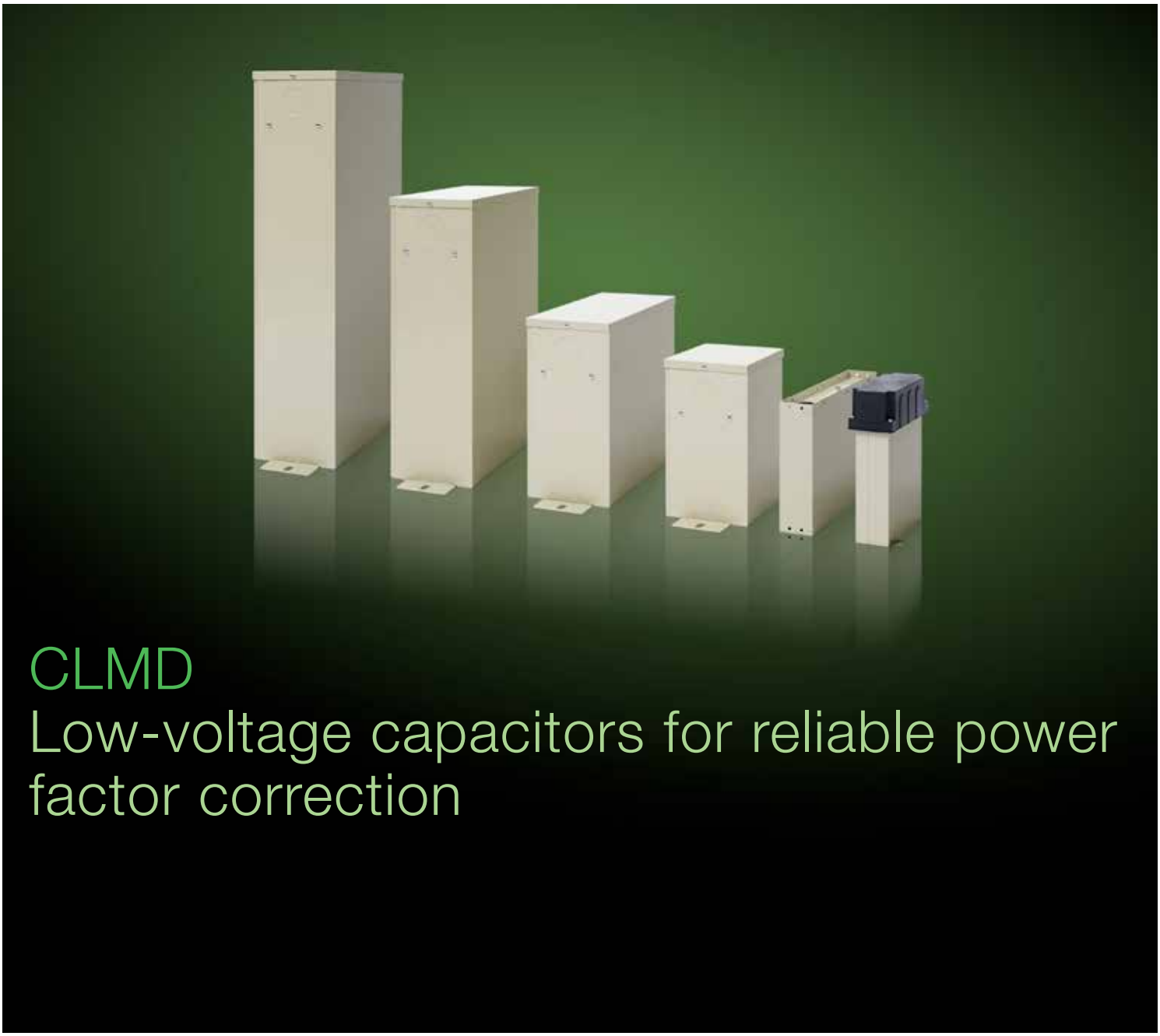


CLMD
Low-voltage capacitors for reliable power factor correction

Power and productivity
for a better world™

Reliability for power factor correction

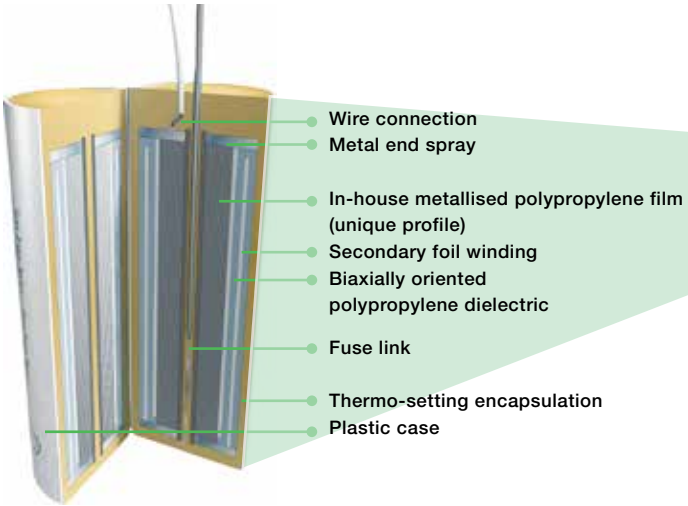
CLMD construction

- The CLMD capacitor consists of a number of wound elements made with a dielectric of metallized polypropylene film. These dry windings are provided with a sequential disconnector ensuring that each element can be reliably and selectively disconnected from the circuit at the end of its life.
- The capacitor elements receive a treatment under vacuum in order to ensure perfect electrical characteristics. Each winding is placed in a plastic case and encapsulated in thermo-setting resin in order to obtain a perfectly sealed element.
- The elements are placed inside a sheet steel box and connected in such a way as to supply the single or three-phase power at the required voltage and frequency.
- The sheet steel box is filled with inorganic, inert and fire proof granules in order to absorb the energy produced or to extinguish any flames in case of a possible defect at the end of an element's life. The CLMD is also provided with thermal equalizers to ensure effective heat dissipation.

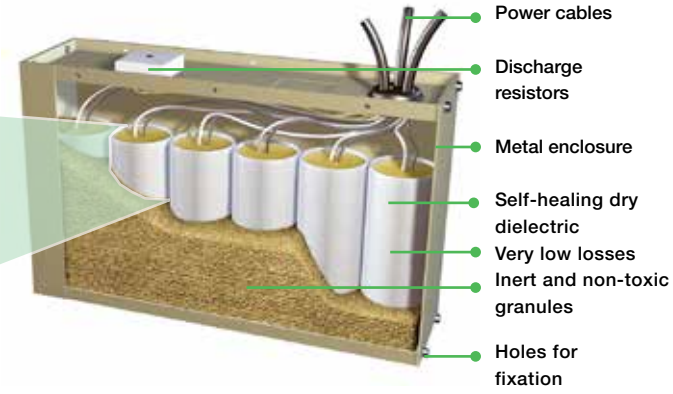
High performance in-house metallized film

ABB's completely integrated manufacturing process has resulted in the development of the special ABB high-performance film of which all ABB LV capacitors benefit:

- high breakdown strength
- excellent peak current handling capability
- high capacitance stability
- optimal self healing design
- long life



Capacitor element



CLMD 33S

Reliable and safe

Dry type design
The CLMD has a dry type dielectric and therefore cannot give any risk of leakage or pollution of the environment.

Very low losses
Dielectric losses are less than 0.2 Watt per kvar. Total losses, including discharge resistors, are less than 0.5 Watt per kvar

Long life - Self-healing
In the event of a fault developing in the dielectric of the capacitor, the metallized electrode adjacent to the fault is immediately vaporized, thus insolating the fault. The capacitor then continues normal operation.

Fire protection
All capacitor elements within the CLMD capacitor are surrounded by vermiculite which is an inorganic, inert, fire proof and non toxic granular material. In the event of any failure the vermiculite absorbs safely the energy produced within the capacitor box and extinguishes any possible flames.

Unique protection system
A unique Sequential Protection System ensures that each individual element can be disconnected from the circuit at the end of its life.

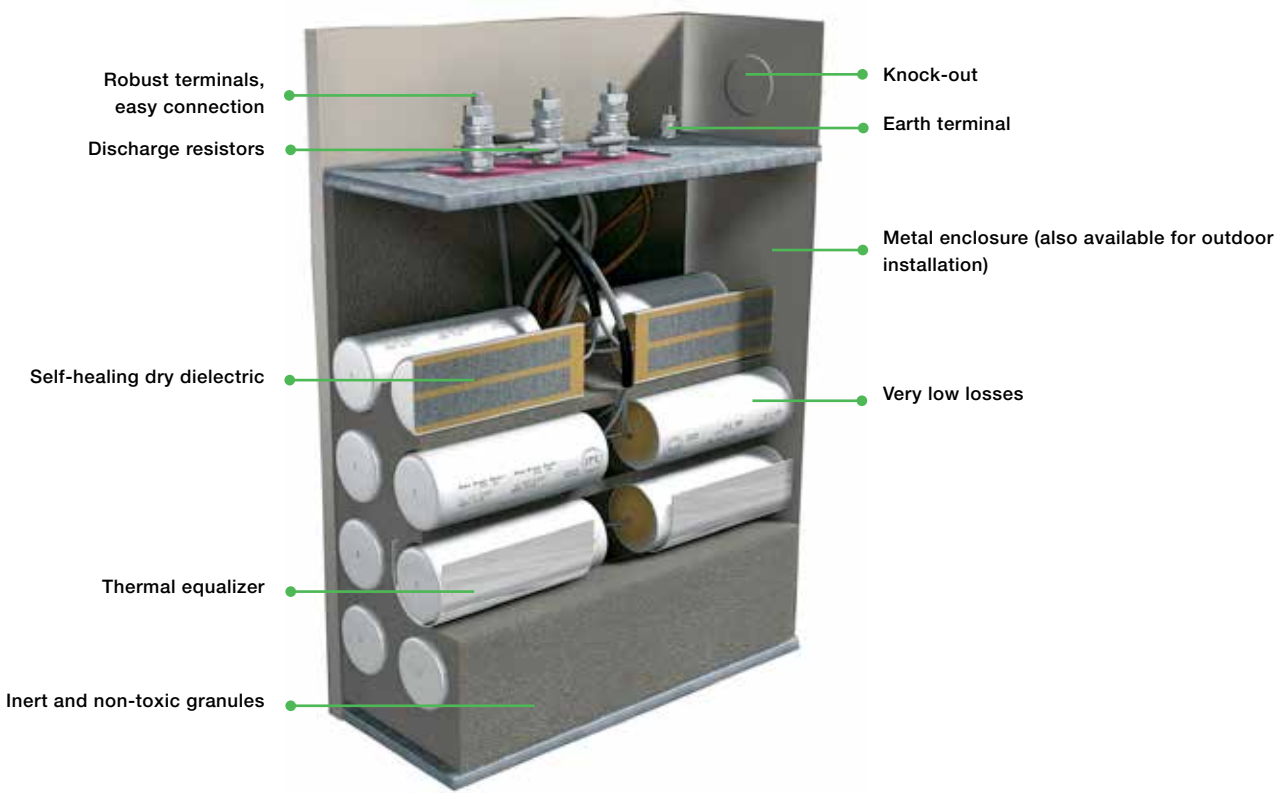
Easy to install - Light weight
The CLMD capacitor is very lightweight and therefore presents no handling difficulties during installation.

High reliability
The CLMD capacitor complies with the requirements of IEC 60831-1 & 2. The use of robust terminals removes the risk of damage during installation and reduces maintenance requirements.

Security
Thermal equalizers are fitted to surround each capacitor element and provide effective heat dissipation. The CLMD capacitor is equipped with discharge resistors.

ISO 9001
Our ISO 9001 Quality System registration provides the strongest assurance of our product quality.

ISO 14001
The CLMD capacitor has a dry type dielectric and is free from liquids or other impregnating agents. It has been designed for environmentally friendly manufacturing. Our ISO 14001 certification guarantees our commitment to the environment.



A comprehensive range

CLMD 43, 53, 63 & 83

The CLMD capacitor unit is designed in such a way to give the highest level of reliability, safety, performance and power all in a robust and compact fashion.

Modular - CLMD 13

The CLMD 13 is designed to make an easy parallel connection of capacitor units.

The CLMD 13 is the ideal basic unit for a modular system.

Compact - CLMD 33S

The CLMD 33S is intended for use in capacitor banks.

It offers high power density and small dimensions.

Technical specifications

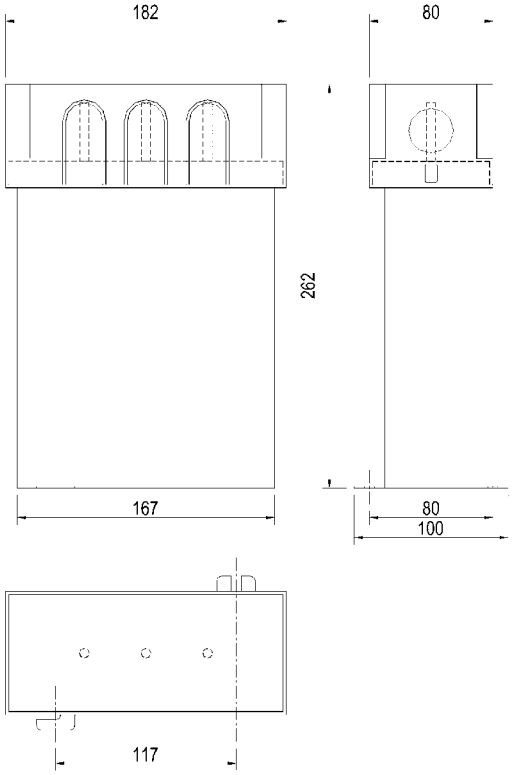
Voltage range	From 220 to 1000 V.
Frequency	50 and 60 Hz.
Connection	Three-phase as standard construction (single-phase on request).
Net output power	From 3.3 to 120 kvar.
Tolerance on capacitance	0 % + 10 %.
Losses (discharge resistors included)	< 0.5 Watt/kvar for 380 V rated voltage and above.
Discharge resistors	Permanently connected built-in discharge resistors are sized to ensure safe discharge of the capacitor to less than 50V in 1 minute after a switch off. Minimum time between disconnection and re-energization: 40 seconds.
Maximum permissible current	1.3 x In for continuous operation.
Tolerance on voltage	30% for maximum 1 minute (according to IEC 60831).
Case material	Zinc electroplated mild steel.
Color	Beige RAL 7032.
Fixing	CLMD13: with two slots, diameter 6.5 mm (suitable fixing for assembly in module). CLMD33S: with eight fixation holes, diameter 5.4 mm. CLMD43-53-63-83: with two slots 26 X 12 mm.
Weight	CLMD13: approximately 2.5 kg. CLMD33 and CLMD33S: approximately 3.5 kg. CLMD43: approximately 6 kg. CLMD53: approximately 11 kg. CLMD63: approximately 15 kg. CLMD83: approximately 23 kg.
Terminals	CLMD13: three M6 terminals. CLMD33S: three cable outputs (6, 10, 16 mm^2), 50 cm long. CLMD43-53-63-83: with threaded rods M6, 8, 10 or 12 according to the power of the capacitor.
Minimum distance between units	CLMD13-33S: 20 mm (25 mm for units > 30 kvar). CLMD43-53-63-83: 50 mm.
Minimum distance between units and wall	CLMD13-33 : 20 mm (25 mm for units > 30 kvar). CLMD43-53-63-83: 50 mm.
Earth	CLMD13-33S: earth connection on the enclosure fixation. CLMD43-53-63-83: a M8 terminal is included under the cover.
Execution	Indoor (outdoor on request).
Maximum ambient temperature	Class „D" (+55°C) according to IEC 60831.
Minimum ambient temperature	Indoor type: -25°C. Outdoor type: -40°C.
Altitude	Up to 1000 m
Protection	CLMD13-43-53-63-83: IP 42 (IP 54 on request). CLMD33S: IP40.
Cable input	By a knock out: CLMD13: 22.5 mm. CLMD43-53: 37 mm. CLMD63-83: 47 mm.
Voltage test	Between terminals: 2.15 Un for 10 seconds. Between terminals and earth: 3 kV for 10 seconds for UN < 500 V and 4 kV for 10 seconds for UN > 500 V.
Lightning impulse voltage test	CLMD13-43-53-63-83: 15kV. CLMD33S: 8kV.
The acceptable overloads are those specified in IEC 60831-1&2	Overvoltage tolerance: 10% max. at intervals. Overcurrent tolerance: 30% permanently. Maximum overload: stable operation at 135% of the nominal rating (generated by overvoltages and harmonics).

Important: the installation of capacitors on networks disturbed by harmonics may require special precautions, especially when there is a risk of resonance.

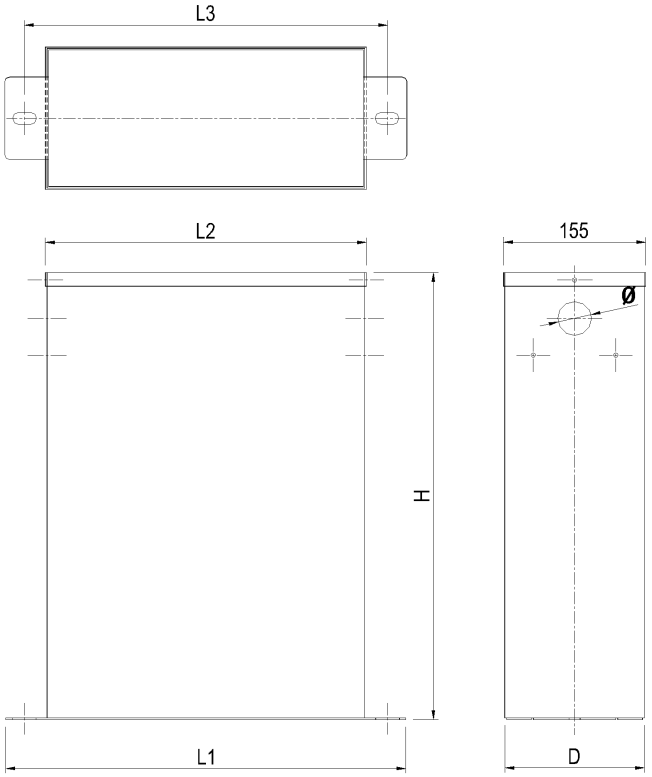
Dimensions

Type	H (mm)	L1 (mm)	L2 (mm)	L3 (mm)	D	Δ (mm)
CLMD 43	275	266	180	226	152	37
CLMD 53	310	436	350	396	152	37
CLMD 63	485	436	350	396	152	47
CLMD 83	670	436	350	396	152	47

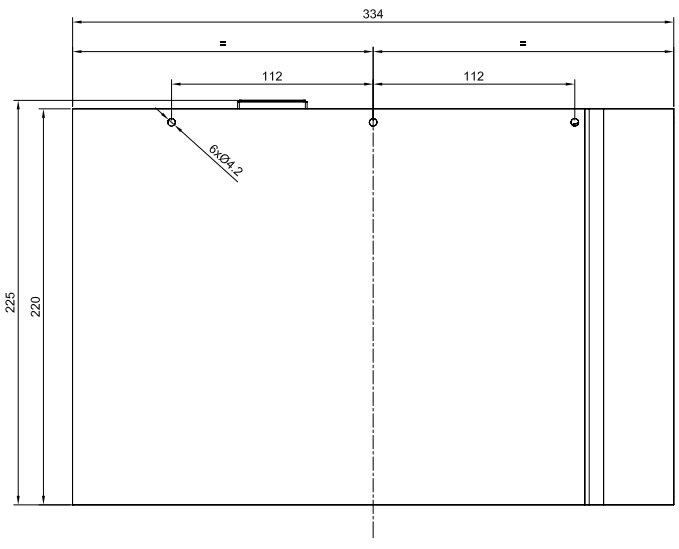
CLMD 13

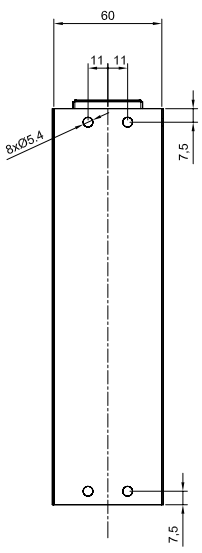


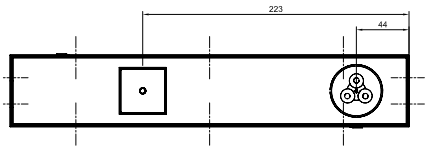
CLMD 43, 53, 63 & 83



CLMD 33S







Range - 50 Hz

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
230	CLMD33S	-	6.3	2GCA289064A0030
		-	10.0	2GCA289065A0030
		-	12.5	2GCA289066A0030
		-	16 (8+8)	2GCA289326A0030
250	CLMD13	-	3.3	2GCA281318A0030
	CLMD13	-	6.5	2GCA281319A0030
	CLMD13	-	9.5	2GCA281320A0030
	CLMD45 [3]	-	9.5	2GCA282449A0030
	CLMD43	-	13.0	2GCA281321A0030
	CLMD43	-	19.0	2GCA280953A0030
	CLMD53	-	28.0	2GCA280954A0030
	CLMD65 [3]	-	28.0	2GCA291550A0030
	CLMD53	-	38.0	2GCA280955A0030
	CLMD63	-	47.0	2GCA280956A0030
	CLMD63	-	57.0	2GCA280957A0030
	CLMD63	-	66.0	2GCA280958A0030
380	CLMD45 [3]	-	2.5	2GCA282091A0030
	CLMD45 [3]	-	5.0	2GCA282092A0030
	CLMD45 [3]	-	20.0	2GCA282193A0030
	CLMD45 [3]	-	30.0	2GCA282290A0030
400	CLMD33S	-	5.0	2GCA289067A0030
	CLMD33S	-	10.0	2GCA289068A0030
	CLMD33S	12.50	11.4	2GCA289068A0030
	CLMD33S	-	12.5	2GCA289069A0030
	CLMD33S	5.67	12.6	2GCA289078A0030
	CLMD33S	7.00	12.7	2GCA289078A0030
	CLMD33S	12.50	12.5	2GCA289080A0030
	CLMD33S	-	15.0	2GCA289070A0030
	CLMD33S	-	20.0	2GCA289071A0030
	CLMD33S	-	25.0	2GCA289072A0030
	CLMD33S	-	25 (12.5+12.5)	2GCA291390A0030
	CLMD33S	12.50	22.9	2GCA289071A0030
	CLMD33S	5.67	25.0	2GCA289079A0030
	CLMD33S	7.00	25.4	2GCA289079A0030
	CLMD33S	12.50	24.7	2GCA289081A0030
	CLMD33S	5.67	26.4	2GCA289344A0030
	CLMD33S	7.00	26.8	2GCA289344A0030
	CLMD33S	12.50	28.5 (14.2+14.2)	2GCA289345A0030
	CLMD33S	-	33.3	2GCA289331A0030
	CLMD33S	-	33.3 (16.6+16.6)	2GCA289332A0030
415 [4]	CLMD13		2.7	2GCA280554A0030
	CLMD45 [3]		2.7	2GCA281710A0030
	CLMD45 [3]		4.5	2GCA282537A0030
	CLMD45 [3]		5.5	2GCA281168A0030
	CLMD13		6.0	2GCA280555A0030
	CLMD45 [3]		6.0	2GCA282392A0030
	CLMD45 [3]		6.5	2GCA282538A0030
	CLMD13		7.2	2GCA281533A0030
	CLMD45 [3]		7.2	2GCA288144A0030

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
415 [4]	CLMD33S		10.0	2GCA289073A0030
	CLMD45 [3]		10.0	2GCA285650A0030
	CLMD13		11.0	2GCA280556A0030
	CLMD33S	-	12.5	2GCA289074A0030
	CLMD45 [3]	-	12.5	2GCA280754A0030
	CLMD33S	5.67	11.4	2GCA289068A0030
	CLMD33S	7.00	11.5	2GCA289068A0030
	CLMD13	-	13.5	2GCA280557A0030
	CLMD45 [3]	-	13.5	2GCA281971A0030
	CLMD33S	5.67	12.5	2GCA289080A0030
	CLMD33S	7.00	12.7	2GCA289080A0030
	CLMD33S	12.50	13.5	2GCA289082A0030
	CLMD33S	-	15.0	2GCA289075A0030
	CLMD13	-	16.0	2GCA280558A0030
	CLMD45 [3]	-	16.0	2GCA281360A0030
	CLMD13	-	18.0	2GCA280559A0030
	CLMD45 [3]	-	18.0	2GCA282391A0030
	CLMD33S	-	20.0	2GCA289076A0030
	CLMD33S	5.67	17.5	2GCA289071A0030
	CLMD33S	7.00	17.7	2GCA289071A0030
	CLMD43	-	22.0	2GCA280960A0030
	CLMD33S	-	25.0	2GCA289077A0030
	CLMD43	-	27.0	2GCA280774A0030
	CLMD45 [3]	-	27.0	2GCA281355A0030
	CLMD33S	5.67	24.7	2GCA289081A0030
	CLMD33S	7.00	25.0	2GCA289081A0030
	CLMD43	-	32.0	2GCA280961A0030
	CLMD33S	7.00	28.8 (14.4+14.4)	2GCA289345A0030
	CLMD33S	-	33 (16.5+16.5)	2GCA289334A0030
	CLMD53	-	37.5	2GCA280730A0030
	CLMD65 [3]	-	37.5	2GCA288054A0030
	CLMD53	-	43.0	2GCA280776A0030
	CLMD53	-	50.0	2GCA280777A0030
	CLMD65 [3]	-	50.0	2GCA287889A0030
	CLMD63	-	54.0	2GCA280729A0030
	CLMD65 [3]	-	54.0	2GCA281110A0030
	CLMD63	-	65.0	2GCA280982A0030
	CLMD65 [3]	-	65.0	2GCA281242A0030
	CLMD63	-	75.0	2GCA280780A0030
	CLMD65 [3]	-	75.0	2GCA281980A0030
	CLMD63	-	86.0	2GCA280781A0030
	CLMD65 [3]	-	86.0	2GCA281243A0030

[1] Detuning reactor (%): value of the reactor (if existing) connected in series with the capacitor. Reactors are not provided.

[2] Power (kvar): net reactive power output in combination with the associated reactor (if existing).

[3] Outdoor execution.

[4] All capacitors for 415V network can be used at 400V providing that their power will be reduced by a factor 0.93 (i.e. (400/415)²).

Please consult us for other ratings.

Range - 50 Hz

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
415	CLMD83	-	110.0	2GCA280731A0030
	CLMD85 [3]	-	110.0	2GCA281111A0030
	CLMD85 [3]	-	120.0	2GCA285652A0030
	CLMD83	-	130.0	2GCA281094A0030
	CLMD85 [3]	-	130.0	2GCA281496A0030
525 [4]	CLMD13	-	10.0	2GCA280842A0030
	CLMD33S	-	10.0	2GCA289084A0030
	CLMD45 [3]	-	10.0	2GCA281815A0030
	CLMD33S	-	12.5	2GCA289085A0030
	CLMD33S	5.67	12.5	2GCA289088A0030
	CLMD33S	7.00	12.5	2GCA289088A0030
	CLMD33S	-	15.0	2GCA289117A0030
	CLMD33S	12.50	16.5	2GCA289094A0030
	CLMD33S	12.50	12.5	2GCA289092A0030
	CLMD43	-	20.0	2GCA280852A0030
	CLMD33S	-	20.0	2GCA289086A0030
	CLMD45 [3]	-	20.0	2GCA281814A0030
	CLMD33S	-	25.0	2GCA289087A0030
	CLMD43	-	30.0	2GCA285296A0030
	CLMD45 [3]	-	30.0	2GCA285301A0030
	CLMD65 [3]	-	30.0	2GCA288084A0030
	CLMD33S	-	30 (15+15)	2GCA289341A0030
	CLMD53	-	40.0	2GCA280855A0030
	CLMD65 [3]	-	40.0	2GCA289367A0030
	CLMD53	-	50.0	2GCA285290A0030
	CLMD65 [3]	-	50.0	2GCA285219A0030
	CLMD63	-	60.0	2GCA280860A0030
	CLMD63	-	80.0	2GCA280864A0030
	CLMD65 [3]	-	80.0	2GCA283731A0030
	CLMD63	-	90.0	2GCA285299A0030
	CLMD65 [3]	-	90.0	2GCA285304A0030
	CLMD83	-	100.0	2GCA280865A0030
	CLMD85 [3]	-	100.0	2GCA282434A0030
	CLMD83	-	120.0	2GCA280866A0030
	CLMD85 [3]	-	120.0	2GCA285401A0030
550	CLMD13	-	10.0	2GCA280566A0030
	CLMD43	-	21.0	2GCA280876A0030
	CLMD53	-	32.0	2GCA280877A0030
	CLMD53	-	42.0	2GCA280878A0030
	CLMD63	-	53.0	2GCA280879A0030
	CLMD63	-	74.0	2GCA280880A0030
	CLMD63	-	84.0	2GCA280881A0030
	CLMD83	-	95.0	2GCA280882A0030
	CLMD83	-	105.0	2GCA280883A0030
600	CLMD13	-	12.5	2GCA280884A0030
	CLMD43	-	25.0	2GCA280886A0030
	CLMD53	-	37.5	2GCA280887A0030
	CLMD53	-	50.0	2GCA280888A0030
	CLMD63	-	62.0	2GCA280889A0030

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
600	CLMD63	-	75.0	2GCA280890A0030
	CLMD63	-	85.0	2GCA280891A0030
	CLMD83	-	100.0	2GCA280892A0030
	CLMD83	-	112.0	2GCA281220A0030
660	CLMD13	-	5.0	2GCA280567A0030
	CLMD13	-	10.0	2GCA280568A0030
	CLMD13	-	15.0	2GCA280569A0030
	CLMD43	-	21.0	2GCA280914A0030
	CLMD53	-	32.0	2GCA280915A0030
	CLMD53	-	42.0	2GCA280916A0030
	CLMD53	-	53.0	2GCA280917A0030
	CLMD83	-	74.0	2GCA280918A0030
	CLMD83	-	85.0	2GCA280919A0030
	CLMD85 [3]	-	85.0	2GCA281575A0030
	CLMD83	-	100.0	2GCA282712A0030
	CLMD83	-	105.0	2GCA280920A0030
	CLMD85 [3]	-	105.0	2GCA281576A0030
690	CLMD13	-	5.0	2GCA280570A0030
	CLMD13	-	10.0	2GCA280571A0030
	CLMD33S	-	10.0	2GCA289090A0030
	CLMD33S	-	12.5	2GCA289091A0030
	CLMD33S	5.67	12.5	2GCA289095A0030
	CLMD33S	7.00	12.5	2GCA289095A0030
	CLMD33S	12.50	12.5	2GCA289097A0030
	CLMD13	-	15.0	2GCA280572A0030
	CLMD33S	-	16.6	2GCA289312A0030
	CLMD33S	-	20.0	2GCA289093A0030
	CLMD33S	-	25.0	2GCA289094A0030
	CLMD33S	5.67	25.0	2GCA289096A0030
	CLMD33S	7.00	25.0	2GCA289096A0030
	CLMD33S	12.50	25.0	2GCA289098A0030
	CLMD33S	-	33 (16.5+16.5)	2GCA289342A0030
	CLMD53	-	35.0	2GCA282568A0030
	CLMD53	-	50.0	2GCA281603A0030
	CLMD63	-	75.0	2GCA283326A0030
	CLMD63	-	80.0	2GCA288925A0030
	CLMD83	-	100.0	2GCA282435A0030
	CLMD83	-	120.0	2GCA282159A0030

[1] Detuning reactor (%): value of the reactor (if existing) connected in series with the capacitor. Reactors are not provided.
[2] Power (kvar): net reactive power output in combination with the associated reactor (if existing).
[3] Outdoor execution.
[4] All capacitors for 525V network can be used at 500V providing that their power will be reduced by a factor 0.91 (i.e. $(500/525)^2$).

Please consult us for other ratings.

Range - 50 Hz - Single-phase

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
400	CLMD13	-	8.0	2GCA293430A0030
	CLMD13	-	11.1	2GCA287000A0030
415	CLMD13	-	2.7	2GCA292770A0030
	CLMD13	-	16.0	2GCA282710A0030
	CLMD43	-	22.0	2GCA292830A0030
	CLMD63	-	54.0	2GCA280706A0030
	CLMD63	-	65.0	2GCA288105A0030
660	CLMD63	-	58.0	2GCA280625A0030
	CLMD63		63.0	2GCA283120A0030

[1] Detuning reactor (%): value of the reactor (if existing) connected in series with the capacitor. Reactors are not provided.
[2] Power (kvar): net reactive power output in combination with the associated reactor (if existing).

Please consult us for other ratings.

Range - 60 Hz

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
208	CLMD45 [3]	-	9.8	2GCA283280A0030
220	CLMD33S	-	6.3	2GCA289103A0030
	CLMD33S	-	10.0	2GCA289105A0030
	CLMD33S	-	12.5	2GCA289106A0030
	CLMD65 [3]	-	50.0	2GCA282030A0030
240	CLMD33S	-	6.3	2GCA289099A0030
	CLMD33S	-	10.0	2GCA289100A0030
	CLMD33S	-	12.5	2GCA289102A0030
	CLMD33S	-	18 (9+9)	2GCA289327A0030
	CLMD33S	-	21 (10.5+10.5)	2GCA289326A0030
	CLMD33S	6.00	6.3	2GCA289102A0030
	CLMD33S	6.00	12.5	2GCA289105A0030
	CLMD33S	6.00	16.7	2GCA289107A0030
	CLMD33S	7.00	6.3	2GCA289102A0030
	CLMD33S	7.00	12.5	2GCA289105A0030
	CLMD33S	7.00	16.7	2GCA289107A0030
	CLMD33S	12.50	6.3	2GCA289108A0030
	CLMD33S	12.50	12.5	2GCA289109A0030
260 [4]	CLMD13	-	3.5	2GCA281322A0030
	CLMD13	-	5.0	2GCA281323A0030
	CLMD13	-	7.0	2GCA281324A0030
	CLMD13	-	12.0	2GCA281325A0030
	CLMD43	-	17.0	2GCA280964A0030
	CLMD53	-	25.0	2GCA280965A0030
	CLMD53	-	29.0	2GCA281327A0030
	CLMD53	-	36.0	2GCA280966A0030
	CLMD63	-	50.0	2GCA280967A0030
	CLMD63	-	60.0	2GCA280968A0030
	CLMD63	-	74.0	2GCA280969A0030
380	CLMD45 [3]	-	5.0	2GCA281466A0030
	CLMD45 [3]	-	10.0	2GCA281468A0030
	CLMD33S	-	10.0	2GCA289073A0030
	CLMD33S	-	12.5	2GCA289074A0030
	CLMD33S	7.00	12.5	2GCA289110A0030
	CLMD33S	6.00	12.5	2GCA289110A0030
	CLMD33S	12.50	12.5	2GCA289082A0030
	CLMD33S	-	15.0	2GCA289075A0030
	CLMD45 [3]	-	15.0	2GCA281571A0030
	CLMD33S	-	20.0	2GCA289076A0030
	CLMD43	-	25.0	2GCA280972A0030
	CLMD45 [3]	-	25.0	2GCA281464A0030
	CLMD33S	-	25.0	2GCA289077A0030
	CLMD33S	7.00	25.0	2GCA289111A0030
	CLMD33S	6.00	25.0	2GCA289111A0030
	CLMD33S	-	30 (15+15)	2GCA289329A0030
	CLMD63	-	50.0	2GCA288794A0030
	CLMD85 [3]	-	70.0	2GCA283418A0030
	CLMD83		100.0	2GCA280978A0030
415 [5]	CLMD13	-	4.5	2GCA281328A0030
	CLMD13	-	6.5	2GCA281329A0030

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
415 [5]	CLMD13		8.6	2GCA281330A0030
	CLMD45 [3]		11.0	2GCA281472A0030
	CLMD13	-	13.0	2GCA281331A0030
	CLMD13	-	16.0	2GCA281332A0030
	CLMD13	-	18.0	2GCA281333A0030
	CLMD45 [3]		22.0	2GCA281473A0030
	CLMD33S	-	25.0	2GCA289689A0030
	CLMD43	-	26.0	2GCA281334A0030
	CLMD33		26.9	2GCA281669A0030
	CLMD53	-	32.0	2GCA281335A0030
	CLMD45 [3]		32.0	2GCA281167A0030
	CLMD33		32.5	2GCA282249A0030
	CLMD53	-	37.5	2GCA281341A0030
	CLMD63	-	43.0	2GCA281342A0030
	CLMD65 [3]		43.0	2GCA286610A0030
	CLMD63	-	48.0	2GCA281343A0030
	CLMD63	-	54.0	2GCA281344A0030
	CLMD65 [3]	-	54.0	2GCA292320A0030
	CLMD63	-	65.0	2GCA281345A0030
	CLMD83	-	75.0	2GCA281346A0030
	CLMD83	-	90.0	2GCA281347A0030
	CLMD83	-	105.0	2GCA281348A0030
440	CLMD33S	-	8.4	2GCA289115A0030
	CLMD33S	-	10.5	2GCA289116A0030
	CLMD33S	-	12.5	2GCA289117A0030
	CLMD33S	-	16.7	2GCA289118A0030
	CLMD33S	-	25.0	2GCA289114A0030
	CLMD33	-	25.0	2GCA281151A0030
	CLMD33S	-	29 (14.5+14.5)	2GCA289335A0030
460 [6]	CLMD13	-	9.0	2GCA281123A0030
	CLMD13	-	14.0	2GCA281119A0030
	CLMD43	-	18.0	2GCA280815A0030
	CLMD43	-	27.5	2GCA280817A0030
	CLMD53	-	32.0	2GCA280818A0030
	CLMD53	-	40.0	2GCA280819A0030
	CLMD63	-	55.0	2GCA280820A0030
	CLMD83	-	70.0	2GCA280822A0030
	CLMD83	-	80.0	2GCA280823A0030
	CLMD83	-	95.0	2GCA280824A0030
	CLMD83	-	110.0	2GCA280825A0030

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
480 [7]	CLMD45 [3]	-	5.0	2GCA281462A0030
	CLMD13	-	10.0	2GCA281118A0030
	CLMD33S	-	10.0	2GCA289115A0030
	CLMD45 [3]	-	10.0	2GCA281461A0030
	CLMD33S	-	12.5	2GCA289116A0030
	CLMD33S	7.00	12.5	2GCA289088A0030
	CLMD33S	5.67	12.5	2GCA289088A0030
	CLMD33S	12.50	12.5	2GCA289120A0030
	CLMD13	-	15.0	2GCA281120A0030
	CLMD33S	-	15.0	2GCA289117A0030
	CLMD43	-	20.0	2GCA280826A0030
	CLMD33S	-	20.0	2GCA289118A0030
	CLMD45 [3]	-	20.0	2GCA281539A0030
	CLMD43	-	25.0	2GCA280827A0030
	CLMD45 [3]	-	25.0	2GCA281540A0030
	CLMD53	-	30.0	2GCA280828A0030
	CLMD33S	-	30 (15+15)	2GCA289341A0030
	CLMD53	-	35.0	2GCA280829A0030
	CLMD63	-	40.0	2GCA280830A0030
	CLMD63	-	45.0	2GCA280831A0030
	CLMD63	-	50.0	2GCA281541A0030
	CLMD65 [3]	-	50.0	2GCA288965A0030
	CLMD63	-	60.0	2GCA280833A0030
	CLMD83	-	70.0	2GCA280834A0030
	CLMD83	-	75.0	2GCA280835A0030
	CLMD83	-	80.0	2GCA280836A0030
	CLMD83	-	90.0	2GCA280837A0030
	CLMD83	-	100.0	2GCA280963A0030
	CLMD83	-	120.0	2GCA286053A0030
525 [8]	CLMD13	-	12.0	2GCA280867A0030
	CLMD13	-	15.0	2GCA285284A0030
	CLMD43	-	24.0	2GCA280868A0030
	CLMD33S	-	30.0	2GCA289087A0030
	CLMD53	-	36.0	2GCA280869A0030
	CLMD53	-	48.0	2GCA280870A0030
	CLMD63	-	60.0	2GCA280871A0030
	CLMD63	-	72.0	2GCA280872A0030
	CLMD63	-	84.0	2GCA285298A0030
	CLMD83	-	96.0	2GCA280873A0030
	CLMD83	-	120.0	2GCA285400A0030
600	CLMD13	-	10.0	2GCA280898A0030
	CLMD33S	-	10.0	2GCA289122A0030
	CLMD33S	-	12.5	2GCA289123A0030
	CLMD33S	6.00	12.5	2GCA289126A0030
	CLMD33S	7.00	12.5	2GCA289126A0030
	CLMD33S	12.50	12.5	2GCA289128A0030
	CLMD33S	-	20.0	2GCA289124A0030
	CLMD33S	-	25.0	2GCA289125A0030

Network voltage	Type	Detuning reactor (%) [1]	Power [kvar] [2]	Article number for ordering
600	CLMD33S	6.00	25.0	2GCA289127A0030
	CLMD33S	7.00	25.0	2GCA289127A0030
	CLMD33S	12.50	25.0	2GCA289295A0030
	CLMD13	-	15.0	2GCA280899A0030
	CLMD43	-	20.0	2GCA280900A0030
	CLMD43	-	25.0	2GCA280901A0030
	CLMD45 [3]	-	5.4	2GCA280713A0030
	CLMD53	-	30.0	2GCA280902A0030
	CLMD33S	-	30.0	2GCA289342A0030
	CLMD33S	-	33.0	2GCA289311A0030
	CLMD53	-	35.0	2GCA280903A0030
	CLMD53	-	40.0	2GCA280904A0030
	CLMD53	-	50.0	2GCA280906A0030
	CLMD63	-	60.0	2GCA280907A0030
	CLMD83	-	70.0	2GCA280908A0030
	CLMD83	-	80.0	2GCA280910A0030
	CLMD85 [3]	-	80.0	2GCA281880A0030
	CLMD83	-	90.0	2GCA280911A0030
	CLMD83	-	100.0	2GCA280912A0030
660	CLMD13	-	12.5	2GCA280921A0030
	CLMD43	-	25.0	2GCA280922A0030
	CLMD53	-	38.0	2GCA280923A0030
	CLMD63	-	50.0	2GCA280924A0030
	CLMD63	-	63.0	2GCA280925A0030
	CLMD83	-	75.0	2GCA280926A0030
	CLMD83	-	88.0	2GCA280927A0030
	CLMD83	-	100.0	2GCA280928A0030

[1] Detuning reactor (%): value of the reactor (if existing) connected in series with the capacitor. Reactors are not provided.
[2] Power (kvar): net reactive power output in combination with the associated reactor (if existing).
[3] Outdoor execution.
[4] All capacitors for 260V network can be used at 240V providing that their power will be reduced by a factor 0.85 (i.e. $(260/240)^2$).
[5] All capacitors for 415V network can be used at 400V providing that their power will be reduced by a factor 0.93 (i.e. $(400/415)^2$).
[6] All capacitors for 460V network can be used at 440V providing that their power will be reduced by a factor 0.91 (i.e. $(440/460)^2$).
[7] All capacitors for 480V network can be used at 440V providing that their power will be reduced by a factor 0.84 (i.e. $(440/480)^2$).
[8] All capacitors for 525V network can be used at 500V providing that their power will be reduced by a factor 0.91 (i.e. $(500/525)^2$).

Please consult us for other ratings.

Contact us

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Power and productivity
for a better world™

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Power and productivity
for a better world™

LV Capacitor CLMD03 Power Module
Power Factor Correction easier than ever

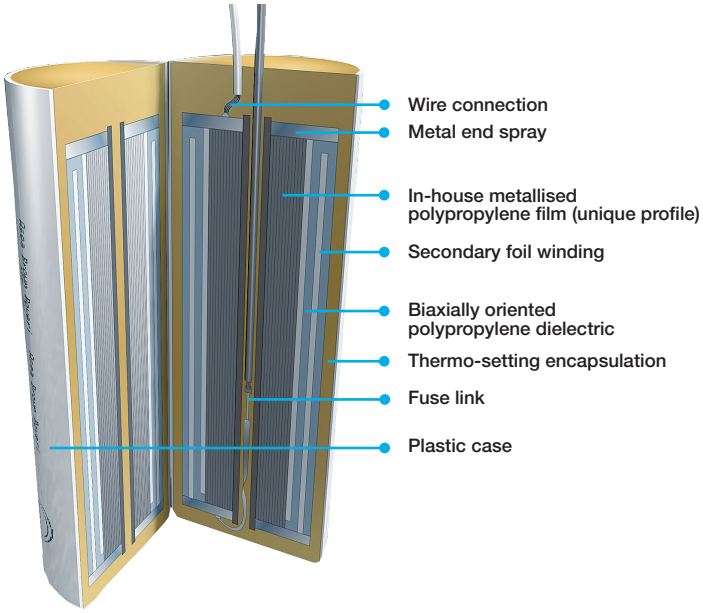
The CLMD03 Power Module concept has been especially developed to make your capacitor bank manufacturing easier than ever and to minimize your costs.

The CLMD03 Power Module is an all-in-one compact and pre-wired power module, including capacitor, contactor, fuses and discharge resistors.

Additionaly, ABB provides sound guidance for cabinet layout and can supply other related key components, such as: reactors, power factor controllers – RVC or RVT. Due to ABB technical support, you have the guarantee of excellent performances for your power factor correction system.

Safe, reliable and long life time

The CLMD03 Power Module utilizes ABB Internally Protected Elements (IPE) embedded into a robust metal enclosure, which is the safest and most reliable capacitor technology, result of more than 40 years of experience. It ensures smooth and long life time to your CLMD03 Power Module.



Capacitor element (IPE)

Environmentally-friendly

ABB CLMD03 Power Module is compliant to highest environmental standards. Especially, capacitors are dry type technology (PCB free), which prevents risk of toxic oil leakage. The aluminum case is recyclable.

ABB performances and quality

High performances and quality come from top class components (i.e. CLMD capacitor and UA contactor) and robust metallical enclosure in an original and thermally optimised layout.

Power and productivity
for a better world™

CLMD03 Power Module Range

U network [V]	Detuning reactor [%]	Net output power Q_N [kvar](1)	Rated power Q_C [kvar](2)	CLMD03 Power Module ordering code	Detuned reactor ordering code
50 Hz network					
400 V	0%	25.0	NA	2GCA292647A0045	NA
	0%	50.2	NA	2GCA292652A0045	NA
	5.67%	25.0	30.3	2GCA292648A0045	2GCA105833A0450
	5.67%	49.7	54.2	2GCA292653A0045	2GCA105834A0450
	7%	25.0	30.3	2GCA292649A0045	2GCA105773A0450
	7%	50.4	54.2	2GCA292654A0045	2GCA105772A0450
	12.5%	25.0	30.4	2GCA292650A0045	2GCA105839A0450
	12.5%	49.6	56.7	2GCA292655A0045	2GCA105768A0450
400 V reinforced	0%	22.0	NA	2GCA292656A0045	NA
(at 457 V)	0%	43.4	NA	2GCA292651A0045	NA
415 V	0%	25.0	NA	2GCA292657A0045	NA
	0%	50.5	NA	2GCA292664A0045	NA
	5.67%	25.0	28.2	2GCA292658A0045	2GCA105842A0450
	5.67%	49.6	56.7	2GCA292662A0045	2GCA105843A0450
	7%	25.0	28.2	2GCA292659A0045	2GCA105845A0450
	7%	50.3	56.7	2GCA292663A0045	2GCA105846A0450
	12.5%	24.6	28.1	2GCA292661A0045	2GCA105848A0450
60 Hz network					
380 V	0%	25.0	NA	2GCA292665A0045	NA
	0%	50.0	NA	2GCA292668A0045	NA
	6%	25.0	36.4	2GCA292666A0045	2GCA105878A0450
	6%	50.0	56.7	2GCA292667A0045	2GCA105879A0450
480	0%	25.0	NA	2GCA292669A0045	NA
	0%	50.4	NA	2GCA292672A0045	NA
	6%	24.0	26.1	2GCA292670A0045	2GCA105887A0450

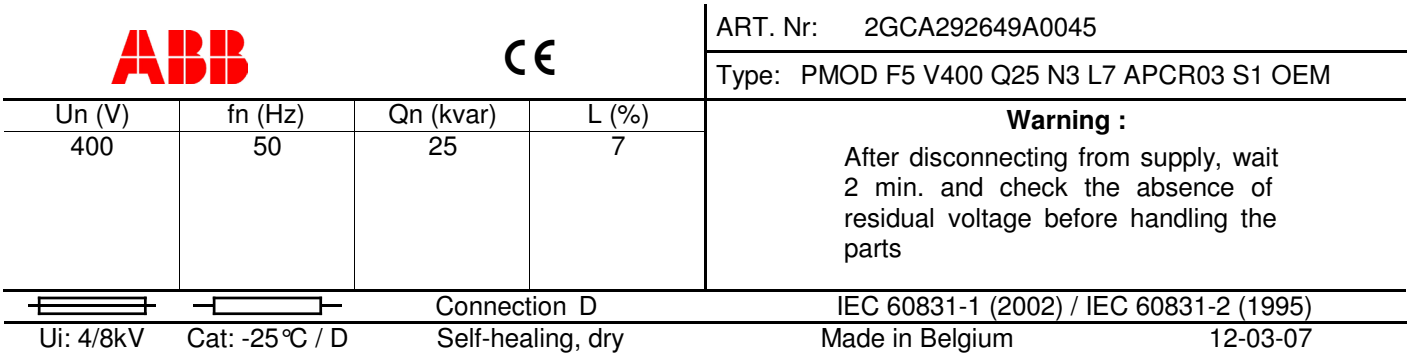
(1) The net output power Q_N is the reactive power provided by the combination of the CLMD03 power module and its detuning reactor (if existing) at $U_{Nominal}$.
(2) The rated power Q_C is the power at CLMD03 Power Module terminals at $U_{Nominal}$.

For other ratings, please consult us.

ABB Power factor controllers (recommended with CLMD03 Power Module)

RVT6 controller	2GCA291720A0050	RVC3 controller	2GCA288098A0050	RVC10 controller	2GCA288095A0050
RVT12 controller	2GCA291721A0050	RVC6 controller	2GCA288097A0050	RVC12 controller	2GCA288094A0050
RVT12-3P	2GCA291722A0050	RVC8 controller	2GCA288096A0050		

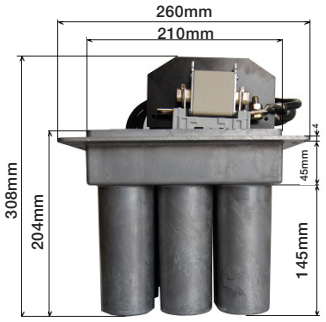
Example of CLMD03 Power Module label

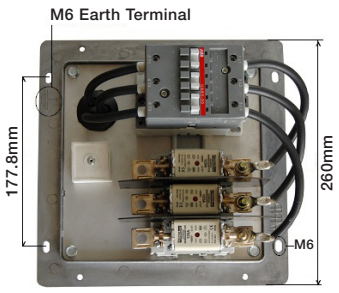


Technical specification

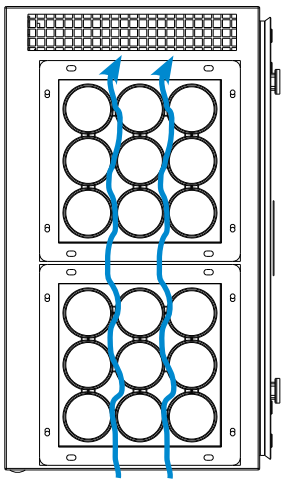
Voltage range	400V and 415V at 50Hz 380V and 480V at 60Hz For other values, please consult us
Connection	Three-phase
Net output power Q_N	25 or 50 kvar
Discharge resistors	Included Discharge: less than 50V in 1 minute
Terminals	Fuse: M8 threaded terminals Contactor: UA50 and UA75
Earth	Earth connection on the enclosure flange M6
Case material	Aluminum
Color	Raw aluminum
Fixing	Four slots for M6 screws (12x7mm) on the upper flange
Execution	Indoor
Protection degree (according to IEC 60529)	IP00
Weight	Approx. 9 kg
Maximum ambient temperature	Class D according to IEC60831: Maximum average over 1 year: 35°C Maximum average over 24h: 45°C Maximum: 55°C
Minimum ambient temperature	-25°C
Fuse	ABB gG or gL 50, 63, 100 and 125 A
Contactor	ABB UA50 for 25kvar ABB UA75 for 50 kvar Control voltage: 230V at 50Hz 120V at 60Hz
Minimum distance between units and wall	25 mm minimum to walls Flange to flange between power modules
Capacitor losses	Less than 0.5 Watt/kvar (discharge resistor losses included)
Contactor and fuses losses	With UA50 contactor: 0.53 W/kvar With UA75 contactor: 0.82 W/kvar
Tolerance on capacitance	0% +10 %
Capacitor voltage test	Between terminals: 2.15xUn for 10 seconds Between terminals and earth: 3kV for 10 sec: Un ≤ 450V 4kV for 10 sec: Un > 450V Lighting impulse voltage: 8kV: Un ≤ 690V
Overload capability (according to IEC 60831)	Overvoltage tolerance: 10% for maximum 8h in every 24h and 30% for maximum 1min Maximum permissible current: 1.3x In for continuous operation
Altitude	Up to 1000m
Compliance	IEC 60831 part 1 & 2 CE marked

Dimensions	See below

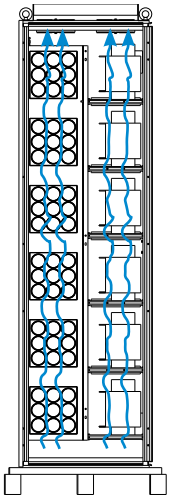




Cooling	- If the capacitors are placed externally: natural cooling for capacitors and forced air cooling for internal parts - If the capacitors are placed internally: forced air cooling



External capacitors assembly: left view



Internal capacitors assembly: back view

QCap
Low-voltage capacitors for improved power quality

Power and productivity
for a better world™

Background

Power Quality is a major concern for all size of business- industrial or commercial. It impacts energy usage costs, pollution levels and CO2 emissions, equipment failure, malfunctioning and lifetime reduction as well as maintenance costs.
ABB‘s new low-voltage capacitor- QCap, helps improve the power quality of low voltage installations by addressing poor power factor issues.

QCap is a cylindrical type capacitor. It is based on ABB‘s latest technologies and developments and is a result of more than a century‘s knowledge on electrical engineering and over 70 years of expertise on capacitor technologies.

QCap answers the following customer needs:

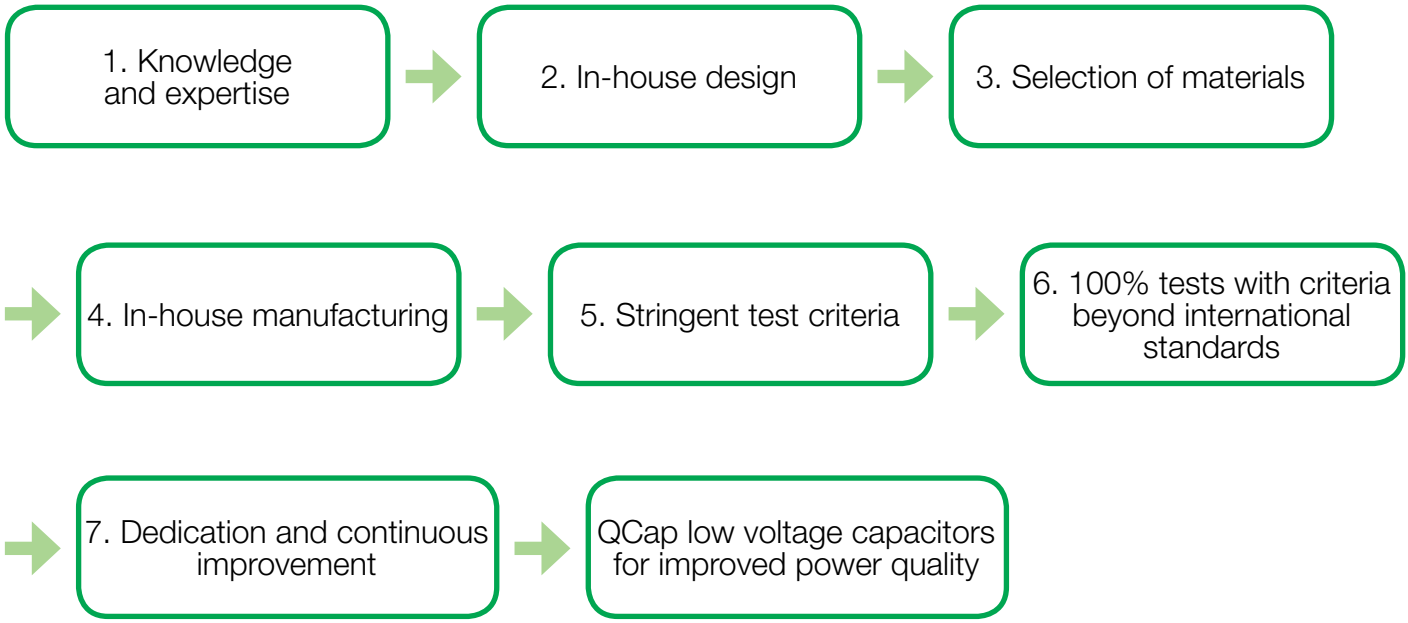
- Reliability: Capacitors can be of poor quality if made with non-capacitor grade-film. ABB‘s strict selection criteria of raw materials and it‘s first class capacitor film ensure QCap‘s high reliability.
- Quality: The unique low losses design of the QCap decreases the temperature of the capacitor and increases it‘s lifetime. The optimized thermal dissipation prevents premature failure which is not uncommon with many low quality capacitors.
- Safety: At the end of its lifetime the capacitor must disconnect itself safely. The specially designed overpressure disconnection device by ABB guarantees a safe disconnection.
- Consistency: A consistent quality over time is most often a challenge for manufacturers. ABB tests 100% of its products with criteria surpassing even international standards.

Requirements for a good capacitor

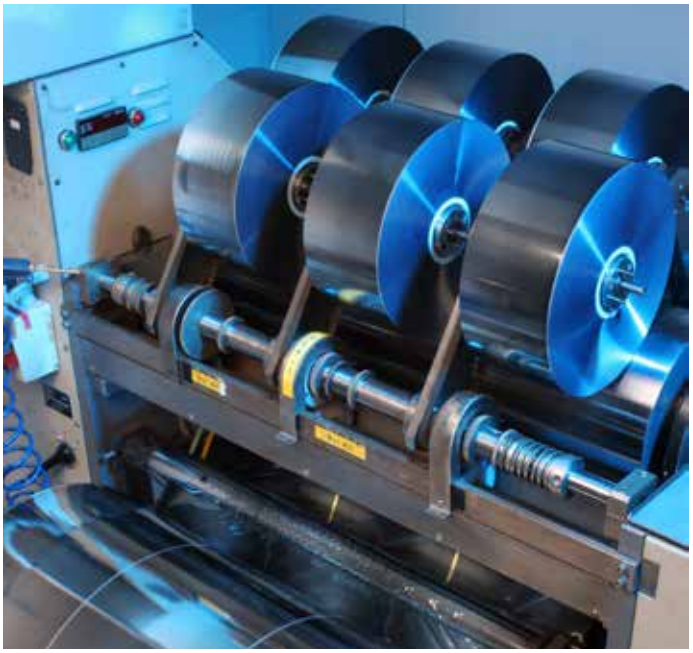
As the pioneers in manufacturing the first metalized power factor correction (PFC) capacitor, ABB believes in seven requirements in producing a quality capacitor.

QCap‘s top class performances are not only guaranteed by ABB‘s technological innovations but also ensured by mastering the manufacturing process:

- Best performances of the capacitors thanks to ABB top class polypropylene film
- Stringent and unique tests procedures
- Products 100% tested with criteria surpassing international standards
- Quality controls from raw material inspection to finished products packing.
- Continuous improvement of the manufacturing process.



Design and process innovation



Top class raw material

ABB supplier's manufacture top class polypropylene film according to ABB specifications which guarantees the best performance.

Polypropylene (PP) film is the primary raw material that goes into making of dry capacitors. The quality one of the film is a determining factor for a dry capacitor's reliability and lifetime. There are thousands of different PP grades in the market. Even the capacitor grade films vary in properties like impurities, consistent thickness and thermal behavior. ABB has more than four decades of research and development experience in PP film. The ABB PPMZ (Zinc metalized PP film) guarantees top capacitor quality and long lifespan.

ABB low losses design means higher reliability and longer lifetime.

The following features have been included in the capacitor design in order to reduce the losses to a minimal level:

- Top class capacitor grade film
- Optimized ABB metallization profile to minimize the electrodes losses generation
- Optimized metal spray
- Low loss elements interconnection
- Optimized film width to minimize the current resistance

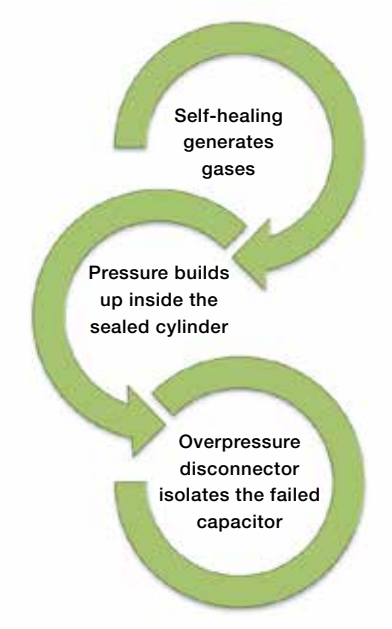
Stringent and unique test procedures

Before shipment, 100% units and its elements are tested. The test criteria are more stringent than as required by international standards.

Complete manufacturing process control

From incoming raw material inspection and quality control to packaging before shipment, every step of producing every single QCap is completely under ABB control.

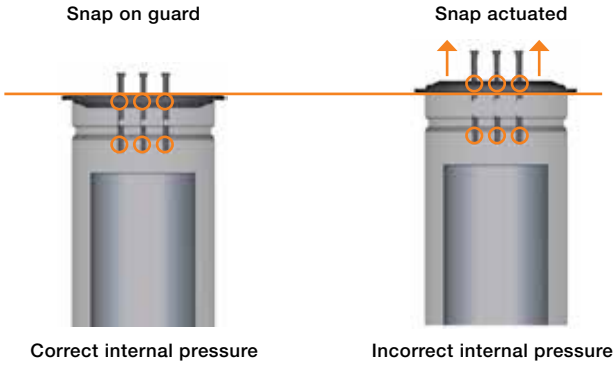
With decades of dedication and continuous improvement on each manufacturing process, ABB guarantees it's customers the best quality capacitor in the market.



Overpressure disconnection

Under faulty conditions, the safety mechanism guarantees a prompt and reliable breaking of all three wires . This mechanism consists of three parts:

- Airtight: the state-of-the-art beaming and seaming technology and equipment ensure a prefectly hermetic cylinder.
- Lock: the ABB unique design on a locking device to contain the three elements tight under both normal and faulty conditions.
- Snap: with the airtight and the lock as prerequisites, the snap breaks three wires promptly and completetly.



Range

50 Hz

Network voltage	Rated power [kvar]	Article number for ordering
400V	12.5	2GCA294450A0031
	15.0	2GCA294451A0031
	20.0	2GCA294452A0031
	25.0	2GCA294453A0031
415V	12.5	2GCA294454A0031
	15.0	2GCA294455A0031
	21.6	2GCA294452A0031
	25.0	2GCA294456A0031
440V	12.5	2GCA294457A0031
	14.2	2GCA294463A0031
	15.0	2GCA294458A0031
	20.0	2GCA294459A0031
	25.0	2GCA294460A0031
	28.2	2GCA294461A0031
	30.0	2GCA294722A0031
480V	12.5	2GCA294462A0031
	15.4	2GCA294457A0031
	16.7	2GCA294463A0031
	20.9	2GCA294473A0031
	25.0	2GCA294464A0031
	30.0	2GCA294723A0031
	31.5	2GCA294831A0031
525V	12.5	2GCA294465A0031
	15.0	2GCA294466A0031
	20.0	2GCA294467A0031
	25.0	2GCA294468A0031

Other ratings available on request.

60 Hz

Network voltage	Rated power [kvar]	Article number for ordering
220V	10.0	2GCA294950A0031
	15.0	2GCA294951A0031
380V	12.5	2GCA294454A0031
	15.0	2GCA294455A0031
	21.7	2GCA294452A0031
	25.0	2GCA294456A0031
400V	12.5	2GCA294469A0031
	15.0	2GCA294450A0031
	20.0	2GCA294470A0031
	24.1	2GCA294453A0031
440V	12.5	2GCA294462A0031
	15.0	2GCA294457A0031
	20.0	2GCA294471A0031
	25.0	2GCA294464A0031
	30.0	2GCA294460A0031
480V	12.5	2GCA294472A0031
	15.0	2GCA294462A0031
	18.0	2GCA294457A0031
	20.0	2GCA294463A0031
	25.0	2GCA294473A0031
	30.0	2GCA294464A0031
516V	26.9	2GCA295061A0031
525V	12.0	2GCA294474A0031
	15.0	2GCA294465A0031
	18.0	2GCA294466A0031
	20.0	2GCA294475A0031
	24.0	2GCA294467A0031
	30.0	2GCA294468A0031
600V	12.0	2GCA294477A0031
	15.0	2GCA294478A0031
	18.0	2GCA294479A0031
	20.0	2GCA294480A0031
	25.0	2GCA294481A0031
	30.0	2GCA294482A0031

Technical specifications

Voltage range	From 220 to 600 V.
Frequency	50 and 60 Hz.
Connection	Three-phase.
Net output power	From 12.5 to 30 kvar.
Tolerance on capacitance	0% / +10%.
Losses	< 0.2 Watt/kvar (dielectric only). < 0.35 Watt/kvar (typical without discharge resistor). < 0.5 Watt/kvar (including discharge resistor).
Discharge resistor	Discharge from Un to 50V in 1 minute.
Maximum permissible current	1.3 x In for continuous operation.
Tolerance on voltage	30% for maximum 1 minute (according to IEC 60831).
Case material	Recyclable aluminum.
Color	Raw aluminum.
Fixing	1 stud (M12).
Dimensions (DxH)	90x417 mm.
Weight	Approximately 3kg.
Terminals	Cage screws.
Minimum distance above unit	20 mm.
Minimum distance between capacitors	30 mm.
Earth	Earth connection on the enclosure fixation.
Execution	Indoor use only.
Temperature range	-25°C / +55°C (class D according to IEC 60831).
Altitude	Up to 2000m without derating.
Protection degree	IP20.
Standards	CE and CSA (with US indicator complying with UL810).

Dimensions

Total H	Can H	D	D fixation screw	H fixation screw
401 mm	368 mm	90 mm	M12	16 mm

Side view

Front view

Top view

Contact us

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