

# Automation Service News

**The Newsletter of Delta Automation Inc.**

**Tech Tip!**

**Having an Existing Network  
Certification Report  
Saved time.**

**True High or True Low ?**

**True High/Low  
Sink or Source**

**Emergency On-site  
Component Level Repair**

**On-site repair  
saves down time**

**Important Info!**

**Emergency repair  
and  
Program retrieval**

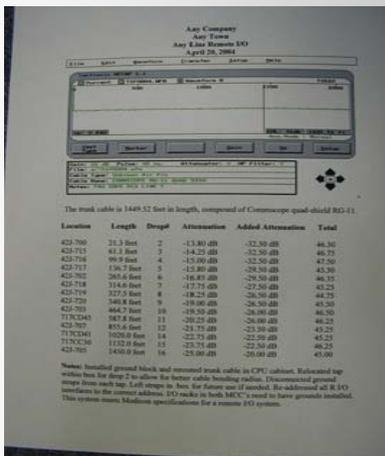
**Delta Automation Contact Info**

**Contact Names, Numbers And E-mail  
Addresses**

# Tech Tip!

Recently a large water management facility called upon Delta Automation, Inc. to revive their Modbus Plus network which was knocked out of commission due to a thunderstorm. This network had been certified by Delta Automation, Inc. several years ago during an installation of new equipment which required that additions be made to the Modbus Plus system.

Delta always recommends that anytime a network is added to or any changes made to it, that the system be re-certified to ensure its' integrity.



The screenshot shows a software interface for network certification. Below the interface is a table with the following data:

Location	Length	Drop	Attenuation	Added Attenuation	Total
423-700	21.3 feet	2	-13.80 dB	-12.50 dB	46.30
423-711	48.8 feet	3	-14.25 dB	-12.50 dB	46.75
423-714	99.9 feet	4	-15.00 dB	-12.50 dB	47.50
423-717	156.7 feet	5	-15.80 dB	-12.50 dB	48.30
423-702	261.6 feet	6	-16.80 dB	-12.50 dB	49.30
423-718	314.6 feet	7	-17.75 dB	-12.50 dB	49.25
423-719	377.9 feet	8	-18.25 dB	-12.50 dB	49.75
423-720	340.8 feet	9	-19.00 dB	-12.50 dB	49.50
423-703	464.7 feet	10	-19.25 dB	-12.50 dB	49.75
717C2A5	587.8 feet	11	-19.50 dB	-12.50 dB	49.50
423-707	671.6 feet	12	-20.25 dB	-12.50 dB	49.75
717C2A1	1020.0 feet	13	-21.75 dB	-12.50 dB	49.25
717C2A0	1020.0 feet	14	-22.75 dB	-12.50 dB	49.25
717C2A3	1112.0 feet	15	-23.75 dB	-12.50 dB	49.25
423-704	1400.0 feet	16	-25.00 dB	-12.50 dB	47.50

Notes: Installed ground block and removed work cable in CPU cabinet. Relocated top within box for drop 2 to allow for better cable bending radius. Documented ground strips from each leg. Each strip is now for future use if needed. Re-addressed all R-D10 modules to the correct address. D0 racks in both MCC's need to have grounds installed. This system meets Modbus specifications for a system I/O system.

This system in question here had taken all of the moving filters off line due to the Modbus Plus system not being able to communicate to all of the nodes. A lightning strike nearby during a storm had induced enough stray voltage into the system to create an open or destroy a device.

All that the customer knew was that the storm had caused the problem. After a cursory check of the system, they called for help. Delta Engineers were dispatched and were on the way within a short time.

Upon arrival at the site, they pre-positioned the test equipment to the same location as when the original certification was performed. This would allow the Delta team to more quickly locate the problem.

After all of the pre-work was accomplished, the test equipment was put into service. It immediately indicated that there was an open at a certain location. The previous certification report was referred to and the distance indicated by the test equipment was equated to a specific piece of the customers' equipment. The Delta team went directly to that location and quickly located and replaced an open drop cable. Upon returning to the test equipment, it was clear that this problem had been rectified. However; the test equipment displayed another open further down the line from the first open. Again, the original certification report was referred to and a distance was derived and was then correlated to another specific piece of the customers' equipment. Again the team ascended upon this location, found and replaced another open drop cable. Back at the test equipment, all faults and discontinuities were cleared. The system was reconnected and was in operation.

The total time to service and restore this system was kept to a minimum due to the simple fact that there was an existing certification document available to reference. What this meant to the customer was that their unscheduled downtime was not lengthened by searching for which nodes are at a given location. This information had already been documented in their original certification report.

This is just one example of how a network certification can assist in troubleshooting a down system, months or in this case, even years later.

Please contact Delta for all of your network needs.

# True High or True Low ?

How many times over the years have you or your customers ordered a true high or true low card, only to get it and realize that the polarity is reversed from what you intended ? The terms true high and true low are usually used together as well as sink and source. While all of these terms are relevant, lets discuss what they actually are referring to when used in the PLC world.

Going back to our basic electrical theory, we learned that D.C. electricity flows from the negative pole to the positive pole. Many people have a difficult time thinking in the “negative”. For this reason some folks use “positive flow”. It makes their logical thinking process simpler. For almost all applications it’s irrelevant which way you think the actual current flows. For true high and true low applications it is essential for proper operation. For example, the Modicon 200 series module number B233 is a **True Low** input. What this indicates is when a “low” or zero voltage level is applied to the input point, the logical input reference reflected in the PLC, is ON. Similarly, the Quantum DDI 153 10 module is listed as a 5 volt **Source** input. It operates the same way as the B233. When the input is low or zero volts, the logical reference in the PLC is ON.

Output modules such as the 200 series model B232 a **True Low** output, functions as follows: a logical one or on state in the PLC logic forces a zero volt condition on the modules’ output point. Again similarly, the Quantum module DDO 153 10, a 5 volt **Sink** card operates the same way. If the PLC logic is a logical one or on condition, the output point on the module will be zero volts.

In summary, these terms can be confusing. The best way to be sure that you receive exactly what you need is to research the applications’ wiring and or circuitry and understand what polarity is required. There is no “one size fits all” solution to this dilemma. To make matters more confusing, different manufacturers state them different ways and certainly foreign manufacturers add another dimension to the formula.

For the writer, I have always used the terms “True high or low” for reference. I guess this relates back to my old Boolean algebra days. When the logical state is “True” does the point need to be high or low with reference to voltage ? Pretty simple. The terms “Sink” and “Source”, are a little more confusing to me since they change from input to output, but .....I’m not French !



## Emergency On-Site Component Level Repair

During a recent on-site network certification service call for a large paper manufacturer, there was a power surge from a main power transformer during a tap change. This power surge caused several power supplies to fail. Fortunately, Delta's fully equipped service van was already on site for another project. When the customer approached the Delta Engineers about the power supply problem, Delta was able to have the schematics faxed over to the Engineer on-site and they were able to repair the power supplies right in the van within hours of the power surge. In normal and especially in emergency situations, Delta Automation, Inc. understands the need for quick, responsive action.



## Engineering Student Seminar

### Goodwill Gesture

Delta Automation, Inc. recently held a free training seminar for several local college Engineering students. They were given an overview of Modicon PLC's, their history, and their capabilities. Demonstrations and various applications of the different types of networks, remote I/O, Modbus Plus, and Ethernet were given to the students. The day's activity was wrapped up with a tour of Delta Automation's repair facility.





### Delta Automation, Inc. to the Rescue

A Modicon customer in Salt Lake City, Utah had a failure of their E984-485 with no backup files of the program. They did however have a spare controller. They searched and found Delta Automation's web site and phone number. They called and wanted to know if we could possibly get the program from this dead controller. This was essential as the plant was down and they desperately needed to load their spare unit. We received the controller via overnight shipping and carefully ensured the battery stayed connected so as to maintain the memory as our technician troubleshoot and repaired the power supply portion of the unit. We then downloaded the program, zipped it, and emailed the zipped file to the customer. This took less than 24 hours to restore their operation that might have otherwise taken weeks to re-write a program from scratch.

All of this for no extra charge to the basic repair price.

This is just one example of how Delta Automation, Inc. goes the extra distance to achieve full customer satisfaction.



804-236-2800

Toll free 1-888-PC-DELTA  
(888-723-3582)

fax 804-236-2900

Bob Culley	President	<a href="mailto:bobculley@deltaautomation.com">bobculley@deltaautomation.com</a>
Margarete Culley	Vice President/CEO	<a href="mailto:mculley@deltaautomation.com">mculley@deltaautomation.com</a>
Roy Caudle	Service	<a href="mailto:roycaudle@deltaautomation.com">roycaudle@deltaautomation.com</a>
Bernie Wieland	Sales	<a href="mailto:berniewieland@deltaautomation.com">berniewieland@deltaautomation.com</a>
Clark Jones	Sales	<a href="mailto:clarkjones@deltaautomation.com">clarkjones@deltaautomation.com</a>
Vann Barden	Outside Sales	<a href="mailto:vannbarden@deltaautomation.com">vannbarden@deltaautomation.com</a>
Mike Martinelli	Repair	<a href="mailto:marti@deltaautomation.com">marti@deltaautomation.com</a>
Theresa Umbel	Accounting	<a href="mailto:plc@deltaautomation.com">plc@deltaautomation.com</a>

#### For after hours

#### Emergency Service or Parts

Call our main number 888-723-3582 or pagers 1-888-969-1308 &/or 1-888-586-3952

Extension 55

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

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

2704 Charles City Road Richmond, VA. 23231

