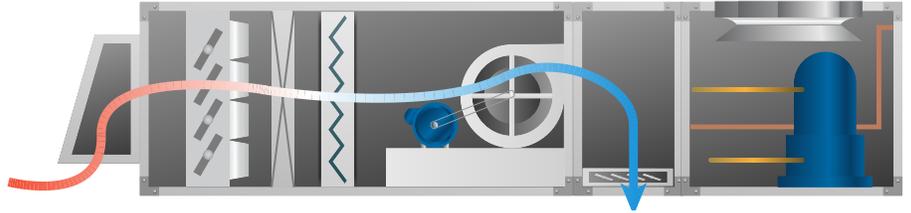


# Rooftop Units Application Data Sheet

## Turntide Smart Motor System™

Sitting on the top of buildings, Rooftop Units (RTUs) work behind the scenes in buildings to maintain optimal indoor conditions – from keeping customers comfortable in a hot, humid environment, to ensuring food is stored at the right temperature for optimal freshness.



Unfortunately, HVAC systems, including RTUs, run on old, inefficient technologies. Due to their importance to everyday business operations, HVAC can contribute up to 35% of energy costs within a building – reducing profits and increasing utility bills.

Designed with a cloud-connected Optimal Efficiency Motor™, the **Turntide Smart Motor System™** drastically reduces the energy consumption of RTUs with zero compromise to HVAC run conditions: saving energy, money, and the environment.



### Immediate Energy Savings

Turntide motors save energy through patented switched reluctance design, which utilizes optimal device physics and control algorithms to run more efficiently



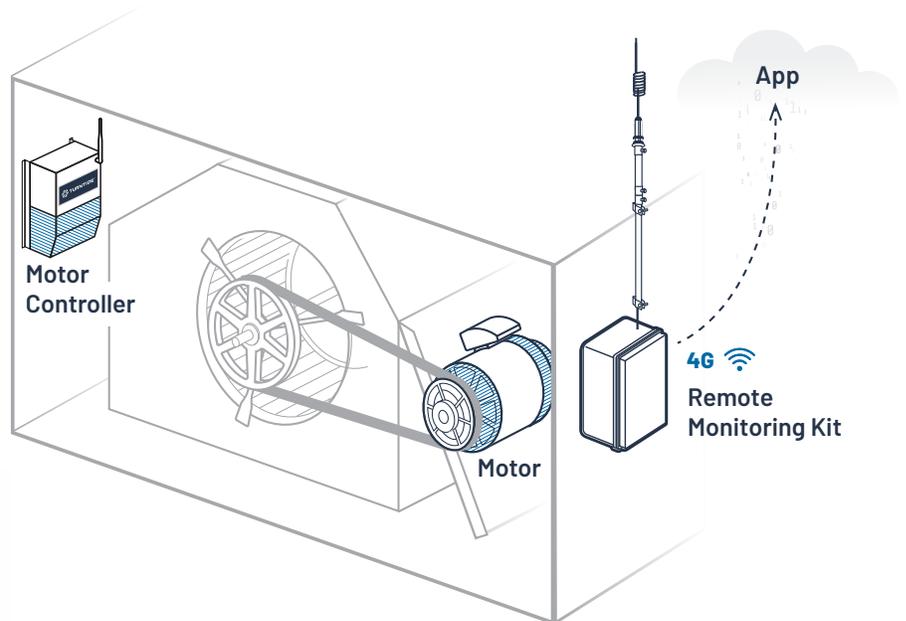
### Gets Better and Smarter Over Time

Turntide motors utilize operating conditions and runtime data to generate insights, enabling improved control algorithms and equipment fault detection

## The Turntide Smart Motor System™ for Rooftop Units

The Turntide Smart Motor System is a high-impact energy conservation measure that delivers immediate and long-term savings. By swapping out legacy AC induction motors and replacing them, Turntide reduces HVAC energy use by an average of 64%

## What's in the Turntide Smart Motor System?



### Smart Motor

Our patented high rotor pole switched reluctance motor with advanced device physics runs more efficiently and reliably.

### Remote Monitoring Kit

The Remote Monitoring Kit is an integrated system of edge devices, Wi-Fi mesh, and cellular 4G networks to ensure a secure, stable connection to monitor and control your HVAC equipment.

### Additional Intelligence

Turntide also bundles in sensor packages, such as the Last Mile Kit, which monitors supply and return air temperature to ensure HVAC equipment operational accuracy.

### Motor Controller

The controller helps the variable-speed motor work at optimized efficiency across a broad range of speeds, enables customized sequences of operation or application-specific functionality, and protect the system from damage or failure.

### Turntide App

Turntide web and mobile apps make remote monitoring and management of your building systems and equipment easy, with notifications, troubleshooting tools, and the ability to make service requests anytime, anywhere.

# Outperforms Existing HVAC Efficiency Measures

# 13%

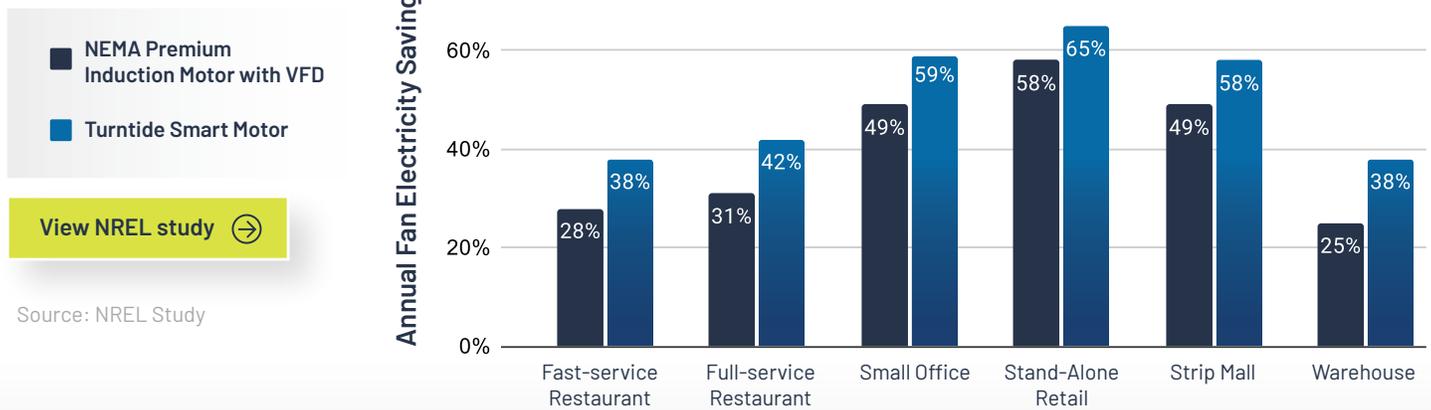
## The ultimate energy conservation measure

The Smart Motor System makes HVAC equipment more efficient, more intelligent, ultra reliable, and simple.

Better performance than VFD retrofit

Source: NREL Study

### Annual Fan Electricity Savings from Motor Retrofit



[View NREL study](#) →

Source: NREL Study

## Proven to Improve HVAC Performance in RTUs

Sustainability focused british retailer Wilko installs Turntide Smart Motor System to dramatically reduce energy bills and carbon footprint



### THE RESULTS:

**>40%** energy reduction compared to baseline

**20%** additional energy savings paired with BMS system

**800** Turntide Motors deployed across Wilko retail locations

# Turntide Smart Motor System Specifications



## Motor Compatibility

Turntide smart motors are designed with industry-standard specifications, matching nameplate specs found on an AC induction motor.

### Horsepower

- 1-15 HP

### Voltage

- 208-230V
- 460V
- 575V

### RPM Range

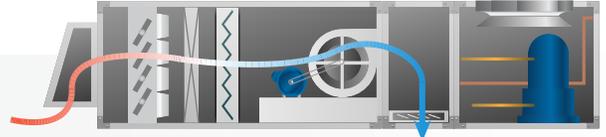
- 100-3600 RPM

### NEMA Frame Sizes

- 56Y
- 56/56H
- 56Z/56HZ/143T/145T
- 182T/184T
- 213T/215T

### NEMA Motor Enclosure

- TEFC



## RTU Compatibility

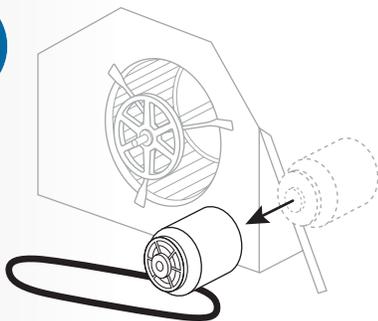
The Turntide Smart Motor System is compatible with rooftop unit systems for most building types.

### Building Types

- Data Centers
- Retail
- School
- Office
- Hotel
- Supermarkets
- Industrial/Warehouses
- And Many More

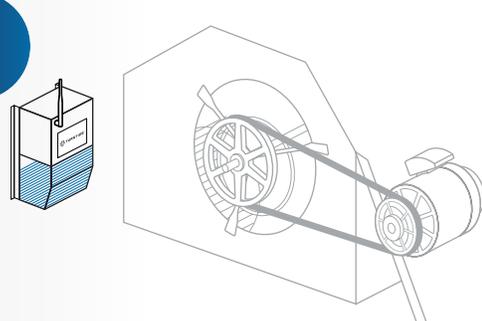
## RTU Retrofit: 5 Easy Steps

1

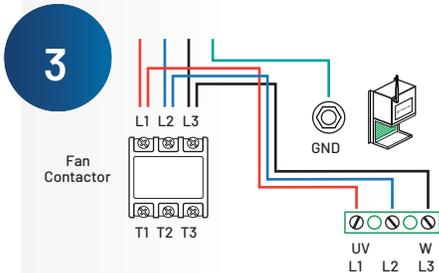


The original motor in the rooftop unit is removed, and replaced with a Turntide smart motor

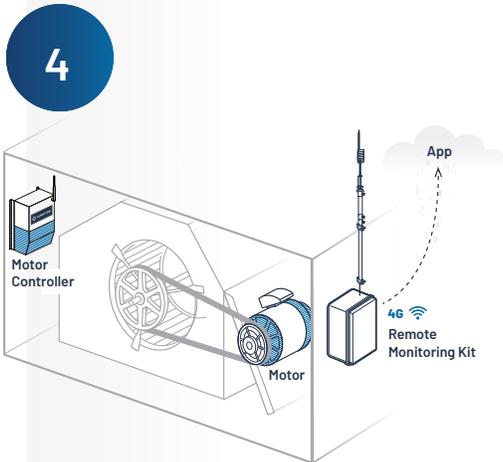
2



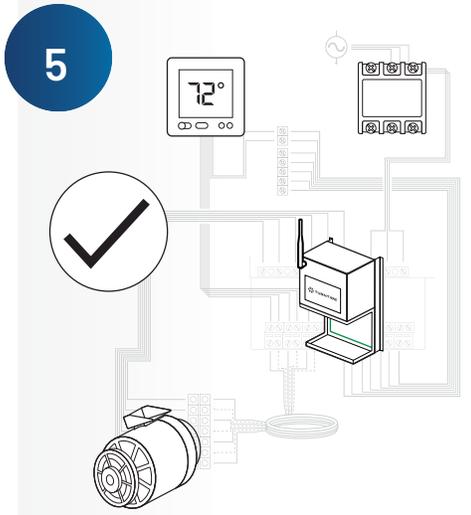
The Turntide motor controller is installed to connect with the motor



3  
 Jumper pins are verified to ensure proper configuration before wiring the system together



4  
 All system components are wired together, including the Remote Monitoring Kit



5  
 System is started up to test and ensure all components work properly for 24/7 safe, reliable operation

For full install information, refer to [www.turntideacademy.com](http://www.turntideacademy.com)

## Turntide For Buildings®: Other Solutions to Improve RTU Management and Performance



### Smart HVAC

Turntide makes it easy to monitor and control HVAC with intelligence, with HVAC applications and hardware to improve service workflows, and reduce HVAC energy use and maintenance costs.



### Smart Building Operations

Turntide enables remote, multi-site management across your building portfolio, by merging fragmented platforms and systems into one simplified view.

#### TURNTIDE TECHNOLOGIES

Our breakthrough technologies accelerate electrification and sustainable operations for energy-intensive industries