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## Firmware Release Notes

### Premium ETY 5103 Exec v5.6

| Affected Product (s) | Prior Version (s) | New Version (s) | Date          |
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| TSXETY5103           | 5.2               | 5.5             | Sep 20,2012   |
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| TSXETY5103           | 4.8               | 4.9             | Dec. 22, 2010 |
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|                     | Role             | Name          | Date     |
|---------------------|------------------|---------------|----------|
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## Table of Contents

|                                                                                                                                                                                |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| ETY5103 VERSION 5.6 RELEASE NOTES.....                                                                                                                                         | 5  |
| 1 AT TIMES PREMIUM HOT STANDBY STAND ALONE PLC DOES NOT START .....                                                                                                            | 5  |
| 1.1 Issue .....                                                                                                                                                                | 5  |
| 1.2 Resolution.....                                                                                                                                                            | 5  |
| 1.3 Customer Action .....                                                                                                                                                      | 5  |
| 2 ETHERNET MODULES IO SCANNING CAUSES EXCESSIVE ARP TRAFFIC WHEN USING A GATEWAY .....                                                                                         | 5  |
| 2.1 Issue .....                                                                                                                                                                | 5  |
| 2.2 Resolution.....                                                                                                                                                            | 5  |
| 2.3 Customer Action .....                                                                                                                                                      | 5  |
| ETY5103 VERSION 5.5 RELEASE NOTES.....                                                                                                                                         | 6  |
| 3 THE WEB PAGE ALLOWED THE USER TO ENTER MORE THAN 16 CHARACTERS AS A PASSWORD BUT ONLY 16 WERE USED .....                                                                     | 6  |
| 3.1 Issue .....                                                                                                                                                                | 6  |
| 3.2 Resolution.....                                                                                                                                                            | 6  |
| 3.3 Customer Action .....                                                                                                                                                      | 6  |
| 4 TWO COPIES OF FDR .PRM FILES SHOULD BE CREATED IN BOTH RAM AND FLASH. THE FLASH VERSION OF THE PRM FILES IN THE PATCH IS NOT CREATED. ....                                   | 6  |
| 4.1 Issue .....                                                                                                                                                                | 6  |
| 4.2 Resolution.....                                                                                                                                                            | 6  |
| 4.3 Customer Action .....                                                                                                                                                      | 6  |
| 5 ENHANCEMENT TO INCREASE PERFORMANCE WITH SERIAL GATEWAYS.....                                                                                                                | 7  |
| 5.1 Issue .....                                                                                                                                                                | 7  |
| 5.2 Resolution.....                                                                                                                                                            | 7  |
| 5.3 Customer Action .....                                                                                                                                                      | 7  |
| 6 RESPONSE TO ICS-ALERT-12-020-03. THE NOE IS VULNERABLE TO HTTP SERVER BUFFER OVERFLOWS. ....                                                                                 | 7  |
| 6.1 Issue .....                                                                                                                                                                | 7  |
| 6.2 Resolution.....                                                                                                                                                            | 7  |
| 6.3 Customer Action .....                                                                                                                                                      | 7  |
| 7 SECURITY ISSUES WITH THIS DEVICE.....                                                                                                                                        | 8  |
| 7.1 Issue .....                                                                                                                                                                | 8  |
| 7.2 Resolution.....                                                                                                                                                            | 8  |
| 7.3 Customer Action .....                                                                                                                                                      | 8  |
| ETY5103 VERSION 5.20 RELEASE NOTES.....                                                                                                                                        | 9  |
| SPECIAL NOTE THIS ETY5103 V5.1 INTEGRATES A NEW HARDWARE COMPONENT. THE ETY5103 WITH A PV OF X.X OR GREATER CANNOT BE DOWNGRADED TO EXEC VERSIONS LESS THAN VERSION 5.20. .... | 9  |
| 8 ON AN ETHERNET DOWNLOAD USING UNITY 6.0 UNDER SOME CONDITIONS UNITY RETURNS AN ERROR.....                                                                                    | 9  |
| 8.1 Issues .....                                                                                                                                                               | 9  |
| 8.2 Resolution.....                                                                                                                                                            | 9  |
| 8.3 Customer action.....                                                                                                                                                       | 9  |
| 9 FIX FOR LOSS OF WEB CONNECTION.....                                                                                                                                          | 9  |
| 9.1 Issues .....                                                                                                                                                               | 9  |
| Repeated access to the diagnostic statistics web page causes web server connection to break .....                                                                              | 9  |
| 9.2 Resolution.....                                                                                                                                                            | 9  |
| 9.3 Customer action.....                                                                                                                                                       | 9  |
| 10 I/O SCANNING SPECIFIC COMBINATION OF REPITITION RATE AND HEALTH TIMEOUT NOT SUPPORTED.....                                                                                  | 10 |
| 10.1 Issue .....                                                                                                                                                               | 10 |
| 10.2 Resolution.....                                                                                                                                                           | 10 |
| 10.3 Customer action.....                                                                                                                                                      | 10 |
| 10.4 Resolution.....                                                                                                                                                           | 10 |

|                                                                                                                                                                                  |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 10.5 Customer action.....                                                                                                                                                        | 10 |
| 11 IO SCANNER OPERATION DOES NOT ALWAYS TRIGGER FAST RETRANSMISSION IN TARGET DEVICE .....                                                                                       | 10 |
| 11.1 Issues .....                                                                                                                                                                | 10 |
| 11.2 Resolution.....                                                                                                                                                             | 10 |
| 11.3 Customer action.....                                                                                                                                                        | 10 |
| ETY5103 VERSION 5.0 RELEASE NOTES.....                                                                                                                                           | 11 |
| SPECIAL NOTE THIS ETY5103 V5.0 IS A PREMIUM HOT-STANDBY ONLY RELEASE TO SUPPORT THE MULTIRACK FEATURE. THE MINIMUM HOT-STANDBY FIRMWARE VERSIONS TO SUPPORT MULTIRACK ARE: ..... | 11 |
| • ETY V5.0.....                                                                                                                                                                  | 11 |
| • CPU V2.83.....                                                                                                                                                                 | 11 |
| • COPRO V2.81 .....                                                                                                                                                              | 11 |
| 12 ENHANCEMENTS AND FIXES TO RESOLVE SYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS SIMULTANEOUSLY POWERING OFF/ON BOTH SYSTEM A AND B.....                               | 11 |
| 12.1 Issues .....                                                                                                                                                                | 11 |
| 12.2 Resolution.....                                                                                                                                                             | 11 |
| 12.3 Customer action.....                                                                                                                                                        | 11 |
| 13 ENHANCEMENTS AND FIXES TO RESOLVE ASYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS POWER OFF/ON PRIMARY SYSTEM ONLY .....                                               | 11 |
| 13.1 Issues .....                                                                                                                                                                | 11 |
| 13.2 Resolution.....                                                                                                                                                             | 12 |
| 13.3 Customer action.....                                                                                                                                                        | 12 |
| 14 ENHANCEMENTS AND FIXES TO RESOLVE BOTH CPU AND ETHERNET CABLE DISCONNECT/RECONNECT ISSUES .....                                                                               | 12 |
| 14.1 Issues .....                                                                                                                                                                | 12 |
| 14.2 Resolution.....                                                                                                                                                             | 12 |
| 14.3 Customer action.....                                                                                                                                                        | 12 |
| 15 ENHANCEMENTS AND FIXES TO RESOLVE HOT-STANDBY ETY ISSUES .....                                                                                                                | 13 |
| 15.1 Issues .....                                                                                                                                                                | 13 |
| 15.2 Resolution.....                                                                                                                                                             | 13 |
| 15.3 Customer action.....                                                                                                                                                        | 13 |
| 16 INTEGRATION OF NEW FLASH MEMORY COMPONENT CAUSES RESTRICTION OF EXEC FIRMWARE VERSIONS IN ETY5103 ONLY (OPR 20047208*V5.0) .....                                              | 13 |
| 16.1 Issues .....                                                                                                                                                                | 13 |
| 16.2 Resolution.....                                                                                                                                                             | 14 |
| 16.3 Customer action.....                                                                                                                                                        | 14 |
| ETY5103 VERSION 4.9 RELEASE NOTES.....                                                                                                                                           | 15 |
| SPECIAL NOTE FOR PREMIUM HOTSTANDBY CUSTOMERS: ETY5103 FIRMWARE V4.9 IS ONLY INTENDED FOR USE WITH CPU (TSXH57XXM) FIRMWARE V2.5.....                                            | 15 |
| 17 I/O SCANNER NOT SCANNING AT CONFIGURED REP-RATE (20044462-20046322-20046496*V4.9) .....                                                                                       | 15 |
| 17.1 Issues .....                                                                                                                                                                | 15 |
| 17.2 Resolution.....                                                                                                                                                             | 15 |
| 17.3 Customer action.....                                                                                                                                                        | 15 |
| 18 FUNCTION CODE 23 NOT SUPPORTED IN SERVER MODE (20045238*V4.9) .....                                                                                                           | 15 |
| 18.1 Issue .....                                                                                                                                                                 | 15 |
| 18.2 Resolution.....                                                                                                                                                             | 15 |
| 18.3 Customer action.....                                                                                                                                                        | 15 |
| 19 TSXETY5103 WILL LOCKUP IF ANOTHER DEVICE ON THE NETWORK IS PRESENT AT IP ADDRESS 192.168.2.1 (20046089*V4.9) .....                                                            | 16 |
| 19.1 Issue .....                                                                                                                                                                 | 16 |
| 19.2 Resolution.....                                                                                                                                                             | 16 |
| 19.3 Customer action.....                                                                                                                                                        | 16 |
| 20 I/O SCANNING CAN TAKE 4-6 SECONDS TO START AFTER A HOT STANDBY SWAPOVER (20046125*V4.9) .....                                                                                 | 16 |

|      |                                                                                                                         |    |
|------|-------------------------------------------------------------------------------------------------------------------------|----|
| 20.1 | Issue .....                                                                                                             | 16 |
| 20.2 | Resolution.....                                                                                                         | 16 |
| 20.3 | Customer action.....                                                                                                    | 16 |
| 21   | I/O SCANNER HEALTH BITS WILL NOT RETURN TO HEALTHY STATE (1) AFTER A<br>TESYSPORT IS POWER CYCLED (20047044*V4.9) ..... | 16 |
| 21.1 | Issue .....                                                                                                             | 16 |
| 21.2 | Resolution.....                                                                                                         | 16 |
| 21.3 | Customer action.....                                                                                                    | 17 |
| 22   | I/O SCANNER WILL NOT OPEN A CONNECTION IF THE DEVICE BEING SCANNED HAS A<br>SLOW RESPONSE TIME (20047044*V4.9).....     | 17 |
| 22.1 | Issue .....                                                                                                             | 17 |
| 22.2 | Resolution.....                                                                                                         | 17 |
| 22.3 | Customer action.....                                                                                                    | 17 |
|      | ETY5103 VERSION 4.8 RELEASE NOTES.....                                                                                  | 18 |
| 23   | ETY5103 DOES NOT START IF ITS LINK STATUS IS NOT ESTABLISHED (20046229*) .....                                          | 18 |
| 23.1 | Issue .....                                                                                                             | 18 |
| 23.2 | Resolution.....                                                                                                         | 18 |
| 23.3 | Customer action.....                                                                                                    | 18 |
| 24   | I/O SCANNER CONFIGURATION 'HOLD LAST VALUE' ISSUE ON PREMIUM HOT STANDBY<br>SWAP OVER (20046238*).....                  | 18 |
| 24.1 | Issue .....                                                                                                             | 18 |
| 24.2 | Resolution.....                                                                                                         | 18 |
| 24.3 | Customer action.....                                                                                                    | 19 |
| 25   | ETY5103 STOPS I/O SCANNER COMMUNICATION WITH SLOW RESPONDING DEVICES<br>(20046431*) .....                               | 19 |
| 25.1 | Issue .....                                                                                                             | 19 |
| 25.2 | Resolution.....                                                                                                         | 19 |
| 25.3 | Customer action.....                                                                                                    | 19 |
| 26   | I/O SCANNER LOSES COMMUNICATION WITH GATEWAYS (20045783*) .....                                                         | 19 |
| 26.1 | Issue .....                                                                                                             | 19 |
| 26.2 | Resolution.....                                                                                                         | 19 |
| 26.3 | Customer action.....                                                                                                    | 19 |
| 27   | A RANDOM ETY REBOOT RESULTS IN THE ERROR LOG RECORDING AN ERROR 921<br>(20046626*) .....                                | 20 |
| 27.1 | Issue .....                                                                                                             | 20 |
| 27.2 | Resolution.....                                                                                                         | 20 |
| 27.3 | Customer action (updated 11/2010) .....                                                                                 | 20 |
| 28   | ETY5103 CAN TAKE UP TO 25 SECONDS TO CLOSE A CONNECTION (20046368*).....                                                | 20 |
| 28.1 | Issue .....                                                                                                             | 20 |
| 28.2 | Resolution.....                                                                                                         | 21 |
| 28.3 | Customer action.....                                                                                                    | 21 |
|      | UPGRADE INSTRUCTIONS .....                                                                                              | 21 |
|      | Backup of customized web site .....                                                                                     | 21 |
|      | Unity Programming software .....                                                                                        | 21 |
|      | Without Unity Programming software.....                                                                                 | 23 |
|      | NOTES .....                                                                                                             | 23 |
|      | Bootrom compatibility .....                                                                                             | 23 |

## **ETY5103 Version 5.6 Release Notes**

### **1 AT TIMES PREMIUM HOT STANDBY STAND ALONE PLC DOES NOT START**

#### **1.1 Issue**

Standalone will not start if no link is present on Monitored ETY at start. CPU goes to off line when it realizes it does not have link. This is correct but after the link comes up it will never go on line until it is power cycled again with the switch up first.

#### **1.2 Resolution**

A flag was added to check link status on bootup. This corrected the improper behavior.

#### **1.3 Customer Action**

Upgrade the ETY5103 firmware.

### **2 ETHERNET MODULES IO SCANNING CAUSES EXCESSIVE ARP TRAFFIC WHEN USING A GATEWAY**

#### **2.1 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.

#### **2.2 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.

#### **2.3 Customer Action**

Upgrade the ETY5103 firmware

## **ETY5103 Version 5.5 Release Notes**

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

#### **3.1 Issue**

If you 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 you try to use the new password, it fails.

#### **3.2 Resolution**

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

#### **3.3 Customer Action**

Upgrade the ETY5103 firmware.

### **4 TWO COPIES OF FDR .PRM FILES SHOULD BE CREATED IN BOTH RAM AND FLASH. THE FLASH VERSION OF THE PRM FILES IN THE PATCH IS NOT CREATED.**

#### **4.1 Issue**

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.

#### **4.2 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.

#### **4.3 Customer Action**

Upgrade the ETY5103 firmware.

## **5 ENHANCEMENT TO INCREASE PERFORMANCE WITH SERIAL GATEWAYS**

### **5.1 Issue**

Serial gateways are slower to respond than ordinary devices. There is an option in Unity 7 to enable a different retransmission algorithm for gateways.

### **5.2 Resolution**

Enhanced to work more efficiently with gateways

### **5.3 Customer Action**

Upgrade the ETY5103 firmware.

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

### **6.1 Issue**

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

### **6.2 Resolution**

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

### **6.3 Customer Action**

Upgrade the ETY5103 firmware.

## **7 SECURITY ISSUES WITH THIS DEVICE**

### **7.1 Issue**

Cyber Security changes required.

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

### **7.2 Resolution**

Removed Telnet service.

Removed Windriver debug port.

Removed unused password access points.

### **7.3 Customer Action**

Upgrade the ETY5103 firmware.

## **ETY5103 Version 5.20 Release Notes**

**SPECIAL NOTE** THIS ETY5103 V5.1 INTEGRATES A NEW HARDWARE COMPONENT. THE ETY5103 WITH A PV OF X.X OR GREATER CANNOT BE DOWNGRADED TO EXEC VERSIONS LESS THAN VERSION 5.20.

### **8 ON AN ETHERNET DOWNLOAD USING UNITY 6.0 UNDER SOME CONDITIONS UNITY RETURNS AN ERROR.**

#### **8.1 Issues**

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

#### **8.2 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.

#### **8.3 Customer action**

Upgrade the ETY5103 firmware.

### **9 FIX FOR LOSS OF WEB CONNECTION**

#### **9.1 Issues**

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

#### **9.2 Resolution**

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

#### **9.3 Customer action**

Upgrade the ETY5103 firmware.

## 10 I/O SCANNING SPECIFIC COMBINATION OF REPETITION RATE AND HEALTH TIMEOUT NOT SUPPORTED

### 10.1 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.

### 10.2 Resolution

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

### 10.3 Customer action

Upgrade the ETY5103 firmware

### 10.4 Resolution

| Model   | PV number of ETY5103          | Description                                           |
|---------|-------------------------------|-------------------------------------------------------|
| ETY5103 | Less than or equal to PV09    | Compatible with all ETY Exec versions                 |
| ETY5103 | Greater than or equal to PV10 | Only compatible with ETY Exec versions 4.9 and higher |

### 10.5 Customer action

Information only. No action required.

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

### 11.1 Issues

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

### 11.2 Resolution

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

### 11.3 Customer action

Upgrade the ETY5103 firmware.

## **ETY5103 Version 5.0 Release Notes**

**SPECIAL NOTE** THIS ETY5103 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

### **12 ENHANCEMENTS AND FIXES TO RESOLVE SYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS**

#### **SIMULTANEOUSLY POWERING OFF/ON BOTH SYSTEM A AND B**

##### **12.1 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

##### **12.2 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.

##### **12.3 Customer action**

Upgrade the ETY5103 firmware.

### **13 ENHANCEMENTS AND FIXES TO RESOLVE ASYNCHRONOUS POWER CYCLE ISSUES IN HOT-STANDBY SYSTEMS**

#### **POWER OFF/ON PRIMARY SYSTEM ONLY**

##### **13.1 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

### **13.2 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.

### **13.3 Customer action**

Upgrade the ETY5103 firmware.

## **14 ENHANCEMENTS AND FIXES TO RESOLVE BOTH CPU AND ETHERNET CABLE DISCONNECT/RECONNECT ISSUES**

### **14.1 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

### **14.2 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.)

### **14.3 Customer action**

Upgrade the ETY5103 firmware.

## **15 ENHANCEMENTS AND FIXES TO RESOLVE HOT-STANDBY ETY ISSUES**

### **15.1 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.

### **15.2 Resolution**

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

### **15.3 Customer action**

Upgrade the ETY5103 firmware.

## **16 INTEGRATION OF NEW FLASH MEMORY COMPONENT CAUSES RESTRICTION OF EXEC FIRMWARE VERSIONS IN ETY5103 ONLY** (OPR 20047208\*V5.0)

### **16.1 Issues**

Obsolescence of the current flash memory device in the ETY requires a new replacement flash memory component. ETY's manufactured with this new component also requires the Exec firmware to be modified. This condition now restricts backward compatibility of downloading old firmware versions into new ETY's. These limitations are described as follows.

## 16.2 Resolution

| Model   | PV number of ETY5103          | Description                                           |
|---------|-------------------------------|-------------------------------------------------------|
| ETY5103 | Less than or equal to PV09    | Compatible with all ETY Exec versions                 |
| ETY5103 | Greater than or equal to PV10 | Only compatible with ETY Exec versions 4.9 and higher |

## 16.3 Customer action

Information only. No action required.

## **ETY5103 Version 4.9 Release Notes**

**SPECIAL NOTE FOR PREMIUM HOTSTANDBY CUSTOMERS:**  
**ETY5103 FIRMWARE V4.9 IS ONLY INTENDED FOR USE WITH CPU (TSXH57XXM)**  
**FIRMWARE V2.5**

### **17 I/O SCANNER NOT SCANNING AT CONFIGURED REP-RATE**

(20044462-20046322-20046496\*V4.9)

#### **17.1 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.

#### **17.2 Resolution**

Modified I/O Scanner task priorities.

#### **17.3 Customer action**

Upgrade the ETY5103 firmware.

### **18 FUNCTION CODE 23 NOT SUPPORTED IN SERVER MODE**

(20045238\*V4.9)

#### **18.1 Issue**

The ETY5103 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.

#### **18.2 Resolution**

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

#### **18.3 Customer action**

Upgrade the ETY5103 firmware.

## **19 TSXETY5103 WILL LOCKUP IF ANOTHER DEVICE ON THE NETWORK IS PRESENT AT IP ADDRESS 192.168.2.1 (20046089\*V4.9)**

### **19.1 Issue**

If a device at IP address 192.168.2.1 already exists on a network when an ETY5103 is booted up on the same network, then the ETY5103 will lock up.

### **19.2 Resolution**

Suppressed ARPing for IP address 192.168.2.1 at bootup.

### **19.3 Customer action**

Upgrade the ETY5103 firmware.

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

### **20.1 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.

### **20.2 Resolution**

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

### **20.3 Customer action**

Upgrade the ETY5103 firmware.

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

### **21.1 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.

### **21.2 Resolution**

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

### **21.3 Customer action**

Upgrade the ETY5103 firmware.

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

### **22.1 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.

### **22.2 Resolution**

Round Trip time algorithm for retransmission was corrected.

### **22.3 Customer action**

Upgrade the ETY5103 firmware.

## **ETY5103 VERSION 4.8 RELEASE NOTES**

### **23 ETY5103 DOES NOT START IF ITS LINK STATUS IS NOT ESTABLISHED (20046229\*)**

#### **23.1 Issue**

An ETY5103 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.

#### **23.2 Resolution**

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

#### **23.3 Customer action**

Upgrade the ETY5103 firmware.

### **24 I/O SCANNER CONFIGURATION 'HOLD LAST VALUE' ISSUE ON PREMIUM HOT STANDBY SWAP OVER (20046238\*)**

#### **24.1 Issue**

If an I/O Scanner is configured for 'Hold Last Value' in a Premium HSBY system, the ETY5103 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.

#### **24.2 Resolution**

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

### **24.3 Customer action**

Upgrade the ETY5103 firmware.

## **25 ETY5103 STOPS I/O SCANNER COMMUNICATION WITH SLOW RESPONDING DEVICES (20046431\*)**

### **25.1 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.

### **25.2 Resolution**

The firmware was changed so that when the ETY5103 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.

### **25.3 Customer action**

Upgrade the ETY5103 firmware.

## **26 I/O SCANNER LOSES COMMUNICATION WITH GATEWAYS (20045783\*)**

### **26.1 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.

### **26.2 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.

### **26.3 Customer action**

Upgrade the ETY5103 firmware.

## 27 A RANDOM ETY REBOOT RESULTS IN THE ERROR LOG RECORDING AN ERROR 921 (20046626\*)

### 27.1 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.

### 27.2 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.

### 27.3 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 ETY5103 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 ETY5103 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 ETY5103 in a non-Hot Standby system, the non-Hot Standby CPU's OS require a minimum version of **2.80**.

## 28 ETY5103 CAN TAKE UP TO 25 SECONDS TO CLOSE A CONNECTION (20046368\*)

### 28.1 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.

## 28.2 Resolution

The code to cancel the retransmit timer was modified.

## 28.3 Customer action

Upgrade the ETY5103 firmware.

# UPGRADE INSTRUCTIONS

## Backup of customized web site

The customized web site will be erased by upgrading firmware. Customer must backup his project with Web Designer Software. Customer will be able to download after upgrade.

## Unity Programming software

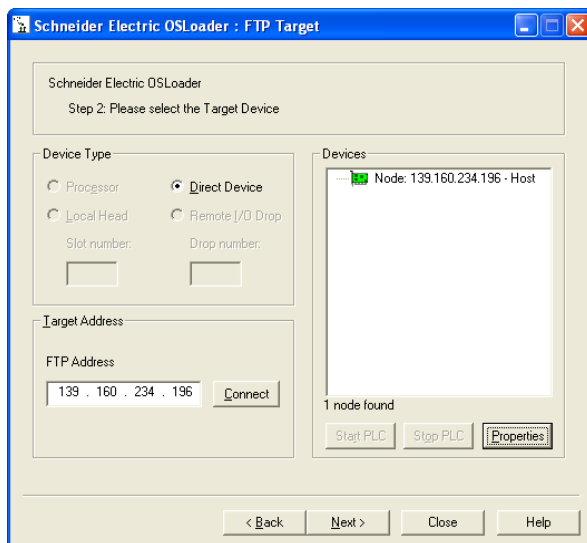
The ETY5103 and Premium CPU firmwares are upgraded using the Unity OS Loader.

You need to use \*.bin file from directory "Unity User"

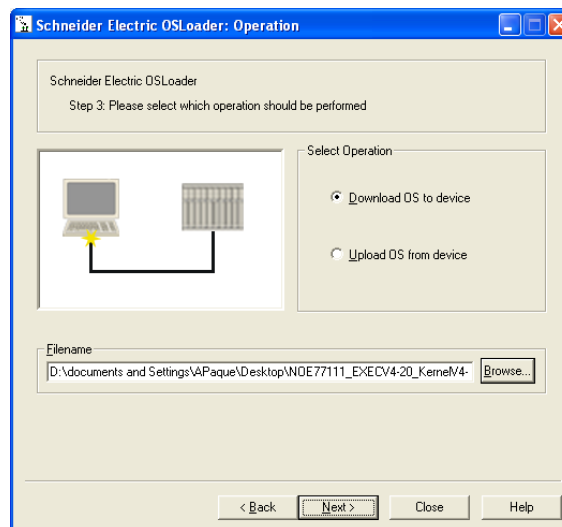
This file is for Unity Loader

1- Select and launch Unity loader in Unity program group.

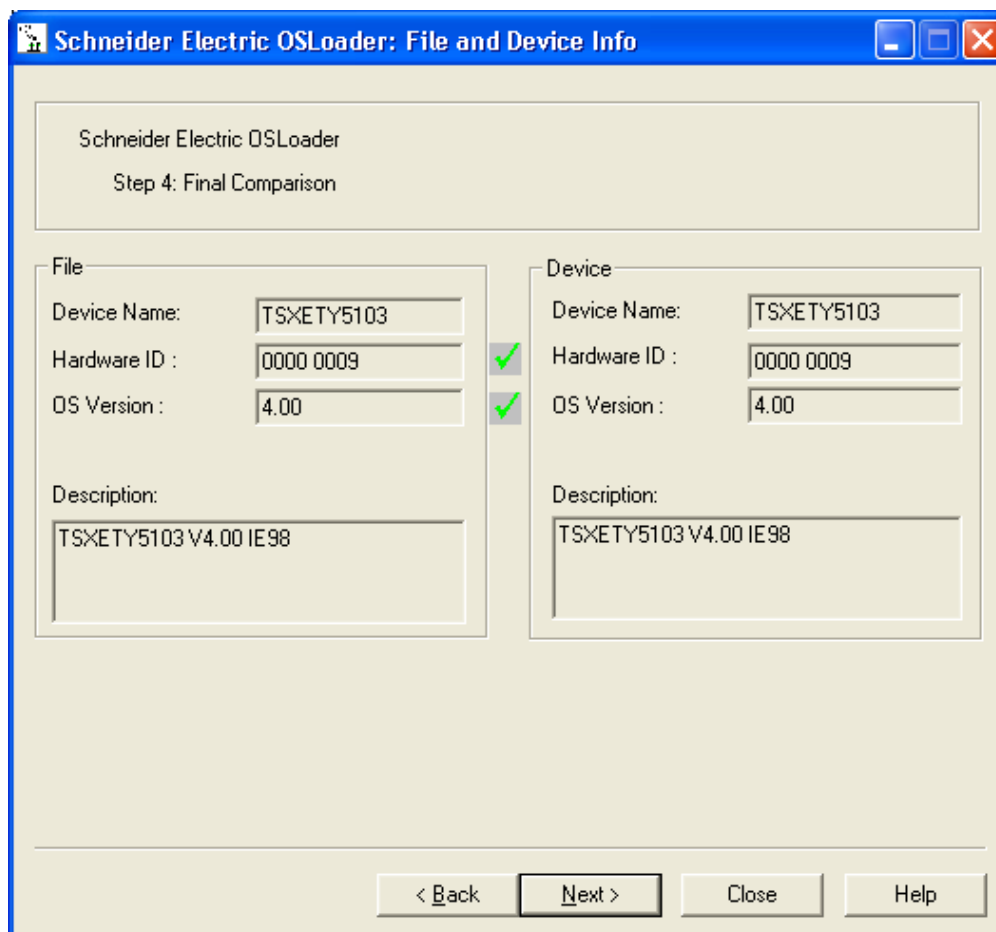
2- Select FTP transfer



3- Fill the IP Address of your module



- 4- Select bin file from the unzipped archive  
Go next



- 5- Click on Next button to start the downloading

## Without Unity Programming software

For non-unity user, we provide a second solution to upgrade the ETY5103.

You will find upfw5103.bat file into directory "No Unity User"

Under MS-DOS command window, you must type the following command from right directory like below.

```

C:\WINDOWS\system32\cmd.exe
4 Dir(s) 4 084 027 392 bytes free

D:\TSXETY5103_U460_IE08\No Unity User>dir
Volume in drive D is DATA
Volume Serial Number is 6EA2-1BB3

Directory of D:\TSXETY5103_U460_IE08\No Unity User

27/05/2010 09:28 <DIR> .
27/05/2010 09:28 <DIR> ..
11/07/2002 18:16 59 devfmtw.ftp
13/03/2009 16:50 757 devs5103.ftp
02/12/2009 15:11 5 490 devw5103.ftp
27/05/2010 09:20 <DIR> FLASH0
27/05/2010 09:20 <DIR> FLASH1
10/12/2002 15:28 509 upfw5103.bat
4 File(s) 6 815 bytes
4 Dir(s) 4 076 544 000 bytes free

D:\TSXETY5103_U460_IE08\No Unity User>upfw5103.bat A.B.C.D_

```

In above picture, A.B.C.D is IP address of module.

## NOTES

### Bootrom compatibility

This firmware is delivered for the following module

TSXETY5103 module

Version that can be updated are TSXETY 5103 V3.00 and upper.

This firmware is NOT compatible with the bootrom version older than V3.1\_IE12. Therefore, the required minimum level of bootrom is V3.1 IE12.