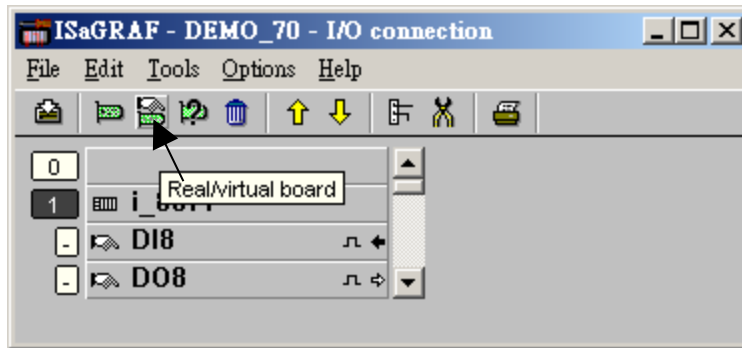


FAQ-032: How to access to ISaGRAF variables as array ? (A demo program of sending string to COM2 or COM3 when alarm 1 to 8 happens)

This demo program can be running in Wincon-8xx7 / 8xx6 or in I-8xx7 or in I-7188EG/XG. Please init "PORT" as 2 if your target is Wincon, while **3 for I-8xx7**. Remember to re-compile.

If you are using 7188EG/XG, please init "PORT" as 2 and modify the "i-8077" in the I/O connection to become virtue board. And then re-compile the project.



To declare a ISaGRAF version 3.4 (or 3.5) "Variable Array", please add 2 more lines on the top of the "isa.ini" file in the ISaGRAF sub-directory "C:\ISAWIN\EXE\". And then when you open the ISaGRAF workbench, there will be a "DIM" area you can assign in the Dictionary declaration windows.

inside c:\isawin\exe\isa.ini, adds 2 lines for "Variable Array"

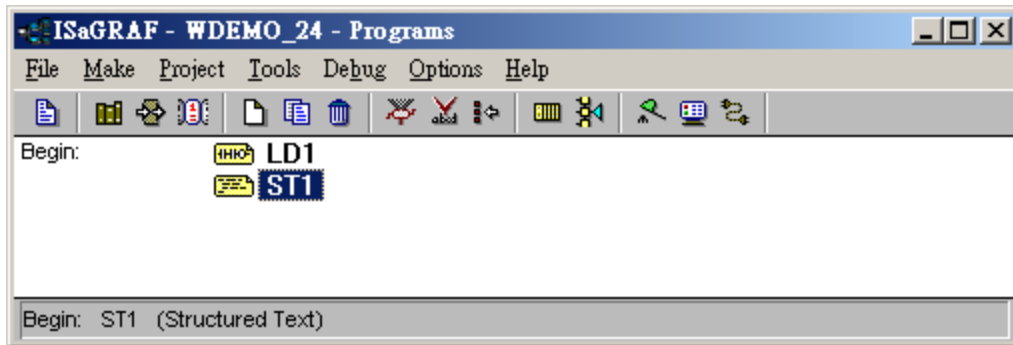
[DEBUG]
arrays=1

Please visit <http://www.icpdas.com/faq/isagraf.htm> FAQ-039 more information *)

Variables :

| Name | Type | Attribute | Description |
|-----------|---------|-----------|--|
| INIT | Boolean | Internal | Init as TRUE, True indicates first PLC scan cycle |
| TMP | Boolean | Internal | Temporary using |
| Tick1 | Boolean | Internal | pulse generated every 1 sec to counting time |
| IN[0..7] | Boolean | Input | IN[0..7] : input of ch1 to 8 at slot 1: 8077, variable array |
| OLD[0..7] | Boolean | Internal | Old value of IN[0..7], variable array |
| ii | Integer | Internal | Index of "For" loops |
| Port | Integer | Internal | COM PORT Number to open, init as 2 for Wincon |
| CNT[0..7] | Integer | Internal | Time-last of True state of IN[0..7],unit is sec, variable array |
| Msg1 | Message | Internal | Message to send to COM2, init length as 128 |

Project architecture:



Operations:

1. If IN[0..7] rising from False to True and hold in True for at least 3 seconds, send one message = 'Alarm N' + <LF> <CR> to COM2. N= 1,2, ... 8 depends on which Input is triggered. For ex, if IN[2] is rising and hold in True longer than 3 seconds, send 'Alarm 3' + <LF> <CR> to COM2
2. If after IN[0..7] 's first alarm is sent and then continuously hold in True for 30 seconds, then send one more message after every 30 second past to COM2 until the state of IN[0..7] is falling to FALSE. The string is for ex, 'Alarm 3 , 30 sec past !'

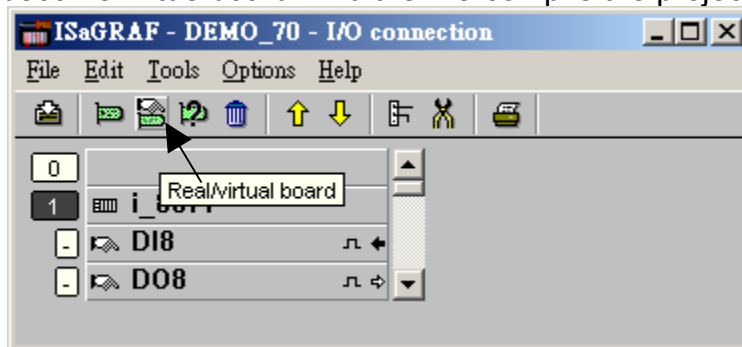
This demo project is in W-8xx7's CD-ROM:\napdos\isagraf\wincon\demo\ "wdemo_24" or ftp://ftp.icpdas.com/pub/cd/wincon_isagraf/napdos/isagraf/wincon/demo/ or

i-8xx7's CD-ROM:\napdos\isagraf\8000\demo\ "demo_70" or <ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/isagraf/8000/demo/>

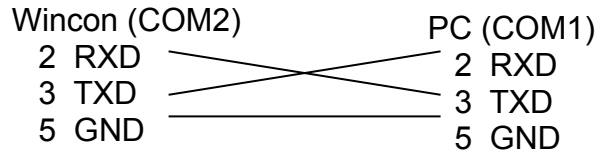
How to test ?

1. Please download wdemo_24 to W-8xx7+ slot 1: I-8077 (or demo_70 for I-8xx7+slot 1: I-8077)

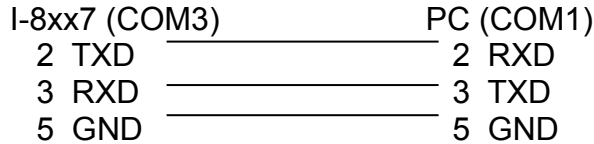
If you are using 7188EG/XG, please init "PORT" as 2 and make the "i-8077" in the I/O connection to become virtue board. And then re-compile the project.



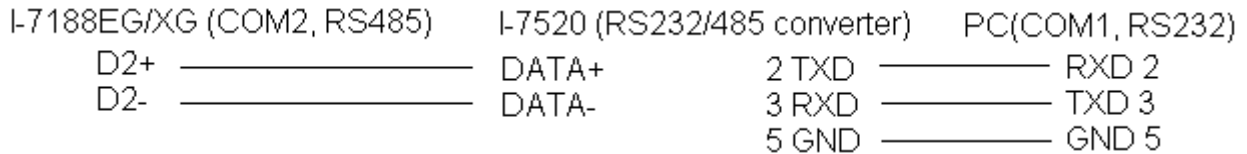
2. Connect a RS232 cable between W-8xx7's COM2 to your PC's COM1



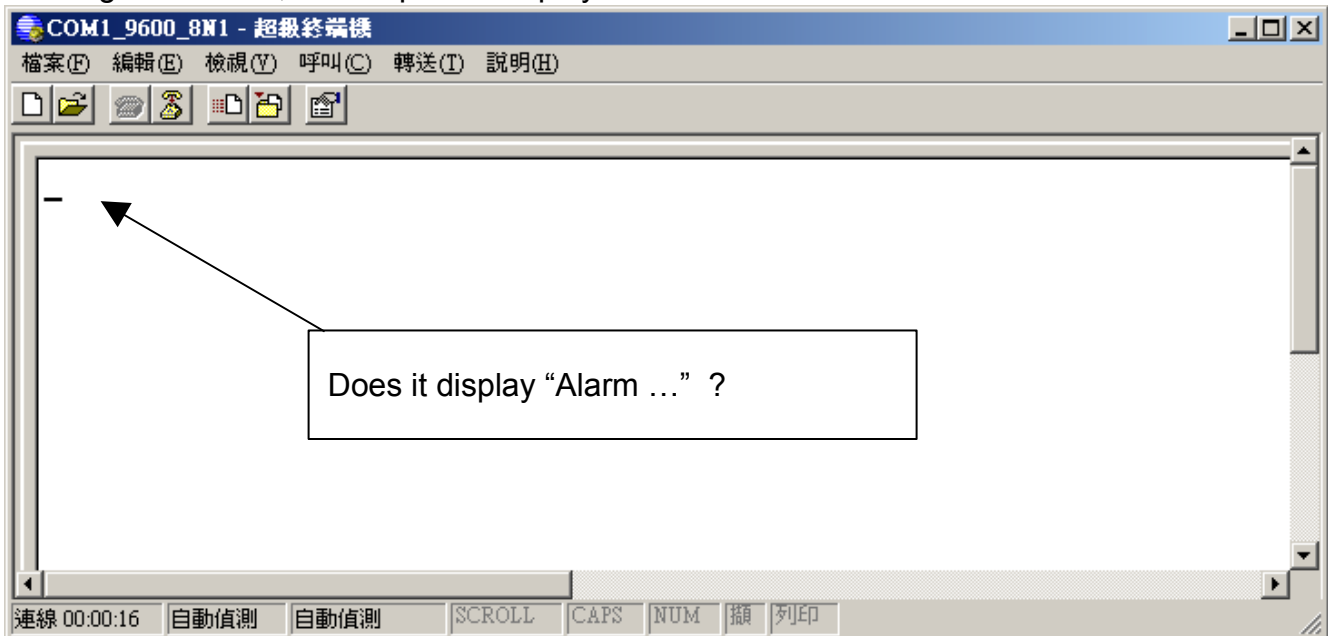
Or if you are using I-8xx7's COM3 to your PC's COM1



Or if your are using I-7188EG/XG's COM2

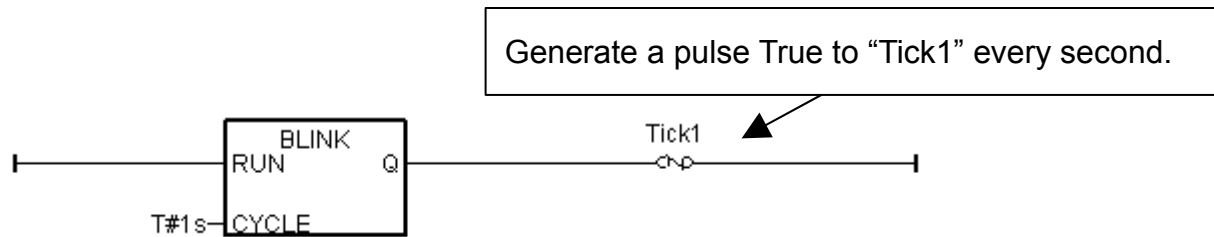


3. Open PC's Hyper terminal at COM1 with 9600, 8 char. size, no parity, 1 stop bit and No flow control. And then please switch I-8077's Input1 or 2 or ... from FALSE to TRUE and wait about three seconds. If it works, there should be a message "Alarm ..." displayed. And then please hold this input TRUE more than 30 seconds, there should be one another message "Alarm ..., 30 sec past !" displayed.



Program description:

LD1 program:



ST1 program:

(* only do it in 1st PLC scan *)

if INIT then

INIT := FALSE ; (* No more 1st PLC scan cycle *)

TMP := COMOPEN(PORT,9600,8,0,1) ; (* open COM3, 9600,8,N,1 *)

(* init value of CNT[0..7] to -7 *)

for ii := 0 to 7 do

CNT[ii] := -7 ;

end_for ;

end_if ;

for ii := 0 to 7 do (* test all IN[0..7] if rising from False to True *)

(* test if IN[0..7] signal rising *)

if (IN[ii] = True) and (OLD_IN[ii] = False) then

(* set related CNT[] value to -3 when Input event is triggered *)

(* if CNT[] value is not -7, it means "INPUT been triggered" *)

(* the CNT[] value will plus 1 every 1 sec past later, except the related INPUT become FALSE, *)

CNT[ii] := -3 ;

end_if ;

(* if INPUT is cleared or "if related INPUT become FALSE", the related CNT[] value will reset to -7: "No input event happens at that INPUT channel" *)

if IN[ii] = False then (* signal is becoming FALSE *)

(* set related CNT[] value to -7: "No input event happens at that INPUT channel" *)

CNT[ii] := -7 ;

end_if ;

```
if Tick1 then (* Tick1 is generated as pulse "True" every second in "LD1" program *)
```

```
(* if CNT[ ] value is not -7, means the related input is triggered *)
```

```
if CNT[ii] > -7 then
```

```
    CNT[ii] := CNT[ii] + 1 ; (* plus 1, Tick1 = True means 1 sec has passed *)
```

```
    (* ----- *)
```

```
    (* INPUT event happens and 3 sec past, send 1st alarm message to COM3 *)
```

```
    if ( CNT[ii] = 0 ) then (* send 1st alarm when CNT[ ] is from -3, -2, -1 ---> 0 *)
```

```
        CNT[ii] := 0 ; (* re-start from 0 and then count to 30 second to send alarm *)
```

```
        (* send one message to COM3 *)
```

```
        msg1 := 'Alarm ' + MSG(ii+1) + ' $0A$0D' ;
```

```
        TMP := comstr_w(PORT , msg1) ;
```

```
    end_if ;
```

```
    (* ----- *)
```

```
    (* ----- *)
```

```
    (* INPUT event happens and every 30 second past, send one alarm message *)
```

```
    if ( CNT[ii] = 30 ) then (* send one alarm when CNT[ ] is from 0, 1, 2, ..., 30 *)
```

```
        CNT[ii] := 0 ; (* re-start from 0 and then count to 30 second to send alarm *)
```

```
        (* send one message to COM3 *)
```

```
        msg1 := 'Alarm ' + MSG(ii+1) + ', 30 sec past ! $0A$0D' ;
```

```
        TMP := comstr_w(PORT , msg1) ;
```

```
    end_if ;
```

```
    (* ----- *)
```

```
end_if ; (* "if CNT[ ] > -7 then" *)
```

```
end_if ; (* "if Tick1 then" *)
```

```
(* Update OLD_IN[ ] *)
```

```
OLD_IN[ii] := IN[ii] ;
```

```
end_for ;
```