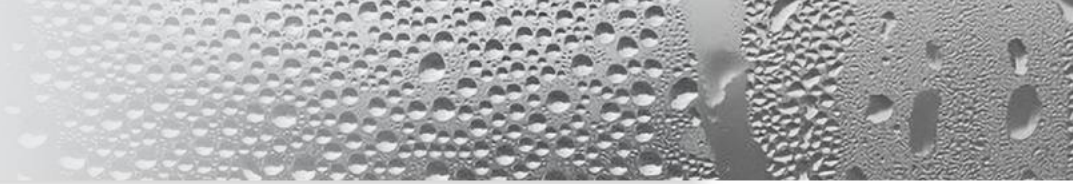


ACTIVE-S

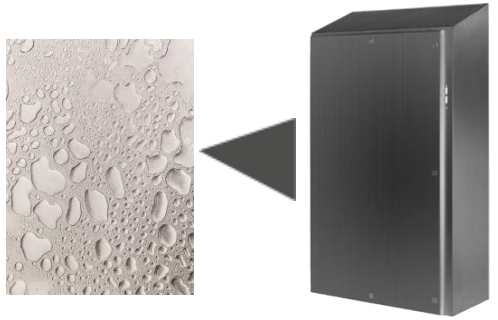
Humidity Control for Sealed Enclosures

Product Overview

What's the Problem?

- ❖ Mitigating Condensation within Enclosures
- ❖ Preventing Damage and Ensuring Optimal Life for Sealed Electrical/Electronic Enclosures

- Enclosures are designed to protect components from external environments
- Sealed enclosures can be exposed to moisture due to a variety of circumstances
- Condensation results when moist air is cooled at or below saturation point (dew point)
  - At this temperature, air can no longer hold all the moisture
  - Water vapor condenses into moisture droplets on available surfaces and components
- Once water is inside it can accumulate
  - From droplets on components to puddles at the base of the enclosure
- Even small amounts of moisture can result in:
  - costly damage to components and risk of short circuits
  - dangerous occurrences of arcing and sparking
  - shorten expected life cycle
  - component corrosion affecting overall performance
  - degraded electrical wire insulation



What's the Solution?

Current Methods Used to Eliminate Condensation and Remove Moisture

DEHUMIDIFIERS

- **Desiccants:** silicon gel can absorb up to 40% of its weight in water
  - high frequency of desiccant change-outs
  - affects maintenance cost
- **Dehumidifiers:** remove moisture from air - protects components from condensation
- **Thermostats:** used to control heating or cooling of equipment
- **Hygrotherms:** sense ambient temperature and relative humidity, adjusts connected devices
- **Hygrostats:** control relative humidity inside enclosure to prevent condensation

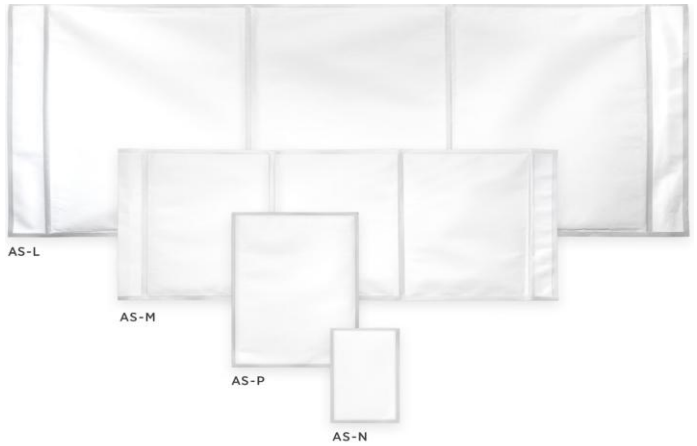
THERMOSTATS

Due to physical size and maintenance these electromechanical solutions are often impractical and cost prohibitive for many enclosure applications

HYGROTHERMS

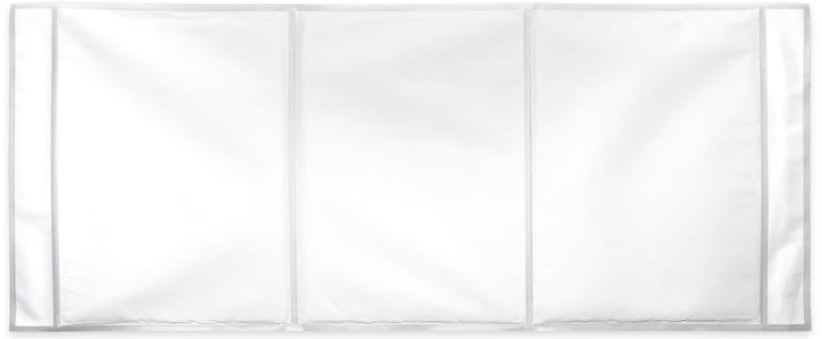
Active-S Humidity Control Sheets

- Not a Desiccant or large electromechanical device
- Easy to install, no space, no power, no maintenance
- Absorbs moisture and releases moisture to control Relative Humidity inside enclosures



Why Active-S HCS is a Better Solution

- Consistently suppresses and maintains relative humidity by absorbing and releasing moisture in the air
- Fits any size enclosure, even tight spaces and curved surfaces
- Requires no space, no maintenance, no power source
- High performance with long usage life
- Installs easily with double-sided tape, Velcro or magnetic tape
- Significantly reduces installation time and labor cost
- 1.6 million units and 10 years of proven field performance
- No moving parts
- Four sheet sizes to suit enclosure capacity
- Lowest applied cost solution for controlling humidity



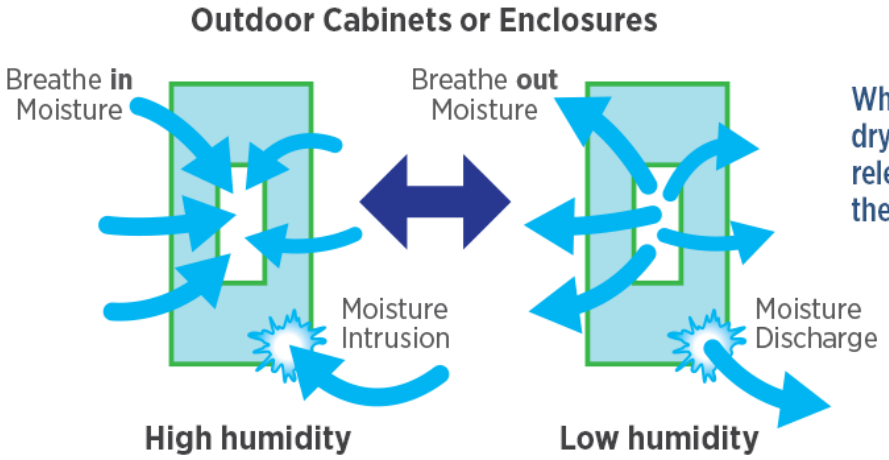
How Does Active-S HCS Work?

Active-S HCS Absorbs and Releases:

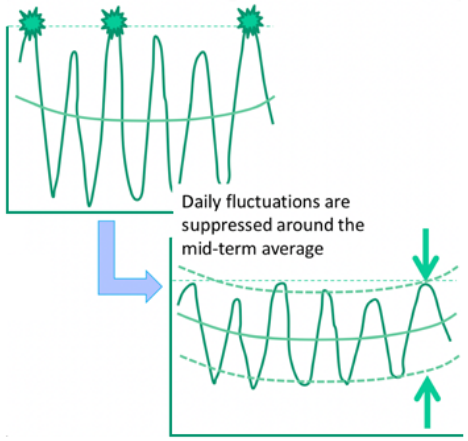
- It is difficult to prevent moisture from collecting and forming condensation within an enclosure
- Active-S is NOT a desiccant. Most, such as a silicon gel, absorb moisture, but do not release and need to be replaced once absorption capacity is reached, requiring frequent replacements
- Active-S is designed to protect sensitive components and systems from condensation through an active exchange of moisture absorption and release suppressing and maintaining relative humidity within an enclosure
- Electro-mechanical solutions require space, a power source and maintenance

When humidity in an enclosure is high, the HCS absorbs (or breaths) in the moisture reducing humidity levels inside the cabinet

Dew drop/humidity control sheet for closure



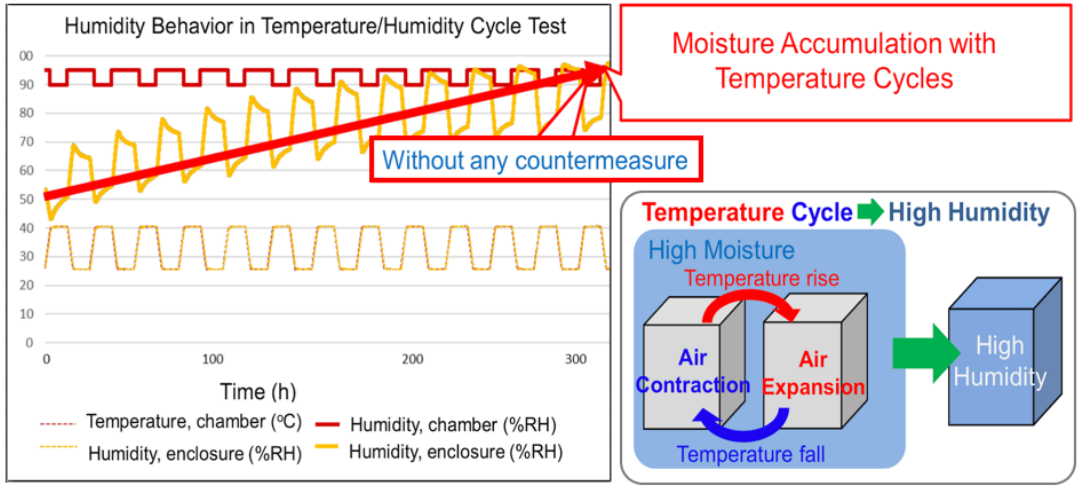
When the cabinet becomes dry (less humidity) the HCS releases (or exhales) out the moisture

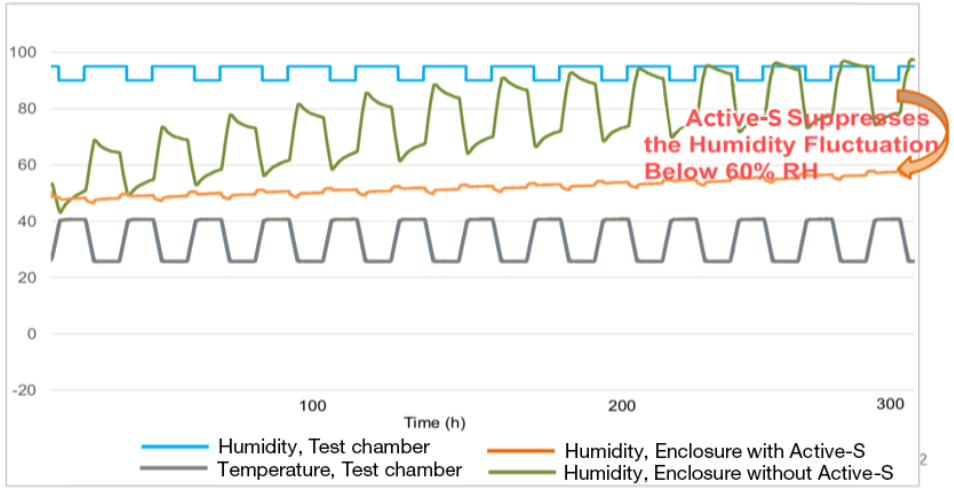


How Does Active-S HCS Work?

A Macromolecule Polymer

- Designed using a macromolecule polymer – a super absorbent material capable of absorbing and releasing moisture (or breathing)
- When humidity in an enclosure is high, the HCS absorbs (or breaths) in the moisture reducing humidity levels inside the cabinet
- When the cabinet becomes dry (less humidity) the HCS releases (or exhales) out the moisture
- This "active breathing" suppresses relative humidity inside the enclosure, maintaining lower humidity levels to protect electrical equipment and components from condensation

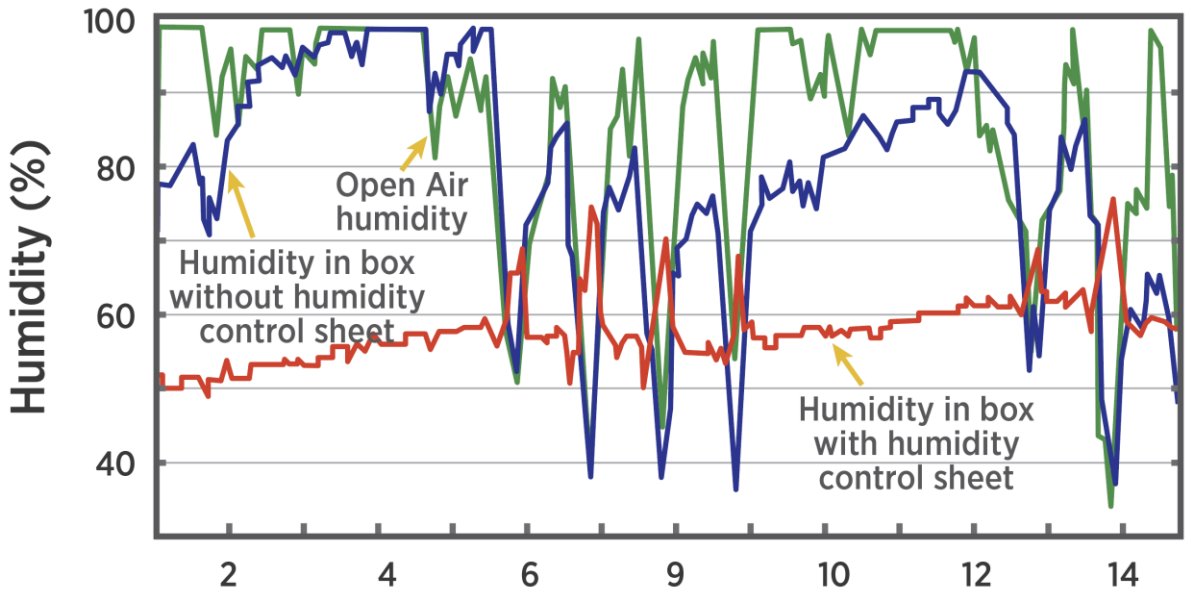




Proven Field Performance

- Telecom construction and management contractors endorse these flexible, easy to install HCS because of their long lasting, humidity controlling performance
- More than 1.6 million HCS installed over a 10-year period in communications equipment, terminal boxes, protection devices and many more applications

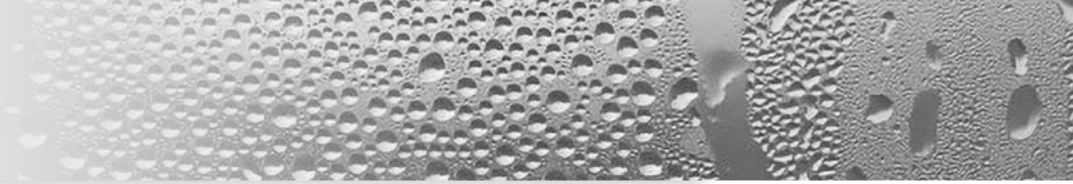
Humidity Control Sheet Humidity (Hygrometric) Measurement Test



Field Test Data

Measurement Conditions

- Volume capacity of box used for testing: 13.9 liters (o5mm vent hole in bottom)
- Humidity Control Sheet Size AS-P30 (postcard size)
- Measurement location: Outdoor location in Hachioji City, Tokyo
- Measurement period: 2 weeks



Designed to Control Humidity in Enclosures for these Applications

- Communications Equipment
- Construction Equipment
- Control Panels
- Drones
- EV Charging Stations
- Food & Beverage Equipment
- Gun Safes
- Manufacturing Equipment
- Monitoring Sensors
- Oil & Gas Equipment
- Optical Equipment & Devices
- M2M Controls
- Marine Enclosures and Controls
- Musical Instruments
- Photography Equipment
- Radar Controls
- Railroad Infrastructure Controls
- Security & Monitoring Cameras
- Ships & Vessels Controls
- Telecom Base Stations
- Traffic Controls
- Utilities
- Wi-Fi Outdoor Equipment

…and many more applications

Applications

Traffic Controls

Telecom Base Stations

Railroad Controls

Optical Devices & Lenses

Oil & Gas Control Box

Large Structure Outdoor Electrical Controls

Small Structure Outdoor Electrical Controls

Traffic Controls & Surveillance

Communication Control Box

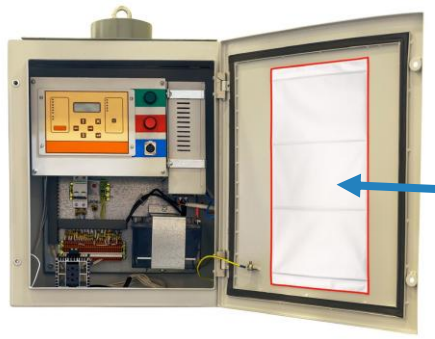
Small Cell Transmission Box

Applications

Food & Beverage Controls

EV Charging Stations

Drones & Ground Control Devices



Enclosures with HCS Mounted

Calculating Active-S Sheet Size for Your Requirements

- Measure Enclosure Inside Dimensions: Width (W) x Depth (D) x Height (H) = cubic inches

Active-S Part #	Size (mm) Size (inches)	Weight (grams) Weight (ounces)	Application Capacity (liters) Application Capacity (cubic inches)	Pack Quantity
AS-L5	560 X 230 X 3 mm 10.25 X 9.0 X 0.12 inches	130 grams 4.6 ounces	400 liters 24,410 cubic inches (14.1 cubic feet)	5
AS-M10	370 X 150 X 3 mm 14.6 X 5.9 X 0.12 inches	50 grams 1.8 ounces	150 liters 9,154 cubic inches (5.3 cubic feet)	10
AS-P30	100 X 148 X 1 mm 3.9 X 5.8 X 0.04 inches	10 grams 0.4 ounces	25 liters 1,526 cubic inches (0.9 cubic feet)	30
AS-N30	55 X 91 X 1 mm 2.2 X 3.6 X 0.04 inches	3 grams 0.1 ounces	7 liters 427 cubic inches	30

Calculating Active-S Sheet Size for Your Requirements

- Measure Enclosure Inside Dimensions: Width (W) x Depth (D) x Height (H) = cubic inches

Example 1:

Mounting Option: Door Surface (Height Dimension)

Interior dimensions of Enclosure: 20” Wide x 18” Deep x 24” High

Volume: 20 x 18 x 24 = 8,640 cubic inches

From the table, one (1) AS-M will do up to 9,154 cubic inches

Example 2:

Mounting Option: Side Surface (Depth Dimension)

Interior dimensions of Enclosure: 18.5” Wide x 14” Deep x 24” High

Volume: 18.5 x 14 x 24 = 6,216 cubic inches

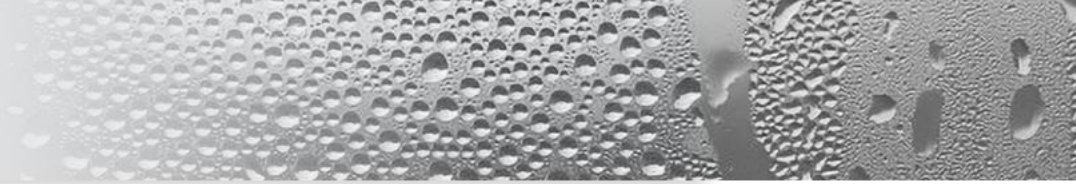
From the table, one (1) AS-M will do up to 9,154 cubic inches, but 14.6” width of AS-M is greater than 14” depth of cabinet, use 4 AS-P sheets.

Mounting Kit Options for Active-S Humidity Control Sheets

Active-S Part#	Double-Side Tape Kit #	Velcro Kit #	Magnetic Tape Kit #
AS-L5	AS-L-TM	AS-L-VM	AS-L-VM
AS-M10	AS-M-TM	AS-M-VM	AS-M-VM
AS-P30	AS-P-TM	AS-P-VM	AS-P-VM
AS-N30	AS-N-TM	AS-N-VM	AS-N-VM

About FiberSource

FiberSource is **ISO 9001:2008 CERTIFIED**, a member of the Telecommunications Industry Association (TIA), and The Society of Cable Telecommunications Engineers (SCTE). FiberSource components are assembled to meet all current fiber optic component specifications for Telcordia, TIA/EIA (FOCIS, etc.), IEC, and JIS. Founded in February 1996 as a manufacturer of fiber optic connectivity solutions, FiberSource has grown into a full-service manufacturer of fiberoptic components, assemblies, PLC splitters, MTP Cassettes, MTP Trunk cables, high-fiber-count cable terminations, lgx style patch panels, pre-loaded adapter plates, custom fiber distribution enclosures, humidity control sheets and much more. FiberSource is strongly committed to the total satisfaction of its customers and strives to maintain their complete confidence and satisfaction by offering the highest quality products with the best value in the industry.



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