R&S®ESSENTIALS

R&S®UDS DIGITAL MULTIMETERS

Built for accuracy, designed for ease

Data Sheet
Version 01.00

ROHDE&SCHWARZ
Make ideas real

MEASUREMENT CAPABILITIES LIKE NEVER BEFORE

The R&S®UDS family of compact digital multimeters is engineered for both general-purpose and production line environments. Renowned for their versatility and precision, the multimeters can simultaneously display three measurement functions, streamlining test workflows. Beyond the standard 12 measurement functions, the multimeters offer built-in statistical and mathematical functions and an intuitive user interface for smooth and efficient testing.

Accuracy, speed and usability are vital to digital multimeters. The instruments are indispensable in circuit troubleshooting, component testing and system validation. The R&S®UDS family of digital multimeters are a powerful solution and include 5½ and 6½ digit multimeters, tailored for both laboratory and production testing. The large screen can display three values at the same time and be easily viewed from a distance.

Both models come fully equipped with essential measurement capabilities for all testing environments. Users can effortlessly navigate through DCV, DCI, ACV, ACI, frequency, resistance, temperature, capacitance, diode and continuity testing functions. Front panel sense sockets support four-wire measurements that require low/high connections. The basic functions are complemented by statistical measurement capabilities and limit testing features. Users can configure statistical parameters and set measurement limits. Display colors change to indicate limit violations: red for out-of-limit values and green for within-limit ones. An optional error tone can be toggled with the beeper soft menu key.

Auto-ranging eliminates the need for manual adjustments while improving efficiency and reducing tact times. Instrument settings can be conveniently stored and retrieved with the save and recall function.

The R&S®UDS600 digital multimeter has exceptional DC accuracy with 0.0075 % precision. Such high levels of accuracy and 6½ digit resolution mean that even the most minute variations can be precisely captured.

All instruments in the R&S®UDS family can be remotely controlled via Ethernet or USB. A virtual COM port and the USB test and measurement class (TMC) are supported. Remote control commands comply with SCPI standards and cost-free driver packages for LabVIEW, LabWindows/CVI and IVI.net are available. The packages enable seamless integration of R&S®UDS instruments into existing systems. The R&S®UDS500-G and R&S®UDS600-G models fit effortlessly into the R&S®HZC95 2 HU 19" rackmount kit, making them ideal for production environments.

Key facts

- Measurement range: DC to 100 kHz
- Digit resolution: up to 6½ digits
- Basic DC accuracy: 0.0075 %
- Up to 200 readings/s
- Measurement functions: basic, mathematical
- Resolution: 100 nV, 10 nA, 0.1 mΩ, 0.1 pF, 1 Hz, 0.1 °C

BENEFITS

FOUR MODEL SERIES

- R&S®UDS500: 5½ digital multimeter
- R&S®UDS500-G: 5½ digital multimeter with GPIB interface
- R&S®UDS600: 6½ digital multimeter
- R&S®UDS600-G: 6½ digital multimeter with GPIB interface

MEASUREMENT ACCURACY

- Up to 2 000 000 counts
- Basic DC accuracy: 0.0075 %
- Signal acquisition from DC to 100 kHz, with up to 200 measurements/s
- Resolution: 100 nV, 10 nA, 0.1 mΩ, 0.1 pF, 1 Hz, 0.1 °C

MEASUREMENT VERSATILITY

- Simultaneous display of three measurements, e.g. DC, AC and statistics
- Up to 12 measurement functions: DCV, DCI, true RMS, ACV and ACI, frequency, two-wire and four-wire resistance, capacitance, continuity test, diode test, temperature, power
- Versatile mathematic functions: limit testing, min./max., average, offset, DC power, dB, dBm
- Brilliant QVGA color display for excellent readability
- Limit testing directly on the display for easy minimum/maximum analysis
- Long-term data logging in CSV format via USB flash drive

REMOTE CONTROL

- USB port (virtual COM port, USBTMC)
- Ethernet interface (LAN) with integrated web server
- Remote control via SCPI based commands
- Driver packages for LabVIEW, LabWindows/CVI, IVI.net
- R&S®UDSx-G models: also IEEE-488 (GPIB) interface
- Code compatible with R&S®HMC8012

INCLUDED ACCESSORIES

- 1-m silicon test leads with safety connector and test probe
- Set of power cables
- Quick start guide

VERSATILE FUNCTIONS

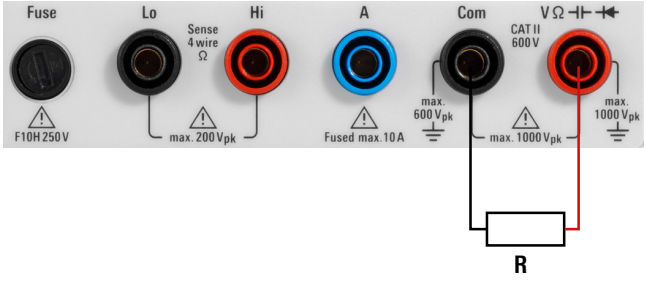
Manual and auto ranging

The range up or range down soft menu keys can adjust the measuring range. Range down switches to the next lower range, while range up switches to the next higher range. When auto range is deactivated, manual adjustments are necessary. When auto range is activated, the device automatically selects the optimal measurement range. If the measured value exceeds the selected range in manual mode, an “over range” message will appear.

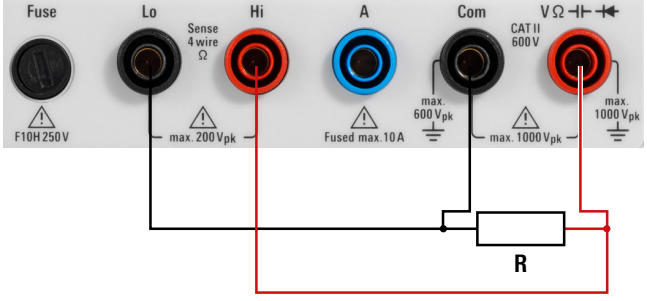
Two- and four-wire measurements

The R&S®UDS digital multimeters support both two-wire and four-wire measurements. They feature four front panel sockets: Com, V, Lo and Hi. For two-wire measurements, only the Com and V sockets are required. Four-wire measurements also require Lo and Hi sockets (Sense).

Two-wire measurements



Four-wire measurements

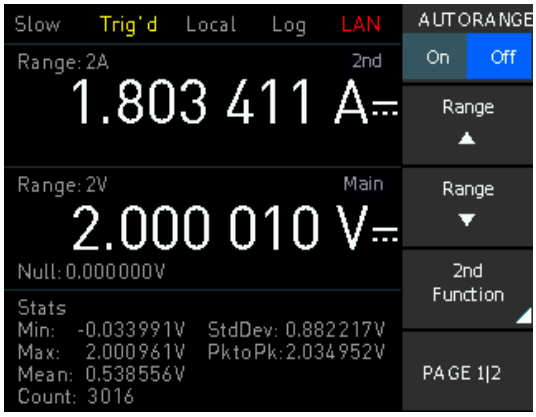


Multiple value function

Depending on the selected measurement function, users can display multiple measured values. The primary measurement value is main. A secondary measurement value can be activated or deactivated with the soft menu key. When activated, the secondary measurement value is displayed above the primary measurement value. If none is selected, the secondary value is deactivated. When clipping occures in one of the functions, values for both functions are invalid. [1)]

Built-in statistics

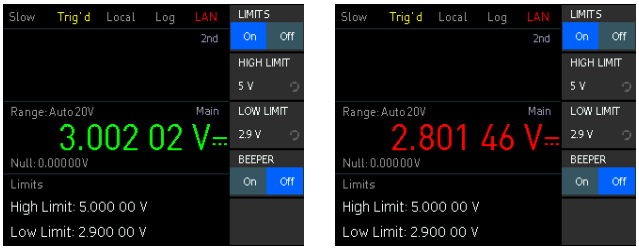
In addition to the basic functions, R&S®UDS multimeters offer mathematical functions. The integrated statistics in the R&S®UDS show min./max., mean, standard deviation, peak-to-peak and count. These can be activated with the stats soft menu. Statistical values can be toggled on/off with the stats soft menu button. The statistical functions are displayed below the primary measurement value.



[1)] Recommended range selection for ACV/DCV dual function use: range AC < range DC.

Limit testing

The limit testing feature on the color display is ideal for conducting minimum and maximum analysis. The R&S®UDS digital multimeters have programmable test functions, including max./min. limits on/off. The display color changes to indicate limit violations: red for out-of-limit values and green for within-limit values. An error tone can be toggled on/off with the beeper soft menu key and sounds when limits are violated.



Save and recall functions

The save and recall functions make it easy store and retrieve frequently used settings. Instrument settings can be freely stored and accessed via the save/recall button. To save current settings, select the save submenu, choose the storage space and name the file. The settings can be reloaded later with the recall submenu.

Data logging

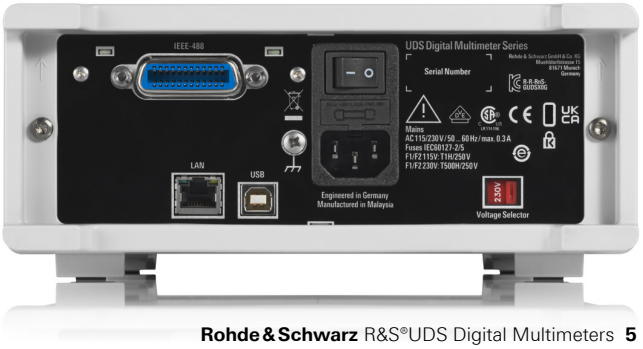
The R&S®UDS digital multimeters have a data logging function that records all measured values. The data can be saved on an external USB flash drive or transferred to an external PC with a USB or LAN connection. The data rate of up to 10 sample/s means the measured values are available every 100 ms.

Front view of the R&S®UDS500

Front view of the R&S®UDS600

Rear view of the R&S®UDS without GPIB

Rear view of the R&S®UDS with GPIB



IDEAL FOR LABS AND TEST SYSTEMS

Tailored for labs and production test systems

R&S®UDS digital multimeters were developed for challenging applications. The multimeters are used in R&D labs and integrated into production test systems.

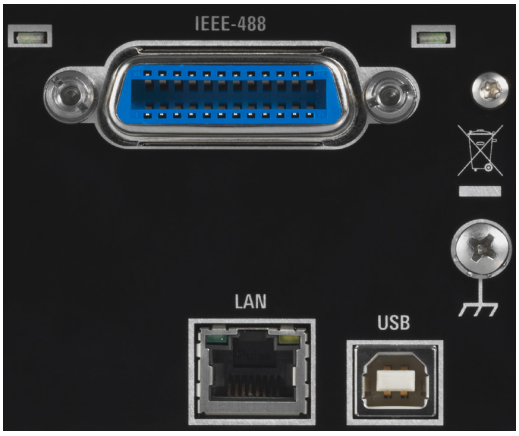
The instruments can be installed on 19" racks with the R&S®HZC95 rack adapter. The compact design lets two instruments be installed next to each other.

Full remote capabilities

All R&S®UDS instruments can be remotely controlled for use in test systems. Standard commands for programmable instruments (SCPI) are used. The following interfaces are available:

- USB and LAN (Ethernet) interfaces as standard
- IEEE-488 (GPIB) interface: R&S®UDS500-G and R&S®UDS600-G models with additionally IEEE-488 (GPIB) interface

Note: This interface cannot be retrofitted to the standard models.



Modern architecture: small, compact and quiet

Benches or racks are always crowded. R&S®UDS measuring instruments take up very little space regardless of their digital resolution. The temperature-controlled fan helps keep the workplace quiet.

SPECIFICATIONS

Definitions

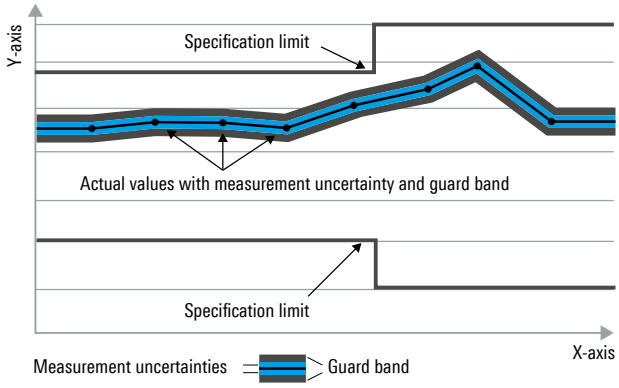
General

Product data applies under the following conditions:

- ▶ Three hours of storage at ambient temperature followed by 30 minutes of warm-up operation
- ▶ Specified environmental conditions
- ▶ Recommended calibration interval
- ▶ All internal automatic adjustments performed, if applicable

Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ± or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)

Represent product performance that is specified and tested as described under "Specifications with limits" above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value, e.g. dimensions or resolution of a setting parameter. Compliance is ensured by design.

Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter, e.g. nominal impedance. In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format "parameter: value".

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Basic specifications

	R&S®UDS500	R&S®UDS600
Number of digits	5½	6½
Measurement functions	DCV, DCI, true RMS, ACV and ACI, frequency, resistance (two-wire and four-wire), capacitance, continuity test, diode test, temperature, power	
Mathematical functions	limit testing, minimum, maximum, average, offset, DC power, calculation of dB and dBm	
Maximum reading rate	200 readings/s	
DC basic accuracy	0.015 % of reading	0.0075 % of reading
Frequency		
Measurement range	DC to 100 kHz	
Resolution	slow speed, 1 s measurement time, resolution: 1 Hz	
	medium speed, 100 ms measurement time, resolution: 10 Hz	
	fast speed, 10 ms measurement time, resolution: 100 Hz	
DC voltage (DCV)		
Measurement range	200 mV to 1000 V	
Resolution	1 µV	100 nV
AC voltage (ACV)		
Measurement range	200 mV to 750 V (RMS)	
Resolution	1 µV	100 nV
DC current (DCI)		
Measurement range	20 mA to 10 A	
Resolution	100 nA	10 nA
AC current (ACI)		
Measurement range	20 mA to 10 A	
Resolution	100 nA	10 nA
Resistance		
Measurement range	200 Ω to 250 MΩ	
Resolution	1 mΩ	0.1 mΩ
Temperature		
Sensor type	measurement with platinum sensor PT100/PT500/PT1000	
Resolution	0.1 °C	
Capacitance		
Measurement range	5 nF to 500 µF	
Resolution	1 pF	0.1 pF
Continuity test	•	
Diode test voltage	2.4 V	

DC specifications of the R&S®UDS500 (meas.)

Function	Range [1]	Test current (voltage drop)	Input impedance	1 year deviation [2] (+23 °C – 3 °C/+ 7 °C)	Temperature coefficient [2] (0 °C to +20 °C, +30 °C to +55 °C)
DC voltage	200 mV		10 MΩ or > 10 GΩ [3]	0.015 + 0.002	0.0010 + 0.0005
	2 V		10 MΩ or > 10 GΩ [3]	0.015 + 0.002	0.0008 + 0.0003
	20 V		10 MΩ	0.020 + 0.002	0.0010 + 0.0005
	200 V		10 MΩ	0.020 + 0.002	0.0015 + 0.0005
	1000 V		10 MΩ	0.025 + 0.002	0.0015 + 0.0005
Resistance (2/4-wire) [4]	200 Ω	1 mA		0.050 + 0.005	0.0020 + 0.0005
	2 kΩ	1 mA		0.015 + 0.002	0.0020 + 0.0002
	20 kΩ	100 µA		0.015 + 0.002	0.0020 + 0.0002
	200 kΩ	10 µA		0.030 + 0.003	0.0020 + 0.0002
	2 MΩ	1 µA		0.060 + 0.005	0.0020 + 0.0002
	20 MΩ	100 nA		0.250 + 0.003	0.0080 + 0.0005
	250 MΩ	100 nA || 10 MΩ (parallel)		2.000 + 0.010	0.200 + 0.0005

[1] 220000 counts except in the 1000 V and 10 A range.
[2] DC accuracy in ±(% reading + % range).
[3] The impedance is dependent on the measurement range. For the 200 mV and 2 V range, the input impedance can be set to either 10 MΩ or > 10 GΩ (high impedance).
[4] Specifications are for four-wire measurements; two-wire measurements use Null function.

DC specifications of the R&S®UDS500 (meas.)

Function	Range [1]	Test current (voltage drop)	Input impedance	1 year deviation [2] (+23 °C – 3 °C/+ 7 °C)	Temperature coefficient [2] (0 °C to +20 °C, +30 °C to +55 °C)
DC current [5]	20 mA	< 0.30 V		0.05 + 0.010	0.008 + 0.0010
	200 mA	< 0.27 V		0.05 + 0.010	0.008 + 0.0010
	2 A	< 0.2 V		0.25 + 0.070	0.012 + 0.0015
	10 A [6]	< 0.60 V		0.25 + 0.070	0.010 + 0.0010
Continuity test	2 kΩ	1 mA		0.05 + 0.010	0.005 + 0.0005
Diode test	2.4 V	1 mA		0.05 + 0.010	0.005 + 0.0005

DC specifications of the R&S®UDS600 (meas.)

Function	Range [1]	Test current (voltage drop)	Input impedance	1 year deviation [2] (+23 °C – 3 °C/+ 7 °C)	Temperature coefficient [2] (0 °C to +20 °C, +30 °C to +55 °C)
DC voltage	200 mV		10 MΩ or > 10 GΩ [3]	0.0090 + 0.0065	0.0010 + 0.0005
	2 V		10 MΩ or > 10 GΩ [3]	0.0080 + 0.0010	0.0008 + 0.0003
	20 V		10 MΩ	0.0075 + 0.0005	0.0010 + 0.0005
	200 V		10 MΩ	0.0085 + 0.0006	0.0015 + 0.0005
	1000 V		10 MΩ	0.0085 + 0.0010	0.0015 + 0.0005
Resistance (2/4-wire) [4]	200 Ω	1 mA		0.050 + 0.005	0.0020 + 0.0005
	2 kΩ	1 mA		0.015 + 0.002	0.0020 + 0.0002
	20 kΩ	100 µA		0.015 + 0.002	0.0020 + 0.0002
	200 kΩ	10 µA		0.030 + 0.003	0.0020 + 0.0002
	2 MΩ	1 µA		0.060 + 0.005	0.0020 + 0.0002
	20 MΩ	100 nA		0.250 + 0.003	0.0080 + 0.0005
	250 MΩ	100 nA || 10 MΩ (parallel)		2.000 + 0.010	0.200 + 0.0005
DC current [5]	20 mA	< 0.30 V		0.050 + 0.0050	0.008 + 0.0010
	200 mA	< 0.27 V		0.050 + 0.0050	0.008 + 0.0010
	2 A	< 0.2 V		0.100 + 0.0100	0.012 + 0.0015
	10 A [6]	< 0.60 V		0.200 + 0.0200	0.010 + 0.0010
Continuity test	2 kΩ	1 mA		0.05 + 0.010	0.005 + 0.0005
Diode test	2.4 V	1 mA		0.05 + 0.010	0.005 + 0.0005

AC specifications of the R&S®UDS500/UDS600 (meas.)

Function	Range [1]		Frequency	1 year deviation [7] (+23 °C – 3 °C/+ 7 °C)	Temperature coefficient [7] (0 °C to +20 °C, +30 °C to +55 °C)
AC voltage [2]	200 mV		10 Hz to 20 Hz	3.0 + 0.05	0.01 + 0.01
	2 V		20 Hz to 45 Hz	1.5 + 0.05	0.01 + 0.01
	20 V		45 Hz to 20 kHz	0.3 + 0.05	0.01 + 0.01
	200 V		20 kHz to 50 kHz [8]	1.0 + 0.05	0.02 + 0.01
	750 V [9]		50 kHz to 100 kHz [10]	3.0 + 0.05	0.05 + 0.01
AC current [5]	20 mA		20 Hz to 40 Hz	1.5 + 0.05	0.01 + 0.01
	200 mA		40 Hz to 1 kHz	0.5 + 0.05	0.01 + 0.01
	2 A		1 kHz to 5 kHz	1.5 + 0.05	0.01 + 0.01
	10 A [6]		5 kHz to 10 kHz [11]	2.5 + 0.05	0.01 + 0.01

[5] At 250 V maximum.
[6] Maximum current load at > 5 A is 30 s, followed by a pause of > 30 s.
[7] AC accuracy in ±(% reading + % range).
[8] Tolerance only applies to values > 20% of respective range. For reading values ≤ 20%, tolerance range of 0.4% applies.
[9] For ACV measurements and frequencies above 50 kHz, the user is required to choose an appropriate measurement range.
[10] Tolerance only applies to values > 20% of respective range. For reading values ≤ 20%, tolerance range of 0.85% applies.
[11] Except 10 A range.

Frequency counter specifications of the R&S®UDS500/UDS600

Function	Range [12]	Frequency	1 year deviation [13] (+23 °C – 3 °C/+ 7 °C)	Temperature coefficient [11] (0 °C to +20 °C, +30 °C to +55 °C)
AC voltage [14]	all ranges	5 Hz to 700 kHz	0.01	0.005
AC current [12]	20 mA, 200 mA	5 Hz to 10 kHz	0.01	0.005
	2 A, 10 A	5 Hz to 5 kHz	0.01	0.005

Frequency counter resolution of the R&S®UDS500/UDS600

Setting	Measurement time	Display range	Resolution
Slow	1 s	999.999 kHz	1 Hz
Medium	100 ms	999.99 kHz	10 Hz
Fast	10 ms	999.9 kHz	100 Hz

Capacitance specification (meas.)

Function	R&S®UDS500 Range	R&S®UDS500 1 year deviation [15] (+23 °C – 3 °C/+ 7 °C)	R&S®UDS500 Temperature coefficient [13] (0 °C to +20 °C, +30 °C to +55 °C)	R&S®UDS600 Range	R&S®UDS600 1 year deviation [13] (+23 °C – 3 °C/+ 7 °C)	R&S®UDS600 Temperature coefficient [13] (0 °C to +20 °C, +30 °C to +55 °C)
Capacitance	5,000 nF	2.0 + 2.5	0.02 + 0.002	5,0000 nF	2.0 + 2.5	0.02 + 0.002
	50,00 nF	1.0 + 2.0	0.02 + 0.002	50,000 nF	1.0 + 2.0	0.02 + 0.002
	500,0 nF	1.0 + 0.5	0.02 + 0.002	500,00 nF	1.0 + 0.5	0.02 + 0.002
	5,000 µF	1.0 + 0.5	0.02 + 0.002	5,0000 µF	1.0 + 0.5	0.02 + 0.002
	50,00 µF	1.0 + 0.5	0.02 + 0.002	50,000 µF	1.0 + 0.5	0.02 + 0.002
	500,0 µF	2.0 + 1.0	0.02 + 0.002	500,00 µF	2.0 + 1.0	0.02 + 0.002

Reading rates [11]

Function	Setting	Resolution R&S®UDS500	Resolution R&S®UDS600	Reading R&S®UDS500	Reading R&S®UDS600	Measurement rate in readings/s
AC voltage	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	200
DC voltage	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	200
AC current	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	200
DC current	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	200
Resistance (2-wire)	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	50
Resistance (4-wire)	slow	5½	6½	200,000	2,000,000	5
	medium	4½	5½	20,000	200,000	10
	fast	4½	5½	20,000	200,000	25
Frequency	slow	6	7	999,999	9,999,999	1
	medium	5	6	99,999	999,999	10
	fast	4	5	9,999	99,999	100
Diode		4½	5½	20,000	200,000	10
Continuity		4½	5½	20,000	200,000	200
Temperature		4	5	999.9	99,999	10

[12] 220000/440000 counts except in the 750 V and 10 A range.
[13] AC accuracy in ±(% of reading).
[14] Specifications are for sinusoidal curves. Input impedance is 1 MΩ parallel < 100 pF.
[15] AC accuracy in ±(% of reading + % of range).

Additional specifications of the R&S®UDS500/UDS600		
DC voltage	measuring method	sigma delta ADC
	input resistance	> 10 GΩ (only in 200 mV and 2 V ranges)
		10 MΩ (in all ranges)
	CMRR	120 dB at V_{CM} < 500 V, 1 kΩ between high and low and 5 measurements/s
	SMRR	> 60 dB at 50 Hz or 60 Hz ± 0.1 % and 5 measurements/s
	input current	60 pA at +25 °C
	overload protection	1000 V in all ranges
AC voltage	measuring method	AC coupled true RMS measurement
	input resistance	1 MΩ parallel < 100 pF (on all ranges)
	crest factor	max. 10 (0.5 % additional measurement uncertainty)
	CMRR	> 60 dB, 1 kΩ in the Lo line and frequency < 60 Hz
	overload protection	750 V (RMS) (in all ranges)
DC current/AC current	shunt resistor	11.01 Ω at 20 mA
		1.01 Ω at 200 mA
		10 mΩ at 2 A, 10 A
	overload protection	fuse 10 A, F characteristic, on the front panel
		fuse 10 A, T characteristic, inside the device
Resistance	measuring method	two-wire and four-wire
	overload protection	1000 V for all ranges
Continuity test	measuring method	1 mA constant current
	threshold value	adjustable in 1 Ω steps
	response rate	200 measurements/s
	overload protection	1000 V
Diode test	measuring method	1 mA constant current
	threshold value	adjustable in 10 mV steps
	response rate	10 measurements/s
	overload protection	1000 V
Temperature	measuring method	resistance measurement with platinum sensor
	sensor types	PT100, PT500, PT1000
	connection	two-wire and four-wire
	overload protection	1000 V
Math functions	statistics	min./max./average/standard deviation
	relative measurement	Null key, offset via keyboard
	logarithmic function	dB: reference level via keyboard or Null key
		dBm: reference impedance 50/75/600 Ω or freely selectable
Data logging	maximum acquisition rate	10 sample/s
	maximum logging time	unlimited
	memory depth internal	512 kbyte
	memory depth external	USB flash drive (max. 4 Gbyte)
	number of measuring counts	internal: 50 000
		external: defined by USB flash drive capacity
	rate log	minimum: 5 ms (typ.) (in line with measuring function and resolution)
		maximum: 3600 s
Data logging (continued)	duration log	internal: 250 s to 25 000 h
		external: defined by USB flash drive capacity
	data log	main, second, timestamp
Interfaces		USB 2.0 (TMC and CDC/VCP)
		Ethernet 10/100BASE-T
		IEEE-488/GPIB optional
Programming		SCPI

Additional specifications		
	R&S®UDS500	**R&S®UDS600**
Remote control		
Command processing time	≤ 30 ms (nom.)	
Protection functions		
Type of protection functions	automatic shutdown if the internal shunt is overloaded	
Fuse	internal 20 A fuse	
Resolution		
Voltage	1 µV	0.1 µV
Current	0.1 µA	0.01 µA
Resistance	1 mΩ	0.1 mΩ
Capacitance	1 pF	0.1 pF
Temperature	0.1 °C	0.1 °C
Limit testing	PASS/FAIL indication with color coding	
Display	3.5"/QVGA (color)	
Display resolution	5½ digits, 10 updates/s	6½ digits, 10 updates/s
Front panel connections	4 mm safety sockets	
Rear panel connections	standard	

General data		
Environmental conditions		
Operating temperature range		0°C to +55°C
Storage temperature range		–40°C to +70°C
Humidity		noncondensing, 5% to 80%
Altitude		operating altitude, max. 2000 m above sea level
Power rating		
Mains nominal voltage		115 V/230 V (± 10%)
Common mode voltage		▶ CAT II: 300 V AC (RMS) ▶ CAT I: 1000 V DC ▶ 750 V AC (RMS)
Mains frequency		50 Hz to 60 Hz
Maximum power consumption		25 W (meas.)
Rated current		max. 0.5 A
Mains fuses		100 V to 115 V power source, F630H/250 V
		230 V power source, F400H/250 V
Product conformity		
Electromagnetic compatibility	EU: in line with Directive 2014/30/EU	applied harmonized standards: ▶ EN 61326-1 ▶ EN 55011 (Class A)
	Korea	KC mark
Electrical safety	EU: in line with Low Voltage Directive 2014/35/EU	applied harmonized standard: EN 61010-2
	USA	UL 61010-1
	Canada	CSA C22.2 No. 61010-1
RoHS	EU: in line with EU Directive 2011/65/EU	applied harmonized standard: EN IEC 63000
Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz, 0.3 mm (peak-to- peak) amplitude const., 55 Hz to 150 Hz, 0.5 g const., in line with EN 60068-2-6
	random	8 Hz to 500 Hz, 1.2 g (RMS), in all three axes, in line with EN 60068-2-64
Shock		10 Hz to 45 Hz, ramp 6 dB/octave, 45 Hz to 2000 Hz, max. 40 g in line with MIL-STD-810E
Mechanical data		
Dimensions (W × H × D)		222 mm × 97 mm × 291 mm (8.74 in × 3.82 in × 11.46 in)
Weight		2.7 kg (5.9 lb)
Rack installation		½ 19", 2 HU
Recommended calibration interval	operation 40 h/week over entire range of specified environmental conditions	1 year

ORDERING INFORMATION

Designation	Type	Order No.
Base unit		
Digital multimeter, 5½	R&S®UDS500	3658.6470.02
Digital multimeter, 5½, with GPIB interface	R&S®UDS500-G	3658.6470.04
Digital multimeter, 6½	R&S®UDS600	3658.6470.03
Digital multimeter, 6½, with GPIB interface	R&S®UDS600-G	3658.6470.05
Accessories		
Silicon test lead, banana to banana, length: 1 m (set of 5, color: blue)	R&S®HZ10B	3594.6301.02
Silicon test lead, banana to banana, length: 1 m (set of 5, color: red)	R&S®HZ10R	3594.3860.02
Silicon test lead, banana to banana, length: 1 m (set of 5, color: black)	R&S®HZ10S	3594.3877.02
System components		
19" rack adapter, 2 HU, for R&S®NGE100B/NGC100/NPA/UDS and R&S®HMC series	R&S®HZC95	5800.2054.02

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