TECHNICAL SUPPORT MANUAL
Fan Coils
FVM2X, FVM4X

Safety Labeling and Signal Words

DANGER, WARNING, CAUTION, and NOTE

The signal words **DANGER, WARNING, CAUTION,** and **NOTE** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING, CAUTION,** and **NOTE** will be used on product labels and throughout this manual and other manuals that may apply to the product.

DANGER − Immediate hazards which **will** result in severe personal injury or death.

WARNING − Hazards or unsafe practices which **could** result in severe personal injury or death.

CAUTION − Hazards or unsafe practices which **may** result in minor personal injury or product or property damage.

NOTE − Used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

⚠ WARNING

The signal word **CAUTION** is used throughout this manual in the following manner:

⚠ CAUTION

Signal Words on Product Labeling

Signal words are used in combination with colors and/or pictures on product labels.

TABLE OF CONTENTS

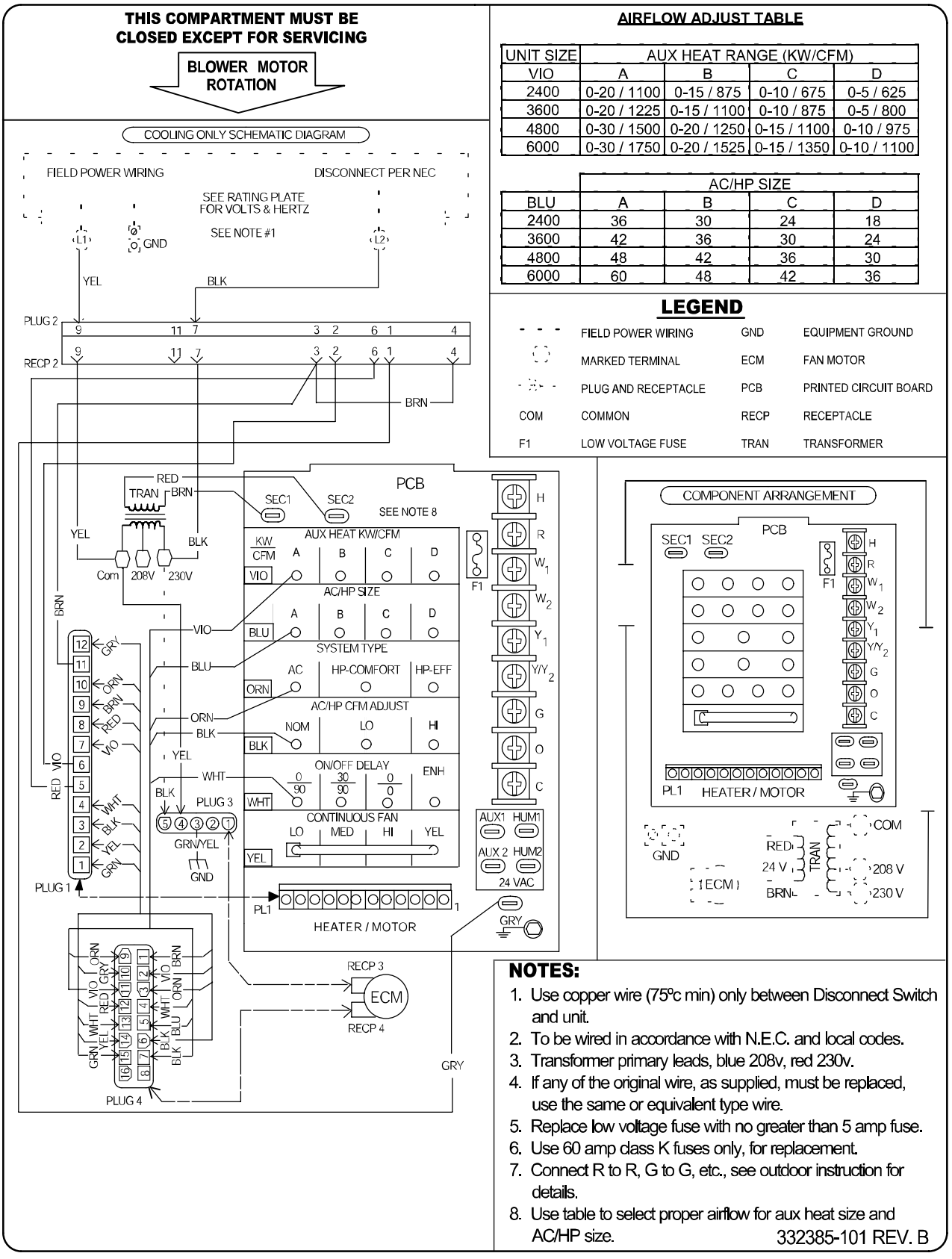
⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to turn off electric power could result in personal injury or death.

Before installing or servicing system, turn off main power to the system. There may be more than one disconnect switch, including accessory heater(s).

Wiring Diagram



AIRFLOW ADJUST TABLE

UNIT SIZE	AUX HEAT RANGE (KW/CFM)			
VIO	A	B	C	D
2400	0-20 / 1100	0-15 / 875	0-10 / 675	0-5 / 625
3600	0-20 / 1225	0-15 / 1100	0-10 / 875	0-5 / 800
4800	0-30 / 1500	0-20 / 1250	0-15 / 1100	0-10 / 975
6000	0-30 / 1750	0-20 / 1525	0-15 / 1350	0-10 / 1100

	AC/HP SIZE			
BLU	A	B	C	D
2400	36	30	24	18
3600	42	36	30	24
4800	48	42	36	30
6000	60	48	42	36

LEGEND

- - -	FIELD POWER WIRING	GND	EQUIPMENT GROUND
◌	MARKED TERMINAL	ECM	FAN MOTOR
- ⋱ -	PLUG AND RECEPTACLE	PCB	PRINTED CIRCUIT BOARD
COM	COMMON	RECP	RECEPTACLE
F1	LOW VOLTAGE FUSE	TRAN	TRANSFORMER

NOTES:

1. Use copper wire (75ºc min) only between Disconnect Switch and unit.
2. To be wired in accordance with N.E.C. and local codes.
3. Transformer primary leads, blue 208v, red 230v.
4. If any of the original wire, as supplied, must be replaced, use the same or equivalent type wire.
5. Replace low voltage fuse with no greater than 5 amp fuse.
6. Use 60 amp class K fuses only, for replacement.
7. Connect R to R, G to G, etc., see outdoor instruction for details.
8. Use table to select proper airflow for aux heat size and AC/HP size.

332385-101 REV. B

FAN COIL AIRFLOW DELIVERY (CFM) IN COOLING MODE (A/C OR HP)										
Fan Coil Size	Outdoor Unit Size	Single Stage Cooling		Two−Stage Cooling				Fan Only		
				High		Low				
		Nominal	Dehum	Nominal	Dehum	Nominal	Dehum	Low	Med	Hi
2400	18	525	420	Two−Stage outdoor unit not offered				350	420	525
	24	700	560	700	560	560	450	350	560	700
	30	875	700	Two−Stage outdoor unit not offered				440	700	875
	36	1050	840	1050	840	840	670	525	840	1050
3600	24	700	560	700	560	560	450	415	560	700
	30	875	700	Two−Stage outdoor unit not offered				440	700	875
	36	1050	840	1050	840	840	670	525	840	1050
	42	1225	980	Two−Stage outdoor unit not offered				615	980	1225
4800	30	875	700	Two−Stage outdoor unit not offered				440	700	875
	36	1050	840	1050	840	840	670	525	840	1050
	42	1225	980	Two−Stage outdoor unit not offered				615	980	1225
	48	1400	1120	1400	1120	1120	900	700	1120	1400
6000	36	1050	840	1050	840	840	670	540	840	1050
	42	1225	980	Two−Stage outdoor unit not offered				615	980	1225
	48	1400	1120	1400	1120	1120	900	700	1120	1400
	60	1750	1400	1750	1400	1400	1120	875	1400	1750

NOTES:
1. The above airflows result with the AC/HP CFM ADJUST select jumper set on NOM.
2. Airflow can be adjusted +15% or −10% by selecting Hi or Lo respectively for all modes except fan only.
3. Dry coil at 230 volts and with 10kW heater and filter installed.
4. Airflows shown are valid for systems with total static pressure between 0.1 and 0.7 inches water column.

Fan Coil Airflow Delivery (CFM) in Heat Pump Heating Mode Only										
Fan Coil Size	Outdoor Unit Size	Single Stage HP Heating		Two−Stage HP Heating				Fan Only		
				High		Low				
		Comfort	Eff	Comfort	Eff	Comfort	Eff	Low	Med	Hi
2400	18	475	525	Two−Stage outdoor unit not offered				350	380	475
	24	630	700	630	700	505	560	350	505	630
	30	785	875	Two−Stage outdoor unit not offered				440	630	785
	36	945	1050	945	1050	755	840	525	755	945
3600	24	630	700	630	700	505	560	415	505	630
	30	785	875	Two−Stage outdoor unit not offered				440	630	785
	36	945	1050	945	1050	755	840	525	755	945
	42	1100	1225	Two−Stage outdoor unit not offered				615	880	1100
4800	30	785	875	Two−Stage outdoor unit not offered				440	630	785
	36	945	1050	945	1050	755	840	525	755	945
	42	1100	1225	Two−Stage outdoor unit not offered				615	880	1100
	48	1260	1400	1260	1400	1010	1120	700	1010	1260
6000	36	945	1050	945	1050	755	840	540	755	945
	42	1100	1225	Two−Stage outdoor unit not offered				615	880	1100
	48	1260	1400	1260	1400	1010	1120	700	1010	1260
	60	1575	1750	1575	1750	1260	1400	875	1260	1575

NOTES:
1. The above airflows result with the AC/HP CFM ADJUST select jumper set on NOM.
2. Airflow can be adjusted +15% or −10% by selecting Hi or Lo respectively for all modes except fan only.
3. Dry coil at 230 volts and with 10kW heater and filter installed.
4. Airflows shown are valid for systems with total static pressure between 0.1 and 0.7 inches water column.

AIRFLOW DELIVERY (CFM)													
FVM Model Size	Outdoor Unit Capacity (BTUH)	Electric Heater kW Range											
		0 – 5			0 – 10			0 – 15			0 – 20		
		LO	NOM	HI	LO	NOM	HI	LO	NOM	HI	LO	NOM	HI
2400	18	625	625	625	675	675	675	*	*	*	*	*	*
	24	650	725	835	*	725	835	875	875	875	*	*	*
	30	815	905	1040	*	905	1040	900	900	1040	1100	1100	1100
	36	980	1085	1250	980	1085	1250	980	1085	1250	1100	1100	1250
3600	24	675	725	835	875	875	*	*	*	*	*	*	*
	30	815	905	1040	875	905	1040	1100	1100	1100	*	*	*
	36	980	1085	1250	980	1085	1250	1100	1100	1250	1225	1225	1250
	42	1140	1270	1460	1140	1270	1460	1140	1270	1460	1225	1270	1460
		0 – 10			0 – 15			0 – 20			0 – 30		
4800	30	975	975	1040	1100	1100	1100	*	*	*	*	*	*
	36	980	1085	1250	1100	1100	1250	1250	1250	1250	*	*	*
	42	1140	1270	1460	1140	1270	1460	1250	1270	1460	*	*	*
	48	1305	1450	1665	1305	1450	1665	1305	1450	1665	1500	1500	1665
6000	36	1100	1100	1250	1350	1350	1350	*	*	*	*	*	*
	42	1140	1270	1460	1350	1350	1460	1525	1525	1525	*	*	*
	48	1305	1450	1665	1350	1450	1665	1525	1525	1665	1750	1750	1750
	60	1630	1810	2085	1630	1810	2085	1630	1810	2085	1750	1810	2085

* Airflow not recommended for heater/system size

NOTE: LO, NOM, and HI refer to AC/HP CFM ADJUST selection on the Fan Control Board.

MINIMUM CFM FOR ELECTRIC HEATER APPLICATION						
FVM Model Size	Outdoor Unit Size	Heater Size kW				
		5	8, 9, 10	15	18, 20	24, 30
2400	18	625	625	––	––	––
	24	650	725	875	––	––
	30	800	875	875	1040	––
	36	970	970	970	1040	––
3600	24	675	875	––	––	––
	30	800	875	1100	1150	––
	36	975	975	1100	1225	––
	42	1125	1125	1125	1225	––
4800	30	800	875	875	1150	––
	36	975	975	1100	1225	––
	42	1125	1125	1125	1225	––
	48	1305	1305	1305	1305	1400
6000	36	1100	1100	1350	1350	––
	42	1125	1125	1350	1350	––
	48	1300	1300	1350	1465	1750
	60	1625	1625	1625	1750	1750

A/C Minimum CFM when using Electric Heat (CFM)						
FVM Model Size		Heater Size kW				
		5	8, 9, 10	15	18, 20	24, 30
2400	Heater Only	625	625	725	875	––
3600		675	700	850	1050	––
4800		675	700	850	1050	1400
6000		1050	1050	1050	1050	1750

NOTES:

1. Heater Only−Air conditioner with electric heater application.
2. These airflows are minimum acceptable airflows as UL listed. Actual airflow delivered will be per airflow delivery chart for Electric Heating Modes.

AIRFLOW PERFORMANCE − CFM RANGE		
Fan Coil Size	**Use with Outdoor Unit Size**	**CFM Range**
2400	18, 24, 30, 36	350 − 1200
3600	24, 30, 36, 42	415 − 1400
4800	30, 36, 42, 48	425 − 1600
6000	36, 42, 48, 60	540 − 2000

SEQUENCE OF OPERATION

FVM fan coils will supply airflow in a range which is more than twice the range of a standard fan coil. Each fan coil size is designed to provide nominal cooling capacities at 50 °F evaporator temperature and the required airflow in order to match with any of four (4) different air conditioner or heat pump outdoor unit sizes. Refer to Airflow Performance (above) for the CFM range for the different FVM fan coils.

The blower motor is a true variable speed motor designed to deliver constant CFM. Constant CFM is valid for systems with total external static pressure between 0.1 and 0.7 inches water column.

A. CONTINUOUS FAN

- Thermostat close circuit R to G.
- Blower runs at continuous fan airflow.

B. COOLING MODE − SINGLE STAGE

- If indoor temperature is above temperature set point and humidity is below humidity set point, thermostat closes circuits R to G, R to Y/Y2 and R to O.

NOTE: For single stage systems, do not use the Y1 terminal.

- Fan coil delivers single stage cooling airflow.

C. COOLING MODE − TWO STAGE

- First stage (low) cooling: Thermostat closes circuits to R to G, R to O, and R to Y1.
- Fan coil delivers low stage cooling airflow.
- Second stage (high) cooling: Thermostat closes circuits to R to G, R to O, R to Y1, and R to Y/Y2.
- Fan coil delivers high stage cooling airflow.

D. COOLING MODE − DEHUMIDIFICATION

- If indoor temperature is above temperature set point and humidity is above humidity set point, thermostat closes circuits R to G, R to Y/Y2 and R to O and humidistat closes R to H.
- The fan coil delivers airflow which is approximately 80% of the nominal cooling airflow to increase the latent capacity of the system.

E. ELECTRIC HEAT HEATING MODE

- Thermostat closes circuit R to W/W1, or W2
- Fan coil delivers the selected electric heat airflow.

F. HEAT PUMP HEATING MODE − SINGLE STAGE

- Thermostat closes circuits R to G and R to Y/Y2.

NOTE: For single stage systems, do not use the Y1 terminal.

- Fan coil delivers single stage heat pump heating airflow.

G. HEAT PUMP HEATING MODE − TWO STAGE

- First stage (low) heating: Thermostat closes circuits R to G and R to Y1.
- Fan coil delivers low stage heating airflow.
- Second stage (high) heating: Thermostat closes R to G, R to Y1 and R to Y/Y2.
- Fan coil delivers high stage heating airflow.

H. HEAT PUMP HEATING WITH AUXILIARY ELECTRIC HEAT

- Thermostat closes circuits R to G, R to Y/Y2 and/or R to Y1 with R to W/W1 or W2 (and R to O in the case of defrost).

If the thermostat calls for electric heat when the heat pump is operating in heating or defrost, the motor will modify the airflow if necessary. The motor will provide an airflow which is safe for the operation of the electric heat. That airflow is the greater of the heat pump heating airflow and the electric heat only airflow.

⚠ CAUTION

ELECTRICAL SHOCK or UNIT DAMAGE HAZARD

Failure to carefully read and follow this CAUTION may result in equipment malfunction, property damage, personal injury and/or death.

Disconnect power to unit before removing or replacing connectors or servicing motor. Wait at least five (5) minutes after disconnecting power before opening motor.

TROUBLESHOOTING ECM MOTOR AND CONTROLS

SEE INSTALLATION INSTRUCTIONS FOR TROUBLESHOOTING INFORMATION.

FAN COIL MODEL NUMBER IDENTIFICATION GUIDE

	F	V	M	2	X	2400	A	1
F = Fan Coil								
V = Variable speed ECM motor **MOTOR TYPE**								
M = Multiposition **INSTALLATION TYPE**								
2 = R−22								
4 = Environmentally Sound R−410A **REFRIGERANT**								
X = TXV **METERING DEVICE**								
2400 = 24,000 BTUH = 2 tons								
3600 = 36,000 BTUH = 3 tons								
4800 = 48,000 BTUH = 4 tons								
6000 = 60,000 BTUH = 5 tons **NOMINAL CAPACITY**								
Sales Code								
Engineering Revision								

ACCESSORIES PART NUMBER IDENTIFICATION GUIDE

	EB	AC	01	NCB	A
EB = Evaporator Blower					
AC = Accessory					
01 = Product Identifier Number					
NCB = Non−Combustible Base Kit					
DFK = Down Flow Kit					
PLG = Power Plug (no heat kit)					
SPK = Single Point Wiring Kit					
FKS = Filter Kit Small					
FKM = Filter Kit Medium					
FKL = Filter Kit Large					
FKX = Filter Kit Extra Large					
CTK = Condensate Trap Kit (PVC pipe)					
Sales Code					