<div style="background:green;color:white">**LAMIX Communication Driver**</div>

Driver for Serial
Communication with LAMIX Display

Contents

Introduction

The LAMIX driver enables communication between the Studio system and LAMIX devices communicating over Serial, according to the specifications discussed in this document.

This document was designed to help you install, configure, and execute the LAMIX driver to enable communication with these devices. The information in this document is organized as follows:

- **Introduction**: Provides an overview of the LAMIX driver documentation.

- **General Information**: Provides information needed to identify all the required components (hardware and software) used to implement communication between Studio and the LAMIX driver.

- **Installing the Driver**: Explains how to install the LAMIX driver.

- **Configuring the Driver**: Explains how to configure the LAMIX driver.

- **Executing the Driver**: Explains how to execute the driver to verify that you installed and configured the driver correctly.

- **Troubleshooting**: Lists the most common error codes for this protocol and explains how to fix these errors.

- **Sample Application**: Explains how to use a sample application to test the LAMIX driver configuration.

- **Revision History**: Provides a log of all modifications made to the driver and the documentation.

✎ **Notes:**

- This document assumes that you have read the "Development Environment" chapter in the Studio *Technical Reference Manual*.
- This document also assumes that you are familiar with the Windows XP/CE environment.
  If you are unfamiliar with Windows XP/CE, we suggest using the **Help** feature (available from the Windows desktop **Start** menu) as you work through this guide.

General Information

This chapter explains how to identify all the hardware and software components used to implement communication between the Studio LAMIX driver and the LAMIX devices.

The information is organized into the following sections:

- Device Characteristics
- Link Characteristics
- Driver Characteristics

Device Characteristics

To establish communication, you must use devices with the following specifications:

- **Manufacturer**: LAMIX
- **Compatible Equipment**:
  – Any device that is fully compatible with the LAMIX display

Link Characteristics

To establish communication, you must use links with the following specifications:

- **Physical Protocol**: Serial
- **Logic Protocol**: Proprietary
- **Device Runtime Software**: None
- **Specific PC Board**: None

Driver Characteristics

The LAMIX driver is composed of the following files:

- **LAMIX.INI**: Internal driver file. *You must not modify this file*.
- **LAMIX.MSG**: Internal driver file containing error messages for each error code. *You must not modify this file*.
- **LAMIX.PDF**: Document providing detailed information about the LAMIX driver
- **LAMIX.DLL**: Compiled driver

 Notes:

- All of the preceding files are installed in the `/DRV` subdirectory of the Studio installation directory.
- You must use Adobe Acrobat® Reader™ (provided on the Studio installation CD-ROM) to view the *LAMIX.PDF* document.

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

- Windows CE
- Windows XP/Vista/7

Installing the Driver

When you install Studio version 5.1 or higher, all of the communication drivers are installed automatically. You must select the driver that is appropriate for the application you are using.

Perform the following steps to select the driver from within the application:

1. Open Studio from the **Start** menu.

2. From the Studio main menu bar, select **File** → **Open Project** to open your application.

3. Select **Insert** → **Driver** from the main menu bar to open the *Communication Drivers* dialog.

4. Select the **LAMIX** driver from the *Available Drivers* list (as shown in the following figure), and then click the **Select** button.
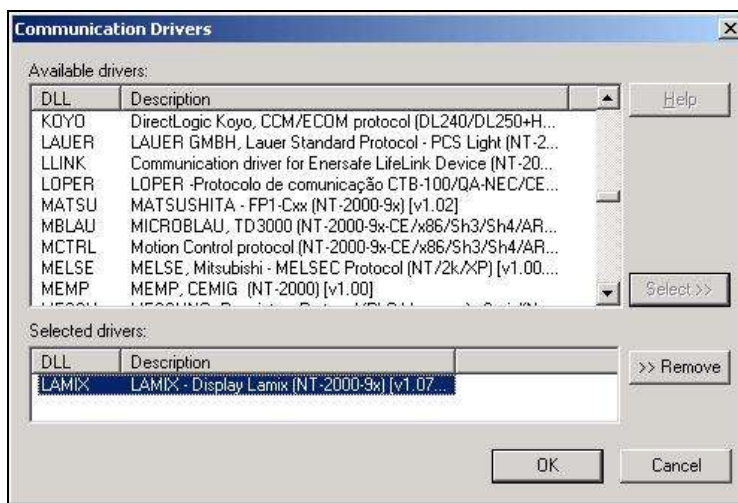
Communication Drivers Dialog Box

5. When the **LAMIX** driver displays in the **Selected Drivers** list, click the **OK** button to close the dialog.

> ✎ **Note:**
> It is not necessary to install any other software on your computer to enable communication between the host and the device. However, to download the custom program to your device, you must install the LAMIX programmer. Consult your LAMIX programmer software documentation for installation instructions.

> ➲ **Attention:**
> For safety reasons, you must use special precautions when installing the physical hardware. Consult the hardware manufacturer's documentation for specific instructions in this area.

Configuring the Driver

After opening Studio and selecting the LAMIX driver, you must configure the driver. Configuring the LAMIX driver is done in two parts:

- Specifying communication parameters
- Defining tags and controls in the *STANDARD DRIVER SHEET*s (or Communication tables)

    Worksheets are divided into two sections, a *Header* and a *Body*. The fields contained in these two sections are standard for all communications drivers — except the **Station**, **Header** and **Address** fields, which are driver-specific. This document explains how to configure the **Station**, **Header** and **Address** fields only.
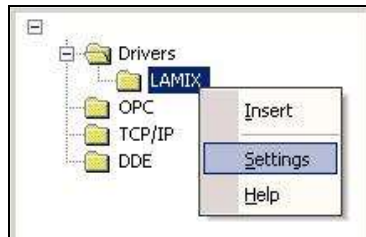

✍ **Note:**

For a detailed description of the Studio *STANDARD DRIVER SHEET*s, and information about configuring the standard fields, review the product's *Technical Reference Manual*.

Setting the Communication Parameters

Use the following steps to configure the communication parameters, which are valid for all driver worksheets configured in the system:

1. From the Studio development environment, select the *Comm* tab located below the *Workspace*.
2. Click on the *Drivers* folder in the *Workspace* to expand the folder.
3. Right-click on the LAMIX subfolder. When the pop-up menu displays (as shown in the following figure), select the **Settings** option.

Select Settings from the Pop-Up Menu

The *LAMIX: Communications Parameters* dialog displays (as follows).

Communication Parameters Dialog

4. Specify the parameters as noted in the following table:

Parameters	Default Values	Valid Values	Description
Station	-	-	Not used
Mode (0- Old or 1-New)	0	0 or 1	The new mode uses the 00h command to specify the target address.

✍ **Note:**

The device must be configured with *exactly the same* parameters that you configured in the *LAMIX Communication Parameters* dialog.

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5. Click the **Advanced** button on the *Communication Parameters* dialog to open the *Advanced Settings* dialog and configure the necessary settings.

✍ **Notes:**

▪ Do not change any of the other *Advanced* parameters at this time. You can consult the Studio *Technical Reference Manual* for information about configuring these parameters for future reference.

▪ Generally, you must change the *Advanced* parameter settings if you are using a DCE (Data Communication Equipment) converter (232/485 for example), modem, and so forth between the PC, the driver and the host. You must be familiar with the DCE specifications before adjusting these configuration parameters.


Configuring the Driver Worksheets

This section explains how to configure the *STANDARD DRIVER SHEETs* (or communication tables) to associate application tags with the device addresses. You can configure multiple Driver Worksheets — each of which is divided into a *Header* section and *Body* section.

Configuring the *STANDARD DRIVER SHEET*

Use the following steps to create a new *STANDARD DRIVER SHEET*:

1. From the Studio development environment, select the *Comm* tab, located below the *Workspace* pane.
2. In the *Workspace* pane, expand the *Drivers* folder and right-click the *LAMIX* subfolder.
3. When the pop-up menu displays (as shown in the following figure), select the **Insert** option.
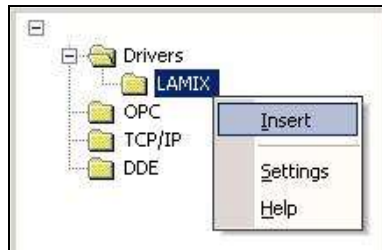
Inserting a New Worksheet

> ✎ **Note:**
>
> To optimize communication and ensure better system performance, you must tie the tags in different driver worksheets to the events that trigger communication between each tag group and the period in which each tag group must be read or written. Also, we recommend configuring the communication addresses in sequential blocks to improve performance.

The *STANDARD DRIVER SHEET* displays (similar to the following figure).

STANDARD DRIVER SHEET

In general, all parameters on the Driver Worksheet (except the **Station**, **Header** and **Address** fields) are standard for all communication drivers, but they will not be discussed in this document. For detailed information about configuring the standard parameters, consult the Studio *Technical Reference Manual*.

4. Use the following information to complete the **Station**, **Header** and **Address** fields on this worksheet.

> **Station** field: Station number
>
> Communication timeout can be disabled with the insertion of: D, after the Station number.
>
> Example: `1:D`
>
>
> **Header** field: Not used
>
> **Address** field: Contains the command of the display. It can contain the tag utility syntax **{Tag}.**
>
> Example:

Address Field
C
T
A{Tag}BC{Tag}

 Note:
The command will tell the display when to *Write Trigger* or *Enable Write On Tag Change*.

Device Configuration

Because there are multiple devices that use the LAMIX protocol, we cannot define a standard device configuration.

Executing the Driver

After adding the LAMIX driver to a project, Studio sets the project to execute the driver automatically when you start the run-time environment.

To verify that the driver run-time task is enabled and will start correctly, perform the following steps:

1. Select **Project** → **Status** from the main menu bar.

    The *Project Status* dialog box displays, as follows.
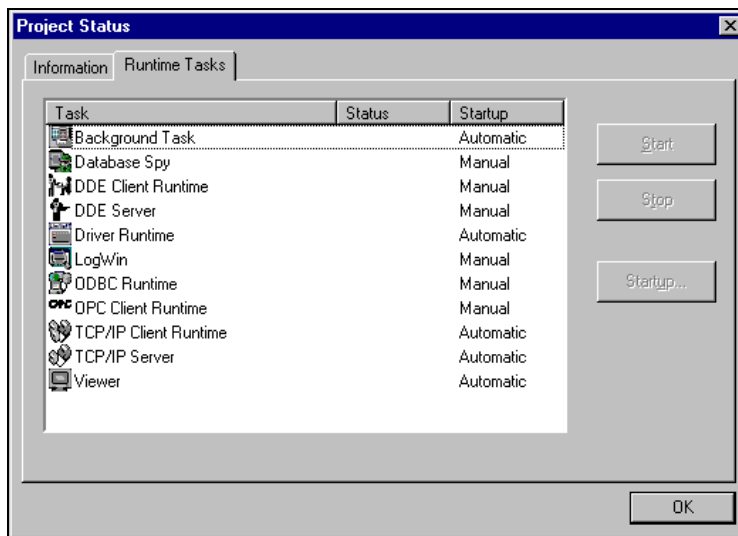
Project Status Dialog Box

2. Verify that the *Driver Runtime* task is set to **Automatic**.

    If the setting is correct, click **OK** to close the dialog box.

    If the **Driver Runtime** task is set to **Manual**, select the **Driver Runtime** line. When the **Startup** button becomes active, click the button to toggle the *Startup* mode to **Automatic**.

3. Click **OK** to close the *Project Status* dialog.

4. Start the application to run the driver.

Troubleshooting

If the LAMIX driver fails to communicate with the device, the tag you configured for the **Read Status** or **Write Status** fields will receive an error code. Use this error code and the following table to identify the failure.

Error Code	Description	Possible Causes	Procedure to Solve
0	OK	Communication without problems	None required
11	Invalid Address	The command configured in the Address field is invalid.	Check the configuration of the Address field.
12	Invalid Response	Receive an invalid message	▪ Check the station number. ▪ Check the command configured in the Address field.
14	Invalid Command	This driver supports the Write Command only and does not support the Read Command.	Change the Read Command to the Write Command.
-15	Timeout Start Message	▪ Disconnected cables ▪ PLC is turned off, in stop mode or in error mode ▪ Wrong station number ▪ Wrong RTS/CTS control settings	▪ Check cable wiring. ▪ Check the PLC state – it must be RUN. ▪ Check the station number. ▪ Check the configuration. See Studio *Technical Reference Manual* for information about valid RTS/CTS configurations.
-17	Timeout Between rx Char	▪ PLC in stop mode or in error mode ▪ Wrong station number ▪ Wrong parity ▪ Wrong RTS/CTS configuration settings	▪ Check cable wiring. ▪ Check the PLC state – it must be RUN. ▪ Check the station number. ▪ Check the configuration. See Studio *Technical Reference Manual* for information about valid RTS/CTS configurations.

> ⇨ **Tip:**
> You can verify communication status using the Studio development environment *Output* window (*LogWin* module). To establish an event log for **Field Read Commands**, **Field Write Commands** and **Serial Communication,** right-click in the *Output* window. When the pop-up menu displays, select the option to set the log events. If you are testing a Windows CE target, you can use the Remote LogWin of Studio (**Tools → Remote Logwin**) to get the log events from the target unit remotely.

If you are unable to establish communication with the PLC, try to establish communication between the PLC Programming Tool and the PLC. Quite frequently, communication is not possible because you have a hardware or cable problem, or a PLC configuration error. After successfully establishing communication between the device's Programming Tool and the PLC, you can retest the supervisory driver.

To test communication with Studio, we recommend using the sample application provided rather than your new application.

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**.
- **Studio version**: To find this information, select **Help → About.**
- **Driver Version**: To find this information, read the full description of the driver in the *Communication Drivers* dialog box.

- **Communication Log**: Displays in the Studio *Output* window (or *LogWin* window) when the driver is running. Be sure to enable the **Field Read Commands**, **Field Write Commands** and **Serial Communication** for the LogWin window.
- **Device Model** and **Boards**: Consult the hardware manufacturer's documentation for this information.

Sample Application

You will find a sample application for drivers in the **/COMMUNICATION EXAMPLES/LAMIX** directory. We strongly recommend that you check for a sample application for this driver and use it to test the driver before configuring your own customized application, for the following reasons:

▪ To better understand the information provided in each section of this document.
▪ To verify that your configuration is working satisfactorily.
▪ To certify that the hardware used in the test (device, adapter, cable and PC) is working satisfactorily before you start configuring your own, customized applications.

> ✎ **Note:**
> This application sample is not available for all drivers.

Use the following procedure to perform the test:

1. Configure the device's communication parameters using the manufacturer's documentation.
2. Open and execute the sample application.

> ⇨ **Tip:**
> You can use the sample application screen as the maintenance screen for your custom applications.

Revision History

Doc. Revision	Driver Version	Author	Date	Description of changes
A	1.07	Eric Vigiani	Sep/28/2004	Implemented 00H command, allowing the user to specify the target address.
B	1.08	André Körbes	Sep/23/2010	Generated driver for Windows CE