

GE  
Electrical Distribution

Gerapid High Speed DC Circuit Breakers

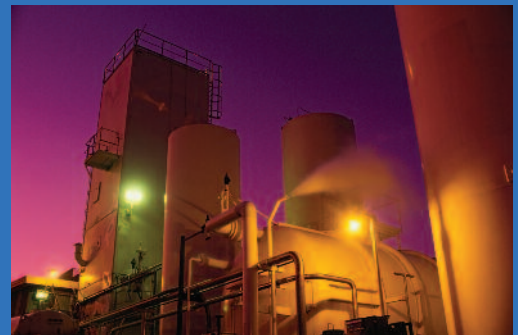
# On the move



imagination at work

## Gerapid High Speed DC Circuit Breakers

To stay up and running today, you need equipment that delivers both unwavering reliability and the technology 21st century systems require. Gerapid satisfies that need. Around the world, in all conditions, they keep people and industry on the move.



These single-pole breakers are suitable for protection of mains and semiconductors (converters/rectifiers) in a variety of railway and industrial applications. The feeder and rectifier breakers come with operating currents up to 8,000ADC and operating voltages up to 3,600VDC. Their very high interruption capacity combines with current limiting characteristic as shown in Tables 1-3.

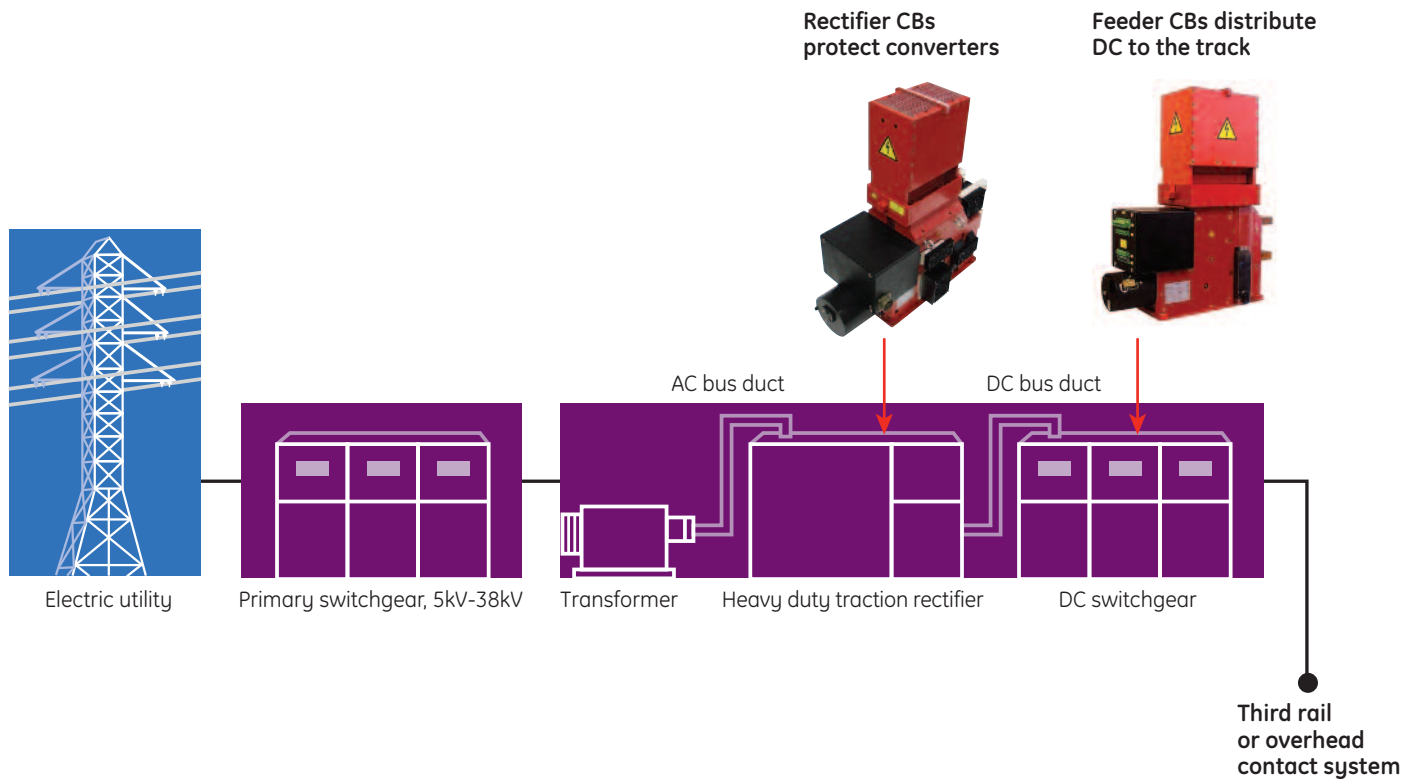
Innovative materials, superior circuit breaking capacity and outstanding dielectric performance ensure service continuity and protection during adverse system events. The technology and quality of these circuit breakers produce high reliability, extended maintenance intervals and uncomplicated serviceability for all fixed installations.

A wide range of fully accessorized rectifier and feeder circuit breakers are available. All comply with IEC 947-2 and ANSI C37.14.

Typical applications include:

- traction power (light rail transit, tram, subway, maglev, etc.)
- industrial plant protection (electrolysis plants, iron and steel mills, etc.)
- mining
- chemical, petrochemical
- power generation
- research/experimental (e.g., physics, particle accelerator protection)

## Typical Traction Electric Power System



### Circuit Breaker Features and Accessories

- Insulated side plates with insulated toggle for setting over current trip (OCT) for feeder breakers
- Mechanical forced tripping
- Electrodynamic trip device (with or without capacitor and charging unit)
- Shunt trip
- No-voltage release
- Auxiliary contacts
- Different auxiliary contacts for signaling (optional)
- Main terminal configurations variable
- Plug connectors for auxiliary circuits (optional)
- Hand lever for manual actuation from front (for maintenance purposes only)
- Position indication (optional)
- Internal power supply with a wide range of supply voltage options
- Integrated current measurement unit (SEL) (optional)
- Rectifier breaker mechanical counter

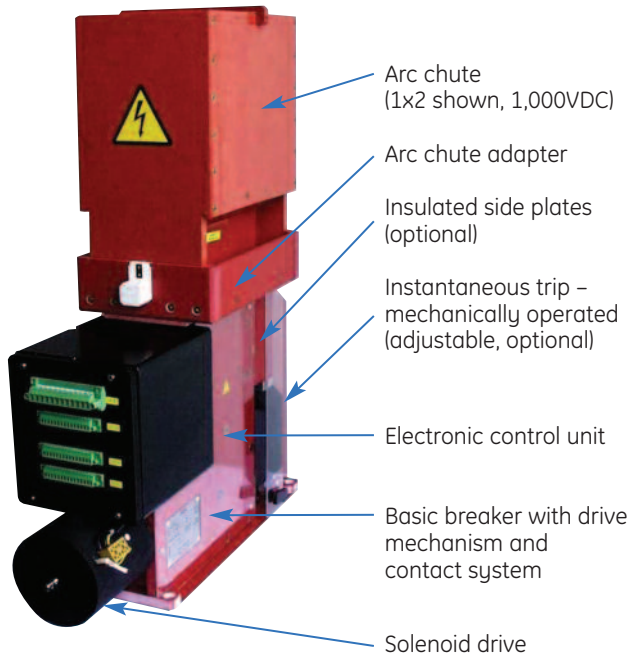
### Key Benefits

- Standard dimensions from 2,600A to 6,000A (feeder models GER2607 – GER8007)
- Operating voltages from 1,000 to 3,600VDC
- Mining and traction compliant (ANSI C37.14, IEC 947-2, EN 50123-2)
- High speed OPEN/TRIP (opening delay <3ms)
- Direct acting instantaneous and adjustable trip unit works without imported energy and is available as bidirectional symmetrical (for line feeder) or unidirectional (for rectifier breaker)
- High speed CLOSE (approximately 150 ms)
- Solenoid drive (integral control unit, mechanically latched, no auxiliary power required to keep contacts closed)
- 2-stage contact system minimizes contact wear
- Compact, enclosed construction
- Modular, serviceable design
- Easily accessible control and auxiliary connections
- Fixed and draw-out versions
- Extensive accessories/options

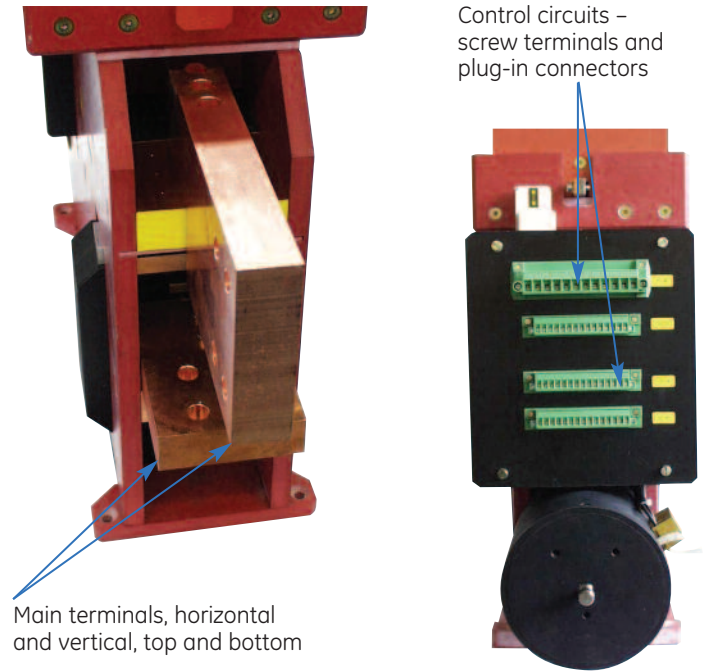
### General Information

Rated Temperature	-5° to 40°C ambient (55°C with reduced ratings)
Relative Humidity	90% @ T<20°C; RH=130-2*T @ T>20 °C
Altitude	-120m to 2000m above sea level

## Gerapid Breaker Modules

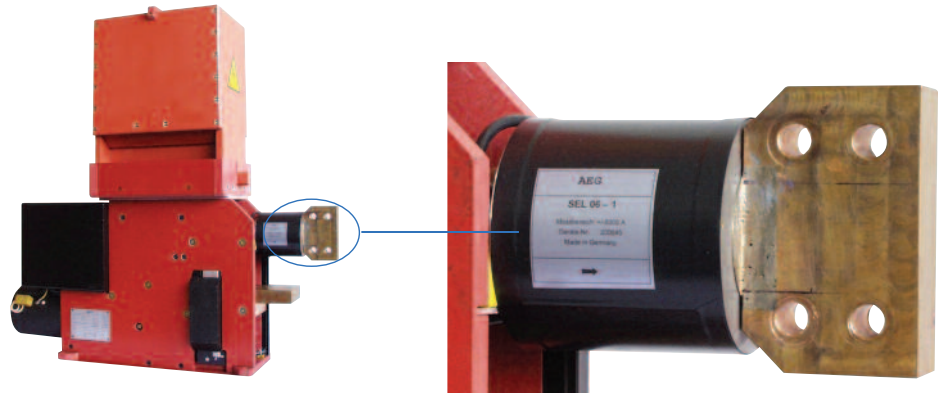


## Power and Control Connections



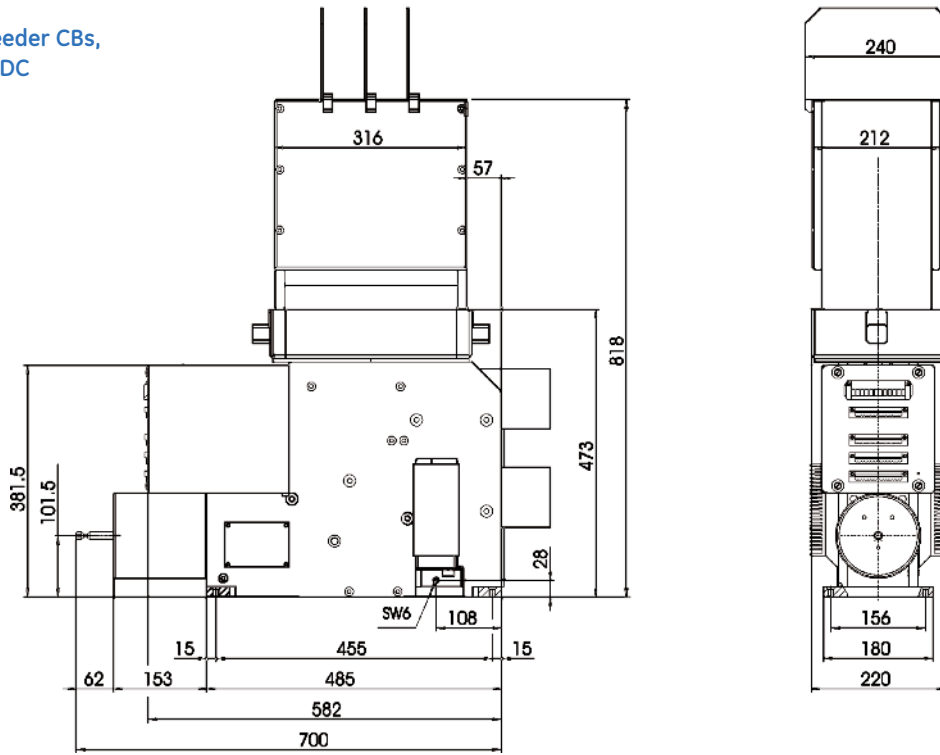
## Type SEL Current Measurement System (optional on 2607 and 4207)

- Current measurement at the breaker
- Factory-equipped or field-installable
- No additional space required or breaker modifications
- Ranges 6kA and 12kA
- To 4,000VDC
- Signal output via 3 interfaces
  - 4...20mA
  - +/- 20mA
  - +/- 10V
- Watchdog function standard



**Figure 1.**  
**Models 2607 - 6007 Feeder CBs,**  
**1X4 Arc Chute, 2,000VDC**

Dimensions in mm



**Figure 1A.**  
**Models 2607 - 6007 Feeder CBs,**  
**2X4 Arc Chute, 3,600VDC**

Dimensions in mm

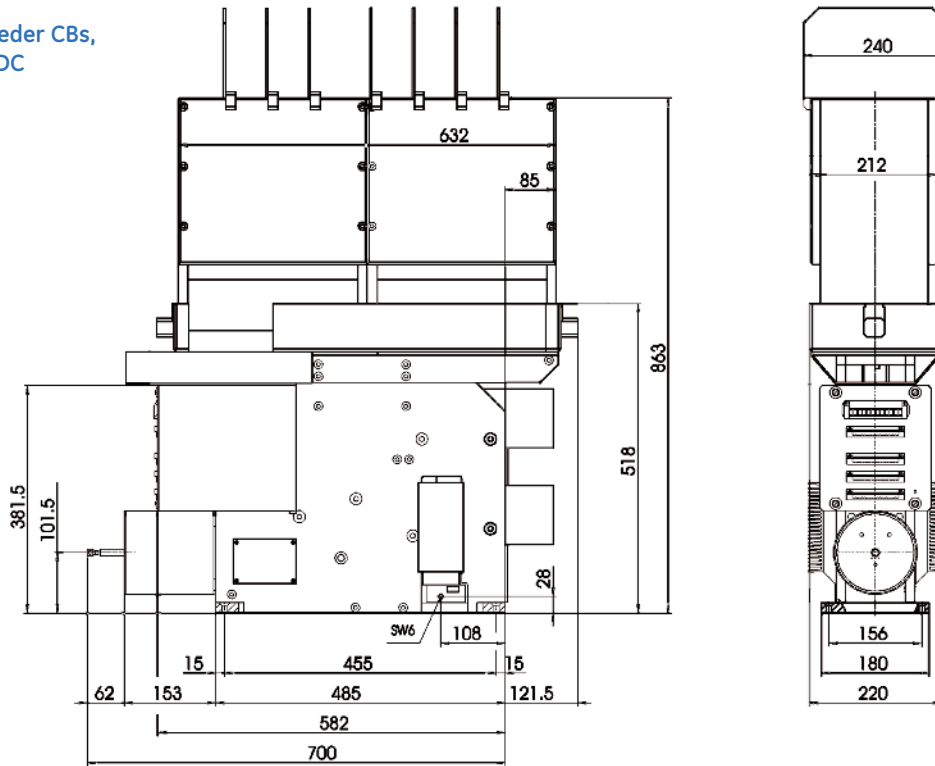


Figure 2.  
Gerapid 8007 Feeder CBs,  
1X4 Arc Chute, 2,000VDC

Dimensions in mm

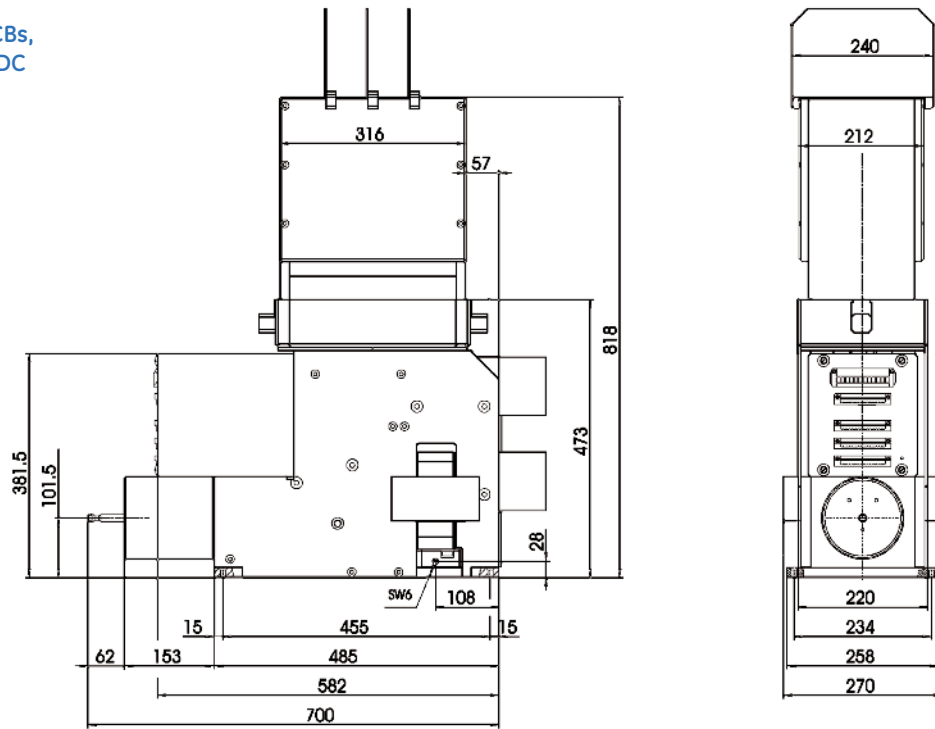
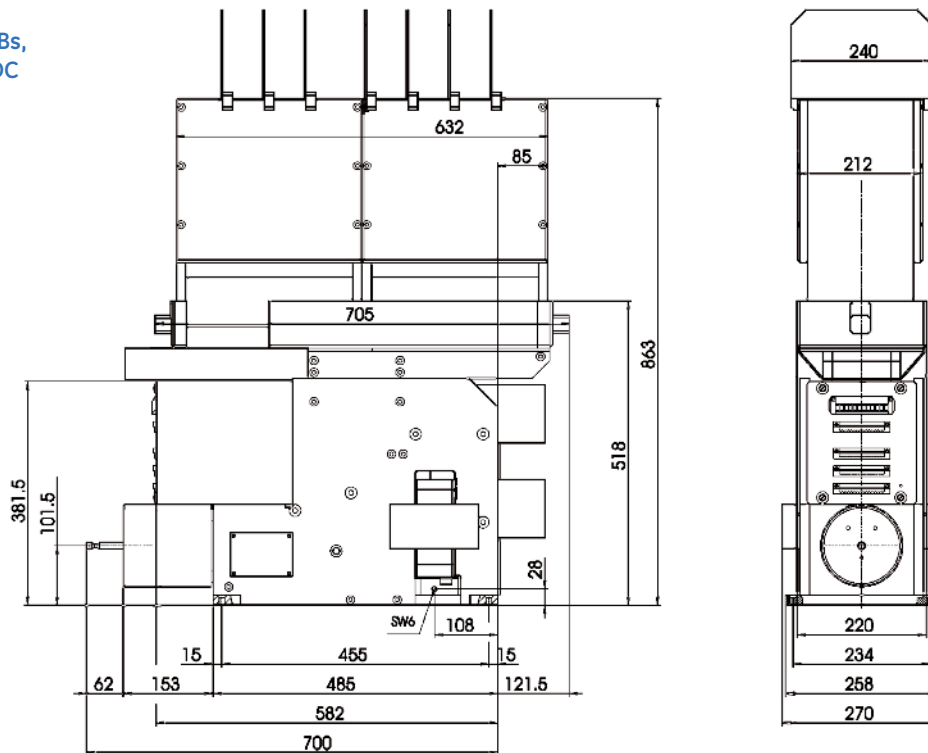


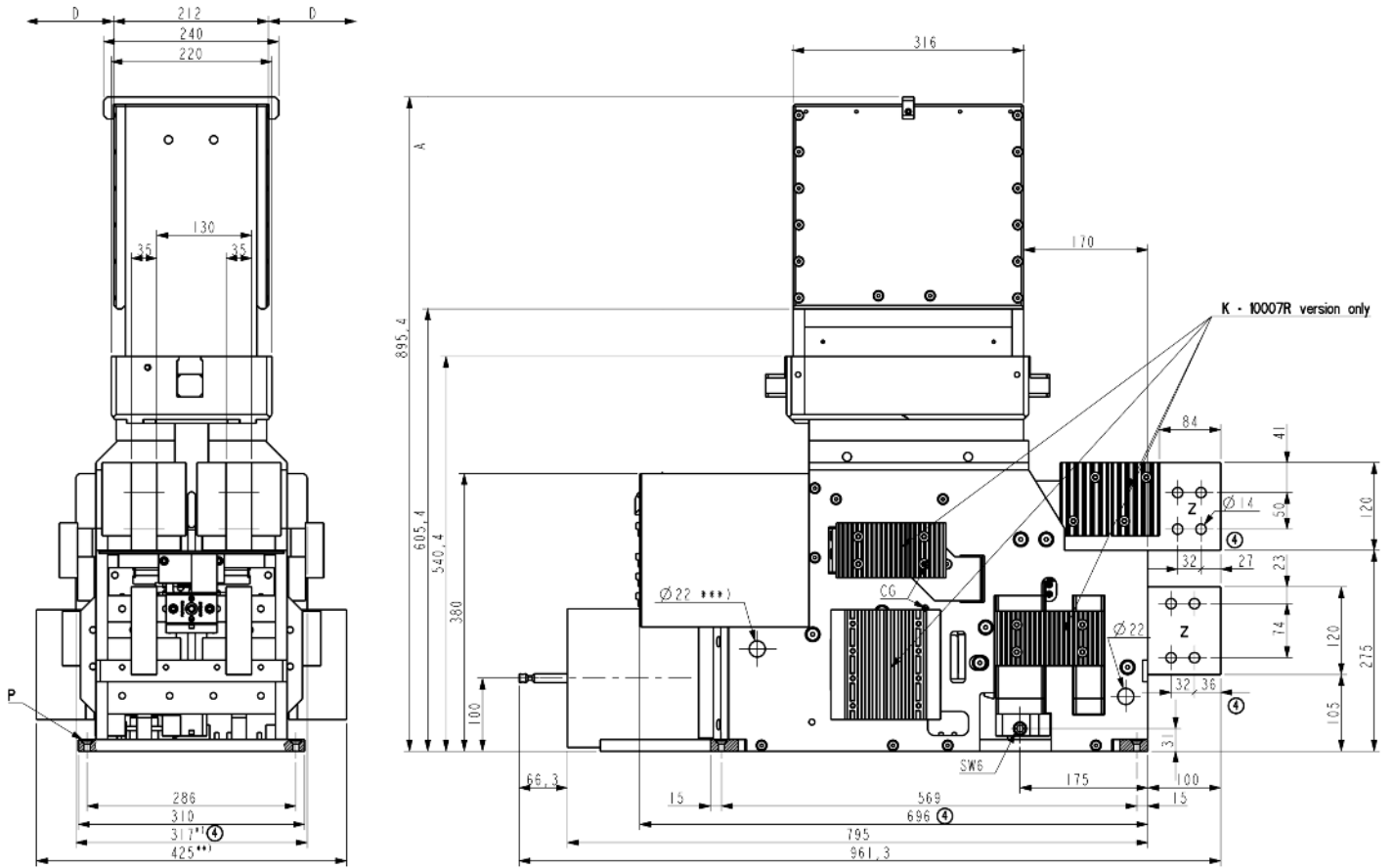
Figure 2A.  
Gerapid 8007 Feeder CBs,  
2X4 Arc Chute, 3,600VDC

Dimensions in mm



**Figure 3.**  
**Gerapid 8007R and 10007R Rectifier CB,**  
**1X2 Arc Chute, 800VDC**

Dimensions in mm



## Technical Data

**Table 1.**  
**Gerapid FCB**

Specification	Gerapid Breaker Type																
	2607					4607					6007					8007	
Arc chute type	1X2	1X4	2X2	2X3	2X4	1X2	1X4	2X2	2X3	2X4	1X2	1X4	2X2	2X3	2X4	1X2	2X2
Conventional thermal current I <sub>th</sub> [A] (IEC/EN)	2600					4200					6000					8000	
Rated current [A] (ANSI/IEEE C37.14)	2600					4150					*					6000	
Rated voltage U <sub>Ne</sub> [V]	1000	2000	2000	3000	3600	1000	2000	2000	3000	3600	1000	2000	2000	3000	3600	1000	2000
Rated voltage [V] (ANSI/IEEE C37.14)	800					1600					800					800	
Rated insulation voltage U <sub>i</sub> [V]	2000	2000	2000	3000	4000	2000	2000	2000	3000	4000	1000	2000	2000	3000	4000	1000	2000
Short time current 120 min [A]	3150					5000					7200					9600	
Short time current 2 min [A]	5200					8500					12000					16000	
Short time current 20 sec [A]	7800					12600					18000					24000	
Impulse withstand voltage 1,2/50 μs U <sub>i</sub> [kV] according to EN 50124-1:1997	18	18	18	30	30	18	18	18	30	30	12	18	18	30	*	12	18
Power frequency withstand voltage 50 Hz U <sub>o</sub> [kVeff] according to EN 50124-1:1997	10	10	10	15	15	10	10	10	15	15	7	10	10	15	*	7	10
Rated short circuit making capacity I <sub>NSS</sub> [kA]	70	50	100	50	42	70	50	100	50	42	70	50	80	50	*	70	*
Rated short circuit breaking capacity I <sub>NSS</sub> [kA] according to EN 50123-2	50	30	71	35	30	50	30	71	35	30	50	35	56	35	*	50	50
Rated service short circuit breaking current I <sub>CS</sub> [kA] according to IEC 60947-2	60	40	50	40	40	60	40	50	40	40	60	40	50	40	*	60	*
Short circuit current [kA] at U <sub>ne</sub> = 800 VDC	200					200					200					200	
Short circuit current [kA] at U <sub>ne</sub> = 1600 VDC	*					100					*					*	
Maximum short circuit current test [kA]	244	120	100		52	244	120	100		52	200					240	
Maximum arc voltage U <sub>arc</sub> [kV]	2	4	4	5.6	7	2	4	4	5.6	7	2	4	4	5.6	7	2	4
Weight ca. [kg]	120	120	160	160	160	120	120	160	160	160	150	150	165	165	165	190	210

\*Characteristic tests at customer request.

**Table 2.**  
**Gerapid 8007R & 10007R**

Parameter	Reference	Gerapid 8007R		Gerapid 10007R	
Arc chute type	N/A	1x2	1x3	1x2	1x3
Rated continuous current [A]	ANSI C37.14 p.5.3	6000	6000	8000	8000
2 hours current [A]	N/A	7200	7200	9600	9600
2 minutes current [A]	N/A	12000	12000	16000	16000
20 seconds current [A]	N/A	18000	18000	24000	24000
Rated short-time current (250ms) [kA]	ANSI C37.14 p.5.5	90 (149 peak)	60 (100 peak)	90 (149 peak)	60 (100 peak)
Rated maximum voltage [V]	ANSI C37.14 p.5.2	800	1200	800	1200
Rated insulation voltage - U <sub>Nm</sub> [V]	EN 50124-1 p.1.3.2.4	2000	2000	2000	2000
Rated impulse voltage - U <sub>Ni</sub> [kV]	EN 50124-1 p.1.3.2.7	18 [1,2/50μs]	18 [1,2/50μs]	18 [1,2/50μs]	18 [1,2/50μs]
Power frequency voltage - U <sub>o</sub> [kV]	EN 50124-1 a.B2.2	10 [1min. 50Hz]	10 [1min. 50Hz]	10 [1min. 50Hz]	10 [1min. 50Hz]
Mechanical endurance [cycles] <sup>1</sup>	N/A	10000	10000	10000	10000
Rated short circuit peak / sustained [kA / kA] <sup>2, 3</sup>	ANSI C37.14 p.5.4	200 / 120	132 / 80	200 / 120	132 / 80
Short-circuit characteristic	Tests a,b,c,d acc. ANSI C37.14 annex A	High-speed	High-speed	High-speed	High-speed
Maximum arc voltage [V]	N/A	2500	2500	2500	2500
Mass ca.	N/A	220 kG	220 kG	220 kG	220 kG

1 10.000 cycles without parts replacement. Inspection after 5.000 cycles. Max. 5.000 cycles by means of ED impulse coil or POCT release.

2 Tested for high and low frequency impedance bonds.

3 Trip by means of POCT (direct-acting, instantaneous, electromechanical and polarized OC release) or by means of ED impulse coil with no intentional delay.

### GE

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