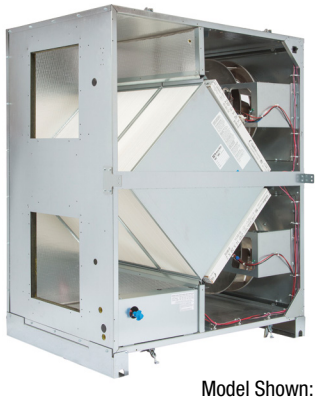
ADVANCING VENTILATION®

EC Motor Supplemental Manual

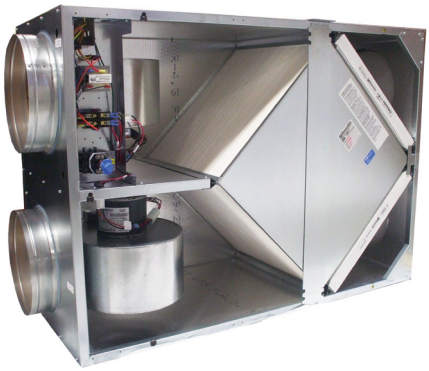
Supplemental Manual for Options

TRCe500
TRCe800
TRCe800V
TRCe1200

Model Shown: TRCe500



Model Shown: TRCe1200



Model Shown: TRCe800

Model Shown: TRCe800V

AHRI CERTIFIED® www.ahridirectory.org
Globally Recognized. Industry Respected.

ETL LISTED c US Intertek

⚠ 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 an 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

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

⚠ CAUTION

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

⚠ CAUTION

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

⚠ CAUTION

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

1.0 OVERVIEW

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.

1.1 DESCRIPTION

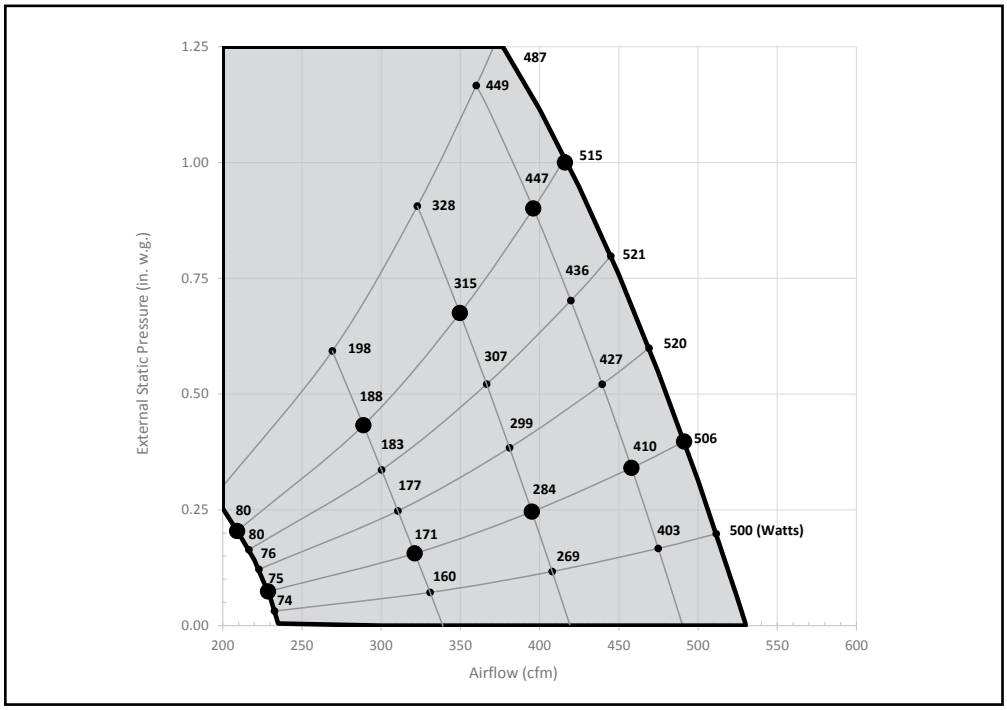
S&P's light commercial units are offered with optional electronically commutated motors (ECM). ECM motors have higher efficiencies with considerable energy savings over a standard permanent split capacitor motor. The ECM motors offered in S&P ERVs are constant torque with a variety of speed control options.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

1.2 OPERATING CONTROLS

A wide variety of low voltage (24 VAC) 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.

2.0 PERFORMANCE DATA

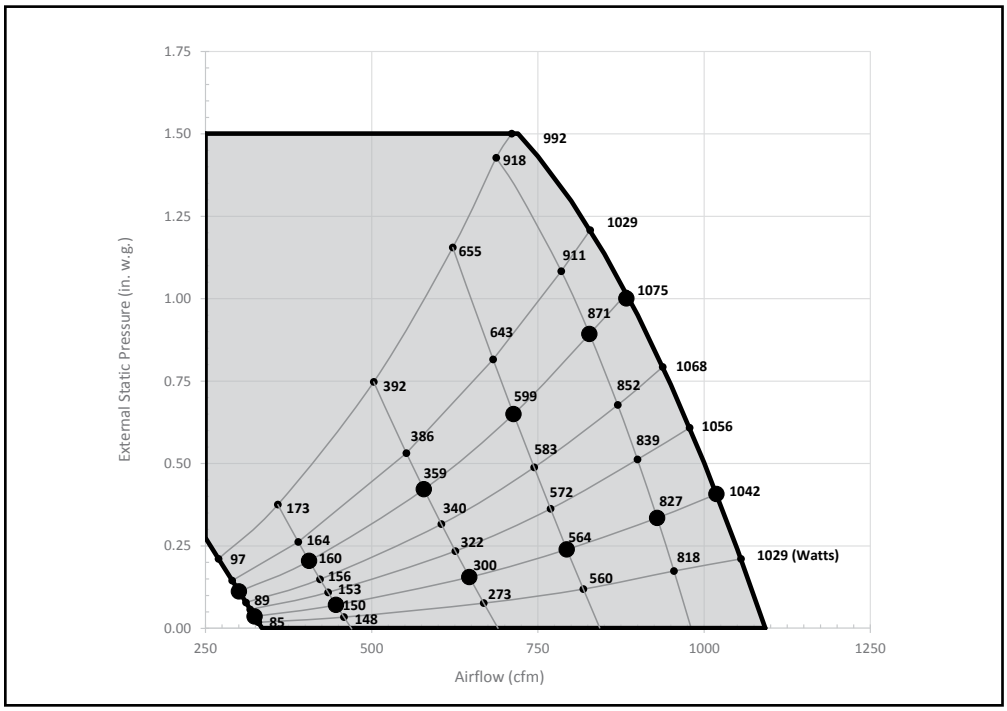
2.1 TRCE500 ECM OPERATING RANGE



TRCe500 ECM		
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

2.2 TRCE800 & TRCE800V ECM OPERATING RANGE



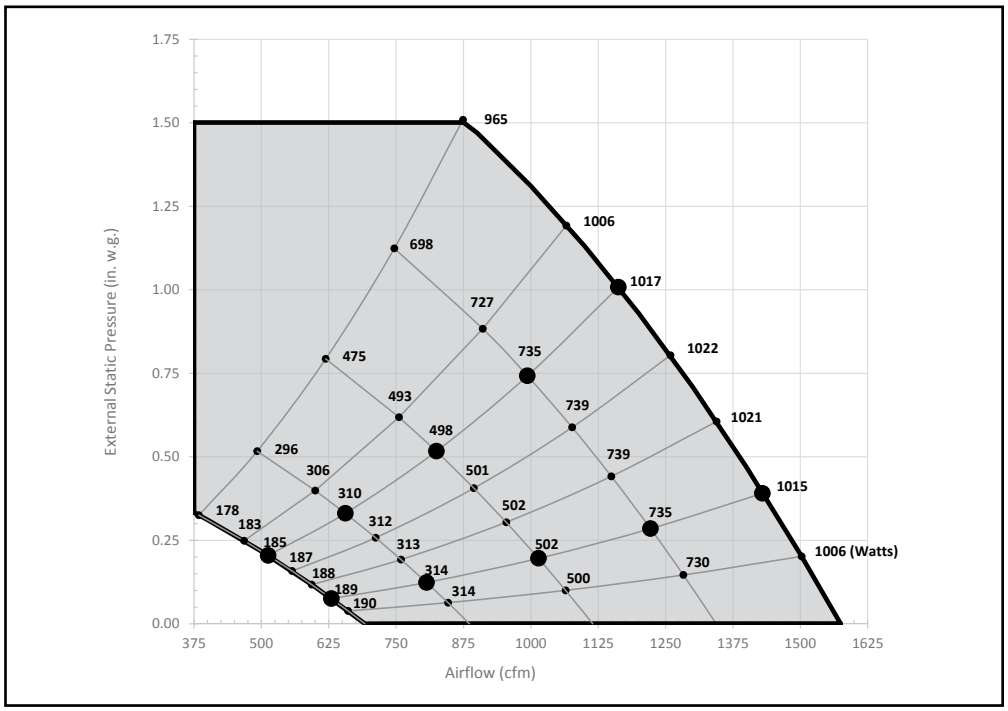
TRCe800 & TRCe800V ECM		
Sample Points		
CFM	ESP*	Watts
324	0.04	86
446	0.07	150
647	0.15	300
794	0.24	564
929	0.33	827
1019	0.41	1042
300	0.11	91
406	0.20	160
579	0.42	359
713	0.65	599
828	0.89	871
883	1.00	1075

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

2.3 TRCE1200 ECM OPERATING RANGE

TRCe1200 ECM		
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



3.0 INSTALLATION

3.1 PRINCIPLES OF EXTERNAL CONTROL

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

- Digital Time Clock STC7D-W
- Occupancy Sensors SMC-C and SMC-W
- Carbon Dioxide Sensor/Controller SCO2-W

3.2 ELECTRICAL SPECIFICATIONS

Electrical Ratings for ECM 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	4.4	9.9	15

3.3 WIRING SCHEMATICS

3.3.1 TRCe500

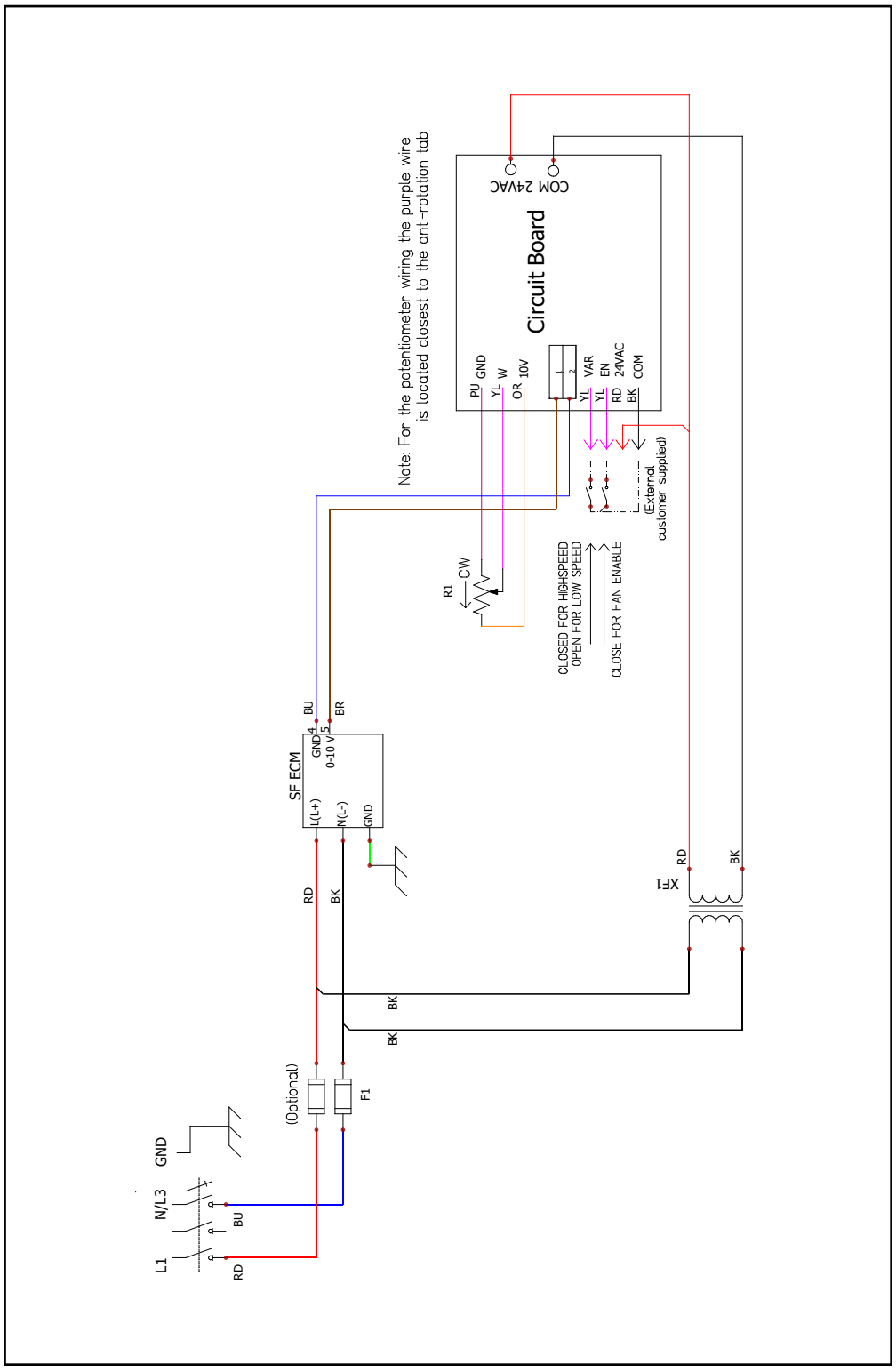
NOTE: Connect the yellow EN wire to the black COM wire to enable the unit.

NOTE: By default the resistors on the board set SPEED 1.

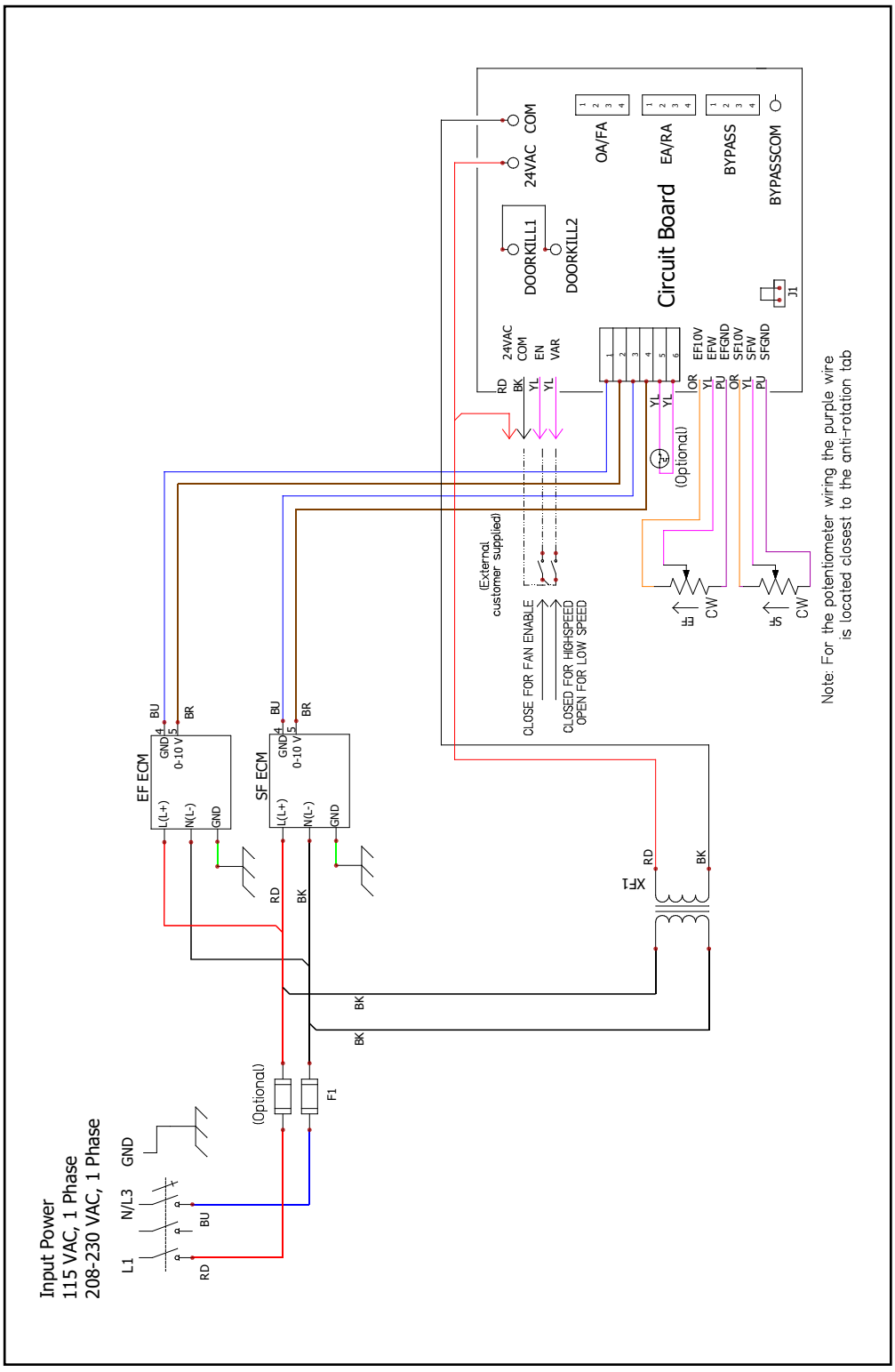
NOTE: Connect the yellow VAR wire to the black COM wire to enable SPEED 2. SPEED 2 is set by the potentiometer.

NOTE: To utilize an external 0–10 VDC analog signal for SPEED 2:

1. Remove the potentiometer by cutting the wires at the potentiometer.
2. Connect the remote analog signal to the yellow wire from the potentiometer.
3. Connect the remote signal ground to the purple wire from the potentiometer.
4. Cap the orange wire from the potentiometer with a wire nut.



3.3.2 TRCe800 and TRCe800V



NOTE: Connect the yellow EN wire to the black COM wire to enable the unit.

NOTE: By default the resistors on the board set SPEED 1.

NOTE: Connect the yellow VAR wire to the black COM wire to enable SPEED 2. SPEED 2 for each fan is set by the potentiometers.

NOTE: To utilize an external 0–10 VDC analog signal for SPEED 2:

1. Remove the potentiometer by cutting the wires at the potentiometers.
2. Connect the remote analog signal to the yellow wire from the potentiometers.
3. Connect the remote signal ground to the purple wire from the potentiometers.
4. Cap the orange wire from the potentiometers with a wire nut.

3.3.3 TRCe1200

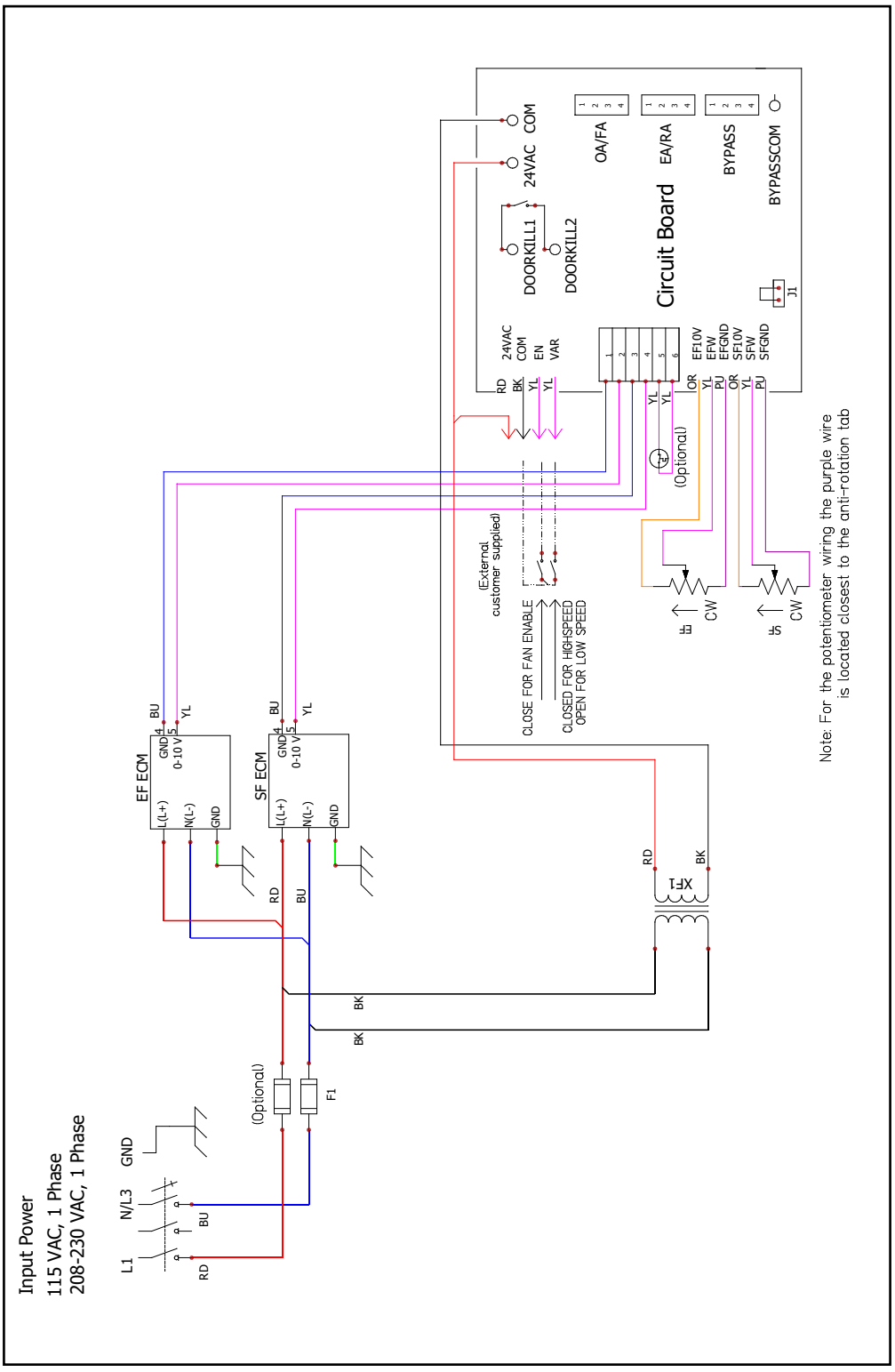
NOTE: Connect the yellow EN wire to the black COM wire to enable the unit.

NOTE: By default the resistors on the board set SPEED 1.

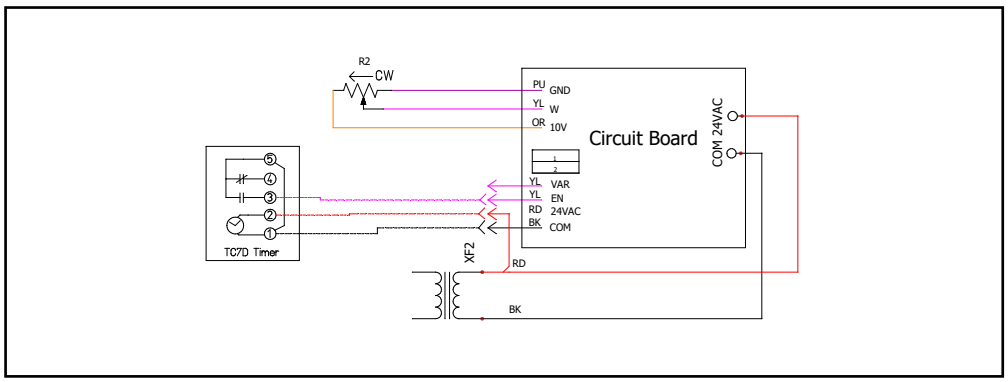
NOTE: Connect the yellow VAR wire to the black COM wire to enable SPEED 2. SPEED 2 for each fan is set by the potentiometer.

NOTE: To utilize an external 0–10 VDC analog signal for SPEED 2:

1. Remove the potentiometer by cutting the wires at the potentiometer.
2. Connect the remote analog signal to the yellow wire from the potentiometer.
3. Connect the remote signal ground to the purple wire from the potentiometer.
4. Cap the orange wire from the potentiometers with a wire nut.



3.3.4 STC7D Field Wiring (Optional Accessory)



4.0 OPERATION

4.1 AIRFLOW PERFORMANCE

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

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

Use the pressure taps in the core and filter doors to determine the airflow. Section 4.3 translates the pressure drop across the energy recovery core to the actual airflow volume.

4.2 MEASURING AIRFLOW

4.2.1 Equipment Required

- Magnehelic gauge or other device capable of measuring 0–1.5 in. water of differential pressure.
- 2 pieces of flexible tubing, 1/8" ID, 1/16" wall works best.

4.2.2 Cross Core Static Pressure Measurement Instructions

- The individual differential pressures (DP) are measured using the installed pressure ports located in the front of the units core access doors.
- To read SCFM of Fresh Air (FA) install the "high" pressure side (+) of your measuring device to the Outside Air (OA) port and the "low" pressure side (-) to the Fresh Air (FA) port.
- To read SCFM of Room Air (RA) install the "high" pressure side (+) of your measuring device to the Room Air (RA) port and the "low" pressure side (-) to the Exhaust Air (EA) port.
- Use the reading displayed on your measurement device to cross reference the CFM output using the conversion chart.
- Adjust airflow by changing the potentiometer setting for the measured airstream.

NOTE: Be sure to remove cap from pressure port before inserting tubing. Ensure tubing is well seated in pressure ports.

NOTE: The tubing should extend in the pressure port approximately 1".

NOTE: These ports are carefully located on the unit to give the most accurate airflow measurement. Do not relocate ports.

NOTE: Be sure to replace cap into pressure port when airflow measuring is complete.

NOTE: For best performance the airflow rate for both the FA and EA should be roughly equal ("balanced"). In some facilities a slight positive or negative pressure in the building is desired. S&P energy recovery ventilators can generally operate with a flow imbalance of up to 20% without significant loss in energy recovery efficiency.

4.3 AIRFLOW VERSUS PRESSURE DROPS

AIRFLOW PREDICTED BY PRESSURE DROP ACROSS CORE (SCFM)								
DP ("H_2O)	TRCe500 ECM		TRCe800V ECM		TRCe800 ECM		TRCe1200 ECM	
	FA	RA	FA	RA	FA	RA	FA	RA
0.10	--	--	--	--	--	--	--	--
0.15	--	--	--	--	--	--	380	320
0.20	200	200	280	--	260	--	500	440
0.25	225	225	330	270	310	290	620	565
0.30	245	245	380	320	360	340	740	695
0.35	265	265	425	375	415	390	860	825
0.40	285	285	470	430	470	440	980	960
0.45	305	305	520	480	520	490	1095	1095
0.50	330	330	570	530	570	540	1215	1235
0.55	350	350	620	580	620	590	1330	1375
0.60	370	370	670	630	670	640	1450	1515
0.65	390	390	720	680	720	690	1565	--
0.70	410	410	770	730	770	740	--	--
0.75	430	430	815	785	820	790	--	--
0.80	455	455	860	840	870	840	--	--
0.85	475	475	910	890	920	890	--	--
0.90	495	495	960	940	970	940	--	--
0.95	--	--	1010	990	1020	990	--	--
1.00	--	--	1060	1040	1070	1040	--	--
1.05	--	--	--	1090	--	1090	--	--

NOTES

NOTES

S&P USA
(800) 961-7370
FAX: (800) 961-7379
6393 POWERS AVE.
JACKSONVILLE, FLORIDA
32217 USA
WWW.SOLERPALAU-USA.COM

S&P CANADA
(416) 744-1217
FAX: (416) 744-0887
6710 MARITZ DRIVE, UNIT 7
MISSISSAUGA, ON L5W 0A1, CANADA
WWW.SOLERPALAUCANADA.COM

104770_005 (06/21)