



Real-Time, High-Speed Data Capture and Analysis

- Combustion analysis and high-speed DAQ synchronized in one system
- Real-time recording of fast, transient events across multiple signal types
- Expandable architecture supporting up to 48 high-speed measurement channels

Phoenix combines real-time combustion analysis and high-speed data acquisition in one synchronized system, helping engineers connect combustion performance with mechanical, structural, thermal, and vehicle-network behavior. From engine development to destructive battery testing, Phoenix captures fast-changing events with the speed, precision, and context needed to identify anomalies, investigate failures, and accelerate test analysis.



Capture High-Speed Events

Record fast, transient signals at sample rates up to 2 MHz, providing the detail needed to analyze combustion, vibration, structural response, thermal events, and test failures.



Correlate Every Signal

Synchronize pressure, vibration, acoustics, strain, torque, temperature, analog, digital, counter, CAN, and CAN FD data to understand how multiple conditions interact during a test.



Adapt to New Applications

Expand up to 48 channels, embed custom calculations, integrate with third-party systems, and transfer results to iTest or commonly used engineering-analysis tools.

Phoenix CAS Software Built-in Combustion Calculations:

- Maximum Rise and Location of Maximum Rise Rate
- Peak Pressure and Location of Peak Pressure
- Mass Fraction Burned and Heat Release
- Indicated Mean Effective Pressures (IMEP)
- Combustion Noise Level Evaluation
- Start and End of Combustion
- Ignition and Injection Timing
- Full Knock Evaluation
- Misfire Detection
- Ignition Delay

Specifications

Category	Feature	Phoenix AM	Phoenix RT
High-Speed Analog Inputs	# Channels	12 per module, up to 48	
High-Speed Analog Inputs	Resolution	16-bit	
High-Speed Analog Inputs	Acquisition Rate	2 MHz	20,000 RPM @ 0.1°
High-Speed Analog Inputs	Low-Pass Filters	None, 12.5 kHz, 25 kHz, 50 kHz	
High-Speed Analog Inputs	Input Ranges	±1 V, ±2 V, ±5 V, ±10 V	
High-Speed Analog Inputs	Input Impedance	~25 kΩ (~100 kΩ on ±50 V range)	
Low-Speed Analog Inputs	# Channels		
Low-Speed Analog Inputs	Resolution		
Low-Speed Analog Inputs	Acquisition Rate		
Low-Speed Analog Inputs	Input Ranges		
Analog Outputs	# Channels		16
Analog Outputs	Resolution		16-bit
Analog Outputs	Update Rate		100 Hz
Analog Outputs	Output Range		±10 V
Digital I/O	# Channels	8 inputs	16 outputs
Digital I/O	Input Range	TTL	
Digital I/O	Maximum Encoder Resolution	0.1°	
Data & Analysis	Analysis Method		Real-time cycle-by-cycle analysis on onboard DSP with streaming to host PC
Data & Analysis	Analysis Rate		12,000 RPM @ 0.1°
Data & Analysis	System Memory		4 GB
Data & Analysis	Non-Volatile Logging		SD
Data & Analysis	Test Bench Interfaces		Winsocket, UDP, XCP, CANbus
Data & Analysis	Host PC Connection		1 Gigabit Ethernet
Data & Analysis	Headless Operation	No	No
Power & Mechanical	Input Power	10-16 VDC (50 W @ 12 VDC), 120/240 VAC external supply	10-30 VDC (50 W @ 12 VDC), 120/240 VAC external supply
Power & Mechanical	Dimensions	343 × 194 × 44 mm (13.5" × 7.6" × 1.8")	343 × 200 × 44 mm (13.5" × 7.9" × 1.8")
Power & Mechanical	Weight	2.2 kg (4.9 lb)	2.2 kg (4.9 lb)
Environmental	Operating Temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Environmental	Operating Humidity	0% to 95% non-condensing	0% to 95% non-condensing