

Sentinel® LPC 528

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, EtherNet/IP™ and PROFINET
- Parent program link
- Program calibration
- Global-friendly control interface
- Self-test diagnostic verification

Description

The Sentinel LPC 528 is an advanced multi-functional leak and flow test instrument delivering high-resolution measurement. This instrument is available in three configurable benchtop models:

- LPC 528 Pressure Decay
- LPC 528 Mass Flow
- LPC 528 Differential Pressure Decay

Sentinel LPC 528 Specifications

Instrument Housing (HxWxD)	6.7" x 10.6" x 10.3" (170 x 270 x 260 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	6 inputs and 3 outputs, 24 V-1 A max Tooling control up to 2 motion
Instrument Weight	13-16 lbs (6-7 kg)

Sentinel LPC 528 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 - $\Delta P/\Delta T$
- Occlusion - Pressure or Vacuum
- 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

• Leak rate

Displayed resolution:

Range is selectable X - X.XXXXX displayed

Instrument resolution: 0.0005 scc/min

LEAK STANDARD

- Optional External Leak Standard

PRESSURE REGULATORS

- Instrument maximum: 1
- Manual regulator options
 - 0.2 to -14.5 psiv (0.4 to 29 inHG)
 - 0.2 to 2.0 psig
 - 0.5 to 10.0 psig
 - 1.0 to 30.0 psig
 - 2.0 to 100.0 psig
 - 3.0 to 200.0 psig
- Electronic regulator options:
 - 0.2 to 14.5 psiv (0.4 to 29.0 inHg)
 - 1.0 to 1.0 bar (vacuum source required)
 - 0.2 to 2.0 psig
 - 0.5 to 10.0 psig
 - 1.0 to 30.0 psig
 - 2.0 to 100.0 psig
 - 3.0 to 200.0 psig

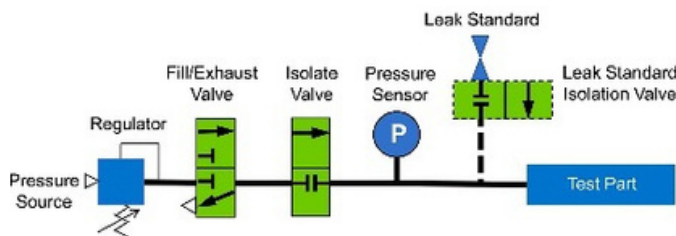
QUICK TEST FUNCTION

- 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
- Simplifies instrument test programming and setup

Pressure Decay Test Circuit



Sentinel LPC 528 Mass Flow Features

Flowmeter 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

• Flow

Transducer Options:

- 0.5-50 scc/min
- 2-250 scc/min
- 5-500 scc/min
- 10-1,000 scc/min
- 30-3,000 scc/min
- 100-10,000 scc/min

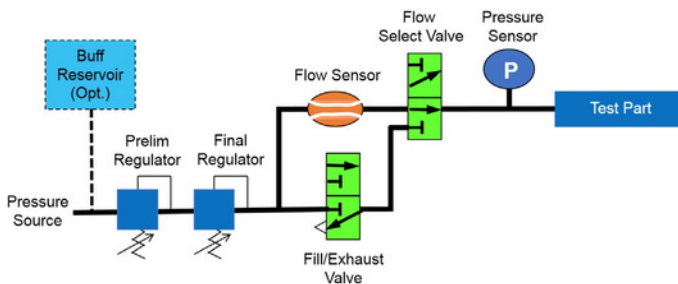
LEAK STANDARDS

- Optional External Leak Standard

PRESSURE REGULATOR

- Instrument maximum: 1
- Manual regulator options:
 - 0.25 to 2.5 psiv (0.5-5 inHg)
 - 0.5 to 14.25 psiv (1-29 inHg)
 - 0.2 to 2.0 psig
 - 0.5 to 10 psig
 - 1.0 to 30.0 psig
 - 2.0 to 100.0 psig

Mass Flow Leak Test Circuit



Sentinel LPC 528 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
- Occlusion – Pressure or Vacuum

MEASUREMENT RESOLUTION

• Test pressure

Displayed resolution:

Range is selectable X - X.XXXXXX displayed units during

• 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

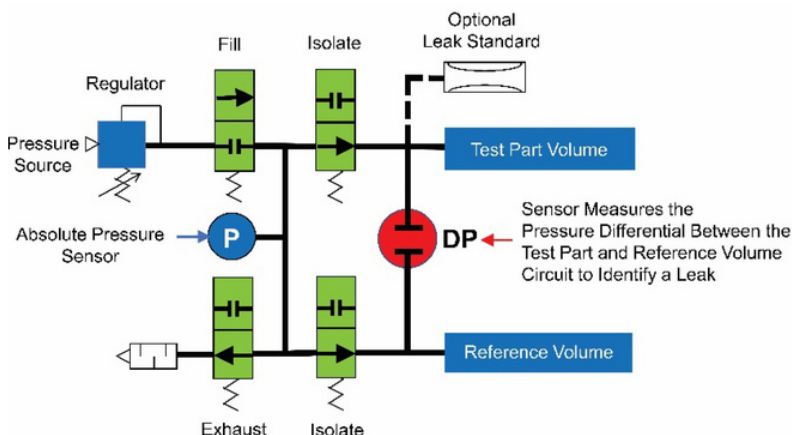
PRESSURE REGULATOR

- Mechanical regulators maximum: 1
- Manual regulator options:
 - 0.2 to -14.5 psiv (0.4 to 29 inHG)
 - 0.2 to 2.0 psig
 - 0.5 to 10.0 psig
 - 1.0 to 30.0 psig
 - 2.0 to 100.0 psig
 - 3.0 to 200.0 psig
- Electronic regulator options:
 - 0.2 to 14.5 psiv (0.4 to 29.0 inHG)
 - 1.0 to 1.0 bar (vacuum source required)
 - 0.2 to 2.0 psig
 - 0.5 to 10.0 psig
 - 1.0 to 30.0 psig
 - 2.0 to 100.0 psig
 - 3.0 to 200.0 psig

LEAK STANDARDS

- Optional External Leak Standard

Differential Pressure Test Circuit



Sentinel LPC 528 Features

32 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 AND STORAGE:

- Up to 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

- 1 Link
- A test type that allows the results of individual tests to be grouped together and reported as 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

TARGET 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

- Single, configurable in front or back of instrument
- 1/4” FNPT test port
- Other connection sizes available (consult factory)

INTERNAL VACUUM SOURCE GENERATION

- 2-stage venturi vacuum generator

Sentinel LPC 528 Features — Continued

24 VOLT DIGITAL INPUTS/OUTPUTS

- 6 User configurable inputs
- 3 User configurable outputs
- Tooling control for up to 2 tooling motions with feedback, part marking, and part presence detection

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 alerts
- EtherNet/IP™ Option, an additional 26 Inputs/25 Outputs
- Test result data transmission with definable fields
- Test program selection
- PROFINET

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 and outputs

SELECTABLE MENU LANGUAGES

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

PASSWORD SECURITY

- Select menu items to secure or un-secure

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