Benefits

- Multifunctional power analyzer for wired measurements up to 100kHz
- Developed in Germany and manufactured in Europe according to highest quality and production standards
- 6 + 1 analyzer with state of the art functionality and highest in class resolution
- Covering a large application area from electronics design and development to service and production environments
- Compact footprint bench-top combining features of seven different instruments at a best in class performance
- Brilliant QVGA TFT display for excellent readability combined with a freely configurable graphical user interface

- Lowest basic accuracy in its class → 0.05% of reading
- Automatic AC/DC detection and switching
- Excellent scaleability through options and accessories
- Well-balanced sampling rate and bandwidth ratio to never miss any waveform details
- Fanless design for silent operation
- Very fast boot time → less than 8s
- Huge variety of interfaces
- Future-proof investment: long-term support and new functions via firmware upgrades

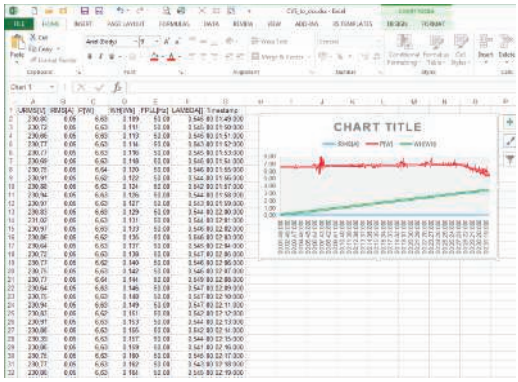
Applications

- Consumption analysis of on-grid devices
- Power analysis for embedded systems
- Power electronics: R&D, engine test stands, switched PSU, power inverter
- Quality control in manufacturing
- Standards testing in R&D and production
- Battery and solar industries: charge and discharge cycles
- Embedded and analog hardware design: power consumption of FPGAs, µCs, LED panels → 5V, mW
- Service and maintenance Education customers

At a Glance

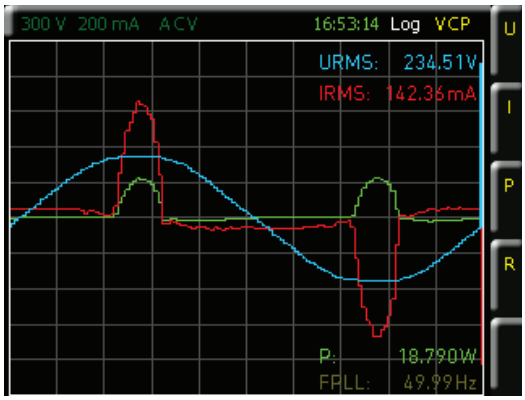
Key Facts	
Bandwidth	DC to 100 kHz
Sampling Rate	500 kSample/s
Resolution	2x 16-bit simultaneous sampling (voltage and current)
Voltage Input	up to $600V_{rms}$
Current Input	up to $20A_{rms}$
Basic Accuracy	0.05% of reading
Display	Brilliant color TFT
1+1 Datalogging	CSV to USB stick or remotely via interface
2+1 Oscilloscope	Oscillographic waveform chart (opt.)
3+1 Spectrum Analyzer	Harmonics as bar chart or table view (opt.
4+1 Energy Meter	Real-time integrator
5+1 Production Tester	Limit testing with PASS-FAIL (opt.)
6+1 Policy Tester	Energy Star, EN50160, EN50564, EN61000-3-2, IEC62301 (opt.)

Datalogging



- Logging of up to 10 measurement parameters
- Recording 10 readings per second
- Absolute time stamps with 100ms resolution
- Directly to USB flash drives (FAT32)
- Logging data saved in CSV format
- Directly utilizable in Excel spreadsheets

Oscilloscope

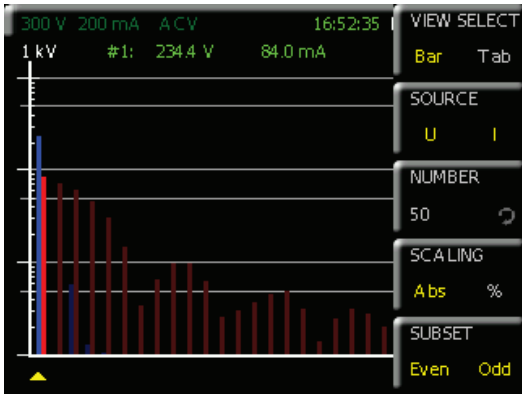


- Waveform auto-scaling
- Automatic hardware-based triggering
- Simultaneous display of voltage, current and power for one period
- Auto-measurement for Urms,Irms, F PLL, P, Φ

Inrush mode: single shot with user-defined time base to analyze fast switching-on operations

Note: for full operation **HVC151** option is required

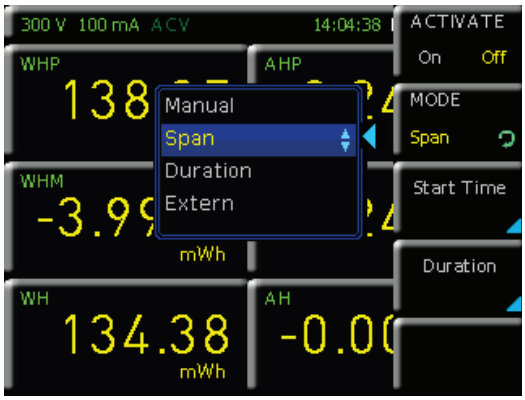
Spectrum Analyzer



- Harmonics visualized as bar chart or table view
- Calculation covering 50 harmonics
- Scaling with absolute V/A values or as percentage of basic wave
- Logarithmic display to never miss any details
- Export function for easier report generation

Note: for full operation **HVC151** option is required

Energy Meter



- High precision and gapless acquisition
- Hardware-based, real-time integration
- Distinguishing positive and negative Wh, Ah
- Acquisition modes: manually, time-based, event-based (ext. trigger)
- Logging functionality as standard

Note: for full operation **HVC152** option is required

Production Tester

Limit testing

- Numerical display with limit bar
- Up to 6 limits freely configurable
- PASS-FAIL for one limit via rear connectors
  - Analog output representing limit bar
  - Digital output showing limit violations

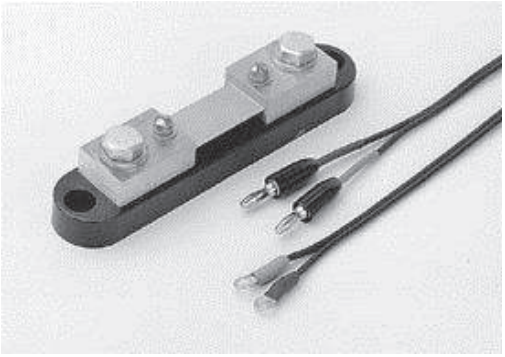
Production environment

- Huge variaty of interfaces for remote control
- SCPI command set
- Rackmount kit capability

Note: for full operation **HVC152** option is required

Input Ranges

- 600V rms and 20A rms
- Short-term peaks up to 1,800V and 60A
- Two selectable crest factors: CF3, CF6
- Automatic internal current range switching
- 3-times overload capability
- Increase current input range by external shunts or current probes
- Graphical range and limit bars



Power Analyzer R&S®HMC8015			
Range configuration			
	CF3	CF6	Peak
voltage	6 V	2.6 V	±16 V
	15 V	7.5 V	±45 V
	30 V	15 V	±90 V
	60 V	30 V	±180 V
	150 V	75 V	±450 V
	300 V	150 V	±900 V
	600 V	300 V	±1800 V
current (600mΩ)	6 mA	2.6 mA	±16 mA
	10 mA	6 mA	±30 mA
	20 mA	10 mA	±60 mA
	60 mA	25 mA	±150 mA
	100 mA	60 mA	±300 mA
	200 mA	100 mA	±600 mA
current (10mΩ)	0.6 A	0.25 A	±1.6 A
	1 A	0.6 A	±3 A
	2 A	1 A	±6 A
	6 A	2.6 A	±16 A
	10 A	6 A	±30 A
	20 A	10 A	±60 A

Measurement Parameters

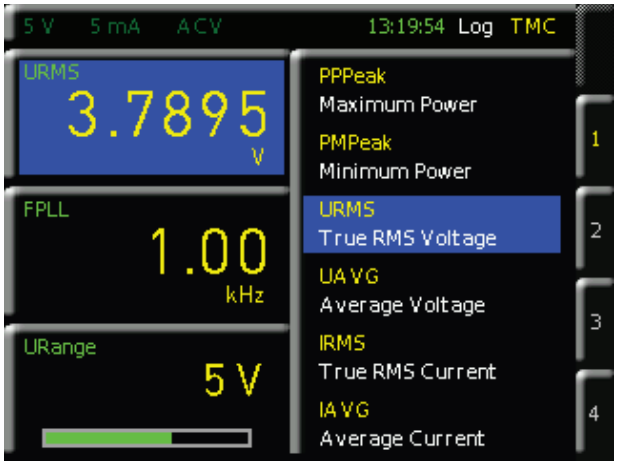
- Simultaneous sampling of voltage and current
- Real-time integrator
- 26 different measurement parameters

- R&S®HMC8015 basic unit

  P,S,Q,U_{rms},U_{avg},U_{THD},I_{rms},I_{avg},I_{THD},F_U,F_I,F_{PLL}, λ,Φ,Wh+,Wh-,Wh,Ah+,Ah-,Ah

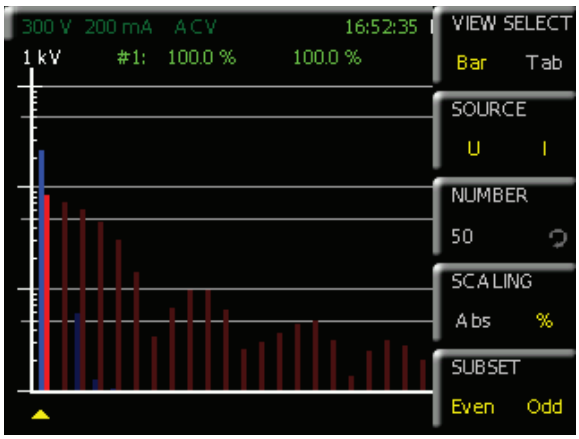
- Advanced Analysis (HOC151/HVC151)

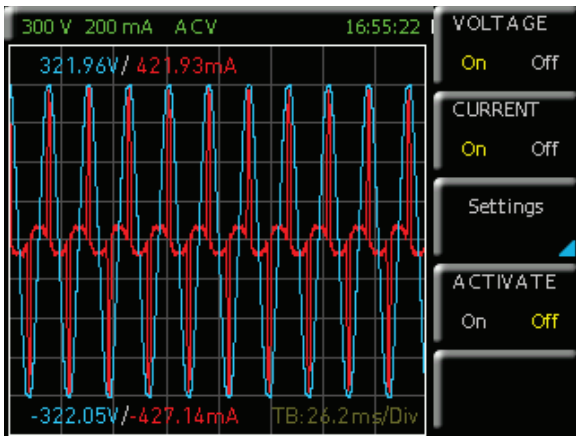
  Same as basic unit plus U_{p+},U_{p-},I_{p+},I_{p-},P_{p+},P_{p-}, waveform, trendchart, inrush, harmonics view



Note: for full operation **HVC151** option is required

- 6 different display and operation modes
  - Numeric
  - Waveform
  - Trendchart
  - Inrush
  - Harmonics
  - Policy Testing





Note: for full operation **HVC151, HVC153** options are required

Connectivity

- R&S®HCZ815 mains adapter
  - EU, GB, USA
  - 250V AC, 10 A max
  - CAT-II

- Analog and digital I/Os + SENSOR input for external sensors,triggering and monitoring

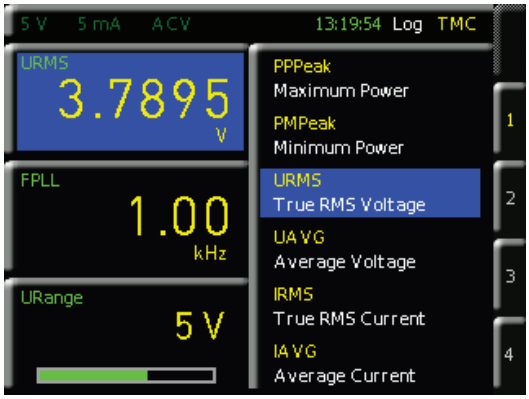
- Remote control interfaces:
  USB (VCP,TMC), Ethernet (LXI + Webserver), IEEE-488 (GPIB,R&S®HMC8015-G)

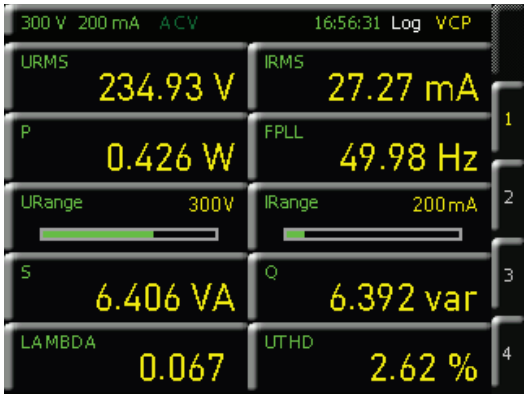
- Driver packages:
  LabVIEW, LabWindows/CVI, VXI, IVI.NET

Note: for full operation **HVC152** option is required

Display

- Freely configurable graphical user interface
- Numerical and chart display modes
- Easy to operate, easy to configure measurements
- Flat menu design for fast navigation
- 10 display updates per second
- Easy screenshot export → push&hold





Technical Data

Basic Specifications

Measurement method	simultaneous voltage and current sampling
Analog bandwidth	DC to 100 kHz
Frequency accuracy	0.1 % of reading
A/D converter resolution	16 bit (voltage), 16 bit (current)
Basic accuracy	0.05 % of reading
Display resolution	5 digits
Sampling frequency	500 kHz
Filters	
Analog signal filter Digital filter Frequency filter	1 kHz automatic adaptiv filter 500 Hz (independent from signal filters)
Additional rear panel inputs / outputs (BNC)	
Analog input	$\pm 10\,V_p$
Analog input accuracy	0.5 % of reading
Analog output	$\pm 5\,V_p$
Digital input	
Low level High level	0 V to 2 V 3 V to 24 V
Digital output	5 V TTL (up to 100 mA source/sink)
Voltage input impedance	2 MΩ
PLL synchronisation sources	U, I, external

General Specifications

Display	
Type	8.9 cm (3.5“) TFT (Farbe)
Resolution	320 x 240 Pixel (QVGA)
Power supply	$100\,V_{ac}$ to $115\,V_{ac}$ / $230\,V_{ac}$ ±10 % @ 50-60 Hz
Power consumption	30 W max, 15 W typ.
Operating temperature	5 °C to 40 °C
Storage temperature	-25 °C to 60 °C
Standards	CSA, DIN EN 61010-1, DIN EN 61326-1, DIN EN 55011
Common mode voltage	CAT II, $600\,V_{rms}$
Dimensions	222 x 88 x 280 mm
Weight	ca 3.250 kg
Warm-up time	60 minutes

Specifications apply to sine wave as input, PF = 1, voltage to earth = 0V, analog signal filter deactivated, digital filter activited

Power Analyzer R&S®HMC8015

Range configuration			
	CF3	CF6	Peak
voltage	5 V 15 V 30 V 60 V 150 V 300 V 600 V	2.5 V 7.5 V 15 V 30 V 75 V 150 V 300 V	±15 V ±45 V ±90 V ±180 V ±450 V ±900 V ±1800 V
current (500mΩ)	5 mA 10 mA 20 mA 50 mA 100 mA 200 mA	2.5 mA 5 mA 10 mA 25 mA 50 mA 100 mA	±15 mA ±30 mA ±60 mA ±150 mA ±300 mA ±600 mA
current (10mΩ)	0.5 A 1 A 2 A 5 A 10 A 20 A	0.25 A 0.5 A 1 A 2.5 A 5 A 10 A	±1.5 A ±3 A ±6 A ±15 A ±30 A ±60 A
sensor	0.033 V 0.33 V 1.33 V	0.066 V 0.66 V 2.66 V	±0.1 V ±1 V ±4 V
Measurement accuracy (± reading in % ± peak range in %)			
Frequency	Voltage	Current / Sensor	Active Power
DC f < 45 Hz 45 Hz < f < 66 Hz 66 Hz < f < 1 kHz 1 kHz < f < 10 kHz 10 kHz < f < 100 kHz	0.05 + 0.05 0.05 + 0.05 0.05 + 0.05 0.05 + 0.1 (0.1 + 0.02 *F) + 0.1 (0.1 + 0.04 *F) + 0.1	0.05 + 0.05 0.05 + 0.05 0.05 + 0.05 0.05 + 0.1 (0.1 + 0.02 *F) + 0.1 (0.1 + 0.04 *F) + 0.2	0.05 + 0.05 0.075 + 0.075 0.05 + 0.05 0.075 + 0.075 (0.1 + 0.07 *F) + 0.1 (0.1 + 0.07 *F) + 0.1
voltage, current: F = frequency in kHz sensor input: F = frequency in kHz *2			
Additional errors			
Power factor < 1	±(0.2 + 0.2 *F)%, only for active power		
Common mode error	±0.01 % of peak range		

All specifications valid for a temperature range between 20 °C and 30 °C at 80% relative humidity after 60 minutes warm-up

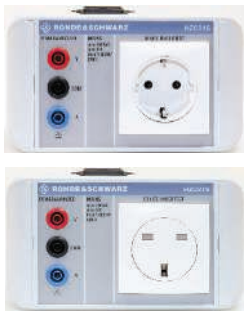
Models & options

- **R&S®HMC8015** basic unit
- **R&S®HMC8015-G** basic unit with GPIB

- **Advanced Analysis** option license key/voucher: HOC151/HVC151
- **Advanced I/O** option license key/voucher: HOC152/HVC152
- **OneBox Tester** option license key/voucher: HOC153/HVC153

Recommended Accessories

- **R&S®HZC815-EU** mains adapter
- **R&S®HZC815-GB** mains adapter
- **R&S®HZC815-USA** mains adapter



- **R&S®HZC50** AC/DC current probe (30A)
- **R&S®HZC51** AC/DC current probe (1kA)