How to process the Integer or Real value coming from the RS-232/ RS-485 device? Like the device of Bar-Code reader or RS-232 weight meter.

Download FAQ-066 Demo.

Some device will send its Integer or Real data to the PAC via RS-232 or RS-485 interface, for example, the "Bar-Code reader" or some RS-232 "weight meter".

Their data format may be similar as the following.

value<CR> or value<CR><LF> or value<LF><CR>

for example,

3456<CR> or 543<CR><LF> or -24<LF><CR>

Note that symbol "**<CR>**" means the Enter character, its ASCII No. is 13. "**<LF>**" is the New Line character, its ASCII No. is 10.

If you are using ISaGRAF PAC - 7188EG, 7188XG, I-8xx7, I-8437-80 or I-8837-80 to connect to this kind of RS-232/RS-485 device, you may apply the below similar program code to receive its data. Please visit http://www.icpdas.com/en/faq/index.php?kind=280#751 FAQ-066 to download the demo program "Demo_73.pia".

This example suppose using I-8437-80's COM3 or COM4 RS-232 to connect to a RS232 "weight meter". This device will send a weight data to the PAC if it detect a weight input (grams).

1<CR> ~ 10000<CR>

Pin assignment of the communication cable:

(Using I-8437-80 **COM3**)

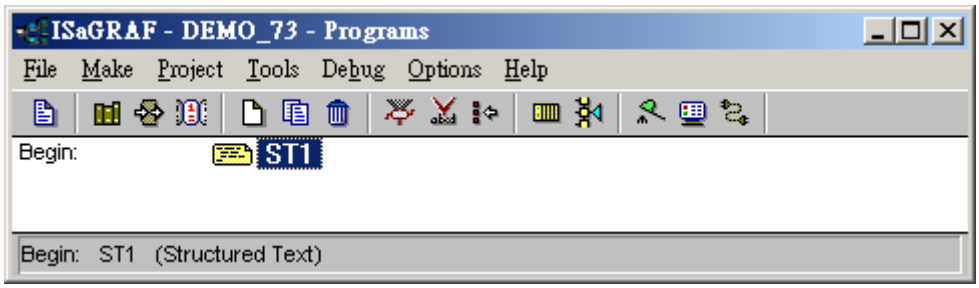
Device		**I-8437-80** (COM3: RS-232)
RXD	———	2 TXD
TXD	———	3 RXD
GND	———	5 GND

(Using I-8437-80 **COM4**)

Device		**I-8437-80** (COM4: RS-232)
TXD	———	2 RXD
RXD	———	3 TXD
GND	———	5 GND

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Architecture of the ISaGRAF project:



Variable :

Name	Type	Attribute	Description
INIT	Boolean	Internal	Set its initial value to True
Port_OK	Boolean	Internal	True: Open Com port Ok
Get_One_Data	Boolean	Internal	Set as True when receiving a correct data to do more operation
Step	Integer	Internal	Internal use
NUM1	Integer	Internal	Returned value of “Comary_r( )”
ii	Integer	Internal	Internal use
result_Gram	Integer	Internal	The weight data received, 1 to 10000 grams
Tmp_val	Integer	Internal	Internal use
Port_No	Integer	Internal	To use which COM port. Set its initial value to 3
CNT1	Integer	Internal	Value plus 1 if a correct data is received
T1	Timer	Internal	To tick time
Msg1	Message	Internal	Internal use, length is set as 255

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ST program – ST1 :

```
(* first PLC scan *)

IF   INIT   THEN
  INIT   :=   FALSE ;
  Port_Ok   :=   COMOPEN( Port_No , 9600 , 8 , 0 , 1 ) ;     (* Open COM as 9600, 8, N, 1 *)
  T1   :=   T#0s ;       (* Init as 0 *)
  STEP   :=   0 ;        (* Init as 0 *)
END_IF   ;
IF   Port_Ok = False   THEN     (* If open COM fail, return *)
  Return   ;
END_IF   ;

(* process the COM port *)
CASE   STEP   OF

  0 :   (* Step 0 : Test if any byte coming *)
      IF   COMREADY( Port_No )   THEN
          STEP   :=   1 ;          (* Yes, one byte coming at least. Set "Step" as 1 *)
          T1   :=   T#0s ;         (* Reset "T1" as 0 *)
          Tstart( T1 ) ;           (* start ticking Timer "T1" *)
      END_IF   ;

  1 :   (* Wait some time to let all bytes completely coming from the device *)
      IF   T1 > T#250ms   THEN    (* This value depends on the device, some is longer *)
        Tstop( T1 ) ;                (* Stop ticking "T1" *)
        T1   :=   T#0s ;
        STEP   :=   0 ;              (* go back to Step 0 *)
        NUM1 := COMARY_R( Port_No , 1 ) ;   (* receive all bytes to the No.1 byte array *)

       (* Here suppose every data contains 2 byte at least. Like 2 grams, data will be 2<CR>,
          The character '2' and the character "<CR>" contain one byte respectively. Max. 15 bytes.
          If your device data format is 3 bytes at least, please modify code to become "NUM1 >= 3" *)

       if   (NUM1 < 15)   and   ( NUM1 >=2 )   then

       (* supports "Ary_Str( )" since driver version of I-7188EG: 2.18 , I-7188XG: 2.16, I-8xx7 : 3.20 *)
            Msg1 := Ary_Str(1 , NUM1) ;   (* Convert No.1 Byte array to become a String *)
```


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```
        (* Extract some integers from a string and then save them into No.1 Integer array *)
            Tmp_val   :=   Msg_N(Msg1 , 1) ;

        (* if it returns -1, it means format error. Like 'A123', '5.63' , … are not integer *)
            if   (Tmp_val > 0)   then      (* If at least one integer is extracted *)

              Tmp_val   :=   Ary_N_r(1 , 1) ;   (* Get the first integer of No.1 Integer Array *)

              (* Test its value. Value between 1 to 10000 gram is correct *)
              If   ( Tmp_val > 0)   and   ( Tmp_val <= 10000 )   then
                result_gram     :=   Tmp_val ;     (* Correct, save value to "result_gram" *)
                Get_One_Data :=   True;            (* Set as True to do more operation at below *)
              end_if   ;

            end_if ;
          end_if ;
        END_IF   ;
END_CASE   ;

if   Get_One_Data   then     (* If value is True (correct data is received), do more operation *)
    Get_One_Data   :=   False;
    CNT1 := CNT1+1 ;
    (* Here you can add code of "more operation" *)
    (*   …   *)
end_if ;
```

How to test?

We can simulate this RS-232 weight meter in PC.

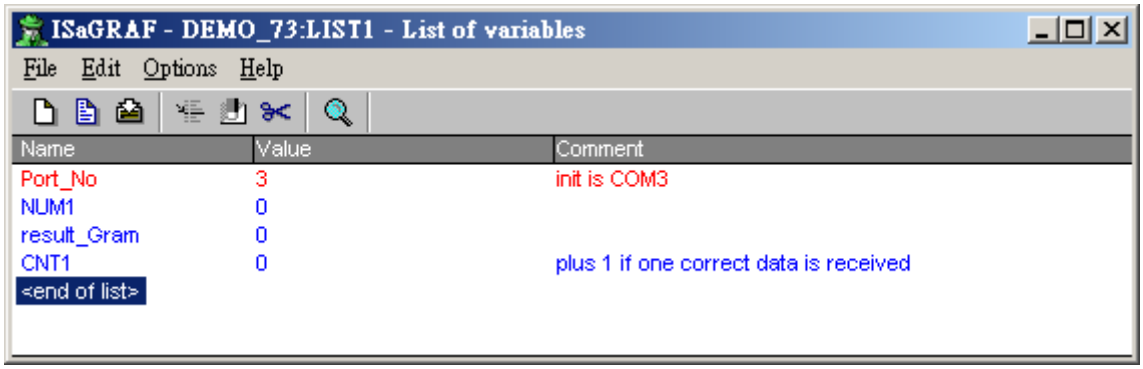
Please connect PC's COM1 to I-8437-80's COM3: RS232 by a RS-232 cable.

Pin assignment of the cable is as below.

PC		I-8437-80 (COM3: RS-232)
2 RXD	———	2 TXD
3 TXD	———	3 RXD
5 GND	———	5 GND

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Then please download the “Demo_73” program to the I-8437-80 PAC. If Ok, the “Spy list” window of this “Demo_73” program will show up. (Please refer to Chapter 9.12 of the ISaGRAF user manual for more information about ‘Spy Lists’).



If there is correct weight data coming, the value of “CNT1” will plus 1, and the value of “result_Gram” represents the correct weight value (unit is grams).

Please run “Hyper Terminal” in the PC to simulate as a RS-232 weight meter as below.



(Enter a name to it and then click “Ok”)

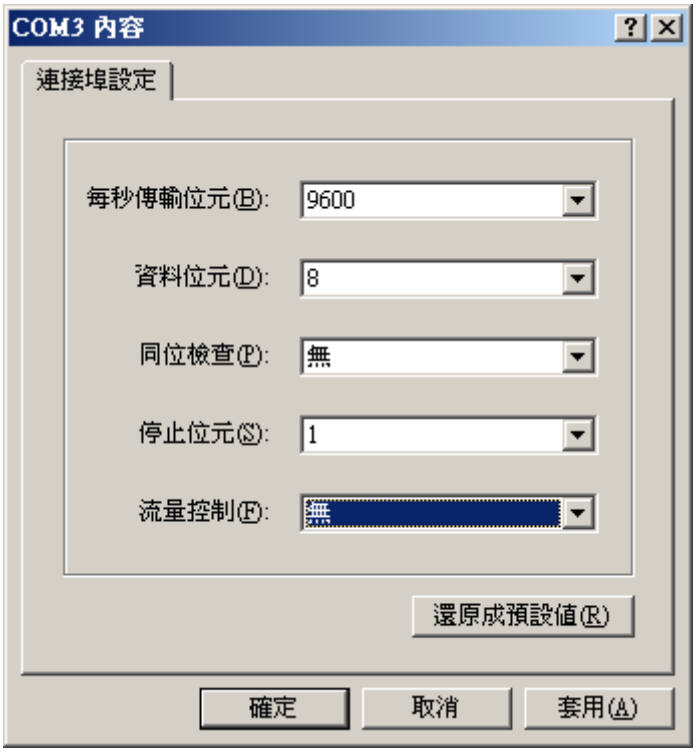


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(Select the proper COM port in your PC, Normal value is “COM1”)

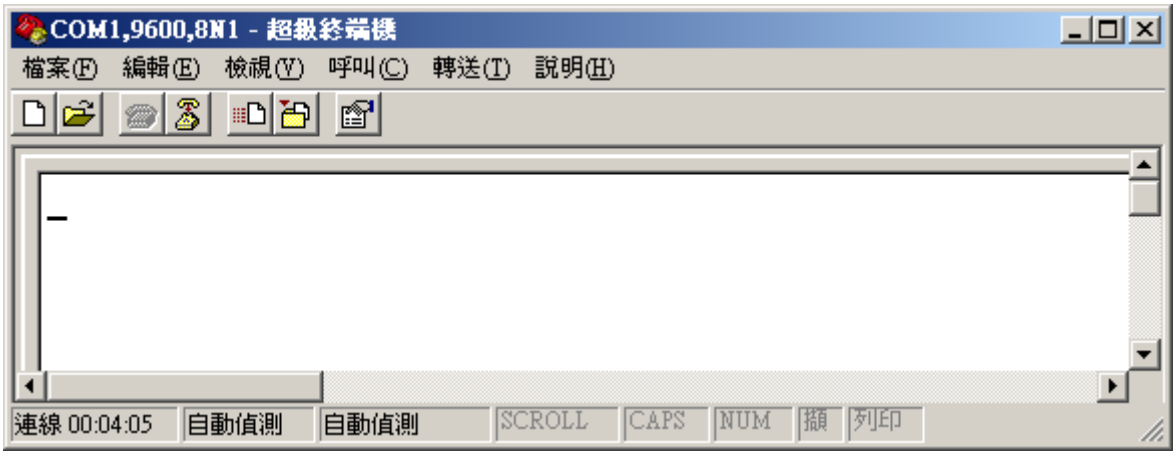


Enter the COM port parameter as “9600, 8, N, 1 , No flow control” for this “Demo_73” program.

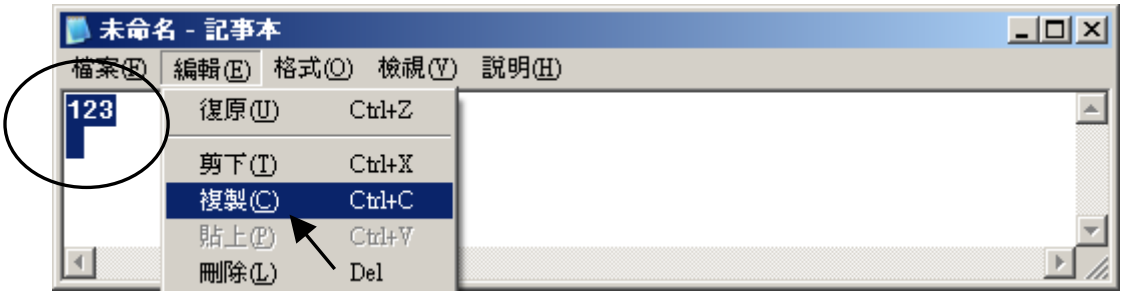


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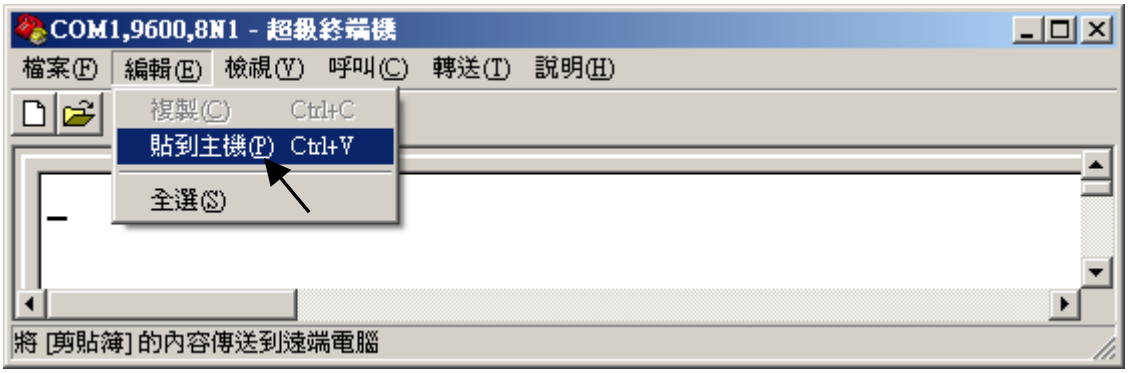
Then the new created “Hyper Terminal” window will show up.



Please run Windows “Notepad” , enter value for example, 123 , then press at “Enter” key. Then Please copy this 123 with the “Enter Key” character as below.

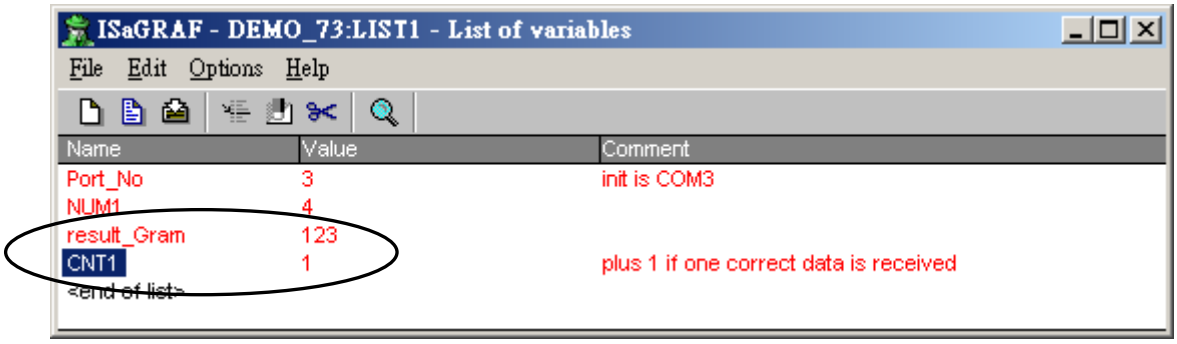


Then please paste these copied characters to the “Hyper Terminal” as below.



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If it succeed, you will see value of “CNT1” and “result_Gram” changed in the Spy List window.



Click the link for more ISaGRAF FAQ:
http://www.icpdas.com/en/faq/index.php?kind=280#751

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