

DICKSON **insights**

February 2016 • CD297

+ **THE HAZARDS OF HIGH HUMIDITY**

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Moist? Sure.

But **Water** Can Be Hazardous Too.

JEFF RENOE • **DICKSON INSIGHTS** EDITOR-IN-CHIEF

Water is a requirement of life.

It helps balance and maintain body temperature, it lubricates our joints and it detoxifies our body. Ninety-two percent of our blood is made up of water in order to deliver important nutrients to the body. Without the substance, our systems would slow down and eventually fail to function.

The same can be said for other organisms like plants and animals. Even desert organisms need to stay hydrated to survive. Camels can live for days, or even months depending on the season, by extracting energy from fat stored in their humps. As time goes by without water, their humps will deflate. Eventually, even this animal would need to replenish itself or see its own systems shut down. Plants and fungi also require moisture to survive. Unfortunately, many types of these organisms aren't welcome in all settings.

Last month we talked about the effect that dry air can have on our bodies. This month we are looking at moist air, and the ways it can create a dangerous environment for us to live.

Find this story and more in the pages that follow and online at blog.dicksondata.com.

Thanks for reading and I hope you enjoy the February issue of **Dickson Insights**.



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18-19 The Hazards Of High Humidity

TEMPERATURE MAPPING SERVICES

KEEPING YOUR PRODUCTS SAFE

HOW IT **WORKS:**



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WE MAP TO YOUR NEEDS



WE PROVIDE DIRECTION

WHAT YOU GET:

- Warehouse Mapping
- Problem Spot Analysis
- Refrigerator, Freezer, and Incubator Mapping
- Control System Analysis
- Acceptance Criteria Creation
- Temperature Recovery Studies
- Self-Mapping Kits
- Temperature and Humidity Monitoring Consultation

WHAT WE OFFER:

- 90 Years of Temperature Mapping Experience
- A team of expert Consultants, Engineers, and Mapping Technicians
- 21CFR11 Compliance
- High Accuracy, High Reliability Data Loggers
- A2LA Calibrated Temperature Recorders
- Secure Data Recovery, Analysis, and Distribution

3D PRINTING

A Medical Perspective

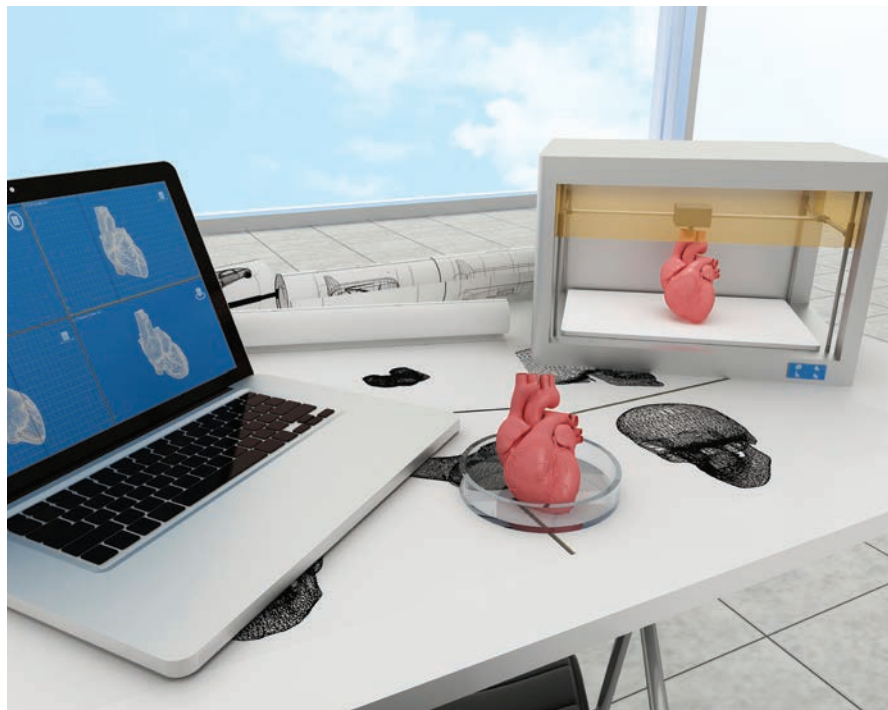
"Tea, Earl Grey, hot."

This short phrase became a trademark for one of Star Trek creator Gene Roddenberry's strongest personalities. Jean-Luc Picard of Star Trek: The Next Generation, played by actor Patrick Stewart, would request the warm beverage from a computer console in his office, and, as if by magic, the drink would appear in front of him.

This process doesn't feel quite as magical today as it did thirty years ago. While we aren't quite able to create something just by calling its name, we are now able to produce objects using plastics, metals, porcelain and even food through innovations in three-dimensional printing.

Stereolithography, only one of a multitude of 3D printing methods, has been an ongoing topic for a while now. While stereolithography may not be an idea you've heard of, the end result is one you're probably familiar with. It's a technique that creates printed, three dimensional objects by using a computer-controlled laser beam. The printer builds each object in layers, using the laser to harden a liquid polymer in place. While we are still far from having a hot cup of tea show up in front of us, 3D printing has improved by leaps and bounds since its first patent was approved in 1986. Some of the biggest gains have been in the affordability of the process.

Just ten years ago, it was a major achievement when the industry developed a printer that could be purchased for less than \$10,000. Now, using the less expensive fuse deposition modeling method, you can get a small desktop printer for as little as \$350. While this method may be more cost effective, it has a lower printing resolution that creates a rougher finished product and is one of the slowest 3D printing processes that exists. A higher quality stereolithographic printer is less cost effective, but can now be obtained for about \$3,000. Formlabs, the maker of one of these types of high quality desktop printers, was recognized by TechCrunch for developing the first refined consumer-grade hardware on the market. That product, the Form 2 printer, was also awarded as most innovative at



the 2015 Minnesota Medtech Conference that Dickson attended last November.

When we sat down to speak with Formlabs about their products, we learned that they envisioned the Form 2 being used for surgical planning within the medical industry. The expectation is that a surgeon would be able to create an exact 3D replica of a patient's organs for surgical practice. Because everyone's anatomy is different, this would help provide more detail to the doctor ahead of time to help ease surgical procedures.

Customized 3D prints don't end with body organs. Manufacturers could easily produce components for product development to help speed up and decrease the costs of innovation. It is even possible for a company to custom create a product for a single customer without lengthy production time and while limiting any cost inefficiencies associated with it.

If you've ever had interest in 3D printing, but the price tag has intimidated you from pursuing your interest, then you should take to the web. You're able to print, buy, create or download custom designs by leveraging printers through services like Shapeways, Ponoko, 3D Hubs and

Sculpteo. Other online resources, like Thingiverse, allow designers to collaboratively share projects with others for recreation using 3D printers they have at home.

Its potential for consumer application makes it likely that these devices will one day be as common in homes as inkjet printers were during the height of their adoption. We're already able to print new clothes, tools, musical instruments, and fully functioning automobiles, and the list of potential products is growing every day. Just imagine how simple it could be to one day purchase a product from a manufacturer, have the information for the product immediately loaded into a printer at home and have it begin printing for use soon thereafter. It would reduce costs of production and limit the carbon footprint that massive warehouses and distribution centers leave behind.

While the future of 3D printing is still unknown, its limits seem to be only matched by those of our own imaginations. If we can think it, with a little fortitude and hard work it seems like, eventually, we can make it. There will always be something magical in that.

D

DicksonOne

Wireless Temperature and Humidity Monitoring



HOW IT WORKS

When you log onto **DicksonOne.com**, your environmental data, from every location, appears before your eyes. Charts and pens, get outta here. USB cords and software on a disc, you too. **DicksonOne** Loggers transmit your data wirelessly to the **DicksonOne** Cloud, where you can access it anytime.



Power Over Your Environment

EMAIL, TEXT & PHONE CALL ALARMS

When something bad happens in your facility, **DicksonOne** can send anyone in your organization an email, text, or phone call. Temperature too high? Humidity too low? We've got you covered.

The screenshot shows the 'Alarms' section of the DicksonOne interface. It includes a navigation bar with 'Devices', 'Events', 'Reports', 'Alarms' (active), 'Manage', 'Support', and 'Admin'. The current time is 2:21:02 PM. Below the navigation bar, there are two tables: 'Current Alarms' and 'Alarm history'.

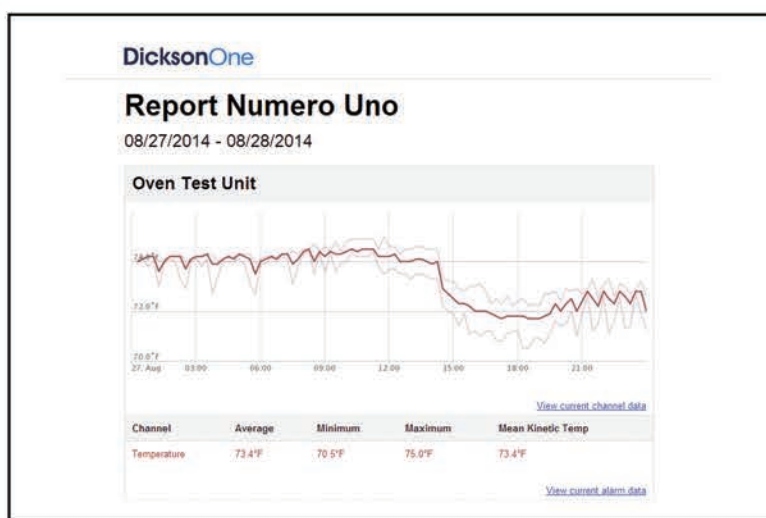
Alarm Triggered	Device	Condition	Recent Reading
01/20/2015 03:08:13 PM CST (19 days, 23 hrs, 11 mins ago)	Touchscreen Vaccine Fridge	Temperature < 55.0°F	53.8°F 01/20/2015 04:53:13 PM CST

Alarm Triggered	Device	Condition	Duration
01/19/2015 02:53:13 PM CST	Touchscreen Vaccine Fridge	Temperature < 55.0°F	7 hrs, 30 mins
01/19/2015 04:43:13 AM CST	Touchscreen Vaccine Fridge	Temperature < 55.0°F	6 hrs, 20 mins

CUSTOMIZABLE REPORTS

The **DicksonOne Reporting Suite** allows you to:

- Create and customize reports for any and all of your loggers
- Choose who in your organization will receive which reports
- Change and modify the frequency of reports



WAREHOUSE



Warehouse Loggers



DWE

Shown with RTRH Temperature and Humidity Sensor.

MEDICAL



Medical Loggers

NEW!
DETAILS P8



DWE

Shown with RTHM2 Glass Bead Thermistor Sensor.

Connect With Us:



Meet The New **DicksonOne** Logger



THE BEST JUST GOT BETTER

Larger, More Detailed Display ■ Compatible with New Universal Replaceable Sensors

Over the Air Updates ■ Smaller Footprint

Updated Design



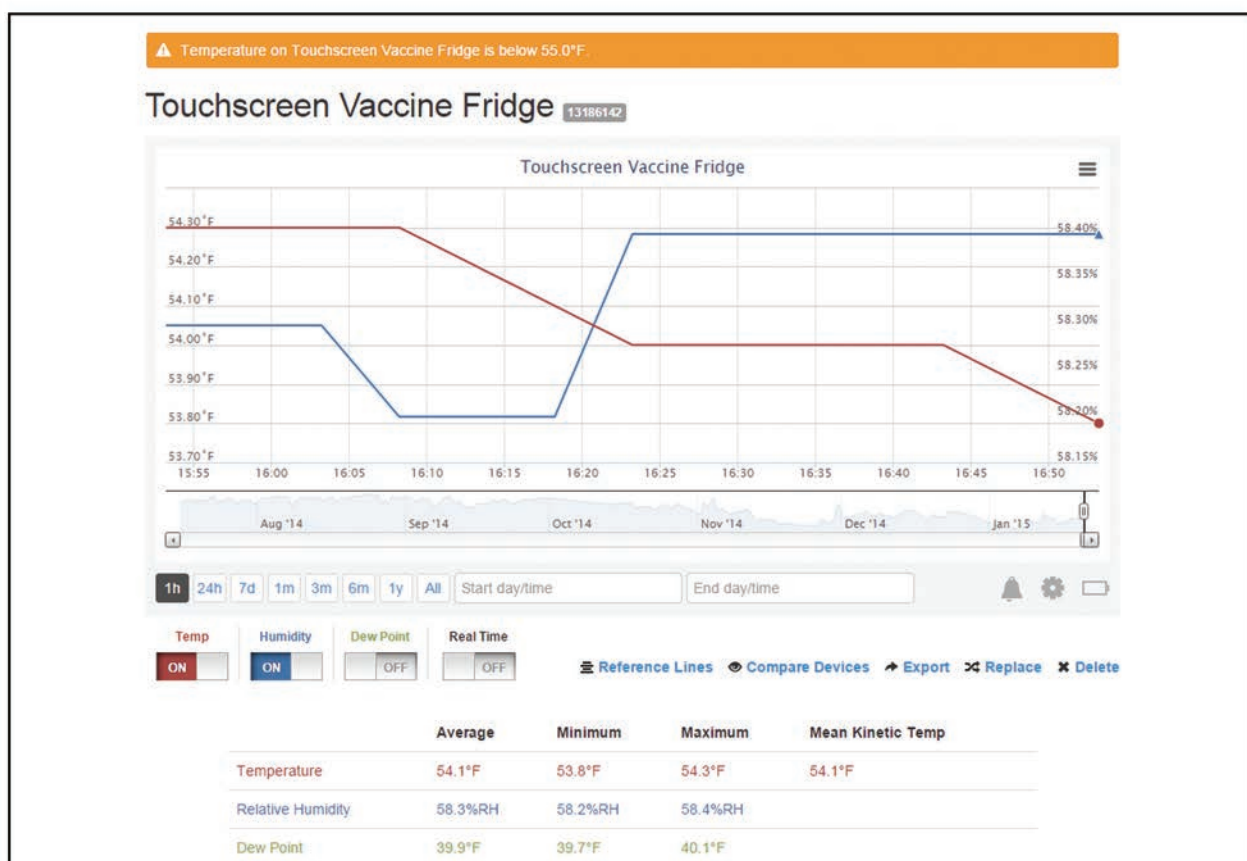
DicksonOne Touchscreen Loggers

Our goal when designing the new line of **Touchscreen Data Loggers** was to create a feature-heavy and easy-to-use device that allowed users access to their entire data history, anywhere. We pushed the limits of connectivity, user-interface, and functionality, to deliver the most robust data logger on the market.

Data At The Source

- 1 **The Graph** Your environmental history just got a whole lot easier to navigate through. We overhauled the user-interface, and made it easy to view and manage your data.
- 2 **Your Channels** Every touchscreen will automatically calculate the minimum, maximum, and average temperatures of your selected view.
- 3 **Real-time Monitoring** Push the play button, and your device will update back to the most recent set of readings.
- 4 **Device Settings** Your Touchscreen is robust. When you navigate your devices settings, you can adjust sample rates, set alarms, and connect to DicksonOne.





NOW WITH DicksonOne

The **Touchscreen** now gives you the option to connect directly to **DicksonOne**. You get all of your data at your fingertips, and now you can access it anywhere too. Just connect your device to your local WiFi network or plug it into an Ethernet port, log into **DicksonOne**, and boom, complete data control.

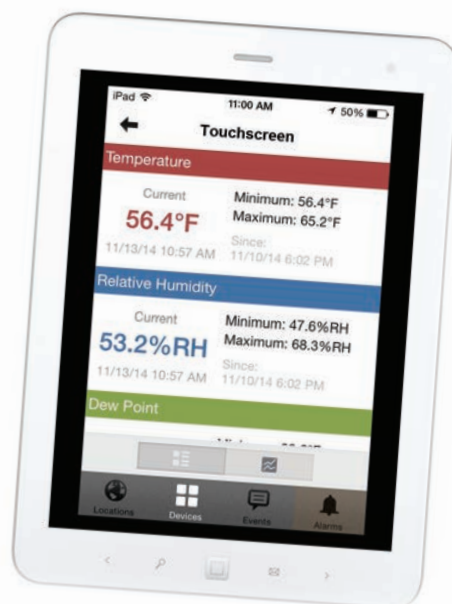
DicksonOne Allows You To

- Get email, text, or phone call alarms from your Touchscreens.
- Access every one of your Touchscreens' data history on one website.
- Generate customizable reports, delivered directly to your inbox when you want.



The new Touchscreen allows for USB download to DicksonWare.

Only DicksonWare A017/A027 will function with Touchscreen Loggers.

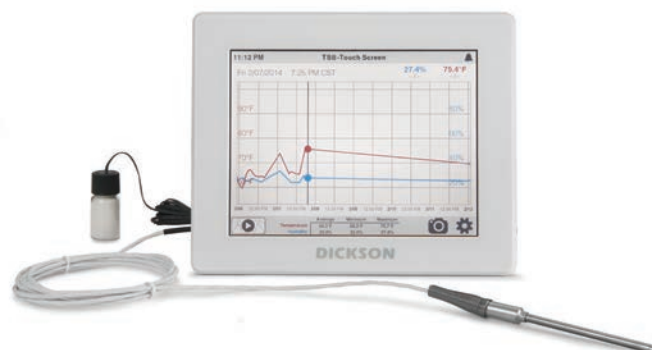


DicksonOne Touchscreen Pricing

MODEL	REMOTE PROBE
TSB	USB Download
TWE	DicksonOne WiFi/Ethernet Connection and Download
TWP	DicksonOne Download and Power over Ethernet



The TSB, TWE, and TWP all allow for basic USB download independent of DicksonOne. Use DicksonWare A017/A027 for USB download with these models.



DicksonOne Display Logger Pricing

MODEL	REMOTE PROBE
DWE	DicksonOne WiFi / Ethernet Connection and Download



DicksonOne Software Pricing

DEVICES	FEATURES
1 to 10	Unlimited Data, Multiple Sample Rates, API Access, Email, Phone, and Text Alarms
11 to 25	Unlimited Data, Multiple Sample Rates, API Access, Email, Phone, and Text Alarms
26 to 50	Unlimited Data, Multiple Sample Rates, API Access, Email, Phone, and Text Alarms
51 +	Unlimited Data, Multiple Sample Rates, API Access, Email, Phone, and Text Alarms

* Dickson offers a Basic Plan with a rolling window of 30 Days of data. One hour sample rates for unlimited loggers at no cost.



Calibration In Five Seconds



HOW REPLACEABLE SENSORS WORK

Dickson Replaceable Sensors are Dickson's answer to the headache of calibrating your temperature or humidity monitoring device. When your device needs to be calibrated, just pop off your sensor, and pop on a new one. It's that easy. Now when you order a DicksonOne or Touchscreen Logger, you get the benefit of never having to ship a logger back to us again.

WITHOUT REPLACEABLE SENSORS

1. Order a recalibration for your device.
2. Acquire a Return Authorization Code from a Dickson Representative.
3. Take unit out of its environment.
4. Move products out of environment/install backup monitoring system.
5. Box unit up.
6. Ship unit to Dickson.
7. Dickson recalibrates unit and ships it back.
8. Receive the unit.
9. Disassemble backup system/move product back into environment.
10. Reinstall unit/system.

Total Down Time: 7-10 Days



WITH REPLACEABLE SENSORS

1. Order a Replaceable Sensor.
2. Take old sensor off, put new sensor on.

Total Down Time: 0 Days

All DicksonOne and Touchscreen Loggers are
RS COMPATIBLE.

High Temp Solutions



- 1 HT 300 Waterproof, High Temperature Data Logger**
HACCP and FDA Compliant. USB Download. IP68 Rating. Temperature Range -40° to 257°F (-40° to 125°C).



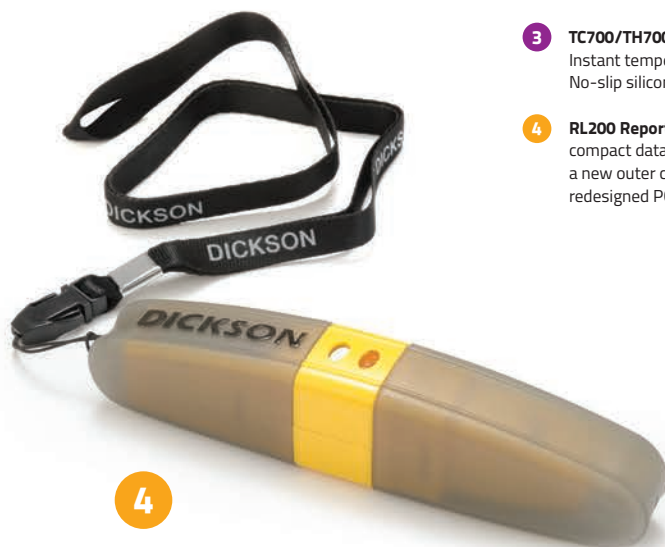
- 2 HT350 High Temperature Process Logger** HACCP Compliant, K-Thermocouple Probe, USB Download, and a large temperature range. Temperature Range -40° to 257°F (-40° to 125°C).

D605 Probe sold separately. For more information on Dickson's Probes and Accessories, visit dicksondata.com.

Instant Data Solutions



- 3 TC700/TH700 Touchscreen Handheld Indicator**
Instant temperature or temperature/humidity data. No-slip silicone cover. Battery powered.



- 4 RL200 Report Logger** We decided to make the best compact data logger on the market, our RL200. With a new outer case, user selectable logging times, and redesigned PC interface, it's exactly what you need.

Mapping Data Loggers

From warehouses to refrigerators, these data loggers are perfect for your next mapping project.

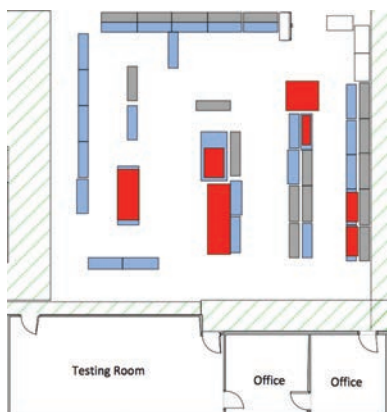
- 1 **SP125** Temperature Logger. Accuracy $\pm 1.2^{\circ}\text{F}$, $\pm 0.67^{\circ}\text{C}$. Range -10 to 176°F , -23 to 80°C .
SP175 Temperature Logger with Thermocouple Probe. Accuracy $\pm 1.8^{\circ}\text{F}$, $\pm 0.1^{\circ}\text{C}$. Range -300 to 2000°F , -30 to 50°C . A203 Probe required for $+500^{\circ}\text{F}$.
TP125 Temperature and Humidity Logger. Accuracy $\pm 0.8^{\circ}\text{F}$, $\pm 0.45^{\circ}\text{C}$. Range -10 to 176°F , -23 to 80°C .
- 2 **SK550** Temperature. Pack of twelve. Accuracy $\pm 1.8^{\circ}\text{F}$, $\pm 1^{\circ}\text{C}$. Range -4 to 158°F , -20 to 70°C .
TK550 Temperature & Humidity. Pack of twelve. Accuracy $\pm 1.8^{\circ}\text{F}$, $\pm 1^{\circ}\text{C}$. Ranges -4 to $+158^{\circ}\text{F}$, -20 to $+70^{\circ}\text{C}$.

Software required and sold separately.
For software and other accessories, call 630.543.3747 or go to www.DicksonData.com.

1



2



DICKSON Temperature Mapping Services

Ninety years of temperature monitoring experience at your service.

Dickson now offers temperature mapping and temperature mapping consulting services. We provide product validation, perform warehouse mapping studies, and give guidance on any temperature monitoring need you may have.

Display Data Loggers

Easy USB download, and complete control of your temperature or humidity data.

- 3 SM300** Temperature Logger. Range -4 to 158°F, -20 to 70°C. Accuracy $\pm 0.8^{\circ}\text{F}$, $\pm 0.44^{\circ}\text{C}$.
- SM320*** Temperature Logger. Remote Probe. Range with Probe -300 to 2000°F, -184 to 1093°C. Accuracy $\pm 1.8^{\circ}\text{F}$, $\pm 1.0^{\circ}\text{C}$.
- SM325*** Temperature Logger. Two Remote Probes. Range with Probe -300 to 2000°F, -184 to 1093°C. Accuracy $\pm 1.8^{\circ}\text{F}$, $\pm 1.0^{\circ}\text{C}$.
- SM420** Temperature Logger. Remote Probe. Range with Probe -50 to 350°F, -45 to 176°C. Accuracy $\pm 0.5^{\circ}\text{F}$, $\pm 0.28^{\circ}\text{C}$.
- TM320** Temperature and Humidity Logger. Range -4 to 158°F, -20 to 70°C. Accuracy $\pm 0.8^{\circ}\text{F}$.
- TM325** Temperature and Humidity Logger. Remote Probe. Range -40 to 185°F, -40 to 85°C. Accuracy $\pm 0.8^{\circ}\text{F}$.
- 4 SP425** Temperature Logger. Digital Display. Accuracy $\pm 1.2^{\circ}\text{F}$, $\pm 0.67^{\circ}\text{C}$. Range -4 to 158°F, -20 to 70°C.
- TP425** Temperature and Humidity Logger. Digital Display. Accuracy $\pm 0.8^{\circ}\text{F}$, $\pm 0.45^{\circ}\text{C}$. Range -4 to 158°F, -20 to 70°C.



Connect With Us

Dickson Social Media Accounts



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Channel:
DicksonData



Search
"Dickson"



Search
"Dickson Data Loggers"

Temperature and Temperature/Humidity Chart Recorders

Want a physical readout right where you are monitoring? Our Chart Recorders have you covered. For ninety years we've built the best chart recorders in the business. Check out our models below.



8 and 6 Inch Models

Eight and Six Inch Chart Recorders display detailed temperature and humidity values.

MODELS AND FEATURES

KT6P	6 Inch Temperature
KT8P	8 Inch Temperature
TH6	6 Inch Temperature and Humidity
TH8P	8 Inch Temperature and Humidity



4 and 3 Inch Models

Four and Three Inch Temperature Chart Recorders designed to fit any application.

MODELS AND FEATURES

SL4350	4 Inch
SL4100	4 Inch
SC3 Series	3 Inch

Charts sold separately. For charts and accessories, call **630.543.3747** or go to www.DicksonData.com.

PRESSURE DATA LOGGERS



Pressure Data Logger One second sampling rate. User replaceable battery. Optional delayed start. USB connectivity. Pressure sensor includes built-in diaphragm seal.

PR125	0-100 PSI
PR325	0-300 PSI
PR525	0-500 PSI



Rugged Utility Pressure Data Logger Water resistant case. 3 year battery. Unobtrusive design. Fits easily in a toolbox. USB Connection.

PR150	0-100 PSI
PR350	0-300 PSI

PRESSURE CHART RECORDERS



4 and 8 Inch Models

Four and Eight Inch Chart Recorders to meet your needs.

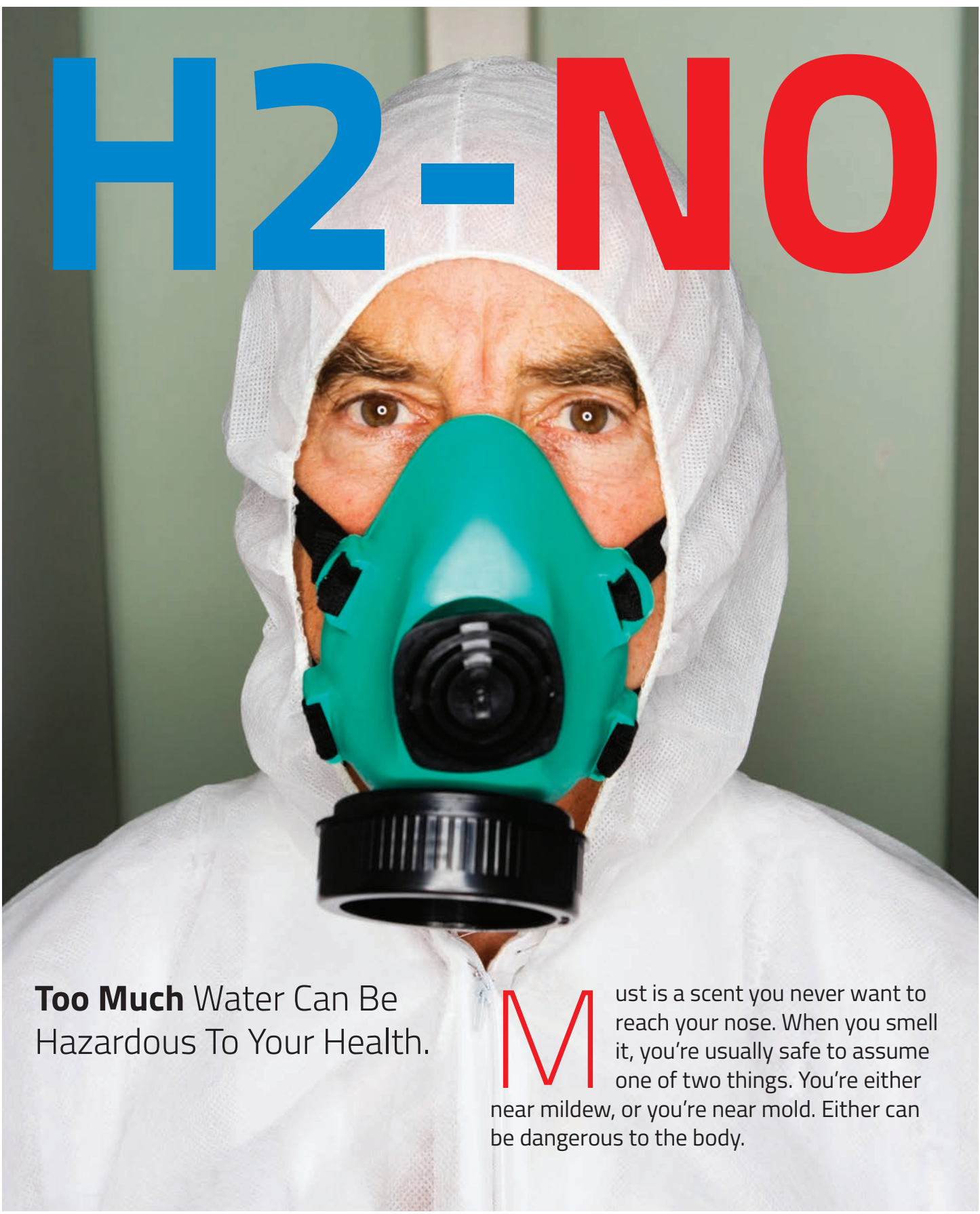
Single AA battery powered. Rugged low-maintenance design features. 7-day or 24-hour recording times. 1/4 inch NPT Connector.

MODELS AND FEATURES

0-100 PSI	PW860/1	PW470
0-200 PSI	PW864/5	PW474
0-300 PSI	PW866/7	PW476
0-500 PSI		PW479
0-1000 PSI	PW875	

Charts sold separately. For charts and accessories, call **630.543.3747** or go to www.DicksonData.com.

H2-NO

A close-up photograph of a person wearing a white protective suit and hood. They are wearing a teal respirator mask with a black filter. The person's eyes are visible through the mask's eye lenses. The background is a plain, light-colored wall.

Too Much Water Can Be Hazardous To Your Health.

Must is a scent you never want to reach your nose. When you smell it, you're usually safe to assume one of two things. You're either near mildew, or you're near mold. Either can be dangerous to the body.

A quick Google search of “mold in schools” will show you that many educational institutions across the US have had to deal with musty scents within their walls. It’s a problem that can occur anywhere without being properly cared for.

What’s the difference between mold and mildew?

At first glance the two different growths can be difficult to distinguish. They’re both growths of fungus, they both cause discoloration and they both require very similar ingredients to grow and thrive. However, they aren’t exactly the same, and one is much more of a problem than the other.



1. Mildew is a coating or discoloration that’s caused by fungi, which appears on fabrics, paper, leather, etc., when exposed to moisture and is characterized by a cottony, usually whitish coating on the surface of affected parts. It can be easily treated with a store bought cleaner and a scrubbing brush.



2. Mold generally develops as a circular colony and has a woolly or furry appearance. This fungus grows on the surface of organic matter like wood, food and meat, and causes it to spoil and decay. Removing large amounts of mold from your home can be an arduous process

that involves gas masks, dangerous chemicals, sealing yourself in a room, and the rental of expensive equipment like a HEPA vacuum. Needless to say, it’s better to prevent mold growth than try and address it after the fact.

What are the key aspects of mold development?

There are a number of main ingredients that are required for mold to develop indoors.

- Darkness
- Warmth
- Moisture

Since you can find the first two at times within any indoor space, the real key is connected to moisture. While many relate mold to leaks in pipes, roofs or windows, one of the most preventable sources of moisture is often the one that is most often overlooked.

Elevated Humidity Indoors

The level of moisture in the air varies by season and geography, but that doesn’t mean we don’t manufacture our own humidity in our homes. Below are a few examples of how indoor air moisture can be created.

- Cooking
- Drying Clothes
- Bathing/Showering
- Humidifiers

While we are able to produce our own internal moisture, it’s important to note that the main reason humidity rises within a structure is because of a lack of ventilation. If moisture can’t escape, it builds up. As it builds up the humidity rises. As the humidity rises, it becomes more difficult for moisture to dry out. It’s a dangerous cycle that can eventually cause the level of moisture in the air to surpass 55%. At that point mold is able to grow and spread.

The Effects of Mold on the Body

Different people can have different reactions to inhaling air that contains mold spores. Some people suffer irritations from the fungus. Mold can cause symptoms in these people such as nasal congestion, eye irritation, wheezing, or even cause them to break out in rashes. Others deal with serious allergies to mold which can cause a more severe reaction. This could cause fever, shortness of breath and respiratory illness. It can even trigger Asthma attacks in those with the condition. The Center for Disease Control and Prevention (CDC) has also noted that recent studies have suggest-

ed a potential link of mold exposure to young children and the development of asthma. The chronic lung disease accounts for nearly two million emergency room visits each year and kills nine Americans every day.

According to the University of Minnesota Environmental Health Sciences Division, mold is also dangerous to the body through ingestion or absorption. When we ingest the fungus on spoiled food, it affects the digestive system and can cause diarrhea, dehydration, nausea and stomach cramps. Dermal absorption is rare and occurs through skin contact. Our bodies interact with mold often in the natural environment, but through personal hygiene, we are able to remove any contamination before it becomes a problem. However, if we do not keep ourselves clean, or are unable to clean our skin surface regularly, disease could exist.

Eliminating mold growth in your home

Since the key to mold growth is moisture, the key to stopping its growth is eliminating the dampness. Reducing the humidity in your home isn’t difficult but it can be tough to understand when you need to take action. The good news is that humidity can be easily tracked and monitored so that steps can be made to reduce the air moisture before it becomes an issue. By creating additional ventilation using windows or vents, you can easily allow air to circulate helping to remove moisture from enclosed spaces. It’s also possible to use a dehumidifier to reduce issues in spaces with limited access to circulation.

If schools were required to track the level of moisture in the air within their buildings it’s possible that mold growth could be prevented before becoming a problem. Such a practice could even provide an environment where students would have access to a better quality of air. It may not make gym lockers smell any better, but it’d at least allow parents to breathe a little easier knowing their kids were safe in the air around them.

D

Check back in the next issue of **Dickson Insights** where we talk about how humidity can affect goods and services in your home or business.

Have a personal story related to this month’s topic? Send it to jeff@dicksondata.com for a chance to be featured in an upcoming blog or issue of **Dickson Insights**.

DICKSON

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FAX 800.676.0498
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The Dickson
Company

Replaceable Sensors Calibration Made Easy

A few years ago, we set out to engineer a way for our customers to calibrate their loggers and recorders, without ever having to send the devices back to us. What we ended up with was Replaceable Sensors.

What are these things?

Replaceable Sensors measure the temperature or humidity of your environment, and then send that signal to your data logger for storage. They are calibrated independently of the device.

What does that mean for you? If you calibrate your data loggers and chart recorders (which you should be doing) it means never, ever having to send your device back in to Dickson for a calibration. Replaceable Sensors take the phrase "down time" out of calibration.

Interested? Visit dicksondata.com/replaceable-sensors to watch a product video, and view products that use Replaceable Sensors.



Stop By And Say Hello

Dickson will be on the road March 6th - 10th in Atlanta, GA as we visit **Pittcon**, the world's largest annual conference and expo for laboratory science. Come find us at booth 3824 and say hello.

For more on Pittcon or to register to attend, visit pittcon.org.

All prices are subject to change without notice. In the event of a printing error, Dickson reserves the right to change to the correct price. All shipments ship 2nd day unless otherwise requested.