

Thank you for purchasing Yokogawa products. This manual explains the conditions and method of using the sample program when connecting DL9000/SB5000/DL6000/DLM6000 series to a PC to perform communications. The sample program is written in Visual Basic Ver. 6.0 or Visual C++ Ver. 6.0.

To ensure correct use, please read this manual thoroughly before beginning operation.

For a description of the communication commands used to actually control Yokogawa products when using the sample program, see the Communication User's Manual for the respective product.

The sample program is created using the communication library of the YOKOGAWA DL Series Digital Oscilloscopes. For a description of the DL Series Library, see tmctl read me.txt that comes with the "TMCTL" (URL: <http://tmi.yokogawa.com/service-support/downloads/>).

Notes

The contents of this manual are subject to change without prior notice as a result of continuing improvements to the performance and functions.

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Revisions

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System Requirements

PC and Language

PC: Windows PC

Programming language: Visual Basic Ver. 6.0 Professional Edition or later,
Visual C++ Ver. 6.0 Professional Edition or later

Applicable Communication Interfaces

USB, Ethernet, and GP-IB

This sample program has been created using the "TMCTL."

To use USB, the DL9000/SB5000/DL6000/DLM6000 dedicated USB driver is also needed. Before starting the sample program, install the USB driver available at the "USB Driver" download page.

Note

The applicable products and communication interfaces listed above vary depending on the installed options of the respective model and firmware version. For details, see "Instruments Supporting Communications Functions" at the Web page.

File Construction

Visual Basic (Under the VB Directory)

Sample.vbp VB project file
DLSample1.bas Sample program

(The following four files are dedicated libraries.)

tmctl.dll	TMCTL library	
tmctl.bas	TMCTL library	Function definition file
tmval.bas	TMCTL library	Constant definition file
USBTMCAPI.dll	TMCTL library	USB library file

Visual C++ (Under the VC Directory)

DLSample.dsw VC++ project workspace file
DLSample1.cpp Sample program
Other files that are automatically created by Visual C++ are also included.

(The following four files are dedicated libraries.)

tmctl.dll	TMCTL library	
tmctl.h	TMCTL library	Function header file
tmctl.lib	TMCTL library	Import library file
USBTMCAPI.dll	TMCTL library	USB library file

Starting the Program

Visual Basic (Under the VB Directory)

Open Sample.vbp using Visual Basic. You can immediately run the program on Visual Basic.

Visual C++ (Under the VC Directory)

Open DLSample.dsw using Visual C++. You can immediately run the program on Visual C++.

Setting the Applicable Products

USB

The USB ID is set to 27E000001 in the sample program. During actual operation, use the serial number.

Ethernet

Examples of Ethernet settings used in the sample program are shown in the table below. However, the IP addresses in the table are for illustrative purposes only, and the instrument will not function if these settings are used. During actual operation, use IP addresses for products and the sample program that match your networking environment. For settings on the instrument, enter the user name, password, timeout time, and TCP/IP settings according to the procedures given in the Communication Interface User's Manual of the product.

IP address	11.22.33.44
User name	anonymous
Password	None
Timeout time	Set the time as necessary.
TCP/IP	Set TCP/IP to match the network environment.

GPIB

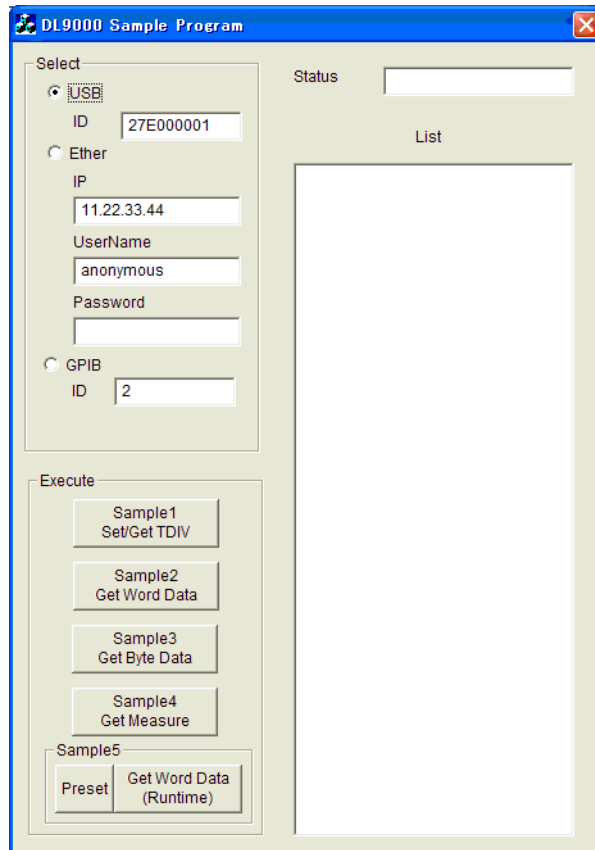
The sample program has been created using "2" as the initial value for the GPIB ID. When actually using the program, please set the GPIB Address accordingly.

Description of the Execution of the Sample Program

The sample program establishes connection using the initialization function against the controlled device (product)

that is connected to the PC. The ID value that the function returns is used as the device ID. Other transmission/reception functions use the ID to control the target device.

When you run the program, a sample program window opens. Select the communication method in the Select area and click the button under Execute to execute the sample program.



Below is a description of the execution of the sample program.

1. Sets T/div and gets T/div settings
Sets T/div to 2 ms/div and queries and displays T/div.
2. Retrieves 125000 points of CH1 waveform data and displays the data as physical values in unit of words
Retrieves waveform data from point 0 to 124999 at 2 bytes per data point and displays the data.
3. Retrieves 125000 points of CH1 waveform data and displays the data as physical values in unit of bytes
Retrieves waveform data from point 0 to 124999 at 1 byte per data point and displays the data.
4. Acquires the waveform once, stops, performs automated measurement of waveform parameters (P-P, Mean, and Freq), and displays the result (Set the CH1 setting to 0.5 V/div and 1 ms/div and input a waveform that activates a trigger.)
Sets the voltage sensitivity to 0.5 V/div and the time axis to 1 ms/div and acquires the waveform once.
After stopping waveform acquisition, the program controls the device to measure and display P-P, Mean, and Freq values.
5. Retrieves 2500 points of waveform data being measured on CH1 through CH4 and displays the data as physical values in unit of words.
Only for the DL6000/DLM6000.
After executing Initialize under "Preset", set the following:
T/div = 500 μ s/div; record length = 2.5 kpoints; trigger level = 500 mV, CH1 to CH4 probe attenuation = 10:1; and V/div = 500 mV/div. Using "Get Word Data(Runtime)", 0 to 2499 points (max.) of waveform data on CH1 to CH4 are acquired and displayed during measurement at a size of 2 bytes per data.