Application Note:
What Causes a CPU to go to Fatal Error and How Do I Recover?

The fatal error state is entered when the processor detects a fault condition that could affect the control of the process. There are many different causes that can lead to a fatal error of the PLC.

The philosophy behind Fatal Error is the following: if the CPU detects a situation where it is not able to guarantee the control of the process, it is better to put the process in a safe state than continuing to execute control and potentially causing damage to equipment and personnel. When the PLC enters the fatal error state, it stops executing the user program and disables outputs, which will lead to a shutdown of the production process and put it in a safe state. One situation where the PLC will go to the fatal error state is when the scan watchdog time limit is exceeded because some task, such as a cyclic program, consumes too much scan time. The fatal error state can also be entered when a diagnostic test detects a problem with a user program or hardware fault that could affect the control of the process. (The CTI CPU executes every scan internal tests on its own hardware and internal functioning).

The detailed information of the cause of the Fatal Error in the CTI CPU is stored in the Event Log. The Event Log is saved by the Backup battery. For technical support it is essential to recover the information of the Event Log in order to analyze the causes of the Fatal Error. Without the Event Log it is practically impossible to make a statement about the cause of a Fatal Error.

When a Fatal Error occurs, the multi segment display on the CPU will show the sign FE and a 3 digit error number. There is a description of the meaning of each Fatal Error number in section 9.3.2 of the CTI 2500 CPU Installation and Operation Guide. The error number will give some indication about the cause and it will sometimes allow maintenance personnel to solve the cause but it is not sufficiently detailed for NAPA technical support to determine the cause of the error without any doubt.

A fatal error can be solved in 95% of the cases by doing a Partial or Complete restart of the CPU with PLC Workshop or with Tisoft2™ or with APT® ®. Further details about the difference between Partial or Complete restarts can be found in the CTI 2500 CPU Installation and Operation Guide chapter 8 *System Restart Options.*

In the remaining 5% of the cases it should be necessary to execute the following procedure:

NOTE : *If below procedure is executed also the Event log will be lost. Therefore, if you need assistance of technical support to analyze the fatal error cause.*
MAKE SURE TO MAKE A BACKUP OF THE EVENT LOG BEFORE EXECUTING THIS PROCEDURE.

2500 Series® PLC System Application Note

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1. Turn off the power on the base where the CPU is installed

2. Wait until the LED "PLC POWER GOOD" on the Power Supply goes off

3. Remove the backup battery on the CPU

4. Restore the power on the base

5. Insert the battery and screw the battery cap tight

6. When step 1 to 5 are executed in the correct order, at this point the internal memory should be completely cleared by the internal Operating system of the CPU

7. Reload the User program with PLC WorkShop Suite^{TM} for CTI 2500 Series® or Tisoft2™ or APT®

8. Set the CPU in RUN mode with PLC WorkShop Suite^{TM} for CTI 2500 Series® or Tisoft2™ or APT®

The procedure Recovering Diagnostic Data from a CTI 2500 Series Processor describes how to make a backup of the Event log and other internal CPU diagnostic information. This procedure can only be executed by connecting to the CPU via the built-in Ethernet port. Therefore it is also important to assign a TCP/IP address to this port when installing a new CPU, even if the port is not used for any other communication.

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