YRC1000 RCS-Module for DELMIA
Installation Manual

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

Please have the following information available when contacting Yaskawa Customer Support:
- System
- Primary Application
- Software Version (Located on Programming Pendant by selecting: {Main Menu} - {System Info} - {Version})
- Robot Serial Number (Located on robot data plate)
- Robot Sales Order Number (Located on controller data plate)

Part Number: 189199-1CD
Revision: 0
DANGER

• This manual explains the RCS-Module for DELMIA. Read this manual carefully and be sure to understand its contents before handling the YRC1000.

• General items related to safety are listed in Chapter 1: Safety of Controller Instructions. To ensure correct and safe operation, carefully read the YRC1000 Instructions before reading this manual.

CAUTION

• The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

• YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications.

• If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.

• YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product’s warranty.

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• All other company names and product names are registered trademarks or trademarks of their respective owners.
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1. Introduction

This product is a software “RCS-Module” (hereafter called RCS-Module for YRC1000) that simulates a robot controlled by YRC1000 using the RRS (Realistic Robot Simulation) function of DELMIA 3DEXPERIENCE (hereinafter DELMIA). This document describes how to install and start RCS-Module for YRC1000.

For more information about DELMIA 3DEXPERIENCE RRS function, please contact Dassault Systèmes, a developer and distributor.

The RCS module for YRC1000 supports robot, travel axis, and simulation of the total number of external axes up to 9 axes. It does not support simulations that exceed 9 axes.

1.1. Operating environment

In order to use the RCS-Module for YRC1000, it is necessary to prepare the following hardware and software in advance.

1.1.1. Hardware

- PC and monitor with Windows OS
- Hard disk space of 512 MB or more
- Hardware lock key (refer to Chapter 1.2)

1.1.2. Software

- Windows OS on which DELMIA 3DEXPERIENCE runs
- DELMIA 3DEXPERIENCE
- OLP for the enhanced version RRS-I of DELMIA 3DEXPERIENCE

Note) For inquiries regarding OLP for the enhanced version RRS-I, please contact Dassault Systèmes, a developer and distributor.

1.2. Hardware Lock Key

For proper operation connect provided hardware lock key (USB type) to personal computer before using this software.

Check and execute <Check the computing environment> <Installation of driver> before connecting the key to USB port.

<Check the computing environment>

Multi-connection of USB type key is not available for one USB port because of hardware structure. Therefore, only one key should be connected to one USB port. When installing multiple offline software into one personal computer and multi-connecting USB keys, use...
the personal computer which is provided same numbers of USB ports as the number of software to be installed.

<Installation of driver>

Please install the driver after detaching all sentinel hardware key from the personal computer.

Execute “¥SentinelDriver¥Sentinel System Driver Installer 7.5.9.exe” of installation CD-ROM.


Be sure to install the driver.  
When installing the driver, be sure to login in administrator mode in order to add files to system folder and input information in registry.  
If a key is connected to personal computer before installing the driver, the message concerning the driver is displayed. In this case, and detach the key from personal computer and then install the driver.

1.3. Software Terms of Use
The rights and copyrights of this product are owned by us and are protected by the copyright law and the provisions of international treaties.
You shall not be able to use, manufacture, distribute, or publish using this product not described in the license agreement. All rights not expressly granted under the license agreement are reserved to us.
2. Installation

2.1. Installation of RCS-Module for YRC1000

2.1.1. Run setup program

Follow the steps below to install RCS-Module for YRC1000.

1) Insert the installation CD-ROM into the CD-ROM drive.
2) Installer will start. If it does not start, execute setup.exe in the CD directly.
3) Select your language, and proceed with the installation according to the installer.
4) Select the installation folder and complete the installation according to the installer.

![Figure 1 Select installation folder](image)

2.1.2. Installation folder

The RCS-Module for YRC1000 and robot parameters are installed in the following folder.

```
<Installation folder>\YASKAWA_RCS\rrs_ex\YASKAWA_ YRC1000\bin  <RCS module>
├ lib  <manip file>
└ data <Robot Parameter files>
```

Note) After installation, please keep the folder "bin", "data" and "lib" in lower case without changing the name. Changing or capitalizing the folder name may cause malfunction of RCS-Module for YRC1000.
2.2. Connection operation of RCS-Module

To connect and simulate the RCS-Module for YRC1000 with DELMIA RRS, it is necessary to perform "Start RCS server program" and "RRS connection operation".

2.2.1. Prior confirmation

2.2.1.1. setup rrs.servers

The following file in the DELMIA installation folder describes the RRS server definition for YRC1000. If the RRS server settings for YRC1000 are not defined in "rrs.servers", addition is required. Please refer to the DELMIA manual for details on how to edit "rrs.servers".

<DELMIA Installation folder>¥win_b64¥startup¥rrs¥rrs.servers

As an example, it is edit as follows.

```
# # YASKAWA YRC1000 Servers
# # YASKAWA_YRC1000_Server1 YASKAWA_YRC1000 SOCKET localhost 5400
```

*Figure 2 rrs.servers*

2.2.1.2. setup CTL file

When making an RCS connection, the extended version RCS module reads the CTL file in the machine data folder.

The control group to be simulated is defined in the CTL file.

If no CTL file exists in the machine data folder, the RCS module returns an initialization error.

For the machine data folder path, refer to "2.2.6 RRS connection method using actual machine parameters".

Table.1 shows the CTL file name definition.

<table>
<thead>
<tr>
<th>CTL file name</th>
<th>[ManiplatorType]_[2-digit robot number].ctl ex) MS00100_A00_01.ctl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install path</td>
<td>Same as machine data</td>
</tr>
</tbody>
</table>

*Table 1 CTL file definition*

Table.2 shows the CTL file format.
### Table 2 CTL file format

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CONTROLLER]</td>
<td>Required fixed phrase</td>
</tr>
<tr>
<td>ID=N</td>
<td>Required Assigned controller identification number. Can be set arbitrarily.</td>
</tr>
<tr>
<td>[ROBOT]</td>
<td>Required fixed phrase</td>
</tr>
<tr>
<td>TYPE= [ManipulatorType]</td>
<td>Required Name of Manipulator</td>
</tr>
<tr>
<td>NUMBER=N</td>
<td>Required Number of Manipulator (RB1,RB2, …) Describe the robot number of the simulation target.</td>
</tr>
<tr>
<td>[BASE]</td>
<td>Required fixed phrase</td>
</tr>
<tr>
<td>NUMBER=N</td>
<td>Can be omitted when not in use Number of Rail (BS1,BS2, …) This is required if the simulation target robot has a rail axis on the parameter file. If not exist this setting, the RCS module will generate an initialization error.</td>
</tr>
<tr>
<td>[STATION]</td>
<td>Required fixed phrase</td>
</tr>
<tr>
<td>NUMBER=N,M</td>
<td>Can be omitted when not in use Number of Station (ST1,ST2, …) When multiple stations are targeted during simulation, they are listed separated by commas.</td>
</tr>
<tr>
<td>[END]</td>
<td>Required fixed phrase</td>
</tr>
</tbody>
</table>

The following shows an example of setting contents when configuring each control group.

- RB1

```
[CONTROLLER]
  ID=1
[ROBOT]
  TYPE=MS00100_A00
  NUMBER=1
[BASE]
[STATION]
[END]
```
• BS1 and ST1

[CONTROLLER]
ID=1

[ROBOT]
TYPE=MS00100_A00
NUMBER=1

[BASE]
NUMBER=1

[STATION]
NUMBER=1

[END]

• RB1 and ST2(GUN2)

[CONTROLLER]
ID=1

[ROBOT]
TYPE=MS00100_A00
NUMBER=1

[BASE]

[STATION]
NUMBER=2

[END]

• RB1 and ST1(GUN1), ST2(Rotation)

[CONTROLLER]
ID=1

[ROBOT]
TYPE=MS00100_A00
NUMBER=1

[BASE]

[STATION]
NUMBER=1,2

[END]
2.2. Start RCS server program

Follow the procedure below to start the RCS server program.

1) Execute the following batch file included in the installation folder of RCS-Module for YRC1000 with “Run as administrator”.

```bash
<Installation folder>\YASKAWA_RCS\YASKAWA_YRC1000_RCS_START.bat
```

Note) If the port number of the RRS server to be used is different from that of the batch file, please edit "PORT_NO" of the batch file.

![Figure 3 start RCS server program](image)

2.2.3. RRS connection operation

Follow the steps below to connect RRS.

1) Start DELMIA and open a cell.

2) Press the "RRS Connect" button. Please refer to the DELMIA manual for details of operation.

3) Click the "OK" button in "RRS Server & Device Configuration Selection".

![Figure 4 Port number setting](image)
Installation

2.2 Connection operation of RCS-Module

Figure 5 RRS Server & Device Configuration Selection

4) Set the folder of “RRS Properties” robot parameter and click “OK” button.

Figure 6 RRS Properties

5) The connection result is displayed in “Messages Reporting”.

Figure 7 Messages Reporting

2.2.4. RRS stop operation

Follow the procedure below to disconnect from RRS.
2 Installation
2.2 Connection operation of RCS-Module

1) Press the "RRS Connect" button.

2.2.5. Stop of RCS server program
When ending DELMIA, the RCS server program also needs to be ended.

1) Execute the following batch file included in the installation folder of RCS-Module for YRC1000 as "Run as administrator".

```
<Installation folder>¥YASKAWA_RCS¥
YASKAWA_YRC1000_RCS_STOP.bat
```

![Figure 8 Stop RCS server program](image)

2.2.6. RRS connection method using actual machine parameters
In order to start RCS-Module normally using the real machine data downloaded from the real machine robot or the real machine data provided by YASKAWA ELECTRIC, please prepare according to the following procedure and connect RRS.

1) Change the file name of the machine data files.
   Please replace "-" (hyphen) in file name to "_".

The new name needs to be changed to a new file name according to the following rules.

<table>
<thead>
<tr>
<th>Table 3 format of file name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL file name</td>
</tr>
<tr>
<td>ex)</td>
</tr>
<tr>
<td>Install path</td>
</tr>
</tbody>
</table>
### Table 4 Actual machine file name change table

<table>
<thead>
<tr>
<th></th>
<th>File names</th>
<th>Actual file names</th>
<th>New file name for GP7-A00 with robot number 1 in the cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Parameter file</td>
<td>ALL.PRM</td>
<td>GP7_A00_01.prm</td>
</tr>
<tr>
<td>2</td>
<td>Tool data</td>
<td>TOOL.CND</td>
<td>GP7_A00_01.tol</td>
</tr>
<tr>
<td>3</td>
<td>User defined frame file</td>
<td>UFRAME.DAT</td>
<td>GP7_A00_01.uf</td>
</tr>
<tr>
<td>4</td>
<td>Spot Gun cond data</td>
<td>SGSPEC.DAT</td>
<td>GP7_A00_01.gsp</td>
</tr>
<tr>
<td>5</td>
<td>Motor gun pressure data</td>
<td>SGPRS.CND</td>
<td>GP7_A00_01.gpr</td>
</tr>
<tr>
<td>6</td>
<td>Clearance setting</td>
<td>SGCLARNC.DAT</td>
<td>GP7_A00_01.gcl</td>
</tr>
</tbody>
</table>

2) Copy the file of the new name to the following folder.
<Installation folder>'¥YASKAWA_RCS¥rrs_ex¥YASKAWA_YRC1000¥data¥<any folder>'¥

3) Perform the RRS connection procedure, set the folder containing the parameters in "RCS Data Home Directory" and "Relative Robot Path" in "RRS Properties", and click "OK" button to connect.

![Figure 9 RRS Properties](image)

### 2.2.7. Settings when the MOTOMAN model required when selecting the Manipulator is not displayed

If the target robot model name is not displayed in "Manipulator" in the RRS Properties dialog, it will be displayed in "Manipulator" by adding the robot model name to the "YASKAWA_YRC1000.manip" file.

Please refer to the DELMIA manual for details of "YASKAWA_YRC1000.manip" file.
When editing "YASKAWA_YRC1000.manip", since the sample is stored in the following RCS module installation folder, please edit this file based on it and store it in the specified DELMIA folder.

<Installation folder>¥YASKAWA_RCS¥rrs_ex¥YASKAWA_YRC1000¥lib¥YASKAWA_YRC1000.manip

1) Open YASKAWA_YRC1000.manip in a text editor.
2) Adds the model name to the manip file.
   The following content is written in the file. Add to this list
   Please add the robot model name you want as for the entry, the name is entered on one line without using a space and a symbol. Also, if "**REPLACE**" is described in the first line, the standard and the list will be replaced.

```
< YASKAWA_YRC1000.manip
AR700_A00
AR900_A00
AR1440_A00
AR1730_A01
AR2010_A11
GP7_A00
GP8_A00
GP12_A00
GP15FLB_A60
GP20HL_A00
GP25_A00
```

Figure 10 manip file

Note) Replace "-" (hyphen) in file name to "_".

3) Finish saving the manip file.
4) Store the edited manip file in the specified folder of DELMIA.
3. Frequently Asked Questions
   3.1. Corrective action when driver is installed with USB type key attached to PC

1) Delete the drive registered as "unknown device" from Device Manager with USB type key attached to PC
2) Uninstall the driver (Sentinel System Driver 7.5.9) with [Add / Remove Programs]
3) Install the driver with the USB type key removed from the computer.

Note 1) Be sure to install the driver.
Note 2) When installing the driver, be sure to log in with administrator privileges when logging in.
# YRC1000 RCS-Module for DELMIA Installation Manual

## Specifications

Specifications are subject to change without notice for ongoing modifications and improvements.

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### 1. Introduction

This manual provides detailed instructions for the installation and commissioning of the YRC1000 RCS-Module for DELMIA.

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### 2. Installation

1. **Unpacking**
   - Carefully unpack the module and check for any damages.

2. **Electrical Connections**
   - Connect the module to the power supply as specified in the specifications.

3. **Software Installation**
   - Install the required software as per the software installation guide provided.

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### 3. Commissioning

1. **Startup Test**
   - Perform a startup test to ensure the module is operating correctly.

2. **Performance Test**
   - Conduct performance tests to verify the module meets the performance requirements.

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### 4. Troubleshooting

- Refer to the troubleshooting section for issues that may arise during installation or commissioning.

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### 5. Specifications

- Refer to the specifications section for detailed technical information.