Demo 4: How to use the VPD-130 to read the µPAC-7186EG's system date and time via RS-485?

In this demo, we will guide you to use the VPD-130 to read the µPAC-7186EG's system date and time. Before starting, make sure you have downloaded the "ISaGRAF demo (get_time.pia)" into the µPAC-7186EG and installed the HMIWorks software. (HMIWorks, the free development software for TouchPAD).

This paper is the ISaGRAF FAQ-147. User can download the document and demo programs from http://www.icpdas.com/faq/isagraf.htm > 147.

718xEG/XG Getting Started:
http://www.icpdas.com/products/PAC/i-8000/isagraf/download/english_manu/718xegxg_getting_started_english.pdf
If you do not know how to restore and download the demo, please refer to section 3.15 to restore the ISaGRAF demo, and then refer to section 2.4 & 2.5 to download the demo to the ISaGRAF PAC.

VPD-130:
http://www.icpdas.com.tw/product/solutions/hmi_touch_monitor/touchpad/vpd-130.html
In the VPD-130 Web Page, you can look for the product specification, download the HMIWorks software and related user manuals.

HMIWorks:
http://ftp.icpdas.com/pub/cd/touchpad/setup/
You can just click the link to download the latest version of HMIWorks.

Getting Started Manual:
http://ftp.icpdas.com/pub/cd/touchpad/document/english/getting_started/
You can learn the software installation and other demos in this manual.

More TouchPAD Products:
www.icpdas.com.tw > Product > Solutions > HMI & Touch Monitor > TouchPAD

1.1. Demo Description

In this demo, we will use the TouchPAD (VPD-130) to read the ISaGRAF PAC's (µPAC-7186EG) system date and time via RS-485.

Hardware Devices：

The VPD-130 and µPAC-7186EG are used in demo4.
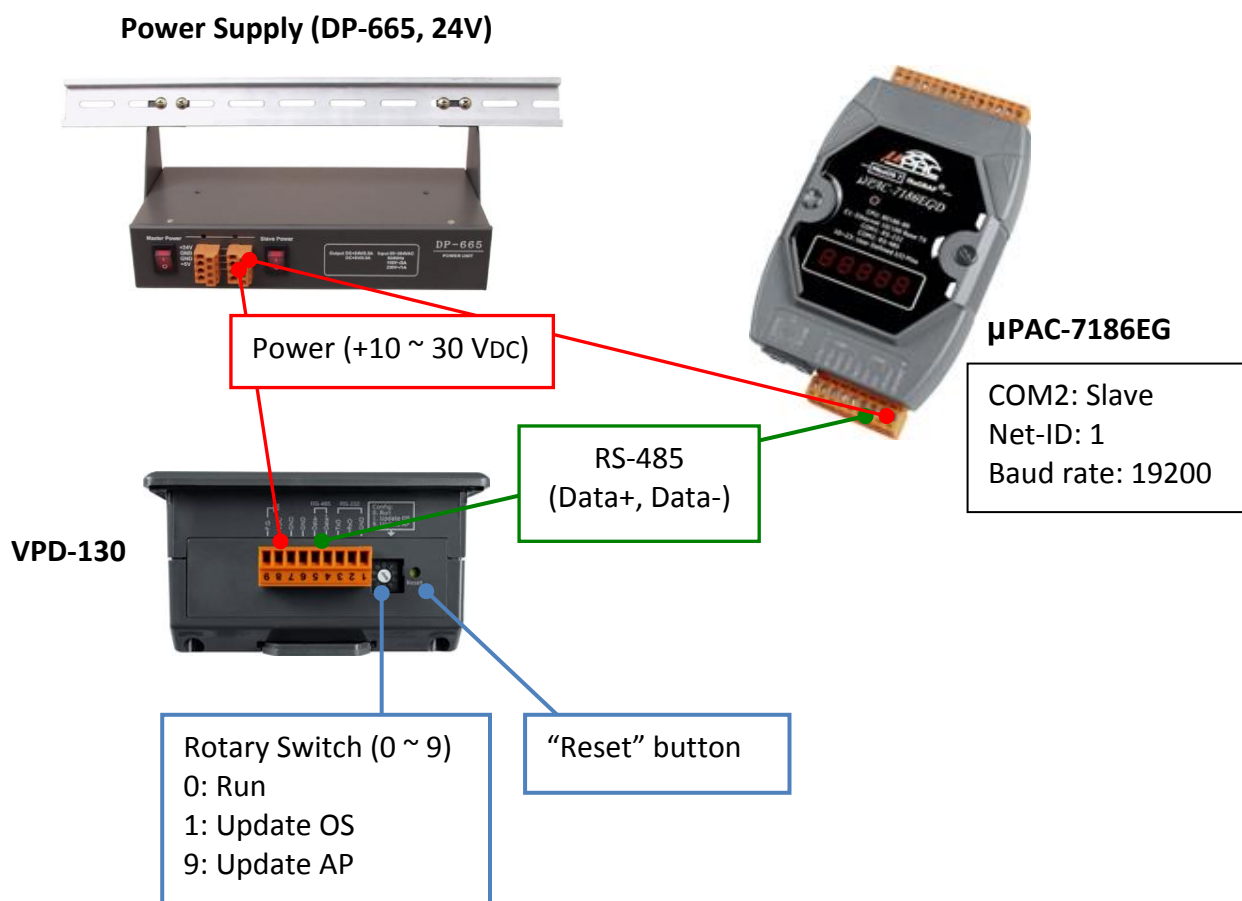
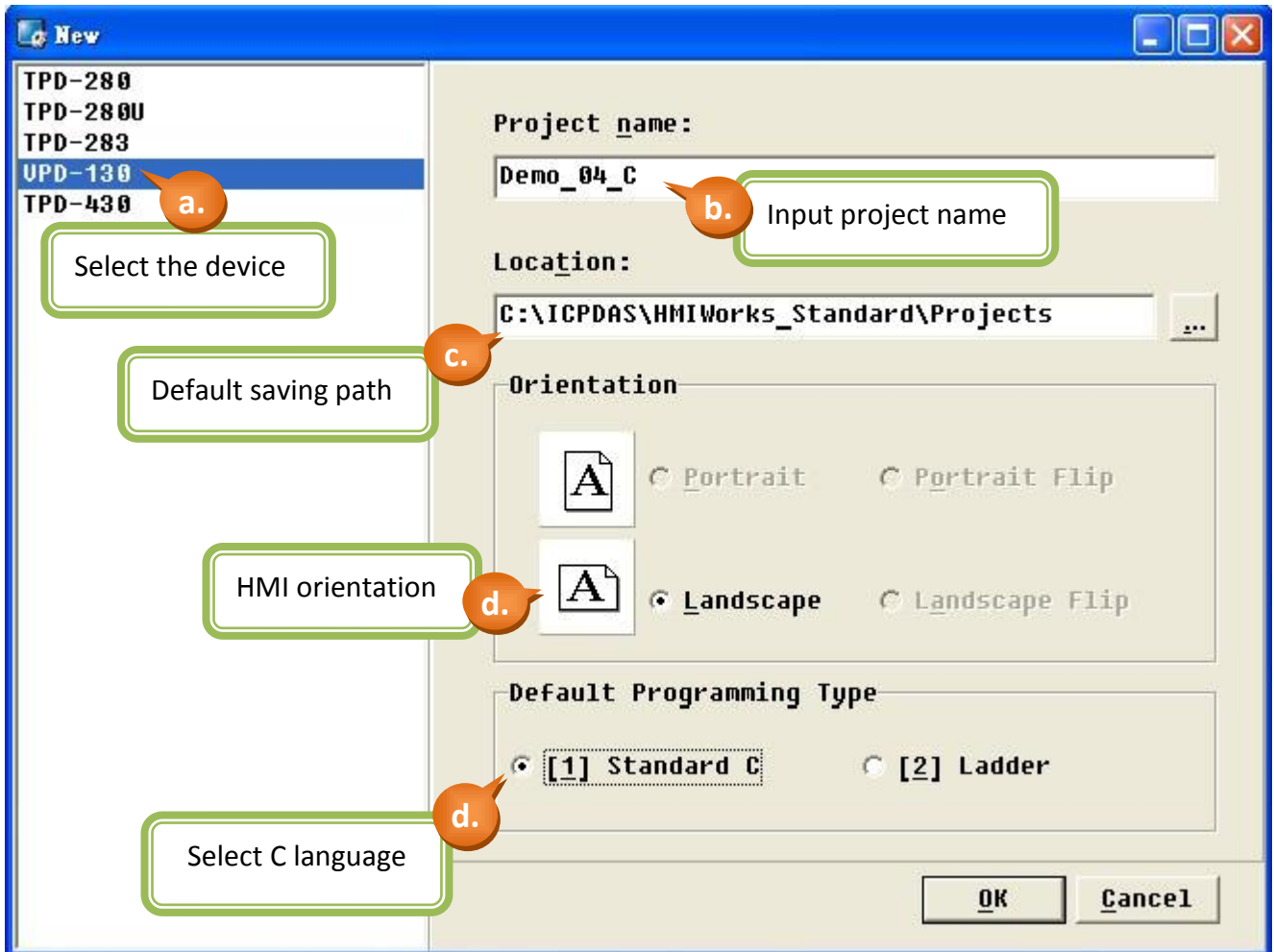**Power Supply (DP-665, 24V)**

Power (+10 ~ 30 V$_{DC}$)

µPAC-7186EG

COM2: Slave
Net-ID: 1
Baud rate: 19200

RS-485
(Data+, Data-)

VPD-130

Rotary Switch (0 ~ 9)
0: Run
1: Update OS
9: Update AP

"Reset" button

1.2. HMI Page Design

**Step 1. Open "HMIWorks" and create a new VPD-130 project using C language.**

Mouse click on "File > New…" in the menu-bar to create a new project, and then the "New" window will show as below.

Step 2. Create a "Label".

In this demo, we required seven labels used to show – the year, month, day, week, hours, minutes and seconds.

a. (As figure below) In the left side of Work Area – "Toolbox - Widget (Ctrl+2)", click the "Label" and then drag the mouse to draw a rectangle into the HMI Design Area.
b. You can repeat this step to draw seven rectangles or use the Copy (Ctrl+c) & Paste (Ctrl+v) way.

Work Area

Workspace Toolbox

HMI Design Area

Attribute Area
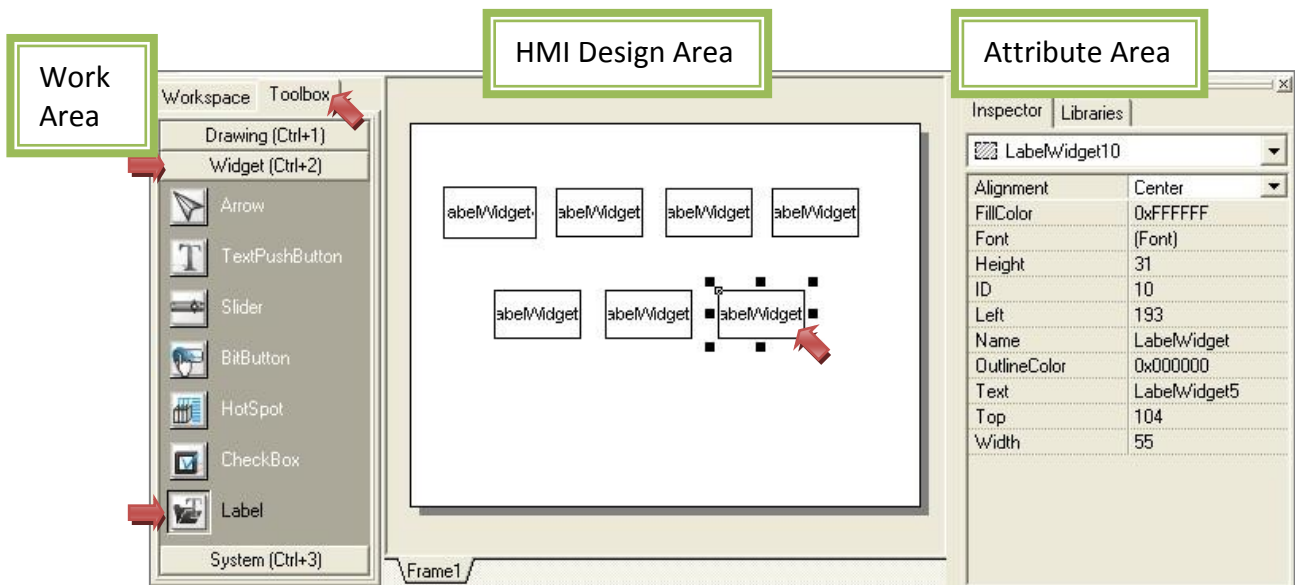
Step 3. Create a "Timer".

The component, Timer, is used to read system date and time once per second.

a. In the left side of Work Area – "Toolbox - System (Ctrl+3)", click the "Timer" and then click on the HMI Design Area; it will generate a "Timer" icon automatically. (After you have downloaded the program to the VPD-130, this icon is invisible).

b. In the right side of Attribute Area – "Inspector – Interval", you can set up the Timer interval (1000 = 1 s).
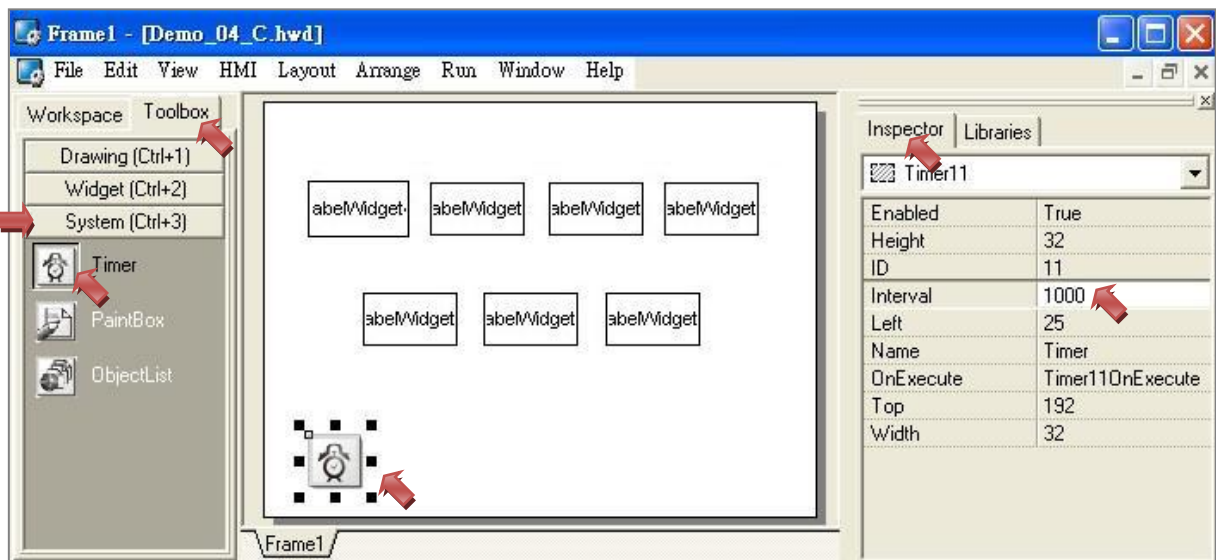
1.3. Programing C program

In the previous section, we have created the required component. Now, we will start programming with C language to achieve the function for reading system date and time. In this demo, you can refer the VPD-130 Web Page to look for related API Function.

Step 1. Create "OnCreate" program.

a. Click on the blank space in the HMI Design Area and then click "Inspector > OnCreate" in the right side of Attribute Area, then double-click on the blank field to open the editing window.
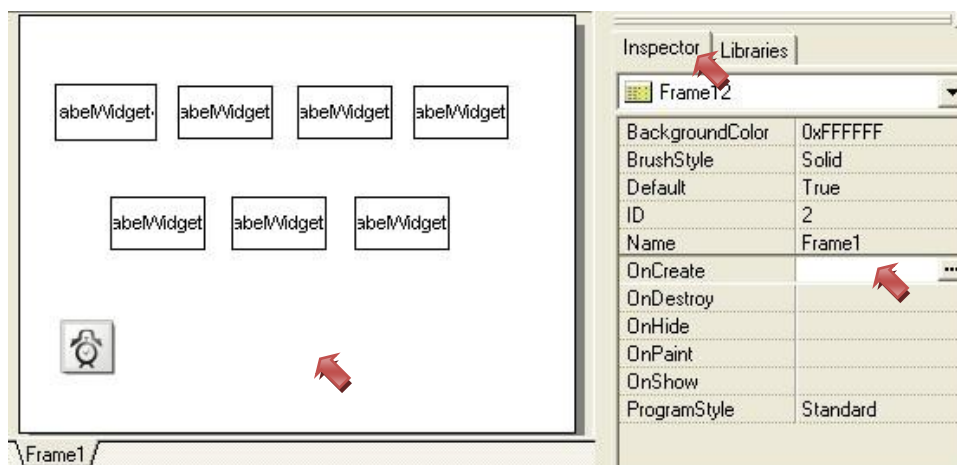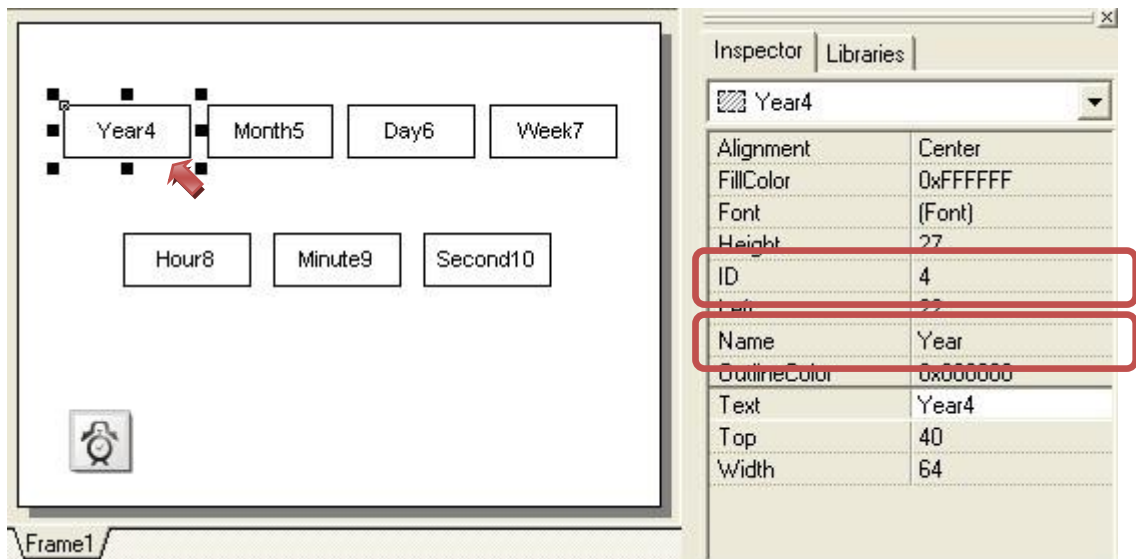

b. In the Program Editing Window, you can start to edit the program. Afterward, click on the menu-bar "File > Save & Close" to save it if the program has been completed.
Important Note: The variable name (selected as figure below) must be the same as the "Name + ID" property of the label (e.g. "Name + ID": Year4).
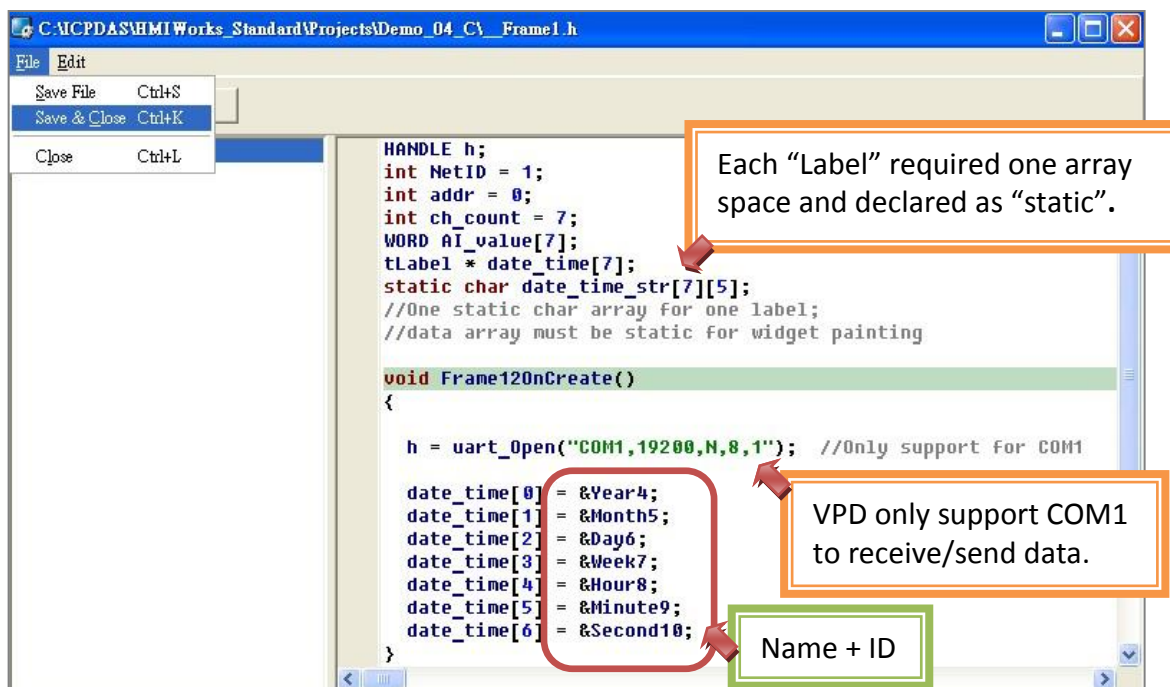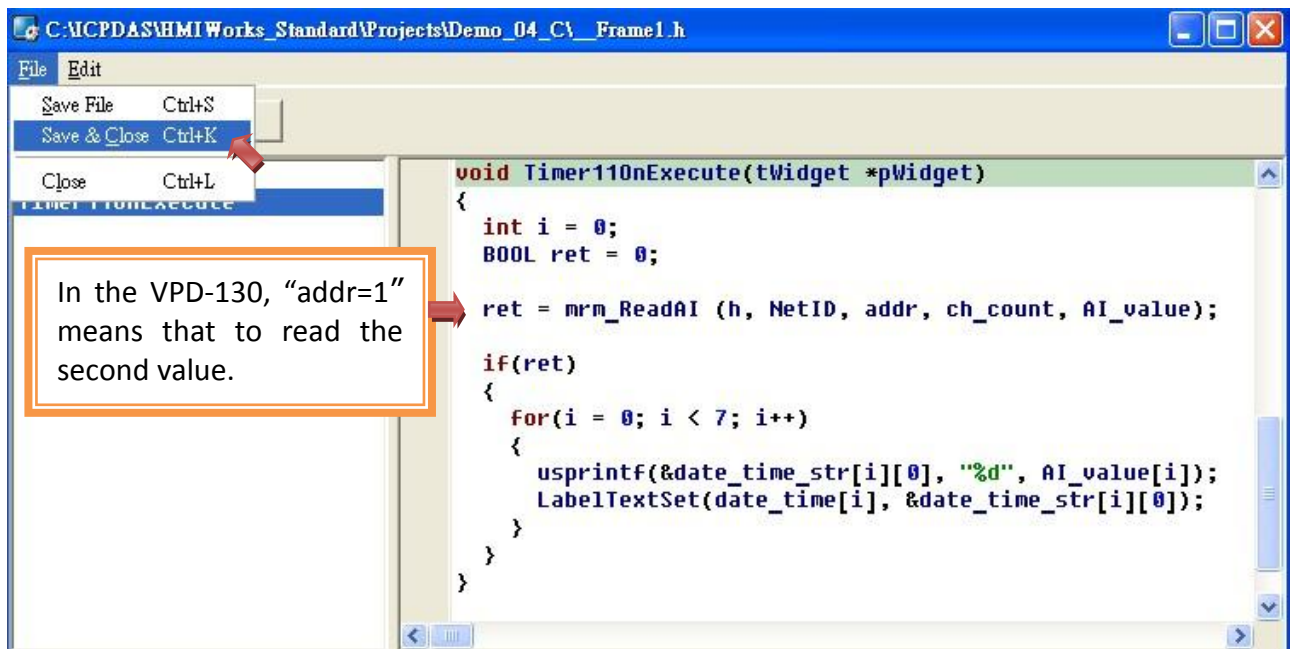
c. **Thus**, modify the property name of Label in the "Name" and "ID" field. (e.g. Year4).


Step 2. Create "Timer" program.

a. In the HMI Design Area, double-click the "Timer" 🕰 to open the program editing window.
b. In the Program Editing Window, start to programming and then click "File > Save & Close" in the menu-bar if you have completed the program.


In the VPD-130, "addr=1" means that to read the second value.

```
void Timer11OnExecute(tWidget *pWidget)
{
    int i = 0;
    BOOL ret = 0;

    ret = mrm_ReadAI (h, NetID, addr, ch_count, AI_value);

    if(ret)
    {
        for(i = 0; i < 7; i++)
        {
            usprintf(&date_time_str[i][0], "%d", AI_value[i]);
            LabelTextSet(date_time[i], &date_time_str[i][0]);
        }
    }
}
```

Step 3. Create "OnDestroy" Program.

a. Click on the white space in HMI Design Area and click "Inspector > OnDestroy" in the right of the Attribute Area then double-click the blank field to open the Program Editing Window.
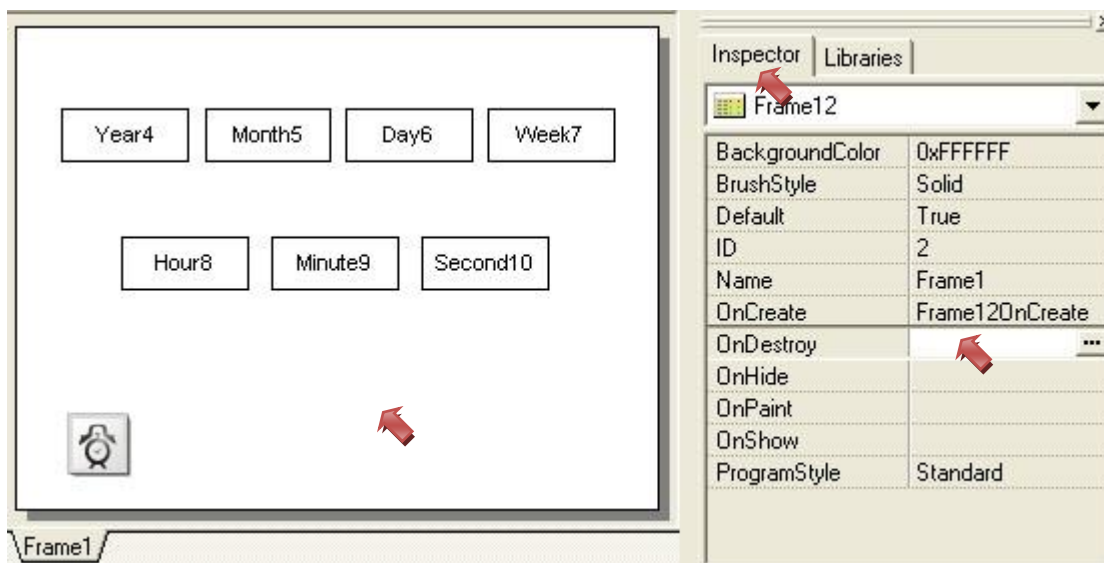
b. In the Program Editing Window, start to programming and then click "File > Save & Close" in the menu-bar if you have completed the program.
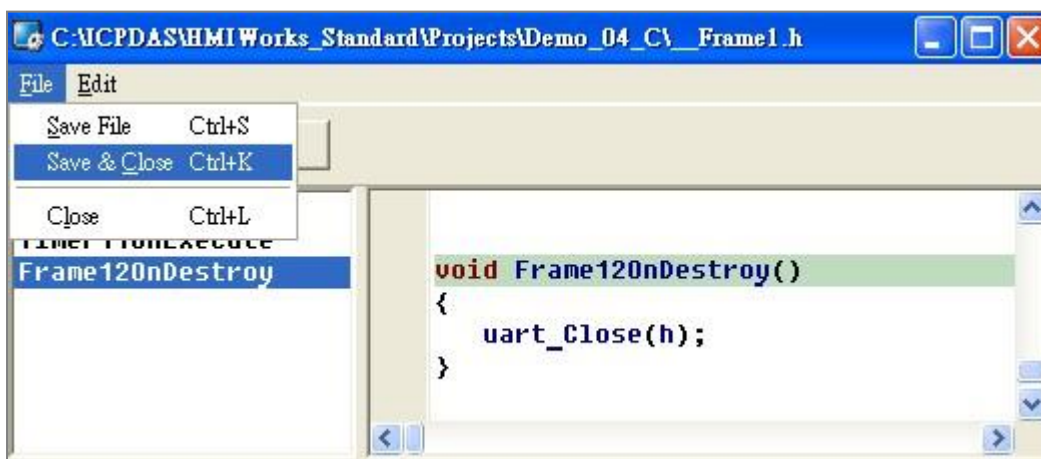
Now, you have finished the programming. In next section, we will introduce how to compile and download the demo into VPD-130.

1.4. Compile and Download a Program

Step 1. Click "Run > Build & Rendering" to compile the program.

At the first compile, please run "Build & Rendering" to make sure the program is correct and then download it. (Next time, you can just click "Run (Build & Download)" to compile and download it).


> If the program is incorrect, it will show the error message here.
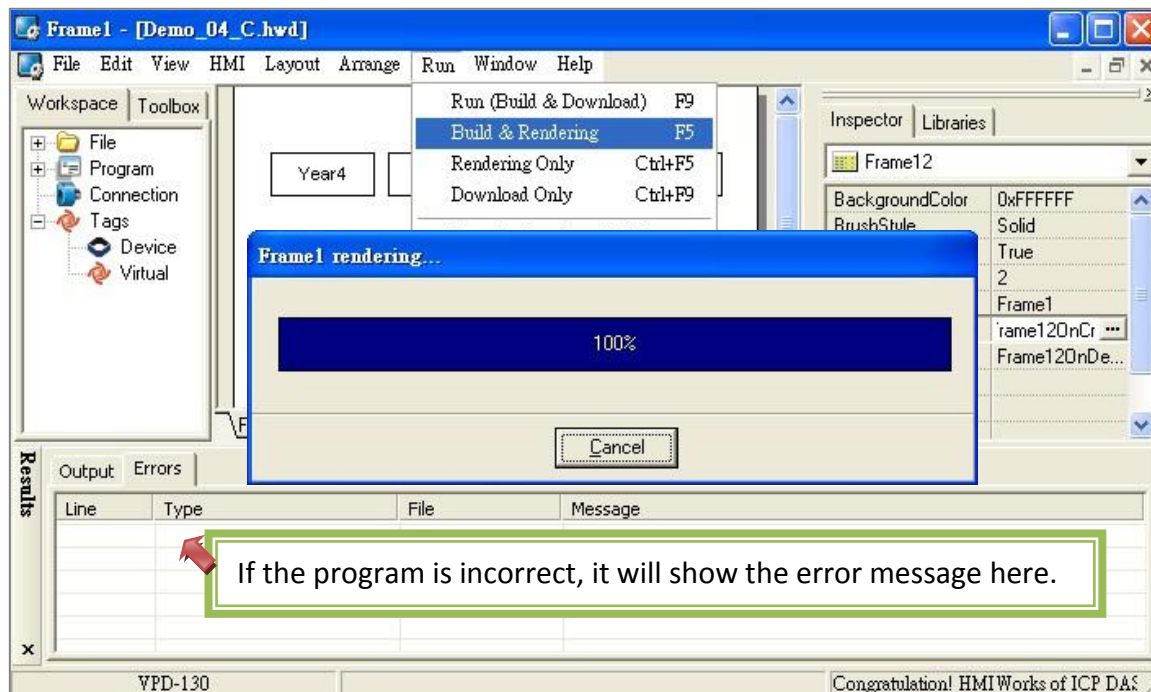
Step 2. Click "Run" > "Download Only" to download the program.

Before downloading, please connect the USB download cable to your PC and VPD-130, then turn the rotary switch (on the bottom of VPD-130) to "9" and then press "Reset" button to restart the VPD-130. **(Important Note: The VPD-130 only supports for USB download. Please refer to TouchPAD Getting Started Manual to install the USB driver)**

(VPD-130's screen)
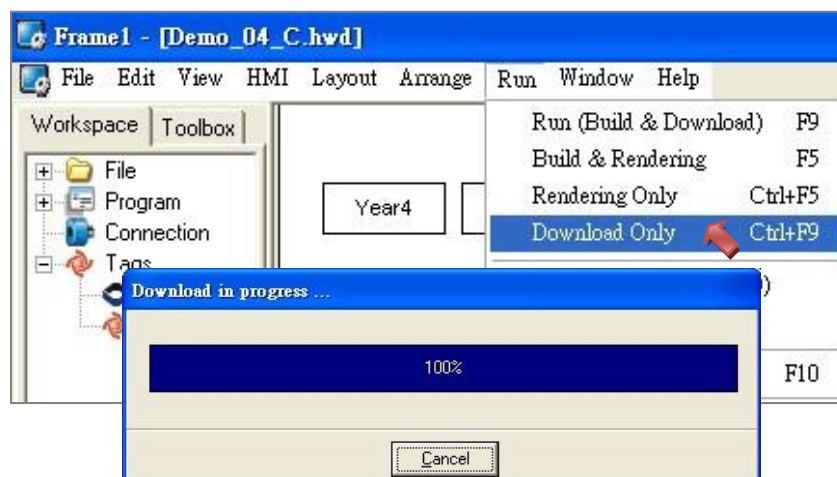
** (After downloading, turn the rotary switch to 0 and restart the VPD-130)

1.5. ISaGRAF Demo

In the previous section, we have downloaded the Demo4 successfully and you can see the ISaGRAF PAC's system date and time showing on the VPD-130. Now, we will briefly introduce the ISaGRAF demo.

If you already restored the ISaGRAF demo, you can see "get_time" in "Project Management".