

# AZURE<sup>®</sup>

## Digi-Motor<sup>®</sup>

MARS No. 10860 / 10861



# Azure<sup>®</sup> Digi-Motor<sup>®</sup>

1. Overview
2. Key Features
3. Construction
4. Set-Up & Installation

# Overview

# Overview

Azure® Digi-Motor®

- **Azure® Digi-Motor®: Blower Motor**
  - Multi-Horsepower ECM (1/5 HP – 1 HP) for air handlers, heat pumps, fossil fuel/electric heat, and AC systems, etc.
  - Only two motors to stock:
    1. **MARS No. 10860** : 1/5 HP to 1/2HP, 115/230V, reversible rotation, (replaces original 10800)
    2. **MARS No. 10861**: 1/2 HP to 1 HP, 115/230V, reversible rotation, (replaces original 10801)

# Overview

Azure® Digi-Motor®

- **Applications for Azure®**

- Replaces Genteq/GE OEM ECM X-13 motors

- Emerging opportunity as warranties expire

- 5,000,000 motor installed base

- OEM replacement X-13 motors are expensive

- NOTE: Azure® does not replace Genteq 2.0, 2.3, 2.5, and 3.0 ECM; Azure® replaces motors marked X-13 (on motor label)

- **BONUS:** Replaces standard PSC motors, too

- 65,000,000+ of these old motors

- Nice upgrade opportunity

- Nice truck motor for ALL service calls

# Overview

Azure® Digi-Motor®

- **Origin of the Azure® Digi-Motor®**
  - The Digi-Motor® has been in existence for 6 years as a basic OEM ECM type motor and is currently trusted by Carrier, Trane, York, Goodman, Nordyne, and **MARS**.

# Overview

## Azure® Digi-Motor®

- **Origin of the Azure® Digi-Motor®**
  - MARS conceptualized and specified the unique features of the Azure® Digi-Motor® specifically for the HVAC aftermarket;
    - Broad Ocean Motor Company manufactures Azure® for MARS using the OEM version of the Digi-Motor® as a basic ‘building block’.
  - The Azure® Digi-Motor® is the latest generation featuring the most innovation of any aftermarket HVAC EC motor available today.

# Overview

Azure® Digi-Motor®

- **Two Motors Replace:**

- ALL Evergreen AH, IM, and EM motors by Genteq
- ALL Ecotech Rescue motors by US Motors
- ALL standard PSC type motors 1/5 HP to 1 HP
- ALL Genteq X-13 motors 1/5 HP to 1 HP

**NOTE:** Azure® does not replace Genteq 2.0, 2.3, 2.5, 3.0, 5.0 or EON motors



# Key Features

# Key Features

Azure® Digi-Motor®

- **High Efficiency ECM (85% peak)**
  - Lower operating cost & possible energy rebate
- **Self Programming**
  - Automatically sizes itself to the application at initial start-up for optimal performance
- **Field Programmable (with optional controller)**
  - Allows custom tailoring of Azure® to the application
    - Programmer is a portable tool that unlike a PWM controller does not need to be installed into they system.

# Key Features

Azure® Digi-Motor®

- **Optional Hand Held Programmer** (MARS No. 08502)
  - Increase speed for high altitude applications
  - Decrease speed for high humidity applications
  - Duplicate speeds on any of the 4 speed taps
  - Optimize blower performance in multi-stage systems
  - Cost is about the same as a single PWM control card
  - Works with ALL generation 2 motors
  - Displays % of torque being applied by the motor on the tap being energized.



# Key Features

Azure® Digi-Motor®

- **Two Stage Surge Protection**
  - Replaceable outboard 6,000V protector  
(Wire harness allows easy bypass of this surge protector)
  - Permanent inboard 4,000V protector
- **Constant Torque Design**
  - Maintains CFM as filter becomes dirty
- **Compact Motor Shell**
  - 1/2HP is 5/8" shorter than Evergreen
  - 1HP is 1-1/8" shorter than Evergreen

# Key Features

Azure® Digi-Motor®

- **Inventory Reducer**

- 2 motors cover all PSC/X-13 blower motor applications up to 1HP; 115/230V and CW/CCW

- **Simple Wiring**

- Connects exactly like a PSC motor (capacitor not needed)
  - Connects exactly like an X-13 motor

# Construction

# Construction

Azure<sup>®</sup> Digi-Motor<sup>®</sup>

- **Standard 48 frame 5.5" diameter**
- **Ball Bearing Design**
- **Epoxy Encapsulated electronics**
  - Protects from moisture and vibration



# Construction

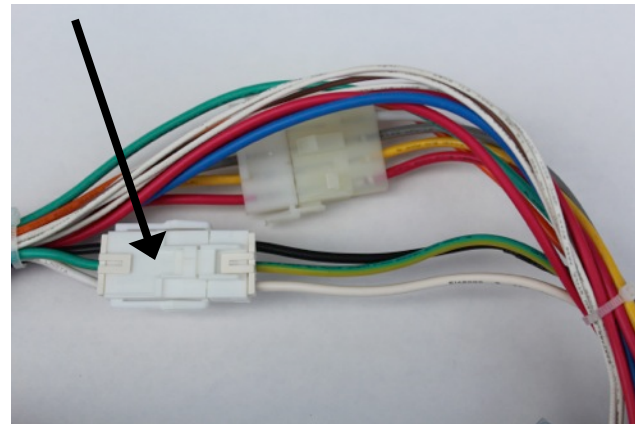
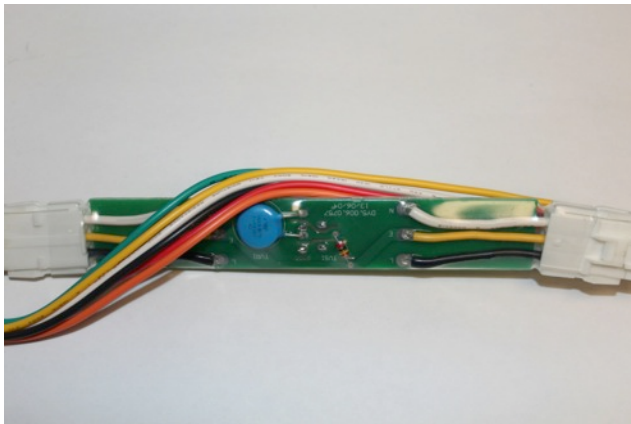
Azure<sup>®</sup> Digi-Motor<sup>®</sup>

- **Bypassable External 6KV Surge Protector**

(4,000V secondary protection remains inside motor)

- Failed surge protector can be removed and the harness can be reconnected without the external surge protector (if a replacement is not readily available).

**(Reconnect without protector)**





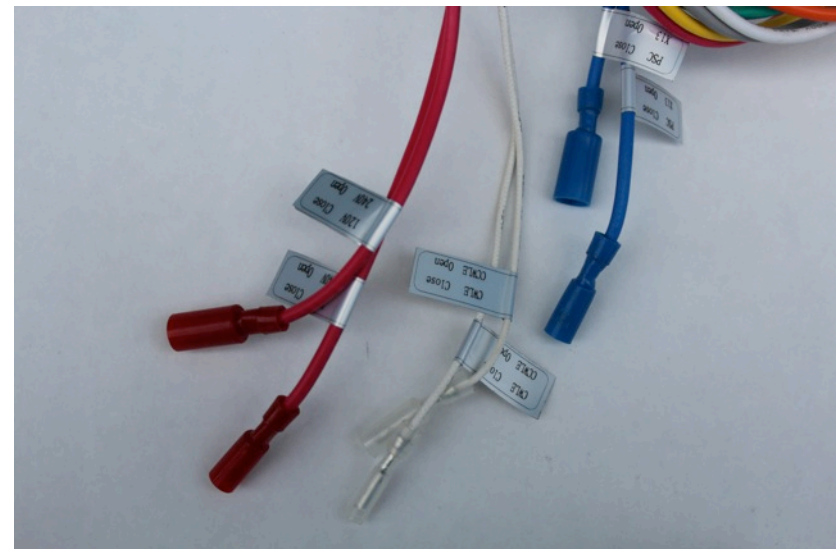
# Construction

Azure® Digi-Motor®

- **Integrated Wire Jumpers**

- Configuration jumpers are actually part of the wire harness and cannot be lost like separate ‘clip’ type jumpers. Connect or disconnect for desired operation.

- Red: Voltage
- White: Rotation
- Blue: Mode of Operation (PSC or X-13)



# **Set-up & Installation**

# Set-Up & Installation

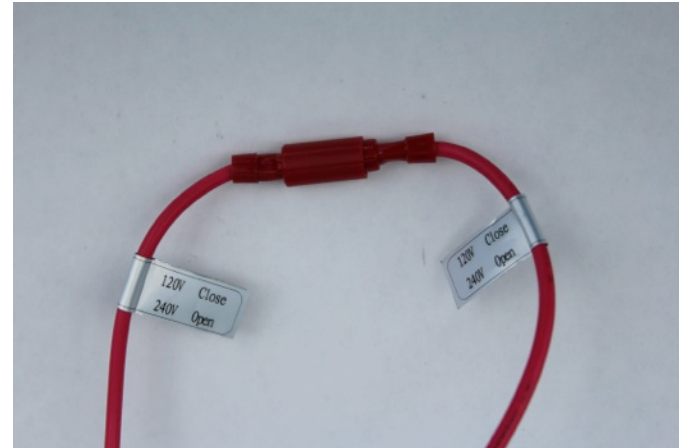
Azure<sup>®</sup> Digi-Motor<sup>®</sup>

## 1. Set Motor Voltage

**Red Jumper**

Close for 120V

Open for 240V

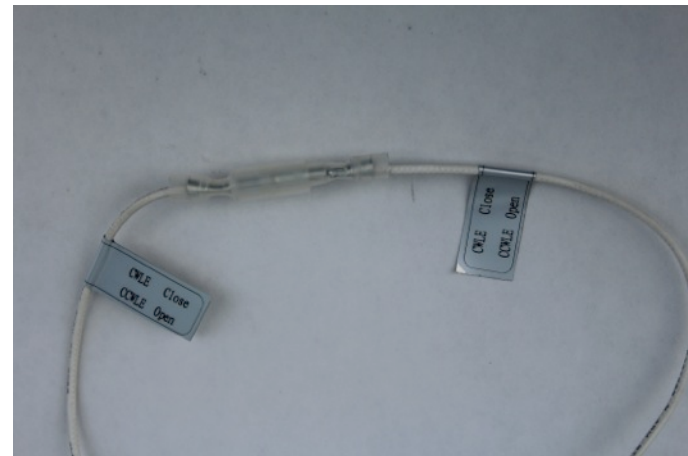


## 2. Set Motor Rotation

**White Jumper**

Close for CWLE

Open for CCWLE



# Set-Up & Installation

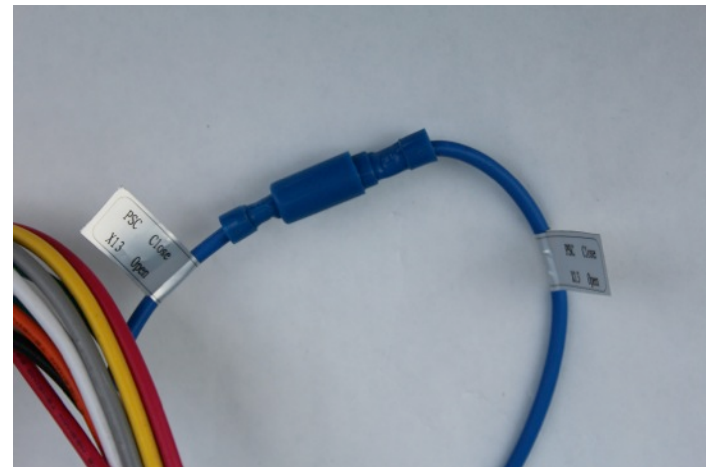
Azure® Digi-Motor®

## 3. Set Motor Mode of Operation

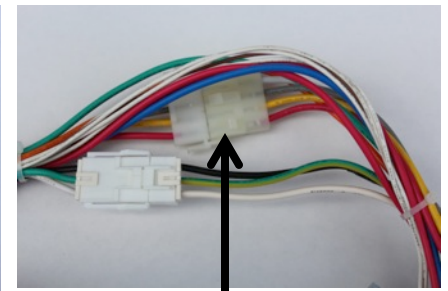
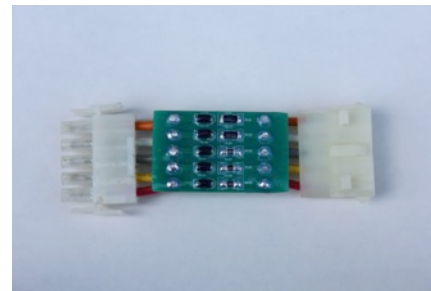
**Blue Jumper**

Close for PSC

Open for X-13



**3A. Insert X-13 PC Board Into Wire Harness**  
(for X-13 applications, only)

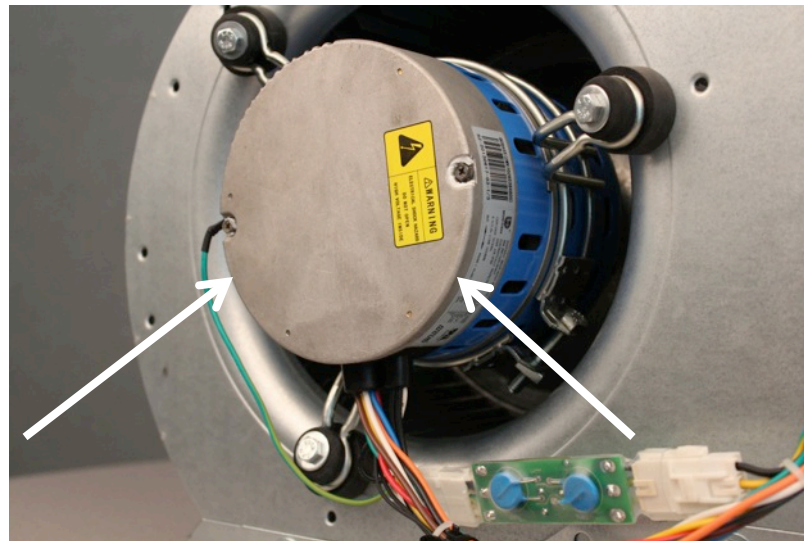


# Set-Up & Installation

Azure<sup>®</sup> Digi-Motor<sup>®</sup>

## 4. Install Azure<sup>®</sup> Digi-Motor<sup>®</sup> into blower

Install with the wire harness between 4 and 8 o'clock to minimize chance of moisture entering the motor where the wires enter the module.



# Set-Up & Installation

Azure<sup>®</sup> Digi-Motor<sup>®</sup>

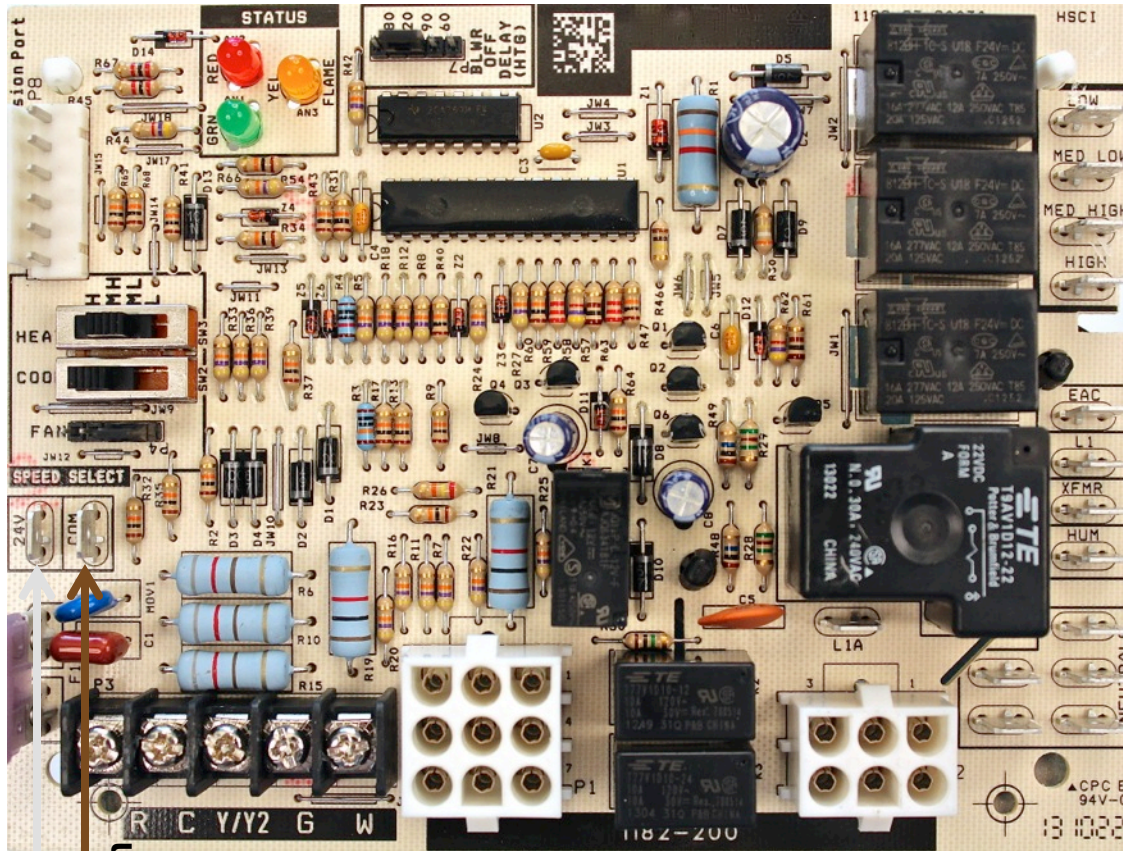
**Auto Sizing & Connecting Azure<sup>®</sup>**

**For**

**PSC Motor Applications**

# Auto Sizing The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

PSC Mode



**WHITE To 24V**  
**BROWN To Common**  
From Motor

- 1) Make Connections
- 2) Apply power; motor runs 2 minutes and stops
- 3) Remove brown/white harness & red speed tap (5)
- 4) Connect desired 115V speed taps
- 5) Test operation

**RED SPEED TAP (5)**

To L1

**WHITE**

To Neutral

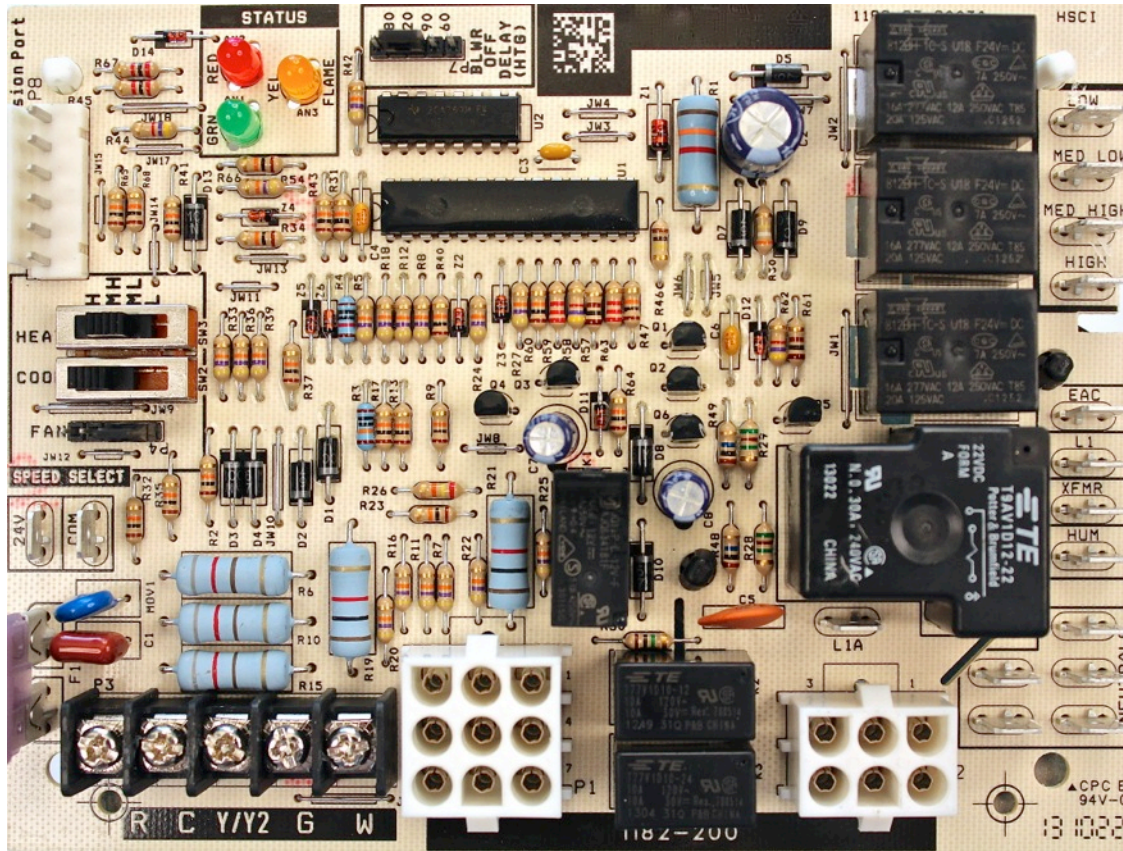
**GREEN/YELLOW**

To Ground

From Motor

# Connecting The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

PSC Mode



**Basic 4 speed HVAC control board**

**MULTI COLOR SPEED TAPS**

**To 115V Blower Motor  
Speed Control**

**WHITE  
To Neutral**

**GREEN/YELLOW  
To Ground**

From Motor

**Same connections as PSC motor; but no capacitor**



# Connecting The Azure® Digi-Motor®

PSC Mode

- **Options For Constant Fan Operation**

1. Connect orange speed tap 1 to FAN terminal (if equipped) on system control board. 625 RPM will be controlled by thermostat.

**Or**

2. Connect orange speed tap 1 to LINE POWER. 625 RPM will be controlled by main power to HVAC system. Thermostat can be left in AUTO mode; motor will run at 625 RPM 24/7 (unless there is a call for heat/cool).

**Or**

3. Install MARS Constant Fan Kit (MARS No. 08595).

# Connecting The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

PSC Mode

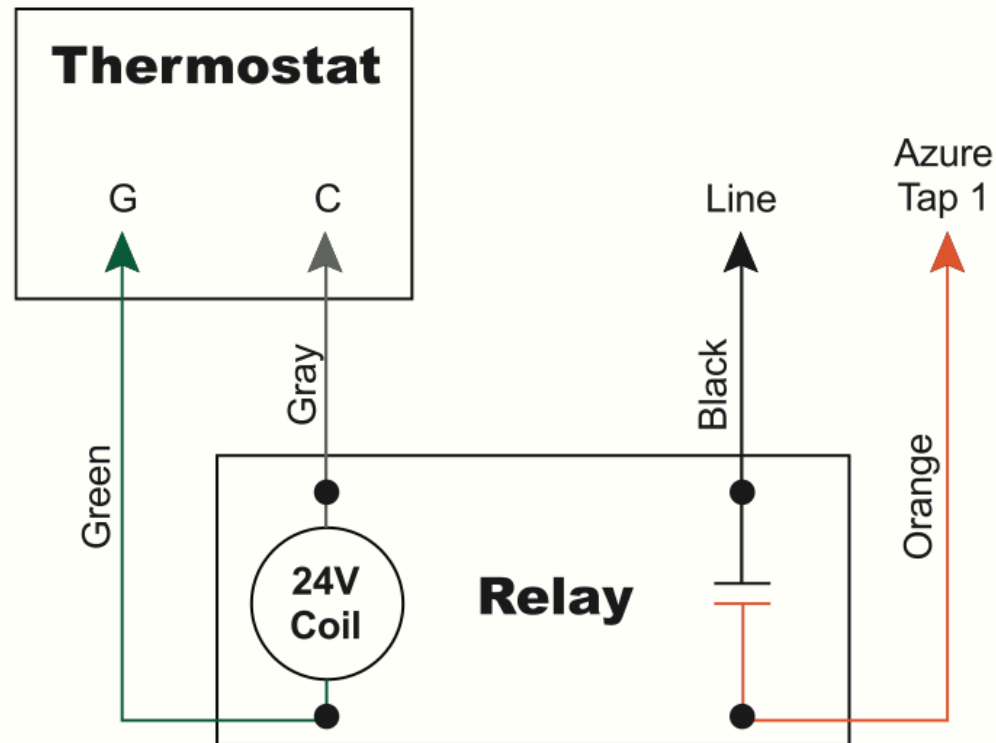
- **Constant Fan Kit (MARS No. 08595)**

Kit includes (1) SPST relay and (3) 24" lengths of pre-terminated leads.

## Notes on Installation:

Disconnect G wire between T-Stat and HVAC system control board.

Some systems energize Y and G simultaneously for AC and constant fan; if so jumper G and Y together on HVAC system control board.



# Set-Up & Installation

Azure<sup>®</sup> Digi-Motor<sup>®</sup>

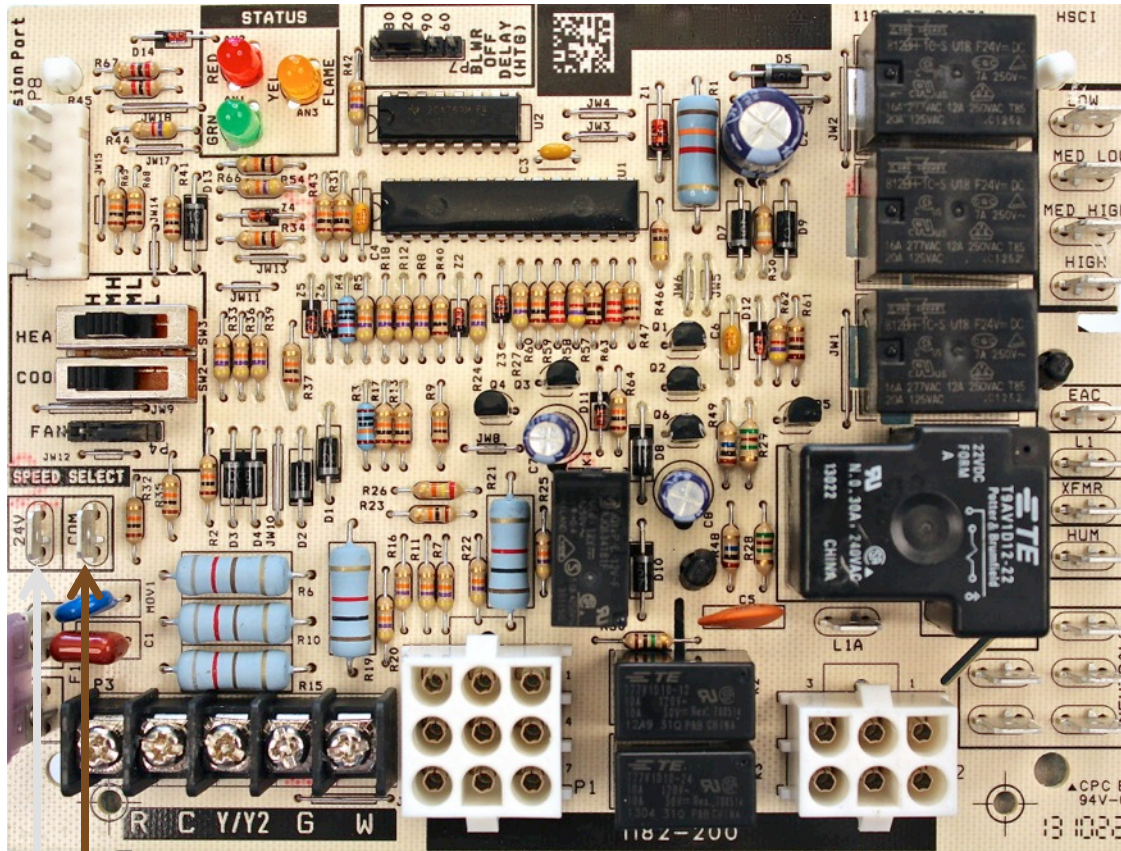
**Auto Sizing & Connecting Azure<sup>®</sup>**

**For**

**X-13 Motor Applications**

# Auto Sizing The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

X-13 Mode



WHITE To 24V

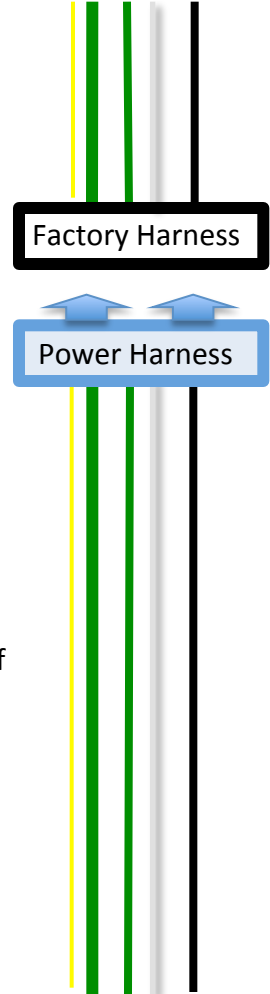
BROWN to Common

- 1) Make Connections
- 2) Apply power; motor runs 2 minutes and stops
- 3) Remove brown/white harness
- 4) Connect desired 24V speed taps
- 5) Test operation

From Motor

Azure<sup>®</sup> plugs directly into the HVAC system wire harness. Just connect the 24V speed tap(s) and the job is complete. In fact, the connections for Azure<sup>®</sup> and X13 are identical. Note: The only difference will be that Azure<sup>®</sup> has 5 speed taps from which to select, and the OEM X13 will have only the number of taps needed for the application.

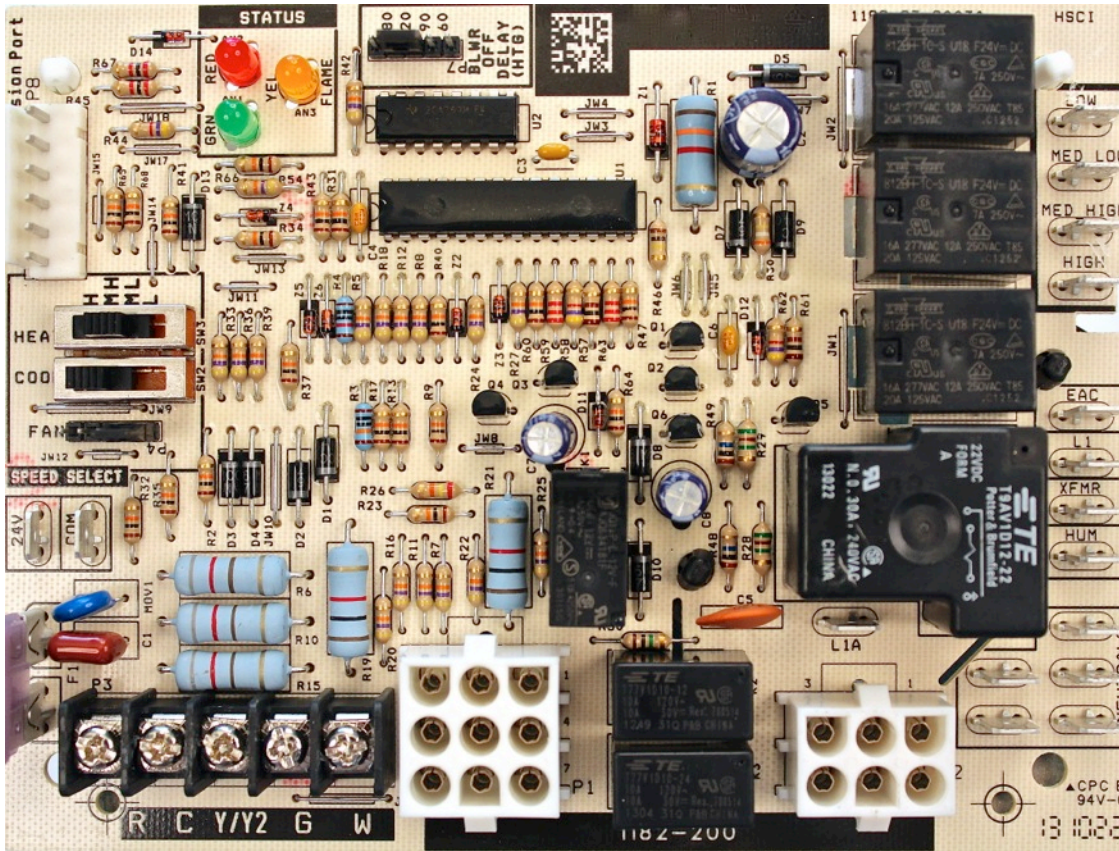
From HVAC System



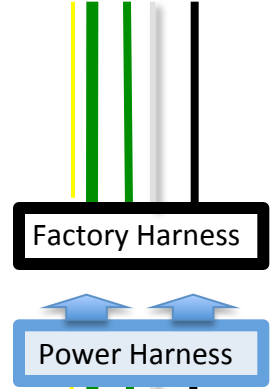
From Azure<sup>®</sup> Motor

# Connecting The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

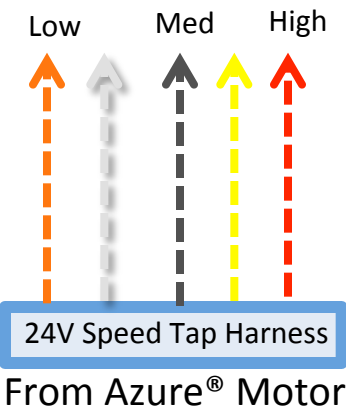
X-13 Mode



From HVAC System



Azure<sup>®</sup> plugs directly into the HVAC system wire harness. Just connect the 24V speed tap(s) and the job is complete. In fact, the connections for Azure<sup>®</sup> and X13 are identical. Note: The only difference will be that Azure<sup>®</sup> has 5 speed taps from which to select, and the OEM X13 will have only the number of taps needed for the application.



**Same connections as OEM X-13**

One Lead to Cool on TStat- Y (Cooling Speed)  
 One Lead to Heat on TStat - W (Heating Speed)

From Azure<sup>®</sup> Motor

# Connecting The Azure<sup>®</sup> Digi-Motor<sup>®</sup>

## X-13 Mode

- **Options For Constant Fan Operation**

1. Azure<sup>®</sup> and X-13 are controlled by 24VAC. If the OE had a tap for low speed constant fan, connect the orange speed tap 1 to this location. 625 RPM would be controlled by thermostat.

**Or**

2. Connect orange speed tap 1 to +24V. 625 RPM will be controlled by main power to HVAC system. Thermostat can be left in AUTO mode; motor will run at 625 RPM 24/7 (unless there is a call for heat/cool). An external switch between orange speed tap 1 and +24V can be added.