

0.1 to 2 GHz Pulse Modulator

FR8205



If you are measuring RCS or antenna patterns below 2 GHz in a high clutter or high multi-path environment, you should consider the benefits provided by the FR8205 Pulse Modulator.

Providing Gated-CW RCS Measurements at VHF and UHF.

The FR8205 Pulse Modulator is a unique instrument which allows low frequency RCS measurements to be performed indoors using a single transmit-receive antenna. By combining high power capability with excellent pulse and gate isolation, very low RCS levels can be measured anywhere within the 100 MHz to 2 GHz frequency range in a single test. In addition, the FR8205 achieves outstanding measurement stability for maximum clutter subtraction levels. The FR8205 is fully compatible with the HP 8511A Frequency Converter. The FR8205 pulse modulator prevents the high levels of RF energy returned from the monostatic feed antenna from causing the familiar "IF OVERLOAD" errors. At the same time, the FR8205 supports Ramp Mode operation allowing very fast frequency sweeps (under 500 ms). For RCS imaging (SAR or ISAR) over the 0.1 to 2 GHz frequency range, the FR8205 Pulse Modulator has proven to be invaluable.

The FR8205 is also fully compatible with the dual-source configurations of the Agilent 8510 and Agilent 8530A. Using the fundamentally-mixed frequency converters such as the Agilent 85310A, -115 dBm system typical sensitivity levels are achieved while simultaneously transmitting +23 dBm peak power RF pulses.

The Goal: Clutter Reduction! The design of the FR8205 Pulse Modulator capitalizes on ORBIT/FR's in-depth experience in measuring RCS at ranges under 200 feet and at frequencies below 2 GHz. On this type of range, clutter is the main cause of poor RCS measurement sensitivity and measurement error. For this reason, the FR8205 provides extremely fast receive gate speeds (2 nS typical), and very high stability.

High Transmit Power From Built In Amplifier

The FR8205 uses an internal power amplifier covering the entire 0.1 to 2 GHz band without band switching. For monostatic applications, the FR8205 incorporates transmit noise blanking during the inter-pulse period to ensure a low system noise floor.

Completely Protected Receive Stage

The FR8205 incorporates design elements that protect the receive stage against damage due to high energy levels coupled to the receive port. This not only protects against damage, but also provides rapid recovery times, allowing radar-target separations as short as 30 feet.

Low Spurious Signal Levels

Through a careful design ORBIT/FR eliminates the impact of video feedthrough on the measurement accuracy. This is especially critical for RCS measurements requiring clutter subtraction levels in excess of 20 dB.

Frequency Coverage	0.1-2.0 GHZ (Single Band)
Receive Noise Figure:	6 dB Typ. at Rx Port
Receiver Gain	25 dB min. (CW)
Receive Input for 1dB Comp	-35 dBm max. (CW or Peak)
Receive Isolation	110 dB min. (CW)
Survival Receive Power	Peak: 20 Watts (100S) Average: 3 Watts
Receive Recovery Time	60 nS min.
Input RF Requirements	-2 dBm Typ.
Transmit Output Power (Internal Amp) (with optional external Amp)	+23 dBm Typ. 10 Watts Typ.
VSWR (All Ports, All States):	< 2:1 Typ
Pulse Characteristics: Pulse Width (-1dB to 1 dB) Rise/Fall Time (10-90%):	8 nS min. to CW 3 nS Typ. 5 nS max
Transmit On/Off Ratio	110 dB min
Pulse Repetition Frequency:	7.5 MHz max
PRF Resolution	1 Hz
Pulse Width, Delay Resolution:	1 nS
Electrical:	115/230 VAC±10%, 47 to 63 Hz, single phase 165 VA
Dimensions:	19" (48.3 cm) wide 3.5" (8.9 cm) high
Weight	18 lbs. max
Environmental: Operating Temperature	60°F (15°C) to 95 °F(35°C)

Options

- Opt. 001 Add Timing Unit
- Opt. 003 Monostatic Antenna Interface
- Opt. 101 Additional Manual
- Opt. 102 International Localization. Specify Country and Voltage

Supplied Accessories

- Operating and Maintenance Manual
- Rack Mount Kit
- Interconnect Cables
- PRF Calculator Shareware
- North American Power Cord

Ordering Information

FR8205 Pulse Modulator, 0.1-2 GHz.