

Design, Simulation and Virtual Testing

madymo[®]

Installation Instructions | VERSION 7.4

www.tass-safe.com

© Copyright 2011 by TASS
All rights reserved.

MADYMO[®] has been developed at TASS BV.

This document contains proprietary and confidential information of TASS. The contents of this document may not be disclosed to third parties, copied or duplicated in any form, in whole or in part, without prior written permission of TASS.

The terms and conditions governing the license of MADYMO[®] software consist solely of those set forth in the written contracts between TASS or TASS authorised third parties and its customers. The software may only be used or copied in accordance with the terms of these contracts.

MADYMO Manuals

An overview of the MADYMO solver related manuals is given below. From Acrobat Reader, these manuals can be accessed directly by clicking the manual in the table below. Manuals marked with a star (*) are also provided in hard-copy (major releases only).

Theory Manual	The theoretical concepts of the MADYMO solver.
Reference Manual*	Detailed information on how to use the MADYMO solver and how to specify the input.
Model Manual*	Dummy, Dummy Subsystem and Barrier Models with simple examples.
Applications Manual	Example applications using Dummy, Dummy Subsystem and Barrier Models.
Human Model Manual	Human Models and applications that make use of Human Models.
Tyre Model Manual	Documentation about Tyre Models.
Utilities Manual	User's guide for MADYMO/Optimiser, MADYMO/Scaler, MADYMO/Dummy Generator, MADYMO/Tank Test Analysis, MADYMO/Cold Gas Inflator
Folder Manual	Describes the use of MADYMO/Folder.
Programmer's Manual	Information about user-defined routines.
Release Notes	Describes the new features, modifications and bug fixes with respect to the previous release.
Installation Instructions	Description for the system administrator to install MADYMO.
Coupling Manual	Description of the direct coupling with ABAQUS, LS-DYNA, PAM CRASH/SAFE and Radioss and the TCP/IP coupling with MATLAB/Simulink.

TASS provides extensive and high quality support for its products to help you in utilizing the software most efficiently. TASS offers extensive hotline support for our software products, MADYMO, PreScan and Delft-Tyre. Our hotline support can be reached over phone as well as via email and will assist you with your questions regarding our different software products. Your requests will be dealt with in a fast and effective manner to support you in the continuation of your work in progress. Below you will find your local representative with the accompanying support contact details.

HEAD OFFICE

TASS HQ
Einsteinlaan 6
2289 CC Rijswijk
The Netherlands
T +31 888 277 000
F +31 888 277 003
E info.nl@tass-safe.com
W www.tass-safe.com

China

TASS China
Room 2301, Sino-Life Tower
707 Zhangyang Road, Pudong
200120 Shanghai
China
T +86 21 5835 8036 *800
F +86 21 5836 0838
E support.cn@tass-safe.com
E info.cn@tass-safe.com

Germany, Austria, Switzerland, Eastern Europe

TASS Germany
Kreuzberger Ring 7a
65205 Wiesbaden
Germany
T +49 7 11 21 843 108
F +49 7 11 89 244 540
E support.de@tass-safe.com
E info.de@tass-safe.com

Australia, New Zealand

Advea Engineering Pty Ltd
PO Box 476
Diamond Creek
VIC 3089
Australia
T +61 3 8644 2510
F +61 3 8679 0344
E support.au@tass-safe.com
E info.au@tass-safe.com

India

CAx Software Private Ltd
G-1, M S Crystal
12, Malleshpalya Main Road
Bangalore 560075
India
T +91 80 4115 1512
F +91 80 4115 1511
E support.in@tass-safe.com
E info.in@tass-safe.com

South America

m.v2 engenharía
R. Pedroso Alvarenga, 1046
Cj.:48-04531-012
Itaim Bibi
São Paulo SP
Brazil
T +55 11 3892 8680/5774
F +55 11 3892 8683
E support.br@tass-safe.com
E info.br@tass-safe.com

Japan

TASS Japan
Nisso No. 15. Building 3F
2-17-19 Shin-Yokohama Kohoku-ku
Yokohama 222-0033
Japan
T +81 45 473 7955
F +81 45 473 7959
E support.jp@tass-safe.com
E info.jp@tass-safe.com

UK, Ireland, Scandinavia, Benelux

Advanced Simulation Technologies Ltd
Whitehouse Lofts
Kings Lane
Stratford Upon Avon, CV37 0RD
United Kingdom
T +44 17 8926 4782
F +44 17 8929 7765
E support.uk@tass-safe.com
E info.uk@tass-safe.com

North America

TASS Americas
38701 Seven Mile Road
Suite 260
Livonia MI 48152
USA
T +1 734 779 4850
F +1 734 779 4858
E support.na@tass-safe.com
E info.na@tass-safe.com

Korea

TASS Korea
Works C502, Garden 5
289, Munjeong-dong
Songpa-gu
Seoul 138-200
Korea
T +82 70 8650 5220
F +82 505 115 5220
E support.kr@tass-safe.com
E info.kr@tass-safe.com

France, Spain, Italy, Portugal

TASS France
Immeuble Le Fuji, 1 Rue du Centre
93160 Noisy Le Grand
France
T +33 1 7061 8335
F +33 1 7997 4891
E support.fr@tass-safe.com
E info.fr@tass-safe.com

Eastern Europe

SEARCH S.C.
Krolewicza Jakuba 13A
02-956 Warsaw
Poland
T +48 22 885 4268
F +48 22 885 4268
E support.pl@tass-safe.com
E info.pl@tass-safe.com

Contents

MADYMO Manuals	iii
1 Introduction	1
2 Conventions in this manual	1
3 Downloading MADYMO products	1
4 MADYMO installation	2
4.1 Installing MADYMO	2
4.2 Setting up the Command Line Interface under UNIX	2
5 Installation of MADYMO/MPP	3
5.1 Installation of MADYMO/MPP	3
5.2 SGI and HP Platforms	3
5.3 Linux Clusters	3
5.4 IBM	4
A System Requirements	5
B Supported Solver platforms	6

1 Introduction

This manual provides detailed installation instructions for MADYMO R7.4 on UNIX and Windows computer systems.

The user is expected to have a general knowledge of the UNIX or Windows systems (the locations and contents of system files).

2 Conventions in this manual

The data that must be entered on the command line is indicated with typewriter font (courier). The conventions are:

(UNIX) Commands are typeset in a box, and put in `typewriter font`.

A part of a command that is variable will be in underlined font. The user must enter the appropriate data.

Most UNIX commands can normally be used for all UNIX systems. However, if a specific system dependent UNIX command is needed, it is preceded by an underlined name identifying the computer system, followed by a colon.

The UNIX system prompt is shown as a % (C-shell) or a \$ (Bourne shell) sign.

When a line within a script does not start with the shell prompt sign, the line is a continuation of the previous line.

3 Downloading MADYMO products

Downloading MADYMO products, patches and models requires access to the MADYMO web pages at www.tass-safe.com. Authorization is required to access the software download area. To obtain access, contact your MADYMO support office.

4 MADYMO installation

4.1 Installing MADYMO

Read the installation document README.TXT and follow the instructions to carry out installation on the desired operating system. This document can be found on the CD-ROM or can be downloaded from www.tass-safe.com (see Section 3) for the appropriate MADYMO release.

Before starting the installation procedure, first check if the system hardware and operating system version match the requirements listed in Appendix A and Appendix B.

4.2 Setting up the Command Line Interface under UNIX

With the MADYMO Command Line Interface (CLI), **madymo_cli**, all MADYMO release R7.4 executables can be launched.

madymo_cli is a platform specific executable, and can be found in the directory **madymodir/madymo_74/platformid/bin**.

The CLI can be made accessible to users in two ways. Read the following section, and select the method that best suites your computing environment.

1. Create a symbolic link in a directory that is normally found in a users PATH, linked directly to the **madymo_cli** executable. Since **madymo_cli** is platform dependent, a link must be created for every platform that is installed. This method is best suited to computing environments that support only one or two platforms.

```
% cd /usr/local/bin
% ln -s madymodir/madymo_74/platformid/bin/madymo_cli madymo74
```

2. Add the directory **madymodir/madymo_74/share/run** to the PATH environment variable. A wrapper script called **madymo74** was created in this directory during the installation. This script first determines the platformid of the computer in use, and starts the correct **madymo_cli** executable. This method may be appropriate for sites that support MADYMO on many different machine architectures.

```
% setenv PATH ${PATH}:madymodir/madymo_74/share/run
```

5 Installation of MADYMO/MPP

5.1 Installation of MADYMO/MPP

Supported platforms to run MADYMO in MPP mode are shown in Appendix B.

MADYMO/MPP uses the Message Passing Interface (MPI) library to exchange data between parallel processes. For details on specific platforms, please see Section 5.2 and further.

For the linux intel and amd platforms (linux24-x86, linux24-x86_64, linux26-x86_64 and linux24-em64t), MADYMO uses HP-MPI which is downloadable separately from the download section on www.tass-safe.com as HPMPI.ZIP.

To start a parallel simulation with MADYMO/MPP, the user has to specify the option **-mpp** and the number of CPUs using the MADYMO command line interface **madymo74 -mpp -nrproc n** where n is the number of CPUs. Please make sure that **madymodir/madymo_74/share/run** is appended to the PATH environment variable and that the MADYMO command line interface is executed in a directory that is accessible by all CPUs. Otherwise, not all MADYMO/MPP processes will be able to read the input file and the simulation will be aborted. Please only use the MADYMO commandline interface to run MADYMO/MPP and do not directly use the **mpirun** program.

5.2 SGI and HP Platforms

- For SGI Altix machines (platformid linux24-ia64) the MPI library that is part of the Message Parsing Toolkit which is included in SGI Propack 3 and 4 can be used. Note that this is part of the operating system and thus probably already present on Altix systems.
- For HP Itanium machines (platformid hp1100ia64) the native MPI library can be used (mpi version: HP MPI 02.00.01.00 B6060BA - HP-UX 11i 1A major version 200 minor version 0).

5.3 Linux Clusters

Before installing MADYMO/MPP on a linux cluster, please make sure that the cluster is set up correctly. When installing MADYMO/ MPP, the installation directory madymodir has to be accessible by all CPUs in the cluster.

HPMPI version 02.02.07.00 is included in the MADYMO installation for 32-bit Linux systems (platformid linux24-x86) and 64-bit Linux systems for Opteron (platformid's linux24-em64t, linux24-x86_64 and linux26-x86_64). For detailed information on HP-MPI see: www.hp.com/go/mpi.

To perform MPP computations, the environment variables MPIRUN and MPI_ROOT have to

be set to:

```
% setenv MPI_ROOT /path/to/hpmpi
% setenv MPIRUN "$MPI_ROOT/bin/mpirun -hostfile myhostfile"
```

where \$MPI_ROOT point to the top level directory where hpmpi is installed (for example: /usr/local/mpp/hpmpi227) and the file 'myhostfile' contains a (user-defined) list of node names and number of CPUs available in each node.

Furthermore, the MPI_REMSH environment variable need to be set to **rsh** if **ssh** is not available. Please also adapt the .rhosts file accordingly.

By default, HP-MPI uses the fastest interconnect available. If you want to use another interconnect than the default one selected by HP-MPI, append the following string to the MPIRUN environment variable (see above):

- for Gigabit Ethernet: **-TCP**
- for Myrinet: **-GM**

For more options see the HP-MPI documentation, or run: '\$MPIRUN --help'.

5.4 IBM

For IBM AIX machines (platform-ID ibmrs51) the native MPI library can be used which is called POE (Parallel Operating Environment) (poe version: 4.2.0.0).

In that case the environment variable MPIRUN has to be set to poe and the environment variable MP_HOSTFILE has to be set to a file containing all the hosts in the parallel environment. See also www-03.ibm.com/systems/p/software/pe.html

A System Requirements

1. For IBM Platforms, download the latest version of libC.a (XIC.rte) from:
<http://www-1.ibm.com/support/docview.wss?uid=swg24011532>

Also, IBM recommends to download any updates from this url:
<http://www-912.ibm.com/eserver/support/fixes/fixcentral>

2. On HP platforms, the following patches must be installed:
 - (a) HP patch *PHSS_33350* must be installed for HP UX-11.23

These patches can be downloaded from www.hp.com.

3. The MADYMO software is developed and validated using the hardware and operating system configurations as specified in Appendix B. Newer versions of the operating system may work correctly with MADYMO, but there is no guarantee. Even when the software installs and runs, reference simulation results might differ beyond quality tolerances on unsupported hardware or operating systems.

Normally operating system vendors provide binary compatibility in the sense that executables generated on a certain version of the operating system will also run on newer (sub-)versions of that operating system. If problems are encountered due to this, install the specified operating system or upgrade to a later version. No support for issues can be given on unsupported hardware or operating systems.

4. MADYMO requires at least 256 Mb RAM to run satisfactorily. However, 512 Mb RAM or more is strongly recommended. However, it strongly depends on the size of the simulation runs, the larger or longer, the more memory is needed.
5. To be able to read the on-line MADYMO manuals, Adobe Acrobat Reader version 4.0 or higher, or xpdf, must be installed. Also the executable *acroread* (*AcroRD32.exe* on Windows) must be found within the PATH environment variable. Acrobat Reader can be downloaded from www.adobe.com.
6. On Windows, FLEXnet license management requires a network transport protocol driver to be installed. Systems that report a *hostid* of 0 or FFFFFFFF need to install either the NETBEUI or NW Link (IPX/SPX) Transport Protocol driver. These are included on the distribution CD of the operating system. To install, Put the Windows system disk in the CDROM drive. Select 'Main'. Select 'Control Panel'. Select 'Network'. Select 'Add'. Add the NWLink IPX SPX or NetBEUI driver.
7. Anti-aliasing is a feature, implemented for example in the Hybrid III series, that requires more intermediate output for the filtering algorithms. The output is written in temporary files stored in the location set by the environment variable *TMPDIR*. If the directory set by *TMPDIR* is limited in its size, the MADYMO Solver cannot write the intermediate output and aborts.

B Supported Solver platforms

This appendix provides information on the platforms on which the solver is build. The first operating system mentioned for each platform-ID relates to the machine on which the solver is build and tested.

In a separate table is shown what commands can be used to retrieve the version information for the platform of interest.

UNIX platforms:

Platform-ID	Platform	Hardware architecture	Operating system ¹	Parallel
hp1100ia64	HP Itanium	Intel Itanium	HP-UX B.11.23	SMP MPP
ibmrs51	IBM	IBM Power5	AIX 5.3	SMP MPP

Windows platforms:

Platform-ID	Platform	Hardware architecture	Operating system ¹	Parallel
win32p	Windows (32-bit)	Intel AMD	Windows XP 32 bit	SMP
em64t-win	Windows (64-bit)	Intel AMD	Windows XP 64 bit	SMP

Linux platforms

Platform-ID <i>Platform</i>	Hardware architecture	Operating system ¹ <i>OS version</i> Compatible Operating systems	Parallel
linux24-x86 ² <i>Linux ia32</i>	Intel/AMD 32-bit	Red Hat Enterprise 3 (Taroon update 6) 2.4.21-50-ELsmp i686	SMP MPP
linux26-x86_64 ² <i>Linux x86_64</i>	Intel/AMD 64-bit	SUSE Enterprise 9.3 2.6.5-7.244-smp x86_64	SMP MPP

¹ See Appendix A for more information on other OS versions.

² If your Linux distribution has Security-enhanced Linux (SELinux) enabled, you may

get the error *cannot restore segment prot after reloc: Permission denied*. The error is given because the offending library requires *text relocation* and SELinux does not allow this. The solution is to allow these libraries to perform text relocation. The command to do this is:

```
chcon -t textrel_shlib_t '<full-.so-path>'
```

For example:

```
chcon -t textrel_shlib_t '/home/tass/madymo_73/linux24-em64t/ext/lib/libirc.s
```

How the version information can be retrieved for each platform is shown in the next table:

Platform-ID	Platform	Operating system command for version <i>additional information</i>
hp1100ia64	HP Itanium	uname -rs
ibmrs51	IBM	uname -s; oslevel
linux24-x86	Linux ia32	cat /etc/*release <i>uname -rm</i>
linux26-x86_64	Linux x86_64	cat /etc/*release <i>uname -rm</i>
win32p	Windows	
em64t-win	Windows	