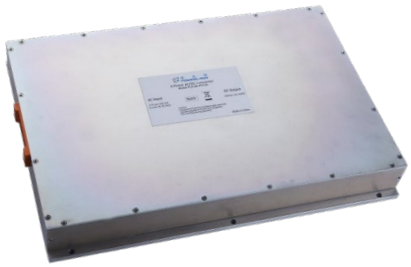
10/15kW “Boost3” Series Three-Phase PFC Rectifiers



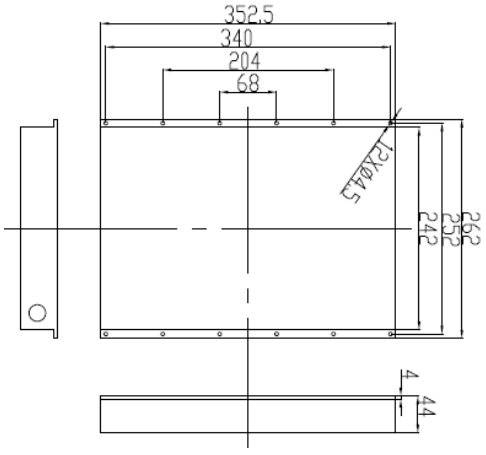
10/15kW “Boost3” series step-up three-phase active PFC rectifiers convert three-phase 380V AC input into 680~720V adjustable DC output. This series is a modularized design with 10/15kW rated output power. It features with wide input voltage range, high efficiency, high power factor, low THD within whole input and output range. This series converters is the essential building block of 3-phase AC/DC power supply to comply with CE101 and harsh grid conditions.

- Vienna-boost step-up topology
- Typical Power Factor (PF): 0.99
- Typical efficiency: 97.5%
- Fully DSP control, smart and dynamic
- Baseplate conduction cooling
- EMC compliance with GJB151B-2013
- Operation ambient temperature: -40~60°C
- Operation baseplate temperature: -40~85°C
- +24V isolated auxiliary power supply
- CAN bus interface
- All round protections including output OVP, output OCP and OTP

Specifications

Description	Input voltage	Output voltage	Output Power	Output Current	Dimensions
15kW 3-Phase active PFC	3-Phase AC 380V±15%	DC 680~720V adjustable	15kW	22.5A	376x218x44mm
10kW 3-Phase active PFC	3-Phase AC 380V±15%	DC 680~720V adjustable	10kW	25A	352.5x262x44mm

Outline Drawing (mm)



Technical Specification

Operation temperature condition: Ta = 25°C unless otherwise noted, based on 15kW model.

Parameter	Notes and Conditions	Min.	Typ.	Max.	Unit
ABSOLUTE MAXIMUM RATINGS					
Input Phase Voltage (RMS)	Measured at Pins				VAC
Non-operation				550	VAC
Operation				495	VAC
Operation Temperature	Baseplate Temperature	-40		85	°C
Storage Temperature		-55		105	°C
ISOLATION CHARACTERISTICS					
Isolation Voltage					
Input Pins to Output Pins	Non-isolated	0			Vac
Input Pins to Baseplate	Enforced Insulation	3000			Vac
Output Pins to Baseplate	Enforced Insulation	3000			Vac
Isolation Resistance		10			Mohm
INPUT CHARACTERISTICS					
Operating Input Voltage Range (RMS)	Measured at Pins	266	380	494	VAC
Input Undervoltage Protection(RMS)	Measured at Pins	255		265	VAC
Input Overvoltage Protection(RMS)	Measured at Pins	495		505	VAC
Maximum Input Current (per phase)	Measured at Po = 10kW @ 323VAC(rms)			33	A
Power Factor	Rated Input Voltage and Full Output Power	0.98	0.99		
Total Harmonic Distortion of AC Input Current	Rated Input Voltage and Full Output Power		3	5	%
OUTPUT CHARACTERISTICS					
Output Voltage Range	Vin = 380Vac	680	700	720	V
Output Voltage Regulation					
Line Regulation	Io > 0.5A		± 7		V
Load Regulation	Io > 0.5A		± 7		V
Temperature Coefficient			0.2		%/°C
Output Ripple and Noise (peak-to-peak)	Full Load, 20 MHz Bandwidth, 10uF Tantalum Capacitor + 1uF Ceramic Capacitor			8	V
Load Capacitance	Full Load			2, 000	μF
Output Current		0		22.5	A
Output Current Limiting	Non-Latch Off	23	25	27	A
Output Shutdown Voltage under Current Limiting	Non-Latch Off				
Output Overvoltage Protection	Non-Latch Off	770		800	V
Efficiency	Full Load	97	97.5		%
FUNCTION CHARATERISTICS					
Switching Frequency			34		kHz
Weight			5		kg
AUXILIARY POWER OUTPUT					
Output Voltage Range	Enforced Isolated from Input and Output				
Source Current					

Technical Specification

Operation temperature condition: Ta = 25°C unless otherwise noted, based on 10kW model.

Parameter	Notes and Conditions	Min.	Typ.	Max.	Unit
ABSOLUTE MAXIMUM RATINGS					
Input Phase Voltage (RMS)	Measured at Pins				VAC
Non-operation				550	VAC
Operation				495	VAC
Operation Temperature	Baseplate Temperature	-40		85	°C
Storage Temperature		-55		105	°C
ISOLATION CHARACTERISTICS					
Isolation Voltage					
Input Pins to Output Pins	Non-isolated	0			Vac
Input Pins to Baseplate	Enforced Insulation	3000			Vac
Output Pins to Baseplate	Enforced Insulation	3000			Vac
Isolation Resistance		10			Mohm
INPUT CHARACTERISTICS					
Operating Input Voltage Range (RMS)	Measured at Pins	266	380	494	VAC
Input Undervoltage Protection(RMS)	Measured at Pins	255		265	VAC
Input Overvoltage Protection(RMS)	Measured at Pins	495		505	VAC
Maximum Input Current (per phase)	Measured at Po = 10kW @ 323VAC(rms)			19	A
Power Factor	Rated Input Voltage and Full Output Power	0.98	0.99		
Total Harmonic Distortion of AC Input Current	Rated Input Voltage and Full Output Power		3	5	%
OUTPUT CHARACTERISTICS					
Output Voltage Range	Vin = 380Vac	680	700	720	V
Output Voltage Regulation					
Line Regulation	Io > 0.5A		± 7		V
Load Regulation	Io > 0.5A		± 7		V
Temperature Coefficient			0.2		%/°C
Output Ripple and Noise (peak-to-peak)	Full Load, 20 MHz Bandwidth, 10uF Tantalum Capacitor + 1uF Ceramic Capacitor			8	V
Load Capacitance	Full Load			2, 000	μF
Output Current		0		14.3	A
Output Current Limiting	Non-Latch Off	15	17	19	A
Output Shutdown Voltage under Current Limiting	Non-Latch Off				
Output Overvoltage Protection	Non-Latch Off	770		800	V
Efficiency	Full Load	97	97.5		%
FUNCTION CHARATERISTICS					
Switching Frequency			34		kHz
Weight			5		kg
AUXILIARY POWER OUTPUT					
Output Voltage Range	Enforced Isolated from Input and Output				
Source Current					