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Introduction

The CATIU driver enables communication between the Studio and 3S controllers through the CAT-ISO protocol over UDP/IP. Acting as a slave, receiving from all 3s controllers and staying with the last message received from each 3S controller.

This document will help you to select, configure and execute the CATIU driver, and it is organized as follows:

- **Introduction:** This section, which provides an overview of the document.
- **General Information:** Identifies all of the hardware and software components required to implement communication between the Studio system and the target device.
- **Selecting the Driver:** Explains how to select the CATIU driver in the Studio system.
- **Configuring the Driver:** Explains how to configure the CATIU driver in the Studio system, including how to associate database tags with device registers.
- **Executing the Driver:** Explains how to execute the CATIU driver during application runtime.
- **Troubleshooting:** Lists the most common errors for this driver, their probable causes, and basic procedures to resolve them.
- **Sample Application:** Explains how to use a sample application to test the CATIU driver configuration
- **Revision History:** Provides a log of all changes made to the driver and this documentation.

Notes:

- This document assumes that you have read the “Development Environment” chapter in Studio’s *Technical Reference Manual*.
- This document also assumes that you are familiar with the Microsoft Windows XP/Vista/7 environment. If you are not familiar with Windows, then we suggest using the **Help** feature (available from the Windows desktop **Start** menu) as you work through this guide.

General Information

This chapter identifies all of the hardware and software components required to implement communication between the CATIU driver in Studio and remote devices.

The information is organized into the following sections:

- Device Specifications
- Network Specifications
- Driver Characteristics
- Conformance Testing

Device Specifications

You can use this driver to communicate with any device using a simple ASCII protocol. (The devices used for conformance testing are listed on the next page.)

Network Specifications

To establish communication, your device network must meet the following specifications:

- **Device Communication Port:** Ethernet port
- **Physical Protocol:** Ethernet - UDP/IP
- **Logic Protocol:** CAT-ISO - ASCII
- **Device Runtime Software:** None
- **Specific PC Board:** None
- **Adapters/Converters:** None
- **Cable Wiring Scheme:** None

Driver Characteristics

The CATIU driver package consists of the following files, which are automatically installed in the \DRV subdirectory of Studio:

- **CATIUI.INI:** Internal driver file. *You must not modify this file.*
- **CATIUI.MSG:** Internal driver file containing error messages for each error code. *You must not modify this file.*
- **CATIUI.PDF:** This document, which provides detailed information about the CATIU driver.
- **CATIUI.DLL:** Compiled driver.

 **Note:**

You must use Adobe Acrobat® Reader™ to view the **CATIUI.PDF** document. You can install Acrobat Reader from the Studio installation CD, or you can download it from Adobe's Web site.

You can use the CATIU driver on the following operating systems:

- Windows NT/2000/XP/Vista
- Windows CE 4.x, 5.x, 6.x

For a description of the operating systems used to test driver conformance, see "Conformance Testing" below.

Conformance Testing

The following hardware/software was used for conformance testing:

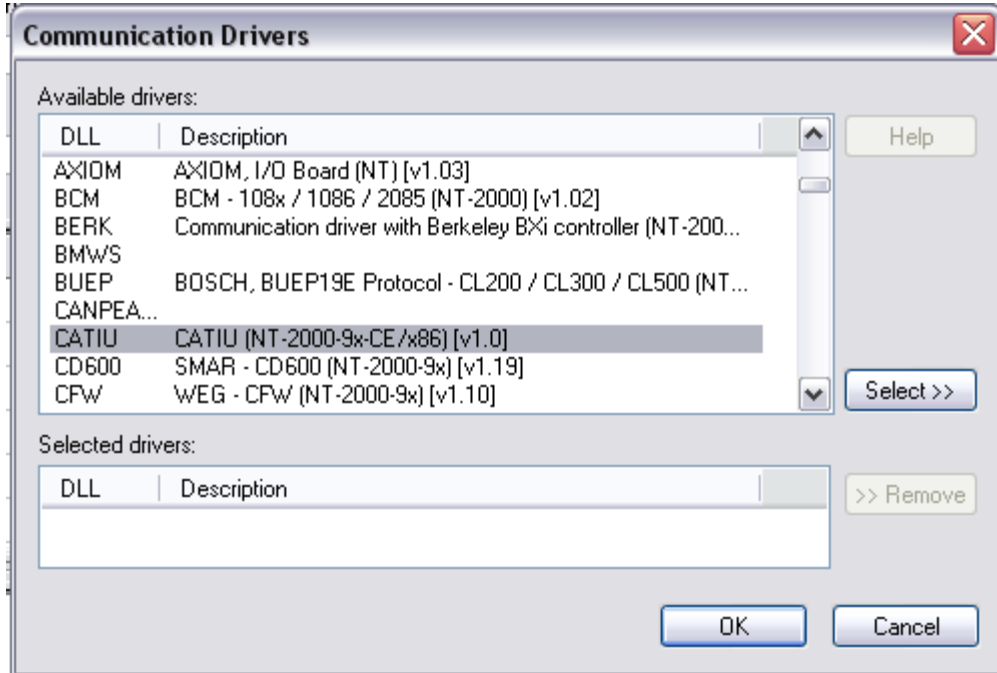
- **Driver Configuration (a):**
 - **PLC Program:** None
 - **Baud Rate:** Not used
 - **Protocol:** ASCII
 - **Data Bits:** Not used
 - **Stop Bits:** Not used
 - **Parity:** Not used
 - **COM Port:** Not used
 - **UDP/IP Port:** 1010
 - **Cable:** Ethernet Cable

Driver Version	Studio Version	Operating System	Equipment
1.0	6.1+SP6	Windows XP	– Two PCs connected with a Ethernet connection, one of them running the CAT_ISO-UDP Simulation software

Selecting the Driver

When you install Studio, all of the communication drivers are automatically installed in the \DRV subdirectory but they remain dormant until manually selected for specific applications. To select the CATIU driver for your Studio application:

1. From the main menu bar, select **Insert** → **Driver** to open the *Communication Drivers* dialog.
2. Select the **CATIU** driver from the *Available Drivers* list, and then click the **Select** button.



Communication Drivers Dialog

3. When the **CATIU** driver is displayed in the **Selected Drivers** list, click the **OK** button to close the dialog. The driver is added to the *Drivers* folder, in the *Comm* tab of the Workspace.

Note:

CATIU driver is used as a server, to enable connections it is necessary to install an external software that uses the CATIU protocol and make it connect to Studio.

Attention:

For safety reasons, you must take special precautions when installing any physical hardware. Please consult the manufacturer's documentation for specific instructions.

Configuring the Driver

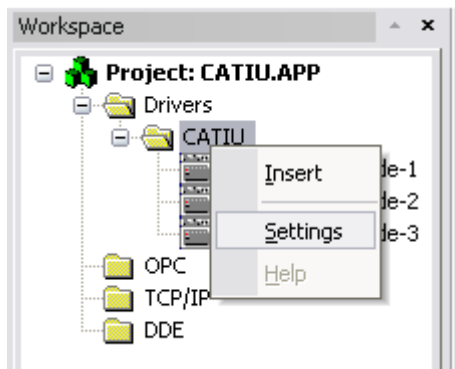
Once you have selected the CATIU driver in Studio, you must properly configure it to communicate with your target device.

Configuring the Communication Settings

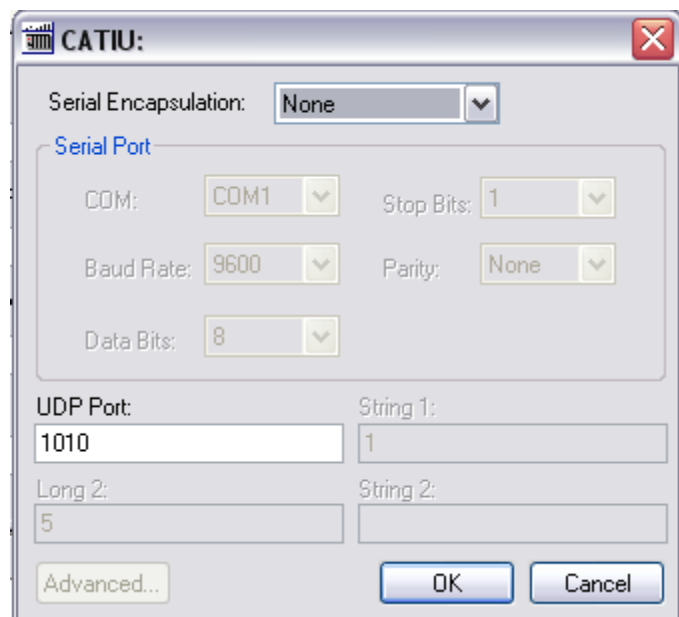
The communication settings are described in detail in the “Communication” chapter of the Studio *Technical Reference Manual*, and the same general procedures are used for all drivers. Please review those procedures before continuing.

For the purposes of this document, only CATIU driver-specific settings and procedures will be discussed here. To configure the communication settings for the CATIU driver:

1. In the *Workspace* pane, select the *Comm* tab and then expand the *Drivers* folder. The CATIU driver is listed here as a subfolder.
2. Right-click on the CATIU subfolder and then select the **Settings** option from the pop-up menu. The CATIU: *Communication Parameters* dialog is displayed:



Select Settings from the Pop-Up Menu



CATIU: Communication Parameters Dialog

- Configure the additional driver-specific settings, as described in the following table:

Setting	Default Value	Valid Values	Description
UDP Port	1010	Integer value	UDP port number used to receive messages from other 3S controllers.

- Click **OK** to close the *Communication Settings* dialog.

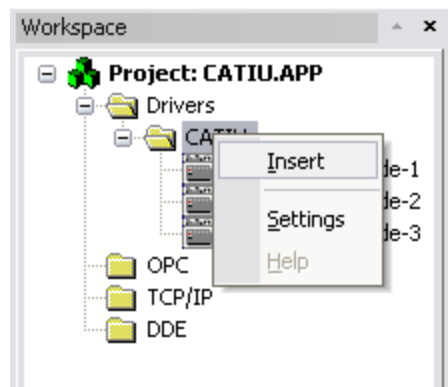
Configuring the Driver Worksheets

A selected driver includes one or more driver worksheets, which are used to associate database tags in Studio with operands on the target device. Each worksheet is triggered by specific application behavior, so that the tags / operands defined on that worksheet are scanned only when necessary – that is, only when the application is doing something that requires reading from or writing to those specific tags / operands. Doing this optimizes communication and improves system performance.

The configuration of these worksheets is described in detail in the “Communication” chapter of the Studio *Technical Reference Manual*, and the same general procedures are used for all drivers. Please review those procedures before continuing.

To insert a new driver worksheet:

- In the *Comm* tab, open the *Drivers* folder and locate the *CATIU* subfolder.
- Right-click on the *CATIU* subfolder, and then select **Insert** from the pop-up menu:



Inserting a New Worksheet

A new *CATIU* driver worksheet is inserted into the *CATIU* subfolder, and the worksheet is opened for configuration:

Header

Description: CATIU-3S-Node-1 Increase priority

Read Trigger: second Enable Read when Idle: Read Completed: Read Status:

Write Trigger: Enable Write on Tag Change: Write Completed: Write Status:

Station: 1 Header: U Min: Max:

Body

	Tag Name	Address	Div	Add
1	B0	1		
2	B1	2		
3	B2	3		
4	B3	4		

CATIU Driver Worksheet

Note:
 Worksheets are numbered in order of creation, so the first worksheet is **CATI001 . drv**.

Most of the fields on this worksheet are standard for all drivers; see the “Communication” chapter of the *Technical Reference Manual* for more information on configuring these fields. However **Header**, and **Address** fields use syntax that is specific to the CATIU driver.

3. Configure the **Header** fields as follows:

- **Station** field (*not used*)
- **Header** field: Define the specific building for sending the door status
 Type of Header:
 - **U:<Unsolicited Message>** : Specify the number of the byte to read.

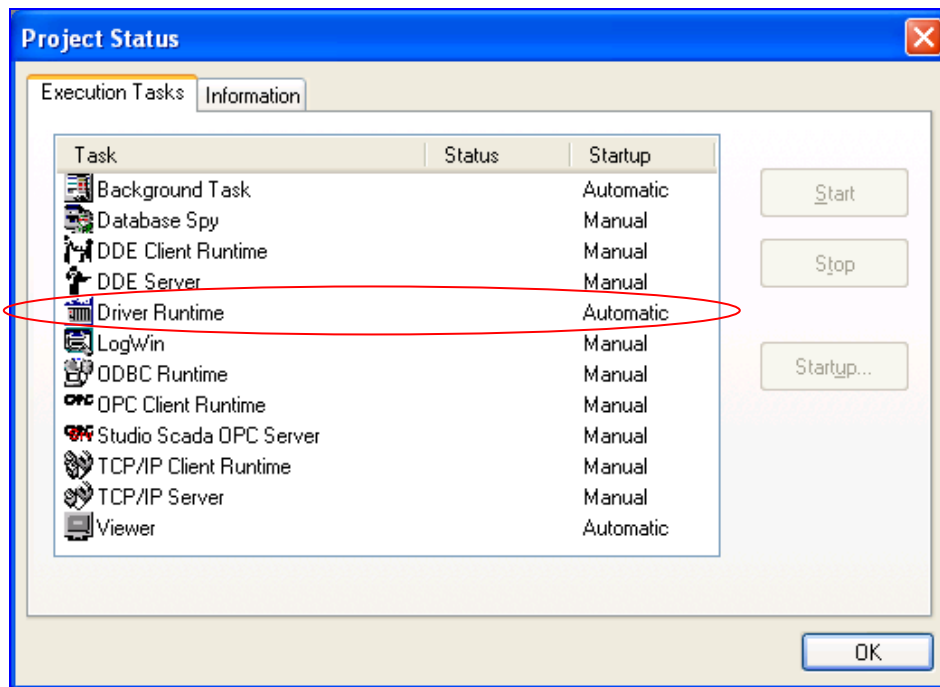
Note:
 Station is used for specifying the 3S node number that will be received.

Executing the Driver

By default, Studio will automatically execute your selected communication driver(s) during application runtime. However, you may verify your application's runtime execution settings by checking the *Project Status* dialog.

To verify that the communication driver(s) will execute correctly:

1. From the main menu bar, select **Project** → **Status**. The *Project Status* dialog displays:



Project Status Dialog

2. Verify that the *Driver Runtime* task is set to **Automatic**.
 - If the setting is correct, then proceed to step 3 below.
 - If the **Driver Runtime** task is set to **Manual**, then select the task and click the **Startup** button to toggle the task's *Startup* mode to **Automatic**.
3. Click **OK** to close the *Project Status* dialog.
4. Start the application to run the driver.

Troubleshooting

If the CATIU driver fails to communicate with the target device, then the database tag(s) that you configured for the **Read Status** or **Write Status** fields of the Standard Driver Sheet will receive an error code. Use this error code and the following table to identify what kind of failure occurred.

Error Code	Description	Possible Causes	Procedure to Solve
0	OK	Communicating without problems	Not required
11	No connection	No client connected	Make a connection with the client, check the port configuration on the client and on Studio.

⇒ **Tip:**

You can monitor communication status by establishing an event log in Studio's *Output* window (*LogWin* module). To establish a log for **Field Read Commands**, **Field Write Commands** and **Protocol Analyzer**, right-click in the *Output* window and select the desired options from the pop-up menu.

You can also use the *LogWin* module (**Tools** → **LogWin**) to establish an event log on a remote unit that runs Windows CE. The log is saved on the unit in the `ce1og.txt` file, which can be downloaded later.

If you are unable to establish communication between Studio and the target device, then try instead to establish communication using the device's own programming software. Quite often, communication is interrupted by a hardware or cable problem or by a device configuration error. If you can successfully communicate using the programming software, then recheck the driver's communication settings in Studio.

If you must contact us for technical support, please have the following information available:

- **Operating System** (type and version): To find this information, select **Tools** → **System Information**.
- **Project Information**: To find this information, select **Project** → **Status**.
- **Driver Version** and **Communication Log**: Displays in the Studio *Output* window when the driver is running.
- **Device Model** and **Boards**: Consult the hardware manufacturer's documentation for this information.

Sample Application

A sample application that employs the CATIU driver is provided on the Studio installation CD. We strongly recommend that you use this sample application to test the driver *before* you develop your own applications, for the following reasons:

- To better understand the information and instructions provided in this document;
- To verify that your driver configuration is working satisfactorily with the target device; and
- To ensure that the all of hardware used in the test (i.e. the device, adapter, cable, and PC) is functioning safely and correctly.

 **Note:**

The following instructions assume that you are familiar with developing project applications in Studio. If you are not, then please review the relevant chapters of the Studio *Technical Reference Manual* before proceeding.

To use the sample application:

1. Configure the device's communication settings according to the manufacturer's documentation.
2. Run Studio.
3. From the main menu bar, select **File → Open Project**.
4. Insert the Studio installation CD and browse it to find the sample application. It should be located in the directory `\COMMUNICATION EXAMPLES\CATIU`.
5. Select and open the sample application.
6. Configure and test the driver, as described in the rest of this document.

When you have thoroughly tested the driver with your target device, you may proceed with developing your own Studio application projects.

 **Tip:**

You can use the sample application screen as the maintenance screen for your own applications.

Revision History

Doc. Revision	Driver Version	Author	Date	Description of Changes
A	1.00	Paulo R. Balbino	3 Feb 2010	Initial version