Your Reliable Power Capacitor Manufacturer

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BSMJ

Self-healing low-voltage shunt capacitor

The BSMJ series self-healing low-voltage shunt capacitors are suitable for use in power systems with an alternating current frequency of 50Hz and a rated voltage of 1000V or less, for improving power factor and enhancing voltage quality. Standards met: IEC 60831-1:2014; IEC 60831-2:2014

Advanced imported production equipment and high-quality imported polypropylene film result in smaller product size and more reliable quality.

The unique design and craftsmanship ensure that the product can withstand high environmental temperatures and situations with significant fluctuations in system voltage.

The new type of sealing equipment has better product sealing performance.

The newly designed installation feet are sturdy, convenient and attractive.

The unique lead-out terminal makes wiring convenient and ensures reliable and safe connections.

An anti-corrosion metal casing, elegant and sturdy, without the need for painting.



○ Model definition and description

B	S	MJ	—	□	□	□	□
1	2	3		4	5	6	7

1.Series code (B represents parallel capacitor)

2.Impregnating agent code (S represents microcrystalline wax; K represents dry type)

3.Medium code (metallized polypropylene film)

4.Rated Voltage (kV)

5.Rated capacity (kvar)

6.Phase number (3: three-phase; 1: single-phase; 6: inter-phase)

7.Yn: Subordinate Clause

○ Normal working conditions and precautions

- Ambient air temperature: -25°C to +50°C
- Relative humidity: ≤50% at 40%; ≤90% at 20%
- Altitude: ≤ 2000m
- Environmental conditions: There are no harmful gases or vapors, no conductive or explosive dust, and no severe mechanical vibrations. The equipment must be operated under good ventilation conditions and is not allowed to be used in a sealed and non-ventilated environment.
- Cautionary notes for the use of capacitors:
- Overvoltage and overheating will shorten the lifespan of the capacitor. Therefore, the operating conditions (such as ambient temperature, voltage and current, etc.) should be strictly controlled.
- When installing parallel capacitors in the system, the following situations should be given full attention:
- a. In environments with severe harmonic content, it is not advisable to directly install parallel capacitors. Instead, series anti-harmonic reactors should be used. In environments with less severe harmonic content, it is recommended to increase the voltage level of the capacitors or use filtering capacitors. (Common harmonic sources include: frequency converters, DC rectifiers, inverters, electroplating equipment, medium-frequency furnaces, arc furnaces, etc.)
- b. When installing parallel capacitors for fixed connection of motors, it is recommended to select capacitors with a current less than 90% of the motor's no-load current.
- c. When the transformer is in no-load condition, the capacitors should be shut down.
- When installing parallel capacitors in the system, special switches, contactors, electronic composite switches, overcurrent relays, etc. that can limit inrush current and prevent re-energization should be selected.
- The capacitor needs to be reconnected after a delay of more than 3 minutes. Before disconnecting the power supply, a short-circuit discharge must be carried out first, and then it is safe to touch or test it.
- When using a small circuit breaker for short-circuit protection, the selection should be based on 2 to 3 times the rated current of the capacitor. It is strictly prohibited to close the circuit breaker with the capacitor connected.
- After the capacitor is disconnected from the power supply, it is necessary to ensure that the remaining voltage of the capacitor drops to 10% of the rated voltage before it can be reconnected.

○ Main parameters and other conditions

- Rated voltage: (0.23 - 1.2) kV, AC
- Rated frequency: 50Hz or 60Hz
- Rated capacity: (1 - 100) kvar
- Capacitance tolerance: -5% to +10%
- Loss tangent value: Under the rated power frequency voltage at 20℃, for products with a capacity of 20kvar or less, tgδ ≤ 0.0012; for products with a capacity over 30kvar, tgδ ≤ 0.0015
- Maximum allowable overvoltage: 1.1UN; no more than 8 hours in each 24-hour period
- Maximum allowable overcurrent: 1.3IN
- Self-discharge characteristic: When a 2UN DC voltage is applied to the capacitor, and the power supply is disconnected for 3 minutes, the remaining voltage drops to 50V or below.
- Main product model specifications, data sheets, appearance, and installation dimensions.

Main technical parameters

Product model	Rated voltage	Rated capacity	Rated capacitance	Rated current	Rated frequency	Height	Figure number
BSMJ	(kV)	(kvar)	(μF)	(A)	(Hz)	(H)mm	
0.25-1-1	0.25	1	51	4	50	115	Figure 1 Terminal M6
0.25-2-1	0.25	2	102	8	50	115	Figure 1 Terminal M6
0.25-3-1	0.25	3	153	12	50	115	Figure 1 Terminal M6
0.25-4-1	0.25	4	204	16	50	115	Figure 1 Terminal M6
0.25-5-1	0.25	5	255	20	50	115	Figure 1 Terminal M6
0.25-6-1	0.25	6	306	24	50	125	Figure 1 Terminal M6
0.25-7.5-1	0.25	7.5	382	30	50	180	Figure 1 Terminal M6
0.25-8-1	0.25	8	408	32	50	180	Figure 1 Terminal M6
0.25-10-1	0.25	10	509	40	50	180	Figure 1 Terminal M6
0.25-12-1	0.25	12	611	48	50	180	Figure 1 Terminal M6
0.25-14-1	0.25	14	713	56	50	180	Figure 1 Terminal M6
0.25-15-1	0.25	15	764	60	50	180	Figure 1 Terminal M6
0.25-16-1	0.25	16	815	64	50	210	Figure 2 Terminal M8
0.25-18-1	0.25	18	917	72	50	210	Figure 2 Terminal M8
0.25-20-1	0.25	20	1019	80	50	210	Figure 2 Terminal M8
0.25-22-1	0.25	22	1121	88	50	250	Figure 2 Terminal M8
0.25-24-1	0.25	24	1223	96	50	250	Figure 2 Terminal M8
0.25-25-1	0.25	25	1273	100	50	250	Figure 2 Terminal M8
0.25-26-1	0.25	26	1325	104	50	230	Figure 3 Terminal M10
0.25-28-1	0.25	28	1427	112	50	230	Figure 3 Terminal M10
0.25-30-1	0.25	30	1528	120	50	230	Figure 3 Terminal M10

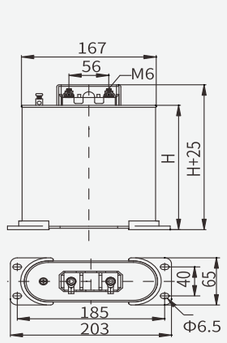


Figure 1

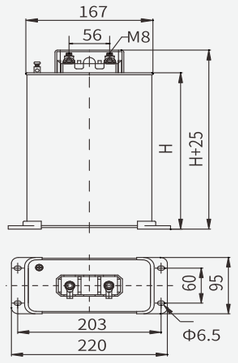


Figure 2

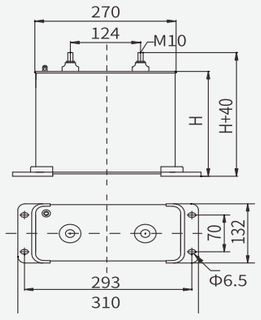


Figure 3

Main technical parameters

Product model	Rated voltage	Rated capacity	Rated capacitance	Rated current	Rated frequency	Height	Figure number
BSMJ	(kV)	(kvar)	(μF)	(A)	(Hz)	(H)mm	
0.4-1-3(1)	0.4	1	20	1.4/2.5	50	115	Figure 4 Terminal M6
0.4-2-3(1)	0.4	2	40	2.9/5	50	115	Figure 4 Terminal M6
0.4-3-3(1)	0.4	3	60	4.3/7.5	50	115	Figure 4 Terminal M6
0.4-4-3(1)	0.4	4	80	5.8/10	50	115	Figure 4 Terminal M6
0.4-5-3(1)	0.4	5	99	7.2/12.5	50	115	Figure 4 Terminal M6
0.4-6-3(1)	0.4	6	119	8.7/15	50	115	Figure 4 Terminal M6
0.4-7.5-3(1)	0.4	7.5	149	10.8/19	50	125	Figure 4 Terminal M6
0.4-8-3(1)	0.4	8	159	11.5/20	50	125	Figure 4 Terminal M6
0.4-10-3(1)	0.4	10	199	14.4/25	50	125	Figure 4 Terminal M6
0.4-12-3(1)	0.4	12	239	17.3/30	50	180	Figure 4 Terminal M6
0.4-14-3(1)	0.4	14	279	20.2/35	50	180	Figure 4 Terminal M6
0.4-15-3(1)	0.4	15	298	21.7/38	50	180	Figure 4 Terminal M6
0.4-16-3(1)	0.4	16	318	23.1/40	50	210	Figure 4 Terminal M6
0.4-18-3(1)	0.4	18	358	26.0/45	50	210	Figure 4 Terminal M6
0.4-20-3(1)	0.4	20	398	28.9/50	50	210	Figure 4 Terminal M6
0.4-22-3(1)	0.4	22	438	31.8/55	50	210	Figure 4 Terminal M8
0.4-24-3(1)	0.4	24	478	34.6/60	50	210	Figure 5 Terminal M8
0.4-25-3(1)	0.4	25	497	36.1/63	50	210	Figure 5 Terminal M8
0.4-26-3(1)	0.4	26	518	37.5/65	50	210	Figure 5 Terminal M8
0.4-28-3(1)	0.4	28	557	40.4/70	50	210	Figure 5 Terminal M8
0.4-30-3(1)	0.4	30	597	43.3/75	50	210	Figure 5 Terminal M8
0.4-35-3(1)	0.4	35	697	50.5/88	50	250	Figure 5 Terminal M8
0.4-40-3(1)	0.4	40	796	57.7/100	50	250	Figure 5 Terminal M8
0.4-50-3(1)	0.4	50	995	72.1/125	50	300	Figure 5 Terminal M8
0.4-60-3(1)	0.4	60	1194	86.6/150	50	230	Figure 6 Terminal M10

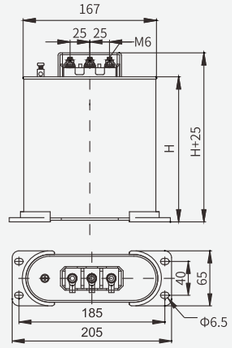


Figure 4

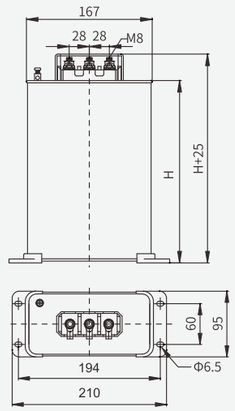


Figure 5

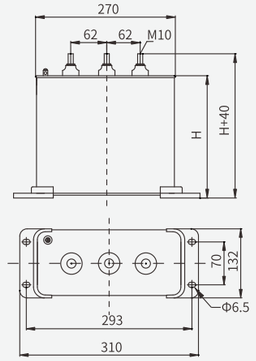


Figure 6

Main technical parameters

Product model	Rated voltage	Rated capacity	Rated capacitance	Rated current	Rated frequency	Height	Figure number
BSMJ	(kV)	(kvar)	(μF)	(A)	(Hz)	(H)mm	
0.45-1-3(1)	0.45	1	15.7	1.3/2.2	50	115	Figure 4 Terminal M6
0.45-2-3(1)	0.45	2	31.4	2.6/4.4	50	115	Figure 4 Terminal M6
0.45-3-3(1)	0.45	3	47	3.8/6.7	50	115	Figure 4 Terminal M6
0.45-4-3(1)	0.45	4	62.8	5.1/8.9	50	115	Figure 4 Terminal M6
0.45-5-3(1)	0.45	5	78.6	6.4/11.1	50	115	Figure 4 Terminal M6
0.45-6-3(1)	0.45	6	94.3	7.7/13.3	50	115	Figure 4 Terminal M6
0.45-7.5-3(1)	0.45	7.5	117.9	9.6/16.7	50	115	Figure 4 Terminal M6
0.45-8-3(1)	0.45	8	125.7	10.3/17.8	50	115	Figure 4 Terminal M6
0.45-10-3(1)	0.45	10	157	12.8/22.2	50	125	Figure 4 Terminal M6
0.45-12-3(1)	0.45	12	188.6	15.4/26.7	50	180	Figure 4 Terminal M6
0.45-14-3(1)	0.45	14	220	18/31	50	180	Figure 4 Terminal M6
0.45-15-3(1)	0.45	15	235.8	19.3/33.3	50	180	Figure 4 Terminal M6
0.45-16-3(1)	0.45	16	251	20.5/35.5	50	180	Figure 4 Terminal M6
0.45-18-3(1)	0.45	18	283	23.1/40	50	210	Figure 4 Terminal M6
0.45-20-3(1)	0.45	20	314	25.7/44.4	50	210	Figure 4 Terminal M6
0.45-22-3(1)	0.45	22	345	28.2/48.9	50	240	Figure 4 Terminal M6
0.45-24-3(1)	0.45	24	377	30.8/53.3	50	240	Figure 4 Terminal M8
0.45-25-3(1)	0.45	25	393	32.1/55.6	50	240	Figure 4 Terminal M8
0.45-26-3(1)	0.45	26	408	33.4/57.8	50	210	Figure 5 Terminal M8
0.45-28-3(1)	0.45	28	440	35.9/62.2	50	210	Figure 5 Terminal M8
0.45-30-3(1)	0.45	30	471	38.5/66.7	50	210	Figure 5 Terminal M8
0.45-35-3(1)	0.45	35	550	44.9/77.8	50	250	Figure 5 Terminal M8
0.45-40-3(1)	0.45	40	628	51.3/88.9	50	250	Figure 5 Terminal M8
0.45-50-3(1)	0.45	50	786	64.1/111.1	50	300	Figure 5 Terminal M8
0.45-60-3(1)	0.45	60	943	77/133.3	50	230	Figure 6 Terminal M10
0.48-1-3(1)	0.48	1	13.8	1.2/2.1	50	125	Figure 4 Terminal M6
0.48-2-3(1)	0.48	2	27.6	2.4/4.2	50	125	Figure 4 Terminal M6
0.48-3-3(1)	0.48	3	41.5	3.6/6.2	50	125	Figure 4 Terminal M6
0.48-4-3(1)	0.48	4	55.2	4.8/8.3	50	125	Figure 4 Terminal M6
0.48-5-3(1)	0.48	5	69	6.0/10.4	50	115	Figure 4 Terminal M6
0.48-6-3(1)	0.48	6	82.8	7.2/12.5	50	125	Figure 4 Terminal M6
0.48-7.5-3(1)	0.48	7.5	103.6	9.0/15.6	50	125	Figure 4 Terminal M6
0.48-8-3(1)	0.48	8	110.5	9.6/16.7	50	125	Figure 4 Terminal M6
0.48-10-3(1)	0.48	10	138	12.0/20.8	50	125	Figure 4 Terminal M6
0.48-12-3(1)	0.48	12	167.8	14.4/25	50	180	Figure 4 Terminal M6
0.48-14-3(1)	0.48	14	193.4	16.8/29.2	50	210	Figure 4 Terminal M6
0.48-15-3(1)	0.48	15	207	18.0/31.2	50	210	Figure 4 Terminal M6
0.48-16-3(1)	0.48	16	221	19.3/33.3	50	210	Figure 4 Terminal M6
0.48-18-3(1)	0.48	18	248.7	21.6/37.5	50	210	Figure 4 Terminal M6
0.48-20-3(1)	0.48	20	276.3	24/41.7	50	210	Figure 4 Terminal M6
0.48-22-3(1)	0.48	22	304	26.5/45.8	50	210	Figure 5 Terminal M8
0.48-24-3(1)	0.48	24	331.5	28.5/50	50	210	Figure 5 Terminal M8
0.48-25-3(1)	0.48	25	345.4	30.7/52.1	50	210	Figure 5 Terminal M8
0.48-26-3(1)	0.48	26	359.2	31.3/54.2	50	210	Figure 5 Terminal M8
0.48-28-3(1)	0.48	28	386.5	33.7/58.3	50	210	Figure 5 Terminal M8
0.48-30-3(1)	0.48	30	414.5	36.1/62.5	50	210	Figure 5 Terminal M8
0.48-35-3(1)	0.48	35	483.5	42.1/72.9	50	250	Figure 5 Terminal M8
0.48-40-3(1)	0.48	40	552.6	48.1/83.3	50	250	Figure 5 Terminal M8
0.48-50-3(1)	0.48	50	690.7	60.1/104.2	50	310	Figure 5 Terminal M10
0.48-60-3(1)	0.48	60	829	72.1/125	50	230	Figure 6 Terminal M10

Main technical parameters

Product model	Rated voltage	Rated capacity	Rated capacitance	Rated current	Rated frequency	Height	Figure number
BSMJ	(kV)	(kvar)	(μF)	(A)	(Hz)	(H)mm	
0.525-1-3(1)	0.525	1	12	1.1/2	50	115	Figure 4 Terminal M6
0.525-2-3(1)	0.525	2	23	2.2/4	50	115	Figure 4 Terminal M6
0.525-3-3(1)	0.525	3	34	3.3/5.7	50	115	Figure 4 Terminal M6
0.525-4-3(1)	0.525	4	46	4.4/8	50	115	Figure 4 Terminal M6
0.525-5-3(1)	0.525	5	58	5.5/10	50	115	Figure 4 Terminal M6
0.525-6-3(1)	0.525	6	69	6.6/11	50	115	Figure 4 Terminal M6
0.525-7.5-3(1)	0.525	7.5	87	8.3/14	50	115	Figure 4 Terminal M6
0.525-8-3-3(1)	0.525	8	92	8.8/15	50	125	Figure 4 Terminal M6
0.525-10-3(1)	0.525	10	115	11.0/19	50	125	Figure 4 Terminal M6
0.525-12-3(1)	0.525	12	139	13.2/23	50	180	Figure 4 Terminal M6
0.525-14-3(1)	0.525	14	162	15.4/27	50	180	Figure 4 Terminal M6
0.525-15-3(1)	0.525	15	173	16.5/29	50	180	Figure 4 Terminal M6
0.525-16-3(1)	0.525	16	185	17.6/30	50	210	Figure 4 Terminal M6
0.525-18-3(1)	0.525	18	208	19.8/34	50	210	Figure 4 Terminal M6
0.525-20-3(1)	0.525	20	231	22.0/38	50	210	Figure 4 Terminal M6
0.525-24-3(1)	0.525	24	277	26.4/46	50	210	Figure 5 Terminal M8
0.525-25-3(1)	0.525	25	289	27.5/48	50	210	Figure 5 Terminal M8
0.525-30-3(1)	0.525	30	346	33.0/57	50	210	Figure 5 Terminal M8
0.525-35-3(1)	0.525	35	404	38.5/67	50	250	Figure 5 Terminal M8
0.525-40-3(1)	0.525	40	462	44.0/76	50	250	Figure 5 Terminal M8
0.525-50-3(1)	0.525	50	577	55.0/95	50	300	Figure 5 Terminal M8
0.525-60-3(1)	0.525	60	693	66.0/11	50	230	Figure 6 Terminal M10
0.69-5-3	0.69	5	33	4.2	50	115	Figure 4 Terminal M6
0.69-6-3	0.69	6	40	5	50	115	Figure 4 Terminal M6
0.69-7.5-3	0.69	7.5	50	6.3	50	115	Figure 4 Terminal M6
0.69-8-3	0.69	8	53	6.7	50	125	Figure 4 Terminal M6
0.69-10-3	0.69	10	67	8.4	50	180	Figure 4 Terminal M6
0.69-12-3	0.69	12	80	10	50	180	Figure 4 Terminal M6
0.69-14-3	0.69	14	94	11.7	50	180	Figure 4 Terminal M6
0.69-15-3	0.69	15	100	12.6	50	210	Figure 4 Terminal M6
0.69-16-3	0.69	16	107	13.1	50	210	Figure 4 Terminal M6
0.69-18-3	0.69	18	120	15.1	50	240	Figure 4 Terminal M6
0.69-20-3	0.69	20	134	16.7	50	240	Figure 4 Terminal M6
0.69-22-3	0.69	22	147	18.4	50	210	Figure 5 Terminal M8
0.69-24-3	0.69	24	161	20.1	50	210	Figure 5 Terminal M8
0.69-25-3	0.69	25	167	20.9	50	210	Figure 5 Terminal M8
0.69-26-3	0.69	26	174	21.8	50	210	Figure 5 Terminal M8
0.69-28-3	0.69	28	187	23.4	50	250	Figure 5 Terminal M8
0.69-30-3	0.69	30	201	25.1	50	250	Figure 5 Terminal M8
0.69-35-3	0.69	35	234	29.3	50	300	Figure 5 Terminal M8
0.69-40-3	0.69	40	267	33.5	50	300	Figure 5 Terminal M8
0.69-50-3	0.69	50	334	41.8	50	230	Figure 6 Terminal M10
0.69-60-3	0.69	60	401	50.8	50	230	Figure 6 Terminal M10

Main technical parameters

Product model	Rated voltage	Rated capacity	Rated capacitance	Rated current	Rated frequency	Height	Figure number
BSMJ	(kV)	(kvar)	(μF)	(A)	(Hz)	(H)mm	
0.25-1-3YN	0.25	1	51	1.3	50	115	Figure 7 Terminal M6
0.25-2-3YN	0.25	2	102	2.7	50	115	Figure 7 Terminal M6
0.25-3-3YN	0.25	3	153	4	50	115	Figure 7 Terminal M6
0.25-4-3YN	0.25	4	204	5.3	50	115	Figure 7 Terminal M6
0.25-5-3YN	0.25	5	254	6.7	50	115	Figure 7 Terminal M6
0.25-6-3YN	0.25	6	305	8	50	125	Figure 7 Terminal M6
0.25-7.5-3YN	0.25	7.5	382	10	50	180	Figure 7 Terminal M6
0.25-8-3YN	0.25	8	407	10.7	50	180	Figure 7 Terminal M6
0.25-10-3YN	0.25	10	509	13.3	50	180	Figure 7 Terminal M6
0.25-12-3YN	0.25	12	611	16	50	210	Figure 7 Terminal M6
0.25-14-3YN	0.25	14	713	18.7	50	210	Figure 7 Terminal M6
0.25-15-3YN	0.25	15	764	20	50	240	Figure 7 Terminal M6
0.25-16-3YN	0.25	16	815	21.3	50	210	Figure 8 Terminal M8
0.25-18-3YN	0.25	18	917	24	50	210	Figure 8 Terminal M8
0.25-20-3YN	0.25	20	1018	26.7	50	210	Figure 8 Terminal M8
0.25-22-3YN	0.25	22	1120	29.3	50	250	Figure 8 Terminal M8
0.25-24-3YN	0.25	24	1222	32	50	250	Figure 8 Terminal M8
0.25-25-3YN	0.25	25	1273	33.3	50	250	Figure 8 Terminal M8
0.25-30-3YN	0.25	30	1528	40	50	300	Figure 8 Terminal M8
0.25-35-3YN	0.25	35	1782.53	46.7	50	300	Figure 8 Terminal M8
0.25-40-3YN	0.25	40	2037.18	53.3	50	230	Figure 9 Terminal M10

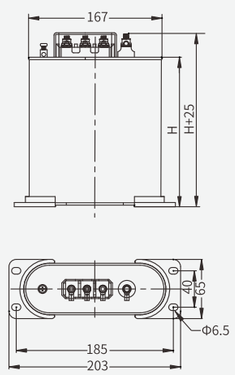


Figure 7

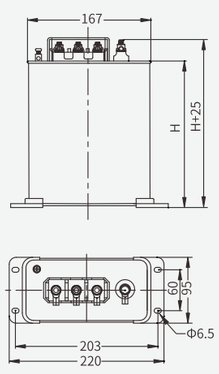


Figure 8

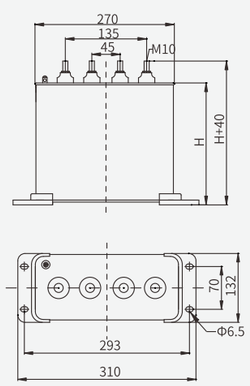


Figure 9

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BSMJ

Cylindrical low-voltage power capacitor

The BSMJ series self-healing environmental-friendly capacitors are produced in strict accordance with the international standard IEC60831-1:2002 "Self-healing Parallel Capacitors for AC Power Systems with Nominal Voltage 1kV and Below". They are used to enhance power factor, reduce reactive power loss, and improve voltage quality. This type of product is the mainstream product in countries such as Europe and America.

Connection Terminals: Capacitors with an outer diameter of ≥ 86mm use B-type terminals for better current-carrying capacity and heat reduction. An over-temperature protection device is also included.

Cylindrical Aluminum Shell: Provides strong protection against explosion and leakage, ensuring safety and environmental friendliness.

High-Quality Film: Utilizes advanced metallized polypropylene film, which is compact, has low temperature rise, excellent electrical performance, and a long service life, enhancing the capacity of compensation cabinets.

Versatility:Adaptable Design: Suitable for high temperatures and environments with significant voltage fluctuations.

Mounting Options: Features M12/M16 threaded mounting for user-friendly installation and adjustment.



Model definition and description

B	S	MJ	—	□	□	□	□
1	2	3		4	5	6	7

1.Series code (B represents parallel capacitor)

2.Impregnating agent code (S represents microcrystalline wax; K represents dry type)

3.Medium code (metallized polypropylene film)

4.Rated Voltage (kV)

5.Rated capacity (kvar)

6.Phase number (3: three-phase; 1: single-phase; 6: inter-phase)

7.Yn: Subordinate Clause

Normal working conditions and precautions

- Ambient air temperature: -25°C to +50°C
- Relative humidity: ≤50% at 40%; ≤90% at 20%
- Altitude: ≤ 2000m
- Environmental conditions: There are no harmful gases or vapors, no conductive or explosive dust, and no severe mechanical vibrations. The equipment must be operated under good ventilation conditions and is not allowed to be used in a sealed and non-ventilated environment.
- Cautionary notes for the use of capacitors:
- Overvoltage and overheating will shorten the lifespan of the capacitor. Therefore, the operating conditions (such as ambient temperature, voltage and current, etc.) should be strictly controlled.
- When installing parallel capacitors in the system, the following situations should be given full attention:
- a. In environments with severe harmonic content, it is not advisable to directly install parallel capacitors. Instead, series anti-harmonic reactors should be used. In environments with less severe harmonic content, it is recommended to increase the voltage level of the capacitors or use filtering capacitors. (Common harmonic sources include: frequency converters, DC rectifiers, inverters, electroplating equipment, medium-frequency furnaces, arc furnaces, etc.)
- b. When installing parallel capacitors for fixed connection of motors, it is recommended to select capacitors with a current less than 90% of the motor's no-load current.
- c. When the transformer is in no-load condition, the capacitors should be shut down.
- When installing parallel capacitors in the system, special switches, contactors, electronic composite switches, overcurrent relays, etc. that can limit inrush current and prevent re-energization should be selected.
- The capacitor needs to be reconnected after a delay of more than 3 minutes. Before disconnecting the power supply, a short-circuit discharge must be carried out first, and then it is safe to touch or test it.
- When using a small circuit breaker for short-circuit protection, the selection should be based on 2 to 3 times the rated current of the capacitor. It is strictly prohibited to close the circuit breaker with the capacitor connected.
- After the capacitor is disconnected from the power supply, it is necessary to ensure that the remaining voltage of the capacitor drops to 10% of the rated voltage before it can be reconnected.

Main parameters and other conditions

- CRated voltage: 0.23kV, 0.25kV, 0.28kV, 0.4kV, 0.45kV, 0.48kV, 0.525kV
- Rated frequency: 50Hz or 60Hz Rated capacity: (1~50) kvar
- Capacitance tolerance: -5% to +10%;
- The ratio of the maximum and minimum capacitances measured between any two output terminals of the three-phase capacitor shall not exceed 1.08 times.
- Tangential loss tangent value tg5: Under the rated power frequency voltage at 20℃, it is less than 0.0012
- Maximum allowable overvoltage: 1.1UN; no more than 8 hours in every 24 hours; Maximum allowable overcurrent: 1.3IN
- Self-discharge characteristic: When a 2UN DC voltage is applied to the capacitor, and the power supply is disconnected for 3 minutes, the remaining voltage drops to 50V or below.

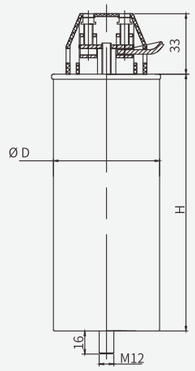
Main technical parameters

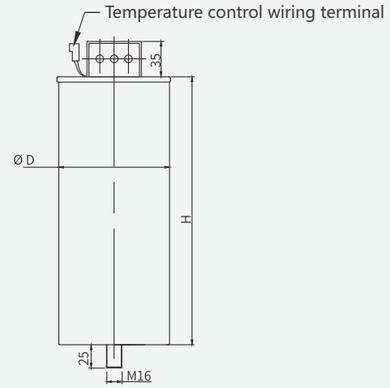
Product model	Rated voltage	Rated capacity	Rated capacitance	Rated frequency	Rated current	Dimensions	Screw size	Terminal structure type
BSMJ	(kV)	(kvar)	(μF)	(Hz)	(A)	(D×H)mm		
0.23-3-3YN(1)	0.23	3	181	50	4.33/13	ø86×240	M12 *16	A/B
0.23-5-3YN(1)	0.23	5	301	50	7.2/21.7	ø86×240	M12 *16	A/B
0.23-10-3YN(1)	0.23	10	602	50	14.4/43.4	ø86×240	M12 *16	A/B
0.23-12-3YN(1)	0.23	12	722	50	17.3/52.1	ø96×240	M16 *25	A/B
0.23-15-3YN(1)	0.23	15	903	50	21.7/65.2	ø96×290	M16 *25	A/B
0.23-18-3YN(1)	0.23	18	1084	50	26/78.2	ø106×290	M16 *25	A/B
0.23-20-3YN(1)	0.23	20	1204	50	28.9/86.9	ø106×290	M16 *25	A/B
0.25-3-3YN(1)	0.25	3	153	50	4/12	ø86×240	M12 *16	A/B
0.25-5-3YN(1)	0.25	5	255	50	6.7/20	ø86×240	M12 *16	A/B
0.25-10-3YN(1)	0.25	10	510	50	13.3/40	ø86×240	M12 *16	A/B
0.25-12-3YN(1)	0.25	12	611	50	16/48	ø86×240	M12 *16	A/B
0.25-15-3YN(1)	0.25	15	764	50	20/60	ø96×240	M16 *25	A/B
0.25-18-3YN(1)	0.25	18	917	50	24/72	ø96×290	M16 *25	A/B
0.25-20-3YN(1)	0.25	20	1019	50	26.7/80	ø106×290	M16 *25	A/B
0.25-25-3YN(1)	0.25	25	1274	50	33.3/100	ø116×290	M16 *25	A/B
0.25-30-3YN(1)	0.25	30	1529	50	40/120	ø116×290	M16 *25	A/B
0.28-3-3YN(1)	0.28	3	122	50	3.57/10.7	ø86×240	M12 *16	A/B
0.28-5-3YN(1)	0.28	5	203	50	5.9/17.8	ø86×240	M12 *16	A/B
0.28-10-3YN(1)	0.28	10	406	50	11.9/35.7	ø86×240	M12 *16	A/B
0.28-12-3YN(1)	0.28	12	487	50	14.3/42.8	ø86×240	M12 *16	A/B
0.28-15-3YN(1)	0.28	15	609	50	17.8/53.5	ø86×240	M12 *16	A/B
0.28-18-3YN(1)	0.28	18	731	50	21.4/64.2	ø96×240	M16 *25	A/B
0.28-20-3YN(1)	0.28	20	812	50	23.8/71.4	ø96×290	M16 *25	A/B
0.28-25-3YN(1)	0.28	25	1016	50	29.7/89.3	ø96×290	M16 *25	A/B
0.28-30-3YN(1)	0.28	30	1219	50	35.7/107	ø106×290	M16 *25	A/B

Main technical parameters

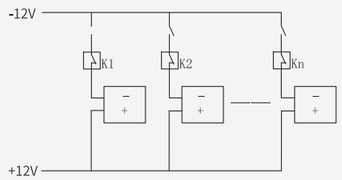
Product model	Rated voltage	Rated capacity	Rated capacitance	Rated frequency	Rated current	Dimensions	Screw size	Terminal structure type
BSMJ	(kV)	(kvar)	(μF)	(Hz)	(A)	(D×H)mm		
0.40-5-3（1）	0.40	5	79	50	4.2/7.2	ø76×240	M12 *16	A/B
0.40-10-3（1）	0.40	10	157	50	8.3/14.4	ø76×240	M12 *16	A/B
0.40-15-3（1）	0.40	15	236	50	12.5/21.7	ø76×240	M12 *16	A/B
0.40-20-3（1）	0.40	20	315	50	16.7/28.9	ø86×240	M12 *16	A/B
0.40-25-3（1）	0.40	25	393	50	20.8/36.1	ø96×290	M16 *25	A/B
0.40-30-3（1）	0.40	30	472	50	25/43.3	ø96×290	M16 *25	A/B
0.40-35-3（1）	0.40	35	550	50	29.2/50.5	ø106×290	M16 *25	A/B
0.40-40-3（1）	0.40	40	629	50	33.3/57.7	ø116×290	M16 *25	A/B
0.45-5-3（1）	0.45	5	79	50	6.4/11	ø76×240	M12 *16	A/B
0.45-10-3（1）	0.45	10	157	50	12.8/22	ø76×240	M12 *16	A/B
0.45-15-3（1）	0.45	15	236	50	19.2/33	ø76×240	M12 *16	A/B
0.45-20-3（1）	0.45	20	315	50	25.7/44	ø86×240	M12 *16	A/B
0.45-25-3（1）	0.45	25	393	50	32.1/56	ø96×290	M16 *25	A/B
0.45-30-3（1）	0.45	30	472	50	38.5/67	ø96×290	M16 *25	A/B
0.45-35-3（1）	0.45	35	550	50	58.9/78	ø106×290	M16 *25	A/B
0.45-40-3（1）	0.45	40	629	50	51.3/89	ø116×290	M16 *25	A/B
0.48-5-3（1）	0.48	5	69	50	6.0/10.4	ø76×240	M12 *16	A/B
0.48-10-3（1）	0.48	10	138	50	12.0/20.8	ø76×240	M12 *16	A/B
0.48-15-3（1）	0.48	15	207	50	18.0/31.2	ø86×240	M12 *16	A/B
0.48-20-3（1）	0.48	20	276	50	24/41.7	ø96×240	M16 *25	A/B
0.48-25-3（1）	0.48	25	346	50	30.1/52.1	ø96×290	M16 *25	A/B
0.45-30-3（1）	0.48	30	415	50	36.1/62.5	ø106×290	M16 *25	A/B
0.48-35-3（1）	0.48	35	484	50	42.1/72.9	ø116×290	M16 *25	A/B
0.48-40-3（1）	0.48	40	553	50	48.1/83.3	ø116×290	M16 *25	A/B
0.525-5-3（1）	0.525	5	58	50	5.5/10	ø76×240	M12 *16	A/B
0.525-10-3（1）	0.525	10	116	50	11/19	ø76×240	M12 *16	A/B
0.525-15-3（1）	0.525	15	173	50	16.5/29	ø86×240	M12 *16	A/B
0.525-20-3（1）	0.525	20	231	50	22/38	ø96×240	M16 *25	A/B
0.525-25-3（1）	0.525	25	289	50	27.5/48	ø96×290	M16 *25	A/B
0.525-30-3（1）	0.525	30	347	50	33/57	ø106×290	M16 *25	A/B
0.525-35-3（1）	0.525	35	404	50	38.5/66.7	ø106×290	M16 *25	A/B
0.525-40-3（1）	0.525	40	462	50	44/76.2	ø116×290	M16 *25	A/B

Appearance and installation dimensions





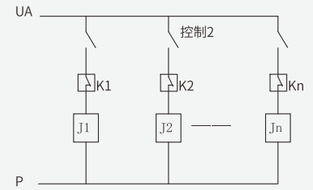
Structural diagram of Type B terminal



When used in conjunction with the composite switch, the function of the temperature protector.

WORKING PRINCIPLE:

When the operating temperature of the capacitor exceeds 60 degrees, the temperature switch changes from closed to open, cutting off the 12V control voltage of the composite switch. The composite switch then changes from closed to open, causing the capacitor to be de-energized, thereby achieving the purpose of protecting the capacitor.



AC contactor: 380V; P point to phase B/C: 220V;
P point to phase N: 220V.

When used in conjunction with the contactor for communication, the function of the temperature protector.

WORKING PRINCIPLE:

When the operating temperature of the capacitor exceeds 60 degrees, the temperature switch changes from closed to open, cutting off the voltage of the AC contactor coil and causing the capacitor to be de-energized. This serves to protect the capacitor.

CKSG

Three-phase series filter reactor

When the CKSG series three-phase series filter reactor capacitor compensates for capacitive reactive power, it is often affected by harmonic current, inrush current and operating overvoltage, which causes capacitor damage and reduces the power factor.

This product is available in three-phase and single-phase versions, and it is of iron core dry type.
The core is made of high-quality cold-rolled silicon steel sheets, which are cut by a high-speed shearing machine. It features small burrs, uniformity, neat and beautiful laminations, ensuring that the transformer operates with low temperature rise and low noise.
The coil is made of high-quality insulated wire and is wound by a special machine. It has the advantages of good flatness and a beautiful appearance.

During the assembly process of the reactor, all the clamps have undergone anti-corrosion treatment. The key clamps are made of non-magnetic materials and go through a process of pre-drying → vacuum impregnation → heat curing, which ensures that the reactor coil and core are firmly integrated, significantly reducing the temperature rise and noise during operation, and effectively improving the quality factor of the reactor and reducing the effect of harmonics.

The dimensions of the reactor are designed according to the standard cabinet size. It is small in size, easy to connect, and significantly reduces the cost investment for the user's cabinet.



○ Model definition and description

CKSG	—	□	□	□	□
1		2	3	4	5

1.Dry-type air-cooled three-phase series-connected filter reactor

2.Rated voltage of power and distribution capacitors (kV)

3.Rated electrical capacity of the power capacitor (kvar)

4.Rated reactance ratio XL/Xc (%)

5.K: With temperature protection switch No marking: Without

○ Normal working conditions and precautions

- The applicable capacitor voltages are: 0.4 kV, 0.45 kV, 0.48 kV, 0.525 kV, 0.66 kV, 0.69 kV;
- Reactance rate: 0.1%, 0.3%, 0.5%, 1%, mainly used to limit the closing inrush current; 4.5%, 5%, 6%, 7% are used to limit the closing inrush current and suppress harmonics of 5th and above; 12%, 14% are used to limit the closing inrush current and suppress harmonics of 3rd and above.
- Rated pressure: 5kV/min; Insulation class: B, F, H; Noise < 30dB; Overload capacity < 1.35In; Continuous operation under overload conditions.
- The voltage rises after the series reactor is connected. The calculation formula is:

$$U=\frac{Uo}{1-\lambda}$$

In the formula:

Working voltage of the capacitor bank: U;

System fundamental voltage: Uo;

Reactance rate:

- The conversion formulas among reactor capacity, capacitor capacity, reactance rate and inductance are as follows:

$$U_L=Uc\times\frac{XL}{Xc} \qquad L=\frac{UL}{I\times 0.314} \qquad Qw=Qc\times\frac{XL}{Xc} \qquad \text{Reactance rate: } =\frac{XL}{Xc}$$

Capacitance: Qc

Inductor current: I

Capacitor capacity: Qw

Capacitor phase voltage: Uc

Reactance voltage at the inductor terminal: UL

Inductance reactance: XL

Inductance: L

Capacitor reactance: Xc

○ The main specification is an impedance rate of 7%.

Product model	Distribution capacity	Dimensions (of the shape)	Installation dimensions
	(kvar)	L×W×H(mm)	L×W(mm)
CKSG-0.35/0.45-7%	5	170×100×160	150×60
CKSG-0.7/0.45-7%	10	175×110×160	150×70
CKSG-1.05/0.45-7%	15	175×145×160	150×80
CKSG-1.4/0.45-7%	20	200×155×185	170×80
CKSG-1.75/0.45-7%	25	240×165×210	200×90
CKSG-2.1/0.45-7%	30	240×170×210	200×95
CKSG-2.45/0.45-7%	35	240×175×210	200×100
CKSG-2.8/0.45-7%	40	240×180×210	200×105
CKSG-3.15/0.45-7%	45	240×190×210	200×110
CKSG-3.5/0.45-7%	50	250×190×210	210×110
CKSG-4.2/0.45-7%	60	250×190×250	210×110
CKSG-4.9/0.45-7%	70	250×195×250	210×115
CKSG-5.6/0.45-7%	80	250×195×265	210×115
CKSG-6.3/0.45-7%	90	310×190×285	260×110
CKSG-7.0/0.45-7%	100	310×190×285	260×110

○ The main specification is an impedance rate of 14%.

Product model	Distribution capacity	Dimensions (of the shape)	Installation dimensions
	(kvar)	L×W×H(mm)	L×W(mm)
CKSG-1.4/0.525-14%	10	200×155×185	170×80
CKSG-2.1/0.525-14%	15	240×170×210	200×95
CKSG-2.8/0.525-14%	20	240×180×210	200×105
CKSG-3.5/0.525-14%	25	250×190×210	210×110
CKSG-4.2/0.525-14%	30	250×190×250	210×110
CKSG-5.6/0.525-14%	40	250×195×265	210×115
CKSG-7.0/0.525-14%	50	310×190×285	260×110

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CJ19(16)

Switching capacitor contactor

CJ19(16)-25, 32, 43, 63, 85, 95 Switching capacitor contactors, specifically designed for switching low-voltage parallel capacitors, are widely used in reactive power compensation equipment with AC 50Hz and voltage up to 380V. The contactors are equipped with a surge current suppression device, which can effectively reduce the impact of closing surge current on the capacitors and lower the operational overvoltage at the moment of disconnection. They can replace the original switching device consisting of one contactor and three current-limiting reactors. They have a small size, light weight, strong switching capability, and are easy to install.



Giantele®

○ Model definition and description

CJ	—	19(16)	□	□	□
1		2	3	4	5

1.Switching capacitor contactor.

2.Design sequence number

3.Basic regulations are expressed in terms of the agreed heating current (A).

4.Auxiliary contact combinations (see the table below)

5.Operating voltage (coil voltage): 220VAC or 380VAC

○ Normal working conditions and installation conditions

- Ambient air temperature: -25℃ to +40℃
- Relative humidity: ≤ 90% at 25℃
- Altitude: ≤ 2000m
- Environmental conditions: No harmful gases or vapors, no conductive or explosive dust, no severe mechanical vibration.
- The inclination between the installation surface and the vertical surface is no more than 5°
- Pollution level: 3rd grade
- Installation category: Class III

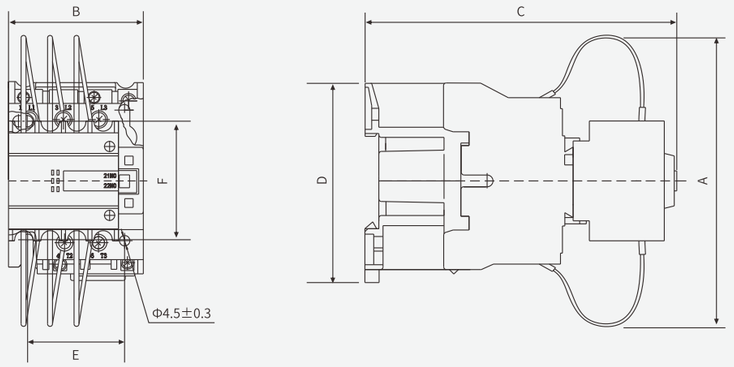
○ Main product model specifications and data sheets

Specification	Auxiliary contact code	Number of auxiliary contacts		Logo	
		Always on	Normally closed		
25A	20	2	0	20E	13、14；23、24
32A	02	0	2	02E	11、12；21、22
43A	11	1	1	11E	13、14；21、22
63A	21	2	1	21E	13、14；21、22；33、24
95A	21	2	1	21E	13、14；21、22；21、32

Main parameters

Project	Specification	25	32	43	63	85	95
Controllable capacitor	230V	6	9	10	15	20	32
Capacity (kvar)	400V	12	18	20	30	40	50
Rated insulation voltage (V)		500	500	500	500	500	500
Rated working voltage (V)		380	380	380	380	380	380
Agreed heating current (A)		25	32	43	63	85	95
AC-6b Rated Operating Current (A)		17	26	29	43	58	72
Peak current 7 Capacitor rated current		20Ie	20Ie	20Ie	20Ie	20Ie	20Ie
Control coil voltage (V)		220/380	220/380	220/380	220/380	220/380	220/380
The insulation class of the coil		B	B	B	B	B	B
Auxiliary contact specified heating current (A)		6	6	6	10	10	10
Operation frequency (times/hour)		120	120	120	120	120	120
Battery life (cycles)		10^5	10^5	10^5	10^5	10^5	10^5
Mechanical life (times)		10^6	10^6	10^6	10^6	10^6	10^6

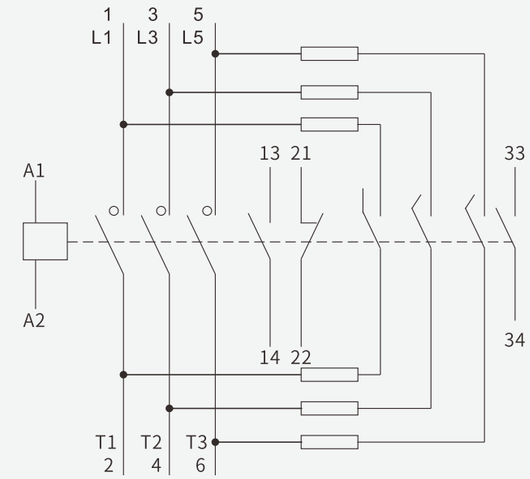
Shape and installation dimensions



Contactor model	Amax	Bmax	Cmax	Dmax	E	F	Note
CJ19-25	80	47	124	76	34/35	50/60	In addition to screw installation, it can also be installed using 35mm installation rails.
CJ19-32	90	58	132	86	40	48	
CJ19-43	90	58	136	86	40	48	
CJ19-63	132	79	150				In addition to screw installation, it can also be installed using 35mm and 75mm installation rails.
CJ19-95	135	87	158				

Note: The contactors can be installed either by using screws or by embedding them with standard rail fasteners.
For CJ19-25, 32, and 43 contactors, the rail width is 35mm. For CJ19(B)-63, 85, and 95 contactors, the rail width is either 35mm or 75mm.

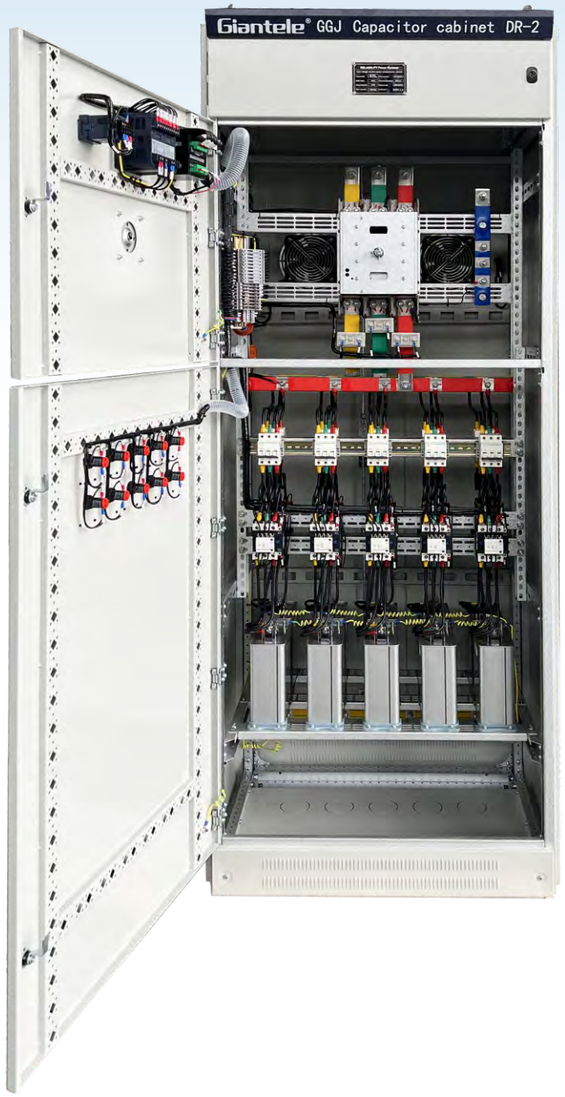
Internal circuit connection



Use and Maintenance

- The incoming and outgoing lines of the contactor must be connected securely to prevent arc discharge between phases during the energization period, which could damage the contactor and the equipment.
- When the capacitor is being re-energized, if the inrush current is too large and exceeds the suppression capacity of this contactor, the resistor may be damaged. In such cases, the resistor can be replaced and the device can be used again.
- The electrical appliances selected for the discharge device in reactive power compensation equipment should have an insulation voltage greater than 2 Ue, to prevent damage to the contactors due to the failure of the discharge device.





○ Product overview

Because the device can effectively improve the power factor of the power load, reduce the line loss, improve the actual load capacity of the transformer, with significant energy-saving effect, while the use of specific reactors in the system, but also effectively prevent harmonic amplification, effectively absorb most of the harmonic current, so that the harmonic voltage total anomaly rate limit and each harmonic current content limit in line with the national standard, harmonic control The purpose of... If the ordinary contactor is used to switch the capacitor bank, it will bring large inrush current, slow compensation time, high maintenance costs and short service life, therefore, we recommend that users give priority to the use of dynamic reactive power compensation devices in the following occasions. Such as: industrial and mining enterprises substation, production workshop and civil buildings in the low-voltage power grid, especially suitable for load often changes, reactive power unstable transmission and distribution system.

This product complies with: GB/T1 5576-2008 "Low voltage complete reactive power compensation equipment", IEC60439 "Low voltage complete switchgear and control equipment" and other standards.

○ Model meaning

GGJ — □ — □ / □ • □

- Connection mode D: Angle connection Y Star connection
- Voltage class 230V 400V
- Compensation capacity kvar
- Compensation mode 1 is dynamic compensation, Conventional omission
- Compensating tank

○ Conditions of use

1. Ambient temperature: -5℃~+40℃.

2. Ambient relative humidity: not more than 90%(20℃).

3. Altitude: not more than 2000m.

4. The surrounding medium has no explosion risk, no gas that can damage and corrode metal, no conductive dust, installation is not easy to violent vibration, no rain and snow erosion.

○ Product characteristics

Inductive loads in the power grid (generators, chokes, transformers, induction heaters and welding machines, etc.) will produce varying degrees of electrical hysteresis, the so-called inductance. The inductive load has the characteristic that the direction of the current (such as positive) can be maintained for a period of time while the direction of the voltage is changed. Once this phase difference between current and voltage exists, reactive power is generated and fed back into the grid. In an AC network (50/60Hz), the above process is repeated 50 or 60 times per second, so an obvious solution is to directly store and release these inductive power (reactive power) through capacitors temporarily, thereby reducing the reactive power exchange of the grid.

1. Strong general performance. The compensation cabinet can be combined with any cabinet at home and abroad, such as MNS, GCK, GGD, etc.

2. The combination of capacitor compensation is diverse and flexible. It has a Y-type compensation mode, a▲type compensation mode, and a Y+▲combination compensation mode.

3. Diversity of communication methods. With RS-232/485 communication interface, wireless data transmission module or GPRS module to implement long-distance communication;

4. Accurate and safe control. Implement voltage crossing trigger, no inrush current crossing zero cutting when input, no high voltage when breaking;

5. Long service life, with maintenance-free service life of more than 100,000 hours.

○ Technical characteristics

1. Automatic compensation of reactive power, improve power factor.

2. Improve equipment efficiency and save investment.

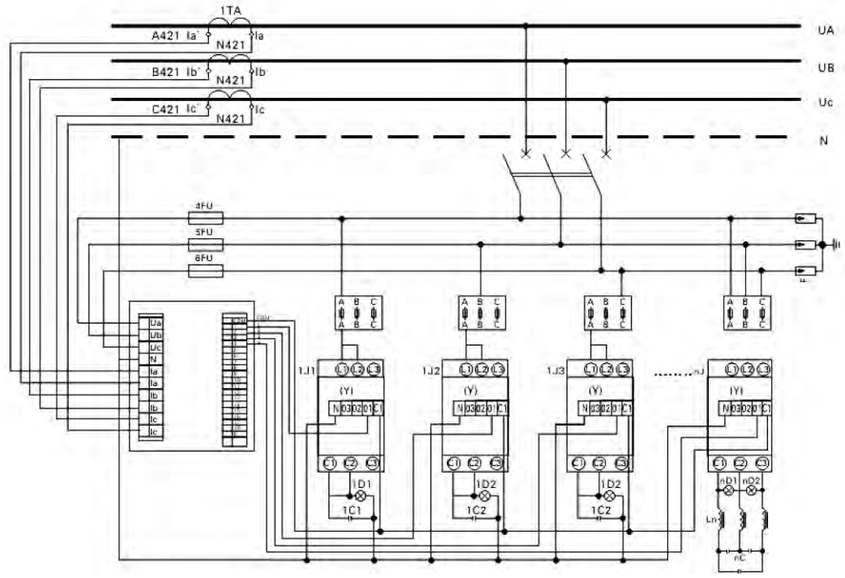
3. Reduce distribution line losses and transformer losses.

4. Change the voltage quality to improve the reliability of power supply.

○ Technical summary of plant

- **Rated voltage Ue**
  Main circuit, 380(400)V
- **Compensation capacity per step**
  10, 15, 20, 30, 45, 60 kvar
- **Steps**
  6, 8, 10, 12 or 7, 11, 15
- **Total capacity**
  up to 600 kvar (two cabinets)
- **Switching mode**
  loop or code plus loop
- **Compensation method**
  centralized compensation
- **Protection class**
  IP40 or IP43 (glass door)

○ Examples of device system principles



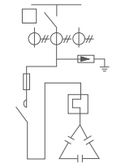
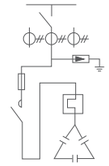
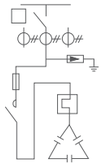
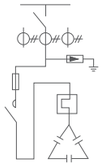
○ Order instructions

1. Main circuit scheme diagram;

2. Compensation capacity and compensation method;

3. If it is inconsistent with the normal conditions of use of the product, it must be explained in advance.

○ Main circuit scheme

Scheme number		GGJ1-01			GGJ1-02			GGJ2-01			GGJ2-02								
Main circuit scheme diagram																			
use		Reactive power compensation			Reactive power compensation			Reactive power compensation			Reactive power compensation								
Major electrical component	Type specification	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
	HD13BX-1000/31							1	1	1	1	1	1						
	HD13BX-400/31	1	1	1	1	1	1												
	BH-0.66□/5	3	3	3	3	3	3	3	3	3	3	3	3						
	AM3-32	30	24	18	30	24	18	30	24	18	30	24	18						
	FYS-0.22	3	3	3	3	3	3	3	3	3	3	3	3						
	CJ19-32/□	10	8	6	10	8	6	10	8	6	10	8	6						
	JR36-63/32□	10	8	6	10	8	6	10	8	6	10	8	6						
	JKL5C-□	1	1	1				1	1	1									
	BSMJ0.4-16-3	10	8	6	10	8	6	10	8	6	10	8	6						
Wide		1000	800	800	1000	800	800	1000	800	800	1000	800	800						
Deep		600	600	600	600	600	600	600	600	600	600	600	600						
Remark																			

○ Installation instructions

After receiving the device, the user should first carry out unpacking inspection. Check whether the components are damaged, whether the wire is broken, turned around, loose, whether the screws are tightened, and whether the documents, accessories, and accessories are complete. After inspection, the device is moved to the mounting base.

After the device is adjusted on the mounting base to make the cabinet perpendicular to the base plane, it is bolted tightly. Then firmly connect the system busbar to the horizontal busbar of the device (or through the cable), and connect the neutral line of the arrester to the neutral line of the system. Connect the grounding device of the cabinet to the grounding part of the system with a copper wire of no less than 50mm2.

The current sampling signal of the controller in the device should be taken from the L1 phase of the current transformer of the total incoming cabinet (or the feed wire that needs to be compensated), and the current transformer should be selected with an accuracy of 0.5 and a rated secondary capacity of not less than 10VA. Use a multi-strand insulated copper wire with a cross-sectional area of not less than 2.5mm2 to lead from the current transformer to the corresponding terminal of the device.

POWER DISTRIBUTION SOLUTION PROVIDER

> > > > > > > > > > > > >

APFC

series active power filter

The main circuit of the active power filter (APFC) is an IGBT power converter. It adopts the detection technology based on the instantaneous reactive power theory, automatically tracks the harmonic changes of the power grid, and has high controllability and rapid response. It overcomes the shortcomings of traditional passive filters, such as poor filtering effect, easy resonance, and only being able to compensate for fixed harmonics. It can achieve good filtering and compensation effects for various fast transient impulse loads.

The APFC series active power filters adopt military-grade control chips, featuring extremely strong computing and anti-interference capabilities. They can achieve centralized control of multiple active power filters in parallel by a single controller. They are equipped with an adaptive current average value control algorithm and combined with the LCL topology structure. It overcomes the shortcomings of traditional hysteresis current control, such as wide output spectrum range, difficult filtering and high-frequency harmonics interfering with the power grid due to the change of switching frequency.



○ Model definition and description

APFC	–	100A	–	4	/	4L	–	B
1		2		3		4		5

1.Product Model: Active Power Filter

2.Module capacity: 30A, 50A, 75A, 100A, 150A ； Cabinet capacity: 200A, 250A, 300A, 350A, 400A, 450A, 500A, 600A

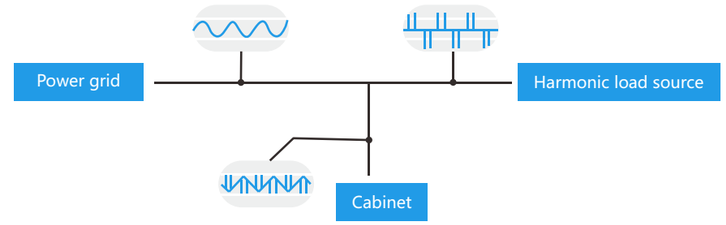
3.Rated voltage: 4: 400V 6: 690V

4.Wiring method: 3L: Three-phase three-wire system; 4L: Three-phase four-wire system

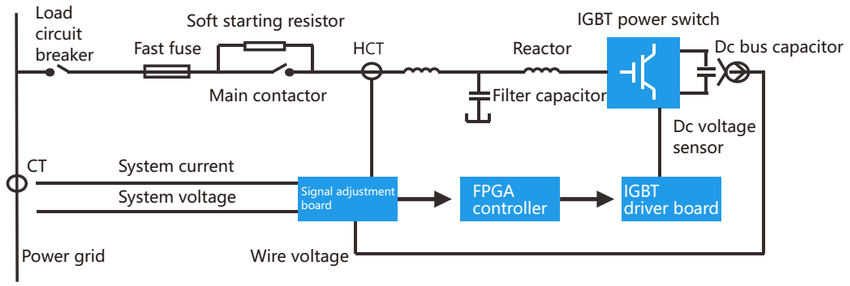
5.Structural forms: B: Drawer type, C: Wall-mounted type, G: Cabinet type

○ The principle of APFC harmonic control

- The APFC collects the current signal in real time through the external transformer CT, separates the harmonic part through the internal detection circuit, and generates a compensation current with the same magnitude and opposite phase as the system harmonic through the IGBT power converter to inject into the power grid, achieving the function of filtering and removing harmonics.



○ The internal working principle of APFC



Technical advantage

- **Modular and building-block expandable parallel structure for convenient capacity expansion.**
  The APFC active power filter adopts a modular expansion parallel structure: each electrical component in the main circuit is miniaturized and standardized, and the entire topology is encapsulated in a single module. The APFC module and the APFC cabinet are connected by dynamic and static connectors. When users expand their capacity, they push the APFC module into the APFC cabinet and plug in the CAN

- **Convenient for maintenance and supports online maintenance.**
  The APFC active power filter adopts a modular design. The damage of any one electrical component will only affect the operation of the current module. The normal operation of other modules in the APFC cabinet will not cause the entire APFC to fail. During maintenance, simply remove the faulty APFC module from the cabinet and replace it with a new one.

- **High reliability and uniform humidity.**
  The APFC active power filter miniaturizes heat-generating components such as IGBTs in the inverter unit and filter inductors and damping resistors in the LCL filter, reducing power. Moreover, the heat-generating elements are evenly distributed in each filter module, ensuring uniform heat distribution. Electrical components are less likely to fail due to excessive humidity.

- **The control system is built purely with FPGA.**
  The control system of the APFC active power filter adopts the military-grade FPGA chip of the American Xilinx Company. The chip integrates 84 hardware DSP units internally to calculate the situation of flight. In addition, the anti-interference ability of FPGA is much higher than that of traditional DSP. Its capability is far greater than that of a single DSP. After burning the program, the entire FPGA chip is equivalent to a hardware circuit. There is no need to call the program, and no program will appear.

- **Data is transmitted between the controller and the APFC module via CAN.**
  The APFC active power filter controller and the power unit are connected by CAN. It features strong real-time performance, adopts a dual-wire serial communication mode, has a strong error detection capability, and can operate in a high-noise interference environment. A reliable error handling and error-checking mechanism ensures that the sent information can be automatically resent if it is damaged.

- **Low noise, with noise below 65db when operating at full load**
  The APFC active power filter uses soft magnetic materials. When current flows through the iron-silicon inductor, there is almost no sound. When the APFC is fully loaded, the noise is less than 65db.

- **Unique parallel operation mode and superior current sharing effect.**
  The APFC active power filter is paralleled. There is only one FPGA controller, and there is no precision deviation of voltage sampling resistors, microcurrent transformers, and current sampling resistors inside each APFC module. The APFC modules can evenly distribute the current well, and there is no circulating current.

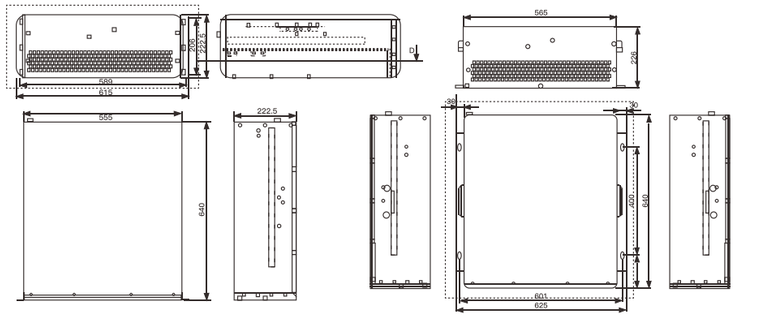
- **Under any load conditions, the compensated system current THD i<3%.**
  The Active Power Filter (APFC) ensures a system current THDi (Total Harmonic Distortion of current) of less than 3% after compensation under any load conditions. It operates with a switching frequency of 21.6 kHz on the inductor and compensates for harmonic orders from 2nd to 50th.

- **A control mode that combines open-loop control with closed-loop control.**
  The APFC active power filter combines the advantages of open-loop and closed-loop control: After the system current sampling is decomposed through FFT operation, the method of combining open-loop control and closed-loop control is adopted. The reactive power compensation APFC adopts open-loop control, which has a fast response speed. The harmonic compensation APFC adopts closed-loop control and has high compensation accuracy.

- **Good limiting ability.**
  The APFC active filter can limit the amplitude of single harmonics and can be used in conjunction with passive filters to control harmonics of the same order.

- **Three-level main current topology.**
  Under the same DC bus voltage, the impulse voltage (dv/dt) generated by the APFC active filter is half that of the first-generation APFC. The second-generation APFC reduces the switching stress and switching loss of each IGBT, making the IGBT more reliable.

Technical advantage



The external dimensions of the drawer-type module

Wall-mounted module external dimensions

Technical characteristics

- It has a wide filtering range and is effective throughout the entire range from 2 to 50 times.
- Full compensation or designated compensation for 2 to 50 different harmonics;
- The response speed is fast. The full compensation response time is less than 300 μ s, and the specified secondary compensation response time is less than 10ms.
- Multi-functionality, simultaneously addressing multiple power quality issues, harmonic and reactive power compensation functions can be freely installed:
- It has neutral line filtering capability (limited to 4L type active power filter);
- The transformer is allowed to be installed on the power supply side or the load side, and users can freely choose according to the on-site conditions.
- Support the automatic current-limiting operation function of the system. Once the compensation current exceeds the compensation capacity, the system will automatically enter the current-limiting working mode.
- Automatically trace and compensate for the varying harmonic currents in the power grid, and the compensation performance is not affected by the system impedance.
- Perfect module parallel technology, supporting multiple units to operate in parallel:
- The perfect self-diagnosis technology upon startup keeps the system under full control.
- Photoelectric isolation is adopted between the strong current main circuit and the weak current control system, which is safe and reliable.
- Military-grade communication error code detection technology ensures the reliability and security of system communication.

Technical parameters

APFC	Three-phase three-wire	Three-phase four-wire
Rated compensation current	100A-600A	50A~600A
Input		
Working voltage (v)	400V(-20%~+15%),690(-20%~+15%)	400V(-20%~+15%)
Operating frequency (Hz)	50Hz/60Hz	50Hz/60Hz
Performance index		
Filtering ability	THDI<3%	THDI<3%
Filtering range	Eliminate harmonics from the 2nd to the 50th order.	Eliminate harmonics from the 2nd to the 50th order.
Instantaneous response time	<100us	<100us
Full response time	<10ms	<10ms
There is power loss.	<3%(rated)	<3%(rated)
Correct three-phase imbalance	have	have
Reactive power compensation.	Yes, the power factor can be set	Yes, the power factor can be set
Overload protection	Automatic current limiting at 100% rated output	Automatic current limiting at 100% rated output
Switching frequency	20KHz	20KHz
Display and Operation		
Display interface	7-inch Chinese color touch screen	7-inch Chinese color touch screen
Display status	Grid parameters such as current, voltage, power and harmonic distortion rate	Grid parameters such as current, voltage, power and harmonic distortion rate
Communication	Modbus,RS 485, TCP /IP Ethernet	Modbus,RS 485, TCP /IP Ethernet
Input and output dry nodes	5 output nodes and 4 input nodes (customizable by users)	5 output nodes and 4 input nodes (customizable by users)
Product configuration		
Single-machine operation	Ok.	Ok.
Shut down and run	Multiple units can be connected online	Multiple units can be connected online
Environmental conditions		
Ambient temperature	-10C~40℃	-10C~40℃
Storage environment	-40C~65℃	-40C~65℃
Relative humidity	Maximum temperature 95℃, no condensation	Maximum temperature 95℃, no condensation
Altitude	Less than 2,000 meters	Less than 2,000 meters

Product Features

- In the process of APFC design, our company closely follows the development trend of power electronic equipment, widely draws on the advantages of related equipment in various industries, and integrates these technical features to form a new generation of APFC. In terms of cost, performance, delivery speed, adaptability and scalability, it has certain advantages in the domestic industry.

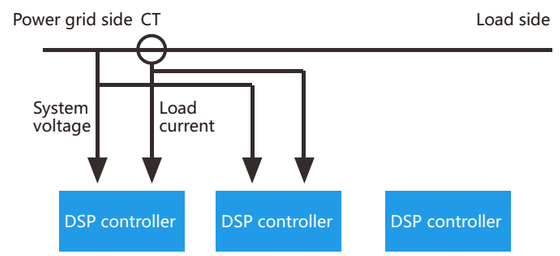
- **Modular pomelo drawer power module.**
  At present, there are two topological structures of active power filters on the market: one is the integrated design. The cabinet is composed of several single independent components, such as three IGBTs for each phase, three fans, three bakers, three lightning arresters, etc. It belongs to a relatively old-fashioned design. The disadvantage of this structure is that when one component fails, it will cause the entire machine to stop working, so its reliability is not high. Another type is modular design, which is the development direction of power electronic products. The cabinet is composed of multiple power modules, each of which is exactly the same and can operate independently. Multiple modules are connected in parallel to operate together. When any one module malfunctions, the other modules automatically share the load evenly and continue to operate normally.

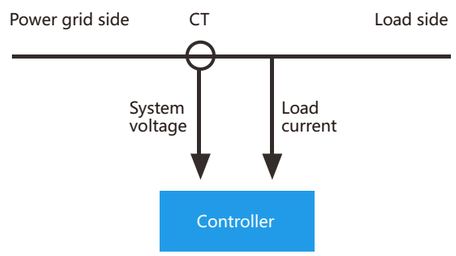
- **Powerful comprehensive power quality management function.**
  The device can simultaneously achieve the following functions. Users can select the priority and simultaneous implementation through the human-machine interface of the touch screen.

Active power filter				
Device current	22.5A	23.3A	21.6A	
System factors	0.593	0.674	0.651	The device is normal.
Power grid THDi	46.0%	48.0%	32.0%	
Status query				
About Settings		View the event		Click to shut down
Route 1	Route 2	Route 3	Route 4	Route 5	Route 6

- Active speed wave: Filters out harmonics within the 50th order. Voltage deviation: Bidirectional compensation for voltage rise and voltage drop. Fixed current: Emits any specified current. Users can observe all electrical parameters such as voltage, current, harmonics, active power, reactive power, power factor, and fault records in real time. It plays a role in power quality monitoring. Meanwhile, the working status, current temperature, fault records, etc. of each module of this machine can all be viewed in real time through the human-machine interface.

- **High-reliability parallel operation mode: Centralized control by the same controller, with no circulating current between modules.**
  APFC can achieve parallel connection of four devices and centralized control with only one controller, with each power module providing uniform current output. There is no circulating current between the modules, which improves the reliability of the device.





GTZN Series

Intelligent integrated power capacitor

This capacitor compensation device provides a solution for improving the power factor of power supply and enhancing the efficiency of the power grid. Its main application fields include:

Factory power distribution system

Residential community power distribution system

Municipal commercial building

Transportation tunnel power distribution system

Box transformers, complete cabinets, outdoor distribution boxes



Giantele®

Overview

The GTZN series intelligent integrated low-voltage power capacitor compensation device (intelligent integrated low-voltage energy-saving power capacitor) is an intelligent reactive power compensation device for 0.4kV low-voltage distribution networks, which is used to reduce line losses, improve power factor, enhance power quality and achieve energy conservation and cost reduction.

It integrates advanced technologies such as modern measurement and control, power electronics, network communication, automatic control, and power capacitors.

It has better compensation effect, smaller size, lower power consumption, lower price, greater cost savings, more flexible usage, easier maintenance, longer service life and higher reliability. These features meet the higher requirements of modern power grids for reactive power compensation.



Common compensation type

Model and Meaning

GT Z N □ /□/□(□+□)

- The capacity of the second capacitor
- The capacity of the first capacitor
- Rated capacity
- Capacitor rated voltage
- Compensation methods (F: phased; S: three-phase)
- Product identification
- Automatic control
- Enterprise Code



Split-phase compensation type

Unique innovation

1.Automatic networking (automatically identifying the host and automatically setting the ID)

2.Automatic query (power grid parameters, capacitor operating status)

3. Automatic protection (automatic protection against issues such as voltage, current, harmonics, short circuit, phase loss, and three-phase imbalance)

4.Automatic Settings (Host control parameter setting, slave machine automatically updates)

5. Easy Maintenance (After connecting the wires, it automatically connects to the network, no need for settings)

6.Simple Wiring (Simple and clear design, wiring is clearly visible) (Customizable stainless steel shell type)

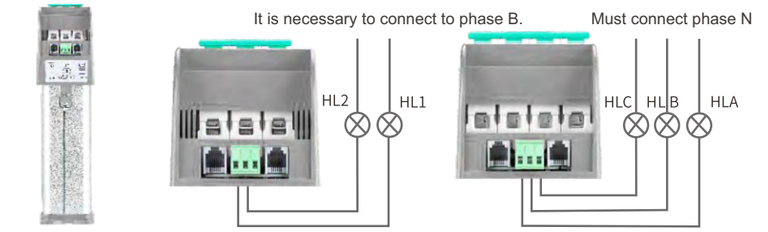
Normal working conditions and installation conditions

Ambient air temperature: -25°C to +55°C;

Relative humidity: ≤20% at 40°C; ≤90% at 20°C;

Altitude: ≤2000m Environmental conditions: No harmful gases or vapors, no conductive or explosive dust, no severe mechanical vibrations.

Indicator light connection & RS485 function



Product rear view | Common compensation type | 380V switching status indicator light | split-phase compensation type | 220V switching status indicator light

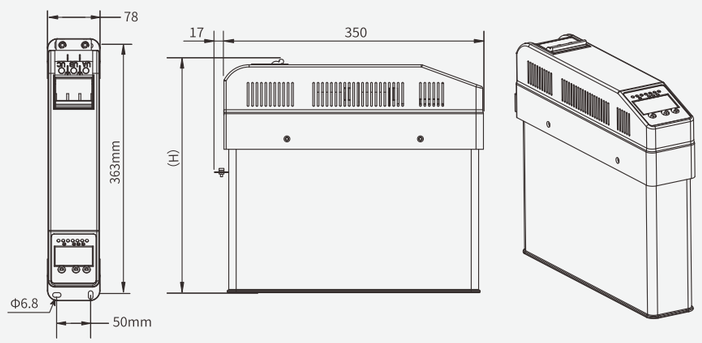
Note: The indicator light wires are connected using multi-core copper conductors with an area of 0.75 mm2.

Product Function Equivalence Diagram



6kA, 15kA interrupting type	1 controller	2 circuit breakers	2 composite switches	2 thermal relays	2 thermal relays

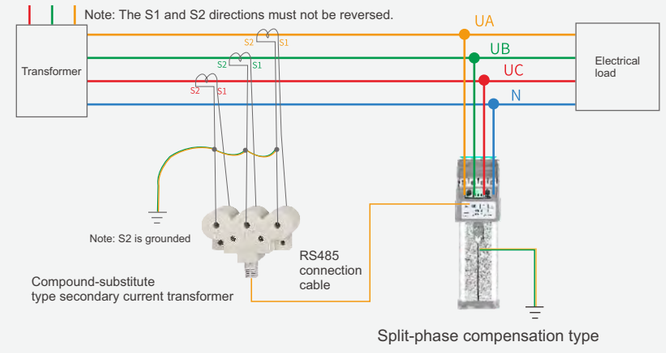
Standard type appearance and installation dimensions



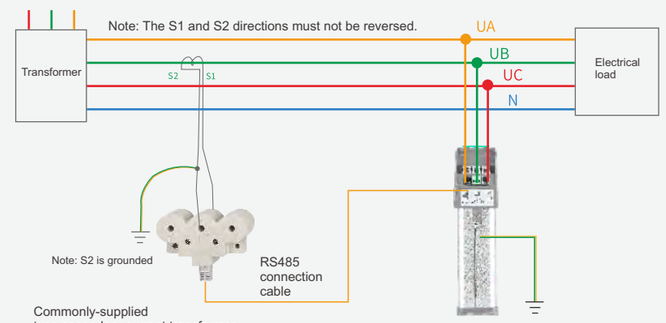
Note: The installation dimensions are 50mm × 363mm.
The installation spacing between the two capacitors should be ≥ 50mm.

Circuit diagram illustration

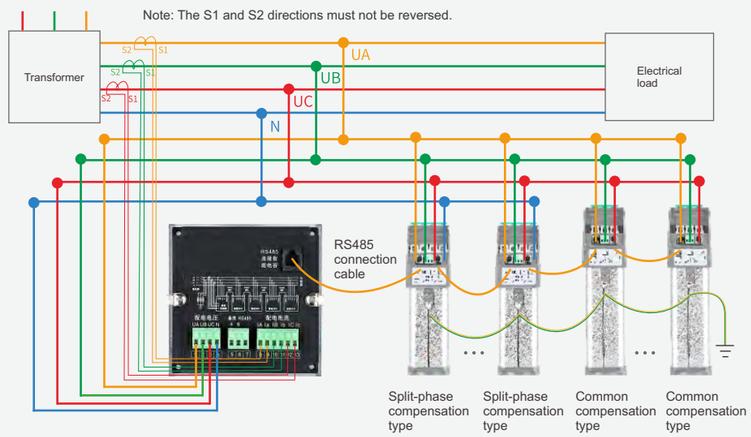
Single unit split-supply wiring diagram (not for use with controller)



Single unit common connection wiring diagram (not for use with controller)



Three-phase hybrid connection diagram (for use with controller)



Note: Object complement + Complement of association Total number of capacitors ≤ 32 units

Main parameters and other conditions

Measurement error

Voltage: ≤ ±0.5% Current: ±0.5%,
Active Power: ±1%
Power Factor: ≤ ±1%,
Temperature: ±1℃

Error of protection

Voltage: ±0.5%
Temperature: ±0.5%,
Current: ±1℃
Time: ±0.1s

Reliability parameters

Control accuracy rate:100%
Number of switching operations allowed: 1,000,000 times.
Capacitor capacity degradation rate over operating time:≤1% per year
Capacitor capacity switching attenuation rate: ≤0.1% per 10,000 operations

Reactive power compensation parameters

Reactive power compensation error: ≤ 50% of the minimum capacitor capacity. Capacitor switching time: ≥ 10 seconds. It can be set within the range of 10 seconds to 180 seconds by yourself.

Power supply conditions:

Working voltage: 380V ± 20%
Harmonic voltage: Sine wave, total distortion rate not more than 5%;
Rated frequency: 50Hz or 60Hz;
Harmonic current: The allowable value of harmonic current at the common connection point shall not exceed the standard value stipulated in IEC 146-6:1992.
Power consumption: ≤ 3W.

Execution standard:

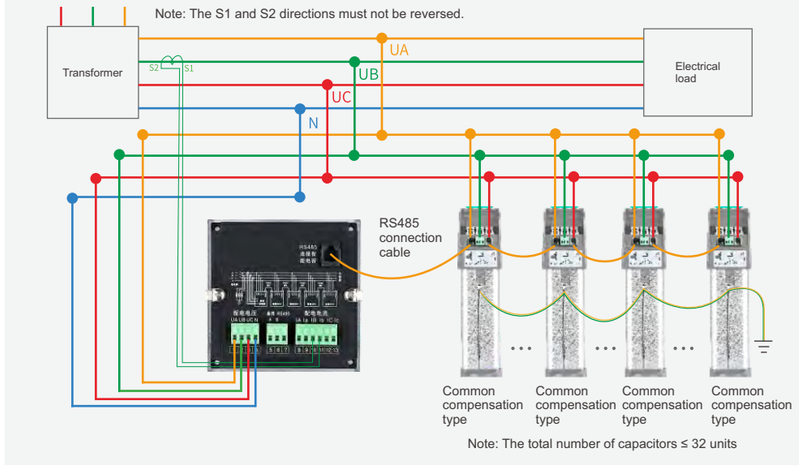
The electrical clearance and creepage distance, insulation strength, safety protection, short-circuit strength, sampling and control circuits all comply with the requirements of the corresponding clauses in IEC 61439-4: "Low-Voltage Power Compensation Equipment for Reactive Power".

Main product model specifications and data sheets

Compensation method	Model specification	Capacitor rating	Rated capacity	Dimensions
		Voltage (V)	(kvar)	(L×W×H)mm³
Three-phase mutual compensation	GTLZNS/450/10(5+5)	450	10	350×80×245
	GTLZNS/450/15(10+5)	450	15	350×80×245
	GTLZNS/450/20(10+10)	450	20	350×80×245
	GTLZNS/450/30(20+10)	450	30	350×80×315
	GTLZNS/450/40(20+20)	450	40	350×80×315
	GTLZNS/450/50(25+25)	450	50	350×80×315
	GTLZNS/450/60(30+30)	450	60	350×80×365
Phase-shifting compensation	GTLZNF/250/5	250	5	350×80×245
	GTLZNF/250/10	250	10	350×80×245
	GTLZNF/250/15	250	15	350×80×275
	GTLZNF/250/20	250	20	350×80×275
	GTLZNF/250/25	250	25	350×80×315
	GTLZNF/250/30	250	30	350×80×315
	GTLZNF/250/40	250	40	350×80×365

Circuit diagram illustration

Three-phase supplementary connection diagram (for use with controller)



Attachment (To be purchased separately)

Secondary current transformer (not for use with controller)	
Type	Corresponding selection
Co-subjunctive form	When using the common-supplement type intelligent capacitor as the main unit, select...
Co-subjunctive form	When using the split-compensation type intelligent capacitor as the main unit, select...

Connection line		
Type	Length	Purpose
W30	30cm	The connection between two adjacent intelligent capacitors
W80	80cm	The connection of the upper and lower layers of intelligent capacitors
D300-W	300cm	The connection between the intelligent capacitor and the controller

Ordering Instructions

The user is required to provide parameters such as the rated voltage, rated capacity, common-supply type or separate-supply type of the product.

Users should try to provide some characteristics of the usage location.

For example: GTZNS /450/30(20+10) - 200 units

Order the GTZN series. The rated voltage of the capacitors is 450V, the rated capacity is 30kvar, and the quantity is 200 units.

ZGZK Series

Anti-harmonic integrated intelligent capacitor

This capacitor compensation device provides a solution for improving the power factor of power supply and enhancing the efficiency of the power grid. Its main application fields include:

Factory power distribution system

Residential community power distribution system

Municipal commercial building

Transportation tunnel power distribution system

Box transformers, complete cabinets, outdoor distribution boxes



Giantele®

Overview

The ZGZK series intelligent combined anti-harmonic low-voltage power capacitor compensation device is a new generation of reactive power compensation equipment that is highly efficient and energy-saving, capable of suppressing harmonics and improving power factor, and is applied in 0.4kv low-voltage distribution networks. It replaces the traditional reactive power compensation equipment composed of individual components such as intelligent reactive power compensation controllers, fuses, switching devices, filtering reactors, and power capacitors. The anti-harmonic intelligent power capacitor is designed for situations where the harmonic content in the power network is high and conventional intelligent capacitors cannot operate normally. It can not only meet reactive power compensation and improve power factor, but also suppress the influence of corresponding harmonic frequencies on the capacitor, thereby improving power quality.

The intelligent combined anti-harmonic low-voltage power capacitor compensation device adopts the latest technological achievements such as microelectronics software and hardware technology, micro-sensor technology, micro-network technology and electrical manufacturing technology to achieve intelligence, realizing the low-voltage reactive power compensation function and enabling it to work reliably, facilitating zero-crossing switching, protection, measurement, signal, online connection and other series of functions. It is a major breakthrough in low-voltage reactive power automatic compensation technology. It is mainly applied to reactive power compensation in occasions with severe harmonics, and can operate reliably without resonance and has no amplifying effect on harmonics. The product with a 7% inductance in series is used in electrical environments where the main harmonics are 5th and above, and the product with a 14% inductance in series is used in electrical environments where the main harmonics are 3rd and above.

The product is mainly applicable to industries such as steel, chemical engineering, building materials, papermaking, textile, coal, power, telecommunications, aluminum industry, shipping ports, tobacco, brewing, automobile manufacturing, precision electronics, precision machinery, etc. At the same time, it can also be applied to power systems in the communication industry, power supply systems for securities trading, backup power systems for airports and ports, large medical systems, various UPS generator sets, exhibition venues, commercial office buildings, and other commercial electricity systems.





Common compensation type

Note: This product must be used in conjunction with our company's JKW-32H reactive power compensation measurement and control device!

Model and Meaning





Split-phase compensation type

ZG Z K □ / □ / □ / □

- Reactance Rate (%)
- Rated capacity (kvar)
- Capacitor rated voltage (V)
- Compensation method: (F: phased; S: three-phase
- Anti-harmonic
- Automatic control
- Enterprise Code

Normal working conditions and installation conditions

Ambient air temperature: -25℃ to +55℃

Relative humidity: ≤ 20% at 40℃; ≤ 90% at 20℃

Altitude: ≤ 2000m

Environmental conditions: No harmful gases or vapors, no conductive or explosive dust, no severe mechanical vibrations

Main parameters and other conditions

Measurement error

Voltage: ≤ 0.5%
(within the range of 80 - 120% of the rated voltage)

Error of protection

Voltage: ≤ 0.5%, Temperature: ≤ 1℃

Reliability parameters

Control accuracy rate: 100%
Number of switching operations allowed:
1,000,000 times
Capacitor capacity operating time attenuation rate:
≤ 1% per year,
Capacitor capacity attenuation rate:
≤ 1% per 10,000 operations.
Annual failure rate: ≤ 1%

Reactive power compensation parameters

Capacitor switching interval: > 10 seconds
(customizable from 10 seconds to 60 seconds)
Reactive power capacity: Total compensation ≤ 50 kvar

Power supply conditions

Working voltage: 380V ± 20%
Rated frequency: 50Hz

Electrical safety

The electrical clearance and creepage distance, insulation strength, safety protection, short-circuit strength, sampling and control circuit protection all comply with the corresponding provisions of the Chinese national power industry standard IEC 61439 "Technical Conditions for the Use of Low-Voltage Parallel Capacitor Devices".

Performance Characteristics

Harmonic suppression function

Effective suppression of high-order harmonics and surges can eliminate the influence of high-order harmonics on capacitors, protect the circuit and capacitors from overload, prevent the capacitor from overheating, aging of the insulation medium, decline in self-healing performance, and reduction in service life.

No Inrush Current Switching Functio

By adopting the zero-crossing switching technology, the response time is fast, enabling dynamic tracking. It can accurately switch on and off when the current and voltage are zero, and is less affected by harmonics, meaning there is no switching surge current.

Phase-shifting compensation function

Phase-segregated compensation type products allow the capacitors of each phase to be switched on or off separately. They are suitable for situations with unbalanced three-phase loads and improve the accuracy of reactive power compensation.

Protection function

Loop current quick cut, overcurrent protection; capacitor overvoltage, undervoltage protection; capacitor overtemperature, phase failure, three-phase imbalance protection. When the temperature of the capacitor exceeds the set value, the entire capacitor unit will be shut down for protection, thereby extending the service life and ensuring the safe operation of the system.

Measurement function

Measurement of distribution voltage, reactor temperature, and capacitor temperature.

Signal function

Capacitor switching status, overvoltage and undervoltage status signals; Protection action type, self-diagnosis fault type signals.

Communication function

The capacitor and the controller are connected via RS-485 communication to form the system operation.

Intelligent Network Control

The automatic detection and tracking system can automatically monitor and track the reactive power changes, and automatically switch on and off the capacitor banks. Capacitors of the same capacity are switched on and off according to the cyclic switching principle, while capacitors of different capacities are switched on and off based on the supplementary principle. Capacitors are put into operation first and then withdrawn, and withdrawn first and then put back into operation; capacitors with lower operating temperatures are put into operation first, and those with higher operating temperatures are withdrawn first.

Fault self-diagnosis function

The intelligent control component of the capacitor can conduct self-diagnosis of all operating parameters of the device. In case of a self-diagnostic failure, the entire machine will respond quickly and shut down.

Main product model specifications and data sheets

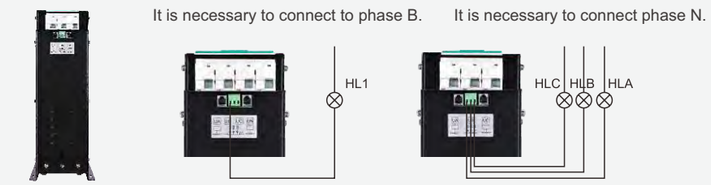
Compensation method	Model specification	Capacitor rated voltage	Reactance rate	Rated capacity	Dimensions
		(V)		(kvar)	(L×W×H)mm
Three-phase mutual compensation	ZGZKS/480/50/7%	480/525	7%/14%	50	490*165*465
	ZGZKS/480/40/7%	480/525	7%/14%	40	490*165*465
	ZGZKS/480/30/7%	480/525	7%/14%	30	490*165*465
	ZGZKS/480/20/7%	480/525	7%/14%	20	490*165*465
	ZGZKS/480/10/7%	480/525	7%/14%	10	490*165*465
Phase-shifting compensation	ZGZKF/280/30/7%	280/300	7%/14%	30	490*165*465
	ZGZKF/280/25/7%	280/300	7%/14%	25	490*165*465
	ZGZKF/280/20/7%	280/300	7%/14%	20	490*165*465
	ZGZKF/280/15/7%	280/300	7%/14%	15	490*165*465
	ZGZKF/280/10/7%	280/300	7%/14%	10	490*165*465
	ZGZKF/280/5/7%	280/300	7%/14%	5	490*165*465

Product Function Equivalence Diagram



ZG Anti-Harmonic Integrated Intelligent Capacitor | 1 controller | 1 circuit breakers | 1 composite switches | 1 Inductor | 1 thermal relays

Switching indicator connection diagram & RS485 indicator function



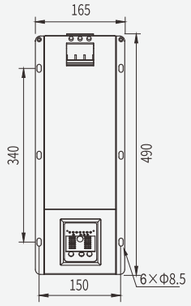
Product rear view

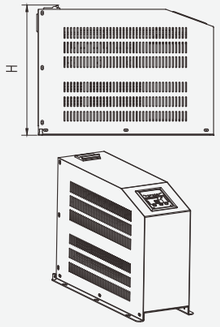
380V switching status indicator light
common compensation type

220V switching status indicator light
split-phase compensation type

Giantele®

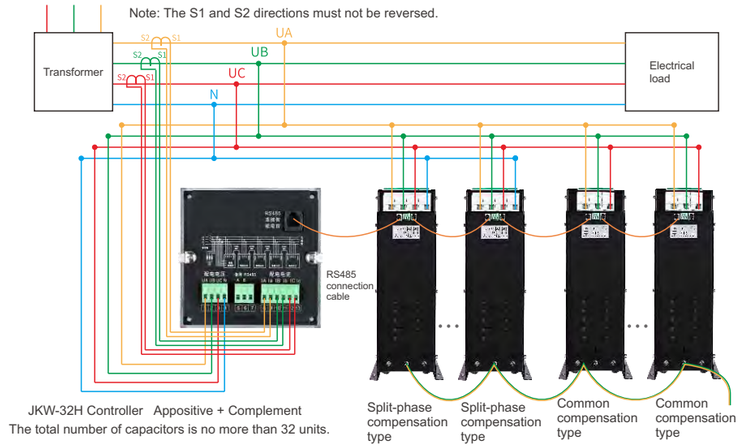
Shape and installation dimensions (mm)



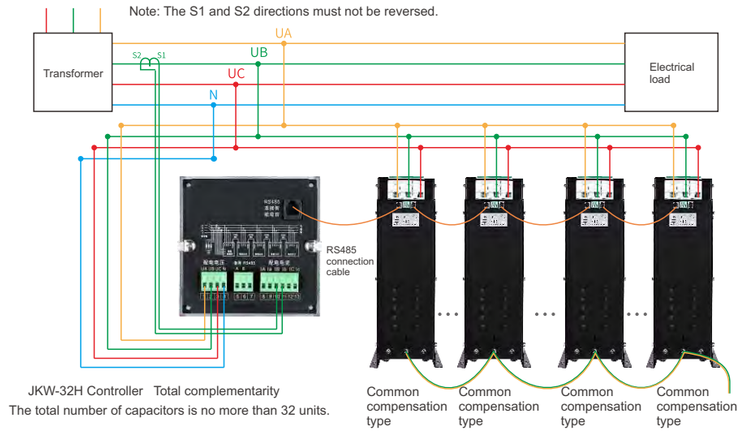


Conventional type 5 - 40Kvar

Circuit diagram illustration



JKW-32H Controller Appositive + Complement
The total number of capacitors is no more than 32 units.



JKW-32H Controller Total complementarity
The total number of capacitors is no more than 32 units.

POWER DISTRIBUTION SOLUTION PROVIDER

> > > > > > > > > > > > >

APF/SVG

Power quality APF/SVG series

The static reactive power generator detects the load current signal in real time through the external current transformer, and calculates and analyzes the reactive power content of the load current through the internal DSP. Then, it controls the PWM signal generator to send control signals to the internal IGBT according to the set value, controlling the inverter to generate the reactive power compensation current that meets the requirements, and ultimately achieving the purpose of dynamic reactive power compensation.

The active power filter detects the load current signal in real time through the external current transformer, and separates the harmonic components in the load current through the internal DSP calculation. Then, it sends the PWM signal to the internal IGBT to control the inverter to generate a compensation current that is equal in magnitude and opposite in phase to the harmonics in the system, achieving the harmonic filtering function.



○ Model definition and description

APF	–	50A	–	0.4	/	4L
1		2		3		4

1.Active power filter

2.Rated current

3.Rated voltage

4.Wiring method

SVG	–	100kvar	–	0.4	/	4L
1		2		3		4

1.Static reactive power generator

2.Rated capacity

3.Rated voltage

4.Wiring method

○ Product Features

- The device boasts powerful performance, supporting 95% harmonic filtering from 2nd to 50th harmonics and a reactive power compensation range of [-1 to 1]. It utilizes IGBT and DSP+FPGA architecture for rapid response and efficient compensation, featuring a three-level topology with an efficiency of ≥97.5%.
- The modular design and intelligent parallel operation capabilities adapt to various distributed scenarios. It is equipped with dual-screen displays and comprehensive fault protection, ensuring easy maintenance with low noise levels.

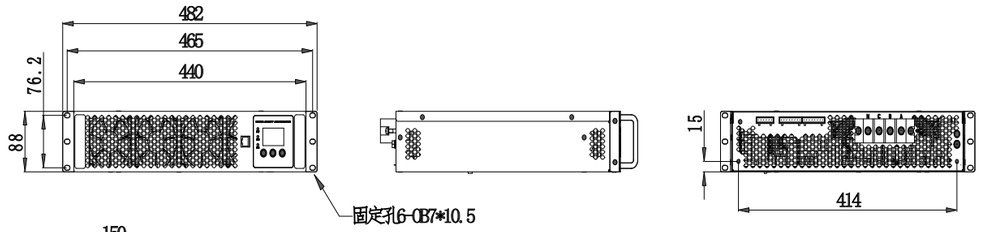
Technical Specification:Electrical parameters

Project	Entry specification			
capacity	35kvar/50A	50kvar/75A	75kvar/100A	100kvar/150A
Grid voltage	400V±20%			
Grid frequency	50/60Hz±10%			
Number of phases	3P3L/3P4L			
CT mode of connection	Gridside/load side			
CT rati orange	100:5~30000:5			
Imbalance kVar and kW compensation	100%			
Compensation range	The capacitance and sensitivity are continuously adjustable			
Response time	≤10ms			
Overload capacity	It can run continuously at 110% rated current and 1min at 120% rated current			
Productiveness	≥97.5%			
Redundance	Any unit can be an independent unit			
THDU	<10%			
Equipment wear and tear	≤2.5%			

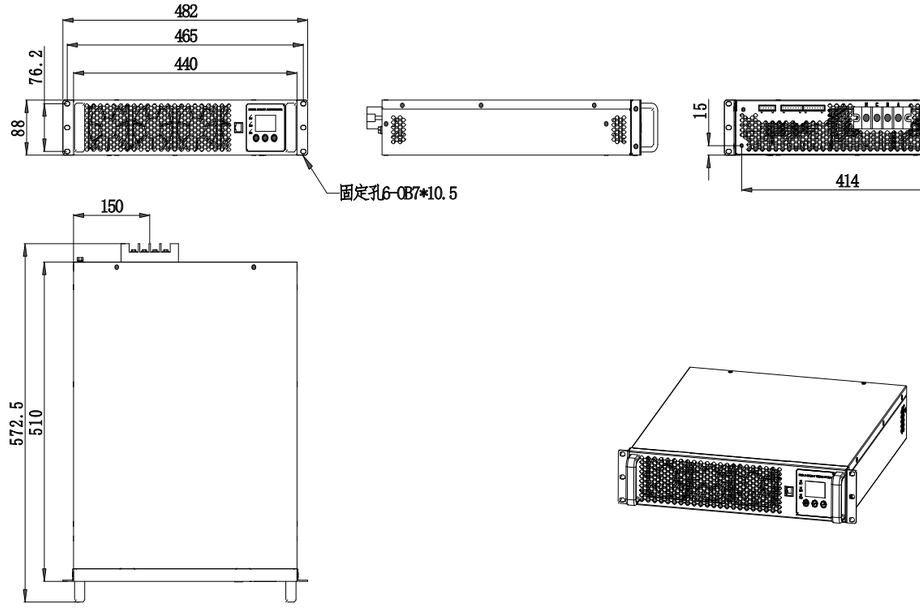
Technical Specification:Whole machine parameters

Project	Entry specification			
Capacity	35kvar/50A	50kvar/75A	75kvar/100A	100kvar/150A
Weight	14kg	17kg	27kg	30kg
Way to install	Rack-mounted			
The color of the body	Black (other colors customizable)			
Communica tioninterface	RS485 interface, CAN interface			
Failure warning	Up to 500 fault messages can be saved			
Monitor mode	Local/remote monitoring is optional and supports dry node Settings			
Cooling-down method	Intelligent air cooling			
Working temperature	-35℃~60°℃,55℃ above is used in reduced capacity			
Relative humidity	5~95%RH, no condensation			
Above sea level	Less than 1500m, between 1500 and 4000, for every increase of 100m, the power decreases by 1%			
levels of protection	IP20			

Product structural dimensions

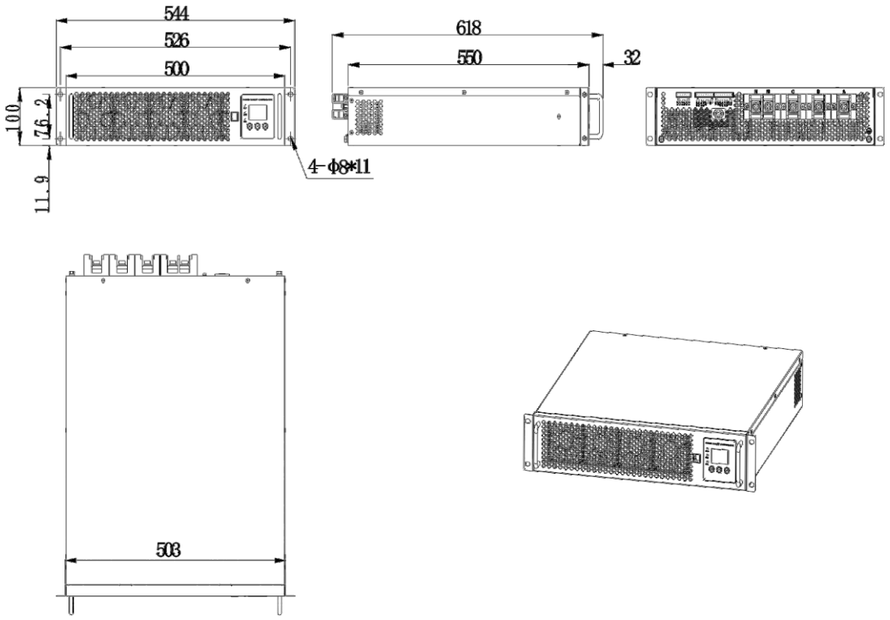


35kvar/50A size



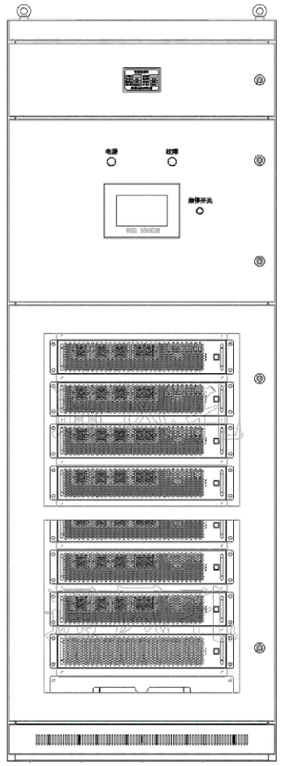
50kvar/75A size

Product structural dimensions



75kvar/100A, 100kvar/150A dimensions

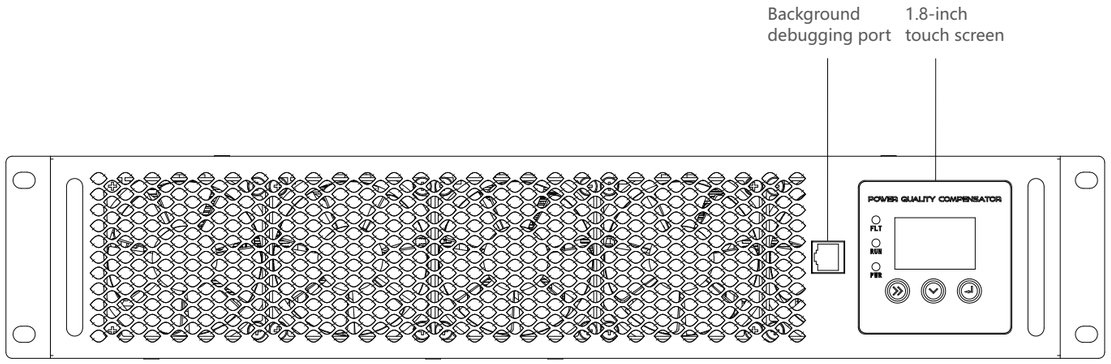
SVG/APF	Size D × H × W	Weight
35kvar/50A	440 × 88 × 425 mm	14kg
50kvar/75A	440 × 88 × 510 mm	17kg
75kvar/100A	500 × 100 × 550mm	27kg
100kvar/150A	500 × 100 × 550mm	30kg



Schematic diagram of an 800kvar cabinet

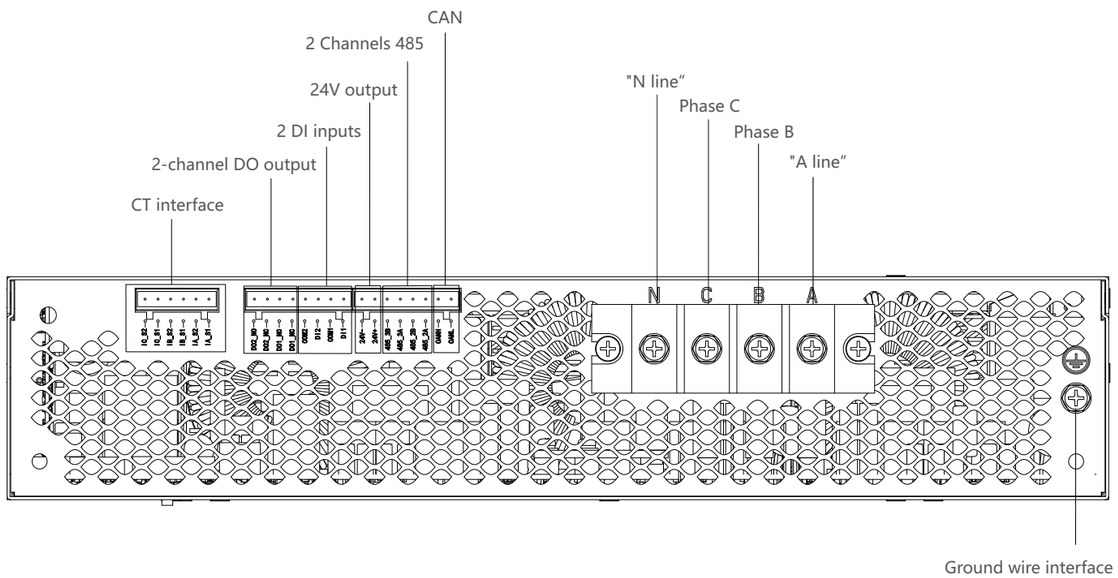
Size D × H × W
800 × 2200 × 1000 mm

SVG and APF front panels

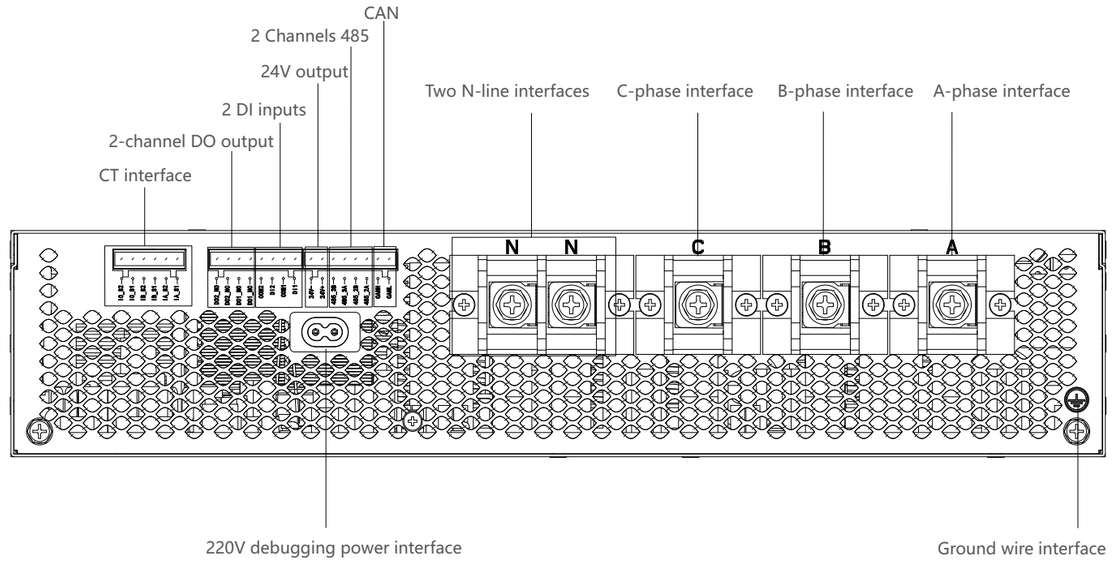


The front panels of all modules only differ in size and all come with a debugging interface. The control panel is optional.

35kvar/50A, 50kvar/75A rear panel



75kvar/100A, 100kvar/150A rear panel



The N line is designed with two terminals. When handling harmonics, the N line should be designed with a margin of twice the rated capacity. The internal design meets the power density requirement of 300A, and the external output needs to carry a current of 300A. One terminal is of 200A specification, which not only meets the safety requirements but also complies with the derating regulations.

Cable selection

Model	Terminal	Cable selection	Terminal selection	Fuse
35kvar/50A	A、B、C、N	16mm²	SC16-6	80A
	PE	16mm²	SC16-6	
50kvar/75A	A、B、C、N	25mm²	SC25-6	125A
	PE	16mm²	SC16-6	
75kvar/100A	A、B、C、N	35mm²	SC35-8	160A
	PE	16mm²	SC16-6	
100kvar/150A	A、B、C、N	50mm²	SC50-8	250A
	PE	25mm²	SC25-6	

It is recommended to use copper core wires: If it has harmonic compensation function, both 75kvar and 100kvar N lines need to be connected.

GTFK Series

Low-voltage intelligent composite switch

Built-in microprocessor and intelligent software enable intelligent control of capacitor switching.

The product can achieve zero-voltage switching, without arc, without inrush current, and with fast response. The conduction resistance is zero and no harmonics are generated.

It does not generate heat and can be installed in a sealed enclosure.

It does not generate closing surge current, so there is no need to use current-limiting reactors, thereby reducing the cost of the complete set of equipment.

Low power consumption, the power consumption is less than 1% of that of the contactor.

The structure is simple, the installation is convenient, and the overall cost is lower than that of thyristor switches.

The failure rate is low, and its service life is much longer than that of thyristors and contactors.

Wide operating temperature range.



Giantele®



Phase-shifting compensation



Three-phase mutual compensation



Phase-shifting compensation (communication type)



Three-phase mutual compensation (communication type)

Overview

The GTFK intelligent capacitor switching device adopts the parallel operation of thyristor switches and magnetic retention switches. It has the advantages of controllable silicon zero-crossing switching during the on and off moments, and the zero-power consumption advantage of magnetic retention switches during normal operation. This switch has significant advantages such as no impact, low power consumption, and long lifespan. It can replace contactors or thyristor switches and is widely used in the field of low-voltage reactive power compensation.

Model and Meaning

GTFK - □ - □ - □ (□ □)

- R: RS485 communication type
- C: With circuit breaker; (No) Without circuit breaker
- Control current (A)
- Rated voltage (V)
- Compensation method (△: Three-phase common compensation; Y: Phase-by-phase compensation) Low-voltage intelligent composite switch

Normal working conditions and installation conditions

- Ambient air temperature: -40℃ to +70℃
- Relative humidity: ≤ 90% at 40°C
- Altitude: ≤ 2500m
- Environmental conditions: No harmful gases or vapors, no conductive or explosive dust, no severe mechanical vibrations

Main parameters

- Rated Voltage: AC 380V ± 20%; Rated Frequency: 50Hz
- Service life: 300,000 times
- Rated operating current: 2mA
- DC control voltage: 8~18V; DC control current: 2~10mA

Main product model specifications and data sheets

Without circuit breaker

Compensation method	Model specification	Control capacity	Control the current	Number of control poles	Dimensions	Installation dimensions
	GTFK-	(kvar)	(A)		mm	mm
Three-phase Common Compensation	△-400-45	≤20	45	3P	155×85×75	143×33
	△-400-63	≤30	63	3P	155×85×75	143×33
	△-400-80	≤40	80	3P	155×85×75	143×33
Single-phase Compensation	Y -250-45	≤20	45	A+B+C	155×85×75	143×33
	Y -250-63	≤30	63	A+B+C	155×85×75	143×33

With circuit breaker

Compensation method	Model specification	Control capacity	Control the current	Number of control poles	Dimensions	Installation dimensions
	GTFK-	(kvar)	(A)		mm	mm
Three-phase Common Compensation	△-400-45	≤20	45	3P	216×85×75	203×73
	△-400-63	≤30	63	3P	216×85×75	203×73
Single-phase Compensation	Y -250-45	≤20	45	A+B+C	216×85×75	203×73
	Y -250-63	≤30	63	A+B+C	216×85×75	203×73

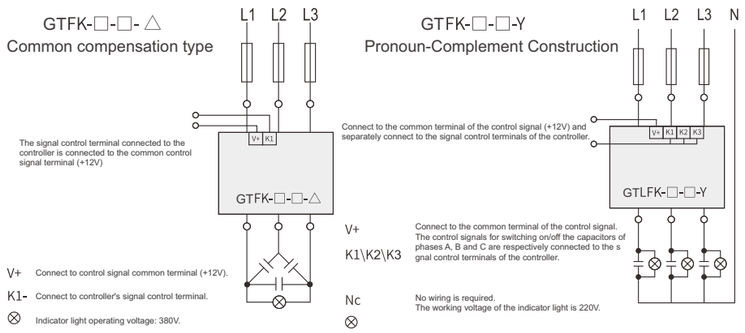
Usage instructions

- The conventional intelligent composite switch must be used in conjunction with the JKW, JKFW, and RPCF dynamic (D) series reactive power automatic compensation controllers produced by our company.
- The RS485 communication type intelligent composite switch must be used in conjunction with the intelligent controllers produced by our company, such as JKW-32 and JKW-32H (up to 32 communication-type composite switches can be connected).

Usage instructions

- Before use, it is essential to carefully check that the screws of the main circuit connection terminals are securely tightened. Otherwise, if the screws loosen during operation, it may cause damage to the switching device. (This product's incoming and outgoing line connection terminals have adopted anti-loosening self-locking nuts, effectively ensuring that the product will not experience secondary loosening of the connections due to transportation or jolting factors.)

Circuit diagram illustration





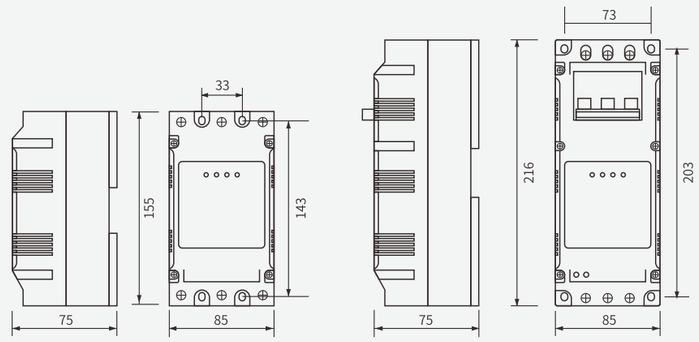
With circuit breaker



With circuit breaker

Note: The control signals of this communication-type product are connected via RS485 communication lines, and there is no need to connect the 12V control signal.

Shape and installation dimensions (mm)



Without circuit breaker

With circuit breaker

GTKCS Series

Capacitive Contactless Switches
(Reactive power dynamic compensation regulator, fast switching module)



Overview

The GTKCS series reactive power dynamic compensation regulator is an electronic power device module capable of rapidly switching on and off power parallel capacitors. Its electrical structure mainly consists of a high-power reverse-connected thyristor module, isolation circuit, trigger circuit, synchronization circuit protection circuit, and drive circuit. It also comes with connection terminals for controlling the on or off of the control switch, with control logic voltages of OV (off) and 12V (on). This switch features simple installation, convenient maintenance, fast response speed, no inrush current during switching, noise-free operation, stable and reliable performance, and phase loss protection. It is an ideal component for the switching capacitor banks used in reactive power dynamic compensation devices.

Model and Meaning

GT KCS □ - □ - □ - □

- S type (not labeled); B type
- The maximum reactive power that can be controlled: 10 (kvar)
- Voltage levels such as: 0.4(kV) or 0.25(kV)
- △: Controls a three-phase capacitor bank; Y: Three single-phase groups.
- capacitors Product category code
- Enterprise code



Normal working conditions and installation conditions

Ambient air temperature: -25℃ to +50℃, and the average temperature within 24 hours does not exceed +35℃.

When the temperature is +25℃, the relative humidity can briefly reach 100%.

The altitude does not exceed 1000 meters.

The installation site should be clean with no explosive or flammable hazardous substances; no gases that could damage insulation or corrode metals; no conductive dust; and free from rain, snow and severe mold growth.

The installation site does not have any significant excessive harmonic components.

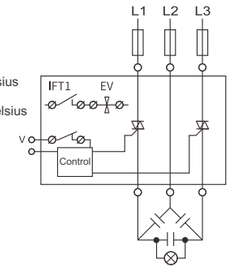
Main parameters

- Rated Voltage: 380V (220V)
- Rated frequency: 50Hz
- 1 Control capacity: 380V level (1kvar to 80kvar)
- 220V level (1kvar to 60kvar)

Wiring principle diagram

KCS-△-0.4-□-3

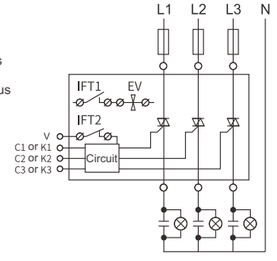
IFT1	Temperature switch: Normally open below 55 degrees Celsius
IFT2	Temperature switch: Normally closed below 75 degrees Celsius
EV	Fan
C1orK1	Control signal from the controller (-12V)
V	Common terminal of control signal OV
⊗	Indicator light operating voltage: 380V



Wiring principle diagram

KCS-Y-0.25-□-1

IFT1	Temperature switch is open below 55 degrees Celsius
IFT2	Temperature switch is closed below 75 degrees Celsius
EV	Fan
C1 C2 C3	Control signal from the controller (-12V)
K1 K2 K3	Control signal from the controller (-12V)
V	Common terminal of control signal 0V indication
⊗	Working voltage of indicator light 220V



(-S) Type Comparison Table and External Shape, Installation Diagram

Model number	Minimum driving capacity	Maximum driving capacity	Installation dimensions
GTKCS-△-0.4-□	1 kvar	40 kvar	104mm×156mm
GTKCS-Y-0.25-□	1 kvar	40 kvar	104mm×156mm

(-B) Type Comparison Table and External Shape, Installation Diagram

Model number	Minimum driving capacity	Maximum driving capacity	Installation dimensions
GTKCS-△-0.4-□	1 kvar	60 kvar	124mm×190mm
GTKCS-Y-0.25-□	1 kvar	60 kvar	124mm×190mm

