ESICAP POWER FACTOR CORRECTION CAPACITORS

Operation manual

Lafaelt

LAFAELT ELECTRIC

Brief introduction of the capacitors

Electrical equipment should be installed, operated, used and maintained by qualified professionals. This manual is an operation manual for trained professionals, our company will not be responsible for any adverse consequences caused by failure to follow the instructions

Safety precautions

Caution

Risk of electric shock, burning and explosion

- Only qualified professionals can install this device, after reading this manual.
- Not work alone.
- Power off all electrical connection before checking, testing and maintaining this device.
- Special attention should be paid to the design of the power system, considering all power sources, including the possibility of reverse power transmission.
- Use properly regulated voltage test device to make sure all the power resources have been cut off.
- Beware of the potential dangers, take personal protection, and carefully check the working area inside the device to ensure no tools and other objects left behind.
- Be careful not to touch live busbars when moving or installing panels to avoid personal injury.
- The successful operation of this device depends on proper installation and operation. Neglect of

basic installation requirements may result in personal injury, as well as damage to electrical device or other objects.

- When performing dielectric strength and insulation tests on the device, all input and output wires connected to it should be disconnected. High voltage test may damage this device.
- During the operation of the device, the surface should be kept clean, and the terminals should be well fastened.

Main functions of power factor correction capacitors

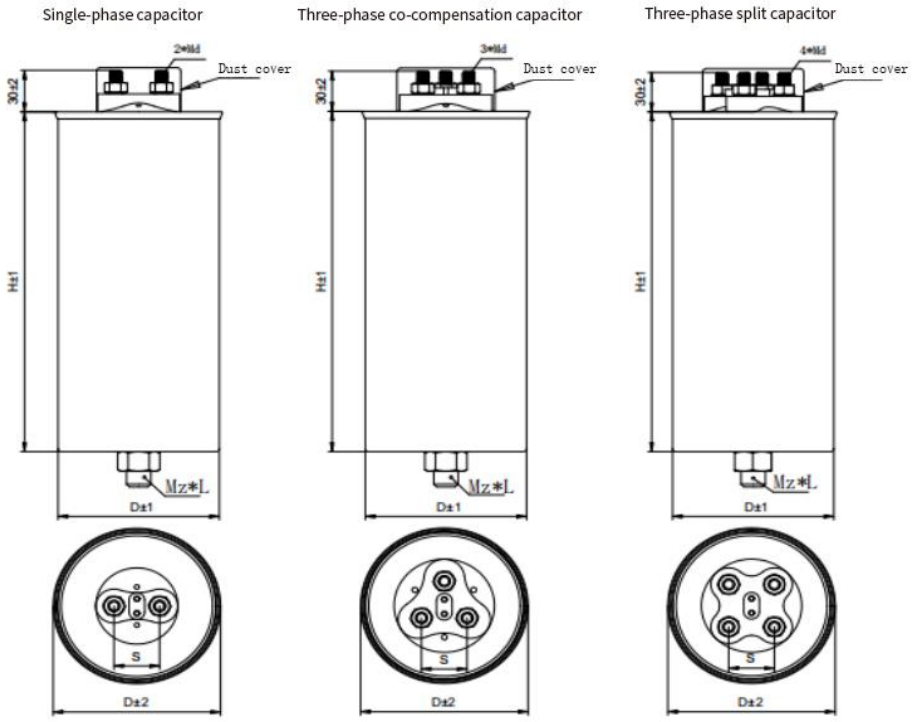
Increase the power factor of the system, improve the power supply quality, and decrease the line loss.

Model Description

LCP □ 480-25-□-□

- B: Square capacitor
  Default: Cylindrical capacitor
- F: Three-phase split capacitor
  Default: Single-phase or Three-phase co-complementary capacitor
- Rated Capacity: 6.7kvar~60kvar
- Rated Voltage： 250V~850V
- H: Enhanced
  Default: Universal
  S: Special Model
- Product name: Lafaelt power factor correction capacitor

LCP-H series enhanced power factor correction capacitor

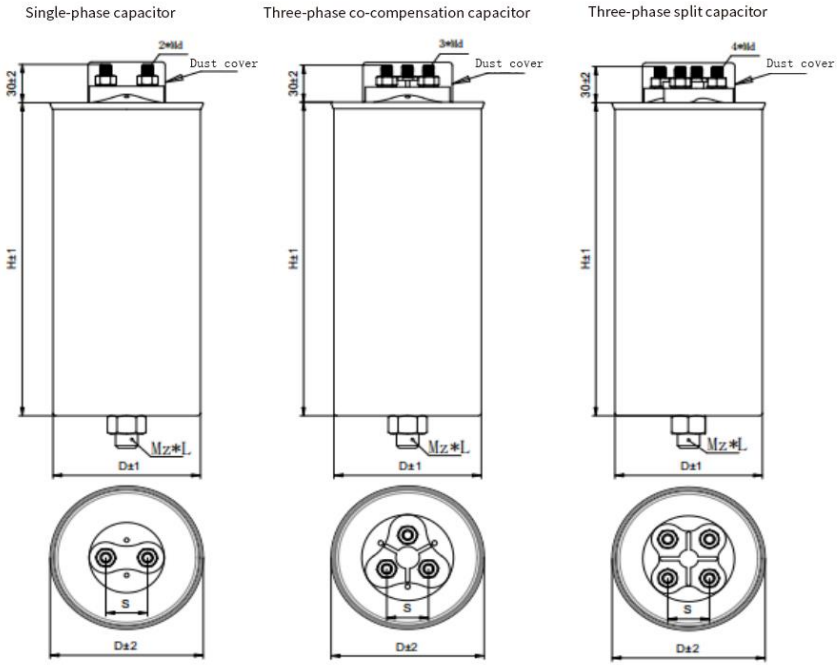


Single-phase capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP-H-280-10	10	35.7	406	90×245	2×M8	M12×16	30
2	LCP-H-280-15	15	53.6	609	106×245	2×M8	M16×25	30
3	LCP-H-280-20	20	71.4	812	116×290	2×M8	M16×25	30
4	LCP-H-300-10	10	40	510	90×245	2×M8	M12×16	30
5	LCP-H-300-15	15	50	531	106×245	2×M8	M16×25	30
6	LCP-H-300-20	20	66.7	708	116×290	2×M8	M16×25	30

Three-phase capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP-H-480-15	15	18.0	207	106×245	3×M8	M16×25	35
2	LCP-H-480-20	20	24.1	276	116×245	3×M8	M16×25	35
3	LCP-H-480-25	25	30.1	346	116×290	3×M8	M16×25	35
4	LCP-H-480-30	30	36.1	415	116×290	3×M8	M16×25	35
5	LCP-H-525-15	15	16.5	173	106×245	3×M8	M16×25	35

6	LCP-H-525-20	20	22.0	231	116×245	3×M8	M16×25	35
7	LCP-H-525-25	25	27.5	289	116×290	3×M8	M16×25	35
8	LCP-H-525-30	30	33.0	347	116×290	3×M8	M16×25	35

LCP series universal power factor correction capacitor



Single-phase capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP250-6.7	6.7	26.7	340	76×245	2×M8	M12×16	30
2	LCP250-8.3	8.3	33.2	423	90×245	2×M8	M12×16	30
3	LCP250-10	10	40.0	510	90×245	2×M8	M12×16	30
4	LCP250-13.4	13.4	53.6	679	106×245	2×M8	M16×25	30
5	LCP250-15	15	60.0	764	106×245	2×M8	M16×25	30
6	LCP250-16.7	16.7	66.8	851	116×245	2×M8	M16×25	30
7	LCP250-20	20	80.0	1019	116×290	2×M8	M16×25	30
8	LCP280-6.7	6.7	23.8	272	76×245	2×M8	M12×16	30
9	LCP280-8.3	8.3	29.6	338	90×245	2×M8	M12×16	30
10	LCP280-10	10	35.7	406	90×245	2×M8	M12×16	30
11	LCP280-13.4	13.4	47.8	544	106×245	2×M8	M16×25	30
12	LCP280-15	15	53.6	609	106×245	2×M8	M16×25	30
13	LCP280-16.7	16.7	59.6	678	116×245	2×M8	M16×25	30

14	LCP280-20	20	71.4	812	116×290	2×M8	M16×25	30
15	LCP300-6.7	6.7	22.3	237	76×245	2×M8	M12×16	30
16	LCP300-8.3	8.3	27.7	294	90×245	2×M8	M12×16	30
17	LCP300-10	10	33.3	354	90×245	2×M8	M12×16	30
18	LCP300-13.4	13.4	44.6	474	106×245	2×M8	M16×25	30
19	LCP300-15	15	50.0	531	106×245	2×M8	M16×25	30
20	LCP300-16.7	16.7	55.7	591	116×245	2×M8	M16×25	30
21	LCP300-20	20	66.7	708	116×290	2×M8	M16×25	30

Three-phase split capacitor

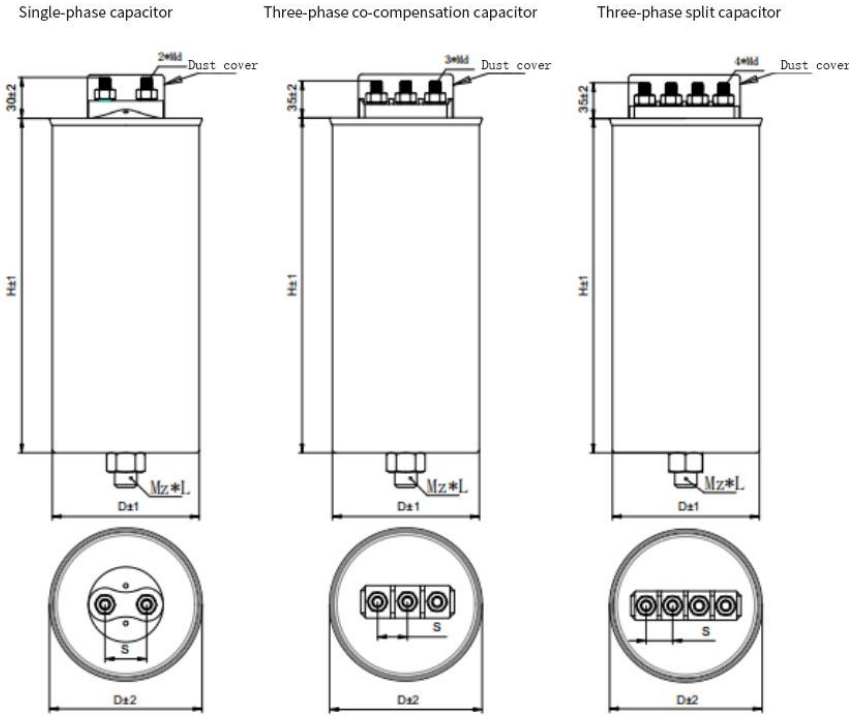
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP250-20-F	20	26.7	1019	116×245	4×M8	M16×25	30
2	LCP250-25-F	25	33.3	1274	116×290	4×M8	M16×25	30
3	LCP250-30-F	30	40.0	1529	136×290	4×M8	M16×25	30
4	LCP280-20-F	20	23.8	812	116×245	4×M8	M16×25	30
5	LCP280-25-F	25	29.8	1016	116×290	4×M8	M16×25	30
6	LCP280-30-F	30	35.7	1219	136×290	4×M8	M16×25	30
7	LCP300-20-F	20	22.2	708	116×245	4×M8	M16×25	30
8	LCP300-25-F	25	27.8	885	116×290	4×M8	M16×25	30
9	LCP300-30-F	30	33.3	1062	136×290	4×M8	M16×25	30

Three-phase capacitor

No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP440-15	15	19.7	247	106×245	3×M8	M16×25	35
2	LCP440-20	20	26.2	329	116×245	3×M8	M16×25	35
3	LCP440-25	25	32.8	411	116×290	3×M8	M16×25	35
4	LCP440-30	30	39.4	493	116×290	3×M8	M16×25	35
5	LCP480-10	10	12.0	138	106×245	3×M8	M12 × 16	30
6	LCP480-15	15	18.0	207	106×245	3×M8	M16×25	35
7	LCP480-20	20	24.1	276	116×245	3×M8	M16×25	35
8	LCP480-25	25	30.1	346	116×290	3×M8	M16×25	35
9	LCP480-30	30	36.1	415	116×290	3×M8	M16×25	35
10	LCP525-15	15	16.5	173	106×245	3×M8	M16×25	35
11	LCP525-20	20	22.0	231	116×245	3×M8	M16×25	35
12	LCP525-25	25	27.5	289	116×290	3×M8	M16×25	35
13	LCP525-30	30	33.0	347	116×290	3×M8	M16×25	35
14	LCP850-15	15	10.2	66	106×245	3×M8	M16×25	35

15	LCP850-20	20	13.6	88	116×245	3×M8	M16×25	35
16	LCP850-25	25	17.0	110	116×290	3×M8	M16×25	35
17	LCP850-30	30	20.4	132	116×290	3×M8	M16×25	35

LCP-S series special model power factor correction capacitor



Single-phase capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP-S-250-6.7	6.7	26.7	340	76×245	2×M8	M12×16	30
2	LCP-S-250-8.3	8.3	33.2	423	90×245	2×M8	M12×16	30
3	LCP-S-250-10	10	40.0	510	90×245	2×M8	M12×16	30
4	LCP-S-250-13.4	13.4	53.6	679	106×245	2×M8	M16×25	30
5	LCP-S-250-15	15	60.0	764	106×245	2×M8	M16×25	30
6	LCP-S-250-16.7	16.7	66.8	851	116×245	2×M8	M16×25	30
7	LCP-S-250-20	20	80.0	1019	116×290	2×M8	M16×25	30
8	LCP-S-280-6.7	6.7	23.8	272	76×245	2×M8	M12×16	30
9	LCP-S-280-8.3	8.3	29.6	338	90×245	2×M8	M12×16	30
10	LCP-S-280-10	10	35.7	406	90×245	2×M8	M12×16	30
11	LCP-S-280-13.4	13.4	47.8	544	106×245	2×M8	M16×25	30
12	LCP-S-280-15	15	53.6	609	106×245	2×M8	M16×25	30
13	LCP-S-280-16.7	16.7	59.6	678	116×245	2×M8	M16×25	30

14	LCP-S-280-20	20	71.4	812	116×290	2×M8	M16×25	30
15	LCP-S-300-6.7	6.7	22.3	237	76×245	2×M8	M12×16	30
16	LCP-S-300-8.3	8.3	27.7	294	90×245	2×M8	M12×16	30
17	LCP-S-300-10	10	33.3	354	90×245	2×M8	M12×16	30
18	LCP-S-300-13.4	13.4	44.6	474	106×245	2×M8	M16×25	30
19	LCP-S-300-15	15	50.0	531	106×245	2×M8	M16×25	30
20	LCP-S-300-16.7	16.7	55.7	591	116×245	2×M8	M16×25	30
21	LCP-S-300-20	20	66.7	708	116×290	2×M8	M16×25	30

Three-phase split capacitor

No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP-S-250-20-F	20	26.7	1019	116×245	4×M8	M16×25	30
2	LCP-S-250-25-F	25	33.3	1274	116×290	4×M8	M16×25	30
3	LCP-S-250-30-F	30	40.0	1529	136×290	4×M8	M16×25	30
4	LCP-S-280-20-F	20	23.8	812	116×245	4×M8	M16×25	30
5	LCP-S-280-25-F	25	29.8	1016	116×290	4×M8	M16×25	30
6	LCP-S-280-30-F	30	35.7	1219	136×290	4×M8	M16×25	30
7	LCP-S-300-20-F	20	22.2	708	116×245	4×M8	M16×25	30
8	LCP-S-300-25-F	25	27.8	885	116×290	4×M8	M16×25	30
9	LCP-S-300-30-F	30	33.3	1062	136×290	4×M8	M16×25	30

Three-phase capacitor

No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Outer Diameter × Shell Height (D×H)	Terminals (Mx)	Bottom Bolt (Md × L)	Terminal pitch (S)
1	LCP-S-480-10	10	12.0	138	106×245	3×M8	M16 × 25	23
2	LCP-S-480-15	15	18.0	207	106×245	3×M8	M16×25	23
3	LCP-S-480-20	20	24.1	276	116×245	3×M8	M16×25	30
4	LCP-S-480-25	25	30.1	346	116×290	3×M8	M16×25	30
5	LCP-S-480-30	30	36.1	415	116×290	3×M8	M16×25	30
6	LCP-S-525-10	10	11.0	116	106×245	3×M8	M16×25	23
7	LCP-S-525-15	15	16.5	173	106×245	3×M8	M16×25	23
8	LCP-S-525-20	20	22.0	231	116×245	3×M8	M16×25	30
9	LCP-S-525-25	25	27.5	289	116×290	3×M8	M16×25	30
10	LCP-S-525-30	30	33.0	347	116×290	3×M8	M16×25	30

LCP-square series power factor correction capacitor

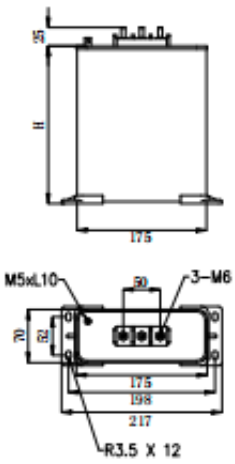


图1

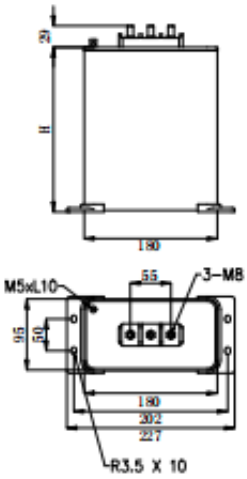


图2

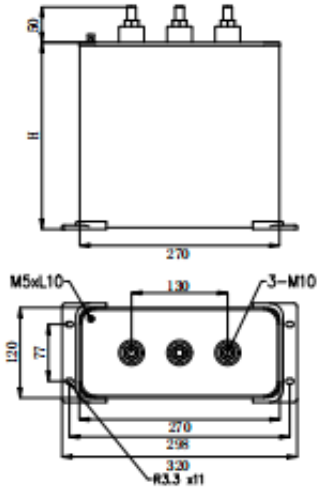


图3

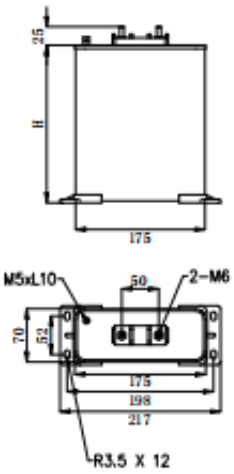


图4

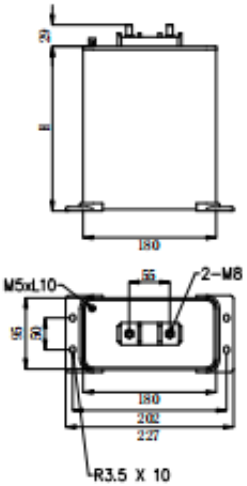


图5

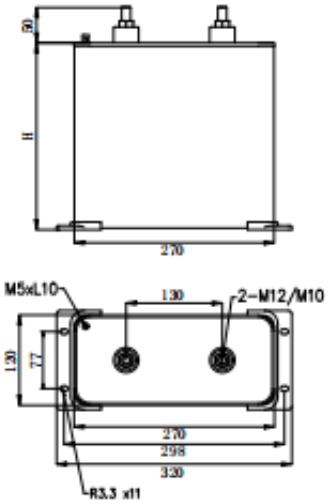


图6

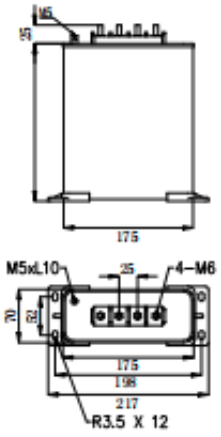


图7

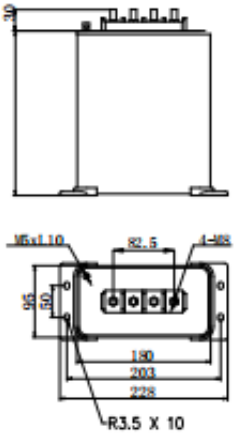


图8

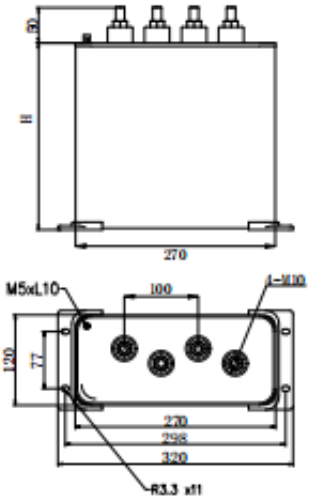


图9

Single capacitor-square								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Length×Width×Height (H)	Terminal (Md)	Installation Drawing	Terminal pitch (S)
1	LCP280-10B	10	35.7	406	175×70×160	2×M6	图 4	50
2	LCP280-15B	15	53.6	609	175×70×210	2×M6	图 4	50
3	LCP280-20B	20	71.4	812	175×70×260	2×M6	图 4	50
4	LCP280-30B	30	107.1	1218	180×95×280	2×M8	图 5	55

Three-phase split capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Length×Width×Height (H)	Terminal (Md)	Installation Drawing	Terminal pitch (S)
1	LCP280-15-FB	15	10.3	609.3	175×70×210	4×M6	图 7	25
2	LCP280-20-FB	20	23.8	812	175×70×260	4×M6	图 7	25
3	LCP280-30-FB	30	35.7	1219	180×95×280	4×M8	图 8	27.5
4	LCP280-40-FB	40	47.6	1624.9	180×95×330	4×M8	图 8	27.5
5	LCP280-60-FB	60	71.4	2437.2	270×120×290	4×M8	图 9	50

Three-phase capacitor								
No.	Model Specification	Rated Capacity (kvar)	Rated Current (A)	Rated capacitance (μF)	Dimension (mm)			
					Length×Width×Height (H)	Terminal (Md)	Installation Drawing	Terminal pitch (S)
1	LCP400-15B	15	21.7	298.5	175×70×210	3×M6	图 1	25
2	LCP400-20B	20	28.9	398.1	175×70×210	3×M6	图 1	25
3	LCP400-25B	25	36.1	497.6	175×70×260	3×M6	图 1	25
4	LCP400-30B	30	43.3	597.1	180×95×220	3×M8	图 2	27.5
5	LCP400-40B	40	57.7	796.2	180×95×280	3×M8	图 2	27.5
6	LCP400-50B	50	72.2	995.2	180×95×330	3×M8	图 2	27.5
7	LCP450-15B	15	19.2	235.9	175×70×210	3×M6	图 1	25
6	LCP450-20B	20	25.7	314.5	175×70×210	3×M6	图 1	25
7	LCP450-25B	25	32.1	393.2	175×70×260	3×M6	图 1	25
8	LCP450-30B	30	38.5	471.8	180×95×220	3×M8	图 2	27.5
9	LCP450-40B	40	51.3	629.1	180×95×280	3×M8	图 2	27.5
10	LCP450-50B	50	64.2	786.3	180×95×330	3×M8	图 2	27.5
11	LCP480-15B	15	18.0	207.3	175×70×210	3×M6	图 1	25
12	LCP480-20B	20	24.1	276.5	175×70×210	3×M6	图 1	25
13	LCP480-25B	25	30.1	345.6	175×70×260	3×M6	图 1	25
14	LCP480-30B	30	36.1	414.7	180×95×220	3×M8	图 2	27.5
15	LCP480-40B	40	481	552.9	180×95×280	3×M8	图 2	27.5
16	LCP480-50B	50	60.1	691.1	180×95×330	3×M8	图 2	27.5
17	LCP480-60B	60	72.2	829.4	270×120×230	3×M8	图 3	65

Product Acceptance

- We do not assume any responsibility for the loss or damage of the goods caused by the carrier, please negotiate with the carrier for any complaints.
- Unpack the product at the installation site.
- Make sure that the product is not subject to impact or deformation.
- Check that there are no missing parts in the product, and that the product has not been subjected to impacts that could cause damage insulation or malfunction.
- Check that the electrical parameters on the product label are consistent with the ordered product.
- If there is any discrepancy, please attach a description to feed back to us.

Storage

- The products should be stored in a dry and well-ventilated environment, protected from rain, water, free of chemicals and dust.
- Wrap or cover the product to provide effective protection from dust, debris, paints, etc.
- The storage temperature: -20℃~60℃。
- The capacitors need to be inspected after storage.

Warning

- Capacitors cannot be installed in places that may be flooded.
- No special protection measures are required; the product packaging has provided the necessary protection in general, since the product does not contain liquid electrolytes, will not be damaged by

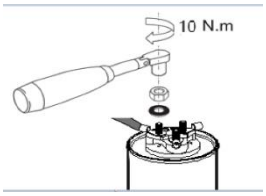
heat or cold, and has no special fire protection requirements.

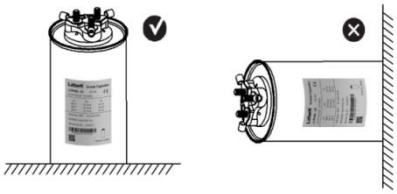
Ventilation

Application scope: the ambient temperature around the power distribution cabinet meets the requirement of IEC60439-1

- Maximum temperature: 40℃
- Average temperature of 24 hours: 35℃
- Annual average temperature: 25℃

Installation Requirements





- Capacitors should be installed in a well-ventilated environment to prevent overheating, if installed in a place with poor ventilation, use a fan for force ventilation. When installing, there should be a distance of not less than 30mm between the capacitors, the installation torque of the bottom fixing bolt is 4～6N.m, and the installation torque of the terminal is 8～10N.m.The top of the capacitor ensures that the product failure explosion-proof deformation space is not less than 50mm.
- Due to the insulting medium poured inside, the capacitor must be installed vertically, sideways or upside down is forbidden.
- The connecting wires on the capacitor terminals are recommended to use flexible wires, and the connecting wires are recommended to be crimped with pre-insulated terminals of corresponding specifications to ensure good contact. The firmness of the connecting wire should be checked after the first operation and 24 hours after the first operation, and give regular maintenance. When multiple

capacitors are connected in parallel, the products should be soft connection to ensure the explore-proof effect.

Current Calculation Method:

Three-phase capacitor I=Q/√3U For example: The product of 480-30-3, the rated current is I=30/(0.48×√3)=36A

Single-phase capacitor I=Q/U For example: The product of 250-15-1, the rated current is I=15/0.25=60A

- It is recommended to use appropriate over-current relay as the overcurrent protection of capacitors. The rated value of the over-current relay is controlled in the maximum current 1.3In.
- Considering that it will increase the voltage when the capacitor is connecting to the grid, so the rated voltage of the chosen capacitor cannot be lower than the maximum operation voltage of the network which the capacitor connected to.
- The voltage waveform and network characteristics should be measured before and after installing the capacitor. If there is a harmonic source, the appropriate electric antibody should be considered to be connected in series on the capacitor.
- In the capacitor circuit, any poor contact will generate an arc to form a high-frequency oscillation, which makes the capacitors overheating and excessive stress. Therefore, users should conduct regular inspections of all contacts of the capacitor compensation device.

Electrical Wiring

- Before connecting all terminals of the power line connection, you should be familiar with the test report and the connection diagram on the nameplate, and the connection must be correct.
- The connection wire composed of cables or busbars must comply with the requirements of reactor operation regulations and electrical installation regulations, and the cables and busbars with appropriate cross-selections should be selected.
- Connecting wires must not create excessive mechanical tension and moments on the terminals.
- The bolt connection must ensure sufficient contact pressure and butterfly washers or spring washers can be used.
- Use flexible wires with a minimum temperature resistance of 105℃.
- Connect the capacitors in parallel.

This instruction applies to all types of terminals for all capacitors.

Maintenance

- Personal Protection

Power must be cut off before any maintenance work on the device.

- Check

Please check the tightness situation of the reactor terminal after one month of use.

Once a year, check the following:

1. General product cleaning
2. Ventilation and filtration system
3. Tightness of electrical wire terminals
4. Capacitor status

5. Ambient temperature and humidity at the installation site

After-sale Service

The products of our company are guaranteed for 1 year, and the warranty period starts from the date of product sale. If the product faults or the parts are damaged during the warranty period, our company will provide free maintenance after it is identified by our technicians as occurring under normal use.

In the following cases, material costs and maintenance man-hours will be charged:

- Damage caused by not following the instructions in the manual
- Damage caused by unauthorized desoldering of parts or modification
- The operation exceeds the “Three Guarantees” period

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