ISaGRAF Controller displays message to EKAN-Modview LED

Please visit http://www.icpdas.com/products/HMI/led/ekan.htm for more information.

Wincon-8xx7/8xx6 or I-7188EG/XG or I-8xx7 can support Modbus RTU Master protocol (RS-485)

EKAN LED (ordering information EKAN-ME122M / ME124M) supports Modbus RTU Slave protocol at its RS-485 port. User may connect Wincon-8xx7/8xx6 or I-7188EG/XG or I-8xx7 's Modbus RTU Master port to one or up to 32 EKAN LED's Modbus RTU Slave port.

Please refer to **Appendix A** & **Appendix E** for the pin assignment.

This paper shows an ISaGRAF demo program to link W-8337 to EKAN - "Modview".The IsaGRAF demo program can be download at http://www.icpdas.com/faq/isagraf.htm FAQ-045 or at ftp://ftp.icpdas.com/pub/cd/Ekan/ModView/Sample/ISaGRAF/ "Wdemo_35" ftp://ftp.icpdas.com/pub/cd/wincon_isagraf/napdos/isagraf/wincon/demo/ "Wdemo_35"

This demo program can also be applied in the i-7188EG/Xg & i-8xx7 controllers. Please modify the IsaGRAF program 's "mbus" port setting & "mbus_n_w" & "mbus_b_w" 's "Slave" setting to a proper value related to the correct port been used.

You may refer to ISaGRAF User's Manual Chapter 9.5 to restore this demo program to your IsaGRAF Workbench, and refer to Chapter 2.1 to learn more about IsaGRAF if you are not familiar with IsaGRAF programming. The complete IsaGRAF manual can be download at http://www.icpdas.com/products/PAC/i-8000/isagraf.htm)

EKAN has two firmware, one is Modview, one is Dlite. Modview can be controlled by Modbus protocol. To update your EKAN's firmware to become Modview, please download the Modview firmware first , Ver. 1.06 or later, at http://www.icpdas.com/products/HMI/led/Download.htm . Then Please follow steps listed in the "**ReadMe.txt**" or **Appendix B** to update Modview firmware to your EKAN.

The EKAN's IP & Mask address can be modified by 7188xw.exe utility. Please refer to Appendix B or the above "ReadMe.txt" to set proper IP & Mask address.

After you update Ekan firmware to become Modview, you may running Internet Explorer, type the EKAN's IP address, for instance, "10.0.0.104", then click the "Modview TCP/RTU ..." to modify the related setting, for example, COM2:RS485's baud rate.
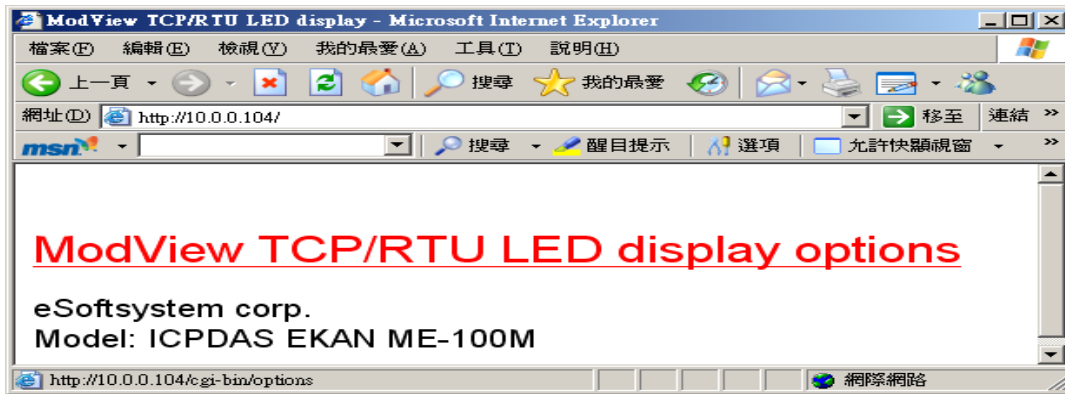
The following steps list how to program an ISaGRAF project to control Ekan – Modview.

Step 1: Connect "mbus" in the IsaGRAF I/O connection windows. Please modify "port_no" to the Port No of your Wincon.   The default baud rate, parity & Stop_bit setting of EKAN is 9600, 8, 0, 1
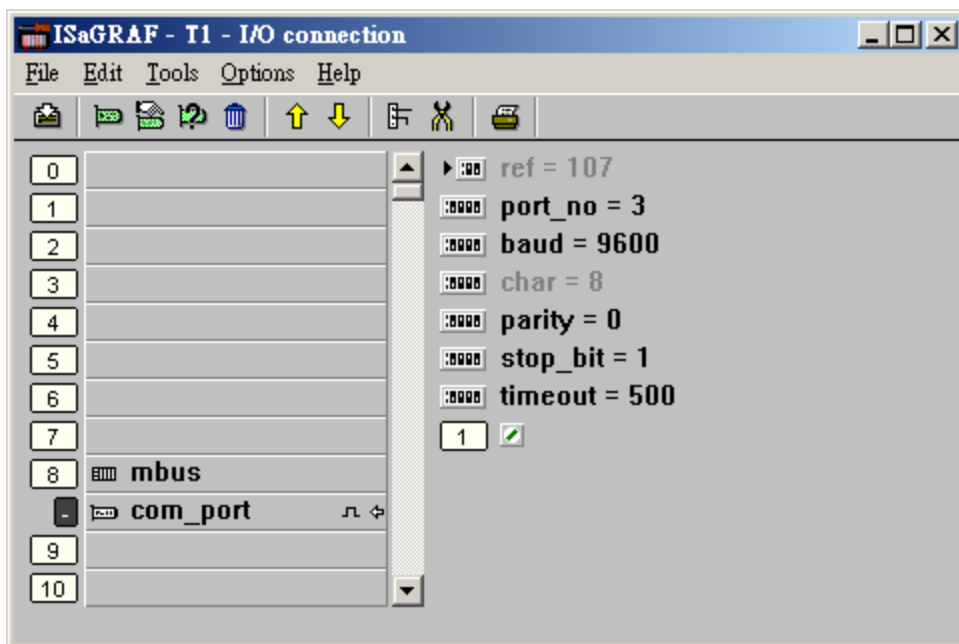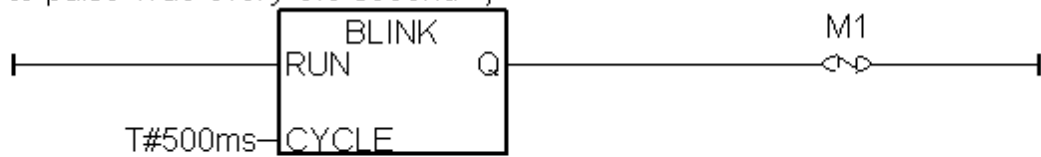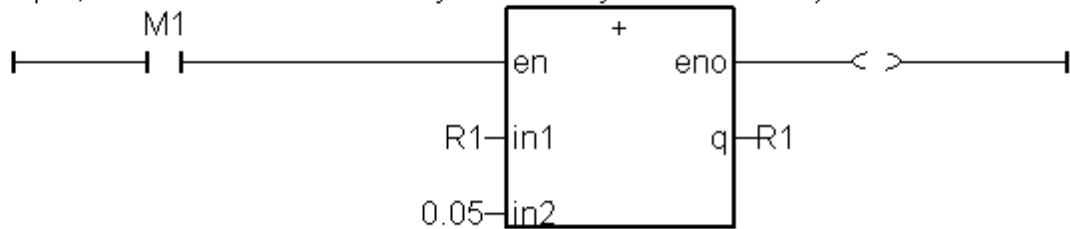

Step 2: Declare IsaGRAF variables

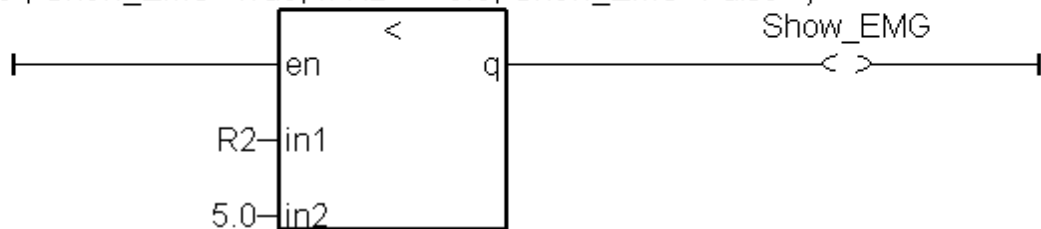| Name	Type	Attribute	Description
M1	Boolean	**Internal**	Triggered to pulse True every s0.5 econd
OK1	Boolean	**Internal**	
R1	Real	**Internal**	Real value1 to display to EKAN
R2	Real	**Internal**	Real value2 to display to EKAN
Show_EMG	Boolean	**Internal**	If = True, show 1st Emergency Message, controlled by R2 in LD1 program

Step 3: Create a Ladder program – LD1 as below

(* Triger M1 to pulse True every 0.5 second *)

```
                    +--------------+
                    |    BLINK     |              M1
          +---------|RUN        Q  |------------+  /  +-----+
          |         |              |            |  \  |
          |         |              |
          |  T#500ms|CYCLE         |
          |         +--------------+
```

(* In this example, R1 value will increase by 0.05 every 0.5 second *)

```
      M1                   +--------------+
  +---| |----+-------------|      +       |
                           |en         eno|-------< >-----------+
                           |              |
                        R1-|in1         q |-R1
                           |              |
                      0.05-|in2           |
                           +--------------+
```

(* if R2 < 5.0 , Show_EMG=True, if R2 >= 5.0, Show_EMG=False *)

```
                    +--------------+           Show_EMG
                    |      <       |             < >
          +---------|en         q  |------------+   +----------+
                    |              |
                 R2-|in1           |
                    |              |
                5.0-|in2           |
                    +--------------+
```
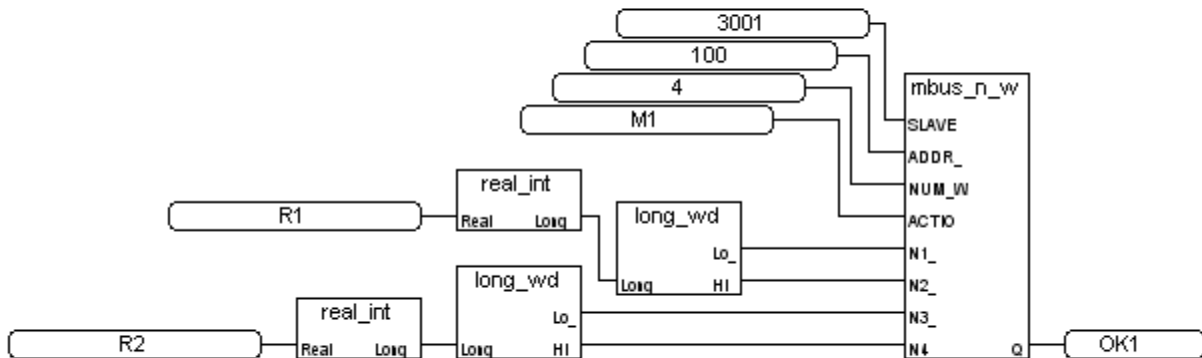
Step 4: Create a Function block program – FBD1 as below

Write two REAL value (4 words) to EKAN - Modview's variable addr starting from 100 every 0.5 second
    when M1 is trigerred , Using modbus call =4 , EKAN Modview's Net-ID = 1

Write one Boolean value of "Show_EMG" to EKAN Modview's Emergency Message address of 300 every 0.5 second
    when M1 is trigerred , , Using modbus call = 5 , EKAN Modview's Net-ID = 1
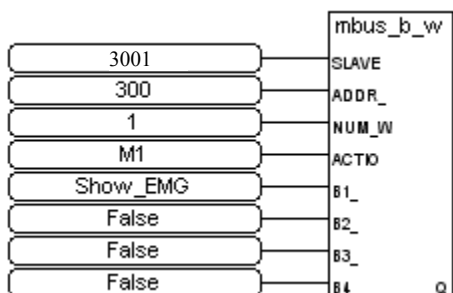
M1 is triggered to a pulse True every 0.5 second in "LD1". So the "mbus_n_w" will write 4 word values (two Real value, one Real value contains two words) to EKAN every 0.5 second.
EKAN – Modview's RegVar1 to RegVar64 's Modbus address is default at 100 to 227, each is format as REAL (32-bit float value, occupy 2 Modbus address)

And "mbus_b_w" will write one "Show_EMG" boolean value to EKAN Modview's Emergency message address 300 every 0.5 second. If "Show_EMG" = True, the 1st Emergency Message will be displayed, if value=False, desplay regular Message.
(EKAN Modview's Emergency message is contr by Modbus address 300 to 319, max 20 emergency message, set the related boolean to True will display the related message)

Note:
1. Please don't always write Modbus command to EKAN, EKAN's display will be hold.
2. Please write Modbus Command to EKAN periodic, for example, once every second, or once every 500 ms, or once ervery 2 seconds, like this example does.

Step 5: Download this IsaGRAF project to your Wincon-8xx7 or Wincon-8xx6.
(Please refer to IsaGRAF User's Manual, chapter 9.5 & Chapter 2.1 to learn about IsaGRAF
http://www.icpdas.com/products/PAC/i-8000/isagraf.htm)

EKAN Modview demo program:

This demo program can be download at http://www.icpdas.com/faq/isagraf.htm FAQ-045 or at
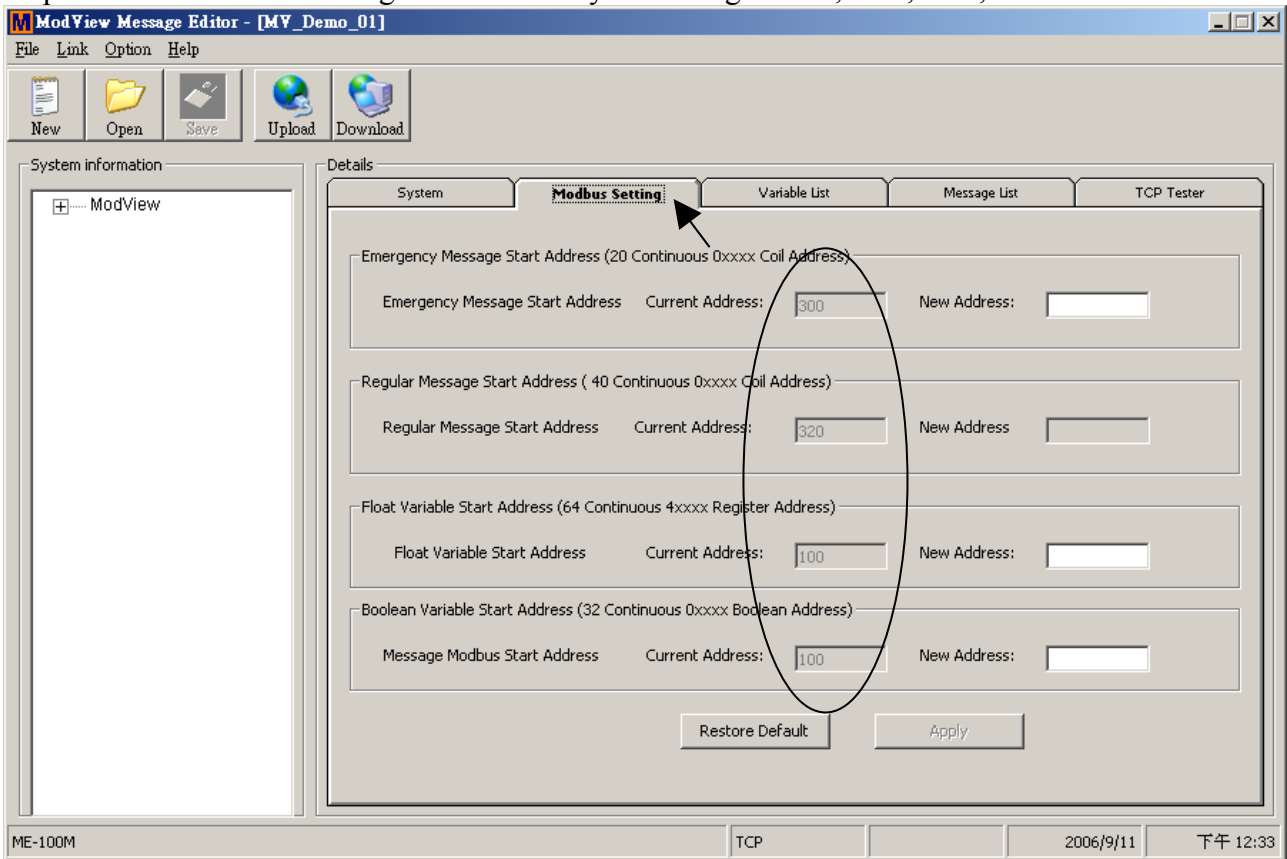ftp://ftp.icpdas.com/pub/cd/Ekan/ModView/Sample/ISaGRAF/ "MV_Demo_01.mvp"

Step1: Run "eSoftsystem" - "Modview" to create a new Modview project
If you don't install it, please run EKAN CD-ROM: \Napdos\EKAN\Modview\Setup.exe
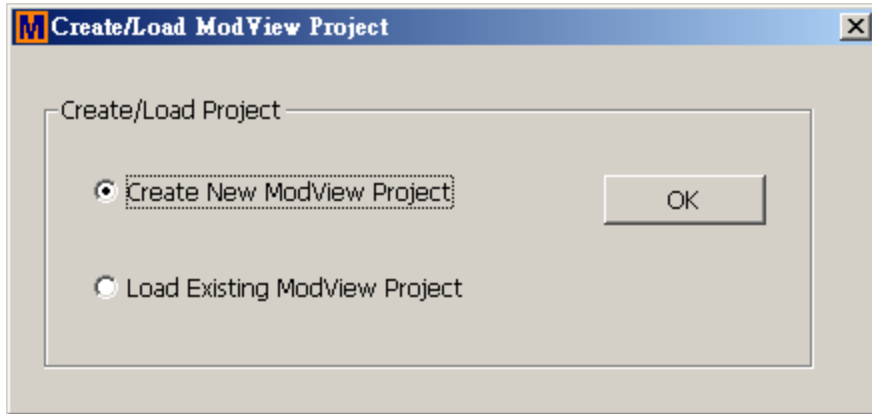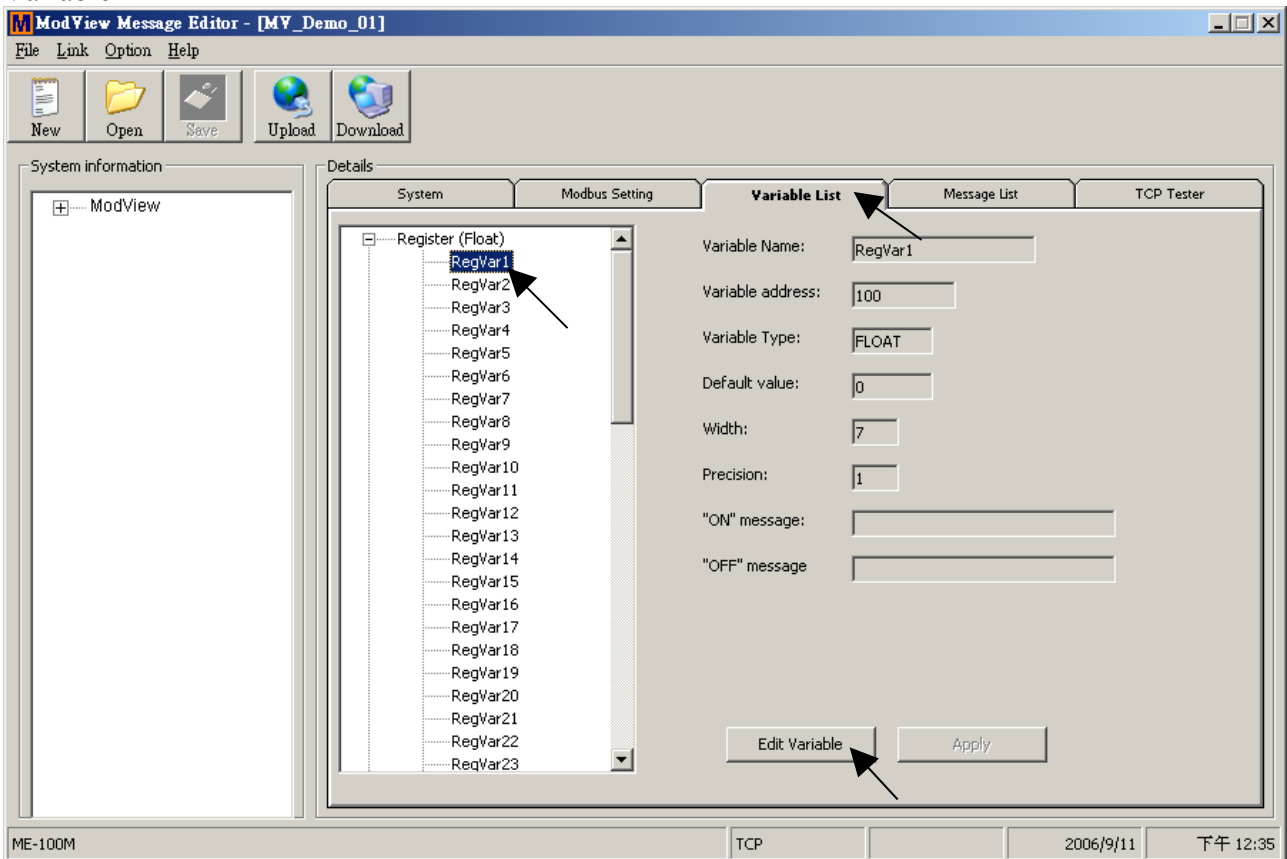

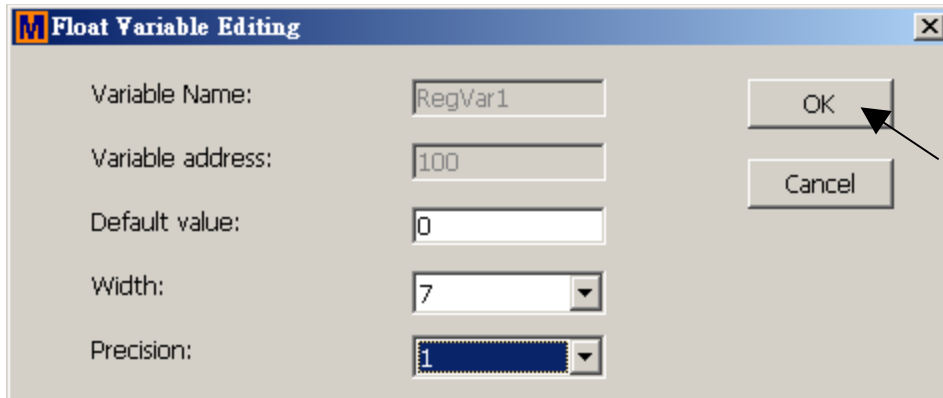Step 2:Click "System" first, and then Enter the IP address of your EKAN
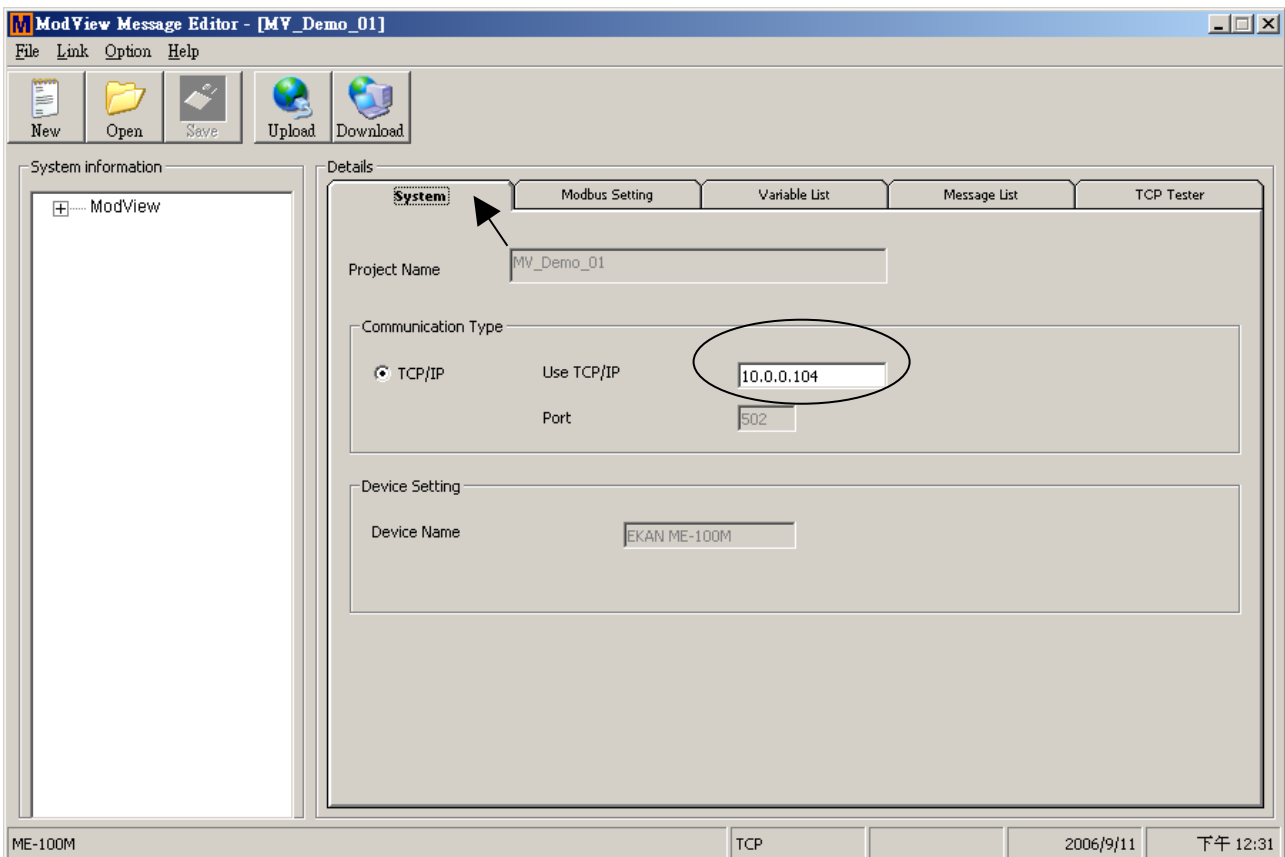
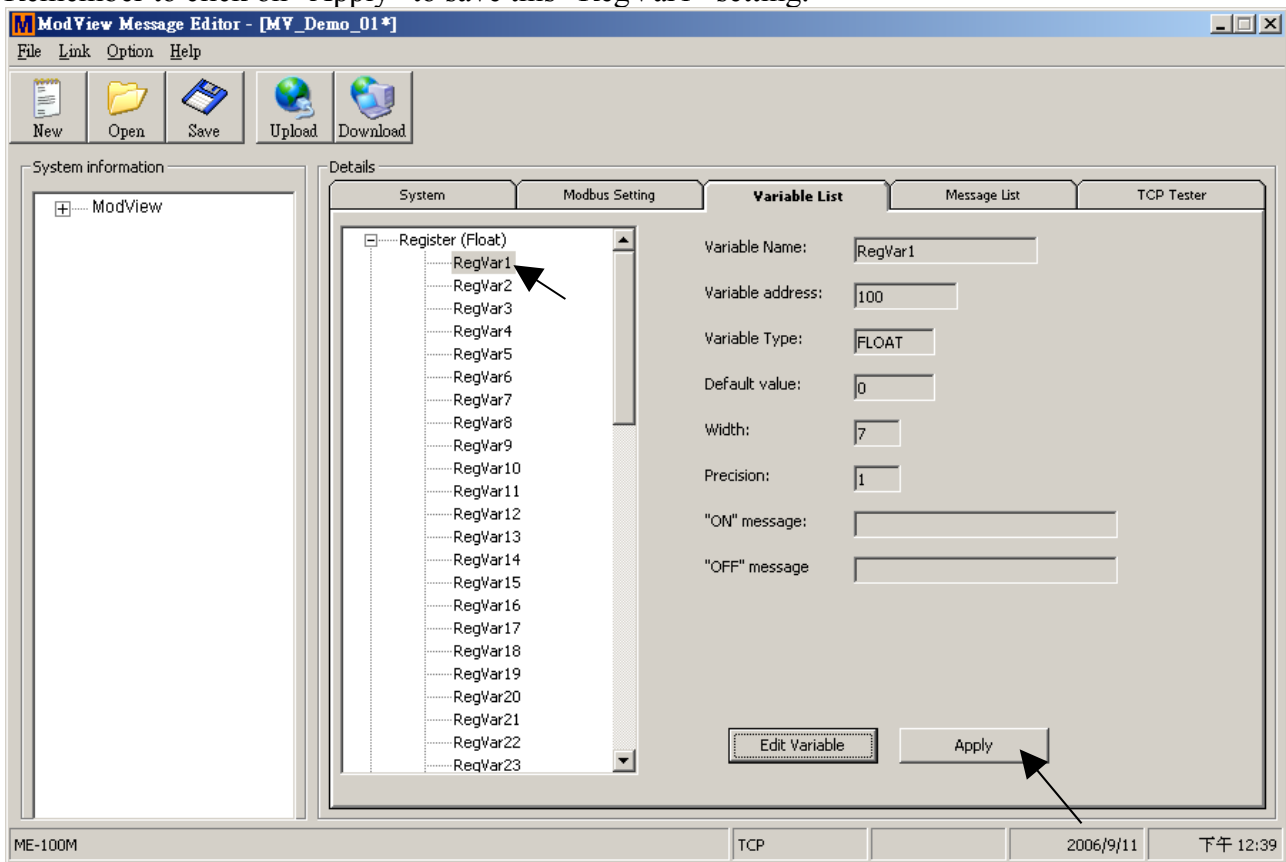Step 3: Click "Modbus Setting" to make sure your setting is 300 , 320 , 100 , 100

Step 4: Click "Variable List", then click on "Register (Float) - "RegVar1" and click on "Edit Variable"

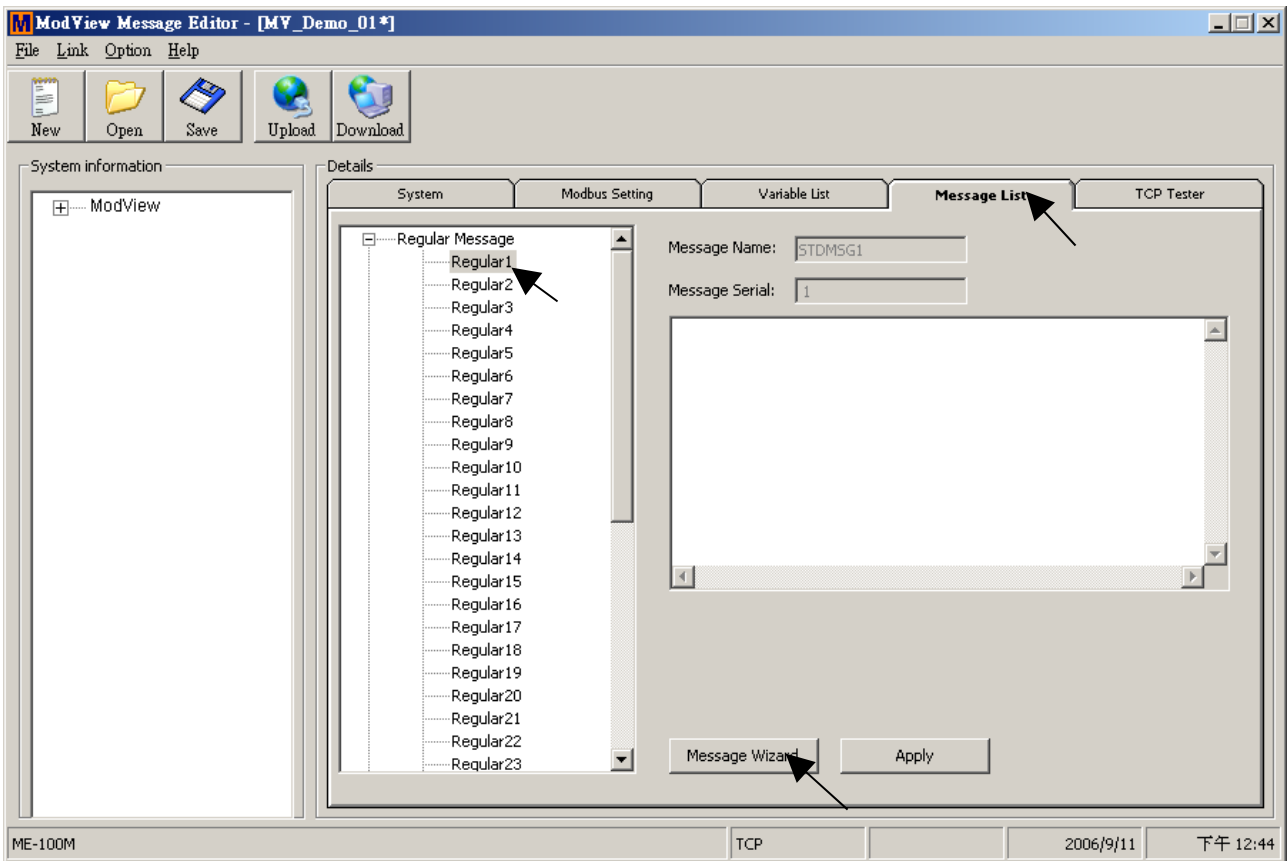Modify the "Width" to 7 , Precision to 1, then click on "Ok"

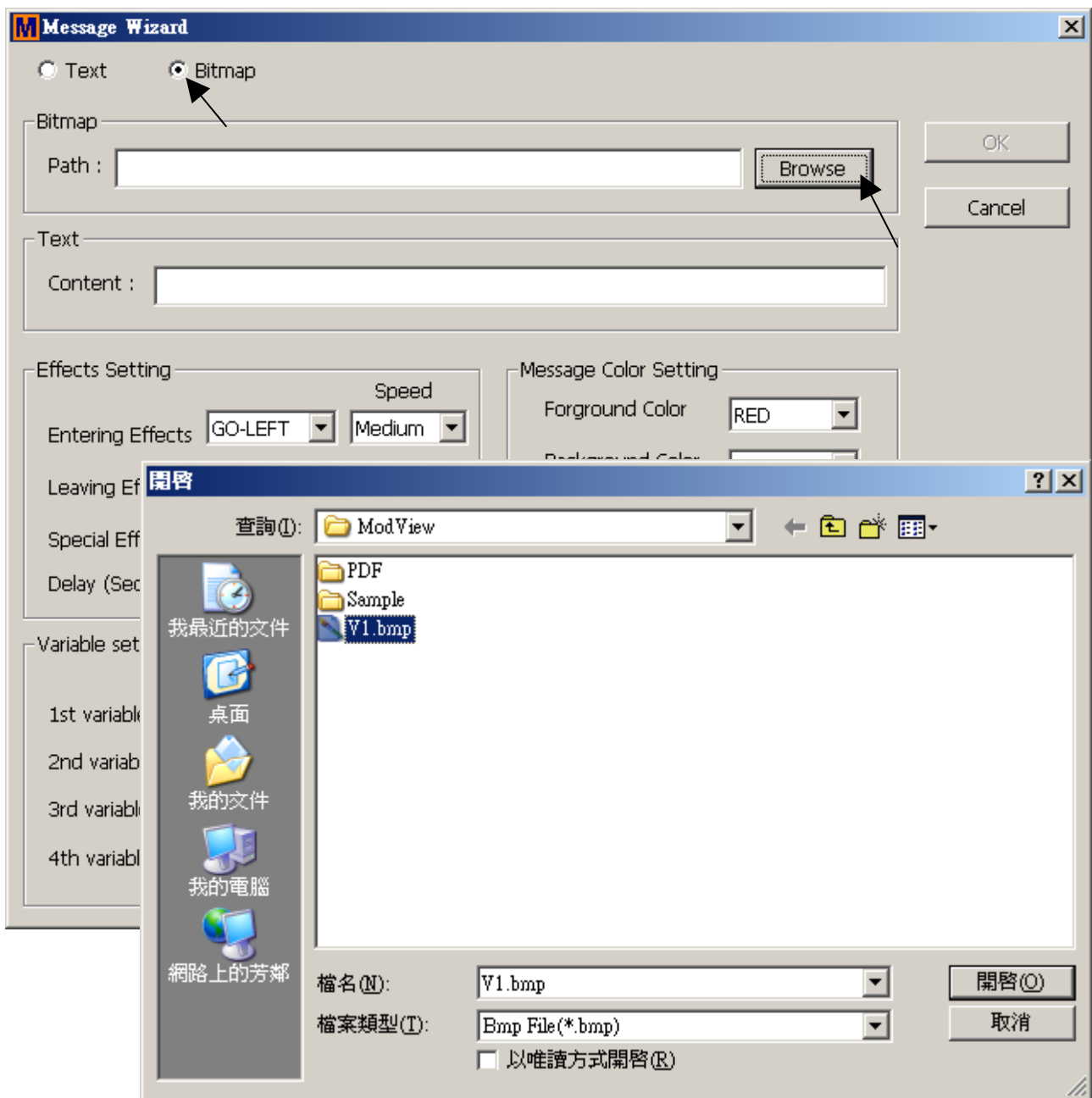Remember to click on "Apply" to save this "RegVar1" setting.

By the same way, please modify setting of "RegVar2" to become Width to 7 , Precision to 2 and the click "Apply" to save it.

Step 5: Click "Message List" and then click "Regular Message" - "Regular1". And then click on "Message Wizard"

Check "Bitmap", then click on "Browse" to point to a pre-defined BitMap file. (You may use Microsoft Paint to create a color=black-white, size=16 x 40 pixel bitmap image file, like this example's V1.bmp)

User may Modify "Effects" to become "GO_DOWN" and then click on "OK"

Then you will see below Modview Script created, Click on "Message wizard" again
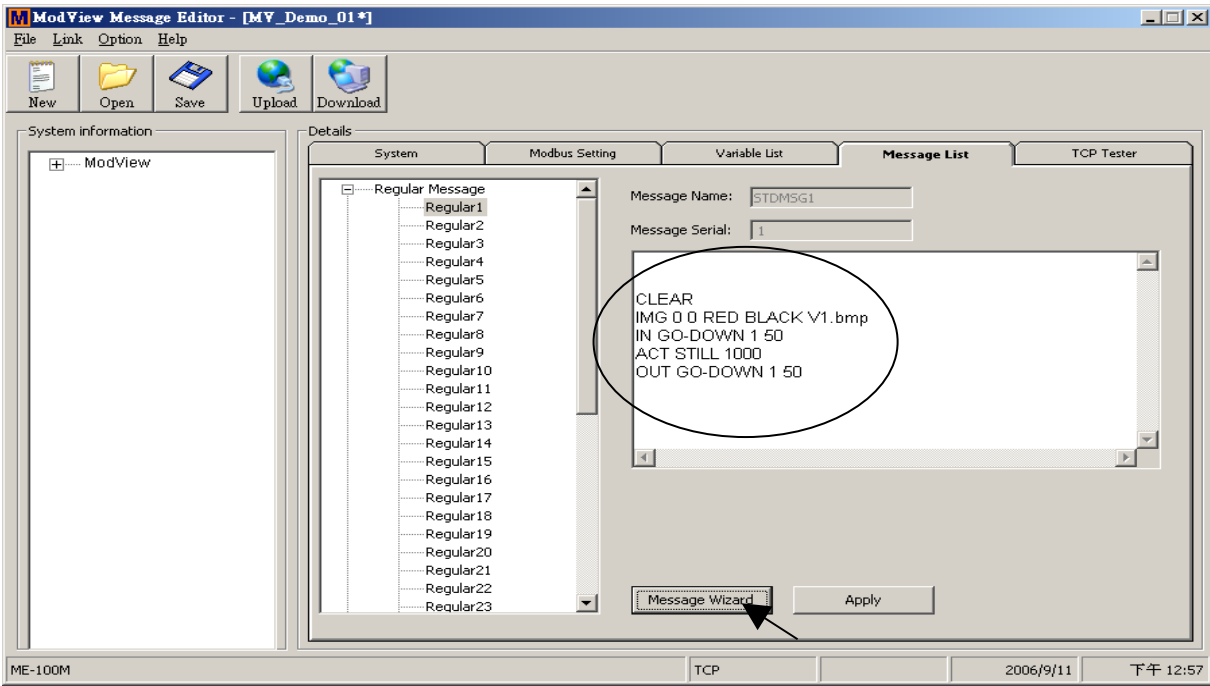
Enter Text as "%v", assign 1ˢᵗ variable as "RegVar1" and proper color to it.
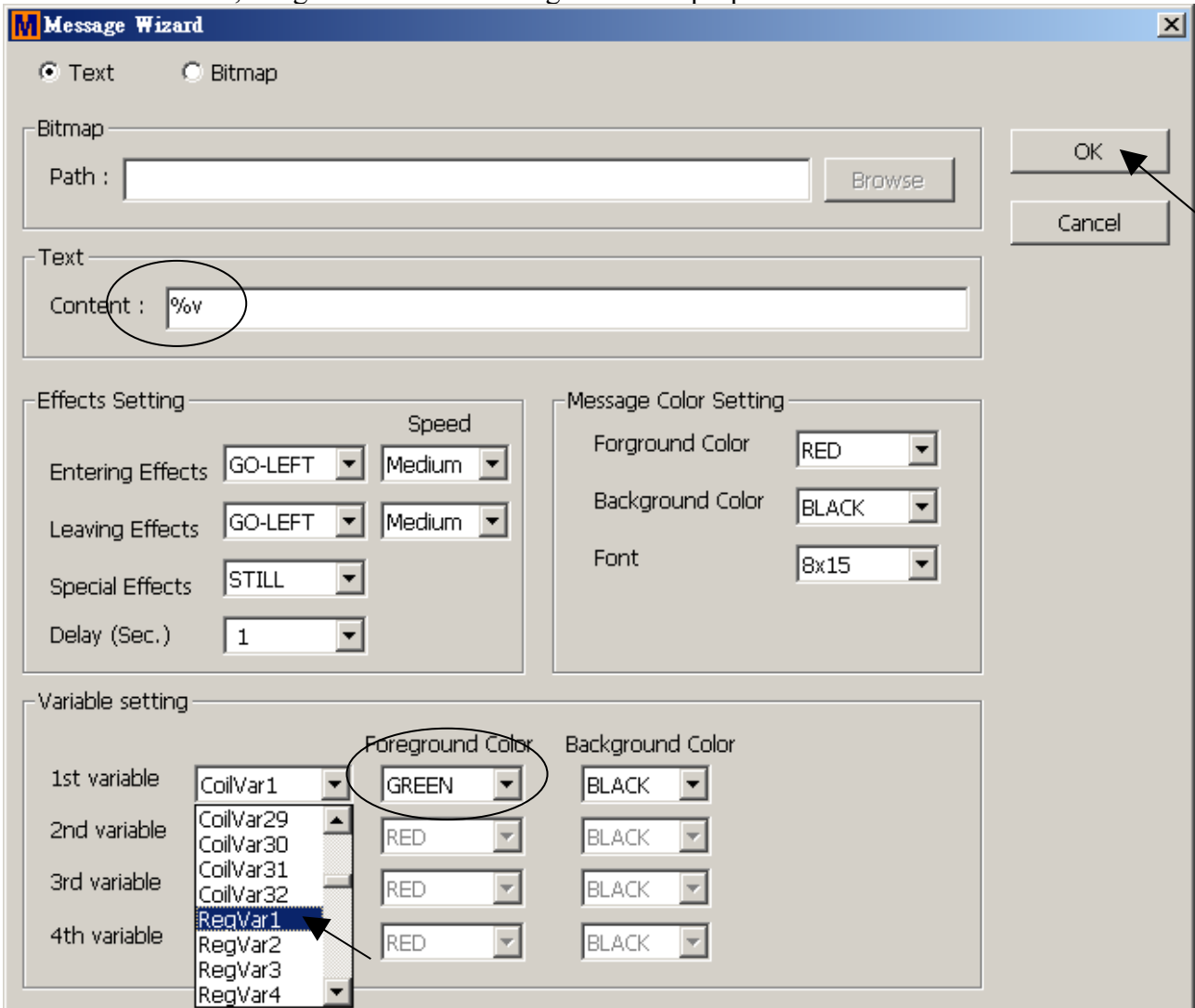
Then please modify Moview script to become contents in the right hand side.

```
CLEAR
IMG 0 0 RED BLACK V1.bmp
IN GO-DOWN 1 50
ACT STILL 1000
OUT GO-DOWN 1 50
CLEAR
TEXT 0 0 RED BLACK " "
DISPVAR 0 0 GREEN BLACK ReglVar1
IN GO-LEFT 1 50
ACT STILL 1000
OUT GO-LEFT 1 50
```

→

```
CLEAR
IMG 0 0 RED BLACK V1.bmp
DISPVAR 40 0 GREEN BLACK RegVar1
IN GO-DOWN   1 50


DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500
DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500
DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500
DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500
DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500
DISPVAR 40 0 GREEN BLACK RegVar1
ACT STILL 500


OUT GO-DOWN  1  50
```

All English charact's width is 8.

"**DISPVAR 40 0 GREEN BLACK RegVar1**" means displaying a Float value starting at LED pixel position (40, 0), foreground color is GREEN, background color is BLACK, the displayed variable is "RegVar1"

"**ACT STILL 500**" means hold on this display for 500 ms.
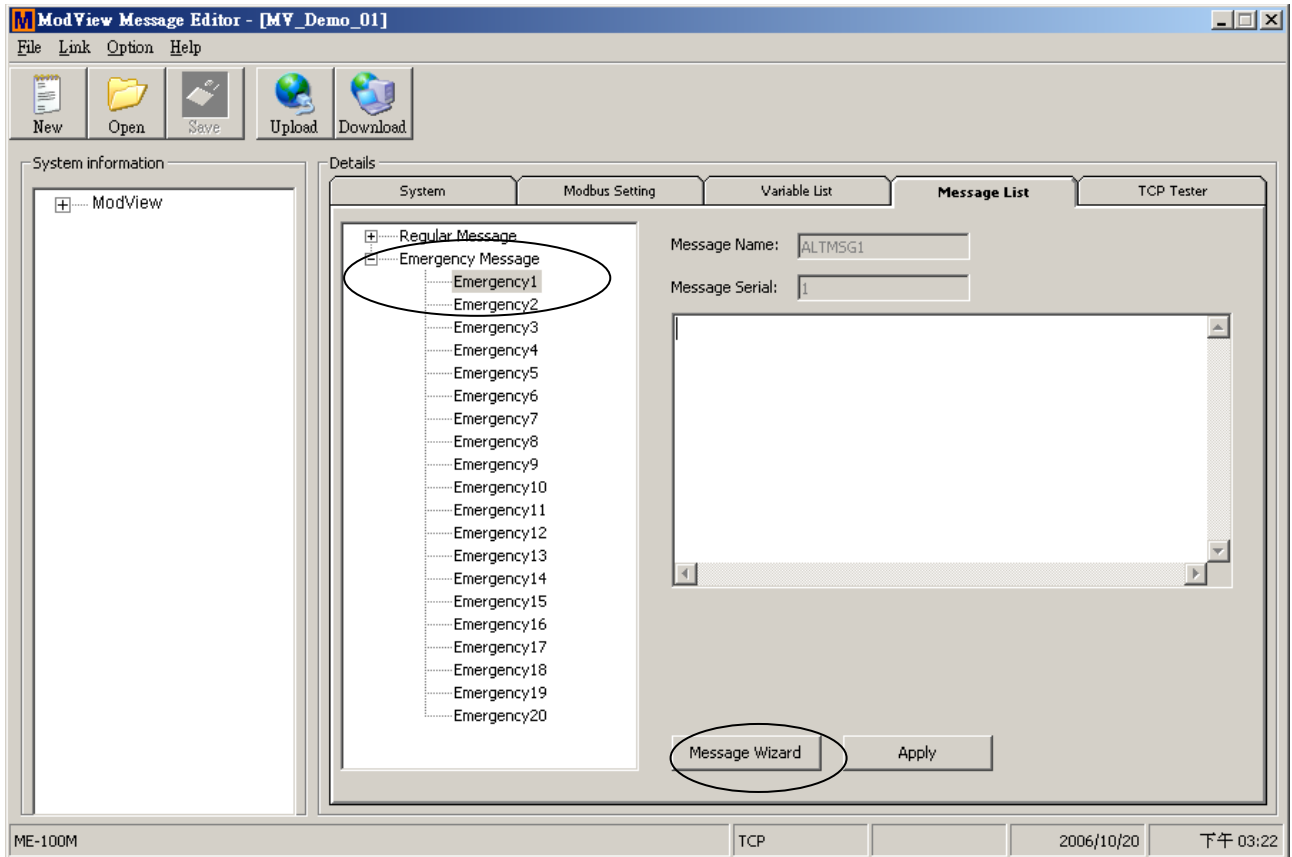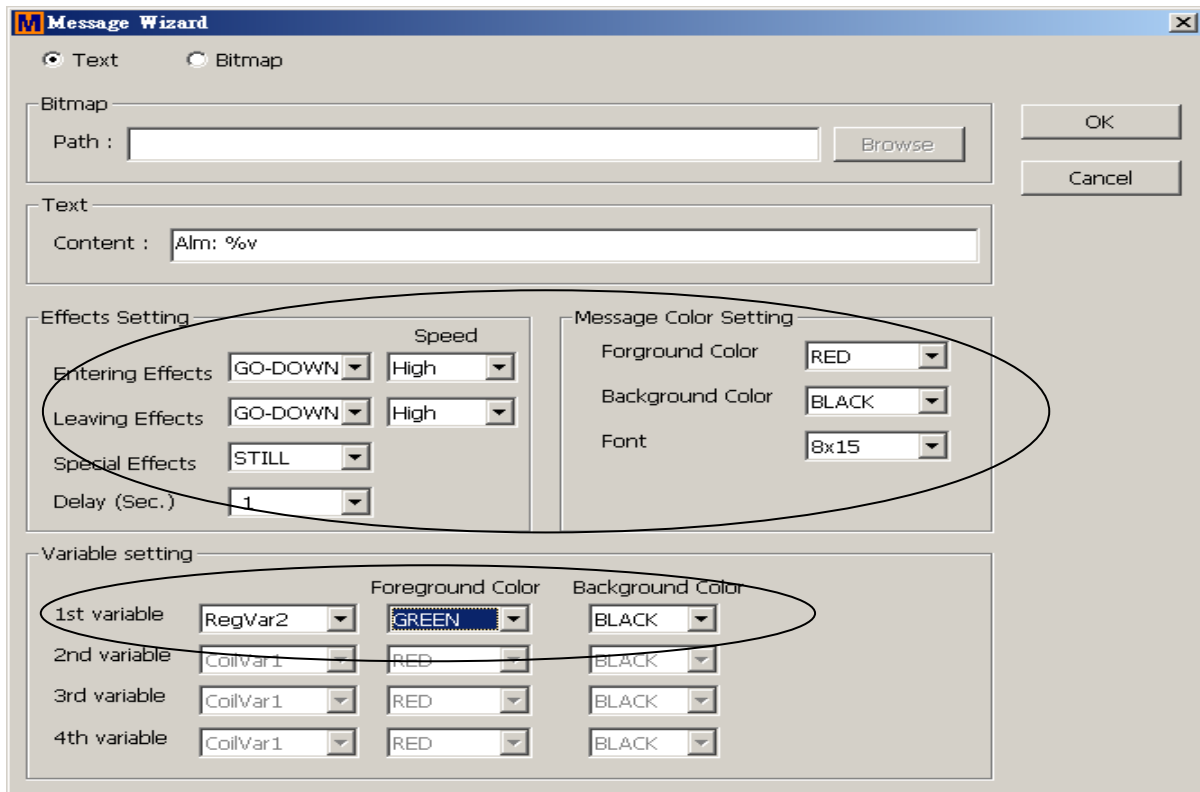
Remember to Click on "Apply" to set the setting.
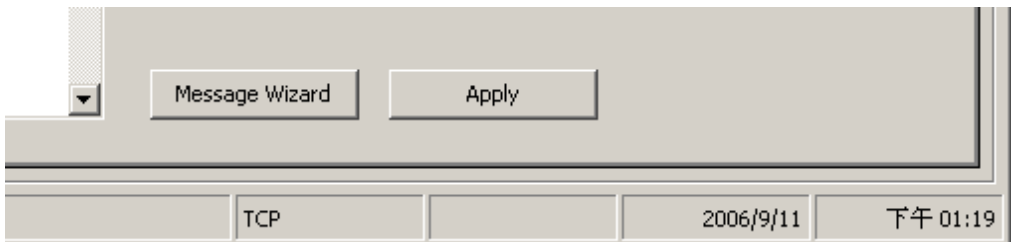
Please also create the second Regular message to display the "RegVar2" in the similiar way.

Step 6: Edit the Emergency Message
Please click on "Emergency1" and then click on "Message Wizard"

Then Enter Text Content as "Alm: %v" , select proper Effects Setting. And then select 1st variable as "RegVar2" , "GREEN" , "BLACK"

Then please modify Modview script to become contents in the below.

```
CLEAR

TEXT 0 0 RED BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

IN GO-DOWN   1   20

ACT STILL 500
TEXT 0 0 ORANGE BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 RED BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 ORANGE BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 RED BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 ORANGE BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 RED BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 ORANGE BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

ACT STILL 500
TEXT 0 0 RED BLACK "Alm:  "
DISPVAR 48 0 GREEN BLACK RegVar2

OUT GO-DOWN   1   20
```

The "Alm:" text above in the emergency message will be displayed in blinking mode by changing the color from Red to Orange then over and over . **Remember to Click on "Apply" to save it.**
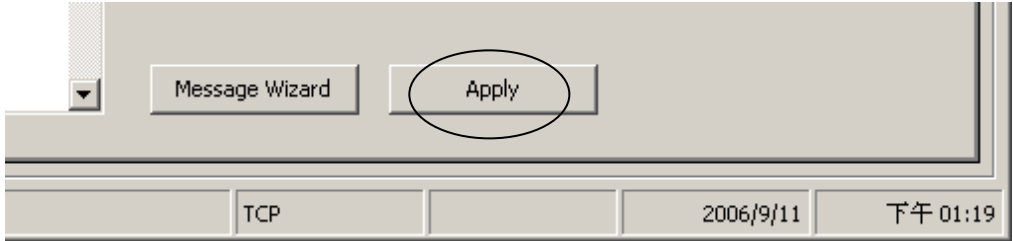
Step 7: Click on "Save" and the click "Upload" to upload program to EKAN.
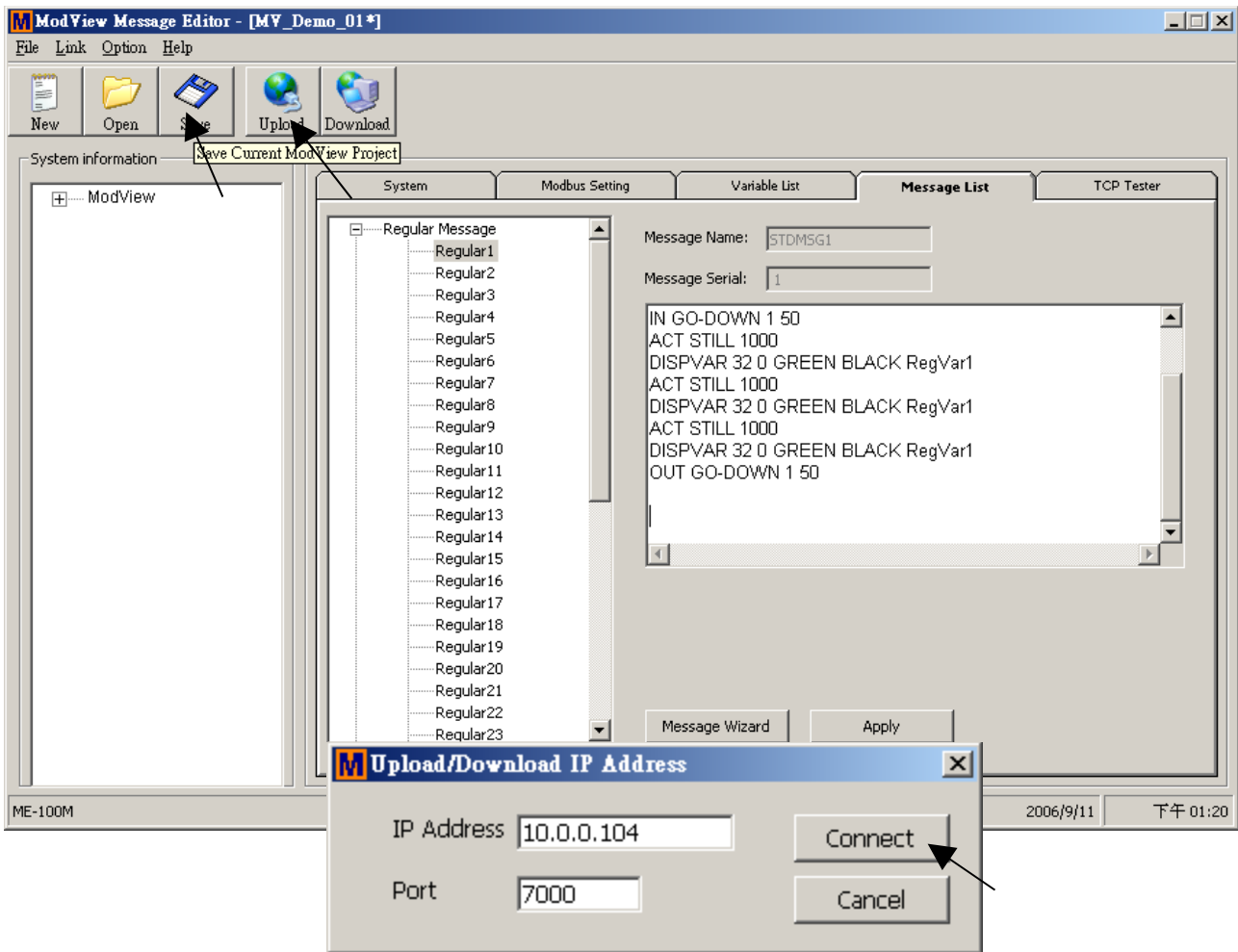
If the Modview program is upload succeed. Below message will appear.

Step 8: Connect Wincon's COM3:RS485 to EKAN – Modview's RS-485 port (refer to Appendix A) and then you may modify the "R2" value in the IsaGRAF program to see what happens with the EKAN's second regular Message.

Appendix A: Wincon connect to EKAN

RS-485 connection:

    Wincon --- EKAN:

        (COM3 or "COM5 ~9 in i-8142/8144")
        Wincon RS-485 D+   ------------   EKAN RS-485 D+
        Wincon RS-485 D-   ------------   EKAN RS-485 D-

    i-7188EG/XG --- EKAN:

        (COM2 or "COM3 in X511")
        7188EG/XG RS-485 D+   ------------   EKAN RS-485 D+
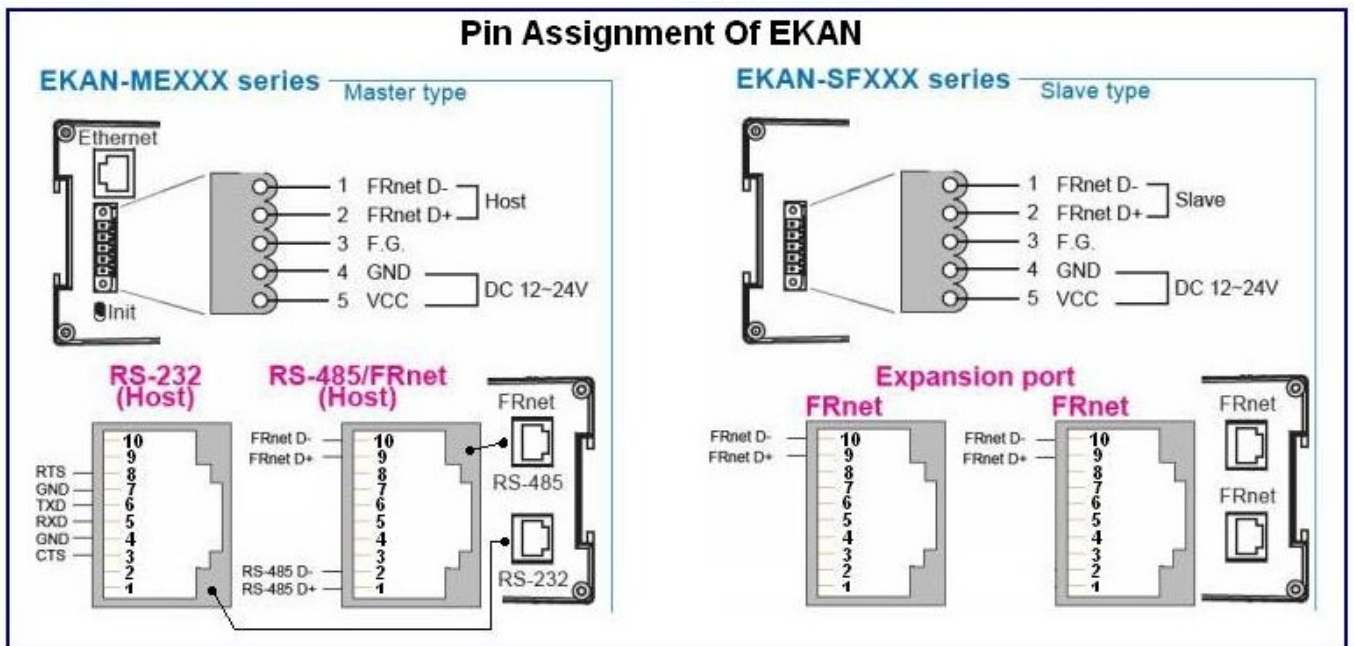   7188EG/XG RS-485 D-   ------------   EKAN RS-485 D-
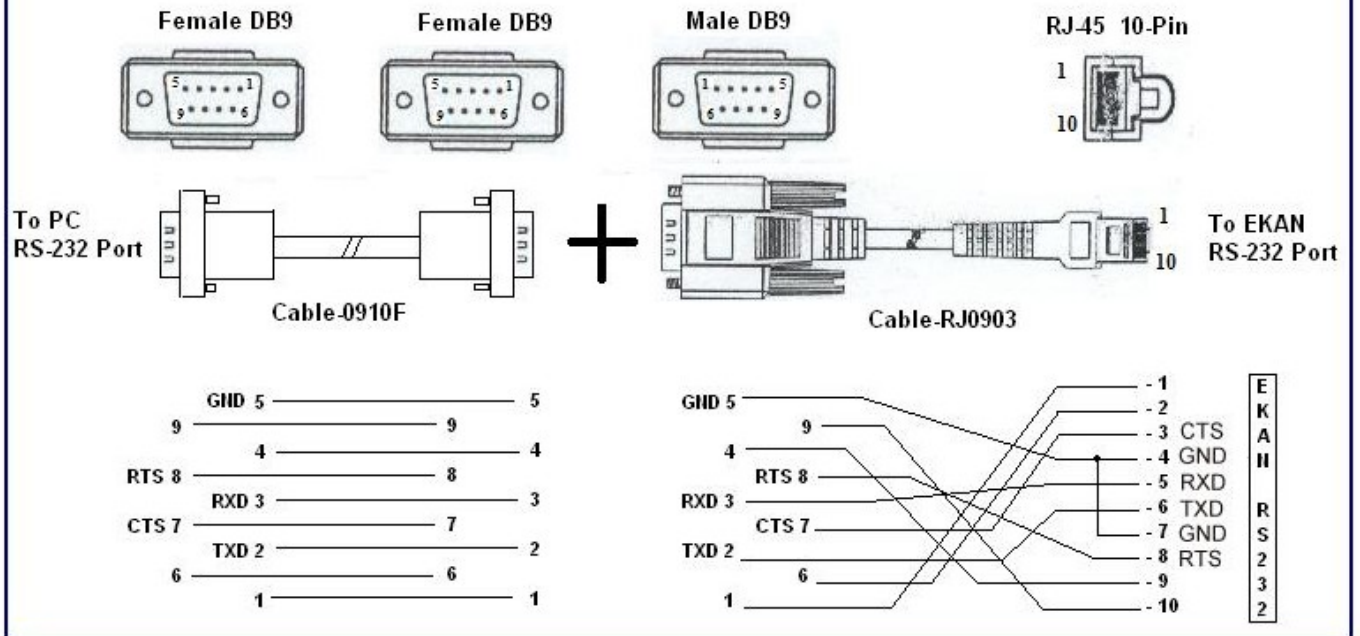
    i-8xx7 --- EKAN:

        (COM3 or "COM5 in i-8142/8144")
        i-8xx7 RS-485 D+   ------------   EKAN RS-485 D+
        i-8xx7 RS-485 D-   ------------   EKAN RS-485 D-

Pin Assignment Of EKAN

Pin Assignment Of Cable

Female DB9	Female DB9	Male DB9	RJ-45 10-Pin

To PC RS-232 Port — Cable-0910F

Cable-RJ0903 — To EKAN RS-232 Port

```
GND 5 ————————— 5          GND 5 ————————————— - 1        E
  9 ————————————— 9            9 ————————————— - 2        K
       4 ————————— 4              4 ————————————— - 3 CTS  A
RTS 8 ————————— 8          RTS 8 ————————————— - 4 GND    N
 RXD 3 ————————— 3           RXD 3 ———————————— - 5 RXD
CTS 7 ————————— 7          CTS 7 ————————————— - 6 TXD    R
  TXD 2 ————————— 2            TXD 2 —————————— - 7 GND    S
  6 ————————————— 6             6 ————————————— - 8 RTS    2
  1 ————————————— 1             1 ————————————— - 9        3
                                              - 10        2
```

If your Wincon's Modbus RTU Master port is at expansion i-8142 or i-8144, please refer to below "Appendix E" for its pin assignment.

Appendix B: Update EKAN 's Firmware And Set New IP and Mask Address

*************** We use firmware version 1.06 as an example here ********************

1. Create a file folder named "Modview" in your hard drive.
   For example, "c:\EKAN\Modview".

2. Copy the firmware & utility of the correct version into your "Modview" folder.

   For example, version 1.06,
      Copy CD-ROM:\Napdos\EKAN\Modview\BIN\1.06*.*   to   c:\EKAN\Modview\1.06*.*
   Or you may visit http://www.icpdas.com/products/HMI/led/Download.htm to download it.

3. Run c:\EKAN\Modview\1.06\7188xw.exe

4. Link COM1 of your PC to "RS232" port of the EKAN Led dispaly
   through a RS232 cable.

If you PC is using another COM port (for example, COM5), please exit "7188xw.exe" first, then modify the first line in the "7188xw.ini" file as below
C1 B115200 P0 D8 S1   ===> C5 B115200 P0 D8 S1
Then run "7188xw.exe" again, it will use COM5 in the above example.

5. Power off the EKAN Led dispaly, switch the DIP switch to "I**NIT**" position.
   ,then power it up again.

6. If the connection is Ok, message will appear on the 7188xw screen.
   Press "Enter" to see if there is response on the 7188xw screen. If there is response it means 7188xw.exe connecting EKAN well. If no response, it means communication fail.

7. If communication is well, press **F4** key to download firmware. This takes about 60 seconds.

8. type "ip" to see current IP setting.

9. type "ip xxx.xxx.xxx.xxx" to set a new IP (for example. ip 10.0.0.103)

10. type "mask" to see current mask setting.

11. type "mask xxx.xxx.xxx.xxx" to set a new MASK (for example. mask 255.255.255.0)

12. Power off the EKAN Led dispaly, switch the DIP switch to "**RUN**" position.
    ,then power it up again.

13. Press ALT_X to exit "7188xw.exe".

Please contact "service@icpdas.com" for technical support

Appendix E: Using Expansion RS-232 or 485 or 422

Wincon can expand 10 more COM ports in its slot 1 to 5 by using below modules:

      i-8112 : 2-channel RS232
      i-8114 : 4-channel RS232
      i-8142 : 2-channel RS422/485
      i-8144 : 4-channel RS422/485
      i-8142i : 2-channel isolated RS422/485

Before user can use them, please configure them By "Wincon utility" first.
Please plug them in slot 1 to 5 and then run "Wincon utility" – "Com" , then click on "New Card Wizard" and then "Slot Scan" and then click on "Save new Module" and Reset the Wincon.
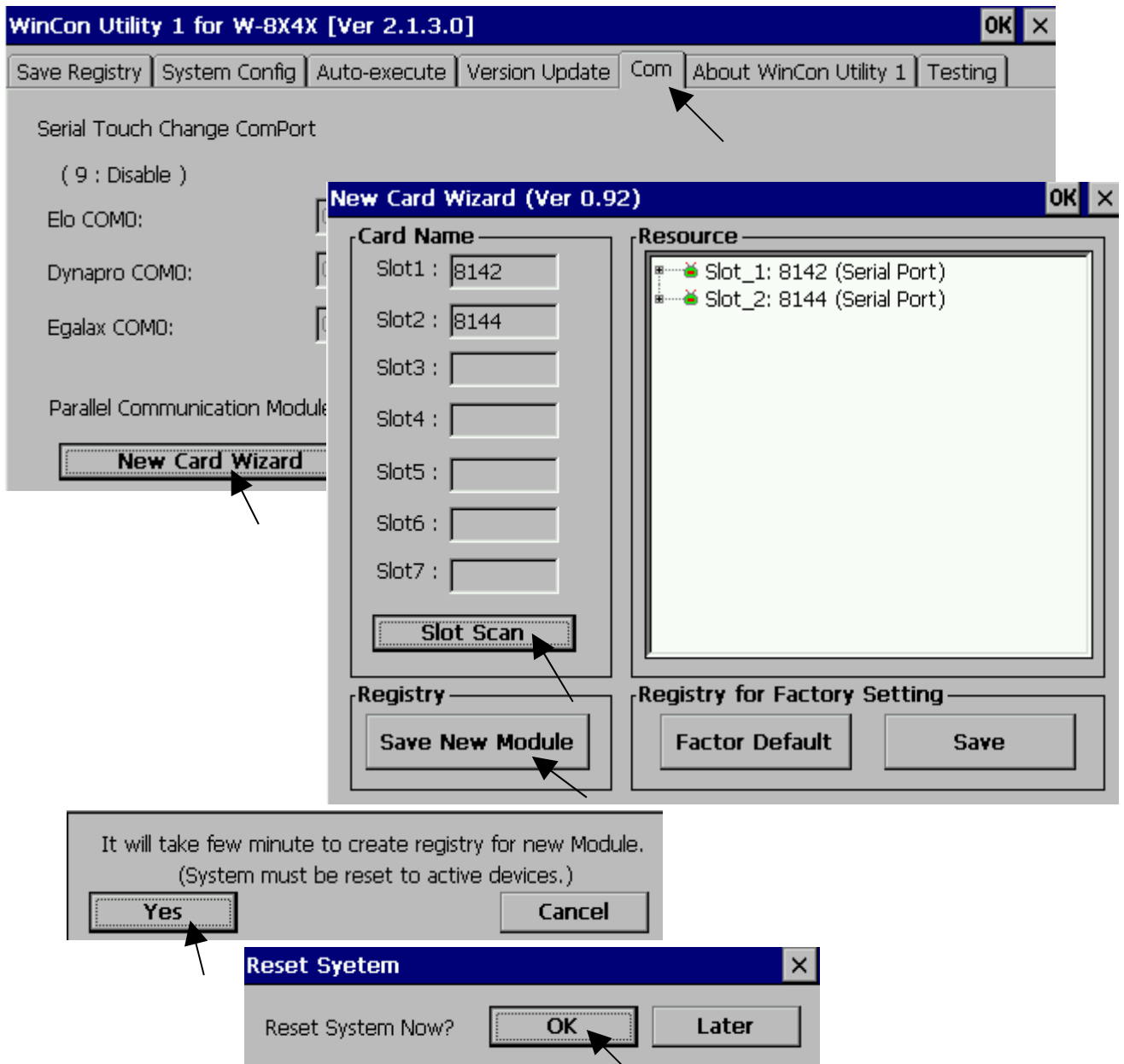
After the configuration succeed. The COM port No. for the expansion board is COM5 to COM14 in the ISaGRAF definition.

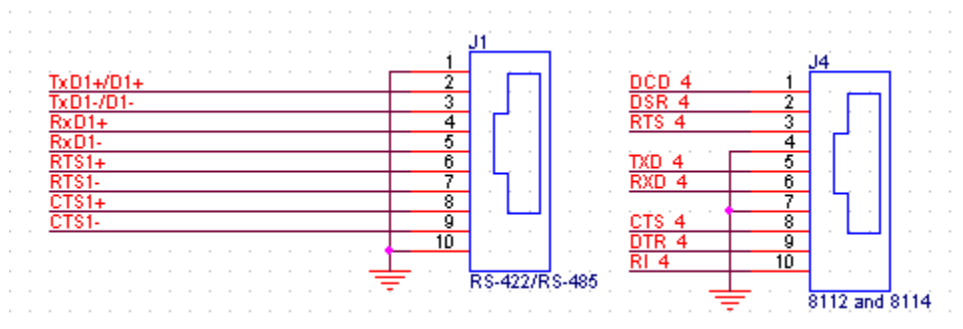The relation between WinCE and ISaGRAF definition for COM10 to COM14 is

WinCE	ISaGRAF
MSP1:	COM10
MSP2:	COM11
MSP3:	COM12
MSP4:	COM13
MSP5:	COM14
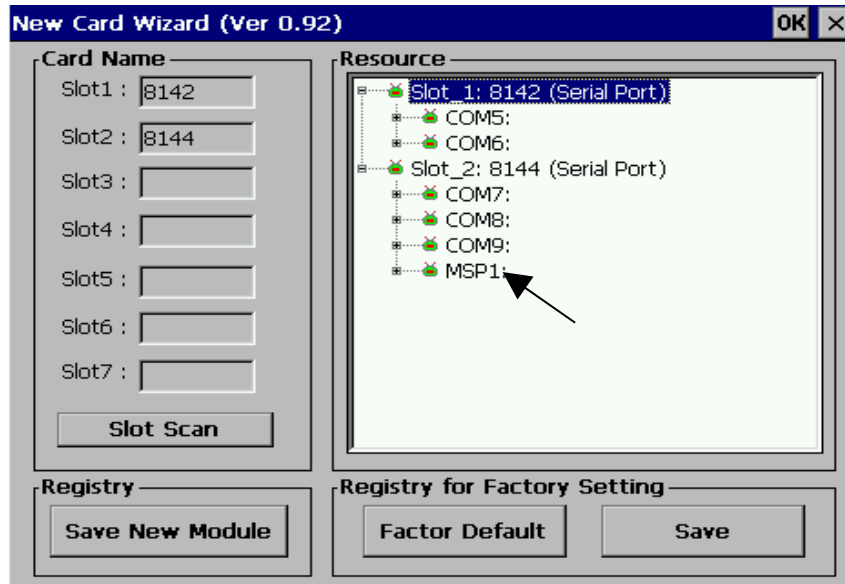
Pin assignment of   i-8142/8144/8142i   i-8112/8114

     (D1+ = RS485+ , D1- = RS485-)   (RS232's signal GND is Pin 4 or 7)

Note:
1. Please refer to section 8.4 of ISaGRAF User's Manual for multi-ports Modbus Master.
2. Please refer to Appendix A.4 of ISaGRAF User's Manual for COM_OPEN, COM_READ, …
functions to read write COM ports.