Applied Innovative Sciences, Inc.

ConectiSys H-Net? 5.0 8Ch Basestation Installation and Operations Manual

Sections:
  I. **FCC Warning, Compliance and Radio Frequency Exposure Statements**
 II. **Introduction and Basestation Description**
III. **Basestation Mounting and Wiring.**
 IV. **Basestation Software Configuration.**
  V. **Reference Figures.**

I.   FCC Warning, Compliance and Radio Frequency Exposure Statements

FCC Warning

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance (ConectiSys) could void the user's authority to operate the equipment.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subjected 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.

FCC Radio Frequency Exposure Statement

The H-Net? 5.0 8Ch Base Station has been evaluated under FCC Bulletin OET 65 and found compliant to the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices. The radiated output power of the H-Net? 5.0 8Ch Base Station is well below the FCC radio frequency exposure limits. Nevertheless, this device should be installed in such a manner that the potential for human contact during normal operation is minimized. To ensure RF exposure compliance, in order to comply with RF exposure limits established in the ANSI C95.1 standards, the distance between the antenna and the user should not be less than 20 cm.

II.   Introduction and Basestation Description

Introduction: The H-Net? radio system has been developed by ConectiSys Corp. as an Automatic Meter Reading (AMR) solution for residential and commercial energy markets. H-Net? utilizes a proprietary protocol for two-way communication using a wireless, tower-less network. The H-Net? 5.0 Eight Channel Basestation is a controlling hub for an H-Net? 5.0 radio system network. The basestation provides a central point for data collection from individual meter units, synchronizing and communicating with individual meters in a TDMA scheme. The eight channel basestation is designed to receive data from up to eight meter units simultaneously time in the basestation's receive sequence. The design provides a solid foundation for future iterations of basestations that will integrate additional receivers.

The basestation consists of a PC/104 computer, Compact Flash drive, AC/DC converter, DC/DC converter, battery back-up system, surge protectors and 8 H-Net? 5.0 radios (one of which has been modified to be the transmitter unit, while the other seven will only receive). The power system is comprised of a 120VAC to 12VDC converter with a 12VDC-battery backup and a 12VDC to 5VDC/3.3VDC converter to power the PC/104 and radios respectively. The radio system is composed of eight radios, each composed of two PCB assemblies (controller module and RF module), a multiplexing board and an omnidirectional vertically mounted, horizontally polarized antenna. The controller and RF modules interface together via PCB mounted headers. The controllers are interfaced to the PC/104 via RS232 serial lines. The antenna is weather sealed and mounted on the top of the basestation. The basestation is housed within an environmentally sealed enclosure meeting the following standards:

> UL 508 Type 3R, 4, 12 and 13
> CSA Type 3R, 4, 12 and 13 Complies with
>> ?? NEMA Type 3R, 4, 12 and 13
>> ?? JIC EGP-1-1967 unless marked[1]
>> ?? IEC 529, IP66

III. Installation and wiring:

WARNING: Failure to wire as instructed may cause damage to device or connected equipment or personal injury. To be installed or checked by an electrician or qualified person only.

Note:
?? Before basestation installation has begun, the basestation should checked to ensure the AC circuit breaker and battery backup switches are in the off position. (See Figures 1 and 5).
?? All wiring devices must be installed and used in accordance with applicable listings, ratings, and codes. References to National Electrical Code are applicable to installations in the United States only.

1. Basestation Mounting:
    a. The H-Net? Eight-channel basestation comes configured to be mounted on a vertical 2 ¾ inch diameter pole.
    b. Mounting pole must be sturdy enough to support 50 pounds against maximum local wind conditions.
    c. Basestation mounting height will be determined by a qualified technician after a local site survey has been conducted.
    d. Basestation is mounted to pole by two 360° Clamping U-Bolts. (See Figure 2).

2. Basestation Wiring
    a. 120VAC and modem wiring are to be run through ½ inch flexible metallic conduit designed for such applications.
    b. Conduit is connected to bottom of basestation through two Liqua-Seal connectors. (See Figure 3).
    c. Modem cable should be run through left conduit and 120VAC through the right.
    d. Modem cable should be a standard RJ-11 telephone cord connected to a direct telephone line.
    e. Modem cable is plugged into topside of telephone line surge protector (See Figure 4).
    f. 120VAC wiring is connected circuit breaker and ground block. Wiring should be white wire (neutral) connected to circuit breaker left terminal, black wire (hot) connected to circuit breaker right terminal and green wire (ground) connected to the green and yellow DIN rail grounding block (See Figure 4).

IV.   Software Configuration:

H-Net⍰ 5.0 Eight Channel Basestation software needs to be configured for each installation.

1. After the basestation has been properly installed connect a PS/2 mouse and keyboard to the indicated connectors in the basestation.
2. Connect a standard VGA PC monitor to the DB15 monitor connector. (See Figure 5).
3. Power up monitor.
4. Power up basestation by flipping the battery back up and circuit breaker switches to the on position.
5. After Windows has finished loading, the H-Net⍰ software will launch automatically. Close this program by clicking exit.
6. Open hnetbase.ini (configuration file) for editing (See Figure 6).
7. Change "phone = ##########" and "mirror = ##########" to dial-up numbers for desired ConectiSys server.
8. Ensure "make_call = 1".
9. "combase = #" should be set for the ComPort number of the radio module set for transmitting, this should be set to 2 in most cases.
10. "count = #" should be set to the number of radios that will be used in the basestation, this should be set to 8 in most cases.
11. Save and exit file.
12. Reboot basestation by shutting down Windows and turning off circuit breaker and battery back up switches, then turning switches back on again.
13. Basestation will dial up and connect to ConectiSys server after reboot.

V.   Reference Figures:

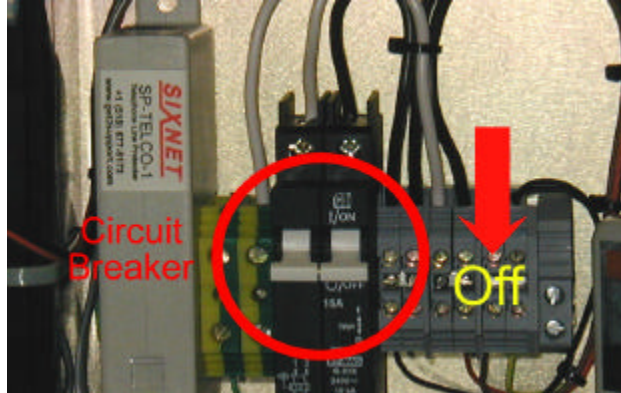Figure 1 – Circuit Breaker and Battery Backup Switches

Figure 2 – Basestation Pole Mounting

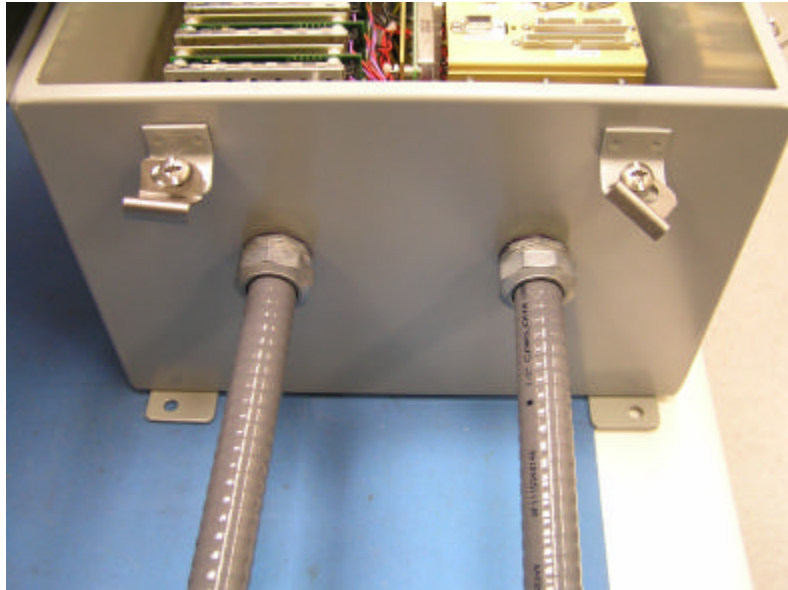Figure 3 – Liqua-Seal Connector's with Conduit

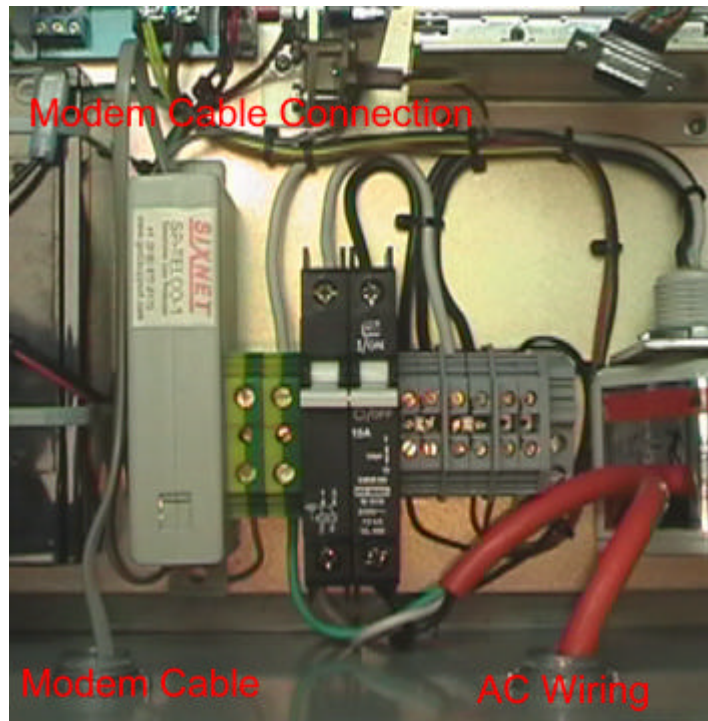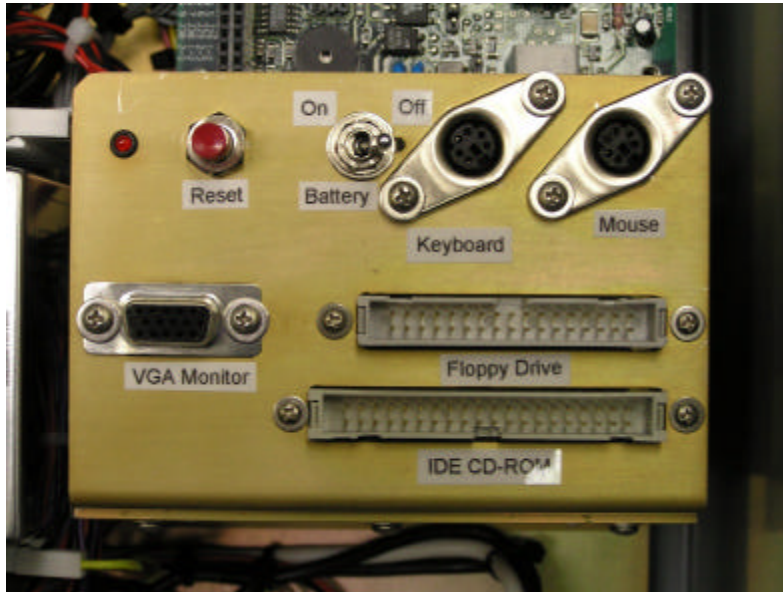

Figure 4 Modem cable and AC wiring

Figure 5 – Monitor, Mouse and Keyboard Connections

Figure 6 – Software Configuration File