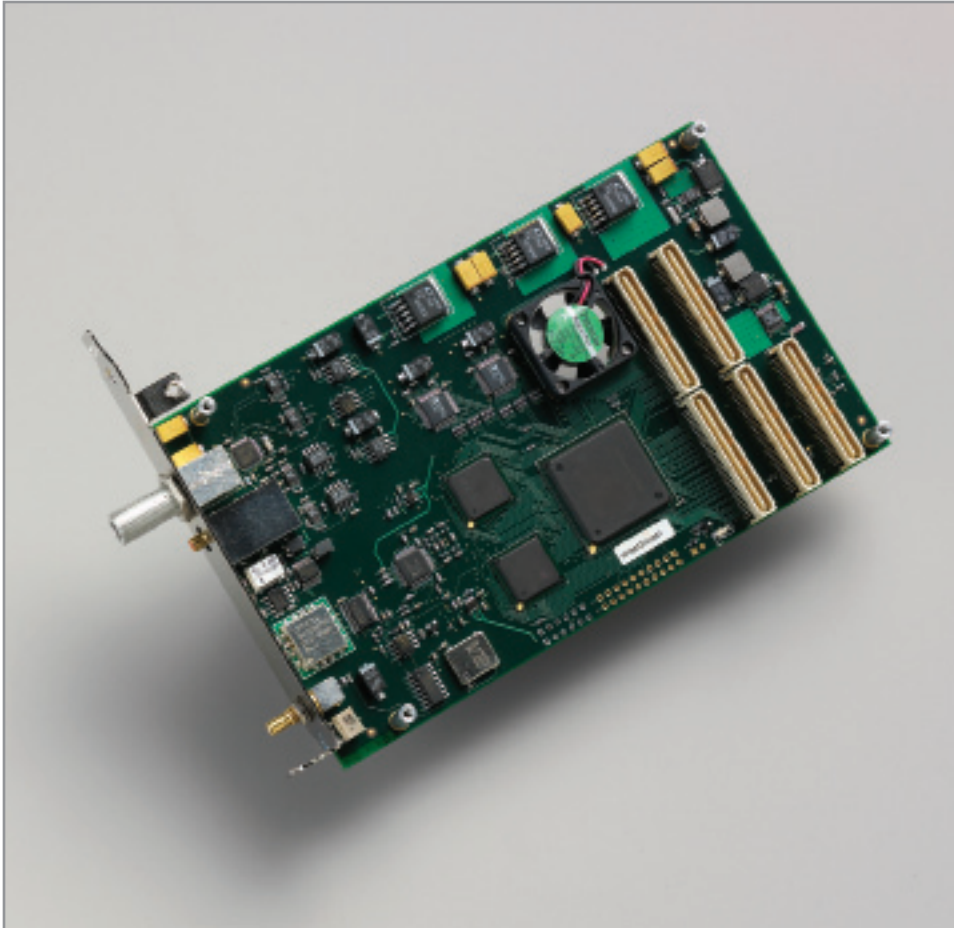


# SRXL

Signal receiver and processor for IF and L-band



## Description

The SRXL is a mezzanine board that pairs with a PCI / PCIe main board to accept simultaneous RF inputs in the L-band range of 925 to 2175 MHz and the IF range of 65 to 225 MHz.

Each input is processed with a tunable quadrature down-converter. The resulting baseband I and Q signals are low-pass filtered and digitized with 12-bit precision at programmable sample rates up to 65 MHz.

The resulting four sample data streams are available as inputs to the Xilinx Spartan 3 FPGA, which is programmable to perform signal processing or to serve as a configurable switch matrix to route data to the main board and two Graychips (GC4016), each with four digital down-converters.

The main board supplies DMA, plus additional memory and programmable FPGA resources.

## Features

Mezzanine board – pairs with an EDT main board (PCI or PCIe), which adds DMA, programmable FPGA resources, and memory

Simultaneous L-band and IF analog-to-digital conversion (12-bit)

L-band: 925 to 2175 MHz (66 MHz bandwidth) with 5 MHz tuning resolution

IF: 65 to 225 MHz (46 MHz bandwidth) with 1 MHz tuning resolution

FPGA: One programmable Xilinx Spartan 3 XC3S1500

Graychips: Two (TI GC4016), each with four DDCs

Sample clock: Programmable to any frequency from 1 to 65 MHz

Timebase: 10 MHz TCXO or user input

## Applications

Satellite receiver

Software-defined radio

Surveillance / spectrum monitoring

Digital tuning

Test and measurement equipment

# Specifications

|                     |   |   |   |
|---------------------|---|---|---|
| Product Type        | Signal receiver interface for IF and L-band; it requires an EDT PCI / PCIe main board.  |   |   |
| FPGAs and Memory    | One programmable FPGA (Xilinx Spartan 3 XC3S1500), plus FPGA and memory resources on main board   |   |   |
| Graychips           | Two programmable (TI GC4016)  |   |   |
| Sample Clock        | User-configurable & phase-locked to 10 MHz reference    Tuning range = 1 to 6 MHz; tuning word (DDS) = 32 bits                          |   |   |
| ADCs (one per port) | Two dual ADCs (one per port); resolution / maximum sample rate = 12 bits / 65 MHz   |   |   |
| Data Rates          | Dependent on such factors as data format, main board, and system variables.   |   |   |
| Data Format (I/O)   | Two inputs are included, supporting the data formats shown below. (For external reference input, see next heading.)                     |   |   |
|                     | <b>Radio frequencies (RFs):</b>   | <b>L-band (925-2175 MHz,<br/>5 MHz tuning resolution)</b>         | <b>IF (65-225 MHz,<br/>1 MHz tuning resolution)</b> |
|                     | <b>General</b>  |   |   |
|                     | Nominal input impedance   | 75 ohms   | 75 ohms   |
|                     | Minimum return loss   | 12 dB   | 12 dB   |
|                     | <b>Gain control</b>   |   |   |
|                     | Minimum RF  | 60 dB   | -   |
|                     | Minimum base band   | 19 dB   | -   |
|                     | Minimum variable  | -   | 43 dB   |
|                     | Typical variable  | -   | 60 dB   |
|                     | <b>Signal level</b>   |   |   |
|                     | Minimum usable  | -72 dBm   | -76 dBm   |
|                     | Maximum usable  | 3 dBm   | -19 dBm   |
|                     | Absolute maximum  | 10 dBm  | 10 dBm  |
|                     | <b>Phase noise</b>  |   |   |
|                     | At 40 KHz (measured)  | -72 dB  | -72 dB  |
|                     | At 10 KHz (measured)  | -50 dB  | -65 dB  |
|                     | <b>Local Oscillators</b>  |   |   |
|                     | Tuning ranges   | 925 to 2175 MHz   | 63 to 112 MHz or 125 to 225 MHz                     |
|                     | Tuning step size  | 5 MHz   | 1 MHz   |
|                     | <b>Demodulators</b>   |   |   |
|                     | Base band LP filter cutoff  | 4 to 33 MHz (-3 dB)   | 23 MHz  |
|                     | Transition band   | 42 dB/octave  | 24 dB/octave  |
|                     | Maximum IQ phase error  | 4 degrees   | 3 degrees   |
|                     | Maximum IQ gain error   | 1.2 dB  | 0.6 dB  |
| External Reference  | <b>10 MHz (input):</b> Impedance 50 ohms; return loss 12 dB; signal level -10 to 10 dBm usable (16 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 ohms; for L-band, F-type 75 ohms; for IF, SMB 75 ohms  |   |   |
| Cabling             | Consult EDT for purchase options.   |   |   |
| Physical            | Weight  | 3.6 oz. typical   |   |
|                     | Dimensions  | 6.6 x 4.2 x 0.75 in. (with a main board)                          |   |
| Environmental       | Temperature (operating / non-operating)   | 0° to 40° C / -40° to 70° C                                       |   |
|                     | Humidity (operating / non-operating)  | 1% to 90%, non-condensing at 40° C / 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: PCI SS / GS or PCIe8 LX / FX / SX

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

### Contact



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