

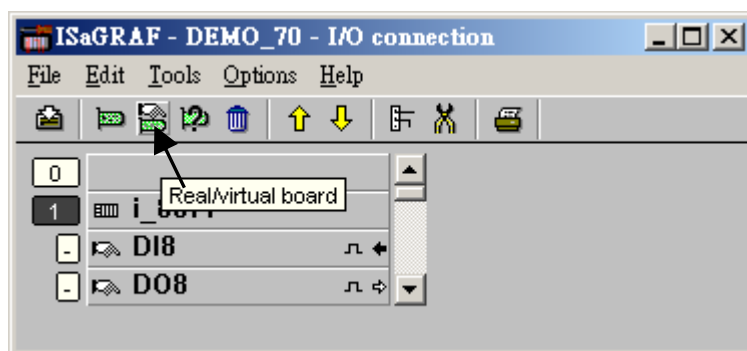
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Author	Chun Tsai	Version	1.0.0	Date	Mar. 2006	Page	1 / 5

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

[Download FAQ-032 Demo.](#)

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
```

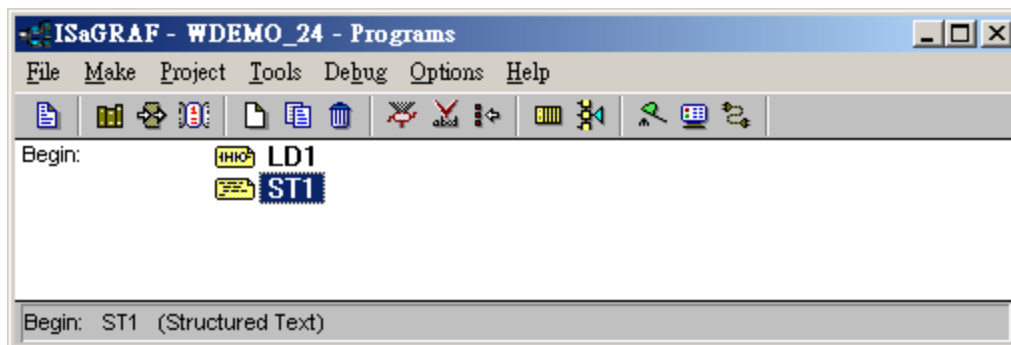
(* Please visit ISaGRAF [FAQ-039](#) for more information *)

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

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Project architecture:



Operations:

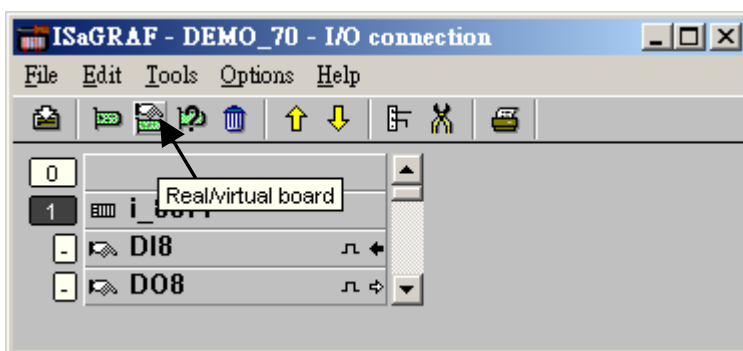
1. If IN[0..7] rising from False to True and hold in True for at least 3 seconds, send one message = 'Alarm N' + <LF><CR> to COM2. N= 1,2, ... 8 depends on which Input is triggered. For ex, if IN[2] is rising and hold in True longer than 3 seconds, send 'Alarm 3' + <LF><CR> to COM2
2. If after IN[0..7] '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 !'

The project name used for W-8xx7's is "wdemo_24" ; "demo_70" is used for i-8xx7.

How to test ?

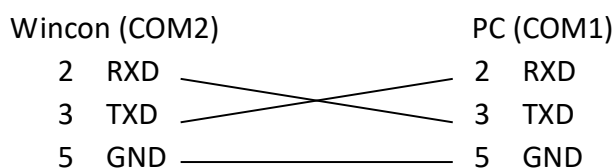
1. Please download wdemo_24 to W-8xx7+ slot 1: I-8077
(or demo_70 for I-8xx7+slot 1: I-8077)

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.



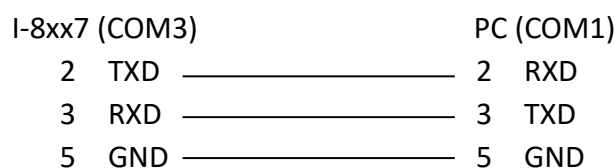
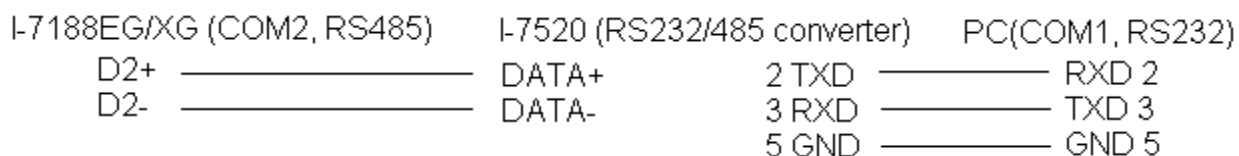
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2. Connect a RS232 cable between W-8xx7's COM2 to your PC's COM1

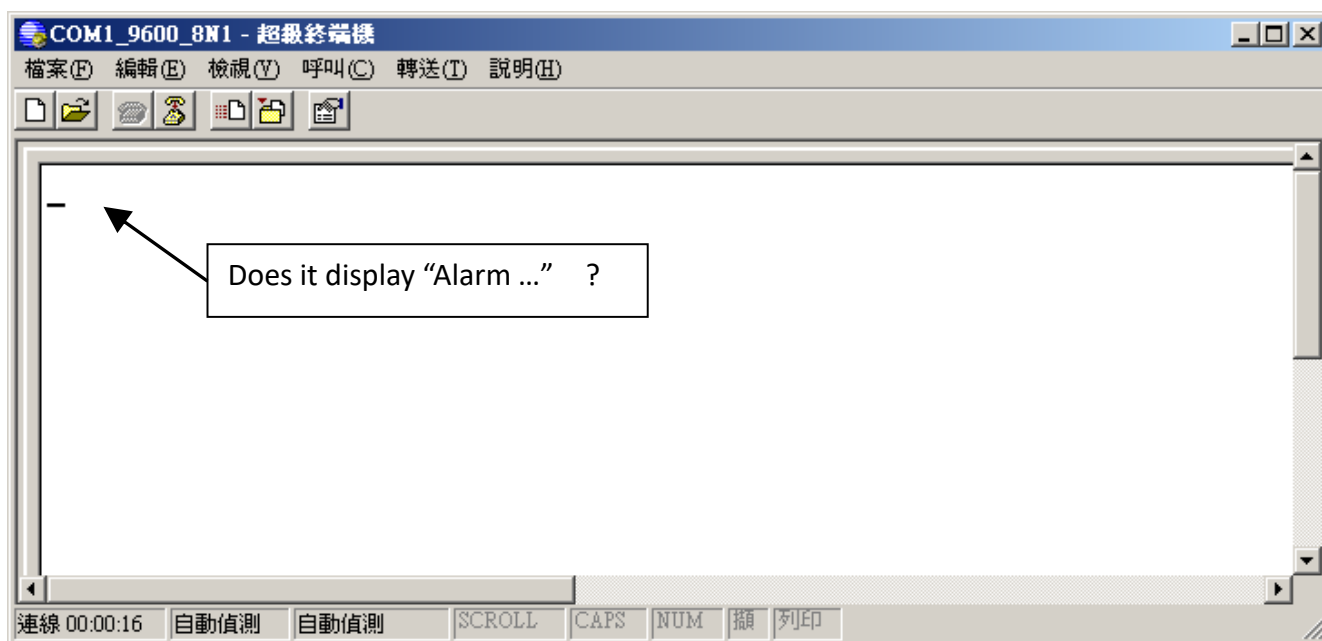


Or if you are using I-8xx7's COM3 to your PC's COM1

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



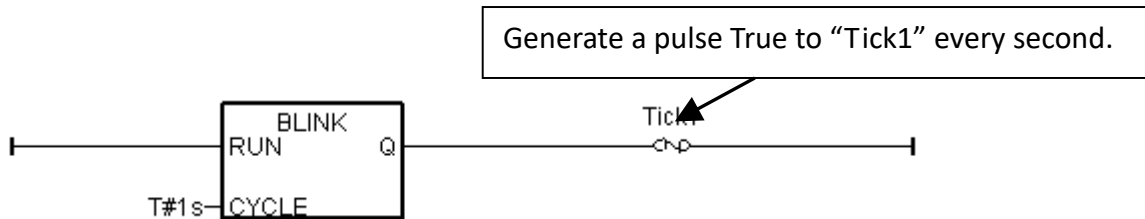
3. Open PC's Hyper terminal at COM1 with 9600, 8 char. size, no parity, 1 stop bit and No flow control. And then please switch I-8077's Input1 or 2 or ... from FALSE to TRUE and wait about three seconds. If it works, there should be a message "Alarm ..." displayed. And then please hold this input TRUE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



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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 *)

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(* 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];

Click the link for more ISaGRAF FAQ:

<http://www.icpdas.com/en/faq/index.php?kind=280#751>