

**Distribution Transformers**  
**3 Phase 22000-400/230 V.**



Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	50kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	50
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 160$
17	Load loss at 75°C	W	$\leq 950$
18	Total load loss at normal ratio at 75°C	W	$\leq 1110$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	97.78
	- 0.8 power factor lagging of 100% load factor	%	97.30
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	90
33	Acoustic sound level	dB	$\leq 65$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	900
	- Dept	mm	600
	- Height	mm	1050
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1000
	- Dept	mm	700
	- Height	mm	1250
37	Weight of fully assembled transformer (Approx.)	kg	395

**Distribution Transformers**  
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Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	100kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	100
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 250$
17	Load loss at 75°C	W	$\leq 1550$
18	Total load loss at normal ratio at 75°C	W	$\leq 1800$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.20
	- 0.8 power factor lagging of 100% load factor	%	97.80
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	125
33	Acoustic sound level	dB	$\leq 65$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	950
	- Dept	mm	650
	- Height	mm	1150
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1050
	- Dept	mm	750
	- Height	mm	1350
37	Weight of fully assembled transformer (Approx.)	kg	575

**Distribution Transformers**  
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Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	160kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	160
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 360$
17	Load loss at 75°C	W	$\leq 2100$
18	Total load loss at normal ratio at 75°C	W	$\leq 2460$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.46
	- 0.8 power factor lagging of 100% load factor	%	98.11
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	140
33	Acoustic sound level	dB	$\leq 65$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1050
	- Dept	mm	660
	- Height	mm	1150
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1150
	- Dept	mm	760
	- Height	mm	1350
37	Weight of fully assembled transformer (Approx.)	kg	820

**Distribution Transformers**  
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Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	250kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	250
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 500$
17	Load loss at 75°C	W	$\leq 2950$
18	Total load loss at normal ratio at 75°C	W	$\leq 3450$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.62
	- 0.8 power factor lagging of 100% load factor	%	98.30
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	230
33	Acoustic sound level	dB	$\leq 65$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1100
	- Dept	mm	700
	- Height	mm	1200
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1200
	- Dept	mm	800
	- Height	mm	1400
37	Weight of fully assembled transformer (Approx.)	kg	1050

**Distribution Transformers**  
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Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	315kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	315
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 600$
17	Load loss at 75°C	W	$\leq 3500$
18	Total load loss at normal ratio at 75°C	W	$\leq 4100$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.70
	- 0.8 power factor lagging of 100% load factor	%	98.40
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	250
33	Acoustic sound level	dB	$\leq 65$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1100
	- Dept	mm	750
	- Height	mm	1200
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1200
	- Dept	mm	850
	- Height	mm	1400
37	Weight of fully assembled transformer (Approx.)	kg	1200

**Distribution Transformers**  
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Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	400kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	400
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 720$
17	Load loss at 75°C	W	$\leq 4150$
18	Total load loss at normal ratio at 75°C	W	$\leq 4870$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.78
	- 0.8 power factor lagging of 100% load factor	%	98.50
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	280
33	Acoustic sound level	dB	$\leq 66$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1150
	- Dept	mm	750
	- Height	mm	1200
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1250
	- Dept	mm	850
	- Height	mm	1400
37	Weight of fully assembled transformer (Approx.)	kg	1300

**Distribution Transformers**  
**3 Phase 22000-400/230 V.**



Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	500kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	500
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 860$
17	Load loss at 75°C	W	$\leq 4950$
18	Total load loss at normal ratio at 75°C	W	$\leq 5810$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.84
	- 0.8 power factor lagging of 100% load factor	%	98.57
20	Impedance	%	4
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	320
33	Acoustic sound level	dB	$\leq 66$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1400
	- Dept	mm	900
	- Height	mm	1250
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1500
	- Dept	mm	1000
	- Height	mm	1450
37	Weight of fully assembled transformer (Approx.)	kg	1600

**Distribution Transformers**  
**3 Phase 22000-400/230 V.**



Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	800kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	800
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 1200$
17	Load loss at 75°C	W	$\leq 9900$
18	Total load loss at normal ratio at 75°C	W	$\leq 11100$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.61
	- 0.8 power factor lagging of 100% load factor	%	98.30
20	Impedance	%	6
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	400
33	Acoustic sound level	dB	$\leq 67$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1550
	- Dept	mm	900
	- Height	mm	1300
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1650
	- Dept	mm	1000
	- Height	mm	1500
37	Weight of fully assembled transformer (Approx.)	kg	2000



**Distribution Transformers**  
**3 Phase 22000-400/230 V.**



Technical Data of Three Phase Distribution Transformers			
No.	Description	Unit	1000kVA
1	Manufacturer		Precise Electric Manufacturing Co., Ltd.
2	Type		Sealed Type
3	No. of phase		3
4	Standard		IEC 60076
5	Continuous rates output	kVA	1000
6	Nominal ratio transformation at no-load		95.26
7	Polarity		Dyn11
8	Rated frequency	Hz.	50
9	Voltage Ratio under voltage	V	22000-400/230
10	Type of tap changer		off-voltage
11	Total range of transformation ratio (on 22kV) at full load		$\pm 2 \times 2.5\%$ (5 positions) <b>or</b> $+1/-3 \times 3.5\%$ (5 positions) <b>or</b> (Optional upon request)
12	Impulse withstand voltage of HV winding	kV	125
13	Impulse withstand voltage of LV winding	kV	30
14	Maximum flux density of core		< 1.75
15	Maximum flux density of Yoke		< 1.75
16	No-load loss	W	$\leq 1270$
17	Load loss at 75°C	W	$\leq 12150$
18	Total load loss at normal ratio at 75°C	W	$\leq 13420$
19	Efficiency at normal ratio at - unity power factor of 100% load factor	%	98.66
	- 0.8 power factor lagging of 100% load factor	%	98.35
20	Impedance	%	6
21	Transformer type (Indoor/Outdoor)		Outdoor
22	Type of cooling		ONAN
23	Insulation		Insulating Paper and Transformer oil (Non PCB)
24	Hermetically		Yes
25	MV bushing type		Outdoor plug in 200 A <b>or</b> Outdoor Porcelain Bushing (Optional upon request)
26	LV bushing type		Outdoor Porcelain Bushing
27	Ambient maximum temperature rise	°C	45
28	Winding temperature rise (maximum)	K	65
29	Oil temperature rise (maximum)	K	60
30	Type of HV winding		Copper Cylindrical Layer Winding
31	Type of LV winding		Copper Cylindrical Layer Winding
32	Total oil required (Approx.)	Litre	490
33	Acoustic sound level	dB	$\leq 67$
34	Exterior finish		Zinc Phosphates Treatmetn with Two Layer Painting
35	Dimension of fully assembled Transformer (Approx.) :		
	- Width	mm	1750
	- Dept	mm	1150
	- Height	mm	1300
36	Dimension of wooden packing (Approx.) :		
	- Width	mm	1850
	- Dept	mm	1250
	- Height	mm	1500
37	Weight of fully assembled transformer (Approx.)	kg	2500