

Questions and Answers

September 26, 2007

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Are there repeaters that do not require resistors?	Some repeaters have terminators built in, usually selected by setting jumpers.
Do you recommend shielded 22awg, or is non-shielded adequate for most applications?	Shielded wire reduces magnetic coupling onto the wire. If you have an area with lots of magnetic interference i.e. motors, relays or electronic ballasts, shielded wire may do a better job.
If you use shielded LON Cable and non-shielded LON cable with similar specifications, do you need to separate the cable with a router?	No, any section of a wire can have a shield. So on a 1000 foot section passing by a motor, you could splice in 100 ft of shield.
Is there any downside to using shielded cable?	None, other than cost
Will DC voltage cause any issues with the LON communications?	To clarify what is LON communications; LON cable has no common side, A+B only. Power supplies usually have a ground, negative and positive terminals. Because companies do not use the same power supply design, the ground and negative terminals should not be connected together. This can be an issue is trying to bus the negative supply between devices from different companies.
What about DC voltage in the same conduit as the LON cable?	In my experience, this has not been an issue. Possibly because the DC supply is pulling such low current, very little energy can be coupled to the LON cable.
Can you explain why you would not use the 22 gauge cable pre-existing vs new 22awg cable?	It has to do with the wires impedance. Not all cable is similar due to capacitance and resistance. Even the same gauge wire will have different characteristics.
Could metal conduit be used if one end is attached to a unit (motor, etc.) by a plastic spacer or something similar?	You can use metal conduit if only one side is connected, do not pull the AC wire in the same conduit.
Is a LonWorks router the same as a LonWorks repeater?	A router has the option of being powered up either as a router or a repeater, a repeater is usually only a repeater. The Loytec L-switch family of routers can be configured as a router and installed. If during installation, you want to it to be a repeater; you change the dip switch setting, re-power the unit and it will reboot as a repeater. When finished, you can set it back to a router and it will maintain all the routing tables.

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<p>Do you have the communication packet breakdowns in a document?</p>	<p>The complete protocol is described in the red LonWorks Installation Handbook book available from Engenuity Systems (http://www.opensystemsproducts.com/items.asp?tp=&itpstatus=1&c=c=books).</p> <p>You may also check with LonMark where many specifications are available, see http://www.lonmark.org/technical_resources/guidelines/home.shtml</p>
<p>What are the issues in using 105 ohm terminating resistors for a double terminated bus?</p>	<p>A terminator is a capacitor / resistor network designed for specific impedance at a frequency acting as a filter to attenuate other frequencies. A resistor is a fixed value and as such, will not have the same performance but will work.</p>
<p>If I am using a packet analyzer tool (LPA); where can I find a resource to look up things such as "Network Management" and "Application Messages" ID's that are sent in these packets?</p>	<p>The complete protocol is described in the red LonWorks Installation Handbook book available from Engenuity Systems (http://www.opensystemsproducts.com/items.asp?tp=&itpstatus=1&c=c=books).</p>
<p>Are these variables specific to the software or are they part of the LonTalk protocol?</p>	<p>LonMark has established approximately 120 SNVTs specific to data structures like SNVT_temp_p for temperature or SNVT_switch which defines an 8 bit analog value with an on-off state. Developers wishing to have their products used in interoperable networks must use these defined resources. For more information, see http://www.lonmark.org/technical_resources/resource_files/home.shtml</p>
<p>In the NPDU header, why do we use different addressing formats, such as subnet/node as opposed to using subnet/neuron id exclusively?</p>	<p>Sending the Neuron ID is a 48 bit or 8 byte structure, a subnet/node address is two bytes so implicit addressing takes less bandwidth on the network. Secondly, with subnet/node addressing, nodes can be members of groups. You can send out one broadcast to all members of a group; using the Neuron ID only you would have to send a request to each node.</p>
<p>Are there any specifications for consulting engineers that address these applications and issues?</p>	<p>The complete protocol is described in the red LonWorks Installation Handbook book available from Engenuity Systems (http://www.opensystemsproducts.com/items.asp?tp=&itpstatus=1&c=c=books). You may also check with LonMark where many specifications are available, http://www.lonmark.org/technical_resources/guidelines/home.shtml</p>
<p>Do isolated power supplies help reduce noise coming in?</p>	<p>An isolated AC or DC supply uses a transformer and will reduce a percentage of the external noise from the power input. A DC power supply will have an output filter that would further reduce any noise from the AC supply. However the supply wire itself is an antenna and can pick up interference which may couple onto a node. Most devices will internally convert the AC or DC power input to its required level, again passing through filtering, reducing most noise that is coupled by the supply wire.</p>

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<p>Regarding the issue of testing the LON bus using an ohm meter; would you have to shut power off to the devices on the bus? The meter would be sending out 9 volts. Would the meter shunt that voltage or would there be an issue?</p>	<p>The LON transceiver in a transformer typically with capacitors in series to block DC voltage. The LON transmission is 1.2 volts loaded or 3 volts unloaded and is a 2 ms pulse. When you turn off a device, you are looking at a transformer with a capacitor in series, which will pose no voltage on the wire. The same is true when placing a 9 volt power source on the LON wire; it will not pose any issue to the transceiver regardless if the unit's power is On or Off. If you apply voltage to a LON wire with devices powered ON, then the devices close to the power supply will see low impedance, similar to a short. This will be a heavy load to the node but should not damage it.</p>
<p>When installing terminators on a bus with repeaters and/or routers, do you only put one terminator at either end for a total of two? Or should a terminator be placed at either side of the repeater/ router for a total of four on the bus?</p>	<p>A terminator is needed on any single wire segment. If you put a repeater in the middle then you have two single segments to deal with, each requiring terminators on both ends.</p>