Digital EC Motor Control

This manual covers the following product(s):
FSC-1   Fan Speed Control

Table of Contents

Overview

The FSC-1 is a digital EC motor control. The control has a simple five button interface with a four digit LED display. All programmable parameters can be accessed through the user menu with the five button interface. There are two ECM connectors with modulating outputs, one 0-10V output, and one 0-10V DC input (MUST BE ISOLATED). The FSC-1 is compatible with Telco Green, Genteq, Nidec, and U.S. motors. User parameters are stored in non-volatile memory, and are retained even during a power outage. The FSC-1 is powered by 24V AC.

Genteq

Genteq motors use our 0-10V output(Terminal labeled "rpm") as the signal going to the motor. In this case, the motor selection(tyP) in the software does not matter. Be sure to select "0-10" in the "APP" parameter.

Normal Operation

Pulse Application

Every ten seconds the FSC-1 display will toggle between the current percent of run speed and the current RPMs. The percent of run speed can be changed by using the **UP▲** and **DN▼** keys followed by the **ENT** key to save your changes. You also have the option of using the control locally or remotely through a 10k potentiometer, 2 Speed Switch, or a 0-10V reference where 0V is 0% and 10V is 100%, unless overridden by the low speed and high speed limits. You can access programming mode by holding the enter key for three seconds.

0-10 Application

In the 0-10V application you are provided a programmable 0-10V reference. The display shows the selected voltage. The voltage is easily changed using the **UP▲** and **DN▼** keys followed by the **ENT** key to save your changes.
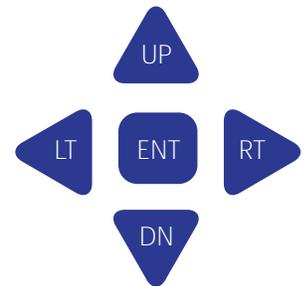
Programming

Please refer to the "FSC-1 Menu Map" on page 3 for editing parameters within program mode. To enter program mode hold the **ENT** key for three seconds until "APPS" is displayed. Use the **UP▲** and **DN▼** keys to navigate to the desired menu parameter shown in column 1 of the menu map on page 3. To edit a menu parameter press the **RT▶** key once on the desired parameter. The current value will be displayed in column 2 of the menu map on page 3. Also use the **UP▲** and **DN▼** keys to change values within a parameter. The parameter will blink until the user presses **ENT** to save the changes or the **LT◀** key to cancel without saving. If a key is not pressed for fifteen seconds, the control will return to normal operating mode. Different parameters are as follows:
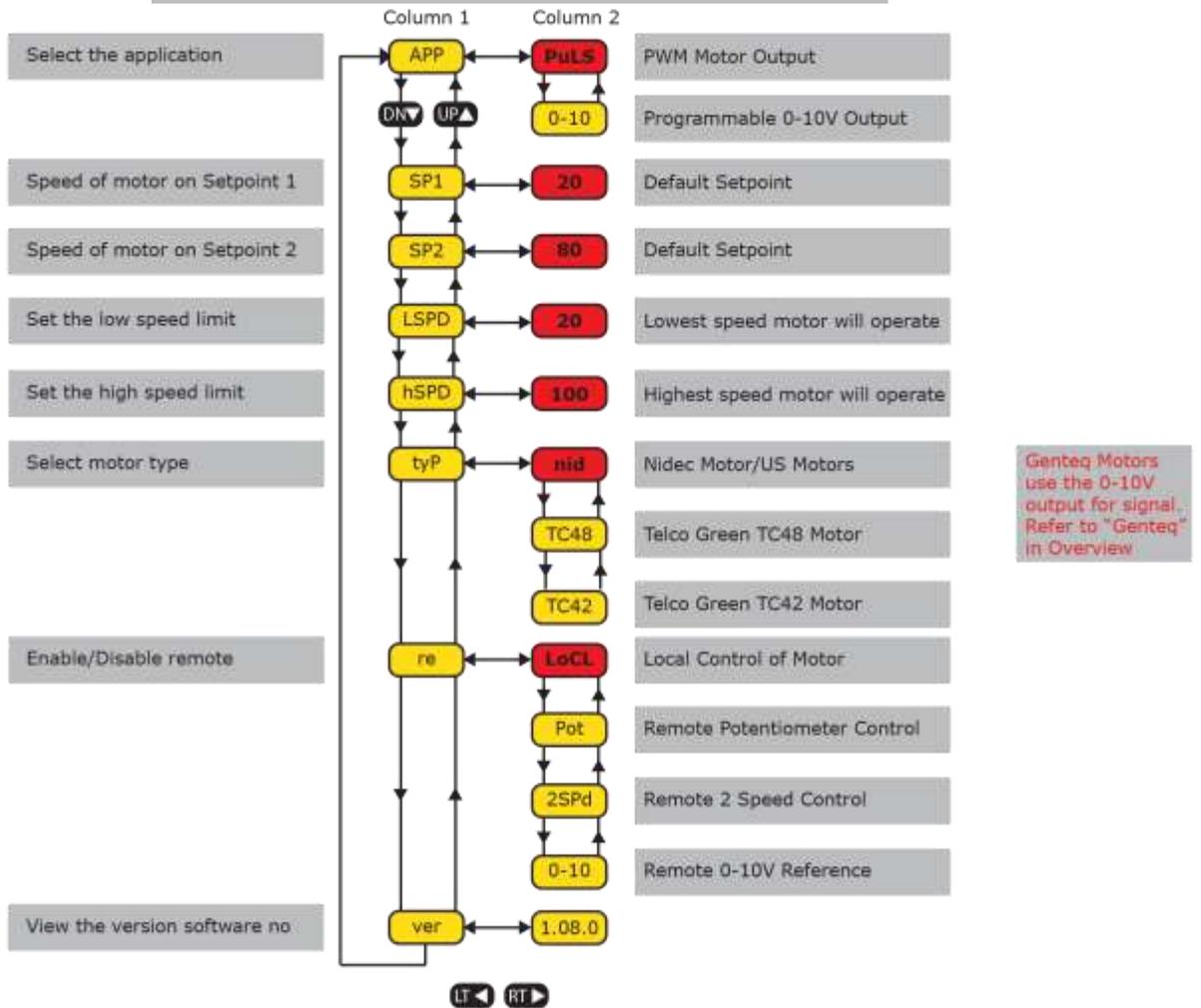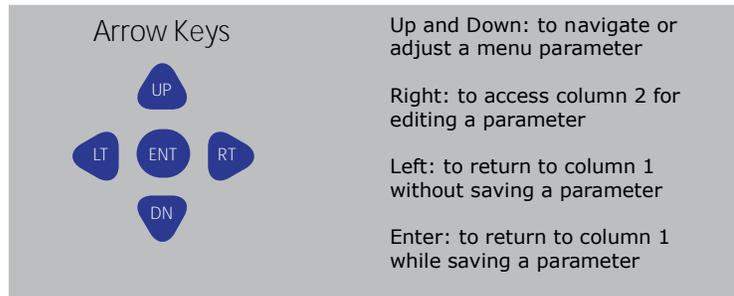
1. "APPS": Prompts the user to select which application to utilize.
2. "SP1": Sets the speed of the motor for Setpoint 1.
3. "SP2": Sets the speed of the motor for Setpoint 2.
4. "LSPD": Sets the lowest possible speed the motor will operate at. If the **DN▼** button is pressed one more time passed the "LSPD" limit, the control will turn off.
5. "hSPD": Sets the highest possible speed the motor can operate at.
6. "tyP": Sets the type of motor the control is configured for. The FSC-1 is compatible with Telco Green, Genteq, Nidec and US motors.
7. "re": Selects local control or remote control type (10k Potentiometer, 2 Speed Switch or 0-10V Reference). When the 0-10V Reference(MUST BE ISOLATED) is utilized with Low Speed and High Speed limits, the FSC-1 will cap the percentage to what the limits are set to. So if Low Speed is set to 30%, anything up to 3 Volts will output 30%. If High Speed is set to 70%, 7 Volts and above will output 70%.
8. "ver": Allows the user to view the current software version number.

Alarms

Error messages on the FSC-1 will scroll across the display with a detailed message. This will help users to resolve issues faster. Possible errors are as follows:

1. "oFF"- The FSC-1 is not receiving RPM feedback.

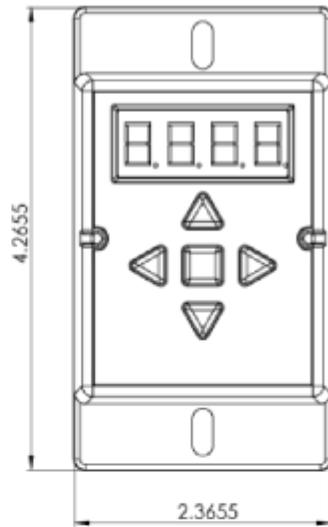To resolve an issue, refer to "Installation" on page 4 for proper wiring connections.

Arrow Keys

Up and Down: to navigate or adjust a menu parameter

Right: to access column 2 for editing a parameter

Left: to return to column 1 without saving a parameter

Enter: to return to column 1 while saving a parameter

Column 1	Column 2	
Select the application	APP → PuLS	PWM Motor Output
	0-10	Programmable 0-10V Output
Speed of motor on Setpoint 1	SP1 ↔ 20	Default Setpoint
Speed of motor on Setpoint 2	SP2 ↔ 80	Default Setpoint
Set the low speed limit	LSPD ↔ 20	Lowest speed motor will operate
Set the high speed limit	hSPD ↔ 100	Highest speed motor will operate
Select motor type	tyP ↔ nid	Nidec Motor/US Motors
	TC48	Telco Green TC48 Motor
	TC42	Telco Green TC42 Motor
Enable/Disable remote	re ↔ LoCL	Local Control of Motor
	Pot	Remote Potentiometer Control
	2SPd	Remote 2 Speed Control
	0-10	Remote 0-10V Reference
View the version software no	ver ↔ 1.08.0	

Genteq Motors use the 0-10V output for signal. Refer to "Genteq" in Overview

(Red indicates default parameter)

FSC-1 Menu Map

Installation

FSC-1 Front Panel   FSC-1 Side View

4.2655
2.3655
1.0285
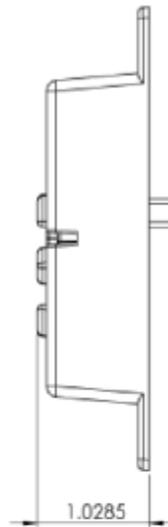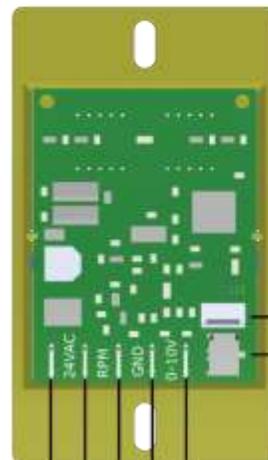
Nidec EC Motor
Telco Green
EC Motor

24VAC   RPM   GND   0-10V

24V
120/240V

GND

0-10VDC IN

0-10VDC OUT

Specifications

Power Requirements	24VAC @ 20VA
Ambient Operating Temperature	-40°F-140°F -40°C-60°C

NIDEC/US MOTORS - PERFECT SPEED

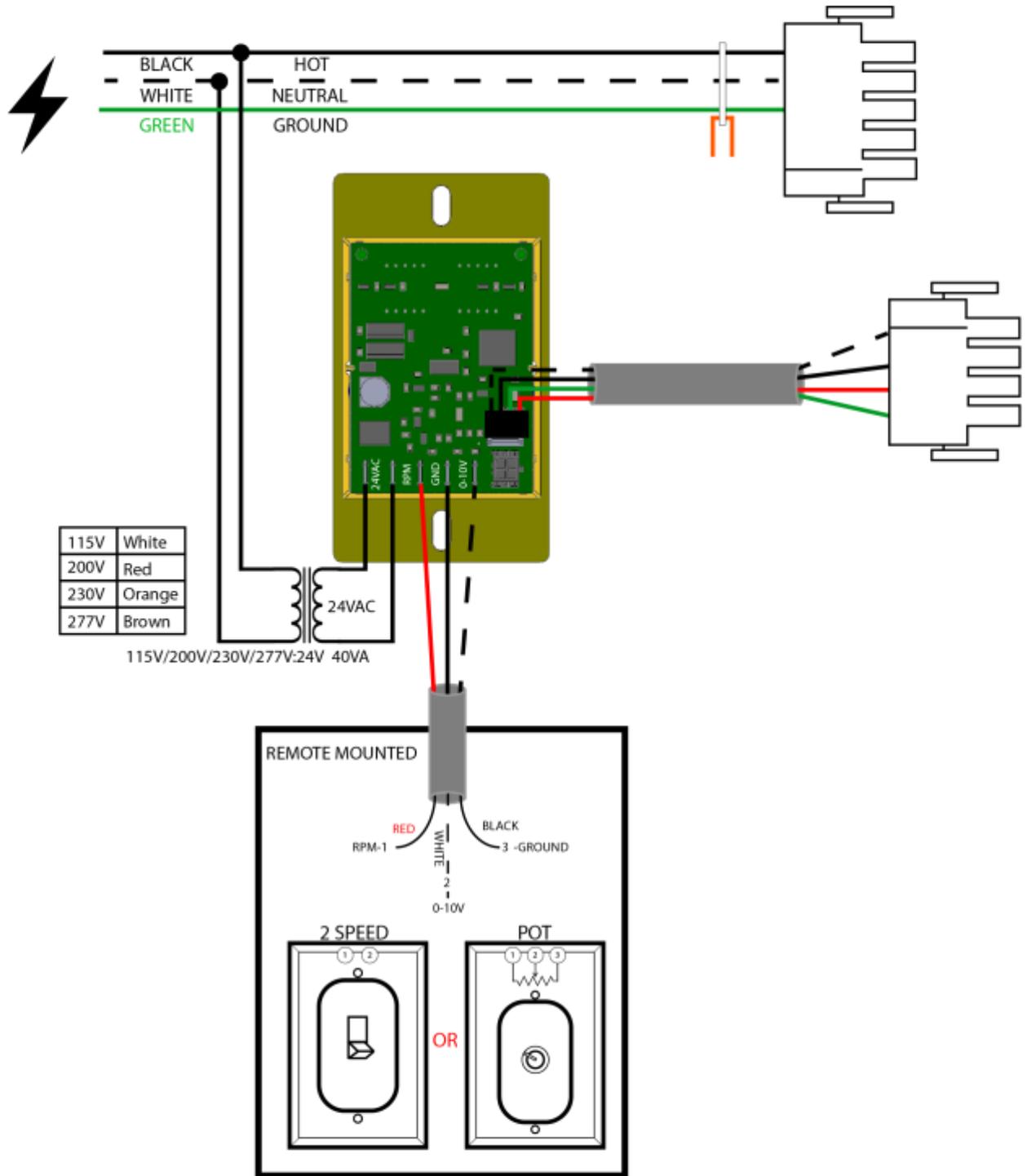|	
115V	White
200V	Red
230V	Orange
277V	Brown

24VAC

115V/200V/230V/277V:24V 40VA

BLACK — HOT
WHITE — NEUTRAL
GREEN — GROUND

24VAC RPM GND 0-10V

REMOTE MOUNTED

RED — RPM-1
WHITE — 2 — 0-10V
BLACK — 3 -GROUND

2 SPEED

POT

OR

NIDEC/US MOTORS - PERFECT SPEED 120

115V	White
200V	Red
230V	Orange
277V	Brown

24VAC

115V/200V/230V/277V:24V 40VA

BLACK — HOT
WHITE — NEUTRAL
GREEN — GROUND

24VAC   RPM   GND   0-10V

REMOTE MOUNTED

RED   BLACK
RPM - 1   3 -GROUND
WHITE
2
0-10V

2 SPEED   POT

OR
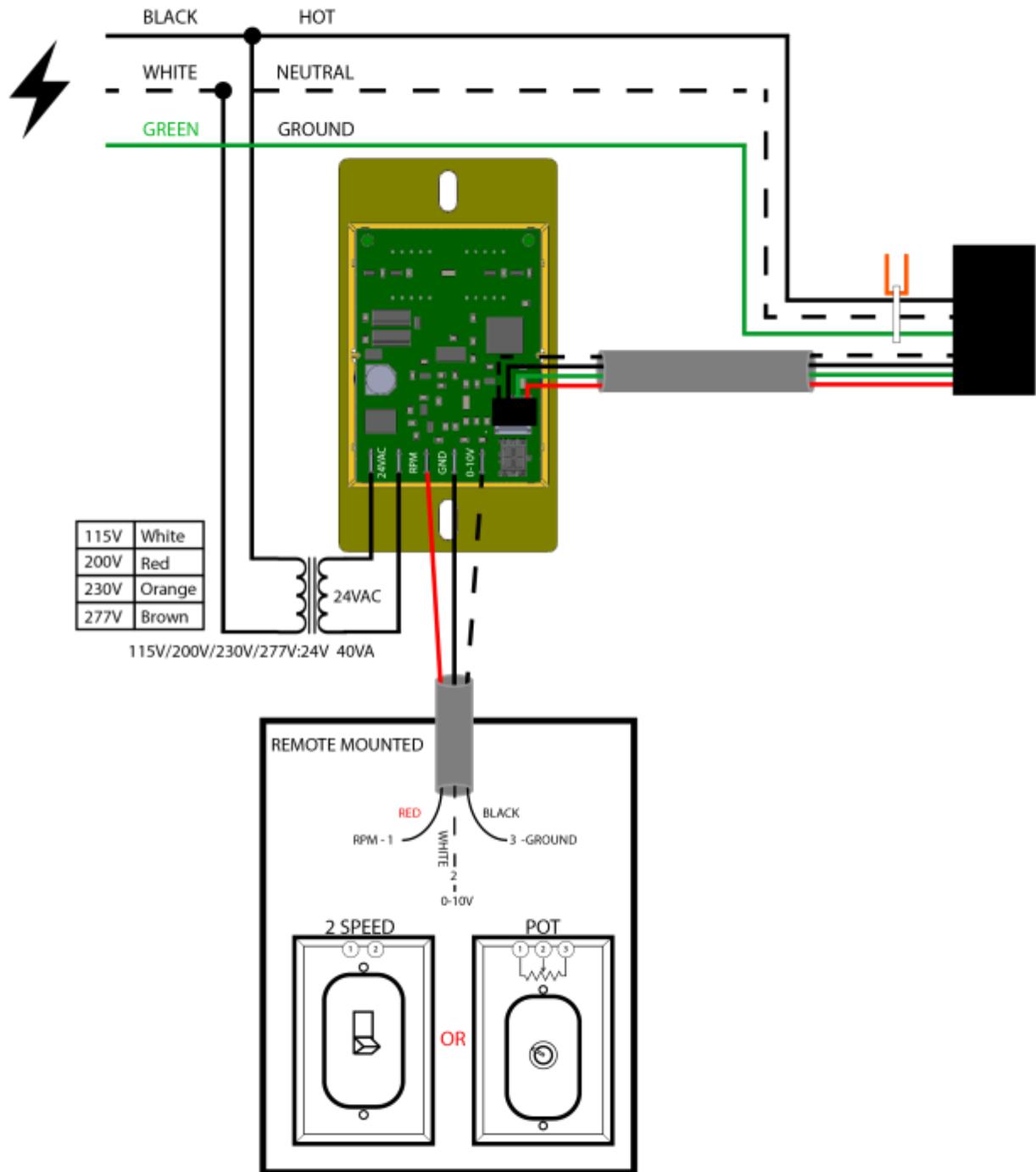
GENTEQ 142R

115V	White
200V	Red
230V	Orange
277V	Brown

115V/200V/230V/277V:24V 40VA

RED

BLACK

MOTOR

GREEN

24VAC

24VAC | RPM | GND | 0-10V

BROWN(0-10V)

BLUE

WHITE

BLACK

10K

RED

REMOTE MOUNTED

BLACK | WHITE

24V — 1

RED

2

0-10V

3 — GROUND

2 SPEED

POT

OR