Integration Note

Manufacturer:	HAI
Model Number(s):	**RC-SERIES OMNISTAT**
Minimum Core Module Version:	
Document Revision Date:	4/8/2013

OVERVIEW AND SUPPORTED FEATURES

This Integration Note describes the integration of HAI thermostats by connecting them directly to the g! system, instead of wiring them into HAI Omni panel.

Refer to HAI Security Integration Notes for details on integrating HAI thermostats when they are wired into the Omni panel.

This Integration Note applies to the 1st generation of OmniStats. For OmniStat 2's please see the OmniStat 2 Integration Note.

Important! Due to possible compatibility issues, HAI Thermostats should only be used on COM ports 1 and 2 of the HC-Series System Controllers.

THE HAI RC-COMMUNICATING THERMOSTATS SUPPORT THE FOLLOWING FEATURES:

Temperature Control: Temperature control can be managed by schedules tied to house modes or by manual control based on time (Timed Temporary Hold, Temporary Hold and Permanent Hold).

Mode Control: The climate system can be set to run in the following heating and cooling modes: **Heat** only, **Cool** only, **Auto Heat Cool** or **Off**. In addition, systems that have a fan can be set to run in **Automatic** mode or **Continuous** mode.

History View: The history view shows the inside temperature, outside temperature, unit run and fan run times, and cooling and heating setpoints.

Schedule Control: Up to three schedules can be set using the Viewer software. The schedules are tied to the house mode.

Auto Time: The **g!** system will automatically update the time on the thermostats including daylight savings time changes.

Auto Thermostat Detection: The **g!** system will automatically detect all the thermostats connected to system, along with each thermostat's ID (number).

Celsius and Fahrenheit: HAI Thermostats support displaying Temperatures in C or F both at the stat and in the **g!** system in whole numbers only. **g!** Core Module 5.5 added support for decimal/fractional numbers, but these are not supported with HAI thermostats.

Any feature not specifically noted as "supported" is not supported.

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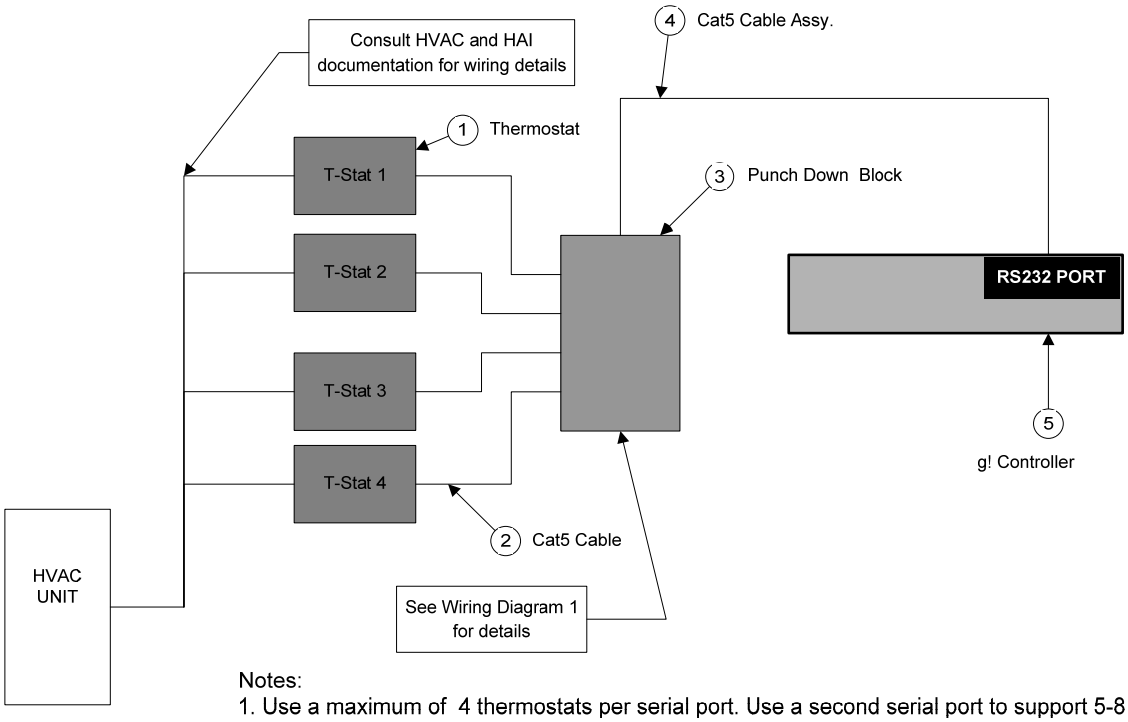
INSTALLATION OVERVIEW

1. Install the HAI RS-232 thermostat communication network and control cables during the rough-in phase. Consult the HVAC unit manual for control cabling requirements.
2. Each serial port can support up to 4 thermostats without a booster. Installation of the booster will allow up to 32 thermostats per serial port.
3. Mount the punch down block and terminate the wires, as per the diagram provided. Make sure that the serial port cable is not plugged in prior to wiring.
4. Run a Cat5 wire from the punch down block back to the Network Assembly of the **g!** system.
5. Mount and connect the thermostats bases electrically using the diagrams provided.
6. **Recheck the wiring on both at the thermostat and the punch down block.**
7. Install and power up the thermostats one at a time. Program the thermostats as outlined in the thermostat programming section, noting the thermostat ID number.
8. Test the thermostat and climate system to ensure that the thermostats correctly turn on the appropriate heating or cooling equipment, and open or close the appropriate valves / dampers.
9. Connect the **g!** system to the HAI thermostats electrically. See the wiring diagrams for more information.
10. Configure the **g!** system for the thermostats and confirm communication between the thermostats and the **g! Controller**. Use the auto detect (Discover Devices) feature to find the thermostats on the network.
11. Test the system by changing the set points, modes and schedules on the viewer and various thermostats, confirming that the various components in the system are in communicating with each other.

CONNECTION DIAGRAMS

OPTION 1: CONNECT UP TO FOUR THERMOSTATS TO THE G! CONTROLLER

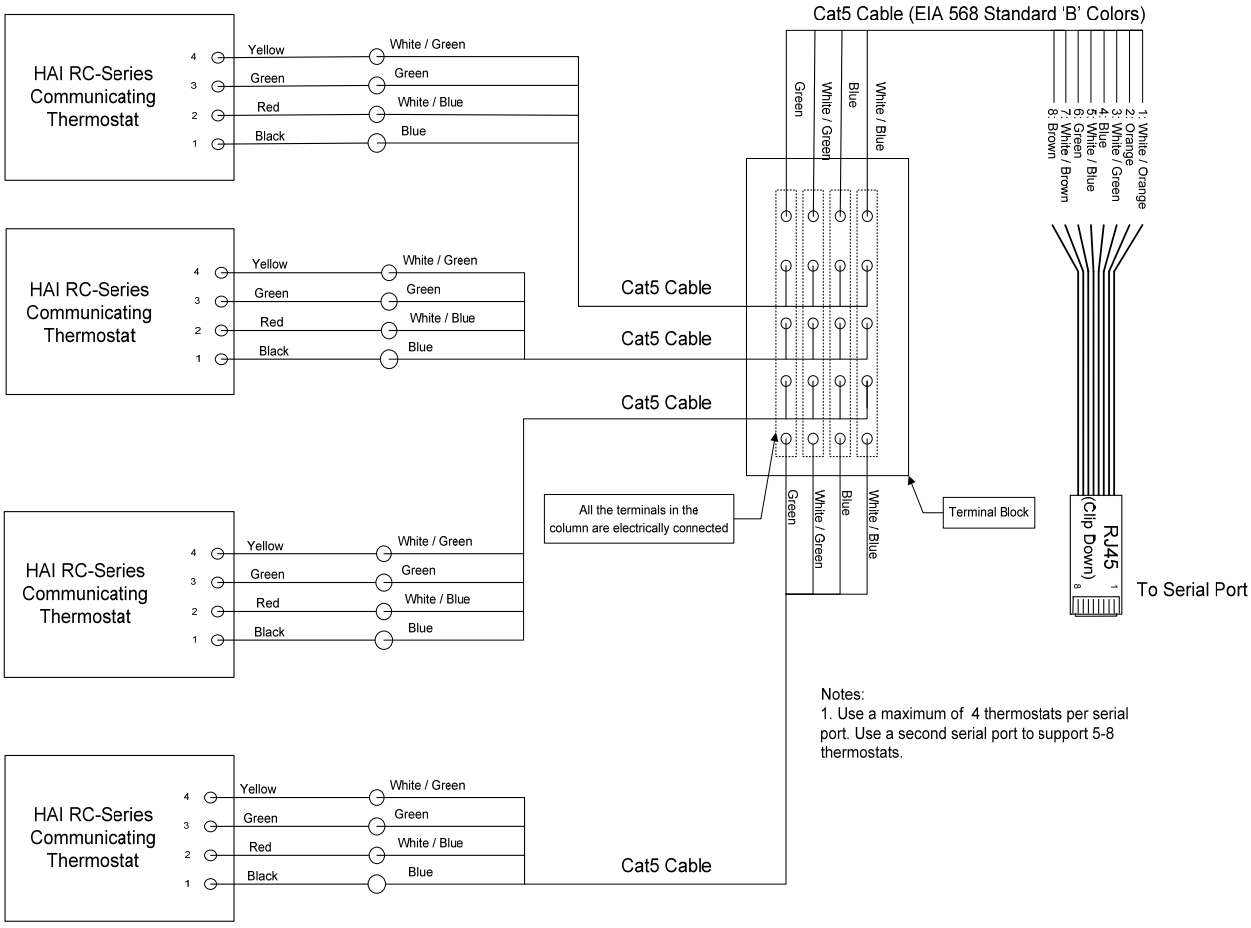


Notes:
1. Use a maximum of 4 thermostats per serial port. Use a second serial port to support 5-8 thermostats
2. Use of the RC-232 Booster will allow a maximum of 127 thermostats on one network (per HAI)

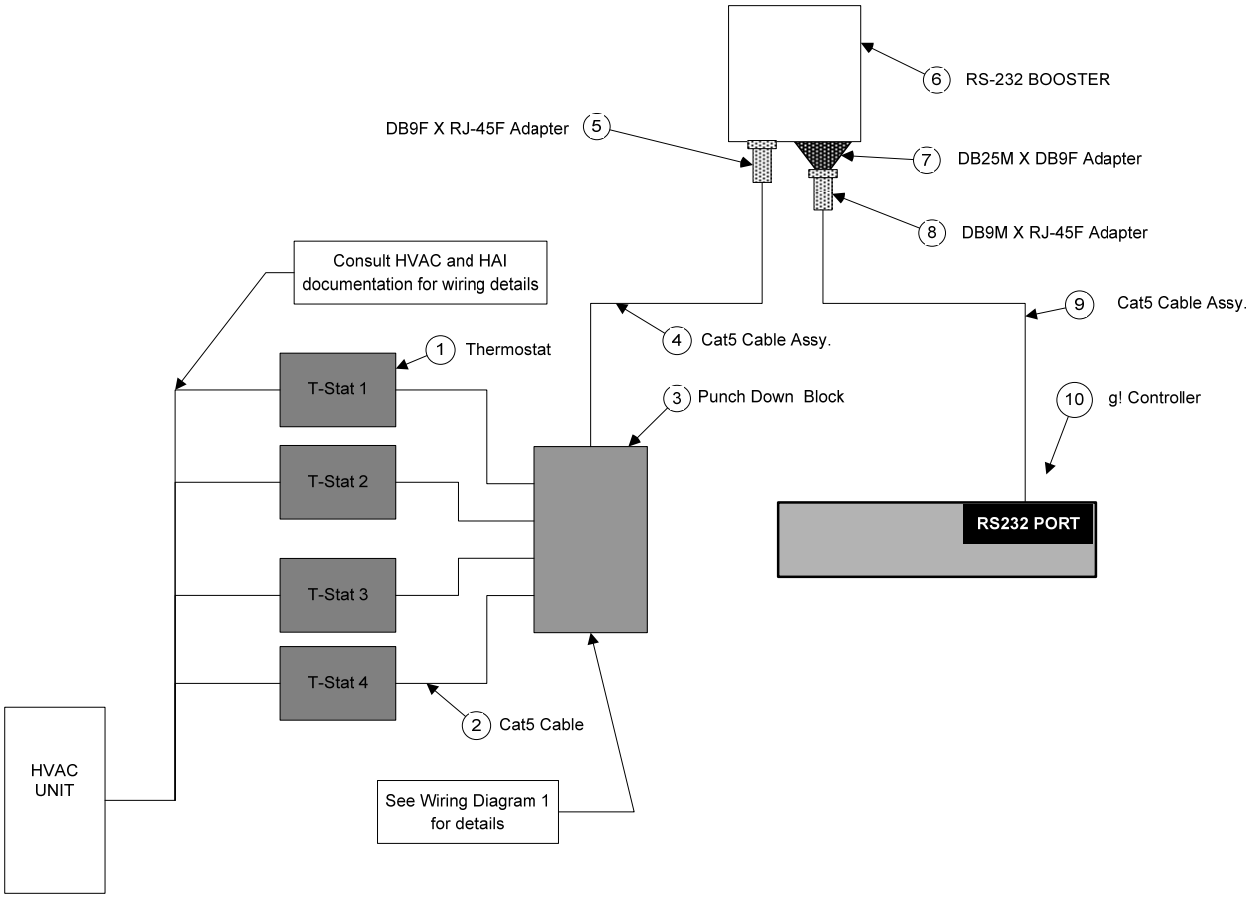
BILL OF MATERIALS

#	Device	Manufacturer	Part Number	Protocol	Connector Type	Notes
1	Thermostat	HAI	RC-SERIES	RS-232	Pigtail	
2	Cat5 Cable	Installer	N/A	RS-232	None	
3	Punch Down Block	ETCO	DD3C	RS-232	Insulation Displacement	
	or					
	Punch Down Block	Leviton	40066-M25	RS-232	Insulation Displacement	
4	Cat5 Cable Assy.	Installer	N/A	RS-232	RJ-45 Male X Wire	
5	g! Controller	Elan	Various (ex. HC-12)	RS-232	RJ-45 Female	Use COM 1, 2, 3, etc.

WIRING DIAGRAM 1



OPTION 2: CONNECT MORE THAN FOUR THERMOSTATS WITH THE BOOSTER



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	or					
	Punch Down Block	Leviton	40066-M25	RS-232	Insulation Displacement	
4	Cat5 Cable Assy.	Installer	N/A	RS-232	RJ-45 Male X Wire	
5	DB9F to RJ45 Adapter	HomeLogic	HA-CB-308	RS-232	DB-9 Female X RJ-45 Female	
6	RS-232 BOOSTER	HAI	RC-202	RS-232	DB-25 Female X DB-9 Male	
7	DB25M X DB9F Adapter	Belkin	F2L088	RS-232	DB-25 Male X DB-9 Female	
8	DB9M to RJ45 Adapter	HomeLogic	HA-CB-307	RS-232	DB-9 Male X RJ-45 Female	
9	Cat5 Cable	Installer	N/A	RS-232	RJ-45 Male X RJ-45 Male	Must terminate all 8 conductors
10	g! Controller	Elan	Various (ex. HC-12)	RS-232	RJ-45 Female	Use COM 1, 2, 3, etc.

THERMOSTAT PROGRAMMING

Once the thermostats are powered up and running properly, you need to make a few changes to the thermostat settings to integrate with the **g!** system.

STANDARD THERMOSTAT SETUP

The changes outlined below in **Table 1** assume that you are starting with a factory default thermostat. These changes will then put the thermostat into a standard **g!** setup.

Step	Instructions	Comments
1	Press [Mode] until the thermostat is OFF and wait 10 seconds	Places the thermostat into **Off Mode**
2	Press [Prog] + [Prog] + [Prog] + [Fan]	Enters **Set-up** mode at **Location 00 (Address)**
3	Press [Up Arrow] and [Down Arrow] until the desired **Address Number** appears	Sets **Location 00** to the **Address Number** of the thermostat
3	Press [Prog]	Goes to **Location 01 (Communications)**
4	Press [Up Arrow] or [Down Arrow] until **0** appears	Sets **Location 01** to **300 baud, RS-232 Mode**
5	Press [Prog] + [Prog]	Goes to **Location 03 (Display Options)**
6	Press [Up Arrow] and [Down Arrow] until **5** appears	Sets **Location 03** to **am/pm time format, non-programmable**
7	Wait 20 seconds	Thermostat switches to **Normal Mode**

Table 1: Steps to setup a factory default Model HC-Series thermostat with standard **g!** settings.

TABLE 2: OTHER THERMOSTAT SETTINGS

In addition to the standard settings listed above, there may be situations that require additional changes to the thermostat to solve a particular installation issue.

The following table lists the thermostat settings and comments on each. Items in the **g!** Standard column that are bold are items that we suggest you change, as explained above. Refer also to the HAI documentation for more information.

Thermostats are put into programming mode by first putting the thermostat into the off mode, waiting 10 seconds and pushing the program button 3 times followed by a press of the hold button. Pressing the scroll left (Hold) and scroll right (Prog) allows selection of the various **Item Numbers.**

Once the desired Item Number has been located, press the **Up and Down Arrows** until the desired value is displayed. Pressing the scroll left (Hold) and scroll right (Prog) keys to move to the next **Item Number** or do nothing for 20 seconds and the thermostat will revert back to the **Normal Operation Mode.**

Item Numbers	Description	HAI Default	Homelogic Standard	Comments
0	Address	1	**1 thru N**	**Must be set with a unique address**
1	DisableCommunication mode	1	**0**	**Must be 0**
2	Systems options	0	0	OK to change
3	Display options	1	**5**	**Selected display mode must be non-programmable**
4	Calibration offset	30	30	OK to change
5	Cool setpoint limit	51	51	OK to change
6	Heat setpoint limit	91	91	OK to change
7	Not used	-4	-4	
8	Not used	4	4	
9	Cooling Anticipator	8	8	OK to change
10	Heating Anticipator	8	8	OK to change
11	Cooling minimum on/off time	0	0	OK to change
12	Heating minimum on/off time	10	10	OK to change
13	Not used	-	-	
14	Clock Adjust	30	30	OK to change
15	Filter Reminder	10	10	OK to change
16	System runtime (This week)	-	-	OK to change
17	System runtime (Last week)	-	-	OK to change

Table 2: HAI RC-Series thermostat settings, showing factory defaults and **g!** standards. Note the comments to the right which indicate which values should not be changed from the **g!** standard.

g! CONFIGURATION DETAILS

The following table provides settings used in the **g!** Configurator when connecting to an HAI thermostat network. Please refer to the *Configurator Reference Guide* for more details.

In the table below:

- o "<Select>" Select the appropriate item from the list (or drop-down) in the Configurator.
- o "<User Defined>", etc. Type in the desired name for the item.
- o "<Auto Detect>", etc. The system will auto detect this variable.

Devices	Variable Name	Setting	Comments
Communication Devices	**Name**	<Auto Detect> See Note 1	
	Type	**Serial Port**	
	Communication Type	**HAI Stand-Alone Thermostat Network**	
	Location	<User Defined> (Not Required)	
	Com Port	<Select>	COM1, 2, 3 etc.
HVAC Units	**Name**	<User Defined>	
	Model	**Generic HVAC Unit**	
	Controls Heat	<Select from list>	
	Controls Cooling	<Select from list>	
	Controls Fan	<Select from list>	
<Discover Devices>			Click the **Discover Devices** button on the Communication Device
Thermostats	**Name**	<User Defined>	Discover Devices will set a default name of "Thermostat1", etc.
	Location	<User Defined> (Not Required)	
	Com Device	<Auto Detect>	
	Thermostat #	<Auto Detect>	
	Heating Unit	<Select from list>	
	Cooling Unit	<Select from list>	
Schedules	**HVAC Schedule**	<Select from list>	0, 1, 2 or 3 schedules
	Programs	<Select from list>	1, 2, or 3 weekly programs
	Monday - Sunday	<Select days>	Select days that go together
	Periods per Day	<Select from list>	1, 2 or 4 periods per day
Global Options	**Units**	<Select from list>	Fahrenheit or Celsius
	Temporary Hold Mode	<Select from list>	Timed Hold or Hold until next period
	Temporary Hold Default Time	<Select>	
	Outside Temperature Sensor	<Select from list>	Choose optional sensor if installed or choose Internet
	Outside Humidity Sensor	<Select from list>	Choose optional sensor if installed or choose Internet

COMMON MISTAKES

1. Programming two thermostats with the same address.
2. Failing to plug the Cat5 cable assembly into the correct serial port. Make sure the RJ-45 connector is plugged into the correct serial port as specified in the Configurator.
3. Configuring 2 subsystems with the same serial port.
4. Mis-wiring the Cat5 cables for the RS-232 connection. Be sure that you are following the EIA568B protocol, or if using 568A, make sure you pay careful attention to **Wiring Diagram 1**.