

# Preventive maintenance Galaxy 7000

March, 03 2020, Annual visit



Customer		Customer Ref. :	
Customer Company	:		
Site contact name	:	Geir Almquist	Site contact Tel :
Site contact email	:		
Site company	:	Digiplex Norway AS - Ulvenveien	
Site address	:	Selma Ellefsens vei 1, 0581 Oslo	
Site country	:	NO	Customer account :
Room name	:	Digiplex Norway As - System E	

Field Service Engineer		Service Request # / Activity : / WO-07646508	
FSE name	:	Asbjørn Fjeldberg Ranheim	Service District : OSLO
FSE address	:	Sandstuveien 68	

Visit results
Byttet vifter, filterkort, RC, DC og AC inngangskondensator. UPS ble rengjort og støvsugd når alle delene var tatt ut.

(FSE) Recommendations / required actions

Signature	
Customer signature	Schneider Electric signature
Geir Almquist	Asbjørn Fjeldberg Ranheim



Equipment data		Customer Ref. :	
Equipment concerned	: Galaxy 7000	Install/Startup date	: November, 25 2010
UPS Power Rating	: 400 kVA	Serial number	: 2Q4K52002001
Phase Type	: 3:3	Configuration	: Parallel W/ Static ByPass
Unit number within parallel system	: 1 / 5		
Designed backup time	: 30 min		
Number of battery	: 2 x 17	Battery date code	: 2018

Main Information		
Room & environmental conditions	UPS	Battery
<p>20 °C</p>	<p>17.80%</p>	<p>25 °C</p>
Ambient temperature	Load percentage	Battery ambient temperature
	Used kVA : 71.04	
	Equipment age : 9 years, 3 months, 16 days	








Visit data		Customer Ref. :	
Service Request # / Activity : / WO-07646508			
Work time start	: March, 03 2020 09:19	Work time end	: March, 03 2020 09:19
Entitlement#	: (1) Year Advantage Ultra Service	Entitlement name	:
Account ID	:	ISX Solution	:

## Parts Installed

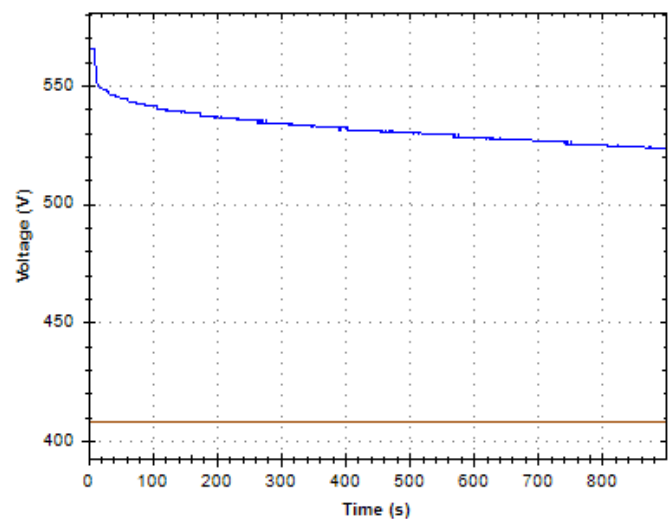
Part	Description	SKU #	Qty
0J-490-0107SE	FAN AC AXIAL 150X172MM - SPARE PART		23
34020434SE	CAPACITOR KIT + BUS 2 -SPARE PART		1
34020438SE	AC CAPACITOR KIT INPUT 2 - SPARE PART		1
1CAP006184SE	CAP AC ETOILE RC30UF/330VAC-KIT OF 3CAPS		1
0J-0P3083GB	BOARD GALAXY7000 FIAT		3

## Lifecycle Indicator

## Parts replacement schedule

Part	2024	2025	2026	2027	2028	2029	2030
 Supply board	✓						
 DC capacitors		✓					
 Fans		✓					
 AC capacitors output					✓		
 Battery					✓		
 AC capacitors input							✓
 RC capacitors							✓

Battery discharge curve

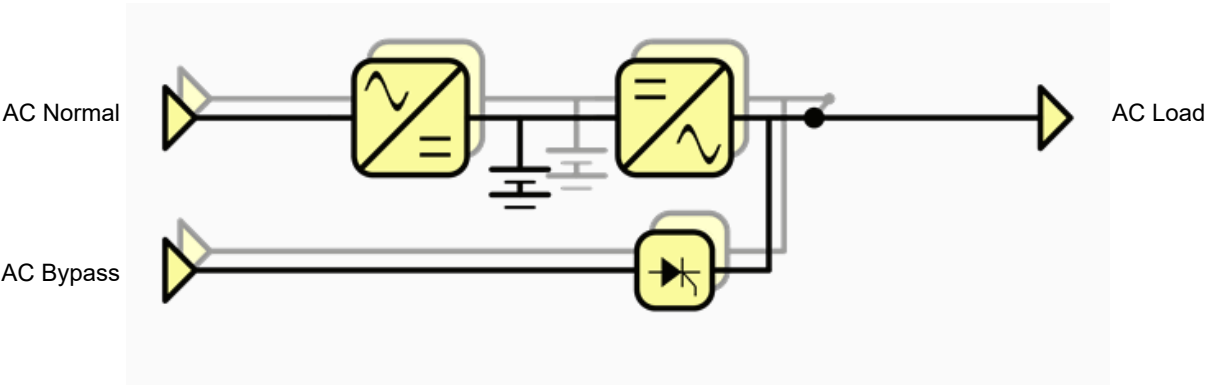


## Synthesis page

Checks carried out	Status when leaving	Comments
Personalization	●	
<b>System Room Check</b>		
Room & Environment Check	●	
Auxiliary cubicles	●	
Battery characteristics	●	
<b>System Check</b>		
Unit & System Inspection	●	
Low Voltage Option Inspection	●	
Classic Battery Solution Inspection	●	Classic Battery Solution Inspection : MN coil er monteret i batteribryter som sitter i eget kabinett. Mx coil i batteibryterne på Li-Ion kabinett Samsung Li-Ion kabinetter Minor alarm signal fra batterikabinett ble testet.
Communication options	●	
<b>Unit Functional Check</b>		
Initial Functional Check	●	
Unit Source transfer	●	
<b>AC measurements</b>		
Power measurement	●	
<b>Current measurements</b>		
AC Load	●	
AC Normal	●	
<b>Voltage measurements</b>		
AC Normal	●	
AC Bypass	●	
AC Load	●	
<b>DC measurements</b>		
<b>Charger and battery voltage</b>		
Charger voltage	●	
<b>Battery discharge curve</b>		
Via system serial port / USB port	●	
Calibration	●	
Battery Check	●	
Communication Option Check	●	
<b>Service and parts</b>		
Parts swap	●	
Parts with life duration	●	
<b>Final Inspection</b>		
Final Inspection	●	
Comments	●	

Maintenance summary

Installation configuration



Comments

Customer  
No comment

Customer issues

Customer  
No comment

Schneider Electric  
No comment

List of measurement devices

Device type	Device model	Serial number	Last calibration date
Oscilloscope	Fluke 43B	26260411	02 July 2018
Multimeter	Fluke 223	27550050	02 July 2018

# 1 Personalization

## UPS Parameters

UPS Type	Modular
UPS automatic start	Forbidden
Number of automatic starts after a limitation	3
Transfer counter resetting duration	4 s
Rate of synchronization with AC Bypass source	1 Hz/s
Transfer to AC Bypass	Always
Transfer to AC Bypass when AC Bypass is out of tolerance	Allocated
UPS output rated frequency	50 Hz
Remote command enabled	No
UPS rated power	400 kVA
UPS output rated voltage	400 V
Break duration	100 ms
Presence Q3BP external	Yes
Presence Q5N external	Yes
Loss of redundancy control	Yes
Equipment number	1
Minimum number of inverter ready for coupling	2
Load transformer presence	No
Load input voltage transformer	400 V
Load output voltage transformer	400 V
Presence Q5N customer	Yes
Number of UPS in redundancy	0
EBM low power level	80 %
EBM high power level	90 %
Maximum operating time in Power Saving Mode	10 Day(s)
Efficiency Booster Mode	No
Local contact name	Schneider Electric
Address	Sandstuveien 68
Phone number	23005585
Fax number	
Local contact e-mail	<a href="http://lcm.apc.com">http://lcm.apc.com</a>
Warranty Contract number	warranty
UPS serial number	2Q4K52002001

## AC Input parameters

PFC Max current on Genset	587 A
Maximal battery charging current on Genset	14 A
Temporization before PFC restart	5 s
AC Normal transformer presence	No
AC Normal input voltage transformer	400 V
AC Normal output voltage transformer	400 V

## AC Bypass parameters

External synchronization source	No
AC Bypass frequency threshold tolerance	8 %
External frequency threshold tolerance	8 %
AC Bypass Static Switch operation when EPO	Closed
External frequency	50 Hz
AC Bypass transformer presence	No
AC Bypass input voltage transformer	400 V
AC Bypass output voltage transformer	400 V

## Battery parameters

Interval between 2 Battery tests	0 Day(s)
Low battery warning remaining time	5 Mn
Battery breaker count	1
Battery type	3
Nominal battery charging duration	12 Hour(s)
Enable battery temperature adjustments	No
Battery cell floating voltage reference	2.27 V
Battery cell charging voltage reference	4.2 V
Battery cell equalization voltage reference	2.27 V

Battery present	Yes
Battery nominal backup time	10 Mn
Expected service life	120 Month(s)
Battery string number	2
Battery cell per block	8
Battery block capacity	67 Ah
Coeff backup time pre-alarm voltage	20 %
Battery current charge coefficient	0.3
Battery minimum operation time	5 s
Battery undertemperature threshold	0 °C
Battery overtemperature threshold	40 °C
Battery temperature sensor	Not present
Minimum Battery voltage threshold to detect end of autonomy (NiCd only)	3.1 V
Low battery warning voltage threshold (NiCd only)	3.22 V
Battery test stop voltage (NiCd only)	1.05 V
Max duration of battery test in discharge (NiCd only)	30 Mn
Battery block per string	17
Battery manual test	No

## LCM parameters

End of legal warranty	120 Month(s)
End of AC capacitor service life	120 Month(s)
End of DC capacitor service life	60 Month(s)
End of Fan service life	60 Month(s)
End of Supply service life	84 Month(s)
End of Battery service life	48 Month(s)
Number of time a message is repeated	0
Repeated message time for LCM	0 Day(s)
Time window start for services functions	09:00:00
Time window end for services functions	10:00:00

## Statistics

Running on autonomy time since startup	0 Hour(s)
Running on autonomy time since reset	0 Mn
Running on autonomy duration < 3 mn occurrence since reset	0
Running on autonomy duration >= 3 mn occurrence since reset	0
Running on AC bypass since startup	1 Hour(s)
Running on AC bypass time since reset	0 Mn
Running on AC bypass occurrence since reset	0
AC bypass out of tolerance time since startup	0 Hour(s)
AC bypass out of tolerance time since reset	0 Mn
AC bypass out of tolerance occurrence since reset	0
Battery temperature over 25°C time since startup	0 Hour(s)
Battery temperature over 25°C time since reset	0 Mn
Battery temperature over 25°C occurrence since reset	0
Running on Online time since startup	194 Day(s)
Running on Online time since reset	20 Hour(s)
Running on overload duration < 5s occurrence since reset	0
Running on overload duration >= 5s occurrence since reset	0
Battery temperature average last 5 days since reset	25 °C
UPS ambient temperature average last 5 days since reset	17 °C
Load rate average last 5 days since last reset	17 %
Last reset statistics date and time	03/02/2020 14:00:32
Running time in Power Saving Mode since commissioning	0 Day(s)
Running time in Power Saving Mode since maintenance reset	0 Hour(s)
% of operation time in Power Saving Mode since commissioning	0 %
% of operation time in Power Saving Mode since maintenance reset	0 %
Entering into Power Saving Mode count since maintenance reset	0

## Out of limits

Out of limit signaling	Active
Repeated message time for out of limit event	0 Day(s)
Running on autonomy duration > 3 mn threshold	10
AC bypass out of tolerance threshold	24 Hour(s)
Running on overload duration > 20s threshold	3
Battery temperature threshold	25 °C
UPS ambient temperature threshold	35 °C



Load rate threshold	80 %
Running on autonomy duration > 3 mn warning display	No
AC bypass out of tolerance warning display	Yes
Running on overload duration > 20s warning display	Yes
Battery temperature warning display	Yes
UPS ambient temperature warning display	Yes
Load rate warning display	Yes

### AC input measurements

AC normal voltage U1-N	237 V
AC normal voltage U2-N	236 V
AC normal voltage U3-N	237 V
AC normal power ph1	23 kW
AC normal power ph2	22 kW
AC normal power ph3	22 kW
AC normal current ph1	96 A
AC normal current ph2	95 A
AC normal current ph3	96 A
AC Normal frequency	49.9 Hz
AC Normal voltage phase-phase U1-2	410 V
AC Normal voltage phase-phase U2-3	409 V
AC Normal voltage phase-phase U3-1	410 V

### AC bypass measurement

AC bypass voltage U1-N	237 V
AC bypass voltage U2-N	235 V
AC bypass voltage U3-N	237 V
AC bypass current ph1	0 A
AC bypass current ph2	0 A
AC bypass current ph3	0 A
AC Bypass frequency	49.9 Hz
AC Bypass voltage phase-phase U1-2	409 V
AC Bypass voltage phase-phase U2-3	410 V
AC Bypass voltage phase-phase U3-1	409 V

### AC output measurements

UPS ambient temperature	19 °C
Output voltage U1-N	231 V
Output voltage U2-N	231 V
Output voltage U3-N	231 V
Output current ph1	96 A
Output current ph2	108 A
Output current ph3	103 A
Output frequency	49.9 Hz
Output apparent power phase 1	22.3 kVA
Output apparent power phase 2	25.1 kVA
Output apparent power phase 3	23.9 kVA
Output active power phase 1	21.3 kW
Output active power phase 2	23.9 kW
Output active power phase 3	22.6 kW
Load current crest factor ph1	1.57
Load current crest factor ph2	1.54
Load current crest factor ph3	1.55
Load ratio per phase ph1	16 %
Load ratio per phase ph2	18 %
Load ratio per phase ph3	17 %
Power factor	0.95
Load ratio (%kVA)	17 %
Adjust inverter voltage reference	230.9 V
Inverter voltage phase-phase U1-2	400 V
Inverter voltage phase-phase U2-3	402 V
Inverter voltage phase-phase U3-1	402 V
Output voltage phase-phase U1-2	400 V
Output voltage phase-phase U2-3	400 V
Output voltage phase-phase U3-1	400 V
Inverter frequency	49 Hz
Load ratio (%kW)	18 %

Neutral current	26 A
Inverter voltage U1-N	233 V
Inverter voltage U2-N	232 V
Inverter voltage U3-N	231 V
Inverter current ph1	141 A
Inverter current ph2	157 A
Inverter current ph3	154 A
Installation power in KVA ph1	111.1 kVA
Installation power in KVA ph2	124.8 kVA
Installation power in KVA ph3	119.5 kVA

## Status

The family "Status" contains no item to print.

## DC Measurements

Battery temperature	25 °C
Battery voltage	565 V
Battery voltage per element	4.15 V
Battery state of charge	100 %
Battery remaining life time	102 Month(s)
Battery current	0 A
Battery backup time	1800 s
Battery maximum backup time	1800 s

## State

Inverter status	Active
PFC status	Active
Battery circuit breaker(s)	Active
UPS coupled	Yes
Battery circuit breaker 1	Active
Battery charge completed	No
Battery equalization in progress	No
Battery test	Inactive
Battery operational	Active
Forbidden AC Bypass transfer	No
Load powered	Yes
Genset current limitation state	No
Transfer to AC Bypass for a parallel installation (globalization)	Redundancy
Limit the battery charging current on GENSET	No
Limit input power on GENSET	No
Load protected	Yes
Environment fault	No
Inverter use the external synchronization source	No
Low Battery for genset current limitation	Inactive
Charger disabled by battery charging current limitation on genset	Inactive

## State of switches

Q3BP switch	Inactive
Q4S switch	Active
Q5N switch	Active
Q1 switch	Active
Q5N customer	Active
External Q5N switch	Active
External Q3BP switch	Inactive

## Dry contact relay

COSIT - Input 1 configuration	Battery major fault from BMS
COSIT - Input 2 configuration	Battery minor fault from BMS
COSIT - Input 3 configuration	Charger stop command from BMS
COSIT - Input 4 configuration	Unused
COSIT - Output 1 configuration	General alarm
COSIT - Output 1 temporization	5 ms
COSIT - Output 2 configuration	Load on AC Bypass
COSIT - Output 2 temporization	5 ms
COSIT - Output 3 configuration	Load on battery

COSIT - Output 3 temporization	5 ms
COSIT - Output 4 configuration	Load on inverter
COSIT - Output 4 temporization	5 ms
COSIT - Output 5 configuration	Load on AC Bypass
COSIT - Output 5 temporization	0 ms
COSIT - Output 6 configuration	Unused
COSIT - Output 6 temporization	0 ms
Custom alarm 1 configuration	Custom alarm 1
Custom alarm 2 configuration	Custom alarm 2
Custom alarm 3 configuration	Custom alarm 3
Custom alarm 4 configuration	Custom alarm 4

### Defaults

The family "Defaults" contains no item to print.

## 2 System Room Check

### 2.1 Room & Environment Check

#### Battery Check

Battery Location	Same as equipment room
Conditions of battery have been checked	Satisfactory

#### Equipment

List/Verify all auxiliary cabinets as part of the system	System E består av 5 stk G7k 400kVA med Li-ion batterier. Alle enheter har eksterne inn og utgangsbrytere i tavle
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#### Unit Room Condition

Customer Room Designation	Digiplex Norway As - System E	
The environment of the equipment is suitable for service operation	Yes	
The general appearance and cleanliness of the room are acceptable	Satisfactory	
Identify the type of room	Electrical Room	Tavle/UPS rom
Type and efficiency of ventilation used in the room	By air-conditioning	Satisfactory
Measure Room Temperature	20 °C	Satisfactory

#### Grounding

Grounding system of the installation	Yes
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### 2.2 Auxiliary cubicles

AC Bypass isolation type	None	
Maintenance bypass panel	Adjacent	Yes
Transformer	No	
Additional transformer	No	
System bypass panel	Yes	
Harmonic filter	No	
Battery breaker box	Yes	
Upstream switchgear	Yes	
Downstream switchgear	Yes	
Distribution cabinet	Yes	

#### Visual check

Cubicles visual check	Satisfactory
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## 2.3 Battery characteristics

Battery capacity	67 Ah
Quantity of battery blocks per strings	17
Type of battery block	12 V
Quantity of battery cells (2V/Cell) per string	136
Quantity of battery strings	2
Backup time	30 min
Float voltage	565 V
Open circuit voltage per cell	4.15 V
Minimum battery voltage	408 V
Ambient temperature	25 °C

## 3 System Check

### 3.1 Unit & System Inspection

#### Visual Check

Describe the system status when arriving	System on
Appearance of the exterior of the cabinets (unit and auxiliaries)	Satisfactory
Data collection and analysis has been performed	Yes
Customer acknowledge replacement of wearing parts will occur during operation	Yes

#### Internal Inspection

Components temperatures while unit is running have been checked (identify problems)	Satisfactory
Possibility to bypass units have been verified	Yes
Appearance of the interior of the cabinets (unit and auxiliaries)	Satisfactory
All cabinets (including auxiliaries) are free of foreign items	Yes
Visual inspection of the ventilation has been done	Satisfactory
Condition of boards, subassemblies and their connections	Satisfactory

#### Grounding

Grounding straps (PE) of all cabinets are present and secured.	Yes	
AC normal grounding / neutral-ground voltage	Neutral is not connected to ground	0 V
AC bypass grounding / neutral-ground voltage	Neutral is not connected to ground	0 V
AC load grounding / neutral-ground voltage	Neutral is not connected to ground	0 V

#### Breakers

Breakers of the unit are set according to Schneider specifications.	Yes
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#### Power AC capacitors control plan

An AC caps control is needed for products with commissioning date older than 3 years or with last AC caps replacement older than 3 years. Is the product is concerned ?	No
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### 3.2 Low Voltage Option Inspection

#### Remote EPO

Emergency Power Off is wired	No
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### 3.3 Classic Battery Solution Inspection

Battery type	Lithium Ion
Installation battery type	Cubicle
The MN coil is less than 5 years old	Yes

#### Grounding

Grounding straps (PE) of all Battery Cabinets are present and secured.	Yes
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#### General

Appearance of the Classic Battery Solution	Satisfactory
Direct contact of terminals between surrounding metal parts and connections is avoided	Yes
Compatibility of battery blocks has been verified	Satisfactory

#### Protection Device

Type of DC protection device	DC circuit breaker
DC protections (breakers) are compliant with Schneider recommendations	Yes
Each DC breaker device(s) include a tripping coil	MnCoil

#### Option

Battery monitoring system is present	Other
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#### Section comments

MN coil er monteret i batteribryter som sitter i eget kabinett.  
Mx coil i batteribryterne på Li-Ion kabinett  
Samsung Li-Ion kabinetter  
Minor alarm signal fra batterikabinett ble testet.

### 3.4 Communication options

Option Name	SKU ref.	Spare Part ref.	Firmware version	Level	Used
Network Management Card with Modbus/Jbus	66123				✓

## 4 Unit Functional Check

### 4.1 Initial Functional Check

#### Settings

System is set according to installation	Yes
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#### Breakers

DC protection device is operational	Yes
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### 4.2 Unit Source transfer

Customer agreement for source transfer	Yes
Test done	OK

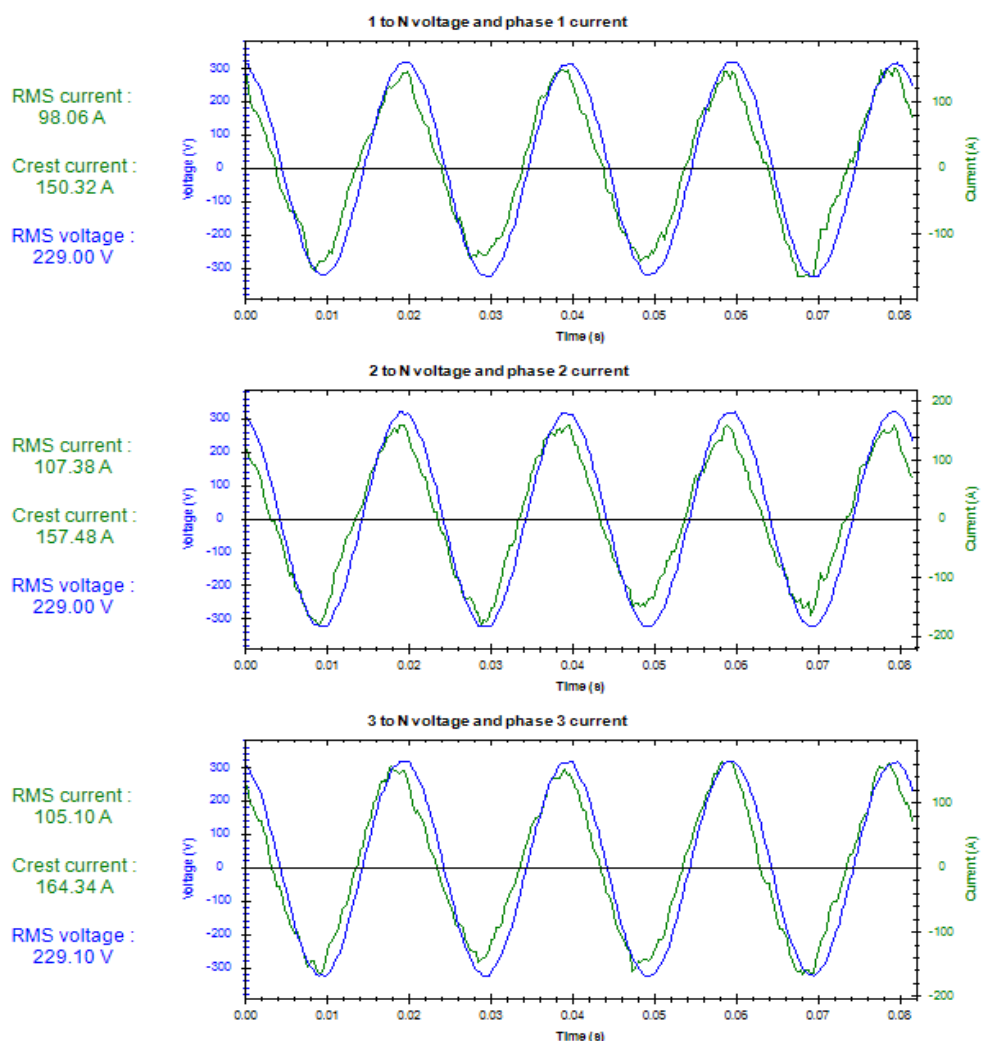
## 4.3 AC measurements

### 4.3.1 Power measurement

	S KVA	P KWatt	Q KVAR	P.F.	Cos.phi
Power util phase 1	22.45	21.62	6.04	0.96	0.97 (Leading)
Power util phase 2	24.54	23.69	6.39	0.97	0.97 (Leading)
Power util phase 3	24.06	23.08	6.79	0.96	0.97 (Leading)
Measured power	71.04	68.39	19.23	0.96	0.97 (Leading)
UPS power	400.00	360.00	174.36	0.90	
Load percentage	17.8%				

*S: apparent power - P: active power - Q: reactive power - P.F: power factor*

Measurement location	AC Load - UPS Output
Type of load	small/medium data center
Circumstances	System On with load



The power factor (PF) is the ratio between Active Power (P) and Apparent power (S):  $PF = P(kW) / S(kVA)$  The power factor takes into account the rms values of the current (fundamental + harmonics). The cos phi relates to the fundamental of the voltage and of the current.

The load supplied by the UPS (range, power) is today capacitive. The oldest range of UPS's could be downgraded with these types of load.

If presence of Genset upstream of the UPS :

-If for reasons of loss of network upstream or maintenance of the UPS, the power generating unit feeds the load directly, then it exists risks of dysfunctions of the power generating unit.

-Actually, most of the Genset have important downgrading with capacitive load. (downgrading depending of cos phi and the load rate of the UPS).

We recommend you to get in touch with your =SE= correspondant to analyse your site and to have a precise evaluation of the level of the risk according to the specifications of your installation.

4.3.2 Current measurements

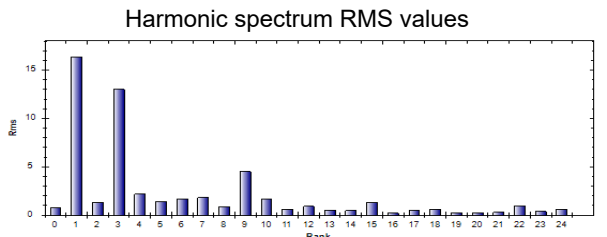
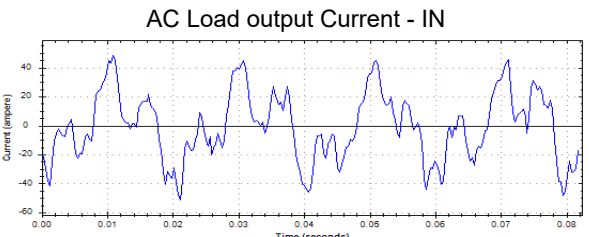
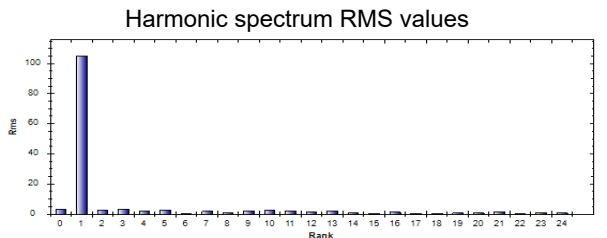
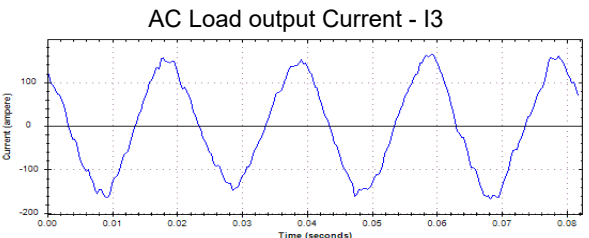
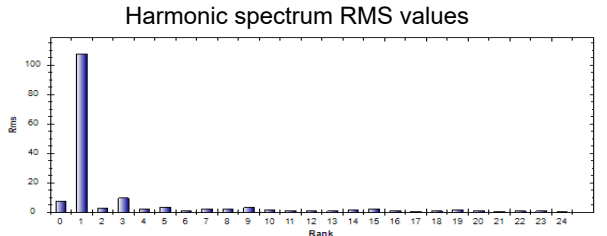
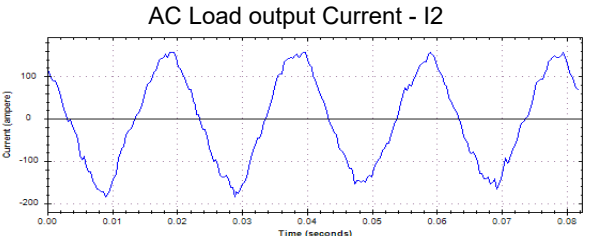
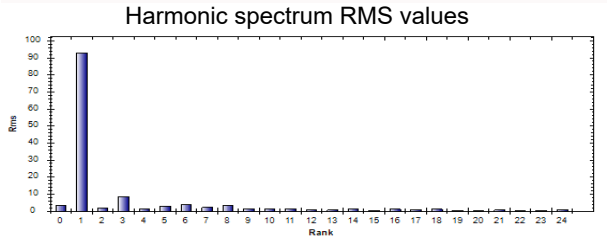
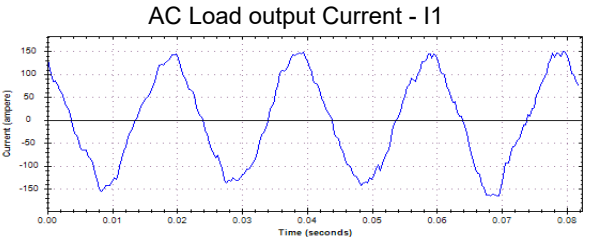
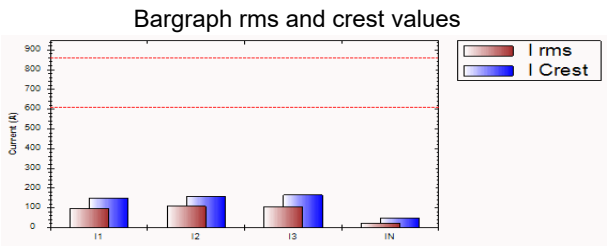
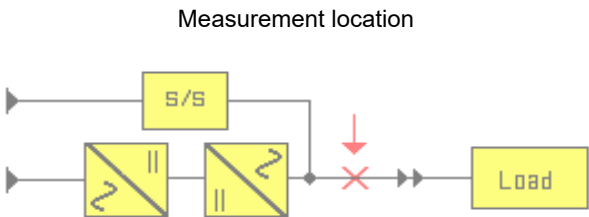
4.3.2.1 AC Load

Measurements

AC Load output Current	I1	I2	I3	IN	max	
I rms	98.10 A	107.40 A	105.10 A	23.20 A	607.74 A	Within tolerance
I Crest	150.30 A	157.50 A	164.30 A	48.60 A	859.47 A	Within tolerance
Crest factor	1.50	1.50	1.60	2.10		
frequency	50.10 Hz	50.00 Hz	50.00 Hz	50.00 Hz		
I rms fundamental	92.98 A	107.56 A	105.13 A	16.38 A		
harmonic distortion THD-f	12.20%	11.30%	7.60%	89.20%		
harmonic distortion THD-rms	12.13%	11.16%	7.53%	66.52%		

Type of load	small/medium data center
Circumstances	System On with load

Waveforms and harmonic spectrum



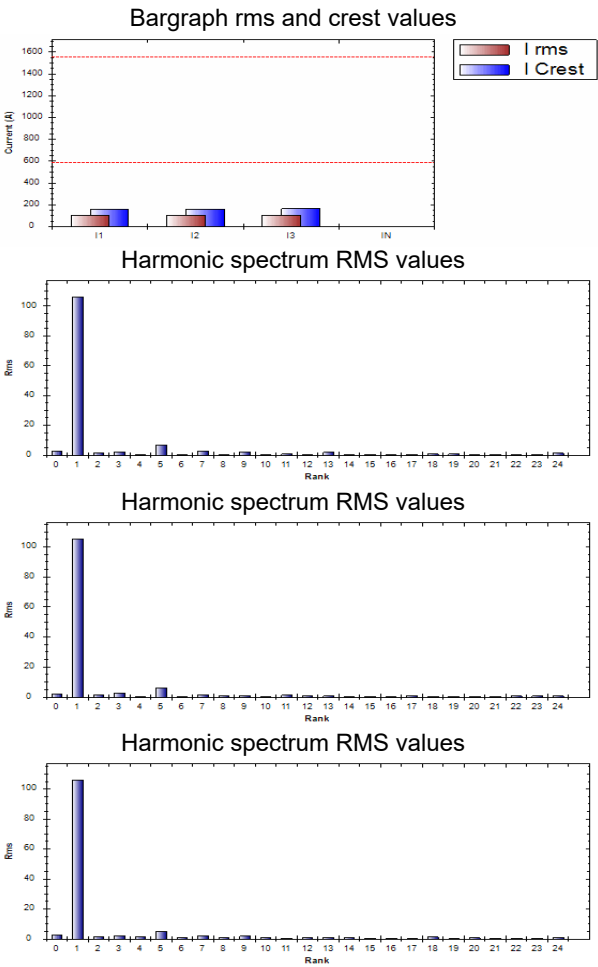
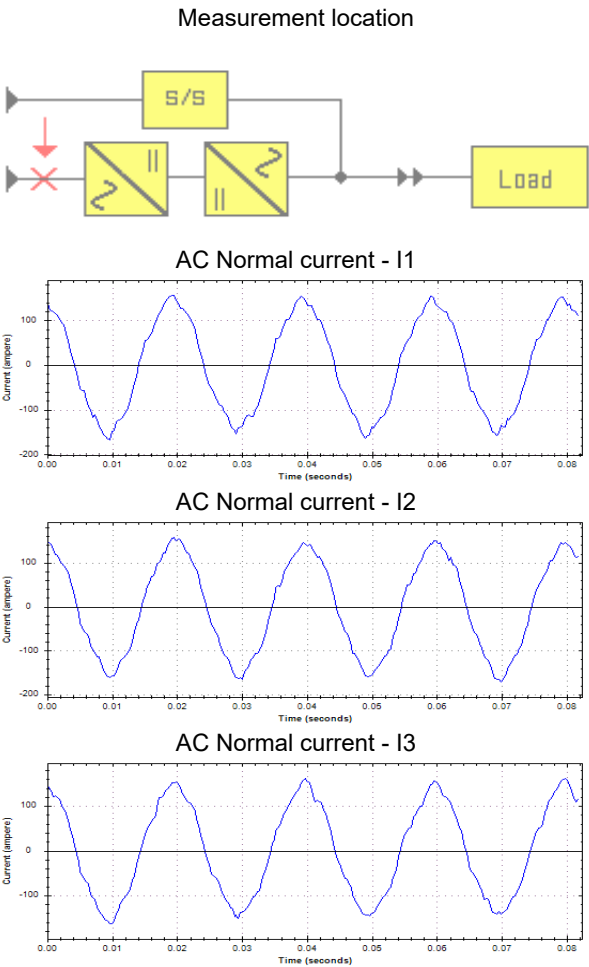
4.3.2.2 AC Normal

Measurements

AC Normal current	I1	I2	I3	max	
I rms	104.10 A	105.30 A	104.60 A	587.00 A	Within tolerance
I Crest	156.30 A	158.30 A	162.30 A	1,555.00 A	Within tolerance
Crest factor	1.50	1.50	1.60		
frequency	50.10 Hz	50.00 Hz	50.00 Hz		
I rms fundamental	106.23 A	105.40 A	106.09 A		
harmonic distortion THD-f	8.00%	7.30%	6.80%		
harmonic distortion THD-rms	7.95%	7.25%	6.78%		

Type of load	small/medium data center
Circumstances	System On with load
Upstream active filter	None

Waveforms and harmonic spectrum





4.3.3 Voltage measurements

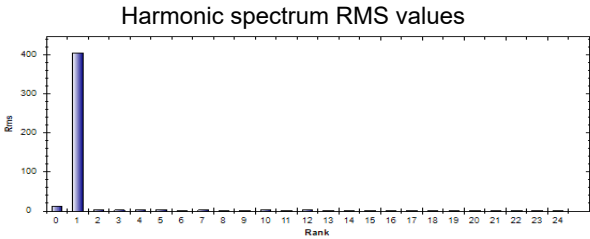
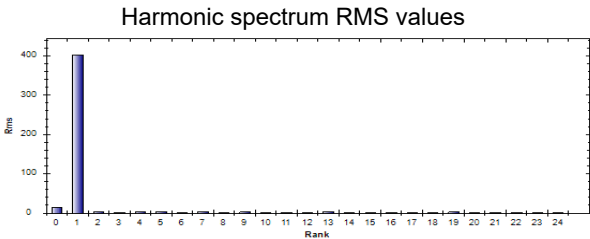
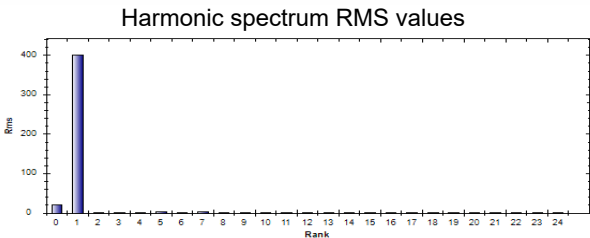
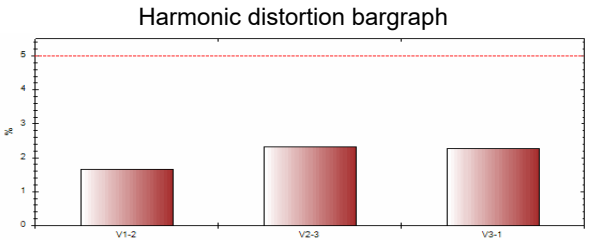
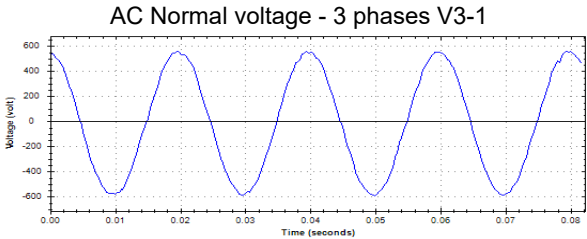
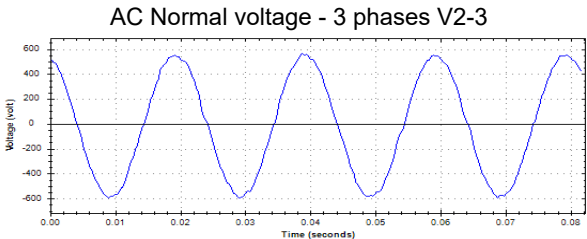
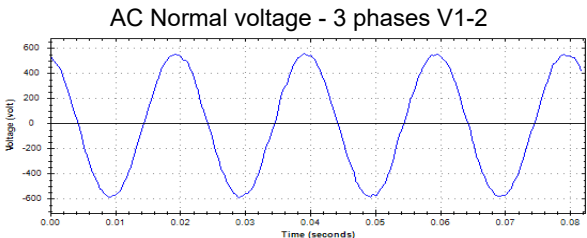
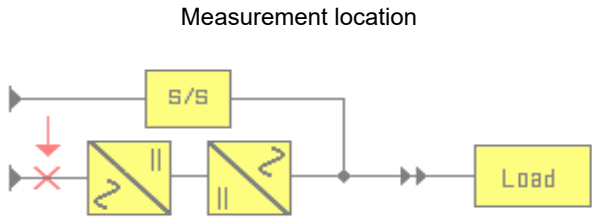
4.3.3.1 AC Normal

Measurements

AC Normal voltage	V1-2	V2-3	V3-1	Min	Max	
U rms	407.70 V	407.30 V	407.80 V	254.00 V	470.00 V	Within tolerance
frequency	50.00 Hz	50.00 Hz	50.00 Hz	45.00 Hz	65.00 Hz	Within tolerance
harmonic distortion THD-f	1.66 %	2.33 %	2.28 %		5.00 %	Within tolerance
harmonic distortion THD-rms	1.66 %	2.32 %	2.28 %		5.00 %	

Circumstances	System On with load
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Waveforms and harmonic spectrum



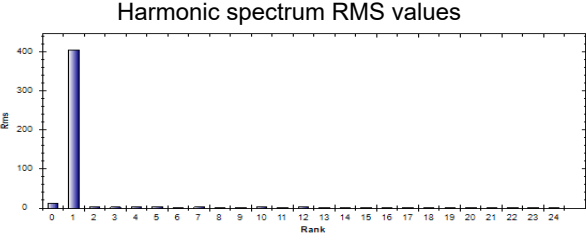
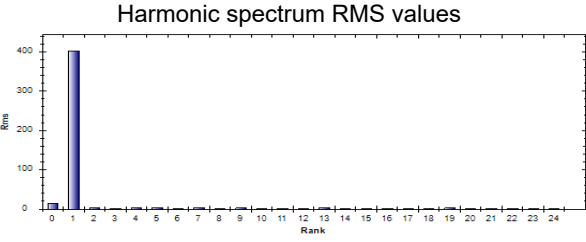
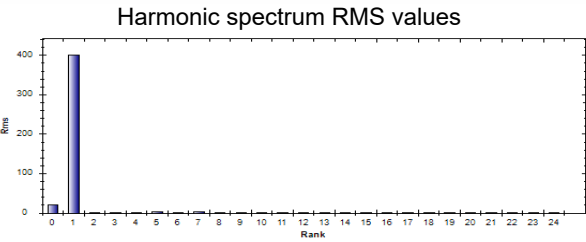
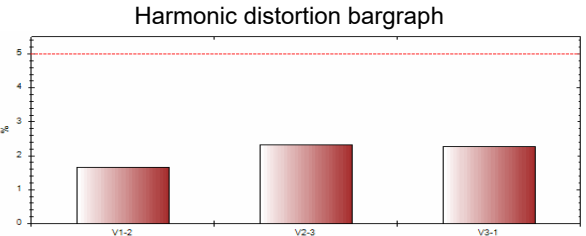
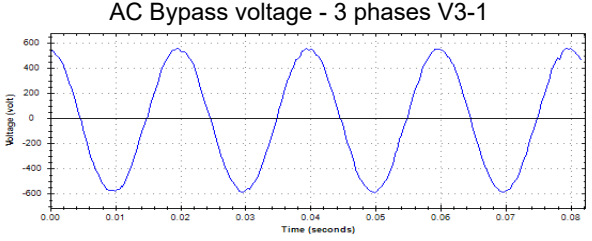
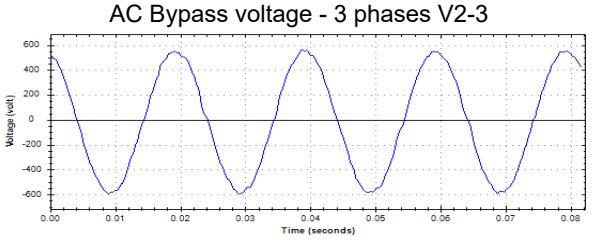
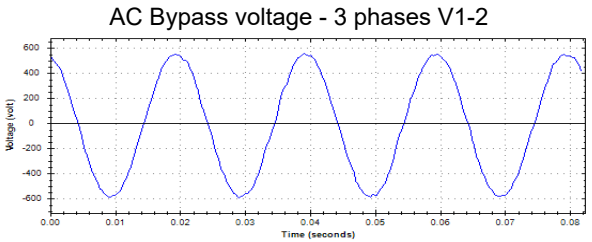
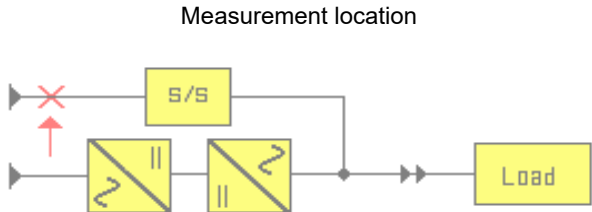
4.3.3.2 AC Bypass

Measurements

AC Bypass voltage	V1-2	V2-3	V3-1	Min	Max	
U rms	407.70 V	407.30 V	407.80 V	352.00 V	448.00 V	Within tolerance
frequency	50.00 Hz	50.00 Hz	50.00 Hz	46.00 Hz	54.00 Hz	Within tolerance
harmonic distortion THD-f	1.66 %	2.33 %	2.28 %		5.00 %	Within tolerance
harmonic distortion THD-rms	1.66 %	2.32 %	2.28 %		5.00 %	

Circumstances	System On with load
---------------	---------------------

Waveforms and harmonic spectrum



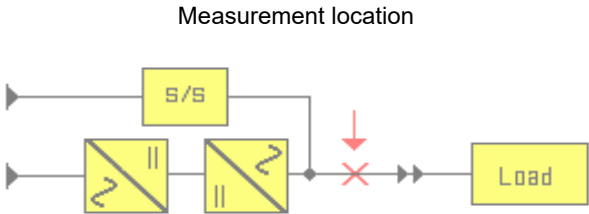
4.3.3.3 AC Load

Measurements

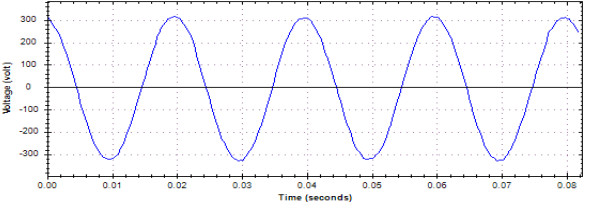
AC Load Voltage at output of the UPS	V1-N	V2-N	V3-N	Min	Max	
U rms	229.00 V	229.00 V	229.10 V	219.00 V	277.00 V	Within tolerance
frequency	50.10 Hz	50.00 Hz	50.00 Hz	46.00 Hz	54.00 Hz	Within tolerance
harmonic distortion THD-f	1.21 %	1.21 %	1.46 %		5.00 %	Within tolerance
harmonic distortion THD-rms	1.21 %	1.21 %	1.46 %		5.00 %	

Circumstances	System On with load
---------------	---------------------

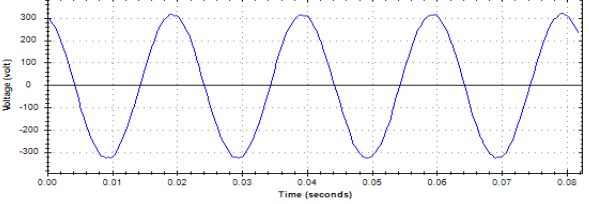
Waveforms and harmonic spectrum



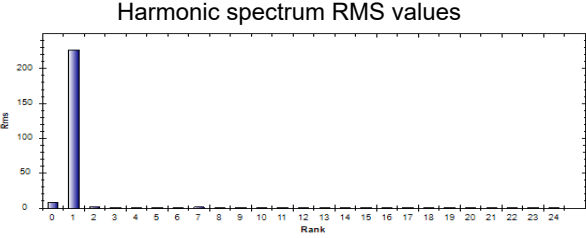
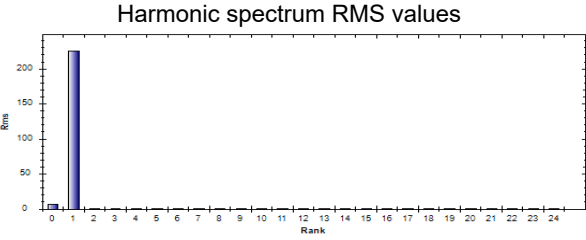
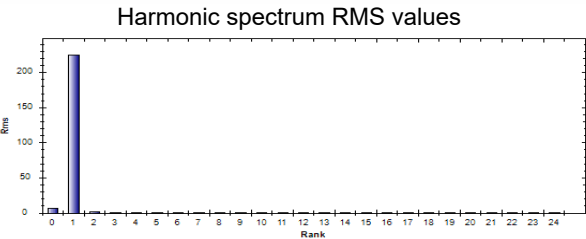
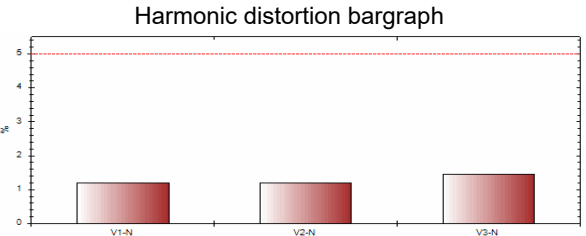
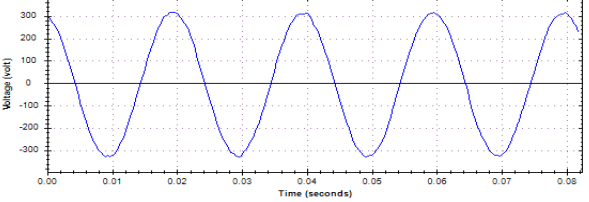
AC Load Voltage at output of the UPS - 3 phases V1-N



AC Load Voltage at output of the UPS - 3 phases V2-N



AC Load Voltage at output of the UPS - 3 phases V3-N



4.4 DC measurements

4.4.1 Charger and battery voltage

4.4.1.1 Charger voltage

		Min	Max	
Measured DC Voltage	565 V	408 V	572 V	Within tolerance
DC Voltage from perso/display	565 V	408 V	572 V	Within tolerance
T° measure	0 °C			
AC Ripple on the DC bus	0 V			
DC Current at float mode	0 A			

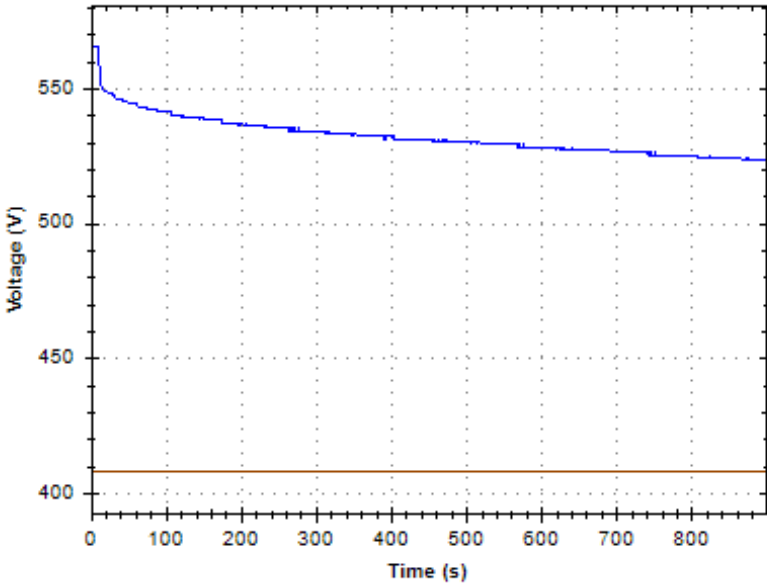
CAUTION: Battery life is halved for every 10°C above 25°C

4.4.2 Battery discharge curve

Battery discharge curve information

AC Load Current during discharge	104.00 A
DC Load Current during discharge	150.00 A
Voltage before discharge	565.00 V
Voltage after discharge	523.00 V
Minimum Battery voltage	408V

Battery discharge curve



4.5 Calibration

	Oscillo.	Perso. / Display	Min	Max
AC Normal voltage	408 V	410 V	254 V	470 V
AC Bypass voltage	408 V	409 V	352 V	448 V
AC Load voltage	229 V	231 V	219 V	277 V
AC Load current	104 A	102.33 A		607.74 A
AC Normal frequency	50 Hz	49.90 Hz	45.00 Hz	65.00 Hz
AC Bypass frequency	50 Hz	49.90 Hz	46.00 Hz	54.00 Hz
AC Load frequency	50.03 Hz	49.00 Hz	46.00 Hz	54.00 Hz
Battery charger Voltage	565 V	565 V	408 V	572 V

4.6 Battery Check

Conditions of battery have been checked	Satisfactory
No voltage present between terminals and earth, when battery breaker is open	Satisfactory
Perform temperature measurements on terminals while discharging to identify problems	Satisfactory
Verify the ability of the UPS to return to normal operation	Pass

5 Service and parts

5.1 Parts swap

Used

Product	Qty	SKU #	Tracking #	Used product	Used serial #
0J-490-0107SE	23				
Description FAN AC AXIAL 150X172MM - SPARE PART					
34020434SE	1				
Description CAPACITOR KIT + BUS 2 -SPARE PART					
34020438SE	1				
Description AC CAPACITOR KIT INPUT 2 - SPARE PART					
1CAP006184SE	1				
Description CAP AC ETOILE RC30UF/330VAC-KIT OF 3CAPS					
0J-0P3083GB	3				
Description BOARD GALAXY7000 FIAT					

5.2 Parts with life duration

5.2.1 DC capacitors

Reference	
Quantity	1
Justification	End of lifetime
Installation date	02 March 2020
Next replacement date	2025
Comment	Kit

5.2.2 Fans

Reference	
Quantity	23
Justification	End of lifetime
Installation date	02 March 2020
Next replacement date	2025

5.2.3 Battery

Reference	
Quantity	34
Justification	End of lifetime
Installation date	01 December 2018
Next replacement date	2028
Comment	34 lithium ion blokker. 2 kabinetter. 17x2

5.2.4 Supply board

Reference	
Quantity	2
Justification	End of lifetime
Installation date	17 March 2017
Next replacement date	2024

5.2.5 AC capacitors input

Reference	
Quantity	1
Justification	End of lifetime
Installation date	02 March 2020
Next replacement date	2030
Comment	Kit

5.2.6 AC capacitors output

Reference	
Quantity	1
Justification	End of lifetime
Installation date	20 March 2018
Next replacement date	2028
Comment	Kit

5.2.7 RC capacitors

Reference	
Quantity	1
Justification	End of lifetime
Installation date	02 March 2020
Next replacement date	2030
Comment	

## 6 Final Inspection

### 6.1 Final Inspection

#### Equipment operation

The state and revision of parts insured proper operation of the unit	Yes	
The unit firmware has been upgraded	AY	No
All operational tests are passed successfully and system is functional	Yes	

#### Customer Relationship

List any customer concerns about the unit.	
The Customer Relationship Management has been updated	Yes

#### Site

Leave the site clean and tidy	Yes
-------------------------------	-----

### 6.2 Comments

General comments

No comment

Classic Battery Solution Inspection

MN coil er monteret i batteribryter som sitter i eget kabinett.

Mx coil i batteribryterne på Li-Ion kabinett

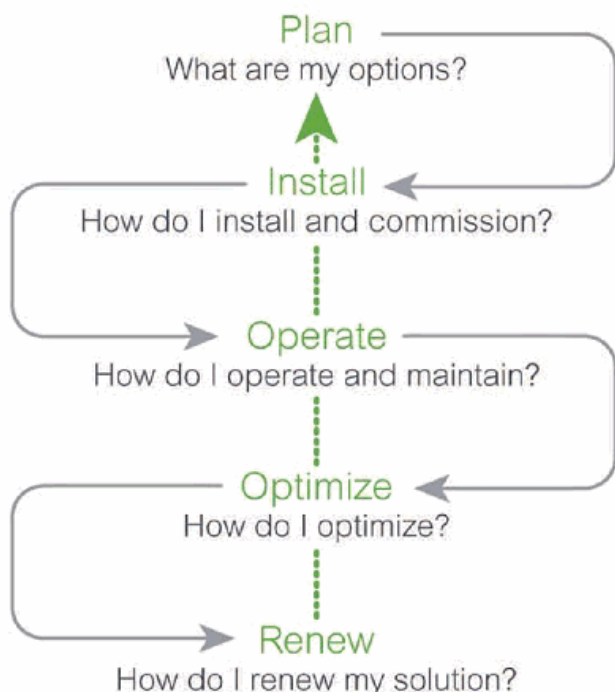
Samsung Li-Ion kabinetter

Minor alarm signal fra batterikabinett ble testet.

# SERVICES SOLUTIONS FROM A TRUSTED ADVISOR

Rely on Schneider Electric Critical Power & Cooling Services to protect your UPS from unexpected issues and downtime. Trained and trusted professionals are at your disposal to support and provide high quality service for your equipments.

## Life Cycle Services



Schneider Electric Critical Power & Cooling Services (CPCS) provides the expertise, services, and support you need for your building, industry, power, or data center infrastructure.

- **Experience:** Our proud 170-year history has led us to worldwide recognition as the thought leader in energy management, power and cooling infrastructure, and energy efficiency.
- **Reputation:** Our highly trained teams — technical support, project managers, Field Service Engineers (FSEs) — and our strong commitment to quality service have earned us a reputation as a trusted advisor in the industries we serve.
- **Availability:** Our extensive worldwide service network is one of the largest in the world. This enables us to deliver service where and when you need it.
- **Expertise:** Our highly skilled, certified FSEs are trained directly by the product developers themselves. This provides them with the highest level of system knowledge, resulting in accurate and quick diagnosis and repair.
- **Speed:** If equipment issues should arise, our technical support team is only a phone call away, ready to help you quickly diagnose the problem. When on-site help is required, our service plans dispatch a FSE rapidly, ensuring your system is up and running as fast as possible.

### Plan

**Assessment:** Site survey, engineering analysis, environmental inspection.

**Design Planning:** Free online tools to plan and design tailor-made solutions.

### Install

**Project Management:** Assistance in completing rollouts on time and within budget.

**Installation:** Equipment implementation and optimization, physical assembly and logistics coordination.

**Start-up:** Initial setup, installation, verification.

**Training:** Onsite equipment orientation, operational and maintenance education.

### Operate

**Service Plans:** comprehensive onsite service packages with either Next-Business-Day availability or response upgrades to 4-hour and 8-hour.

**Monitoring Service:** 24\*7 digital monitoring service with instant access to data and experts through Smartphone apps well as operational insights and analytics.

**Preventive Maintenance:** Corrective maintenance, system cleaning, environmental inspection, functional verification, and free firmware upgrades.

### Optimize

**Asset Capacity Trending:** proactive asset planning guidance, along with analysis of critical power, cooling, and room layout domains.

**Data Center Health Check:** Site-level assessment as well as inventory list for Schneider Electric and 3rd party vendor equipment.

### Renew

**Modular Power Revitalization:** comprehensive on-site UPS refresh service for modular UPS solutions, updated by certified service professionals.

**Modernization Services:** solutions to protect your aging UPS from unexpected issues and downtime. Assets' availability will increase and investments maximized.

For more information, please visit Critical Power & Cooling Services website at:  
<http://www.schneider-electric.com/b2b/en/services/field-services/critical-power-and-cooling/>