, 6 mA_s (±5 %); non-programmable
Test times	Rise time:	80 – 65000 ms; in steps of 20 ms
	Dwell time:	40 – 65000 ms; in steps of 20 ms
	Fall time:	0 – 65000 ms; in steps of 20 ms
Breakdown detection	• Limit exceedance $I_{maxreal}$ 0.5 – 4.2 mA_{eff}; in steps of 0,1 mA; $I_{maxreal}$ mhas to be lower than I_{max} • Limit exceedance I_{max} 0.5 – 4.2 mA_{eff}; in steps of 0,1 mA • Breakdown detector du/dt; non-programmable; fast and sensible breakdown detector. Prevents the unit under test from damage by the arc.	
Voltage type	**DC**	
Test voltage	RM60 / RM100 / RM16	40 – 1000 VDC (±5 %, min. 5 V); in steps of 5 V
	RM80 / RM120	40 – 1500 VDC (±5 %, min. 5 V); in steps of 5 V
Short circuit current	MT2000-3mA	max. 3 mA (±5 %); non-programmable; safety current limited according to EN 50191
	MT2000-6mA	max. 6 mA (±5 %); non-programmable
Test times	Rise time:	20 – 65000 ms; in steps of 20 ms
	Dwell time:	20 – 65000 ms; in steps of 20 ms
	Fall time:	0 – 65000 ms; in steps of 20 ms
Breakdown detection	• Limit exceedance I_{max} 0.5 – 6 mA; in steps of 0.1 mA • Breakdown detector du/dt; non-programmable; fast and sensible breakdown detector. Prevents the unit under test from damage by the arc.	
Insulation test		
Voltage type	**DC**	
Test voltage	RM60 / RM100 / RM16	40 – 1000 VDC (±5 %, min. 5 V); in steps of 5 V
	RM80 / RM120	40 – 1500 VDC (±5 %, min. 5 V); in steps of 5 V
Short circuit current	MT2000-3mA	max. 3 mA (±5 %); non-programmable; safety current limited according to EN 50191
	MT2000-6mA	max. 6 mA (±5 %); non-programmable
Test times	Rise time:	20 – 65000 ms; in steps of 20 ms
	Dwell time:	20 – 65000 ms; in steps of 20 ms
Threshold for insulation test	500 kOhm – 100 MOhm (±5 %, voltage ≥ 100 V) 100 MOhm – 2 GOhm (±5 %, voltage ≥ 500 V) Option: up to 10 GOhm (±15 %, voltage ≥ 1000 V) in steps of 500 kOhm Voltage breakdown detection at test voltages ≥ 200 V	

Breakdown detection:	Breakdown detector du/dt; non-programmable; fast and sensible breakdown detector. Prevents the unit under test from damage by the arc.	
Component test		
Varistors		
Varistor voltage	RM60 / RM100 / RM16	40 – 900 VDC
	RM80 / RM120	40 – 1300 VDC
Test current	1 mA	
Surge arrestor		
Breakdown voltage	RM60 / RM100 / RM16	100 – 900 VDC
	RM80 / RM120	100 – 1300 VDC
Ramp	100 V/s or 1000 V/s	

Measurement electronics option MT_EXT

Voltage measurement	
Voltage AC	0.2 – 500 V (±3 %, min. 100 mV), max. 400 Hz
Voltage DC	0.2 – 700 V (±3 %, min. 100 mV)

Measurement electronics option MT_LCR

Component test	
Test voltage	2 V (±0.6 V)
Measurement frequencies	100 Hz, 1 kHz, 10 kHz
Inductances	200 µH – 1 H (±5 %, min. 50 µH)
Capacitors	100 pF – 10 µF (±5 %, min. 50 pF)
Resistors	1 Ohm – 50 kOhm (±5 %, min. 100 mOhm)

Conditions for all tolerance statements: operating mode „Precise Mode“, earthbound operation, environmental conditions 15 – 35 °C / 20 – 60 % rel. humidity (non-condensing)

The statements for the component test refer to the test of single components, which are connected separately with test points.

Technical data and tolerances are subject to change depending on a specific ambient of the test object or application.