BL57-RE / BL57-NE
(with/without reference point)

Supports a wide range of applications and offers the highest performance in its class. Ideal for precision stages, semiconductor inspection systems, precision processing machines, and liquid crystal manufacturing equipment.

BL57-RE
● Achieves a measuring length of up to 1,060mm upon request, and offers the highest-level response speed and accuracy in its class.
● Signal pitch: 400mm
● Built-in reference point.
(Applications) Precision measuring equipment, precision stages.

BL57-NE
● Compact size makes machine integration much easier
● Theoretically unaffected by changes in temperature, humidity, air pressure and air movement. Unparalleled measuring stability achieved by use of low expansion glass
● Signal pitch: 400mm
(Applications) High-accuracy microscopes, measurement equipment.

External Dimensions

BL57-xxxRE-B (Measuring length: 60/160/260/360/460 mm)

BL57-xxxRE-B (Measuring length: 560/660/760/860/960/1060 mm)
### External Dimensions

#### BLST-xxxRE-C (Measuring length: 30/60/110/160/210/260/310/360/410 mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring length</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Reference plate B (t=2.2)</th>
<th>Reference plate B (t=5)</th>
<th>Reference plate W (t=2.2)</th>
<th>Reference plate W (t=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>160</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>250</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>210</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>160</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>310</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>250</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>410</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
</tbody>
</table>

#### BLST-xxxNE-B (Measuring length: 60/160/260/360/480 mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring length</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Reference plate B (t=2.2)</th>
<th>Reference plate B (t=5)</th>
<th>Reference plate W (t=2.2)</th>
<th>Reference plate W (t=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
<td>160</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>250</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>75</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>250</td>
<td>25</td>
<td>25</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
<td>25±0.2</td>
</tr>
</tbody>
</table>

### Main Specifications (BLST-RE)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Model</th>
<th>F</th>
<th>E</th>
<th>D</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal form</td>
<td>F</td>
<td>E</td>
<td>D</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Detection principle</td>
<td>F</td>
<td>E</td>
<td>D</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Scale accuracy (at 20°C)</td>
<td>F</td>
<td>E</td>
<td>D</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Scale expansion coefficient</td>
<td>F</td>
<td>E</td>
<td>D</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Max. response speed</td>
<td>F</td>
<td>E</td>
<td>D</td>
<td>H</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. The items marked by an asterisk indicate the machining dimensions on the mounting surface.
2. The surface roughness of the scale mounting surface is Rmax = 0.05S.
3. The surface roughness of the detector head mounting surface is Rmax = 12.5S.
4. "M" refers to the machine guide.
5. The flatness of the scale mounting surface must be within 0.01mm over the range of 7 (width)×200 (length)mm.
6. The flatness of the scale abutting surface and the machine guide is 0.02 over the range of 5 (width)×200 (length)mm.
7. Mount and adjust the pan-axes reference plates so that their reference surfaces have a parallelism of 0.1 or less with respect to the machine guide.
### Main Specifications [BL57-NE]

**Detector**
- Low-pass filter: 8kHz, 9kHz, 1kHz, 2kHz, 3kHz
- Scale: 8kHz, 9kHz, 1kHz, 2kHz, 3kHz

**Head**
- Max. travel: 60, 160, 260, 360, 460, 560, 660, 760, 860, 960, 1060 mm
- Measuring length: 30, 70, 120, 170, 220, 270, 320, 370, 420 mm

**Power consumption**
- 200 mA (no load)
- 290 mA (no load)

**Light source**
- Semiconductor laser: Wavelength 780nm, Output 6mW

**Vibration resistance**
- 10 to 100 Hz (0.001g to 1.0g)

**Environmental conditions**
- Temperature: 0 to +40°C (no condensation)
- Humidity: 20 to 90% RH (no condensation)

**Outgas analysis chart**

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head cable</td>
<td>Cable length</td>
<td>Sensing section</td>
<td>Head cable length</td>
<td>Output cable length</td>
<td>Power supply (V)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30mm</td>
<td>100mm</td>
<td>300mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply (V)</td>
<td>200±20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- For dimensions of head, scale, and I/F box, see the page on BL57-RE.
- Cable length in vacuum: 1.7m min. (to the electronic control section)
- Max. response speed: 3,000 mm/s (with 120Ω termination)
- Radiated power: 100mW (in vacuum), 120mW (in atmosphere)

### External Dimensions

- **BL57-xxxNE-C** (Measuring length: 30/70/120/170/220/270/320/370/420 mm)

**Main Specifications**
- Scale clamp:
  - Reference plate (t=2.2)
- Reference plate W:
  - Scale clamp mounting screw
  - Detector head

**External Dimensions**
- Reference plate (t=2.2)
- Reference plate W:
  - Mounting hole ø2.4
- Mounting screw

**Note 1:** The items marked by an asterisk indicate the machining dimensions on the mounting surface.

**Note 2:** A power supply line longer than 10m is incompatible with EN61000-6-2. Take surge protection measures upon use.

**Note 3:** Satisfy the required specifications at the connector input section.

**Note 4:** The surface roughness of the scale mounting surface is Rmax = 6.3μm.

**Note 5:** When mounting the reference plate (reference plate W), adjust the plate so that the parallelism between the corresponding scale abutting surface and the machine guide is 0.01mm or less.

---

**Vacuum-compatible, open type with reference point. Allowing ultra-precise positioning in a vacuum environment.**

- Ultimate vacuum of 10⁻⁵ Pa class.
- Emitted gas flow rate of 10⁻⁴ Pa·m³/s class.
- Signal pitch 0.4μm
- Built-in reference point.

**Applications:**
- Semiconductor inspection systems, length measuring SEM.

---

**Power consumption:**
- 200mA (no load)
- 290mA (no load)

**Light source:**
- Semiconductor laser: Wavelength 790nm, Output 6mW

**Vibration resistance:**
- 10 to 100 Hz (0.001g to 1.0g)

**Environmental conditions:**
- Temperature: 0 to +40°C (no condensation)
- Humidity: 20 to 90% RH (no condensation)

---

**Outgas analysis chart**

<table>
<thead>
<tr>
<th>Log (mg/m³)</th>
<th>Quantity (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10⁻³</td>
<td>10⁻²</td>
</tr>
<tr>
<td>10⁻²</td>
<td>10⁻¹</td>
</tr>
<tr>
<td>10⁻¹</td>
<td>10⁰</td>
</tr>
<tr>
<td>10⁰</td>
<td>10¹</td>
</tr>
<tr>
<td>10¹</td>
<td>10²</td>
</tr>
</tbody>
</table>

---

**Note:**
- Max. response speed is limited by output cable length (the part before the connector section).
- The items marked by an asterisk indicate the machining dimensions on the mounting surface.
- For dimensions of head, scale, and I/F box, see the page on BL57-RE.
- Cable length in vacuum: 1.7m min. (to the electronic control section)
- Note 3: Satisfy the required specifications at the connector input section.
- Note 4: The surface roughness of the scale mounting surface is Rmax = 6.3μm.
- Note 5: When mounting the reference plate (reference plate W), adjust the plate so that the parallelism between the corresponding scale abutting surface and the machine guide is 0.01mm or less.