CSZ
Cincinnati Sub-Zero

Z-Plus
Temperature/Humidity Chambers

Z-Plus Series Temperature/Humidity Chambers

- **Performance You Specify**
- **Reliability You Expect**
- **Features You Want**
- **Value You Need**
- **Energy You Save**

Z-Plus chambers are used to test and store products by subjecting them to various temperature & humidity conditions. Designed for ease-of-use, reliability and performance, this line of chambers incorporates customer-requested features with extended performance for faster ramp rates.

Features

All Z-Plus chambers include your most requested chamber features.

Features At-A-Glance

- CSZ EZT-570*i* Touch Screen Controller
- Email or Text Message Alarm Notification
- RS-232/RS-485 Serial Communications
- Ethernet Control and Monitoring
- Temperature Limit and Alarm
- Two 4" Access Ports
- Casters
- Leveling Legs
- Adjustable, Slide-Out Shelf
- Single-Handed Latch
- Fog-Free Viewing Window
- Interior Light
- Easily Removable Access Panels
- Enhanced Air Flow
- Extended Performance

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Cabinet Features

The contemporary and smooth cabinet design is aesthetically pleasing to fit the style of your laboratory. The standard color is pearl gray finished with a durable oven-baked powder coat, contrasting trim and hardware.

- Two, 4" access port centered on the left-hand and right-hand sides for ease of cable routing. Ports are fully welded to eliminate leaks and increase chamber life

- Compact size and casters allow you to move the chamber throughout your lab with leveling legs to secure and level your chamber

- One adjustable product shelf slides out to provide easier access to your product. The new shelf design is non-tipping and supports large product loads

- Single-handed latch operation for ease of use

- Fog-free viewing window provides product viewing

- Interior light illuminates chamber workspace and product

- Removable side panels allow for easy access to all systems

- Lower workspace allows for easy product loading

- The workspace interior is heliarc-welded with type 304 brushed stainless liner that is easy to clean

- Double gasketing assures a vapor tight seal and non-settling low "K" factor fiberglass insulation minimizes heat loss

- Each chamber is fully pressure tested along with fully welded ports to eliminate potential leaks and prolong chamber life

- New gasket design allows for easy replacement in the event of future wear

Air Flow System

Our high volume airflow system includes robust air circulator motors that provide better airflow that improves controllability within the chamber. Better airflow minimizes temperature gradients and accelerates temperature change rates of the device under test.

Time-Saving Features to Test Faster
EZ➔Programming   EZ➔Datalogging
EZ➔To be Connected to Your Test World

CSZ's EZT-570i controller offers a 7" or 10" touch screen and the latest in test chamber programming. Flexible configurations along with a full range of user-friendly features combine to simplify programming and save valuable time for greater return on your investment. Intuitive controller includes built-in data security & safeties to protect your chamber and product under test.

Communications & Connectivity

• Ethernet capability to remotely monitor and control multiple test chambers. Wired, wireless, local area network or World Wide Web Ethernet connectivity provides anytime, anywhere access using a PC or PDA device.

• Alarm notification system sends email and/or text phone messages in the event of a test chamber alarm, saving valuable tests while reducing downtime.

• Integrated email sends data files directly from the controller with a touch of a button.

Data Logging

• Data logging with custom file names, batch & lot numbers, operator events & digital signatures.

• Automated "Ethernet" back-up of data files provides "hassle free" file management.

• Easily download profiles, alarm files, audit trail files and data files to USB memory stick in a compatible .CSV file fromat. Also import profiles to other chambers saving valuable profile entry time.

• Access data files directly from controller or PC.

User Convenience & Flexibility

• Real time & historical trend graphs. Print graphs directly to a printer.

• Profile status view provides details on the profile with stop date and time.

• Profile autostart allows profiles to begin at a date, day and time.

• Help menu provides text and voice assistance in multiple languages (English, Spanish, French or Chinese).

Enhanced Functionality

• Adapt-a-tune technology provides the ultimate in chamber performance and control stability.

• Product control feature accelerates temperature cycling of the device under test.

• Product high/low limit protects product.

• Selectable power failure/recovery options.

• Fully configurable alarm settings.

• Full system security allows up to 30 different users twith three different levels of security.

Refrigeration Features

- Extended performance with a selection of three refrigeration systems and multiple performance packages are available to meet your product testing requirements.

- Environmentally safe refrigerants are non-flammable, and have a zero Ozone Depletion Potential (ODP).

- Refrigeration service taps and refrigeration pressure gauges are included for easy maintenance.

- Refrigeration system saves energy costs and prevents coil frost up for efficient operation.

CSZ's patented Tundra® system offers increased performance, reduces maintenance and energy usage, saving up to 54% on operational costs. Available in temperature ranges as low as -45°C. See pg. 8 for details.

Humidification System (ZPH Models)

- The Z-Plus features our fast response, tight control, humidity system. Humidification systems allow for humidity and moisture resistance testing meeting a variety of commercial and military standards.

- These systems include an electronic, solid-state humidity sensor for accuracy and minimal maintenance.

Electrical & Safety Features

- All wiring between the electrical panel and the various components pass through terminal strips for easy maintenance. Wiring is color-coded and identified with numbers that correspond to system schematics.

- Multiple safety devices include a primary over-temperature limit to protect your product and an over-temperature safety limit to protect the chamber. All branch power and control circuits are individually fused.

- Safety relay connection is provided to protect your device under test by removing power to it when the chamber is not running.
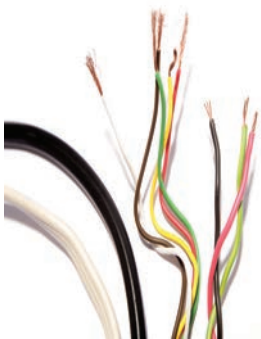
Communications

- Z-Plus models come equipped with EIA-232, EIA-485 communications, ethernet connectivity for monitroing & control, and optional IEEE-488 GPIB.

- Customer Event Output Option includes 15 event outputs with connection panel and removable plug connectors. Designed to turn customer's electronic DUT's (devices under test) ON or OFF at various stages of the customer programmed test profile.

Standard Z-Plus Features

Enhanced Air Flow

Fog-Free Viewing Window

4" Access Port

Adjustable, Slide-Out Shelf

EZT-570*i* 7" Touch Screen Controller, USB port & audio jack

4" Access Port

Single-Handed Latch

Communications, External DUT & Customer Event Connections

Pressure Gauges

Easy to Remove Panels

Casters and Leveling Legs

Value and Economy
The best warranty and our extensive list of standard features make the Z-Plus the highest valued chamber in the industry.

Options for Flexibility and Performance

Choose from a complete selection of standard and custom options for flexibility and increased performance not found in other competitive models such as the ability to incorporate both left and right side ports/slots.

Windows Software for your chamber controller...
Using our optional EZ-View windows software, from one central PC you are able to monitor, control, datalog, create profiles, and receive alarm notifications. This software package allows you to control up to 20 chambers. Contact your CSZ salesperson for additional information.

Optional Accessories

- Dry Air Purge
- Recirculating Water Supply System
- Humidity Water Filtration System
- Demineralizer Cartridge Filters
- LN2 Boost Cooling
- Low RH
- CO2 Boost Cooling
- CO2 Cooling Only
- LN2 Cooling Only
- GN2 Purge
- Water Cooled Condenser (1-3HP)
- Air Cooled Condenser (6HP)
- Water Pressure Regulator

- 10" Controller Screen
- Running Time Meter
- IEEE-488 Computer Interface
- Windows-Based Software
- Chart Recorder
- Additional Shelves
- Customer Event Digital Outputs
- Digital Inputs
- Heat Only
- Extra Heat for Faster Transitions
- Blank Door without window
- Temperature Limited Sheathed Heaters
- Extended Temperature Range up to 250°C

- Temperature-Controlled Door Lock
- Main Power Cord
- Main Power Disconnect
- Redundant Product Hi/Low Limit
- Glove Ports
- Reinforced Chamber Floor
- Reinforced Shelf
- Additional Ports
- Cable Notch
- Stainless Steel Exterior

Z-Plus Performance Data

Single Stage -34°C to 190°C

	Cooling Performance		Heating Performance		
	with Empty Chamber in Minutes from:		with Empty Chamber in Minutes from:		
	24°C		24°C		-34°C
	-18°C	-34°C	93°C	190°C	24°C
ZP-8-1.5-H/AC	10	22	10	30	10
ZP-16-1.5-H/AC	10	30	15	40	10
ZP-32-1.5-H/AC	22	58	20	60	10
ZP-44-3-H/AC	14	38	20	55	12
ZP-64-3-H/AC	18	48	20	70	15

	Live Load Capacity		Electrical Power Requirements	
	Watts		Minimum Amp Service	
	-18°C	-34°C	208/230V,1Phase	208/230V,3Phase
ZP-8-1.5-H/AC	1200	250	45	40
ZP-16-1.5-H/AC	1200	250	60	40
ZP-32-1.5-H/AC	1200	250	60	40
ZP-44-3-H/AC	2000	300	60	60
ZP-64-3-H/AC	2000	300	60	60

	ZP(H) - 8	ZP(H) - 16	ZP(H) - 32	ZP(H) - 44	ZP(H) - 64
Workspace Volume	8 Cubic Ft (230 L)	16 Cubic Ft (450 L)	32 Cubic Ft (900 L)	44 Cubic Ft (1,250 L)	64 Cubic Ft (1,810)
Exterior Dimensions	36"W x 57"D x 76"H (91cm x 145cm x 193cm)	42"W x 63"D x 82"H (107cm x 160cm x 208cm)	50"W x 71"D x 91.5"H (127cm x 180cm x 232cm)	56.5"W x 71"D x 99.5"H (143.5cm x 180cm x 253cm)	60.5"W x 81"D x 101.5"H (154cm x 205cm x 258cm)
Workspace Dimensions	24"W x 24"D x 24"H (61cm x 61cm x 61cm)	30"W x 30"D x 30"H (76cm x 76cm x 76cm)	38"W x 38"D x 38"H (97cm x 97cm x 97cm)	44"W x 38"D x 46"H (112cm x 97cm x 117cm)	48"W x 48"D x 48"H (122cm x 122cm x 122cm)

Temperature Ranges	Single Stage: -34°C to +190°C (-30°F to 375°F)
	Tundra®: -45°C to +190°C (-49°F to 375°F)
	Cascade: -73°C to +190°C (-100°F to 375°F)

*Temperature Control Tolerance	±0.5°C at steady state condition after stabilization

Humidity Range Optional Range	10% to 98% RH 5% to 98% RH

*Humidity Control Tolerance	±3% RH at steady state conditions after stabilization
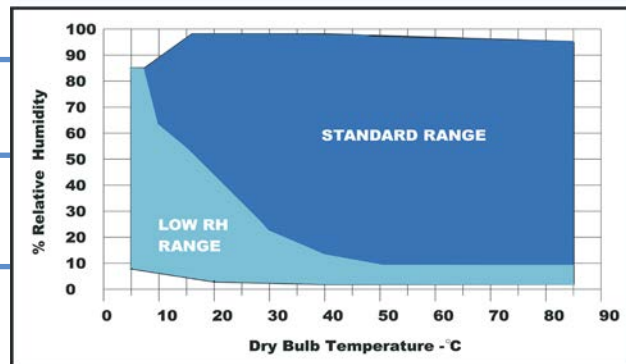
Distributed Shelf Load Capacity	110 lbs.	110 lbs.	100 lbs.	100 lbs.	100 lbs.

* Tolerances are based upon the full temperature range of the chamber. Better control will be achieved across a limited range.

Go Green with CSZ's Tundra® Cooling System

Tundra is a patented refrigeration system design that uses one compressor and is available in temperature ranges as low as -45ºC. This system provides additional performance for fast transition rates, increased live load capacity and can save up to 54% on energy costs.

The Tundra systems offers these benefits:

- Increased Performance
- High Reliability
- Quiet Operation
- Energy Efficient

- Improved Serviceability
- Reduced Utility and Maintenance Cost
- Increased Value

GREEN
Energy
Saving
Product

Tundra® -45°C to 190°C

	Cooling Performance			Cooling Rate	Heating Performance		
	with Empty Chamber in Minutes from:			°C / min.	with Empty Chamber in Minutes from:		
	24°C			85°C		24°C		-34°C
	-18°C	-34°C	-40°C	-40°C		93°C	190°C	24°C
ZP-8-2-SCT/AC	6	12	18	30	4.1	10	30	10
ZP-8-3.5-SCT/AC	5	8	10	26	4.8	3.5	10	8
ZP-16-3.5-SCT/AC	5	10	12	30	4.1	10	30	10
ZP-16-6-SCT/WC	3	7	10	15	8.3	10	30	6
ZP-32-3.5-SCT/AC	8	15	20	35	3.5	10	30	8
ZP-32-6-SCT/WC	5	9	12	30	4.1	10	30	8
ZP-32-10-SCT/WC	3	6	8	18	6.9	7	20	6
ZP-32-15-SCT/WC	2	4	6	10	12.5	6	16	5
ZP-44-3.5-SCT/AC	10	25	30	50	2.5	20	55	12
ZP-44-6-SCT/WC	7	15	20	30	4.1	20	55	12
ZP-44-10-SCT/WC	4	8	12	15	7.3	8	20	7
ZP-44-15-SCT/WC	3	6	10	12	10.4	6	15	5
ZP-64-3.5-SCT/AC	14	33	38	60	2.0	20	70	15
ZP-64-6-SCT/WC	10	20	25	40	3.1	20	70	15
ZP-64-10-SCT/WC	5	10	18	20	6.2	10	25	8
ZP-64-15-SCT/WC	4	8	12	15	8.3	8	20	6

| | Live Load Capacity | | | Electrical Power Requirements | | |
| | Watts | | | Minimum Amp Service | | |
	-18°C	-34°C	-40°C	208/230V, 1Phase	208/230V, 3Phase	460V, 3 Phase
ZP-8-2-SCT/AC	1800	950	725	50	50	-
ZP-8-3.5-SCT/AC	2100	1100	925	-	60	30
ZP-16-3.5-SCT/AC	3000	1700	1300	-	60	30
ZP-16-6-SCT/WC	3600	2300	1800	-	70	40
ZP-32-3.5-SCT/AC	3000	1700	1300	-	60	30
ZP-32-6-SCT/WC	3600	2300	1800	-	70	40
ZP-32-10-SCT/WC	6000	3500	2300	-	-	50
ZP-32-15-SCT/WC	8000	5000	3000	-	-	60
ZP-44-3.5-SCT/AC	2800	1500	1100	-	60	30
ZP-44-6-SCT/WC	3300	2000	1500	-	70	40
ZP-44-10-SCT/WC	6000	3500	2300	-	-	50
ZP-44-15-SCT/WC	8000	5000	3000	-	-	60
ZP-64-3.5-SCT/AC	2600	1300	800	-	60	30
ZP-64-6-SCT/WC	3100	1800	1300	-	70	40
ZP-64-10-SCT/WC	6000	3500	2300	-	-	50
ZP-64-15-SCT/WC	8000	5000	3000	-	-	60

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. For 50 Hz operation, stated performance and air flow may be approximately 17% less. Specifications are subject to change.

Whether you need to do basic temperature cycling or fast temperature cycling, the Z-Plus offers a variety of sizes, temperature ranges and performance packages that meet your testing needs with over 80 different models to select from with and without humidity

Cascade -73°C to 190°C

	Cooling Performance					Cooling Rate	Heating Performance			
	with Empty Chamber in Minutes from:					°C / min.	with Empty Chamber in Minutes from:			
	24°C				85°C		24°C		-34°C	-68°C
	-18°C	-34°C	-40°C	-54°C	-68°C	-40°C		93°C	190°C	24°C	24°C
ZP-8-1.5-1-H/AC	8	15	18	25	38	40	2.5	10	30	10	15
ZP-8-2-2-H/AC	5	8	10	12	18	20	3.5	10	30	10	15
ZP(HP)-8-3.5-3.5-SC/AC*	3	5	6	10	14	11	11.3	3.5	10	3.5	4.5
ZP-16-2-2-H/AC	8	10	12	18	25	28	4.4	15	40	10	20
ZP-16-3.5-3.5-SC/AC	6	8	11	17	23	25	5.0	10	30	6	12
ZP-16-6-6-SC/WC	4	6	7	10	15	15	8.3	10	30	6	12
ZP-32-2-2-H/AC	10	16	20	28	38	40	2.2	20	60	10	20
ZP-32-3.5-3.5-SC/AC	8	14	18	25	35	35	3.5	10	30	8	15
ZP-32-6-6-SC/WC	5	8	10	15	25	25	5.0	10	30	8	15
ZP-32-10-10-SC/WC	4	6	7	10	15	15	8.3	7	20	6	10
ZP-32-15-15-SC/WC	3	4	5	7	10	8	15.6	6	16	5	8
ZP(HP)-32-20-20-SC/WC*	1.5	2.25	2.5	4	6	6	21.0	2	7	3	4.5
ZP-44-3.5-3.5-SC/AC	15	22	28	40	60	50	2.5	20	55	12	20
ZP-44-6-6-SC/WC	8	12	15	20	30	30	4.1	20	55	12	20
ZP-44-10-10-SC/WC	5	7	8	12	18	15	8.3	8	20	7	10
ZP-44-15-15-SC/WC	4	5	6	8	12	10	12.5	6	15	5	8
ZP-64-3.5-3.5-SC/AC	15	25	30	40	60	60	2.0	20	70	15	25
ZP-64-6-6-SC/WC	10	15	20	25	35	35	3.5	20	70	15	25
ZP-64-10-10-SC/WC	6	8	9	15	22	20	6.2	10	25	8	12
ZP-64-15-15-SC/WC	5	6	7	9	15	12	10.4	8	20	6	10

	Live Load Capacity					Electrical Power Requirements		
	Watts					Minimum Amp Service		
	-18°C	-34°C	-40°C	-54°C	-68°C	208/230V, 1 Phase	208/230V, 3 Phase	460V, 3 Phase
ZP-8-1.5-1-H/AC	-	-	650	450	200	60	40	-
ZP-8-2-2-H/AC	-	-	1200	900	600	70	70	-
ZP(HP)-8-3.5-3.5-SC/AC*	-	-	1700	1200	750	-	80	40
ZP-16-2-2-H/AC	-	-	1800	1200	600	70	70	-
ZP-16-3.5-3.5-SC/AC	-	-	2000	1600	1000	-	80	40
ZP-16-6-6-SC/WC	-	-	3000	2400	1500	-	90	45
ZP-32-2-2-H/AC	-	-	1500	1100	600	70	70	-
ZP-32-3.5-3.5-SC/AC	-	-	2000	1600	1000	-	80	40
ZP-32-6-6-SC/WC	-	-	3000	2400	1500	-	100	60
ZP-32-10-10-SC/WC	-	-	4500	3500	1700	-	-	80
ZP-32-15-15-SC/WC	-	-	5500	4500	2500	-	-	90
ZP(HP)-32-20-20-S/WC*			10,000	8,000	5,000	-	-	125
ZP-44-3.5-3.5-SC/AC	-	-	1700	1300	700	-	80	40
ZP-44-6-6-SC/WC	-	-	2700	2100	1200	-	100	60
ZP-44-10-10-SC/WC	-	-	4500	3500	2000	-	-	80
ZP-44-15-15-SC/WC	-	-	5500	4500	3000	-	-	90
ZP-64-3.5-3.5-SC/AC	-	-	1500	1100	500	-	80	40
ZP-64-6-6-SC/WC	-	-	2500	2100	1000	-	100	60
ZP-64-10-10-SC/WC	-	-	4500	3500	2000	-	-	80
ZP-64-15-15-SC/WC	-	-	5500	4500	3000	-	-	90

*High Performance Model

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. For 50 Hz operation, stated performance and air flow may be approximately 17% less.

Specifications are subject to change.

The Experience you Rely on...

Cincinnati Sub-Zero (CSZ) Products, Inc. is an ISO-9001 **certified company with over 70 years of industry experience designing** and manufacturing temperature-controlled products of the highest quality, with a commitment to total customer satisfaction.

At CSZ, we offer a complete line of both standard and custom-designed environmental simulation chambers including:

- **Temperature Cycling**
- **Humidity**
- **Stability Cabinets & Rooms**
- **Thermal Shock**
- **Stress-Screening**
- **Altitude**
- **AGREE Vibration**

- **Freezers**
- **Liquid Chillers**
- **Liquid Chillers**
- **Wind & Rain**
- **Sand & Dust**
- **Other Temperature Management Solutions**

Sizes range from benchtop to full walk-in/drive-in chambers.

TESTING SERVICES

CSZ Testing Services is an A2LA Accredited Test Laboratory utilizing the latest test technology. CSZ is your one stop source for all of your environmental simulation testing needs. Our testing laboratory is here to help with your product qualification testing, overflow testing and /or third party product validation. Testing capabilities include Temperature, Humidity, and/or Vibration, Thermal Shock, Burn-in, Altitude, Vibration, Shock, Salt Spray, and Cyclic Corrosion test. Serving you from two locations in Cincinnati, OH and Sterling Heights, MI. For more information please call CSZ Testing headquarters at 513-793-7774 or visit **www.csztesting.com**.

CSZ is your one stop solution for ...

-Environmental Chambers
-Freezers
-System Upgrades
-Preventative Maintenance
-Calibration Services
-Contract Testing Services

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