

# PRODUCT SPECIFICATION

COMPRESSOR MODEL

**CR22K6M-TFM**

BILL OF MATERIALS

**101, 111, 111DM**

**Emerson Climate Technologies (India) Limited**  
Karad Dhebewadi Road  
Karad - 415 110  
INDIA

Note: Sales compressor drawing number and compressor model name are the same.

SC1				01	F45-1212-0763 EN No.	A2 31.12.2012
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MODEL : CR22K6M-TFM-XXXXX

## A) MODEL DESCRIPTION

<b>Model Name</b>	<b>CR22K6M-TFM-XXXXX</b>
<b>Compressor Type</b>	Reciprocating, Connecting Rod Type
<b>Application Group</b>	High Temperature (HBP)
<b>Evaporating Temperature Range</b>	(-)23.3 °C To 12.8 °C Or (-)10 °F To 55 °F
<b>Refrigerant</b>	R-22
<b>Rated Voltage</b>	380-420 V, 50 Hz, 3 Phase
<b>Compressor Cooling</b>	Fan : 400 ft <sup>3</sup> / minute
<b>Typical Application</b>	Air - Conditioning, Heat Pump
<b>Certifications &amp; Approvals</b>	---

## B) PERFORMANCE SPECIFICATION @ RATED CONDITION

Parameter	Unit	ASRE/T	ARI
Cooling Capacity	Btu / hr	18,350	17,800
	kcal / hr	4,633	4,494
	W	5,373	5,211
	Nominal HP	1.85	1.79
Input Power	W	1,750	1,750
Input Current	A	3.2	3.2
EER = $\frac{\text{Cooling Capacity}}{\text{Input Power}}$	Btu / W-hr	10.48	10.17
	kcal / W-hr	2.64	2.56
	W / W	3.07	2.97

Note: Above Performance Parameters are Nominal Values & subject to  $\pm$  5% variation.

## C) RATING CONDITIONS

Parameter	Unit	ASRE/T	ARI
Evaporating Temperature	°C (°F)	7.2 $\pm$ 0.5 (45)	7.2 $\pm$ 0.5 (45)
Condensing Temperature	°C (°F)	54.4 $\pm$ 1 (130)	54.4 $\pm$ 1 (130)
Ambient Temperature	°C (°F)	35 $\pm$ 1 (95)	35 $\pm$ 1 (95)
Sub-cooled Liquid Temperature	°C (°F)	46 $\pm$ 1 (115)	46 $\pm$ 1 (115)
Return Gas Temperature	°C (°F)	35 $\pm$ 1 (95)	18.3 $\pm$ 1 (65)
Test Voltage	V	400	400

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### D) MECHANICAL SPECIFICATIONS

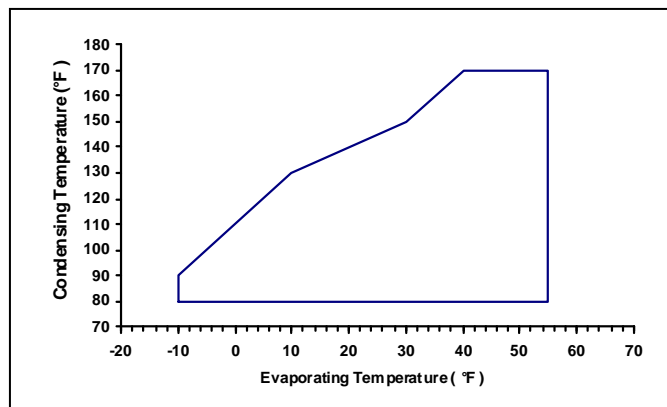
Parameter	Unit	Value
Number of Cylinders	Number	Two (2)
Displacement	cm <sup>3</sup> (inch <sup>3</sup> ) / rev	40.80 (2.490)
Net Weight	kg	29.5
Approximate Shipping Weight	kg	30.0
Oil Charge	cm <sup>3</sup> (Oz)	1,330 (45)
Oil Type	Refrigeration Grade	Mineral
IPRV (Pressure Differential)	kg/cm <sup>2</sup> (psig)	31.64 / 38.67 (450 / 550)
** Crank - Case Heater	W @ V	N/A

\*\* Recommended only for Heat Pump Application.

### E) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Operating Voltage Range	V	342 To 462
Motor Circuit	---	3 Phase
Electrical Accessories	---	
➤ Start Capacitor	μF @ V AC	N/A
➤ Run Capacitor	μF @ V AC	N/A
➤ Relay	---	N/A
➤ Over Load Protector	---	Internal
Locked Rotor Ampere (LRA)	A	20
Maximum Continuous Current (MCC)	A	4.5
High Potential Test	(kV / second / mA)	2.3 / 1 / 5.5 ± 0.5

### F) OPERATING ENVELOPE @ 400 V, 50 Hz, 3 Phase



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G) PERFORMANCE TABLES

Superheating	11 °C ( 20 °F )	Voltage	400 V, 50 Hz, 3 Phase
Sub - cooling	8.3 °C ( 15 °F)	Compressor Cooling	400 ft <sup>3</sup> / minute
Ambient Temperature	35 °C ( 95 °F )	-	-

H) COOLING CAPACITY (Btu / hr)

Condensing Temperature		Evaporating Temperature									Coefficients			
		c1										c2		
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	9.49E+03		
(°F)		-10	0	10	20	30	40	45	50	55	c4	3.71E+02		
37.8	100	3628	6005	8910	12406	16561	21440	24172	27109	30259	c5	9.85E+01		
43.3	110	----	4966	7702	10992	14901	19496	22071	24841	27816	c6	4.57E+00		
48.9	120	----	----	6516	9591	13248	17550	19965	22565	25360	c7	-7.07E-01		
54.4	130	----	----	5389	8242	11638	15642	17800	20319	22931	c8	-1.98E+00		
60.0	140	----	----	----	6984	10112	13809	15892	18141	20565	c9	1.09E-02		
											c10	-1.93E-02		
												c10	-3.72E-03	
													c10	6.42E-03

J) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature									Coefficients					
		c1										c2				
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	-2.60E+03				
(°F)		-10	0	10	20	30	40	45	50	55	c4	-1.65E+01				
37.8	100	807	901	1023	1154	1276	1370	1401	1418	1418	c5	8.35E+01				
43.3	110	----	891	1046	1211	1366	1493	1540	1574	1591	c6	1.48E-01				
48.9	120	----	----	1040	1239	1428	1590	1654	1704	1738	c7	-4.37E-01				
54.4	130	----	----	1012	1247	1472	1668	1750	1818	1869	c8	-6.29E-01				
60.0	140	----	----	----	1243	1504	1737	1837	1923	1992	c9	-3.10E-03				
												c10	-8.03E-05			
													c10	-8.03E-05		
														c10	5.43E-04	
															c10	1.44E-03

K) INPUT CURRENT (A)

Condensing Temperature		Evaporating Temperature									Coefficients					
		c1										c2				
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	-1.96E+01				
(°F)		-10	0	10	20	30	40	45	50	55	c4	7.77E-02				
37.8	100	1.9	2.1	2.3	2.5	2.6	2.7	2.8	2.8	2.8	c5	5.21E-01				
43.3	110	----	2.2	2.4	2.6	2.8	2.9	3.0	3.0	3.0	c6	-4.37E-04				
48.9	120	----	----	2.4	2.6	2.8	3.0	3.1	3.1	3.2	c7	-1.13E-03				
54.4	130	----	----	2.3	2.6	2.8	3.1	3.2	3.3	3.4	c8	-4.09E-03				
60.0	140	----	----	----	2.6	2.9	3.2	3.3	3.5	3.6	c9	-1.95E-06				
												c10	4.04E-06			
														c10	5.59E-06	
															c10	1.05E-05

L) MASS FLOW RATE (lbs/hr)

Condensing Temperature		Evaporating Temperature									Coefficients	
		c1										c2
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	Under Evolution
(°F)		-10	0	10	20	30	40	45	50	55	c4	
37.8	100	Under Evolution									c5	
43.3	110										c6	
48.9	120										c7	
54.4	130										c8	
60.0	140										c9	
											c10	

Note: 1. Nominal Performance Values ( ± 5% ) based on 24 h of 'run in'. Subject to change without notice.  
 2. Compressor is intended to be operated in the range of condensing & evaporating temperatures where performance values are specified in above tables.

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## M) MECHANICAL SPECIFICATIONS

Parameter	Unit	Value
Cylinder Bore Diameter	cm (inch)	4.207 (1.6564)
Crank - Shaft Eccentricity	cm (inch)	0.734 (0.289)
Crank - Shaft Stroke	cm (inch)	1.468 (0.578)
Approximate Internal Free Volume (Without Oil)	cm <sup>3</sup> (inch <sup>3</sup> )	7,000 (427)
Maximum Residual Moisture	mg	300
Maximum Internal Solid Residue / Impurities	mg	40

## N) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Motor Type	---	2 Pole, Induction, Three Phase
Nominal Motor Speed	rpm	2,850
Nominal Motor Winding Resistance (@ 25 °C)	Ω	7.3 To 8.5
Nominal Motor Output Power	kW	1.53
Max. Allowable Motor Winding Temp.	°F (°C)	266 (130) B Class Insulation
Relay		
Type	---	N/A
Part Number	---	N/A
Pick Up (Maximum)	V	N/A
Drop Out (Minimum)	V	N/A
Maximum Voltage Rating of Coils	V	N/A
Over Load Protector		
Type	---	Internal
Part Number		34HM-200-6
Disc Opening Temperature	°F (°C)	212 To 230 (100 To 110)
Disc Closing Temperature	°F (°C)	126 To 158 (52 To 70)
1 <sup>st</sup> Cycle Trip Current	A	18
1 <sup>st</sup> Cycle Trip On Time	second	2 To 10
Terminal Fused Cluster	---	¼" Quick Connector
Copper Wire Material	---	Hermetic Grade Round Enameled
Copper Wire Enamel Designation & Construction	---	H Class, Dual Coated

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## P) PERFORMANCE SPECIFICATIONS

Parameter	Unit	Value
Bare Compressor Sound	dBA	70.0 Maximum
Bare Compressor Vibration	µm	120.0 Maximum
Compressor Discharge Pulse	psi	2.5 Maximum

## Q) TEST CONDITIONS

Parameter	Voltage	Suction Pressure	Discharge Pressure	Top Shell Temperature	Ambient Temperature
Unit	V	kg/cm <sup>2</sup> (psig)	kg/cm <sup>2</sup> (psig)	°C (°F)	°C (°F)
Overload ( High Load )	400	6.50 (92.43)	30 (426.6)	--	55 (131)
Blocked Fan	400	6.33 (90)	28.12 (400)	--	--
Low Voltage Start :					
Equalised	342	11.9 (169)	11.9 (169)	62 (143.6)	--
Unequilised	342	8.4 (119)	18.9 (269)	62 (143.6)	--
Low Voltage Run	342	6.50 (92.43)	30 (426.6)	--	55 (131)

Note: Above test conditions are only for reference. Refer operating envelop and maximum allowable discharge line temperature for safe operation of compressor.

## R) REFERENCE APPLICATION DETAIL CONDITIONS

Parameter	Unit	Value
Maximum Allowable Ambient Temperature	°C (°F)	55 (131)
Maximum Discharge Line Temperature	°C (°F)	129.4 (265)
Maximum Return Gas Temperature	°C (°F)	27 (80.6)

Note: Application Details are the guidelines for safe operation of compressor.

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SPECIFICATION