

## ISTEK-C104 100A 750V High Voltage DC Contactor Series



### Part-A: Areas of applications

This model of DC contactor can be used in many different areas. Typical applications include: power supply for industrial machineries; motor control; circuit isolation; circuit protection and safety devices; automobile battery charging and recovering; power control for inverter and frequency converter.

### Part-B: Product features and benefits

#### 1 - Capable of controlling big current and very high voltage

Epoxy sealed and inside filled with inert gas, with the help of magnetic-blow-arc-elimination, the well protected contacts can carry a load up to 900VDC / 100A.

#### 2 - Compact and quiet

With the contact chamber filled with inert gas and the adoption of non-arc-gap structure, it makes possible to have very small contact gap while maintaining safe and efficient DC breaking. As the result of this optimal structure, this contactor is very small in size and also very quiet even when it breaks high current.

#### 3 - Safe and reliable

The contactor's safety and reliability are ensured by the fact that the contact is sealed inside the chamber filled with inert gas. The arc has no way out which makes it very safe to operate. The consistent contact resistance (due to inert gas protection) makes it perform reliably regardless of the environment changes.

#### 4 - Flexible installation options

With the light moveable part, big counter force and less impact of gravity, it can be easily installed with side or bottom mounting options - no other special installation requirements.

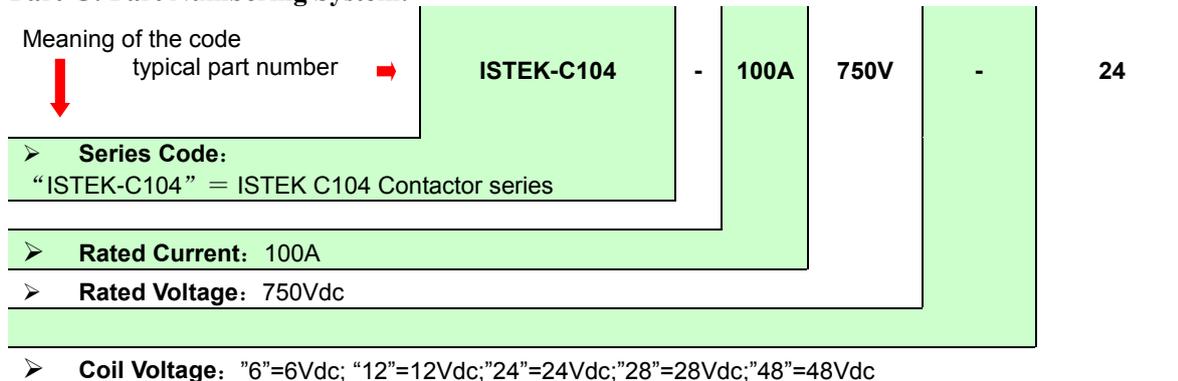
#### 5 - Multiple applications

General applications include: battery switching and backup equipment, power control of DC voltage and circuit safety protection, etc..

#### 6 - RoHS compliant (EU RoHS directive - 2002/95/EC)



**Part-C: Part Numbering System:**



**Note:** Customers can choose different Installation methods and coil lead-outs.

**Part-D: Technical parameters**

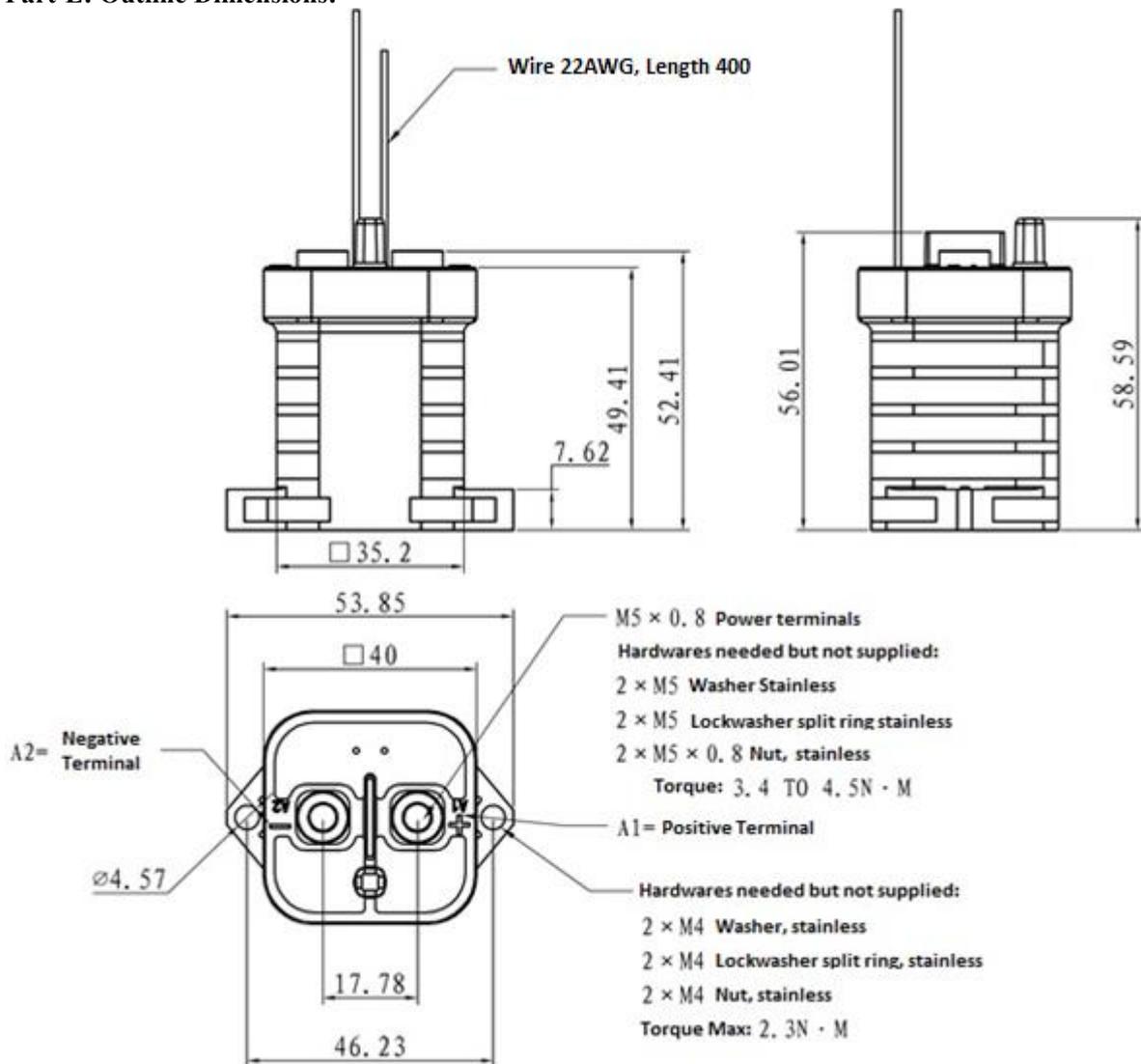
Power Contacts Parameters		Estimated Life	
Contact Arrangement	1 form normally open	50A @ + 400Vdc (On / Off)	50,000 cycles
Rated Operating Voltage	12-900VDC	100A @ + 400Vdc (On / Off)	6,000 cycles
Continuous (Carry) Current	100A★1	100A @ - 400Vdc (On / Off)	1,000 cycles
Short time (Carry) Current	200A (3 min) ★2	200A @ + 400Vdc (On / Off)	500 cycles
Max break current	1200A (1/2 cycle,50-60Hz) (Via closed contacts only)	1,000A @ +400Vdc (Break only)	10 cycles
Dielectric Strength★3	Between contacts: 5,600Vrms / 8,000Vdc Contact and coil: 2,000Vrms / 4,000Vdc	600A (Make only)	25 cycles
Insulation Resistance (Contact-Contact and Contact-Coil)	New products: 100MΩ (Min.) @500Vdc. End of electrical life: 50MΩ(Min.) @500Vdc.	Mechanical Life	1,000,000
Contact Voltage Reduction ( @100A )	≤80mV		
Environmental Parameters		Make / Break Time @25°C	
Shock, 11ms 1/2 sine ( Closing/Making )	20G Peak	Make (incl. bounce)	25ms, Max.
Vibration, sine, 20G( peak)	55~2,000Hz	Bounce (after close only)	5ms, Max.
Operating Ambient Temperature	-40~+85°C	Break / Release	10ms, Max.
Altitude	<4000m		
Noise Releasing (@100mm)	70dB(a)		
Weight	190 ± 2g		

Coil Parameters			
Operating Voltage (Rated)	<b>12Vdc</b>	<b>24Vdc</b>	<b>48Vdc</b>
Maximum Working Voltage	16Vdc	28Vdc	52Vdc
Pull-in (close) Voltage (20°C)	8VDC	16VDC	33VDC
Release Voltage (20°C)	1.2Vdc	2.4Vdc	4.8Vdc
Coil Current (20°C, Nominal @12Vdc)	461mA	250mA	122mA
Coil Power (20°C, Nominal @ Rated Voltage)	5.5W	6.0W	6.0W
Maximum Pull-in Close Voltage (85°C)	9.6Vdc	19.2Vdc	38.4Vdc
Rated Coil Resistance ±5% (20°C)	26Ω	96Ω	392Ω

**Note:**

- \*1: 8.4mm<sup>2</sup> wire, the rated current is dependent on size of wire, the terminal's temperature rise is under 175°C
- \*2: 8.4mm<sup>2</sup> (#8 AWG) wire, ambient temperature +40°C, 3 minutes.
- \*3: Under all conditions, min 2,000V effective virtual value, operates to the end of life

**Part-E: Outline Dimensions:**



**Part-F: Precautions**

1. When installing contactors, washers have to be used to prevent the screws from loosening.  
Exceeding the maximum torque can lead to product break-down, refer to the following provisions on torque ranges.
  - Contacts torque (M5 Nut): 3.4 – 4.5 N.m
  - Torque at mounting position: 2.3 N.m Max
2. The contactor's contacts are polarized, so it should be wired according to what is indicated on top of the product case.
3. Do not use drop-off products.
4. Avoid installing the product in strong magnetic fields (e.g. near transformers or magnets), or near objects with heat radiation.
5. Electrical life  
In its final breakdown mode, as a high voltage DC switch, this contactor may lose its breaking function. So, do not exceed its specified switching capacity and life parameters. (Please treat the contactor as a product with certain life, replace it when necessary). Once losing the ability to break or cutoff, it may cause neighboring parts to burn. So, design a proper wiring plan to ensure that power supply can be cut off within 1 second.
6. The life of the internal gas diffusion  
The contactor's contacts are sealed in a cavity which is filled with inert gas, the gas diffusion life is decided by the contact chamber temperature (i.e. ambient temperature + temperature rise when contacts are energized). Make ensure that the ambient temperature is - 40 to +85 °C.
7. If the contactor's coil and the contacts are continuously under the rated voltage / current, plus if the power supply is also connected straight after the cutoff, then the coil resistance will increase due to the coil temperature rise; this will result in the increase of the contactor's pull-in voltage, even beyond the rated pull-in voltage. In this case, you should take the following measures: such as reducing the load current; limiting the continuous power-on time; or to have coil voltage higher than the rated pull-in voltage.
8. When the load is resistive, the main contacts' rating parameters are applicable. If it is inductive load (L load) with  $L/R > 1\text{ms}$ , the inductive load should have a parallel surge current protection device.
9. The coil drive circuit's power must be greater than the coil's power; otherwise it will reduce the breaking / cutting off capacity.
10. Do not contaminate the terminals. The external wiring terminals should be contacted reliably with the main terminals (refer to below figure for wiring), otherwise it may cause too high terminal temperature.

