

# **ControlLogix ControlNet Interface Module, Series D**

Catalog Numbers 1756-CNB/D, 1756-CNBR/D

<b>Topic</b>	<b>Page</b>
About This Publication	1
Enhancements	2
Corrected Anomalies	5
ControlLogix I/O Rack Connection Limitations	14
Additional Resources	15

### **About This Publication**

These release notes cover the ControlLogix ControlNet Interface Module Series D firmware, revision 7.15 and earlier.

### Enhancements

These enhancements have been made to the firmware.

Revision	Description
5.50	Firmware ASSERTs display the firmware revision along with the source file and line numbers.
	To provide easier diagnostics for the customer, the module has changed its failure display when it encounters a failed backplane interface ASIC. Instead of displaying a file name and line number, the module scrolls the message FAILED BACKPLANE INTERFACE ASIC should a failed backplane interface ASIC be detected.
	Implemented a more efficient method of processing the CPU utilization, resulting in a more accurate value at high utilizations.

Revision	Description
5.44	<p>Provided a more descriptive scrolling message for certain fatal error conditions. These include the setting of the node address to zero in any system or to 99 in a redundant system. Also, not being able to communicate with the backplane ASIC or receiving conflicting data from the backplane ASIC will also produce a scrolling error message.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• ADDRESS SWITCHES = 00, ILLEGAL &lt;file name&gt; &lt;line number&gt;</li> <li>• ADDRESS SWITCHES = 99, ILLEGAL IN REDUNDANT SYSTEM &lt;file name&gt; &lt;line number&gt;</li> <li>• TIMED OUT WAITING FOR SRM TO POWER-UP AND RELEASE THE BACKPLANE SIGNAL &lt;file name&gt; &lt;line number&gt;</li> <li>• UNABLE TO COMMUNICATE WITH CHASSIS BACKPLANE &lt;file name&gt; &lt;line number&gt;</li> <li>• CONFLICTING RACK SIZE OR SLOT DATA FROM BACKPLANE ASIC &lt;file name&gt; &lt;line number&gt;</li> <li>• UNABLE TO COMMUNICATE WITH BACKPLANE ASIC &lt;file name&gt; &lt;line number&gt;</li> <li>• SRM RESPONDING TO BACKPLANE PING BUT NOT REDUNDANCY CONNECTION &lt;file name&gt; &lt;line number&gt;</li> </ul>
5.39	<p>Changed the n U # # diagnostic 4-character display to these two displays:</p> <ul style="list-style-type: none"> <li>• U c x x where xx is the number of unconnected client buffers, up to 20, used by the 1756-CNB module  <p style="margin-left: 40px;">The display is enabled when usage is 80% or greater and turns off when usage drops below 50% of the available buffers.</p> </li> <li>• U s x x where xx is the number of unconnected server buffers, up to 20, used by the 1756-CNB module  <p style="margin-left: 40px;">The display is enabled when usage is 80% or greater and turns off when usage drops below 50% of the available buffers.</p> </li> </ul>

## 4 ControlLogix ControlNet Interface Module, Series D

Revision	Description
5.38.40	Beginning with this version of the firmware, a sub-minor revision will be added to the revision of the firmware (major rev., minor rev., sub-minor rev.> for example, 5.38.40). The sub-minor revision number is added to help to better identify and differentiate pre-released products. There should be no change in user behaviors when referencing the firmware revisions of released products. This number is not printed on the product label, however; it is scrolled on the displayed upon module powerup.
	Enhanced the rate at which ControlNet network configuration, station status, and error counter information is gathered. With this enhancement, this data will be gathered and updated every 3 seconds to more closely match other system timing such as connection re-establishment.
5.36	Enhanced the internal RAM memory test to improve memory fault coverage.
5.32	The 1756-CNBR modules can now be used with the 1756-CNB I/O Configuration entry in RSLogix 5000 under compatible keying.
	This version of the product is ControlNet International (CI) conformance tested. All future releases will continue to be CI-compliant.
5.27	Optimized the 1756-CNBR module for the ControlLogix Redundancy system.
	Added the ability to present diagnostic information on the 4-character display on the module.
	Added 16-bit minor fault counters internal to the module for these fault conditions (this feature was introduced in version 5.22): <ul style="list-style-type: none"><li>• Bandwidth exceeded – increments whenever there are no receive buffers available to handle incoming ControlNet data</li><li>• Network error count – increments whenever a lonely or network mismatch condition is detected</li><li>• ControlBus receive error count – increments whenever the 1756-CNB module detects a backplane error on the module</li><li>• ControlBus address error count – increments whenever the 1756-CNB module detects a backplane address error on the module</li></ul> These read-only counters are accessible to ladder programs using CIP generic messaging. These counters are continuous and will roll over from 65,535 to 0. The counts are reset only at power is applied to the module.

## Corrected Anomalies

These anomalies have been corrected in firmware revisions 7.15 and earlier.

Revision	Anomaly	Description
7.15	Single-channel 1756-CNB module at lowest node causes network disruption	Using a single-channel 1756-CNB module as the lowest node on a ControlNet network that has media redundancy configured for channels A and B OR as a B only network may prevent normal network operation. Symptoms include: <ul style="list-style-type: none"> <li>• Loss of all scheduled connections for the network</li> <li>• New devices are prevented from joining the network</li> <li>• Module fault with ASSERT: smacdrv.c line 3440 showing on the display Lgx00076887</li> </ul>
	ControlNet network channel media redundancy state not configured correctly	A 1756-CNB or 1756-CNBR module that is the current Active Keeper may not apply the channel media redundancy state correctly after a new RSNetWorx software project has been downloaded. Lgx00074794

## 6 ControlLogix ControlNet Interface Module, Series D

Revision	Anomaly	Description
7.15	Enhancement for new extended status code of 16#812	The 1756-CNB and 1756-CNBR modules now report error code 16#812 whenever the modules' node address does not match the expected address. Lgx00075549
	Power cycle racks caused persistent fault 16#0304	A 1756-CNB or 1756-CNBR module that is also the current Active Keeper may fail any connections with an error code 16#304 No Scheduled Configuration if lower nodes are power cycled just after a major network disruption. Lgx00075848
	Fault due to unterminated ControlNet network cable	Leaving the ControlNet network unterminated for long periods of time may cause the 1756-CNB or 1756-CNBR modules to fault with ASSERT: smacisr.c showing on the display. Lgx00077216
	OK status indicator remains flashing red	After recovering from a NET ERR condition, the OK status indicator may remain flashing red until the first connection has been established through the module. Lgx00081279
	Fault during flash update	Under very rare conditions the 1756-CNB module may fault with ASSERT: icpserv.c showing on the display during a ControlFLASH update if it has any active connections. Lgx00080851
7.12	Downloading RSNetWorx software project through bridge to 1756-CNB or 1756-CNBR modules fails	The RSNetWorx software project may fail with this error message:  Unable to send message to the online active-keeper device due to resource limitations...  while performing either a download or an online save when the online path is through a gateway and the last hop is a 1756-CNB or 1756-CNBR module. Lgx00066853

Revision	Anomaly	Description
7.11	An incorrectly configured outbound MSG can cause all inbound messages to fail with error 16#204	<p>An incorrectly configured outbound MSG may cause problems if the 1756-CNB module is also receiving a large number of unconnected messages through the ControlNet network.</p> <p>Specific conditions for the anomaly include:</p> <ul style="list-style-type: none"> <li>• Outbound MSG configured as Unconnected</li> <li>• The outbound MSG configured with the 1756-CNB module's own ControlNet network node address in the communication path</li> <li>• MSG is sent when all ControlNet incoming unconnected buffers are in use</li> </ul> <p>Each time all of the above conditions are met the 1756-CNB module will lose one of its incoming unconnected buffers. Incoming messages performance may slowly degrade until all buffers are lost, at which point all incoming unconnected messages will begin to fail with an error code 16#204. <span style="float: right;">Lgx00064807</span></p>
	Module fault under heavy unscheduled load	Module may rarely fault with ASSERT fifo.c line 0744 showing on the display when five or more unscheduled packets are to be sent at the same time. <span style="float: right;">Lgx00063510</span>
7.10	Module no longer responds to network traffic	After recovering from a major network disruption the 1756-CNB or 1756-CNBR modules may become unresponsive to network traffic. <span style="float: right;">Lgx00063368</span>
	Transmission of scheduled data delayed by one Network Update Time (NUT)	After a major network disruption, the transmission of scheduled data may be permanently delayed by one network interval. <span style="float: right;">Lgx00061468</span>

## 8 ControlLogix ControlNet Interface Module, Series D

Revision	Anomaly	Description
7.10	Changes in electronic keying	A redundant media 1756-CNBR module can no longer replace a non-redundant media 1756-CNB module if a connection specifies the electronic keying to be exact match.
	Module freezes when using Add I/O Online	The 1756-CNB module may become unresponsive with the display frozen when you use the Add I/O Online feature. This occurs when the connection is configured as a multi-hop connection. Lgx00058180
	Fault due to unterminated ControlNet network cable	Leaving the ControlNet network unterminated for long periods of time may cause the 1756-CNB or 1756-CNBR modules to fault with ASSERT: icn_ucmm showing on the display.
	Module fault when using Add I/O Online and Change of State	<p>Module may fault with ASSERT icpint.c line 294 showing on the display when using unscheduled connections that send data rapidly on the backplane.</p> <p>All the following conditions must be true:</p> <ul style="list-style-type: none"> <li>• Module added to I/O tree using Add I/O Online feature</li> <li>• Module configured for Change of State.</li> <li>• Rapid changes in module inputs trigger rapid data production</li> </ul> <p>Lgx00058434</p>



Revision	Anomaly	Description
5.50	Illegal ControlNet network schedule	<p>An illegal ControlNet network schedule can be imposed on a network after a project is downloaded to a Logix controller. After the download, the illegal schedule may require a 1756-CNB module on the network to transmit more data in a single Network Update Time (NUT) than ControlNet network specifications allow. Revision 5.50 will fail the module when an illegal schedule is detected; however, a more descriptive message will be scrolled across the 1756-CNB display. The display will scroll <b>FAULT: Rev 5.50 Build 010 SCHEDULE LIMIT REACHED, INHIBIT CONNECTIONS, RESET MODULE THEN RESCHEDULE.</b></p> <p>This message indicates the steps you need to take to recover from this condition. Some of the connections through this 1756-CNB module have to be inhibited so that the 1756-CNB module can be reset and rejoin the network without again detecting the problem and faulting. Once the connections are inhibited, the 1756-CNB module can be safely reset and the network rescheduled. Once the network is rescheduled to a valid configuration, the connections can be uninhibited. Be sure to save the project.</p>

## 10 ControlLogix ControlNet Interface Module, Series D

<b>Revision</b>	<b>Anomaly</b>	<b>Description</b>
5.50	1756-CNB module assert during network disruption	<p>When a 1756-CNB module goes lonely, the module could assert when messages are received from the backplane. This version includes a fix that properly handles this backplane traffic.</p> <p>Module may assert in smacisr.c during ControlNet network disruption - After a network disruption, the module now waits for the communications chip to reset before allowing traffic to be received.</p> <p>Module may assert in icn_ucmm.c during ControlNet network disruption - If a retry to an unconnected request is received at the same time the original reply is being sent, the module may assert.</p>
	Delay in sending scheduled data	When operating with a fully loaded schedule, the 1756-CNB module may delay in sending scheduled data by one network interval. Modified the firmware to more efficiently guarantee data delivery according to the network schedule.
	NET ERR display	1756-CNB or 1756-CNBR modules with firmware revisions later than 5.39.10 may permanently display NET ERROR after either a major network disruption or a complete system power cycle. While the module is in this state, no communication is possible for any device on the same network.
	UCMM server count	The number of UCMM servers being displayed on the 1756-CNB module does not match the number of servers being used. The number of UCMM servers was not being decremented when they timed out, leaving the count out of sync with the number actually being used.