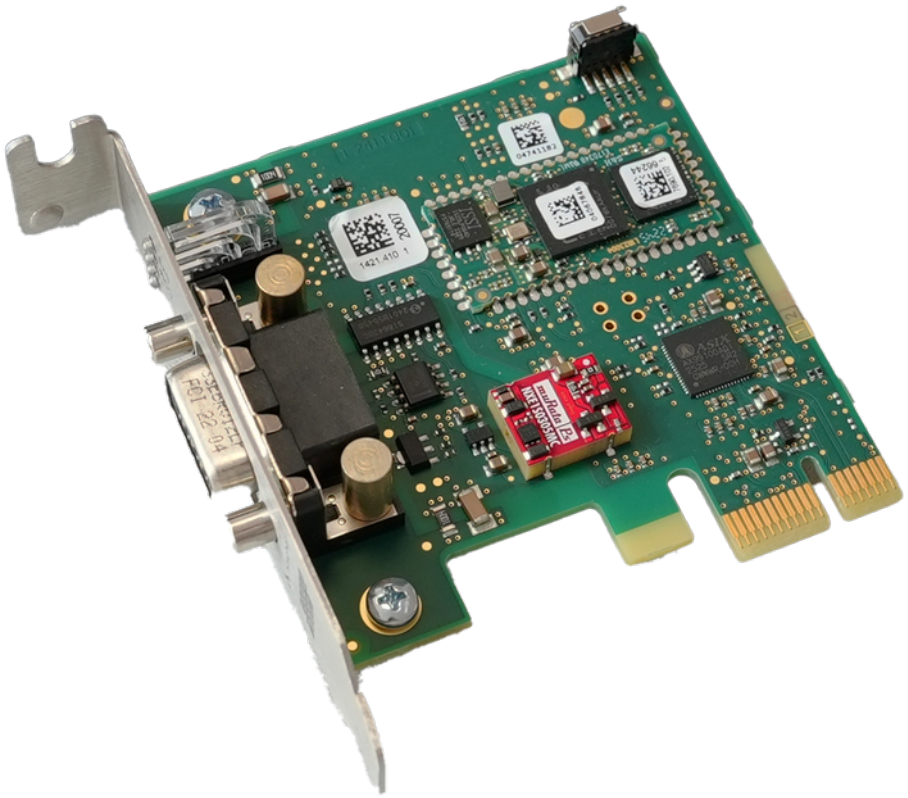
empowering communication

User manual

CIFX LPCIE90-DPS

PC card Low Profile PCI Express PROFIBUS DP Slave



Hilscher Gesellschaft für Systemautomation mbH
www.hilscher.com

DOC260202UM01EN | Revision 1 | English | 2026-04 | Released | Public

Table of contents

1 Introduction 4
1.1 About the user manual 4
1.2 List of revisions 4
2 Device 5
2.1 PC card cifX 6
2.2 Revision or version status of hardware and software 8
2.3 Product software 8
2.4 Device label with matrix code 9
3 Safety 10
3.1 General note 10
3.2 Personnel qualification 10
3.3 Safety messages 10
3.3.1 Hazardous voltage, electric shock 10
3.3.2 Personal injury, device damage due to hot swap/hot plug 10
3.4 Property damage 11
3.4.1 Excessive supply voltage 11
3.4.2 Excessive signaling voltage 11
3.4.3 Electrostatic sensitive devices 11
3.4.4 Power drop during write and delete accesses in the file system 11
3.4.5 Exceeding the maximum number of permitted write and delete accesses 12
4 Installing the hardware 13
4.1 System Requirements 13
4.2 Requirements for operation 14
4.3 Overview installation and firmware download 15
4.4 Installation warnings 16
4.5 Installing the hardware 17
4.6 Hints for problem solving 18
4.7 Loading firmware and configuration in the device or making an update 19
5 Diagnosis with LEDs 20
5.1 Overview 20
5.2 System LED 20
5.3 PROFIBUS DP-Slave 21
6 Connectors and switch 22
6.1 PROFIBUS interface 22
6.2 PCI Express (1 lane) 23
6.3 Rotary switch for slot number (card ID) 24
7 Technical data 25
7.1 Technical data CIFX LPCIE90-DPS 25
7.2 PCI identifiers on the PCI Express bus 27
7.3 Supported PCI bus commands 27

© Hilscher 2026

7.4 Technical data of the communication protocols 27

8 Removing the hardware 28

8.1 Removing the PC card 28

8.2 Disposal and recycling of waste electronic equipment 29

9 Appendix 30

9.1 References 30

9.2 Legal notes 30

9.3 Registered trademarks 33

Contacts 37

© Hilscher 2026

1 Introduction

1.1 About the user manual

This user manual for CIFX LPCIE90-DPS (Low Profile PCI Express PROFIBUS DP Slave) provides information about:

- Hardware description,
- installation of the hardware and
- firmware download.

1.2 List of revisions

Revision	Date	Changes
1	2026-04-02	Document created.

Table 1: List of revisions

© Hilscher 2026

2 Device

The PC card CIFX LPCIE90-DPS is a Hilscher communication interface based on the netX 90 communication controller.

PC card	Description
CIFX LPCIE90-DPS	Low Profile PCI Express PROFIBUS DP Slave
	Type (according to the PCI Express Card specification): PCI Express 1x
	PCI Express slot (3.3 V)

Table 2: PC card CIFX LPCIE90-DPS

The use refers exclusively to slave systems. Depending on the firmware loaded, the PC card cifX performs the protocol-specific communication.

Data is exchanged between the connected devices and the PC or connecting device via the Dual-Port Memory.

© Hilscher 2026

2.1 PC card cifX

The elements of the device that are important for installation and operation can be identified by a position number in the following figure.

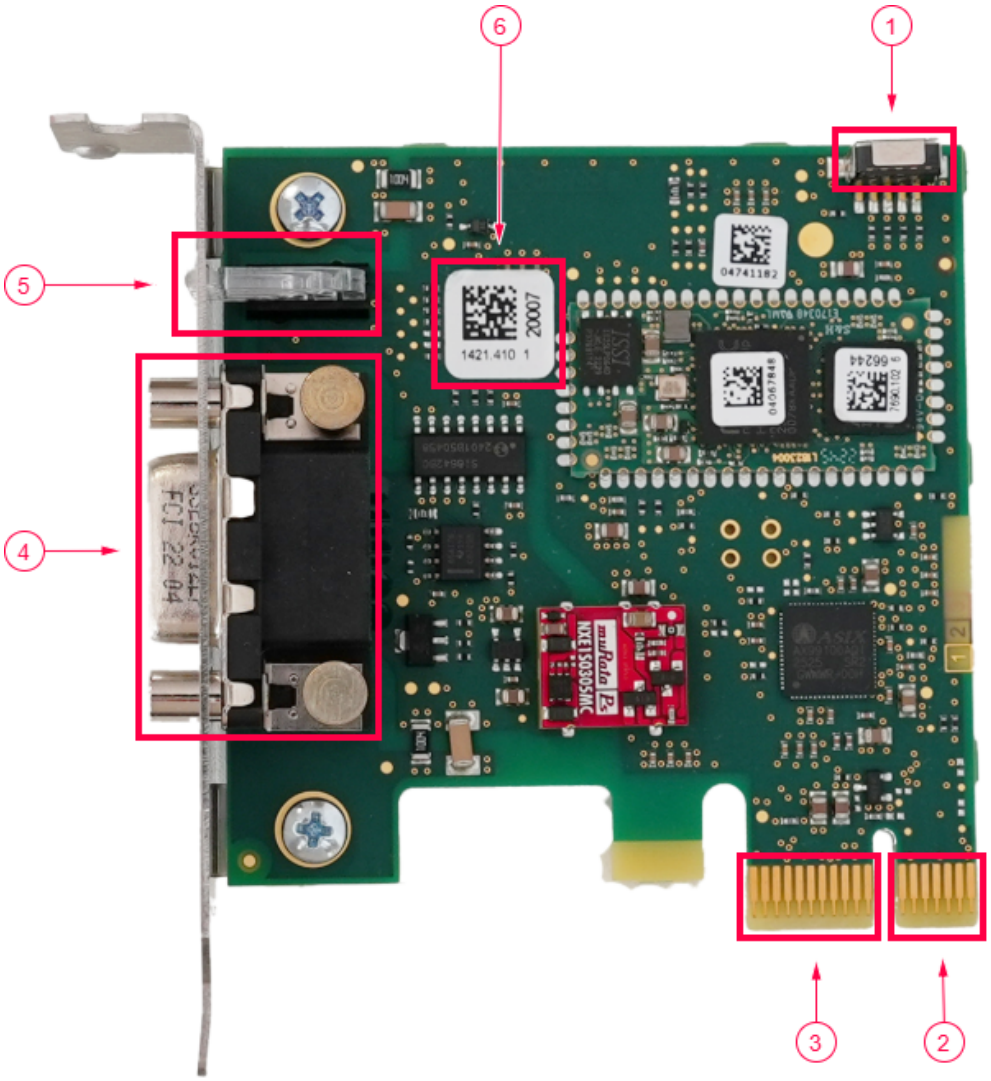


Figure 1: Position numbers of the CIFX LPCIE90-DPS PC card

No.	Description
(1)	*Rotary switch for slot number (card ID)* [▷ page 24]
(2)	*PCI Express-Bus* [▷ page 23] Pin 12 to pin 18
(3)	*PCI Express bus 1x* [▷ page 23] Pin 1 to pin 11
(4)	*PROFIBUS interface* [▷ page 22]
(5)	*System-LED* [▷ page 20] (yellow/green), *COM-LED* [▷ page 21] (green/red) (see section *Diagnosis with LEDs* [▷ page 20])
(6)	*Matrix label* [▷ page 9]

Table 3: Position numbers of the CIFX LPCIE90-DPS PC card

© Hilscher 2026

Slot cover and LED positions

Figure 2: Slot cover and LED positions

No.	Description
(1)	*SYS (System status)* [▷ page 20]
(2)	*COM (Communication status)* [▷ page 21]
(3)	Not assigned
(4)	Not assigned
(5)	*PROFIBUS interface (D-Sub)* [▷ page 22]

Table 4: Legend of the slot cover of the PC card CIFX LPCIE90-DPS

Note:
The status of the LEDs are described in chapter *Diagnosis with LEDs* [▷ page 20].

© Hilscher 2026

2.2 Revision or version status of hardware and software

The hardware revisions listed below, as well as the driver, software and firmware versions belong together functionally. If a hardware installation is available, the driver and the firmware must be updated according to these specifications.

Name of device	Description	Part no.	Hardware revision
CIFX LPCIE90-DPS	PC card cifX Low Profile PCI Express PROFIBUS DP Slave	1421.410	1

Table 5: Hardware revisions

Drivers and software	Name	Version
Device driver	cifX Device Driver	2.3 or higher
Software for downloading the firmware	Device Explorer	1.4
Configuration software	Communication Studio	1.4

Table 6: Versions for drivers and software

The following table lists the supported protocols. The firmware version column indicates the minimum version of the firmware.

Protocol	File name	Firmware version
PROFIBUS DP Slave	X0902001.nxi	5.2

Table 7: Firmware (protocol and file name)

Note:
Unless otherwise specified, the firmware version in this manual is the same as the stack version.

2.3 Product software

All the information and software you need for your product can be downloaded free of charge at the web-link https://hilscher.atlassian.net/wiki/spaces/CARDS/overview.

➢ Select the link for the current release for the Download Package Communication Solution 90.

After the download, you can start commissioning and configuring your device immediately.

➢ Check our website regularly for software updates for your product.

© Hilscher 2026

2.4 Device label with matrix code

You can identify your device by means of the device label.

Note:
The position of the device label on your device is indicated in the device drawing.

The device label consists of a matrix code and the information contained therein in plain text.

The identification label contains the following information:

Position	Description
(1)	Part number
(2)	Hardware revision
(3)	Serial number

Table 8: Identification label

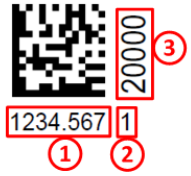


Figure 3: Identification label (example)

© Hilscher 2026

3 Safety

3.1 General note

The documentation in the form of a user manual, an operating instruction manual or other manual types, as well as the accompanying texts, have been created for the use of the products by qualified personnel. When using the products, all Safety Messages, Integrated Safety Messages, Property Damage Messages and all valid legal regulations must be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

3.2 Personnel qualification

The PC card may only be installed, configured, operated or uninstalled by qualified personnel. Job-specific technical skills for people professionally working with electricity must be present concerning the following topics:

- Safety and health at work
- Mounting and connecting of electrical equipment
- Measurement and Analysis of electrical functions and systems
- Evaluation of the safety of electrical systems and equipment
- Installing and configuring IT systems

3.3 Safety messages

3.3.1 Hazardous voltage, electric shock

Danger to life or risk of injury by electric shock may occur if you open the housing of your PC (or connection device) to install your PC card.

- **Hazardous voltages** are present in the PC (or connection device) for mounting. Always read and observe the safety instructions of the PC manufacturer before installation.
- First disconnect the power plug of the PC (or connection device), before opening the housing.
- Make sure that the power supply is off at the PC (or connection device).
- Only then open the housing and install or remove the PC card.

3.3.2 Personal injury, device damage due to hot swap/hot plug

The PC card is not designed or intended for a hot-swap or hot-plug connection. Performing hot-swap or hot-plug may pose a hazard to the PC card, the system platform and the person performing the action.

© Hilscher 2026

3.4 Property damage

3.4.1 Excessive supply voltage

The PC card may only be operated with the prescribed supply voltage, which corresponds to the tolerances specified in this manual. The limits of the permitted range must not be exceeded.

Device damage, malfunctions

- If the supply voltage is above the specified upper limit, this can lead to serious damage to the PC card!
- If the supply voltage is below the specified lower limit, malfunctions of the PC card may occur.

3.4.2 Excessive signaling voltage

All I/O signal pins on the PC card tolerate only the specified signal voltage, as specified in this manual.

Device destruction

Operating your PC card at a signal voltage that exceeds the specified signal voltage can cause serious damage to the PC card!

3.4.3 Electrostatic sensitive devices

This equipment is sensitive to electrostatic discharge which cause internal damage and affect normal operation. Therefore adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge if you install or replace your device. Follow the guidelines listed hereafter when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on the PC card.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

3.4.4 Power drop during write and delete accesses in the file system

The FAT file system in the netX firmware is subject to certain limitations in its operation. Write and delete accesses in the file system (firmware update, configuration download etc.) can destroy the FAT (File Allocation Table) if the accesses cannot be completed if the power drops. Without a proper FAT, a firmware may not be found and cannot be started.

➢ Make sure that the power supply of the device does not drop during write and delete accesses in the file system (firmware update, configuration download etc.).

© Hilscher 2026

3.4.5 Exceeding the maximum number of permitted write and delete accesses

This device uses a serial Flash device to store retentive data, such as storing the firmware, saving the configuration, and so on. This device allows a maximum of 100,000 write/delete accesses, which are sufficient for normal operation of the device. However, too frequent write/delete of the device (e.g. changing the configuration or changing the station name) leads to the maximum number of permitted write/delete accesses being exceeded and to damage to the device. For example, if the configuration is changed once an hour, the maximum number is reached after 11.5 years. If the configuration is changed even more frequently, for example once a minute, the maximum number will be reached after approximately 69 days.

Avoid exceeding the maximum permitted write/delete accesses of writing too frequently.

© Hilscher 2026

4 Installing the hardware

4.1 System Requirements

For installation of the PC card CIFX LPCIE90-DPS, a PC or connection device with a PCI Express slot (host interface) is required to mount the PC card.

Host interface

PC card	Type	Supply voltage (1)	Current consumption (2)	Signal voltage (3)
CIFX LPCIE90-DPS	PCI Express slot (3.3 V)	+3.3 VDC -5% / +9%	See section Technical data.	PCIe compatible

Table 9: Host interface requirements

Comments:

(1) Required or permissible supply voltage

(2) Typical current consumption at 3.3 V. The typical current consumption depends on the type of PC card. To ensure compatibility between different systems, it is recommended to supply a maximum of 1 A (at +3.3 VDC -5% / +9%).

(3) Required or tolerated signal voltage at the I/O signal pins on the PCIe bus of the PC card

Operating system

For Device Explorer and Communication Studio: Windows® 10, Windows® 11.

© Hilscher 2026

4.2 Requirements for operation

The following described requirements must be fulfilled when operating the PC card.

Requirements	Specification	See section
Communication	For communication of a PC card (device), a controller device is required for the communication system used. To configure the controller device, you need a device description file for the device used with the name for: • PROFIBUS DP Slave: `.gsd` The settings in the used controller must match the settings in the device.	-
Software installation	**cifX Device Driver** as the driver for the host interface (latest version of the driver). **Device Explorer** as software for downloading or updating the firmware and configuration, as well as for setting the device driver. **Communication Studio** for configuring and diagnosing netX 90-based devices.	Revision or version status of hardware and software and References (Driver and software documentation)
Firmware Download	The user must select the firmware using the software and download it to the PC card. The firmware contains a communication protocol.	
Configuration	The PC card must be configured using the **Communication Studio** configuration software.	

Table 10: Requirements for operation

© Hilscher 2026

4.3 Overview installation and firmware download

Below you find an overview of the steps to install the hardware, driver, and firmware for the PC card CIFX LPCIE90-DPS.

Step	Description	See section
Download installation files	• Download the installation files from the Hilscher website for: - cifX Device Driver (atest version) - Device Explorer - Communication Studio • Save the installation files to the local hard disk of your PC.	Revision or version status of hardware and software
Install drivers and software	• Double-click the appropriate installation file to open the startup menu. • Start the installation from the home screen and follow the instructions in the installation menu.	
Install hardware	• Take the protective measures and safety precautions for the hardware installation. • Open the housing of the PC or connecting device. • Insert the PC card into the PCI Express slot and attach the PC card. Do not exert unnecessary force on the PC card. • Close the housing of the PC or connecting device.	Installing the hardware
Firmware and configuration download	• Download the firmware according to the information in the "Device Explorer" user manual. The PC card cifX is now ready for operation and has yet to be configured. • Then download the configuration.	Loading firmware and configuration in the device or making an update

Table 11: Overview for installation and firmware download

For detailed descriptions of how to install and operate the software, refer to the relevant operating instruction manual, section References.

© Hilscher 2026

4.4 Installation warnings

When installing your device, observe the following warnings on possible personal injury, as well as the warnings on property damage.

WARNING
Dangerous electrical voltage!
Risk of death, risk of injury from electric shock

Dangerous electrical voltages are present in the PC (or the connection device).

- First disconnect the power plug of the PC (or connection device), before opening the housing.
- Make sure that the PC (or connection device) is disconnected from the mains voltage.

CAUTION
Personal injury, device damage due to hot swap/hot plug

The PC card is not designed or intended for a hot-swap or hot-plug connection.
Performing hot-swap or hot-plug may pose a hazard to the PC card, the system platform and the person performing the action.

NOTICE
Electrostatically sensitive devices

To prevent damage to the PC and PC card, make sure the PC card is grounded through the connection plate and PC, and make sure you are grounded when you install or uninstall the PC card.

Installation warnings (USA)

When installing your device, observe the following warnings on possible personal injury, as well as the warnings on property damage.

© Hilscher 2026

4.5 Installing the hardware

Install the CIFX LPCIE90-DPS PC card in the PC or connecting device as described below.

1. Preparation

Note the requirements and prerequisites described in the sections System Requirements and Requirements for operation.

2. Protective measures and safety precautions

CAUTION Personal injury, device damage due to hot-plug/hot-swap

- Do not "plug" or "unplug" the PC card during operation.

NOTICE Electrostatic sensitive components

- Make sure that the device is grounded via the endplate and the PC, and make sure that you are discharged when you install/uninstall the device.

3. Installation

WARNING Hazardous voltage! Danger to life, risk of injury by electric shock

- Disconnect the power plug of the PC (or connection device).
- Make sure that the power supply is off at the PC (or connection device).
- Open the housing of the PC or connecting device.
- Insert the PC card into the PCI Express slot.
- Close the housing of the PC or connecting device.
- Reconnect the PC or the connection device to the mains.

© Hilscher 2026

4.6 Hints for problem solving

In case of an error or a malfunction of the PC card cifX CIFX LPCIE90-DPS observe the following information for problem solving:

General

➢ Check that the requirements for operation of the PC card are met according to the information provided in this user manual.

SYS and COM LEDs

You can troubleshoot the system by checking the behavior of the LEDs.

- The SYS LED (yellow/green) on the device indicates the general device status and can be switched on, off or blinking. The COM LED (green/ red) shows the operating status of PROFIBUS.
- The COM LED indicates the communication status and error status and may be permanently switched on or off, flash or blink cyclically or acyclically. The communication status is shown in green and the error status is shown in red.

If the SYS LED and the COM LED are static green, the PC card cifX is in the "in operation" state. The PC card is in the state of cyclic communication with the connected controller. The communication between the controller and the PC card is operating normally.

Cable

➢ Check whether the pin assignment of the used cable is correct which you have connected from the PC card (device) to the controller.

Detailed descriptions of the behavior of the LEDs can be found in the chapter on LEDs in this manual. Information about the device diagnostics and its functions can be found in the user manual of the configuration software for your device.

© Hilscher 2026

4.7 Loading firmware and configuration in the device or making an update

- Download the firmware from the Hilscher website and save the firmware on the local hard disk of your PC.
- If necessary, transfer the configuration to the PC. You create the configuration using a suitable configuration software.
- Use **Device Explorer** to load the firmware and configuration into the device or update the firmware and configuration in your device.
- When downloading the firmware and configuration to your device or when performing an update, follow the instructions in the "Device Explorer" operating instruction manual.

For the "Device Explorer" operating instruction manual, see section References.

© Hilscher 2026

5 Diagnosis with LEDs

5.1 Overview

LED	PROFIBUS DP
System status	**SYS** Yellow/ green
Communication status	**COM** Green / Red

Table 12: LEDs PROFIBUS DP

5.2 System LED

The system status LED **SYS** can assume the states described below.

LED	Color	State	Description
SYS	Duo-LED: yellow RDY / green RUN		
	(green)	On	The firmware is running.
	(green)	Blinking	During the formatting of the file system
	(yellow)	On	A system error has occurred.
	(yellow)/ (green)	Blinking, 3x yellow, 3x green	Firmware crash, unrecoverable (an internal exception occurred that cannot be handled)
	(yellow)/ (green)	Blinking, 1 Hz	Firmware update mode active: The firmware is idle and waiting for the update file.
	(yellow)/ (green)	Blinking, 4 Hz	Firmware update mode active: A firmware update is being installed.
	(gray)	Off	• No supply voltage: No supply voltage for the device or hardware defect. • During a firmware reset

Table 13: States of the SYS-LED

LED state	Definition
Blinking	The LED turns on and off in phases.
Blinking, 3x yellow, 3x green	The LED turns on and off, with a frequency of approx. 1 Hz: • 3x yellow "On" for 500 ms and "Off" for 500 ms and • 3x green "On" for 500 ms and "Off" for 500 ms.
Blinking, yellow/green, 1 Hz, 4 Hz	The LED turns on in phases yellow or green, with a frequency of approx.: • 1 Hz: 1 x yellow "On" for 500 ms and 1 x green "On" for 500 ms, • 4 Hz: 1 x yellow "On" for 125 ms and 1 x green "On" for 125 ms.

Table 14: Definitions of the states of the SYS LED

© Hilscher 2026

5.3 PROFIBUS DP-Slave

For the PROFIBUS DP Slave protocol, the communication status LED **COM** can assume the states described below. This description is valid from stack version V2.7.

LED	Color	State	Description
COM	**Duo LED red/green**		
Communication status (2)	● (green)	On	RUN, cyclic communication
	✺ (green)	Flashing, cyclic (2 Hz)	Master is in CLEAR state.
	✺ (red)	Flashing, acyclic (1 Hz)	The device is not configured.
	✺ (red)	Flashing, cyclic (2 Hz)	STOP, no communication, connection error
	● (red)	On	Wrong configuration at PROFIBUS DP Slave.
	● (off)	Off	Device is not switched on or supply voltage is missing.

Table 15: LED states for the PROFIBUS DP Slave protocol

LED states	Definition
Flashing, acyclic (1 Hz)	The LED turns on and off in irregular intervals, with a frequency of 1 Hz: “On” for 750 ms, followed by “Off” for 250 ms.
Flashing, cyclic (2 Hz)	The LED turns on and off with a frequency of 2 Hz: “On” for 250 ms, followed by “Off” for 250 ms.

Table 16: LED state definitions for the PROFIBUS DP Slave protocol

© Hilscher 2026

6 Connectors and switch

6.1 PROFIBUS interface

Potential-free RS-485 interface:

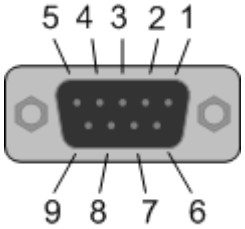


Figure 4: PROFIBUS interface (DSub socket connector, 9 pin), X201

Connection with DSub socket	Signal	Description
3	RxD/TxD-P	Receive/transmit data P or connection B on the socket
5	DGND	Data reference potential
6	VP	Positive supply voltage
8	RxD/TxD-N	Receive/transmit data-N or connection A on the plug

Table 17: Pin assignment of the PROFIBUS interface, X201

© Hilscher 2026

6.2 PCI Express (1 lane)

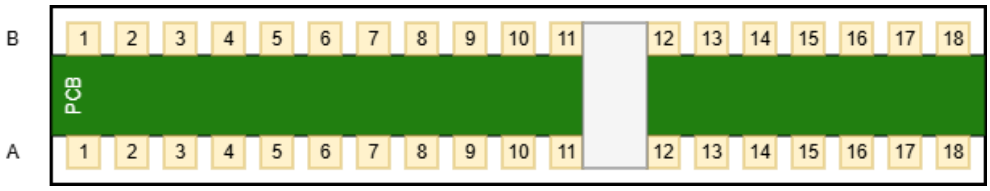


Figure 5: PCI Express (1 lane) pin assignment

The following table describes the pin assignment of the PCI Express (1 lane) of the PC card.

Pin	Pin (side B)		Pin (side A)	
Number	**Name**	**Description**	**Name**	**Description**
1	n.u.	Not used	PRSNT#1	Hot plug presence detect
2	n.u.	Not used	n.u.	Not used
3	n.u.	Not used	n.u.	Not used
4	GND	Ground	GND	Ground
5	n.u.	Not used	JTAG2	TCK
6	n.u.	Not used	JTAG3	TDI
7	GND	Ground	JTAG4	TDO
8	+3.3 V	+3.3 volts power	JTAG5	TMS
9	JTAG1	+TRST#	+3.3V	Power supply
10	n.u.	Not used	+3.3V	Power supply
11	WAKE#	Link reactivation	PERST#	PCI Express reset signal
Coding pad				
12	RSVD	Reserved	GND	Ground
13	GND	Ground	REFCLK+	Reference Clock Differential pair
14	HSOp(0)	Transmitter Lane 0 differential pair	REFCLK-	
15	HSOn(0)		GND	Ground
16	GND	Ground	HSIp(0)	Receiver Lane 0 Differential pair
17	PRSNT#2	Hot plug detection	HSIn(0)	
18	GND	Ground	GND	Ground

Table 18: Pin assignment PCI Express (1 lane)

© Hilscher 2026

6.3 Rotary switch for slot number (card ID)

The rotary switch **Slot number (card ID)** is used by the cifX Device Driver to identify the cifX PC card.

Switch position	Description	Example
0	The cifX Device Driver identifies the cifX PC card based on its device number and serial number. Switch position 0 deactivates the function of the slot number. If you use multiple cifX PC cards in one PC, you can use switch position 0 for multiple PC cards.	 Switch position 0
1 … 9	The cifX Device Driver identifies the cifX PC card using the slot number set (1 ... 9) If you use multiple cifX PC cards in one PC, make sure that you use a different and unique slot number for each PC card. The Device Explorer software and Communication Studio display the slot number to identify the PC card. The application can use the cifX Device Driver to read the slot number and use it to identify the PC card.	 Switch position 1

Table 19: Rotary switch for slot number (card ID)

Note for replacing the device (replacement case)

If you are replacing a cifX PC card, set the same slot number on the replacement card as on the previously used PC card.

© Hilscher 2026

7 Technical data

7.1 Technical data CIFX LPCIE90-DPS

CIFX LPCIE90-DPS	Parameter	Value
Product	Product name	CIFX LPCIE90-DPS
	Part number	1421.410
	Brief description	PCI Express PC card cifX PROFIBUS DP Slave
	Function	Communication interface with Low Profile PCI Express and PROFIBUS interface
Communication controller	Type	netX 90
Integrated Memory	RAM	8 MB SDRAM
	FLASH	8 MB + 1 MB
Power supply	Supply voltage	+3.3 V DC ±5 %
	Typical current, maximum current	270 mA (at 3.3 V), 280 mA (at 3.6 V)
	Connector	Via PCI Express bus
	Typical power consumption	900 mW
System interface	Bus type	PCI Express, one-lane port
	Data access	Dual-port memory
	Connector type	PCI Express
	Dual-port memory size	32 KB
	Data width	32 bit
	Transmission rate	2 GBit/s
Communication interface	Communication standard	PROFIBUS
	Interface type	RS-485, isolated
	Connector	D-Sub socket, 9-pin
Displays	LED display	SYS (System status)
		COM (Communication status)
Operating element	Rotary switch slot number (card ID)	To set the slot number (card ID)
Permitted ambient conditions	Operating temperature range	-20 °C ... +70 °C (Air flow during measurment: 0.375 m/s, 50 %)
	Storage temperature range	-40 °C ... +85 °C
	Humidity	10 % … 95 % relative humidity, no condensation permitted
	Environment	The device must be used only in a pollution degree 2 environment (or better)
	Altitude	0 m … 2000 m
Device	Dimensions (L x W x H)	77.3 mm x 21.8 mm x 80.5 mm
	Weight	44.5 g
	Mounting/Installation	PCI Express x1 slot (3.3 V)
Configuration	Configuration software	Communication Studio
	Download firmware and configuration	Device Explorer
	API	Yes
Conformity	RoHS	Yes

© Hilscher 2026

CIFX LPCIE90-DPS	Parameter	Value
Conformance with EMC directives	CE sign	Yes
	UKCA sign	Yes
	Emission	DIN EN 61000-6-3 / BS EN 61000-6-3
	Immunity	DIN EN 61000-6-2 / BS EN 61000-6-2

Table 20: Technical data CIFX LPCIE90-DPS

© Hilscher 2026

7.2 PCI identifiers on the PCI Express bus

The PC card CIFX (L)PCIE90-RE is a multifunction device on the PCI Express bus and requires two PCI identifiers. The following identifiers apply:

PCI identifier	Value
Vendor ID	0x15CF
Device ID	0x0090
Subsystem vendor ID	0x15CF
Subsystem device ID	0x6001 (Flash-based device, SPM) 0x1002 (interrupt source, SPM)

Table 21: PCI identifiers on the Mini PCI Express bus

7.3 Supported PCI bus commands

The following table lists the PCI bus commands supported by the Hilscher cifX PCI Express and Low Profile PCI Express PC cards.

C/BE3#	C/BE2#	C/BE1#	C/BE0#	Type of bus command	Supported
0	0	0	0	Interrupt acknowledge	no
0	0	0	1	Special Cycle	no
0	0	1	0	I/O Read	**Yes**
0	0	1	1	I/O Write	**Yes**
0	1	0	0	Reserved	no
0	1	0	1	Reserved	no
0	1	1	0	Memory Read	**Yes**
0	1	1	1	Memory Write	**Yes**
1	0	0	0	Reserved	no
1	0	0	1	Reserved	no
1	0	1	0	Configuration Read	**Yes**
1	0	1	1	Configuration Write	**Yes**
1	1	0	0	Memory Read Multiple	no
1	1	0	1	Dual Address Cycle	no
1	1	1	0	Memory Read Line	no
1	1	1	1	Memory Write and Invalidate	no

Table 22: Supported / unsupported PCI bus commands

C/BE = Bus Command and Byte Enable Signal of PCI

7.4 Technical data of the communication protocols

Communication protocol	Version	URL
PROFIBUS DP Slave	5	https://hilscher.atlassian.net/wiki/x/YAKaB

Table 23: Technical data: Protocol (URL)

© Hilscher 2026

8 Removing the hardware

8.1 Removing the PC card

Removing the PC card CIFX from the PC or connecting device as described below.

1. Protective measures and safety precautions

CAUTION Personal injury, device damage due to hot-plug/hot-swap

- Do not "plug" or "unplug" the PC card during operation.

NOTICE Electrostatic sensitive components

- Make sure that the device is grounded via the endplate and the PC, and make sure that you are discharged when you install/uninstall the device.

2. Uninstallation

WARNING Hazardous voltage! Danger to life, risk of injury by electric shock

- Disconnect the power plug of the PC (or connection device).
- Make sure that the power supply is off at the PC (or connection device).
- Open the housing of the PC or connection device.
- If the PC card is screwed to the PC or the connection device, loosen this screw.
- Remove the PC card from the PCI Express slot.
- Close the housing of the PC or connecting device again.
- Reconnect the PC or the connection device to the mains.

© Hilscher 2026

8.2 Disposal and recycling of waste electronic equipment

Waste electronic equipment must be disposed of properly after the end of use.

Waste electronic equipment

This product must not be disposed of with household waste.

Dispose of this product in accordance with local regulations in your country.

When disposing of the product, observe the following:

- Observe national and local regulations for the disposal of waste electronic equipment and packaging.
- Delete personal data stored in the waste electronic device.
- Dispose of this product in an environmentally friendly manner at a local collection point for waste electronic equipment.
- Dispose of packaging in such a way that a high level of recycling is possible.

Alternatively, you can return our products to us for disposal. The prerequisite is that no additional foreign substances are contained. Before returning, please contact us via the Return Merchandise Authorization (RMA) form on www.hilscher.com.

In Europe, the directive 2012/19/EU waste electrical and electronic equipment applies. Different policies and laws may apply nationally.

© Hilscher 2026

9 Appendix

9.1 References

Documentation about software

Hilscher Gesellschaft für Systemautomation mbH: Operating instruction manual, Device Explorer, Download firmware to the device, DOC190302OIxxEN, English, 2021-02.

Hilscher Gesellschaft für Systemautomation mbH: Operating instruction manual, Communication Studio, Tool for Configuration and Diagnostics, DOC190501OIxxEN, English, 2025-02.

PCI Express Electromechanical Specification

PCI-SIG (Special interest Group), PCI Express® Base Specification, Revision 4.0, English, 2017-09

9.2 Legal notes

Copyright

© Hilscher Gesellschaft für Systemautomation mbH

All rights reserved.

The images, photographs and texts in the accompanying materials (in the form of a user's manual, operator's manual, Statement of Work document and all other document types, support texts, documentation, etc.) are protected by German and international copyright and by international trade and protective provisions. Without the prior written consent, you do not have permission to duplicate them either in full or in part using technical or mechanical methods (print, photocopy or any other method), to edit them using electronic systems or to transfer them. You are not permitted to make changes to copyright notices, markings, trademarks or ownership declarations. Illustrations are provided without taking the patent situation into account. Any company names and product designations provided in this document may be brands or trademarks by the corresponding owner and may be protected under trademark, brand or patent law. Any form of further use shall require the express consent from the relevant owner of the rights.

Important notes

Utmost care was/is given in the preparation of the documentation at hand consisting of a user's manual, operating manual and any other document type and accompanying texts. However, errors cannot be ruled out. Therefore, we cannot assume any guarantee or legal responsibility for erroneous information or liability of any kind. You are hereby made aware that descriptions found in the user's manual, the accompanying texts and the documentation neither represent a guarantee nor any indication on proper use as stipulated in the agreement or a promised attribute. It cannot be ruled out that the user's manual, the accompanying texts and the

documentation do not completely match the described attributes, standards or any other data for the delivered product. A warranty or guarantee with respect to the correctness or accuracy of the information is not assumed.

We reserve the right to modify our products and the specifications for such as well as the corresponding documentation in the form of a user's manual, operating manual and/or any other document types and accompanying texts at any time and without notice without being required to notify of said modification. Changes shall be taken into account in future manuals and do not represent an obligation of any kind, in particular there shall be no right to have delivered documents revised. The manual delivered with the product shall apply.

Under no circumstances shall Hilscher Gesellschaft für Systemautomation mbH be liable for direct, indirect, ancillary or subsequent damage, or for any loss of income, which may arise after use of the information contained herein.

Liability disclaimer

The hardware and/or software was created and tested by Hilscher Gesellschaft für Systemautomation mbH with utmost care and is made available as is. No warranty can be assumed for the performance or flawlessness of the hardware and/or software under all application conditions and scenarios and the work results achieved by the user when using the hardware and/or software. Liability for any damage that may have occurred as a result of using the hardware and/or software or the corresponding documents shall be limited to an event involving willful intent or a grossly negligent violation of a fundamental contractual obligation. However, the right to assert damages due to a violation of a fundamental contractual obligation shall be limited to contract-typical foreseeable damage.

It is hereby expressly agreed upon in particular that any use or utilization of the hardware and/or software in connection with

- Flight control systems in aviation and aerospace;
- Nuclear fission processes in nuclear power plants;
- Medical devices used for life support and
- Vehicle control systems used in passenger transport

shall be excluded. Use of the hardware and/or software in any of the following areas is strictly prohibited:

- For military purposes or in weaponry;
- For designing, engineering, maintaining or operating nuclear systems;
- In flight safety systems, aviation and flight telecommunications systems;
- In life-support systems;
- In systems in which any malfunction in the hardware and/or software may result in physical injuries or fatalities.

You are hereby made aware that the hardware and/or software was not created for use in hazardous environments, which require fail-safe control mechanisms. Use of the hardware and/or software in this kind of environment shall be at your own risk; any liability for damage or loss due to impermissible use shall be excluded.

© Hilscher 2026

Warranty

Hilscher Gesellschaft für Systemautomation mbH hereby guarantees that the software shall run without errors in accordance with the requirements listed in the specifications and that there were no defects on the date of acceptance. The warranty period shall be 12 months commencing as of the date of acceptance or purchase (with express declaration or implied, by customer's conclusive behavior, e.g. putting into operation permanently).

The warranty obligation for equipment (hardware) we produce is 36 months, calculated as of the date of delivery ex works. The aforementioned provisions shall not apply if longer warranty periods are mandatory by law pursuant to Section 438 (1.2) BGB, Section 479 (1) BGB and Section 634a (1) BGB [Bürgerliches Gesetzbuch; German Civil Code] If, despite of all due care taken, the delivered product should have a defect, which already existed at the time of the transfer of risk, it shall be at our discretion to either repair the product or to deliver a replacement product, subject to timely notification of defect.

The warranty obligation shall not apply if the notification of defect is not asserted promptly, if the purchaser or third party has tampered with the products, if the defect is the result of natural wear, was caused by unfavorable operating conditions or is due to violations against our operating regulations or against rules of good electrical engineering practice, or if our request to return the defective object is not promptly complied with.

Costs of support, maintenance, customization and product care

Please be advised that any subsequent improvement shall only be free of charge if a defect is found. Any form of technical support, maintenance and customization is not a warranty service, but instead shall be charged extra.

Additional guarantees

Although the hardware and software was developed and tested in-depth with greatest care, Hilscher Gesellschaft für Systemautomation mbH shall not assume any guarantee for the suitability thereof for any purpose that was not confirmed in writing. No guarantee can be granted whereby the hardware and software satisfies your requirements, or the use of the hardware and/or software is uninterruptable or the hardware and/or software is fault-free.

It cannot be guaranteed that patents and/or ownership privileges have not been infringed upon or violated or that the products are free from third-party influence. No additional guarantees or promises shall be made as to whether the product is market current, free from deficiency in title, or can be integrated or is usable for specific purposes, unless such guarantees or promises are required under existing law and cannot be restricted.

Confidentiality

The customer hereby expressly acknowledges that this document contains trade secrets, information protected by copyright and other patent and ownership privileges as well as any related rights of Hilscher Gesellschaft für Systemautomation mbH. The customer agrees to treat as confidential all of the information made available to customer by Hilscher Gesellschaft für

© Hilscher 2026

Systemautomation mbH and rights, which were disclosed by Hilscher Gesellschaft für Systemautomation mbH and that were made accessible as well as the terms and conditions of this agreement itself.

The parties hereby agree to one another that the information that each party receives from the other party respectively is and shall remain the intellectual property of said other party, unless provided for otherwise in a contractual agreement.

The customer must not allow any third party to become knowledgeable of this expertise and shall only provide knowledge thereof to authorized users as appropriate and necessary. Companies associated with the customer shall not be deemed third parties. The customer must obligate authorized users to confidentiality. The customer should only use the confidential information in connection with the performances specified in this agreement.

The customer must not use this confidential information to his own advantage or for his own purposes or rather to the advantage or for the purpose of a third party, nor must it be used for commercial purposes and this confidential information must only be used to the extent provided for in this agreement or otherwise to the extent as expressly authorized by the disclosing party in written form. The customer has the right, subject to the obligation to confidentiality, to disclose the terms and conditions of this agreement directly to his legal and financial consultants as would be required for the customer's normal business operation.

Export provisions

The delivered product (including technical data) is subject to the legal export and/or import laws as well as any associated regulations of various countries, especially such laws applicable in Germany and in the United States. The products / hardware / software must not be exported into such countries for which export is prohibited under US American export control laws and its supplementary provisions. You hereby agree to strictly follow the regulations and to yourself be responsible for observing them. You are hereby made aware that you may be required to obtain governmental approval to export, reexport or import the product.

9.3 Registered trademarks

Windows® 10 is a registered trademark of the Microsoft Corporation.

Adobe-Acrobat® is a registered trademark of the Adobe Systems Incorporated.

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

EtherNet/IP™ is a trademark of the ODVA (Open DeviceNet Vendor Association, Inc.).

Modbus is a registered trademark of Schneider Electric.

POWERLINK is a registered trademark of B&R, Bernecker + Rainer Industrie-Elektronik Ges.m.b.H, Eggelsberg, Austria.

© Hilscher 2026

PROFIBUS® is a registered trademark of PROFIBUS & PROFINET International (PI), Karlsruhe.

PROFINET® is a registered trademark of PROFIBUS & PROFINET International (PI), Karlsruhe.

PCI™, PCI Express® and PCIe® or MINI PCI™ are trademarks or registered trademarks of the Peripheral Component Interconnect Special Interest Group (PCI-SIG).

All other brands mentioned are property of their respective owner of the rights. Any company names and product designations provided in this document may be brands (company names or trademarks) of the corresponding owner and may be protected under trademark or patent law.

© Hilscher 2026

List of figures

Figure 1: Position numbers of the CIFX LPCIE90-DPS PC card 6
Figure 2: Slot cover and LED positions 7
Figure 3: Identification label (example) 9
Figure 4: PROFIBUS interface (DSub socket connector, 9 pin), X201 22
Figure 5: PCI Express (1 lane) pin assignment 23

© Hilscher 2026

List of tables

Table 1: List of revisions 4
Table 2: PC card CIFX LPCIE90-DPS 5
Table 3: Position numbers of the CIFX LPCIE90-DPS PC card 6
Table 4: Legend of the slot cover of the PC card CIFX LPCIE90-DPS 7
Table 5: Hardware revisions 8
Table 6: Versions for drivers and software 8
Table 7: Firmware (protocol and file name) 8
Table 8: Identification label 9
Table 9: Host interface requirements 13
Table 10: Requirements for operation 14
Table 11: Overview for installation and firmware download 15
Table 12: LEDs PROFIBUS DP 20
Table 13: States of the SYS-LED 20
Table 14: Definitions of the states of the SYS LED 20
Table 15: LED states for the PROFIBUS DP Slave protocol 21
Table 16: LED state definitions for the PROFIBUS DP Slave protocol 21
Table 17: Pin assignment of the PROFIBUS interface, X201 22
Table 18: Pin assignment PCI Express (1 lane) 23
Table 19: Rotary switch for slot number (card ID) 24
Table 20: Technical data CIFX LPCIE90-DPS 25
Table 21: PCI identifiers on the Mini PCI Express bus 27
Table 22: Supported / unsupported PCI bus commands 27
Table 23: Technical data: Protocol (URL) 27

© Hilscher 2026

Contacts

HEADQUARTER

Germany

Hilscher Gesellschaft für
Systemautomation mbH
Rheinstraße 15
65795 Hattersheim
Phone: +49 (0) 6190 9907-0
Fax: +49 (0) 6190 9907-50
E-mail: info@hilscher.com

Support

Phone: +49 (0) 6190 9907-990
E-mail: hotline@hilscher.com

SUBSIDIARIES

China

Hilscher Systemautomation (Shanghai) Co. Ltd.
200010 Shanghai
Phone: +86 (0) 21-6355-5161
E-mail: info@hilscher.cn

Support

Phone: +86 (0) 21-6355-5161
E-mail: cn.support@hilscher.com

India

Hilscher India Pvt. Ltd.
Pune, Delhi, Mumbai, Bangalore
Phone: +91 8888 750 777
E-mail: info@hilscher.in

Support

Phone: +91 020-24243777
E-mail: info@hilscher.in

Italy

Hilscher Italia S.r.l.
20090 Vimodrone (MI)
Phone: +39 02 25007068
E-mail: info@hilscher.it

Support

Phone: +39 02 25007068
E-mail: it.support@hilscher.com

Japan

Hilscher Japan KK
Tokyo, 160-0022
Phone: +81 (0) 3-5362-0521
E-mail: info@hilscher.jp

Support

Phone: +81 (0) 3-5362-0521
E-mail: jp.support@hilscher.com

Republic of Korea

Hilscher Korea Inc.
13494, Seongnam, Gyeonggi
Phone: +82 (0) 31-739-8361
E-mail: info@hilscher.kr

Support

Phone: +82 (0) 31-739-8363
E-mail: kr.support@hilscher.com

Austria

Hilscher Austria GmbH
4020 Linz
Phone: +43 732 931 675-0
E-mail: sales.at@hilscher.com

Support

Phone: +43 732 931 675-0
E-mail: at.support@hilscher.com

Switzerland

Hilscher Swiss GmbH
4500 Solothurn
Phone: +41 (0) 32 623 6633
E-mail: info@hilscher.ch

Support

Phone: +41 (0) 32 623 6633
E-mail: support.swiss@hilscher.com

USA

Hilscher North America, Inc.
Lisle, IL 60532
Phone: +1 630-505-5301
E-mail: info@hilscher.us

Support

Phone: +1 630-505-5301
E-mail: us.support@hilscher.com

© Hilscher 2026