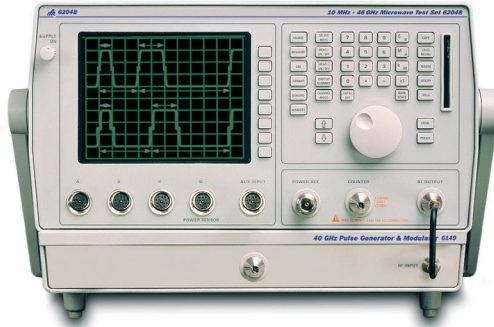


Microwave

6149 40 GHz Pulse Generator and Modulator

AEROFLEX
A passion for performance.



Low cost microwave pulse generator and modulator for simplifying the testing of early warning and radar systems

- 70 MHz to 40 GHz modulation
- Complex pulse patterns
- 100 ns - 100 ms pulse parameters
- External trigger function
- Simple user interface
- Easy installation to 6204B

The IFR 6149 Pulse Generator and Modulator is an adapter unit which works in conjunction with the 6204B Microwave Test Set (MTS). It allows the user to generate pulsed microwave signals.

The 6149 comprises two parts - a pulse generator and a pulse modulator, which are located in the adapter unit situated under the 6204B MTS. The MTS acts as the system controller, RF source and user interface.

The 6149 is connected to the MTS through power and data connections at the rear, and RF input at the front. The RF output connector is located on the front of the adapter unit for connection to the user test system. In addition, pulse sync and video outputs are provided on the rear of the 6149 for visual inspection of pulse patterns using an oscilloscope.

Features

- 70 MHz to 40 GHz operation
- Simple to use user interface
- Up to 256 user defined pulses in a single pattern
- 100 ms pulse PRI's
- 100 ns edge placement resolution
- Second pattern allows simulation of jitter and dropped pulses
- External Trigger function
- Store/Recall of pulse patterns on separate memory card

Benefits

- Easy to operate
- Allows emulation of complex waveforms
- Can simulate pulse jitter and drop-out
- Can test aircraft EW systems without having to take the aircraft into the air
- Low cost approach to EW system testing
- Accurate RF levels
- Secure information on memory card

Applications

- Threat simulator to test Radar Early Warning Systems on an aircraft while still on the ground
- Radar component testing

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- Radar tangential sensitivity testing

Operation

The Pulse Generator/Modulator is accessed as an application on a memory card for the 6204B. Once the application is loaded (or permanently installed in the MTS memory) the card can be removed, allowing the use of a separate memory card for store/recall functions.

The main applications screen describes the Pulse Pattern which is defined as a series of pulses in a table. Each entry represents a separate pulse in the pattern and comprises a pulse width (PW) and a pulse repetition interval (PRI). A maximum of 256 entries is allowed.

A Sync Pulse is also generated at the beginning of each pattern output, which can be used to trigger other equipment from the 6149. Alternatively, each pulse pattern can be triggered by an External Trigger, selectable for TTL/ECL level and positive/negative edge.

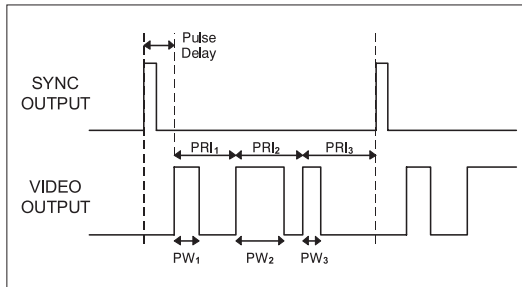


Figure 1 - Internal Trigger Operation

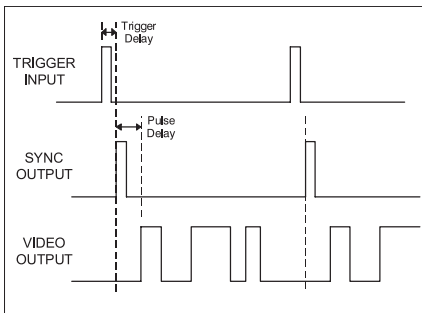


Figure 2 - External Trigger Operation

Up to 256 separate pulses can be specified in the pattern, with a maximum PRI for each pulse of 100 ms. As shown in figures 1 & 2, the pulse pattern can also be offset from the sync pulse by a user-variable pulse delay.

The user can select an auto-download function, where data is updated as each parameter is changed, or use a master download key to update major changes in one block.

A second pulse pattern can also be utilized, which alternates with the first pattern, and can be separately edited by the user. By offsetting the timing of the second pattern to the first, the effects of jitter or dropped pulses could be seen.

If required, the pulse generator can be disabled and the external trigger input configured as a pulse input. The user can then pulse modulate the RF independently with their own pulse generator, if required.

SPECIFICATION

VIDEO OUTPUT (REAR PANEL BNC)

Pulse Mode

Up to 256 user defined pulses

Pulse Width (separately variable)

250 ns - 100 ms, resolution 100 ns

Pulse Repetition Interval (separately variable)

250 ns - 100 ms, resolution 100 ns

Pulse delay (from SYNC)

0 - 100 ms, resolution 100 ns

Timing Accuracy

As for 6204B frequency standard

Level

Pseudo TTL (Typ. 0 to 5 V, 0 to 2.5 V into 50 Ω)

Rise/Fall time

<10 ns Typical

SYNC OUTPUT (REAR PANEL BNC)

Pulse Width

400 ns Typical

Level

Pseudo TTL (Typ. 0 to 5 V, 0 to 2.5 V into 50 Ω)

Rise/Fall Time

<10 ns Typical

EXTERNAL TRIGGER (PULSE INPUT)

Characteristics

Selectable positive or negative edge, ECL or TTL level into high impedance

Minimum Pulse Width 10 ns

Trigger to SYNC Delay

Less than 100 ns

Trigger to SYNC Jitter

Less than 50 ns

PULSE MODULATOR

Frequency Range

70 MHz to 40 GHz

ON/OFF Ratio

>23 dB

Rise/Fall Time

<50 ns

RF OUTPUT

Frequency

70 MHz to 40 GHz

Minimum Output Power at 23°C

(when used with standard 6204B)

70 MHz to 20 GHz ≥ -7 dBm, -5 dBm typ

20 to 40 GHz ≥ -10 dBm, -8 dBm typ

Return Loss

7 dB Typical

Reverse Power Damage Level

+20 dBm, ± 42 V DC

Connector

2.92 mm (f)

Electromagnetic Compatibility (when used with standard 6204B)

Conforms with the protection requirements of the EEC Council Directive 89/336/EEC. Conforms with the limits specified in the following standards:

IEC/EN61326-1 : 1997, RF Emission Class B, Immunity Table 1, Performance Criteria B

Safety (when used with standard 6204B)

Conforms with the requirements of EEC Council Directive 73/23/EEC (as amended) and the product safety standard IEC / EN 61010-1 : 2001 C1 : 2002 + C2 : 2003 for class 1 portable equipment, for use in a Pollution Degree 2 environment. The instrument is designed to be operated from an Installation Category 2 supply.

Dimensions and Weight

46 mm high, 325 mm wide, 450 mm deep.

3.8 kg (including interconnecting cables and fixing kit)

RATED RANGE OF USE

Temperature - 0 to +50°C

Humidity - Up to 93% humidity at +40°C

VERSIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering Numbers

6149 70 MHz to 40 GHz Pulse Generator & Modulator

Supplied with

59000/326 Application Software & User Manual

46884/738 Installation Kit

Optional Accessories

59000/186 512 k Blank Memory Card

CHINA Beijing

Tel: [+86] (10) 6467 2761 2716
Fax: [+86] (10) 6467 2821

CHINA Shanghai

Tel: [+86] (21) 6282 8001
Fax: [+86] (21) 62828 8002

FINLAND

Tel: [+358] (9) 2709 5541
Fax: [+358] (9) 804 2441

FRANCE

Tel: [+33] 1 60 79 96 00
Fax: [+33] 1 60 77 69 22

GERMANY

Tel: [+49] 8131 2926-0
Fax: [+49] 8131 2926-130

HONG KONG

Tel: [+852] 2832 7988
Fax: [+852] 2834 5364

INDIA

Tel: [+91] 80 5115 4501
Fax: [+91] 80 5115 4502

KOREA

Tel: [+82] (2) 3424 2719
Fax: [+82] (2) 3424 8620

SCANDINAVIA

Tel: [+45] 9614 0045
Fax: [+45] 9614 0047

SPAIN

Tel: [+34] (91) 640 11 34
Fax: [+34] (91) 640 06 40

UK Burnham

Tel: [+44] (0) 1682 604455
Fax: [+44] (0) 1682 662017

UK Stevenage

Tel: [+44] (0) 1438 742200
Fax: [+44] (0) 1438 727601
Freephone: 0800 282388

USA

Tel: [+1] (316) 522 4981
Fax: [+1] (316) 522 1360
Toll Free: 800 835 2352



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www.aeroflex.com
info-test@aeroflex.com