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.

Some device will send its Integer or Real data to the controller 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.
(symbol "<CR>" means the Enter character, its ASCII No. is 13.   "<LF>" is the New Line character, its ASCII No. is 10)

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

for example,   3456<CR>   or   543<CR><LF>   or   -24<LF><CR>

If you are using ISaGRAF controller - 7188EG, 7188XG, I-8xx7, I-8437-80 , i-8837-80 or Wincon-8xx7 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 www.icpdas.com – FAQ – Software – ISaGRAF – 066 to download the demo program "Demo_73.pia"   or
I-8xx7 CD-ROM: \napdos\isagraf\8000\demo\   "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 controller if it detect a weight input (grams).

1<CR>   ~   10000<CR>

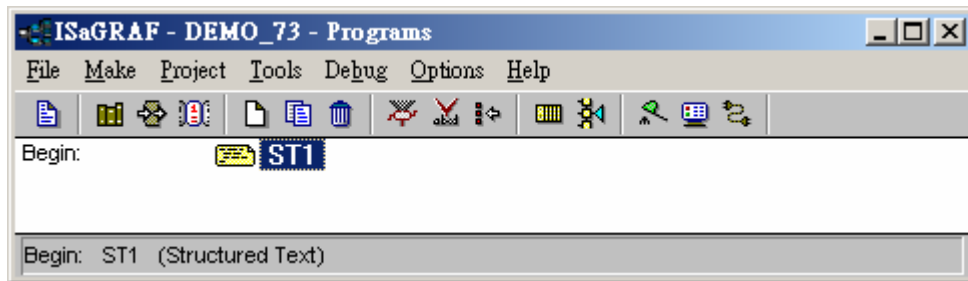Pin assignment of the communication cable:

(Using i-8437-80 COM3)

Device   i-8437-80   COM3: RS232
RXD   -----------   2 TXD
TXD   -----------   3 RXD
GND   -----------   5 GND

(Using i-8437-80 COM4):

Device   i-8437-80   COM4: RS232
TXD   -----------   2 RXD
RXD   -----------   3 TXD
GND   -----------   5 GND

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

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 *)

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        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 , W-8xx7: 3.37 *)
         Msg1 := Ary_Str(1 , NUM1) ;   (* Convert No.1 Byte array to become a String *)

        (* 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: RS232
     2 RXD    -----------         2 TXD
     3 TXD    -----------         3 RXD
     5 GND    -----------         5 GND
```

Then please download the "Demo_73" program to the i-8437-80 controller. If Ok, the "Spy list" window of this "Demo_73" program will show up. (Please refer to Chapter 9.12 of the "User's Manual Of ISaGRAF Embedded Controllers" about more information of Spy Lists).
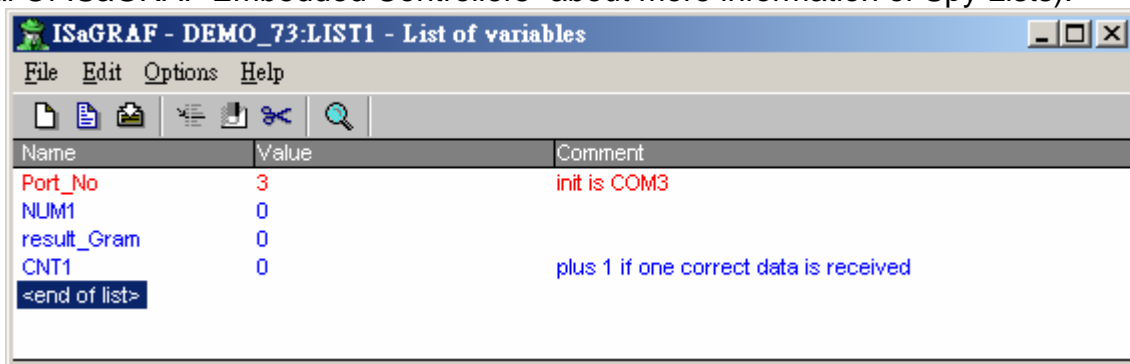
If there is correct weight data coming, the value of "CNT1" will plus 1, and the value of "result_Gram" represents the correct weight value (unit is grams).

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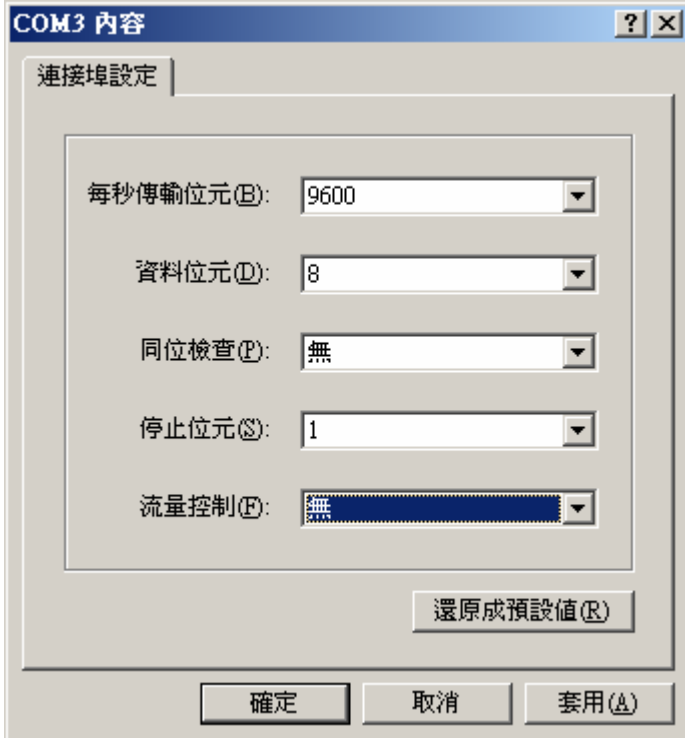

(Enter a name to it and then click "Ok")

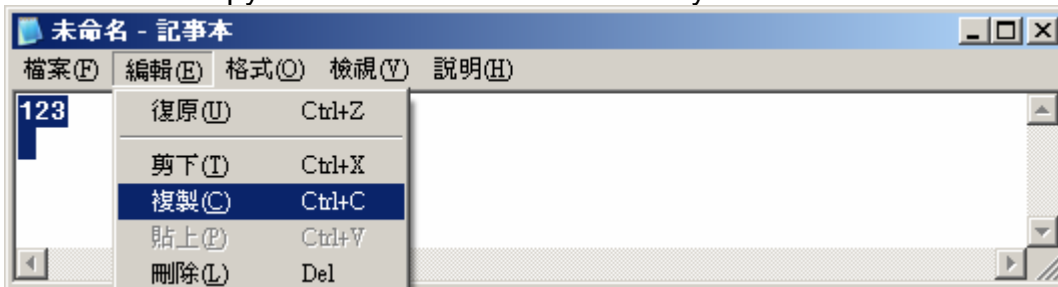(Select the proper COM port in your PC, Normal value is "COM1")
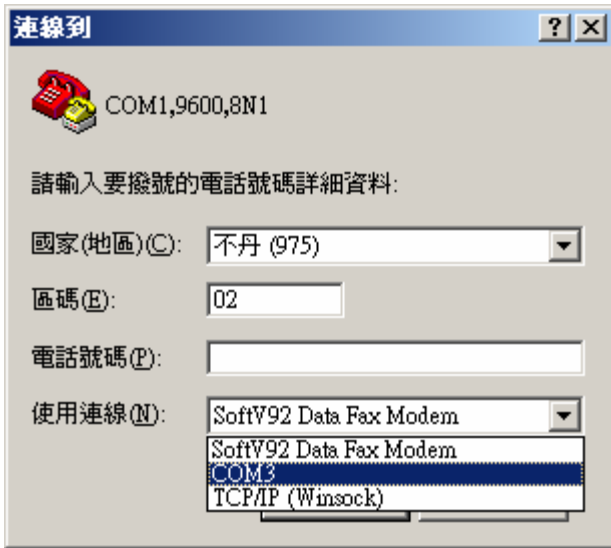
Enter the COM port parameter as "9600, 8, N, 1 , No flow control" for this "Demo_73" program.
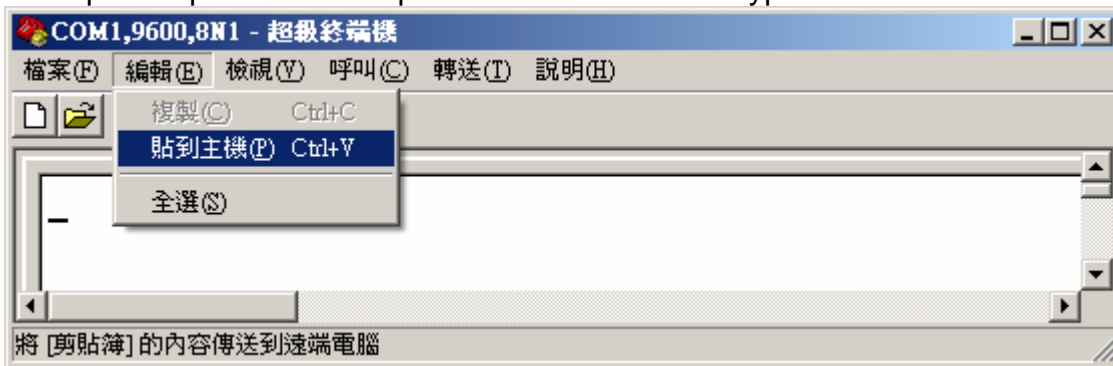
Then the new created "Hyper Terminal" window will show up.

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.

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