

## MONITOR YOUR DATA CENTER WITH RARITAN'S PLUG-AND-PLAY SENSORS

Raritan environmental solutions feature sensors for monitoring temperature, humidity, airflow, air pressure, water/leaks, contact closures, motion around a cabinet, and vibration. Environment data is instantly sent to Power IQ® DCIM Monitoring software to provide a complete picture of data center conditions at the rack, aisle, and facility level while alerting operators to risks or potential threats in real-time and revealing trends over time. The sensors are deployed as plug-and-play options for the PX intelligent rack PDU series, EMX rack controllers, PX inline meters, rack transfer switches, and branch circuit monitors. Raritan's environment sensors make it easy to identify hot spots, cool equipment optimally, prevent downtime, and maintain facility security.

### PRE-INTEGRATED WITH RARITAN PX IPDUS, EMX, POWER IQ®

A seamless solution that works out-of-the-box with PX Intelligent PDUs, EMX environment smart rack controllers, and Power IQ® DCIM monitoring software.



EMX Controller



PX iPDUs



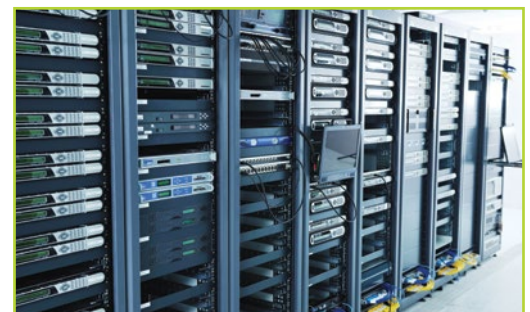
DCIM Software

### FEATURES

- Monitor the data center environment: temperature, humidity, airflow, air pressure, water leaks, and vibrations
- Save on cooling by confidently raising data center temperatures
- Check airflow and air pressure to and from racks to prevent hot spots
- Maintain cabinet security with contact closure sensors, sensors to activate cabinet door locks, and sensors that detect motion around cabinets
- Improve data center uptime by receiving environment alerts including vibrations that might damage IT equipment, especially at remote locations
- Make strategic decisions on environmental designs and modifications
- Easily install plug-and-play sensors without disrupting operations
- Maintain temperature and humidity sensor accuracy with field replaceable heads

## WHY ARE ENVIRONMENT SENSORS USED IN ALL MODERN DATA CENTERS?

Environment sensors are an easy to install, cost-effective way to reduce energy costs, improve reliability, and increase capacity for future data center growth. By using environmental sensors you can optimize your data center ecosystem to ensure that you are meeting equipment guidelines, reducing operational costs, deferring capital investments, and improving your power usage effectiveness (PUE).



# SENSORS IN YOUR DATA CENTER



## Vibration

The DX-VBR detects vibrations, such as from earthquakes or damaged fans, along three axes (x, y, z).



## Temperature

The DPX3-T1H1 can be placed at the front or rear of the rack to monitor cool air entering and/or hot air being expelled, and ensure proper containment.<sup>2</sup>



## Airflow

The DPX-AF1 can meter airflow in plenum space such as under a raised floor, or just above the perforated tiles.



## Rack Inlet Temperature and Humidity

The DPX2-T3H1 strings together 3 sensor heads, making it easy to mount them at the bottom, middle, and top of the cool air inlet side as per ASHRAE<sup>1</sup> guidelines.



## Proximity

The DX-PIR detects motion around a cabinet.



## Differential Air Pressure

The DPX-T1DP1 meters differential air pressure above and below a raised floor, or between hot aisles and cold aisles to prevent thermal leaks.



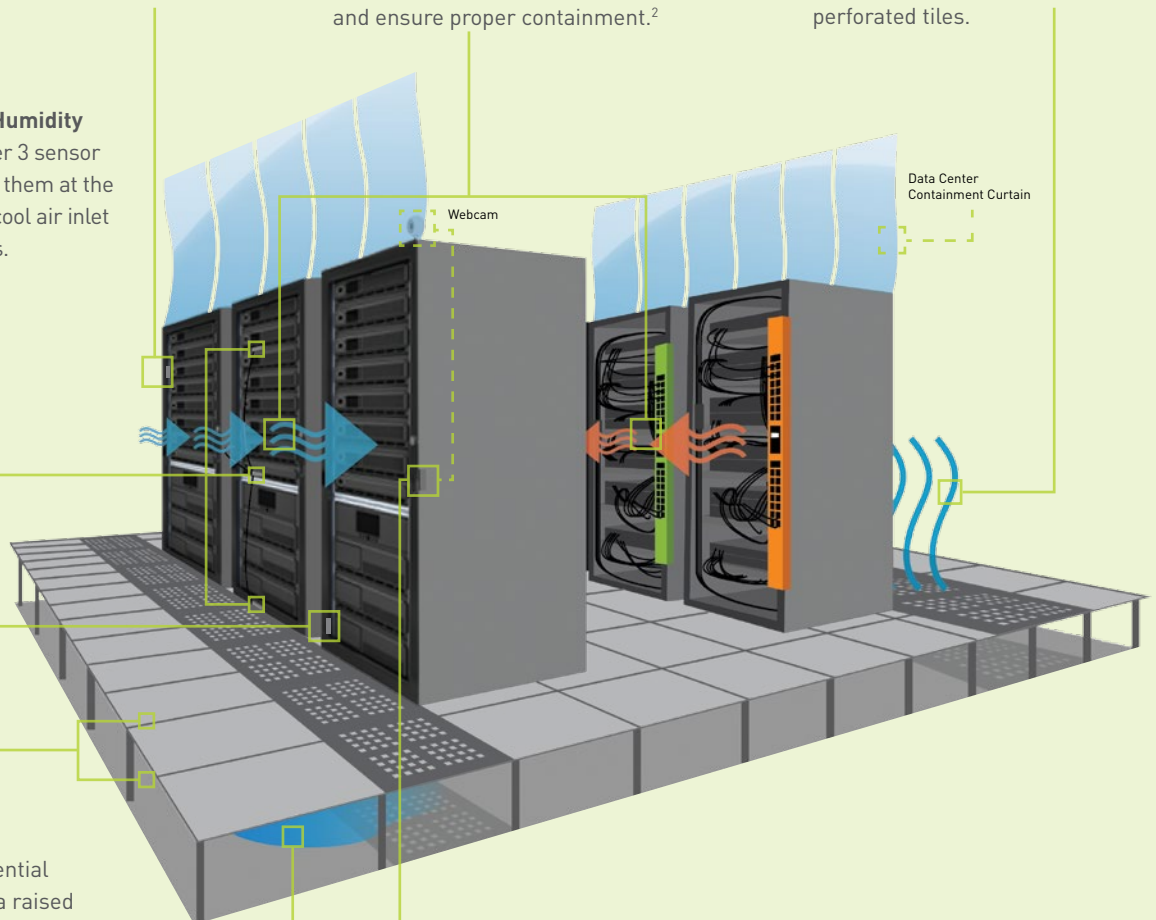
## Water/Leak

The DPX-WSF-KIT, DPX-WSC-35-KIT, and DPX-WSC-70-KIT sensors monitor leaks on the floor, around an area, on liquid cooled racks, and can detect condensation.



## Contact Closure

The DPX-CC2-TR dual contact closure is used with third-party sensors such as smoke detectors, magnetic door locks, or to trigger webcams whenever a cabinet door is opened. DX-PD2C5 has active dry contacts with 12V power to support door locks and contact closures for third-party sensors.



<sup>1</sup>The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommends measuring the cool air entering IT equipment near the bottom, in the middle, and near the top of each IT rack.

<sup>2</sup>Additional temperature and humidity sensor options are available. See the table on page 4.

# INNOVATIVE FEATURES

## DETACHABLE SENSOR HEADS

If sensor accuracy diminishes you don't need to remove the entire sensor; just replace the sensor head to maintain a high degree of accuracy.



## LED INDICATOR

Temperature and humidity sensors feature LED lights that visually alert technicians when temperature thresholds are exceeded.

## POWER IQ® DCIM MONITORING

Environment data collected by sensors is instantly sent to Raritan's Power IQ® DCIM monitoring software which allows you to confidently raise ambient temperatures and adjust fan speed in CRAHs and CRACs to increase your energy savings and get the most out of your cooling systems.

Additionally, users can compare the data from sensors to the environmental envelope of a psychrometric chart, and ensure that adequate cooling is where it needs to be, proper operating conditions have been maintained, and that they are in compliance with corporate, vendor, or utility guidelines and requirements.

### Power IQ allows you to:

- See hot spots at-a-glance
- Know when to increase/decrease temperature set points
- Know how much to humidify
- Easily manage to ASHRAE standard thermal envelopes
- Simplify how you manage airside economization
- Customize and add your own thermal envelopes



Patented Real-Time Psychrometric Charts

Learn more at [www.raritan.com/poweriq](http://www.raritan.com/poweriq)

Sensor and Description	Range	Accuracy
<b>DPX-T1 TEMPERATURE SENSOR</b> Single temperature sensor, 10 ft. (3m) cable length, RJ-12 connector.	-40C to +85C	+/- 2C
<b>DPX-T1H1 TEMPERATURE AND HUMIDITY SENSORS</b> Single combo temperature and humidity sensor, 10ft (3m) cable, RJ-12 connector.	-40C to +85C, 0% RH to 100% RH	+/- 2C, +/- 3.5% RH @ 25C
<b>DPX3-T1H1 TEMPERATURE AND HUMIDITY SENSORS</b> Single combo temperature and humidity sensor, field replaceable sensor modules, 13ft (4m) cable, RJ-45 connector. (Not supported by DPX and PX models)	-25C to +75C, 0% RH to 100% RH	+/- 1°C, +/-2.5% RH for 20%-60% @ 25°C
<b>DPX-T2H2 TEMPERATURE AND HUMIDITY SENSORS</b> Dual combo temperature and humidity sensors, 10ft (3m) cable from RJ-12 connector to combined temperature/humidity sensor, additional 10ft (3m) cable to second combined temperature/humidity sensor (total length 20ft/6m).	-40C to +85C, 0% RH to 100% RH	+/- 2C, +/- 3.5% RH @ 25C
<b>DPX3-T2H2-KIT TEMPERATURE AND HUMIDITY SENSORS</b> Two single combo temperature and humidity sensors, field replaceable modules, 10ft (3m) cable, RJ-45 connector.	-25C to +75C, 0% RH to 100% RH	+/- 1°C, +/-2.5% RH for 20%-60% @ 25°C
<b>DPX-T3H1 TEMPERATURE AND HUMIDITY SENSORS</b> Three temperature sensors, middle sensor supporting humidity (four sensors total in three housings), 13ft (4m) cable from RJ-12 connector to first sensor, 3ft (1m) between first and second and second and third sensor housings (PX and PX2 models require firmware PX1.4.1 / PX2.1.5 or higher).	-40C to +85C, 0% RH - 100% RH	+/- 2C, +/- 3.5% RH @ 25C
<b>DPX2-T3H1 TEMPERATURE AND HUMIDITY SENSORS</b> Three temperature sensors, middle sensor supporting humidity (four sensors total in three housings), field replaceable sensor modules, 13ft (4m) cable from RJ-12 connector to first sensor, 3ft (1m) between first and second and second and third sensor housings. (Not supported by DPX and PX models)	-25C to +75C, 0% RH to 100% RH	+/- 1.0C / RH +/- 2.5%
<b>DPX-AF1 AIRFLOW SENSOR</b> Single airflow sensor, 10ft (3m) cable, RJ-12 connector.	0 to 4m/s (787 LFM)	+/- 10%
<b>DPX-T1DP1 DIFFERENTIAL AIR PRESSURE AND TEMPERATURE SENSOR</b> Single combo differential air pressure and temperature sensor, 10ft (3m) cable, RJ-12 connector.	0 to 125 Pa, -25C to +125C with 0.03C resolution	+/- 1.5%
<b>DPX-CC2-TR CONTACT CLOSURE</b> Dual contact closure, requires customer-provided Normally Closed (NC) or Normally Open (NO) switch, e.g. door open/close, door locked/unlocked, smoke present/absent, etc. Each of the two ports (channels) can be independently set to NC or NO, factory default is NC, RJ-12 connector (PX and PX2 models require firmware PX1.4.1 / PX2.1.5 or higher).	N/A	N/A
<b>DX-PD2C5 CONTACT CLOSURE WITH 12V POWER</b> Two active dry contacts powered by 12V to support door locks. Five digital Normally Closed (NC) or Normally Open (NO) contact closures which require customer-provided NC or NO switches, e.g. door open/close, smoke present/absent, etc. Each of the five ports (channels) can be independently set to NC or NO, factory default is NC, RJ-45 connector (Not supported by DPX, PX or PX2 models).	N/A	N/A
<b>DX-D2C6</b> Two digital dry contacts requiring external 12V power supply to power door locks. Five digital Normally Closed (NC) or Normally Open (NO) contact closures which require customer-provided NC or NO switches, e.g. door open/close, smoke present/absent, etc. Each of the five ports (channels) can be independently set to NC or NO, factory default is NC, RJ-45 connector to connect to PX3. (Not supported by DPX or DX models)	N/A	N/A
<b>DPX-WSF-KIT WATER/LEAK SENSOR</b> Floor water/leak sensor plus contact closure sensor, RJ-12 connector.	N/A	N/A
<b>DPX-WSC-35-KIT WATER/LEAK SENSOR</b> 11.5ft (3.5m) rope water/leak sensor plus contact closure sensor, RJ-12 connector.	N/A	N/A
<b>DPX-WSC-70-KIT WATER/LEAK SENSOR</b> 23ft (7.0m) rope water/leak sensor plus contact closure sensor, RJ-12 connector.	N/A	N/A
<b>DX-VBR VIBRATION SENSOR</b> Vibration sensor which detects acceleration along three axes (x, y, z). RJ-45 connector.	0 to 100Hz, 0.01G to 13.85G	+/- 10% Resolution: 0.01G
<b>DX-PIR DIGITAL PROXIMITY SENSOR</b> Digital proximity sensor which detects motion around a cabinet, RJ-45 connector (Not supported by DPX, PX or PX2 models).	16ft (5m), +/- 47 degrees horizontal, +/- 41 degrees vertical	N/A
<b>DPX-ENVHUB2 SENSOR HUB</b> Two-port (1x2) hub to expand RJ-12 sensor ports, comes with mounting bracket and RJ-12-to-RJ-12 cable to connect to, and receive power from, PX and EMX products.	N/A	N/A
<b>DPX3-ENVHUB4 SENSOR HUB</b> Four-port (1x4) hub to expand RJ-45 sensor ports, comes with mounting bracket.	N/A	N/A
<b>EMX2-111-KIT SENSOR KIT</b> Rack environment monitoring starter kit, includes EMX2-111 smart rack controller and DPX-T3H1 sensor.	-40C to +85C, 0% RH - 100% RH	+/- 2C, +/- 3.5% RH @ 25C

Visit [www.raritan.com/sensors](http://www.raritan.com/sensors)  
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