Technical Data Sheet

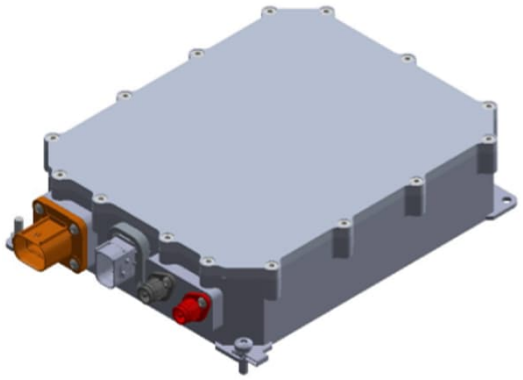
RMOD700-HV-UW / E-Mobility

700W / Wide Range

RECOM DC/DC Converter

FEATURES

- Converter with I/O isolation
- High Input Voltage Range
- 700 W rated power
- Parallel Operation without Active Current Sharing
- 297 mm x 212 mm x 64 mm compact size
- Base-plate cooling
- IP6K9K protection



Dimensions 297.0 x 212.0 x 64.0 mm (11.69 x 8.35 x 2.52 in)

APPLICATION



SAFETY & EMC

CE RoHS² compliant 10 from 10 Reach compliant

- The converter follows LVD Directive 2014/35/EU and EMC Directive 2014/30/EU.
- The converter is CE compliant. EMC radiation must be evaluated and tested in the complete system since mounting and wiring have a large influence on radiation behaviour.
- Cybersecurity: the product features a serial communication interface. CRA-relevant security aspects have been considered in the product design and documentation, including risk assessment. The product complies with the Cyber Resilience Act (CRA, EU Regulation 2024/2847) when installed in accordance with the instruction sheet.

DESCRIPTION

The RMOD700-HV-UW Series is a high-performance DC/DC converter designed for e-mobility, material handling, and automotive applications. It features robust I/O isolation and supports a wide input voltage range, making it suitable for demanding environments. With a rated power of 700W, this converter enables parallel operation without the need for active current sharing, allowing for scalable power solutions. Its compact dimensions facilitate integration into space-constrained systems. The unit operates reliably across a broad temperature range from -40°C to +85°C and supports base-plate cooling for efficient thermal management. Additionally, the RMOD700-HV-UW offers IP6K9K protection, ensuring resistance to dust and high-pressure water ingress, ideal for harsh and challenging environments.

MODELS

Part Number	Input Voltage nom. [VDC]	Input Current Max. [A]	Output Voltage nom. [VDC]	Output Current Max. [A]	Output Power Max [W]
RMOD700-HV-800-14-UW	800	2.2	14	50	700
RMOD700-HV-800-28-UW		2.2	28	25	
RMOD700-HV-800-56-UW		2.2	56	12.5	

RMOD700-HV-800- -UW

- Series Type
- Nominal Output Power
- Nominal Output Voltage
- Input Voltage

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RECOM
DC/DC Converter

BASIC CHARACTERISTICS

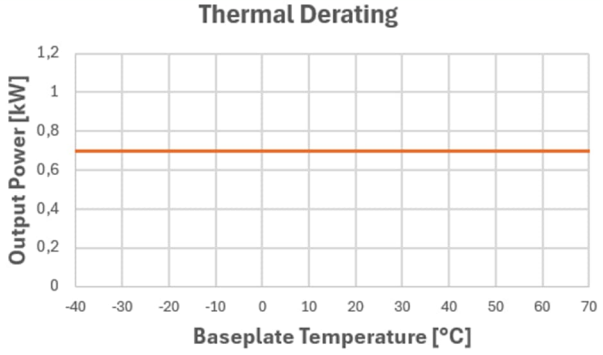
Parameter	Conditions		Min.	Typ.	Max.
INPUT					
Rated Input Voltage				800VDC	
Input Voltage Range			350VDC[1]		950VDC
Efficiency				93.5%	
OUTPUT					
Rated Output Voltage	RMOD700-HV-800-14-UW @Full Load			14VDC	
	RMOD700-HV-800-28-UW @Full Load			28VDC	
	RMOD700-HV-800-56-UW @Full Load			56VDC	
Output Voltage Range (adjustable via CAN)	RMOD700-HV-800-14-UW @Full Load		12VDC		14VDC
	RMOD700-HV-800-28-UW @Full Load		24VDC		28VDC
	RMOD700-HV-800-56-UW @Full Load		48VDC		56VDC
Maximum Output Current (adjustable via CAN)	RMOD700-HV-800-14-UW Vin≥350Vdc		10A		50A
	RMOD700-HV-800-28-UW Vin≥350Vdc		10A		25A
	RMOD700-HV-800-56-UW Vin≥350Vdc		10A		12.5A
Minimum Output Current			0A		
Output Power Max					700W
Output Ripple & Noise	Noise BW 20 MHz, with respect to the output voltage Rated Output voltage and Output Power	RMOD700-HV-800-14-UW			4%
		RMOD700-HV-800-28-UW			3%
		RMOD700-HV-800-56-UW			3%
Remote Control ON/OFF	CAN communication turns ON when voltage is applied on the EN signal pin		10VDC	24VDC	32VDC
Power Good Signal	Open Collector Pin Active LOW Suitable for an External Pull-Up Resistor				1mA
Power Good Signal Threshold	Positive going threshold	RMOD700-HV-800-14-UW		11VDC	
		RMOD700-HV-800-28-UW		22VDC	
		RMOD700-HV-800-56-UW		44VDC	
	Negative going threshold	RMOD700-HV-800-14-UW		9VDC	
		RMOD700-HV-800-28-UW		20VDC	
		RMOD700-HV-800-56-UW		40VDC	
Output Accuracy	Full Load		-2%		+2%
Line Regulation			-1%		+1%
Load Regulation	Output voltage increases at no load			-5%	
Transient Response	10% - 90% load				10%
	Recovery Time				10ms
Apparition Time	Vin=350V				<1s

Note 1: Start-up Voltage= 350VDC; unit shuts down below 330Vdc (Undervoltage Lockout)

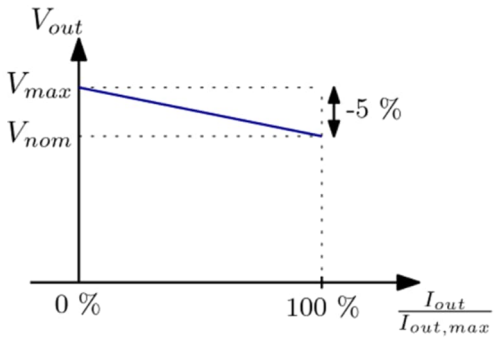
CAN BUS (Interface according to J1939)

CAN database file with communication registers available on request

POWER DERATING VS BASE PLATE TEMPERATURE



OUTPUT VOLTAGE REGULATION vs CURRENT



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ENVIRONMENTAL CONDITIONS

Parameter	Conditions	Min.	Typ.	Max.
Operating Ambient Temperature Range	Base-Plate Temperature Not Exceeding the Max Value	-40°C		+85°C
Base-Plate Temperature	Full Power			+70°C
Cooling	Base Plate			
Storage Temperature Range		-40°C		+85°C
Operating Altitude			2000m	
IP Rating	With mating connector		IP6K9K	
Pollution Degree	Outdoor device		PD4	
Bump	Half Sinusoidal, Exposure Levels 10g, Duration 16ms, 10 /axis		EN 60068-2-27 (Eb)	
Shock	Half Sinusoidal, Exposure Levels 30g, Duration 11ms, 6 / axis		EN 60068-2-27 (Ea)	
Vibration Sinusoidal	Frequency 5-150Hz, Constant Displacement, 0.4mm, 5Hz – 57Hz Constant Acceleration, 2.5g, 57Hz – 150Hz		EN 60068-2-6 (Fc)	
Damp Heat	Cyclic: Air Temperature 55°C No. of Cycles 2 Test of Cycle Db Variant 1		EN 60068-2-30 (Db)	
Salt Mist	Air temperature 35°C Duration 96h Concentration 5%		EN 60068-2-11 (Ka)	
Low Temperature storage	Temperature: -40°C, Stabilization Time 16h		EN 60068-2-1 (Ab)	

SAFETY AND PROTECTIVE FUNCTIONS

Parameter	Conditions		Min.	Typ.	Max.
Class of Equipment	Connection point to mechanical chassis provided			Not Classified	
Dielectrics withstand voltage 60s EN62477-1	Input vs Output + Chassis			2200VAC[3]	
	Output – Chassis			600VDC[3]	
Isolation Resistance	Input vs Output + Chassis at 1000VDC		300MΩ		
	Output vs Input + Chassis at 500VDC		300MΩ		
Isolation Grade	Input – Output			Reinforced	
	Input – Chassis			Basic [4]	
	Output – Chassis			Basic	
HVIL Function	Passive High Voltage Interlock, Safety Feature for Low-Voltage Loop			Present, see pinout	
Internal Input Fuse				None [2]	
Short Circuit Protection (SCP)	Short Circuit Latch Off the Output Voltage. Latch Condition can be Cleared by Inhibit Signal or Input voltage reset				
Input Reverse Polarity Protection	Non-destructive			Protected	
Overvoltage Protection (OVP)	Latch Off the Output Voltage, Vin Shutdown is Necessary to Reset the Latch	RMOD700-HV-800-14-UW		18VDC	
		RMOD700-HV-800-28-UW		36VDC	
		RMOD700-HV-800-56-UW		67VDC	
Overcurrent Protection (OCP)			1.1 Inom		1.3 Inom
Input overvoltage					950VDC
Overtemperature Protection (OTP)	Internal Threshold by NTC, Auto Restart After Cool Down (Base Plate Temperature) Worst case Vin=350V			75°C	
Undervoltage Lockout				330VDC	

Note 2: No integrated fuse. A fuse must be provided externally by the customer application in accordance with maximum input parameters.

Note 3: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note 4: Which monitors the insulation resistance to chassis. The supplementary protection needs to be operated immediately after a failure of the basic insulation.

CERTIFICATIONS

Compliance	Standard / Criterion
RoHS + RoHS2 Restriction of the use of certain hazardous substances in electrical and electronic equipment	RoHS 2011/65/EU + AM2015/863/EU
REACH Regulation	EC 1907/2006
CE conformity	CE

CERTIFICATIONS

Safety		
Compliance	**Parameter**	**Standard / Criterion**
Safety	Safety requirements for electronic power converter systems and equipment - Part 1: General	IEC / EN62477-1

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CERTIFICATIONS

EMC Compliance

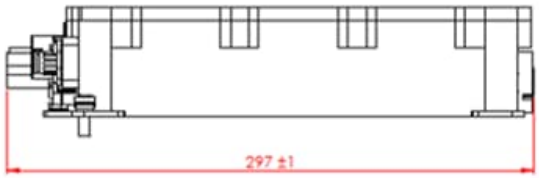
Compliance	Parameter	Standard / Criterion
Electromagnetic compatibility	Broadband electromagnetic interference 30-75 MHz; 62- 52 dBµV/m 75-400 MHz; 52-63 dBµV/m 0,4-1 GHz; 63 dBµV/m	ECE-R10, Rev.6, Part 6.5
	Narrowband electromagnetic interference 30-75 MHz; 52-42 dBµV/m 75-400 MHz; 42-53 dBµV/m 0,4-1 GHz; 53 dBµV/m	ECE-R10, Rev.6, Part 6.6
	Limits for conducted disturbances, input port only 0.15-0.5 MHz; 79 dBµV/m (QP) 0.5-30 MHz; 73 dBµV/m (QP)	ECE-R10, Rev.6, Part 7.13
	Immunity of ESAs to electromagnetic radiation	ECE-R10, Rev.6, Part 6.8
Road vehicles - Electrical Disturbances from Conduction and Coupling	Immunity of ESAs to transient disturbances conducted along 24 V supply lines Transient test pulse 1, test pulse 2a/b, test pulse 3a/b	ECE-R10 Part 6.9 ISO 7637-2

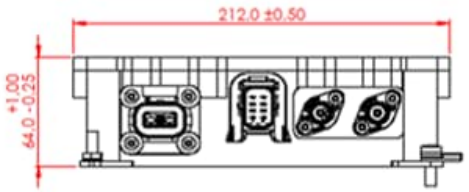
MECHANICAL DATA

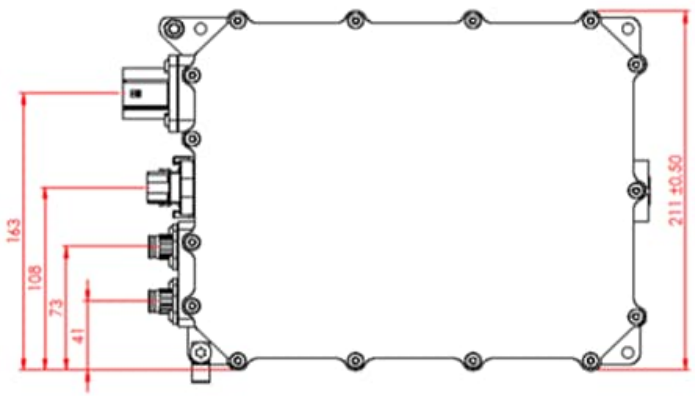
Parameter	Conditions	Min.	Typ.	Max.
Weight			TBD	
Case	Aluminium			
IP Protection Class	With Mating Connector		IP6K9K	
Height			64.0mm 2.52in	
Width			297.0mm 11.69in	
Length			212.0mm 8.35in	

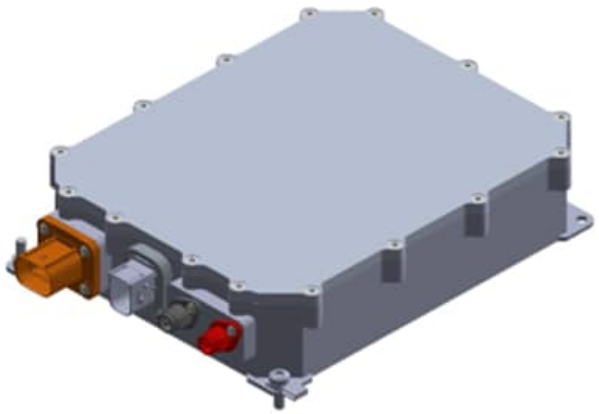
DIMENSIONS

Dimension Drawing (mm)





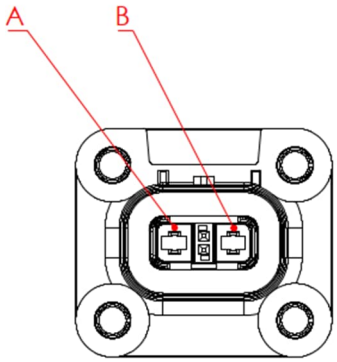




INPUT CONNECTOR: TYCO ELECTRONICS 2310540-2

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Pin No.	Configuration	Function
A	HV+	Positive High Voltage DC Input
B	HV-	Negative High Voltage DC Input



OUTPUT CONNECTOR: AMPHENOL

Pin		Function
RED	SLPHIRMBPSR1	Positive Output Voltage
BLACK	SLPHIRMBPSB1	Negative Output Voltage

SIGNAL CONNECTOR: TYCO ELECTRONICS 1-1564416-1

Pin NO.	Configuration	Function
1	HVIL_IN(5)	High Voltage Interlock IN
2	SIGNAL GROUND	Signal ground
3	CAN_L	CAN Low Signal
4	CAN_H	CAN High Signal
5	HVIL_OUT(5)	High Voltage Interlock OUT
6	-	Not Connected
7	PG	Power Good
8	EN	Enable

Note 5: HVIL_IN (PIN 1) and HVIL_OUT (PIN 5) will short when input HV connector is plugged in.



DIMENSIONS AND INSTALLATION INFORMATION

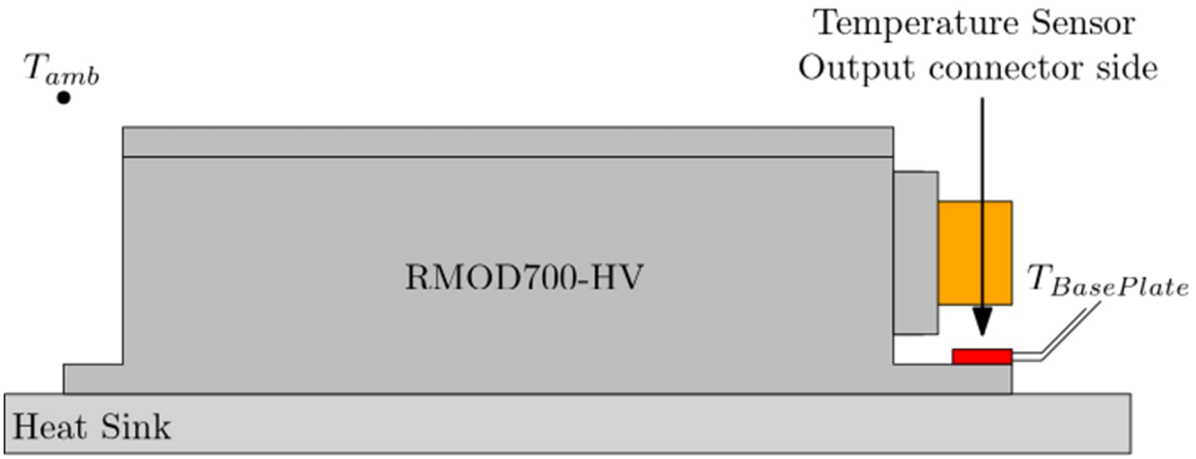
For converter installation, observe the following requirements:

- Install the converter in a secure location out of reach of users to prevent accidental contact with high-voltage parts or burns from hot surfaces.
- Install the converter in a dry area protected from splashing water, dirt, and impact.
- The converter's sealing is ensured only if all wires are fully assembled and connected to sealed units on both ends. Any unconnected cable or wire must be sealed separately.
- Secure all cables near the device with strain relief elements (not included).
- Allow enough slack in the cables and route them away from sharp edges.
- Ensure the mounting arrangement securely holds the device and minimizes vibration.
- Ensure the enclosure is adequately ventilated to prevent heat buildup.

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BASEPLATE TEMPERATURE CONTROL

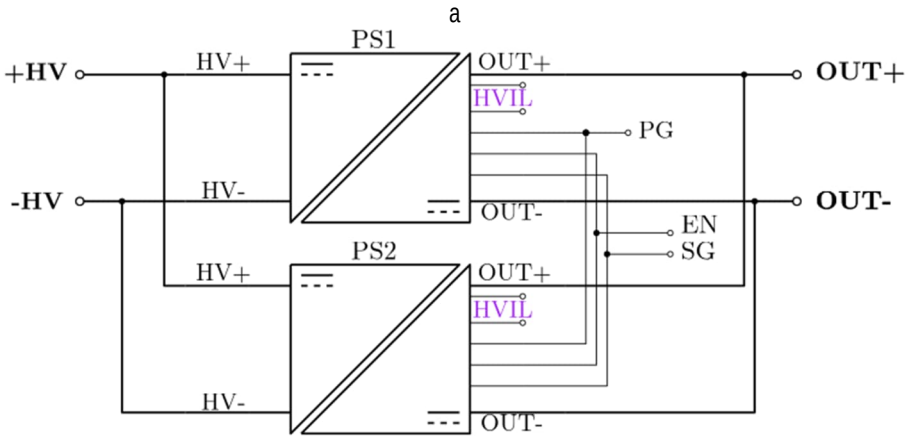
- The base plate temperature (TBasePlate) can be controlled through a temperature sensor connected as reported here



PARALLEL OPERATION

- Here is an example of two units connected in parallel:

a



- HVIL contacts can be connected in series to form a single HVIL loop.

WARRANTY AND GUARANTEE

The warranty corresponds to the regulations in our currently valid general terms and conditions.

INSTRUCTIONS REGARDING DISPOSAL

A basic requirement for the re-use and recycling of used electronic devices is the correct disposal. With the implementation of the electric and electronic device regulation, electronic devices may no longer be disposed of along with ordinary household waste but must be separately collected and recorded by a specialist service.
Disposal through a specialist service significantly helps to avoid dangers to people and nature. Therefore, in the case of disposal, we recommend contacting a recognized specialist disposal service.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; each customer is responsible for determining its suitable. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

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