Emerson Climate Technologies At A Glance

Emerson Climate Technologies is the world's leading provider of heating, ventilation, air conditioning, and refrigeration solutions for residential, industrial, and commercial applications. We combine technically superior products and services from our industry-leading divisions and brands with our global engineering, design and distribution capabilities to create reliable, energy efficient climate systems that improve human comfort, safeguard food, and protect the environment.

DCU116-EN-1209

For more details, see www.emersonclimate.eu

Emerson Climate Technologies - European Headquarters - Pascalstrasse 65 - 52076 Aachen, Germany
Phone: +49 (0) 2408 929 0 - Fax: +49 (0) 2408 929 570 - Internet: www.emersonclimate.eu

EMERSON. CONSIDER IT SOLVED.™

Copeland™ EazyCool™

Outdoor Condensing Unit - ZX Range

High Efficiency In Compact Design

EMERSON™
Climate Technologies

Outdoor Condensing Unit - ZX The Best Choice For Small Retail And Food Service Applications

Copeland EazyCool™ ZX condensing unit is the latest generation of Emerson Climate Technologies outdoor condensing units. Responding to space and noise constraints, this new range is designed to ease refrigeration integration into the application environment.

Simplifying Refrigeration System Integration

For years, Copeland EazyCool™ outdoor condensing units have brought innovation to refrigeration by providing solutions for quick and easy installation. Regular communication between Emerson Climate Technologies and its customers has resulted in the latest outdoor condensing unit design, taking this concept one step further. The combination of proven Copeland Scroll™ technology with the unit's compact design exactly meets the market requirements.

Building Integration With Maximum Space Saving

The ZX condensing units are:

- Built for any type of outdoor applications
- Perfect for wall or roof installation in city centres

Simple Installation

The fully equipped Copeland EazyCool™ ZX unit enables quick and easy installation and commissioning on site within a few hours.

Urban Environment Integration Through Noise Attenuation

A significant noise attenuation is guaranteed through:

- The integration of low speed fan motors with sickle blades and fan speed controller
- A unique fan speed control algorithm based on ambient temperatures, which causes fans to slow down at night time when temperatures tend to be low

Energy Savings

- Copeland Scroll™ compressor with significantly higher efficiency than traditional piston compressors in the target applications
- Enhanced condenser coil and fan combination with automatic adjustment of condensing temperature to ambient conditions
- Vapor injection technology on low temperature models further improves the operational efficiency

High Reliability Through Diagnostic Protection Capabilities

The built-in electronics detect and display the system status in real time. They also provide unique protection for the compressor against the following:

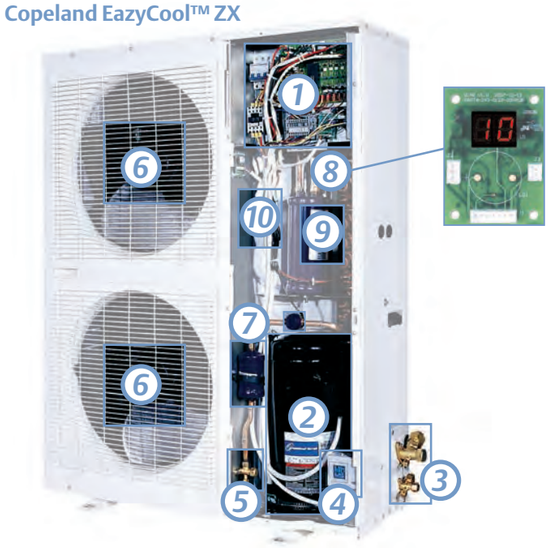
- Over-current
- Phase imbalance
- Phase loss
- Incorrect phase rotation

The new Copeland EazyCool™ series of outdoor scroll condensing units are specifically designed to cater for a wide range of refrigeration applications covering medium and low evaporating temperatures.

Typical applications for Copeland EazyCool™ ZX include:

- Convenience stores
- Cold rooms
- Fast food chains and restaurants
- Beverage coolers

Features Copeland EazyCool™ ZX



1 *Fully equipped electrical panel including overload protector and main switch, as well as electronic board for compressor protection and fan speed control features*

2 *Copeland Scroll™ compressor with crankcase heater and fixed setting high and low pressure switches*

3 *Easy, accessible suction and liquid line connections – slanted for compact design*

4 *Adjustable low pressure control switch*

5 *Liquid line isolating valve for drier replacement*

6 *Low speed fan motors with sickle blades*

7 *Filter drier and sight glass*

8 *Diagnostics module detects and displays the system mode*

9 *Oil separator (LT version only)*

10 *Suction accumulator (LT version only)*

Performance Data For Medium And Low Temperature Models

Medium Temperature Models	Capacity (kW*) at Evaporating Temperature (°C)						
	-20	-15	-10	-5	0	5	7
ZXME-020E	2.4	3.0	3.6	4.2	4.9	5.7	6.0
ZXME-025E	3.0	3.6	4.3	5.1	6.0	6.9	7.3
ZXME-030E	3.7	4.4	5.3	6.2	7.1	8.2	8.6
ZXME-040E	5.0	5.9	7.0	8.2	9.5	10.8	11.4
ZXME-050E	6.4	7.7	9.1	10.7	12.5	14.4	15.2
ZXME-060E	7.3	8.8	10.4	12.2	14.1	16.2	17.1
ZXME-075E	8.4	10.0	11.9	13.9	16.1	18.5	19.5

*EN 13215: R404A, Te - 10°C, Ta 32°C, SGT 20°C

Low Temperature Models	Capacity (kW*) at Evaporating Temperature (°C)						
	-40	-35	-30	-25	-20	-15	-10
ZXLE-020E	1.5	1.9	2.3	2.8	3.3	3.9	4.5
ZXLE-030E	2.2	2.6	3.1	3.8	4.5	5.2	6.0
ZXLE-040E	3.2	3.9	4.8	5.8	6.9	8.1	9.3
ZXLE-050E	3.7	4.5	5.5	6.7	8.0	9.5	10.9
ZXLE-060E	4.5	5.6	6.8	8.1	9.6	11.2	12.8

*EN 13215: R404A, Te - 35°C, Ta 32°C, SGT 20°C

Outdoor Condensing Unit - ZX Digital
The Compact Solution For Continuous Capacity Modulation

Copeland EazyCool™ ZX Digital Condensing Units represent the top level of the ZX product platform. The advantages of the standard models compactness, silence and efficiency are further extended by the capability of continuous capacity modulation. This makes ZX Digital condensing units the perfect fit for applications with wide load variations.

Simplifying Capacity Modulation

On many refrigeration systems the load will vary over a wide range, thus requiring the use of capacity control if a high frequency of system on/off cycles should be avoided. Based on the unique and proven Copeland Scroll Digital™ compressor technology, the ZX Digital condensing units operate on a simple mechanism. Capacity control is achieved by separating the compressor scroll sets axially over a short period of time. It is a simple mechanical solution allowing precise temperature control thus improving system efficiency.

Reducing Installation Effort

ZX Digital condensing units are ready for operation and can easily and quickly be implemented into any system design. Compared to alternative modulation solutions like parallel condensing units or compressor speed control ZX Digital units significantly reduce installation time. In addition the compact dimensions and light weight enable easy handling.

Energy Savings With Digital Scroll Technology

Digital Scroll™ technology provides:

- Continuous modulation from 10% to 100% capacity
- No restrictions to the operating envelope
- Immediate load adjustment
- Reduced compressor cycling with high current starting periods to a minimum
- Precise temperature control that allows lifting the evaporating temperature thus saving energy
- Superior energy efficiency through low condensing temperatures in capacity modulation mode

Preserving Food Quality

As a result of digital continuous modulation system, pressures and temperatures are tightly controlled which allows:

- An accurate control of display case and cold room temperatures
- Precise adjustment of evaporating temperatures
- Less dehumidification of the food and preservation of food quality

Reducing System Downtime And Lifecycle Costs

The refrigerant flow back to a Digital Scroll™ compressor is identical to a standard scroll compressor, even at low capacity. The Digital Scroll™ compressor motor runs at full speed at all times, never slowing the oil flow to the compressor. Its reliability level is as high as in standard compressors. It does not cause motor overheating or resonance vibrations in the condensing unit. The reliability of ZX Digital condensing units is further supported by:

- Less mechanical stress on the unit due to fewer start/stop cycles
- Selection of adjusted quality components including the controller
- Proven Digital Scroll™ technology
- Equipped with oil separator to guarantees constant oil levels
- Oil Separator to guarantee constant oil levels

Thanks to those features the ZX Digital condensing units significantly improve system reliability reduce system downtime and lifecycle costs.

Features Copeland EazyCool™ ZX Digital

1 *Fully equipped electrical panel including overload protector and main switch, as well as electronic board for compressor protection and fan speed control features*

2 *Copeland Scroll™ Digital compressor with crankcase heater and fixed setting high and low pressure switches*

3 *Easy, accessible suction and liquid line connections – slanted for compact design*

4 *Adjustable low pressure control switch*

5 *Liquid line isolating valve for drier replacement*

6 *Low speed fan motors with sickle blades*

7 *Filter drier and sight glass*

8 *EC2 controller with TCP/IP interface*

9 *Oil separator*

Performance Data For Medium Temperature Models

Digital Models Medium Temperature	Capacity (kW*) at Evaporating Temperature (°C)						
	-20	-15	-10	-5	0	5	7
ZXDE-040E	5.0	5.9	7.0	8.1	9.3	10.7	11.2
ZXDE-050E	6.4	7.6	9.0	10.6	12.3	14.1	14.9
ZXDE-060E	7.4	8.9	10.5	12.2	14.1	16.1	16.9
ZXDE-075E	8.4	10.0	11.8	13.8	16.0	18.3	19.2

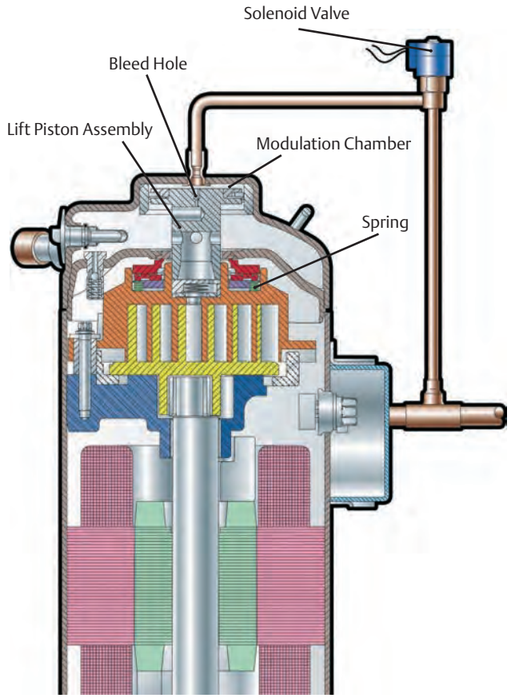
*EN 13215 Conditions, Te -10°C, Ta = 32°C, RGT = 20°C

Digital Capacity Modulation

Digital Mechanism

Capacity modulation is based on PWM (Pulse Width Modulation) control of a solenoid valve that operates a piston fitted rigidly to the upper scroll. This piston is actuated by gas pressure. The solenoid opens to allow the modulation chamber to communicate with suction via the external tube.

Discharge pressure on the lower side of the piston forces it upwards, bringing with it the upper scroll – there is no compression. When the solenoid closes, pressure builds up in the modulation chamber. Pressure in the modulation chamber is controlled via a small bleed hole. The upper scroll moves down to its normal contact position – compression resumes.



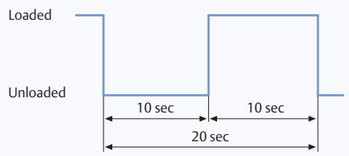
Cycle Time

The compressor capacity is controlled by modulating the solenoid valve input over time.

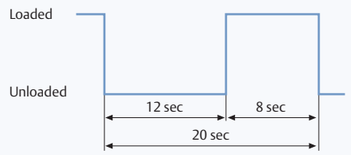
Example 1:
Cycle time: 20 sec
Valve inactive/ closed: 10 sec
Valve active/open: 10 sec
Resulting capacity: 50%

Example 2:
Cycle time: 20 sec
Valve inactive/ closed: 8 sec
Valve active/open: 12 sec
Resulting capacity: 40%

50% Modulation

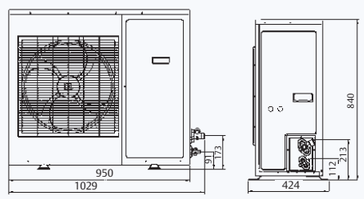


40% Modulation

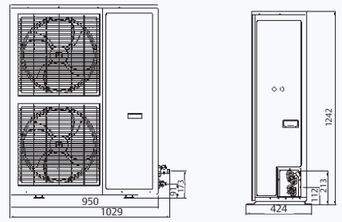


Dimensions

Single fan units



Dual fan units



Technical Overview ZX

Model	Capacity (kW)*	COP*	Max. Operating Current (A)	Number Of Fans	Total Fan Motor Power	Connection Lines (in)		Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Sound Level (dB[A])**	
						Suction	Liquid					Day	Night
Medium Temperature 380-420V / 50Hz / 3~													
ZXME-020E-TFD	3.6	2.0	5.0	1	116	3/4	1/2	840	1029	424	76	39	36
ZXME-030E-TFD	5.3	2.1	6.1	1	116	3/4	1/2	840	1029	424	79	40	37
ZXME-040E-TFD	7.0	2.1	7.5	1	116	7/8	1/2	840	1029	424	91	40	37
ZXME-050E-TFD	9.1	2.2	9.6	2	246	7/8	1/2	1242	1029	424	108	41	38
ZXME-060E-TFD	10.4	2.2	11.5	2	246	7/8	1/2	1242	1029	424	112	41	38
ZXME-075E-TFD	11.9	2.2	11.9	2	246	7/8	1/2	1242	1029	424	118	42	39
Medium Temperature 220-240V / 50Hz / 1~													
ZXME-020E-PFJ	3.6	2.2	12.8	1	116	3/4	1/2	840	1029	424	76	39	36
ZXME-025E-PFJ	4.3	2.2	14.2	1	116	3/4	1/2	840	1029	424	76	39	36
ZXME-030E-PFJ	5.3	2.0	16.4	1	116	3/4	1/2	840	1029	424	79	40	37
ZXME-040E-PFJ	6.8	2.0	23.5	1	116	7/8	1/2	840	1029	424	91	40	37
Low Temperature 380-420V / 50Hz / 3~													
ZXLE-020E-TFD	1.9	1.1	5.7	1	116	3/4	1/2	840	1029	424	79	39	36
ZXLE-030E-TFD	2.6	1.3	6.7	1	116	3/4	1/2	840	1029	424	81	40	37
ZXLE-040E-TFD	4.0	1.3	9.2	1	116	7/8	1/2	840	1029	424	93	40	37
ZXLE-050E-TFD	4.7	1.3	11.9	2	246	7/8	1/2	1242	1029	424	106	41	38
ZXLE-060E-TFD	5.7	1.3	13.7	2	246	7/8	1/2	1242	1029	424	116	41	38
Low Temperature 220-240V 50Hz 1~ **preliminary*													
ZXLE-020E-PFJ	1.9*	1.1*	14.4*	1	116	3/4	1/2	840	1029	424	79	39	36
ZXLE-025E-PFJ	2.3*	1.2*	16.4*	1	116	3/4	1/2	840	1029	424	80	40	37
ZXLE-030E-PFJ	2.6*	1.3*	18.6*	1	116	3/4	1/2	840	1029	424	81	40	37

* EN 13215 MT/LT Conditions, Ta = 32°C, SGT = 20°C, MT (Te -10°C)/ LT (Te -35°C)

** ISO 3744 @ 10 m

Technical Overview ZX Digital

Model	Capacity (kW)*	COP*	Max. Operating Current (A)	Number Of Fans	Total Fan Motor Power (W)	Connection Lines (in)		Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Sound Level (dB[A])**	
						Suction	Liquid					Day	Night
Medium Temperature 380-420V / 50Hz / 3~ *(preliminary)*													
ZXDE-040E-TFD	7.0	2.2	7.7	2	246	7/8	1/2	1242	1029	424	104	40	37
ZXDE-050E-TFD	9.0	2.2	10.4	2	246	7/8	1/2	1242	1029	424	112	41	38
ZXDE-060E-TFD	10.4	2.1	11.6	2	246	7/8	1/2	1242	1029	424	114	41	38
ZXDE-075E-TFD	11.8	2.2	12.4	2	246	7/8	1/2	1242	1029	424	119	42	39

* EN 13215 Conditions, Te -10°C, Ta = 32°C, RGT = 20°C

** ISO 3744 @ 10m