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LR
ENVIRONMENTAL
EQUIPMENT & TEST LAB

Note: Data Sheet For Reference Only - Actual Chamber May Vary Depending on Model Year, Options, Controllers, and Individual Configuration

CSZ
A GENTHERM COMPANY

Z-PLUS

TEMPERATURE / HUMIDITY CHAMBERS

A GENTHERM COMPANY

Z-PLUS SERIES TEMPERATURE / HUMIDITY CHAMBERS

Designed for ease-of-use, reliability and performance, this line of chambers incorporates customer-requested features with extended performance for faster ramp rates.

Whether you need to do basic temperature cycling or rapid cycling, the Z-Plus offers a variety of sizes, temperature ranges and performance packages that meet your testing needs with over 110 different models to select from with and without humidity.

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

Value and Economy

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

Z-Plus Cabinet Features

The contemporary and smooth cabinet design is aesthetically pleasing to fit the style of your laboratory. Stainless steel interior with oven-baked, powder-coated exterior for added durablity.

- Two, 4” access ports 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.
- EZ-tilt controller screen tilts up or down 20° to accommodate users of different heights.
- 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.

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.

Z-Plus Temperature/Humidity Chambers

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.

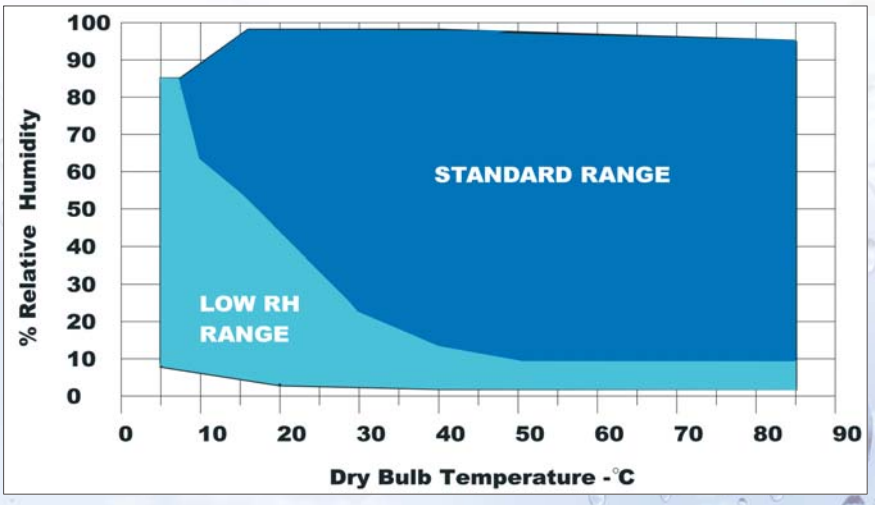
CSZ's patented Tundra® system offers increased performance, reduces maintenance and energy usage, saving up to 54% on operational costs. Available in temperature ranges as low as -45°C. See pg. 10 for details.

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.
- UL-508A listed electrical panel.

Communications

- Z-Plus models come equipped with EIA-232, EIA-485 communications, ethernet connectivity for monitoring & control, and optional IEEE-488 GPIB.
- Safety relay connection is provided to protect your device under test by removing power to it when the chamber is not running.



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.

EZT-570S Touchscreen Controller

The Next Generation Controller with Smartphone Technology

Save valuable time with the ease of use of the EZT-570S featuring fewer steps to accomplish your daily testing needs while incorporating simplified operation and programming to test faster.

All features are built into the controller interface so no additional software or internet is required for access to all the features the controller has to offer.

Manually control, run or stop a profile directly from the home screen and view a snap shot of current activity like actual/setpoint values, alarm, datalogging, profile, security, IP address information and more.

Communications & Connectivity

- Monitor and/or Control the chamber remotely for anytime, anywhere access from any device (PC, smarphone or tablet) using LAN/VNC.
- Alarm notification system sends email and/or text phone messages in the event of a test chamber alarm, saving valuable tests while reducing downtime.
- Email built-in to send data, alarm, audit trail files directly from controller. Also create and send new emails.

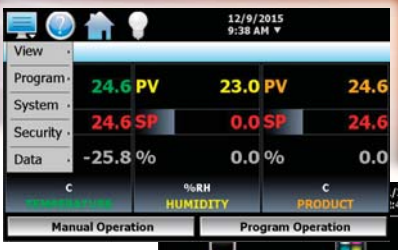
Profiling

- Profiling includes up to 99 steps and 1000 cycles.
- Program ramp steps entering time or °C/min.
- Programs may be written using product control function.
- Easily review profile using trend chart or review list of steps before running profile.
- Profile status view displays current step, estimated start/stop date and time and more.
- Profiles may be transferred to different chambers via USB or optional EZ-View software.
- Automated delay profile start.

Data Logging

- Configurable log interval, data file length, filename, operator entered batch & lot information as well as an unlimited number of operator notes saved to the data file.
- Access data files directly from controller or PC.
- Easily download profiles, alarm files, audit trail files and data files using LAN (FTP, email) and/or USB in a compatible .csv file format for ease of use. Files may also be automatically backed up daily for hassle-free file management.

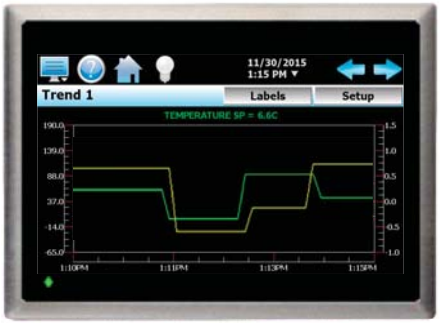
Users can choose to operate like a smart device with icons and slide-navigation or windows-navigation with drop down menus similar to our previous EZT controllers.



User Convenience & Flexibility

- Controller may be configured in any of one of 28 languages – one setting up dates icons, menus and help screen.
- Selectable power failure/recovery options.
- Full system security allows up to 30 different users with four different levels of security.
- Audit trail files track changes in settings by each user.
- Import/export configuration settings to other controllers saving time. (Personalized to your use)
- Configure alarm setting and maintenance alerts.

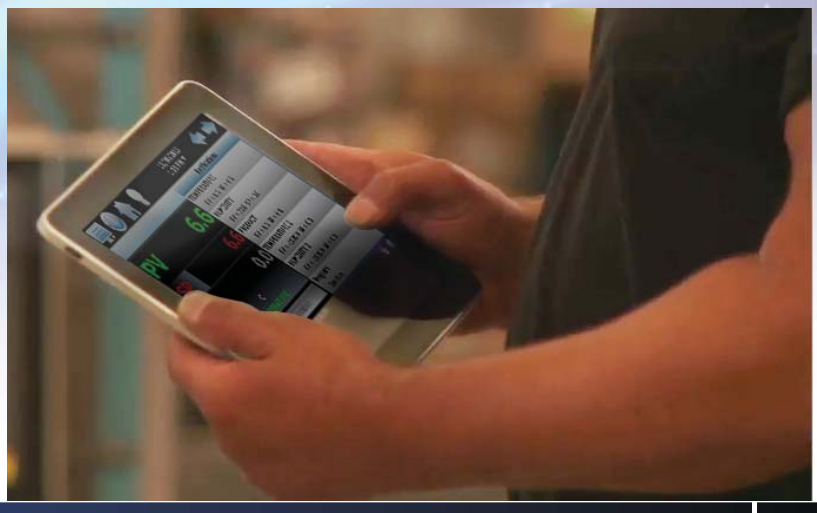
Graphing Technology



- Real-time trend display graph with adjustable time and min/max values.
- Up to eight configurable trend graphs with left & right axis
- Graph historical data files
- Zoom in/out graphs

Enhanced Communications & Control Options

- Digital input option provides 8 inputs that can be configured for various control functions including starting, stopping and pausing a profile. “Wait for” function allows the user to pause a profile during a particular step of the profile until a specific digital input is turned on or off.
- Digital output “customer event” feature provides 15 programmable outputs. Each output can be configured to perform other operations including alarm or profile status indicators for more control over your testing.
- Optional refrigeration monitor package displays and data logs temperatures and refrigeration system compressor suction/discharge pressures.
- Condensation control option helps prevent condensation from collecting on the part by automatically managing the air dewpoint.
- Bar code option allows user to scan barcode to start profile and to add notes to current data file when datalogging.



Performance Specifications

Z-Plus Chamber Specifications

	ZP(H) - 8	ZP(H) - 16	ZP(H) - 32	ZP(H) - 44	ZP(H) - 64	ZP(H) - 80
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 (1,810L)	80 Cubic Ft (2,265L)
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[1] x 99.5"H (143.5cm x 180cm x 253cm)	60.5"W x 81"D[1] x 101.5"H (154cm x 205cm x 258cm)	67"W x 94"D[1] x 101.5"H (170cm x 238cm 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)	48"W x 60"D x 48"H (122cm x 152cm 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:-70°C to +190°C (-94°F to 375°F)[2]					
***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.	100 lbs.

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

Single Stage -34°C to 190°C

	Cooling Performance with Empty Chamber in Minutes from:		Heating Performance with Empty Chamber in Minutes from:		
	24°C		24°C		-34°C
Model	**-18°C**	**-34°C**	**93°C**	**190°C**	**24°C**
ZP-8-2-H/AC	6	18	10	30	10
ZP-16-2-H/AC	8	22	15	50	12
ZP-32-2-H/AC	10	28	20	72	15
ZP-44-2-H/AC	15	40	20	60	15
ZP-64-2-H/AC	20	50	25	75	20

	Live Load Capacity Watts		Electrical Power Requirements Full Load Amps [3]	
Model	**-18°C**	**-34°C**	**208-230V, 1Phase**	**208-230V, 3Phase**
ZP-8-2-H/AC	1200	250	34	30
ZP-16-2-H/AC	1200	250	34	30
ZP-32-2-H/AC	1200	250	34	30
ZP-44-2-H/AC	2000	300	43	38
ZP-64-2-H/AC	2000	300	43	38

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. Lower voltages will extend heating performance. For 50 Hz performance, please refer to the 95000-I, Z-Plus international brochure. Specifications are subject to change.

[1] Add 38" (96cm) to depth for 30-30 HP models.

[2] Temperature range for 30-30 HP models is -65°C to +190°C.

[3] Electrical requirements based on temperature only units. Amperage may increase on humidity models. See quotation for actual ampdraw.

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

High Performance Model Specifications

Fast Transition Rates

Cascade -70°C to 190°C

	Cooling Performance with Empty Chamber in Minutes from:						Cooling Rate [2]	Heating Performance with Empty Chamber in Minutes from:			
	24°C					85°C	°C / min	24°C		-34°C	-68°C
Model	-18°C	-34°C	-40°C	-54°C	-68°C	-40°C		93°C	190°C	24°C	24°C
ZP(HP)-8-6-6-SC/WC	2	3	4	6	10	9	14.0	3.5	12	3.5	5
ZP(HP)-16-10-10-SC/WC	1.5	2.5	3	5	10.5	11	11.4	4	11	3	5
ZP(HP)-32-10-10-SC/WC	3	5	6	8	12	10	12.5	7	20	6	10
ZP(HP)-32-15-15-SC/WC	2	3	4	6	10	8	15.6	6	16	5	8
ZP(HP)-32-20-20-S/WC	1.5	2.3	2.5	4	6	5	25.0	2	9	3	4.5
ZP(HP)-44-15-15-SC/WC	3	4	6	9	13	11	11.4	6	15	5	8
ZP(HP)-44-20-20-S/WC	2	3	4	6	8	8	15.6	3	12	3	4.5
ZPS(HP)-44-30-30-S/WC	1.5	2	3	5	7.5	5	25	2	8	2	4
ZP(HP)-64-15-15-SC/WC	4	5	6	9	16	12	10.4	8	20	6	10
ZP(HP)-64-20-20-S/WC	2.5	3.5	4.5	6.5	9	9	14.0	3.5	13	3.5	5
ZPS(HP)-64-30-30-S/WC	2	2.5	3.5	5.5	8.5	8	13.8	2.5	10	2.5	4
ZPS(HP)-80-20-20-S/WC	3	4.5	5.5	7.5	11.5	12	10.4	5	17	6	10
ZPS(HP)-80-30-30-S/WC	2.2	3.5	4.5	6.5	11.5	10	12.5	4	16	5	9

	Live Load Capacity Watts					Electrical Power Requirements Full Load Amps [1]		
Model	-18°C	-34°C	-40°C	-54°C	-68°C	208/230V, 1 Phase	208/230V, 3 Phase	460V, 3 Phase
ZP(HP)-8-6-6-SC/WC	-	-	2000	1600	1000	-	65	29
ZP(HP)-16-10-10-SC/WC	-	-	3500	2600	1600	-	-	45
ZP(HP)-32-10-10-SC/WC	-	-	4500	3500	1700	-	-	45
ZP(HP)32-15-15-SC/WC	-	-	5500	4500	2500	-	-	53
ZP(HP)-32-20-20-S/WC	-	-	10000	8000	5000	-	-	84
ZP(HP)-44-15-15-SC/WC	-	-	5500	4500	3000	-	-	53
ZP(HP)-44-20-20-S/WC	-	-	10000	8000	5000	-	-	84
ZPS(HP)-44-30-30-S/WC	-	-	15000	10000	8000	-	-	110
ZP(HP)-64-15-15-SC/WC	-	-	5500	4500	3000	-	-	53
ZP(HP)-64-20-20-S/WC	-	-	10000	8000	5000	-	-	84
ZPS(HP)-64-30-30-S/WC	-	-	15000	10000	8000	-	-	110
ZPS(HP)-80-20-20-S/WC	-	-	10000	8000	5000	-	-	84
ZPS(HP)-80-30-30-S/WC	-	-	15000	10000	8000	-	-	110

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. Lower voltages will extend heating performance.
For 50 Hz performance, please refer to the 95000-I, Z-Plus international brochure. Specifications are subject to change.

[1] Electrical requirements based on temperature only units. Amperage may increase on humidity models. See quotation for actual values.
[2] From +85°C to -40°C

Go Green with CSZ's Tundra® Cooling System

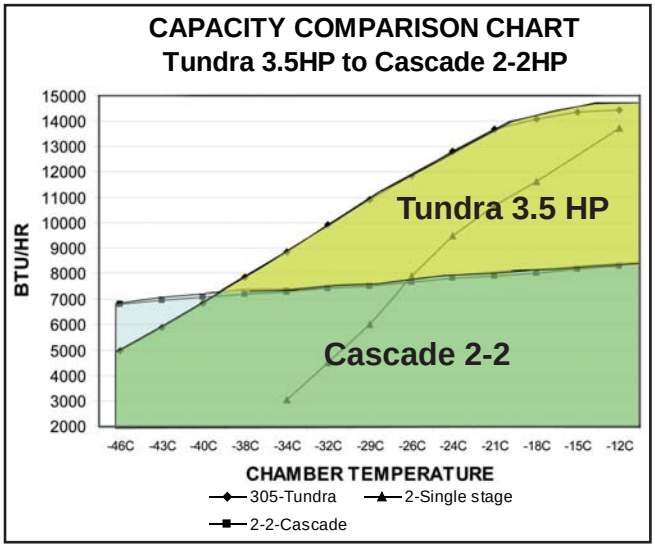
Tundra is a patented refrigeration system design that uses one compressor and is available in temperature ranges as low as -45ºC. This system provides additional performance for fast transition rates, increased live load capacity and can save up to 54% on energy costs.

The Tundra systems offers these benefits:

- Increased Performance
- High Reliability
- Quiet Operation
- Energy Efficient
- Improved Serviceability
- Reduced Utility and Maintenance Cost
- Increased Value

Tundra® -45°C to 190°C

	Cooling Performance with Empty chamber in Minutes from:				Cooling Rate [2]	Heating Performance with Empty Chamber in Minutes from:		
	24°C			85°C	°C / min	24°C		-34°C
Model	-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	4	8	12	22	5.6	3.5	12	3.5
ZP-8-6-SCT/WC	3	5	7	12	10.4	3.5	12	3.5
ZP-16-3.5-SCT/AC	5	10	15	25	5.0	10	30	6
ZP-16-6-SCT/WC	3	7	10	18	7.0	10	30	6
ZP-16-10-SCT/WC	2.5	5	7	12	10.4	4	11	3
ZP-32-3.5-SCT/AC	7	15	20	35	3.5	10	35	8
ZP-32-6-SCT/WC	4	9	12	22	5.6	10	35	8
ZP-32-10-SCT/WC	3	6	8	18	7.0	7	20	6
ZP-32-15-SCT/WC	2	4	6	11	11.3	6	16	5
ZP-44-3.5-SCT/AC	11	25	32	52	2.4	20	60	15
ZP-44-6-SCT/WC	5.5	15	20	30	4.1	20	60	15
ZP-44-10-SCT/WC	4	8	12	22	5.6	8	25	7
ZP-44-15-SCT/WC	3	7	10.5	14	9.0	6	15	5
ZP-64-3.5-SCT/AC	14	30	38	65	2.0	25	75	20
ZP-64-6-SCT/WC	7	17	22	38	3.2	25	75	20
ZP-64-10-SCT/WC	5	11	18	24	5.2	10	30	8
ZP-64-15-SCT/WC	4	9	14	18	7.0	8	20	6
ZPS-80-3.5-SCT/AC	16	36	48	75	1.7	30	80	40
ZPS-80-6-SCT/WC	12	24	30	50	2.5	30	80	40
ZPS-80-10-SCT/WC	7	14	25	32	3.9	15	40	12
ZPS-80-15-SCT/WC	5	12.5	19	24	5.2	12	31	10



	Live Load Capacity Watts			Electrical Power Requirements Full Load Amps [1]		
Model	-18°C	-34°C	-40°C	208/230V, 1Ph	208/230V, 3Ph	460V, 3Ph
ZP-8-2-SCT/AC	1800	950	725	31	27	-
ZP-8-3.5-SCT/AC	2110	1100	925	-	37	23
ZP-8-6-SCT/WC	2200	1500	1200	-	46	21
ZP-16-3.5-SCT/AC	3000	1700	1300	-	37	23
ZP-16-6-SCT/WC	3600	2300	1800	-	46	21
ZP-16-10-SCT/WC	4000	2500	2000	-	-	29
ZP-32-3.5-SCT/AC	3000	1700	1300	-	37	23
ZP-32-6-SCT/WC	3600	2300	1800	-	46	21
ZP-32-10-SCT/WC	6000	3500	2300	-	-	29
ZP-32-15-SCT/WC	8000	5000	3000	-	-	35
ZP-44-3.5-SCT/AC	2800	1500	1100	-	37	23
ZP-44-6-SCT/WC	3300	2000	1500	-	46	21
ZP-44-10-SCT/WC	6000	3500	2300	-	-	29
ZP-44-15-SCT/WC	8000	5000	3000	-	-	35
ZP-64-3.5-SCT/AC	2600	1300	800	-	37	23
ZP-64-6-SCT/WC	3100	1800	1300	-	46	21
ZP-64-10-SCT/WC	6000	3500	2300	-	-	29
ZP-64-15-SCT/WC	8000	5000	3000	-	-	35
ZPS-80-3.5-SCT/AC	2600	1300	800	-	37	23
ZPS-80-6-SCT/WC	3100	1800	1300	-	46	21
ZPS-80-10-SCT/WC	6000	3500	2300	-	-	29
ZPS-80-15-SCT/WC	8000	5000	3000	-	-	35

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. Lower voltages will extend heating performance. For 50 Hz performance, please refer to the 95000-I, Z-Plus international brochure. Specifications are subject to change.

[1] Electrical requirements based on temperature only units. Amperage may increase on humidity models. See quotation for actual values.
[2] From +85°C to -40°C

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.

Cascade -70°C to 190°C

	Cooling Performance with Empty Chamber in Minutes from:						Cooling Rate [2]	Heating Performance with Empty Chamber in Minutes from:			
	24°C					85°C	°C / min	24°C		-34°C	-68°C
Model	-18°C	-34°C	-40°C	-54°C	-68°C	-40°C		93°C	190°C	24°C	24°C
ZP-8-2-2-H/AC	5	8	9	12	20	18	7.0	10	30	10	15
ZP-8-3.5-3.5-SC/AC	3	5	6	10	16	14	9.0	3.5	12	3.5	5
ZP-16-2-2-H/AC	6	10	12	17	25	25	5.0	15	50	12	22
ZP-16-3.5-3.5-SC/AC	5	8	11	16	23	25	5.0	10	30	6	12
ZP-16-6-6-SC/WC	4	5	6	9	15	13	9.6	10	30	6	12
ZP-32-2-2-H/AC	10	16	20	28	38	40	3.1	20	72	15	25
ZP-32-3.5-3.5-SC/AC	8	13	16	23	33	30	4.2	10	35	8	15
ZP-32-6-6-SC/WC	5	8	10	15	23	20	6.3	10	35	8	15
ZP-44-3.5-3.5-SC/AC	13	22	26	40	60	45	2.7	20	60	15	25
ZP-44-6-6-SC/WC	8	12	15	22	32	32	4.0	20	60	15	25
ZP-44-10-10-SC/WC	4	6	7	10	16	15	8.3	8	25	7	10
ZP-64-3.5-3.5-SC/AC	15	25	30	42	65	65	2.0	25	75	20	30
ZP-64-6-6-SC/AC	10	15	20	26	36	36	3.5	25	75	20	30
ZP-64-10-10-SC/WC	5	6	8	13	22	18	7.0	10	30	8	12
ZPS-80-3.5-3.5-SC/WC	18	30	36	50	70	70	1.8	30	80	25	35
ZPS-80-6-6-SC/WC	12	20	23	33	45	45	2.7	30	80	25	35
ZPS-80-10-10-SC/WC	7	9	10	16	29	30	4.2	15	40	12	18
ZPS-80-15-15-SC/WC	5	7	8	11	19	20	6.2	12	31	10	15

	Live Load Capacity Watts					Electrical Power Requirements Full Load Amps [1]		
Model	-18°C	-34°C	-40°C	-54°C	-68°C	208/230V, 1 Phase	208/230V, 3 Phase	460V, 3 Phase
ZP-8-2-2-H/AC	-	-	1200	900	600	49	36	-
ZP-8-3.5-3.5-SC/AC	-	-	1700	1200	750	-	48	29
ZP-16-2-2-H/AC	-	-	1800	1200	600	49	36	-
ZP-16-3.5-3.5-SC/AC	-	-	2000	1600	1000	-	48	29
ZP-16-6-6-SC/WC	-	-	3000	2400	1500	-	65	29
ZP-32-2-2-H/AC	-	-	1500	1100	600	49	36	-
ZP-32-3.5-3.5-SC/AC	-	-	2000	1600	1000	-	48	29
ZP-32-6-6-SC/WC	-	-	3000	2400	1500	-	65	29
ZP-44-3.5-3.5-SC/AC	-	-	1700	1300	700	-	48	29
ZP-44-6-6-SC/WC	-	-	2700	2100	1200	-	65	29
ZP-44-10-10-SC/WC	-	-	4500	3500	2000	-	-	45
ZP-64-3.5-3.5-SC/AC	-	-	1500	1100	500	-	48	29
ZP-64-6-6-SC/WC	-	-	2500	2100	1000	-	65	29
ZP-64-10-10-SC/WC	-	-	4500	3500	2000	-	-	45
ZPS-80-3.5-3.5-SC/WC	-	-	1500	1100	500	-	48	29
ZPS-80-6-6-SC/WC	-	-	2500	2100	1000	-	65	29
ZPS-80-10-10-SC/WC	-	-	4500	3500	2000	-	-	45
ZPS-80-15-15-SC/WC	-	-	5500	4500	3000	-	-	53

Performance is based on 230V, 60 Hz. operation and a 24°C ambient. Lower voltages will extend heating performance.
For 50 Hz performance, please refer to the 95000-I, Z-Plus international brochure. Specifications are subject to change.

[1] Electrical requirements based on temperature only units. Amperage may increase on humidity models. See quotation for actual values.

[2] From +85°C to -40°C

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