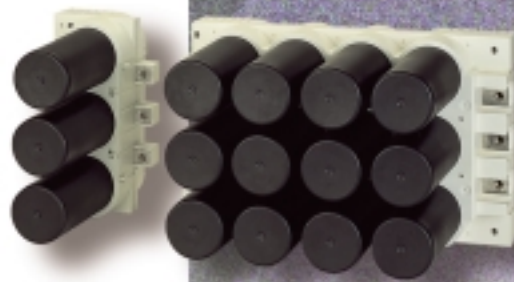


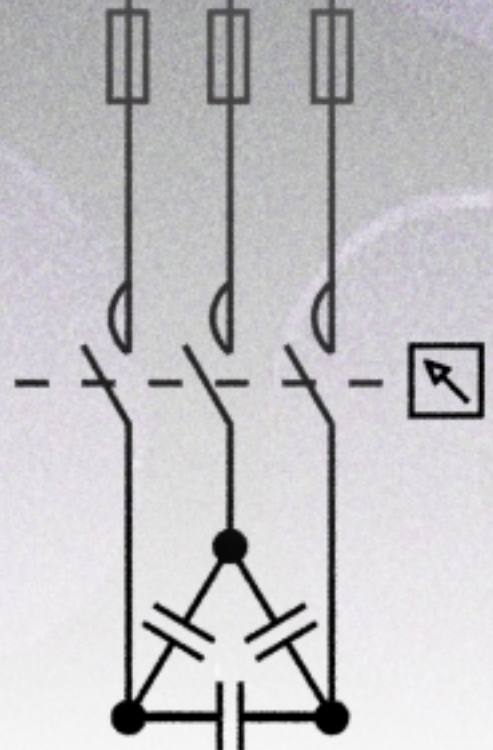
# Varplus M LV capacitors from 230V to 690V



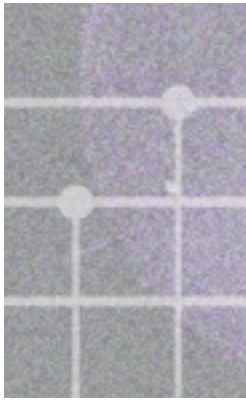
m o d u l a r i t y

s i m p l i c i t y

s a f e t y



- Merlin Gerin
- Modicon
- Square D
- Telemecanique

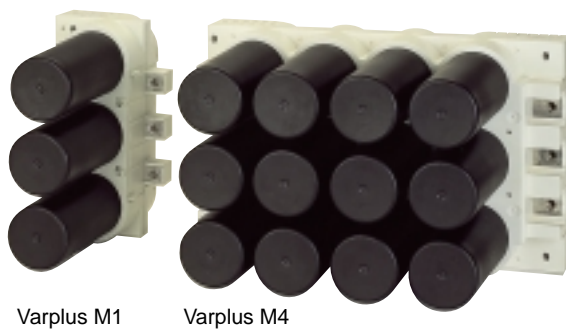


## A modular range

Varplus M capacitors make it easy to cover a wide range in voltage (from 230 V to 690 V) and in power up to 100 kvar from a limited number of references.

Power ratings are obtained by:

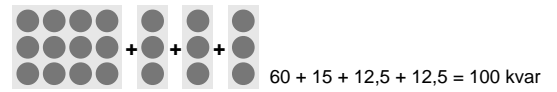
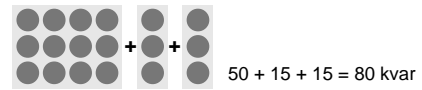
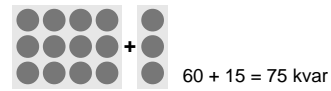
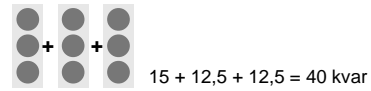
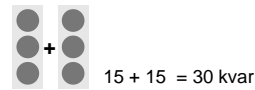
- the use of Varplus M1 or Varplus M4 capacitors alone,
  - the assembly of several Varplus M1 capacitors,
  - the assembly of one Varplus M4 capacitor with one or several Varplus M1 capacitors.
- With these assembly configurations stock management and future power evolution are made very simple.



Varplus M1

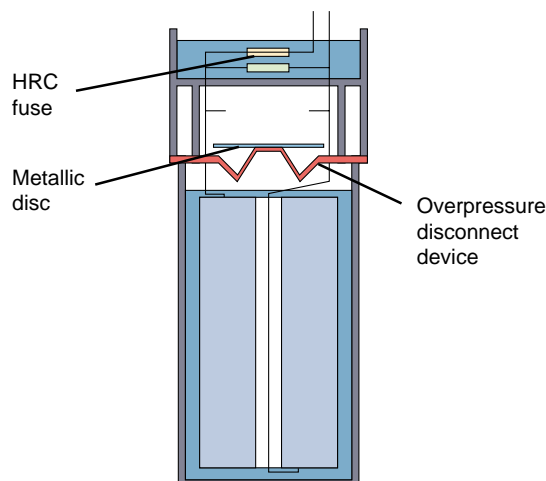
Varplus M4

### Configuration examples 400 V 50 Hz



## Safety of personnel and installations

■ the technology of Varplus M capacitors is based on the use of self healing polypropylene film requiring no gas or liquid impregnation.



Cross-section of a capacitor element

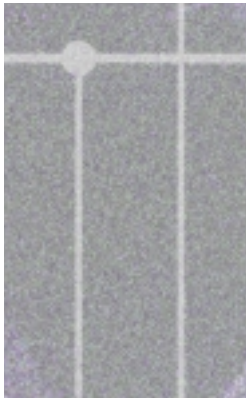
■ the HQ protection system integrated into each capacitor element provides total safety. A unique design, patented, it has been used for more than 10 years on several million elements.

■ the HQ protection system provides protection against the two fault types met in capacitor end of life. Protection against high current faults is provided by an HRC cartridge fuse. Protection against low current faults is provided by the combination of an overpressure disconnect device and the HRC fuse.

■ whatever the fault pressure inside the capacitor element is always limited to a value far lower than the maximum admissible pressure.

■ in both fault types the electrical current is always opened by a standard HRC fuse.

■ the plastic enclosure of Varplus M capacitors offer double electrical insulation. Plastic materials used provide both excellent mechanical properties and maximum self extinguishing ratings (UL 94 5 VB certification).



## Simplicity of mounting and connection

- the design of Varplus M capacitors meets key principles of LV electrical distribution products to which they are associated in electrical switchboards: simple assembly on vertical plate, fast connection on power terminals.
- their simplicity can be found in the ergonomic design details: standardized dimensions, front or rear connection, simple and original finger contact protection, IP 42 protection with the addition of a cable entry box.

- their ingenious design allows the total occupied volume to be very compact and eases the cooling of elements.
- the use of functional plates makes it easy to standardize the installation of capacitors in panels and to simplify the maintenance of power factor correction equipment.

### Connection

#### Varplus M4



Front connection

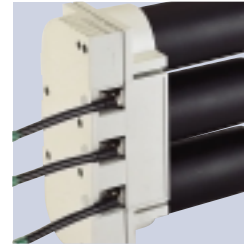


Rear connection

#### Varplus M1



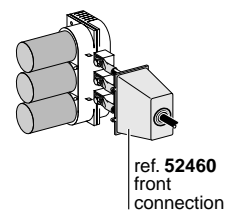
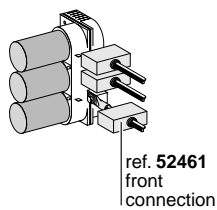
Front connection



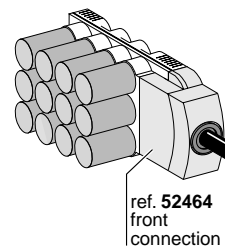
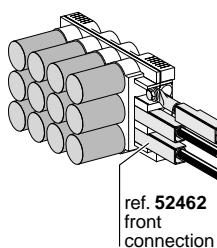
Rear connection

### Accessories

#### Varplus M1



#### Varplus M4

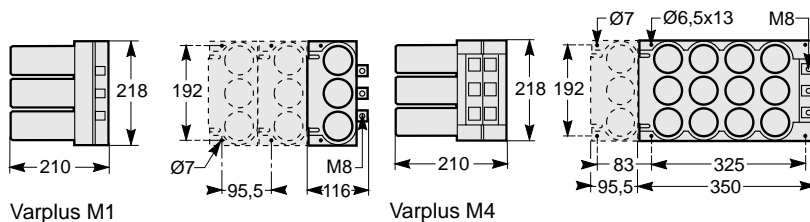


# Capacitor references and ratings (kvar)



230 V / 240 V		50 Hz		60 Hz	
50/60 Hz		230 V	240 V	230 V	240 V
52410	Varplus M1	2,5	2,5	3	3
52411	Varplus M1	3,8	4	4,5	5
52412	Varplus M1	5	5,5	6	6,5
52413	Varplus M1	5,5	6	7	7,5
52414	Varplus M1	7,5	8,5	9,5	10
52415	Varplus M4	30	33	36	40
52416	Varplus M4	32,5	35	40	42,5
400 V / 415 V		50 Hz		60 Hz	
50/60 Hz		400 V	415 V	400 V	415 V
52417	Varplus M1	5	5	5,5	6
52418	Varplus M1	7,5	7,5	9	9
52419	Varplus M1	10	10	12,5	13,5
52420	Varplus M1	12,5	12,5	15	16
52421	Varplus M1	15	15	18	19,5
52422	Varplus M4	50	50	60	60
52423	Varplus M4	60	65	70	75
440 V / 470 V		50 Hz		60 Hz	
50/60 Hz		440 V	470 V	440 V	470 V
52424	Varplus M1	4,5	5	5	6
52425	Varplus M1	7	8	8,5	9,5
52426	Varplus M1	9	10	10	12
52427	Varplus M1	12,5	14,5	15	17
52428	Varplus M1	14	16	17	19
52429	Varplus M4	50	57,5	60	69,5
52430	Varplus M4	55	60	65	75

480 V / 525 V		50 Hz		60 Hz	
50/60 Hz		480 V	525 V	480 V	525 V
52431	Varplus M1	5	6	6	7,5
52432	Varplus M1	8	10	10	12,5
52433	Varplus M1	10	12,5	12,5	15
52434	Varplus M1	12,5	15	15	18
52435	Varplus M4	40	50	50	60
52436	Varplus M4	50	60	60	70
550 V / 590 V		50 Hz		60 Hz	
50/60 Hz		550 V	590 V	550 V	590 V
52437	Varplus M1	5,5	6	6,5	7,5
52438	Varplus M1	10	12,5	12,5	15
52439	Varplus M1	12,5	14,5	15	17
52440	Varplus M4	40	50	50	60
52441	Varplus M4	50	58	60	70
600 V / 690 V		50 Hz		60 Hz	
50/60 Hz		600 V	690 V	600 V	690 V
52442	Varplus M1	2,5	3,5	3	4
52443	Varplus M1	5	7	6,5	8,5
52444	Varplus M1	8	11	10	13
52445	Varplus M1	10	14	12,5	16,5
52446	Varplus M4	33	45	40	50
52447	Varplus M4	40	55	50	66



## Options

finger contact protection	réf.
set of 3 terminal covers for Varplus M1 - front connection	52461
set of 3 terminal covers for Varplus M1 - rear connection	52466
set of 3 terminal covers for Varplus M4	
front connection or rear connection	52462
set of 3 terminal covers for Varplus M4 rear connection with special cable lug	52463
IP 42 protection	
three phase cable entry box for Varplus M1	52460
three phase cable entry box for Varplus M4	52464
IP 54 protection	
on request	

## Technical specifications

standards	IEC 60831-1 and 2, NF C 54-104, VDE 0560 Teil 41, CSA 22-2 N° 190						
tolerance on capacitance values	0, +10%						
losses	≤ 0.7 W/kvar discharge resistors included						
insulation level	50 Hz 1 min withstand voltage: 6 kV impulse wave withstand: 1.2 / 50 µs – 25 kV if the rear panel is at least 15 mm away from all metal frames – 11 kV if the rear panel is up against a metal frame						
maximum assembly configurations (kvar)	230/240 V	400/415 V	440/470 V	480/525 V	550/590 V	600/690 V	
M1+M1 assembly front connection	30 kvar	60 kvar	60 kvar	60 kvar	60 kvar	60 kvar	
M1+M1 assembly rear connection	15 kvar	30 kvar	30 kvar	30 kvar	30 kvar	30 kvar	
M4+M1 assembly(*) rear or front connection	60 kvar	100 kvar	100 kvar	100 kvar	100 kvar	100 kvar	
temperature class	max	highest average over all period of: 24 hours 1 year		reactive power (kvar)			
-25/D	55°C	45°C	35°C	230/240 V	400/415 V	440/470 V	480/525 V 550/590 V 600/690 V
-25/C	50°C	40°C	30°C	up to 40 kvar	up to 65 kvar	up to 76 kvar	up to 85 kvar up to 100 kvar up to 100 kvar
-25/B	45°C	35°C	25°C	41 to 50	67.5 to 90	77 to 100	85 to 100
admissible current overloads	30%						
admissible voltage overloads (8 h in 24 h specified by IEC 831 1 and 2)	10%						
colors	base: RAL 9002 - elements: RAL 9005 - terminal covers: RAL 9002						
weight	Varplus M1: 2.6 kg - Varplus M4: 10 kg						

\* using Varplus M4 power termination

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