COMTRADE CONFORMITY CHECK (CCC)

Version 2.7

Quick Start

Preface

This document contains information about COMTRADE Conformity Check. Several examples are provided including an example report from a real COMTRADE record.

This document is intended for use by any individuals working with COMTRADE records.

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CHAPTER 1

System Requirements and Installation

This chapter lists the system requirements needed for installing and running the CCC software. It also describes the installation process.

System Requirements

- Windows 7 or 10
- 5 MB of storage available
- 10 MB of RAM available
- Notepad

Download and Install from the Web

1. To download and install the software from the internet go to www.wavewin.net.
2. Click on the last picture labeled COMTRADE Conformity Check (CCC).
3. Enter the username and password provided to you by Softstuf. The username and password are case sensitive.
4. Click on the software link to download the latest executable files.

What do you want to do with COMConformityCheck-2.3-08-02-19.zip (11.1 MB)? From: softstuf.com	Open	Save	∧	Cancel	✕
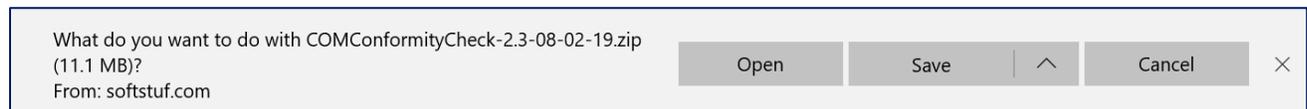
5. When you download the executable a message similar to the one displayed above (picture may vary depending on the internet browser being used) should show up on your screen. Click on the save button, this should save a zipped folder to your downloads directory.
6. Create a folder off the root called "C:\COM_Conformity_Check", take the contents of the zip file and unzip them to this folder.
7. Create a desktop shortcut for the COMTRADE Conformity Check (CCC) executable. From there the application is installed and ready to be used.

Copy and Install from a USB

1. Create a folder off the root directory called "C:\COM_Conformity_Check".
2. Copy the contents of the folder located on the USB to the folder you have created.
3. Create a desktop shortcut for the COMTRADE Conformity Check executable. From there the application is installed and ready to be used. See the picture below for an example.
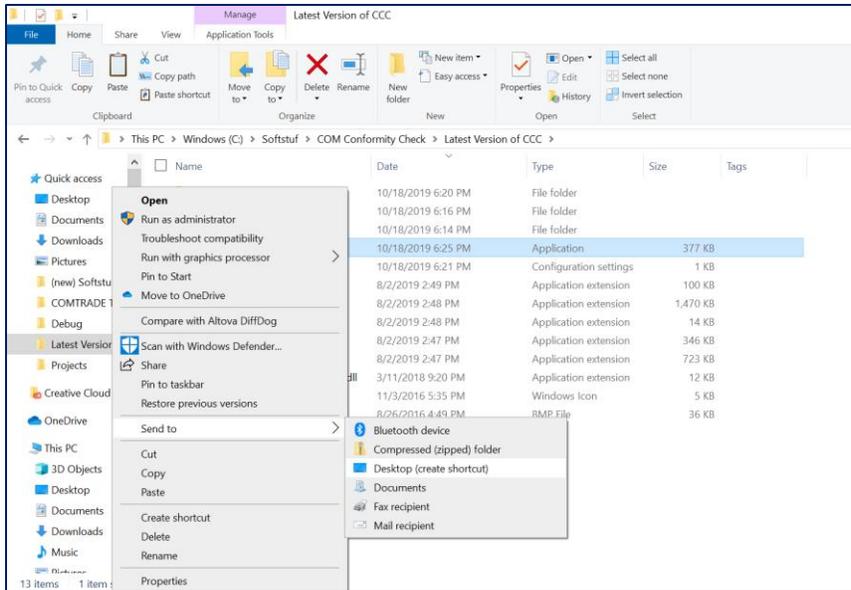
Activation Code

To use CCC the application must first be activated. To activate CCC first run the application, when the application is run for the first time the following dialog box will appear:
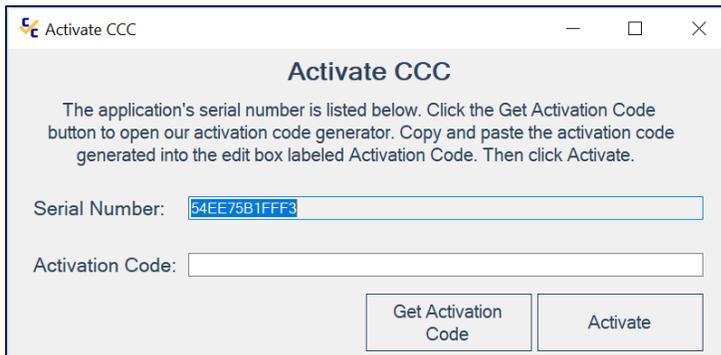
To generate the activation code, click the "Get Activation Code" button, this will take the user to our Activation Code Generator webpage.
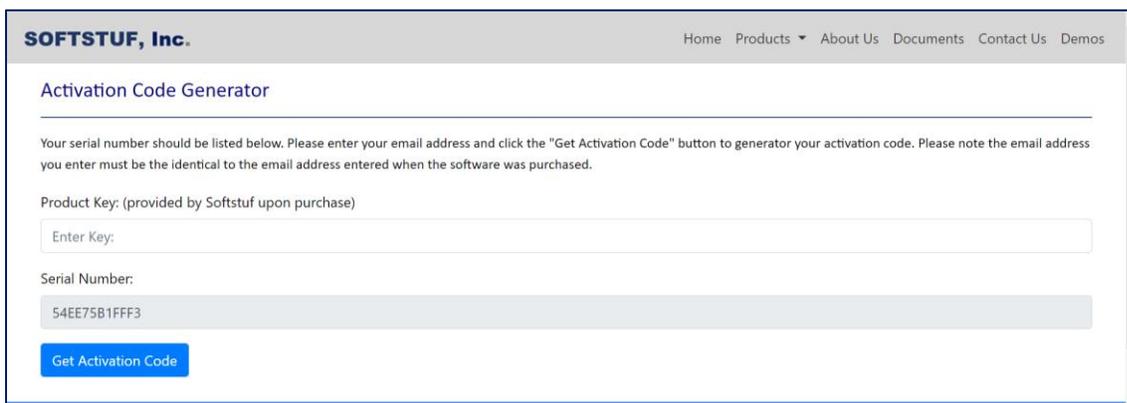
The serial number which ties the application to one machine will be automatically populated, to generate the activation code enter the Product Key provided by Softstuf and click the "Get Activation Code" button. This will take you to a new page where the activation code will be listed.
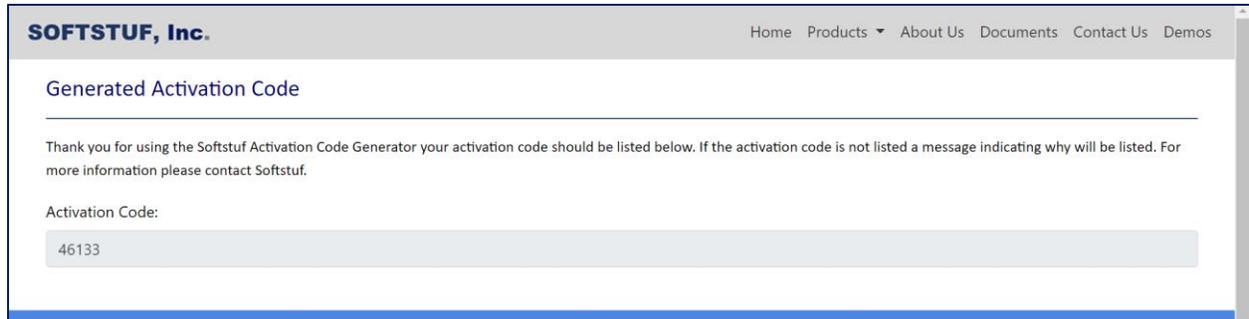
Copy the activation code from here and paste it in the "Activation Code:" textbox on the "Activate CFC" dialog box, after this click the "Activate" button to activate the software.

CHAPTER 2

Application Buttons and Controls

This chapter describes the purpose of the application and gives a detailed tutorial on how to use the application.

Application Purpose

The purpose of COMTRADE Conformity Check (CCC) is to detect and identify errors in COMTRADE records, and COMNAME filenames. By quickly identifying format errors and creating a report file, users will be able to see exactly where the errors are, and how to fix them. CCC can also now correct errors found in COMTRADE records.

Buttons and Controls

When first opened (after activation) CCC will appear as displayed below.
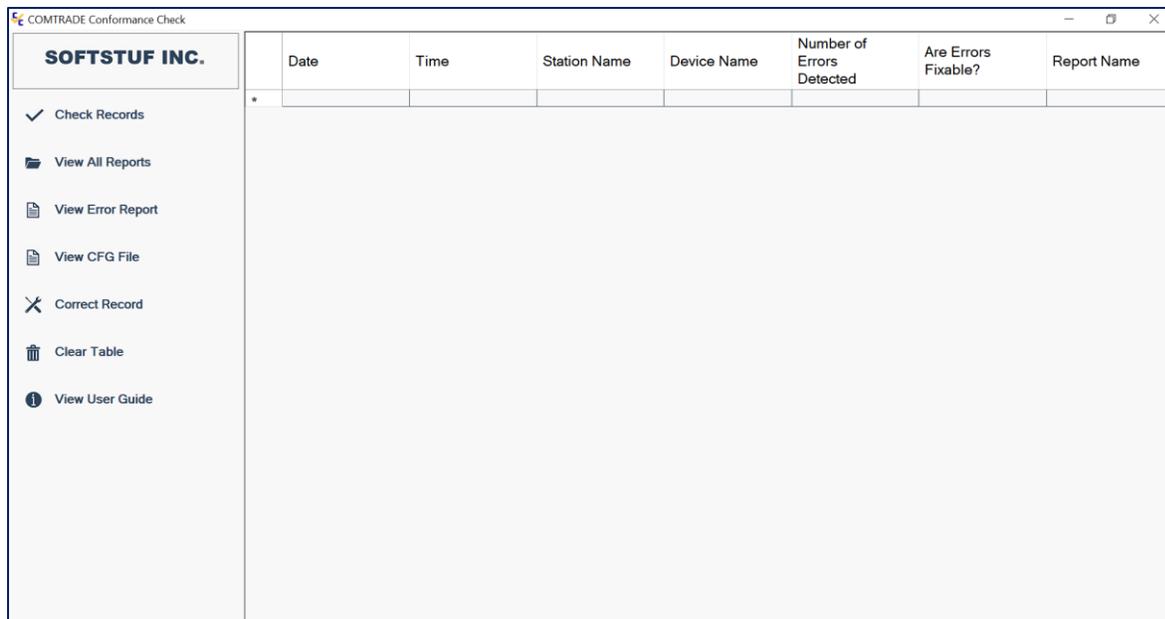
When COMTRADE records are checked relevant information such as the records trigger date/time, the name of the device which produced it and the number of errors detected will be displayed in the data table on the applications main window. The buttons on the left panel are used in the following ways:

Check Records

When the Check Records button is selected the dialog box displayed below will appear. This is used to detect errors in either a single COMTRADE record or a directory of COMTRADE records.
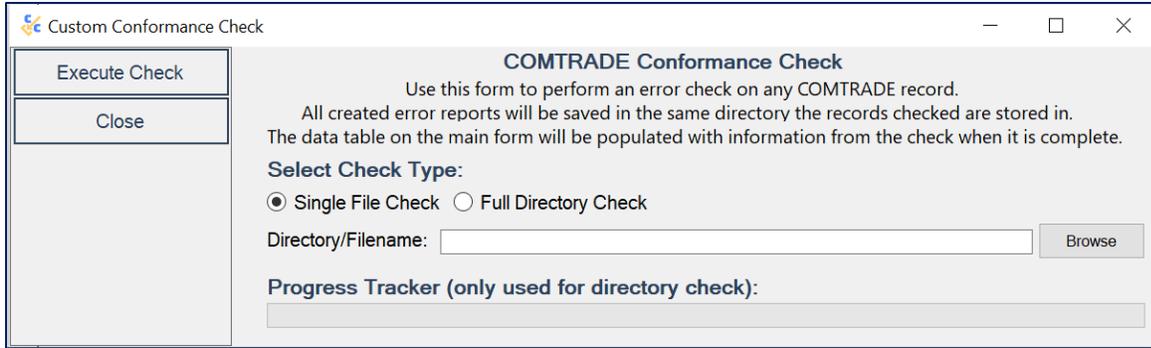
When the dialog is opened the Single-File check option will be highlighted. To check a single file, click on the radio button labeled "Single File Check". To check a full directory, click on the radio button labeled "Full Directory Check". A file manager will open when the user clicks the Browse button during a single file check. A directory manager will open when the user clicks Browse during a directory check. When the Single File or Directory has been selected and the "Directory/Filename:" text box is populated click the "Execute Check" button.

After the check is complete information on each COMTRADE record checked will appear in the table on the main application dialog, as appears below. If a Single-File check is executed a row will be added to the data table as soon as the check is finished.

If a Full-Directory check is executed a row for each record checked will be added to the data table when all records in the directory have been checked. At the end of the directory check all COMTRADE files in the directory will be listed in the data table in the order they were checked.

Date	Time	Station Name	Device Name	Number of Errors Detected	Are Errors Fixable?	Report Name
06/01/2014	05:33:44.13976	Substation52	Device52	1	Yes	01062014,053344713976,-5,Substation52,
06/02/2009	02:05:47.73475	Substation79	Device79	1	Yes	02062009,020547473475,-5,Substation79,
10/05/2016	10:49:51.91861	Substation82	Device82	1	Yes	05102016,104951991861,-5,Substation82,
05/09/2015	15:57:04.89081	Substation41	Device41	1	Yes	09052015,155704989081,-5,Substation41,
03/13/2014	10:07:16.62558	Substation78	Device78	1	Yes	13032014,100716462558,-5,Substation78,
05/13/2014	12:19:38.48917	Substation46	Device46	4	Yes	13052014,121938848917,-5,Substation46,
05/09/2015	15:57:05.83000	Substation28	Device28	1	No	150509,155705083000,0t,Substation28,De
05/09/2015	15:57:05.84870	Substation80	Device80	1	No	150509,155705084870,0t,Substation80,De
05/09/2015	15:57:05.68065	Substation81	Device81	1	No	150509,155705968065,0t,Substation81,De
10/26/2016	08:30:57.08	Substation25	Device25	0	No	161026,083057808,-5,Substation25,Device
02/17/2014	14:14:19.11375	Substation34	Device34	7	Yes	17022014,141419211375,-5,Substation34,
05/17/2016	15:52:42.72941	Substation55	Device55	1	Yes	17052016,155242372941,-5,Substation55,
05/17/2016	15:52:42.74801	Substation53	Device53	1	Yes	17052016,155242374801,-5,Substation53,
06/18/2016	15:15:17.22000	Substation49	Device49	1	Yes	18062016,151517422000,-5,Substation49,
10/26/2016	02:30:57.09563	Substation44	Device44	1	Yes	26102016,023057709563,-5,Substation44,
06/05/2013	15:15:32.477000	Device42	Company	4	Yes	6-5-13,-5,Substation42,Device42,Company
08/20/2014	21:47:29.354000	Substation58	Device58	1	Yes	Aug 20 2014 21 47 29 354 2,-5,Substation5
08/28/2016	20:52:36.61	Substation26	Device26	1	Yes	Aug282016,205236961,-5,Substation26,De
12/27/2016	12:58:02.050000	Device59	Company	3	Yes	Dec 27 2016 12 58 02 050 4,-5,Substation5
01/01/2016	13:08:32.83	Substation13	Device13	1	Yes	R10F836_160101,130832783,-4t,Substatio
07/20/2016	22:18:11.83	Substation23	Device23	1	Yes	R20F2111_160720,221811983,-4t,Substati

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✓ Check Records

📁 View All Reports

📄 View Error Report

📄 View CFG File

✕ Correct Record

🗑 Clear Table

ℹ View User Guide

View Error Report

To view a records error report, select a row in the table and click the "View Error Report" button. To select a row, click on the white box to the left on the row you wish to select.

An example error report appears is pictured below:


```
13052014,121938848917,-5,Substation46,Device46,Company.CCC - Notepad
File  Edit  Format  View  Help
Code,  Line,  File,  Error Description
0018,  0003,  CFG,  Range Minimum is not the correct length (must be 1 - 6 characters) in analog channel 1
0018,  0005,  CFG,  Range Minimum is not the correct length (must be 1 - 6 characters) in analog channel 3
0018,  0006,  CFG,  Range Minimum is not the correct length (must be 1 - 6 characters) in analog channel 4
0124,  0000,  CMN,  Start Date in the filename must be 6 digits in length (first field in filename).
```

The format for the error report is as follows, the first field displays the error code, the second field displays the line in which the error was found, the third field displays what file the error was found in, and the fourth field provides a quick description of the error detected. Using this format, the first error listed in the report can be read as: error code 18, the range minimum is not the correct length in analog channel one on line three of the COMTRADE records CFG file.

View CFG File

To view a records CFG file, or the CFF file if the record is saved in the 2013 single file format select a row and click the "View CFG File" button. (Same process as displayed above).

Correct Record

If the "Is an Error Fixable" field contains a "Yes" then the one or more of the errors detected in a COMTRADE record can be corrected. All corrected records will be saved to a sub directory

titled "Corrected_Records" which will be created directly underneath the directory where the original record is saved. Please note CCC will never make changes to COMTRADE records, instead the software creates a new record containing the corrections. To correct a record, select a row and click the "Correct Record" button. Depending on which errors have been detected a COMTRADE record can be corrected in one of three ways.

1. If the errors detected in a record are not related to the filename CCC will correct the errors and create a new COMTRADE record with the same name as the original record with ",CCC" added to the end of the filename. For example, if the record to be corrected is named "210811,010715143,-5,STN,DEV,CMP.CFG" then the corrected record will be named "210811,010715143,-5,STN,DEV,CMP,CCC.CFG".

2. If the errors detected in a record are related to the filename CCC will rename the record to be compliant with the COMNAME standard, for example if the record is named "Record1.CFG", and the errors detected are only in the filename this message box will appear:
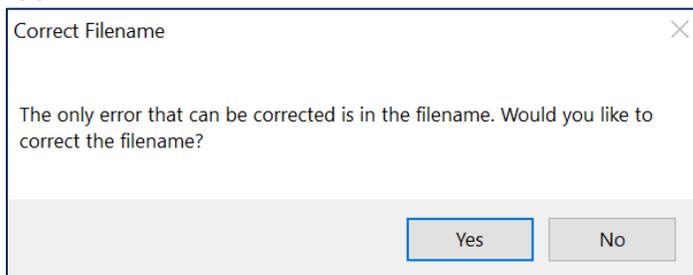
If the user clicks "Yes" then the following dialog box will appear, asking the user to enter the name of the device which produced the record, the station in which that device is located, and the company which owns the station, as well as the time zone in which the file was created.
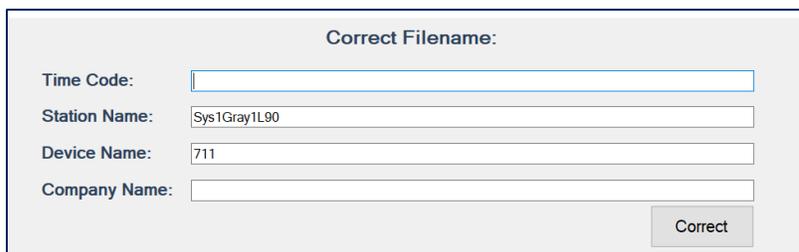
All of this information will be used to rename the file. Depending on the record being corrected certain fields will be populated automatically from information found in the file or the filename. If the time code is entered as "-5" and the company name is entered as "Softstuf" a new record will be created named:
"210811,010715432,-5,Sys1Gray1L90,711,Softstuf,CCC.CFG"

3. If errors are detected that can be fixed in both the record and the filename then the following dialog box will appear:
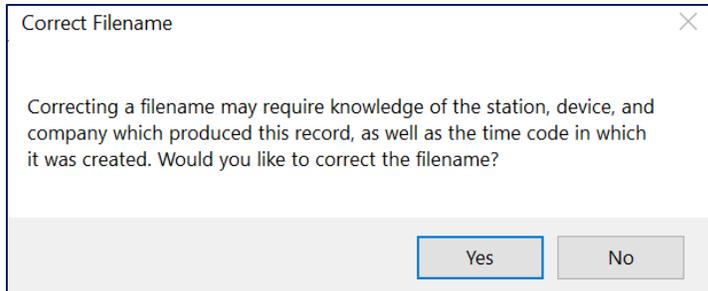
If the user clicks "Yes" they will be taken to the dialog displayed in #2 and the file will be renamed to be COMNAME compliant. If the user clicks "No" then the record will be renamed as described in #1, for example if the records name is "Record1.CFG" then the record will be renamed to "Record1,CCC.CFG".

CCC currently supports correction of error codes 10, 25, 54, 58, 61, 91, 92, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132. If a record contains error codes 10, 25, 58, 61, or 91 once the user clicks the "Correct" button the record will be automatically corrected. If a record contains error codes 54 or 91 when a user clicks the "Correct" button the dialog box displayed below will appear.
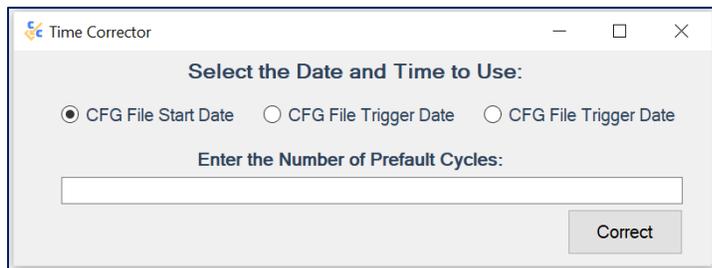
This allows the user to choose the time tag in the record they consider the most trustworthy, this will be the time tag that is used to correct the record. The user can also specify the number of Prefault cycles between the start and trigger time tags.

If a record contains error codes 123, 124, 125, 126, 127, 128, 129, 130, 131, or 132 then one of the two dialogs described in #2 and #3 above will appear.

View All Reports

To view reports created from a previous check select the "View All Reports" button. This will open a directory manager which will allow the user to select a directory.
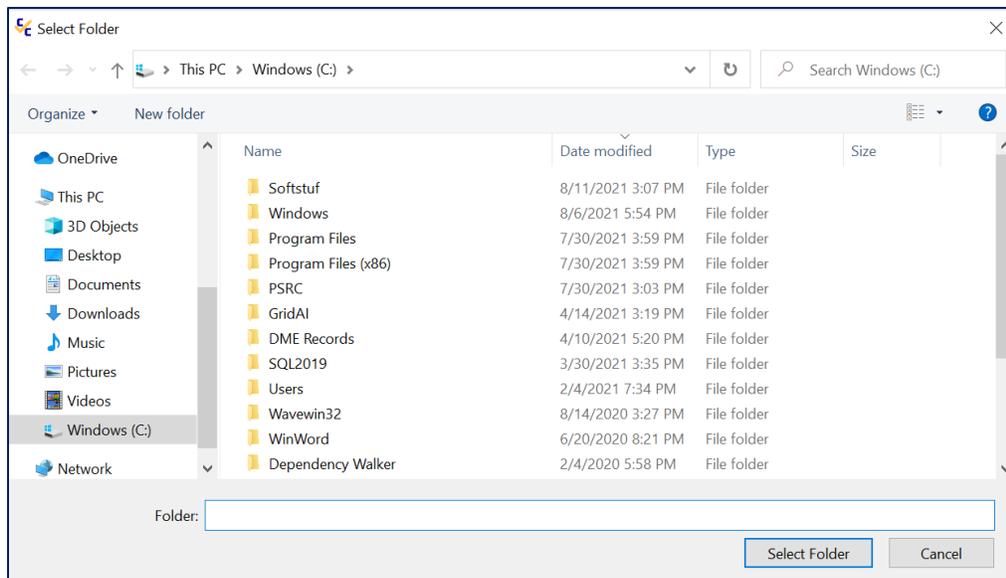
After the directory is selected the table on the main window will be populated will information from each error report saved to that directory.

Please note the information for records which are not named in compliance with the COMNAME standard in the table will be different when using the "View All Reports" button compared to the "Check Records" button. The reason for this is CCC uses information from the filename in the data table such as the trigger date, trigger time, station name, and device name.

During a COMTRADE check if this information is not available in the filename the software will get the information from inside the COMTRADE records configuration file. The "View All Reports" command only displays information from error report files that have been previously created by the software. If the error report filename does not contain the trigger date, trigger time, station name and device name then this information will not be displayed. The "View All Reports" button should mainly be used to determine if COMTRADE records in a directory have been previously checked.

Clear Table

To remove all error checking information from the table, click the "Clear Table" button.

View User Guide

To open this document, click the "View User Guide" button on the left panel.

CHAPTER 3
List of Possible COMTRADE Conformity Errors

CFG File Possible Errors

1. Incorrect number of columns (must be 3).
2. Station Name is not the correct length (must be 1 - 64 characters).
3. Recording Device Identification name incorrect length (must be 1 - 64 characters).
4. Revision Year is incorrect (must be 4 digits).
5. Incorrect number of columns (must be 3).
6. Total Number of Channels is incorrect (must be 1 - 6 characters).
7. Analog Channels is incorrect (must be 2 - 7 characters and must end with the character A).
8. Digital Channels is incorrect (must be 2 - 7 characters and must end with the character D).
9. Analog Channels: Incorrect number of columns (must be 13).
10. Analog Channels: Incorrect Analog Channel Number (must be successive and sequential).
11. Analog Channels: Channel Identifier is over 128 characters long.
12. Analog Channels: Channel Phase Identification is over 2 characters long.
13. Analog Channels: Circuit Component is over 64 characters long.
14. Analog Channels: Channel Units is not the correct length (must be 1 - 32 characters).
15. Analog Channels: Channel Multiplier is not the correct length (must be 1 - 32 characters).
16. Analog Channels: Channel Offset is not the correct length (must be 1 - 32 characters).
17. Analog Channels: Channel Time Shew is not the correct length (must be between 1 - 32 characters).
18. Analog Channels: Range Minimum is not the correct length (must be 1 - 13 characters).
19. Analog Channels: Range Maximum is not the correct length (must be 1 - 13 characters).
20. Analog Channels: VT/CT Primary Factor is not the correct length (must be 1 - 32 characters).
21. Analog Channels: VT/CT Secondary Factor is not the correct length (must be 1 - 32 characters).
22. Analog Channels: Primary/Secondary Data Identifier is not the correct character (must be p, P, s, or S).
23. Analog Channels: Missing analog channel.
24. Digital Channels: Incorrect number of columns (must be 5).
25. Digital Channels: Incorrect Digital Channel Number.
26. Digital Channels: Channel Identifier is not the correct length (must be 1 - 32).
27. Digital Channels: Channel Phase Identifier cannot be longer than 2 characters long.

28. Digital Channels: Circuit Component cannot be longer than 64 characters long.
29. Digital Channels: Normal state must be either 0 or 1.
30. Digital Channels: Incorrect digital channel count
31. Frequency Line: Incorrect number of columns (must be 1).
32. Frequency Line: Line Frequency is not the correct length (must be 1 - 32 characters).
33. Sampling Rate: Incorrect number of columns (must be 1 or 2).
34. Sampling Rate: Sampling Rate is not the correct length (must be 1 - 3 characters).
35. Sampling Rate Line 2: Incorrect number of columns (must be 2).
36. Sampling Rate Line 2: Sampling Rate is not the correct length (must be 1 - 32 characters).
37. Sampling Rate Line 2: End Sample is not the correct length (must be 1 - 10 characters).
38. Date and Time Lines: Incorrect number of columns (must be 2).
39. Date and Time Lines: Day is incorrect (must be 1 - 31).
40. Date and Time Lines: Month is incorrect (must be 1 - 12).
41. Date and Time Lines: Year is incorrect (must be 4 digits).
42. Date and Time Lines: Time slot 1 is incorrect (must be 1 - 23).
43. Date and Time Lines: Time slot 2 is incorrect (must be 2 - 59).
44. Date and Time Lines: Time slot 3 is incorrect (must be 6 - 9 integers long).
45. Date and Time Lines: Incorrect number of columns (must be 2).
46. File Type Line: Incorrect number of columns (must be 1).
47. File Type Line: File type is the incorrect length (must be 5 - 8 characters).
53. Date and Time Lines: Fault date is incorrect.
54. Date and Time Lines: Fault time is incorrect.
55. 1991 standard: Analog channels must be 10 columns.
56. 1991 standard: Digital channels must be 3 columns.
57. 1991 standard: Fault year must be 2 or 4 digits.
58. First Line: Illegal revision year (must be 1991, 1999, or 2013).
59. Digital Channels: Normal state is missing.
60. Analog or digital channel count is incorrect program cannot check the rest of the file.
61. In COMTRADE files each line must end with a carriage return and line feed.
62. 2013 standard: Time stamp incorrect length (must be 1 - 32).
63. 2013 standard: Time code field 1 incorrect length (must be 1 - 6).
64. 2013 standard: Time code field 2 incorrect length (must be 1 - 6).
65. 2013 standard: Time quality code incorrect length (must be 1).
66. 2013 standard: Leap second indicator incorrect length (must be 1).
68. Analog or digital channel count incorrect the program cannot check the rest of the file.
70. Cannot have blank lines in-between CFG file information.
71. Scan number missing or invalid, cannot continue checking program.
72. Analog channel offset must be numeric.
73. Incorrect number of columns (must be 2 for 1991 version).
76. Time information and local time information missing.

77. Time Quality of samples information missing.

78. Crucial information missing from CFG file, cannot continue checking file.

79. Cannot check DAT file (crucial information missing from CFG file).

80. This application can only read COMTRADE files.

81. There cannot be more than 3 time slots, one for the hour, one for the minute, and one for the second and millisecond.

82. The total channels field can only contain numeric values.

83. There cannot be more than one carriage return at the end of each line, CCC will not attempt to read the rest of this record.

84. In the 1991 revision the revision year should not be listed, there are only two columns in the first line. One for the substation and one for the device.

91. The time difference between the start time and the trigger time is longer than the duration of the recording in the DAT file.

93. Time stamp multiplication factor must be numeric and between 1 and 32 characters.

94. Incorrect number of columns (only 1 column is allowed for the Time stamp multiplication factor line).

95. Cannot convert total channels to an integer, please ensure there are no non-numeric characters in the total channel count field.

96. Cannot convert analog channel or digital channel count to integers, please ensure the only non-numeric characters in the analog and digital count fields should be a trailing A and D.

97. Analog Channel Number is either non-numeric or too large to compute in analog channel.

98. Channel Offset is either non-numeric or too large to compute.

99. Channel Skew is either non-numeric or too large to compute.

100. Range Minimum is either non-numeric or too large to compute.

101. Range Maximum is either non-numeric or too large to compute.

102. VC/VT Primary Factor is either non-numeric or too large to compute.

103. VC/VT Secondary Factor is either non-numeric or too large to compute.

104. Digital Channel Number must be numeric.

105. Line Frequency is either non-numeric or too large to compute.

106. Number of Rates is either non-numeric or too large to compute.

107. Sample Rate is either non-numeric or too large to compute.

108. Scan Number is either non-numeric or too large to compute.

109. Start date is not properly formatted. The format should be dd/mm/yyyy in the 1999 and 2013 revision and mm/dd/yyyy in the 1991 revision.

110. Start time is not properly formatted. The format should be hh/mm/ss.ssssss for all revision years.

111. Trigger date is not properly formatted. The format should be dd/mm/yyyy in the 1999 and 2013 revision and mm/dd/yyyy in the 1991 revision.

112. Trigger time is not properly formatted. The format should be hh/mm/ss.sssssss for all revision years.

113. File type must be either ASCII, Binary, Binary32, or Float32 in the 2013 revision.

114. Incorrect number of columns in the Time information and Relationship to UTC Time line, must be 2 columns.

115. Incorrect number of columns in the Time Quality of Samples line, must be 2 columns.

118. Cannot find CFG file.

120. Cannot find CFF file.

121. File type must be either ASCII or Binary for records saved in the 1999 or 1991 revision.

122. Standard Revision year cannot contain spaces.

DAT File Possible Errors

48. Incorrect number of channels (correct number is equal to the total channels listed in the CFG file).

49. Incorrect scan number (scan numbers must be successive and sequential).

50. Incorrect number of scans (scan number is specified in CFG file).

51. Binary file incorrect size.

52. Incorrect scan number in binary file.

60. First number in the Binary DAT file is not 1 (DAT file type listed in the CFG file may be incorrect.)

67. First sample number in the DAT file cannot be 0.

69. Cannot check DAT File (analog or digital count is incorrect in CFG file).

74. DAT file type does not match up with DAT file separator.

75. Illegal character at end of DAT file.

92. There is an extra carriage return and line feed at the end of the DAT file.

116. The same error has occurred more than 20 times, CCC will stop checking this DAT file as it is most likely this error repeats for the remainder of the file.

117. Timestamp in binary DAT file is not properly formatted.

119. Cannot find DAT file.

Filename (COMNAME) Possible Errors

123. Filename is not COMNAME compliant.

124. Start Date in the filename must be 6 digits in length (first field in filename).

125. Start Date must be numeric.

126. The second two digits of the start date must be between 01 - 12.

127. The last two digits of the start date must be between 01 - 31.

128. Start Time in the filename must be between 6 and 12 digits in length (second field in filename).

129. First two digits of the Start Time must be between 00 - 23.

130. Second two digits of the Start Time must be between 00 - 59.

131. Third two digits of the Start Time must be between 00 - 60.

132. Time Code field (third field in filename) must be between 1 and 7 characters in length.

CHAPTER 4
Contact Information and Technical Support

Technical Support

If you have any questions about COMTRADE Conformity Check contact Zach Makki, Monday through Friday between 9 AM and 6 PM.

Email: zach@softstuf.com