Application: Record 10-Ch. temperature value into a file in uPAC-7186EG every minute. When 24 hour recording is finished, send this record file by email every day.

Download FAQ-080 Demo

1. Introduction

This application sample uses one uPAC-7186EG + X-608 and using its COM2: RS-485 connecting to one I-7018Z to record 10-Ch. Temperature value every minute. Then send an email with the attached record file after 24-hour recording is finished. This email is sent around 00:00 to 00:01am every day.
I-7018Z's DOCN setting should be configured as below by the DCON utility:

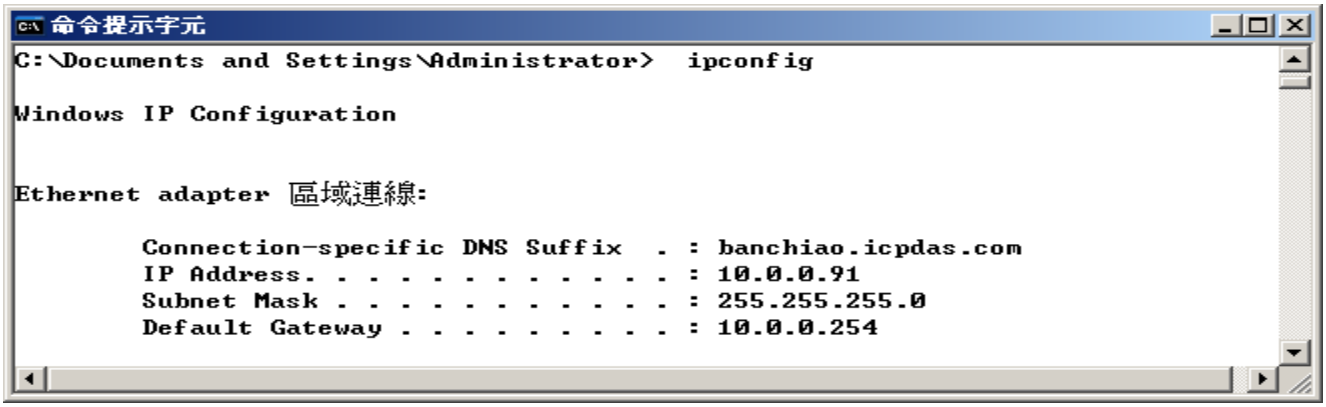
I-7018Z: Addr = 1, Baud = 9600, No Checksum, Formate = 2's compliment
Type = the Thermo-Couple sensor type you are using (for ex, [0F]: T/C K-Type)

The ISaGRAF demo programs is "demo_75a".
Please visit https://www.icpdas.com/en/faq/index.php?kind=280#751 >FAQ-080 to download it.

For more information about sending email with attached file by uPAC-7186EG, please refer to the FAQ-076 and FAQ-077.

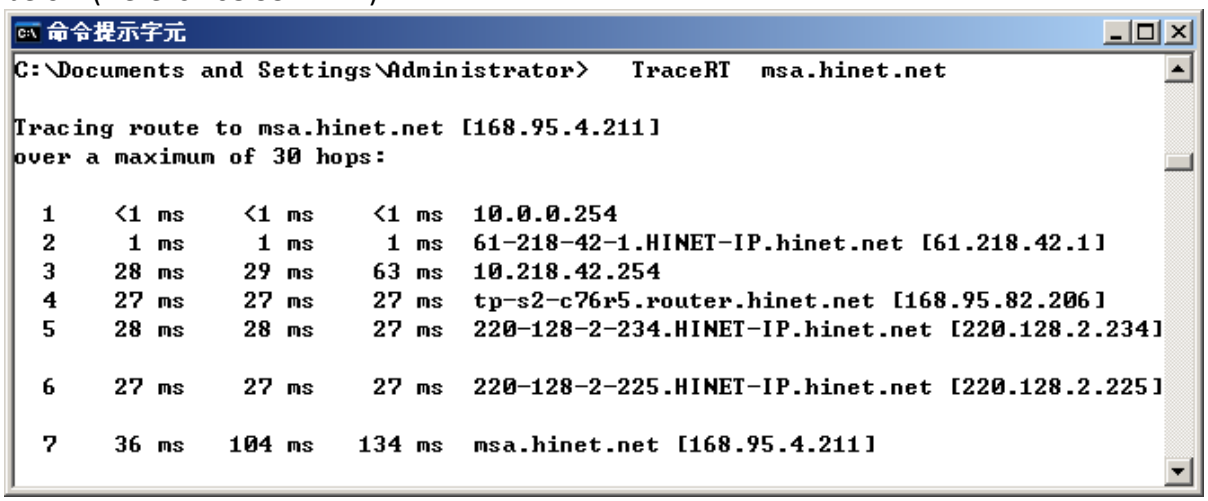
For more information about operating the X-608: battery backup SRAM, please refer to the section 10.3 of the "ISaGRAF User Manual". It can be found in the following linkage at
https://www.icpdas.com/en/download/show.php?num=333&nation=US&kind1=&model=&kw=ISaGRAF

To send email correctly, please set proper Gateway IP in the controller's Ethernet port setting. Please type command "ipconfig" in a PC's command prompt window at the same local network to get the Gateway IP setting as below. (Here is 10.0.0.254)



Then please fill-in this Gateway IP address to your uPAC-7186EG's Ethernet port setting. Please run "7188xw.exe" in the PC and give command for example, "gateway 10.0.0.254" if the gateway IP is 10.0.0.254. (Please refer to appendix B of the "ISaGRAF User Manual" for the detail steps)

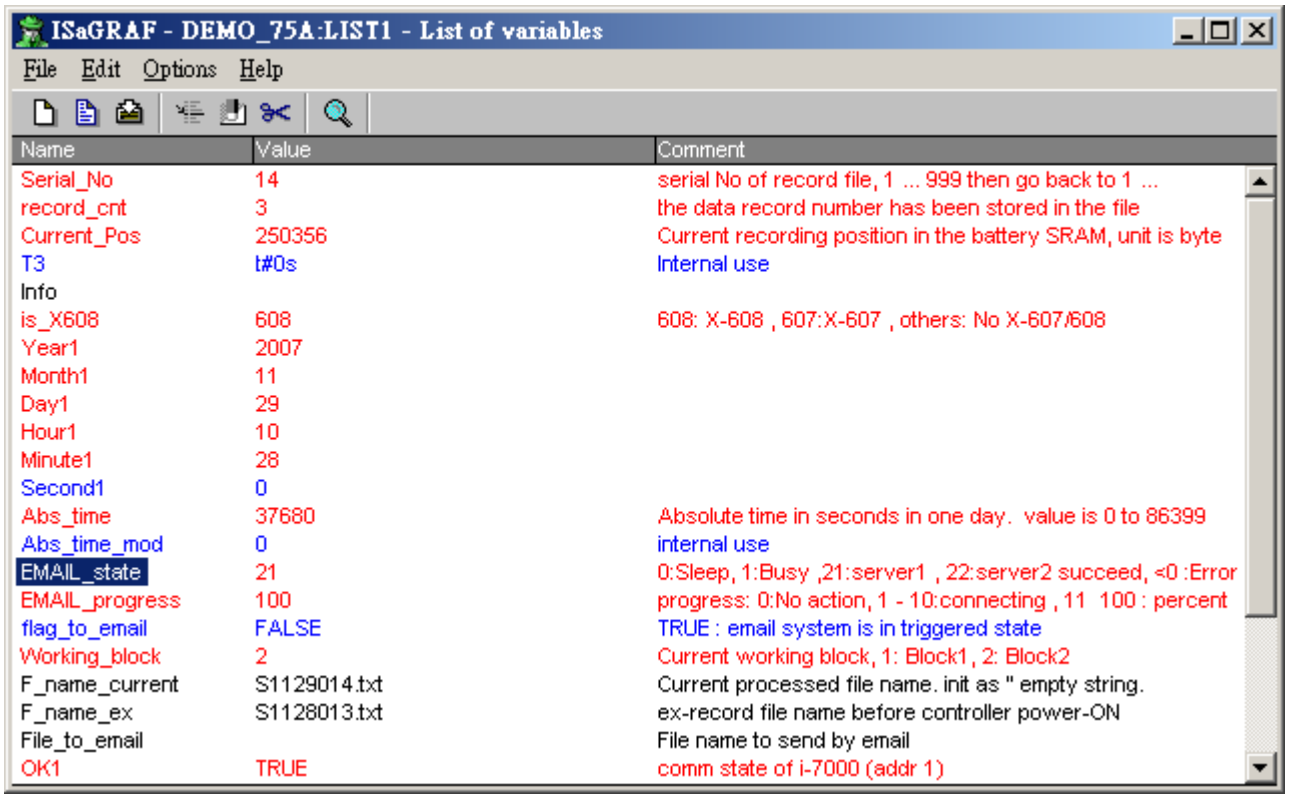
The PC's command prompt windows can also request the Mail server's IP address (We need it in the ISaGRAF program). For example, to request IP of msa.hinet.net, please type command TraceRT msa.hinet.net as below (Here is 168.95.4.211)



Email demo download from https://www.icpdas.com/en/faq/index.php?kind=280#751 >FAQ-080 is "demo_75a.pia".
Please modify at least the below setting in the demo program to be your own setting.

```
TMP:= MAIL_SET( 1,'chun@icpdas.com' ) ;          (* Receiver 1. please modify it *)
TMP:= MAIL_SET( 100,'go_mao@hotmail.com' ) ;     (* Sender. please modify it *)
TMP:= MAIL_SET( 101,'168.95.4.211' ) ;           (* Mail server 1's IP, please modify it *)
```

Then re-compile it and then download it to the uPAC-7186EG+X-608 to run. The below windows will show up. If "OK1" shows "False", it means communication is broken between the uPAC-7186EG and the connected I-7018Z.



If the original email sending time is not modified in this example program, it will send one email every day at around 00:00:00 ~ 00:00:59 according uPAC-7186EG's clock. The reporting data normally has 1440 records similar as below (one for every minute, each contains 10-CH. values)

```
Start recording at 0:1:30, 2007/11/28
1,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
2,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
3,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
4,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
5,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
6,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
7,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
8,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
9,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
10,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
11,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
12,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
13,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
14,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
15,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
16,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
17,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
18,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
19,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
20,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
21,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
22,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
23,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
24,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
25,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
26,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
27,-280.0,-280.0,21.4,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
28,-280.0,-280.0,21.3,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0,-280.0
```

User may modify the sending-time setting for demo purpose (because waiting 24 hours is too long). For example, modify below codes inside the ST program “Record1”

Please mask below code by using “(*” and “*)”

```
(*  if  Abs_time >= 0  and  Abs_time <= 59  then  *)
```

And then remove “(*” and “*)” in the below codes

```
TMP_v := Abs_time / 60 ;
if  Mod( TMP_v, 3 ) = 0  then
```

The email will be sent every 3 minutes.

This example program has one safety design. If the email is not sending successfully (The possible reason may be Internet no working or Mail Server 1 out of service or others), this “demo_75a” will try to re-send this email every 15 minutes until it is sending successfully or until the time is over 00:00 (mid-night) again. Recommend to add the Mail server 2 setting in the ST program “Record1”.

```
TMP: = MAIL_SET ( 102,'211.72.51.214' ) ;      (* Please use yours, not this IP address *)
```

Then if the mail server 1 is out of service, uPAC-7186EG will try to connect mail server 2 to send the email.

Because the above safety design, this example program divides the X-608 memory into two blocks. One is for storing data of the current day, the other is for storing data of the past-day. The past-data (ex-file) is normally sent at around 00:00:00 ~ 00:00:59 unless it was sending failed, then it will be re-sent every 15 minutes.

The available address in X-608 for user is from byte No.1 to No. 512, 000 (while for X-607 is 1 to 118,784). This example program cannot use X-607 because its memory is not enough. Please use X-608.

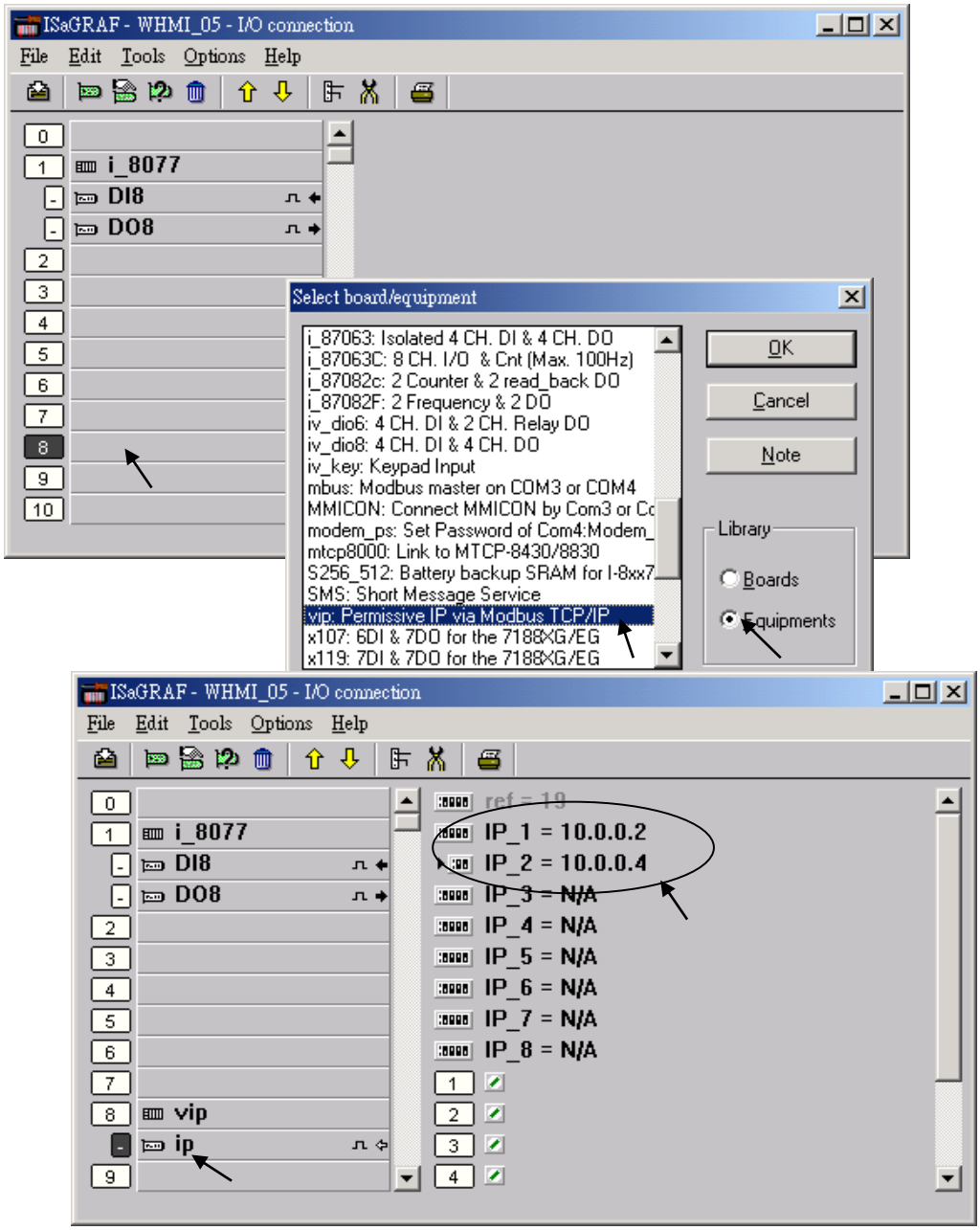
The definition of X-608 memory in this example shows in the following table (unit is Byte).

No.1 to No.4 (4-byte-binary Integer)	State of the memory. 7654321 : this memory has been used by this program. other value: hasn't been used before
No.5 to No.8 (4-byte-binary Integer)	where is the ex-record data before controller power-ON 1 : ex-record data is stored in memory Block 1 2 : ex-record data is stored in memory Block 2 0 or other value: No ex-record data
No.9 to No.12 (4-byte-binary Integer)	the file-tail position of Block 1 (last record byte position) > 0 : the file-tail position of Block 1 -1 : No data
No.13 to No.16 (4-byte-binary Integer)	the file-tail position of Block 2(last record byte position) > 0 : the file-tail position of Block 2 -1 : No data
No.17 to No.20 (4-byte-binary Integer)	The serial No. of record file (1... 999 then go back from 1...) New file will increase by 1
No.21 to No.40	reserved
No.41 to No.53 (Message, String)	File name stored in Block 1 (12 byte + string-end byte =13 byte, for ex, ‘S1203037.txt'
No.61 to No.73	File name stored in Block 2

No.1 to No.4 (4-byte-binary Integer)	State of the memory. 7654321 : this memory has been used by this program. other value: hasn't been used before
(Message, String)	(12 byte + string-end byte =13 byte, for ex, 'S1203037.txt'
No.101 to No.250,100	Data area in Block 1 (max. 250,000 data bytes)
No.250,101 to No.500,100	Data area in Block 2 (max. 250,000 data bytes)

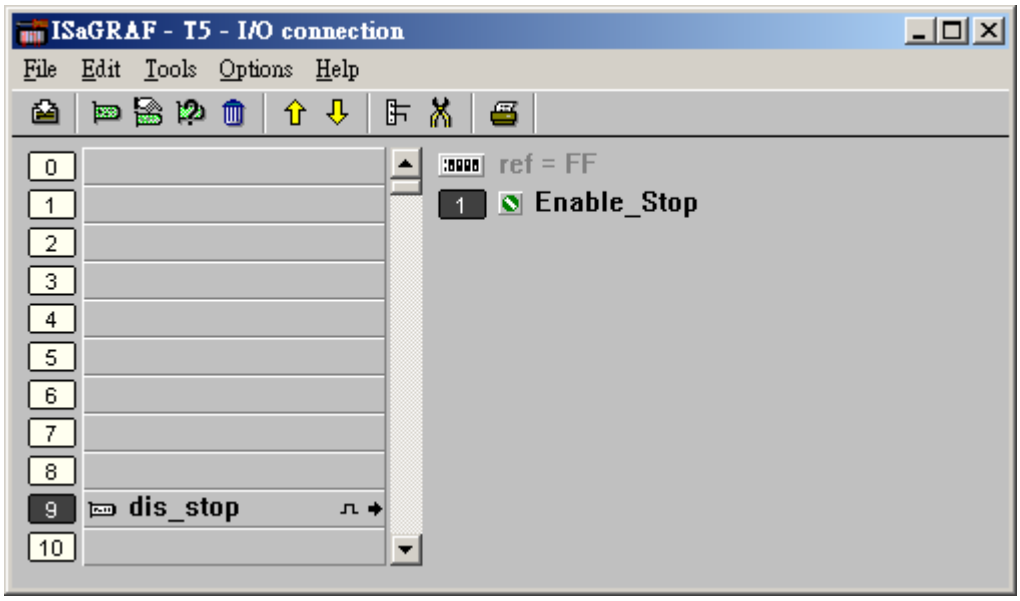
Modbus TCP/IP security

User may set up to 8 IP address for ISaGRAF or other HMI to get access to the I-8x37, I-7188EG / uPAC-7186EG & W-8xx7 via the Modbus TCP/IP protocol as below. On the IO connection window of ISaGRAF, please connect “vip” and entering the IP which can get access to the controller via Modbus TCP/IP protocol. If “vip” is not connected, any remote IP can get access to your controller via Modbus TCP/IP protocol. If “vip” is connected and No IP is entered (all assigned as “N/A”), No HMI and ISaGRAF can get access to it by Modbus TCP/IP anymore.



Using “dis_stop” to disable / enable the ISaGRAF Download function

For some reason, to prevent someone to use ISaGRAF software to stop or to download a different controller project already running in the I-7188EG / uPAC-7186EG, I-8437/8837 and W-8xx7, the “Dis_stop” can be applied. Please connect “dis_stop” at a slot No. larger than 8 and init the channel value to become TRUE. Then stop / download command is not allowed in this controller.



To disable “Dis_stop” to accept stop / download command, please run the original ISaGRAF project to link to this controller and set the channel value to become False.