AMKASMART ihXT.

Decentralized drive technology with clever cabling.
The new ihXT series expands the AMKASMART decentralized product family to include a full-scale servo drive with a power range of 150 to 450 watts. These drives have everything you need for precise servo control. AMK maintained a strict focus on the essentials throughout product development.

The ihXT combines the functions of a synchronous servo motor and a servo inverter. To make installation as easy and space-saving as possible, the decentralized ihXT servo drives are equipped with a hybrid cable. The complete unit offers convenient daisy chaining possibilities: The DC bus as well as the real-time Ethernet communication are routed through the hybrid cable from one drive to the next. Up to 40 axes can be connected in series on branch.

Your benefits are: The compact dimensions, the elimination of expensive connectors, and cutting of the installation effort in half through hybrid cables saves you up to 90% of your cable costs. The clever plug-in terminal connection in IP65 also reduces the connector costs by at least two thirds.

Energy efficiency, fast commissioning, and low installation costs are therefore effectively combined.

- Decentralized installation in the machine
- Easy cabling
- Hybrid cable
- Degree of protection: IP65
- Up to 90% savings in cable costs
- Reduction of connector costs by at least two-thirds
ihXT connection technology.
Simply clever.
Plug-in terminal connection from AMK.

AMK has developed clever connection technology with plug-in terminals to ensure that the savings from using the ihXT are not offset by the use of expensive connectors. The cabling is thus not only significantly less expensive but also requires less space. While the system connectors in this performance range often represent about one-third of the costs of the overall drive, you are saving with the connection technology of AMK.
Interfaces

Daisy chaining of the DC bus
Daisy chaining of 24 VDC supply voltage:
Electronics and motor brake, STD

Power connection of DC link:
24 VDC supply voltage
Electronics and motor brake, STD

Type key

\[ i \ h \ X \ T \ 3 \ - \ x \ - \ x \ - \ x \ O \ xxx \ - \ xx \ - \ x \ x \]

- **Functional Safety**: (in preparation) 0: Not integrated; S: Integrated
- **Communication with controller**
  - E: EtherCAT (SoE)
  - C: CAN (DS402)
  - V: VARAN (SoV)
  - S: SERCOS III
- **Design, B5 flange**
- **No-load speed (rpm)**
- **Cooling** 0: Convection cooling
- **Motor holding brake** 0: No motor holding brake; B: With integrated motor holding brake
- **Motor encoder type**
  - E: Single-turn absolute encoder EnDat 2.1 (digital and sin/cos track), optical
  - F: Multi-turn absolute encoder EnDat 2.1 (digital and sin/cos track), optical
  - P: Single-turn absolute encoder EnDat 2.2 light (digital), inductive
  - Q: Multi-turn absolute encoder EnDat 2.2 light (digital), inductive
  - S: Single-turn absolute encoder Hiperface, with sin/cos track, optical
  - T: Multi-turn absolute encoder Hiperface, with sin/cos track, optical
  - U: Single-turn absolute encoder Hiperface, with sin/cos track, capacitive
  - V: Multi-turn absolute encoder Hiperface, with sin/cos track, capacitive
  - I: I-encoder, with sin/cos track and zero pulse, optical
- **Number of poles**
- **Code number for the motor core length**
- **Size**
AMKASMART ihXT.
Decentralized drive solution with and without a control cabinet.

**Automation with no control cabinet**

This example shows a completely decentralized automation solution. The incoming supply is via the iSA decentralized controller, which has an integrated 24 V supply and DC supply. This enables automation without a control cabinet.

**Supply unit in the control cabinet**

The ihXT drives are installed as decentralized drives. The hybrid cable is connected to the supply unit in the control cabinet and daisy chained from ihXT to ihXT (as shown here).
Decentralized in the networked system

Star wiring of individual drives from the control cabinet is now a thing of the past. As shown above, up to 40 iX-T drives can be connected in series on one branch for larger machines and plants. The potential savings that can be realized in terms of cabling becomes clear here. Depending on the application, up to 90% of the cabling costs can be saved here.
AMKASmart ihXT3

Technical data

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ihXT3-0.5-10-xxO</td>
<td>1.39</td>
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Explanation of characteristic values: 
- Mmax: Maximum torque 
- Imax: Maximum current 
- Mo: Continuous stall torque 
- Io: Continuous stall current 
- nN: Rated speed 
- PN: Rated power 
- J: Moment of inertia 
- L: Motor length 
- LBR: Motor length with brake 
- m: Weight 
- mBR: Weight with brake

Dimensions

ihXT3 convection-cooled

Characteristic curves

<table>
<thead>
<tr>
<th>Motor type</th>
<th>Characteristic curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>ihXT3-0.5</td>
<td>Maximum torque</td>
</tr>
<tr>
<td>ihXT3-1</td>
<td>Thermal continuous torque</td>
</tr>
</tbody>
</table>

Bearing service life (L10h) characteristic curve: 
- 2 x nN 
- nN 
- 0.5 x nN
AMKASmart iXt4

Technical data

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<td>2.6</td>
<td>2.28</td>
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<td>4000</td>
<td>390</td>
<td>0.32</td>
<td>132</td>
<td>165</td>
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<tr>
<td>iXt4-2-10-xxO</td>
<td>3.7</td>
<td>2.28</td>
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<td>163</td>
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</tbody>
</table>

Explanation of characteristic values:
- Mmax: Maximum torque
- Imax: Maximum current
- Mo: Continuous stall torque
- Io: Continuous stall current
- nN: Rated speed
- Pn: Rated power
- J: Moment of inertia
- L: Motor length
- LBR: Motor length with brake
- m: Weight
- mBR: Weight with brake

Dimensions

iXt4 convection-cooled

Characteristic curves

- Maximum torque
- Thermal continuous torque

Bearing service life (L10h) characteristic curve:
- 2 x nN
- nN
- 0.5 x nN
**Safety. Integrated, functional, safe.**

Machines and plants may pose a risk to persons, property, and the environment in the event of dangerous failures and malfunctions. It must therefore be ensured that plants and machines can be safely operated. In its standard design, the AMKASmart distributed drive technology allows use of the STO function in PL d according to EN ISO13849-1. Functional Safety is also available as an option.

### STO (Safe Torque Off)

- **DC bus, 24 VDC, STO**
- **Real-time Ethernet**
- **3x400-480 VAC**
- **24 VDC**
- **Real-time Ethernet**

### Functional Safety

- **FSoE safety fieldbus protocol**
- **Safety PLC**
- **For selection of Functional Safety**

**Functional Safety**

- Stop functions:
  - Safe Torque Off (STO)
  - Safe Stop (SS1, SS2)

- Safe motion functions:
  - Safely Limited Speed (SLS)
  - Safe Direction (SDI)

- Safe Speed Range (SSR)
- Safe Operating Stop (SOS)
- Safe Maximum Speed (SMS)
- Safely-Limited Increment (SLI)

The safety functions are controlled using the FSoE safety fieldbus protocol.

The machine controller and the safety controller are separate in the AMK safety concept. The advantage of this approach is that when new modules are added, changes are only required in the PLC and not the safety controller. This eliminates high expenses for certification.
## Interfaces and connections.

**Hybrid Cable Interface Board (HCIB)**

The HCIB is the interface between the central control cabinet system and the decentralized drives.

On the mounting rail module, the DC link, 24 V supply, STO, and real-time Ethernet are supplied and then connected to the connectors of the hybrid cable of the decentralized drives.

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>X01</td>
<td>Connection DC link UZP, UZN, and PE</td>
</tr>
<tr>
<td>X08/X09</td>
<td>Connection supply voltage for 24 VDC electronics and motor holding brake, Safety STO, and loop-through to the next hybrid collector</td>
</tr>
<tr>
<td>X85/X86</td>
<td>Connection real-time Ethernet and daisy chain to next hybrid cable interface board</td>
</tr>
<tr>
<td>S1</td>
<td>Bus termination</td>
</tr>
<tr>
<td>X02</td>
<td>Connection DC link to the hybrid cable (part no. 47774) for supplying the drive</td>
</tr>
<tr>
<td>X07</td>
<td>Connection of supply voltage for 24 VDC electronics and motor holding brake, signal STO and STO_GND to the hybrid cable (part no. 47774) for supplying the drive</td>
</tr>
<tr>
<td>X87</td>
<td>Connection real-time Ethernet IN/OUT to the hybrid cable (part no. 47774) for supplying the drive</td>
</tr>
<tr>
<td>F1</td>
<td>Microfuse 24 VDC for electronics and motor holding brake</td>
</tr>
<tr>
<td>F2</td>
<td>Resettable thermal fuse 24 VDC for signal STO</td>
</tr>
<tr>
<td>LED STO &amp; 24 V</td>
<td>LEDs for status indication</td>
</tr>
</tbody>
</table>

### Power connection ihXT DC link

<table>
<thead>
<tr>
<th>PIN</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UZN</td>
<td>Supply DC link -</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PE</td>
<td>Protective conductor</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
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<tr>
<td>5</td>
<td>UZP</td>
<td>Supply DC link +</td>
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### Supply voltage ihXT (24 VDC and STO)

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<thead>
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<th>PIN</th>
<th>Signal</th>
<th>Meaning</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>24 VDC</td>
<td>Supply voltage 24 VDC motor holding brake</td>
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<tr>
<td>2</td>
<td>0 VDC</td>
<td>Reference potential for 24 VDC</td>
</tr>
<tr>
<td>3</td>
<td>STO</td>
<td>STO (Safe Torque Off)</td>
</tr>
<tr>
<td>4</td>
<td>STO_GND</td>
<td>Reference potential for STO</td>
</tr>
</tbody>
</table>

### Real-time Ethernet connection ihXT (contact assignment)

<table>
<thead>
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<th>PIN</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+</td>
<td>Transmission Data +</td>
</tr>
<tr>
<td>2</td>
<td>TX-</td>
<td>Transmission Data -</td>
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<tr>
<td>3</td>
<td>RX+</td>
<td>Receive Data +</td>
</tr>
<tr>
<td>4</td>
<td>RX-</td>
<td>Receive Data -</td>
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The information in this brochure serves only as a product description for a series of products. Deviations are possible due to specific product features and ongoing development activities. Before using the data for calculation or design purposes, you should inquire about the current status and request product-specific dimension drawings and data sheets.