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Firmware Release Notes

Premium ETY 4103 Exec v5.4

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Table of Contents

ETY4103 VERSION 5.4 RELEASE NOTES 5

1 IN ETHERNET MODULES IO SCANNING CAUSES EXCESSIVE ARP TRAFFIC WHEN USING
A GATEWAY 5

 1.1 Issue..... 5

 1.2 Resolution 5

 1.3 Customer action 5

2 INCONSISTENCY ISSUE BETWEEN PRODUCTS USING GLOBAL DATA. 5

 2.1 Issue..... 5

 2.2 Resolution 5

 2.3 Customer action 5

ETY4103 VERSION 5.3 RELEASE NOTES 6

3 CYBER-SECURITY ICS-ALERT-12-020-03: THE NOE IS VULNERABLE TO FTP BUFFER
OVERFLOWS..... 6

 3.1 Issue..... 6

 3.2 Resolution 6

 3.3 Customer action 6

ETY4103 VERSION 5.2 RELEASE NOTES 7

4 THE WEB PAGE ALLOWED USER TO ENTER MORE THAN 16 CHARACTERS AS A
PASSWORD BUT ONLY 16 WERE USED..... 7

 1.1. Issue..... 7

 1.2. Resolution 7

 1.3. Customer action 7

5 ENHANCEMENT - INCREASE TTL TO 32 7

 5.1 Issues..... 7

 5.2 Resolution 7

 5.3 Customer action 7

6 TWO COPIES OF FDR “. PRM” FILES SHOULD BE CREATED, ONE IN RAM AND ONE IN
FLASH. THE FLASH VERSION OF THE “.PRM” FILES IS NOT CREATED..... 8

 6.1 Issues..... 8

 6.2 Resolution 8

 6.3 Customer action 8

7 ENHANCEMENT TO ADD OPTION FOR SLOWER RETRIES WHEN COMMUNICATING WITH
GATEWAYS 8

 7.1 Issues..... 8

 7.2 Resolution 8

 7.3 Customer action 8

8 RESPONSE TO ICS-ALERT-12-020-03. THE NOE IS VULNERABLE TO HTTP SERVER
BUFFER OVERFLOWS 8

 8.1 Issues..... 8

 8.2 Resolution 9

 8.3 Customer action 9

9 SECURITY ISSUES WITH THIS DEVICE 9

 9.1 Issues..... 9

 9.2 Resolution 9

 9.3 Customer action 9

ETY4103 VERSION 5.1 RELEASE NOTES 10

• SPECIAL NOTE THIS ETY4103 V5.1 INTEGRATES A NEW HARDWARE COMPONENT. THE
ETY4103 WITH A PV OF 14 OR GREATER CANNOT BE DOWNGRADED TO EXEC VERSIONS
LESS THAN VERSION 5.1. 10

10 ON AN ETHERNET DOWNLOAD USING UNITY 6.0 UNDER SOME CONDITIONS UNITY
RETURNS AN ERROR. 10

 10.1 Issues..... 10

 10.2 Resolution 10

10.3	Customer action	10
11	FIX FOR LOSS OF WEB CONNECTION	10
11.1	Issues	10
11.2	Resolution	10
11.3	Customer action	10
12	I/O SCANNING SPECIFIC COMBINATION OF REPITITION RATE AND HEALTH TIMEOUT NOT SUPPORTED	11
12.1	Issue	11
12.2	Resolution	11
12.3	Customer action	11
13	THE FDR SERVER DOES NOT ALWAYS SAVE THE CORRECT BACKUP FILE	11
13.1	Issues	11
13.2	Resolution	11
13.3	Customer action	11
14	IO SCANNER OPERATION DOES NOT ALWAYS TRIGGER FAST RETRANSMISSION IN TARGET DEVICE	12
14.1	Issues	12
14.2	Resolution	12
14.3	Customer action	12
	ETY4103 VERSION 5.0 RELEASE NOTES	13
	SPECIAL NOTE THIS ETY4103 V5.0 IS A PREMIUM HOT-STANDBY ONLY RELEASE TO SUPPORT THE MULTIRACK FEATURE. THE MINIMUM HOT-STANDBY FIRMWARE VERSIONS TO SUPPORT MULTIRACK ARE:	13
	• ETY V5.0	13
	• CPU V2.83	13
	• COPRO V2.81	13
15	ENHANCEMENTS AND FIXES TO RESOLVE SYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS SIMULTANEOUSLY POWERING OFF/ON BOTH SYSTEM A AND B	13
15.1	Issues	13
15.2	Resolution	13
15.3	Customer action	13
16	ENHANCEMENTS AND FIXES TO RESOLVE ASYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS POWER OFF/ON PRIMARY SYSTEM ONLY	13
16.1	Issues	13
16.2	Resolution	14
16.3	Customer action	14
17	ENHANCEMENTS AND FIXES TO RESOLVE BOTH CPU AND ETHERNET CABLE DISCONNECT/RECONNECT ISSUES	14
17.1	Issues	14
17.2	Resolution	14
17.3	Customer action	14
18	ENHANCEMENTS AND FIXES TO RESOLVE HOT-STANDBY ETY ISSUES	15
18.1	Issues	15
18.2	Resolution	15
18.3	Customer action	15
	ETY4103 VERSION 4.9 RELEASE NOTES	16
	SPECIAL NOTE FOR PREMIUM HOTSTANDBY CUSTOMERS: ETY4103 FIRMWARE V4.9 IS ONLY INTENDED FOR USE WITH CPU (TSXH57XXM) FIRMWARE V2.5	16
19	I/O SCANNER NOT SCANNING AT CONFIGURED REP-RATE (20044462-20046322-20046496*V4.9)	16
19.1	Issues	16
19.2	Resolution	16
19.3	Customer action	16
20	FUNCTION CODE 23 NOT SUPPORTED IN SERVER MODE (20045238*V4.9)	16
20.1	Issue	16
20.2	Resolution	16

20.3	Customer action	16
21	TSXETY4103 WILL LOCKUP IF ANOTHER DEVICE ON THE NETWORK IS PRESENT AT IP ADDRESS 192.168.2.1 (20046089*V4.9)	17
21.1	Issue.....	17
21.2	Resolution	17
21.3	Customer action	17
22	I/O SCANNING CAN TAKE 4-6 SECONDS TO START AFTER A HOT STANDBY SWAPOVER (20046125*V4.9).....	17
22.1	Issue.....	17
22.2	Resolution	17
22.3	Customer action	17
23	I/O SCANNER HEALTH BITS WILL NOT RETURN TO HEALTHY STATE (1) AFTER A TESYSPORT IS POWER CYCLED (20047044*V4.9).....	17
23.1	Issue.....	17
23.2	Resolution	17
23.3	Customer action	18
24	I/O SCANNER WILL NOT OPEN A CONNECTION IF THE DEVICE BEING SCANNED HAS A SLOW RESPONSE TIME (20047044*V4.9)	18
24.1	Issue.....	18
24.2	Resolution	18
24.3	Customer action	18
	ETY4103 VERSION 4.8 RELEASE NOTES	19
25	ETY4103 DOES NOT START IF ITS LINK STATUS IS NOT ESTABLISHED (20046229*V4.8)	19
25.1	Issue.....	19
25.2	Resolution	19
25.3	Customer action	19
26	I/O SCANNER CONFIGURATION 'HOLD LAST VALUE' ISSUE ON PREMIUM HOT STANDBY SWAP OVER (20046238*V4.8).....	19
26.1	Issue.....	19
26.2	Resolution	19
26.3	Customer action	20
27	ETY4103 STOPS I/O SCANNER COMMUNICATION WITH SLOW RESPONDING DEVICES (20046431*V4.8).....	20
27.1	Issue.....	20
27.2	Resolution	20
27.3	Customer action	20
28	I/O SCANNER LOSES COMMUNICATION WITH GATEWAYS (20045783*V4.8)	20
28.1	Issue.....	20
28.2	Resolution	20
28.3	Customer action	20
29	A RANDOM ETY REBOOT RESULTS IN THE ERROR LOG RECORDING AN ERROR 921 (20046626*V4.8).....	21
29.1	Issue.....	21
29.2	Resolution	21
29.3	Customer action (updated 11/2010)	21
30	ETY4103 CAN TAKE UP TO 25 SECONDS TO CLOSE A CONNECTION (20046368*V4.8).....	21
30.1	Issue.....	21
30.2	Resolution	22
30.3	Customer action	22
31	UPGRADE INSTRUCTIONS.....	23
31.1	Unity Programming software.....	23

ETY4103 Version 5.4 Release Notes

1 IN ETHERNET MODULES IO SCANNING CAUSES EXCESSIVE ARP TRAFFIC WHEN USING A GATEWAY

1.1 Issue

Each line of an I/O scanner issues its own ARP prior to establishing a connection. This can cause excessive traffic for a router or gateway.

1.2 Resolution

The I/O scanner will issue an ARP for each IP address rather than for each line of the scanner. This will eliminate multiple ARPS to the same device.

1.3 Customer action

Upgrade the ETY4103 firmware.

2 INCONSISTENCY ISSUE BETWEEN PRODUCTS USING GLOBAL DATA.

2.1 Issue

Under certain conditions, Global Data would not become active on a power up of the system or a link-up/ link-down event. It would only start when a PLC stop>start was performed if the subscriber is a BMXNOE.

2.2 Resolution

One problem with task start-up timing while the controller was in a Run state timing was corrected and another problem with closing and cleaning up resources when the link was down and Global data was running was also corrected solving the problem

2.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 Version 5.3 Release Notes

3 CYBER-SECURITY ICS-ALERT-12-020-03: THE NOE IS VULNERABLE TO FTP BUFFER OVERFLOWS

3.1 Issue

A long path and file name used with an FTP command will cause an overflowed buffer which in turn causes the module to either crash or reboot.

3.2 Resolution

There was a bug in the stack that has been corrected. When the buffer overflow condition now occurs, the module does not crash or re-boot.

3.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 Version 5.2 Release Notes

4 THE WEB PAGE ALLOWED USER TO ENTER MORE THAN 16 CHARACTERS AS A PASSWORD BUT ONLY 16 WERE USED

1.1. Issue

If the user entered a new password as 17 characters in the http password web page, the NOE returned a page saying that the password change was successful. When the user tried to use the new password, it failed.

1.2. Resolution

The password field was corrected to limit the user to 16 characters and no more will be accepted.

1.3. Customer action

Upgrade the ETY4103 firmware.

5 ENHANCEMENT - INCREASE TTL TO 32

5.1 Issues

Customer requested that the Time To Live be increased to 32 in order to accommodate larger number of hops.

5.2 Resolution

The password field was corrected to limit the user to 16 characters and no more will be accepted.

5.3 Customer action

The TTL is now 32 for this Ethernet product.

6 TWO COPIES OF FDR “. PRM” FILES SHOULD BE CREATED, ONE IN RAM AND ONE IN FLASH. THE FLASH VERSION OF THE “.PRM” FILES IS NOT CREATED

6.1 Issues

The problem is in the algorithm when it attempts to parse the extension names of the FDR files on RAM (.prm). It is due to an existing method coding when comparing strings. The strings do not have the proper number of bytes so the Flash version of the .prm files could not be created.

6.2 Resolution

A more specific string comparing function in C programming language was used allowing specifying number of bytes to compare. The FLASH files are now created.

6.3 Customer action

Upgrade the ETY4103 firmware.

7 ENHANCEMENT TO ADD OPTION FOR SLOWER RETRIES WHEN COMMUNICATING WITH GATEWAYS

7.1 Issues

There is an option added to the IO Scanner in Unity 7 to improve operation with Gateways.

7.2 Resolution

Since gateways are slower than normal communications, this option allows the user to change the retry and retransmission rate when communications through a gateway is required.

7.3 Customer action

Upgrade the ETY4103 firmware.

8 RESPONSE TO ICS-ALERT-12-020-03. THE NOE IS VULNERABLE TO HTTP SERVER BUFFER OVERFLOWS

8.1 Issues

An Http GET request with too-long filename causes overflow, device crash.

8.2 Resolution

The Get Request will be rejected if the number of characters is excessive.

8.3 Customer action

Upgrade the ETY4103 firmware.

9 SECURITY ISSUES WITH THIS DEVICE

9.1 Issues

Cyber Security changes required.

- 1) Remove Telnet service
- 2) Remove Wind River debug service pt
- 3) Remove unused logins/passwords from firmware.

9.2 Resolution

Removed Telnet service.
Removed Windriver debug port.
Removed unused password access points.

9.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 Version 5.1 Release Notes

- **SPECIAL NOTE THIS ETY4103 V5.1 INTEGRATES A NEW HARDWARE COMPONENT. THE ETY4103 WITH A PV OF 14 OR GREATER CANNOT BE DOWNGRADED TO EXEC VERSIONS LESS THAN VERSION 5.1.**

10 ON AN ETHERNET DOWNLOAD USING UNITY 6.0 UNDER SOME CONDITIONS UNITY RETURNS AN ERROR.

10.1 Issues

Unity 6 returns a 'Send message action failed. PLC is busy or request is invalid' error.

10.2 Resolution

The handling of new downloaded configurations in the device have been resolved to prevent Unity Pro TCP disconnections when updating the controller through the Ethernet module IP address.

10.3 Customer action

Upgrade the ETY4103 firmware.

11 FIX FOR LOSS OF WEB CONNECTION

11.1 Issues

Repeated access to the diagnostic statistics web page causes web server connection to break.

11.2 Resolution

A race condition was occurring that lead to an endless loop. This was corrected and the loop will no longer occur.

11.3 Customer action

Upgrade the ETY4103 firmware.

12 I/O SCANNING SPECIFIC COMBINATION OF REPITITION RATE AND HEALTH TIMEOUT NOT SUPPORTED

12.1 Issue

The combination of a 30ms repetition rate and 50ms Health Timeout leads to triggering Health Timeout in less than 50ms. This is due to a slight delay in the CPU while it is handling FDR synchronization.

12.2 Resolution

The priority of the task controlling the Health timeout was raised eliminating the problem.

12.3 Customer action

Upgrade the ETY4103 firmware.

13 THE FDR SERVER DOES NOT ALWAYS SAVE THE CORRECT BACKUP FILE

13.1 Issues

This comes about because the time/date clock in the NOE is reset on each bootup and the saved file appears newer than subsequent files. When the NOE is rebooted the stored files' time will be overwritten by the NOE's new time. This insures than future files will have a newer date.

13.2 Resolution

When the NOE is rebooted the stored files' time will be overwritten by the NOE's new time. This insures that future files will have a newer date.

13.3 Customer action

Upgrade the ETY4103 firmware.

14 IO SCANNER OPERATION DOES NOT ALWAYS TRIGGER FAST RETRANSMISSION IN TARGET DEVICE

14.1 Issues

Fast Retransmission is triggered by three KEEP ALIVE messages. Under some circumstances the NOE would only issue two.

14.2 Resolution

The ETY4103 will not issue three KEEP ALIVE messages in order to insure that the target device will follow the fast retransmission algorithm.

14.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 Version 5.0 Release Notes

SPECIAL NOTE THIS ETY4103 V5.0 IS A **PREMIUM HOT-STANDBY ONLY** RELEASE TO SUPPORT THE MULTIRACK FEATURE. THE MINIMUM HOT-STANDBY FIRMWARE VERSIONS TO SUPPORT MULTIRACK ARE:

- ETY V5.0
- CPU V2.83
- COPRO V2.81

15 ENHANCEMENTS AND FIXES TO RESOLVE SYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS

SIMULTANEOUSLY POWERING OFF/ON BOTH SYSTEM A AND B

15.1 Issues

- The monitored ETY RUN and STS LED's blinking during synchronous power cycles
- The monitored ETY I/O scanner enters a faulted condition during synchronous power cycles
- The hot-standby system remains in Offline/Offline condition during synchronous power cycles

15.2 Resolution

There were various bug fixes relating to improper management of the HSBY Status of the local CPU and remote ETY during the boot sequence of the ETY. These were identified during extensive power cycle testing.

15.3 Customer action

Upgrade the ETY4103 firmware.

16 ENHANCEMENTS AND FIXES TO RESOLVE ASYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS

POWER OFF/ON PRIMARY SYSTEM ONLY

16.1 Issues

- The I/O scanner service of the monitored ETY enters a fault condition during asynchronous power cycles

- The hot-standby system swaps abnormally after stopping asynchronous power cycle cut test
- The hot-standby system remains in Primary/Offline mode during asynchronous power cycles
- The non-monitored ETY crashed with both RUN and STS LEDs blinking during asynchronous power cycles
- The Modbus server (port 502) of the non-monitored ETY is not available during asynchronous power cycles

16.2 Resolution

- Resolved memory management issues which, at times, caused improper protection of shared memory between tasks. This sometimes initiates exceptions to occur causing a crash.
- Resolved backplane interrupt handler issues during boot up and swap sequence which affected the Modbus Server.

16.3 Customer action

Upgrade the ETY4103 firmware.

17 ENHANCEMENTS AND FIXES TO RESOLVE BOTH CPU AND ETHERNET CABLE DISCONNECT/RECONNECT ISSUES

17.1 Issues

- The monitored ETY module errors after disconnecting the hot-standby CPU sync link cable and a COLD start (push reset button on CPU) on Standby CPU
- The monitored ETY doesn't start (all LEDs off) when powered on with ETY Ethernet cable disconnected
- Both hot-standby CPU's act as Primary during disconnection of hot-standby CPU sync link cable and power cycle of the Standby system
- The non-monitored ETY remains in error after disconnect/reconnect of monitored ETY Ethernet cable
- The monitored ETY reboots after disconnecting hot-standby CPU sync link cable
- The Primary and Standby systems swap when removing the hot-standby CPU sync link cable

17.2 Resolution

Improved

- ETY-to-ETY data exchange mechanism
- Management of link status in the monitored ETY.
- Server response time for servicing an explicit request. (example: Read_VAR, Write_VAR, etc.)

17.3 Customer action

Upgrade the ETY4103 firmware.

18 ENHANCEMENTS AND FIXES TO RESOLVE HOT-STANDBY ETY ISSUES

18.1 Issues

- With a Stand-alone hot-standby system (single Primary system only), stopping the CPU causes the Unity Programming connection to disconnect
- With a Stand-alone hot-standby system (single Primary system only), the ETY module is in error after a COLD start (push reset on CPU front panel) to the CPU
- The CPU communications fails when connecting via TCP/IP and opening ETY web page debug screen on the monitored ETY
- The IP address of the monitored ETY within standby system reports IP address in ETY debug screen (should report IP+1)
- Under continuous excessive traffic conditions, the Modbus port502 server of the monitored ETY may become inoperable
- After an online modification is made to a hot-standby system, the hot-standby system enters Primary/Offline condition
- Both system A and B CPU's act as Primary after removing the Primary PCMCIA card from CPU
- ETY IO scanner service sometimes not operational after application download via CPU USB port.

18.2 Resolution

- Resolved IP status that was incorrectly returned from the ETY.
- Improved Modbus server connection management.

18.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 Version 4.9 Release Notes

**SPECIAL NOTE FOR PREMIUM HOTSTANDBY CUSTOMERS:
ETY4103 FIRMWARE V4.9 IS ONLY INTENDED FOR USE WITH CPU (TSXH57XXM)
FIRMWARE V2.5**

19 I/O SCANNER NOT SCANNING AT CONFIGURED REP-RATE

(20044462-20046322-20046496*V4.9)

19.1 Issues

- The I/O Scanner may not operate at the configured Rep Rate if its configured rate is greater than 1 second.
- If the Rep Rate is configured for a value of 5 msec, the actual rep rate will vary between 1ms and the configured rate of 5 msec.

19.2 Resolution

Modified I/O Scanner task priorities.

19.3 Customer action

Upgrade the ETY4103 firmware.

20 FUNCTION CODE 23 NOT SUPPORTED IN SERVER MODE

(20045238*V4.9)

20.1 Issue

The ETY4103 does not support Function Code 23 in server mode. In instances where a Modbus server did not support FC23 read/write, the IO Scanner would instead split the request into separate FC3 Read and FC16 Write requests.

20.2 Resolution

The ETY will now respond to FC23 requests with a FC23 response which will increase the response time from the PLC.

20.3 Customer action

Upgrade the ETY4103 firmware.

21 TSXETY4103 WILL LOCKUP IF ANOTHER DEVICE ON THE NETWORK IS PRESENT AT IP ADDRESS 192.168.2.1 (20046089*V4.9)

21.1 Issue

If a device at IP address 192.168.2.1 already exists on a network when an ETY4103 is booted up on the same network, then the ETY4103 will lock up.

21.2 Resolution

Suppressed ARPing for IP address 192.168.2.1 at bootup.

21.3 Customer action

Upgrade the ETY4103 firmware.

22 I/O SCANNING CAN TAKE 4-6 SECONDS TO START AFTER A HOT STANDBY SWAPOVER (20046125*V4.9)

22.1 Issue

If the primary is powered off, I/O Scanning from the new Primary can take 4 seconds or longer to startup after the swap occurs.

22.2 Resolution

After a HSBY swap, the number of retries were reduced and the RST algorithm was modified so client connections would close quicker.

22.3 Customer action

Upgrade the ETY4103 firmware.

23 I/O SCANNER HEALTH BITS WILL NOT RETURN TO HEALTHY STATE (1) AFTER A TESYSPORT IS POWER CYCLED (20047044*V4.9)

23.1 Issue

Sometimes after power cycling a TesysPort, the respective I/O Scanner health bits in the ETY changes to a state value of zero (0) and never changes back to a value of one (1) after power is re-applied to the TesysPort.

23.2 Resolution

If a response is not received within 3x times the configured health timeout, then the IO scanner connection is re-initialized.

23.3 Customer action

Upgrade the ETY4103 firmware.

24 I/O SCANNER WILL NOT OPEN A CONNECTION IF THE DEVICE BEING SCANNED HAS A SLOW RESPONSE TIME (20047044*V4.9)

24.1 Issue

If the device being IO scanned has a slow response time (110-120ms), then the IO scanner will not be able to open a connection.

24.2 Resolution

Round Trip time algorithm for retransmission was corrected.

24.3 Customer action

Upgrade the ETY4103 firmware.

ETY4103 VERSION 4.8 RELEASE NOTES

25 ETY4103 DOES NOT START IF ITS LINK STATUS IS NOT ESTABLISHED (20046229*V4.8)

25.1 Issue

An ETY4103 will not go into run mode if the link is not established on an operational network. For example:

- ETY did not start if the switch is not fully operational before the ETY has completed its boot-up.
- ETY does not go into RUN if the cable is disconnected during power-up.
- If the ETY and managed switch is powered up simultaneously, the ETY will not go into RUN.

25.2 Resolution

The issue was resolved by increasing the size of the status buffer.

25.3 Customer action

Upgrade the ETY4103 firmware.

26 I/O SCANNER CONFIGURATION 'HOLD LAST VALUE' ISSUE ON PREMIUM HOT STANDBY SWAP OVER (20046238*V4.8)

26.1 Issue

If an I/O Scanner is configured for 'Hold Last Value' in a Premium HSBY system, the ETY4103 I/O scanner did not always hold the last value on a swap over. The PLC will sometimes read I/O scanner information in the middle of the ETY I/O scanner update. Therefore, only the health has been updated while the data is still in the process of being updated.

26.2 Resolution

The issue was resolved in the ETY firmware by writing the data first and then setting the health values.

26.3 Customer action

Upgrade the ETY4103 firmware.

27 ETY4103 STOPS I/O SCANNER COMMUNICATION WITH SLOW RESPONDING DEVICES (20046431*V4.8)

27.1 Issue

I/O Scanning to devices with varying response times may stop if it receives a reset (RST) from the device. If a RST is received by the ETY on a connection it can cause the I/O Scanner entry to stop communicating.

27.2 Resolution

The firmware was changed so that when the ETY4103 receives a RST from the server on an established connection, it closes the existing connection and tries to establish a new connection on a different port.

27.3 Customer action

Upgrade the ETY4103 firmware.

28 I/O SCANNER LOSES COMMUNICATION WITH GATEWAYS (20045783*V4.8)

28.1 Issue

I/O Scanning client stops communicating when a gateway device (i.e, TesysT, Exemys, Emerson Fieldbus Gateway) loses a packet. The loss of a packet results in a packet with an incorrect sequence number, thus stopping communications.

28.2 Resolution

ETY I/O Scanning a gateway. The gateway may occasionally drop a packet (query). The gateway waits a period of time, and then re-transmits the previous response. The ETY ACKs the response and continues ACKing (set of 6), based on the round trip time, but never retransmits the query.

In the code, the timer responsible for the retransmission was canceled thus stopping the retransmission from triggering.

The code to cancel the retransmit timer was modified.

28.3 Customer action

Upgrade the ETY4103 firmware.

29 A RANDOM ETY REBOOT RESULTS IN THE ERROR LOG RECORDING AN ERROR 921 (20046626*V4.8)

29.1 Issue

The following conditions will cause a 921 Crash code:

1. The CPU sends an incorrect Modbus response message to the ETY.
2. The CPU sends an invalid packet across the Premium backplane to the ETY.
3. The ETY will reset if it detects that a new Modbus message received from a device on the network contains the same Modbus message transaction ID as a message already being processed within its internal buffers.

29.2 Resolution

Changes have been incorporated into the CPU and the ETY to enhance the communications between the modules across the backplane. In the event that one of these conditions occurs, the ETY will discard the incorrect or invalid message and continue to operate without resetting.

29.3 Customer action (updated 11/2010)

Note: *The Customer action for this issue has been updated. Please review the changes that have been made.*

It was previously stated that 'both the ETY4103 and Premium CPU firmware must be upgraded when used in a Premium Hot Standby system.' The requirements were, use the Premium CPU OS version 2.81 in a Hot Standby system and version 2.80 in a non-Hot Standby system.

These requirements have changed and should read as follows:

- When using the ETY4103 in a Hot Standby system, the Hot Standby CPU's TSXH5744M and TSXH5724M require a minimum CPU OS version of **2.50**.
- When using the ETY4103 in a non-Hot Standby system, the non-Hot Standby CPU's OS require a minimum version of **2.80**.

30 ETY4103 CAN TAKE UP TO 25 SECONDS TO CLOSE A CONNECTION (20046368*V4.8)

30.1 Issue

The ETY sends a set of 6 ACKS or Keep-alives followed by a RST. This can take up to 25 seconds before the connection is closed and allowing a new one to open.

In the code, the timer responsible for the retransmission was canceled thus stopping the retransmission from triggering.

30.2 Resolution

The code to cancel the retransmit timer was modified.

30.3 Customer action

Upgrade the ETY4103 firmware.

31 UPGRADE INSTRUCTIONS

31.1 Unity Programming software

The ETY4103 and Premium CPU firmwares are upgraded using the Unity OS Loader.