



LSFC

Power Factor Correction Systems

- Power Range: 100 to 500 kvar
- Modular construction in freestanding sheet steel cabinet
- Ready for connection
- Fully automatic and intelligent Power Factor Control Relay
- Power Factor Correction Capacitors LKT dry-type with triple safety feature

// Application Recommendations

Power Factor Correction Systems, type LSFC are suitable for compensation in networks without harmonic distortion.

Attention: Even low harmonic levels can be amplified by network resonances. For Power Factor Correction Systems with a power >150 kvar this effect will amplify even more. This is because the PFC-System, together with the transformer, generates resonance frequencies in the network, which are within the range of the low frequency, energy-intensive harmonics. High harmonic levels can overload or damage all electrical devices and machines in the network.

Today, networks without harmonic distortion are quite rare. Therefore we generally recommend installing fixed capacitors with Harmonic Filter Reactors (page 121 ff.).

// Power Range

Power Factor Correction System in sheet steel cabinet:

- 100 to 500 kvar

// Construction

The ready-for-connection Power Factor Correction System consists of pre-assembled capacitor-reactor modules type C64C... and the suitable sheet steel cabinet.

The cabinet contains:

- Self-healing LKT type power capacitors with low loss self-healing dielectric made from segmented metallised polypropylene film. Filled with a PCB-free filler. With discharge resistors, as per EN 60831-1 and -2 as well as IEC 60831-1 and -2
- Capacitor Switching Contactors with leading transition contact for damping of current peaks
- Fuse links, 3-pole, size NH00
- Control terminal strip with control fuse and thermal trip contact for safety shutdown
- Intelligent Power Factor Control Relay RM 9606 or EMR 1100 S

// Application / Installation

The place of installation must comply with the requirements of the ingress protection and ambient temperature concerned.

// Regulations

For installation and connection of Power Factor Correction Capacitors in Germany the following regulations must be complied with: VDE 0100, VDE 0105, VDE 0560 Part 46 and VDE 0106 Part 100 (German Association of Electrical Engineers). In other countries the equivalent local regulations must be followed.

// Connection

The power supply cable and the current transformer cable enter the bottom of the cabinet through a sliding gland plate and a cable clamp rail, the power supply being connected to the busbar system and the current transformer cable to the terminal strip provided.

// System Expansion

An extension of the system is possible by adding LSFCZ extension units. This extension unit will be integrated in the existing control circuit via the control cable (supplied with the extension unit).

// Technical Data

Design	Sheet steel cabinet with door right hinged
Rated voltage	400 V / 50 Hz
Rated voltage of capacitors	440 V / 50 Hz
Ambient temperature	-5 °C to +40 °C
Humidity	Max. 90 %, no condensation
Cabinet colour	RAL 7035
Standards	EN 60831-1 and -2 IEC 60831-1 and -2 EN 61921 VDE 0660 Part 600-1 and -2 EN 61439-1 and -2

// Important Notes

The presence of inductive and capacitive reactances in the low voltage network means that the harmonics generated there, together with those fed in from the medium voltage network, can be amplified many times over due to resonance. Particularly in industrial networks with loads that generate harmonics, the use of conventional power factor correction systems without Harmonic Filter Reactors is not advisable. Instead, detuned systems should be installed. See the LSFC-P series of Power Factor Correction Systems.

For further information on power factor correction and harmonics please refer to our „Manual of Power Factor Corrections“.

FRAKO systems are designed for connecting 5 core cables. If a 4-core cable is used, a jumper must be fitted to connect PE and N, or a control transformer must be installed.

Power Factor Correction Systems

Power Factor Correction Systems

Article-No.	Type	Rated power [kvar]	Stage power [kvar]	Switching sequence	Dimensions			Weight approx. [kg]	Protection IP
					Width [mm]	Height [mm]	Depth [mm]		

Power Factor Correction Systems in sheet steel cabinets (width = 600 mm), rated mains voltage: 400 V / 50 Hz

Type series: LSFC

34-19420	LSFC 100-12,5-211-400-64-606	100	12.5	1:1:2:4	600	2000	400	120.5	30
34-19421	LSFC 100-25-21-400-64-606	100	25	1:1:2	600	2000	400	116	30
34-19422	LSFC 125-12,5-221-400-64-606	125	12.5	1:1:2:2:4	600	2000	400	136	30
34-19423	LSFC 125-25-12-400-64-606	125	25	1:2:2	600	2000	400	132	30
34-19424	LSFC 150-12,5-212-400-64-606	150	12.5	1:1:2:4:4	600	2000	400	137	30
34-19425	LSFC 150-25-22-400-64-606	150	25	1:1:2:2	600	2000	400	135	30
34-19426	LSFC 150-25-6-400-64-606	150	25	1:1:1:1	600	2000	400	136	30
34-21451	LSFC 175-12,5-11A2-400-64-606	175	12.5	1:2:3:4	600	2000	400	139	30
34-19428	LSFC 175-25-13-400-64-606	175	25	1:2:2:2	600	2000	400	138	30
34-19429	LSFC 200-12,5-213-400-64-606	200	12.5	1:1:2:4	600	2000	400	141	30
34-19430	LSFC 200-25-23-400-64-606	200	25	1:1:2:2	600	2000	400	143	30
34-19431	LSFC 200-25-8-400-64-111	200	25	1:1:1:1	600	2000	400	149	30
34-19432	LSFC 225-12,5-223-400-64-111	225	12.5	1:1:2:2:4	600	2000	400	156	30
34-19433	LSFC 225-25-14-400-64-606	225	25	1:2:2:2	600	2000	400	152	30
34-19434	LSFC 225-25-9-400-64-111	225	25	1:1:1:1	600	2000	400	154	30
34-19435	LSFC 250-12,5-214-400-64-111	250	12.5	1:1:2:4	600	2000	400	158	30
34-19436	LSFC 250-25-24-400-64-606	250	25	1:1:2:2	600	2000	400	157	30
34-19437	LSFC 250-25-0-400-64-111	250	25	1:1:1:1	600	2000	400	159	30
34-19391	LSFC 250-50-5-400-64-606	250	50	1:1:1:1	600	2100	400	156	30
34-19616	LSFC 275-25-15-400-64-606	275	25	1:2:2:2	600	2000	400	166	30
34-19438	LSFC 300-12,5-215-400-64-111	300	12.5	1:1:2:4	600	2000	400	166	30
34-19394	LSFC 300-25-25-400-64-111	300	25	1:1:2:2	600	2000	400	163	30
34-19439	LSFC 300-25-0-400-64-111	300	25	1:1:1:1	600	2000	400	236	30
34-19440	LSFC 300-50-6-400-64-606	300	50	1:1:1:1	600	2000	400	164	30
34-19617	LSFC 325-25-16-400-64-111	325	25	1:2:2:2	600	2000	400	174	20
34-19384	LSFC 350-25-26-400-64-111	350	25	1:1:2:2	600	2000	400	183	20
34-19441	LSFC 350-50-7-400-64-111	350	50	1:1:1:1	600	2000	400	181	20
34-19618	LSFC 375-25-17-400-64-111	375	25	1:2:2:2	600	2000	400	190	20
34-19442	LSFC 400-25-27-400-64-111	400	25	1:1:2:2	600	2000	400	188	20
34-19443	LSFC 400-50-8-400-64-111	400	50	1:1:1:1	600	2000	400	173	20
34-20282	LSFC 500-50-0-400-64-111	500	50	1:1:1:1...	600	2000	400	293	20

Power Factor Correction Systems, extension units in sheet steel cabinets (width = 600 mm), rated mains voltage: 400 V / 50 Hz

Type series: LSFCZ

34-16235	LSFCZ 100-50-2-400-64	100	50	1:1	600	2000	400	137	30
34-16236	LSFCZ 150-50-3-400-64	150	50	1:1:1	600	2000	400	125	30
34-16237	LSFCZ 200-50-4-400-64	200	50	1:1:1:1	600	2000	400	142	30
34-16238	LSFCZ 250-50-5-400-64	250	50	1:1:1:1	600	2000	400	157	30
34-16239	LSFCZ 300-50-6-400-64	300	50	1:1:1:1	600	2000	400	180	30
34-16240	LSFCZ 350-50-7-400-64	350	50	1:1:1:1	600	2000	400	183	20
34-16241	LSFCZ 400-50-8-400-64	400	50	1:1:1:1	600	2000	400	185	20

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 145 ff.)

Systems > 300 kvar with internal roof vent

// Options and accessories for Power Factor Correction Systems type LSFC 400 V, 50 Hz

Options, mounted and wired ready for operation

Article-No.	Type	Description	for sytem type
S34-5502	-111- (instead of -606)	Power Factor Control Relay EMR 1100 S instead of RM 9606	all
S34-5500	-112- (instead of -606)	Power Factor Control Relay EMR 1100 instead of RM 9606	all
S34-5519	-66- (instead of -64-)	FRAKO LSFC-66 WxHxD: 600x2000x600 mm (without floor standing base and roof)	LSFC-64
S34-5528	-66- (instead of -84-)	FRAKO LSFC-66 WxHxD: 600x2000x600 mm (without floor standing base and roof)	LSFC-84
S34-5503	-84- (instead of -64-)	FRAKO LSFC-84 WxHxD: 800x2000x400 mm (without floor standing base and roof)	LSFC-64
S34-5524	-85- (instead of -84-)	FRAKO LSFC-85 WxHxD: 800x2000x500 mm (without floor standing base and roof)	LSFC-84
S34-5517	-86- (instead of -84/85-)	FRAKO LSFC-86 WxHxD: 800x2000x600 mm (without floor standing base and roof)	LSFC-84/-85
S34-5504	-27- (instead of -64-)	Rittal TS 8604, WxHxD: 600x2000x400 mm (without floor standing base and roof)	LSFC-64
S34-5518	-43- (instead of -84/85-)	Rittal TS 8606 WxHxD: 600x2000x600 mm (without floor standing base and roof)	LSFC-84/-85
S34-5505	-29- (instead of -84-)	Rittal TS 8804, WxHxD: 800x2000x400 mm (without floor standing base and roof)	LSFC-84
S34-5506	-24- (instead of -85-)	Rittal TS 8805, WxHxD: 800x2000x500 mm (without floor standing base and roof)	LSFC-85
S34-5527	-10- (instead of -84-)	Rittal TS 8806, WxHxD: 800x2000x600 mm (without floor standing base and roof)	LSFC-84
S34-5507	-10- (instead of -85-)	Rittal TS 8806, WxHxD: 800x2000x600 mm (without floor standing base and roof)	LSFC-85
S34-5509	-Li	Cabinet door with door left hinged	all type FRAKO LSFC
S34-5510	-Li	Cabinet door with door left hinged	all type Rittal TS
S34-5023	-S60	Pivoting lever closure for mounting a semiprofile cylinder	all
S34-0060	-SO (+ Description)	Special painting outside (RAL-Scale)	all
S34-0010	-S1	Cable entry through the cabinet roof with connection on top	up to 400 kvar/cabinet
S34-5512	-54	Ingress protection IP54	≤ 300 kvar/cabinet
S34-5513	-54	Ingress protection IP54	> 300 ≤ 400 kvar/cabinet
S34-0054	-S80	Ingress protection IP21 with dust cover roof W x H x D: 520 x 300 x 50 mm; RAL 7035	all FRAKO LSFC
S34-5523	S34-5523	Ingress protection IP43, roof vent installation on cabinet instead of a roof vent installation in cabinet	> 300 ≤ 400 kvar/cabinet
S34-5511	-SLT	Fuse switch disconnecter instead of fuse base per 50 kvar	all
S34-5514	-SLA	Fuse switch disconnecter in cable entry compartment	≤ 200 kvar/cabinet
S34-5515	-SLA	Fuse switch disconnecter in cable entry compartment	≤ 300 kvar/cabinet
S34-0109	-LTA	Switch disconnecter* 400 A in cable entry compartment, for cabinet width 600 mm	≤ 200 kvar/cabinet
S34-0108	-LTA	Switch disconnecter* 400 A in cable entry compartment, for cabinet width 800 mm	≤ 200 kvar/cabinet
S34-0107	-LTA	Switch disconnecter* 630 A in cable entry compartment, for cabinet width 600 mm	≤ 300 kvar/cabinet
S34-0106	-LTA	Switch disconnecter* 630 A in cable entry compartment, for cabinet width 800 mm	≤ 300 kvar/cabinet
34-90011	-S56	Circuit breaker and control switch (On/Off) (option for Switzerland)	all
S34-5535	-S19	Control phase + N via a protective motor switch (option for France)	all
S34-5536	-S119	Control transformer set 500 VA incl. primary and secondary fuses	≤ 500 kvar
S34-5526	-S119	Control transformer set 800 VA incl. primary and secondary fuses	> 500 ≤ 900 kvar
S34-5069	-S53	3 ammeter incl. current transformer	all
S34-5073	-SO (+ Description)	Voltage meter with switch	all
S34-5077	-SO (+ Description)	kvar-Meter incl. current transformer; measuring range up to 300 kvar, 400 V	all
S34-5057	-SO (+ Description)	Measuring transducer 4-20 mA for power factor	all
S34-0067	-S255	EM-PQ 1500 with current transformer without EM-FD 1500	all
S34-0066	-S255	EM-PQ 1500 with current transformer with EM-FD 1500	all
S34-5050	-S255	EMA 1101 with current transformer	all
S34-0040	-S66	Summation current transformer 5+5/5A	all
S34-0081	-S66	Summation current transformer 5+5+5/5A	all
S34-5049	-S145	Switch cabinet lighting with power outlet and position switch	all

*) Switch disconnecter can be operated from the outside

Power Factor Correction Systems

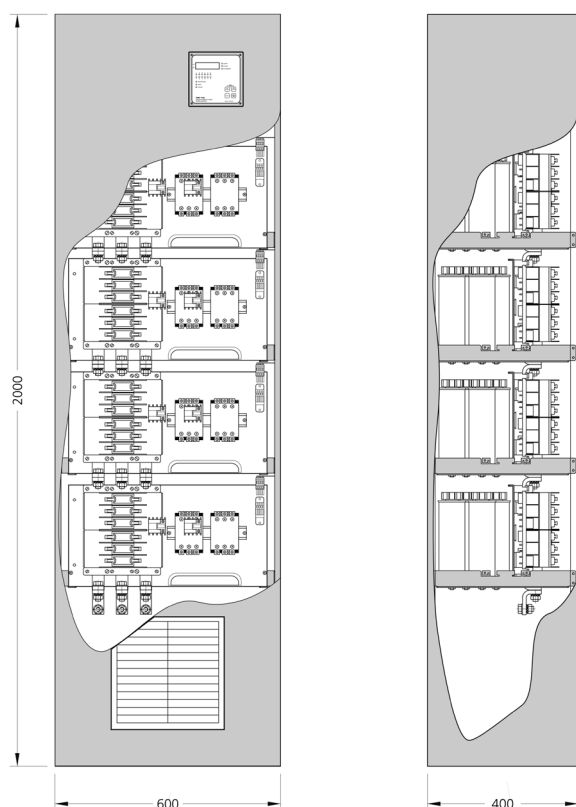
Power Factor Correction Systems

Accessories

Article-No.	Type	Description	for system type
34-80090	KR-LSFC-64-100	Floor standing base (h = 100 mm)	LSFC-64
34-80175	KR-LSFC-64-200	Floor standing base (h = 200 mm)	LSFC-64
34-80122	KR-LSFC-66-100	Floor standing base (h = 100 mm)	LSFC-66
34-80125	KR-LSFC-66-200	Floor standing base (h = 200 mm)	LSFC-66
34-80091	KR-LSFC-84-100	Floor standing base (h = 100 mm)	LSFC-84
34-80113	KR-LSFC-84-200	Floor standing base (h = 200 mm)	LSFC-84
34-80079	KR-LSFC-85-100	Floor standing base (h = 100 mm)	LSFC-85
34-80075	KR-LSFC-85-200	Floor standing base (h = 200 mm)	LSFC-85
34-80092	KR-LSFC-86-100	Floor standing base (h = 100 mm)	LSFC-86
34-80112	KR-LSFC-86-200	Floor standing base (h = 200 mm)	LSFC-86

Other options and accessories on request

// Dimensions



Dimensional drawing LSFC (100 bis 400 kvar)

All dimensions in mm