

Easy Adjustment of Motor Torque with Simple System

# TM Series Torque Motor and Power Controller Package

Introducing a new series of torque motors that let you adjust torque by changing the applied voltage.

The **TM** Series combines a newly developed, user-friendly power controller with a torque motor. With the **TM** Series, you can adjust torque easily with a simple system.

The **TM** Series is perfect for winding applications, push-motion mechanisms and other situations where torque must be adjusted over a wide range.

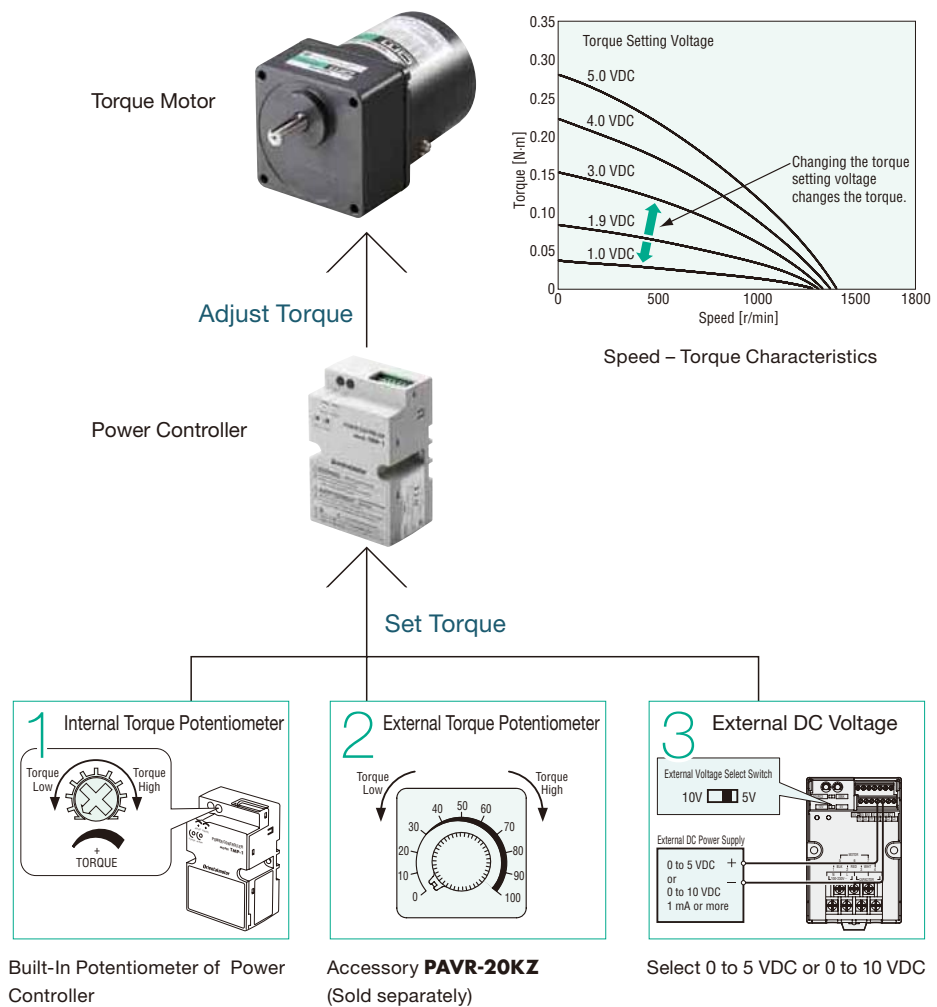
## Easy Torque Adjustment/Selectable Torque Setting Method

### Motor torque can be adjusted with ease.

You can set/adjust motor torque using the internal torque potentiometer of the power controller, etc.

### Selectable torque setting method

Torque can be set using one of three methods according to the specific purpose of use. You can also change torque over two levels by switching between the internal potentiometer and external potentiometer/voltage.





### Full Range of Functions

- Two torque levels set by the internal potentiometer and external potentiometer/voltage
- Alarm output function (detection of an open thermal protector)
- Instantaneous bi-directional operations by CW/CCW signal switching
- Switching of signal input logic between sink and source

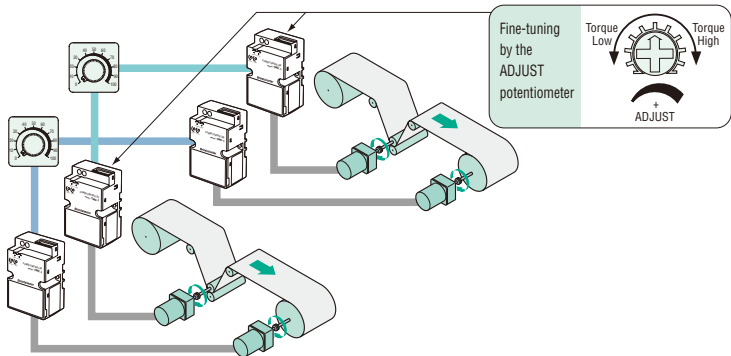
### Improved Accuracy of Set Torque

Variation of the generated torque relative to the set torque is much less compared to conventional models.

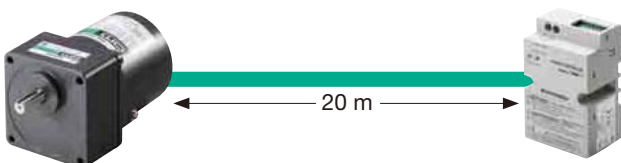
### Torque Fine-Tuning Function

Each motor has a slight variation in its relationship between the set torque and the actual torque output by the motor. The power controller adopted by the **TM** Series has a torque fine-tuning potentiometer (ADJUST potentiometer) for adjusting this variation.

This means that even in the case of multi-motor control such as one where multiple motor-operated machines are operated in parallel, the differences among the individual motors can be corrected with ease.



### Extendable Distance between Motor and Power Controller Up to 20 m

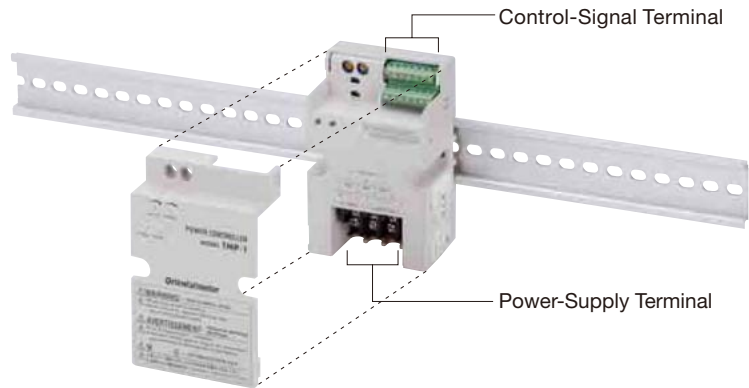


The distance between the motor and power controller can be extended up to 20 m.

This feature is ideal in situations where the location where the motor is installed is away from the control panel.

## Simple Wiring, DIN Rail Mountable

For easy wiring the design of power controller provides separate terminals for power supply and control signal. It also can be mounted to the DIN rail directly.



## Long Life, Low Noise GN-S Gearhead Adopted for Combination Type

The combination type comes with the motor and long life, low noise **GN-S** gearhead pre-assembled. Since the gearhead and motor are pre-assembled, every combination type can be installed in your system with ease and you need not worry about damaging the shaft, either. You can also purchase a pinion shaft motor and gearhead separately.



Combination Type

### Gearhead (Long life, low noise **GN-S** gearhead)

The "long life, low noise **GN-S** gearhead" achieves a long rated life of 10000 hours, twice the level of a conventional gearhead, by adopting innovative technologies and structure. Also, it is low noise designed.

### Motor

A motor's life is determined by its bearing. We adopted high-performance bearing grease to lubricate this important component. The life of the motor bearing is twice as long as a conventional type. The motor equips a protective earth terminal.

## Conform to Major Safety Standards

### Motor



The motor is recognized by UL and CSA Standards, and certified under the China Compulsory Certification System (CCC System). CE Marking is used in accordance with the Low Voltage Directive. It also has a built-in overheat protection device (thermal protector).

### Power Controller



The power controller is recognized by UL Standards. CE Marking is used in accordance with the Low Voltage Directive and EMC Directive. It provides protection against electrical shock conforming to IP20.

## RoHS-RoHS-Compliant

The **TM** Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

## Global Voltage Specifications

The **TM** Series supports the power supply voltages used in major countries. The power controller also adopts a wide voltage range to cover all key global voltage specifications (single-phase 100 to 230 VAC) with only one unit.

## Lineup

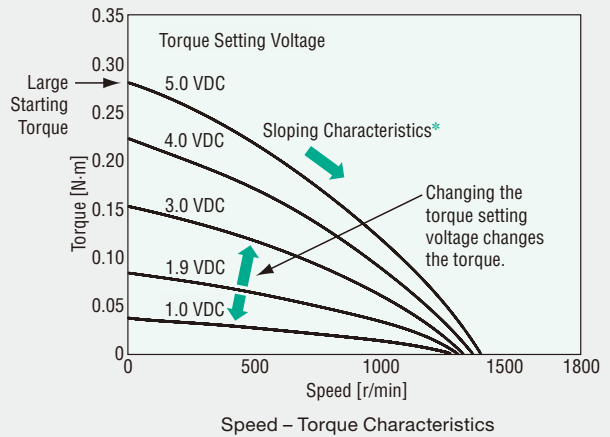
- Output Power: 3 W, 6 W, 10 W, 20 W
- Type: Combination type, Round shaft type, Pinion shaft type
- Power Supply Voltage: Single-phase 100 VAC, Single-phase 110/115 VAC, Single-phase 200 VAC, Single-phase 220/230 VAC

# Features of Torque Motor and Application Examples

Torque motors have different features than induction motors and reversible motors. The features specific to torque motors and examples of how these features can be applied are explained.

## Features of Torque Motor

- Torque can be adjusted by changing the voltage applied to the motor.
- Large starting torque and sloping characteristics\*.
- Usable over the entire range of speed – torque characteristics.
- Provides stable torque in a locked state or at low speed.
- Functions as a brake when the motor can be rotated in the reverse direction.
- If the load is constant, the speed can be changed by adjusting the applied voltage.
- If the applied voltage is constant, the speed changes when the load changes.
- With the **TM** Series, the applied voltage, and consequently the torque, can be changed by adjusting the torque setting voltage or each torque potentiometer.
- \*Torque is highest at zero speed and decreases steadily with increasing speed.

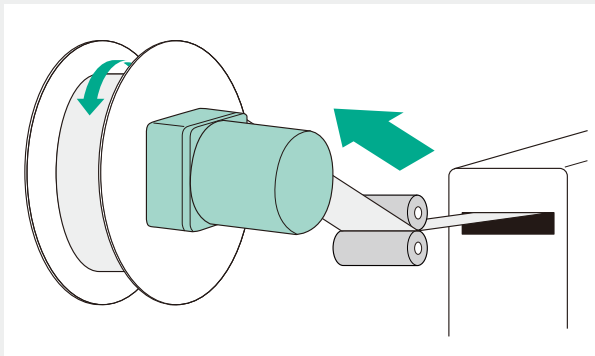


## Examples of Torque Motor Application

Shown below are representative examples of utilizing the features of a torque motor.

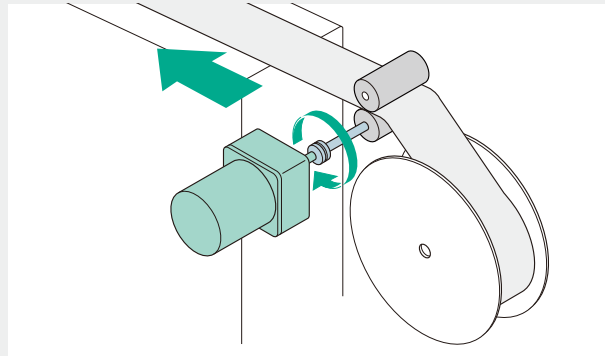
### ● Winding

The sloping characteristics of a torque motor is ideal for applications where the work is wound at a constant speed and tension.\*1



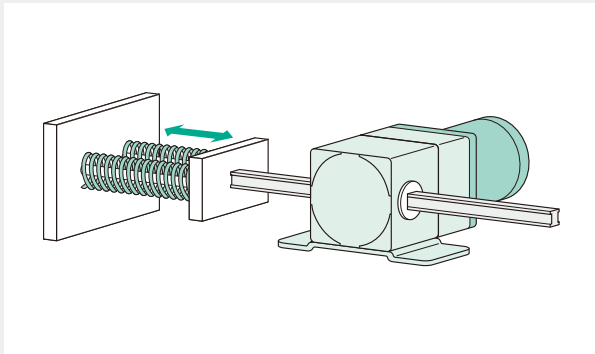
### ● Tensioning (Brake)

The braking force of a torque motor can be used to tension the material as it is wound to remove slacks.\*1



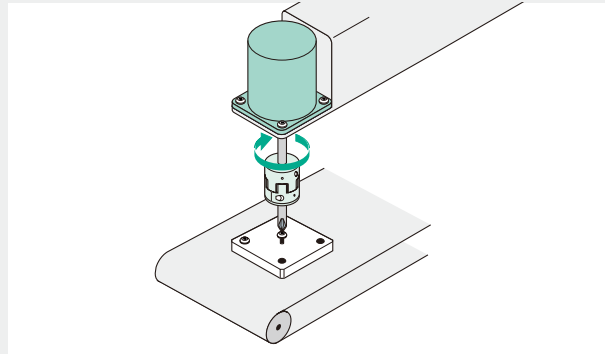
### ● Push-Motion

Since a torque motor provides stable torque in a locked state or near-locked operation at low speed, it is suitable for push-motion operation.\*2



### ● Tightening

Since a torque motor provides stable torque in a locked state or near-locked operation at low speed, it is suitable for applications where screws, etc., are tightened.\*2



\*1 How to select a torque motor used in winding or tensioning (brake) applications is explained in details on the "Overview of torque motor and selection example" page. Overview of torque motor and selection example → Page 29

\*2 The output torque increases when the motor is locked. If a gearhead or linear head is used with a torque motor, do not hit to stop. The impact generated when the work contacts the stopper may damage the gearhead or linear head.