CTI 2500 Series Processor
Firmware Revision History

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Firmware Version 9.18 (1/21/2019)
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Issues Resolved:

1341: The PLC consistently dropped packets containing CAMP requests when communicating with multiple high traffic HMIs.

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Firmware Version 9.16 (9/19/2018)
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Issues Resolved:

1245: The event log semaphore was not working properly, which could cause corruption of an event log entry if a higher priority task were to interrupt the logging task.

1261: The "Max TCP Server Connections Allowed" statistic in the TCP/IP web page erroneously increased after startup and after each time the IP address was changed.

1267: The PLC halted with E89 error during power up after a normal shutdown. A software error code correction facility was added to repair possible flash memory corruption issues.

1277: The PLC would not completely start up due to a firmware error. *NOTE: This problem occurred during development testing only and was never present in released firmware.*

1292: Model C100 Rev E failed to start after upgrading to V9.09 firmware. *NOTE: This problem occurred during development testing only and was never present in released firmware.*

1294: Changed Ethernet switch settings to disable egress rate limiting (2500-Cxxx PLC). *NOTE: This change does not affect any released firmware. It was made to undo egress rate limiting introduced during development testing.*

1295: Changed Ethernet switch settings to disable egress rate limiting (2500C-Cxxx PLC). *NOTE: This change does not affect any released firmware. It was made to undo egress rate limiting introduced during development testing.*

1301: PLC C100 fatal errors at system startup time when running V9.09 firmware *NOTE: This problem occurred during development testing only and was never present in released firmware.*

New Features and Improvements:

1247: Improved the information logged for special function I/O exception handling.

1251: Added a log event documenting when the PLC IP address is changed by user.

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Firmware Version 9.11 (3/28/2018)
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Issues Resolved:

1324: CTI processors using the Altera FPGA for Profibus I/O experienced occasional I/O timeouts, requiring PLC to reset the Profibus subsystem in order to recover. Applicable products include models 2500-C200, 2500-C300, and 2500-C400 hardware revision G and above, and all CTI compact processor models (2500P-C200, 2500P-C300, and 2500)-C400).

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Firmware Version 9.08 (2/14/2017)
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Issues Resolved:

1285:1286: Hardware revision J of CTI processor models 2500-C200, 2500-C300, 2500-C400, 2500P-C200, 2500P-C300, and 2500P- C400 exhibited Profibus failures at 60° C during CTI testing.

NOTE: This version fully resolves the problem originally identified by Issues 1278 and 1279.

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Firmware Version 9.07 (1/6/2017)
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Issues Resolved:

1278/1279: Hardware revision J of CTI processor models 2500-C200, 2500-C300, 2500-C400, 2500P-C200, 2500P-C300, and 2500P- C400 exhibited Profibus failures at 60° C during CTI testing.

NOTE: Additional testing revealed that this firmware version did not completely resolve the issues.

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Firmware Version 9.06 (8/24/2016)
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Issues Resolved:

1215: During CTI thermal testing, the product encountered a scan watchdog fatal error (113) while in the Profibus I/O scan element. Changes were made to the Profibus reset sequence because the software was not recovering properly after a hardware error.

1216: Erroneous intermittent shutdown signaling, typically caused by aging power supplies, could cause the product to restart in fatal error mode, requiring the customer to clear the fatal error before continuing. Software was modified to avoid declaring a fatal error if the shutdown procedure completed successfully.

New Features and Improvements:

Added support for Compact PLC hardware.

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Firmware Version 9.05 (5/10/2016)
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Issues Resolved:

1192: When entering an IP address via the Network Configuration web page, the user was erroneously prevented from entering a 0 in the second octet of the IP address.

1191: When a new IP address was entered using the Network Configuration web page, the IP address of the controller was not updated. *Note: This issue was introduced in V9.02.*

FT-411: When using V8.04 or V9.02 firmware, an on-line edit of PID Loop Parameters via "PID Loop Edit" screen caused the PID Loop control to become unstable

The error occurred only under the following conditions:
- PID Loop was running in AUTO mode
- PID Loop was not configured to use "Remote Setpoint".
- Loop Setpoint (LSP) was not updated by a statement in SF Program called by Loop.
- One or more Loop Parameters were edited via the "PID Loop Edit" window in Workshop or TISOFT and the edit was accepted so that the entire set of Loop Parameters is written to the controller.

Under the above conditions, the Loop Setpoint (LSP) value was set to full scale, which could result in the PID Loop becoming unstable and no longer controlling the process as expected.

Note: This issue, caused by a firmware modification introduced in V8.04 to resolve issue FT-407, was temporarily resolved in V9.03 (and 9.04) by removing the modification. See revision history for V9.03 regarding details. This release contains firmware that resolves this issue and also resolves issue FT-407.

FT-410: When transitioning to run mode, the PLC encountered a fatal error (fatal error code 300). The cause of the problem was an RLL program created using an old Workshop version (V3.30, SP1), which created invalid RLL code for various complex rungs.

FT-409: When a "non-writable" address (K or WX) was entered as the "Remote SP Address", the PID operation overwrote the value in the location specified as Remote SP when the PID Loop is transferred into Cascade Mode (from Manual or Auto). The 555 controllers do not overwrite the value of a "non-writable" address in these conditions.

FT-407: The initial values of the Control Blocks for both Alarms and Loops did not match those of the Siemens 555 PLC. Alarm and Loop processing was modified so that the initial values are the same as the Siemens 555 controller. For both Alarms and PID Loops, the Rate of Change (ROC) alarm detection check was moved from pre-SFP execution to post-SFP execution to match the execution of the 555 PLC. The PID Loop execution cycle was changed to provide Rate of Change (ROC) monitoring in all Loop operation modes (Manual/Auto/Cascade.

New Features and Improvements:

1161: To improve readability, leading zeroes are now suppressed when octets of the IP address are shown on the Multi-Segment Display (MSD). Leading zeroes are also suppressed when an IP address, subnet mask, or gateway address is presented by the controller web server.

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Firmware Version 9.04 (4/12/2016)
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Issues Resolved:

1185: When updating firmware using the SD card method, the Multi-Segment Display became erratic when the 2500 Series controller was powered up while the SD card was inserted and error "E31" was being displayed.

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Firmware Version 9.03 (4/6/2016)
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Issues Resolved (V9.02):

The following issues were discovered in firmware version 9.02:

1184: Profibus exception errors were encountered during CTI high temperature testing of Rev G hardware. The issue was resolved by modifying the wait states associated with reading and writing dual ported RAM.

1183: An erroneous hardware version error event was logged when starting up starting up on Rev E hardware.

1182: A Profibus dual ported RAM timing problem, which resulted in Profibus errors, was discovered during high temperature testing on Rev G hardware at temperatures near 60 °C.

1180: Event logging for the Altera Profibus part on Rev G hardware erroneously reported as a DstNi part when reset.

1179: When executing on Rev G hardware, the Profibus firmware did not reset the Profibus processor properly after encountering a Profibus subsystem error.

1176: On Rev G hardware, duplicate event messages "Profi Ready" were being logged during startup. An erroneous event, "Profi Slow Start", was also being logged during startup after power was lost while in Run mode. This issue problem was resolved by modifying Profibus startup timing.

1175: The main firmware file loader did not work properly with CTI manufacturing diagnostic code.

Other Issues Resolved:

The firmware modification that resolved issue FT-407, introduced in firmware version 8.04 and present in firmware version 9.02, has been removed. S*ee the firmware revision history entry for version 8.04 below for information regarding issue FT-407.* The modification was found to potentially cause a more serious problem: an on-line edit of PID loop parameters via the "PID Loop Edit" screen may cause the PID loop to become unstable. The problem and specific conditions that result in the problem are described in a 2500 Series Processor Technical Advisory (TA) dated March 31, 2016. This TA is available on the CTI web site: http://www.controltechnology.com/support/advisories. CTI anticipates a firmware release in May 2016 that properly resolves issue FT-407.

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Firmware Version 9.02 (2/24/2016)
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This version adds support for 2500 processors that use a Rev G printed circuit board (PCB), which contains new Profibus components. Rev G boards have the label 901G-2500-CXXX at the top of the PCB and report as Hardware Configuration 0x1 on the Product Information web page. This version is functionally equivalent to firmware version 8.04, which supports only 2500 controllers that use the Rev E PCB. Rev E boards are labeled 901E-2500-CXXX and report as Hardware Configuration 0x0 on the Product Information web page.

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Firmware Version 8.04 (10/29/2015)
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Issues Resolved:

FT-407: The initial values of the Control Blocks for both Alarms and Loops did not match that of the 555 PLC. These initialization values were modified to match the 555 controller. For both Alarms and PID Loops, the Rate of Change (ROC) alarm detection check was moved from pre-SFP execution to post-SFP execution to match the execution of the 555 PLC. PID Loop execution cycle was changed to provide Rate of Change (ROC) monitoring in all Loop operation modes (Manual/Auto/Cascade).

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Firmware Version 8.03 (10/19/2015)
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Issues Resolved:

FT-408: The correction for issues FT-293/FT-405 (listed below in "Firmware Version 8.02 (9/10/2015") was applied to the rungs in RLL Subroutines. In some instances, the RLL Subroutine logic would cause the PLC to go to FE 300 when transitioning from Program to Run.

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Firmware Version 8.02 (9/10/2015)
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Issues Resolved:

1148: Immediately after a firmware update, powering up the 2500 series controller while a 2500P-ACP1 module was attempting to initiate a data caching connection sometimes caused a fatal error condition (FE102 or FE10B) or caused the controller to halt during startup.

1144: Because the routine used to count broadcast packets over an interval of time was not operating correctly, broadcast storm protection software could erroneously detect a broadcast storm and turn off the Ethernet port prematurely.

1140: During the firmware update process, an event containing an error code of 138 was erroneously being logged, due to a system startup order problem in the Ethernet link status logic. This problem occurred only on the first execution after a firmware update.

1139: The size of the TCP/IP queue was not big enough, resulting in dropped packets and other artifacts when the packet rate was high or when a large burst of packets was received in a short amount of time. The queue size was increased from 32 to 128.

1138: After updating firmware, the data displayed on the Ethernet Statistics web page was incorrect until the data was cleared by the user.

1137: Corrected a memory boundary mapping that exceeded its designated region by four bytes. *This issue was discovered by CTI development and is not known to have caused a field problem.*

1131/1129/1106/1104: When receiving packets at a rate of approximately 1400 packets per second or greater, the Ethernet port link status would periodically toggle between connected and disconnected, interrupting communications between the PLC and 2500P-ECC1 modules, 2500P-ACP1 modules, HMI terminals and SCADA workstations. Events indicating Ethernet link Inactive were being successively logged without an interposing event indicating Ethernet Link Active. Continuous toggling of the link status eventually caused the Ethernet port to stop communicating and, in some cases, caused the PLC to declare a fatal error. Restoration of communications required cycling power to the PLC.

1090: DCP requests for drum addresses other than 1 yielded incorrect values.

1038: The scan overrun bit was not being set properly in all cases. When a scan overrun occurred, the Siemens 555 PLC set the scan overrun bit **only** when in RUN or EDIT mode. The 2500 PLC correctly set the overrun bit while in RUN or EDIT mode but also set the overrun bit when in PROGRAM mode, an incorrect action.

909: When a fatal error occurred while the PLC Ethernet port storm protection firmware was active, the Ethernet storm protection duration value reported on the Ethernet Statistics page was inaccurate.

890: If the PLC was powered off while the Normal I/O task was communicating with the I/O processor, the PLC would go to fatal error mode (60F). *NOTE: This issue was originally addressed in firmware version 7.05 but was re-opened to fix another error case.*

880: When Port Lockout was engaged, it did not prevent a change to the V memory size or a change from RUN to PROGRAM mode as required.

844: Discrete I/O points, control registers, and words could not be forced using task code 9E.

833: After a power up start, the "Last Counter Clear" date and time on the Ethernet Statistics web page was not correct.

823: For TC56 (Write I/O Configuration Table), if more than one message was required to transfer all the configuration data, it was possible to create a request that would overwrite data. *This issue was discovered by CTI development. Since this task code is used by programming and test software only, it is very unlikely that this condition would have occurred in the field.*

807: After disabling an enabled password, the reported status remained "enabled".

FT-293 / FT-405: User programs created in an old Workshop version (3.30, SP1) erroneously created invalid rungs for various complex RLL rungs and because of this they could incorrectly execute and set outputs**.**

FT-406: When both Loop PV Low/High values were changed from the default 0-100 range, the Loop Set Point (LSP) initial value was set to High limit instead of the Low Limit as done in 555 controllers. This issue could also affect the Sequential Shift Register (SSR) statement when using an address of type LPVL, LPVH, APVL, or APVH for the Table Register Start Address.

New Features and Improvements:

1150: Added the baud rate of the serial port to the Product Information web page.

1096: Added the subnet mask in dotted decimal and CIDR (Classless Inter-Domain Routing) notation to the Product Information web page.

1019: Added Unicast Packets Received and transmitted to the Ethernet Statistics page. Also added the number of transmitted Ethernet packets with Ethertype 837A. *Ethertype 837A is used to transfer data between the PLC and an advanced function module using data caching.*

937: Added the capability to change the PLC IP parameters via the local Ethernet port using PLC Workshop or by accessing a PLC web page (enabled by SW11). Also added the capability to reset the IP parameters to the factory default (enabled by Jumper D) and added the capability to display of the subnet mask in CIDR notation on the Multi-Segment Display.

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Firmware Version 8.01 (6/30/2014)
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Issues Resolved:

1050: After a duplicate IP address was detected, causing the Network Status (NS) LED to turn RED, a subsequent duplicate IP test, initiated by removing and re-inserting the Ethernet cable, did not set the NS LED to GREEN, even though the duplicate IP address problem had been corrected.

FT-401: Incorrect non-fatal error bit in STW162 was set when the CTI 2500 controller attempted to execute a missing SF program. Bit 8 (Attempt to invoke a restricted SF program or subroutine) was set instead of bit 16 (Attempt to execute an undefined SF program or subroutine).

FT-402: The PID Loop Velocity algorithm generated an incorrect output value when the calculated output was full scale negative.

FT-403: The EDRUM preset time was not reset when a JOG input caused the drum to advance to the next step.

New Features and Improvements:

875: Extended the number of control relays supported by the C400 processor from 32,768 to 56,320. The additional control relays are non-retentive. Access to this feature via PLC Workshop requires V4.8 and above. TISOFT cannot access the additional control relays.

1047: Clarified the text of the event logged when the number of outstanding data cache read requests exceeded 175. The data cache protocol is used to transfer data between the PLC and Advanced Function modules, such as the 2500P-ECC1.

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Firmware Version 7.10 (4/8/2014)
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Issues Resolved:

1043: A timing anomaly during power-up start occasionally caused the processor firmware to erase the user program. This problem was introduced in firmware version 7.08.
1044: A "low power" event was erroneously logged during power-up start.

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Firmware Version 7.09 (2/25/2014)
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Issues Resolved:

FT-399: Using the 'Find' function resulted in Fatal Error 113 (scan watchdog) in certain situations (for example, a large amount of L memory allocated and a search address that was not contained in the program). The error occurred because the Find function, which is a deferred task code, did not yield to the time slice allocated for Normal Communications and attempted to complete the operation in a single scan.

New Features and Improvements:

1026: The method for filtering multicast packets was improved and an entry was added to the Ethernet Statistics web page that counts the multicast packets that have been discarded by software. NOTE: If the Ethernet controller hardware is rejecting all multicast packets, as expected, the count of multicast packets rejected by software will be 0.

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Firmware Version 7.08 (1/21/2014)
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Issues Resolved:

FT-398: When located within MCR zone, the On-Delay and Off-Delay Coil outputs did not turn OFF when the MCR power flow is OFF. Similarly, the ONDC and OFFDC outputs did not "hold last state" when located within JMP zone.

1014: On occasion, a long period of time would expire (up to 5 minutes) before the PLC would allow a 2500P-ECC1 module to reconnect after a broadcast storm occurred.

1000: The PLC failed to perform a duplicate IP address test during power up start, as specified.

995: The PLC was not ready to update firmware immediately after when the "U01" status code was displayed

901: The Web server was slow to display some web pages.

New Features and Improvements:

1013: To aid in identifying the source of an Event Log, the PLC serial number and firmware revision is now written to the event log after it is cleared.

1006: To assist in identifying power supply problems, the capability to monitor the 5V supply has been added to the PLC.

992: The number of supported Advanced Function modules (such as the 2500P-ECC1), was increased from 4 to 8.

882: Added the capability to execute logic conditioned on last scan when transitioning to program mode. After the request to go to program mode, a Last Scan before Program Mode" flag (stw201.5) is set, and a final scan is initiated. The RLL logic can detect this condition and perform operations such as setting WY values to a designated state.

832: Added a log event when a program is copied from RAM to EEPROM (Flash Memory).

788: Added logging of loop mode transitions, loop lock/unlock transitions, and transition to Program-Freeze mode.

680: Added a means to clear Ethernet Statistics and a means to Display All Statistics, which is useful when transmitting diagnostic information to CTI support personnel. Improved the capability to navigate among web server pages.

671: Added the capability to send an ARP announcement and check for a duplicate IP address when the Ethernet link is re-established (cable is re-connected). The ARP announcement can improve the ability to re-connect in certain situations.

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Firmware Version 7.07 (4/8/2013)
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Issues Resolved:

976: Peak scan time was reported incorrectly when running a fast cyclic RLL task while scan type was set to "variable with limit".

961: A 2500 Series controller, running a pre-release of the firmware and communicating with a 2500P-ECC1 module as a Host Controller, sometimes encountered a Fatal Error 113 (scan watchdog overrun) while downloading a user program. *Note: NOTE: This problem occurred only with a CTI test build and was not introduced to the field.*

945: The Ethernet Statistics web page was not working correctly when the 2500 controller was executing a pre-release version of the firmware. *Note: NOTE: This problem occurred only with a CTI test build and was not introduced to the field.*

938: The 2500 Series controller would stop responding to data cache update requests from the 2500P-ECC1 module when the scan mode was set to "variable with limit."

917: When the IP address of a 2500-Cxxx controller was changed while it was communicating with a 2500P-ECC1 module as a Host Controller, the ECC1 module could not re-connect to it until power to the controller was cycled.

894: The Dual Power Supply status STW76 was not updating properly when only one RBC was operational in a redundant base.

762: Some diagnostic statistics displayed on the Ethernet Statistics web page, such as total number of bytes and packets received, were incorrect. A new method for gathering Ethernet statistics was implemented and the Ethernet Statistics web page was revised.

New Features and Improvements:

953: Updated Product Information web page to document dipswitch position 7 and 8 and to clarify the use of other switches and jumpers.

952: Increased the maximum Ethernet packet rate limit from 300 to 330 packets per 50ms. This allows the 2500-ECC1 to provide broadcast storm protection for the 2500 controller when its Ethernet port is connected directly to the Ethernet port of the ECC1 module using a 2% setting. (*See the 2500P-ECC1 User Manual).*

885: Provided a user-selectable method for reducing scan time with I/O configurations using only one RBC per base (non-redundant). When the method is selected, the I/O system will not consume time attempting to poll secondary RBCs.

884: Provided a user-selectable method for automatically disabling bases that are enabled but unconfigured, potentially reducing overall scan time. When a base is enabled but there is no I/O configuration for the base, the 2500-Cxxx controller will still consume a small amount of scan time attempting to communicate with the base. This feature is primarily intended for APT users, who have no manual means to disable bases.

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Firmware Version 7.05 (11/7/2012)
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Issues Resolved:

FT-396: The Move Element (MOVE) instruction incorrectly calculated the "last used Address" when using a BYTE data type with a "Source Index"(SI) parameter. This could cause an invalid "Table Overflow" error to be reported when the source table is located near the top of configured memory.

904: When the 2500 controller auto-selected crossover (MDIX) mode for the local Ethernet port, reception and transmission of Ethernet packets became erratic in certain circumstances. The problem did not occur when the mode of the 2500 controller Ethernet port is MDI, which is the default mode.

When two Ethernet devices are connected using a standard Ethernet cable, one device must use MDI mode while the other uses MDIX mode. Because Ethernet ports on switches and hubs are MDIX, the 2500 uses the MDI mode when connected to them. Consequently, typical installations will not encounter the problem.

The 2500 controller could auto-select MDIX mode only when it is directly connected to the port of a device that is normally in MDI mode, such as a PC or the 2500P-ECC1. In this case, the two devices negotiate the mode and either may ultimately auto-select MDIX.

The problem was resolved by disabling auto-negotiation on the 2500 controller Ethernet port, resulting in the permanent selection of MDI mode. This should not prevent a directly connected PC, 2500P-ECC1, or other device supporting auto-MDIX negotiation from communicating with the 2500 controller, since the device will auto-select MDIX. For existing installations that directly connect an Ethernet device that does not support auto-MDIX, you can re-enable auto-negotiation by setting jumper C to the enabled position.

902: Replies to task code 7F, 50 and 9D did not return the correct format when DCC was accessed.

900: Routine for servicing Task Code 52 did not support Loop or Alarm data types. In order to duplicate the SIMATIC® 505 controllers, the operation must ignore undefined data blocks while continuing to process all other blocks in the command range that are defined. Full support for TC52 is now provided, as well as allowing writes to other undefined Loop or Alarm control blocks without reporting an error condition.

898: The CAMP Memory Exchange command was not supported correctly.

891: The controller firmware could not be updated using an SD card due to a problem with the firmware file loader.

890: Powering down the PLC while a Normal I/O cycle was in process caused Fatal Error 60F.

New Features and Improvements:

Added support for the 2500P-ECC1 Ethernet Communications Coprocessor module.

Modified the system startup procedure to write the serial number of the CTI 2500 controller to the event log at system startup. This was done to facilitate matching of log files with the appropriate controller (#881).

Changed firmware update procedure to retain event log after update rather than deleting it (#859).

Labeled switch functions in the 2500 Product Information Web Page (#809)

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Firmware Version 6.18 (12/21/2011)
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FT-390: Downloading an APT program without performing a prior Clear All could generate an invalid expression, causing Fatal Error 701 to be reported. The execution engine has been modified to duplicate SIMATIC 505-1106 error reporting.

FT-387: Executing a TSET instruction in RLL program while a deferred task code request (such as "Find") was being processed created a time synchronization error and caused all currently executing timers to immediately expire.

Added support for SD High Capacity (SDHC) cards (DT# 670).

Added new RLL instructions: Delay Coils, Floating Point Compare Instructions, and Mega Event Drum. *NOTE: Access to new instructions requires PLC Workshop V4.60.*

Revised power monitoring routine to improve reporting of power supply anomalies (DT# 848).

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Firmware Version 6.17 (9/13/2011)
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Issues Resolved:

862:     An invalid request message sent by a special function module, such as a 2572-A, could cause the 2500 Series controller to transition to the fatal error state (Code 300).

754:     The 2500 Series controller erroneously logged off a base when the base was requested to execute diagnostics.

FT-382: If all Profibus slaves were deleted from an "Online" Profibus network, the Profibus operational mode could not be changed from OPERATE to STOP. This problem caused Workshop to become unresponsive when the user attempted to change the operational mode to STOP or attempted to load Profibus data using the "Load by Parts" method (which automatically attempted to place the Profibus network in STOP mode).

FT-381: The operation of the SF SWITCH statement was indeterminate when no accompanying CASE statement was present.

New Features and Improvements:

Added support for dual remote base controller configurations.

Added support for the CAMP General Module Query command. This support provides a common means for application software to obtain product information such as model number and serial number. (DT# 822)

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Firmware Version 6.14 (3/29/2011)
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Issues Resolved:

842: Task Code 9E incorrectly wrote V and K memory when multiple items of the same memory type were sent in the same transaction.

839: Accessing diagnostic information via the Web server was very slow when the PLC scan was set to a fixed value that substantially exceeded the time required to process the user logic.

831: Added fatal error 102 to differentiate an unknown error from a hardware watchdog error (Fatal Error 103).

826: Corrected an error introduced in V6.11 that caused the SF Print instruction to drop the first 8 characters in the print string.

820: The Profibus diagnostic bytes accessed by the RSD command were contained incorrect data.

816: The Ethernet stack would stop accepting TCP connections once the connections were closed 256 times.

725: An invalid request from a special function module to the 2500 Series controller could cause a fatal error 300.

FT- 379: The MIRFT instruction did not execute correctly within active JMP/MCR zones.

FT- 378: The Special Function FSTR instruction did not execute when bit-of-word addresses were assigned to status bits.

FT- 377: The RSD instruction was incorrectly calculating the length for the Profibus Diagnostic data, and the message size was 2 bytes shorter than maximum specified length.

FT- 375: When a Special Function program was called from an Analog Alarm, the First Run (T7) flag was not cleared after the first execution

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Firmware Version 6.11 (9/1/2010)
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Issues Resolved:

801: When a user program was saved to EEEPROM, the fixed scan time was not saved.

796: Task Code 9D returned invalid data when attempting to read TT type 0x1E (Loop Status).

769: After the configuration of a single Profibus slave was modified, the other Profibus slaves were left in a deactivated state.

735: After a period of heavy Ethernet traffic (network storm), programming workstations and HMI were unable to reconnect to the Ethernet port on the 2500 PLC after the storm subsided.

732: Heavy Ethernet Traffic (network storm), caused fatal error 103 (Hardware Watchdog Timeout).

669: CVU workstations and other devices using task codes 77 and 7A could not access loop and alarms data, since these task codes were not supported by the previous version of the 2500 controller firmware.

FT-369: The controller did not prohibit invalid values from being written into Loop Setpoint (LSP) and Sample Time (LTS) variables via SFPGM or HMI. This caused the loop calculation to produce an invalid Loop Error (LERR) value that resulted in invalid Loop Bias (LMX) and Loop Output (LMN) terms.

FT-368: Parameters values P6 - P10 could not be accessed by the called SFSUB. An "Address out of range" error (value = 02) was returned when attempting to access these parameters.

FT-367: When the LEAD-LAG statement was inserted in a SFSUB program called by a Loop, Alarm, or Cyclic SFP, a "Non-cyclic SFP statement" error (value = 83) was returned.

FT-366: Attempting a 'Block Move' while editing a program On-Line Program using TISOFT caused CPU Fatal Error.

FT-364: The STFN instruction did not allow 'W' memory-type address to be used as INDEX (IN) parameter

FT-363: An in-line PID instruction running within a Cyclic Task caused a Fatal Error 113 (Scan Watchdog).

FT-362: The MATH statement produced imprecise results when converting a long integer value to a real number.

New Features and Improvements:

800: Increased SFIO stack size to accommodate new features.

799: The system exception handler was modified so that multiple events were logged using a repetition counter, improving diagnostic capabilities.

772: The I/O Interface was modified to log extended text when an SF module in the local base generates an invalid request to the 2500 controller, improving diagnostic capabilities.

771:     The TCP/IP stack was modified to send an ARP Announcement during power-up start. The ARP announcement causes the ARP caches on all network hosts to be updated, enabling HMI and programming workstations to immediately connect to a replacement 2500 controller

714:     Enhancements to system status words. Added bit 6 to STW231 to flag that at least one Profibus slave is not in data exchange mode. Modified STW3-STW9 to set bits to 0 only when the corresponding slaves are in data exchange mode. Unconfigured slaves or configured but not activated slaves will have their corresponding bits set to 1.

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Firmware Version 6.08(3/24/2010)
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Issues Resolved:

768: In some Profibus configurations, the status of the Profibus slaves (as reported by status bits in STW3-STW9) erroneously transitioned between 0-1, indicating a temporary "offline" state. This problem, introduced in V6.07 in an attempt to improve performance of the Profibus interface, was the result of a timing conflict in the data transfer between the main controller and Profibus processor. The issue was resolved by increasing the time interval allowed for completion of the data transfer.

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Firmware Version 6.07(3/15/2010)
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Issues Resolved:

764 and 765: When communicating with I/O bases that contained more than 256 bytes of input data (i.e. 9 modules with 16 words of input data) the I/O base would be logged out. *NOTE: This error existed only in firmware versions 6.0, 6.02, 6.03, and 6.05 using CPLD version 6.02.*

763:   The 2500 I/O interface did not comply with product functional specifications which required that the interface send a "disable outputs" request to all I/O bases (local and remote) if the main processor stopped communicating with it.

761:   When two 2500 series controllers running firmware version 6.03 or 6.05 were connected to an Ethernet hub, a task code request sent by a PC connected to the hub to one controller would be responded to by both controllers. *This problem did not occur if the hub was replaced with an Ethernet switch.*

751: When all remote bases were disabled, the remote base controller status would periodically change from 3 (no communications) to 7(communications OK, no configuration). This occurred because the 2500 controller was sending a keep-alive poll to the bases. When **all** bases are disabled, no keep-alive polls should be sent. *NOTE: This did not affect the operation of field I/O.*

746: The address decoder error handling routine did not have a default case. As a result, it was possible for an unanticipated error to cause a memory exception. *NOTE: this issue was created as a result of an internal code review. It is highly unlikely that this error would actually occur.*

740: The Profibus processor did not respond to data access requests from the main processor in some circumstances, causing the main processor to attempt

recovery by resetting the Profibus processor. This caused to Profibus network to go offline while the Profibus processor was rebooting.

722: Workshop was unable to read Profibus status when port lockout was enabled on another port or when HMI port 4450/1505 was used to access the PLC.

662: The 2500 controller would erroneously log out a Series 500 series base that did not respond to an operator initiated request for "RBC Part Number".

647: Downloading a program that attempted to set the fixed scan time beyond 255ms caused the 2500 Series controller to report a fatal error 113. The maximum fixed scan time is now clamped at 255ms. *NOTE: Programs transferred from older PLCs such as the 525 may have fixed scan times above 255ms.*

485: Certain recurring I/O error events, such as a duplicate remote base controller address, could fill the event log, potentially overwriting other significant events in the log.

FT- 359   SF bit-of word access was not reporting all bit values correctly for V, K, WX and WY memory addresses greater than 1024.

FT- 357   SF Variable LVF mode bits (bits 1-3) were not cleared after a "Complete Restart". This interfered with the ability to change the loop mode using LVF.

FT- 356   Event Log Text for a SF compile error is in error; failure reason is reported as "success".

FT- 355   Added support for Task Code 4B and 4C used by the CTI TCAM and other Operator Interfaces. .

FT- 353   Discrete outputs in MWIR, DCAT, MCAT, SHRB, and all drum instructions within a JMP/MCR did not hold last value in output-disabled state.

FT- 351   A PACK statement that moved an integer into discrete bits did not work correctly as generated by an APT program.

FT- 350   The RLL COMPARE instruction "GT" and "LT" bits were updated every scan within a JUMP and MCR zones even when output-disable state was active.

FT -345   The search function could not find bit of Word addresses in an SFSUB

FT- 344   Entering a value of 0 as the time base for an EDRUM instruction caused an "illegal instruction" error when the 2500 controller was set to RUN mode.

New Features and Improvements:

717: Increased maximum number of Profibus slots per slave that could be configured from 64 to 128. This was done to facilitate the use of devices such as the DP/PA link coupler.

714: Added new status bits to STW244 and STW245. Added reporting of Fatal Error code in STW246.

713: Added the capability to automatically assign an IP address at power-up start if no IP address is present or the IP address is 0.

710: Added the capability to log an event when a data point is forced or unforced.

694: Enhanced the information added to the event log when a scan watchdog error occurs to facilitate troubleshooting.

692: Reduced the TCP keep-alive interval and number of retries for the local Ethernet port to allow faster reconnection after the connection is disrupted.

688: Added the capability to set the IP address of the local Ethernet port while the 2500 controller is in RUN mode.

672: Added the capability to logically detect whether the Ethernet port is connected or disconnected from an Ethernet network.

337: Added communications support allowing the CTI 5250-TI5 Operator Interface (and other products using task code 4B and 4C) to read timer/counter and drum program tables.

CTI Internal Issues Resolved
The following resolved issues relate to development versions that were never released to the field: 757, 750, FT-358.

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Firmware Version 6.05 (12/15/2009)
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740: Profibus network could not be automatically restarted after the Profibus processor stopped communicating. *NOTE: This resolves one of the issues contained in DevTrack 740.*

698: The local Ethernet port stopped processing Ethernet packets after an indeterminate period of time when connected to a network with moderate activity.   Recovery required cycling power to the 2500 Series controller. Heavy Ethernet activity could cause a fatal error 113 or fatal error 103, despite the changes introduced in firmware version 6.03*. NOTE: This release substantially improves the susceptibility of the local Ethernet port to excessive network traffic. However, extreme packet rates, sufficient to disable most devices on the network, can still cause the Ethernet port to quit communicating or a fatal error to occur.*

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Firmware Version 6.03 (10/23/2009)
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Firmware Issues Resolved:

727: The controller would not allow task Code 39 to be used to set the scan time to variable mode.

723: In rare circumstances, unconfigured Series 500® remote bases could time out when Special Function modules were installed.

720: Series 500® bases were erroneously logged out because of an error in handling the RBC serial port.

712: Web based scan time statistics were incorrect when the "Start with Overlap" option was selected.

698: Heavy Ethernet activity could cause the scan watchdog to trip, resulting in fatal error 113. In some cases, the hardware watchdog could trip, causing fatal error 103.

695: TCP/IP processing was changed from scan-triggered to preemptive operation.

669: Analog loop and alarm data could not be accessed using a CVU because it used task codes not supported by the 2500 controller. A user activated means of logging rejected task codes in STW401-410 was added.

Improvements:

Enhanced Ethernet diagnostic statistics to aid in analyzing network problems.

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Firmware Version 6.02 (8/31/2009)
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Firmware Issues Resolved:

709: Changes to I/O timing introduced in V6.00 and V5.00 caused some Siemens® RBCs in certain I/O installations to report a diagnostic failure (error 01) on the RBC display.

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Firmware Version 6.00 (8/5/2009)
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686: The Siemens® ASCII module did not work with the 2500 controller.

682: If the 2500 controller shipped with an invalid IP address, the IP address could not be changed.

679: The Link Status, Interface Speed, and Duplex mode were incorrectly reported in the Ethernet Statistics web page.

677: The serial port communications task did not execute during idle time within a fixed scan. Allowing the task additional time to run can improve serial communications performance for applications using a fixed scan.

642: The 2500 controller would go to fatal error state (error 618), when a task code request to read networks (TC20) was received from TISOFT connected to an RBC serial port.

596: The 2500 controller erroneously detected a module mismatch when an SF module was installed and the SF bit was not set in the I/O configuration.

FT-329: A process "bump" could occur when the PID loop operating mode was changed from manual to auto if the Loop PV Address parameter contained an address and the LPV value was also set by a special function program called from the loop.

FT-328: The SDT instruction did not allow T memory to be specified for an output address.

FT-326: The PACKRS instruction allowed Invalid data to be loaded into a Ramp/Soak Table.

FT-319: STW232 bits were not set properly immediately after an RLL program containing an RSD instruction was compiled.

FT-317: STW1 bits could be overwritten by the MWI instruction.

New Features and Improvements:

Improved Remote I/O reliability in high noise environments when used with CPLD firmware V6.02.

Improved the I/O diagnostic statistics Web Page (requires CPLD firmware V6.02).

Reduced Remote I/O scan time for I/O configurations that do not contain Series 500 I/O.

Added support for new SF program/subroutine instructions and password protection for SF subroutines. NOTE: Requires PLC Workshop V4.50, anticipated to be released in August 2009.

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Firmware Version 5.00 (5/4/2009)
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Firmware Issues Resolved:

654: Removing power while in run-time edit mode could cause the controller to start up in fatal error mode (FE60C).

653: The time reported in the PLC Scan Statistics diagnostic web page for cyclic RLL execution was twice the actual value.

651: Changing the IP address while a TCP connection was established caused a fatal error to be reported.

645: Reduced scan overhead for bases that were enabled but not configured.

643: Priority for Profibus immediate I/O task needed to be increased (CTI internal).

639: A temporary undocumented change allowing SW9 to force the Ethernet speed to 10Mb was removed.

637: Peak times on the PLC Scan Statistics diagnostic web page were underreported when using the "Start with Overlap" option.

630: An APT program that would load in a Siemens® 545L would not load in a model C100 due to differences in memory allocation.

613: Noise occurring on the remote I/O network while the 2500 controller was waiting on a reply message would cause the controller to miss the reply. Under certain circumstances this could cause a remote base to be logged out and placed in a fail-safe condition.

575: During the firmware update process, if power was removed while I/O flash was being written, the controller would start up in fatal error mode with a confusing fatal error code. The firmware update procedure was changed to detect and report the problem by returning a specific error code.

FT-316: When the PACK instruction was used to pack less than 16 bits into a word, unused bit bits were not cleared (set to 0).

FT-315: SF lead-lag instruction results did not match the Siemens 505® controller when the lead-lag ratio was greater than 1.0, less than 1.0, or when the output was specified as a real number.

FT-309: The PACK statement did not permit bit memory types to be written to loop/alarm CF variables.

FT-308: An error was not reported when the user attempted to create a loop that already existed.

FT-307: Cyclic Special Function programs would stop running when an Exit on Error instruction was executed.

FT-306: Output of a multiple parallel branch was ON when the input conditions were NOT met (introduced in 4.03).

FT-302:   The DCAT instruction did not honor changes new timer preset when the
          associated TCP value was changed.

FT-271:   Executing a syntax check on a very large program could cause the scan
          watchdog to trip in certain circumstances.

New Features and Improvements:
- Added the capability to update firmware using the SD card interface.
- Improved the scan execution time and remote I/O performance.
- Added PLC mode changes to the event log.
- Improved readability of fatal error log event (#661).
- Added a log event for normal power down (#660).
- Reduced run-time checksum evaluation overhead (#652).
- Improved Profibus logging (#648, #633)).
- Added a duplicate IP address test for the local Ethernet port (#481).
- Added web diagnostic statistics for Ethernet, TCP/IP, and remote I/O.


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Firmware Version 4.03 (12/15/2008)
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Firmware Issues Resolved:

632:    Control Relay forces that were cleared using the "Clear All Forces" command
        (Workshop) or "Unforce All" command (APT and TISOFT) did not remain
        cleared after a subsequent power on start.

620:    User was unable to re-connect to port 4452 after changing the IP address while
        all TCP connections were in use.

619:    When the user program was stored in flash and the program source was set to
        flash, items designated as read-only could still be written using task code 5A.

614:    Excessive PRINT activity on the RS-232 serial port prevented the USB port
        from communicating.

569:    An attempt to access DCP for unconfigured drums using the CAMP protocol
        did not return an error as expected.

557:    An attempt to access word code 7800 did not return error code 09 as expected.

FT-301: The PACK statement did not work correctly when attempting to move
         Loop/Alarm Control Flags to/from bit memory (C, X, and Y).

FT-300: Performing an on-line edit to an RLL program that contained two Task 2
         instructions caused the controller to go to fatal error mode.

FT-299: Cyclic SF programs triggered erratically when the "Time Set" instruction was
         executed.

FT-298: The LVF address data field could be interpreted incorrectly in a loop
         calculation function when the loop transitioned to manual mode. Under certain
         conditions, this could result in bit 'C1' erroneously being set to zero.

FT-295: A cyclic SF program did not immediately stop executing after the related
         SFPGM instruction was edited on-line to change the execution to "in-line".

FT-294: Cyclic SF programs with the "continue on error" parameter set to "no" did not stop on error after an error was encountered.

FT-293: SFPGM instructions were being triggered when the input conditions were false. This occurred because of a bug in the Workshop fss file. The 2500 firmware was modified to detect and correct the bug.

FT-292: This issue corrected multiple problems:

- The following RLL instructions were not operating properly when W or B memory addresses were used: DCMP (W), MOVE (W), DIV (W), IMC (W and B), MWFT (W), MWTT (W), PID (W), RSD (W), SMC (W and B), TCMP (W), TSET (W), DCAT (B), DRUM (B), EDRUM (B), MCAT (B), MDRMD (B), MDRMW (B), MIRFT (B), MIRTT (B), MIRW (B), CTR (B).

- MOVE instruction would fail if the destination address included the last configured location for specified memory type.

- RSD instruction would not turn on the output coil if called when Profibus mode was set to STOP or the specified slave had not issued a diagnostic.
  SMC instruction could operate incorrectly because the mask bits with a value of 0 were not being stored and evaluated properly.

- The PID instruction (called as Fast Loop from RLL) would terminate with error if triggered to run with no SFP defined for execution within PID calculation (SFPGM = None).

New Features:

Status words can now be read when the controller is in fatal error (DT- 371).

Implemented remote I/O improvements that reduce susceptibility to RBC jabber.

Modified TCP/IP stack data message processing to run within the network time slice.
Set serial port parameters to 7, odd and 1 when port is selected for printing.

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Firmware Version 4.00 (9/30/2008)
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Firmware Issues Resolved:

609: First Scan flag bit 9 was not set after a power up restart with a bad battery.

608: V memory was not properly cleared after a power cycle with a bad or missing battery.

603: Under certain conditions, the event log could be corrupted, causing FE 103.

600: After a power up start in RUN mode, the image register was not updated before the first scan.

598: Excessive noise on the serial port could cause the controller to report a fatal error.

592: Task code 14 failed to validate the upper bound of an address (CTI Internal).

590: Removing power from the Profibus network would cause the controller to report a fatal error.

584: Reported peak scan time was erratic when there was no user program was loaded and no I/O was installed.

552: Powering off a DP slave which provided active bus termination when there was no termination at the CTI 2500 Profibus port would cause the controller to report a fatal error.

480: GRIDCONNECT Serial to Ethernet converter would not work when connected to the CTI 2500 local Ethernet port.

FT-291: "NOT" contacts were improperly executing when contained in a complex network with more than 16 parallel branches.

FT-289: The MIRW instruction did not execute properly in an RLL subroutine using "B" memory.

FT-288: TCC values were not restored after power was cycled.

FT-287: The operation of setpoint clamping for PID loops differed from the Siemens 505$^®$ controller.

FT-286: Analog alarms were not handled properly when the alarm deadband overlapped the low/High alarm values.

FT-284: Loop Reset Time could be set to 0 using the MATH or PACKLOOP statements, causing the loop to function erratically.

FT-283: One Shot contacts erroneously triggered when transitioning from Run to Edit mode.

New Features

- The special function PRINT instruction is now supported by the controller. *NOTE: Workshop V 4.30 and above is required to program the PRINT statement.*

- The product serial number is now reported in STW 258 – 259. (DT-601).

- Task code processing was enhanced to support Maple Systems terminals.

- Added a new diagnostic web page with enhanced scan statistics. (DT-602).

- Added support to report dual power supply status in STW 168.

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Firmware Version 3.20 (8/21/2008)
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FT-279: Loop reset time could be set to 0 via HMI or a data window. This invalid value caused erratic loop operation.

FT-277: MCR instruction did not work correctly in some cases where the program contained more than one MCR statement. .

FT-276: B memory was not accepted as a valid memory type within a Compare instruction.

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Firmware Version 3.18 (8/18/2008)
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Firmware Issues Resolved:

589: Discrete forces were erroneously cleared after cycling AC power off and back on.

585: An attempt to execute an immediate input mapped to a Profibus network that had never been brought online caused the RLL to stop processing instructions following the immediate I/O instruction.

573: The firmware update procedure did not display an error code when a problem was encountered updating the Profibus interface firmware.

555: Remote I/O bases in some installations would erroneously log off during operation. This situation was most prevalent when the configuration contained Series 500 I/O.

549: Some installations using Series 500 I/O were reporting a significant number of remote I/O channel receive errors (STW 145) and timeout errors (STW 146).

543: Using the Complete Restart or Partial Restart commands to clear a fatal error while the battery was disconnected caused the 2500 controller to erroneously clear the user program.

GT-275: An RLL network that contained parallel branches, each branch containing a NOT instruction combined with another after the branch ended did not execute properly. The output was always off regardless of the condition of the inputs.

FT-272: The CTR instruction was operating differently than the Siemens Series 505® controller in certain situations. When TCC=TCP the output was on (as expected). Subsequently moving a value from V memory to TCC that is less than TCP caused the output to go off.

FT-270: T memory addresses T1 – T7 were erroneously re-initialized every time an SF program that was called from a Loop or an Alarm started execution. This occurred even if the SF program had been previously suspended because the time slice expired before the SF completed execution. If the user had re-used T1-T7 for other purposes before execution was suspended, these values were overwritten.

FT-269: The RLL BCD to Binary conversion instruction was not working properly when the most significant bit (Bit 1) was set in the starting value.

FT-268: The SF Program MOD operation did not always work correctly when used in a MATH statement due to the rounding precision being used in floating point calculations.

FT-267: The WorkShop "Find" operation used to search for a specific instruction within a PLC program could return a failure or fatal error due to an error in decoding the network address.

FT-266: Fatal error 704 (Invalid SF number) was encountered after completing a run-time edit of the RLL that changed the address of the output coil following a subroutine call.

FT-265: The PID Loop Ramp/Soak operation could not be restarted by setting its associated LRSN value to the step number that corresponds to the start of an R/S profile. The same problem could be encountered when attempting to change LSRN from HMI.

Enhancements:

567:     Enhanced product web server to provide the capability to display/print all events in the event log and to improve presentation of information and options.

FT- 264: Reduced scan time overhead when tasks running in a time slice had nothing to do.

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Firmware Version 3.12 (6/4/2008)
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Firmware Issues Resolved:

565: After installing V3.08, some CTI 2500 processors reported a fatal error. This occurred when the flash area reserved for the user program contained an invalid value, causing the flash checksum to fail on startup.

563: An unsupported or invalid request from a special function module caused the processor to report a fatal error #113.

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Firmware Version 3.08 (5/15/2008)
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Issues Resolved:

FT-264: The "PACK TO" instruction did not allow the Data Start Address to be entered as a constant.

FT-263: When multiple instances of the same SF subroutine were called from cyclic RLL, the SFS would eventually stop executing.

FT-260: Executing a SF subroutine in-line within a cyclic task could cause a fatal error when another SFS, running in a time slice, was interrupted after allocating temporary memory.

FT-259: The IMATH statement produced an incorrect result when the "shift left" was used with a long integer.

FT-258: An online search of SF subroutines in WorkShop did not find in-line SF subroutines.

FT-257: A Task 1 label inserted after the first network would cause a cyclic task that did nothing execute every 10ms. This added unnecessary PLC scan overhead with no other adverse effect.

FT-255: Executing a syntax check of a program containing a large number of SKP and LBL instructions caused the scan watchdog to trip, resulting in a fatal error.

553: Cyclic RLL Task did not execute on the first scan after transition from Program to RUN mode except after CPU restart or complete download.

551: A problem reporting an error on the remote I/O network caused a Fatal Error 300.

545: Single Scan mode did not work properly using TISOFT.

543: When the Partial or Complete Restart command was used to clear a fatal error while the battery was not installed or enabled, the user program was cleared.

541: A recurring Profibus network error eventually caused a Fatal Error 300.

Enhancements:

Implemented the capability to store a user program in on-board flash memory.

Added STW 455-469 to display receive errors by base.

Added STW 487 – 501 to display RBC timeouts by base. (DT533).

Improved Event Log formatting of variable text strings (DT435).

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Firmware Version 3.07 (4/24/2008)
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Issues Resolved:

558: Using V3.05 firmware, the CTI 2500 processor would erroneously report a fatal error when connected to a Series 500 TIWAY NIM.

556: Following a fatal error condition, the CTI 2500 processor would erroneously log an error if the SFIO input queue contained a deferred task code request.

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Firmware Version 3.05 (3/17/2008)
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Issues Resolved:

413: Remote I/O bases, attached using RS-485 cable, were erroneously logged off in some installations where line jitter was high.

502: Remote I/O bases, attached by coaxial cable, were erroneously logged off in some installations where line jitter was high.

522: A fatal error 300 would sometimes occur when removing RS-485 remote I/O connections.

524: Web server pages did not contain proper product nomenclature.

526: A fatal error would occur when attempting to connect to the CTI 2500 Ethernet port when the maximum number of TCP connections was exceeded.

528: STW 139 (number of forced bits) and STW 140 (number of forced words) were not cleared when a Clear All request was received.

532: Entering an IP address of 0.0.0.0 prevented the TCP/IP stack from restarting until power was cycled.

535: STW 146 (Channel 0 Timeout) was occasionally incremented in error.

537: TC17, Find Word Force, reported incorrect values for WX and WY addresses above 1024.

540: TC55 failed to recognize position of Jumper A when configuring PLC memory.

Enhancements:

This release contains several modifications which reduce scan time when using remote I/O.

This release contains significant improvements that increase remote I/O tolerance to sub-optimal conditions. **For best results, customers having remote I/O timeout problems should concurrently update the remote I/O CPLD code to V5.0. Contact CTI or your distributor for upgrade information.**

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Firmware Version 3.02 (2/21/2008)
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NOTE: V3.02 files with a file date earlier than 2/21/08 should not be used. These files did not support C100 processors and the local serial port correctly.

Issues Resolved:

FT-254: Loops were not set to manual mode when a Complete Restart command was initiated.

FT-253: Loops were not queued for execution in the correct order when multiple loop execution timers expired concurrently. Loops with shorter cycle times should have been queued before loops with longer cycle times but were not.

FT-250: SF Scale Statement integer results were truncated instead of rounded.

FT-249: The MOVW instruction was not executing properly when using memory locations TCP1024 or TCC1024 as either source/destination parameter. Corrected limit checking issue with this instruction.

FT-248: See FT-247

FT-247: Frequently toggling loops in and out of cascade mode without a configured remote setpoint would eventually cause a system exception, resulting in fatal error 300. *NOTE: This fix was included in V3.00 but not confirmed to be resolved at the time V3.00 was released.*

FT-246: The method used to queue SF programs would not allow all enabled SF programs to run in certain configurations. In the worst case scenario, the problem would occur when attempting to queue more than 32 Priority SF programs or 32 Normal SF programs. *NOTE: The fix allows up to 1023 Priority or Normal SF programs to be queued concurrently.*

520: PLC memory was not cleared when executing a Power-On Restart command (TC 34) with the battery bad, missing, or off as required.

517: Loop Mode could not be unlocked from the Ladder Mode when both modes were in Run.

515: Changes to time slice values did not take effect immediately as required. A soft restart or power cycle was required before taking effect. *NOTE: This problem was introduced in firmware version 3.0.*

514: User was able to change the value in STW139 (number of discrete forces) and STW140 (number of word forces) by manually writing to the status word. This has been prevented in the new release.

513: The CTI 2500 controller would not communicate properly with a Simatic MP-370 Operator panel using an RS-422 serial connection, sometimes resulting in fatal error #103. This was caused by the failure of the serial controller interface to recover from corrupted data packets.

410: The local Ethernet port would stop responding after a storm of network broadcast packets and would not recover until power was cycled.

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Firmware Version 3.00 (1/15/2008)
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Issues Resolved:

FT-244 Edits to analog alarms were erroneously limited to 64 on model C200 and 16 on model C100.

FT-241 The loop and alarm deadband was not functioning properly when the PV went negative, potentially causing the alarm to chatter.

FT-240 The loop and alarm setpoint was not being clamped properly when remote setpoint was not used and the clamping limit was 0.

FT-239 When using an in-line SFSUB, the SFSUB would not stop execution when the SFEC variable was written and "Continue on Error" was set to no.

FT-238 The PID instruction incorrectly passed power flow when an "S Memory Busy" error was encountered, preventing the PID from executing.

FT-236 An SF edit that disabled a Special Function Program caused other Special Function Programs to stop executing

FT-234 When a three word SFEC block was written and subsequently cleared, all words were cleared. This has been changed to clear only the first word, emulating the Siemens 505® controller.

512 The C2500 rejected requests from TISOFT 7.1 to change the PLC time/day, which contained invalid data in the high nibble of the day number byte. The modified code ignores the high nibble.

510 The peak and dynamic discrete execution times were incorrectly reported when the controller was in Program mode.

508 Fatal Error 103 was occasionally returned when the web server End button was clicked.

505 A task code request to read I/O channel status did not return the same value as the Siemens 505® controller.

503 Scan watchdog would occasionally trip when running a fixed scan with a frequent cyclic task.

498 Connecting and disconnecting cable from a coax RBC while running sometimes caused Fatal Error 300 to be reported.

494	0.1 second timer (TMR) would count too fast when a TSET instruction was executed during the timer interval.
453	Changing the IP parameters for the local Ethernet port while a TCP client was connected prevented all clients from re-connecting to the local Ethernet port.

Enhancements:
New, faster TCP/IP stack

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Firmware Version 2.16 (11/16/2007)
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Issues Resolved:

FT-231 Multiplexed timers embedded in a SUBR did not work correctly.

FT-232 Alarms were not cleared properly when other alarms became active before the next sample interval.

FT-233 Incremental download using APT programming software caused an "illegal instruction" error.

325	CTI 2500 controller did not support the 2541 Redundant Processor Module.
449	Old 2112 and 2114 RBC modules were not supported by the CTI 2500 controller.
466	STW 223-224 (binary time of day) value was not calculated correctly.
467	STW 226 bit 10 was not cleared during startup when default time/date used.
470	Cyclic Scan time interval was erroneously extended when using fixed scan time.
472	Slow performance when using the 2572-A in multicast mode with the CTI 2500 caused the 2572-A message queue to fill up. As a result, the application would not work properly.
473	STW 299 did not reset when changing from fixed to variable scan mode.
476	Profibus did not automatically recover (go back to Operate mode) when a bus error (such as a shorted wire) occurred.
477	Changing the time occasionally caused a fatal error to be reported.
479	Profibus startup memory diagnostics were not reported correctly.
484	PID reset value could be set to an invalid value (0) using a task code, which caused the loop algorithm to fail (divide by 0 error).
486	STW 145 and 146 (remote I/O communications error and timeout counters) could not be cleared when communicating via a 2572-A or an RBC serial port.
489	The CTI 2500 controller caused the CTI 2572-A module to reset when the CAMP protocol was used to request an unconfigured loop or alarm value. This occurred because the controller response to this request was not compatible to the Siemens 505[©] controller. (Note: Some I/O servers will request a block of data, including items not requested by the HMI).

Enhancements:

Added support for RBC serial port for remote I/O using CTI 2500-RIO or Siemens® 505-6851 remote base controllers.

Enabled hardware watchdog on the master processor.

Improved execution speed of contacts and coils slightly.

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Firmware Version 2.14 (10/3/2007)
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Issues Resolved:

FT-222   RSD Instruction did not load diagnostic data into the designated memory location.

409   The CTI 2500 controller did not support high-density mixed-mode modules properly, including the Siemens® 505-7003 high speed counter module and the CTI 2505 Vibration Sensor Interface Module.

464   STW 231 bit 16 was not set when a program with no Profibus configuration was loaded.

469   The USB port failed to function after a power-on start when the PLC clock month was set to October.

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Firmware Version 2.12 (9/24/2007)
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Issues Resolved:

FT-192:   The CTI 2500-C100 controller reported the incorrect maximum number of loops and alarms to the programming software.

FT-210:   Special Function SCALE and UNSCALE instructions did not handle long integer addresses correctly. The high 16 bits of the address were ignored.

FT-212:   An RLL program containing a MWIR instruction using a B variable for the IR parameter prevented the C500 controller from transitioning to RUN mode.

FT-214:   The Special Function LEAD/LAG statements did not produce the same results as the Siemens 505® PLCs.

FT-215:   When attempting to use the TISOFT block and delete functions to delete a single SF program, all SF programs were deleted.

FT-216   When performing a run-time edit in APT, an "unsupported task code" error was returned.

FT-219:   A checksum evaluation bug caused the CTI 2500 controller to erroneously go to the fatal error state when evaluating some SF programs.

FT-220:   The MOVW instruction did not execute correctly in an RLL subroutine when the destination address = W20.

FT-223:   All output coils within the JMP/JMPE zone were not frozen when the JMP instruction lost power flow.

FT-224:   Some coils within a MCR/MCRE zone did not function like the Siemens Series 505® PLC when the MRC instruction was disabled. Coils with bit of word addresses and DCAT/MCAT alarm output coils were not cleared as required.

FT-225:   Setting the time and date caused user program timers to time out.

388:    Intermittent Profibus connection occasionally caused the CTI 2500 controller to go to the fatal error state. Changes were made to report this condition as a non-fatal error.

413:    The CTI 2500 controller would not maintain communications with remote bases in noisy environments or installations with out-of-spec topologies. Substantial changes were made to the I/O interface software to enhance noise immunity.

426:    User Programs with heavy cyclic RLL programs could cause update of the Multi Segment Display (MSD) to become sluggish.

433:    Status Word 299 was not consistently cleared when peak scan time was cleared.

441:    Some Profibus configurations caused the CTI 2500 controller to erroneously go to the fatal error state when starting up in RUN mode.

442:    IP Address failed to advance when some user programs are running.

444:    Profibus interface diagnostic failure during startup caused the PLC to go to the fatal error state, even if Profibus was not used. The behavior was modified to log an event if the Profibus interface reports a diagnostic error at startup. The Profibus interface will be evaluated for errors only after it is configured for use.

446:    Program download over the local Ethernet port was slower than expected. The modification results in a speed improvement of 2 times.

448:    Status word 144 did not report tenths and hundredths of a second correctly.

450:    A slower than expected response of the Profibus interface occasionally caused the controller to go to the fatal error state. The timeout was increased to allow the interface to process special conditions.

452:    Using APT with APTNet to perform run time edits on the CTI 2500 controller via a 2572-A module would sometimes cause the 2572-A module to reset.

454:    An "Address Out of Range" error was incorrectly reported when attempting to load some programs to a CTI 2500-C200. The highest analog point address was improperly calculated when a low density discrete module was in the slot following an analog module.

459:    The user was prevented from entering the month as October when setting the date.

462:    The C2500 controller prevented a program containing a Profibus configuration from being loaded unless all slaves were mapped to I/O register addresses.

Enhancements:

The Fatal Error code is now displayed on the Multi Segment Display (MSD) when in fatal error.

Event logging has been modified so that consecutive occurrences of the same event increment an event counter rather than creating a new event record. This change reduces clutter in the event log.

The TCP/IP Address can now be set when the controller is in Fatal Error state.

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Firmware Version 2.11 (9/10/2007)
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Issues Resolved:

417: The Remote I/O interface was overly sensitive to noisy environments and improperly terminated cables (including RS-485 cabling). As a result, remote bases were erroneously logged off. *Changes were made to the I/O interface code to enhance noise immunity.*

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Firmware Version 2.09 (8/29/2007)
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Issues Resolved

FT-207: The Index Matrix Compare instruction did not function properly. The CUR PTR value selected the incorrect mask for comparison.

FT-208: "S Memory Busy" error was erroneously set in STW 200 when editing SF programs that are queued for execution (**not** marked as In-Line). This error should be returned only for SF programs that are marked as In-Line. When this error was set for a queued SF program, the program was erroneously removed from the execution queue.

FT-209: The FIND operation would not locate implied addresses in a ladder logic instruction. For example, if you entered a MOVW instruction that moved 10 words from V1 to V100, a search for V5 would not locate this instruction.

OTHER: Corrected syntax check problems with DCMP/DSET, MDRUMD/MDRUMW, MWFT/MWTT, and SHRB instructions.

379: Merging or downloading certain Profibus configurations sometimes caused the Profibus polling to stop, resulting in a fatal error.

415: Profibus modular slaves with more than 16 slots per slave were not supported.

417: When using Siemens 500 series® I/O, remote bases using coax connections would occasionally go offline. *The I/O interface has been modified to retry certain base status requests when the base is logged in and to increase timeout parameters in certain cases.*

420: V memory addresses were incorrectly written on download when the V memory size was configured to 64K words or greater. V memory addresses below 64 K were overwritten with values contained in the addresses 64K and larger.

431: When using Profibus I/O with modules having discrete outputs and analog inputs, the output and the input points on that module were incorrectly assigned to I/O addresses.

432: I/O addresses ranges were not validated on download. This caused problems when downloading programs to C100 or C200 processors that were developed on larger models using I/O configurations that the model C100/C200 did not support.

434: The IP address of the local Ethernet port could not be changed if a TCP client was connected to the local Ethernet port. Error message of "Configuration Lock" is displayed. *A change was made to allow the IP parameters to be changed even if a TCP connection was present.*

436: Incorrect amount of data was returned from task code 73 request. *This error did not affect user operation.*

437: Drum Step Current (DSC) value was reported incorrectly for undefined drums.

439: The TCP/IP default router address was not preserved over a power cycle.

440: TISoft displayed incorrect drum parameters for DSP and DSC. DSP and SDC values are 1 step more than the actual drum step.

Enhancements

The capability to log and event when an abnormal base logoff is detected has been added to the I/O subsystem.

STW 471 – 485 have been added to maintain a cumulative count of abnormal base logoff events by base.

Support for the Network Status (NS) LED has been added.

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Firmware Version 2.08 (8/10/2007)
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This release resolves the following issues.

FT-197: If the cyclic RLL task interrupts an analog scan task, the Cyclic RLL execution time may be extended waiting on the analog scan task to complete.

FT-200: An SF program with a PRINT statement will not compile. PRINT statements should be ignored.

FT-201: Analog Alarm V flags write 16 bits instead of 11 bits when the V flag is assigned to control relays (C). This may cause the V flag data to overwrite other control relays in use.

FT-202: The SF MATH instruction erroneously sets the SFEC when you assign the maximum address value to an element.

FT-203: If you attempt to specify values rather than addresses when using the PACKRS instruction, the SF program or subroutine will not compile.

FT-205: If you attempt to use the FIND command to locate a timer, Workshop may cease responding.

FT-206: Timers presets are occasionally not written properly during a user program download.

391: When the PLC is set to a fixed scan time, the reported peak scan time is always 1ms more than the fixed scan time, regardless of the fixed scan time setting.

397: A System Exception error is sometimes reported when a power outage occurs.

399: The Cyclic Peak Execution time as reported in CTI diagnostics status word 330 is not correct.

401: TPET1 values not are calculated the same as the Siemens 505® PLC, which uses TPET1 to display the peak scan time. The CTI 2500 uses TPET1 to represent the peak time required to execute the Main RLL task (task 1) and

TPET2 to represent the peak cyclic RLL time (task2). NOTE: This was resolved by adding a status word to allow the peak scan time to be read using STW299.

404:     PLC scan time peaks are larger than expected.

405:     Scan time values in CTI diagnostic status words 308 – 327 are erroneous when the PLC is set to fixed scan mode.

411:     Unable to change the IP address more than once when Ethernet cable is attached.

412:     Entering an IP router address and then changing the router address causes the PLC to halt.

419:     Series 500 low density modules that have a mixture of word and discrete points are not supported by the C2500. Also, module configurations 7X/1Y, 6X/2Y, 4X/4Y, 3X/5Y, 2X/6Y, and 1X/7Y are not properly supported.

420:     When downloading a user program that configures 65 K or greater words of V memory, V memory will be improperly written. This anomaly will cause V memory addresses below 65 K to be erroneously cleared or overwritten with values contained in higher addresses.

425:     The Delta Computer Systems TMC188/40Q will cause the CPU to lock up if the module is inserted into a remote base. NOTE: Although the fix prevents PLC lockup; this module will not function in a remote base.

431:     When a Profibus slave has a single slot configured for both discrete inputs and discrete outputs, the incorrect outputs will be driven.

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Firmware Version 2.07 (7/26/2007)
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Resolved the following issues:

190: Using timer Instructions in Cyclic RLL causes erroneous RLL checksum fatal error.

195: When a MATH instruction contains an integer for the destination, the resulting value is truncated instead of rounded as it should be.

198: Using a Model C100, you cannot enter a loop remote setpoint WX address greater than WX1020.

395: Heavy Ethernet traffic will cause USB communications to become erratic or lock up.

400: "Brownout" conditions (low AC power) or power up start in low voltage conditions can cause the controller to go to the fatal error state.

403: Some large programs will not complete download via USB

407: Using two timers to set and reset C contacts, the C contacts are locked to 0 after changing from RUN mode to PROGRAM mode and then back to RUN mode.

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Firmware Version 2.06 (7/16/2007)
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Revised task code responses to support C100 processor.

Resolved the following problems:

187: SFSUB SSR Statement does not allow parameter in register start address field.

191: Loop parameters specified as integer values in a packed loop instruction are being packed as real numbers.

193: Analog tasks are sometimes reporting done when they have not finished.

194: Temporary memory is erroneously re-initialized on occasion when the program did not complete in the previous time slice.

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Firmware Version 2.00 (6/28/2007)
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Original Production Release