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:
http://www.software.rockwell.com/download/comms/rsnetworx/bootp-dhcp%20server%202.3.2.zip
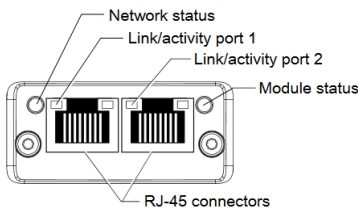
Part 1: Setup and Installation

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:
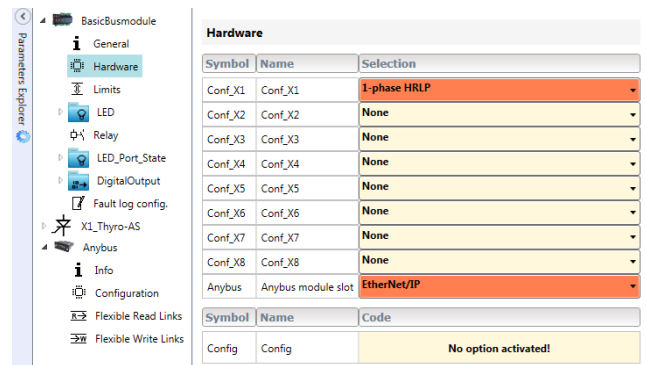
Required for 2.
- PC Software Thyro-Tool Pro 2000000380
- 24VDC 200mA/Busmodule connected to X11.1(+), X11.2(-), and X11.3 (PE)

3. 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

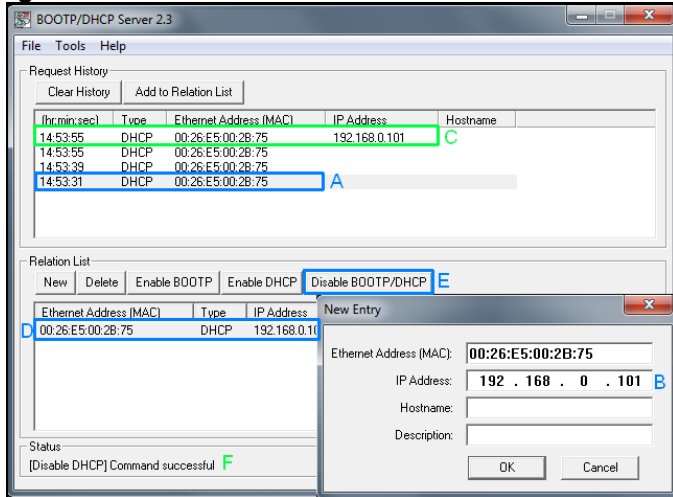| Ethernet IP Bus Module				
Subnet Mask	255	255	255	0
Gateway	0	0	0	0
Primary DNS	0	0	0	0
Secondary DNS	0	0	0	0
Domain Name				

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

TN1025 - Initializing of the Anybus Ethernet IP Basic Busmodule

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

Figure 1: BOOTP

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**.

4. 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).

6. For verifying that the busmodule has a valid ip and can be reached, use the windows cmd.exe program

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

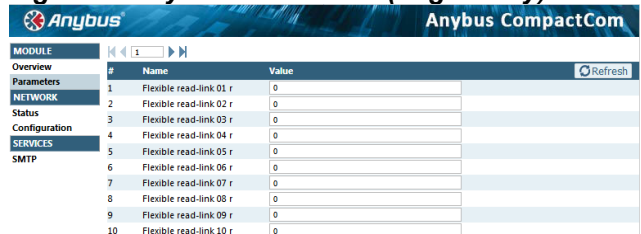## Part 3: Modifying defined IP-Address or Re-enable DHCP Mode

The Anybus module allows access to internal settings via Webserver.

1. Start your browser and open the page http://192.168.0.101/ (Your assigned IP address)
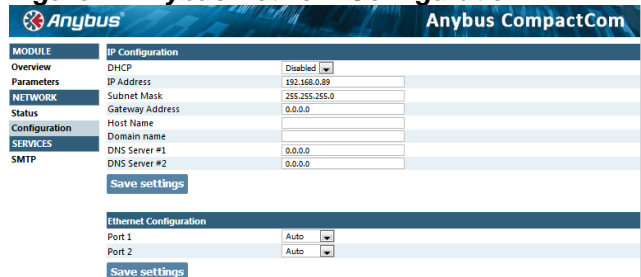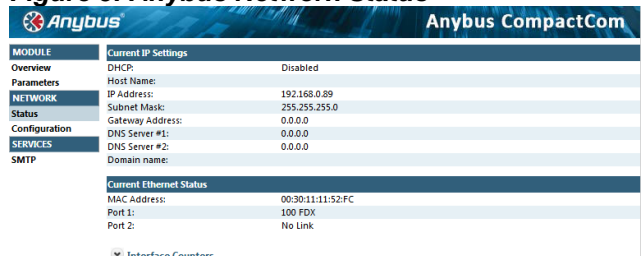
Figure 2: Anybus Main Page (Overview)
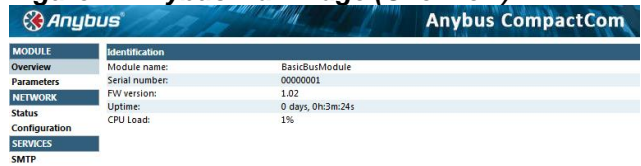
Figure 3: Anybus Parameters (Page1 only)

Figure 4: Anybus Network Configuration

Figure 5: Anybus Network Status

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

Part 4: Examples Project

TN1025 - Initializing of the Anybus Ethernet IP Basic Busmodule

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.

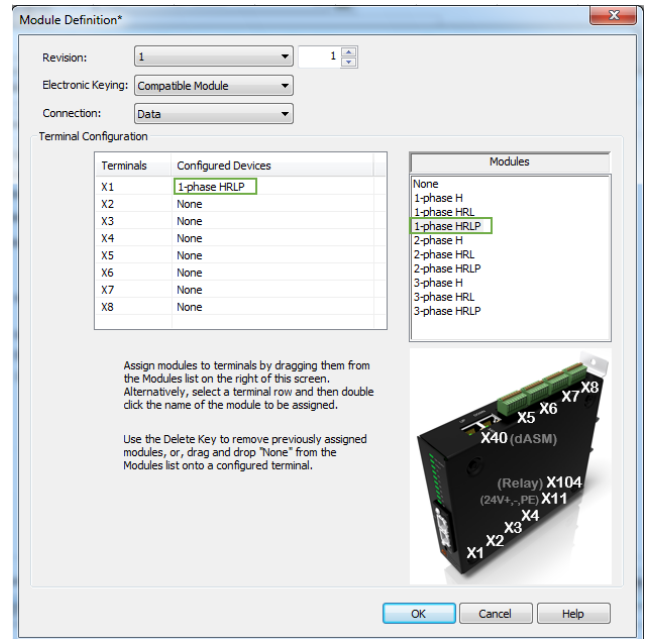The following steps are a continuation after part 2. This means:
- The PC has the fixed IP 192.168.0.100
- The Anybus module has the fixed IP 192.168.0.101
- The PLC has the fixed IP 192.168.0.102
- The bus module, power controllers, PLC and PC are connected and powered.

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**:

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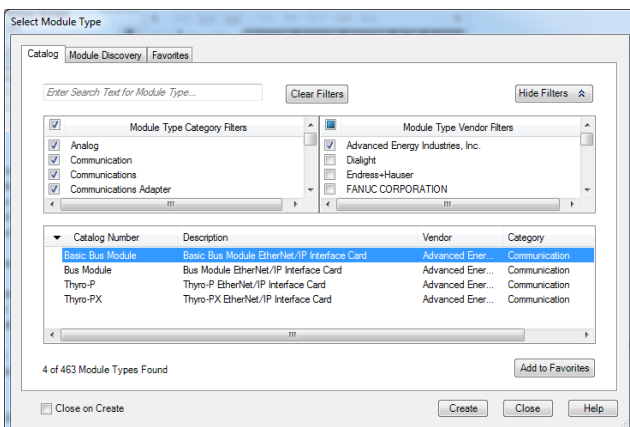
   This type can be used to heat a 230V 16A single phase heater - phase to phase or phase to neutral:

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)
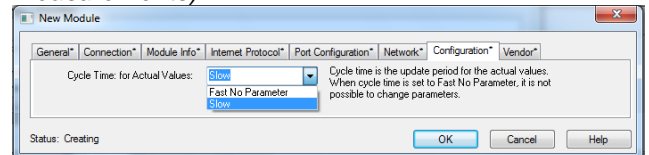
6. Set New_Module\General\Name: For Example: BasicBusModule
(Variable as shown in the following screenshots)
Set New Module\General\IP_Address: 192.168.0.101

7. Click: Go Online, Download the project to the PLC, and change PLC to remote run.

TN1025 - Initializing of the Anybus Ethernet IP Basic Busmodule

Name	Value	Force Mask	Style	Data Type
+ Local:1:O	{...}	{...}		AB:Embedded_[
+ Local:1:I	{...}	{...}		AB:Embedded_[
+ Local:1:C	{...}	{...}		AB:Embedded_[
− BasicBusModule:O	{...}	{...}		AE:BasicBusMoi
+ BasicBusModule:O.DeviceCommands	0		Decimal	DINT
BasicBusModule:O.X1PulseLock	0		Decimal	BOOL
BasicBusModule:O.X2PulseLock	0		Decimal	BOOL
BasicBusModule:O.X3PulseLock	0		Decimal	BOOL
BasicBusModule:O.X4PulseLock	0		Decimal	BOOL
BasicBusModule:O.X5PulseLock	0		Decimal	BOOL
BasicBusModule:O.X6PulseLock	0		Decimal	BOOL
BasicBusModule:O.X7PulseLock	0		Decimal	BOOL
BasicBusModule:O.X8PulseLock	0		Decimal	BOOL
BasicBusModule:O.ExternalError1	0		Decimal	BOOL
BasicBusModule:O.Save	0		Decimal	BOOL
BasicBusModule:O.OnlyIfBitSet	0		Decimal	BOOL
BasicBusModule:O.X1FieldBusSP	0.0		Float	REAL
+ BasicBusModule:I	{...}	{...}		AE:BasicBusMo
+ BasicBusModule:C	{...}	{...}		AE:BasicBusMoi

Monitor Tags / Edit Tags

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:

Name	Value	Force Mask	Style	Data Type
− BasicBusModule:I	{...}	{...}		AE:BasicBusMod...
BasicBusModule:I.ConnectionFaulted	0		Decimal	BOOL
+ BasicBusModule:I.DeviceError_device	0		Decimal	DINT
BasicBusModule:I.AuxSupplyError	0		Decimal	BOOL
BasicBusModule:I.ParameterError	0		Decimal	BOOL
BasicBusModule:I.InternalCommunicati...	0		Decimal	BOOL
BasicBusModule:I.ExternalError1	0		Decimal	BOOL
BasicBusModule:I.X1ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X2ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.X3ConfigurationError	0		Decimal	BOOL
BasicBusModule:I.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:I.X1ActualSP	0.0		Float	REAL
+ BasicBusModule:I.X1Error	2#0000_000...		Binary	DINT
BasicBusModule:I.X1Frequency_Outsi...	0		Decimal	BOOL
BasicBusModule:I.X1SynchronizationE...	0		Decimal	BOOL
BasicBusModule:I.X1TemperatureMon...	0		Decimal	BOOL
BasicBusModule:I.X1FlashValuesInvalid	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
BasicBusModule:I.X1PulseInhibActive	0		Decimal	BOOL
BasicBusModule:I.X1MainsFrequencyI...	0		Decimal	BOOL
BasicBusModule:I.X1U_Limit	0		Decimal	BOOL
BasicBusModule:I.X1I_Limit	0		Decimal	BOOL
BasicBusModule:I.X1P_Limit	0		Decimal	BOOL
BasicBusModule:I.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.X1UrmsBelowMinim...	0		Decimal	BOOL
BasicBusModule:I.X1UrmsAboveMaxi...	0		Decimal	BOOL
BasicBusModule:I.X1IrmsBelowMinimum	0		Decimal	BOOL
BasicBusModule:I.X1IrmsAboveMaxim...	0		Decimal	BOOL
BasicBusModule:I.X1PBelowMinimum	0		Decimal	BOOL
BasicBusModule:I.X1PAboveMaximum	0		Decimal	BOOL
BasicBusModule:I.X1Alpha	0.0		Float	REAL
BasicBusModule:I.X1TimeOn	0.0		Float	REAL
BasicBusModule:I.X1L1_Urms	0.0		Float	REAL
BasicBusModule:I.X1L1_Irms	0.0		Float	REAL
BasicBusModule:I.X1TotalPower	0.0		Float	REAL
BasicBusModule:I.DASMTotalPower	0.0		Float	REAL
+ BasicBusModule:I.DASMCount	0		Decimal	DINT
+ BasicBusModule:C	{...}	{...}		AE:BasicBusMod...