CINCINNATI TEST SYSTEMS
A TASI Group Company

Sentinel M-24 Specification Sheet

Versatile Multi-Station Pressure Decay Leak Test Instrument

- **1 to 4 Independent Test Stations**
- **Graphic VFD Display**
- **RS232, IrDA, RS485, Ethernet**
- **Simple Setup and Calibration**

Versatile Configurations (independent by station)

Pressure (Vacuum) decay
(Absolute pressure transducer)
High flow Pressure (Vacuum) decay
(Absolute pressure transducer)
Dual pressure (vacuum) decay
(Absolute pressure transducer)
Single pressure drop (Absolute pressure transducer)
Dual pressure drop (Absolute pressure transducer)

High resolution 24 bit A/D converter for fast, repeatable test results (resolution to 0.00001% of the transducer full scale)

Monitoring and Programming via integral operator panel or remote computer. Remote selection using pulse train digital input, RS232, IrDA or Ethernet.

16 part programs per station storage including timers, pressure parameters, leak rates, and calibration parameters

Flexibility to set test method, test parameters, input/output options, units of measurement, calibration method, and communication to meet a variety of applications.

Modular Pneumatics are independent by station with manifold mounted valves, transducer(s), calibrated leak standard, and regulator(s)

Compact modular enclosure for easy installation and maintenance (includes all electronics and pneumatics,
Backplane mounted: 16”h x 14”w x 8”d

Operator Display panel makes operator interface simple, fast and comprehensive

- **VFD display** with graphic pressure curve, bar graph test results, digital test results, test parameters, counters, and test statistics (256 x 64 display)
- **Test result lights** for Test Accept and Reject
- **Keypad with Function and Display keys** for Change Part, Auto Calibrate, Part Configuration, Instrument Configuration, Self Test, Start, Stop, Test Data, Monitor, and Help

Auto Calibration routine tests master production part with internal calibrated leak standard to automatically establish the pressure-loss-over-time to leak rate relationship for the part program.

Environmental drift correction maintains calibration accuracy by monitoring and automatically making continuous small adjustments for changes in temperature and environmental conditions.

Quik Test monitors the instantaneous in-test results and ends the testing process early when it is obvious that an accept or reject result is imminent.

High Speed Communication via RS232, IrDa, RS485, and Ethernet includes test parameters, test results, counter information, test statistics, and in-test values at baud rates up to 57800. Test result formats are selectable.

Self Test functions include internal pneumatic leak check, calibration verification, transducer zero and span calibration, and test regulator adjustment.

Data Collection stores the digital test results of leak rates, pressure loss, test pressure, and test result plus time and date for up to 1,000 tests per station.

Counters and Statistics are stored by part program and station. Counters include total parts tested, accepts, rejects, and malfunctions. Part Statistics are calculated on selected data per station which includes Min value, Max value, range, mean, and standard deviation for accept, reject and all parts.

Standard integral 4 input/4 output digital interface per station. These inputs and outputs are independently programmable within for each station.

Tooling control includes a pneumatic seal output for operator safe automatic motions combined with one input start, part presence, and part accept/reject part mark. The tooling control setup is easy and independent per station.

Security password protection is available for calibration, part change, part configuration, instrument configuration, counter reset, and data reset.

Specifications

Pneumatic Manifold Configurations

Single Pressure Pneumatics, Standard Cv (1/8" orifice) valves

- Pressure ranges: Vacuum, 14 inWC, 5, 30, 100, and 200 psig

Single Pressure Pneumatics, High Cv (5 times higher flow) valves

- Pressure range: Vacuum, 14 inWC, 5, 30, and 100 psig

Single Pressure Pneumatics, High pressure, High Cv (five times higher flow) valves

- Pressure range: Upto 500 psi

Dual pressure pneumatics, Standard Cv valves, Single pressure transducer

- Pressure range: Vacuum, 14 inWC, 5, 30, 100, 200 psig

Dual pressure pneumatics, Standard Cv valves, Two pressure transducers

- Pressure range: Vacuum, 14 inWC, 5, 30, 100, 200 psig

Pressure Display

Test pressure and pressure loss are measured with an absolute pressure transducer. The instrument displays gage pressure during fill and stabilization referenced to the atmospheric pressure at the beginning of the test cycle. Pressure loss is displayed during test.

Pressure resolution: 0.00005% of pressure range (0.4 Pa) or better

Displayed pressure resolution for fill and stabilization: 0.01 units

Displayed pressure resolution for test: 0.00001 units

Calibration system

- NIST traceable calibrated leak standard sized to within +5%/-0% of specified reject rate with an accuracy of +/-1.2% of value. Mounted directly to pneumatic manifold

Instrument Power Requirements

- 120 VAC - 6 amps;
- 230 VAC - 6 amps,
- 24 VDC - 6 amps

Input/Output Terminals

- Integral 4 inputs and 4 outputs per station are available within the enclosure.

Input and output functions per terminal are assigned within each station

Independent Inputs per station include:

Start	Stop/release
Hold	Part presence
Auto Cal	Make-to-continue
Send RS232	Part Select Pulse

Control inputs: 12 sinking TTL inputs

Independent Outputs per station include:

Part Accept	Part Reject
Test passed	Test failed
Below LL	Above HL
Betw Lim	Adv Seal
In Test	In AutoCal Mode
In Pre-fill timer	In fill timer
In stab timer	In test timer
In Exh timer	In Relax
Accept Mark	Reject Mark
Part Select Fdbk	
Make to Continue Fdbk	

Control outputs are sourcing

- 16 mechanical relays

I/O board fused for 5 amps max

- Station outputs fused in groups of four – 2.5 amps
- For instruments with 120 VAC or 230 VAC, I/O can be supplied as 120 VAC or 24 VDC
- For instruments with 24 VAC, I/O must be 24 VDC

Communication: Two way

- TCP/IP (Ethernet – telnet and email)
  - One internal connection on Analog Master board
- RS485 – one internal connection on Analog Master board
  - 57800 baud
  - No parity, 8 bits, 1 stop bit, no flow control
- IrDA on front panel
  - 9600 baud
  - No parity, 8 bits, 1 stop bit, flow control
- RS232 one (on front of operator panel for external connection)
- RS232 two (internal connection on communication board)
  - 57800 or 9600 baud
  - No parity, 8 bits, 1 stop bit, no flow control

Program Backup and Restore

- Flash chip socket on inside of door allows easy backup and restore of instrument and part programs

Enclosure:

Nema 12 industrial enclosure, die cast aluminum
Dimensions: 16”W x 12”H x 8”D
Weight: 30 – 40 lbs
Ambient conditions: 5 to 40 C (41 to 109 F)
Humidity: 90% non-condensing

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Instrument Option Selection

Central Electronic Module

	Number of Stations-max 4 regulators
	One station
	Two stations
	Three stations
	Four stations

	Power source for instrument
	120 VAC
	230 VAC
	24 VDC

	Pneumatic connections
	NPT
	Metric

Station Pneumatic Modules (Specify one per station)

	Test Capability Desired
	Single pressure, Standard Cv Valves, Pressure Decay and Pressure Drop Tests
	Single pressure, High Cv valves, Pressure Decay and Pressure Drop Tests
	Single and Dual Sequential Pressure, Standard Cv Valves, Pressure Decay and Pressure Drop Test (

	Test pressure range
	Vacuum (0 to 14.7 psiv)
	0 – 14 inch water column vacuum
	0 – 14 inch water column gage
	0 – 5 psig
	0 – 30 psig
	0 – 100 psig
	0 – 200 psig
	200 – 500 psig

	Second Test pressure range for Dual Sequential Pressure Manifold
	Vacuum (0 to 14.7 psiv)
	0 – 14 inch water column vacuum
	0 – 14 inch water column gage
	0 – 5 psig
	0 – 30 psig
	0 – 100 psig
	0 – 200 psig

Test Pressure: _____

Leak Rate: _____

2nd Test Pressure: _____

2nd Test Leak Rate: _____