

# Copeland Scroll™ Outdoor Refrigeration Unit

Medium and low temperature applications



Convenience Store • Restaurant  
R-22, 134a, 404A/507A, 407C/A, 448A/449A • 1.5 - 6 HP

**COPELAND SCROLL™**

  
**EMERSON™**

# Innovative design based on three factors demanded by industry users

## 1 – Energy Efficiency

The Copeland Scroll Outdoor Refrigeration Unit significantly reduces energy consumption by utilizing scroll compressor technology, variable speed fan motors, large capacity condenser coils and advanced control algorithms. Compared to hermetic reciprocating units, end-users will save more than \$350 in annual energy costs.

## 2 – Reliability

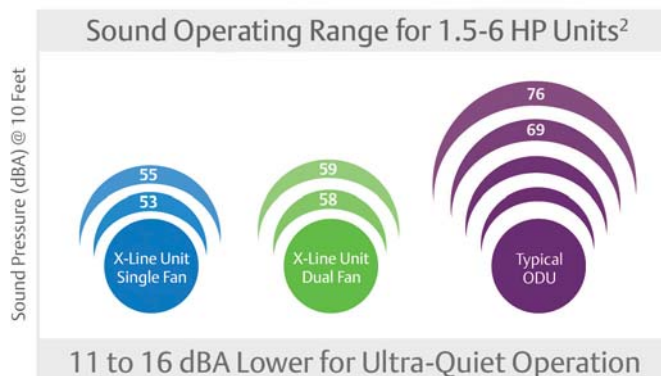
Combining the proven reliability of Copeland Scroll compressors with advanced CoreSense™ Diagnostics, equipment reliability is greatly enhanced. Fault code alerts and fault code retrieval capabilities provide information to help improve speed and accuracy of system diagnostics. Integrated electronics provide protection against over-current, over-heating, incorrect phase rotation, compressor cycling, high pressure resets, low pressure cut-outs and liquid flood-back conditions that cause unexpected performance losses or worse, unplanned equipment failure. As part of the Emerson family of products, the Copeland Scroll Outdoor Refrigeration Unit provides unsurpassed access to system status, diagnostics, and operational control.



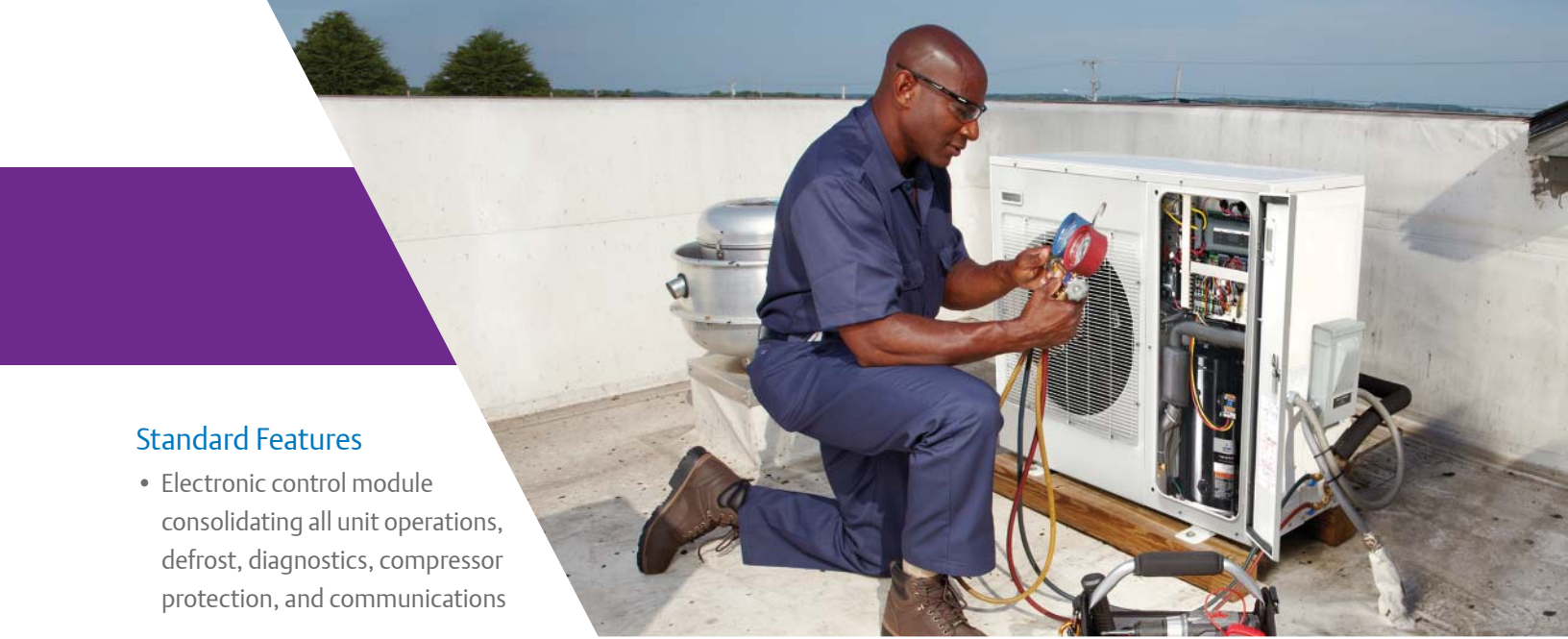
## 3 – Flexibility

The light weight and slim-line profile ease the installation process. The ultra quiet variable-speed fan motor significantly reduces exterior sound levels, allowing use in noise restricted residential zones. With high and low ambient operation capability, coated coils for coastal applications, multi-refrigerant capabilities, and optional wall mounting capability, the units deliver unmatched mounting and environmental location flexibility.

Perfectly suited for walk-in and display case cooler and freezer applications. All units integrate the many benefits of scroll compressor technology, fan speed control, and CoreSense Diagnostics, delivering higher energy efficiency and lower sound levels, while ensuring reliable performance and operation in foodservice applications.



Two sound values shown represent the X-Line unit's lowest and highest operating dBA measurements, or typical industry outdoor unit published data, for both MT and LT products. Sound pressure values are 10 feet from the unit at 25°F evap for MT and -10°F evap for LT at 90°F ambient. A sound reduction of up to 3 dBA will occur in ambient temperatures below 70°F. This data is typical of 'free field' conditions for horizontal air cooled condensing units and may vary depending on the condensing unit installation. There are many factors that affect the sound reading of a condensing unit such as unit mounting, reflecting walls, background noise and operating condition.



## Standard Features

- Electronic control module consolidating all unit operations, defrost, diagnostics, compressor protection, and communications
- External service valves and hinged service panel for easy setup and service
- Standard moisture indicator and liquid filter drier
- Quiet variable speed condenser fan
- Heated and insulated receiver with pressure relief valve
- Powder-coated galv-annealed chassis and coated condenser fins for corrosion protection
- Standard accumulator and oil separator on low temp models. Optional accumulator on medium temp models.

## Accessories

Part Number	Description	Purpose
074-7286-00	Wall bracket	Allows mounting unit to walls
074-7289-00	Adjustable stand	Raises unit 12 inches from ground level
943-0224-00	PC interface kit	Allows direct connection of unit to PC
943-0058-00	Remote display	Control/view unit status up to 30 feet from unit

## Nomenclature

<b>X</b>	<b>F</b>	<b>A</b>	<b>M</b>	<b>-</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>Z</b>	<b>-</b>	<b>T</b>	<b>F</b>	<b>C</b>	<b>-</b>	<b>0</b>	<b>8</b>	<b>1</b>
Family = X-Line	F = Multi-refrigerant	A = Air-Cooled	L = Low Temp M = Medium Temp P = Multiple Applications			1.5 to 6.0 = H.P.		Z = Scroll		CFV = 208/230V-1ph-60Hz	TFC = 208/230V-3ph-60Hz			0 = UL Listed Product	81 = Standard	

To place an order select **Base Model > Electrical > Bill of Material**

## Feature

## Owner/Enterprise Benefit

Energy improvement (More than \$350 per year)	• Lower operating costs
Sound improvement	• Creating a more comfortable environment for guests • Beneficial for regions with noise ordinances
Diagnostic protection capabilities	• Reduce nuisance calls • Extends life of your equipment • Faster, more accurate service, and reduced call-backs • Maintains your equipment to original standards, maintaining energy efficiency and temperature control • Have confidence in what your contractor is fixing
Slim profile, lighter weight, and optional wall mount capability	• Lower installation costs • Improved appearance of your enterprise site • Avoids more costly solutions for potential location issues
Multi-refrigerant*	• R-22, R-134a, R-404A, R-407C/A, R-448/449A
Emerson family of electronics	• Scalable electronics can operate as a stand-alone unit or connect as part of a full intelligent store

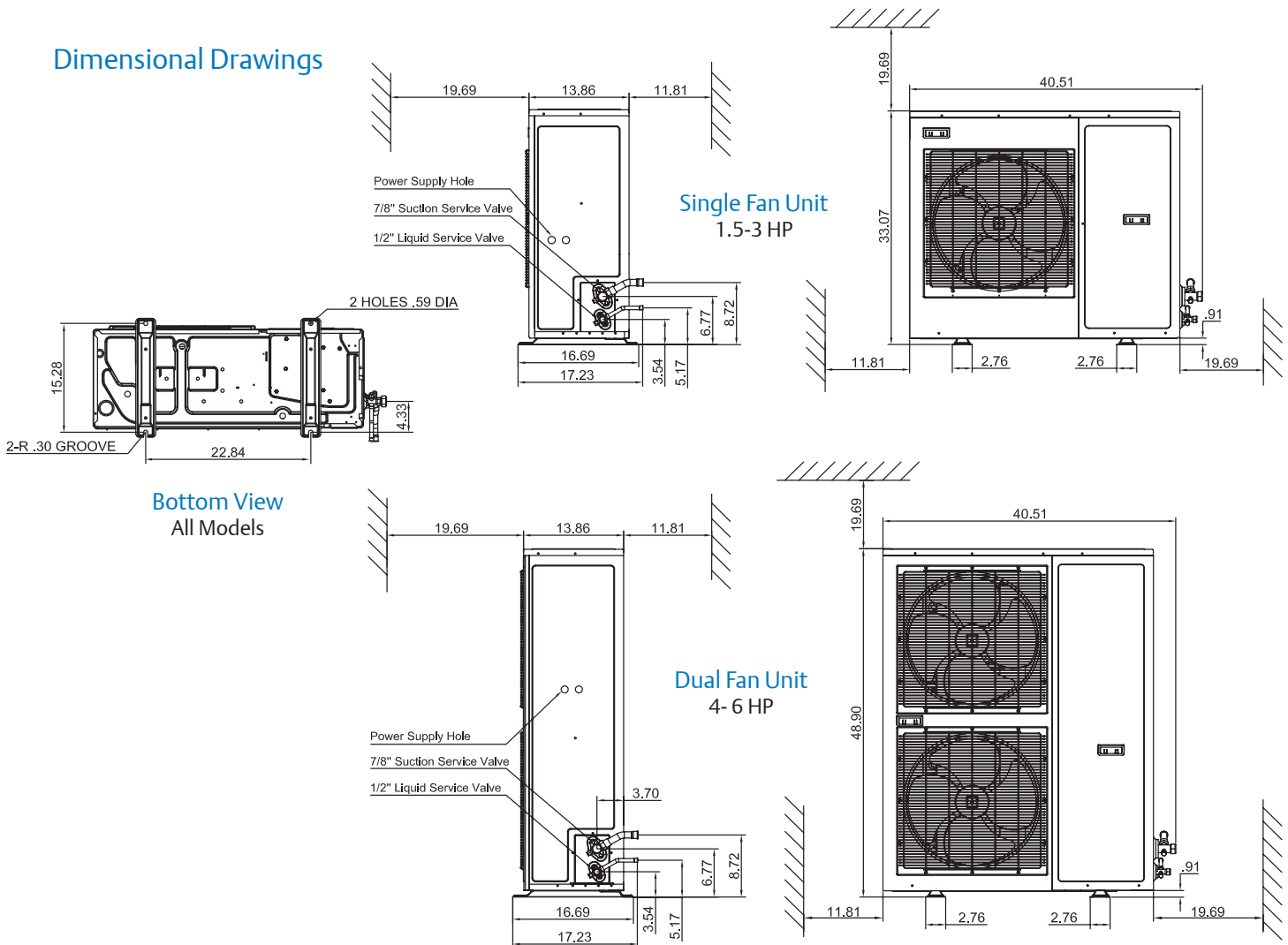
\* Visit [EmersonClimate.com/OPI](http://EmersonClimate.com/OPI) for specific refrigerant approvals for each model.



## Specifications

Unit Model	Compressor Electrical	Chassis Size	Length	Width	Height	Refrigerant Connections		Receiver Capacity (Lbs @ 90% Volume)					MCA	Max Fuse
						Liquid	Suction	R-22	R-134a	R-404A	R-407A	R-407C		
XFAM-015Z-CFV	ZS09KAE-PFV	1 FAN	16.7	40.5	33.1	1/2 S	7/8 S	10.3	10.4	8.9	9.8	9.8	13.55	20
XFAM-015Z-TFC	ZS09KAE-TF5												11.05	15
XFAM-017Z-CFV	ZS11KAE-PFV												16.80	25
XFAM-017Z-TFC	ZS11KAE-TF5												14.05	20
XFAM-022Z-CFV	ZS15KAE-PFV												20.68	35
XFAM-022Z-TFC	ZS15KAE-TF5												14.30	20
XFAM-030Z-CFV	ZS21KAE-PFV	2 FAN	16.7	40.5	48.9	1/2 S	7/8 S	15.1	15.3	13.1	14.4	14.3	30.05	50
XFAM-030Z-TFC	ZS21KAE-TF5												20.05	30
XFAM-045Z-CFV	ZS33KAE-PFV												37.35	60
XFAM-045Z-TFC	ZS33KAE-TF5												29.98	50
XFAM-050Z-CFV	ZS38K4E-PFV												41.85	70
XFAM-050Z-TFC	ZS38K4E-TF5												28.85	45
XFAL-020Z-CFV	ZXI06KCE-PFV	1 FAN	16.7	40.5	33.1	1/2 S	7/8 S	N/A	N/A	8.9	9.8	9.8	21.55	35
XFAL-020Z-TFC	ZXI06KCE-TF5												16.175	25
XFAL-030Z-TFC	ZXI09KCE-TF5												17.175	25
XFAL-035Z-CFV	ZXI11KCE-PFV												34.05	50
XFAL-040Z-CFV	ZXI14KCE-PFV												40.1	60
XFAL-040Z-TFC	ZXI14KCE-TF5												27.1	45
XFAL-050Z-TFC	ZXI15KCE-TF5	2 FAN	16.7	40.5	48.9	1/2 S	7/8 S	N/A	N/A	13.1	14.4	14.3	28.85	45
XFAL-051Z-CFV	ZXI16KCE-PFV												44.725	70
XFAL-060Z-TFC	ZXI18KCE-TF5												33.975	50

## Dimensional Drawings



## R-404A MT

Model	Comp	0	5	10	15	20	25	30	35	40	45
90° Ambient											
XFAM-015Z	ZS09KAE	7,400	8,260	9,200	10,200	11,300	12,500	<b>14,100</b>	<b>15,400</b>	<b>16,900</b>	<b>18,400</b>
XFAM-017Z	ZS11KAE	8,880	9,900	11,000	12,200	13,500	14,900	<b>16,800</b>	<b>18,400</b>	<b>20,000</b>	<b>21,800</b>
XFAM-022Z	ZS15KAE	12,000	13,400	14,800	16,400	18,100	20,000	<b>22,300</b>	<b>24,300</b>	<b>26,400</b>	<b>28,600</b>
XFAM-030Z	ZS21KAE	17,600	19,600	21,600	23,900	26,200	28,800	<b>31,800</b>	<b>34,500</b>	<b>37,200</b>	<b>40,100</b>
XFAM-045Z	ZS33KAE	24,400	27,100	30,000	33,100	36,400	40,000	<b>44,500</b>	<b>48,200</b>	<b>52,000</b>	<b>56,000</b>
XFAM-050Z	ZS38K4E	29,100	32,000	35,200	38,500	42,100	45,800	<b>51,500</b>	<b>56,000</b>	<b>60,500</b>	<b>65,000</b>
XFAM-060Z	ZS45K4E	34,500	37,900	41,500	45,400	49,500	54,000	<b>60,500</b>	<b>65,500</b>	<b>70,500</b>	<b>76,000</b>
100° Ambient											
XFAM-015Z	ZS09KAE	6,850	7,630	8,490	9,420	10,400	11,500	<b>12,900</b>	<b>14,100</b>	<b>15,400</b>	<b>16,800</b>
XFAM-017Z	ZS11KAE	8,220	9,140	10,200	11,300	12,500	13,700	<b>15,400</b>	<b>16,800</b>	<b>18,300</b>	<b>19,900</b>
XFAM-022Z	ZS15KAE	11,100	12,300	13,700	15,100	16,700	18,400	<b>20,500</b>	<b>22,300</b>	<b>24,100</b>	<b>26,100</b>
XFAM-030Z	ZS21KAE	16,300	18,000	19,900	21,900	24,000	26,400	<b>29,300</b>	<b>31,600</b>	<b>34,100</b>	<b>36,700</b>
XFAM-045Z	ZS33KAE	22,500	25,000	27,600	30,400	33,400	36,700	<b>41,000</b>	<b>44,300</b>	<b>47,800</b>	<b>51,500</b>
XFAM-050Z	ZS38K4E	26,600	29,300	32,200	35,200	38,400	41,800	<b>47,400</b>	<b>51,500</b>	<b>55,500</b>	<b>60,000</b>
XFAM-060Z	ZS45K4E	31,700	34,700	38,000	41,500	45,200	49,100	<b>55,500</b>	<b>60,500</b>	<b>65,000</b>	<b>70,000</b>
110° Ambient											
XFAM-015Z	ZS09KAE	6,260	6,960	7,730	8,570	9,480	10,500	<b>11,800</b>	<b>12,900</b>	<b>14,000</b>	<b>15,200</b>
XFAM-017Z	ZS11KAE	7,500	8,330	9,240	10,200	11,300	12,500	<b>14,100</b>	<b>15,400</b>	<b>16,700</b>	<b>18,100</b>
XFAM-022Z	ZS15KAE	10,100	11,200	12,400	13,700	15,100	16,700	<b>18,800</b>	<b>20,400</b>	<b>22,100</b>	<b>23,800</b>
XFAM-030Z	ZS21KAE	14,800	16,300	18,000	19,800	21,700	23,800	<b>27,100</b>	<b>29,200</b>	<b>31,400</b>	<b>33,700</b>
XFAM-045Z	ZS33KAE	20,500	22,600	25,000	27,500	30,200	33,200	<b>38,000</b>	<b>41,000</b>	<b>44,100</b>	<b>47,400</b>
XFAM-050Z	ZS38K4E	24,100	26,500	29,000	31,700	34,600	37,700	<b>43,200</b>	<b>46,900</b>	<b>50,500</b>	<b>55,000</b>
XFAM-060Z	ZS45K4E	28,700	31,500	34,400	37,500	40,800	44,400	<b>51,000</b>	<b>55,000</b>	<b>59,500</b>	<b>64,000</b>

Capacities rated at 40°F return gas (65° return gas for capacities in bold), 5°F subcooling

## R-404A LT

Model	Comp	-40	-35	-30	-25	-20	-15	-10	-5	0
90° Ambient										
XFAL-020Z	ZXI06KCE	5,700	6,960	8,210	9,450	10,690	11,920	13,140	14,360	15,570
XFAL-030Z	ZXI09KCE-TF5	7,840	9,390	10,950	12,500	14,060	15,620	17,170	18,730	20,280
XFAL-035Z	ZXI11KCE-PFV	9,700	11,100	12,600	14,200	15,900	17,700	19,700	21,700	23,900
XFAL-040Z	ZXI14KCE	12,690	14,430	16,280	18,240	20,300	22,470	24,740	27,120	29,610
XFAL-050Z	ZXI15KCE-TF5	14,030	16,040	18,140	20,350	22,660	25,060	27,570	30,170	32,880
XFAL-051Z	ZXI16KCE-PFV	14,030	16,040	18,140	20,350	22,660	25,060	27,570	30,170	32,880
XFAL-060Z	ZXI18KCE	18,000	20,500	23,000	25,700	28,600	31,600	34,700	38,100	41,500
100° Ambient										
XFAL-020Z	ZXI06KCE	5,640	6,840	8,020	9,200	10,370	11,530	12,680	13,830	14,970
XFAL-030Z	ZXI09KCE-TF5	6,940	8,520	10,100	11,680	13,260	14,840	16,420	18,000	19,580
XFAL-035Z	ZXI11KCE-PFV	9,090	10,300	11,700	13,100	14,700	16,300	18,100	20,000	21,900
XFAL-040Z	ZXI14KCE	12,370	13,980	15,710	17,540	19,480	21,530	23,680	25,940	28,300
XFAL-050Z	ZXI15KCE-TF5	13,110	14,960	16,900	18,940	21,080	23,320	25,660	28,100	30,640
XFAL-051Z	ZXI16KCE-PFV	13,110	14,960	16,900	18,940	21,080	23,320	25,660	28,100	30,640
XFAL-060Z	ZXI18KCE	17,240	19,480	21,930	24,380	27,030	29,780	32,740	35,800	38,200
110° Ambient										
XFAL-020Z	ZXI06KCE	5,500	6,610	7,710	8,810	9,890	10,970	12,040	13,100	14,160
XFAL-030Z	ZXI09KCE-TF5	5,830	7,420	9,010	10,590	12,180	13,770	15,350	16,940	18,530
XFAL-035Z	ZXI11KCE-PFV	9,020	10,140	11,340	12,720	14,200	15,690	17,380	19,190	21,090
XFAL-040Z	ZXI14KCE	11,850	13,350	14,950	16,660	18,480	20,400	22,420	24,560	26,800
XFAL-050Z	ZXI15KCE-TF5	11,920	13,590	15,370	17,250	19,220	21,300	23,470	25,740	28,110
XFAL-051Z	ZXI16KCE-PFV	11,920	13,590	15,370	17,250	19,220	21,300	23,470	25,740	28,110
XFAL-060Z	ZXI18KCE	16,170	18,330	20,500	22,760	25,130	27,600	30,200	32,960	34,700

Capacities rated at 65°F return gas, 5°F subcooling

## Application Engineering Bulletins

available at [Emerson.com/OPI](http://Emerson.com/OPI)

4-1273 *Factors to Consider in Converting Compressor  
Rated Capacity to Actual Capacity*

4-1327 *Economized Vapor Injection (EVI) Compressors*

11-1147 *Suction Accumulators*

11-1297 *Liquid Line Filter Driers*

17-1260 *Compressor Overheating*

17-1268 *Compressor Ratio as it Affects Compressor Reliability*

22-1182 *Liquid Refrigerant Control in Refrigeration and  
Air Conditioning Systems*

5-1412 *Copeland Scroll Outdoor Refrigeration Unit – X-Line User Manual*

This bulletin is provided with each unit and is a source for additional product details.

For more information visit:

[Emerson.com/CopelandOutdoorUnit](http://Emerson.com/CopelandOutdoorUnit)