

Section 4.1

Calling Variables

The Network System features simplified wiring and a two-way communication platform. Together, these features make troubleshooting easier with Network than with a conventional control system.

In conventional systems, wiring is duplicative — multiple devices are wired in parallel to the same terminals. Duplicated wiring adds cost to a project and makes troubleshooting confusing. The Network System eliminates wiring duplication and makes troubleshooting easier. In most instances, information transfer between devices, such as thermostats, only requires two wires. Each device has only one Cat5 wire connecting it to a control.

In conventional systems, wiring configuration dictates how devices operate. In contrast, the Network System uses Calling Variables — a different method to turn devices on and off. The Network System sends Calling Variables between devices to signal, for example, that heat is needed or that a fan should turn on.

The Calling Variables screen in the Uponor Configuration Tool (UCT) software (A9090000) lets the user see a representation of the calls (e.g., heat demand from a thermostat) happening within the Network System. Rather than going all over a house or building tracing signals, the user can view all calls through the Calling Variables screen in the UCT.

This section covers the following topics.

- Calling Variables on the cabinet controls
- Calling Variables on Digital Zone Control Modules (DZCMs)
- Understanding Calling Variable values and using the A>D converter
- Calling Variables screen definitions

Before proceeding, make sure the following steps are complete.

- ❑ All UCT software components are installed (**Section 1.5**).
- ❑ The computer is correctly connected to the Network System (**Section 1.6**).

Calling Variables on the Cabinet Controls

This feature provides a snapshot of heating, cooling and ventilation functions occurring across the entire Network System. Refer to the following steps to see calls to the cabinet controls.

1. From the **Main Menu**, click the **General Maintenance** button shown in **Figure 4.1-1**. This displays the Maintenance Screen shown in **Figure 4.1-2**.

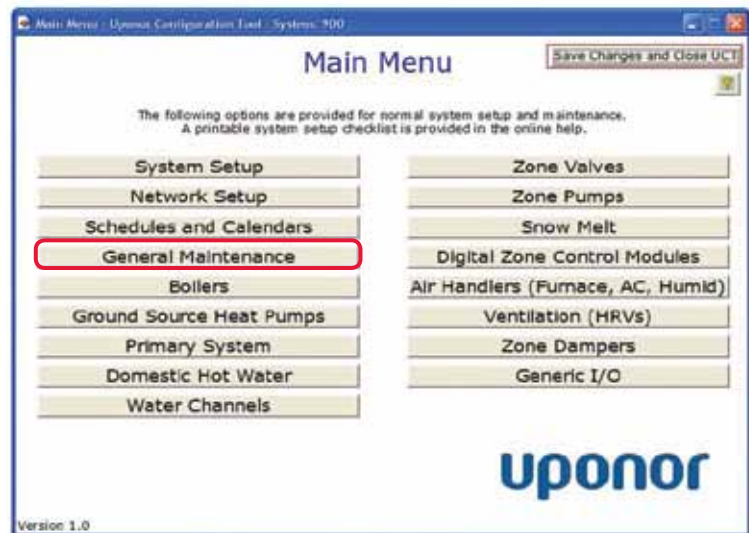


Figure 4.1-1: Main Menu Screen

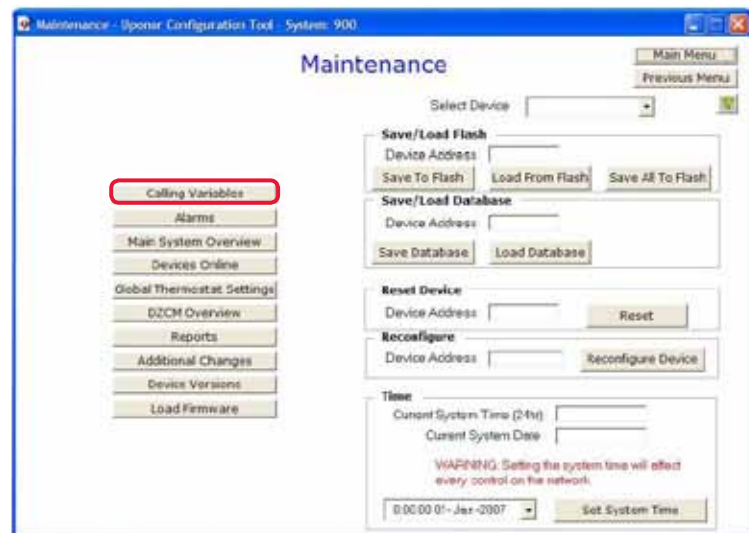


Figure 4.1-2: Maintenance Screen

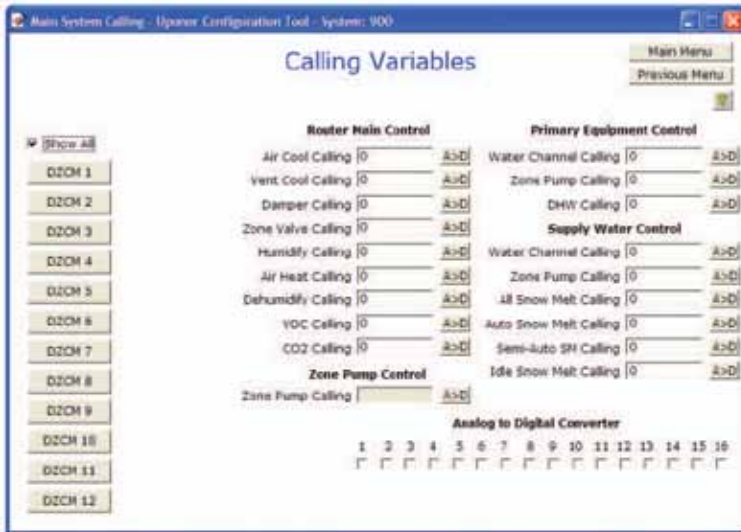


Figure 4.1-3: Calling Variables Window

2. Click the **Calling Variables** button to display the Calling Variables screen, shown in **Figure 4.1-3**.

Calling Variables are arranged by cabinet control:

- Router Main Control (RTR) (A9011000)
- Primary Equipment Control (PEC) (A9012000)
- Supply Water Temperature Control (SWT) (A9013000)
- Zone Pump Control (ZPC) (A9014000).

If the Calling Variable fields for a given control are gray (as shown for the SWT in **Figure 4.1-3**), it means the device is not installed or is not communicating.

Figure 4.1-3 shows the value for all Calling Variables is zero. A zero indicates no call, which means no heating, cooling or ventilation functions are occurring. Calling Variable values are explained later in this section.

If a particular device — for example, zone pump 2 — should be running, but the Calling Variable on the RTR is zero, the next troubleshooting step is to view the DZCM that should be making the call.

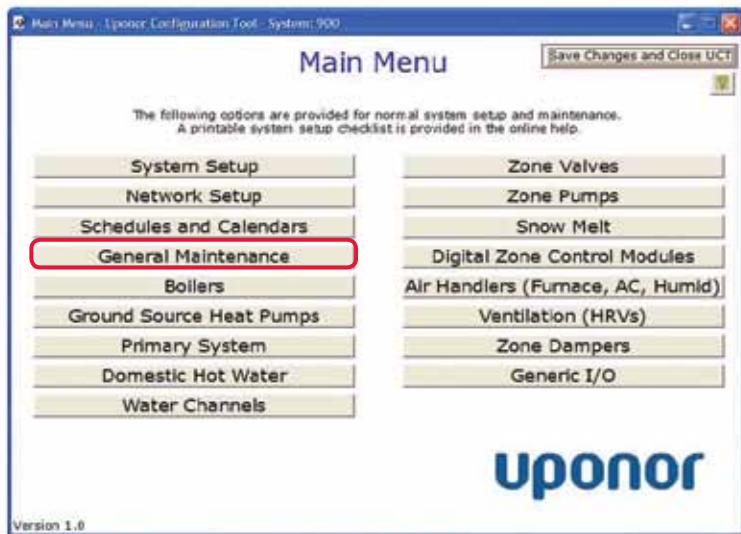


Figure 4.1-4: Main Menu Screen

Calling Variables on Digital Zone Control Modules

Refer to the following steps to see calls to an individual DZCM.

1. From the **Main Menu**, click the **General Maintenance** button shown in **Figure 4.1-4**. This displays the Maintenance screen shown in **Figure 4.1-5**.

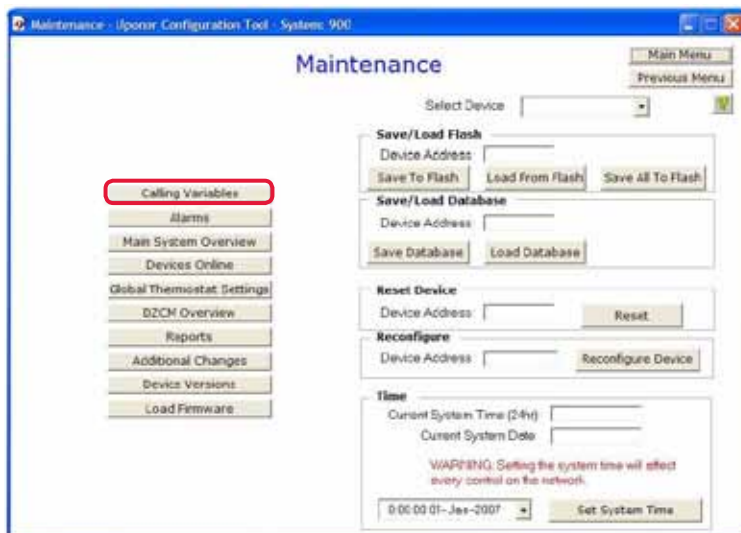


Figure 4.1-5: Maintenance Screen

- Click the **Calling Variables** button to display the Calling Variables window, shown in **Figure 4.1-6**. All DZCMs that are detected and communicating on the network will appear on the left side of the Calling Variable screen. In this example, the Show All box is checked to display buttons for all 12 potential DZCMs, whether or not they are connected for the particular installation.
- Click on the DZCM button (DZCM 1 through DZCM 12) to open the DZCM Calling Variables screen for that particular DZCM. **Figure 4.1-7** shows an example for DZCM 1.

Understanding Calling Variable Values and Using the A>D Converter

The Calling Variable fields display values that correspond to virtual switches. (A switch can represent any type of device or element in the Network System, e.g., pumps, valves or schedules.) A Calling Variable field displays the sum of the values for all switches that are on. See **Table 4.1-1** for switch value assignments. Note that the values double from switch to switch. Each individual switch or combination of switches will cause a unique value to be displayed in the Calling Variable field. For example, if the Calling Variable value is 8193, switches one and 14 are on.

The A>D buttons next to each Calling Variable field make it possible for the user to see what devices or schedules are on at a glance, without manual calculations and conversions. The user simply clicks an A>D button and the Analog to Digital Converter section of the screen will display a series of checked boxes to indicate which devices or schedules are on.

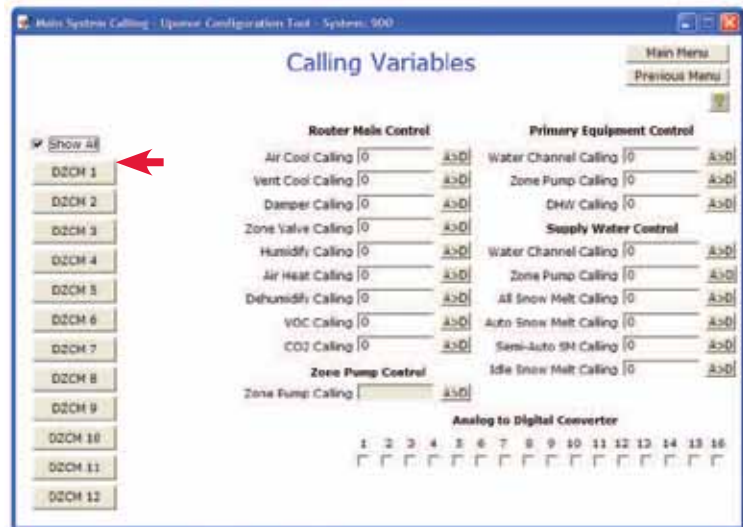


Figure 4.1-6: Calling Variables Window

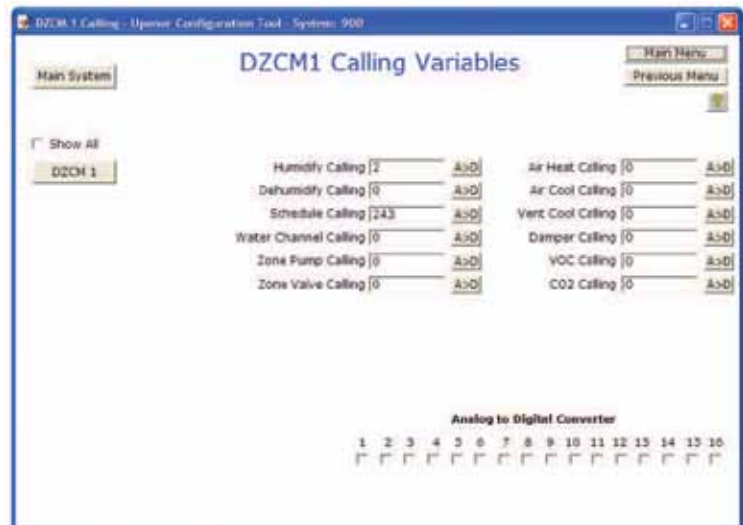


Figure 4.1-7: DZCM Calling Variables

Switch #	1	2	3	4	5	6	7	8
Value	1	2	4	8	16	32	64	128
Switch #	9	10	11	12	13	14	15	16
Value	256	512	1024	2048	4096	8192	16384	32768

Table 4.1-1: Switch Value Assignments

Refer to the following steps to use the A>D Converter.

1. In **Figure 4.1-8**, which uses the Schedule Calling as an example, the Schedule Calling Variable value is 255. Click on the **A>D** button.
2. Review the Analog to Digital Converter section of the screen; see the example in **Figure 4.1-9**. The example shows schedules 1, 2, 5, 6, 7 and 8 are on. (As **Table 4.1-1** shows, the values for these switches are as follows: $1 + 2 + 16 + 32 + 64 + 128 = 243$.)

Note: If an hourglass appears and continues to spin, it indicates the UCT software is not connected to the Network System. Check the system connection and verify the correct connection adapter was selected (wired or wireless).

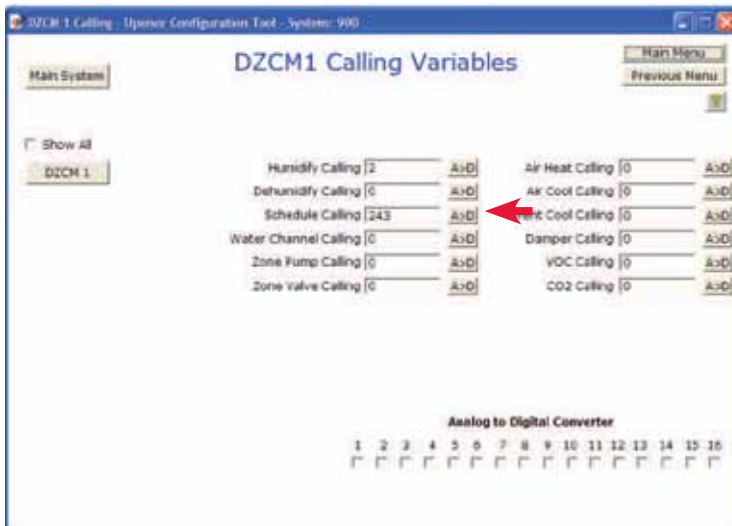


Figure 4.1-8: DZCM Calling Variables



Figure 4.1-9: Analog to Digital Converter

Calling Variables Screen Definitions

Router Main Control Calling Variable Definitions

See below for the RTR Calling Variables Screen definitions.

- **Air Cool Calling:** Request to air handlers to supply cooled air; relates to the cooling output on a Furnace and Air Conditioning Control (FAC)
- **Vent Cool Calling:** Request to ventilators to supply cool air for first-stage cooling; relates to a speed output on a Heat Recovery Ventilator Control (HRV)
- **Damper Calling:** Request to air dampers to open; relates to the output on a Zone Valve and Damper Control (ZVD) with the jumper set to dampers
- **Zone Valve Calling:** Request to zone valves to open; relates to the output on a ZVD with the jumper set to valves
- **Humidify Calling:** Request to air zones to supply humidified air; relates to the humidify output on an FAC
- **Air Heat Calling:** Request to air handlers to supply heated air; relates to the heat output on an FAC
- **Dehumidify Calling:** Request to air zones to supply dehumidified air; relates to the dehumidify output on an FAC
- **VOC Calling:** Request to ventilators to run to satisfy a volatile organic compound (VOC) call; relates to a speed output on an HRV
- **CO2 Calling:** Request to ventilators to run to satisfy a carbon dioxide call; relates to a speed output on an HRV

Primary Equipment Control Calling Variable Definitions

See below for the PEC Calling Variables Screen definitions.

- **WTC Calling:** Request to water temperature channels to run
- **Zone Pump Calling:** Request to zone pumps to run; relates to an output on the ZPC
- **DHW Calling:** Request to domestic hot water (DHW) tanks to reheat

Supply Water Temperature Control Calling Variable Definitions

See below for the SWT Calling Variables Screen definitions.

- **WTC Calling:** Request to water temperature channels to run
- **Zone Pump Calling:** Request to zone pumps to run; relates to an output on the ZPC
- **All Snow Melt Calling:** Snow melt zones are receiving heat for Auto, Semi-Auto or Idle operation
- **Auto Snow Melt Calling:** Snow melt zones are receiving heat because the Automatic Snow and Ice Sensor has detected moisture and automatically started the snow melt system
- **Semi-Auto SM Calling:** Snow melt systems are receiving heat because a user activated the snow melt system
- **Idle Snow Melt Calling:** Snow melt zones are being heated to maintain a minimum temperature

Zone Pump Control Calling Variable Definitions

See below for the ZPC Calling Variables Screen definitions.

- **Zone Pump Calling:** Request to zone pump(s) to run

Digital Zone Control Module Calling Variable Definitions

See below for the DZCM Calling Variables Screen definitions.

- **Humidify Calling:** Request for air zones to supply humidified air; relates to the humidify output on an FAC
- **Dehumidify Calling:** Request for air zones to supply dehumidified air; relates to the dehumidify output on an FAC
- **Schedule Calling:** Schedules that are currently on
- **WTC Calling:** Request to water channels to run
- **Zone Pump Calling:** Request to zone pumps to run; relates to an output on the ZPC
- **Zone Valve Calling:** Request to zone valves to open; relates to the output on a ZVD board with the jumper set to valves
- **Air Heat Calling:** Request to air handlers to supply heated air; relates to the heat output on an FAC
- **Air Cool Calling:** Request to air handlers to supply cooled air
- **Vent Cool Calling:** Request to ventilators to supply cool air for first-stage cooling; relates to a speed output on an HRV
- **Damper Calling:** Request to air dampers to open; relates to the output on a ZVD with the jumper set to dampers
- **VOC Calling:** Request to ventilators to run to satisfy a VOC call; relates to a speed output on an HRV
- **CO2 Calling:** Request to ventilators to run to satisfy a carbon dioxide call; relates to a speed output on an HRV

