Built-In type / non-Contact Sensor

**ATC run-out Detection System**

Aluminum High-Speed Cutting Process Monitoring Device

Sudden Machining Defects ——
Are they being caused by chips in the tool chuck?

- Measurement in 0.3 seconds
- High Accurate Detection 5 µm
- Simple Installation

[Image of a machine with a Built-In sensor and a display monitoring tool run-out]
Measurement in 0.3 second! Accurately detects run-out of 5μm.

ATC run-out detection system is used to detect abnormal run-out of the tool caused by entering the tool taper and to prevent machining defects.

### Accurate Detection

- **Accurate Detection**

  "True run-out quantity" is calculated by storing the shape of the tool flange in the controller without run-out state and comparing it with the shape of the run-out which is measured just before machining. More highly accurate run-out measurement is achieved in comparison with the simple run-out measurement (repeatability:30μm) by using general eddy-current sensors.

### Interpolation of Notched Part

By using proprietary algorithm, reliability of the run-out measurement is improved by interpolating the notched part of the tool holder, which is the decreasing factor of the measurement accuracy.

### Example data in the evaluation of production line

**A Co.:** Detect abnormal run-out every 1/843(average), during ATC
- Measurement times: 2529
- Chips enter the space: 3 times(setting parameter:10μm)

**B Co.:** Detect abnormal run-out every 1/918(average), during ATC
- Measurement times: 1836
- Chips enter the space: 2 times(setting parameter:5μm)
0.3 second Measuring Time

- **High Speed Measurement**
  Although it is very difficult to achieve run-out measurement at 600rpm by using contact type, it is achieved by using non-contact method. In addition, by using proprietary algorithm, all the measuring processes are completed in merely 0.3 seconds (at 600rot/min).

- **Superior Serviceability / High Reliability**
  - **Sensor Head Automatic Tuning Function**
    Replacing only the sensor is possible if damage occurs to the sensor for any reason. After replacing the sensor, combination adjustment of controller and sensor head is completed by removing the tool holder from the spindle and clicking “sensor adjustment” button once.

- **Easy Operation**
  - **Simple Setup**
    By just adding one line
    [ M132 ] --- Tool registration
    [ M133 ] --- ZDetect run-out
  - **Standard attachment of ACCRETECH**
    Sensor Bracket, Controller box, etc.

- **Most Suitable for Machining Environment**
  This run-out detection measuring system is coolant-resistant.

- **System Configuration**

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1 Test condition: When run-out of our master tool is measured at rotation speed of 600rot/min.
2 When run-out is measured by a combination of our EDYCOM, PULCOM V10, and roundness measuring function of PULCOM V10.
Six common coolants were tested.
### Basic Specification

<table>
<thead>
<tr>
<th>Model</th>
<th>Controller</th>
<th>AT50369</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool registrations</td>
<td>E-DT-ED02A-234</td>
<td></td>
</tr>
</tbody>
</table>

#### Performance

- Display unit: 0.5μm
- Repeatability: 3μ or less *Using our master tool holder(BT40)
- Tool rotation speed: 600rot/min
- Cycle time: 0.3s (without retries)

#### Usage environment

- Temperature: 0 to 40
- Vibration resistance: 3.66G max. (x,y,z-axis directions)
- Shock resistance: sensor head: 50G max. (x,y,z-axis directions)
- Waterproof standard: IP67(sensor head) *Do not expose controller to water, oil or other liquids.

#### Power requirements

- Rated voltage: DC24±V10%
- Rated power: 14W

### Product Configuration

<table>
<thead>
<tr>
<th>Product code</th>
<th>Product name</th>
<th>Model</th>
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<tbody>
<tr>
<td>991016</td>
<td>ATC run-out detection system</td>
<td>AT50369</td>
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<tr>
<td>991007</td>
<td>Installation expense (without Moving expenses, Accommodation expenses, Meeting expenses and actual expense)</td>
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</tr>
<tr>
<td>991009</td>
<td>Expense of retrofit</td>
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<tr>
<td>991017</td>
<td>Controller</td>
<td>E-DT-ED02A-234</td>
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<tr>
<td>991003</td>
<td>Sensor head</td>
<td>AM50352-0001</td>
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<tr>
<td>4219412</td>
<td>Sensor bracket base</td>
<td>AM50352-0002</td>
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<tr>
<td>4219414</td>
<td>Sensor bracket block</td>
<td>AM50352-0003</td>
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<tr>
<td>4219416</td>
<td>Protection cap</td>
<td>AM50352-0004</td>
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<td>4219646</td>
<td>Piping receiving plate</td>
<td>AM50352-0005</td>
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<td>4457404</td>
<td>Box for Controller</td>
<td>AM50352-C001</td>
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<td>4219804</td>
<td>HD cable</td>
<td>AM50359-C001</td>
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<tr>
<td>4219913</td>
<td>Power cable (DC)</td>
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<tr>
<td>4219914</td>
<td>Power cable (AC)</td>
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<td>4206870</td>
<td>Casing tube</td>
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<tr>
<td>4219402</td>
<td>Power unit (DC24V)</td>
<td>Mount on to DIN rail</td>
</tr>
</tbody>
</table>

### Model dimensions

- AM50352-D001-01
- AM50352-D005-00
- E-DT-ED02A-234 (with protection cap)