

System Description

System Controller

The processor-based system controller monitors and coordinates all input and output functions, determines the characteristics of the servo control loop and supervises the overall functioning of the drive.

Parameter and program memories

The parameter memory holds all application-specific data. The parameter editor software can be used to copy the settings to disk and transfer them to other COMPAX devices.

The integrated program memory has the capacity for storage of up to 250 command lines. This allows the COMPAX to be pre-loaded with a complete motion program.

Setpoint generator

The setpoint generator produces a velocity-time profile from the programmed move parameters. Linear, jerk-free and square profiles are available.

Position controller

The target position determined by the setpoint generator is compared with the actual position of the motor. The output of the position controller becomes the setpoint value for the velocity controller.

Velocity and torque controllers

The velocity setpoint value delivered by the position controller is compared with the actual speed of the motor. The result becomes the torque setpoint value for the following digital current controller.

Power output stage

The isolated power output stage is implemented in IGBT technology. It is self-monitoring to detect any short circuits or ground faults, and incorporates over-temperature protection.

Feed forward control

In the setpoint generator, the course of a positioning event is calculated and passed to the position controller as a setpoint. As a consequence, the setpoint generator has access to preliminary information about the velocity, acceleration and torque demands needed for the positioning task at hand. By routing this information through the controller, contouring errors can be minimized, the controller achieves an improved transient response and the drive dynamics are enhanced.

Motor speed & position generation

This module converts rotor position data from the resolver into digital speed and position information. The resolver is an integral component of the motor—no additional feedback signal generators are required.

Speed Override input

Using an analogue input, the velocity can be reduced from the set value down to zero. This is a convenient way of operating at reduced speed during startup and troubleshooting.

Encoder interface

With the encoder interface E2 option, it is possible to connect an external incremental encoder (Litton G7 1SSLDBI-2500-151-050BX or equivalent type). This can then be used to synchronize the COMPAX to an external speed with the aid of the "SPEED SYNC" command. The resolution can take any value between 120 and 5000 increments per revolution.

Encoder modules and accessories:

- E2: ERM5/01 Encoder input module with line termination for individual connections
- E3: ERM4/01 Encoder emulation output module, resolution 512 or 1024
- E4: ERM5/02 Encoder input module without line termination for setting up an encoder bus
- EAM4/01 Encoder distributor for setting up an encoder bus
- BUS1/01 Bus terminator

Absolute positioning sensing option (A1)

When an absolute positioning sensor is used, it is unnecessary for the axis to return to a reference position following a power failure.

The Stegmann type AG100MS/GRAY 4096/4096 absolute encoder is recommended.

D/A monitor (D1)

The D1 option offers the possibility of representing two of 16 internal measurement values as analog output voltages ($\pm 10V$) and viewing them on an oscilloscope. Especially during initial parameter setting and startup, this provides a powerful tool for monitoring system operation.