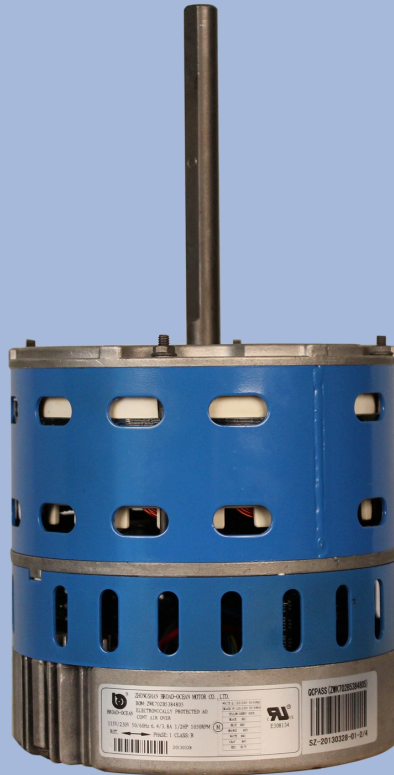


AZURE™

Digi-Motor Generation 2



Azure Digi-Motor

Generation 2

1. Overview
2. Azure Digi-Motor vs. Azure Digi-Motor (generation 2)
3. Key Features
4. Construction
5. Set-Up & Installation

Overview

Overview

Azure Digi-Motor Generation 2

- **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 Generation 2

- **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 Generation 2

- **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 Generation 2

- **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 generation 2 Azure Digi-Motor is the second and latest generation featuring the most innovation of any aftermarket HVAC EC motor available today.

Overview

Azure Digi-Motor Generation 2

- **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
 - Both original Azure Digi-Motors (10800 & 10801)

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






Azure Digi-Motor

vs.

Azure Digi-Motor

Generation 2

Available as
PDF

	Feature	 Digi-Motor	NEW  Digi-Motor Generation 2
	85% peak efficiency electronically controlled blower motor; compatible with air handlers, heat pumps, electric and fossil fuel furnaces and air conditioners.	YES	YES
	Two motor SKUs replace all standard PSC and OEM ECM (X-13) type motors up to 1 HP; uses simple jumper straps to set voltage (115/230V) and rotation (CW/CCW).	YES	YES
	“Auto sizes” speed tap configuration to optimize performance in each application.	YES	YES
	Replaceable outboard 6KV surge protection as well as inboard 4KV protection.	YES	YES
	Drop-in replacement for standard PSC blower motor, wires connect the same as standard PSC motor.	NO	YES
	Configurable to replace OEM ECM (X-13) using a simple jumper wire to determine PSC or X-13 mode of operation. No need for special set up programming procedure.	NO	YES
	Field programmable capability allows fine tuning of motor performance using a hand held programmer; no need to purchase and install a PWM controller for each application desiring custom tuning.	NO	YES

Key Features

Key Features

Azure Digi-Motor
Generation 2

- **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 Generation 2

- **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
Generation 2

- **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
Generation 2

- **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
- **Gentle Start Operation**
 - Eliminates blast of air at start-up

Construction

Construction

Azure Digi-Motor
Generation 2

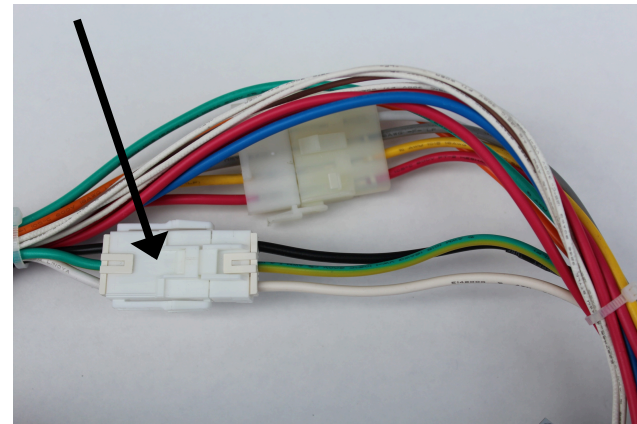
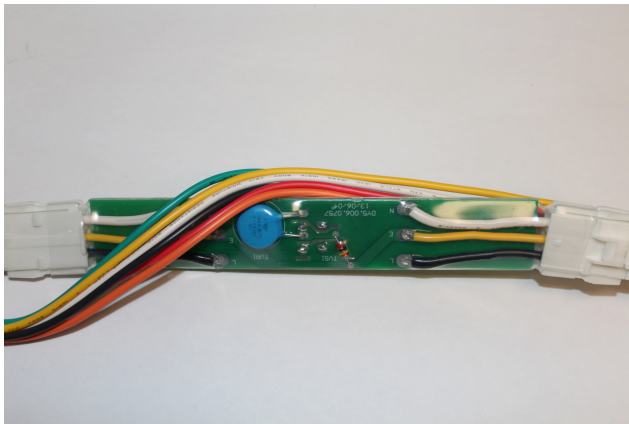
- **Standard 48 frame 5.5" diameter**
- **Ball Bearing Design**
- **Epoxy Encapsulated electronics**
 - Protects from moisture and vibration



Construction

Azure Digi-Motor Generation 2

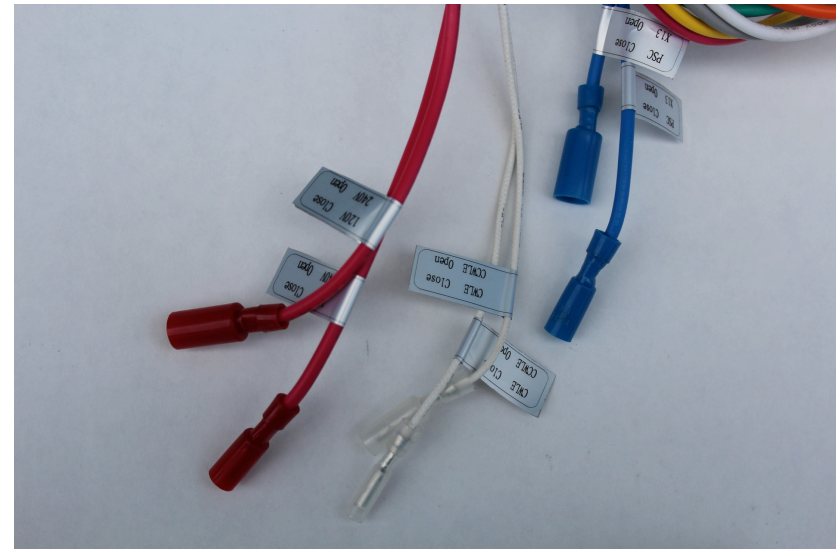
- **Bypassable External 6KV Surge Protector**
(4,000V secondary protection remains inside motor)
 - Failed surge protector can be removed and the harness can be reconnected without the external surge protector (if a replacement is not readily available).
(Reconnect without protector)



Construction

Azure Digi-Motor Generation 2

- **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

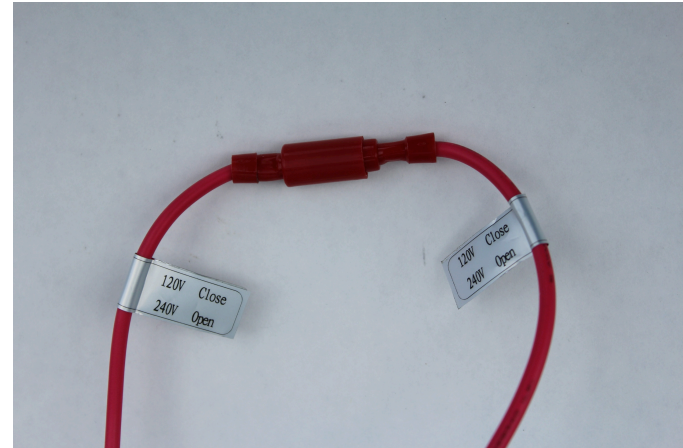
Azure Digi-Motor
Generation 2

1. Set Motor Voltage

Red Jumper

Close for 120V

Open for 240V

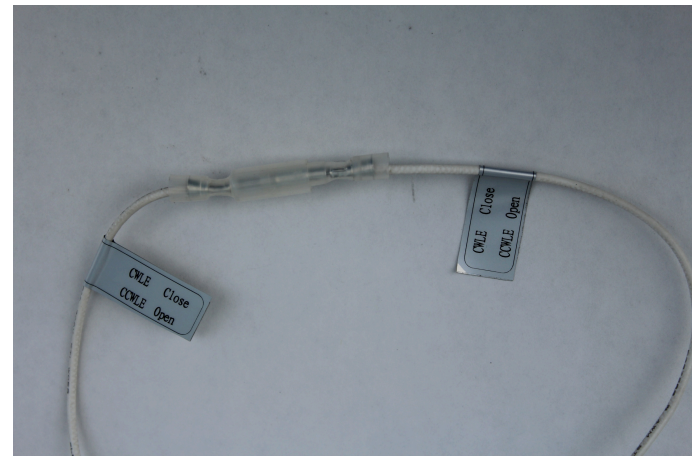


2. Set Motor Rotation

White Jumper

Close for CWLE

Open for CCWLE



Set-Up & Installation

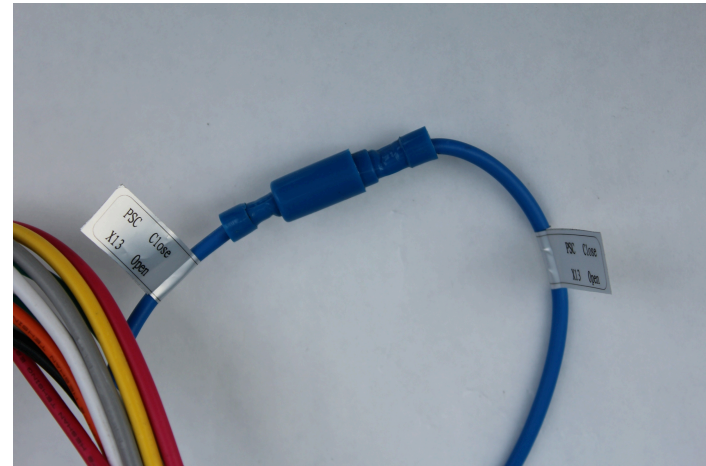
Azure Digi-Motor
Generation 2

3. Set Motor Mode of Operation

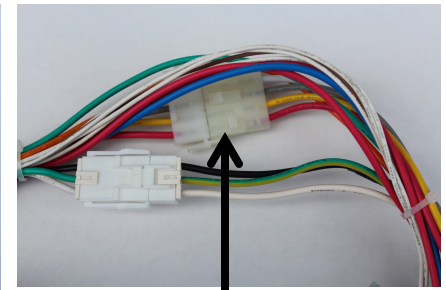
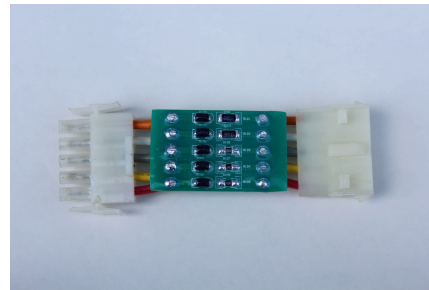
Blue Jumper

Close for PSC

Open for X-13



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

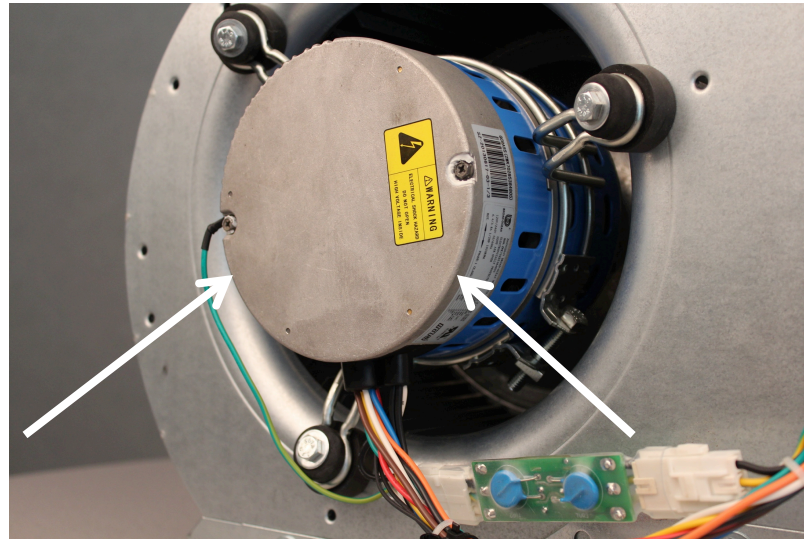


Set-Up & Installation

Azure Digi-Motor Generation 2

4. Install Azure Digi-Motor 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.



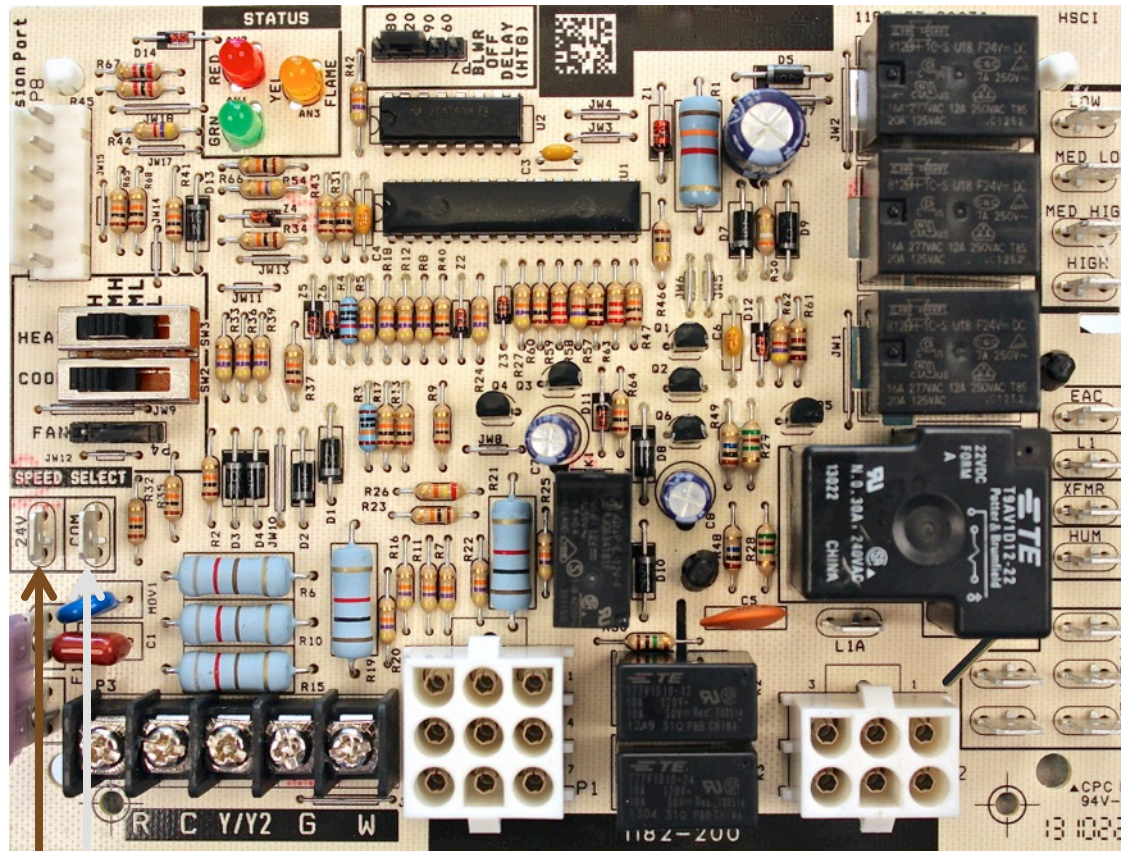
Set-Up & Installation

Azure Digi-Motor
Generation 2

Auto Sizing & Connecting Azure For PSC Motor Applications

Auto Sizing The Azure Digi-Motor

PSC Mode



RED SPEED TAP (5)

To L1

WHITE

To Neutral

GREEN/YELLOW

To Ground

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

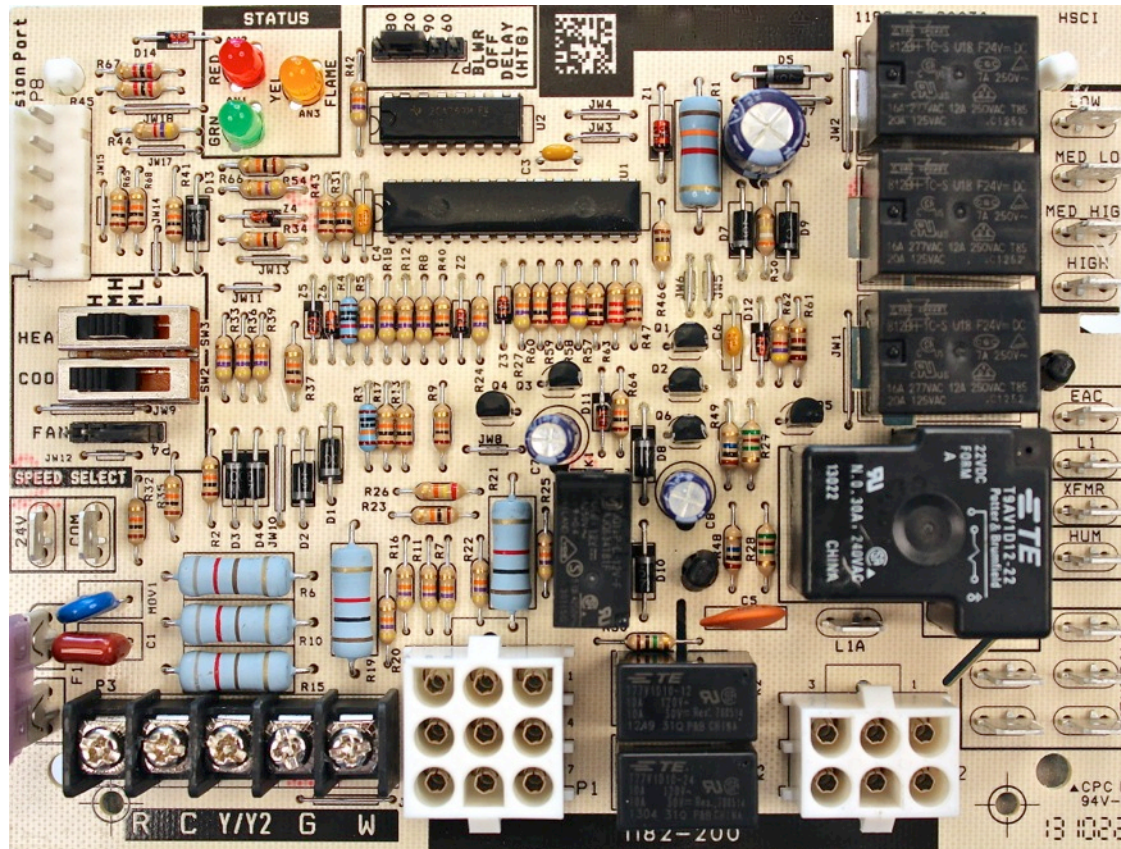
BROWN To 24V

WHITE To Common

From Motor

Connecting The Azure Digi-Motor

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 Digi-Motor

PSC Mode

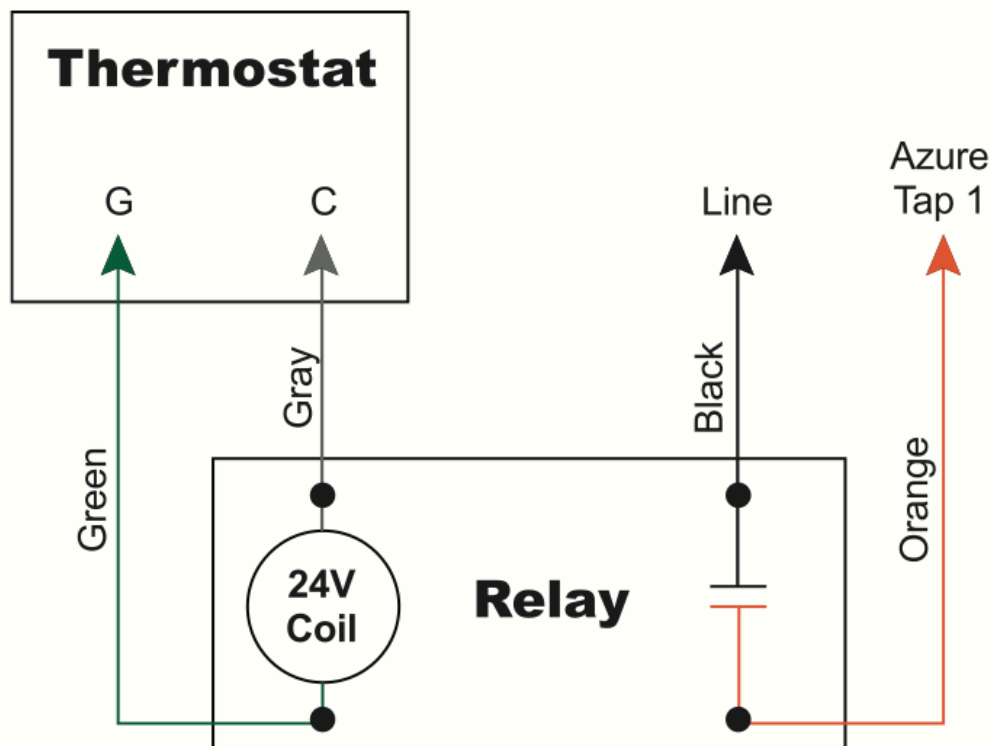
- **Constant Fan Kit (MARS No. 08595)**

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.



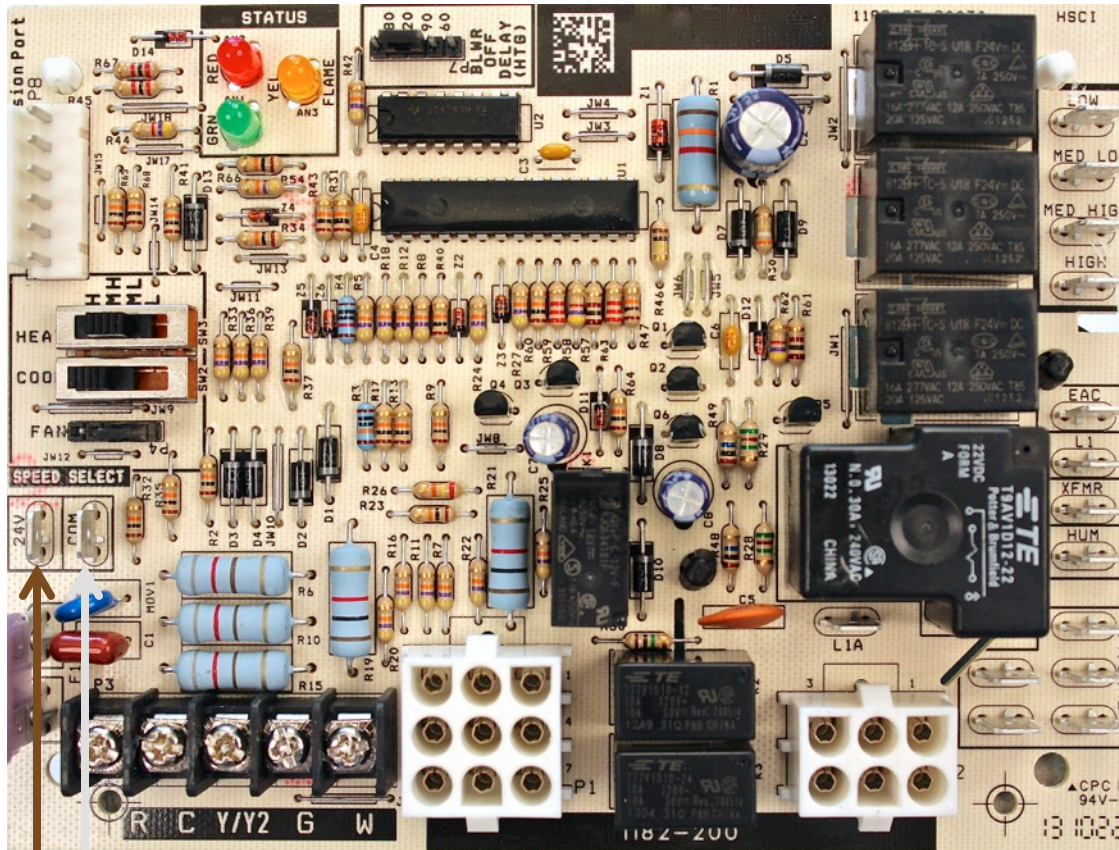
Set-Up & Installation

Azure Digi-Motor
Generation 2

**Auto Sizing & Connecting Azure
For
X-13 Motor Applications**

Auto Sizing The Azure Digi-Motor

X-13 Mode



BROWN To 24V

WHITE 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 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 and X13 are identical. Note: The only difference will be that Azure 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

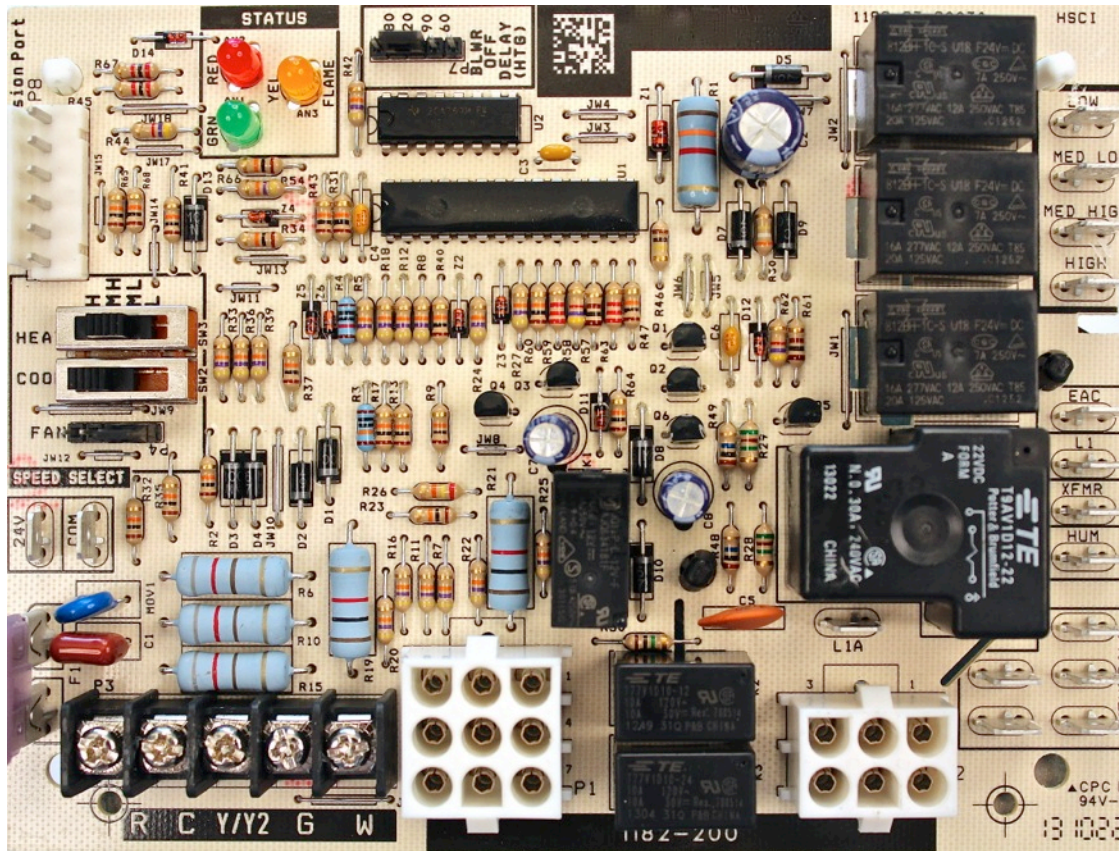
Factory Harness

Power Harness

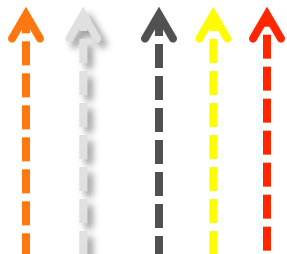
From Azure Motor

Connecting The Azure Digi-Motor

X-13 Mode



Low Med High



24V Speed Tap Harness

From Azure Motor

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 HVAC System

Factory Harness

Power Harness

From Azure Motor

Azure 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 and X13 are identical. Note: The only difference will be that Azure has 5 speed taps from which to select, and the OEM X13 will have only the number of taps needed for the application.

Connecting The Azure Digi-Motor

X-13 Mode

- **Options For Constant Fan Operation**

1. Azure 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.

Installation Complete

System Decal



This system has been retrofitted with the generation 2 Azure Digi-Motor from MARS.

MARS No. 10860: 1/5 HP – 1/2 HP

MARS No. 10861: 1/2 HP – 1 HP

PSC Mode Connections: 115VAC Taps

White – Neutral

Green/Yellow – Ground

Orange – Tap 1 Low Speed 625 RPM

White – Tap 2 Medium Low Speed

Gray – Tap 3 Medium Speed

Yellow – Tap 4 Medium High Speed

Red – Tap 5 High Speed

X-13 Mode Connections: 24VAC Taps

White – Neutral/L2

Green/Yellow – Ground

Black – L1

Green – 24V Common

Orange – Tap 1 Low Speed 625 RPM

White – Tap 2 Medium Low Speed

Gray – Tap 3 Medium Speed

Yellow – Tap 4 Medium High Speed

Red – Tap 5 High Speed

