



B&R Windows CE SRAM Driver

User's Manual

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I Versions

Version	Date	Comment	Edited by
1.00	Mar 18, 2014	First edition	PAM

Table 1: Versions

II Distribution

Name	Company, Department	Amount	Remarks

Table 2: Distribution

III Safety Notices

Safety notices in this document are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Warning!	Disregarding the safety regulations and guidelines can result in severe injury or heavy damage to material.
Caution!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information used to prevent errors.

Table 3: Safety notices

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1 Introduction

This document provides technical information about the B&R SRAM driver. The descriptions refer to B&R SRAM driver version 1.1.

The B&R SRAM driver is a Windows CE 6.0 device driver that enables access to a B&R SRAM module.

More information about the SRAM modules can be found in the corresponding user manuals. These manuals are available in the download area of the B&R website (www.br-automation.com).

2 Supported hardware

The B&R SRAM driver can be used on the following devices:

- 5PC810.SX01-00
- 5PC810.SX02-00
- 5PC810.SX03-00
- 5PC810.SX05-00
- 5PP5IF.FCAN-00
- 5PP5IF.FETH-00
- 5PP5IF.FPLM-00
- 5PP5IF.FX2X-00
- 5PP5IF.FXCM-00

3 Supported operating systems

The B&R SRAM driver can be used on Windows CE 6.0 R3.

4 Installation

In order to install the B&R SRAM driver, the following steps must be taken on the CE device:

- Delete a possible existing older version of BrSram.dll in the Windows directory.
- Copy the BrSram.dll file to the Windows directory.
- Double-click on the BrSram.reg file.
This will add the necessary entries for the B&R SRAM driver to the registry.
- Save the registry and restart the system.
This can be done in the Control Panel using the Restart page of the Configuration Manager. ("Save settings before restart" must be selected)

5 Features

The B&R SRAM driver provides the following features:

- Access to the SRAM with the standard Windows functions *ReadFile()*, *WriteFile()* and *SetFilePointer()*.
- The driver can only be opened once from the user space.
- Optional auto adjustment of the file pointer on *ReadFile()* and *WriteFile()*.
- The prefix of the driver is *NVR*.

6 Registry values

The following registry values are necessary for driver start.

They define the B&R SRAM driver as the corresponding driver for the B&R SRAM modules, which are reported as PCI devices.

The registry value *AutoIncrement* defines whether the file pointer should be adjusted after a read or write operation or not.

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SRAM]
"Class"=dword:05
"SubClass"=dword:00
"ProgIF"=dword:00
"VendorID"=multi_sz:"1677","1677","1677","1677","1677","1677","1677"
"DeviceID"=multi_sz:"A3ED","B4DA","B7C4","CD8C","B4D8","B4D9","BB9D"
"Prefix"="NVR"
"Dll"="BrSram.dll"
"AutoIncrement"=dword:00
```

Listing 1: Registry values

7 Device interface

The following Win32 functions are supported by the B&R SRAM driver device interface.

7.1 Device open

The device can be opened with the Windows function *CreateFile()* via the device name *NVR1:*. The device can only be opened once. If another session is already open, the Win32 error code *ERROR_BUSY* will be returned from the function.

```
HANDLE hSramDev = CreateFile(_T("NVR1:"), GENERIC_READ | GENERIC_WRITE, 0, NULL, OPEN_EXISTING,  
0, NULL);
```

Listing 2: Device open

7.2 Device close

The device can be closed with the Windows function *CloseHandle()*.

```
BOOL ret = CloseHandle(hSramDev);
```

Listing 3: Device close

7.3 Device read

The device can be read with the Windows function *ReadFile()*. If the auto increment switch is enabled, the file pointer will be adjusted after reading. If the end of the SRAM is reached and the byte count is greater than the remaining size, the function will return the number of bytes that are really read.

```
DWORD BytesRead;  
BYTE bValue;  
BOOL ret = ReadFile(hSramDev, &bValue, sizeof(bValue), &BytesRead, NULL);
```

Listing 4: Device read

7.4 Device write

The device can be written with the Windows function *WriteFile()*. If the auto increment switch is enabled, the file pointer will be adjusted after writing. If the end of the SRAM is reached and the byte count is greater than the remaining size, the function will return the number of bytes that are really written.

```
DWORD BytesWritten;  
BYTE bValue = 0x55;  
BOOL ret = WriteFile(hSramDev, (LPCVOID)&bValue, sizeof(bValue), &BytesWritten, NULL);
```

Listing 5: Device write

7.5 Device seek

The Windows function *SetFilePointer()* allows moving the file pointer with respect to the beginning of the SRAM, the current position in the memory or the end-of-memory position. If the new position is after the end of the SRAM, the file pointer is not moved and the WIN32 error code *ERROR_SEEK_ON_DEVICE* will be returned. If the new position is a negative value (before begin of the SRAM), the file pointer is not moved and the WIN32 error code *ERROR_NEGATIVE_SEEK* will be returned.

```
DWORD ret = SetFilePointer(hSramDev, 0, NULL, FILE_BEGIN);
```

Listing 6: Device seek

7.6 Error Codes

Whenever a function fails, following WIN32 error codes are possible.

Error Code	Error No.	Reason
ERROR_INVALID_PARAMETER	87	A function parameter is invalid.
ERROR_BUSY	170	Another instance of the device is open.
ERROR_ACCESS_DENIED	5	The device has been opened with the wrong access rights.
ERROR_NEGATIVE_SEEK	131	The file pointer is negative.
ERROR_SEEK_ON_DEVICE	132	The file pointer exceeds the SRAM size.

Table 4: WIN32 error codes

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