

# BACnet/IP

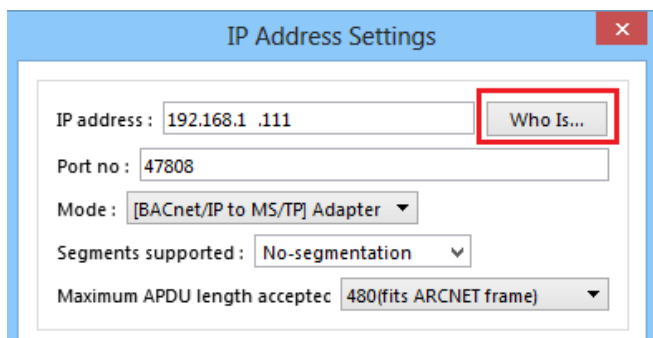
Supported series: BACnet/IP protocol devices

## HMI Setting:

Parameters	Recommended	Options	Notes
PLC type	BACnet/IP		
PLC I/F	Ethernet		
Port no.	47808		47808 is the standard communication port of BACnet protocol.
HMI port no.	47808	47808~47823 49152~65535	Different HMI ports are required when connecting multiple
Device ID	342566	0~999999	According to device.
PLC sta. no.	1		

### 1 [Who is]

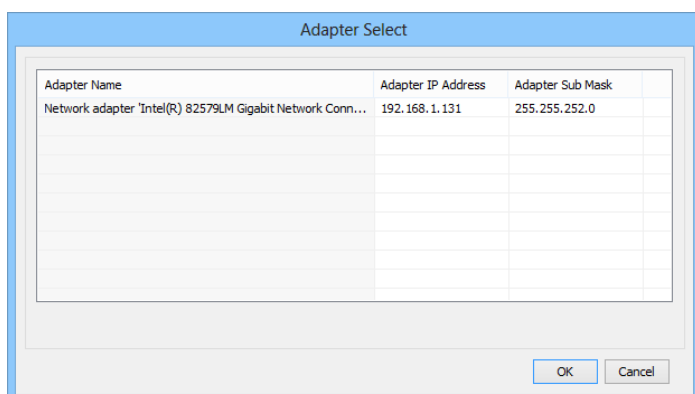
Scan the device in the domain and obtain the device settings.



The IP Address Settings dialog box contains the following fields and controls:

- IP address: 192.168.1.111
- Port no.: 47808
- Mode: [BACnet/IP to MS/TP] Adapter
- Segments supported: No-segmentation
- Maximum APDU length accepted: 480(fits ARCNET frame)
- A red box highlights the "Who Is..." button next to the IP address field.

\* After pressing the **[who is]** button, please select the network card in the same domain as the PLC.



The Adapter Select dialog box displays a table of available network adapters:

Adapter Name	Adapter IP Address	Adapter Sub Mask
Network adapter 'Intel(R) 82579LM Gigabit Network Conn...	192.168.1.131	255.255.252.0

At the bottom of the dialog are "OK" and "Cancel" buttons.

## 2. [Mode]

- Normal: General BACnet device
- [BACnet/IP to MS/TP] Adapter

## 3. [Segments supported] : Device supports large packet segmentation.

Mode : [BACnet/IP to MS/TP] Adapter ▼

Segments supported : No-segmentation ▼  
Segmented-both  
Segmented-transmit  
Segmented-receive  
No-segmentation

Maximum APDU length : 480 (fits ARCNET frame)

Ultimate destination MAC layer address : 83 : 12 : 32 : 44 : 12 : 14

## 4. [Maximum APDU Length accepted]: The maximum APDU length that device can support.

Segments supported : No-segmentation ▼

Maximum APDU length accepted : 480 (fits ARCNET frame) ▼  
50  
128  
206 (fits Lon Talk frame)  
480 (fits ARCNET frame)  
1024  
1479 (fits ISO 8802-3 frame)

Ultimate destination MAC layer address : 83 : 12 : 32 : 44 : 12 : 14

Length : 6 ▼

MAC (Hex) : 83 : 12 : 32 : 44 : 12 : 14

## 5. [Device ID]: 0 ~ 4194302

Timeout (sec) : 1.0 ▼ Turn around delay (ms) : 0

HMI port no : 47808

Device ID (0~4194302) : 342566 Network number : 0

The number of resending commands : 0 ▼

## 6. [HMI port no]: Set the communication port between HMI and device.

Timeout (sec) : 1.0 ▼ Turn around delay (ms) : 0

HMI port no : 47808

Device ID (0~4194302) : 342566 Network number : 0

The number of resending commands : 0 ▼

## BACnet/IP to MS/TP Adapter Setting:

1. When using BACnet/IP driver, please correctly set **[Mode]**, **[Segments supported]**, and **[Maximum APDU length accepted]** according to the actual device.
2. As shown above, in BACnet/IP to MS/TP Adapter mode, **[Network number]** must follow the factory setting, and enter the device station number in **[Device ID]**.
3. **[HMI port no]**. default: 47808, can be filled in other effective value.
4. **[Ultimate destination MAC layer address]**: Set the MAC address of the serially connected MSTP.



**BACnet/IP to  
MS/TP adapter**

IP Address Settings

IP address : 192.168.1 .111

Who Is...

Port no : 47808

Mode : [BACnet/IP to MS/TP] Adapter

Segments supported : No-segmentation

Maximum APDU length accepted 480(fits ARCNET frame)

Ultimate destination MAC layer address

Length : 6

MAC (Hex) : 83 : 12 : 32 : 44 : 12 : 14

Timeout (sec) : 1.0

Turn around delay (ms) : 0

HMI port no : 47808

Device ID (0~4194302) : 342566

Network number : 0

The number of resending commands : 0

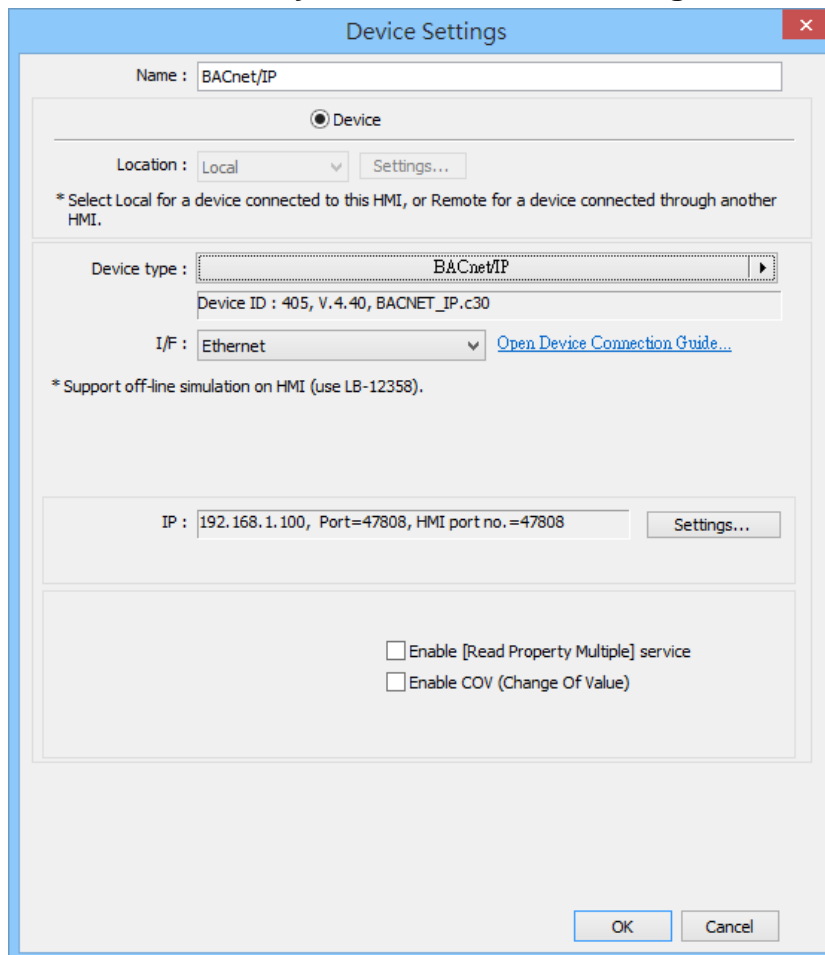
OK

Cancel

## How to Import Tags:

EasyBuilder Pro provides two ways to gain tag addresses. One is to directly get tag information via internet, another is to export the generated CSV file via SCADA, and then import to EasyBuilder Pro. The following introduces how to import tag address information.

### Step 1. Add BACnet/IP driver in System Parameters Settings

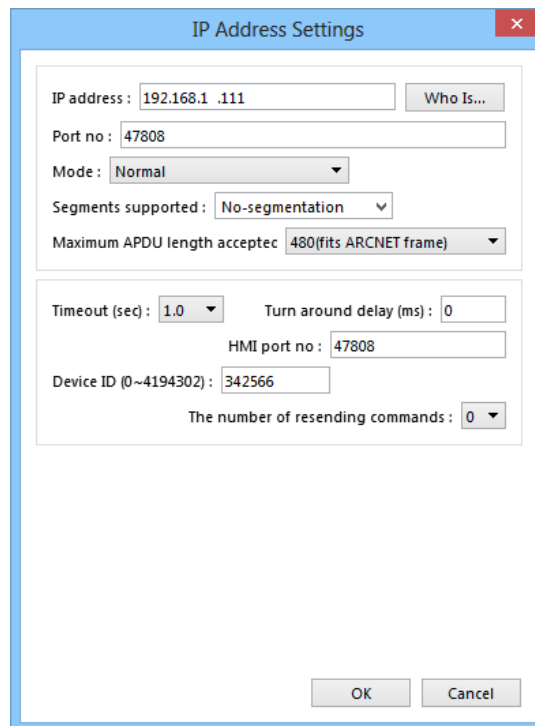


The screenshot shows the 'Device Settings' dialog box with the following configuration:

- Name:** BACnet/IP
- Device:** Selected via radio button.
- Location:** Local (dropdown menu). A 'Settings...' button is next to it.
- Device type:** BACnet/IP (dropdown menu).
- Device ID:** 405, V.4.40, BACNET\_IP.c30
- I/F:** Ethernet (dropdown menu). A link 'Open Device Connection Guide...' is next to it.
- IP:** 192.168.1.100, Port=47808, HMI port no.=47808. A 'Settings...' button is next to it.
- Options:**
  - ☐ Enable [Read Property Multiple] service
  - ☐ Enable COV (Change Of Value)
- Buttons:** OK and Cancel at the bottom right.

\* Select Local for a device connected to this HMI, or Remote for a device connected through another HMI.

\* Support off-line simulation on HMI (use LB-12358).

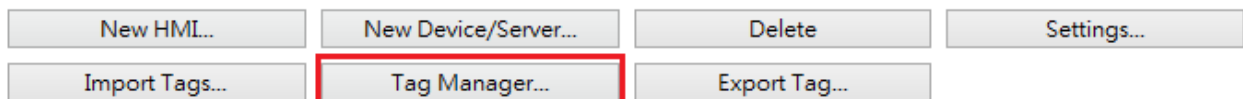
**Step 2. Correctly set the relevant parameters.**

The IP Address Settings dialog box contains the following fields and controls:

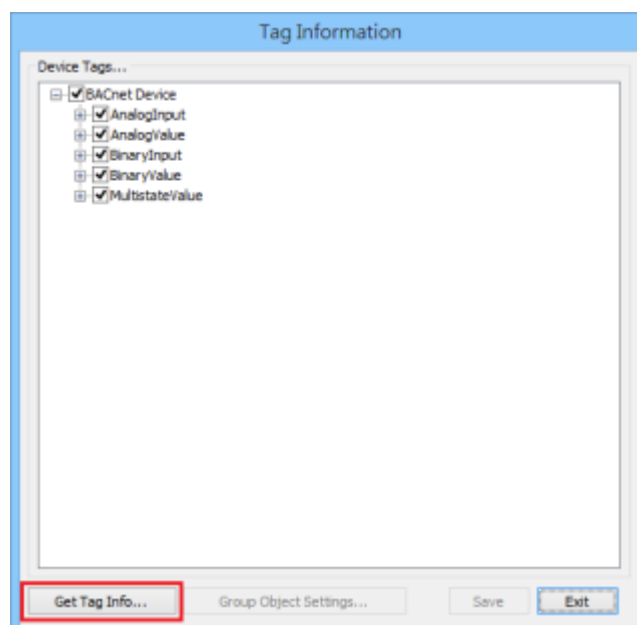
- IP address: 192.168.1 .111 (with a "Who Is..." button)
- Port no: 47808
- Mode: Normal (dropdown menu)
- Segments supported: No-segmentation (dropdown menu)
- Maximum APDU length accepted: 480(fits ARCNET frame) (dropdown menu)
- Timeout (sec): 1.0 (dropdown menu)
- Turn around delay (ms): 0
- HMI port no: 47808
- Device ID (0~4194302): 342566
- The number of resending commands: 0 (dropdown menu)
- OK and Cancel buttons at the bottom right.

**Step 3. Get tag address information**

Way 1: Click **Tag Manager** -> **Get Tag Info**



A menu bar with the following items: New HMI..., New Device/Server..., Delete, Settings..., Import Tags..., Tag Manager... (highlighted with a red border), and Export Tag...



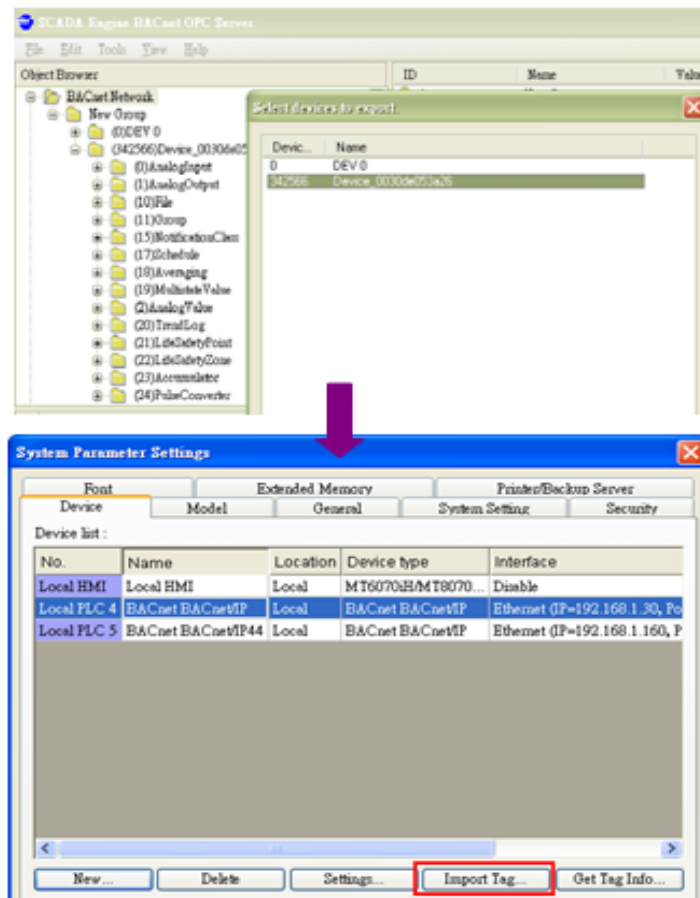
The Tag Information dialog box shows a tree view of device tags under the heading "Device Tags...". The tree is expanded to show the following items, all of which are checked:

- BACnet Device
  - AnalogInput
  - AnalogValue
  - BinaryInput
  - BinaryValue
  - MultistateValue

At the bottom of the dialog, there are four buttons: "Get Tag Info..." (highlighted with a red border), "Group Object Settings...", "Save", and "Exit".

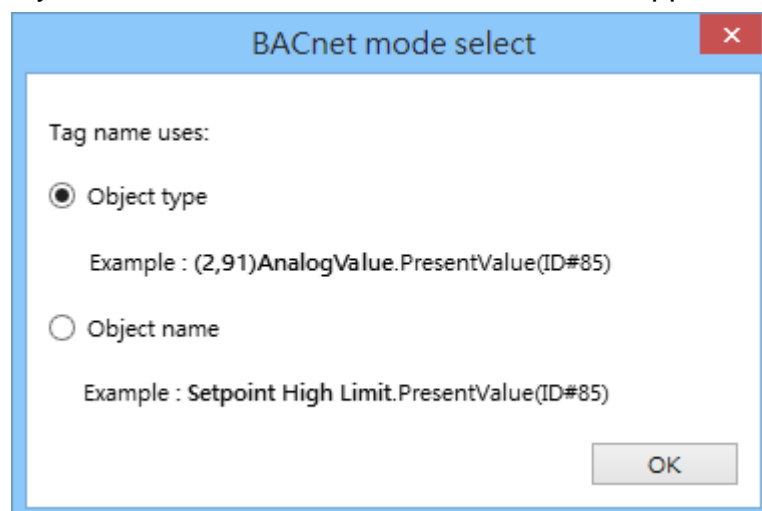
Way 2: Import the CSV file generated by SCADA software.

\*Support files exported by BACShark software



### BACnet mode select: Object type or Object name

When using Get tag or import SCANDA Software to create a csv file, you can select BACnet mode. (EasyBuilder Pro V6.04.02 and later versions support this function)

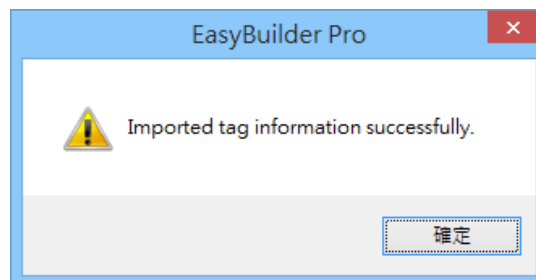


CSV file content is shown below; users can build the file and import:

- Object format
- OBJECT NAME (user defined tag name, EasyBuilder will start reading data from the 6<sup>th</sup> row of CSV file.), DEVICE ID, OBJECT TYPE(object ID) and INSTANCE(object address)

A1		GROUP_ID	
A	B	C	D
1	GROUP_ID	GROUP_NAME	
2	1	New Group	
3	DEVICE_ID	GROUP_ID	DEVICE_NAME
4	342566	1	Device_0030de053a26
5	DEVICE_ID	OBJECT_TYPE	INSTANCE
6	342566	0	0 ANALOG_INPUT_0
7	342566	0	1 ANALOG_INPUT_1
8	342566	0	2 ANALOG_INPUT_2
9	342566	1	0 ANALOG_OUTPUT_0
10	342566	1	1 ANALOG_OUTPUT_1
11	342566	1	2 ANALOG_OUTPUT_2
12	342566	2	0 ANALOG_VALUE_0
13	342566	2	1 ANALOG_VALUE_1
14	342566	2	2 ANALOG_VALUE_2
15	342566	2	3 ANALOG_VALUE_3
16	342566	3	0 BINARY_INPUT_0
17	342566	3	1 BINARY_INPUT_1
18	342566	3	2 BINARY_INPUT_2
19	342566	3	3 BINARY_INPUT_3
20	342566	3	4 BINARY_INPUT_4
21	342566	3	5 BINARY_INPUT_5

Step 4. File imported successfully.



Take **(10,2)File** as an example, **10** represents object ID, **2** represents object address, **File** represents user defined name or default name.

Name	Data Type	Description
Controller Tags		
(8,342566)Device	Device	
(10,2)File	File	
(10,3)File	File	
(10,4)File	File	
(10,8)File	File	
(10,9)File	File	
(10,10)File	File	
(10,5)File	File	
(10,6)File	File	
(10,7)File	File	
(17,0)Schedule	Schedule	
(6,0)Calendar	Calendar	
(3,0)BinaryInput	BinaryInput	
(3,1)BinaryInput	BinaryInput	
(4,0)BinaryOutput	BinaryOutput	
(4,1)BinaryOutput	BinaryOutput	
(4,2)BinaryOutput	BinaryOutput	

Tag : (10,2)File

OK Cancel

## Default Object Model:

Object ID	Object Name	Object Structure
0	Analog Input	ObjectName ObjectIdentifier ObjectType PresentValue PresentValue Array EventState OutOfService Units SubscribeCovTime HighLimit LowLimit DeadBand NotificationClass LimitEnable EventEnable NotifyType TimeDelay AckedTransitions
1	Analog Output	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState OutOfService Units Priority PriorityReset PriorityArray RelinquishDefault HighLimit LowLimit DeadBand NotificationClass LimitEnable EventEnable



Object ID	Object Name	Object Structure
		NotifyType TimeDelay AckedTransitions
2	Analog Value	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState OutOfService Units Priority PriorityReset PriorityArray RelinquishDefault HighLimit LowLimit Dead Band NotificationClass LimitEnable EventEnable NotifyType TimeDelay AckedTransitions
3	Binary Input	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState OutOfService Polarity AlarmValue NotificationClass EventEnable NotifyType TimeDelay AckedTransitions

Object ID	Object Name	Object Structure
4	Binary Output	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState OutOfService Priority PriorityReset PriorityArray Polarity AlarmValue NotificationClass EventEnable NotifyType TimeDelay AckedTransitions RelinquishDefault
5	Binary Value	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState Priority PriorityReset PriorityArray OutOfService AlarmValue NotificationClass EventEnable NotifyType TimeDelay AckedTransitions RelinquishDefault
6	Calendar	ObjectName ObjectIdentifier ObjectType

Object ID	Object Name	Object Structure
		PresentValue DateList Date DateList DateRange DateList WeekDay DateListControl DateListStatus
7	Command	ObjectName ObjectIdentifier ObjectType InProcess AllWritesSuccessful
8	Device	ObjectName ObjectIdentifier ObjectType SystemStatus VendorName VendorIdentifier ModelName FirmwareRevision ApplicationSoftwareVersion ProtocolVersion ProtocolRevision MaxAPDUlengthAccepted SegmentationSupported ApduTimeout NumberOfAPDUretries DataBaseRevision MaxSegmentsAccepted UtcOffset DaylightSavingsStatus ApduSegmentTimeout BackupFailureTimeout
10	File	ObjectName ObjectIdentifier ObjectType FileType FileSize Archive

Object ID	Object Name	Object Structure
		ReadOnly
11	Group	ObjectName ObjectIdentifier ObjectType SettingGroup
13	Multi State Input	ObjectName ObjectIdentifier ObjectType PresentValue EventState OutOfService NumberOfStates AckedTransitions
14	Multi State Output	ObjectName ObjectIdentifier ObjectType PresentValue EventState OutOfService NumberOfStates Priority PriorityReset PriorityArray AckedTransitions RelinquishDefault
15	Notification Class	ObjectName ObjectIdentifier ObjectType NotificationClass RecipientList ControlWord (1:Read / 2:Write)
16	Program	ObjectName ObjectIdentifier ObjectType
17	Schedule	ObjectName ObjectIdentifier ObjectType PresentValue

Object ID	Object Name	Object Structure
		PriorityForWriting Reliability OutOfService WeeklyScheduleControl WeeklyScheduleStatus ExceptionScheduleControl ExcpetionScheduleStatus ScheduleDefault WeeklySchedule_Monday WeeklySchedule_Tuesday WeeklySchedule_Wednesday WeeklySchedule_Thursday WeeklySchedule_Friay WeeklySchedule_Saturday WeeklySchedule_Sunday BACnetExceptionSchedule_Date BACnetExceptionSchedule_DateRange BACnetExceptionSchedule_WeekDay BACnetExceptionSchedule_Calender
18	Averaging	ObjectName ObjectIdentifier ObjectType MinimumValue AverageValue MaximumValue AttemptedSamples ValidSamples Window nterval WindowSamples
19	Multi State Value	ObjectName ObjectIdentifier ObjectType PresentValue EventState OutOfService NumberOfStates Priority PriorityReset

Object ID	Object Name	Object Structure
		PriorityArray AckedTransitions RelinquishDefault
20	Trend Log	ObjectName ObjectIdentifier ObjectType Enable StopWhenFull BufferSize RecordCount TotalRecordCount
21	Life Safety Point	ObjectName ObjectIdentifier ObjectType PresentValue TrackingValue EventState Reliability OutOfService Mode Silenced
22	Life Safety Zone	ObjectName ObjectIdentifier ObjectType PresentValue TrackingValue EventState Reliability OutofService Mode Silenced
23	Accumulator	ObjectName ObjectIdentifier ObjectType PresentValue PresentValueArray EventState OutOfService

Object ID	Object Name	Object Structure
		Scale Units
24	Pulse Converter	ObjectName ObjectIdentifier ObjectType PresentValue EventState OutOfService Units ScaleFactor AdjustValue Count

**Note 1:** Object name can not include “#”.

**Note 2:** Group objects can only communicate when the Group\_Member\_List addresses are placed in the project editing screen.

Name	Data type	Description
Group_Member_List(1)(1)(85)	INT	
Group_Member_List(1)(1,0)	INT	
Group_Member_List(1)(2)(87,1)	INT	
Group_Member_List(1)(3)(87,2)	INT	
Group_Member_List(2)(1)(87,2)	INT	
Group_Member_List(2)(2)(85)	INT	
Group_Member_List(2)(2,0)	INT	
Group_Member_List(2)(3)(87,4)	INT	
Group_Member_List(3)(1)(85)	INT	
Group_Member_List(3)(2)(87,3)	INT	
Group_Member_List(3)(3)(87,8)	INT	
Group_Member_List(3)(5,0)	INT	
ObjectIdentifier(ID#75)	DINT	
ObjectName(ID#77)	SINT[32]	
ObjectType(ID#79)	INT	
PresentValue(1)(1)(ID#85)	REAL	
PresentValue(1)(2)(ID#85)	REAL	
PresentValue(1)(3)(ID#85)	REAL	
PresentValue(2)(1)(ID#85)	REAL	

## Wiring Diagram:

Ethernet cable:

