Report 5000

Reporting Softwate

Microsoft ® Excel Addin
Help Manual

EUROTHERM

Invensys
An Invensys company

EXCEL ADDIN HELP PAGES

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Introduction

Overview

General information

The History ActiveX control allows data from a Review data base to be imported into a standard Exel spread sheet for analysis.

Timestamps

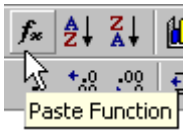
The default for timestamps is the time zone of the instrument, not of the PC. The function UH_SetTimeZoneGMT described below can be used to switch to GMT (sometimes known as UTC) for situations where data is required to cross Daylight Saving Time (DST) boundaries. An additional function (UH_GMTToLocal) can then be used to convert these timestamps to instrument time zone, for display.

Data Paths

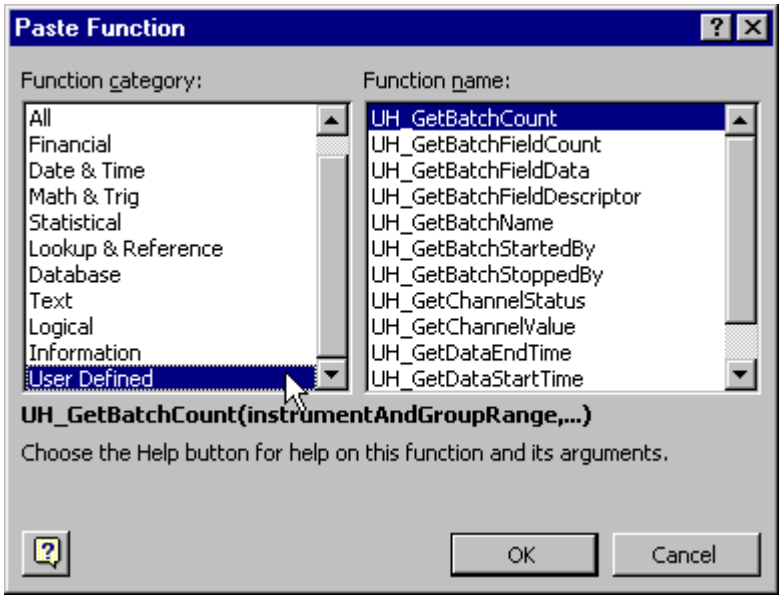
The function UH_SetArchiveDataPath allows the user to set the path to the folder containing the review database containing the data to be imported. The function need not be called if the data is held in the default database (from the registry), unless data has previously been called using a different path name.

Entering function parameters

To access a function, and enter its parameters, the relevant cell in the spreadsheet is clicked, and the fx key clicked.

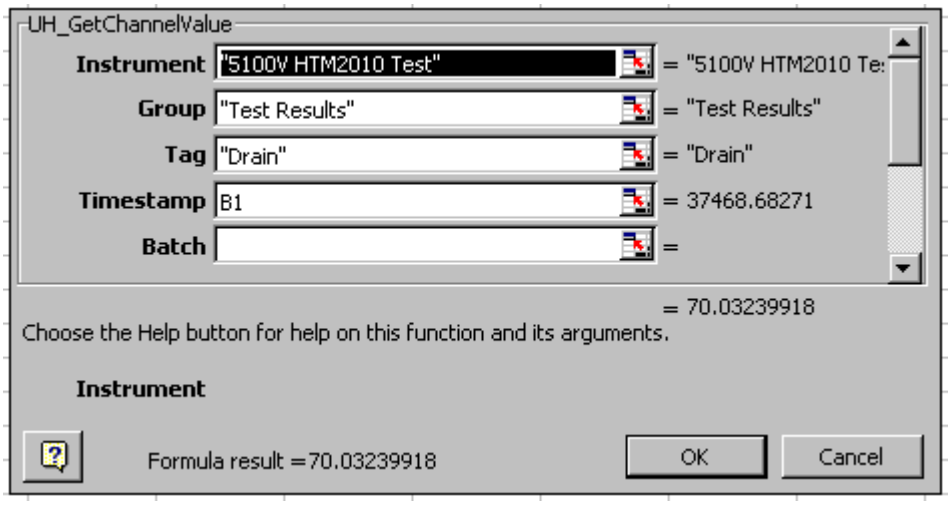


This produces a picklist of all available functions. This picklist can be 'filtered' by selecting a specific type for display. In the figure below, 'User Defined' has been selected.

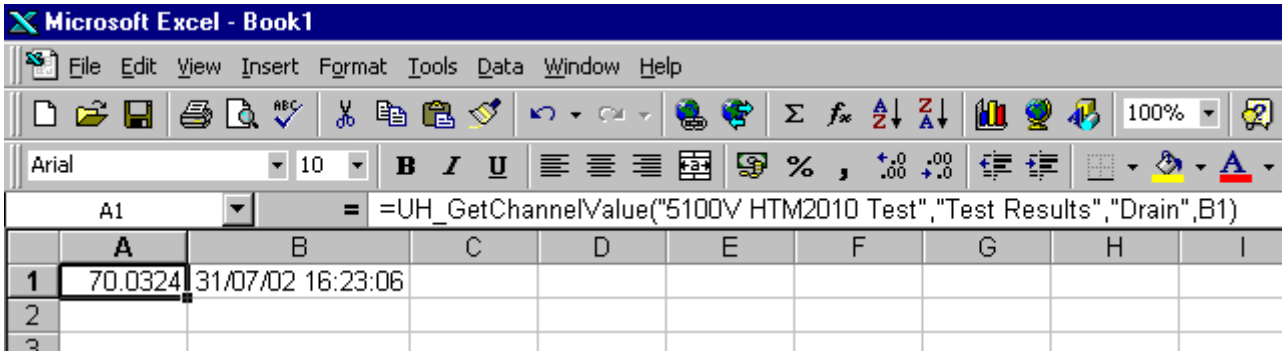


Entering Function parameters (Cont.)

Once the required function has been selected, and OK clicked, a list of parameters appears, for the user to configure. The figure below shows the top part of the list for the Get Channel Value function. Further parameters are displayed by means of the scroll bar.



Once configuration is complete, and OK pressed, the new equation for the cell appears in the formula bar.



Default values in function cells

When an optional parameter is to be left at its default setting, it can be left out of the function call.

For example, the Get Channel Value function has the parameter call:
(instrument, group, tag, timestamp, batch, channelType, channelNumber, interval, mode) where the parameters in blue are optional.
Thus, UH_GetChannelValue(B2,C2,D2,E2,,E3,5) will pick up the instrument from cell B2, the group name from C2, the tag from D2 and the timestamp from cell E2. The batch name is defaulted, the channel type is fetched from cell E3, and the channel number is 5. Interval and mode are defaulted.

In the case where an optional parameter is to be fetched from a cell, but is required to have its default value, this can be achieved in most cases by leaving the cell empty. The exceptions to this are Category/Mask, Channel type and Channel number, all of which must have the value –1 placed in the cell in order that the function pick up the default value.

Functions available

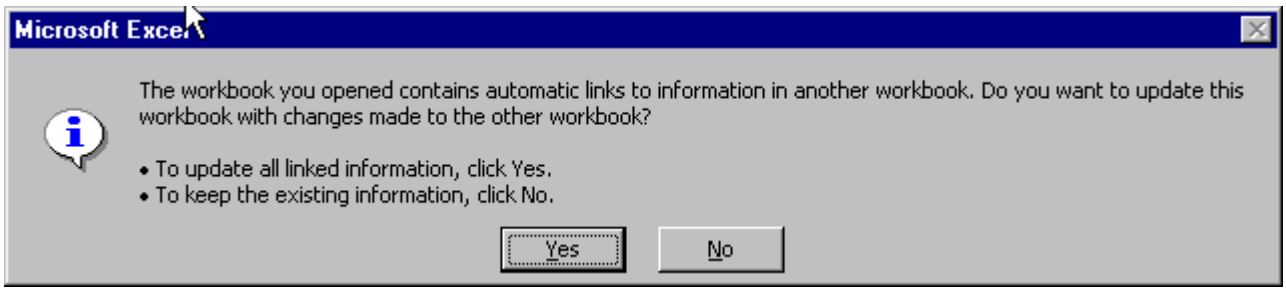
The following functions are available:

Get Addin Version
Get Batch Count
Get Batch Field Count
Get Batch Field Data
Get Batch Field Descriptor
Get Batch Name
Get Batch Name at Time
Get Batch Name Column
Get Batch Started By
Get Batch Stopped By
Get Channel Status
Get Channel Status Column
Get Channel Units
Get Channel Value
Get Channel Value Column
Get Control Version
Get Data End Time
Get Data Start Time
Get Database Path
Get Digital Channel Value String
Get Digital Channel Value String Column
Get Group Count
Get Group Name
Get Instrument Count
Get Instrument Name
Get MAC Address
Get Message Category
Get Message Category Column
Get Message Count
Get Message Text
Get Message Text Column
Get Message Timestamp
Get Message Timestamp Column
Get Raw Sample Channel Value Column
Get Raw Sample Count
Get Raw Sample Timestamp
Get Raw Sample Timestamp column
Get Tag Count
Get Tag Name
Get Time Zone
GMT to Local
Refresh Data
Set Time Zone
Set Archive Data Path
Error messages

Quick Start

After installing the Uhistory software, open Excel. With an empty spreadsheet open, click 'Add-ins' in the Tools menu to call the Add-Ins dialogue, and click the Browse button. Browse to the Uhistory installation folder (normally to be found in C:\Program Files...), and select Uhistory.xla. Click OK, then click the Add-Ins dialogue OK. This allows Excel to use the functions in the Uhistory Add-in, and allows access to the help file via 'Help on Uhistory' in the Excel Help menu.

A sample spreadsheet (UhistoryQuickstart.xls) is supplied, and this demonstrates some of the techniques that can be used to generate reports from data in the Review database. This spreadsheet can be found in the Samples folder within the Uhistory installation folder, and should be opened in Excel. If Uhistory is not in the default location, (C:\Program Files...) a message may appear:



Click 'No', then click 'Links' in the Excel Edit menu. Click on the 'Change Source' button and browse to Uhistory.xla in the folder that was specified at installation time. Click OK, then click the 'Links' dialogue OK.

Batch information

Get Batch Count

This function returns the number of batches in a specified set of instruments and groups, in a specified time range.

The Instrument/Group range of cells must either be a single column containing instrument names, or a pair of columns, with each cell pair containing an instrument name in one, and a group name in the other.

If a group cell is left empty, then all groups on the matching instrument are included.

If an instrument cell is left empty, then all groups with the same name as that in the associated group cell will be included. (E.G several instruments may contain a group called 'Group 1')

The time range start and end points are used to select only those batches that exist, either wholly or partially) within the time range.

Function:

UH_GetBatchCount(instGrpRange,timerangeStart,timerangeEnd)

Parameters

instGrpRange	Optional. Can be one of the following: 1. A single column (possibly only one cell) containing instrument names. Batches counted will be those recorded by any of these instruments. 2. Two columns (possibly one pair of cells). In this case, the first column contains instrument names; the second column contains group names, each pair of cells making an instrument/group pair. Batches counted will be those recorder by any of the instrument/group pairs. If any of the group cells is empty, then all groups for the associated instrument will be included. If any of the instrument cells is empty, then all groups with the same name as that in the associated group cell will be included.
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.

Get Batch Field Count

This function fetches the number of batch field descriptors and data items for a specified batch. If the batch is not found, an error message is generated.

Function:

UH_GetBatchFieldCount(batch,instrument,group)

Parameters

batch	The required Batch name.
instrument	Optional. The required Instrument name. If blank, then data for all instruments is included.
group	Optional. The required Group name. If blank, then data for all groups within the specified instrument is included.

Get Batch Field Data

This function returns Batch Field data for the field defined by 'Index', where the 1st field = index 1. If the batch is not found, or if there are conflicting strings, an error message is generated.

Function:

UH_GetBatchFieldData(index,batch,instrument,group)

Parameters

index	The index into the array of fields (1st descriptor = index 1).
batch	The required Batch name.
instrument	Optional. The required Instrument name. If blank, then data for all instruments is included.
group	Optional. The required Group name. If blank, then data for all groups within the specified instrument is included.

Get Batch Field Descriptor

This function returns the batch field descriptor defined by 'Index', where the 1st descriptor = index 1. If the batch is not found, or if there are conflicting descriptor strings, an error message is generated.

Function:

UH_GetBatchFieldDescriptor(index,batch,instrument,group)

Parameters

index	The index into the array of descriptors (1st descriptor = index 1).
batch	The required Batch name.
instrument	Optional. The required Instrument name. If blank, then data for all instruments is included.
group	Optional. The required Group name. If blank, then data for all groups within the specified instrument is included.

Get Batch Name

Allows iteration through batch names, with optional specification of instrument/group pairs and time range.

The Instrument/Group structure must either be a single column containing instrument names, or a pair of columns, with each cell pair containing an instrument name in one, and a group name in the other.

If a group cell is left empty, then all groups on the matching instrument are included.

If an instrument cell is left empty, then all groups with the same name as that in the associated group cell will be included. (E.G several instruments may contain a group called 'Group 1'.)

The time range start and end points are used to select only those batches that exist, either wholly or partially) within the time range.

Function:

UH_GetBatchName(index,instGrpRange,timerangeStart,timerangeEnd)

Parameters

index	Which of the set of batch names to provide. 1st batch = 1
instGrpRange	Optional. Can be one of the following: 1. A single column (possibly only one cell) containing instrument names. Batches counted will be those recorded by any of these instruments. 2. Two columns (possibly one pair of cells). In this case, the first column contains instrument names; the second column contains group names, each pair of cells making an instrument/group pair. Batches counted will be those recorder by any of the instrument/group pairs. If any of the group cells is empty, then all groups for the associated instrument will be included. If any of the instrument cells is empty, then all groups with the same name as that in the associated group cell will be included.
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.

Get Batch Name at Time

This function provides the batch name (if any) for a specified instrument and group, at a specified time.

Function:
UH_GetBatchNameAtTime(instrument,group,timestamp)

Parameters

instrument	The required Instrument name.
group	The required Group name.
timestamp	The timestamp for which the batch name is to be returned.

Get Batch Name Column

Designed to be called by an event handler, this function fills a specified column with batch names. The batch names can be filtered by instrument/group and time range if required.

Any unused cells in the specified column are cleared.

If there are insufficient cells, an error message is placed in the first cell.

The Instrument/Group structure must either be a single column containing instrument names, or a pair of columns, with each cell pair containing an instrument name in one, and a group name in the other.

If a group cell is left empty, then all groups on the matching instrument are included.

If an instrument cell is left empty, then all groups with the same name as that in the associated group cell will be included. (E.G several instruments may contain a group called 'Group 1')

The time range start and end points are used to select only those batches that exist, either wholly or partially) within the time range.

Function:
UH_GetBatchNameColumn(fillRange, instGrpRange, timerangeStart, timerangeEnd)

Parameters

fillRange	The range of cells to fill. Must be a single column.
instGrpRange	Optional. Can be one of the following: 1. A single column (possibly only one cell) containing instrument names. Batches counted will be those recorded by any of these instruments. 2. Two columns (possibly one pair of cells). In this case, the first column contains instrument names; the second column contains group names, each pair of cells making an instrument/group pair. Batches counted will be those recorded by any of the instrument/group pairs. If any of the group cells is empty, then all groups for the associated instrument will be included. If any of the instrument cells is empty, then all groups with the same name as that in the associated group cell will be included.
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.

Get Batch Stopped By

This function returns the 'Stopped by' string for the specified batch. If the batch is not found, or if there are conflicting strings, an error message is generated.

Function:

UH_GetBatchNameStoppedBy(batch,instrument,group)

Parameters

batch	The required Batch name.
instrument	Optional. The required Instrument name. If blank, then data for all instruments is included.
group	Optional. The required Group name. If blank, then data for all groups within the specified instrument is included.

Get Batch Started By

This function returns the 'Started by' string for the specified batch. If the batch is not found, or if there are conflicting strings, an error message is generated.

Function:

UH_GetBatchNameStartedBy(batch,instrument,group)

Parameters

batch	The required Batch name.
instrument	Optional. The required Instrument name. If blank, then data for all instruments is included.
group	Optional. The required Group name. If blank, then data for all groups is included.

Instrument Information

Get MAC Address

This function fetches the MAC address for a specified instrument.

If, for example, an instrument has been replaced, but the configuration of the previous instrument has been 'restored' to the new instrument, the database will contain two MAC addresses for the named instrument. Specifying a group and timestamp allows each instrument to be accessed.

Function:

UH_GetMACAddress(instrument,group,timestamp)

Parameters

instrument	The instrument, the MAC address of which is to be fetched.
Group	Optional. If left blank, the addresses from all groups within the specified instrument is considered. If these are identical, the address is returned; if not, an error message is generated.
Timestamp	Optional. The timestamp for which the MAC address is required. If blank, or 0, the addresses for all timestamps are considered. If these are identical, the address is returned; if not, an error message is generated.

Get Time Zone

This function returns the time zone of the specified instrument as a string. E.G. 'GMT-2 DST ' means that the instrument is 2 hours behind GMT, that it is configured to use daylight saving time (DST).

Function:

UH_GMTTimezone(instrument)

Parameters

instrument	The instrument, the time zone of which is to be fetched.

GMT to Local

This function converts a GMT timestamp to one for the local time zone for the specified instrument. Returns a converted time or zero if an error is encountered.

UH_GMTToLocal(timestamp,instrument)

Parameters

Timestamp	Timestamp in GMT
instrument	The instrument, the time zone of which is to be used.

Messages

Get Message Category

This function returns a numeric value to define the type (category) of the indexed message. The timestamp of the 1st message is called by setting index = 1

If time range and batch are specified, then only those messages associated with the selected batch which occurred within the time range are included. The category mask parameter can be used to select one or more particular type of message (e.g. alarm messages) for inclusion.

See also...Get Message Category String

Function:

UH_GetMessageCategory(index,timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

index	The index into the array of messages (where the 1st message = index 1).
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.
instrument	Optional. Instrument name. If left blank, messages from all instruments are included.
group	Optional. Group name. If left blank, messages from all groups in the specified instrument are included.
batch	Optional. Batch name. If left blank, messages from all batches in the specified group/instrument are included.
categoryMask	Optional. Allows one or more particular message type to be singled out for inclusion. Specific entries (which may be added together to define more than on category) are as follows:
0	Uncategorised messages
1	System messages
2	Alarm messages
4	Power-up messages
8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Get Message Category Column

Designed to be called from an event handler, this fills a column of cells with the selected messages' category values.

All parameters except Fill Range are optional

Any unused cells are cleared.

If there are insufficient cells, an error string is placed in the first cell of the range.

Function:

UH_GetMessageCategoryColumn(fillRange,timerangeStart,timerangeEnd,instrument,group,batch, category, mask)

Parameters

fillRange	The range of cells to fill (must be single column).
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
instrument	Optional. Limits samples to those from the specified instrument. If left empty, all instruments included.
group	Optional. Limits samples to those from the specified group. If left empty, all groups in the selected instrument are included.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches within the specified instrument/group are included.
categoryMask	Allows one or more particular message types to be singled out for inclusion. Specific entries (which may be added together to define more than one category) are as follows:
0	Uncategorised messages
1	System messages
2	Alarm messages
4	Power-up messages
8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Get Message Category String

This function returns a comma separated string showing the types of messages returned by the 'Get Message category ' function.

Function: UH_GetMessageCategoryString(category)

Parameter:

Category	The category value returned by the Get message category function.

Get Message Count

This function returns the number of messages in a specified time range and/or batch.
If time range and batch are specified, then only those messages associated with the selected batch which occurred within the time range are included. The category mask parameter can be used to select one or more particular types of message (e.g. alarm messages and login messages) for inclusion.
Function:
UH_GetMessageCount(timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

timerangeStart		Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd		Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.
instrument		Optional. Instrument name. If left blank, messages from all instruments are included.
group		Optional. Group name. If left blank, messages from all groups in the specified instrument are included.
batch		Optional. Batch name. If left blank, messages from all batches in the specified group/instrument are included.
categoryMask		Optional. Allows one or more particular message types to be singled out for inclusion. Specific entries (which may be added together to define more than one category) are as follows:
	0	Uncategorised messages
	1	System messages
	2	Alarm messages
	4	Power-up messages
	8	General messages
	16	Batch messages
	32	Login messages
	64	Signing messages
	128	Audit trail messages
	-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
	-1	All messages

Get Message Text

This function returns the text of the selected message. The 1st message is called by setting index = 1
If time range and batch are specified, then only those messages associated with the selected batch which occurred within the time range are included. The category mask parameter can be used to select one or more particular type of message (e.g. alarm messages) for inclusion.

Function:

UH_GetMessageText(index,timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

index	The index into the array of messages (where the 1st message = index 1).
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.
instrument	Optional. Instrument name. If left blank, messages from all instruments are included.
group	Optional. Group name. If left blank, messages from all groups in the specified instrument are included.
batch	Optional. Batch name. If left blank, messages from all batches in the specified group/instrument are included.
categoryMask	Optional. Allows one or more particular message type to be singled out for inclusion. Specific entries (which may be added together to define more than on category) are as follows:
0	Uncategorised messages
1	System messages
2	Alarm messages
4	Power-up messages
8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Get Message Text Column

Designed to be called from an event handler, this fills a column of cells with the selected messages' texts.

All parameters except Fill Range are optional
Any unused cells are cleared.
If there are insufficient cells, an error string is placed in the first cell of the range.
Function:
UH_GetMessageTextColumn(fillRange,timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

fillRange	The range of cells to fill (must be single column).
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
instrument	Optional. Limits samples to those from the specified instrument. If left empty, all instruments included.
group	Optional. Limits samples to those from the specified group. If left empty, all groups in the selected instrument are included.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches within the specified instrument/group are included.
categoryMask	Optional. Allows one or more particular message types to be singled out for inclusion. Specific entries (which may be added together to define more than one category) are as follows:
0	Uncategorised messages
1	System messages
2	Alarm messages
4	Power-up messages
8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Get Message Timestamp

This function returns the timestamp of the selected message, where the timestamp of the 1st message is called by setting index = 1

If time range and batch are specified, then only those messages associated with the selected batch which occurred within the time range are included. The category mask parameter can be used to select one or more particular type of message (e.g. batch messages and audit trail messages) for inclusion.

Function:

UH_GetMessageTimestamp(index,timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

index	The index into the array of messages (where the 1st message = index 1).
timerangeStart	Optional. Specifies start of the time range over which data is to be included. If left blank, time range starts from the earliest time in the database.
timerangeEnd	Optional. Specifies the end of the time range over which data is to be included. If left blank, time range finishes at the latest time in the database.
instrument	Optional. Instrument name. If left blank, messages from all instruments are included.
group	Optional. Group name. If left blank, messages from all groups in the specified instrument are included.
batch	Optional. Batch name. If left blank, messages from all batches in the specified group/instrument are included.
categoryMask	Optional. Allows one or more particular message type to be singled out for inclusion. Specific entries (which may be added together to define more than one category) are as follows:
0	Uncategorised messages
1	System messages
2	Alarm messages
4	Power-up messages
8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Get Message Timestamp Column

Designed to be called from an event handler, this fills a column of cells with the timestamps of selected messages.

All parameters except Fill Range are optional

Any unused cells are cleared.

If there are insufficient cells, an error string is placed in the first cell of the range.

Function:

UH_GetMessageTimestampColumn(fillRange,timerangeStart,timerangeEnd,instrument,group,batch,categoryMask)

Parameters

fillRange	The range of cells to fill (must be single column)
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
instrument	Optional. Limits samples to those from the specified instrument. If left empty, all instruments included.
group	Optional. Limits samples to those from the specified group. If left empty, all groups in the selected instrument are included.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches within the specified instrument/group are included.
categoryMask	Optional. Allows one or more particular message types to be singled out for inclusion. Specific entries (which may be added together to define more than one category) are as follows:
0	Uncategorised messages
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8	General messages
16	Batch messages
32	Login messages
64	Signing messages
128	Audit trail messages
-2147483648	Annotation messages generated using Review Software (Hex 8000 0000)
-1	All messages

Process Data

Get Channel status

This function fetches a channel status at a specified time.

Function:

UH_GetChannelStatus(instrument, group, tag, timestamp, batch, channelType, channelNumber, interval, mode)

Parameters

instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timestamp	Time stamp for which sample is required
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely.
interval	Though optional, this parameter must be entered if Mode (below) is set to anything other than 0 (Normal). If entered, 'interval' specifies the interval over which max, min or average is taken. The value is in Excel date format, where the value is a fraction of a day.
mode	Optional. If one of the following values is inserted, it allows 'Normal' Average, 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 1 Average 2 Minimum 3 Maximum

Get Channel Status Column

This function, designed to be called from a VB event handler, fetches a set of channel status strings to a specified column of cells. In order to let the calling function know whether or not the function completed successfully, the function returns an empty string if all is well, or an error message if an error is detected.

If the range of cells is not a single column wide, an error message is placed in the first cell of the range, the remaining cells being left unaltered. Otherwise, all cells are cleared and an attempt is made to fill the cells as requested. if any errors are encountered, or if there is insufficient room in the range, an error message is placed in the first cell, and the remaining cells left empty.

If the channel status is not good, then a channel status string is placed in the appropriate cells.

If the specified channel is a max/min channel, then Mode must be specified as max or min, otherwise an error message is returned.

Function:

UH_GetChannelStatusColumn(fillRange, instrument, group, tag, timerangeStart, timerangeEnd, interval, batch, channelType, channelNumber, mode)

Parameters

fillRange	The range of cells to fill (must be single column)
instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
interval	The interval between samples. The value is in date format, where the value is a fraction of a day.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely
mode	Optional. If one of the following values is inserted, it allows 'Normal' Average, 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 1 Average 2 Minimum 3 Maximum

Get Channel Units

This function fetches a channel units string, as configured in the instrument

Function:

UH_GetChannelUnits(instrument,group,tag,channelType,channelNumber)

Parameters

instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely.

Get Channel Value

This function fetches a channel value at a specified time.
If the channel status is not good, then a channel status string is returned.
If the specified channel is a max/min channel, then Mode must be specified as max or min, otherwise an error message is returned.
Digital values are returned as the value 0 or 1.

See also... Get Digital Channel Value String

Function:
UH_GetChannelValue(instrument, group, tag, timestamp, batch, channelType, channelNumber, interval, mode)

Parameters

instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timestamp	Time stamp for which sample is required
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely.
interval	Though optional, this parameter must be entered if Mode (below) is set to anything other than 0 (Normal). If entered, 'interval' specifies the interval over which max, min or average is taken. The value is in Excel date format, where the value is a fraction of a day.
mode	Optional. If one of the following values is inserted, it allows 'Normal' Average, 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 1 Average 2 Minimum 3 Maximum

Get Channel Value Column

This function, designed to be called from a VB event handler, fetches a set of channel values to a specified column of cells. In order to let the calling function know whether or not the function completed successfully, the function returns an empty string if all is well, or an error message if an error is detected.

If the range of cells is not a single column wide, an error message is placed in the first cell of the range, the remaining cells being left unaltered. Otherwise, all cells are cleared and an attempt is made to fill the cells as requested. if any errors are encountered, or if there is insufficient room in the range, an error message is placed in the first cell, and the remaining cells left empty.

If the channel status is not good, then a channel status string is placed in the appropriate cells.

If the specified channel is a max/min channel, then Mode must be specified as max or min, otherwise an error message is returned.

Digital values are returned as the value 0 or 1.

See Also...Get Digital Channel Value String Column

Function:

UH_GetChannelValueColumn(fillRange, instrument, group, tag, timerangeStart, timerangeEnd, interval, batch, channelType, channelNumber, mode)

Parameters

fillRange	The range of cells to fill (must be single column)
instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
interval	The interval between samples. The value is in date format, where the value is a fraction of a day.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely
mode	Optional. If one of the following values is inserted, it allows 'Normal' Average, 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 1 Average 2 Minimum 3 Maximum

Get Digital Channel Value String

This function fetches a digital channel value at a specified time. The value is supplied as a formatted string, similar to that which appears on the instrument or in Review.

If the channel status is not good, then a channel status string is returned.

If the specified channel is a max/min channel, then Mode must be specified as max or min, otherwise an error message is returned.

Digital values are returned as the value 0 or 1.

Function:

UH_GetChannelValue(instrument, group, tag, timestamp, batch, channelType, channelNumber, interval, mode)

Parameters

instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timestamp	Time stamp for which sample is required
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely.
interval	Though optional, this parameter must be entered if Mode (below) is set to anything other than 0 (Normal). If entered, 'interval' specifies the interval over which max, min or average is taken. The value is in Excel date format, where the value is a fraction of a day.
mode	Optional. If one of the following values is inserted, it allows 'Normal' Average, 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 1 Average 2 Minimum 3 Maximum

Get Digital Channel Value String Column

This function, designed to be called from a VB event handler, fetches a set of digital value strings to a specified column of cells. In order to let the calling function know whether or not the function completed successfully, the function returns an empty string if all is well, or an error message if an error is detected.

If the range of cells is not a single column wide, an error message is placed in the first cell of the range, the remaining cells being left unaltered. Otherwise, all cells are cleared and an attempt is made to fill the cells as requested. if any errors are encountered, or if there is insufficient room in the range, an error message is placed in the first cell, and the remaining cells left empty.

If the channel status is not good, then a channel status string is placed in the appropriate cells.

If the specified channel is a max/min channel, then Mode must be specified as max or min, otherwise an error message is returned.

See also...Get Digital Channel Value String

Function:

UH_GetDigitalChannelValueStringColumn(fillRange, instrument, group, tag, timerangeStart, timerangeEnd, interval, batch, channelType, channelNumber, mode)

Parameters

fillRange	The range of cells to fill (must be single column)
instrument	Instrument name
group	Group name
tag	Tag name. May be left empty if channel type and channel number supplied.
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
interval	The interval between samples. The value is in date format, where the value is a fraction of a day.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely
mode	Optional. If one of the following values is inserted, it allows 'Normal', 'max' or 'min' to be selected. If anything other than 'Normal' (0) is selected, then an 'interval' must be entered (see above). The value returned is the maximum, minimum or average value of the selected channel during the interval immediately **preceding** the timestamp. 0 Normal 2 Minimum 3 Maximum

Get Raw Sample Channel Value Column

Designed to be called from an event handler, for situations where raw samples are required, this fills a column of cells with the values of samples as they appear in the archive file.

Any unused cells are cleared.

If there are insufficient cells, an error string is placed in the last cell of the range.

If the channel is a min/max channel, then mode must be specified as minimum or maximum.

Function:

UH_GetRawSampleChannelValueColumn(fillRange, instrument, group, tag, timerangeStart, timerangeEnd, batch, channelType, channelNumber, mode)

Parameters

fillRange	The range of cells to fill (must be single column).
instrument	The instrument for which data is to be fetched.
group	The group within the specified instrument for which data is to be fetched.
tag	Tag name. May be left empty if channel type and channel number supplied
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.
channelType	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely. One of the following values must be entered: 0 Analogue input channel (ANIN) 1 Analogue output channel (ANOUT) 2 Digital input channel (DIGIN) 3 Digital output channel (DIGOUT) 4 Derived variable (DV) 5 Totaliser (TOT) 6 Counter (COUNT)
channelNumber	Though optional, this parameter must be supplied if the Instrument, Group and Tag name do not specify the channel uniquely
mode	A mode value must be supplied if the channel was recorded in Adaptive (min/max) mode, in order to specify whether minimum or maximum values are required. For 'Normal' channels, the entry may be left blank, or 0 may be entered. 0 Normal 2 Minimum 3 Maximum

Get Raw Sample Count

For situations where individual samples are required, this function (along with Get Data Start Time, Get Data End Time and Get RawSampleTimestamp) can be used to step through the samples, using Get Channel Value and Get Channel Status as normal, once the timestamps are known.

The function returns the number of samples in the specified time range and/or batch.

Function:

UH_GetRawSampleCount(instrument, group, timerangeStart, timerangeEnd, batch)

Parameters

instrument	Specifies the instrument to be searched
group	Specifies the group, within the specified instrument, for which the count is to be fetched.
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.

Get Raw Sample Timestamp

Where Raw samples are required, this returns the timestamp of the indexed sample in the specified range and/or batch.

Get Channel Value and Get Channel Status can be used with the resulting timestamp to access the process data.

Function:

UH_GetRawTimestamp(index, instrument, group, timerangeStart, timerangeEnd, batch)

Parameters

Index	Index of sample (1st sample = sample 1)
instrument	The instrument for which data is to be fetched
group	The group, within the specified instrument, for which data is to be fetched
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.

Get Raw Sample Timestamp Column

Designed to be called from an event handler, for situations where raw samples are required, this fills a column of cells with the timestamps of samples as they appear in the archive file.

Any unused cells are cleared.

If there are insufficient cells, an error string is placed in the last cell of the range.

Function:

UH_GetRawSampleTimestampColumn(fillRange, instrument, group, timerangeStart, timerangeEnd, batch)

Parameters

fillRange	The range of cells to fill (must be single column)
instrument	The instrument for which data is to be fetched
group	The group, within the specified instrument, for which data is to be fetched.
timerangeStart	Optional. Specifies start of the time range. If left empty, then earliest time is used.
timerangeEnd	Optional. Specifies the end of the time range. If left empty, then latest time is used.
batch	Optional. Limits samples to those from the specified batch. If left empty, all batches included.

Review Database browse

Get Group Count

This function searches the database, and returns a value showing the number of groups found within a specified instrument.

Function:

UH_GetGroupCount(instrument)

Parameters

instrument	Defines the instrument to be searched.

Get Group Name

This allows iteration through the group names for the specified instrument.

Function:

UH_GetGrouptName(index)

Parameters

Index	Defines the group name to be accessed. 1 = group 1.

Get Instrument Count

This function returns a value which is the number of instruments for which data is held on the data base.

Function: UH_GetInstrumentCount

Get Instrument Name

This allows iteration through the instrument names (1st instrument name is accessed by index = 1)

Function:

UH_GetInstrumentName(index)

Parameters

Index	Defines the instrument name to be accessed. 1 = first instrument

Get Tag Count

This function returns a value showing the number of tags found on the data base for a specific group within a specific instrument.

Function:

UH_GetTagCount(instrument, group)

Parameters

instrument	Specifies an instrument for the search.
group	Specifies the group to be searched within the specified instrument.

Get Tag Name

This allows iteration through the tag names for the specified instrument / group.

Function:

UH_GetTagName(index,instrument,group)

Parameters

Index	Defines the tag to be accessed. 1 = 1st tag
instrument	Defines the instrument to be searched.
group	Defines the specified instrument's group to be searched.

Timestamp range information

Get Data End Time

If an instrument, group and/or batch are specified, then the timestamp returned will be the latest in that instrument, group and/or batch. Otherwise, this function fetches the timestamp for the latest data that exists in the database.

Note: When a batch name is specified, the time returned is the batch end time. This can be after the last recorded data for that batch.

Function:
UHGetDataEndTime(batch,instrument,group)

Parameters

batch	Optional. Batch name. If blank, data from all batches is included
instrument	Optional. Instrument name. If blank, then data for all instruments is included
group	Optional. Group name. If blank, then data for all groups is included

Get Data Start Time

If an instrument, group and/or batch are specified, then the timestamp returned will be the earliest in that instrument, group and/or batch. Otherwise, this function fetches the timestamp for the earliest data that exists in the database.

Note: When a batch name is specified, the time returned is the batch start time. This can be before the earliest recorded data for that batch.

Function:
UH_Get_Data_Start_Time(batch,instrument,group)

Parameters

batch	Optional. Batch name. If blank, data from all batches within the specified instrument/group is included
instrument	Optional. Instrument name. If blank, then data for all instruments is included
group	Optional. The required Group name. If blank, then data for all groups within the specified instrument is included.

Utility Functions

Get Addin Version

This function returns a string containing the Excel Addin version in the format a.b.c followed, in some cases, by a descriptive text string.

Function:

UH_GetAddinVersion

Get Control Version

This function returns a string containing the ActiveX Control version in the format a.b.c followed, in some cases, by a descriptive text string.

Function:

UH_GetControlVersion

Get Database Path

This function returns the path to the current archive database. (This is the database actually in use. This might or might not be the same as the value passed to the UH_SetArchiveDataPath function, which might be blank, for example.)

Function:

UH_GetDataBasePath

Refresh data

This function is intended to be called from an event such as a button press. It forces a recalculation of the spreadsheets, to include new data from the Review database.

It can be useful to place a 'call' of this function in the Workbook Open event, so that the latest data is always fetched when the book is opened. See Automatic setup of Archive Data Path for details of how to call a function from the Workbook Open event.

Refresh data can also be called by a Button macro, to allow the latest data to be fetched on demand.

Function:

UH_RefreshData

Set Archive Data Path

The function UH_SetArchiveDataPath allows the user to set the path to the folder containing the review database containing the data to be imported. The function need not be called if the data is held in the default database (from the registry), unless data has previously been called using a different path name.

Function Parameter: Path

Notes:

1. If multiple workbooks are open in one instance of Excel, they will all use the same database. If multiple instances of Excel are active, they may use different databases.
2. If a workbook that sets a path is closed, and another workbook is opened which does not specify a path, the path set by the previously closed workbook will be used. For this reason, it is recommended that if multiple databases are in use, then each workbook should define its own path.
3. If the string is empty (default), the path is determined from the registry. If the default is required, then this function need be called only if it has been called previously, with a non-blank string.
4. If a path to a folder is given, then the file review.erv is looked for in that folder
5. If a specific file is referenced, than that file is used.

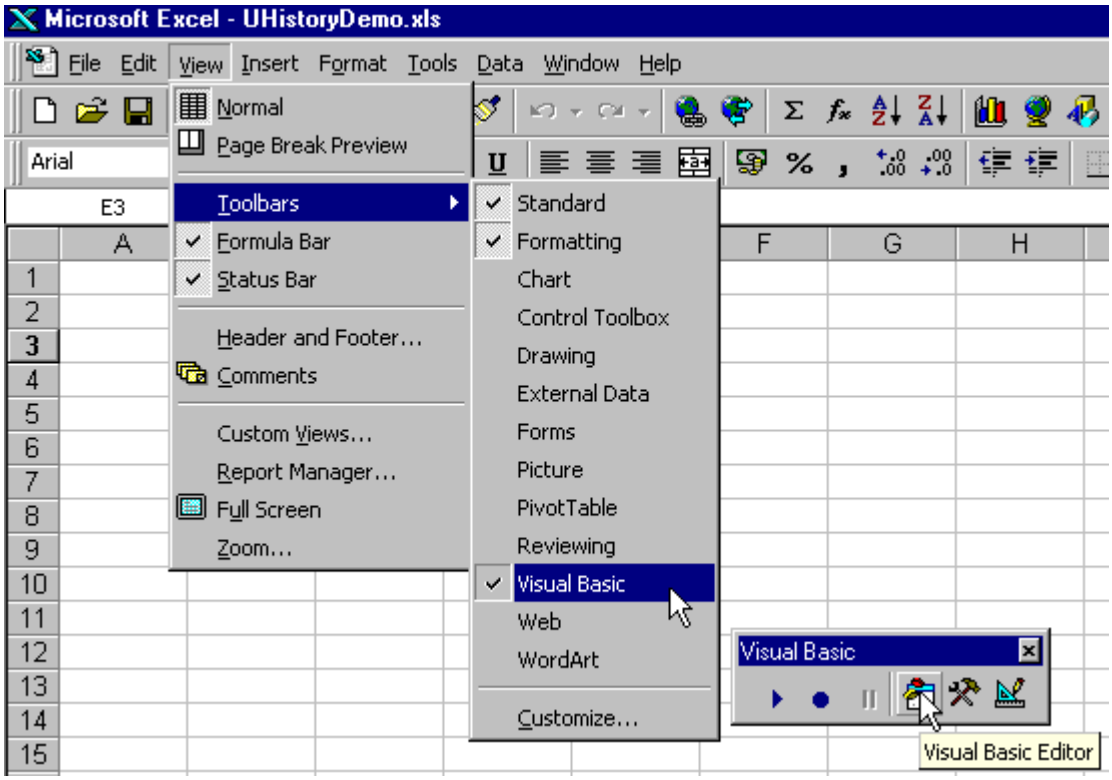
Automatic setup of Archive Data Path

If it is necessary to specify the database location, this can be called automatically, by calling the Set Archive Data Path function when the Workbook is opened, as follows:

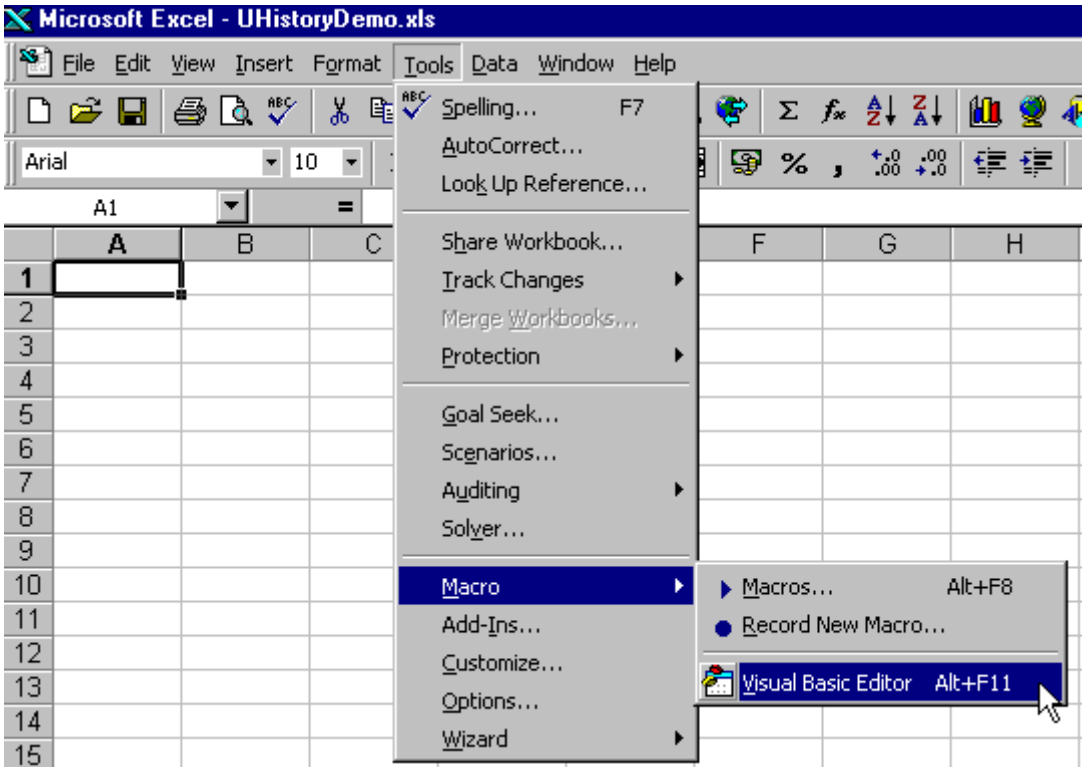
1. From the workbook, switch to the visual basic editor either by selecting Visual Basic Editor from the View/Toolbars/Visual Basic menu item, or by selecting the Visual Basic Editor from the Tools/Macro menu. Both of these menus are depicted below.
2. Double-click on the 'This Workbook' item in the 'Microsoft Excel Objects' of the VBA Project. This calls a window headed ThisWorkbook(code).
3. Select 'Workbook' in the drop-down list box at the top left of the window (may initially show 'General'). This then fills-in the skeleton of the subroutine 'workbook_Open', which is called whenever the workbook is opened. Enter the call of UH_SetArchiveDataPath in the subroutine.
4. Ensure that Visual Basic Code is able to access the Addin, by selecting 'References' in the Tools menu of the Visual Basic editor, and 'ticking' 'Uhistory' in the 'Available References' list (if it is not already ticked.
5. The Debug item in the Compile menu can be clicked, to check that the code has been entered correctly.

Note: The subroutine will not be run until the next time the workbook is opened. It is recommended, therefore, that the Workbook be saved, closed and then reopened. On re-opening, it will use the newly specified path. Ctrl + Alt + F9 should then be used to refresh the spreadsheet using data from the new database.

Automatic setup of Archive Data Path (Cont.)



Switching to Visual basic using the View menu



Switching to visual basic using the tools menu

Set Time Zone

Time Zone

The function UH_SetTimezoneGMT allows the user to define timestamps as local or GMT.
If the function is called, it should be called once, possibly in the Workbook Open event.
If the function is not called, the timestamps are in instrument local time.

This is a Boolean function, and if TRUE, the timestamps are in GMT; if FALSE the timestamps are in instrument local time.

Error messages

Batch not found

This error message appears if a selected batch name cannot be found within the specified instrument (if any) on the database.

Channel is not digital

This appears if a channel passed to 'UH_GetDigitalChannelValueString' is not a digital channel.

Channel not found

This message appears if the specified channel does not exist in the database for the specified instrument/group etc.

DAO Initialisation Failure

The likely cause of this message is that the Microsoft software 'Data Access Objects' software has not been correctly installed. the software is installed as a part of the Uhistory installation. Re-installing and watching for error messages may help to resolve the problem. There is no need to 'uninstall' first.

Database name not found in registry...

The message "Database not found in registry, either install Review, or specify a path to database using ArchivePath property" appears if Review software has not been installed, or if the database could not be found where expected. UH_SetArchiveDataPath can be used to specify the database location. This action also sets the Archive Path property appropriately.

Database not found

This message (followed by the filename that was not found) appears if the specified database could not be found. Either tag, or both Channel Type and Channel Number must be supplied.

Error opening help file

This appears if the help file cannot be opened. This may be because the Help file has been moved or deleted.

Empty data base name

The message "An empty database name has been provided (see property ArchivePath)" appears if the database name is empty.

Group/instrument not found

This appears if the specified group or instrument does not appear in the database.

Index out of range

This message appears if an attempt is made to use an index entry outside the available range.

InstGrpRange must be...

The message "InstGrpRange must be empty or have 1 or 2 columns" appears if an incorrect number of columns has been entered for any function which has 'InstGrpRange' as a parameter.

Instrument and group names are required

This appears if an instrument or group name has been omitted from the parameter list of a function for which they are compulsory.

Instrument name is required

This appears if an instrument name has been omitted from the parameter list of a function for which it is compulsory.

Error Messages (Cont.)

Invalid channel type
Appears if the selected channel type value is outside the range 0 to 6.

Interval must not be negative
A valid interval must be supplied if Average, Max or Min mode is selected

Invalid category value
Appears if an invalid category value is entered.

Invalid channel number
Appears if the selected channel number is negative or zero.

Invalid mode parameter
This message appears if a mode parameter other than 0, 1, 2 or 3 has been entered in a function such as GetChannelValue.

Min or max mode...
"Min or max mode must be specified for Min/Max channel" appears if a max or min mode setting has not been included in a function such as UH_GetChannelValue, for a channel which is configured as a max/min channel.

More than one matching channel
This message appears if a channel's tag/type entries are insufficient to identify it uniquely – i.e. there is more than one channel on the database with the same tag. To resolve the problem, channel type and number should be entered as well as tag.

Multiple entries for batch, with conflicting data
This appears if, for example, information such as batch field data is requested, but the batch name appears in multiple instruments/groups AND the requested data is not identical for each occurrence of the batch name. To resolve the problem, the batch should be identified uniquely by entering a specific instrument and/or group.

Multiple entries for MAC address...
The message "Multiple entries for MAC address with conflicting values" appears if the MAC address associated with a specified instrument has changed. (This might be because an instrument has failed and been replaced by another, which has then been given the same instrument name as the failed unit, but has, of course, its own unique MAC address). To identify the MAC address a group and timestamp should be specified.

No data found for...
The "No data found for specified batch/instrument/group" message appears no data for the specified batch, group or instrument can be found.

No data found at specified timestamp
This message appears if the specified group/batch etc. contains no data recorded by the timestamp.

Number of entries...
The "Number of entries in instrument and group arrays mismatched" message appears if, for example, the number of cells in the instrument column does not match the number of cells in the group column, for a parameter such as instGrpRange.

Error Messages (Cont.)

Range does not contain enough rows

This message is generated by column functions (e.g. UH_GetBatchNameColumn) if the specified range contains insufficient cells to contain all the values requested.

Range must contain only one column

This message means that a multi-column range (e.g. A1 to B20) has been passed to one of the column functions, each of which may have only one column (e.g. A1 to A20).

Review database...

The message "Review database not compatible with this version of Uhistory Control" appears if the Review software version is incompatible with Uhistory.

Specified interval must be a value >0

For functions where an interval entry is required, this entry must be greater than zero.

TimerangeStart greater than TimerangeEnd

This appears if an error has been made in entering a time range, such that the end time is earlier than the start time.

Timestamp is required

This message appears when a timestamp is required and either no timestamp has been supplied, or a timestamp of zero has been supplied.

Unable to open database...

This text is followed by further information giving the reason why the database cannot be opened. E.G. "Unable to open database as it is already open for exclusive use by another process."

Wrong mode specified...

"Wrong mode specified for channel recorded as min or max" appears if a mode setting other than ‘Max’ or ‘Min’ has been included in a function such as GetChannelValue, for a channel which is configured as a max/min channel.

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