

261300S03 Medium Voltage Circuit Breaker Specifications

Note: The UK purchase order number is to be referenced to on each shipment.

1.0 DESCRIPTION

These general specifications cover 1200- and 2000-amp, three-phase, outdoor distribution circuit breakers that utilize vacuum bottle technology as the method of arc suppression.

2.0 RATINGS

Identification	Ratings					Related Capabilities				
	Nominal kV Class	Rated Max kV	Rated Voltage Range Factor K	Insulation Level		Current Amps		Current Values - Amps		
				Rated Withstand Test Voltage		Rated Short Circuit Current at Rated Max kV	Interrupting Time (Cycles)	Maximum Symmetrical Interrupting Capability RMS	3 Second Short Time Current Carrying Capability RMS	Closing and Latching Capability RMS
				Low Freq. (kV, RMS)	Impulse (kV, Crest)					
1200 Amps	2.4-14.4	15.5	1.0	50	110	20,000	3	20,000	20,000	32,000
2000 Amps	2.4-14.4	15.5	1.0	50	110	20,000	3	20,000	20,000	32,000

3.0 CONDITIONS

ITEM	Unit	1200 Amp	2000 Amp
Lightning Impulse Withstand Voltage			
Full Wave 1.2/50 psec	kV	110	110
Chopped Wave 2psec	kV	142	142
Chopped Wave 3psec	kV	126	126
Operating Duty Cycle		CO-15s-CO	CO-15s-CO
Reclosing Time	cycles	20	20
Permissible Tripping Delay	sec	2	2
Closing Time	cycles	6	6
Transient Recovery Voltage	kV, Peak	28	28
Capacitance Switching			
Open Wire Line Charging Switching	Amps	600	600
Isolated Cable Charging	Amps	600	600
Isolated Capacitor Bank Switching	Amps	600	600
Minimum Phase Spacing	Inches	13.5	13.5
Minimum External Creep	Inches	11	11
Minimum External Strike Terminal To Ground	Inches	6	6
Auxiliary Voltage	VDC	125	125
Control Cabinet Heater	VAC	120 - 240	120 - 240
Dual Trip Coils Required		No	Yes
Operating Mechanism		Stored Energy	Stored Energy

261300S03 Medium Voltage Circuit Breaker Specifications

Dated: 01/2018

Applies to: All Projects

University of Kentucky

261300S03 Medium Voltage Circuit Breaker Specifications

Note: The UK purchase order number is to be referenced to on each shipment.

4.0 PHYSICAL CHARACTERISTICS

Frame-mounted, outdoor, three-pole, three-phase, 60 Hz, vacuum-interrupting type power circuit breaker.

4.1 Frame Mounted

Frame extension shall provide nine (9) feet of minimum clearance from foundation to live bushing part.

4.2 Finish

Breaker shall be equipped with rain guards, weather sheds, and gaskets on doors and cover plates to prevent the intrusion of inclement weather. Operating the door-closing handle shall compress the gaskets between the door and the breaker cabinet. Breaker shall have painted interior and exterior under coating on a clean, unblemished, and rust-free metal surface. Apply two coats of exterior light gray paint (finish color ANSI-70) inside and out.

5.0 BUSHING CHARACTERISTICS

5.1 1200 Amp Breakers

Bushings shall be porcelain, 15 kV insulation class, 110 kV BIL, 1200 amps rated continuous current, ANSI-70 color. Bushings shall not be supplied with terminal connectors. The bushing stud terminal shall accommodate a 1.25-inch diameter terminal connector with 12 threads per inch.

5.2 2000 Amp Breakers

Bushings shall be porcelain, 15 kV insulation class, 110 kV BIL, 2000 amps rated continuous current, ANSI-70 color. Bushings shall not be supplied with terminal connectors. The bushing stud terminal shall accommodate a 1.50-inch diameter terminal connector with 12 threads per inch.

6.0 CURRENT DEVICES

6.1 1200 Amp Breakers

Three (3) 1200/5 multi-ratio bushing current transformers (CTs) shall be supplied on bushings 1-3-5. The accuracy class shall be C-200. Three (3) 2000/5 multi-ratio bushing CTs shall be supplied on bushings 2-4-6. The accuracy class shall be C-400. CT secondary wires shall be terminated in the breaker control cabinet on six short-circuit terminal blocks, with each block having six terminal locations (the last position being a ground). Wiring shall be terminated using ring lugs.

6.2 2000 Amp Breakers

261300S03 Medium Voltage Circuit Breaker Specifications

Dated: 01/2018

Applies to: All Projects

University of Kentucky

Page 2

261300S03 Medium Voltage Circuit Breaker Specifications

Note: The UK purchase order number is to be referenced to on each shipment.

Three (3) 2000/5 multi-ratio bushing current transformers (CTs) shall be supplied on bushing 1-3-5. The accuracy class shall be C-400. Three (3) 2000/5 multi-ratio bushing CTs shall be supplied on bushings 2-4-6. The accuracy class shall be C-400. CT secondary wires shall be terminated in the breaker control cabinet on six short circuit terminal blocks, with each block having six terminal locations (the last position being a ground). Wiring shall be terminated using ring lugs.

6.3 1200 - 2000 Amp Breaker Additional CT's

6.3 Breakers to be used as a Main Transformer Breaker or a Bus Sectionalizing Breaker will require a second set of 2000/5 multi-ratio bushing CTs, accuracy class C-400. This set of bushing CTs shall be installed on bushings 1-3-5. Attention to the purchase order will make this clear.

7.0 POTENTIAL DEVICES

7.1. Meter potential will be derived from Substation Bus Potential Transformers mounted in the station steel (by others). Potential Secondary will be supplied out of the station Potential Junction Box to the breaker control panel using 4 conductor cable (by others). The breaker shall have one (1) four-post terminal block mounted in the mechanism cabinet. On this block the 4 conductor potential cable is to be terminated. Breaker supplier shall provide wiring from the terminal block to a 3 pole fuse block. This is a 20 amp circuit to be fused at 3 amps. The 4th cable conductor is to be grounded. This fuse block shall be mounted in the general vicinity of the DC fuse blocks and disconnects.

8.0 OPERATING MECHANISM

8.1 Closing Mechanism

The non-automatic re-closing breaker shall be equipped with a 125-volt DC operating mechanism. By using 240-volt AC coils and a universal motor for charging the spring, the operating mechanism may be operated with 120 volts AC in an emergency. Note: Use of a rectifier circuit and a DC closing coil are NOT acceptable. Mechanism shall include a motor-charged spring with provisions for manual charging. Provisions for manually closing the breaker shall also be included.

8.2 Tripping Mechanism

Breaker shall be equipped with 125-volt DC wet-cell battery trip coils. A manual trip device shall also be provided.

8.3 AUXILIARY SWITCHES AND ACCESSORIES

The following items shall be provided on all breaker sizes:

261300S03 Medium Voltage Circuit Breaker Specifications

Dated: 01/2018

Applies to: All Projects

University of Kentucky

Page 3

261300S03 Medium Voltage Circuit Breaker Specifications

Note: The UK purchase order number is to be referenced to on each shipment.

1. 10-Stage auxiliary switch with spare contacts wired out to terminal block for customer use
2. Latch check switch
3. Operation counter
4. Position indicator
5. Space heater with thermostat controls (100-watt minimum)
6. Two (2) two-hole ground terminal pads to accommodate a two-bolt connector
7. Emergency pull to trip handle with SPST switch to prevent reclosing

9.0 SCADA Communication

Two (2) ASCO Model 180 (LCDP) Series 100 surge suppressor, a two-pair (four-wire) module implementing three-stage hybrid technology. This module addresses over-voltage transients with silicon avalanche components.

Ground wire must be kept as short as possible. These surge protective devices are to be supplied with and mounted in the control cabinet of the breaker.

Miscellaneous wire and mounting hardware to connect the signal to the PM8244 shall be provided and mounted by the breaker supplier.

10.0 MISCELLANEOUS

Wiring from the control panel shall terminate on post terminal blocks located on the back hinge side of the panel. Connection between the panel and the breaker shall be completed in the field by UK electrical personnel.

The vendor shall provide four (4) complete sets of prints for each breaker ordered. The prints shall include the following: nameplate, outline, control, elementary and connection diagrams, instruction books and complete renewal parts lists.

The order shall be considered incomplete and payment may be withheld until all prints are received. Prints should be sent to:

University of Kentucky
Peterson Service Building, Room 211R
Lexington, KY 40506-0005

Attn: Facilities Management Department Shipping instructions for the breakers will be on the individual purchase orders.

261300S03 Medium Voltage Circuit Breaker Specifications

Dated: 01/2018

Applies to: All Projects

University of Kentucky

Page 4