

PCS100 SFC

Static Frequency Converter

Technical Catalogue



Introduction

Around the world there are many different power systems, while different voltages can easily be rectified, changing frequency typically from 50Hz to 60Hz or vice versa is much more difficult.

The PCS100 Static Frequency Converter is the ideal solution for addressing that exact issue, it takes the standard grid supply and converts it to the desired frequency and voltage using static technology meaning there are no large moving masses.

The SFC is highly configurable for different size options from 125kVA up to 2MVA, even larger systems are possible as multiple units can be paralleled if required. Also incorporated in the SFC are industry standard control interfaces for easy integration into existing installations.

This Technical Catalogue will guide the reader through the product selection and will give examples of system requirements and space required.

The Company

We are an established world force in the design and manufacture of power electronics and power protection equipment.

As a part of ABB, a world leader in electrical technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years' experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

Quality Control

The products listed in this catalogue are manufactured in an ISO 9001 accredited facility.



Registration No. 2469

For more information...

Further publications for the PCS100 SFC are available for free download from www.abb.com/pcs100-power-converters or by scanning this code:



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1 Overview

1.1 System overview

The PCS100 Static Frequency Converter, SFC, allows connection of 60Hz powered equipment to a 50Hz supply network and 50Hz powered equipment to a 60Hz supply network. Additionally the PCS100 SFC can if required, convert the supply voltage to a different voltage to match the requirement of the load.

Key technical features of the ABB PCS100 Static Frequency Converter (SFC) system:

- Thoroughly proven advanced IGBT technology
- Compact design, high power density
- Modular design, self-contained independent rectifier and inverter modules
- No moving elements – low maintenance
- High reliability and availability
- Precise output frequency generation
- Bi-directional power flow
- Good maintainability and serviceability, excellent Mean Time To Repair (MTTR)
- Unique 'Ride-through' on module failure or fault, continual operation with reduced capacity
- Remote monitoring and control through Ethernet, Modbus-TCP IP protocols

The system functions by converting the input AC power through a sine-wave rectifier to a DC link and then through an AC sine-wave inverter to produce a clean, full sine-wave output at the new frequency and voltage. For correct operation of the power electronics an isolation transformer is required as part of the SFC system. The isolation transformer can be applied to the input or output of the SFC.

The PCS100 SFC system is constructed using power electronic modules. These state of the art modules operate as rectifiers to source sinusoidal current from the supply, and inverters to reproduce the AC waveforms on the output. The primary user interface is via a door mounted touch screen Graphical Display Module (GDM). The display is intuitive and is navigated by touching on the desired menu buttons.

System monitoring is possible by connection to a PLC (via the digital and analog I/O) or connection to a computer based SCADA package using TCP/IP Ethernet serial communications.

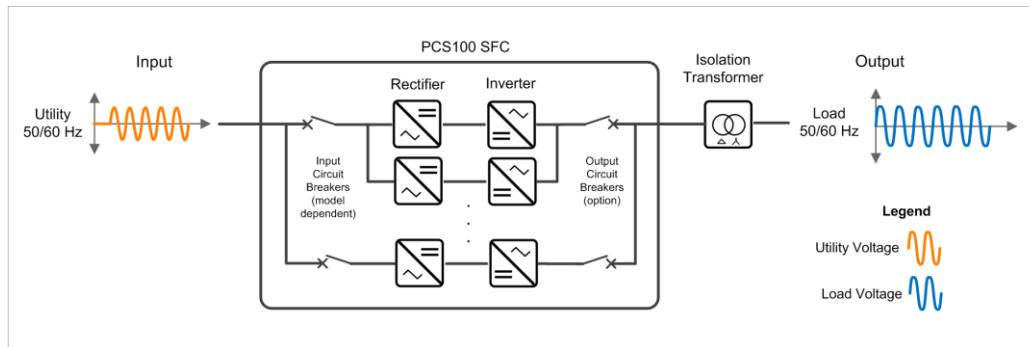


PCS100-03-05F-LH+T500

2 Sub Assemblies

A SFC System consists of the following sub-assemblies:

- Input circuit protection (not required on all models).
- Rectifier Power Modules.
- Inverter Power Modules.
- Isolation transformer (sold separately to the SFC converter)



2.1 Rectifiers & Inverters

The PCS100 SFC is constructed using pairs of rectifier and inverter power modules (module pairs). The rectifier modules convert the incoming three phase AC voltage into a regulated DC voltage. The DC voltage is then supplied to the inverter modules to be re-created into AC voltage at a different frequency.

Depending on requirements, between one and sixteen replaceable ABB PCS100 module pairs are used. The modules are highly integrated and can behave independently. That is, if one module fails, it will automatically be withdrawn from service while the remaining modules continue to run. This provides redundancy (at reduced capacity) and very high availability for the PCS100 SFC.

The ABB PCS100 SFC system includes a master controller that is located in one of the enclosures. The master controls all power modules and provides communication functionality to the SFC's touchscreen and external serial networks.



2.2 Input Circuit Breakers

Where multiple enclosures of SFC modules are needed to construct the required size converter, circuit breakers are fitted to the input of the SFC. The function of these circuit breakers is to protect the cabling inside the individual cabinets. Overload protection is performed electronically via the power electronics control. Therefore there will be one circuit breaker fitted on the input for each full size converter cabinet.

For smaller SFC units consisting of up to four module pairs input breakers are not included. Suitable protection should be installed in the supply feeding the SFC in this case.

Note: input circuit breakers are not available for rack SFC and must be supplied by the integrator.



2.3 Isolation Transformer

The purpose of the isolation transformer is to:

- match voltage to the utility and load's requirement
The PCS100 voltage is nominally 480 Vac
- transform the 3-wire inverter source into a 4-wire source, and
- isolate the power module common-mode voltage from the utility & load.

An isolation transformer is required either on the input or output of the SFC converter for the above reasons. More detail on specifying isolation transformers can be found in ABB document number 2UCD030000E003.

3 Control features

3.1 Power Module Redundancy Feature

One unique feature critical to the reliability of the converted output supply is the built-in redundancy capability which is an intrinsic feature of the modular system design. In an unlikely event where either a single rectifier or inverter module encounters a fault and stop functioning, the master controller that oversees the rectifier/inverter module pairs will reduce the output capacity to the available remaining working rectifier/inverter module pairs.

This reduction of capacity is transparent as typically the converter is not running at full load. The load will not be shed, but it will be transferred seamlessly to the remaining module pairs in the converter. To illustrate the function a 2000kVA SFC has 16 pairs of rectifier/inverter modules. A rectifier module failure will result in the controller automatically transferring the load to the remaining 15 pairs of rectifier/inverters. Only the maximum output of the converter is hence reduced by 1/16 or 6.25%

The PCS100 Advanced Redundancy feature represents a further milestone of power electronics reliability and availability improvements.

- Reduces power output in a failure only by a small fraction of the total system power
- Enables built in n+1 configurations by adding a spare module to achieve breakthrough levels in power availability.
- Allows flexible planning of converter repair/faulty module replacement.

3.2 Parallel load sharing

The PCS100 SFC is extremely flexible with regard to paralleling with other voltage sources, either other generators or multiple SFC units. Parallel load sharing is achieved using frequency and voltage droop profiles programmed into the converter. This allows the converters to share power with other systems without the need for any additional communication signals. In addition SFC converters of different power ratings can be paralleled, with each one delivering the same percentage of its rated power as required by the load.

3.3 Power Flow Control

Using the advanced power flow control capabilities of the SFC provides the ability to control the power flow from one AC grid to another AC grid. This feature is especially useful for interfacing co-gen plants to the grid, where the flow of power to and from the grid must be controlled.

3.4 Automatic Output Synchronisation

Where two or more SFC units are paralleled together, or the SFC is connected to an AC bus with other generators, starting the SFC into the live bus is greatly simplified due to the automatic output synchronisation feature. Using this feature whenever an SFC is commanded to run it will first check its output to see if there is a live bus connected (for example when changing from generator supply onboard a vessel to SFC supply). If the output of the SFC is live, then the SFC controller will first phase lock to this exact voltage and frequency before enabling the inverter modules. This enables a full seamless transfer from generator supply to SFC supply on the output bus. If the output bus is dead when the SFC is given a start command it will ramp up the voltage over 1 second, providing a soft energising of the output.

3.5 Remote Synchronisation

In addition to the automatic output synchronisation feature the PCS100 SFC also has a dedicated voltage sensing input to allow the converter to synchronise its output to any other three phase voltage reference. This feature is particularly useful where two separate busses must be synchronised before connecting them together i.e. closing a bus tie breaker on a vessel switchboard.

3.6 Output Short Circuit Protection

Should a short circuit occur on the PCS100 SFC output the converter automatically provides current limiting to 200% of nominal current for 2 seconds. This allows discrimination with downstream protection. If the fault is still present after 2 seconds the SFC will trip offline to avoid damage.

4 SFC Selection and Sizing

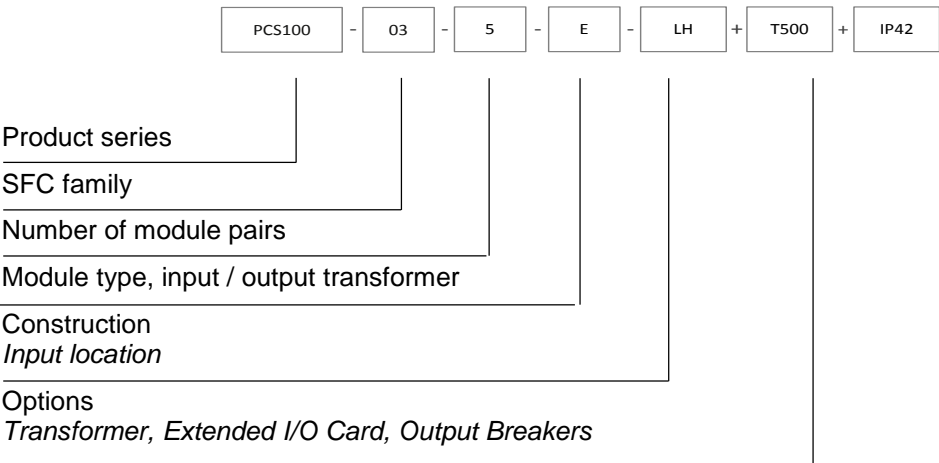
4.1 Type code

This catalogue has been designed to make it easy for you to select the SFC that best fits your requirements. All you need is the following information:

- Utility Voltage (V) and Utility Frequency (Hz)
- Load Capacity (kVA) and kW
or kVA and power factor
- Load Frequency
- Ambient operating data
- IP rating requirements

Type Code

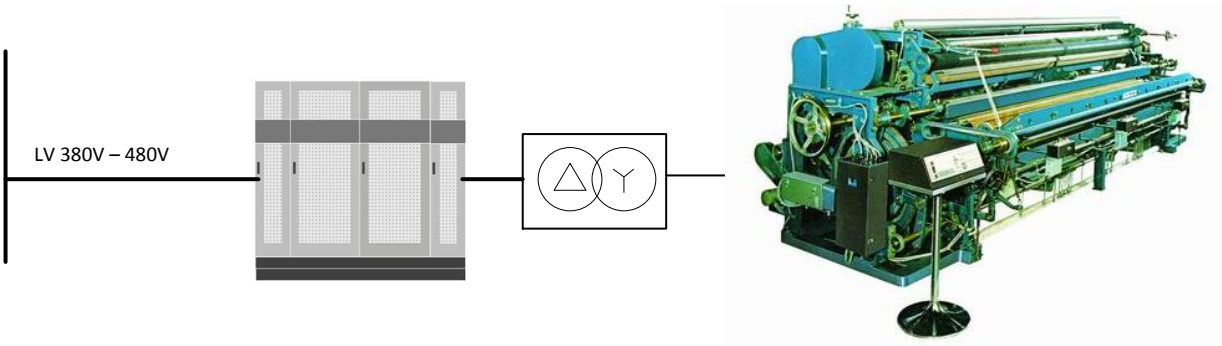
With this information, you can quickly determine the type code that is required for ordering a SFC. The following diagram outlines the structure of the type code.



4.2 Choosing the best transformer configuration

4.2.1 Industrial application

When the input voltage is between 380Vac and 480Vac, using an output transformer will give the most flexible output. This will enable the customer to utilize either a 3 wire or 4 wire output and a choice of earthing options. An additional transformer may be required on the input if voltage matching is required.

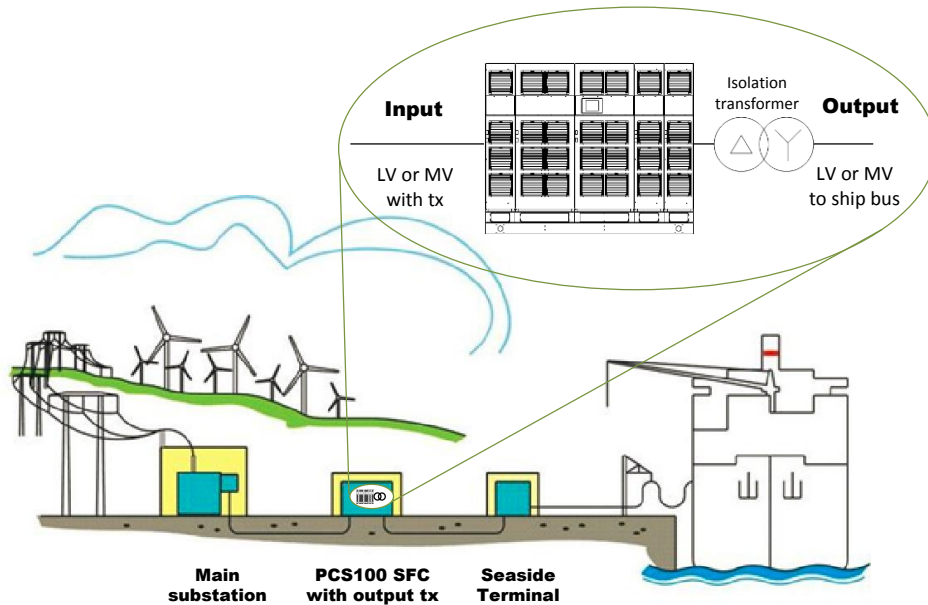


SFC to power relocated 50Hz machinery in a 60Hz country.

4.2.2 Shore to ship (Converter on harbor side)

When supplying power to berthed vessels, it is necessary for the SFC to have an output transformer. The transformer will not only provide voltage matching and isolation of the common mode voltages generated by the converter but also very importantly galvanic isolation for the ship from the shore earth. The isolation is required to eliminate earth currents that cause galvanic corrosion between the ship's hull and other metal objects.

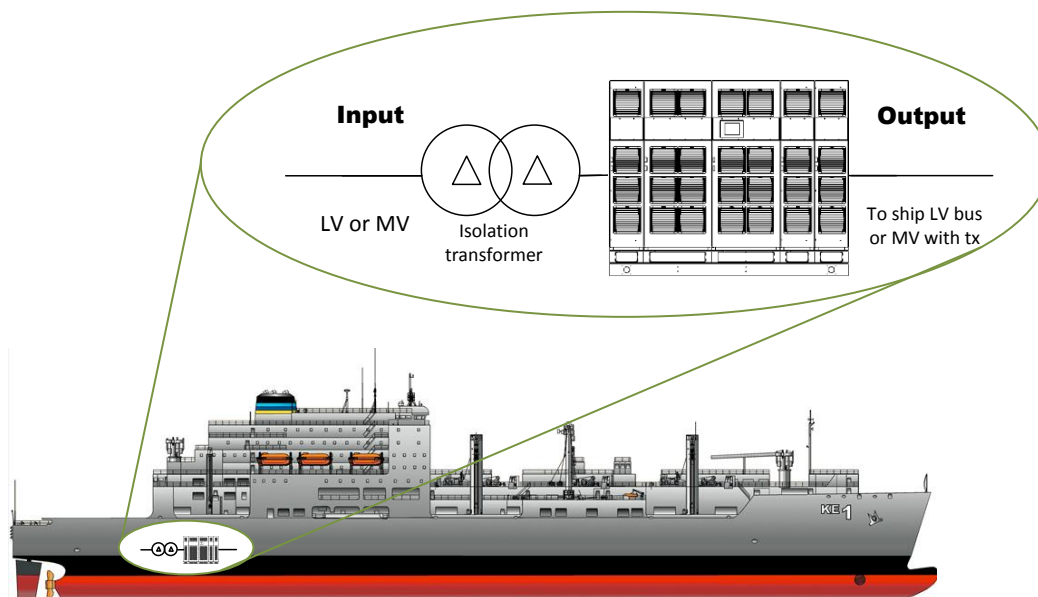
An additional transformer may be required on the input for voltage matching.



4.2.3 On-board Shore power

When a converter is installed on board to provide power conversion from the shore supply, a transformer must be provisioned on the input side of the frequency converter. The transformer will not only provide voltage matching and isolation of the common mode voltages generated by the converter but also very importantly galvanic isolation from the shore earth. Galvanic isolation from the shore earth is required to eliminate the earth currents that cause galvanic corrosion between the ship's hull and other metal objects.

An additional transformer may be required on the output if voltage matching or a neutral is required.



4.3 Sizing tool

ABB provides an easy to use Windows PC application for sizing the SFC. The easy to use tool will calculate the size of the SFC required from inputting the load kVA, input and output voltages, environmental data etc and will size the SFC accordingly.

The output of the sizing tool will be the type code, available power kVA and kW.

The file can be saved as a csv file and emailed to the factory for peer review or stored as a record for future reference.

5 Product Range

PCS100 - 03 - 5 - E - LH + T500 + IP42

Different model ratings are defined by the number of power module pairs (rectifier and inverter) used to construct the system. The table below summarizes the PCS100 SFC product range. Ratings are for a typical PCS100 SFC system with;

- 480Vac +/- 10% input voltage
- 480Vac output voltage
- 40°C max ambient temperature

Note: Operation at other voltages will affect the power rating. Consult the sizing tool for the exact rating according to your operating conditions.

Input Iac A	Output				Type Code	No. of module pairs
	Continuous Operation		Overload 150% for 30s			
	kVA @ 480V	Iac A	kVA @ 480V	Iac A		
150	125	150	188	225	PCS100 03-01	1
300	250	300	375	450	PCS100 03-02	2
450	375	450	563	675	PCS100 03-03	3
600	500	600	750	900	PCS100 03-04	4
750	625	750	938	1125	PCS100 03-05	5
900	750	900	1125	1350	PCS100 03-06	6
1050	875	1050	1313	1575	PCS100 03-07	7
1200	1000	1200	1500	1800	PCS100 03-08	8
1350	1125	1350	1688	2025	PCS100 03-09	9
1500	1250	1500	1875	2250	PCS100 03-10	10
1650	1375	1650	2063	2475	PCS100 03-11	11
1800	1500	1800	2250	2700	PCS100 03-12	12
1950	1625	1950	2438	2925	PCS100 03-13	13
2100	1750	2100	2625	3150	PCS100 03-14	14
2250	1875	2250	2813	3375	PCS100 03-15	15
2400	2000	2400	3000	3600	PCS100 03-16	16

PCS100-03-05 and larger (with termination cabinets) have been designed with a fault rating of 65kA. Internal cabinets and the associated wiring are protected by the internal MCCB's.

Smaller units must be protected from the switch board with a current limiting MCCB with I_{ssc} set to less than 5 x SFC current.

6 Technical Specification

Input

Voltage	208-480 V \pm 10% (or any voltage with input transformer)
Power System	3-Phase TN
Frequency	50 Hz or 60 Hz
Frequency range	\pm 5 Hz
Max Continuous Voltage	110%
Overload Capacity	150% for 30 seconds
Overvoltage Category	III
Efficiency	95% Typ
Current Harmonics	<3% THDi (at rated load)
Power Factor	Unity (adjustable

Output

Capacity Rating	125 kVA to 2000 kVA .9pf (higher power with parallel units)
Voltage	208-480 V (or any voltage with input transformer)
Frequency	50 or 60 Hz
Voltage Harmonics	< 2.5% THDv (linear load)
Overload Capability	120% for 10 min* 150% for 30 s
Short Circuit limit	200% for 2 s
Voltage Accuracy	+/- 1%
Frequency Accuracy	+/- 0.1%

User Interface

Type	8.4" touch screen
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Control Interface

Digital Inputs (volt free contacts)	Start Stop / Reset
Digital Outputs (relay outputs)	Running (NO) Warning (NO) Fault (NC)
Relay Output Ratings	230 Vac 1 A

General

Enclosure IP rating	IP20 (IP42 Cabinet optional – cabinet only)
Operating panel (GDM) front IP rating	IP54
Pollution degree rating	2
Operating Temperature	0 °C to 40 °C
Cooling	Forced Air
Temperature De-rating	Above 40 °C, derate by 2% load per °C to a maximum of 50 °C
Capacity derating with elevation	–1.2% / 100 m for application above 1000 m 3000 m maximum
Humidity	< 95% non-condensing
Noise	75-85 dBA typical

Electromagnetic Compatibility

Environment	CISPR 11 class A
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Enclosures

Materials	Electro-galvanized steel
Colour	RAL 7035
Panel Thickness – Sides & Rear Panels	1.5mm 2mm
Enclosure Access	Hinged doors with key lock – cabinet only

Standards

ISO 9001 Quality Assurance System IEC62103 / EN 50178 CE Mark Marine classifications by request <i>DV, DNV, GL, ABS, CCS</i>	
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*at 75% pre-load

7 Layout Plans & Elevations (Cabinet version)

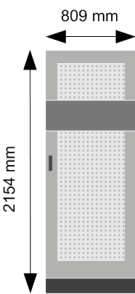
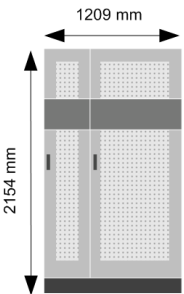
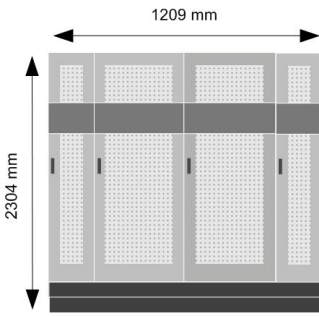
The PCS100 SFC dimensions are as per those listed in the table below. There are two enclosure sizes used to construct the converter, one 400mm wide and one 800mm wide. Multiple cabinets are used according to the converter size.

Dimensions (MM)			Heat				
			Weight	Dissipation	Air Flow		Type Code
H	W	D	kg	kW	m3/hr	CFM	
2154	809	804	860	6.3	1200	707	PCS100 03-01
2154	809	804	601	12.5	2400	1414	PCS100 03-02
2154	809	804	761	18.8	3600	2120	PCS100 03-03
2154	1209	804	987	25	4800	2827	PCS100 03-04
2304	2409	804	1772	31.3	6000	3534	PCS100 03-05
2304	2409	804	1932	37.5	7200	4241	PCS100 03-06
2304	2809	804	2308	43.8	8400	4948	PCS100 03-07
2304	3209	804	2586	50	9600	5654	PCS100 03-08
2304	3209	804	2746	56	10800	6361	PCS100 03-09
2304	3609	804	3407	62.5	12000	7068	PCS100 03-10
2304	4809	804	3700	69	13200	7775	PCS100 03-11
2304	4809	804	3860	75	14400	8482	PCS100 03-12
2304	5209	804	4248	81	15600	9188	PCS100 03-13
2304	5609	804	4550	87.5	16800	9895	PCS100 03-14
2304	5609	804	4710	94	18000	10602	PCS100 03-15
2304	6009	804	5102	100	19200	11309	PCS100 03-16

7.1 Front Elevations

PCS100 SFC front elevations for several models are shown below.

Note: For models PCS100 03-05 and larger the height is 2304 due to an additional cable tray at the base of the converter as shown below.

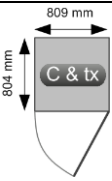
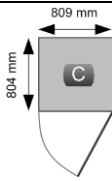
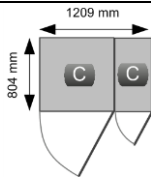
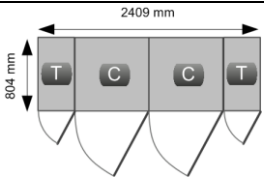
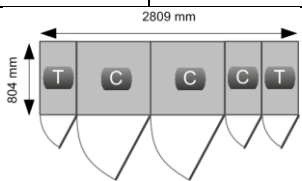
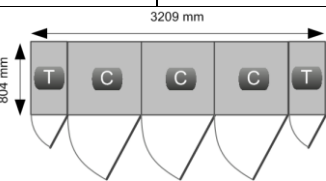
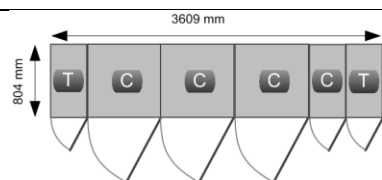
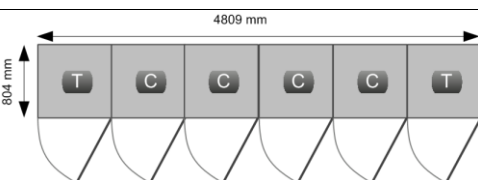
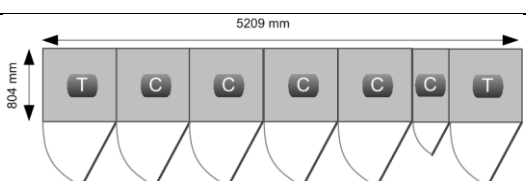
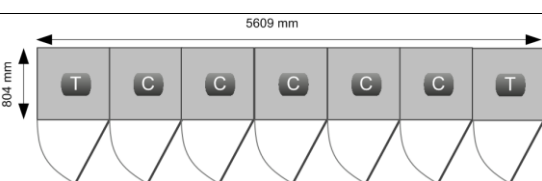
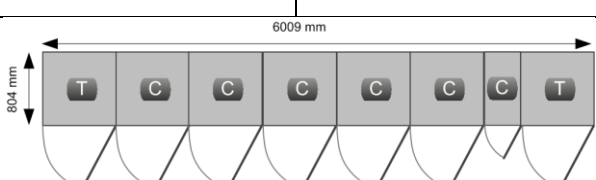
		
PCS100 03-01	PCS100 03-04	PCS100 03-05 PCS100 03-06

7.2 Plan Views

Plan views of the whole PCS100 SFC range are shown below.

Ledged:

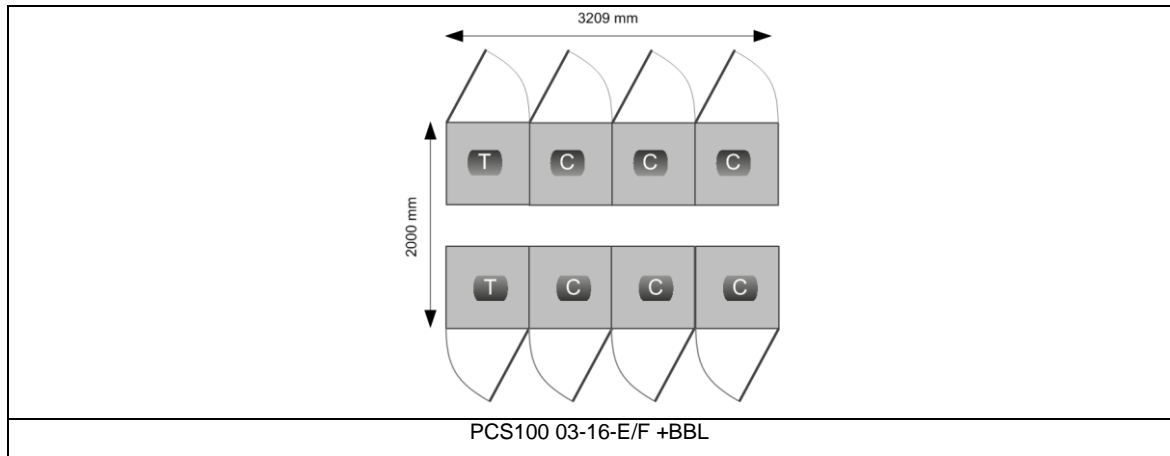
- C = Converter enclosure
- Tx = Transformer included
- T = Termination enclosure

			
PCS100 03-01-E/F + T125	PCS100 03-02-E/F PCS100 03-03-E/F	PCS100 03-04-E/F	PCS100 03-05-E/F PCS100 03-06-E/F
			
PCS100 03-07-E/F		PCS100 03-08-E/F PCS100 03-09-E/F	
			
PCS100 03-10-E/F		PCS100 03-11-E/F PCS100 03-12-E/F	
			
PCS100 03-13-E/F		PCS100 03-14-E/F PCS100 03-15-E/F	
			
PCS100 03-16-E/F			

7.3 Layout Options

In addition to placing enclosures side by side, enclosures may be placed back to back for larger models. Please discuss your layout requirements with your ABB representative prior to ordering.

Example: Back-to-Back

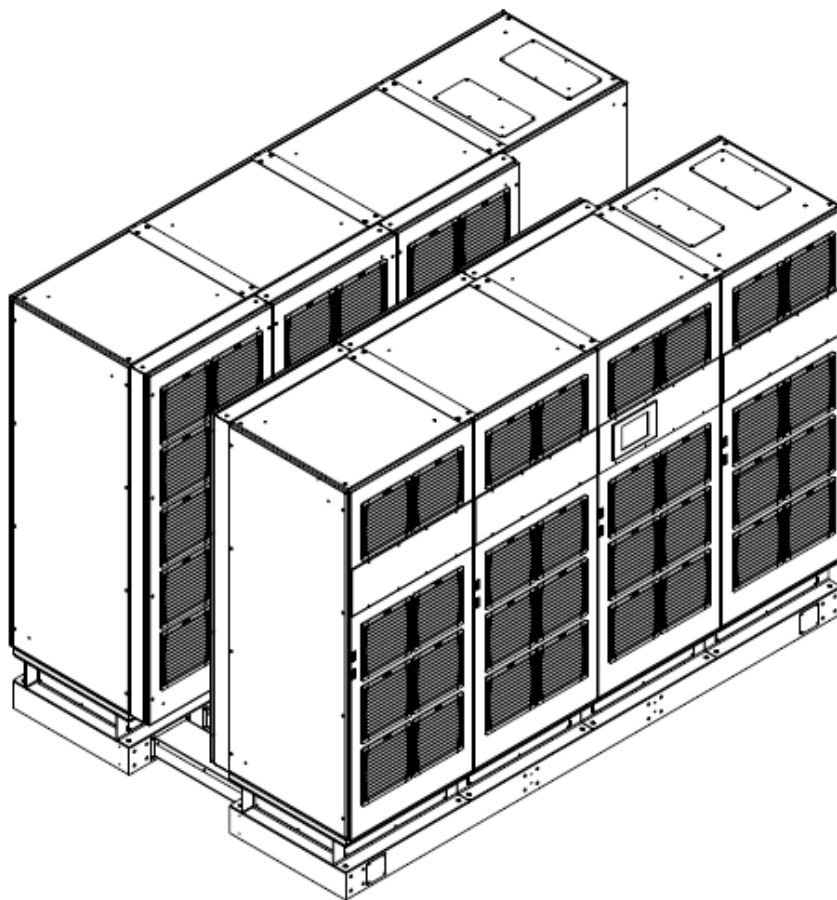


7.4 Floor Requirements

All enclosures must be installed on a horizontal fireproof surface.

Do not exceed $\pm 0.2^\circ$ change in slope between adjacent enclosures.

Do not exceed ± 5 mm in elevation between adjacent enclosures.

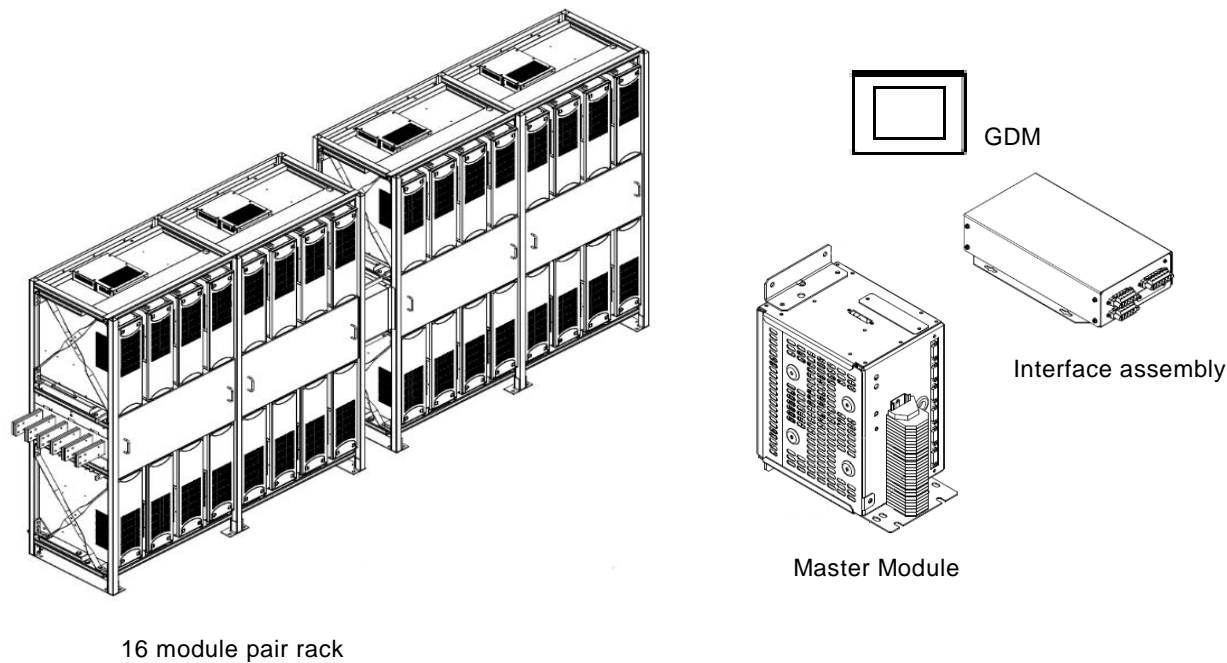


PCS100 03-16-E/F +BBL

8 Layout Plans & Elevations (Rack version)

Racks are available for easy containerization and are available to accredited integrators.

The racks have two different footprints of 1000mm x 800mm per section for 1-4 module pairs and 2000mm x 800mm for 5 - 8 module pairs. Empty slots will be covered by a blanking plate. The modules are installed in 2 levels with AC busbars and DC links running between the 2 levels. Busbars can be terminated to either end of the rack. Usually a termination cabinet containing AC/DC breakers is installed by the system integrator.



The master controller for each system are built on a baseplate for integration into a control cabinet. Aux supply of 230Vac and 26.5Vdc must be provided by the integrator.

Dimensions, weight, losses and air flow for standard racks

Dimensions (Excluding termination busbars)			Weight	Heat dissipation	Air flow		Number of module pairs
H (mm)	W (mm)	D (mm)			m3/hr	CFM	
2200	1041	703	842	25	4800	2827	4
2200	2041	703	1081	31.3	6000	3524	5
2200	2041	703	1224	37.5	7200	4241	6
2200	2041	703	1366	43.8	8400	4948	7
2200	2041	703	1508	50	9600	5654	8
2200	3332	703	1928	56	10800	6361	9
2200	3332	703	2065	62.5	12000	7068	10
2200	3332	703	2208	69	13200	7775	11
2200	3332	703	2350	75	14400	8482	12
2200	4332	703	2589	81	15600	9188	13
2200	4332	703	2732	87.5	16800	9895	14
2200	4332	703	2874	94	18000	10602	15
2200	4332	703	3016	100	19200	11309	16

9 Power Module Type

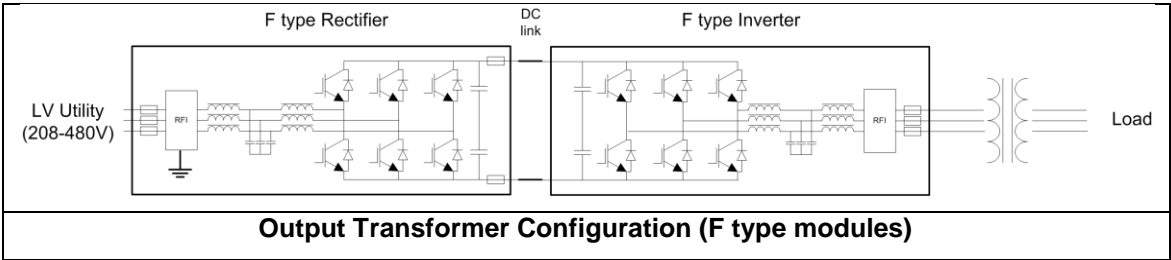
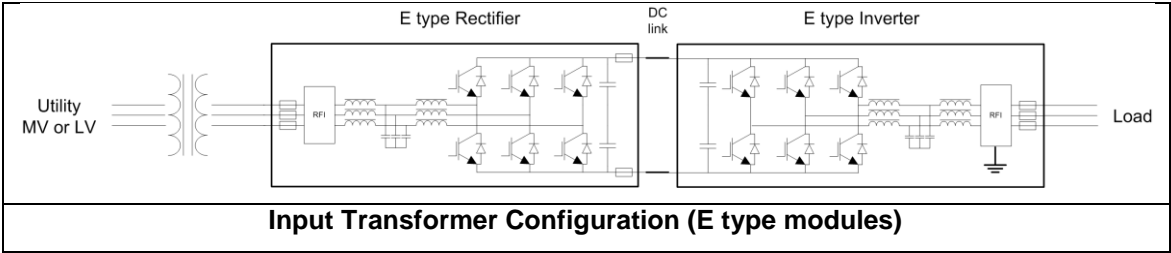


All PCS100 products use the same LV power modules which employ IGBT's and integrated sinusoidal filters. The ac and dc power connections of each module are protected by high speed semiconductor fuses. Multiple modules are connected in parallel to provide higher power.

Two module types can be specified for SFC converters that corresponds to the location of the isolation transformer. An isolation transformer is required at either the input or output of the SFC for correct operation. The converter must be ordered and constructed according to the specified transformer location.

E – Input Isolation Transformer systems (RFI Floating Rectifier, Grounded Inverter)

F – Output Isolation Transformer systems (RFI Grounded Rectifier, Floating Inverter)



Transformers may also be used on both the input and output of the SFC for voltage matching reasons.

10 Input Termination Location

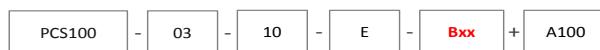
10.1 Cabinet version



The following options are available for the location of the input connection:

- **PCS100 03-01 to PCS100 03-04** models have input and output via bottom entry only (BE)
- **PCS100 03-05 to PCS100 03-16** have the option to place the input at either the left hand (LH) end of the converter, or the right hand (RH) end of the converter (when viewed from the front). The output connection is always at the opposite end to the input connection.

10.2 Rack version



Bxx – Standard rack in 1 row, a rack can have sections of 1000mm width

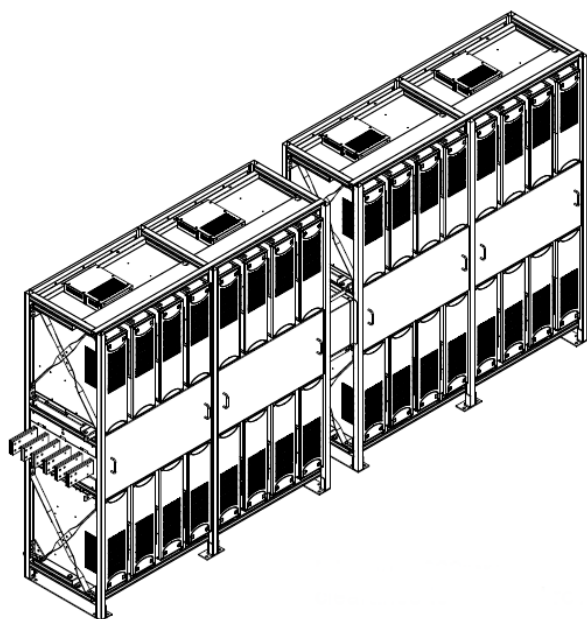
Bxx – number of 1000mm sections (max. 4 module pairs per 1000mm)

Possible combinations of racks: 1-4 module pairs → B1x, 5-8 modules pairs → B2x, etc.

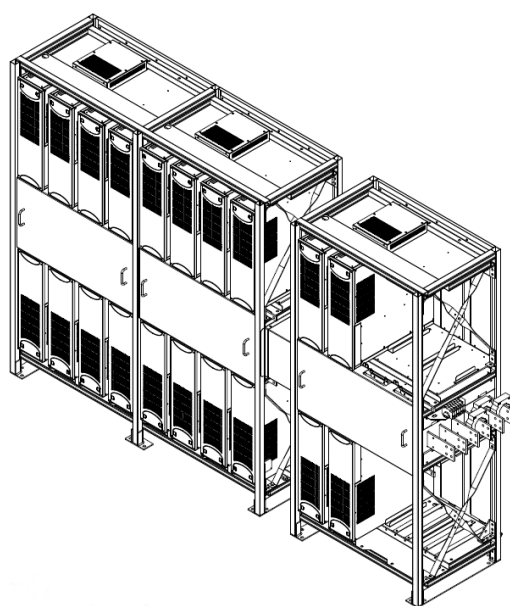
Bxx – AC termination of rack system

Possible termination: left termination → Bx5, right termination → Bx6

Examples below

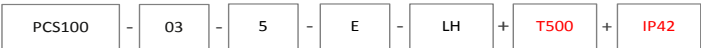


PCS100-03-16E/F-B45



PCS100-03-10E/F-B36

11 Options



The options for all PCS100 are defined by additional codes (so called plus codes). Each option has an own code and will be added to the type code by a plus.

11.1 Extended I/O Board +A100

Additional I/O is possible by adding the Extended I/O board option. This board connects to the internal PCS100 CAN bus and provides the following I/O connections;



Analog inputs

Quantity	2
Voltage signal	-10 to +10 V, Rin > 200 kΩ
Current signal	4 to 20 mA, Rin = 100 Ω
Maximum delay	10 ms
Resolution	0.1 %
Accuracy	+/- 2 %

Analog outputs

Quantity	2
Voltage signal	-10 to +10 V
Current signal	4 to 20 mA, load < 500 Ω
Maximum delay	50 ms
Accuracy	+/- 2 %

Digital Inputs

Quantity	7
Voltage signal	24Vdc with internal or external supply, PNP & NPN
Input impedance	25 kΩ
Maximum delay	10 ms

Thermal trip inputs

Quantity	1
Type	PTC or normally closed thermostat

Serial Communications

Type	Modbus RTU
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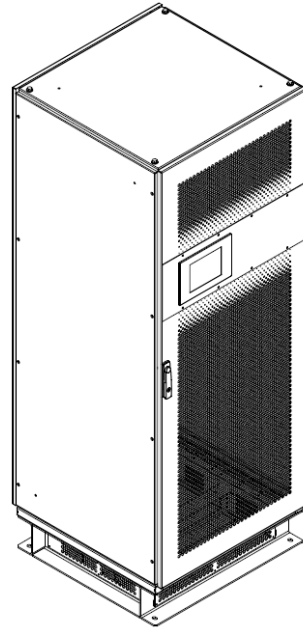
Typical applications include;

- Remote synchronisation command and feedback
- Providing a dedicated overload relay
- Providing an analogue converter power output signal
- Full remote control via Modbus

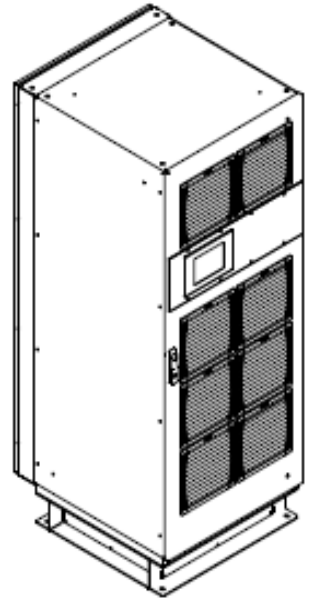
11.2 Increased IP rating (cabinet version only)

A higher IP rating are possible for the SFC apart from IP20

- **+ IP42** Louver panels with 1mm IP42 screens are fitted to the cabinet's front and rear. Cabinet depth increases by 100mm from the standard IP20 depth.



IP20



IP42

11.3 Output Circuit Breakers +OCB (cabinet version only)

Note: Valid for models PCS100 03-05 and larger

Output circuit breakers are optional for SFC systems constructed with 5 or more module pairs (these systems are also be fitted with input circuit breakers as standard). Outputs breakers may be fitted for several reasons;

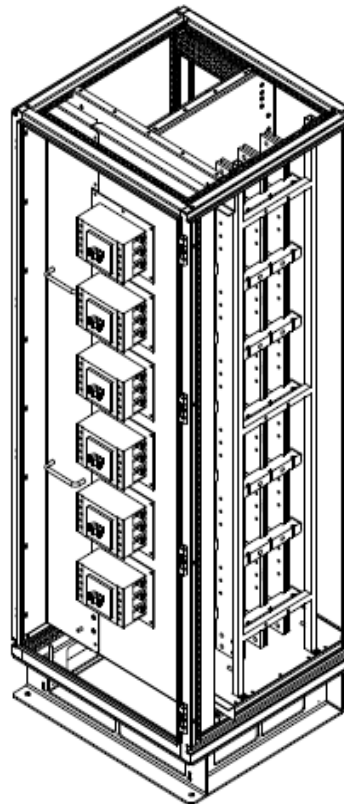
- To protect the output of the SFC in case there are other generating sources connected in parallel to the SFC output, and
- To provide a means of isolating sections of the SFC via opening the input and output circuit breakers.

Note: Isolation by opening circuit breakers only may not meet local electrical safety regulations as required for maintenance.

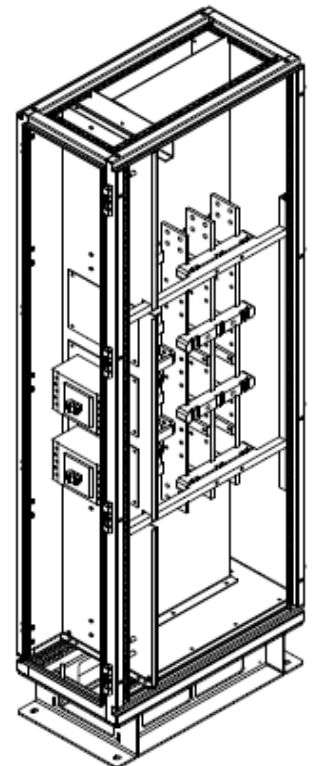
Output circuit breakers are not required for overload protection. This is performed electronically via the power electronics control.

Where other generating sources are connected in parallel with the SFC output (this could be diesel generators, power grids or micro grids) output circuit breakers should be specified.

With parallel SFC configurations the total short circuit capacity of the output needs to be considered. Since the SFC has built in short-circuit current limiting, output circuit breakers are only necessary where the short circuit current is greater than 8kA.



1375kVA to 2000kVA +OCB



625kVA to 1250kVA +OCB

11.4 Isolation Transformers

The PCS100 must always operate together with a dedicated isolation transformer to counter common mode noise generated by the converters to provide voltage matching. Low voltage transformers up to 500 kVA can be ordered with the converter from the factory. Larger transformers can be sourced via the local ABB office.

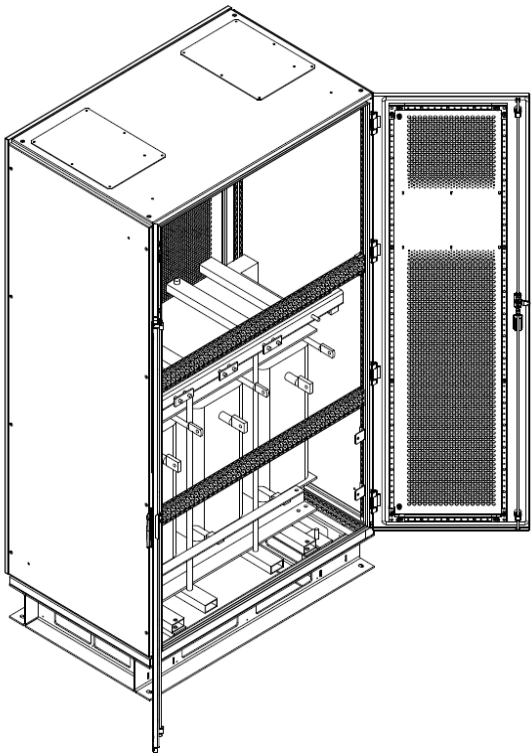
- **+T125** Transformer up to 125kVA rating for the PCS100 03-01 model. This transformer fits in the lower half of the cabinet.

Transformers T250 to T500 are housed inside separate IP23 Enclosures.

- **+T250** 250kVA transformer inside a 1200 x 800 x 2150mm cabinet
- **+T375** 375kVA transformer inside a 1200 x 800 x 2150mm cabinet
- **+T500** 500kVA transformer inside a 1200 x 1200 x 2150mm cabinet

Transformer Specifications

Capacity Rating	100% of SFC rating
Type	Dry Core is made from laminated transformer steel. Windings are copper. Earthed core.
Insulation	Class N insulation (200 °C).
Typical Impedance	5%



+T250

11.5 Neutral Generating Transformers

Note: These transformers are also called static balancers or zigzag transformers


For input transformer configurations the output of the SFC converter is three phase three wire. If a neutral is required there are two ways to achieve this;

- Add an output delta / star transformer
- Add a neutral generating transformer

If isolation is not required on the output, a neutral generating transformer is most economic. This transformer connects to the SFC output and creates a neutral point from the three phases. Transformers are dual rated for 50Hz and 60Hz operation, 400 V / 50Hz, 440 & 480V / 60Hz.

- **+ TZ10** 500A Neutral transformer inside a 800 x 800 x 2150mm IP23
- **+ TZ10** 1000A Neutral transformer inside a 1200 x 800 x 2150mm IP23

12 Examples of Systems




PCS100	-	03	-	1	-	F	-	BE	+	T125
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Single SFC cabinet with integrated isolation transformer in the bottom (behind door). Master controller with I/O in the top right corner



PCS100	-	03	-	3	-	F	-	BE
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SFC cabinet with 3 module pairs. Master controller with I/O in the bottom right corner.



PCS100	-	03	-	15	-	E	-	LH	+	OCB
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Layout for a 1875 kVA SFC with output breakers



2 x 1700kVA @45°C PCS100 SFC onboard installation, FPSO



3 x 1875kVA @ 50° PCS100 SFC installation, dock side power supply



2 x 1250kVA PCS100 SFC containerised



PCS100-03-10E-B35 & PCS100-03-10E-B36 integrated into container solution

Contact us

To find the contact person for your region
please refer top our webpage:

www.abb.com/pcs100-power-converters

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