Tyco BT FTAM
PC Control Application
Version 1.4.12

For Use On Mk1 FTAMs Only

User Manual

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Document Status

Version	Date	Summary
Draft A	29/11/4	First beta release version for comment only based on V1.4.11 code.
Issue 1	19/11/4	Release version based on V1.4.12 code.

Support

Please report any errors, omissions or other problems with this document and the application to:-

Pete Smith pete.smith@tycoelectronics.com or John Hulse john.hulse@tycoelectronics.com

If you require support whilst running this application, please contact Lee Hudson of Tyco.

Notes

This PC based application is intended for use on Tyco FTAMs equipped with the Mk1 Master Units and Mk1 Control Boxes. Do not use this version of the application with the Tyco Mk2 products.

Quick Start

It is recommended that this manual is read before using the PC application, however it is recognised that some users will want to proceed without reading the document. The recommended quick start sequence is:-

1. Install the Tyco Front End application into the PC (see page 5).
2. Connect the serial lead from the Master Unit Local Port to the PC serial port.
3. Click on the **Tyco Front End** icon on the desktop to start the application and the main screen will be displayed (see page 6).
4. Click on the **Audit Equipment** button and verify that the expected results are displayed (see page 8).
5. Click on the **Control Box Left Test** button to run the CB Left Tests (see page 10).
6. Click on the **Control Box Right Test** button to run the CB Right Tests (see page 10).
7. Click on the **TAM Card Address Test** to verify the address setting sequence (see page 10).
8. Click on the **TAM Chain Continuity Test** to run the electrical tests on the Test Buses (see page (11).
9. When **all** parts of **each** of the above tests have been completed, click on the **TAM OK** obtain the Excel Spreadsheet report (see page 12).

PC System Requirements

Supported Operating Systems
Windows 2000 and Windows XP

Minimum Hardware
Pentium 500MHz or greater
128Mb RAM
20Mb free hard disk space.

Required Software
The Tyco Front End Application exports the FTAM Installation report as a Microsoft Excel spreadsheet. It uses the OLE functionality of Windows; therefore to export the TAM Report, you will require a copy of Microsoft Excel to be installed on the machine that is running the Tyco application.

Installation/Starting/Un-installation Procedure

Releasing the Software

The software is released as a single self-extracting installer executable. This contains all the required DLLs, OCX's, configuration files, and all the other information required to run the software.

Installation the Software

The software installation procedure will probably require Administrator rights on the PC that you are trying to install the software on. To install the software, simply run the supplied Tyco FTAM Front End application. The installer application will copy the required files to the PC, and will create shortcuts on the desktop and on the start menu.

Starting the Software

To start the software, use the **Tyco FTAM Front End 1.4.12** icon on the desktop, or press the **Start** button, click on **Tyco** then on **FTAM Front End 1.4.12** and finally click **FTAM Front End 1.4.12** button.

Un-Installing the Software

The software un-installation procedure will probably require Administrator rights on the PC that you are trying to install the software on. To uninstall the software, press the **Start** button, click on **Tyco** then on **FTAM Front End 1.4.12**, then on **Uninstall**, and finally **Uninstall FTAM Front End 1.4.12.** This will automatically delete the desktop and start menu shortcuts, all files in the installation folder other than the configuration files. If these files have been altered, they may be needed for reference when editing configuration files in the future.

Running Different Versions on the Same PC

It is possible to run different versions of the software application on the same PC. Each release will have a different version number, and will be installed in a different location. If there is a new release of software, it is possible for you to keep the old version of software on the PC, in case you want to use the old version for any reason.

Main Screen

The main window is obtained by clicking on the Tyco icon in the front end of the screen. After an introduction screen has been displayed, the main window is displayed. This is divided into the following main areas:-

- Configuration – see page 7
- Tests – see page 8.
- Results Window – see page 13.
- Advanced Options– see page 15.

After the introductory screen the application main screen is displayed:-

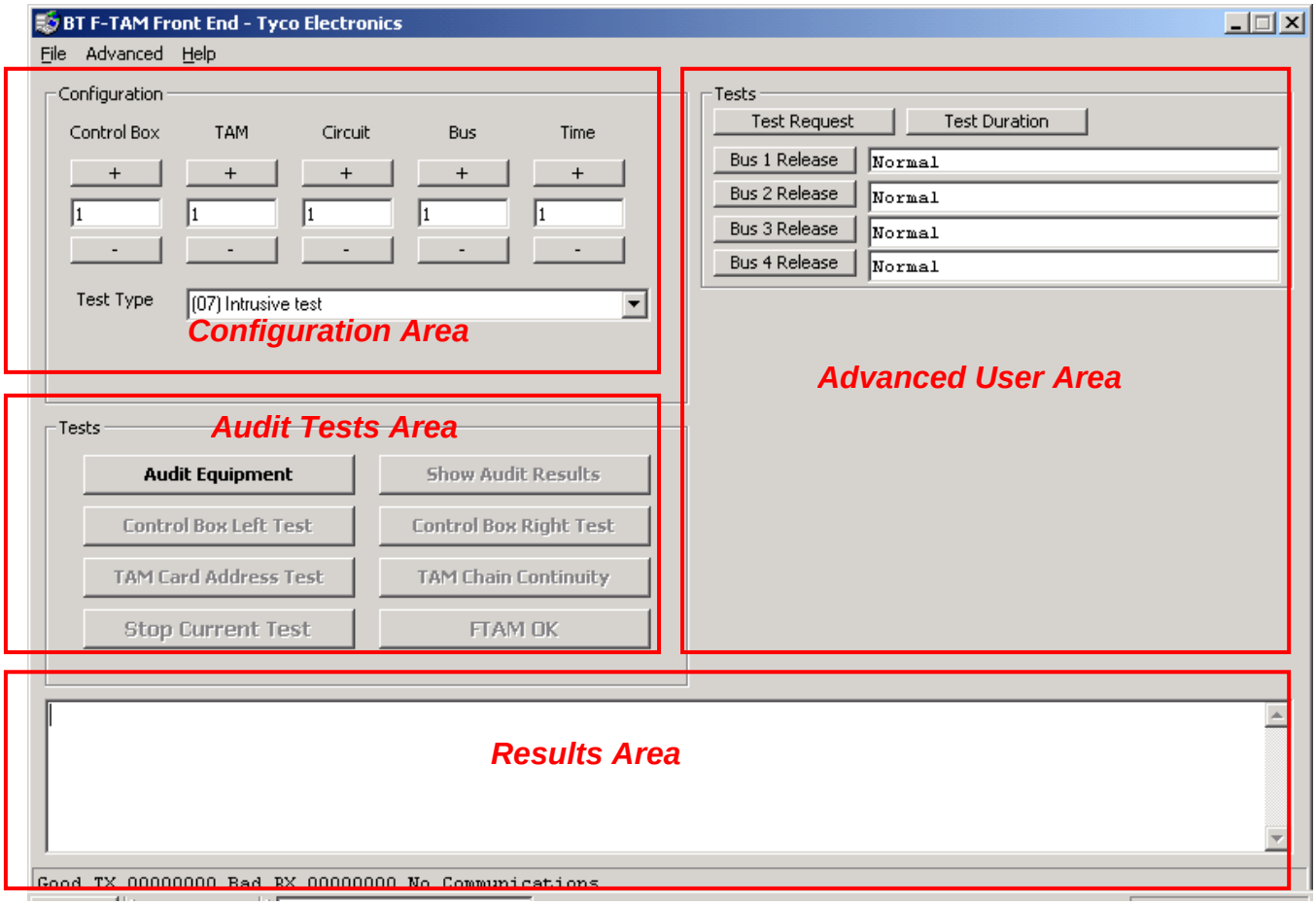


Figure 1 - TAM Installation Front End Main Screen

The above screen is the default User mode and provides the key functions of FTAM system audit.

Configuration Area

This part of the main screen contains all the commonly used configuration controls, which allow you to direct commands to a specific Control Box or TAM card or Circuit.

Control Box

This section sets the Control Box number that all subsequent tests or advanced controls will access. For example, setting Control Box to 2, and then operation of the **Initialise** button will initialise Control Box 2.

TAM

This section sets the TAM Card number that all subsequent tests or advanced controls will access. For example, setting Control Box to **2** and TAM card to **4**, then operation of the **TAM Version** button will return the Software Version of TAM card **4** connected to Control Box **2**.

Circuit

This section sets the Circuit number that all subsequent tests or advanced controls will access. For example, setting Control Box to **2**, TAM card to **4** and circuit to **43**, then operation of the **Test Request** button will start a test on Circuit **43**, TAM card **4**, Control Box **2**.

Bus

This section sets the Test Bus number that all subsequent tests or advanced controls will access. For example, setting Control Box to **2**, TAM card to **4**, circuit to **43** and Test Bus to **4**, then operation of the **Test Request** button will start a test on Circuit **43**, TAM card **4**, Control Box **2** using Test Bus **4**.

Time

This section sets the time by which a test is to be extended, for example entering the value of 254 and then pressing **Test Duration** will extend the current test on the selected bus (see above) by **254** seconds.

+ Buttons

Buttons are associated with the several controls and the **+** button increment the value of the associated section by 1. For example, pressing the **+** button below the Control value will increase the Control Box number by 1. Note that the buttons will automatically wrap over from the 10 setting to the 1 setting.

– Buttons

Buttons are associated with the several controls and the **+** button decrement the value of the associated section by 1. For example, pressing the **– button** below the Control value will decrease the Control Box number by 1. Note that the buttons will automatically wrap over from the 1 setting to the 10 setting.

Tests Area

This drop down menu enables selection of the required test type to be implemented as part of the Test Request operation. The test options include:-

- Intrusive Test
- Non-Intrusive Test With Active And Passive Probes
- Circuit Release
- Test To Disconnection Of Test Bus At The Cartridge
- Test To Disconnection Of Line At The Cartridge

For example, selecting the menu option of **"(07) Intrusive**" together with values for the Control Box of **2**, TAM card to **4**, circuit to **43** and Test Bus to **4**, then pressing the "**Test Request**" button will start an Intrusive Test on Circuit 43, TAM card 4, Control Box 2 on Test Bus 4.

This section of the screen controls the semi-automated FTAM System Installation tests. This suite of tests is used by the commissioning engineer to validate and audit the installed FTAM system. There are 5 tests that must be completed:-

1. Audit Equipment Test, which provides a quick overview screen showing system population
2. Control Box Left Test, which implements a functional test on the left hand side Control Boxes,
3. Control Box Right Test, which implements a functional test on the right hand side Control Boxes,
4. TAM Card Address Test, which sequentially communicates with each TAM on a Control Box,
5. TAM Continuity Test, which enables an electrical continuity test to be done on each Test Bus via each Control Box.

Only at the end of <u>all</u> the above tests will the **TAM OK** button will become available. An Excel format spreadsheet showing the full system configuration and population will be created and then stored if required.

Audit Equipment

The first test in the full audit of the FTAM system is initiated by operation of the **Audit Equipment** button and the process will show the detected population of Control Boxes, TAM Cards and Cartridges in the system under test on the PC screen. This will enable the commissioning engineer to quickly locate many possible problems with the installation.

Firstly the application tries to connect to each Control Box in turn. If the Control Box is present then the software version and code checksum values are recorded. Once all the Control Boxes have been interrogated, the application will then interrogate each Control Box in detail to identify which TAM Cards are present. When this is completed, each TAM that is present is instructed to report the software version and report all cartridges that are present.

When the Audit Equipment is completed, then the Quick Installation Overview screen will enable the complete initial status of the system to be displayed. Equipment defects or other problems will result in the following results:-

6. If a Control Box is missing, the Quick Installation Overview application fills the top cell of the table column with red colour to signify missing information from a Control Box.
7. If a TAM card is missing, the Quick Installation Overview application will colour the cell red together with the associated cartridge value to signify missing information.
8. If a TAM is fitted but one or more cartridges are missing, the Quick Installation Overview application fills the cartridge cell entry with red together with listing the number of cartridges present.

See Figure 2 - Section of Audit Equipment Quick Installation Overview Screen below for details.

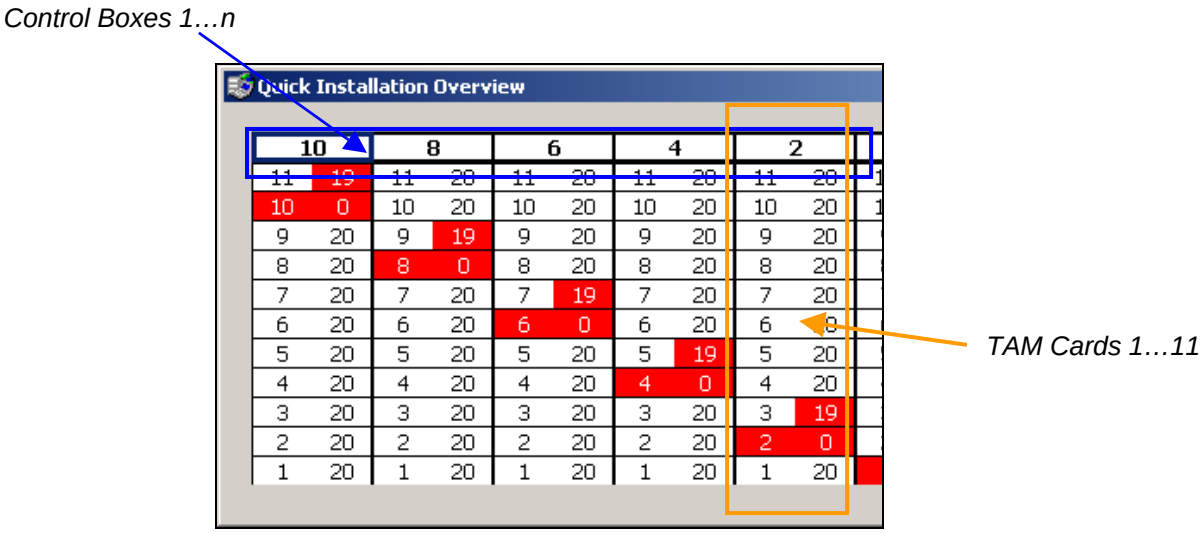


Figure 2 - Section of Audit Equipment Quick Installation Overview Screen

Figure 2 above shows a section of the Audit Equipment result screen. The Control Boxes 1…10 are organised across the top of the screen using the agreed Left and Right numbering conventions (even Control Boxes on the left hand side and odd Control Boxes on the Right hand side). If a Control Box is not present, then the entire column will be coloured in red.

The TAM Cards are numbered from 1…10 upwards in a column below the associated Control Box. The logical number of the TAM Card is in the left hand cell of the Control Box column and the number of cartridges detected by the TAM card is displayed in the right hand side cell of the column.

Figure 2 shows that Control Box 8, TAM Card 9 has 19 cartridges fitted. As this means that 1 cartridge is missing, then the cell is coloured in red for easy recognition. A similar example below shows that Control Box 10, TAM Card 4 has only 19 cartridges fitted.

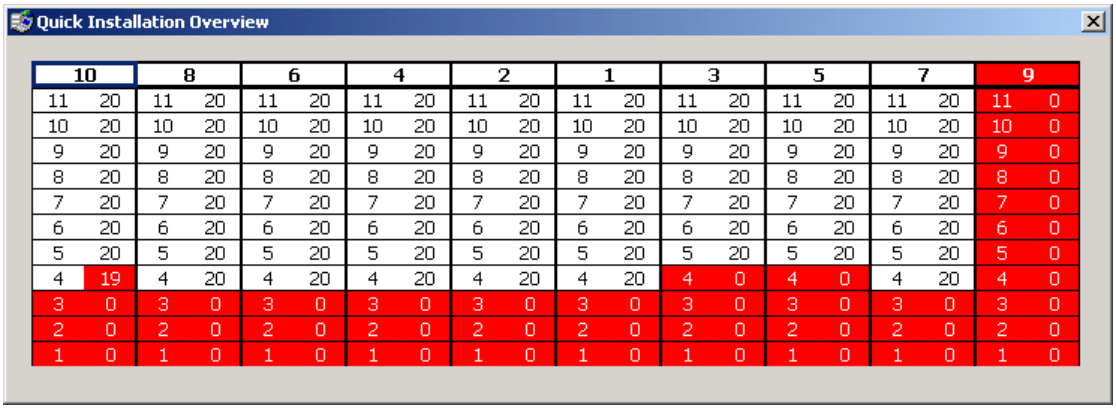


Figure 3 - Example of the Audit Equipment Quick Installation Overview Screen

Note that the above screen cannot be printed or saved directly to a file and is intended purely as a rapid reporting element of the overall audit.

Show Audit Results

This button will re-display the information gathered within the last **Audit Equipment** process. This is simply a faster version of the Audit Equipment and does not re-interrogate the installed environment.

Control Box Left Test
This is the second part of the major audit tests and this button will run a test on the end TAM card (normally address = 1) of the selected Control Box on the left hand side of the Master Unit (even numbered Control Boxes). This test will activate an intrusive test on circuit 100 of TAM 1 which is normally unused and cause the Test LED on both the selected Control Box and the end TAM Card to flash. This test will prove basic communications and enable the commissioning engineer to visually check the address of each Control Box in the sequence. To stop this test, press **Stop Current Test** button.

It is highly recommended that the Control Box Left Test is run on each Control Box in sequence and a visual check done to ensure that the Control Box address allocation for the site is correct.

Control Box Right Test
This is the third part of the major audit tests and this button will run a test on the end TAM card (normally address = 1) of the selected Control Box on the right hand side of the Master Unit (odd numbered Control Boxes). This test will activate an intrusive test on circuit 100 of TAM 1 which is normally unused and cause the Test LED on both the selected Control Box and the TAM Card to flash. This test will prove basic communications and enable the commissioning engineer to visually check the address of each Control Box. To stop this test, press **Stop Current Test** button.

It is highly recommended that the Control Box Left Right is run on each Control Box in sequence and a visual check done to ensure that the Control Box address allocation for the site is correct.

TAM Card Address Test
This is the fourth major part of the audit tests and this test will run a basic addressing test on every TAM Card served by the selected Control Box. This test will flash the Test LED on each TAM card in sequence for about 2 seconds to enable the engineer to quickly identify any problems with the allocated address settings. If there are any addressing errors on the TAM cards due to the DIP switch being set in the wrong value for the expected position on the chain, then the switch address error will be seen by the Test LED flash occurring out of the expected sequence.

This test will activate an intrusive test on circuit 100 of TAM 1 which is normally unused and cause the Test LED on both the selected Control Box and the TAM Card to flash.

The test starts at the TAM card with the highest logical address number (maximum number = 11) and flashes the TAM Card Test LED for about 2 seconds. The test will then access the TAM card with the next lowest address setting and the Test LED will then flash on that card. This sequence will repeat until the TAM card with the lowest address setting is accessed (normally address = 1). The test sequence will then go back to the highest TAM address setting on the same Control Box and then repeats indefinitely. When one Control Box has been fully tested using the TAM Card Address Test, use the **Stop Current Test** button to halt the test and then select the next Control Box in sequence (see page 7) and re-run the TAM Card Address Test.

It is highly recommended that the TAM Card Address Test is run on each Control Box in sequence and a visual check done to ensure that the address allocation is correct. The run-time for a test on a Control Box serving 11 TAM Cards is about 60 seconds.

TAM Chain Continuity Test

This is the last major test in the audit sequence and enables the engineer to check the electrical continuity of each Test Bus from the RJ-45 Test Bus connectors on the Master Unit to the first TAM card (normally address = 1 and furthest from the Control Box) served by the Control Box selected in the Configuration section (see page 7).

The test implements a 4 wire intrusive test on the normally unused circuit 100 of the first block in the TAM chain of the selected Control Box. This will enable an electrical continuity test to be implemented between circuit 100 on the Jacks,Test 47A to the RJ-45 test bus port on the Master Unit. The first test defaults to use Test Bus 1. During this test, the original **TAM Chain Continuity Test** button changes to **On Bus 1, Click for 2** which is the current state and the required action. Press this dynamic button to move the test to operate on Test Bus 2. Repeat this for Test Bus 3 and Test Bus 4. At this stage, the button will now state **On Bus 4, Click for 1**. The TAM Chain Continuity tests have now been completed for that Control Box and now end this test by selecting the **Stop Current Test** button.

It is highly recommended that each Control Box in sequence is tested and a visual check done to ensure that the continuity on each Test Bus is correct. Note that it is the responsibility of the engineer to implement the TAM Chain Continuity Test on every Control Box.

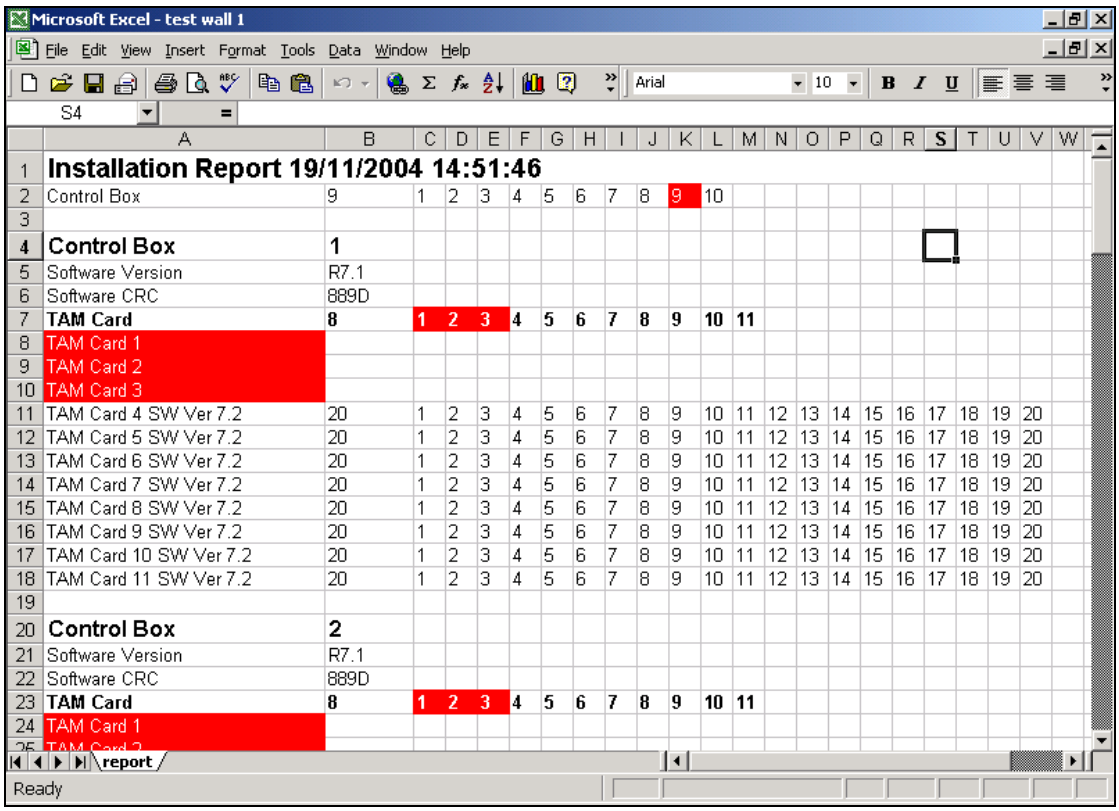
After all the above major tests have been completed, the **TAM OK** button will become available.

TAM OK

This button only becomes available once the 5 tests above have been completed. This activated button will generate a Windows prompt to specify the location to store the full audit test file. When a suitable location has been selected, a Microsoft Excel Spreadsheet is created and stored in the target location. To see the resultant file, navigate to the stored location using Windows Explorer etc, and then double-click on the file name, This will cause Excel file to open which will detail the detected installation. The file reports the following:-

- Number of Control Boxes,
- Firmware version and checksum of every fitted Control Box,
- Firmware version of every TAM Card connected to every fitted Control Box,
- Number of cartridges per TAM and a list of every missing or present cartridge.

See Figure 4 below which shows the sample report file opened in Excel, showing the time and date of the report, the number of control boxes attached, and the statistics for Control Box 1, with the software version and checksum, the number of TAM Cards and details of all TAM cards (fitted or otherwise) etc.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	**Installation Report 19/11/2004 14:51:46**																						
2	Control Box	9	1	2	3	4	5	6	7	8	9	10											
3																							
4	**Control Box**	**1**																					
5	Software Version	R7.1																					
6	Software CRC	889D																					
7	**TAM Card**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**										
8	TAM Card 1																						
9	TAM Card 2																						
10	TAM Card 3																						
11	TAM Card 4 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
12	TAM Card 5 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
13	TAM Card 6 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
14	TAM Card 7 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
15	TAM Card 8 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
16	TAM Card 9 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
17	TAM Card 10 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
18	TAM Card 11 SW Ver 7.2	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
19																							
20	**Control Box**	**2**																					
21	Software Version	R7.1																					
22	Software CRC	889D																					
23	**TAM Card**	**8**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**										
24	TAM Card 1																						

Figure 4 – Example of the Excel Installation Report File

Results Window

This window is located in the lower part of the main screen and shows the progress of any tests and also the communications status of the serial link from the PC to the Master Unit.

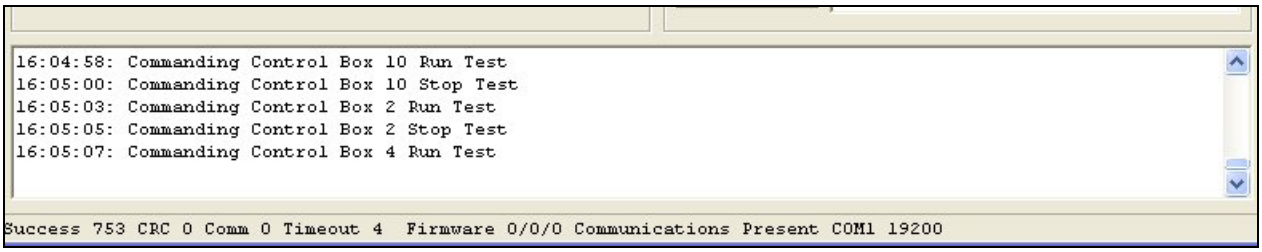


Figure 5 - Example of the Results Window

The bottom part of this window displays the communications integrity and the number of serial communication success packets, errors and timeouts etc. Note that the Communications Present text is displayed only when tests are running and will normally show No Communications. The integrity of data communications between the PC and the Master Unit is verified by the Success counter in the bottom left hand corner of the Result Window incrementing. If there are no communications between the PC and the Master Unit, then the Success counter will remain static when commands are requested.

Test Area (Advanced)

This area enables the trained maintenance engineer to apply specific tests to specific circuits. The test area is not intended for general application as the tests can be service affecting.

Test Request

This button will run a test on the TAM system, based on the information set in the Configuration area. The information used is the Control Box, TAM Card, Circuit Number and Bus Number. For example, if Control Box is set to 1, TAM card set to 2, Circuit to 3, Bus to 4, and Test Type to “Intrusive”, this button will start an intrusive test on Control Box 1, TAM card 2, circuit 3, on bus 4, for the default time of 60 seconds.

The Results area will display the Test Type command together with the location of the test and the duration of the test. The Test Area window associated with the Bus 1,2,3 and 4 Release buttons will show a decrementing seconds counter. At the end of the test, the test will clear automatically.

Bus 1,2,3 or 4 Release

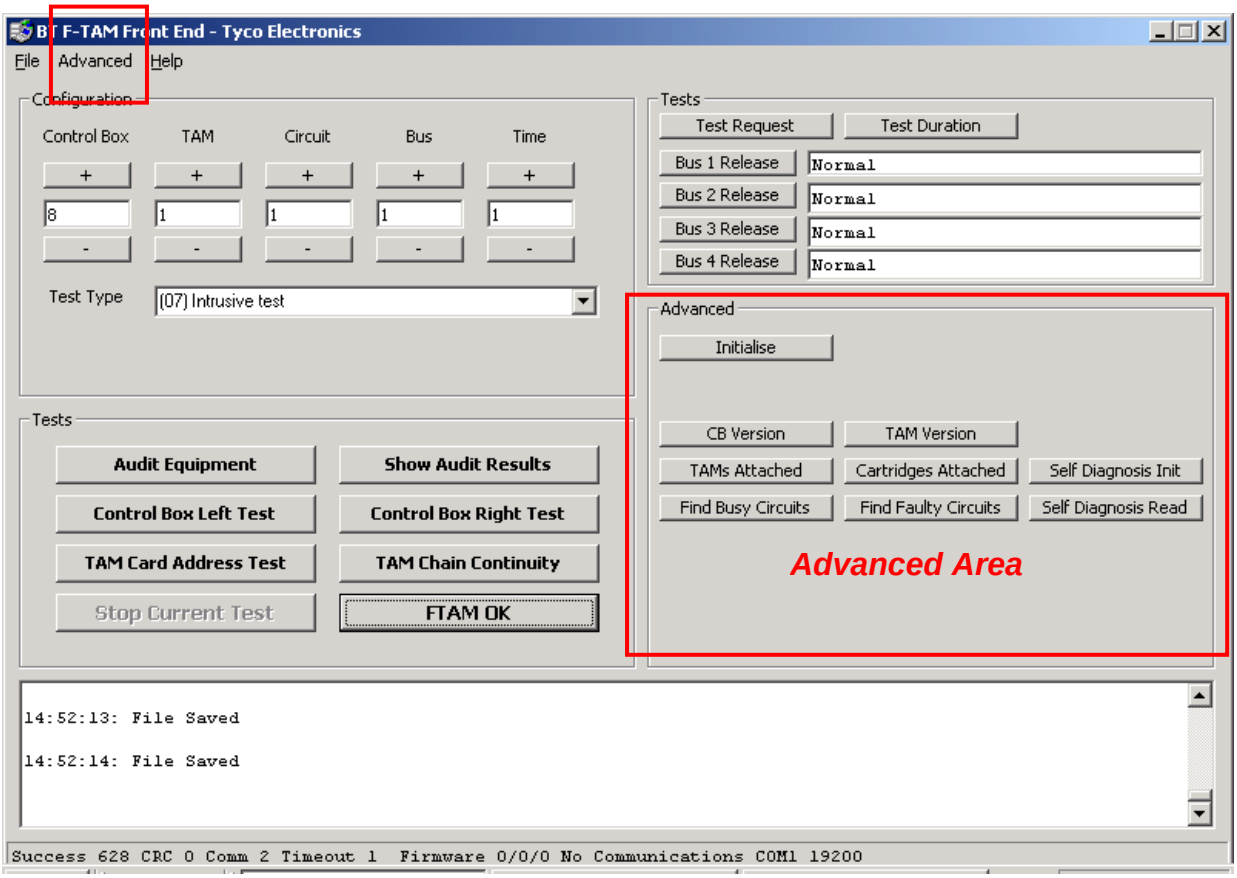
These 4 buttons are adjacent to a text box section, detailing the tests that are being run on the specified bus. Pressing the button will release the test running on the selected Bus.

Test Duration

This button will set the current test time of the test running on the Control Box and TAM Card selected in the Configuration area. For example, if the Control Box is set to 1, TAM card set to 2, Bus to 4, and Time to 254 this button will set the test that is currently running on Control Box 1, TAM card 2, Bus 4 to run for 254 seconds from the time of the button press.

Advanced Options

This is the Advanced Installer section of the main screen and is intended only for suitably qualified and experienced personnel. These instructions detail **all** buttons accessible in all versions of the software. Some buttons will not be available for some TAM systems; for example, the BT MK1 FTAM systems will not have access to any Status, Firmware or Alarms buttons. To access this advanced area, select **Advanced** on the top menu bar and then select **Advanced Mode**.



Initialise

This button initialises the Control Box selected in the Configuration area. The test shuts down all active tests and put the Control Box into Disabled state.

CB Version

This button will return the Firmware Version and Firmware Checksum of the Control Box selected in the Configuration area. For example, setting Control Box to 1 and pressing the button will return firmware version of Control Box 1.

TAM Version

This button will return the Firmware Version of the TAM card connected to the Control Box selected in the Configuration area. For example, if the Control Box is set to 1 and TAM Card is set to 2, pressing the button will return firmware version of TAM Card 2 on Control Box 1.

TAMs Attached

This button will return the TAMs attached to the Control Box selected in the Configuration section. For example if the Control Box is set to 1, pressing the button will return the number of TAM Cards connected to Control Box 1.

Cartridges Attached

This button will return the cartridges attached to the TAM card connected to the control box selected in the Configuration section. For example, setting Control box to 1 and TAM Card to 2, pressing the button will return the number of cartridges connected to TAM card 2 on Control Box 1.

Self Diagnosis Init
This button will initialise the Self Diagnosis function of the Control Box selected in the Configuration area. The results of this function are available from Self Diagnosis Read button (see below).

Find Busy Circuits
This button will return any “busy circuits”. A busy circuit is defined as a circuit that has a test running on it. The button will return either “No Busy Circuits” or “Bus 1 TAM Card 2 Circuit 3”

Find Faulty Circuits
This button will return any “faulty circuits”. A faulty circuit is defined as a circuit that has had a test running on it, but when the control box/OSS tried to shut the test down, the Control Box did not get a response from the TAM. This button will return either “No Faulty Circuits” or “Bus 1 TAM Card 2 Circuit 3”

Self Diagnosis Read
This button will read the data from the Self Diagnosis Function of the control box selected in the Configuration section. It will return the Control Box firmware version, Code Checksum and the Processor Self Diagnostics.