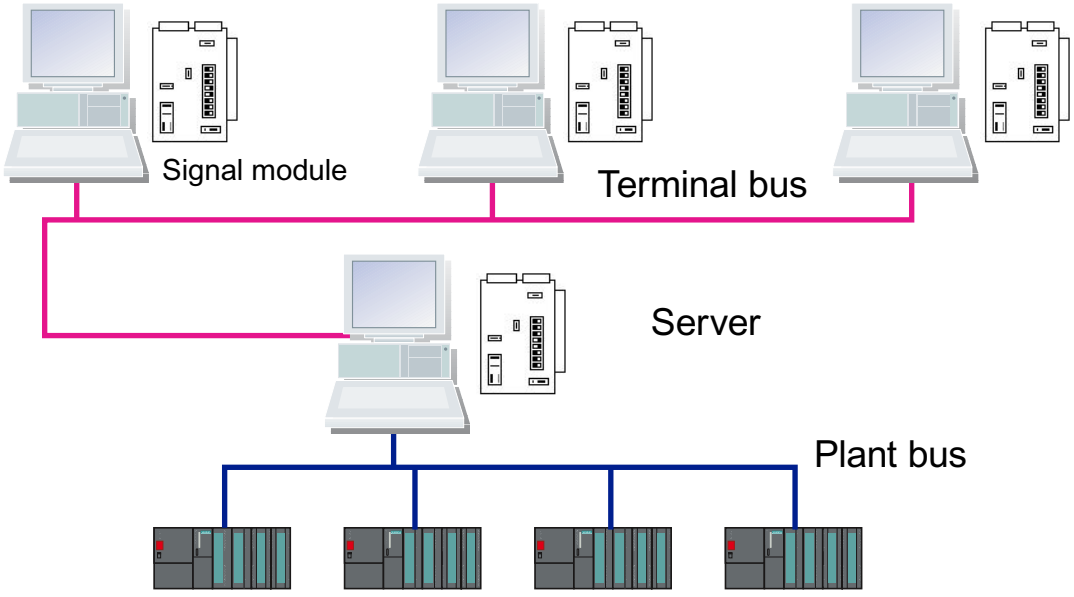
3.11 Signal module

3.11.1 General Information about the Signal Module

Introduction

The signal module is used to control up to three different messaging devices (horn, buzzer, lights, etc.) with an option to connect to a hardware-based acknowledgment button used for acknowledging externally. It also includes a hardware timer (watchdog). It is triggered cyclically by WinCC Runtime via a API call driver. An alarm is triggered if an error, such as a computer failure, occurs so that retriggering no longer takes place. The module also possesses 3 additional binary inputs. The signal module is a PC module that has been specially developed for use in the OS with a 32-bit PCI bus interface (MLFB no.: 6DS 1916-8RR). You need a 5V PCI slot to operate the signal module with PCI bus interface. It is not possible to operate it in a 3.3V PCI slot.

The signal module is a hardware option to the WinCC system that is offered as an option pack. In the following figure, you can see the general structure of a system and the installation options for the signal module within a system.



If the server operator stations have multiple client operator stations, each terminal can be equipped with a signal module.

Note

The signal module is configured separately for each computer. You need to configure each computer. When you use the project duplicator, the settings are not copied.

See also

Function Characteristics of the Signal Module (Page 121)
PCI Bus Signal Module (Page 122)
Installing the Signal Module (Page 125)
Pin Assignment of the External Interface (Page 128)
Testing the Signal Module (Page 126)

3.11.2 Function Characteristics of the Signal Module

Functionality

The signal module performs the following functions:

- Control of three acoustic or optical sensors
- Watchdog
- Three binary inputs
- Acknowledgment/resetting of the audible signals through software control or external acknowledgment

A 25-pin and a 9-pin Sub-D-plug are located at the front of the module. The watchdog and signaling device functions are carried through the 25-pin Sub-D-plug. The 9-pin plug is not used.

Via the Basic Process Control option pack, the group signal or the group audible indicator is controlled by a logical OR.

When control is through the software, the three signal outputs are reset. When acknowledgment is carried out externally, for instance using keystrokes, all assigned signal tags are set to 0 and the signal outputs are reset at the same time.

All signals sent through the two plugs are isolated and implemented as relay contacts or optical couplers. The 24 V DC supply voltage, which is provided externally by the relay contacts or optical couplers of the signal module, must be 1 A protected by the customer.

See also

General Information about the Signal Module (Page 120)
Testing the Signal Module (Page 126)
Installing the Signal Module (Page 125)

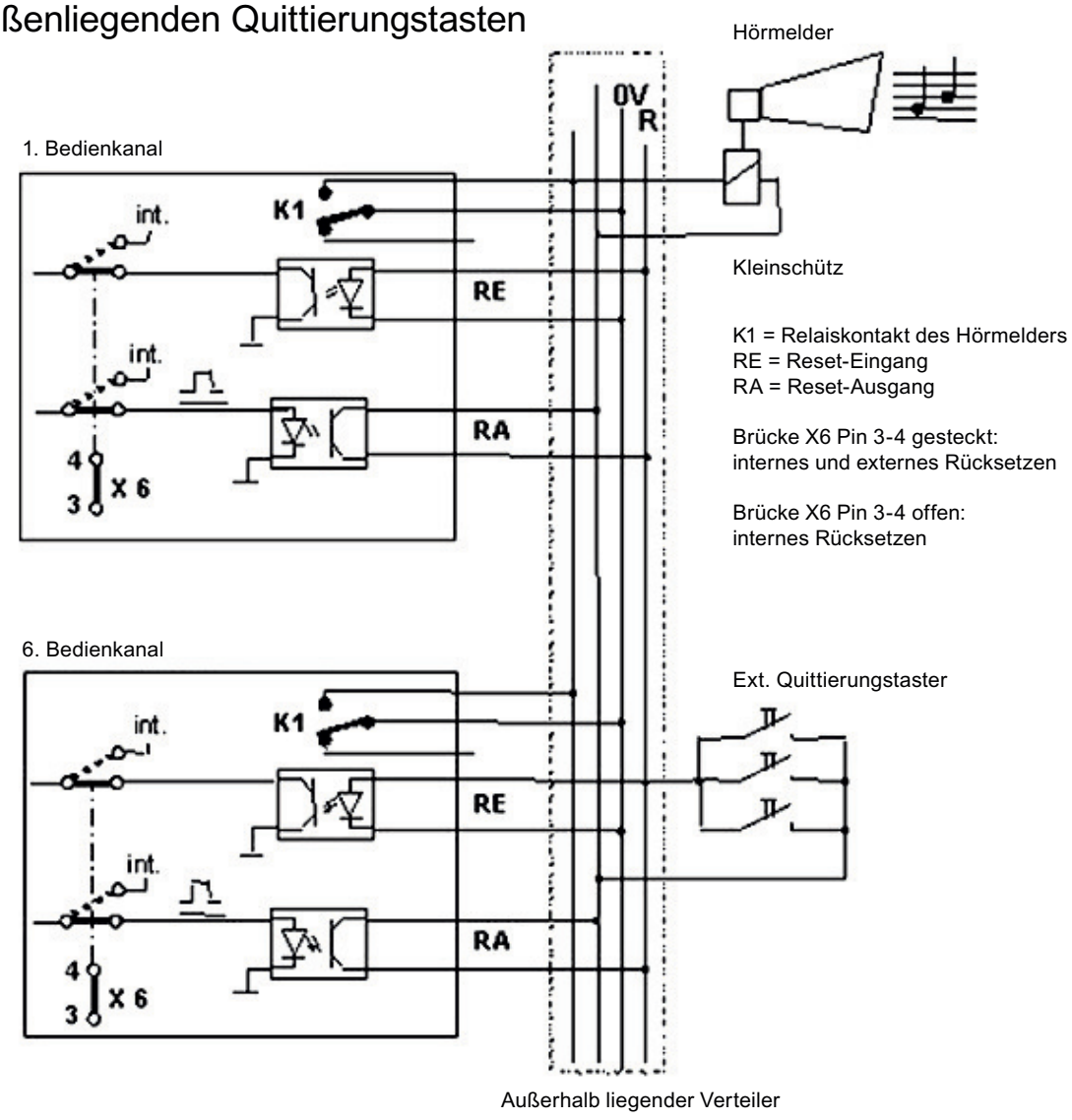
3.11.3 PCI Bus Signal Module

The signal module is a PCI bus card for PCs. It is used for controlling up to three external signaling devices and possesses three binary inputs.



Insert the signal module into the motherboard of the operator station PC. Check whether a PCI slot is available.

Zusammenschalten mehrerer Bedienkanäle mit außenliegenden Quittierungstasten



Note

You can only use a PCI card as a signal module if it has a product status > = 4 (see self-adhesive label, e.g. ES4).

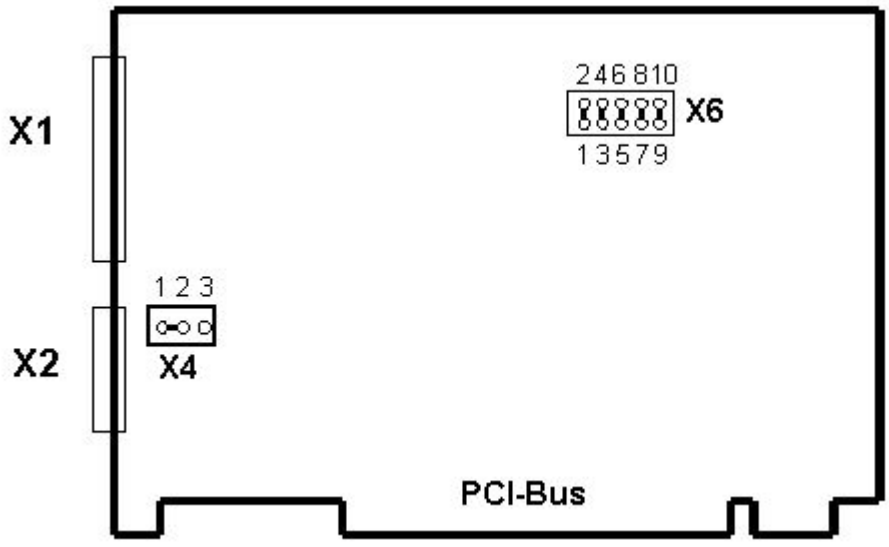
See also

Structure of the Switches and Jumpers with the PCI Bus (Page 124)

3.11.4 Structure of the Switches and Jumpers with the PCI Bus

Overview

The following simplified representation of the signal module with 32-Bit PCI bus interface shows the physical arrangement and the pin numbering of the switches and jumpers. Their use is explained below.



The image shows the factory settings of the jumpers and the default switch positions.

Configuration / meaning of the jumpers / switches / interfaces

The functions of signal generators, watchdogs, plug control and addressing are set using plug-in jumpers.

Slot	Jumper	Meaning
X6	1-2 jumpered*)	Signal generator function on
	3-4 open*)	Signal generators can only be acknowledged by software
	3-4 jumpered	Signal generator acknowledgment is possible by means of software and externally wired pushbutton
	5-6 open*)	Watchdog function normal
	5-6 jumpered	Watchdog function inverted
	7-8 open	Event-triggered release of the signal generator relay
	7-8 jumpered*)	Event-triggered activation of the signal generator relay
	9-10 open	Watchdog function off
	9-10 jumpered*)	Watchdog function on
X4	1-2 jumpered*)	Insertion check is activated by means of jumper between pin 6-8 inside the connector
	2-3 jumpered	Insertion check activated by means of +5 V signal from printer

Slot	Jumper	Meaning
X1		25-pin watchdog and signal generator interface
X2		9-pin hardcopy interface

All X6 jumpers are inserted in delivery state. The X4 jumper "1-2" is inserted in delivery state.

The jumper settings marked with *) represent the standard configuration for use with PCS7-OS and **do not correspond with the delivery state**.

Note

If several modules are interconnected by way of external wiring it is mandatory that jumper 3-4 at slot X6 is in the same position at all modules. The jumper is usually inserted on all modules.

See also

PCI Bus Signal Module (Page 122)

3.11.5 Installing the Signal Module

Procedure

The installation is broken down into multiple steps. Follow these steps:

1. Hardware Installation:
   Insert the signal module card into the OS motherboard. The card requires a free PCI slot in the OS. If the OS is a server OS with several client OS's, each client can contain an additional signal module.
2. Hardware Setup:
   Once you have installed the signal module card, you can test its functionality using the operating system's "Control Panel". To do so, double-click "Signal Unit Configuration" within the "Control Panel". The "Signal Unit Hardware Setup" dialog box will open. Perform the hardware setup for the signal module plug-in card via this dialog box.
   Note:
   - When you close the dialog box, you must wait approx. 4 seconds before opening it again once the icon comes into focus again.
   - Before activating Runtime, you have to close the "Signal Unit Hardware Setup". The horn is not triggered by message events otherwise.

3. Configuring signal tags:
   - Assign the messages to signal tags in the "Message Assignment" tab of the horn. The access rights are taken into account here.
   - Assign available physical signals to the signal tags in the "Signal Assignment" tab for the horn. In the "Sensor" column, you assign outputs from an installed signal module to the tags by double-clicking in the subsequent dialog box. The available signal outputs are "Output "1", "Output 2" and "Output 3".
4. Testing the signal module:
   - The updated driver with version 1.1.0 is used in all operating systems for the "6DS1916-8RR" signal module as of WinCC V7.0 SP1 / PCS7 V7.1. You can find the driver on your computer in the installation directory <WinCC>\Options\Drivers.

PCI signal module under Windows Server 2012 R2 (64-bit version)

Install the PCI signal module as follows:

1. Open the device manager in Windows.
2. Under the category "Other devices" you will find the signal module "System DMA Controller" you want to install.
3. Open the installation dialog with a right mouse-click and select "Update driver software".
4. Select the option "Browse my computer for driver software > Browse here for driver software > Browse".
5. Navigate to the storage location of the driver installation "Siemens\WinCC\Options\Drivers". Confirm with "Next". Use the file "HMPCI64.INF".
6. Finish the installation with "Close".

The "Signal Unit PCI Adapter" device now appears in the device manager under the "PCS 7" group.

See also

Testing the Signal Module (Page 126)

3.11.6 Testing the Signal Module

Introduction

In order to test the installed signal module, proceed as follows:

Procedure

1. Select "Start > Settings > Control Panel".

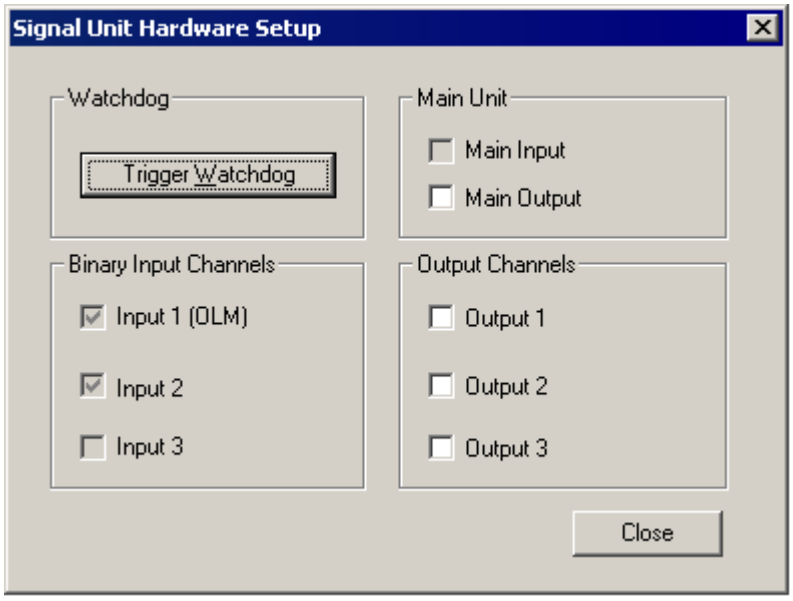


2. Double-click this icon to open the "Signal Unit Hardware Setup" dialog box.
3. You can now test the signal module in the "Signal Unit Hardware Setup" dialog box.

Note:

- After having closed the dialog box, you must wait approx. four seconds after the icon is focused again before you re-open the dialog box.
- Close the "Signal Unit Hardware Setup" dialog box before activating Runtime. The horn is not triggered by message events otherwise.

Structure of the dialog box "Signal Unit Hardware Setup".



Activate "Output 1" to "Output 3" check boxes in the "Output Channels" group in order to immediately test the functions of the signal module and connected signal generators.

Dialog boxes

The dialog box settings are defined as follows:

Field name	Meaning
Trigger Watchdog	The watchdog is triggered once when you click this button. (Test)
Main Unit	You can only activate the "Main Output" check box in the "Main Unit" group (group message).

Field name	Meaning
Main Output	After you activated this check box, the connected sensor is activated at the output of the group signal.
Binary Input Channels	Displays the status of binary inputs 1, 2 and 3.
Output Channels	A corresponding relay is activated if you select an output. The outputs are controlled in system runtime by means of the permanently assigned tags.
Close	Use this button to close the Setup dialog box.

Note

The previous "Auto-Trigger Watchdog" option is no longer available, as the PCI version of the signal module does not support auto-triggering of the watchdog.

See also

Installing the Signal Module (Page 125)

3.11.7 Pin Assignment of the External Interface

Pin Assignment Watchdog and Horn Signal Interface (X1)

The sensor output and the channel outputs are directly connected externally. Each contact controls a signaling device. In the event of an error message, the main contact and the assigned detail contact are set. An acknowledgment results in the control software resetting the main contact and all detail contacts. The acknowledgment is triggered externally via the acknowledgment input or by the software.

The following table shows the wiring of a 25-pin Sub-D plug which is used for connecting external devices (lights, buzzers, bells, buttons, etc.).

Pin	Signal	Description	Connection
*H	*S		
1	Signaling device M	Relay center contact	
2	+	Reset output	Optocoupler
3	-	Reset output	Optocoupler
4	+	Reset input	Optocoupler
5	-	Reset input	Optocoupler
6	Signaling device R	Relay, normally closed contact	
7	Signaling device A	Relay, front contact	
8	Watchdog M	Relay center contact	
9	Watchdog R	Relay, normally closed contact	
10	Watchdog A	Relay, front contact	
11	+	BI 1 *BI	
12	-	BI 1 *BI	

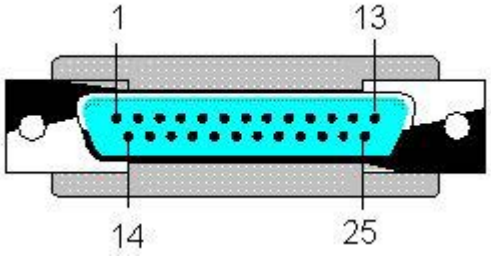
Pin	Signal	Description	Connection
13	+	BI 2 *BI	Optocoupler
14	+	BI 3 *BI	
15	-	BI 3 *BI	
16	Output 1 M	Relay center contact	
17	Output 1 A	Relay, front contact	
18	Output 1 R	Relay, normally closed contact	
19	Output 2 M	Relay center contact	
20	Output 2 A	Relay, front contact	
21	Output 2 R	Relay, normally closed contact	
22	Output 3 M	Relay center contact	
23	Output 3 A	Relay, front contact	
24	Output 3 R	Relay, normally closed contact	
25	-	BI 2 *BI	

*H = Housing

*S = Shield

*BI = Binary Inputs

25-pin subminiature plug connector (pin connector with screw locking)



Comments

Wire the main signaling device (horn, signal lamp, etc.) to the main contact of the signal module. The main signaling device responds every time a detail contact is set, that is, each time an alarm is reported at the signal module.

You can connect the detail contacts to signal devices such as lamps or buzzers.

You can wire a device which is activated if the relevant signal module is no longer triggered to the watchdog alarm output. This event is triggered by a failure of the corresponding OS.

You must choose whether to reset the signal module using the control software (driver) or an external acknowledgment button.
Take the following measures to use both variants in parallel:

- You can interconnect pins 3 and 4 at jumper X6 of the PCI card to enable acknowledgment by means of external pushbutton. You can find related topics in the section "Configuration of switches and jumpers on the PCI bus".

Wire an external pushbutton to the reset input. Wire the reset output accordingly in parallel to this button.