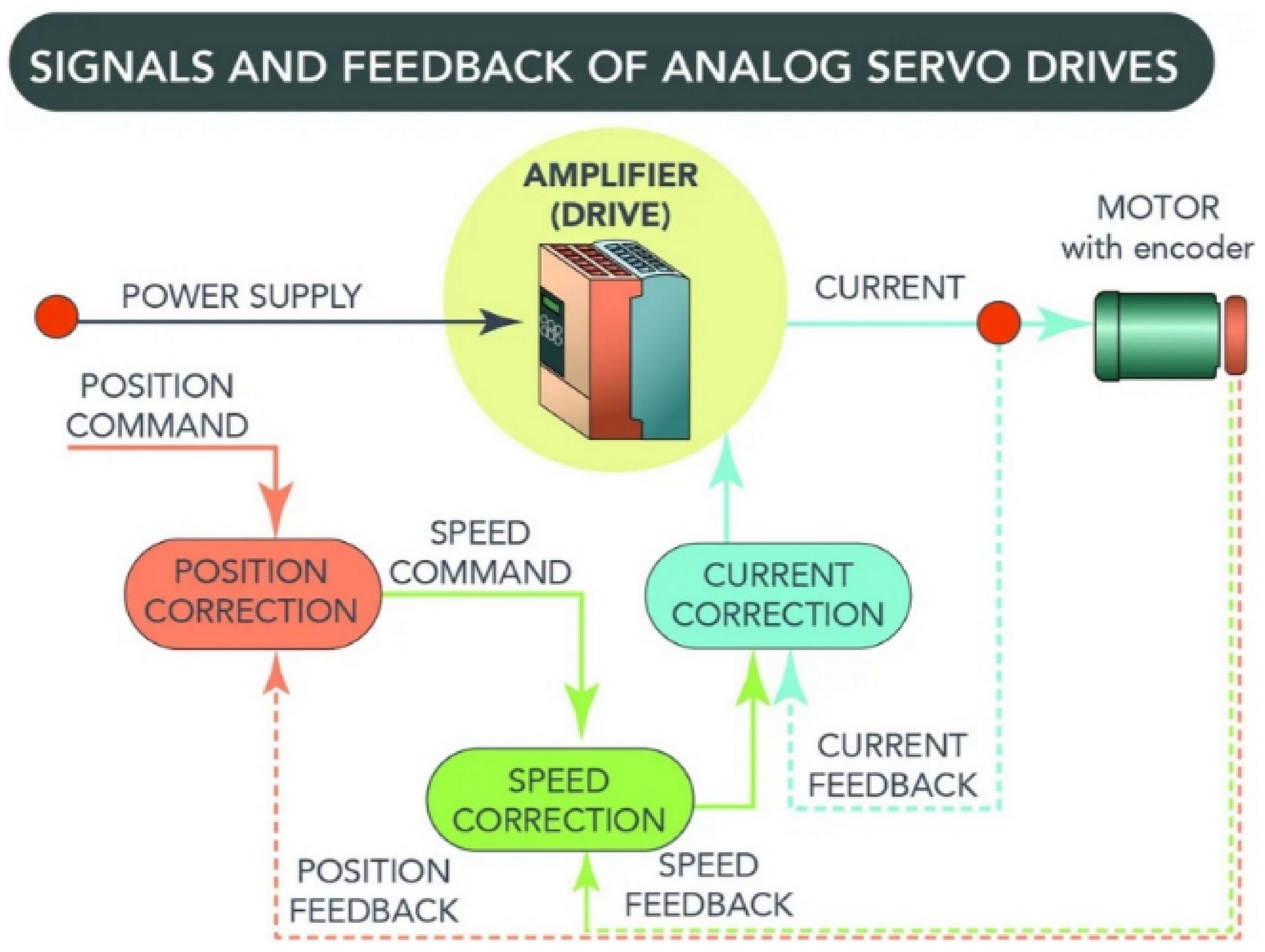
26 February 2022 13:00

The purpose of a servo drive is to convert low-power signals from the controller to high-power signals to the motor, instructing it to produce the desired torque or velocity. Servo drives (also referred to as servo amplifiers) can operate on either analog or digital input signals.

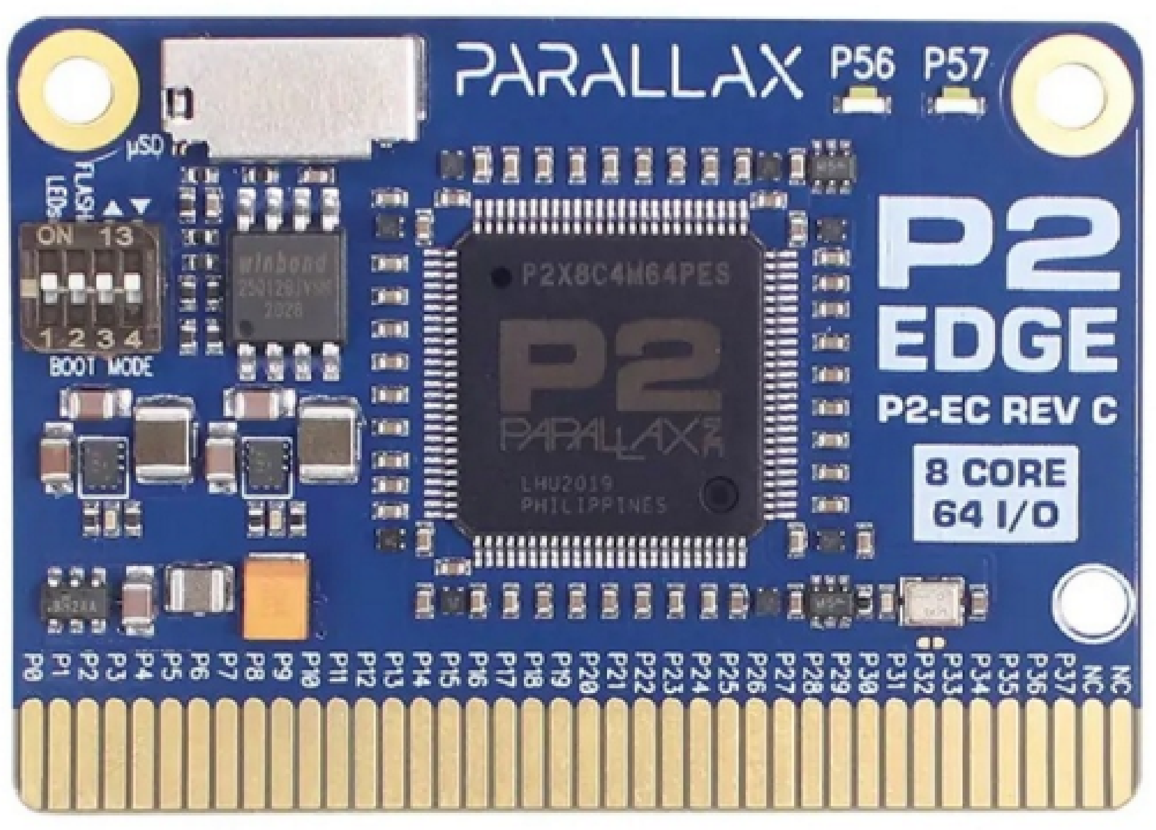
Analog servo drives receive ±10-Volt analog signals from the controller and convert these to current commands for the motor. The drive can control velocity or torque, and both the velocity and torque feedback loops are typically PI (proportional-integral) controllers.

A signal of +10-V indicates full velocity (or torque) in the forward direction, and a signal of -10 V indicates full velocity (or torque) in the reverse direction. A signal of 0 V indicates standstill, and other voltages indicate speeds (or torques) between full forward and full reverse, proportional to the level of the signal.



Unlike digital servo drives, analog types have no processing ability — that is, **no ability to make computations in the drive**. This is actually a benefit in terms of servo response time, because the system doesn't spend time waiting for a digital processor to make the necessary computations and determine the response.

The tuning process for analog servo drives is also simple, with gain values and other parameters set via potentiometers.



This £60 module requires opamps to produce the required +/-10v motor commands from PWM.
It requires differential line-receivers to interface to the encoders.

Using 48 of the available 64 I/O, we now have 12 closed-loop servo axes with performance capabilities that go way beyond the mechanical elements that are being driven and this includes linear motors on zero-friction air bearings and laser-interferometer position feedback.