

PRODUCT DESCRIPTION

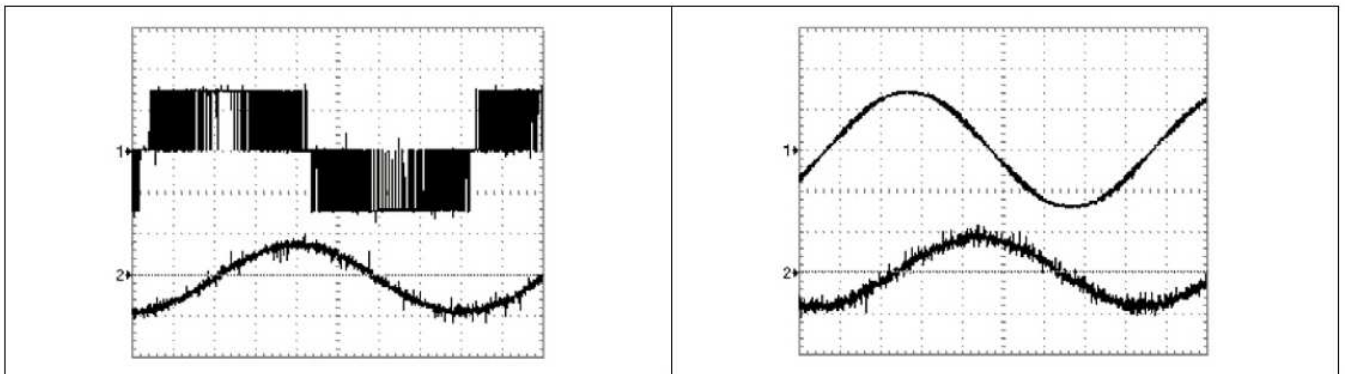
Most modern motors have a variable-speed drive which uses a frequency inverter employing semiconductor devices (IGBTs). The switching techniques used generate high rates of change of voltage which can cause undesirable effects on the motor (load), depending on particular application requirements.

Long cable runs between the frequency inverter and the motor and fast switching times can contribute to the premature failure of a motor (load) through bearing damage or insulation failure or other unacceptable phenomena such as power losses, high acoustic noise levels and parasitic earth currents.

The sinusoidal filter has the effect of a low-pass. It convert the clocked voltage pulses into a sinewave-form voltage. The operation and the loss balance of the asynchronous motor (load) is similar to that with normal mains operation. The typical singing motor noise with converter operation now will not occur because the phase current now has also the sinewave-form again. The comfortable operation is being bought by the filter losses. Depending on the installation, now it is possible to abandon the shielded cable to the motor. Below is possible to see the sinusoidal filter input voltage (left) and output voltage (right), is possible to see how the voltage waveform applied to the load is smoothed when the sinusoidal filter is used.

Voltage and current at inverter output

Voltage and current at sinusoidal filter output

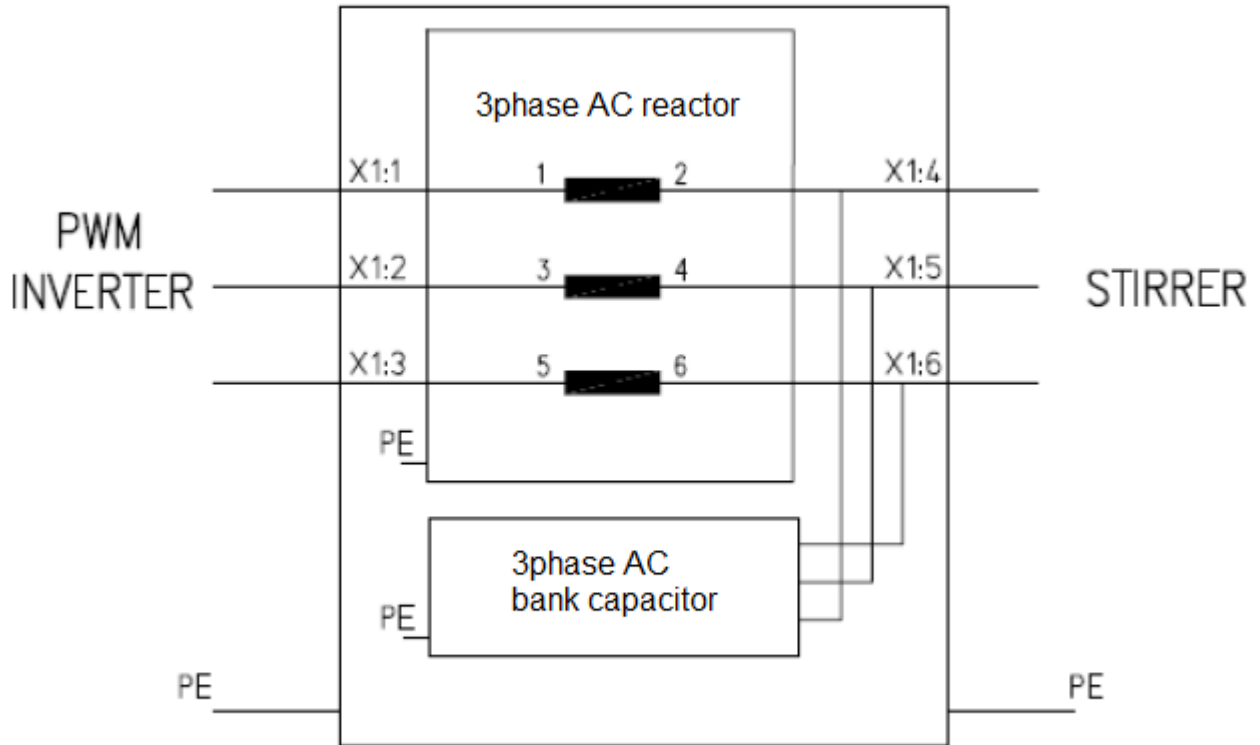


The Sinusoidal filter are used for convert the PWM output voltage of the inverter in a sinusoidal voltage. Inside a sinusoidal filter a 3phase LC filter is present, the reactor is series connected from input to output, the 3phase ac bank capacitor are connected from phase to phase in the output side of the filter. It's mandatory to respect the correct connection of the filter. The load of the sinusoidal filter has to be a big reactor like a Stirrer. This type of filter has been designed for three phase inverter with a PWM of unipolar type and without overmodulation, with a switching frequency from 2.5 kHz to 4 kHz. For some type of inverter some modification of parameter should be required.

A single phase voltage 230Vac is required for the fan cooling supply mounted inside the sinusoidal filter.

The use of the sinusoidal filter increase the life time of the stirrer because the AC voltage applied to the stirrer is sinusoidal. When no sinusoidal filter is used, in the Stirrer the PWM voltage coming from the inverter will generate great overvoltage spike in the stirrer coils, this spike will create a damage or an insulation failure in the load.

Below is possible to see the inverter connection diagram:





Sinusoidal filter for inverter

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Rev. 00

Sheet 3
of 3

TECHNICAL FEATURES

Type	Nominal voltage V	Nominal current A	Filter output phase	PWM Switching frequency (kHz)	Nominal inductance (uH)	Dimension (LxHxB) mm	Weight (Kg)
FSSP-3-500/25	480	600	3	2.5	140	700x800x800	240
FSSP-3-800/25	480	800	3	2.5	100	1040x1150x1040	300

Common data	
Input voltage (rms voltage)	360-480 Vac +/- 10%
Maximum inverter DC voltage	720V=
Waveform input voltage	PWM unipolar type
Minimum PWM frequency	2,5 kHz
Maximum PWM frequency	4 kHz
AC fundamental frequency	2 – 60 Hz
Load type	3 phase stirrer
Input/ output size bolts	M16
Maximum ambient temperature without derating	35°C
Maximum altitude	1000 mt. over sea level
Fan voltage [V] For FSSP-3-800/25 filter	1AC, 200-245 Vac, 50Hz 1.5A
Degree of protection	IP21