

RFA1160/4

RF Power Amplifier

(Preliminary data)



1002

The Model RFA1160/4 is a class AB amplifier designed to drive the LS600- series of Isomet High Power Germanium Acousto-Optic Deflectors with < 280Watts across a 50-90 MHz bandwidth. The RFA1160/4 exhibits progressive phase shifting across four RF output channels. Phase shifting is the basis of the beam-steering technique used in Isomet wideband AO deflectors. The phase controlled RF drive imparts a variable acoustic launch angle in the LS600 crystal. With appropriate control, it is possible to compensate for the reduction in efficiency resulting from errors in the frequency dependent Bragg angle.

Passive phase shifting is employed between adjacent output channels J1 and J2 and similarly between channels J3 and J4. Depending on the input source, active or passive phase control can be applied between the channel pairs J1-J2 and J3-J4. e.g. The Isomet *iDDS-2* synthesizer offers active phase control. When used as the input source for the RFA1160/4, the result is near exact acoustic beam-steering across the full scan range of the LS600. Active phase control provides a more uniform diffraction efficiency scan response at lower average RF power.

The RFA1160/4 includes a number of additional features to aid test and control:

- Eight Analog outputs representing the forward and reflected RF power for each output (Qualitative).
- Thermal Interlock logic levels for the Amplifier and associated AO deflector Interlock
- Analog outputs representing the Temperature of the Amplifier and Deflector (10mV/°C)
- Opto-isolator compatible RF gate signal required to enable RF output (Active low)
- Integral DC-DC converters providing power for ancillary components such as the *iDDS-2*.

SPECIFICATIONS

Power out:	80 Watts max. CW into 50 Ω per output
Frequency response:	48 - 92 MHz
Flatness:	+/- 1dB
Gain Input to Each Output:	50dB nominal
Input / Output impedance:	50Ω Nominal
Input VSWR:	< 2.0:1
2 nd Harmonic Distortion:	> 20 dB below fundamental at 60W output
3 rd Harmonic Distortion:	> 15 dB below fundamental at 60W output
Forward/Reflected RF power indication:	0 to +6V analog (1Kohm)
Temperature indication	10mV/°C (1Kohm)
RF gate	Closed (0V) = RF outputs enabled, Floating (12V) = OFF
Thermal interlocks	Opto-isolated, Closed = ON, Open = Fault
Power Supply Requirement:	24A (total) at +24Vdc
Water Cooling:	Maintain water flow at > 1litre/min / <25°C (Corrosion inhibitor recommended)

ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

ISOMET CORP, 5263 Port Royal Rd, Springfield, VA 22151, USA.

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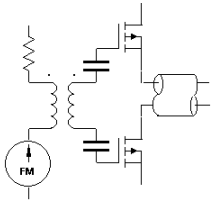
E-mail: ISOMET@ISOMET.COM Web Page: WWW.ISOMET.COM

Quality Assured.

In-house: RF & Digital design

Software Development

OEM manufacture



RFA1160/4

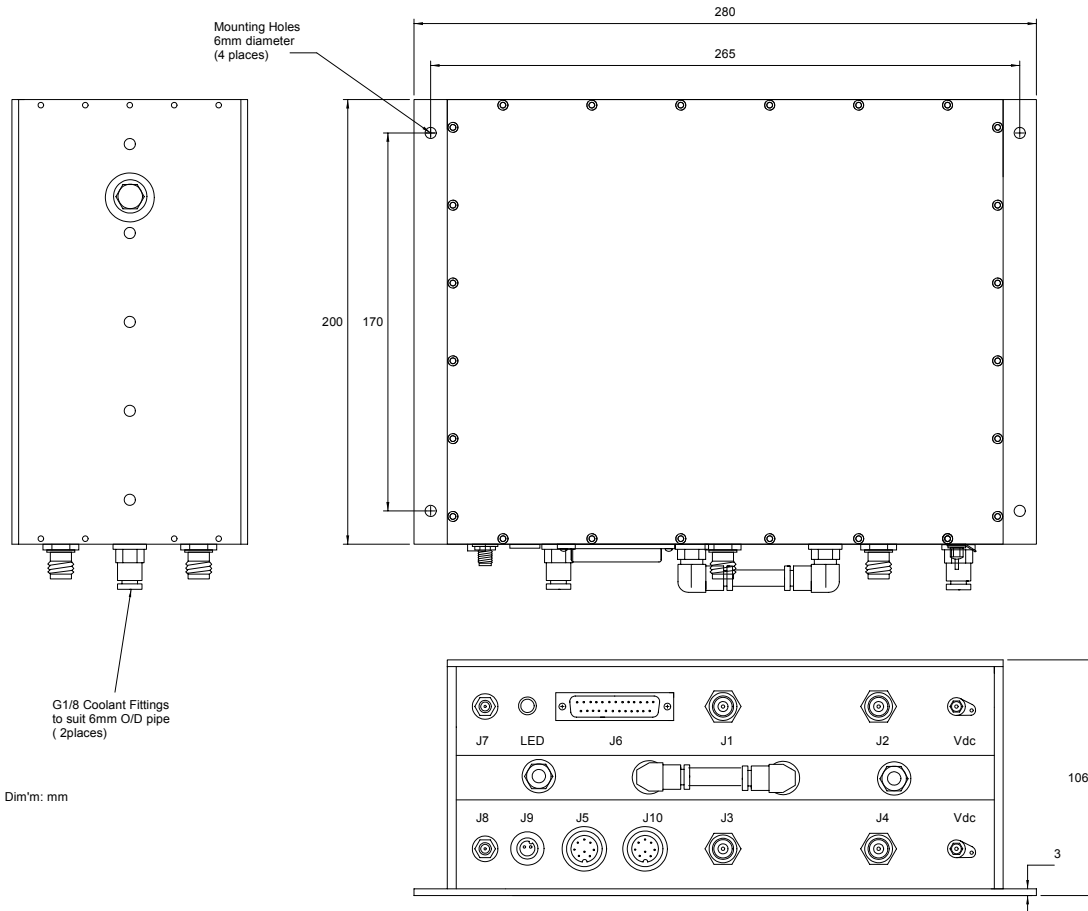


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OUTLINE DRAWING



Connector Summary

- J1 – J4:** TNC, RF Outputs Ch1 – CH4
- J5:** 3-way Circular Panel Socket, Binder 680 (Auxiliary supply output: +/-12Vdc/0.2A)
- J6:** 25-way Filtered D-type Connector (Forward/Reflected Power Ch1 - Ch4; Interlock status and Temperature for both Amplifier and AOD)
- J7:** SMA, RF1 Input
- J8:** SMA, RF2 Input (Phase shifted)
- J9:** 5-way Circular Panel Plug, Binder 712 (AOD Temp' and Interlock Input, AOD sensor power output)
- J10:** 5-way Circular Panel Socket, Binder 680 (*i*DDS supply output +5Vdc/4A, +/-12Vdc/0.2A)
- Vdc:** Solder Terminal +24Vdc/12A Input Power (2 off)

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