



Machining • Metalworking

Four-area sensing by 2-output teaching

# Reduce man-hours by easy adjustment and output visualization



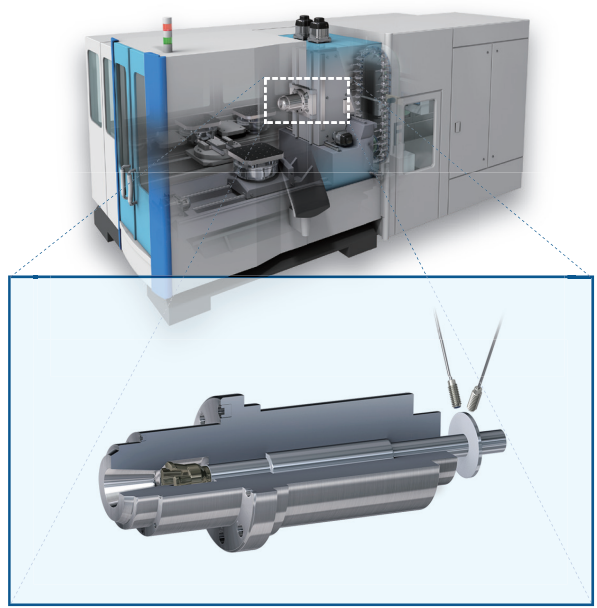
Proximity Switches

Product	Discrete sensor Adjustable Proximity Sensor
Model	H3C

Process/ Equipment	Machining Center
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## Current Situation

- After a tool change, the tool's position must be detected to see if it is properly clamped.
- 4 positions must be distinguished: Unclamped, Misclamped, Clamped, and Clamped Empty.
- To detect 4 positions, the ON/OFF outputs of 2 proximity switches are used.



## Current Problems

- Two proximity switches are installed with an offset, and adjusting the on and off positions for Unclamped, Misclamped, Clamped, and Clamped Empty takes a great deal of time.
- Workers vary in how they do the work, and we don't know how much safety margin we have for the sensing settings, so we are dependent on skilled workers.
- Switch positions must be adjusted very precisely, so onsite readjustment may be required.
- Proximity switches are installed inside the equipment, so they are difficult to access.

	Unclamped	Misclamped	Clamped	Clamped Empty
Proximity switch 1	OFF	ON	ON	OFF
Proximity switch 2	OFF	OFF	ON	ON

## Solution 1

### Remarkable 2-output 4-area proximity switch sensing

1 proximity sensor with 2 outputs does the work of multiple switches.

## Solution 2

### Auto-tuning function automatically sets the detection threshold

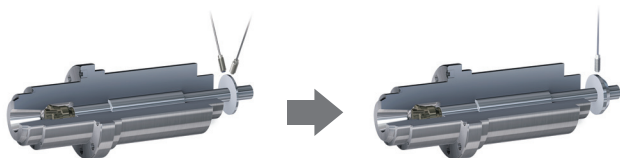
Automatic setting of optimum threshold helps to reduce problems on the line.

## Solution 3

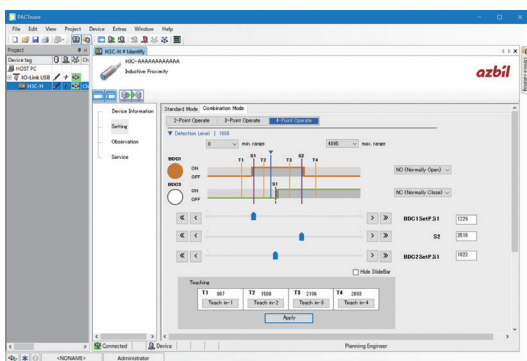
### Configuration Tool makes detection levels easily visible

Monitor safety margins for sensing with the Tool, check for optimum thresholds, and make adjustments.

### Solution 1 Sample proximity switch installation

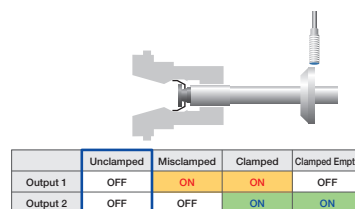


### Solution 3 Configuration Tool

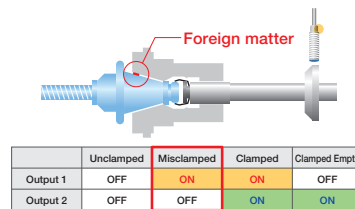


### Solution 2 Clamp positions and detection results

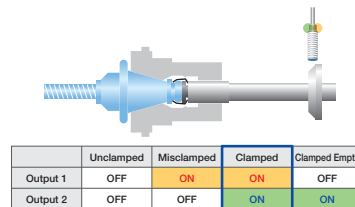
Unclamped



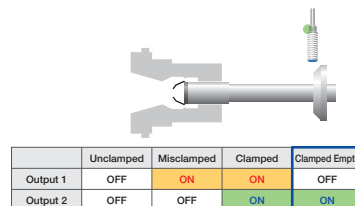
Misclamped



Clamped



Clamped Empty



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