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How to Read/Write the Win-GRAF Modbus Data by using InduSoft?

Before using InduSoft to read/write the Win-GRAF PAC data, you must enable the Modbus Slave function and set the public variables in the Win-GRAF workbench. We provide the Win-GRAF demo project (wingraf_faq016.zip) and open up some common data type of Win-GRAF variables (e.g., BOOL, INT, DINT, REAL, and TIME). Moreover, we also provide an InduSoft demo project (indusoft_demo.zip) and describe the corresponding method for the InduSoft data type and the Win-GRAF data type.

1.1. Restore the Win-GRAF Project

- In the Win-GRAF, click the menu items **File, Add Existing Project, and From Zip** to restore the demo project (wingraf_faq016.zip). If not familiar with the settings, refer the [FAQ-003](#).
- For more details on Win-GRAF Modbus **Slave** settings, refer the Win-GRAF [FAQ-008](#).

1.2. The Win-GRAF Modbus Slave Settings

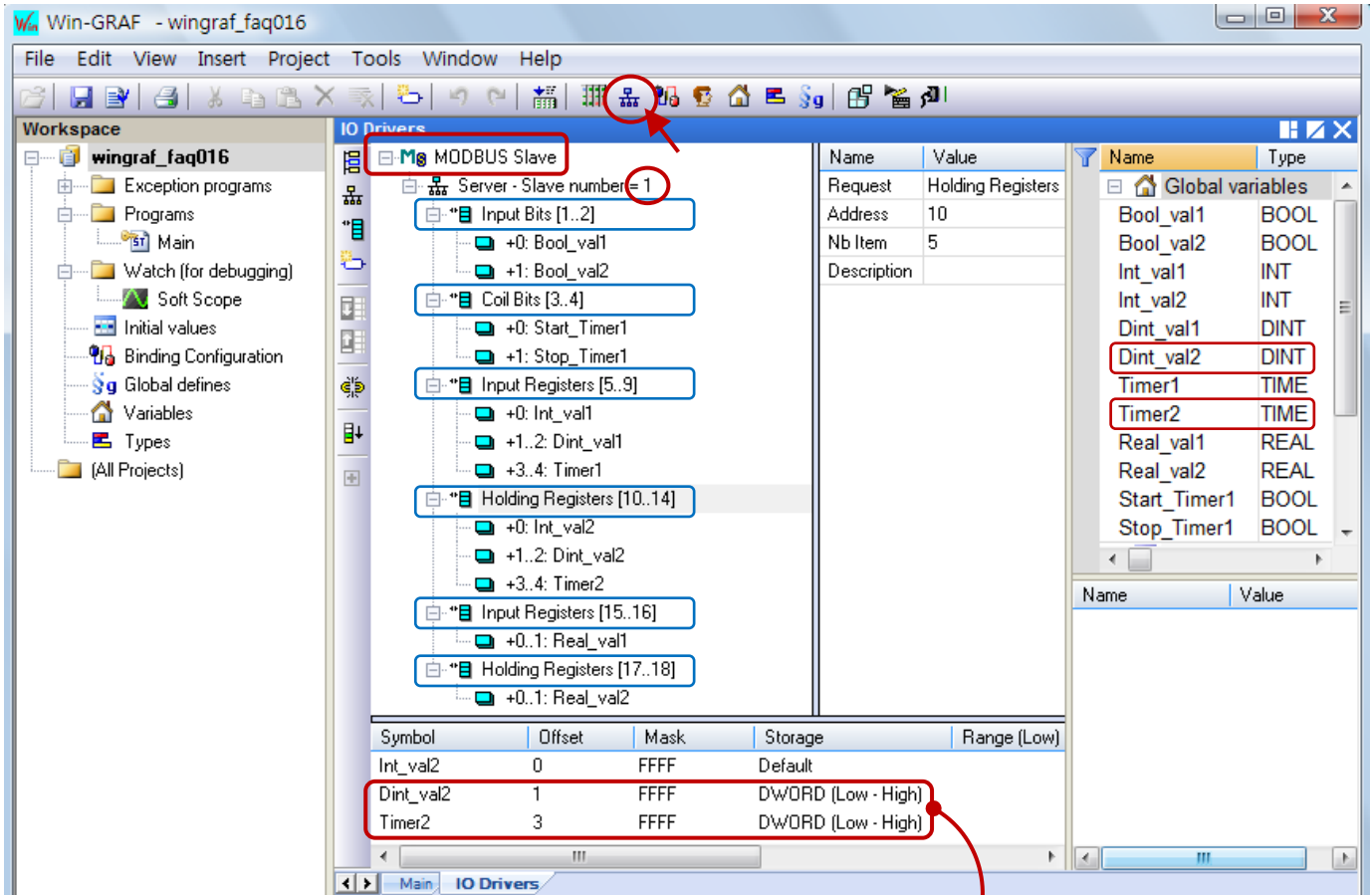
The following table listed all Win-GRAF variables that allowed the Modbus Master (i.e., InduSoft) to read/write data:

Variable Name	Data Type	Description
Bool_val1	BOOL	Used for data read by the Master (DI / Input Bits, see the figure below)
Bool_val2	BOOL	Used for data read by the Master (DI / Input Bits)
Start_Timer1	BOOL	Used for data read/write by the Master (DO / Coil Bits) To active the Timer1 when set it as "True".
Stop_Timer1	BOOL	Used for data read/write by the Master (DO / Coil Bits) To inactive the Timer1 when set it as "True".
int_val1	INT	Used for data read by the Master (AI / Input Registers)
int_val2	INT	Used for data read/write by the Master (AO / Holding Registers)
Dint_val1	DINT	Used for data read by the Master (AI / Input Registers)
Dint_val2	DINT	Used for data read/write by the Master (AO / Holding Registers)
Timer1	TIME	Used for data read by the Master (AI / Input Registers)
Timer2	TIME	Used for data read/write by the Master (AO / Holding Registers)
Real_val1	REAL	Used for data read by the Master (AI / Input Registers)
Real_val2	REAL	Used for data read/write by the Master (AO / Holding Registers)

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The Win-GRAF Modbus Slave Settings:

In the Win-GRAF workbench, you must enable the Modbus Slave function and configure variables that can be used for data read/write. (If not familiar with the Modbus Slave settings, refer the Win-GRAF [FAQ-008](#).)



Modbus Slave Request:

For Modbus Master to Read data:

Options	Data Types
Input Bits	BOOL
Input Registers	INT, DINT, REAL, TIME, etc.

For Modbus Master to Read/Write data:

Options	Data Types
Coil Bits	BOOL
Holding Registers	INT, DINT, REAL, TIME ...等。

Notice: (As the figure above)

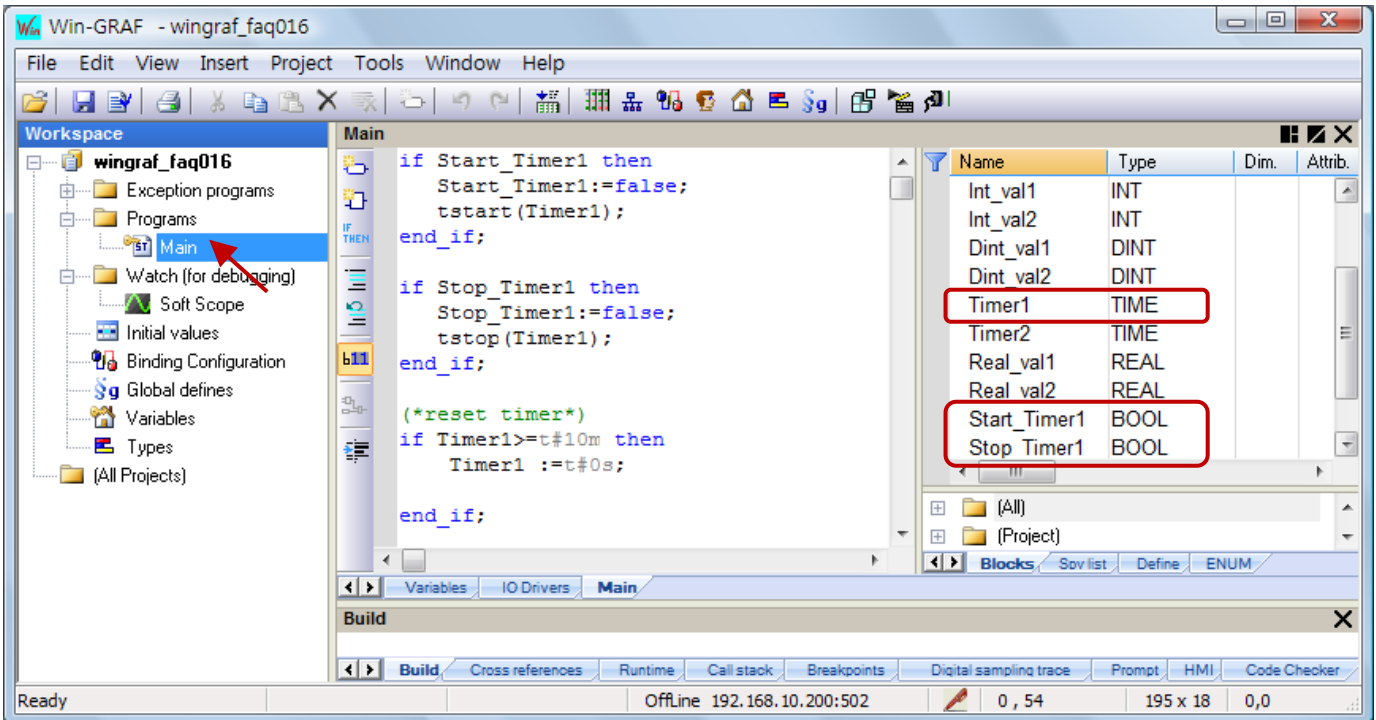
- (1) The “Offset” value starts at “0” and the **Modbus address of variable is equal to this value plus 1 (Base address)**.
- (2) When using a **32-bit** variable (e.g., DINT, TIME), it requires **two Modbus addresses**, and the “Storage” field must be set as “DWORD (Low – High).

Note: Refer the [Win-GRAF Getting Started Manual](#) – Appendix A to see more Win-GRAF data type.

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1.3. The Win-GRAF Program (Main)

This Win-GRAF project includes a ST program (i.e., Main), which used to start, stop, or reset the Timer1.



```

if Start_Timer1 then
  Start_Timer1:=false;
  tstart(Timer1);
end_if;

if Stop_Timer1 then
  Stop_Timer1:=false;
  tstop(Timer1);
end_if;

(* Reset Timer *)
if Timer1>=t#10m then
  Timer1 :=t#0s;
end_if;

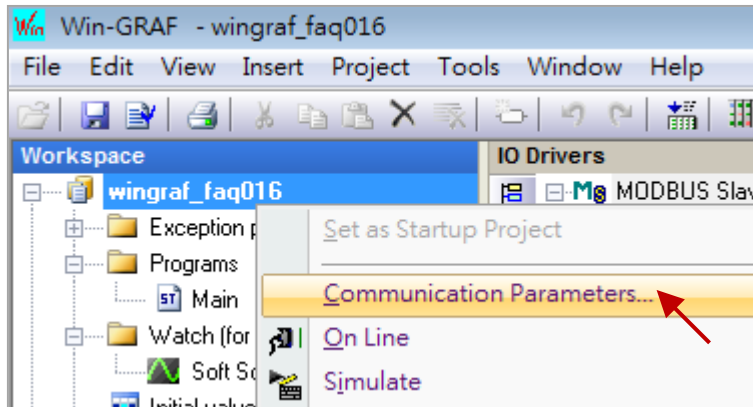
```

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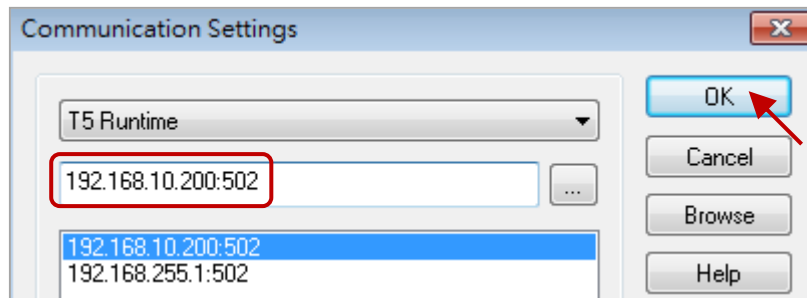
1.4. Download the Project to the Win-GRAF PAC

Before downloading the project, you need to set up the communication parameters.

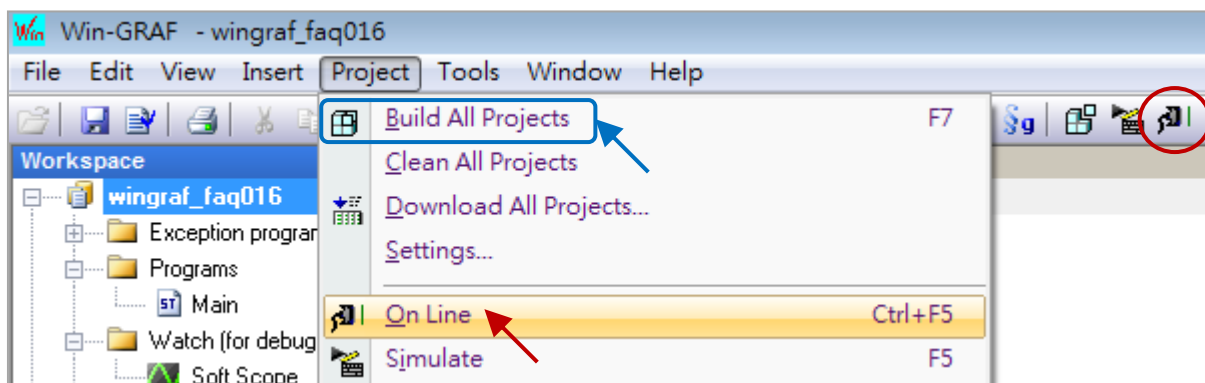
1. Mouse right-click on the project name and select “Communication Parameters...” to open the settings window.



2. Enter the current PAC's IP address (e.g., “192.168.10.200:502”) and click “OK”.



3. Before connecting to the Win-GRAF PAC, click the menu bar “Project” and select “Build All Projects” to compile the project, and then click “On Line” or click the tool button (🔌) to establish a connection.

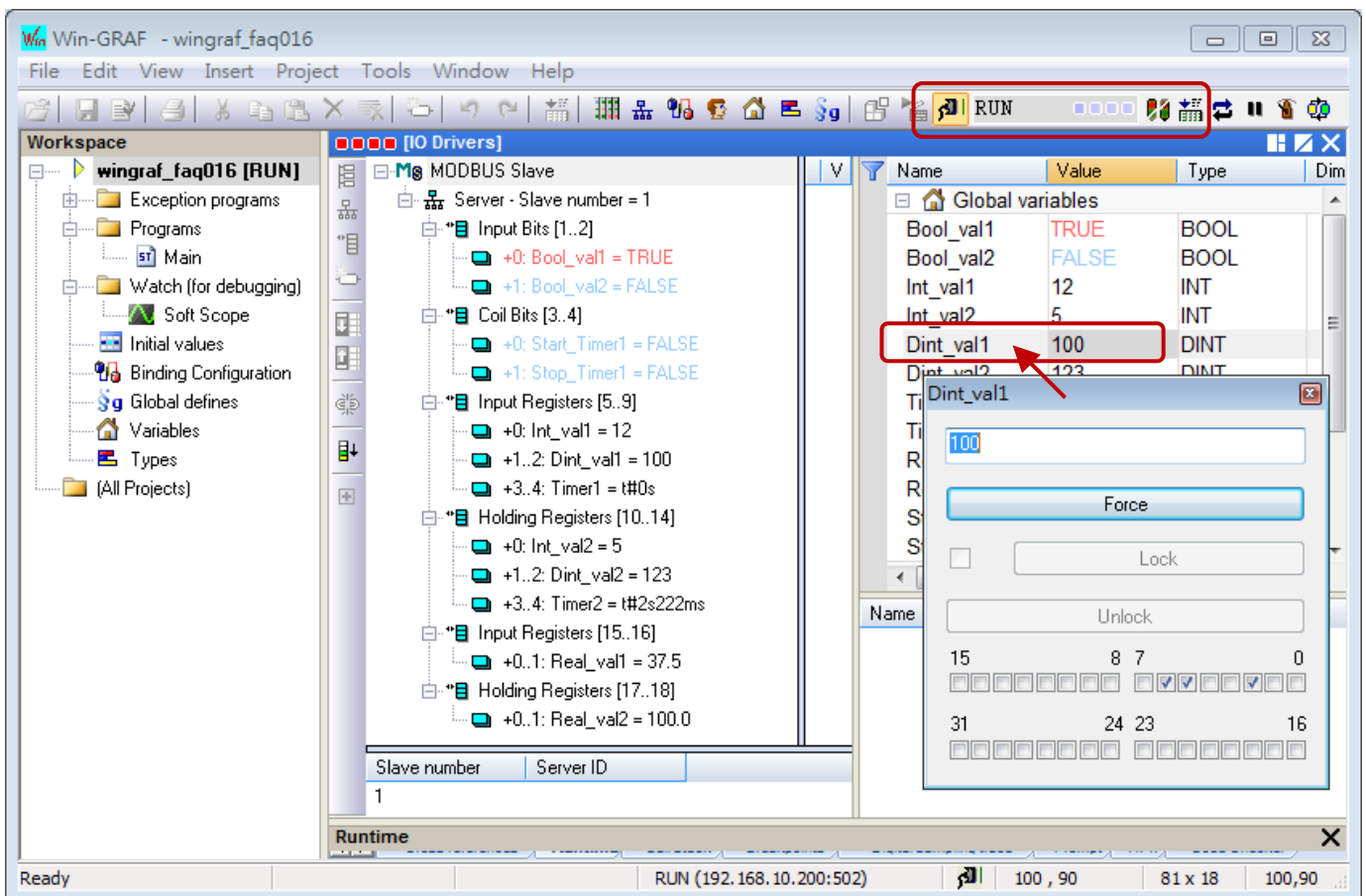


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Note: If a project has been running in your PAC, click the “Stop application” button to stop the project, and then click the “Download” button to download the “wingraf_faq016” project.



- If there is no devices connect to your PAC, you can also double click on the Win-GRAF variable and enter a value for project testing.



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1.5. The InduSoft Project

1. Unzip the “indusoft_demo.zip” file and open this InduSoft demo project (indusoft_demo.APP).
2. Click the “Comm” tab below, and then double click on “MAIN DRIVER SHEET” to view the tag settings.

The screenshot shows the InduSoft Web Studio interface. The 'Project Explorer' on the left shows the project structure with 'MAIN DRIVER SHEET' selected under 'MOTCP'. The main window displays the 'MAIN DRIVER SHEET' configuration, including a table of tag settings. The 'Comm' tab is highlighted in the bottom taskbar.

	Tag Name	Station	I/O Address	Action
	Filter text	Filter text	Filter text	(All)
1	Bool_val1	192.168.10.200:502:1	1X:1	Read
2	Bool_val2	192.168.10.200:502:1	1X:2	Read
3	Start_Timer1	192.168.10.200:502:1	0X:3	Read+Write
4	Start_Timer2	192.168.10.200:502:1	0X:4	Read+Write
5	int_val1	192.168.10.200:502:1	3X:5	Read
6	Dint_val1	192.168.10.200:502:1	DW3:6	Read
7	Timer1	192.168.10.200:502:1	DW3:8	Read
8	int_val2	192.168.10.200:502:1	4X:10	Read+Write
9	Dint_val2	192.168.10.200:502:1	DW:11	Read+Write
10	Timer2	192.168.10.200:502:1	DW:13	Read+Write
11	Real_val1	192.168.10.200:502:1	FP3:15	Read
12	Real_val2	192.168.10.200:502:1	FP:17	Read+Write

- Tag Name:** Here, we use the same tag names as the Win-GRAF variables. It is convenient for you to check out.
- Station:** Enter the current Win-GRAF PAC’s IP address (e.g., 192.168.10.200), the port number (i.e., 502) and the Slave ID (e.g., 1).
- I/O Address:** Enter the InduSoft Function Code (refer the table below) and the Modbus address of the Win-GRAF variables (refer [Section 1.2](#)).
- Action:** Choose the action option to read/write the Win-GRAF PAC.

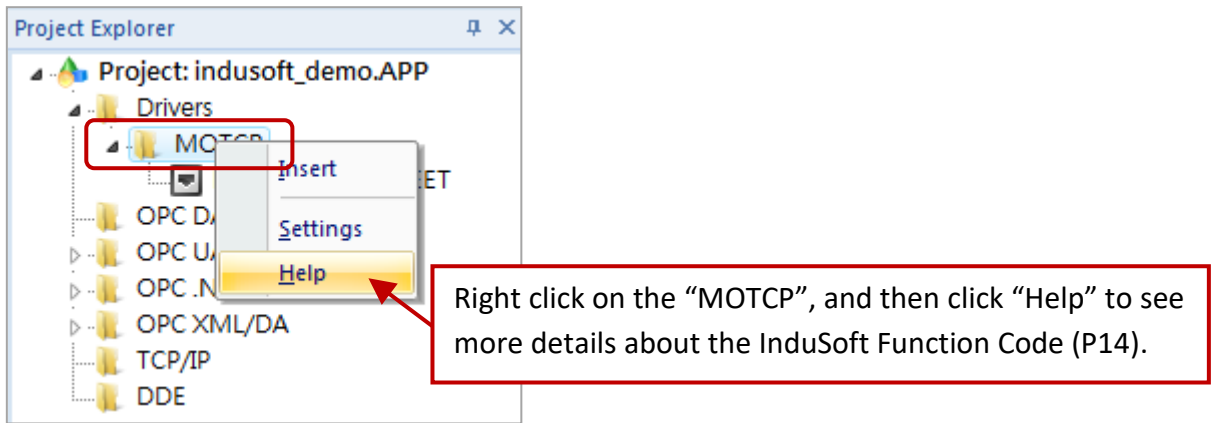
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The Tag Settings:

	Tag Name	Station	I/O Address	Action
	Filter text	Filter text	Filter text	(All)
1	Bool_val1	192.168.10.200:502:1	1X:1	Read
2	Bool_val2	192.168.10.200:502:1	1X:2	Read
3	Start_Timer1	192.168.10.200:502:1	0X:3	Read+Write
4	Start_Timer2	192.168.10.200:502:1	0X:4	Read+Write
5	int_val1	192.168.10.200:502:1	3X:5	Read
6	Dint_val1	192.168.10.200:502:1	DW3:6	Read
7	Timer1	192.168.10.200:502:1	DW3:8	Read
8	int_val2	192.168.10.200:502:1	4X:10	Read+Write
9	Dint_val2	192.168.10.200:502:1	DW:11	Read+Write
10	Timer2	192.168.10.200:502:1	DW:13	Read+Write
11	Real_val1	192.168.10.200:502:1	FP3:15	Read
12	Real_val2	192.168.10.200:502:1	FP:17	Read+Write

The corresponding table for the Win-GRAF Modbus data type and the InduSoft Function Code:

Win-GRAF Modbus Slave Request	Win-GRAF Data Type	InduSoft Function Code
Input Bits	BOOL	1X:
Coil Bits	BOOL	0X:
Input Registers	INT (16-bit)	3X:
Holding Registers	INT (16-bit)	4X:
Input Registers	DINT,TIME (32-bit)	DW3:
Holding Registers	DINT,TIME (32-bit)	DW:
Input Registers	REAL (32-bit)	FP3:
Holding Registers	REAL (32-bit)	FP:



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The Screen of the InduSoft Project:

Click the **Run** button to read/write the Win-GRAF Modbus data.



Note: Make sure that you have downloaded the Win-GRAF project to the Win-GRAF PAC.
(See [Section 1.3](#)).

