Technical Data Sheet

RIDA1300-TW / SINE WAVE INVERTER

1100W-1300VA / Wide Input Range

RECOM
DC/AC INVERTER

FEATURES

- Sine wave output voltage
- Suitable for motors control
- Adjustable output voltage
- High input-output isolation 3000Vrms
- Remote control via RS232
- Alarm by isolated relay contacts
- Remote ON/OFF opto-coupled
- According to standard EN50155:2021
- Fire and Smoke: EN45545-2 approved



(Size 1) Dimensions 66.5 x 178.0 x 315.0 mm -2.62 x 7.01x 12.4 inch
(Size 2) Dimensions 66.5 x 200.0 x 315.0 mm -18.54 x 7.874x 12.4 inch

APPLICATION



SAFETY & EMC

- The charger 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.

DESCRIPTION

- The RIDA1300 consists of three phase sine-wave DC-AC inverters with galvanic isolation between input and output.
- The unit allows:
- Start-up motors by means of a soft start. In the start-up, the output voltage and frequency rise linearly from 0V to set voltage and from 5Hz to set frequency. The start-up ramp slope may be changed via RS-232 port
- Set the rotation speed of a motor according to the appropriate Voltage/Frequency ratio.
- Monitoring the status of the input and output.
- Set and monitor parameters via RS-232.
- The RIDA1300 has a maximum output current protection. This protects the semiconductors even when an output short-circuit occurs. It also features a disabled function for input under-voltage.

MODELS

Part Number	Input Voltage nom. [VDC]	Input Current Max. [A]	Output Voltage nom. [VAC]	Output Current Max [A]	Output Power Max [W]	Size
RIDA1300-24-250-TW-1.1kW	24	73.57	250	3.10	1100	2
RIDA1300-72-250-TW-1.1kW	72	24.25	250	3.10	1100	1
RIDA1300-110-250-TW-1.1kW	110	15.87	250	3.10	1100	1
RIDA1300-24-400-TW-1.1kW	24	73.57	400	1.88	1100	2
RIDA1300-72-400-TW-1.1kW	72	24.25	400	1.88	1100	1
RIDA1300-110-400-TW-1.1kW	110	15.70	400	1.88	1100	1
RIDA1300-24-400-TW-PRN-1.1kW	24	73.57	400	1.88	1100	2

* References subject to special MOQs and lead times. Please consult RECOM Power Systems's Sales Dept. and web site.

RIDA1300- - -TGSW-

Nominal power
Nominal input
Options: PRN: with Neutral
Nominal Output

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BASIC CHARACTERISTICS				
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
	INPUT			
Rated Input Voltage	RIDA1300-24-250-TW-1.1kW		24VDC	
	RIDA1300-72-250-TW-1.1kW		72VDC	
	RIDA1300-110-250-TW-1.1kW		110VDC	
	RIDA1300-24-400-TW-1.1kW		24VDC	
	RIDA1300-72-400-TW-1.1kW		72VDC	
	RIDA1300-110-400-TW-1.1kW		110VDC	
	RIDA1300-24-400-TW-PRN-1.1kW		24VDC	
Input Voltage Range	RIDA1300-24-250-TW-1.1kW	16.8VDC		30.0VDC
	RIDA1300-72-250-TW-1.1kW	50.4VDC		90.0VDC
	RIDA1300-110-250-TW-1.1kW	77.0VDC		138.0VDC
	RIDA1300-24-400-TW-1.1kW	16.8VDC		30.0VDC
	RIDA1300-72-400-TW-1.1kW	50.4VDC		90.0VDC
	RIDA1300-110-400-TW-1.1kW	77.0VDC		138.0VDC
	RIDA1300-24-400-TW-PRN-1.1kW	16.8VDC		30.0VDC
Input Current Max.	RIDA1300-24-250-TW-1.1kW			73.57A
	RIDA1300-72-250-TW-1.1kW			24.25A
	RIDA1300-110-250-TW-1.1kW			15.87A
	RIDA1300-24-400-TW-1.1kW			73.57A
	RIDA1300-72-400-TW-1.1kW			24.25A
	RIDA1300-110-400-TW-1.1kW			15.70A
	RIDA1300-24-400-TW-PRN-1.1kW			73.57A
Input Current No Load	RIDA1300-24-250-TW-1.1kW			1.58A
	RIDA1300-72-250-TW-1.1kW			0.52A
	RIDA1300-110-250-TW-1.1kW			0.34A
	RIDA1300-24-400-TW-1.1kW			1.58A
	RIDA1300-72-400-TW-1.1kW			0.52A
	RIDA1300-110-400-TW-1.1kW			0.34A
	RIDA1300-24-400-TW-PRN-1.1kW			1.58A
Efficiency	RIDA1300-24-250-TW-1.1kW		89%	
	RIDA1300-72-250-TW-1.1kW		90%	
	RIDA1300-110-250-TW-1.1kW		90%	
	RIDA1300-24-400-TW-1.1kW		89%	
	RIDA1300-72-400-TW-1.1kW		90%	
	RIDA1300-110-400-TW-1.1kW		91%	
	RIDA1300-24-400-TW-PRN-1.1kW		89%	
Low input voltage timed shutdown	RIDA1300-24-250-TW-1.1kW		16.8VDC	
	RIDA1300-72-250-TW-1.1kW		50.4VDC	
	RIDA1300-110-250-TW-1.1kW		77.0VDC	
	RIDA1300-24-400-TW-1.1kW		16.8VDC	
	RIDA1300-72-400-TW-1.1kW		50.4VDC	
	RIDA1300-110-400-TW-1.1kW		77.0VDC	
	RIDA1300-24-400-TW-PRN-1.1kW		16.8VDC	
Low input voltage instantaneous shutown	RIDA1300-24-250-TW-1.1kW		14.4VDC	
	RIDA1300-72-250-TW-1.1kW		43.2VDC	
	RIDA1300-110-250-TW-1.1kW		66.0VDC	
	RIDA1300-24-400-TW-1.1kW		14.4VDC	
	RIDA1300-72-400-TW-1.1kW		43.2VDC	
	RIDA1300-110-400-TW-1.1kW		66.0VDC	
	RIDA1300-24-400-TW-PRN-1.1kW		14.4VDC	
Time to shutdown (t)			500ms	

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BASIC CHARACTERISTICS				
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
	OUTPUT			
Rated Output Voltage	RIDA1300-24-250-TW-1.1kW		250VAC	
	RIDA1300-72-250-TW-1.1kW		250VAC	
	RIDA1300-110-250-TW-1.1kW		250VAC	
	RIDA1300-24-400-TW-1.1kW		400VAC	
	RIDA1300-72-400-TW-1.1kW		400VAC	
	RIDA1300-110-400-TW-1.1kW		400VAC	
	RIDA1300-24-400-TW-PRN-1.1kW		400VAC	
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
Output Voltage Range (via RS-232)	RIDA1300-24-250-TW-1.1kW	150VAC		250VAC
	RIDA1300-72-250-TW-1.1kW	150VAC		250VAC
	RIDA1300-110-250-TW-1.1kW	150VAC		250VAC
	RIDA1300-24-400-TW-1.1kW	200VAC		400VAC
	RIDA1300-72-400-TW-1.1kW	200VAC		400VAC
	RIDA1300-110-400-TW-1.1kW	200VAC		400VAC
	RIDA1300-24-400-TW-PRN-1.1kW	200VAC		400VAC
Output Current Range	RIDA1300-24-250-TW-1.1kW		3.10A	
	RIDA1300-72-250-TW-1.1kW		3.10A	
	RIDA1300-110-250-TW-1.1kW		3.10A	
	RIDA1300-24-400-TW-1.1kW		1.88A	
	RIDA1300-72-400-TW-1.1kW		1.88A	
	RIDA1300-110-400-TW-1.1kW		1.88A	
	RIDA1300-24-400-TW-PRN-1.1kW		1.88A	
Output Current Peak (10ms)	RIDA1300-24-250-TW-1.1kW		6.6A	
	RIDA1300-72-250-TW-1.1kW		6.6A	
	RIDA1300-110-250-TW-1.1kW		6.6A	
	RIDA1300-24-400-TW-1.1kW		3.4A	
	RIDA1300-72-400-TW-1.1kW		3.4A	
	RIDA1300-110-400-TW-1.1kW		3.4A	
	RIDA1300-24-400-TW-PRN-1.1kW		3.4A	
Output Power			1100W 1300VA	
Output Frequency	Via RS-232	5Hz		60Hz
Output under-voltage shut	< 85% of setting 1000ms			
Warning voltage (output alarm)	< 90% of setting to 200ms			
Initial start-up frequency			5Hz	
Soft start duration	10 cycles			
Ramp-up V/F	one cycle		1 Hz	
Time between restart attempts			4000ms	
Number of attempts of consecutive overload			3	
Max. Output Power			1100W 1300VA	
Output HF Ripple				2.5%

ENVIROMENTAL CONDITIONS				
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
Operating Temperature Range	Full load	-25°C		+55°C
	62.5% Load	-25°C		+70°C
	25% Load	-25°C		+85°C
Storage Temperature Range		-25°C		+85°C
Operating Humidity Range	No condesated	5%		95%
Operating Storage Range	No condesated	5%		95%
Operating Altitude	Above sea level		2000m	
Cooling	Controlled internal fan			
MTBF	According MIL-HDBK-217-E: Gb, 25°C		100000h	

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SAFETY AND PROTECTIVE FUNCTIONS				
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
Dielectrics withstand voltage	Input - Output		3000VRMS	
	Input – P.E.		1500VRMS	
	Output – P.E.		1500VRMS	
Isolation				
Overloads protection	Shutdown with auto-recovery		---	
Short circuit protection (SCP)	Shutdown with auto-recovery		---	
Over-temperature protection (OTP)	Shutdown with auto-recovery		---	
Internal shutdown temperature			87°C	
Internal restart temperature			82°C	
Internal temperature of fan start-up			45°C	
Lock for continuous overload or internal failure	Unlimited time			
Reset time by input disconnection			>2	
Inrush Current				<25A

CERTIFICATIONS	
Environmental (Railway Standards)	
Compliance	**Standard / Criterion**
RoHS Restriction of the use of certain hazardous substances in electrical and electronic equipment	2015/863/EU SI 2012 No. 3032
RoHS2	RoHS 2011/65/EU + AM2015/863
CE	CE
UKCA	UKCA
Fire Protection on Railway Vehicles	EN 45545-2 Hazard Level HL3

CERTIFICATIONS	
Safety	
Compliance	**Standard / Criterion**
Low voltage the electrical equipment (safety) regulations	2014/35/EU SI 2016 No 1101
Audio/video, information and communication technology equipment Safety requirements	EN 62368-1:2024 + A11:2024
Railway Applications - Electrical Equipment used on rolling stock	EN50155: 2021
Railway applications. EMC Rolling stock equipment	EN50121-3-2:2016 + A1:2019

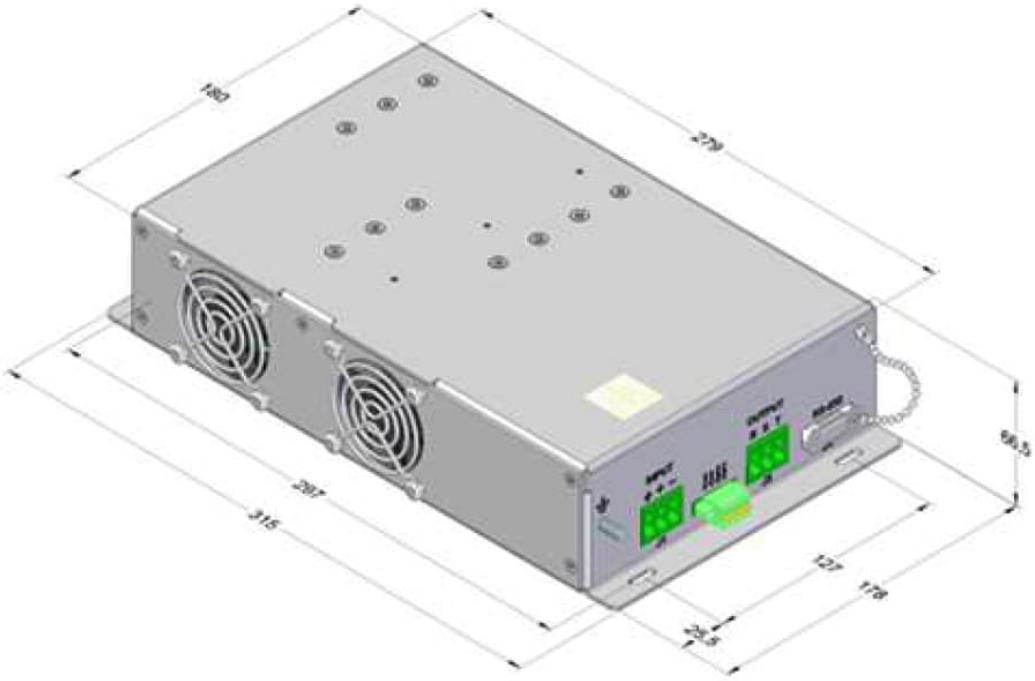
CERTIFICATIONS	
EMC Compliance	
Compliance	**Standard / Criterion**
EMC Electromagnetic compatibility regulations	2014/30/EU SI 2016 No 1091
Immunity according	EN IEC61000-6-2:2019
Emission according	EN IEC61000-6-4:2019

MECHANICAL DATA				
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**
Weight				<3200g 7,054lb
Enclosure Material	Aluminum Casting		---	
Height			66.5mm (size1-2) 2.62inch (size1-2)	
Width			178.0mm (size1) 7.01inch (size1) 200.0mm (size2) 7,874 inch (size2)	
Length			315.0mm (size1-2) 12.40inch (size1-2)	

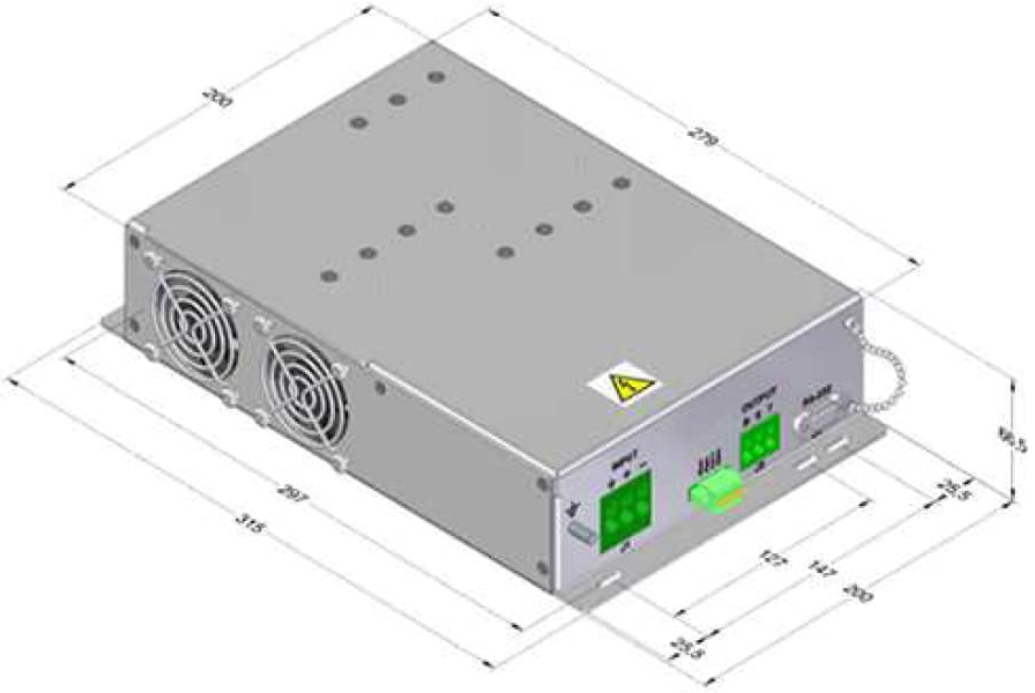
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DIMENSIONS

SIZE-1

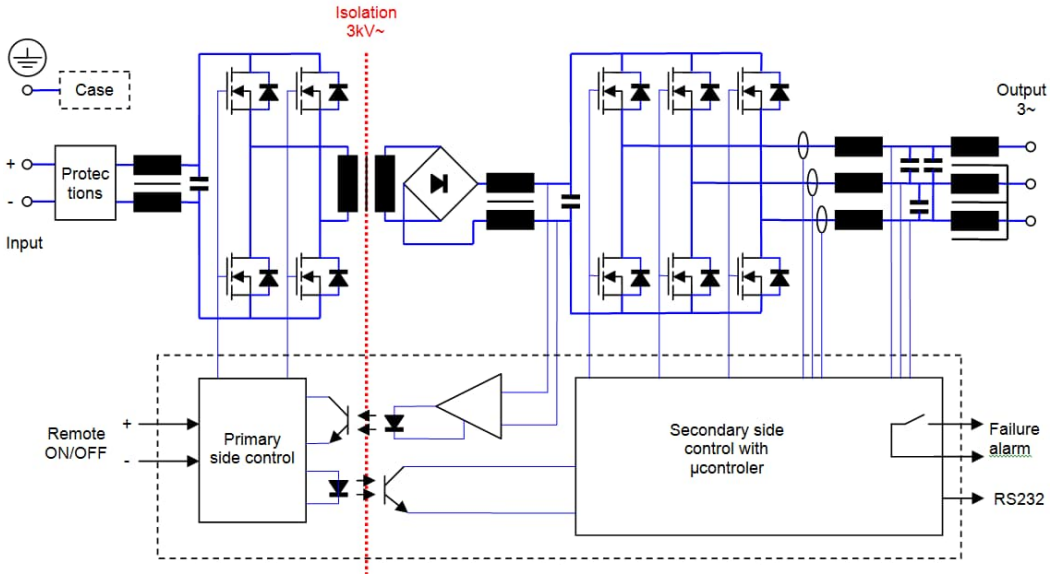


SIZE-2



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BLOCK DIAGRAM

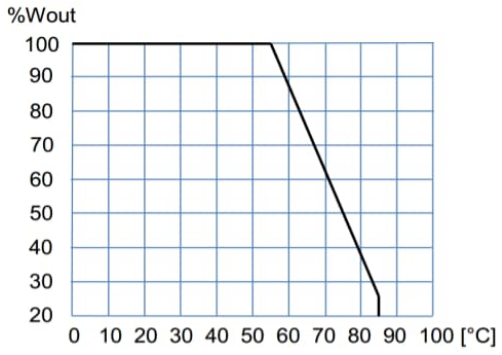


- The RIDA1300 consists of three phase sine-wave DC-AC inverters with galvanic isolation between input and output.
- The unit allows:
- Start-up motors by means of a soft start. In the start-up, the output voltage and frequency rise linearly from 0V to set voltage and from 5Hz to set frequency. The start-up ramp slope may be changed via RS-232 port
- Set the rotation speed of a motor according to the appropriate Voltage/Frequency ratio.
- Monitoring the status of the input and output.
- Set and monitor parameters via RS-232.

RS-232 Monitoring	RS-232 Settings
Output Voltage	On/Off
Internal Temperature	Output Voltage
Output Frequency	Output Frequency
Inverter State	Reset
Model Number	
Firmware Version	

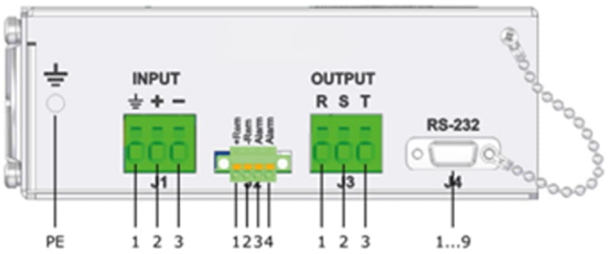
- The RIDA1300 has a maximum output current protection. This protects the semiconductors even when an output short-circuit occurs. It also features a disabled function for input under-voltage.

POWER DERATING vs AMBIENT TEMPERATURE



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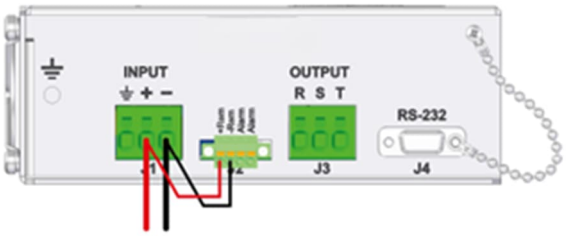
CONNECTIONS



Connection	Terminal	Notes
J0	Case PE	Threaded Shack M6 (Rec. Torque 3.8 Nm)
J1-1	Protective Earth	Cable 1.5…16mm²
J1-2	+Input	
J1-3	-Input	
J2-1	+Remote Off	Phoenix Contact MC1.5/4-GF-3.81 Mating Connector Included
J2-2	-Remote Off	
J2-3	Alarm	
J2-4	Alarm	
J3-1	R Output	Cable 0.75…4mm²
J3-2	S Output	
J3-3	T Output	
J4-2	RS232 Rx	SUB DB9
J4-3	RS232 Tx	
J4-5	RS232 GND	

DIMENSIONS AND INSTALLATION INFORMATION

- The unit has 4 threaded holes for the fixation on a mounting surface.
- The unit has internal fans. For an appropriate cooling, the air input and output should be free of elements that cause and an air flow reduction (minimum recommended distance to other objects 50mm).
- Make connection as shown in the figure
- To start-up the unit without a remote ON/OFF signal, it is possible by configuring the units via RS232 port or by making the following connection



For safety reasons, the following requirements must be met:

- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed
- Include an input fuse with a rating immediately higher than the maximum input current
- Use cables of adequate cross-sections for the cables used for each power connection

For the installation of converter, the following must be adhered to:

- The converter must be installed at a secure location out of reach of the user. This is to prevent dangers such as accidental touching of HV components or skin burns on the hot housing.
- The converter should be installed at a dry location, safe from splashing water, dirt and stone chipping.
- The tightness of the converter can only be guaranteed if all signal wires to the signal connectors are assembled and connected to a tight unit on both sides. If this is not the case for a cable or wire, it must be sealed separately.
- The mechanical fixture is to be designed in such a way that the device is installed in a fixed position and with as little vibrations as possible.
- All cable connections must be secured with strain relief elements near the device (not included in the scope of delivery).
- Cable connections must have sufficient play and must not meet sharp-edged components.
- The enclosure should be sufficiently ventilated (no heat accumulation).

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RECOMMENDED WIRING

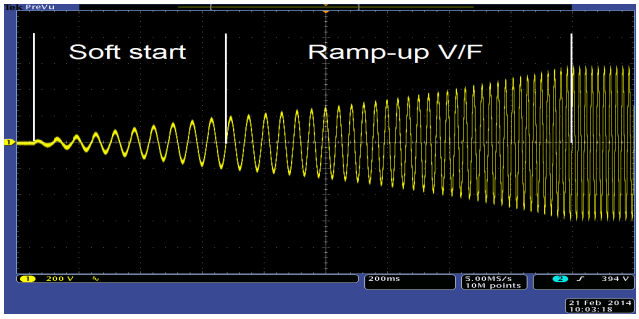
	Input 24V	Input 72V	Input 110V	Output 250V	Output 400V
Current	70A	24.4A	16A	3.1A	1.88A
Cable Cross Section	16mm²	2.5mm²	1.5mm²	0.75mm²	0.75mm²

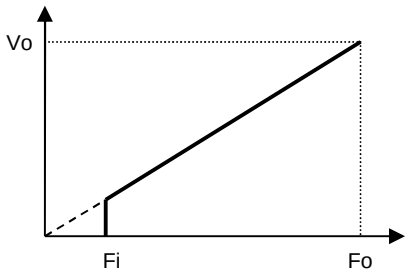
RS232 COMMUNICATION PORT

It is possible to control and monitor de unit via RS232 by means a terminal emulator like “Tera Term” or “Putty”. Also, it is possible to control and monitor the unit directly using the protocol showed in table: Protocol Configuration: ASCII Code, 9600Bauds, Parity None, 8Bits, 1Bit Stop

Header		Function	Parameter		Returns	Description
P	R	L	U		PTU■■■.■	Output voltage in Volts RMS
			T		PTT■■■.■	Internal temperature in ºC
			F		PTF■■■.■	Output frequency in Hz
			S		PTS■■■.■	Inverter status 999.9 → Enabled 000.0 → Disabled 111.1 → Inverter blocked by overload or short-circuit
			M		PTM■■■■	Model number
			R		PTR■■■■	Firmware version
			Other character		PTE	Command not supported
		G	3	■■■.■	OK / ERR	Changes the inverter status 999.9 → Enabled 000.0 → Disabled
			4	■■■.■	OK / ERR	Set the output voltage in Volts RMS 150.0 ≤ ■■■.■ ≤ 250.0 (models of 250V output) 200.0 ≤ ■■■.■ ≤ 400.0 (models of 400V output)
			6	■■■.■	OK / ERR	Changes the output frequency in Hz (output must be stopped) 005.0 ≤ ■■■.■ ≤ 075.0 Factory preconfigured → 50 Hz
			8	■■■.■	OK / ERR	111.1 → Reset the inverter
			B	■■■.■	OK / ERR	Changes the logic of the ‘Remote OFF input’ 222.2→ Inverter On applying 15…143Vdc on ‘Remote OFF input’ 111.1 → Inverter Off applying 15…143Vdc on ‘Remote OFF input’
			O	■■■.■	OK / ERR	Set the initial frequency in the start-up (Fi) (output must be stopped) 005.0 ≤ ■■■.■ ≤ 075.0 Factory preconfigured → 16Hz
			P	■■■.■	OK / ERR	Set the ramp-up in increment of “N” cycles per Hz in mode V/F, frequency changes or start-up (Note-1) 001.0 ≤ ■■■.■ ≤ 100.0

Note: OK (Data accepted) / ERR (Data not valid for the current parameter)





Example for N=1: start-up time = N x 1.7s for changes from 16Hz to 50Hz

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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.

REQUIREMENTS ON THE OPERATION PERSONNEL

All courses of action described in this manual may only be carried out by a qualified electrician! Specialist staff are defined as electricians who have had

- specific professional training
- have knowledge and experience in the field of electronics
- as well as knowledge of relevant provisions and dangers for which they can provide proof. Furthermore, they must be able to assess the work assigned to them independently, identify possible dangers, and establish necessary protection measures.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. 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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