

## Application Note

**Industry:** Semiconductor

**Application:** Input/Output Stacker for Wafer Heat Chamber Automation

**Challenges:**

- Replacing outdated automation components with current technology that understands command protocol from host system
- Delicate and precise movements to handle silicon wafers

### *Situation*

Semiconductor manufacturer used separate controller, motor and drive components to control elevators that separated silicon wafers into slots to be taken into a heat chamber. The motor drove a pulley to ball screw to align the wafer with the correct slot before a robotic arm pushed the wafer into the heat chamber.

### *Problem*

When the motor for the input/output stacker failed, the manufacturer needed to find a new motion system that could understand command protocol from their current host system. The alternative of changing the command protocol in their state-of-the-art host system to accommodate the new motor's language was not an option.

### *Solution*

The manufacturer used the SmartMotor's interrupt feature to parse ASCII character command strings from the host. The SmartMotor then decoded the command strings to set motion parameters and initiate motion. Processing speeds of the Class 5 SmartMotor were fast enough to execute the parser in the SmartMotor program without any delay in motion. The SmartMotor replaced the whole controller-motor-drive system with one NEMA 34 frame SmartMotor.

