

FPACV Communication Driver

Driver for Communication with FlashPoint ControlView
PC-Based Control for Windows CE

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Introduction

The FPACV driver enables communication between Studio and FlashPoint ControlView Run-Time for Windows CE using the IXL API provided with the files “**IsaIXL.dll**” and “**IsaSys.dll**,” in accordance with the characteristics covered in this document.

This document contains eight parts, as follows:

- **Introduction:** Provides an overview of the driver documentation.
- **General Information:** Provides information necessary to identify all the required components (hardware and software) necessary to implement the communication and global characteristics about the communication.
- **Installation:** Explains the procedures that must be followed to install the software and hardware required for the communication.
- **Driver Configuration:** Provides the required information to configure the communication driver, such as the different permutations for configuration and its default values.
- **Execution:** Explains the steps to test whether the driver was correctly installed and configured.
- **Troubleshooting:** Lists the most common error codes for this protocol and the procedures to fix them.
- **Application Sample:** Provides a sample application for testing the configuration of the driver.
- **History of Versions:** Provides a log of all the modifications made to the driver.

Notes:

- This document assumes that you have read the “Driver Configuration” chapter in the product's *Technical Reference Manual*.
- This document also assumes that you are familiar with the Windows NT/2000/XP environment. If you are unfamiliar with Windows NT/2000/XP, 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 serial communication between Studio and FlashPoint ControlView Run-Time for Windows CE using the IXL API.

The information is organized into the following sections:

- Device Characteristics
- Link Characteristics
- Driver Characteristics

Device Characteristics

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

- **Manufacturer:** FlashPoint
- **Compatible Equipment:** WinCE device or Win2K/XP PC compatible with FlashPoint ControlView

For a list of the devices used for conformance testing, see “Conformance Testing” on page 4.

Link Characteristics

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

- **Device Communication Port:** Ethernet adapter
- **Physical Protocol:** TCP/IP over Ethernet
- **Logic Protocol:** Proprietary
- **Device Runtime Software:** FlashPoint ControlView runtime
- **Specific PC Board:** None
- **Link cable scheme:** Ethernet cable

⇒ Tip:

Please refer to the “Conformance Testing” section to see the equipment used in the standard conformance tests for this driver.

Driver Characteristics

The FPACV driver is composed of the following files:

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

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

- Windows NT/2000/XP
- Windows CE (ARM)

For a list of the operating systems used for conformance testing, see the “Conformance Testing” section.

The FPACV driver supports communication with the tags configured in FlashPoint ControlView.

Conformance Testing

The following hardware/software was used for conformance testing:

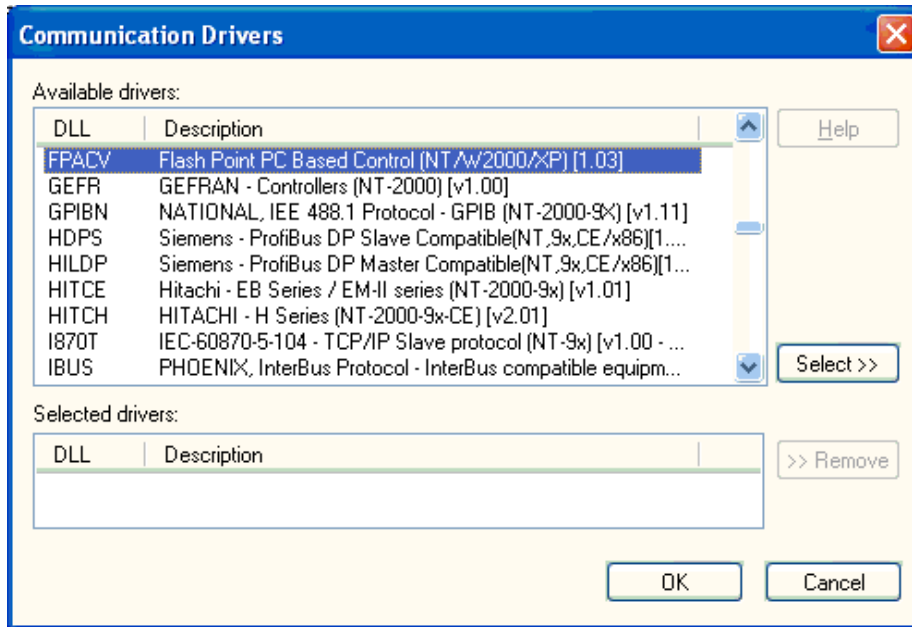
- **Equipment:** Windows CE HMI with Arm processor, Pentium with Windows 2000/NT/XP
- **Cable:** Use specifications described in the “Link Characteristics” section
- **Configuration:** FlashPoint ControlView standard project linked locally (host system driver) or remotely via TCP/IP
- **Operating System (*development*):** Windows NT/2000/XP
- **Operating System (*target*):**
 - Windows NT/2000/XP
 - Windows CE v3.00
- **Studio Version:** 5.1
- **Driver Version:** 1.00

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 **FPACV** driver from the *Available Drivers* list, and then click the **Select** button.
5. When the *FPACV* driver displays in the *Selected drivers* list, click the **OK** button to close the dialog.



Communication Drivers Dialog

Other Software Requirements

You must:

1. Install the FlashPoint ControlView (*IsaGraf.exe*, *IsaIXD.exe*, *IsaRSI.exe*, *IsaVM.exe*). The symbols file (generated by the FlashPoint ControlView Workbench when the target is downloaded) must be in the same folder.
2. Copy the files "*IsaIXL.dll*" and "*IsaSys.dll*" to the `\Bin` sub-folder of Studio.
3. Copy the symbols file to the `\Bin` sub-folder of Studio, or set the path of the file at the **Header** field of the *Driver* worksheet.

⚠ 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 Device

FlashPoint ControlView software should be used to configure the PC-Based Control application. Refer the manufacturer’s documentation for further details.

Configuring the Driver

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

- Specifying settings or communication parameters (there is only one configuration to the driver).
- Defining communication tags and controls in the *Communication* tables or *Driver* worksheet. There are two types of communication tables: **STANDARD TABLES** and the **MAIN DRIVER SHEET**. This driver version uses only the *Standard 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.

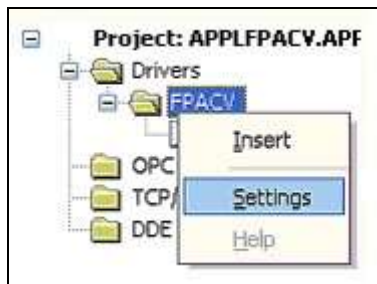
Note:

For a detailed description of the Studio *Standard* and *Main Driver* worksheets, and information about configuring the standard fields, review the product’s *Technical Reference Manual*.

Setting the Communication Parameters

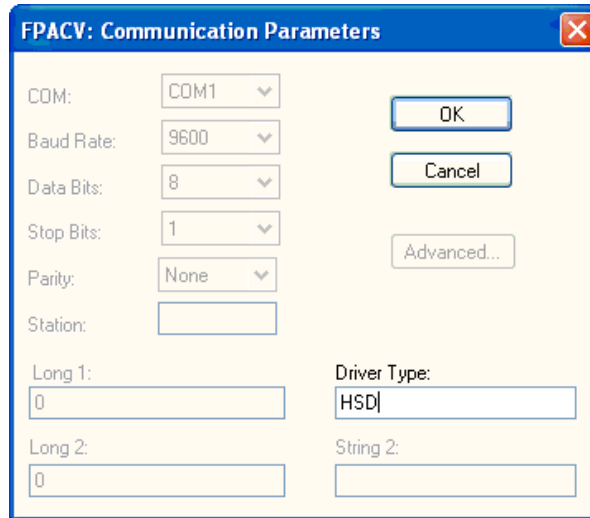
Use the following steps to configure the *Communication* parameters, which are valid for all driver worksheets configured in the system):

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 *FPACV* subfolder and when the pop-up menu displays, select the **Settings** option.



Select Settings from the Pop-Up Menu

The *FPACV: Communications Parameters* dialog displays:



FPACV: Communication Parameters Dialog

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

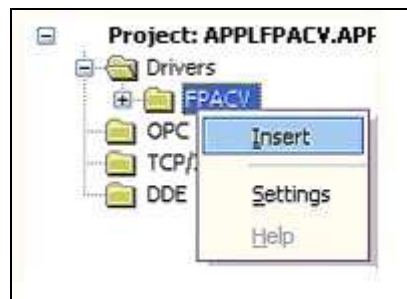
Parameter	Default Value	Valid values	Description
Driver Type	HSD	HSD - ETCP	HSD – client with host system driver ETCP – implements the TCP/IP protocol, and acts as a server

Configuring the Standard Driver Worksheet

This section explains how to configure a *Standard Driver Worksheet* (or communication table) to associate application tags with the PLC addresses. You can configure multiple Driver Worksheets — each of which is divided into a *Header* and *Body* section.

Use the following steps to create a new *Standard Driver Worksheet*:

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 *FPACV* subfolder.
3. When the pop-up menu displays, 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 <drivername>.drv dialog displays:

	Tag Name	Address	Div	Add
1	tag0	bool1		
2	tag1	sint1		
3	tag2	dint1		
4	tag3	real1		
5	tag4	string1		
6				

FPACV Driver Worksheet

Configuring the Station and Header

The following table lists all of the data types and address ranges that are valid for the **Header** field.

Parameter	Default Value	Valid values	Description
Station	–	1 to 255 or a valid IP Address: 1 to 255	If Driver Type is set as HSD: FlashPoint ControlView Resource Number. If Driver Type is set as ETCP: IP Address:Resource Number of the computer where FlashPoint ControlView is running.
Header	–	–	Path and name of the symbols file. The symbols file is generated by FlashPoint ControlView when the target is downloaded.

Configuring the Address

The body of the driver worksheet allows you to associate each tag to its respective address in the device. In the **Tag Name** column, you must type the tag from your application database. This tag will receive or send values from or to an address on the device. The address cells should be filled with *FlashPoint ControlView Run-Time* tag names configured on its workbench.

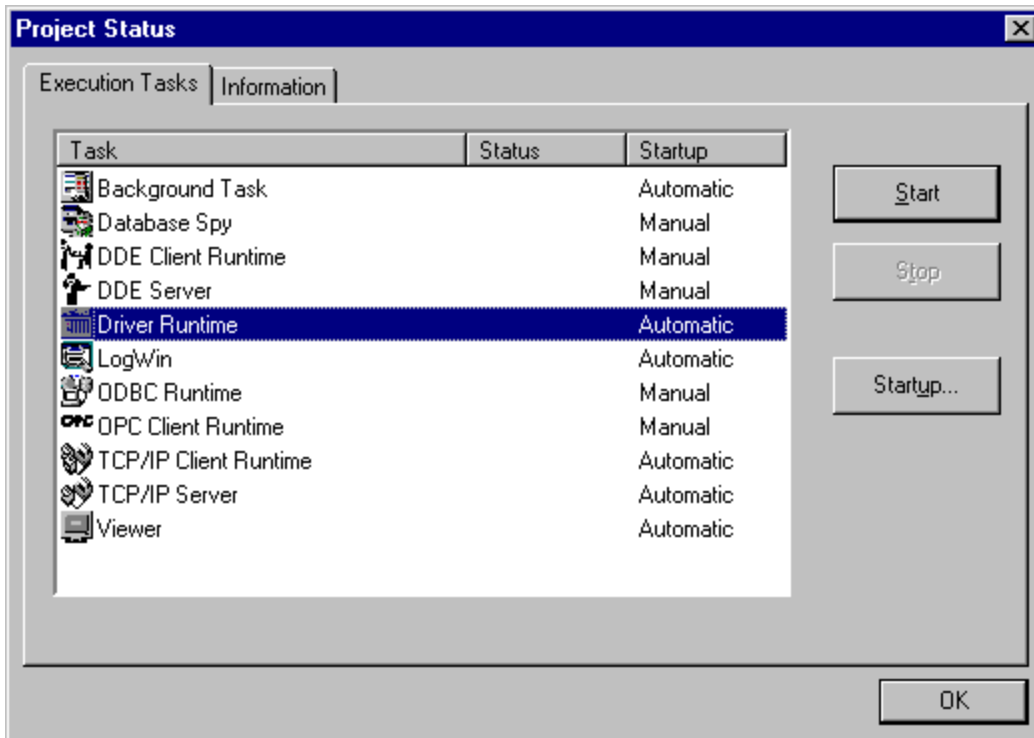
Executing the Driver

After adding the FPACV driver to a project, Studio sets the project to execute the driver automatically when you start the **Runtime 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 displays:



Project Status Dialog

2. Verify that the *Driver Runtime* task is set to **Automatic**.
 - If the setting is correct, click **OK** to close the dialog.
 - 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

After each attempt to communicate using this driver, the tag configured in the field **Read Status** or **Write Status** will receive the error code regarding the kind of failure that occurred. The error messages are:

Error Code	Description	Possible causes	Procedure to solve
0	OK	Communication without problems	None
2	Invalid Station	Typed an IP Address:resource at the station field when the driver type is ETCP, or typed only the resource number when the driver type is HSD.	See “Configuring the Station and Header” for some samples of valid Station.
3	Invalid Address	The address field is empty.	Use workbench to check the tag and create it if necessary.
4	Invalid Connection	If the driver type is HSD, wrong station number. If the driver type is ETCP, wrong IP Address.	Use the workbench to check the resource number and IP Address is correct.
5	Driver Type	Driver type must be HSD or ETCP.	Check that the driver type is typed correctly.
6	Couldn't load symbol table	Couldn't find the symbols file.	Check that the path and the name of the symbols file is typed correctly, or that it is placed in the correct folder.
7	Resource Info	Invalid resource number.	Check that the station field is filled with a valid resource number.
8	Error check CRC	Protocol error.	Contact your Studio technical support representative.
9	Symbol table does not match	The symbol table changed after you started the driver.	Download the symbol table to the target again, and check the name of the symbols file is typed correctly, or that it is placed in the correct folder.
10	Error getting info from name	Typed the tag incorrectly.	Check the tag name.
11	Error read	Protocol error.	Contact your Studio technical support representative.
12	Error writing	Protocol error.	Contact your Studio technical support representative.
13	Error start dialog	Protocol error.	Contact your Studio technical support representative.
14	Error get resource	Protocol error.	Contact your Studio technical support representative.

⇒ **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 enable the log at the unit (**Tools** → **Logwin**) and verify the `ce1log.txt` file created at the target unit.

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**.

- **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.

Application Sample

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

- To better understand the information provided in the “Installing the Driver” 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.
3. Execute the *Viewer* module in Studio to display information about the driver communication.

 **Tip:**

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

Revision History

Revision	Version	By	Date	Description of changes
A	1.00	Lidiane A. Moreira	17-Aug-2003	▪ First driver version
B	1.01	Lidiane A. Moreira	18-Aug-2003	▪ Changed log information