Technical data and possible accessories

TESTRANO 600

Outputs

HV & LV outputs – power

Frequency	DC or 15 Hz … 599 Hz		
Power	V_{mains}	P_{30s}	$P_{continuous}$
	> 100 V_{RMS}	1500 W	1000 W
	> 190 V_{RMS}	4000 W	2400 W

HV & LV outputs – voltage

Source	Range	$I_{max, continuous}$
3-phase AC (RMS)	0 ... 230 V (LN)	100 mA_{RMS}
	0 ... 80 V (LN)	16 A
	0 ... 40 V (LN)	33 A
1-phase AC (RMS)	0 ... 240 V	16 A
	0 ... 120 V	33 A
3-phase DC	0 ... ±113 V	16 A
	0 ... ±56 V	33 A
1-phase DC	0 ... ±340 V	16 A
	0 ... ±170 V	33 A

HV & LV outputs – current

Source	Range	$V_{max, continuous}$
3-phase DC	0 ... ±33 A	56 V
	0 ... ±16 A	113 V
1-phase DC	0 ... ±100 A	56 V
	0 ... ±33 A	170 V
	0 ... ±50 A	113 V
	0 ... ±16 A	340 V
3-phase AC (RMS)	0 ... 33 A (LN)	40 V
	0 ... 16 A (LN)	80 V
1-phase AC (RMS)	0 ... 50 A	80 V
	0 ... 33 A	120 V
	0 ... 16 A	240 V

On-load tap changer input/output

Voltage	300 V_{RMS}
Accuracy AC (50 / 60 Hz) / DC	0.07 % rd + 0.07 % range
Current clamp input	3 V_{RMS}
Tap up/down switch	Current[1]: 300 $mA_{continuous}$ 9 A for 0.7 s Voltage[1]: 300 V_{RMS}

Inputs

HV & LV inputs – voltage[2]

Input	Range	Accuracy[3]
AC (RMS)	0 ... 300 mV	0.01 % rd + 0.003 % range
	0 ... 3 V	0.01 % rd + 0.003 % range
	0 ... 30 V	0.01 % rd + 0.003 % range
	0 ... 300 V	0.012 % rd + 0.003 % range
DC	0 ... 42.4 mV	0.022 % rd + 0.032 % range
	0 ... 424 mV	0.01 % rd + 0.017 % range
	0 ... 4.24 V	0.007 % rd + 0.012 % range
	0 ... 42.4 V	0.01 % rd + 0.017 % range
	0 ... 424 V	0.007 % rd + 0.012 % range

HV & LV inputs – current[4]

Input	Range	Accuracy[3]
AC (RMS)	0 ... 4 A_{RMS}	0.036 % rd + 0.0033 % range
	0 ... 40 A_{RMS}	0.023 % rd + 0.013 % range
DC	0 ... 0.56 A_{DC}	0.1 % rd + 0.023 % range
	0 ... 5.6 A_{DC}	0.037 % rd + 0.026 % range
	0 ... 56 A_{DC}	0.008 % rd + 0.01 % range

Combined values

DC resistance measurement

Current	Range	Accuracy[3]
3 A_{DC}	10 ... 100 Ω	0.1 % rd + 0.18 % range
	1 ... 10 Ω	0.1 % rd + 0.267 % range
	0.1 ... 1 Ω	0.1 % rd + 0.18 % range
30 A_{DC}	1 ... 10 Ω	0.037 % rd + 0.017 % range
	0.1 ... 1 Ω	0.04 % rd + 0.027 % range
	0.01 ... 0.1 Ω	0.033 % rd + 0.017 % range
	0.001 ... 0.01 Ω	0.037 % rd + 0.027 % range
	0.0001 ... 0.001 Ω	0.05 % rd + 0.043 % range
100 A_{DC}	3 ... 30 mΩ	0.033 % rd + 0.017 % range
	300 ... 3000 µΩ	0.037 % rd + 0.027 % range
	30 ... 300 µΩ	0.05 % rd + 0.043 % range
	3 ... 30 µΩ	0.07 % rd + 0.44 % range

Ratio measurement

Range	Accuracy[3]
1:1 ... 10	0.03 % rd + 0.043 % range
1:10 ... 100	0.027 % rd + 0.043 % range
1:100 ... 1000	0.027 % rd + 0.043 % range
1:1000 ... 10 000	0.027 % rd + 0.043 % range

Power specifications

Voltage	Nominal: 100 V ... 240 V AC Permitted: 85 V ... 264 V AC
Frequency	Nominal: 50 Hz / 60 Hz Permitted: 45 Hz ... 65 Hz
Power fuse	Automatic circuit breaker with magnetic overcurrent tripping at I > 16 A
Power consumption	Continuous: < 3.5 kW Peak: < 5.0 kW

Environmental conditions

Temperature	Operating:	-10 °C ... +55 °C / +14 °F ... +131 °F
	Storage:	-30 °C ... +70 °C / -22 °F ... +158 °F
Relative humidity	5 % ... 95 %, non-condensing	
Maximum altitude	Operating:	2000 m / 6550 ft, up to 5000 m / 16400 ft (with limited specifications [5,6])
	Storage:	12000 m / 40000 ft

Mechanical data

Dimensions (W × H × D)	580 × 386 × 229 mm / 22.9 × 15.2 × 9.0 inch (W = 464 mm / 18.3 inch without handles)	
Weight	Device with display:	20.6 kg / 45.5 lbs
	Device without display:	19.5 kg / 43 lbs

Equipment reliability

Shock	IEC / EN 60068-2-27, 15 g / 11 ms, half-sinusoid, each axis
Vibration	IEC / EN 60068-2-6, frequency range from 10 Hz to 150 Hz, continuous acceleration 2 g (20 m/s² / 65 ft/s²), 10 cycles per axis

1 Only AC permitted

2 Typical phase accuracy at 50 / 60 Hz, V > 30 % of range: 0.017°

3 Means "typical accuracy"; at typical temperatures of 23 °C ± 5 K; 98 % of all units have an accuracy which is better than specified

4 Typical phase accuracy at 50 / 60 Hz, I > 30 % of used range: 0.025°

5 From 2000 m to 5000 m altitude CAT III compliance only with half voltage

6 From 2000 m to 5000 m altitude only CAT II compliance or CAT III compliance with half voltage

7 Signals below 45 Hz with reduced values possible.

8 Reduced accuracy at mains frequency or its harmonics.

9 Recommended system requirements marked in bold

10 Graphics adapter supporting Microsoft® DirectX 9.0 or later is recommended.

11 Installed software required for the optional Microsoft Office® interface functions.

CP TD12

High-voltage output

U	THD	I_{max}	S_{max}	t_{max}
0 ... 12 kV AC	< 2%	300 mA	3600 VA	> 2 min
		100 mA	1200 VA	> 60 min

Capacitance Cp (equivalent parallel circuit)

Range	Typical accuracy [3]	Conditions
1 pF ... 3 µF	Error < 0.05 % of reading + 0.1 pF	I_x < 8 mA, U_{test} = 2 kV ... 10 kV
1 pF ... 3 µF	Error < 0.2 % of reading	I_x > 8 mA, U_{test} = 2 kV ... 10 kV

Dissipation factor DF (tan δ)

Range	Typical accuracy [3]	Conditions
0 ... 10 % (capacitive)	Error < 0.1 % of reading + 0.005 % [8]	f = 45 ... 70 Hz, I < 8 mA, U_{test} = 2 kV ... 10 kV
0 ... 100 % (0 ... 10000%)	Error < 0.5 % of reading + 0.02 %	U_{test} = 2 kV... 10 kV

Power factor PF (cos φ)

Range	Typical accuracy [3]	Conditions
0 ... 10 % (capacitive)	Error < 0.1 % of reading + 0.005 % [8]	f = 45 ... 70 Hz, I < 8 mA, U_{test} = 2 kV ... 10 kV
0 ... 100 %	Error < 0.5 % of reading + 0.02 %	U_{test} = 2 kV ... 10 kV

Primary Test Manager™

System requirements[9]

Operating system	**Windows 10™, 64-bit** **Windows 8™ and 8.1™, 64-bit** **Windows 7™ SP1**, 32-bit and **64-bit**
CPU	**Multicore system with 2 GHz or faster** Single core system with 2GHz or faster
RAM	minimum 4 GB (**8 GB**)
Hard disk	minimum 5 GB of available space
Storage device	DVD-ROM drive
Graphics adapter	Super VGA (1280×768) or higher-resolution video adapter and monitor[10]
Interface	Ethernet NIC
Installed software[11]	**Microsoft Office® 2016,** Office® 2013, Office® 2010 or Office® 2007