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## SMS: Short Message Service

[Download FAQ-111 Demo](#)

The iP-8447/8847,  $\mu$ PAC-7186EG, WP-8xx7, I-8xx7/I-8x37-80, I-7188EG, I-7188XG and VP-25W7/23W7 controller can integrate with a GSM Modem to support SMS: Short Message Service. This allows user to request information or control something from his own cellular phone to the ISaGRAF controller. Besides, the controller can also send information and alarms with short message in user's local language to user's cellular phone.

### 1.1: Hardware Installation

The iP-8447/8847 supports SMS since its driver version of 1.05, while version 1.08 for  $\mu$ PAC-7186EG, and version 1.12 for WP-8xx7, and version of 4.1 for I-8xx7/I-8x37-80, and version of 3.09 for I-7188EG and I-7188XG, and version of 1.03 for VP-25W7/23W7. If your driver is older one, please upgrade the hardware driver to the associate version or a later version. The driver and I/O library can be found from the below ICP DAS's web site:

<http://www.icpdas.com/en/download/show.php?num=368&nation=US&kind1=&model=&kw=isagraf>

The I/O library should be re-installed if yours is older one. Please refer to section 1.2 of the ISaGRAF User's manual. Or you can refer to Appendix A.2 of the ISaGRAF User's manual to simply install "C functions" with the below items. SMS\_test, SMS\_get, SMS\_gets, SMS\_send, SMS\_sts, To\_unico and "I/O complex equipment": SMS.

The "SMS\_Message\_Converter.exe" tool is for generating the short message in user's local language which can be found from the below zip file :

[http://www.icpdas.com/web/product/download/software/development\\_tool/isagraf/document/faq/faq111\\_demo.zip](http://www.icpdas.com/web/product/download/software/development_tool/isagraf/document/faq/faq111_demo.zip)

The GSM Modem **GTM-20xM series** is recommended for the ISaGRAF controller.

<http://www.icpdas.com/en/product/GTM-203M-3GWA#Specifications>

You may purchase it from ICP DAS or from your local agent. (Note: There is no guarantee that other GSM modems can work with ICP DAS PAC)



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**Note: Please REMOVE the password setting in the SIM card, then plug it into GSM modem, or it would not work.**

iP-8xx7	(COM4)	
WP-84x7/WP-88x7	(COM4)	GSM cable of
VP-25W7/23W7	(COM3)	GTM-201-RS232
I-8xx7/I-8x37-80	(COM4)	

2 RXD	=====	2 TXD
3 TXD	=====	3 RXD
5 GND	=====	5 GND
4 DTR	=====	4 DSR
7 RTS	=====	7 CTS

WP-8147 (COM1)		GSM cable of
		GTM-201-RS232

2 TXD		2 TXD
3 RXD		3 RXD
5 GND	=====	5 GND

μPAC-7186EG	(COM1/3/4)
I-7188EG	(COM1/3/4)
I-7188XG	(COM1/3/4)

WP-8147	(COM5)	
iP-8xx7/WP-8xx7	(COM5)	GSM cable of
VP-25W7/23W7	(COM5)	GTM-201-RS232
I-8xx7/I-8x37-80	(COM5)	

RXD	=====	2 TXD
TXD	=====	3 RXD
GND	=====	5 GND
DTR (or RTS)	=====	4 DSR
DTR (or RTS)	=====	7 CTS

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## 1.2: An SMS example program

The demo project is “demo\_43” and “demo\_43a”, please refer to section 11.1 of the ISaGRAF User's manual to install it to your ISaGRAF workbench. User's Manual can be download at following website:

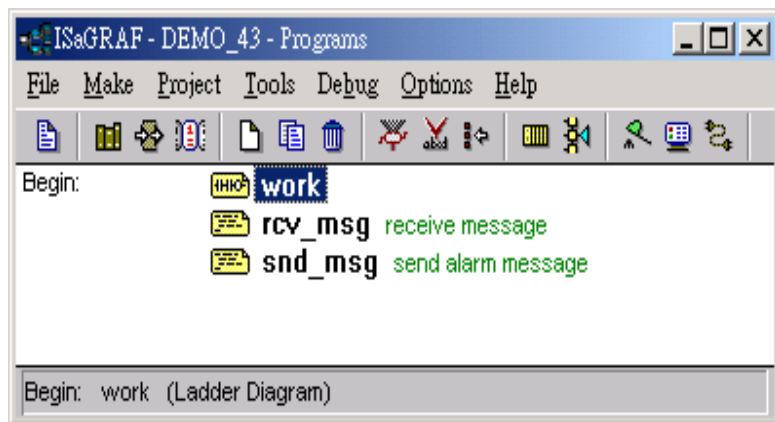
<http://www.icpdas.com/en/download/show.php?num=333&nation=US&kind1=&model=&kw=isagraf>

Variables:

Name	Type	Attribute	Description
M1	Boolean	Internal	Trigger to send an alarm message when K1 is set true.
M2	Boolean	Internal	Trigger to send a report message when a message is coming
M3	Boolean	Internal	Trigger to send an alarm message in Local language when K2 is set as true.
M4	Boolean	Internal	Trigger to send an alarm message in Local language when K3 is set as true.
K1	Boolean	Internal	Trigger M1 when K1 is set true
K2	Boolean	Internal	Trigger M3 when K2 is set true
K3	Boolean	Internal	Trigger M4 when K2 is set true
L1	Boolean	Output	Use the function block “blink” to trigger L1, the timer is T1
Q1	Boolean	Internal	Test if message is coming
TMP	Boolean	Internal	Temporary usage
SMS_available	Boolean	Input	Is SMS available? connect to SMS - status
T1	Timer	Internal	Blinking time of L1 to L3, init at T#500ms
data	Message	Internal	The coming Message
phone	Message	Internal	phone No. of sender
Date_time	Message	Internal	Message coming date & time in string format
To_who	Message	Internal	phone No of receiver, <b>please use your own No.</b>
Msg_to_send	Message	Internal	Message to send out
Year1	Integer	Internal	Message coming year
Mon1	Integer	Internal	Message coming month
Day1	Integer	Internal	Message coming date
Wday1	Integer	Internal	Message coming week date
Hour1	Integer	Internal	Message coming hour
Min1	Integer	Internal	Message coming minute
Sec1	Integer	Internal	Message coming second
Q1_cnt	Integer	Internal	Message coming count, declared as retained variable
Msg_status	Integer	Internal	Message sending status
TMP_v	Integer	Internal	temporary usage

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Project architecture:

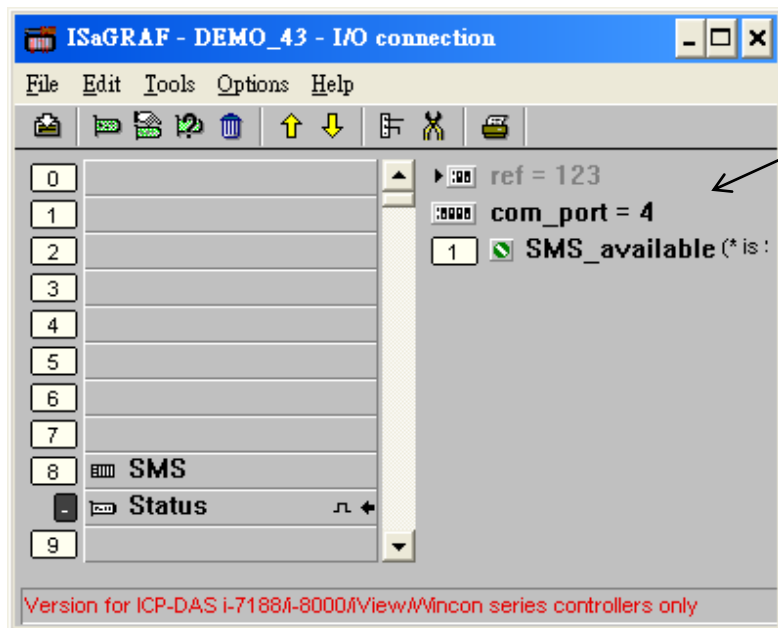


Operation actions:

1. If K1 is set as true, an Alarm message will be sent.
2. If the user send a message in format, for ex. T0200 or T1500 to the controller, the blinking period will change to 200ms and 1500ms. And then the controller will response a report message back to the user.
3. It will be triggered to send a short message in local language, when K2 or K3 is set as true.

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I/O connection:

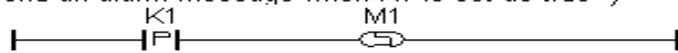


The setting of "Com-Port" depends on your ISaGRAF PAC

iP-8xx7(COM4/5)  
 WP-84x7/88x7(Com4/5)  
 WP-8147(Com1/5)  
 VP-25W7/23W7(Com3/5)  
 I-8xx7/I-8x37-80(Com4/5)  
 μ Pac-7186ED(Com1/3/4)  
 I-7188EG(Com1/3/4)  
 I-7188XG(Com1/3/4)

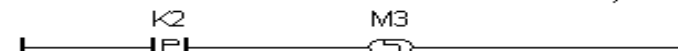
LD program: work

(\* Trigger to send an alarm message when K1 is set as true \*)



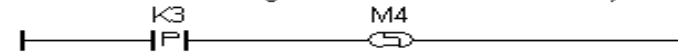
Trigger to send an alarm message when K1 is set true

(\* Trigger to send an alarm message when K2 is set as true \*)



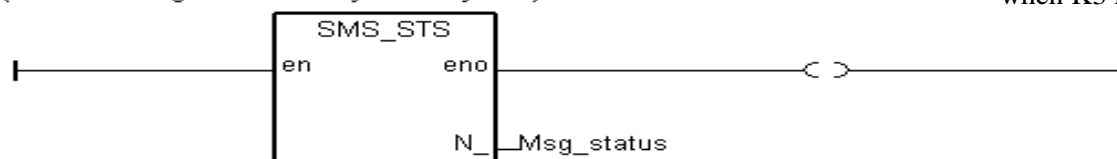
Trigger to send an alarm message when K2 is set true

(\* Trigger to send an alarm message when K3 is set as true \*)

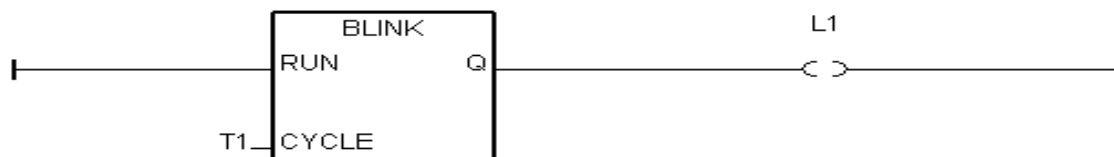


Trigger to send an alarm message when K3 is set true

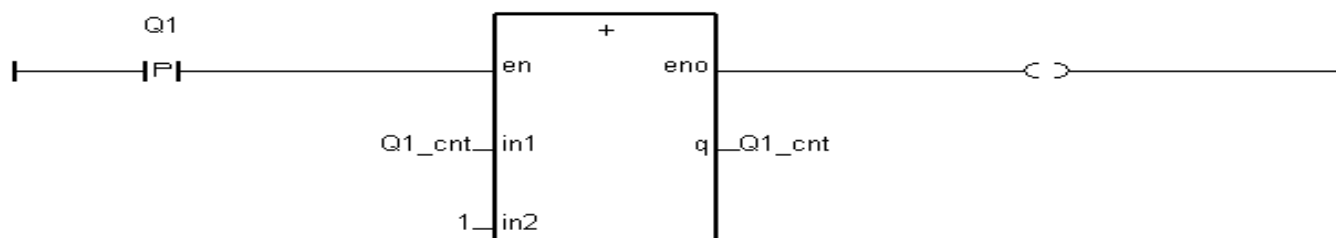
(\* Get message status every scan cycle \*)



(\* Show the system is working \*)



(\* Message coming count, Q1\_cnt is declared as retained variable \*)



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ST program: rcv\_msg

**Attention : the ISaGRAF PAC supports receiving short message in “pure text” format. It cannot receive short message in local language. However, it can send the short message in local language.**

```

Q1:= SMS_test();           ← Test if a message is coming or not

if Q1 then                 ← if a message coming

    Year1 := SMS_get(1);
    Mon1  := SMS_get(2);
    Day1  := SMS_get(3);
    Wday1 := SMS_get(4);
    Hour1 := SMS_get(5);
    Min1  := SMS_get(6);
    Sec1  := SMS_get(7);
                                ← call SMS_get to get message coming date
                                & Time in integer format

    phone := SMS_gets(2);
                                ← get phone No. of sender
    date_time:= SMS_gets(3);
                                ← get message coming date & time in string format

    data := SMS_gets(1);
                                ← get message data, SMS_gets(1) should be called in the last
                                one, because it will reset SMS_test status to FALSE:No
                                message coming

    Check the coming message. For ex. T1500 will result T1=1500 ms, while T0300
    result T1=300ms, however TAB10 will result T1=0 ms (not valid)
    if mid(data, 1, 1) = 'T' then

        TMP_v:= ANA(mid(data, 4, 2)); ← check 1st char is T or not

        (* valid format *)
        if TMP_v>=50 and TMP_v<=9999 then ← extract 4 bytes starting from string position 2,
            T1:= TMR(TMP_v); (* convert to timer *) and then convert to an integer

        Msg_to_send:= 'Current T1 change to ' + Msg(TMP_v) + ' ms.';
        M2:= TRUE;

    else (* invalid format*)

        Msg_to_send:= '!!! Wrong command, Val should be between T0050 to T9999. Current T1 remains at ' +
        Msg(Ana(T1)) + ' ms.';
        M2:= TRUE;
                                ← Trigger to send a report message to sender

    end_if;

end_if; (* if mid(data, 1, 1) = 'T' then *) ← Trigger to send a report message to sender

end_if; (* if Q1 then *)

```

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ST program: snd\_msg

if message sending status is not 1:busy

```
if (Msg_status <> 1) and SMS_available then
if M1 then (* alarm triggering *)
```

```
(* TEXT mode: the first parameter is not added 'L' at beginning. *)
TMP:= SMS_send(to_who, 'K1 is pushed!');
M1:= FALSE;
```

```
elseif M2 then (* Report triggering *)
```

```
TMP:= SMS_send(phone, Msg_to_send);(* report message back *)
M2:= FALSE;
```

```
elseif M3 then
```

```
(* Local Language mode: please add 'L' at beginning of the phone number. *)
(* the content of the second parameter means "K2 has been set true" in Traditional Chinese *)
(* It is generated by SMS_Message_Converter.exe, please refer to the next section 17.3 *)
TMP:= SMS_send('L' + to_who, '004B00325DF27D9388AB8A2D70BA0054007200750065');
M3:= FALSE;
```

```
elseif M4 then (* Report triggering *)
```

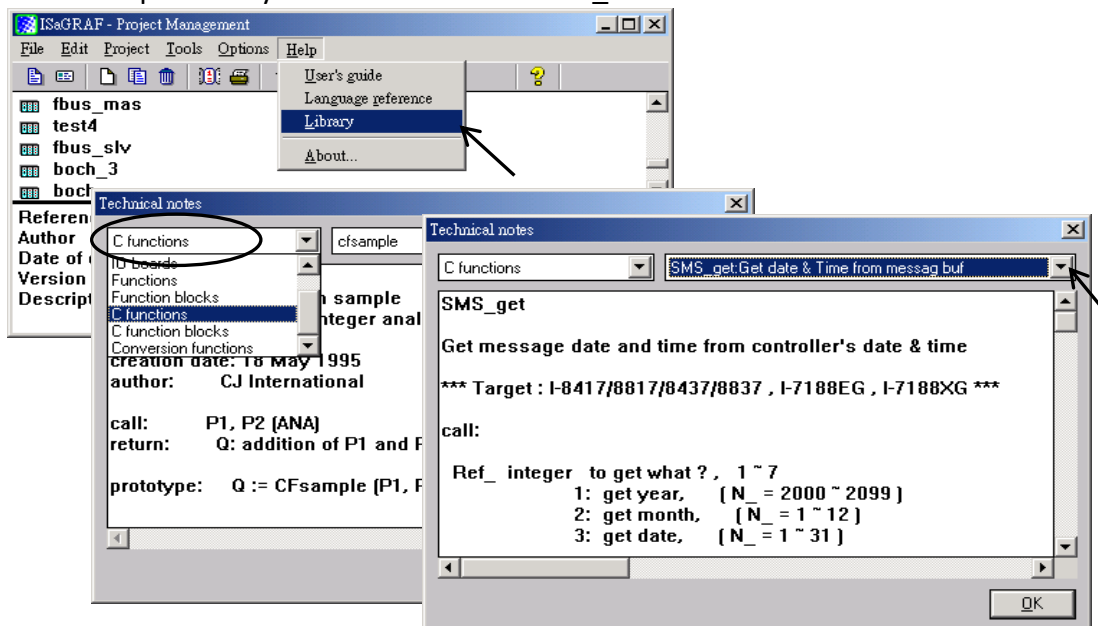
```
(* report message back. the content is "the value of the timer is set as <T1> ms" in traditional Chinese. *)
(* Please refer to the section 17.4 for the "To_unico" function *)
TMP:= SMS_send('L' + to_who, '9583720D76848A2D5B9A503C76EE524D70BA' +
To_unico(MSG(ANA(T1))) + '006D0073');
M4:= FALSE; (* Must disable it (set to FALSE) after SMS_send is called *)
```

```
end_if;
end_if;
```

Message sending status:  
0: waiting for a new sending request  
1: busy. (message is processing now) 21:  
The message is sent successfully  
-1: SMS system is not available  
-2: Timeout, No response.

Must disable it (set to FALSE)  
after SMS\_send is called

More description of SMS\_sts, SMS\_send, SMS\_test, SMS\_get, SMS\_gets and To\_unico, Please refer to ISaGRAF's On-line Help. "Library" – "C functions" – "SMS\_xxxx"



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### 1.3: How to use SMS\_Message\_Converter

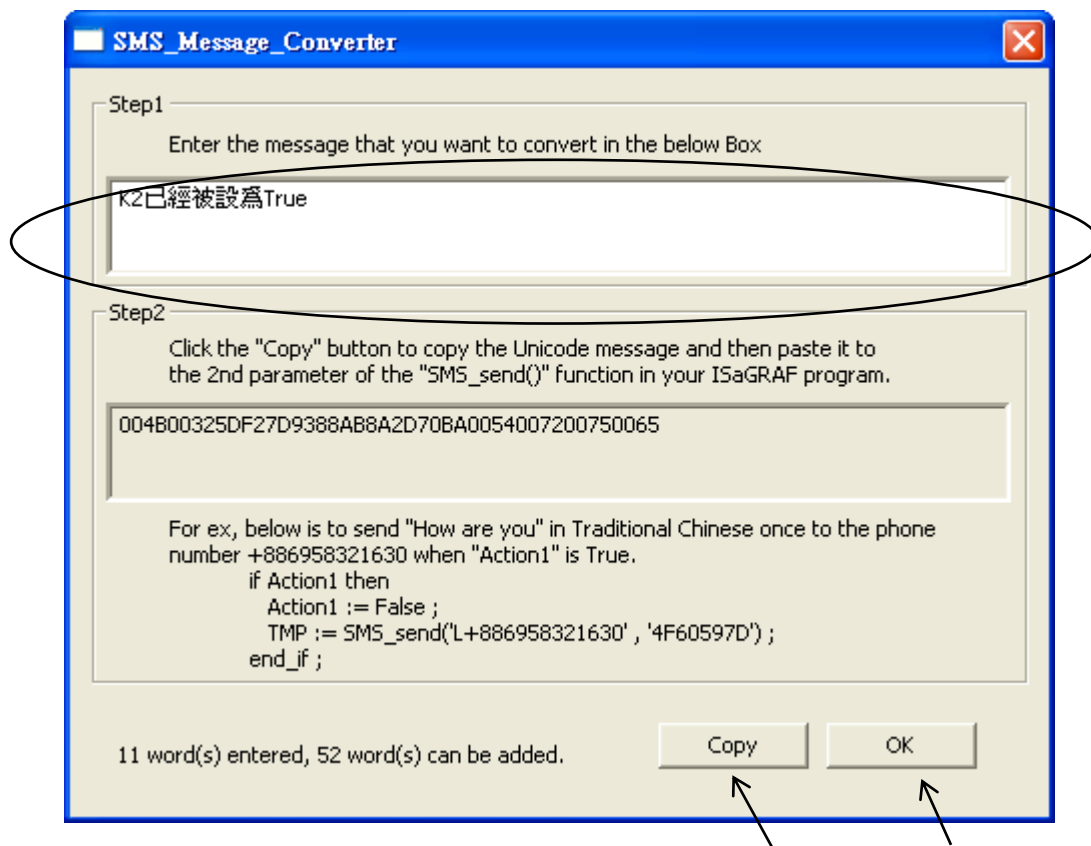
Please download SMS\_Message\_Converter.exe to your desktop from the below linkage:

[http://www.icpdas.com/web/product/download/software/development\\_tool/isagraf/document/faq/faq111\\_demo.zip](http://www.icpdas.com/web/product/download/software/development_tool/isagraf/document/faq/faq111_demo.zip)

How to Use :

Step 1 : Enter your words in local language that you want to translate in the first column.

Step 2 : Click the button "Copy", then Click the button "OK" to exit.



Step 3 : In the ISaGRAF program, press Ctrl-V to paste the converted string that we just copied to the second parameter of the function "SMS\_send()"

ex :

```
if Action1 then
  Action1:= False;
  TMP:= SMS_send('L+886958321630', '004B00325DF27D9388AB8A2D70BA0054007200750065');
end_if;
```

**Attention :** Please add 'L' at the beginning of the 1<sup>st</sup> parameter of "SMS\_send" to send a short message in local language.



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## 1.4: How to use “To\_Unico” to convert number string and ASCII string to Unicode string Usage:

```

TO_UNICO
convert ascii string to unicode string in PDU mode format

*** Target:
Target 1: I-8417/8817/8437/8837, I-7188EG, I-7188XG
Target 2: VP-25W7/ 23W7
Target 3: uPAC-7186EG
Target 4: iPAC-8x47
Target 5: WinPAC-8xx7/ 8xx6
call:
MSG_: Message The string to be converted, MAX length is 60.
return:
Q_: Message return value
'123ABC' ---> '003100320033004100420043'
'45.002' ---> '00340035002E003000300032'
'!@#$' ---> '0021004000230024'
'1223221211... 231 '(if length is 61) ---> " (The string will not be converted)

```

```

ex1:
(* T1 is a timer variable *)
if Action1 then
Action1: = False;
TMP: = SMS_send('L' + to_who, '9583720D76848A2D5B9A503C76EE524D70BA' +
To_unico(MSG(ANA(T1))) + '006D0073');
end_if;

```

```

ex2:
(* Int2 is a integer variable *)
if Action1 then
Action1: = False;
TMP: = SMS_send('L' + to_who, '9583720D76848A2D5B9A503C76EE524D70BA' +
To_unico(MSG(Int2)) + '006D0073');
end_if;

```

```

ex3:
(* Real2 is a real variable *)
if Action1 then
Action1: = False;
TMP: = SMS_send('L' + to_who, '9583720D76848A2D5B9A503C76EE524D70BA' +
To_unico(real_str2( Real2, 2 )) + '006D0073');
end_if;

```

**Attention :** The length of the second parameter must be less than 255 characters, or some data will lose.