TECHNICAL BULLETIN

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CPC®
COMPUTER PROCESS CONTROLS

I/O Network Outage in Einstein Versions Before Einstein 1.81

Synopsis

Einstein versions before version 1.81 in rare cases can experience an outage in I/O network communications with no alarm notification. All sites that experience this outage should be upgraded to the latest Einstein version to correct the problem. Sites that do not already have this problem do not need to be upgraded.

Description

In less than 5% of new installations of Einstein versions up to and including version 1.80, and also in some instances where older versions of Einstein are upgraded, a problem in handling I/O communications between Einstein and devices on the RS485 network has been known to occur. The problem causes Einstein to stop communication with its I/O devices without registering the boards as being offline.

The symptoms of this problem are as follows:

- Logs of input values from points on the I/O network will be recorded as "NO DATA" for an extended period of time. This will also show in UltraSite32 and Einstein front panel graphs as a gap in the data. All logs of I/O points will exhibit this behavior for the same period of time as indicated by the time stamps of the log entries that show "NO DATA."

- During the I/O network outage indicated by the log gaps, no "Controller Absent From Network" alarms will occur to indicate there is a problem with the I/O network. **Note: if "Device Absent From Network" alarms do occur, the problem is not related to this issue.** Check wiring and termination, and call CPC service for further assistance.

- If suction pressure transducers are present on any boards on the Einstein's I/O network, a "Failed Sensor or Bad Wiring" alarm will occur for the points associated with the transducers.

- During the period of I/O network outage, output boards **may or may not** revert to a fail-safe state. In some instances, the boards enter fail-safe mode, but in other instances relays on the output boards remain in their last commanded state until the outage is resolved.

- In many cases, field reports have indicated when Einstein is in a state of I/O network outage, pressing a key on the Einstein front panel or logging in to the controller immediately caused the I/O network to return to normal operation.

Causes of the Problem

The cause of the Einstein I/O network problem has been traced to the Einstein's inability to handle irregularities of communication on the I/O network. It is almost always related to one or more boards on the I/O network being faulty, meaning either there is a flaw in the hardware that causes the board to require replacement, or else the board is communicating in a way that causes Einstein's I/O subsystem to become locked in an endless state of communication retries.

Actions Required to Fix the Problem

Einstein version 1.81F01 and all versions released afterwards have been fixed to prevent a prolonged I/O network outage from occurring. The upgrade should be performed for all units at the site where this problem occurs. An upgrade will either remove all outages in the I/O network, or else it will contain the outages to one or more of the "faulty" boards on the network, allowing you to pinpoint which faulty device was causing the problem and remove or replace it.

If a site with an Einstein version before 1.81F01 is <u>not</u> exhibiting this problem, it is not necessary to upgrade it. The I/O network outage only occurs if something on the I/O network is causing it to occur; it will not happen spontaneously at a site that has been running for a long time without any issue. It **<u>is</u>** recommended, however, that if any additions or upgrades to the I/O network are made, the Einsteins should be upgraded to the most recent Einstein software version.

Problems Observed After Upgrading

In several cases, after upgrading a site to Einstein 1.81F01 to fix an I/O network outage problem, one or more of the following problems occur:

- **Service Log entries such as "IONet sem timeout" occur.** This is an indicator the condition that was causing the lockup in Einstein is still occurring on the network, but Einstein was able to detect the condition and restart the I/O network without any problems. If there are no prolonged gaps in the input log data that indicate there is still an I/O network outage problem, it is safe to ignore these service log entries.

- **"Device Absent From Network" alarms occur for one or more I/O boards.** It is likely that the device referred to in this alarm message is the same device that was causing the I/O network outage in the pre-1.81 version of Einstein. This device should be removed from the network and replaced with a new board as soon as possible. The faulty board should be returned to CPC's Returned Goods department with a notification that the board was involved with an Einstein I/O network outage condition.