



## M1045-13y Instrument Specifications

### Vacuum Rise Leak Detector

This is a compact instrument designed for a low cost, high resolution, vacuum rise leak test for a medium to large volume parts.

**World Leader in  
Leak Detection  
Technology**

**ISO 9001 Registered  
ISO 17025 Accredited**

**Turnkey, Single  
Source Capabilities**

InterTech has the in-house resources required to assume single source responsibility for its products while maintaining outstanding quality and meeting delivery commitments.

#### Instrumentation

Air Leak Test Systems  
Helium Leak Test Systems  
Assembly and Test Systems  
Functional Test Systems

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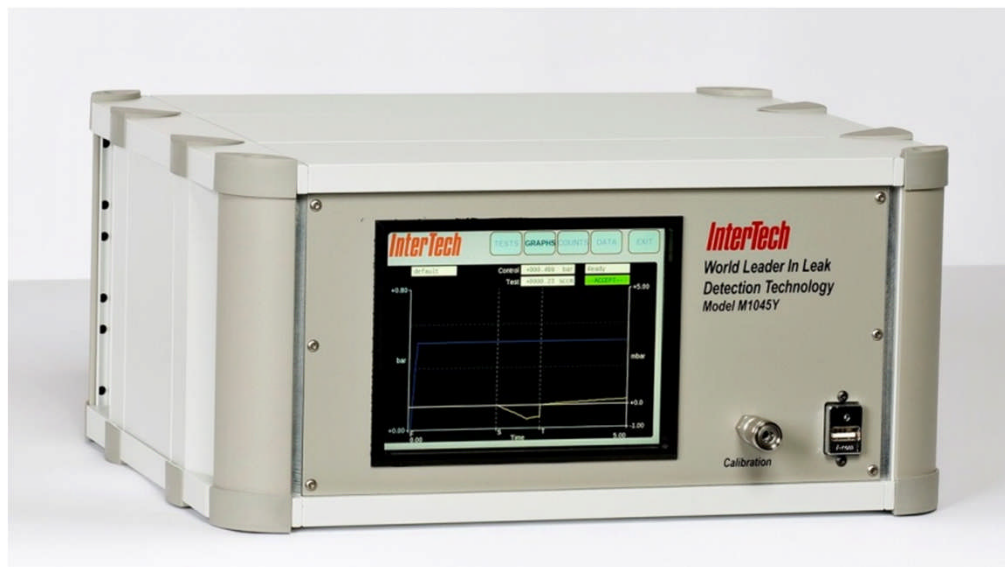


May be covered by one or more of the following U.S. patents:

No. 5,363,689  
No. 5,161,410  
No. 5,546,789  
No. 6,279,383  
No. 6,422,550

Specifications subject to change without notice

Document Revision:  
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November 23, 2011



Touch-screen control panel, real-time test cycle displays, Ethernet connectivity, and embedded Web page.

### Test Technology and Operation

The vacuum transducer is connected to the test part/ When this circuit is evacuated and isolated from the vacuum supply, any leak results in a vacuum rise relative to atmospheric pressure. The transducer output provides a measurement of the vacuum rise proportional to the leak rate.

- Programmable Vacuum Range: 0 – 29 In-Hg (standard)
- Transducer repeatability: 0.05% F.S.D.
- Transducer sensitivity:  $< 10^{-5}$  psiv (standard)
- A/D Conversion: 24 bit, 100 conversions/second
- Timer increments: 0.01 sec.
- Low ( $< 1.5 \text{ cm}^3$ ) internal volume

### Calibration

Calibration is NIST traceable using a transfer standard such as the CalMaster CM-15 which can be connected to the panel mounted calibration port. A menu driven sequence results in the independent calibration of instrument zero and span.

### Operator Displays and Keypad

6.5 inches color monitor with touch-screen key-pad provides a user friendly and flexible operator interface.

- Password protection is a standard feature
- Amber, green, red displays indicate test-in-progress, accept, reject, and trouble status
- User selectable language: English, German, French, and Spanish (Chinese and Korean will be available soon)

### Fail-Safe Operation

Test pressure and mass flow transducer status are monitored during each test cycle to ensure correct operation of all components of the test circuit. Fault conditions are signaled by a red light, error message, and test record entry. The trouble contact output can be programmed to energize after a user selectable consecutive number of rejections.

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## User Connections and Controls

Power: 90-240VAC, 50/60 Hz, 1 Amp

Vacuum Supply

Air Supply

PART UNDER TEST  
(FIXTURE PORT)

Data Communication Ports  
(1 USB, 1 Ethernet, 2 Com Ports, 1 User I/O Port)

Note: Fittings for port connections may not be shown

### Pneumatic Connection:

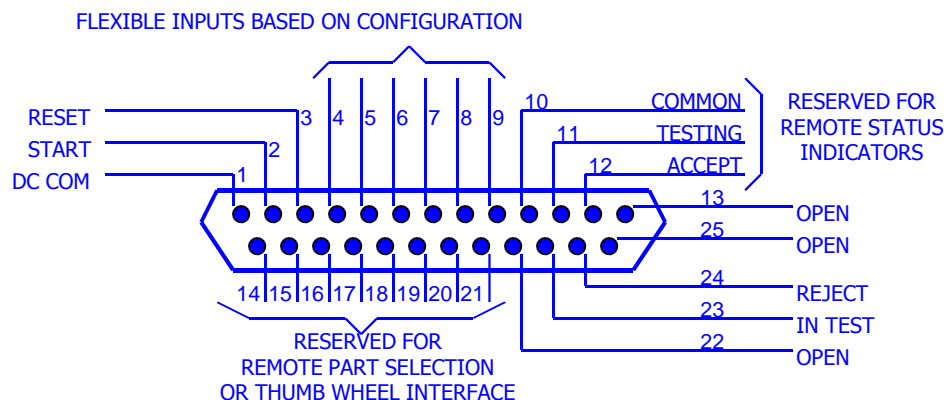
Air/Vacuum Supply Port - 1/4 inch (standard) / 6 mm (metric tube)  
Test Port - 1/8 inch (4 mm) tube  
Calibration Port (front side) - 1/8 inch (4 mm) quick connect type tube

### Communication Connection:

USB Ports to upload/download data files & program restore/backup  
RS-232 Com1 Port - data and control  
RS-232 Com2 Port - serial port available for additional capabilities or RS485 option  
Ethernet Port to connect with factory/host network (TCP/IP)  
Embedded web page server for remote viewing of instrument data and files

### User I/O Connection (see also specifications):

25-Pin male user I/O Port - Inputs: Start, Reset, Part Select, Outputs: In Test, Reject  
*Optional - additional 25-Pin female user I/O connector (machine/fixture controls)*



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Page 3 of 4

## Test Displays and Menus

All functions are Menu driven with touch-screen prompts for ease of use.

### The normal test mode display includes:

- Test state: *Ready, Evacuate, Stabilize, and Test*
- Test status: *Accept, Cause of Reject.*
- Display of vacuum in in-hg, or can be calibrated in sccm
- Real-time display of vacuum, vacuum change, and time remaining
- Real-time test graph shows trace of test transducer verses cycle time (with upper and lower user specified limits).
- Gauge R&R screen display of test records, automatically calculates R%R percentages based on the number of trials.
- Display of all test records (up to 4,000,000) can be downloaded to USB drive
- Seal check facilitates troubleshooting (continuous test state display, indicating time elapsed).

Counts display shows total accepts, rejects, and related statistics. Test program Edit Menu allows the on-site entry of new test programs and changes to existing programs without the need for a remote terminal. Additional menus prompt the user through calibration, print, and diagnostic functions.

## Test Programs

Up to 99 different test programs may be selected.

### Test parameters includes:

- Evacuate/stabilize/test times
- Minimum and maximum pressure limits
- Upper and lower accept limits
- Calibration factors

### User selectable features include:

- Hold vacuum on reject

## Set-up

The leak detector may operate as a stand alone instrument, or can be easily interfaced with a PLC or PC.

### The test cycle is started and reset:

Manually by depressing the front panel controls. By the PLC using digital start and reset inputs by using the Com1 RS232 port

### In addition:

The required test program is externally selectable using a BCD input (selector switch, PLC) or RS232 (PC). Fixture control using anti-tie-down palm buttons, proximity switches, and solenoid valves are available

## Options

- Customer specific vacuum/leak ranges
- Active Com2 RS232 port
- Barcode reader interface
- Fixture controls (additional 12 inputs and 12 outputs)
- Profibus, Modbus TCP/IP, or CANbus interface

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Page 4 of 4

## **Data Storage, Statistics & Communications**

Two USB Ports are included for storing test records to the Thumb-Drive.

**Up to 4,000,000 test records may be stored in a buffer and include:**

Part number, part name, date, time, test value, pass/fail status

**Statistics calculated on up to the last (1000) test records include:**

Mean, standard deviation

Mean  $\pm$  3 standard deviation

**Counts, accumulated since last "clear" command include:**

Total – pass – fail

**Buffer records, counts, and statistics:**

Can be recorded on demand

Cleared on demand or automatically on part changeover

Viewed on the counts display (not records)

Individual test records are automatically transferred to the Com1 RS232 port at the end of each test, and can also be printed (user selectable) at that time. Bi-directional communications to interface with InterTech's S-3085 monitoring software (or customer network) is standard.

Past records viewable on demand

Copy part parameters (.pdf) to the USB Thumb-drive

USB backup/restore system & configuration file to the Thumb-drive

Download test records to the USB Thumb-drive

Save R&R study (.pdf) to the USB Thumb-drive

## **Specifications**

- **Dimensions:** Dimensions: 13.97" W x 8.94" D x 6.61" H (355 mm x 227 mm x 168 mm)
- **Touch-Screen Display:** 6.5 inch color monitor, 640 x 480 resolution
- **Weight:** 26 lbs.
- **Power Supply:** 90-240VAC, 50/60Hz, 1Amp
- **Air Supply:** Clean, dry, and minimum 10 psig higher than test pressure
- **Inlet Filter:** 5 micron particulate filter
- **Pneumatic connections:** (1) test port, (1) vacuum supply, (1) air supply, (1) calibration port
- **Test outputs(4):** 5-30VDC, 0.3 Amp Contact closures (accept, reject, trouble, testing)
- **Test inputs(2):** 24VDC Digital (test start & reset)
- **Fixture control:** (1) 24VDC digital input (anti-tie-down), (3) 24 VDC digital proximity switch inputs, (1) 5-30VDC 0.3 Amp contact closure output.
- **Program selection:** (2) BCD digits with strobe
- **Data Communications:** (1) RS232 port: Com1 data and control; Com2: serial port available for additional capabilities or RS485 option; (1) Parallel printer port; (2) USB Ports data & program restore/backup, (1) Ethernet Port - (see TU-113 for further details)