

# PPA500 Series PPA1500 Series

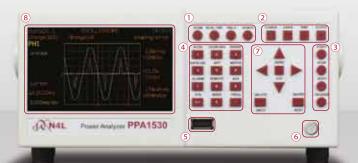


## **High Accuracy - Low Cost**

Range of PC software options	Remote control, monitoring and recording of real time data, tables and graphs
Versatile interfaces	RS232, USB and optional LAN, GPIB
Built in high precision current shunt	20Arms 300Apk or 30Arms 1000Apk direct plus a wide range of external sensors
Leading phase accuracy	0.005 degrees plus 0.01 degrees per kHz
Fast sample rate and No-Gap	1M samples/s - High accuracy in noisy applications
Wide frequency range	DC, 10mHz to 1MHz (DC, 10mHz to 500kHz PPA500)
Oscilloscope/Graphical Display	PPA1500 features Oscilloscope and graphical datalog display
Leading wideband accuracy	Basic 0.05% with class leading high frequency performance

## PPA5/15xx Precision Power Analyzer



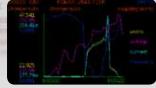


## 1) SCREEN DISPLAY OPTIONS

PPA5xx: Zoom, Real time and Table

#### FRONT VIEW

PPA15xx: Zoom, Real Time, Table, Graph



PPA1500 Graphical Datalog View

#### **2 MEASUREMENT FUNCTION SELECTION BUTTONS**

PPA5xx: POWER ANALYZER, TRUE RMS VOLTMETER, POWER INTEGRATOR, HARMONIC ANALYZER PPA15xx: POWER ANALYZER, HARMONIC ANALYZER, TRUE RMS VOLTMETER, OSCILLOSCOPE Note: The PPA15xx includes the following modes via sub menu: POWER INTEGRATOR, PHASE METER, IMPEDANCE METER

## ③ START, STOP, ZERO AND TRIGGER

Trigger button refreshes measurement, Zero resets datalog or allows an offset trim Start and Stop buttons provide manual control of a measurement period

#### **4) MEASUREMENT SETTINGS BUTTONS**

Acquisition settings - Sets wiring configuration, Smoothing and data logging, Set coupling to AC, DC or AC+DC, Range - Internal or external attenuator, autoranging settings, scale factors, Application mode - Ballast, inrush current and standby power

#### **(5) FRONT USB PORT**

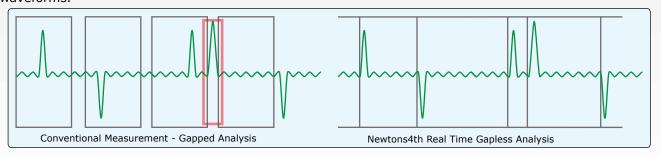
USB memory port allows data and colour screen prints to be saved directly to a USB pen drive

- 6 POWER BUTTON 7 MENU SELECTION AND CURSOR CONTROL
- **8 DISPLAY SCREEN**

White LED backlit colour TFT display with high contrast and wide viewing angle

### Real Time No Gap Analysis

The PPA5xx/PPA15xx series Power Analyzers use a real time no gap analysis technique unique to Newtons4th that enables real time measurements to be taken with no gap in incoming data from the ADC. This ensures that no events are missed, which is particularly important for the correct measurement of asynchronous waveforms.



#### Intuitive User Interface Simplifies Setup

The PPA5xx/PPA15xx user interface has been developed with ease of use in mind. A simple button layout eases setup of the instrument allowing the engineer to commence measurements quickly with no fuss.





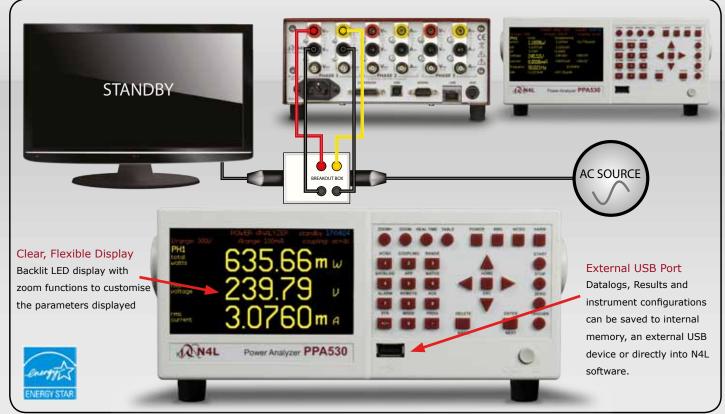


PPA5xx PPA15xx

## **Example Applications**

## Example Application: Standby Power Measurement IEC62301/EN50564

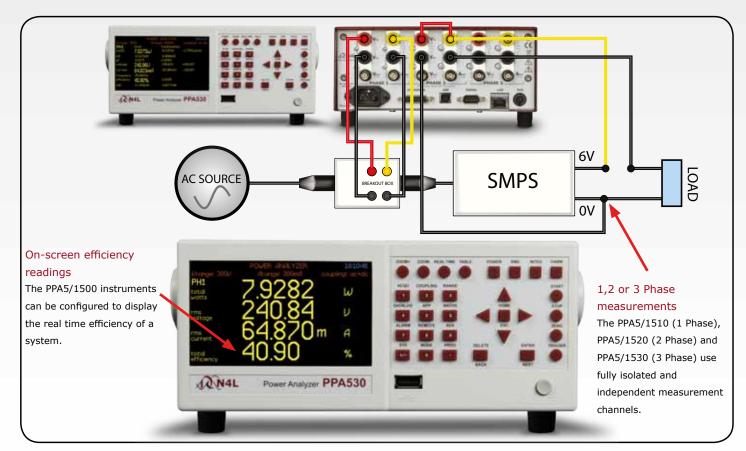
The PPA5xx and PPA15xx are the perfect instruments for tests such as EN50564 Standby Power Testing. PC software that provides simple testing and reporting for EN50564 is available from the N4L website.



Meets or exceeds the requirements and methodology of U.S. EPA (Energy Star), U.S.DOE, California Energy Commission (CEC), among others.

#### Example Application: AC-DC Power Supply Efficiency Testing using a PPA500/PPA1500

The PPA5/1520 or PPA5/1530 can be used in 2 Phase 2 Wattmeter configuration for efficiency testing of power supplies, ballasts and many other devices.



## **ACCESSORIES**

High Performance	High Performance Voltage Attenuating Probes						
Model	Voltage Range	Frequency Range	Details				
TT-HV250	2500Vpk	300MHz	High Voltage Probe (Passive) 2.5kVpk 100:1				
TTV-HVP	15000Vpk	50MHz	High Voltage Probe (Passive) 15kVpk 1000:1				
ATT10	30Vpk	30MHz	10:1 Voltage Attenuator Box (For use in conjunction with HV Probes when output voltage of probe is >3Vpk, BNC Input/BNC Output)				
ATT20	60Vpk	30MHz	20:1 Voltage Attenuator Box (For use in conjunction with HV Probes when output voltage of probe is >3Vpk, BNC Input/BNC Output)				
ULCP	3000Vpk	2MHz	1000:1 Ultra Low Capacitance Probe (Active), For use in applications such as Ballast Testing (<1pF Capacitance)				



TT-HV250 2.5kVpk Probes



TT-HVP 15kVpk Probes





ULCP

High Performance	External Current M	leasurment Optic	ons				
Model Number	Measuring Range	Frequency Range	Basic Accuracy	Phase Accuracy	Details		
HF003	3Arms - 30Apk	DC - 2MHz	470mΩ (±0.1%)	0.0001° / kHz	3Arms External Current Shunt, BNC Output (Use with PPA External Input)		
HF006	6Arms - 60Apk	DC - 2MHz	100mΩ (±0.1%)	0.001° / kHz	6Arms External Current Shunt, BNC Output (Use with PPA External Input)		
HF020	20Arms - 200Apk	DC - 2MHz	10mΩ (±0.1%)	0.01° / kHz	20Arms External Current Shunt, BNC Output (Use with PPA External Input)		
HF100	100Arms - 1000Apk	DC - 2MHz	1mΩ (±0.1%)	0.05° / kHz	100Arms External Current Shunt, BNC Output (Use with PPA External Input)		
HF200	200Arms - 2000Apk	DC - 2MHz	0.5mΩ (±0.1%)	0.1° / kHz	200Arms External Current Shunt, BNC Output (Use with PPA External Input)		
HF500	500Arms -	DC - 2MHz	0.2mΩ (±0.1%)	0.1° / kHz	500Arms External Current Shunt, BNC Output (Use with PPA External Input)		









External	Shunt	HF-003

External Shunt HF-100

External Shunt HF-200

External Shunt HF-500

Probe/Current Cla	Probe/Current Clamp Transformer: AC					
Model Number	Measuring range	Frequency range	Accuracy	Details	Clamp diameter	Category
M3 UB 50A-1V	100mA ∼ 50A	40Hz ∼ 5kHz	1%	100mA to 50A AC Current Clamp	15mm×17mm	600V CATIII
M3 U 100A-1V	1A ~ 100A	40Hz ∼ 5kHz	1%	1A to 100A AC Current Clamp	15mm×17mm	600V CATIII
S UE 200A-1V	1A ~ 200A	40Hz ∼ 5kHz	1%	1 A to 200A AC Current Clamp	50mm ø	600V CATIII
S UE 250 500 1000-1V	1A ~ 250A/500A/1000A	40Hz ∼ 5kHz	1%(250A) 0.5%(500+1000A)	1 A to 250/500/1000A AC Current Clamp	50mm ø	600V CATIII
US UE 1000A-1V	1A ~ 1000A	40Hz ∼ 5kHz	1%	1A to 1000A AC Current Clamp	43mm ø	600V CATIII
SM UE 1000A-1V	0.5A~1000A(1%>100A)	15Hz ∼ 15kHz	1%	0.5A to 1000A AC Current Clamp	54mm ø	600V CATIII
SM UB 1000A-1V	$0.5A \sim 1000A(0.5\% > 10A)$	15Hz ∼ 15kHz	0.5%	0.5A to 1000A AC Current Clamp	54mm ø	600V CATIII
P32 UE 1000A-1V	5A ~ 1000A	40Hz ∼ 5kHz	1%	5 A to 1000A AC Current Clamp	83mm ø (125mm×47mm or 100m m×58mm)	600V CATIII
P32 UE 3000A-1V	5A ~ 3000A	40Hz ∼ 5kHz	1%	5 A to 3000A AC Current Clamp	83mm ø	600V CATIII









Current Clamp M3-UB 50A-1V

Current Clamp S-UE 200A-1V

Current Clamp SM-UB 1000A-1V

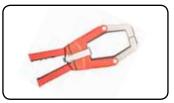
Current Clamp P32-UE 1000A-1V

Probe / Current Clamp (Hall effect): AC + DC						
Model number	Measuring range	Frequency range	Accuracy	Details	Clamp diameter	Category
SC 3C 100A-1V	$1A \sim 100A$	DC ∼ 5kHz	2%	1A to 100A AC+DC Current Clamp	50mm ø	600V CATIII
SC 3C 1000A-1V	1A ~ 1000A	DC ~ 2kHz	1%	1A to 1000A AC+DC Current Clamp	59mm ø	600V CATIII
P20 3C 2000A-2V	40A ~ 1000/2000A	DC ~ 2kHz	1%	40A to 2000A AC+DC Current Clamp	83mm ø	600V CATIII
P40 3C 4000A-2V	40A ~ 2000/4000A	DC ~ 2kHz	1.5%	40A to 4000A AC+DC Current Clamp	83mm ø	600V CATIII
P50 3C 5000A-2V	50A ~ 1000/5000A	DC ~ 2kHz	1.5%	50A to 5000A AC+DC Current Clamp	83mm ø	600V CATIII









Current Clamp SC 3C 100A-1V

Current Clamp SC 3C 1000A-1V

Current Clamp P20 3C 2000A-2V

Current Clamp P50 3C 5000A-2V

Rogowski Current Tra	Rogowski Current Transducer: AC / Zero Flux Current Transducer: AC+DC					
Model number	Measuring range	Frequency range	Accuracy	Details	Coil/Through Hole Circumference	Category
WR5000 Rogowski	1A ~ 5000A	$1 \text{Hz} \sim 1 \text{MHz}$	0.05%	1A to 5000A AC Rogowski Coil	600mm	600V CATIII
WR10000 Rogowski	1A~10000A	1Hz ∼ 1MHz	0.05%	1A to 5000A AC Rogowski Coil	600mm	600V CATIII
Danisense Zero Flux	0A ∼ 200A	DC ∼ 250kHz	0.01%	200A Zero Flux Current Transducer	27.6mm	600V CATIII
Current Transducer						
Danisense Zero Flux	0A ~ 600A	DC ~ 250kHz	0.01%	600A Zero Flux Current Transducer	27.6mm	600V CATIII
Current Transducer	0/1 000/1	DC 250KHZ	0.0170	000/(Zero riax current transaucer	27.011111	OUGV CATTI
LEM IT-60S Zero Flux	0A ~ 60A DC/pk (42Arms)	DC ~ 800kHz	0.01%	60A Zero Flux Current Transducer	26mm	600V CATIII
Current Transducer	UA O OUA DC/pk (42AITIIS)	DC 19 800KHZ	0.0170	OUA Zero Flux Current Transducer	20111111	000V CATIII
LEM IT-200S Zero Flux	0A ~ 200A DC/pk	DC FOOLI	0.010/	200A Zero Flux Current Transducer	26	600V CATIII
Current Transducer	(141Arms)	DC ∼ 500kHz	0.01%	200A Zero Flux Current Transducer	26mm	600V CATIII
LEM IT-700S Zero Flux	0A ~ 700A DC/pk	DC ~ 100kHz	0.01%	700A Zero Flux Current Transducer	30mm	COOV CATILI
Current Transducer	(495Arms)	DC ~ 100kHz	0.01%	700A Zero Flux Current Transducer	SUITITI	600V CATIII







WR5000 Rogowski Coil

Danisense DS600

LEM IT700-S

## PPA500 SERIES MODELS

Phases	Model	Specification
1 Ph	PPA510	DC,
2 Ph	PPA520	10mHz ~ 500kHz Normal: 100mApk ~ 300Apk
3 Ph	PPA530	x10: 10mApk ∼ 30Apk

Phases	Model	Specification
1 Ph	PPA510-HC	DC,
2 Ph	PPA520-HC	10mHz ~ 500kHz Normal: 300mApk ~ 1000Apk
3 Ph	PPA530-HC	x10: 30mApk ~ 100Apk

## PPA1500 SERIES MODELS

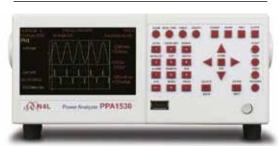
Phases	Model	Specification
1 Ph	PPA1510	DC,
2 Ph	PPA1520	10mHz ~ 1MHz Normal: 100mApk ~ 300Apk
3 Ph	PPA1530	x10: 10mApk ~ 30Apk

Phases	Model	Specification
1 Ph	PPA1510-HC	DC,
2 Ph	PPA1520-HC	$10$ mHz $\sim$ $1$ MHz Normal: $300$ mApk $\sim$ $1000$ Apk
3 Ph	PPA1530-HC	x10: 30mApk ~ 100Apk

## PPA500



## PPA1500



## PPA5/1530



## Calibration and ISO17025 Certification

## UKAS PPA500 PPA1500

Newtons4th are an accredited UKAS Calibration laboratory, all PPA500 and PPA1500 Power Analyzers are supplied with an ISO17025 UKAS Calibration Certificate as standard. Calibration of N4L Power Analyzers is an integral and important part of our service to our clients, we offer quick turnaround times at a competitive price. Re-Calibration is also available at our international offices and various distributors throughout the world\*.



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#### Schedule of Accreditation PPA500 PPA1500

N4L's schedule of accreditation to ISO17025 is wide ranging and an overview of the schedule is detailed below, for more specific information please see the UKAS website to view the full accreditation schedule.

	ISO17025 UKAS Accreditation Schedule				
	Signal Amplitude	Frequency Range			
Voltage Sine Amplitude	1V to 1008V	16Hz to 850Hz			
Voltage Harmonic Amplitude	0V to 302V	16Hz to 6kHz			
Current Sinewave Amplitude	100mA to 48A	16Hz to 850Hz			
Current Harmonic Amplitude	0A to 15A	16Hz to 6kHz			
Current to Voltage Phase Angle	-180° to +180°	16Hz to 850Hz			
Apparent Power (VA Product)	100mVa to 48.4kVA	16Hz to 850Hz			
AC Power	0W to 48.4kW	16Hz to 850Hz			
Current Harmonic Amplitude to IEC61000-4-7	0A to 6A	16Hz to 6kHz			
	Pinst(Sinusoidal Modulation)				
	Pinst(Rectangular Modulation)				
	Pst				
Flicker to IEC61000-4-15	Frequency Changes	As per IEC61000			
FIICKEI TO IECO 1000-4-13	Distorted Voltage with Multiple Zero Crossings				
	Harmonics with Sidebands				
	Phase Jumps				
	Rectangular Changes with Duty Cycle				





Due to the specialist nature of Power Measurement Instrumentation Calibration, N4L utilise both commercially available calibration equipment (such as the Fluke 6105A for UKAS Certification) along with N4L bespoke designed signal generation equipment in order to calibrate our instruments over the full frequency range (up to 2MHz). Calibration over the full frequency range is uncommon given that such signal generation equipment is not commercially available. When supplied with an N4L analyzer, all customers will receive a calibration certificate covering the complete frequency range.



<sup>\*</sup>UKAS Calibration is available from N4L UK HQ only, details of calibration performed at other locations is subject to local accreditation, please contact your local office for more details.

## **SPECIFICATION**

Crest Factor 20(Voltage and Current) Sample Rate 1Ms/s on all channels, No-Gap 1EC62301/EN50564 Standby Power 1EC62301/EN50564 Standby Power Application Modes 1EC62301/EN50564 Standby Power Application Modes Ballast, Inrush, Power Transformer, Standby Power Ballast, Inrush, Power Transformer, Standby Power CMRR - Common Mode Rejection Ratio  250V © 50Hz - ≥ 1mA (150dB) 100V © 100kHz - ≥ 3mA (130dB)  Measurement Parameters  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk Frequency (Hz), Phase (deg), Fundamentals, Impedance Harmonics, ThD, TIF, THF, TBD, TDD Integrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog Wow No-Gap analysis, Minimum window 10ms Memory 16,000 records 16,000 records  Communication Ports  82322 Baud rate up to 38.4kbps,RTS/CTS flow control  LAN (Option L) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing GPIB (Option G-E) IEEE488.2 Compatible - via external communications box USB 2.0 and 1.1 compatible  Extension Fitted as Standard Accessories  Leads Power, R5232, USB Power, R5232, USB  Connection Cables  Connection Cables  Connection Cips 4 mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  Connection Cips User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Dienesions 92H×215W3312D mm excluding feet					PPA500		PPA1500								
Column	Frequenc														
Common   C															
Colored   1996	Voltage I	Input	XIO	DC, IUIIII	2.01	UUKIIZ		XIU		DC, IOIIIIIZ · TOOKIIZ					
According	voitage 1		Normal	1	/pk ∼	2500Vpk	(1000Vrms) in 8 ranges	Normal		1Vpk ~ 2500Vpk(1000Vrms) in 8 ranges					
Course   C	Internal	Range	x10					x10		100mVpk ~ 300Vpk(1000Vrms) in 8 ranges					
Margin   1 m/sile - 2004   Margin   1 m/sile - 2004   Margin   M	internar	Accuracy								· · · · · · · · · · · · · · · · · · ·					
Corner   Enote		Pango	-						/nk -						
Common   Contract Shart	External							11117							
Page	Current 1		0.03	76 Kug∓0.1	70 KI	ig+(0.003	70×K112 Kug)+3uV		0.0.	33% Rug+0.1% Riig+(0.003%×Rii2 Rug)+3uV					
Page	current.	Input					100mApk ~ 300Apk(20Arms) in		l						
ACMING LUTIES SOUTH   ACMING				Rang	es	Normal	8 ranges	Ranges	Norm	mai   100mApk ~ 300Apk(20Arms) in 8 ranges					
Accord   A			20Arms Current Sh	unt	:	x10			x10						
ACCURS   10,00% R69 + 0.1% R69 + 1000   10			4mm safety connec	tors		Normal	_		Norm	mal					
Accoracy				Accu				Accuracy		0.05% Rdg + 0.1% Rng + (0.01% x kHz Rdg) +					
Agriculture						x10	1		x10	- ,					
SAPTIMES Current Schurt   Annaes   10 - 3 Grindge   10	Internal					Normal	300mApk ~ 1000Apk(30Arms)		Norm	mal $300 \text{mAnk} \sim 1000 \text{Ank} (30 \text{Arms})$ in 8 ranges					
Sturms current Short   Morrial   0.05% Rdg + 0.1% Rng + 0.005% kdg + 0.005				Rang		Normai	in 8 ranges	Ranges	Non	That SouthApk ToooApk(SoAthis) in a ranges					
According			30Arms Current Sh			x10	30mApk ~ 100Apk in 8 ranges		x10	30mApk $\sim$ 100Apk in 8 ranges					
							0.05% Rda + 0.1% Rna +			0.05% Rda + 0.1% Rna + (0.005% x kHz Rda)					
Note						Normal			Norm	mal					
Accuracy				Accu	1	v10	0.05% Rdg + 0.1% Rng +	Accuracy	v10	0.05% Rdg + 0.1% Rng + (0.01% x kHz Rdg) +					
Common							(0.01% x kHz Rdg) + 300uA		110	300uA					
Casernal plant	External	input	BNC Connector (Ma	Rang	es	1mVpk $\sim$	3Vpk in 8 ranges	Ranges	1mV <sub>l</sub>	/pk ~ 3Vpk in 8 ranges					
Accuracy	•					0.05% Rd	a+0.1% Rna+(0.005%×kHz								
Normal	Current s	sensor)	,	Accu	racvi			Accuracy	0.05	5% Rdg+0.1% Rng+(0.005%×kHz Rdg)+ 5μV					
Normal   (0.14 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Phase Ac	ccuracy													
Normal															
Normal   (0.1%+0.1%/pf+(0.01%×ktrtz)/pf  Rdg+0.1%VAR Rng     0.1%+0.1%/pf+(0.01%×ktrtz)/pf  Rdg+0.1%VAR Rng     0.1%+0.1%/pf+(0.01%×ktrtz)/pf  Rdg+0.1%VAR Rng     0.1%+0.1%/pf+(0.01%×ktrtz)/pf  Rdg+0.1%VAR Rng     0.1%+0.1%/pf+(0.01%×ktrtz)/pf  Rdg+0.1%VAR Rng     0.05%	Down A cours ou		X10	0.01	deg+	(0.02deg :	( kHz)	0.01deg+(0.02deg x kHz)							
10	rower Ac	curacy	Normal	[O 19/	.±0 1	%/nf±(0	01%×kHz\/nfl Rda+0 1%\/Δ Rna	[0.1%±0.1%/i	nf±(∩	1 01% × kHz)/nfl Rda+0 1%VA Rna					
As per standard spec with Ring error reduced from +0.1%VA,VA Ring to 0.05% As per standard spec with Ring error reduced from +0.1%VA,VA Ring to 0.05% As per standard spec with Ring error reduced from +0.1%VA,VA Ring to 0.05% Minimum Current Measurement at Full Accuracy  1mA  PPAS/1500 20A  20(Voltage and Current)  Sample Rate  1M5/s on all channels, No-Gap  1EC 62301/EN30564 Standby Power  1EC 62301/EN30564 Standby Power  1EC 62301/EN30564 Standby Power  1EC 62301/EN30564 Standby Power  250V © 50Nt2 - 2 1mA (150d8)  Measurement Parameters  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk  Frequency (Hz), Phase (deg), Fundamentals, Impedance  Harmonics, Tilo, TIT, Titf, TRD, TDD  Interprated Values, Datalog, Sum and Neutral values  Datalog Window  No-Gap analysis, Minimum window 10ms  Memory  16,000 records  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82232  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82222  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82232  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82232  Baud rate up to 38.4kbps, RTS/CTS flow control  Communication Ports  82232  Baud rate up to 38.4kbps and a variable via external communications box  USB 2.0 and 1.1 compatible  Events and a variable via external communication port variable via external communications box  USB 2.0						., ,				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Minimum Current   Measurement at Full Accuracy   ImA	40-400H	7			• •										
PRAS/1500 20A  Crest Factor Sample Rate  IMs/s on all channels, No-Gap  EC Modes  IEC 62301/EN50564 Standby Power  IND 75 Frequency (Ft.) Phase (deg), Fundamentals, Impedance  Integrated Values, Datalog, Sum and Neutral values  No-Gap analysis, Minimum window IDms  No-Gap analysis, Minimum window					CITOI	reduced	10111 +0.1 /0V,A,VA Kilg to 0.05 /0	As per standar	u spec	et with king error reduced from +0.1 /0v,A,VA king to 0.05 /0					
Crest Factor   20(Voltage and Current)			veasurement at run	Accuracy				1mA							
Grest Factor 20(Voltage and Current)  Sample Rate 1Ms/s on all channels, No-Gap 1Ms/s on all channels, No-Gap 1EC63301/EN50564 Standby Power 1EC63301/EN50564 Standby Power Application Modes Ballast, Inrush, Power Transformer, Standby Power Application Modes Ballast, Inrush, Power Transformer, Standby Power CMRR - Common Mode Rejection Ratio  250V © 50Hz - ≥ 1mA (150dB)  100V © 100kHz - ≥ 3mA (130dB)  Measurement Parameters  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk Frequency (Hz), Phase (deg), Fundamentals, Impedance  Harmonics, THD, TTI, TH, FT, RTD, TDD  Integrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with Pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Datalog - Up to 4 user selectable measurement functions (60 with pc software)  Badd atte up to 38.4kbps,RTS/CTS flow control  LAN (Option 1) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10															
Sample Rate 1 MS/s on all channels, No-Gap 2 MS/s on all channels, MS/s on all channels, MS/s on all channels, No-Gap 2 MS/s on all channels, MS/s on	General														
IEC Modes  IEC 62301/EN50564 Standby Power Application Modes Ballast, Inrush, Power Transformer, Standby Power Application Modes Ballast, Inrush, Power Transformer, Standby Power  250V ⊕ 50Hz - ≥ 1mA (150d8)  100V ⊕ 100kHz - ≥ 3mA (130d8)  Measurement Parometers  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk Frequency (Hz), Phase (deg), Fundamentals, Impedance Harmonics, ThD, TIF, THF, TRD, TDD  1ntegrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with PC software) Datalog Window  No-Gap analysis, Minimum window 10ms No-Gap an	Crest Fac	tor	20(Voltage and Current)												
Application Modes Ballast, Inrush, Power Transformer, Standby Power  CMRR - Common Mode Rejection Ratio  250V ⊕ 50Hz - ≥ 1mA (150dB)  100V ⊕ 100kHz - ≥ 3mA (130dB)  Measurement Parameters  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk Frequency (Hz), Phase (deg), Fundamentals, Impedance Harmonics, THD, T1F, TRD, TDD  Integrade Values, Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog wilndow No-Gap analysis, Minimum window 10ms No-Gap analysis, Minimum window 10ms  Memory 16,000 records  Communication Ports  RS2322  Baud rate up to 38.4kbps,RTS/CTS flow control  LAN (Option L) 10/100 Base-T Ethernet auto sensing (Option G-E) IEEE488.2 Compatible - via external communications box USB USB 2.0 and 1.1 compatible  Extension Fitted as Standard  Standard Accessories  Extension Power, RS232, USB Connection Clips Amm terminated aligator clips - 1, verd, 1x yellow and 2x black per phase  CO-ROM CommView2 (RS232,USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dibriensions  921x215W3312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATIII), 600Vrms or DC(CATIII) Power supply  90~265Vrms, 50~60Hz, 400Vamax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.															
250V @ 50Hz - ≥ 1mA (150dB)							<u> </u>	·							
Measurement Parameters					ower	Iransforr	ner, Standby Power	Ballast, Inrush, Power Transformer, Standby Power							
Measurement Parameters    W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk   Frequency (Hz), Phase (deg), Fundamentals, Impedance   Harmonics, THD, TIF, THF, TRD, TDD   Integrated Values, Datalog, Sum and Neutral values   Datalog - Up to 4 user selectable measurement functions (60 with PC software)   Datalog Window	CMRR - (	Common													
Measurement Parameters  W, VA, Var, pf, V & A - rms, rectified mean, AC, DC, Peak, Surge, Crest Factor, Form Factor, Star to Delta Voltage, +ve Pk, -ve Pk Frequency (Hz), Phase (deg), Fundamentals, Impedance Harmonics, THD, TIF, THF, TRD, TDD Integrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with PC sostware)  Datalog Window No-Gap analysis, Minimum window 10ms No-Gap analysis, Minimum window 10ms Memory 16,000 records 16,000 records Communication Ports  RS232 Baud rate up to 38.4kbps,RTS/CTS flow control LAN (Option L) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing GPIB (Option G-E) IEEE488.2 Compatible - via external communications box USB USB 2.0 and 1.1 compatible Extension Fitted as Standard Standard Accessories Leads Power, RS232, USB Power, RS232, USB Power, RS232, USB Connection Cables 1 x red, 1 x yellow and 2 x black per phase COP-ROM CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download) Documents User manual, Communications manual, Calibration certificate, Quick start guide Mechanical/Environmental Display 480x272 dot full colour TFT, White LED Backlit Display 480x272 dot full colour TFT, White LED Backlit Display 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.			_ , , ,												
Frequency (Hz), Phase (deg), Fundamentals, Impedance  Harmonics, THD, TIF, THF, TRD, TDD  Integrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog Window  No-Gap analysis, Minimum window 10ms  No-Gap analysis, Minimu	Measure	ment Para	ameters												
Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog Window No-Gap analysis, Minimum window 10ms No-Gap analysis, Minimum win			W, v	A, Var, pf,	V & A	- rms, re	ctified mean, AC, DC, Peak, Sur	ge, Crest Facto	r, Forr	rm Factor, Star to Delta Voltage, +ve Pk, -ve Pk					
Integrated Values, Datalog, Sum and Neutral values  Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog Window No-Gap analysis, Minimum window 10ms No-Gap analysis, Minimum window 10ms  Memory 16,000 records 16,000 records  Communication Ports  R5232 Baud rate up to 38.4kbps,RTS/CTS flow control  LAN (Option L) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing GPIB (Option G-E) IEEE488.2 Compatible - via external communications box USB 2.0 and 1.1 compatible  Extension Fitted as Standard  Standard Accessories  Leads Power, R5232, USB Power, R5232, USB  Connection Cables 20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase  Connection Clips Amm terminated alignator clips - 1x ed, 1x yellow and 2x black per phase  CD-ROM CommView2 (R5232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.							Frequency (Hz), Phase (de	eg), Fundament	tals, Iı	Impedance					
Datalog - Up to 4 user selectable measurement functions (60 with PC software)  Datalog Window  No-Gap analysis, Minimum window 10ms  Memory  16,000 records  Communication Ports  RS232  Baud rate up to 38.4kbps,RTS/CTS flow control  LAN  (Option L) 10/100 Base-T Ethernet auto sensing  (Pitted as standard) 10/100 Base-T Ethernet auto sensing  (Option G-E) IEEE488.2 Compatible - via external communications box  USB 2.0 and 1.1 compatible  Extension  Fitted as Standard  Standard Accessories  Leads  Power, RS232, USB  Connection Cables  Connection Cables  Connection Cips  4mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CO-ROM  CommView2 (RS232/USB/LAN), Command line, Script based communications software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92H×215W×312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATIII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.															
Datalog Window  No-Gap analysis, Minimum window 10ms  Memory  16,000 records  (Fitted as standard) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing (Fitted as Standard)  10,000 records  10,000 records  10,000 records  (Option G-E) IEEE488.2 Compatible - via external communications box (Option G-E) IEEE488.2 Compatible - via external communications box (USB 2.0 and 1.1 compatible external sentence of the standard standard standard external sentence of the standard external sentence of					_	(60		log, Sum and N	Neutra	al values					
Memory 16,000 records 16,000 records  Communication Ports  RS232 Baud rate up to 38.4kbps,RTS/CTS flow control  LAN (Option L) 10/100 Base-T Ethernet auto sensing (Fitted as standard) 10/100 Base-T Ethernet auto sensing GPIB (Option G-E) IEEE488.2 Compatible - via external communications box USB USB 2.0 and 1.1 compatible  Extension Fitted as Standard  Standard Accessories  Leads Power, RS232, USB Power, RS232, USB  Connection Cables 20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase  Connection Clips 4mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  Connection Clips CommView2 (RS232/USB/LAN), Command line, Script based communications software (Datalogging software available as free of charge download)  Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92Hx215Wx312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATIII), 600Vrms or DC(CATIII)  Power supply 90 ~265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Datalog Window					•	<u> </u>			No Can analysis Minimum window 10ms					
Baud rate up to 38.4kbps,RTS/CTS flow control  (Option L) 10/100 Base-T Ethernet auto sensing  (Option G-E) IEEE488.2 Compatible - via external communications box  USB  (Option G-E) IEEE488.2 Compatible - via external communications box  USB 2.0 and 1.1 compatible  Extension  Fitted as Standard  Standard Accessories  Leads  Power, RS232, USB  Power, RS232, USB  Connection Cables  Connection Clips  Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM  COmmView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92Hx215Wx312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.			l'	ю-дар ана				No dap an							
Baud rate up to 38.4kbps,RTS/CTS flow control  (Option L) 10/100 Base-T Ethernet auto sensing (Option G-E) IEEE488.2 Compatible - via external communications box USB USB 2.0 and 1.1 compatible  Extension Fitted as Standard  Standard Accessories  Leads Power, RS232, USB Connection Cables Connection Cables Connection Cables Connection Cables Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase CD-ROM CommView2 (RS232/USB/LAN), command line, Script based communication software (Datalogging software available as free of charge download) Documents User manual, Communications manual, Calibration certificate, Quick start guide Mechanical/Environmental Display 480x272 dot full colour TFT, White LED Backlit Dimensions 92Hx215W×312D mm excluding feet Weight 3.3kg(1 Phase), 4kg(3 Phase) Safety Isolation 1000Vrms or DC(CATIII), 600Vrms or DC(CATIII) Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.		nication P	orts		20,0	30 100010		10,000 (000)							
(Option L) 10/100 Base-T Ethernet auto sensing  GPIB  (Option G-E) IEEE488.2 Compatible - via external communications box  USB  USB 2.0 and 1.1 compatible  Extension  Fitted as Standard  Standard Accessories  Leads  Power, RS232, USB  20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals  1x red, 1x yellow and 2x black per phase  Connection Clips  Commoview2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92H×215W×312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATIII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	RS232						Baud rate up to 38.4	kbps,RTS/CTS	flow c	control					
USB USB 2.0 and 1.1 compatible Extension Fitted as Standard  Standard Accessories  Leads Power, RS232, USB Power, RS232, USB Power, RS232, USB Power, RS232, USB  20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase  Connection Clips Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download) Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental Display 480x272 dot full colour TFT, White LED Backlit Dimensions 92H×215W×312D mm excluding feet Weight 3.3kg(1 Phase), 4kg(3 Phase) Safety Isolation 1000Vrms or DC(CATIII), 600Vrms or DC(CATIII) Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	LAN		(Opt	ion L) 10/1	00 Ba	se-T Ethe	· · · · · · · · · · · · · · · · · · ·		(Fitted as standard) 10/100 Base-T Ethernet auto sensing						
Fitted as Standard  Standard Accessories  Leads Power, RS232, USB Power, RS232, USB  Connection Cables  Connection Clips  Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATIII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	GPIB		(Option G-E) IEI	E488.2 Co	mpat	ible - via	external communications box	· · · · · · · · · · · · · · · · · · ·							
Standard Accessories  Leads Power, RS232, USB Power, RS232, USB  Connection Cables  Connection Clips  Connection Clips  Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	USB							·							
Power, R5232, USB  20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase  Connection Clips  4mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM  CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92H×215W×312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.							Fitted	as Standard							
Connection Cables  20A (Std version) or 36A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase  Connection Clips  4mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM  CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92H×215W×312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.		Accesso	ries			DC25-	ICD			D					
Connection Cales  Connection Clips  Amm terminated aligator clips - 1x red, 1x yellow and 2x black per phase  CD-ROM  CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents  User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display  480x272 dot full colour TFT, White LED Backlit  Dimensions  92H×215W×312D mm excluding feet  Weight  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Leads			P	ower										
Connection Clips       4mm terminated aligator clips - 1x red, 1x yellow and 2x black per phase         CD-ROM       CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)         Documents       User manual, Communications manual, Calibration certificate, Quick start guide         Mechanical/Environmental       480x272 dot full colour TFT, White LED Backlit         Dimensions       92H×215W×312D mm excluding feet         Weight       3.3kg(1 Phase), 4kg(3 Phase)         Safety Isolation       1000Vrms or DC(CATII), 600Vrms or DC(CATIII)         Power supply       90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax         Operating       23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.		on Cables				20	, ,		,						
CD-ROM CommView2 (RS232/USB/LAN), Command line, Script based communication software (Datalogging software available as free of charge download)  Documents User manual, Communications manual, Calibration certificate, Quick start guide  Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Connection					4r									
Mechanical/Environmental  Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.		on Clips						ation software	(Data	talogging software available as free of charge download)					
Display 480x272 dot full colour TFT, White LED Backlit  Dimensions 92H×215W×312D mm excluding feet  Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.		on Clips	CommView2	(RS232/US	B/LAI	V), Comm	and line, Script based communi								
Dimensions  92H×215W×312D mm excluding feet  3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation  1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply  90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating  23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Connection CD-ROM		CommView2	(RS232/US	B/LAI	**			ertific	cate, Quick start guide					
Weight 3.3kg(1 Phase), 4kg(3 Phase)  Safety Isolation 1000Vrms or DC(CATII), 600Vrms or DC(CATIII)  Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Connection CD-ROM Documen Mechanic	nts		(RS232/US	B/LAI	**	manual, Communications manua	l, Calibration c							
Safety Isolation $1000Vrms$ or DC(CATII), $600Vrms$ or DC(CATIII)       Power supply $90 \sim 265Vrms$ , $50 \sim 60Hz$ , $40VAmax$ Operating $23^{\circ}C \pm 5^{\circ}C$ Ambient Temperature (or air intake temperature when rack mounted), $20-90\%$ Non-Condensing Relative Humidity.	Connection CD-ROM Document Mechanic Display	nts cal/Enviro		(RS232/US	B/LAI	**	manual, Communications manua 480x272 dot full colo	l, Calibration cour	LED B	Backlit					
Power supply 90 ~ 265Vrms, 50 ~ 60Hz, 40VAmax  Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Connection CD-ROM Documen Mechanic Display Dimensio	nts cal/Enviro		(RS232/US	B/LAI	**	manual, Communications manua 480x272 dot full colo 92H×215W×312	our TFT, White I D mm excludin	LED Ba	Backlit					
Operating 23°C ± 5°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity.	Connection CD-ROM Documen Mechanic Display Dimensio Weight	nts cal/Envirc		(RS232/US	B/LAI	**	manual, Communications manual 480×272 dot full colo 92H×215W×312 3.3kg(1 Pha	ur TFT, White I D mm excludinse), 4kg(3 Phas	LED Ba	Backlit et					
	Connection CD-ROM Documen Mechanic Display Dimensio Weight Safety Is	cal/Enviro		(RS232/US	B/LAI	**	480×272 dot full colo 92H×215W×312 3.3kg(1 Pha 1000Vrms or DC(CAT)	ur TFT, White I D mm excludin se), 4kg(3 Phas II), 600Vrms or	LED Bag feet se)	Backlit et CATIII)					
	Connection CD-ROM Documen Mechanic Display Dimensio Weight Safety Iso Power su	onts  cal/Environts  ons  olation  pply	onmental			User	480x272 dot full cold 92H×215W×312 3.3kg(1 Pha 1000Vrms or DC(CAT) 90 ~ 265Vrms,	our TFT, White ID mm excludingse), $4 \log 3$ PhassII), $600 \ Vrms$ or $\sim 60 \ Hz$ , $40 \ Vrms$	LED Bag feet se) · DC(C	Backlit  CATIII)  x					

PRODUCT COMPARISON											
	PPA500	PPA1500	PPA4500	PPA5500							
Basic Accuracy											
V, A rdg error	0.05%	0.05%	0.03%	0.01%							
Power rdg error	0.10%	0.10%	0.04%	0.03%							
Phase Options											
Internal	1~3	1~3	1~3	1~3							
Master/Slave operation	_	-	4 ~ 6	4 ∼ 6							
Bandwidth											
20 & 30A Shunt	DC $\sim$ 500kHz	DC ∼ 1MHz	-	_							
10 & 30A Shunt	_	-	DC ∼ 2MHz	DC ~ 2MHz							
50A Shunt	_	-	DC ∼ 1MHz	DC ∼ 1MHz							
Voltage Input											
Max input voltage	2500Vpk	2500Vpk	3000Vpk	3000Vpk							
No. of ranges	8	8	8	9							
Direct Current Input											
10Arms model	_	_	0	0							
20Arms model	0	0	_	_							
30Arms model	0	0	0	0							
50Arms model	_	-	0	0							
No. of ranges	8	8	8	9							
Features											
Scope and Graph Modes		0	0	0							
USB Memory port	0	0	0	0							
LAN Port	0	0	0	0							
GPIB Port	0	0	0	0							
RS232 Port	0	0	0	0							
Real time clock	0	0	0	0							
19in Rack mount option	0	0	0	0							
Torque and Speed	_	_	0	0							
IEC61000 Mode	_		_	0							
PWM Motor Drive Mode	_	(Via Parallel Filtering Options)	0	0							
Oscilloscope/Graphic	_	0	0	0							
Transformer Mode PWM Filter Options	_	2	7	7							
Speed/Harmonics/Sec		2 300/sec	600/sec	/ 1800/sec							
Internal Datalogging	4 Parameters	4 Parameters	16 Parameters	16 Parameters							
Datalog Records	16000	16000	16000	10 Farameters							
ABD0100.1.8 Mode	_	_	_	0							
Internal Memory	192kB	192kB		1GB							
Harmonics	50	192kB 50	100	417							
Minimum Window Size	10ms	10ms	100 10ms	2ms							
	TUIIIS	TUIIIS	TOILIS	21115							
Dimensions - Excl. Feet H x W x D (mm)	92 x 215 x 312	92 x 215 x 312	130 x 400 x 315	130 x 400 x 315							
Weight	3.3 - 4kg	3.3 - 4kg	5.4 - 6kg	5.4 - 6kg							

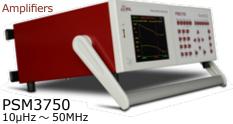
Not Applicable

Option

Standard

All specifications at  $23^{\circ}$ C ±  $5^{\circ}$ C. These specifications are quoted in good faith but Newtons4th Ltd reserves the right to amend any specification at any time without notice

The N4L product range also includes Frequency Response and Impedance Analyzers, Selective Level Meters and Laboratory Power





PSM17xx  $10\mu Hz\sim 35MHz$ 

#### **Applications**

## Newtons4th Ltd N4L



- Power supply phase margin and gain margin (FRA)
- Inductance, Capacitance and Resistance (LCR)
- Analysis of mechanical vibration (HARM)
- Phase Angle Voltmeter (PAV)

Contact your local N4L Distributor for further details

#### Newtons4th

Newtons4th Ltd (abbreviated to N4L) was established in 1997 to design, manufacture and support innovative electronic equipment to a world-wide market, specialising in sophisticated test equipment particularly related to phase measurement. The company was founded on the principle of using the latest technology and sophisticated analysis techniques in order to provide our customers with accurate, easy to use instruments at a lower price than has been traditionally associated with these types of measurements. Flexibility in our products and an attitude to providing the solutions that our customers really want has allowed us to develop many innovative functions in our ever increasing product range.





Newtons4th Ltd are ISO9001 registered, the internationally recognised standard for the quality management of businesses

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION

In recognition of the technical innovation and commercial success of the PPA series, N4L received the "Innovation 2010" Queen's award for enterprise

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