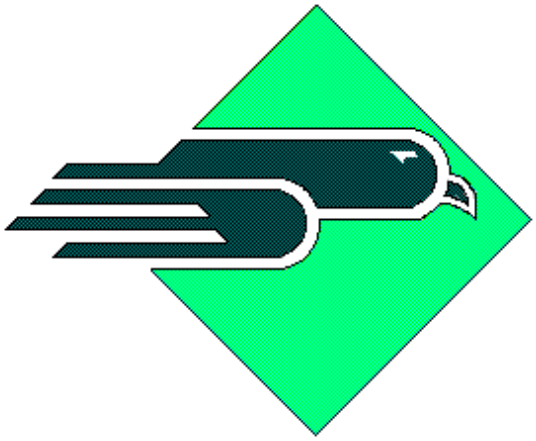


WESTERN AVIONICS

IIB-1553-PC/AT
IIB-3910-PC/AT
Windows GUI Drivers

P/N 1L01675H01 Rev 2.3

User Manual
UM 01675 Rev G

13/14 Shannon Free Zone
Co. Clare
Ireland

19 December 1999

Introduction

The software provided under Part Number 1L01675H01 Revision 2.3 provides Win 3.1, Win3.11, Win95 and WinNT drivers that may be used with any of the following Western Avionics products: -

IIB-1553-PC/AT IIB-3910-PC/AT

IIB-1553-VME/VSB and IIB-3910-VME/VSB (with PCV800 PC/VME)

Suretest Model 4510 PC/AT (3910) and Suretest Model 4520 PC/AT (1553)

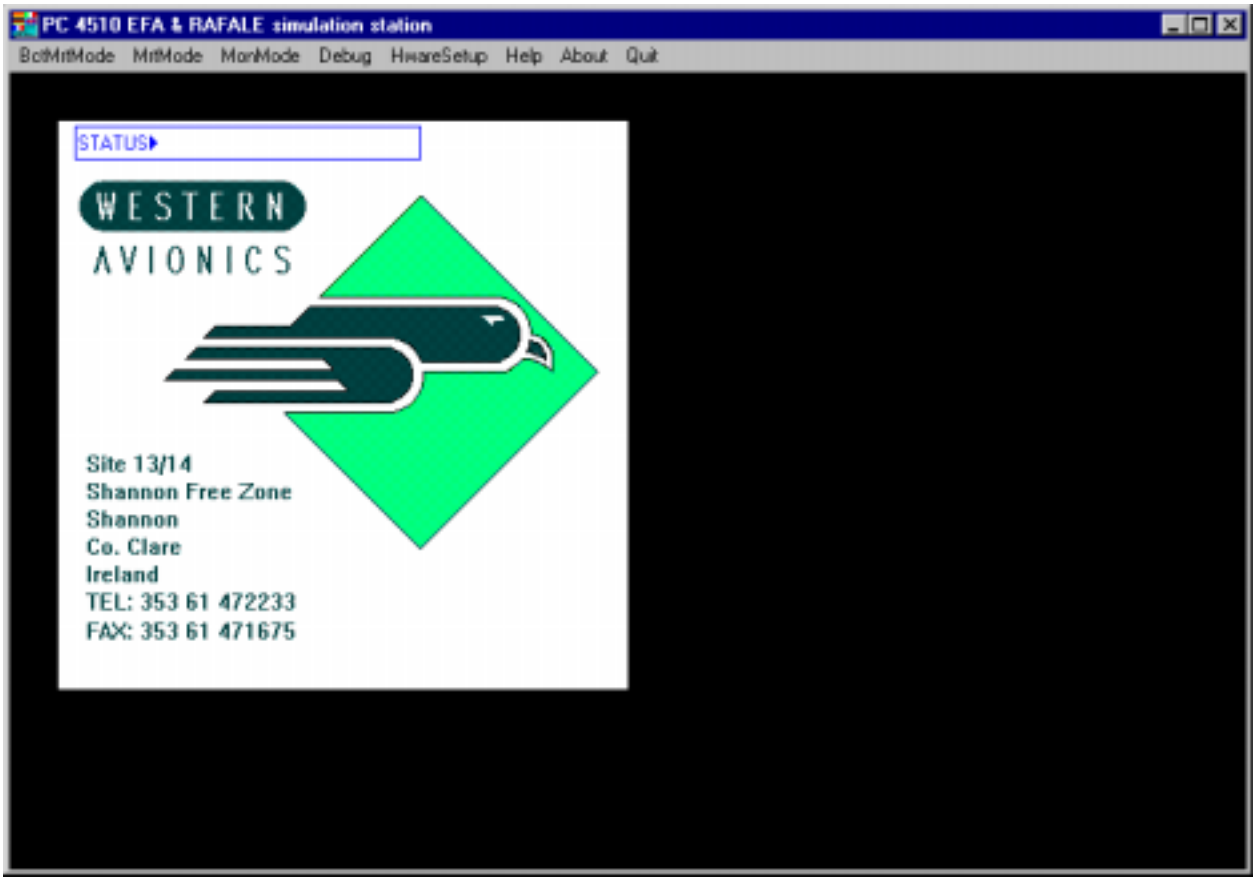
Suretest Model 2110 VME/VSB and Suretest Model 4210 VME/VSB (with PCV800 PC/VME)

Installation

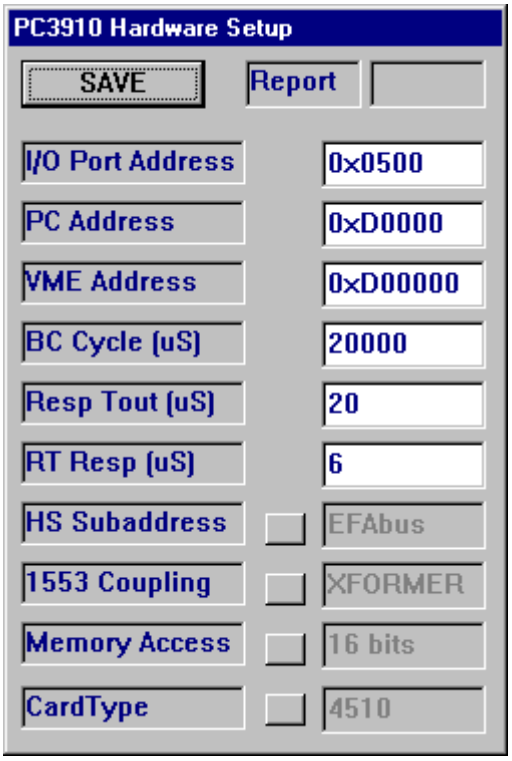
The software is provided in a single file WIN3910.EXE, which may be loaded under Windows.

Please follow the screen instructions for directory settings, etc. Re-start your PC after completion of initial installation, to enable access to the PC3910 drivers.

On entering the main software program, by clicking on the PC3910 icon, the initial menu screen will appear. An 'on-line' help file may be accessed at any time by clicking on the ***Help*** menu. You may also check on the revision level of the GUI software (1L01675) and Drivers software (1L01616H01) by clicking on the ***About*** menu.



From this initial menu, you must first enter the ***Hardware Set-up*** menu, to initialise the card hardware.



Hardware Set-up

The hardware set-up is called by clicking on the '***HwareSetup'*** option on the main menu.
This set-up MUST be carried out to initialise the PC hardware interface before the card can be placed in any of its operating modes.
When entering the hardware set-up, the software looks for a file called PC3910.INI in the directory where the EXE file resides. If this file does not exist, a file of this name is created with default values for all the variables in the hardware set-up. If this file does exist, all the variables in the file PC3910.INI are used as the initial values for the hardware set-up. When the set-up is executed, PC3910.INI is updated with any new values. Hence, all hardware set-up variables start up at the values last programmed.

I/O Port Address

This is the base address of the PC card I/O ports as defined on the HEX switches.

PC Address

This is the base address in the bottom 1MByte of the PC where the card memory segment is to reside.

VME Address

This is the base address of the card in a VME rack. This is a special parameter that is required if the PC3910 software is being used via an ADAS Electronique PCV 800 PC/AT-VME gate-way interface card.

For normal operation using the Western Avionics PC card this is not used.

Memory Access

This defines the access to be 8 or 16bits. The 16bit option is more desirable for speed, but the particular PC architecture may not allow this option for the particular segment address.

HS Subaddress

This can be set to EFAbus (subaddress 26), RAFALE (subaddress 1) or 'Disabled' if the card is to be 1553 only.

1553 Coupling

This can be set for transformer or direct coupling.

BC Cycle

This value specifies the duration in microseconds of a Bus Controller Minor Cycle. This value shall be no greater than 600,000 (0.6 seconds).

Response Timeout

This is the time in uS that the Bus Controller shall wait before deciding that a Remote Terminal has not responded.

RT Response Time

This is the default RT response time that will be used both in BcMrt and Mrt modes. Individual Response times can be set-up in the BC mode 'Message Pages' and the MRT mode 'Global Pages'.
Any errors will be reported in the 'Report' box.

CardType

The CardType button is used to select the card type. Enter 4510 for use with any PC/AT card (4510, IIB-1553-PC/AT or IIB-3910-PC/AT) and the software will initialise to access a PC/AT card via the PC bus.

If the card type is 1553VME (2110 or IIB-1553-VME) enter 2110 and the software will initialise to access the card via an ADAS Electronique PCV 800 PC/AT-VME gate-way interface card on the PC bus.

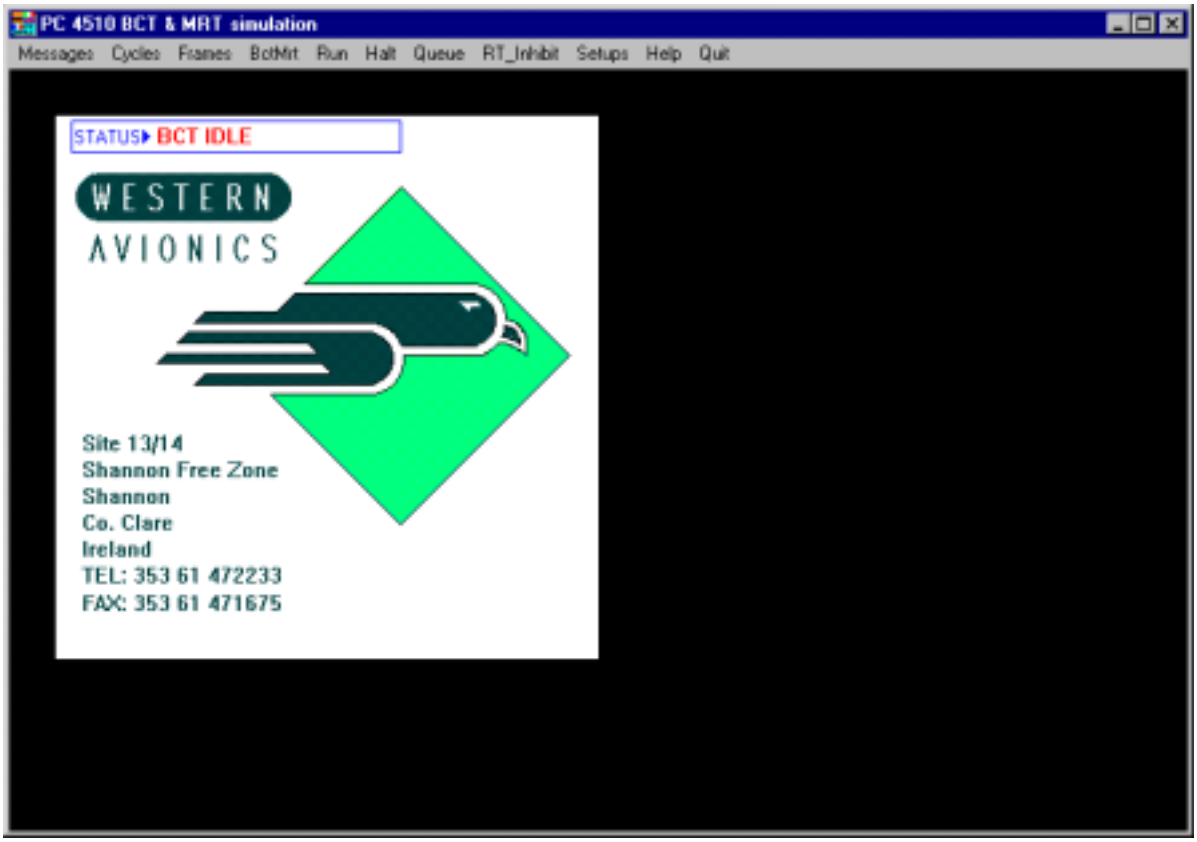
If the card type is 3910VME (4210 or IIB-3910-VME) enter 4210 and the software will initialise to access the card via an ADAS Electronique PCV 800 PC/AT-VME gate-way interface card on the PC bus.

NOTE

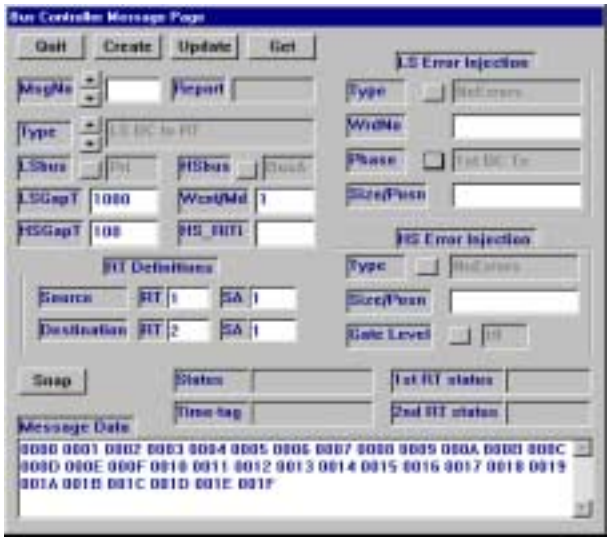
It is vital to ensure that the I/O Port Address and PC Address are set correctly, otherwise hardware initialisation will not be completed. This will result in the status bar in the BctMrtMode, MrtMode or MonMode menus showing an UNDEFINED condition, when these menus are activated.

If the I/O Port Address and PC Address are set correctly, the status bar in the BctMrtMode, MrtMode or MonMode menus will show an IDLE condition, when these menus are activated.

Bus Controller Menu's



On entering the ***BctMrtMode,*** the first menu to be entered is the ***Bus Controller Message Page***, which is as shown below.



Bus Controller Message Page

Messages

The messages dialog box allows the user to define the BCT messages and their associated data.

Creating a message

To create a message the user must first define the message type, associated data and any error injection if required. The command word(s) for this message will automatically be set-up as defined by the message type, source and destination RT and subaddress values. When the user is happy the set-up for the particular message is as required, clicking on the 'Create' button will create the message and return a number in the 'Msg No' edit box. This number must be noted, as this is a numeric handle for the message and will be required if the message is to be used in a message cycle or if the message needs to be modified.

Any errors will be reported in the 'Report' box.

Getting a message

There are two ways of getting an existing message:

1. Enter the numerical handle for the message in the 'Msg No' box and then click on the 'Get' button. This shall retrieve the message and display its parameters.
2. Click on the thumbwheel next to the 'Msg No'. Successive clicks will get each created message in ascending or descending order depending on the direction of the thumbwheel selection.

As well as the static message set-up parameters, the 'Get' button will:

1. Update the data buffer with the current data values.
2. Show the current status of the message (Good, Error, Update).
3. Show the time-tag value of the message (in uS).
4. Show the RT status word(s) associated with the message.

Any errors will be reported in the 'Report' box.

Snap Update

When the 'Snap' button is pressed, a timer is enabled that will periodically update the message parameters. This is equivalent to continually pressing the 'Get' button. This can be used to continually monitor the status, time-tag and data of a particular message. While the 'Snap' is running, the user can change the number in the 'Msg No' box to a new value and the screen will automatically change to display the new message number parameters. To stop this feature simply press the 'Snap' button again.

Any errors will be reported in the 'Report' box.

Modifying a message

To modify an existing message, simply 'get' the message to be modified. Now change any particular parameters and click on the 'Update' button. This message will now be updated. If the changes are considerable, it is not required to 'Get' the existing message. For example, to copy message 2 to message 3 the user can 'Get' message 2, change the number in the 'Msg No' box to 3 and click on the 'Update' button.

Any errors will be reported in the 'Report' box.

Wcnt/Md

This value defines the message wordcount or mode code number depending on the message type.
The TX data values can be set-up in the 'Message Data' edit box, prior to creating or updating.
When a message is read back using the 'Get' button and the message type is a transmit message the Message Data box will be filled with the RX buffer for that message.

LSGapT and HSGapT

The LSGapT is the 1553 intermessage gap time, in microseconds, before transmission of the next message. The HSGapT is the gaptime, in microseconds, between the two 1553 messages of an HS RT-RT transfer.

RI & TI times
These are the 3910 receive and transmit initialise times, in microseconds, for this particular message. These values are only valid for HS type messages.

LS error injection
This is a unique LS error injection for this particular message.
The error type can be chosen by clicking on the 'Type' button until the desired error is displayed.
The 'Size/Posn' edit box is used to enter extra information, if any, required for defining the particular error. Only five error types require this field to be set-up. The relevance of this field for each of these five error types is as follows:

Error	**Size/Posn value**
Response time	Unique RT response time in uS
Sync	6 binary digits defining sync pattern
Manchester	Bit number in word for error
Word length	Number of bits in word
Word count	Number of words too few or too many

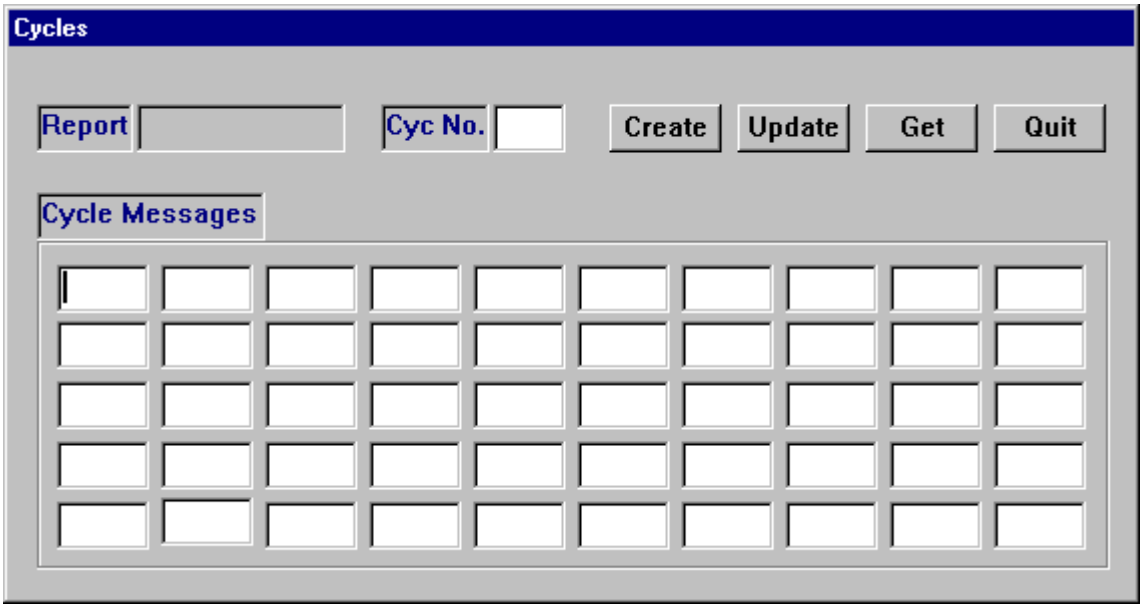
NOTE:
1. Response time can be 4 to 31uS.
2. Example of sync pattern: 111000 = Command Sync.
3. Manchester error bit range is 0 to 15 (bit 0 is the first bit transmitted).
4. Wordlength can be programmed as 0 to 31 bits.
5. Wordcount error can be programmed from +/-1 to +/-64 words.

The phase button selects the phase of the message for error injection. This can be 1 of 4 values:
1. 1st BC Tx - First part of message with initial command word.
2. 2nd BC Tx - Second command word (for HS RT-RT messages).
3. 1st RT Sim - First RT response part of message.
4. 2nd RT Sim - Second RT response part (for LS and HS messages).

The injection in the RT Sim phases are only valid if the BC is also simulating that RT.

The 'WordNo' edit box is used to define the word number in the phase of the message for error injection. A value of '0' in this field will result in error injection in the Status or Command word of the chosen phase. This field is only applicable to word related error types. Message related errors such as Both Bus do not require this field to be set-up.

HS error injection
This is an HS error injection for a message and is not applicable when the message type is LS.
The error type can be chosen by clicking on the 'Type' button until the desired error is displayed.
The 'Size/Posn' edit box is used to enter extra information, if any, required for defining the particular error. The only errors that require a value in this field is Preamble and GateErr. For Preamble this shall define the number of preamble bits to transmit. For GateErr this shall define the bit number in the 3910 data stream for Manchester encoding error injection. If GateErr is selected then the 'Gate' field shall define if the selected Manchester error bit is to be transmitted HI or LO.



Cycles

This dialog box allows the user to setup a number of minor cycles consisting of a number of messages created in the 'Messages' dialog box.

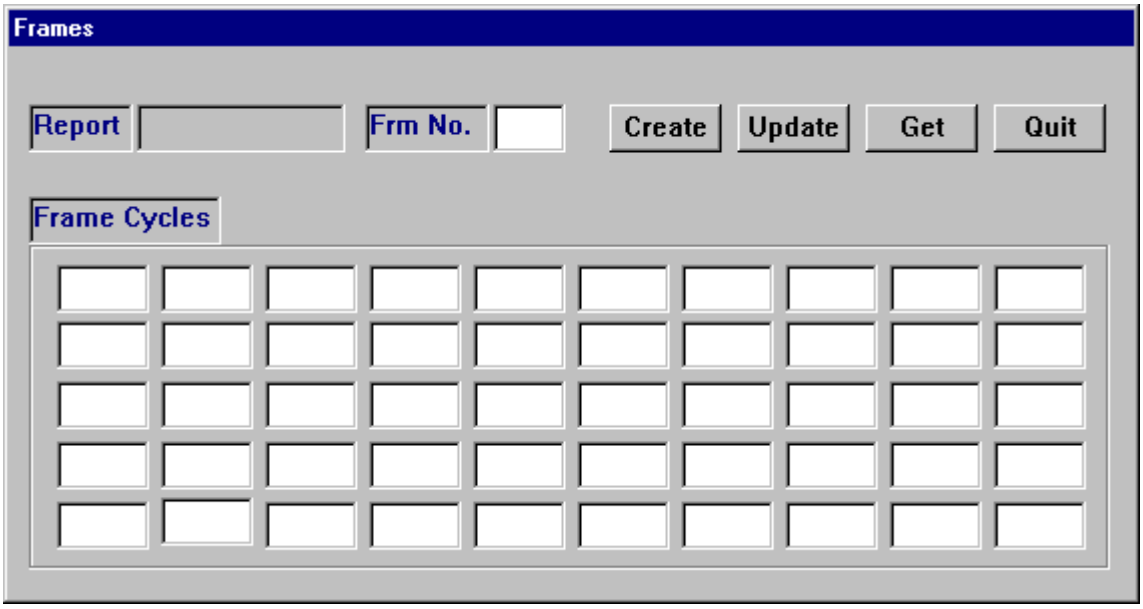
Creating a cycle

The cycle is created by entering message handle numbers in the message boxes, starting top left. After the last message number is entered, the next box MUST be empty or have the word 'END' inserted into it to indicate the end of the cycle.
Once this is done, press the 'Create' button and a number for the cycle will appear in the 'Cyc No.' box.
This number must be noted as this is a numeric handle for the cycle and will be required if the cycle is to be used in a frame or if the cycle needs to be modified.

Modifying a cycle

To modify an existing cycle, simply enter the numerical handle for the cycle in the 'Cyc No' box and then click on the 'Get' button. This shall retrieve the cycle and display its parameters.
Now change any particular parameters and click on the 'Update' button.
This cycle will now be updated. If the changes are considerable, it is not required to 'Get' the existing cycle. For example, to copy cycle 2 to cycle 3 the user can 'Get' cycle 2, change the number in the 'Cyc No' box to 3 and click on the 'Update' button.

Any errors will be reported in the 'Report' box.



Frames

This dialog box allows the user to setup a major frame consisting of a number of minor cycles created in the 'Cycles' dialog box.

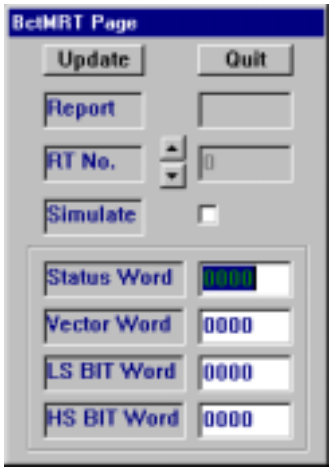
Creating a frame

The frame is created by entering cycle handle numbers in the cycle boxes, starting top left.
After the last cycle number is entered, the next box MUST be empty or have the word 'END' inserted into it to indicate the end of the frame.
Once this is done, press the 'Create' button and a number for the frame will appear in the 'Frm No.' box.
This number must be noted as this is a numeric handle for the frame and will be required if the frame is to be transmitted or needs to be modified.

Modifying a frame

To modify an existing frame, simply enter the numerical handle for the frame in the 'Frm No' box and then click on the 'Get' button. This shall retrieve the frame and display its parameters. Now change any particular parameters and click on the 'Update' button. This frame will now be updated. If the changes are considerable, it is not required to 'Get' the existing frame. For example, to copy frame 2 to frame 3 the user can 'Get' frame 2, change the number in the 'Frm No' box to 3 and click on the 'Update' button.

Any errors will be reported in the 'Report' box.



BctMrt

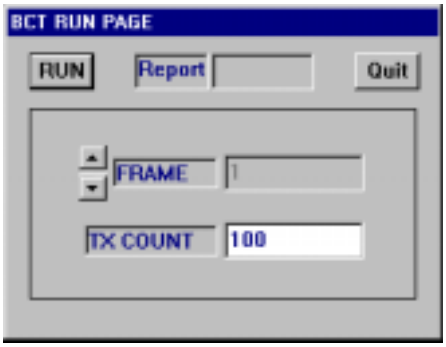
This dialog box allows the RT simulation parameters to be modified when the PC card is in BCT mode.

Modifying RT parameters

Using the vertical scroll bar the particular RT parameters can be displayed. To change the RT parameters simply change the value in the particular edit boxes. To enable or disable on-board simulation of the RT set the check box accordingly.

Once all the parameters are as required click the 'Update' button and the parameters will be updated as requested.

Any errors will be reported in the 'Report' box.



Run

This dialog box allows the user to start transmission of one of the previously created Bus Controller frames.

Selecting a frame

Use the scroll bar to select the ID number of the frame required for transmission. If no frames have been created the contents of the frame selection edit box will be "NO FRAMES".

TX Count

This box defines the number of times the frame is to be transmitted. A value of 0 will result in the frame being transmitted continuously.

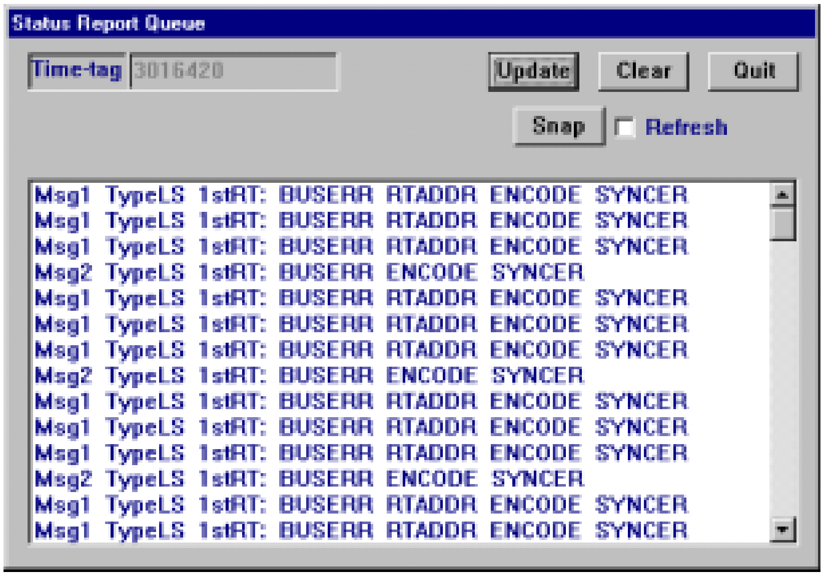
Starting the frame

Use the 'Run' button to start the selected frame.

Quit

Use the 'Quit' button to exit this dialog box.

Any errors will be reported in the 'Report' box



BCT Status Report Queue

This dialog box allows the user to monitor the status report queue for error messages.

Queue values

The Status Report Queue is a 128 element cycling queue showing any error messages detected by the BCT.
The format of each line of the queue is as follows:

1. Msg number. This number is the ID value given when creating a message.
2. Message type (TypeLS or TypeHS).
3. 1stRT or 2ndRT indicates which RT caused the error (LS type only).
4. Errors detected:

BUSERR	Wrong/Both 3838 bus error.
LSNRES	LS No Response error (for RT-RT transfers).
RTADDR	Incorrect RT address detected (for RT-RT transfers).
ENCODE	LS Encoding error detected (e.g. Parity, Manchester etc.).
SYNERR	Incorrect SYNC type detected.
OVERLP	HS data overlap error.
HSNRES	HS No Response error.
FCSERR	HS Frame Check Sequence Error.
HSWCNT	HS Wordcount error.
NOEDEL	No HS End Delimiter error.

Clear

Pressing the 'Clear' button will clear the status report queue.

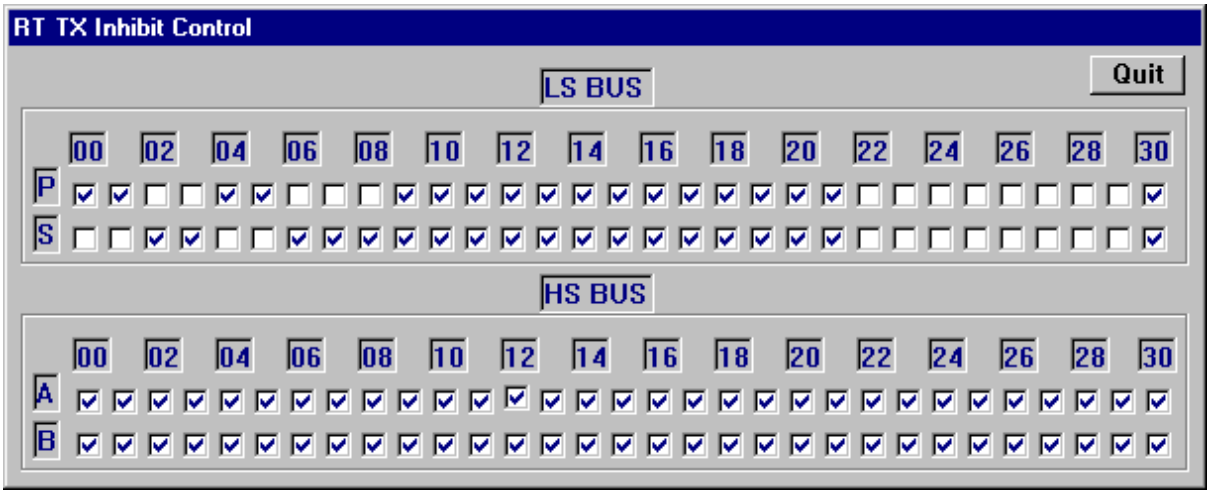
Update

Pressing the 'Update' button will fill the list box with the latest values in the status report queue.

Time-tag

When an update is being carried out, the on-board clock is read and the value of this clock is entered into the Time-tag edit box. This value has a resolution of 1uS.

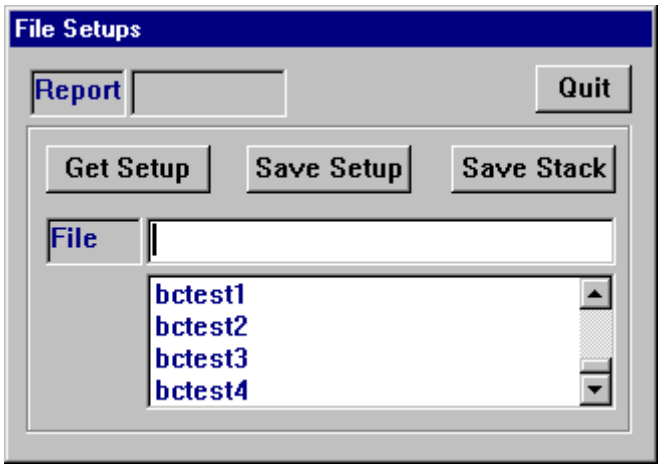
Snap
Pressing the 'Snap' button will start a timer for continually updating the list box with the current values in the status report queue. If the 'Refresh' option is selected, the status report queue will be cleared after an update so that each update will only display the events that occurred since the previous update. This will give an indication of whether the error events are continuous or intermittent.
'Snap without refresh' is equivalent to continually pressing the 'Update' button.
'Snap with refresh' is equivalent to continually pressing the 'Update' button, followed by the 'Clear' button.
To stop this facility simply press the 'Snap' button again.



RT Inhibit
This dialog box is used to monitor and change the RT TX enable flags for the card when in BCMRT or MRT mode.

Inhibit Flags
Each on-board RT dynamically executes all Transmitter Shutdown mode code commands for both HS and LS dual redundant buses by automatically updating a set of TX inhibit flags. Transmission on a given bus will only take place if the flag associated with that particular bus is in the correct state.
These inhibit flags are made available in this dialog box for the user to force a particular RT LS or HS bus to be enabled or disabled. If a particular tick box is ticked, transmission is enabled for that RT bus.

Dynamic Update
The state of these inhibit flags are continually updated in the dialog box. Hence, if the user enables the TX flag for RT 2 LS Secondary Bus and a Transmitter Shutdown LS mode code is sent to RT 2 on the Primary Bus, this flag will automatically clear.



Setups

This dialog box allows the user to save and restore setups from disk.

Saving Setups

If the user has setup the card and wishes to save it, simply enter the desired file name in the edit box and press the 'Save Setup' button.

Restoring Setups

To setup the card with an existing file, simply enter the file name in the edit box and press the 'Get Setup' button. If the 'Get Button' is pressed and the contents of the file name edit box is a directory then the list box will be filled with all the files in that directory. The list box can now be used to select a setup by simply double clicking on the chosen file name.

Note 1:
The wildcard character '*' can be used to filter the files of interest into the list box.

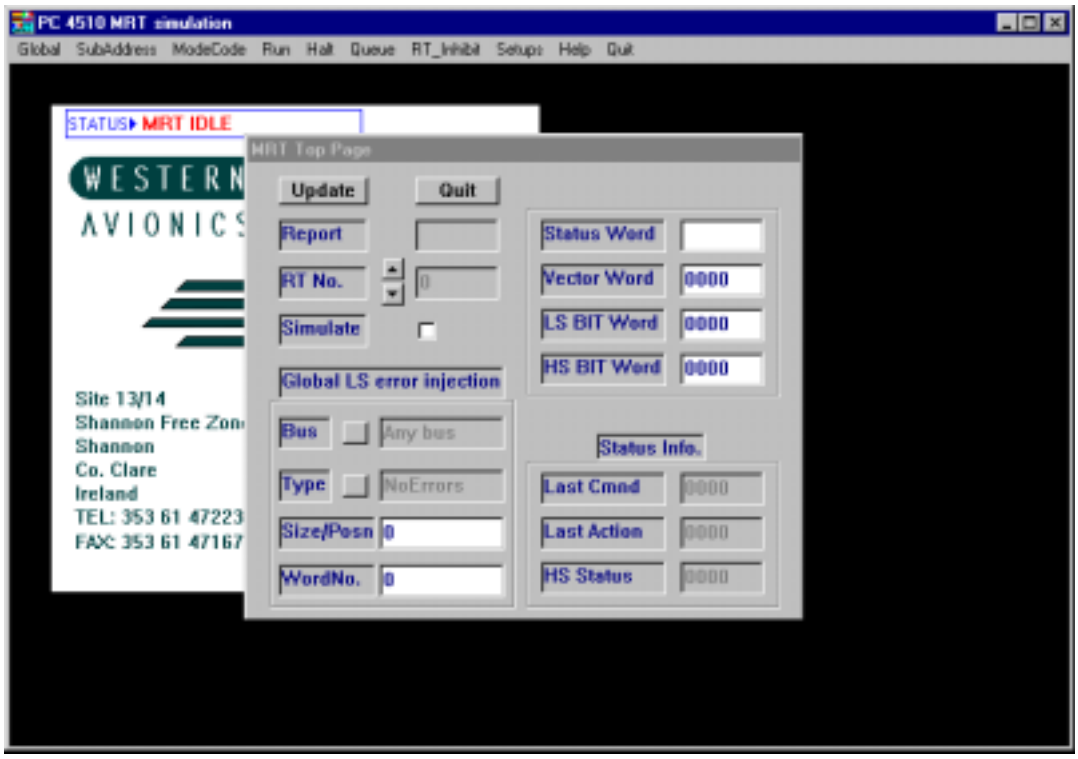
Note 2:
Each setup file is unique to the particular mode it was saved in (BCT, MRT or MON). If the user attempts to restore a setup in the wrong mode, an error will be indicated in the report box.

Saving Stack Data

To save the captured bus monitor stack data to a file, simply enter the file name in the edit box and press the 'Save Stack' button. This file will be text as displayed in the Bus Monitor Stack list box in detailed format.
NOTE: This is only applicable when in Bus Monitor mode.

Multiple Remote Terminal Menu's

On entering the Mrt, the first menu to be entered is the MRT Global, which is as shown below:



MRT Global

This dialog box is used for modifying the various RT's global variables.

RT selection and Update

To update a particular RT use the vertical scroll to select the desired RT number. If the chosen RT is required to actively simulate, check the 'Simulate' box. Once all the variables are as required, click the 'Update' button and all the data will be dynamically updated. The 'Report' edit box will display any errors encountered.

NOTE:
It is NOT required to halt the MRT before updating. All changes can be done while the card is active.

Global LS error injection

The bus definition for error injection can be one of 4:

1. No bus — Global error injection disabled.
2. Pri Only — Inject error on PRIMARY bus only.
3. Sec Only — Inject error on SECONDARY bus only.
4. Any bus — Inject error on either bus.

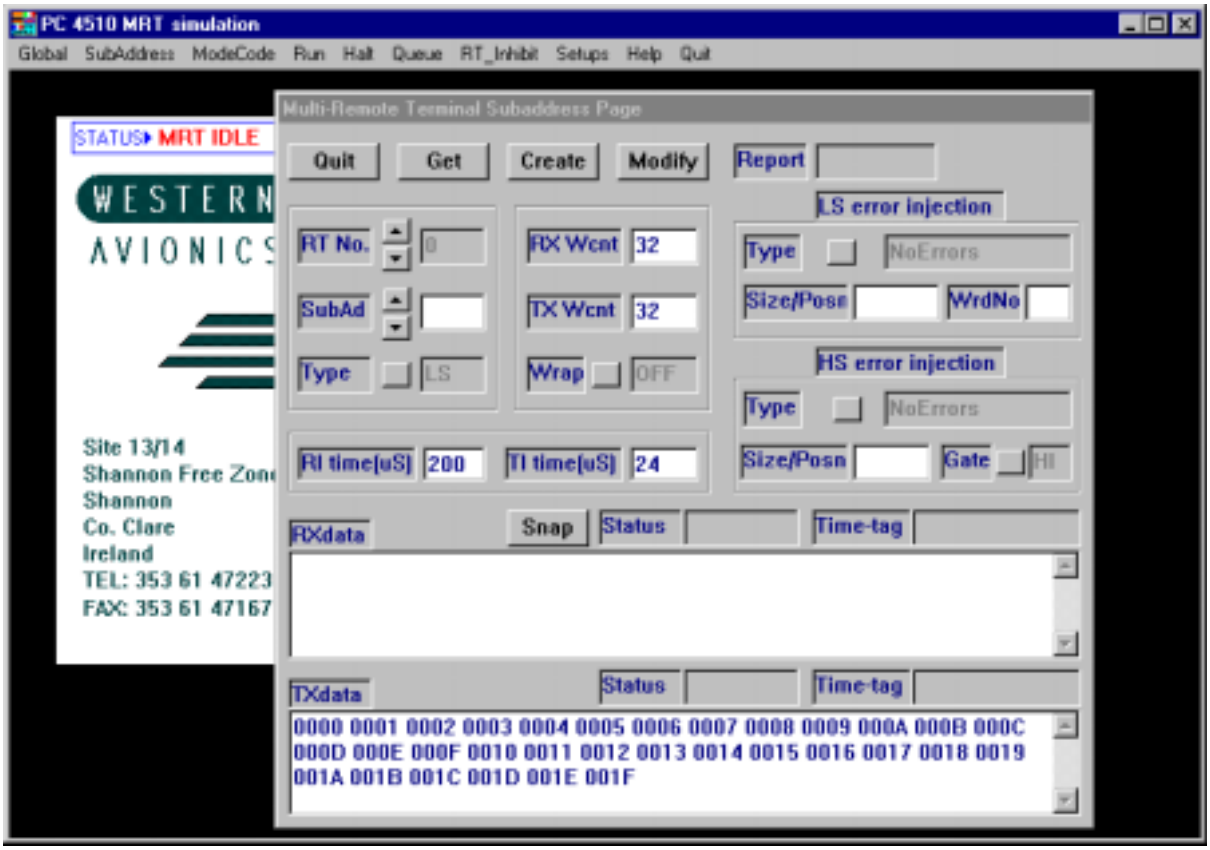
Once the user has selected the bus for error injection, the error type can be chosen by clicking on the 'Type' button until the desired error is displayed.

The 'Size/Posn' edit box is used to enter extra information, if any, required for defining the particular error.
For example, if a Manchester error is required, this box shall contain a number defining the bit number in the word for Manchester error injection.

The 'WordNo' edit box is used to define the word number in the RT response for error injection.
A value of '0' in this field will result in error injection in the Status word.

Status, Vector and BIT word modification
Use the appropriate edit box to modify these values
The default value for the status word is with the correct address bits and all flag bits clear.

Status Info.
When a new RT is selected using the vertical scroll bar, the data for that particular RT is read from the card.
Included in this data will be the Last Command word, Last Action word and HS status word.
These words will be displayed in the 'Status Info.' edit boxes.



SubAddress

At initialisation, all RT sub-addresses and mode codes are pointed to a common buffer and are effectively disabled.
This dialog box is used to setup specific sub-addresses and mode codes with unique data and error injection information.

Creating a sub-address
To create a sub-address, first enter the required RT number and sub-address using the 'RT No.' scroll bar and 'SubAd' edit box. If the sub-address type is LS, the sub-address number must not exceed 31.
After the user has chosen the RT number, sub-address and sub-address type the remaining variables can be set as

required. Once the user has the desired setup, the information for this sub-address is allocated a unique set of buffers on the card by clicking on the 'Create' button. Any errors will be reported in the 'Report' box.

Getting a sub-address

There are two ways of getting a previously defined sub-address:

1. Enter the RT number, sub-address and type in the appropriate fields and then click on the 'Get' button. This shall retrieve the sub-address information and display its parameters.
2. Click on the thumbwheels next to the RT number and sub-address number until the desired RT/sub-address is reached. Each selection will attempt to 'get' that RT/sub-address. If the RT/sub-address has not been created, an error will be reported.

As well as the static message setup parameters, the 'Get' button will:

1. Update the data buffer with the current data values.
2. Show the current status of the message (Good, Error, Update).
3. Show the time-tag value of the message (in uS).
4. Show the RT status word(s) associated with the message.

Any errors will be reported in the 'Report' box.

Modifying a sub-address

To modify a previously defined sub-address, simply 'get' the RT number/sub-address. Now change any particular parameters and click on the 'Modify' button. This sub-address will now be updated. If the changes are considerable, it is not required to 'Get' the existing message. For example, to copy sub-address 2 to sub-address 3 the user can 'Get' sub-address 2, change the number in the 'SubAd' box to 3 and click on the 'Create' or 'Modify' button whichever is appropriate.

Any errors will be reported in the 'Report' box.

Snap Update

When the 'Snap' button is pressed, a timer is enabled that will periodically update the sub-address parameters. This is equivalent to continually pressing the 'Get' button. This can be used to continually monitor the status, time-tag and data of a particular sub-address. While the 'Snap' is running, the user can change the RT and Sub-address numbers to new values and the screen will automatically change to display the new RT sub-address parameters. To stop this feature simply press the 'Snap' button again.

Any errors will be reported in the 'Report' box.

RI & TI times

These are the 3910 receive and transmit initialise times for this particular sub-address.
These values are only valid for HS sub-addresses.

RX and TX Wcnt

These values will define the buffer sizes reserved for the RX and TX data for this particular sub-address. If the 'Wrap' is set 'On' the same buffer will be used for TX and RX data. Hence, any TX commands to this sub-address will result in the RT transmitting the last data received at this sub-address.
The TX data values can be setup in the 'TXdata' edit box, prior to creating or updating.
When a sub-address set-up is read in using the 'Get' button, the contents of the sub-address RX buffer will be written into the 'RXdata' edit box. The number of words is defined by the RX Wcnt value.

LS error injection

This is a unique LS error injection for this particular sub-address.
The error type can be chosen by clicking on the 'Type' button until the desired error is displayed. The 'Size/Posn' edit box is used to enter extra information, if any, required for defining the particular error. Only five error types require this field to be setup. The relevance of this field for each of these five error types is as follows:

Error	**Size/Posn value**
Response time	Unique RT response time in uS
Sync	6 binary digits defining sync pattern
Manchester	Bit number in word for error
Word length	Number of bits in word
Word count	Number of words too few or too many

NOTE:
1. Response time can be 4 to 31uS.
2. Example of sync pattern: 111000 = Command Sync.
3. Manchester error bit range is 0 to 15 (bit 0 is the first bit transmitted).
4. Wordlength can be programmed as 0 to 31 bits.
5. Wordcount error can be programmed from +/-1 to +/-64 words.

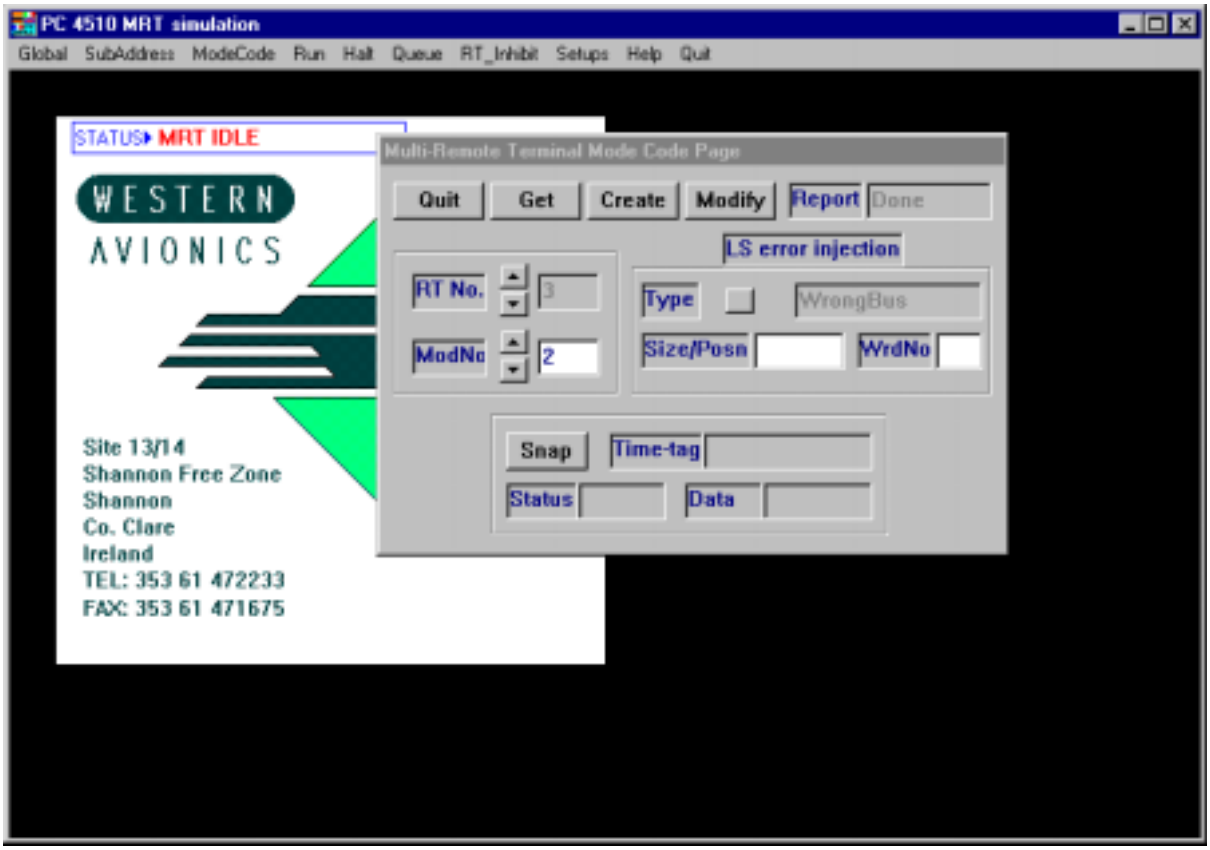
The phase button selects the phase of the message for error injection. This can be 1 of 4 values:

1.	1st BC Tx	First part of message with initial command word.
2.	2nd BC Tx	Second command word (for HS RT-RT messages).
3.	1st RT Sim	First RT response part of message.
4.	2nd RT Sim	Second RT response part (for LS and HS messages).

The injection in the RT Sim phases are only valid if the BC is also simulating that RT.

The 'WordNo' edit box is used to define the word number in the RT response for error injection.
A value of '0' in this field will result in error injection in the Status word.
This field is only applicable to word related error types.
Message related errors such as Both Bus do not require this field to be setup.

HS error injection
This is a HS error injection for this particular HS sub-address. It is not applicable when sub-address type is LS.
The error type can be chosen by clicking on the 'Type' button until the desired error is displayed.
The 'Size/Posn' edit box is used to enter any extra information required for defining a particular error.
The only errors that require a value in this filed are Preamble and GateErr.
For Preamble this shall define the number of preamble bits to transmit.
For GateErr this shall define the bit number in the 3910 data stream for Manchester encoding error injection. If GateErr is selected then the 'Gate' filed shall define if the selected Manchester error bit is to be transmitted HI or LO.



MRT Mode Codes Setup

This dialog box allows the user to setup the error injection for individual mode codes and to monitor the activity of the mode code traffic.

Creating a Mode Code

To create a unique buffer for a mode code, simply enter the RT number and mode code number in the appropriate fields, set the error injection as required then click on the 'Create' button. The mode code will now be allocated a unique buffer.

Any errors will be reported in the 'Report' box.

Getting a Mode Code

There are two ways of getting a mode code information:

1. Enter the RT number and mode code number in the appropriate fields and then click on the 'Get' button.
   This shall retrieve the mode code information and display its parameters.
2. Click on the thumbwheels next to the RT number and mode code number until the desired RT/mode is reached. Each selection will 'get' that RT/mode information.

As well as the static mode code setup parameters, the 'Get' button will:

1. Display the current associated data word, if any, for that mode code.
2. Show the current status of the buffer (Good, Error, Update).
3. Show the time-tag value of the buffer (in uS).

Any errors will be reported in the 'Report' box.

Modifying a Mode Code
To modify a previously created mode code, simply 'get' the desired RT/mode code. Now change any particular parameters and click on the 'Modify' button. This mode code will now be updated.

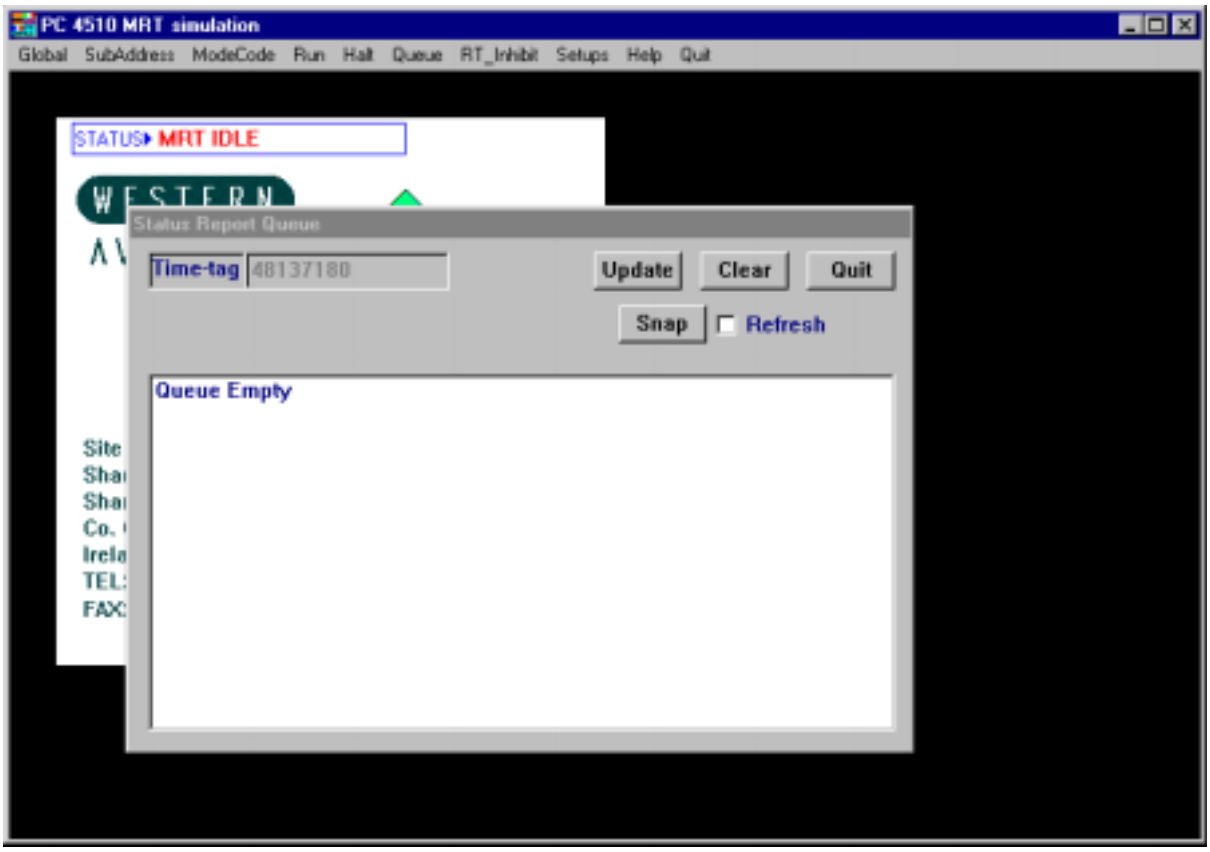
Any errors will be reported in the 'Report' box.

Snap Update
When the 'Snap' button is pressed, a timer is enabled that will periodically update the mode code parameters. This is equivalent to continually pressing the 'Get' button. This can be used to continually monitor the status, time-tag and data of a particular mode code. While the 'Snap' is running, the user can change the RT and mode code numbers to new values and the screen will automatically change to display the new RT mode code parameters. To stop this feature simply press the 'Snap' button again.

Any errors will be reported in the 'Report' box.

LS error injection
This is a unique LS error injection for this particular mode code.
The error type can be chosen by clicking on the 'Type' button until the desired error is displayed.
The 'Size/Posn' edit box is used to enter extra information, if any, required for defining the particular error. For example, if a Manchester error is required, this box shall contain a number defining the bit number in the word for Manchester error injection.

The 'WordNo' edit box is used to define the word number in the RT response for error injection.
A value of '0' in this field will result in error injection in the Status word.



MRT Status Report Queue

This dialog box allows the user to monitor the status report queue for error messages.

Queue values

The Status Report Queue is a 128 element cycling queue showing any error messages detected by the MRT. The format of each line of the queue is as follows:

1. RT number that message is related to.
2. Message type and direction (LS_RX, LS_TX, HS_RX or HS_TX).
3. Sub-address/Mode number (Sub-address indicated by 'Sa', Mode code indicated by 'Mc').
4. Errors detected:

BUSERR	Wrong/Both 3838 bus error.
LSNRES	LS No Response error (for RT-RT transfers).
RTADDR	Incorrect RT address detected (for RT-RT transfers).
ENCODE	LS Encoding error detected (eg. Parity, Manchester etc.).
SYNERR	Incorrect SYNC type detected.
OVERLP	HS data overlap error.
HSNRES	HS No Response error.
FCSERR	HS Frame Check Sequence Error.
HSWCNT	HS Wordcount error.
NOEDEL	No HS End Delimiter error.

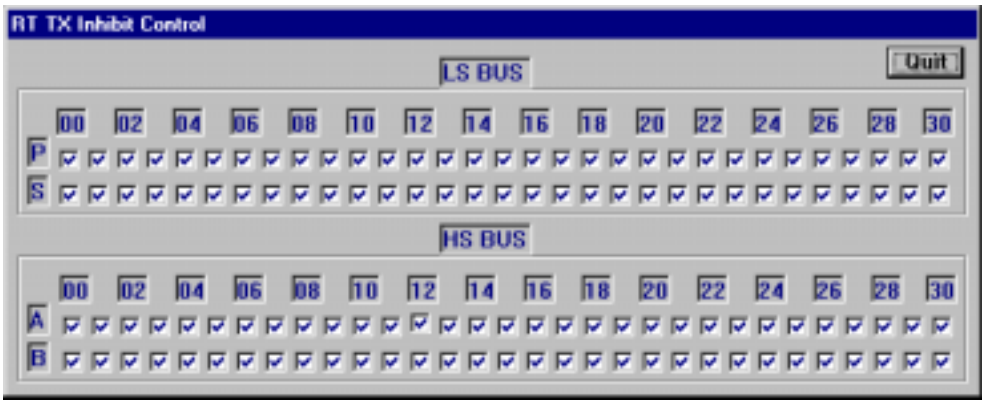
NOTE:
The queue values are related to individual sub-address lookup table pointer values. To guarantee correct queue values each RT subaddress in use MUST be created individually using the MRT subaddress page facility.

Clear
Pressing the 'Clear' button will clear the status report queue.

Update
Pressing the 'Update' button will fill the list box with the latest values in the status report queue.

Time-tag
When an update is being carried out, the on-board clock is read and the value of this clock is entered into the Time-tag edit box. This value has a resolution of 1uS.

Snap
Pressing the 'Snap' button will start a timer for continually updating the list box with the current values in the status report queue. If the 'Refresh' option is selected, the status report queue will be cleared after an update so that each update will only display the events that occurred since the previous update. This will give an indication of whether the error events are continuous or intermittent.
'Snap without refresh' is equivalent to continually pressing the 'Update' button.
'Snap with refresh' is equivalent to continually pressing the 'Update' button, followed by the 'Clear' button.
To stop this facility simply press the 'Snap' button again.



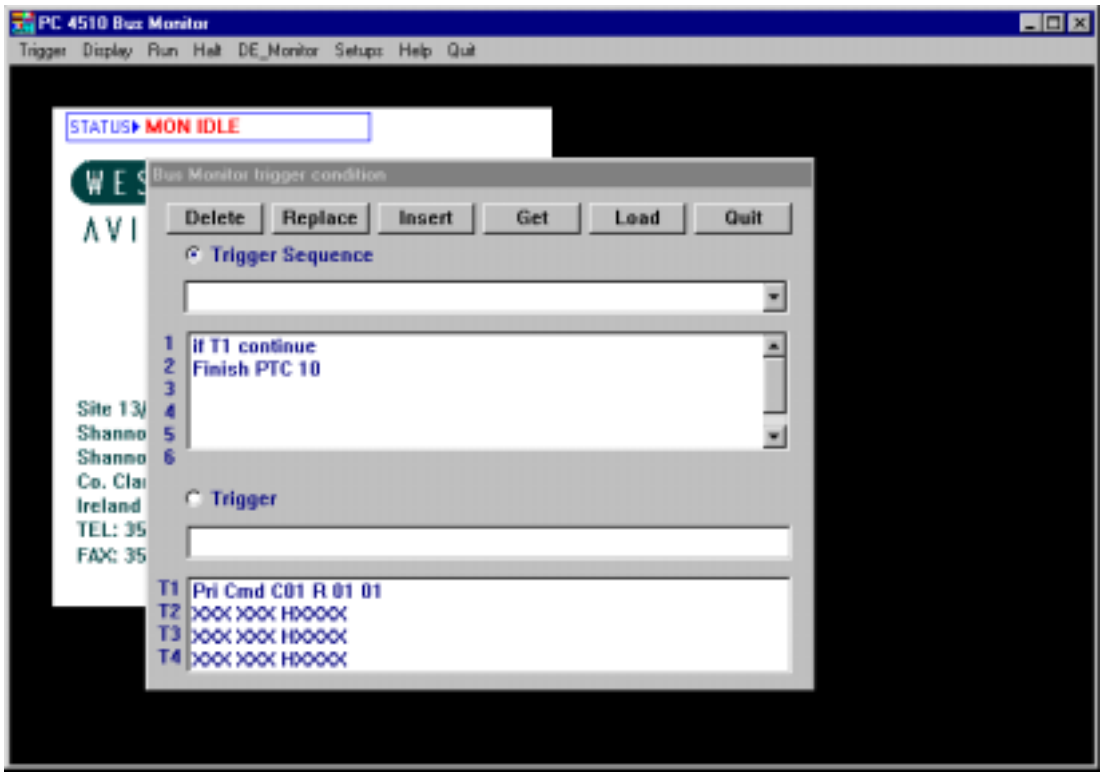
RT Inhibit
This dialog box is used to monitor and change the RT TX enable flags for the card when in BCMRT or MRT mode.

Inhibit Flags
Each on-board RT dynamically executes all Transmitter Shutdown mode code commands for both HS and LS dual redundant buses by automatically updating a set of TX inhibit flags. Transmission on a given bus will only take place if the flag associated with that particular bus is in the correct state.
These inhibit flags are made available in this dialog box for the user to force a particular RT LS or HS bus to be enabled or disabled. If a particular tick box is ticked, transmission is enabled for that RT bus.

Dynamic Update
The state of these inhibit flags are continually updated in the dialog box. Hence, if the user enables the TX flag for RT 2 LS Secondary Bus and a Transmitter Shutdown LS mode code is sent to RT 2 on the Primary Bus, this flag will automatically clear.

Monitor Mode

On entering the MonMode, the first menu to be entered is the Trigger, as shown below.



Trigger

The trigger dialog box allows the user to setup the trigger condition for the chronological stack monitor.

The text for each line in the trigger and sequence list boxes can be deleted, copied, edited, inserted and replaced using the 'Delete', 'Replace', 'Insert' and 'Get' buttons.

Once the user has completed the correct sequence and trigger conditions the trigger can be loaded into the PC card using the 'Load' button. If an error occurs during the load it will be reported in the edit box associated with the trigger or sequence set-up.

Trigger Sequence

Before working on the trigger sequence, the 'Trigger Sequence' check box should be selected.
The trigger sequence is setup by a maximum of 6 instruction lines defining a complex trigger sequence using a pseudo language. This language has a fixed number of possible commands as follows:

1. When hardware trigin <t> continue
2. If T<n> continue {else back <c>}
3. If not T<n> continue {else back <c>}
4. If T<n> and word <w> is T<n> continue
5. If T<n> and word <w> is not T<n> continue
6. If T<n> and word <w> is T<n> select <s> continue
7. If T<n> and word <w> is not T<n> select <s> continue
8. If T<n> and HS T<n> {errors [e]} continue
9. If T<n> and HS not T<n> {errors [e]} continue
10. Finish PTC <p> {[trigout on <x>]}

{ } - These indicate optional section to the command.
<n> - Trigger number 1-4.
<t> - 'HI-LO' or 'LO-HI'.
<c> - Branch back <c> lines. This must be 0-3 and point to a valid line.
<w> - Word number in message for secondary trigger.
<s> - Number of messages to selectively capture.
<p> - Post trigger message count.
<x> - 'COMPLETE' or 'TRIGGER'.
[e] - HS errors for trigger condition.

NOTE:
1. The parsing of this string is NOT case sensitive.
2. The { } define optional section. They are NOT in the string.
3. The hardware trigin command, if used, MUST be the first line.
4. The word number <w> defines the particular word, after the primary trigger word, that must meet the secondary trigger condition. This allows the detection and capture of a particular word within a message. If <w> is set to '0' or 'X' a trigger will occur if any word, within the message following the primary trigger word, meets the secondary trigger condition.
5. The selective message count <s> can be replaced with 'FOREVER'.
   In this case the following continue' statement MUST NOT be used.
6. The HS errors are optional. If not used or no errors are placed between the '[ ]' the error condition will be don't care.
   The errors are as follows:-
   'FCS' - Frame check sequence error
   'HWC' - HS word count error
   'EDL' - Bad/No end delimiter
   'HNR' - HS no response error
   If more than 1 of these errors is inserted between the brackets (e.g. [FCS HWC]) the condition will be a logical OR of the errors.
7. The PTC <p> can be replaced with 'FOREVER' for continuous capture.

To aid the user, the drop window of the trigger sequence combo box contains a set of standard command lines that can be edited and inserted into the sequence list.

Trigger Definitions
Before working on the trigger definitions, the 'Trigger Definition' check box should be selected.
There are 4 triggers that have a numerical handle for use by the trigger sequence language.
A character string defines each trigger. The format of this string is as follows:

<bus> <typ> <f><pattern> {[errors]}

{ } - These indicate optional section in the line.

<bus> - 3 chars PRI, SEC, BTH, XXX (BTH = Both buses, XXX = Don't care).

<typ> - 3 chars CMD, STA, DAT, RTR, XXX (RTR = RT to RT, XXX = Don't care).

<f> - 1 char, 'B' for binary pattern, 'H' for hex pattern, 'C' or 'S' for 1553 format.

<pattern> - 16 chars for binary, 4 chars for hex.
1553 format - 1F 1 1F 1F. The T/R bit can be represented as T, R, 1 or 0.
For all options 'X' = don't care.

[errors] - The errors are optional.
If not used or no errors are placed between the '[ ]' the error condition will be don't care.

The errors are as follows: -

Py	Parity error	Mn	Manchester error
Lg	Long word	Sh	Short word
Wc	Word count error	NR	No response
TA	Terminal address error	Sy	Sync error

If more than 1 of these errors is inserted between the brackets (e.g.[Py Mn]) the condition will be a “logical or” of the errors.

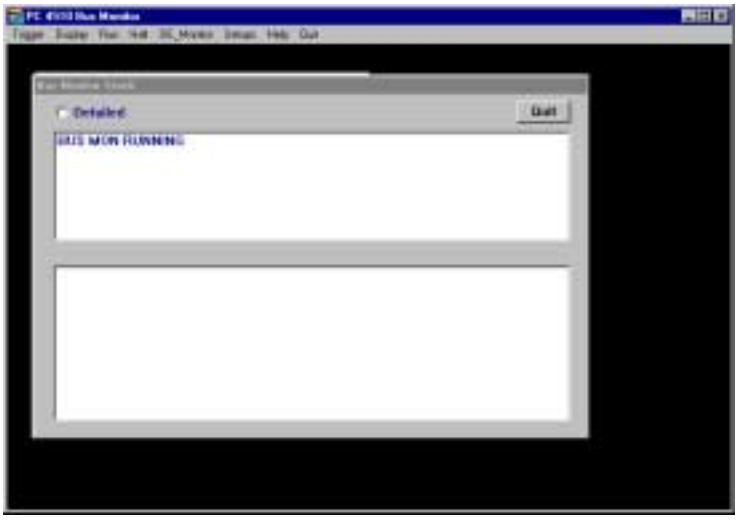
Display

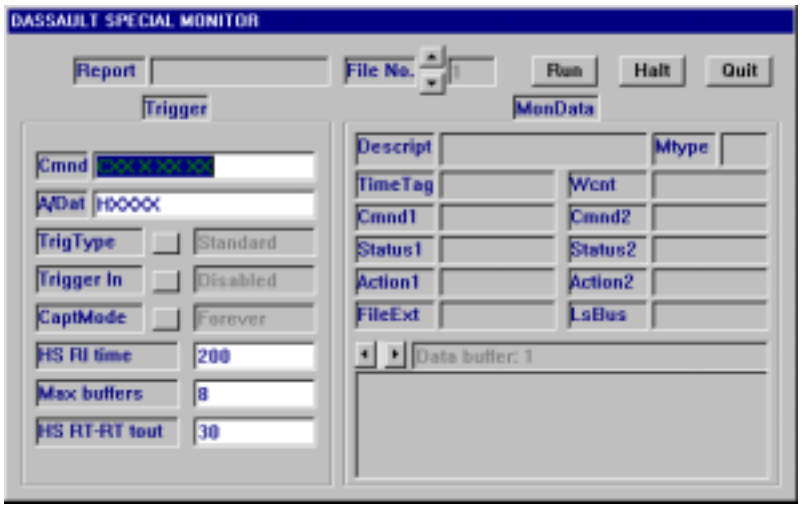
Snap View

The snap view dialog box is used to continually view the activity on the 1553/3910 bus.
Three modes of display are available; short, standard and detailed.
The short form displays a message on a single line.
If the message has an error an 'e' will be displayed at the beginning of the line.
The standard format displays a '*' after any word that is in error.
The detailed format shows all data and fully describes any errors that occur in the message.

Stack

The stack dialog box is used to view data after the capture has completed.
The top list box displays the captured messages in short form and allows the user to scroll through the stack.
If the user sees a message of particular interest on the stack they can click on the particular message and it will appear in the bottom list box in a more detailed form.
This format shall be standard or detailed depending on the state of the detailed check box.
The standard format displays a '*' after any word that is in error.
The detailed format shows all data and fully describes any errors that occur in the message.





DE_Monitor

The DE_Monitor dialog box is a special page for operating the PC card in the Dassault Electronique special bus monitor mode. It is split into two sections, 'Trigger' for setting up the capture trigger condition and 'MonData' for displaying the captured data.

Trigger

Cmnd

The command word for the trigger condition can be defined in one of three formats,
Binary (B), 1553 (C), or Hex (H).
The B, C or H character must precede the definition to indicate the format.

Bddddddddddddddd
Caa t ss ww
Hnnnn

d = Binary digit 0 or 1 (X can be used for don't care term).
aa = Command address 00-1F (X can be used for don't care term).
t = Command TX/RX bit and can be T,R or X.
ss = Command subaddress 00-1F (X can be used for don't care term).
ww = Command wordcount 00-1F (X can be used for don't care term).
n = Hex digit 0-F (X can be used for don't care term).

A/Dat

The Action/Data word is the word pattern for the Action word of a HS message or the 1st data word of a LS extended subaddress message.
This word can be defined in one of two formats,
Binary (B) or Hex (H). The B or H character must precede the definition to indicate the format.

Bddddddddddddddd
Hnnnn

d = Binary digit 0 or 1 (X can be used for don't care term).
n = Hex digit 0-F (X can be used for don't care term).

TrigType
The trigger type can be Standard, Extended or FileMode.

In Standard mode the monitor will test for the trigger condition of the command word and if the message is LS and this condition is true the message will be stored.
If the message is HS the monitor will test the condition of the associated action word and if this also passes the Action/Data value then the message will be stored.

In Extended mode the 1st data word of the message will be tested and compared with the Action/Data condition and only if this test passes will the LS message be stored.
This mode is not applicable for HS messages.

In FileMode the most significant 2 bits of the first data word of the message (HS or LS) will be tested for the value 01, 11 and 10. If the value is 01 the message will be regarded as the 1st message of a FILE transfer and the message will be stored in buffer 1. Any message following with the bits set to 11 will be saved in the next buffer as a segment of the FILE transfer. If the bits are set to 10 the message will be regarded as the last message in the FILE transfer and the pointer will be returned back to the first buffer. Hence file transfer messages can be captured in consecutive buffers.

Trigger In
The trigger in, if enabled will cause the monitor to NOT capture messages until it detects a LO-HI transition at the trigger input of the card.

CaptMode
The capture mode can be 'Forever' or 'One shot'.
In 'Forever' mode the card will continuously capture messages until the card is commanded to halt.
In 'One shot' mode the card will automatically halt after recording 1 message. If the trigger mode is of type FILE then the card will attempt to capture 1 complete file before automatically halting.

HS RI time
This is the 3910 receive initialise time to be used.

Max buffers
This value is the maximum allowable buffers that can be used if the trigger mode is for the capture of a file.

HS RT-RT tout
This value is the time in uS that the card must wait after a HS message to determine if it is the first part of a HS RT-RT data transfer.
The RX command word and action word of a HS RT-RT transfer is used as the trigger condition. The firmware will setup the 3910 DMA controller to receive data. The firmware will then wait for the end of the message and then poll the LS bus activity for the time defined in the HS RT-RT timeout.

MonData

Descript
This edit box will report the state of the monitored buffer.
This will report one or more of the following messages:

No errors	- No errors (Good message)
No buffer	- Buffer is updating or has never been written to
Py	- Parity error
Mn	- Manchester error
Lg	- Long word
Sh	- Short word
Wc	- Wordcount error
TA	- Terminal address error
LNR	- LS no response error
HNR	- HS no response error
FCS	- FCS error

Mtype
This will report the message type LS or HS.

TimeTag
This will report the time tag value for the buffer accurate to 1/1000 of a second.

Wcnt
This will report the number of data words associated with the message.

Cmnd1, Cmnd2, Status1, Status2, Action1, Action2
The associated command, status and action words for the message will be displayed in these fields.

FileExt
This field will contain the value of the 1st data word in the message. This is of particular interest when the trigger mode is Extended or File.

LsBus
This shall display the LS bus that the message was transmitted on.

Data Buffer: n
The data buffer edit box will contain up to 32 words of associated message data.
The user can scroll through the data blocks of the message using the horizontal scroll bar up to the maximum buffer number for the message.
This can be done while the monitor is running.
If the message is LS type then this feature is not required.

File No.
The vertical 'File No.' scroll bar is used to move from 1 file buffer to the next.
Changing the value of the file number will automatically cause the software to read the new file and display it. This can be done while the monitor is running.

Debug

ExCommand

This dialog box allows the user to issue a command to the card. LOAD CLOCK and SYNCH CLOCK commands will load the clock with the hex value in the edit box to the right hand side of the ***'Read'*** button. Clicking on the '***Read'*** button will return the current clock value and store it in the edit box. The ***Report*** edit box will return an error number if one is encountered.

The ***'Full Memory Test'*** button is used to start a full test of the cards memory. The test will carry out an incremental value test to ensure that the address lines to the memory are good. Once this is complete the test will be done using the values 0x5555, 0xAAAA, 0xFFFF and 0x0000. If an error is detected at any stage, the test will be terminated and the report box will define the test that failed.

The ***'Trigger In-Out Test'*** button is used to test if the TRIGIN and TRIGOUT functions are operating correctly. When this button is pressed, the card will be setup such that, every time a LO-HI is set on the TRIGIN input a 1mS pulse will appear at the TRIGOUT output.

Read/Modify

This dialog box allows the user to read and modify memory locations in the PC card.

This interface controls the hardware interface such that the memory appears to the user as a 2Mbyte linear memory map.

The 'Goto' button makes the display go to the hex memory address as defined by the user in the 'Goto' edit box. The vertical scroll bar to the RHS of the memory display box is used to increment / decrement through the memory. The PgUp, PgDn, Home and End keys can be used for speeding up accessing of desired addresses. The 'Edit' button allows the location defined by the address in the 'Goto' edit box to be changed to the value as defined in the 'Edit' edit box.

Any errors encountered will be reported in the 'Report' edit box.

ERRORS

No.	MNEMONIC	DESCRIPTION
10	E_INV_CARDHANDLE	Card handle is not valid
11	E_INV_INFO	Invalid information field
12	E_INV_RTNUM	Invalid RT number
20	E_NOT_BCMRT_MODE	Card is not in BCMRT mode
21	E_NOT_MRT_MODE	Card is not in MRT mode
22	E_NOT_CM_MODE	Card is not in MON mode
30	E_CARD_RUNNING	Card is already running
31	E_CARD_HALTED	Card is halted
32	E_CANNOT_ISSUE_CMD	Card not responding to command
40	E_ALLOC_CYCLEL	Cycle allocation error
41	E_ALLOC_FRAMEL	Frame allocation error
42	E_ALLOC_SYSBLOCKL	System block allocation error
43	E_ALLOC_GAPSCYAREAL	System block area allocation error
44	E_ALLOC_SAMDL	Subaddress/Mode allocation error
45	E_ALLOC_DATAGAPL	Data buffer allocation error
46	E_ALLOC_SYSGAPL	System gap allocation error
47	E_ALLOC_DATAMEM	Data memory allocation error
48	E_ALLOC_DEFAULTS	Default value allocation error
50	E_DATA_AREA_FULL	Data allocation has exceeded maximum
51	E_SYS_AREA_FULL	System allocation has exceeded maximum
100	E_INV_	Invalid operating mode for function
102	E_INV_CARDADD	Invalid card address
200	E_INV_MSGID	Invalid message ID
201	E_INV_MSGDATA	Invalid message DATA
210	E_INV_CYCLEID	Invalid cycle ID
211	E_INV_CYCLEDATA	Invalid cycle DATA
212	E_CYCLE_AREA_FULL	Cycle allocation has exceeded maximum
220	E_INV_FRAMEID	Invalid frame ID
221	E_INV_FRAMEDATA	Invalid frame DATA
222	E_FRAME_AREA_FULL	Framer allocation has exceeded maximum
240	E_INV_COUNT	Invalid frame TX count
310	E_INV_SA	Invalid subaddress
311	E_INV_SATYPE	Invalid subaddress type
312	E_SA_NOT_FOUND	Subaddress not found
313	E_RT_NOT_FOUND	RT not found
320	E_INV_MD	Invalid mode code
321	E_MD_NOT_FOUND	Mode code not found
400	E_CM_RUNNING	Chron mon still running
401	E_CM_TRIG_DEF_ERR	Trigger definition error
402	E_CM_TRIG_SEQ_ERR	Trigger sequence error
403	E_CM_NO_TRIG	Trigger not set-up
404	E_CM_SRCH_ERR	Invalid search parameters
405	E_CM_SRCH_MAX	Maximum search count expired
406	E_CM_NO_MESSAGE	No messages available
407	E_CM_STOPPED	Chron mon has stopped

500	E_INV_CMND	Invalid command
600	E_SELFTEST_FAILED	Selftest has failed
601	E_CARD_NOT_PRESENT	Card is not present
602	E_INV_CLOCK	Invalid clock value
700	E_DE_MON_SETUP_ERR	Dassault special monitor set-up error
701	E_DE_MON_REPORT_ERR	Dassault buffer report error
2010	E_NO_SUITABLE_GAP	No suitable gap found
2020	E_CM_SYNTAX_ERR	Chron mon syntax error
3000	E_DRIVER_INIT_FAILED	Failed to initialise driver for Win95/NT
8000	E_FILE_OPEN	Cannot not open file
8001	E_FILE_WRITE	Cannot write to file
8002	E_FILE_READ	Cannot read from file
8003	E_WRONG_FILE_TYPE	Incorrect file type for mode of operation No.