2945 Washington Ave. St. Louis, MO 63103
877-783-6774 | sales@darwinchambers.com
www.darwinchambers.com

IN SERIES INSECT REARING CHAMBER

IN Series Overview

The IN-series chambers are designed with insect rearing as the primary application but can be used for other research studies as well. Our IN-series chambers are widely used among Drosophila and Mosquito researchers and offer state of the art technology for pursuing various research studies. Every insect chamber is built with coated coils to prevent corrosion from insects, and a secondary safety high temperature cut-off switch to protect insects.

IN03

The IN03 is an undercounter insect rearing chamber.

IN011

The IN011 is a bench insect rearing chamber designed to fit on 24” benchtops or stacked with optional racking.

IN030

The IN030 is a single-door insect rearing chamber.

IN034

The IN034 is an extra wide single-door insect rearing chamber designed to fit through standard doors.

IN055

The IN055 is a 2-door insect rearing chamber.

IN068

The IN068 is a larger 2-door insect rearing chamber.

IN084

The IN084 is a 3-door insect rearing chamber.

Specifications are subject to change without prior notice.

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IN SERIES: INSECT REARING CHAMBERS

The IN series was introduced in 2003 as the first commercially manufactured large capacity Peltier-cooled insect rearing chamber. Thousands of IN series insect rearing chambers are presently in use by research companies around the world. The advantages of these chambers for insect rearing include:

Reliable Cooling Redundancy

Each IN series chamber includes multiple, independent thermoelectric cooling units. The 7-year warranty on cooling components and the ability of our chambers to maintain temperature even if the chamber suffers multiple failures is unmatched by any other refrigeration-based chamber.

Quiet Operation

The IN chambers utilize quiet and highly efficient DC fans. Locating these chambers in laboratory workspaces is a viable option.

Simple Serviceability

Due to the omission of all refrigeration equipment on these models, refrigeration technicians are not required during chamber servicing. Refrigerated insect rearing chambers are not only costly to service but can require days to service properly. Nearly every component of thermoelectric-based chambers can be serviced within minutes with basic tools. For instance, the ultrasonic humidifier is capable of being removed and reinstalled in less than five minutes and operates on non-hazardous 24 volts.

Options Available

Extended Temperature Range**
Chart Recorders
Data Loggers
Pneumatic & Desiccant Wheel Dryers**
Window or Glass door. **
Full swinging interior glass door
Magnetic latch door handle with lock and two keys (011 and 034)
Touch Screen interface
Headless interface (Virtual Touch Screen VTS)
Other control Options or monitoring i.e., CO_2.
Adjustable Fan Speeds. **
Air exchanges filtered or non-filtered with ambient space. **
Condensate drain pumps.
Interior or exterior electrical outlets. (Limited power) **
Stainless Steel Exterior (030, 055 and 084)
Timed lighting
Lights
Humidity **
5 gallon carboy (if no hookup to waterline available)
Door ajar alarm

***Some Options may limit chamber performance less or greater than specified here.*

Superior Control and Uniformity

The optional ultrasonic humidification system provides excellent humidity control and avoids hot spots seen during chamber mapping of steam boiler equipped chambers. Standard control at the sensor in these chambers is ±0.2°C. All sensors are calibrated using NIST traceable standards before shipment of the chamber.

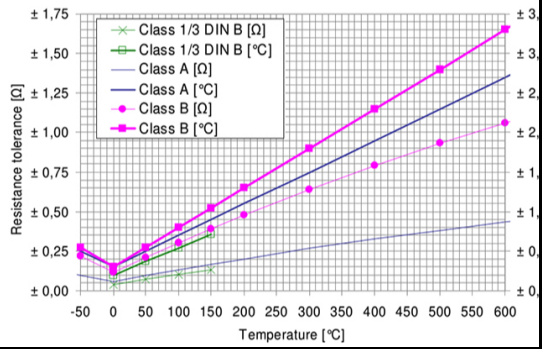
Widely Proven, Non-Proprietary Controllers

Standard controllers are manufactured by Fuji Electric and are ideal for stability testing chambers. Unlike many proprietary controllers, this controller is commercially available and proven in tens of thousands of installations. Standard functions include: autotuning, fuzzy logic, PID control, programmable alarms, calibration correction capability, ramp/soak, uniformity offset capability, etc. A touchscreen control interface is optional. Other controller manufacturers are also supported (Watlow, Allen Bradley etc.)

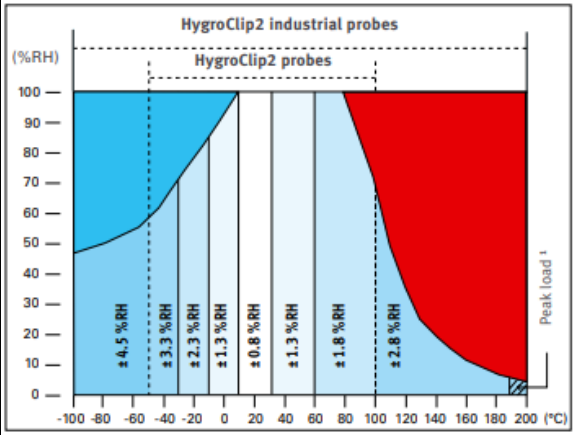
Services and Warranties

We offer technical support throughout the lifetime of your chamber. In addition to standard warranties, we also offer extended warranties for cooling components, parts, and labor. We also provide qualifications, validations, and preventive maintenance services at an additional cost.

IN Series Insect Rearing Chamber Specifications (ambient 23° C)

Temperature		
Performance	Standard	Optional
Temperature Range	(IN011 12° C to 50° C) all others 16° C to 50° C	Up to 70° C
Ambient Temperature	21° C ± 3° C	
Temperature Control	± 0.2° C	
Control Resolution	0.1° C	
Temperature Sensor Type	3 wire PT100 Class A RTD	

Specifications are subject to change without prior notice.

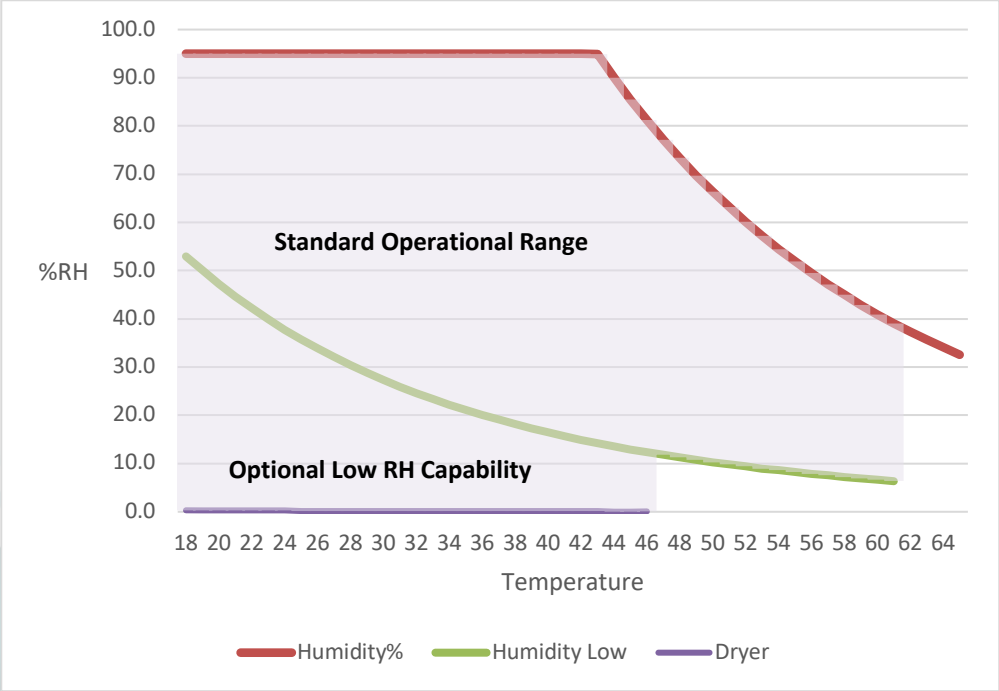
Optional Humidity		
Performance	Standard Option	Optional
Humidity Range	Ambient Absolute Humidity* to 90% Relative Humidity @ 42°C Dewpoint	2 to 95% @ 22° C (or other ranges)
Humidity Control	± 0.3%	
Control Resolution	0.1%	
Humidity Sensor	Rotronic HC2A-S Operating range -50...100 °C / 0...100 %RH Accuracy: ±0.8 %RH, ±0.1 K, at 23 °C ±5 K Digital interface (UART) and scalable analogue outputs, 0...1 V **RH Sensor** **Accuracy Overview** 	Vaisala or other

**Absolute Humidity is the amount of moisture in the air in a particular environment.*

The humidity chart below shows the chamber's humidity capabilities.

How to read the chart below:

The Humidity% Line in red is the max humidity level that can be achieved by staying within the 42°C dew point. Humidity levels above this line are not recommended. The Humidity Low line in green is the lowest the chamber can go without the use of a dryer. This is based on ideal performance and ambient condition of 23°C and 50% RH. Lower or higher ambient conditions will impact the lower humidity capabilities of your chamber. If your set points are near this line or below it is recommended to add dryer capabilities to your chamber. The Dryer Line in purple represents the use of a pneumatic dryer with a -40 Dew Point. To reach such low humidity, a constant supply of dry air is needed, and manual adjustment to humidity valve may be needed. Alternatively, if low %RH (low dewpoint) is desired but dry compressed air is not available, other dryer types are available.



Humidity% represents chamber performing at 42°C Dew point.
Humidity Low represents absolute humidity at ambient space of 23°C and 50%RH.

Control System	Standard	Optional
Controller	Fuji PXF4	VTS (Virtual Touchscreen), Gefran 650, Future Design Controls CM and MCT4 + More
Control Readout	Actual and Set-Point Values 	Trending, Duty Cycle
Indication Accuracy	RTD input: ±0.2% of indication value ±1 digit or ±0.5°C±1 digit, whichever is larger	Dependent on optional Controller
Sample Rate	Fast as 50 ms	Dependent on optional Controller
Control Speed	Fast as 100 ms	Dependent on optional Controller
Control Type	PID - Fuzzy Logic (9 types available)	Dependent on optional Controller
Auto Tuning	YES	Dependent on optional Controller
Calibration Correction Capability	±0.1 lower and upper scale	Dependent on optional Controller
Uniformity Off Set	±0.1 Resolution Linear adjustment	±0.1 Resolution
Alarm	High / Low Audible and Visual	Text, Email, Web Server, Remote Access
Alarm Type	High / Low Deviation in 0.1 resolution with adjustable Delay. Control audible alarm enable or disable components.	Absolute & Deviation 0.1 Resolution with Delay
Remote Monitoring / BMS connection	Double throw Dry Contact Alarm, RS 485 MODBUS RTU / ASCII**	Ethernet & Analog Output (Specify voltage or mA)
Password Protection	Hexadecimal	Numeric, Alpha Numeric
Audit Trail	Not Standard*	Dependent on optional Controller
Universal Power Supply for Monitoring	Not Standard	Available. *Controllers and sensors powered during outage for data logging. Chamber operation not supported*.
Ramp Soak Function	Up to 64 steps. A Step includes a ramp and soak. Up to 8 patterns / programs (recipes).	Dependent on optional Controller

**Applies with touchscreen or VTS option.*
***For BACNET or MODBUS TCP (Ethernet) please contact your BMS vendor about using a gateway to interface with controllers via the RS485.*

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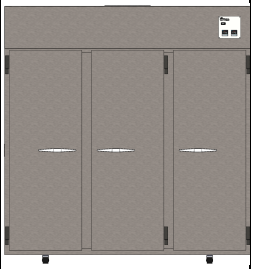
IN						
Construction						
Exterior	Powder Coated Finish	Stainless Steel Front continuous coil coated steel sides	Powder Coated Finish	Stainless Steel Front continuous coil coated steel sides	Powder Coated Finish	Stainless Steel Front continuous coil coated steel sides
Exterior Material Thickness	Heavy Gauge	Medium Gauge	Heavy Gauge	Medium Gauge	Heavy Gauge	Medium Gauge
Interior	304 Stainless Steel	Coated Aluminum	304 Stainless Steel	Coated Aluminum	304 Stainless Steel	Coated Aluminum
Interior Material Thickness	.036”	Medium Gauge	.036”	Medium Gauge	.036”	Medium Gauge
Door QTY	1	1	1	2	2	3
Door Lock	Optional	Tumbler Cam Key Lock	Optional	Tumbler Cam Key Lock	Optional	Tumbler Cam Key Lock
Door Swing	+180°	120° Stay Open Feature	+180°	120° Stay Open Feature	+180°	120° Stay Open Feature
Door Gasket	Magnetic Gasket	Snap in Magnetic Gasket	Magnetic Gasket	Snap in Magnetic Gasket	Magnetic Gasket	Snap in Magnetic Gasket
Shelving Material	304 Stainless Steel	Epoxy Coated	304 Stainless Steel	Epoxy Coated	304 Stainless Steel	Epoxy Coated
Shelf Quantity per Door	2	3	3	3	3	3
Casters Height	2.75”	3”	2.75”	3”	2.75”	3”
Caster QTY	4	4	4	4	5	4
Caster Locking Brakes	2	2	2	2	2	2
Access Port Qty	2	2	2	2	2	2
Multi-Purpose ports	YES	YES	YES	YES	YES	YES

Continuous coil coated is treated metal before it is cut and formed, the entire surface is cleaned and treated, providing tightly bonded finish. Formed sides have holes, valleys, recessed areas, and hidden areas that make it difficult to clean and uniformly coat. Coil coated metal is often considered more durable and corrosion resistant than most painted metal as it is treated before shaped.

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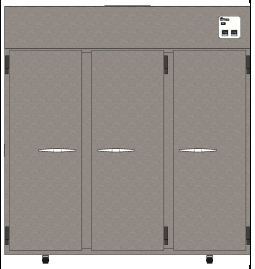
IN						
Capacity & Dimensions						
NET Capacity*	9.2 ft^3	22.1 ft^3	29.0 ft^3	48.2 ft^3	62.6 ft^3	74.3 ft^3
Conditioned Space	11.6 ft^3	23.9 ft^3	32.1 ft^3	50.0 ft^3	69.3 ft^3	76.2 ft^3
External Dimensions	36.2W x 27.4D x 47.1H	26W x 32D x 78.75H	35.7W x 33.8D x 80.8H	52W x 32D x 78.75H	68.4W x 34.2D x 81.8H	78W x 32D x 78.75H
Internal Dimensions	29.7W x 23.6H x 22.6D	22W x 28D x 62H	29.4W x 29.0D x 57.3H	48W x 28D x 62H	64.2W x 29.4D x 57.3H	74W x 28D x 62H
Access Port Dimensions	2” ID with Foam Insert	2” ID with Foam Insert	2” ID with Foam Insert	2” ID with Foam Insert	2” ID with Foam Insert	2” ID with Foam Insert
Recommended Clearance	Top 12”	Top 12”	Top 12”	Top 12”	Top 12”	Top 12”
	Rear 6”	Rear 6”	Rear 6”	Rear 6”	Rear 6”	Rear 6”
	Sides 6”	Sides 6”	Sides 6”	Sides 6”	Sides 6”	Sides 6”
Shelf Dimensions	28.9W x 20.4D	21.25W x 24.6D	28.75W x 26D	22.75W x 22.75D	31.4W x 24.25D	24W x 22.75D
Shelf Weight Capacity	150 lbs.	90 lbs.	150 lbs.	90 lbs.	150 lbs.	90 lbs.
Approx. Max Storage weight	600	500	700	1000	1000	1500
Approx. Crated Weight	470 lbs.	526 lbs.	765 lbs.	740 lbs.	1100lbs	1100 lbs.

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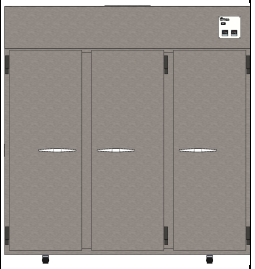
IN						
Components						
Thermoelectric Assembly QTY	2	2	2	3	4	4
Heater Watt Size	350	500	350	500	500	500 (1000)
Heater Qty	1	1	1	1	1	2
Perimeter Heater	YES	YES	YES	YES	YES	YES
Air flow direction	Front to Back	Front to Back	Front to Back	Front to Back	Front to Back	Front to Back
Fan Count	3	1	3	1	6	1
Fan CFM per fan	125	Up to 600	125	Up to 600	125	Up to 600
Variable Speed	Manual Adjust	Manual Adjust	Manual Adjust	Manual Adjust	Manual Adjust	Manual Adjust
Humidity	Optional	Optional	Optional	Optional	Optional	Optional
Water quality	A conductivity of 0.1 µS – 10 µS (Micro Siemens), TDS (Total Dissolved Solids) of less than 10 PPM (Parts per Million), and 1-10 PSI (Pounds per Square Inch) of supply water pressure. ¼" poly tube push to connect fitting for water connection.					
Max Water consumption	1200 ml / 0.32 Gal per Hour	1200 ml / 0.32 Gal per Hour	1200 ml / 0.32 Gal per Hour	1200 ml / 0.32 Gal per Hour	1200 ml / 0.32 Gal per Hour	1200 ml / 0.32 Gal per Hour
Water Connection	¼" poly tube push to connect	¼" poly tube push to connect	¼" poly tube push to connect	¼" poly tube push to connect	¼" poly tube push to connect	¼" poly tube push to connect
**** Optional Compressed Dry Air ****						
Max use70 PSI & 200 CFH. ¼" poly tube push to connect fitting. Recommend Compressed Dry air of -40°C Dew point.						

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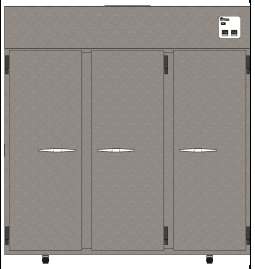
IN						

Electrical North America												
Voltage	115 VAC/ 60 Hz											
RLA	4.3		4.3		4.3		7.0		9.5		9.5	
Heat Rejection	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
	1023 Btu/h	1500 Btu/h	1023 Btu/h	1500 Btu/h	1023 Btu/h	1500 Btu/h	1405 Btu/h	2160 Btu/h	1405 Btu/h	2160 Btu/h	2046 Btu/h	2822 Btu/h
Cord Length	9 ft		9 ft		9 ft		9 ft		9 ft		9 ft	
Dedicated Circuit	15 A		15 A		15 A		15 A		15 A		15 A	
Electrical International via Buck Boost Transformer												
Voltage	230 VAC/ 50 Hz											
RLA	2.2		2.2		2.2		3.5		4.6		4.6	
Heat Rejection	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
	1023 Btu/h	1500 Btu/h	1023 Btu/h	1500 Btu/h	1023 Btu/h	1500 Btu/h	1405 Btu/h	2160 Btu/h	1405 Btu/h	2160 Btu/h	2046 Btu/h	2822 Btu/h
Cord Length	2.74 m		2.74 m		2.74 m		2.74 m		2.74 m		2.74 m	
Accessory connections												
BMS Dry Contact	Screw terminal 3 position Common / Normally Closed / Normally Open											
RS485 MODBUS	1/8" or 2.5mm stereo input jack											
Optional Re transmission	Screw terminal											
Dry Air solenoid	Screw Terminal											
Desiccant Wheel Dryer	Twist lock 4 pin din connector											
Aux 24VDC output (500 mA limit)	5.2 mm Barrel Connector											

**Interior Capacity includes the 2" spacing from interior walls to allow for best air flow performance.*
***Include width with handle and height with castors installed.*

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RLA and heat rejection is based on a controlled operation temperature of 30C and 65% RH. Value may change on operating set points.