Calculated type DCM <KHL-3L,R>

Features

- The simplest calculated type DCM.
- Long 2nd crystal is mounted instead of using the translation stage to beam direction.
- Consists of:
  1. Crystal cooling system
  2. 1st. & 2nd. crystal alignment stages
  3. Main axis goniometer
  4. Direct beam stopper
  5. Beam Mask
  6. Supporting structure
  7. Vacuum chamber
  8. Crystal Alignment Jig.
  9. Controller for motors
- LN2 crystal cooling
- The first crystal alignment stages
  - \( \Delta \theta \) 1: ±2 degree (Coarse)
  - ±16.5 arcsec (Fine)
- The second crystal alignment stages
  - \( \Delta \phi \) 2: ±2 degree
- The main \( \theta \) axis
  - Accuracy: 5 arcsec/any 10 degree
  - Repeatability: <1arcsec
  - Backlash: <5 arcsec
  - Encoder: ERO785 (Heidenhain)

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>KHL-3L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main ( \theta ) Height</td>
<td>1212.5 mm</td>
</tr>
<tr>
<td>Beam Offset</td>
<td>25 mm Upward</td>
</tr>
<tr>
<td>Bragg Angle Range</td>
<td>5.6 – 29.7 degree (-2.0 – +32 degree mechanically)</td>
</tr>
<tr>
<td>Energy Range : Si(111)</td>
<td>4.0 – 20.0 KeV</td>
</tr>
<tr>
<td>Main ( \theta ) Rotation Center</td>
<td>Placed the intersection which corresponds with the normal through the center of the 1st crystal and the extension of the 2nd crystal surface.</td>
</tr>
<tr>
<td>Crystal Parallelism</td>
<td>10 arcsec (for full stroke) 2 arcsec (at any 3 degree )</td>
</tr>
<tr>
<td>Vacuum Pressure</td>
<td>4.00 x 10E-5 Pa</td>
</tr>
<tr>
<td>Crystal Size : Si(111)</td>
<td>70 x 50 x 50, 180 x 50 x 20 (L x W x T : mm) *1</td>
</tr>
<tr>
<td>Dimension</td>
<td>1320 x 1140 x 1600 (L x W x H : mm)</td>
</tr>
</tbody>
</table>

Date of issue: 2010/May/19

*1 The crystal is not available
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ALL MEASUREMENT is NOT FEEDBACK

Data (Accuracy for main $\theta$) <prototype KHL-3C>

- 9 arcsec (one direction)

Data (Parallelism : Pitch) <prototype KHL-3C>

- 5 arcsec (pitch)

Data (Parallelism : Yaw) <prototype KHL-3C>

- 3 arcsec (yaw)

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- LN2 crystal cooling
- The first crystal alignment stages
  $\Delta \theta_1 : \pm 2$ degree (Coarse)
  : $\pm 16.5$ arcsec (Fine)
- The second crystal alignment stages
  $\Delta \phi_2 : \pm 2$ degree
- The main $\theta$ axis
  Accuracy:
  5 arcsec/ any 10 degree
  Repeatability:
  <1arcsec
  Backlash:
  < 5 arcsec
  Encoder:
  ERO785 (Heidenhain)