

System Controller LC-AVMHTC1-0 (HTC)

Installation Guide

LC-AVMHTC1-0

Part No. 21-0250-JC, Rev. A

Release Draft 1

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Supersedes NA

Applications or Application Requirements

The center of the Touch4 system is the System Controller (HTC), which communicates with Johnson Controls and third-party products to enable office automation and interaction of individual devices.

The Touch4 system is made of a combination of Johnson Controls or third-party devices that are controllable using BACNET, TCP/IP, Infrared (IR), RS 232, contacts, relays, WiFi, ZigBee, etc.

The Touch system provides a customizable navigation device user interface. It has the ability to easily tie all the devices to the system to easily program interactions between devices on the system.

On the Touch4 system, you set up the system using Composer software that resides on the PC. The PC communicates to the System Controller using a Local Area Network (TCP/IP). You need to use the Composer software to define locations, devices, and the programming interaction between the controllable system devices on the Touch4 system.

When you arrive on-site, you need to establish a network connection using your normal method, such as WiFi (wireless) or Ethernet (Category 5 cable).

You need to place the System Controller at a location where there is an Ethernet port available to the Local Area Network, such as a direct connection to the router, switch, or Ethernet port on the wall.

Software and hardware requirements for setting up a Touch4 system include:

- System Controller hardware (included)
- PC Software and Hardware
 - Composer Professional Software (sold separately)

- Microsoft .NET 1.1 and Support Pack 1 (Installation automatically launched from Composer Install either from CD or web.)
- Microsoft Windows XP and Service Pack 2 (Home or Professional)
- 500 Mhz processor or higher
- 256 MB RAM
- 80 MB Hard Disk space
- Video card and monitor supporting resolution of 1024x768 or higher
- Keyboard
- Mouse
- 1-2 Ethernet (Category 5) cables
- TCP/IP-based network (DSL/Cable Modem, secure gateway, router, or switch)
- Internet Connection (broadband required)
- Wireless Access Point supporting 802.11 b or g (optional - recommended)

Graphical Symbols on the Device

The following information has been placed on the device:



Graphical Symbols in this Guide

The following symbols and their descriptions draw your attention to important safe practices and additional information that can help you avoid injury, death, or loss of material or time.



WARNING: Risk of a potentially hazardous situation that, if **not** avoided, may result in death or serious injury. **DO NOT IGNORE A WARNING!**



CAUTION: Risk of a potentially hazardous situation that, if **not** avoided, may result in minor or moderate injury. **DO NOT IGNORE A CAUTION!**

Emissions Compliance

This product complies with standards established by the following regulatory bodies:

- Federal Communications Commission (FCC)
- Industry Canada
- Underwriters Laboratories Inc. (UL)
- CE Declaration of Conformity
- Environmental Protection Agency or Other Designated Local Recycling Agencies

IMPORTANT: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Federal Communications Commission (FCC)

FCC ID: R33AVMHTC11

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada

This Class B digital apparatus complies with Canada ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Underwriters Laboratories Inc. (UL)

This product has been tested by UL and has been found to be in compliance with:

UL 60065:2003: Standard for Audio, Video and Similar Electronic Apparatus — Safety Requirements
CAN/CSA-C22.2 No. 60065-03, First Edition



Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. This apparatus has no AC mains power switch. The appliance coupler is the AC mains disconnect device. As such, the appliance coupler must remain readily operable; that is, it must be readily accessible, and operation of the disconnect device must be free from obstruction.



WARNING: Risk of fire or electrical shock, do not expose this apparatus to rain or moisture.

This CLASS I apparatus must be connected to an AC mains socket outlet that has a protective earthing connection (i.e., third-prong ground conductor). **DO NOT DEFEAT THE PROTECTIVE EARTHING CONNECTION!**

CE Declaration of Conformity



DeCl aration OF CONFORMITY

Johnson Controls, Inc., 5757 N. Green Bay Avenue, P.O. Box 591, Milwaukee, WI 53201, Tel (414) 524-1200

Product: **System Controller (HTC)**, Model No: **LC-AVMHTC1-0**

The undersigned hereby declares, on behalf of Johnson Controls, Inc., that the above-referenced product, to which this declaration relates, is in conformity with the provisions of:

**Council Directive 89/336/EEC (May 3, 1989) on Electromagnetic Compatibility
Council Directive 1999/5/EC (Mar 9, 1999) on Radio & Telecommunication Terminal Equipment (R&TTE)
Council Directive 73/23/EEC (Feb. 19, 1973) on Low Voltage Equipment Safety
Council Directive 93/68/EEC (Jul. 22, 1993) Amending Directives 89/336/EEC and 73/23/EEC**

and has been tested to the requirements of, and shown to be in compliance with, the following requisite standards:

EMC

EN 301 489-1 V1.4.1 — Electromagnetic compatibility and Radio spectrum Matters (ERM): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services—Part 1 Common technical requirements.

**EN 301 489-17 V1.2.1 — Electromagnetic compatibility and Radio spectrum Matters (ERM): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment.
AS/NZS CISPR 22: 2002 — Information Technology Equipment — Radio disturbance characteristics.**

Radio

**EN 300 328-2 V1.4.1 — Wide band transmission systems; data transmission equipment operating in the 2.4GHz ISM band. Harmonised EN covering essential requirements under Article 3(2) of the R&TTE Directive.
AS/NZS 4771: 2000 — Spread Spectrum Equipment using 900MHz, 2.4GHz and 5.8GHz bands.**

Safety

IEC 60950-1: 2001 (1st Edition) and/or EN 60950-1: 2001 — Information Technology Equipment—Safety with national and group differences in accordance with CB Bulletin No. 109A December 2005: AS/NZS 60950-1: 2003.

The Technical Construction File required by these Directives is maintained at the corporate headquarters of Johnson Controls, Inc., Milwaukee, WI U.S.A.

Signed,

Paul E. Nagel—Vice President of Engineering, May 23, 2006

Environmental Protection Agency or Other Designated Local Recycling Agencies

For information on recycling, please go to www.<website placeholder>.com/recycling



Installation

The installation of a fully functional Touch4 system includes the following steps:

1. Install Composer software on Personal Computer.
2. Design System and Create Groups and Users.
3. Set up Agents and Program using Composer.
4. Install and Configure Hardware.
5. Test Device Control using Navigation Devices.
6. Test System using Navigation Devices.



This document outlines how to install hardware in this process. For more information about how to do the other stages, see the Composer online help.

Parts Included

The following are included in your product:

- System Controller (HTC) LC-AVMHTC1-0
- Pluggable terminal block connector (1)
- IEC power cord

Installing Composer Software on Personal Computer

When setting up a Touch4 system, you need to design your system using the Composer software. The Composer software is installed on your Personal Computer and communicates to the System Controller via the TCP/IP-based network. The Composer software communicates to the System Controller using the network.

To install Composer software:

1. Ensure that the software and hardware requirements are met. See “Applications or Application Requirements” on page 1.
2. Ensure that your PC is connected to the Internet.
3. Launch the Composer installation and follow the instructions on the Z10 Touch Screen.
4. Follow the instructions on the Z10 Touch Screen to update to the latest version of Composer.

5. During the installation process, click the **Continue Anyway** button for the installation to proceed.

Designing System and Creating Groups and Users

Designing the system includes using the Composer software to determine the make up of the Touch4 system. Within the Composer software, you define the project tree to build the system design. It includes defining the building, tenants, floors, and areas, and the devices that you want to control on the system.





You also need to create groups and users at each area location and define their respective rights to a given area. Tenants are given the administration rights to make changes in that domain as defined by building administrators.






An important part of designing the system is backing up the design in a project file that you can load later to the System Controller. See Composer Online help for information about how to design a Touch4 System.

Installing and Configuring Hardware

In order to use the Touch4™ system to control devices, you must install the hardware and make physical connections between devices, then mirror the physical connections with logical connections in the software project. Use Table 1, “Connection Worksheet for System Controller” to plan and make physical connections and then make the logical connections within the Composer software.

Table 1: Connection Worksheet for System Controller

Connection Options and Typical Use	Reserved for:
Power plug port —For C6 power connector. See “Installing Hardware” for more information. 	1. For C6 power connector.
Ethernet —RJ-45 for a 10/100 BaseT Ethernet connection. See “Installing Hardware” for more information. 	1.
Video Out Options —Composite or S-Video port for displaying navigation menus on a monitor or TV. When available, use S-Video instead of Composite for a higher quality display. See “Installing Hardware” for more information. 	1.
Relay (1 set) —Pluggable terminal block connector for 1 normally closed or normally opened switchable connection, such as a blind, a fireplace, or a projector screen. The set contains a connection for Common (COM) and Normally Closed (NC) or Normally Opened (NO). See “Connecting to the Relay Port” for more information. 	1.

Connection Options and Typical Use	Reserved for:
BACnet/FLBus (1 set) —Pluggable terminal block connector for 1 BACnet/FLBus, such as a thermostat. See “Using BACnet/FLBus Port” for more information.	1.
IR Out (6) —3.5 mm jacks for up to 6 IR output transmitters. See “Setting Up IR Emitters” for more information. 	1. 2. 3. 4. 5. 6.
USB (1 port) —For external storage device with USB support (such as FAT32 formatted devices). See “Set up External Storage Device” for more information. 	1.
Audio In (1 Left-Right pair) —RCA jacks for stereo channel input (line level) for 1 stereo analog source. 	1.
Audio Out (2 Left-Right pairs) —RCA jacks for stereo channel line output (line level) for amplifiers or audio switches. 	2. 3.
Video Sense In-Out (2 pairs) —Composite In-Out port pairs for monitoring up to 2 video In sources, such as DVD players or VCRs, that allow the system to determine the On/Off status of devices. Each Out port allows the signal to loop through the System Controller and continue to its intended video connection. See “Using Video Sense Loops” for more information. 	1. 2.
External 802.15.7 Antenna —Whip antenna for providing external radio signal when the System Controller is stored in a signal-inhibiting area (such as a steel utility closet). See “Using External 802.15.7 Antenna” for more information.	3. 4.

To install and configure hardware:

1. Install hardware and make physical connections.
2. Connect to a System Controller’s Director.
3. Load project.
4. Make and verify logical connections.
5. Configure devices.
6. Update devices (firmware - software that resides on the devices).
7. Set up music and playlists.

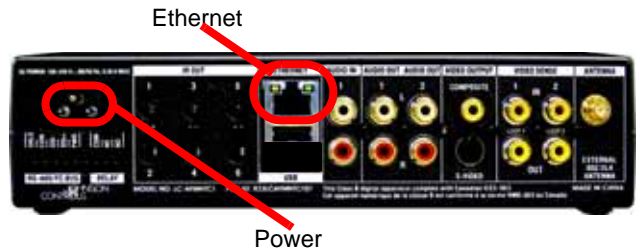
Installing Hardware

This section includes setting up the System Controller hardware and installing other devices on the control system, such as dimmers, switches, navigation devices, thermostats, etc. It also includes installing the physical cables, such as Ethernet cables, contact, relays, etc. It includes connecting the PC and the System Controller using Ethernet cables to the local area network as they communicate with each other through the local area network. This documentation assumes that the local area network that is either using Ethernet or WiFi is already set up.

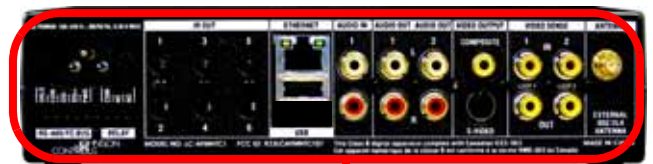
IMPORTANT: You must use the Local Area Network for communication between the PC and the System Controller. You **cannot** connect the PC and System Controller directly using the Ethernet port.

To install the System Controller and other System Devices:

1. Connect PC to live TCP/IP Ethernet network (Local Area Network or LAN). Use either a wireless access point or Ethernet cable to connect the PC to the office network.
2. Connect System Controller to Ethernet Local Area Network (LAN) using the RJ-45 labeled Ethernet on the back of the System Controller. If successful, the amber LED turns on and the green LED blinks.
3. Power up System Controller using the power cord provided.



4. Install all other system devices, hardware, cables, and networks that you intend to control on the Touch4 system as instructed in the accompanying documentation.



BACnet, IR Out, Audio IN, Audio Out, Video Output, Video Sense Ports, and Antenna

Note: USB Port: To make music saved to a USB drive available to the system, use the USB port on the back of the System Controller. The USB port is only for music storage use and USB updates. You **cannot** use it to connect the PC directly to the System Controller.

Connections

Connect all applicable devices to the System Controller using one of the available connection methods including those described on Table 1, "Connection Worksheet for System Controller". Connect all applicable devices to the System Controller. The following sections provide guidelines on making the various connections, including:

- Using Pluggable Terminal Block Connectors
- Using BACnet port
- Connecting to the Relay Port
- Setting Up IR Emitters
- Using USB Port to Set up External Storage Device
- Using Video Sense Loops

Using Pluggable Terminal Block Connectors

For the Contact, Relay, and BACNET ports, the System Controller makes use of a pluggable terminal block connector—a removable plastic part to lock in individual wires. This connector is included.

To connect a device to the Pluggable Terminal Block:

1. Insert one of the wires required for your device into the appropriate opening in the Pluggable Terminal Block you reserved for that device (refer to Table 1 on page 4).
2. Lower the openings latch until it locks the wire in place.
3. Repeat Steps 1-2 for all wires required for your device.

Using BACnet/FLBus ports

The System Controller provides one BACnet® Network port (labeled RS-485/FC-Bus as a subset of the pluggable terminal block provided). See the following figure to determine how to connect to this port.

Figure 1: BACnet (RS-485/FC Bus) Port



For example, to install a BACnet Networked Thermostat:

1. Install the BACnet® Networked Thermostat and wire the thermostat's MS/TP Communications Bus according to documentation provided and the MS/TP Communications Bus Technical Bulletin (LT-12011034).
2. Connect the communication wires from the thermostat to the System Controller as follows.

Wires from Thermostat	Terminal Block on System Controller
COM	COM
-	SIG -
+	SIG +

Connecting to the Relay Port

The System Controller provides one relay port as a subset of the pluggable terminal block provided.

Figure 2: Relay Port



Attach one wire to the common terminal and the other to either the normally open terminal or the normally closed terminal.

The relay switch closes when the relay is activated.

The System Controller can support applications that require either a normally closed contact or a normally open contact.

Setting Up IR Emitters

Your system might contain products that are controlled with IR commands (usually through remote controls).

Note: IR emitters sold separately in the “Media Package.”

To provide a way for the System Controller to control a device that only recognizes IR commands, complete the following setup:

1. Plug the 3.5 mm connector end of one of the 6 IR stick-on emitters into an IR Out port on the System Controller.
2. Place the stick-on emitter end over the IR receiver on the media player, TV, or other target device to transmit IR signals from the System Controller to the target.

Using USB Port to Set up External Storage Device

When using the System Controller as the primary System Controller in the office, from the USB port (on the back), you can store and access media from an external storage device, such as a network hard drive or USB memory device.

3. For more information, see the Composer online help topic: “Use External Storage Devices.”

Using Video Sense Loops

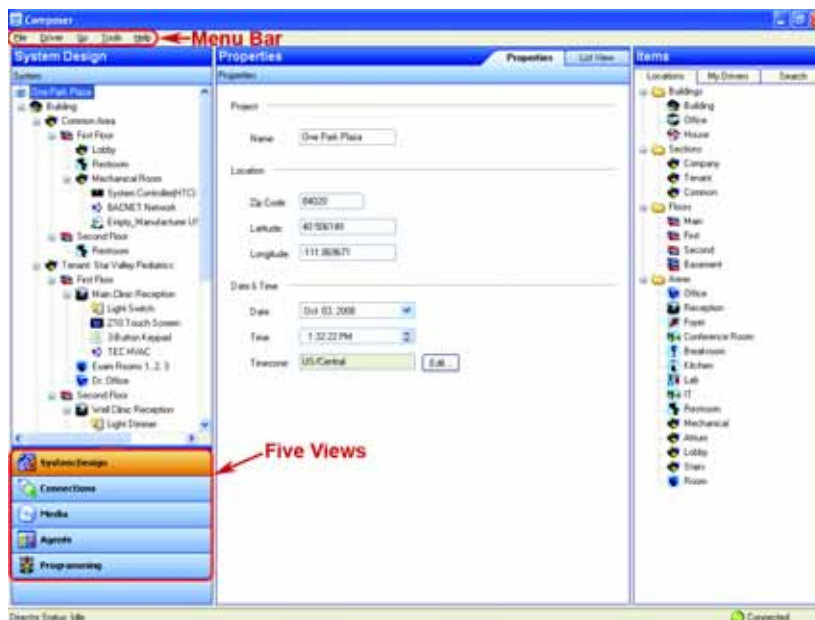
Video sensing can enhance the ability to sense the power state of a device, such as whether the device is “on” or “off.” If you need to add video signal sensing capabilities for a video device (such as a TV, VCR, DVD player, etc.), connect one of the device’s composite *Video Out* ports to a System Controller *Video Sense In* port. Then, use the companion *Video Sense Out* port (where available) for the device’s video out as needed.

For Video Sense only (no loop-through), connect a device’s *Composite Video Out port* to one of the two *Video Sense In ports*.

Using External 802.15.7 Antenna

Setup and Adjustments

Figure 3: Windows XP-based Composer



Johnson Controls Composer is a Windows XP-based PC program that has an intuitive drag-and-drop interface. This interface enables you to fully design, set up, and program the Touch4 system that automates and schedules HVAC, lighting, security and other devices found within a light commercial environment.

To take advantage of its features, Composer has five main views:

- **System Design** — Allows you to build the Project Tree and identify the devices on the system. See Composer online help for more information.

- **Connections** — Allows you to identify all connections (Room, Control, AV, Network). See Composer online help for more information.
- **Media** — Allows you to add and scan stored or broadcast media. See Composer online help for more information.
- **Agents** — Allows you to set up agents for use on the system and programming. Agents include: lighting scenes, wake up, scheduler, variables, etc. See Composer online help for more information.
- **Programming** — Allows you to program devices and agents on the system. See Composer online help for more information.

Note: Click and pull down the dotted bar to make the navigation views collapsible to give you more room to view the Project Tree.



The Menu Bar provides the following menus:

- **File menu** — Use to perform typical file management tasks, connect or disconnect to the local director, update the Composer software and exit Composer. See the *Touch4 System User Guide* for more information.
- **Media menu (appears when Media view is selected)** — Use to perform tasks regarding music and media lists. See the *Touch4 System User Guide* for more information.
- **Go Menu** — Use to access the various Composer views, including System Design (Ctrl+1), Connections (Ctrl+2), Media (Ctrl+3), Agents (Ctrl+4), and Programming (Ctrl+5). Short cuts are also available to this views as indicated. See the *Touch4 System User Guide* for more information.
- **Tools menu** — Use to view network status and logs. See the *Touch4 System User Guide* for more information.
- **Help menu** — Use to view on-line help and version information. See the *Touch4 System User Guide* for more information.

Operation

Using the Front Panel

The operation of the System Controller is mostly from the Navigation devices on the Touch4 system.



1. **IR window** — For capturing third-party IR codes from hand-held devices (such as remote controls).
2. **Data LED** — Red LED light indicates data is received.
3. **Link LED** — Red LED light indicates System Controller has been identified in a project configuration.
4. **Power LED** — Red LED light indicates AC power is present. This LED will turn on approximately 30 seconds after the power is applied to the device.
5. **Identification/Reset Button** — For identifying this device to the system during initial setup. This button also serves as the device reset button when pressed for 10 seconds or more.

For systems operations, see the *Touch4 System User Guide*.

Repairs and Replacement

For repairs or replacement, contact Technical Support.

About this Document

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preliminary - this information may change