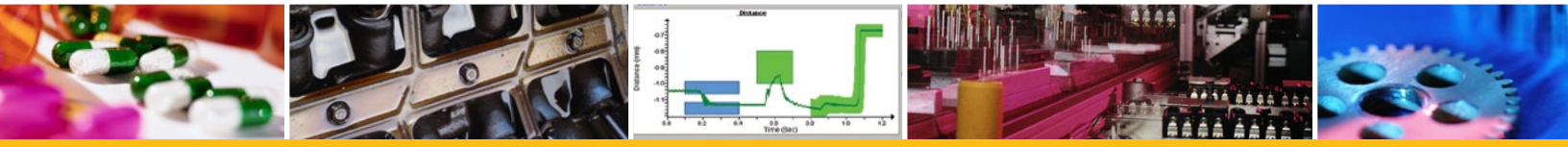
sciemetric®



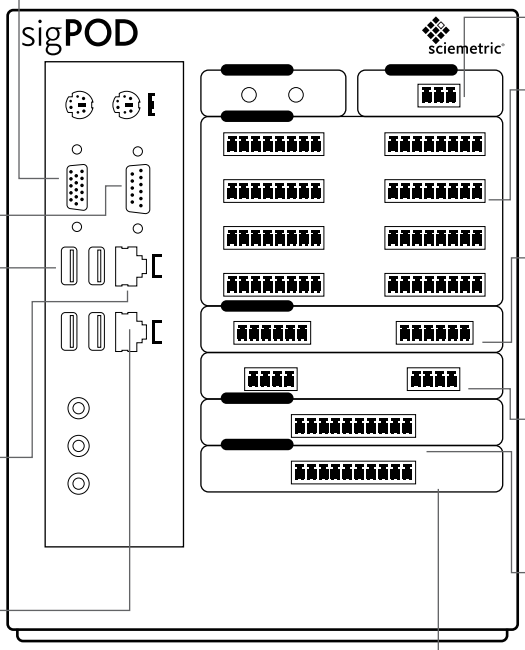
# sigPOD

## SIMPLY THE BEST TECHNOLOGY TO MONITOR AND CONTROL MANUFACTURING PROCESSES

# Standardize Testing Across The Plant

## Flexible Monitoring Platform

sigPOD is an in-station process monitoring platform that uses advanced signature analysis to track manufacturing processes, deliver real-time pass/fail feedback and the most advanced defect detection.




**Serial Port**
- Standard RS232C DB9 format
- Serial number input
- Test results output

**VGA Port**
- Supports remote or local screen

**USB V2.0**
- 4 ports
- Use for system backup, install and data retrieval
- Peripherals

**Ethernet**
- Data record transfer
- Backup/recall of sigPOD setup and data

**Field Bus – Ethernet**
- Ethernet/IP (optional)
- PROFINET
- Modbus/TCP

**24 VDC Input Power**

**Analog Inputs**
- 2, 4 and 8 channel versions
- 16 bit A/D
- Up to 1 MHz sample rate
- +10 VDC sensor excitation

**Encoder Inputs**
- 2 Channels
- 32 bit counter
- Linear or rotary sensors

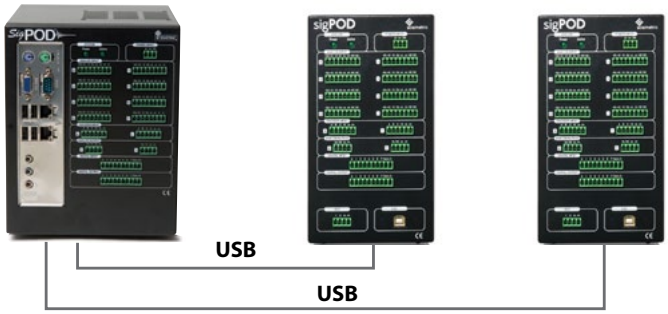
**Analog Output**
- Up 2 Channels
- ±10 V output
- 16 bit resolution

**Digital Inputs**
- 8 Channels
- ±48 VDC
- Optical isolation

**Digital Outputs**
- 8 Channels
- Can switch up to ±48 VDC @ 1 Amp
- Optically isolated

**Base System (Model 14xx)**
- Compact 8" x 6.5" x 8" (HxWxD)
- Powerful processor: 1.5 GHz minimum
- 60 GB hard drive minimum
- Windows XP embedded OS

## Expandable System



NEMA-12 Option Available

**Example 24-Channel System :** Higher channel capacity applications can be supported using Model 1608 expansion units.

# sigPOD

## NEW! sigPOD 1302

The latest addition to the sigPOD family is the industry's most affordable two-channel universal process monitoring solution.

## Mounting Options

**Machine mount**

**DIN Rail**

**Multi-unit Desktop**

**Wall mount**

## sigPOD Data Node

**Model 1010**
**– sigPOD Data Node**

- Windows XP Embedded OS
- Intelligent processing/ Decision node
- Receive, process and transmit data
- Gateway to or from PLCs

## sigPOD Leak

**Model 3404**
**– Leak Controller**

- Supports up to 4 Leak Modules
- Advanced signature analysis leak test algorithms
- Easy setup & calibration
- Industry-leading software

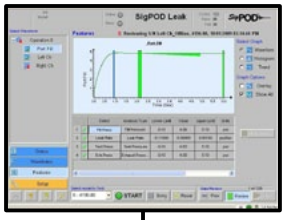
**Model 3501 – Pressure Decay Leak Module**
**Model 3511 – Vacuum Decay Leak Module**

- Best-in-class modular packaging
- Compact 8" x 2.6" x 8" (HxWxD)
- Two thumb screws allow access to pneumatics
- Integrated calibration port

# Standard sigPOD Software

## Leak Testing

- Best leak monitoring software available
- Plug and play connectability
- Applications: medical devices, engine chambers, any application where seal integrity is critical

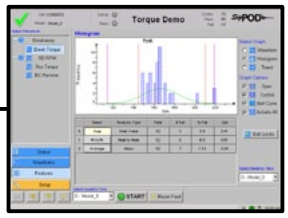


## Sound & Vibration Analysis

- Designed for the production line
- Configurable setup for time, frequency, and orders domain analysis
- Applications: rotating machinery, motorized assemblies, resonance testing and machining

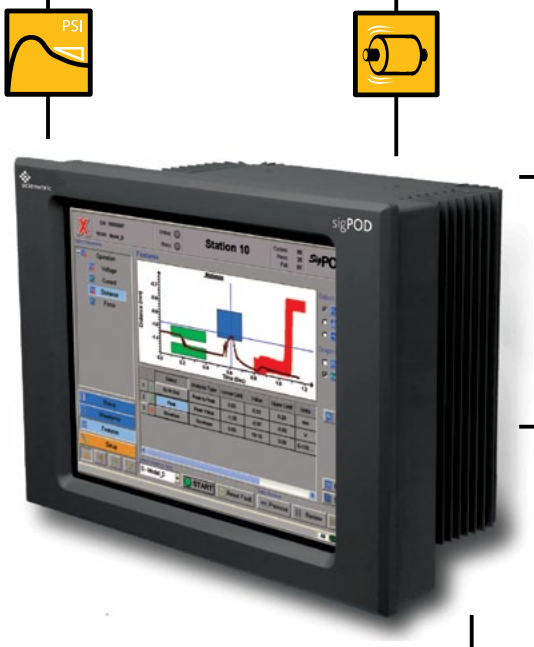
## Torque Monitoring

- Multi channel torque and encoder signal support
- Built-in analysis algorithms
- Applications: engine shafts, electric motors, compressors, pumps, etc.



## Press-Fit Monitoring

- Sciemetric has been supplying press monitors since 1991
- Built-in proven defect detection algorithms
- Applications: for any assembly operation involving press-fitting



## Weld Monitoring

- Integrated analysis for resistance and ultrasonic welding
- Monitors: Voltage, current, force distance, amplitude, frequency, power
- Calculates: Dynamic resistance, instantaneous power
- Application: medical instruments, automotive assemblies

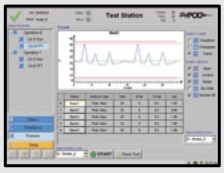
## Functional Testing

- Completely programmable and flexible platform
- Uses Sciemetric InspeXion IDE software to develop almost any application
- End-of-line testing, e.g., cold or hot engine test, electric motors, pumps

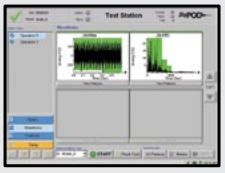
## Process Monitoring (PSV)

- Customizable without programming
- Support for most analog sensor inputs and encoders
- Applications: monitoring any repetitive waveform or signature such as dispensing and profiling

## Best in Class Software



Features SPC for limit management. Uses production statistics to calculate optimal test limits.



Runs advanced signature analysis for greatest accuracy.

Best-in-class user interface with screens tailored for each user: engineer, supervisor, and operator. Common GUI across applications.

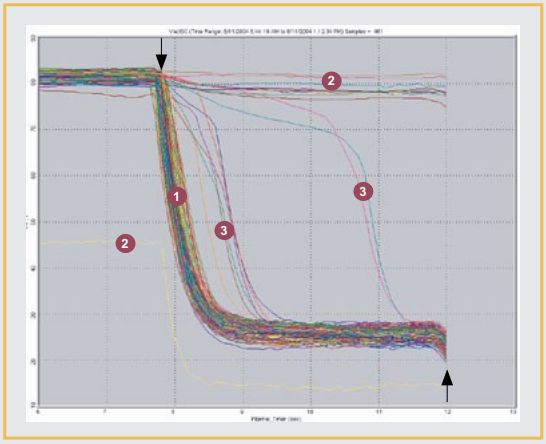
# sigPOD

## Best Defect Detection

The sigPOD software uses advanced **Process Signature Verification (PSV)** to quickly analyze the complete operation.

This detailed analysis finds anomalies in the process which postage stamp-type analysis cannot identify.

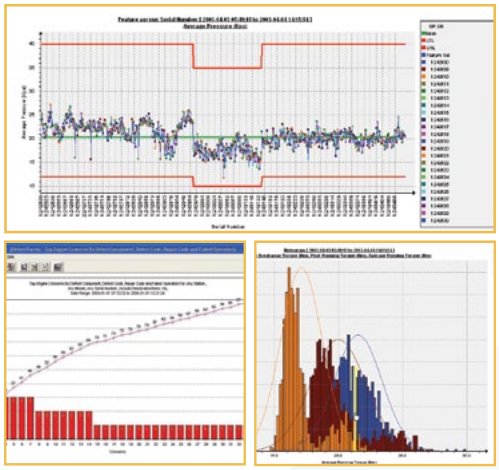
Storing sigPOD data provides manufacturers with insight to improve processes and avoid defects.




**1 repeatable waveforms of a healthy process producing good parts. The waveforms in 2 are the obvious failures, which are usually caught. The waveforms in 3, however, are often missed by other monitoring systems because they meet the minimal criteria for a "pass". These anomalies can point to process issues and/or problems with parts downstream.**

# qualityworx QUALITY MANAGEMENT SYSTEM

Manufacturers often struggle with process improvement initiatives because they lack visibility and traceability data. QualityWorX is a manufacturing process analysis software tool that automates the storage, retrieval, analysis and reporting of manufacturing processes. It transforms production data collected on the plant floor into information to control the manufacturing process.



- Easily provide **evidence of quality compliance** as required to customers and regulators;
- Quickly address quality issues and **conduct selective rather than mass recalls**;
- Record key information from various systems on the production line and store them for future access for **part and process traceability**; and
- Use the analytics to **identify the root cause** of quality issues and bottlenecks.

# sigPOD Models and Specifications

| Model | 1010 | 1202/1204 | 1302 | 1404 | 1408 | 1508 | 1608 | 3404* |
|---|---|---|---|---|---|---|---|---|
| Name | sigPOD Data Node | sigPOD | sigPOD | sigPOD | sigPOD | sigPOD | 8-ch USB Expansion | Leak Controller |
| Analog In | - | 2/4 | 2 | 4 | 8 | 8 | 8 | 4 Leak Modules |
| Analog Range | - | ±10, 2, 0.1, 0.033 V | ±10, 5, 1, 0.2 V | ±10, 5, 1, 0.2 V | ±10, 5, 1, 0.2 V | ±10, 5, 2, 1, 0.5, 0.2, 0.1V | ±10, 5, 1, 0.2 V | ±10, 5, 1, 0.2 V |
| Bandwidth | - | 20 kHz | 700 kHz | 700 kHz | 700 kHz | 1.7 MHz | 700 kHz | 160 Hz |
| Anti-aliasing filters | - | ✓ | - | - | - | - | - | ✓ |
| Max Sample Rate | - | 250 kHz | 250 kHz | 250 kHz | 250 kHz | 1 MHz | 250 kHz | 250 Hz |
| Analog Out | - | - | - | - | - | 2 | 2 | - |
| Encoder In | - | 2/4 | 1 | 2 | 2 | 2 | 2 | - |
| Digital I/O | - | 8/8 | 8/8 | 8/8 | 8/8 | 8/8 | 8/8 | 8/8 |
| Processor | 1.5 GHz | 650 MHz | 1.6 GHz | 1.6 GHz | 1.6 GHz | Core duo 2 GHz | - | 1.6 GHz |
| Memory | 1 GB | 1/2 GB | 1 GB | 1 GB | 1 GB | 2 GB | - | 1 GB |
| HD | 120 GB | 40 GB | 40 GB | 120 GB | 120 GB | 120 GB | - | 120 GB |
| USB | 4 V2.0 | 2 V1.0 | 4 V2.0 | 4 V2.0 | 4 V2.0 | 4 V2.0 | 1 V2.0 out | 4 V2.0 |
| Ethernet | 2 | 1 | 1 | 2 | 2 | 2 | - | 2 |
| Free PCI Slot | ✓ | - | - | - | - | - | - | - |
| Operating System | Windows XP Embedded | Windows XP Embedded | Windows XP Embedded | Windows XP Embedded | Windows XP Embedded | Windows XP Embedded | - | Windows XP Embedded |
| Size –inches (mm) | 8 x 6.5 x 8 (203 x 165 x 203) | 7.5 x 9.66 x 4.2 (199 x 241 x 107) | 8 x 4.5 x 8 (203 x 114 x 203) | 8 x 6.5 x 8 (203 x 165 x 203) | 8 x 6.5 x 8 (203 x 165 x 203) | 8 x 6.5 x 8 (203 x 165 x 203) | 8 x 4.5 x 8 (203 x 114 x 203) | 8 x 6.5 x 8 (203 x 165 x 203) |
| NEMA 12 (IP 52) | - | ✓ | - | - | - | - | - | - |
| Expandable[1] | - | - | - | ✓ | ✓ | ✓ | - | - |
| Optional[2] Integrated Display | - | 10.4” | 8” | - | - | - | - | - |

* For specifications on the leak pressure decay and vacuum modules, please visit our Web site at www.sciemetric.com.

[1] Measurement capabilities can be expanded through addition of 1608.

[2] All sigPODs accept optional remote 10.4” touch screen display.

# sigPOD Technical Specifications

## Power

| | |
|---|---|
| Supply Voltage | 24 VDC (22 to 28 VDC) |
| Power Consumption | 75 W maximum, 40 W typical |

## Processor**

| | |
|---|---|
| System Memory | 1 GB RAM |
| Data Memory | 40 GB HD minimum |
| Ethernet | 1 or 2 (see chart) |
| USB | 2 or 4 (see chart) |
| RS232 | 1 |
| Monitor | SVGA Connector |
| Keyboard/Mouse | PS2 |

## General

| | |
|---|---|
| Operating Temperature | 5 to 45 ˚C |
| Environment | NEMA 12 (IP 52) Model 12xx only, other Models IP 30 |
| Paint Finish | Black backed powder |

## Analog Input

| | |
|---|---|
| Number of Channels | 2, 4 and 8 Channel |
| Input Ranges | See model chart |
| Input Accuracy | ±0.02% for ±1 V range and greater; ±0.05% for ranges less than 1 V |
| Resolution | 16 bit A/D, ±32,768 counts |
| Maximum Sample Rate | 250 kHz (1 MHz Model 15xx) |
| Input Impedance | 10 G Ω ‖ 100 pF power on, 820 Ω power off |
| Small Signal Bandwidth | 1.7 MHz (Model 15xx)<br>700 kHz (Models 1302, 14xx, 1608)<br>20 kHz (Model 12xx) |
| Cross Talk | 75 dB adjacent channels,<br>90 dB non-adjacent channels |
| CMRR (DC to 60 Hz) | 75 dB (Model 12xx)<br>92 dB (Models 1302, 14xx, 1608)<br>100 dB (Model 15xx) |
| Overload Protection | ±25 V for up to two channels powered and ±15 V when off. |

## Analog Excitation

| | |
|---|---|
| Excitation Voltage | +10 VDC |
| Maximum Current | 100 mA per channel |
| Accuracy | ±0.1 % |
| Maximum Noise | 100 µV |
| Short Circuit Protection | Continuous |

## Encoder Input

| | |
|---|---|
| Number of Channels | 1 or 2 (see chart) |
| Sensors | Rotary encoders and linear scales |
| Input Voltage | 5 V TTL or OC (Open Collector) |
| Signal Type | Quadrature or Single Phase |
| Max Input Frequency | 10 MHz TTL, 50 kHz Open Collector |
| Counter | 32 bit (±2 x $10^9$ counts) |
| Input Protection | +24 V or -18 V without damage |
| Sensor Power | +5 VDC @ 150 mA, current limited |

## Digital Inputs

| | |
|---|---|
| Number of Channels | 8 with common return line |
| Polarity | Bidirectional |
| Isolation Voltage | ±120 V (Optically isolated) |
| Input Current | less that 2.3 mA |
| Input for Low State | 8 VDC maximum |
| Input for High State | 16 VDC minimum |
| Maximum Input Voltage | ±48 V |
| Switching Speed | 2 msec |

## Digital Outputs

| | |
|---|---|
| Number of Channels | 8 with common return line |
| Polarity | Bidirectional |
| Isolation Voltage | 120 V (Optically isolated) |
| Switching Capability | ±1 A @ ±48 VDC or VAC peak |
| Contact Resistance | > 100 M Ω off; <0.5 Ω on |
| Power On State | All Off |
| Switching speed | 8 msec |

## Analog Outputs

| | |
|---|---|
| Number of Channels | 2 depending on model |
| Resolution | 16 bits |
| Accuracy | 0.02 % |
| Output Range | ±10 V |
| Output Impedance | 0.2 Ω |
| Output Drive Current | ±5 mA |
| Protection | ±25 V |
| Power On State | ±5 mV |
| Power On Glitch | 1.5 V for 1.5 S |

** The exact processor type and speed, memory supplied and other technical specifications are subject to change without notice. Please contact Sciemetric for latest specifications.

# sigPOD

SIMPLY THE BEST TECHNOLOGY
TO MONITOR AND CONTROL
MANUFACTURING PROCESSES

## Find answers with the Manufacturing Intelligence Team (MIT)

For expert assistance in resolving manufacturing process problems, consult with Sciemetric's unique Manufacturing Intelligence Team (MIT). Having walked hundreds of lines and developed as many applications, MIT can evaluate test processes, conduct engineering trials and develop custom process monitoring applications to meet your requirements.

## Feel confident with our Global Services, Installation and Support

Sciemetric has teams of applications specialists to deliver successful installations and ensure your systems and software are operating properly. We provide integration, commissioning and run-off support, deploying our specialists globally to debug, validate and fully integrate our software and equipment on the integrator's shop floor, run-off at the integrator and at the plant, and launch support for start of production.

## About Sciemetric

Since 1981, Sciemetric's process monitoring and quality management systems and software have enabled some of the world's leading automotive, medical and industrial manufacturers to gain visibility into and control over their manufacturing processes. On the production floor, Process Signature Verification (PSV™) technology provides the most accurate determination of process health and part quality while collecting all data. Manufacturing managers use Sciemetric's analytic tools to transform the data into actionable information to reduce costs, manage quality, and maximize yield while providing proof of process compliance and complete line-wide traceability. Visit www.sciemetric.com for more information.

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