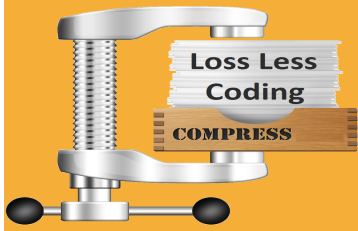


**ΩΣ**



**LossLess Coding Library**

**LossLess Coding Library for FPGA**

**LossLess Coding Library for FPGA  
Version 1.0**

# **User Manual**

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## LossLess Coding Library for FPGA

Lossless data compression is a class of data compression algorithms that allows the exact original data to be reconstructed from the compressed data. Lossless compression is used when it is important that the original and the decompressed data be identical, or when no assumption can be made on whether certain deviation is uncritical. Typical applications include data storage and transmission.

The following LabVIEW FPGA IP core allows lossless data compression based on the modified Lempel-Ziv-Ross-Williams-1 algorithm. Its focus is on high throughput of uncompressed data at the expense of a somewhat lower compression ratio. Two byte of uncompressed data can be processed at every clock cycle.

An example with coder and decoder is included for one channel and two channel compression (suitable for RF Data streaming). The core is fully pipelined to allow high clock speeds. 100MHz can easily be achieved on 796xR and 797xR FPGA's. This results in a maximum compression throughput of almost 200MBytes/sec.

Most of other algorithms are suitable for text or audio compression but there are no tools to compress test signals especially in streaming applications.

In addition, the following algorithm has zero delay, which means for every input data there is always an output data (playback).

The LLC Library is targeted at the [NI PXIe-7961R](#) , [NI PXIe-7962R](#) , [NI PXIe-7965R](#) , [NI PXIe-7966R](#) , [NI PXIe-7971R](#) , [NI PXIe-7972R](#) , [NI PXIe-7975R](#) , [NI PXIe-7976R](#) PXIe modules from National Instruments. The LLC Library is provided as a set of VI's and may be rapidly integrated into your designs with ease of use and detailed help.

**Software requirements:** LabVIEW ([2014 or later](#)), LabVIEW FPGA Module ([2014 or later](#)).

**Hardware requirements:** [NI PXIe-7961R](#) , [NI PXIe-7962R](#) , [NI PXIe-7965R](#) , [NI PXIe-7966R](#) , [NI PXIe-7971R](#) , [NI PXIe-7972R](#) , [NI PXIe-7975R](#) , [NI PXIe-7976R](#).

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## 2. Software Support

### 2.1. [Software requirements](#)

### 2.2. [Hardware requirements](#)

#### 2.1. Software requirements

To installation [LLC](#) Library for FPGA toolkit, please take the following steps in order:

**Step 1:** Download and install [VIPM](#) (Virtual Instrument Package Manager >= 2014) software from the link.

**Step 2:** To install the [LLC](#) Library for FPGA toolkit, please go to the website by the following links in the right side of the table and enter the software name of the appropriate file to download. After downloading the files, install them sequentially from I to V . Start each installation process after finishing the previous one (during the installation process follow all the commands).

Software Name	Version
I. LabVIEW 2014	<a href="#">2014 or later</a>
II. LabVIEW FPGA Module	<a href="#">2014 or later</a>

*Note: If the files indicated in the "Step 2" are already installed on the computer, you can install the [LLC](#) Library in FPGA toolkit by skipping the "Step 2".*

To [activate](#) the [LLC](#) Library for FPGA toolkit product please send your FlexRIO hardware serial number to the E-mail: info@olympmail.am and call Tel.: +374 93 688 597 for more information about activation.

Related Topics:

[Hardware requirements](#)

## 2.2. Hardware requirements

This table describes the list of hardware needed for the use of the [LLC](#) Library for FPGA toolkit. Please go to the website by the following links in the right side of the table to learn more information about the appropriate module for correct use.

Hardware Name	Hardware Type
NI PXIe-7961R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7961R</a> )
NI PXIe-7962R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7962R</a> )
NI PXIe-7965R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7965R</a> )
NI PXIe-7966R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7966R</a> )
NI PXIe-7971R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7971R</a> )
NI PXIe-7972R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7972R</a> )
NI PXIe-7975R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7975R</a> )
NI PXIe-7976R	NI FlexRIO FPGA Module ( <a href="#">NI PXIe-7976R</a> )

Related Topics:

[Software requirements](#)

**OLYMP Engineering LLC**

## 3. Activation

### 3.1. [Software Activation](#)

### 3.2. [Hardware Activation](#)

E-mail: [info@olympmail.am](mailto:info@olympmail.am)

Tel.: +374 93 688 597

Address: 123 Hovsep Emin EIF Entrance, 102

Yerevan 0051, Armenia

### **3.1. Software Activation**

To get acquainted with the steps of activation of the [LLC](#) Library for FPGA toolkit, it is necessary to send us the serial number of NI FlexRIO FPGA Module that you use. After that we will send you a license file for the activation of the [LLC](#) Library for FPGA toolkit.

E-mail: [info@olympmail.am](mailto:info@olympmail.am)

Tel.: +374 93 688 597

Address: 123 Hovsep Emin EIF Entrance, 102

Yerevan 0051, Armenia

Related Topics:

[Hardware Activation](#)

## 3.2. Hardware Activation

It is necessary to send us the Serial Number of NI FlexRIO FPGA Module that you use to activate your [LLC](#) Library for FPGA toolkit.

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Related Topics:

[Software Activation](#)



## 4. Conclusion