



6000 SERIES DRIVER

15 W Output - Configurable Operation

PRODUCT DATASHEET

Gooch & Housego's 15 W output RF Driver provides up to two independent RF channels with a fast parallel interface as well as USB controllability.

Ideally suited for controlling a two element phased array acousto-optic (AO) beam deflector (MUX mode), the driver can also be used to drive two single element AO beam deflectors for two dimensional scanning (Dual Channel mode). The 6000 Driver has additional flexibility for controlling AO tunable filters (multi-tone mode). With its arbitrary waveform playback capability, multiple wavelengths can be simultaneously diffracted by tunable filters and multiple beam spots can be generated by beam deflectors.

Two independent 15 W RF amplifiers are housed in a compact form factor with a fast parallel frequency programming interface. Remote control over an included USB interface is also available with an intuitive command set and GUI. Dual amplitude and relative phase control inputs are included on the rear panel with the parallel interface connectors. Capabilities include dynamic frequency chirp control. An all digital option allows high speed programming of frequency, amplitude and phase. The default, power-on is stand-alone mode, not requiring PC control; connecting the USB connection enables a Host PC mode. A single channel version is also available

The 6000 Driver is available in three frequency bands, and each unit includes a monitor output that covers the entire 20-450 MHz frequency band. Driver functionality can be re-configured over the USB interface.



Front and rear view

Key Features

- Two 15 W independent RF outputs
- Parallel interface for frequency programming
- USB interface and compact command set
- 20-450 MHz in three bands:
 - Low band 20-150 MHz
 - Mid band 40- 245 MHz
 - High band 140-450 MHz
- Re-configurable functionality
- Playback mode for custom waveforms
- Amplitude and phase modulation
- 10 spare definable control inputs

Key Benefits

- Dual RF outputs
- Compact form factor
- Host PC control or fast interface
- Functional re-configurability

Applications

- OEM AODF/AOTF systems
- Via drilling/micro-machining systems
- Optical inspection systems

97-0600X-XX

General Specifications

| Parameter | Min | Max | Units |
|---|-----------------|-------------------|---------|
| Output frequency range: low band model mid band model high band model | 20 40 140 | 150 245 450 | MHz |
| Rated RF output power ^{1,9} | 15 | | W |
| RF power flatness ² across frequency band, nominal power | | +/- 0.5 | dB |
| 2 nd harmonic distortion at rated RF output power | -25 | | dBc |
| Non-harmonic spurious free dynamic range | -50 | | dBc |
| Standard output waveform ³ | Sinusoid | | n/a |
| Independent RF outputs | | 2 | n/a |
| Number of programmable tones per output ⁴ | 5 | | n/a |
| Frequency resolution ⁵ | 1 | | kHz |
| Frequency stability, 15°C to 50°C ambient temperature | | +/- 0.5 | ppm |
| Frequency settling time after latch signal assertion ⁶ | | 200 | nS |
| Frequency update rate (parallel interface) | | 25 | MHz |
| Amplitude control (analog input) range, each output channel ⁷ | 40 | | dB |
| Amplitude blanking | 80 | | dB |
| Relative phase control (analog input) range, relative ⁸ | 0 | +/- 180 | Deg. |
| Amplitude/phase control modulation bandwidth | | 25 | MHz |
| DC voltage input range ⁹ | 24 | 28 | V |
| DC total system power | | 100 | W |
| Playback mode waveform file size (per output, 1 GHz clock) | | 300 k | Samples |
| Operating temperature range (ambient) | 15 | 50 | °C |

All specifications at T_{ambient} = 22 °C

- 1 Rated amplifier output level, requires adequate heatsinking. Contact us for details.
- 2 Power flatness set internally at factory. User compensation array can be loaded over USB interface.
- 3 Default output waveform is sinusoidal. User-defined waveforms loaded in playback mode.
- 4 Standard firmware build is 1 frequency tone per output port.
- 5 Frequency tuning word (FTW) is 20 bits.
- 6 Total latency time from assertion of latch signal to appearance of new frequency at RF output (FTW pre-loaded at interface).
- 7 Output power linear with input control voltage.
- 8 Sets phase of output #2 relative to output #1, defined only for identical programmed frequencies on both outputs.
- 9 Rated output power at 28 VDC.

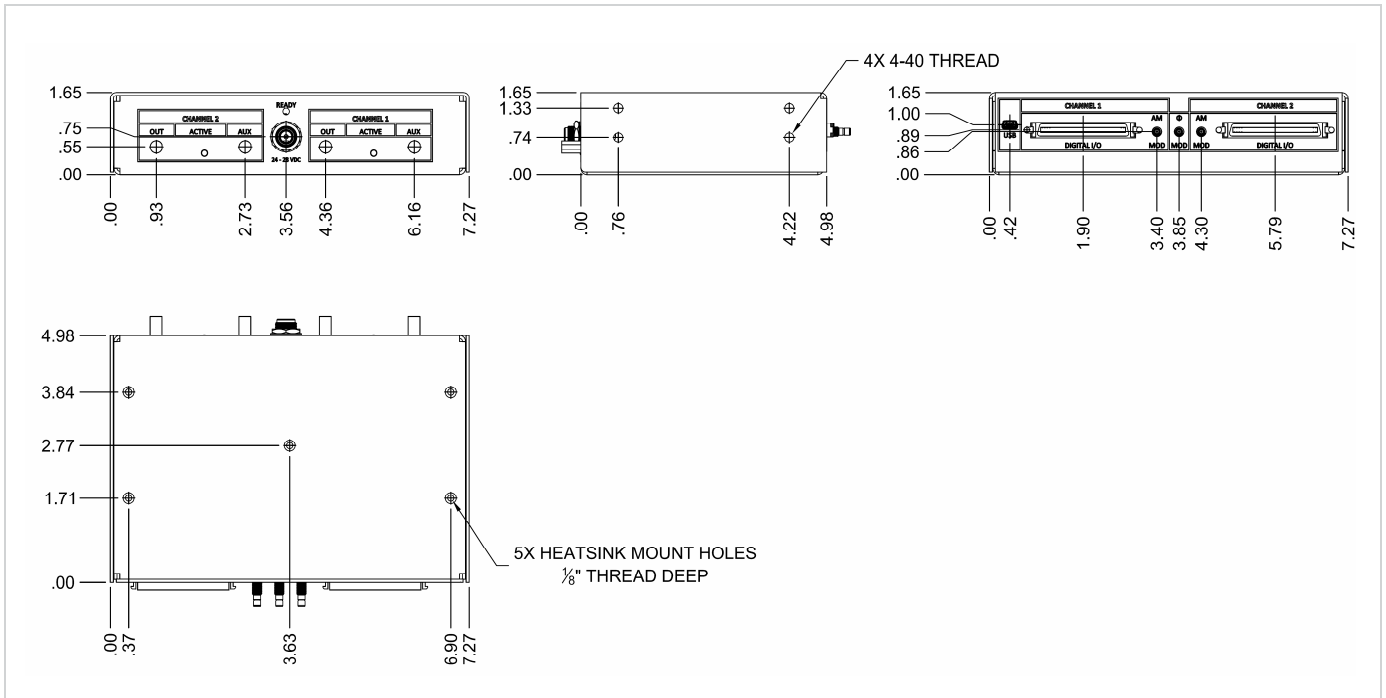
Command Set (Host PC Mode via USB interface)

| Command | Action |
|-------------|--|
| Freq X, YYY | Sets output frequency YYY (MHz) on channel X (1 or 2) |
| Amp X, YY | Sets output power YY (00 - 99) on channel X (1 or 2) |
| Pha YYY | Sets relative phase to YYY (0 to 360 degrees) |
| Latch X | Latch command for channel X, latches the pre-loaded FTW |
| Soft on | Allows USB control of output power levels |
| Soft off | Reverts system to hardware mode, requires analog amplitude control |

Interface Description

| Interface Definition | Connector | Levels | Input / Output Assignments |
|-------------------------------|------------------------|------------|--|
| Parallel interface, Ch #1, #2 | MDR mini-D 68 pin (x2) | TTL | Frequency word [19:0], spares (5), latch In (1), trigger in (1), blank (1), sync (1), status out (1) |
| Amplitude modulation inputs | SMB (x2) | 0-1V | Ch #1, Ch #2 |
| Phase modulation input | SMB (x1) | 0-1V | Relative phase between channels |
| USB | USB mini-B | USB | USB 2.0 Interface (mass storage) |
| Main RF output | SMA (x2) | RF Output | Main RF output ports, per model |
| Aux RF output | SMA (x2) | Aux Output | Auxiliary RF output, 20-450 MHz |
| Main DC power input | 2 mm power jack | 24-28 VDC | Main DC power input |

Outline Drawings



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Preliminary datasheet - Revision No. 3.0

As part of our policy of continuous product improvement, we reserve the right to change specifications at any time.

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