Installation, Operation and Troubleshooting

When distances separating Ethernet connection points are greater than 328 feet (100 meters), standard Ethernet signals are insufficient. Instead, a hyper extender is used for distances up to 6,200 feet (1.9 km). A hyper extender consists of a local unit (monitoring location) and a remote unit (machine room) connected together through CAT-5 network-grade twisted pair wiring or shielded twisted pair phone line. The illustration below shows a typical layout for elevator monitoring application. Note that, if you are monitoring multiple controls at the same location, you need just one hyper extender connection to a local network switch to which all controllers at that site are connected.

Figure 1.   Typical Monitoring Site Connection

Instruction # 42-IS-0209, Rev A2 Copyright 2013, Motion Control Engineering.
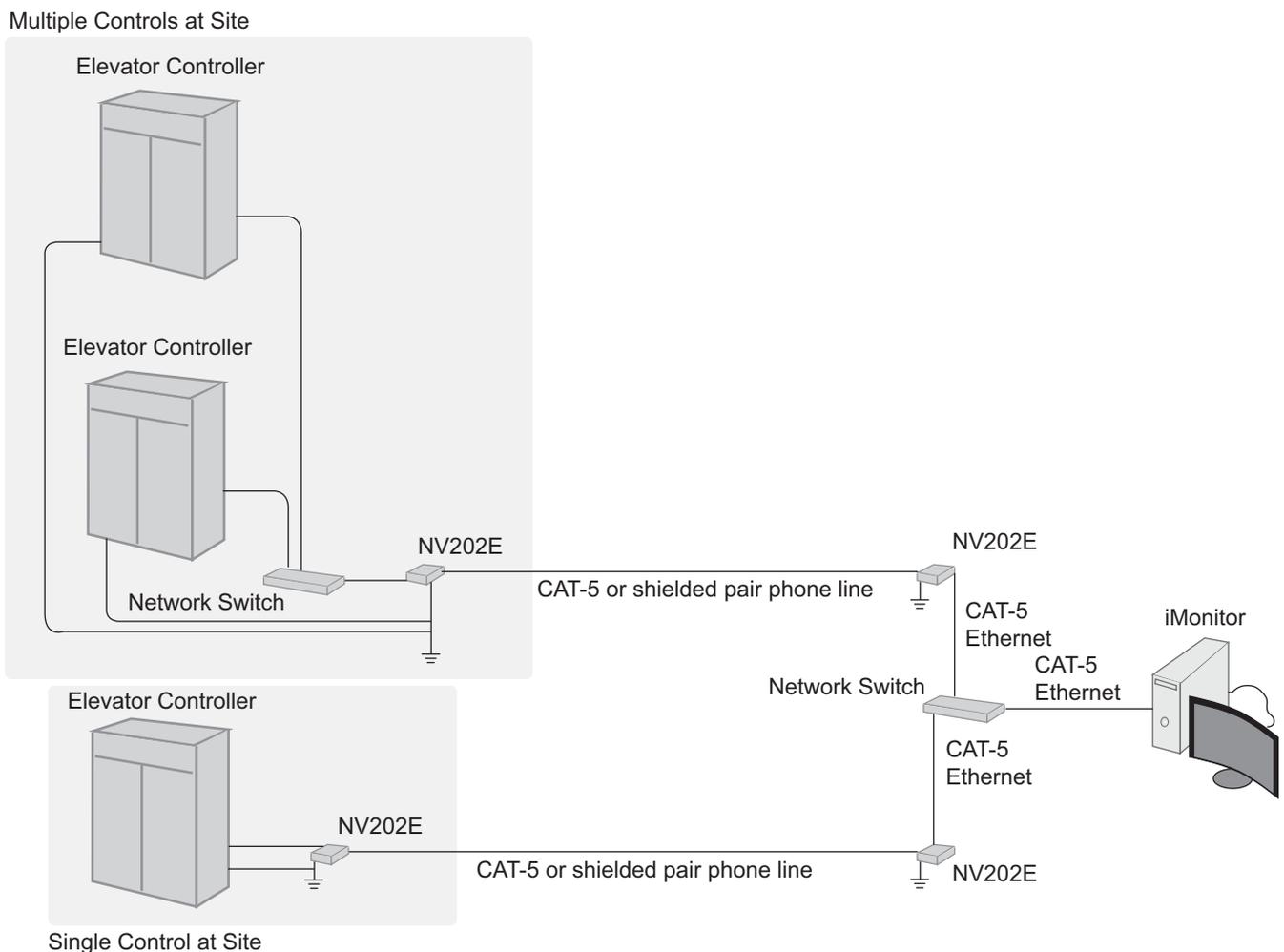
Installation

Unpack the hyper extender kit. You should have two NV-202E units, a power supply for each, two short Ethernet cables for local switch connection, and manufacturer documentation (CD and paper). You will also receive this instruction from Motion Control Engineering.

The hyper extenders are already configured as LOCAL and REMOTE by MCE. A label on the bottom will tell you which is which.

Monitoring Site (Local)

1. Place the local and remote NV-202E units in the desired locations. Do not connect power yet.
2. Install CAT-5 cable between sites, or use shielded, twisted pair phone line. AWG of individual conductors must be 24 - 26 gauge.

Note

For the local site to remote site cable, you can use metal-shielded RJ-11 connectors at each end or you can choose to use push-in terminal connections. Both are provided on the NV-202E.
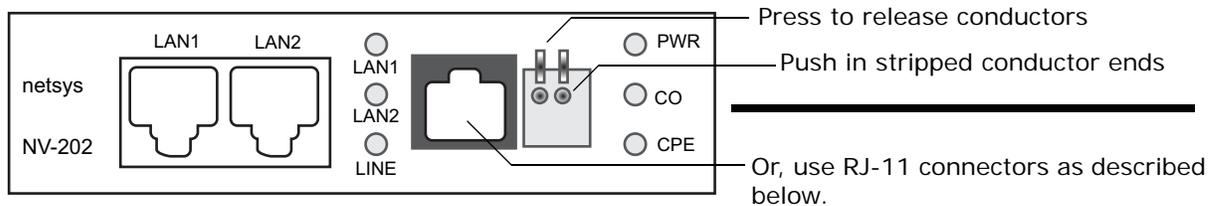
3. Using only approved connector tools, attach an RJ-11 connector to each end of the phone line or network-grade twisted pair wiring between sites. Leave the drain wire long so you can connect it to the hyper extender ground lug. The connections are "straight through" (2 to 2, 3 to 3, etc.). See Figure 2.

Figure 2.   RJ-11 Shielded Connectors on Each End of CAT-5 or Phone Line
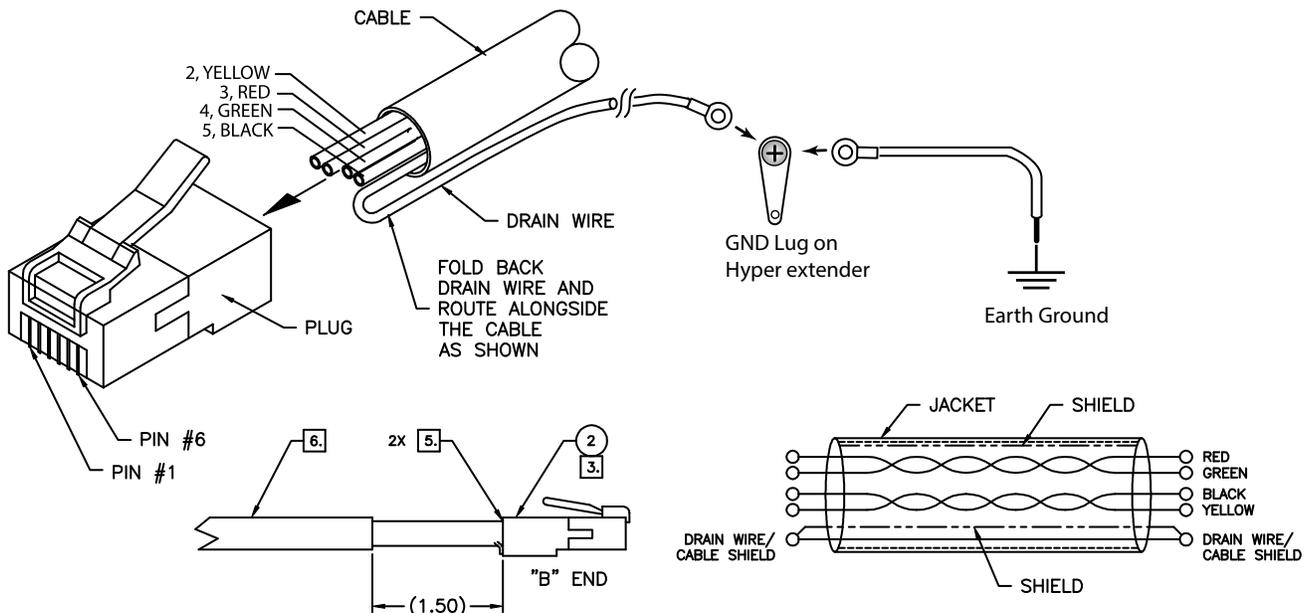
4. Note the shield/drain wire is pulled back through the connector body. For EFI/RMI protection, attach the shield/drain wire to the ground lug provided on the hyper extender using a crimp on connector and additionally install a wire from the ground lug to true earth ground. Do this at each end of the connection. Use the same ground as is used by the elevator controller at the monitored equipment end.

5. Plug the RJ-11 connection into the LINE connector on the local and remote hyper extenders. Or, if you are using the conductor push-in connections, use the Red and Green conductors and plug them in "straight-through."


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            GREEN

            RED


(+)                           (+)
  GND LUG        GND LUG
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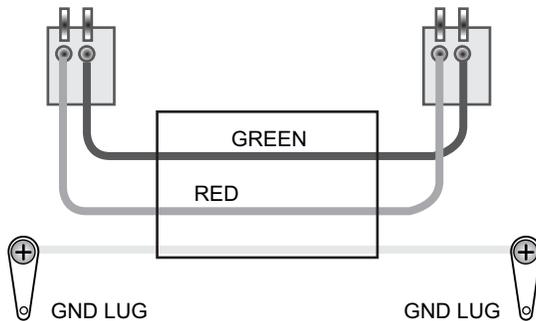
6. On the **Local** Hyper Extender only, verify the #1 DIP switch position to ON.

7. At the local end, connect an Ethernet cable from the hyper extender LAN1 or LAN2 port to a port on the same Ethernet switch the monitor PC is connected to or, if no switch is used, directly to the Ethernet port on the monitor PC.

8. At the remote end, connect an Ethernet cable from the hyper extender LAN1 or LAN2 port to a port on the same LAN Ethernet switch the controller or dispatcher is connected to or, if no switch is used, directly to the Ethernet port on the dispatcher or controller.

Note

If the controller or dispatcher is an MCE unit, follow the instructions in the iMonitor, iReport, or USN manual provided with the monitoring software and/or the Ethernet hardware provided by MCE.

9. Connect each hyper extender to power using the wall plug power transformers provided.

10. Power up the system and check that it is working properly.

Operation

1. Check the status indicators (green LEDs) on the hyper extenders.

Table 1. NV-202 Status Indicators

LED	Status	Description
PWR	On (steady)	VDSL2 bridge has power
	Off	Device not ready or malfunction
LAN1/2	On (steady)	Ethernet connection good
	Blinking	Sending or receiving data
	Off	LAN not connected
CO (Local side)	On (steady)	Running in CO (master) mode
CPE	On (steady)	Running in CPE (slave) mode
LINE	On (steady)	Internet/network connection good
	Blinking slow	CO device auto-detecting CPE device
	Blink fast	1. CO device has detected CPE device; ready to connect. 2. Device sending or receiving data.
	Off	Internet/network connection down

2. Check that the monitor PC is capable of monitoring the remote systems.

Troubleshooting

If the remote connection is not working properly, check the items noted in this section. Also, make sure that you have followed the connection and operation instructions in the monitoring software manual and, required for iControl systems, have obtained any necessary access codes from Motion Control Engineering.

Basic Troubleshooting Using the LED Indicators

The NV-202 units can be easily monitored through front panel LED indicators. These indicators assist the network manager in identifying problems.

- Symptom: PWR LED does not light up after power on.
  - Cause: Defective External Power Supply
  - Check the power transformer by plugging in another power supply that is functioning properly.
  - Check power cords in the same fashion.
  - Replace the defective cord or transformer/power supply.

- Symptom: LAN1 or LAN2 LED does not light (green) after making a physical connection with the attached network equipment.
  - Cause: Network interface (e.q, a network adapter card on the attached device), network cable, or switch port is defective.
  - Solution: Power off/on the attached device and the NV-202 unit.
  - Verify that the NV-202 unit and attached device are powered on.
  - Be sure the Category 5 Patch Cable is plugged into both the NV-202 unit and corresponding network device.
  - Verify that the proper cable type is used and its length does not exceed specified limits.

- Check the cable connections on the NV-202 unit and attached device.
- Replace the suspected NV-202 unit, attached network device, or cable if necessary.

- Symptom: LINE LED does not light after making a physical connection between the NV-202 units.
  - Cause: Line interface on an NV-202 unit or the line used to connect the two units.
  - Power off/on each NV-202 unit.
  - Verify that both units are powered on.
  - Be sure the CAT-5 or telephone cables are plugged into the LINE Ports of both units and that RJ-11 connections are electrically sound.
  - Verify that ONLY RJ-11 connectors OR ONLY LINE connectors are used, NOT BOTH.
  - Verify that the proper cable type is used and its length does not exceed specified limits.
  - Replace the suspected NV-202 unit and retry if necessary.

Note

If you are attempting to connect the NV-202 units over a long distance and a link is not established, connect the units with a short CAT-5 cable wired as shown earlier to verify proper unit function.

Power and Cooling Problems

If the PWR LED does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or external power supply as explained in the previous section. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet, and verify that the NV-202 unit has proper ventilation and that the temperature does not exceed the specified range. If you still cannot isolate the problem, then the external power supply may be defective.

Installation Problems

Verify that all product kit components have been properly installed. If one or more components appear to be malfunctioning (e.g., the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

The default configuration for the Ethernet connections is 10/100 Mbps auto-negotiating. For the link connections, the default configuration is 10 Mbps. If the Ethernet link is disrupted (e.g., by unplugging the network cable and plugging it back in again or by resetting the power), the port will try to reestablish communication with the attached device via auto-negotiation. If auto-negotiation fails, communications are set to half duplex by default. Based on this type of industry-standard connection policy, if you are using a full-duplex device that does not support auto-negotiation, communications can be easily lost (i.e., reset to the wrong mode) whenever the attached device is reset or experiences a power fluctuation. The best way to resolve this problem is to upgrade these devices to a version that supports auto-negotiation.

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the new changes, one step at a time. Ensure that cable distances and other physical aspects of the installation do not exceed recommendations

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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 or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.