

## **AMKASMART ihXT.**

Decentralized drive technology with  
clever cabling.

**AMK**





## **AMKSMART ihXT.** Decentralized. Clever. Efficient.

The new ihXT series expands the AMKSMART 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.**

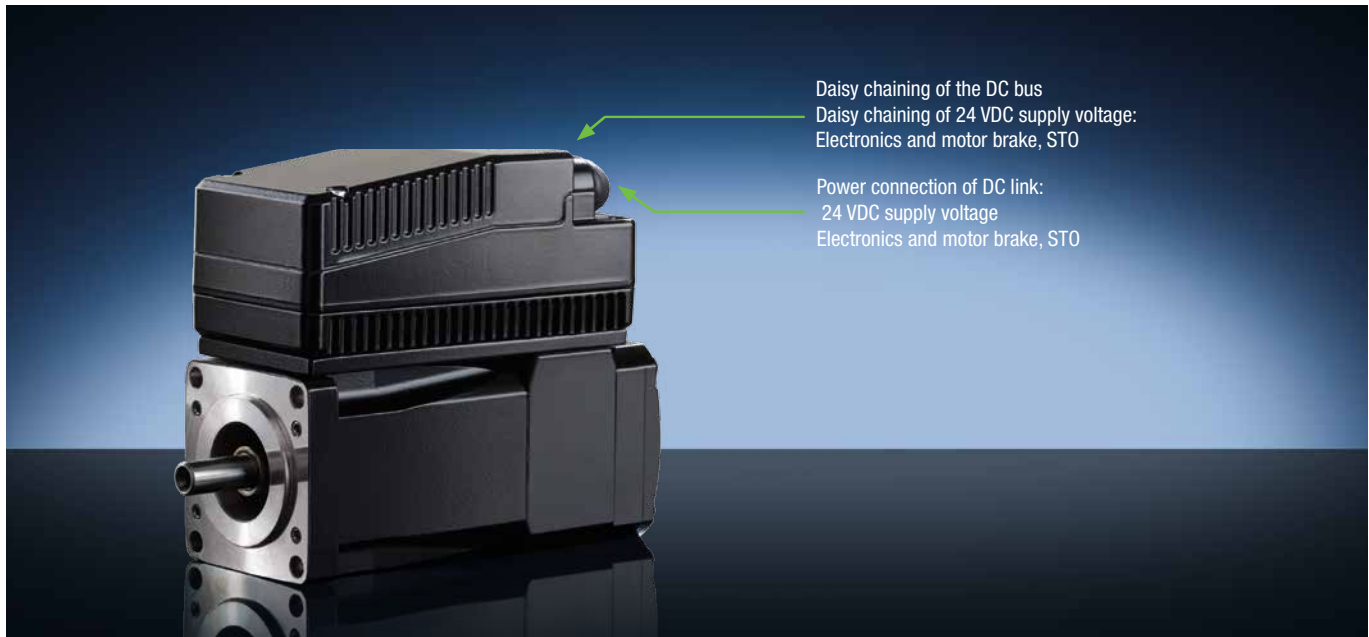
Simply clever.

Plug-in terminal connection from AMK.

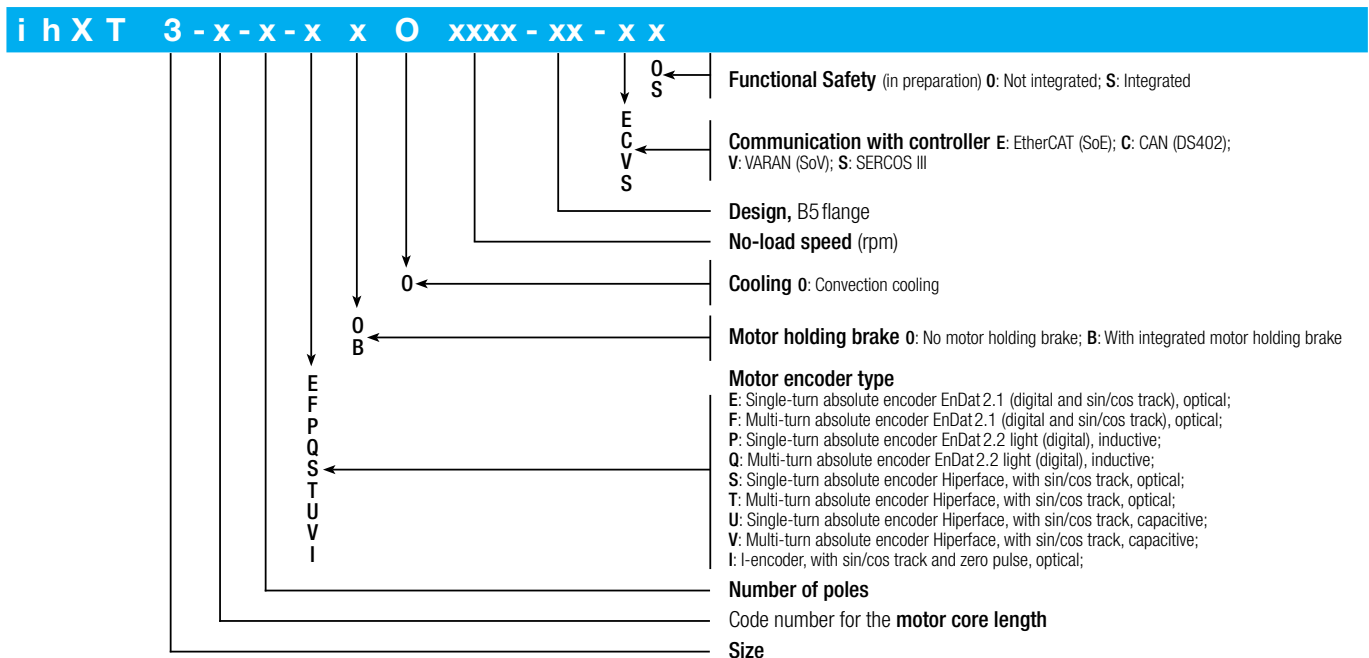
AMK has developed clever connection technology with plug-in terminals to ensure that the savings from using the ihXT are not offset by the use of expensive connectors. The cabling is thus not only significantly less expensive but also requires less space. While the system connectors in this performance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



# Interfaces



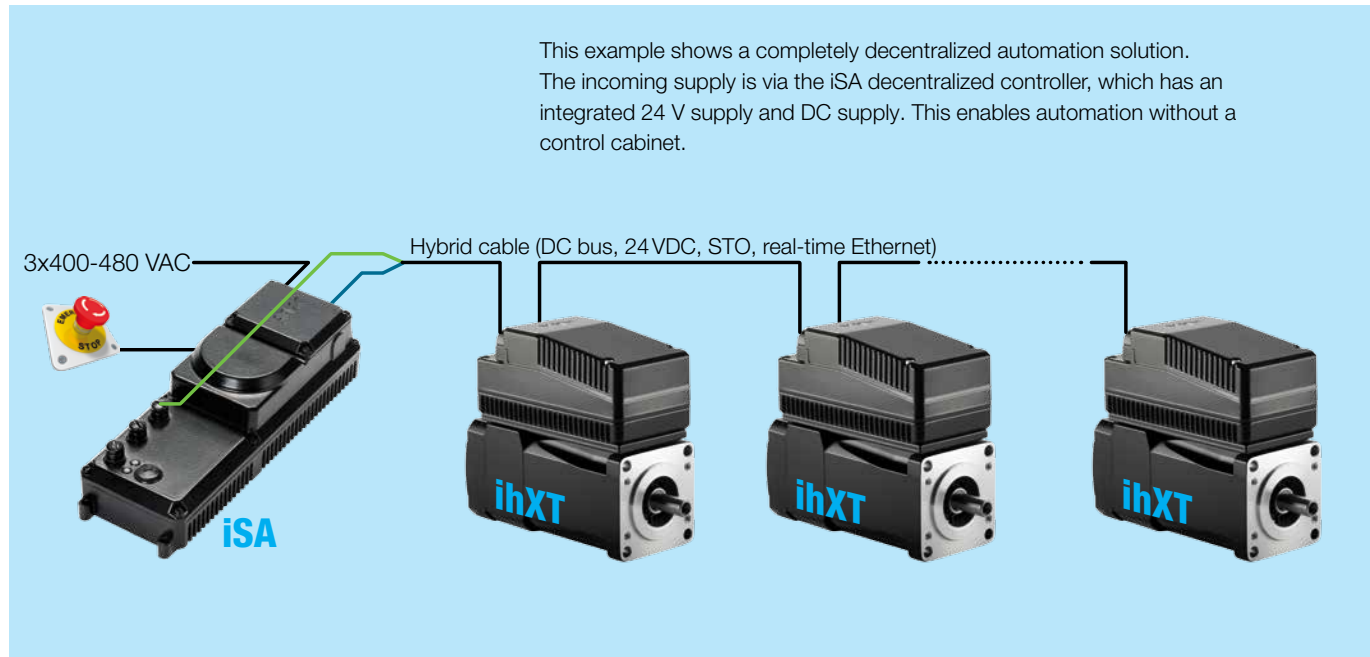
## Type key



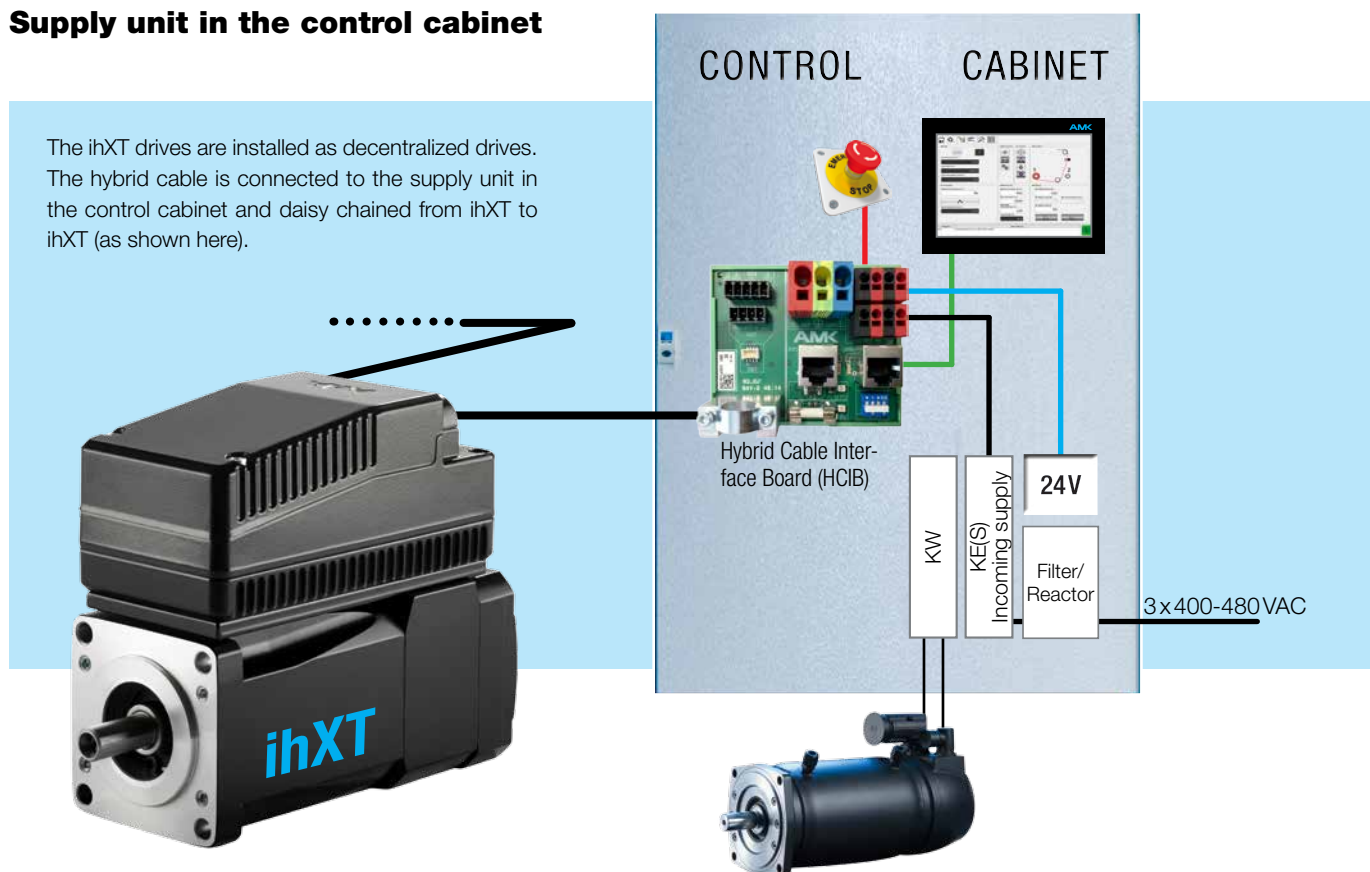
# AMKASmart ihXT.

Decentralized drive solution with and without a control cabinet.

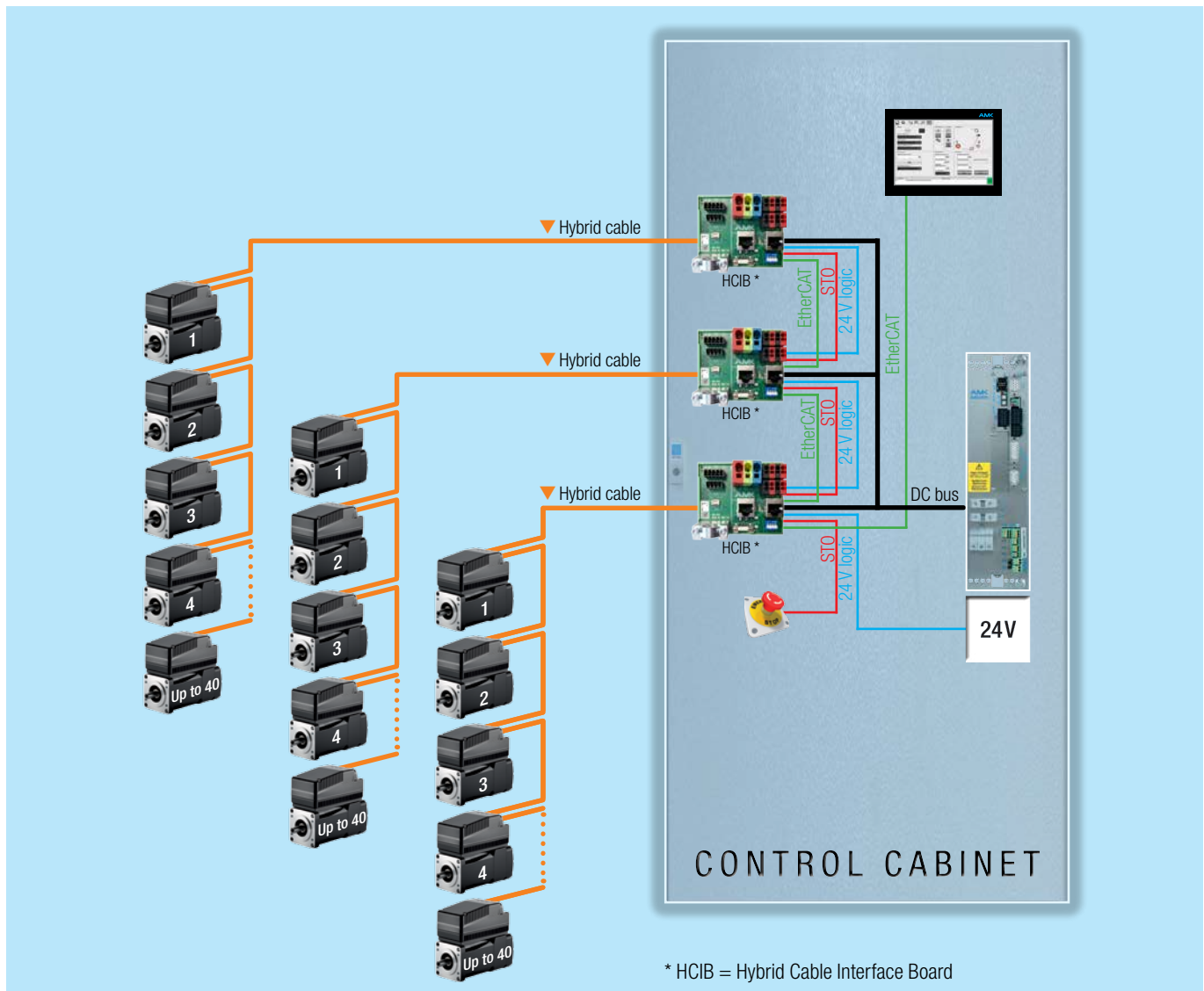
## Automation with no control cabinet



## Supply unit in the control cabinet



**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 ihXT 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.

# AMKSMART ihXT3



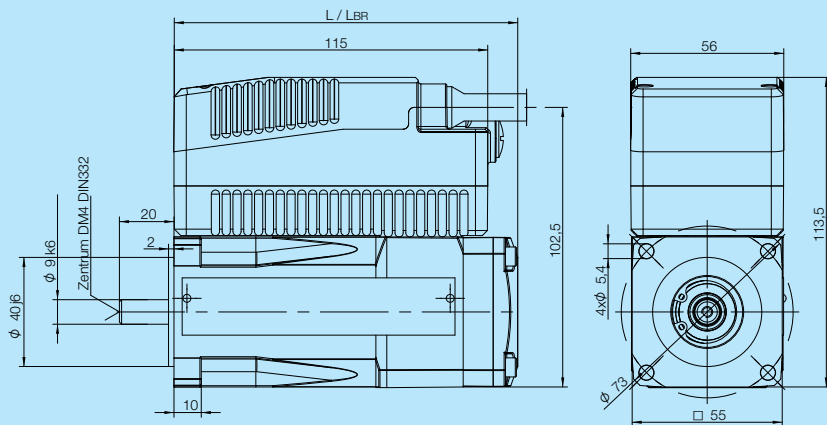
## Technical data

Motor type	$M_{max}$ [Nm]	$I_{max}$ [Arms]	$M_0$ [Nm]	$I_0$ [Arms]	$M_N$ [Nm]	$I_N$ [Arms]	$n_N$ [rpm]	$P_N$ [W]	$J$ [kgcm <sup>2</sup> ]	$L$ [mm]	$L_{BR}$ [mm]	$m$ [kg]	$m_{BR}$ [kg]
ihXT3-0,5-10-xx0	1.39	2.28	0.64	1.0	0.44	0.77	6000	280	0.09	126	156	1.6	1.9
ihXT3-1-10-xx0	3.1	2.28	1.18	0.9	0.74	0.59	3000	230	0.27	186	216	2.4	2.7

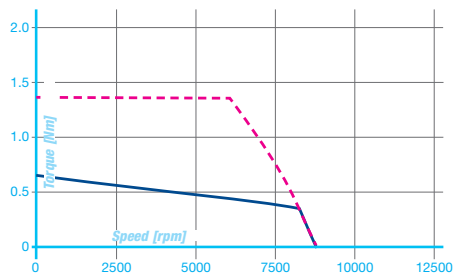
Explanation of characteristic values:  $M_{max}$  Maximum torque ·  $I_{max}$  Maximum current ·  $M_0$  Continuous stall torque ·  $I_0$  Continuous stall current ·  $M_N$  Rated torque ·  $I_N$  Rated current  
 $n_N$  Rated speed ·  $P_N$  Rated power ·  $J$  Moment of inertia ·  $L$  Motor length ·  $L_{BR}$  Motor length with brake ·  $m$  Weight ·  $m_{BR}$  Weight with brake

## Dimensions

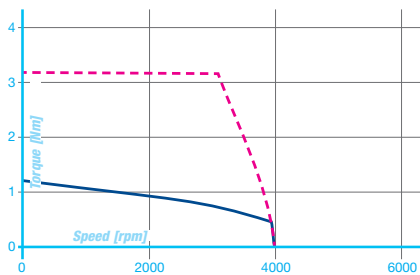
ihXT3 convection-cooled



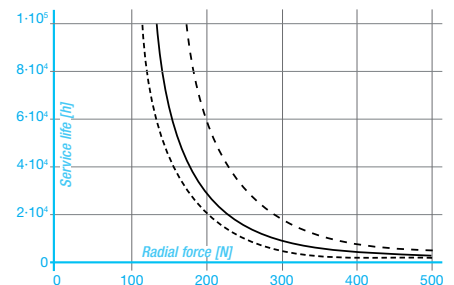
## Characteristic curves



ihXT 3-0.5



ihXT 3-1



Bearing service life (L10h) characteristic curve

--- Maximum torque — Thermal continuous torque

Bearing service life: - - -  $2 \times n_N$  —  $n_N$  - - -  $0.5 \times n_N$



# AMKSMART ihXT4



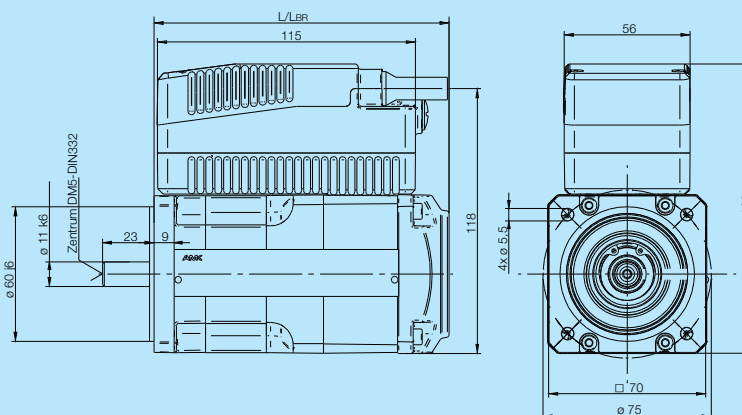
## Technical data

Motor type	$M_{max}$ [Nm]	$I_{max}$ [Arms]	$M_0$ [Nm]	$I_0$ [Arms]	$M_N$ [Nm]	$I_N$ [Arms]	$n_N$ [rpm]	$P_N$ [W]	$J$ [kgcm <sup>2</sup> ]	$L$ [mm]	$L_{BR}$ [mm]	$m$ [kg]	$m_{BR}$ [kg]
ihXT4-1-10-xx0	2.6	2.28	1.19	1.1	0.93	0.86	4000	390	0.32	132	165	2.1	2.4
ihXT4-2-10-xx0	3.7	2.28	1.65	1.0	1.25	0.82	3000	390	0.71	163	196	2.6	3.0

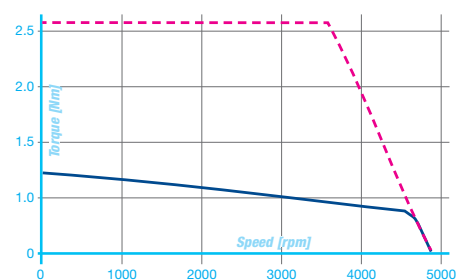
Explanation of characteristic values:  $M_{max}$  Maximum torque ·  $I_{max}$  Maximum current ·  $M_0$  Continuous stall torque ·  $I_0$  Continuous stall current ·  $M_N$  Rated torque ·  $I_N$  Rated current ·  $n_N$  Rated speed ·  $P_N$  Rated power ·  $J$  Moment of inertia ·  $L$  Motor length ·  $L_{BR}$  Motor length with brake ·  $m$  Weight ·  $m_{BR}$  Weight with brake

## Dimensions

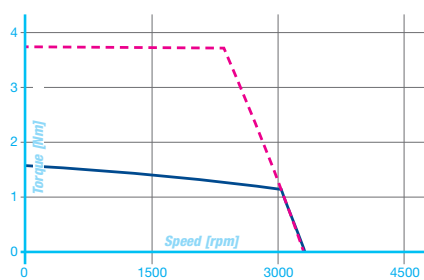
ihXT4 convection-cooled



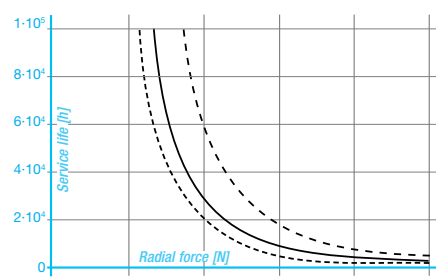
## Characteristic curves



ihXT 4-1



ihXT 4-2



Bearing service life (L10h) characteristic curve

--- Maximum torque — Thermal continuous torque

Bearing service life: ---  $2 \times n_N$  —  $n_N$  - - -  $0.5 \times n_N$

## 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 AMKSMART 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)



### 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.

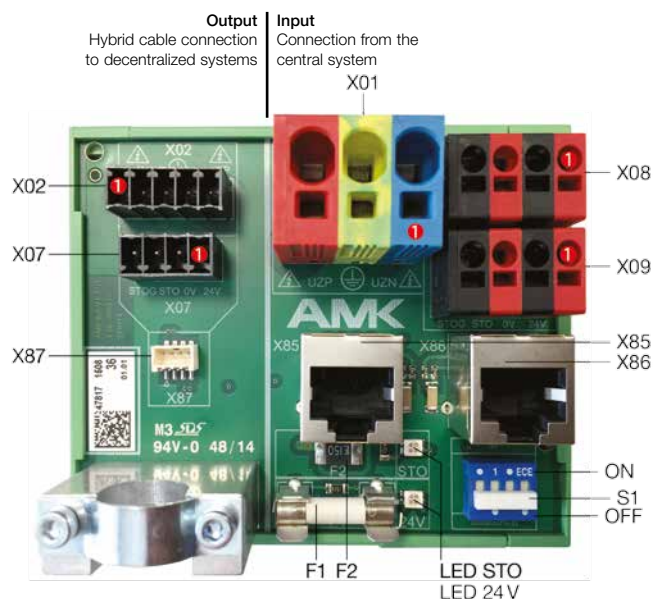
The machine controller and the safety controller are separate in the AMK safety concept. The advantage of this approach is that when new modules are added, changes are only required in the PLC and not the safety controller. This eliminates high expenses for certification.

## Interfaces and connections.

### Hybrid Cable Interface Board (HCIB)

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

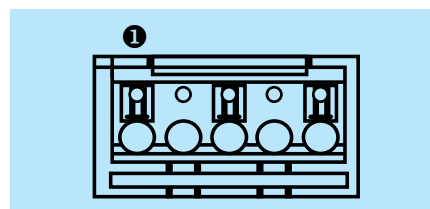
On the mounting rail module, the DC link, 24V supply, STO, and real-time Ethernet are supplied and then connected to the connectors of the hybrid cable of the decentralized drives.



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

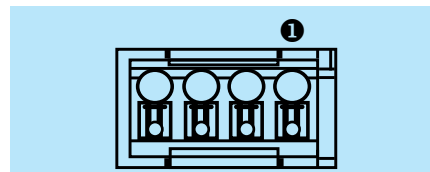
### Power connection ihXT DC link

PIN	Signal	Meaning
1	UZN	Supply DC link -
2	-	
3	PE	Protective conductor
4	-	
5	UZP	Supply DC link +



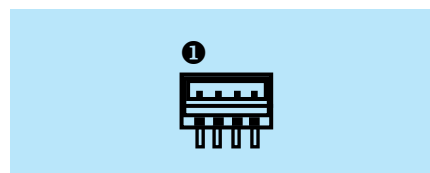
### Supply voltage ihXT (24VDC and STO)

PIN	Signal	Meaning
1	24 VDC	Supply voltage 24 VDC motor holding brake
2	0 VDC	Reference potential for 24 VDC
3	STO	STO (Safe Torque Off)
4	STO_GDN	Reference potential for STO



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

PIN	Signal	Meaning
1	TX+	Transmission Data +
2	TX-	Transmission Data -
3	RX+	Receive Data +
4	RX-	Receive Data -





- **AMKAMAC**  
Controllers
- **AMKSMART**  
Decentralized  
drive technology
- **AMKASYN**  
Servo converters
- **DYNASYN**  
Servo motors
- **SPINDASYN**  
Linear drives

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