Sentinel C28-DP & C28-WE
Compact Leak Test Instrument

- Multi Language Software
- RS232, Ethernet
- Color Graphic Display

Versatile Test Capabilities
Differential Pressure Decay Leak Rate
Differential Pressure (AP)
Pressure Decay Leak Rate
Pressure Decay (∆P/∆T)
Pressure Decay (∆T)
Occlusion (Back Pressure)

Instrument Flexibility accommodates:
- Same 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 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).
Utilized during Pressure decay leak standard,
(∆P/∆T), (∆T), and Occlusion tests.

Differential Pressure Transducer:
Utilized during the Differential Pressure Decay Leak
Standard test. Measures the difference between the test
part and a customer supplied reference volume. This is
a calibrated rate of loss test to a certified leak standard.
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 0.05 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

Differential Pressure Decay Leak Rate, Pressure Decay Leak Rate, (∆P/∆T), (∆T), and Occlusion Tests

Single Regulator* / Absolute Pressure Transducer /Differential Pressure Transducer/ Single Leak Standard

- Standard Cv valves (1/8” orifice), Internal volume (8 cc)
  - Pressure ranges: 0.2 psig to 100 psig
  - Test port: ¼” FNPT

Transducer Resolution

- Absolute Pressure Transducer
  - Displayed Pressure Resolution: Range is selectable X - X.XXXXXX displayed units during pre-fill, fill, and stabilize
  - Gage Pressure Resolution: 0.00005% of transducer range (0.3 pa for 200 psi range)

- Differential Pressure Transducer
  - Displayed Pressure Resolution: Range is selectable X - X.XXXXXX displayed units during test and as a DP pressure loss.
  - Differential Pressure Resolution: 0.00005% of transducer range (5 psid).

Electronic Regulator Option is not available

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:

<table>
<thead>
<tr>
<th>Input Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Stop/reset</td>
</tr>
<tr>
<td>Part presence</td>
<td>Halt/Vent</td>
</tr>
<tr>
<td>Hold</td>
<td>Ext Press Sw*</td>
</tr>
<tr>
<td>Program Cal</td>
<td>Open Leak Std</td>
</tr>
<tr>
<td>Binary part select (B1-B5)</td>
<td>SPC Test Part</td>
</tr>
</tbody>
</table>

Outputs include:

<table>
<thead>
<tr>
<th>Output Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Accept</td>
<td>Part Reject</td>
</tr>
<tr>
<td>Malfunction</td>
<td>Severe Leak</td>
</tr>
<tr>
<td>ProgramCal Mode</td>
<td>ProgramCal LS</td>
</tr>
<tr>
<td>ProgramCal Master</td>
<td>Fill Valve</td>
</tr>
<tr>
<td>Press Select*</td>
<td>In Relax</td>
</tr>
<tr>
<td>In Pre-fill timer*</td>
<td>In fill timer*</td>
</tr>
<tr>
<td>In stab timer*</td>
<td>In test timer*</td>
</tr>
<tr>
<td>In Exh timer*</td>
<td>Below LL*</td>
</tr>
<tr>
<td>Betw Lim*</td>
<td>Above HL*</td>
</tr>
<tr>
<td>Test passed*</td>
<td>Test failed*</td>
</tr>
<tr>
<td>Tool Mot 1extend</td>
<td>Tool Mot 1 retract</td>
</tr>
</tbody>
</table>

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 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

Test screen samples

Test Accept Screen

Multi Language Software
Instrument Options

<table>
<thead>
<tr>
<th>Instrument mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall</td>
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<table>
<thead>
<tr>
<th>Pneumatic connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPT</td>
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</table>

<table>
<thead>
<tr>
<th>Digital I/O Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Power source for instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC</td>
</tr>
<tr>
<td>24 VDC</td>
</tr>
<tr>
<td>230 VAC</td>
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</table>

Pneumatic Module Options

<table>
<thead>
<tr>
<th>Manifold</th>
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</thead>
<tbody>
<tr>
<td>Standard CV Manifold</td>
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<table>
<thead>
<tr>
<th>Regulated Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 – 2 psig</td>
</tr>
<tr>
<td>2 – 30 psig</td>
</tr>
<tr>
<td>2 – 100 psig</td>
</tr>
<tr>
<td>2 – 200 psig</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Pressure Transducer</th>
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</thead>
<tbody>
<tr>
<td>0 – 20 psia</td>
</tr>
<tr>
<td>0 – 45 psia</td>
</tr>
<tr>
<td>0 – 115 psia</td>
</tr>
<tr>
<td>0 – 215 psia</td>
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</tbody>
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<table>
<thead>
<tr>
<th>DP Transducer</th>
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</thead>
<tbody>
<tr>
<td>1 psid (internal protection circuit)</td>
</tr>
<tr>
<td>10 psi range protected</td>
</tr>
</tbody>
</table>

1st Test Leak Rate ____________________
1st Test Pressure ________________