

## Sentinel C28 Compact Leak Test Instrument

- Unique Auto Test Setup
- Single Pressure Test Capabilities
- RS232, Ethernet
- Color graphic display

### Versatile Test Capabilities

Pressure (Vacuum) Decay Leak Rate  
Pressure (Vacuum) Drop  
Pressure Rate of Change  
Occlusion (Back Pressure)

### Instrument Flexibility accommodates:

- different pressure test pneumatics
- performs various test methods
- accepts different part-to-part test parameters
- allows test specific units of measurement
- selectable digital input and output functions
- utilizes RS232 and TCP/IP (Telnet) communications methods to interface with the factory network.

### 32 Part Programs with Application

**Flexibility** includes test type, timers, pressure parameters, leak rates, calibration parameters, units of measurement, and digital input/output options.

**Auto Setup** automatically determines optimal test cycle times to meet desired total cycle time requirements for leak rate tests.

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

**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 a reject or accept result is imminent.

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

**Compact Modular Enclosure** for easy installation and maintenance (includes all electronics and pneumatics) in a wall mount configurations

**Wall mount:** 6.6" h x 8.7" w x 7.2" d

**Modular Pneumatics** with manifold mounted valves, transducer, calibrated leak standard, and regulator.

### Transducers

#### Absolute Pressure Transducer:

Monitors test pressures for all tests and displays pressure relative to atmosphere (gauge pressure) or pressure loss or rate of loss during standard pressure/vacuum decay tests.

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

**High speed, powerful computer with 32 bit processor** for fast, high resolution processing.

**Monitoring and Programming** via integral operator panel or remote computer. Remote part program selection using Binary digital inputs (1 to 6 digital inputs), RS232, or Ethernet.

**Operator Display Panel** makes operator interface simple, fast and comprehensive

- **Highly visible, color LCD display** with bar graph test results, digital test results, test parameters, counters, and test statistics
- **Test result lights** for In test/Accept/Reject
- **Keypad with Function and Display keys** for Auto Setup, Change Part, Auto Calibrate, Part Configuration, Instrument Configuration, Self Test, Start, Stop, Test Data, Monitor, and Help

**High Speed Communication via RS232 and Ethernet** includes test parameters, test results, counter information, and test statistics at baud rates up to 115200 for RS232. Test result output formats are selectable

**Pressure Streaming** - Test data output every 0.01 seconds via RS232 for plotting test curves.

**Data Collection** stores test results of leak/flow rates, pressure loss, test pressure, time, date, and more for upto 5,000 tests.

**Tooling Control** for simple applications includes an extend and retract output for part seal with one input start and part presence before start. Easy setup performed within each part program.

**Standard Integral 6 Input / 3 Output Digital Interface.** These inputs and outputs are independently programmable within each individual part program.

**Programmable Digital Inputs** include Start, Stop/reset, Open Leak Std Valve, Part Presence, Ext. Switch feedback (before end of fill timer),

Auto Cal, Hold, Vent/Halt, SPC Test Part, and 1-5 Binary Part Select.

**Programmable Digital Outputs** include Test Accept/Reject per test, Part Accept/Reject, Outputs per test reject limits, Outputs for steps of test sequence, 1Tooling Extend, 1Tooling Retract, In Auto Cal sequences, and Press Select.

## Specifications

### Pneumatic Manifold Options for Test Types

#### Test Type P - Pressure Test

*Pressure Decay Leak Rate, Pressure Drop, Rate of Change, and Occlusion Tests*  
Single Regulator\* / Absolute Pressure Transducer / Single Leak Standard

- **N Manifold** - Low volume (<1 cc), Low Cv Valves
  - Pressure ranges: 10 psiv to 100 psig
  - Test port: 1/8" FNPT
- **A Manifold** - Standard Cv valves (1/8" orifice), Internal volume (8 cc)
  - Pressure ranges: 14.7 psiv to 100 psig
  - Test port: 1/4" FNPT
- **B Manifold** - High flow-high Cv valves (5X flow), Internal volume (12cc)
  - Pressure ranges: 14.7 psiv to 200 psig
  - Test port: 1/4" FNPT

### Transducer Resolution

- **Absolute Pressure Transducer**
  - Displayed Pressure Resolution: 0.001 units during pre-fill, fill, and stabilize
  - Displayed Resolution of pressure loss during test: 0.00001 units
  - Absolute Pressure Resolution: 0.00005% of transducer range (0.3 pa for 200 psi range)

### I/O Board Power Requirements

- Supplied independent of instrument power
- 120 VAC or 24 VDC fused for 2.5 amp total

### Control inputs are sinking

- 6 optically isolated inputs

### Control outputs are sourcing

- 3 dry contact relays

### Input/Output Terminals

- Integral 6 inputs and 3 outputs are available within the enclosure.
- Input and output functions per terminal are assigned within the part programs

### Inputs include:

Start	Stop/reset
Part presence	Halt/Vent
Hold	Ext Press Sw*
Auto Cal	Open Leak Std
Binary part select (1-5)	SPC Test Part
Ext Sw feedback*	

### Outputs include:

Part Accept	Part Reject
Malfunction	Severe Leak
AutoCal Mode	AutoCal LS
AutoCal Master	Test Lamp
Press Select*	In Relax
In Pre-fill timer*	In fill timer*
In stab timer*	In test timer*
In Exh timer*	Below LL*
Betw Lim*	Above HL*
Test passed*	Test failed*
Tool Mot 1 extend	
Tool Mot 1 retract	

### Instrument Power Requirements

- 120 VAC – 1 amps;
- 230 VAC – 0.5 amps,
- 24 VDC - 2 amps

### Part Program Storage

- Up to 32 part programs

### 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

### Communication: Two-way

- TCP/IP (Ethernet – telnet and email)
- One portal via one internal connection on communication board
- RS232 (on front of operator panel for external connection)

- 115600, 57800, 33600, 19200, or 9600 baud rate
- no parity, 8 bits, 1 stop bit, no flow control

### USB memory chip (Formatted Fat32):

- Firmware update only

### Enclosures:

#### Nema 12 Industrial Enclosure

Die cast aluminum

Dimensions: 8.7"W x 6.6"H x 7.2"D

Weight: 12.5 lbs (5.7 kg)

**Ambient conditions:** 5 to 40 C (41 to 109 F)

**Humidity:** 90% non-condensing

## Instrument Option Selection

	<b>Instrument mounting</b>
	Wall

	<b>Pneumatic connections</b>
	NPT

	<b>Digital I/O Voltage</b>
	120 VAC
	24 VDC

	<b>Power source for instrument</b>
	120 VAC
	24 VDC
	230 VAC

	<b>Keypad Language</b>
	Chinese

	<b>Pressure Transducer</b>
	0 – 20 psia
	0 – 45 psia
	0 – 115 psia
	0 – 215 psia

	<b>Transducer Option</b>
	No Transducer

1<sup>st</sup> Test Leak Rate \_\_\_\_\_  
 1<sup>st</sup> Test Pressure \_\_\_\_\_

## Pneumatic Test Module

	<b>Test Capability Desired</b>
	Pressure Decay/Pressure Drop/Rate of Drop Test with One Regulator and One Calibrated Leak Standard

	<b>Flow capacity of Test pneumatics</b>
	Low Volume – low flow manifold
	Standard flow – std. volume manifold
	High flow manifold (5 x higher flow)

	<b>Pressure Package Range</b>
	Vacuum (0 to 14.7 psiv)
	0.5 – 2 psig
	2 – 30 psig
	2 – 100 psig
	2 – 200 psig