



# Low Voltage Power Factor Correction Capacitors

**TYPE : RFA-4**



■ THREE PHASE ■ 380V , 400V , 415VAC ■ 50Hz / 60Hz

## [APPLIED STANDARDS]

The capacitors are designed, manufactured and tested to meet the requirements of the latest IEC Publication No. IEC 60831-1: 1996 60831-2: 1995 & JIS. C 4901

## [SAFETY FEATURES]

1. Discharge device: The capacitors are provided with an internal discharge resistor which will reduce the residual voltage from the peak value to 75 volts or less within a maximum time of 3 minutes after they are disconnected from the source of supply.
2. Protective mechanism: When a breakdown occurs in the capacitor, a fault current will flow through the fuse of the defective unit capacitor, disconnecting the defective unit capacitor from the power supply. Should a breakdown occur, therefore, only the defective unit capacitor will be disconnected from the power supply, while a large number of other unit capacitors remain intact and continue to work properly.

## [DESIGN AND CONSTRUCTION]

1. Type RFA-4 capacitors are made with specially processed metallized polypropylene film impregnated with wax .
2. The capacitors are normally designed to suit for mounting in vertical position with terminals on top.
3. The capacitor container is coated with non-corrosive poly-urethane resin enamel in Munsell color notation 5Y7/1 to extend maintenance free service life.

## [ELECTRICAL CHARACTERISTICS]

1. The capacitors are capable of withstanding the operation at the following overvoltages for the maximum duration shown below.

### Maximum permissible voltages vs duration

Voltage factor (x rated voltage)	Maximum duration
1.10	8 hours max. in every 24 hours
1.15	30 minutes max. in every 24 hours
1.20	5 minutes max. x 2 times max. in a month
1.30	1 minute max. x 2 times in a month

2. The capacitors are capable of continuous operation at a current not exceeding 1.3 times the rated current. For capacitors having a capacitance reading which is within the tolerance but in the positive side, the maximum permissible current can be increased by the positive percentage of the capacitance.

3. Every capacitor is subjected to the following tests to verify that the requirements of the applicable standard are met.

#### a. Dielectric withstand test:

The capacitors shall successfully withstand the application of the following voltages.

(1) Between terminals: 1.75 times the rated voltage for more than 2 seconds.

(2) Between terminals (connected together) and container: 3,000 volts for 10 seconds. (3,000 volts for arated voltage exceeding 250 volts)

#### b. Capacitance (Output) :

The capacitors shall have a capacitance within +15% and -5% of the rated value when measured by an A.C. bridge at a room temperature. Output will be calculated based on the capacitance value.

#### c. Capacitor losses:

Capacitor loss including the loss of the discharge resistor shall be not more than 0.2% when measured by Schering Bridge at the rated voltage.

#### d. Sealing test:

Capacitors shall be free from leaks when heated to and maintained at 70°C for more than 2 hours.

## [WARRANTY]

The Company warrants these capacitors against defects in materials and workmanship for one (1) full year from date of installation.

The Company, at its option, will repair or replace any capacitors returned to the factory, which the Company, upon inspection, shall determine to be defective in material and/or workmanship.

## [NAMEPLATE MARKING]

Each capacitor is provided with a nameplate showing the following information.

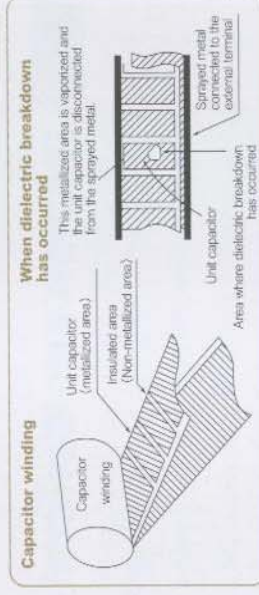
- a. Name of manufacturer
- b. Type number
- c. Rated terminal voltage
- d. Rated output in kvar
- e. Rated frequency
- f. Number of phase
- g. Rated current
- h. Connection
- i. Weight
- j. Internal discharge device fitted or not
- k. Internal protective device fitted or not
- l. Date of manufacture or serial number

## [NOTE]

The dimensions, characteristics and other details contained in this publication are accurate at date of issue. However, the Company reserves the right to make, from time to time, such departure from the information contained in this publication as may be required to permit improvements in the design of its products.

### Protective Mechanism

These capacitors comprise a number of segments (unit capacitors) with a small capacitance connected in parallel with each other. Should a dielectric breakdown occur in a unit capacitor, only the unit capacitor will be disconnected from the source of power in a moment without causing breakdown on other unit capacitors to protect the capacitor from smoking or igniting. Other unit capacitors will remain connected, and the capacitor as a whole will continue to function properly with a slight capacitance loss.



## [SPECIFICATION]

### TYPE : RFA-4

Rated voltage	380V,400V,415VAC	Reference	JIS-C-4901 IEC 60831-1:1996 and 60831-2:1995
Frequency	50Hz/60Hz	Operating temperature	-25°C~+50°C
Phase	Three Phase	Dissipation factor	Less than 0.20%
Withstand voltage	Between terminals	Painting	Munsell 5Y7/1 (Light gray)
	Rated voltage × 1.75 for more than 2 seconds	Installation	Indoor only
Output (CAP)	Between terminals and container	Altitude	Not exceeding 1,000 meters above sea level
	3,000VAC for 10 seconds	Safety & mechanism & discharge resistors fitted.	
Tolerance	1kvar~50kvar -5%~+15%		

## [DIMENSIONS]

### TYPE : RFA-4

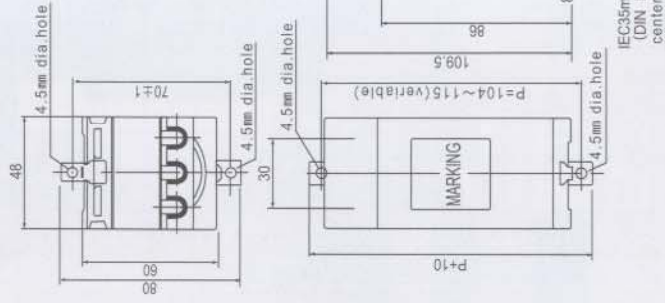


Fig.1

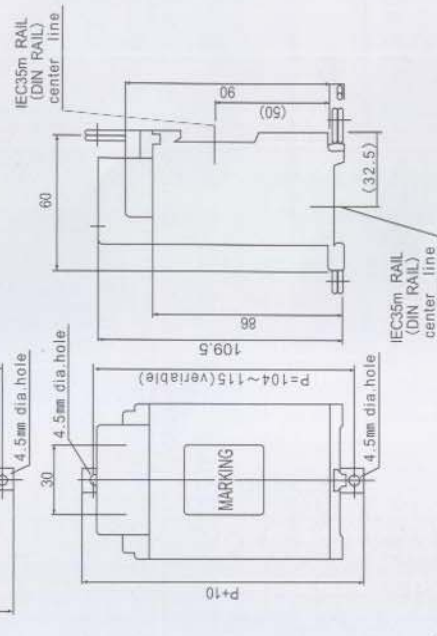
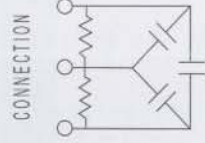


Fig.2

### 50Hz, 60Hz

RATED VOLTAGE (V)	RATED OUTPUT (kvar)	GROSS MASS (kg)	Fig
380	1	0.32	1
	1.5	0.42	2
400	1	0.32	1
	1.5	0.42	2
415	1	0.32	1
	1.5	0.42	2

## Type : RFA-4

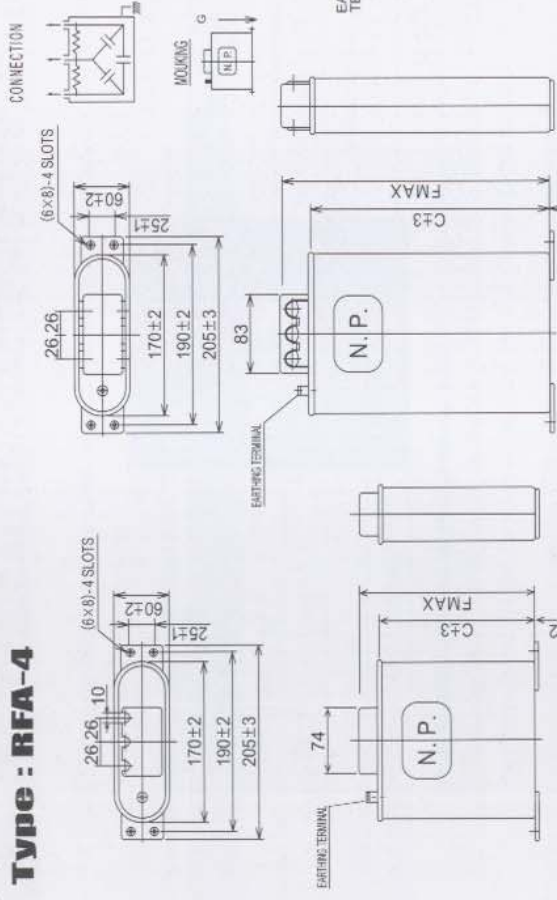


Fig.3

Fig.4

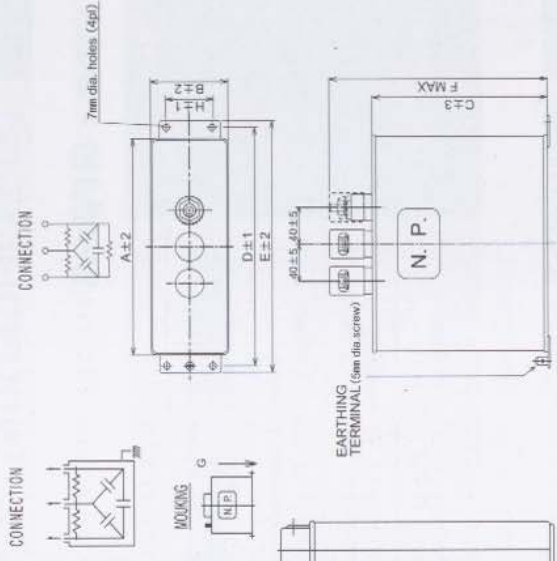


Fig.5

### 50Hz

RATED VOLTAGE (V)	CAP. (kvar)	DIMENSION		GROSS MASS (kg)	F.I.B
		C	F		
380	10	147	165	1.3	3
	15	167	185	1.5	3
	20	247	265	2.2	3
	25	257	295	2.3	4
400	10	127	145	1.1	3
	15	167	185	1.5	3
	20	247	265	2.2	3
	25	257	295	2.3	4
415	10	127	145	1.1	3
	15	147	165	1.3	3
	20	207	225	1.9	3
	25	257	295	2.3	4

### 60Hz

RATED VOLTAGE (V)	CAP. (kvar)	DIMENSION		GROSS MASS (kg)	F.I.B
		C	F		
380	10	127	145	1.1	3
	15	167	185	1.5	3
	20	247	265	2.2	3
	25	257	295	2.3	4
400	10	127	145	1.1	3
	15	167	185	1.5	3
	20	247	265	2.2	3
	25	257	295	2.3	4
415	10	107	125	1.0	3
	15	147	165	1.3	3
	20	167	185	1.5	3
	25	207	245	2.0	4

### 50Hz

RATED VOLTAGE (V)	RATED OUTPUT (kvar)	DIMENSIONS						GROSS MASS (kg)	FIG.No.	
		A	B	C	D	E	F			H
380	30	240	90	180	265	280	235	55	4.5	5
	40	240	90	230	265	280	285	55	5.5	5
	50	240	90	250	265	280	305	55	6.0	5
400	30	240	90	180	265	280	235	55	4.5	5
	40	240	90	230	265	280	285	55	5.5	5
	50	240	90	250	265	280	305	55	6.0	5
415	30	173	70	270	190	205	325	40	4.5	5
	40	240	90	200	265	280	255	55	5.0	5
	50	240	90	230	265	280	285	55	5.5	5

### 60Hz

RATED VOLTAGE (V)	RATED OUTPUT (kvar)	DIMENSIONS						GROSS MASS (kg)	FIG.No.	
		A	B	C	D	E	F			H
380	30	173	70	270	190	205	325	40	4.5	5
	40	240	90	200	265	280	255	55	5.0	5
	50	240	90	250	265	280	305	55	6.0	5
400	30	173	70	270	190	205	325	40	4.5	5
	40	240	90	180	265	280	235	55	4.5	5
	50	240	90	230	265	280	285	55	5.5	5
415	30	173	70	270	190	205	325	40	4.5	5
	40	240	90	180	265	280	235	55	4.5	5
	50	240	90	230	265	280	285	55	5.5	5

For details contact us.

**SHIZUKI ELECTRIC CO., INC.**

10-45, Taisha-cho, Nishinomiya City 662-0867, Japan.

TEL : 0798-74-5821

FAX : 0798-73-0807

URL : <http://www.shizuki.co.jp>



# Low Voltage Capacitor Bank

## TỦ TỤ BÙ HẠ THẾ



### ■ SPECIFICATION - Thông số chung

Equipment Thiết bị	Type Ký hiệu	Standard Tiêu chuẩn	Manufacturer Hãng sản xuất	Rated Voltage Điện áp
Capcitor Tụ bù	RFA-4	IEC-60831	ShiZuki-Japan	380/415 VAC
Automatic Controller Bộ điều khiển	S-6Q S-12Q	IEC-60831	ShiZuki-Japan	-25 to + 50°C
Devide - Thiết bị đóng cắt: MCCB - Aptomat MC - Contactor	ABE GMC	IEC-60947	LS-Korea	Up-down or circular mode Lên xuống hoặc vòng tròn
Power case - Tủ điện	LCB	TCVN	LGMEC-VN	Delay Closing Time Thời gian đóng trễ
				3 min, 9 min 3 phút, 9 phút
				Paint Màu sơn
				Ral Màu ghi

### ■ ORDER - ĐẶT HÀNG:

<b>LCB</b>	-	<b>6</b>	-	<b>120</b>	-	<b>D1</b>
4. 4Cấp		80. 80KVAR		D1. Lên xuống		
5. 5Cấp		100. 100KVAR		D2. Vòng tròn		
6. 6Cấp		120. 120KVAR		.....		
12. 12Cấp		600. 600KVAR				



**Long Giang Mechanicals Electrical Company**

Trụ sở chính:

Số 6 Chùa Bộc - Đống Đa - HN

Tel : (84-4) 573 6080

Fax: (84-4) 573 6079

Website: www.lgmec.com.vn

Chi nhánh TP Hồ Chí Minh:

Số 119 Kinh Dương Vương

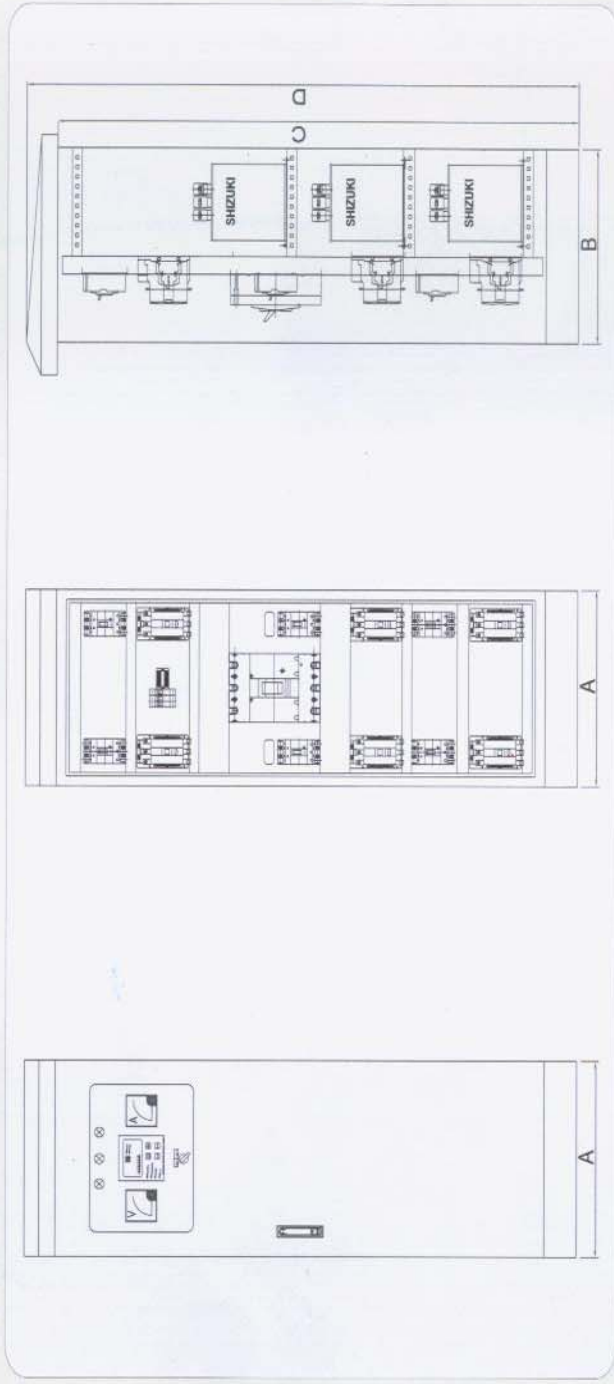
Quận 6 - Tp Hồ Chí Minh

Tel : (84-8) 877 8143

Fax: (84-8) 298 0030

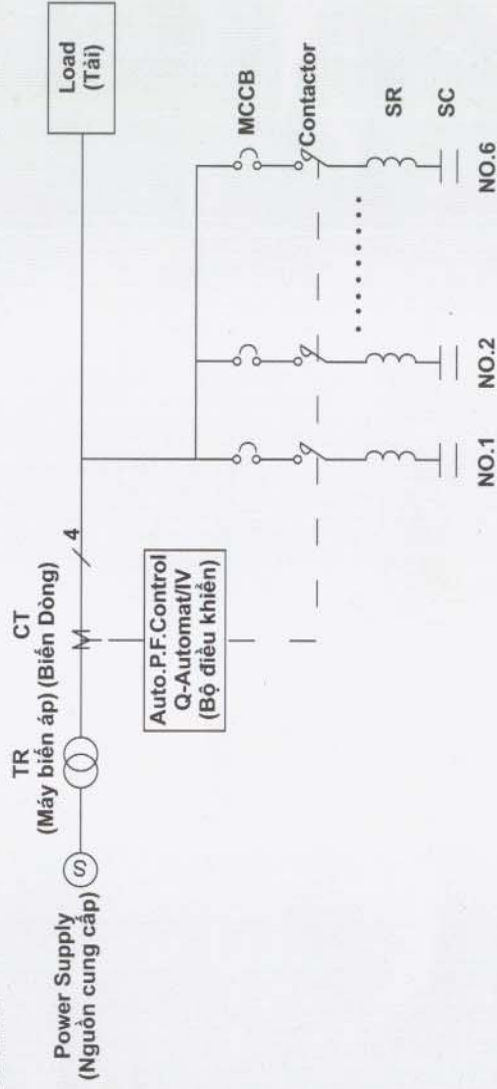
## RATINGS LGMEC

System V Điện Áp (V)	Frequency Tần Số (Hz)	Combined Output Công Suất (KVAR)	No. steps (Cấp Điều Khiển)	Rated current Dòng Danh Định (A)	Dimensions (mm) Kích Thước Tủ			
					A	B	C	D
415	50	100	4x25kvar	154	600	450	1000	1050
	50	120	4x30kvar	185	600	450	1000	1050
	50	140	1x20kvar+4x30kvar	216	600	600	1300	1400
	50	165	1x15kvar+5x30kvar	255	600	600	1300	1400
	50	180	6x30kvar	278	600	600	1300	1400
	50	200	5x40kvar	310	600	600	1300	1400
	50	220	1x20kvar+5x40kvar	340	600	600	1600	1400
	50	240	6x40kvar	370	600	600	1600	1400
	50	275	1x25kvar+5x50kvar	425	600	600	1600	1700
	50	300	6x50kvar	465	600	600	1600	1700



## Connection Diagram (Ex.6steps)

Sơ đồ kết nối



## Chú ý

- CT (biến dòng) phải được đặt ở trước tụ và tải
- Nguồn cung cấp cho bộ điều khiển phải cùng pha đặt CT