

Microwave

6146 Pulse Modulator



AEROFLEX
A passion for performance.

A general purpose high performance pulse modulator for radar systems testing.

- Wide frequency coverage 500 MHz to 18 GHz
- Fast rise and fall times of <5 ns
- >70 dB ON/OFF ratio
- Standard TTL levels
- Suitable for use with 6800 series microwave systems analyzers or 6200B series microwave test sets
- +5 dB insertion gain, 500 MHz to 18 GHz
- Small and rugged for field use

The 6146 Pulse Modulator is ideal for modulating RF and Microwave signals to enable testing of radar systems. Its wide frequency range of 70 MHz to 20 GHz means it can test both the RF and IF performance of the radar.

Fast rise and fall times coupled with >70 dB ON/OFF ratio ensures that the 6146 can be used to test the majority of modern radars. Modulation is controlled by a TTL input. Any suitable pulse generator can be used to drive the 6146. An integral amplifier gives the 6146 an insertion gain of +5 dB. This enhances the ability to measure the dynamic range of a radar compared with traditional pulse modulators that typically have an insertion loss up to 10 dB.

The 6146 is a small lightweight and rugged package. It can be connected directly onto the

output of a signal source and has type N connectors. When used with the 6200B series Microwave Test Set it is powered with the supplied lead which connects directly onto the 6200B auxiliary output. For use with other signal sources an optional AC power supply is available.

The combination of 6146 and a 6800 microwave system analyzer or 6200B microwave test set fitted with an internal attenuator forms the basis of an excellent solution for testing radar systems. The fundamental radar tests of minimum discernible signal, 1 dB compression and subclutter rejection are made simple.

SPECIFICATION

Frequency Range

500 MHz to 18 GHz (useable from 70 MHz to 20 GHz)

ON/OFF Ratio

>70 dB from 500 MHz to 18 GHz
35 dB 70 MHz to 200 MHz
60 dB 200 MHz to 500 MHz

Rise/Fall Time - <5 ns

Delay Time - ≤20 ns

Minimum Pulse Width - 50 ns

Maximum PRF - 20 MHz

Pulse Width Compression - ≤10 ns

Video Breakthrough

<150 mV pk-pk 500 MHz to 18 GHz
<200 mV pk-pk 70 MHz to 500 MHz

Switch Generated RF

<-35 dBm from 70 MHz to 500 MHz
<-50 dBm from 500 MHz to 1 GHz

<-70 dBm from 1 GHz to 18 GHz

Reverse Power Damage Level

+20 dBm, ± 42 V DC

Harmonics

≤ -15 dBc for >10 dB output power

Power Accuracy (After user calibration with 6800 or 6200B)

± 1 dB

Insertion Gain at +23°C

>5 dB 500 MHz to 18 GHz

Gain temperature coefficient, $-0.05/^\circ\text{C}$ typical

Minimum Output Power at +23°C (with +5 dBm input power)

$\geq +8$ dBm

Input Damage Level

+20 dBm, ± 42 V DC

Modulation Input Type

Standard TTL levels. BNC input for RF ON when logic level low.

Modulation Input Impedance

>10 k Ω .

RF INPUT

Connector - Type N (m) 50 Ω .

Return loss

>5 dB 70 MHz to 200 MHz Typical.

>8 dB 200 MHz to 18 GHz Typical.

RF OUTPUT

Connector - Type N (f) 50 Ω .

Return loss

>10 dB 200 MHz to 6 GHz Typical.

> 6 dB 6 GHz to 18 GHz Typical.

Electromagnetic Compatibility

Conforms with the protection requirements of the EEC Council Directive 89/336/EEC.

Complies with the limits specified in the following standards:

EN55011 Class B

CISPR 11

EN50082-1

IEC 801-2,3,4.

Safety

Conforms with the requirements of EEC Council Directive 73/23/EEC (as amended) and the product safety standard IEC / EC 61010-1 for class 3 portable equipment, for use in Pollution Degree 2 environment. The instrument is designed to be operated from an installation Category 1 supply.

RATED RANGE OF USE

Temperature - 0°C to $+50^\circ\text{C}$.

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

CONDITIONS OF STORAGE AND TRANSPORT

Temperature - -40°C to $+70^\circ\text{C}$.

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

Altitude - Up to 4,600 metres (15,000 feet).

Dimensions and Weight

148 mm x 86 mm x 41 mm, 400g.

Supply Voltages

+12 V DC 400 mA. & -12 V DC 70 mA.

Available from the optional AC adapter.

VERSIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering Numbers

6146 Pulse Modulator 500 MHz to 18 GHz

Supplied with

46882/211 Instruction Manual.

43138/399 Power Supply lead for use with 6200 Auxiliary Output

Optional Accessory

5444/1019 Mains Power Supply

Input 100 V to 240 V AC,

50 Hz to 60 Hz 48 W maximum output 24 VDC at 2.0 A maximum

CHINA Beijing

Tel: [+86] (10) 6539 1166

Fax: [+86] (10) 6539 1778

CHINA Shanghai

Tel: [+86] 21 2028 3588

Fax: [+86] 21 2028 3558

CHINA Shenzhen

Tel: [+86] (755) 3301 9358

Fax: [+86] (755) 3301 9356

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] 89 99641 0

Fax: [+49] 89 99641 160

INDIA

Tel: [+91] 80 [4] 115 4501

Fax: [+91] 80 [4] 115 4502

JAPAN

Tel: [+81] (3) 3500 5591

Fax: [+81] (3) 3500 5592

KOREA

Tel: [+82] (2) 3424 2719

Fax: [+82] (2) 3424 8620

SCANDINAVIA

Tel: [+45] 9614 0045

Fax: [+45] 9614 0047

SINGAPORE

Tel: [+65] 6873 0991

Fax: [+65] 6873 0992

TAIWAN

Tel: [+886] 3 5500 338

Fax: [+886] 3 5502 065

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

As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice. All trademarks are acknowledged. Parent company Aeroflex, Inc. ©Aeroflex 2013.

www.aeroflex.com

info-test@aeroflex.com



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

Part No. 46891/058, Issue 4, 08/13