How are tags and messages archived in WinCC flexible?

WinCC flexible

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Service & Support

Answers for industry.

SIEMENS

Question

How are tags and messages archived in WinCC flexible?

Answer

Follow the instructions and notes listed in this document for a detailed answer to the above question.

Contents

1 Creating logs

Introduction

WinCC flexible as from the 270 series provides options for logging tags and alarms. The storage location of a log can be a database (only for PCs and Panel PCs) or a file.

Note If you use archives on a panel, please **ensure** that Runtime is **closed** before switching off the panel. Given the properties of the operating system, an unexpected mains failure may result in the logs becoming corrupted. If you **cannot** ensure this, it is also possible equip the panel with a **UPS** (**U**ninterruptible **P**ower **S**upply) that permits controlled shutdown. Refer also to Entry ID: 21633613.

Storage locations of logs

Table 1-1

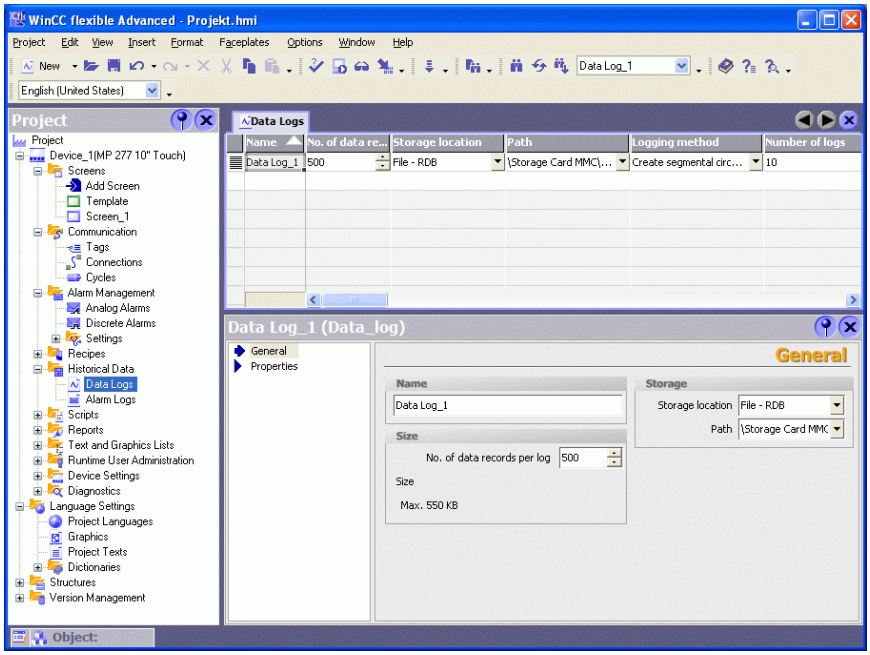
Storage location	Panel	PC and Panel PC	Support
CSV (ASCII)	X	X	As from WinCC flexible 2004
Database	--	X[1]	
RDB	X[2]	X[2)]	As from WinCC flexible 2008
TXT (Unicode)	X[2)]	X[2)]	As from WinCC flexible 2008 SP1

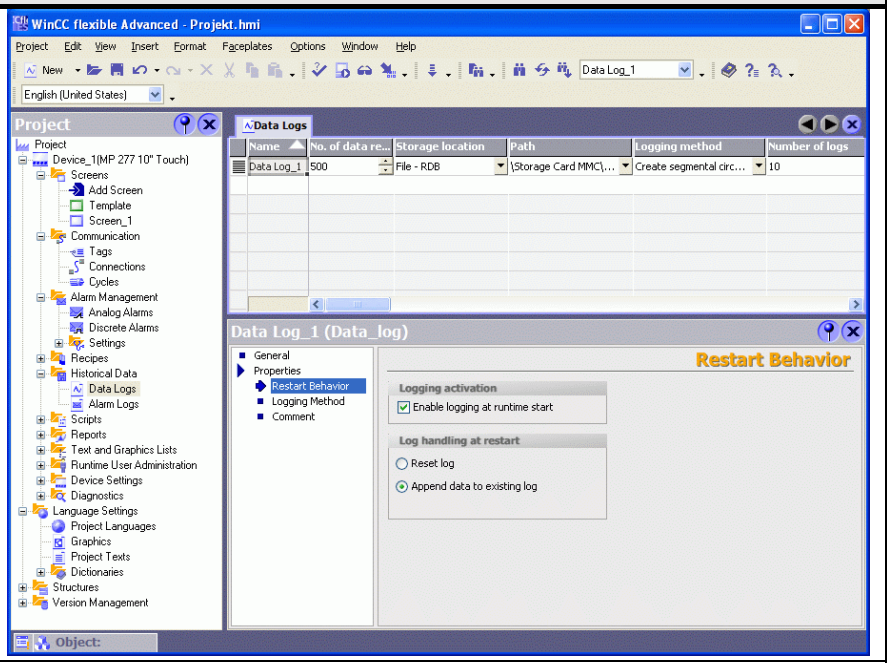
Note More information about storage locations is available in chapter 3 "Information about storage locations".

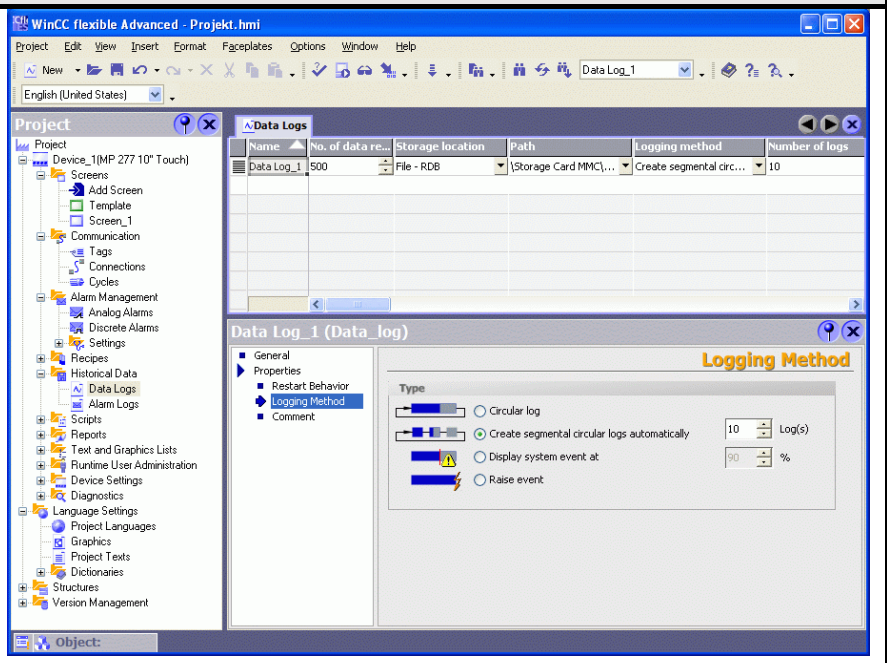
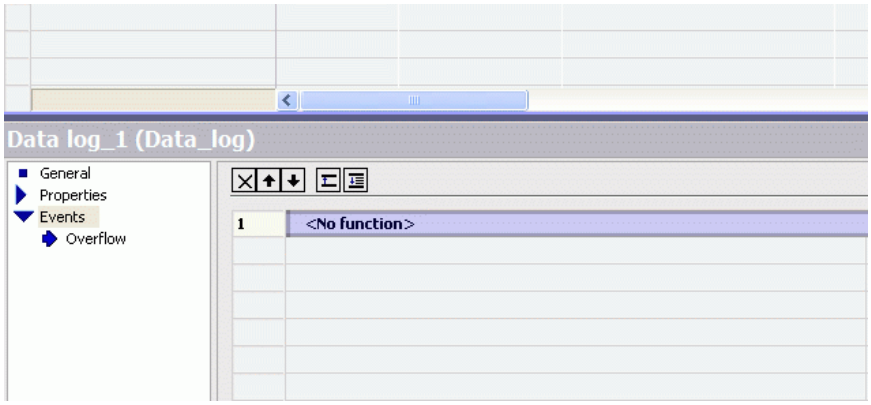
[1] Only released databases
[2] Only operator panels as from the 277 series and 377 series

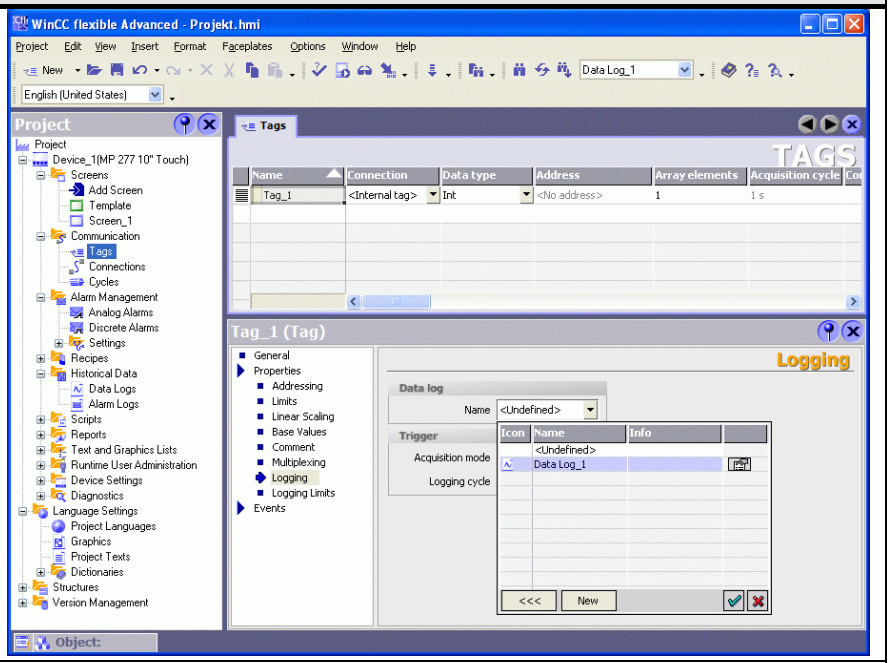
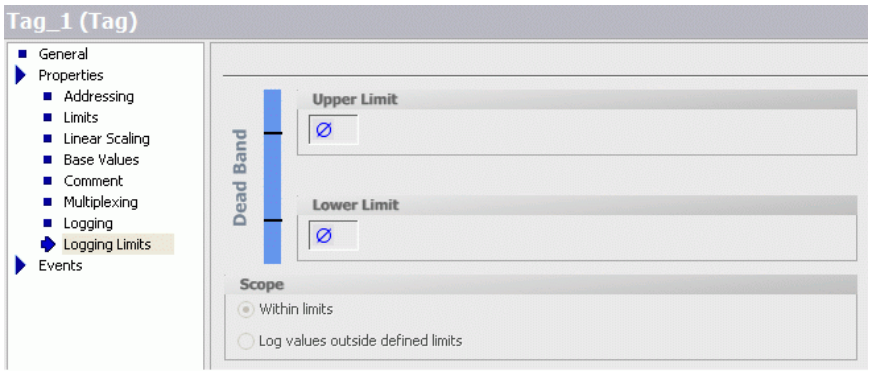
1.1 Creating tag logs

Table 1-2

No.	Procedure
1.	**Creating a tag log** • Open the "Historical Data" entry in the project window. • Select "Tag Logs" and double-click to open the editor. • Create the log in the editor. • Define the name, storage location and path in the Properties window. **Note:** More information about storage locations is available in chapter 3 "Information about storage locations". The names of logs must be unique! More information is available in Entry ID: 31155955. The storage location for Windows CE panels is this path: • \Storage Card\ • \Storage Card2\ • \Storage Card MMC\ • \Storage Card USB\ or • \\... (for the network path) 
2.	**Setting further properties** • If not already open, open the Properties window of the tag log. • Define the starting behavior of the logging. **Note:** If logging does not start when you start the Runtime, you can start it with the system function "StartLogging". All the logs must be open before starting logging with the system function. You do this with the system function "OpenAllArchives".

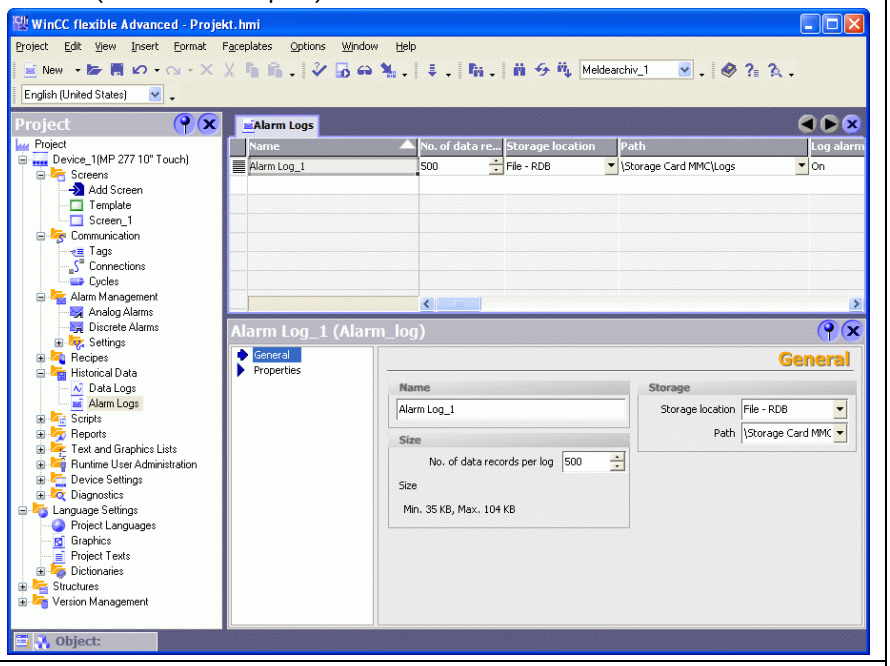
No.	Procedure
	
3.	**Setting the logging method** • In the Properties window, you click on "Logging Method". • Setting the logging method **Logging methods:** **Circular log** Once the log contains the maximum number of specified entries, it is overwritten again, starting from the oldest entry. 20% of the oldest entries are deleted to facilitate this! **Segmental circular log (sequential log)** Sequential logs are created depending on the number selected and the maximum number of entries. Once the maximum number of sequential logs is reached, they are also overwritten, once again beginning with the oldest. **Display system event at ... %** Outputs a message when the log reaches the predefined fill level. **Raise event** When the log is full, the "Overflow" event is triggered. The "Events" entry then appears in the Properties window (second figure below).

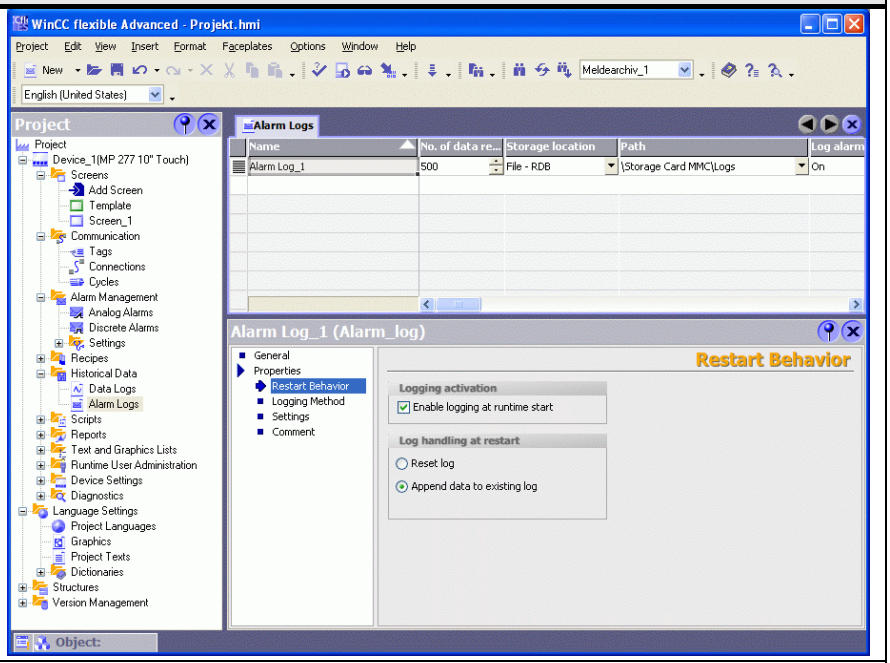
No.	Procedure
	 
4.	**Defining which tags to log** • Open the tag editor and select the tag to log. • Select the appropriate log under "Properties > Logging". • Define the acquisition mode and the logging cycle. **Acquisition mode:** **On demand** The tag values are logged by calling the system function "LogTag". **Upon change** The tag values are logged as soon as the operator panel detects a change in tag values. **Cyclic continuous** The tag values are logged at regular intervals. You can add your own cycles to those cycles predefined in WinCC flexible. These cycles should be based on the predefined cycles. **Logging cycle:** The logging cycle is only relevant for the acquisition mode "Cyclic continuous". These tags are then transferred to the log in-process in accordance with the settings.

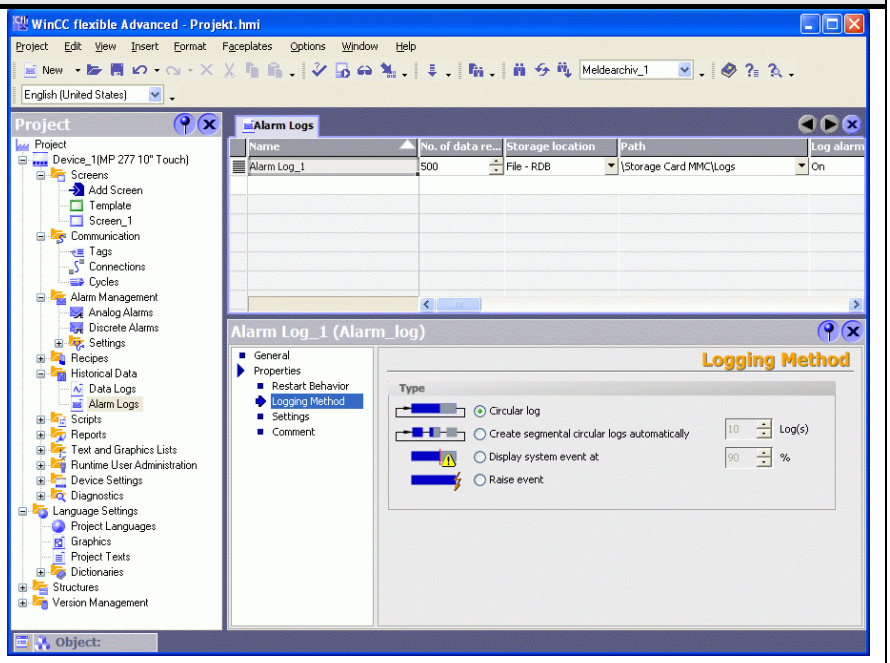
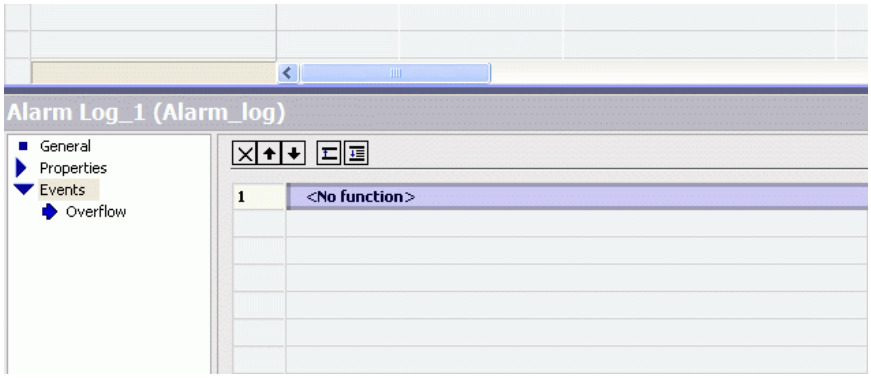
No.	Procedure
	
5.	**Tag logging limits** If you only wish to log the tags within specific limits, you can also define a range. The tag is then only logged if the value lies within or outside these limits. 

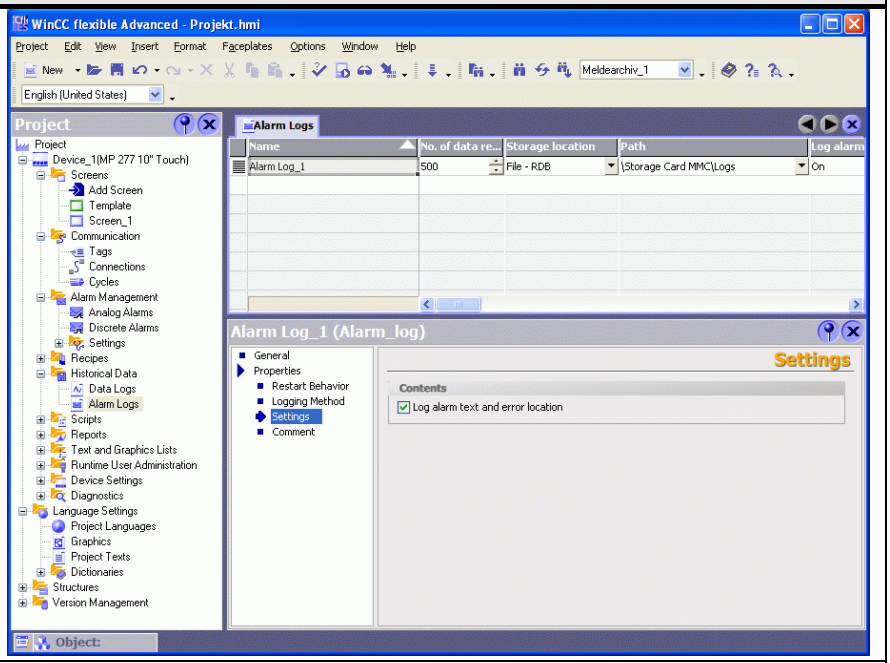
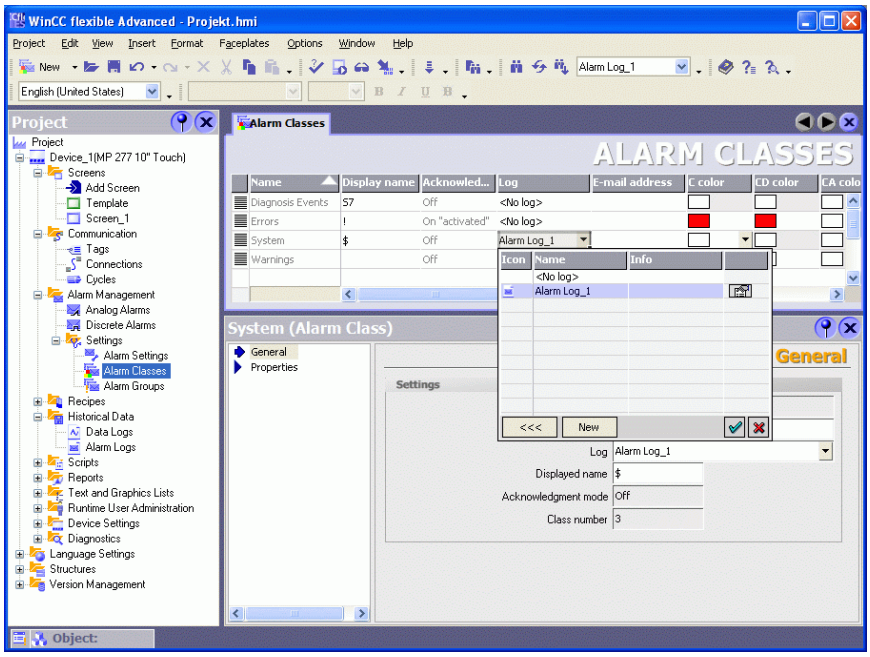
1.2 Creating alarm logs

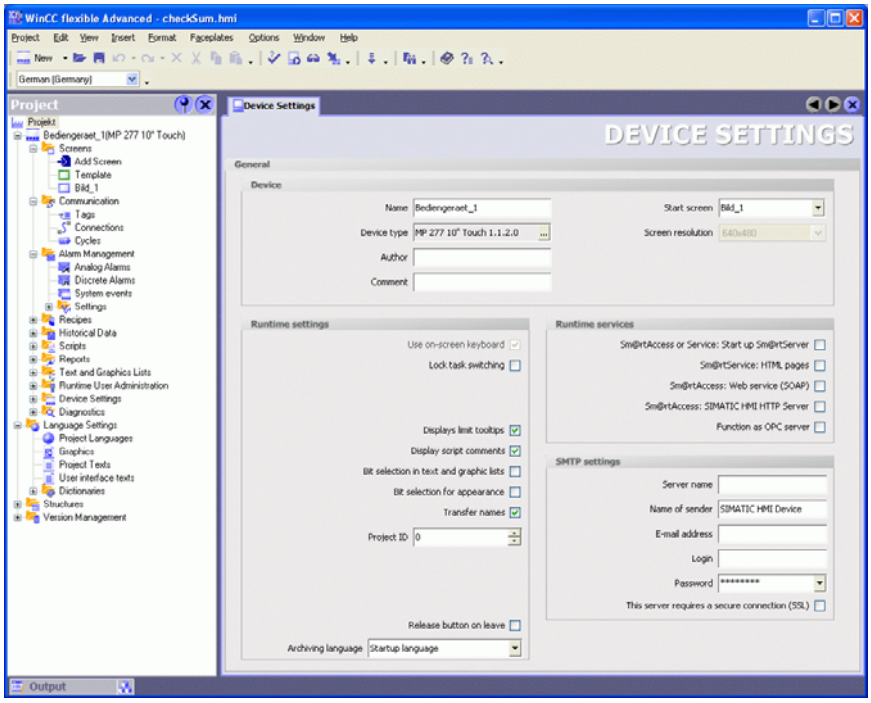
Table 1-3

No.	Procedure
1.	**Creating an alarm log** • Open the "Historical Data" entry in the project window. • Select "Alarm Logs" and double-click to open the editor. • Create the log in the editor. • Define the name, storage location and path in the Properties window. **Note:** More information about storage locations is available in chapter 3 "Information about storage locations". The names of logs must be unique! More information is available in Entry ID: 31155955. The storage location for Windows CE panels is this path: • \Storage Card\ • \Storage Card2\ • \Storage Card MMC\ • \Storage Card USB\ or • \\... (for the network path) 
2.	**Setting further properties** • If not already open, open the Properties window of the alarm log. • Define the starting behavior of the logging. **Note:** If logging does not start when you start the Runtime, you can start it with the system function "StartLogging". All the logs must be open before starting logging with the system function. You do this with the system function "OpenAllArchives".

No.	Procedure
	
3.	**Setting the logging method** • In the Properties window, you click on "Logging Method". • Setting the logging method **Logging methods:** **Circular log** Once the log contains the maximum number of specified entries, it is overwritten again, starting from the oldest entry. 20% of the oldest entries are deleted to facilitate this! **Segmental circular log** Sequential logs are created depending on the number selected and the maximum number of entries. Once the maximum number of sequential logs is reached, they are also overwritten, once again beginning with the oldest. **Display system event at ...%** Outputs a message when the log reaches the predefined fill level. **Raise event** When the log is full, the "Overflow" event is triggered. The "Events" entry then appears in the Properties window (Fig. 10).

No.	Procedure
	 
4.	**Other settings** In addition to the alarm number, you can also log the text and error location in an alarm log. **Note:** The texts are logged in the current runtime language set at the time of logging!

No.	Procedure
	
5.	Defining which alarm classes to log • Open the editor under "Alarm Management > Settings > Alarm Classes". • Select the relevant log in the "Log" column. 
6.	**Defining the archiving language** As from WinCC flexible 2008 SP1 you can also define the archiving language with operator panels of the 277 series onwards. • In the project tree you click on "Device Settings > Device Settings". • Under "Runtime settings" you select the desired archiving language. **Note:** If you select "Startup language" as the archiving language, then each time Runtime starts up archiving is done in the language last active in Runtime. The first time you start up Runtime, the startup language is the one defined

No.	Procedure
	in the order as "0" under "Device Settings > Languages and Fonts". 

2 Information on logging

This chapter contains important information on software limits and hardware requirements.

2.1 System limits for logging

The following system limits apply to Windows-based systems:

Table 2-1

	xP270	xP277, Mobile Panel 277	MP370	MP377	PC
Number of logs	20	20	50	50	100
Number of loggable tags per log[1]	20	--	50	--	100
Number of log segments	400	400	400	400	400
Entries per log[2]	10.000	10.000	50.000	50.000	500.000
Cyclic trigger for logging	1s	1s	1s	1s	1s

[1] Note for CE devices (TP 270, OP 270, MP 270B, MP 370):
The operator panels are primarily not designed for logging data cyclically, they are intended more for logging acyclic error states (e.g. fault alarms and process signals). Operator panels are not designed for extensive logging tasks with large volumes of data or with high performance requirements.

[2] With the "segmental circular log" method of logging, the number of entries applies to all the sequential logs. The product of the number of sequential logs and the number of data records per sequential log must not exceed the system limit.

2.2 Released storage media

You can use the following storage media for logging depending on the operator panel:

- CompactFlash card (CF card)
- Multi Media Card (MMC card)
- Secure Digital Memory (SD card)
- USB stick[1]
- Hard disk[2]

More information about the storage media released is available in the following entries.

Table 2-2

Storage medium	Entry ID
CF card	21848848
MMC card	21847868
SD card	
USB stick[1]	25439231
Hard disk[2]	--

2.3 Write access to and service life of storage media

Please note that CF/MMC/SD cards and USB sticks currently only allow a guaranteed maximum of 100,000 write accesses (for CF cards) to 1,000,000 (for USB sticks). The specified maximum number of write accesses might vary from manufacturer to manufacturer and change in the course of time.

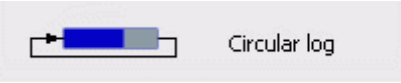
Example

Determining the foreseeable maximum service life of a memory card.

The maximum number of write accesses applies generally to each storage location of the memory card.

Below are the calculations for the approximate service life of a sample memory card.

- A tag is logged every second 24 hours/day in a circular log.
- The log size is 10,000 entries.



=> The archive is full after approx. 10,000 seconds (2.7 hours).
Therefore, the separate storage location is rewritten every 2.7 hours.

Now, if the maximum number of 100,000 write accesses (manufacturer's

[1] Only for operator panels with Windows CE 5.0
[2] Only for operator panels with Windows CE 5.0

specifications) is taken into account, then the individual storage location will be defective after approx. 270,000 hours or approx. 30 years (1 year = 365 days).

Note This calculation can be used **only** for the theoretical calculation of the service life of a memory card. It is merely a reference point.

2.4 Activating the checksum when logging

In the case of a regulated project, with activated Audit option, you can also activate a checksum. Taking the checksum, you can use the AuditViewer or the DOS program "HmiCheckLogIntegrity" to determine whether the log has been manipulated.

Requirements

- The option is only available for the "File - CSV (ASCII)" and "File - TXT (Unicode)" storage locations.
- The logging method "Display system event at ... %" or "Raise event" must be selected.
- Operator panels of the 277 series onwards
- As from WinCC flexible 2008 Standard or WinCC flexible 2008 Advanced

The "**AuditViewer**" can be downloaded in Entry ID 22180683.

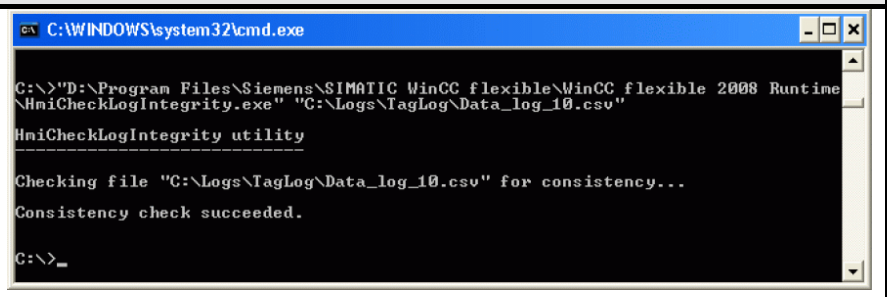
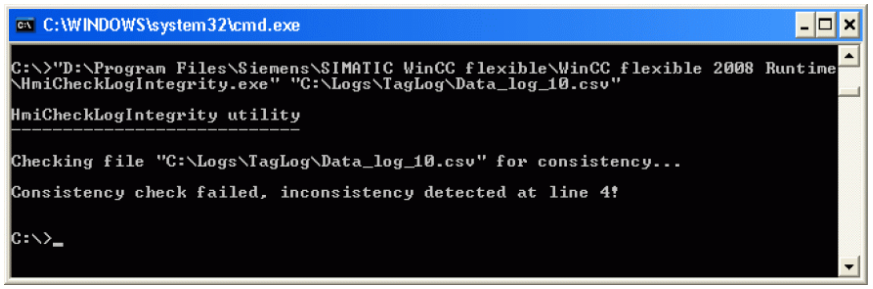
The "**HmiCheckLogIntegrity.exe**" program is located in the Installation directory of WinCC flexible, in the "WinCC flexible 2008 Runtime" folder.

Example

C:\Program Files\Siemens\SIMATIC WinCC flexible\WinCC flexible 2008 Runtime

Table 2-3

No.	Procedure
1.	**Open the DOS prompt** • Copy the file to be checked from the operator panel to your configuration computer. • Open the DOS prompt via "Start > Programs > Accessories > DOS prompt" or by clicking on "Start > Run..." and then entering "cmd".
2.	**Call "HmiCheckLogIntegrity.exe"** • In the DOS prompt (see Fig. 14) you enter the path to "HmiCheckLogIntegrity.exe" and then a space. After the space you enter the storage location of the file to be checked in quotation marks. • Press the "Enter" key and the check is run.
3.	**Evaluation of the log file** If the data checked is consistent, the message "Consistency check succeeded" is displayed.

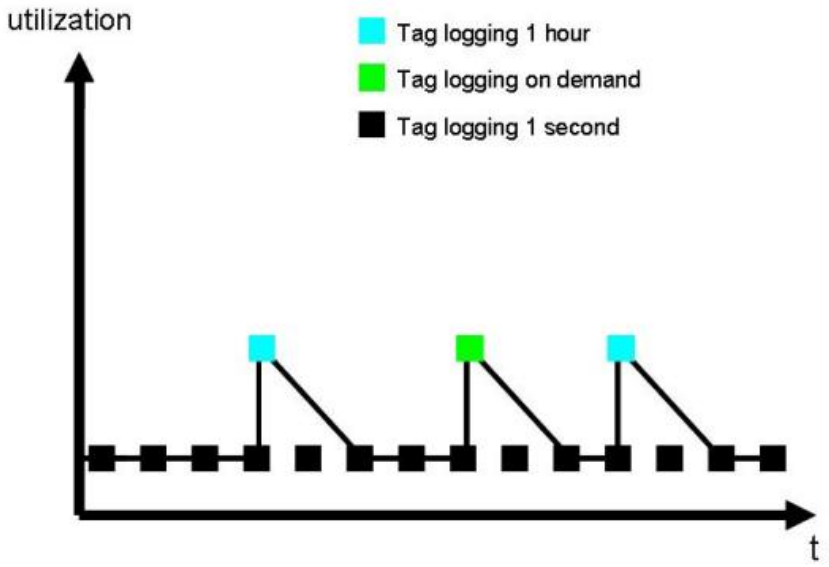
No.	Procedure
	 If the data checked is not consistent, the message "Consistency check failed" is displayed. In addition, the first inconsistent line of the file is indicated. 

2.5 Runtime load during logging

The load of the HMI operator panel increases when multiple tags are logged at the same time. If the tags are written to different logs, this increases the load even more. The greater the number of tags to be logged, the longer the time required for all the data to be written to the log file.

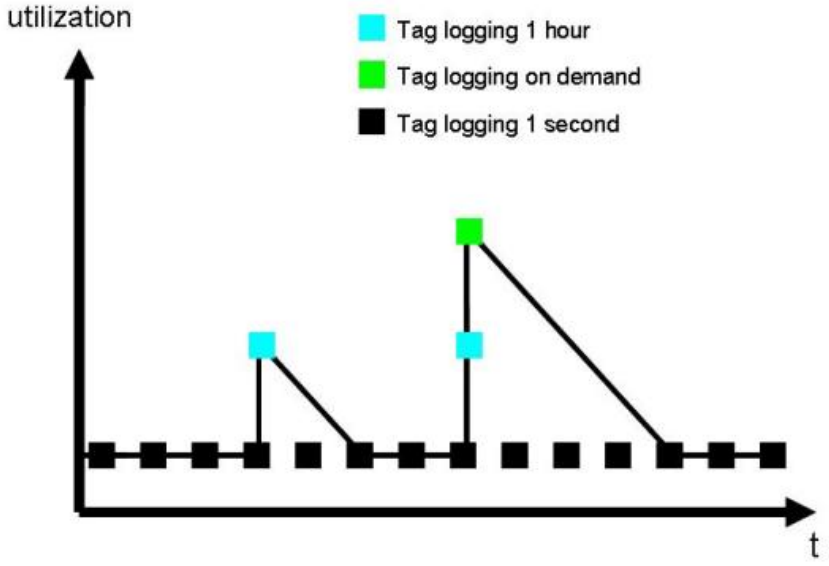
Low Runtime load

Figure 2-1



High Runtime load

Figure 2-2



Notes on load during logging

- Tags that are to be logged at the same time should be written as far as possible to the same log file.
- Log as few tags as possible at the same time or not more than necessary.
- If the logging cycle is less than the update cycle of the tag, the current value of the tag is always logged and the tag is not updated in addition.

3 Information about storage locations

Depending on the version of WinCC flexible, you have the following storage locations for logging.

3.1 CSV files (ASCII)

The CSV format is supported by all versions of WinCC flexible. Logging is always in ASCII format. If you want to read or evaluate the logged data without WinCC flexible Runtime, then you should use the "File - CSV(ASCII)" storage location.

In the CSV file format, table columns are separated by separators and table rows terminated with a line break. In this way, you can evaluate or edit your log data with an external editor or spreadsheet program.

Note Quotation marks or multiple characters are not permitted as separators in the "File - CSV (ASCII)" storage location. The setting for separators is to be found under "Start > Settings > Control Panel > Regional and Language Options" in Windows 2000, Windows XP and Windows Vista. The settings are to be found under "Control Panel > Regional Settings" on a Windows-based operator panel.

Note

On a PC you can use an Excel macro to graphically display the data logged in a CSV file without WinCC flexible. You can download the macro in Entry ID 35929465.

3.2 RDB file

The RDB format is available in WinCC flexible 2008 and higher for operator panels of the 277 series onwards. RDB is an internal format of the WinCC flexible Runtime. You can achieve faster read and write access through optimized data storage in a proprietary database. Logs in this format can only be read and displayed with WinCC flexible Runtime.

Note To be able to use data without WinCC flexible Runtime, you can use the system function "CopyLog" to convert the RDB file into the CSV format.

3.3 TXT file (Unicode)

Logging in a TXT file in Unicode is available as from WinCC flexible 2008 SP1 for operator panels of the 277 series onwards.

This file format supports all the characters used in WinCC flexible and WinCC flexible Runtime. For editing you need software that supports Unicode, like Notepad, for example.

Note Use the "File - TXT (Unicode)" storage location if you use Asian languages for logging.

3.4 Database

In all versions of WinCC flexible, logging is available exclusively for the WinCC flexible PC Runtime.

If you store your logs in a database, you can use the database's full range of functions to process and evaluate the log data.

WinCC flexible supports logging via the ODBC interface. The table below shows the **enabled** databases.

Table 3-1

Database	WinCC flexible			
	2004	2005	2007	2008
MS Data Engine 97	X	X	X	--
MS Data Engine 2000	X	X	X	X
MS Data Engine XP	--	--	--	X
MS Access 97	X	X	X	--
MS Access 2000	X	X	X	--
MS SQL Server 7.0	X	X	X	--
MS SQL Server 2000	X	X	X	--
MS SQL Server 2005 Express Edition	--	--	--	X

X: Release

--: No release

The following entries provide more information on logging in a database:

Table 3-2

No.	Entry	Entry ID
1.	Logging tags in a Microsoft SQL database	24677043
2.	Logging tags and alarms in a Microsoft Access database with ProTool/Pro **Note:** This entry applies also for **all WinCC flexible** versions that are also **enabled** with MS Access (see Table 3-1), because it is a **Windows setting**.	15024627

Note

The **Windows Vista** operating system does **not** support databases with the option "System-defined data source". You can use databases **only** with the option "User-defined data source". You **must** create this as Administrator and **enable** it on the PC.