



FEATURES	TBM3030	TM175D	TBM072	TBM076	TBM086	T98	T260D	TBM116	TBM118	TBM135	T77N
PAGE	22	22	22	23	23	23	24	24	24	25	25
MAX AC Current (A)	600	600	600	600	1000	1000	1000	1000	2000	1000	100
MAX DC Current (A)		2									
MAX AC Voltage (V)	600	600	600	600	1000	750	750	600	600	600	
MAX DC Voltage (V)	600	600	600	600	1000	1000	1000	600	600	600	
MAX Resistance (Ω)	40M	6M	60k	60k	60k	2k	2M	40M	6M	1k	
Jaw Size (mm)	26	30	30	30	51	42	60	45	45	45	40
Temperature (°C)		400		400	400						
Continuity	•	•	•	•	•	•	•	•	•	•	•
Frequency (Hz)	100k	1000k	100k	100k	100k			30k	500		
Capacitance (F)	3000μ	2500μ		2500μ	2500μ			2000μ	2000μ		
Diode	•	•	•	•	•	•	•	•	•	•	•
Display (Counts)	4000	4000	6000	6000	6000	1999	1999	4000	6000	6000	6000
Backlight		•	•	•	•	•		•	•	•	•
Auto Range		•	•	•	•	•		•	•	•	•
Data Hold	•	•	•	•	•	•	•	•	•	•	•
Min/Max Display	•	•	•	•	•	•		•	•	•	•
Amptip™		•	•	•	•						
TRUE RMS		•	•	•	•			•	•	•	•
Data Logging											
Safety Category	CAT III 300V	CAT IV 300V	CAT III 600V	CAT III 600V	CAT III 1000V	CAT III 600V	CAT II 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 300V

NOTE:

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TF3000	T223	TBM061	TBM062	TBM079	T8056	TBM162	TBM089	T2608	TBM195	TBM197	TBM157
25	26	26	26	27	27	27	28	28	28	29	29
3000	100	400	400	600	1000	800	1000	1500	2000	2000	1000
	100	400	400	600	1000	1000	1000	2000	2000	2000	
	600	600	600	600	700	600	1000	750	1000	1000	600
	600	600	600	600	1000	600	1000	1000	1000	1000	600
	10k	40M	40M	60k	40M	40M	60k	40M	40M	40M	999.9
110	12.5	30	30	35	42	50	51	57	55	55	45
				400	750		400			1000	
	•	•	•	•	•	•	•	•	•	•	•
500		100k	100k	400	100k	1000k	400k	400k	400	400	500
		3000μ	3000μ	2500μ	40μ	3000μ	2500μ	40μ	2000μ	2000μ	
		•	•	•	•	•	•	•	•	•	•
3000	4 Digits	4000	4000	6000	4000	4000	6000	4000	6000	6000	6000
•			•	•		•	•			•	•
•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•
•			•	•		•	•	•		•	•
									•	•	•
CAT IV 600V	CAT III 300V	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT IV 600V	CAT III 1000V	CAT IV 1000V	CAT IV 1000V



FEATURES	T416	T1805	T1105	T1820	T1120	T2000
PAGE	31	31	32	32	32	29
Earth Resistance Test (Ω)	50k	1k	1.2k	2k	2k	1k
Earth Resistance Test (V)	460	30	30	200	200	
Micro Processor Controlled	•					
Long Test		•	•	•	•	•
Auto Power Off (APO)	•					•
PC Connection	•					
Data Saving	•					•
On Display Help	•					
Backlight	•					•
Data Hold	•			•	•	•
Test Cables Resistance Compensation	•				•	
Ground Resisting 4 Wire	•					
Detection of Disturbances Currents	•					•
Taut Band Movement		•	•			
Battery Check	•	•	•	•	•	
Safety Category						

*Optional accessory software TOPVIEW and USB Cable (T416)

NOTE:

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ELECTRIC SAFETY MEASUREMENTS	MACROG3	T419	T60
PAGE	53	53	53
True RMS	•	•	•
Insulation with voltage 50, 100, 250, 500, 1000V DC	•	•	•
Continuity of protective conductors with 200mA / 10A	•	•	•
Tripping time and current of RCDs type B, A, AC Standard, Selective and Delayed up to 1A	200mA	Only A, AC general and selective	200mA
Tripping time and current of earth leakage relaytype B, A, AC Standard, Selective and Delayed up to 10A	•***		•***
Non-trip earth resistance	•	•	•
Earth resistance with rods	•		•
Earth resistance with stakeless testing method	•**		•**
Ground resistivity by 4-wire method	•		•
Loop/line impedance, Phase-Phase, Phase-Neutral, Phase-PE	•	•	•
Loop/Line impedance Phase-Phase, Phase-Neutral, Phase-PE with high resolution (0.1 m Ω)	•*	•*	•*
Measurement of percentage voltage drop on the line	•		•
Contact Voltage	•	•	•
Phase Sequence	•	•	•
Leakage current with optional clamp meter	•	•	•
POWER ANALYSIS			
Measurement of Voltage, Current, Active, Reactive, Apparent Power	(1)		•
Measurement of Cosphi, Power Factor	(1)		•
Voltage and current harmonics up to the 49th with calculation of THD%	25th		•
ADDITIONAL CHARACTERISTICS			
Safety category			
Automatic test (Ra, RCD, Insulation)		•	•
Measurement of environmental parameters (°C, °CF, %RH, Lux)	•*		*+
Test with remote lead PR400	•	•	•
Help on screen display	•	•	•
Internal memory for measured data saving	•	•	•
Optical/USB serial port for PC connection	•	•	•
Integrated WiFi connection and compatibility with HTANALYSIS App	•		•
Size (L x W x H) mm	222 x 162 x 57	222 x 162 x 57	222 x 162 x 57
Weight (batteries included) Kg	1.2kg	1.2kg	1.2kg
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
IP degree	50	50	50

* Optional accessory **TIMP57**

** Optional accessory clamp **T2100**

*** Optional accessory **RCDX10**

(1) Single-phase or balanced three-phase system

+ Optional accessory **HT52/05**

NOTE:

Page numbers in the above table refer to pages in the Catalogue: Tools and Instruments 2018. Please consult our website (www.hellermannnyton.co.za) for the full catalogue.



MAIN MEASUREMENTS	T824	T78	TPQA820
PAGE	55	55	55
AC/DC voltage in single-phase/three-phase systems	•	•	•
AC/DC current in single-phase/three-phase systems	•	•	•
Cospfi, Power Factor	•	•	•
Voltage unbalance (NEG%, ZERO%)	•	•	•
Active, reactive, apparent power/energy and DC power	•	•	•
Voltage and current harmonics up to the 49th with THD%	•	•	•
Voltage anomalies (dips, peaks) with 10ms resolution (@ 50Hz)	•	•	•
Voltage fast transients (spikes) with 5µs resolution	•		
Electric motor starting current (INRUSH)	•		
Voltage flickers (Pst, Plt)	•		
Phase sequence	•	•	•
Neutral-Ground Voltage	•	•	
Neutral current	•	•	•
MEMORY AND RECORDING			
Max number of simultaneously selectable parameters	251	251	383
Recording with selectable integration period	1s-60n	1s-60n	5s-60s
Indicative memory duration (in days @ Pl=10min @ max number of parameters)	90 days	90 days	30 days
Indication of recording duration	•	•	•*
Internal memory capacity	50MB	15MB	8MB
External compact flash card	•	•	
Default and custom recording	•	•	
Saving instant sampled value	•	•	•*
REAL-TIME DISPLAY			
Summary table of main electric parameters	•	•	•*
Voltage/current waveforms	•	•	•*
Tables or histograms of Harmonics and THD%	•	•	•*
Voltage/current vector diagram	•	•	•*
ADDITIONAL CHARACTERISTICS			
Safety category	CAT IV Δ 600V	CAT IV Δ 600V	CAT IV Δ 300V
Measurement with use of external CT and VT (with optional accessory HT903)	•	•	•**
Touchscreen colour display	•	•	
Power supply and rechargeable battery recharging	•	•	Auto power supplied
Auto Power Off (APO)	•	•	•
USB port for data download onto Pen Drive	•	•	Only PC
Provided PC interface with software for Windows	USB	USB	WiFi/USB
Context help active on each screen	•	•	
Protection password on recording	•	•	
Size (L x W x H) mm	235 x 165 x 75	235 x 165 x 75	255 x 200 x 115
Weight (batteries included) Kg	1	1	0.7
Reference standard for power quality	EN50160	EN50160	
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1

*Through App HTANALYSIS
**Adapter ACONBIN necessary

NOTE:
Page numbers in the above table refer to pages in the Catalogue: Tools and Instruments 2018.
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ACCESSORY	T824	T78	TPQA820
PAGE	55	55	55
TOPVIEW2007 PC Windows software + USB cable	•	•	•
BORSA2051 Soft carrying bag for device/accessories	○	○	
A0055 External power supply AC/DC	•	•	
KITMPPACC Set of 4 alligator clips for AC voltage			•
KITMPPACW Set of 4 cables for AC voltage 2m			•
TKIT800 Set of 5 cables, black, Red, green, Blue and brown with alligator clips	•	•	
606-IECN Connector with magnetic terminal	○	○	•
ACONBIN Adapter for connection standard clamps			○
HTFLEX33E Flex 3000A AC clamp, max diameter of cable 174mm	•	•	
TFLEX33L Flex 1000A AC clamp, diameter 174mm			•
HTFLEX35 Flex 3000A AC clamp, max diameter of cable 274mm	○	○	○**
HT96U Standard AC clamp 1-100-1000A/1V, diameter 54mm	○	○	○*
HP30D1 Standard DC clamp 1000A/1V, diameter 83mm	○	○	○*
HT4005K Standard AC 200A/1V clamp, diameter 40mm	○	○	○*
HT4005N Transducer AC 5A-100A/1V	○	○	○*

○ Optional
* Adapter ACONBIN necessary
** Max measurement 1000A AC



MAINTENANCE AND EFFICIENCY OF THE PHOTOVOLTAIC SYSTEM	SOLARIV	IV500	SOLAR300N	PVCHECK
PAGE	61	61	62	62
Continuity of protective conductors with 200mA				•
Insulation measurement with test voltage 250, 500, 1000V DC with no service interruption				•
I-V Curve measurement on single module or string	•			
VOC and ISC measurement on single module or string	•			•
Single-Phase and Three-Phase efficiency measurement	1MPPT		1MPPT	
DC side efficiency of the photovoltaic field			•	•
Use of remote unit SOLAR02 with USB \ RF connection	RF	USB		RF
Measurement of irradiation with reference cell	•	•	•	•
Temperature measurement of cell and environment	•	•	•	•
POWER QUALITY ANALYSIS				
AC/DC voltage in single-phase/three-phase systems		•		DC
AC/DC current in single-phase/three-phase systems			•	DC
Cosphi, Power Factor			•	
Voltage unbalance (NEG%, ZERO%)			•	
Power/Energy: Active P, Reactive Q, Apparent S	Only active P		•	Only active P
Voltage and current harmonics up to the 49th with THD%			•	
Voltage anomalies (dips, peaks) with 10ms resolution (@ 50Hz)			•	
Voltage fast transients (spikes) with 5µs resolution (200kHz)			•	
Electric motor starting current (INRUSH)			•	
Voltage flickers (Pst, Plt)			•	
Full analysis according to EN50160			•	
Phase sequence			•	
Neutral-Ground Voltage			•	
Neutral current			•	
MEMORY AND RECORDING				
Internal memory capacity	249 curves I-V 8 days@ PI=10 min	249 curves I-V	15MB 90 days@ PI=10 min	999 Locations
Recording with selectable integration period	5s-60m		5s-60m	5s-60m
Indicative memory duration (in days @ PI=10min @ max number of parameters)	8		90	
Indication of recording duration for power quality analysis				•
REAL-TIME DISPLAY				
Summary table of main electric parameters	•	•	•	•
Voltage/current waveforms			•	
Tables or histograms of Harmonics and THD%			•	
Voltage/current vector diagram			•	

NOTE:

Page numbers in the above table refer to pages in the Catalogue: Tools and Instruments 2018. Please consult our website (www.hellermannnyton.co.za) for the full catalogue.



ADDITIONAL CHARACTERISTICS	SOLARIV	IV500	SOLAR300N	PVCHECK
Measuring range of I-V Curve / IVCK	1500V/ 10A 1000V/ 15A	1500V/ 10A 1000V/ 15A		1000V/15A only VOC and ISC
Measuring range for efficiency measurement	1000V DC/ 265V AC		1000V AC-DC 3000A	
Safety category	CAT III 300	CAT III 300	CAT IV 600	CAT III 300
Touchscreen colour display			•	
LCD display with backlight	•	•		•
USB port for data download onto Pen Drive			•	
PC interface with software for Windows	•	•	•	•
Integrated WiFi interface	•	•		
Custom management of internal PV module database	•	•		•
Power supply with rechargeable battery and battery charger			•	
Auto Power Off (APO)	•	•	•	•
Indication of recording duration for efficiency measurement	•		•	
Reference standard for Power Quality Analysis			EN50160	
On display help	•	•	•	•
Size (L x W x H) mm	235 x 165 x 75	235 x 165 x 75	235 x 165 x 75	235 x 165 x 75
Weight (batteries included) kg	1.2	1.2	1	1.2
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1

Solutions for Performance and Troubleshooting

Troubleshooting

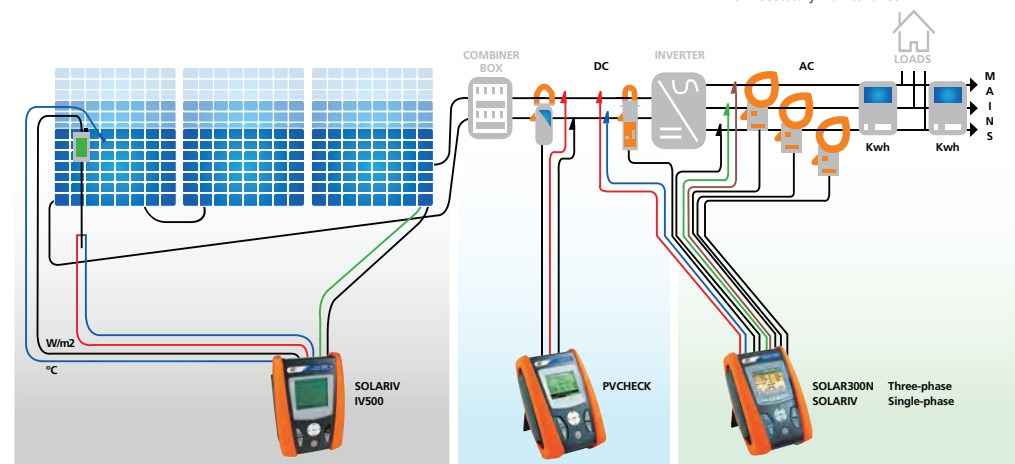
If system efficiency is lower than expected, it is necessary to detect the defective modules so that they can be replaced. This can be achieved by measuring the I-V curve with devices SOLARIV and IV500.

Commissioning Tests

When operating a photovoltaic system, it is necessary to certify its safety according to IEC62446. The suitable device to carry out these verifications is PVCHECK.

Performance

System performance monitoring it is possible to detect production loss quickly and efficiently. SOLAR300N and SOLARIV can record the energy production of a system and the inverter performance check over time thus preventing unnecessary maintenance.





ACCESSORY	SOLARIV	IV500	SOLAR300N	PVCHECK
PAGE	61	61	62	62
TOPVIEW2006 TOPVIEW2007 PC Windows software + USB/ optical cable	TOPVIEW2006		TOPVIEW2007	TOPVIEW2006
PT300N PT1000 probe for PV module tempera- ture	•		•	○
SOLAR02 Remote unit for Irradiation and Temperature	•	○	•	○
KITGSC4 Set of 4 cables + 4 alligator clips	•	•		•
KITPVMC3 - KITPCMC3 Set of 2 adapters with connectors MC3	KITPVMC3	KITPVMC3		KITPCMC3
KITPVMC4 - KITPCMC4 Set of 2 adapters with connectors MC4	KITPVMC4	KITPVMC4		KITPVMC4
TKIT800 Set of 5 cables + 5 alligator clips			•	
A0055 External power supply AC/ DC battery charger 230V 50/60Hz			•	
PT400 Touch-screen pen			•	
HT304N Sensor for irradiation measurement	•	•	•	○
M304 Mechanical inclinometer	•	•		○
HT4004N Standard 10-100A DC clamp, diameter 32mm	•		•	

○ Optional

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ACCESSORY	SOLARIV	IV500	SOLAR300N	PVCHECK
PAGE	61	61	62	62
HT4005K Standard 200A AC clamp, diameter 40mm	•		•	
C2007 USB cable			•	
BORSA2051 Soft carrying bag				•
VA500 Rigid carrying case	•	•	•	
HT97U Standard clamp 10-100-1000A AC, diameter 54mm	○		○	
HTFLEX33E Flex 3000A AC clamp, diameter 174mm			○	
HP30D1 Standard 1000A DC clamp, diameter 83mm	○		○	
HP30C3 Standard 3000A AC clamp, diameter 70mm			○	
HP30C2 Standard 200-2000A AC clamp, diameter 70mm			○	
606IECN Magnetic connectors for voltage measurement	○		○	○

○ Optional



FEATURE	T3004	T8000	T500K	T502KJ	TIR9PEN	T306	T151	T685
PAGE	79	80	80	81	81	81	82	82
Temperature Range	-27°C to 60°C	-100°C to 1300°C	-200°C to 1372°C	-200°C to 1370°C	-33°C to 500°C	-50°C to 700°C	-30°C to 650°C	-50°C to 1000°C
Probe/Sensor Type	Semi-conductor	K	K	K, J	IR	IR	IR	IR
Single/Dual Input		Single	Single	Dual				
Data Hold	•	•	•	•	•	•	•	•
Min/Max Display	•	•	Max	•	•	•	•	•
Resolution	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C
Backlight			•	•	•	•	•	•
High/Low Setting				•		•	•	
Auto Power Off (APO)	•	•	•	•	•	•	•	•
Temperature Accuracy (°C)	±0.8°C	0.1°C	±0.1% to 2°C	±0.05% to ±0.7°C	±2°C or ±2%	±1.5°C to ±3°C	±1.5°C to ±2°C	±2°C to ±3°C or ±2%

Temperature Probes (Type K) - Selection Guide

Range °C	-50	-20	0	100	200	300	900	1000	1100	1200	1300	1400
TP01												
TP02A												
TP03												
TP04												
TP04L												

* Refer to Instruments for full technical data



TP01 Bead probe



TP02A General purpose liquid probe



TP04 Surface contact probe



TP04L Surface contact probe

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FEATURE	THT45	TG301	THT60	TPK160
PAGE	84	84	85	85
CHARACTERISTICS OF IR IMAGE				
IR Sensor Resolution (Pixels)	80 x 80	128 x 128 Interpolation	160 x 120	160 x 120
Temperature Range	-20°C to 350°C	-30°C to 650°C	-20°C to 400°C	-20°C to 350°C
Thermal Image Sensitivity	< 0.1°C at 30°C	150mK (0.1°C)	≤ 0.8°C at 30°C	0.8°C at 30°C
Spectrum Range	8 to 14µm	8 to 14µm	8 to 14µm	
Type of IR Sensor	UFPA	IR-EX™ (Integrated IR Array with CMOS Sensor)	UFPA	
Frequency	50Hz	8Hz	50Hz	
CHARACTERISTICS OF IR AND INTEGRATED OPTICS				
Field of view	17° x 17°	33° x 33°	29.8° x 22.6°	24° x 32°
Focal length of standard lens	9mm		7.5mm	Fixed
Interchangeable Optics			•	
FUNCTIONS				
Laser	•	Circular	•	
Colour Palettes	4 Standard	3 Standard	8 Standard, 10 Custom Colours	6 Standard
Saved Image Format	JPEG, MPEG4	Bitmap	JPEG, MPEG4	JPG
Touch Screen			•	•
IP Rating	IP50	IP50	IP65	IP54
Shock/Vibrations	25G/2G	50G/2.5G	25G/2G	25G/2G
Hot/Cold Spot	Auto			Auto

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