Power Standards Laboratory
www.PowerStandards.com
980 Atlantic Ave #100
Alameda, CA 94501 USA
TEL ++1-510-522-4400
FAX ++1-510-522-4455

Job # SCH-001

SEMI F47-0706
(Reapproved 0812)

SEMI E6-0914

Voltage Sag Immunity Report

Altivar ATVx30 & ATVx50 Series
AC400V, 3-phase Delta 3-wire + PE, 50Hz

Client

Schneider Electric Industries SAS
35 rue Joseph Monier
Rueil Malmaison 92506
France

Deposit received: NA
Client's Confidentiality Agreement: OK
Responsibility paragraph: OK

Contact: Frederic Roussel
Tel: +33 2 32 78 16 71
Email: frederic.roussel@schneider-electric.com
P.O. NO.: CDA133120

PSL Engineer, Schedule, and Equipment

PSL Test Engineer:	Mark Richter, (510) 522 4400
Test date:	30th January 2018
Test location:	Same as above
Test category:	SEMI F47 Voltage Sag Immunity
Test sub-category:	AC400V, 3-phase Delta 3-wire + PE, 50Hz
Equipment under test:	Altivar 930
Model Number:	ATV930D30N4
S/N:	4023300JM174201458

SEMI E6 Power Characterization

The manufacturer states this VFD represents the series of ATVx30 and ATVx50 drives that follow the same hardware design criteria with software and enclosure differences as noted below;

ATV630 for Fluid & gas handling application
ATV930 for Solid & mechanics movement application
Same rule applies for ATVx50
ATVx30 IP21 enclosure
ATVx50 same product but in IP55 enclosure

The software for management of the defaults and restart functions are exactly the same on all the sizes of ATV6xx and ATV9xx series. Only the motor torque control is different between ATV9xx and ATV6xx.

ATVx30 and ATVx50 drives are capable of 'Auto Restart' and are user configurable.

A list of drives covered are listed in the back of this report.

PSL provided equipment: PSL IPC-400V-200A Voltage Sag Generator with Data Acquisition System S/N IPC03001 and PC Notebook, pre-loaded with F47/IEC 61000-4-34 software and Reports

Photo 1: Equipment Under Test
Altivar 930

Client personnel

The following Client personnel participated in the test. It is acceptable for one person to perform more than one role. Note that PSL provides engineering advice only, and accepts responsibility for damage only to equipment provided by PSL. Client is responsible for safety during testing, and is responsible for any damage to Client equipment and/or facilities.

Supervisor: Thomas Stefan
Contact: Thomas.Stefan@Schneider-Electric.com
(This person is primarily responsible for operating the Equipment Under Test (EUT), and determining if it has experienced a misoperation.)

Testing Engineer: Philipp Hawel
Contact: Philipp.Hawel@NON.Schneider-Electric.com
(This person is responsible for the overall testing procedure and environment.)

Documents, Test Environment, Tools and Supplies

Client provided the following Documents, Test environment, Tools and supplies.

Documents provided by Client:

✓ Block diagrams and circuit diagrams

Test environment provided by Client:

✓ A test space that provides convenient, safe, comfortable access to the Equipment Under Test
✓ Equipment Under Test in operating condition and other utilities connected.
✓ Readily-disconnected electric power for Equipment Under Test, with current limiting devices rated no more than twice the nameplate rating of the Equipment Under Test. Each electric power connection must be clearly labeled with phase identification and voltage.
✓ Instrument power (120/240V, 50/60 Hz, 5 amps) for sag generator, located no more than three feet from power connection for Equipment Under Test. Extension cords are acceptable.
✓ Protective earth lug suitable for 10AWG – 6AWG, for sag generator.
✓ Work-table for sag generator, capable of supporting 150 lbs.
✓ Readily broken and re-connected power conductors for Equipment Under Test, typically 10AWG – 8AWG, installed in each phase conductor, and in neutral conductor if used.

Tools and supplies provided by Client

✓ One or more spools of stranded 10AWG-8AWG conductors for miscellaneous wiring, plus spare fuses (if used) for Equipment Under Test and electric power source.
✓ Standard safety equipment for all participants (gloves, glasses, etc.), and standard hand tools and supplies for electric power work (screwdrivers, cutters, tape, etc.)
✓ Hand-held DVM for checking connections, fuses, voltages, etc.
✓ Clamp-on AC current meter for miscellaneous checks

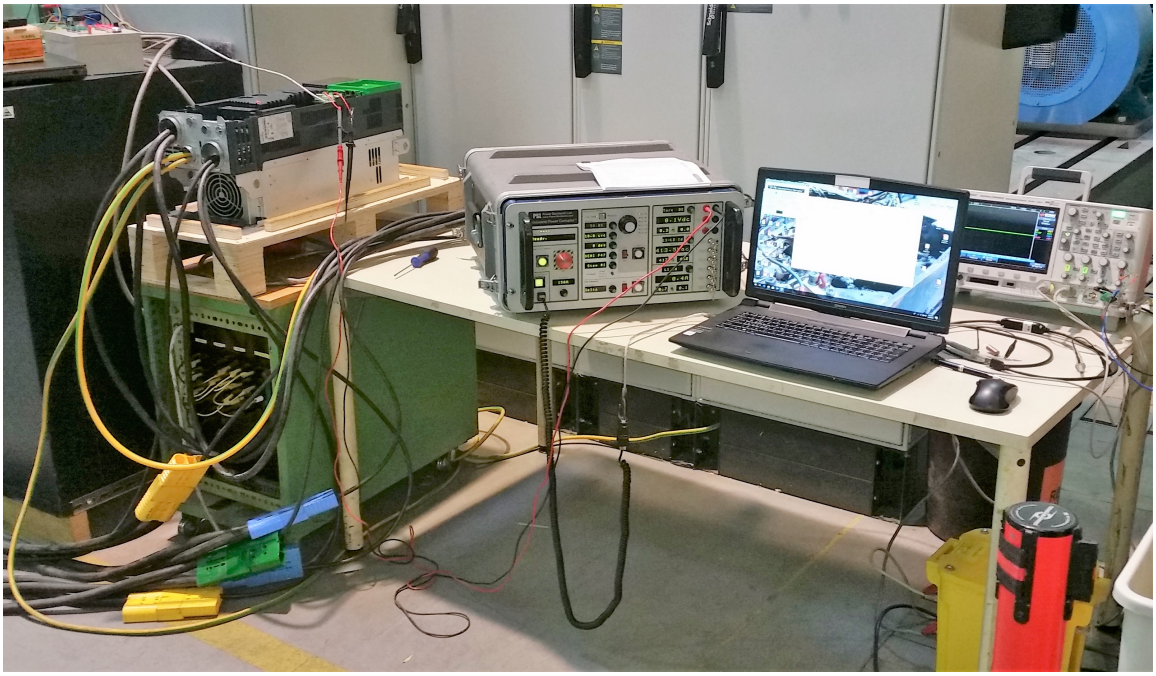


Figure 1 IPC Test Setup

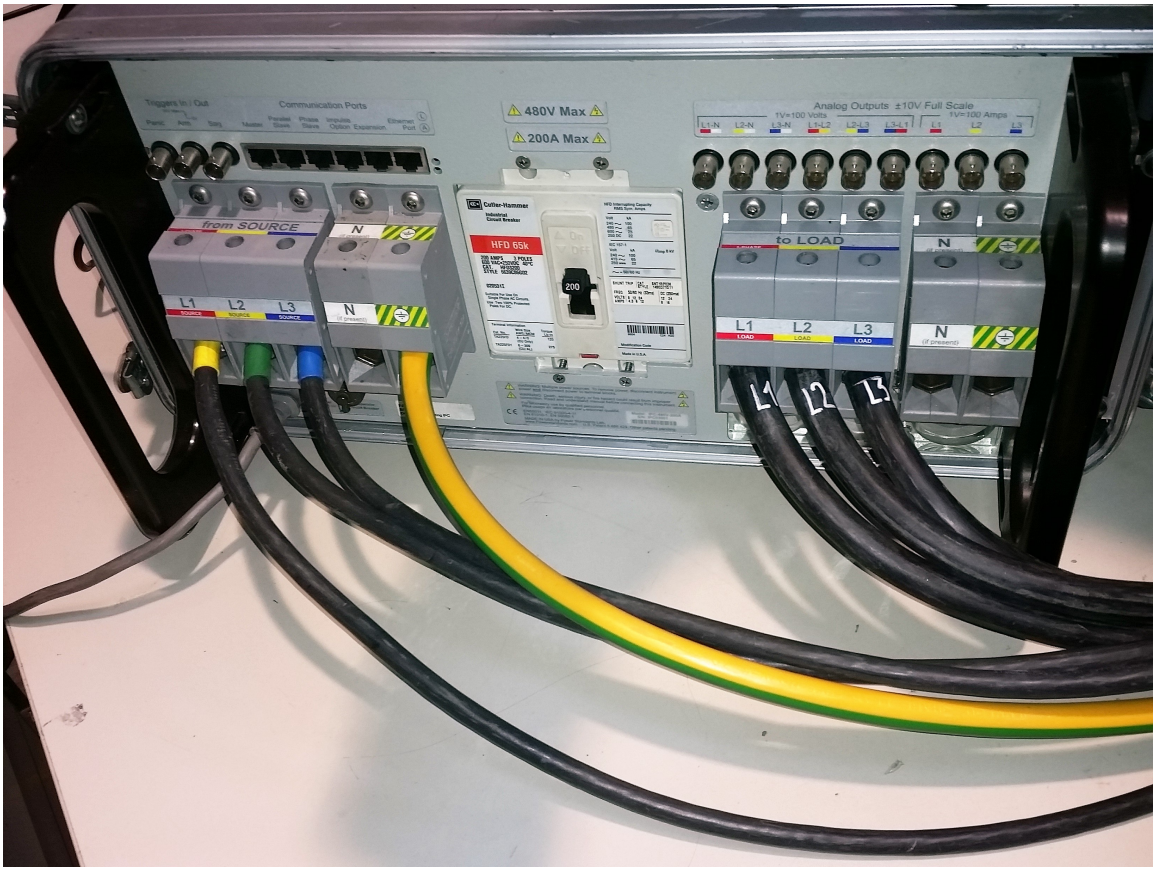


Figure 2 IPC Wiring

Figure 3 Main Disconnect and Terminations

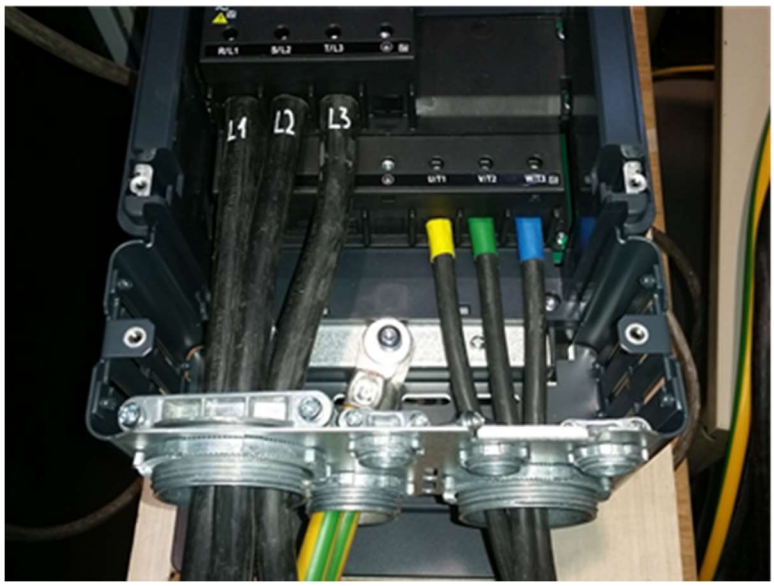


Figure 4 VFD Terminations

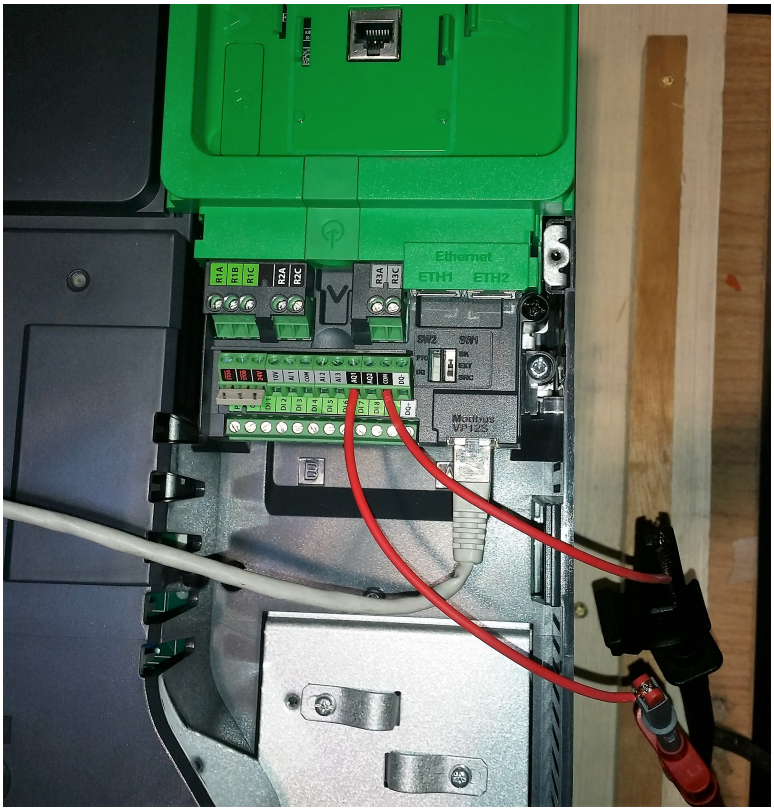


Figure 5 Analogue terminations for drive torque

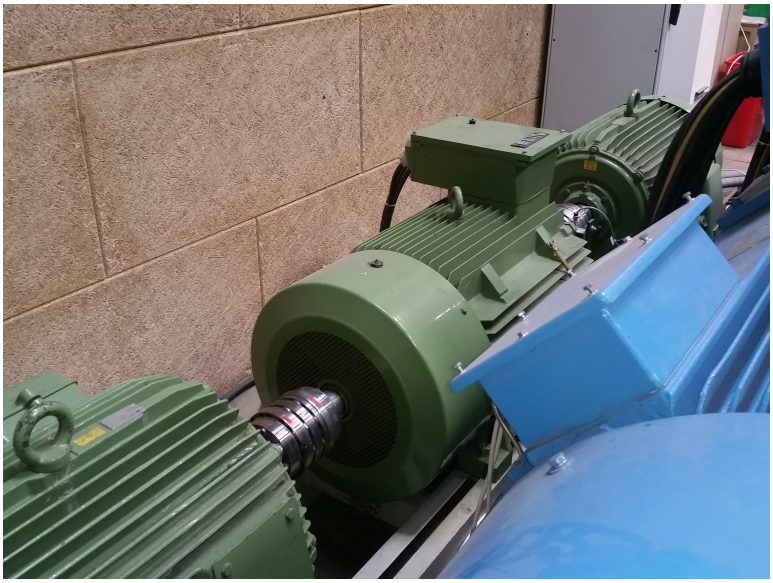


Figure 6 Regeneration Motors for loading

Safety review

✓ Prior to test commencement, all participants review the exit locations, the location of fire extinguishers, the emergency telephone number.

Protective eyewear was not required.

✓ One participant had current CPR certification.

Electric power connections

AC400V, 3-phase Delta 3-wire + PE, 50Hz
630A 50kAic

Equipment under test

Altivar 930
Model: ATV930D30N4
S/N: 4023300JM174201458

✓ EUT's most sensitive process modes: Normal operation

✓ EUT's indications of misoperation: Fault on drive, or the rotating assembly stopping without auto-restart

Rating Label:

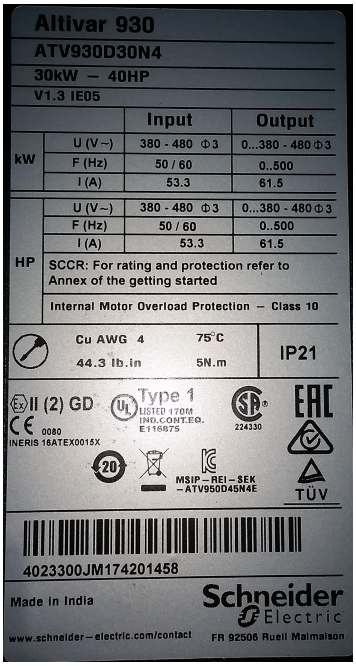


Figure 7 EUT Nameplate

SEMI F47 Test Data

Typical disturbance during testing (Disturbance001.cvs, 30th January 2018)

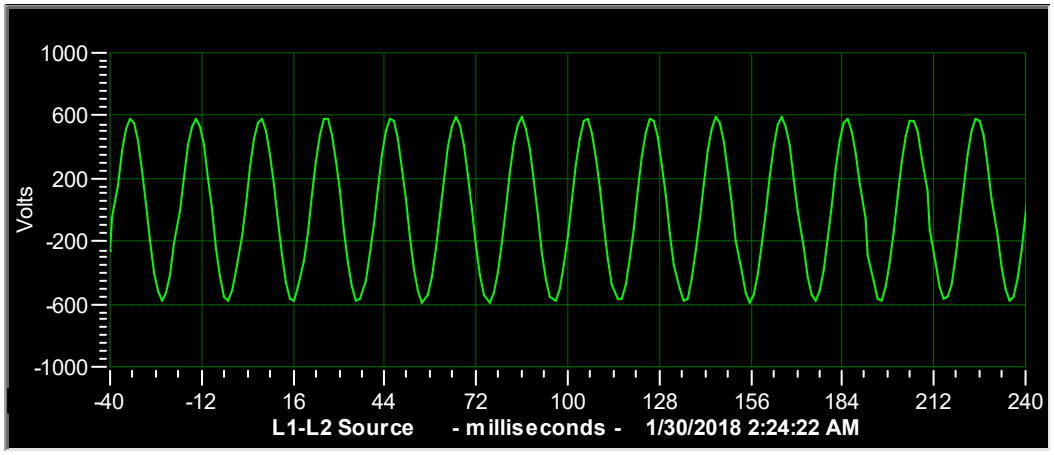


Figure 8 L1-L2 Source (Volts)

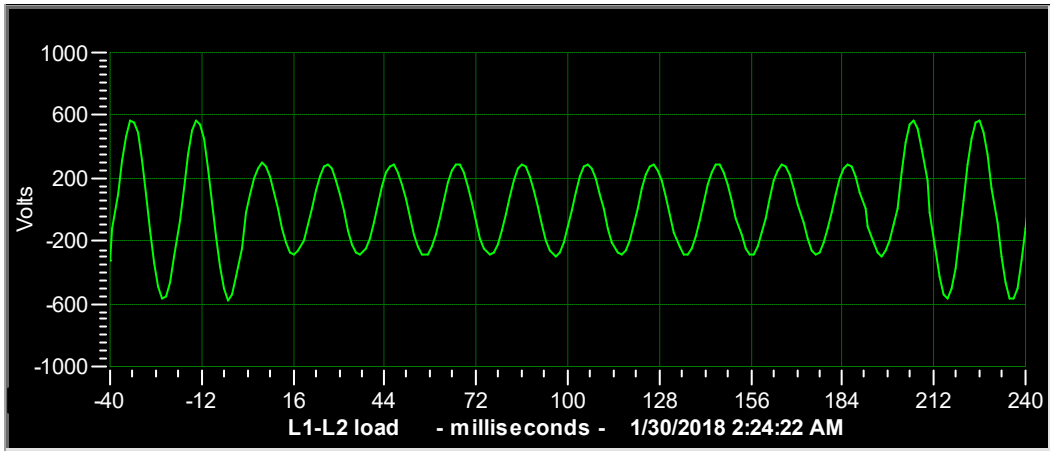


Figure 9 L1-L2 Load (Volts)

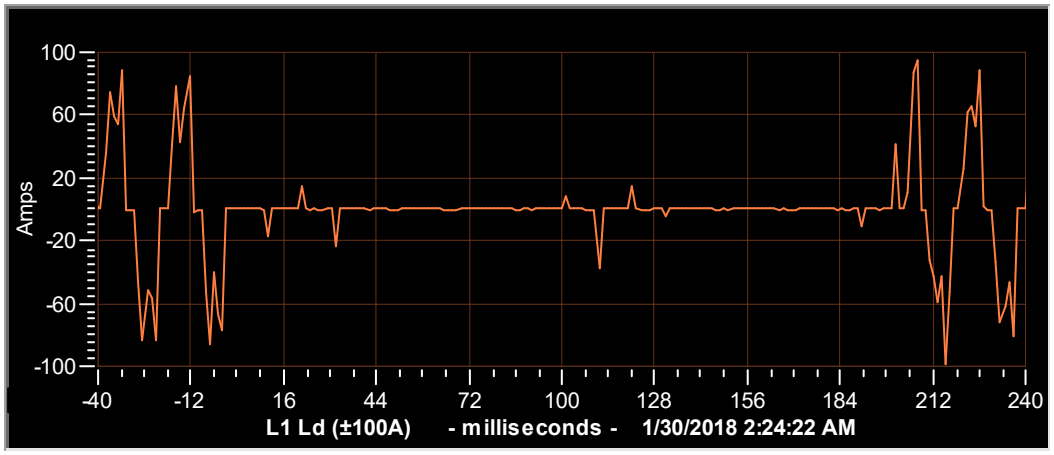


Figure 10 Load Current (Amps)

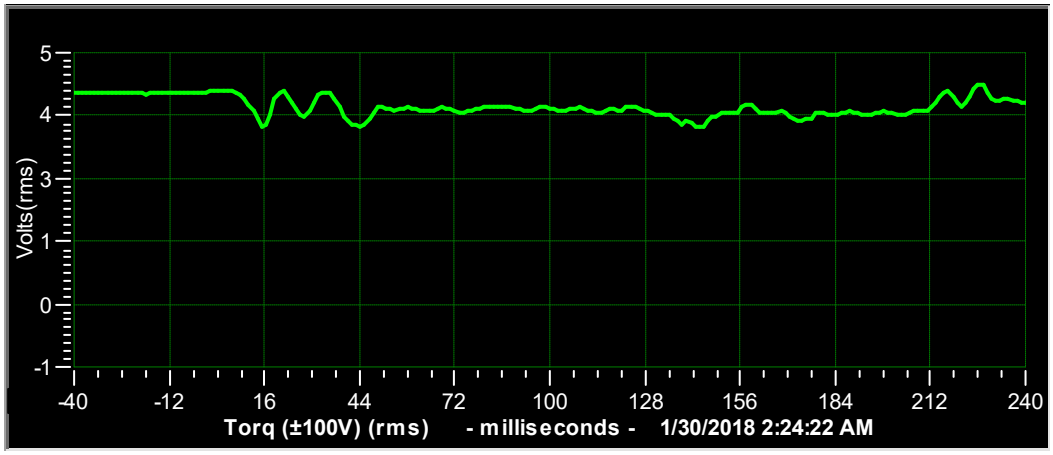


Figure 11 Torque (Volts rms)

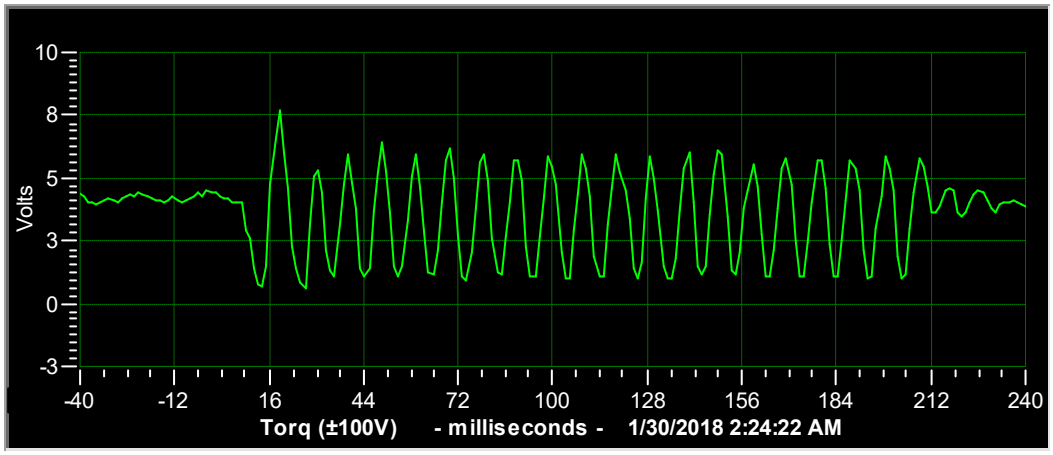


Figure 12 Torque (Volts)

Note. Torque is represented at a percentage of full load with the scale of 0-300% : 0-10V

Recorded at:	1/30/2018 2:24
Test equipment:	IPC-480V-200A
Test equipment S/N:	IPC03001 Last service date: 11/12/15
Rev levels:	Firmware: Rev 4.0.0 Software: Rev 4.0.3 Hardware: Rev 2.1.3
Test engineer:	Mark Richter
Test company:	Power Standards Lab
Equipment Under Test:	Altivar 930
EUT manufacturer:	Schneider Electric Industries SAS
Manufacturer location:	India
IndiaEUT Model Number:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
Comments:	
Nominal power:	400V / 50Hz / Delta 3-phase 3-wire + PE
Event retained voltage:	50.0%
Event duration:	10.0 cyc
Event phase angle:	0 deg
Applied to:	L1-L2
Trip current setting:	150A
Result:	PASS
Comments:	Drive running well

Typical disturbance during testing (Disturbance002.cvs, 30th January 2018)

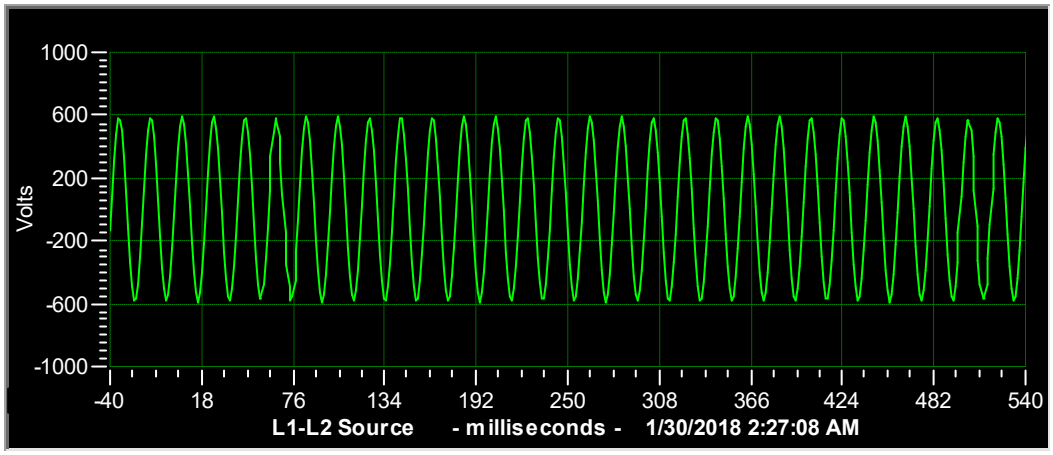


Figure 13 L1-L2 Source (Volts)

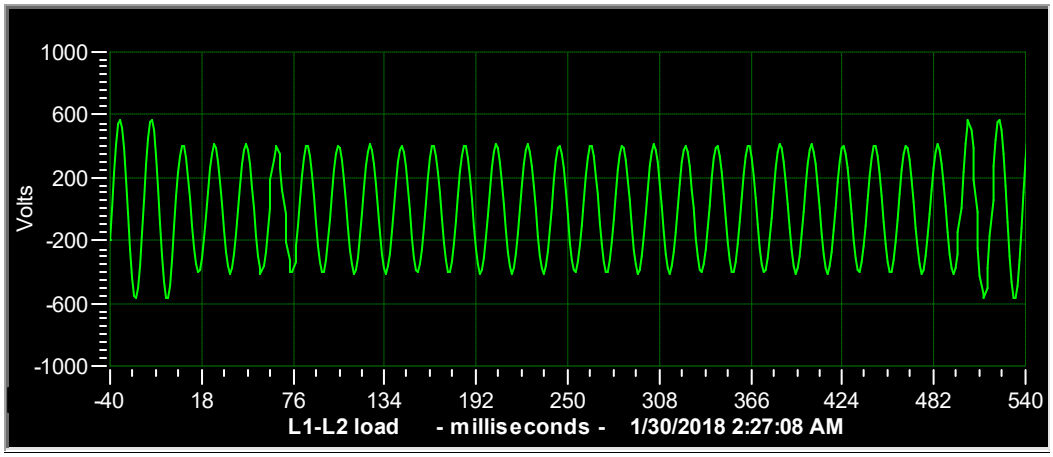


Figure 14 L1-L2 Load (Volts)

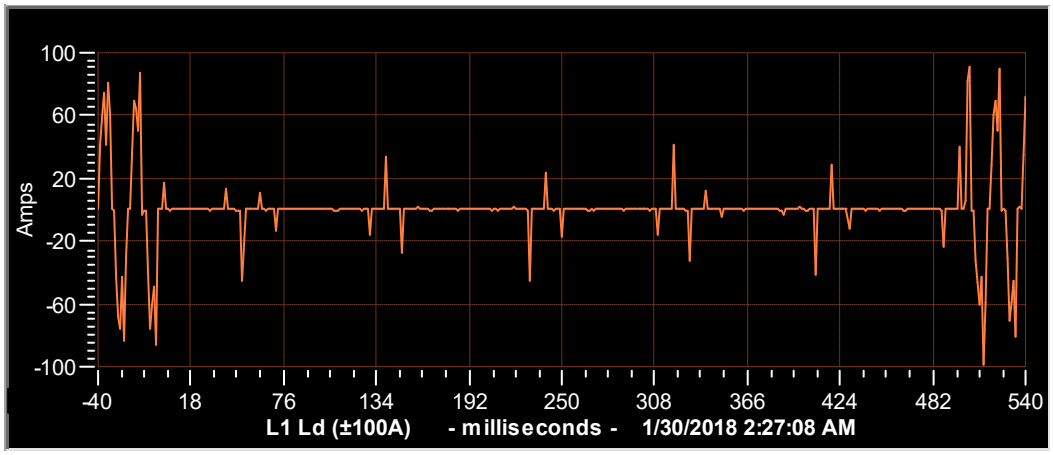


Figure 15 Load Current (Amps)

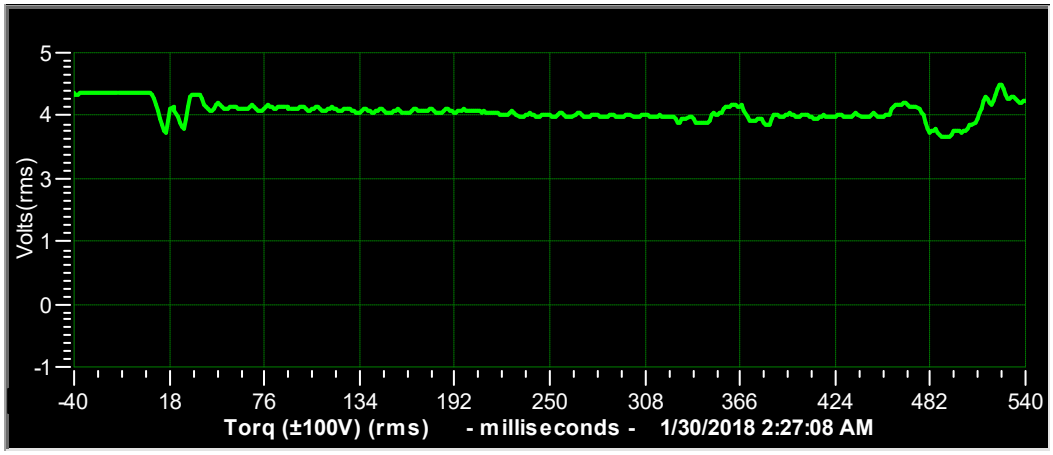


Figure 16 Torque (Volts rms)

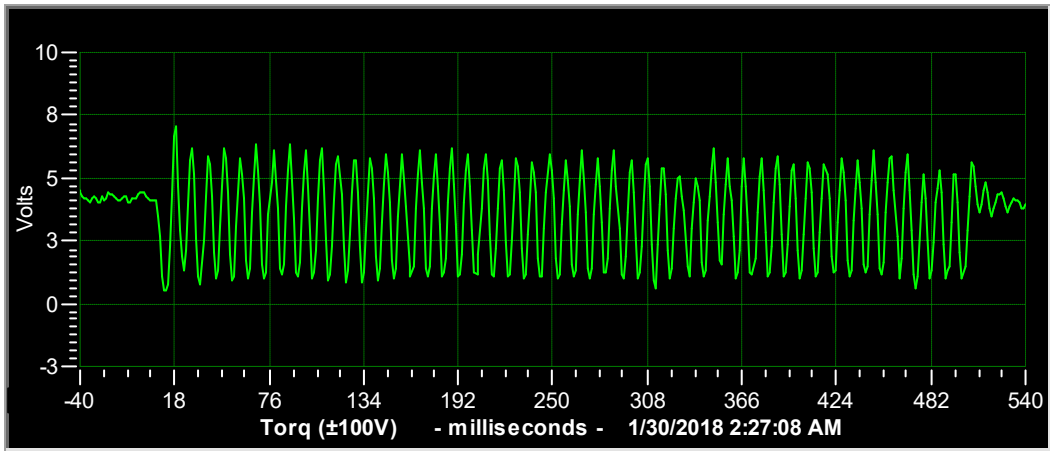


Figure 17 Torque (Volts)

Note. Torque is represented at a percentage of full load with the scale of 0-300% : 0-10V

Recorded at:	1/30/2018 2:27
Test equipment:	IPC-480V-200A
Test equipment S/N:	IPC03001 Last service date: 11/12/15
Rev levels:	Firmware: Rev 4.0.0 Software: Rev 4.0.3 Hardware: Rev 2.1.3
Test engineer:	Mark Richter
Test company:	Power Standards Lab
Equipment Under Test:	Altivar 930
EUT manufacturer:	Schneider Electric Industries SAS
Manufacturer location:	India
IndiaEUT Model Number:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
Comments:	
Nominal power:	400V / 50Hz / Delta 3-phase 3-wire + PE
Event retained voltage:	70.0%
Event duration:	25.0 cyc
Event phase angle:	0 deg
Applied to:	L1-L2
Trip current setting:	150A
Result:	PASS
Comments:	Small torque oscillation, but drive running well

Typical disturbance during testing (Disturbance005.cvs, 30th January 2018)

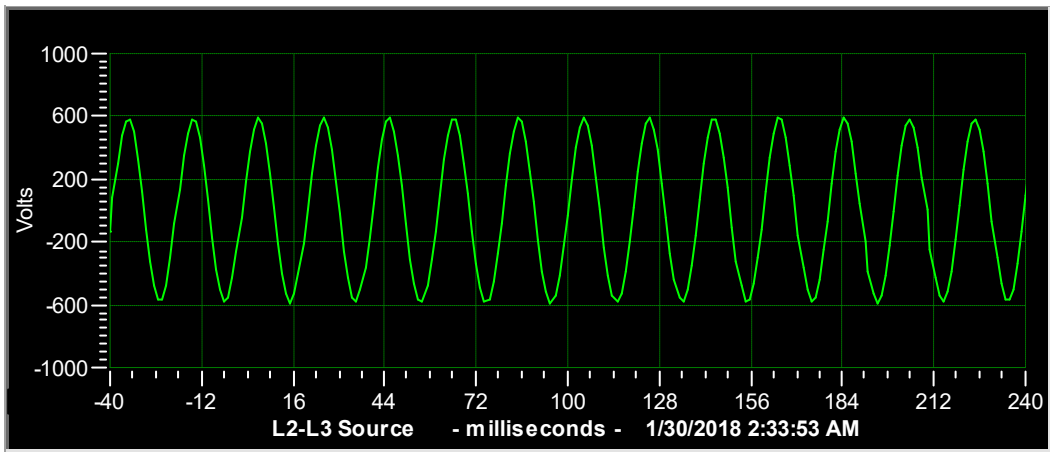


Figure 18 L2-L3 Source (Volts)

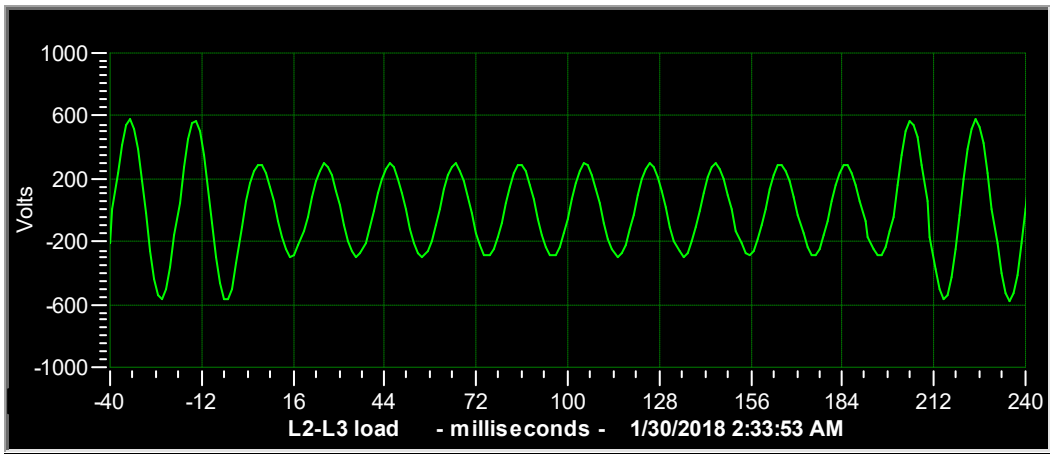


Figure 19 L2-L3 Load (Volts)

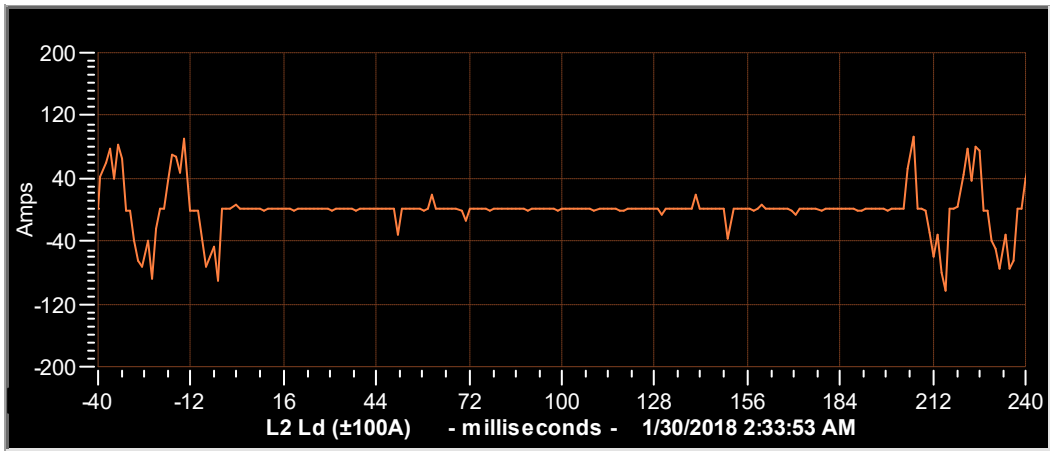


Figure 20 Load Current (Amps)

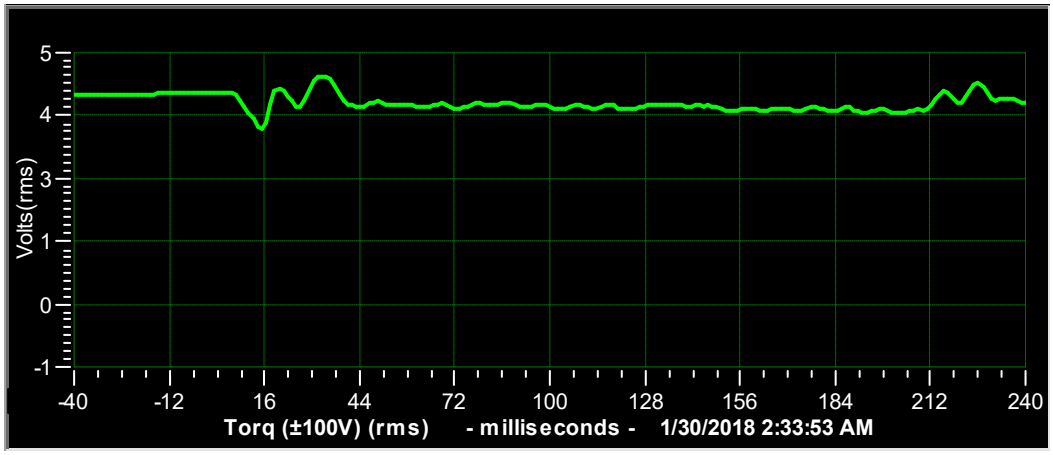


Figure 21 Torque (Volts rms)

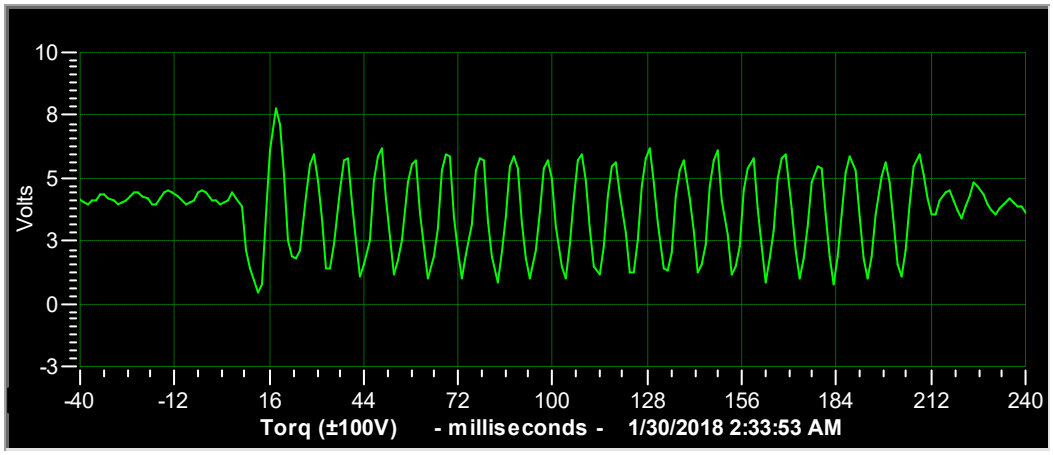


Figure 22 Torque (Volts)

Note. Torque is represented at a percentage of full load with the scale of 0-300% : 0-10V

Recorded at:	1/30/2018 2:33
Test equipment:	IPC-480V-200A
Test equipment S/N:	IPC03001 Last service date: 11/12/15
Rev levels:	Firmware: Rev 4.0.0 Software: Rev 4.0.3 Hardware: Rev 2.1.3
Test engineer:	Mark Richter
Test company:	Power Standards Lab
Equipment Under Test:	Altivar 930
EUT manufacturer:	Schneider Electric Industries SAS
Manufacturer location:	India
IndiaEUT Model Number:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
Comments:	
Nominal power:	400V / 50Hz / Delta 3-phase 3-wire + PE
Event retained voltage:	50.0%
Event duration:	10.0 cyc
Event phase angle:	0 deg
Applied to:	L2-L3
Trip current setting:	150A
Result:	PASS
Comments:	Drive running OK

Typical disturbance during testing (Disturbance011.cvs, 30th January 2018)

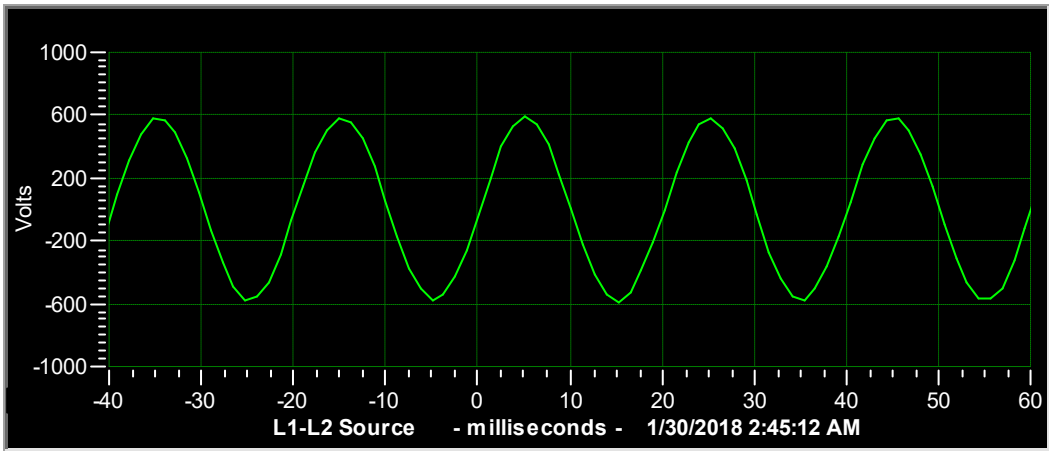


Figure 23 L1-L2 Source (Volts)

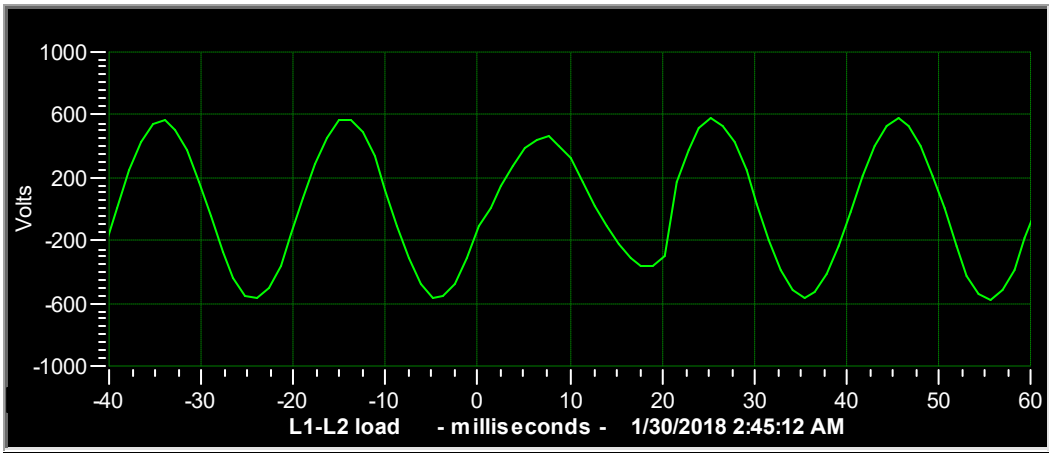


Figure 24 L1-L2 Load (Volts)

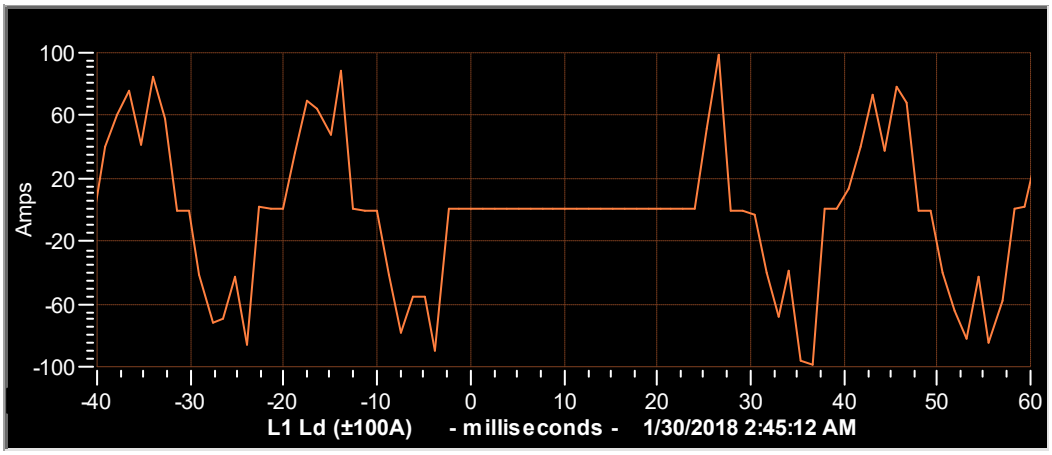


Figure 25 Load Current (Amps)

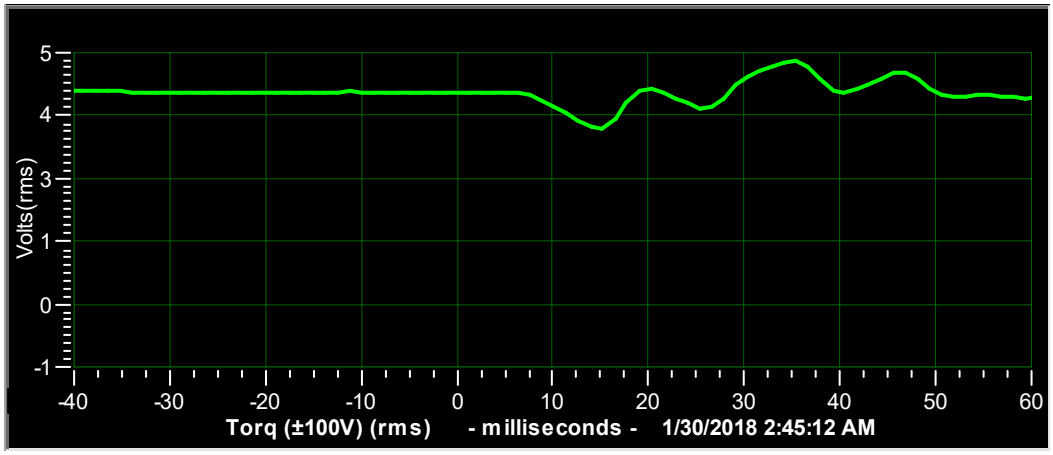


Figure 26 Torque (Volts rms)

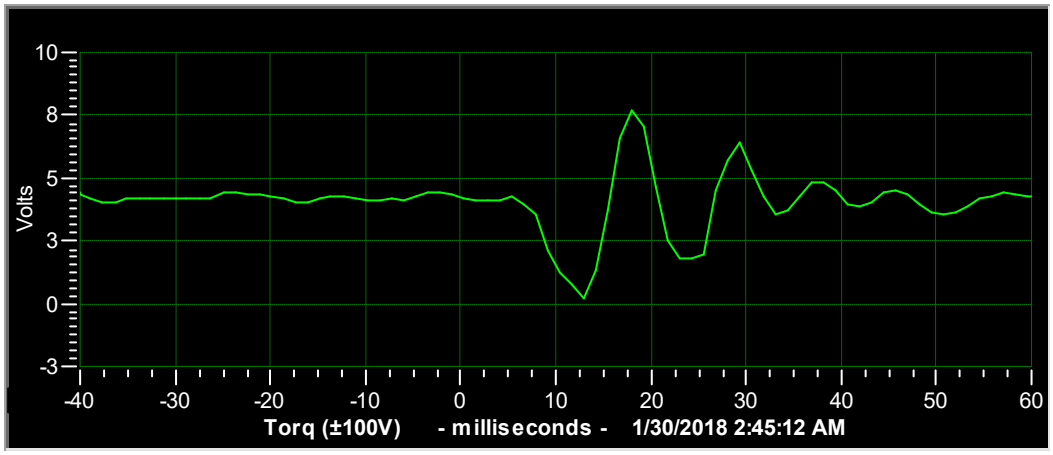


Figure 27 Torque (Volts rms)

Note. Torque is represented at a percentage of full load with the scale of 0-300% : 0-10V

Recorded at:	1/30/2018 2:45
Test equipment:	IPC-480V-200A
Test equipment S/N:	IPC03001 Last service date: 11/12/15
Rev levels:	Firmware: Rev 4.0.0 Software: Rev 4.0.3 Hardware: Rev 2.1.3
Test engineer:	Mark Richter
Test company:	Power Standards Lab
Equipment Under Test:	Altivar 930
EUT manufacturer:	Schneider Electric Industries SAS
Manufacturer location:	India
IndiaEUT Model Number:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
Comments:	
Nominal power:	400V / 50Hz / Delta 3-phase 3-wire + PE
Event retained voltage:	0% High Z
Event duration:	1 cyc
Event phase angle:	0 deg
Applied to:	L1-L2
Trip current setting:	150A
Result:	PASS
Comments:	Drive running normally

Typical disturbance during testing (Disturbance009.cvs, 30th January 2018)

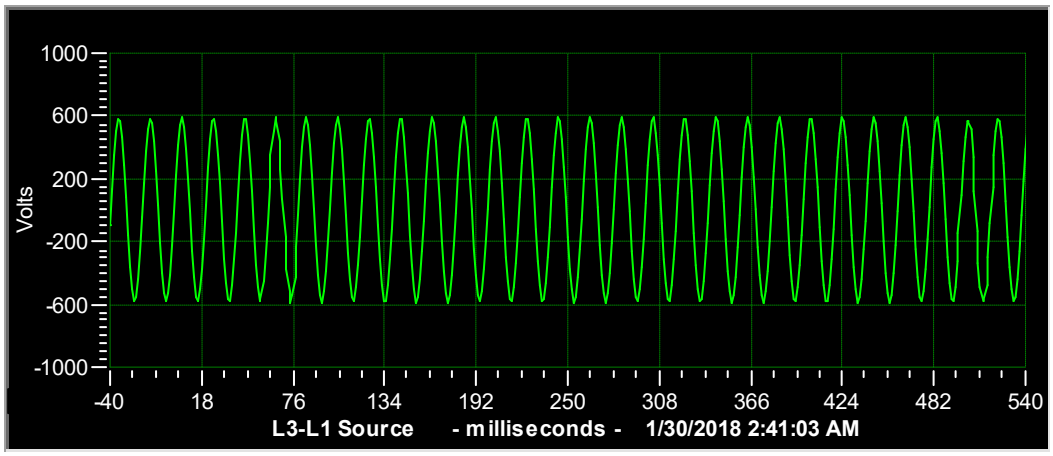


Figure 28 L1-L2 Source (Volts)

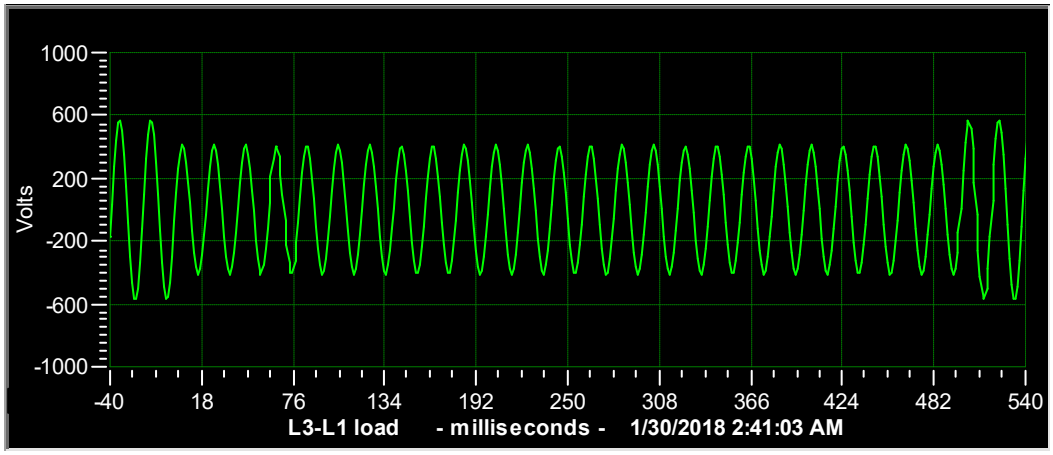


Figure 29 L1-L2 Load (Volts)

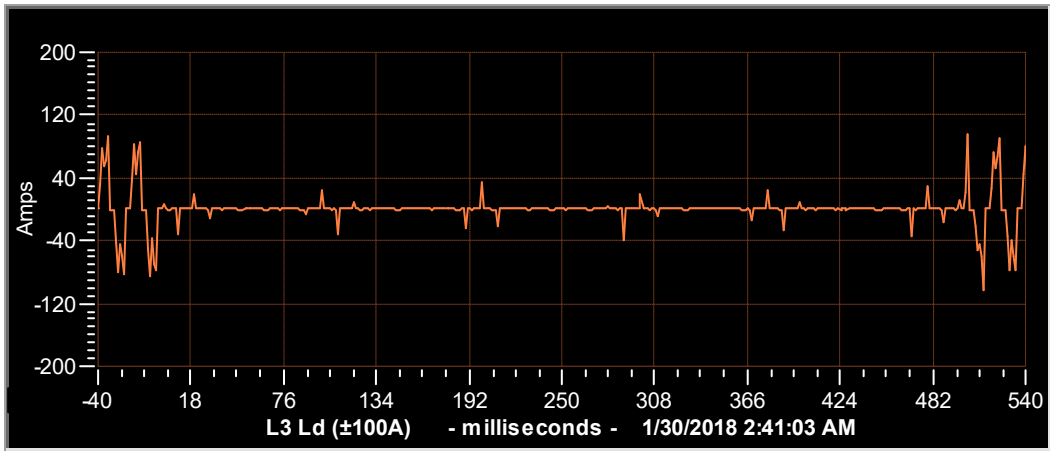


Figure 30 Load Current (Amps)

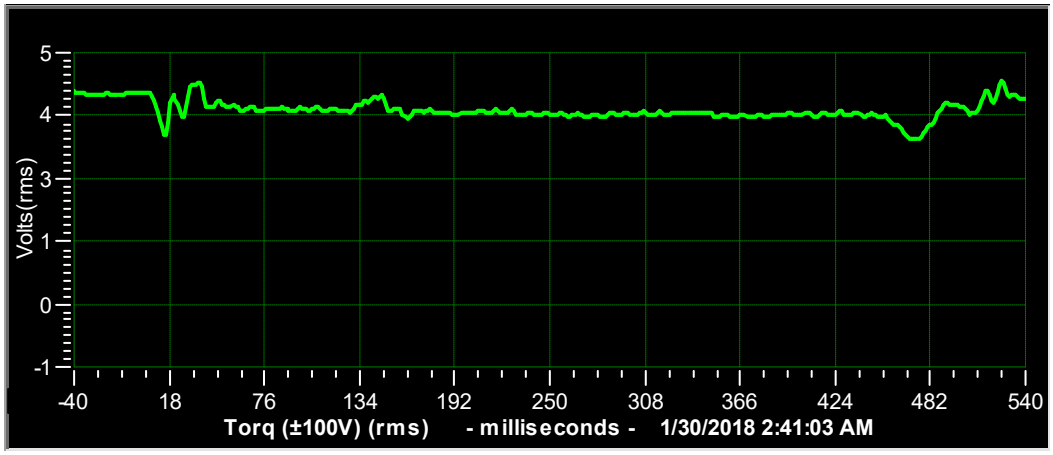


Figure 31 Torque (Volts rms)

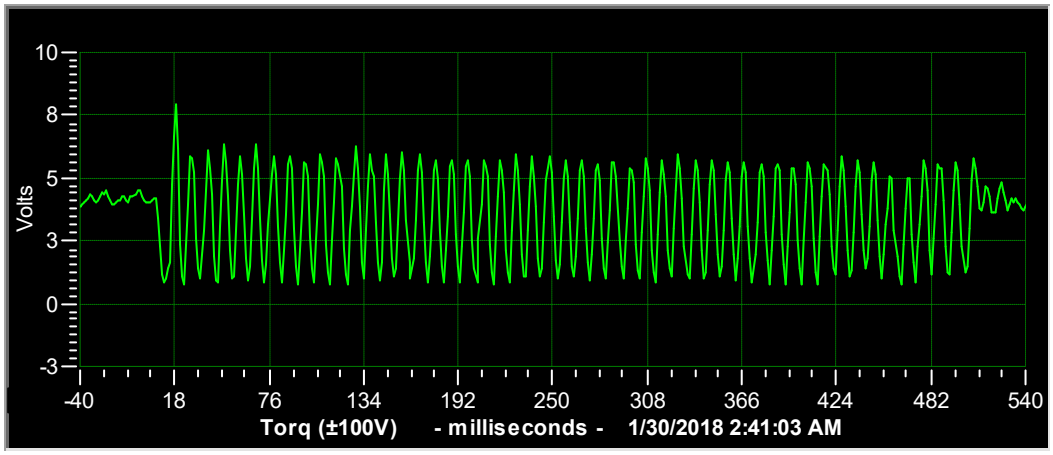
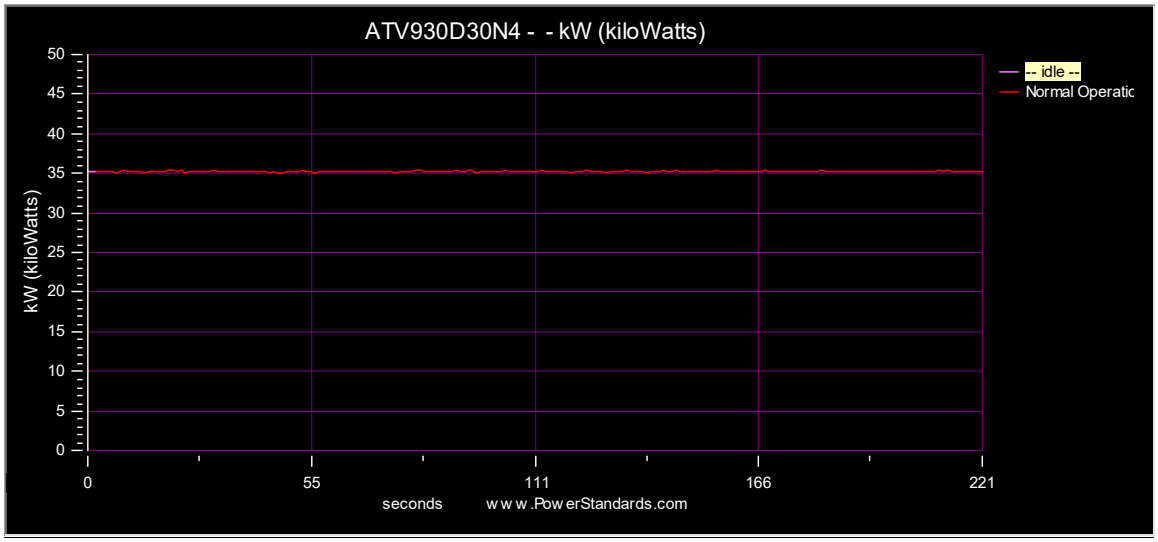


Figure 32 Torque (Volts)

Note. Torque is represented at a percentage of full load with the scale of 0-300% : 0-10V

Recorded at:	1/30/2018 2:41
Test equipment:	IPC-480V-200A
Test equipment S/N:	IPC03001 Last service date: 11/12/15
Rev levels:	Firmware: Rev 4.0.0 Software: Rev 4.0.3 Hardware: Rev 2.1.3
Test engineer:	Mark Richter
Test company:	Power Standards Lab
Equipment Under Test:	Altivar 930
EUT manufacturer:	Schneider Electric Industries SAS
Manufacturer location:	India
IndiaEUT Model Number:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
Comments:	
Nominal power:	400V / 50Hz / Delta 3-phase 3-wire + PE
Event retained voltage:	70.0%
Event duration:	25.0 cyc
Event phase angle:	0 deg
Applied to:	L3-L1
Trip current setting:	150A
Result:	PASS
Comments:	OK

SEMI E6 Power Characterization Data



kW – kilowatts

---- Power Standards Lab - Industrial Power Corruptor - Power Flow Option ----

Recording equipment:	Model: IPC-480V-200A S/N: IPC03001 Service Date: 11/12/15
Recorded at:	30-Jan-18,2:17:36 AM
Test engineer:	Mark Richter
Test company:	PSL

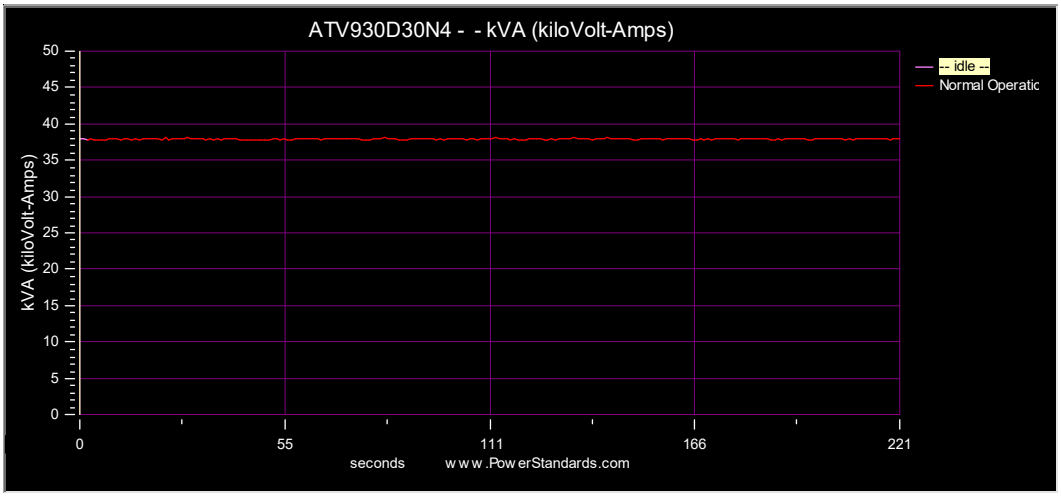
Equipment Under Test:	ATV930D30N4
EUT Serial Number:	4023300JM174201458
EUT manufacturer:	Schneider Electric Industries SAS
EUT Process:	
Power configuration:	400 / 50 Hz / 3-phase delta 3-wire + PE
Rated frequency:	50 Hz
Connection type:	Lugs
Amp Interrupting Capacity:	50kAIC
Branch circuit protection:	630

	Idle avg.	Process avg.	Maximum
Real Power(Watts)	35.22 kW	35.23 kW	35.38 kW
Apparent Power(Volt-Amps)	37.89 kVA	37.91 kVA	38.08 kVA

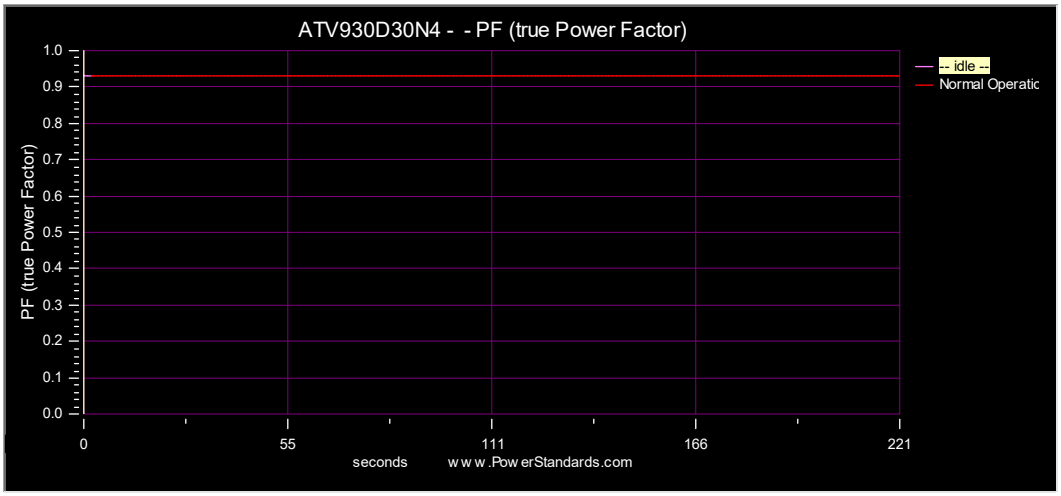
	L1	L2	L3	Neut
Full Load Rating	54	54	54	
Current - Idle - avg.	53.2 A	53.52 A	54.07 A	1.24 A
Current - Process - avg.	53.21 A	53.63 A	54.08 A	1.25 A
Current - max	53.65 A	54.1 A	54.6 A	1.44 A
Current - THD (coincident)	38.67%	39.31%	37.51%	414.11%

Process cycle energy 2.17 kWh

SEMI E6 Power Characterization Data - (Continued)

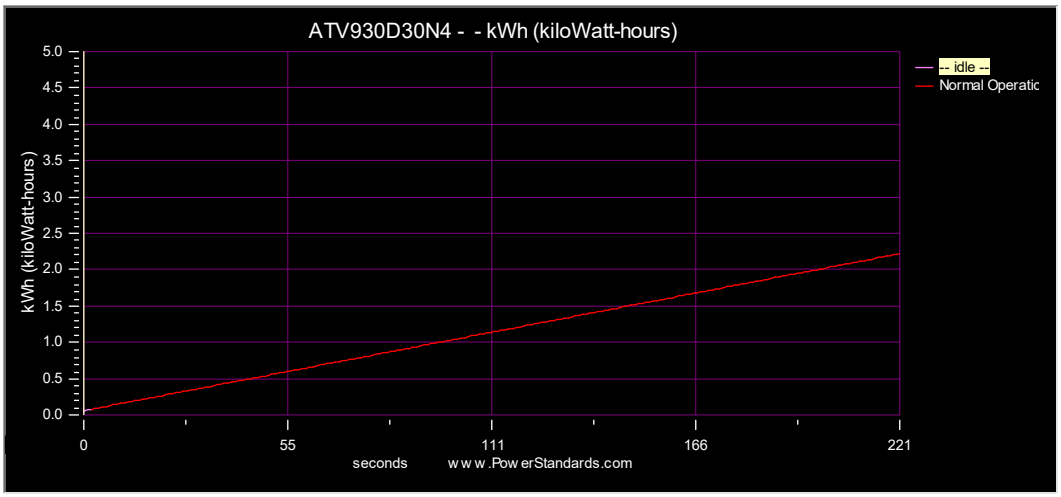


kVA - kiloVolt-Amps

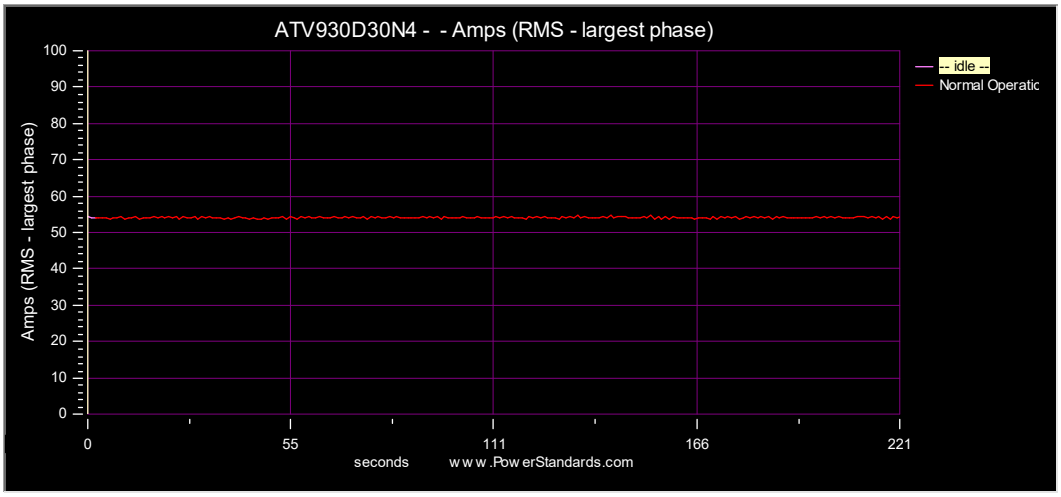


True Power Factor

SEMI E6 Power Characterization Data - (Continued)

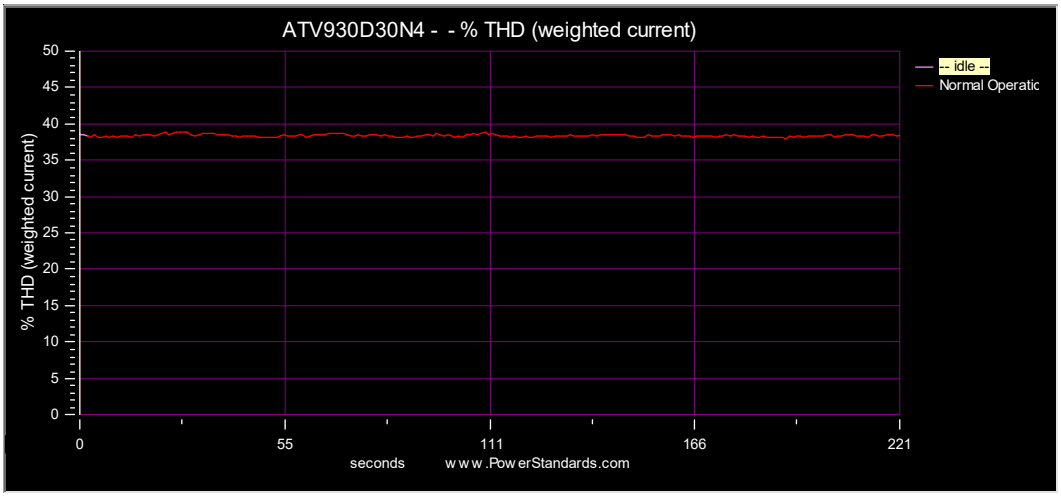


kWh - kiloWatt-hours

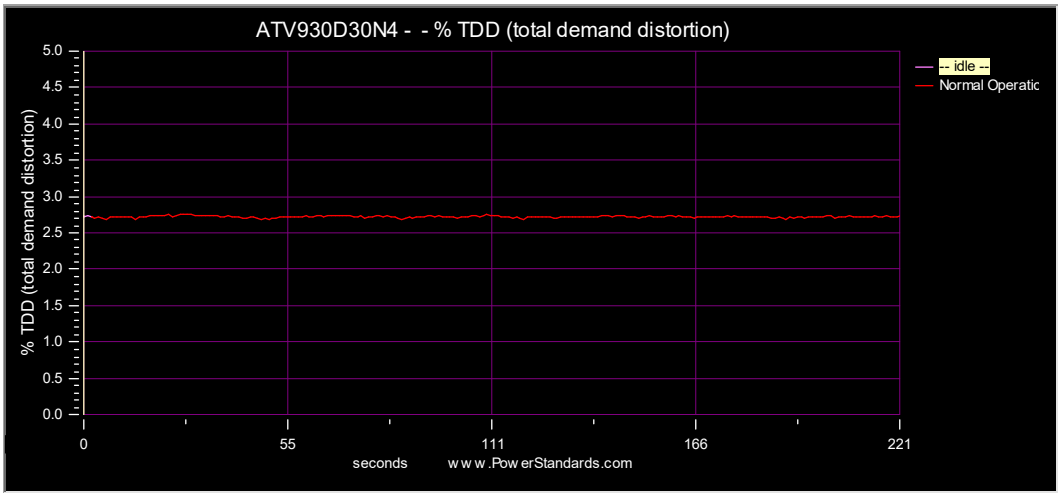


Amps - RMS - Largest phase

SEMI E6 Power Characterization Data - (Continued)

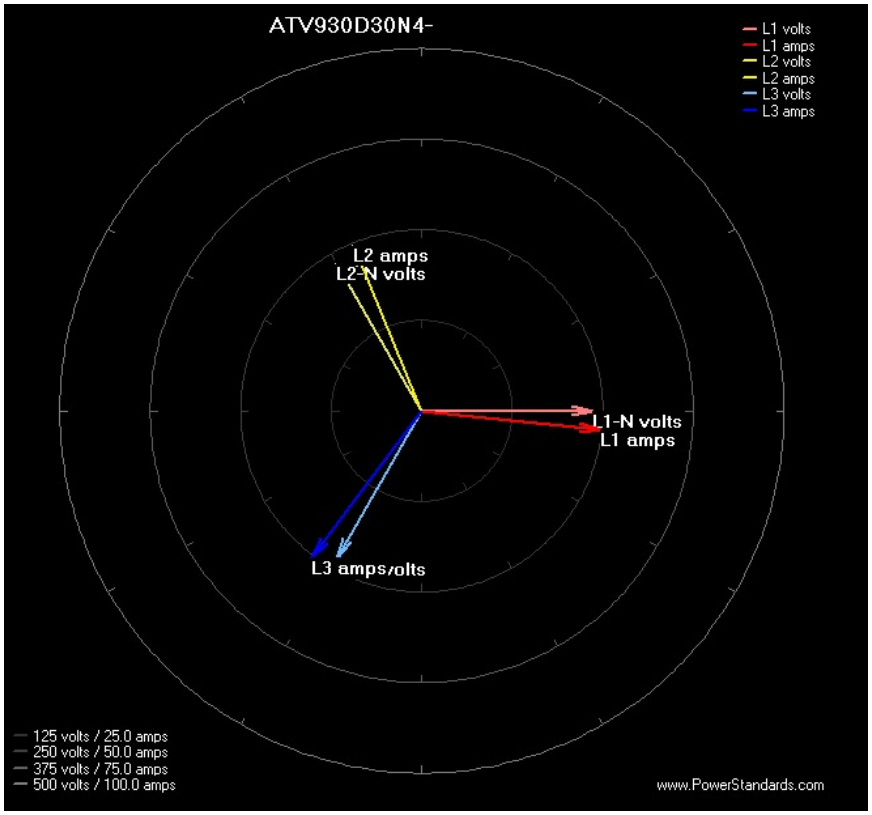


THD - Total Harmonic Distortion



TDD - Total Demand Distortion

SEMI E6 Power Characterization Data - (Continued)



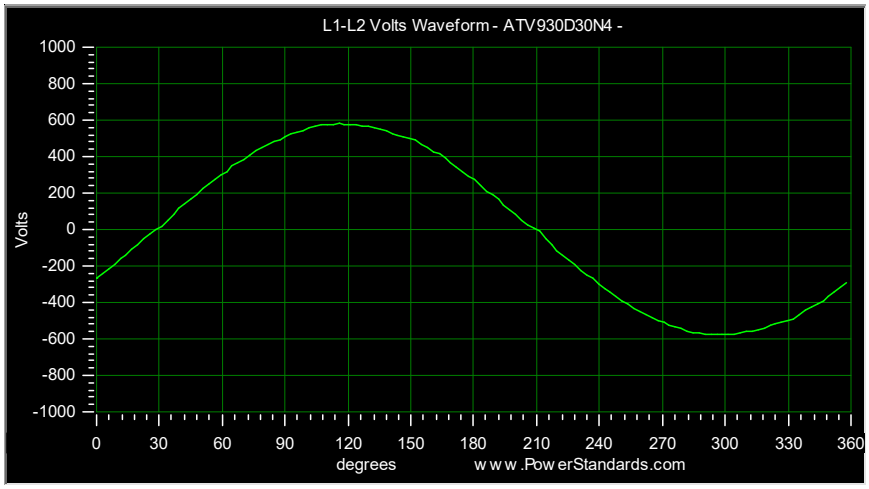
ATV930D30N4 - - Normal Operation

KiloWatts:	35.13 kW
KiloVoltAmps:	37.79 kVA
True Power Factor:	0.93 PF
Amps - largest phase:	53.79 Amps (RMS)
Amps - largest phase:	89.53 Amps (peak)
Current Crest Factor:	1.66 CF
Current Unbalance:	1.8%
Current THD (weighted):	38.3% THD

L1(fundamental) : 49.28 Amps at 353 degrees
L2(fundamental) : 50.08 Amps at 113 degrees
L3(fundamental) : 50.33 Amps at 234 degrees

L1(fundamental) : 235.7 Volts at 0 degrees
L2(fundamental) : 235.5 Volts at 120 degrees
L3(fundamental) : 235.9 Volts at 240 degrees

SEMI E6 Power Characterization Data - (Continued)



L1-L2 Volts Waveform - Altivar 930 -

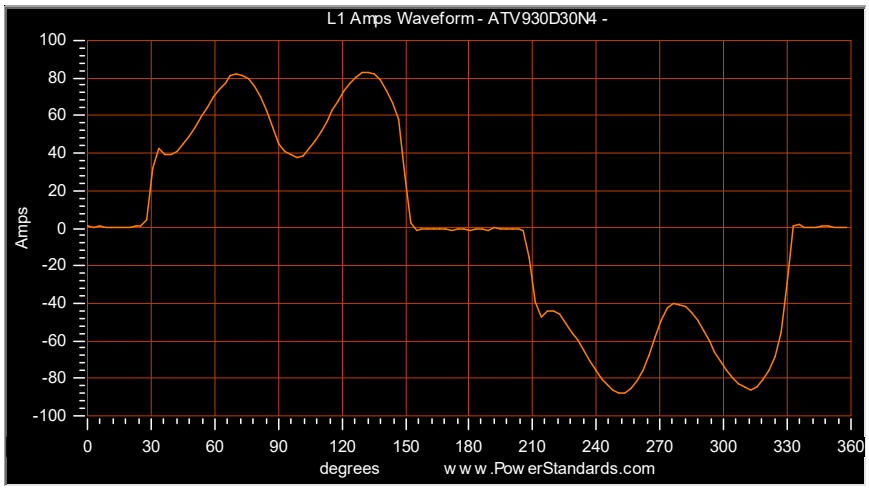
L1-L2 Volts Waveform - ATV930D30N4 -

Process step: Normal Operation

408.28 Vrms 1.00% THD

	RMS volts	sine angle		RMS volts	sine angle
====	==========	=====	====	==========	=====
Fund	408.3 Vrms	-30°	2nd	0.1 Vrms	
3rd	0.7 Vrms	154°	4th	0.1 Vrms	
5th	1.4 Vrms	18°	6th	0.2 Vrms	
7th	2.0 Vrms	39°	8th	0.2 Vrms	
9th	0.2 Vrms		10th	0.1 Vrms	
11th	0.9 Vrms	-107°	12th	0.2 Vrms	
13th	0.6 Vrms	-177°	14th	0.2 Vrms	
15th	0.2 Vrms		16th	0.2 Vrms	
17th	1.4 Vrms	50°	18th	0.1 Vrms	
19th	1.0 Vrms	24°	20th	0.0 Vrms	
21st	0.2 Vrms		22nd	0.1 Vrms	
23rd	1.4 Vrms	-150°	24th	0.1 Vrms	
25th	1.2 Vrms	170°	26th	0.1 Vrms	
27th	0.3 Vrms		28th	0.2 Vrms	
29th	0.7 Vrms	-16°	30th	0.1 Vrms	
31st	0.6 Vrms	-44°	32nd	0.1 Vrms	
33rd	0.1 Vrms		34th	0.1 Vrms	
35th	0.2 Vrms		36th	0.2 Vrms	
37th	0.4 Vrms		38th	0.2 Vrms	
39th	0.0 Vrms		40th	0.6 Vrms	-53°
41st	0.3 Vrms		42nd	0.1 Vrms	
43rd	0.3 Vrms		44th	0.7 Vrms	6°
45th	0.0 Vrms		46th	0.0 Vrms	
47th	0.3 Vrms		48th	0.1 Vrms	
49th	0.2 Vrms		50th	0.1 Vrms	

SEMI E6 Power Characterization Data - (Continued)



L1 Amps Waveform - Altivar 930 -

L1 Amps Waveform - ATV930D30N4 -

Process step: Normal Operation

52.76 Arms 38.29% THD

	RMS amps	sine angle		RMS amps	sine angle
Fund	49.3 Arms	-64°	2nd	1.1 Arms	19°
3rd	0.4 Arms		4th	0.4 Arms	
5th	16.2 Arms	-159°	6th	0.0 Arms	
7th	7.4 Arms	179°	8th	0.3 Arms	
9th	0.1 Arms		10th	0.2 Arms	
11th	4.0 Arms	48°	12th	0.1 Arms	
13th	2.6 Arms	-46°	14th	0.3 Arms	
15th	0.1 Arms		16th	0.2 Arms	
17th	2.3 Arms	-135°	18th	0.0 Arms	
19th	1.7 Arms	108°	20th	0.3 Arms	
21st	0.1 Arms		22nd	0.2 Arms	
23rd	1.5 Arms	34°	24th	0.0 Arms	
25th	1.2 Arms	-88°	26th	0.2 Arms	
27th	0.1 Arms		28th	0.1 Arms	
29th	1.1 Arms	-156°	30th	0.0 Arms	
31st	0.8 Arms	81°	32nd	0.1 Arms	
33rd	0.1 Arms		34th	0.1 Arms	
35th	0.8 Arms	16°	36th	0.1 Arms	
37th	0.6 Arms	-109°	38th	0.1 Arms	
39th	0.1 Arms		40th	0.2 Arms	
41st	0.6 Arms	-171°	42nd	0.1 Arms	
43rd	0.5 Arms		44th	0.1 Arms	
45th	0.1 Arms		46th	0.1 Arms	
47th	0.4 Arms		48th	0.0 Arms	
49th	0.3 Arms		50th	0.1 Arms	

Table 1: Sag Immunity Test Results

File	Date / Time	Phase	Amplitude	Duration	Angle	Result	Comments
power001.csv	1/30/2018 2:17						
disturbance001.csv	1/30/2018 2:24	L1-L2	50.00%	10.0 cyc	0 deg	PASS	Drive running well
disturbance002.csv	1/30/2018 2:27	L1-L2	70.00%	25.0 cyc	0 deg	PASS	Small torque oscillation, but drive running well
disturbance003.csv	1/30/2018 2:29	L1-L2	80.00%	50.0 cyc	0 deg	Data only	
disturbance004.csv	1/30/2018 2:32	L1-L2	80.00%	50.0 cyc	0 deg	PASS	Drive perfroming as expected
disturbance005.csv	1/30/2018 2:33	L2-L3	50.00%	10.0 cyc	0 deg	PASS	Drive running OK
disturbance006.csv	1/30/2018 2:34	L2-L3	70.00%	25.0 cyc	0 deg	PASS	No problems
disturbance007.csv	1/30/2018 2:38	L2-L3	80.00%	50.0 cyc	0 deg	PASS	Continuing to run
disturbance008.csv	1/30/2018 2:40	L3-L1	50.00%	10.0 cyc	0 deg	PASS	Drive running well
disturbance009.csv	1/30/2018 2:41	L3-L1	70.00%	25.0 cyc	0 deg	PASS	OK
disturbance010.csv	1/30/2018 2:43	L3-L1	80.00%	50.0 cyc	0 deg	PASS	Running great with a slight drop in torque
	1/30/2018 2:44						Passed Mandatory SEMI F47
disturbance011.csv	1/30/2018 2:45	L1-L2	0% highZ	1.0 cyc	0 deg	PASS	Drive running normally
disturbance012.csv	1/30/2018 2:46	L1-L2	80.00%	10.0 sec	0 deg	PASS	OK
disturbance012.csv	1/30/2018 2:48	L1-L2	80.00%	10.0 sec	0 deg	PASS	OK
disturbance013.csv	1/30/2018 2:50	L1-L2	90.00%	15.0 sec	0 deg	PASS	Running OK
disturbance014.csv	1/30/2018 2:51	L2-L3	0% highZ	1.0 cyc	0 deg	PASS	Drive running normally
disturbance015.csv	1/30/2018 2:54	L2-L3	80.00%	10.0 sec	0 deg	PASS	Drive running as expected
disturbance016.csv	1/30/2018 2:56	L2-L3	90.00%	15.0 sec	0 deg	PASS	No problems with drive operation
disturbance017.csv	1/30/2018 2:57	L3-L1	0% highZ	1.0 cyc	0 deg	PASS	OK
disturbance018.csv	1/30/2018 2:58	L3-L1	80.00%	10.0 sec	0 deg	Data only	Running well
disturbance019.csv	1/30/2018 3:01	L3-L1	90.00%	15.0 sec	0 deg	PASS	OK

Recommendations:

The Altivar 930 tool performed well and no further recommendations from PSL

Conclusions:

The Altivar 930 complies with all Mandatory and Recommended SEMI F47-0706 voltage sag testing requirements.

Mark Richter 30th January 2018
Power Standards Lab
http://www.PowerStandards.com

Note.

The complete dataset for this test and report will be made available upon request.

Models covered by this report (list provided by Schneider):

Manufacturer declaration

The manufacturer states this VFD represents the series of ATV x30 drives that follow the same hardware design criteria with software and enclosure differences as noted below;

ATV630 for Fluid & gas handling application
ATV930 for Solid & mechanics movement application
Same rule for ATVx50
ATVx30 IP20 enclosure
ATVx50 same product but in IP55 enclosure

Reference (1)	Supply Voltage	Motor Power	IP
ATV630U07N4	380-480V Three Phase	0,75 kW	21
ATV630U15N4	380-480V Three Phase	1,5 kW	21
ATV630U22N4	380-480V Three Phase	2,2 kW	21
ATV630U30N4	380-480V Three Phase	3 kW	21
ATV630U40N4	380-480V Three Phase	4 kW	21
ATV630U55N4	380-480V Three Phase	5,5 kW	21
ATV630U75N4	380-480V Three Phase	7,5 kW	21
ATV630D11N4	380-480V Three Phase	11 kW	21
ATV630D15N4	380-480V Three Phase	15 kW	21
ATV630D18N4	380-480V Three Phase	18 kW	21
ATV630D22N4	380-480V Three Phase	22 kW	21
ATV630D30N4	380-480V Three Phase	30 kW	21
ATV630D37N4	380-480V Three Phase	37 kW	21
ATV630D45N4	380-480V Three Phase	45 kW	21
ATV630D55N4	380-480V Three Phase	55 kW	21
ATV630D75N4	380-480V Three Phase	75 kW	21
ATV630D90N4	380-480V Three Phase	90 kW	21
ATV630C11N4	380-480V Three Phase	110 kW	21
ATV630C13N4	380-480V Three Phase	130 kW	21
ATV630C16N4	380-480V Three Phase	160 kW	21
ATV630C22N4	380-480V Three Phase	220 kW	21
ATV630C25N4	380-480V Three Phase	250 kW	21
ATV630C31N4	380-480V Three Phase	315 kW	21

(1) May be followed by 1 to 3 character

Reference (1)	Supply Voltage	Motor Power	IP
ATV650U07N4	380-480V Three Phase	0,75 kW	55
ATV650U15N4	380-480V Three Phase	1,5 kW	55
ATV650U22N4	380-480V Three Phase	2,2 kW	55
ATV650U30N4	380-480V Three Phase	3 kW	55
ATV650U40N4	380-480V Three Phase	4 kW	55
ATV650U55N4	380-480V Three Phase	5,5 kW	55
ATV650U75N4	380-480V Three Phase	7,5 kW	55
ATV650D11N4	380-480V Three Phase	11 kW	55
ATV650D15N4	380-480V Three Phase	15 kW	55
ATV650D18N4	380-480V Three Phase	18 kW	55
ATV650D22N4	380-480V Three Phase	22 kW	55
ATV650D30N4	380-480V Three Phase	30 kW	55
ATV650D37N4	380-480V Three Phase	37 kW	55
ATV650D45N4	380-480V Three Phase	45 kW	55
ATV650D55N4	380-480V Three Phase	55 kW	55
ATV650D75N4	380-480V Three Phase	75 kW	55
ATV650D90N4	380-480V Three Phase	90 kW	55

Reference (1)	Supply Voltage	Motor Power	IP
ATV650U07N4E	380-480V Three Phase	0,75 kW	55
ATV650U15N4E	380-480V Three Phase	1,5 kW	55
ATV650U22N4E	380-480V Three Phase	2,2 kW	55
ATV650U30N4E	380-480V Three Phase	3 kW	55
ATV650U40N4E	380-480V Three Phase	4 kW	55
ATV650U55N4E	380-480V Three Phase	5,5 kW	55
ATV650U75N4E	380-480V Three Phase	7,5 kW	55
ATV650D11N4E	380-480V Three Phase	11 kW	55
ATV650D15N4E	380-480V Three Phase	15 kW	55
ATV650D18N4E	380-480V Three Phase	18 kW	55
ATV650D22N4E	380-480V Three Phase	22 kW	55
ATV650D30N4E	380-480V Three Phase	30 kW	55
ATV650D37N4E	380-480V Three Phase	37 kW	55
ATV650D45N4E	380-480V Three Phase	45 kW	55
ATV650D55N4E	380-480V Three Phase	55 kW	55
ATV650D75N4E	380-480V Three Phase	75 kW	55
ATV650D90N4E	380-480V Three Phase	90 kW	55

Reference (1)	Supply Voltage	Motor Power	IP
ATV930U07N4	380-480V Three Phase	0,75 kW	21
ATV930U15N4	380-480V Three Phase	1,5 kW	21
ATV930U22N4	380-480V Three Phase	2,2 kW	21
ATV930U30N4	380-480V Three Phase	3 kW	21
ATV930U40N4	380-480V Three Phase	4 kW	21
ATV930U55N4	380-480V Three Phase	5,5 kW	21
ATV930U75N4	380-480V Three Phase	7,5 kW	21
ATV930D11N4	380-480V Three Phase	11 kW	21
ATV930D15N4	380-480V Three Phase	15 kW	21
ATV930D18N4	380-480V Three Phase	18 kW	21
ATV930D22N4	380-480V Three Phase	22 kW	21
ATV930D30N4	380-480V Three Phase	30 kW	21
ATV930D37N4	380-480V Three Phase	37 kW	21
ATV930D45N4	380-480V Three Phase	45 kW	21
ATV930D55N4	380-480V Three Phase	55 kW	21
ATV930D75N4	380-480V Three Phase	75 kW	21
ATV930D90N4	380-480V Three Phase	90 kW	21
ATV930C22N4	380-480V Three Phase	220 kW	21
ATV930D55N4C	380-480V Three Phase	55 kW	21
ATV930D75N4C	380-480V Three Phase	75 kW	21
ATV930D90N4C	380-480V Three Phase	90 kW	21
ATV930C11N4C	380-480V Three Phase	110 kW	21
ATV930C13N4C	380-480V Three Phase	130 kW	21
ATV930C16N4C	380-480V Three Phase	160 kW	21
ATV930C22N4C	380-480V Three Phase	220 kW	21
ATV930C25N4C	380-480V Three Phase	250 kW	21
ATV930C31N4C	380-480V Three Phase	315 kW	21

Reference (1)	Supply Voltage	Motor Power	IP
ATV950U07N4	380-480V Three Phase	0,75 kW	55
ATV950U15N4	380-480V Three Phase	1,5 kW	55
ATV950U22N4	380-480V Three Phase	2,2 kW	55
ATV950U30N4	380-480V Three Phase	3 kW	55
ATV950U40N4	380-480V Three Phase	4 kW	55
ATV950U55N4	380-480V Three Phase	5,5 kW	55
ATV950U75N4	380-480V Three Phase	7,5 kW	55
ATV950D11N4	380-480V Three Phase	11 kW	55
ATV950D15N4	380-480V Three Phase	15 kW	55
ATV950D18N4	380-480V Three Phase	18 kW	55
ATV950D22N4	380-480V Three Phase	22 kW	55
ATV950D30N4	380-480V Three Phase	30 kW	55
ATV950D37N4	380-480V Three Phase	37 kW	55
ATV950D45N4	380-480V Three Phase	45 kW	55
ATV950D55N4	380-480V Three Phase	55 kW	55
ATV950D75N4	380-480V Three Phase	75 kW	55
ATV950D90N4	380-480V Three Phase	90 kW	55

Reference (1)	Supply Voltage	Motor Power	IP
ATV950U07N4E	380-480V Three Phase	0,75 kW	55
ATV950U15N4E	380-480V Three Phase	1,5 kW	55
ATV950U22N4E	380-480V Three Phase	2,2 kW	55
ATV950U30N4E	380-480V Three Phase	3 kW	55
ATV950U40N4E	380-480V Three Phase	4 kW	55
ATV950U55N4E	380-480V Three Phase	5,5 kW	55
ATV950U75N4E	380-480V Three Phase	7,5 kW	55
ATV950D11N4E	380-480V Three Phase	11 kW	55
ATV950D15N4E	380-480V Three Phase	15 kW	55
ATV950D18N4E	380-480V Three Phase	18 kW	55
ATV950D22N4E	380-480V Three Phase	22 kW	55
ATV950D30N4E	380-480V Three Phase	30 kW	55
ATV950D37N4E	380-480V Three Phase	37 kW	55
ATV950D45N4E	380-480V Three Phase	45 kW	55
ATV950D55N4E	380-480V Three Phase	55 kW	55
ATV950D75N4E	380-480V Three Phase	75 kW	55
ATV950D90N4E	380-480V Three Phase	90 kW	55

END OF TEST REPORT