Data sheet

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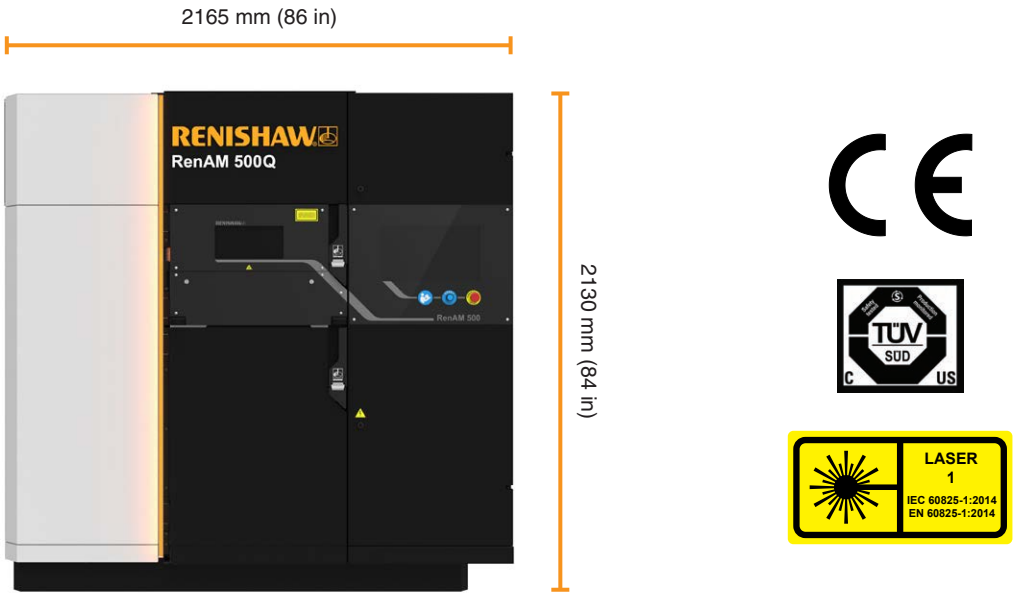
RenAM 500Q/S additive manufacturing systems

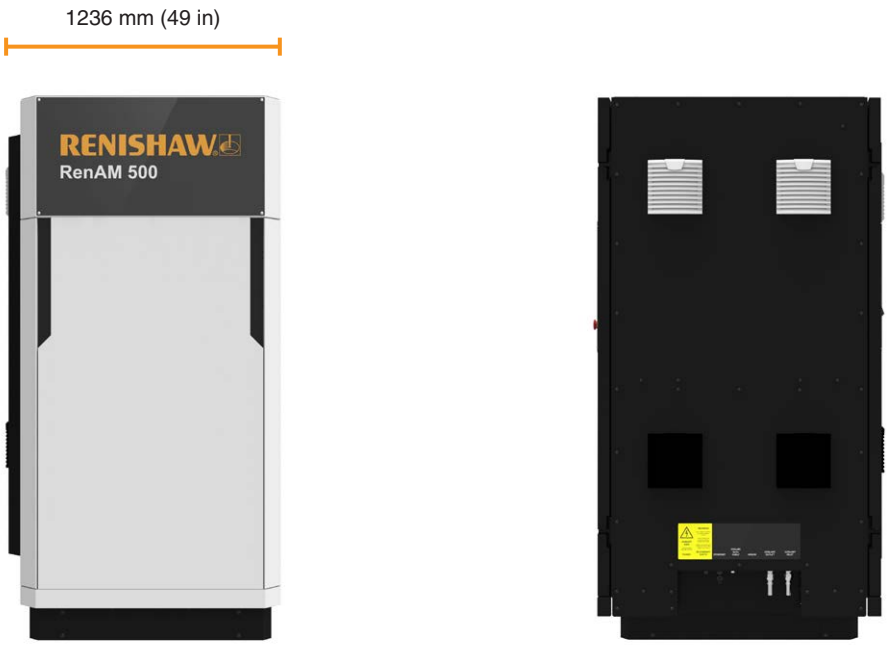
System description

RenAM 500Q/S are Renishaw's multi-laser AM systems. The RenAM 500 series can be configured with one (S) or four (Q) high power 500 W lasers, each able to access the whole powder bed surface simultaneously. With its four lasers, RenAM 500Q achieves build rates up to four times faster than single laser systems. Its compact galvanometer assembly has been designed and additively manufactured in-house, using aluminium for high thermal conductivity, and includes conformal cooling fluid channels resulting in excellent thermal stability of the optical system.

The system features automated powder and waste handling systems that enable consistent process quality, reduce operator intervention time and ensure high standards of system safety. RenAM 500Q/S features a digital control system and is fully compatible with Renishaw's InfiniAM process planning and monitoring tools.



RenAM 500Q front view



RenAM 500Q side views

System specification

Dimensions without accessories (L × W × H)	1 236 mm × 2 165 mm × 2 130 mm (49 in × 86 in × 84 in)
Clearance under RenAM 500 series with no plinth	146 mm (5.75 in)
Size of build volume (X × Y × Z)	250 mm × 250 mm × 350 mm (9.84 in × 9.84 in × 13.78 in)
Typical maximum build envelope (X × Y × Z) (using standard 15 mm (3/5 in) substrate)	245 mm × 245 mm × 335 mm (9.64 in × 9.64 in × 13.19 in)
Build rate* (including recoater time)	Up to 150 cm^3/hr (9.15 in^3/hr)
Powder layer thickness	In the range of 20 µm to 100 µm (1 µin to 4 µin)
Weight (net)	Q (quad) 2 040 kg (4 498 lb) S (single) 1 950 kg (4 300 lb)
Minimum pressure in chambers (vacuum)	-950 mbar-gauge or 5 kPa-abs (-13.8 psi-gauge)
Working pressure (above atmosphere)	10 mbar-gauge (0.15 psi-gauge)
Power supply	380 V to 480 V AC, 50 A, 50 Hz to 60 Hz, 3-phase
Data connections	Standard network connection RJ45
Chilled water connection	From HRSH090-AF-40 chiller
Argon gas supply connection	3/8 in BSP male cone fitting
Running argon consumption (after initial fill)	< 50 L/hr (1.8 ft^3/hr)
Maximum argon consumption (during fill)	400 L/min (14.12 ft^3/min)
System fill/purge consumption	< 1 200 L (43 ft^3)
Build atmosphere preparation time	< 20 minutes to 1000 ppm using vacuum
Argon quality (greatest permissible impurities)	20 ppm or better (99.998% pure)
Continuous noise level	≤ 70 dB
Maximum noise level (temporary)	≤ 71 dB
Number of lasers, laser power and type of laser	Q (quad) 4 × 500 W – ytterbium fibre lasers S (single) 1 × 500 W – ytterbium fibre laser
Laser focus diameter	80 µm (3 µin)
Laser focusing	Dynamic
Maximum scanning and positioning speed **	10 m/s (32.8 ft/s)
Typical processing speed **	2 m/s (6.6 ft/s)
Beam wavelength	PRISM laser 1 080 nm
Laser modulation frequency	15 kHz
Dynamic focus diameter	Up to 500 µm (20 µin)
Optical module sealing	IP6X
Time to prepare build chamber atmosphere to 1 000 ppm oxygen	15 minutes

* Build rate is dependent upon parameters, part geometry and material.

** Typical processing speed is dependent upon parameters and material.

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Refer to the RenAM 500Q/S brochure H-5800-4031 for further information

For worldwide contact details, visit www.renishaw.com/contact

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