

# Cobot Safety Programming

## Multi-Axis and Interface Mini™

Industry: Industrial Automation

### Summary

#### Customer Challenge

Collaborative robots, or cobots, are offering more manufacturing operations in the industrial packaging industry. Protective cages or fences are no longer needed for safety purposes, but safety testing are still needed to ensure humans and robots can work alongside each other.

#### Interface Solution

Interface suggests installing a 6-Axis force plate under the cobot, and also two ConvexBT Load Button Load Cells in the pinchers of the cobot. If a human were to knock into the cobot, or have a limb stuck in the pincher, the cobot would sense the amount of force measured from the load cells and be programmed to stop immediately.

#### Results

Interface's multi-axis force plate and miniature load cells were programmed and able to detect when a human interacted with the cobot, shutting it down for safety purposes.

### Materials

- Four 3-Axis Force Load Cells
- Mounting Plates
- Two BX8 Multi-Channel Bridge Amplifier and Data Acquisition System with supplied software
- Two ConvexBT Load Button Load Cells
- DMA2 DIN Rail Mount Signal Conditioner
- PLC Controller
- Robotic Arm
- Customer's PC or Laptop

### How It Works

1. Four 3-Axis Force Load Cells (creating one 6-Axis Force Plate) are installed between two metal plates at the base of the cobot.
2. The two ConvexBT Load Button Load Cells are connected to both sides of the cobot's clamping device.
3. Reaction forces from the robotic arm are measured and recorded using the two BX8 Multi-Channel Bridge Amplifier and Data Acquisition Modules. Data then be logged, graphed, and displayed on the customer's PC. Forces from the ConvexBT is sent to the DMA2, then signaled to the PLC controller, which is programmed to tell the cobot to stop clamping pressure.

