

PFC Systems on mounting plates / Capacitor Modules

Power Factor Correction Systems on mounting plates – detuned



3

LSP-P

Power Factor Correction Systems on mounting plates – detuned

Detuned PFC Systems on mounting plates for installation in standard switchboards for low-voltage networks with harmonic content.

- Power range: 17.5 to 100 kvar
- Compact design on a mounting plate
- Ready for connection (without control relay and relay cable)
- Power Factor Correction Capacitors LKT dry-type with four safety features

Application Recommendations

Power Factor Correction Systems on mounting plates type LSP-P are suitable for installation in standard switchboards. Those systems are pre-wired. One only has to connect the Power Factor Correction Relay (not included) to the terminal strip.

They are suitable for supply networks with harmonic distortion according to EN 61000-2-4 class 2. They are available as follows:

| Version | Detuning factor | Resonance frequency |
|---------|-----------------|---------------------|
| P1 | $\rho = 14 \%$ | 134 Hz |
| P7 | $\rho = 7 \%$ | 189 Hz |
| P8 | $\rho = 8 \%$ | 177 Hz |

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Power Range

Power Factor Correction System on mounting plate - detuned:

- 17.5 to 100 kvar

Construction

Mounting plate with mounted Power Factor Correction Capacitors, Capacitor Switching Contactors and fuses for installation in switchboards.

The system 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
- Heavy duty Capacitor Switching Contactors
- Harmonic Filter Reactors with overtemperature switch
- Fuse links, 3-pole, size NH00
- Control terminal strip with control fuse and thermal contact for safety shutdown

Installation Site

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 cable is connected to the LV NH00 fuse element; The Power Factor Correction Relay (not included) as well as the cable from the current transformer has to be connected to the control terminal strip.

System Expansion

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

Technical Data

| | |
|------------------------------------|--|
| Rated voltage | 400 V/50 Hz |
| Rated voltage of capacitors | 440 V/50 Hz (-P5 to -P8) 480 V/50 Hz (-P1) |
| Ambient temperature | -5 °C to +60 °C |
| Humidity | Max. 90 %, no condensation |
| Standards | EN 60831-1 and -2 IEC 60831-1 and -2 EN 61921 IEC 61921 EN 61439-1 and -2 IEC 61439-1 and 2 |

Important Notes

For further information on power factor correction and harmonics please refer to our "Manual of Power Factor Correction".

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Version: P1 (Detuning factor $p = 14\%$)

| Article- No. | Type | Rated power [kvar] | Step power [kvar] | Switching sequence | Dimensions | | | Weight (gross) approx. [kg] | Protection IP |
|-----------------|------|------------------------------|-----------------------------|-----------------------|---------------|----------------|---------------|--------------------------------------|------------------|
| | | | | | Width [mm] | Height [mm] | Depth [mm] | | |

Power Factor Correction Systems on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSP ...-3-P1

| | | | | | | | | | |
|----------|----------------------------------|-------|-------|---------|-----|------|-----|-----|----|
| 34-57701 | LSP 25-6,25-21-400/480-3-P1 | 25 | 6.25 | 1:1:2 | 550 | 1157 | 240 | 69 | 00 |
| 34-57702 | LSP 31,25-6,25-12-400/480-3-P1 | 31.25 | 6.25 | 1:2:2 | 550 | 1157 | 240 | 75 | 00 |
| 34-57703 | LSP 43,75-6,25-111-400/480-3- P1 | 43.75 | 6.25 | 1:2:4 | 550 | 1157 | 240 | 84 | 00 |
| 34-57704 | LSP 50-6,25-211-400/480-3-P1 | 50 | 6.25 | 1:1:2:4 | 550 | 1157 | 240 | 98 | 00 |
| 34-57705 | LSP 50-12,5-21-400/480-3-P1 | 50 | 12.5 | 1:1:2 | 550 | 1157 | 240 | 90 | 00 |
| 34-57706 | LSP 50-50-1-400/480-3-P1 | 50 | 50 | 1 | 550 | 1157 | 240 | 95 | 00 |
| 34-57707 | LSP 62,5-12,5-12-400/480-3-P1 | 62.5 | 12.5 | 1:2:2 | 550 | 1157 | 240 | 105 | 00 |
| 34-57708 | LSP 68,75-6,25-112-400/480-3- P1 | 68.75 | 6.25 | 1:2:4:4 | 550 | 1157 | 240 | 115 | 00 |
| 34-57709 | LSP 75-12,5-22-400/480-3-P1 | 75 | 12.5 | 1:1:2:2 | 550 | 1157 | 240 | 120 | 00 |
| 34-57852 | LSP 75-12,5-11A-400/480-3-P1 | 75 | 12.5 | 1:2:3 | 550 | 1157 | 240 | 123 | 00 |
| 34-57710 | LSP 75-25-11-400/480-3-P1 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 121 | 00 |
| 34-57711 | LSP 87,5-12,5-111-400/480-3-P1 | 87.5 | 12.5 | 1:2:4 | 550 | 1157 | 240 | 126 | 00 |
| 34-57781 | LSP 100-16,67-11A-400/480-3-P1 | 100 | 16.67 | 1:2:3 | 550 | 1157 | 240 | 143 | 00 |

Power Factor Correction Systems, extension units on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSPZ ...-3-P1

| | | | | | | | | | |
|----------|----------------------------|----|----|-----|-----|------|-----|----|----|
| 34-57900 | LSPZ 50-50-1-400/480-3-P1 | 50 | 50 | 1 | 550 | 1157 | 240 | 83 | 00 |
| 34-57901 | LSPZ 75-25-11-400/440-3-P1 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 87 | 00 |

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 141 ff.)

PFC Systems on mounting plates / Capacitor Modules

Power Factor Correction Systems on mounting plates – detuned

Version: P7 (Detuning factor $p = 7\%$)

| Article- No. | Type | Rated power [kvar] | Step power [kvar] | Switching sequence | Dimensions | | | Weight (gross) approx. [kg] | Protection IP |
|-----------------|------|--------------------------|-------------------------|-----------------------|---------------|----------------|---------------|--------------------------------------|------------------|
| | | | | | Width [mm] | Height [mm] | Depth [mm] | | |

Power Factor Correction Systems on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSP ...-3-P7

| | | | | | | | | | |
|----------|----------------------------------|-------|-------|---------|-----|------|-----|-----|----|
| 34-57712 | LSP 17,5-2,5-111-400/440-3-P7 | 17.5 | 2.5 | 1:2:4 | 550 | 1157 | 240 | 51 | 00 |
| 34-57713 | LSP 25-5-12-400/440-3-P7 | 25 | 5 | 1:2:2 | 550 | 1157 | 240 | 57 | 00 |
| 34-57714 | LSP 25-6,25-21-400/440-3-P7 | 25 | 6.25 | 1:1:2 | 550 | 1157 | 240 | 54 | 00 |
| 34-57715 | LSP 30-5-11A-400/440-3-P7 | 30 | 5 | 1:2:3 | 550 | 1157 | 240 | 61 | 00 |
| 34-57716 | LSP 31,25-6,25-12-400/440-3-P7 | 31.25 | 6.25 | 1:2:2 | 550 | 1157 | 240 | 59 | 00 |
| 34-57717 | LSP 43,75-6,25-111-400/440-3-P7 | 43.75 | 6.25 | 1:2:4 | 550 | 1157 | 240 | 64 | 00 |
| 34-57718 | LSP 50-6,25-211-400/440-3-P7 | 50 | 6.25 | 1:1:2:4 | 550 | 1157 | 240 | 72 | 00 |
| 34-57719 | LSP 50-12,5-21-400/440-3-P7 | 50 | 12.5 | 1:1:2 | 550 | 1157 | 240 | 70 | 00 |
| 34-57720 | LSP 50-50-1-400/440-3-P7 | 50 | 50 | 1 | 550 | 1157 | 240 | 75 | 00 |
| 34-57721 | LSP 52,5-7,5-111-400/440-3-P7 | 52.5 | 7.5 | 1:2:4 | 550 | 1157 | 240 | 79 | 00 |
| 34-57722 | LSP 60-10-11A-400/440-3-P7 | 60 | 10 | 1:2:3 | 550 | 1157 | 240 | 79 | 00 |
| 34-57723 | LSP 62,5-12,5-12-400/440-3-P7 | 62.5 | 12.5 | 1:2:2 | 550 | 1157 | 240 | 77 | 00 |
| 34-57724 | LSP 68,75-6,25-112-400/440-3-P7 | 68.75 | 6.25 | 1:2:4:4 | 550 | 1157 | 240 | 82 | 00 |
| 34-57853 | LSP 75-12,5-11A-400/440-3-P7 | 75 | 12.5 | 1:2:3 | 550 | 1157 | 240 | 88 | 00 |
| 34-57725 | LSP 75-12,5-22-400/440-3-P7 | 75 | 12.5 | 1:1:2:2 | 550 | 1157 | 240 | 86 | 00 |
| 34-57726 | LSP 75-25-11-400/440-3-P7 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 87 | 00 |
| 34-57727 | LSP 87,5-12,5-111-400/440-3-P7 | 87.5 | 12.5 | 1:2:4 | 550 | 1157 | 240 | 89 | 00 |
| 34-57728 | LSP 93,75-6,25-1111-400/440-3-P7 | 93.75 | 6.25 | 1:2:4:8 | 550 | 1157 | 240 | 96 | 00 |
| 34-57729 | LSP 100-12,5-211-400/440-3-P7 | 100 | 12.5 | 1:1:2:4 | 550 | 1157 | 240 | 102 | 00 |
| 34-57730 | LSP 100-50-2-400/440-3-P7 | 100 | 50 | 1:1 | 550 | 1157 | 240 | 105 | 00 |
| 34-57780 | LSP 100-16,67-11A-400/440-3-P7 | 100 | 16.67 | 1:2:3 | 550 | 1157 | 240 | 102 | 00 |
| 34-57768 | LSP 100-25-21-400/440-3-P7 | 100 | 25 | 1:1:2 | 550 | 1157 | 240 | 104 | 00 |

Power Factor Correction Systems, extension units on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSPZ ...-3-P7

| | | | | | | | | | |
|----------|----------------------------|-----|----|-------|-----|------|-----|-----|----|
| 34-57902 | LSPZ 50-50-1-400/440-3-P7 | 50 | 50 | 1 | 550 | 1157 | 240 | 65 | 20 |
| 34-57903 | LSPZ 60-30-2-400/440-3-P7 | 60 | 30 | 1:1 | 550 | 1157 | 240 | 78 | 20 |
| 34-57904 | LSPZ 75-25-11-400/440-3-P7 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 102 | 20 |
| 34-57905 | LSPZ 90-30-3-400/440-3-P7 | 90 | 30 | 1:1:1 | 550 | 1157 | 240 | 102 | 20 |
| 34-57906 | LSPZ 100-50-2-400/440-3-P7 | 100 | 50 | 1:1 | 550 | 1157 | 240 | 99 | 20 |

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 141 ff.)

PFC Systems on mounting plates / Capacitor Modules

Power Factor Correction Systems on mounting plates – detuned

Version: P8 (Detuning factor p = 8 %)

| Article- No. | Type | Rated power [kvar] | Step power [kvar] | Switching sequence | Dimensions | | | Weight (gross) approx. [kg] | Protection IP |
|-----------------|------|--------------------------|-------------------------|-----------------------|---------------|----------------|---------------|--------------------------------------|------------------|
| | | | | | Width [mm] | Height [mm] | Depth [mm] | | |

Power Factor Correction Systems on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSP ...-3-P8

| | | | | | | | | | |
|----------|----------------------------------|-------|--------|---------|-----|------|-----|-----|----|
| 34-57751 | LSP 17,5-2,5-111-400/440-3-P8 | 17.5 | 2.5 | 1:2:4 | 550 | 1157 | 240 | 52 | 00 |
| 34-57767 | LSP 25-5-12-400/440-3-P8 | 25 | 5 | 1:2:2 | 550 | 1157 | 240 | 58 | 00 |
| 34-57827 | LSP 25-6,25-21-400/440-3-P8 | 25 | 6.25 | 1:1:2 | 550 | 1157 | 240 | 55 | 00 |
| 34-57732 | LSP 30-5-11A-400/440-3-P8 | 30 | 5 | 1:2:3 | 550 | 1157 | 240 | 62 | 00 |
| 34-57735 | LSP 31,25-6,25-12-400/440-3-P8 | 31.25 | 6.25 | 1:2:2 | 550 | 1157 | 240 | 60 | 00 |
| 34-57750 | LSP 43,75-6,25-111-400/440-3- P8 | 43.75 | 6.25 | 1:2:4 | 550 | 1157 | 240 | 64 | 00 |
| 34-57763 | LSP 50-6,25-211-400/440-3-P8 | 50 | 6.25 | 1:1:2:4 | 550 | 1157 | 240 | 70 | 00 |
| 34-57747 | LSP 50-12,5-21-400/440-3-P8 | 50 | 12.5 | 1:1:2 | 550 | 1157 | 240 | 68 | 00 |
| 34-57828 | LSP 50-50-1-400/440-3-P8 | 50 | 50 | 1 | 550 | 1157 | 240 | 68 | 00 |
| 34-57749 | LSP 52,5-7,5-111-400/440-3-P8 | 52.5 | 7.5 | 1:2:4 | 550 | 1157 | 240 | 75 | 00 |
| 34-57748 | LSP 60-10-11A-400/440-3-P8 | 60 | 10 | 1:2:3 | 550 | 1157 | 240 | 75 | 00 |
| 34-57771 | LSP 62,5-12,5-12-400/440-3-P8 | 62.5 | 12.5 | 1:2:2 | 550 | 1157 | 240 | 77 | 00 |
| 34-57734 | LSP 68,75-6,25-112-400/440-3- P8 | 68.75 | 6.25 | 1:2:4:4 | 550 | 1157 | 240 | 81 | 00 |
| 34-57854 | LSP 75-12,5-11A-400/440-3-P8 | 75 | 12.5 | 1:2:3 | 550 | 1157 | 240 | 91 | 00 |
| 34-57736 | LSP 75-12,5-22-400/440-3-P8 | 75 | 12.5 | 1:1:2:2 | 550 | 1157 | 240 | 91 | 00 |
| 34-57830 | LSP 75-25-11-400/440-3-P8 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 91 | 00 |
| 34-57754 | LSP 87,5-12,5-111-400/440-3-P8 | 87.5 | 12.5 | 1:2:4 | 550 | 1157 | 240 | 95 | 00 |
| 34-57733 | LSP 93,75-6,25-1111-400/440-3-P8 | 93.75 | 6.25 | 1:2:4:8 | 550 | 1157 | 240 | 97 | 00 |
| 34-57731 | LSP 100-12,5-211-400/440-3-P8 | 100 | 12.5 | 1:1:2:4 | 550 | 1157 | 240 | 103 | 00 |
| 34-57782 | LSP 100-16,67-11A-400/440-3-P8 | 100 | 16.666 | 1:2:3 | 550 | 1157 | 240 | 106 | 00 |
| 34-57785 | LSP 100-25-21-400/440-3-P8 | 100 | 25 | 1:1:2 | 550 | 1157 | 240 | 97 | 00 |

Power Factor Correction Systems, extension units on mounting plates, rated mains voltage: 400 V / 50 Hz

Type series: LSPZ ...-3-P8

| | | | | | | | | | |
|----------|----------------------------|-----|----|-------|-----|------|-----|-----|----|
| 34-57907 | LSPZ 50-50-1-400/440-3-P8 | 50 | 50 | 1 | 550 | 1157 | 240 | 102 | 00 |
| 34-57908 | LSPZ 60-30-2-400/440-3-P8 | 60 | 30 | 1:1 | 550 | 1157 | 240 | 102 | 00 |
| 34-57909 | LSPZ 75-25-11-400/440-3-P8 | 75 | 25 | 1:2 | 550 | 1157 | 240 | 99 | 00 |
| 34-57910 | LSPZ 90-30-3-400/440-3-P8 | 90 | 30 | 1:1:1 | 550 | 1157 | 240 | 65 | 00 |
| 34-57911 | LSPZ 100-50-2-400/440-3-P8 | 100 | 50 | 1:1 | 550 | 1157 | 240 | 79 | 00 |

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 141 ff.)

PFC Systems on mounting plates / Capacitor Modules

Power Factor Correction Systems on mounting plates – detuned

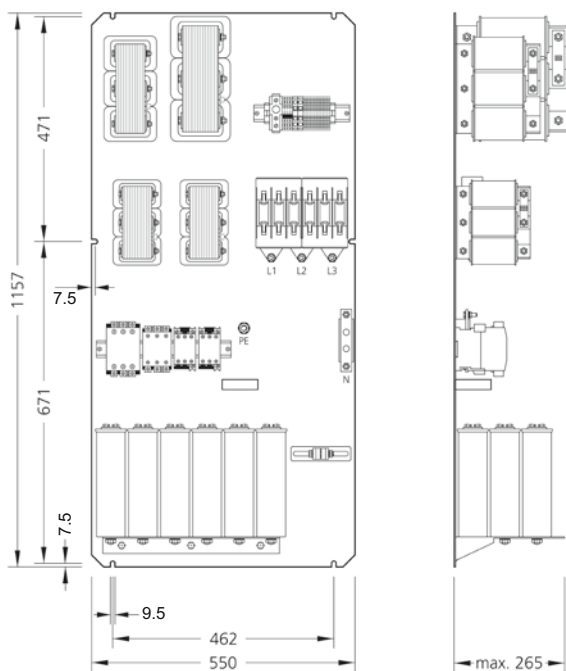
Options and accessories for Power Factor Correction Systems type LSP-P 400V, 50 Hz

Accessories

| Article-No. | Type | Description |
|-------------|--------------------|---|
| 38-00100 | RM 9606 | Power Factor Control Relay RM 9606 - German |
| 38-00103 | RM 9606 | Power Factor Control Relay RM 9606 - English |
| 38-00300 | EMR 1100 S | Power Factor Control Relay EMR 1100 S - German |
| 38-00301 | EMR 1100 S | Power Factor Control Relay EMR 1100 S - English |
| 89-20557 | RK-RM 9606-1150 | Control cable for RM 9606, length = 1150 mm |
| 89-20558 | RK-RM 9606-1500 | Control cable for RM 9606, length = 1500 mm |
| 89-20622 | RK-RM 9606-2600 | Control cable for RM 9606, length = 2600 mm |
| 89-20555 | RK-EMR 1100 S-1150 | Control cable for EMR 1100 S, length = 1150 mm |
| 89-20556 | RK-EMR 1100 S-1500 | Control cable for EMR 1100 S, length = 1500 mm |
| 89-20621 | RK-EMR 1100 S-2600 | Control cable for EMR 1100 S, length = 2600 mm |

Other options and accessories on request

Dimensions



Dimensional drawing LSP-P (17.5-100 kvar)

All dimensions in mm