POWER STANDARDS LAB

DATA SHEET

pqube3r.com

PQube® 3r Power Analyzer and Controller

FEATURES

- Connects directly to voltages up to 690 V Nominal (auto-detects, frequency, nominal voltage, wiring mode)
- Certified for Class A power quality according to IEC 61000-4-30 Ed3
- Computes 4-quadrant ANSI Class 0.2 revenue–grade energy on eight single-phase channels
- Monitors DC power and process parameters with four additional AC/DC analog channels
- Detects and records high-frequency impulses at 4Mhz
- Measures and records 2 kHz ~150kHz emissions
- Controls 4 programmable relay outputs
- Holds years of data and thousands of events via 32 GB of internal flash memory

OVERVIEW

If you have a sensitive process that requires a graceful shutdown when hit by a power disturbance, if you need to identify tool malfunction root cause quickly, the PQube 3r is your power analyzer of choice.

The PQube 3r records all types of AC and DC power disturbances , environmental and process parameters, and also control your process with 4 programmable relay outputs.

Easy to install, easy to use, the PQube 3r is an ultra-accurate power analyzer and a versatile controller

RESULTS

- Real-time readings via protocols: Modbus and SNMP
- Real-time relay alarms
- Events recordings and graphs: CSV, GIF, and PQDIF
- Daily, weekly, monthly trends and graphs: CSV, GIF, and PQDIF

Part Number: PQube3-PQ-E08N-03RL-XXXX

SPECIFICATIONS

PQube 3r MEASUREMENT FUNCTIONS		
Sampling rate	512 samples per cycle at 50 Hz / 60 Hz (applies to voltage, current, and analog channels)	
VOLTAGE (4 inputs, referenced to earth)	L1, L2, L3, N, E	Range: 0 ~ 750 VAC (L-N), 0 ~ 1300 VAC (L-L), impedance: 4.8MΩ
Voltage Magnitude*	L-L, L-N, L-E, and N-E. RMS refreshed 1/2 cycle ($U_{RMS\ 1/2}$)	
Frequency*	Nominal: 50 Hz, 60 Hz, 400 Hz, or 16.67 Hz	
Unbalance (negative and zero sequence)*	IEC, GB, and ANSI methods	
Flicker (Pinst, Pst, and Plt)*	IEC 61000-4-15	
Voltage Harmonic & Interharmonic*	Volt or %H1, IEC 61000-4-7 Class 1, order up to 50th	
Total Harmonic Distortion (THD)	%	
High Frequency Impulses	Records HF impulses on one channel (L1-E, L2-E, L3-E, or N-E) at 4 MHz sampling, or all four channels at 1 MHz, range: ± 6 kV	
Conducted Emissions (2 ~ 9 kHz)*	Volts, L1-E, L2-E, L3-E; resolution 200 Hz bins range 0 ~ 60 Vpk	
(8 ~ 150 kHz)*	Volts, L1-E, L2-E, L3-E, and N-E; resolution 2000 Hz bins range 0 ~ 60 Vpk	
CURRENT (8 inputs, differential)	I1 ~ I8	Range: 0.333Vrms, 10Vpk, 0 ~ 6000 Amp with CTs, impedance: 33.3 kΩ
Current Magnitude*	RMS refreshed 1/2cycle ($I_{RMS\ 1/2}$)	
Peak Current	RMS over 1 sec, 1 min, or user defined internal (3 min ~ 1 hr)	
Unbalance (negative and zero sequence)*	IEC, GB/T, and ANSI methods	
Current Harmonics & Interharmonics*	Amp, order up to 50th	
Total Demand Distortion (TDD) or Total Harmonic Demand Distortion (THDI)	Amp %	
POWER (8 calculated channels)	I1 ~ I8	calculated with either L1-N, L2-N, or L3-N voltages
Total Power	Up to four (3-phase) loads	
Peak Power	Intervals: 1 sec, 1 min, or user defined (up to one hour)	
Reactive Power	VAR (per-phase and total)	
Apparent Power	VA (per-phase, peak, and total)	
Power Factor	TPF or DPF method (per-phase and total)	
ENERGY (8 calculated channels)	I1 ~ I8	calculated with either L1-N, L2-N, or L3-N voltages
Active Energy (import, export, & net)**	kWh (per-phase and total)	
Reactive Energy (import, export, & net)	kVARh (per-phase and total)	
Apparent Energy	kVAh (per-phase and total)	
ANALOG (4 single ended or 2 differential inputs)	A1, A2, A3, A4, E	Range: Low: ± 10 VDC, High: ± 100 VDC
Analog Magnitude	(AN1-E, AN2-E, AN3-E, AN4-E) or differential (AN1-AN2, AN3-AN4) RMS refreshed 1/2 cycle	
Analog Power & Energy (optional)	Power and energy meter 1 (AN1 X AN2), power and energy meter 2 (AN3 X AN4)	
DIGITAL (1 differential input)	D+, D-	Digital threshold 1.5 V ± 0.2 V typical
ENVIRONMENT (2 ENV2 probe inputs)	USB2, USB3	Uses PSL's ENV2 EnviroSensor probe
Temperature	Measured range: -20 ~ +80 °C (-4 ~ 176 °F)	
Humidity	Measured range: 0 ~ 100 % RH	
Barometric Pressure	(Resolution better than 0.001 hPa)	
Acceleration (x, y, and z axis)	± 2g, ± 4g, or ± 8g gravity ranges, trigger on shock/vibration, seismic, or tilt	
OUTPUT RELAYS	Operate Time	< 20 ms
Main Relay [RLY1]	Terminals	[RLY1]: 2-pole terminal
	Rating	Max 300 mA at 30VAC/VDC
	Function	Normally open contact (NO) when PQube 3r is not powered. Normally closed (NC) when PQube 3r is powered Upon event triggering, the relay opens for 3 seconds or for the event duration (whichever is longer)
Additional Relays [RLY2, RLY3, RLY4]	Terminals	[RLY2, RLY3, RLY4]: each relay has a 3–pole terminal, comes with 3 pluggable screw connectors
	Rating	2 Amps at 60VDC/30VAC
	Function	Each relay can be individually wired as with Normally Open (NO) or Normally Closed (NC).

PQube 3r TECHNICAL SPECIFICATIONS	
Dimensions (L x W x H)	4.33 in X 2.89 in X 3.08 in (metric: 11.0 cm X 7.34 cm X 7.82 cm), 35 mm DIN rail mountable
Weight	10.5 oz (300 g)
Operating Environment	-20 ~ 65 °C (55 °C with PM2 AUX load), 5 ~ 95% RH (inside use), <2000 m above sea level (for EMC immunity, overvoltage, and other conditions, see full specs)
Power Supply (AC)	24 VAC ±10% at 50/60/400 Hz, 1.5A max PSL's PM1, PM2 modules supply PQube 3 compatible power at 100~240 VAC 50/60 Hz, and 120~370 VDC)
(DC)	±24 ~ 48 VDC ±10% (polarity independent), 1A max. Power over Ethernet (PoE) compatible
Internal memory	32 GB (holds over a year of data)***
Data backup	16 GB (up to 128 GB) micro SD card or USB 2.0 thumb drive
Clock Synchronization	SNTP, NTP, or GPS (optional)
Output file types	GIF, text, CSV/Excel, and PQDIF (IEEE 1159-3)
Communication	10/100 Ethernet port (RJ-45) (optional wireless and cell modem)
Communication protocols	Modbus/TCP, DNP 3.0, SNMP with traps, FTP, HTTP (secure FTPS, HTTPS), and email

* Meets or exceeds IEC 61000-4-30 Ed. 3 Class A
** Accuracy certified BackSI C12.20 Class 0.2 and IEC 62053-22 Class 0,2S
*** Dependent on number of recorded events

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