Technical Data Sheet

RAC40S-K Series ◊ AC/DC Power Supply

40W ◊ Input: 100-277VAC or 100-264VAC

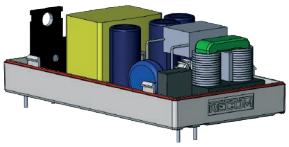
RECOM
AC/DC Converter

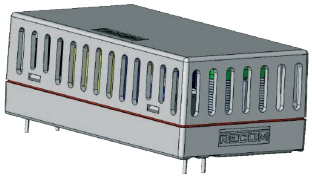
FEATURES

- Operating Input Voltage: 85 - 264 or 305VAC
- 40W still air convection rating
- 2”x1” footprint P12 for floating output connections
- 2.7”x1.5”; EMI-Filter for PELV or ground coupled output
- No load power consumption < 75mW
- 90% plus Efficiency, starting from 4W loads
- OVC III up to 3000m altitude; 5000m: OVC II
- Operating Temperature rated: -40° to 90°C
- Encapsulated and open frame printmount modules
- 3 year warranty





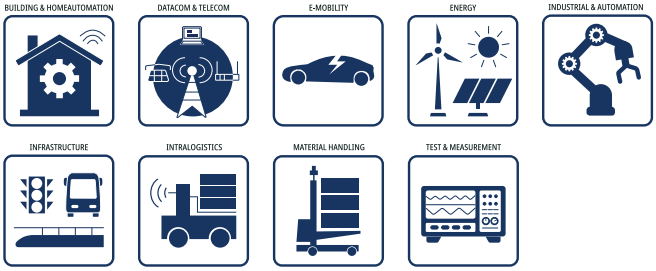






2” x 1” THT: 52.5 x 27.4 x 23.0mm (2.07 x 1.07 x 0.90 inch)
“/277/PCB/OF: 69.5 x 37.0 x 22.5mm (2.73 x 1.45 x 0.88 inch)
“/277/PCB/ENC: 69.5 x 37.0 x 24.0mm (2.73 x 1.45 x 0.94 inch)

APPLICATIONS



SAFETY & EMC

RoHS² compliant 10 from 10

Reach compliant

DESCRIPTION

The 40W AC/DC print-mount series sets a new benchmark in compact power conversion, delivering 40W under natural convection with an outstanding power density of up to 22W/in³ in its compact 2”×1” version. Combining efficiency exceeding 90% from just 4W load with ultra-low no-load power consumption below 75mW, the series offers exceptional energy performance. Available as encapsulated modules with industry-standard P12 pinning for floating output connections or open-frame versions with integrated EMI filtering for PELV and ground-coupled applications, the series provides maximum integration flexibility. Outstanding conducted EMI performance, with a margin of at least 8dB below EN55032 Class B limits, simplifies system integration and minimizes additional filtering efforts. Supporting 85–264VAC or extended 85–305VAC input, operating temperatures from -40°C to +90°C, OVC III compliance up to 2000m and OVC II up to 5000m, these modules are designed for demanding industrial applications and backed by a 3-year warranty. The compact 2”×1” version shares the P12 pinning configuration with the RAC10-K/277, RAC20NE-K/277, RACM30-K/277, and RACM65S-K/277 series, supporting consistent PCB layouts across different power classes.

SELECTION GUIDE

Part Number	Input Voltage Range (1) [VAC]	Output Voltage nom. [VDC]	Output Current nom. [A]	Efficiency typ. (2) [%]	Output Power continuous [W]
RAC40S-05SK (2)	85-264 / 85-305	5	6	88	30
RAC40S-12SK (2)	85-264 / 85-305	12	3.33	91	40
RAC40S-15SK (2)	85-264 / 85-305	15	2.67	91	40
RAC40S-24SK (2)	85-264 / 85-305	24	1.67	90	40
RAC40S-28SK (2)	85-264 / 85-305	28	1.42	90	40
RAC40S-48SK (2)	85-264 / 85-305	48	0.83	89	40

Note1: without suffix: 240VAC_nom rated; with suffix “/277”: 277VAC_nom rated
Note2: Efficiency is tested at nominal input (230VAC) and full load at +25°C ambient

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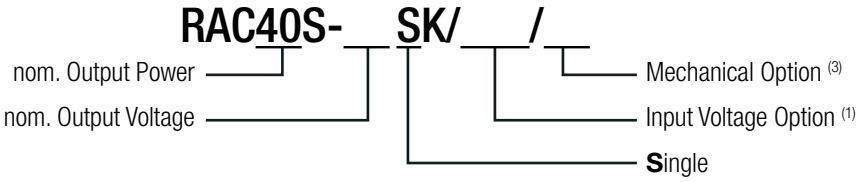
MODEL NUMBERING



Note3: without suffix= standard THT printmount version
"/PCB/OF"= open frame version with THT mounting pins
"/PCB/ENC"= enclosed version with THT mounting pins

Note4: RAC40S-xxSKA/277, variant without internal Y-caps : on request to meet OVCIII and/or 277_nom requirements on P12 footprint

ORDERING INFORMATION

Model	nom. Output Voltage	2" x 1"	2" x 1" "SKA/277/	"/277/PCB/OF"	"/277/PCB/ENC"
RAC40S-05SK	5VDC	y	on request	coming soon	coming soon
RAC40S-12SK	12VDC	y	on request	coming soon	coming soon
RAC40S-15SK	15VDC	y	on request	coming soon	coming soon
RAC40S-24SK	24VDC	y	on request	coming soon	coming soon
RAC40S-28SK	28VDC	y	on request	coming soon	coming soon
RAC40S-48SK	48VDC	y	on request	coming soon	coming soon

y= standard portfolio; on request= on project base (MOQ applies)

BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Parameter	Condition		Min.	Typ.	Max.
Nominal Input Voltage	50/60Hz	no suffix	100VAC		240VAC
		"/277" suffix			277VAC
Operating Range (5)	47-63Hz	no suffix	85VAC		264VAC
		"/277" suffix	85VAC		305VAC
Input Current	120AC			0.65A	1A
	230VAC			0.4A	
	277VAC			0.365A	
Inrush Current	cold start at 25°C, 230VAC				45A
No Load Power Consumption			40mW		75mW
Ecodesign Standby Mode Use (Available output power for stated input power)	P_{IN}= 0.3W		220mW		
	P_{IN}= 0.5W		400mW		
	P_{IN}= 0.7W		570mW		
Input Frequency Range			47Hz		63Hz
Minimum Load			0%		
Power Factor	120AC		0.6		
	230VAC		0.5		
	277VAC		0.45		

Note5: The products were submitted for safety files at AC-Input operation

Note6: Measurements are made with a 0.1µF MLCC & 10µF E-cap in parallel across output. (low ESR)
The test setup can have an impact on ripple noise values (placement of scope probe, capacitors, it's specifications, wires, PCB tracks, distances, etc.)

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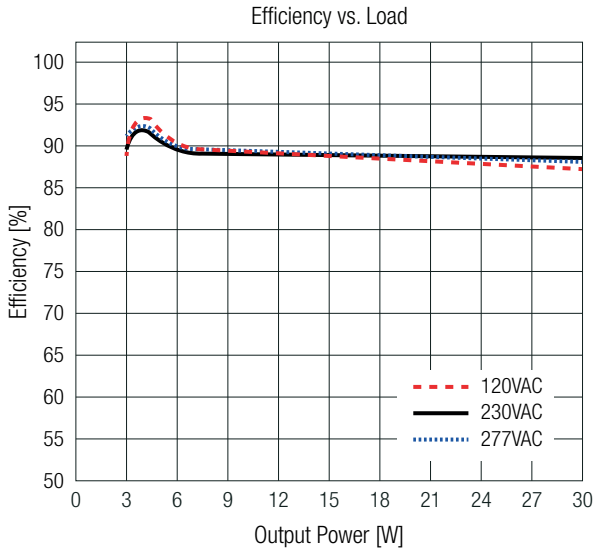
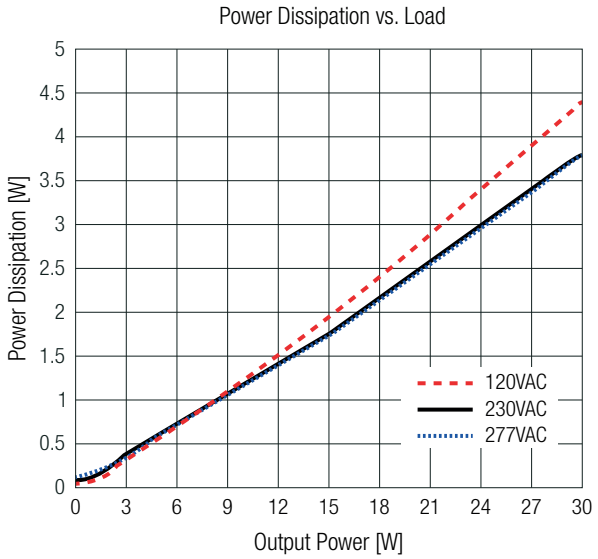
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

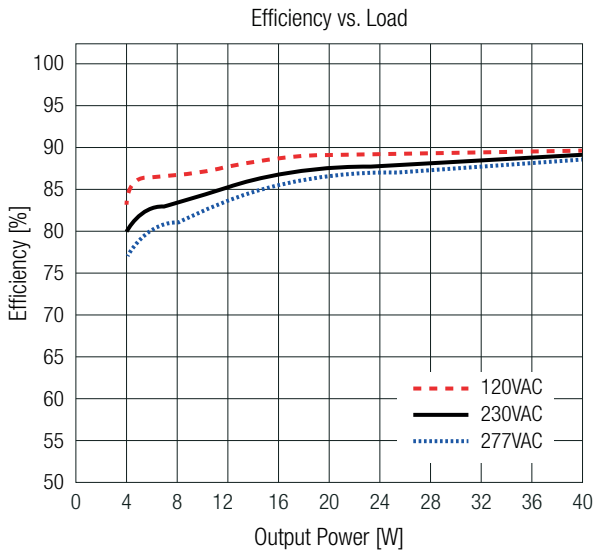
Parameter	Condition		Min.	Typ.	Max.
Start-up time	120AC			110ms	150ms
	230VAC			60ms	
	277VAC			40ms	
Rise time	230VAC				25ms
Hold-up time	120VAC			8ms	
	230VAC			30ms	
	277VAC			45ms	
Internal Operating Frequency					145kHz
Output Ripple and Noise [6]	20MHz BW	5Vout			120mVp-p
		others			1% of Vout

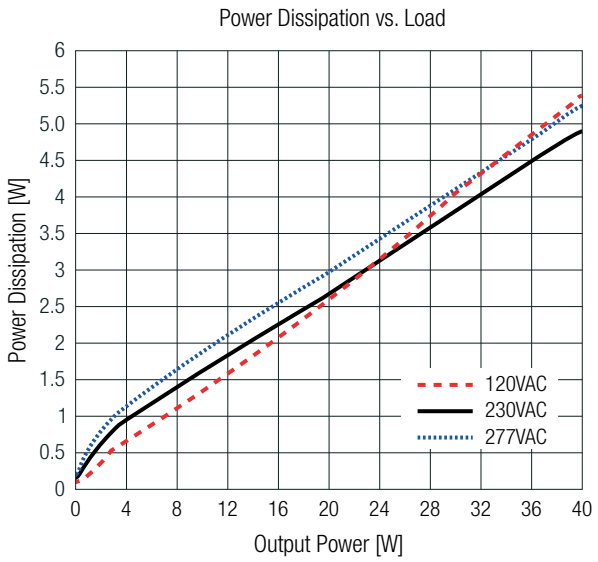
5Vout





48Vout





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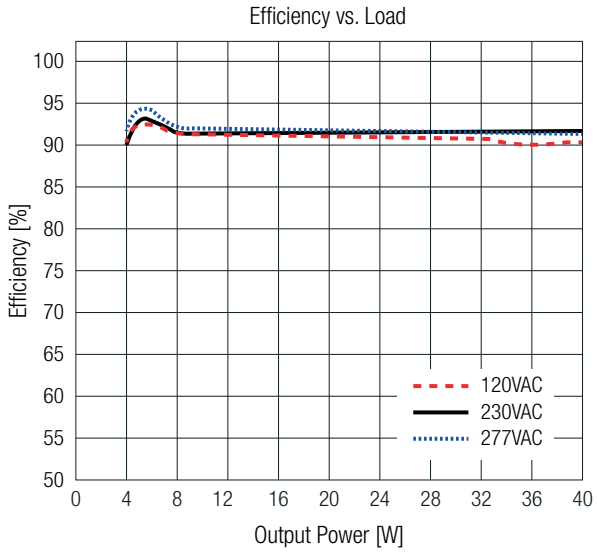
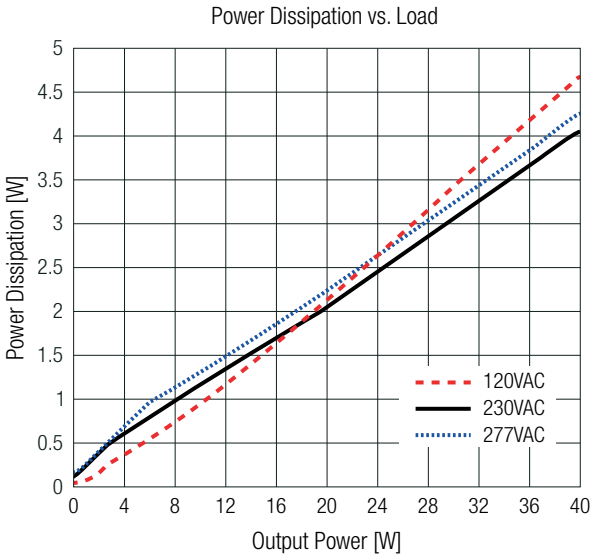
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

others





REGULATIONS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Parameter	Condition	Value
Output Accuracy		±3.0% max.
Line Regulation	low line to high line	±1.0% max.
Load Regulation [7]	10% to 100% load	1.0% typ.
Transient Response	10%-100%-10% load change steps	±800mV max.
	recovery time	3ms max.

Note7: Operation below 10% load will not harm the converter, but specifications may not be met

PROTECTIONS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Parameter	Type		Value
Internal Input Fuse			T3.15A , slow blow type
Short Circuit Protection (SCP)			hiccup, auto recovery
Over Voltage Protection (OVP)	5Vout		≤10VDC
	12 & 15Vout		≤25VDC
	24 & 28Vout		≤35VDC
	48Vout		≤63VDC
Over Voltage Category (OVC)	P12 modules		OVC III (2000m)
	"/PCB" versions		OVC III (3000m)
	all versions		OVC II (5000m)
Over Current Protection (OCP)			130%-150%, hiccup, auto recovery
Isolation Voltage [8]	1 minute	I/P to O/P	4.2kVAC
Isolation Resistance	V_{ISO} = 500VDC		1GΩ min.
Isolation Capacitance	I/P to O/P, 100kHz, 0.1V		<1200pF max.

Note8: For repeat Hi-Pot testing, reduce the time and/or the test voltage

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ENVIRONMENTAL (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

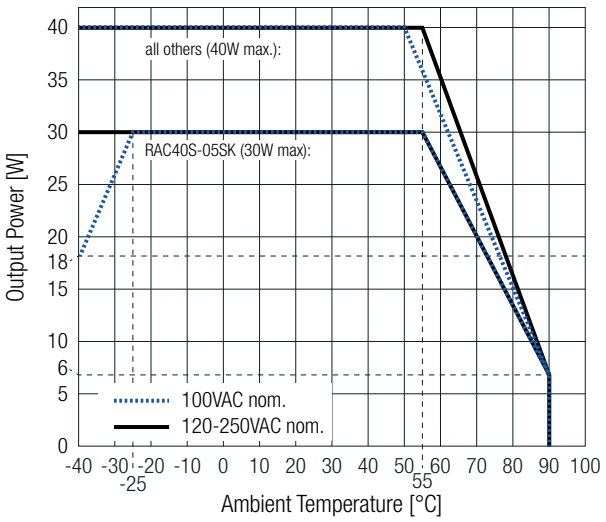
Parameter	Condition			Value
Operating Ambient Temperature Range	@ natural convection (0.1m/s)	refer to **„Derating Graph“**		-40°C to +90°C
Maximum Case Temperature				+110°C
Operating Altitude [9]	P12 modules			2000m (OVC III)
	“/PCB” versions			3000m (OVC III)
	all versions			5000m (OVC II)
Temperature Coefficient				0.023%/K
Operating Humidity	non-condensing			90% RH max.
Shock	according to IEC60068-2-6 & -64			5-500Hz, 2Grms, 15 min for each axis
MTBF	according to MIL-HDBK-217, G.B.	T_{AMB}= +25°C	100VAC	2000 x 10^3 hours
			230VAC	2110 x 10^3 hours
		T_{AMB}= +40°C	100VAC	1170 x 10^3 hours
			230VAC	1860 x 10^3 hours
Design Lifetime	5Vout @ 230VAC	T_{AMB}= +40°C		43 x 10^3 hours
		T_{AMB}= +50°C		24 x 10^3 hours
	others @ 230VAC	T_{AMB}= +40°C		28 x 10^3 hours
		T_{AMB}= +50°C		16 x 10^3 hours

Note9: Recognized by safety agency for safe operation up to 5000m. High altitude operation may impact the performance and lifetime. Please contact RECOM tech support for advice.

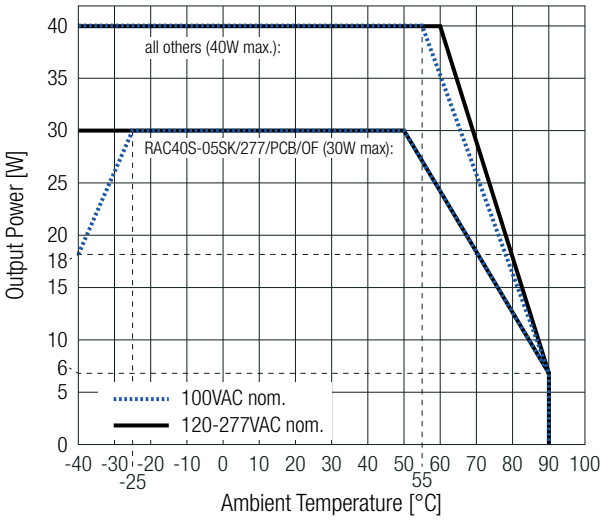
Derating Graph

(@ Chamber and natural convection 0.1m/s)

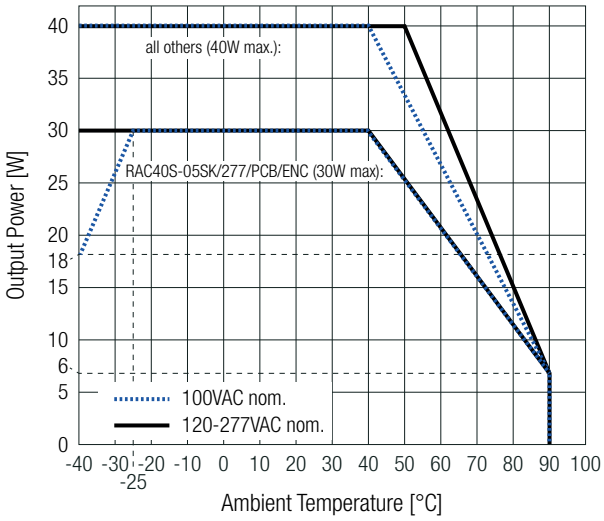
2” x 1” P12 modules



“/277/PCB/OF” Version coming soon



“/277/PCB/OF” Version coming soon



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SAFETY & CERTIFICATIONS

Certificate Type (Safety)	Report Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	pending	UL62368-1:2019
		CAN/CSA-C22.2 No. 62368-1-19
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	pending	IEC62368-1:2018
		EN IEC 62368-1:2020
Household and similar electrical appliances – Safety – Part 1: General requirements	pending	EN/IEC60335-1:2023 + A11:2023
		IEC60335-1:2020
Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure	pending	EN62333:2008 + AC:2008
Safety of power transformers, power supplies, reactors and similar products for supply voltages up to 1100 V Part 2: Particular requirements	pending	IEC 61558-2-16:2021
Safety of power transformers, power supplies, reactors and similar products for supply voltages up to 1100 V 3rd Edition	pending	IEC 61558-1:2017
Safety of power transformers, power supplies, reactors and similar products for supply voltages up to 1100 V 3rd Edition	pending	EN IEC 61558-1:2019
Safety of power transformers, power supplies, reactors and similar products for supply voltages up to 1100 V Part 2: Particular requirements	pending	EN IEC 61558-2-16:2025
RoHS2		RoHS 2011/65/EU + AM2015/863

EMC Compliance according to EN IEC61204-3	Condition	Standard / Criterion
Low voltage power supplies, d.c. output Part 3: Electromagnetic compatibility (EMC)		IEC/EN 61204-3:2018
Limits of Harmonic Current Emissions		EN IEC 61000-3-2:2019
Limits of Voltage Fluctuations & Flicker		EN61000-3-3:2013+A1:2019

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40W ◊ Input: 100-277VAC or 100-264VAC

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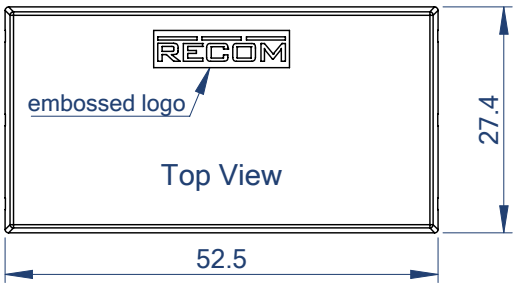
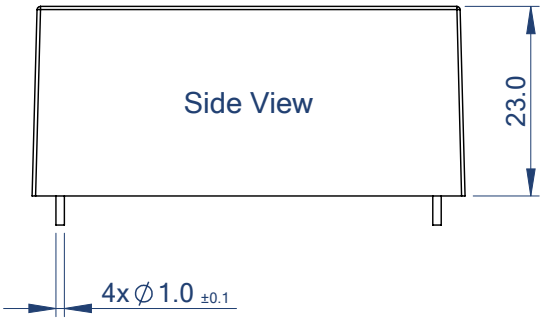
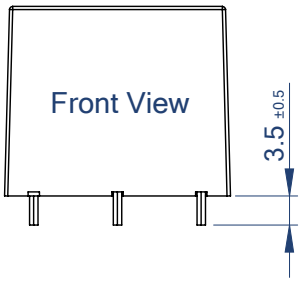
DIMENSION & PHYSICAL CHARACTERISTICS

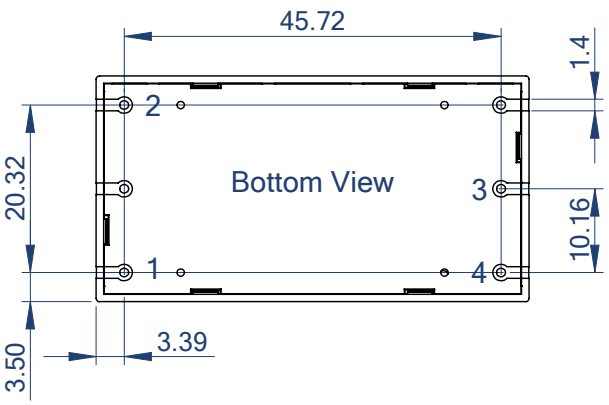
Parameter	Type	Value
Materials	case/ baseplate	black plastic, (UL94 V-0)
	potting	silicone, (UL94 V-0)
	PCB	FR4
Dimension (LxWxH)	encapsulated models	52.5 x 27.4 x 23.0mm 2.07 x 1.07 x 0.90 inch
	"/277/PCB/OF"	69.5 x 37.0 x 22.5mm 2.73 x 1.45 x 0.88 inch
	"/277/PCB/ENC"	69.5 x 37.0 x 24.0mm 2.73 x 1.45 x 0.94 inch
Weight	encapsulated models	80.5g typ. 0.17 lbs
	"/277/PCB/OF"	68.5g typ. 0.15 lbs
	"/277/PCB/ENC"	75g typ. 0.16 lbs

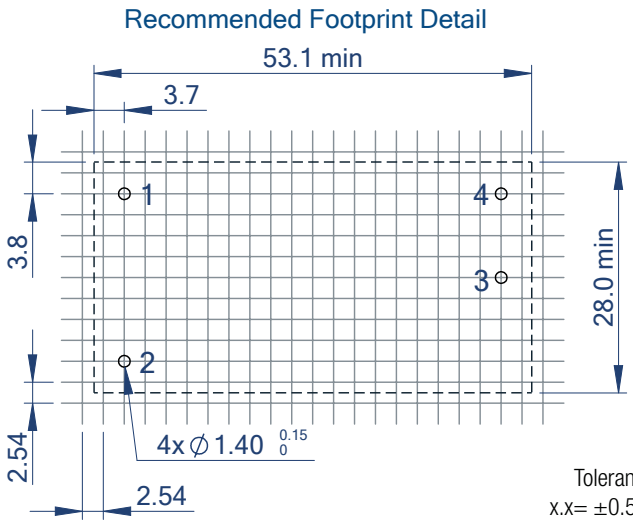
Dimension Drawing 2" x 1" P12 footprint module (mm)

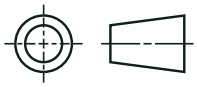












Pinning information [P12+]

Pin #	Single
1	VAC in (N)
2	VAC in (L)
3	-Vout
4	+Vout

Tolerances:
x.x= ±0.5mm
x.xx= ±0.25mm

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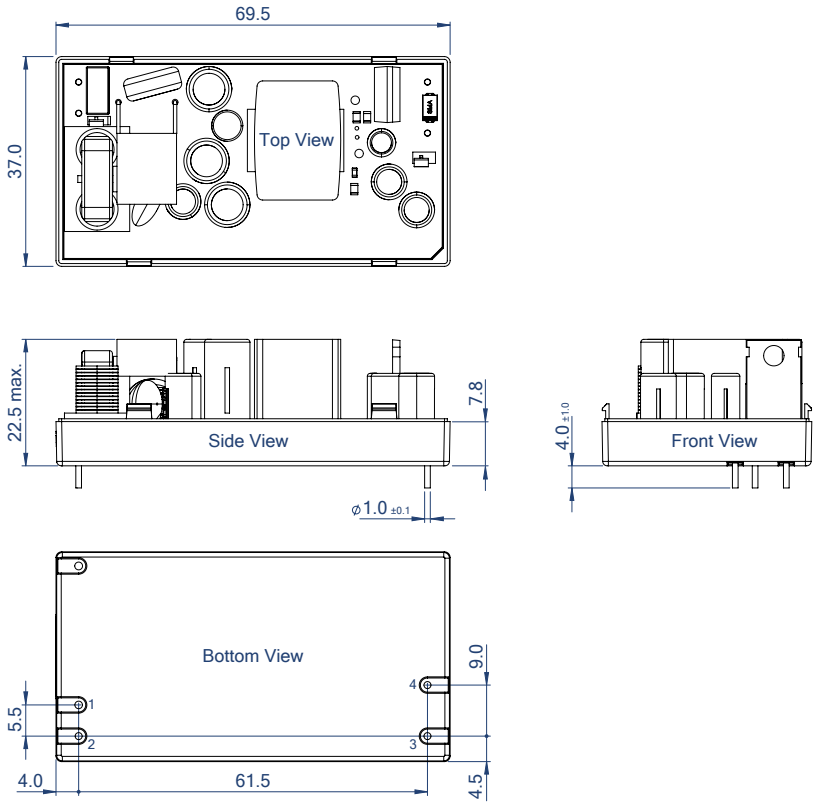
DIMENSION & PHYSICAL CHARACTERISTICS (COMING SOON)

Dimension Drawing "/277/PCB/OF" Version (mm)

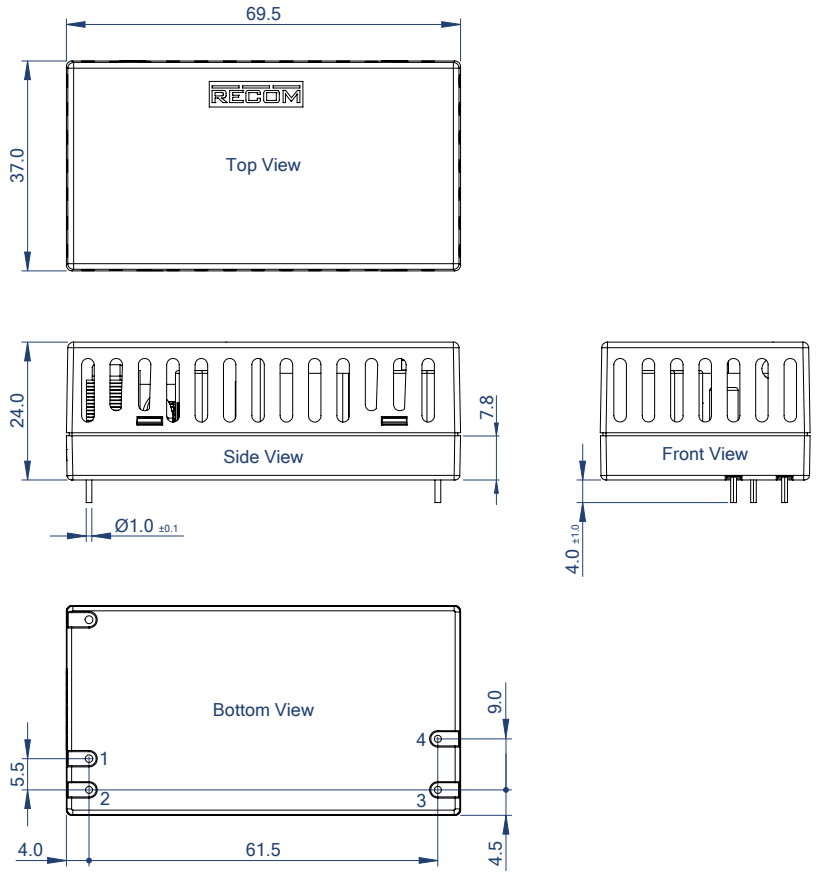


Pinning information [P12+]

Pin #	Single
1	VAC in (N)
2	VAC in (L)
3	-Vout
4	+Vout

Tolerances:
x.x= ±0.5mm
x.xx= ±0.25mm

Dimension Drawing "/277/PCB/ENC" Version (mm)



Pinning information [P12+]

Pin #	Single
1	VAC in (N)
2	VAC in (L)
3	-Vout
4	+Vout

Tolerances:
x.x= ±0.5mm
x.xx= ±0.25mm

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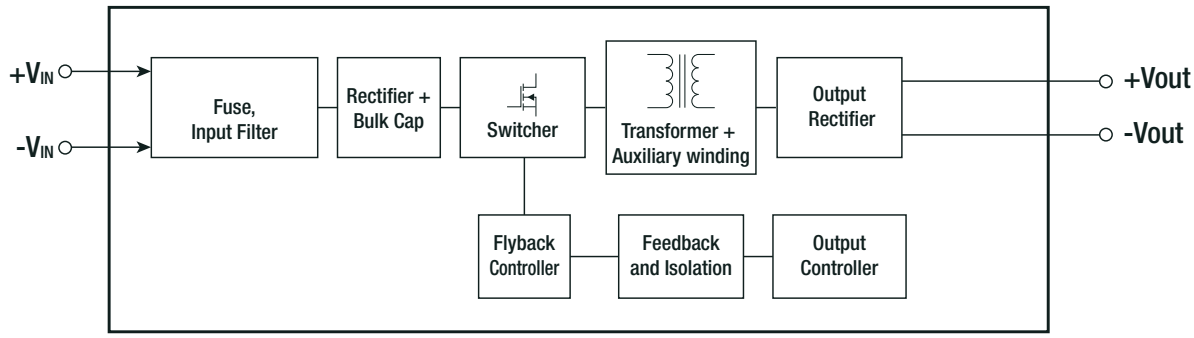
BLOCK DIAGRAMM



PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	cardboard box	490.0 x 56.0 x 40.0
Packaging Quantity		15pcs
Storage Temperature Range		-40°C to +90°C
Storage Humidity	non-condensing	95% RH max.

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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