# Application Note IMO XGB PLC XG5000 Program

This document guides you through the setup of proprietary vendor specific software installed on you PC. Your supervisor may provide you with additional or alternative instructions.

The document consists of standard instructions that may not fit your particular solution. Please visit our support website for latest revisions of documentation and firmware:

http://www.secomea.com

Version: 1.0, April 2012



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# 1. Prerequisites for This Guide

The following guide will assist you to setup a remote and online connection to the IMO equipment placed on the customer site using your IMO XG5000 Program software installed on your PC.

Prerequisites for this guide are:

- You have an operational LinkManager installed on your PC with a GateManager certificate that allows you to connect to the SiteManager agents.
- You have the IMO software installed.
- You have the IMO device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the IMO PLC.
  - A Serial attached PLC (Such as the XGB XECDR32H/DC) must be configured with agent device type **IMO/Serial** on the SiteManager.
  - A network attached PLC (Such as the XBL-EMTA Module for XGB) must be configured with agent device type IMO/Ethernet on the SiteManager.

If any of these prerequisites are not met, you should contact the person / department responsible within your own company or at the company responsible hereof.

# **System Overview**

The communication path is as follows:

**XG5000 Program**  $\rightarrow$  LinkManager  $\rightarrow$  GateManager  $\rightarrow$  SiteManager  $\rightarrow$  PLC.

This guide will elaborate on the components marked with **bold**.

The following system overview depicts a SiteManager 3134 at the customer location:





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## 2. TCP Ethernet Access

The following describes how to connect the IMO XG5000 Program to an IMO PLC that is attached to a SiteManager via Ethernet. The description shows a XBL-EMTA module attached to the PLC.

**Note:** A network attached PLC must be configured with agent device type **IMO/Ethernet** on the SiteManager.

1. Locate the agent that represents you TCPI/IP attached IMO PLC

LinkManager secimea	<b></b>
Logout	Sniffer Refresh
gm06.Je	ensHeshe
⊡_y_gm06 	
Show all Refresh	Show all Expand all Refresh

2. You will not see any activity on it yet. This only starts when you connect to the PLC via your project (Make a note of the IP address of the PLC):

Linki	Manu a	ager								(	5
		(	Disconnect Logout		Services		Sniffer				
			gm0	)6.JensHe	eshe						
			IMO Ethernet (	PH-Demo	o2) - <mark>10</mark>	.0.0.200					
		Agent	Address	Status	Con	nects	Pac	kets	By	tes	
		- gene	11001-233	Diatas	ok	fail	tx	rx	tx	rx	
	@ <b>*</b>	IMO Ethernet	10.0.0.200:2002,10001	IDLE	0	0	0	0	0	0	

3. Start the XG5000 Program and select file → Open From PLC.





4. Select Ethernet in Type, and click "Settings" to set the IP address.



5. Type in the IP address of the device (obtained from section 2) and click OK and OK.

Details	? <mark>×</mark>
Ethemet	
Set IP address	
<u>I</u> P address: 10 . 0 . 0	. 200
	Canad
<u>S</u> can IP OK	Lancel



6. The XG5000 Program will start loading data from the PLC. After this, it will show "Reading is completed". Click OK.

Read		? ×
Reading Parameter		Elapsed time:
2.3KB / 7.9KB		
Current:	29 %	
Total:	34 %	Cancel

7. You are now online with the PLC. You can now observe data traffic in the LinkManager:

LinkManager sectmea	
Disconnect Logout Services Sniffer	
gm06.JensHeshe	
IMO Ethernet (PH-Demo2) - 10.0.0.200	
Agent Address Status Connects Packets Bytes	
ok fail <u>tx rx tx rx</u>	
😳 IMO Ethernet 10.0.0.200:2002 UP:1 6 0 <b>547 542 16,315 81,09</b>	J



# 3. Serial Access via Serial IMO cable

The following describes how to connect the IMO XG5000 Program to an IMO PLC that is attached to a SiteManager via an IMO Serial cable.

**Note:** A Serial attached PLC (Such as the XGB XECDR32H/DC) must be configured with agent device type IMO/Serial PLC on the SiteManager.

1. Locate the agent that represents your network attached IMO PLC



 When connecting the agent, you should see some activity in the tray icon area, which is the auto configuring of a virtual serial port. If your SiteManager, and IMO PLC is correctly attached, you should also see the status of the agent become OK, and a few bytes of traffic:

Lin secu	KΜ( mea	anager									
			Disconnect Logout	Servic	es	Sniffe	IL				
			gm06	i.JensHeshe							
			IMO Seriel	(PH-Demo2)							
		Agent	Address	Status	Connects Pa		Pac	kets I		Bytes	
					ok	fail	tx	rx	tx	rx	
	0	IMO Seriel	172.24.2.128:23> 127.0.0	0.1 UP:1	1	0	3	2	39	39	

3. Now right click the LinkManager system tray Icon, and select **Status**. Make note of the Serial port that has been assigned (in this case COM5):



Right click the LinkManager system tray icon again, and select **Options**. Enter the number of the COM port you found under status. This will ensure that you will always get this port in the future.



**IMPORTANT:** if you change the port you must stop and start the LinkManager.

Options	
COM port	Net Type C Bridged C NAT
ОК	Cancel

**Note:** You can also force another COM port (e.g. COM2). Just ensure in your Windows device manager, that the port is not conflicting with an existing COM port. See Appendix A for info on how to organize COM ports.

4. Open the XG5000 Program and select **Project → Open From PLC**:



5. Select RS-232C in Type, and click "Settings".

Online Settings - Open from the	PLC ? X
Connection settings	
Type: RS-232C 💌	Settings
Depth: Local 🔹	Preview
General	
Timeout interval:	5 🚔 sec.
Retrial times:	1
Read / Write data size in PLC ru	un mode
💿 Normal 🛛 💿 Maximum	
* Send maximum data size in s	stop mode
Connect OK	Cancel



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6. Select the COM port (obtained from section 3) and click OK and OK.

Details 2 X	J
RS-232C	
RS-232C settings	
Port number: COM5	
Baud rate: 115200(XGT) -	

7. The XG5000 Program will start loading data from the PLC. After this, it will show "Reading is completed". Click OK.

Read				? ×
Reading	Parameter			Elapsed time:
			~	
2.3KB /	7.9KB			
Current:		29 %		
Total:		34 %		Cancel

8. You are now online with the PLC. You can now observe data traffic in the LinkManager:

LinkManager sectmea							(	ch
	Disconnect Logout	Servi	ices	Sniffe	er			
	gm06.J	ensHeshe						
	IMO Seriel PL	.C (PH-De	mo2)					
Agent	Address	Status	Con	nects	Pac	kets	Ву	rtes
			ok	fail	tx	rx	tx	rx
IMO Seriel PLC	172.24.2.128:23> 127.0.0.1	UP:1	1	0	254	872	1,839	25,640



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## 4. Ethernet connection via Windows XP under VMWare

You can run the XG5000 program inside a VMWare engine, to an IMO PLC that is Ethernet attached to a SiteManager.

**Note:** LinkManager must be installed on the hosting machine, and <u>NOT</u> inside the VMWare Windows XP image. LinkManager cannot run inside a VMWare virtual machine.

The following illustrates VMWare Player, which can be downloaded from <a href="http://www.vmware.com/support/product-support/player/">http://www.vmware.com/support/product-support/player/</a>

1. Locate your Windows XP that has XG5000 program installed, and enter **Edit** virtual machine settings.

🧐 VMware Player File + VM + Help +	_ ×
VMware Player File • VM • Help •	Windows XP Professional 2 State: Powered Off DS: Windows XP Professional Version: Workstation 5.x virtual machine RAM: 1024 MB
	Edit virtual machine settings
	الله <b>vm</b> ware



2. Make sure the Network Adapter settings is set to NAT:

Device	Summary	Device status
<ul> <li>Memory</li> <li>Processors</li> <li>Hard Disk (IDE)</li> <li>CD/DVD (IDE)</li> <li>Floppy</li> </ul>	1024 MB 1 8 GB (Preallocated) Auto detect Using drive A:	Connected Connect at power on Network connection O Bridged: Connected directly to the physical network
Serial Port	Present Using port COM6	Replicate physical network connection state     NAT: Used to share the host's IP address     Host-only: A private network shared with the host

- 3. Start the VMWare engine and on the host PC start LinkManager.
- 4. Follow the procedure of section **2 TCP Ethernet Access** to get access to the PLC via LinkManager



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# 5. Serial connection via Windows XP under VMWare

You can run the XG5000 Program inside a VMWare engine, to an IMO PLC that is Serial attached to a SiteManager.

**Note:** LinkManager must be installed on the hosting machine - and <u>NOT</u> inside the VMWare Windows XP image. LinkManager cannot run inside a VMWare virtual machine.

The following illustrates VMWare Player, which can be downloaded free of charge from <a href="http://www.vmware.com/support/product-support/player/">http://www.vmware.com/support/product-support/player/</a>

- 1. Follow step 1-3 of section **3 Serial Access via Serial IMO** cable on **7**. This will create a COM port even if the PC does not have a physical COM port.
- 2. Locate your Windows XP that has XG5000 Program installed, and without starting it, enter Edit virtual machine settings.



3. Add Serial Port to the Hardware list (if it does not already exist).



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Hardware Options Device Memory Processors Hard Disk (IDE) CD/DVD (IDE)	Summ 1024 1 B GB ( Auto	Add Hardware Wizard           Hardware Type           What type of hardware do you want to install?		
Eloppy	Using NAT Prese Hard Disk © CD/DVD Drive Floppy Drive Network Adapter SubB Controller Sound Card Parallel Port Serial Port Generic SCSI Device	Explanation Add a serial port.		
	Add Remove	< Back Next > Cancel		

4. Select "Use physical port" (Even though LinkManager makes a virtual COM port, VMWare sees it as a physical port)

Add Hardware Wizard 🛛 🛛 🔀
Serial Port Type What media should this serial port access?
Serial port
⊙ Use physical serial port on the host
Output to file
Output to named pipe
<pre></pre>



5. Set the port to the COM port used by the LinkManager (see section **2. Serial Connection**)

tual Machine Settings 🗾				
Hardware Options				
Device Memory	Summary 256 MB	Device status     If Connected     If Connect at power on		
Processors  Hard Disk (IDE)  CD/DVD (IDE)  Floppy	1 4 GB Using drive F: Using drive A:	Connection		
ENetwork Adapter USB Controller	NAT Present Auto detect	COM3		
() Serial Port	Using port COM3	© Use named pipe:		

- 6. If VMWare does not allow you to add a Serial port, it may be because the PC does not have a physical Serial port.
- 7. Press **OK** twice, and select the Select **Finish** and **OK**, Start the VMWare WindowsXP image, and start the XG5000 Program.
- 8. Follow the procedure described in section **3 Serial Access** on getting access to the PLC via LinkManager.

**Note:** VMWare will typically make the physical COM port of the host system (e.g. COM3) appear to the virtual OS as COM1. You should configure the XG5000 Program to use the port of VMWare (COM1) and not the physical port of the host system (COM3) that is used by LinkManager.

#### 5.1. Startup order of VMWare, LinkManager and XG5000 Program

If you have already preset a COM port in LinkManager as well as in VMWare, the startup order would be irrelevant. You can stop and start the components individually.

If you encounter problems, or you have changed the COM port setting of LinkManager it is recommended to do the following:

- 1. Stop the VMWare engine.
- 2. Stop LinkManager completely.
- 3. Start LinkManager.
- 4. Connect to the Serial PLC and check the assigned COM port under Status (by right-clicking the LinkManager tray icon)
- 5. Check the COM port settings of the Virtual Machine Settings of the Windows image with the XG5000 Program.
- 6. Start the VMWare image.
- 7. Start XG5000 Program and connect to the PLC



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# Appendix A, Organizing COM ports in Windows

#### Clean up Windows Registry for redundant COM ports:

You may experience that older versions of the IMO software require a lower COM port number. In case your PC assigns a COM port of e.g. 13, it may be due to previous installs of virtual COM ports from in relation to installation of other programs.

You can clean your PC for redundant COM ports in Windows registry:

- 1. Open regedit (Start  $\rightarrow$  run  $\rightarrow$  Regedit)
- 2. Navigate to:

# HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\COM Name arbiter

- 3. In the ComDB set all values to 00
- 4. Restart your PC

#### Enable LinkManager to use COM1:

If you prefer the COM port to be COM1:

Even if no COM ports are installed on the PC, Windows will never assign a COM port lower than COM3 to the LinkManager. You therefore have to do the following to force LinkManager to use COM1:

- Open Windows Control Panel → System → Hardware → Device Manager → Ports (COM & LPT).
- 2. If there already are physical COM ports listed, you must re-assign the port numbers to free up COM1.

Right click a COM port and select Properties  $\rightarrow$  Port Settings  $\rightarrow$  advanced

- 3. Change the COM port number in the drop down list.
- 4. Restart your PC.
- 5. Right click the LinkManager system tray icon and select Options.
- 6. Enter 1 in the COM port field.

Options	
COM port	Net Type C Bridged ⓒ NAT
ОК	Cancel

7. Stop and Start the LinkManager and start the Serial agent.



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