Caterpillar M5X Protocol

Connector Configuration Parameters

CCM Type

Use the Dropdown list box to select the type of CCM that you are connecting to. The CCM type selection alters the AUTOINIT sequence and defines a Unit ID for the Stop Fault Code Broadcast message if needed.
There are 7 AUTOINIT steps:

1	Log On
2	Deactivate Lists 1 thru 8
3	Deactivate Lists 9 thru 16
4	Deactivate Advanced Broadcast Lists 1 thru 16
5	Stop Diagnostic Broadcasts
6	Stop Event Broadcasts
7	Stop Fault Code Broadcasts

The following table defines the AUTOINIT steps for each selection:

G3600	Steps 2 and 7, Unit ID 13
G3500 Air-Fuel	Steps 2 and 7, Unit ID 12
G3500 EIS	Steps 2 and 7, Unit ID 0E
G3400 EIS	Steps 2 and 7, Unit ID 0E
Original CCM (Diesel)	Steps 1 and 2, Unit ID not used
Enhanced CCM	Steps 1,2,3,4,5 and 6, Unit ID not used

RTS ON DelayX10ms

Enter a number from 0 to 255 (0 to 2.55 seconds) to delay sending a message after turning on Request To Send (RTS). Commonly used with modem communication to allow additional time for the modems to synchronize.

RTS OFF DelayX10ms

Enter a number from 0 to 255 (0 to 2.55 seconds) to keep RTS on after a message has been sent. Commonly used to keep a radio on for a short period of time at the end of a message.

Handshake Option

If Full Handshake is selected the Omnii-Comm will assert RTS and wait for CTS before sending a message. RTS will be turned off after the message has been sent. If Constant Carrier is selected the Omnii-Comm will assert RTS when it sends its first message and leave it asserted. It will wait for CTS before sending. If Ignore CTS is selected, RTS will be asserted before sending a message and removed at the end of the message. The CTS input will be ignored. If No Handshake is selected, RTS will be asserted when the Omnii-Comm sends its first message. RTS will not be turned off at the end of the message. The CTS input will be ignored. If Activity Monitor is selected, the Omnii-Comm will check the DCD input before sending a message. If DCD is ON, the Omnii-Comm will delay sending the message.

Option Bit Parameters

Use Radio Key

If checked, Bit 0 in a register specified by the "Radio Key Address" on the Header configuration screen will be turned ON before a message is sent and turned OFF after the message has been completed.

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Protocol Extension Table Parameters

Enable the Extension Table and click on the Edit Ext Table button to edit the Protocol Extension Table for Caterpillar. You must use the Extension Table even if you do not plan to do any commands. The Caterpillar Protocol Extension Table fields are:

CMD Flag Data Type and Flag Offset

The first two fields define the data type and starting offset that will be used to store the Command Flags. The Command Flags are monitored by the Omnii-Comm and when the state changes from OFF to ON, a command is built using information read from the Command Data words.
For Caterpillar M5X protocol the Command Bits are:

Bit	Function
0	Single Parameter Read
1	Single Parameter Write
2	Program Composite Response
3	Request Fault Codes
4	Auto Init Sequence Start
5	Log On to CCM
6	Special Parameter Command
7	Spare

CMD Data Data Type and Starting Offset

These two fields are used to specify what Data Type and Starting Offset will be used to store the information required to build a command. The Command Data should be set up before setting the Command Trigger bit ON.

Caterpillar M5X requires 20 words of Command Data.

Word	Function
00-01	Command PID (enter in Hex, right justified)
02	Command Flags
03	Command Update Time (1 bit/4 seconds)
	Note: Activation flag for IID81 and IID82 in high byte of word 3
04	Command MID
05	Parameter byte count (IID00, IID34)
06-19	Command Data (1-27 bytes)

Use New Data Flags

If selected a status word will be added to the beginning or the end of a broadcast list data. The high byte will always be set to $FF, the low byte will be a copy of the RUD (Recently Updated Data) field in the broadcast message. The user can determine that new data has been received by monitoring the high byte and the quality of the data by monitoring the low byte.

Password

Enter up to 8 alphanumeric characters if passwords are enabled. The default password is all blanks.

Composite Broadcast Page

If Composite Broadcast lists are defined (either Events or Diagnostic) then multiple messages may be returned for each broadcast. The messages are temporarily collected in an area of Paged RAM in the Omnii-Comm until all messages have been received. Then all the messages are written as specified in the write section of the poll table that defines the Composite Broadcast. This entry allows the user to select a RAM page that will be used to temporarily store the events or diagnostics. Valid selections are pages 7 thru 12. The page selected cannot be used for any other function.

Poll Table Read Parameters

Read Function

Select the type of read to be performed. Valid selections are:

Special Read (IID $00)
Single Parameter Read (IID $24)
Security Monitor (reads current security level using PID $F0 $12)

MID/UNIT # (hex)

This is the Cat Data Link Module ID that this Write request is being sent to. Valid MIDs are:
3500 Marine Engine
$21 Port
$22 Starboard
$24 Single or Center
3500B Generator Set
$24 #1
$21 #2
$22 #3
$23 #4
$25 #5
$26 #6
$28 #7
$29 #8
EMCP II Generator Set Unit Numbers
$58-$5F for GSC #1 thru 8
CCM
$61
ITSM
$6B Slave
$6F Master
ICSM
$6D Odd Bank
$6E Even Bank.

PID, high (hex)

The high byte of the Parameter ID for the Read. This is the first two hex digits of the PID. Used only for 6 digit PIDs.

PID, low (hex)

The lower 4 digits of the Parameter ID for the Read.

Bytes Expected

The total number of bytes of data expected to be returned.

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Poll Table Write and Error Parameters

Write Function

The type of Write operation to perform. Valid selections are:

Special Write
Single Parameter Write
Define Broadcast List
Define Advanced Broadcast List
Define Diagnostic Broadcast
Define Event Broadcast
Define Fault Code Broadcast.

MID/Unit #(hex)

This is the Cat Data Link Module ID that this Write request is being sent to. Valid MIDs are:
3500 Marine Engine
  $21 Port
  $22 Starboard
  $24 Single or Center
3500B Generator Set
  $24 #1
  $21 #2
  $22 #3
  $23 #4
  $25 #5
  $26 #6
  $28 #7
  $29 #8
EMCP II Generator Set Unit Numbers
  $58-$5F for GSC #1 thru 8
CCM
  $61
ITSM
  $6B Slave
  $6F Master
ICSM
  $6D Odd Bank
  $6E Even Bank

List Number

The List Number to set up if the Write Function is to Define a Broadcast List

Update Rate

The desired broadcast rate if Defining a Broadcast List, Event or Fault Code Broadcast. The rate is .5 seconds per count for Broadcast List and 5 seconds per count for Event and Fault Code Broadcasts.

Format

The desired format of the Broadcast message. Choose ASCII or Binary.

PID, high (hex)

The high byte of the Parameter ID if Single Parameter Write. This is the first two hex digits of the PID. Used only for 6 digit PIDs.

PID, low (hex)

The lower 4 digits of the Parameter ID if Single Parameter Write

Poll # for RTN Data

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Optionally define a Poll Table that will be used to Write Broadcast, Event Lists or Fault Lists when they are sent by the CCM. Set this field to 0 if using RTN Data to Type and Offset fields below.

RTN Data to Type

Broadcast data and Event List and Fault List data can be stored directly to Database by entering the Data Type and Offset numbers. Enter the Data Type that will receive the data here. Note, that the data will be sent to the SOURCE of the data.

Starting Offset

The offset in words in the Data Type where the return data will be stored.
Note: System Error Protocol Definitions are the same as Poll Table Write and Error Parameters

Database Extension Table Parameters

Index	Name	Size:Max Length
0	Type 00	2:256
1	Type 01	2:256
2	Type 02	2:256
3	Type 03	2:256
4	Type 04	2:256
5	Type 05	2:256
6	Type 06	2:256
7	Type 07	2:32
8	Type 08	2:32
9	Type 09	2:32
10	Type 10	2:64
11	Type 11	2:32
12	Type 12	2:32
13	Type 13	2:32
14	Type 14	2:32
15	Type 15	2:32
16	Type 16	2:32
17	Type 17	2:32
18	Type 18	2:32
19	Type 19	2:32
20	Type 20	2:256
21	Type 21	2:256