G4K Fixed Power Quality Analyzer
BLACKBOX
Don't be left in the dark

ELSPEC

G4K

THE FUTURE OF POWER QUALITY

- Continuous Waveform Recordings

- Superior Accuracy

- Threshold-Free Setup

The Perfect
Fixed Solution

The innovative design of the G4400 BLACKBOX device series is a technological breakthrough providing the perfect PQ Analysis solution. Its' enhanced capabilities are uniquely adaptable to address the individual needs and requirements for almost any business and / or application.

Electrical Utilities

- Produce Detailed & Comprehensive Statistical Records
- Avoid Customer Disputes
- Troubleshoot All Power Quality Issues at a High Resolution
- Ensure a Reliable & Consistent Supply of Energy
- Assess the Status of your System Apparatus

Industrial & Commercial

- Measure & Analyze System Efficiency, Provide Solutions, Increase Profits
- Empower Negotiating Capabilities with Power Providers
- Detect Electric Bill Inconsistencies
- Avoid PQ Compliance Issues

PQZIP - Compression Technology

The unique patented PQZIP compression technology enables you to store up to 1000 times more information than typical file formats.

PQZIP allows storage of complete and precise data over extended periods of time.

Unique
Features

Continuous Waveform Recordings

Exclusive only to the G4K, the device is able to record and store all electrical waveforms, all the time, for more than a year (Voltage at 1,024 samples per cycle, and Current at 256 samples per cycle[1,2]), with no gaps in the data. These innovations in the technology provide a clear and comprehensive picture of conditions leading up to, during, and after an event.

Superior Accuracy

Elspec's pioneering measurement method utilizes a dual-range gain of 2 x 16 Bit to yield, a superior accuracy far surpassing IEC 61000-4-30 Class A requirements, thereby capturing the finest details and deviations in PQ parameters.

Threshold-Free Setup

The G4K's setup is free from any thresholds, triggers, and events. If required, the device may also be pre programmed with any individual parameters during setup for event flagging.

SCADA Compatible

The BLACKBOX device series is equipped with standard Industrial protocols for seamless integration into any existing SCADA system.

Standard Compliance Testing

The G4K provides PQ parameters according to EN50160 and IEC 61000-4-30, including other National Standards. Parameters may also be customized to comply with any other unique standards or requirements.

Remote Monitoring Capabilities

The G4K is specifically designed to connect either via TCP/IP/RTU/GPRS Wireless for ease of use. Data may be analyzed over any network, at any remote location.

Full Compliance with IEC 61000-4-30 Class A

Far surpassing the highest standards set by the industry, the BLACKBOX device series complies with standards for: aggregations, time clock uncertainty, flagging, and transient influence quantities.

[1] G4430 Unit Only   [2] Sampling Rate For Both Voltage & Current May Also Range At 512 Samples Per Cycle

Advanced
PQSCADA

The Power Quality Management Software Suite (Enterprise Edition) empowers the G4K with an unparalleled data recording capability providing the most accurate detection and isolation of PQ anomalies for the diagnosis and effective maintenance of equipment.

Elspec's innovative PQSCADA Power Quality Management Suite software simplifies troubleshooting. This user-friendly system allows for the control, configuration, comparison and analysis of time-synchronized data recorded by any number of BLACKBOX devices within a particular site or across many sites.

Statistics

Trends

Phasors

Harmonics

Maps

Event Focus

Automated Reports

Generate automated reports set to any customized pre-scheduled period. Event data is exportable to either COMTRADE or PQDIF, and all other data to PDF, EXCEL and HTML.

Optional
Accessories

G4100 Display

The Elspec G4100 display unit provides full control over all the analyzers, allowing technicians and field operators to fully configure and operate every single analyzer in the network. The G4100 can be used as a hand held monitoring and configuration tool, connectable via a TCP/IP connection.

GPS (Global Positioning System)

The GPS provides an optimal mobile time synchronization solution for accurate time data via satellite signal. In the absence of many other technologies, it synchronizes time at any remote site location.

Multi-Frequency 3.5G Wireless Modem

The Wireless GPRS Modem provides fast mobile communication access and offers the perfect solution in industrial data communication. It is fitted with a SIM Card drawer structure, and it may be connected with any standard RS-422 interface. Data is transmitted at 3.5G, and the modem is fully compatible with GSM/GPRS/EDGE.

G4400 Multi I/O Expansion

The G4400 optional module expands the monitoring capabilities of the BLACKBOX with additional digital and analog I/O ports. The I/O Engine periodically checks the inputs and sets the outputs accordingly. Energy pulses, Digital Inputs and Analog Inputs are logged continuously, from Current to Voltage relays and stored in the PQZIP files.

IEC 61000-4-30 Class A Test Reports

Upon request, Elspec can provide a comprehensive functionality and calibration test report for each analyzer. Fully automated calibration software is also available for customers in-house use.

Product Selection Guide

Product Series	G4410	G4420	G4430
Real-Time Measurements			
Voltage Sampling Rate, Maximum Samples/Cycle	256	512	1024
Voltage Harmonics (Individual, Even, Odd, Total) Up to -	127TH	255TH	511TH
Type of Analog to Digital Converter	16/20[1] bit	16/20[1] bit	16/20[1] bit
Storage Capacity			
Internal Memory	128 MB	4 GB	16 GB
Power Quality Analysis			
Transient Detection, Microseconds (50Hz/60Hz)	78.1/65.1µs	39/32.5µs	19.5/16.3µs
Communication Ports			
Ethernet Ports	1	2	2
Power Over Ethernet (PoE- Out)	—	✓	✓
Voltage Ride Through on Power Loss (up to)	10 sec.	25 sec.	25 sec.

Specifications

Applicable Measurement Standards
EN50160, IEEE1159, IEEE519, IEC61000-4-15, IEC61000-4-7, IEC61000-4-30 Class A, IEC62053-22/23 Class 0.2

Control
Comprehensive web server for local and remote real-time monitoring and control

Applicable EMC Standards
EN55011 Group 1 Class A, EN60439-1 (clauses 7.9.1, 7.9.3, 7.9.4, 7.10.3, 7.10.4), FCC Part 15 Subpart B Class A, IEC61000-3-3, EN61000-6-2, IEC60255

Applicable Environmental Standards
IEC60068-2-1, 2, 6, 11, 27, 30, 75

Applicable Safety Standards
EN61010-1:2001 2nd Edition

Voltage

Channels	3 Phase + Neutral
Nominal Full Scale	1000V
Maximum Peak Measurement	8kV
Input Impedance	3MΩ
Uncertainty	0.1% of Nominal

Power Supply

Auxiliary Supply – PoE In	According to 802.3af
Auxiliary DC Supply	48 Vdc
Operating Range	100-260 VAC: 50/60 Hz 100-300 VDC

Current

Channels	3 Phase + Neutral
Nominal Full Scale	5A
Maximum Peak Measurement	50A
Burden	0.0001VA@5A
Phase	±0.42°@3A ±0.17°@5A
Uncertainty	0.1% of Nominal

Time

Real Time Clock	20ppm
Synchronization Device	**Accuracy**
GPS	100-200µs
IRIG B	100-200µs
DCF-77	±15ms
SNTP Server	50-100µs

Frequency

Fundamental Frequency	42.5 Hz to 69 Hz
Frequency Resolution	10 mHz
Frequency Accuracy	±10 mHz

Communication Protocols
Modbus TCP, Modbus RTU, OPC, DNP3 SMTP Client

RS-485/422

Physical

Dimensions	175mm x 232mm x138mm
Weight	1.7Kg

Environmental Conditions

Operation Temperature	-20°C to 70°C (-4°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F – 185°F)

[1] Effective bits.

Disclaimer: Specifications subject to change without prior notice.

Worldwide Innovator in Power Quality

Since 1988 Elspec has developed, manufactured and marketed proven power quality solutions far exceeding our clients' needs and expectations. Our innovations not only simplify the understanding of the quality of power itself, but are also highly compatible, making it suitable for any business and or application. Elspec's international team of professionals with extensive experience in electrical engineering are ready to provide a tailor-made strategy that will enable a sustainable and efficient use of your electrical energy.

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