

## Specification Guide

# F Series

## Premier Low Profile Air Handlers

*Electric or No Heat, with available 5-Speed High Efficiency ECM Motor*



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## Cabinet Features

- Available from factory as upflow or upflow/horizontal. Field installed horizontal drain pan kit also available.
- Downflow kit available for field installation.
- Two independent front access panels allow for easy access to clean the coil, even after installation.
- Only four (4) screws to remove blower panel for easier access.
- Slide-out blower and coil assemblies.
- Cabinet constructed of heavy gauge painted steel.
- High quality 5/8" foil-faced insulation lines cabinet, with cabinet flanges & retaining rods for better attachment.
- Brackets hold coil assembly in place when installed in horizontal position.
- Filter rack built into every air handler (filter not included).
- ETL lab tested 2% or less cabinet air leakage for better efficiency.

## Evaporator Coil Features

- Coils are air pressure tested at 500psi, leak tested with helium, sealed with rubber plugs, and then charged with dry air.
- Suitable for use with R-22 and R-410A.
- Available in copper or aluminum construction.
- Lanced fin design.
- Rifled copper tubing.
- Piston or HP TXV available factory installed. Screw-on TXVs available as kits for field installation (see Accessories & Replacement Parts list for available kits).
- TXV Bulbs come standard attached to header assembly.
- HYDROTEC™ drain pan holds less water, which reduces the possibility of mold and mildew growing in the pan.
- All drain pans have Microban protection, which inhibits the growth of mold and mildew that cause odors and staining.
- Drain pans are molded of corrosion proof engineered polymer.
- Dual 3/4" FPT condensate drains on left and right sides.

## Electrical Features

- 120 V 60 Hz and 208/240 V 60 Hz supply voltages available.
- 5-speed high efficiency ECM motor available.
- Dynamically balanced blowers for quiet, vibration-free operation.

## Physical Data

		Unit Size									
		18	24	25	30	31	36	37	42	48	60
<b>Available Voltage</b> <sup>[1]</sup>		(120 V 60 Hz, 1 ph), (208/240 V, 60 Hz, 1 ph)									
<b>Maximum Elec. Heat Available (kW)</b>		10	10	10	15	15	15	15	20	20	20
<b>Transformer Size and Type</b>		40 VA, Class 2									
<b>Blower Data:</b> 3-Speed PSC Motor (120V)	<b>Motor H. P.</b>	1/5	1/3	1/3	1/3	1/3	1/3	-	1/2	3/4	3/4
	<b>F. L. A. @ 120 V</b>	2.0	3.2	3.2	3.2	5.3	5.3	-	8.5	7.5	10.5
	<b>Wheel (dia x wid)</b>	9x6	9x6	9x6	9x6	9x6	10x8	-	10x8	10x8	10x10
<b>Blower Data:</b> 3-Speed PSC Motor (240V)	<b>Motor H. P.</b>	1/5	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2
	<b>F. L. A. @ 240 V</b>	1.1	1.6	1.9	1.9	2.6	2.6	1.9	1.9	3.9	3.9
	<b>Wheel (dia x wid)</b>	9x6	9x6	10x8	10x8	12x8	10x8	12x8	12x8	11x10	11x10
<b>Blower Data:</b> 5-Speed High Eff. ECM Motor	<b>Motor H. P.</b>	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	3/4	1
	<b>F. L. A. @ 240 V</b>	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.2	4.6
	<b>Wheel (dia x wid)</b>	9x6	9x6	10x8	10x8	10x8	10x8	10x8	10x8	10x10	10x10
<b>Nominal CFM</b>		600	800	800	1000	1000	1200	1200	1400	1600	2000
<b>Air Filter Size (in)</b>		12x20	12x20	16x20	16x20	18x25	16x20	18x25	18x25	18x25	18x25
<b>Sound Level @ 0.3 Static (dBA)</b> <sup>[2]</sup>		50	50	48	50	53	50	53	53	53	54
<b>Refrigerant Conn. (IDS) Suction (in)</b>		3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
<b>Refrigerant Conn. (IDS) Liquid (in)</b>		3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
<b>R-22 Piston Size (in)</b> (for replacement only)		.053	.059	.059	.067	.067	.073	.073	.080	.084	.093
<b>R-410A Piston Size (in)</b>		.049	.053	.053	.059	.059	.067	.067	.073	.076	.093
<b>Approx. Weight lbs (base unit w/o heat)</b>		80	80	105	105	155	105	155	155	155	155

[1] 120 V, 60 Hz supply voltage cannot be used with electric heat, 5-Speed high efficiency ECM motor.

[2] Typical sound levels based on 240V 3-speed PSC motor.

# Product Nomenclature

**F C M E31 9 24 S 05 2**

**Cabinet Color**

**F** = Fully painted (taupe)

**Blower Motor Type**

**C** = 3-speed PSC motor  
**E** = 5-speed high efficiency ECM motor

**Airflow Configuration** <sup>[1]</sup>

**M** = Multi-position (vertical, left or right horiz.)

**Slab Number**

**Metering Device**

**1** = Piston (R-410A)  
**9** = Non-bleed HP-A/C TXV (R-410A)

**Unit Size (Nominal MBTUH)**

18, 24, 25, 30, 31, 36, 42, 48, 60

**Option Code**

**Blank** = No option  
**S** = Palletized

**Voltage** (All include time delay functionality)

**1** = 208/240 V, 60 Hz, 1 ph. (ECM only)  
**2** = 208/240 V, 60 Hz, 1 ph. (PSC only)  
**4** = 120 V, 60 Hz, 1 ph. (PSC only) <sup>[2]</sup>

**Electric Heat**

**00** = none sizes 18 - 60  
**05** = 5 kW sizes 18 - 48  
**07** = 7.5 kW sizes 18 - 60  
**10** = 10 kW sizes 18 - 60  
**15** = 15 kW sizes 30 - 60  
**20** = 20 kW sizes 48 - 60

**Available In:**

Note: Maximum 10 kW per electrical supply circuit.

**Line Voltage Connections**

	Amount of Heat (kW)					
	0	5	7.5	10	15	20
<b>S</b> = Stripped wire	#	#				
<b>B</b> = Circuit breaker		O	#	#	#	#

# = Standard O = Optional

[1] Downflow with optional field installed kit.

[2] 120 V, 60 Hz supply voltage cannot be used with electric heat, 5-speed high efficiency ECM motor.

## Blower Performance: 3-Speed PSC Motor

- All data is given while air handler is operating with a dry coil and air filter installed.
- Speeds marked **\*bold with asterisk** are the factory speed settings for both heating and cooling.
- Heating speeds should not be reduced below factory setting.
- Different speeds can be set for cooling mode; see installation instructions for changing cooling speeds.
- For downflow operation (with field installed kit), use the next highest speed setting available. If set to high speed from the factory, use high speed for downflow.

### 208/240 Volt 3-Speed PSC Motor

		Airflow (CFM) vs. External Static Pressure (inches W.C.)				
Size	Speed	0.10	0.20	0.30	0.40	0.50
18	Low	505	499	487	434	397
	<b>*Med</b>	653	634	625	600	512
	High	891	853	812	778	733
24	Low	663	624	583	578	562
	<b>*Med</b>	902	864	822	792	744
	High	1159	1097	1031	960	893
25	<b>*Low</b>	867	839	803	780	733
	Med	1044	1015	991	941	889
	High	1260	1234	1200	1149	1098
30	Low	867	839	803	780	733
	<b>*Med</b>	1044	1015	991	941	889
	High	1260	1234	1200	1149	1098
31	<b>*Low</b>	1143	1112	1081	1047	1015
	Med	1268	1233	1186	1165	1133
	High	1415	1390	1352	1314	1260
36	Low	1143	1112	1081	1047	1015
	<b>*Med</b>	1268	1233	1186	1165	1133
	High	1415	1390	1352	1314	1260
37	<b>*Low</b>	1318	1299	1270	1210	1147
	Med	1444	1409	1374	1294	1220
	High	1712	1645	1544	1453	1328
42	Low	1318	1299	1270	1210	1147
	<b>*Med</b>	1444	1409	1374	1294	1220
	High	1712	1645	1544	1453	1328
48 **	<b>*Low</b>	1764	1709	1652	1563	1418
	Med	1984	1884	1780	1683	1509
	High	2031	1959	1832	1725	1617
60	Low	1764	1709	1652	1563	1418
	Med	1984	1884	1780	1683	1509
	<b>*High</b>	2031	1959	1832	1725	1617

\*\* Use only low speed on heating for unit size 48 with 5kW electric heat.

### 120 Volt 3-Speed PSC Motor

		Airflow (CFM) vs. External Static Pressure (inches W.C.)				
Size	Speed	0.10	0.20	0.30	0.40	0.50
18	Low	431	424	425	403	385
	<b>*Med</b>	645	645	645	641	597
	High	804	804	804	793	765
24	Low	530	525	519	507	483
	<b>*Med</b>	925	915	875	823	736
	High	1189	1110	1016	917	826
25	<b>*Low</b>	998	956	905	844	770
	Med	1045	1004	962	871	785
	High	1089	1036	980	905	826
30	Low	998	956	905	844	770
	<b>*Med</b>	1045	1004	962	871	785
	High	1089	1036	980	905	826
31	Low	1008	1004	972	925	867
	<b>*Med</b>	1190	1150	1100	1040	970
	High	1250	1200	1140	1070	995
36	Low	945	930	912	869	793
	<b>*Med</b>	1150	1145	1123	1166	1004
	High	1291	1291	1285	1277	1200
37	Low	1008	1004	972	925	867
	<b>*Med</b>	1190	1150	1100	1040	970
	High	1250	1200	1140	1070	995
42	<b>*Low</b>	1393	1378	1366	1246	1167
	Med	1603	1592	1575	1540	1443
	High	1811	1811	1805	1744	1674
48	Low	1393	1378	1366	1246	1167
	<b>*Med</b>	1603	1592	1575	1540	1443
	High	1811	1811	1805	1744	1674
60	Low	1583	1583	1583	1567	1551
	<b>*Med</b>	1972	1972	1968	1882	1819
	High	2169	2146	2096	2004	1908

## Blower Performance: 5-Speed High Efficiency ECM Motor

- All data is given while air handler is operating with a dry coil and air filter installed.
- Speeds marked **\*bold with asterisk** are the factory speed settings for both heating and cooling.
- Heating speeds should not be reduced below factory setting.
- Different speeds can be set for cooling mode; see installation instructions for changing cooling speeds.
- For downflow operation (with field installed kit):
  - If factory-set speed tap 3 is desirable for your application, use speed tap 5 for downflow.
  - If speed tap 2 is desirable for your application, use speed tap 3 in downflow.

		Airflow (CFM) vs. External Static Pressure (inches W.C.)							
Size	Tap	0.10	0.20	0.30	0.35	0.40	0.45	0.50	0.60
18	1	492	448	393	361	361	333	307	273
	2	513	471	420	414	384	357	325	318
	<b>*3</b>	667	641	615	605	596	577	567	560
	4	705	673	665	648	630	621	603	590
	5	721	689	673	656	639	629	612	590
24, 25	1	732	627	590	581	571	545	536	525
	2	671	634	594	578	573	546	493	480
	<b>*3</b>	892	859	832	828	818	797	790	775
	4	911	866	839	832	825	818	804	760
	5	924	886	846	832	825	818	797	780
30, 31	1	871	830	778	722	671	635	625	586
	2	906	859	809	779	715	689	654	635
	<b>*3</b>	1085	1070	1048	1036	1024	1001	989	975
	4	1125	1103	1087	1059	1047	1024	1012	983
	5	1176	1146	1114	1098	1081	1059	1047	1029
36, 37	1	882	887	826	804	766	760	755	695
	2	1082	1037	1025	1002	990	959	921	881
	<b>*3</b>	1270	1250	1238	1228	1214	1189	1179	1162
	4	1290	1275	1265	1246	1236	1227	1212	1172
	5	1335	1315	1301	1287	1278	1259	1240	1225
42	1	1008	907	861	832	803	772	717	671
	2	1292	1243	1202	1192	1171	1149	1127	1070
	<b>*3</b>	1447	1430	1404	1377	1359	1340	1322	1283
	4	1534	1502	1476	1459	1433	1416	1398	1362
	5	1559	1519	1502	1477	1460	1434	1417	1381
48	1	1585	1494	1320	1252	1210	1151	1120	1088
	2	1510	1463	1414	1389	1363	1324	1256	1228
	<b>*3</b>	1675	1633	1579	1556	1545	1510	1487	1451
	4	1737	1697	1655	1633	1612	1590	1568	1545
	5	1781	1731	1679	1658	1637	1615	1593	1571
60	1	1394	1342	1288	1251	1172	1109	1077	1025
	2	1722	1666	1623	1594	1564	1534	1518	1471
	<b>*3</b>	2083	2048	2013	1990	1972	1947	1929	1885
	4	2179	2135	2101	2079	2056	2039	2021	1937
	5	2209	2166	2122	2101	2057	2058	2047	1956

## Electrical Data: 3 Speed PSC Motor

### No Electric Heat

Unit Size	Electric Heating Capacity		Blower Amps			Minimum Circuit Ampacity			Circuit Breaker Amps per Stage	
	kW <sup>[1]</sup>	BTUH	120 V	208 V	240 V	120 V	208 V	240 V	1	2
	240 V <sup>[2]</sup>	240 V <sup>[2]</sup>								
18	0	0	2.0	1.2	1.1	2.5	1.5	1.4	15	-
24	0	0	3.2	1.7	1.6	4.0	2.1	2.0	15	-
25, 30	0	0	3.2	2.0	1.9	4.0	2.5	2.4	15	-
31, 36	0	0	5.3	2.7	2.6	6.6	3.4	3.3	15	-
37	0	0	5.3	2.0	1.9	6.6	2.5	2.4	15	-
42	0	0	8.5	2.0	1.9	10.6	2.5	2.4	15	-
48	0	0	7.5	4.1	3.9	9.4	5.1	4.9	15	-
60	0	0	10.5	4.1	3.9	13.1	5.1	4.9	15	-

### With Electric Heat

Unit Size	Electric Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps/Stage <sup>[3]</sup>	
	kW <sup>[1]</sup>	BTUH	208 V	240 V	208 V	240 V	1	2
	240 V <sup>[2]</sup>	240 V <sup>[2]</sup>						
18	5	17,065	1.2	1.1	24.0	27.4	30	-
	7.5	25,598	1.2	1.1	35.3	40.4	45	-
	10	34,130	1.2	1.1	46.6	53.5	60	-
24	5	17,065	1.7	1.6	24.7	28.0	30	-
	7.5	25,598	1.7	1.6	36.0	41.1	45	-
	10	34,130	1.7	1.6	47.2	54.1	60	-
25	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
30	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
	<b>15</b>	51,195	2.0	1.9	70.2	80.5	60	30
31, 36	5	17,065	2.7	2.6	26.0	29.3	30	-
	7.5	25,598	2.7	2.6	37.3	42.3	45	-
	10	34,130	2.7	2.6	48.6	55.3	60	-
	<b>15</b>	51,195	2.7	2.6	71.1	81.4	60	30
37, 42	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
	<b>15</b>	51,195	2.0	1.9	70.2	80.5	60	30
48	5	17,065	4.1	3.9	27.7	30.9	45 <sup>[4]</sup>	-
	7.5	25,598	4.1	3.9	39.0	43.9	45	-
	10	34,130	4.1	3.9	50.3	57.0	60	-
	<b>15</b>	51,195	4.1	3.9	72.9	83.0	60	30
	<b>20</b>	68,260	4.1	3.9	95.4	109.0	60	60
60	7.5	25,598	4.1	3.9	39.0	43.9	45	-
	10	34,130	4.1	3.9	50.3	57.0	60	-
	<b>15</b>	51,195	4.1	3.9	72.9	83.0	60	30
	<b>20</b>	68,260	4.1	3.9	95.4	109.0	60	60

[1] kW packages in **bold italics** require and include circuit breakers; circuit breakers are optional for others.

[2] For 208 volt use 0.751 correction factor for kW & BTUH.

[3] Listed circuit breaker size is for 240V applications. For 208V verify breaker sizing based on min. circuit ampacity.

[4] Breaker supplied with heat kit may need to be changed. Verify breaker sizing based on min. circuit ampacity.

# Electrical Data: 5-Speed High Efficiency ECM Motor

## No Electric Heat

Unit Size	Elec. Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps per Stage	
	kW <sup>[1]</sup>	BTUH	208 V	240 V	208 V	240 V	1	2
	240 V <sup>[2]</sup>	240 V <sup>[2]</sup>						
18, 24, 25	0	0	3.2	3.0	4.0	3.8	15	-
30, 31, 36, 37, 42	0	0	3.2	3.0	4.0	3.8	15	-
48	0	0	3.4	3.2	4.2	4.0	15	-
60	0	0	4.9	4.6	6.1	5.8	15	-

## With Electric Heat

Unit Size	Elec. Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps per Stage <sup>[3]</sup>	
	kW <sup>[1]</sup>	BTUH	208 V	240 V	208 V	240 V	1	2
	240 V <sup>[2]</sup>	240 V <sup>[2]</sup>						
18, 24, 25	5	17,065	3.2	3.0	26.5	29.8	30	-
	7.5	25,598	3.2	3.0	37.8	42.8	45	-
	10	34,130	3.2	3.0	49.1	55.8	60	-
30, 31, 36, 37, 42	5	17,065	3.2	3.0	26.5	29.8	30	-
	7.5	25,598	3.2	3.0	37.8	42.8	45	-
	10	34,130	3.2	3.0	49.1	55.8	60	-
	<b>15</b>	51,195	3.2	3.0	71.7	81.9	60	30
48	5	17,065	3.4	3.2	26.8	30.0	30	-
	7.5	25,598	3.4	3.2	38.1	43.1	45	-
	10	34,130	3.4	3.2	49.4	56.1	60	-
	<b>15</b>	51,195	3.4	3.2	71.9	82.1	60	30
	<b>20</b>	68,260	3.4	3.2	94.5	108.2	60	60
60	7.5	25,598	4.9	4.6	39.9	44.8	45	-
	10	34,130	4.9	4.6	51.2	57.8	60	-
	<b>15</b>	51,195	4.9	4.6	73.8	83.9	60	30
	<b>20</b>	68,260	4.9	4.6	96.3	109.9	60	60

[1] kW packages in **bold italics** require and include circuit breakers; circuit breakers are optional for others.

[2] For 208 volt use 0.751 correction factor for kW & BTUH.

[3] Listed circuit breaker size is for 240V applications. For 208V verify breaker sizing based on min. circuit ampacity.

# Dimensions

Air Handler Size	A (in)	B (in)	C (in)	Supply Duct Opening		Return Duct Opening		Pallet Qty. (-S Option)
				Depth (in)	Width (in)	Depth (in)	Width (in)	
18, 24	36	22	15	17	13	20.35	12.20	6
25, 30, 36	41	22	18 1/2	17	16.5	20.35	16.20	4
31, 37, 42, 48, 60	48	26	21 7/8	21	20	24.60	20.08	2

