

မြန်မာနိုင်ငံအားလုံးစက်ရုံအတွက် 66/11 kV, 10MVA Transformer's Specification

	Description	Unit	Specification
1	66/11 kV ,10MVA Transformer (1)Set		
	-Maker(Country of Origin)	-	To State
	-Standard	-	IEEE /IEC
	-Type	-	Oil Immersed Conservator Type
	-Guarantee	-	At Least 5 years from commission date
	-Number of Phase	-	3-Phase
	-Frequency	Hz	50
	-Capacity	MVA	10
	-Voltage Ratio	kV	66/11
	-Rated current	A	87.5/525
	-Vector Group	-	YNyn0J11
	-Type of Cooling	-	ONAN
	Impedance Voltage; HV-LV winding	%	8 (minimum)
	Efficiency at 1.0 pf 100% Load	%	To State
	75% Load	%	To State
	50% Load	%	To State
	-Voltage Regulation at P.F=1	%	To State
	-Insulation Class	A	To State
	-Losses;		
	-NoLoad Loss	W	To State
	-Full Load Loss	W	To State
	-No Load Current	%	To State
	-No. of Tapping	-	7 Steps
	-Tapping Range	-	± 2.5 %
	-Type of Tap Changer	-	NLTC
	-Temperature Rise	(°C)	Top Oil/Winding(60/65)
	-Relative humidity(maximum)	%	To State
	Winding Material	-	Cu/Cu
	-Core Material	-	To State
	-Painting	-	To State

Approximate Dimension & Weight	-	
Length	mm	To State
Width	mm	To State
Height	mm	To State
Weight of Core & Coil	kg	To State
Oil Weight	kg	To State
Total Weight	kg	To State
Fitting and accessories		
H.V bushing complete with terminal plate & earthing horn	-	Included
L.V bushing complete with terminal plate & earthing horn	-	Included
Magnetic Oil level indicator with alarm contact	-	Included
Current transformer for winding temperature sensor	-	Included
Pressure release device with trip contact	-	Included
Winding temperature control meter with alarm & trip contact	-	Included
Oil temperature control meter with alarm & trip contact	-	Included
Gas relay (Buchholz relay) with alarm & trip contact	-	Included
Dehydrating breather	-	Included
Earthing arrangement	-	Included
Butterfly valve	-	Included
skid base	-	Included
(a) Off Load Tap Changer		
Maker	-	To State
Country of Origin	-	To State
Standard	-	To State
(b) Insulating Oil		
Maker	-	To State
Country of Origin	-	To State
Confomerd standard	-	To State
Density at 20°C	kg/m3	<0.895(0.87)
Viscosity at 40°C	mm2/S	12 max(9.6)
Acidity	mgkOH/g	0.01 max(0.01)
Water content	mg/kg	<30(<20)
Dielectric dissipation factor(DDF) at 90°C	-	0.005 max

Breakdown voltage;	-	
(1) Before treatment	kV	>30(40-60)
(2) After treatment	kV	>70(>70)
Flash Point P/M	(°C)	>135(150)
PCB	-	not detectable
(c) High Voltage Bushing	-	
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
Nominal voltage	kV	66
Highest system voltage	kV	72.5
BIL	kV	≥325
Current	A	800
Creepage distance	mm/kV	>25
Nominal capacitance between conductor and test tap	pF	NA
(d) Low voltage Bushing		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
Nominal voltage	kV	11
Highest system voltage	kV	12
BIL	kV	75
Current	A	630
Creepage distance	mm/kV	>25
Nominal capacitance between conductor and test tap	pF	NA
(e) Buchholz relay		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
(f) Oil Temperature Indicator		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State

(j) Winding Temperature Indicator		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
(h) Oil Level Indicator		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
(i) Pressure Relief Device		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
(j) Sudden Pressure Relay		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State
(k) Dehydrating Breather		
Maker	-	To State
Country of origin	-	USA / Euro / Japan /Korea
Type	-	To State

රට්‍යා:සෙ:තර්ථුඅලුර් 66/33 kV,60MVA Transformer's Specification

no.	Description	Unit	Specification
1	66/33 kV ,60MVA Three Phase Power Transformer		
	(1) Maker(Country of Origin)		To State
	(Place Of Manufactured must be started)	-	
	(2) Applicable Standard	-	IEC 60076
	(3) Number of Phase	-	3-Phase
	(4) Insulation	-	Mineral Oil
	(5) Application	-	Outdoor,Substation Transformer
	(6) Rated Frequency	Hz	50
	(7) Type of Cooling	-	ONAN
	(8) Rated Output HT/LT	kVA	60000
	(9) Norminal Voltage Level HT/LT	kV	66/33
	(10) Highest System Voltage Level HT/LT	kV	72.5/36
	(11) Rated current	A	525/1050
	(12) Rated Power Frequency Withstand Voltage	kV	140/70
	(13) Rated Lightning Impulse Withstand Voltage	kVpeak	325/170
	(14) Vector Group	-	Dyn11
	(15) Impedance HV-LV winding	%	minimum 11
	(16) Losses;		
	(1) NoLoad Loss	KW	To State
	(2) Load Loss	KW	To State
	(17) Average Audio Sound Level	dB	To State
	-Rated current	A	To State
	-Vector Group	-	YNyn0d11
	Impedance Voltage;		
	HV-LV winding	%	To State
	Efficiency at 1.0 pf 100% Load	%	To State
	75% Load	%	To State
	50% Load	%	To State
	(18) Transformer Tap		(8)x1.65%
	(19) Normal Tap		9
	(20) On Load Auto Tap Changer		
	(1) A Load tap changing mechanism shall be furnished		Must be include

(2) Manufacture		To State
(3) Country Of Origin		Europe
(4) Type/Model		To state
(5) Maximun rated through-current	A	350
(6) Maximun rated step voltage	V	1089
(7) Operation and Control		Auto,Remote & manual
-No. of Tapping	-	To State
-Tapping Range	-	To State
-Type of Tap Changer	-	NLTC
-Temperature Rise	(°C)	Top Oil/Winding(60/65)
-Relative humidity(maximum)	%	To State
Winding Material	-	Cu/Cu
-Core Material	-	To State
-Painting	-	To State
-Approximate Dimension & Weight		
-Length	mm	To State
-Width	mm	To State
-Height	mm	To State
-Weight of Core & Coil	kg	To State
-Oil Weight	kg	To State
-Total Weight	kg	To State
Fitting and accessories		
- H.V bushing complete with terminal plate & earcing horn	-	To State
- L.V bushing complete with terminal plate & earcing horn	-	To State
- Magnetic Oil level indicator with alarm contact	-	To State
- Current transformer for winding temperature senser	-	To State
- Pressure release device with trip contact	-	To State
- Winding temperature control meter with alarm & trip contact	-	To State
- Oil temperature control meter with alarm & trip contact	-	To State
- Gas relay (Buchholz relay) with alarm & trip contact	-	To State
- Dehydrating breather	-	To State
- Earthing arrangement	-	To State
- Butterfly valve	-	To State
- skid base	-	To State

(a) Off Load Tap Changer		
Maker	-	To State
Country of Origin	-	To State
Standard	-	To State
No; of step	-	To State
(b) Insulating Oil		
Maker	-	To State
Country of Origin	-	To State
Confomerd standard	-	To State
Density at 20°C	kg/m ³	<0.895(0.87)
Viscosity at 40°C	mm ² /S	12 max(9.6)
Acidity	mgkOH/g	0.01 max(0.01)
Water contant	mg/kg	<30(<20)
Dielectric dissipation factor(DDF) at 90°C	-	0.005 max
Breakdown voltage;		
(1) Before treatment	kV	>30(40-60)
(2) After treatment	kV	>70(>70)
Flash Point P.M	(°C)	>135(150)
PCB	-	not detectable
(c) High Voltage Bushing		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
Nominal voltage	kV	66
Highest system voltage	kV	72.5
BIL	kV	To State
Current	A	To State
Creepage distance	mm/kV	>25
Nominal capacitance between conductor and test tap	pF	NA
(d) Low voltage Bushing		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
Nominal voltage	kV	33
Highest system voltage	kV	36
BIL	kV	To State
Current	A	To State
Creepage distance	mm/kV	>25
Nominal capacitance between conductor and test tap	pF	NA

), Buchholz relay		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
(f) Oil Temperature Indicator		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
(g) Winding Temperature Indicator		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
(h) Oil Level Indicator		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
(i) Pressure Relief Device		
Maker	-	To State
Country of origin	-	To State
Type	-	To State
(j) Sudden Pressure Relay		
Maker	-	To State
Country of origin	-	To State
Type	-	To State