

## Sentinel C28 Compact Leak Test Instrument

- **Unique Auto Test Setup**
- **Multi Language Software**
- **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 (gage 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

- **Vivid, color LCD display** with bar graph test results, digital test results, test parameters, counters, and test statistics. Icon menu screens for easy navigation.
- **Test result lights** for In test/Accept/Reject
- **Language Neutral Keypad** international icon design keypad accesses user friendly menu driven set up screens.

**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 up to 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

- **Low volume** (<1 cc), Low Cv Valves
  - Pressure ranges: 10 psiv to 100 psig
  - Test port: 1/8" FNPT
- **Standard Cv** valves (1/8" orifice), Internal volume (8 cc)
  - Pressure ranges: 14.7 psiv to 100 psig
  - Test port: 1/4" FNPT
- **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)

**Electronic Regulator Option** is available for multiple pressure applications.

### I/O Board Power Requirements

- Supplied independent of instrument power
- 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 1extend	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

- Optional 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)

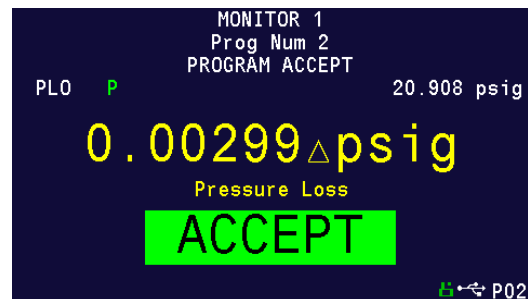
**Ambient conditions:** 5 to 40 C (41 to 109 F)

**Humidity:** 90% non-condensing

### Test screen samples



Icon Menu Set-up Screen



Test Accept Screen



Multi Language Software

### Instrument Options

<b>Instrument mounting</b>
Wall

<b>Pneumatic connections</b>
NPT

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

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



Low Volume CV Manifold

### Pneumatic Module Options

<b>Manifold</b>
Low Volume CV
Standard CV Manifold
High CV Manifold



Standard CV Manifold

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

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



High CV Manifold

<b>Transducer Option</b>
No Transducer

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