

TEST CERTIFICATE - IEC 60831-1-2002

Sl. No	TEST	CLAUSE	RESULTS
1	Capacitance Measurement & Output Calculation	7	Within the specified tolerance
2	Measurement of the Tangent of Loss angle (tanδ) of the Capacitor (after energization)	8	< 0.0005
3	Voltage Test between Terminals	9	Withstood
4	Voltage Test between Terminal & Container	10	Withstood
5	Test of the internal Discharge Device	11	Residual Voltage < 50 V within 60 Seconds.
6	Sealing Test	12	No Leakage



Tested by: QA Engineer

Schneider Electric Industries

Imported and Distributed by Schneider-Electric:



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 Brazil: 0800 7289 110 / (11) 3468-5791
 China: 400 810 1315
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 India: 1800 180 1707 / 1800 103 0011
 Indonesia: 500 055
 Turkey: 444 30 30 / 0126 564 76 73

Manufactured by:



Schneider Electric Power Factor Correction
 12(A), Attibele Industrial Area,
 Neralur Post,
 Bangalore-562107, INDIA.
 Tel No:+91 80 30900700

EAV2239501-01

More information on: www.schneider-electric.com

Refer "Guide for Design and Production of LV Power Factor Correction Cubicles-FCED111008EN"

Protection devices such as MCB, MCCB's must be used along with every capacitor steps in a power factor correction panel or used for standalone PF compensation After switching off a capacitor, a delay of at least 1 minute must be allowed before switching on again to ensure the discharge of individual capacitor step/unit before re-connection.

Switching and protection devices

User is advised to check the harmonic content in the system before installation of capacitor. In case of high harmonics content in the network, it is necessary to use specifically adapted capacitors with additional series reactors to avoid resonance phenomena (detuned reactors). The use of inappropriate capacitor will reduce its life time.

Harmonics

Specific precautions must be taken in order not to exceed temperature values of -25° C/D category around the capacitors inside the cubicle. (refer to "Installation Guide" for more information).

Ventilation

Use proper lugs for connecting Double Fast-on + Cable

Kvar Rating	Cable Size in mm ²			
	Al	Cu	Al	Cu
50	16	10	6	6
40	16	10	6	6
30	16	10	6	6
25	16	10	6	6
20	10	6	6	6
15	10	6	6	6
12.5	10	6	6	6
10	10	6	6	6
7.5	10	6	6	6
5	6	6	6	6

Cable Cross Section selection table

Limits of Warranty

Wrong selection of capacitor with respect to duty to be performed will cause over heating, over stress, and it shortens the life of capacitor and hence user should take proper care for selection of capacitor and maintain the operating conditions.

Attention

▲Caution: Do not touch the Capacitor Terminals before Discharging.
 To access installed capacitors:
 • Switch off main power supply.
 • Switch off power supply of control circuit.
 • Allow capacitor discharge time (1 minute).
 • Short circuit and earth the terminals to ensure that capacitors are fully discharged.

Safety

All operations described in this user manual must be carried out in compliance with safety standards under the responsibility of a competent authority.

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VarPlus Box Capacitor

Applicable standards:

IEC 60831-1/2 and current local adaptations

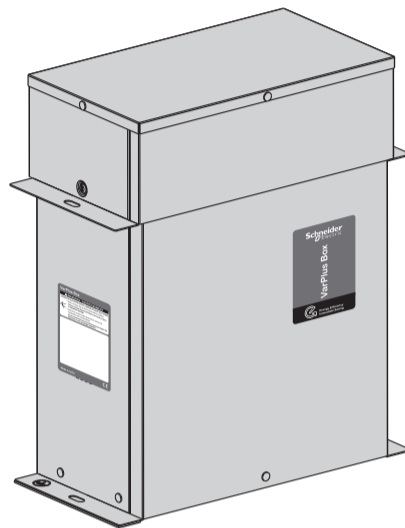
Reception of goods

- Check that no package is missing and goods have not suffered from any impact that would have damaged their insulation or good operation.
- Check that all the characteristics meet the specifications of the order form. If characteristics are not right please note the delivery document number on your claim form and send it to us. We decline all responsibility in the case of missing goods or damages during transport.

Storage

Capacitors should be stored in a dry, well ventilated room away from rain, water, chemicals and dust.

Presentation

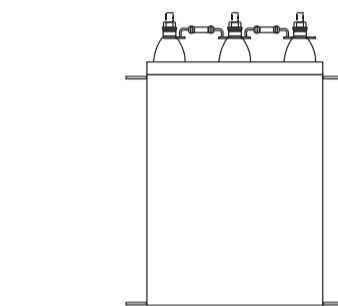
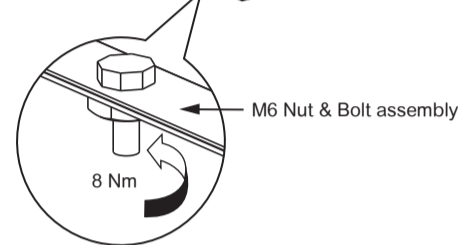
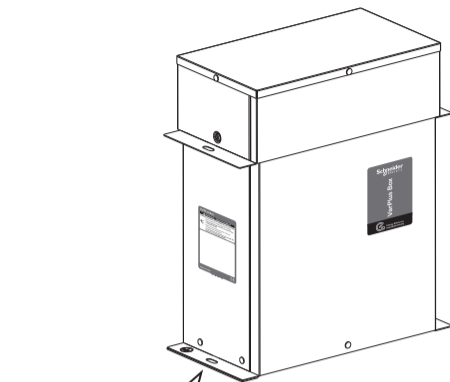


Handling

- Unpack capacitor at the installation site
- Keep this user manual at disposal of personnel in charge of installation, mounting, operation and maintenance.
- Avoid shocks and distortion on the capacitor element.

Mounting

- VarPlus Box capacitors can be mounted alone or in row.
- Position: Upright
- Capacitor body shall be earthed at bottom where the earthing mark is provided.
- Capacitor shall be installed in dry place away from heat generating source & avoid dusty atmosphere.
- Provide proper cross ventilation for heat conduction.
- Torque of 8 Nm to be used to fix the Capacitor on the mounting plates.
- Use M6 nut & bolt assembly to mount the capacitor

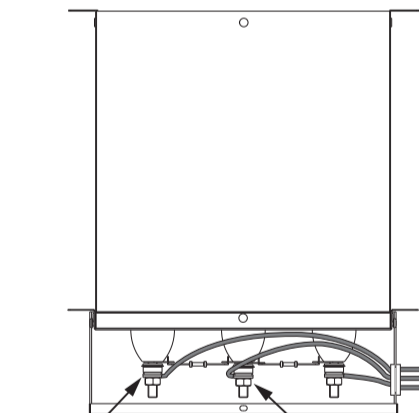


Capacitor Terminals view

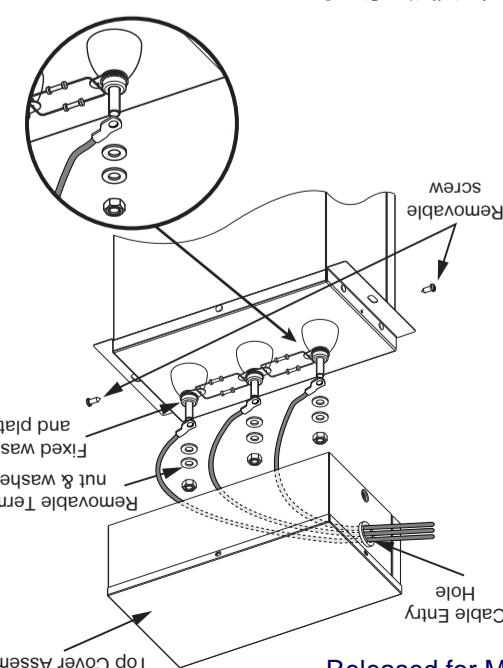
- Paralleling of the capacitor should not be done at the capacitor terminals. Ensure that the paralleling is done at the reactor side and two separate cables are coming to the capacitor terminals from reactor.

- M6 Studs - 4 Nm
- M8 Studs - 8 Nm
- M10 Studs - 12 Nm

Follow the torque provided here for different type of terminals:



Removable Terminal Nuts & Washer



Released for Manufacturing

2014/02/03

- Identify the capacitor terminal.
- Suitable size connecting plugs has to be used with connecting cable to capacitor terminals in order to avoid heat generation due to improper contacts.
- Insert cable fully inside the Lug. No single strand to come out from the Slot.
- Use pneumatic gun (with Torque indicator) to tighten the terminal nut from top. If not, please ensure proper tightness with spanner of proper size to avoid loosen termination.

- VarPlus Box Capacitors are provided with 3 different types of connection terminals depended on the rating of the capacitor.
- M6 Stud and
- M8 Stud and
- M10 Stud.
- User is recommended to use a cable of min. temperature withstand capacity of 90° C.

Electrical connection

- Indoor installation on firm support in a properly ventilated local or envelope.
- Ambient temperature around capacitors must not exceed 35° C over one year, 45° C over 24hours and 55° C max. (according to IEC 60831 for -25/D temperature category).
- Maintain a gap of min. 30 mm between capacitor units and min. 30 mm between capacitors and panel enclosure for better air circulation.
- Electrical clearance between phases shall be 30 mm.
- Keep min. 30 mm gap above the top of the capacitor.
- Use capacitor duty contactor or detuned reactor or inductor coil in series with two phases in order to limit the inrush current when capacitors are switched in parallel with other energized capacitor units.

Installation

测试证书 IEC 60831-1-2002

序号	测试	条款	结果
1	电容测量与输出计算	7	规定电容公差内
2	电容器损耗角正切 (tanδ) 测量 (通电后)	8	< 0.0005
3	端子间电压测试	9	耐压
4	端子与容器间电压测试	10	耐压
5	内部放电装置测试	11	60 秒内残余电压 < 50V
6	密封测试	12	无泄漏



EAV2239501

测试人: 质量工程师

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VarPlus Box 电容器

适用标准:

IEC 60831-1/2及当地现行适用标准

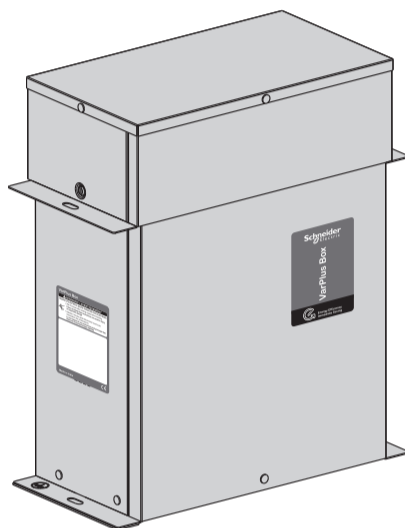
收货

- 检查无包装缺少, 且货物未受到可能损害其绝缘性能和良好运行的任何影响。
- 检查所有特性是否符合订货单规格要求。如有特性不符, 请在赔偿申请表上注明交付文件编号, 并将表单发给我们。运输过程中出现的货物缺损, 我方概不负责。

储存

电容器应存放于干燥、通风的室内, 避免接触雨水、潮湿、化学品以及灰尘。

外观结构



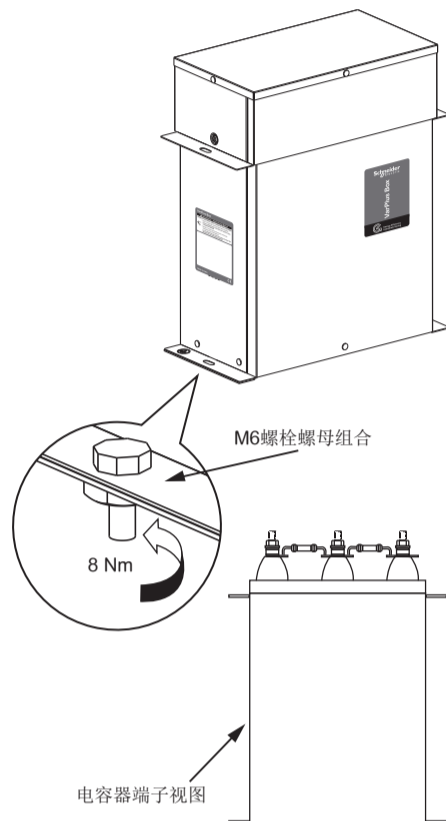
搬运

- 在安装现场拆除包装。

- 保管本使用手册, 供负责安装、装配、运行和维护的人员随时使用。
- 避免电容器元件碰撞和变形。

装配

- VarPlus Box电容器可单独安装 也可并排安装。
- 位置: 垂直
- 电容器主体应在底部 (贴有接地标志) 进行接地处理。
- 电容器应安装在干燥处, 远离发热源并避免多尘环境。
- 提供经验证的适当对流通风以利于热传导。
- 使用8 Nm扭矩将电容器固定到安装板上。
- 使用M6螺栓以螺母组合来安装电容器。



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欲了解更多信息请访问:
www.schneider-electric.com

该设备应仅按照上述说明装配。因未遵守该手册说明出现的任何问题, 生产商概不负责。

用户应确保对电容器以及关联使用的开关和保护装置进行定期维护。推荐的维护周期为6个月。

质保限制:

电容器选型不当投入使用将导致电容器过热、过压进而缩短电容器的使用寿命。因此用户应该正确选择电容器并维持电容器的运行环境。

注意

- 小心! 放电前切勿触摸电容器端子。
- 短路和端子接地, 确保电容器完全放电。
- 容许电容器放电时间 (1分钟)。
- 切断控制电路电源。
- 切断主电源。

接触已安装的电容器时:

本使用手册描述的所有操作必须按照监管部门规定的安全标准进行。

安全

电容器断电后, 再次接通前必须保证至少1分钟延时, 以确保重新连接前单个电容器组/单元放电。

开关和保护装置

电容器避免谐振现象发生 (谐振电阻器)。使用不当的电容器会缩短其使用寿命。

建议用户安装电容器前检查系统内谐波含量。如果系统网络谐波含量过高, 必须使用配有附加串联电阻器的额定比电

谐波

柜内气流必须由下而上。

(参考“安装指南”, 了解更多信息)

(D级), 必须采取特定防护措施

为避免电容器柜内环境温度超过-25/+55°C (D级), 必须采取特定防护措施

电容器、接触器、熔断器以及电气连接都会产生热损耗 (总约2.5 W/kvar, 串联电阻器后约为8 W/kvar)。

通风

使用合适接线片连接双快速固定端子+电缆

Kvar	额定容量		电缆尺寸 mm ²			
	230V/240V	400 to 480V	>600V	10	12.5	15
50	-	35	35	35	35	25
40	-	35	25	25	25	16
30	-	25	16	16	16	10
25	25	16	16	16	16	10
20	16	10	10	10	10	6
15	10	6	6	6	6	6
12.5	10	6	6	6	6	6
10	16	10	6	6	6	6
7.5	10	6	6	6	6	6
5	6	6	6	6	6	6
	铝	铜	铝	铜	铝	铜

电缆横截面选择表

• 电容器的并联应在接触器端进行, 确保两组独立的电缆分别从接触器端引出至电容器端子。

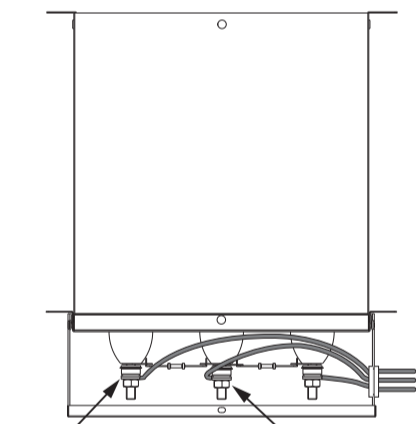
M6螺栓 - 4Nm

M8螺栓 - 8Nm

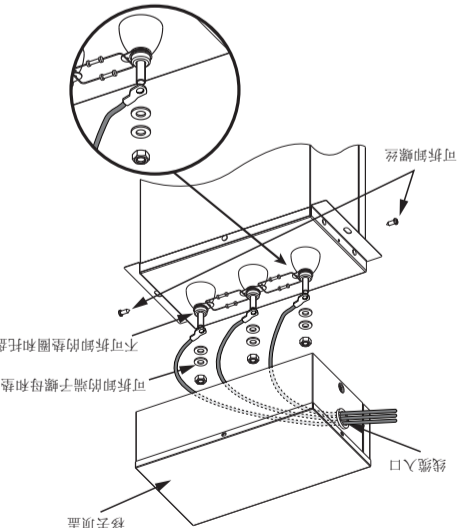
M10螺栓 - 12Nm

不同类型的端子扭矩如下:

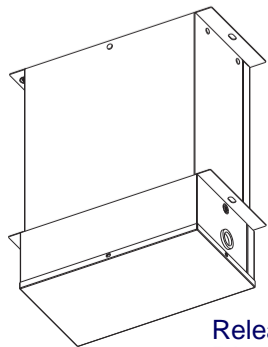
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安装步骤2:



安装步骤1:



- 小的扳手确保紧密性, 避免终端松动。
- 接头螺母。若气动螺丝刀 (带扭矩指示器) 紧固顶部使用气动螺丝刀, 请使用合适大
- 单股从插槽冒出。
- 将电缆线股完全插入接线片。不得有当导致发热。
- 电缆接至电容器端子, 避免因连接不
- 必须使用合适尺寸的连接插头将连接
- 确定电容器端子
- M6螺栓
- M8螺栓以及
- M10螺栓
- 的接线端子。
- VarPlus Box电容器配备3种不同类型的
- 根据电容器额定功率的不同,
- 建议用户使用最低耐受温度为90°C的
- 电缆。

电气连接

- PSD运行时对其造成影响。
- (PSD) 无外力作用, 从而避免
- 无论应如何确保保护器
- 抑制涌流。
- 用接触器, 串联调谐电阻器或双相电感器
- 当电容器投入时, 必须使用电容器投切专
- 电容器顶部保留30 mm间隙。
- 相位间的电气间隙应为30 mm。
- 空气循环。
- 之间分别保留最小30 mm间隙, 便于
- 电容器单元之间、电容器和柜壳
- 最大70°C)。
- Energy系列除外 (24小时内55°C,
- -25/D 温度类型的 IEC 60831),
- 最高不得超过55°C (根据适用于
- 35°C, 24小时平均不得超过45°C,
- 电容器环境温度一年平均不得超过
- 设置在通风适当的区域。
- 安装在室内的固定支架上且固定支架应该

安装