

AMC-1040 Antenna Multiplexer Converter



The AMC-1040 Antenna Multiplexer Converter is an RF front end processor that receives antenna inputs from 0.5 to 40 GHz and provides three parallel RF outputs for simultaneous signal processing by multiple microwave tuners.

The Rockwell Collins AMC-1040 Antenna Multiplexer Converter provides multiple simultaneous RF outputs from one or two 0.5 to 40 GHz RF inputs to allow parallel RF processing of received signals without the need for RF band switching.

The AMC-1040 is designed to receive RF signals from broadband antennas and to distribute those signals into multiple RF outputs for parallel signal processing. An internal RF multiplexer is used to split the 0.5 to 40 GHz RF input into three different frequency bands that may be distributed for processing by a 0.5 to 18 GHz RF

Distribution Unit (RFD) for distribution to standard 0.5 to 18 GHz microwave tuners.

The AMC-1040 splits the input signal into three bands: 0.5 to 18 GHz, 18 to 26.5 GHz and 26.5 to 40 GHz. The 0.5 to 18 GHz band is not converted to a lower frequency and is applied to a digital attenuator that provides 0 to 70 dB of attenuation in 10 dB steps. An internal comb generator provides RF test signals for system end-to-end testing.

The 18 to 26.5 GHz band passes through a millimeter wave downconverter where it is converted to 9.02 to 17.52 GHz. The 26.5 to 40 GHz band passes through another millimeter wave downconverter where it is converted to 2.24 to 15.74 GHz.

All of the local oscillators (LO) used in the downconversion process are phase locked to a high stability internal OCXO. The AMC-1040 automatically detects and phase locks the OCXO to an external 10 MHz precision frequency reference input to provide a fully phase coherent system design.

Each of the three RF output paths is amplified and run through an equalizer to compensate for RF cable losses between the AMC-1040 and the RF Distribution Unit.

The AMC-1040 Antenna Multiplexer Converter is packaged in a small unit that is designed to be installed as closely as possible to the RF output from an antenna such as the Rockwell Collins ANT-1040A Airborne Spinning DF Antenna. The AMC-1040 may be installed beneath the flooring of an aircraft to minimize the RF cable loss between the antenna and the AMC-1040. The AMC-1040 uses universal AC power and uses 2.92 mm, SMA and circular MIL connectors.

KEY FEATURES

- 0.5 to 40 GHz input frequency coverage
- Three simultaneous RF outputs of less than 18 GHz
- Multiplexer splits RF input into three parallel RF paths
- 0.5 to 18 GHz path not frequency converted
- 18 to 26.5 GHz path converted to 9.02 to 17.52 GHz
- 26.5 to 40 GHz path converted to 2.24 to 15.74 GHz
- Comb generator, 1 to 27 GHz, 1 GHz spacing
- Digital attenuator (0 to 70 dB) in 0.5 to 18 GHz RF path
- Output amplifiers drive RF cables to RF distribution
- Output equalizers compensate for RF cable losses
- Small chassis, reduced SWaP (Size/Weight/Power)
- Ethernet LAN control interface

AMC-1040

RF input	One RF input, 0.5 to 40 GHz, 2.92 mm female, 50 ohms
RF input filtering	Input multiplexed into three RF bands: 0.5 to 18 GHz 18 to 26.5 GHz 26.5 to 40 GHz
RF multiplexer crossovers	Multiplexer crossover frequencies at 18 GHz and 26.5 GHz
Test signal	1 GHz comb signal
RF outputs	Three simultaneous RF outputs SMA female, 50 ohms
RF output #1 0.5 to 18 GHz input band	No frequency conversion, 0 to 70 dB RF attenuator with 10 dB step size
RF output #2 18 to 26.5 GHz input band	Converted to 9.02 to 17.52 GHz
RF output #3 26.5 to 40 GHz input band	Converted to 2.24 to 15.74 GHz
RF output processing	Output amplifier and equalizer on all three RF outputs
Internal reference	Contains highly stable 10 MHz
Oscillator	OCXO reference oscillator
External reference input	Accepts one external 10 MHz reference input, 0 dBm, SMA female, 50 ohms
Chassis size	3" H x 14.4" W x 14.4" L
Weight	15 lbs
Power	Universal AC power, 90 to 260 VAC, 47 to 440 Hz, <145 Watts
Operating temperature	0 to +50° C

RELATED EQUIPMENT

ANT-1040A	Spinning DF Antenna, 0.5 to 40 GHz
CS-1960	RF Distribution Unit (4 x 6)
RFDU-1968	RF Distribution Unit (8 x 6)
RFDU-1988	RF Distribution Unit (8 x 8)
RC-5800	VME Microwave Tuner
CS-5020C	Microwave Tuner

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