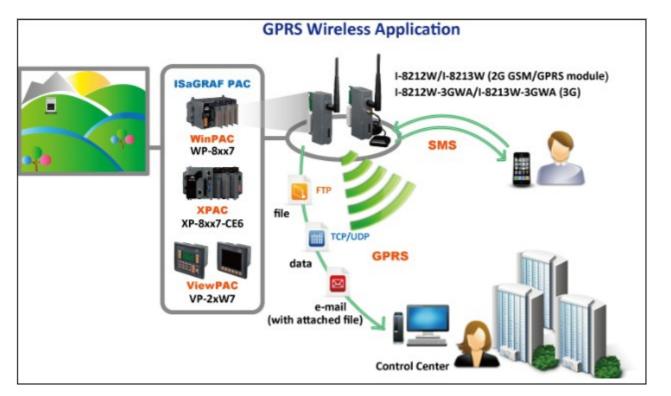
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How to Make "ISaGRAF WinCE PAC" to Connect to the Internet and Send Data by 2G / 3G wireless Dial-up ? How to get the location by using GPS ?

Sending back the collected data to the control center is necessary in some application. However, there may be no cable can reach the field or the cost of the network wiring is too expensive. ICP DAS released the "ISaGRAF PAC + I-8212W (or I-8213W)" solution for such applications (Or WP-5147 + GTM-201-RS232 or GTM-201-3GWA).

Designers can collect I/O data or other application data by program a PLC application (Ladder, ST, Function block, ...) with ISaGRAF software. Using the device – "I-8212W" or "I-8213W" (insert the SIM card inside that has registered the GPRS service from the Telecom Company) to connect internet by dial-up GPRS, then the PLC can send e-mail or TCP/UDP data to the center.



The following ISaGRAF driver version supports the dial-up GPRS (2G) access with I-8212W . **XP-8xx7-CE6**: 1.17 or later ; **WP-8xx7**: 1.37 or later ; **VP-25W7/23W7**: 1.29 or later

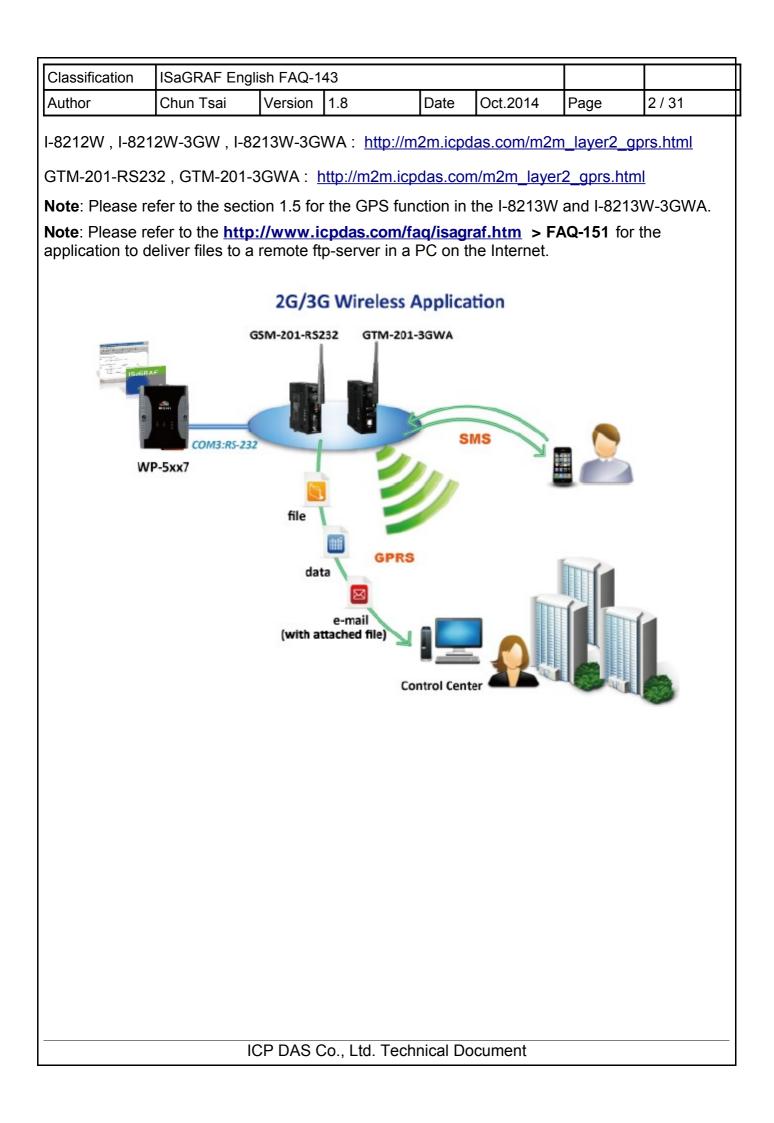
The following ISaGRAF driver version supports the dial-up (3G) access with the I-8212-3GWA (or I-8213W-3GWA).

XP-8xx7-CE6: 1.24 or later ; WP-8xx7: 1.44 or later ; VP-25W7/23W7: 1.36 or later

If the PAC is **WP-5xx7** (ISaGRAF driver version 1.01 or later), its COM3 (RS-232) can link one GTM-201-RS232 (2G) or GTM-201-3GWA (3G) to dial up .

If the ISaGRAF driver version of your PAC is older than the above listed version, please visit the <u>http://www.icpdas.com/products/PAC/i-8000/isagraf-link.htm</u> to download the newer driver.

This paper is the ISaGRAF FAQ-143. Users can download the document and demo programs from <u>http://www.icpdas.com/faq/isagraf.htm</u> > 143.



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1.1 : Hardware Installation

The I-8212W supports 2G GPRS/GSM. Insert the GPRS SIM card (that registered the GPRS function from the Telecom Company) into the "SIM card" socket of the I-8212W card and make sure the antenna has installed well. (However plug-in a 3G SIM card for the I-8212W-3GW and I-8213W-3GWA)

If your PAC is XP-8xx7-CE6 or XP-8xx6-CE6, plug the I-821xW in its slot 1 (leftmost I/O slot).

If your PAC is WP-8xx7 or WP-8xx6 or VP-25W7/VP-25W6 or VP-23W7/VP-23W6, please plug the I-821xW in its slot 0.

If your PAC is WP-5147, link its COM3 : RS-232 to a GTM-201-RS232 (2G) or GTM-201-3GWA (3G) and set the GTM-201 's SW1 to the "None" position.

Then power on the PAC and run PAC Utility (for example, run WinPAC utility for WinPAC) to setup the "MSA1" port of the I-821xW. Remember to run "File > Save and Reboot" once to save the settings.

If the PAC is XP-8xx7-CE6 / XP-8xx6-CE6, this step is not necessary (MSA1 is already in the XP-8000-CE6).

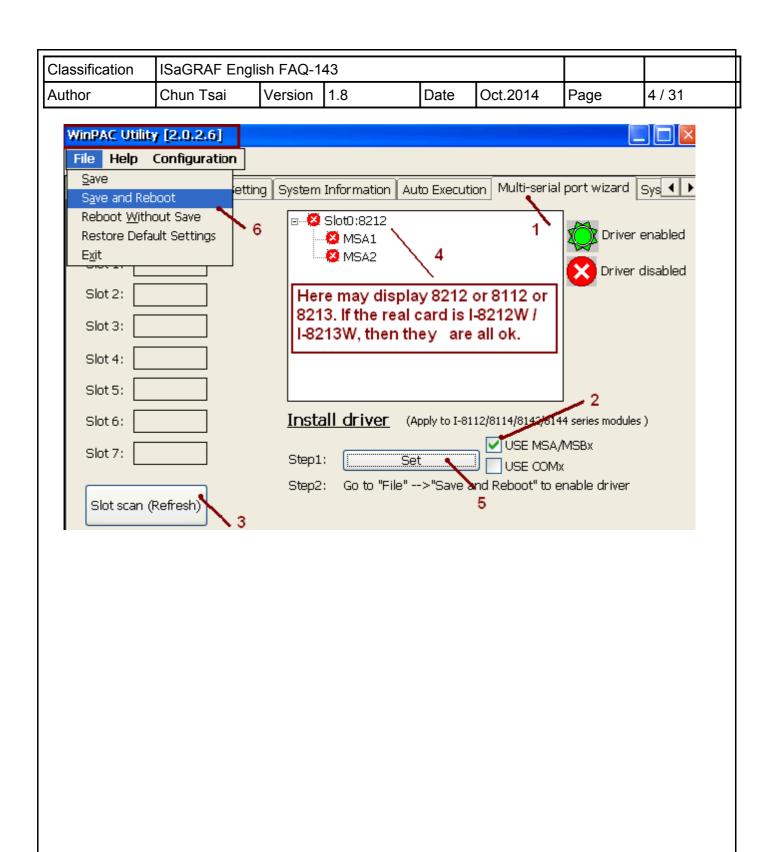
If the PAC is WP-5147, this step is not necessary (because it is using COM3 not MSA1)

However it is necessary for WinPAC and ViewPAC. Make sure your PAC utility is the version **2.0.2.6** or later version before setup the "MSA1" port. If yours is older version, please visit the below web site to download the utility and update it to

the"\System_Disk\Tools\WinPAC_Utility"directory for WinPAC (ViewPAC is "\System_Disk\Tools\ViewPAC_Utility").

WP-8xxx: http://ftp.icpdas.com/pub/cd/winpac/napdos/wp-8x4x_ce50/system_disk/tools/

ViewPAC : <u>ftp://ftp.icpdas.com/pub/cd/winpac/napdos/vp-2000_ce50/system_disk/tools/</u>



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1.2 : Software Installation

Please check the ISaGRAF driver version for your PAC is the correct version that listed in the first page of this document. If not, update it.

Note: Please refer to the <u>http://www.icpdas.com/faq/isagraf.htm</u> > FAQ-151 for the application to deliver files to a remote ftp-server in a PC on the Internet.

1.2.1 : Install the I-8212W / I-8213W or GTM-201 Driver

Double-click the "icpdas_i-821xw_MSA1_v1.00.cab" file in the path of ISaGRAF PAC: \System_Disk\ISaGRAF\ to install the I-8212W / I-8213W driver if the PAC is WP-8xx7, VP-25W7 or XP-8xx7-CE6.

Double-click the "ICPDAS GTM-201-RS232_COM3_winpac_v1.01.cab" in the path of PAC : \Micro_SD\ISaGRAF\ to install the GTM-201-Rs232 (2G) or GTM-201-3GWA (3G) driver if the PAC is WP-5xx7.

After completing the installation, remember to open the WinPAC Utility (or ViewPAC Utility, XPAC Utility) and run "File > Save and Reboot" to save the settings, then the PAC will restart automatically once. In the below figure, we use XP-8000-CE6 as a sample (XP-8xx7-CE6/ XP-8xx6-CE6, please select "Manual Save To Flash" and then run "File > Save and Reboot").

Save	n Auto Execution Rotary Execution M
leboot	
Restore Utility Default Settings	
⊻it	Welcome to use XPAC Utility
and the second se	This tool will help you easy to use XPAC CE series.
	use AFAC CE series.
	Task Bar setting:
	🗖 Auto Hide
	Always On Top
XPAC WINCE Series	HIVE Registry:
Industrial Control Products Data Acquisition Systems	
	🔿 Auto Save To Flash (Default)
	 Maunal Save To Flash
Configure the synchronization with a time server	Configure

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1.2.2 : Configure the GPRS Dial-up Parameters At first, get into the "Network and Dial-up Connections" and then run "Make New Connection" in the PAC.								
Programs Favorites Documents Settings Control Panel Help Network and Dial-up Connections Run Taskbar and Start Menu Select "Dial-Up Connection" and type an English name (ex. GPRS, it allows to contain the								
	p Connection" a 9) then click "No							
(If the PAC is	WP-5147, sele	ct the "ICF	DAS GTN	1-201-RS2	32 COM3:")			
Type ar	A Connection hame for the conne GPRS Dial-Up Connect Dial-Up Connect Direct Connection Virtual Private N Virtual Private N PPP over Etherr < E	ion on etwork (PPT etwork (L2TI net [PPPoE]		Modem Select a mod [CPDAS I-82 TCP/IP Se	dem: 21xW MSA1:	<u>C</u> onfigure urity Setting ck <u>N</u> ext	5	
			Coltd T	echnical D	ocument			
ICP DAS Co., Ltd. Technical Document								

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Then click the "Configure ..." button. In the "Port Settings" tab, select "Baud Rate" as "115200", "Data Bits" as "8", "Parity" as "None", "Stop Bits" as "1" and "Flow Control" as "None", and then click "Call Options" tab to set up the "Extra Settings" (the settings depends on each of the Telecom Company). For example, the settings provided by a Telecom Company in Taiwan is

+CGDCONT=1,"IP","INTERNET"

and a Telecom Company in China is

+CGDCONT=1,"IP","CMNET"

This configuration includes the "GPRS APN", please contact your SIM card provider (Telecom Company), to get the settings, or you can also visit the web to search the word "GPRS APN" to find the settings.

Modem 🛛 🕹					
GPRS	Device Properties		?	ок 🗗	
	Port Settings Call Options				
Select a modem:	Manua Dial (user supplies dial	Connection Preferences			
ICPDAS I-821xW MSA1:		<u>B</u> aud Rate	115200	×	
Configure	Terminals	<u>D</u> ata Bits	8	~	
TCP/IP Settings Security Settings	Use terminal window	<u>P</u> arity	None	~	
Term seconds	before dialing	<u>S</u> top Bits	1	~	
	Use terminal window <u>a</u> fter dialing	Elow Control	None		
< Back Next >					
Device Properties	?	ok 🔀			
Port Settings Call Options					
Call Setup	Muet	fit the setting	provided	by	
✓ Cancel the call if not connect	ed within 120 seconds the To	elecom Comp	•		
<u>W</u> ait for cial tone before dialir	^{ng} /web t	o search "GP			
Wait for credit card <u>t</u> one	0 seconds find t	he settings.			
E <u>x</u> tra Settin <u>os (soecial modem comn</u>	nands may be inserted into the This	example is fo	r Taiwan '	s	
+CGDCONT=1,"IP","IN		e Telecom Co	mpany.		
	art is VPN				
1113 þ			2:27 PM 🗭		
ICP DAS (Co., Ltd. Technical Documer	nt			

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Then get into the "TCP/IP Settings ..." dialog box and follow the same settings as below.

Modem	
GPRS Select a modem: [CPDAS I-821xW MSA1: ☐ Configure ☐ Configure ☐ Configure ☐ Configure ☐ Configure ☐ Configure	TCP/IP Settings OK General Name Servers GPRS GPRS Use server-assigned IP addressi Use Slip Use software compression Use IP header compression
TCP/IP Settings General Name Set Image: Set	

. .

Alt D<u>N</u>S: <u>W</u>INS:

Alt WINS:

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Then get into the "Security Settings" dialog box and follow the same settings as below. Afterward, type the phone number for GPRS dial-up, and it must fit for the number provided by Telecom Company, and then click "Finish".

MAS 1:921WW MSA1: Configure P/IP Settings Security Settings Use Data encryption Logon security: Use Data encryption Logon security: We Extensible Authentication Protocol (EAP) MD5-Challenge MD5-Challenge Modem Wich crypted password (PAP) Select a modem: Microsoft CHAP (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Proview user name and password Configure ICP/IP Settings Encret Number Select a modem: Configure ICP/IP Settings Security Settings Contry/region code: 1 Hrait war. Phone number: 199***1# Security code Pare code: Proce long distance Proce long distance	dem 🔀
AKS 1-821XW MSA1: Configure P/IP Settings Security Settings Advanced Security Settings Use Data encryption Logon security: Use Data encryption Logon security: Use Extensible Authentication Protocol (EAP) MD5-Chalenge Modelm Whenpsoft CHAP (MS-CHAP) Chalenge Handshake Authenticator Of palenge Handshake Authenticator Optionsoft CHAP (MS-CHAP) Optionsoft CHAP Version 2 (MS-CHA) Select a modern: (CPOAS 1-821xW MSA1: Configure (CPOAS 1-821xW MSA1: Preview user name and password (PIDF Settings Fecurity Settings (PIDF Settings Fecurity Settings (PIDF Settings Fecurity Settings (PIDF Settings) (PIDF Settings) (PIDF Settings) (PIDF Settings) (PIDF Sett] gprs
Configure P/IP Settings Security Settings Advanced Security Settings Use Data encryption Use Data encryption Use Extensible Authentication Protocol (EAP) MD5-Chalenge MD5-Chalenge Modem Image: Configure Im	ect a modem:
P/IP Settings Security Settings Use Data encryption Logon security: Use Extensible Authentication Protocol (EAP) MDS-chalenge Unencrypted password (PAP) Chalenge Handshake Authentication Microsoft CHAP (MS-CHAP) Microsoft CHAP (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Preview user name and password Preview user name and password CP/IP Settings Security Settings Protection code: GRRS Country/region code: 1 Prove user name and password Prove user name and password Company 's setting. This Phone number should fit the Telecom Company 's setting. This example is for some Telcom company in Taiwan. Phone number: Prove user lance Prove use	PDAS I-821xW MSA1:
Security Settings Advanced Security Settings Use Data encryption Logon security: Use Data encryption Logon security: We Extensible Authentication Protocol (EAP) MD5-Challenge MD5-Challenge Mcdem MD5-Challenge Mcdem	<u>C</u> onfigure
Advanced Security Settings Use Data encryption Logon security: Use Extensible Authentication Protocol (EAP) MDS-Challenge Mutpercrypted password (PAP) Chalenge Handshake Authentication Chalenge Handshake Authentication Chalenge Handshake Authentication Microsoft CHAP (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Preview user name and password Configure CPDAS I-921XW MSA1: Configure CPDAS I-921XW MSA1: Configure CPDIP Settings Security Settings Configure CPDIP Settings Security Settings Configure Conf	CP/IP Settings Security Settings
Advanced Security Settings Use Data encryption Logon security: Use Extensible Authentication Protocol (EAP) MDS-Challenge Mutpercrypted password (PAP) Chalenge Handshake Authentication Chalenge Handshake Authentication Chalenge Handshake Authentication Microsoft CHAP (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Preview user name and password Configure CPDAS I-921XW MSA1: Configure CPDAS I-921XW MSA1: Configure CPDIP Settings Security Settings Configure CPDIP Settings Security Settings Configure Conf	Security Settings
Lise Data encryption Logon security: Use Extensible Authentication Protocol (EAP) MD5-Challenge MD5-Challenge Handshake Authentication Challenge Handshake Authentication Microsoft CHAP (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Microsoft CHAP Version 2 (MS-CHAP) Preview user name and password ICP/IP Settings Beck Next Select a modern: Configure ICP/IP Settings Beck Next Preview user name and password Proview user name and password Pro	
Use Extensible Authentication Protocol (EAP) MD5-Challenge Import Challenge Import Chall	
MD5-Challenge WD5-Challenge Md2em	
✓ Unencrypted password (PAP) ✓ Ghalenge Handshake Authenticatii ✓ Microsoft CHAP (MS-CHAP) ✓ Microsoft CHAP Version 2 (MS-CHAP) ✓ Microsoft CHAP Version 2 (MS-CHAP) ✓ Preview user name and password Preview user name and password ✓ Order Number ✓ Order Order 1 425 Phone number: ✓ Order Order 425 Phone number: ✓ Order Order ● Forcelord ✓ Order Order ● Forcelord ✓ Order Order ✓ Order Order ● Forcelord ✓ Order Order ● Forcelord ✓ Order Order • Forcelord	MD5-Challenge
✓ Unehcrypted password (PAP) ✓ Ghalenge Handshake Authenticatii ✓ Microsoft CHAP (MS-CHAP) ✓ Microsoft CHAP Version 2 (MS-CHA) ✓ Preview user name and password Configure TCP/IP Settings Ence long distance Force long distance *99***1# Conce long distance *99***1# Conce long distance *99***1# Conce long distance *90***1# Conce long distance *90***1#	ð¬
Image: Microsoft CHAP (MS-CHAP) Image: Microsoft CHAP Version 2 (MS-CHAP) <td< td=""><td></td></td<>	
Image: Microsoft CHAP Version 2 (MS-CHA	
Preview user name and password TCP/IP Settings Security Settings Phone Number Security Settings Security Settings Phone Number Security Settings Security Settings Security Settings Phone Number Security Settings Security Setting Security Setting	Microsoft CHAP Version 2 (MS-CHA
Proview user name and password Phone Number GPRS GPRS Country/region code: Area code: Phone number: Phone number: Phon	<u>C</u> onfigure
Phone Number GPRS GPRS Country/region code: 1 4rea code: 425 Phone number: *99***1#	
GPRS Country/region code: Area code: Phone number: Force long distance Force long distance Back Finish	
GPRS This Phone number should fit the Telecom Company 's setting. Country/region code: 1 Area code: 425 Phone number: *99***1# Eorce long distance *99***1# Force long distance * Pon't Check them < Back Finish *	Phone Number < Back Next >
Country/region code: 1 Area code: 425 Phone number: *99***1# Force long distance Force long distance Com't Check them < Back	
Country/region code: 1 This example is for some Telcom company in Taiwan. Area code: 425 in Taiwan. Phone number: *99***1# Eorce long distance Force local Don't Check them < Back	Company ssetting.
Phone number: Phone number: Force long distance Force local Don't Check them < Back Finish	Country/region code: 1 This example is for some Telcom company
Eorce long distance Force local Don't Check them < Back Finish	
Force local Don't Check them < Back Finish	
them < Back Finish	
<u>Back</u> Finish	Don't Check
ICP DAS Co., Ltd. Technical Document	them < Back Finish
ICP DAS Co., Ltd. Technical Document	
	ICP DAS Co., Ltd. Technical Document

Author Chun Tsai Version 1.8 Date Oct.2014 Page 10 / 31 Next, double-click on the new connection (ex. GPRS) that you have created and get into the "Dialing Patterns" to change the content of those three fields as "G" and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click "OK". Image: Search and click the search an	Classification	ISaGR	AF Eng	lish FAQ-1	143						
"Dial Properties" dialog box, and then get into the "Dialing Patterns" to change the content of those three fields as "G" and click "OK". Wake New Connection Make New Connection	Author	Chun ⁻	ſsai	Version	1.8	Date	Oct.2014	Page	10 / 31		
GPRS Ljser Name: Password: Dgmain: Gave password Connect Cancel Dialing Properties @ OK When dialing from: Work When dialing from: Work In blocal agree code is: 1 Dial agree code is: 1 Dialing Patterns Pulse Dialing Patterns Conne C Cancel Dialing Patterns Pulse Dialing Patterns Conne C Cancel Dialing Patterns Pulse Dialing Patterns Cone Coll to change how the phone is dialed. G For Long Distance calls dial:	"Dial Proper those three f	'Dial Properties" dialog box, and then get into the "Dialing Patterns" to change the content of those three fields as "G" and click "OK". Image: Second click with the second cli									
When dialing from: Work Local settings are: The local grea code is: 125 1425 16 17 18 18 18 18 19 10 <		User Name Password:	PRS	Save passwo	Dial fro	im: Dial	Properties				
		When dia Local s	aling from settings Th local cou	are: are: are: a local area untry/region Dialing by Dialing Pai Edit the dia the phone For Long E G For Long E G For Interna	code is: 1 al using: <u>I</u> dialing: Items aling pattern for is dialed. alis dial: 2 2 stance calls dial: 2 ational calls dial:	each type o	New (F Dialing Pattern) Pulse ? (f call to change				

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Now, you need the "User Name word "GPRS A example (keep card) to start dial-u	e" and "Passwo PN". As figure I two fields blan	ord" that p pelow, we	rovided by the use a Taiwa	e Teleco n SIM ca	om Company ard for Telec	rk is OK. Pl / or online s om Compa	earch the ny as an
Dial	Up Connection						
Ę	GPRS		Must fit t Telecom		ng of the any.		
Į	User Name:		Phone: Dial from Work	n:	**1# Properties		
	<u> </u>	<u>B</u> ave passwo	rd 🖸	onnect	Canc	el	
If the connection	on is successful	, it will sh	ow up "Conne	ected".			
After successfu		•	message: ((ommand Prom	•	give a ping		
the connection run "Disconnec		e the nex			ection 1.2.3).	. After ping	is ok, must
Programs Payorites Pocuments Pocuments Payorites Payorites	 Contract Explored intervention Internet Explored intervention Internet Explored intervention Intervention RegView TaskMgr Windows Explored intervention WINPAC_Utility 	orer dPad orer =	GPRS Status Conne Hide t	ected his messa		Hide connect	
Reply from 7 Reply from 7 Reply from 7	google.com www.google.com 4.125.153.104: 4.125.153.104: 4.125.153.104: 4.125.153.104:	[74.125.1 Echo size= Echo size= Echo size=	32 time=626ms 32 time=796ms 32 time=608ms	TTL=52 TTL=52			
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Please m 1. If the P then mus	PAC is	nt Configurat the following going to use the gateway s s utility "File >	two impor ne GPRS settings of	tant settings. to go to the in f LAN1 and L	nternet to	the GPRS w	TCP, UDP, ill not work.	,
Eile Make I Conne	New	View Advance		AN1				
1	LANIL Fa	ist Ethernet Ad	apter' Set	tings		ок 🔀		
	An IP ac automat compute does no IP addre administ	Mame Servers Idress can be ically assigned to t ar. If your networ t automatically ass isses, ask your net rator for an addre: n type it in the sp t.	:his 'k ign :work IP <u>A</u> ss, Subr ace			P	gateway b	lank
GPRS (in	such a	connect to th a case, then p nuch faster th	lease set	the gateway				
configura	tion is	is page, the co very importan SPRS network	t and can	't be ignored	or else it			n when you
If the stat	us of G	SPRS connect	ion is still	"Connected"	, please	click the "Dis	connect" bu	utton first.
		GP	-6-	nected this message:		ijde onnect		
			CP DAS (Co., Ltd. Tech	nical Do	cument		

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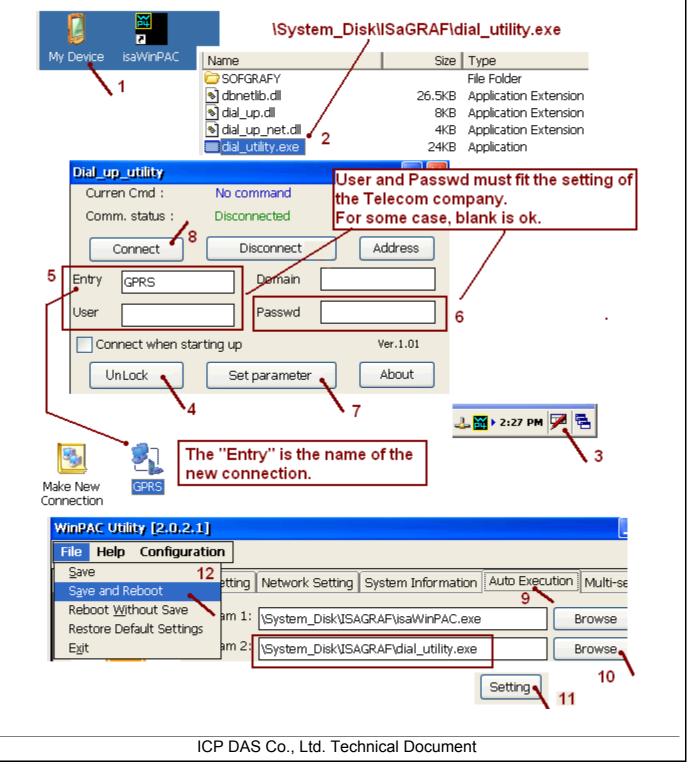
After that, run the new connection (here is GPRS) and then click "Cancel" (At this time, Do Not click "Connect", you must click "Cancel" first). Finally, run "File > Save and Reboot" in each PAC Utility (ex. "<u>XPAC</u> Utility) to save all the settings (including this and those in the previous section) and then the PAC will restart automatically once.

and the second		
<u>U</u> ser Name: <u>P</u> assword: D <u>o</u> main:	Save password	Phone: *99***1# Dial from: Work Dial Properties
XPAC Utility [1.0.2.5] File Help Save Save Save and Reboot Reboot Restore Utility Default Set Exit		s "Cancel" operation must set e. Then run PAC 's Utility to e this "Cancel" setting.

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1.2.4 : Enable "Dial_up_utility"

"Dial_up_Utility" is a software tool developed by ICP DAS for the GPRS dial-up automatically. It allows an ISaGRAF program (or VB.net 、 C#.net and C program) to connect or disconnect GPRS by sending commands and it can also read the connection status or command status. Please follow the steps below to enable the "Dial_up_Utility". Then, click "Connect" to check if the connection is good and click "Disconnect" to check if the connection is broken. Finally, you need to run "...PAC Utility" and add the "dial_utility.exe" to the list of "Auto-Execution" and then run "File > Save and Reboot" to save the settings.



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he ISaGRAF G/3G. Set up (* connec if conn	Descriptions demo progran "connect_GPI ct_GPRS and ect_GPRS	n below sh RS" as TR TMP are d then	ows how to JE, it will i	o use COM nstruct "Dia	1_MRTU(99 al_up_utility"		
TMP: end_if;	= COM_MR	TU(999	, TRUE)); (* Cor	inect GPRS ^{>}	*)	
	elow shows th _GPRS" as Th				,		ie 2G/3G. Set
TMP : end_if ;	nnect_GPR = COM_MR	TU(999	, FALSE	READ(99	9) to read t	he current	
	tion and use C						e oonnana.
G/3G connec (* GPRS_sta (* GPRS sta	tion and use C ite and GPRS_ itus: tion, 1 - 7: Co			_		Ĩ	ers *)
G/3G connec (* GPRS_sta (* GPRS sta 0: No-act	te and GPRS_ tus:	nnecting,	8: Conne	_		Ĩ	ers *)
G/3G connec (* GPRS_sta (* GPRS sta 0: No-act GPRS_sta	ite and GPRS_ itus: tion, 1 - 7: Co	nnecting, READ(99	8: Connec 99) ;	cted, 9: Di	sconnected,	10: Othe	ers *)
CG/3G connec (* GPRS_sta (* GPRS sta 0: No-act GPRS_sta (* GPRS co	nte and GPRS_ ntus: tion, 1 - 7: Co ate := COMI	onnecting, READ(99 0: No-act	8: Connec 99) ; ion, 1: Co	cted, 9: Di onnect, 2:	sconnected,	10: Othe	ers *)
2G/3G connec (* GPRS_sta (* GPRS sta 0: No-act GPRS_sta (* GPRS co	nte and GPRS_ ntus: tion, 1 - 7: Co ate := COMI mmand type:	onnecting, READ(99 0: No-act	8: Connec 99) ; ion, 1: Co	cted, 9: Di onnect, 2:	sconnected,	10: Othe	ers *)

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The following t	wo usage is sup	ported fro	om the below	ISaGR/	AF driver ver	sion.	
	6: 1.53 or newe 3W7: 1.65 or ne				4 or newer 8 or newer		
	below shows th ion state when						
	G connection st		-		plication" by	PC / ISaGR	RAF
INIT is Boo	olean / Internal \	/ariable a	-		olication" by	PC / ISaGR	RAF
INIT is Boo	olean / Internal v) is Boolean / In	/ariable a	-		plication" by	PC / ISaGR	RAF
INIT is Boo TMP_BOO	olean / Internal v) is Boolean / In I	/ariable a	-		plication" by	PC / ISaGR	RAF
INIT is Boo TMP_BOO if INIT then INIT := Fa	olean / Internal v) is Boolean / In I	/ariable a ternal *)	nd inited as T		plication" by	PC / ISaGR	RAF

When the 2G/3G dial-up state is "connected". The driver will try to ping DNS server and "8.8.8.8" every 15 minutes to test if the 2G/3G communication is ok. If both ping timeout at 15 seconds later, the ISaGRAF PAC will automatically reset the 2G/3G module and then re-dial-up to recover the 2G/3G communication.

If user don't want to ping this "8.8.8.8", can modify it to ping one another ip address (for example, 192.168.71.9). Like as below code.

```
(* set to ping one another IP address .
```

INIT is Boolean / Internal variable and inited as TRUE

TMP_BOO is Boolean / Internal *)

if INIT then

INIT := False ;

```
TMP_BOO := COM_MRTU( net_addr('192.168.71.9') , TRUE ) ;
```

end_if;

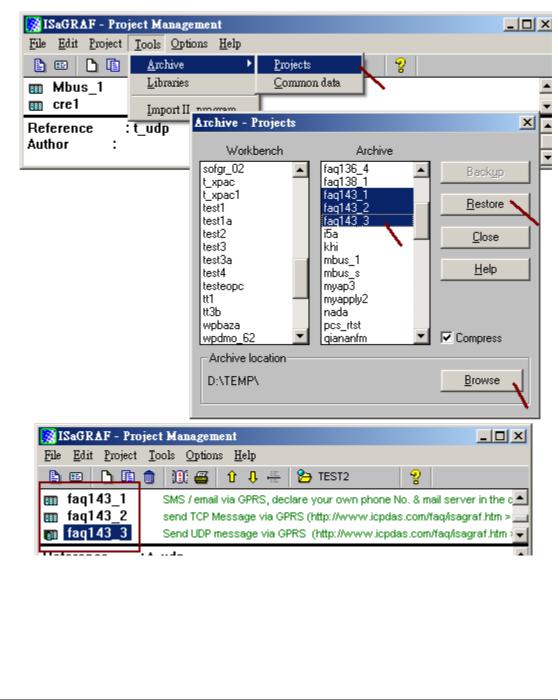
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1.4 : GPRS Demo Programs

User can download related files from <u>http://www.icpdas.com/faq/isagraf.htm</u> > 143, faq143_demo_english.zip, including three ISaGRAF demo files - faq143_1.pia、faq143_2.pia and faq143_3.pia, please follow the steps to restore the files into your PC (ISaGRAF) as below figure.

Note: Please refer to the <u>http://www.icpdas.com/faq/isagraf.htm</u> > FAQ-151 for the application to deliver files to a remote ftp-server in a PC on the Internet.

Note: Please refer to the section 1.5 of this paper for the GPS function built in the I-8213W and I-8213W-3GWA.



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1.4.1 : Demo FAQ143_1 : Send an email with one attached file by GPRS

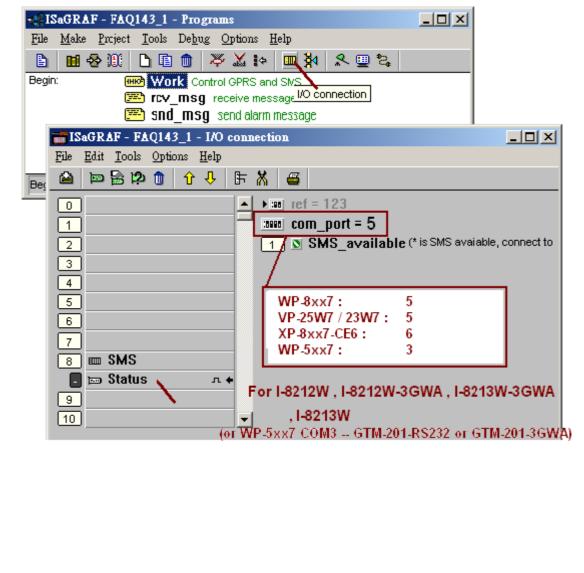
In the demo FAQ143_1, you can send or receive a short message from cell phone by using the I-8212W or I-8213W (plus SIM card) and you can also send an email with one attached file by connecting GPRS.

If you want to know "how to send/receive a short message from your cell phone to ISaGRAF PAC?", please refer to <u>http://www.icpdas.com/faq/isagraf.htm</u> > FAQ-111.

If you want to know "how to send an email by ISaGRAF PAC?", please refer to <u>http://www.icpdas.com/faq/isagraf.htm</u> > FAQ-067.

First, please modify the program - faq143_1 to fit for your application environment.

1. Please get into the "IO connection" dialog box, modify the "com_port" number used for the SMS.



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2. Click the "Dictionary" button and modify the initial value (the phone number of the SMS receiver) of Message variable (to_who).

- ISaGRAF - FAQ143_1 - Programs			
<u>File Make Project Tools Debug Op</u>	tions <u>H</u> elp		
🕒 🛄 😵 🕮 🕒 🖻 🍈 🤻 .	💊 ISaGRAF - FAQ143	2_1 - Global messa	iges
Begin: Work Control G		ons <u>H</u> elp	
Dictionary rcv msg rece	ē	à 🔾 🕓 🖌	🗄 🛰 🗈 🥈 📉 (
🧱 snd_msg ser 💌 snd mail for	Booleans Integers/Reals	s Timers Messages	FB instances Define
		ttrib. Addr. nternal] 0000	Comment The coming Messa
Begin: rcv_msg (Structured Text)		nternal] 0000	*** phone No. of se
	date_time	nternal] 0000	Message coming d
		nternal] 0000 nternal] 0000	*** phone No of rec
	Msg_to_send [#	nternal] 0000	Message to send c
Message ¥ariable			nail subject. Max
to uto			nail data1 Max. 2
Name: to_who	Network /	Address:	r own *)
Comment: *** phone No of receiver	, please use your own		321630]
Init.: +886958111222	Maximum	length: 24	
- Attributes			
 Internal 		🗖 R <u>e</u> tain	123456
Cinput		-	
C <u>D</u> utput	<u>S</u> tore	<u>N</u> ext	
C Const <u>a</u> nt	Cancel	Previous	1
		Extended	
3. Modify the following contents in the p	orogram (snd mail))	
	logiam (sha_man).	
TMP := MAIL_SET(1 , 'father@icpda	as.com'); (* Mo	odify email reco	eiver & address *)
TMP := MAIL_SET(100 , 'go_mao@ I	hotmail.com'): (*	Modify email	addresser & address *)
TMP := MAIL SET(101 , '168.95.4.2		-	
TWF :- WAIE_SET(101, 108:95.4.2	ii), (Woully t		
•#ISaGRAF - FAQ143_1 - Pi	rograms	_	
<u>File Make Project T</u> ools De	<u>b</u> ug <u>O</u> ptions <u>H</u> elp		
🕒 🖬 🕸 🕮 🗅 🖬 的	⊨ 🎘 🛣 🕪 💷 🕅	🛠 🛄 📚	
	Control GPRS and SMS		
	sg_receive message Isg_send alarm message		
	ail for sending email		
	T		
Begin: snd_mail (Structured Tex	d)		
		Deerseest	
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How to test the demo program - faq143_1 ?

After finished the modifications of step (1) to (3), please re-compile the program (faq143_1) once to confirm it is correct and then download it to your ISaGRAF WinCE PAC to run. When the connection between the PC (ISaGRAF) and your PAC is normal, the window (as figure below) will show up on the PC screen. If "SMS_available" is "TRUE" that means the connection between PAC and I-8212W (plus SIM card) has been established and now you can send or receive the short message. Please set "K1" as "TRUE", it will start sending a text message to the phone number of "to_who" and then auto set "K1" as "False" immediately. Then, you will see the "Msg_status" value is slowly changing from 1 to 21, that means the sending is successful.

If you want to send an email via the GPRS connection, please set the "Connect_GPRS" as "TRUE" (the settings will auto return to "False" immediately). Now, you will see the "GPRS_cmd_type" changed to 1 (Connect) and the "SMS_available" changed to "FALSE", then the "GPRS_state" will change too. If the "GPRS_state" value finally changes to "9" that means "disconnected" (bad GPRS connection) and if the value is "8" that means "connected" (successful GPRS connection). After connecting the GPRS successfully, you can send an email by setting up the "to_send" as "TRUE" (the settings will auto return to "False" immediately). Before sending the email, the PAC will start to search LAN1, LAN2 and GPRS connection. If the PAC's LAN1 & LAN2 unable to connect to internet (such as the gateway of LAN1 or LAN2 is not set), it will try to send mail by GPRS connection finally. Now, you will see the "EMAIL_progress" value increased slowly from 1 to 100, "100" means the email has been sent out completely (100%). For the next sending, the email will be sent out via GPRS directly.

If you want to break the GPRS connection, please set the "Disconnect_GPRS" as "TRUE" (the settings will auto return to "False" immediately) and you will see the "GPRS_cmd_type" changed to "2 (disconnect)" and the "GPRS_state" value changed to "9 (disconnected)". After some time, the SMS will resume available and you will see the "SMS_available" changed to "TRUE". If it is unable to work correctly, please refer to the section 1.1 & 1.2 to confirm all the settings are correctly and refer to the section 1.4.1 to check if you had modified the demo program to fit for your regional settings.

🗅 🖹 🖄 👘	🗄 😽 🔍	
Name	Value	Comment
GPRS_cmd_type	2	Current Cmd. type: 0: No action, 1: Connect, 2: Disconnect
GPRS_state	9	0: No-action, 1~7: connecting, 8: connected, 9: disconnected
SMS_available	TRUE	is SMS available, connect to SMS - status
Connect_GPRS	FALSE	set TRUE to connect GPRS
Disconnect_GPRS	FALSE	set TRUE to disconnect GPRS
Current_Year	2011	
Current_Month	7	
Current_Day	27	
Current_Hour	17	
Current_Minute	53	
Current_second	10	
EMAIL_state	0	 0:Sleep, 1:Busy ,21:server1 , 22:server2 succeed, <0 :Error
EMAIL_progress	0	progress: 0:No action, 1 - 10:connecting , 11, 100 : percent
to_send	FALSE	Set as TRUE to trigger to send an email
Q1_cnt	0	Message coming count
Msg_status	0	Message sending status
to_who	+886958111222	*** phone No of receiver, please use your own
Msg_to_send		Message to send out
K1	FALSE	Set as True to send a Short Message
<end list="" of=""></end>		

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1.4.2 : Demo FAQ143_2: Send and Receive TCP String (Message) or binary Data by GPRS

The demo program (FAQ143_2) allows connecting the GPRS via I-8212W or I-8213W (plus the SIM card), and then the ISaGRAF PAC can connect to the remote TCP Server via enabling the TCP Client function. When the TCP Client and the TCP Server are online working, the ISaGRAF PAC can send string data (Message, String, one string packet contains up to 255 bytes) or binary data (one binary packet contains up to 512 bytes), and it can also receive the string and binary data from the remote Server (but the receiving function only works while a TCP connection is established). For more information about "How to enable the TCP Client function of ISaGRAF PAC", please refer to the "ISaGRAF User's Manual" - Section 19.3.

For testing the program (faq143_2), you need to prepare a PC as TCP server and apply for a fixed Internet IP (provided by a Telecom Company) and then you can run a TCP Server test program (Tcp3.exe). The file is in the "faq143_demo_english.zip" (you can download it from our website: <u>http://www.icpdas.com/faq/isagraf.htm</u> > 143). Please refer to the following operation to enable the TCP Server.

At first, set up the Internet IP、Subnet mask and Default gateway for the PC (TCP Server).

🕹 區域連線 內容	? ×
一般 驗證 進階	Internet Protocol (ICP/IP) 內容 ?
速線使用: Image: D-Link DFE-530TX PCI Fast Etheme 證 D-Link DFE-530TX PCI Fast Etheme 證 這個連線使用下列項目(2): Image: QoS Packet Scheduler Image: Qo Packet Scheduler <	 一般 如果您的網路支援這項功能,您可以取得自動指派的 IP 設定。否則,您必須詢問網路系統管理員正確的 IP 設定。 ● 自動取得 IP 位址(Q) ● 使用下列的 IP 位址(S): IP 位址(I): 子網路遮罩(II): 子網路遮罩(II): 預設開道(D): ● 自動取得 DNS 伺服器位址(B) ● 使用下列的 DNS 伺服器位址(E): 「貸用 DNS 伺服器(A):
	進階(Y) 確定 🔪 5 取消
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Command Pro check if the se P to check if th Tcp3 1505" to	e file (Tcp3.exe) mpt" and get inte ttings are correct ne network conn o run the test pro (faq143_2) inst	o D:\TCP tly. Aften ection is ogram for	2_server\ (as ward, using good. If all o TCP Serve	the figur "ping 8.8 of the abo r at Port_	e below), th .8.8" comma ove operatio No 1505. (E	en type "ipo and or ping n is correct Due to the IS	config" to other websi , please typ
🔤 命令提示	字元 - tcp3 1505						
D:∨cd t D:∖TCP_se	nts and Settin cp_server rver> ipconfig P Configuratio	r I	istrator>		neck these	settings	
	adapter 區域連 Connection-spec P Address Subnet Mask Default Gateway	ific DNS		: 255.2	8.42.10 55.255.0 8.42.1		
	rver> ping 8.8		of data:	Г	Check Ping	jok?	
Reply fro Reply fro	m 8.8.8.8: byt m 8.8.8.8: byt m 8.8.8.8: byt m 8.8.8.8: byt	es=32 ti es=32 ti	ime=46ms TT ime=54ms TT	L=54 / L=54			
Packe Approxima	istics for 8.8 ts: Sent = 4, te round trip num = 42ms, Max	Received times in	n milli-sec	onds:			
DINTOR OF	rver> tcp3 15	05	If	all are fi	ne, start the	tcn3 exe	

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TCP/IP server testing ... Create TCP/IP server at port_No=1505

Waiting for client to connect...

•

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Then, modify the ISaGRAF demo program (faq143_2) to fit for your test environment. The configurations are similar as below and then compile the program.

-#ISaGRAF - FAQ143_2 - Programs	
File Make Project Tools Debug Options Help	
🖹 🖩 😔 🕮 🗋 🖷 👘 🚿 🛣 🌬 💻 🙀 冬 💻 🏞	
Begin: IDI Control GPRS	•
ST1 send a TCP message 1/O connection	
ISaGRAF - FAQ143_2 - I/O connection	
	his_ip = GPRS means this tcp_client" use GPRS to connect
	the remote TCP server.
□ ► m ref = 128A	
1 Image: Stress Stres	
2	
4 3000 port1 = 1505	- 0
5 to_ip1 = 61.218.42	2.10
6 Send_Time_Gap1	- 250
7 mm port2 = 14001	TCP server 's Port No and IP address.
8 mm tcp_clie mmm to_ip2 = N/A	unu n uuuress.
🖪 📼 Socket л 🗧 🚥 Send_Time_Gap2	= 250
9 port3 = 14001	
10 to_ip3 = N/A	
11 Send_Time_Gap3	= 250
12 port4 = 14001	
13 to_ip4 = N/A	- 250
14 Image: Send_Time_Gap4 15 1	= 250 n1 (* 1st TCP connection is connected (TRL
15 1 S TCP_connection 16 2 Z	
17 3 Z TRUE means	the TCP server is connected.
18 FALSE means	s disconnected.
19	

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For now, download the ISaGRAF demo program (faq143_2) to the ISaGRAF WinCE PAC by using another PC, if the operation is correctly the window will show up as below. Please set the "Connect_GPRS" as "TRUE" (the settings will auto return to "False" immediately), it will start to connect the GPRS. If the "GPRS_state" is "8" that means it can access GPRS connection ("9", stands for disconnected). Then, set "Send1" as "TRUE" (the settings will auto return to "False" immediately) and it will start to connect to the TCP Server and send an ISaGRAF Message (in this example, it sends "Hello !" to the remote TCP Server). If the connection is normal, the "TCP_connection1" value will change to "TRUE" and the "Tcp3" test program will show up the received data on the PC screen (TCP Server). It will reply the same message to the ISaGRAF PAC and you will see the "Msg_cnt" value plus one, then the "Msg_cnt" value will equal the message you just sent out.

🚊 ISaGRAF - FAQ	143_2:LIST1 - List	of variables
<u>File Edit Options</u>	<u>H</u> elp	
🗅 🖹 🖄 🐇	l 😽 🔍	
Name	Value	Comment
GPRS_cmd_type	1	Current Cmd. type. 0: No action, 1: Connect, 2: Disconnect
GPRS_state	8	0: No-action, 1~7: connecting, 8: connected, 9: disconnected
Connect_GPRS	FALSE	set TRUE to connect GPRS
Disconnect_GPRS	FALSE	set TRUE to disconnect GPRS
send1	FALSE	Set as True to send a Message to the TCP server
str1	Hello !	Message to send, init as 'Hello !' , len is 255
TCP_connection1	TRUE	1st TCP connection is connected (TRUE) or not (FALSE)
Msg_ont	2	Message count has been received.
Received_Msg <end list="" of=""></end>	Hello !	The recent received Message, len is 255

ns H ns e Send 7 bytes - 0k
Send 7 bytes - Ok
Send 7 bytes - Ok
Send 7 bytes - Ok
-

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If you want to send the binary data via TCP_cliet, you need to enable the "eth_tcp" function (one TCP packet can transmit up to 512 bytes and you can send data by using "eth_send" function).

ISaGRAF - FAQ143_2 - I/O connection	
<u>File Edit Tools Options H</u> elp	
🖴 📨 🗟 🎾 🍈 🕆 🕂 🕂 🖌 🚝	
0 ref = 128AB	
1 Time_to_Sleep = 40	
2 this_ip = GPRS	
3 port1 = 1505	
4 ► into_ip1 = 61.218.42.10 5 Send Time Gap1 = 250	
5 3000 Send_Time_Gap1 = 250 6 3000 port2 = 19001	
7	
8 mp eth_tcp Send_Time_Gap2 = 250	
🖪 📼 Socket л. ф 🚥 ротt3 = 19001	
9 to_ip3 = N/A	
10 SaGRAF - FAQ143_2 - Programs	_ 🗆
11 <u>File Make Project Tools Debug Options Help</u>	
12 13 14 15 16 17 17 13 Berlin: Image: Comparison of the company of	
Image:	ge <u>r</u> eference
15	
Instruction About 16 Begin: LD1 (Ladder Diagram)	
Technical notes	×
C functions eth_send:send byte array via UDP or TCP	
parameter :	
Via : Message send via which protocol ? Valid v	value i
ID_: Integer send to which connection ? Valid val	ue is 1
AryNo_: Integer the byte-array number to send. Valid	value
	value
AryNo_: Integer the byte-array number to send. Valid Start_: Integer the starting address inside the byte-arr	value
AryNo_: Integer the byte-array number to send. Valid	value

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1.4.3 : Demo FAQ143_3 : Send UDP String (Message) by GPRS

In the demo program - FAQ143_3, after connecting the GPRS by using I-8212W or I-8213W (plus the SIM card), the ISaGRAF PAC can send a string data (Message, String, one string packet contains up to 255 bytes) to the remote UDP Server via enabling the UDP function. UDP is a connectionless protocol that is different from TCP (In the section 1.4.2). For more information about "How to enable the UDP function of ISaGRAF PAC", please refer to the "ISaGRAF User's Manual" - Section 19.2.

For testing the program - faq143_3, you need to prepare a PC as a UDP server and apply for a fixed Internet IP (provided by a Telecom company). Then, you can run a test program (UDP.exe) for UDP Server and the program is in the "faq143_demo_english.zip" (you can download it from our website: <u>http://www.icpdas.com/faq/isagraf.htm</u> > 143). Please refer to the following operation to enable the UDP Server.

At first, please set up the Internet IP \diagdown Subnet mask and Default gateway for the PC (UDP Server).

🚣 區域連線 內容	<u>? X</u>
一般 驗證 進階	Internet Protocol (ICP/IP) 內容
 連線使用: 連 D-Link DFE-530TX PCI Fast Etheme 設定 這個連線使用下列項目(Q): ② QoS Packet Scheduler ③ QoS Packet Scheduler ③ Themet Protocol (TCP/IP) ④ Themet Protocol (TCP/IP) ● 重整(图) 解除安裝(四) 內容 描述 2 博輸控制通訊協定/網際網路通訊協定 (TCP/IP) 。 這 設的廣域網路通訊協定,提供不同網路之間的通話 力。 ● 連線後,在通知區域內顯示圖示(四) ● 在這個連線只有有限連線或沒有連線能力時通知: 	 一般 如果您的網路支援這項功能,您可以取得自動指派的 IP 設定。否則,您必須詢問網路系統管理員正確的 IP 設定。 6 自動取得 IP 位址(Q) 使用下列的 IP 位址(Q) 何 位址(1): 子網路遮罩(1): 子網路遮罩(1): 預設開道(D): 61.218.42.10 255.255.0 61.218.42.1 ● 自動取得 DNS 伺服器位址(B) 使用下列的 DNS 伺服器位址(E): 慎用 DNS 伺服器(Δ):
	<u>進階(V)</u> 確定 <u>5</u> 取消
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Please copy the Command Pron the settings are check if the net 1505" to run the program (faq14	npt" and get inf correctly. Afte work connectio UDP Server t	o D:\UDF rward, us n is good est progra	P_server\ (as ing "ping 8.8.8 . If all of the a am at Port_No	figure b 3.8" cor ibove o o 1505.	elow), then ty mmand or pin peration is co (Due to the I	/pe "ipconfig g other web prrect, pleas SaGRAF de	g" to check if osite IP to e type "UDP
🔜 命令提示	字元‐UDP 1505						
D:\/cd D:\/JDP_se	nts and Setti UDP_server rver> ipconfi	a	nistrator> d				
Windows I	P Configurati	on			Check these	settings	
C I S	adapter 區域; connection-spe P Address ubnet Mask . efault Gatewa	cific DN		: 255.	18.42.10 255.255.0 18.42.1		
	rver> ping 8. .8.8.8 with 3		of data.		Check Pin	g Ok ?	
Reply fro Reply fro Reply fro	m 8.8.8 with 3 m 8.8.8.8: by m 8.8.8.8: by m 8.8.8.8: by m 8.8.8.8: by	tes=32 t tes=32 t tes=32 t	ime=27ms TTL ime=116ms TT ime=27ms TTL	L=54 /			
Packe Approxima	istics for 8. ts: Sent = 4, te round trip um = 25ms, Ma	Receive times i	n milli-seco 116ms, Avera	nds: .ge = 4		Peve	
Receive m	rver> UDP 15 essage via UD eate socket	₽∕IP, po	rt No.=1505				•
		CP DAS C	Co., Ltd. Tech	nical D	ocument		

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Then, modify the ISaGRAF demo program - faq143_3 to fit for your test environment, it is similar to the figure below and then compile the program.

ISaGRAF - FAQ143_3 - Programs	
File <u>Make Project</u> Tools Debug Options	
▙▏▆��⋈▕▙▝▆▕▓▓¥♥	
Degin: ID1 Control GPRS	
<u>, 311</u>	
egin: FAQ143_3 - I/O com	nection this_ip=GPRS means delivering
File Edit Tools Options Help	the UDP message by GPRS
	X G conncetion.
<u> </u>	
<u> </u>	
2	this_ip = GPRS
3	Security_passwd = 0
4	send_Time_Gap = 250
5	internet i contractione i contractio
6	interved = 0
7 8 m udp ip	port1 = 1505
	to ip1 = 61.218.42.10
	port2 = 12001
9 10	issue to ip2 = N/A
11	port 3 = 12001 Port No. and IP address
12	to $ip3 = N/A$ of the remote UDP
	interest to 190 High
	issue to ip4 = N/A
15	
16	

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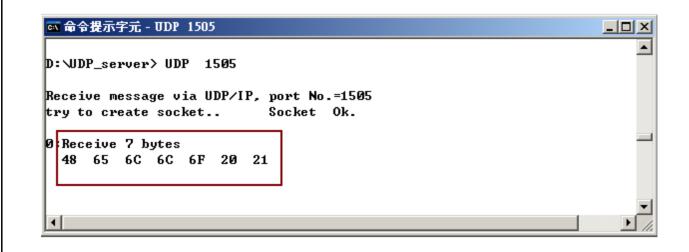
Next, please download the ISaGRAF demo program - faq143_3 to your ISaGRAF WinCE PAC by using another PC. If it is normal, it will show up the window as below.

Set the "Connect_GPRS" as "TRUE" (the settings will auto return to "False" immediately) and it will start to connect the GPRS. If the "GPRS_state" is "8" that means it has connected to the GPRS ("9" stand for disconnected). If it is properly connected to the GPRS, the value of "UDP_IP_ok" will become to "TRUE".

Then, set "Send1" as "TRUE" (the settings will auto return to "False" immediately) and it will send out an ISaGRAF Message (in this example, it sends "Hello !" to the remote UDP server).

Now, the message you sent will show up on the PC screen (UDP Server).

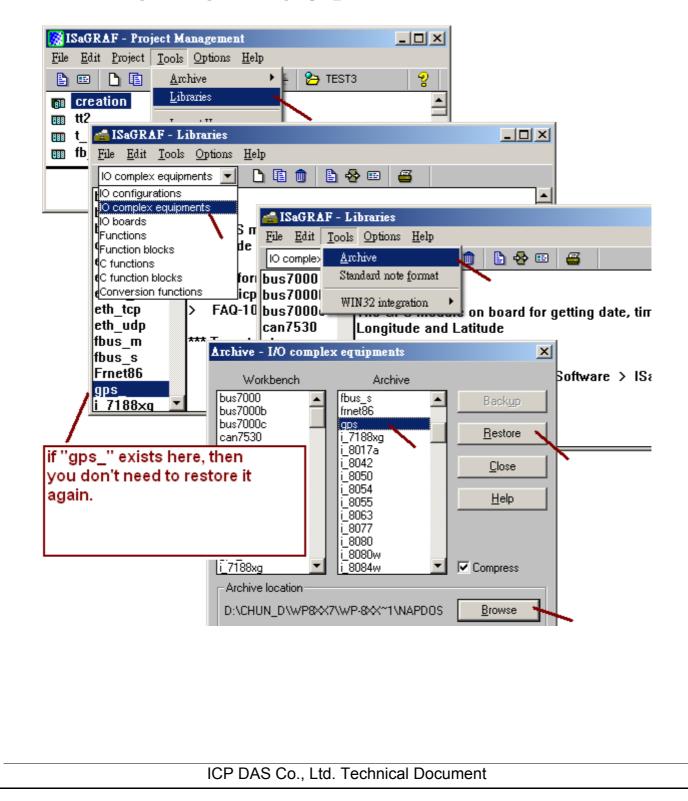
<u>File Edit Options</u>		
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Name	Value	Comment
GPRS_cmd_type	1	Current Cmd. type. 0: No action, 1: Connect, 2: Disconnect
GPRS_state	8	0: No-action, 1~7: connecting, 8: connected, 9: disconnected
Connect_GPRS	FALSE	set TRUE to connect GPRS
Disconnect_GPRS	FALSE	set TRUE to disconnect GPRS
send1 👞	FALSE	set as TRUE to send a UDP message
str1	Hello !	
UDP_IP_ok	TRUE	True: enabled , False: something wrong
<end list="" of=""></end>		



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1.5 : Using the GPS function built in the I-8213W and I-8213W-3GWA

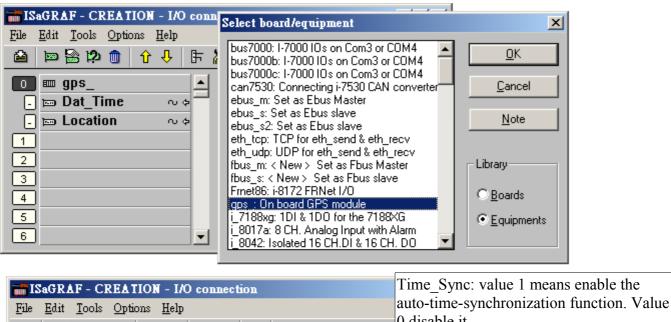
The I-8213W and I-8213W-3GWA support both of the GPRS and GPS. To use the GPS function of these two cards, first refer to the setion 1.1 of this document to well configure the MSA1 and MSA2 serial ports in the WP-8xx7 (or VP-25W7, XP-8xx7-CE6). Then make sure your PC / ISaGRAF has the "gps_" installed. If it is not, follow the following steps to restore it to the PC / ISaGRAF. You can find the "gps_.xia" in the ZIP file downloaded at <u>http://www.icpdas.com/faq/isagraf_c.htm</u> > 143.



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Then connect the "gps_" in the IO connection of your ISaGRAF project. The definition of each integer input channel is as the following figure.

(Next page for the definition of the location)



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Image: Second state Image: Second state Image: Second state Image: Second state 0 Image: Second state ∞ ▲ 0 Image: Second state ∞ ▲ 0 Image: Second state ∞ ▲ 1 ∞ ∞ ↓ 2 ∞ ∞ ↓ 3 ∞ ∞ ↓ 4 ∞ ∞ ↓ 5 ∞ ∞ ↓ 7 ∞ ∞ ↓	10000 ref = 124 10000 Time_Sync = 1 10000 UTC_diffirence = 800 10000 reserved = 0 10000 Date	0 disable it. -UTC_diffirence: The time difference between the UTC Time and local time. Value can be -1200 to +1200, for ex., 800 means +8 hour, +230 means +2 hour and 30 minutes, -700 means -7 hour. h.1 means the Date / Time from satellite is prect or not. Value 1 means correct (Ch.2 to are all correct). However value 0 means correct (then Ch.2 to 9 data can not be
8 9 10 11 12 13 14 15	2 0 ∪ Peal us 3 0 ∪ Month (C 4 0 ∪ Day sta 5 0 ∪ Hour CI 6 0 ∪ Minute CI 7 0 ∪ Second CI 8 Satelite_num CI	h.2 : Year , Ch.3 : Month , Ch.4 : Day h.2 : Year , Ch.3 : Month , Ch.4 : Day h.5 : Hour , Ch.6 : Minute , Ch.7 : Second h.8 : Satellite amount found, can be 0 to 8 h.9 : Reserved (GPS working state, normally 1)

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	me ~ +	3000 ref = 3000 Rest 3000 Res 3000	125 erved = 0 erved = 0 erved = 0 erved = 0 erved = 0 erved = 0 erved = 0 ongi_Lati_ok ongitude atitude	or not. Va correct) . (then Ch. (Ch1 val Ch.2 : Lo Positive v Value car +1800000 Ch.3 : La Positive v South. Va	ns the Longit alue 1 means However val 2 and 3 data of is auto-modif ngitude, unit val means Eas	correct (Cl ue 0 means can not be ied by the is 0.00001 st, negative 99 (-179.99 00 degree) 0.00001 d rth, negative 0000000 (-9	s incorrect used) satellite state) degree. e means West. 9999 degree) to egree. 7e means