

# EasyLOAD-615A

## User's Manual

### ARINC615A Data Loader



The screenshot displays the EasyLOAD-615A software interface with several active windows:

- Ethernet FIND:** Shows IP Address, Destination IP (255.255.255.255), UDP Port, Dest Port (1001), and Timeout (3 sec). The FIND Response shows 1 TARGETS RESPONDED with details for THW NAME1, THWID1, MPU, L, and HV1.
- Information Operation <Target Name3>:** Shows the operation status as COMPLETE and provides target hardware information including serial number, part numbers, and designations.
- Upload Operation <Target Name3>:** Shows the upload status as Executing and a progress bar. The Load List Information table is as follows:
 

Load PN	% Complete	Status	Status Description	Header File
MMMMN-FFFF-CCCC1	100%	Complete	The load is Complete	HEADER001.LUH
MMMMN-FFFF-CCCC2	100%	Complete	The load is complete	HEADER002.LUH
MMMMN-FFFF-CCCC3	0%	Executing	The load is in progress	HEADER003.LUH
- Operator Defined Download Operation <Target Name3>:** Shows the download status as Executing and a progress bar. The Download List Information table is as follows:
 

File Name	Status	Status Description	Destination
HEADER001.LUH	Executing	The Download is in Progress	C:\Loader_exe\Media\HEADER001.L
HEADER002.LUH	Executing	The Download is in Progress	C:\Loader_exe\Media\HEADER002.L
HEADER003.LUH	Executing	The Download is in Progress	C:\Loader_exe\Media\HEADER003.L
HEADER004.LUH	Executing	The Download is in Progress	C:\Loader_exe\Media\HEADER004.L

**AIM GmbH**  
**Sasbacher Str. 2**  
**79111 Freiburg, Germany**

**Tel: +49-761-45229-0**  
**Fax: +49-761-45229-33**

**October 2021**  
**V02.7x**

**sales@aim-online.com**  
**www.aim-online.com**





# ***EasyLOAD-615A*** **User's Manual**

## **ARINC615A Data Loader**

**V02.7x**

**October 2021**

AIM No.60-15200-35-0274

---



## AIM WORLDWIDE



**[www.aim-online.com](http://www.aim-online.com)**

### AIM GmbH

Sasbacher Str. 2  
79111 Freiburg, Germany  
+49-761-45 22 90  
[sales@aim-online.com](mailto:sales@aim-online.com)

### AIM-USA

Seven Neshaminy Interplex  
Suite 211  
Trevose, PA 19053  
267-982-2600  
[salesusa@aim-online.com](mailto:salesusa@aim-online.com)

### Munich Sales Office

Terofalstrasse 23 a  
80689 Muenchen  
+49-89-70 92 92 92  
[salesgermany@aim-online.com](mailto:salesgermany@aim-online.com)

### AIM UK

Cressex Business Park  
Lincoln Rd, High Wycombe  
Bucks HP12 3RB, England  
+44-1494-44 68 44  
[salesuk@aim-online.com](mailto:salesuk@aim-online.com)

Notice: The information that is provided in this document is believed to be accurate. No responsibility is assumed by AIM for its use. No license or rights are granted by implication in connection therewith. Specifications are subject to change without notice.

© Copyright 2021: AIM GmbH



# Table of Contents

<b>Section 1 Introducing EasyLOAD-615A</b> .....	<b>1</b>
1.1 Associated Documents .....	2
<b>Section 2 Getting Started</b> .....	<b>3</b>
2.1 System Requirements .....	4
2.2 Installation .....	5
2.3 EasyLOAD-615A Window Overview .....	6
2.4 Managing License Keys .....	8
<b>Section 3 EasyLOAD-615A Operation</b> .....	<b>11</b>
3.1 Defining a Target Database .....	12
3.1.1 Open Target Database .....	14
3.1.2 Create/Edit a Target Database .....	15
3.1.2.1 Target Hardware Identification.....	16
3.1.2.1.1 Ethernet FIND.....	17
3.1.2.1.2 AFDX FIND.....	18
3.1.2.2 Connection Information.....	19
3.1.2.3 Data Loading Protocol.....	21
3.1.2.4 Trivial File Transfer Protocol.....	22
3.1.2.5 Find Information.....	23
3.1.3 Save Target Database .....	24
3.2 Linking Targets to AFDX-Ports .....	25
3.2.1 AFDX Resources .....	26
3.2.2 AFDX Portmapping .....	28
3.3 Perform ARINC615A Operations .....	29
3.3.1 Information Operation .....	30
3.3.2 Upload Operation .....	31
3.3.3 Multi Upload Operation .....	33
3.3.4 Download Operation - Media Defined .....	35
3.3.5 Download Operation - Operator Defined .....	36



<b>Section 4 665-MediaSet Builder</b> .....	<b>39</b>
<b>Section 5 Remote Interface</b> .....	<b>43</b>
<b>Section 6 Definitions</b> .....	<b>45</b>
6.1 Abbreviations .....	46
6.2 Terms .....	47
<b>Index</b>	<b>48</b>



# 1 Introducing EasyLOAD-615A

Welcome to **EasyLOAD-615A**, AIM's support for Target Data Loader Operations in accordance with ARINC Report 615A-1/2/3 and ARINC Report 665-1/2/3.

**EasyLOAD-615A** supports Data Loader operations in conjunction with:

- AIM's AFDX/ARINC664 interface modules for AFDX/ARINC664 networks.
- LAN interface for standard Ethernet networks.

**EasyLOAD-615A** provides the user with the following capabilities:

- Manually or dynamically **FIND/SNIP Target 'End Systems'**
- Configure Target's ID information, AFDX or Ethernet communications parameters and 615A Data Load protocol plus TFTP protocol characteristics
- **Multiple Data Loader operations** with multiple Target 'End Systems' can be executed simultaneously including
  - **Information Operation** – Recover information on the configuration of the Target Hardware and Loadable Software Airplane parts (i.e. identifiers and Part numbers of the hardware and the software).
  - **Uploading Operation** – Upload data to Target 'End Systems'. Upload source data can reside on the local host or any accessible storage device on the local area network.
  - **Media Defined Download Operation** – Download data from Target 'End Systems' using a pre-defined list of Target file names.
  - **Operator Defined Download Operation** – Request a list of downloadable files from Target 'End Systems' and select the files to download from the list.
- **Log Client/Server communications** during Data Loader Operations
- Automatically creates the LOADS.LUM, FILES.LUM and all header (\*.luh) files used for the ARINC615A Upload Operation using the **665-MediaSet Builder** scripting tool.
- Validation of an entire MediaSet including verification of FileExists, numbers, counters, and CRC's.



## 1.1 Associated Documents

### Industry Documents

Software Data Loader Using Ethernet Interface ARINC Report 615A-1/2/3

Loadable Software Standards ARINC Report 665-1/2/3

RFC 1350 - The TFTP Protocol (Revision 2)

RFC 2347 - TFTP Option Extension

RFC 2348 - TFTP Blocksize Option

RFC 2349 - TFTP Timeout Interval and Transfer Size Options

### AIM Documents

AIM has developed several documents that may be used to aid the developer with other aspects involving the use of AIM's **EasyLOAD-615A** and AFDX/ARINC664 interface modules. These documents and a summary of their contents are listed below:

**ARINC-664/AFDX TFTP Application Interface Library Reference Manual** - provides the application developer with the detailed Trivial File Transfer Protocol (TFTP) library function calls which provide transfer services.

**ARINC-615A DLP Application Interface Library Reference Manual** - provides the application developer with the detailed Dataloading Protocol (DLP) library function calls for all operations.

**EasyLOAD-615A User's Manual** - provides the EasyLOAD-615A user with instructions to perform Data Loader Operations.

**ARINC664/AFDX Interface Module Application Interface Library Reference Manual** - provides the application developer with the detailed FDX library function calls. This guide is to be used in conjunction with the Programmer's Guide for Windows Applications.

**ARINC664/AFDX Interface Module Programmer's Guide** - provides the ARINC664/AFDX application developer with high-level s/w development information including high level system design information, board support package contents, user application system design concepts, function call guidelines, and sample programs. This guide is to be used in conjunction with the **ARINC664/AFDX Interface Module Application Interface Library Reference Manual**.

**ANS User's Manual - AIM Network Server for AFDX**- describes how to utilize the AIM Network Server (ANS) to support remote testing for AFDX/ARINC664 products.





## 2 Getting Started

Getting started with **EasyLOAD-615A** involves understanding:

- [Requirements of your host system to run EasyLOAD-615A](#)

Defines the system resources required for **EasyLOAD-615A**.

- [Installation](#)

Provides a description of the installation process and a description of the resources installed on your system.

- [EasyLOAD-615A Window Overview](#)

Provides an overview of the initial **EasyLOAD-615A** displays including menu bars and buttons and status bars.

- [Managing License Keys for Data Loader Operations over AFDX or Ethernet](#)

Describes how to enter license keys required for operation.

- [EasyLOAD-615A Operation](#)

All **EasyLOAD-615A** displays are described in an operationally sequential order.

- [665-MediaSet Builder](#)

The **EasyLOAD 665-Mediaset Builder** is used to automatically create the LOADS.LUM, FILES.LUM and all header (\*.luh) files used for the ARINC615A Upload Operation.



## 2.1 System Requirements

Minimal system requirements for **EasyLOAD-615A** are:

- Pentium 1GHz CPU
- 2GB RAM
- Available Hard disk space for Upload/Download operation
- Windows 7/8/10
- VC++ 2015 Redistributable Package (vcredist\_x86), automatically installed by the setup
- Access to one of the following:
  - AIM AFDX Interface Module to access the AFDX network installed on the host system or accessible via the AIM Network Server (ANS) with installed Board Support Package and drivers
  - Standard Ethernet Port (using host PC 10BaseT or 100BaseT Ethernet connection) installed on the host system



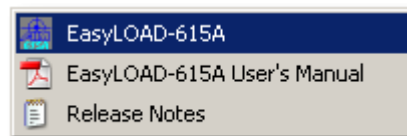
## 2.2 Installation

**EasyLOAD-615A** is available on DVD from AIM or via download from our AIM-Online website download area at [www.aim-online.com](http://www.aim-online.com).

In addition to the **EasyLOAD-615A** application, the software package includes the following resources:

- EasyLOAD-615A User's Manual
  - Release Notes
  - Sample Target Database.
- **To install the *EasyLOAD-615A* software package from the AIM provided DVD or a download from AIM-Online**
1. If using the AIM provided DVD, insert it into the corresponding drive. The Setup Application will automatically start after a few seconds. If the Setup Application does not start after a few seconds, or the setup is being installed from an AIM-Online download, the Setup Application must be manually started. To Start the application manually, navigate to the drive or the download directory and double click on the Setup.exe application.
  2. Once the Setup Application has started, step through the install wizard to complete the installation.

The installation will result in the creation of the following shortcuts which can be located by going to **Start | Programs | AIM GmbH | EasyLOAD-615A Vxxxx**.



➤ **To start *EasyLOAD-615A***

1. Double click on the EasyLOAD-615A icon  installed on your desktop  
or  
Select **Start | All Programs | AIM GmbH | EasyLOAD-615A Vxxxx / EasyLoad-615A**

The directory where **EasyLOAD-615A** is installed is per default:

`C:\Program Files\AIM\EasyLOAD-615A Vxx.xx`

and indicated as

`<EasyLOAD-Installation-Directory>`

in this document.

The program uses the common application data directory, which is typically

`C:\ProgramData\AIM GmbH\EasyLOAD\`

and indicated as

`<EasyLOAD-AppData-Directory>`

This directory is used for the easyload.ini file and the temp subdirectory stores all exchanged TFTP-Files.

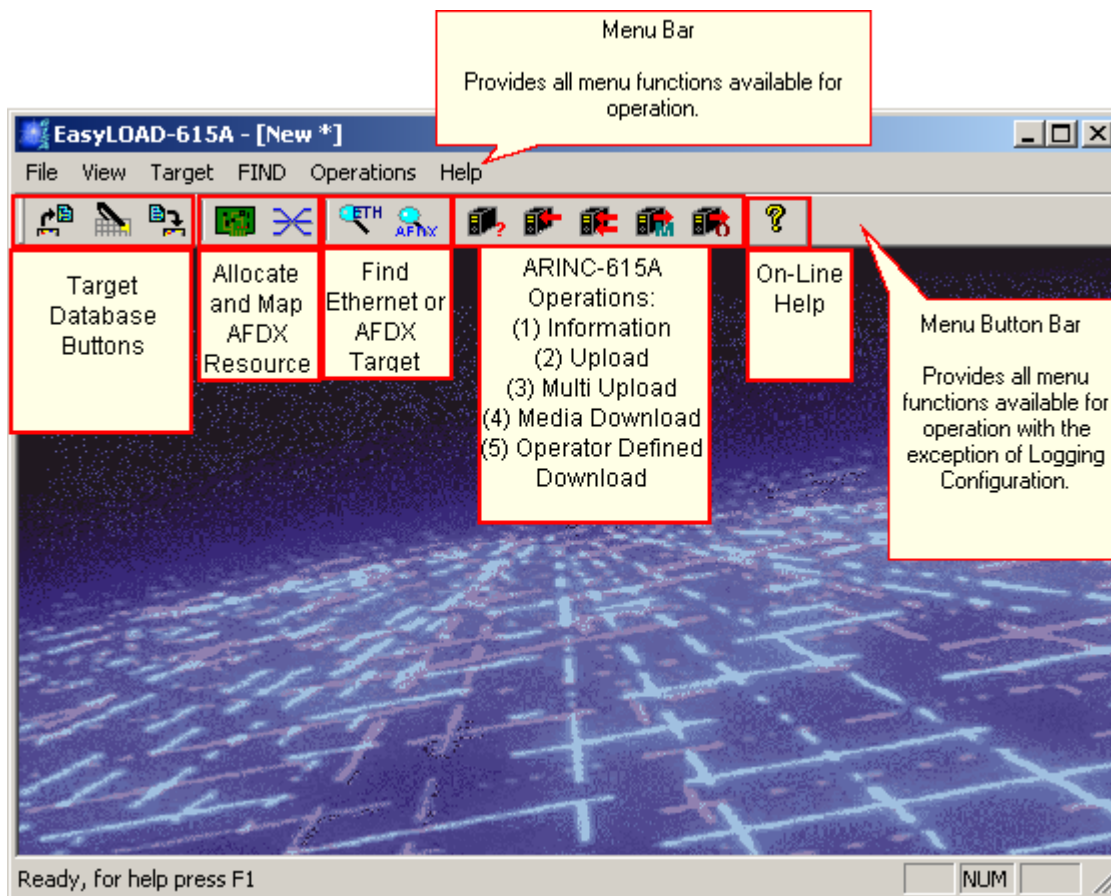
You can check the directory locations also in a command-shell by typing "set Program".



## 2.3 EasyLOAD-615A Window Overview

The **EasyLOAD-615A Main Window Layout** is shown below. **EasyLOAD-615A** initialization includes a search for AIM AFDX/ARINC664 interface modules installed on your system. All AFDX/ARINC664 interface modules found are available for Data Loader operations. If no modules are found a message box will appear indicating "No AFDX Resources Found".










**Note:** Some Menu Button Bars will be greyed (unavailable) until certain operations have taken place, such as Loading a Target Database or Mapping your AFDX resources, as defined in the Table below.



The Menu Buttons described in the following table are made available to provide "One-Click" access to often used dialog boxes and are listed as follows:

Icon	Action	Description
	<a href="#">Open Target Database</a>	Allows the user to open a Target Database. (*.tdi)  <b>Note:</b> A sample Target Database (TargetTestDBase.tdi) is provided in the installed software package in <EasyLOAD-Installation-Directory>\samples
	<a href="#">Edit Target Database</a>	Allows the user to edit the Target Database.
	<a href="#">Save Target Database</a>	Allows the user to save the Target Database.  (This button becomes available for use after <a href="#">opening/defining a Target Database.</a> )



<b>Icon</b>	<b>Action</b>	<b>Description</b>
	<a href="#">AFDX Resources</a>	Allows the user to choose the available AFDX/ARINC664 interface module(s) for Data Loader operations and select the speed.
	<a href="#">AFDX Port Mapping</a>	Allows the user to map the AFDX/ARINC664 interface module's port to a Target defined in the Target Database via a logical Portmap.  (This button becomes available for use after <a href="#">logging into a AFDX port resource</a> .)
	<a href="#">Ethernet FIND</a>	Using the Target's IP/UDP address, allows the user to generate a FIND/SNIP request over the standard Ethernet port of the host PC to obtain Target ID information. This information can then be used to populate the Target Database.
	<a href="#">AFDX FIND</a>	Using the Target's address quintuplet, allows the user to generate a FIND/SNIP request over the selected AFDX port to obtain Target ID information. This information can then be used to populate the Target Database.  This button becomes available for use after <a href="#">logging into your AFDX port resource</a> and <a href="#">mapping the port to a logical portmap</a> .
	<a href="#">Information Operation</a>	Allows the user to perform a 615A Information Operation with a defined Target. The 615A Information Operation provides information on the configuration of the Target Hardware and Loadable Software Airplane parts.  (This button becomes available for use after <a href="#">opening/defining a Target Database</a> .)
	<a href="#">Upload Operation</a>	Allows the user to perform a 615A Upload Operation to a defined Target. Only an ARINC665 compatible load can be chosen for upload.  (This button becomes available for use after <a href="#">opening/defining a Target Database</a> .)
	<a href="#">Multi Upload Operation</a>	Allows the user to perform Multiple 615A Upload Operations to multiple Targets via a single Dialog. (This button becomes available for use after <a href="#">opening/defining a Target Database</a> .)
	<a href="#">Media Defined Download Operation</a>	Allows the user to perform a 615A Media Defined Download Operation from a defined Target.  (This button becomes available for use after <a href="#">opening/defining a Target Database</a> .)
	<a href="#">Operator Defined Download Operation</a>	Allows the user to perform a 615A Operator Defined Download Operation from a defined Target.  (This button becomes available for use after <a href="#">opening/defining a Target Database</a> .)



## 2.4 Managing License Keys

The **Manage License Keys** dialog provides the user with the capability to easily enter all license keys required to:

- **Operate EasyLOAD-615A using one or more AFDX Interface Module(s) and/or Ethernet**  
A license key is required for each AFDX Interface Module to be used with the EasyLOAD-615A software. These license keys can be easily entered prior to EasyLOAD-615A operations using the Manage License Keys Dialog.

**Note:** *The license key used for an AFDX Interface Module to operate with EasyLOAD-615A also allows for Target interface via Ethernet.*

- **Operate EasyLOAD615A using Ethernet (no AFDX interface allowed)**

If the user has purchased EasyLOAD-615A for the sole purpose of interfacing via Standard-Ethernet-NIC, then your AIM representative will provide a license key which is based on your MAC-Address.

➤ **To determine your MAC Address**

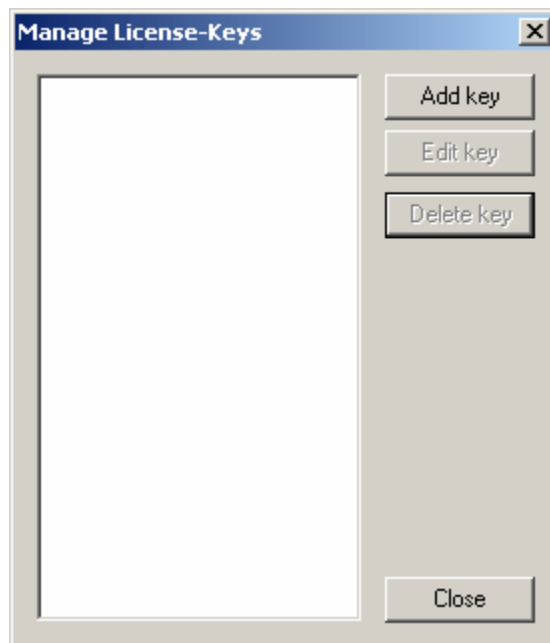
1. To open a Command Prompt window: Go to **Start | Run** and enter **cmd.exe** or go to **Start | Accessories | Command Prompt**
2. Type "ipconfig /all" and select Enter
3. Look for the physical address, this is your MAC-Address!

or

1. Open a command-line (cmd.exe)
2. Type "getmac"

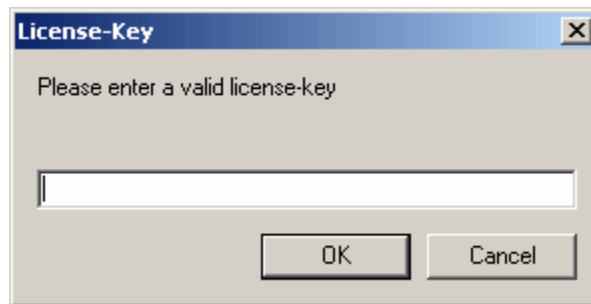
➤ **To enter the license key for an AFDX Module or to interface via Ethernet**

1. Select **Help | Licenses**





2. Select the Add button and enter a valid license key. Select OK.



Once the license key has been entered, it is stored in the `easyload.ini` file, located in

`<EasyLOAD-AppData-Directory>` which is typically

`C:\ProgramData\AIM GmbH\EasyLOAD\`

Please note that **EasyLOAD-615A** can also be licensed with an **USB-Dongle** or by the **PBA.pro License-Server** via Network. In this case you need not enter a license key and need not the Manage License Keys dialog.







### 3 EasyLOAD-615A Operation

Now that you are familiar with the file menus and menu bars, let's talk about the general order of operation.

1. [Define a Target Database](#)

The Target Database (\*.tdi) defines the list of Targets which can be used by EasyLOAD-615A Operations.

2. [Link your Source Resource\(s\) to your Target Resource\(s\)](#)

Once you have defined your Target properties, you must then configure your local resources and map them to the Target.

3. [Perform the ARINC615A Operation](#)

EasyLOAD-615A provides the user with four ARINC615A operations:

[Information Operation](#)

[Upload Operation](#)

**Note:** Prior to the Upload Operation - you may need to build the ARINC665 compatible Upload Files; LOADS.LUM, FILES.LUM and header file (\*.luh). If so, use the [665-MediaSet Builder](#) in EasyLOAD615A.

[Media Defined Download Operation](#)

[Operator Defined Download Operation](#)



### 3.1 Defining a Target Database

The Target Database is an ASCII file (\*.tdi extension) that defines the list of Targets which can be used by **EasyLOAD-615A** for Information/Upload/Download Operations. The Target Database contains ID information, AFDX or Ethernet Communication parameters and 615A Data Load protocol (DLP) plus TFTP protocol characteristics.

A sample Target Database (`TargetTestDBase.tdi`) is provided in the installed software package in:

`<EasyLOAD-Installation-Directory>\samples`

For initial use, you may open this file, edit as needed and save the Target Database using your own application-unique name.

The Target Database can be populated as follows:

1. [Open an existing Target Database](#) (or skip this step to create a new Target Database)
2. [Create/Edit Target Database](#)
3. [Save Target Database](#)

The following information is contained in the Target Database:

Target Database Tab	Target Property **Information Available with AFDX FIND / Ethernet FIND
Target ID Target ID	Target Name** Target Hardware Identifier** Manufacturer Code** Target Type** Target Position**
Connection Connection	For an <b>Ethernet</b> transfer: Destination IP Minimum UDP Port Maximum UDP Port  For an <b>AFDX/ARINC664</b> transfer: Loader-to-Target: Source MAC ID Virtual Link (VL) ID and BAG Source IP address Destination IP address Minimum UDP Port Maximum UDP Port  Target-to-Loader Virtual Link (VL) ID Destination IP address  AFDX Portmap ID
DLP Data Load Protocol Options	Retry Number Timeout Data Load Protocol Version (615-1 or 615-2)
TFTP TFTP	Block Size (enable/disable) Maximum File Size (enable/disable) Timeout (enable/disable)



<b>Negotiated /Static Options</b>	T0 Timeout T2 Timeout Retry Number Well Known Port number Port Option Dally Avoidance
---	--



### 3.1.1 Open Target Database

The following instructions describe the processes involved in opening an existing Target Database.

➤ **To open an existing Target Database**

1. Select **File | Open Target Database** or the Open Target Database button.
2. Select your previously saved Target database or select the sample database  
<EasyLOAD-Installation-Directory>\samples\TargetTestDBase.tdi
3. Select the **Open** button.  
The selected Target Database is now open and available for [editing](#).

**OR**

➤ **To instruct EasyLOAD-615A to automatically open an existing Target Database at startup**

1. In any Text Editor, open the EasyLOAD-615A INI file (easyload.ini).
2. Add the following to the INI file:  
[TARGETS]  
DEFAULT\_DB = <Path to TDI File>

where <Path to TDI File> is the full pathname to the Target Database file which is to be automatically loaded at startup.

3. Save the changes to the INI file and close the Text Editor.
4. Shutdown and re-launch the EasyLOAD-615A application.
5. Alternatively it is also possible to use the TDI-File-Path as **command-line parameter** at EasyLOAD startup



### 3.1.2 Create/Edit a Target Database

The following instructions describe the processes involved in creating/editing a Target Database.

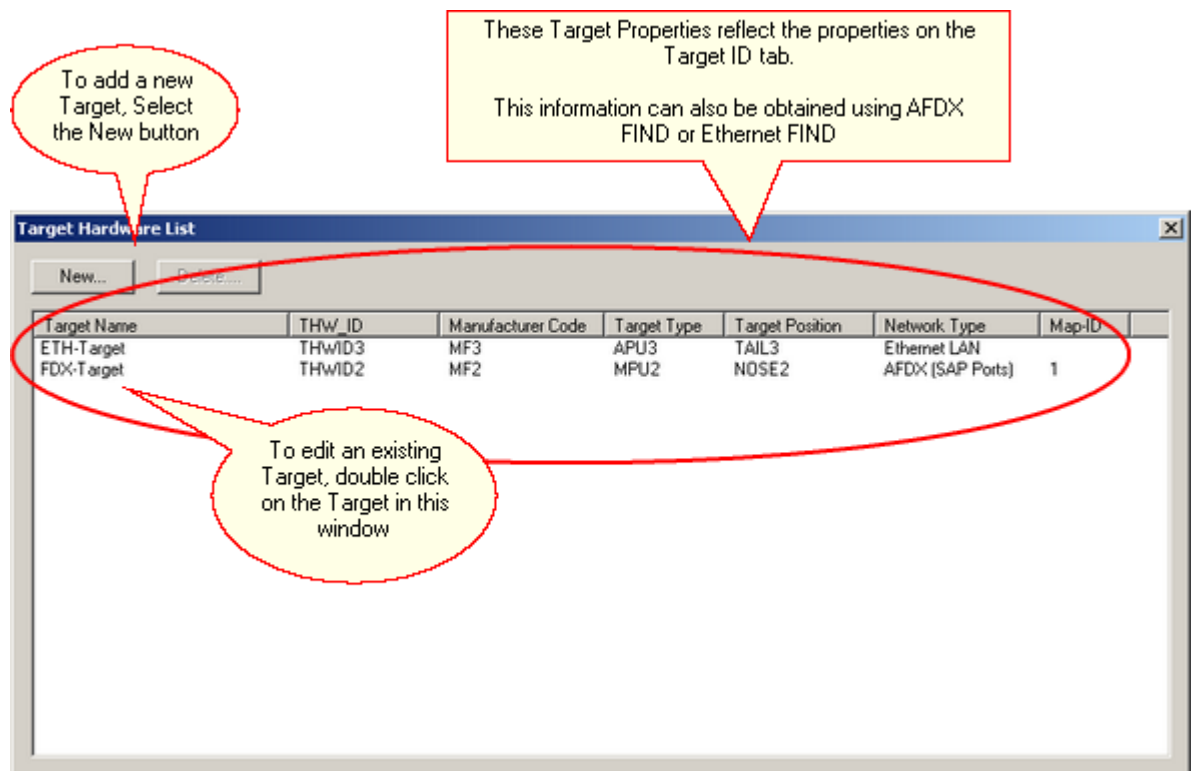
**Note:** While the Target Database is being edited, all other **EasyLOAD-615A** operations are not allowed.

➤ **To create/edit a Target Database**

1. Select **Target | View/Edit Targets** or the Edit Target Database button.

If a Target Database had previously been [opened](#), the opened Target Database can now be edited, otherwise a blank Target Hardware List window will appear.

The following window shows the sample Target Database **TargetTestDBase.tdi**.



2. To **enter a new Target**, select the **New** button. To **edit** a Target, **double click on the Target to be edited**.

You can now create/edit the parameters associated with the target including:

- [Target Hardware Identification](#) - General Target Parameters and Network Communication Type
- [Connection Information](#) - Target Addressing, dependent on Communication Network
- [Data Loading Protocol \(DLP\) parameters](#) - Data Loader Protocol 615A Configuration
- [Trivial File Transfer Protocol \(TFTP\) parameters](#) - TFTP Protocol settings

3. [Save](#) change to your Target Database if desired.



### 3.1.2.1 Target Hardware Identification

The **Target ID** dialog includes entry for General Target Parameters and Network Communication Type.

If Target Hardware Identification information is unknown, the user can obtain this information prior to creating/editing the Target Database and use the information obtained to populate the Target Hardware ID information:

- [Ethernet FIND](#): For users performing the ARINC-615A operations over the host Ethernet interface
- [AFDX FIND](#): For users performing the ARINC-615A operations over AFDX/ARINC664 interface

The following window represents the Target ID dialog:

The screenshot shows the "615A Target Hardware Definition" dialog with the "Target ID" tab selected. The "Target Hardware Identification" section contains the following fields:

- Target Name: FDX-Target
- Target Hardware Identifier: THWID2
- Manufacturer Code: MF2
- Target Type: MPU2
- Target Position: NDSE2

The "Network" section contains a "Network Type" dropdown menu with the following options:

- AFDX (SAP Ports)
- AFDX (SAP Ports)
- Ethernet LAN

Callouts provide additional information:

- "Target Name" and "Target Type" can be defined by the user.
- Target Hardware Information can also be obtained using AFDX FIND or Ethernet FIND.
- "Target Hardware Identifier", "Manufacturer Code" and "Target Position" must equal the target's information. These parameters are used at the Data Loader Protocol (DLP) level.
- Define whether the Target will be communicating via Ethernet or AFDX. At this time AFDX Service Access Point (SAP) ports are supported.
- AFDX (SAP Ports) -> Requires an AIM AFDX Interface Board. The port must be configured and mapped to the Target via AFDX Resources and AFDX Portmapping windows
- Ethernet LAN -> Assumes the use of the Ethernet port of the Host computer. Uses standard Windows UDP sockets.



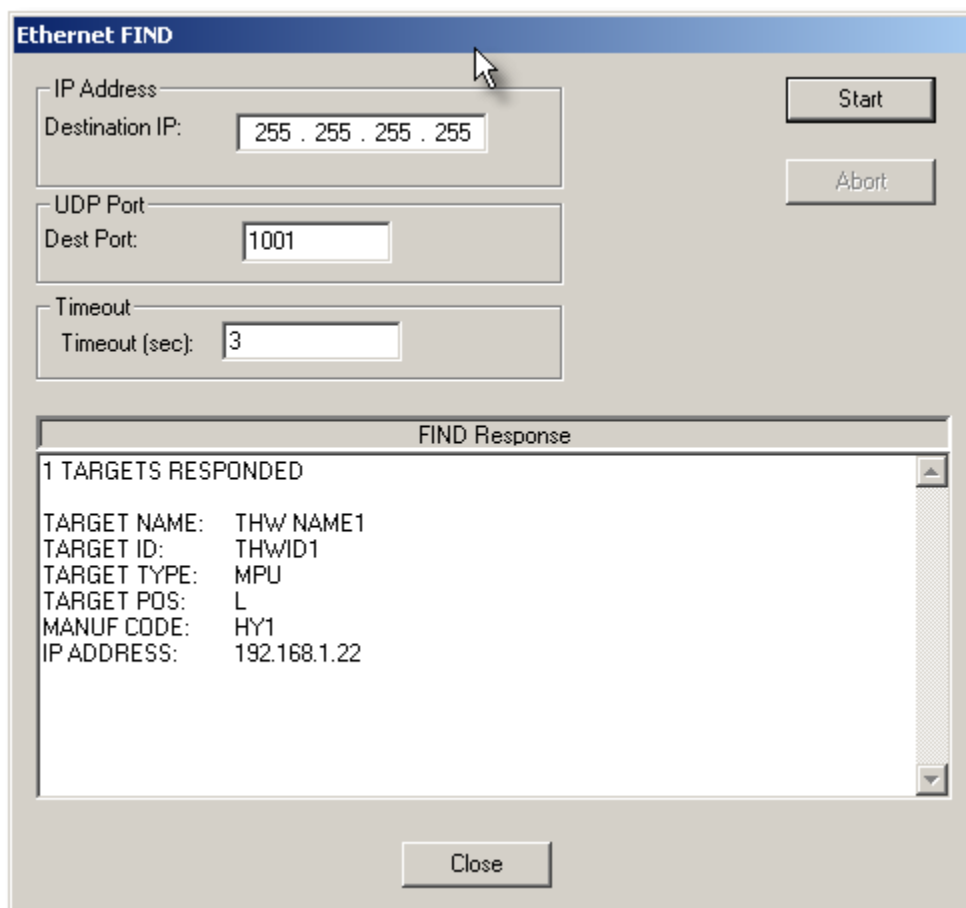
### 3.1.2.1.1 Ethernet FIND

The **Ethernet FIND** dialog provides the ability to generate a FIND/SNIP Request over Standard Ethernet Port of the Host PC to the corresponding IP address and UDP destination Port. A user definable timeout for the request is supported as well.

➤ **To generate a Ethernet FIND/SNIP Request**

1. Select **FIND | Find ETH Targets** or select the Ethernet FIND button.
2. Enter the **Destination IP/UDP address** to be used in the FIND request message. This may be either a broadcast or unicast IP address.
3. Enter the **timeout** desired for this request.
4. Select **Start**.

If an Ethernet Target with the IP/UDP address entered is listening - it should respond with it's target hardware information in the FIND Response window. This information can then be entered into the [Target Database](#) for this target.





### 3.1.2.1.2 AFDX FIND

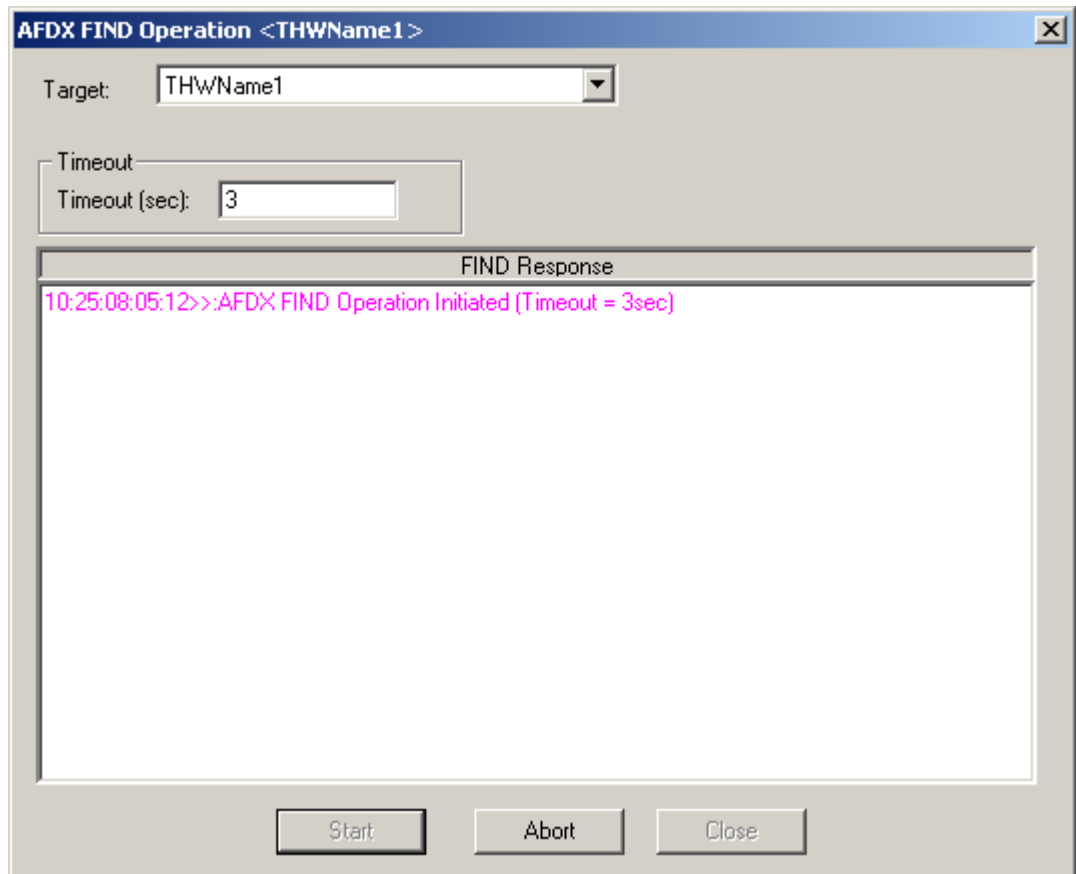
The **AFDX FIND** dialog provides the ability to generate a FIND/SNIP Request over the selected AFDX port to the corresponding MAC address. A user definable timeout for the request is supported as well.

**Note:** This capability becomes available after [logging into your AFDX port resource](#) and [mapping the port to a logical portmap](#).

➤ **To generate an AFDX FIND/SNIP Request**

1. Select **FIND | Find AFDX Targets** or select the AFDX FIND button.
2. Select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#)).
3. Enter the **timeout** desired for this request.
4. Select **Start**.

If an AFDX Target is listening - it should respond with it's target hardware information in the FIND Response window as shown below. This information can then be entered into the [Target Database](#) for this target.







### 3.1.2.2 Connection Information

The **Connection** dialog includes entry for Target Addressing. Depending on the Network Type selected in the Target ID dialog, the Connection dialog will vary in appearance and input requirements as follows:

For **AFDX SAP Port Communication** the **Connection** dialog will appear as:

The Loader->Target Connection parameters:  
Portmap, Source MAC, VL, BAG, and Source IP can be identical for each Target.  
However, please note that the Source MAC and BAG must be the same for common Loader->Target VLs.

The Loader-to-Target and Target-to-Loader addressing requirements can be found in the AFDX End System Detailed Functional Specification.

Select the logical Portmap. The logical port should be mapped to a physical port via the AFDX Portmapping dialog prior to Data Loader operations. Logical Portmap assignment in the Target Database allows the defined target to be independent of a physical resource.

Note: If more than one Target is assigned to the same Portmap the user should ensure that the UDP port ranges do not overlap if simultaneous Data Loader Operations are required.

The combination of Target->Loader Connection parameters:  
Portmap, VL Id, and DestIP must be unique for each Target.  
For example it is correct to define 2 Target-Definitions:  
Portmap = 1, VL Id = 10269, DestIP = 10.1.33.1  
Portmap = 2, VL Id = 10269, DestIP = 10.1.33.1

Enter the range of UDP ports to be used by the host system for the Client/Server TFTP level transfers. In TFTP protocol, Clients and Servers use the source UDP port as a transaction ID. The range of ports is split evenly between the Client and Server. For example if min = 1000 and max = 1003. The TFTP Server will be allocated ports 1000 and 1001. The Client will use 1002 and 1003. Therefore, the Client and Server will each be capable of supporting 2 simultaneous file transfers.

You should specify as a minimum a range of 4 UDP ports in order to support 2 simultaneous file transfers.

These parameters are independent of the Target ES.

Bandwidth Allocation Gap (BAG) values are in milliseconds: 1, 2, 4, 8, 16, 32, 64, 128

**For AFDX SAP Port Communication**

615A Target: Hardware Definition

Target ID | Connection | DLP | TFTP

Loader ----> Target

Parts of Source MAC

Domain-Id: Domain 1

Location-Id: Location 1

Side-Id: Side 1

Virtual Link

VL id: 1

BAG: 1 mS

IP Address (Loader)

Source IP: 10 . 1 . 33 . 1

IP Address (Target)

Dest IP: 10 . 1 . 33 . 2

UDP Ports

Min. UDP Port: 1024

Max. UDP Port: 1048

AFDX Port

Portmap: Portmap 1

Target ----> Loader

Virtual Link

VL id: 2

IP Address

Destination IP: 10 . 1 . 33 . 1



For **Ethernet LAN Communication** the **Connection** dialog will appear as:

### For Ethernet LAN Communication

**615A Target Hardware Definition**

Target ID | **Connection** | DLP | TFTP

IP Addresses

Destination IP:

UDP Ports

Min. UDP Port:

Max. UDP Port:

Enter the IP address of the Target system.

Enter the range of UDP ports to be used by the host system for the Client/Server TFTP level transfers. In TFTP protocol, Clients and Servers use the source UDP port as a transaction id. The range of ports is split evenly between the Client and Server. For example if min = 50000 and max = 50003. The TFTP Server will be allocated ports 50000 and 50001. The Client will use 50002 and 50003. Therefore, the Client and Server will each be capable of supporting 2 simultaneous file transfers.

You should specify as a minimum a range of 4 UDP ports in order to support 2 simultaneous file transfers. You should also consider that other applications and processes may already use the given UDP-Ports, in this case the next free UDP-Port will be searched.

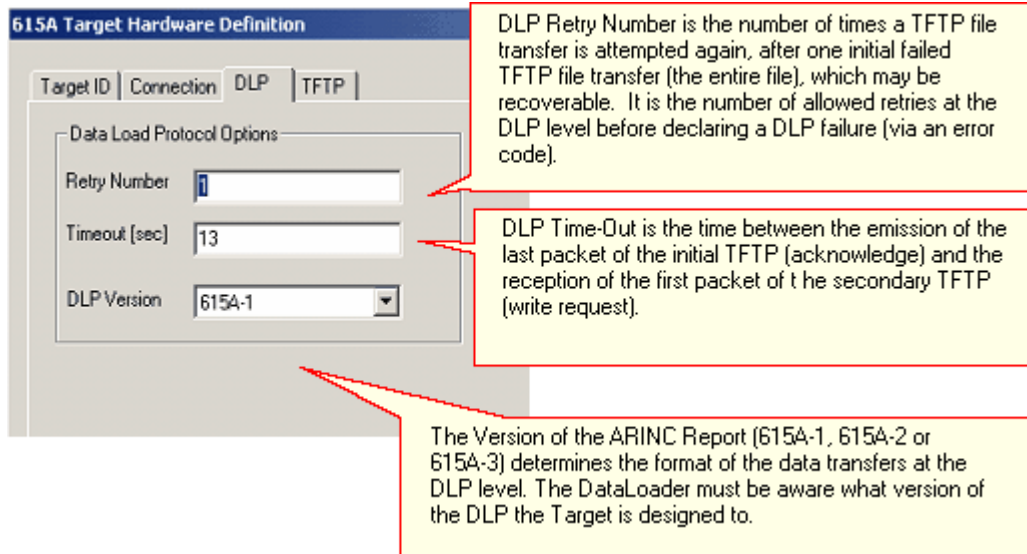
Please note that normally private UDP-Ports in the range 49152...65535 must be used, see <https://www.iana.org>  
These parameters are independent of the Target ES.



### 3.1.2.3 Data Loading Protocol

The **Data Load Protocol (DLP)** dialog includes entry for DLP options. The DLP layer manages general processes and coordinates activities between the Data Loader and the Target hardware. The DLP layer is activated for each [data load operation](#) (upload, download, etc.) for each target hardware, and manages objects corresponding to one TFTP file transfer. The DLP layer has no knowledge of the TFTP exchanges.

The **DLP** dialog is shown below:





### 3.1.2.4 Trivial File Transfer Protocol

The **Trivial File Transfer Protocol (TFTP)** dialog includes entry for TFTP options. The TFTP Layer supports file transfers (protocol files and data files). This layer defines one exchange by one request and its answer (regardless of the type of packet).

The **TFTP** dialog is shown below:

**615A Target Hardware Definition**

Target ID | Connection | DLP | **TFTP**

TFTP Negotiated Options

- Block Size [bytes]: 512
- Max. File Size [bytes]: 4096000
- Timeout [sec]: 1
- Port: 49152

TFTP Static Options

- T0 Timeout [sec]: 1
- T2 Timeout [sec]: 1
- Retry Number: 1
- Well Known Port: 59
- Daily:

**Callout 1:** TFTP Option negotiation allows the Data Loader to negotiate with the Target in order to increase functionality. The Target should accept any option request, but may ignore options that it does not implement.

**Callout 2:** The TFTP time-out is the time measured between the emission of one TFTP packet (whatever the type of TFTP packet) and the reception of the associated answer packet for the same TFTP exchange (whatever the type of TFTP packet).

**Callout 3:** The TFTP Port is used to support TFTP Port option negotiation as defined in the ARINC615A-3 Draft standard. 49152 to 65535 is suggested as private ports by the IANA.

**Callout 4:** T0 is timeout that the client waits for a response/acknowledgment to a sent TFTP message before re-transmitting the message. T2 is the timeout that the Client/Server waits after the last TFTP ACK message is sent before declaring the file transfer complete. It is intended to handle the error condition in which the last ACK of a file transfer is lost before it reaches its destination.

**Callout 5:** The TFTP Retry Number is the number of times a TFTP exchange is attempted after one initial failed exchange (inside the same TFTP session), which may be recoverable. It is the number of allowed retries before declaring a TFTP failure (via an error code) to the DLP.

**Callout 6:** If set, the TFTP Dally option allows the data loader to respond to the last ACK of a file transfer with another TFTP ACK. If implemented also by the target, this option allows the data loader to avoid waiting the T2 timeout at the end of a file transfer.

**Callout 7:** Well Known Port numbers are used to separate communication for Data Loader applications and other file-transfer applications. Use the well-known port number: 59 (decimal), (based on ARINC Report 615A Protocol) or 69 (decimal) (based on RFC 1350 The TFTP Protocol).



### 3.1.2.5 Find Information

The **Find** tab includes entry for Target Addressing to be used for execution of the [AFDX Find Operation](#). The Find tab will only be displayed in the **615A Target Hardware Definition** dialog when the network type AFDX (SAP Ports) is selected in the [Target ID](#) tab.

The Find tab is used to enter connection data that is used for communications with the AFDX Target when executing the [AFDX Find Operation](#). In most cases, this will be the same information as entered in the [Connection](#) tab. To avoid re-entering the same data, the **Copy Data From Connection Tab** button may be used.

**615A Target Hardware Definition**

Target ID | Connection | DLP | TFTP | **FIND**

Loader ----> Target

Parts of Source MAC

Domain-Id:

Location-Id:

Side-Id:

Virtual Link

VL id	BAG	Max. Frame Size
<input type="text" value="60"/>	<input type="text" value="1 mS"/>	<input type="text" value="1518"/>

IP Address (Loader)

Source IP:

IP Address (Target)

Dest IP:

UDP Ports

Source UDP:

Destination UDP:

Copy Data From Connection Tab

Copy FIND Connection data from the Connection Tab

Target ----> Loader

Virtual Link

VL Id:

IP Address

Destination IP:

UDP

Destination:



### 3.1.3 Save Target Database

Once you have created/edited your Target Database, you may choose to save your changes. The following instructions describe the processes involved in saving a Target Database.

➤ **To save a Target Database**

1. To save with the same name, select **File | Save Target Database** or the Save Target Database button.

or

To save with a new name, select **File | Save Target Database As** and enter a new name for the Target Database.

The target database will be saved with the file extension `*.tdi`



## 3.2 Linking Targets to AFDX-Ports

To communicate to the Target 'End System' via an AFDX/ARINC664 interface, there are two steps that you must first perform:

1. [Configure your AFDX board/Port.](#)
2. [Map your physical AFDX Port to the Logical Portmap](#) assigned to the Target.

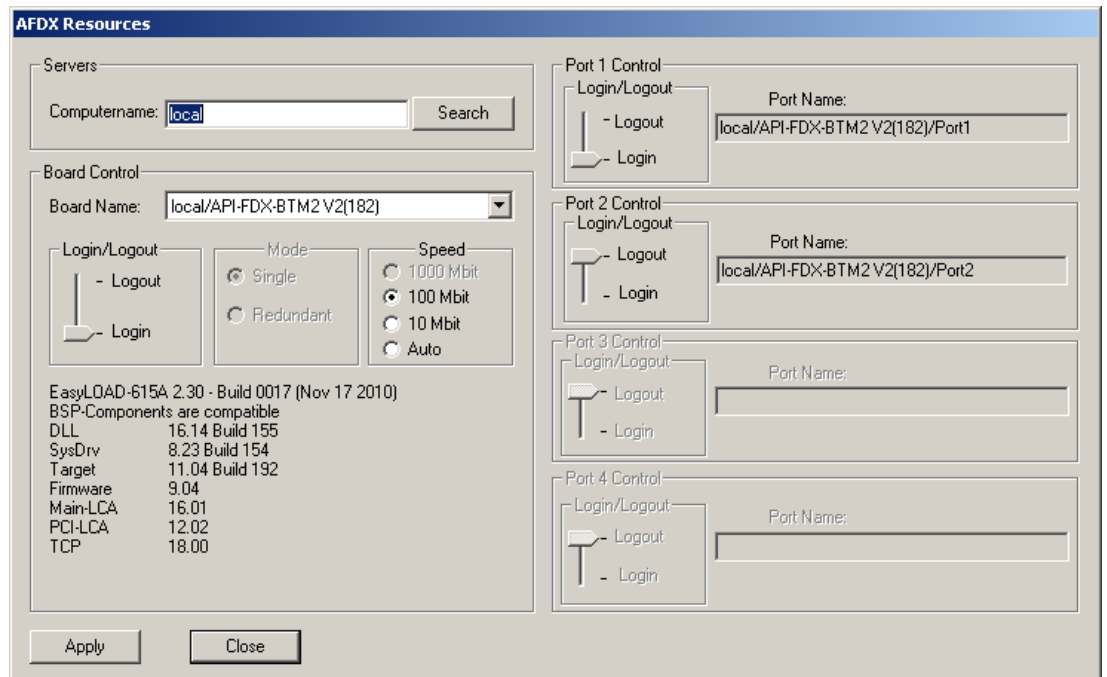


### 3.2.1 AFDX Resources

The **AFDX Resources** dialog allows you to Login to the AIM AFDX board(s)/port(s) and configure the speed of the port(s). This step must be performed prior to any Data Loader operations that involve an interface to a Target via AFDX.

➤ **To configure your AFDX/ARINC664 Board/Port Resource**

1. Select **View | AFDX Resources** or select the AFDX Resources button.  
The AFDX Resources dialog will appear. If AFDX resources were previously found when EasyLOAD-615A was started, they will appear in the list of Boards in the Board pull down menu. If no AFDX resources were found, the board and port entries will be greyed out.



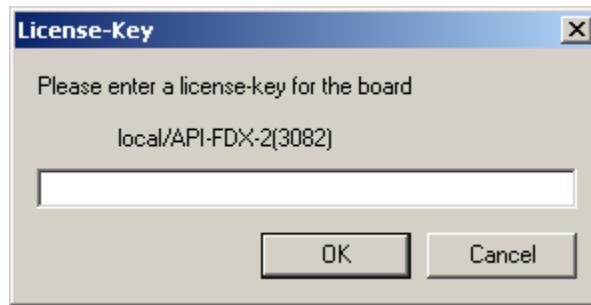
2. If you would like to use AFDX resources on a server connected to your Local Area Network (LAN) enter the **IP address** or **name of the computer** hosting the AFDX boards and select **Search**.  
The found AFDX resources should appear now in the Board pull down menu under the Board Control entry on the dialog.

**Note:** It is not possible to use local and remote AFDX boards simultaneously. Also, it is not possible to use boards of different servers simultaneously.

3. Select the **Board** you would like to Login to using the pull-down menu.
4. **Login to the Board** using the slider bar.

If you have not entered the [license key](#) for this AFDX board before, you will be asked to enter the license-key in order to use the AFDX interface module with EasyLOAD-615A.





5. Enter the **license-key** and select **OK**  
Once the license key has been entered, it is stored in the `easyload.ini` file, located in  
<EasyLOAD-AppData-Directory>.
6. Select Board **speed** (both ports must operate at the same speed).
7. Select Single (each port operates independently) or redundant (Port 2 is configured to transmit the same data as Port 1).
8. **Login to port(s)** to be used for the Data Loader operation(s). (If the board is in Redundant mode, you can only perform a Login to Port 1.)
9. Select **Apply**.
10. **Check** if all BSP-Components are **compatible**. Maybe it is necessary to update your Board and System-Driver if there is a compatibility problem.  
You can download the latest BSP -including System-Driver- and EasyLOAD from [www.aim-online.com](http://www.aim-online.com).

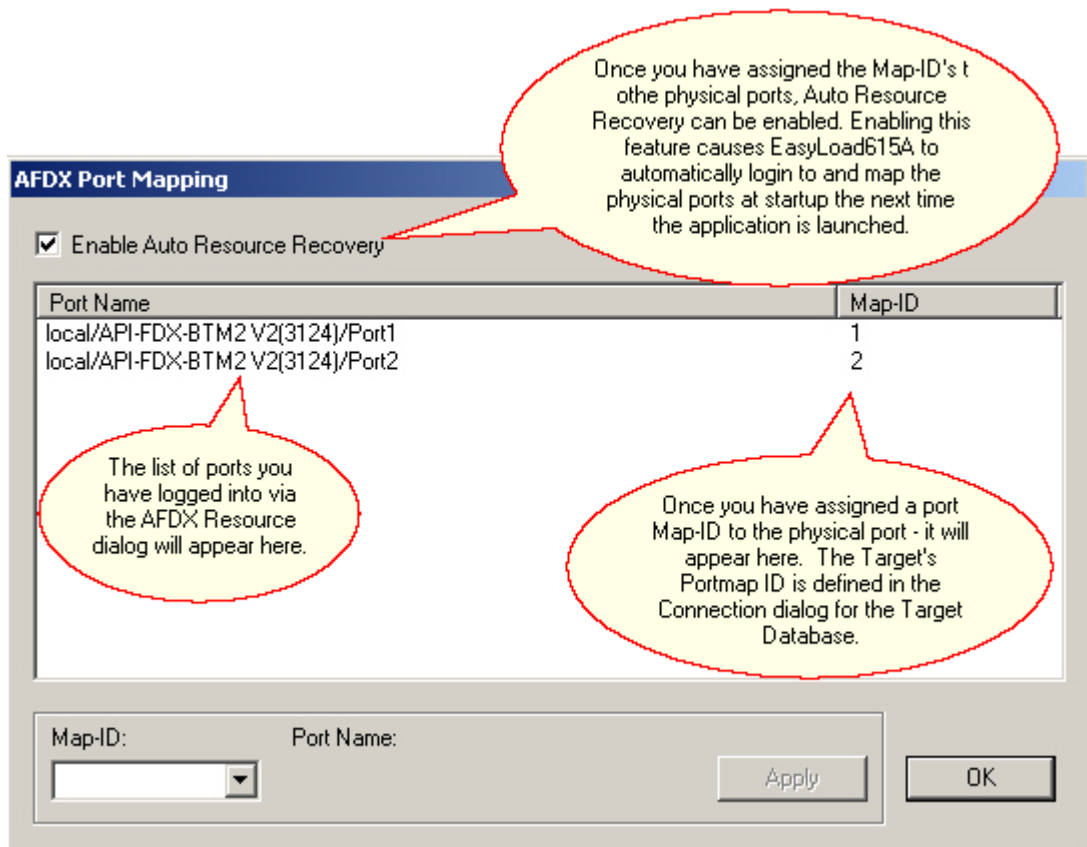


### 3.2.2 AFDX Portmapping

The **AFDX Portmapping** dialog allows you to assign a physical AFDX Port resource to a logical Portmap. The logical Portmap is the parameter configured for each Target via the Target Database [Connection](#) window. The logical portmapping provides the user with the capability to easily reassign a physical port to a logical portmap used for a particular target's data load operations. A defined AFDX Target in the Target Database is able to perform Data Loader Operations (Information, Upload and Download), only if the associated portmap has been assigned to a physical AFDX port.

➤ **To map your AFDX/ARINC664 Board/Port Resource to a logical Portmap used in the Target DB**

1. Select **View | AFDX Port Mapping** or select the AFDX Port Mapping button.  
The list of AFDX Port Resources to which you have logged in are listed on the left.
2. Select an **AFDX Port Resource** from the left list under Port Name.
3. Choose a **Map\_ID** from the pick list.
4. Select **Apply**.





### 3.3 Perform ARINC615A Operations

All Data Loader operations supported by **EasyLOAD615A** can be performed simultaneously with multiple Target 'End Systems'.

**Note:** *Multiple Targets can be supported over the same port (Portmap), but the user must ensure that the UDP port ranges defined in the Target Database for the Target's Connections do not overlap. Each Target can only support one operation at a time (as defined in ARINC615A-1/2/3 Reports).*

Once you have defined your Target in the Target Database, configured and mapped the physical port to the logical port assigned to the Target, you can perform the following ARINC615A Data Loader Operations:

- [Information Operation](#)
- [Upload Operation](#)
- [Multi Upload Operation](#)
- [Media Defined Download Operation](#)
- [Operator Defined Download Operation](#)



### 3.3.1 Information Operation

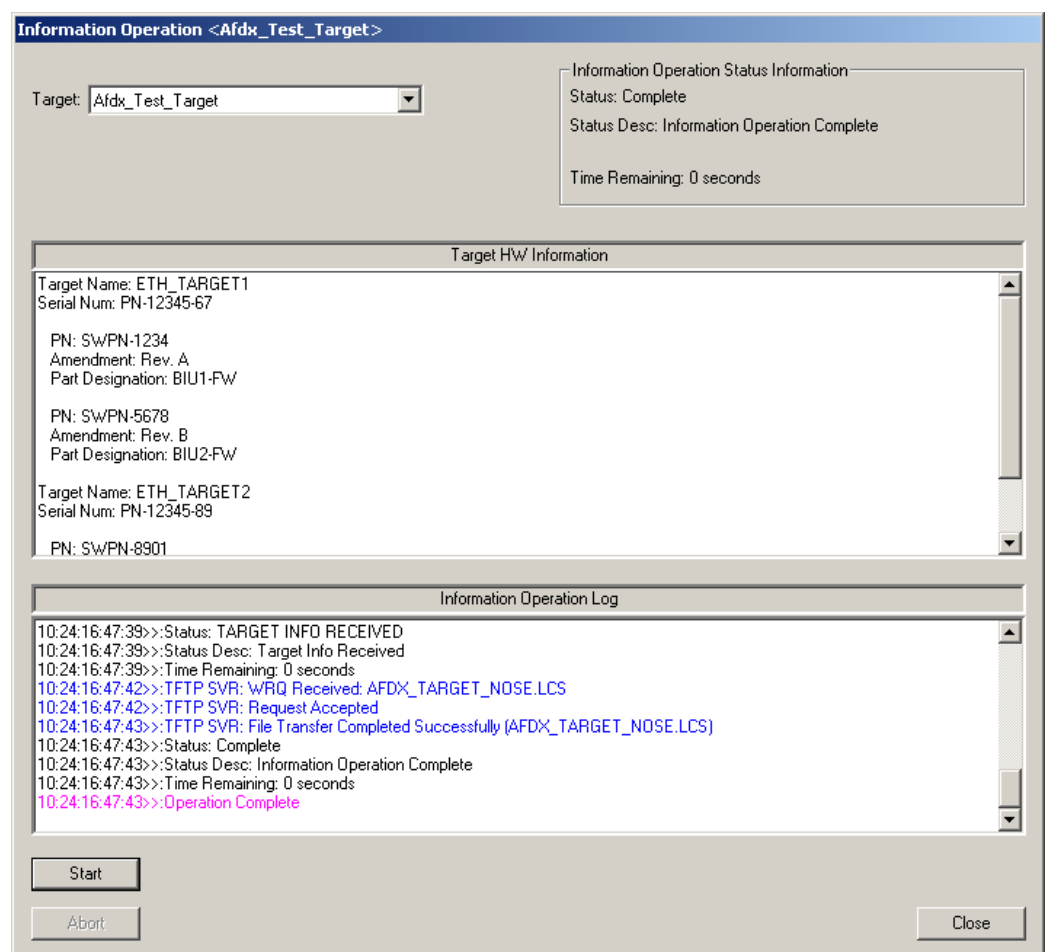
The **Information Operation** allows you to recover information on the configuration of the Target Hardware and Loadable Software Airplane parts (i.e. identifiers and Part numbers of the hardware and the software).

➤ **To perform an Information Operation with a Target**

1. Select **Operations | Information** or select the Information Operation button.
2. Select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#)).
3. Select **Start**.

The status of the Information Operation is shown in the Information Operation Status window. If the Information Operation is successful, the Target Information is retrieved and shown in the Target HW Information window as shown below.

4. If desired, select **Abort** to stop the Information Operation.





### 3.3.2 Upload Operation

The **Upload Operation** allows you to upload ARINC665 compatible files from the Data Loader to the Target Hardware. Upload source files can reside on the local host or any accessible storage device on the local area network.

**Note:** To build the ARINC665 compatible Upload Files; LOADS.LUM, FILES.LUM and header file (\*.luh), use the [665-MediaSet Builder](#) in EasyLOAD-615A.

➤ **To Upload files to a Target**

1. Select **Operations | Upload** or select the Upload Operation button
2. Select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#))
3. Use the **Verify** check-box if you want to validate the MediaSet to be loaded. Then select the **Add Load** button to browse to the media (i.e. CD, floppy, directory) which contains the ARINC665 compatible LOADS.LUM and FILES.LUM, or any ARINC665 compatible load header (\*.LUH) defining a load(s) to be added to the load session.

After the LOADS.LUM, or load header file is selected, if the **Verify** check box is selected, the MediaSet will be verified/validated by EasyLOAD-615A, if an error is found the validation will be aborted and the error/problem will be shown. If the MediaSet can be loaded anyway (maybe only a CRC was not correct), EasyLOAD-615A will ask if the MediaSet should be used although a problem was found. If no errors occurred the "Load List Information" window will list all Header Files (as defined in the associated FILES.LUM file) associated with this load.

4. Select **Start** to start the Upload Operation
5. The status of the Upload Operation is shown in the Upload Operation Status Information window and the status of each header file associated with this load is shown in the Load List Information window.
6. If desired, select **Abort** to stop the Upload operation.



Upload Operation <Target Name2>

Target: Target Name2

Add Load  Verify

Remove Load

Upload Operation Status Information

Status:

Status Desc:

Time Remaining:

Elapsed Time: 00:00:00

Load List Information

Load PN	% Complete	Status	Status Description	Header File
MMMNN-PPPP-DDD1	0%	PENDING	Upload Operation has not yet started	C:\FDX_EDE_DEV\EASYLOAD\...
MMMNN-PPPP-DDD2	0%	PENDING	Upload Operation has not yet started	C:\FDX_EDE_DEV\EASYLOAD\...
MMMNN-PPPP-DDD3	0%	PENDING	Upload Operation has not yet started	C:\FDX_EDE_DEV\EASYLOAD\...

Upload Log Information

Start Abort Close

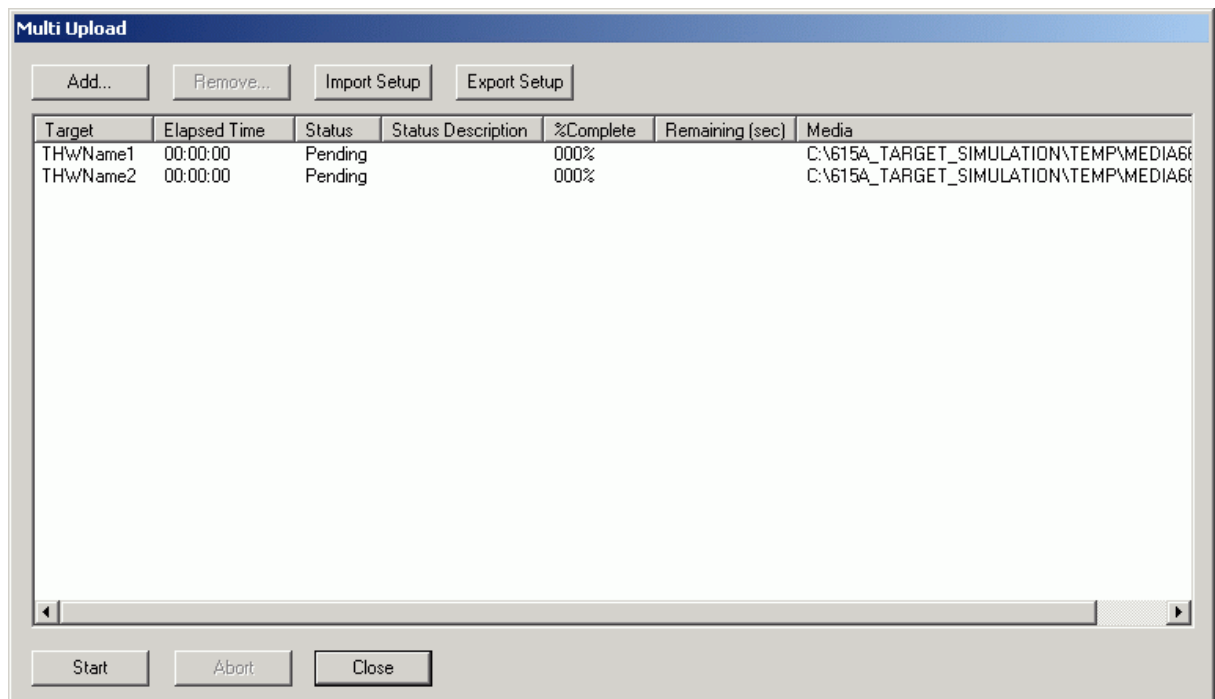
- **To Remove load files from the Upload session**
  1. Select the Load PN of the load to be removed from the session.
  2. Select the **Remove Load** button.



### 3.3.3 Multi Upload Operation

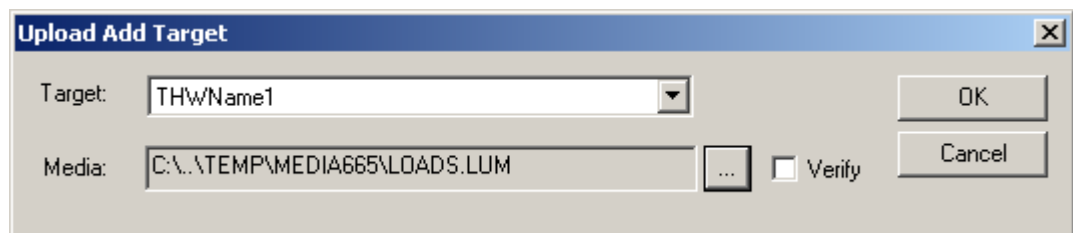
The **Multi Upload Operation** allows you to upload several ARINC665 compatible files from the Data Loader to several AFDX Target Hardware devices from a single user interface dialog. Upload source files can reside on the local host or any accessible storage device on the local area network.

**Note:** To build the ARINC665 compatible Upload Files; LOADS.LUM, FILES.LUM and header file (\*.luh), use the [665-MediaSet Builder](#) in EasyLOAD-615A.



#### ➤ To Add Targets to the Upload List

1. Select **Add..**
2. In the **Upload add Target** dialog, select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#))
3. Use the Media button ("...") to browse to the media to be loaded to the Target (i.e. CD, floppy, directory). Select the ARINC665 LOADS.LUM at the root of the media set containing the files to be uploaded, or select any ARINC665 compatible load header file (\*.luh).



After the LOADS.LUM or a load header file (\*.luh) is selected, and if the Verify checkbox has been selected, the MediaSet will be verified/validated by EasyLOAD-615A. If an error is found the validation will be aborted and the error/problem will be shown. If the MediaSet can be loaded anyway (maybe only a CRC was not correct), EasyLOAD-615A will ask if the MediaSet should be used although a problem was found. If no errors occurred the "Load List Information" window will list the selected file.

#### ➤ To Remove Targets from the Upload List

1. Select the target to be removed in the Upload List.



2. Select the **Remove** button.
- **To Upload the Targets**
    1. Select **Start** to start the Multi Upload Operation
    2. The status of the Upload Operations is shown for each Target in the list.
    3. If desired, select **Abort** to stop the Upload operation.
  - **To Save the Upload List**
    1. Select the **Export Setup** button.
    2. In the **Save As** dialog specify the file name (\*.emu) and select **Save** to save the Upload List to a file.
  - **To Use a previously saved Upload List**
    1. Select the **Import Setup** button.
    2. In the **Open** dialog specify the file name (\*.emu) and select the **Open** button to open the Upload List.





### 3.3.4 Download Operation - Media Defined

The **Media Defined Download Operation** allows you to download a pre-defined list of Target files from a Target 'End System'. In a Media defined download operation a predefined list of Downloadable files is sent to the Target Hardware prior to download.

➤ **To Download a pre-defined list of files from a Target**

1. Select **Operations | Media Defined Download** or select the Media Defined Download button.
2. Select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#)).
3. Select the **Select** button to browse to the \*.LNR file that contains the list of Target files to be downloaded.  
Once selected, the list of files as defined in the \*.LNR file will be listed in the Download List window.
4. Select **Start** to begin downloading this list of files from the Target.  
The status of the Download Operation is shown in the Download Operation Status Information window and the status of each file associated with this download is shown in the Download List Information window. All downloaded files are placed in the same directory in which the \*.LNR file resides.
5. If desired, select **Abort** to stop the Download operation.

**Media Defined Download Operation <Afdx\_Test\_Target2>**

Target:

Destination Media:

Download Operation Status Information  
 Status: Executing  
 Status Desc: Download Operation in Progress  
  
 Time Remaining: 7 seconds

File Name	Status	Status Description
HEADER001.LUH	Complete	The Download is completed
HEADER002.LUH	Complete	File Received From Target
HEADER003.LUH	Executing	The Download is in Progress
HEADER004.LUH	Executing	The Download is in Progress

Media Download Log

```

10:26:08:24:22>>:TFTP SVR: Request Accepted
10:26:08:24:23>>:TFTP SVR: File Transfer Completed Successfully (THWID2_NOSE2.LNS)
10:26:08:24:24>>:DLP: Downloading_Information_Status Message Received
10:26:08:24:24>>:Status: Executing
10:26:08:24:24>>:Status Desc: Download Operation in Progress
10:26:08:24:24>>:Time Remaining: 7 Seconds
10:26:08:24:24>>:TFTP SVR: WRQ Received: HEADER002.LUH
10:26:08:24:25>>:TFTP SVR: Request Accepted
10:26:08:24:26>>:TFTP SVR: File Transfer Completed Successfully (HEADER002.LUH)
10:26:08:24:26>>:DLP: Downloading_File_Receipt Message Received
10:26:08:24:26>>:File Name: HEADER002.LUH
10:26:08:24:27>>:TFTP SVR: WRQ Received: THWID2_NOSE2.LNS
10:26:08:24:27>>:TFTP SVR: Request Accepted
  
```



### 3.3.5 Download Operation - Operator Defined

The **Operator Defined Download Operation** allows you to download files from a Target 'End System'. In an Operator defined download operation the operator is allowed to request the list of the Target's files available for download, then from that list select the files to be downloaded to the host system. The operator can choose the destination location for each file to be downloaded. Data can be downloaded to the local host or any accessible storage device on the local area network.

➤ **To Download an operator selected list of files from a Target**

1. Select **Operations | Operator Defined Download** or select the Operator Defined Download button.
2. Select the **Target** via the pull-down menu (Target must be defined in the [Target Database](#)).  
The **Get List** button is now selectable.
3. Select the **Get List** button to request a list of downloadable files from the Target. Once selected, the list of downloadable files will be received from the Target and displayed in the Download List Information window.
4. Double click on the file(s) you would like to download.  
The red stop sign next to the selected file will turn to a green light to indicate the file has been selected for download.
5. While the file is selected, select the **Destination** button to browse to a location to indicate where you want the file to be downloaded. Perform this step for each individual file selected for download.
6. Once you have selected the file(s) for download, select **Continue** to begin downloading the selected list of files from the Target.  
Once selected, the status of the Download Operation is shown in the Download Operation Status Information window and the status of each file associated with this download is shown in the Download List Information window.
7. If desired, select **Abort** to stop the Download operation.



**Operator Defined Download Operation <Afdx\_Test\_Target2>**

Target:

All Files:   Destination:

Download Operation Status Information

Status: Executing

Status Desc: Waiting for File List

Time Remaining: 3 seconds

Download List Information			
File Name	Status	Status Description	Destination
HEADER001.LUH	Executing	The Download is in Progress	C:\EasyLoad615A_F16\afdx_1sa\HEA
HEADER002.LUH	Executing	The Download is in Progress	C:\EasyLoad615A_F16\afdx_1sa\HEA
HEADER003.LUH	Executing	The Download is in Progress	C:\EasyLoad615A_F16\afdx_1sa\HEA
HEADER004.LUH	Executing	The Download is in Progress	C:\EasyLoad615A_F16\afdx_1sa\HEA

Operator Defined Download Log

```

10:26:08:46:35>>.TFTP SVR: File Transfer Completed Successfully (THWID2_NOSE2.LNS)
10:26:08:46:35>>.DLP: Downloading_Information_Status Message Received
10:26:08:46:35>>.Status: Executing
10:26:08:46:35>>.Status Desc: Waiting for File List
10:26:08:46:35>>.Time Remaining: 3 seconds
10:26:08:46:39>>.TFTP SVR: WRQ Received: THWID2_NOSE2.LNS
10:26:08:46:39>>.TFTP SVR: Request Accepted
10:26:08:46:40>>.TFTP SVR: File Transfer Completed Successfully (THWID2_NOSE2.LNS)
10:26:08:46:40>>.DLP: Downloading_Information_Status Message Received
10:26:08:46:40>>.Status: Executing
10:26:08:46:40>>.Status Desc: Waiting for File List
10:26:08:46:40>>.Time Remaining: 3 seconds
                
```





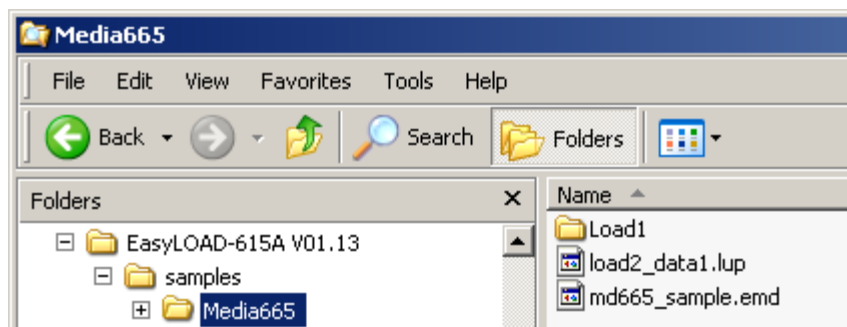
## 4 665-MediaSet Builder

The **EasyLOAD 665-MediaSet Builder** is a scripting tool which can be used to create the LOADS.LUM, FILES.LUM and all header (\*.luh) files required for the ARINC615A Upload Operation. The tool also allows the user to specify whether the files created by the 665-MediaSet Builder are in ARINC665-1, ARINC665-2 or ARINC665-3 format. As an option, the user can perform validation of the entire MediaSet generated including verification of FileExists, numbers, counters, and Checksums.

In summary, the 665-MediaSet Build process is to be performed after you have created the data and support files to be uploaded to the Target in a defined directory structure. A 665-MediaSet Builder script file (\*.emd, EasyloadMediaDefinition) is then created by the user that references the Target data and support file locations, as well as the Part Number (PN) and Target Hardware ID's on the Target. This script file is then read into the 665-MediaSet Builder to create the LOADS.LUM, FILES.LUM and header files used for the ARINC615A Upload Operation.

To enable the user to better understand the 665-MediaSet Build process, sample media set data and support files are located in:

```
<EasyLOAD-Installation-Directory>\samples\Media665
and
<EasyLOAD-Installation-Directory>\samples\Media665-3
```

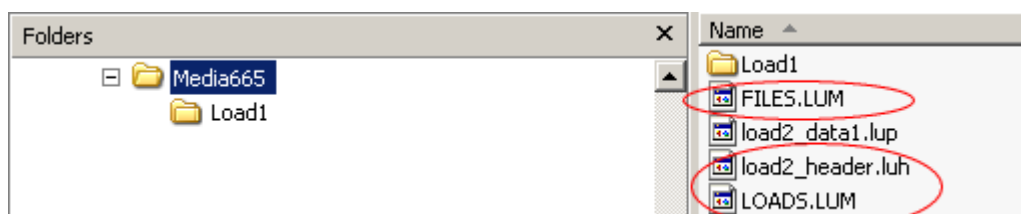


Windows 7 and 10 restricts the write access to the "Program Files" directory, where EasyLOAD is normally installed. Hence the **samples should be copied** for example to C:\.

The LOADS.LUM, and FILES.LUM and all header files (\*.luh) can then be created by selecting **File | 665-MediaSet Builder** then browsing to the following file location:

```
C:\Media665\md665_sample.emd
```

and selecting **Open**. This starts the 665-MediaSet Builder process. Once the process is complete, the new LOADS.LUM, FILES.LUM and all new header files can be seen in the Media665 folder/subfolders, located in the area specified in the `md665_sample.emd` file.



Follow the steps below to create your own 665-MediaSet.

### ➤ To create the LOADS.LUM, FILES.LUM and header (\*.luh) MediaSet files

1. Create the Target's data and support files to be uploaded and locate in a directory/folder structure which can be used for the creation of the LOADS.LUM, FILES.LUM and



- header (\*.luh) MediaSet files.
2. Create a 665-MediaSet Builder script file (\*.emd) containing the required information. You can use the `md665_sample.emd` to start with and modify as necessary. The `md665_sample.emd` file is located in

<EasyLOAD-Installation-Directory>\samples\Media665\md665\_sample.emd

Copy the file to the C:\media665 directory (for example) to avoid problems with the Windows Access-Rights, open the file with a text-editor (e.g. Notepad) and read the fileheader, which holds the latest instructions and help to create a MediaSet:

```
----- Mediaset section
[Mediaset]
;LOADS.LUM and FILES.LUM are created in the RootDir,
;this directory and all HeaderFilePath-subdirectories must exist!
;please note that the RootDir must end with a trailing backslash
RootDir=C:\media665\
;MediasetPN is used for the LUM-files
MediaSetPN=AMEDIASETPN
;665A1version (=1) or 665A2version (=0)
IsVersion665A1=0
;Number of Loads (size of the load-list of LOADS.LUM)
;Dependent on this number, you must define LoadCount-Sections
;in this file ([Load_001], [Load_002], ...[Load_xxx]), see below
LoadCount=2
----- Load_001 section
[Load_001]
LoadPN=LOAD1PN
;this headerfile will be created by EasyLOAD
HeaderFileName=load1_header.luh
;subdirectory for this load, all Data- and Support-Files
;of this load must exist in <RootDir>\<HeaderFilePath>
HeaderFilePath=\load1\
;TargetHW-ID List of this load
THWIDCount=2
THWID_001=THW1
THWID_002=THW2
;DataFile-List of this load
DataFileCount=2
DataFile_001=load1_data1.lup
DataFilePN_001=PN1
DataFile_002=load1_data2.lup
DataFilePN_002=PN2
;SupportFile-List of this load
SupportFileCount=1
SupportFile_001=load1_support1.txt
SupportFilePN_001=PN1
----- Load_002 section
[Load_002]
LoadPN=LOAD2PN
HeaderFileName=load2_header.luh
;if the <RootDir> shall be used just define "" as subdirectory
HeaderFilePath=\
THWIDCount=1
THWID_001=THW3
DataFileCount=1
DataFile_001=load2_data1.lup
DataFilePN_001=PN3
SupportFileCount=0
```

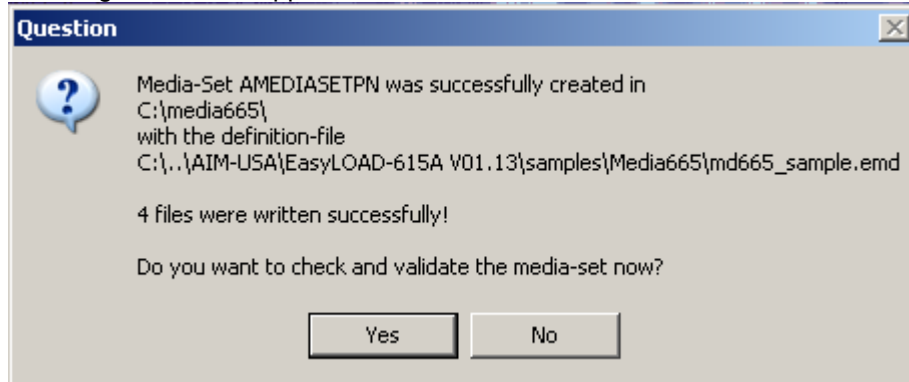
Annotations in the image:

- Specify the root directory containing the head location of the the Target's upload files. (points to RootDir=C:\media665\)
- MediaSet part number (points to MediaSetPN=AMEDIASETPN)
- Specify either ARINC665-1 or ARINC665-2. (points to IsVersion665A1=0)
- Specify the number of Loads. (points to LoadCount=2)
- Note: All used Part number (PN)- and Target Hardware ID (THWID) Strings should be compliant with the ARINC665 Specifications. (points to THWID\_001=THW1, THWID\_002=THW2)
- Specify the part number for the 1st load. (points to LoadPN=LOAD1PN)
- Specify the name of the header file to be created by the 665-MediaSet Builder. (points to HeaderFileName=load1\_header.luh)
- Specify the location of the 1st load (in relation to the Root directory). (points to HeaderFilePath=\load1\)
- Specify the Target HW ID's and count. (points to THWIDCount=2)
- Specify the number, part number and filename of \*.lup files to be included in the header file (\*.luh) (points to DataFile\_001=load1\_data1.lup, DataFilePN\_001=PN1, DataFile\_002=load1\_data2.lup, DataFilePN\_002=PN2)
- Specify the number, part number and filename of support files to be included in the header file (\*.luh) (points to SupportFile\_001=load1\_support1.txt, SupportFilePN\_001=PN1)



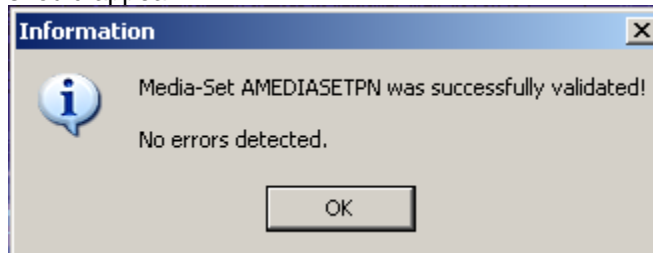
3. Select **File | 665-MediaSet Builder** then browse to the location of your \*.emd file you just created and select **Open**.

This starts the 665-MediaSet Builder process. Once the process is complete, the following window will appear:



The new LOADS.LUM, FILES.LUM and all new header files (\*.luh) can now be seen in the root location/folders specified in your \*.emd file.

4. Select **Yes** if you would like to perform verification/validation of the MediaSet. If verification/validation is requested and an error is found, the validation will be aborted and the error/problem will be shown. If no errors occurred - the following window should appear:



5. Select **OK** to complete the process.







## 5 Remote Interface

The **EasyLOAD-615A Remote Interface** is a server process that runs within the EasyLOAD-615A application and allows users to execute data load operations from external programs. With the Remote Interface enabled, using the **Remote Client application** included with EasyLOAD-615A, the user can issue a set of commands (via DOS Batch files) instructing the EasyLOAD-615A application to execute various ARINC615A operations. Also it is possible to use other clients, like the **EasyLOAD615ARemoteInterface python class**, to send and receive string to/from EasyLOAD-615A. Per default the command execution is in "**blocking mode**", which means that the command is not returning before it is completed. Especially for big uploads this can take some minutes. Furthermore the Remote Interface can not process any other commands, so the upload can not be aborted. In "non-blocking" mode the command just "starts" an operation in EasyLOAD and returns afterwards immediately. Anyhow the result of the operation must be retrieved later with a GETLOG command.

### ➤ To Enable the EasyLOAD-615A Remote Interface

1. In any Text Editor, open the EasyLOAD-615A, INI file  
<EasyLOAD-AppData-Directory>\easyload.ini.
2. Add the following to the INI file:  
[REMOTE\_IF]  
PORT=5150  
ENABLE=Y

**NOTE:** The PORT value should be set to the port on which EasyLOAD-615A shall listen for incoming commands from the remote client. It corresponds to the value used in the -P switch of the Remote Client command described below.

3. To configure the Remote Interface for blocking or non-blocking mode, edit the line:  
BLOCKING=N
4. Save the changes to the INI file and close the Text Editor.
5. Shutdown and re-launch the EasyLOAD-615A application.

### ➤ To invoke an operation using the Remote Client command shell application

Invoke the Remote Client command at the Command Prompt using the following syntax:

```
remote_client.exe [-H<Host IP>] [-P<Port>] [-L<Log File Path>]
[-W] <Sub Command>
```

```

C:\> Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

Z:\>c:
C:\>EASYLOAD615A -P5150 A665BUILD C:\temp\media_665.emd

```

Examples:

```

remote_client.exe -H192.168.1.40 -P5150 INFO THWID1 TAIL
remote_client.exe -P5150 A665BUILD C:\temp\media_665.emd
remote_client.exe -P5150 -LC:\LogFiles\MyUploadLogs.log UPLOAD THWID1 TAIL C:
\Media665\Loads.lum -V

```

**Note:** The executable for the Remote Client command is located at

<EasyLOAD-Installation-Directory>\remote\_client\remote\_client.exe

### Sub Command

#### To Build a 665 Media Set

```
A665BUILD <Media Set Path> [-V]
```

Media Path to the media set build file (.emd)  
Set Path



-V Optional, specifies whether or not media set CRCs should be verified after build

#### To Load a TDI-File

`TDILOAD <TDI Path> [-V]`  
TDI Path Path to the Target Database (.tdi) file

#### To Perform an Ethernet Find Operation

`ETHFIND <IP Addr> <Port> <Time Out>`  
IP Addr IP Destination Address  
Port Destination UDP Port  
Time Out Time out in Seconds

#### To Perform an AFDX Find Operation

`AFDXFIND <THWID> <THWPOS> <Time Out>`  
THWID Target Hardware ID as specified in the target database  
THWPOS Target Hardware position as specified in the target database  
Time Out Time out in Seconds

#### To Perform an Information Operation

`INFO <THWID> <THWPOS>`  
THWID Target Hardware ID as specified in the target database  
THWPOS Target Hardware position as specified in the target database

#### To Perform an Upload Operation

`UPLOAD <THWID> <THWPOS> <Loads.lum Path> [-V]`  
THWID Target Hardware ID as specified in the target database  
THWPOS Target Hardware position as specified in the target database  
Loads.lum Path Full path to the location of the loads.lum file describing the load  
-V Optional, specifies whether or not media set CRCs should be verified prior to loading

#### To Perform a Media Defined Download Operation

`MDOWNLOAD <THWID> <THWPOS> <LNR.lnr Path>`  
THWID Target Hardware ID as specified in the target database  
THWPOS Target Hardware position as specified in the target database  
LNR.lnr Path Full path to the location of the LNR file describing the files to be downloaded

#### To Abort an active Operation (in non-blocking mode)

`ABORT <SUBCMD> <THWID> <THWPOS>`  
SUBCMD Specifies the operation to be aborted, can be INFO | UPLOAD | AFDXFIND | MDOWNLOAD  
THWID Target Hardware ID as specified in the target database  
THWPOS Target Hardware position as specified in the target database

#### To Get the Log-Outputs (in non-blocking mode)

`GETLOG <SUBCMD> <THWID> <THWPOS>`  
If the operation is still active  
or:  
`GETLOG`  
To get the remaining Log-Outputs of all operations which have completed  
SUBCMD Specifies the operation to get the log for, can be INFO | UPLOAD | AFDXFIND | MDOWNLOAD

#### ➤ To use the EasyLOAD615ARemoteInterface python class

You can write a python script:

```
#import easyload615a_remote_client  
myRemoteClient = easyload615a_remote_client.EasyLOAD615ARemoteInterface()  
myRemoteClient.upload("C:\\temp\\LOADS.LUM", "THWID2", "NOSE2")
```

Check the python sources of easyload615a\_remote\_client.py for more functions and options.



---

## 6 Definitions

The following topics provide definitions of the used acronyms and terms:

- [Acronyms and Abbreviations](#)
- [Definition of Terms](#)



## 6.1 Abbreviations

µsec	microseconds
ACI	AIM's CompactPCI I-Architecture
AFDX	Avionic Full Duplex Switched Ethernet
AMC	AIM's PMC I-Architecture
API	AIM's PCI I-Architecture
API	Application Programming Interface
ARINC	Aeronautical Radio, Incorporated
ASCII	American Standard Code for Information Exchange
ASP	Application Support Processor
BAG	Bandwidth Allocation Gap
BIP	Bus Interface Unit Processor
BIT	Built In Test
BIU	Bus Interface Unit
BSP	Board Support Package
CD	Compact Disc
DLL	Dynamic Link Library
DLP	Data Load Protocol
ES	End System
FCS	Frame Check Sequence
FIND	Find Identification of Network Devices
GTM	Generic Transmit Mode
GTU	Gap Time Unit
I/O	Input / Output
IC	Integrity Checking
ID	Identifier
IFG	Inter-frame Gap
IP	Internet Protocol
MAC	Medium Access Controller
Mbps	Mega bits per second
MCFL	Maximum Consecutive Frames Lost
MSB	Most Significant Byte
ns	nanoseconds
OIN	Open Information Network
OSI	Open System Interconnect
PBI	Physical Bus Interface
PC	Personal Computer.
PCI	Peripheral Component Interconnect
PGWT	Packet group wait time
PMC	PCI Mezzanine Card
PN	Part Number
RFC	Request for Comments
ROM	Read-only memory
S/Q	Sampling & Queuing
SAP	Service Access Point
SNIP	Simple Network Identification Protocol
TFTP	Trivial File Transfer Protocol
TS	Traffic Shaping
UDP	User Datagram Protocol
VL	Virtual Link



## 6.2 Terms

address quintuplet	The address of an AFDX Comm port which consists of UDP Source/Destination, IP Source/Destination, and MAC Destination address (VL)
Bandwidth Allocation Gap	The amount of time the transmitting device is allocating for the time difference between the start of one frame and the beginning of the next frame transmitted on the port.
Channel	Two physical AFDX ports
FIND protocol	Find Identification of Network Devices (FIND) Protocol allows a client/initiator to dynamically obtain: MAC address IP address Identity and functional characteristics for each available FIND host on the network
Interframe Gap	Gap between the end of the preceding frame and the current frame.
multicast	Multicast is communication between a single sender and multiple receivers on a network.
Packet Group Wait Time	The time from the transmission start point of the last frame to the start point of the current frame with a resolution of 1us.
Port	One physical AFDX or Ethernet Port
RFC	Requests for Comments (RFCs) form a series of notes, started in 1969, about the Internet (originally the ARPANET). The notes discuss many aspects of computer communication, focusing on networking protocols, procedures, programs, and concepts.
SNIP protocol	Simple Network Identification Protocol (SNIP) allows a client/initiator to dynamically obtain: MAC address IP address Identity and functional characteristics for each available SNIP host on the network. This protocol was renamed to Find Identification of Network Devices (FIND) Protocol in ARINC Report 615A-2 to avoid conflict with other avionics protocols.
Target	Refers to the End System to which the Data Loader is in communication for ARINC615A data loader operations.

# Index

## - 6 -

665-MediaSet Builder 39

## - A -

AFDX FIND 18  
AFDX Portmapping 28  
AFDX Resources 26  
ARINC Report 615A-1/2/3 2  
ARINC Report 665-1/2/3 2  
ARINC615A Operations 29  
    Command-Line interface 43  
    Information Operation 30  
    Media Defined Download Operation 35  
    Multi Upload Operation 33  
    Operator Defined Download Operation 36  
    SNIP/Find Operation AFDX 18  
    SNIP/Find Operation Ethernet 17  
    Upload Operation 31

## - B -

BSP-Compatibility 26

## - C -

Command-Line Interface 43  
Connection  
    AFDX 19  
    Ethernet 19  
Controlling EasyLOAD via batch files 43

## - D -

Data Load Protocol  
    Characteristics 21  
Download Operation  
    Media Defined 35  
    Operator Defined 36

## - E -

EasyLOAD-615A

Getting Started with 3  
Installation 5  
Operation 11  
Overview 1  
Window Overview 6  
emd-File 39  
Ethernet FIND 17

## - F -

Find Operation  
    AFDX Find 18  
    Ethernet Find 17  
    Target Database 23

## - G -

Getting Started 3

## - I -

Information Operation 30  
Installation 5

## - L -

License 8  
License-Key 26  
Linking Hardware-Ports to Target-Definitions 25  
Login 26  
LUM- and LUH-File Builder 39

## - M -

MAC Address 8  
MediaSet  
    Builder 39  
    Creation via batch files 43  
    Upload 31  
    Verification 39  
Menu 6  
Multi Upload Operation 33

## - N -

NetSpeed 26



---

## - P -

- Portmap
  - of a physical AFDX-Port/Hardware 28
  - of an AFDX Target-Definition 19

## - R -

- Remote Interface 43
- Resource Recovery 28
- RFC 1350 2
- RFC 2347 2
- RFC 2348 2

## - S -

- SNIP 17, 18, 23
- System Requirements 4
- System-Driver 26

## - T -

- Target Database 6, 12
  - Connection 19
  - DLP characteristics 21
  - Edit/Create 15
  - Find Information 23
  - Open 14
  - Save 24
  - Target HW ID 16
  - TFTP characteristics 22
- Target Hardware Identification 16
- Target ID 16
- TDI-File 12
- Trivial File Transfer Protocol characteristics 22

## - U -

- Upload Operation 31