Technical Note 49

DataHighway Tips and Troubleshooting

Overview

This technical note provides solutions to common problems encountered implementing DataHighway and/or DataHighway Plus networks. It is intended as a supplement to the MBX-DH help, and not as a replacement. Wherever possible, the appropriate sections of the Orion help system are referenced, and the reader is strongly encouraged to review these sections. The help system also contains a number of programming examples, as well as hardware configuration information. Refer to the “Data Highway Communications” page for details (select “Help Topics”, then select the “Index” tab).

Common Mistakes

- Make sure that the network type and baud rate parameters specified with the DH.INIT statement match the configuration for the remainder of the network.
- Before a variable can be accessed over the network, it must be “mapped”. Refer to the MBX-MAP documentation for details.
- After initializing the DH+ interface with the DH.INIT statement, the MotionBASIC program must also set DH@ equal to TRUE. This enables access to “mapped” variables via the network.
- If a PLC is performing reads and writes on another device on the network, the message block must perform the read/write function, and then wait for a reply to the message before another read/write is attempted. A message block that is executed each scan of the PLC program will cause all sorts of network errors.
- If the Orion is performing reads and/or writes on another device on the network, the program must not perform a second read/write until DH.MSG@ becomes true. After DH.MSG@ becomes true, the application should also check DH.STS@ to verify that the operation completed successfully.
- If possible, program the PLC such that there is a time interval between message block executions. This helps to relieve network traffic.
Electrical noise can cause problems on any high-speed network. Make sure that proper grounding and shielding techniques are followed. An application note detailing the recommended grounding and shielding techniques can be found at http://www.ormec.com.

**Network Problems**

The assumption is made here that the “Common Mistakes” section of this document has already been referenced, and the network still does not function properly.

- A DH.WHO@ can be executed on the Orion after the DataHighway/Plus interface is initialized to see which (if any) devices on the network are recognized.

- Check, then double-check, the terminating resistors on the network cable. Verify that the PLC does not have “built-in” terminating resistors.

- Also make sure that the minimum cable length specification is followed. Network cabling examples are shown in the “Adapter” section of the MBX-DH help.

- If possible, reduce the network to the Orion, and one other device (preferably a PLC, if one is present). Test the network operation with these two devices. If it works, start adding devices to see which one is causing problems. If it doesn’t work with these two devices, get it working before adding additional devices. Make sure that proper network termination is maintained.

- See if the Orion can “talk to itself” by setting DH.DEST@ equal to the station ID of the Orion, then execute the DH.OK@ statement. It will be necessary to wait for DH.MSG@, then check DH_STS@. An example of how to do this is in the Orion help system in the documentation for the DH.OK@ statement.

- As a last resort, try swapping the blue and clear wires of the “blue hose” at the Orion.
Register Access Problems

This section assumes that the network is functional, but there is a problem with register access to/from the Orion. Network functionality can be checked with the DH.WHO statement. If all devices appear in the device map, they are recognized by the network.

• Make sure DH@ is set ON.

• If the register accesses are being done by another device on the network (a PLC, for example), make sure that the appropriate registers are “mapped”. There are a number of examples of MotionBASIC® code, and PLC ladder diagrams in the Orion help system.

• If the PLC is reading and writing registers, watch out for entering decimal numbers where octal numbers are required in the message block definitions.

• If the Orion is reading and writing registers, make sure that you’re using a correctly formatted address string. Refer to “PLC-5 Addressing”, “PLC-2 Addressing”, and “SLC Addressing” in the MBX-DH help.

• Use DH.TRACE@ to enable more debugging information.

• Use DH.STS@ and DH.RSTS@ to determine the type of errors that are detected.

• Use DH.DUMP to get a detailed listing of useful debug information.

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