

RF Transmit and Receive Unit

Up and Down Frequency Converter

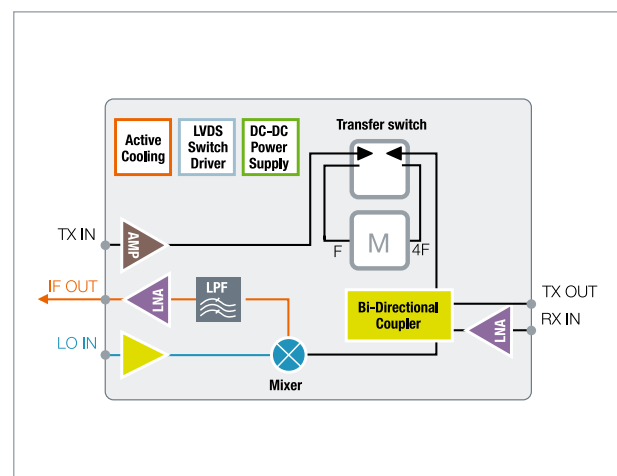


Transmit and Receive (TX/RX) Units are up and down frequency converters used in an MVG-Orbit/FR antenna measurement system. These RF modules are designed to be symmetrically placed on the probe/feed and/or AUT sides of the antenna measurement system.

Main features

- Frequency range: 0.5-50 GHz*
- Supports both Transmit and Receive modes
- Allows for the use of low frequency** RF cables
- Used in conjunction with a basic Vector Network Analyzer (up to 20 GHz) with external IF inputs
- Extends the dynamic range of the antenna measurement system. Typical dynamic range above 80 dB
- Optimizes dynamic range
- Provides stable VSWR towards the AUT and probe/feed
- Identical RF units, interchangeable for the probe/feed or AUT sides

Functional Block Diagram



* No interruption in the measurement process when changing frequency bands. Operator only needs to select frequencies in the MiDAS Software, click and let proceed.

** Up to 20 GHz. High frequency phase stable cables are not required.



Note: In such systems, placing Transmit and Receive (Tx/Rx) units in the vicinity of the RF probe and the AUT offers increased dynamic range. The proximity of the Tx/Rx unit to the probe or AUT also guarantees high accuracy antenna measurement. For example, the Tx/Rx unit placed close to the probe antenna will allow accurate reference of the transmitted signal and thus will avoid phase disturbances caused by RF cable movement.

Specifications

EXAMPLE MODEL	OFR-TXRX00520-X	OFR-TXRX00540-X	OFR-TXRX00550-X
Type	TX/RX module, 0.5-20 GHz	TX/RX module, 0.5-40 GHz	TX/RX module, 0.5-50 GHz
Input TX/LO frequency	0.5-20 GHz	0.5-20 GHz	0.5-20 GHz
Output IF frequency	0.5-700 MHz	0.5-700 MHz	0.5-700 MHz
Output TX power	• 0.5-20 GHz: +20 dBm typical @ P1dB compression	• 0.5-20 GHz: +20 dBm typical @ P1dB compression • 20-40 GHz: +10 dBm typical	• 0.5-20 GHz: +20 dBm typical @ P1dB compression • 20-50 GHz: +10 dBm typical
Input TX power	0 dBm max	0 dBm max	0 dBm max
Input LO power	-13 dBm max	-13 dBm max	-13 dBm max
Mixer Conversion Loss	10 dB typical	• 0.5-20 GHz: 10 dB typical • 20-40 GHz: 22 dB typical	• 0.5-20 GHz: 10 dB typical • 20-50 GHz: 22 dB typical
Internal Frequency Multiplier	-	Utilize 4 th multiplication for TX signal and 3 rd harmonic for LO signal	Utilize 4 th multiplication for TX signal and 3 rd harmonic for LO signal
Connectors	TX OUT and RX IN: SMA (F) TX IN, LO IN and IF OUT: SMA (F)	TX OUT and RX IN: 2.92 mm (F) TX IN, LO IN and IF OUT: SMA (F)	TX OUT and RX IN: 2.4 mm (F) TX IN, LO IN and IF OUT: SMA (F)
Power Supply	24 V DC, 1.5 A max	24 V DC, 1.5 A max	24 V DC, 1.5 A max

Model index for RF transmit/receive units

PART NUMBER	FREQUENCY BAND	DESCRIPTION
OFR-TXRX00520-1	0.5-20 GHz	Transmit & Receive unit with LNA
OFR-TXRX00520-2	0.5-20 GHz	Transmit & Receive unit without LNA
OFR-TXRX00520-3	0.5-20 GHz	Transmit & Receive unit with external mixer
OFR-TXRX00520-4	0.5-20 GHz	Transmit & Receive unit without external LO and without LNA on RX path
OFR-TXRX00540-1	0.5-40 GHz	Transmit & Receive unit with LNA
OFR-TXRX00540-2	0.5-40 GHz	Transmit & Receive unit without LNA
OFR-TXRX00540-3	0.5-40 GHz	Transmit & Receive unit with external mixer
OFR-TXRX00540-4	0.5-40 GHz	Transmit & Receive unit without external LO and without LNA on RX path
OFR-TXRX00550-1	0.5-50 GHz	Transmit & Receive unit with LNA
OFR-TXRX00550-2	0.5-50 GHz	Transmit & Receive unit without LNA
OFR-TXRX00550-3	0.5-50 GHz	Transmit & Receive unit with external mixer
OFR-TXRX00550-4	0.5-50 GHz	Transmit & Receive unit without external LO and without LNA on RX path



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