

## EC MOTOR SUPPLEMENTAL MANUAL

EC MOTORS FOR:  
TRCe500 (IN)  
TRCe800 (IN)  
TRCe800V (IN)  
TRCe1200 (IN)



MODEL SHOWN: TRCe1200



MODEL SHOWN: TRCe500



MODEL SHOWN: TRCe800



MODEL SHOWN: TRCe800V

## EC MOTORS

### ABOUT S&P

S&P USA operations are based in Jacksonville, Florida. This geographically strategic location allows the shipment of products throughout the U.S. and Canada. The Jacksonville manufacturing facility has more than 150,000 square feet of warehouse space for the stocking of a comprehensive range of products. This permits the overnight delivery of many popular model sizes to anywhere in the U.S. and Canada.

At S&P USA we take pride in the fact that our customers receive only the very highest levels of customer service and care. Our internal and external technical and customer service teams are on-hand to provide professional and experienced application advice to enable our customers to apply our products to their particular ventilation and air movement applications. As the USA sales, marketing and distribution division of the S&P Group of companies we are committed to providing only the very highest levels of customer service. Our commitment in providing only the very highest standards of customer service is key to our company strategy.

S&P Ventilation Group is the world's leading fan manufacturer. It celebrated its 50th anniversary in 2001. S&P is able to offer a range of ventilation products benefiting from over 50 years of experience in the industry. The company's impressive, long-term growth is the result of one simple philosophy - develop an air moving product that effectively and efficiently meets the needs of the customer, supported by unparalleled engineering, distribution and service.

In 1951 Eduard and Josep Palau, both born in Ripoll, Spain, founded the company Soler & Palau (S&P). From the very start the business proved to be their vocation. Together they combined their extensive knowledge and flair to ensure the successful start of their business project. There is continual in-house product development with state-of-the-art technology, and a continued program of in-house laboratory certifications.

Currently S&P's R&D, manufacturing and distribution facilities occupy a total of 1.1 million square feet, with offices and locations around the globe. S&P products can be found in virtually any commercial or residential application, ranging from innovative, quiet and reliable room ventilators to large diameter, high capacity exhaust systems designed for critical applications in some of the world's toughest environments.

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## EC MOTORS

### PRODUCT INFO

#### EC MOTORS

S&P's light commercial units are offered with optional electronically commutated motors (EC). EC motors have higher efficiencies with considerable energy savings over a standard permanent split capacitor motor. The EC motors offered in S&P ERVs are constant torque with a variety of speed control options. The motors operate at fixed speed or variable speed with speed inputs from fixed resistors, potentiometer, or 0-10Vdc analog signal.

#### CAUTION

When an external 10VDC source control is used the maximum distance between EC motor and 10VDC source control cannot exceed 33 feet (10m).

#### ABOUT EC MOTORS

#### OPERATING CONTROLS

A wide variety of low voltage (24VAC) control schemes may be selected to meet the ventilation needs of the facility. These include time clock, occupancy sensor, carbon dioxide sensor, and others. Building Management Systems (BMS) may also control the unit with external control by others.

#### ELECTRICAL SPECIFICATIONS

ELECTRICAL RATINGS FOR EC MOTOR UNITS					
	Phase (unit)	Input Voltage	FLA (motor)	MCA (unit)	MOPD (unit)
TRCe500	1	115 VAC	8.1	10.1	15
		208-230 VAC	4.8	6.0	15
TRCe800 TRCe800V	1	115 VAC	8.1	18.2	25
		208-230 VAC	4.8	10.8	15
TRCe1200	1	115 VAC	8.0	18.0	20
		208-230 VAC	6.2	14.0	15

## EC MOTORS

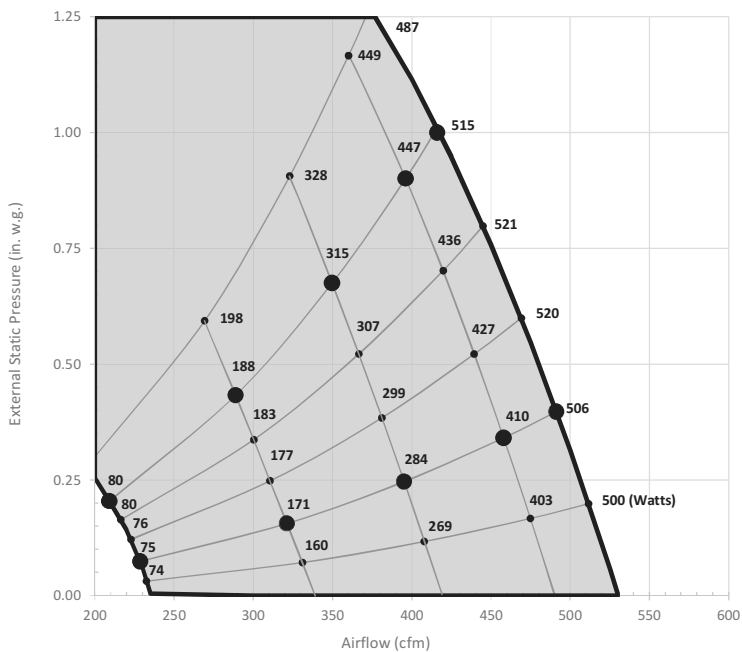
### PRODUCT INFO

#### EC MOTOR OPTION OPERATING RANGES

TRCe500 EC MOTOR		
Sample Points		
CFM	ESP*	Watts
229	0.07	75
321	0.16	171
395	0.25	284
458	0.34	410
491	0.40	506
209	0.20	80
289	0.43	188
350	0.67	315
396	0.90	447
416	1.00	515

Note: Watts is for the entire unit.  
\*Inches Water Column

#### F1 TRCe500

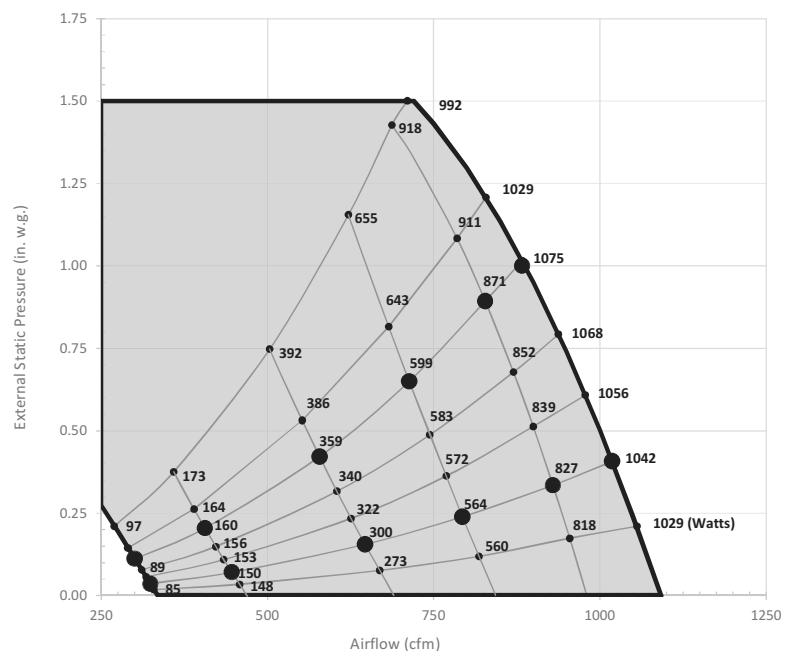


#### EC MOTOR OPTION OPERATING RANGES

TRCe800 & TRCe800V EC MOTOR		
Sample Points		
CFM	ESP*	Watts
324	0.04	86
446	0.07	150
647	0.15	300
794	0.24	564
929	0.33	827
1019	0.41	1042
300	0.11	91
406	0.20	160
579	0.42	359
713	0.65	599
828	0.89	871
883	1.00	1075

Note: Watts is for the entire unit.  
\*Inches Water Column

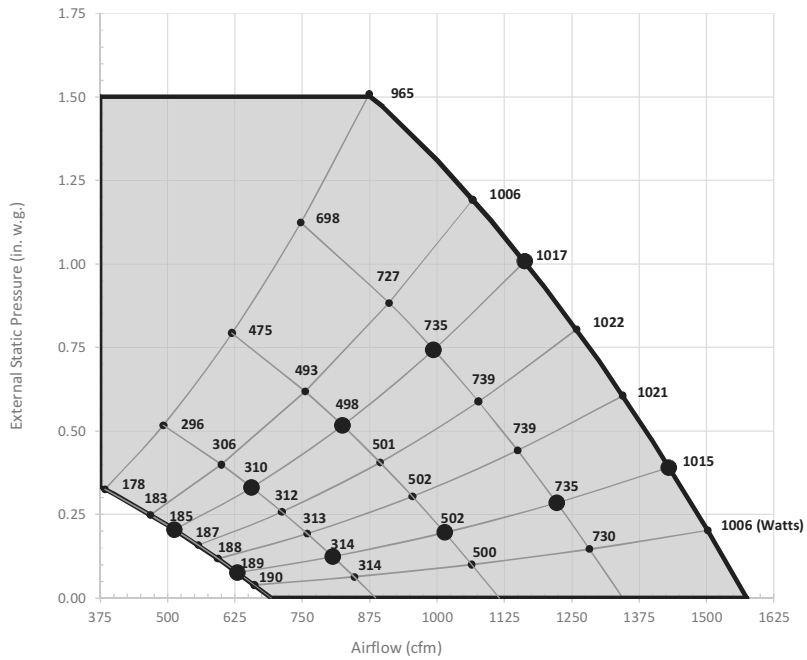
#### F2 TRCe800 & TRCe800V



## EC MOTORS

### PRODUCT INFO

#### F3 TRCe1200 (H)



#### EC MOTOR OPTION OPERATING RANGES

TRCe1200 EC MOTOR		
Sample Points		
CFM	ESP*	Watts
630	0.07	189
807	0.12	314
1014	0.20	502
1222	0.28	735
1430	0.39	1015
513	0.20	185
656	0.33	310
825	0.52	498
994	0.74	735
1163	1.01	1017

Note: Watts is for the entire unit.  
\*Inches Water Column

## EC MOTORS

### INSTALLATION

#### PLANNING YOUR INSTALLATION

#### WARNING

##### **RISK OF FIRE, ELECTRIC SHOCK, OR INJURY. OBSERVE ALL CODES AND THE FOLLOWING:**

1. Before servicing or cleaning the unit, switch power off at disconnect switch or service panel and lockout/tag-out to prevent power from being switched on accidentally. More than one disconnect switch may be required to de-energize the equipment for servicing.
2. This installation manual shows the suggested installation method. Additional measures may be required by local codes and standards.
3. Installation work and electrical wiring must be done by qualified professional(s) in accordance with all applicable codes, standards and licensing requirements.
4. Any structural alterations necessary for installation must comply with all applicable building, health, and safety code requirements.
5. This unit must be grounded.
6. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment that might be installed in the area affected by this equipment. If this unit is exhausting air from a space in which chimney-vented fuel burning equipment is located, take steps to assure that combustion air supply is not affected. Follow the heating equipment manufacturer's requirements and the combustion air supply requirements of applicable codes and standards.
7. Use the unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
8. This unit is intended for general ventilating only. Do not use to exhaust hazardous or explosive materials and vapors. Do not connect this unit to range hoods, fume hoods or collection systems for toxics.
9. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
10. If installed indoors this unit must be properly ducted to the outdoors.

#### CAUTION

To avoid motor bearing damage and noisy and/or unbalanced impellers, keep drywall spray, construction dust, etc., out of unit.

#### PRINCIPLES OF EXTERNAL CONTROL

The S&P units with EC motors are designed for control by a wide variety of low voltage (24VAC) controls to meet the ventilation needs of the facility. These include time clock, occupancy sensor, carbon dioxide sensor, building management system (BMS) and others. These devices are commonly known as 2-wire, 3-wire, and 4-wire devices. S&P offers separately the following for standalone control of the ERV:

- Digital Time Clocks
- Occupancy Sensors
- Carbon Dioxide Sensor/Controllers

#### TRCe800, TRCe800V & TRCe1200

The external control device connects to the S&P unit to operate each blower independently or for one blower to act as leader and the other blower to act as follower. When operating independently, a single external switch or relay calls for operation but each speed control motor can respond independently to switch or analog signal source.

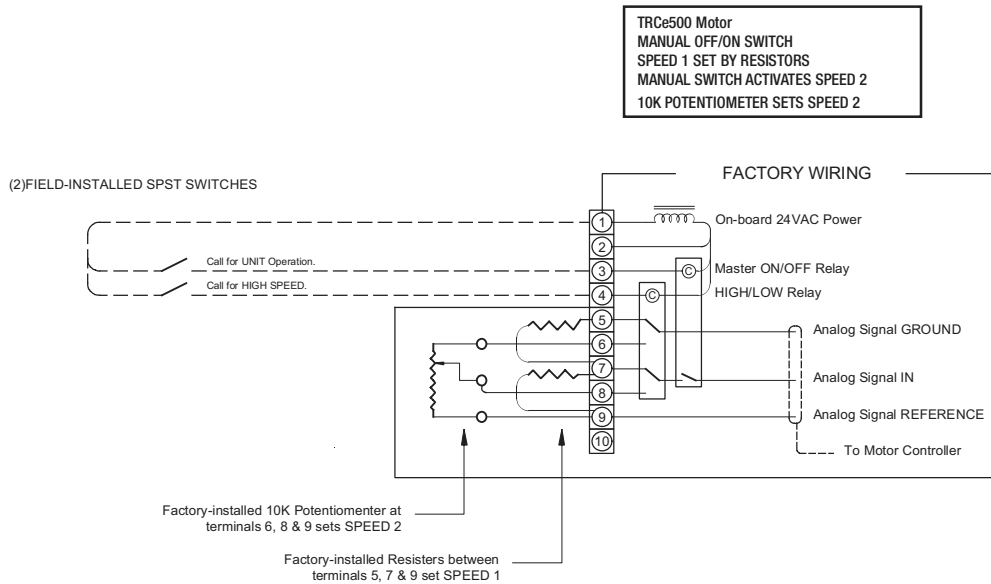
When acting as leader-follower, again, a single external source calls for operation and then one motor responds to the input signal. The TRCe800, TRCe800V and TRCe1200 units have the versatility that either the exhaust air (EA) motor or the fresh air (FA) motor can act as leader. Connection of an external control device to the S&P unit is simple. All external control device wires connect to a terminal block(s) in the unit's electrical box.

## EC MOTORS

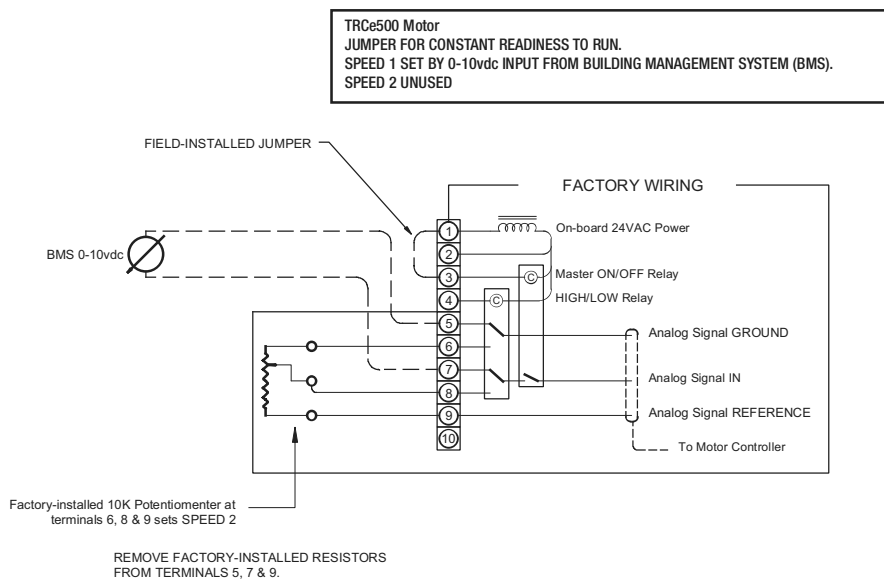
### INSTALLATION

#### TRCe500 FIXED SPEED CONTROL

#### WIRING SCHEMATICS BY CONTROL METHOD



#### TRCe500 0-10 VDC SIGNAL FROM EXTERNAL CONTROL OR BMS

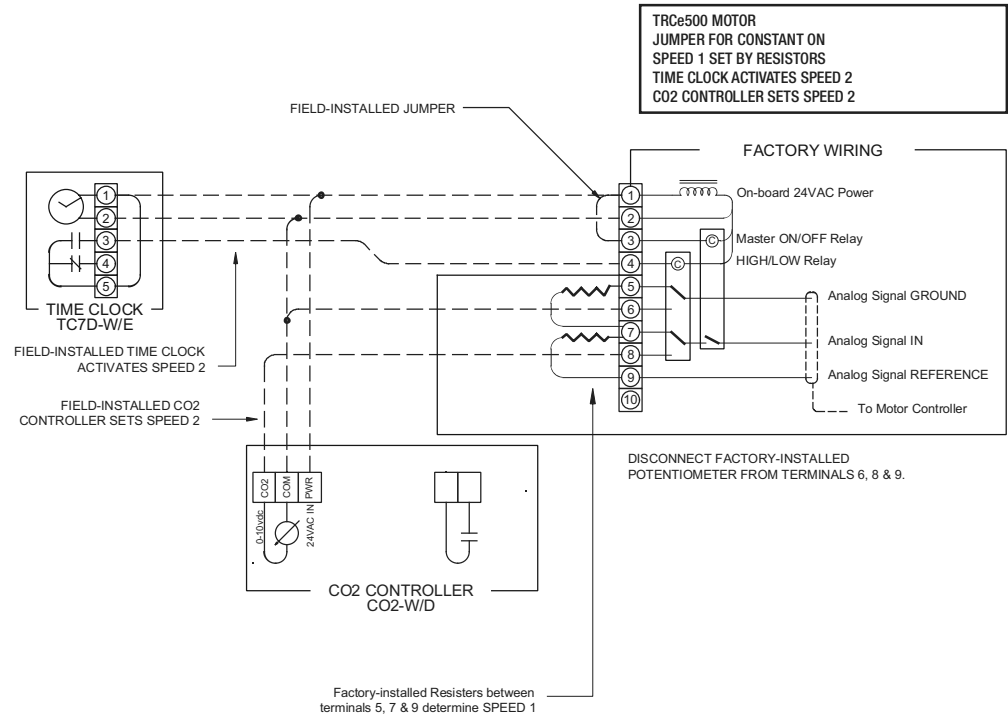


## EC MOTORS

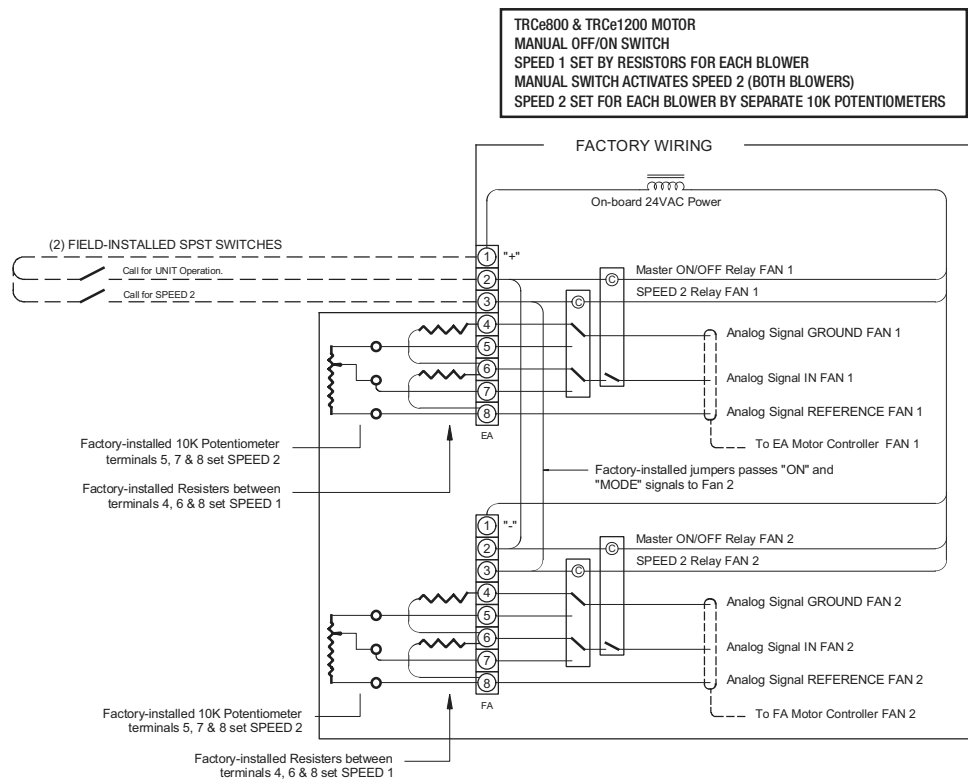
### INSTALLATION

#### WIRING SCHEMATICS BY CONTROL METHOD

##### TRCe500 0-10 VDC SIGNAL FROM CO2 CONTROL



##### TRCe800, TRCe800V & TRCe1200 FIXED SPEED CONTROL





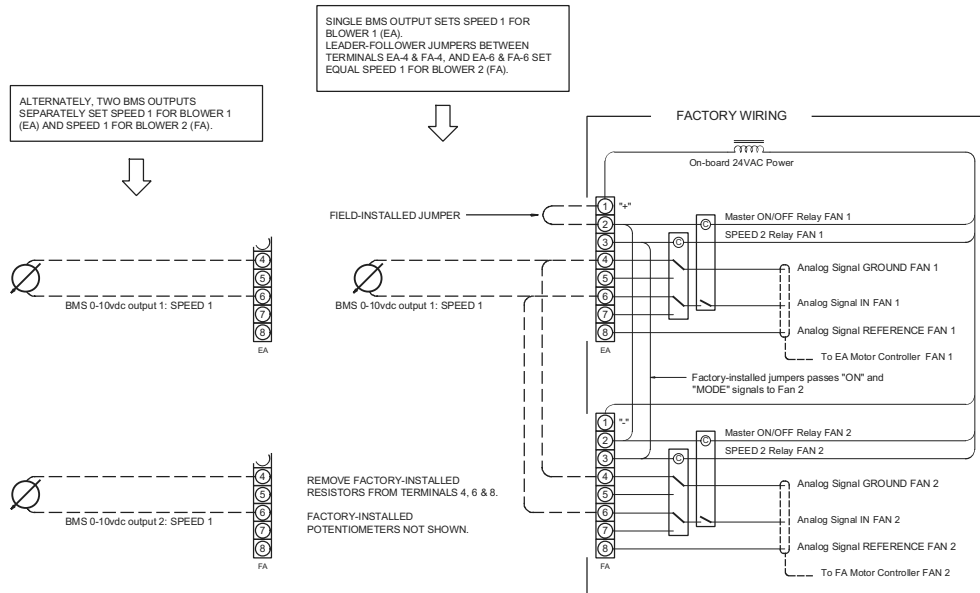
## EC MOTORS

## INSTALLATION

### TRCe800, TRCe800V & TRCe1200 0-10 VDC SIGNAL FROM EXTERNAL CONTROL OR BMS

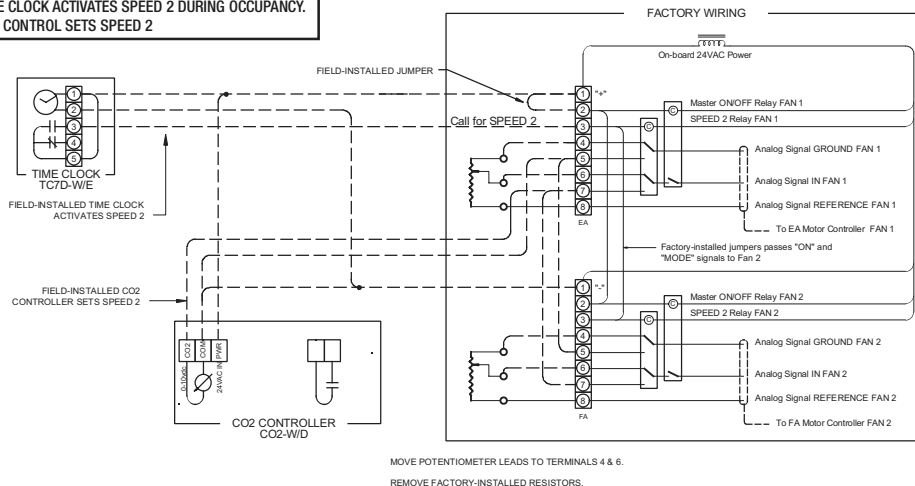
### WIRING SCHEMATICS BY CONTROL METHOD

TRCe800 & TRCe1200 MOTOR  
JUMPER FOR CONSTANT ON  
SPEED 1 SET BY 0-10vdc OUTPUTS OF BUILDING MANAGEMENT SYSTEM (BMS)  
SPEED 2 UNUSED



### TRCe800, TRCe800V & TRCe1200 0-10 VDC SIGNAL FROM CO2 CONTROL

TRCe800 & TRCe1200 MOTOR  
JUMPER FOR CONSTANT UNIT ON  
SPEED 1 SET BY 10K POTENTIOMETER EACH BLOWER  
TIME CLOCK ACTIVATES SPEED 2 DURING OCCUPANCY.  
CO2 CONTROL SETS SPEED 2

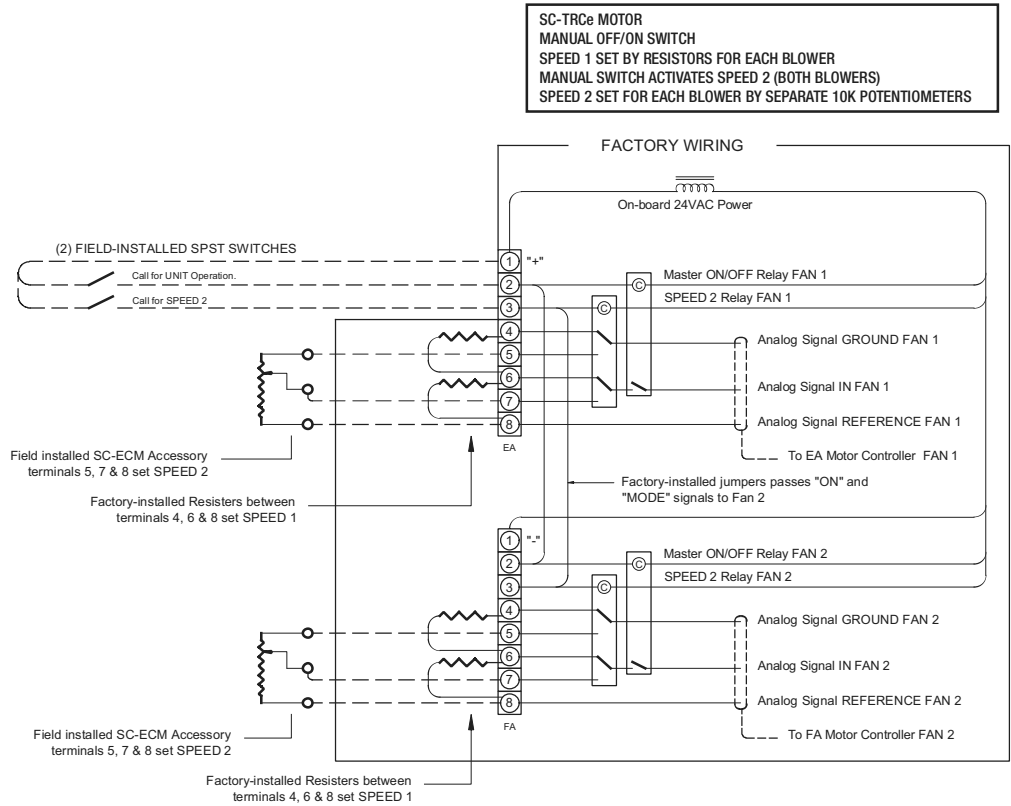


## EC MOTORS

### INSTALLATION

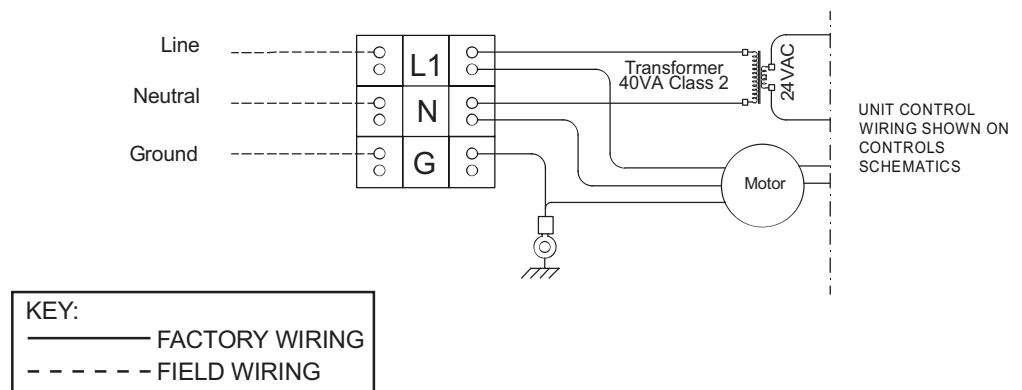
#### WIRING SCHEMATICS BY CONTROL METHOD

#### SPEED CONTROL SC-TRCe ACCESSORY CONTROL



#### WIRING SCHEMATICS BY MODEL

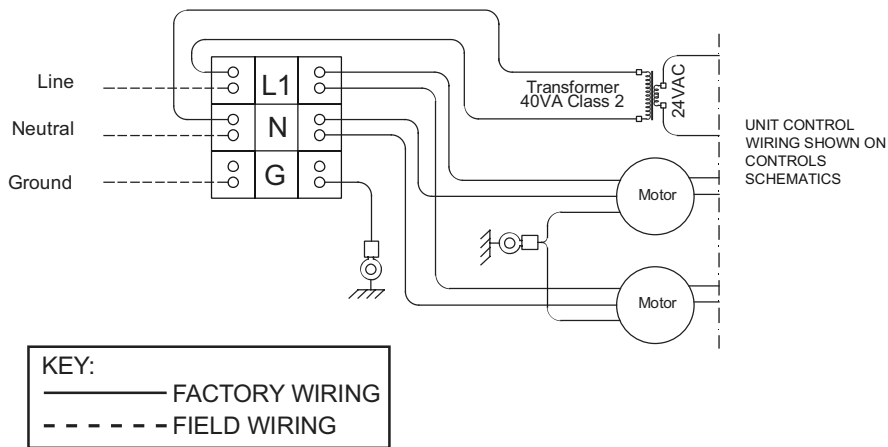
#### TRCe500 LINE VOLTAGE WIRING CONNECTIONS



## EC MOTORS

### INSTALLATION

#### TRCe800, TRCe800V & TRCe1200 LINE VOLTAGE WIRING CONNECTIONS



#### AIRFLOW PERFORMANCE

The ERV is factory wired to operate at low fixed speed and high variable speed.

Airflows must be measured and the unit's potentiometers adjusted so that it operates at the airflow volumes specified for the installation.

#### CAUTION

Make sure clean filters are installed before balancing airflow. Dirty or clogged filters reduce airflow through the unit.

#### START-UP

#### CAUTION

Very low airflow rates may result in fouling of the energy exchanger core. Do not reduce airflow to below 250 cfm per core.

#### AIRFLOW