



## **SoftMotion: DriveInterface: Automata Sercos Interface**

**Document Version 2.1**

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This document describes the steps to do, if you want to use the AUTOMATA SERCOS interface (PCI/PC104/ISA) together with CoDeSys SP RTE.

The PCI card can be used under Windows NT/2000/XP; the ISA and PC104 version only works under Windows NT.

## 1 ISA/PC104 card - only with Windows NT!

### 1.1 Job Steps

1. Detect free **interrupt** (possible: 3,4,5,7,10,11,12,15) and reserve in BIOS
2. Detect free **memory area** (card base address), set dip switches on card corresponding to that, reserve memory area in BIOS
3. Enable **ResetConfigurationData** in BIOS
4. **Switch off** PC; **put in card**; **start** PC
5. Copy **RTIOdrvAutomata.sys** in Windows\System32\driver path
6. Register driver by running **RTIOdrvAutomata.reg**
7. Enter in **Registry** under  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\RTIOdrvAutomata\Params  
card base address and interrupt number
8. **Start CoDeSys SP RTE** service and select or enter driver name („RTIOdrvAutomata“) at System->IODrivers
9. **Enable** System->Ext. Config->Connect interrupts **floatingpoint-save**
10. Disable System->Config->**Watchdog** or put high multiplier on it
11. **Restart** CoDeSys SP RTE

### 1.2 Solving Problems

The driver generates - **when exiting** !- under  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\RTIOdrvAutomata\Params some  
entries for diagnosis:

If the driver could find the card, it enters 0xFFD8 (PC104) resp. 0xFFD7 (ISA) in „BoardFound“.

Additionally it writes the number of received interrupts into „ReceivedInts“, which should be greater than 0, if a CoDeSys application which uses Sercos has been running.

If the driver runs but during the operation problems occur, please see chapter 4.

## 2 PCI card with Windows NT

### 2.1 Job steps

1. Switch off PC
2. Put in card
3. Start PC
4. Copy **RTIOdrvAutomata.sys** into Windows\System32\drivers
5. Register driver by running **RTIOdrvAutomata.reg**
6. Enter in **Registry** under  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\RTIOdrvAutomata\Params  
0xFFFFFFFF as base address of the card
7. **Start CoDeSys SP RTE** service and select or enter driver name („RTIOdrvAutomata“) at System->IODrivers
8. **Enable** System->Ext. Config->Connect interrupts **floatingpoint-save**
9. Disable System->Config->**Watchdog** or put high multiplier on it
10. **Restart** CoDeSys SP RTE

### 2.2 Solving Problems

The driver generates - **when exiting** !- under  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\RTIOdrvAutomata\Params some  
entries for diagnosis:

If the driver could find the card, it enters 0x12345678 in „BoardFound“.

Additionally it writes the number of received interrupts into „ReceivedInts“, which should be greater than 0, if a CoDeSys application which uses Sercos has been running.

If the driver runs but during the operation problems occur, please see chapter 4.

### 3 PCI card with Windows 2000/XP

#### 3.1 Job Steps

1. Switch off PC
2. Put in card
3. Start PC
4. After booting, Windows detects the new hardware. Select driver manually:  
**RTIOwdmAutomata.inf/.sys**
5. Reboot
6. **Start** CoDeSys SP RTE service and **enter driver name** („RTIOwdmAutomata“) at System->IODrivers
7. **Enable** System->Ext. Config->Connect interrupts **floatingpoint-save**
8. Disable System->Config->**Watchdog** or put high multiplier on it
9. **Restart** CoDeSys SP RTE

#### 3.2 Solving Problems

The driver generates - **when exiting !**- under  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\RTIOdrvAutomata\Params some  
entries for diagnosis:

If the driver could find the card, it enters 0x12345678 in „BoardFound“.

Additionally it writes the number of received interrupts into „ReceivedInts“, which should be greater than 0, if a CoDeSys application which uses Sercos has been running.

If the driver runs but during the operation problems occur, please see chapter 4.

## 4 SercosAutomataDiag.lib

To use this function, the library SercosAutomataDiag.lib must be included.

Calling the function GetDiagStructAddress will return an address of a DIAGSTRUCT data structure. This data structure includes information of the current driver:

```
pPciCtrlRegs:DWORD;  
ulCurpPciCtrlRegs:DWORD;  
ulNumIntsAbsolute:DWORD;  
ulNumIntsCur:DWORD;  
ulNumReportedInts:DWORD;  
pDPR:DWORD;  
pSerconRegs:DWORD;  
ulIntTime: DWORD;           (* point in time, when ISR was entered *)  
ulLastIntTime: DWORD;       (* point in time, when ISR was entered one time before *)  
ulLastInterruptDifference: DWORD; (* difference between ulIntTime and ulLastIntTime *)  
ulISRTIME: DWORD;           (* time in µs needed to acknowledge interrupt *)
```

**Change History**

<b>Version</b>	<b>Description</b>	<b>Editor</b>	<b>Date</b>
---	Issued	HP	23.09.2003
1.0	Last update	HP	19.07.2004
2.0	Replaces recent documents SercosDriveAutomata.doc/pdf and SoftMotion_SercosDrive.pdf ; Start of document versioning + Adaptation to new template; Release	MN	30.05.2005
2.1	SercosAutomataDiag.lib	HP	27.07.2006