



Write Filter Manager

User Guide

Date: December 28, 2011

We reserve the right to change the contents of this document without notice. The information contained herein is believed to be accurate as of the date of publication; however, B&R makes no warranty, expressed or implied, with regard to the products or the documentation in this document. In addition, B&R shall not be liable for incidental or consequential damages in connection with or arising from the furnishing, performance or use of this material. The software names, hardware names and trademarks used in this document are registered by the respective companies.

I Version information

Version	Date	Comment	Author
1.00	2011-05-18	First edition	TRT
1.10	2011-12-28	Revised	HOH

Table 1: Version information

II Distribution

Name	Company, Department	Amount	Comment

Table 2: Distribution

III Organization of safety notices

Safety guidelines in this document are organized as follows:

Safety notice	Description
Danger!	Disregarding safety regulations and notices can be life-threatening.
Warning!	Disregarding safety regulations and notices can result in severe injury or substantial damage to equipment.
Caution!	Disregarding safety guidelines and notices can result in injury or damage to equipment.
Information:	Important information for preventing errors.

Table 3: Organization of safety notices

IV Table of contents

1 Introduction.....	4
2 Enhanced Write Filter (EWF)	5
2.1 General	5
2.1.1 RAM Reg mode	5
2.1.2 RAM mode	5
2.2 Functions.....	6
2.3 Taskbar status display	7
3 File Based Write Filter (FBWF)	8
3.1 General	8
3.2 Functions.....	8
3.3 Taskbar status display	11
4 Help.....	12
5 Figure index	13
6 Table index.....	14
7 Index	15

1 Introduction

The B&R Write Filter Manager enables you to configure the Enhanced Write Filter as well as the File Based Write Filter on a B&R Automation Device with Windows Embedded Standard 7.

The program is automatically started in the background every time the system is started, providing the user with a quick overview of the current status of the write filter via an icon in the task bar. The user interface of the Write Filter Manager can be opened both from the Control Panel or via this icon.

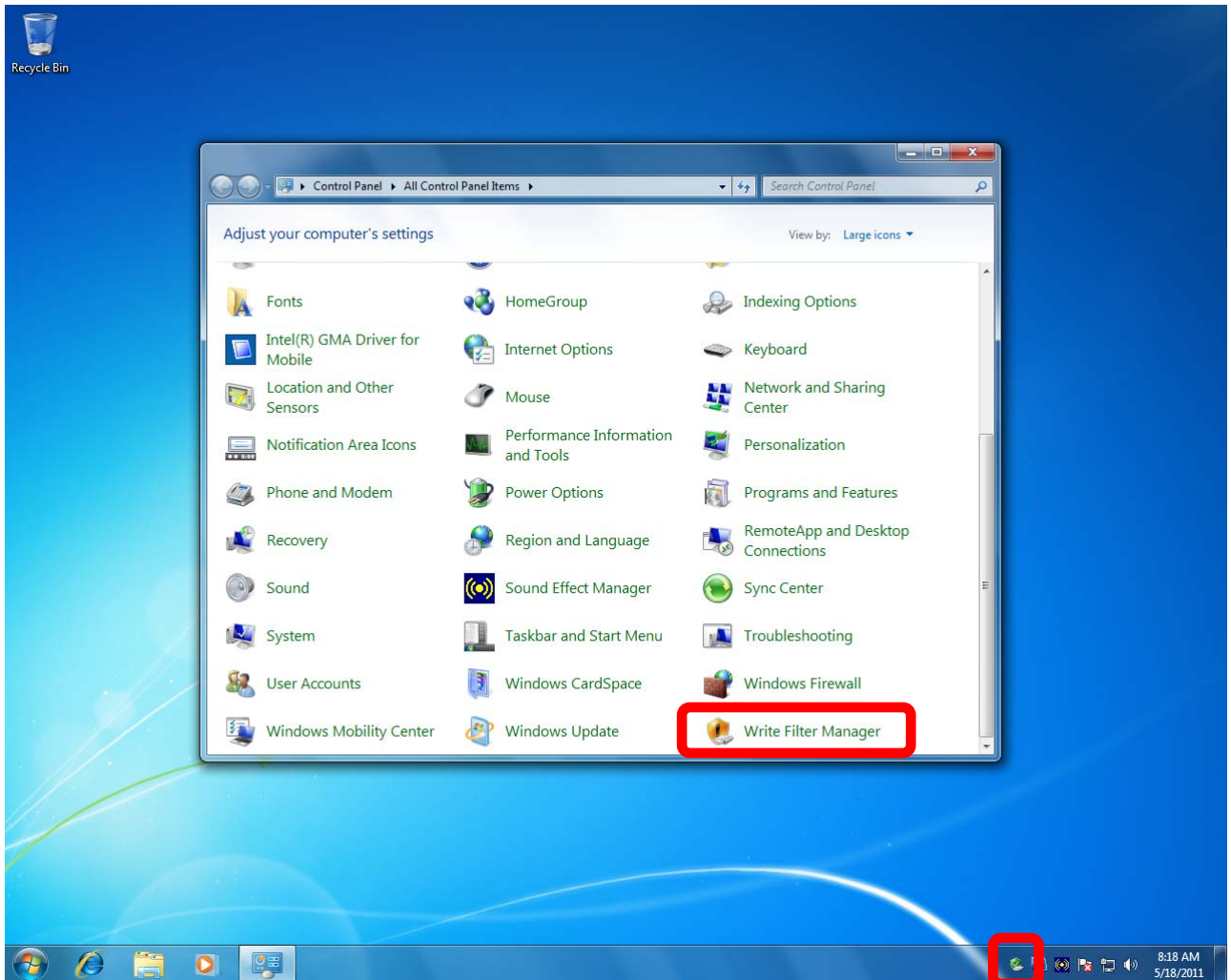


Figure 1: B&R Write Filter Manager in Windows Control Panel

2 Enhanced Write Filter (EWF)

2.1 General

The **Enhanced Write Filter (EWF)** directs all write procedures that are intended for a disc to the RAM. This prevents the data on the disk itself from being changed. After rebooting, any changes that have been made are reset and the image is returned to its original state. If changes are to be applied, then the entire RAM overlay can be written to the disk. The Enhanced Write Filter has two modes, the RAM Reg mode and RAM mode.

2.1.1 RAM Reg mode

In RAM Reg mode, the EWF overlay is saved to the RAM and the EWF volume in the registry.

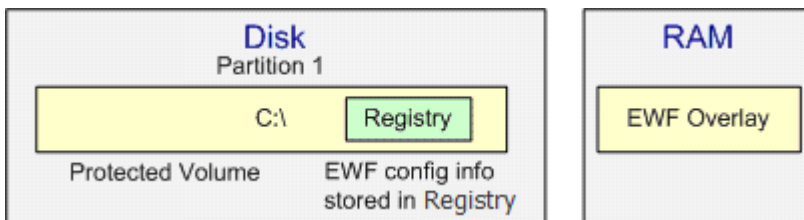


Figure 2: EWF - RAM Reg mode

Information:

Because the EWF volume information is stored in the registry, any attempt to disable the EWF will fail if the registry is read-only.

This is why in RAM Reg mode, a Disable command must always be followed by a Commit command with a system reboot, so that the data from the overlay can be committed to the disk. This occurs automatically with the B&R Write Filter Manager's Disable command (see section 2.2 -> EWF commands)

2.1.2 RAM mode

In RAM mode, the EWF overlay is saved to the RAM. The EWF volume is created in an unpartitioned space on the disc.

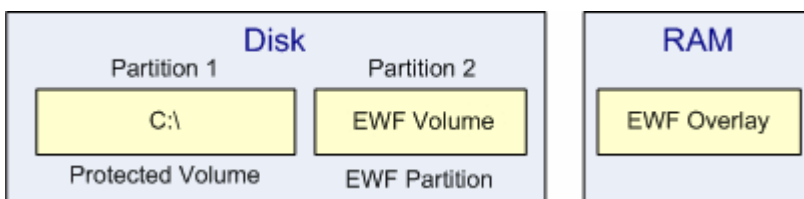


Figure 3: EWF - RAM mode

Information:

RAM mode requires an unpartitioned space on the disk for creating an EWF volume.

2.2 Functions

EWF commands:

Enable: Enables EWF for all selected volumes (see below -> "Volume").

- Reboot required
- Button is "enabled" only if EWF is disabled

Disable: Disables EWF for all selected volumes (see below -> "Volume").

- Reboot required
- Button is "enabled" only if EWF is enabled
- When disabling EWF in RAM(REG) mode, all data will also be committed at the same time

Commit: Writes all data from RAM to the disk.

- Reboot required
- Button is "enabled" only if EWF is enabled

Commit and Disable Live: Writes all data from RAM to the disk and the EWF.

Disabled for all selected volumes (see below -> "Volume").

- Reboot **not** required
- Button is "enabled" only if EWF is enabled

Clear command: The selected operation for the next reboot (boot command) can be reset.

HORM:

Activate HORM:

Activates EWF-HORM and sets "powercfg /h" to "ON".

- Button is "enabled" only if EWF is disabled

Deactivate HORM:

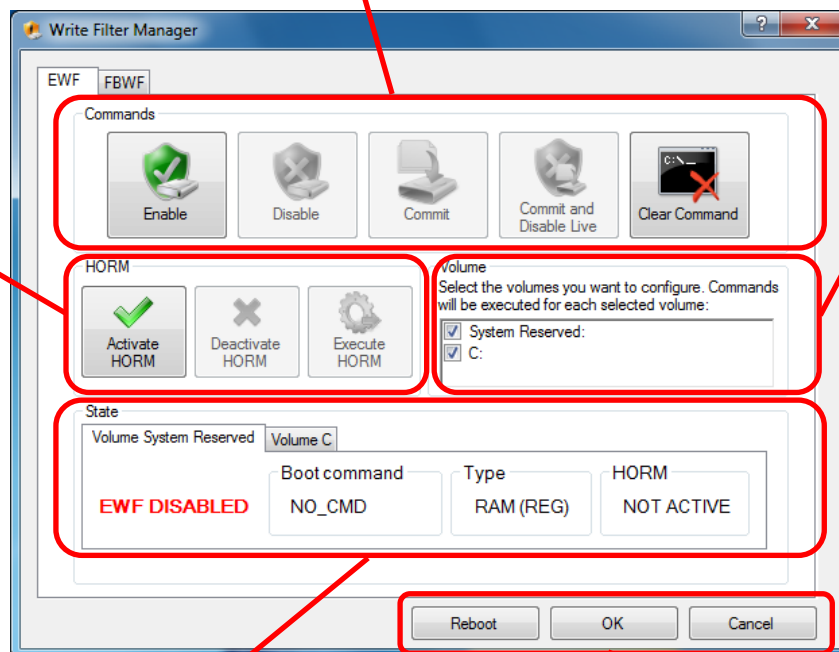
Deactivates EWF-HORM and sets "powercfg /h" to "OFF".

- Button is "enabled" only if EWF is disabled and HORN is activated

Execute HORM:

All volumes that are not protected by EWF will be temporarily dismounted. The system enters Hibernate mode.

- Button is "enabled" only if EWF is enabled



Volume:

The volumes to be configured for the EWF must be selected here. The EWF commands are executed for each of the volumes selected here. Only volumes that were pre-configured as "EWF Protected Volume" can be selected.

Status display:

A new tab with the following contents is created for each existing volume:

Current EWF status: EWF DISABLED / EWF ENABLED

Boot command (operation performed during the next reboot): COMMIT / ENABLE / DISABLE

Type (currently set EWF mode): RAM / RAM (REG)

HORM (current HORM status): ACTIVE / NOT ACTIVE

Reboot: A system reboot is performed.

OK: A corresponding message is displayed if changes have been made that require a system reboot.

Cancel: Resets the selected processes and closes the window.

Information:

The system can only enter Hibernate mode if the system volume contains at least as much free space as the amount of RAM (hiberfil.sys file with the size of the available memory is created in the system root directory). Otherwise a message is displayed: "This system does not support hibernation. Exiting. "

Information:

The following actions must be taken in order to run HORM:

- EWF disable
- Select "Activate HORM" button
- EWF enable
- Reboot
- Select "Execute HORM" button

2.3 Taskbar status display

The Write Filter Manager is automatically launched in the background when the system is started. An icon is displayed in the Windows taskbar, indicating the current status of the EWF. Moving your mouse over the icon will reveal an info text.

Double-clicking the icon opens the user interface for the application.

Right-clicking on the icon opens a shortcut menu, which can also be used to open or close the user interface.

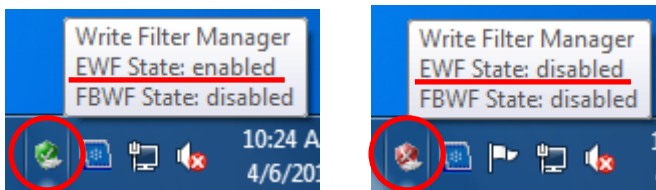


Figure 4: EWF - Taskbar status display

3 File Based Write Filter (FBWF)

3.1 General

The **File Based Write Filter (FBWF)** can be used to configure a variety of write-protect operations at the file and folder level.

Individual files and folders can be transferred from the overlay to the disc or even restored. They can be configured with or without write protection. Exclusions are also generated. Data written to these excluded files/locations will be written directly to the disk. All other changes are cached in the RAM overlay.

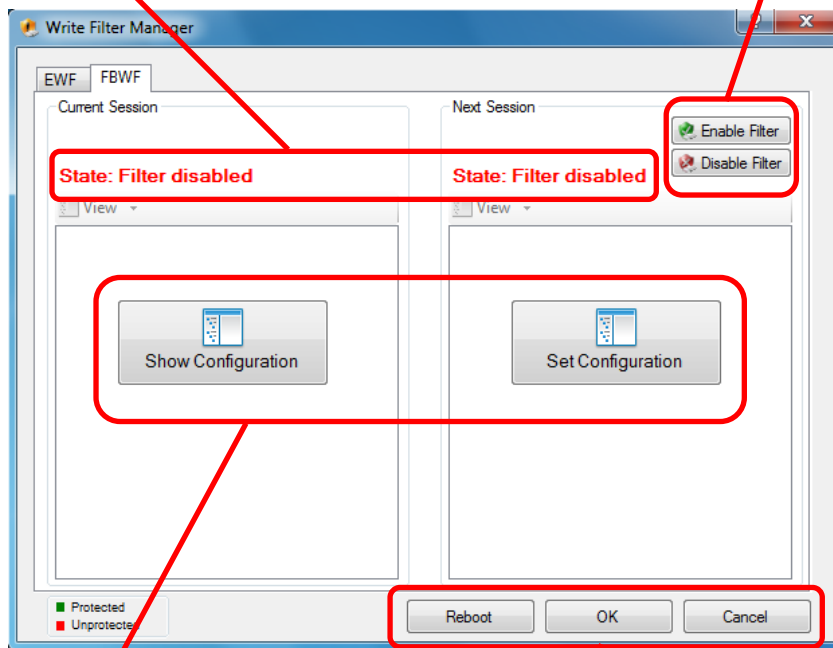
3.2 Functions

Status display:

Displays the current and the future status of the FBWF (applied after rebooting the system).

Enable/Disable Filter:

Enables/disables the FBWF
→ Reboot required



Show/Set Configuration:

Loads and shows the File Explorer. This Explorer can be used to view and change the current FBWF configuration.

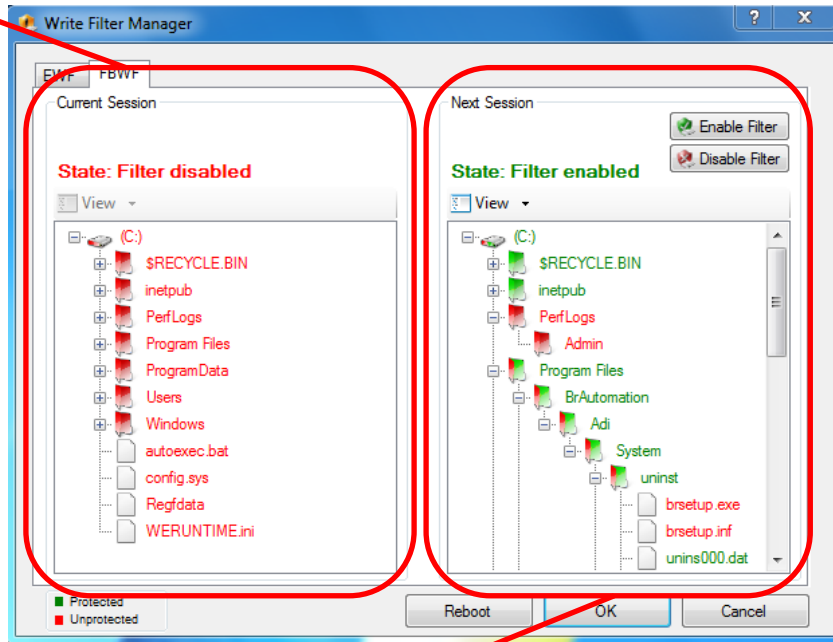
Reboot: A system reboot is performed.

OK: A corresponding message is displayed if changes have been made that require a system reboot.

Cancel: Resets the selected processes and closes the window.

Current Session:

This display is only for information, indicating which FBWF configuration is currently on the system. The configuration can only be changed for the next session.

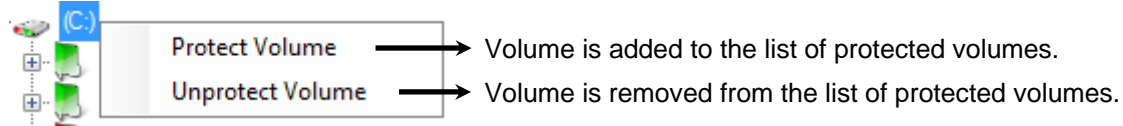


Next Session:

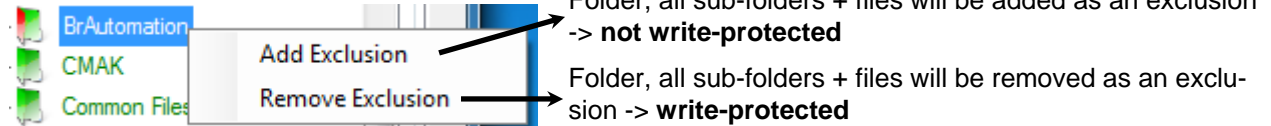
The FBWF configuration can be modified for the next session. These changes will not take effect until the next system reboot.

Right-clicking on volume/folder/file will display the respective shortcut menu:

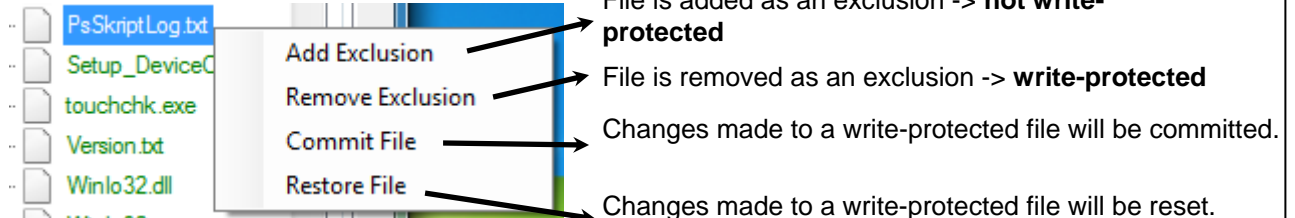
Volume:



Folder:



File:



- : Folder, all sub-folders + files are **write-protected**
- : Folder, all sub-folders + files are **not write-protected**
- : This folder or a sub-folder contains **non write-protected** folders/files

Information:

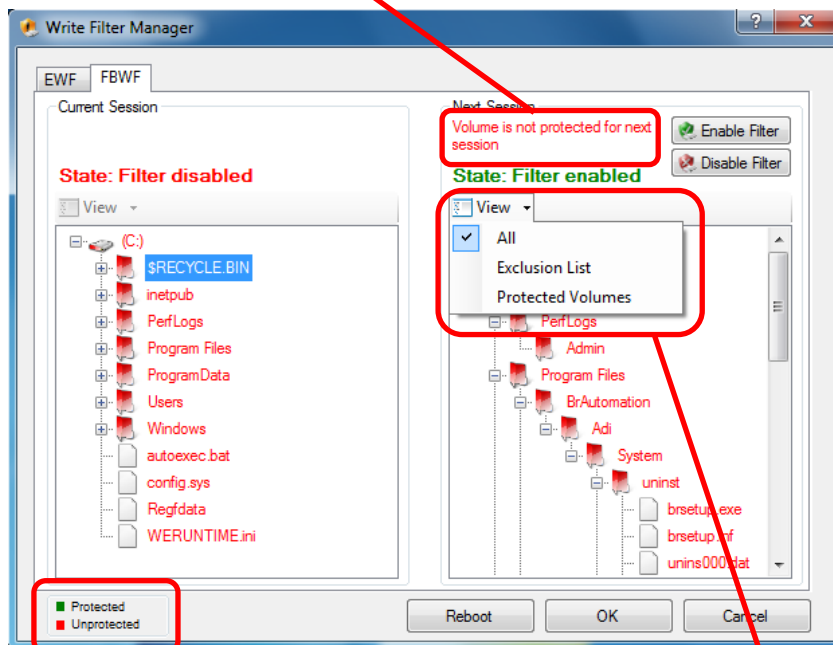
The FBWF must be activated for the next system reboot before it can be configured.

Information:

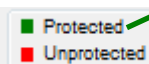
Before adding a folder or a file as an exclusion, the volume, where the folder or file is located, must first be protected (right click on the desired volume, such as "C", and select "Protect Volume").

Error message display:

If an error occurs during an operation, a corresponding message will appear here.



Legend:



Write-protected

Not write-protected

View:

The file explorer view can be reduced to the selected volumes/folders/files.

The selection is only active if the FBWF status is set to "filter enabled".

All: All volumes/folders/files are displayed in the File Explorer.

Exclusion List: Only the folders/files that are added as an exclusion will be displayed in the File Explorer.

Protected volumes: Only the protected volumes are displayed in the File Explorer.

3.3 Taskbar status display

The Write Filter Manager is automatically launched in the background when the system is started. An icon is displayed in the Windows taskbar, indicating the current status of the FBWF. Moving your mouse over the icon will reveal an info text.

Double-clicking the icon opens the user interface for the application.

Right-clicking on the icon opens a shortcut menu, which can also be used to open or close the user interface.

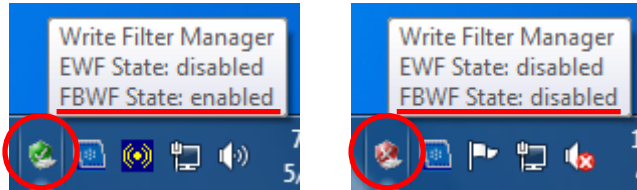



Figure 5: FBWF - Taskbar status display

4 Help

Use the  – button to display Help texts in the B&R Write Filter Manager. The corresponding Help text is displayed by clicking on this button and then on the desired component.

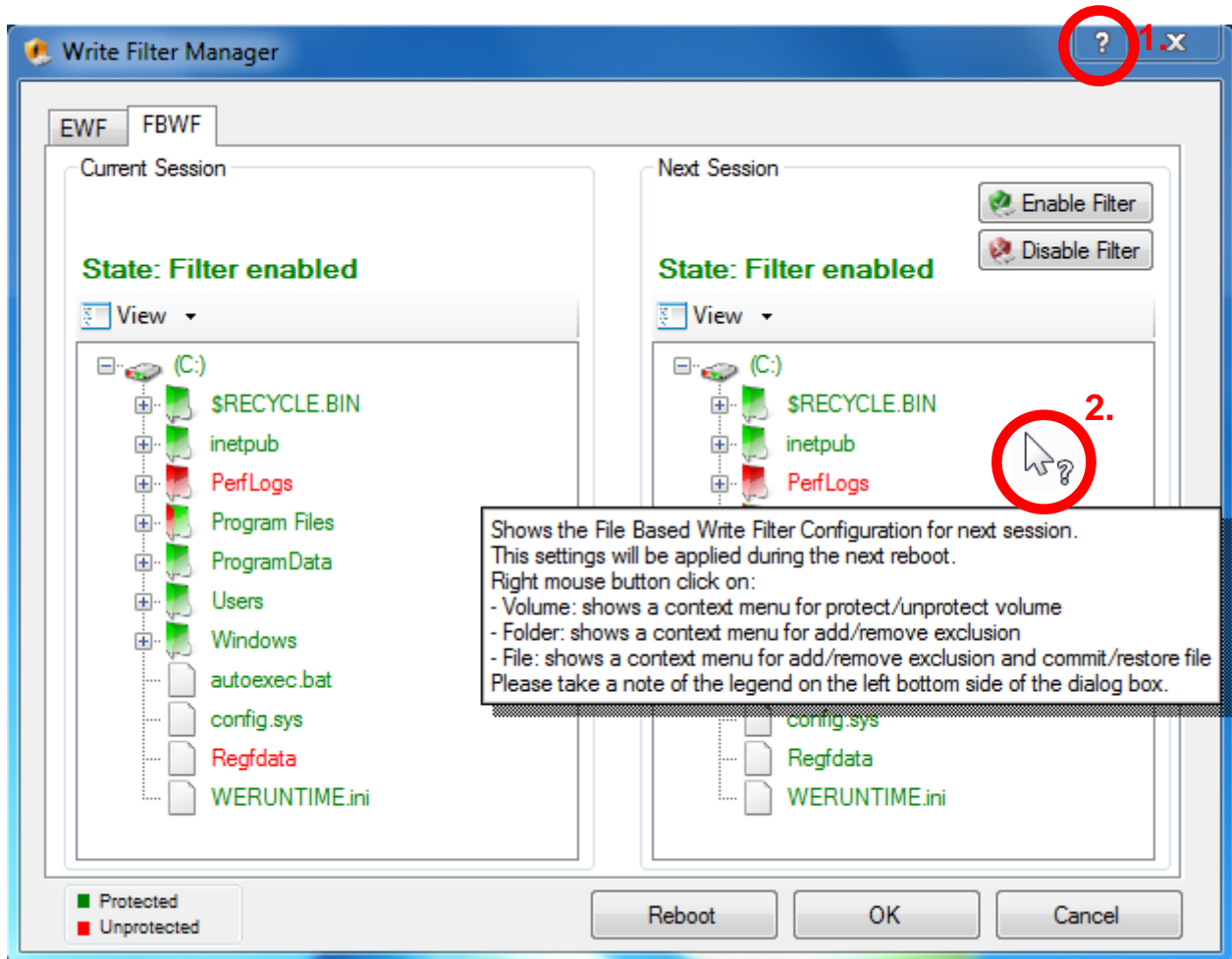


Figure 6: Help

5 Figure index

Figure 1: B&R Write Filter Manager in Windows Control Panel.....	4
Figure 2: EWF - RAM Reg mode	5
Figure 3: EWF - RAM mode	5
Figure 4: EWF - Taskbar status display	7
Figure 5: FBWF - Taskbar status display	11
Figure 6: Help	12

6 Table index

Table 1: Version information.....	2
Table 2: Distribution.....	2
Table 3: Organization of safety notices.....	2

7 Index

	D		
Distribution			2
	E		
Enhanced Write Filter (EWF)			5
	F		
Figure index			13
File Based Write Filter (FBWF)			8
Functions			6, 8
	H		
Help			12
	I		
Index			15
Introduction			4
	R		
RAM mode			5
RAM Reg mode			5
	S		
Safety notices			2
	T		
Table index			14
Table of contents			3
Taskbar status display			7, 11
	V		
Version information			2

