Application Note ABB PM583 PLC with Control Builder Plus

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: 2.0, September 2012



Table of Contents

Pre	requisites for This Guide	3
1.	TCP Ethernet Access	4
2.	Serial access via ABB serial cable (TK501:AC500)	8
3.	Ethernet Access via Windows XP under VMWare	13
Арр	pendix A, Organizing COM ports in Windows	15
Not	ices	16



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 ABB PM583 programming 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 ABB software installed.
- You have the ABB device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the ABB PLC.
 - A network attached PLC (such as the PM583) must be configured with agent device type **ABB/PLC Ethernet** on the SiteManager.
 - A serial attached PLC (such as the PM583) must be configured with agent device type ABB/PLC Serial on the SiteManager. Furthermore, the PLC must be attached to the SiteManager via a TK501:AC500 serial cable.

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:

Control Builder Plus \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 3229 at the customer location:





1. TCP Ethernet Access

The following describes how to connect the Control Builder Plus to an ABB PLC, which is attached to a SiteManager via Ethernet. The description shows a PM583 module attached to the PLC.

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

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

LinkManager sectmea	
Logout Services GM I	ogin Sniffer Refresh
JHS-Gmail: ROO)T.test.JHS.ABB
A ROOT.test.JHS.ABB	
Show all Refresh	ABB Ethernet (SM3229 demorack (JHS)) - 192.168.0.10 Image: Show all 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):

LinkMa sectmea	anc	iger									
		Disc	onnect Log	jout	Servi	ces 🛛	Sniffe	r			
	ROOT.test.JHS.ABB										
		ABI	3 Ethernet (SM32	229 demo	rack (JI	HS)) - <mark>(1</mark> 92	2.168.0.1	10			
		Acont	Addunce	Status	Conr	nects	Pac	kets	By	tes	
		Agent	Address	status	ok	fail	tx	rx	tx	rx -	
	€3*	ABB Ethernet	192.168.0.10	IDLE	0	0	0	0	0	0	
			(udp)	IDLE	0	0	0	0	0	0	
		<	virtualpc	IDLE	0	0	0	0	0	0	
		-	virtualpc (udp)	IDLE	0	0	0	0	0	0	



3. Start the Control Builder Plus software, and open your project. Right-click on your PLC, and select "Set Gateway".

CBP_Project1.project	- Control Builder Plus						
<u>File Edit View Project Tools Window Help</u>							
🗄 🛥 🖪 🗇 👗 🖻	🖻 🗙 🖊 🏰 📑						
Devices	- 4 × [€	Start Page					
□ CBP_Project1	Recer	t projects					
AC500_PM583_FTU	Target change	Project1					
CPU_parame	Сору	0-Webserver_Example_V04_engelsk te					
Interfaces ()	a Paste						
_с⊂⊑ сом1 🐰	Cut						
	Delete	started					
Communicati	Export mappings to CSV	te a new project					
	Import mappings from CSV	a project from disk					
μ Γ TA524	Add Object	a project archive from disk					
ີ (TA524	Add Device	about basic concents					
۲А524 ۲۵524	Insert Device	the homepage					
	Update Device						
Ľ	Edit Object	information					
	Set Gateway	uilder Plus 2.2.0					
	Login K						
		_					

4. If you haven't already created a Gateway, click **New**.

Communication Paramet	егѕ			
Channels	Name	Value	Comment	OK Cancel
				New Removas
				Gateway Update
	<	1111		



Page 5 of 16

5. Type in a proper name for the PLC connection, and select "Tcp/lp", and click **OK**.

Communication Parameters	:: New Channel	
Name PM583		OK
Device		Cancel
Name	Info 🔨	
ABB Arcnet AC	ABB SST Arcnet AC	
ABB RS232 AC	ABB RS232 AC drive	
ABB Tcp/lp Level 2 AC	ABB SST Tcp/lp Le	
Tcp/lp	3S Top/Ip driver	
Serial (F 1232)	3S Serial RS232 driv	
Serial (1 - 1 32, 8 bit)	3S Serial RS232 driv	
Tcp/lp (Level 2)	- 3S Top/Ip level 2 dri 🔽	
<	>	
,		

6. Double-click on the IP address, and set it to match the IP address in section 2. Verify the Port to be 1201, and click **OK**.

Communication Parameters	
Channels Channels Channels Comment Address 132.168.0.10 IP address or hostname Port 1201 Motorola byteorder Yes	<u>D</u> K <u>C</u> ancel <u>N</u> ew <u>R</u> emove <u>G</u> ateway <u>U</u> pdate



Page 6 of 16

7. To go online with the PLC, right-click on the PLC again and select Login.

🛤 CBP_Project1.project* - Co	ontrol Builder Plus							
<u> Eile E</u> dit <u>V</u> iew <u>P</u> roject <u>T</u> ools	<u>W</u> indow <u>H</u> elp							
1 🖆 🚅 🔚 🍏 👗 🗈 🛍 🗙 🛤 🎼 🚰								
Devices	🗸 🕂 🗙 💽 Start	Page						
□ ☐ CBP_Project1	Recent pro	ojects						
AC500_PM583_ETH (A	Target change	ct1						
CPU_parameters	Сору	bserver_Example_V04_engelsk te						
IO_Bus (I/O-Bus)	Paste							
	Cut							
COM2_Onlir 🗙	Delete	:ed						
Gommunication m	Export mappings to CSV	ew project						
Gonboard_Eth	Import mappings from CSV	pject from disk						
IP_Setting	Add Object	pject archive from disk						
-ζ TA524_Slot2	Add Device	bject archive from PLC						
لم TA524_Slot	Insert Device	menage						
····\$ 1A524_5lot4	Update Device	mopago						
G	Edit Object	mation						
	Set Gateway	Plus 2.2.0						
	Login r							
	Å							
	-γ							

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

LinkM sec'mea	anc	iger								(
		Disc	onnect Log	jout	Servi	ces (Sniffe	r		
ROOT.test.JHS.ABB										
		ABI	3 Ethernet (SM32	29 demo	rack (JI	HS)) - 19:	2.168.0.	10	_	
		Agent	Address	Status	Conr	nects fail	Pac tx	kets rx	By tx	tes rx
	@ *	ABB Ethernet	192.168.0.10	IDLE	1	0	216	216	3,284	5,699
			(udp)	UP:2	0	0	27	0	5,190	0
		-	virtualpc	IDLE	0	0	0	0	0	0
		-	virtualpc (udp)	IDLE	0	0	0	0	0	0



2. Serial access via ABB serial cable (TK501:AC500)

The following describes how to connect the Control Builder Plus to an ABB PLC, which is attached to a SiteManager via serial cable. The description shows a PM583 module attached to the PLC.

Note: A serial attached PLC must be configured with agent device type **ABB/PLC Serial** on the SiteManager. This agent is included from SiteManager firmware 12384.

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



2. 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 ABB PLC is correctly attached, you should also see the status of the agent become OK, and a few bytes of traffic:

Disconnect Logout Services Sniffer								
gm06.JHS								
ABB Serial (SiteManager)								
Agent	Address	Status	Conr	nects	Pac	kets	By	tes
-			ok	fail	tx	۳x	tx	۳x
🝼 🔨 ABB Serial	10.0.0.1:23> 127.0.0.1	UP:1	1	0	3	з	63	70



Page 8 of 16

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 COM4):



4. 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 ⓒ 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.





5. Start the Control Builder Plus software, and open your project. Right-click on your PLC, and select "Set Gateway".

CBP_Project1.project -	Control Builder Plus						
Eile Edit <u>V</u> iew Project]	<u>File Edit View Project Tools Window H</u> elp						
1 🖆 🚅 🔚 1 🍝 1 👗 🖻	🖻 🗙 🏘 🕼 🕤						
Devices	👻 🕂 🗙 두 👻	Start Page					
CBP_Project1	Recer	nt projects					
AC500_PM583_FT14	Target change	Project1					
	Сору	0-Webserver_Example_V04_engelsk.te					
IO_Bus (I/O	Paste						
🗧 сомі 🐰	Cut						
	Delete	started					
E Communicati	Export mappings to CSV	te a new project					
Diboard	Import mappings from CSV	a project from disk					
	Add Object	a project archive from disk					
	Add Device	a project archive from PLC					
ζ TA524	Insert Device) about basic concepts					
ີ TA524	Undate Device	the homepage					
G	Edit Object	information					
	Set Gateway	uilder Plus 2.2.0					
	Login						

If you haven't already created a Gateway, click New.

Communication Paramet	ers			
Channels	Name	Value	Comment	OK Cancel
	Name	value	Comment	New Removes
				Gateway Update
	<			



7. Type in a proper name for the PLC connection, and select "Serial (RS232)", and click OK.

Communication Parameters: New Channel				
Name Local_serial		OK		
Device		Cancel		
Name	Info 🔺			
ABB Arcnet AC	ABB SST Arcnet AC			
ABB RS232 AC	ABB RS232 AC drive 🗏			
ABB Tcp/lp Level 2 AC	ABB SST Tcp/lp Le 💻			
Tcp/lp	3S Top/Ip driver			
Serial (RS232)	3S Serial RS232 driv			
Serial (RS232, 8 bit)	3S Serial RS232 driv			
Tcp/lp (Level 2)	3S Top/Ip level 2 dri 👻			
•	Þ			

8. Double-click on the Port number, and use the DOWN ARROW on your keyboard to increase the number. Select the number obtained from section 2. Click ok.

Communication Parameters	—
Serial (RS232) Local_serial Name Value Comment Port COM4 Baudrate 19200 Parity No Stop bits 1 Motorola byteorder Yes Flow Control Off	OK Cancel New Remove Gateway Update



9. Right-click on the PLC again and select Login.

👪 CBP_Project1.project* - Control Builder Plus						
<u>File Edit View Project Tools Window H</u> elp						
1 🖆 😅 🔚 I 🏯 🐘 🛍 🗙 I 👫 🎼 📑						
Devices 🗸 🗸 💽 Start Page						
CBP_Project1						
AC500_PM583_ETH (A	Target change	ct1 bserver Example V04 engelskite				
IO_Bus (I/O-Bus)	Paste					
COM1_Onlin 🐰	Cut	ed				
	Export mappings to CSV	ew project				
	Import mappings from CSV	bject from disk				
TA524_Slot:	Add Object	bject archive from PLC				
	Add Device	ut basic concepts				
۰۰۰۰۲ TA524_Slot	Update Device	omepage				
D	Edit Object	mation				
	Set Gateway	103 21210				
	Login 🔥					
	4					

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

Disconnect Logout Services Sniffer									
gm06.JHS									
ABB Serial (SiteManager)									
A	Advace	Status	Connects		nects	Packets		Bytes	
	Agent	Audress	status	ok	fail	tx	rx	tx	PX .
01	ABB Serial	10.0.0.1:23> 127.0.0.1	UP:1	1	0	19	20	245	338

Page 12 of 16

3. Ethernet Access via Windows XP under VMWare

You can run the Control Builder Plus program inside a VMWare engine, to an ABB PLC that is Ethernet attached to a SiteManager.

From LinkManager version 12155 you can choose to run the LinkManager inside or outside the virtual machine. Note that LinkManager can only run inside VMWare if the host OS is Windows 7 and the PC's CPU has support for virtualization.

The following illustrates VMWare Player, which can be downloaded from http://www.vmware.com/support/product-support/player/, and for LinkManager running <u>outside</u> the virtual machine (i.e. on the host OS system)

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

🤫 VMware Player File 🕶 VM 👻 Help 👻	_ ×
Home	
Windows XP Professional 2	
	Windows XP Professional 2
	State: Powered Off OS: Windows XP Professional Version: Workstation 5.x virtual machine RAM: 1024 MB
	Play virtual machine
	🗊 vm ware [.]

Page 13 of 16

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

Device	Summary	Device status
 Memory Processors Hard Disk (IDE) CD/DVD (IDE) Floppy 	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 **1 TCP Ethernet Access** to get access to the PLC via LinkManager



Page 14 of 16

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 C NAT
ОК	Cancel

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



Notices

Publication and copyright

© **Copyright Secomea A/S 2008-2012**. All rights reserved. You may download and print a copy for your own use. As a high-level administrator, you may use whatever you like from contents of this document to create your own instructions for deploying our products. Otherwise, no part of this document may be copied or reproduced in any way, without the written consent of Secomea A/S. We would appreciate getting a copy of the material you produce in order to make our own material better and – if you give us permission – to inspire other users.

Trademarks

SiteManager[™], LinkManager[™] and GateManager[™] are trademarks of Secomea A/S. Other trademarks are the property of their respective owners.

Disclaimer

Secomea A/S reserves the right to make changes to this publication and to the products described herein without notice. The publication of this document does not represent a commitment on the part of Secomea A/S. Considerable effort has been made to ensure that this publication is free of inaccuracies and omissions but we cannot guarantee that there are none.

The following paragraph does not apply to any country or state where such provisions are inconsistent with local law:

SECOMEA A/S PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

SECOMEA A/S SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGE ALLEGED IN CONNECTION WITH THE FURNISHING OR USE OF THIS INFORMATION.

Secomea A/S Denmark

CVR No. DK 31 36 60 38

E-mail: sales@secomea.com www.secomea.com





Page 16 of 16