



Power Circuit Breaker for DC Power System

Power Circuit Breaker for DC Power System

ENTEC's DC CB can meet the increasing demand of DC power generation and distribution technology in the field of renewable energy solution and other DC power system.

ENTEC's DC CB can perform reliable overcurrent and short-circuit current protection to avoid damage in the DC distribution line equipment, and to ensure operator's safety.

The DC CB is designed to cover DC power protection requirements up to DC1500V/5000A, being applicable to various customer applications. ENTEC offers wide range of products and solutions to meet not only the installation requirements but also the customer's needs.

In addition, the DC CB is tested according to the International standards at the international authorized testing laboratory



Features

- Wide range of selection
- High short-circuit capacity
- High operational reliability
- Maintenance free
- Convenient operation
- Compact size
- Flexible configuration

Applications

- Renewable energy (Solar, wind, hydro etc.) power plant equipment
- Railway application
- DC power supply and distribution equipment and others
- Building, Vessel, and Industrial facilities
- Large-scale energy storage system



Ratings

ENTEC DC CB has high short circuit making and breaking capacity and reliable operation performance. By satisfying the requirements of international standard, the DC CB can achieve safe power line protection and reliable power supply,

Ratings

Rated service voltage Ue	[Vdc]	500		1000			
Rated insulation voltage Ui	[kVdc]	3.82		3.82			
Rated impulse withstand voltage Uimp	[kV]	12		12			
Number of poles	[P]	2~3		3~4			*3~4
Frame size	[AF]	1600	2500	1600	2500	3200	5000
Rated uninterrupted current (at 40℃) Iu	[A]	630	2000	630	2000	3200	4000
		1000	2500	1000	2500	-	5000
		1600	-	1600	-	-	-
Rated service short-circuit breaking current Ics [%Icu]	[kA]	100%		100%			
Rated service short-time withstand current Icw [1sec]	[kA]	50	65	40	45	50	65
Rated short-circuit making current Icm [%Icu]	[kA]	100%		100%			
Category of use(According to IEC 60947-2)		B		B			
Overcurrent protection (Digital trip units for DC applications)		Long-time, Short-time, Instantaneous					
Closing time	[ms]	≤60		≤60			
Breaking time for Icm	[ms]	≤60		≤60			
Operating temperature	[℃]	-25 ~ +70					
Versions		Fixed - Withdrawable					
According to the type of DC network		Insulated/Network with earthed negative polarity/ Network with the mid-point earthed					
Rated control voltage	[V]	DC 24, 48, 110, 125 / AC 220					
Mechanical life	[times]	25,000	20,000	25,000	20,000	20,000	12,000
Applied standard		IEC 60947-1, 60947-2 & IEEE C37.14					

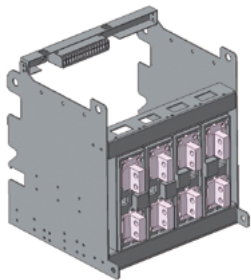
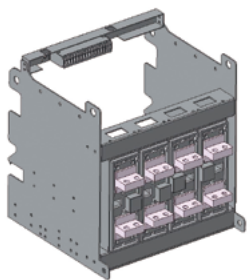
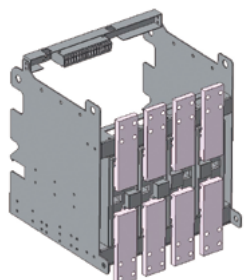
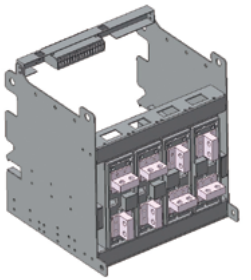
* At this rating, 2 poles are connected in parallel.

Rated service voltage Ue	[Vdc]	1500			
Rated insulation voltage Ui	[kVdc]	3.82			
Rated impulse withstand voltage Uimp	[kV]	12			
Number of poles	[P]	4	4	3~4	*4
Frame size	[AF]	1600	2500	3200	5000
Rated uninterrupted current (at 40°C) Iu	[A]	630	2000	3200	4000
		1000	2500	-	5000
		1600	-	-	-
Rated service short-circuit breaking current Ics [%Icu]	[kA]	100%			
Rated service short-time withstand current Icw [1sec]	[kA]	40	45	50	65
Rated short-circuit making current Icm [%Icu]	[kA]	100%			
Category of use(According to IEC 60947-2)		B			
Overcurrent protection (Digital trip units for DC applications)		Long-time, Short-time, Instantaneous			
Closing time	[ms]	≤60			
Breaking time for Icm	[ms]	≤60			
Operating temperature	[°C]	-25 ~ +70			
Versions		Fixed - Withdrawable			
According to the type of DC network		Insulated/Network with earthed negative polarity/ Network with the mid-point earthed			
Rated control voltage	[V]	DC 24, 48, 110, 125 / AC 220			
Mechanical life	[times]	25,000	20,000	20,000	12,000
Applied standard		IEC 60947-1, 60947-2 & IEEE C37.14			

* At this rating, 2 poles are connected in parallel.

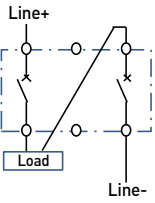
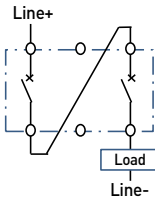
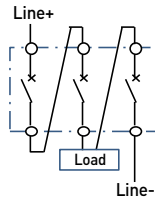
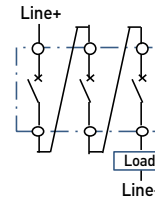
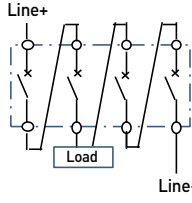
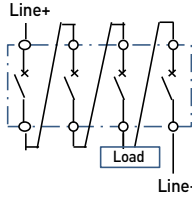
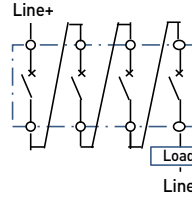
Flexible Configuration

Each terminal is designed to be able to rotate by 90 degrees according to the busbar type, thereby enhancing customer convenience.

Vertical type	Parallel type
	
Flat type	Mixed type
	

Connection of Conductor

For stable breaking performance at high voltages, main contacts of the 3-pole or 4-pole CB are connected in series.

Connection type	2-pole		3-Pole	
				
	A	B	A	B
Connection type	4-Pole			
				
	A	B	C	

Digital Protection Relay(ETDR101)

ETDR101, a high-performance digital protection relay, is built in the DC CB to trip within a specified time in the event of a fault current.

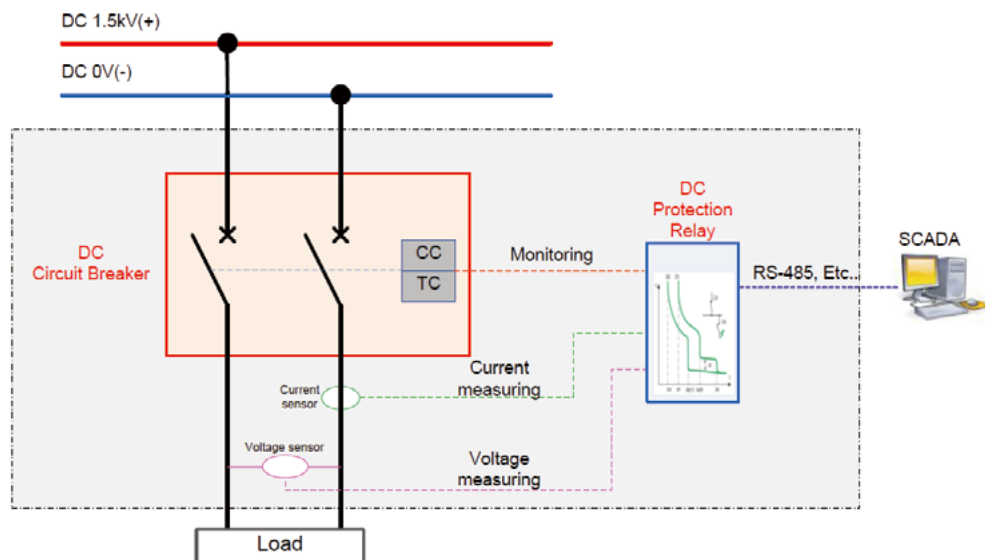
Long time delay, short time delay, instantaneous trip are performed at the presetting time with high precision to enhance the safety of the load system.



Control voltage			[V]	DC 75~ 350			
Power consumption			[W]	8.4			
Circuit breaker AF			[A]	1600	2500	3200	5000
Input signal (Shunt)			[mV]	12	12	24	24
Pick-up range	Long time (LT)	Pick-up	0.80×In ~ 1.60×In (0.01 Step)				
		Delay time	[s]	2.50 ~ 3.0 (0.5 Step)			
	Short time (ST)	Pick-up	OFF, 1.5×LT ~ 15.0×LT (0.1 Step)				
		Delay time	[s]	0.07, 0.10, 0.15, 0.20, 0.35			
	Instantaneous (Inst)	Pick-up	OFF, 1.5×LT ~ 15.0×LT (0.1 Step)				
Insulation voltage (1min)			[kV]	2.5			
Usage temperature range			[℃]	-10 ~ 50			
Communication protocol through RS485				MODBUS			

ETDR101 Configuration Diagram

ETDR101 with the circuit breaker in DC system monitors the load current and trips when it detects a fault current. In addition to the basic protection functions, it also supports load current monitoring and communication.



Ordering Guide

Line Description	Designation	Code
1. Product type	DC CB	EDB
2. Rated service voltage	500 Vdc 1000 Vdc 1500 Vdc	05 10 15
3. Frame size	1600 AF 2500 AF 3200 AF 5000 AF	16 25 32 50
4. Rated control voltage	24 Vdc 48 Vdc 110 Vdc 125 Vdc 220 Vac	A B C D E
5. Versions	Fixed Withdrawable	FI WI

Example

Line	1	2	3	4	5
Customer's choice	DC CB	1500V	1600A	110V	Fixed
Ordering form	EDB	15	16	C	FI

* For more details, please contact us in below.