



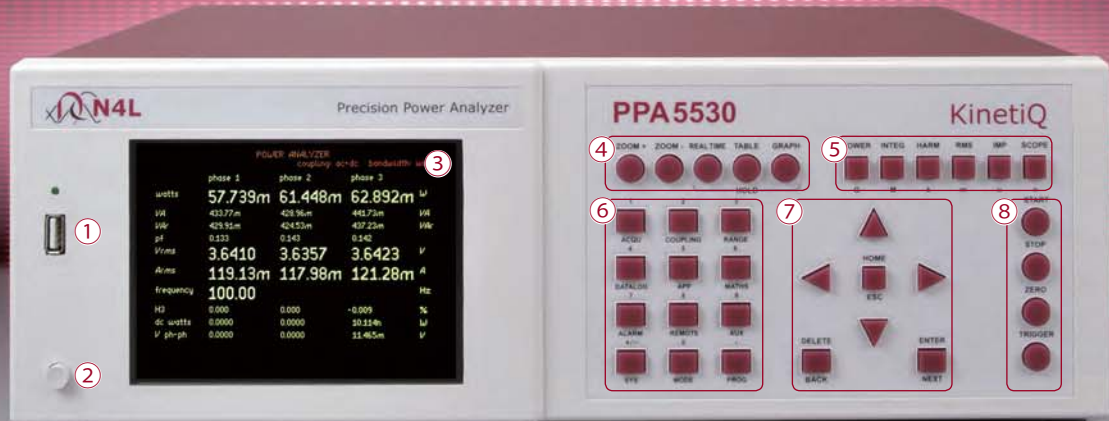
PPA5500 Series  
PPA1500 Series  
PPA500 Series



领先的带宽精度：	0.01%的基本精度，具有行内高标准领先高频性能
带宽范围：	PPA500系列：10mHz~500kHz，PPA1500系列：10mHz~1MHz，PPA5500系列：10mHz~2MHz
无间隙快速采样率：	在嘈杂的应用环境中可实现高精度采样，PPA1500/500系列为1Ms/s，PPA5500系列：2.2Ms/s
超前相位精度：	0.005度+0.01度 / kHz
内置高精度分流器：	10Arms, 30Arms or 50Arms with up to 1000Apk，可以直接加更广泛的全系列外置传感器
通用接口：	RS232, USB, LAN等（可选配GPIB接口），PPA5500系列标配GPIB接口及转矩和转速测试功能
系列化的PC软件选项：	远程监控，监测和实时数据记录，表格和图表形式呈现

# PPA5530 Precision Power Analyzer

## FRONT VIEW



### ① 前置USB接口：

USB 端口允许测试到的数据或者视频图片保存到USB移动盘

### ② 电源按钮开关

### ③ 显示屏：

具有高对比度和宽视角白光LED背光彩色TFT显示屏

### ④ 屏幕显示选项：

变焦，实时监控，数据表和图表等多项显示输出（PPA500无图表与波形显示）

### ⑤ 测量功能选择按钮：

- 功率分析POWER ANALYZER
- 积分POWER INTEGRATOR
- 谐波分析HARMONIC ANALYZER
- 真有效值电压与电流  
TRUE RMS VOLTMETER and AMMETER
- 阻抗测试表IMPEDANCE METER
- 波形显示OSCILLOSCOPE

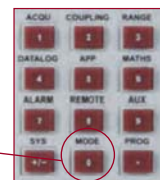


PPA5500 SERIES



PPA1500 SERIES

MODE SELECTION



### ⑥ 测量设置按钮：

获取设置连接配置

波形和数据记录

耦合到AC, DC或者AC+DC, 同时设置带宽

设置内部和外部衰减范围, 自动调节设置选项等

PWM/镇流器/浪涌电流/变压器/待机功耗等

加辅助/报警/远程监控/系统和程序



PPA5500 SERIES

### ⑦ 操作菜单选择和光标控制

### ⑧ 开始，停止，零和触发：

触发按钮刷新测试，零复位动作或者允许便置修正启动和停止按钮，提供一个测量周期内的手动控制

## REAR VIEW



PPA5530 (3 Phase)

### ⑨ 电压与电流输入：

直接输入电压为9个量程（峰值电压3KV/有效值电压1KV）

输入电流：标准型号：30Arms，（峰值300Apk），低电流型：10Arms（峰值30Apk），高电流型：50Arms（峰值1000Apk）

外置电压和电流传感器输入：达到3V峰值

PPA1500/PPA500系列：20Arms，（峰值300Apk），PPA1500-HC/PPA500-HC系列：30Arms（峰值1000Apk）

### ⑩ 同步连接：

所有PPA系列通过使用PPALog PC程序都能提供高达9相功率分析功能，另外在PC不可用的情况下，通过扩展端口和同步BNC连接器可以使用两台PPA5530组成6通道功率分析

### ⑪ 外部传感器输入（扭矩与转速）：

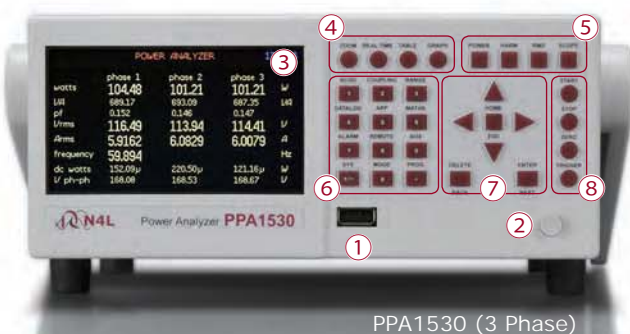
PPA5500系列功率分析仪具有通过扭矩和转速传感器脉冲输入或者+/-10V 电压提供机械功率的直接测试和模拟输出

### ⑫ PC接口连接：

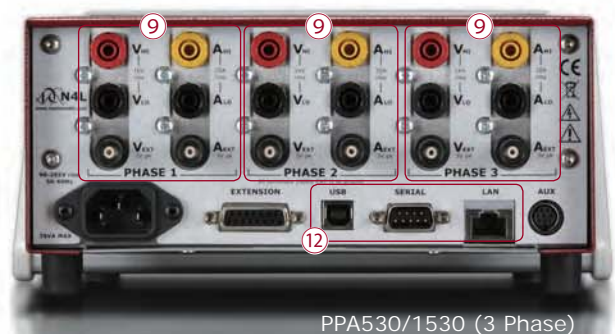
标准接口：RS232 + USB + LAN（选配Optional）+ GPIB（仅PPA5500 可选配）

### ⑬ 低噪音风扇：

低噪音风扇在确保最小电噪音的同时保证了系统内高精度低电感的电流分流器有正常的工作温度。



PPA1530 (3 Phase)

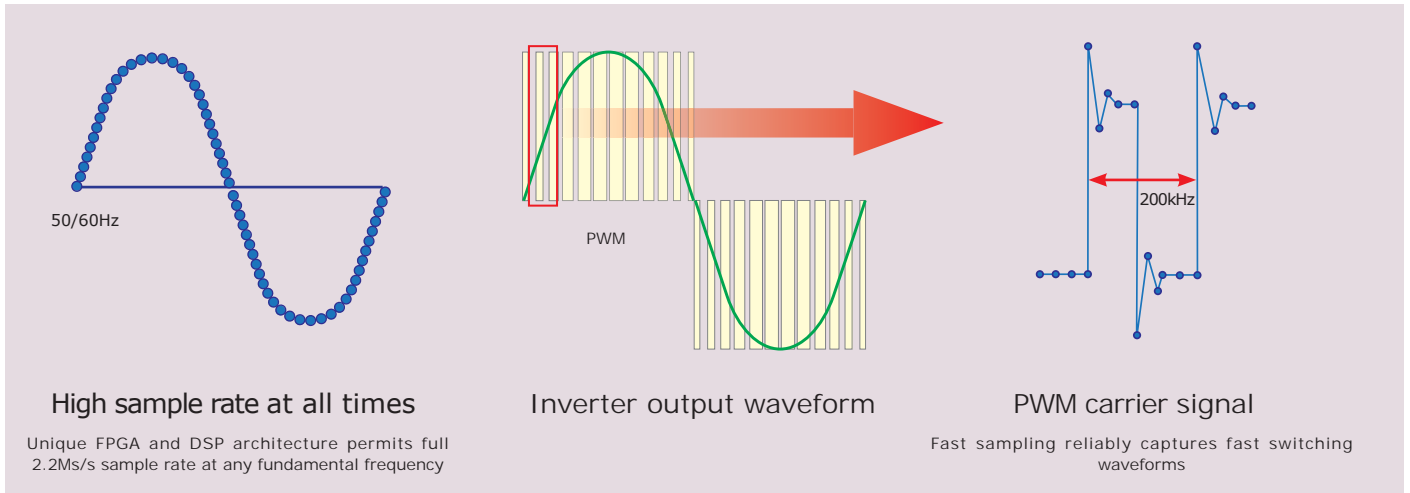


PPA530/1530 (3 Phase)

# FEATURES

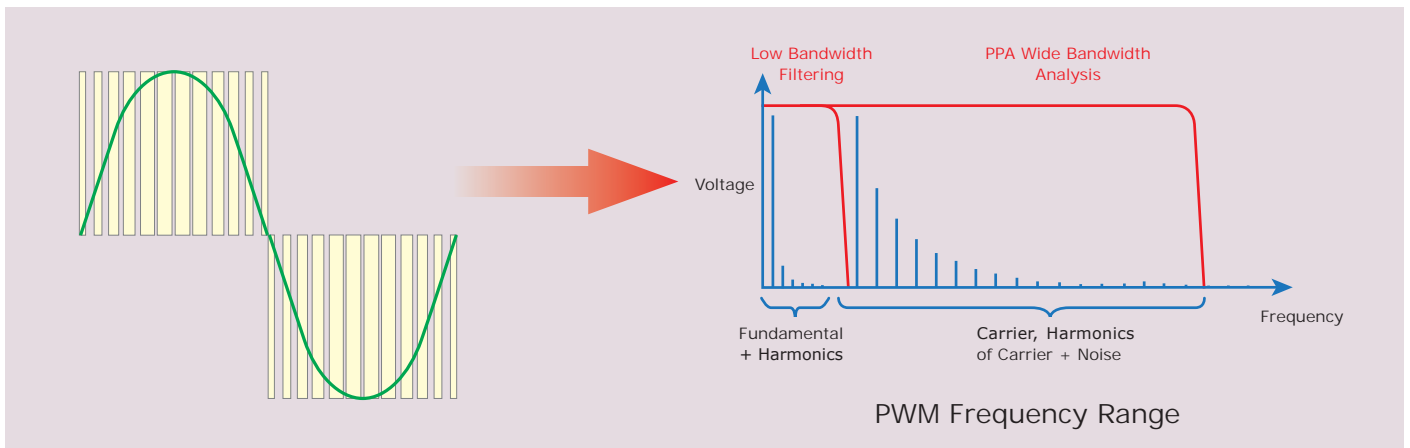
## PPA5500系列高速电参数测试

测量包括所有频率成分，例如功率波形，基波，间谐波和通过保持在任何驱动频率下，采样速率为2.2Ms/s的PWM逆变器输出载波。  
※备注：PPA1500/PPA500 系列采样率为1Ms/s



## PPA5500系列2MHz带宽

拥有2MHz的带宽和优异的平滑的响应，PPA系列提供了所有电参数功率分析，如电子镇流器和PWM驱动，设计宽范围的高频成分，专属N4L的称为Expanded Nyquist的数字处理技术，确保了测数据的精准。



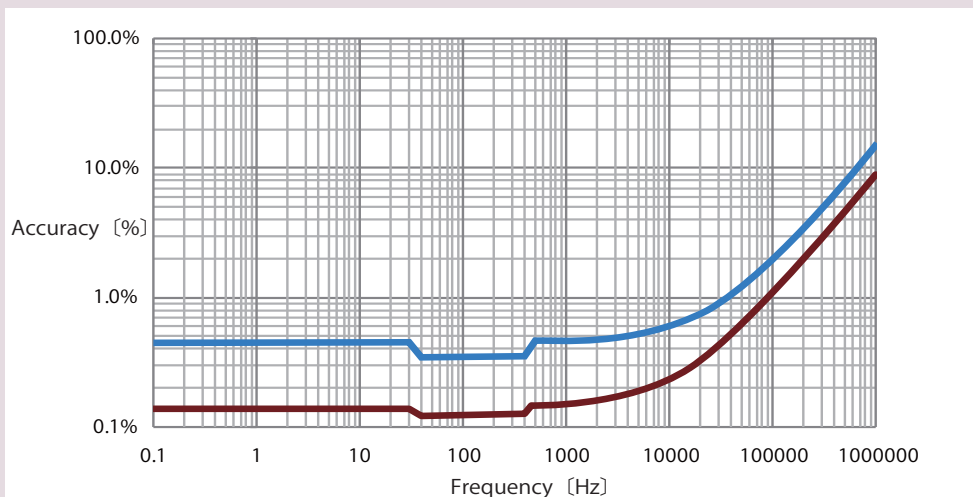
## 高精度

PPA5500 PPA1500 PPA500

独特的电压和电流模拟卡设计确保了对功率和谐波分析的高精度

### Class Leading Power Accuracy

Power Accuracy:  $[0.03\% + 0.03\%/pf + (0.01\% \times kHz)/pf]$  Rdg + 0.03%VA Rng  
240V (300V Range), 1A (3A Range), Power Factor : 1 (40-400Hz 0.02%VA Rng)



## PPA500/PPA1500/PPA5500全系列DFT实时无间隙分析

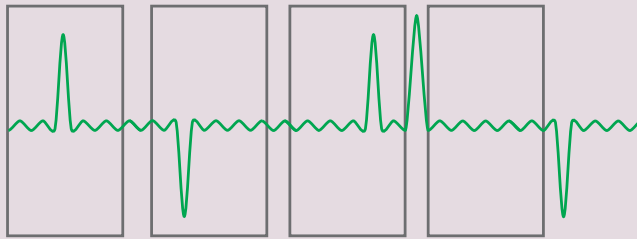
PPA5500

PPA1500

PPA500

现实中很多场合由于存在快速变化的异步电流脉冲，为测试的准确性，采用传统的FFT模式很难保证结果的真实性和精度；而PPA系列功率分析仪结合了可变窗口无间隙分析的实时DFT技术确保了最佳的测试速度和精度

### Low Duty Cycle Standby Current



Event

Event

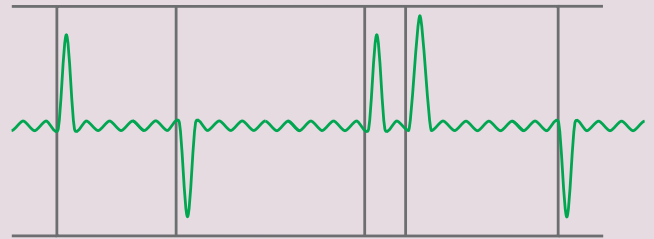
Event

Missed

Gapped analysis causes events to be missed, resulting in inaccurate measurements

- Missing data compromises power accuracy
- Long term measurement integration achieves approximately correct average power

### PPA Series IEC62301 Testing



Event

Event

Event

Event

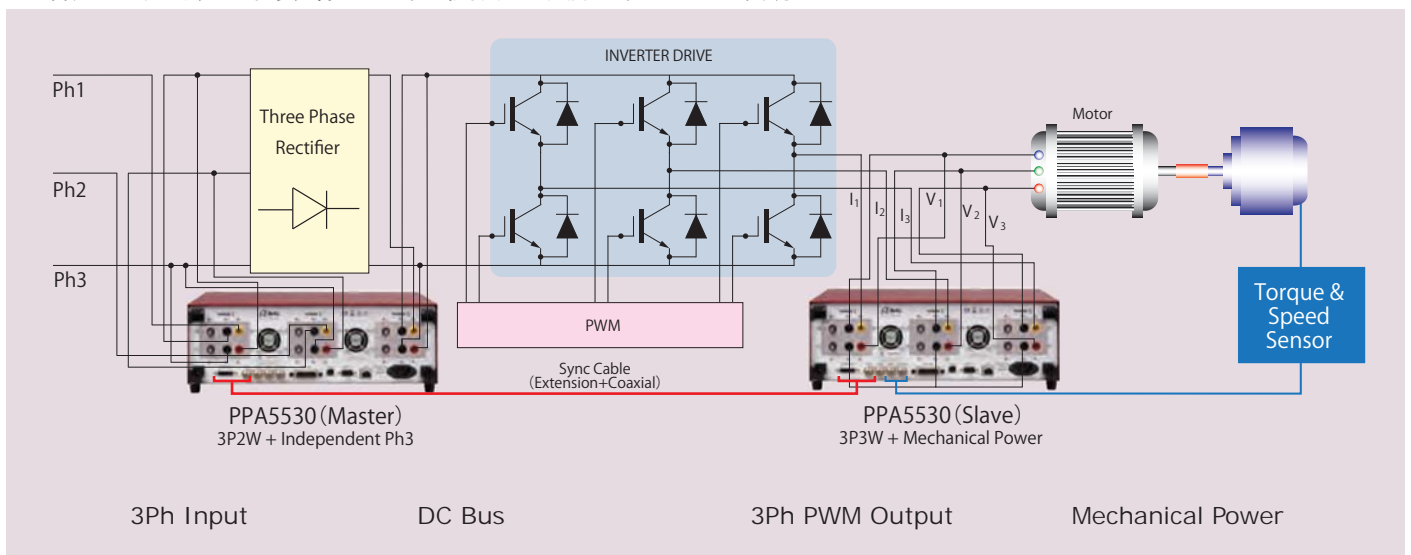
- Real Time No Gap analysis ensures correct power measurement
- Simultaneous fundamental and pulse frequency synchronization quickly obtains the correct power

## PPA5500系列多达6通道的功率分析仪

PPA5500

主从模式将两台PPA5530是完全可以同步组建成一个独立的6通道测试系统。

备注：4通道以上均可以利用N4L的PC软件和主从模式的PPA5530来实现。



### 两台仪器主从组合的优点：

- 双倍的处理速度
- 在不同场合可以实现灵活性的使用
- 通过单点控制可以实现多单元的完全同步

### 常用的测量参数有：

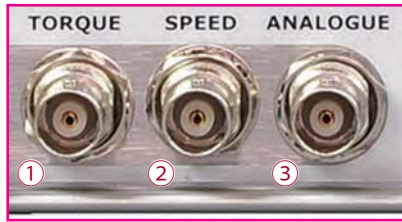
- 输入和输出参数测试
- 逆变器的效率测试
- 逆变器输出电压谐波的测试
- 马达（电机）驱动特性测试
- 电机电控及充电桩输入输出测试



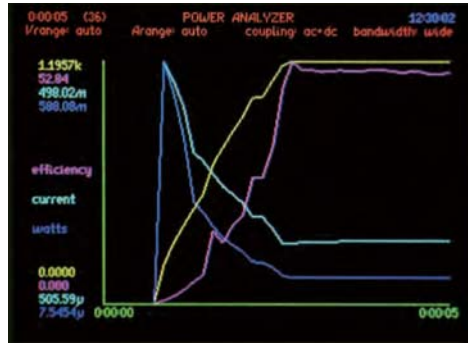
# FUNCTIONS

## PPA5500系列输入扭矩和转速传感器 PPA5500

利用PPA5500系列功率分析仪可以直接测量扭矩和转速，通过自定义输入，将电压和电流通道实现完全同步，能真正的实时实现功率转换效率的评估



- ① 扭矩 Bipolar  $\pm 10V$  / pulsed
- ② 转速 Bipolar  $\pm 10V$  / pulsed
- ③ 模拟输出 Analogue output of selected function  $\pm 10V$

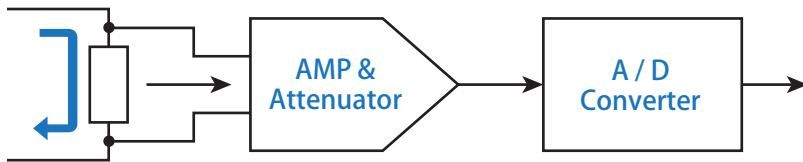


Graph



Real time data

## 内置放大器和独特的分流电阻 (PPA500/PPA1500/PPA5500系列) PPA5500 PPA1500 PPA500



The PPA series use a single shunt resistor unique to N4L that combines exceptional linearity and no need for relay switching which can cause measurement errors

Model	Low Current Model	Standard Model	High Current Model
PPA5500	9 ranges: 3mA <sub>pk</sub> - 30A <sub>pk</sub> (10Arms) 100mΩ Shunt	9 ranges: 30mA <sub>pk</sub> - 300A <sub>pk</sub> (30Arms) 10mΩ Shunt	9 ranges: 100mA <sub>pk</sub> - 1000A <sub>pk</sub> (50Arms) 3 mΩ Shunt
PPA1500/ PPA500	-	8 ranges: 100mA <sub>pk</sub> - 300A <sub>pk</sub> (20Arms) 10mΩ Shunt x10 Mode - 10mA <sub>pk</sub> - 30A <sub>pk</sub>	8 ranges: 300mA <sub>pk</sub> - 1000A <sub>pk</sub> (30Arms) 3mΩ Shunt x10 Mode - 30mA <sub>pk</sub> - 100A <sub>pk</sub>

N4L的PPA系列功率分析仪充分利用了分流电阻卓越的线性度，采用一个简单的分流电阻，充分避免了使用继电器开关导致测试的误差。

### 可选的外置分流器

(DC ~ 1MHz, 0.1% Accuracy, Inductance<1nH)

型号	最大电流		带宽
	Rated A	Peak	
HF500	500Arms	5000A <sub>pk</sub>	DC ~ 1MHz
HF200	200Arms	2000A <sub>pk</sub>	
HF100	100Arms	1000A <sub>pk</sub>	
HF020	20Arms	200A <sub>pk</sub>	
HF006	6Arms	60A <sub>pk</sub>	
HF003	3Arms	30A <sub>pk</sub>	



HF003



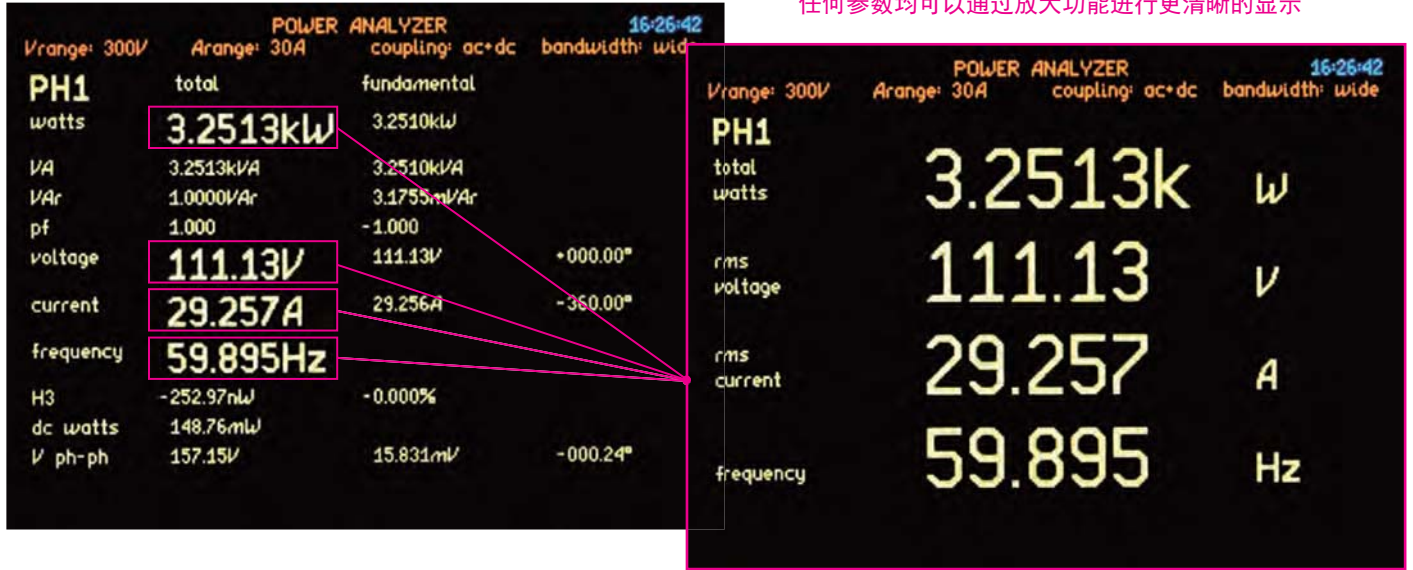
HF500



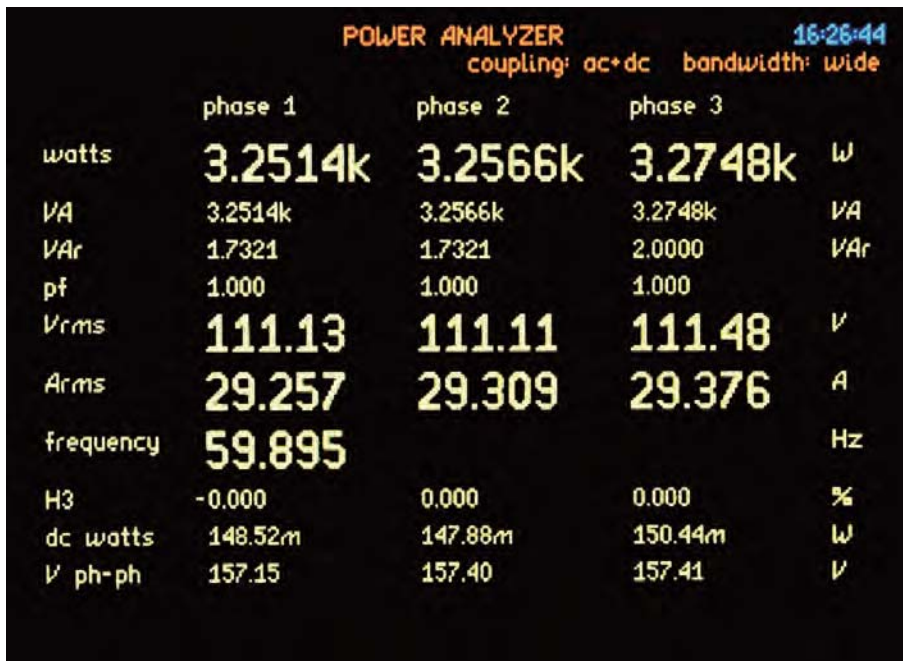
# MEASUREMENT DISPLAY

功率分析仪PPA5500/PPA1500/PPA500系列 PPA5500 PPA1500 PPA500

任何参数均可以通过放大功能进行更清晰的显示



Zoom function enabled on total watts, rms voltage, rms current and frequency



3 Phase analysis display selectable in both Total and Fundamental values

显示屏上的任何参数都可以自由的缩放显示。在所有功率测量和RMS值计算过程中可以同时选择需要的测量值和进行缩放观察分析，三相总功率和每相的主功率加频率，谐波，DC功率和相电压在所有功率测试和均方根值计算的同时，我们可以随时选择需要分析的选项，将数据的字体进行放大便于直观分析

选择三相总功率与在每相所有主要参数的以及频率，选择的谐波，直流功率和相与相间电压。

机械功率、运算和效率功能也可以显示在屏幕上实现实时的电气分析和电气机械系统的分析。

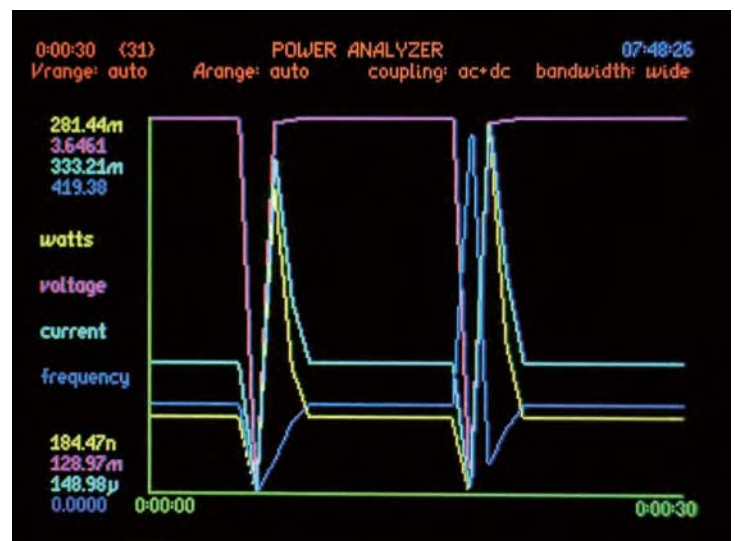
## MEMORY

PPA5500系列功率分析仪有1G的内存，可以同步准确记录数据，PPA5500系列数据点存储可以多达10M。

PPA500/PPA1500系列存储点达16K。

另外数据也可以存储到外部比如USB等。

右图为显示电压、电流、频率和功率的一个例子。



Trend analysis \*No Graph function in PPA500

# MEASUREMENT MODES

## 功率积分（能耗）模式，RMS测量模式和阻抗测量模式：PPA5500/PPA1500/PPA500系列

PPA5500 PPA1500 PPA500



Power Integrator mode



RMS Voltmeter mode

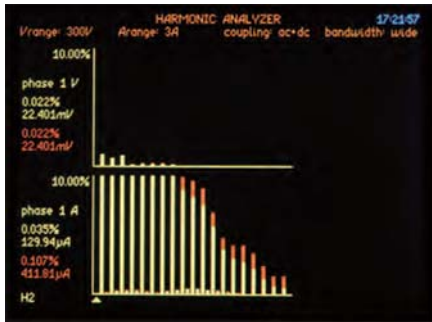


Impedance meter mode

### 注意:

除了可以测量详细的相位功率参数外，在3相4线的连接方式中还可以测量相与相之间及中性线与地之间的多项参数。

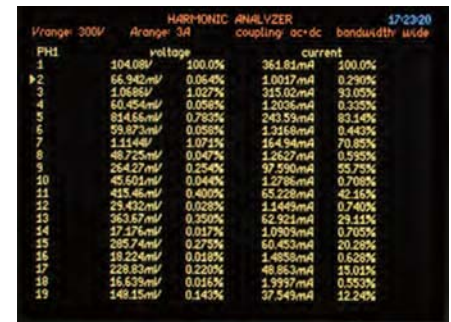
## 谐波测试分析（PPA500/PPA1500/PPA5500） PPA5500 PPA1500



Harmonic analyzer (Bar graph)

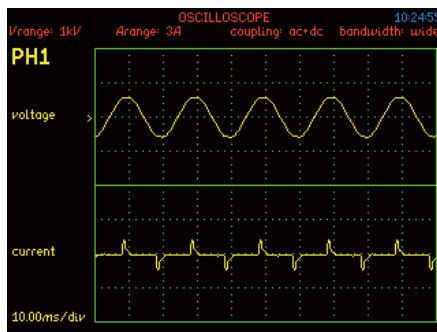


Harmonic analyzer summary page



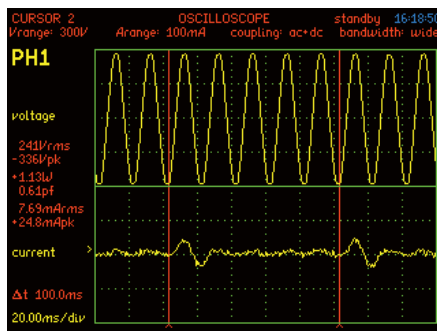
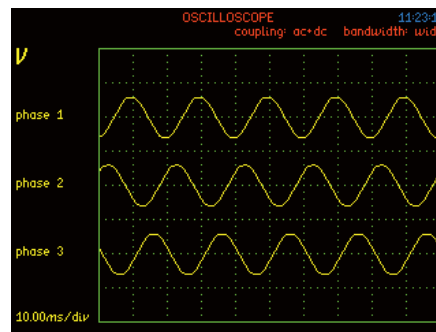
Harmonic analyzer table

\*No Graph function in PPA500

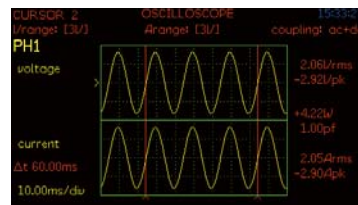


Oscilloscope - Voltage and Current display, Phase 1, 2 and 3

\*No Scope function in PPA500



Oscilloscope Cursors - Enable cursors and display Vrms, Vpk, Watts, Power Factor, Arms and Apk (Not PPA500)



PPA15xx

### Note

在谐波分析模式下，PPA1500/PPA500系列可以实时的，或者图表方式（PPA500需在PC端实现）呈现高达50次谐波。PPA5500系列扩展了谐波范围达到满足航空航天应用的417次谐波，还包括为间谐波分析的1次FFT频谱模式。



# ACQUISITION SETTINGS

## PPA500/PPA1500/PPA5500自动量程, 手动量程采集设置

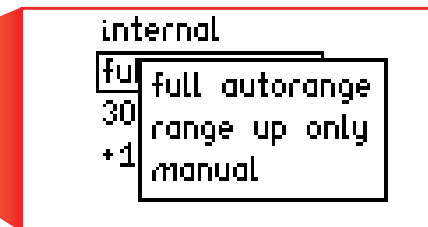
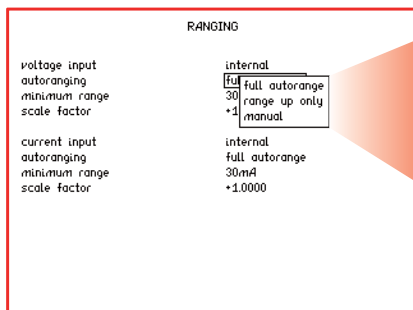
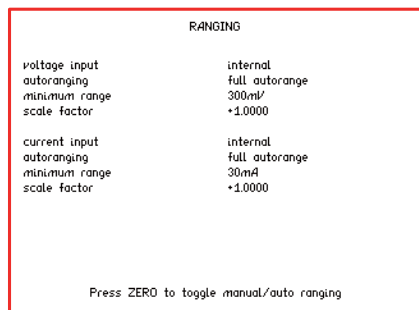
PPA5500

PPA1500

PPA500

Range modes are selectable

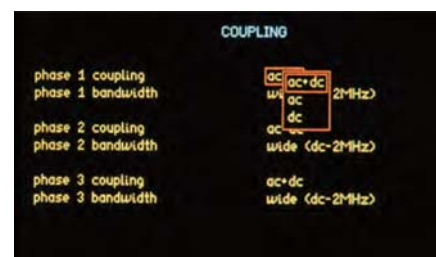
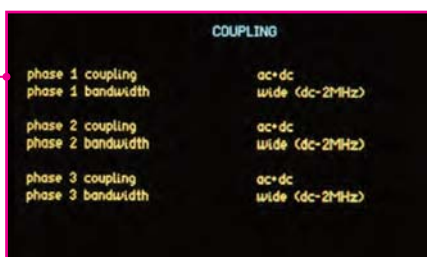
- ① Auto-Ranging 根据测量值的电平自动执行电压和电流量程的自动切换, 所有输入独立或相互连接, 以确保最佳精度。  
自动量程时, 输入不超过范围的120%
- ② Range up only 不使用自动量程时, 可自定义设置量程
- ③ Manual 在励磁涌流测试中使用 (在已知输入电压和电流时使用)



## PPA500独立设置输入耦合

PPA5500

独立设置输入耦合, 从而实现不同的传感方法。例如第1阶段的CT和2 + 3阶段的并联感应



## 接线设置

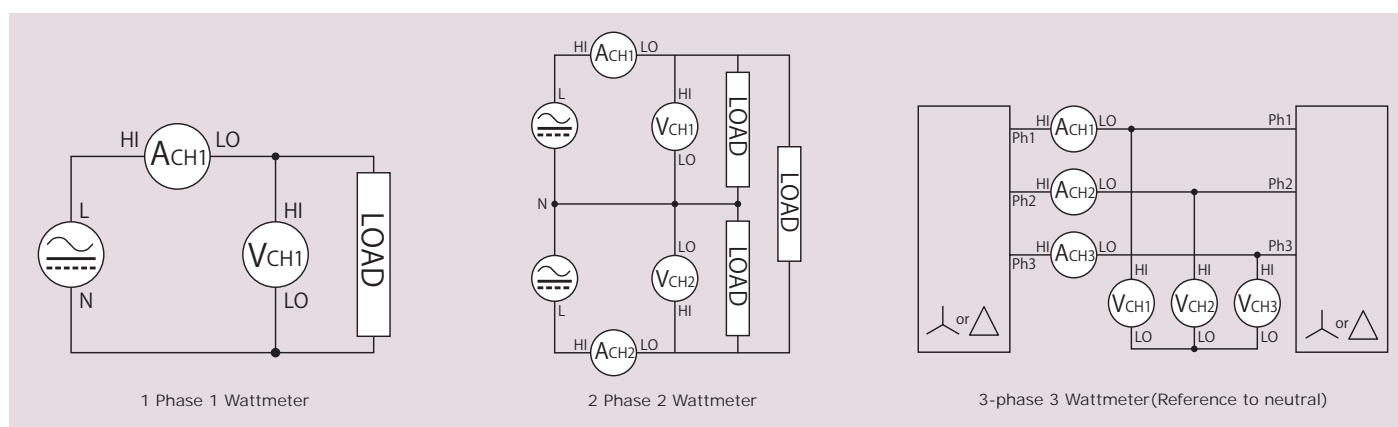
PPA5500

PPA1500

PPA500



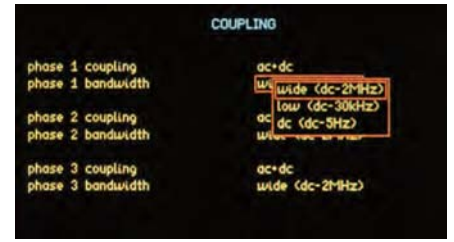
Various wiring arrangement settings to satisfy a complete range of setups found in power analysis, fully independent mode in PPA5500 only.



# ACQUISITION SETTINGS

## PPA5500系列带宽设定 PPA5500

- DC(DC-5Hz) DC measurements up to 5Hz
- Low(DC-200kHz) Basic power (50/60Hz) including harmonics of the fundamental while rejecting high frequency noise
- Wide(DC-2MHz) Wideband applications such as PWM inverter drives including all power components for true total power



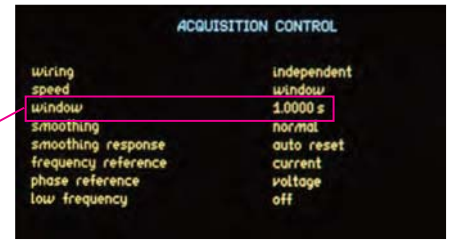
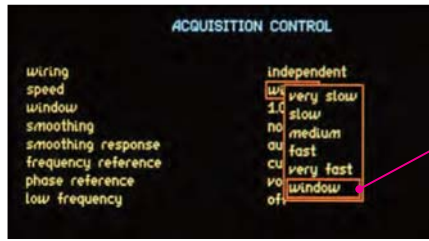
Example of independent wiring configuration showing 3 phase individual coupling settings

**注意:** PPA5500系列功率分析仪本身自带一个可编程数字滤波器，允许使用者设定一个首选的带宽。

## PPA500/PPA1500/PPA5500显示设定，平滑响应和频率参数 PPA5500 PPA1500 PPA500

### ① 显示更新速率

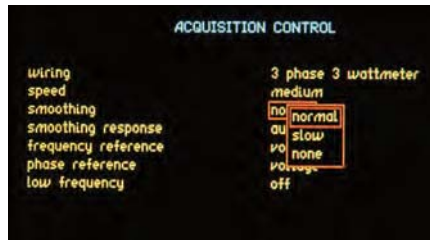
为显示更新速率的各种设置 (12.5ms~10s)，还增加了平滑的平滑选项一起使用时。“窗口”选项允许直接控制测量窗口的大小



Example of setting the window, eg (50Hz set to 20ms)

### ② 响应设置

可以与速度设置一起工作，然后可以将平滑滤波器应用到测量中。正常的和慢速的选项是可用的，它对测量窗口的输出应用递增的时间常数。

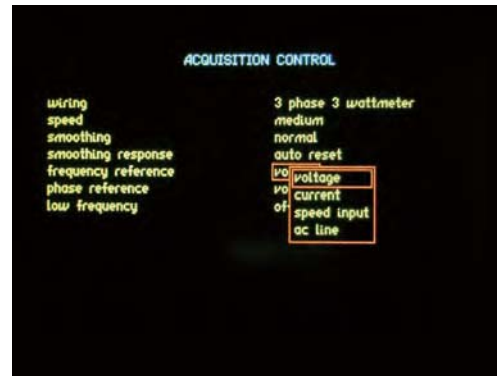


speed	update rate	normal time constant	slow time constant
Very Fast	1/80s	0.05s	0.2s
fast	1/20s	0.2s	0.8s
medium	1/3s	1.5s	6s
slow	2.5s	12s	48s
very slow	10s	48s	192s

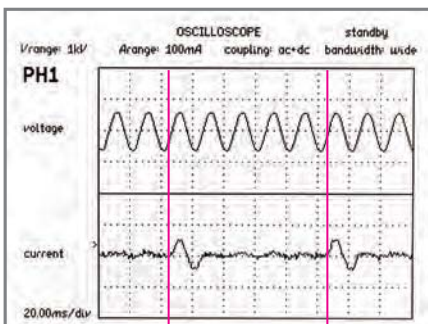
- Display update speed settings
- Setting the filter (normal/slow)

## 频率参考 PPA5500 PPA1500 PPA500

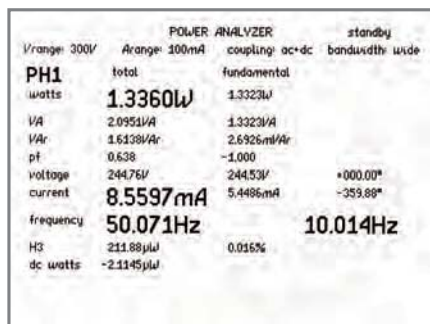
当需要对AC功率进行精密测试时，选择正确同步的基本频率是至关重要的，PPA系列功率分析仪提供了一套可靠的频率同步的解决方案，可以广泛应用在包括：待机功耗，变频器，电子镇流器测试和DC到AC逆变器等指定选项去选择电压，电流，速度或者AC线输入作为频率参考。PPA5500系列还能提供完全独立的频率检测一个所有相位的输入。



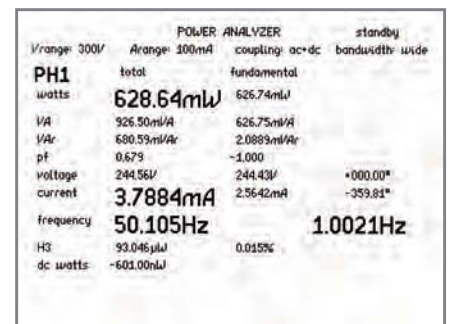
Speed Input PPA5500 only



1:5 cycle (10Hz standby current period) Power measurements synchronized to low duty cycle current pulses of a power supply in standby mode



1:5 duty cycle standby power measurement cycle



1:50 low duty cycle (1Hz) power measurement

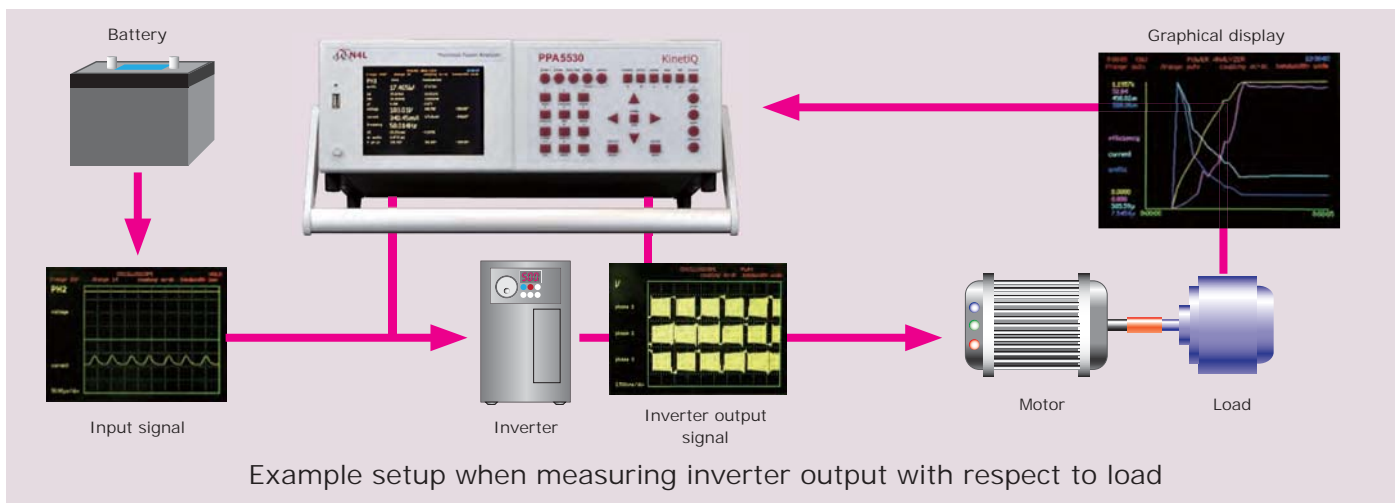
# APPLICATIONS

## 应用模式

PPA5500 PPA1500 PPA500

除了通常的功率测量外，PPA系列功率分析仪还可以进行各种预编程的测试模式：比如PWM马达驱动，电子镇流器，冲击电流，电力转换和待机功耗等测试。

\*PPA5500 only



**APPLICATION SELECTION**

```

mode
default settings
frequency filter
frequency reference
low frequency
torque + speed
efficiency
                
```

**PWM motor drive**  
press ENTER to load

```

4kHz
voltage
off
dis disabled
dis analogue speed
dis pulsed speed
                
```

**APPLICATION SELECTION**

```

mode
default settings
frequency filter
frequency reference
low frequency
torque + speed
scale factor
offset
scale factor
offset
efficiency
                
```

**PWM motor drive**  
press ENTER to load

```

4kHz
current
off
analogue speed
+1.0000 Nm/V
+0.0000 V
1.0000 rpm/V
+0.0000 V
mechanical / sum
                
```

Mode Selection

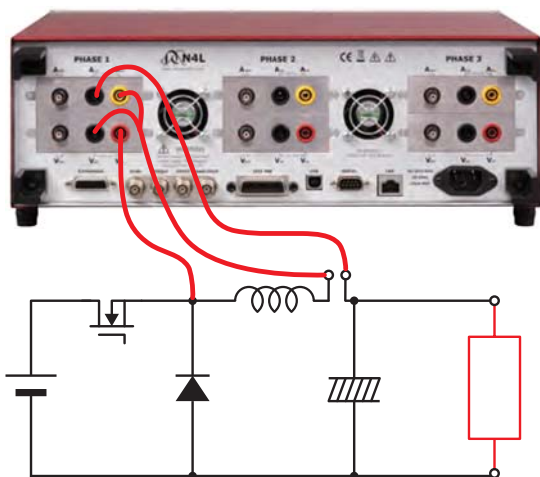
PWM torque and speed sensor selection

Scale factor of analogue speed and torque inputs

## 电感损耗分析测试

PPA5500 PPA1500 PPA500

动态电感损耗分析的一个实例



POWER ANALYZER			
V range: 30V	A range: 300mA	coupling: ac+dc	bandwidth: wide
<b>PH1</b>	total	fundamental	
watts	<b>23.813mW</b>	11.320mW	
VA	325.76mVA	193.59mVA	
VAr	324.89mVAr	-193.26mVAr	
pf	0.073	+0.058	
voltage	<b>3.6878V</b>	2.2899V	+000.00°
current	<b>88.335mA</b>	84.539mA	-086.65°
frequency	<b>30.000kHz</b>		
H3	4.9618mW	43.83%	
dc watts	68.838μW		

Real time data

# PC CONTROL AND DATA ACQUISITION

## PC Software/通过仪器进行分析很容易实现数据的转换

PPA5500 PPA1500 PPA500

仪器进行的分析可以很容易地通过USB、RS232或局域网传输到PC。

- ① PPA LoG软件，非常灵活和易于使用，通过PPA主从模式的功能可以组建4-9个通道的应用领域，数据，图像，Excel等多种方式输出保存

The screenshot shows the PPA Dual Data Logger software interface. It includes a settings panel on the left with options for ACQUI, COUPLING, RANGE, and various measurement parameters. The main area displays 'PPA1 - RESULTS' and 'PPA2 - RESULTS' with real-time data values. A data table at the bottom shows columns for time, rms voltage, rms current, watts, VA, VAR, frequency, and power factor. A 'SAVE LOG TO CSV' button is visible.

Simultaneous display of master and slave units

Real time Datalog

a. Measurement parameters are chosen by the user from tick box options  
 b. Real time results can be displayed as latest value, table or graph  
 c. Datalogging results are then saved in the selected format

Capture up to 60 measured functions per line

## Data Export options

The screenshots show data export options. On the left, a 'POWER ANALYZER' screen displays various power parameters like PH1, watts, VA, VAR, current, frequency, and DC watts. On the right, an Excel spreadsheet shows a table of measurement data with columns for TIME, rms V PH1, rms I PH1, watts PH1, VA PH1, VAR PH1, frequency PH1, power factor PH1, and rms V PH2. A 'SAVE LOG TO CSV' button is highlighted in the software interface.

A Bitmap image of any PPA screen image can be copied to clipboard or imported directly into documents

Measurement tables generated by the data logging function can be exported directly to Excel

- ② PPA Standby Power待机测试功能，完全满足 IEC62301标准，测试数据可以达到并超越美国的能源之星标准和CEC标准等



The screenshots show the PPA Standby Power test interface and its report. The interface displays 'Standby Power' test results for 'Newtons4th Ltd.' with parameters like Power (W), Crest Factor, Average Power (W), and Accumulated Power (Wh). The test result is 'PASS'. The report, titled 'N4L - Standby Power Test Report - IEC 62301', provides detailed test details, test environment, and measurement instrument information.

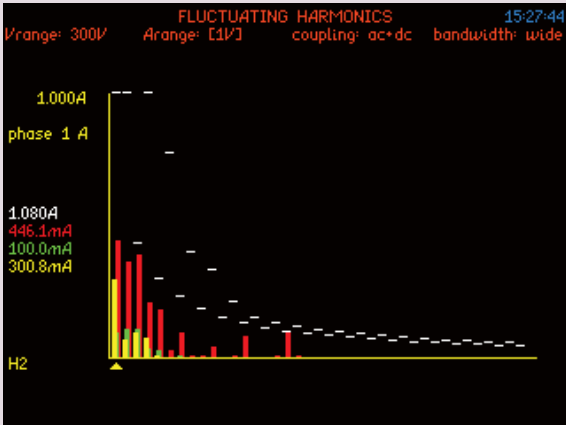
Standby power test screen with real time update of IEC62301 criteria

On completion of the standby test, a full test report can be exported directly to a spreadsheet

## 完全符合 IEC61000-3-2/3-3 的谐波和闪烁测试标准 PPA5500 系列

PA5500

PPA5500 全系列功率分析仪都 满足谐波和闪烁测试标准，N4L 通过仪器和 PC 软件可以提供需要的测试结果



Limits are shown in the graph mode where current, average and max values are updated. The class of the device under test (Harmonics) can be selected in the application menu.



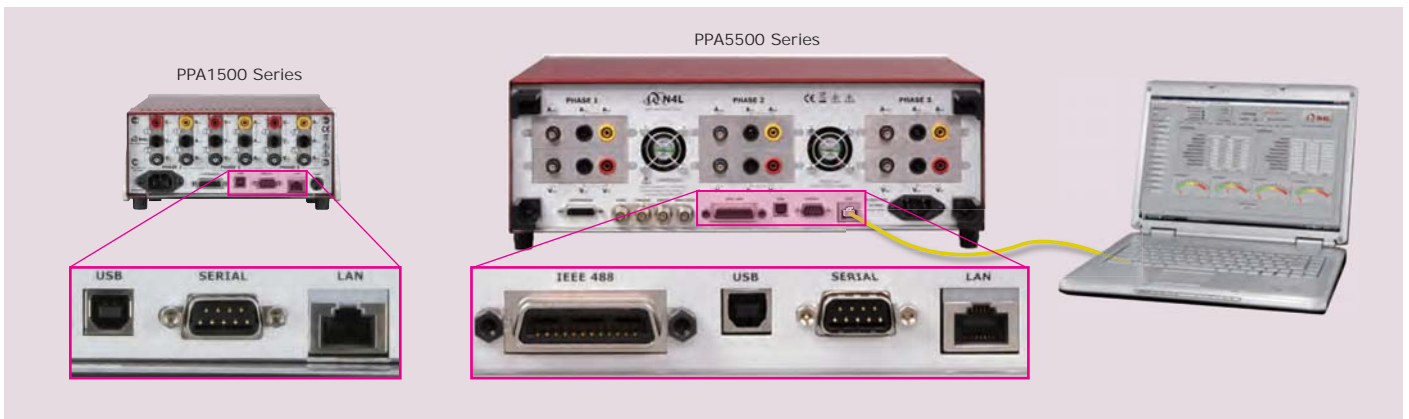
After the test is complete, the unit will display a Pass or Fail message. A screen shot can be downloaded to software, alternatively the test can be controlled and monitored in software.

More information is available in a separate IEC61000 Harmonics and Flicker brochure, fully compliant models are PPA5511 and PPA5531 see \*\* on page 14 for spec

## 通讯接口 PPA500/PPA1500/PPA5500 系列

PPA5500 PPA1500 PPA500

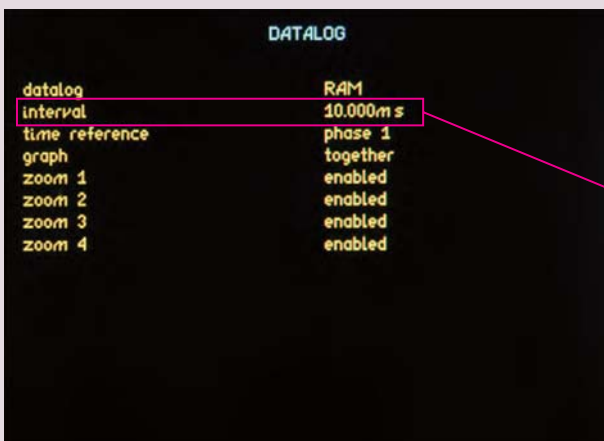
标配 RS232 接口，USB 接口；可选 LAN 接口和 GPIB 接口 (PPA5500 系列标配)



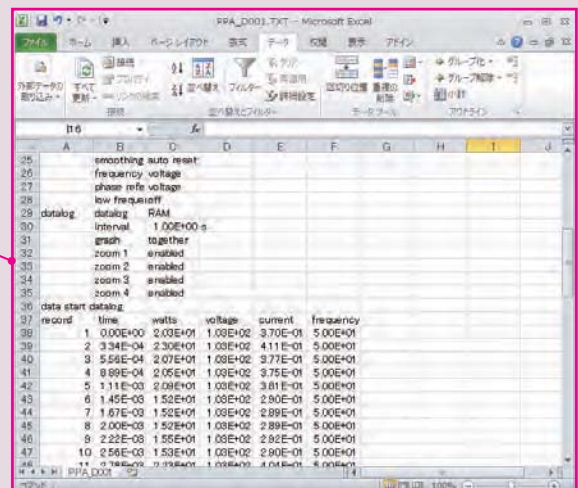
## 数据记录功能 PPA5500/PPA1500/PPA500 系列

PPA5500 PPA1500 PPA500

利用 N4L 独有的复杂频率检测技术，我们的 PPA 系列功率分析仪可以自动实现与交流波形的同步，data log 间隔可以设置从 10ms 与测量保存到电脑或内部存储器。



Datalog menu, interval set to 10ms



# 技术参数

		PPA5500		PPA1500/PPA500			
<b>频率范围</b>							
		DC,10mHz~2MHz - PPA5500-LC(10Arms), PPA5500(30Arms) DC,10mHz~1MHz - PPA5500-HC(50Arms)		正常	PPA1500 DC,10mHz~1MHz/ PPA500 DC, 10mHz~500kHz		
				x10	DC,10mHz~100kHz		
<b>输入电压</b>							
内置	范围	300mVpk~3000Vpk(1000Vrms) in 9 ranges (240Vrms within 300Vpk range, using 20% overrange)		正常	1Vpk~2500Vpk(1000Vrms) in 8 ranges		
	精度	0.01% R <sub>dg</sub> +0.038% R <sub>ng</sub> +(0.004%×kHz)+1mV		x10	100mVpk~300Vpk in 8 ranges		
外置	范围	300μVpk~3Vpk in 9 ranges [BNC connector 3Vpk max input]		正常	0.05% R <sub>dg</sub> +0.1% R <sub>ng</sub> +(0.005%×kHz)+5mV		
	精度	0.01%R <sub>dg</sub> +0.038%R <sub>ng</sub> +(0.004%×kHz)+1μV		x10	0.05% R <sub>dg</sub> +0.1% R <sub>ng</sub> +(0.01%×kHz)+1mV		
<b>输入电流</b>							
内置 (直接输入)	10Arms Low Current (PPA5500-LC) 4mm safety connectors	范围	3mA <sub>pk</sub> ~30A <sub>pk</sub> (10Arms) in 9 ranges	20Arms (PPA1500) Shunt 4mm Safety Connectors	范围	正常	100mA <sub>pk</sub> ~300A <sub>pk</sub> (20Arms) in 8 ranges
		精度	0.01% R <sub>dg</sub> +0.038% R <sub>ng</sub> +(0.004%×kHz)+10μA		x10	10mA <sub>pk</sub> ~30A <sub>pk</sub> in 8 ranges	
	30Arms Current (PPA5500) 4mm safety connectors	范围	30mA <sub>pk</sub> ~300A <sub>pk</sub> (30Arms) in 9 ranges	30Arms (PPA1500-HC) Shunt 4mm Safety Connectors	精度	正常	0.05% R <sub>dg</sub> +0.1% R <sub>ng</sub> +(0.005%×kHz)+500μA
		精度	0.01% R <sub>dg</sub> +0.038% R <sub>ng</sub> +(0.004%×kHz)+100μA		x10	0.05% R <sub>dg</sub> +0.1% R <sub>ng</sub> +(0.01%×kHz)+100μA	
	50Arms High Current (PPA5500-HC) ** Touch proof screw terminal	范围	100mA <sub>pk</sub> ~1000A <sub>pk</sub> (50Arms) in 9 ranges		范围	正常	300mA <sub>pk</sub> ~1000A <sub>pk</sub> (30Arms) in 8 ranges
		精度	0.01% R <sub>dg</sub> +0.038% R <sub>ng</sub> +(0.004%×kHz)+300μA		x10	30mA <sub>pk</sub> ~100A <sub>pk</sub> in 8 ranges	
外置输入 (外置电流传感器)	BNC Connector (Max input 3Vpk)	范围	300μVpk~3Vpk in 9 ranges	BNC connector (Max input 3Vpk)	范围	正常	1mVpk~3Vpk in 8 ranges
		精度	0.01% R <sub>dg</sub> +0.038% R <sub>ng</sub> +(0.004%×kHz)+1μV		精度	x10	0.05% R <sub>dg</sub> +0.1% R <sub>ng</sub> +(0.005%×kHz)+5μV
<b>相位精度</b>							
		0.005deg+(0.01deg×kHz) 【PPA5500-LC(10Arms), PPA5500(30Arms)】 0.01deg+(0.02deg×kHz) 【PPA5500-HC(50Arms)】		正常	0.01deg+(0.01deg×kHz)		
				x10	0.01deg+(0.02deg×kHz)		
<b>功率精度</b>							
		[0.03%+0.03%/pf+(0.01%×kHz)/pf] R <sub>dg</sub> +0.03%VA R <sub>ng</sub>		正常	[0.1%+0.1%/pf+(0.01%×kHz)/pf] R <sub>dg</sub> +0.1%VA R <sub>ng</sub>		
				x10	[0.1%+0.1%/pf+(0.02%×kHz)/pf] R <sub>dg</sub> +0.1%VA R <sub>ng</sub>		
40-400Hz			[0.03%+0.03%/pf+(0.01%×kHz)/pf] R <sub>dg</sub> +0.02%VA R <sub>ng</sub>	40-400Hz	As above with range error reduced from +0.1%VA,VA R <sub>dg</sub> to +0.05%VA,VA R <sub>ng</sub>		
<b>常规项</b>							
波峰因数	20(Voltage and Current)						
采样率	2.2Ms/s on all channels, No-Gap		1Ms/s on all channels, No-Gap				
IEC模式	IEC61000 Harmonics and Flicker (PPA5500), IEC62301 Standby Power						
应用模式	PWM Motor Drive, Ballast, Inrush, Power Transformer, Standby Power, Fluctuating Harmonics, Flicker Meter		Ballast, Inrush, Standby Power				
<b>CMRR - 共模抑制比</b>							
		250V @ 50Hz - ≥ 1mA (150dB)					
		100V @ 100kHz - ≥ 3mA (130dB)					
<b>测量参数</b>							
W ,VA ,Var ,pf ,V & A - rms ,rectified mean ,AC ,DC ,Peak ,Surge ,Crest Factor ,Form Factor ,Star to Delta Voltage							
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 (30 with optional PC software)							
数据记录窗口	No-Gap analysis, Minimum window 10ms						
存储	10M records into flash RAM (Non-Volatile)		RAM up to 16,000 records				
<b>通讯接口</b>							
RS232	Baud rate up to 38.4kbps,RTS/CTS flow control						
LAN(选配 L)	10/100 Base-T Ethernet auto sensing						
GPIB(选配G)	IEEE488.2 Compatible		—				
USB	USB 2.0 and 1.1 compatible						
模拟输出	Bipolar ±10V(BNC)						
转速	BNC Bipolar±10V or Pulse count 1Hz to 1MHz 0.01% R <sub>dg</sub>						
扭矩	BNC Bipolar±10V or Pulse count 1Hz to 1MHz 0.01% R <sub>dg</sub>						
同步	4~6 Phase measurement (Master/Slave)						
扩展功能	4~6 Phase (Master/Slave) + Auxiliary		Auxiliary Port				
<b>标准配件</b>							
电缆线	Power, RS232, USB						
连接电缆	36A 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase (1x red, 1x black with HC version)		20A (Std version) or 30A (HC version) 1.5m long 4mm stackable terminals 1x red, 1x yellow and 2x black per phase				
连接片	4mm terminated alligator clips - 1x red, 1x yellow and 2x black per phase (1x red and 1x black per phase with PPA5500-HC version)						
CD-ROM	CommView2 (RS232/USB/LAN), Command line, Script based communication software						
手册文件	User manual, Communications manual, Calibration certificate, Quick start guide						
<b>物理参数</b>							
显示	320×240 dot full colour TFT, White LED Backlit		480×272 dot full colour TFT, White LED Backlit				
尺寸	130H×400W×315D mm excluding feet		92H×215W×312D mm excluding feet				
重量	5.4kg(1 Phase), 6kg(3 Phase)		3.3kg(1 Phase), 4kg(3 Phase)				
安全隔离	1000Vrms or DC(CATII), 600Vrms or DC(CATIII)						
电源	90~265Vrms, 50~60Hz, 40Vamax						
工作温度	5°C to 40°C Ambient Temperature (or air intake temperature when rack mounted), 20-90% Non-Condensing Relative Humidity. Temperature coefficient ±0.01% per °C of reading at 5-8°C and 28-40°C						

# 规格型号

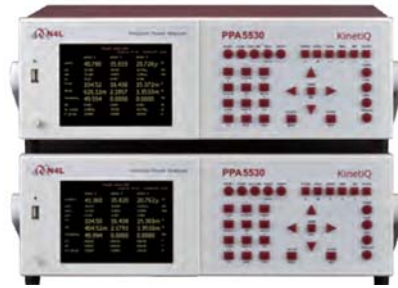
## PPA5500 Series

Phases	Model	Specification
1 Ph	PPA5510-LC	DC, 10mHz ~ 2MHz 3mApk ~ 30Apk (10Arms)
2 Ph	PPA5520-LC	
3 Ph	PPA5530-LC	
4 Ph	PPA5540-LC	
5 Ph	PPA5550-LC	
6 Ph	PPA5560-LC	



PPA5500 3 Phase model

Phases	Model	Specification
1 Ph	PPA5510	DC, 10mHz ~ 2MHz 30mApk ~ 300Apk (30Arms)
2 Ph	PPA5520	
3 Ph	PPA5530	
4 Ph	PPA5540	
5 Ph	PPA5550	
6 Ph	PPA5560	



PPA5500 units in Master/Slave mode, synchronised for 4-6 Phase measurements

Phases	Model	Specification
1 Ph	PPA5510-HC	DC, 10mHz ~ 1MHz 100mApk ~ 1000Apk (50Arms)
2 Ph	PPA5520-HC	
3 Ph	PPA5530-HC	
4 Ph	PPA5540-HC	
5 Ph	PPA5550-HC	
6 Ph	PPA5560-HC	



Touchproof 50A screw connectors used on PPA5500-HC and PPA2600-HC versions



PPA1500 3 Phase model

## PPA1500/PPA500 Series

Phases	Model	Specification
1 Ph	PPA1510/510*	DC, 10mHz ~ 1MHz 100mApk ~ 300Apk (20Arms)
2 Ph	PPA1520/520*	
3 Ph	PPA1530/530*	
1 Ph	PPA1510/510-HC*	DC, 10mHz ~ 1MHz 300mApk ~ 1000Apk (30Arms)
2 Ph	PPA1520/520-HC*	
3 Ph	PPA1530/530-HC*	

\*PPA500 DC, 10mHz ~ 500kHz

## 配件

电缆线和接口		Specification
Type		
36A Connection lead set		1.5 Meter - 36A lead set with 4mm stackable safety terminals 1x Red, 1x Yellow and 2x Black per phase plus alligator clips
36A 4mm to spade (option)		1.5 Meter - 36A lead set with 4mm to spade for HC terminals
RS232 cable		RS232 9pin serial Cable
USB cable		USB 2 Meter A male to B male
USB to 9-pin RS232 (Option)		USB ~ 9-pin RS232 Serial Converter
Master-Slave cable (Option)		Leads for connecting 2x PPA5500 in master/slave mode

接口 (选件)		Specification
Type		
PPA-LAN interface		Option L - LAN Interface
PPA-GPIB interface		Option G - GPIB(IEEE488)Interface - PPA25/26 and 55 series

PC 软件 (选件)		Specification
Type		
PPA Dual Data Logger		PC control and data acquisition of 1 to 6 phases with selectable Real Time data, Graphing, Datalog and versatile export options
PPAcomm		Basic PC Control, Data storage, Print features
PPA Standby Power		Standby power measurements and reporting to IEC62301
PPAsoft PC software		LabView based software, PC Control, Data storage and Print

连接与扩展端口 (选配)		Specification
Type		
Breakout box		Simple analyzer connection between source and DUT
PCIS		10Arms 300Apk rated Phase Controlled Inrush Switch

套件 (选件)		Specification
Type		
Rack Mount brackets		PPA26/5500 19in rack mount brackets (model specific)
Rack Mount panel		PPA2500 19in rack facia panel

Carry cases (选件)		Specification
Type		
Soft carrying case		Black nylon with shoulder strap
Hard flight case		Hard case with moulded lining suitable for shipping

文件 (标准)		Specification
Type		
校准/测试&检验证书		PPA 校准证书
备用手册		用户手册 通讯手册

## 产品对比表

	PPA1500/PPA500	PPA2500/PPA2600	PPA5500
<b>基本精度</b>			
V, A rdg error	0.05%	0.04%	0.01%
Power rdg error	0.10%	0.05%	0.03%
<b>相数</b>			
单机	1 ~ 3		
主从模式	—	4 ~ 6	
<b>电压输入</b>			
最大输入电压	2500Vpk	3000Vpk	
No. of ranges	8	8	9
<b>直接输入电流</b>			
10Arms model	—	○	○
20Arms model	○	—	—
30Arms model	○	○	○
50Arms model	—	only PPA2600	○
No. of ranges	8	8	9

	PPA1500/PPA500	PPA2500/PPA2600	PPA5500
<b>频宽</b>			
20A & 30A 分流器	DC ~ 1MHz/500kHz	—	—
10A & 30A 分流器	—	DC ~ 2MHz	DC ~ 2MHz
50A 分流器	—	DC ~ 1MHz	DC ~ 1MHz
<b>Features</b>			
USB Memory port	○	—	○
Real time clock	○	—	○
19in Rack mount option	—	only PPA2600	○
<b>Other features</b>			
Speed-Harmonics/sec	300	300	1,800
存储器	192kB	192kB	1GB
Internal data logging	4	4	16(4 X 4)
扭矩和转速	—	○	○
Dimensions - Excl. Feet H x W x D (mm)	92 x 215 x 312	125 x 355 x 250 125 x 430 x 250	130 x 400 x 315
重量	3.3 - 4kg	5 - 6kg	5.4 - 6kg

## 配套选件

### 外置分流电阻 (DC ~ 1MHz)

Model number	Basic accuracy	Phase accuracy	Maximum current	
			Continuous	Peak
HF500	0.2mΩ (±0.1%)	0.1° / kHz	500Arms	5000Apk
HF200	0.5mΩ (±0.1%)	0.1° / kHz	200Arms	2000Apk
HF100	1.0mΩ (±0.1%)	0.05° / kHz	100Arms	1000Apk
HF020	10mΩ (±0.1%)	0.01° / kHz	20Arms	200Apk
HF006	100mΩ (±0.1%)	0.001° / kHz	6Arms	60Apk
HF003	470mΩ (±0.1%)	0.0001° / kHz	3Arms	30Apk



External Shunt HF-003

External Shunt HF-500

### 探头与电流传感器: AC

Model number	Measuring range	Frequency range	Clamp diameter	Category
M3 UB 50A-1V	100mA ~ 50A	40Hz ~ 5kHz	15mm×17mm	600V CATIII
M3 U 100A-1V	1A ~ 100A	40Hz ~ 5kHz	15mm×17mm	600V CATIII
S UE 200A-1V	1A ~ 200A	40Hz ~ 5kHz	50mm ø	600V CATIII
S UE 250 500 1000-1V	1A ~ 250A/500A/1000A	40Hz ~ 5kHz	50mm ø	600V CATIII
UE UE 1000A-1V	1A ~ 1000A	40Hz ~ 5kHz	43mm ø	600V CATIII
SM UE 1000A-1V	0.5A ~ 1000A(1%>100A)	15Hz ~ 15kHz	54mm ø	600V CATIII
SM UB 1000A-1V	0.5A ~ 1000A(0.5%>10A)	15Hz ~ 15kHz	54mm ø	600V CATIII
P32 UE 1000A-1V	5A ~ 1000A	40Hz ~ 5kHz	83mm ø (125mm×47mm or 100mm×58mm)	600V CATIII
P32 UE 3000A-1V	5A ~ 1000A	40Hz ~ 5kHz	83mm ø	600V CATIII



Current Clamp SC 3C 1000A-1V



Current Clamp P20 3C 2000A-2V

### 罗氏线圈: AC

Model number	Measuring range	Frequency range	Coil Circumference	Category
WR5000 Rogowski	1A ~ 5000A	1Hz ~ 1MHz	600mm	600V CATIII

### 探头 / 电流钳(Hall effect): AC + DC

Model number	Measuring range	Frequency range	Clamp diameter	Category
SC 3C 1000A-1V	1A ~ 1000A	DC ~ 2kHz	59mm ø	600V CATIII
P20 3C 2000A-2V	40A ~ 1000/2000A	DC ~ 2kHz	83mm ø	600V CATIII
P40 3C 4000A-2V	40A ~ 2000/4000A	DC ~ 2kHz	83mm ø	600V CATIII
P50 3C 5000A-2V	50A ~ 1000/5000A	DC ~ 2kHz	83mm ø	600V CATIII



HV Probe TT-HV15

### 高精度探头

Model	Voltage range	Frequency range	Specification
ULC Probe	~ 1000Vrms	DC ~ 2MHz	Ultra-low capacitance probe, 1000: 1, 1.5pF
ATT20 probes	—	—	20:1 HV Attenuator
ATT10 probes	—	—	10:1 HV Attenuator

All specifications at 23°C ± 5°C. These specifications are quoted in good faith but Newtons4th Ltd reserves the right to amend any specification at any time without notice

英国N4L公司的产品还包括频率响应分析仪和阻抗分析仪, 双通道频率校准分析仪和电压放大器等。



PSM1735  
10μHz ~ 35MHz



PSM1700  
10μHz ~ 1MHz

### 应用领域:

- 电源相位与增益分析(FRA)
- 电感, 电容和是阻(LCR)
- 机械振动分析 (HARM)
- 相位分析 (PAV)

Contact your local N4L Distributor for further details

## Newtons4th英国牛顿

英国N4L公司是一家集设计, 制造和技术支持于一体的创新型电子仪器公司: 面对全球市场, 专著于与相位测试相关的高精密测试领域的研究; 公司坚持以高性价比, 采用全球最新前沿技术和最新分析技术设计客户需要的, 易于客户使用的高精密仪器; 同时应客户的真正需求, 我们可以提供个性化, 创新性的客户需求。



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



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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