The interpolation and digitizing electronics of the IBV 6000 series permit the connection of two subsequent electronic units to one encoder. By arranging the internal connections to the two output flange sockets, 1 VPP and/or TTL signals with various, adjustable interpolation factors can be selected. The encoder-dependent possible combinations are listed under Selecting the output signals.
### Specifications

<table>
<thead>
<tr>
<th>IBV 6072</th>
<th>IBV 6172</th>
<th>IBV 6272</th>
</tr>
</thead>
</table>

#### Input

- ~1 Vpp

- Electrical connection: M23 flange socket (female) 12-pin

- Cable length:
  - ≤ 60 m with $U_P > 4.9$ V
  - ≤ 30 m with $I_{encoder} \leq 120$ mA
  - Note the voltage supply range of the connected encoder

#### Interpolation

- IBV 6072: 2-fold
- IBV 6172: 2-fold (fixed), 5-fold, 10-fold (switchable)
- IBV 6272: 2-fold (fixed), 5-fold, 10-fold (switchable), 20-fold, 25-fold, 50-fold, 100-fold (switchable)

#### Input frequency

<table>
<thead>
<tr>
<th>2-fold</th>
<th>5-fold</th>
<th>10-fold</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 kHz</td>
<td>~</td>
<td>~</td>
</tr>
</tbody>
</table>

#### Outputs

- ~1 Vpp and TTL (for possible combinations see Selection of output signals)

- Electrical connection: Two M23 flange sockets (male), 12-pin

- Cable length: ≤ 100 m ($U_{AS} \leq 50$ m)

- Edge separation $a$¹:
  - $0.150 \mu s$
  - $0.100 \mu s$
  - $0.220 \mu s$
  - $0.345 \mu s$
  - $0.465 \mu s$
  - $0.585 \mu s$
  - $0.950 \mu s$
  - $1.925 \mu s$

- Reference mark signal¹: Pulse width 90° elec. (not with IBV 6072) or 270° elec.

- Fault message¹: Through fault detection signal $U_{AS}$ or additional $U_{A1}/U_{A2}$ high-impedance

#### Voltage supply

- 5 V ± 0.25 V (only via X2)

#### Current consumption²

- IBV 6072: ≤ 60 mA
- IBV 6172: ≤ 90 mA
- IBV 6272: ≤ 130 mA

#### Operating temperature

- 0 °C to 70 °C
- -30 °C to 80 °C

#### Vibration

- 50 to 2000 Hz
- Shock 11 ms

- ≤ 10 m/s²
- ≤ 300 m/s²

#### Mass

- ~0.7 kg

---

**Bold:** This version is the factory default setting

¹) Adjustable

²) Adjustable; nominal values, the actual input frequency can be up to 5 % lower. Exceeding this limit results in failure.

³) Without current consumption by the encoder and without output load (80 mA with recommended input circuit)

⁴) Without interpolation upon request
Selecting the output signals

Various output signals are available, depending on the product model. They can be assigned to the two output flange sockets by reconnecting the plug-in PCB.

**IBV 6072**

**Output signals**
- 2 x ~1 V<sub>PP</sub>
- 2 x ~TTL x 2

**Possible combinations**
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~TTL x 2
- ~TTL x 2

**IBV 6172**

**Output signals**
- 1 x ~1 V<sub>PP</sub>
- 1 x ~TTL x 2
- 1 x ~TTL x 5 or x 10

**Possible combinations**
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~TTL x 2
- ~TTL x 5 or x 10

**IBV 6272**

**Output signals**
- 2 x ~1 V<sub>PP</sub>
- 1 x ~TTL
- 1 x ~TTL x 5 or x 10
- 1 x ~TTL x 20, x 25, x 50 or x 100

**Possible combinations**
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~1 V<sub>PP</sub>
- ~TTL x 2
- ~TTL x 5 or x 10
- ~TTL x 2
- ~TTL x 20, x 25, x 50 or x 100

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1) Adjustable
TTL: Non-clocked
TTL x 5 and higher: Clocked

2) TTL upon request
Electrical connection

**Connecting cable or adapter cable with M23 connector (male)**

12-pin

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**Cable and connector**, 12-pin. See also HEIDENHAIN catalogs for linear encoders, angle encoders and rotary encoders as well as Product Information documents for the respective encoders.

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**Connecting cable M23**, 12-pin, ∅ 8 mm, Cross section of supply lines $A_P = 0.5 \text{ mm}^2$

- **Complete**
  - ID 298399-xx

- **With one connector**
  - ID 309777-xx

- **Cable only**
  - ID 244957-01
  - $[4(2 \times 0.14 \text{ mm}^2) + (4 \times 0.5 \text{ mm}^2)]$

- **Connector (female)**, 12-pin
  - ID 291697-05

---

### IBV input – $\sim 1 \text{ VPP}$

**12-pin flange socket** M23

<table>
<thead>
<tr>
<th>Voltage supply</th>
<th>Incremental signals</th>
<th>Other signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>UP</td>
<td>Sensor U_p</td>
<td>0 V</td>
</tr>
<tr>
<td>Sensor 0 V</td>
<td>A+</td>
<td>A-</td>
</tr>
<tr>
<td>B+</td>
<td>B-</td>
<td>R+</td>
</tr>
<tr>
<td>R-</td>
<td>Vacant</td>
<td>Vacant</td>
</tr>
<tr>
<td>Vacant</td>
<td>Yellow</td>
<td></td>
</tr>
</tbody>
</table>

- Brown/Green
- Blue
- White/Green
- White

---

### IBV output – $\sim \neg \neg \text{TTL} / \sim 1 \text{ VPP}$

**12-pin flange socket** M23

<table>
<thead>
<tr>
<th>Voltage supply(^1)</th>
<th>Incremental signals</th>
<th>Other signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>\text{Mating connector:} 12-pin connector, M23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M11 TTL</th>
<th>Sensor 5 V</th>
<th>0 V</th>
<th>Sensor 0 V</th>
<th>$U_{a1}$</th>
<th>$U_{a1}$</th>
<th>$U_{a2}$</th>
<th>$U_{a2}$</th>
<th>$U_{a0}$</th>
<th>$U_{a0}$</th>
<th>$U_{a5}$</th>
<th>Vacant</th>
<th>Vacant</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 \text{ VPP}$</td>
<td>A+</td>
<td>A-</td>
<td>B+</td>
<td>B-</td>
<td>R+</td>
<td>R-</td>
<td>Vacant</td>
<td>Vacant</td>
<td>Vacant</td>
<td>Vacant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Brown/Green
- Blue
- White/Green
- White

**Cable shield** connected to housing; $U_p =$ Power supply voltage

**Sensor**: The sensor line is connected in the encoder with the corresponding power line. Vacant pins or wires must not be used.

\(^1\) IBV voltage supply: Only through one of the two flange sockets; see *Mounting Instructions*
This Product Information supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is made.

Further Information
• Product overview: Interface Electronics