

**TECHNICAL DETAILS**

**1.0 General**

1.1 Type Designation 3AP1 FG  
 1.2 Governing Standard IEC 62271-100

**2.0 Technical Data**

**2.1 System Parameters**

.1 Rated Voltage kV 145 kV  
 .2 Service Voltage kV 132 kV  
 .3 Frequency Hz. 50  
 .4 No. of Poles Three  
 .5 Ambient Temperature Range °C -30 to +50

**3.0 Operating Data at rated operating Voltage & rated pressure**

3.1 Type of Operating Mechanism Spring Energy Stored  
 3.2 Mechanism is mechanically gang operated Yes

**3.3 Operating Data**

.1 Making mSec. 55 +/- 8  
 .2 Breaking mSec. 60  
 .3 Opening Time mSec. 30 +/- 4  
 .4 Arcing Time mSec. ≤25

**3.4 Switching Data**

.1 Rated normal current A 3150  
 .2 Rated short circuit breaking current kA 40  
 .3 Rated short time current kA 40, (3sec.)  
 .4 Rated short circuit making current kAp 100  
 .5 First pole to clear factor 1.5  
 .6 Out-of-phase breaking current kA 10  
 .7 Rated line charging breaking current A 50  
 .8 Rated cable charging breaking current A 160

3.5 Rated operating sequence O - 0.3sec - CO - 3min - CO

**4.0 Basic Insulation Level**

Customer: BiharState Power Transmission Corporation Limited.

Project :

Qty :		Date:	Description :-145kV,40kA,3150A,SF6 CB		Sh No.  1
Sales Ref :		Prep :	Work :-		
		Ckd :			
Issue	Remarks	Date	Name	Office	Details :- TECHNICAL DETAILS
Original/Replacement for/					No.of: Sh
Replaced by :-					

4.1	Rated power frequency withstand voltage (1min, 50 Hz)		
.1	Phase to earth	kV	275
.2	Across the open breaker	kV	275
.3	Between phases	kV	275
4.2	Rated lighting impulse withstand voltage (1.2 / 50 micro sec.)		
.1	To earth	kVp	650
.2	Across the open breaker	kVp	650
.3	Between phases	kVp	650
4.3	Creepage distance		
.1	To earth	mm	3625
.2	Across the open breaker	mm	3625
.3	Insulator type		Combination shed
5.0	Construction		
5.1	Clearance		
.1	To earth	mm	1250
.2	Across the open breaker	mm	1200
.3	Phase to phase	mm	1360
.4	Pole to pole center distance	mm	1700
5.2	Arc quenching Medium		
.1	Nominal pressure SF6 (@20°C)	bar	6 rel.
.2	Signal loss of SF6 (@20°C)	bar	5.2 rel.
.3	General lockout (@20°C) (Tripping)	bar	5.0 rel.
.4	Quantity of SF6 gas required per breaker	kg	8
.5	Qty of gas being supplied per breaker, pre filled in the poles.	kg	1.5
.6	In addition to pre filled gas, qty. of gas being sent to site in cylinder.	kg	9
5.3	Installation		Outdoor
5.4	Approx. weight of breaker with support structure	kg	1750 approx.
6.0	Structures, Base Frame		
6.1	Material		Mild Steel
6.2	Surface Treatment		Hot Dip Galavanised
7.0	Control Cubicle		

Customer: BiharState Power Transmission Corporation Limited.

Project :

Qty :		Date:	Description :-145kV,40kA,3150A,SF6 CB		Sh No.
Sales Ref :		Prep :	Work :-		2
		Ckd :			
Issu e	Remarks	Date	Name	Office	Details :- TECHNICAL DETAILS
Original/Replacement for/					No.of Sh 2
Replaced by :-					

- 7.1 Construction
- .1 Material of enclosure CR Sheet Steel
  - .2 Thickness of sheet steel mm 2.5
  - .3 Painting for control cubicle Epoxy / Polyester paint
  - .4 External shade 631 as per IS5
  - .5 Degree of protection of enclosure IP 55
  - .6 Padlocking facility for cubicle Provided
  - .7 Glass window to see spring status Provided on control cubicle
- 7.2 Wiring
- .1 Control wiring
    - .1 Size 2.5 sq. mm flexible copper conductor
    - .2 Insulation Grey - DC, Black - AC 1100V Grade
  - .2 Earth Wiring
    - .1 Size 2.5 sq. mm flexible copper conductor
    - .2 Insulation Yellow/Green 1100V Grade
- 7.3 Control Terminals
- .1 Type Stud/Pin Type
  - .2 Make Connectwell / Elmex / Wago or equivalent
  - .3 Size mm<sup>2</sup> 4
  - .4 Spare unwired terminal % 10
- 7.4 Auxiliary Supply

Circuit	Rated Voltage	Source	Range
Spring Charging Motor	240V DC	External	85 - 110%
Closing Coil	220V DC	External	85 - 120%
Trip Coil - 1 & 2	220V DC	External	70 - 120%
Space Heater / Socket / Illumination	240V AC	External	-

Terminal Connectors: - Single ACSR Zebra. 6nos per circuit breaker.

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Project :

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Sales Ref :		Prep :	Work :-		3
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Issue	Remarks	Date	Name	Office	Details :- TECHNICAL DETAILS
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