

TubeTAG^{PLUS TM}

Operators' Manual

Version 1.2

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1. Warnings

Please first read the ULTRA/ULTRA 50:50[™] manual to familiarise yourself with the autosampler software and operation before analysing tagged tubes.

Under no circumstances should you directly expose tags to temperatures exceeding 110°C (Note: the ULTRA tube oven is specifically designed to allow heating to 390°C, with a tagged tube in position, without damaging the tag).

1.1. Tags on metal tubes [¼"stainless steel, Silcosteel[®]]

- Must be removed prior to loading on ULTRAs prior to serial number (GB00)M20456
- *May remain* on tubes during analysis on a tag "ready" (with the capability to read and write tags) ULTRA from serial number (GB00)M20467
- *Must be removed* before analysis on UNITY[™] (can be left in place with UNITY 2[™])
- Must be removed before conditioning on TC-20[™]

2. Introduction

Associating sample and usage data with thermal desorption (TD) tubes, have historically relied on manually recording tube serial numbers. Barcode technology has proved difficult to apply to TD tubes because the high temperatures required limit the lifetime and readability of labels. In addition, barcodes cannot be programmed to record tube history or sample specific information (*e.g.* sampling time and date).

TubeTAG represents a revolutionary advance in sorbent tube informatics. The product comprises an RFID tag and clip that can be attached to individual sorbent tubes. A TAG^{SCRIBE} or a TubeTAG equipped ULTRA can then be used to automatically read and write tube and sample specific data to these tagged tubes.

TubeTAGs are generally used in two ways:

- **Sample specific mode** A tag is attached to a conditioned sample tube in the laboratory before field deployment. That tag then stays with and tracks that sample tube whilst sampling in the field, where further sampling information can be logged to it, until its return to the laboratory. On return, the information is read back off the tag before sample analysis. The tag is then removed and the tube analysed. The information on the tag is then cleared. It is then ready to go out with another tube to track another sample.
- **Tube specific mode** A specific tag is associated with a specific tube throughout its life time so that it logs both sample specific data and tube history information: number of thermal cycles, back pressure during sampling, when the tube needs repacking, *etc.*

Both modes of operation offer a significant step forward and a new range of benefits to the busy air monitoring lab. Tags can be reused almost indefinitely.

3. Attaching and removing tags from tubes

3.1. Metal tubes [1/4" (6.35 mm)]

A special removal/replacement tool is required to take the tags off metal tubes and to correctly position them when putting them back on.



Note: Carefully check the alignment of the PTFE (white) component of the tab after attachment. It must be parallel to the tube (as illustrated by green arrows). If not, adjust accordingly.

The following images show incorrect tube tag alignment. Failure to align tubes correctly can lead to problems such as tube jamming and forcing of the tube oven out of correct position. The latter may lead to incomplete sample desorption and therefore unreliable sample analysis. *The precise construction of the autosampler highlights the need for care in aligning the tag.*



The broken green arrow indicates the correct (parallel) alignment of PTFE tube tag component (see also bottom picture on page 3 for illustration). The right-hand part of the image illustrates the impact that the incorrectly aligned tag may have on tray positioning, resulting in the problems described.

After tag attachment, and prior to insertion of the tube into an ULTRA tray, fit a tag-compatible cap to the ungrooved end of the tube. For long term storage, substitute with a brass cap assigned for this purpose.

3.2. Glass tubes

1.1. 7.2 Glass tubes

To install the TAGs onto glass tubes follow the instructions below.









4. Software

4.1. Installation

Install the software by inserting the software CD and following the onscreen prompts. Alternatively, navigate to the CD using Windows Explorer and locate the appropriate 'setup.exe' file. (Note: If you already have a copy of the Markes control software installed, you should uninstall this first *via* the 'Add/Remove programs' feature in Windows).

4.2. Manual tag read/write



When the toolbar tag icon is clicked the `Manual tag Read Write ' window is displayed. This window allows you to manually read from and write to tags while the system is in standby.	Manual Tag Read Write Tube Information Tube Letter/Number TAG ID Tube Type Not defined Adsorbent Packing Unknown Packing Date 01/01/2000 Tube Type Not defined Packing Date 01/01/2000 Themal Cycles Tube Status Unknown Tube re-collected from Sample Information Sample Ref Pump Ref Sample Statu Date 01/01/2000 Sample Statu Date 01/01/2000 Sample Statu Date 01/01/2000 Sample Statu Date 01/01/2000 Sample End Date 01/01/2000 Sample End Date 01/01/2000 Sample End Time 00:00:00 Statt Flow Rate Sample End Date 01/01/2000 Sample End Time	Select Instrument Sampling Ultra Collecting Ultra Load 1 UnLoad
To read a tag from a specific tube, it must first be loaded by selecting the tube number from the drop down menu and clicking `Load '.	Load 1 UnLoad 1 0 1	
 While the tube is being loaded, read from or written to, all the function buttons are grayed out. Once the tube is loaded, the tag information is automatically read. (Note: When using the manual read/write function, the data read from the tag is not stored to file) 	Manual Tag Read Write Tube Information Tube Letter/Number TAG ID Tube Type Not defined Adsorbent Packing Unknown Packing Date 01/01/2000 Thermal Cycles Tube Status Unknown Tube Status Unknown Tube Status Unknown Sample Information Sample Ref Pump Ref Sample Start Date 01/01/2000 Sample Start Date 01/01/2000 Sample End Date 01/01/2000 Sample Start Date 01/01/2000 Sample End Date 01/01/2000 Sample End Date 01/01/2000 Sample End Date 01/01/2000 Sample End Time 00:00:00 End Flow Rate	Select Instrument Select Instrument Select Instrument Collecting Ultra UnLoading UnLoad

Once a tag has been read	Manual Tax Band III			
Once a tay has been reau,	Tube Information	rice		Select Instrument
all the stored information is	Tube Letter/Number	A 👻 654321	Read Tube &	Sampling Ultra
displayed in the relevant	TAG ID	20080721-0001	Sample Info	
boxes.	Tube Type	Silcosteel 1/4"	Write Tube & Sample Info	C Collecting Ultra
	Adsorbent Packing	Tenax TA 💌	Class Tube Info	
For information on the fields	Packing Date	15/07/2008		
available see section 4.2.1	Thermal Cycles	5	Clear Sample Info	Tube
	TD Method	Single split Tenax desorption 50:30	lon white	Load 1 💌
	Pressure Ratio	0.98		
	Tube Status	Conditioned		UnLoad
	Tube re-collected from			
	Sample Information			
	Sample Ref		Clear Sample Info	
	Pump Ref			
	Sampling Mode	Pumped		
	Sample Start Date	01/01/2000 Sample Start Ti	me 00:00:01	<u></u>
	Start Flow Rate	0	-	
	Sample End Date	01/01/2000 Sample End Til	me 00:00:01	1
	End Flow Rate	Jo		
TC	a state of the second			
If you wish to alter any of	Manual Tag Read W	rite		Colort Justermant
If you wish to alter any of the tube or sample	Manual Tag Read W Tube Information Tube Letter/Number	R v 654321	Read Tube &	Select Instrument
If you wish to alter any of the tube or sample information use the text	Manual Tag Read W Tube Information Tube Letter/Number TAG ID	A 654321 20080721-0001	Read Tube & Sample Info	Select Instrument
If you wish to alter any of the tube or sample information use the text boxes or drop down menus.	Manual Tag Read W Tube Information Tube Letter/Number TAG ID Tube Type	A 654321 20080721-0001 Silcosteel 1/4"	Read Tube & Sample Info	Select Instrument
If you wish to alter any of the tube or sample information use the text boxes or drop down menus.	Manual Tag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing	A 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4"	Read Tube & Sample Info Write Tube & Sample Info	Select Instrument Sampling Ultra Collecting Ultra
If you wish to alter any of the tube or sample information use the text boxes or drop down menus.	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date	A ▼ 654321 20080721-0001 Silcosteel 1/4" Silcosteel 1/4" ▼ Stainless Steel 1/4" Silcosteel 1/4"	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info	Select Instrument
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles	A ▼ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Silcosteel 1/4" Safelok 1/4" Glass 1/4" Glass 1/4" Silcost 1/4"	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info	Select Instrument Sampling Ultra Collecting Ultra Tube
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method	A G54321 G080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Sicosteel 1/4" Glass form Unknown	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info on Write	Select Instrument Sampling Ultra Collecting Ultra Tube Load
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio	A Gamma 654321 Constant 1/4" Stainless Steel 1/4" Stainless Steel 1/4" Stainless form Unknown 0.98	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info on Write	Select Instrument Sampling Ultra Collecting Ultra Load 1
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status	A Gamma Gam	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info on Write	Select Instrument Sampling Ultra C Collecting Ultra Load UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating	Manual Fag Read W Tube Information TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube te-collected from	A ▼ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Silcosteel 1/4" Safelok 1/4" Glass 1/4" Glass 1/4" Glass 6mm Unknown 0.98 Conditioned ▼	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info on Write	Select Instrument Sampling Ultra Collecting Ultra Load UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length.	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube re-collected from Sample Information	A Getain the second se	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info □ Clear Sample Info □ ○ <td< td=""><td>Select Instrument Sampling Ultra Collecting Ultra Load UnLoad</td></td<>	Select Instrument Sampling Ultra Collecting Ultra Load UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length.	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube re-collected from Sample Information Sample Ref	A Gamma Gam	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info Clear Sample Info On Write	Select Instrument Sampling Ultra Collecting Ultra Load UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length.	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube re-collected from Sample Information Sample Ref Pump Ref	A 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Safelok 1/4" Glass 1/4" Glass Finm Unknown 0.98 Conditioned Image: Conditioned	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info on Write	Select Instrument © Sampling Ultra © Collecting Ultra Tube Load 1 UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube re-collected from Sample Information Sample Ref Pump Ref Sampling Mode	A _ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Safelok 1/4" Glass 6mm Unknown 0.98 Conditioned •	Read Tube & Sample Info	Select Instrument © Sampling Ultra © Collecting Ultra Tube Load 1
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube Status Sample Information Sample Ref Pump Ref Sampling Mode Sample Statt Date	A ▼ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Safelok 1/4" Glass 1/4" Glass 1/4" Glass 1/4" Glass 1/4" O 98 Conditioned ▼ 0 Sample Start Ti	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info On Write Clear Sample Info Clear Sample Info	Select Instrument Sampling Ultra Collecting Ultra Load UnLoad 1
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent Packing is not shown refer	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube re-collected from Sample Information Sample Ref Pump Ref Sample Start Date Start Flow Rate	A 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Silcosteel 1/4" Safelok 1/4" Glass 1/4" Glass 1/4" Glass 1/4" Glass 1/4" Glass 1/4" O 0.98 Conditioned Image: Conditioned Image: Conditioned Image: Conditi	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info Clear Sample Info Clear Sample Info Clear Sample Info 00:00:01	Select Instrument Sampling Ultra Collecting Ultra Load UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent Packing is not shown refer to section 4.5 for	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube Status Tube re-collected from Sample Information Sample Information Sample Ref Pump Ref Sampling Mode Sample Start Date Start Flow Rate Sample End Date	A ▼ 654321 20080721-0001 Silcostel 1/4" Stainless Steel 1/4" Silcosteel 1/4" Stainless Steel 1/4" Glass 1/4" Glass 1/4" Glass 6mm Unknown	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info on Write Clear Sample Info Clear Sample Info Mite 00:00:01 me 00:00:01	Select Instrument © Sampling Ultra © Collecting Ultra Tube Load 1 • UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent Packing is not shown refer to section 4.5 for instructions on altering the	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube Status Tube re-collected from Sample Information Sample Ref Pump Ref Sample Start Date Start Flow Rate Sample End Date End Flow Rate	A ▼ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Silcosteel 1/4" Safelok 1/4" Glass 1/4" Glass 1/4" Glass 1/4" Jona 0 0.98 Conditioned ▼ 0 0.98 0 0.01/01/2000 Sample Start Ti 0 Sample End Tim 01/01/2000 Sample End Tim	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info Clear Sample Info Clear Sample Info Mile 00:00:01 me 00:00:01	Select Instrument © Sampling Ultra © Collecting Ultra Load 1 • UnLoad
If you wish to alter any of the tube or sample information use the text boxes or drop down menus. Note: The alphanumeric fields have a limited number of characters. Place the mouse over the field and a text box will appear stating the maximum field length. If the correct Tube Type , TD Method or Adsorbent Packing is not shown refer to section 4.5 for instructions on altering the available options.	Manual Fag Read W Tube Information Tube Letter/Number TAG ID Tube Type Adsorbent Packing Packing Date Thermal Cycles TD Method Pressure Ratio Tube Status Tube Status Tube Status Tube re-collected from Sample Information Sample Ref Pump Ref Sample Ref Sample Ref Sample Statt Date Start Flow Rate Sample End Date End Flow Rate	A ▼ 654321 20080721-0001 Silcosteel 1/4" Stainless Steel 1/4" Safelok 1/4" Glass 6mm Unknown 0.98 Conditioned ▼ 0 Sample Start Ti 0 0 Sample End Tir 0	Read Tube & Sample Info Write Tube & Sample Info Clear Tube Info Clear Sample Info Clear Sample Info Clear Sample Info Clear Sample Info 00:00:01 me 00:00:01	Select Instrument © Sampling Ultra © Collecting Ultra Load 1 • UnLoad

To write the undated	Access Tag Modification
information to the tag click	Select Instrument
	User Name: Head Tube & Fampling Ultra
Write Tube & Sample Info'.	Eassword: Write Tube &
	OK Cancel Sample Into Collecting Ultra
To prevent accidental loss of	Packing Date 15/07/2008
information a password is	Thermal Cycles 5 Clear Samole Info
required to write data.	TD Method Single split Tenax description 50:30 🔹 on Write Load 1
·	Pressure Ratio 0.98
The user name is left blank	Tube Status Conditioned UnLoad
and the presiverd is	Tube re-collected from
and the password is:	- Sample Information
	Sample Ref
Mona Lisa	TYPE Pump Ref
	Sampling Mode Pumped
Note: Once the password	Sample Start Date 01/01/2000 Sample Start Time 00:00:01
has been entered you will	Start Flow Rate 0
not be asked for it again	Sample End Date 01/01/2000 Sample End Time 00:00:01
uptil the coffware is	End Flow Rate 0
restarted.	
If you wish to clear all the	Manual Tag Read Write Select Instrument
information on a tag (e.g. if	Tube Letter/Number A 👻 654321 Read Tube & G Sampling Ultra
you were moving the tag to	TAG ID 20080721-0001 Sample Info
a different tube) click 'Clear	Tube Type Silcosteel 1/4" Viite Tube & C Collecting Ultra
Tube Info'	Adsorbent Packing Tenax TA
	Packing Date 15/07/2008
	Thermal Cycles 5 Clear Sample Info
Once again, to prevent	TD Method Single split Tenax desorption 50:30 💌 on Write Load 1 💌
accidental loss of	Pressure Ratio 0.98
information a password is	Tube Status Conditioned UnLoad
required to clear the data.	Tube re-collected from
	Sample Information You are about to clear all tube information information from the tag
The user name is left blank	Sample Ref Do you wish to proceed
and the password is	Pump Ref OK Cancel
and the password is:	Sampling Mode Pumped
	Sample Start Date 01/01/2000 Sample Start Time 00:00:01
Mona Lisa	Start Flow Rate 0
	Sample End Date 01/01/2000 Sample End Time 00:00:01
Note: Once the password	End Flow Rate 0
has been entered you will	
not be asked for it again	
uptil the coffware is	
restarted.	
A final window then appears	
asking you to confirm	
clearing the tag data.	
If you wish to clear the	Clear Sample Info
sample info fields when you	- On Write
write to the tag tick 'Clear	
Sample Info on Write'	
To upload the tube alial	
TO UNIOAD THE TUDE CIICK	
`Unload'. The tube and cap	

haster/hebbin will then cool	Tit
neater/bobbin win their coor	Tube
to the unload temperature.	Load 1 👻
Note: Refer to the	
	Unicoad 4
ULIRA/ULIRA 50.50	5
manual for further	Ž
information on the unload	8
temperature.	
If loading a second tube,	
simply repeat the tube load	
procedure. The system will	
cool then unload the first	
tube before loading another.	
Note: If several tubes are	
to be loaded for manual	
road (write lowering the	
read/write, lowering the	
flow path temperature to	
the unload temperature will	
speed up the procedure.	

4.2.1. Tube information field descriptions

Tube Information			Select Instrument
Tube Letter/Number	A 💌 654321	Read Tube &	Sampling Ultra
TAG ID	20080721-0001	Sample mit	
Tube Type	Silcosteel 1/4"	Write Tube & Sample Info	C Collecting Ultra
Adsorbent Packing	Tenax TA	Chu Taba lata	
Packing Date	15/07/2008	Clear Tube Info	
Thermal Cycles	5	Clear Sample Info	Tube
TD Method	Single split Tenax desorption 50:30	on Write	Load 1 💌
Pressure Ratio	0.98	_	
Tube Status	Conditioned	•	UnLoad
Tube re-collected from	• 0		

Tube	These two fields are designed to record the tube serial number (and letter) to
Letter/Number	which the tag is attached. They are limited to one letter and six digits (Note:
	numbers beginning with zero(s) will be shortened – <i>i.e.</i> 078323 will be
	shortened to 78323 when read back from the tag).
TAG ID	Read only field containing the factory set unique identifier for a given tag.
Tube type	By default this field is designed to record the tube type – <i>i.e.</i> $\frac{1}{4}''$ stainless
	steel, ¼" Silcosteel [®] etc. The options available in this drop down list are
	completely customisable and could be used, for example, to specify
	"Environmental Tubes for Diffusive Sampling" or "General Purpose Screening
	Tubes" etc. For information on editing the available options in these drop down
	menus, see section 4.5.
Adsorbent	Specifies the nature of the sorbent packing inside the sample tube. By default
Packing	the list contains a selection of some of the most common packings. The
	options available in this drop down list are customisable – see section 4.5.
Packing date	If entered, this specifies the date on which the sample tube was packed and
	allows the user to track the age of the sorbent packing.

T I I I	
Thermal cycles	Iracks the number of times the sorbent in the tube has been heated
	(conditioned or analysed). If analysed on a tag "ready" ULTRA this value is
	increased automatically. Alternatively a value may be typed in directly.
TD Method	Allows the user to specify the recommended TD analytical method for analysis
	of this sample tube. The options in this list box are customisable – information
	on editing the contents is given in section 4.5.
Pressure ratio	Displays the most recent pressure ratio measurement – large changes here
	could indicate a tube that is becoming blocked, or has lost its sorbent packing.
	Valid values are between 0.000 and 1.000 where 0.000 would indicate
	completely blocked and 1.000 completely free flowing. Note: the value is
	reported in the sequence reporter and automatically updated with the most
	recent value, when using an ULTRA 50:50 autosampler.
Tube status	This field should be used to indicate the current status of the sample tube to
	which the tag is attached. The default options include conditioned, sampled
	and desorbed. The options for this list box are customisable – information on
	editing the contents is given in section 4.5.
	NOTE: there is the special tube status of "re-collected" which gives you the
	option to note the number of the tube from which a sample originated when
	using the SecureTD-Q ^{M} option of all Markes TD systems.

4.2.2. Sample Information field descriptions

Sample Information					
Sample Ref	<u> </u>		(Clear Sample Info	
Pump Ref	I		-		
Sampling Mode	Pumped	•			
Sample Start Date	01/01/2000	•	Sample Start Time	00:00:01	
Start Flow Rate	0				
Sample End Date	01/01/2000	•	Sample End Time	00:00:01	
End Flow Rate	0				

Sample Ref	Free text field limited to eight alphanumeric characters allowing the user to
	uniquely identify this sample
Pump	Free text field limited to three alphanumeric characters allowing the user to
Reference	identify the pump used to take this sample
Sampling mode	Drop down menu allowing the user to define whether this is a pumped/active
	sample or a diffusive/passive sample
Sample start	Allows user to define sampling start date and time to a two second resolution
time	
Start flow rate	Allows the user to log the pumped sampling flow rate at the start of sampling
Sample end	Allows user to define sampling end date and time to a two second resolution
time	
End flow rate	Allows the user to log the pumped sampling flow rate at the end of sampling

4.3. Sequence reports

When a tube with a tag	
TubeTAG ULTRA/ULTRA	Sequence Viewer Sequence Reporter
<i>50:50</i> , the tag information	s Tube PR Tube Letter / Number TAG ID Tube Type Packing Packing Date Thermal Cycles TD Method Pressure Ratio
is read and displayed in the	0.983 A 654321 20080/21-0001 ilcosteel 1/4 Tenax 1A 15/07/2008 5 Tenax desor 0.980 0.983 B 123456 20080731-0001 nless Steel 1 Tenax TA 10/09/2008 3 Tenax desor 0.980
sequence reporter.	
In the sequence reporter tab, any columns containing data read from a tag are highlighted in blue.	
To select which columns are	
displayed in the sequence	Options
reporter ao to ' View –	Methods Gas Sequence Ports Configuration Reporting Flow Control Miscellaneous
Options ' then the	Reporting
` Reporting ' tab.	IV Sample Name
	Method Name
You can now select/deselect	Desorb Start Time Desorb End Time Peak Desorb Temp
the columns as required.	Sample Type
	Trap Fire Time
(Note: It is necessary to	✓ Unity Deviation
close and reopen the control	🔽 Ultra Deviations
software for these sequence	Injection Count
reporter changes to be	Cycle Count
taken into account)	Tag
	I Tube Letter / Number I TAG ID I Tube Type
	V TD Method V Pressure Batio V Tube Status
	✓ Re-collected from ✓ Re-collected onto ✓ Tag Deviations
	Sampling Information
	OK Craste Beast File
Note that two versions of	
the sequence report are	
stored as .csv files in the	test_P12Aug2008_102553.csv
`unity\reports' directory.	E test F12Aug2008 102553.csv
L	
Two versions are saved:	
one with _P in the file name	
with the partial information	
(<i>i.e.</i> that displayed in the	
with E in the file name	
containing the full	
tag/sequence information	

4.4. Tag information/error messages

The new tag deviations column in the sequence reporter is used to report information/errors relevant to the tag read/write process:

Read/Write OK	Successful read write
Multiple tag failure: Sample	Read/write error on the sample tube or the re-
read + sample write + collect	collection tube due to no tag being present or a
read + collect write	corrupt tag.
Sample R/W OK – Collect:	Sample tag read/write ok, re-collection tube tag
failed read + failed write	read/write failed (either the selected re-collection
	tube has no tag or the re-collection tube tag is
	corrupt)

Errors written to the 'Tube Status' field on the tag (and to the report file):

Leak test failure: tube not desorbed	Tube failed leak test, sample retained
Instrument failure: sample retained	An error on the instrument occurred before
	primary desorption
Instrument failure: sample lost	An error on the instrument occurred during or
	after primary desorption of tube

4.5. Altering the TubeTAG drop down menus

If you wish to add additional options in the **Tube Type**, **TD Method** or **Adsorbent Packing** drop down menus you must first browse to your UNITY program directory (Default location: **`C:\Program Files\Unity**').

Using Notepad you can open the following files:

tagadsorbents.txt
tagmethods.txt
tagtubetypes.txt
(tagstatus.txt)
(We recommend that you only add to the files. Do not remove or change any of the default
states in these files as this could cause your tag to be written with the incorrect information).

To add additional options (in the example shown 'Special Packing' has been added) take the next available number in the list (*e.g.* 11), then a comma (no spaces between) and the description (*e.g.* Special Packing) followed by another comma (no spaces between) and N.



Once the changes have been made, save the text file with the original file name *e.g.* tagadsorbents.txt and restart the software. (Note: Do not use commas in names as they are used to separate different sections of information.)

You can use the manual tag read/write window to confirm successful changes.

Note: Text files will need to be copied to all relevant PCs if the same data are to be recalled from the tags.



4.6. Information flow schematic for tagged tubes on ULTRA