

Section 6.2

Network Addressing and BACnet Object Definitions

Each control in the Network System has a unique address so devices can communicate with one another. Addresses are set in one of several ways, including:

- Hard coding (for Cabinet Controls):
 - Router Main Control (RTR) (A9011000)
 - Primary Equipment Control (PEC) (A9012000)
 - Supply Water Temperature Control (SWT) (A9013000)
 - Zone Pump Control (ZPC) (A9014000)

Note: A single Network System can only have one of each of the above controls.

- Rotary dial — for Digital Zone Control Modules (DZCMs) (A9011500)
- Jumper pins — for all Field Modules except DZCMS

This section covers the following topics.

- Cabinet Control addresses
- Field Module addresses
- Building Automation and Control Network (BACnet) object definitions
- Address string information

Cabinet Control Addresses

Cabinet Controls and DZCMs always follow a standard addressing scheme. **Table 6.2-1** shows the addressing standards for available versions of the Network System.

The address for the RTR always ends in “00”. The RTR distributes the system address to other controls in the installation. The address for other controls in the system is a combination of the system (or RTR) address and the individual control’s root address. For example, in a Network System 900, the address for the RTR is 900. The PEC address is 917, and the first DZCM in the system has an address of 901. All boards with red daughter boards use this addressing scheme.

Device	Root Address	How to Set Address	System 900	System 21800	System 151900
RTR	00	Fixed	900	21800	151900
PEC	17	Fixed	917	21817	151917
SWT	18	Fixed	918	21818	151918
ZPC	19	Fixed	919	21819	151919
DZCM 1	1	Dial = 1	901	21801	151901
DZCM 2	2	Dial = 2	902	21802	151902
DZCM 3	3	Dial = 3	903	21803	151903
DZCM 4	4	Dial = 4	904	21804	151904
DZCM 5	5	Dial = 5	905	21805	151905
DZCM 6	6	Dial = 6	906	21806	151906
DZCM 7	7	Dial = 7	907	21807	151907
DZCM 8	8	Dial = 8	908	21808	151908
DZCM 9	9	Dial = A	909	21809	151909
DZCM 10	10	Dial = B	910	21810	151910
DZCM 11	11	Dial = C	911	21811	151911
DZCM 12	12	Dial = D	912	21812	151912

Table 6.2-1: Main Control Addresses

Field Module Addresses

Most Field Modules, which do not have red daughter boards, use jumper pins to define system addresses. Field Modules that use jumpers include the following controls.

- Furnace and Air Conditioning Control (FAC) (A9011100)
- Heat Recovery Ventilator Control (HRV) (A9011200)

- Zone Valve Damper Control (ZVD) (A9011400)
- Generic Input/Output Control (GIO) (A9011600)

Table 6.2-2 shows the jumper settings for Field Module addresses for available versions of the Network System.

Device	Set Address	Set Device	System 900	System 21800	System 151900
FAC 1	Jumper = 1	N/A	900.LNK16	21800.LNK16	151900.LNK16
FAC 2	Jumper = 2	N/A	900.LNK17	21800.LNK17	151900.LNK17
FAC 3	Jumper = 3	N/A	900.LNK18	21800.LNK 18	151900.LNK18
FAC 4	Jumper = 4	N/A	900.LNK19	21800.LNK 19	151900.LNK19
FAC 5	Jumper = 5	N/A	900.LNK30	21800.LNK30	151900.LNK30
FAC 6	Jumper = 6	N/A	900.LNK31	21800.LNK31	151900.LNK31
FAC 7	Jumper = 7	N/A	900.LNK32	21800.LNK32	151900.LNK32
FAC 8	Jumper = 8	N/A	900.LNK33	21800.LNK33	151900.LNK33
HRV 1	Jumper = 1	N/A	900.LNK20	21800.LNK20	151900.LNK20
HRV 2	Jumper = 2	N/A	900.LNK21	21800.LNK21	151900.LNK21
HRV 3	Jumper = 3	N/A	900.LNK22	21800.LNK22	151900.LNK22
HRV 4	Jumper = 4	N/A	900.LNK23	21800.LNK23	151900.LNK23
HRV 5	Jumper = 5	N/A	900.LNK30	21800.LNK42	151900.LNK42
HRV 6	Jumper = 6	N/A	900.LNK31	21800.LNK6.2-	151900.LNK6.2-
HRV 7	Jumper = 7	N/A	900.LNK32	21800.LNK44	151900.LNK44
HRV 8	Jumper = 8	N/A	900.LNK33	21800.LNK45	151900.LNK45
ZV1	Jumper = 1	Valves	900.LNK24	21800.LNK24	151900.LNK24
ZV2	Jumper = 2	Valves	900.LNK25	21800.LNK25	151900.LNK25
ZD1	Jumper = 1	Dampers	900.LNK26	21800.LNK26	151900.LNK26
ZD2	Jumper = 2	Dampers	900.LNK23	21800.LNK27	151900.LNK27
GIO	N/A	N/A	900.LNK23	21800.LNK54	151900.LNK54

Table 6.2-2: Field Module Addresses

Network/BACnet Object Definitions

Network System devices communicate using the BACnet communication standard, which is similar to the Bluetooth® or Wi-Fi™ (802.11g) standard. The BACnet standard defines the types of devices (or

object types) used in building automation and control systems and assigns two-letter codes for each object type. This section summarizes the BACnet object types used in the Network System.

Two-letter Code	BACnet Object Type	Description
AI	Analog Input	An AI reads a variety of information. The most common example of an AI is a temperature sensor.
AO	Analog Output	An AO controls a device that has a variable position. Examples of AOs are modulating valves or boilers and injection pumps.
AV	Analog Variable	An AV monitors a data point that could change within a range of values. Examples of AVs are boiler minimum temperature, domestic hot water (DHW) tank setpoint and snow melt temperature.
BI	Binary Input	A BI reads the on/off status of a switch. Common examples of BIs are zone-valve end switches and float switches.
BO	Binary Output	A BO runs an on/off device. Examples of BOs are zone valves, zone dampers and fans.
BT	Binary Totalizer	A BT tracks the runtime of a device — either the number of hours or the number of on/off cycles.
BV	Binary Variable	A BV tracks on/off conditions for a device or function. Examples of BVs are No Boiler Limits, Enable Legionella Prevention, and Snow Melt Idle Enable.
CAL	Calendar	A CAL keeps track of the time of year to affect the room setpoints and/or DHW production. The state of the CAL will either be On or Off. The most commonly used in calendar is the Vacation Calendar.
SCH	Schedule	A SCH keeps track of the time of day and the day of the week to affect the room setpoints and/or DHW production. The state of the SCH is either On or Off. Schedules are most commonly used for thermostats.
TL	Trend Log	A TL logs data. TLs can automatically graph temperature data or output state. TLs are used throughout the Network System for tracking temperature information for certain sensors.

Table 6.2-3: Network System BACnet Object Types

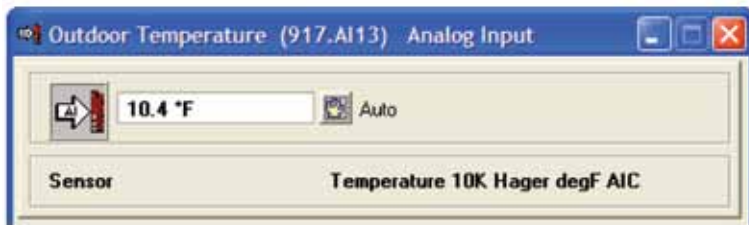


Figure 6.2-1: Address String Example

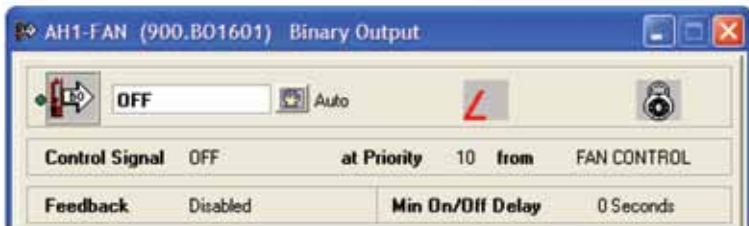


Figure 6.2-2: Field Module Address String Example

Address String Information

Network System control addresses and BACnet object definitions are combined to form address strings. Address strings are a combination of numbers and letters and are displayed in the screen headers in the Uponor Configuration Tool (UCT) software (A9090000). Address strings are used when customizing Network System operation through programming.

The example in **Figure 6.2-1** shows the address string for the Outdoor Sensor (A9012005).

Each component of the string address provides information about the device, with some differences in the format and information provided for Cabinet Controls and Field Modules.

The string address for Cabinet Controls provides the following information.

- **Main Control Address:** three-, five- or six-digit number, corresponding to Network System 900, 21800 or 151900; options are listed in **Table 6.2-1**
- **Object Type:** two-letter BACnet object type; options are listed in **Table 6.2-3**
- **Object Reference:** number of the device

The Main Control Address and the Object Type are separated by a period.

For example, **Figure 6.2-1** displays the address string 917.AI13, where:

- 917 is the PEC (in a Network System 900)
- AI indicates an analog input
- 13 indicates the device is the 13th AI connected to the PEC

The string address for Field Modules provides the following information.

- **Main System Address:** three-, five- or six-digit number, corresponding to Network System 900, 21800 or 151900; options are listed in **Table 6.2-1**
- **Object Type:** two-letter BACnet object type; options are listed in **Table 6.2-3**
- **Field Module LNK Address:** two-digit LNK address of the device; options are listed in **Table 6.2-2** (LNK designates a sub-device in the BACnet standard)
- **Object Reference:** number of the device

The Main Control Address and the Object Type are separated by a period.

For example, **Figure 6.2-2** shows address string 900.BO1601, where:

- 900 is the Main System Address
- BO indicates a binary output
- 16 reflects the LNK address for FAC1
- 01 indicates the device is the first BO on the FAC board

Note: Appendix A.7: System Points Addressing lists all inputs and outputs for the Network System controls.