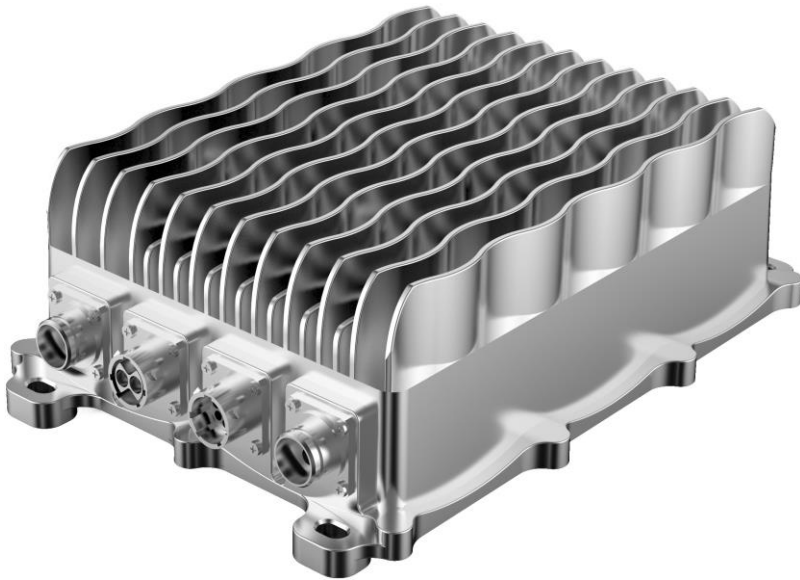


DC to DC Converter for Hybrid and EV

Model M-VDD102S360-14

1 kW @ 12 Vdc



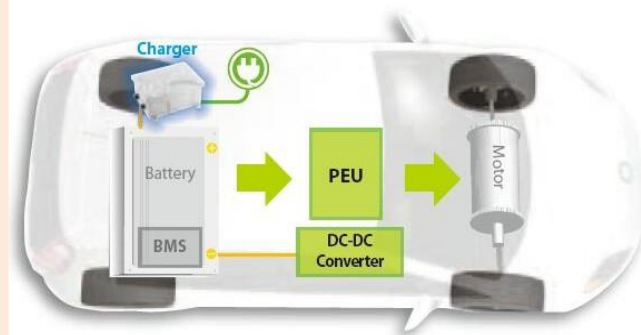
Key Features

- High Frequency: silent operation
- Output power: 1000W
- Protection from short circuit, overload and reverse polarity
- Fully isolated
- IP67 protection
- CAN-bus communication
- Integrated fuse holder
- Power status indicator

Application Overview

Electric vehicles normally use low voltage service batteries (12, 24, 48VDC) to supply the board instrumentation. The easier system to charge and aid the board battery is to connect in parallel a power supply with an appropriate output voltage. The biggest power source on the vehicles are normally the traction batteries with an higher voltage, so we have to reduce an high DC voltage to a lower DC voltage. This is the M-VDD102S360-14 DC/DC converter object.

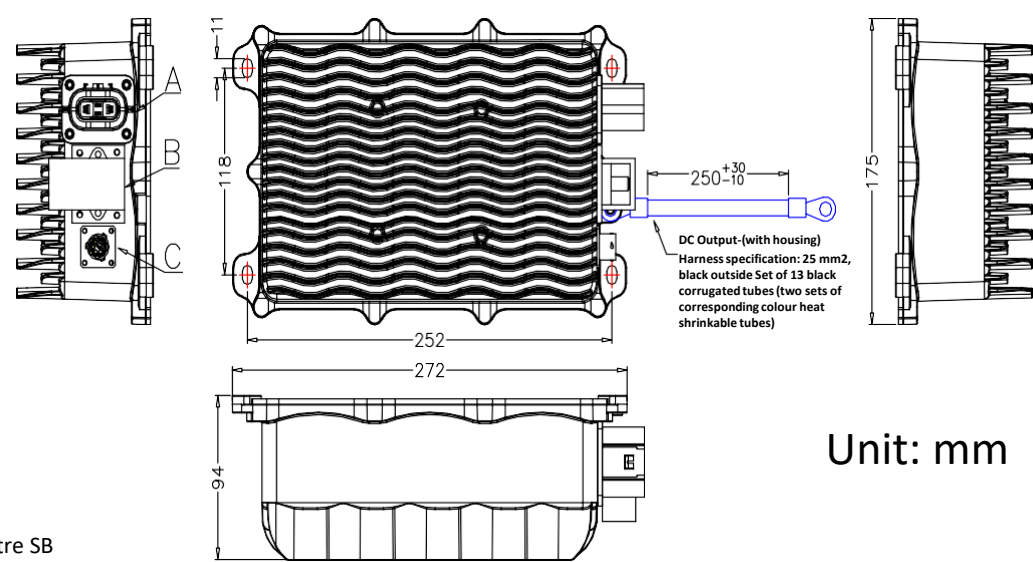
The M-VDD102S360-14 DC/DC Converter is suitable for all electric powered vehicles and is designed to be fitted on board the vehicle and connected permanently to the battery. This fully encapsulated converter deliver a stable isolated high power, low voltage DC supply for accessories such as lights, horns, and wipers. This eliminated inefficient battery taps and fragile, expensive high voltage accessories.



M-VDD102S360-14 SPECIFICATIONS

Item	Specifications
Output	
Output Power	1KW
Nominal Voltage Range	12Vdc
Output Current	0-72A
Peak Power	1.2KW
Input	
Operating Input Range	200-420Vdc
Maximum Input Current	3.5A
Fequency Range	50/60Hz
Efficiency	≥94%
Mechanical	
Cooling	Air-cooling
Dimension	272x175x94mm; 10.7x6.9x3.7"
Weight	2kg; 4.4lbs
Operating Temperature	- 40~60°C
Operating Ambient Temperature	- 40~75°C
Storage Temperature	- 40~95°C
Relative Humididty (non-condensing)	≥85%
Attitude	≤2000m
Regulation	
Environment	IP67, IEC60068, CNS15454
Emission	IEC 1000/IEC 801-2,3,4/IEC 255-4
Communication	
Interface	CAN BUS/Enable control
Protection	
Input Protection	Surge protection
	Short circuit protection
	Over voltage protection
	Under voltage protection
	Input Fuse over current protection
Output Protection	Short circuit protection
	Over load protection
	Reverse priority protection
	Over voltage protection
	Over temperature protection
	Current limit protection
	Output fuse over current protection

Dimensions



Unit: mm

DC to DC Converter Hybrid and EV

Model M-VDD152S360-14

1.5 kW @ 12 Vdc



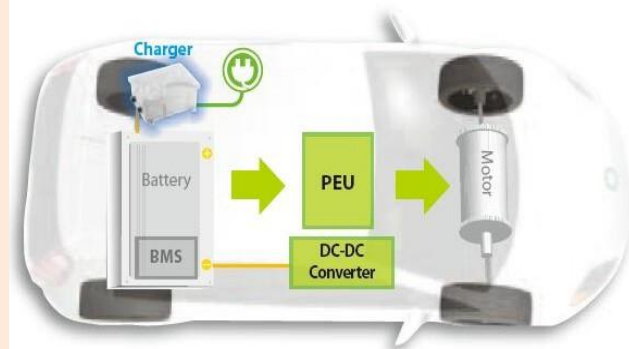
Key Features

- High Frequency: silent operation
- Output power: 1500W
- Protection from short circuit, overload and reverse polarity
- Fully isolated
- IP67 protection
- CAN-bus communication
- Integrated fuse holder
- Power status indicator

Application Overview

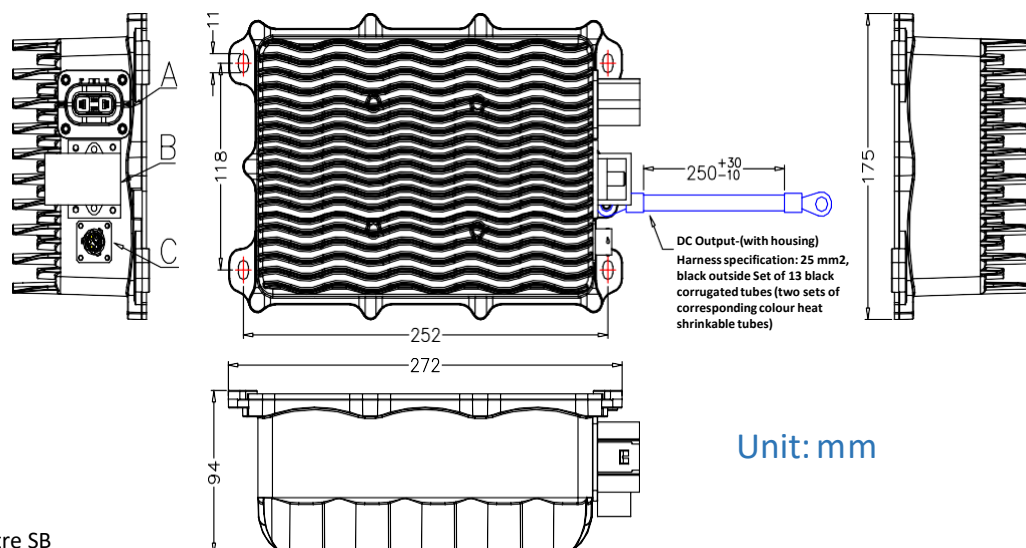
Electric vehicles normally use low voltage service batteries (12, 24, 48VDC) to supply the board instrumentation. The easier system to charge and aid the board battery is to connect in parallel a power supply with an appropriate output voltage. The biggest power source on the vehicles are normally the traction batteries with an higher voltage, so we have to reduce an high DC voltage to a lower DC voltage. This is the M-VDD152S360-14 DC/DC converter object.

The M-VDD152S360-14 DC/DC Converter is suitable for all electric powered vehicles and is designed to be fitted on-board the vehicle and connected permanently to the battery. This fully encapsulated converter deliver a stable isolated high power, low voltage DC supply for accessories such as lights, horns, and wipers. This eliminated inefficient battery taps and fragile, expensive high voltage accessories.



M-VDD152S360-14 SPECIFICATIONS

Item	Specifications
Output	
Output Power	1.5KW
Nominal Voltage Range	12Vdc
Output Current	0-108A
Peak Power	1.8KW
Input	
Operating Input Range	200-420Vdc
Maximum Input Current	5.5A
Fequency Range	50/60Hz
Efficiency	≥94%
Mechanical	
Cooling	Air-cooling
Dimension	272x175x94mm; 10.7x6.9x3.7"
Weight	2kg; 4.4lbs
Operating Temperature	- 40~60°C
Operating Ambient Temperature	- 40~75°C
Storage Temperature	- 40~95°C
Relative Humididty (non-condensing)	≧85%
Attitude	≦2000m
Regulation	
Environment	IP67, IEC60068, CNS15454
Emission	IEC 1000/IEC 801-2,3,4/IEC 255-4
Communication	
Interface	CAN BUS/Enable control
Protection	
Input Protection	Surge protection
	Short circuit protection
	Over voltage protection
	Under voltage protection
	Input Fuse over current protection
Output Protection	Short circuit protection
	Over load protection
	Reverse priority protection
	Over voltage protection
	Over temperature protection
	Current limit protection
	Output fuse over current protection

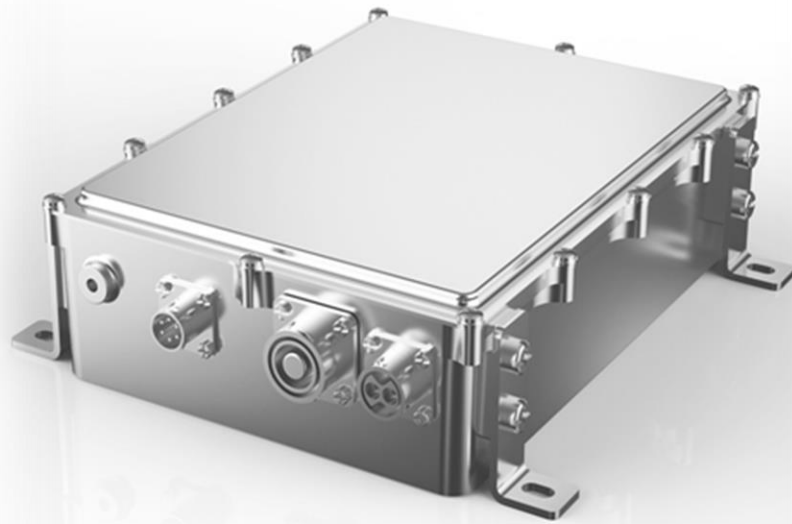


Unit: mm

DC to DC Converter for Hybrid and EV

Model M-VDD202S360-14

2 kW @ 12 Vdc



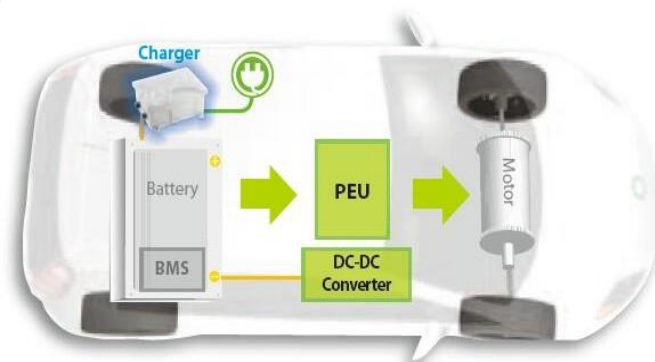
Key Features

- High Frequency: silent operation
- Output power: 2000W
- Protection from short circuit, overload and reverse polarity
- Fully isolated
- IP67 protection
- CAN-bus communication
- Integrated fuse holder
- Power status indicator

Application Overview

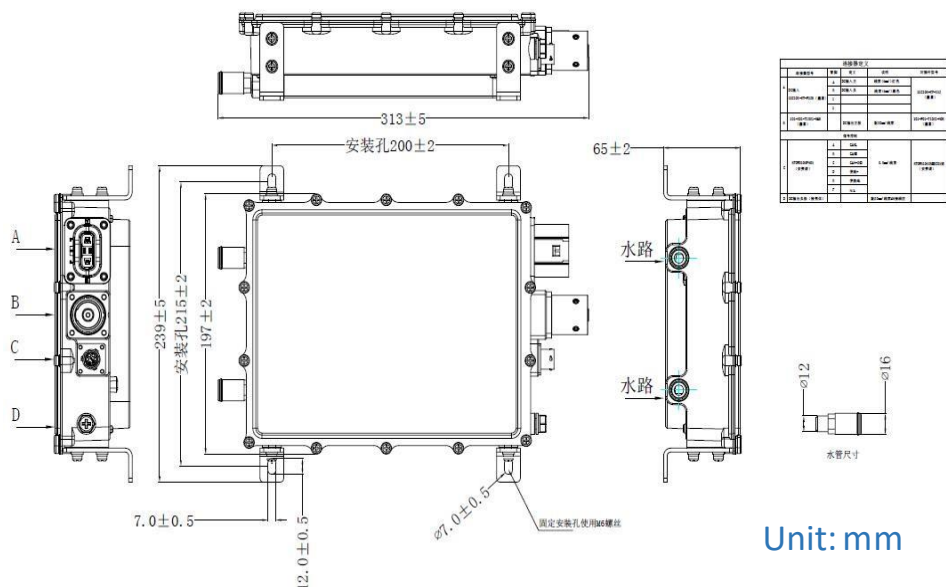
Electric vehicles normally use low voltage service batteries (12, 24, 48VDC) to supply the board instrumentation. The easier system to charge and aid the board battery is to connect in parallel a power supply with an appropriate output voltage. The biggest power source on the vehicles are normally the traction batteries with an higher voltage, so we have to reduce an high DC voltage to a lower DC voltage. This is the M-VDD202S360-14 DC/DC converter object.

The M-VDD202S360-14 DC/DC Converter is suitable for all electric powered vehicles and is designed to be fitted on-board the vehicle and connected permanently to the battery. This fully encapsulated converter deliver a stable isolated high power, low voltage DC supply for accessories such as lights, horns, and wipers. This eliminated inefficient battery taps and fragile, expensive high voltage accessories.



M-VDD202S360-14 SPECIFICATIONS

Item	Specifications
Output	
Output Power	2KW
Nominal Voltage Range	12Vdc
Output Current	0-143A
Peak Power	2.4KW
Input	
Operating Input Range	200-420Vdc
Maximum Input Current	7A
Frequency Range	50/60Hz
Efficiency	≥94%
Mechanical	
Cooling	Liquid-cooling
Dimension	250x196x98mm; 9.8x7.7x3.9"
Weight	2.5kg; 5.5lbs
Operating Temperature	-40~60°C
Operating Ambient Temperature	-40~75°C
Storage Temperature	-40~95°C
Relative Humidity (non-condensing)	≥85%
Attitude	≤2000m
Regulation	
Environment	IP67, IEC60068, CNS15454
Emission	IEC1000/IEC 801-2,3,4/IEC 255-4
Communication	
Interface	CANBUS/Enable control
Protection	
Input Protection	Surge protection
	Short circuit protection
	Over voltage protection
	Under voltage protection
	Input Fuse over current protection
Output Protection	Short circuit protection
	Over load protection
	Reverse priority protection
	Over voltage protection
	Over temperature protection
	Current limit protection
	Output fuse over current protection

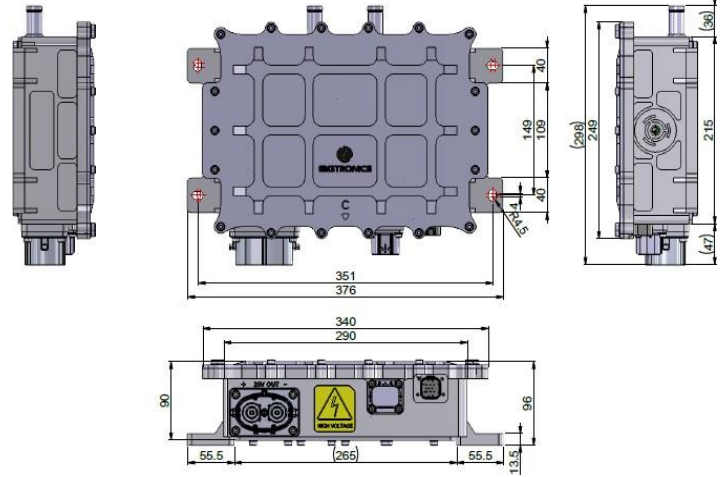


Unit: mm

DC to DC Converter for Hybrid and EV

Model M-ACU14V3K

3 kW @ 14 Vdc



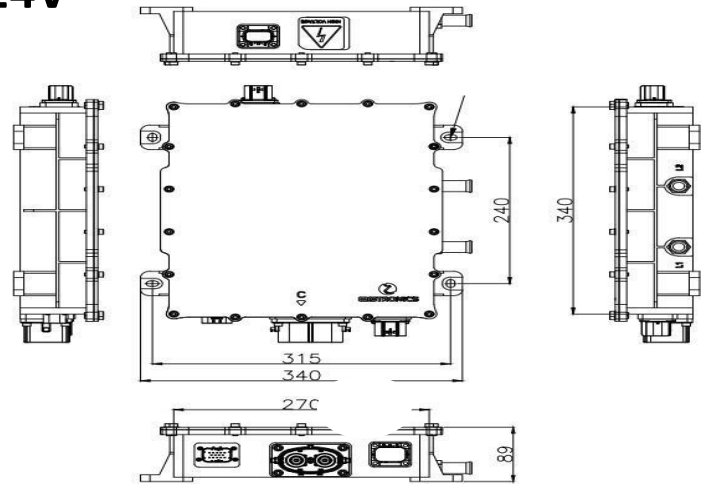
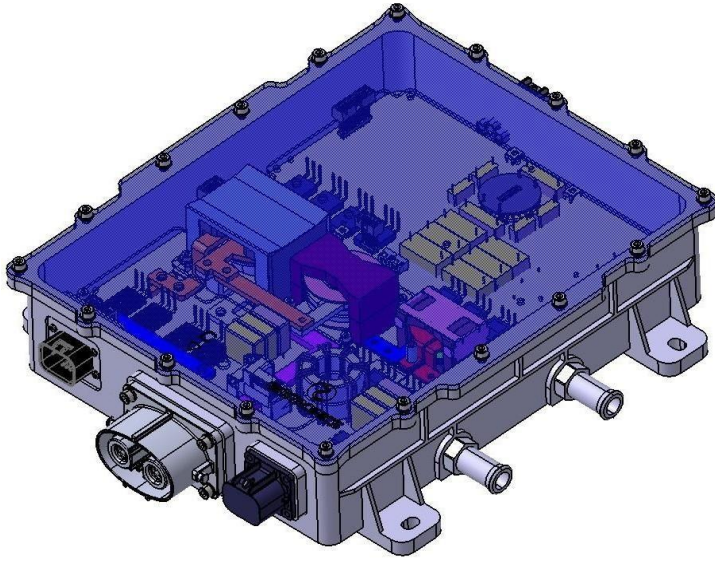
POWER	UNIT	STANDARD
Power ratings	[kW]	3
Input side voltage range	[V]	430(330~500)
Input side current ratings	[A]	7.75(6.7~10.2)
Output side Voltage range	[V]	14(8~15)
Output side current ratings	[A]	214.3
Control Power	[V]	14(8~16)
Structure(Type)	[-]	Uni-Directional
Efficiency @ 80% Load	[%]	Over 96
Efficiency @ Max Load	[%]	Over 95
OPERATING CONDITION	UNIT	STANDARD
Environ. Temp.(operating)	[°C]	-40 ~ 85
Environ. Temp(storage)	[°C]	-40 ~ 105
CONTROL	UNIT	STANDARD
Type of Controller	[-]	Digital/Analog
Command source and type	[-]	Voltage command from PCU
Command recurrence time	[ms]	10
Control period	[kHz]	1
Control accuracy	[V]	±0.1V
Control Bandwidth	[Hz]	Over than 1,000

DC to DC Converter for Hybrid and EV

Dual Output

3kW - 13.8V

1kW - 24V



315 X 340 X 89mm (W X D X H)

Class. III	Items	Unit	M-ACU14V3K(R2) (LDC3K)				
			(Min)	(Nominal)	(Max)	Rev 01. 2018.08.13	
Power Spec.	Power ratings	Continuous	[kW]		3	3	@Low side voltage=14V(±10%)
	Input side voltage range		[V]	250	350	420	
	Input side current ratings		[A]	8	9.52	13.4	@effi : 96%
	Output side Voltage range		[V]	8	13.8	15	@±6%
	Output side current ratings	Continuous	[A]		217	217	@ Low side voltage = 14V (Con.)
	Control Power (Battery Power range)		[V]	8	13.8	16	
	Start-up time		[S]			1↓	
	Structure(Type)		[-]		Uni-Directional Phase shift Full Bridge converter		isolated type
Operating conditions	Location		[-]		in Case		
	Environ. Temp.(operating)		[°C]	-40		85	
	Environ. Temp(storage)		[°C]	-40		105	
Mechanical	Weight		[kg]		15↓		
	Size(W*D*H) (mm*mm*mm)		[-]		340 * 270 * 89		
	Vibration class(G)		[g]		5		
	life cycle (life expectancy)		[hours]				
Cooling	cooling method		[-]		Water cooling		
Protection Grade	Protection Class		[-]		IP69		
Efficiency	Efficiency @ rated operating Condition		[%]		96↑		
	Efficiency @ max. operating Condition		[%]		94↑		

Dual Output 3kW - 13.8V 1kW - 24V

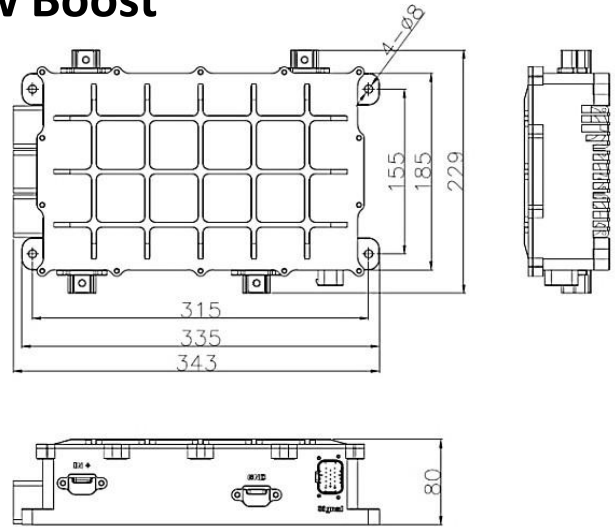
Class. III	Items		Unit	M-ACU14V3K(R2) (LDC3K)			
				(Min)	(Nominal)	(Max)	Rev 01. 2018.08.13
Power Spec.	Power ratings	Continuous	[kW]		3	3	@Low side voltage=14V(±10%)
	Input side voltage range		[V]	250	350	420	
	Input side current ratings		[A]	8	9.52	13.4	@effi : 96%
	Output side Voltage range		[V]	8	13.8	15	@±6%
	Output side current ratings	Continuous	[A]		217	217	@ Low side voltage = 14V (Con.)
	Control Power (Battery Power range)		[V]	8	13.8	16	
	Start-up time		[S]			1↓	
	Structure(Type)		[-]		Uni-Directional Phase shift Full Bridge Converter		isolated type
Operating conditions	Location		[-]		in Case		
	Environ. Temp.(operating)		[°C]	-40		85	
	Environ. Temp(storage)		[°C]	-40		105	
Mechanical	Weight		[kg]		15↓		
	Size(W*D*H) (mm*mm*mm)		[-]		340 * 270 * 89		
	Vibration class(G)		[g]		5		
	life cycle (life expectancy)		[hours]				
Cooling	cooling method		[-]		Water cooling		
Protection Grade	Protection Class		[-]		IP69		
Efficiency	Efficiency @ rated operating condition		[%]		96↑		
	Efficiency @ max. operating condition		[%]		94↑		

DC to DC Converter for Hybrid and EV

Model M-ADL5030

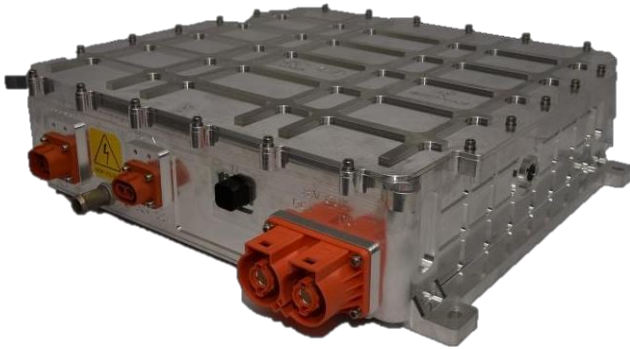
Bi-directional Converter

3kw Buck / 2.5kw Boost



POWER	UNIT	LDC BUCK 3KW	LDC BOOST 2.5KW
Power ratings (Con/Max)	[kW]	3 @Low side voltage=12V(±10%)	2.5 @High side voltage=48V(±10%)
Input side voltage range (Min/Nom/Max)	[V]	36 / 48V / 52	10 / 12V / 16
Output side Voltage range (Min/Nom/Max)	[V]	6.5 / 13.8V / 18 @±2%	48V @±1%
Current (Input side current ratings (Min/Max))	[A]	0 ~ 66	0 ~ 215
Current (Output side current ratings (Con))	[A]	218A @ Low side voltage = 13.8V	53A @ High side voltage = 48V
Control Power (Battery Power range (Min/Nom/Max))	[A]	6.5 / 12V / 18	<-
Efficiency	UNIT	LDC BUCK 3KW	LDC BOOST 2.5KW
Efficiency @ rated operating condition	[%]	95↑	93↑
Efficiency @ max. operating condition	[%]	96↑	94↑

Dual Low Voltage DC-DC Converter (DLDC)



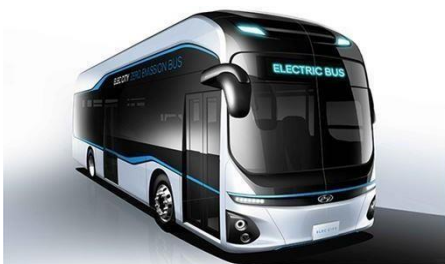
Features

- ★ Unidirectional operation
- ★ Very high efficiency (above 96%)
- ★ Galvanically Isolated type.
- ★ ZVS (Zero Voltage Switching) topology ensures very low switching losses and excellent EMC – behavior
- ★ Step Down (Buck converter) Type
- ★ CAN interface

➤ Specification

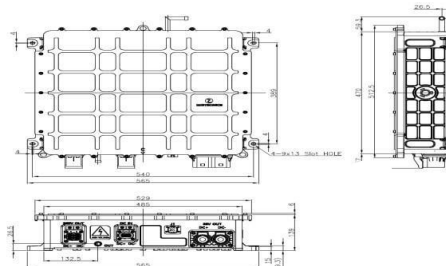
Contents		Unit	Value
Power Specification	Input voltage range		560 - 820
	Nominal output voltage	V	28 / 360
	Output voltage range		16 – 28 / 300 - 360 @±0.25V
	Constant output current	A	207 / 33.3 @ Lowest Output Voltage
	Max. output current		207 / 33.3 @ Temp = 65°C
	Max. output voltage ripple		500mV @ 20MHz
Performance	Continuous power	kW	5.8 / 12 @ nominal output voltage
	Peak power		5.8 / 12 @ nominal output voltage
	Efficiency	%	above 95
	Switching frequency	kHz	40
Operation Environment	Operating Temp.	°C	-40 – 85
	Storage Temp.		-40 – 105
Mechanical Data	Weight	kg	30
	IP protection		69
	Ambient temperature range	°C	-40 – 85
	Coolant temperature range		below than 65
	Coolant flow rate		14 liter per min.
Control	Over voltage @ In/Out	Stop	
		- Power derating @ 110%	
		- Ceasing controller over 110%	
	Under voltage @ In/Out	Stop	
		- Power derating @ 110%	
		- Ceasing controller over 110%	
	Over current	Derating then Ceasing controller @ output current	
Short current	Shutdown : need to be reset		
Over Temperature	Derating then re-start automatically		

➤ Application



EV bus (Elec City)

➤ Dimension



Madhura Power Technologies Pvt. Ltd.

A 202 Trade Towers, International Convention Centre
SB Road, Pune 411016 INDIA

Tel.: +91-20-25632783, 25638494

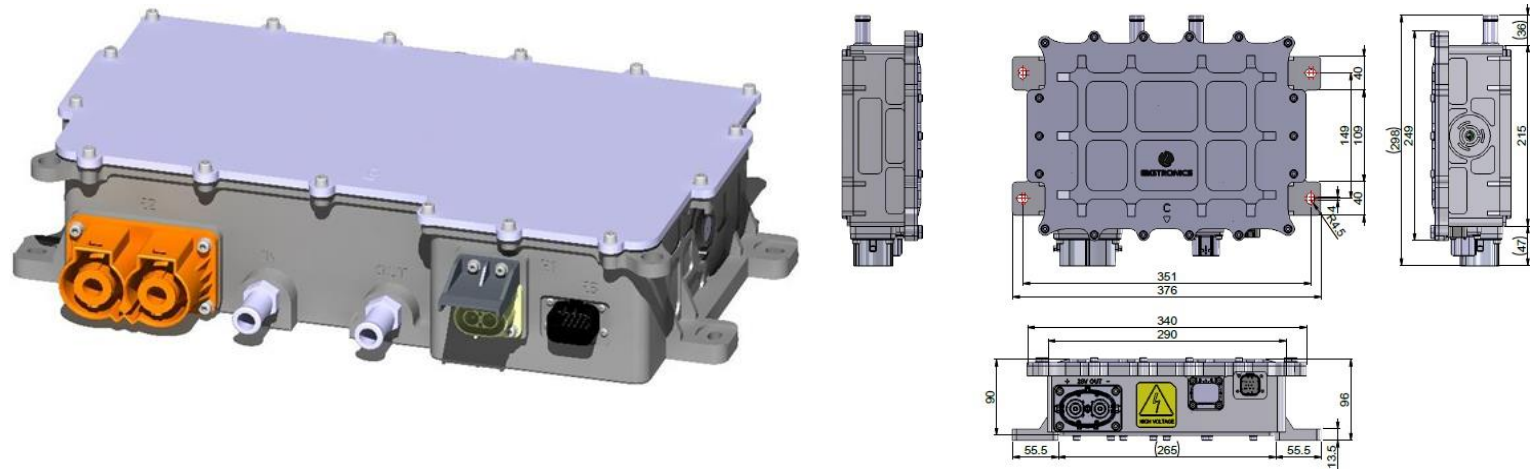
Email: sales@madhura.net

Website : www.madhura.net

DC to DC Converter for Hybrid and EV

Model M-ACU28V10K

10 kW @ 28 Vdc



POWER	UNIT	STANDARD
Power ratings	[kW]	10
Input side voltage range	[V]	700(550~850)
Input side current ratings	[A]	15.87(13.1~20.3)
Output side Voltage range	[V]	28(16~32)
Output side current ratings	[A]	357.1
Control Power	[V]	28(16~32)
Structure(Type)	[-]	Uni-Directional
Efficiency @ 80% Load	[%]	Over 97
Efficiency @ Max Load	[%]	Over 96
OPERATING CONDITION	UNIT	STANDARD
Environ. Temp.(operating)	[°C]	-40 ~ 85
Environ. Temp(storage)	[°C]	-40 ~ 105
CONTROL	UNIT	STANDARD
Type of Controller	[-]	Digital/Analog
Command source and type	[-]	Voltage command from PCU
Command recurrence time	[ms]	10
Control period	[kHz]	1
Control accuracy	[V]	±0.1V
Control Bandwidth	[Hz]	Over than 1,000