


RUDOLF™ Digital Power Analyzer DPA96

The R-DPA96 is an instrument for measuring and metering electrical values for single, two and three-phase LV/HV electrical networks. From the front panel (6 keys and LCD displays) you can programme and display all the parameters and use the functions provided to carry out the following:

- measure electrical values on 4 quadrants
- hours run meter
- Compact DIN - 96 x 96 mm display and reduced depth of 60 mm (80 mm including plug-in options)
- instantaneous, average and maximum current over a programmable integration time (5 to 60 min),
- phase to neutral and phase to phase voltage,
- frequency,
- instantaneous, average and maximum active power P on 4 display quadrants (L/C/+/-) over a programmable integration time (5 to 60 min),
- instantaneous, average and maximum reactive power Q on 4 display quadrants (L/C/+/-) over a programmable integration time (5 to 60 min),
- instantaneous, average and maximum apparent power S over a programmable integration time (5 to 60 min),
- instantaneous and maximum power factor PF with L (inductive) and C (capacitive) indications,
- metering in 1/100th of an hour for operating time, with reset to zero,
- Optional plug-in modules (metering, harmonics, communication, analogue, alarms or control/command) enable additional functions to be added to the base unit enabling initial performance vs cost to be optimised whilst providing long term on-site flexibility for the end user,
- 6 direct access keys:
I: current,
U/F: Voltage and frequency,
PQS: active, reactive and apparent powers,
PF: power factor,
Max H: maximum demand, current and power,
 **/E**: energy and hours run
- Large, clear, back-lit display is easy to read. Simultaneous display of measured parameter values in unit, value and bar graph format. The self adjusting contrast enables the screen to be easily viewed in all environments and from all positions.

An overview of the display parameters (TRMS)

Display Parameter	
• Voltage L1, L2, L3, L12, L23, L31	
• Current L1, L2, L3, In Instantaneous, Avg	
• Frequency	
• Active Power P	L1, L2, L3 instantaneous, Average, Max
• Reactive Power Q	L1, L2, L3 instantaneous, Average, Max
• Apparent Power S	L1, L2, L3 instantaneous, Average, Max
• Power Factor L/C	L1, L2, L3 instantaneous, Average, Max
• Max Demand	I, P, Q, S
• Harmonics for current L1, L2, L3, In & Voltage L1, L2, L3, L12, L23, L31	up to row 15
• Voltage THD L1, L2, L3, L12, L23, L31	up to row 49
• Current THD L1, L2, L3, In	up to row 49
• Active Energy	4 quadrant
• Reactive Energy	4 quadrant
• Apparent Energy	4 quadrant
• Hour run meter	



Technical Specifications

Case

Dimensions:	96 x 96 x 60mm or 96 x 96 x 80 mm with all optional modules (DIN 43700)
Connection:	via 2.5mm ² disconnectable terminals (voltage and others) and 6mm ² fixed terminals (current)
IP index:	IP40 (front panel)
Weight:	400 g

Display

Type:	High luminosity self adjusting LCD display
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Measurements

Three-phase (3 or 4 wires), two-phase (2 wire) and single-phase networks

Voltage (TRMS)

Direct measurement:	from 50 to 700 V AC (phase/phase) from 28 to 404 V AC (phase/neutral)
Measurement via PT:	
• Primary	up to 400 kV
• Secondary	60, 100, 110, 115, 120, 173 and 190 V AC
Display and resolution	from 0 to 400.0 kV
Permanent overload:	760 V AC
Update period:	1 second

Current (TRMS)

Via CT with:	
• Primary	up to 10000 A
• Secondary	1 or 5 A
Minimum measuring current	18mA
Input consumption:	0.3 VA
Display:	from 0 to 11 kA (1.1 times the primary value)
Permanent overload:	10 A
Intermittent overload:	10 In / 1 second
Update period:	1 second
Maximum ratio KI x KU:	2 000 000

Power

Per phase:	0 to 1660 MW/Mvar/MVA
Total:	0 to 8000 MW/Mvar/MVA
Update period:	1 second

Frequency

Update period:	from 45.0 to 65.0 Hz 1 second
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Auxiliary Supply

110 to 440V AC:	50/60 Hz +/- 10%
120 to 350V DC:	+/- 20%
Consumption:	10 VA
Other version:	18 to 100 V DC (+/-10%)

Technical Specifications (continue)

Measurement Accuracy

Current:	0.5% from 10 to 120% / In
Voltage:	0.5% from 140 to 700 V AC
Power:	1% of full scale (-90° - +90°)
Power factor:	1% for 0.5 < FP < 1
Frequency:	0.1Hz from 45 to 65Hz
Active energy metering:	+/- 1% from 0.02 to 1.2 In with PF = 0.5 L or 0.8 C (class 1 IEC 61036)
Reactive energy metering:	+/- 2% from 0.1 to 1.2 In with sinφ = 0.5 L or C (class 1 IEC 61268)

Pulse outputs

Reed relays	(100 V DC - 0.5 A - 10 VA)
No. of operations:	<10 ⁸

Communication

RS 485:	2 or 3 wires half duplex
Protocol:	PROFIBUS/JBUS/MODBUS RTU protocol mode
Speed:	2400 to 38400 Bauds

Analogue output 0/4-20mA

Load resistance:	0 to 600 ohms
Reply time:	1s
Accuracy (full scale):	0.5%

Inputs

optocouplers (10-30V DC)

Outputs for monitoring or command

Relays (230V AC - 5A - 1150 VA)

Galvanic insulation (AC insulation voltage)

Auxiliary supply:	4 kV
Voltage inputs:	1.5 kV
Current inputs:	1.5 kV
Serial link:	1.5 kV
Pulse outputs:	1.5 kV

Operating conditions

Operating temperature:	-10° to +55°C (14° to 131°F)
Storage temperature:	-20° to +85°C (-4° to 158°F)
Relative humidity:	95%

Standards

Metering	IEC 61036 class 1, IEC 61268 class 2
CE-marking	IEC 61000-4/2-3-4-5-6-8-11 EN 50081-1, EN 50082-2
Environment	IEC 60068-2/6-11

Product code:

R-DPA96	Basic model
R-DPA96+N	Basic model complete with measured neutral measurement
R-Module-1	Metering: Combining with active, reactive and apparent energy metering of two configurable impulse outputs can be used for active, reactive or apparent energy metering, with a programmable value (0.1, 1, 10, 100 kWh, kvarh or kVAh and 1 or 10 MWh, Mvarh and MVAh) and duration (100 ms to 900 ms).
R-Module-2	Harmonic metering: Display of the harmonic percentage per row for 3I, In, 3U and 3V up to number 15, and the functionalities of the R-Module-1.
R-Module-3	Plug in module for communication RS 485 (JBUS/MODBUS protocol) 2 or 3-wire RS485 with JBUS/MODBUS protocol, with transmission speed of up to 38,400 bauds
R-Module-4	Analogue outputs: 2 configurable 0/4-20mA analog outputs (threshold at 0 or 4mA and threshold at 20mA) on I1, I2, I3, In, U12, U23, U31, V1, V2, V3, $\sum P$, $\sum Q$, $\sum S$, $\sum FP^{L/C}$ and F. There can be a maximum of 4 analog outputs on one DPA96 Ap (2 modules).
R-Module-5	Monitoring or Checking/Control: 2 inputs for pulse metering (metering checking) and 2 outputs for monitoring or control via the RS485. For the monitoring function, programming of an upper and lower threshold, of the hysteresis, of the time delay and of the run mode for 3I, In, 3U, 3V, $\sum P$, $\sum Q$, $\sum S$, F, $\sum FP^{L/C}$, thd 3I, thd In, thd 3U, thd 3V and TIME (hour run). Storage of the instant minimum and maximum values for 3U, 3I, In, $\sum P$, $\sum Q$, $\sum PF$, F, thd 3U, thd 3I, and thd In accessible by the RS485. There can be a maximum of 6 inputs/6 outputs on a DPA96 Ap (3 modules).
R-Module-3+6	Plug in module for communication RS485 (PROFIBUS protocol) 2 or 3-wire RS485 with PROFIBUS DP protocol, with transmission speed of up to 38,400 bauds

Corporate Introduction

Bridex Singapore Pte Ltd was founded in 1973 as a manufacturer of instruments transformer for the Asian market. We are the first local electrical switchgear components manufacturer that launches our own Asian identity – RUDOLF™.

Today we aim to become a knowledge-based, technology driven engineering organization, with emphasis on providing solution for electrical distribution and control, in area of instruments, distribution & protection and standard components. With our present headquarter in Singapore and subsidiaries that are located in Philippines, China and Australia, we are well equipped to service both local and Asia-Pacific countries.

Product Introduction

What are the reasons behind an increasing trend toward the use of power meter and power analyzer? To replace the conventional metering using analogue meter? We have reasons better than this. With just one product, we achieve consolidated measurement, energy metering, alarm monitoring, possibility for remote communication, the possibility for control and command and the possibility for data logging function via sole proprietor software. These possibilities allow the user to obtain and manage information thereby providing the user with the capability to control cost, improve power quality and participate in control system (BMS)

These functions can be achieved by any of RUDOLF R-DPA96 Digital Power Analyzer. Contact us for any enquiry.



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