LV Capacitor CLMD
Reliability for Power Factor Correction

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Reliability for power factor correction

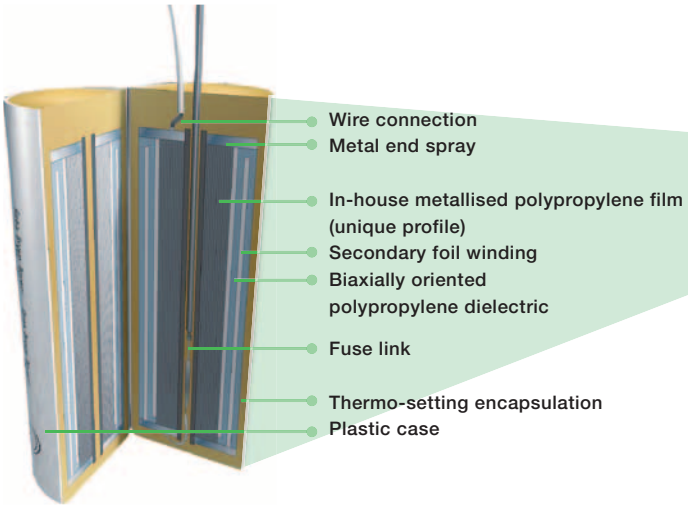
CLMD construction

- 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.

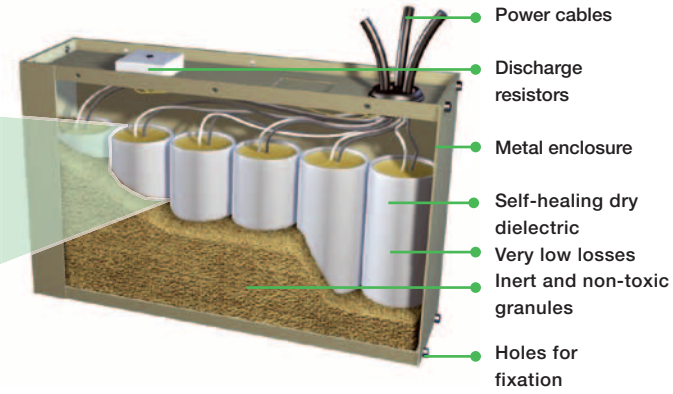
High performance in-house metallized film

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.

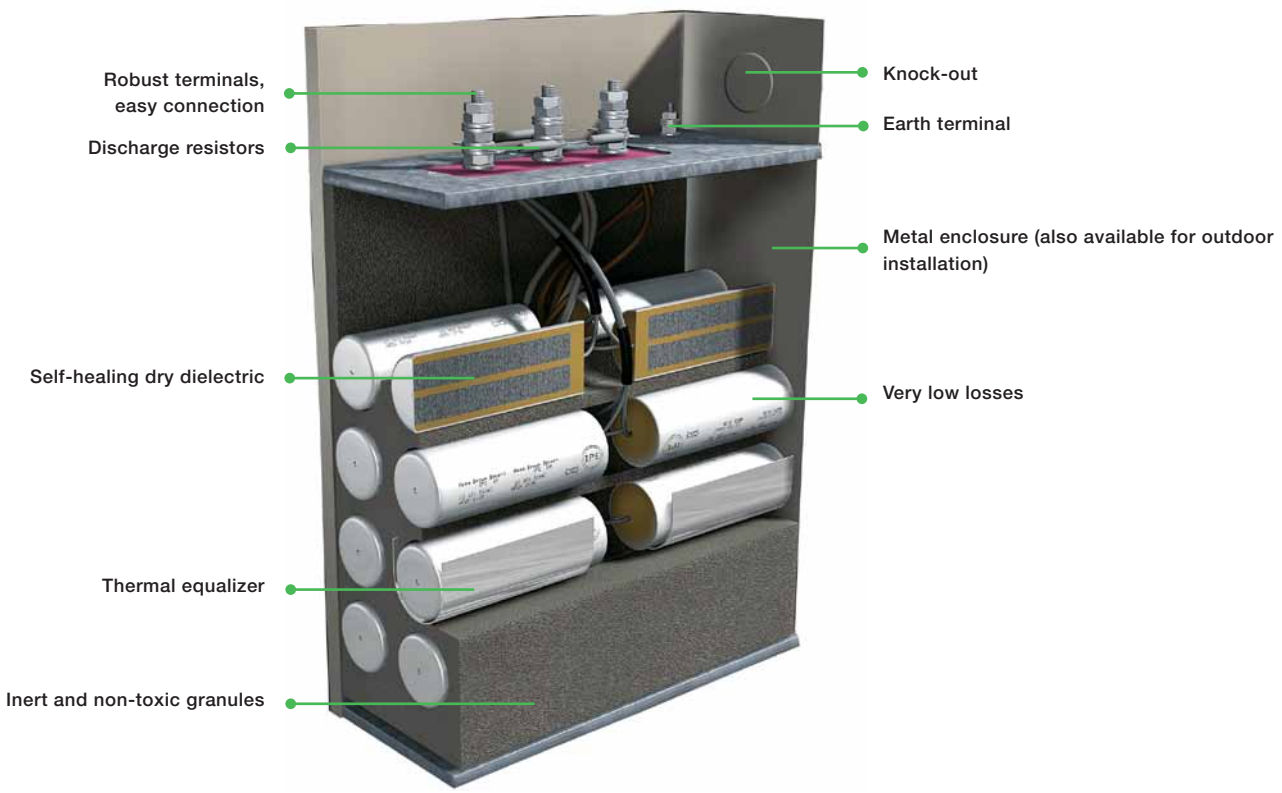
Easy to install - Light weight
The CLMD capacitor is very lightweight and therefore presents no handling difficulties during installation.

High reliability
The CLMD capacitor complies with the requirements of IEC 831-1 & 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.

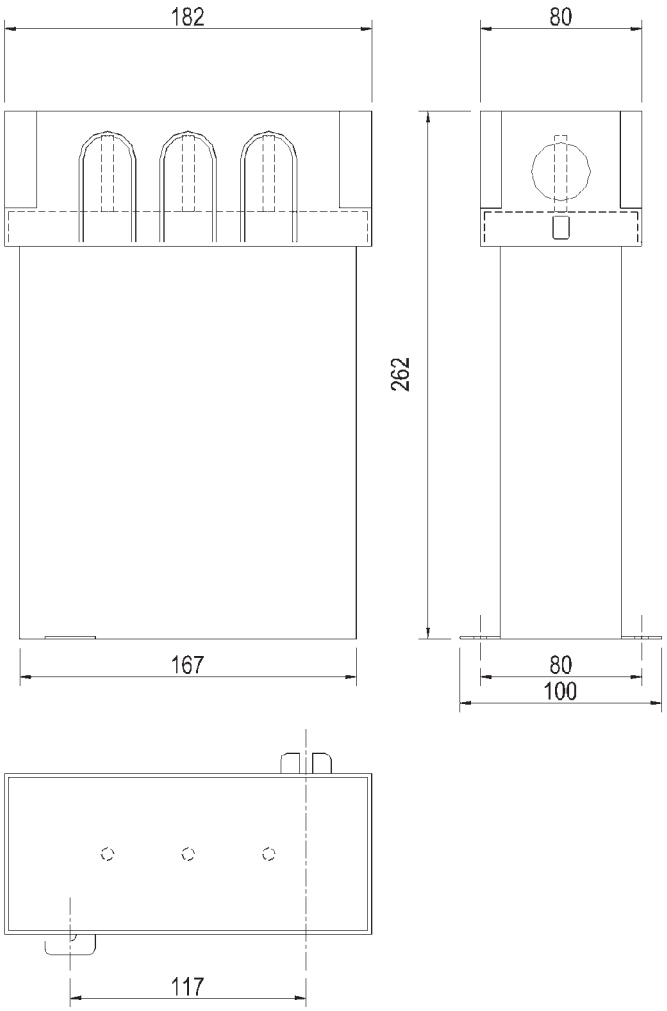
Technical specifications

Voltage range	From 220 to 1000 V.
Frequency	50 and 60 Hz.
Connection	Three-phase as standard construction (single-phase on request).
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.
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.
Earth	CLMD13-33S: earth connection on the enclosure fixation. CLMD43-53-63-83: a M8 terminal is included under the cover.
Cable input	By a knock out: CLMD13: 22.5 mm. CLMD33S: 500 mm CLMD43-53: 37 mm. CLMD63-83: 47 mm.
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.
Execution	Indoor (outdoor on request).
Protection	CLMD13-43-53-63-83: IP 42 (IP 54 on request). CLMD33S: IP40.
Maximum ambient temperature	Class „D“ (+55°C) according to IEC 60831.
Minimum ambient temperature	Indoor type: -25°C. Outdoor type: -40°C.
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.
Losses (discharge resistors included)	< 0.5 Watt/kvar for 380 V rated voltage and above.
Tolerance on capacitance	0 % + 10 %.
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 831-1&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).

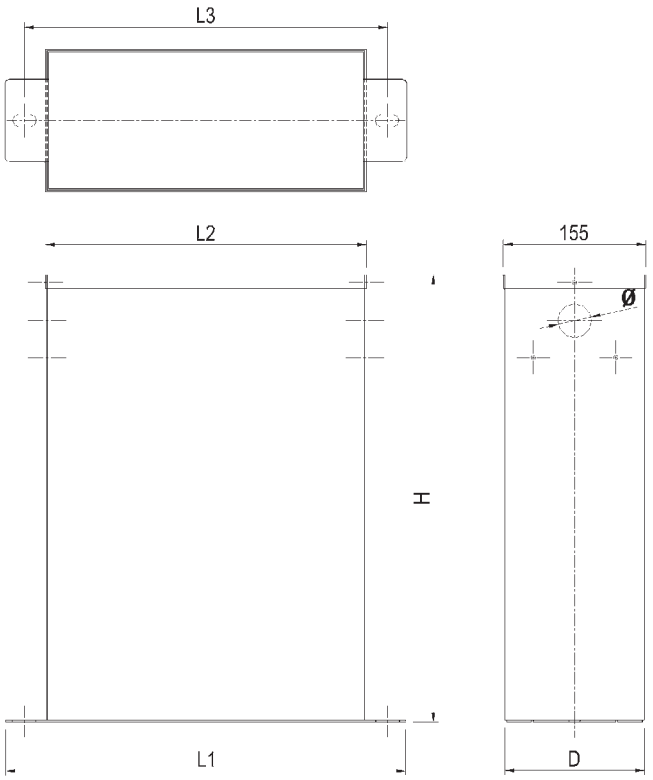
Important: the installation of capacitors on networks disturbed by harmonics may require special precautions, especially when there is a risk of resonance.

Dimensions

CLMD 13

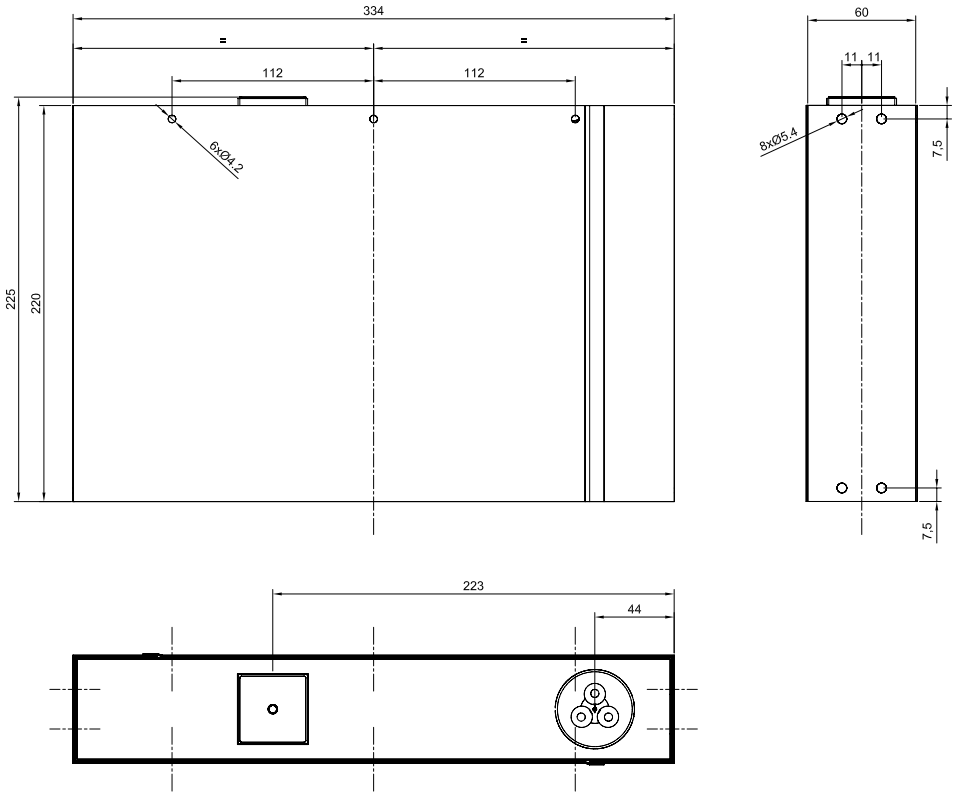


CLMD 43, 53, 63 & 83



Type	H (mm)	L1 (mm)	L2 (mm)	L3 (mm)	D	Δ (mm)
CLMD43	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 33S



Range - 50 Hz

CLMD13, 43, 53, 63 & 83

Network voltage	Type	Power [kvar]	Power [kvar]	Article number for ordering
		250V	230V	
250V/230V	CLMD13	3.3	2.8	2GCA281318A0030
	CLMD13	6.5	5.5	2GCA281319A0030
	CLMD13	9.5	8.0	2GCA281320A0030
	CLMD43	13.0	11.0	2GCA281321A0030
	CLMD43	19.0	16.0	2GCA280953A0030
	CLMD53	28.0	24.0	2GCA280954A0030
	CLMD53	38.0	32.0	2GCA280955A0030
	CLMD63	47.0	40.0	2GCA280956A0030
	CLMD63	57.0	48.0	2GCA280957A0030
	CLMD63	66.0	56.0	2GCA280958A0030
		415V	400V	
415V/400V	CLMD13	2.7	2.5	2GCA280554A0030
	CLMD13	6.0	5.5	2GCA280555A0030
	CLMD13	7.2	6.7	2GCA281533A0030
	CLMD13	11.0	10.0	2GCA280556A0030
	CLMD13	13.5	12.5	2GCA280557A0030
	CLMD13	16.0	15.0	2GCA280558A0030
	CLMD13	18.0	16.6	2GCA280559A0030
	CLMD43	22.0	20.0	2GCA280960A0030
	CLMD43	27.0	25.0	2GCA280774A0030
	CLMD43	32.0	30.0	2GCA280961A0030
	CLMD53	37.5	35.0	2GCA280730A0030
	CLMD53	43.0	40.0	2GCA280776A0030
	CLMD53	50.0	45.0	2GCA280777A0030
	CLMD63	54.0	50.0	2GCA280729A0030
	CLMD63	65.0	60.0	2GCA280982A0030
	CLMD63	75.0	70.0	2GCA280780A0030
	CLMD63	86.0	80.0	2GCA280781A0030
	CLMD83	110.0	100.0	2GCA280731A0030
	CLMD83	130.0	120.0	2GCA281094A0030
440V	CLMD13	5.0		2GCA280560A0030
	CLMD13	10.0		2GCA280561A0030
	CLMD13	12.0		2GCA280562A0030
	CLMD13	14.0		2GCA280563A0030
	CLMD43	20.0		2GCA280785A0030
	CLMD43	25.0		2GCA280744A0030
	CLMD53	30.0		2GCA280789A0030
	CLMD53	35.0		2GCA280790A0030
	CLMD53	40.0		2GCA280792A0030
	CLMD53	50.0		2GCA280794A0030
	CLMD63	60.0		2GCA280796A0030
	CLMD63	70.0		2GCA280797A0030
	CLMD63	80.0		2GCA280798A0030
	CLMD83	90.0		2GCA280799A0030
	CLMD83	100.0		2GCA280800A0030

Network voltage	Type	Power [kvar]	Power [kvar]	Article number for ordering
460V	CLMD43	15.0		2GCA280803A0030
	CLMD43	23.0		2GCA280804A0030
	CLMD53	35.0		2GCA280805A0030
	CLMD53	45.0		2GCA280806A0030
	CLMD63	57.0		2GCA280807A0030
	CLMD63	70.0		2GCA280808A0030
	CLMD63	80.0		2GCA280810A0030
	CLMD83	90.0		2GCA280811A0030
	CLMD83	100.0		2GCA280812A0030
		525 V	500 V	
525V/500V	CLMD13	10.0	9.0	2GCA280842A0030
	CLMD43	20.0	18.0	2GCA280852A0030
	CLMD43	30.0	27.0	2GCA280854A0030
	CLMD53	40.0	36.0	2GCA280855A0030
	CLMD53	50.0	45.0	2GCA285290A0030
	CLMD63	60.0	54.0	2GCA280860A0030
	CLMD63	80.0	73.0	2GCA280864A0030
	CLMD63	90.0	81.6	2GCA285299A0030
	CLMD83	100.0	91.0	2GCA280865A0030
	CLMD83	120.0	109.0	2GCA280866A0030
550V	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
600V	CLMD13	12.5		2GCA280884A0030
	CLMD43	25.0		2GCA280886A0030
	CLMD53	37.5		2GCA280887A0030
	CLMD53	50.0		2GCA280888A0030
	CLMD63	62.0		2GCA280889A0030
	CLMD63	75.0		2GCA280890A0030
	CLMD63	85.0		2GCA280891A0030
	CLMD83	100.0		2GCA280892A0030
	CLMD83	112.0		2GCA281220A0030
660V	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		2GCA280818A0030

CLMD13, 43, 53, 63 & 83

Network voltage	Type	Power [kvar]	Power [kvar]	Article number for ordering
660V	CLMD83	85.0		2GCA280819A0030
	CLMD83	105.0		2GCA280920A0030
690V	CLMD13	5.0		2GCA280570A0030
	CLMD13	10.0		2GCA280571A0030
	CLMD13	15.0		2GCA280572A0030

(1) Associated reactor (%): value of the detuned reactor to be combined with the capacitor unit. Reactors are not provided.

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

Please consult us for other ratings, single phase units, outdoor executions.

CLMD33S

Network voltage	Associated reactor (%) (1)	Power [kvar] (2)	Article number for ordering
230V	-	6.3	2GCA289064A0030
	-	10.0	2GCA289065A0030
	-	12.5	2GCA289066A0030
400V	-	5.0	2GCA289067A0030
	-	10.0	2GCA289068A0030
	-	12.5	2GCA289069A0030
	-	15.0	2GCA289070A0030
	-	20.0	2GCA289071A0030
	-	25.0	2GCA289072A0030
	5.67	12.5	2GCA289078A0030
	5.67	25.0	2GCA289079A0030
	7.0	12.5	2GCA289078A0030
	7.0	25.0	2GCA289079A0030
	12.5	12.5	2GCA289080A0030
	12.5	25.0	2GCA289081A0030
415V	-	10.0	2GCA289073A0030
	-	12.5	2GCA289074A0030
	-	15.0	2GCA289075A0030
	-	20.0	2GCA289076A0030
	-	25.0	2GCA289077A0030
	5.67	12.5	2GCA289080A0030
	5.67	25.0	2GCA289084A0030
	7.0	12.5	2GCA289080A0030
	7.0	25.0	2GCA289081A0030
	12.5	12.5	2GCA289082A0030
525V	-	10.0	2GCA289084A0030
	-	12.5	2GCA289085A0030
	-	20.0	2GCA289086A0030
	-	25.0	2GCA289087A0030
	5.67	12.5	2GCA289088A0030
	7.0	12.5	2GCA289088A0030
	12.5	12.5	2GCA289092A0030
	12.5	16.7	2GCA289094A0030
690V	-	10.0	2GCA289090A0030
	-	12.5	2GCA289091A0030
	-	20.0	2GCA289093A0030
	-	25.0	2GCA289094A0030
	5.67	12.5	2GCA289095A0030
	5.67	25.0	2GCA289096A0030
	7.0	12.5	2GCA289095A0030
	7.0	25.0	2GCA289096A0030
	12.5	12.5	2GCA289097A0030
	12.5	25.0	2GCA289098A0030

Range - 60 Hz

CLMD13, 43, 53, 63 & 83

Network voltage	Type	Power [kvar]	Power [kvar]	Article number for ordering
		260 V	240 V	
260V/240V	CLMD13	3.5	3.0	2GCA281322A0030
	CLMD13	5.0	4.2	2GCA281323A0030
	CLMD13	7.0	6.0	2GCA281324A0030
	CLMD13	12.0	10.0	2GCA281325A0030
	CLMD43	17.0	15.0	2GCA280964A0030
	CLMD53	25.0	21.0	2GCA280965A0030
	CLMD53	29.0	25.0	2GCA281327A0030
	CLMD53	36.0	31.0	2GCA280966A0030
	CLMD63	50.0	43.0	2GCA280967A0030
	CLMD63	60.0	51.0	2GCA280968A0030
	CLMD63	74.0	63.0	2GCA280969A0030
		415 V	400 V	
415V/400V	CLMD13	4.5	4.2	2GCA281328A0030
	CLMD13	6.5	6.0	2GCA281329A0030
	CLMD13	8.6	8.0	2GCA281330A0030
	CLMD13	13.0	12.0	2GCA281331A0030
	CLMD13	16.0	15.0	2GCA281332A0030
	CLMD13	18.0	16.7	2GCA281333A0030
	CLMD43	26.0	25.0	2GCA281334A0030
	CLMD53	32.0	30.0	2GCA281335A0030
	CLMD53	37.5	35.0	2GCA281341A0030
	CLMD63	43.0	40.0	2GCA281342A0030
	CLMD63	48.0	45.0	2GCA281343A0030
	CLMD63	54.0	50.0	2GCA281344A0030
	CLMD63	65.0	60.0	2GCA281345A0030
	CLMD83	75.0	70.0	2GCA281346A0030
	CLMD83	90.0	85.0	2GCA281347A0030
	CLMD83	105.0	100.0	2GCA281348A0030
460V	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

Please consult us for other ratings, single phase units, outdoor executions.

Network voltage	Type	Power [kvar]	Power [kvar]	Article number for ordering
480V	CLMD13	10.0		2GCA281118A0030
	CLMD13	15.0		2GCA281120A0030
	CLMD43	20.0		2GCA280826A0030
	CLMD43	25.0		2GCA280827A0030
	CLMD53	30.0		2GCA280828A0030
	CLMD53	35.0		2GCA280829A0030
	CLMD63	40.0		2GCA280830A0030
	CLMD63	45.0		2GCA280831A0030
	CLMD63	50.0		2GCA281541A0030
	CLMD63	60.0		2GCA280833A0030
	CLMD83	70.0		2GCA280834A0030
	CLMD83	75.0		2GCA280835A0030
	CLMD83	80.0		2GCA280836A0030
	CLMD83	90.0		2GCA280837A0030
	CLMD83	100.0		2GCA280963A0030
		525 V	500 V	
525V/500V	CLMD13	12.0	11.0	2GCA280867A0030
	CLMD43	24.0	22.0	2GCA280868A0030
	CLMD53	36.0	33.0	2GCA280869A0030
	CLMD53	48.0	44.0	2GCA280870A0030
	CLMD63	60.0	54.0	2GCA280871A0030
	CLMD63	72.0	65.0	2GCA280872A0030
	CLMD63	84.0	76.0	2GCA285298A0030
	CLMD83	96.0	87.0	2GCA280873A0030
	CLMD83	120.0	108.8	2GCA285400A0030
600V	CLMD13	10.0		2GCA280898A0030
	CLMD13	15.0		2GCA280899A0030
	CLMD43	20.0		2GCA280900A0030
	CLMD43	25.0		2GCA280901A0030
	CLMD53	30.0		2GCA280902A0030
	CLMD53	35.0		2GCA280903A0030
	CLMD53	40.0		2GCA280904A0030
	CLMD53	50.0		2GCA280906A0030
	CLMD63	60.0		2GCA280907A0030
	CLMD83	70.0		2GCA280908A0030
	CLMD83	80.0		2GCA280910A0030
	CLMD83	90.0		2GCA280911A0030
	CLMD83	100.0		2GCA280912A0030
660V	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		2GCA280827A0030
	CLMD83	100.0		2GCA280828A0030

CLMD33S

Network voltage	Associated reactor (%) [1]	Power [kvar] [2]	Article number for ordering
220V	-	6.3	2GCA289103A0030
	-	10.0	2GCA289105A0030
	-	12.5	2GCA289106A0030
240V	-	6.3	2GCA289099A0030
	-	10.0	2GCA289100A0030
	-	12.5	2GCA289102A0030
	6.0	6.3	2GCA289102A0030
	6.0	12.5	2GCA289105A0030
	6.0	16.7	2GCA289107A0030
	7.0	6.3	2GCA289102A0030
	7.0	12.5	2GCA289105A0030
	7.0	16.7	2GCA289107A0030
	12.5	6.3	2GCA289108A0030
	12.5	12.5	2GCA289109A0030
380V	-	10.0	2GCA289073A0030
	-	12.5	2GCA289074A0030
	-	15.0	2GCA289075A0030
	-	20.0	2GCA289076A0030
	-	25.0	2GCA289077A0030
	6.0	12.5	2GCA289110A0030
	6.0	25.0	2GCA289111A0030
	7.0	12.5	2GCA289110A0030
	7.0	25.0	2GCA289111A0030
	12.5	12.5	2GCA289082A0030
440V	-	8.4	2GCA289115A0030
	-	10.5	2GCA289116A0030
	-	12.5	2GCA289117A0030
	-	16.7	2GCA289118A0030
	-	21.0	2GCA289119A0030
	-	25.0	2GCA289114A0030
480V	-	10.0	2GCA289115A0030
	-	12.5	2GCA289116A0030
	-	15.0	2GCA289117A0030
	-	20.0	2GCA289118A0030
	-	25.0	2GCA289119A0030
	6.0	12.5	2GCA289088A0030
	7.0	12.5	2GCA289088A0030
	12.5	12.5	2GCA289120A0030
600V	-	10.0	2GCA289122A0030
	-	12.5	2GCA289123A0030
	-	20.0	2GCA289124A0030
	-	25.0	2GCA289125A0030
	6.0	12.5	2GCA289126A0030
	6.0	25.0	2GCA289127A0030
	7.0	12.5	2GCA289126A0030
	7.0	25.0	2GCA289127A0030
	12.5	12.5	2GCA289128A0030
	12.5	25.0	2GCA289295A0030

[1] Associated reactor (%): value of the detuned reactor to be combined with the capacitor unit. Reactors are not provided.

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

Please consult us for other ratings, single phase units, outdoor executions.

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