YU35 Communication Driver

Driver for Serial Communication
with YOKOGAWA equipments

Contents

Introduction

This document will help you to select, configure and execute the YU35 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 YU35 driver in the Studio system.
- **Configuring the Driver**: Explains how to configure the YU35 driver in the Studio system, including how to associate database tags with device registers.
- **Executing the Driver**: Explains how to execute the YU35 driver during application runtime.
- **Troubleshooting**: Lists the most common errors for this driver, their probable causes, and basic procedures to resolve them.
- **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 7/XP/Vista 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 YU35 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 the following devices: UT750, UP750, UT550, UT520, UP550, UT350, UT320, UM350, UM330, UP350 and the GREEN series.

Network Specifications

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

- **Physical Protocol**: RS485
- **Logic Protocol**: PC Link Communication
- **Device Runtime Software**: None
- **Specific PC Board**: None
- **Adapters/Converters**: None
- **Cable Wiring Scheme**: None

Driver Characteristics

The YU35 driver package consists of the following files, which are automatically installed in the **\DRV** subdirectory of Studio:

- **YU35.INI:** Internal driver file. *You must not modify this file*.
- **YU35.MSG:** Internal driver file containing error messages for each error code. *You must not modify this file*.
- **YU35.PDF:** This document, which provides detailed information about the YU35 driver.
- **YU35.DLL:** Compiled driver.

You can use the YU35 driver on the following operating systems:

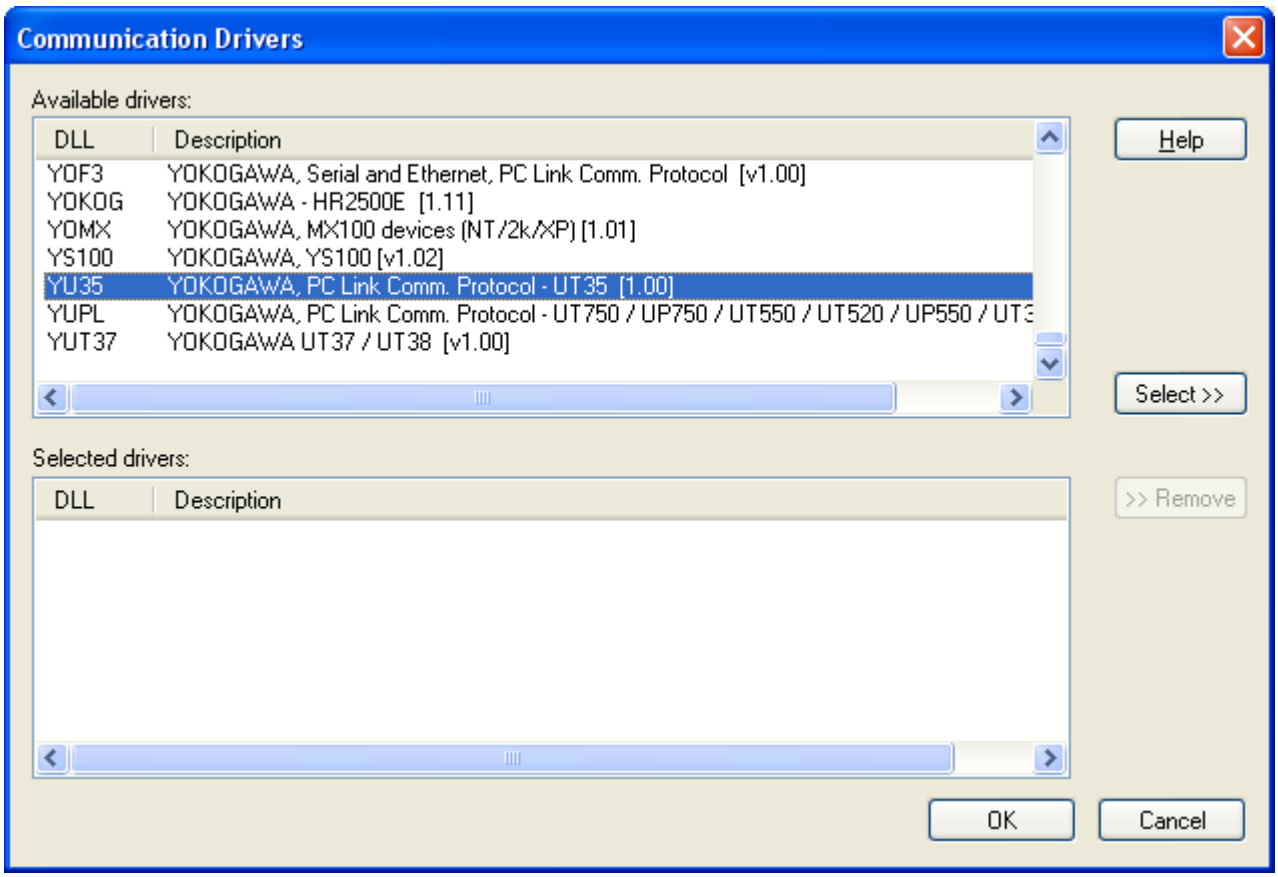
- Windows 7/XP/Vista

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

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 YU35 driver for your Studio application:

1. From the main menu bar, select **Insert** → **Driver** to open the *Communication Drivers* dialog.
2. Select the **YU35** driver from the *Available Drivers* list, and then click the **Select** button.



Communication Drivers Dialog

3. When the **YU35** 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.

> **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 YU35 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 YU35 driver-specific settings and procedures will be discussed here. To configure the communication settings for the YU35 driver:

1. In the *Workspace* pane, select the *Comm* tab and then expand the *Drivers* folder. The YU35 driver is listed here as a subfolder.

2. Right-click on the *YU35* subfolder and then select the **Settings** option from the pop-up menu:

YU35: Communication Settings Dialog

3. In the *Communication Settings* dialog, configure the driver settings to enable communication with your target device. To ensure error-free communication, the driver settings must *exactly match* the corresponding settings on the device. Please consult the manufacturer's documentation for instructions how to configure the device and for complete descriptions of the settings.

   Depending on your circumstances, you may need to configure the driver *before* you have configured your target device. If this is the case, then take note of the driver settings and have them ready when you later configure the device.

> ➲ **Attention:**
>
> For safety reasons, you **must** take special precautions when connecting and configuring new equipment. Please consult the manufacturer's documentation for specific instructions.

The communication settings and their possible values are described in the following table:

Parameters	Default Values	Valid Values	Description
Use CheckSum (0 or 1)	**0**	**0 or 1**	This parameter defines if the driver must send the checksum bytes. Set to 0 to not send or 1 to send.

Configuring the Driver Worksheets

This driver currently does not support Main Driver Sheet. Standard Driver Worksheets must be inserted to define tag/register associations to be monitored, that are triggered by specific application behaviors.

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.

For the purposes of this document, only YU35 driver-specific parameters and procedures will be discussed here.

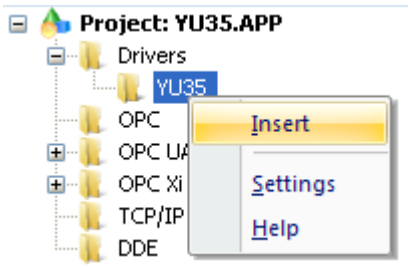
STANDARD DRIVER WORKSHEET

When you select the YU35 driver and add it to your application, it does not have any Driver Sheet added. To start communicating, you must insert Standard Driver Worksheets to define the tags/registers to be monitored and commands to be written. These services are specified by the header used on the driver sheet and the addresses.

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.

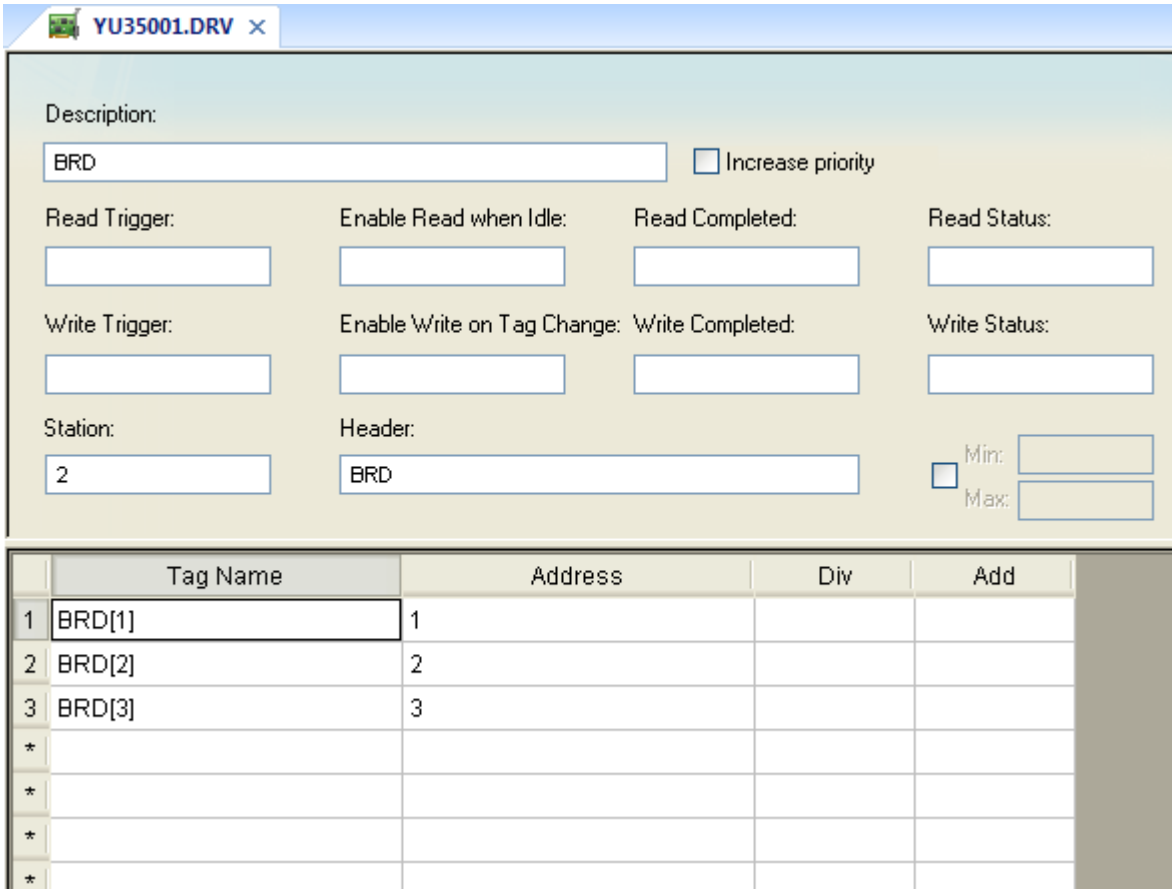
To insert a new driver worksheet:

1. In the *Comm* tab, open the *Drivers* folder and locate the *YU35* subfolder.
2. Right-click on the *YU35* subfolder, and then select **Insert** from the pop-up menu:



Inserting a New Worksheet

A new *YU35* driver worksheet is inserted into the *YU35* subfolder, and the worksheet is opened for configuration:



YU35 Driver Worksheet

> **Note:**
> Worksheets are numbered in order of creation, so the first worksheet is **`YU35001.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 **Body** (as noted on the above picture) fields use syntax that is specific to the YU35 driver.

3. Configure the **Station**, **Header** and **Address** fields as follows:

   - **Station** field: Address of the controller to communicate

     You can also specify an indirect tag (e.g. **`{station}`**), but the tag that is referenced must follow the same syntax and contain a valid value.

   - **Header** field: Contains the command to be executed:
     - To read: BRD or WRD
     - To write: BWR or WWR
   - **Address** field: Device address to read/write

- You may specify a bit of the address using the notation `<Address>.<Bit>`

Note:

To write several addresses at the same time, the driver sheet must be organized to have the address sorted ascending and without gaps between them. This is not necessary for read operations.

The maximum number of points by worksheet depend on the header:

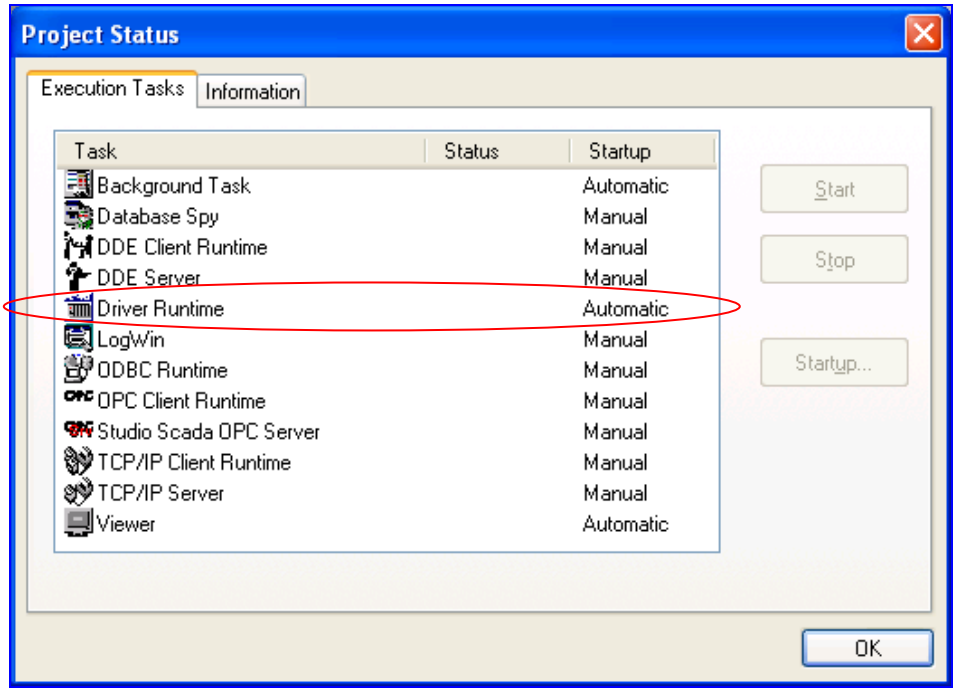
Header	Limit
BRD	**256**
BWR	**256**
WRD	**64**
WWR	**64**

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 YU35 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	N/A	N/A
1	Invalid Address	The address supplied is invalid	- Check the driver sheet configurations.
2	Invalid Header	The header supplied is invalid	- Check the driver sheet configurations for the valid header commands.
3	Invalid Header to this command(read or write)	Attempted to read or write using a header that does not support this operation	- Check the driver sheet configurations.
4	Command error	Device returned status '02'	- Check the device configurations - Check that driver sheet configurations match device configurations
5	Device specification error	Device returned status '03'	- Check the device configurations - Check that driver sheet configurations match device configurations
6	Setpoint deviated	Device returned status '04'	- Check the device configurations - Check that driver sheet configurations match device configurations
7	Number of deviated data	Device returned status '05'	- Check the device configurations - Check that driver sheet configurations match device configurations
8	Monitor error	Device returned status '06'	- Check the device configurations - Check that driver sheet configurations match device configurations
9	Communication error	Device returned status '41'	- Check the device configurations - Check that driver sheet configurations match device configurations
10	Character reception interval timeout	Device returned status '44'	- Check the device configurations - Check that driver sheet configurations match device configurations
11	General Error	Device returned an unrecognized status code	- Check the device configurations - Check that driver sheet configurations match device configurations

⇨ **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 *Remote LogWin* module (**Tools** → **LogWin**) to establish an event log on a remote unit that runs Windows CE

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 and Project Information** (type and version): To find this information, select **Help** → **Support Information**.
- **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.

Revision History

Doc. Revision	Driver Version	Author	Date	Description of Changes
A	1.00	André Körbes	Jan. 24, 2011	Document reviewed and updated.