



**VOL 3 ISSUE 4**

**Winter 2003**

# Automation Service News

**The Newsletter of Delta Automation Inc.**

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**Delta Automation Contact Info**

**Contact names, numbers and e-mail  
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**Tech Tip!**

## The Importance of upgrading J890-001's to J890-101's



**AS-J890-001  
With BNC connector**

The J890 remote I/O interface is a device which converts input/output information from the I/O cards located within the rack or backplane to the proper protocol for the coax media. This device handles many important functions. In this discussion, we will address the impact the device has or may have upon the media



**AS-J890-101  
With F connector**

which can affect the performance of the entire system or network. As you may already be aware, any device or connection upon a network will cause an impedance disturbance, however minute. The Modicon remote I/O system has a basic characteristic impedance of 75 ohms. The original interface, part number AS- J890-001, has an impedance level of about 300 ohms. When connected to a 75 ohm system, there will be a mismatch of impedance, which causes a loss of signal transfer due to signal reflections on the media. Even when the interface is properly connected utilizing a tap, reflections will occur along the drop cable itself. To remedy the situation, the manufacturer recommended an in-line terminator be installed with each interface. This properly matched the impedance with the system, however it also induced an increased signal loss of  $-3\text{dB}$  ,along with adding several more connections which can contribute to intermittent communications. In a modern network, a loss of  $-3\text{dB}$  at each interface may not be acceptable to system performance. The manufacturer, after some time, improved the performance of the J890-001 by providing a properly impedance matched unit along with several other needed improvements and changed the part number to AS-J890-101. This upgrade is visually evident by the change from a “BNC” type connector to an “F” type connector. By no means is this the only change! There are several internal changes to complete this upgrade. Additional improvements include: reduced sensitivity to electrical noise and the proper connector to eliminate the need for adaptors. Delta Automation Inc. offers an upgrade only service, or will upgrade your existing J890-001’s to J890-101’s as part of the repair process, if requested. We will not automatically upgrade your product without your permission as this may cause a need for some connector work to be performed on your system before re-installing the repaired interface. This upgrade includes all J890-001’s, J890-002’s, J892-001’s and J892-002’s.

**BNC right angle adaptor**

**BNC to F adaptor**



**In-line terminator**

**Additional connectors required with J890-001's**

These are the types of issues and problems that can be avoided by utilizing the network services of Delta Automation Inc. for all of your network design and support needs. Delta Automation Inc. certifies Modbus Plus, Modbus II and Remote I/O networks in metallic and fiber optics.

Delta Automation Inc.  
Field Engineers Discuss:

## Common Installation Mistakes on Modbus Plus Networks

While Modbus Plus is a robust network of peer to peer communications used on process control and data acquisition applications, several basic mistakes are commonly uncovered during the certification process performed by Delta Automation, Inc.'s Field Service Engineers. One, if not the, most frequent, is exceeding the maximum allowable limit of 1500 cable feet without a repeater. Modbus Plus is a continuous cable with four conductors, a twisted pair, a drain wire and a shield. You must use the approved shielded Belden cable for the network to perform properly.



Common Connector  
Styles

There are several types of connectors approved for node connections, they are: the MBKT type, the TEE type, the Ruggedized Industrial type and the newest Version, which utilizes screw terminals. However; you cannot mix the MBKT style with any of the type connectors which utilize the drop cable (all others). The grounding scheme is quite different. There are two lengths of drop cables, 8 and 20 feet that are connected to all but the MBKT type connectors. These add 16 or 40 feet respectively to the main Modbus Plus or "trunk" cable. Using the connectors which have drop cables guarantees the 10 feet minimum between nodes unless someone shortens the drop cable. Orientation of these connectors is critical

for proper grounding. If you terminate on the "left" side of one end of a segment you must follow the same pattern of coming in on the "left and going out on the right" so the other end of the segment is terminated on the "right" side. This will insure each piece of the main cable is grounded properly. The Industrial taps cause an impedance mismatch which can be displayed as an insertion reflection when testing the network using a time domain reflectometer (TDR). Delta Automation, Inc. does not recommend more than two of these taps on any segment. The MBKT connectors are "daisy-chained" together so when a node is connected or disconnected, the main trunk may be disturbed or made intermittent. This also may cause a poor connection at the MBKT, which in turn changes the resistance of the network that adversely effects the communications. A quick check of a segment is to measure the resistance between pins 2 and 3. The reading should be between 60-80 ohms, if both ends are terminated properly and the 1500-foot length has not been exceeded. Any additions to your Modbus Plus networks or new networks can be certified by Delta Automation, Inc. Engineers. This certification includes a written report with the TDR printout as a snapshot of your network detailing node distances and any problems located and repaired.

These and other problems can be identified and corrected when utilizing the network services of Delta Automation, Inc.

## *On-site Start-up services for Drives*

Several of the drive manufacturers for which Delta Automation Inc. is authorized by, recommend an



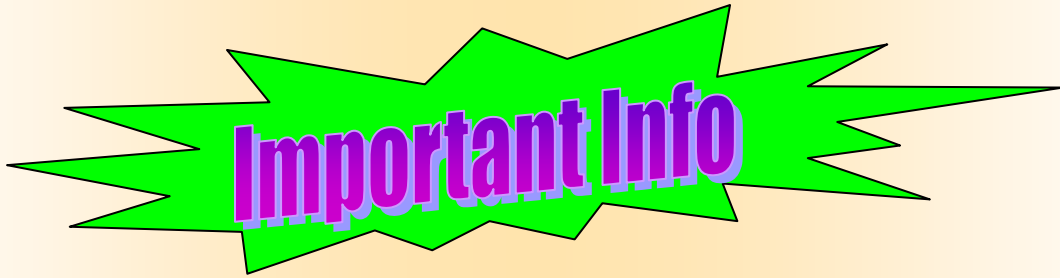
on-site visit from a factory authorized service person to inspect the installation. This inspection accomplishes several things: it assures that the application is correct with relation to sizing, it checks that the conductors are sized and positioned correctly and that the grounding is per the manufacturers specifications, and any operational parameters that may need adjusting are properly made. At least one of these manufacturers will increase the factory warranty an additional six months if this service is performed at start-up. This service may be requested at the time of purchase from your dealer or directly from Delta Automation Inc.

## **Clark Jones joins Delta's Inside Sales Force**



Clark Jones comes to Delta Automation Inc. with 20 plus years of sales and technical experience with industrial and electro-mechanical products. His most recent position was as an inside sales representative and office manager for a GE FANUC distributor in the Richmond, Virginia area. Prior to that, he served as a sales rep. and technical support/purchasing agent for a local manufacturers' on-site program.

In the years leading up to that he worked as a field service engineer for a medical products and service company.



**Richmond Industrial Show  
April 9th and 10th**

**Be sure to come by and visit our display at booth 101!**

**Also, be sure to register to win the grand prize,  
a DVD player.**

**Located at the Richmond Raceway complex  
(former State Fairgrounds)**



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**For after hours**

**Emergency Service or Parts**

Call our main number 888-723-3582

**Extension 55**

Leave a message and someone will respond within fifteen minutes to answer your call.

[www.deltaautomation.com](http://www.deltaautomation.com)

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