



# QUICK PICK GUIDE



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# POWER QUALITY ANALYZERS AND DATA LOGGERS



	POWER QUALITY ANALYZERS						DATA LOGGERS			
Functions	PQA 824	PQA 823	VEGA 78	PQA 820	PQA 819	HT 9022	XL 423	XL 424	XL 421	XL 422
AC TRMS voltage in single phase plants	•	•	•	•	•	•	•	•		
AC TRMS voltage in three phase plants	•	•	•	•	•	•		•		
AC TRMS current in single phase plants	•	•	•	•	•	•			•	•
AC TRMS current in three phase plants	•	•	•	•	•	•				•
AC TRMS voltage, current, power, energy, PF in single phase plants	•	•	•	•	•	•				
AC TRMS voltage, current, power, energy, PF in three phase plants	•	•	•	•	•	•				
Neutral to ground voltage	•	•	•	•	•	•				
DC voltage, current, power	•	•	•	•	•	•				
Neutral current	•	•	•	•	•	•				
Phase sequence indication	•	•	•	•	•	•				
Voltage unbalance (NEG%, ZERO%)	•	•	•	•	•	•				
Voltage Flicker (Pst, Plt)	•	•	•	•	•	•				
Measurements by external CTs and VTs	•	•	•	•	•	•				
Voltage/current waveforms with selectable pages	•	•	•	• (on mobile device)	• (on mobile device)	•				
Voltage/current harmonic histograms and THD% calculation	•	•	•	• (on mobile device)	• (on mobile device)	•				
Voltage/current vectorial diagram	•	•	•	• (on mobile device)	• (on mobile device)	•				
Recording analysis with selectable integration period IP	• (1s-60m)	• (1s-60m)	• (1s-60m)	• (5s-60m)	• (5s-60m)	• (1s-15m)	• (1s-60m)	• (1s-60m)	• (1s-60m)	• (1s-60m)
Simultaneous recording of all available analysis	•	•	•	•	•	•				
Max number of selectable parameters for simultaneous recording	251	251	251	383 (fixed)	44 (fixed)	60 (fixed)	1	3	1	3
Voltage/current harmonic analysis up to 49 <sup>th</sup> order	•	•	•	•	• (real time)	• (25 <sup>th</sup> )				
THD% voltage/current recording	•	•	•	•	•	•				
Complete EN50160 analysis	•	•	•	•	•	•				
Voltage anomalies (sags, swells) from 10ms @50Hz with selectable thresholds	•	•	•	•	•	•				
Inrush currents of electrical motors	•	•	•	•	•	•				
Voltage fast transients (spikes) (5µs resolution, 200kHz sampling rate)	•	•	•	•	•	•				
Recording duration indication	•	•	•	•	•	•				
Predefined and customized recording settings	•	•	•	•	•	•				
"Touch screen" LCD display	•	•	•	•	•	•				
Display resolution (pxl)	320x240	320x240	320x240			128x128				
Colour display	•	•	•	•	•	•				
Battery	Li-ION	Li-ION	Li-ION	Li-ION	Li-ION	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Power supply by rechargeable battery	•	•	•	•	•	•				
Power supply by AC/DC adapter	• (external)	• (external)	• (external)	• (built-in)	• (built-in)	•				
Auto Power OFF	•	•	•	•	•	•				
Internal memory size	15Mb	15Mb	15Mb	8Mb	8Mb	2Mb	1Mb	1Mb	1Mb	1Mb
External Compact Flash memory	•	•	•	•	•	•				
USB port for external memory stick	•	•	•	•	•	•				
Approx. memory duration (in days @ max parameters)	110	110	110	30 (PI=10min)	230 (PI=15min)	2.1	365(60s)	365(60s)	365(60s)	365(60s)
PC interface	USB	USB	USB	USB/WiFi	USB/WiFi	Bluetooth	RS232	RS232	RS232	RS232
Contextual help at display on each screen	•	•	•	• (on mobile device)	• (on mobile device)	•				
Saving of recordings and snapshots	•	•	•	• (on mobile device)	• (on mobile device)	•				
Protection password on recordings	•	•	•	•	•	•				
Dimensions (LxWxH) (mm)	235x165x75	235x165x75	235x165x75	255x200x115	255x200x115	252x88x44	120x80x43	120x80x43	120x80x43	120x80x43
Weight (batteries included)	1 Kg	1 Kg	1 Kg	0.7 Kg	0.7 Kg	0.42 Kg	0.5 Kg	0.5 Kg	0.5 Kg	0.5 Kg
Safety in compliance with IEC/EN61010-1	•	•	•	•	•	•	•	•	•	•
Quality network standard reference	EN50160	EN50160								

# INSTRUMENTS FOR TESTING AND VERIFYING PHOTOVOLTAIC INSTALLATIONS



	INSTRUMENTS FOR TESTING AND VERIFYING PHOTOVOLTAIC INSTALLATIONS					
Functions	PVCHECK	MPP300	SOLAR 200	SOLAR 300N	I-V400	SOLARI-V
Continuity of protective conductors with 200mA	•		•			
Insulation with test voltages of 50, 100, 250, 500, 1000V DC	• (250,500,1kV)		•			
String mode and field mode insulation	•					
Tripping time and current of RCDs type A, AC up to 500mA			•			
Impedance Line/Loop, also with high resolution (0.1mΩ), and Ipsc calculation			•			
Total earth resistance with no RCD tripping			•			
Phase sequence			•	•		
DC/AC TRMS voltage/current on single-phase systems	• (DC only)	•		•		•
DC/AC TRMS voltage/current on three-phase systems	• (DC only)	•		•		•
DC/AC powers on single-phase systems	• (DC only)	•		•		•
DC/AC powers on three-phase systems	• (DC only)	•		•		•
Power factor (cos φ) on single-/three-phase systems			•			
Energies on single-phase and three-phase systems			•			
Recording of mains parameters with programmable IP	• (5s-60m)			• (1s-60m)		• (5s-60m)
Maximum number of quantities contemporarily selectable	5			251		9
Harmonic analysis of voltages/currents up to the 49 <sup>th</sup> order				•		
Detection of voltage anomalies (dips, peaks) in 10ms				•		
Complete analysis according to EN50160				•		
Inrush current of electric motors				•		
Voltage fast transients (spikes) with a resolution of 5µs (200kHz)				•		
Voltage unbalance (NEG%, ZERO%) and Flicker (Pst, Plt)				•		
Display of vector diagrams and waveforms of voltages/currents				•		
Indication of recording autonomy				•		
Default and customizable recordings				•		
TFT touch-screen colour display				•		
LCD custom backlit display	•		•		•	•
Power supply by rechargeable battery and by means of external power supplier		•		•		
Use of remote unit		•		•	•	
Efficiency measurement/recording of single-string system	• (DC only)	•		•		•
Efficiency measurement/recording of multi-string system up to 3 MPPTs		•		• (with MPP300)		• (1 MPPT only)
Efficiency measurement/recording of single-phase system		•		•		
Efficiency measurement/recording of three-phase system		•		•		• (1 MPPT only)
Irradiation measurement with reference solar cell	•			•		•
Temperature measurement of modules and environment	•			•		•
Detection of I-V curve of modules and strings				•		•
Quick test mode	• (1000V,10A)				• (1000V, 10A)	• (1000V,10A)
Internal database of PV modules	•			•		•
Measurement of modules and strings data (Voc, Vmpp, Imp, Isc, Pmax, FF, Dpmax)	• (Voc, Isc)			•		•
Auto power off	•	•	•	•	•	•
Memory capacity	999 locations	2 Mbyte	500 locations	1 month @ PI=15min, 251 parameters	> 200 curves	> 200 curves 8 days @ PI=10min
Extension of internal memory with external Compact Flash				•		
USB port for connection of external memory sticks				•		
PC interface with software for Windows	• (optical/USB)		• (optical/USB)	• (USB)	• (optical/USB)	• (optical/USB)
Context-sensitive help on the display	•		•	•	•	•
Saving of recordings and instant values	•		•	•	•	•
Dimensions (LxWxH) (mm)	235x165x75	300x265x140	235x165x75	235x165x75	235x165x75	235x165x75
Weight (batteries included)	1,2 Kg	2,3 Kg	1,2 Kg	1 Kg	1,2 Kg	1,3 Kg
Safety in compliance with IEC/EN61010-1	•	•	•	•	•	•

# MULTIFUNCTION SAFETY TESTERS



Functions	ELECTRIC TESTS, MAINS ANALYSIS, ENVIRONMENTAL PARAMETERS, MACHINES SWITCHBOARDS											ELECTRIC TESTS TRMS MULTIMETERS WIRE MAPPERS		
	GSC53N	GSC57	ZG47	SIRIUS 89N	COMBI 421	MACROTEST 5035	SIRIUS 87	MACROTEST G3	COMBI G2	MACROTEST G1	MACROTEST G2	FULLTEST 3	M74	M75
Insulation with 1000VDC test voltage	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Insulation with 500VDC test voltage	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Insulation with 250VDC test voltage	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Insulation with 50, 100VDC test voltage	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Continuity of earth conductors with 200mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Continuity of earth conductors with I>10A, V<12V	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Continuity of earth conductors with 10A< I <25A, V<6V	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Continuity of earth conductors according to IEC/EN60204-1:2006	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Earth resistance with 2-wire and 3-wire methods	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Earth resistance with ring mode	•	•	•	•	•	•	•	•(**)	•	•(**)	•(**)	•	•	•
Ground resistivity with 4-wire method	•	•	• <b>w</b>	•	•	•	•	•	•	•	•	•	•	•
Global earth resistance without RDC's tripping	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Line/fault impedance Phase-Phase, Phase-Neutral, Phase-PE	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Line/fault impedance Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1mΩ)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•(*)	•	•
Prospective short circuit/fault current	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Contact voltage	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Advanced loop (breaking capacity, test I2t) on MCB and Fuse devices	•	•	•	•	•	•	•	•	•	•	•	•	•	•
RCD type A, AC Standard and Selective trip out time	•(500mA)	•(500mA)	•(500mA)	•(500mA)	•(1A)	•(500mA)	•(500mA)	•(1A)	•(1A)	•(1A)	•(1A)	•(1A)	•	•
RCD type AC Standard trip out time	•(500mA)	•(500mA)	•(500mA)	•(500mA)	•(1A)	•(500mA)	•(500mA)	•(1A)	•(1A)	•(1A)	•(1A)	•(1A)	•	•
RCD type B Standard and Selective trip out time	•	•	•	•	•	•	•	•(300mA)	•(300mA)	•	•	•(500mA)	•	•
RCD delayed type trip out time	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Test on earth leakage delay testers RCD up to 10A	•	•	•	•	•	•	•	•(***)	•(***)	•	•	•	•	•
RCD trip out current	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Phase sequence indication	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Main lines percentage voltage drop measurement	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic test (Global earth resistance, RCD trip out time, Insulation) directly on test outlet of plant)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Test with remote probe (with PR400 optional accessory)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Wire mapping test on LAN UTP/STP, RJ45 network cables	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Withstanding test with test voltage from 250V to 5100V	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Withstanding test in BURN mode	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Discharging time on DUT's plug and internal circuits	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Leakage current on machine's socket	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DC/AC TRMS voltage, AC TRMS current, Frequency, Resistance and Continuity test	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DC current (with batteryed transducer)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Leakage current (with HT96U optional accessory)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Measurement of electrical parameters (V, A, W, VAR, VA, PF)	•(3)	•(3)	•(3)	•(1)	•(1)	•	•	•(1)	•(1)	•(1)	•(1)	•	•	•
Recording of electrical parameters (V, A, W, VAR, VA, PF, Wh)	•(3)	•(3)	•(3)	•(1)	•	•	•	•	•	•	•	•	•	•
V, A harmonic analysis up to 49 <sup>th</sup> order and THD% calculation	•	•	•	•	•(1)	•	•	•(1)	•(1)	•(1)	•(1)	•	•	•
Voltage anomalies (sags, swells) with 10ms resolution	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Measurement of environmental parameters (°C, F, %RH, Lux) (with HT52/05, HT53/05 optional probes)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Recording of environmental parameters (°C, F, %RH, Lux) (with HT52/05, HT53/05 optional probes)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Help on line	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Internal memory to save the measures	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Optical / USB port for PC connection	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Built-in WiFi communication interface	•	•	•	•	•	•	•	•	•	•	•	•	•	•

(1) Single phase installations / Single input  
 (3) Three phase installations / Three inputs  
 (\*) with IMP57 optional accessory  
 (\*\*) with T2100 optional accessory  
 (\*\*\*) with RCDX10 optional accessory

# SINGLE FUNCTION SAFETY TESTERS



Functions	INSULATION CONTINUITY						RCD TEST LOOP/LINE IMPEDANCE		EARTH RESISTANCE				STEP/CONTACT VOLTAGE
	M70	M72	ISO 410	EQUITEST 5071	HT7051	HT7052	M73	SPEED 418	GEO 416	M71	T2000	T2100	HT2055
Insulation with 50, 100, 250, 500, 1000VDC test voltage			•		•	•							
Insulation with 250, 500VDC test voltage	•	•	•		•	•							
Insulation with 250, 500, 1000VDC test voltage	•		•		•	•							
Insulation with 100V to 5000VDC test voltage					•	•							
Insulation with measurement range up to 10TΩ					•	•							
Insulation with 500V to 10kV test voltage						•							
Continuity of earth conductors with 200mA	•	•	•	•									
Continuity of earth conductors with I>10A, V<12V				•									
Continuity of earth conductors according to IEC/EN60204-1:2006				•									
Earth resistance with 2-wire and 3-wire methods									•	•			•
Earth resistance with ring mode											•		
Ground resistivity with 4-wire method									•				•
Global earth resistance without RDC's tripping				•			•	•					
Line/fault impedance Phase-Phase, Phase-Neutral, Phase-PE				•				•					
Line/fault impedance Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1mΩ)				•(*)				•(*)					
Prospective short circuit/fault current				•			•	•					
Contact voltage				•			•	•					
Step/contact voltage in TN systems													•
RCD type A, AC Standard and Selective trip out time								•					
RCD type AC Standard trip out time							•						
RCD trip out current								•					
Phase sequence indication		•		•			•	•					
Test with remote probe (with PR400 optional accessory)			•					•					
DC/AC TRMS voltage, AC TRMS current(**), Frequency(**), Resistance and Continuity test	•(**)	•					•						
DC current (with battery transducer)		•					•						
Leakage current in earth systems											•		
Leakage current (with HT96U optional accessory)		•					•						
Help on line			•					•	•				
Internal memory to save the measures			•	•	•	•		•	•				•
RS-232 / USB port for PC connection			•	•	•	•		•	•				•
RS-232 interface for connection to MACROTESTG3												•	

(\*) with IMP57 optional accessory  
 (\*\*) not for M70



# DIGITAL MULTIMETERS

HT701



Functions	HT8051	HT8000	HT8100	HT401	HT701	HT321	HT322	HT326	HT327	HT32	HT37	HT39	HT710	HT712	HT210	HT21	HT12	HT603
TRMS			•	•	•				•		•			•				
LCD Resolution (points)	88888	88888	50000	6000	10000	2000	2000	4000	4000	6000	4000	4000	4000	4000	4000	4000	3400	5000
DC Voltage	•(max 10V)	•(max 10V)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
AC Voltage			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Low impedance AC Voltage				•														
AC + DC voltage			•	•														
AC Voltage with 1 wire														•				
DC Current	•	•	•(1A)	•	•(400mA)			•	•	•	•	•					•	
AC Current			•(1A)	•	•(400mA)			•	•	•	•	•					•	
AC + DC voltage			•	•														
Resistance			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Frequency			•	•	•			•	•	•	•	•	•	•	•	•	•	•
Frequency with 1 wire														•				
Capacitance				•	•			•	•	•	•	•			•	•		•
Continuity test with buzzer			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Diode test								•							•	•		•
Duty cycle (%)				•	•		•											
Temperature with type K probe					•													
Insulation (up to 1000V)																		
Generation of DC voltage (max 10V)	•	•	•	•	•													
Selectable output ramps	•	•	•															
Measurement of DC current 4-20mA	•	•																
Generation of DC current 4-20mA	•(V, I)		•(I)															
Phase sequence indication														•				
Phase sequence indication with 1 wire														•				
Phase conformity with 1 wire														•				
Overload protection	30V	30V	1000V	1000V	1000V	600V	600V	600V	600V	1000V	1000V	1000V	600V	600V	600V	600V	600V	600V
Category of measurement	CAT I 30V		CAT III 1000V CAT IV 600V	CAT IV 600V	CAT III 1000V CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT IV 600V	CAT IV 600V	CAT III 600V	CAT III 600V	CAT II 600V CAT III 300V	CAT III 300V CAT II 600V
Bargraph				•	•								•					•
Backlight			•	•	•		•	•	•				•		•	•		•
Autorange			•	•	•					•	•	•	•	•	•	•	•	•
AutoPowerOFF			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Data HOLD			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MIN/MAX			•	•	•	•(MAX)	•(MAX)			•	•	•						
AVG			•	•	•													
PEAK				•								•						
AC/DC signal automatic detection			•											•				
Relative measurement			•		•			•	•		•	•	•		•	•		•
Real-time recording												•						
Memory			•		•													
RS-232 interface												•						
Dimensions (LxWxH) (mm)	195x92x55	190x89x42	207x95x52	190x94x48	207x95x52	163x88x48	163x88x48	163x88x48	163x88x48	168x82x44	168x82x44	168x82x44	250x51x30	250x51x30	138x68x37	138x68x37	128x87x24	112x56x12
Weight	400g	350g	630g	460g	630g	280g	280g	280g	280g	400	400g	400g	150g	150g	210g	210g	210g	115g

# AMPEROMETRIC CLAMPS



	AC CLAMPS							AC/DC CLAMPS		LEAKAGE CURRENT CLAMPS		POWER/HARMONIC CLAMPS		
Functions	HT4010	HT4011	HT4012	HT4014	HT9012	HT9014	HT9019	HT9015	HT9021	HT77N	HT78	HT4020	HT4022	HT9022
Current range	600A	400A	400A	400A	600A	600A	1000A	600A	1000A	100A	3000A	400A	400A	1000A
TRMS measurement							•	•	•	•	•	•	•	•
LCD resolution (points)	2000	4000	2000	4000	2000	6000	6000	6000	6000	6000	3200	10000	10000	128x128pxl
DC Voltage	•	•	•	•	•	•	•	•	•			•	•	•
AC Voltage	•	•	•	•	•	•	•	•	•			•	•	•
DC Current								•	•					•
AC Current	•	•	•	•	•	•	•	•	•	•	•	•	•	•
AC+DC Current														•
Inrush current														•
AC voltage detector	•	•			•	•	•	•	•					•
Resistance	•	•	•	•	•	•	•	•	•			•	•	•
Continuity test	•	•	•	•	•	•	•	•	•			•	•	•
Frequency		•		•		•		•	•			•	•	•
Leakage current										•	•			
Diode test	•	•	•	•	•	•		•	•					
Duty Cycle		•						•	•					
Capacitance		•						•	•					
Temperature with type K probe		•						•	•					
Phase sequence												•	•	•
Phase conformity												•	•	•
Active power												•	•	• (AC/DC)
Active/reactive/apparent power												•	•	•
Power factor (cos φ)												•	•	•
Energy												•	•	•
Voltage/current harmonics up to 25th order													•	•
Total Harmonic Distortion (THD%)													•	•
Category of measurement	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT IV 600V CAT III 1000V	CAT III 300V	CAT II 600V CAT III 300V	CAT III 600V	CAT III 600V	CAT IV 600V CAT III 1000V
Bargraph				•		•	•	•	•	•		•	•	
Backlight	•	•		•	•	•	•	•	•	•		•	•	•
Autorange	•	•	•	•	•	•	•	•	•	•		•	•	•
Autopoweroff	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PEAK function						•	•	•	•	•		•	•	
Data HOLD function	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MAX/MIN function	•(MAX)	•(MAX)		•	•(MAX)	•	•	•	•			•	•	•
AVG (Average) function												•	•	
Relative measurement		•				•			•					
Low-pass filter										•	•			
Analoghe output											•			
Maximum diameter of cable	30mm	30mm	30mm	30mm	30mm	30mm	45mm	30mm	45mm	40mm	108mm	30mm	30mm	45mm
Dimensions (LxWxH) (mm)	197x60x40	200x66x37	205x64x39	205x64x39	220x76x50	210x75x45	252x88x44	210x75x45	252x88x44	202x75x42	341x194x52	205x75x42	205x64x39	252x88x44
Weight	180g	205g	280g	280g	400g	400g	420g	400g	420g	265g	1.9kg	280g	280g	420g

# INFRARED THERMAL CAMERAS WITH TOUCH-SCREEN DISPLAY



Functions	THT70	THT60	THT47
<b>Technical specifications</b>			
Detector type	UFPA		
Spectral range	8 ÷ 14µm		
Pixel sensor form [pxl]	384x288,25µm	160x120,25µm	
Sensitivity (NETD)	<0.06°C @ 30°C	<0.08°C @ 30°C	
Lens / FOV	22mm / 25°x 19°	7.5mm / 30° x 23°	
I FOV (@1m)	1.14mrad	3.33mrad	
Temperature range	-20°C ÷ 400°C		
Accuracy	±2°C or ±2%rdg		
Emissivity correction	0.01 ÷ 1.00, at display		
Corrections on measurement	Environmental temperature, Reflected temperature, Humidity, Distance, Offset		
Focus	Manual on lens		
Image frequency	50Hz		
Electronic zoom	x1 ÷ x20		
Image rotation	0° ÷ 360° at display		
Standard palettes	8		
Customized palettes	• (10 according with RGB model)		
Advanced analysis	• (3 points, 2 lines, 3 areas, Isotherm)		
<b>Visual image</b>			
Built-in camera [pxl]	640x480		
Target illuminator	•		
Recording IR video	On micro SD card		
Display	3.5" TFT capacitive touch screen		
Video output	PAL/NTSC		
Picture in picture (PiP)	• (Fusion, IR, Visual, Mix)		
<b>Memory</b>			
Auxiliary memory	4GB micro SD card		
Card memory size	> 1000 images		
File format	JPG standard		
Voice annotation	• (max 60s/image)		
Text annotation	• (internal virtual keyboard)		
IR video format	MPEG4		
USB 2.0	•		
<b>General features</b>			
Laser locator	• (Class 2)		
Battery type	Rechargeable Li-ION 2700mAh		
Charging system	Inside the camera or by external quick battery charger		
Battery life	4.5 hours (stand-by)		
External power supply	AC adapter 110/240VAC, 50/60Hz		
Operating temperature	-20°C ÷ 50°C		
Storage temperature	-40°C ÷ 70°C		
Humidity	10%RH ÷ 90%RH		
Encapsulation	IP65		
Shock	25g (IEC60068-2-29)		
Vibration	2g (IEC60068-2-6)		
Drop test	2m		
Dimensions (Lx W x H)	243x103x160mm		
Weight (battery included)	0.92kg		
Optional lens	11mm, 38mm	11mm, 22mm, 33mm	

# INFRARED THERMAL CAMERAS



Functions	THT49	THT44	THT42	THT41	THT40
<b>Technical specifications</b>					
Detector type	UFPA				
Spectral range	8 ÷ 14µm				
Pixel sensor form [pxl]	384x288,25µm	160x120,25µm			
Sensitivity (NETD)	<0.08°C @ 30°C	<0.1°C @ 30°C			
Lens / FOV	25mm / 22°x16°	11mm / 20.6°x15.5°			
I FOV (@1m)	1mrad	2.27mrad			
Temperature range	-20°C ÷ 250°C				0°C ÷ 250°C
Accuracy	±2°C or ±2% rdg				
Emissivity correction	0.01 ÷ 1.00, at display				
Corrections on measurement	Environmental temperature, Humidity, Distance				
Focus	Manual on lens	Auto/Manual			
Image frequency	50Hz				
Electronic zoom	x2 ÷ x4				
Standard palettes		8		6	4
<b>Visual image</b>					
Built-in camera [pxl]	2Mpxl				
Target illuminator	•				
Recording IR video	On SD card e PC by USB		On SD card		
Display	3.5" TFT LCD				
Video output	PAL/NTSC				
Picture in picture (PiP)	• (Fusion)				
<b>Memory</b>					
Built-in memory	•				
Auxiliary memory	4GB SD card				
Card memory size	> 1000 images				
File format	JPG standard				
Voice annotation	•				
IR video format	Not standard				
USB 2.0	•				
<b>General features</b>					
Laser locator	• (Class 2)				
Battery type	Rechargeable NiMH, 1.2V type AA				
Charging system	Inside the camera or by external quick battery charger				External
Battery life	2 hours (stand-by)				
External power supply	AC adapter 110/240VAC, 50/60Hz				
Operating temperature	-10°C ÷ 50°C				0°C ÷ 50°C
Storage temperature	-20°C ÷ 60°C				-10°C ÷ 60°C
Humidity	10%RH ÷ 95%RH				
Encapsulation	IP54				IP43
Shock	30g (IEC60068-2-29)				
Vibration	2g (IEC60068-2-6)				
Dimensions (Lx W x H)	252x182x112mm	240x124x111mm			
Weight (battery included)	1kg	0.73kg			

# PROFESSIONAL DIGITAL SOUND LEVEL METER



Functions	HT154	HT155	HT157
Instrument category (class)	Class 2	Class 1	Class 1
Noise measuring range	30 ÷ 130dB	25 ÷ 140dB	25 ÷ 140dB
Noise measurement resolution	0.1dB	0.1dB	0.1÷0.01dB
Frequency range	30Hz ÷ 8kHz	10Hz ÷ 20kHz	10Hz ÷ 20kHz
Dynamic range	50dB	90dB	90dB
Sound pressure level (SPL) measurement	•	•	•
Measurement of noise equivalent levels (Leq)		•	•
Frequency weighting	A/C	A/C/Z	A/C/Z
Integration over time	Fast/Slow	Fast/Slow/Impulse	Fast/Slow/Impulse
Integration with programmable period		•	•
Peak measurements (Peak-, Peak+)		•	•
MAX/MIN SPL value display	•	•	•
Statistic analysis of noise with "A" weighting		•	•
SPL analysis over 24H		•	•
Spectrum analysis with filter in octave band (1/1)			•
Spectrum analysis with filter in 1/3 octave band			19Hz÷16kHz
Supplied portable calibrator	• (Class 2)	• (Class 1)	• (Class 1)
Manual calibration with trimmer	•	•	•
Accurate calibration with internal procedure		•	•
Pre-polarized "1/2" condenser microphone	•	•	•
AC and DC analogue outputs with 3.5mm jack	•	(AC only)	(AC only)
Internal memory for data saving		• (128 records)	• (128 records)
Recalling results on the display		•	•
Mini-USB interface for PC connection		•	•
Data transfer to USB flash drive		•	•
Windows software for saved data analysis		•	•
Display	LCD 3½ digits	LCD matrix 240 x 160	LCD matrix 240 x 160
Display backlighting		•	•
Power supply	Battery 1 x 9V 6F22	Battery 4 x 1.5V AA	Battery 4 x 1.5V AA
External power supply provided		•	•
Reference standard	IEC 61672 Class 2	IEC 61672 Class 1	IEC 61672 Class 1 IEC 61620 Class 1
Dimensions (LxWxHmm)	289x80x32	285x90x39	285x90x39
Weight (batteries included)	300g	500g	500g

# OTHER METERS



Functions	HT5	HT6	HT8	HT9	HT14N	HT20	HT70	HT82
AC voltage detection	•	•	•	•	•	•	•	•
AC and DC voltage detection		•	•	•	•			
Continuity test	•	•	•	•				
LED and sound indications	•	•	•	•		•	•	
Diode test	•	•	•	•				
Phase sequence indication		•	•	•			•	•
Built-in torch	•	•	•	•		•		
Test on high/low pressure gas lamps	•			•				
LCD Display			•					
DC Current								
Analogic display								
Resistance measurement								
Safety IEC/EN61010-1	•	•	•	•	•	•	•	•
Power supply (battery)	1x9V	2x1.5V AAA	2x1.5V AAA	2x1.5V AAA	1x1.5V AA	2x1.5V AAA	2x1.5V AAA	by mains
Dimensions (L x W x H) [mm]	255x60x40	255x60x35	255x60x35	255x60x35	145x80x45	160x26x20	160x26x20	130x69x22
Weight (battery included)	170g	170g	170g	170g	25g	48g	48g	130g






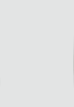

















Functions	HT-5000	HT6050	HT6055	DM40	iDM70	TESTBOARD	HT307	HT309
Cables/pipe trace	•							
LAN wire map		•	•					
Cable length measurement		•						
Internal memory		•						
Distance measurement up to 40m				•	•			
Distance measurement up to 70m					•			
Multifunctional demoboard case						•		
Light (Lux)							•	•
Light of LED sources								•
Safety IEC/EN61010-1	•							
Power supply (battery)	6x1.5V LR20 10x1.5V AA 260x140x255 660x252x99	6x1.5V AAA	1x9V	2x1.5V AAA	2x1.5V AAA	by mains	1x9V	1x9V
Dimensions (L x W x H) [mm]		150x72x35	128x67x39	110x48x28	135x53x30	474x415x214	172x55x38	130x55x38
Weight (battery included)	1.7kg / 2.5kg	215g	165g	135g	160g	7.6kg	250g	250g



Functions	HT300	HT3301	HT3310	HT3320	HT950N	HT204	HT4000	HT2234N
Temperature with type K probe	•	•		•				
Infrared temperature			•	•				
Data logger				•				
Internal memory		•		•				
Temperature with Pt100					•			
Solar radiation (W/m²)						•		
Air speed and humidity							•	
RPM with/without contact								•
Power supply (battery)	1x9V	1x9V	1x9V	Li-ION	by mains	1x9V	1x9V	x1.5V AA
Dimensions (L x W x H) [mm]	130x56x38	170x56x230	100x56x230	205x155x62	960x960x1100	172x60x38	130x56x38	172x63x36
Weight (battery included)	170g	290g	290g	410g	800g	150g	160g	190g

















# STANDARD ACCESSORIES FOR MULTIFUNCTION SAFETY TESTERS

																		
Code	Description	GSC 53N	GSC 57	SIRIUS 89N	ZG47	MACROTEST 5035	SIRIUS 87	COMBI 421	M72	M73	M74	M75	ISO 410	EQUITEST 5071	GEO 416	M71	SPEED 418	HT7051
C2033X	3-terminal cable with SHUKO plug	•	•	•	•	•	•	•						•			•	
KITGSC5	Set of 4 cables + 4 alligator clips + 2 test leads	•	•	•	•	•	•											
KITTERNE	Set of 4 cables + 4 metal earth probes	•	•	•	•	•	•								•			
C5700	Power supply cord for 10A continuity test		•											•				
HTFLEX33E	Flexible clamp 3000A AC, diameter 174mm	•(3p)		•	•(3p)													
A0050	Power supply adapter 230VAC/12VDC 50Hz	•	•	•														
TOPVIEW2006	PC Windows software + optical /USB cable C2006	•	•	•	•	•	•							•				
BORSA2051	Carrying bag	•	•	•	•	•	•							•				
UNIVERSALKIT	Set of 3 cables + 3 alligator clips + 1 test leads							•					•	•				
BORSA75N	Carrying bag							•					•					•
KIT0075	Set of 2 cables with test leads + 2 alligator clips								•	•	•	•						
C2075	2-terminal cable with SHUKO plug									•	•	•						
HT4003	Clamp 400A AC, diameter 30mm											•						
REM1	LAN remote unit #1 + patch cable											•						
REM2	LAN remote unit #2 + patch cable											•						
YAAMS0000000	FTP patch cable RJ45, 20cm											•						
BORSA75	Carrying bag								•	•	•	•						
C7000	Set of cables for 10A test, length 3m												•					
KIT0071	Set of 3 cables + 3 alligator clips + 2 metal probes															•		
CO4-UK	Set of 4 alligator clips														•			
SP-6085	Carrying bag															•		
BORSA2000N	Carrying bag for accessories														•			•
KIT14000	Set of 3 cables with alligator clips + 2 cables with test leads														•			•
C7001	Power supply cord																	•
TOPVIEW	PC software + RS-232 serial cable C232NG1																	•
User manual		•	•	•	•	•	•								•			•
User manual on CD-ROM								•	•	•	•	•	•	•		•	•	•
Quick reference guide								•	•	•	•	•	•	•		•	•	•
ISO9000 calibration certificate		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

					
Code	Description	MACROTEST G3	COMBI G2	MACROTEST G1	MACROTEST G2
C2033X	3-terminal cable with SHUKO plug	•	•		
KITGSC5	Set of 4 cables + 4 alligator clips + 2 test lead	•	•	•	•
KITTERNE	Set of 4 cables + 4 metal earth probes	•	•	•	•
TOPVIEW2006	PC Windows software + optical /USB cable C2006	•	•	•	•
BORSA2051	Carrying bag	•	•	•	
VA500	Rigid carrying case				•
PT400	Stylus	•	•	•	•
YABAT0003000	1.2V NiMH rechargeable battery type AA	•(6p)		•(6p)	•(6p)
YABAT0004000	External battery charger	•		•	•
PR400	Switch probe	•			
T2100	Clamp for earth probe resistance measurement				•
User manual on CD-ROM		•	•	•	•
Quick reference guide		•	•	•	•
ISO9000 calibration certificate		•	•	•	•



# STANDARD ACCESSORIES FOR **POWER QUALITY ANALYZERS** AND FOR **PHOTOVOLTAIC INSTALLATION TESTERS**

																	
Code	Description	SOLAR 200	SOLAR 300N	SOLAR I-V	I-V400	PV CHECK	MPP 300	PQA 823	PQA 824	VEGA 78	PQA 820	PQA 819	HT9022	XL421	XL422	XL423	XL424
C2033X	3-terminal cable with SHUKO plug	•															
HTFLEX33E	Flexible clamp 3000A AC, diameter 174mm							•(4p)	•(4p)	•(4p)							
TOPVIEW2006	PC Windows software + optical /USB cable C2006			•	•	•											
BORSA2051	Carrying bag					•					•	•					
UNIVERSALKIT	Set of 3 cables + 3 alligator clips + 1 test leads	•															
BORSA75N	Carrying bag																
PT400	Stylus		•					•	•	•							
BORSA75	Carrying bag	•															
SOLAR02	Remote unit to record irradiation and temperature		•	•													
KIT800	Kit of 5 cables + alligator clips for voltage measurement		•					•	•	•							
HT4004N	Transducer for AC/DC currents 0÷10 - 0÷100A, diameter 32mm		•	•				•	•	•							
HT4005K	Transducer for AC 0÷200A, diameter 40mm, 3 pcs		•(3p)	•													
HT304N	Sensor for irradiation measurement		•	•	•												
PT300N	Probe PT1000 for panel temperature		•	•													
A0055	AC/DC power supply		•				•	•	•	•							
YABAT0003HT1	Rechargeable 3.7V Li-Ion battery		•				•	•	•	•							
TOPVIEW2007	Widows software + USB cable C2007		•					•	•	•	•	•					
VA500	Rigid transport suitcase		•	•	•			•	•	•							
KITGSC4	Kit of 4 cables with 4mm banana plugs + 4 alligator clips			•	•	•											
KITPVMC3	Kit of 2 adapters with MC3 compatible connectors			•	•	•											
KITPVMC4	Kit of 2 adapters with MC4 compatible connectors			•	•												
KITPCMC3	Kit of 2 adapters with MC3 compatible connectors – one wire					•											
KITPCMC4	Kit of 2 adapters with MC4 compatible connectors – one wire																
M304	Mechanical inclinometer			•	•												
HT4004	Transducer for DC currents 0÷10 - 0÷100Adiameter 30 mm																
KITMPPDCW	Set of 2 cables, 2m, for DC voltage measurement						•(3p)										
KITMPPDCC	Set of 2 alligator clips for DC voltage measurement						•(3p)										
KITMPPACW	Set of 4 cables, 2m, for AC voltage measurement						•				•	•					
KITMPPACC	Set of 4 alligator clips for AC voltage measurement						•				•	•					
606-IECN	Magnetic adapter for connection to screw heads										•(4p)	•(4p)					
C2007	USB cable						•	•	•	•	•	•					
HTFLEX33L	Flexible transducer for 0÷100A, 0÷1000A AC current 174mm diameter										•(4p)	•(3p)					
KITXL423C	Set of 2 test leads with alligator clips																•
KITXL424C	Set of 4 test leads with alligator clips																•
VELCRO	Adhesive velcro 50x70mm													•	•	•	•
BORSA2000	Carrying bag													•	•	•	•
TOPVIEW2004	PC Windows software with RS-232 cable C2004													•	•	•	•
YAAMK0000HT0	Couple of test leads												•				
YAAMK0001HT0	Couple of alligator clips												•				
YABRS0000NN0	Carrying bag												•				
TOPVIEWS	PC Windows software without cable												•				
Batteries													•	•	•	•	•
User manual														•	•	•	•
User manual on CD-ROM		•	•	•	•	•	•	•	•	•	•	•	•				
Quick reference guide		•	•	•	•	•	•	•	•	•	•	•	•				
ISO9000 calibration certificate		•	•	•	•	•	•	•	•	•	•	•	•				

# OPTIONAL ACCESSORIES FOR MULTIFUNCTION METERS

Models	HT96U	HT97U	HT98U	HP30D1	HP30C2	HP30C3	HTFLEX 3003	HTFLEX 33E	HTFLEX 35	HT4003	HT4004N	HT4005K	HT4005N	IMP57	PR400	TOPVIEW 2007	TOPVIEW 2006	C2009	CN0050	SP-0400	HT52/05	HT53/05
ZG47	•	•						•(S)	•			•	•	•			•(S)		•		•	•
GSC53N	•	•						•(S)	•			•	•	•			•(S)		•		•	•
GSC57	•	•					•					•	•	•			•(S)		•		•	•
SIRIUS89N	•	•						•(S)	•			•	•	•			•(S)		•		•	•
MACROTEST5035														•			•(S)		•			•
SIRIUS87														•			•(S)		•			•
COMBI421, COMBI420	•	•								•(*) (A)		•	•	•	•		•		•		•	•
COMBI419	•	•										•	•	•	•		•		•		•	•
SPEED418														•			•		•			•
MACROTESTG3				•										•	•(COMBIG2)		•(S)		•		•	•
COMBIG2																	•(S)		•			•
MACROTESTG1																	•(S)		•			•
MACROTESTG2																	•(S)		•			•
M72, M73, M74	•(N)	•(N)	•(N)	•(N)	•(N)	•(N)				•	•(N)	•(N)	•(N)									
M75	•(N)	•(N)	•(N)	•(N)	•(N)	•(N)				•(S)	•(N)	•(N)	•(N)									
EQUITEST5071														•			•(S)		•			
HT7051																		•				
FULLTEST3	•													•		•(S)						
SOLAR200																						
SOLAR300N	•	•	•	•	•	•		•(NPV)	•(NPV)		•(S)	•(S)	•			•(S)	•				•	•
SOLAR I-V	•	•	•	•	•	•					•(S)	•(S)	•				•(S)				•	•
MPP300	•	•	•(A4)	•(A4)	•	•		•	•		•(A4)	•	•								•	•
PQA820, PQA819	•(AB)	•(AB)	•(AB)	•(AB)	•(AB)	•(AB)					•(A4)	•(AB)	•(AB)				•(S)				•	•
PQA823	•	•	•	•	•	•		•(S)	•		•	•	•				•(S)				•	•
PQA824	•	•	•	•	•	•		•(S)	•		•	•	•				•(S)				•	•
VEGA78	•	•	•	•	•	•		•(S)	•		•	•	•				•(S)				•	•
XL421, XL422																			•			
XL423, XL424																			•			

(N) = with NOCANBA optional accessory; (\*) = Transducer clamp not compliance for AC active power measurement; (A) = with ABNAICON optional accessory; (S) = provided

as a standard accessory; (AB) = with ACONBIN optional accessory; (A4) = with ACON3F4M optional accessory; (NPV) = not for Photovoltaic efficiency measurement

Models	1066-IEC%	404-IEC#	5004-IEC#	606-IECN	A0050	ABNAICON	ACON3F4M	ACONBIN	C2006	C2013	HT304N	HT903	NOCANBA	REMn (*)	REM38
	Connector for banana cables	Safety test lead	Alligator clip	Magnetic adapter	Power supply adapter	Adap. H-Male-B-Female	Adapter for STD clamp	Adapter for STD clamp	Optical/USB cable	Optical/WiFi adapter	Reference cell	Adapter for TA connection	Adapt. H-Female-B-Male	Remote unit "n" + patch cable	Set 6 remote units + 6 patch cables
GSC57, GSC53N, ZG47	•	•(S)	•(S)	•	•(S)	•			•(S)			•			
SIRIUS89N	•	•(S)	•(S)	•	•(S)	•			•(S)			•			
MACROTESTG3	•	•(S)	•(S)	•		•			•(S)	•(**)					
MACROTESTG1	•	•(S)	•(S)	•		•			•(S)						
MACROTESTG2, COMBIG2	•	•(S)	•(S)	•		•			•						
COMBI419, COMBI420, COMBI421	•	•(S)	•(S)	•		•			•						
ISO410	•	•(S)	•(S)	•		•			•						
EQUITEST5071	•	•(S)	•(S)	•		•			•(S)						
M70	•	•(S)	•(S)	•		•			•						
M71	•	•(S)	•(S)	•		•			•						
GEO416	•	•(S)	•(S)	•		•			•						
SPEED418	•	•	•	•		•			•						
M74	•	•	•(S)	•		•			•				•		
M75	•	•	•(S)	•		•			•				•	•	•
M72	•	•	•(S)	•		•			•				•	•	•
M73	•	•	•(S)	•		•			•				•	•	•
PQA823, PQA824, VEGA78	•	•	•(S)	•		•			•			•			
PQA820	•	•	•(S)	•(S)		•		•	•			•			
SOLAR300N	•	•	•(S)	•		•			•		•(S)	•			
I-V400, SOLAR I-V	•	•	•(S)	•		•			•(S)		•(S)	•			
MPP300	•	•	•(S)	•		•	•		•						
PVCHECK	•	•	•(S)	•		•			•(S)		•				
SOLAR200	•	•(S)	•(S)	•		•			•						

(S) = provided as a standard accessory; % = color (N= Black, R = Red); # = color (N= Black, R= Red, B= Blue, V= Green); (\*) n = number from 3 to 8; (\*\*) For models without built-in WiFi

OPTIONAL ACCESSORIES  
FOR **MULTIMETERS AND CLAMPS**

														
Models	T10	TK107	TK108	TK109	TK110	TK111	B80	SW39	4413-2	KIT4000A	P710EU	P711EU	17-10038-1	17-10043-1
HT21							• (S)			• (S)				
HT210	• (S)	•	•	•	•	•				• (S)				
HT321							• (S)		• (S)					
HT322	•	•	•	•	•	•	• (S)		• (S)					
HT326, HT327							• (S)		• (S)					
HT32, HT37, HT39							•	•(HT39)	•				•(11A)	
HT710, HT712											• (S)	• (S)		
HT401													•(11A)	•(440mA)
HT4010, HT4011										• (S)				
HT4012, HT4014, HT4020, HT4022							• (S)		• (S)					
HT701														•(440mA)
HT7011, HT7015, HT7016									• (S)					
HT9012, HT9014									• (S)					
HT9015, HT9021	• (S)	•	•	•	•	•			• (S)					
HT9019, HT9022									• (S)					

(S) = provided as a standard accessory

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# APP HTanalysis

THANKS TO THE POWERFUL APP HTANALYSIS IT WILL BE EASY TO FIND AN IMMEDIATE SOLUTION TO ENERGY-WASTE PROBLEM.

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**NEW**



## HTanalysis for PQA820

- Display of voltage, current, power, energy, harmonic, cosphi and frequency recordings.
- Real time display of waveforms and vectorial diagrams.
- Storage of recordings into HTCloud database for further sharing.



Examples for screen shots on tablets and smartphones created through suitable software HTanalysis.

## HTanalysis for MACROTESTG3

- Creation of thorough reports complete with photos, videos, text and voice comments.
- Storage of recordings into HTCloud database for further sharing.



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