

TECHNICAL DATA SHEET

SureWave SFC

Static Frequency Converter



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1. Introduction

1.1. Description

The SureWave SFC combines ABB's years of experience with market trends and knowledge and has driven the need to create the next generation Static Frequency Converter – ABB's SureWave SFC.

The new generation of Static Frequency Converter (SFC) allows the connection of 60 Hz powered equipment to a 50 Hz supply network and 50 Hz powered equipment to a 60 Hz supply network.

Additionally, the SureWave SFC can stabilize the frequency to allow the correct operation of sensitive equipment when the supply is not sufficiently regulated. Also, the SureWave SFC can convert the supply voltage to a different voltage to match the requirement of the load

An isolation transformer might be required if the voltage is out of the SFC specifications.

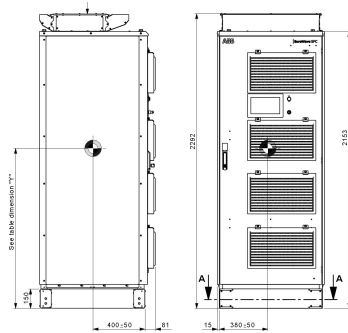
1.2. Key features and benefits

FEATURE	BENEFIT
Modern power module design	High power density, compact footprint, high efficiency, clean and stable sinewave output
Modular redundancy	High reliability with high availability for critical load
Bi-directional power flow capability	Allows supply to or from a ship
Double conversion	Ride through most common utility voltage sags and frequency variations, isolating and protecting sensitive load
Virtual Generator	Optimal and simple load sharing and grid interaction
Live load-bus synchronization	Allows the SureWave to synchronize with an AC live load-bus, and seamlessly take over the load
Overall robust system design	Superior overload capability, superb fault clearing capacity, and exceptional industrial load profile handling
Optimized termination cabinets	Functional cable routing options for easy installation and maintenance
Quick connect modules	Fast replacement, low MTTR, high system availability and operational safety
ABB Ability	Remote monitoring

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2. Mechanical overview

2.1. 250 kVA to 750 kVA range

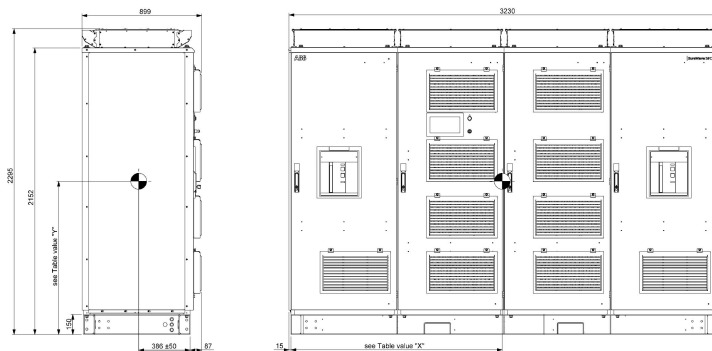


Dim (W x D x H)	830 x 899 x 2292 mm
Weight	1010 kg (fully populated)
Floor loading	1353 kg/m ²

Refer to 2UCD42000E102_A for more detail

2.2. 1.0 MVA to 1.5 MVA range

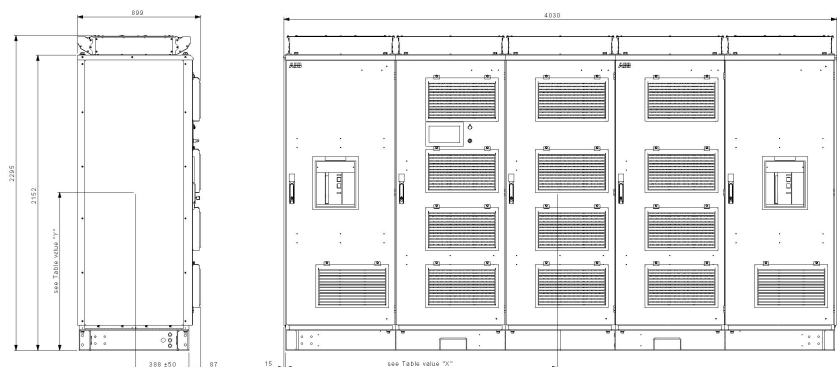
Refer to
2UCD42000E101_B
for more detail



Dimensions (W x D x H)	3230 x 898 x 2295 mm
Weight	3300 kg (bottom entry fully populated)
Floor loading	1136 kg/m ²

2.3. 1.75 MVA to 2.25 MVA range

Refer to
2UCD42000E103_A
for more detail



Dimensions (W x D x H)	4030 x 899 x 2295 mm
Weight	4400 kg (bottom entry fully populated)
Floor loading	1214 kg/m ²

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3. General overview

3.1. PEBB Characteristics



Dimensions (W x D x H)	723 x 710 x 223 mm
Weight	115 kg
Power flow	Bidirectional
AC supply	3 phase, 3 wire
Nominal voltage	380-480 V line to line
Rated current	300 A

3.2. System technical summary

AC voltage	380 – 480 V line-line
AC frequency range	50 – 60 Hz
Efficiency	96% (typical @ 100% load)
THDi at the input terminals	< 3% (at rated load)
THDv at the output terminals	< 2.5% (linear load)
Overload capability	250% for 2 seconds
Graphic Display Module (GDM)	Functional, high resolution, resistive 10" display
Acoustic noise	<80 dBA @ 1 m
Cooling exhaust	Top hat
Input termination cabinet (only for >750kVA)	Left or right
Cable entry (only for >750kVA)	Top or bottom
Communication	MODBUS TCP/IP, Ethernet

3.3. 250 kVA to 2.25 MVA complete range

	1 PE120			2 PE120			3 PE120		
	1	2	3	4	5	6	7	8	9
Module pairs	1	2	3	4	5	6	7	8	9
Termination Cabinet	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
I/O Breaker	N/A	N/A	N/A	E4.2 2000	E4.2 2000	E4.2 2000	E4.2 3200	E4.2 3200	E4.2 3200
Breaker rating current [A]	N/A	N/A	N/A	2000	2000	2000	3200	3200	3200
Nominal output current [A]	300	600	900	1200	1500	1800	2100	2400	2700
Nominal output power [kVA]	250	500	750	1000	1250	1500	1750	2000	2250
Max output power [kW]	225	450	675	900	1125	1350	1575	1800	2025

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3.4. Electrical characteristics

3.4.1. Electrical Connections

Input / output connections	L1, L2, L3 / L1', L2', L3'
Protective earth	Chassis earth connection
Transformer earth (PE)	Unique PE connection towards load

3.4.2. AC Connection

Nominal voltage (center referenced)	380 – 480 V line - line +/-10% Input voltage < 380 V will require external supply for PSUs
Over-voltage category	III (6kV)
Overload 1	120% 600 s, from 80% preload
Overload 2	150% 30 s once per 600 s not exceeding continuous rating
Overload 3	250% 2 s, from 100% load
Conditional short-circuit current (I _{cc})	65 kA, 60 ms

3.4.3. Protection requirements

TN	3 pole circuit breaker (provided with models > 750 kVA)
TT	3 pole circuit breaker with dc capable RCD
IT	3 pole circuit breaker and insulation monitoring

3.4.4. Auxiliary power

Control supply	Generated from the 3-phase AC input < 380 V at the input will require external supply
Control supply voltage nominal	24 Vdc, negative referenced to chassis, SELV
Control load current	< 1.5 Adc per PEBB
Fan load current	< 9 Adc per PEBB

3.5. Environment

Operating temperature	0 ... 40 °C
Derated operating temperature	40 ... 50 °C derated - 2% / °C
Storage temperature	-20 ... 60 °C
Shipping temperature	-25 ... 65 °C
Climate class	3K3 according to EN 60721-3-3
Chemical environment	3C1 according to EN 60721-3-3
Pollution degree	PD2 according to EN 60664-1
Operating altitude <1000m	No derating; IEC 62477 OV cat III
Derated operating altitude 1000 - 2000m	1% current derating per 100 m above 1000 m; IEC 62477 OV cat III
IP21	Optional (no filters fitted)

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IP42 – Standard option	Inlet and outlet air filters fitted
Rated air flow	0.125 m ³ /s per PEBB120
Exhaust air rise - 100% load	40 deg C (typical at full power)
Acoustic noise	< 80 dBA at 1 m

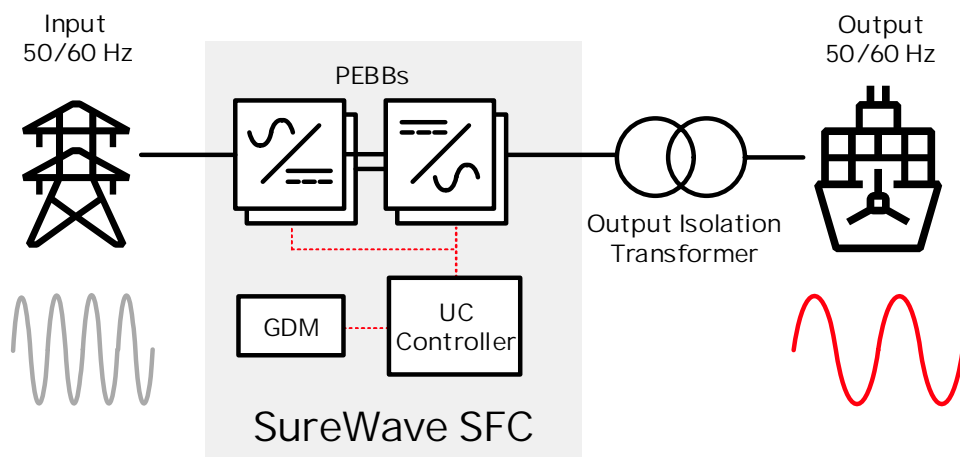
3.6. Standards

Conformed standard	EN 62477-1 / EN 50178; EN60240-2
CE Mark	Yes

3.7. Safety

Isolation to auxiliary supply	Reinforced insulation – 300 V ground /600 V line; Cat III / 6 kV
Earth leakage current	High leakage currents may exist - must be permanently earthed
Common mode voltage	Substantial PWM common mode voltage will exist on the non-ground referenced supplies

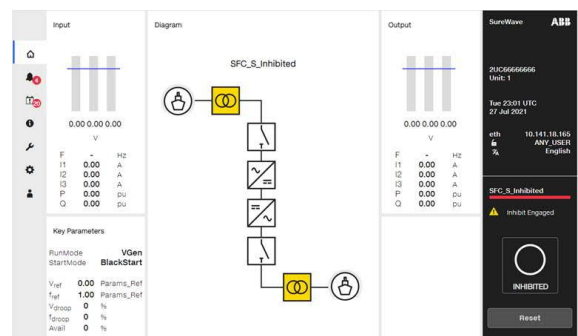
3.8. Block diagram



3.9. System display

The primary user interface for configuration of the SureWave SFC is via the Graphic Display Module (GDM).

The GDM is a 10" resistive, touchscreen, functional, high resolution, with a user-friendly intuitive interface.



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