

1 Voltage dips, short interruptions Generators (N-L1 AC 230 V / 50 Hz)

1.1 Output voltage at no load

Test level	Duration	Measured [V] r.m.s.	Limits [V]		Results	Remarks
100 % output	-		230(±5 %)	218.5-241.5		
80 % output	250 cycle		184(±5 %)	174.8-193.2		
70 % output	25 cycle		161(±5 %)	152.95-169.05		
40 % output	10 cycle		92(±5 %)	87.4-96.6		
0 % output	1 cycle		—	0-46		k
0 % output	1/2 cycle		—	0-46		

1.2 Output voltage at 100 Ω load

Test level	Duration	Measured [V] r.m.s.	Limits [V]		Results	Remarks
100 % output	-		230(±5 %)	218.5-241.5		
80 % output	250 cycle		184(±5 %)	174.8-193.2		
70 % output	25 cycle		161(±5 %)	152.95-169.05		
40 % output	10 cycle		92(±5 %)	87.4-96.6		

1.3 Rise time / Fall time at 100 Ω load

Test level	Phase angle [deg]	Measured [μs]	Limits [μs]	Results	Remarks
0 % to 100 %	90		1-5		
	270				
100 % to 80 %	90				
	270				
100 % to 70 %	90				
	270				
100% to 40%	90				
	270				
100% to 0%	90				
	270				

1.4 Overshoot, Undershoot at 100 Ω load

Test level	Phase angle [deg]	Measured [V]	Limits [V]	Results	Remarks
0 % to 100 %	90		Less than 5 % of (r.m.s) (at Power supply voltage 230 V) <11.5 V		
	270				
100 % to 80 %	90				
	270				
100 % to 70 %	90				
	270				
100 % to 40 %	90				
	270				
100 % to 0 %	90				
	270				

1.5 Phase angle accuracy at 100 Ω Load

Test level	Phase angle [deg]	Measured		Limits		Results
		Time [ms]	Phase angle [deg]	Time [ms]	Phase angle [deg]	
0 % to 100 %	0			-0.555-0.555	0 \pm 10	
	45			1.945-3.055	45 \pm 10	
	90			4.445-5.555	90 \pm 10	
	135			6.945-8.055	135 \pm 10	
	180			9.445-10.555	180 \pm 10	
	225			11.945-13.055	225 \pm 10	
	270			14.445-15.555	270 \pm 10	
	315			16.945-18.055	315 \pm 10	
	359			19.389 - 20.50	359 \pm 10	
100 % to 0 %	0			-0.555-0.555	0 \pm 10	
	45			1.945-3.055	45 \pm 10	
	90			4.445-5.555	90 \pm 10	
	135			6.945-8.055	135 \pm 10	
	180			9.445-10.555	180 \pm 10	
	225			11.945-13.055	225 \pm 10	
	270			14.445-15.555	270 \pm 10	
	315			16.945-18.055	315 \pm 10	
	359			19.389 - 20.50	359 \pm 10	
100 % to 80 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	
80 % to 100 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	
100 % to 70 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	
70 % to 100 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	
100 % to 40 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	
40 % to 100 %	90			4.445-5.555	90 \pm 10	
	180			9.445-10.555	180 \pm 10	

1.6 Duration for voltage dips and output voltage at 100 Ω load

1.6.1 100 % to 80 %

1.6.2 100 % to 70 %

	1/2 cycle 10[ms]	80 % output 260.22[V](peak)		1/2 cycle 10[ms]	70 % output 227.69[V](peak)
Measured	10	---	Measured	10	---
	1 cycle 20[ms]	80 % output 520.43[V](peak to peak)		1 cycle 20[ms]	70 % output 455.38[V](peak to peak)
Measured	20		Measured	20	
	5 cycle 100[ms]	80 % output 520.43[V](peak to peak)		5 cycle 100[ms]	70 % output 455.38[V](peak to peak)
Measured	100	---	Measured	100	---
	10 cycle 200[ms]	80 % output 520.43[V](peak to peak)		10 cycle 200[ms]	70 % output 455.38[V](peak to peak)
Measured	200		Measured	200	
	25 cycle 500[ms]	80 % output 520.43[V](peak to peak)		25 cycle 500[ms]	70 % output 455.38[V](peak to peak)
Measured	500		Measured	500	
	50 cycle 1000[ms]	80 % output 520.43[V](peak to peak)		50 cycle 1000[ms]	70 % output 455.38[V](peak to peak)
Measured	1000		Measured	1000	

1.6.3 100 % to 40 %

1.6.4 100 % to 0 %

	1/2 cycle 10[ms]	40 % output 130.11[V](peak)		1/2 cycle 10[ms]	0 % output 0[V](peak)
Measured	10		Measured	10	
	1 cycle 20[ms]	40 % output 260.22[V](peak to peak)		1 cycle 20[ms]	0 % output 0[V](peak to peak)
Measured	20		Measured	20	
	5 cycle 100[ms]	40 % output 260.22[V](peak to peak)		5 cycle 100[ms]	0 % output 0[V](peak to peak)
Measured	100		Measured	100	
	10 cycle 200[ms]	40 % output 260.22[V](peak to peak)		10 cycle 200[ms]	0 % output 0[V](peak to peak)
Measured	200		Measured	200	
	25 cycle 500[ms]	40 % output 260.22[V](peak to peak)		25 cycle 500[ms]	0 % output 0[V](peak to peak)
Measured	500		Measured	500	
	50 cycle 1000[ms]	40 % output 260.22[V](peak to peak)		50 cycle 1000[ms]	0 % output 0[V](peak to peak)
Measured	1000		Measured	1000	

1.7 Inrush current

1.7.1 AC 230 V / 50 Hz, 90 [deg]

1.7.2 AC 230 V / 50 Hz, 270 [deg]

	[A]		[A]
Measured		Measured	

4 Voltage dips, short interruptions Generators (L1-L2 AC 400 V / 50 Hz)

4.1 Output voltage at no load

Test level	Duration	Measured [V] r.m.s.	Limits [V]		Results	Remarks
100 % output	-		400(±5 %)	380-420		
80 % output	250 cycle		320(±5 %)	304-336		
70 % output	25 cycle		280(±5 %)	266-294		
40 % output	10 cycle		160(±5 %)	152-168		
0 % output	1 cycle		—	0-80		Peak-Peak
0 % output	1/2 cycle		—	0-80		Peak

4.2 Output voltage at load

Test level	Duration	Measured [V] r.m.s.	Limits [V]		Results	Remarks
100 % output	-		400(±5 %)	380-420		
80 % output	250 cycle		320(±5 %)	304-336		
70 % output	25 cycle		280(±5 %)	266-294		
40 % output	10 cycle		160(±5 %)	152-168		

4.3 Rise time / Fall time at load

Test level	Phase angle [deg]	Measured [μs]	Limits [μs]	Results	Remarks
0 % to 100 %	90		1-5		
	270				
100 % to 80 %	90				
	270				
100 % to 70 %	90				
	270				
100 % to 40 %	90				
	270				
100 % to 0 %	90				
	270				

4.4 Overshoot, Undershoot at load

Test level	Phase angle [deg]	Measured [V]	Limits [V]	Results	Remarks
0 % to 100 %	90		Less than 5 % of (r.m.s) (at Power supply voltage 400 V) <20.0 V		
	270				
100 % to 80 %	90				
	270				
100 % to 70 %	90				
	270				
100 % to 40 %	90				
	270				
100 % to 0 %	90				
	270				

4.5 Phase angle accuracy at load

Test level	Phase angle [deg]	Measured		Limits		Results
		Time [ms]	Phase angle [deg]	Time [ms]	Phase angle [deg]	
0 % to 100 %	0			-0.555-0.555	0±10	
	45			1.945-3.055	45±10	
	90			4.445-5.555	90±10	
	135			6.945-8.055	135±10	
	180			9.445-10.555	180±10	
	225			11.945-13.055	225±10	
	270			14.445-15.555	270±10	
	315			16.945-18.055	315±10	
	359			19.389 - 20.50	359±10	
100 % to 0 %	0			-0.555-0.555	0±10	
	45			1.945-3.055	45±10	
	90			4.445-5.555	90±10	
	135			6.945-8.055	135±10	
	180			9.445-10.555	180±10	
	225			11.945-13.055	225±10	
	270			14.445-15.555	270±10	
	315			16.945-18.055	315±10	
	359			19.389 - 20.50	359±10	
100 % to 80 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	
80 % to 100 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	
100 % to 70 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	
70 % to 100 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	
100 % to 40 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	
40 % to 100 %	90			4.445-5.555	90±10	
	180			9.445-10.555	180±10	

4.6 Duration for voltage dips and output voltage at load

4.6.1 100 % to 80 %

	1/2 cycle 10[ms]	80 % output 452.55[V](peak)
Measured	10	
	1 cycle 20[ms]	80 % output 905.10[V](peak to peak)
Measured	20	
	5 cycle 100[ms]	80 % output 905.10[V](peak to peak)
Measured	100	
	10 cycle 200[ms]	80 % output 905.10[V](peak to peak)
Measured	200	
	25 cycle 500[ms]	80 % output 905.10[V](peak to peak)
Measured	500	
	50 cycle 1000[ms]	80 % output 905.10[V](peak to peak)
Measured	1000	

4.6.2 100 % to 70 %

	1/2 cycle 10[ms]	70 % output 395.98[V](peak)
Measured	10	
	1 cycle 20[ms]	70 % output 791.96[V](peak to peak)
Measured	20	
	5 cycle 100[ms]	70 % output 791.96[V](peak to peak)
Measured	100	
	10 cycle 200[ms]	70 % output 791.96[V](peak to peak)
Measured	200	
	25 cycle 500[ms]	70 % output 791.96[V](peak to peak)
Measured	500	
	50 cycle 1000[ms]	70 % output 791.96[V](peak to peak)
Measured	1000	

4.6.3 100 % to 40 %

	1/2 cycle 10[ms]	40 % output 226.27[V](peak)
Measured	10	
	1 cycle 20[ms]	40 % output 452.55[V](peak to peak)
Measured	20	
	5 cycle 100[ms]	40 % output 452.55[V](peak to peak)
Measured	100	
	10 cycle 200[ms]	40 % output 452.55[V](peak to peak)
Measured	200	
	25 cycle 500[ms]	40 % output 452.55[V](peak to peak)
Measured	500	
	50 cycle 1000[ms]	40 % output 452.55[V](peak to peak)
Measured	1000	

4.6.4 100 % to 0 %

	1/2 cycle 10[ms]	0 % output 0[V](peak)
Measured	10	
	1 cycle 20[ms]	0 % output 0[V](peak to peak)
Measured	20	
	5 cycle 100[ms]	0 % output 0[V](peak to peak)
Measured	100	
	10 cycle 200[ms]	0 % output 0[V](peak to peak)
Measured	200	
	25 cycle 500[ms]	0 % output 0[V](peak to peak)
Measured	500	
	50 cycle 1000[ms]	0 % output 0[V](peak to peak)
Measured	1000	