

# **TN1025** - Initializing of the Anybus Ethernet IP Basic Busmodule Introduction

This procedure provides instruction for initializing the AE Anybus-Module Ethernet/IP 2000190015 installed in the: BasicBusModule with dASM / P/N 2000190003 or BasicBusModule w/o dASM P/N 2000190002, using the Allen Bradley, BOOTP/DHCP utility.

After completing this procedure, the BasicBusModule should be configured with a user-defined IP address and is ready for operation. Refer to the BasicBusModule Ethernet IP operating Instructions for additional details.

The BOOTP/DHCP application can be downloaded from the Allen Bradley website using the following link: <u>http://www.software.rockwell.com/download/comms/rsne</u> tworx/bootp-dhcp%20server%202.3.2.zip

### Part 1: Setup and Installation



#### - RJ-45 connectors

#### Table 2. Module status LED

LED State	Description
Off	No power
Green	Controlled by a scanner in Run state
Green, blinking	Not configured, or scanner in Idle state
Red	Major fault (for example, exception state or fatal error)
Red, blinking	Recoverable fault(s). Module is configured, but stored parameters differ from currently used parameters.

If both the network status LED and the module status LED are red, a fatal error has occurred.

Table 3. Link/activity LED

LED State	Description
Off	No link, no activity
Green	100 Mbit/s link established
Green, flickering	100 Mbit/s activity
Yellow	10 Mbit/s link established
Yellow, flickering	10 Mbit/s activity

1. Install and set up the AB BOOTP/DHCP utility on your pc as provided in the instructions from the Allen Bradley website. 2. For Ethernet-IP operation, install the Anybus Ethernet I/P module and enable the Anybus Ethernet I/P module in the PC Software Thyro-Tool Pro. Additional configure the type of power controllers as they are connected to its terminals X1 to X8:

<ul> <li>Para</li> </ul>	✓ I BasicBusmodule I General	Hardwar	e	
imete	i Hardware	Symbol	Name	Selection
rs Exp	🗴 Limits	Conf_X1	Conf_X1	1-phase HRLP 👻
plore	Þ 😨 LED	Conf_X2	Conf_X2	None 🗸
Ó	¢√ Relay	Conf_X3	Conf_X3	None 👻
	ED_Port_State	Conf_X4	Conf_X4	None 🗸
	DigitalOutput	Conf_X5	Conf_X5	None 👻
	☐ Fault log config. ⊥	Conf_X6	Conf_X6	None 👻
	▶ ¥ X1_Thyro-AS	Conf_X7	Conf_X7	None 👻
	Anyous	Conf_X8	Conf_X8	None •
	i Configuration	Anybus	Anybus module slot	EtherNet/IP 🗸
	R→ Flexible Read Links	Symbol	Name	Code
	<u>→w</u> Flexible Write Links	Config	Config	No option activated!

### Required for 2.

- PC Software Thyro-Tool Pro 200000380
- 24VDC 200mA/Busmodule connected to
- X11.1(+), X11.2(-), and X11.3 (PE)
- A fixed IP address should be assigned for the PC, (for example, 192.168.0.100. Use 255.255.255.0 as the subnet mask. For Windows 7, these can be defined in Windows > Control Panel > Network and Internet > Network Connections > Local Area Connection properties, by configuring "Internet Protocol Version 4"
- 4. The factory settings for the Windows 7 (or higher) firewall do not allow communication for the DHCP. request and should be temporarily disabled via Windows > Control Panel > System and Security > Windows Firewall > Turn Windows Firewall off
- 5. Once the bus module and all connected Thyro devices are powered, connect an Ethernet cable between the bus module and PC.

### Table 1: BOOTP Network Settings

Ethernet	IP Bus	Module		
Subnet Mask	255	255	255	0
Gateway	0	0	0	0
Primary DNS	0	0	0	0
Secondary DNS	0	0	0	0
Domain Name				

- 6. Start the AB BOOTP/DHCP utility using 255.255.255.0 as the subnet mask (Tools > Network settings). All other values should be 0 and the Domain Name empty. Verify that the network settings match the settings of your local area network.
- 7. If the PC, bus module and SCR power controller are setup and connections were made properly, the



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Anybus- card's MAC address will appear in the Relation List. (see Figure 1, callout A on Page 2).

### Figure 1: BOOTP

BOOTP/DHCP Server 2.3		
File Tools Help		
Request History		
Clear History Add to Relation List		
(hrimin:sec) Type Ethernet Address (MAC)	IP Address	Hostname
14:53:55 DHCP 00:26:E5:00:28:75	192.168.0.101	С
14:53:55 DHCP 00:26:E5:00:28:75		
14:53:35 DHCP 00:26:E5:00:28:75		
☐ Relation List		
New Delete Enable BOOTP Enable DHCP	isable BOOTP/DHCP	Ξ
Ethernet Address (MAC) Type IP Address	New Entry	
00:26:E5:00:28:75 DHCP 192.168.0.1		
	Ethernet Address (MAC	00:26:E5:00:2B:75
	IP Addres	s: 192.168.0.101 B
	Hostnam	e:
Status	Descriptio	n:
[Disable DHCP] Command successful F		OK Cancel

If the card does not show up in the "Request History List" then recheck the previous steps to make sure the pc, bus-card and SCR power controller are connected and operating properly.

### NOTE:

All new factory Anybus modules are shipped from the factory with DHCP enabled.

If the IP address is set to static it is important to note the IP address on the busmodule.

In case the static assigned IP address is unknown, a network analyser is required to find the IP address and to allow communication with the busmodule.

## Part 2: Assigning an IP Address (DHCP Enabled)

- 1. Click the desired entry in the Request History box so it is highlighted. (see Figure 1, callout A).
- 2. Click **Add to Relation List**. The New Entry pop up displays.
- 3. Enter 192.168.0.101 or the desired address in the **IP** Address field (see Figure 1, callout B), and click **OK**.
- Wait until the MAC address shows up again in the Request History field. This time it should have the newly assigned IP address (see Figure 1, callout C)
- 5. Select the bus module in the Relation List at the bottom of the window (see Figure 1, callout D), and click **Disable BOOTP/DHCP** to disable DHCP (see Figure 1, callout E).
- For verifying that the busmodule has a valid ip and can be reached, use the windows cmd.exe program REV 170614

Enter: ping 192.168.0.101 (As assigned before in this example).

## Part 3: Modifying defined IP-Address or Re-enable DHCP Mode

The Anybus module allows access to internal settings via Webserver.

1. Start your browser and open the page <u>http://192.168.0.101/</u> (Your assigned IP address)

### Figure 2: Anybus Main Page (Overview)

🛞 Anyl	bus		Anybus CompactCom
MODULE	Identification		
Overview	Module name:	BasicBusModule	
Parameters	Serial number:	0000001	
NETWORK	FW version:	1.02	
Status	Uptime:	0 days, 0h:3m:24s	
Configuration	CPU Load:	1%	
SERVICES			

### Figure 3: Anybus Parameters (Page1 only)

Anguus	State 12	1 Participant	Anybus Compacteo
E			
N #	Name	Value	ORef
ers 1	Flexible read-link 01 r	0	
RK 2	Flexible read-link 02 r	0	
3	Flexible read-link 03 r	0	
ation 4	Flexible read-link 04 r	0	
5	Flexible read-link 05 r	0	
6	Flexible read-link 06 r	0	
7	Flexible read-link 07 r	0	
8	Flexible read-link 08 r	0	
9	Flexible read-link 09 r	0	
10	Flexible read-link 10 r	0	

### Figure 4: Anybus Network Configuration

🛞 Anyl	bus		Anybus CompactCom
MODULE	IP Configuration		
Overview	DHCP	Disabled 💌	
arameters	IP Address	192.168.0.89	
NETWORK	Subnet Mask	255.255.255.0	
itatus	Gateway Address	0.0.0.0	
Configuration	Host Name		
EDVICES	Domain name		
CKVICL5	DNS Server #1	0.0.0.0	
MIP	DNS Server #2	0.0.0.0	
	Save settings		
	Ethernet Configuration		
	Port 1	Auto	
	Port 2	Auto 💌	
	Save settings		

### Figure 5: Anybus Network Status

🛞 Anyl	bus	A share and a share a	Anybus CompactCom
MODULE	Current IP Settings		
Overview	DHCP:	Disabled	
Parameters	Host Name:		
NETWORK	IP Address:	192.168.0.89	
Statur	Subnet Mask:	255.255.255.0	
Status	Gateway Address:	0.0.0.0	
Configuration	DNS Server #1:	0.0.0.0	
SERVICES	DNS Server #2:	0.0.0.0	
SMTP	Domain name:		
	Current Ethernet Status		1
	MAC Address:	00:30:11:11:52:FC	
	Port 1:	100 FDX	
	Port 2:	No Link	
	Interface Counters		

On the Network Configuration page, it is possible to modify the IP address or to activate the DHCP-Mode.

### **Part 4: Examples Project**



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The following screenshots are explaining a sample project, where a 1A...HRLP3 power controller is connected to an Allen-Bradley CompactLogix-PLC via our Anybus Ethernet module. Even if a different configuration is used, this sample can help to find the correct settings for the PLC, to communicate with our power controllers.

The following steps are a continuation after part 2. This means:

- The PC has the fixed IP 192.168.0.100
- The Anybus module has the fixed IP -192.168.0.101
- The PLC has the fixed IP 192.168.0.102
- The bus module, power controllers, PLC and PC are connected and powered.

### Table 2: Configuration as used below

Company	Component	Material Nr.
Allen- Bradley	Compact Logix (PLC)	1769-L30ER
Advanced Energy	Thyro-A 1A 230-16 HRLP3 (1 PH. AC 230V 16A SCR)	2000322104
Advanced Energy	BasicBusModule with dASM	2000190003
Advanced Energy	Anybus-Module Ethernet/IP	2000190015
Advanced Energy	4 Cables for BasicBusModule, length 2,5m each	2000004014

1. Right click I/O Configuration > Ethernet > New Module..., select Advanced Energy Industries. Inc., Basic Bus Module and click create:

Catalog	Module Discovery Favo	xites Type	Cle	ar f	ilters			Hide Filters	*
	Module T	vpe Category Filters		•		Мо	dule Type Vendor Fit	ters	*
<ul> <li></li> <li><th>Analog Communication Communications Communications Adapter</th><th>,</th><th></th><th>•</th><th></th><th>Advanced Energy Dialight Endress+Hauser FANUC CORPOR</th><th>v Industries, Inc.</th><th></th><th>•</th></li></ul>	Analog Communication Communications Communications Adapter	,		•		Advanced Energy Dialight Endress+Hauser FANUC CORPOR	v Industries, Inc.		•
٠.		II	×		•				
•	Catalog Number	Description					Vendor	Category	
	Basic Bus Module	Basic Bus Module Ether	let/ll	' Int	erfac	e Card	Advanced Ener	Communication	
	Bus Module Thyro-P Thyro-PX	Bus Module EtherNet/IP Thyro-P EtherNet/IP Inte Thyro-PX EtherNet/IP Int	Inter rface terfac	ace Car e C	Card d ard		Advanced Ener Advanced Ener Advanced Ener	Communication Communication Communication	
•			III						•
4 of 4	63 Module Types Found							Add to Favor	ites
CI	ose on Create						Create	Close	Help

2. If the Thyro-A is not yet installed on your Rockwell package, please ask AE tech support to provide the AE-Rockwell-AOP setup: technical.support@aei.com

- 3. Open the Module Definition window in the New Module window.
- 4. In this sample we use the predefined type: 1-phase HRLP for our Thyro-A 1A 230-16 HRLP3.

This type can be used to heat a 230V 16A single phase heater - phase to phase or phase to neutral:



The Basic Busmodule-AOP provides predefined types for all our latest Thyro-S, A, AX units. For the ECO, please use the HRL. If you do not find your type or need to connect an older unit, please ask technical.support@aei.com for compatibility.

5. Set the New Module\Configuration\*\Cycle Time\ (Use "Slow" to allow the acyclic transmission of parameters and to support older types. The "Fast..." type should be used if your application needs highest possible update speed of measurements)

General*	Connection*	Module Info*	Internet Protocol*	Port Con	figuration*	Network*	Configuration*	Vendor*	
Cy	cle Time: for A	ctual Values:	Slow Fast No Parameter Slow		Cycle time is When cycle possible to (	the update time is set t hange para	period for the a o Fast No Parar meters.	ctual values. neter, it is not	

- 6. Set New\_Module\General\Name: For Example: **BasicBusModule** (Variable as shown in the following screenshots) Set New Module\General\IP\_Address: 192.168.0.101
- Click: Go Online, Download the project to the PLC, 7. and change PLC to remote run.



## TN1025 - Initializing of the Anybus Ethernet IP Basic Busmodule

Name	-B 🗸	Value 🗧	Force Mask 🗧 🕈	Style	Data Type
+-Local:1:0		{}	{}		AB:Embedded_[
+-Local:1:I		{}	{}		AB:Embedded_[
+-Local:1:C		{}	{}		AB:Embedded_[
- BasicBusModule:O		{}	{}		AE:BasicBusMo
BasicBusModule:O.DeviceComma	nds	0		Decimal	DINT
-BasicBusModule:O.X1PulseLock		0		Decimal	BOOL
-BasicBusModule:0.X2PulseLock		0		Decimal	BOOL
BasicBusModule:0.X3PulseLock		0		Decimal	BOOL
BasicBusModule:O.X4PulseLock		0		Decimal	BOOL
BasicBusModule:O.X5PulseLock		0		Decimal	BOOL
BasicBusModule:O.X6PulseLock		0		Decimal	BOOL
-BasicBusModule:0.X7PulseLock		0		Decimal	BOOL
-BasicBusModule:0.X8PulseLock		0		Decimal	BOOL
BasicBusModule:O.ExternalError1		0		Decimal	BOOL
-BasicBusModule:O.Save		0		Decimal	BOOL
BasicBusModule:O.OnylfBitSet		0		Decimal	BOOL
BasicBusModule:O.X1FieldBusSP		0.0		Float	REAL
+ BasicBusModule:		{}	{}		AE:BasicBusMo
+ BasicBusModule:C		{}	{}		AE:BasicBusMo
Monitor Tags / Edit Tags /		•			E F

All the Output and Input variables are created in the "Controller Tags" for our configured power controllers. In our example we connected only one power controller to the basic bus module terminal X1, so we can only transmit one set point (X1FieldBusSP) and receive the readings only from the single power controller:

- BasicBusModule:I	{}	{}		AE:BasicBusMod
BasicBusModule:I.ConnectionFaulted	0		Decimal	BOOL
+ BasicBusModule:I.DeviceError_device	0		Decimal	DINT
BasicBusModule: LAuxSupplyError	0		Decimal	BOOL
BasicBusModule: I. ParameterError	0		Decimal	BOOL
BasicBusModule: InternalCommunicati	0		Decimal	BOOL
BasicBusModule:   ExternalError1	0		Decimal	BOOL
Pagio Pup Medulo II V1Configuration Error	0		Desimal	POOL
Desis Dus Module II.X (Configuration Entry	0		Decimal	BOOL
Dasicbusmodule.1.X2ConfigurationError	0		Decimal	BOOL
Basic Bus Module: 1.X3Configuration Error	0		Decimal	BOOL
BasicBusModule:1.X4ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X5ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X6ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X7ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X8ConfigurationError	0		Decimal	BOOL
-BasicBusModule:I.AnybusConfiguratio	0		Decimal	BOOL
+ BasicBusModule:I.DeviceError_extensi	0		Decimal	DINT
BasicBusModule:I.AnybusNotConnected	0		Decimal	BOOL
BasicBusModule: I.AnybusADINotExist	0		Decimal	BOOL
BasicBusModule:I.DASMTotalPowerE	0		Decimal	BOOL
BasicBusModule:I.DASMCountError	0		Decimal	BOOL
BasicBusModule:1X1ActualSP	0.0		Float	REAL
+ BasicBusModule I X1Emor	2#0000_000		Binary	DINT
BasicBusModule:   X1Frequency Outei	240000_0000111		Decimal	BOOL
Pasia Pus Medule II X19 meterorization E	0		Decimal	POOL
Dasic Dus Module .1.X Toynchronization E	0		Decimal	BOOL
BasicBusiModule:1.X Tremperature Mon	0		Decimal	BOOL
Basic Businodule: 1.X Triash values invalid	0		Decimal	BOOL
BasicBusModule:I.X1InternalError_Dat	0		Decimal	BOOL
BasicBusModule:I.X1AuxSupplyError	0		Decimal	BOOL
BasicBusModule:I.X1MasterSlaveFault	0		Decimal	BOOL
BasicBusModule:I.X1LeftRotatingField	0		Decimal	BOOL
BasicBusModule:I.X1PhaseL1_Error	0		Decimal	BOOL
BasicBusModule:I.X1PhaseL2_Error	0		Decimal	BOOL
BasicBusModule:I.X1PhaseL3_Error	0		Decimal	BOOL
BasicBusModule:I.X1BootJumperError	0		Decimal	BOOL
BasicBusModule:I.X1ThyristorShortCir	0		Decimal	BOOL
BasicBusModule:I.X1SYT9 OK	0		Decimal	BOOL
BasicBusModule:I.X1FailureRotatingFi	0		Decimal	BOOL
+ BasicBusModule:I.X1Status	2#0000 000		Binary	DINT
Basic Bus Module: I X1Pulse Inhib Active	0		Decimal	BOOL
Basic Bus Module 1 X1Mains Frequency	0		Decimal	BOOL
PasiaPusModulo:1X111 Limit	0		Desimal	POOL
Desis Dus Module II.X TO_DInic	0		Decimal	BOOL
	0		Decimal	BOOL
	0		Decimal	BOOL
Dasicbusmodule:1.X1SyncOutOn	0		Decimal	BOOL
BasicBusModule:I.X1BusmoduleActive	0		Decimal	BOOL
+ BasicBusModule:I.X1Monitor	2#0000_000		Binary	DINT
BasicBusModule:I.X1LoadFault	0		Decimal	BOOL
-BasicBusModule:I.X1UmainsBelowMin	0		Decimal	BOOL
-BasicBusModule:I.X1UmainsAboveMa	0		Decimal	BOOL
-BasicBusModule:I.X1UmsBelowMinim	0		Decimal	BOOL
-BasicBusModule:I.X1UmsAboveMaxi	0		Decimal	BOOL
BasicBusModule:I.X11msBelowMinimum	0		Decimal	BOOL
BasicBusModule:I.X1ImsAboveMaxim	0		Decimal	BOOL
BasicBusModule:I.X1PBelowMinimum	0		Decimal	BOOL
BasicBusModule:I.X1PAboveMaximum	0		Decimal	BOOL
BasicBusModule   X1Aloba	0.0		Float	REAL
Basic Bus Module   X1TimeOn	0.0		Float	REAL
BasicBusModule: 1 V11.1 Lima	0.0		Float	REAL
Dasic Bus Module 1. A TE 1_UTINS	0.0		riua.	DEAL
DasicBusModule:I.XILI_Ims	0.0		rioat	REAL
BasicBusModule:1.X1TotalPower	0.0		Hoat	REAL
BasicBusModule:I.DASMTotalPower	0.0		Hoat	REAL
+ BasicBusModule:I.DASMCount	0		Decimal	DINT
+ BasicBusModule:C	{}	{}		AE:BasicBusMod