PULSED RADAR TRACKING RECEIVER



The pulsed radar tracking receiver consists of an RF front end and a tracking LO subsystem. The inputs to the system are coupled signals from the transmitter (Magnetron) and the received RF signal return from the target. The RF transmitter signal can be any frequency between 2.8 to 3.2 GHz. The coupled signal from the transmitter is detected and fed to an AFC processor. The AFC processor sweeps a local oscillator, mixes the output with the coupled RF signal and disables the sweep when the local LO subsystem is approximately 35 MHz above the RF signal. After the initial lock is obtained, a digital AFC tracking system is activated which fine tunes the local oscillator to precisely 35 MHz above the coupled RF signal. The digital AFC then continuously tracks the RF coupled signal. The digital AFC processor keeps the system in-lock even in the absence of a large number of RF pulses (AFC dead-time ride through). The LO output signal is mixed in the RF front-end mixer to generate a system IF output at 35 MHz. The doppler shift is detected as an offset from the 35 MHz IF output. These pulsed radar tracking receivers are primarily used in moving target indicator (MTI) systems.

FEATURES

- · Real-time software and hardware, digital AFC processing
- Programmable frequency accuracy control and update rate optimization
- Accurate frequency control in the absence of RF pulses (dead time)
- Interface and control flexibility

PRTR-44 ADVANTAGES COMPARED TO EXISTING SYSTEMS

- Digital tracking eliminates the instabilities present in conventional AFC processors (temperature variation, offsets, etc.)
- Digital processing algorithms are used to achieve a more accurate lock than conventional AFC processors
- Digital processing enables better control and provides more flexibility

ELECTRICAL SPECIFICATIONS

1 to 35 GHz

bandwidths available across the input frequency band

Tracking range ±200 MHz, wider bands available

PRFs available

IF center frequency...... See options

IF bandwidth 6 MHz (see Options)

AFC tracking accuracy ±0.1 MHz

PRIMARY POWER REQUIREMENTS

MECHANICAL SPECIFICATIONS

PHYSICAL

CONNECTORS

RF input/output SMA female
IF output SMA female
IF monitor SMA female
AC power MS3102A18-22P
Remote/control/status MS3102A22-27P
DC power monitor Test point jack

OPTIONS

- P1 RF input frequency range (customer to specify).
- P2 RF input bandpass filter (customer to specify).
- P3 Auto sweep bandwidth at RF, available bandwidths are ±200, ±400 and ±800 MHz.
- P4 IF center frequency selection, 21.4, 30, 35, 60 and 160 MHz (customer to specify).
- P5 IF bandwidth (customer to specify).
- P6 PRF range (customer to specify).
- P7 Pulse width range (customer to specify).