

USING THE QUICK GUIDE

- Provides information on handling, assembly and installation.
- Remains for later use at the product.
- Does **not** replace the electronically provided instructions for use.

This manual is intended exclusively for persons who are familiar with the logistics and installation. The person must have the following qualifications:

- Knowledge and understanding of the safety instructions.
- Skills for installation and assembly.
- Knowledge of EMC conform installation.
- Detection of hazards and risks of the electrical drive technology.
- Knowledge of *DIN IEC 60364-5-54*.
- Knowledge of national safety regulations (e.g. *DGUV Regulation 3*).

SAFETY INSTRUCTIONS

⚠ DANGER



Interventions by unauthorized personnel!

Danger to life through electric shock and malfunctions!

- Modification or repair is only permitted by KEB authorized personnel.

NOTICE



Getting more documentation

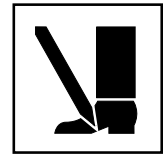
Hazards and risks through ignorance.

- Open the KEB homepage at www.keb-automation.com.
- By entering the material number in the search field, you will get the corresponding parts of the instructions for use.
- Read the instructions for use carefully!
- Observe the safety and warning instructions!
- If you have any questions, please contact service@keb.de!

TRANSPORT

The transport must be carried out by instructed persons, observing the following instructions.

⚠ CAUTION

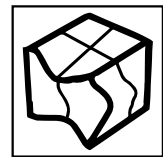


Maximum design edges and high weight!

Contusions and bruises!

- Never stand under suspended loads.
- Wear safety shoes.
- Secure devices accordingly when using lifting gear.

NOTICE



Behaviour in case of transport damage

- When receiving goods, check the device for transport damage such as deformations or loose parts.
- In case of damage, contact the carrier immediately.
- Do not operate the device in case of transport damage!

STORAGE

Do not store the devices

- in the environment of aggressive and/or conductive liquids or gases.
- at places with direct sunlight.
- outside the specified environmental conditions.

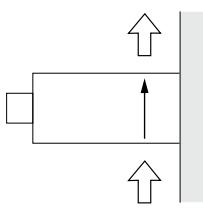
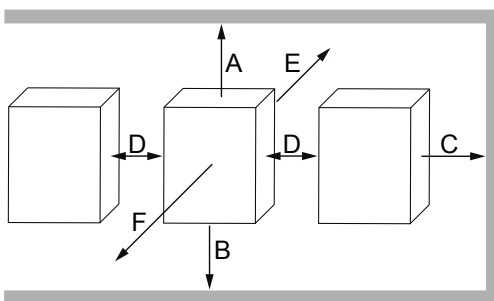
UNPACKING AND CHECKING

- Make sure that no components are bent and/or isolation distances are changed.
- The device must not be put into operation in case of mechanical defects. There is no compliance with applicable safety standards any more.

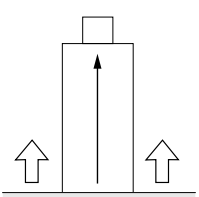
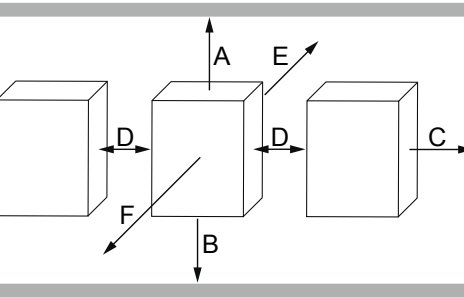
INSTALLATION

- If available, use the provided lifting eyes for installation.
- Do not stand under suspended equipment during installation.
- Mount the product according to the required degree of protection.
- Make sure that no small parts fall into the device during assembly and wiring (drilling chips, screws etc.). This also applies to mechanical components, which can lose small parts during operation.
- The devices are intended for the use in a pollution degree 2 environment.
- Maximum ambient temperature 45°C
- UL/CSA: Ensure UL-compliant connection of all power connections according to the requirements given in the data sheet.

INSTALLATION DISTANCES

Installation position	Installation distances	Dimension	Distance in mm / inch
 Direction of the air flow		A	150 / 6
		B ²⁾	100 / 4
		C	100 / 4
		D	100 / 4
		E	0
		F ¹⁾	100 / 4
		¹⁾ Distance to upstream operating elements in the control cabinet door.	
²⁾ For chokes xxZ1B04-1007, dimension B must be increased to 150mm. Observe the instruction manual for the submounted HF filters for F6!			

ONLY FOR 17Z1B03...21Z1B03 / 20Z1B04...33Z1B04 / 28Z1B06...39Z1B06

Installation position	Installation distances	Dimension	Distance in mm / inch
 Direction of the air flow		A	150 / 6
		B	100 / 4
		C	100 / 4
		D	100 / 4
		E	0
		F ¹⁾	100 / 4
		¹⁾ Distance to upstream operating elements in the control cabinet door.	



Other installation positions are also possible, but must be checked by the customer with regard to the thermal properties of the choke. The choke must not exceed a temperature of 155 °C.

DIMENSIONS

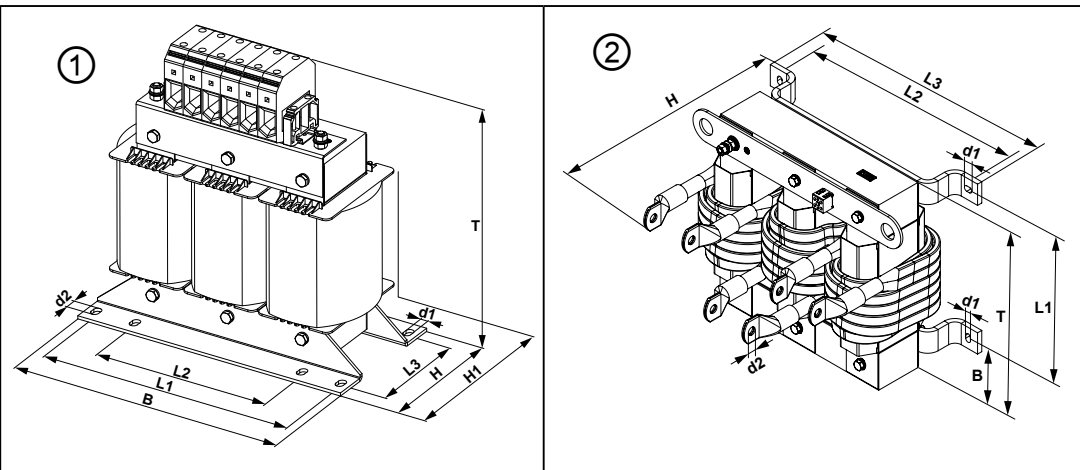


Figure 1: Exemplary overviews of the mains chokes

Mat. No.	Figure No.	B	H	H1	T	L1	L2	L3	d1	d2	Weight
05Z1B02-1000	1	60	49.9	57	72.5	44	-	36	3.6	7	0.54
07Z1B02-1000	1	85	60	65	89	64	-	47	4.8	9	1.4
09Z1B02-1000	1	85	60	65	90	64	-	50	4.8	9	1.4
10Z1B02-1000	1	85	60	86	105	64	-	46	4.8	9	1.5
12Z1B02-1000	1	85	60	87	104	64	-	50	4.8	9	1.53
05Z1B03-1000	1	100	54	H	120	80	-	39	4.8	8	0.8
07Z1B03-1000	1	100	54	H	120	80	-	39	4.8	8	0.9
09Z1B03-1000	1	100	54	H	122	80	-	39	4.8	8	1.1
10Z1B03-1000	1	100	63	H	122	80	-	47	4.8	8	1.5
12Z1B03-1000	1	148	67	H	145	136	90	47	4.8	8	2
13Z1B03-1000	1	148	77	H	145	136	90	58	4.8	8	3.7
14Z1B03-1000	1	148	76	H	150	136	90	57	4.8	8	2.91
15Z1B03-1000	1	178	87	97	175	166	113	68	4.8	8	5.6
16Z1B03-1000	1	219	101	135	160	201	136	73	7	12	7.6
17Z1B03-1000	1	219	110	145	161	201	136	80	7	12	9.44
18Z1B03-1000	1	219	120	150	170	201	136	90	7	12	12.1
19Z1B03-1000	1	243	115	155	180	225	156	85	7	12	12.2
20Z1B03-1000	1	243	126	165	180	225	156	96	7	12	15
21Z1B03-1000	1	267	133	173	202	249	176	103	7	12	21.6
05Z1B04-1000	1	100	55	H	121	80	-	40	4.8	8	0.8
07Z1B04-1000	1	100	55	H	121	80	-	40	4.8	8	0.85
09Z1B04-1000	1	100	55	H	121	80	-	40	4.8	8	0.9
10Z1B04-1000	1	100	63.5	H	121	80	-	47	4.8	8	1.5
12Z1B04-1000	1	148	68	H	145	136	90	48	4.8	8	1.9
13Z1B04-1000	1	148	78	H	145	136	90	59	4.8	8	2.4
14Z1B04-1000	1	148	77	H	145	136	90	58	4.8	8	2.45
15Z1B04-1000	1	178	72.5	87	180	166	113	55	4.8	8	3.8
16Z1B04-1000	1	178	88	100	178	166	113	68	4.8	8	5
17Z1B04-1000	1	219	101	115	220	201	136	73	7	12	6.4
18Z1B04-1000	1	219	111	120	220	201	136	81	7	12	8

continue in the next column

Mat. No.	Figure No.	B	H	H1	T	L1	L2	L3	d1	d2	Weight
19Z1B04-1000	1	219	121	135	220	201	136	91	7	12	10.3
20Z1B04-1000	1	219	121	150	220	201	136	91	7	12	12
21Z1B04-1000	1	267	109	155	207	249	176	82	7	12	15.6
22Z1B04-1000	1	291	129	185	215	273	185	97	10	18	19.3
23Z1B04-1000	1	291	129	200	215	273	185	97	10	18	22
24Z1B04-1000	1	316	153	225	235	292	200	113	10	16	24.8
25Z1B04-1000	1	316	153	222	234	292	200	113	10	16	25
26Z1B04-1000	1	352	145	210	266	328	224	105	10	16	31.6
27Z1B04-1000	1	352	145	230	265	328	224	106	10	16	34
28Z1B04-1000	1	388	150	245	295	364	248	112	10	16	41.5
29Z1B04-1000	1	412	155	260	315	388	264	116	10	16	49.3
30Z1B04-1000	1	412	174	270	315	388	264	132	10	16	57.7
31Z1B04-1000	1	480	170	250	367	450	316	123	12	20	66
32Z1B04-1000	1	480	170	262	475	450	316	123	12	20	80.5
33Z1B04-1000	1	480	170	290	475	450	316	123	12	20	86
09Z1B04-1003	1	100	63.5	H	117	80	-	47	4.8	8	1.5
10Z1B04-1003	1	147	68	H	139	136	90	48	4.8	8	1.9
12Z1B04-1003	1	147	78	H	137	136	90	59	4.8	8	2.6
12Z1B04-1010	1	148	68	H	145	136	90	48	4.8	8	1.9
14Z1B04-1010	1	148	77	H	145	136	90	58	4.8	8	2.45
28Z1B06-1000	1	412	156	252	315	388	264	116	10	16	58
29Z1B06-1000	1	412	156	236	312	388	264	116	10	16	50
30Z1B06-1000	1	412	174	260	322	388	264	123	10	16	62
31Z1B06-1000	1	412	184	280	325	388	264	145	10	16	69.5
33Z1B06-1000	1	480	245	365	370	445	310	197	12	20	75
39Z1B06-1000	1	552	278	315	450	516	356	205	14.5	24	100
25Z1B04-1007	2	22	210	-	226	182	258	290	8	10	25
26Z1B04-1007	2	25	245	-	256	206	298	330	8	10	31.6
27Z1B04-1007	2	25	250	-	256	206	298	330	8	10	34
28Z1B04-1007	2	28	255	-	286	230	322	380	8	12	41.5
29Z1B04-1007	2	30	290	-	305	245	358	395	8	12	49.3
30Z1B04-1007	2	30	290	-	305	245	358	395	8	12	57.7

All dimensions in mm; all weights in kg

INSTALLATION / ELECTRICAL CONNECTION

⚠ DANGER



Voltage at the terminals and the device!

Danger to life by electric shock!

- Never work under voltage on the device or touch exposed parts.
- For any work on the unit switch off the supply voltage and secure it against switching on.
- Wait until the drive has stopped in order that no regenerative energy can be generated.
- Never bridge upstream protective devices (also not for test purposes).
- Connect the protective earth conductor properly.
- Install all required covers and protective devices for operation.



For a trouble-free and safe operation, please pay attention to the following note:

- Check for reliable fit of the device connections in order to avoid contact resistance and sparking.

WIRING



Information on fuse protection can be found in the instructions for use of the drive controllers.

Mains connection 1-phase (L1, N)				

Mat. No.	Connection in mm² / AWG		Tightening torque in Nm / lb inch		Voltage in V	Current in A	Frequency in Hz	Temperature switch			
	L1, N	PE	L1, N	PE							
05Z1B02-1000	4 / 22-10	Flat con- nector 6.3	max. 1 / 8.85	—	230	6.0	50 / 60	—			
07Z1B02-1000						10.0					
09Z1B02-1000						16.0					
10Z1B02-1000						20.0					
12Z1B02-1000	10 / 8		max. 2 / 17.7			25.0					
Mat. No.	Connection in mm² / AWG		Tightening torque in Nm / lb inch		Voltage in V	Current in A	Frequency in Hz	Temperature switch			
	L1, L2, L3	PE	L1, L2, L3	PE							
05Z1B03-1000	4 / 22-10	M4	max. 1 / 8.85	1.5 / 13.3	230	2.4	50 / 60	—			
07Z1B03-1000						4.2					
09Z1B03-1000						7.4					
10Z1B03-1000						10.5					
12Z1B03-1000			17.3								
13Z1B03-1000			25.2								
14Z1B03-1000	34.7										
15Z1B03-1000	10 / 8		max. 2 / 17.7			50.4					
16Z1B03-1000	M8 (25mm²)	M6	10 / 88.5	4.5 / 39.8	230	69.5	50 / 60	—			
17Z1B03-1000	M8 (35mm²)					88.2					
18Z1B03-1000	M8 (50mm²)					105.0					
19Z1B03-1000	M8 (50mm²)					121.0					
20Z1B03-1000	M8 (70mm²)				152.3						
21Z1B03-1000	M10 (70mm²)	M8	20.0 / 177.0	10.0 / 88.5		189.0					
05Z1B04-1000	4 / 22-10	M4	max. 1 / 8.85	1.5 / 13.3	400 / 480	1.4	50 / 60	—			
07Z1B04-1000									2.7		
09Z1B04-1000									4.3		
10Z1B04-1000									6.1		
12Z1B04-1000				10.0							
13Z1B04-1000				12.6							
14Z1B04-1000		17.3									
15Z1B04-1000	10 / 8		max. 2 / 17.7			25.2					
16Z1B04-1000						34.7					
17Z1B04-1000	16 / 16-6	M6	max. 4 / 35.4	4.5 / 39.8		44.1					
18Z1B04-1000						52.5					
19Z1B04-1000	35 / 12-2		max. 5 / 44.3			63.0					
20Z1B04-1000						79.0					
21Z1B04-1000	M8 (35mm²)		10 / 88.5			95.0			50 / 60	✓	
22Z1B04-1000	M8 (50mm²)										121.0
23Z1B04-1000	M8 (70mm²)										158.0
24Z1B04-1000	M10					20 / 177					189.0
25Z1B04-1000	(70mm²)	221.0									
26Z1B04-1000	M10 (120mm²)	263.0									
27Z1B04-1000	M10 (150mm²)	315.0									
28Z1B04-1000			390.0								
29Z1B04-1000	M12 (185mm²)		40 / 354		485.0						
30Z1B04-1000	M12				600.0						
31Z1B04-1000	(240mm²)				660.0						
32Z1B04-1000	M12 (300mm²)				750.0						
33Z1B04-1000	M12 (400mm²)	M12		40 / 354	840.0						
09Z1B04-1003	4 / 22-10	M4	max. 1 / 8.85	1.5 / 13.3	400 / 480	7.1	50 / 60	—			
10Z1B04-1003									10.9		
12Z1B04-1003									16.1		
12Z1B04-1010	4 / 22-10	M4	max. 1 / 8.85	1.5 / 13.3	400 / 480	10.0	45 - 65	—			
14Z1B04-1010									17.3		
28Z1B06-1000	M10 (120mm²)	M8	20 / 177	15 / 133	690	240.0	50 / 60	✓			
29Z1B06-1000	M10 (150mm²)					295.0					
30Z1B06-1000						370.0					
31Z1B06-1000	M12 (185mm²)		40 / 354			405.0					
33Z1B06-1000	M16 (185mm²)	M12	80 / 708	40 / 354		500.0					
39Z1B06-1000	M16 (300mm²)	M16		80 / 708		1020.0					
25Z1B04-1007	M10 (70mm²)	M8	23 / 204	15 / 133	400 / 480	221	50 / 60	—			
26Z1B04-1007	M10 (120mm²)							263	✓		
27Z1B04-1007	M10 (150mm²)							315			
28Z1B04-1007	M12 (150mm²)					390					
29Z1B04-1007	M12 (185mm²)		40 / 354			485					
30Z1B04-1007	M12 (240mm²)					600					
All data except max. values are rated values											

START-UP AND OPERATION

⚠ WARNING



Triggering of overcurrent protection devices

Risk of fire or electric shock!

▶ Triggering of an overcurrent protection device will be a hint for an over-load or short circuit. Triggering a RCD may be caused by a leakage current.

▶ In order to reduce the risk of fire or electric shock, live parts and other components of the device should be checked and replaced in case of damage.

⚠ CAUTION



High temperatures on the device

Burning of the skin!

▶ Cover hot surfaces so that they are safe to touch.

▶ If necessary, attach warning signs to the system.

▶ Check surface before touching.

▶ Let the device cool down before any work is carried out.

MAINTENANCE

The following maintenance work has to be carried out when required, but at least once a year by authorized and trained personnel.

▶ Clean the product from dirt and dust deposits.

▶ In case of malfunction, unusual noises or smells inform a person in charge!

▶ In case of failure, please contact the machine manufacturer.

DISPOSAL

▶ For professional disposal, follow the instructions in the instructions for use.

CERTIFICATION

CE certification

CE certification

KEB products meet the requirements of the valid European and national direc-tives. The conformity has been proven. The corresponding declarations can be downloaded from our website by entering the material number in the search field.

UL certification

NOTICE

UL certification

Only devices with UL logo on the nameplate are certified.

 For compliance with UL for use on the North American and Canadian Market, the following additional information must be observed (English original text):

CONDITIONS OF ACCEPTABILITY:

When installed in the final use equipment, the following are among the considerations to be made:

- Suitability of these Reactors, when operating under normal load conditions within an enclosure, shall be determined for each end-use application.
- Three phase 230 V sizes 05,07,09,10,12,13,14,15,16,17,18,19 , single phase 230 V sizes 05,07,09,10,12 ,three phase 480 V sizes 09,12,13,14,15,16,17,18,19,20,21,22, 23,24,25,26 have been evaluated for field wiring and size 27,28,29 and 30 have been evaluated for factory wiring only.
- These Reactors are provided with a Class 155(F) insulation system.
- The maximum operating temperature is surrounding air ambient of 45°C.
- Suitability of Ground Connection shall be determined in the end use.
- „Use UL Listed crimp-on pressure-wire connectors of the closed-loop type for field ins-tallation. Use only crimp tools specified by the manufacturer.“ or equivalent.
- „For use in Pollution Degree 2“ or equivalent.
- „Use 75 ° C rated copper wire only“ or equivalent

INSTRUCTIONS FOR USE			
		▶ Open the KEB homepage at www.keb-automation.com. ▶ By entering the material number in the search field, you will get the corresponding parts of the instructions for use. ▶ Read the instructions for use carefully!	
KEB Online	www.keb-automation.com	KR	다른 언어도 사용할 수 있습니다.
BG	Други налични езици.	HR	Ostali dostupni jezici.
CN	其他语言可用。	HU	Más elérhető nyelvek.
CZ	Jiné jazyky k dispozici.	LV	Citas pieejamās valodas.
DK	Andre sprog til rådighed.	LT	Kitos kalbos.
DE	Weitere Sprachen verfügbar.	MT	Lingwi oħra disponibbli.
EN	Other languages available.	NL	Andere talen beschikbaar.
EE	Muud keeled on saadaval.	PL	Inne dostępne języki.
ES	Otros idiomas disponibles.	PT	Outros idiomas disponíveis.
FI	Muut kielet saatavilla.	RO	Alte limbi disponibile.
FR	Autres langues disponibles.	RU	Доступны другие языки.
GR	Άλλες διαθέσιμες γλώσσες.	SE	Andra språk finns tillgängliga.
IE	Teangacha eile ar fáil.	SK	Iné jazyky sú k dispozícii.
IT	Altre lingue disponibili.	SI	Drugi jeziki so na voljo.
JP	他の言語も利用できます。	TR	Mevcut diğer diller.

Z1 CHOKES

QUICK START GUIDE

Mat.No. 00Z1N1M-0000

Translation of the original manual
Z1 series chokes
Document 20170996 EN 05