

Blackbelt Compact Bench Top Leak Test Instrument

- **Unique Auto Test Setup**
- **Auto Calibration**
- **RS232, USB, & Ethernet**
- **Color graphic display**

Versatile Test Capabilities

- Pressure or vacuum decay (leak rate with embedded leak standard)
- Pressure or vacuum change
- Pressure or vacuum rate of change
- Pressure or vacuum occlusion (blockage)
- Pressure or vacuum burst test
- Pressure or vacuum proof test

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.
- USB data up-load / down-load, storage

99 Part Programs with Application

Flexibility includes test type, linking, timers, pressure limits, 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 Bench Top Enclosure contains all electronic and pneumatic components.

Size: 11.25”h x 9”w x 15”d
28.5cm h x 23cm w x 38cm d

Modular Pneumatics with manifold mounted valves, transducer, calibrated leak standard, and regulator.

Transducers

Absolute Pressure Transducer:

Absolute transducers are not influenced by environmental conditions.

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)

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

- **Highly visible, color LCD display** with pressure versus time graph results, digital test results, test parameters, counters, and test statistics
- **Light Ring** unique light ring on test port signals in test (white), accept (green) and reject (red) status.
- **Simplified keypad** features a language neutral design, with start and stop, program change, information and menu selection pushbuttons.

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, 1 Tooling Extend, 1 Tooling Retract, In Auto Cal sequences, and Press Select.

Specifications

Pneumatic Manifold Options for Test Types

Pressure Decay Leak Rate, Pressure Drop, Rate of Change, Burst, Proof and Occlusion Tests

Single Regulator / Absolute Pressure Transducer / Optional Single Leak Standard

- **Low Volume Manifold** - (<1 cc), Low volume Cv Valves
 - Pressure ranges: 10 psiv to 100 psig
 - Test port: 1/8" FNPT
- **Standard Manifold** - 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 Manifold** - 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)

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,

Part Program Storage

- Up to 99 part programs

Optional Calibration System

- 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 or

may be optionally located on front panel for external calibration.

Communication: Two-way

- TCP/IP (Ethernet – telnet and email)
- One portal via one external connection
- 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):

- Data up-load and down-load

Enclosure: Bench top design

Composite panels over sheet metal frame.

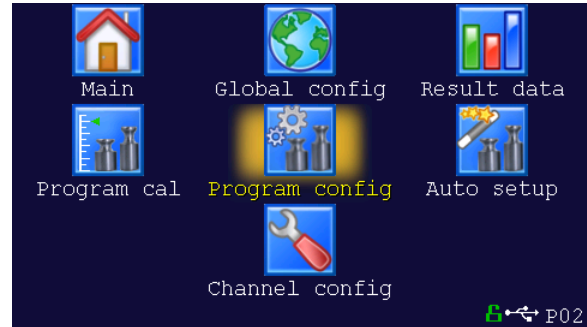
Dimensions: 11.25”h x 9”w x 15”d
28.5cm h x 23cm w x 38cm d

Weight: 14.6 lbs (6.6 kg)

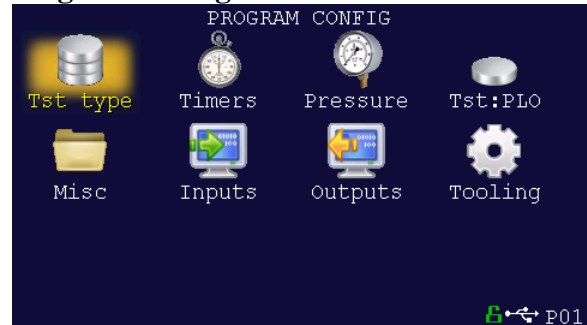
Ambient conditions: 5 to 40 C (41 to 109 F)

Humidity: 90% non-condensing

Main Menu Screen



Program Configuration Screen



Instrument Option Selection

	Instrument mounting
	Bench top

	Pneumatic connections
	NPT

	Digital I/O Voltage
	24 VDC

	Power source for instrument
	120 VAC
	230 VAC

	Test Capability Desired
	Pressure or Vacuum Decay Pressure or Vacuum Change Pressure or Vacuum Rate of Change Pressure or Vacuum Occlusion Pressure or Vacuum Burst Test Pressure or Vacuum Proof Test

	Pressure Transducer
	0 – 20 psia
	0 – 45 psia
	0 – 115 psia
	0 – 215 psia

	Vacuum Generator Option
	Internal vacuum generator

	Calibrated Leak Standard Option
	Internal leak standard
	External leak standard

1st Test Leak Rate _____
1st Test Pressure _____

Pneumatic Test Module

	Flow capacity of Test pneumatics
	Low Volume – low flow manifold
	Standard flow – std. volume manifold
	High flow manifold (5 x higher flow)

	Pressure Package Range
	Vacuum (0 to 14.7 psiv)
	0.5 – 2 psig
	2 – 30 psig
	2 – 100 psig
	2 – 200 psig
	Electronic regulator (0-150 psig)