

INTRODUCTION

The .NET OptoMMP Software Development Kit (SDK) for *groov* EPIC, *groov* RIO, and SNAP PAC provides a simple, easy-to-use interface for a developer to quickly create an Ethernet I/O-based application for Opto 22 products that use the OptoMMP protocol. This SDK encapsulates the OptoMMP messaging protocol used by our Ethernet-based brains for reading or writing I/O data.

For more information about OptoMMP and the complete memory map, see the [OptoMMP Protocol Guide](#) (form 1465). The guide is available on our website, www.opto22.com.

The SDK targets the .NET Standard version 2.0. For an explanation of .NET frameworks and operating systems that support .NET Standard version 2.0, see Microsoft's® [.NET Standard version 2.0](#). The SDK is available as a 100% managed DLL.

System Requirements

- Visual Studio appropriate for your .NET platform
- Windows 11 Professional
- Windows 10 Professional (32- or 64-bit)
- Ethernet interface (wired or wireless).

ADDING THE SDK TO YOUR PROJECT

The SDK must be added as a resource to your Visual Studio project. It may be added to a C# or Visual Basic® project.

To add the SDK, follow these instructions:

1. Unzip the PAC-DEV-OPTOMMP-DOTNET.zip file with your preferred decompression tool.
2. In your Visual Studio Project, from the Project menu, choose Add Existing Reference.
3. Navigate to the SDK's Developer folder.
4. Select OptoMMP_Standard_2_0.dll.
5. From Visual Studio's Nuget manager, add NLog (4.7.15) to your project.
6. In your project files, choose one of the following:
 - For Visual Basic, add an Imports (namespace) into your code file. For example: `Imports OptoMMP6`
 - For Visual C#, add a Using (namespace) into your code file. For example: `using OptoMMP6`

Make sure that the OptoMMP_Standard_2_0.dll is in the same directory where the final executable is located.

To check whether the reference is included, open your project's Properties. Click on the references tab. You should see the OptoMMP_Standard_2_0.dll listed as a reference.

Accessing Assembly Documentation

Assembly documentation is provided in an html format.

1. Navigate to the folder `SDK Documentation`
2. Open the html folder and open `index.html`
Your default web browser will show the assemblies within the SDK.

Introduction to Assemblies

Namespace OptoMMP6

This assembly serves as the OptoMMP interface. Use this assembly to configure, read, and write to I/O points of *groov* EPIC processors, *groov* RIO modules, SNAP PAC R-series controllers, and SNAP PAC EB-series Ethernet brains. For help understanding the architecture of the OptoMMP implementation, see the [OptoMMP Protocol Guide](#), form 1465.

Namespace StreamsHelper

If you are using a streaming function, you can use either of two methods. Both use the **OptoMMPStream assembly**. See “Streaming Data” in Chapter 2 of the [OptoMMP Protocol Guide](#) for more information, and see the Memory Map Appendix in the same guide for all memory map areas and addresses.

- **groov EPIC and groov RIO streaming** from a streaming area of the memory map specific to *groov* EPIC and *groov* RIO devices. For more information see the section “Streaming Data” in the [OptoMMP Protocol Guide](#). This streaming area of the memory map is limited to a maximum of 512 points of I/O on a full chassis, with all I/O modules having 32 points or less.
- **Traditional OptoMMP streaming** from a streaming area of the memory map specific to non-*groov* EPIC and non-*groov* RIO Opto 22 devices. For more information see the section “Streaming Data” in the [OptoMMP Protocol Guide](#). The Streaming area of the memory map is limited to a maximum of 64 points of I/O on a full rack, with all I/O modules having 4 points or less.

This functionality started with the SNAP-B3000-ENET brain (our earliest Ethernet-based brain, first released in 1998) and can still be used in the newest *groov* EPIC processors and SNAP PAC controllers and brains, if desired. However, newer brains can support I/O modules with up to 32 points each and a full rack of 512 points, and this traditional streaming is not capable of handling the expanded I/O information.

- **New Custom areas** in the memory map now allow you to define the data you want in a stream, essentially pulling separated addresses in the memory map into one accessible location for streaming. To use this method requires three steps:
 - a. Set up the data you need by writing to the Custom Configuration area of the memory map. See the example Custom Data Stream Demo in the SDK for help with this step.
 - b. Put together the streaming packet using the format described in “Custom Streaming” in Chapter 2 of the [OptoMMP Protocol Guide](#).
 - c. Read and write to the Custom Data Access area of the memory map. (See the Memory Map Appendix for these addresses.)

The OptoMMP6 assembly contains methods to configure and verify either streaming method.