

# Dynamic Power Factor Correction Systems

Dynamic Capacitor Modules – detuned



## C84D-P-E / C85D-P-E / C86D-P-E Dynamic Capacitor Modules – detuned

FRAKO's dynamic Capacitor Modules are suitable for installation in standard switchgear systems. Avoiding of inrush current peaks through instantaneous zero-cross switching – therefore free of wear switching even when capacitors are not discharged.

- Power Range: 25 to 100 kvar per module
- Compact design - up to 300 kvar per cabinet
- Ideal for mounting in all common switchgear systems
- Easy and quick mounting with multifunctional rails
- Power Factor Correction Capacitors LKT dry-type with four safety features

### Application Recommendations

Capacitor modules type C84D-P-E, C85D-P-E and C86D-P-E are suitable for installation in standard switchgear systems. Additional mounting rails for all common switchgear systems:

- W = 800 mm, T = 400, 500, 600 mm
- allow an easy and quick installation of complex Power Factor Correction Systems.

Suitable for supply networks with harmonic distortion according to EN 61000-2-4 class 2.

Available in the following versions:

Version	Detuning factor	Resonance frequency
P1	p = 14 %	134 Hz
P5	p = 5.67 %	210 Hz
P7	p = 7 %	189 Hz
P8	p = 8 %	177 Hz

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## Power Range

Compact compensation module ideal for mounting in switchgear systems:

- 25 to 100 kvar

## Construction

Sheet steel chassis with mounted power capacitors, electronic switches for 100 % duty cycle and fuses - ideal for mounting in all common switchgear systems.

The module consists of:

- 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
- With electronic switches for 100 % duty cycle
- Low-loss Harmonic Filter Reactors with temperature switches
- Busbar system with bus-mounting fuse base, 3-pole, size NH 00
- Control circuit with female connector (wired connector for connection with terminal strip incl.)

## 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.

## Installation

Specific module rails are required for installation in the switchgear system. Those module rails are available for all common switchgear systems and can be supplied as an optional accessory.

## Connection

The network connection can be done either vertically or horizontally. For the horizontal connection one has to connect the cables equipped with the cable lugs to the busbar by using the M12 screws.

A bus connection bracket CU AW-1 for vertical connection is available as an option.

Additional modules can be connected directly via the busbar system.

## Technical Data

### Design

Sheet steel chassis for installation in switchgear cabinets  
C6xD... for cabinets (width = 600 mm)  
C8xD... for cabinets (width = 800 mm)

**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 Quality".

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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]		

Capacitor Modules for installation in switchgear systems with a width of 800 mm, rated mains voltage: 400 V / 50 Hz

### Type series: C8xD ...-P1-E

34-64857	C84D 25-25-1-400/480-84-P1-E	25	25	1	700	300	350	58	00
34-65016	C85D 37,5-12,5-11-400/480-85- P1-E	37.5	12.5	1:2	700	300	450	*	00
34-65015	C85D 50-25-2-400/480-85-P1-E	50	25	1:1	700	300	450	*	00
34-64886	C84D 50-50-1-400/480-84-P1-E	50	50	1	700	300	350	*	00
34-64376	C85D 75-25-11-400/480-85-P1-E	75	25	1:2	700	300	450	*	00
34-65012	C86D 100-50-2-400/480-86-P1-E	100	50	1:1	700	300	550	*	00

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 137 ff.)

## 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]		

Capacitor Modules for installation in switchgear systems with a width of 800 mm, rated mains voltage: 400 V / 50 Hz

### Type series: C6xD ...-P7-E

34-64028	C84D 25-25-1-400/440-84-P7-E	25	25	1	700	300	350	*	00
34-64061	C84D 37,5-12,5-11-400/440-84-P7-E	37.5	12.5	1:2	700	300	350	*	00
34-64029	C84D 50-25-2-400/440-84-P7-E	50	25	1:1	700	300	350	*	00
34-64030	C84D 50-50-1-400/440-84-P7-E	50	50	1	700	300	350	*	00
34-64031	C85D 75-25-11-400/440-85-P7-E	75	25	1:2	700	300	450	*	00
34-64032	C85D 100-50-2-400/440-85-P7-E	100	50	1:1	700	300	450	97	00

Other rated voltages, frequencies and power ratings on request

Recommended supply lead cross sections: please refer to the technical annex (page 137 ff.)

\* on request

For options and accessory equipment for PFC Systems on mounting plates and ordering examples see page 87 ff.