

For BACnet Applications:

When configured for BACnet, the Carrier BACnet/Modbus Translator is designed to communicate on a BACnet MS/TP (Master Slave/Token Passing) network; which is a 2 wire, RS-485 network. Just as CCN elements must have a unique CCN address when they are on a common CCN communication bus, so do all BACnet devices on the same BACnet bus require a unique BACnet address.

In order to configure the BACnet address properties the CONFIG table of the BACnet/Modbus Translator needs to be accessed. Start by checking that the first item called Secondary Protocol is set to a value of "0" (which configures the Translator for BACnet). The default setting for this item is "0". In this same CONFIG table there are two items that make up the BACnet address. The first item is the called Protocol Address and has a default value of 16. This is the BACnet address on the local MS/TP bus, which can only have a range from 1 to 127. The second item is the BACnet Device Instance number and it also has a default value of 16. This is the identity of the Translator on the overall BACnet network. A large BACnet system can consist of many different BACnet networks (IP, Ethernet, MS/TP, etc) so the Device Instance is the unique BACnet address in the whole BACnet system. In addition to the addresses, there is a configuration setting for the secondary baud rate of the BACnet network. The default value is 9600 and the available values are 1200, 2400, 4800, 9600, 19200, 38400.

It is recommended that the Carrier person discuss the desired MS/TP address (range from 1 to 127) and Device Instance address (range from 1 to 4,194,303) for each Translator and the desired BACnet baud rate with the local BACnet systems person before the Translator is connected on the BACnet network.

If the BACnet systems person requests the PIC statement for the Translator, refer them to Appendix A of the BACnet/Modbus Translator Installation and Start-up manual.

For Modbus Applications:

When configured for Modbus, the Carrier BACnet/Modbus Translator is designed to communicate on a Modbus Remote Terminal Unit (RTU) network; which is a 2 wire, RS-485 network. Just as our CCN elements must have a unique CCN address when they are on a common CCN communication bus, so do all Modbus devices on the same Modbus bus require a unique Modbus address.

In order to configure the Modbus address properties the CONFIG table of the BACnet/Modbus Translator needs to be accessed. Start by checking that the item called Secondary Protocol is set to a value of "1" (which configures the Translator for Modbus). The default setting for this item is "0" which will set it for BACnet. In this same CONFIG table, the item called Protocol Address is the Modbus address on the RTU network. It has a default value of 16 and has a range from 1 to 247. In addition to this address, there are several communication parameter settings that apply to Modbus. There is a Secondary Baud Rate item that has a default of 9600 (the available values are 1200, 2400, 4800, 9600, 19200, 38400). This item determines the communication rate on the Modbus side. There is a Stop Bits item that has a default of 1 (the range is 0 to 2). This determines the number of stop bits used to mark the end of each Modbus communications packet. There is a Parity item that has a default of 0 (the available settings are 0=none, 1=odd, 2=even). This item determines which error detection protection routine will be used to check Modbus communications. There is a Flow Control item that has a default of 0 (the available settings are 0=none, 1=Xon/Xoff). This item determines which data flow management routine will be used to check Modbus communications.

It is recommended that the Carrier person discuss the desired Modbus address (range from 1 to 247) and communication settings for each Translator with the local Modbus systems person before the Translator is connected on the Modbus network.

NOTE: When you are asked by the Modbus systems person for details of our Modbus structure you should provide them with Appendix B from the BACnet/Modbus manual, #808-356, as described at the beginning of this bulletin. Two particular items are as follows:

1. Modbus provides for several types of registers which is where the data is stored, Coil, Input, and Holding, however the Carrier Modbus Translator is designed to use only Holding Registers for the data.
2. The first data register in the Modbus Translator is at 16,384 (decimal, or 4000hex) as shown on page 46 of Appendix B, however our design has an offset of the register numbers of 40,000(decimal). This makes the total address of the first data register be 56,384 (decimal), which is the sum of 16,384 and 40,000. Some Modbus systems, usually older designed systems, may only be able to read register numbers up to 49,999(decimal). Because our data starts at a number above that, 56,384(decimal), these systems are not compatible with our Modbus Translator.

For Lon Translator Applications:

The Carrier Lon Translator is designed to communicate to a Lon FT-10A network. Each Translator has a unique Lon identify, called a NeuronID number, that is hard coded in the Echelon processor chip on each Translator. This NeuronID number cannot be accessed from the CCN side. During the commissioning of the Lon network side of the Translator, the white service pin on the top of the Translator will be pushed and the Lon network will receive its Lon identity. This has virtually never been a problem, however the next step in the Lon commissioning process, getting the internal Lon table structure, has been a very common issue.

NOTE: During the commissioning process, the Lon Translator will be configured with an address for the Lon network. There is not an address configured in the Translator when it is shipped from the factory.

The first thing to check is that the Lon Translator has version 1.2 software in it. The previous version has several problems and should be upgraded (please refer to bulletin CMB05014). In order to upgrade a Lon Translator, it will be necessary to send the module to the Controls Systems Support department in Farmington, CT. The shipping address is:

Carrier Corp.
30 Batterson Park Road, Suite 110
Farmington, CT 06032
Attn: Mary Flieger

One of the first steps in commissioning the Lon Translator is to select the appropriate points profile. The Translator initially comes with no selected profile, this must be configured by a Carrier technician. The Lon systems person should not attempt to find and upload the Translator into the Lon system until this is done as there will be no points profile to upload.

There are three profiles to select from; Rooftop (device type 1), Chiller (device type 2), or Generic (device type 3). Each of these profiles has an associated unique Lon Program ID number that the Lon systems person can read. This ProgramID can also be different for different versions of the Lon Translator. This is the case for the Version 1.0 Translator compared to the Version 1.2 Translator. Having the Lon systems person read this will confirm that the Translator has actually been configured with the correct profile and that it is the correct release.

When the Lon systems person does the commissioning of the Lon side of the Translator, there are three ways he can get the Translator's information into the Lon system database.

1. The first most common, method is simply to upload it from the Translator itself, similar to what we do with a Carrier front end like ComfortView.

2. The second most common method is to first import a profile table called an "XIF" file into the Lon database. The Carrier person would have to supply this and they must make sure they have the file for the desired profile type and that it is for the current version 1.2 software. This import process is similar to what we do with a Carrier front end when we import a "cwx" database file into ComfortView. The "XIF" files can be found in the CCN Support web site. Follow the same instructions as described at the beginning of this bulletin to find Controls Bulletins for the Translators, but select from the "XIF" files under the Lon Translator product.

3. The least common method requires copying an existing data profile for the Translator from some other place within the Lon database that has previously used the upload or import method.

Notes:

A. If a Lon system is having a problem with the import method suggest that they try the upload method, if their system will allow that.

B. Some Lon systems, such as the Honeywell CARE system, cannot perform the upload method and must use the XIF import method. In order to be compatible with our "XIF" files the Honeywell system must be CARE version 5.0 or greater.

Some Additional Comments:

Once any issues related to basic communications have been resolved, there may still be some other issues concerning the third party system which are noted below:

A. The BMS is reading incorrect values on BACnet Translator Applications

The BACnet Translator uses Dynamic Point mapping so if points are added to the point mapping tables AFTER the BMS has already "learned" the CCN device, this may cause a problem with the information read by the BMS. The BACnet Translator may revise its assignment of BACnet object types and instance numbers, as seen in the Translator's maintenance tables, based on the current points configured. If changes are made to the Translator configuration then the Carrier person **must** supply the BMS person with the current object type and instance number list so that they may verify their configuration relative to the currently active point mapping in the Translator which could explain why the BMS is reading invalid or incorrect information.

B. Commands issue by the BMS are not achieving the expected result in the target CCN device.

As part of the checkout of the Translator, Carrier should verify that any points that the BMS is expecting to write to (Force) can also be forced using a CCN software program such as ComfortVIEW or Service Tool. These points would preferably not have a force on them before the Translator is connected to the BMS network. On select equipment, it is necessary to either set a switch or configure the equipment to be in CCN mode or to accept commands over the network.

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