Title	Delta AC Motor Drive Instructions – PID Functions
Date	August, 2016
Applicable to	Full Series of the Delta AC Motor Drives
Key words	AC Motor Drive, PID

【Introduction】

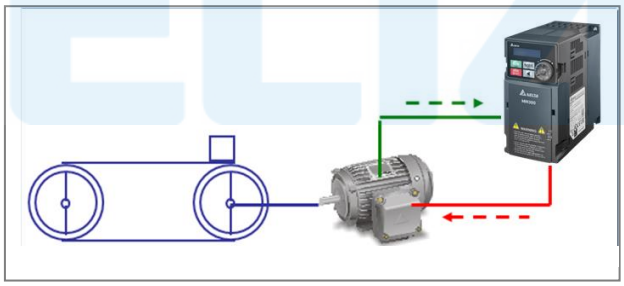
The Delta AC Motor Drives provide a variety of energy-saving control functions such as PID control, Sleep/wake modes and automatic energy savers to optimize energy efficiency for different industry applications. PID control is widely applied in many industries. It compares real-time system parameters with target values and provides precise “Proportional-Integral-Derivative” calculations to ensure stable and reliable system performance.

【PID Function for Delta’s AC Motor Drive】

There are two major operation models for an AC Motor Drive’s PID function:

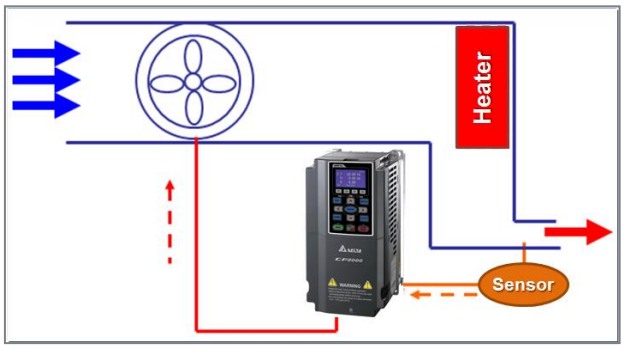
- **Motor Speed Control**

  Real-time motor speed information is provided by an encoder, and the target speed is set up by the operator or acquired from other systems to achieve constant speed control or synchronous speed control. To implement the PID function for motor speed control, users have to install a PG feedback card for Delta’s AC Motor Drives.



- **For Production Processes**

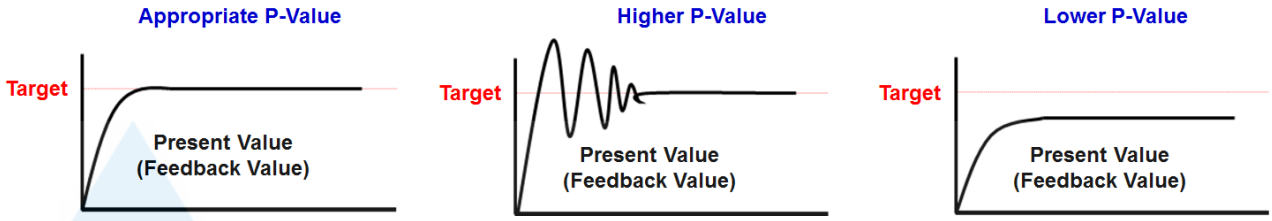
  The PID controller receives real-time data from different sensors such as pressure sensors, flow sensors, thermocouples or thermistors and executes constant pressure, flow or temperature control. These functions are commonly used in fans, pumps or HVAC systems.



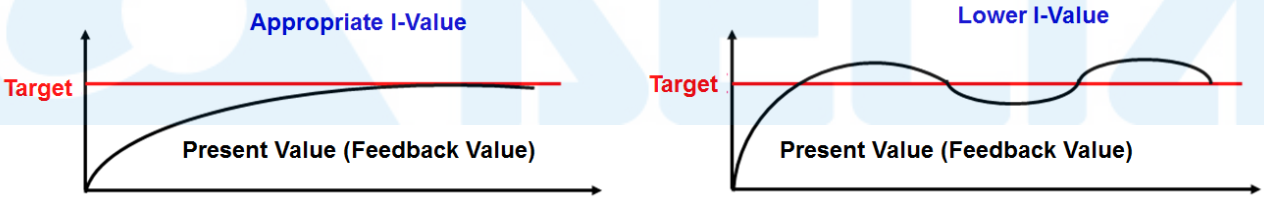
【PID Function Settings】

1. Identify the control models (speed, pressure, flow or temperature) and command source
2. Identify the sensor types and input signal source
3. Confirm if there is positive feedback or negative feedback for the PID controller and proceed with parameters setup
4. Based on the application requirement, adjust the P, I, D values accordingly

- The P value represents proportional control of the present values. Enlarging the present value error could ensure a faster response of the system.



- The I value accounts for the integral time of present value errors. If the current output is not sufficiently strong, errors will accumulate over time, and the controller will respond by applying a stronger action.



- The D value is for derivative adjustments. If error times are short but occur frequently, lower the D value to adjust the PID control.