



Documentation

Mains choke AX2090-ND80

Accessories for multi axis servo system AX8000

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1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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1.2 Documentation issue status

Version	Comment
1.0	First publication
0.0.1	internal version

2 Device description

Infographic	Article no.	Description
	AX2090-ND80	The external mains chokes of the AX2090-ND80 series are made for minimize mains perturbation and reduce reactive power components. In addition, the mains chokes reduce charging currents in the DC link capacitor and contribute to an improvement of the cos (phi) at. All mains chokes of the series AX2090-ND80-xxxx are cUL and CSA approval.

3 Intended use

The mains chokes from the AX2090-ND80-xxxx series are intended exclusively for use directly on a supply module from the AX86xx series. They are installed together with the AX86xx supply module on a multi-axis servo system as components in control cabinets of electrical systems and machinery and may only be operated there.



WARNING

Nature and source of the danger

Basically, electronic devices are not fail-safe. The machine manufacturer is responsible for ensuring that the connected motors and the machine are brought into a safe state in the event of a fault in the drive system.

Improper use




The AX2090-ND80-xxxx mains chokes are **not** suitable for use in the following areas:

- in ATEX zones without a suitable housing
- in areas with aggressive environments (e.g. aggressive gases or chemicals)

The relevant standards and directives for EMC interference emissions must be complied with in residential areas. The brake resistors may only be installed in housings and control cabinets with appropriate shielding attenuation.

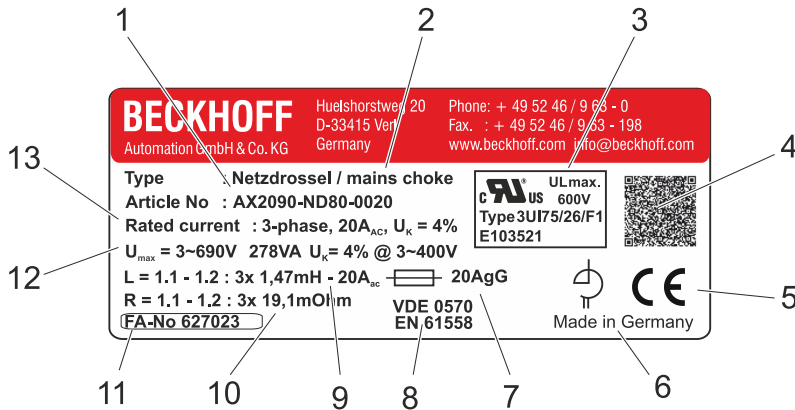
4 Special safety notes on brake resistors

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations and guidelines.

 <p>DANGER</p>	<p>Danger to life due to high voltage on the DC link capacitors of the servo drive AX8000!</p> <p>The DC link capacitors RB+ and RB- and the test contacts DC+ and DC- on the supply, axis and option modules can carry life-threatening voltages of $\geq 875 V_{DC}$.</p> <p>Take the following measures to avert danger:</p> <ul style="list-style-type: none"> • After disconnecting the servo drive from the mains supply, wait until the voltage has fallen below $50 V_{DC}$. Only then is it safe to work. • Measure the voltage on the test contacts properly. • Secure the work area properly and wear the PPE.
 <p>WARNING</p>	<p>Caution - Risk of injury through hot surfaces!</p> <p>The temperature of the mains choke housing surface may reach over $100\text{ }^{\circ}\text{C}$. Please ensure that the housing has cooled down below $40\text{ }^{\circ}\text{C}$ before touching it.</p>
	<p>UL- recognized component</p> <p>The mains chokes from the AX2090-ND80 series are certified according to applicable UL and CSA safety requirements. They may therefore be used in products, plants or systems bearing the UL-Listing test mark.</p>

5 Product identification

Name plate






Pos. no.	Description
1	Article no. (Order code)
2	Article name / product type
3	cRUus certification logo under specification of the E no.
4	Data matrix code
5	CE certification logo
6	Country of manufacture
7	Pre-fuse
8	European norm EN 61558
9	Inductance
10	Resistance
11	Serial no.
12	Supply voltage (U _b) under specification of the ambient temperature (t _a), the isolation class of the winding (B) and the mains frequency (50 – 60 Hz)
13	Rated current (A _{AC}) und specification of the short circuit voltage (U _K)

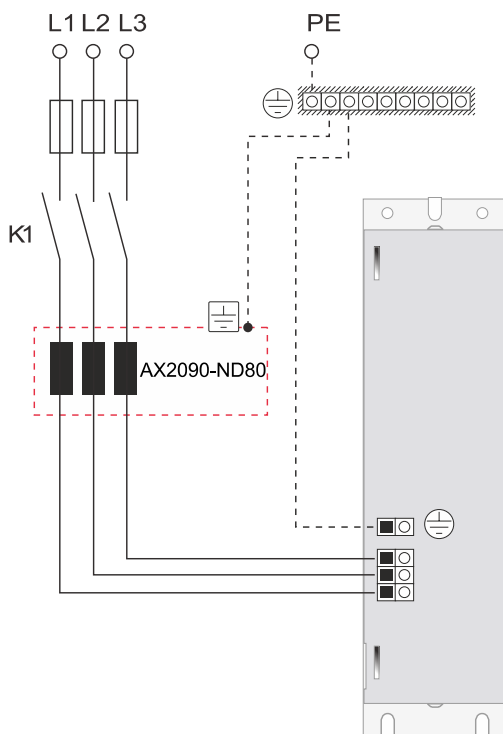
Type key

Infographic	Item no.	Description
<p>AX2090-ND80-00xx</p>	1	Drive Technology Accessories
	2	ND = mains choke
	3	20 = AX8620-x000, 20 A _{AC} 30 = AX8640-x000, 40 A _{AC}
	4	Multi axis servo system AX8000

6 Installing the mains chokes

 WARNING	<p>Caution - Risk of injury through electric shock!</p> <p>De-energize all electrical components (servo drive, control cabinet etc.) before commencing the installation or deinstallation of the mains choke.</p>
 WARNING	<p>Caution - risk of injury through high voltages!</p> <p>Mains chokes contain components that can store electrical charge. Wait 10 minutes after disconnecting the mains chokes and measure the voltage on conductors L1 to L3. You can ensure safe working by letting the voltage drop below 50 V.</p>
 CAUTION	<p>Beware of improper earthing!</p> <p>Ensure proper earthing during installation of the mains chokes. The installation should take place on a mounting plate (chromated / galvanized) suitable for earthing.</p>

6.1 Circuit diagram and installing




Assembly sequence:

- Position the mains choke on the mounting surface.
- Mark the positions of the thread holes on the mounting surface.
- Centre and drill the thread holes. Then cut the threads in the holes.
- Secure the mains choke on the mounting surface with suitable screws.

Connection:

- Connect the protective conductor connection of the mains choke with the PE rail.
- Connect the connecting cable of the mains choke to the appropriate terminals of the servo drive.
- Connect the mains choke to the supply network.

 DANGER	<p>Danger to life due to high voltage on the DC link capacitors of the servo drive AX8000!</p> <p>The DC link capacitors RB+ and RB- and the test contacts DC+ and DC- on the supply, axis and option modules can carry life-threatening voltages of $\geq 875 V_{DC}$.</p> <p>Take the following measures to avert danger:</p> <ul style="list-style-type: none"> • After disconnecting the servo drive from the mains supply, wait until the voltage has fallen below $50 V_{DC}$. Only then is it safe to work. • Measure the voltage on the test contacts properly. • Secure the work area properly and wear the PPE.
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Mechanical data

	AX2090-ND80-	
	0020	0030
Phase connection	terminal screw, 4 mm ²	terminal screw, 10 mm ²
PE connection	for M5	for M6
Mounting	foot angle	
Mounting screws	M5	M6

7 Technical data

Environmental conditions	Three-phase mains chokes AX2090-ND80
Rated voltage	3 x 400 V, -25% +10%, 50/60 Hz ¹⁾
Overload factor	2.0 x I _N for 30 s
Ambient temperature	-10 °C to +40 °C, with 1.3% (/°C) power derating to +60 °C
Mounting height	1000 m, with 6% (/1000 m) power derating to 4000 m
Relative humidity	15%...95%, condensation not permitted
Storage temperature	-25 °C to +70 °C
Protection class	IP00
Short-circuit voltage	UK 4% at 400 V = 9.24 V _{AC}
Permissible level of contamination	P2 according to EN 61558-1
Thermal configuration	I _{eff} < I _N
Material	The AX2090-ND80 devices are UL-certified for the US and Canadian markets

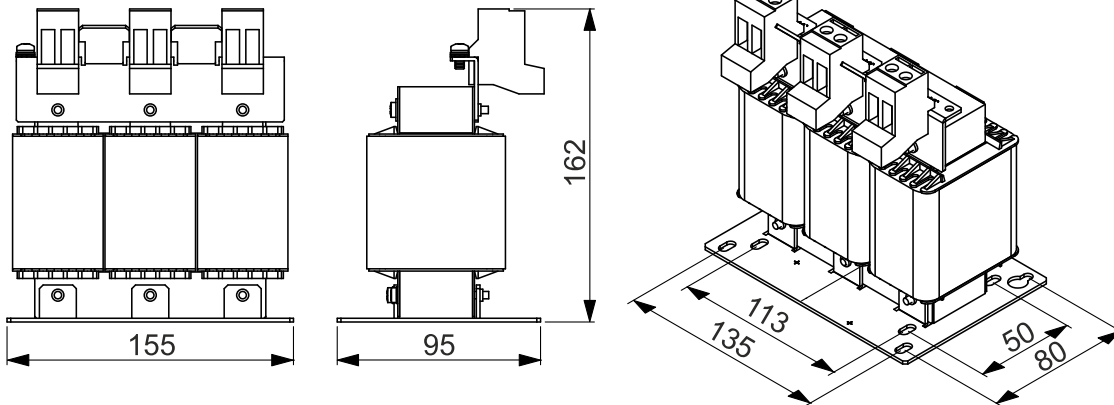
¹⁾ at 60 Hz mains frequency the power loss is approx. 10% higher!

Three-phase mains chokes

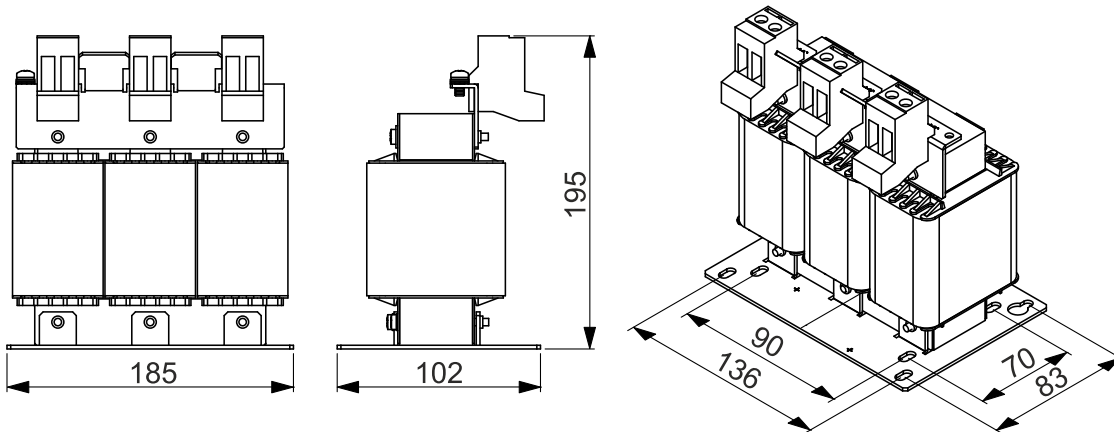
Data	AX2090-ND80-	
	0020	0030
Rated current [A _{AC}]	30	60
Power loss [VAC]	9.2	
Inductance [mH]	1.470	0.740
Inductance tolerance [%]	± 10	
Isolation class	IEC = F / UL = 155	
Test voltage [VAC]	4000	
Weight [kg]	3.80	6.80
Short-circuit voltage	4 % U _K	

7.1 Dimensional drawing

AX2090-ND80-0020



AX2090-ND80-0040



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