



## Description

The DRX is a mezzanine board that pairs with an AMC main board. It has two configurable IF input channels; for each channel, you can choose a lowpass filter or a bandpass filter.

The lowpass filter has a -3 dB cutoff at 105 MHz and is used for IFs from 10 to 90 MHz. The bandpass filter has a center frequency of 140 MHz or 160 MHz, selected when ordering.

For each channel, the filtered IF signal is digitized with 12-bit precision at a sample rate programmable to 10-250 MHz. Both channels of digital sample data are available as inputs to the Xilinx Virtex 5 SX FPGA. This FPGA connects directly to the main board FPGA through a high-speed LVDS data interface and some additional control signals. Two optional Graychips (GC4016) for narrowband tuning also connect to the FPGA, which is user-configurable.

For the timebase, you can use the 10 MHz TCXO provided, or connect your own source via the reference input.

The main board supplies additional memory and FPGA resources, as well as a 1 pps or IRIG-B time code input and a 1GbE interface.

## Features

Mezzanine board for AMC uTCA main board (the main board provides inputs for GigE and time code, as well as additional FPGA and memory resources)

Channel 0: Two filters provided - one for 140 or 160 MHz bandpass (selected at time of order), and one 105 MHz lowpass

- For IF from 10 to 90 MHz, use 105 MHz lowpass filter
- For IF of 140 or 160 MHz, use sound-acoustic wave (SAW) bandpass filter

Channel 1: Same specifications as channel 0

FPGA: One programmable Xilinx Virtex 5 SX 50T

Graychips: Two optional (TI GC4016), each with four channels of digital down-conversion.

ADC: Simultaneous 12-bit analog-to-digital conversion of both IF channels

Sample clock: Independently programmable for each channel (10 to 250 MHz)

Timebase: 10 MHz TCXO or user input

## Applications

IF receiver

Surveillance / spectrum monitoring

Digital tuning

Test and measurement

## Specifications

Product Type	DRX is a dual receiver mezzanine board for IF; it requires an EDT AMC main board.		
FPGAs and Memory	One programmable FPGA (Xilinx Virtex 5 SXT SX50T), plus FPGA and memory resources on main board		
Graychips	None or optional two programmable (TI GC4016)		
Sample Clock	User-configurable & phase-locked to 10 MHz reference	Tuning range = 10 to 250 MHz (independently programmable for each channel)	
ADCs (one per channel)	Resolution / maximum sample rate	12 bits / 250 MHz	
Data Rates	Dependent on such factors as data format, main board, and system variables.		
Data Format (I/O)	Two configurable data inputs are included, supporting the data formats shown below. (For external reference input, see next heading.) Time code input is provided by the main board.		
		<b>Set filter to this...</b>	<b>Or toggle to either this... or this (select bandpass option when ordering)</b>
	<b>CHANNEL 0</b>	<b>Lowpass (10-90 MHz)</b>	<b>SAW bandpass (140 MHz) SAW bandpass (160 MHz)</b>
	Input impedance	75 or optional 50 $\Omega$	75 or optional 50 $\Omega$
	Return loss	16 dB	16 dB
	Signal level (usable / max)	-67 to -17 / -10 dBm	-60 to -17 / -10 dBm
	Center frequency	n/a	140 MHz
	-3 dB bandwidth	105 MHz	63.71 MHz
	Typical SNR / SFDR	68 / 60 dB	68 / 60 dB
	<b>CHANNEL 1</b>		
	Input impedance	75 or optional 50 $\Omega$	75 or optional 50 $\Omega$
	Return loss	16 dB	16 dB
	Signal level (usable / max)	-67 to -17 / -10 dBm	-62 to -17 / -10 dBm
	Center frequency	n/a	160 MHz
	-3 dB bandwidth	105 MHz	41.8 MHz
	Typical SNR / SFDR	68 / 60 dB	68 / 60 dB
External reference	<b>10 MHz (input):</b> Impedance 50 $\Omega$ ; return loss 12 dB; signal level 0 to 7 dBm usable (11 dBm maximum)		
Internal reference	<b>10 MHz (TCXO):</b> Frequency adjustment range +/- 3 ppm; tolerance +/- 0.5 ppm at 25° C; over temperature +/- 2.5 ppm at 0° to 75° C		
Connectors	For external reference	SMB 50 $\Omega$	
	For channel 0 and channel 1	SMB 50 or 75 $\Omega$	
Cabling	Consult EDT for purchase options.		
Physical	Weight	With AMC FX5 main board: 8.6 oz.	
	Dimensions	With AMC FX5 main board: 3" W x 7.25" L x 1.25" H	
Environmental	Temperature	Operating 0° to 40° C Non-operating -40° to 70° C	
	Humidity	Operating 1% to 90%, non-condensing at 40° C Non-operating 95%, non-condensing at 45° C	
System and Software	For details on system requirements and EDT-provided software driver packages, see specifications for your EDT main board.		

## Ordering Options

Main board: AMC FX5 (required)  
 Graychips: **0** / 2  
 Channel 0: 140 / 160 MHz SAW bandpass filter  
 Channel 1: 140 / 160 MHz SAW bandpass filter  
 Connectors: 50 / **75**  $\Omega$  (IF)

**Bold** is default. For more options, see main board detail. **Ask** about custom options.

>> **CONTACT US** to discuss engineer-to-engineer support – from phone consultation to custom design of hardware, firmware, and software.