

## Background

[Alpha Grainger](#) specializes in producing high-precision turned parts manufactured in top of the line CNC machines supplying a variety of industries such as aerospace, medical, military, and automotive fields to name a few.

Alpha Grainger machines consist of valves and sensors connected to modules such as IO racks, interface modules, and HMI's. PROFIBUS is the digital fieldbus data communication network that connects all these sensors, valves, and modules together.

## Challenge



“We had an ongoing battle with alarms, and the result started out to be reduced production capacity. This issue was especially difficult because the problem was intermittent, and it was difficult to pinpoint with our test equipment.

Recently, the situation degraded where the machine was completely inoperable. If an alarm occurred during production, the machine would immediately stop. It was like someone had hit an e-stop (emergency stop).

If the machine suddenly shuts down like this, and particularly if taps were in the part, the tap would break, which damages the part as well. Another difficulty was that the alarms on the machines would point to several different modules, which would cause us to chase breadcrumbs around with no solid diagnostic information to lead us in the right direction.”

## Solution

[Softing's PROFIBUS Tester 5](#) was specified by Jake Grainger, the owner, and implemented by Thomas Guerard (Mechatronics Engineer) and Charles Comeau (Controls Engineer). “The PROFIBUS Tester 5 was connected to each of our modules giving us an instant and easy to read conclusion.”



“We tested the main electrical cabinet with everything in the cabinet looking correct, but all the modules in the machine were barely registering. We then quickly connected to each of the modules at the machine and noticed that those modules all now had great readings and the cabinet was the one with the questionable modules. So, with the meter's ability to tell us the order of the modules and the length of those cables between them, we were able to pinpoint just which cable and connector was causing the problem.”

## Results

“This has been an ongoing issue that several people have pursued. Numerous items had been replaced, and countless hours wasted trying to solve this. All our testing with the [PROFIBUS Tester 5](#) took under an hour, including the time it took for us to figure out the functions we were going to use. We were able to get a machine back to 100% capacity that was running an extremely time sensitive job for a customer that was in immediate need of parts.”

~ Charles Comeau, Controls Engineer, Alpha Grainger