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HIGH-VOLTAGE DC RELAY

Product Selection Guide

ZHEJIANG LVMA ELECTRIC CO., LTD.

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YDC High Voltage DC Relay

Professional manufacturing leads the times

Advanced Manufacturing Equipment

Industry-leading full-process automation Lean digital production line

LVMA is a professional domestic manufacturer of ATSE low-voltage electrical appliances with complete testing systems, offering ODM/OEM services. We develop new energy DC and smart IoT electrical products, selling globally with expert R&D support. Adhering to integrity and quality, we win worldwide recognition.

YDC High Voltage DC Relay Parameter Overview

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Appearance Reference

Appearance Reference

YDC-P400			
YDC-P20			
YDC-P250			
YDC-M300			
YDC-M400			
YDC-P60			

YDC-P400 Series DC Relay

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Feature

- Ceramic brazed sealing eliminates the risk of arc leakage, preventing fire and explosion hazards.
- The interior is filled with hydrogen-dominant gas, which effectively suppresses contact oxidation and ablation, delivering low and stable contact resistance. The contact section achieves IP67 protection degree.
- Supports long-duration current carrying of 400A at 85°C.
- Insulation resistance reaches 1000 MΩ (at 1500 VDC); the dielectric withstand voltage between contacts and coil is 4 kV, compliant with IEC 60664-1 standard.
- The load circuit has no polarity requirement, while the coil driving side is polarity-sensitive.

Main Contact Parameters

Contact Form			H			
Maximum Switching Power			600kW			
Contact Resistance			≤0.25mΩ(at 400A)			
Rated Contact Load			400A			
Maximum Breaking Current			2000A/1500VDC			
Maximum Switching Voltage			1500 VDC			
Minimum Applicable Load			6VDC,1A			
Current Withstand Capacity		Current	400A	400A	400A	400A
		Time	Continuous	2000s	15s	1s
Electrical Endurance	Capacitive Load		Make: 3×10^4 cycles (37.5 VDC, 400A, C=1100μF)			
	Resistive Load		Break: 100 cycles (1500 VDC, 400A)			
			Break: 150 cycles (1500 VDC, 300A)			
			Break: 2×10^4 cycles (1500 VDC, 10A)			
	Ambient Temp		Room temperature			
	Vibration Resist		0.6s : 5.4s			
Current Withstand Capacity	Current Withstand Capacity		$2x10^5$			
	Ambient Temp		Room temperature			
	Vibration Resist		0.5s : 0.5s			

Auxiliary Contact Parameters

Contact Form	A
Contact Resistance	≤150mΩ(at 1A)
Rated load	6VDC,0.1A
Minimum Applicable Load	6VDC,3mA

Main Contact Parameters

Rated Voltage	24VDC
Operating Voltage Range	19.2-32VDC
Drop-out Voltage	≥2.4VDC
Coil Power Consumption	≤19.2VDC
Pick-up Voltage (at 23°C)	Pick-up Power: 50 W, Holding Power: 5 W

Performance Specs

Insulation Resistance	Between Open Main Contacts	1500 VDC, 1000 MΩ
	Between Open Contacts and Coil	1500 VDC, 1000 MΩ
	Between Open Main and Auxiliary Contacts	1500 VDC, 1000 MΩ
Dielectric Withstand Voltage	Between Open Main Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Contacts and Coil	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Main and Auxiliary Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
Time Parameters	Pick-up Time	⩽50 ms
	Drop-out Time	⩽20 ms
	Pick-up Bounce Time	⩽5 ms
Vibration Resistance	Stability	Double amplitude: 1.5 mm, Frequency range: 10 Hz ~ 500 Hz Acceleration: 49 m/s^2, 1 hour per each axis.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
Shock Resistance	Stability	Acceleration: 98 m/s^2, Pulse duration: 11 ms, 6 times per each of 3 mutually perpendicular axes, total 36 times.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
	Strength	Acceleration: 490 m/s^2, Pulse duration: 6 ms, 50 times per each of 3 mutually perpendicular axes, total 300 times.
Standard Test Conditions	Temperature	23°C ±5°C
	Humidity	25% ~ 75% RH
	Mounting Direction	Vertical
	Atmospheric Pressure	96 × (1±10%) kPa
Operating Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	Any orientation
Storage Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	12 months (in original packaging)
Environmental Requirements		No corrosive gas shall exist in the product storage area. Avoid direct sunlight on the product during storage.

YDC-P400 Series DC Relay

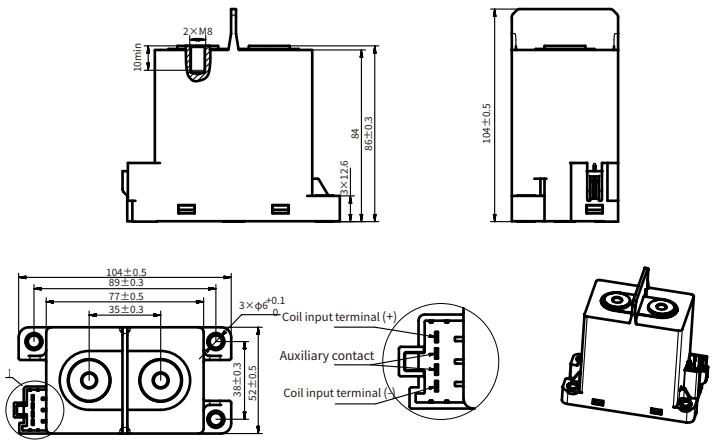
YDC- P 400 /1500 -24 -H A -C 5 -6 -(XXX)

Product Model	
Use Case	P: Energy Storage
Series Code	400A
Load Voltage	1500VDC
Coil Voltage	24V
Contact Type	H:1 Normally Open
Auxiliary Contact Type	A: 1 Normally Open
Coil Lead Type	C: Connector
Load Lead Type	5: Internal thread
Special Custom Code	6: Dual-coil with electronic switch energy-saving module
Special Feature Code	XXX: Custom specifications (e.g. W for horizontal mounting)

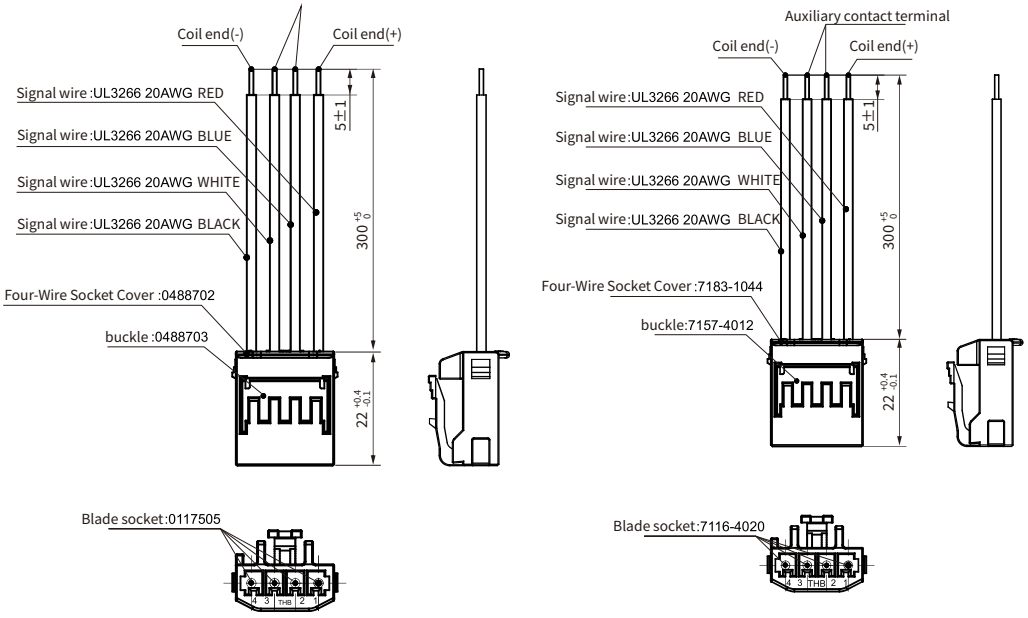
Installation Info

Load Terminal Mounting Section	Mounting Method	M8 Screw
	Torque Requirement	8 N·m ~ 10 N·m
	Busbar Hole Diameter	Ø8.0 mm ~ Ø8.5 mm
	Busbar Thickness	5 mm
Relay Main Body Mounting Section	Mounting Method	M5 Screw
	Torque Requirement	3 N·m ~ 4 N·m
Model No.		YDC-P400/1500-24-HA-C5-6(XXX)
Weight		≈785 g

Outline drawing, installation hole dimensions, wiring diagram

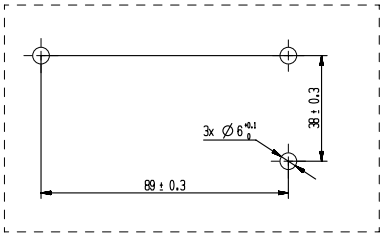


Coil lead type

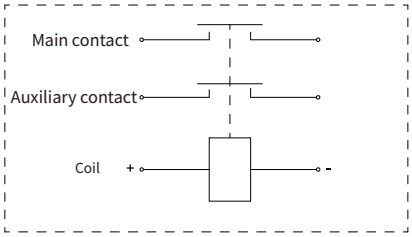


Note: The connector is an optional part.

Outline drawing, installation hole dimensions, wiring diagram



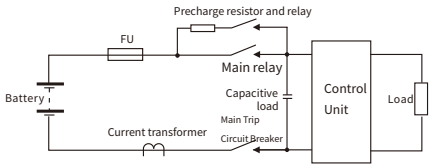
installation hole dimensions



wiring diagram

Notes

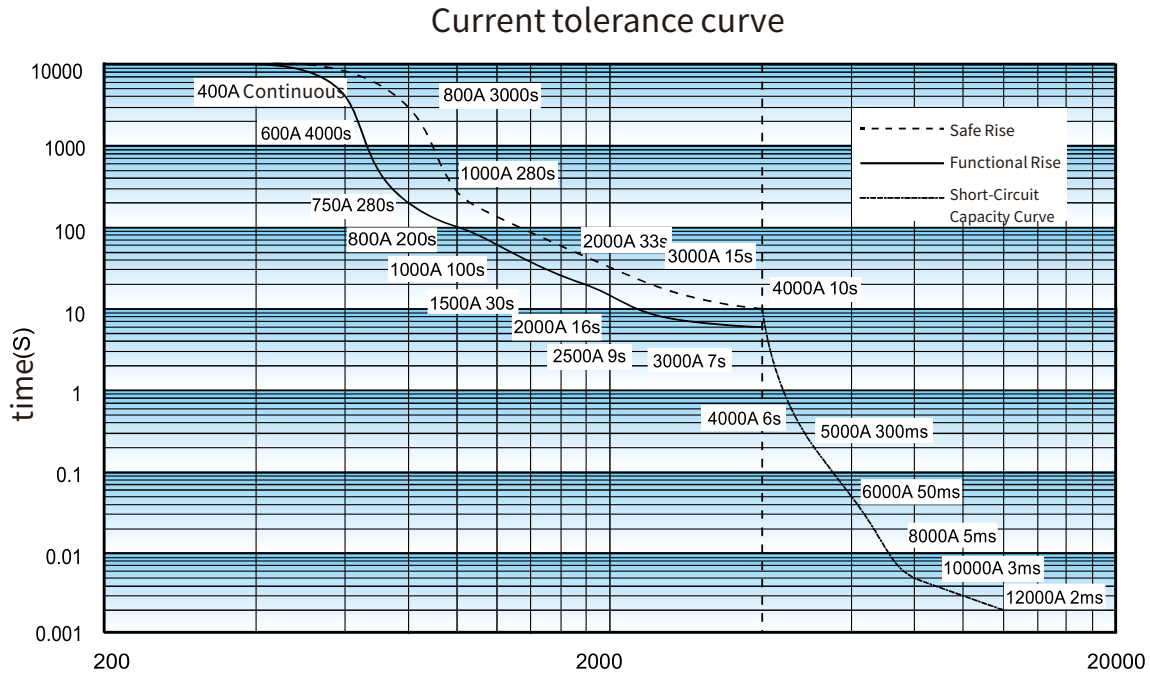
- This relay is a DC high-voltage switching device. In the event of a final failure, it might not be able to break the circuit. If it fails to cut off, it could cause overheating, smoke, or even fire. So, avoid using it beyond its specifications (including, but not limited to, coil rating, load rating, and electrical life). Make sure to use a circuit that can cut off the current load quickly in emergencies. For safety, replace the parts regularly.
- When a relay is used in a charging circuit, a pre-charge circuit should be added to ensure that the inrush current stays below the rated load current. As shown in the diagram, the charging sequence is: first close the main negative relay, then close the pre-charge relay, and finally close the main positive relay. Without a pre-charge circuit, a large transient current will occur the moment the main relay closes, which could cause the main positive relay to stick. Please be aware of this.



- The contact ratings are all based on resistive loads. When using an inductive load (L load) with L/R⩾1ms, you should take surge absorption measures in parallel with the inductive load. If no measures are taken, it may lead to reduced electrical life or switching failures.
- To suppress the back EMF of the relay coil, a surge-absorbing non-linear resistor (varistor recommended) is advised. Note that using a diode will degrade the relay breaking performance.

- Do not expose the relay to environments outside its operating temperature range (-40°C ~ 85°C) for an extended period.
- Avoid mounting near strong magnetic fields (transformers, permanent magnets) or heat-generating objects.
- Use washers correctly during installation to prevent loose mounting. Use M5 screws for relay body mounting with a tightening torque of 3 N•m ~ 4 N•m; use M8 nuts for load terminals with a tightening torque of 8 N•m ~ 10 N•m. Excessive torque may damage the product.
- Do not allow grease or other contaminants to adhere to the terminals. Use connecting wires with a cross-sectional area of no less than 200 mm^2; otherwise, abnormal overheating may occur at the terminals.
- A 5 mm thick busbar is recommended. Thin busbars may cause thread stripping or insufficient clamping force. Mounting two busbars on the same side is not recommended to prevent high-voltage short circuits and arcing.
- As a general rule, discontinue use if the relay suffers impact from being dropped.

Performance curve chart



Notes:

- The curve data is for design reference only; actual verification shall prevail for model selection and short-circuit fuse matching.
- The upper temperature limit of safe temperature rise defined by this curve is 180°C.
- For long-term continuous operation, it is recommended to keep the temperature below 130°C. The relay may malfunction if the safe temperature of 180°C is exceeded.
- Operating conditions beyond the safe curve carry risks of fire and explosion. The relay must be replaced promptly once such operating conditions occur.
- The ambient temperature for safe temperature rise and functional temperature rise in this curve is 85°C; ambient temperature for current above 4000A test is room temperature, with wire cross-section ⩾200 mm^2.
- At current ⩾4000A, contact welding may occur during current withstand even under conditions below the safe curve. Breaking loads beyond the scope defined in this datasheet poses fire and explosion hazards.
- At current ⩾6000A, severe contact bounce is highly likely. If the fuse fails to blow in time, the relay may explode, and sustained electric arc after explosion may ignite the relay.
- At current ⩾8000A, violent contact bounce will block further rise of loop current. If the fuse cannot blow timely, the relay will explode, and the subsequent electric arc may ignite the relay.

YDC High Voltage DC Relay

YDC-P20 Series

Feature

- Adopts ceramic brazed sealing to eliminate arc leakage risk, preventing fire and explosion hazards.
- Filled with hydrogen-based mixed gas, it effectively inhibits contact oxidation and ablation to achieve low and stable contact resistance. The contact assembly meets IP67 protection degree.
- Capable of continuous current carrying at 20 A and 85°C.
- Insulation resistance reaches 1000 MΩ (at 1000 VDC); dielectric withstand voltage between contacts and coil is 4 kV, compliant with IEC 60664-1 standard.
- The load circuit has no polarity requirement.

Main Contact Parameters

Contact Form			H					
Maximum Switching Power			45kW					
Contact Resistance			⩽4.5mΩ(at 20A)					
Rated Contact Load			20A					
Maximum Breaking Current			150A/1500VDC					
Maximum Switching Voltage			1500 VDC					
Minimum Applicable Load			6VDC,1A					
Current Withstand Capacity		Current	20A	30A	40A	80A	120A	200A
		Time	Continuous	1h	20min	30s	10s	6s
Electrical Endurance	Resistive Load		Switching: 10^4 cycles (1500 VDC, 15 A)					
			Make: 1.5×10^4 cycles (1500 VDC, 40 A)					
	Ambient Temp		Room temperature					
	Vibration Resist		0.6s : 5.4s					
Current Withstand Capacity	Current Withstand Capacity		$2x10^5$					
	Ambient Temp		Room temperature					
	Vibration Resist		0.5s : 0.5s					

Main Contact Parameters

Rated Voltage	24VDC
Drop-out Voltage	⩾2.4VDC
Coil Power Consumption	⩽19.2VDC
Pick-up Voltage (at 23°C)	2.6W

Performance Specs

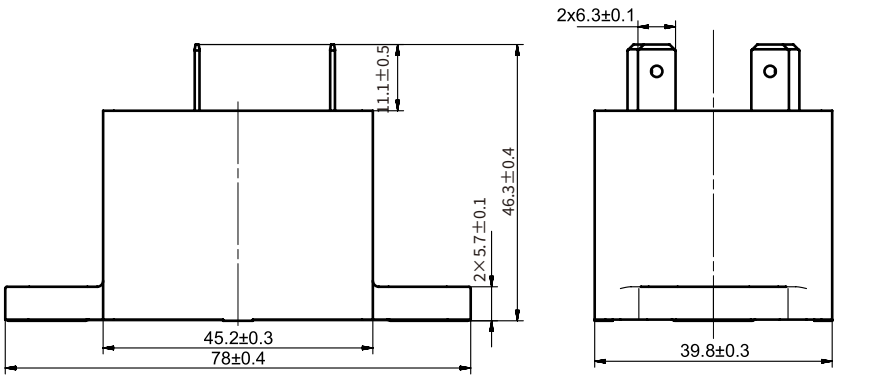
Insulation Resistance	Between Open Main Contacts	1500 VDC, 1000 MΩ
	Between Open Contacts and Coil	1500 VDC, 1000 MΩ
	Between Open Main and Auxiliary Contacts	1500 VDC, 1000 MΩ
Dielectric Withstand Voltage	Between Open Main Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Contacts and Coil	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Main and Auxiliary Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
Time Parameters	Pick-up Time	⩽50 ms
	Drop-out Time	⩽20 ms
	Pick-up Bounce Time	⩽5 ms
Vibration Resistance	Stability	Double amplitude: 1.5 mm, Frequency range: 10 Hz ~ 500 Hz Acceleration: 49 m/s^2, 1 hour per each axis.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
Shock Resistance	Stability	Acceleration: 98 m/s^2, Pulse duration: 11 ms, 6 times per each of 3 mutually perpendicular axes, total 36 times.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
	Strength	Acceleration: 490 m/s^2, Pulse duration: 6 ms, 50 times per each of 3 mutually perpendicular axes, total 300 times.
Standard Test Conditions	Temperature	23°C ±5°C
	Humidity	25% ~ 75% RH
	Mounting Direction	Vertical
	Atmospheric Pressure	96 × (1±10%) kPa
Operating Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	Any orientation
Storage Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	12 months (in original packaging)
Environmental Requirements		No corrosive gas shall exist in the product storage area. Avoid direct sunlight on the product during storage.

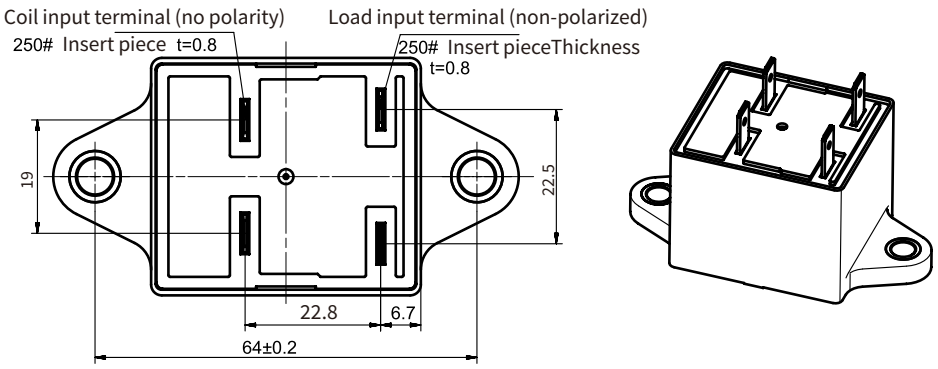
YDC- P 20 /1500 -24 -H -Q 2 J -1 -(XXX)

Product Model	
Use Case	P: PV & Energy Storage
Series Code	20A
Load Voltage	1500VDC
Coil Voltage	24V
Contact Type	H: 1 Normally Open
Coil Terminal Type	Q: QC terminal
Load Terminal Type	2: QC terminal
Housing Structure	J: Housing without boss
Special Custom Code	1: Single coil
Special Feature Code	XXX: For customized requirements

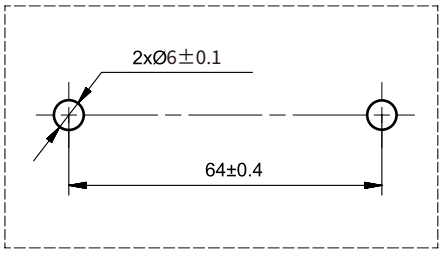
Outline drawing, installation hole dimensions, wiring diagram

Model No.	YDC-P20/1500-24-H-Q2J-1-(XXX)
Weight	160g±20g

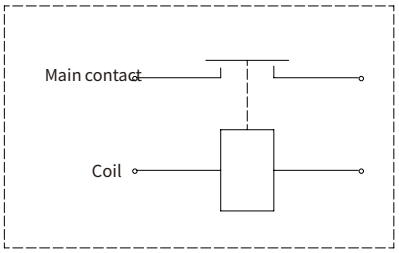




Outline drawing, installation hole dimensions, wiring diagram



installation hole dimensions

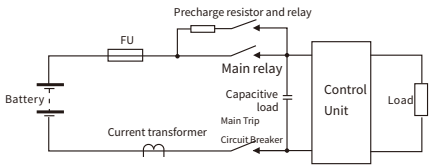


wiring diagram

Note: The connector is an optional part.

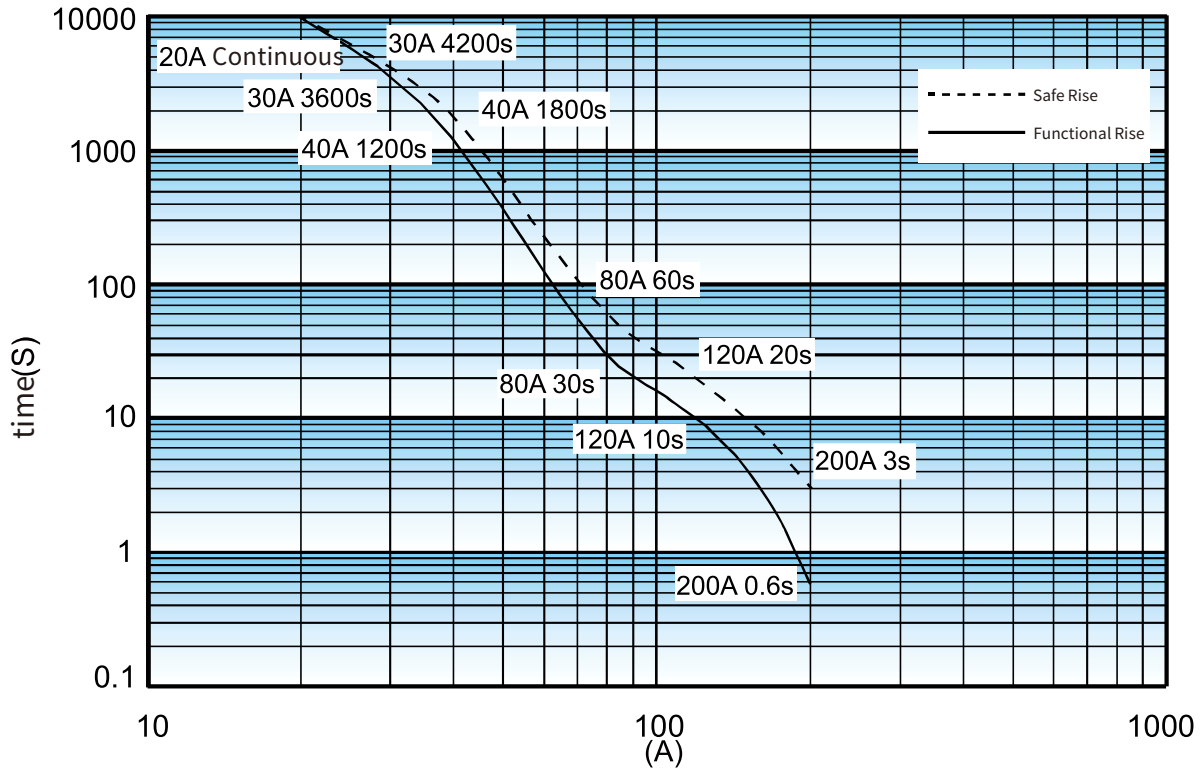
Notes

- This relay is a DC high-voltage switching device. In the event of a final failure, it might not be able to break the circuit. If it fails to cut off, it could cause overheating, smoke, or even fire. So, avoid using it beyond its specifications (including, but not limited to, coil rating, load rating, and electrical life). Make sure to use a circuit that can cut off the current load quickly in emergencies. For safety, replace the parts regularly.
- When a relay is used in a charging circuit, a pre-charge circuit should be added to ensure that the inrush current stays below the rated load current. As shown in the diagram, the charging sequence is: first close the main negative relay, then close the pre-charge relay, and finally close the main positive relay. Without a pre-charge circuit, a large transient current will occur the moment the main relay closes, which could cause the main positive relay to stick. Please be aware of this.



- The contact ratings are all based on resistive loads. When using an inductive load (L load) with L/R≥1ms, you should take surge absorption measures in parallel with the inductive load. If no measures are taken, it may lead to reduced electrical life or switching failures.
- To suppress the back EMF of the relay coil, a surge-absorbing non-linear resistor (varistor recommended) is advised. Note that using a diode will degrade the relay breaking performance.
- Do not expose the relay to environments outside its operating temperature range (-40°C ~ 85°C) for an extended period.
- Avoid mounting near strong magnetic fields (transformers, permanent magnets) or heat-generating objects.
- Use washers correctly during installation to prevent loose mounting. Use M5 screws for relay body mounting with a tightening torque of 3 N•m ~ 4 N•m; use M8 nuts for load terminals with a tightening torque of 8 N•m ~ 10 N•m. Excessive torque may damage the product.
- Do not allow grease or other contaminants to adhere to the terminals. Use connecting wires with a cross-sectional area of no less than 200 mm^2; otherwise, abnormal overheating may occur at the terminals.
- A 5 mm thick busbar is recommended. Thin busbars may cause thread stripping or insufficient clamping force. Mounting two busbars on the same side is not recommended to prevent high-voltage short circuits and arcing.
- As a general rule, discontinue use if the relay suffers impact from being dropped.

Performance curve chart



Notes:

● The curve data is for design reference only; actual verification shall prevail during model selection.

● The upper temperature limit defined by this curve for safe temperature rise is 180°C, and the upper limit for functional temperature rise is 130°C.

● For long-term continuous operation, it is recommended to keep the operating temperature below 130°C. The relay may malfunction if the safe temperature limit of 180°C is exceeded.

● Operating conditions beyond the safe curve carry fire and explosion risks. The relay must be replaced immediately once such operating conditions occur.

● The ambient test temperature for both safe temperature rise and functional temperature rise in this curve is 85°C, with wire cross-sectional area ⩾ 4 mm^2.

YDC High Voltage DC Relay

YDC-P250 Series

Feature

- Ceramic brazed sealing eliminates the risk of arc leakage, preventing fire and explosion hazards.
- The interior is filled with hydrogen-dominant gas, which effectively suppresses contact oxidation and ablation, delivering low and stable contact resistance. The contact section achieves IP67 protection degree.
- Supports long-duration current carrying of 250A at 85°C.
- Insulation resistance reaches 1000 MΩ (at 1500 VDC); the dielectric withstand voltage between contacts and coil is 4 kV, compliant with IEC 60664-1 standard.
- The load circuit has no polarity requirement, while the coil driving side is polarity-sensitive.

Main Contact Parameters

Contact Form			H				
Maximum Switching Power			250kW				
Contact Resistance			≤0.3mΩ(at 250A)				
Rated Contact Load			250A				
Maximum Breaking Current			1000A/1500VDC				
Maximum Switching Voltage			1500 VDC				
Minimum Applicable Load			6VDC,1A				
Current Withstand Capacity		Current	250A	350A	500A	600A	900A
		Time	Continuous	5min	1min	30s	10s
Electrical Endurance	Resistive Load		Break: 10^4 cycles (1500 VDC, 20 A)				
			Switching: 6000 cycles (1500 VDC, 50A)				
			Break: 1000 cycles(1500 VDC, 140A)				
			Break: 100 cycles (1500 VDC, 250A)				
	Ambient Temp		Room temperature				
	Vibration Resist		0.6s : 5.4s				
Current Withstand Capacity	Current Withstand Capacity		$2x10^5$				
	Ambient Temp		Room temperature				
	Vibration Resist		0.5s : 0.5s				

Auxiliary Contact Parameters

Contact Form	A
Contact Resistance	≤100mΩ (at 0.5A&23°C)
Rated load	6VDC,0.1A
Minimum Applicable Load	6VDC,3mA

Main Contact Parameters

Rated Voltage	24VDC
Drop-out Voltage	≥2.4VDC
Coil Power Consumption	≤19.2VDC
Pick-up Voltage (at 23°C)	Pick-up Power: 36 W, Holding Power: 6 W

Performance Specs

Insulation Resistance	Between Open Main Contacts	1500 VDC, 1000 MΩ
	Between Open Contacts and Coil	1500 VDC, 1000 MΩ
	Between Open Main and Auxiliary Contacts	1500 VDC, 1000 MΩ
Dielectric Withstand Voltage	Between Open Main Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Contacts and Coil	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Main and Auxiliary Contacts	4000 VAC, 1 min, Leakage Current ⩽0.5 mA
Time Parameters	Pick-up Time	⩽30 ms
	Drop-out Time	⩽10 ms
	Pick-up Bounce Time	⩽5 ms
Vibration Resistance	Stability	Double amplitude: 1.5 mm, Frequency range: 10 Hz ~ 500 Hz Acceleration: 49 m/s^2, 1 hour per each axis.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
Shock Resistance	Stability	Acceleration: 98 m/s^2, Pulse duration: 11 ms, 6 times per each of 3 mutually perpendicular axes, total 36 times.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
	Strength	Acceleration: 490 m/s^2, Pulse duration: 6 ms, 50 times per each of 3 mutually perpendicular axes, total 300 times.
Standard Test Conditions	Temperature	23°C ±5°C
	Humidity	25% ~ 75% RH
	Mounting Direction	Vertical
	Atmospheric Pressure	96 × (1±10%) kPa
Operating Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	Any orientation
Storage Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	12 months (in original packaging)
Environmental Requirements		No corrosive gas shall exist in the product storage area. Avoid direct sunlight on the product during storage.

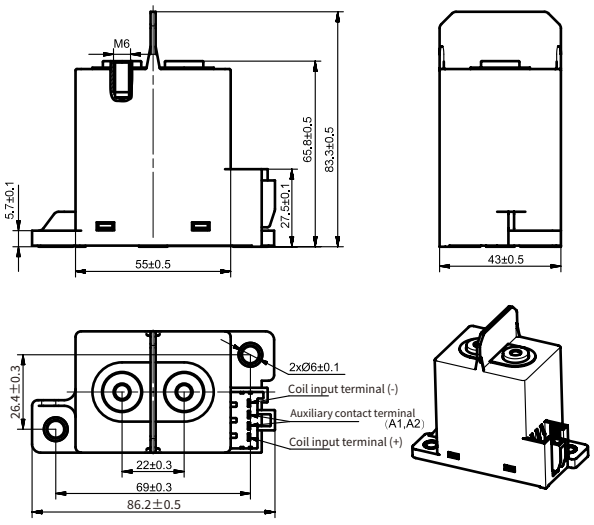
YDC- P 250 /1500 -24 -H A -C 5 -6 -(XXX)

Product Model	
Use Case	P: PV & Energy Storage
Series Code	250A
Load Voltage	1500VDC
Coil Voltage	24V
Contact Type	H: 1 Normally Open
Coil Terminal Type	A: 1 Normally Open
Load Terminal Type	C: Connector Terminal
Housing Structure	5: Internal Thread Terminal
Special Custom Code	6: Dual-coil with electronic switch energy-saving module
Special Feature Code	XXX: For customized requirements

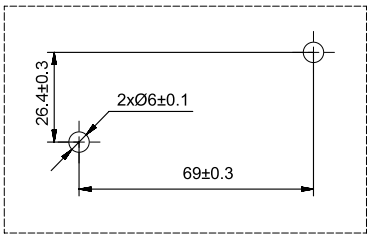
Installation Info

Load Terminal Mounting Section	Mounting Method	M6 Screw
	Torque Requirement	6 N·m ~ 8 N·m
	Busbar Hole Diameter	Ø6.0 mm ~ Ø6.5 mm
	Busbar Thickness	3 mm
Relay Main Body Mounting Section	Mounting Method	M5 Screw
	Torque Requirement	3 N·m ~ 4 N·m
Model No.		YDC-P250/1500-24-HA-C5-6(XXX)
Weight		370g±20g

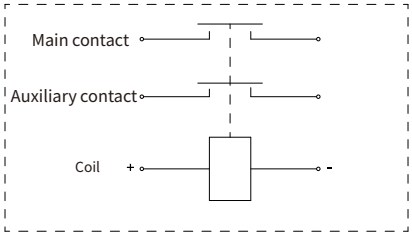
Outline drawing, installation hole dimensions, wiring diagram



Outline drawing, installation hole dimensions, wiring diagram

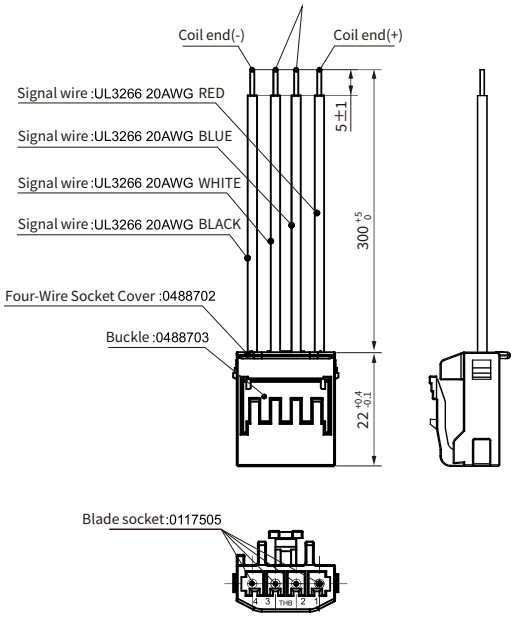


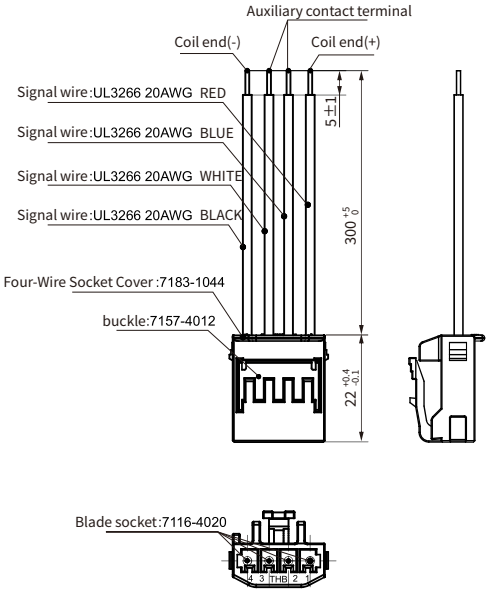
installation hole dimensions



wiring diagram

Coil lead type

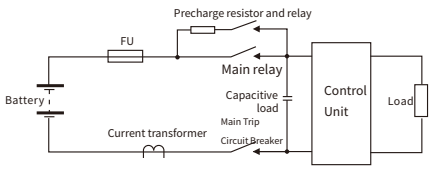




Note: The connector is an optional part.

Notes

- This relay is a DC high-voltage switching device. In the event of a final failure, it might not be able to break the circuit. If it fails to cut off, it could cause overheating, smoke, or even fire. So, avoid using it beyond its specifications (including, but not limited to, coil rating, load rating, and electrical life). Make sure to use a circuit that can cut off the current load quickly in emergencies. For safety, replace the parts regularly.
- When a relay is used in a charging circuit, a pre-charge circuit should be added to ensure that the inrush current stays below the rated load current. As shown in the diagram, the charging sequence is: first close the main negative relay, then close the pre-charge relay, and finally close the main positive relay. Without a pre-charge circuit, a large transient current will occur the moment the main relay closes, which could cause the main positive relay to stick. Please be aware of this.

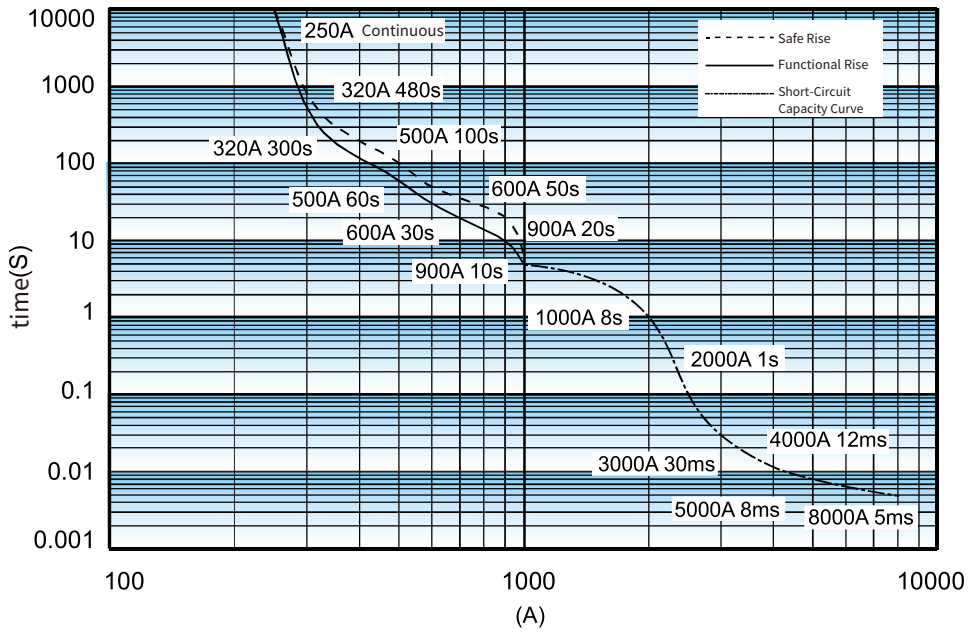


- The contact ratings are all based on resistive loads. When using an inductive load (L load) with L/R⩾1ms, you should take surge absorption measures in parallel with the inductive load. If no measures are taken, it may lead to reduced electrical life or switching failures.
- To suppress the back EMF of the relay coil, a surge-absorbing non-linear resistor (varistor recommended) is advised. Note that using a diode will degrade the relay breaking performance.

- Do not expose the relay to environments outside its operating temperature range (-40°C ~ 85°C) for an extended period.
- Avoid mounting near strong magnetic fields (transformers, permanent magnets) or heat-generating objects.
- Use washers correctly during installation to prevent loose mounting. Use M5 screws for relay body mounting with a tightening torque of 3 N•m ~ 4 N•m; use M8 nuts for load terminals with a tightening torque of 8 N•m ~ 10 N•m. Excessive torque may damage the product.
- Do not allow grease or other contaminants to adhere to the terminals. Use connecting wires with a cross-sectional area of no less than 200 mm^2; otherwise, abnormal overheating may occur at the terminals.
- A 5 mm thick busbar is recommended. Thin busbars may cause thread stripping or insufficient clamping force. Mounting two busbars on the same side is not recommended to prevent high-voltage short circuits and arcing.
- As a general rule, discontinue use if the relay suffers impact from being dropped.

Performance curve chart

Current tolerance curve



Notes:

- The curve data is for design reference only; practical verification shall take precedence during model selection and short-circuit fuse matching.
- The upper temperature limit of safe temperature rise defined by this curve is 180°C
- For long-term continuous operation, the recommended maximum operating temperature shall not exceed 130°C. The relay may malfunction once the safe temperature limit of 180°C is exceeded.
- Operating conditions beyond the safe curve carry fire and explosion hazards. The relay must be replaced immediately if such operating conditions occur.
- The ambient test temperature for safe temperature rise and functional temperature rise in this curve is 85°C; the ambient test temperature for current above 2000 A is room temperature, with wire cross-sectional area greater than 80 mm^2.
- At current ⩾ 1000 A, contact welding may occur during current withstand even under conditions below the safe curve. Breaking loads beyond the scope specified in this datasheet poses fire and explosion risks.
- At current ⩾ 3000 A, severe contact bounce is highly likely. If the fuse fails to blow in a timely manner, the relay may explode, and sustained electric arc after explosion may ignite the relay body.
- At current ⩾ 5000 A, violent contact bounce will block further rise of loop current. If the fuse cannot blow timely, the relay will explode, and the subsequent electric arc may ignite the relay.

YDC High Voltage DC Relay

LVMA

YDC-M300 Series

Feature

- Adopts ceramic brazed sealing to eliminate arc leakage risk and prevent fire and explosion hazards.
- Filled with hydrogen-based mixed gas, it effectively inhibits contact oxidation and ablation to maintain low and stable contact resistance. The contact assembly meets IP67 protection degree.
- Supports continuous current carrying at 300 A under 85°C ambient temperature.
- Insulation resistance reaches 1000 MΩ (tested at 1000 VDC); dielectric withstand voltage between contacts and coil is 3 kV, compliant with IEC 60664-1 standard.

Main Contact Parameters

Contact Form			H				
Maximum Switching Power			450kW				
Contact Resistance			⩽0.3mΩ(at 200A)				
Rated Contact Load			300A				
Maximum Breaking Current			2000A/750VDC				
Maximum Switching Voltage			1000 VDC				
Minimum Applicable Load			6VDC,1A				
Current Withstand Capacity		Current	300A	450A	600A	1000A	2000A
		Time	Continuous	400s	150s	23s	10s
Electrical Endurance	Resistive Load		Break: 100 cycles(1000 VDC, 300 A),Break: 500 cycles(800 VDC, 300 A)				
			Break: 500 cycles(750 VDC, 300 A),Break: 1000 cycles(400 VDC, 300 A)				
			Break: 1 cycle(450 VDC, 2000 A),Break: 1 cycle(450 VDC, 3000 A)				
			Break: 100 cycles (750 VDC, 2000A)				
	Ambient Temp		Room temperature				
	Vibration Resist		0.6s : 5.4s				
Current Withstand Capacity	Current Withstand Capacity		$2x10^5$				
	Ambient Temp		Room temperature				
	Vibration Resist		0.5s : 0.5s				

Auxiliary Contact Parameters

Contact Form	B
Contact Resistance	⩽150mΩ(at 1A)
Rated load	6VDC,0.1A
Minimum Applicable Load	6VDC,3mA

Main Contact Parameters

Rated Voltage	12VDC
Operating Voltage Range	9-16VDC
Drop-out Voltage	⩾1VDC
Coil Power Consumption	⩽9VDC
Pick-up Voltage (at 23°C)	Pick-up Power: 55 W, Holding Power: 4.7 W

Performance Specs

Insulation Resistance	Between Open Main Contacts	1000 VDC, 1000 MΩ
	Between Open Contacts and Coil	1000 VDC, 1000 MΩ
	Between Open Main and Auxiliary Contacts	1000 VDC, 1000 MΩ
Dielectric Withstand Voltage	Between Open Main Contacts	3000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Contacts and Coil	3000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Main and Auxiliary Contacts	3000 VAC, 1 min, Leakage Current ⩽0.5 mA
Time Parameters	Pick-up Time	⩽30 ms
	Drop-out Time	⩽10 ms
	Pick-up Bounce Time	⩽5 ms
Vibration Resistance	Stability	Double amplitude: 1.5 mm, Frequency range: 10 Hz ~ 500 Hz Acceleration: 49 m/s^2, 1 hour per each axis.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
Shock Resistance	Stability	Main contact: 196 m/s^2; Auxiliary contact: 147 m/s^2 under energized condition, 98 m/s^2 under de-energized condition.Pulse duration: 6 ms, 10 shocks per each of 3 mutually perpendicular axes, total 60 shocks.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
	Strength	Acceleration: 490 m/s^2, Pulse duration: 6 ms, 50 times per each of 3 mutually perpendicular axes, total 300 times.
Standard Test Conditions	Temperature	23°C ±5°C
	Humidity	25% ~ 75% RH
	Mounting Direction	Vertical
	Atmospheric Pressure	61.6kPa~106.2kPa
Operating Conditions	Temperature	-40"C~125"G
	Humidity	5% ~ 85% RH
	Mounting Direction	Any orientation
Storage Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 85% RH
	Mounting Direction	12 months (in original packaging)
Environmental Requirements		No corrosive gas shall exist in the product storage area. Avoid direct sunlight on the product during storage.

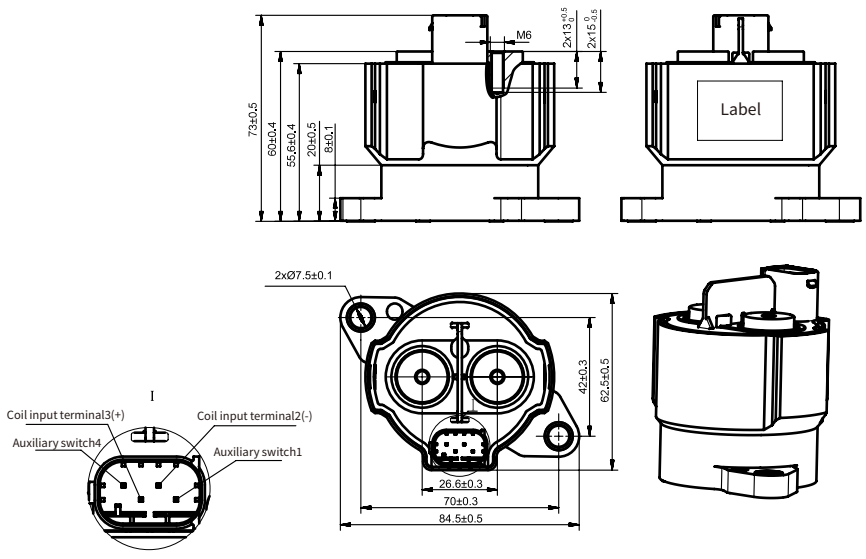
YDC- M 300 /XXXX -12 -H B -C 5 -6 -(XXX)

Product Model	
Use Case	M：New Energy Vehicle Field
Series Code	300A
Load Voltage	750VDC
Coil Voltage	12V
Contact Type	H: 1 Normally Open
Coil Terminal Type	A: 1 Normally Open
Load Terminal Type	C: Connector Terminal
Housing Structure	5: Internal Thread Terminal
Special Custom Code	6: Dual-coil with electronic switch energy-saving module
Special Feature Code	XXX: Customized special requirements

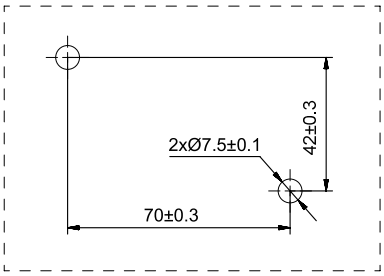
Installation Info

Load Terminal Mounting Section	Mounting Method	M6 Screw
	Torque Requirement	6 N·m ~ 8 N·m
	Busbar Hole Diameter	Ø6.8 mm ~ Ø7.2 mm
	Busbar Thickness	4 mm
Relay Main Body Mounting Section	Mounting Method	M6 Screw
	Torque Requirement	5 N·m ~ 6 N·m
Model No.		YDC-M300/XXXX-12-HB-C5-6(XXX)
Weight		410±20g

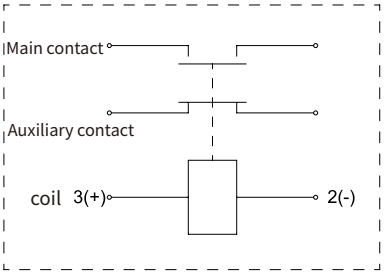
Outline drawing, installation hole dimensions, wiring diagram



Outline drawing, installation hole dimensions, wiring diagram

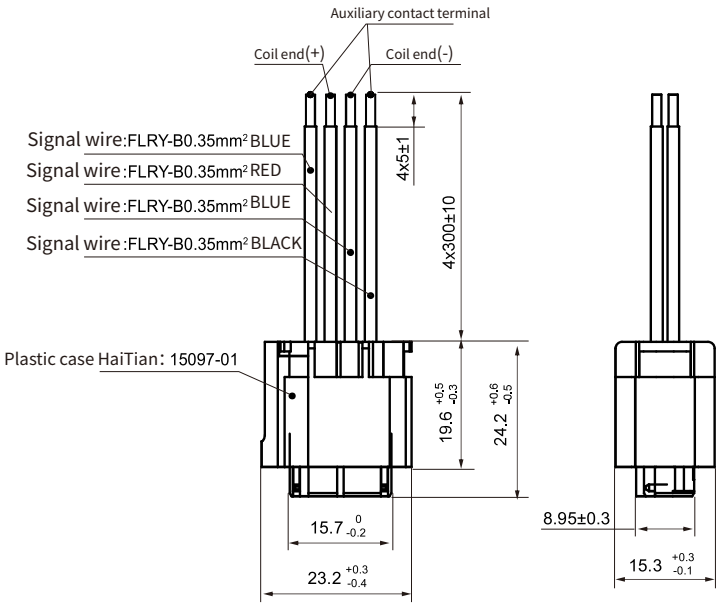


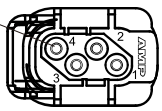
installation hole dimensions



wiring diagram

Coil lead type

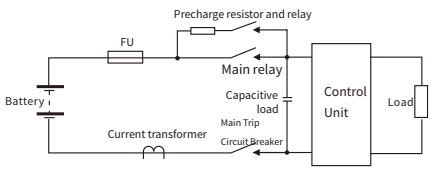




Note: The connector is an optional part.

Notes

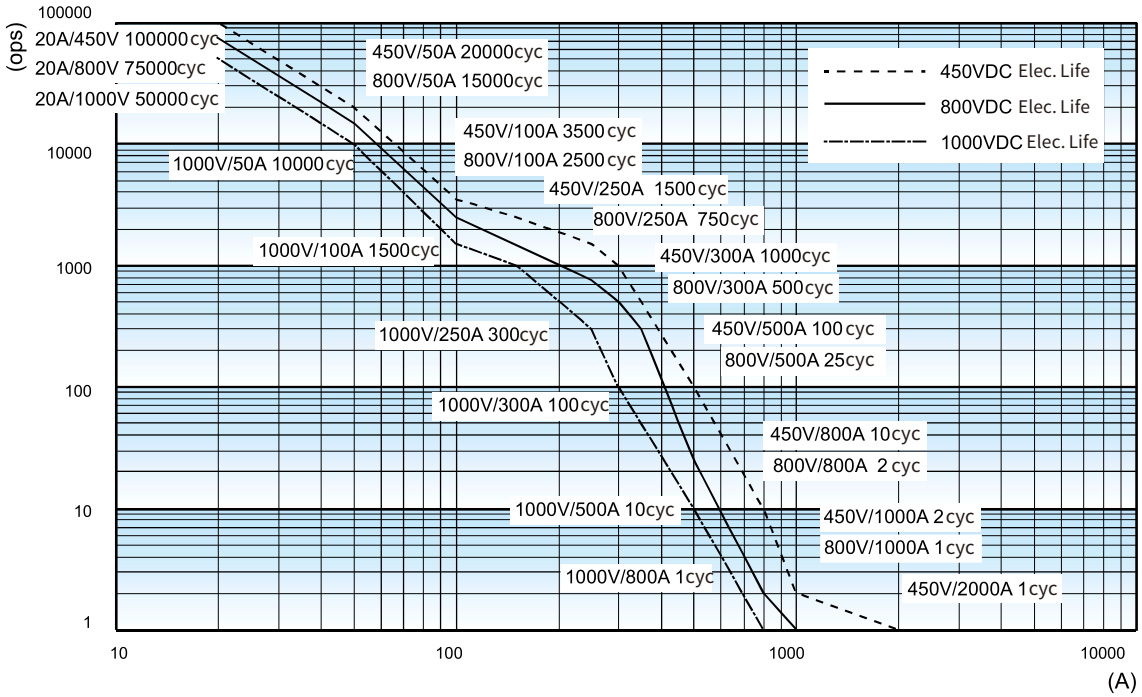
- This relay is a DC high-voltage switching device. It may fail to make or break contacts under ultimate fault conditions. Once the load cannot be cut off, abnormal overheating, smoke, fire and other accidents may occur. Do not operate the relay beyond its specified ratings (including but not limited to coil rating, load rating and electrical life). Adopt a circuit capable of promptly cutting off load current in emergencies. Replace the component regularly for safety.
- When the relay is applied to charging circuits, a pre-charge circuit shall be added to limit inrush current below the rated load current. Refer to the diagram below for charging sequence: close the main negative relay first, then the pre-charge relay, and finally the main positive relay. Without a pre-charge circuit, transient high current will be generated the moment the main relay closes, which may cause welding of the main positive relay contacts. Please take note.



- All contact ratings are specified under resistive load conditions. For inductive loads with L/R ⩾ 1 ms, install surge suppression components in parallel with the inductive load. Without such measures, electrical life will be shortened and breaking failure may occur.
- To suppress back EMF generated by the relay coil, a surge-absorbing non-linear resistor (varistor recommended) is suggested. Note that diodes will degrade the relay' s breaking performance.
- Do not expose the relay to environments outside its operating temperature range (-40°C ~ 125°C) for an extended period.
- Avoid mounting near strong magnetic fields (transformers, permanent magnets) or heat-emitting objects.
- Use washers properly during installation to prevent loose mounting. M6 screws shall be used for relay fixing with tightening torque controlled at 5 N·m ~ 6 N·m; tightening torque for M6 nuts at load terminals shall be 6 N·m ~ 8 N·m. Excessive torque may damage the product.
- Prevent grease or other contaminants from adhering to terminals. Use connecting wires with cross-sectional area ⩾ 100 mm²; otherwise abnormal overheating at terminals may happen.
- A 4 mm thick busbar is recommended. Thin busbars may cause thread stripping or insufficient clamping force. Mounting two busbars on the same side is not recommended to prevent high-voltage short circuits and arcing.
- As a general rule, discontinue use if the relay suffers impact from being dropped.

Performance curve chart

Resistive Load Breaking Life Curve



- All data above is for reference only.
- Wire cross-sectional area shall be greater than 100 mm².
- The above data is measured under resistive load conditions (L/R < 1 ms), with ON-OFF time ratio of 0.6 s : 5.4 s and ambient temperature of 23°C. These values may vary with load type, switching frequency, ambient conditions and other factors. It is recommended to conduct verification under actual load during application.

YDC High Voltage DC Relay

YDC-M400 Series

Feature

- Adopts ceramic brazed sealing to eliminate arc leakage risk and prevent fire and explosion hazards.
- Filled with hydrogen-based mixed gas, it effectively inhibits contact oxidation and ablation to maintain low and stable contact resistance. The contact assembly meets IP67 protection degree.
- Supports continuous current carrying at 400 A under 85°C ambient temperature.
- Insulation resistance reaches 1000 MΩ (tested at 1000 VDC); dielectric withstand voltage between contacts and coil is 3 kV, compliant with IEC 60664-1 standard.

Main Contact Parameters

Contact Form			H				
Maximum Switching Power			360kW				
Contact Resistance			⩽0.25mΩ(at 400A)				
Rated Contact Load			400A				
Maximum Breaking Current			2500A/1000VDC				
Maximum Switching Voltage			1500 VDC				
Minimum Applicable Load			6VDC,1A				
Current Withstand Capacity		Current	400A	750A	1000A	1350A	2000A
		Time	Continuous	200s	65s	28s	10s
Electrical Endurance	Capacitive Load		Make: 7.5×10^4 cyc (22.5 VDC, 140 A, 1100 μF)				
	Resistive Load		Break: 100 cyc(1000 VDC, 400 A)				
			Break: 200 cyc(800 VDC, 400 A)				
			Break: 1000 cyc(450 VDC, 400 A)				
	Ambient Temp		Room temperature				
	Vibration Resist		0.6s : 5.4s				
Current Withstand Capacity	Current Withstand Capacity		2x10^5				
	Ambient Temp		Room temperature				
	Vibration Resist		0.5s : 0.5s				

Main Contact Parameters

Rated Voltage	24VDC
Operating Voltage Range	18-32VDC
Drop-out Voltage	⩾2VDC
Coil Power Consumption	⩽18VDC
Pick-up Voltage (at 23°C)	6W

Performance Specs

Insulation Resistance	Between Open Main Contacts	1000 VDC, 1000 MΩ
	Between Open Contacts and Coil	1000 VDC, 1000 MΩ
	Between Open Main and Auxiliary Contacts	1000 VDC, 1000 MΩ
Dielectric Withstand Voltage	Between Open Main Contacts	3000 VAC, 1 min, Leakage Current ⩽0.5 mA
	Between Open Contacts and Coil	3000 VAC, 1 min, Leakage Current ⩽0.5 mA
Time Parameters	Pick-up Time	⩽50 ms
	Drop-out Time	⩽10 ms
	Pick-up Bounce Time	⩽5 ms
Vibration Resistance	Stability	Double amplitude: 1.5 mm, Frequency range: 10 Hz ~ 500 Hz Acceleration: 49 m/s^2, 1 hour per each axis.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
Shock Resistance	Stability	Main contacts: 98 m/s^2 (pulse duration 11 ms), 6 shocks per each of the three mutually perpendicular axes, total 36 shocks.The break time of closed circuit or make time of open circuit shall not exceed 10 μs.
	Strength	Acceleration: 490 m/s^2, Pulse duration: 6 ms, 50 times per each of 3 mutually perpendicular axes, total 300 times.
Standard Test Conditions	Temperature	23°C ±5°C
	Humidity	25% ~ 75% RH
	Mounting Direction	Vertical
	Atmospheric Pressure	96x(1±10%) kPa
Operating Conditions	Temperature	-40"C~125"G
	Humidity	5%~95%RH
	Mounting Direction	Any orientation
Storage Conditions	Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% RH
	Mounting Direction	12 months (in original packaging)
Environmental Requirements		No corrosive gas shall exist in the product storage area. Avoid direct sunlight on the product during storage.

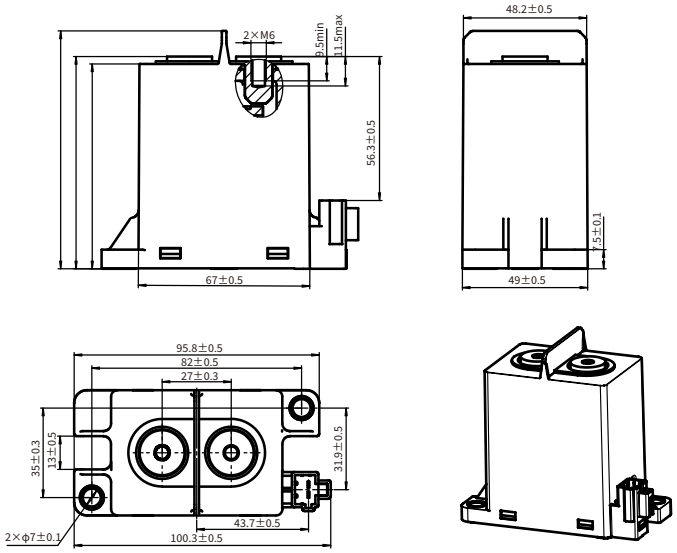
YDC- M 400 /1000 -24 -H A -C 5 -6 -(XXX)

Product Model	
Use Case	P: Energy Storage
Series Code	400A
Load Voltage	100VDC
Coil Voltage	24V
Contact Type	H: 1 Normally Open
Coil Terminal Type	A: 1 Normally Open
Load Terminal Type	C: Connector Terminal
Housing Structure	5: Internal Thread Terminal
Special Custom Code	6: Dual-coil with electronic switch energy-saving module
Special Feature Code	XXX: Customized special requirements

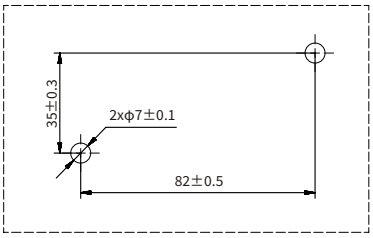
Installation Info

Load Terminal Mounting Section	Mounting Method	M6 Screw
	Torque Requirement	6 N·m ~ 8 N·m
	Busbar Hole Diameter	Ø6.8 mm ~ Ø7.2 mm
	Busbar Thickness	2 mm-3 mm
Relay Main Body Mounting Section	Mounting Method	M6 Screw
	Torque Requirement	6 N·m ~ 8 N·m
Model No.		YDC-M400/1000-24-H-C5-1(XXX)
Weight		≈730g

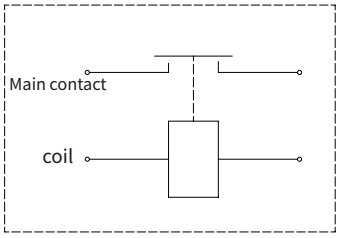
Outline drawing, installation hole dimensions, wiring diagram



Outline drawing, installation hole dimensions, wiring diagram

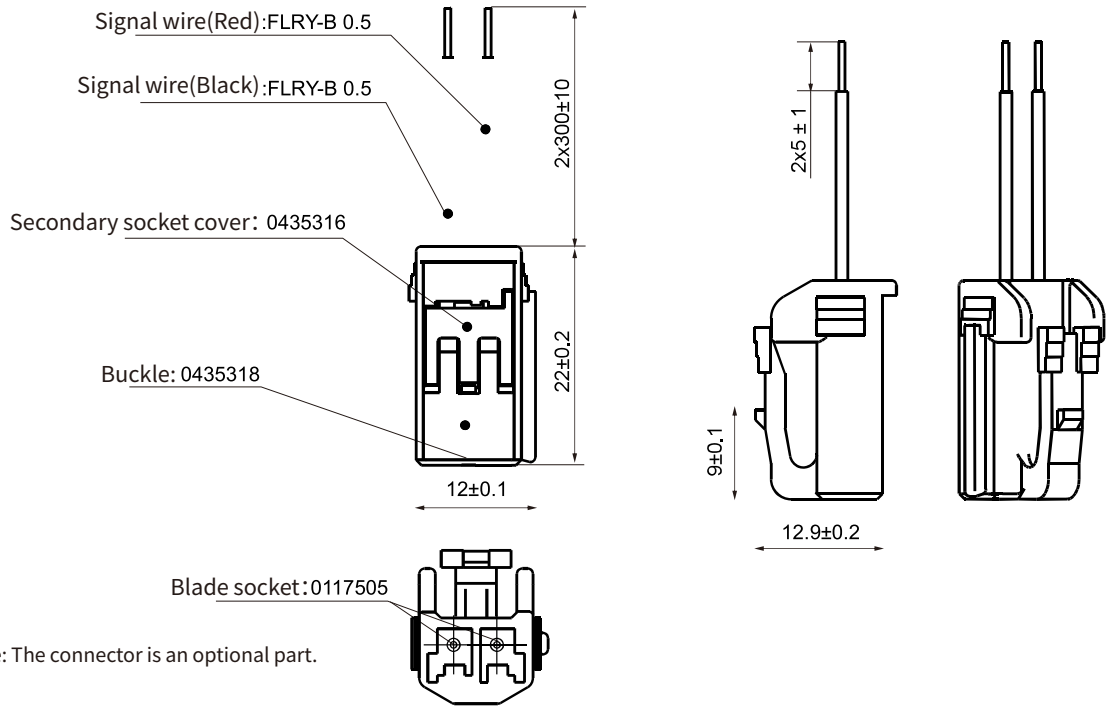


installation hole dimensions



wiring diagram

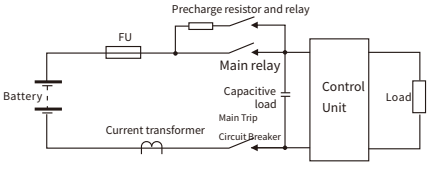
Coil lead type



Note: The connector is an optional part.

Notes

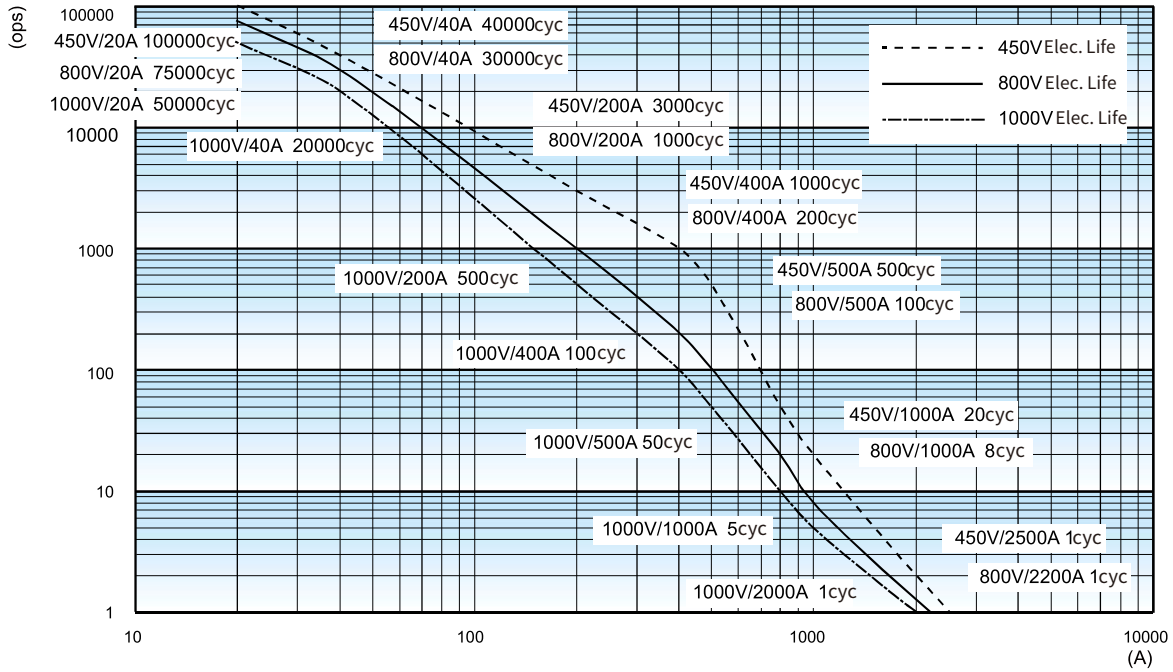
- This relay is a DC high-voltage switching device. It may fail to make or break contacts under ultimate fault conditions. If the load cannot be disconnected, abnormal overheating, smoke, fire and other safety hazards may occur. Do not operate the relay beyond its rated specifications (including but not limited to coil rating, load rating and electrical life). Equip the system with a circuit that can cut off load current promptly in emergencies. Replace this component regularly for safety assurance.
- When the relay is applied to charging circuits, a pre-charge circuit must be configured to limit inrush current below the rated load current. Refer to the attached diagram for the standard charging sequence: close the main negative relay first, then the pre-charge relay, and finally the main positive relay. Without a pre-charge circuit, transient high current will occur the instant the main relay closes, which may cause contact welding on the main positive relay. Please pay close attention to this requirement.



- All contact ratings are defined under resistive load operating conditions. For inductive loads with L/R ⩾ 1 ms, install parallel surge suppression components across the inductive load. Without such protection, the electrical life will be shortened, and breaking failure may arise.
- To suppress back EMF generated by the relay coil, a surge-absorbing non-linear resistor (varistor is recommended) is advised. Note that diodes will degrade the relay' s breaking performance.
- Do not place the relay for extended periods in environments outside its operating temperature range of -40°C ~ 85°C.
- Avoid installing the relay near strong magnetic fields (such as transformers and permanent magnets) or heat-generating components.
- Properly fit washers during installation to prevent loose mounting. M6 screws shall be used for fixing the relay, with tightening torque controlled between 6 N·m and 8 N·m; the tightening torque for M6 nuts on load terminals shall also be maintained at 6 N·m ~ 8 N·m. Excessive torque will cause permanent damage to the product.
- Prevent grease or other contaminants from adhering to terminals. Use connecting wires with a cross-sectional area of 200 mm² or larger; otherwise abnormal overheating at the terminals may occur.
- A busbar thickness of 2 mm ~ 3 mm is recommended. Thinner busbars will lead to thread stripping or insufficient clamping force. Mounting two busbars on the same side is not recommended to prevent high-voltage short circuits and arcing.
- As a general rule, discontinue use of the relay if it has suffered impact from being dropped.

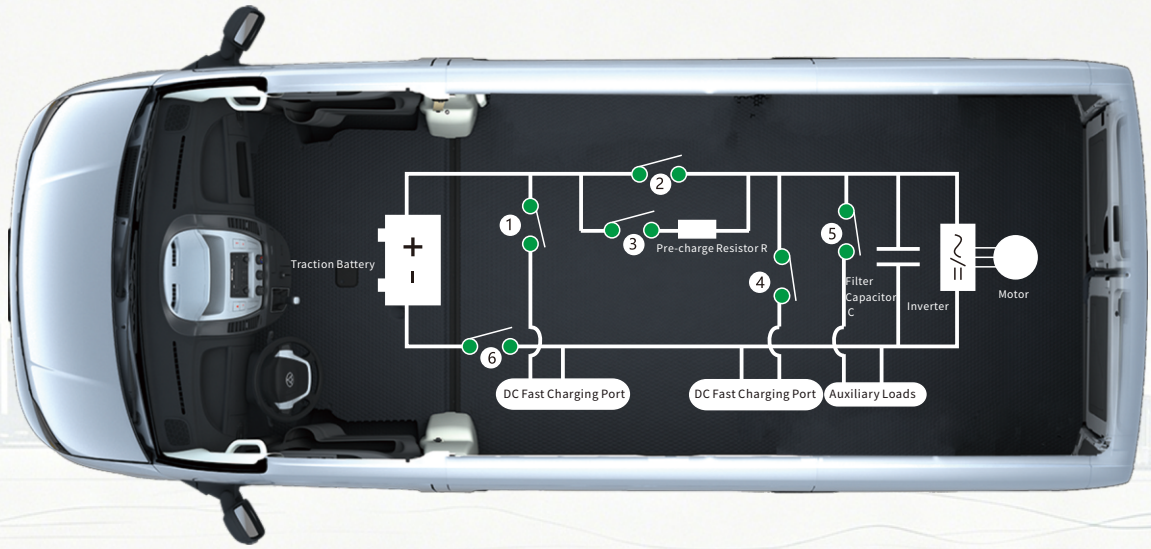
Performance curve chart

Resistive Load Breaking Life Curve



- All data above is for reference only.
- Wire cross-sectional area shall be greater than 100 mm².
- The above data is measured under resistive load conditions (L/R < 1 ms), with ON-OFF time ratio of 0.6 s : 5.4 s and ambient temperature of 23°C. These values may vary with load type, switching frequency, ambient conditions and other factors. It is recommended to conduct verification under actual load during application.

New Energy Vehicles



1 DC Fast Charging Circuit

2 Main Positive Circuit

3 Pre-charge Circuit

4 AC Slow Charging Circuit 20A~40A

5 Auxiliary Circuit 20A~60A

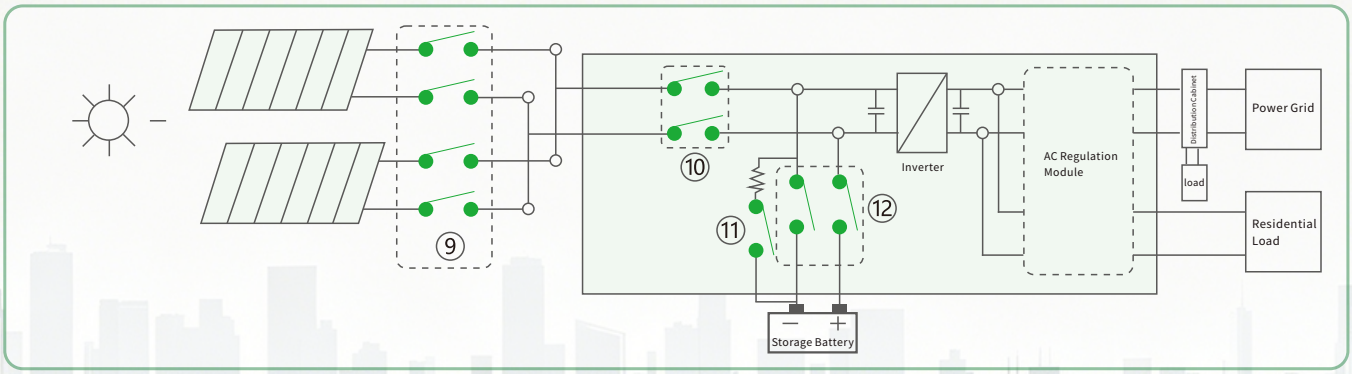
6 Main Negative Circuit 100A~400A

DC Charging Equipment

7 Converging branch: 100A~150A

8 Converging main line: 250A~600A

Solar/Storage System



9 PV String Branch Circuit: 20A~40A

10 Main Confluence Circuit: 20A~400A

11 Energy Storage Pre-charge: 20A~40A

12 Energy Storage Main Circuit: 150A~800A

Commercial Storage Application Cases

13 Energy Storage Pre-charge: 20A~60A

14 Energy Storage Main Circuit: 100A~1200A

50k+ m²
Floor Area

600+
Employees

80+
Export Countries

20+Years
Industry Experience

≥50%
Automation Rate

ZHEJIANG LVMA ELECTRIC CO., LTD.specializes in the R&D, production,and sales of low-voltage electrical appliances.

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(9th Floor, Building 5, Headquarters Economic Park)