M1075-94y Instrument Specifications

Multi-Channel Leak Detector

This is a compact instrument designed for independently testing up to four small volume parts. Two, Three, or Four independent circuits each with its own test transducer are available.

Configurations

Each channel can be configure as either pressure decay, mass flow leak test circuit, or flow/blockage test circuit within the following ranges:

- Pressure Range: 1 – 60 psig (standard)
- Mass Flow Leak Measurement Range: 0 – 20 sccm (standard)
- Flow Measurement Range: 0 – 2 slpm (standard)

Test Technology and Operation

Multiple pressure/flow transducers are connected to the test parts. When each test circuits is filled with air and isolated from the supply, pressure change relative to atmospheric pressure or flow reading are accurately measured air passes over a transducer.

- Pressure/Flow Range: See configurations
- Transducer repeatability: 0.05% F.S.D.
- Transducer sensitivity: < 10^-5 psi (STD)
- A/D Conversion:
  - Pressure Decay: 24 bit, 100 conversions/second
  - Mass Flow: 14 bit, 1,000 samples/sec
- Timer increments: 0.01 sec.
- Low (<1.5 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 ports. This allows the instrument to provide reading in flow units (sccm typical). A menu driven sequence results in the independent calibration of instrument zero and span.

Fail-Safe Operation

Test pressure status is 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 user selectable consecutive number of rejects.
InteTech has the in-house resources required to assume single source responsibility for its products while maintaining outstanding quality and meeting delivery commitments.

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Functional Test Systems

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User Connections and Controls

Pneumatic Connection:
Air Supply Port - 1/4 inch (standard) / 6 mm (metric tube)
Test Channel 1 Port – 1/8 inch (4 mm) quick connect type tube
Test Channel 2 Port – 1/8 inch (4 mm) quick connect type tube
Test Channel 3 Port – 1/8 inch (4 mm) quick connect type tube
Test Channel 4 Port – 1/8 inch (4 mm) quick connect type tube
Calibration Channel 1 Port (front side) – 1/8 inch (4 mm) quick connect type tube
Calibration Channel 2 Port (front side) – 1/8 inch (4 mm) quick connect type tube
Calibration Channel 3 Port (front side) – 1/8 inch (4 mm) quick connect type tube
Calibration Channel 4 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
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):
TWO 25-Pin male user I/O Ports - Inputs: Start, Reset, Part Select, Outputs: In Test, Reject

Specifications subject to change
without notice

Document Revision:
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**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 light displays indicate test-in-progress, accept, reject, and trouble status for each test channel
- Cause of reject is clearly shown on the display
- User selectable language: English, German, French, and Spanish

**Test Programs**

Up to 99 different test programs may be selected. In the standard configuration each test channel run asynchronously with the same test program.

Test parameters includes:

- Fill/bypass/stabilize times
- Minimum and maximum pressure limits
- Upper and lower accept limits
- Separate calibration factors for each channel

**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, Fill, Bypass, Stabilize.
- Test status: Accept, Cause of Reject.
- Leak rate in sccm
- Real-time display of supply pressure, leak, 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.
- 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.

**Data Storage, Statistics & Communications**

Two USB Ports are included for storing test records to the Thumb-Drive. Test records from each channel are stored separately and can be downloaded from individual RS-232 ports or UBS ports. Bi-directional communications to interface with InterTech’s S-3085 monitoring software (or customer network) is standard.

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

- Date-time-station-part number-test value
- Pass/Fail totals

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

- Mean, standard deviation
- Mean ± 3 standard deviation

- USB to offload measurements
- USB to record unit parameters
- Ethernet Port to connect into factory/host network
- Built-in web page server.
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 manually by touching either of the test in progress lights or automatically by an external PLC compatible digital signal. Inputs include digital start and reset signals for each channel and BCD selection of the required test program. Outputs include contact closures for test-in-progress and accept conditions for each channel.

Specifications

- **Dimensions:** 15.75” D x 12.60” W x 6.77” H (400 mm x 320 mm x 172 mm)
- **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:** (2), (3), or (4) test ports, (1) air supply, (2 – 4) calibration ports
- **Test outputs(8):** 5-30VDC, 0.3 Amp Contact closures (accept, reject, trouble, testing per channel)
- **Test inputs(6):** 24VDC Digital (test start, reset, and part strobe per channel)
- **Program selection:** (2) BCD digits (common for all channels)
- **Data Communications:** (1) RS232 port: Com1 data and control; Com2: serial port available for additional capabilities; (2) USB Ports data & program restore/backup, (1) Ethernet Port

Options

- Customer specific pressure ranges (0.03-2 psig, 2-150 psig) with external pressure regulator
- Customer specific leak ranges (0 – 4 sccm, 0 – 40 sccm, 0 – 80 sccm, 0 – 400 sccm)
- Profibus, Modbus TCP/IP, or CANbus interface