

A robust, safe, reliable and high-performance solution for power factor correction in standard operating conditions.



VarPlus Xtreme Heavy duty

Operating conditions

- Optimum solution for stand alone PF compensation
- For networks with significant non-linear loads ($NLL \leq 25\%$).
- Higher operating temperature up to 60 °C.
- Higher number of switching operations up to 10000/year.
- Higher Long life expectancy up to 150,000 hours.

VarPlus Xtreme Heavy Duty – Answer for high performance with robustness

Safety

- Its unique safety feature electrically disconnects the capacitors safely at the end of their useful life.
- The disconnectors are installed on each phase, which makes the capacitors very safe, in addition to the protective steel enclosure.
- Use of Aluminum inside the steel enclosure eliminates the risk of any fire hazards unlike with plastic cells.

High performance

- Heavy edge metallization/wave-cut edge to ensure high inrush current capabilities and high current handling.
- Special resistivity and profile metallization for better self-healing & enhanced life.

Robustness

- Double metallic protection.
- Mechanically well suited for “stand-alone” installations.

Technology

Constructed internally with single-phase capacitor elements.

The design is specially adapted for mechanical robustness and stability and designed for harsh environments. The enclosures of the units are designed to ensure that the capacitors operate reliably in hot and humid tropical conditions, without the need of any additional ventilation louvres (see technical specifications).

Special attention is paid to equalization of temperatures within the capacitor enclosures since this gives better overall performance.

Benefits

- Robustness with double metal protection (Aluminum cans inside steel box)
- Suitable for individual compensation with stand alone installation.
 - Direct connection to a machine, in harsh environmental conditions.
- Dual safety
 - Pressure Sensitive Disconnecter(PSD) in aluminum cans with metal enclosure

Technical specifications

General characteristics

Standards		IEC 60831-1/2
Voltage range		400 to 525 V
Frequency		50 / 60 Hz
Power range		5 to 75 kvar
Losses (dielectric)		< 0.2W/kvar
Losses (total)		< 0.5W/kvar
Capacitance tolerance		-5%, +10 %
Voltage test	Between terminals	2.15 x U _N (AC), 10 s
	Between terminal & container	≤ 525 V: 3 kV (AC), 10 s or 3.66 kV (AC), 2 s > 525 V: 3.66 kV (AC), 10 s or 4.4 kV (AC), 2 s
	Impulse voltage	≤ 690 V: 8 kV
Discharge resistor		Fitted, standard discharge time 60 s

Working conditions

Ambient temperature	-25 / 60 °C
Humidity	95 %
Altitude	2,000 m above sea level
Overvoltage	1.1 x U _N 8h in every 24 h
Overcurrent	Up to 1.8 x I _N
Peak inrush current	350 x I _N
Switching operations (max.)	Up to 10000 switching operations per year
Mean Life expectancy	Up to 150,000 hrs
Harmonic content withstand	N _{LL} ≤ 25 %

Installation characteristics

Mounting position	Indoor, upright
Fastening	Mounting cleats
Earthing	
Terminals	Bushing terminals designed for large cable termination

Safety features

Safety	Self-healing + Pressure-sensitive disconnecter for each phase + Discharge device
Protection	IP20

Construction

Casing	Sheet steel enclosure
Dielectric	Metallized polypropylene film with Zn/Al alloy. special resistivity & profile. Special edge (wave-cut)
Impregnation	Non-PCB, polyurethane soft resin.

⚠ WARNING

HAZARD OF ELECTRICAL SHOCK

Wait 5 minutes after isolating supply before handling



Failure to follow these instructions can result in injury or equipment damage

Rated Voltage 380/400/415 V										
50 Hz				60 Hz				μF (X3)	Case Code	Reference Number
Q _N (kvar)				Q _N (kvar)						
380 V	400 V	415 V	I _N (A) at 400 V	380 V	400 V	415 V	I _N (A) at 400 V			
18.8	20.8	22.4	30.0	22.6	25.0	26.9	36.1	137.9	GB	BLRBH208A250B40
22.6	25.0	26.9	36.1	27.1	30.0	32.3	43.3	165.7	GB	BLRBH250A300B40
37.6	41.7	44.9	60.2	45.1	50.0	53.8	72.2	276.4	IB	BLRBH417A500B40
45.1	50.0	53.8	72.2	---	---	---	---	331.4	IB	BLRBH500A000B40

Rated Voltage 480 V										
50 Hz				60 Hz				μF (X3)	Case Code	Reference Number
Q _N (kvar)				Q _N (kvar)						
400 V	415 V	480 V	I _N (A) at 480 V	400 V	440 V	480 V	I _N (A) at 480 V			
17.9	19.3	25.8	31.0	21.5	26.0	31.0	37.2	118.8	IB	BLRBH258A310B48
29.0	31.2	41.7	50.2	34.8	42.0	50.0	60.2	192.0	IB	BLRBH417A500B48
43.0	46.3	61.9	74.5	---	---	---	---	284.9	IB	BLRBH619A000B48
47.2	50.8	68	81.8	---	---	---	---	192.0	IB	BLRBH680A000B48

Rated Voltage 525 V										
50 Hz				60 Hz				μF (X3)	Case Code	Reference Number
Q _N (kvar)				Q _N (kvar)						
415 V	480 V	525 V	I _N (A) at 525 V	400 V	480 V	525 V	I _N (A) at 525 V			
15.6	20.9	25.0	27.5	17.4	25.1	30.0	33.0	96.2	GB	BLRBH250A300B52
25.0	33.4	40.0	44.0	27.9	40.1	48.0	52.8	153.9	IB	BLRBH400A480B52
46.9	62.7	75	---	---	---	---	---	96.2	IB	BLRBH750A000B52

VarPlus Xtreme Heavy Duty harmonic applications

VarPlus Xtreme Heavy Duty capacitors are designed for applications where higher number of non-linear loads are present. Higher current carrying capacity in VarPlus Xtreme Heavy Duty allows the operations in stringent conditions. VarPlus Xtreme Heavy Duty capacitors are dedicated for standalone applications.

Operating conditions

- For networks with a large number of non-linear loads ($N_{LL} < 50 \%$).
- Significant voltage disturbances.
- Very frequent switching operations, up to 10000/ year.

Rated voltage

In a detuned filter application, the voltage across the capacitors is higher than the network service voltage (U_s). Then, capacitors must be designed to withstand higher voltages.

Depending on the selected tuning frequency, part of the harmonic currents is absorbed by the detuned capacitor bank. Then, capacitors must be designed to withstand higher currents, combining fundamental and harmonic currents.

The rated voltage of VarPlus Xtreme Heavy Duty capacitors is given in the table below, for different values of network service voltage and relative impedance.



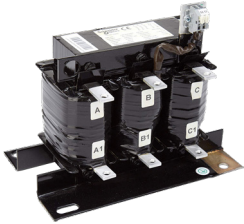
Detuned reactor VarPlus Xtreme Heavy Duty

Capacitor Rated Voltage U_N (V)		Network Service Voltage U_s (V)	
		50 Hz	60 Hz
Relative Impedance (%)	5.7	400	400
	7	480	480
	14	480	480

In the following pages, the effective power (kvar) given in the tables is the reactive power provided by the combination of capacitors and reactors.

VarPlus Xtreme Heavy Duty + Detuned Reactor + Contactor + MCCB

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LC1D25BD.JPG



PB110417.jpg



Network 400 V, 50 Hz Capacitor Voltage 480 V 5.7 % / 7 % Detuned Reactor						
Effective Power (kvar)	Q _N at 480 V	Capacitor Ref.	5.7% fr = 215Hz	7% fr = 190Hz	Switching: Contactor Ref.	Protection: Compact NSX 50 kA at 380/415 V
			D R Ref.	D. R Ref.		
12.5	17.1	BLRBH171A205B48 x 1	LVR05125A40T x 1	LVR07125A40T x 1	LC1D18 x 1	LV429846 x 1
25	33.9	BLRBH339A407B48 x 1	LVR05250A40T x 1	LVR07250A40T x 1	LC1D38 x 1	LV429843 x 1
50	67.9	BLRBH339A407B48 x 2	LVR05500A40T x 1	LVR07500A40T x 1	LC1D95 x 1	LV429840 x 1
100	136.2	BLRBH339A407B48 x 4	LVR05X00A40T x 1	LVR07X00A40T x 1	LC1F185 x 1	LV431831 x 1

Network 400 V, 50 Hz Capacitor Voltage 480 V 14 % Detuned Reactor						
Effective Power (kvar)	Q _N at 480 V	Capacitor Ref.	14% fr = 135Hz		Switching: Contactor Ref.	Protection: Compact NSX 50 kA at 380/415 V
			D R Ref.			
12.5	15.6	BLRBH156A187B48 x 1	LVR14125A40T x 1		LC1D18 x 1	LV429846 x 1
25	31.5	BLRBH315A378B48 x 1	LVR14250A40T x 1		LC1D38 x 1	LV429843 x 1
50	61.9	BLRBH619A000B48 x 1	LVR14500A40T x 1		LC1D95 x 1	LV429840 x 1
100	123.8	BLRBH619A000B48 x 2	LVR14X00A40T x 1		LC1F185 x 1	LV431831 x 1

Network 400 V, 60 Hz Capacitor Voltage 480 V 5.7 % / 7 % Detuned Reactor						
Effective Power (kvar)	Q _N at 480 V	Capacitor Ref.	5.7% fr = 250Hz	7% fr = 230Hz	Switching: Contactor Ref.	Protection: Compact NSX 50 kA at 380/415 V
			D R Ref.	D. R Ref.		
25	34.6	BLRBH288A346B48 x 1	LVR05250B40T x 1	LVR07250B40T x 1	LC1D32 x 1	LV429843 x 1
50	69.2	BLRBH288A346B48 x 2	LVR05500B40T x 1	LVR07500B40T x 1	LC1D95 x 1	LV429840 x 1
100	138.4	BLRBH288A346B48 x 4	LVR05X00B40T x 1	LVR07X00B40T x 1	LC1F195 x 1	LV431831 x 1

Network 400 V, 60 Hz Capacitor Voltage 480 V 14 % Detuned Reactor						
Effective Power (kvar)	Q _N at 480 V	Capacitor Ref.	14% fr = 160Hz		Switching: Contactor Ref.	Protection: Compact NSX 50 kA at 380/415 V
			D R Ref.			
25	31	BLRBH258A310B48 x 1	LVR14250B40T x 1		LC1D38 x 1	LV429843 x 1
50	62	BLRBH258A310B48 x 2	LVR14500B40T x 1		LC1D95 x 1	LV429840 x 1
100	124	BLRBH258A310B48 x 4	LVR14X00B40T x 1		LC1F185 x 1	LV431831 x 1