SMS: Short Message Service

Download FAQ-111 Demo

The iP-8447/8847, µPAC-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 µPAC-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

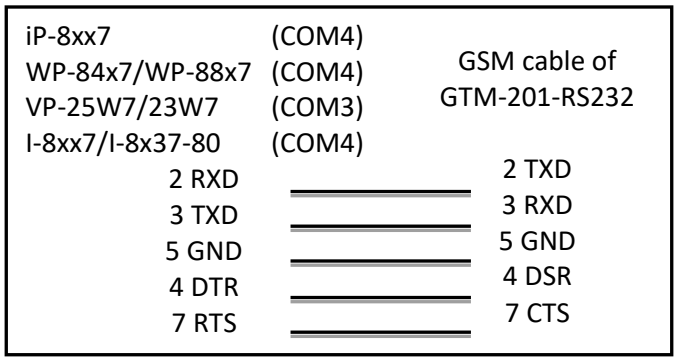
The I/O library should be re-installed if yours is older one. Please refer to section 1.2 of the ISaGRAF User's manual. Or you can refer to Appendix A.2 of the ISaGRAF User's manual to simply install "C functions" with the below items. SMS_test, SMS_get, SMS_gets, SMS_send, SMS_sts, To_unico and "I/O complex equipment": SMS.

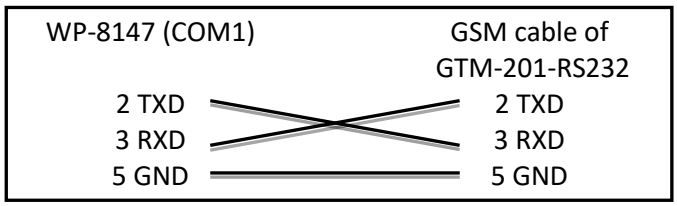
The "SMS_Message_Converter.exe" tool is for generating the short message in user's local language which can be found from the below zip file：
http://www.icpdas.com/web/product/download/software/development_tool/isagraf/document/faq/faq111_demo.zip
The GSM Modem **GTM-20xM series** is recommended for the ISaGRAF controller.
http://www.icpdas.com/en/product/GTM-203M-3GWA#Specifications

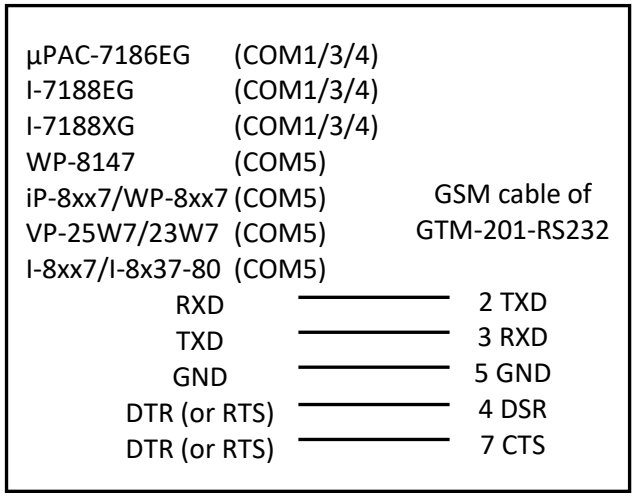
You may purchase it from ICP DAS or from your local agent. (Note: There is no guarantee that other GSM modems can work with ICP DAS PAC)

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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.







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1.2: An SMS example program

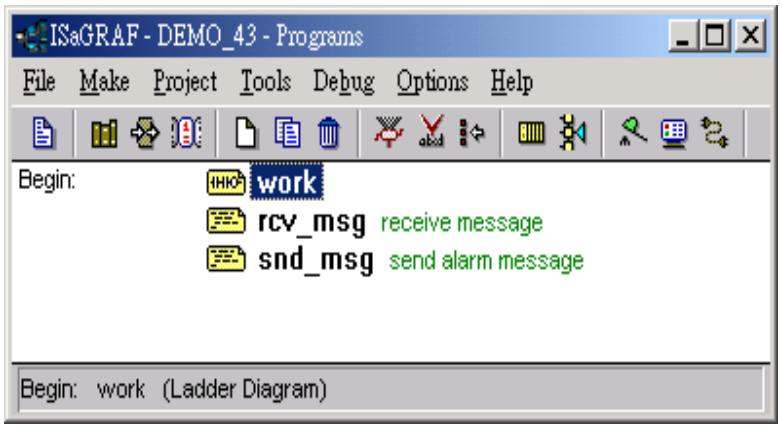
The demo project is “demo_43” and “demo_43a”, please refer to section 11.1 of the ISaGRAF User's manual to install it to your ISaGRAF workbench. User’s Manual can be download at following website:
http://www.icpdas.com/en/download/show.php?num=333&nation=US&kind1=&model=&kw=isagraf

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, **please use your own No.**
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:

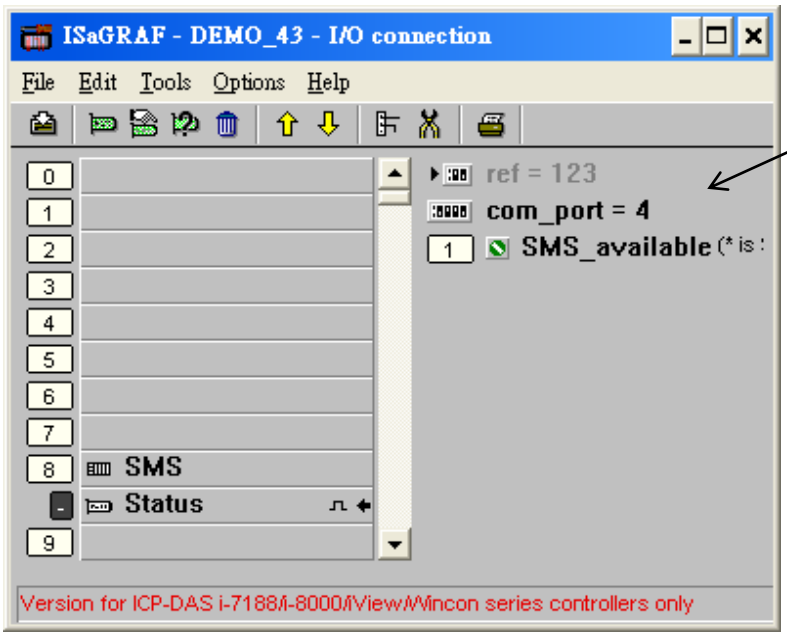


Operation actions:

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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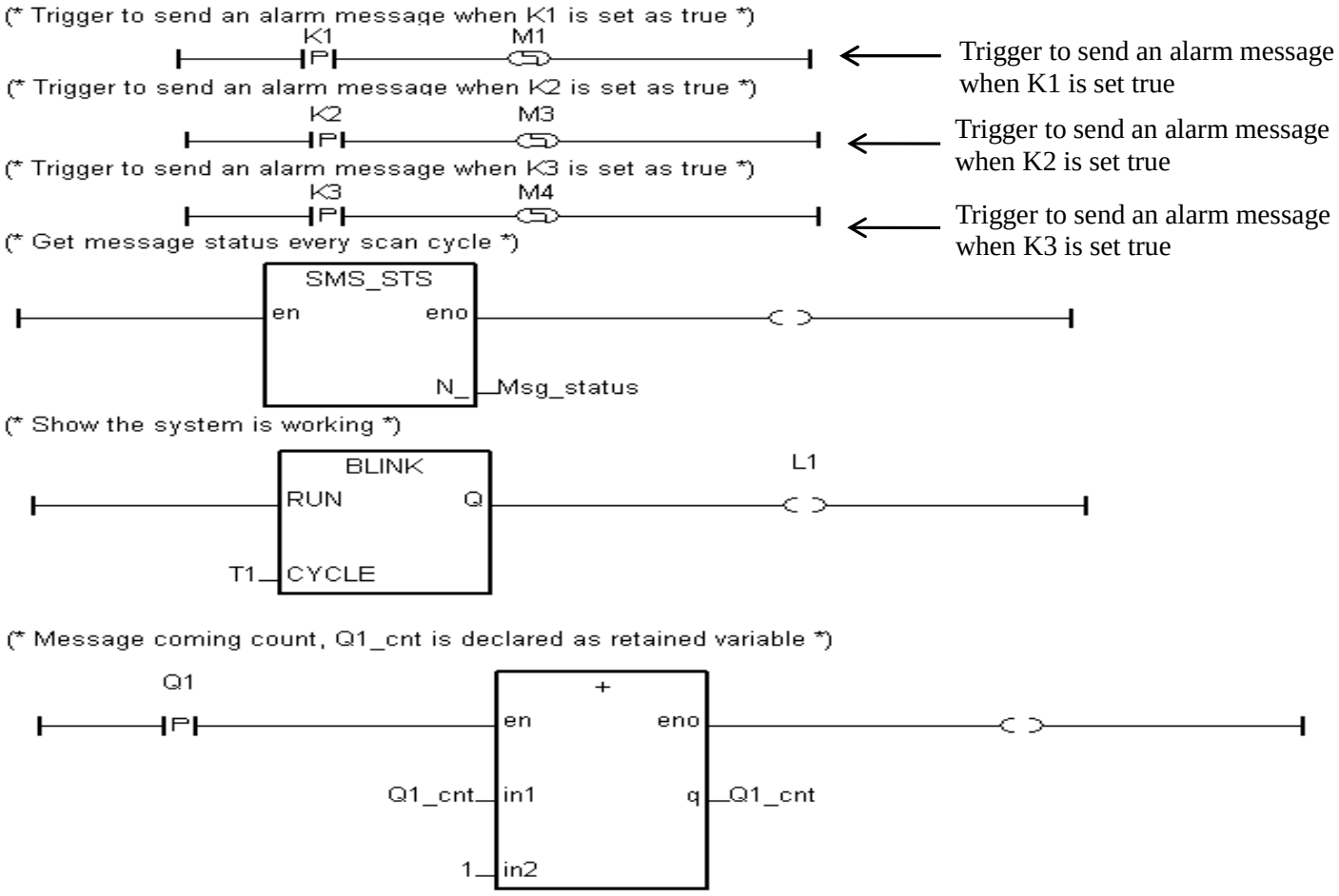
I/O connection:



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 true

Trigger to send an alarm message when K2 is set true

Trigger to send an alarm message when K3 is set true

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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
 T1:= TMR(TMP_v); (* convert to timer *)
```
← extract 4 bytes starting from string position 2, 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;

 elsif M2 then (* Report triggering *)

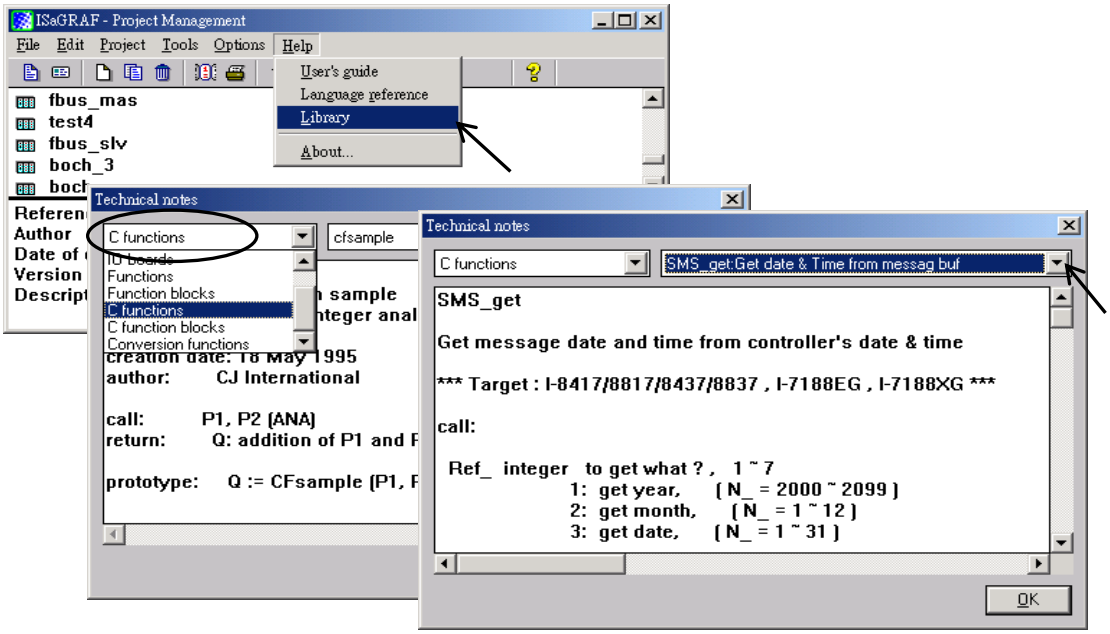
  TMP:= SMS_send(phone, Msg_to_send);(* report message back *)
  M2:= FALSE;

 elsif 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 Tranditional 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;
 elsif M4 then (* Report triggering *)
  (* report message back. the content is "the value of the timer is set as <T1> ms" in tranditional 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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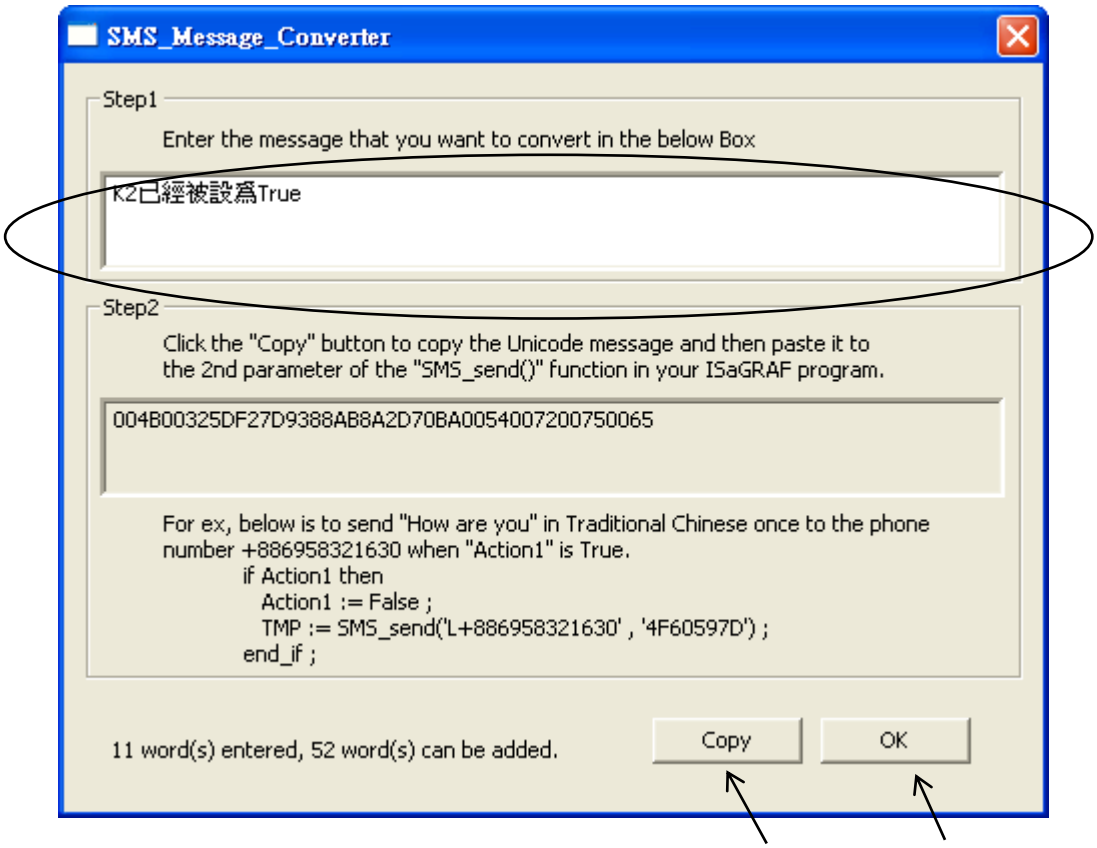
1.3: How to use SMS_Message_Converter

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

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 1st 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' ---> '00310032003300410042003'
'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.

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