SENTINEL I28

Leak and Flow Test Instrument

HIGHLIGHTS

- ✓ Pressure decay, mass flow, and differential pressure decay test types
- ✓ Program calibration with CTS Performance Factor Feedback for accuracy monitoring
- ✓ RS232, TCP/IP, and EtherNet/IP™ communications
- ✓ Auto program setup
- ✓ Parent program linking
- ✓ Program calibration
- ✓ Global friendly control interface

DESCRIPTION

The SENTINEL I28 is an advanced multi-functional leak and flow test instrument delivering high resolution measurement. This instrument is available in three configurable wall mount models:

- **I28 PRESSURE DECAY**
- **I28 MASS FLOW**
- **I28 DIFFERENTIAL PRESSURE DECAY**

I28 SPECIFICATIONS

Instrument Housing	I28 Wall mount configuration 12” w x 9.25” h x 8.75” d (305 x 235 x 220 mm)
Electrical	100-240 VAC, 50/60 Hz
Air Quality	ISO 8573-1:2010 [2:2:2] Compressed air or nitrogen only
Pilot	60 psig (4.1 bar) minimum
Operating Temperature	41-104° F (5-40° C)
Operating Humidity	90% non-condensing
Digital I/O	12 inputs and 12 outputs, 24 V - 1 A max. Tooling control up to 5 motions with feedback
Instrument Weight	13-16 lbs (6-7 kg)

SENTINEL I28 PRESSURE DECAY FEATURES

Pressure decay leak testing is the measurement of pressure loss over time. The use of absolute pressure transducers increases the accuracy of the test by measuring the pressure relative to a sealed vacuum reference, eliminating barometric pressure change issues.

Pressure Decay Test Types

- Pressure/Vacuum Decay - Leak Standard
- Pressure/Vacuum Decay - ΔP
- Pressure/Vacuum Decay - ΔP/ΔT
- Occlusion - Pressure or Vacuum
- Ramp to Proof - Pressure
- Pressure Verify

Measurement Resolution

- **Test Pressure / Pressure Loss**
  Displayed Resolution:
  Range is selectable X - X.XXXXXX displayed units during pre-fill, fill, stabilize, test, and exhaust

  Transducer Options:

Range	Measurement	Resolution
0-20 psia	-14.7 to 5 psig	0.000004 psig
0-45 psia	-14.7 to 30 psig	0.000008 psig
0-115 psia	-14.7 to 100 psig	0.000021 psig
0-215 psia	-14.7 to 200 psig	0.000040 psig
0-515 psia	-14.7 to 500 psig	0.000096 psig

- **Leak Rate**
  Displayed Resolution:
  Range is selectable X - X.XXXXX displayed
  Instrument Resolution: 0.0005 scc/min

Leak Standard

- Internal Leak Standard located on the valve manifold.

Pressure Regulators

- Instrument maximum 2
- Manual regulator options
  0.2 to 2.5 psiv (0.5-5 inHG)
  0.5 to -12.7 psiv (1-26 inHG)
  2.5 to -14.5 psiv (5-29 inHG)
  0.2 to 2.0 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  3.0 to 200.0 psig
  5.0 to 400.0 psig
  10.0 to 500.0 psig
- Electronic regulator options:
  0.5 to 14.5 psiv (1-29.0 inHg)
  0.5 to 2 psiv (0.1- 4 inHG)
  0.02 to 0.5 psig (0.5-15 inH2O)
  0.2 to 2.0 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  3.0 to 200.0 psig

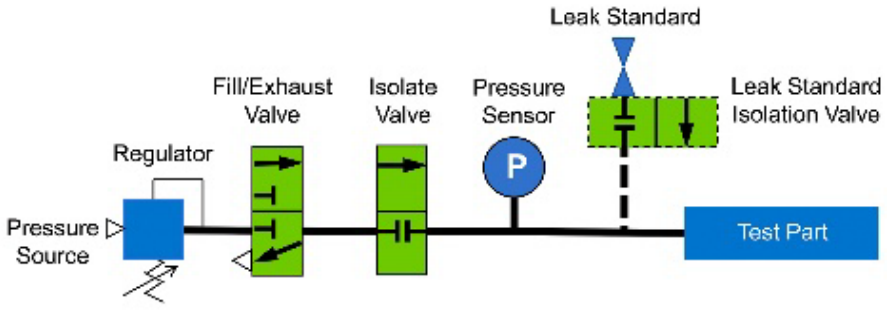
Quik Test Function

- Monitors the instantaneous in-test results and ends the testing process early when it is obvious that a reject or accept result is imminent.
- Reduces test time
- Analyzes test results in real time

Patented Auto Test Setup

- Automated optimization of test program based on maximum user allowable cycle time
- Simpifies instrument test programming and setup

Pressure Decay Test Circuit



SENTINEL I28 MASS FLOW FEATURES

Flow meter measures the amount of air required to maintain test pressure over time.
Any flow indicates a leak.

Mass Flow Test Types

- Mass Flow
- Mass Flow - Leak Standard

Measurement Resolution

- **Test Pressure**
  Displayed Resolution:
  Range is selectable X - X.XXXXXX displayed units during pre-fill, fill, stabilize, test, and exhaust
  Transducer Options:

Range	Measurement	Resolution
0-20 psia	-14.7 to 5 psig	0.000004 psig
0-45 psia	-14.7 to 30 psig	0.000008 psig
0-115 psia	-14.7 to 100 psig	0.000021 psig
0-215 psia	-14.7 to 200 psig	0.000040 psig
0-515 psia	-14.7 to 500 psig	0.000096 psig

- **Flow**
  Transducer Options:
  Range
  0.5-50 scc/min
  2-250 scc/min
  300-3000 scc/min
  Other ranges available (consult factory)

- **Leak Rate**
  Displayed Resolution:
  Range is selectable X - X.XXXXX displayed units
  Instrument Resolution: 0.0005 scc/min

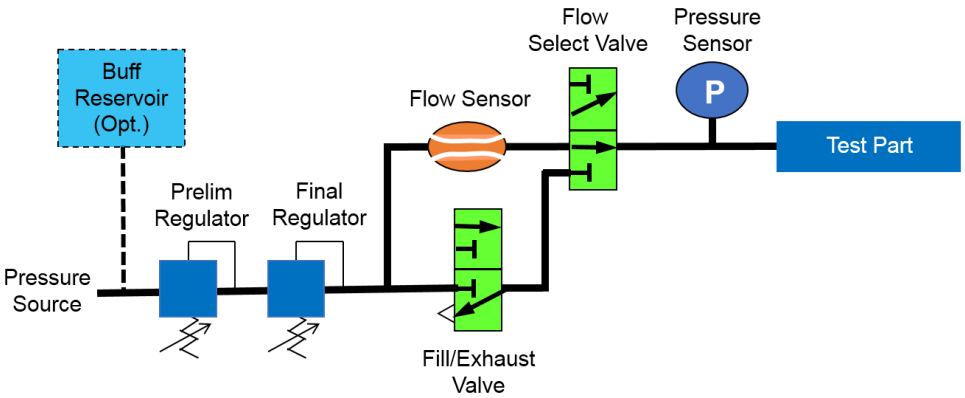
Leak Standard

- Internal Leak Standard located on the valve manifold.

Pressure Regulator

- Instrument maximum 1
- Manual Regulator **Options**
  0.2 to 2.0 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  Other ranges available (consult factory)

Mass Flow Leak Test Circuit



SENTINEL I28 DIFFERENTIAL PRESSURE FEATURES

Differential Pressure Decay leak testing is the measurement of pressure loss over time by comparing the pressure difference between a reference volume and a test part volume.

Differential Pressure Decay Test Types

- DP Pressure/Vacuum Decay - Leak Standard
- DP Pressure/Vacuum Decay - ΔP
- DP Pressure/Vacuum Decay - Leak Rate
- Occulusion – Pressure or Vacuum

Measurement Resolution

- **Test Pressure**

  Displayed Resolution:

  Range is selectable X - X.XXXXXX displayed units during pre-fill, fill, stabilize, test, and exhaust

  Transducer Options

Range	Measurement	Resolution
0-115 psia	-14.7 to 100 psig	0.000021 psig
0-215 psia	-14.7 to 200 psig	0.000040 psig

- **Differential Pressure**

  Displayed Resolution:

  Range is selectable X - X.XXXXXX displayed units during test.

  Instrument Resolution 0.000001 psig (0.007 Pa)

- **Leak Rate**

  Displayed Resolution:

  Range is selectable X - X.XXXXXX displayed units during test and as a DP pressure loss.

  Instrument Resolution: 0.00005 scc/min

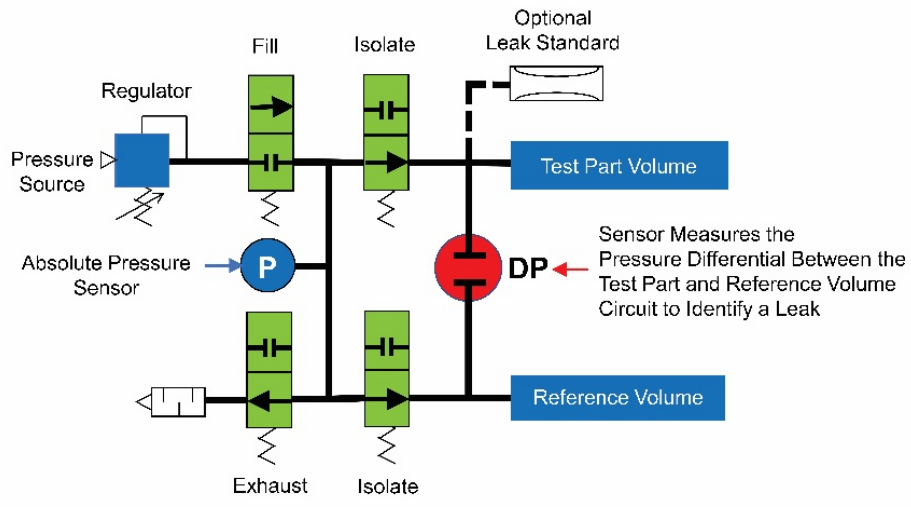
Pressure Regulator

- Instrument maximum 2
- Manual regulator options
  0.2 to 2.5 psiv (0.5-5 inHG)
  0.5 to -12.7 psiv (1-26 inHG)
  2.5 to -14.5 psiv (5-29 inHG)
  0.2 to 2.0 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  3.0 to 200.0 psig
- Electronic regulator options:
  0.5 to 14.5 psiv (1-29.0 inHg)
  0.5 to 2 psiv (0.1- 4 inHG)
  0.2 to 2.0 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  3. to 200.0 psig

Leak Standard Options

- Internal Leak Standard located on the valve manifold.
- External Leak Standard located on the bottom of the unit with quick-disconnect port
- Pneumatics configured with no leak standard port.

Differential Pressure Test Circuit



SENTINEL I28 FEATURES

99 Test Programs
- Program Selection and Flexibility
- Pressure, flow, and vacuum test types
- Timers
- Pressure limits
- Reject limits
- Calibration parameters
- Units of measurement
- Digital I/O
- Tooling control

Patented Auto Test Setup
- Automated optimization of test program based on maximum user allowable cycle time
- Simplifies instrument test programming and setup

Data Management & Storage:
- 30,000 tests stored in on-board memory
- Infinite expandable through USB port
- Statistic data tracking for static trending capability
  - History length
  - Accept %
  - Reject %
  - Accept Average
  - Reject Average
  - Accept Std Deviation
  - Sample Size (since last reset)
- Resettable production counters:
  - Accept
  - Reject
  - Malfunction
- Test result log viewable on display

Parent Program Linking
- A test type that allows the results of individual test to be grouped together and reported a global or “parent test“ result.
- Allows linking of individual test programs to test in sequence for overall control of tooling, cycle inputs, and program result outputs for the test sequence.

Environmental Drift Correction
- Maintains calibration accuracy by monitoring and automatically making continuous small adjustments for changes in temperature and environmental conditions.

Self-Test Functions:
- Internal leak detection process
- Program calibration verification (when a leak standard is used)

Automatic Calibration
- An easy to perform routine that calibrates the instrument to a “master part.“
- Batch calibration to average over multiple parts, if required.
- Permits manual edits of calibration data.

Test Pressure Compensation
- Compares programmed test pressure to actual test pressure and correlates a comparative measurement for the leak test to maintain accuracy.

High-speed 32-bit Processor and 24-Bit A/D Converter
- Exceptionally fast, high resolution test processing
- Stable yet extremely responsive pressure/flow measurements

Units of Measure
- Pressure: Pressure: ATM, Bar, cmHg, inHg, kPa, Mpa, mBar, mmHg, Pa, Torr, psia, psig, psiv, mmWC, iWC, cmWC, ksc
- Flow: sccm, sccs, scch, slpm, slps, slph, scfm, scfs, scfh
- Time: msec, sec, min
- All of the above selected globally or per test program

Test Ports
- 1 concurrent test port, standard
- 2, 3, and 4 test ports available for sequential or zone specific testing (consult factory)
- 1/4” FNPT test port
- Metric and BSPT
- Other connection sizes available (consult factory)

Vacuum Source Generation
- 2-stage internal venturi vacuum generator
- External electronic vacuum pump available

24 Volts Digital Inputs/Outputs
- 12 User configurable inputs
- 12 User configurable outputs
- Tooling control for up to five tooling motions with feedback,part marking, and part presence detection

FEATURES - CONTINUED

RS232 Communication Ports

- 2-Way communication
- Test result data transmission with definable fields
- Pressure streaming for waveform analysis
- Generated reports with test data and configuration
- Barcode unique part identification

Ethernet Port

- 2-Way Telnet communication
- Email of reports, test data, and and alerts
- EtherNet/IP™ Option, an additional 26 Inputs/25 Outputs
- Test result data transmission with definable fields
- Test Program Selection

External USB Port

- Provides additional program storage capacity and synchronized test result data storage
- Backup/Restore of instrument functions
- Report storage
- Test result data storage and automated result synchronization

Compact Enclosure Design

Communication connections located at the side, test ports and pressure regulators on the bottom of the unit

Full-Color LCD Display

- 480 x 272 pixels
- User-friendly icon-based menus
- Menu operating modes: Basic , Advanced, Admin
- Graphing of Pressure or Flow vs. Time with plot position and zoom capability
- Displays active/inactive status of digital inputs & outputs

Selectable Menu Languages

- Language neutral operator interface
- English, Spanish, Chinese, Korean, Portuguese, and German language options

3-Color Light-Bar

- Panel mount light indicators provide visual feedback of test results
- White = In-Test, Green = Accept, and Red = Reject
- Eliminates stack lights
- Adjustable brightness
- Adjustable duration

Password Security

- Select menu items to secure or unsecure

Help Menus

- On-screen popup window description of parameters (activated by single shortcut key)
- Minimizes need to have the equipment manual present when programming the instrument

QualityWorX CTS DataHub™ Communications

The *QualityWorX CTS DataHub* is a turnkey solution that helps user collect, store and analyze test results from CTS Sentinel Instruments.

Each system includes:

- QualityWorX database and software solution for post test data analysis
- Sciemetric Studio LT software for waveform and trend analysis
- External monitor
- Mouse and Keyboard

For details, visit our website:
www.cincinnati-test.com/qualityworx-cts-datahub

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