Sentinel® IX5

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 communications
- ✓ Auto program setup
- ✓ Parent program linking
- ✓ Program calibration
- ✓ Global-friendly control touch-screen interface

Description

The Sentinel® IX5 is an advanced multi-functional leak and flow test instrument delivering high-resolution measurement. This instrument is available in three configurable wall mount models:

- IX5 Pressure decay
- IX5 Mass flow
- IX5 Differential pressure decay

Sentinel IX5 specifications	
Instrument housing	IX5 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 120 psig (8.3 bar) maximum
Operating temperature	41-104° F (5-40° C)
Operating humidity	90% non-condensing
Digital I/O	12 inputs and 12 outputs with expansion capabilities, 24 V - 1 A max. Tooling control up to 18 motions with feedback
Instrument weight	13-16 lbs (6-7 kg)

Sentinel IX5 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
- Volumetric Fill

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

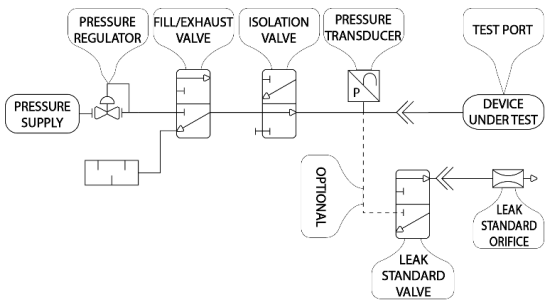
Range	Measurement	Resolution
0-20 psia	-14.7 to 5 psig	0.000004 psig
0-45 psia	-14.7 to 30 psig	0.000008 psig
0-115 psia	-14.7 to 100 psig	0.000021 psig
0-215 psia	-14.7 to 200 psig	0.000040 psig
0-515 psia	-14.7 to 500 psig	0.000096 psig

- **Leak rate**
  Displayed resolution: Range is selectable X - X.XXXXX
  displayed instrument resolution: 0.0005 scc/min

LEAK STANDARD 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

Pressure Decay Test Circuit



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
  0.5 to 10 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
- Simplifies instrument test programming and setup

EXPANDED PRESSURE DECAY

- The Expanded Pressure Decay option includes a secondary pressure transducer for Ambient Pressure Correction
  (see Features on page 5)
- Pressure Transducer Option: 0-20 psia
  Pressure Transducer Resolution: 0.000001 psig
  Leak Rate Resolution: 0.00005 scc/

Sentinel IX5 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:
  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
  Other ranges available (consult factory)

- **Leak rate**
  Displayed resolution: Range is selectable X - X.XXXXX displayed units
  Displayed resolution: 0.0005 scc/min

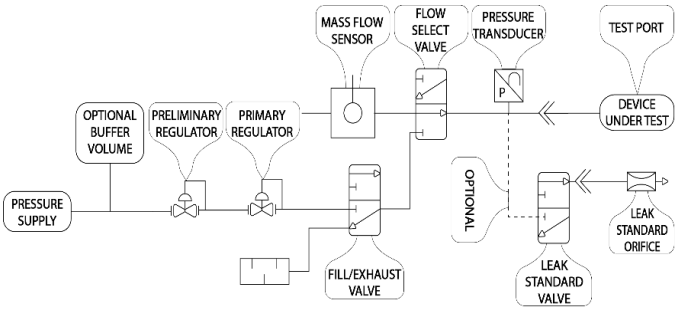
PRESSURE REGULATION

- Instrument maximum: 2
- Manual regulator options:
  0.2 to 2.5 psiv
  2.5 to 14.5 psiv
  0.2 to 2.0 psig
  0.5 to 10 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  Other ranges available (consult factory)

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

Mass Flow Leak Test Circuit



Sentinel IX5 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 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.XXXXX displayed units during test.
  Instrument resolution: 0.000001 psig (0.007 Pa)

- **Leak rate**
  Displayed resolution: Range is selectable X - X.XXXXX displayed units during test and as a DP pressure loss
  Instrument resolution: 0.00005 scc/min

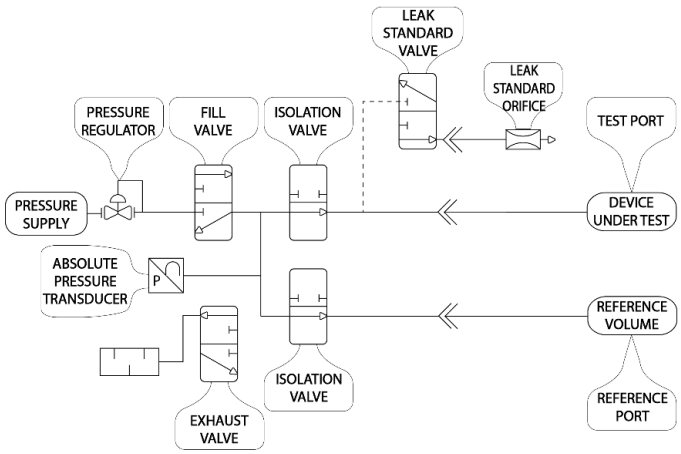
PRESSURE REGULATION

- Mechanical regulators 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
  0.5 to 10 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
  0.5 to 10 psig
  1.0 to 30.0 psig
  2.0 to 100.0 psig
  3.0 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 IX5 Features

250 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

- 50,000 tests stored in on-board memory
- Infinitely 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

HIGH-SPEED 32-BIT PROCESSOR AND 24-BIT A/D CONVERTER

- Exceptionally fast, high-resolution test processing
- Stable yet extremely responsive pressure/flow measurements

SEQUENCE EDITOR

- A test type that allows the results of individual tests to be mapped with different test components (i.e.: tooling, delays, etc.)
- Allows sequencing of individual test programs to test in sequence for overall control of tooling, cycle inputs and program result outputs for the test sequence

AUTOMATIC PROGRAM 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

SELF-TEST FUNCTIONS

- Internal leak detection process
- Program calibration verification (when a leak standard is used)

ENVIRONMENTAL DRIFT CORRECTION

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

TARGET PRESSURE CORRECTION

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

AMBIENT PRESSURE CORRECTION

- Measures ambient pressure changes during the test using a secondary pressure sensor and applies a correction value to the test result based on the change in part volume
- This correction method can be applied to large, flexible volumes and is only available with the Expanded Pressure Decay option

AMBIENT TEMPERATURE CORRECTION

- Measures ambient temperature changes during the test using a secondary RTD sensor and applies a correction value to the test result based on the changes in ambient temperature

UNITS OF MEASURE

- 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
- 1/4" CPC female test port connection
- Metric and BSPT
- Other connection sizes available (consult factory)

Sentinel IX5 Features — Continued

VACUUM SOURCE GENERATION

- 2-stage internal venturi vacuum generator
- External electronic vacuum pump available

24 VOLTS DIGITAL INPUTS/OUTPUTS

- Up to 12 standard, expandable to 36 user configurable inputs
- Up to 12 standard, expandable to 36 user configurable outputs
- Tooling control for up to 18 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™ and PROFINET options supply 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
- USB Barcode Scanning
- 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 TOUCHSCREEN DISPLAY

- 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

REMOTE INSTRUMENT MANAGEMENT WITH CTSnet SOFTWARE

- PC software included with every Sentinel IX5
- Monitor and control the instrument
- Configure programs
- View data and export reports

SELECTABLE MENU LANGUAGES

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

3-COLOR LIGHT-BAR

- Instrument-mounted lights provide a clear visual reference for test progress
- White = in-test, green = accept, red = reject
- Eliminates stack lights
- Adjustable brightness
- Adjustable duration

MULTIPLE USER SECURITY

- Allows for the creation of a multiple users with different levels of access

HELP MENUS

- On-screen description of parameters below each one
- Minimizes need to have the equipment manual present when programming the instrument

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Rev November 2024