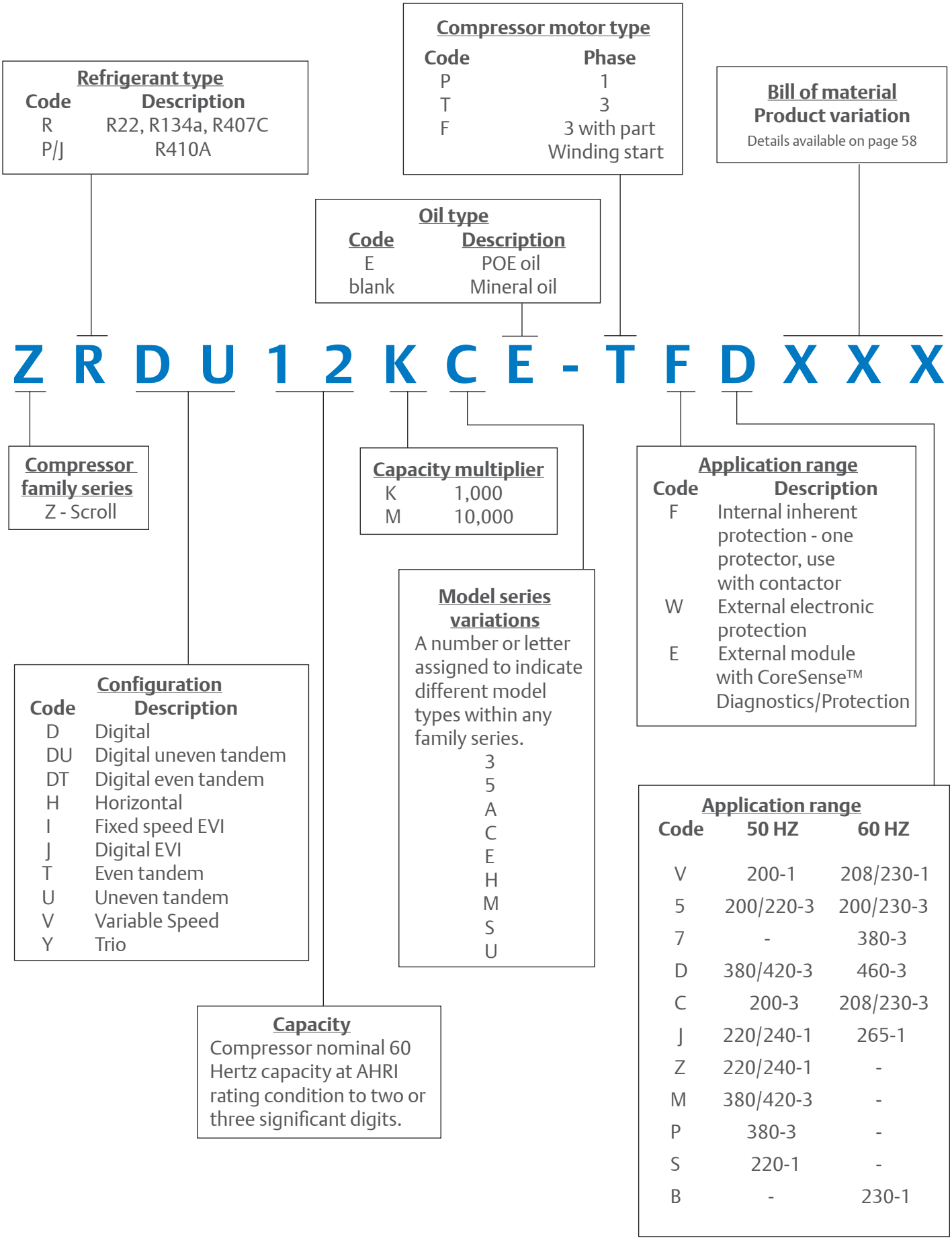
Nomenclature



Copeland Scroll™ compressors for R22, R407C and R134a refrigerant



Copeland Scroll compressors for R22, R407C and R134a refrigerants are widely used in air conditioning, process cooling and precision cooling applications.

Applied in the air conditioning industry in diverse applications including split systems, rooftops, packaged units and chillers, scroll compressors are now the most used compression technology replacing reciprocating and screw compressors due to its undeniable superiority. Several, fully Copeland™ qualified, multiple compressor assemblies (tandem and trio) are available to be used in large capacity systems to deliver optimal comfort, low operating cost with higher seasonal efficiency.

The range of products goes from ZR18 (1.5HP) to ZR380 (30HP) in single compressor applications and to 60/90 HP in Tandem/trio applications in single module.

Features and benefits

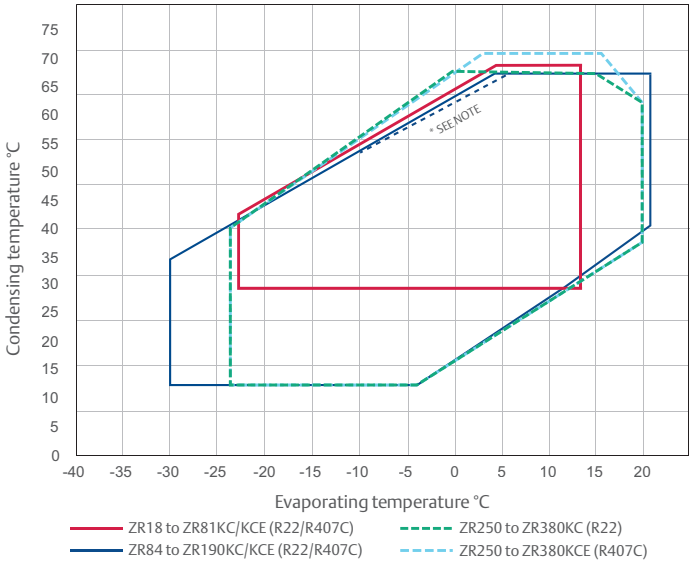
- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- Wide scroll line-up
- Low oil circulation rate
- Superior liquid handling capability
- Low sound and vibration level
- Low Life Cycle Climate Performance (LCCP)
- Copeland qualified tandem and trio configurations for superior seasonal efficiency

Maximum allowable pressure (PS)

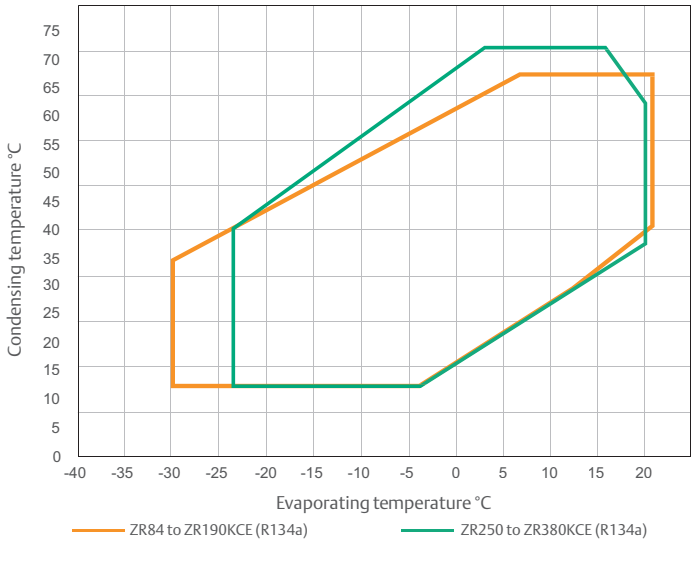
- ZR18 to ZR81: Low Side PS 20 bar(g) / High Side PS 29.5 bar(g)
- ZR84 to ZR380: Low Side PS 20 bar(g) / High Side PS 32 bar(g)

Operating envelopes

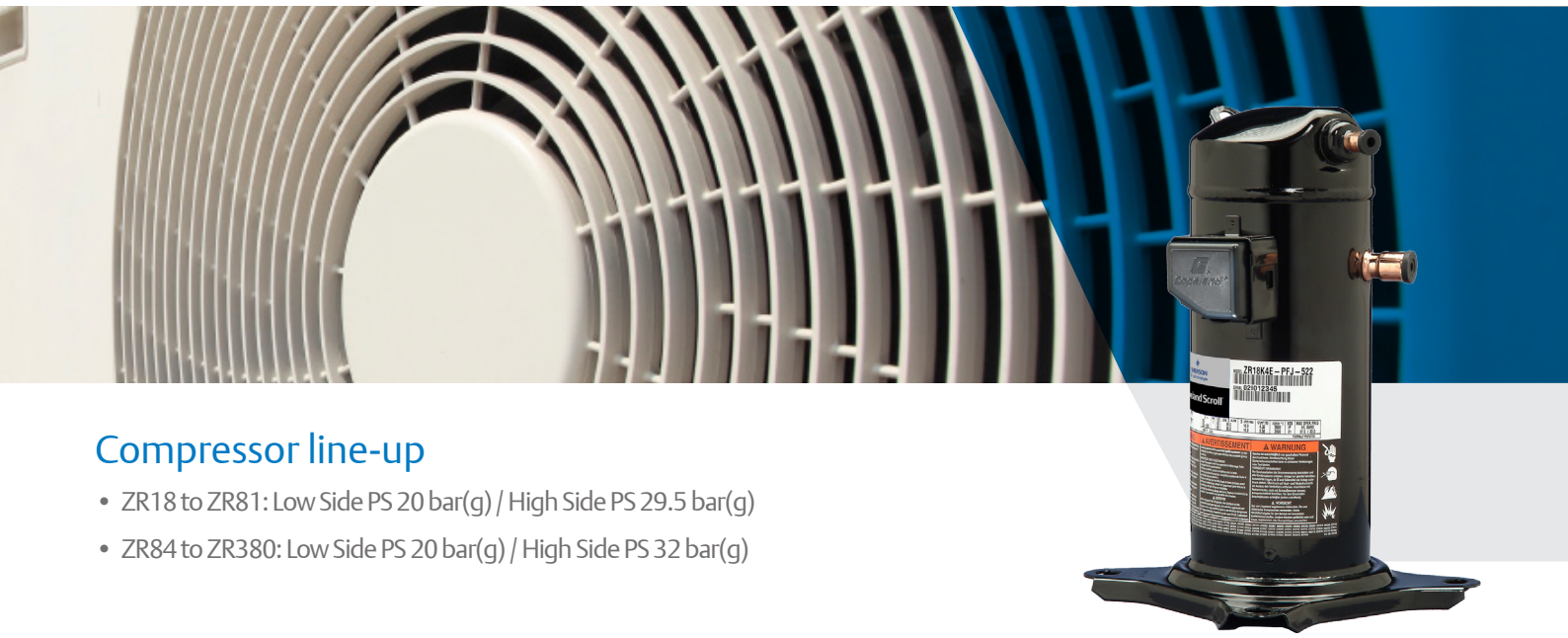
R22 and R407C



R134a



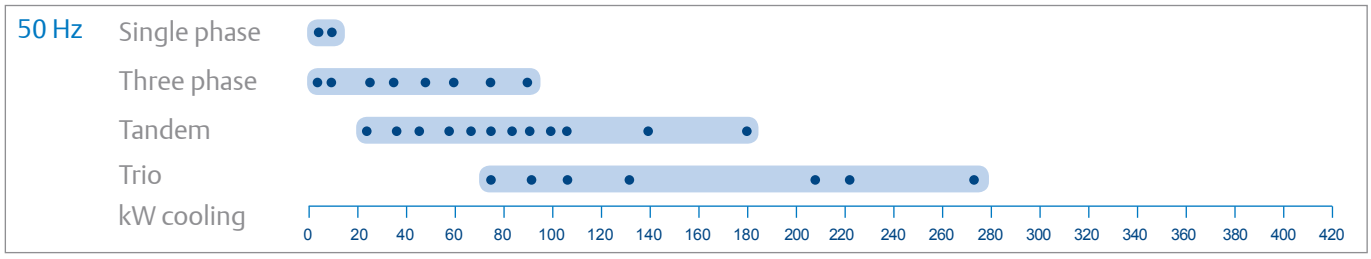
Note:
Dashed blue line indicates the reduced envelope for the ZR144 when operating with R407C

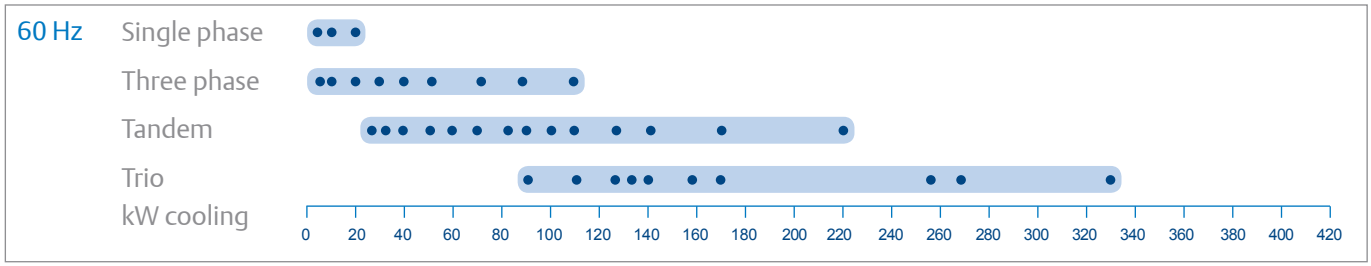


Compressor line-up

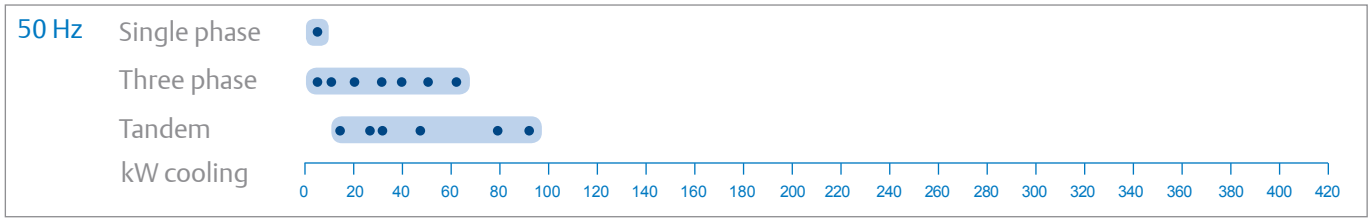
- ZR18 to ZR81: Low Side PS 20 bar(g) / High Side PS 29.5 bar(g)
- ZR84 to ZR380: Low Side PS 20 bar(g) / High Side PS 32 bar(g)

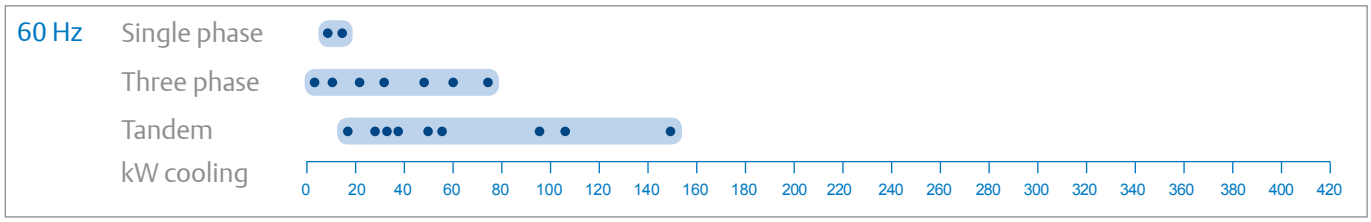
R22/R407C





R134a





Technical overview

R22

220-240V ; 50Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR22K3 PFJ	1.8	5,350	18,200	1,730	8.0	3.08	10.5	30.7	1.12	25.9	47.0	65
ZR24K3 PFJ	2.0	5,900	20,200	1,920	9.2	3.08	10.5	34.0	1.12	25.0	58.0	65
ZR26K3 PFJ	2.2	6,350	21,700	2,010	9.5	3.17	10.8	36.1	1.12	27.2	60.0	65
ZR28KM PFZ	2.3	6,750	23,000	2,020	9.2	3.34	11.4	37.2	0.77	19.4	52.9	63
ZR30KM PFZ	2.5	7,350	25,000	2,190	10.1	3.34	11.4	40.5	0.77	19.3	52.9	63
ZR30KS PFZ	2.5	7,350	25,000	2,230	10.2	3.28	11.2	41.0	0.74	22.1	60.0	68
ZR32KS PFZ	2.7	7,900	27,000	2,410	10.9	3.28	11.2	44.3	0.74	22.1	66.0	68
ZR34K3 PFJ	2.8	8,250	28,100	2,550	12.1	3.22	11.0	46.2	1.24	28.6	76.0	68
ZR34KH PFJ	2.8	8200	28000	2520	13.6	3.25	11.1	46.2	1.04	30.4	100.0	66
ZR36K3 PFJ	3.0	8,850	30,200	2,720	13.1	3.25	11.1	49.5	1.24	29.5	82.0	68
ZR36KH PFJ	3.0	8900	30300	2730	13.6	3.25	11.1	49.5	1.24	30.4	100.0	68
ZR39KH PFJ	3.3	9850	33600	3000	14.6	3.28	11.2	54.2	1.24	30.4	114.0	68
ZR40K3 PFJ	3.3	9,750	33,300	3,000	14.7	3.25	11.1	54.2	1.24	27.9	100.0	68
ZR42K3 PFJ	3.5	10,250	35,000	3,150	15.2	3.25	11.1	57.2	1.24	30.4	97.0	68
ZR42KH PFZ	3.5	10,250	35000	3150	15.8	3.25	11.1	57.2	1.2	31.3	114.0	68
ZR45K3 PFJ	3.8	11,200	38,200	3,380	16.4	3.31	11.3	61.1	1.24	32.2	114.0	68
ZR47K3 PFJ	3.9	11,550	39,400	3,460	16.8	3.34	11.4	63.3	1.24	31.3	114.0	68
ZR48K3 PFJ	4.0	11,850	40,500	3,630	17.6	3.28	11.2	65.5	1.24	31.3	114.0	68
ZR61KC PFZ	5.1	14,950	51,000	4,550	21.7	3.28	11.2	82.6	1.66	42.6	150.0	71
ZR68KC PFJ	5.7	16,700	57,000	5,130	24.5	3.25	11.1	93.0	1.83	40.4	150.0	72

208-230V ; 60Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR18K5 PFV	1.5	5,300	18,000	1,705	7.8	3.09	10.6	25.2	0.74	22.2	55.0	68
ZR20KH PFB	1.6	5840	19900	1810	8.3	3.23	11.0	26.7	0.77	20.0	60.0	66
ZR22K3 PFV	1.8	6,550	22,400	2,090	9.0	3.14	10.7	30.7	1.12	25.9	56.0	68
ZR24K3 PFV	2.0	7,200	24,500	2,230	10.3	3.22	11.0	34.0	1.12	26.3	61.0	68
ZR26K3 PFV	2.2	7,800	26,600	2,440	11.1	3.19	10.9	36.1	1.12	26.8	67.0	68
ZR28KC PFV	2.3	8,500	29,000	2,620	12.0	3.22	11.0	39.3	1.12	26.7	73.0	68
ZR28KH PFB	2.3	8240	28100	2450	10.9	3.34	11.4	37.2	0.77	19.4	61.5	66
ZR28KM PFV	2.3	8,250	28,100	2,450	10.9	3.34	11.4	37.2	0.77	19.4	61.5	66
ZR30K3 PFV	2.5	9,100	31,100	2,800	12.6	3.25	11.1	42.0	1.24	28.1	73.0	68
ZR32K3 PFV	2.7	9,550	32,600	2,960	13.6	3.22	11.0	43.4	1.24	28.7	83.0	71
ZR34K3 PFV	2.8	10,100	34,400	3,060	14.1	3.28	11.2	46.2	1.24	28.5	88.0	71
ZR34KH PFJ	2.7	9850	33600	3020	13.6	3.25	11.1	46.2	1.04	36.3	102.0	71
ZR36K3 PFV	3.0	10,800	36,900	3,290	14.9	3.28	11.2	49.5	1.24	29.0	95.0	71
ZR36KH PFJ	3.0	10640	36300	3280	12.7	3.25	11.1	49.5	1.24	27.2	96.0	71
ZR39KH PFJ	3.3	11820	40300	3600	14.0	3.28	11.2	54.2	1.24	30.4	113.0	71
ZR40K3 PFV	3.3	11,900	40,600	3,630	16.8	3.28	11.2	54.2	1.24	29.7	104.0	71
ZR42K3 PFV	3.5	12,550	42,800	3,790	17.2	3.31	11.3	57.2	1.24	30.4	109.0	71
ZR47K3 PFV	3.9	14,150	48,200	4,190	18.2	3.37	11.5	63.3	1.24	31.3	137.0	71
ZR48K3 PFV	4.0	14,600	49,800	4,330	19.5	3.37	11.5	65.6	1.24	32.2	137.0	71
ZR54K3 PFV	4.5	16,100	55,000	4,830	21.4	3.34	11.4	73.2	1.66	43.1	148.0	74
ZR57K3 PFV	4.8	17,000	58,000	5,040	23.6	3.37	11.5	77.2	1.66	40.8	148.0	74
ZR61K3 PFV	5.1	18,200	62,000	5,450	24.8	3.34	11.4	82.6	1.66	40.8	148.0	74
ZR68KC PFV	5.7	20,400	69,500	6,200	28.0	3.28	11.2	93.0	1.77	40.4	176.0	74

Technical overview

R22

380-420V ; 50Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR22K3 TFD	1.8	5,350	18,200	1,770	3.2	3.0	10.3	30.7	1.1	24.5	24.0	65.0
ZR24K3 TFD	2.0	5,900	20,200	1,920	3.5	3.1	10.5	34.0	1.1	25.0	26.0	65.0
ZR26K3 TFD	2.2	6,350	21,700	2,010	3.8	3.2	10.8	36.1	1.1	26.8	26.0	65.0
ZR28K3 TFD	2.3	6,900	23,600	2,150	4.0	3.2	11.0	39.3	1.1	25.4	32.0	65.0
ZR30K3 TFD	2.5	7,400	25,200	2,290	4.2	3.2	11.0	42.0	1.2	25.9	32.0	65.0
ZR32K3 TFD	2.7	7,750	26,500	2,430	4.4	3.2	10.9	43.4	1.2	26.3	35.0	68.0
ZR34K3 TFD	2.8	8,250	28,100	2,500	4.6	3.3	11.2	46.2	1.2	26.9	40.0	68.0
ZR34KH TFD	2.8	8,200	28,000	2,480	4.7	3.3	11.3	46.2	1.0	36.3	40.0	68.0
ZR36K3 TFD	3.0	8,850	30,200	2,700	4.8	3.3	11.2	49.5	1.2	27.2	40.0	68.0
ZR36KH TFD	3.0	8,880	30,300	2,680	4.7	3.3	11.3	49.5	1.1	30.0	40.0	68.0
ZR39KH TFD	3.3	9,850	33,600	2,950	5.3	3.3	11.4	54.2	1.1	30.4	46.0	68.0
ZR40K3 TFD	3.3	9,750	33,300	2,970	5.3	3.3	11.2	54.2	1.2	28.1	46.0	68.0
ZR42K3 TFD	3.5	10,250	35,000	3,110	5.5	3.3	11.3	57.2	1.2	28.2	46.0	68.0
ZR44K5 TFD	3.7	10,600	36,100	3,280	5.4	3.2	11.0	58.4	1.2	28.9	41.0	70.0
ZR45KC TFD	3.8	11,100	37,900	3,320	6.1	3.3	11.4	61.1	1.4	28.1	48.0	68.0
ZR47KC TFD	3.9	11,550	39,400	3,430	6.3	3.4	11.5	64.2	1.4	28.1	48.0	68.0
ZR48KC TFD	4.0	11,850	40,500	3,600	6.1	3.3	11.2	65.5	1.4	28.1	50.0	68.0
ZR48KE TFM	3.9	11,870	40,500	3,580	6.1	3.3	11.3	65.5	1.4	29.9	48.0	68.0
ZR54KE TFD	4.5	13,200	45,000	3,920	7.4	3.4	11.5	73.1	1.4	29.9	71.3	69.0
ZR54KS TFD	4.5	13,200	45,000	3,920	7.1	3.4	11.5	73.1	1.2	29.9	56.0	69.0
ZR57KE TFD	4.8	13,900	47,500	4,130	7.8	3.4	11.5	77.2	1.4	28.6	71.3	69.0
ZR57KE TFM	4.6	13,930	47,500	4,130	7.8	3.4	11.5	77.2	1.4	28.6	71.3	69.0
ZR57KS TFD	4.8	14,050	48,000	4,170	7.5	3.4	11.5	77.2	1.2	30.0	56.0	69.0
ZR61KE TFD	5.1	14,950	51,000	4,470	8.3	3.3	11.4	82.6	1.4	29.9	58.0	69.0
ZR61KH TFD	4.9	14,980	51,100	4,440	7.8	3.4	11.5	82.6	1.8	27.2	67.0	72.0
ZR61KS TFD	5.1	14,950	51,000	4,430	7.9	3.4	11.5	82.6	1.2	29.9	59.0	69.0
ZR68KC TFD	5.7	16,900	57,500	4,960	8.6	3.4	11.6	93.0	1.8	39.0	74.0	72.0
ZR72KC TFD	6.0	17,700	60,500	5,200	8.9	3.4	11.7	98.1	1.8	38.6	74.0	72.0
ZR72KC TFM	5.9	17,740	60,500	5,200	8.9	3.4	11.7	98.1	1.8	38.6	74.0	72.0
ZR81KC TFD	6.8	19,900	68,000	5,810	10.5	3.4	11.7	107.8	1.8	39.0	101.0	72.0
ZR84KC TFD	7.0	20,800	71,000	6,000	11.4	3.5	11.8	113.6	2.5	57.2	100.0	74.0
ZR94KC TFD	7.8	23,300	79,500	6,750	12.5	3.5	11.8	127.2	2.5	57.2	95.0	73.0
ZR108KC TFD	9.0	26,400	90,000	7,550	13.7	3.5	12.0	142.9	3.3	59.9	111.0	74.0
ZR125KC TFD	10.4	31,000	106,000	9,000	15.8	3.5	11.8	167.2	3.3	61.2	118.0	75.0
ZR144KC TFD	12.0	35,000	120,000	10,100	17.6	3.5	11.9	190.9	3.3	61.2	118.0	76.0
ZR160KC TFD	13.3	38,000	130,000	11,300	20.3	3.4	11.5	209.1	3.3	64.9	140.0	79.0
ZR190KC TFD	15.8	45,500	155,000	13,600	25.6	3.3	11.4	249.2	3.3	66.2	174.0	82.0
ZR250KC TWD	20.8	60,000	204,000	17,700	29.6	3.4	11.5	325.2	4.7	139.3	225.0	83.0
ZR310KC TWD	25.8	74,000	253,000	22,000	37.9	3.4	11.5	410.6	6.8	160.1	272.0	85.0
ZR380KC TWD	31.7	92,500	315,000	26,500	45.1	3.5	11.9	502.7	6.3	176.9	310.0	88.0

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

Technical overview

R22

460V / 200-230V / 380V ; 60 Hz , 3 Phase

Model		Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
			(W)	(Btu/h)									
ZR22K3	TFD	1.8	6,500	22,100	2090	3.2	3.11	10.6	30.7	1.12	24.5	22.4	68
	TF5				2080	6	3.14	10.7				45	
ZR24K3	TFD	2	7250	24,800	2310	3.5	3.14	10.7	34	1.12	25	27	68
	TF5					7						55	
ZR26K3	TFD	2.2	7700	26,200	2430	3.8	3.17	10.8	36.1	1.12	26.8	27	68
	TF5		7750	26,500	2450	7						55	
ZR28K3	TFD	2.3	8450	28,900	2630	4	3.22	11	39.3	1.12	25.4	31	68
	TF5					7.9						63	
ZR30K3	TFD	2.5	9100	31,100	2830	4.2	3.22	11	42	1.24	25.9	31	68
	TF5					8.3						63	
ZR32K3	TFD	2.7	9,550	32,600	2,910	4.4	3.28	11.2	43.4	1.24	26.3	35	71
	TF5					8.7						77	
ZR34K3	TFD	2.8	9,950	34,000	2,970	4.6	3.34	11.4	46.2	1.24	26.9	39	71
	TF5				2,970	9.1	3.34	11.4			26.9	77	
	TF7				3,200	5.4	3.11	10.6			31.3	39	
ZR34KH	TFD	2.8	9850	33600	2980	4.7	3.31	11.3	46.2	1.0	36.3	39	71
ZR36K3	TFD	3	10,800	36,900	3,250	4.9	3.31	11.3	49.5	1.24	27.2	39	71
	TF5					9.7					27.3	77	
ZR36KH	TFD	3.0	10640	36300	3220	4.9	3.31	11.3	49.5	1.2	13.6	39	71
ZR39KH	TFD	3.4	11820	40300	3470	5.3	3.40	11.6	54.2	1.2	30.4	44	71
ZR40K3	TFD	3.3	11,900	40,600	3,560	5.4	3.34	11.4	54.2	1.24	28.1	44	71
	TF5					10.7					27.9	88	
ZR42K5	TFD	3.5	12,350	42,200	3,750	5.7	3.3	11.3	56.5	1.24	27.6	48	73
	TF5					11.3					27.7	93	
ZR45KC	TFD	3.8	13,500	46,000	4,000	6.1	3.37	11.5	61.1	1.36	28.1	46	71
	TF5					12.1						91	
ZR47KC	TFD	3.9	13,900	47,500	4,130	6.1	3.37	11.5	64.2	1.36	28.1	46	71
	TF5					12.2			64.2			91	
	TF7					7.4			63.4			54	
ZR48KC	TFD	4	14,400	49,100	4,270	6.3	3.37	11.5	65.5	1.36	28.1	50	71
	TF5					12.6						91	
	TF7					7.6						54	
ZR54KE	TFD	4.5	16,100	55,000	4,780	7.6	3.37	11.5	73.1	1.36	29.9	74.8	72
	TF5		16,900	57,500	4,960	15.3						137	
ZR54KS	TFD	4.5	16,000	54,500	4,670	7.2	3.4	11.6	73.1	1.24	29.9	59	72
	TF5				4,670	14.3						125	
	TF7				4,700	8.3						65	
ZR54K5	TFD	4.5	15,700	53,500	4,740	6.8	3.31	11.3	72	1.24	31	52	73
	TF5				4,740	13.6						114	
	TF7				4,730	7.9						65	
ZR57KE	TFD	4.8	17,100	58,400	5,040	8	3.4	11.6	77.2	1.36	28.6	74.8	72
ZR57KS	TFD	4.8	17,100	58,500	5,050	7.5	3.4	11.6	77.2	1.24	29.9	59	72
	TF5				5,050	15	3.4	11.6				125	
	TF7				5,100	8.9	3.37	11.5				65	
ZR61KE	TFD	5.1	18,300	62,500	5,390	8.4	3.4	11.6	82.6	1.36	29.9	74.8	69

460V / 200-230V / 380V ; 60 Hz , 3 Phase (continuation)

Model		Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
			(W)	(Btu/h)									
	TFD					7.9						56	
ZR61KS	TF5	5.1	18,200	62,000	5,350	15.8	3.4	11.6	82.6	1.24	29.9	125	72
	TF7					9.2						65	
ZR61KH	TFD	5.2	18120	61800	5430	8.1	3.34	11.4	82.6	1.8	27.2	68	75
	TFD					8.8						75	
ZR68KC	TF5	5.7	20,500	70,000	5,950	17.5	3.46	11.8	93	1.77	39	156	75
	TF7					10.1						70	
	TFD					9.1						75	
ZR72KC	TF5	6	21,500	73,500	6,250	18.2	3.43	11.7	98.1	1.77	38.6	156	75
	TF7					10.5						70	
	TFD					11						100	
ZR81KC	TF5	6.8	24,000	82,000	6,950	20.8	3.46	11.8	107.8	1.77	39	164	75
	TF7					11.8						100	
	TFD					11.4						100	
ZR84KC	TF5	7	25,100	85,500	7,300	22.8	3.46	11.8	113.6	2.51	57.2	196	78
	TF7					13.8						135	
	TFD					12.8					57.2	95	
ZR94KC	TF5	7.8	28,300	96,500	8,200	24.9	3.46	11.8	127.2	2.51	56.7	195	78
	TF7					15.1					57.2	123	
	TFD					14.1					59.9	114	
ZR108KC	TF5	9	32,000	109,000	9,200	28.2	3.49	11.9	142.9	3.25	59.9	225	80
	TF7					17.1					60.3	140	
	TFD					16.3						125	
ZR125KC	TF5	10.4	37,500	128,000	10,900	32.6	3.43	11.7	167.2	3.25	61.2	239	80
	TF7					19.7						145	
	TFD					18.2						125	
ZR144KC	TF5	12	43,000	146,000	12,300	38.3	3.46	11.8	190.9	3.25	61.2	245	80
	TF7					22.5						145	
	TFD		47,000	160,000		20.8	3.37	11.5				150	
ZR160KC	TF7	13.3	45,500	155,000	13,900	24.2	3.28	11.2	209.1	3.25	64.9	138	83
	TWD		47,000	160,000		20.8	3.37	11.5				150	
ZR160KC	TW5	13.3	47,000	160,000	13,900	43.2	3.37	11.5	209.1	3.25	66.2	300	83
	TW7					24.2					64.9	139	
	TFD					26.5						179	
ZR190KC	TWD	15.8	55,500	190,000	16,800	26.5	3.34	11.4	249.2	3.25	66.2	173	83
	TW5					53.2						340	
	TW7					32						196	
	TWD					30.5			325.2		139.3	225	
ZR250KC	TW5	20.8	73,500	250,000	21,700	66.6	3.37	11.5	325.2	4.67	138.8	505	88
	TW7					36.9			318.1		139.3	280	
	TWD					38.8						272	
ZR310KC	TW5	25.8	89,500	306,000	27,100	81.6	3.31	11.3	410.6	6.8	160.1	605	90
	TW7					47						353	
	TWD					47.1						310	
ZR380KC	TW5	31.7	111,000	379,000	32,700	94.2	3.4	11.6	502.7	6.3	176.9	599	92
	TW7					57						358	

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

Technical overview

R407C

220-240V ; 50Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR18K5E PFJ	1.5	4,200	14,400	1,455	7	2.9	9.9	25.2	0.74	22.4	45	65
ZR22K3E PFJ	1.8	5,100	17,400	1,740	8.1	2.93	10	30.7	1.12	25.9	47	65
ZR24K3E PFJ	2	5,700	19,400	1,940	9.2	2.93	10	34	1.12	25	58	65
ZR26K3E PFJ	2.2	6,050	20,600	2,010	9.6	2.99	10.2	36.1	1.12	27.2	60	65
ZR28K3E PFJ	2.3	6,650	22,700	2,190	10.4	3.02	10.3	39.3	1.12	27.2	61	65
ZR30K3E PFJ	2.5	7,100	24,300	2,330	11.2	3.05	10.4	42	1.24	28.1	74	65
ZR34K3E PFJ	2.8	7,900	27,000	2,580	12.3	3.05	10.4	46.2	1.24	28.6	76	68
ZR36K3E PFJ	3	8,450	28,800	2,740	13.1	3.08	10.5	49.5	1.24	29.5	82	68
ZR40K3E PFJ	3.3	9,300	31,800	3,040	14.3	3.08	10.5	54.2	1.24	28	100	68
ZR42K3E PFJ	3.5	9,750	33,200	3,150	15.2	3.11	10.6	57.2	1.24	30.4	97	68
ZR45K3E PFJ	3.8	10,400	35,500	3,360	16.6	3.11	10.6	61.1	1.24	32.2	114	68
ZR47K3E PFJ	3.9	10,950	37,400	3,480	16.9	3.14	10.7	63.3	1.24	31.3	114	68
ZR48K3E PFJ	4	11,400	38,900	3,610	17.3	3.17	10.8	65.5	1.24	31.3	114	68
ZR68KCE PFJ	5.7	15,700	53,500	5,200	25.1	3.02	10.3	93	1.83	40.4	150	72

208-230V ; 60Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR18K5E PFV	1.5	5,050	17,300	1,750	7.6	2.89	9.9	25.2	0.74	22.2	55.0	57.0
ZR21K5E PFV	1.8	5,900	20,200	2,040	8.7	2.90	9.9	29.0	0.74	21.3	56.0	57.0
ZR24K3E PFV	2.0	6,850	23,400	2,260	10.2	3.02	10.3	34.0	1.12	26.3	61.0	57.0
ZR28K3E PFV	2.3	7,950	27,200	2,600	11.7	3.08	10.5	39.3	1.12	26.7	72.5	57.0
ZR30K3E PFV	2.5	8,550	29,200	2,760	12.4	3.11	10.6	42.0	1.24	28.1	73.0	57.0
ZR34K3E PFV	2.8	9,550	32,600	3,060	13.8	3.11	10.6	46.2	1.24	28.5	88.0	60.0
ZR36K3E PFV	3.0	10,250	34,900	3,260	14.9	3.14	10.7	49.5	1.24	29.0	95.0	60.0
ZR40K3E PFV	3.3	11,300	38,500	3,580	16.6	3.17	10.8	54.2	1.24	29.7	104.0	60.0
ZR48K3E PFV	4.0	13,850	47,200	4,410	20.3	3.14	10.7	65.6	1.24	32.2	137.0	60.0
ZR61KCE PFV	5.1	17,700	60,050	5,300	24.8	3.34	11.4	82.6	1.66	39.5	144.0	63.0
ZR68KCE PFV	5.7	19,000	65,000	6,050	27.5	3.14	10.7	93.0	1.77	40.4	176.0	64.0

380-420V ; 50Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR22K3E TFD	1.8	5,150	17,500	1,670	3.1	3.1	10.5	30.7	1.12	24.6	24.0	65
ZR24K3E TFD	2.0	5,700	19,400	1,920	3.7	3.0	10.1	34.0	1.12	25.0	26.0	65
ZR26K3E TFD	2.2	6,400	21,800	2,190	4.1	2.9	10.0	36.1	1.12	26.8	26.0	65
ZR28K3E TFD	2.3	6,650	22,700	2,140	3.9	3.1	10.6	39.3	1.12	25.4	32.0	65
ZR30K3E TFD	2.5	7,400	25,200	2,270	4.4	3.3	11.1	42.0	1.24	25.9	32.0	65

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

Technical overview

R407C

380-420V ; 50Hz , 3 Phase (continuation)

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR32K3E TFD	2.7	7,400	25,200	2,410	7.6	3.1	10.4	43.4	1.24	26.3	35.0	68
ZR34K3E TFD	2.8	7,900	27,000	2,530	4.7	3.1	10.7	46.2	1.24	26.9	40.0	68
ZR36K3E TFD	3.0	8,450	28,800	2,700	4.8	3.1	10.7	49.5	1.24	27.2	40.0	68
ZR38K5E TFD	3.2	8,800	30,000	2,900	5.4	3.0	10.4	50.9	1.24	27.5	47.0	70
ZR40K3E TFD	3.3	9,300	31,700	2,960	5.4	3.1	10.7	54.2	1.24	28.1	46.0	68
ZR42K3E TFD	3.5	9,750	33,300	3,110	5.3	3.1	10.7	57.2	1.24	28.2	46.0	68
ZR45KCE TFD	3.8	10,500	35,800	3,340	6.1	3.1	10.7	61.1	1.36	28.1	48.0	68
ZR47KCE TFD	3.9	10,950	37,400	3,440	6.5	3.2	10.9	64.2	1.36	28.1	48.0	71
ZR48KCE TFD	4.0	11,300	38,600	3,590	6.3	3.1	10.7	65.5	1.36	28.1	50.0	71
ZR48K5E TFD	4.0	11,200	38,300	3,450	6.2	3.3	11.1	63.4	1.24	29.1	60.0	70
ZR48KEE TFM	4.1	11280	38500	3500	6.1	3.2	11.0	65.6	1.36	30.0	48.0	68
ZR49K3E TFD	4.1	11,350	38,800	3,670	6.4	3.1	10.6	67.1	1.95	37.2	51.5	69
ZR54KSE TFD	4.5	13,350	45,600	4,190	7.4	3.2	10.9	73.1	1.24	29.9	56.0	69
ZR54K5E TFD	4.5	12,500	42,700	3,880	6.6	3.2	11.0	72.0	1.24	31.0	52.0	70
ZR54KEE TFM	4.5	12950	44200	3980	7.5	3.3	11.1	73.1	1.36	30.0	71.3	69
ZR57KSE TFD	4.8	14,250	48,700	4,450	7.8	3.2	10.9	77.2	1.24	30.0	56.0	72
ZR57KEE TFM	4.8	13570	46300	4220	7.8	3.2	11.0	77.2	1.36	30.0	71.3	69
ZR61KSE TFD	5.1	15,200	52,000	4,760	8.2	3.2	11.0	82.6	1.24	29.9	59.0	72
ZR61KHE TFM	5.1	14,350	48,900	4,470	8.0	3.2	10.9	82.6	1.77	39.5	67.0	72
ZR61KEE TFM	5.1	14650	50000	4550	8.2	3.2	11.0	82.6	1.36	30.0	71.3	69
ZR68KCE TFD	5.7	15,800	54,000	5,100	8.9	3.1	10.6	93.0	1.77	39.0	74.0	72
ZR72KCE TFD	6.0	16,600	56,500	5,150	9.1	3.2	11.0	98.1	1.77	38.6	74.0	72
ZR72KEE TFM	6.0	17870	61000	5250	9.2	3.4	11.6	98.1	1.77	39.0	73.0	72
ZR81KCE TFD	6.8	18,600	63,500	5,900	10.9	3.2	10.8	107.8	1.77	39.0	101.0	72
ZR84KCE TFD	7.0	19,600	67,000	6,150	11.4	3.2	10.9	113.6	2.51	57.2	100.0	79
ZR94KCE TFD	7.8	23,000	78,600	6,950	12.9	3.3	11.4	127.2	2.51	57.2	95.0	74
ZR108KCE TFD	9.0	25,800	88,100	7,580	13.8	3.4	11.6	142.9	3.25	59.9	111.0	74
ZR125KCE TFD	10.4	30,000	103,000	8,950	16.0	3.4	11.6	167.2	3.25	61.2	118.0	74
ZR144KCE TFD	12.0	34,500	118,000	10,150	17.7	3.4	11.6	190.9	3.25	61.2	118.0	75
ZR160KCE TFD TWD	13.3	37,500	128,000	11,450	20.5	3.3	11.2	209.1	3.25	64.9	140.0	78
ZR190KCE TFD TWD	15.8	44,000	150,000	13,650	26.5	3.2	11.0	249.2	3.25	66.2	174.0	82
ZR250KCE TWD	20.8	58,500	200,000	18,000	30.1	3.3	11.1	325.2	4.67	139.3	225.0	83
ZR310KCE TWD	25.8	72,500	248,000	22,300	37.9	3.3	11.1	410.6	6.80	160.1	272.0	85
ZR380KCE TWD	31.7	91,500	313,000	26,700	45.5	3.4	11.7	502.7	6.30	176.9	310.0	88

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

460V / 200-230V / 380V / 208-230V ; 60Hz , 3 Phase

Model		Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
			(W)	(Btu/h)									
ZR22K3E	TFD TF5	1.8	6,100 6,200	20,800 21,100	2,110 2,090	3.3 8.9	2.87 2.96	9.8 10.1	30.7	1.12	24.5	22.4 45.0	57.0
ZR24K3E	TFD TF5	2.0	7,200 6,900	24,600 23,500	2,240 2,190	1.7 7.2	3.22 3.14	11.0 10.7	34.0	1.12	25.0	27.0 55.0	57.0
ZR26K3E	TFD TF5	2.2	7,750 7,700	26,400 26,200	2,470 2,490	3.7 7.0	3.14 3.08	10.7 10.5	36.1	1.12	26.8	27.0 55.0	57.0
ZR28K3E	TFD TF5	2.3	8,000	27,300	2,530	3.9 7.8	3.17	10.8	39.3	1.12	25.4	31.0 63.0	57.0
ZR30K3E	TFD TF5	2.5	8,500	29,000	2,750	4.3 8.5	3.08	10.5	42.0	1.24	25.9	31.0 63.0	57.0
ZR32K3E	TFD TF5	2.7	9,000	30,700	2,850	4.4 8.7	3.17	10.8	43.4	1.24	26.3	35.0 77.0	60.0
ZR34K3E	TFD TF5 TF7	2.8	9,650	33,000	3,010 3,010 3,320	4.6 9.2 5.4	3.22 3.22 2.90	11.0 11.0 9.9	46.2	1.24	26.9 26.9 31.3	39.0 77.0 39.0	60.0
ZR36K3E	TFD TF5	3.0	10,250	34,900	3,180	4.9 9.7	3.22	11.0	49.5	1.24	27.2 27.3	39.0 77.0	60.0
ZR40K3E	TFD TF5	3.3	11,200	38,300	3,490	5.4 10.7	3.22	11.0	54.2	1.24	28.1 27.9	44.0 88.0	60.0
ZR42K3E	TFD TF5	3.5	11,800	40,200	3,730	5.5 11.0	3.17	10.8	57.2	1.24	28.2 28.1	44.0 88.0	60.0
ZR47KCE	TFD TF5	3.9	13,050	44,600	4,150	6.2 12.4	3.14	10.7	64.2	1.36	28.1	46.0 91.0	60.0
ZR48KCE	TFD TF5 TF7	4.0	13,750	47,000	4,330	6.3 12.6 7.6	3.19	10.9	65.5	1.36	28.1	50.0 91.0 54.0	60.0 64.0 60.0
ZR54KCE	TF7	4.5	15,800	54,000	4,880	9.0	3.25	11.1	73.2	1.95	37.2	65.8	63.0
ZR54KSE	TFD TF5	4.5	16,100	55,000	5,050 4,970	7.6 14.7	3.19 3.25	10.9 11.1	73.1	1.24	29.9	59.0 125.0	61.0
ZR57KSE	TFD TF5	4.8	17,100	58,500	5,350	8.0 15.7	3.19	10.9	77.2	1.24	29.9	59.0 125.0	64.0 61.0
ZR61KCE	TF7	5.1	17,100	58,500	5,300	9.2	3.25	11.1	82.6	1.95	36.3	64.0	63.0
ZR61KSE	TFD TF5	5.1	17,400 18,300	59,500 62,500	5,450 5,750	8.0 16.5	3.22 3.19	11.0 10.9	82.6	1.24	29.9	56.0 125.0	64.0 61.0
ZR68KCE	TFD TF5	5.7	19,200	65,500	6,000	9.2 18.4	3.19	10.9	93.0	1.77	39.0	75.0 156.0	64.0
ZR72KCE	TFD TF5 TF7	6.0	20,400	69,500	6,200	8.8 18.1 10.7	3.28	11.2	98.1	1.77	38.6	75.0 156.0 70.0	64.0

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

460V / 200-230V / 380V / 208-230V ; 60Hz , 3 Phase (continuation)

Model		Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
			(W)	(Btu/h)									
ZR81KCE	TFD TF5 TF7	6.8	22,600	77,000	7,150	11.0 21.9 13.3	3.17	10.8	107.8	1.77	39.0	100.0 164.0 100.0	64.0
ZR84KCE	TFD TF5 TF7	7.0	23,900	81,500	7,300	11.6 23.2 14.0	3.28	11.2	113.6	2.51	57.2	100.0 196.0 135.0	71.0
ZR94KCE	TFD TF5 TF7	7.8	27,500	94,000	8,310	12.8 25.6 15.5	3.34	11.4	127.2	2.51	57.2 56.7 57.2	95.0 195.0 123.0	68.0
ZR108KCE	TFD TF5 TF7	9.0	31,000	106,000	9,220	14.0 28.0 17.0	3.37	11.5	142.9	3.25	59.9 59.9 60.3	114.0 225.0 140.0	69.0
ZR125KCE	TFD TF5 TF7	10.4	36,500	125,000	10,850	16.3 32.6 19.8	3.40	11.6	167.2	3.25	61.2	125.0 239.0 145.0	69.0
ZR144KCE	TFD TF5 TF7	12.0	41,500	142,000	12,350	18.2 36.3 22.0	3.40	11.6	190.9	3.25	61.2	125.0 245.0 145.0	69.0
ZR160KCE	TFD TF7	13.3	45,000	154,000	13,850	20.8 25.1	3.28	11.2	209.1	3.25	64.9	150.0 138.0	71.0
ZR160KCE	TWD TW5 TW7	13.3	45,000	154,000	13,850	20.8 41.5 25.1	3.28	11.2	209.1	3.25	64.9 66.2 64.9	150.0 300.0 139.0	71.0
ZR190KCE	TFD	15.8	53,000	181,000	16,650	26.2	3.19	10.9	249.2	3.25	66.2	179.0	72.0
ZR190KCE	TWD TW5 TW7	15.8	53,000	181,000	16,650	26.2 52.4 31.7	3.19	10.9	249.2	3.25	66.2	173.0 340.0 196.0	72.0
ZR250KCE	TWD TWC TW7	20.8	70,500	240,000	21,700	31.1 67.8 37.6	3.25	11.1	325.2 325.2 318.1	4.67	139.3 138.8 139.3	225.0 505.0 280.0	77.0
ZR310KCE	TWD TWC TW7	25.8	87,000	297,000	27,500	39.0 82.0 47.2	3.17	10.8	410.6	6.80	160.1	272.0 605.0 353.0	79.0
ZR380KCE	TWD TWC TW7	31.7	109,500	374,000	32,800	47.3 94.6 57.3	3.34	11.4	502.7	6.30	176.9	310.0 599.0 358.0	81.0

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

Technical overview

R134a

220-240V ; 50Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR22K3E PFJ	1.8	3,500	12,000	1,190	5.5	2.96	10.1	30.7	1.12	25.9	47.0	54.0
ZR28K3E PFJ	2.3	4,700	16,000	1,510	7.4	3.11	10.6	39.3	1.12	27.2	61.0	54.0
ZR34K3E PFJ	2.8	5,600	19,100	1,780	8.8	3.14	10.7	46.2	1.24	28.6	76.0	57.0
ZR40K3E PFJ	3.3	6,450	22,000	2,170	11.5	2.96	10.1	54.2	1.24	27.9	100.0	57.0
ZR47K3E PFJ	3.9	7,950	27,200	2,620	16.2	3.05	10.4	63.3	1.24	31.3	114.0	57.0
ZR48K3E PFJ	4.0	8,150	27,800	2,670	16.5	3.05	10.4	65.5	1.24	31.3	114.0	57.0

208-230V ; 60Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR40K3E PFV	3.3	7,950	27,100	2,550	12.2	3.11	10.6	54.2	1.24	29.7	104.0	60.0
ZR61KCE PFV	5.1	12,200	41,700	3,590	20.4	3.40	11.6	82.6	1.66	39.5	144.0	63.0
ZR68KCE PFV	5.7	13,750	46,900	4,420	22.2	3.11	10.6	93.0	1.77	40.4	176.0	64.0

380-420V ; 50Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZR22K3E TFD	1.8	3,600	12,300	1,230	2.4	2.93	10.0	30.7	1.12	24.5	24.0	54.0
ZR28K3E TFD	2.3	4,750	16,200	1,570	3.2	3.02	10.3	39.3	1.12	25.4	32.0	54.0
ZR34K3E TFD	2.8	5,550	18,900	1,830	3.7	3.02	10.3	46.2	1.24	26.9	40.0	57.0
ZR36K3E TFD	3.0	5,400	18,500	1,992	3.8	2.72	9.3	49.5	1.24	27.2	40.0	57.0
ZR40K3E TFD	3.3	6,500	22,100	2,090	4.1	3.11	10.6	54.2	1.24	28.1	46.0	57.0
ZR48KCE TFD	4.0	7,900	26,900	2,420	4.8	3.25	11.1	65.5	1.36	28.1	50.0	60.0
ZR61KCE TFD	5.1	10,050	34,300	2,990	6.3	3.37	11.5	82.6	1.95	36.1	65.5	60.0
ZR81KCE TFD	6.8	13,300	45,400	4,010	8.6	3.31	11.3	107.8	1.77	39.0	101.0	61.0
ZR84KCE TFD	7.0	13,350	45,600	4,200	10.0	3.18	10.9	113.6	2.51	57.2	100.0	68.0
ZR94KCE TFD	7.8	15,700	53,500	4,710	10.4	3.33	11.4	127.2	2.51	57.2	95.0	63.0
ZR108KCE TFD	9.0	17,600	59,900	5,260	11.6	3.34	11.4	142.9	3.25	59.9	111.0	63.0
ZR125KCE TFD	10.4	20,500	70,000	6,150	12.2	3.34	11.4	167.2	3.25	61.2	118.0	63.0
ZR144KCE TFD	12.0	23,300	79,500	6,950	13.6	3.37	11.5	190.9	3.25	61.2	118.0	64.0
ZR160KCE TFD TWD	13.3	25,500	87,000	7,600	15.7	3.37	11.5	209.1	3.25	64.9	140.0	67.0
ZR190KCE TFD TWD	15.8	30,500	104,000	9,200	20.6	3.31	11.3	249.2	3.25	66.2	174.0 173.0	71.0
ZR250KCE TWD	20.8	40,000	137,000	12,200	22.6	3.28	11.2	325.2	4.67	139.3	225.0	72.0
ZR310KCE TWD	25.8	50,000	170,000	15,300	28.3	3.25	11.1	410.6	6.80	160.1	272.0	74.0
ZR380KCE TWD	31.7	63,000	215,000	18,800	35.6	3.34	11.4	502.7	6.30	176.9	310.0	77.0

Note:
All values as per AHRI standards: evaporating temp. : 7.2°C , condensing temp. : 54.4°C , subcooling : 8.3K , superheat : 11.1K , ambient temp. : 35°C

Technical overview

R134a

460V / 200-230V / 380V ; 60Hz , 3 Phase

Model		Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
			(W)	(Btu/h)									
ZR22K3E	TFD	1.8	4,350	14,800	1,480	2.9	2.93	10.0	30.7	1.12	24.5	22.4	57.0
ZR28K3E	TFD TF5	2.3	5,800	19,800	1,910	3.3 6.6	3.02	10.3	39.3	1.12	25.4	31.0 63.0	57.0
ZR34K3E	TFD	2.8	6,850	23,300	2,250	3.9	3.05	10.4	46.2	1.24	26.9	39.0	60.0
ZR36K3E	TFD	3.0	7,150	24,400	2,390	3.8	2.99	10.2	49.5	1.24	27.2	39.0	60.0
ZR40K3E	TFD	3.3	7,900	26,900	2,580	4.1	3.05	10.4	54.2	1.24	28.1	44.0	60.0
ZR48KCE	TFD	4.0	9,600	32,800	2,970	5.0	3.22	11.0	65.5	1.36	28.2	50.0	60.0
ZR48K3E	TFD TF5	4.0	9,500 9,650	32,500 32,900	3,090 2,990	5.0 9.8	3.08 3.22	10.5 11.0	65.5	1.36	28.1 32.7	50.0 91.0	60.0
ZR61KCE	TFD TF5	5.1	12,350 12,150	42,200 41,500	3,550 3,710	6.4 13.1	3.49 3.28	11.9 11.2	82.6	1.95	36.1 35.4	63.0 128.0	63.0
ZR68KCE	TFD	5.7	13,850	47,200	4,030	6.5	3.43	11.7	93.0	1.77	39.0	75.0	64.0
ZR81KCE	TFD TF5	6.8	16,100 16,000	55,000 54,500	4,950 4,760	8.9 16.0	3.25 3.37	11.1 11.5	107.8	1.77	39.0	100.0 164.0	64.0
ZR84KCE	TFD TF5 TF7	7.0	16,200	55,400	5,150	9.8 19.5 11.8	3.15	10.8	113.6	2.51	57.2	100.0 196.0 135.0	71.0
ZR94KCE	TFD TF5 TF7	7.8	18,800	64,000	5,700	11.4 22.8 13.8	3.28	11.2	127.2	2.51	57.2 56.7 57.2	95.0 195.0 123.0	68.0
ZR108KCE	TFD TF5 TF7	9.0	21,100	72,100	6,440	11.5 22.9 13.9	3.28	11.2	142.9	3.25	59.9 59.9 60.3	114.0 225.0 140.0	69.0
ZR125KCE	TFD TF5 TF7	10.4	24,900	85,000	7,570	12.4 24.8 15.0	3.30	11.3	167.2	3.25	61.2	125.0 239.0 145.0	69.0
ZR144KCE	TFD TF5 TF7	12.0	28,300 28,400 28,300	96,400 96,900 96,400	8,500 8,480 8,500	13.7 30.0 16.5	3.33 3.34 3.33	11.4	190.9	3.25	61.2	125.0 245.0 145.0	69.0
ZR160KCE	TFD	13.3	31,000	105,000	9,500	16.3	3.25	11.1	209.1	3.25	64.9	150.0	71.0
ZR160KCE	TWD TW5 TW7	13.3	31,000	105,000	9,500	16.3 32.6 19.8	3.25	11.1	209.1	3.25	64.9 66.2 64.9	150.0 300.0 139.0	71.0
ZR190KCE	TFD	15.8	37,000	127,000	11,300	21.4	3.28	11.2	249.2	3.25	66.2	179.0	72.0
ZR190KCE	TWD TW5 TW7	15.8	37,000	127,000	11,300	21.4 42.8 25.9	3.28	11.2	249.2	3.25	66.2	173.0 340.0 196.0	72.0
ZR250KCE	TWD TW5 TW7	20.8	48,500	166,000	15,100	22.7 49.6 27.5	3.22	11.0	325.2 325.2 318.1	4.67	139.3 138.8 139.3	225.0 505.0 280.0	77.0
ZR310KCE	TWD TW7	25.8	60,000	205,000	18,800	28.3 34.3	3.19	10.9	410.6	6.80	160.1	272.0 353.0	79.0
ZR380KCE	TWD TW5 TW7	31.7	74,000	253,000	22,400	34.7 69.4 42.0	3.31	11.3	502.7	6.30	176.9	310.0 599.0 358.0	81.0



Copeland Scroll™ compressors with CoreSense™ communications

Enhanced reliability and increased uptime in commercial air conditioning applications.

Communication, protection and diagnostics onboard.

For years, Copeland Scroll compressors have been setting the standard in commercial applications with proven reliability and superior performance. Now, commercial customers can receive advanced diagnostic and protection benefi ts onboard Copeland Scroll compressors.

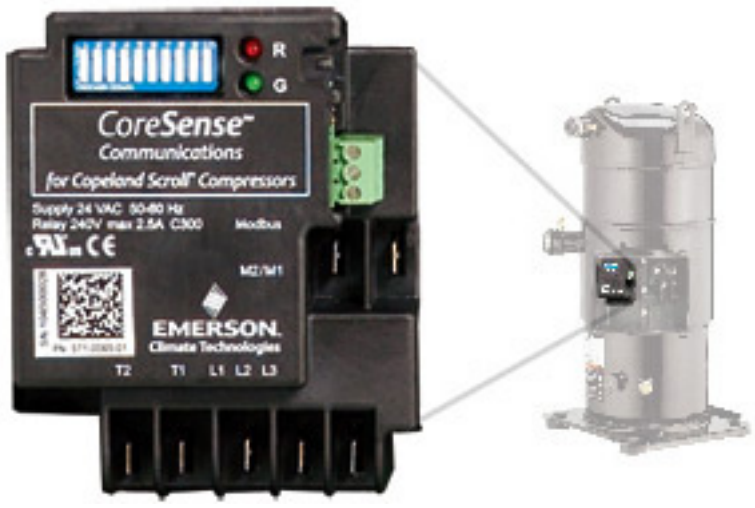
Introducing the industry's fi rst ever Copeland Scroll compressors with CoreSense Communications onboard. With this added feature, Copeland Scroll compressors can stream real-time diagnostics information on the compressor's operation to the system controller. By using the compressor as a sensor, valuable data from inside the system can be accessed and monitored in real time by the controller, improving performance and reliability even proactively shutting down the compressor to prevent a catastrophic failure.

Real time communication enables improved protection.

Temperature protection inside the compressor is a critical feature to ensure the reliability you have come to expect with Copeland Scroll compressors. With the ability to stream data real time to the system controller, your system now has a level of control never before offered in the industry. Proactive measures can now be taken to maintain overall comfort and maximum uptime, something your customers will love.

Unlock new, invaluable information.

Not only can Copeland Scroll compressors with CoreSense Communications provide real time data to the system controller, but it can also provide you with historical information. Faults that might have occurred in the past week and over the entire life of the compressor are available at your fingertips. Having this information allows the technician on the job to know exactly what the system is experiencing. That means shorter and fewer site visits, saving you and your customer time and money.



Intergrated Course™ technology delivers enhanced reliabilty for Copeland Scroll™ compressors.





Diagnostics and protection

- Missing phase
- Reverse phase
- Short cycling protection
- Motor temperature protection
- Fault history

Communication protocol

- Modbus - current
- BACnet - future

Emerson CoreSense™ technology

CoreSense technology gives technicians access to information inside the compressor so they can identify performance issues quickly and accurately to ensure greater reliability. When adverse operating conditions are detected, CoreSense shuts the compressor down to prevent system damage, saving contractors and end-users money.

For improved system performance and end-user peace-of-mind, make sure you install systems with Copeland Scroll compressors with CoreSense communications.



Modulation technologies



Air conditioning units with conventional fixed capacity compressors are typically designed for peak load performance and usually have more capacity than is required for normal everyday usage. These units turn on and off frequently to reduce output under light load conditions. This can cause broad temperature swings and poor humidity control, as well as decreases in efficiency and overall reliability. In response, manufacturers have worked to develop technologies that specifically meet part-load challenges and provide higher efficiency, improved comfort, and better system performance.

Commercial air conditioning

Modulating compressor technologies are also good solution for the specific challenges facing the commercial air conditioning industry, including precisely managing varying temperature and humidity load requirements in the most efficient manner. As the main power consumer in rooftop systems, compressors account for over half of the system's total energy use, making them a primary target for improvements in efficiency.

Residential air conditioning

The residential air conditioning market in particular continues to face an increasing need for enhanced energy efficiency and improved comfort.

Types of compressor modulation

While capacity modulation is still growing in adoption, Emerson has identified four compressor modulation technologies that are helping manufacturers meet capacity and energy efficiency needs.

1. Multiple compressors
2. Ultratech (two-step)
3. Digital (continuous)
4. Variable Speed

Modulation range

Multiple compressors



Digital (continuous)



Ultratech (two-step)



Variable Speed





Tandems / Trios



Copeland Scroll UltraTech™



Digital™



Variable Speed - Residential



Variable Speed - Commercial



Modulation type	Full load efficiency	Part load efficiency	Applied cost	Range
Multiple compressors	High	High	Medium	3-180 Tons
Ultratech (two-step)	Medium/high	High	Low	2-5 Tons
Digital (continuous)	High	Medium	High	3-15 Tons
Variable Speed	Medium	Highest	Highest	2-15 Tons

Copeland Scroll™ digital compressors for R22, R407C and R410A refrigerant

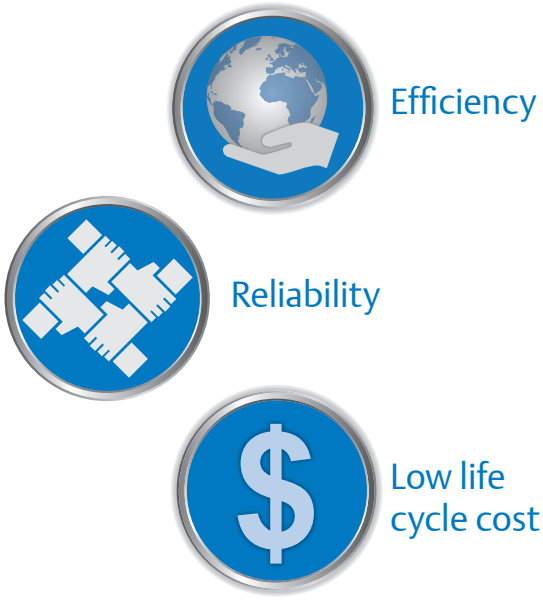
Copeland Scroll Digital compressors offer stepless capacity modulation in air conditioning applications and a flexible solution for R22, R407C and R410A refrigerant.

In many cooling and heating systems, load and operating conditions vary over a wide range, thus, requiring the use of capacity modulation. The Digital scroll is a simple compressor solution able to assure stepless modulation down to 10% of the nominal capacity allowing for precise temperature and humidity control, superior comfort and energy saving.

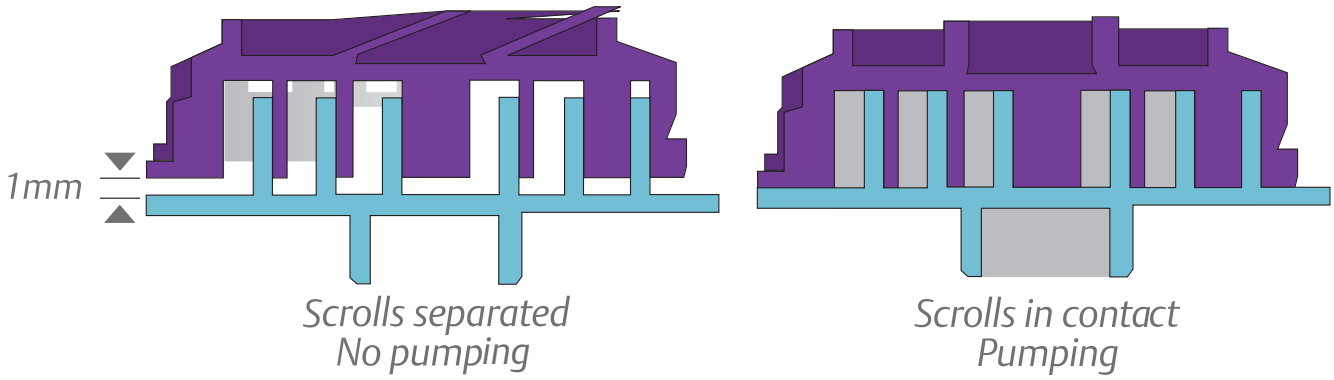
This compressor range is the preferred choice for Variable Refrigerant Flow(VRF), rooftop, chilled water, Variable Air Volume (VAV) and process cooling applications.

Features and benefits

- Wide modulation range from 10% to 100% for immediate load adjustment, precise temperature control and optimal comfort
- Energy efficient operation at part load conditions
- Copeland Scroll axial and radial compliance offers high reliability
- Fewer starts/stops
- Constant speed operation means simpler system oil return management
- Easy to install, commission and maintain - simple system architecture, no complicated electronics and no EMI/EMC problems
- CoreSense™ is available for digital compressors

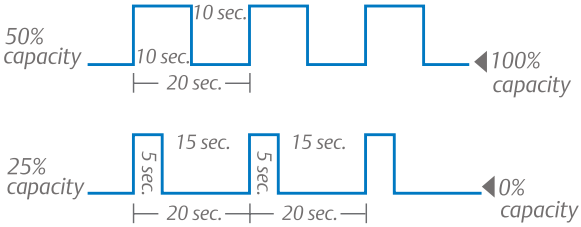


The modulation mechanism of a Copeland Digital Scroll compressor



Compressor in loaded state operates as a standard scroll and delivers full capacity and mass flow. During the unloaded state, however, the system delivers no capacity and no mass flows through.

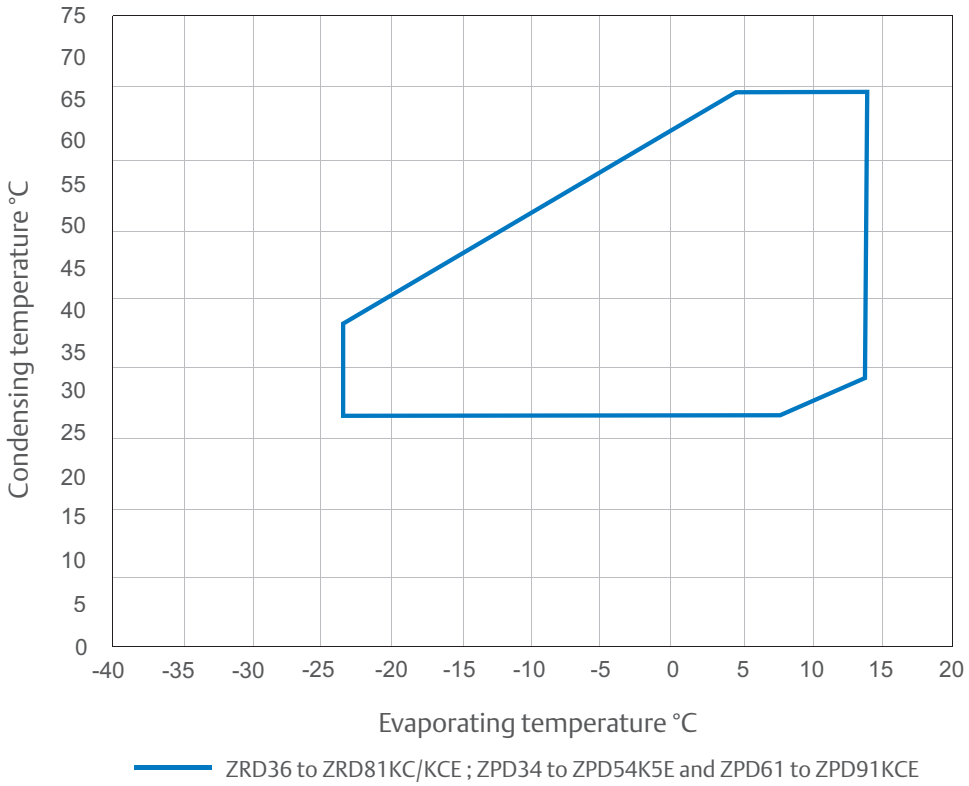
The concept of cycle time



Varying the 'loaded state' and the 'unloaded state' times, any capacity between 10% and 100% can be delivered by the compressor.

Operating envelope

R22, R407C and R410A





Internal valve



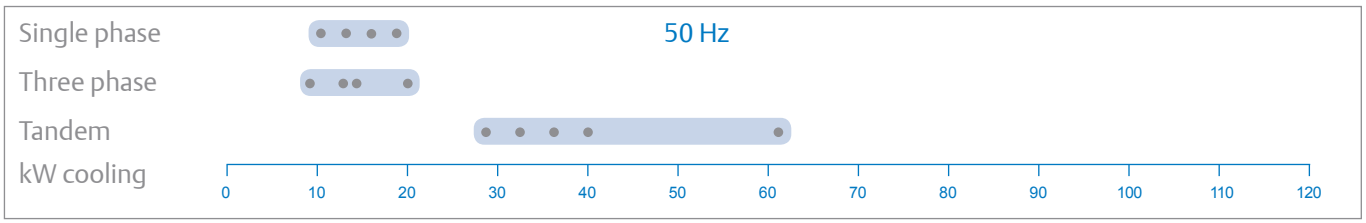
External valve

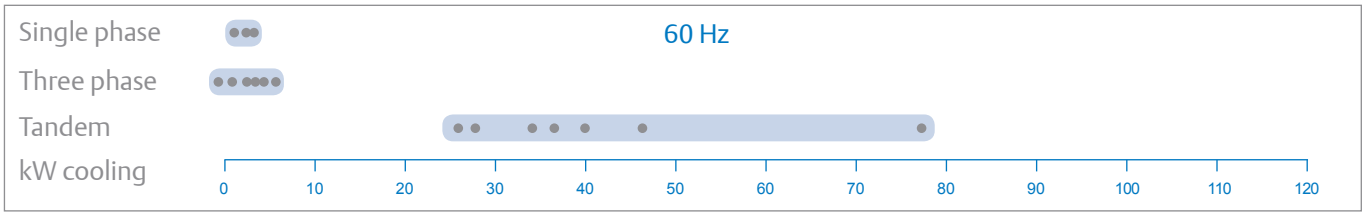
Maximum allowable pressure (PS)

- Digital ZRD36 to ZRD81:
  Low Side PS 20bar(g) / High Side PS 29.5 bar(g)
- Digital ZRD94 to ZRD125:
  Low Side PS 20bar(g) / High Side PS 32 bar(g)
- Digital ZPD34 to ZPD91:
  Low Side PS 28 bar(g) / High Side PS 43 bar(g)

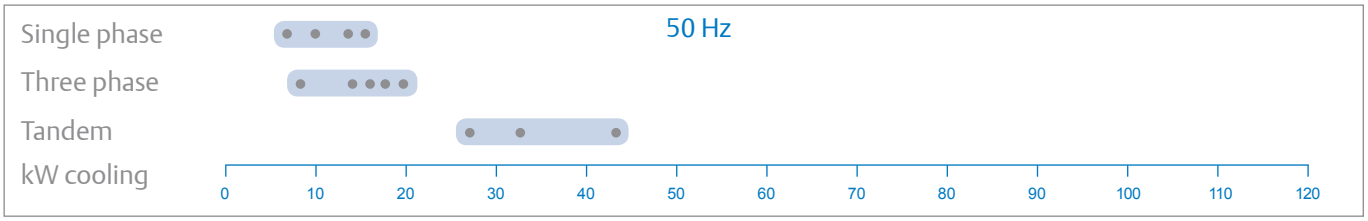
Compressor line-up

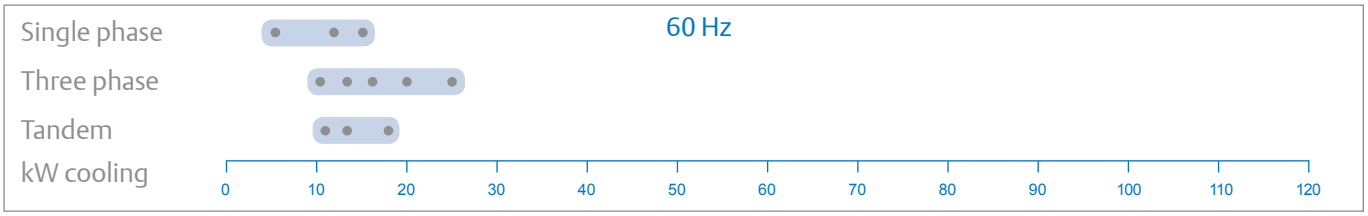
R22/R407C





R410A







Technical overview

R22

220-240V ; 50Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD42KC PFJ	3.5	10,300	35,100	3,200	15.3	3.22	11.0	57.2	1.24	31.2	97.0	60.0
ZRD48KC PFZ	4.0	11,950	40,800	3,630	16.7	3.28	11.2	65.6	1.36	32.8	125.0	57.0
ZRD61KC PFZ	5.0	14,950	51,000	4,640	22.5	3.22	11.0	82.6	1.89	38.1	150.0	63.0
[Δ]ZRD68KC PFZ	6.0	16,700	57,000	5,150	23.9	3.22	11.0	93.0	2.01	39.0	142.0	63.0

208-230V ; 60Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD36KC PFV	3.0	10,550	36,000	3,300	14.5	3.19	10.9	48.0	1.24	30.2	95.0	62.0
ZRD48KC PFV	4.0	14,550	49,700	4,320	19.5	3.37	11.5	65.6	1.48	33.5	137.0	62.0
ZRD49KC PFV	4.0	14,550	49,600	4,550	20.8	3.19	10.9	67.1	1.89	42.6	129.0	63.0
ZRD61KC PFV	5.0	18,200	62,000	5,650	26.1	3.19	10.9	82.6	1.89	38.1	148.0	66.0

380-420V ; 50Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD42KC TFD	3.5	10,400	35,500	3,080	5.4	3.37	11.5	57.2	1.24	31.2	46.0	60.0
ZRD48KC TFD	4.0	11,950	40,800	3,510	6.1	3.40	11.6	65.6	1.36	32.7	48.0	64.0
ZRD49KC TFD	4.0	12,050	41,100	3,660	7.1	3.28	11.2	67.1	1.89	42.6	51.5	-
ZRD61KC TFD	5.0	14,950	51,000	4,550	8.1	3.28	11.2	82.6	1.89	38.1	64.0	67.0
ZRD68KC TFD	6.0	17,100	58,500	5,100	8.9	3.37	11.5	93.0	1.89	40.2	74.0	63.0
ZRD72KC TFD	6.0	17,600	60,200	5,330	9.6	3.31	11.3	98.1	1.89	39.9	74.0	60.0
ZRD81KC TFD	7.0	19,900	68,000	6,000	11.1	3.31	11.3	107.8	1.89	40.8	100.0	67.0

460V / 200-230V / 380V ; 60Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD36KC TF5	3.0	10,600	36,200	3,120	9.3	3.40	11.6	48.0	1.24	30.2	77.0	62.0
ZRD42KC TFD	3.5	12,750	43,500	3,770	5.5	3.37	11.5	57.2	1.24	31.2	44.0	62.0
ZRD48KC TFD TF5 TF7	4.0	14,600 14,600 14,450	49,800 49,800 49,300	4,330 4,220 4,320	6.2 12.1 7.6	3.37 3.46 3.34	11.5 11.8 11.4	65.6	1.36	32.7	46.0 110.0 54.0	65.0
ZRD49KC TFD TF5 TF7	4.0	14,550	49,600	4,460	6.5 13.0 7.9	3.25	11.1	67.1	1.89	42.6	47.5 115.0 57.0	61.0 63.0 61.0
ZRD61KC TFD TF5 TF7	5.0	18,000	61,500	5,450 5,450 5,550	8.0 16.0 9.5	3.31 3.31 3.25	11.3 11.3 11.1	82.6	1.89	38.1	62.0 137.0 64.0	67.0
ZRD68KC TFD	6.0	20,800	71,000	6,150	8.9	3.37	11.5	93.0	1.89	40.2	75.0	67.0
ZRD72KC TFD TF5 TF7	6.0	21,400	72,900	6,460	9.3 18.6 11.3	3.31	11.3	98.1	1.89	39.9 39.9 39.5	70.0 156.0 70.0	63.0
ZRD81KC TFD TF7	7.0	23,700	81,500	7,500 7,400	11.7 12.4	3.19	10.9	107.8	1.89	40.8	100.0 78.0	67.0

Note:
[Δ]Preliminary data

Technical overview

R407C

220-240V ; 50Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD42KCE PFJ	3.5	10,350	35,400	3,430	16.4	3.02	10.3	57.2	1.24	31.2	97.0	60.0
ZRD48KCE PFZ	4.0	11,250	38,400	3,690	17.1	3.05	10.4	65.6	1.36	32.8	125.0	57.0
ZRD61KCE PFZ	5.0	14,200	48,500	4,750	22.2	2.99	10.2	82.6	1.89	38.1	150.0	63.0

208-230V ; 60Hz , 1 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD36KCE PFV	3.0	10,650	36,400	3,550	15.6	3.02	10.3	48.0	1.24	30.2	95.0	62.0
ZRD48KCE PFV	4.0	14,650	50,000	4,640	21.0	3.17	10.8	65.6	1.48	33.5	137.0	62.0
ZRD61KCE PFV	5.0	16,900	57,500	5,700	25.9	2.96	10.1	82.6	1.89	38.1	148.0	66.0

380-420V ; 50Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD36KCE TFD	3.0	8,450	28,800	2,610	4.6	3.24	11.1	48.0	1.24	27.3	38.0	62.0
ZRD42KCE TFD	3.5	10,000	34,100	3,130	5.6	3.19	10.9	57.2	1.24	31.2	46.0	60.0
ZRD48KCE TFD	4.0	12,050	41,200	3,780	6.6	3.19	10.9	65.6	1.36	32.7	48.0	64.0
ZRD49KCE TFD	4.0	11,200	38,300	3,700	6.9	3.05	10.4	67.1	1.89	42.6	51.5	61.0
ZRD61KCE TFD	5.0	14,150	48,300	4,610	8.1	3.08	10.5	82.6	1.89	38.1	64.0	65.0
ZRD68KCE TFD	6.0	15,700	53,500	5,200	9.2	3.02	10.3	93.0	1.89	40.2	74.0	63.0
ZRD72KCE TFD	6.0	16,900	57,500	5,350	9.3	3.14	10.7	98.1	1.89	39.9	74.0	63.0
ZRD81KCE TFD	7.0	20,100	68,500	6,450	12.0	3.11	10.6	107.8	1.89	40.8	100.0	67.0

460V / 200-230V / 380V ; 60Hz , 3 Phase

Model	Nominal HP	Capacity		Input power (W)	Current (A)	COP (W/W)	EER (Btu/Wh)	Displacement (cc/ Rev.)	Oil quantity (l)	Net weight (kg)	LRA (A)	Sound power (dBA)
		(W)	(Btu/h)									
ZRD36KCE TFD TF5 TF7	3.0	- 10,750 10,150	- 36,700 34,700	- 3,350 3,150	- 10.0 5.5	- 3.19 3.22	- 10.9 11.0	48.0	1.24	27.3 30.2 27.2	37.5 77.0 38.0	- 62.0 62.0
ZRD42KCE TFD	3.5	12,200	41,700	3,960	7.0	3.08	10.5	57.2	1.24	31.2	44.0	62.0
ZRD48KCE TFD TF5 TF7	4.0	14,050 9,400 14,550	48,000 32,100 49,700	4,400 3,160 4,640	6.4 9.7 8.1	3.19 2.99 3.14	10.9 10.2 10.7	65.6	1.36	32.7	46.0 110.0 54.0	65.0
ZRD49KCE TFD	4.0	13,550	46,200	4,540	6.7	2.99	10.2	67.1	1.89	42.6	47.5	61.0
ZRD61KCE TFD TF5 TF7	5.0	17,400	59,500	5,740	8.5 16.9 10.3	3.05	10.4	82.6	1.89	38.1	62.0 137.0 64.0	63.0
ZRD68KCE TFD	6.0	19,500	66,500	6,250	9.1	3.11	10.6	93.0	1.89	40.2	75.0	67.0
ZRD72KCE TFD TF5 TF7	6.0	20,700	70,500	6,550	9.5 19.0 11.5	3.17	10.8	98.1	1.89	39.9 39.9 39.5	70.0 156.0 70.0	63.0
ZRD81KCE TFD TF7	7.0	22,900 24,200	78,000 82,500	7,700 7,950	12.2 10.9	2.99 3.05	10.2 10.4	107.8	1.89	40.8	100.0 78.0	67.0