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

Download FAQ-016 Demo

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

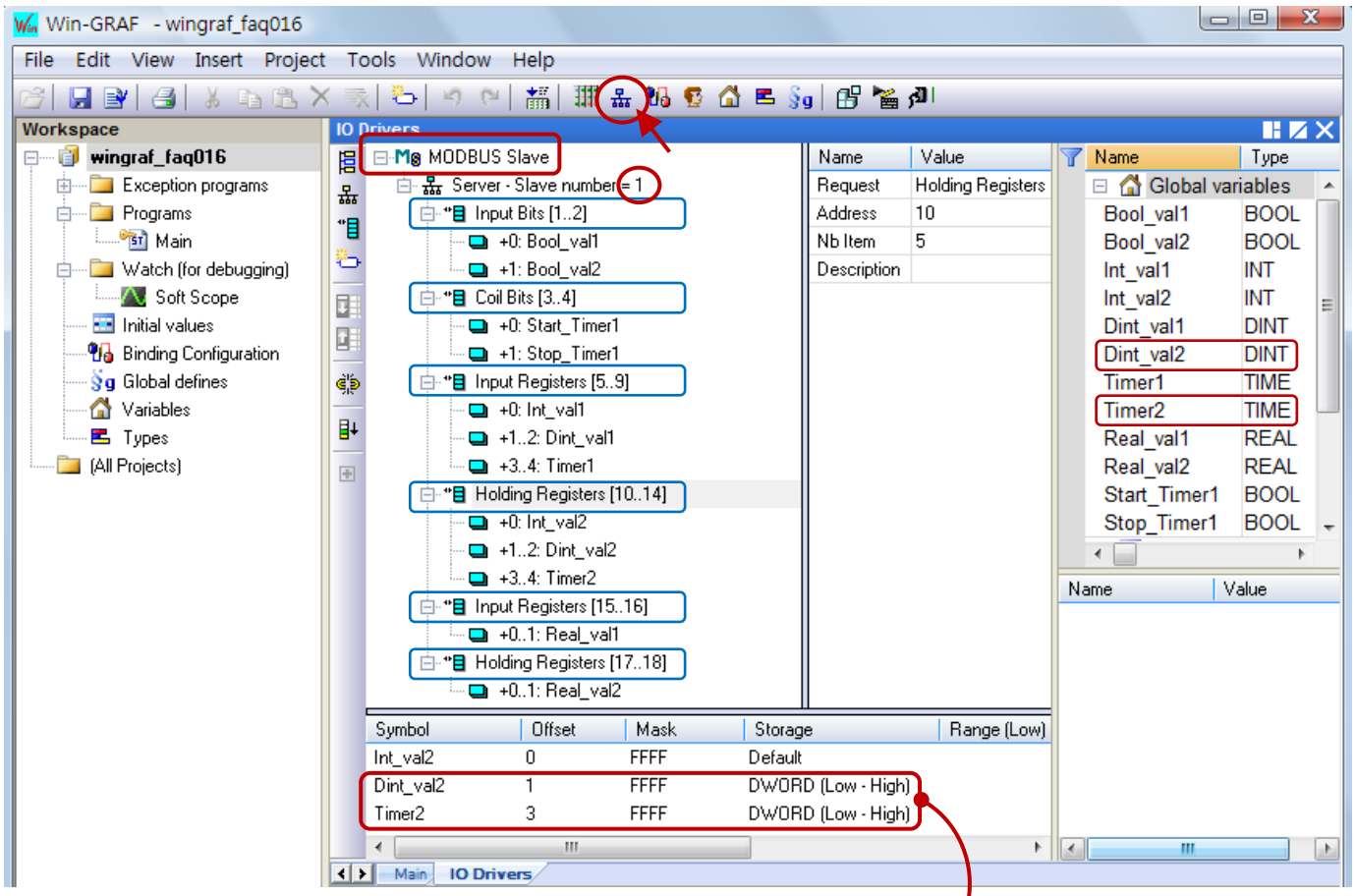
The following table listed all Win-GRAF variables that allowed the Modbus Master (i.e., InduSoft) to read/write data:

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)**.

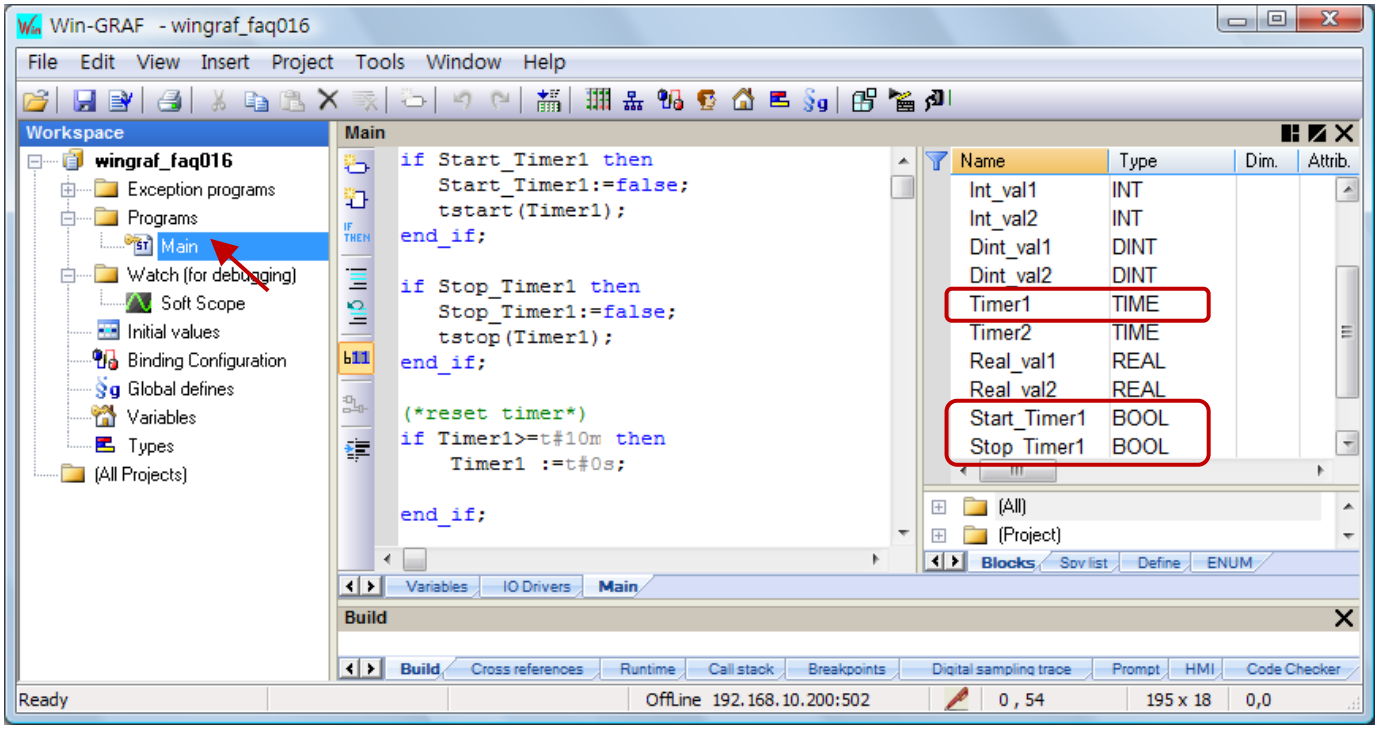
(2) When using a **32-bit** variable (e.g., DINT, TIME), it requires **two Modbus addresses**, and the "Storage" field must be set as "DWORD (Low – High).

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;

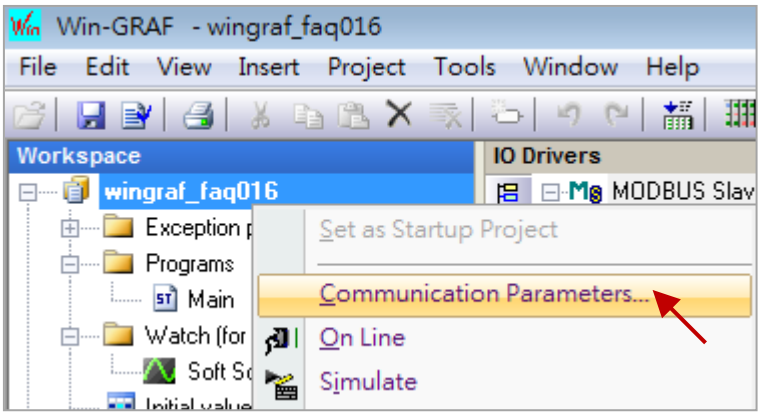
(* Reset Timer *)
if Timer1>=t#10m then
     Timer1 :=t#0s;
end_if;
```


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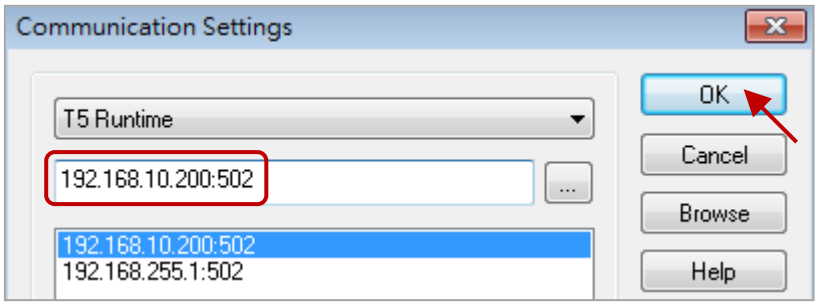
1.4. Download the Project to the Win-GRAF PAC

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

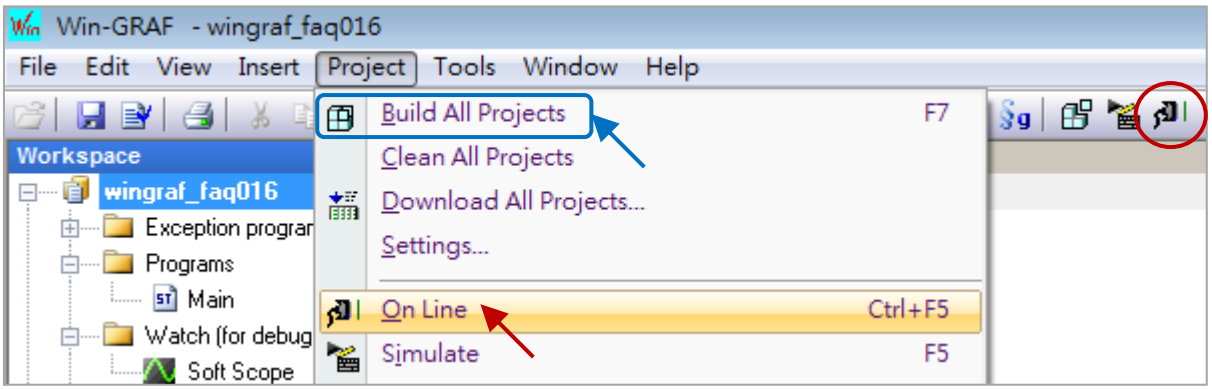
1. Mouse right-click on the project name and select “Communication Parameters…” to open the settings window.



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

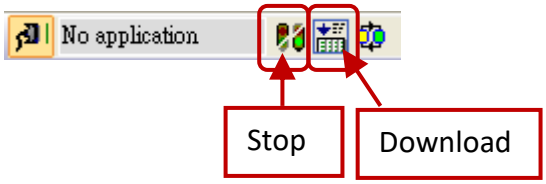


3. Before connecting to the Win-GRAF PAC, click the menu bar “**Project**” and select “**Build All Projects**” to compile the project, and then click “**On Line**” or click the tool button ( ) to establish a connection.

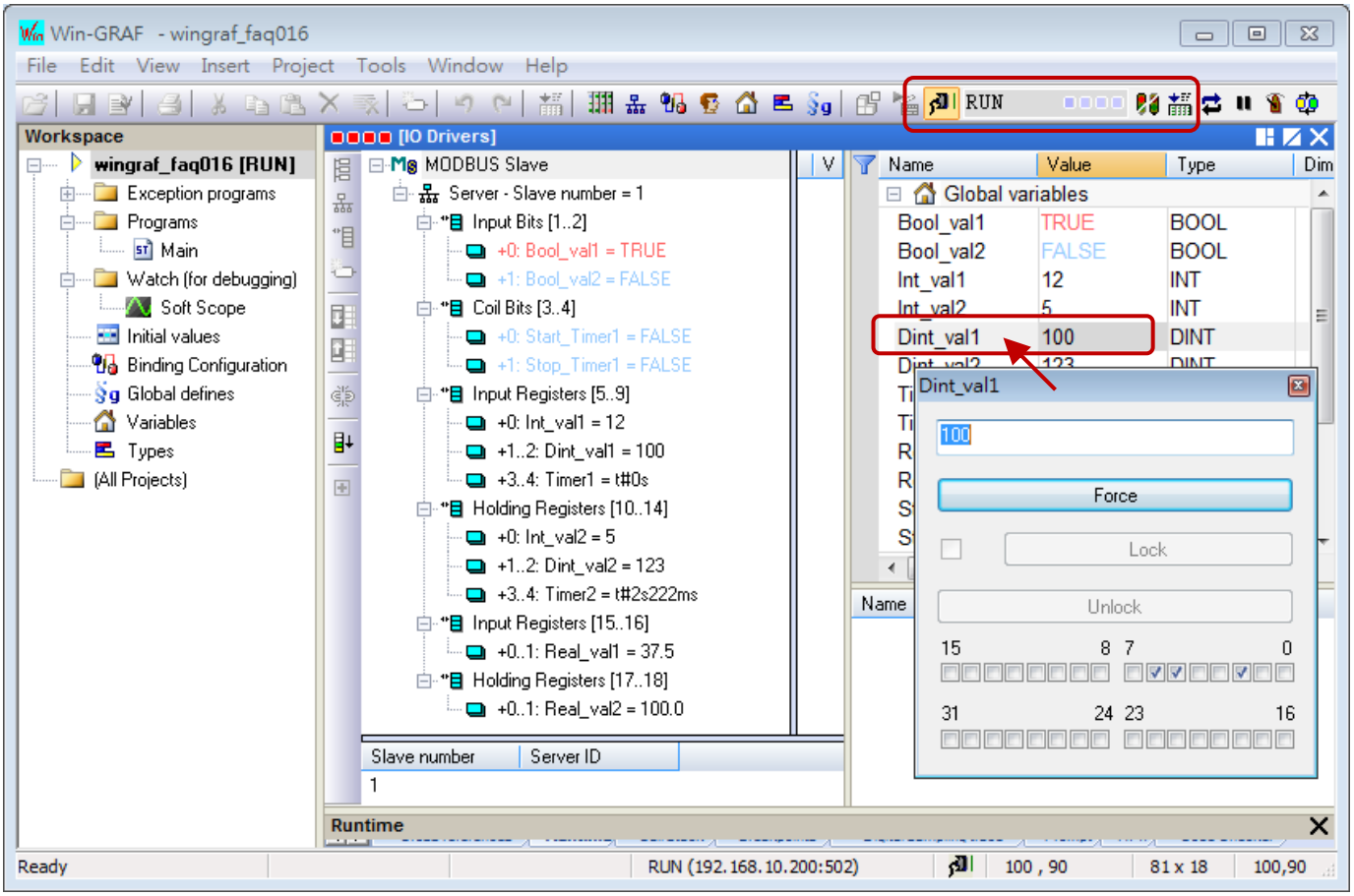


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Note: If a project has been running in your PAC, click the "Stop application" button to stop the project, and then click the "Download" button to download the "wingraf_faq016" project.



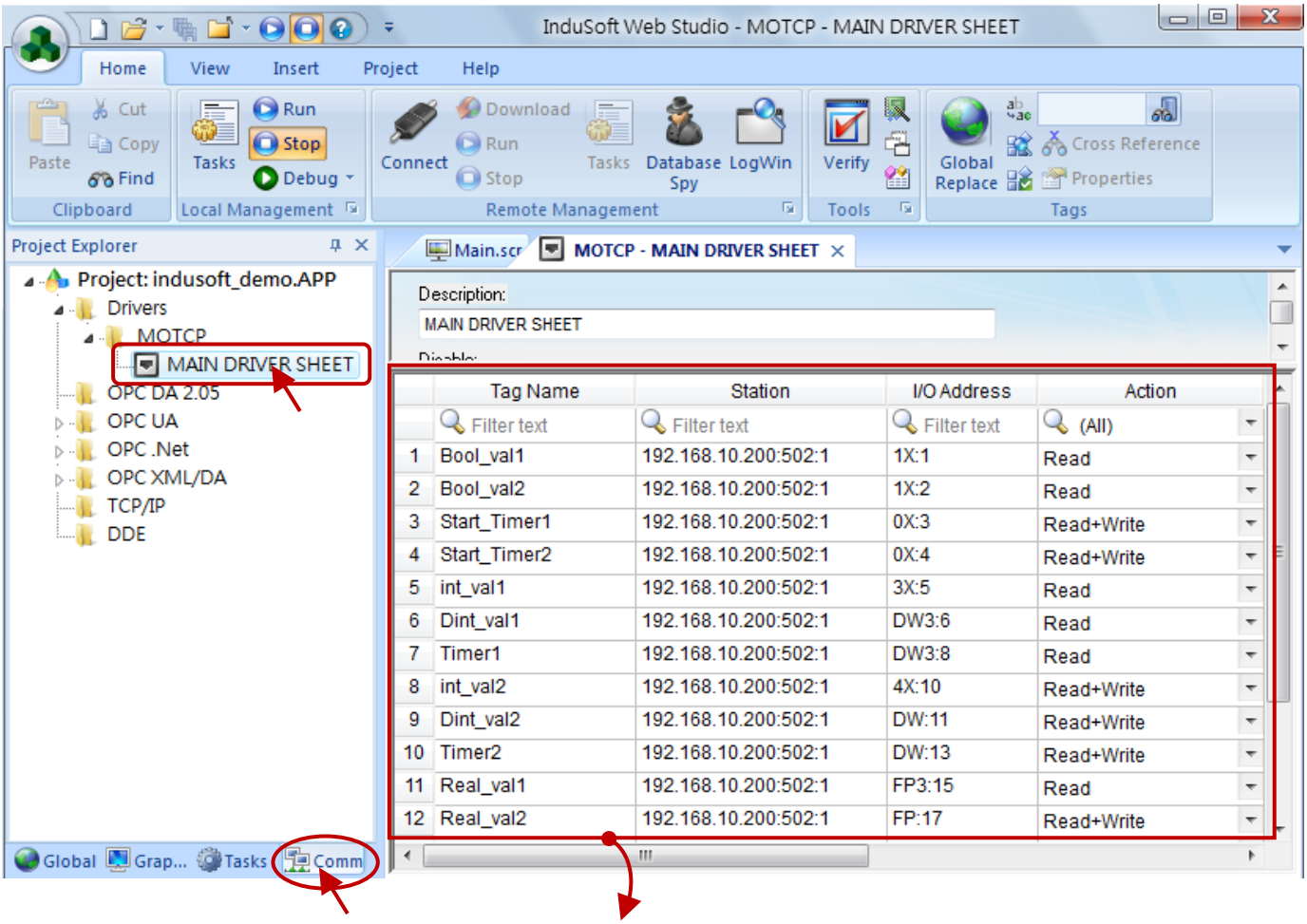
4. If there is no device connected to your PAC, you can also double click on the Win-GRAF variable and enter a value for project testing.



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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.



	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.

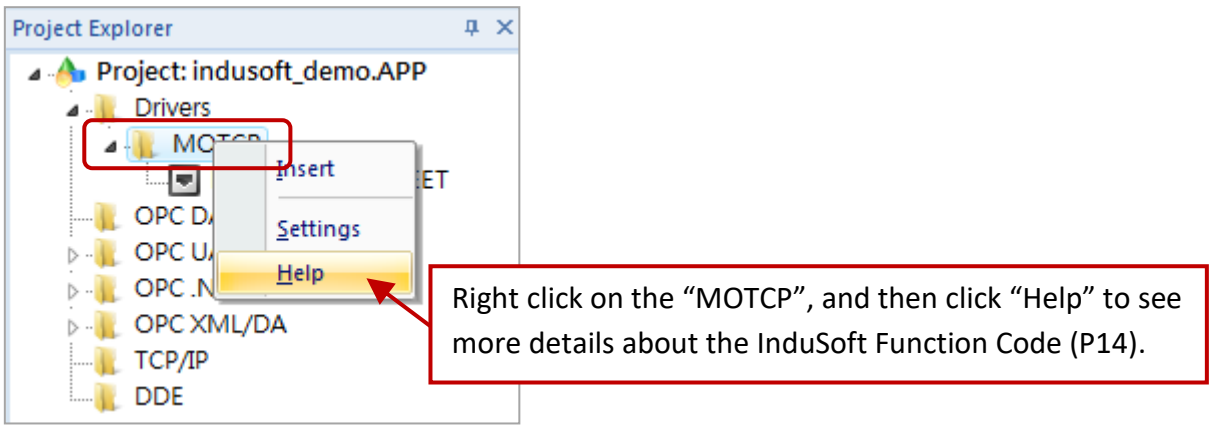
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The Tag Settings:

	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:



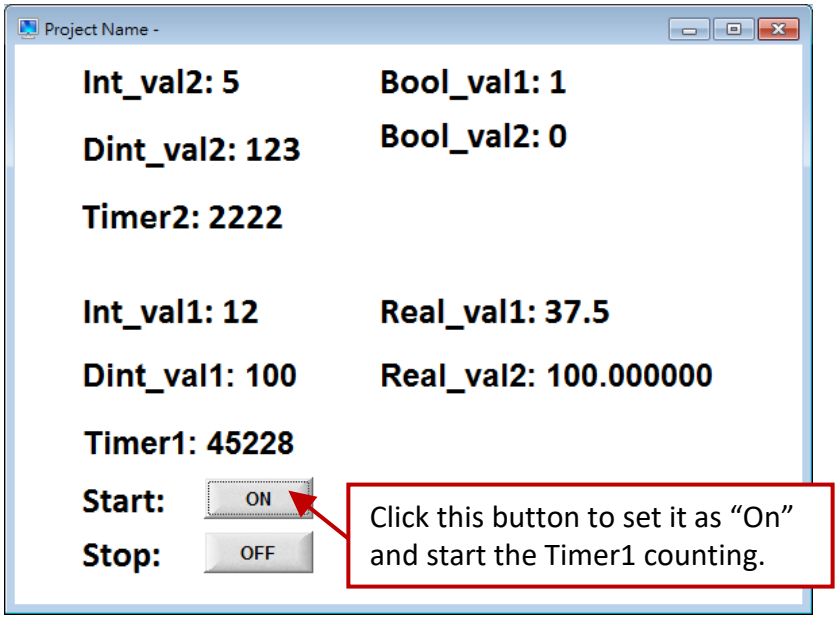
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The Screen of the InduSoft Project:

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).



Click the link for more Win-GRAF FAQ:
https://www.icpdas.com/en/faq/index.php?kind=273#840

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