

Quantum 140NOE77101 Firmware Release Notes

Exec Revision History

Version	Date	Problem fixed / Enhancement	Details
V6.0	3/30/2013	This is a special security release. The Unity configuration features listed require Unity hotfix V7.0_HF20050608	
	Enhancement	• The default behavior of enabled FTP/TFTP and HTTP Service at module boot up has changed • Concept will not have any changes to enable/disable FTP/TFTP or HTTP in the configuration. • The MSTR block now supports the OpCode 0xFFFF0 to be used by the user to enable and disable FTP/TFTP and HTTP services in the module on-the-fly, when Unity has enabled the service.	On power up the NOE module will have the FTP/TFTP servers and HTTP service enabled when in non-configured mode, or when configured by an older version of Unity Pro/DTM that does not have FTP/HTTP Cyber Security control. When using Concept both FTP/TFTP and HTTP will be enabled in the configuration at all times allowing MSTR to control the enable/disable of the services. Once the enabled state of the services are changed by a MSTR they remain unchanged until the next MSTR block call with OpCode 0xFFFF0, or the load of a new application, or the module is reset/power cycled. This OpCode works on Concept and Unity controller installations. In Concept the Web server/pages must be updated by the user to be able to control HTTP state of enable/disable, using the file NOE77101_WEB.zip. Bring the Web version up to V5.00 or above. * SEE Note below on how to enable/disable these services
		• New Log Out Web Page • Web Restrictions: When the FTP is disabled and HTTP is enabled there will be some Web restrictions as they require a FTP access.	Users click on Diagnostics and go to Controller Status in the side menu. Below the applet is the logout button. • Data Editor/Viewer is not fully functional: the user does not have the ability to save or retrieve tables, or get variables from the namespace. • When FTP/TFTP is disabled the corresponding ports 21(FTP), and 69(TFTP) are closed. If the ports have an open connection when the MSTR is executed to disable FTP, the connection is closed
V5.4	12/20/2012	Bug Fix	
		• NOE77101 connection closure mechanism Can cause error 6003 in M1E MSTR function block	A special socket option was added to all Modbus server connections called "No Linger" to facilitate HSBY switchovers. However that state was inadvertently added to two paths which caused the problem seen

		• Communications gradually degrades then stop after running for about 16 months. • In Quantum Ethernet modules I/O Scanning causes excessive ARP traffic when using a gateway. • Cannot ping The NOE77101 Ethernet port • OpCode 16 to close connections needed for Concept.	Due to mishandling of a 32 bit timer overflow in the stack as the timer approached the overflow point the performance of the NOE would degrade and at the point of overflow it would stop. It would recover on its own. 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 If the cable is pulled from the Ethernet port and not reconnected for approximately 70 hours the connection is not reestablished. Customer requested functionality similar to Unity where OpCode 16 in the MBP MSTR block aborts the Ethernet connections
Version V5.3	Date 9/20/2012 Bug Fix	Problem fixed / Enhancement • Under Rare applications the NOE77101 goes into a state of continuous bootup upon startup • The NOE77101 Web Page Configuration Viewer does not display the NOC 780 or NOC801	Details With a particular application the NOE77101 will not start properly. It continues to reboot due to an improper initialization of the I/O scanner stack. This initialization was not necessary. The NOC module information was not included in the configuration web file gcncftcop.sys
Version V5.2	Date 6/13/2012 Bug Fix	Problem fixed / Enhancement • Response to ICS-ALERT-12-020-03. FTP buffer overload	Details A possible problem due to FTP buffer overload
Version V5.1	Date 6/29/2012 Bug Fix	Problem fixed / Enhancement • The Web page allowed user to enter more than 16 characters as a password but only 16 were used • Unless there is a valid entry in the address table the FDR server will not start • 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 • Response to ICS-ALERT-12-020-03. The NOE is vulnerable to HTTP server buffer overflows • Various Security issues Removed Telnet service. Removed Windriver debug port. Removed unused password access points	Details 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. The address service will not start unless there is at least one valid entry with a valid MAC address configured in Unity 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. An Http GET request with too-long filename causes overflow, device crash. Cyber Security changes necessary in the following 1) Telnet service 2) Wind River debug service port 3) unused logins/passwords from firmware

		Global Data won't start under certain circumstances with NOE77101 Exec v5.0	Global data will not become operational if the cable to either the Publisher or Subscriber NOE is disconnected when that PLC is power cycled and then link is connected after the PLC goes into Run.
		Add option for slower retries when communicating with Gateways	Slower responding gateways can cause a problem in communications.
Version V5.1	Date 12/15/2011 Bug Fix	Problem fixed / Enhancement Special Note This NOE77101 V5.0 Integrates A new Hardware component. The NOE77101 with a PV of 22 or greater cannot be downgraded to Exec versions less than Version 5.0.	Details
		- On an ethernet download using unity 6.0 Under some conditions Unity returns an error - Fix for loss of web connection	Unity 6 returns a 'Send message action failed. PLC is busy or request is invalid error Repeated access to the diagnostic statistics web page causes web server connection to break.
		I/O Scanning Specific combination of Repetition Rate and Health Timeout not supported	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.
		IO scanner operation does not always trigger fast retransmission in target device	Fast Retransmission is triggered by three KEEP ALIVE messages. Under some circumstances the NOE would only issue two.
		Increase in the TTL (Time to Live)	The customer had a large project involving many routers and he needed the Time To Live to be increased
Version V4.9	Date 6/24/2011 Bug Fix	Problem fixed / Enhancement	Details
		- The MSTR Function Block in Unity was modified to Allow it to read 0x, 1x, and 3x registers - The Modbus client messaging capacity was Extended	There is no method of reading 3x, 1x or 0x registers from devices that do not support 4x registers Additional registers are required to access diagnostic information in the PRM (Profibus Remote Master module) in a single Modbus request. Quantum is limited to 100 registers per Modbus request.
		MSTR block TCP connections take too long to free up for reuse	When an MSTR block is aborted, it takes 30 seconds before the socket is free
Version V4.8	Date 12/22/2010	Problem fixed / Enhancement	Details

Bug Fix

- I/O scanner not scanning at configured rep-rate

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.

- I/O scanner health bits will not return to healthy state (1) after a tesysport is power cycled

Sometimes after power cycling a TesysPort, the respective I/O Scanner health bits in the NOE 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.

- I/O Scanner communications will take 600ms to recover on loss of a TCP reply packet from a gateway
- After multiple consecutive swaps of a Quantum Hot Standby system, the NOE771x1 does not restart
- Network statistics incorrectly reporting Link status when the Ethernet cable is removed

The I/O scanner fast retransmission algorithm may not be supported by all gateway devices causing message sequencing issues

After performing 3 or more immediate swaps of a Hot Standby system, the NOE does not restart.

Within the MBP_MSTR block, there is a Function Code 3 that can be used to 'Get Local Statistics' from an NOE. It returns the 'TCP/IP Ethernet Network Statistics' in a data buffer array. Word 3 of the data buffer array is used for the 'Board Status Word'. Bit 15 of Word 3 is used to monitor the status of the Link which is represented by the LINK LED on the front of the NOE module. The bit changes to a value of 1 when the Ethernet cable is plugged in. Then, if the Ethernet cable is removed from the NOE module, the LINK LED on the NOE goes off but bit 15 of word 3 of the data buffer array incorrectly flickers between values 1 and 0.

- I/O Scanner stops communications with a gateway device

Termination of the IO Scanner connection by the server may result in a condition where the I/O Scanner does not restart.

- I/O Scanner will not open a connection if the device being scanned has a slow response time

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.

Version
V4.7

Date
5/26/2010
Bug Fix

Problem fixed / Enhancement

- The NOE goes into detected fault mode if the primary HSBY plc is stopped
- NOE stops i/o scanner communication with slow responding devices
- I/O scanner may not hold last value during a HSBY swap

Details

If the Primary PLC (HSBY configuration) is stopped, the NOE in the new Primary goes into detected fault mode for 20 seconds. This happens when there is more than one NOE. The HSBY system has a narrow window of time when Primary and standby change IP address. In some cases this leads to a duplicate IP conflict.configured.

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 NOE on a connection it can cause the I/O Scanner entry to stop communicating.

The NOE771xx IO scanner may not hold the last value on a swap over of the Hot Standby. The I/O scanner values become zero for one scan.

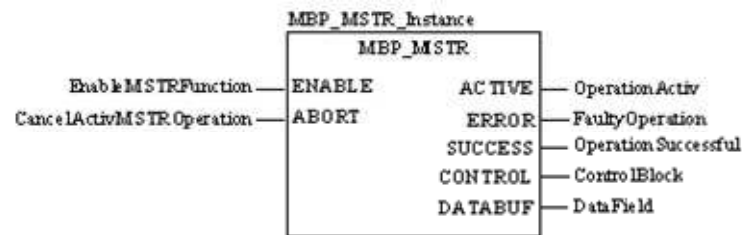
- NOE can take up to 25 seconds to close a connection
- The NOE is incorrectly assigned an address of 'configured IP+1' instead of the 'configured IP' in a standalone 140CPU6716x

The NOE sends a set of six 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
The 140NOE77101 incorrectly returned an address of 'configured IP+1' unless there was a remote drop configured with a '140 CRP 93x xx' in the same rack as the '140CPU6716x'. This only happened when the Hot Standby CPU was used as a standalone/offline configuration.

NOTE

How to enable/disable FTP/TFTP and/or HTTP using MBP_MSTR FB

Definition



- MSTR block programming follows normal programming procedures in addition to a new format of the control block. Both the control block and return data field must be located to %MW in the application. The return data field must be at least one word in length but is not used.
- The control block must be at least nine words in length.
- The control block **MUST** be programmed as follows:

Word0 - OpCode 0xFFFF0

Word1 - Error Return Code

Word2 - **MUST** be set to 1

Word3 - **MUST** be set to 1

Word4 - Must be set to slot number of NOE (high byte) and Destination ID to use (low byte)

Word5 – Bit 0 (LSB) FTP/TFTP Request Mode, 1 = Enable, 0 = Disable

Bit 1 HTTP Request Mode, 1 = Enable, 0 = Disable

Word6 - **MUST** be set to 0

Word7 - **MUST** be set to 0

Word8 - **MUST** be set to 0

Errors returned

The MSTR block returns the following status/errors:

- Success – 0x0000, when the MSTR block with OpCode 0xFFFF0 is called and the enabled state of either HTTP or FTP/TFTP was changed .
- Busy – 0x5068, when the MSTR block with OpCode 0xFFFF0 is called within 2 seconds of previous call regardless of success or error..

Bit 1 HTTP Request Mode, 1 = Enable, 0 = Disable

Word6 - **MUST** be set to 0

Word7 - **MUST** be set to 0

Word8 - **MUST** be set to 0

Errors returned

The MSTR block returns the following status/errors:

- Success – 0x0000, when the MSTR block with OpCode 0xFFFF0 is called and the enabled state of either HTTP or FTP/TFTP was changed .
- Busy – 0x5068, when the MSTR block with OpCode 0xFFFF0 is called within 2 seconds of previous call regardless of success or error..
- Same State – 0x4001 when the MSTR block with OpCode 0xFFFF0 is called to change the state of both HTTP and FTP/TFTP to the state that they are currently in.
- Invalid Data – 0x2004 when the data in the MSTR's control block is not as specified. In Concept if word 2 is set to 0 this error is set to 0x1001.
- Disabled – 0x5069, when the MSTR block with OpCode 0xFFFF0 is called and Unity Pro has disabled FTP/TFTP or HTTP and the MSTR request is to changed the state of the disabled service.
- **IMPORTANT – No change of state will occur for either FTP/TFTP or HTTP if an error code other than success is returned.**