

# vPad-IN™

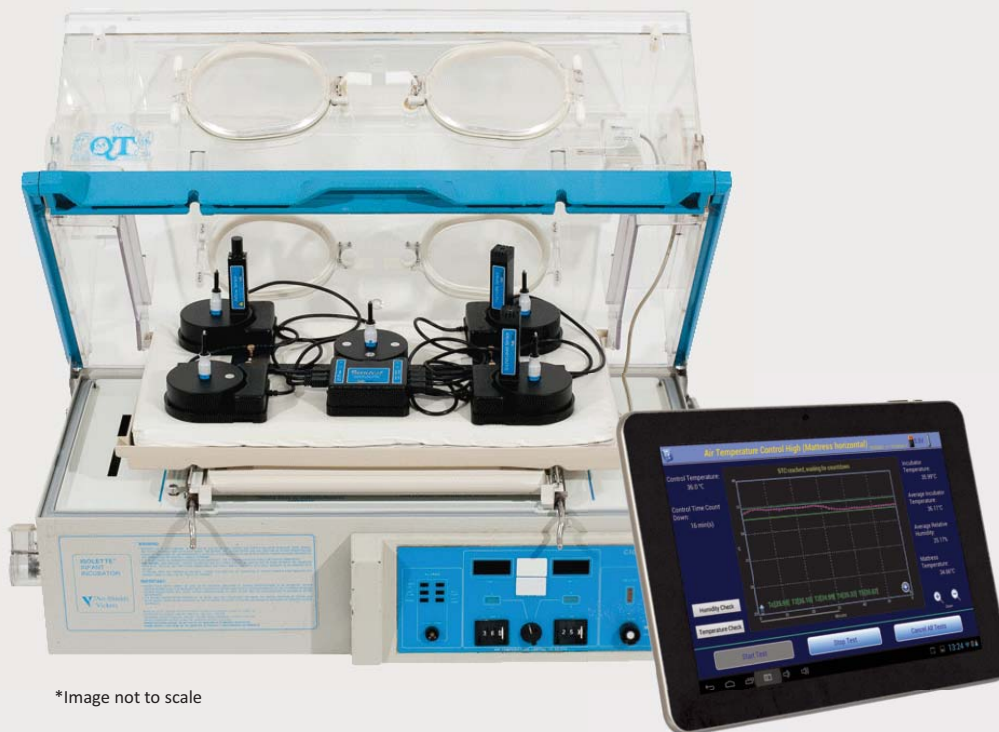
## Infant Incubator & Radiant Warmer Testing System

Datrend Systems next generation Incubator Tester, vPad-IN, is based on our revolutionary Vision-Pad Technology™. Utilizing the Vision-Pad platform, parameters are sensed inside the incubator environment and results are transmitted wirelessly to a 10" Android tablet for analysis and display. Using wireless control, test parameters and test protocols can be modified without disturbing the equilibrium of the heated environment, thereby minimizing test times.

### Key Features:

- Compatible with closed, forced air convection incubators, transport incubators and open, radiant infant warmers (optional)
- Simultaneous measurement of humidity, airflow, sound, and 6 different temperatures
- All sensors are independently movable, to be placed in positions required by the Standard
- Sound level measurements may be taken outside the incubator for external alarm test
- Results can be merged with vPad Electrical Safety Test results and imported into commonly-used CMMS
- Optional precision controlled heater permits testing of body temperature sensor accuracy

*vPad-IN was designed  
to help protect our  
most precious resource  
in life — the beginning  
of a new life itself!*



\*Image not to scale

Innovation by design

## Incutest – Performance Specifications

### Temperature:

Measurement Range: 0 °C to 50 °C  
Accuracy: T1 +/- 0.05 °C  
Resolution: 0.01 °C  
Convection: 5 “puck” sensors (T1 - T5) - radiant warmer  
Air Convection: 5 sensors (alternate “pos” T1 - T5) - incubator  
1 Mattress Temperature Sensor  
Skin Sensor?: Sensor “oven” with thermal pad contact  
28 °C to 40 °C in 2 °C increments  
Resolution: 0.01 °C  
Accuracy: +/- 0.05 °C

### Airflow:

Measurement Range: 0.1 to 1 m/s  
Accuracy: +/- 0.1 m/s at 50% RH +/- 15%  
Resolution : 0.01 m/s

### Sound Level:

Measurement Range: 30 dBA to 100 dBA, Type III  
Accuracy: +/- 3 dBA  
Resolution: 0.1 dBA

### Relative Humidity:

Measurement Range: 0 - 100% Non-condensing  
Accuracy: +/- 3% to 100% RH  
Resolution: 0.1% RH

### Data Retention:

Capacity: up to 48 hours per test  
Sample rate: 1/min or 1/sec, automatic, parameter dependent

### Test Specifications:

#### Incubator Testing Specifications

- Measures temperature at 6 points as per IEC 60601-2-19 (sub-clause 50.102)
- Measures humidity at the center of the enclosure per IEC 60601-2-19 (sub-clause 103.1)
- Measures airflow at 4 points in the enclosure per IEC 60601-2-19 (sub-clause 104.1)
- Measures sound level inside the incubator per IEC 60601-2-19 (sub-clause 102.1)
- Measures sound level inside the incubator during alarm per IEC 60601-2-19 (sub-clause 102.2)
- Measures sound level outside the incubator per IEC 60601-2-19 (sub-clause 102.3)
- Measures incubator temperature at center point (A) of incubator as per IEC 60601-2-19 (sub-clause 50.102)
- Measures average incubator temperature (AIT) per IEC 60601-2-19 (sub-clause 2.9.106)
- Measures incubator temperature (IT) per IEC 60601-2-19 (sub-clause 2.9.105)
- Measures average temperature (AT) per IEC 60601-2-19 (sub-clause 2.9.103)
- Measures average temperature at 4 points per IEC 60601-2-19 (sub-clause 50.102)
- Measures skin temperature sensor accuracy per IEC 60601-2-19 (sub-clause 50.104)<sup>1</sup>

- Confirms skin temperature sensor control of incubator per IEC 60601-2-19 (sub-clause 50.105)
- Confirms independent incubator temperature sensor accuracy per IEC 60601-2-19 (sub-clause 50.106)
- Measures difference between average temperature and control temperature per IEC 60601-2-19 (sub-clause 50.107)
- Measures actual warm-up time compared to operating manual per IEC 60601-2-19 (sub-clause 50.108)
- Measures overshoot and recovery to steady state per IEC 60601-2-19 (sub-clause 50.109)
- Confirms humidity reading per IEC 60601-2-19 (sub-clause 50.110)

#### Radiant Warmer Testing Specifications

- Measures skin temperature sensor accuracy per IEC 60601-2-21 (sub-clause 50.101)<sup>1</sup>
- Measures average warmer temperature at 4 points per IEC 60601-2-21 (sub-clause 50.102)
- Measures average warmer temperature at center point (A) of incubator as per IEC 60601-2-21 (sub-clause 50.102)
- Confirms skin temperature sensor control of warmer per IEC 60601-2-21 (sub-clause 50.103)
- Confirms airflow is less than 0.1 m/s per IEC 60601-2-21 (sub-clause 50.102)
- Measures sound level on the mattress per IEC 60601-2-21 (sub-clause 102.1)
- Measures sound level on the mattress during alarm per IEC 60601-2-21 (sub-clause 102.1)
- Measures sound level in front of the warmer per IEC 60601-2-21 (sub-clause 102.1)

#### Transport Incubators

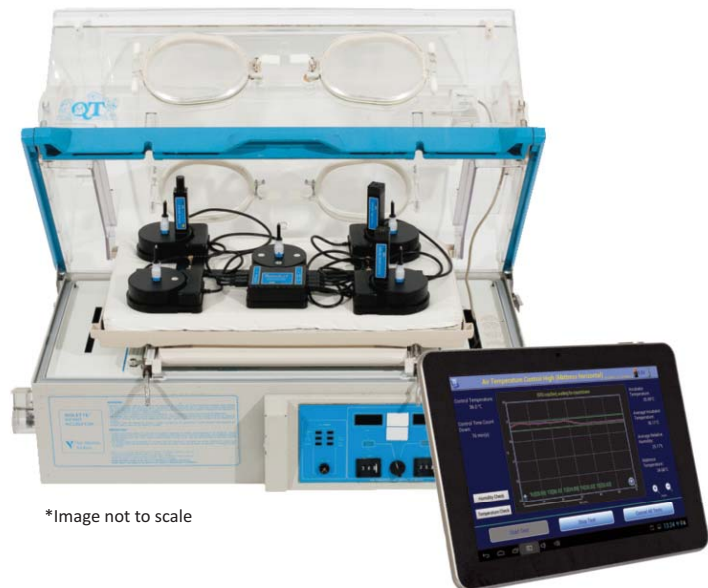
Testing carried out in accordance with IEC601-2-20

#### Utility App

Enables ad-hoc testing of airflow, humidity, sound & temperature

<sup>1</sup> Sensor accuracy heater is an optional accessory

*All specifications subject to change without notice.*



\*Image not to scale



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