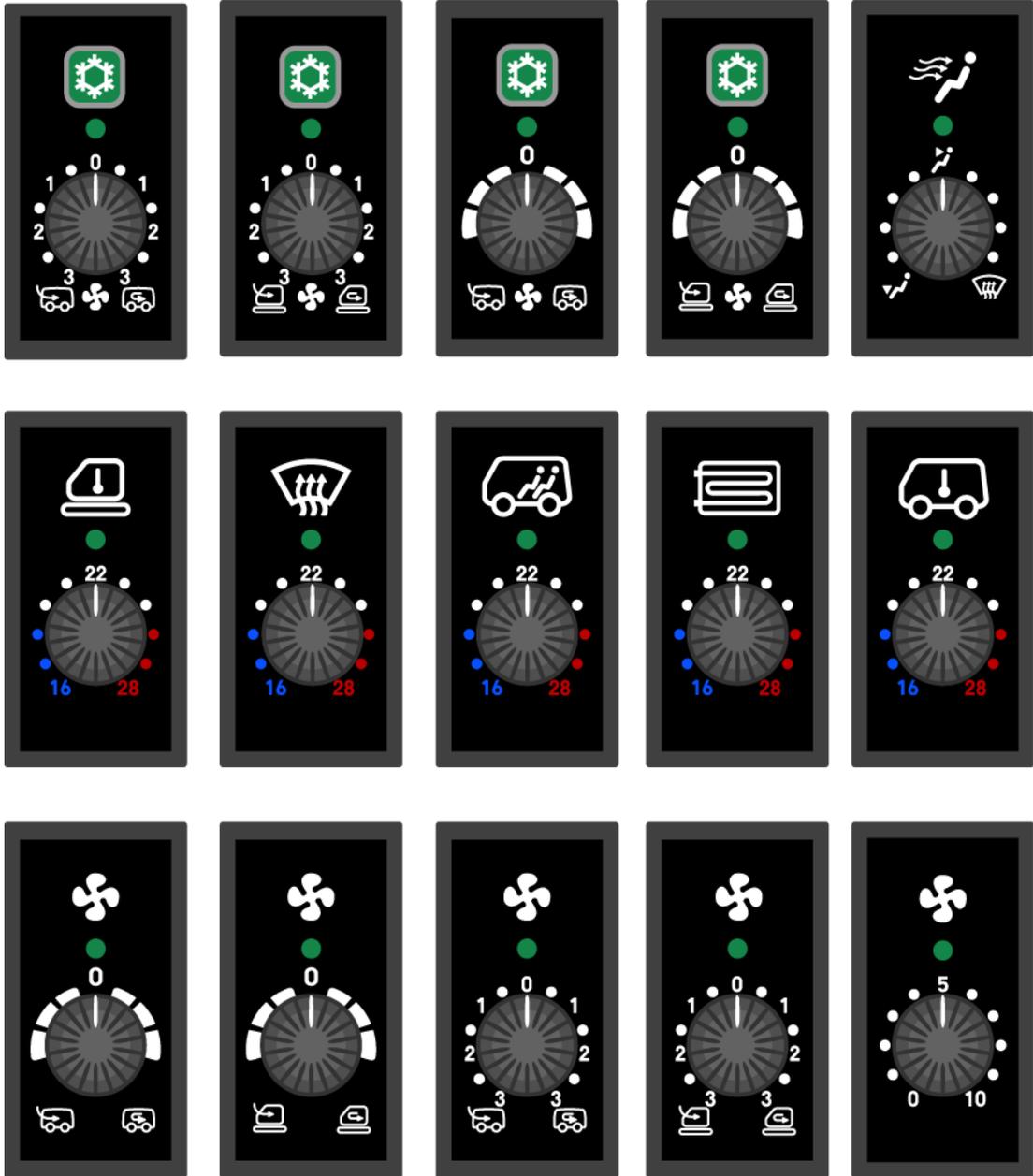




# Mobile Climate Control



## Easy Turn Family

## Easy Turn Family

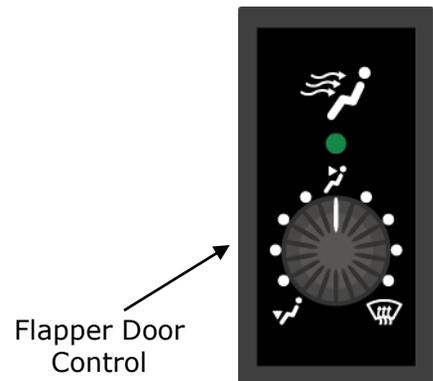
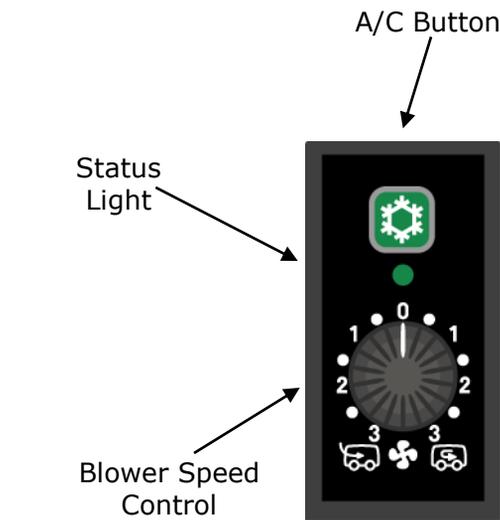
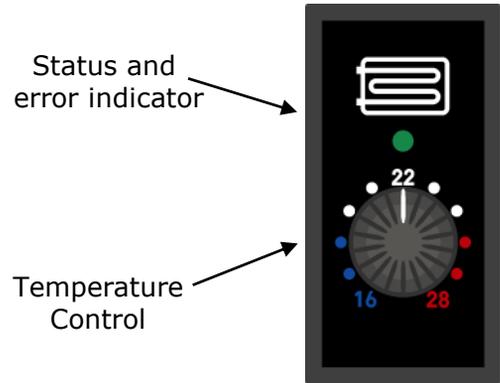
The Easy Turn is a family of mini control units in a standard SWF package. Its compact and rugged design is ideal for on and off road equipment.

The Easy Turn uses a temperature set-point potentiometer, diesel heat switch, motorized water valve, temperature sensor and A/C compressor to maintain driver cab temperature. This will eliminate the rotary switch, and control cable assembly.

The operator will choose a temperature setting which will be maintained by automatically adjusting the water valve by the Easy Turn's microprocessor.

This will increase temperature accuracy and reduce installation time.

It has built-in diagnostic features that can indicate if there is an error with the temperature sensor (Open or Short) or motorized water valve (Open, Closed or Jammed) and A/C compressor error (Short or Open Circuit)





Potentiometer Control

### Easy Turn Convectector

Design to control floor temperature in a passenger compartment in transit bus and highway coaches.



Potentiometer Control

### Easy Turn Compartment

Design to control temperature in passenger compartment in transit buses and highway coaches.



Potentiometer Control

### Easy Turn Automatic Temperature Module (ATM)

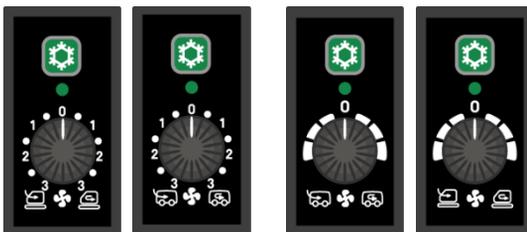
The ATM is ideal for controlling cabin temperature in mini-buses and off-road equipment.



Potentiometer Control

### Easy Turn Defroster

Design to control driver defroster temperature from mini buses to highway coaches.



Potentiometer Control

Switch Control

### Easy Turn A/C Module

It controls A/C compressor and fan speed for fresh and recycled air. This module is ideal for off-road and highway applications.

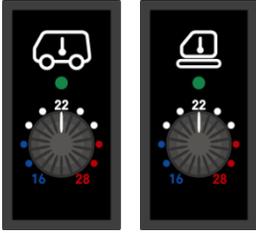


Potentiometer Control

### Easy Turn Fan Module

Design to control driver fan speed from mini buses to highway coaches.

## Easy Turn ATM's



### How it works

The microprocessor uses after coil and inside temperature sensors to control electronic water valve maintain temperature set by user.

### Diesel Heat Input

When a supply signal is applied to the diesel heat input then the water valve will open completely regardless of the Temperature Set-point and inside temperature

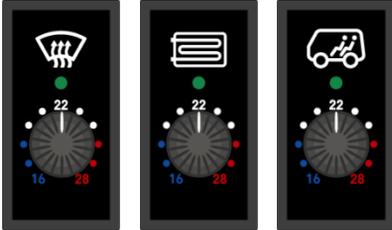
### After Coil Temperature Sensor

This sensor measures the temperature of the air flowing past the heater coil. By measuring this temperature, the Easy Turn can know the amount of heat being added to the air flowing through the unit.

### Inside Temperature Sensor

This sensor measures the temperature of the air inside the cab. This is the temperature that the Automatic Thermostat Module tries to maintain at the setting on the Temperature Set-point potentiometer.

## **Easy Turn ATM Compartment Convactor Defroster**



### **How it works**

The microprocessor uses after coil and inside temperature sensors to control electronic water valve maintain temperature set by user.

### **Diesel Heat Input**

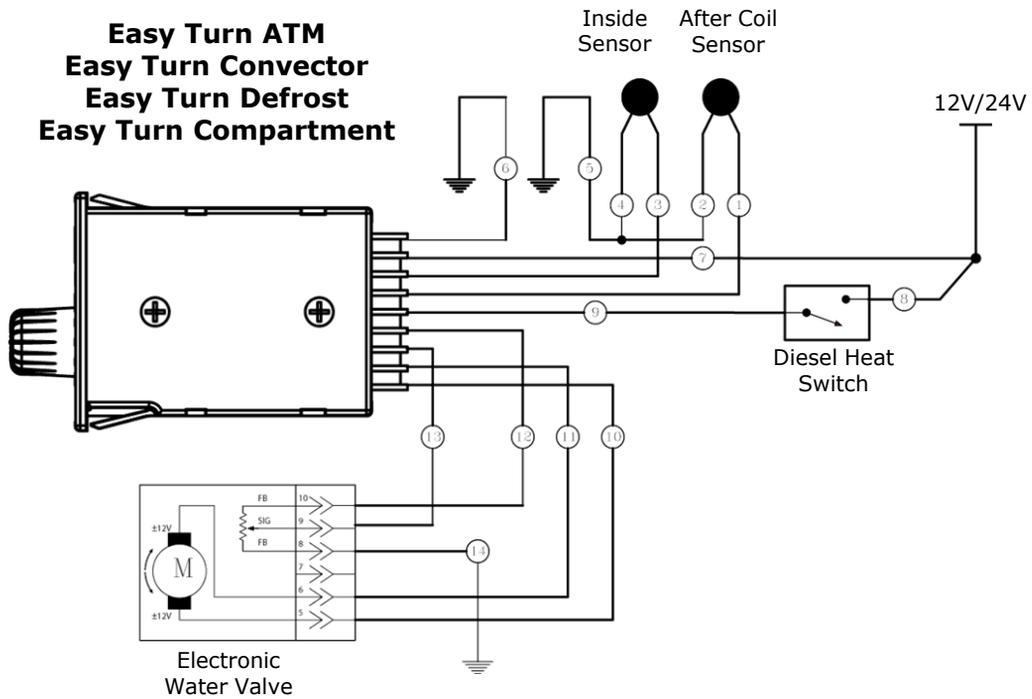
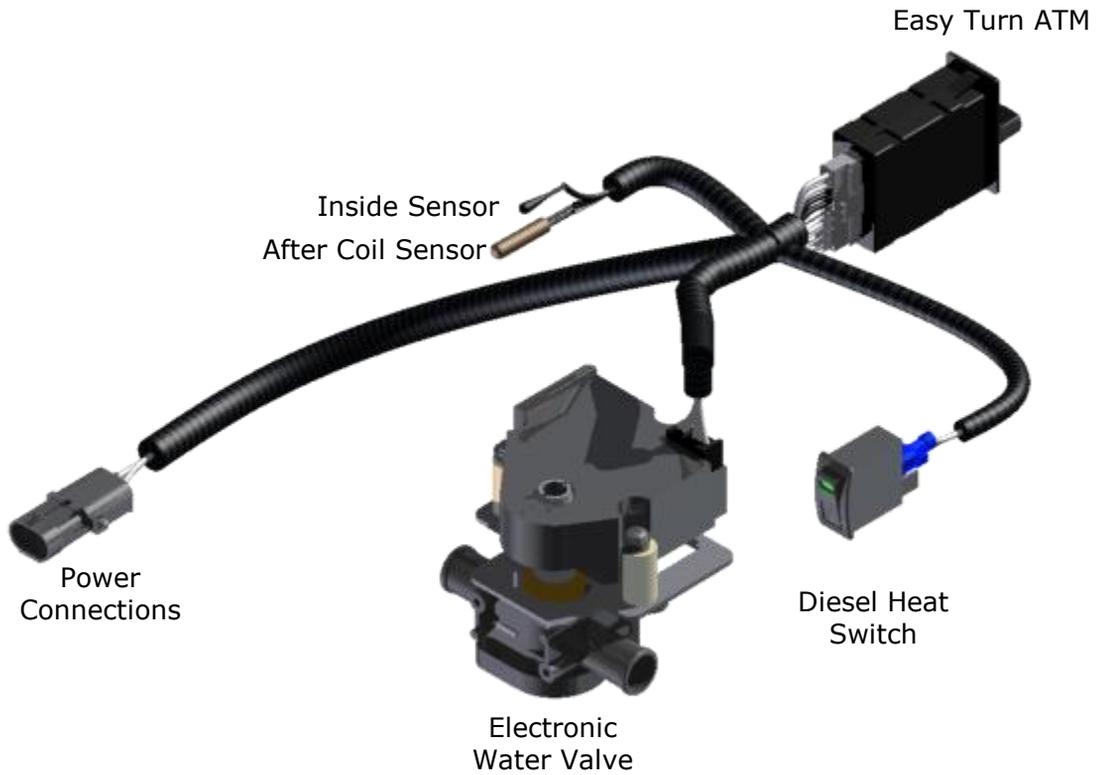
When a supply signal is applied to the diesel heat input then the water valve will open completely regardless of the Temperature Set-point and inside temperature

### **After Coil Temperature Sensor**

This sensor measures the temperature of the air flowing past the heater coil. By measuring this temperature, the Easy Turn can know the amount of heat being added to the air flowing through the unit.

### **Inside Temperature Sensor**

This sensor measures the temperature of the air inside the cab. This is the temperature that the Automatic Thermostat Module tries to maintain at the setting on the Temperature Set-point potentiometer.



## Easy Turn A/C

The Easy Turn A/C Module is a complete A/C control system. Able to control blower speed, flapper door and A/C compressor clutch.

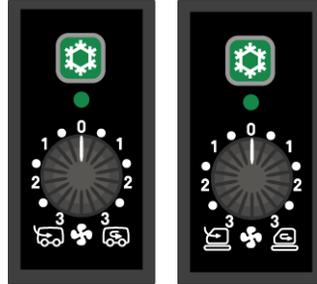
When the blower is turned on and the A/C button is pressed. The A/C compressor clutch and condenser fan will turn on when the evaporator coil temperature is above +2°C and turn off until the coil temperature is below -2°C to prevent the evaporator from freezing.

In case of a component failure, the Easy Turn's status light will indicate an error to notify service personnel repair is required.

The module will attempt to restart every 20 until the fault is repaired.

For short circuit and over current faults, it will attempt to restart every 20 seconds for 10 cycles for short circuit and over current.

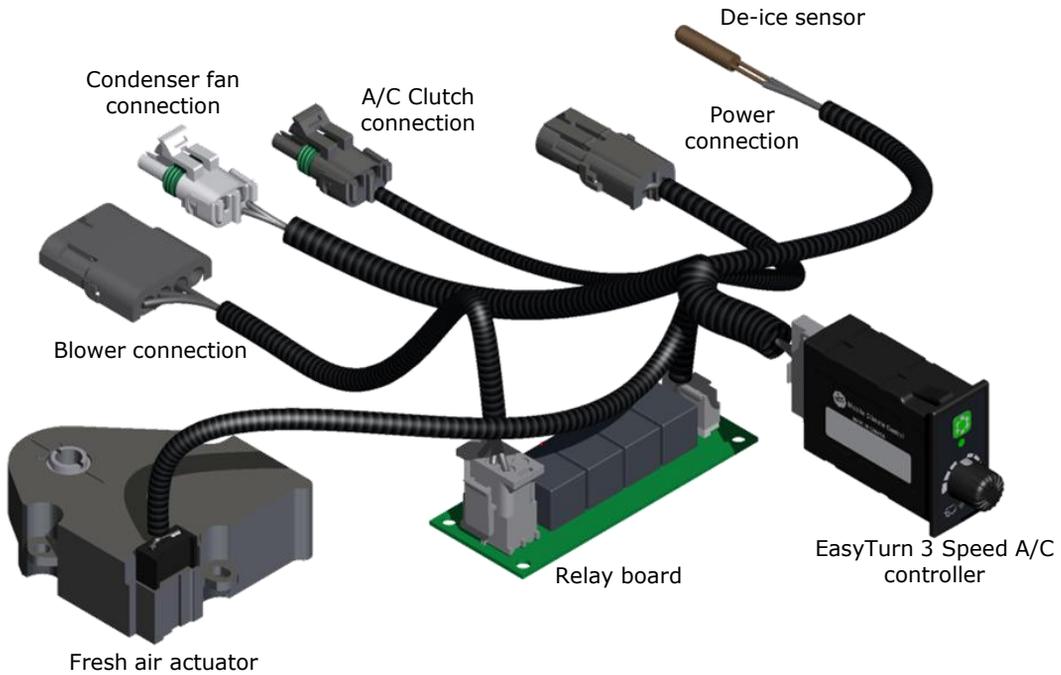
### Easy Turn A/C Stepless



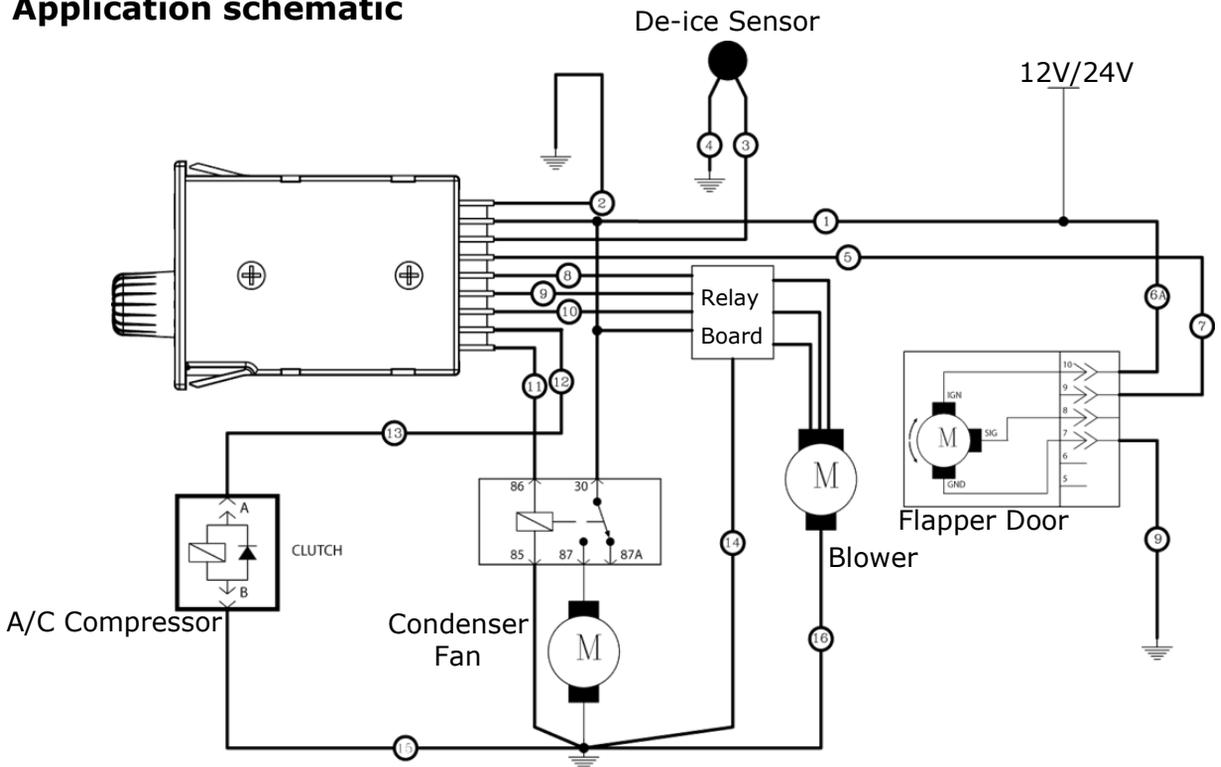
### Easy Turn A/C Three Speed



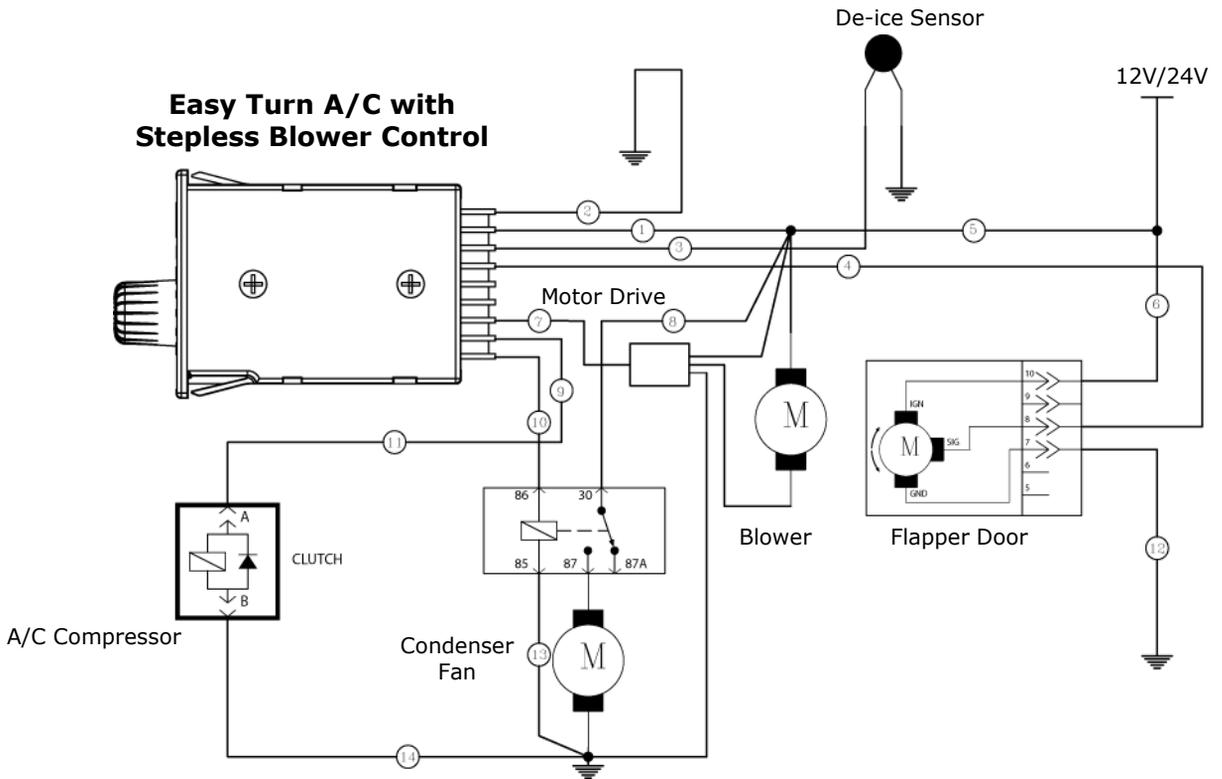
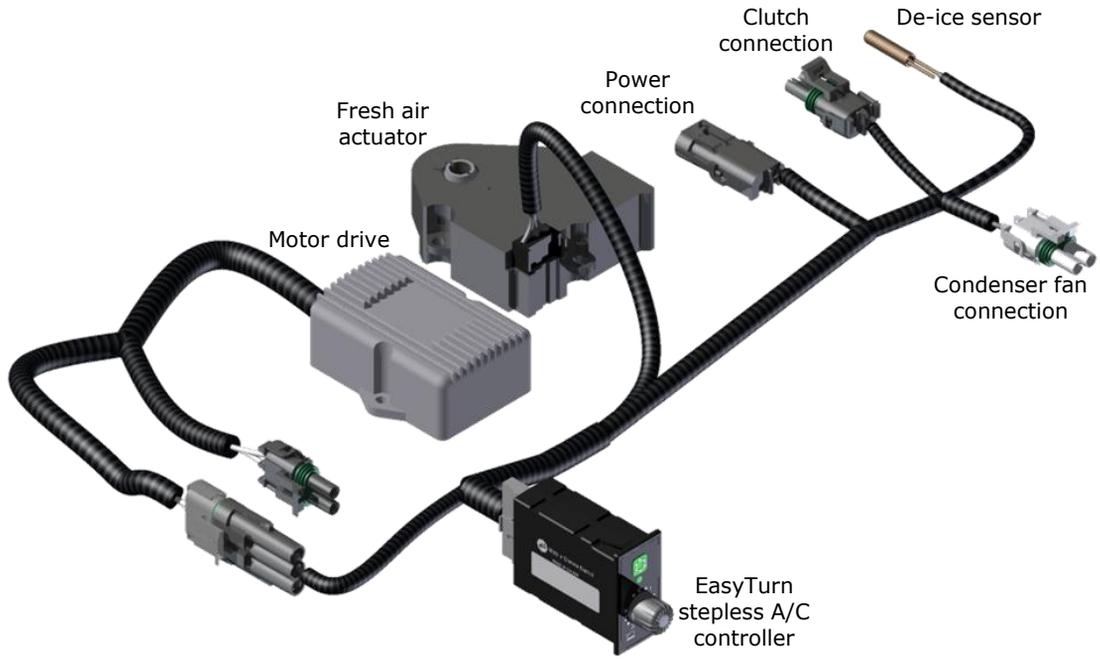
## A/C with 3 Speed control



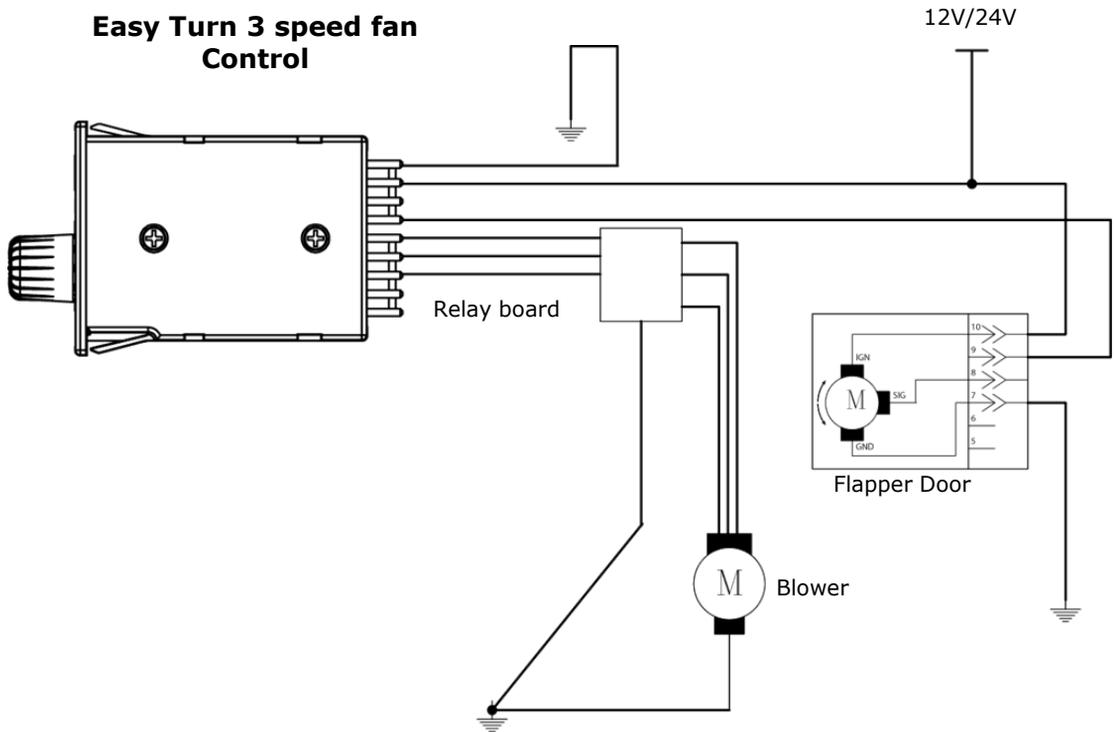
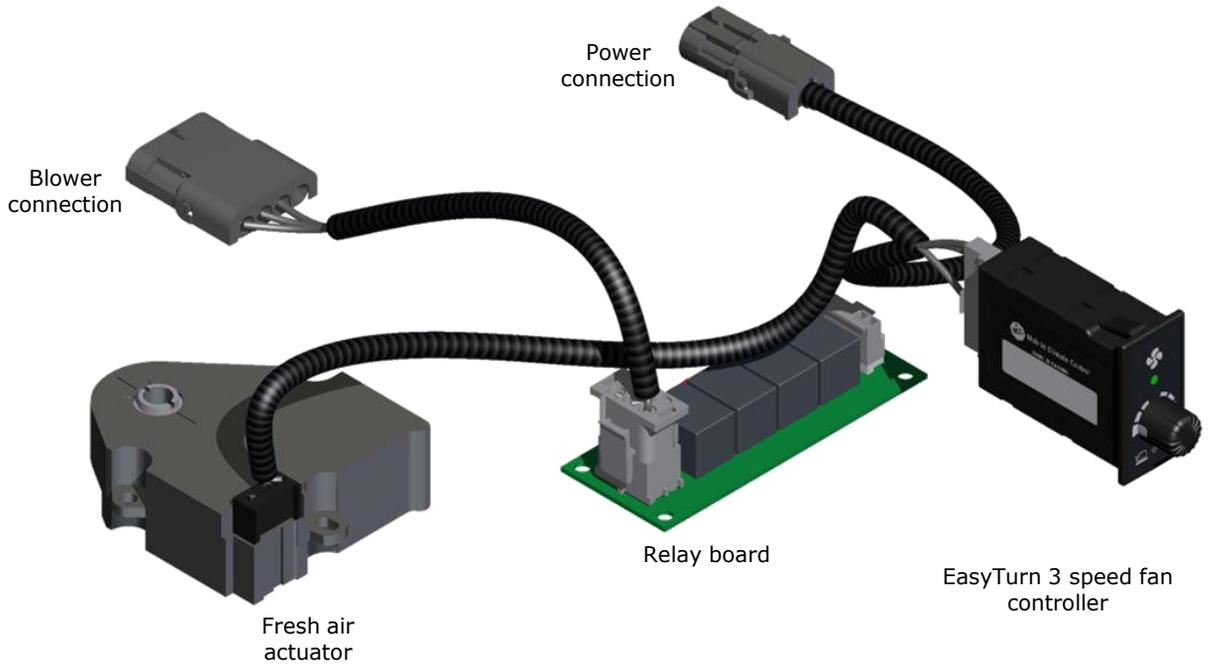
## Application schematic



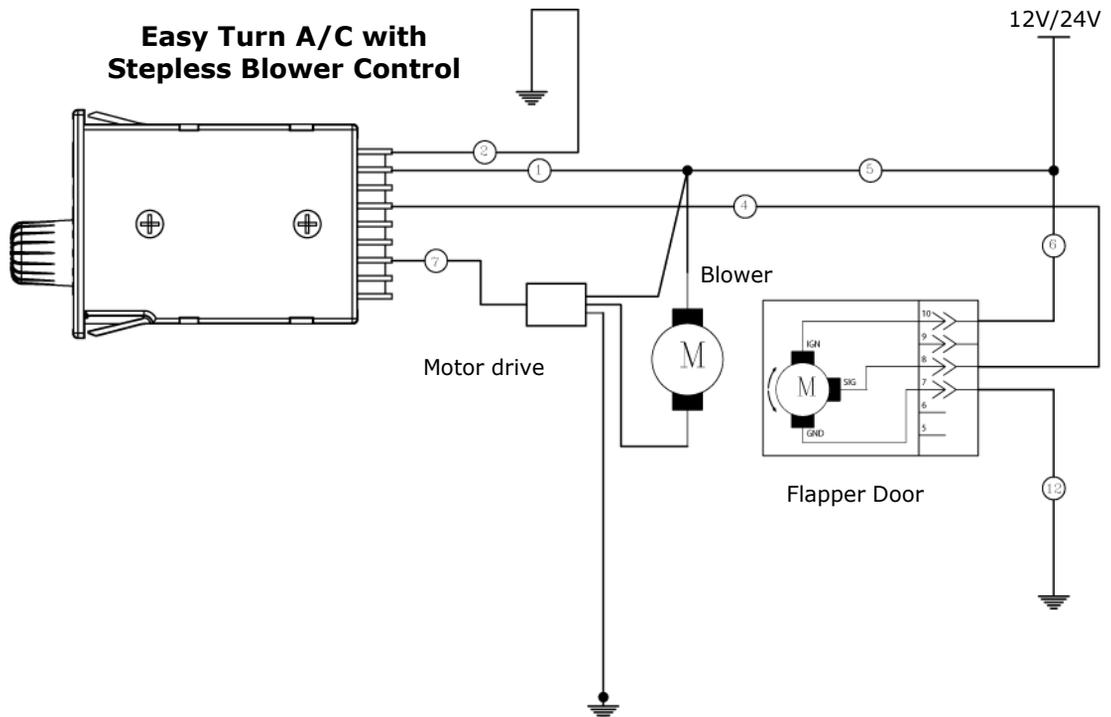
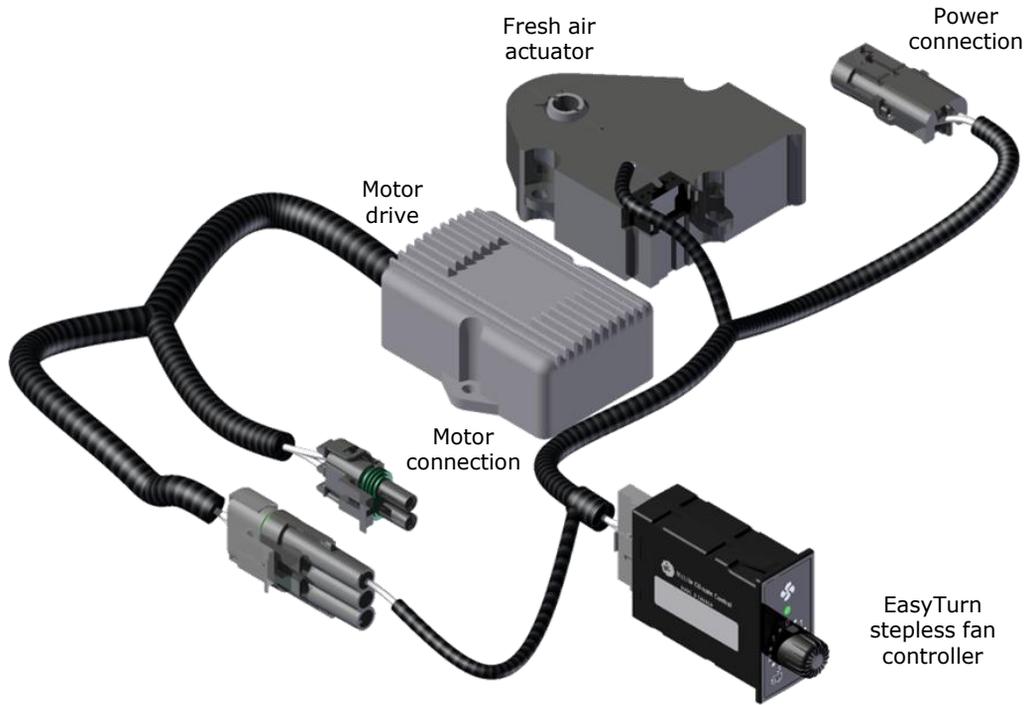
## A/C with Stepless control



### 3 Speed fan control

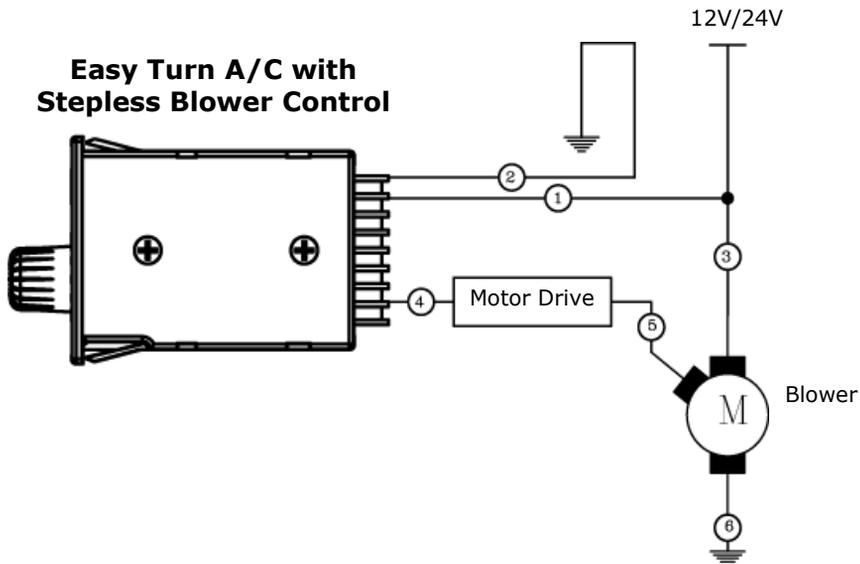
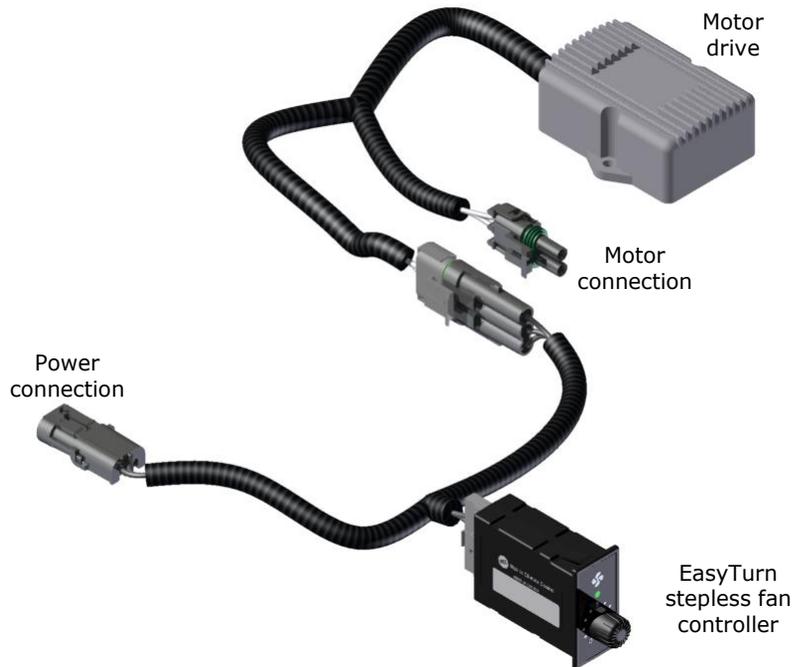


## Stepless fan control



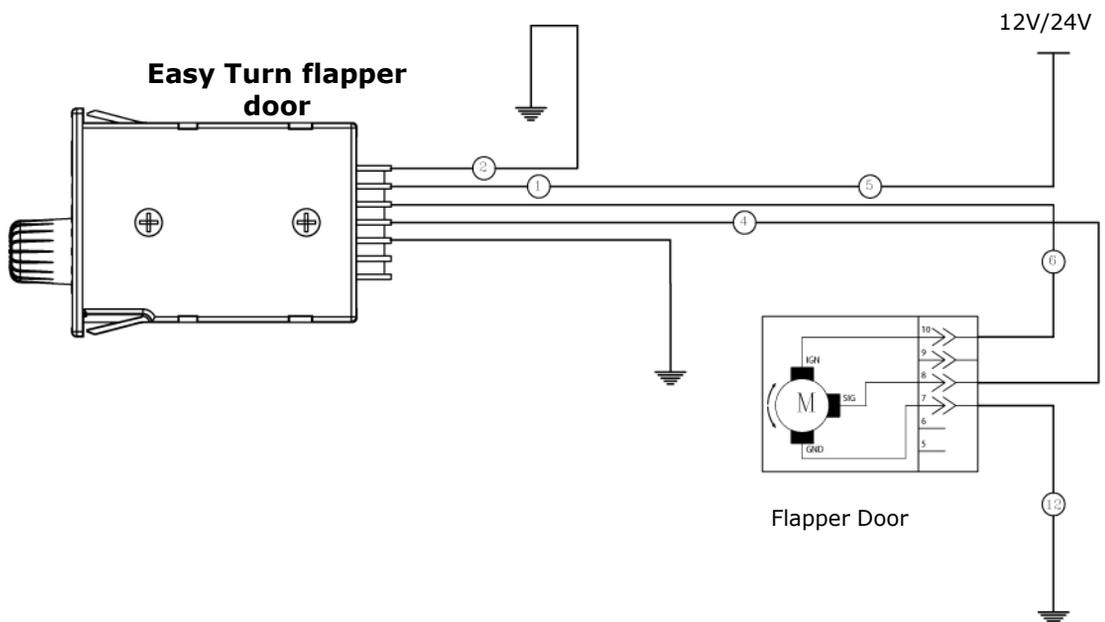
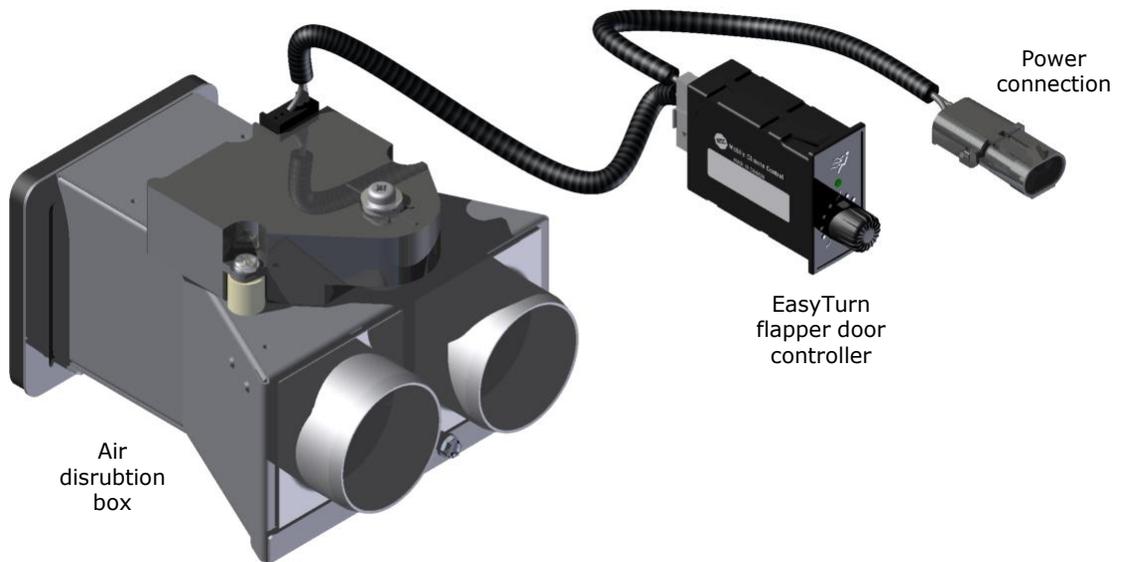
## Fan speed control

The EasyTurn fan speed control module is designed for variable fan speed control with a combination of a PWM motor drive. Stepless control allows more precise control and higher efficiency



## Flapper door

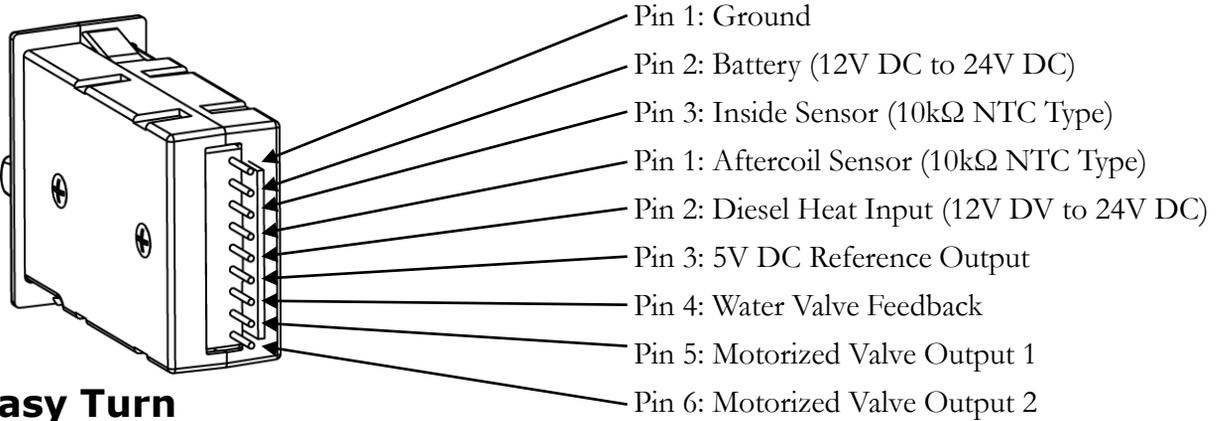
The Easy Turn Flapper Door module is designed to control flapper doors. It provides smooth and trouble free operation for distribution as compared to mechanical bowden cable assemblies.



## Connections

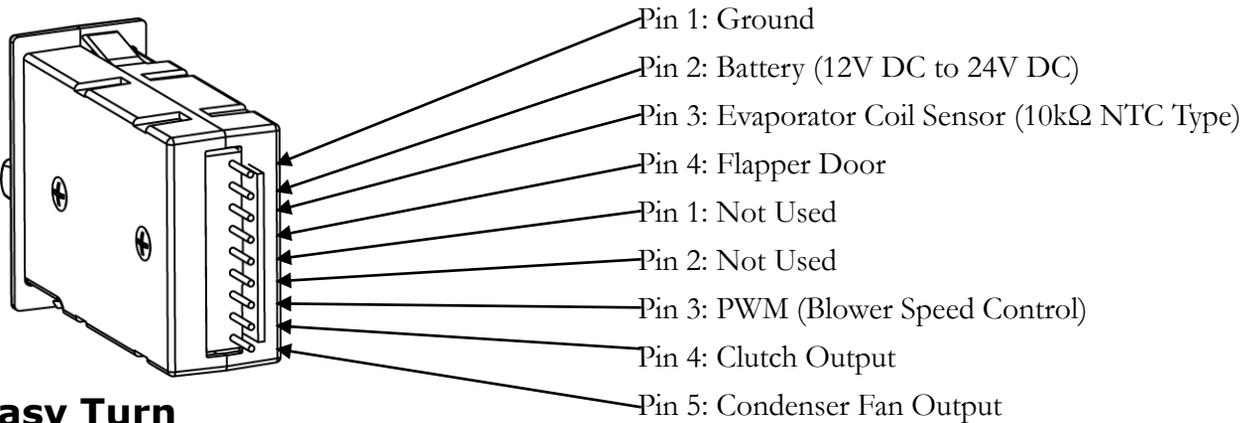
### Easy Turn

ATM, Convector, Compartment and Defroster



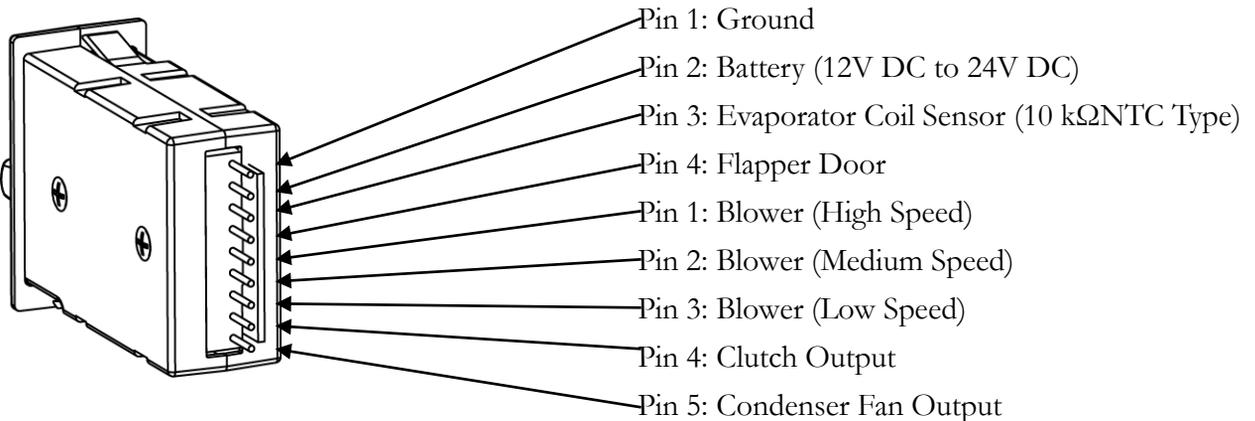
### Easy Turn

A/C with Stepless Blower

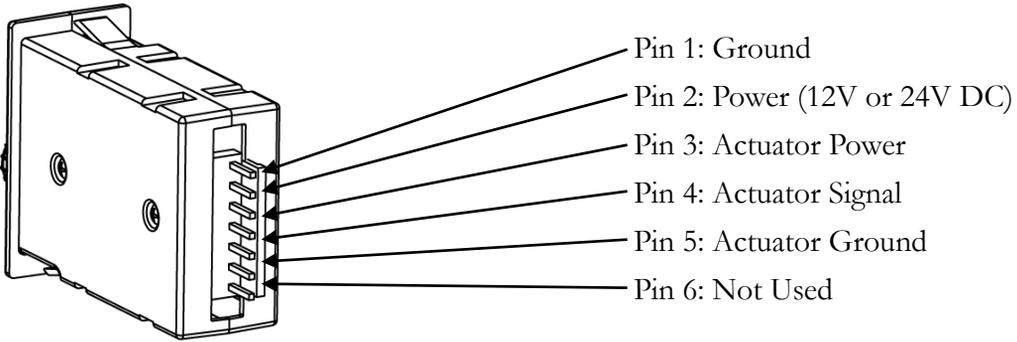


### Easy Turn

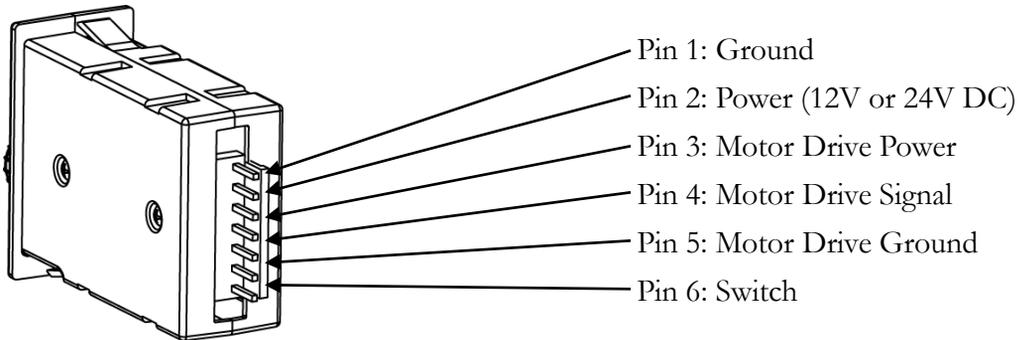
A/C with 3 speed Blower



## Easy Turn Flapper Door



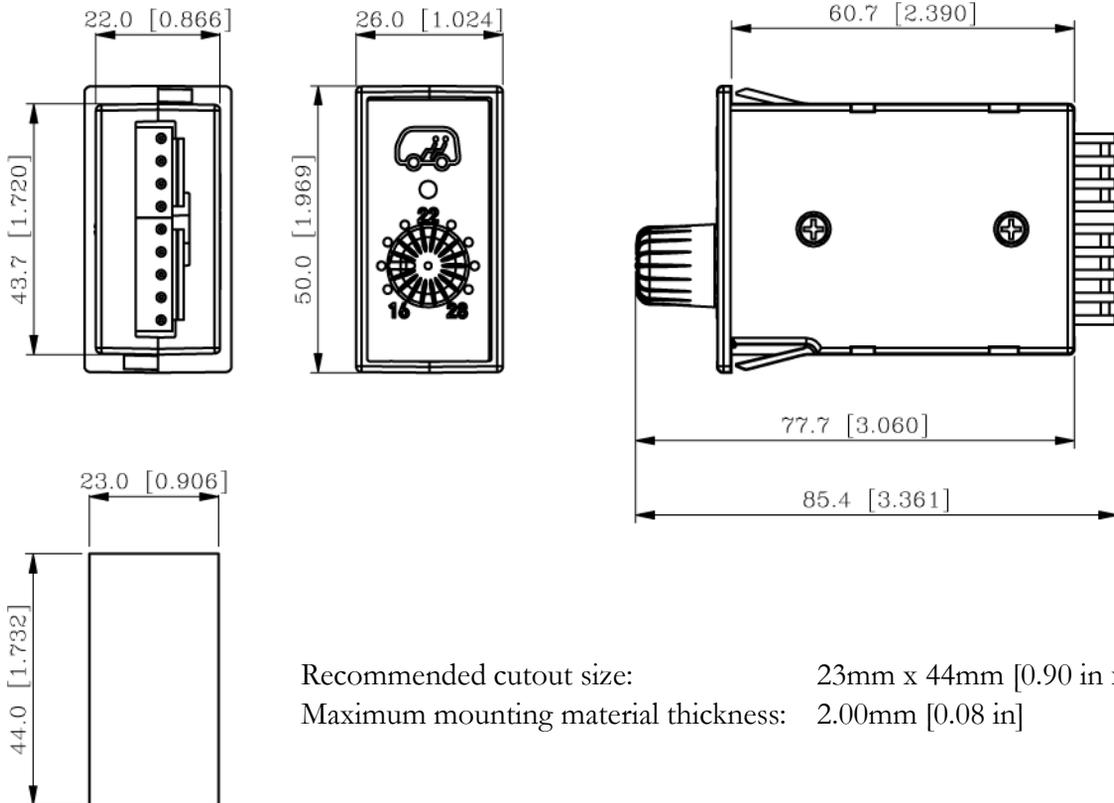
## Easy Turn Fan With Switch



## Specifications

Operating Voltage: 11V DC to 30V DC  
 Operating Temperature: -40°C to +85°C  
 Storage Temperature: -40°C to +105°C  
 Clutch Output: 7A  
 Temperature Sensors: NTC (10k Ω @25° C)

## Dimensions



Recommended cutout size: 23mm x 44mm [0.90 in x 1.73 in]  
 Maximum mounting material thickness: 2.00mm [0.08 in]

### Temperature Control Modules

Mating Connector: JST P/N VHR 4N and VHR 5N

### A/C and Stepless Blower Modules

Mating Connector: JST P/N VHR 3N and VHR 6N

Mating Terminal: 22GA-18GA: JST P/N SVH-21T-P1.1  
 16GA -20GA: JST P/N SVH-41T-P1.1

### Flapper Door and Stepless With Switch

Mating Connector: JST P/N VHR 6N

Mating Terminal: 22GA-18GA: JST P/N SVH-21T-P1.1  
 16GA -20GA: JST P/N SVH-41T-P1.1

## EasyTurn Family



35-0819  
Off-road A/C  
Stepless



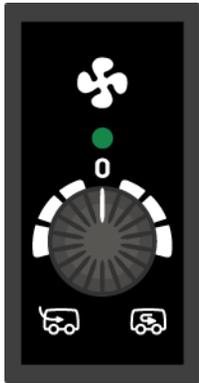
35-0814  
On-road A/C  
Stepless



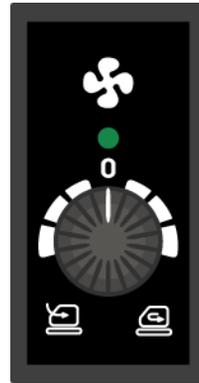
35-0825  
On-Road A/C  
3 Speed



35-0826  
Off-road A/C  
3 Speed



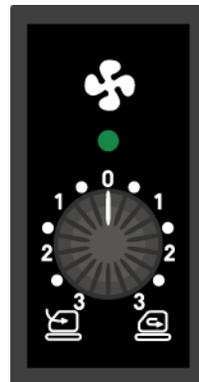
35-0820  
On-Road Fan  
3 Speed



35-0821  
Off-Road Fan  
3 Speed



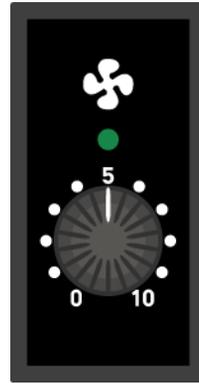
35-0822  
On-Road Fan  
Stepless



35-0823  
Off-Road Fan  
Stepless



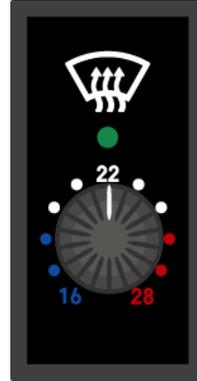
35-0891  
Flapper door



35-0824/35-0892  
Stepless fan/Stepless Fan  
with switch



35-0813  
Compartment



35-0816  
Defroster



35-0815  
ATM Off-Road



35-0818  
Convector



35-0817  
Passenger  
Compartment