KUKA

KR C4 PROFIBUS

Configuration

For KUKA System Software 8.3

For VW System Software 8.3

Contents

1 Introduction

1.1 Target group

This documentation is aimed at users with the following knowledge and skills:

- Advanced KRL programming skills
- Advanced knowledge of the robot controller system
- Advanced knowledge of field buses
- Knowledge of WorkVisual

1.2 Industrial robot documentation

The industrial robot documentation consists of the following parts:

- Documentation for the manipulator
- Documentation for the robot controller
- Operating and programming instructions for the KUKA System Software
- Documentation relating to options and accessories
- Parts catalog on storage medium

Each of these sets of instructions is a separate document.

1.3 Representation of warnings and notes

Safety   These warnings are relevant to safety and **must** be observed.

> **⚠ DANGER**   These warnings mean that it is certain or highly probable that death or severe injuries **will** occur, if no precautions are taken.

> **⚠ WARNING**   These warnings mean that death or severe injuries **may** occur, if no precautions are taken.

> **⚠ CAUTION**   These warnings mean that minor injuries **may** occur, if no precautions are taken.

> **NOTICE**   These warnings mean that damage to property **may** occur, if no precautions are taken.

> ⚠ These warnings contain references to safety-relevant information or general safety measures.
> These warnings do not refer to individual hazards or individual precautionary measures.

This warning draws attention to procedures which serve to prevent or remedy emergencies or malfunctions:

> **SAFETY INSTRUCTIONS**   Procedures marked with this warning **must** be followed exactly.

Notes   These hints serve to make your work easier or contain references to further information.

> **i** Tip to make your work easier or reference to further information.

1.4 Trademarks

Windows is a trademark of Microsoft Corporation.

Step 7 is a trademark of Siemens AG.

1.5 Terms used

Term	Description
GSD	Device description file for PROFIBUS The file extension differs depending on the language, e.g. GSG for German, GSE for English or GSF for French.
PLC	Programmable logic controller
DP	Decentralized periphery
PA	Process automation
Step 7	Configuration software from Siemens
WorkVisual	Configuration software from KUKA for field bus configuration

2 Product description

PROFIBUS is a universal field bus which enables communication between devices from different manufacturers without special interface adaptations. Data exchange is carried out on a master-slave basis.

Variants

For the KR C4 or the KR C4 compact there are 3 different variants of PROFIBUS:

- PROFIBUS Master - EtherCAT
- PROFIBUS Slave - EtherCAT
- PROFIBUS Master/Slave - EtherCAT

Expansion

KR C4 PROFIBUS can be combined with the "Expansion of Digital I/Os 16/16" option, but not with other expansion options for digital inputs/outputs.

Compatibility

KR C4 PROFIBUS is compatible with the following field buses:

- KR C4 PROFINET 3.0
- KR C4 EtherCAT

Restrictions

Only the device class PROFIBUS DP-V0 is supported. The device class PROFIBUS DP-V0 includes the function "cyclic communication".

The following device classes / functions are not supported, for example:

- PROFIBUS DP-V1 (includes the functions "acyclic communication" and "alarm handling")
- PROFIBUS DP-V2 (includes the functions "isochronous communication", "slave cross communication" and "time synchronization")
- PROFIBUS PA (used for monitoring measuring devices in process host systems and in process technology)
- Profiles, e.g. PROFIdrive or PROFIsafe
- Gateway devices (for converting PROFIBUS to other field buses)

Configuration software

KR C4 PROFIBUS is configured on a laptop or PC. The following software is required for configuration:

- WorkVisual 3.0

  The requirements for installation of WorkVisual are contained in the WorkVisual documentation.
- With use of a higher-level controller, the corresponding configuration software from the manufacturer of the higher-level controller is also required, e.g. Step 7 from Siemens.

Device types

The following device types are used with KR C4 PROFIBUS:

- Master: A higher-level controller that controls all the components of a system.
- Slave: A field device subordinated to a master. A slave consists of a number of modules and submodules.
- Supervisor: Can be a programming device or industrial PC. Parallel to the master, this has access to all process and parameter files.

The 3 device types have relationships for transferring configuration data and process data.

A physical device, e.g. the robot controller, can be a master and/or a slave. The configuration of communication relationships is carried out solely in the master.

Interfaces

Depending on the variant, different interfaces are available on the KR C4:

- PROFIBUS master: Interface X61
- PROFIBUS slave: Interface X15A/X15B
- PROFIBUS master/slave: Interface X61 and X15A/X15B

	The connection panel and the connector pin allocations are described in the documentation "Optional Interfaces".

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3 Safety

This documentation contains safety instructions which refer specifically to the product described here. The fundamental safety information for the industrial robot can be found in the "Safety" chapter of the operating or assembly instructions for the robot controller.

> ⚠ **WARNING** The "Safety" chapter in the operating instructions or assembly instructions of the robot controller must be observed. Death to persons, severe injuries or considerable damage to property may otherwise result.

4 Start-up and recommissioning

4.1 Routing the data cables

> A maximum of 32 devices per PROFIBUS segment can be connected. The segments can be connected via a maximum of 3 repeaters.

Procedure

1. Route the PROFIBUS cables in a line or tree structure.
2. Install a terminator at the beginning and end of the bus cable.

5 Configuration

5.1 Overview

Step	Description
1	Configure the higher-level controller with the manufacturer's configuration software. **Note:** This step only needs to be carried out if a higher-level controller is being used. The required device description file must be obtained from the manufacturer of the device.
2	Make the device description files available. (>>> 5.2 "Making device description files available" Page 13)
3	Configure the PROFIBUS. (>>> 5.3 "Configuring the bus with WorkVisual" Page 14)
5	Map the inputs and outputs in WorkVisual. (>>> 5.4 "PROFIBUS signal names in WorkVisual" Page 18)
6	Transfer the bus configuration from WorkVisual to the robot controller.

> **i** Information about procedures in WorkVisual is contained in the WorkVisual documentation. Information about procedures in the configuration software from the manufacturer of the higher-level controller can be found in the documentation for this configuration software.

5.2 Making device description files available

WorkVisual requires the following device description files for the configuration of PROFIBUS slaves:

- Beckhoff EKxxxx.xml
- Beckhoff EL6xxx.xml
- EL31095F.GSG (German) or EL31095F.GSE (English)

The files can be downloaded from the website of the manufacturer (Beckhoff).

Precondition
- There is no project open.

Procedure
1. Select the menu sequence **File** > **Import / Export**.
   The **Import/Export Wizard** window is opened.
2. Select **Import device description file** and click on **Next >**.
3. Click on **Browse…** and specify a directory.
4. Select the file format **PROFIBUS GSD**.
5. Select the device description file and click on **Open**.
6. Confirm with **Next >**.
   A list is displayed of the devices that are to be imported.
7. Click on **Finish**.
   The devices are imported.
8. Close the **Import/Export Wizard** window.

5.3 Configuring the bus with WorkVisual

> With the variant PROFIBUS Master/Slave, the PROFIBUS master must be configured first, followed by the PROFIBUS slave.

5.3.1 Configuring the EtherCAT coupler

Precondition
- A robot controller has been added and set as active.

Procedure
1. Expand the tree structure of the robot controller on the **Hardware** tab in the **Project structure** window.
2. Right-click on **Bus structure** and select **Add…** from the context menu.
3. A window opens. Select the entry **KUKA Extension Bus (SYS-X44)** and confirm with **OK**. The entry is inserted in the tree structure.
4. Open the tree structure as far as possible. Right-click on **EtherCAT** and select **Add…** from the context menu.
5. A window opens. Select the bus coupler **EK1100 EtherCAT-Koppler (2A E-Bus)** and confirm with **OK**. The bus coupler is inserted in the tree structure.

5.3.2 Configuring the PROFIBUS master

Precondition
- The EtherCAT coupler is configured.
- The robot controller has been set as the active controller.

Procedure
1. Expand the tree structure of the robot controller on the **Hardware** tab in the **Project structure** window.
2. Right-click on **EBus** and select **Add…** from the context menu.
3. A window opens. Select the EtherCAT Gateway **EL6731 PROFIBUS DP Master** and confirm with **OK**. The gateway is inserted in the tree structure.
4. Open the tree structure as far as possible. Right-click on **Profibus IO** and select **Add…** from the context menu.
5. A window opens with a list of devices. Select the lower-level PROFIBUS slave and add it with **OK**. The slave is inserted in the tree structure.

> **NOTICE** The inserted device must correspond to the actual device used in reality. Substantial damage to property may otherwise result.

6. Right-click on the slave in the tree structure and select **Settings…** from the context menu. A window opens with the device settings.

    The **Module configuration** tab displays the slots on the slave. Assign the slots to the modules used.

    (>>> 5.3.4 "Device settings" Page 15)
7. If necessary, repeat steps 9 to 11 for further devices.
8. Save the device settings by selecting **OK**.
9. Right-click on **EL6731 PROFIBUS DP Master** and select **Settings…** from the context menu. A window opens.
10. On the **Gateway settings** tab, fill out the boxes **Profibus address** and **Baud rate**.

    (>>> 5.3.6 ""Gateway settings" tab (PROFIBUS master)" Page 17)

> The configured Profibus addresses must be set on the PROFIBUS slaves themselves, e.g. using the DIP switches.

11. Save the settings with **Apply**.

12. On the **Slave settings** tab, fill out the boxes **Device name** and **Profibus address**.

(>>> 5.3.5 ""Slave settings" tab" Page 16)

13. Save the settings by selecting **OK**.

5.3.3   Configuring the PROFIBUS slave

Precondition
- ■ The EtherCAT coupler is configured.
- ■ The robot controller has been set as the active controller.

Procedure
1. Expand the tree structure of the robot controller on the **Hardware** tab in the **Project structure** window.

2. Right-click on **EBus** and select **Add…** from the context menu.

3. A window opens. Select the EtherCAT Gateway **EL6731-0010 PROFI-BUS DP Slave** and confirm with **OK**. The gateway is inserted in the tree structure.

4. Open the tree structure as far as possible. Right-click on **Profibus IO** and select **Add…** from the context menu.

5. A window opens. Select the PROFIBUS slave **EL6731-0010** and confirm with **OK**. The PROFIBUS slave is inserted in the tree structure.

6. Right-click on the PROFIBUS slave in the tree structure and select **Settings…** from the context menu. A window opens with the device settings.

The **Module configuration** tab displays the slots on the PROFIBUS slave. Assign the slots to the modules used.

(>>> 5.3.4 "Device settings" Page 15)

7. Save the device settings by selecting **OK**.

8. Right-click on **EL6731-0010 PROFIBUS DP Slave** and select **Settings…** from the context menu. A window opens.

9. On the **Gateway settings** tab, fill out the boxes **Device name** and **Profibus address**.

(>>> 5.3.7 ""Gateway settings" tab (PROFIBUS slave)" Page 17)

10. Save the settings by selecting **OK**.

5.3.4   Device settings

Slot configuration
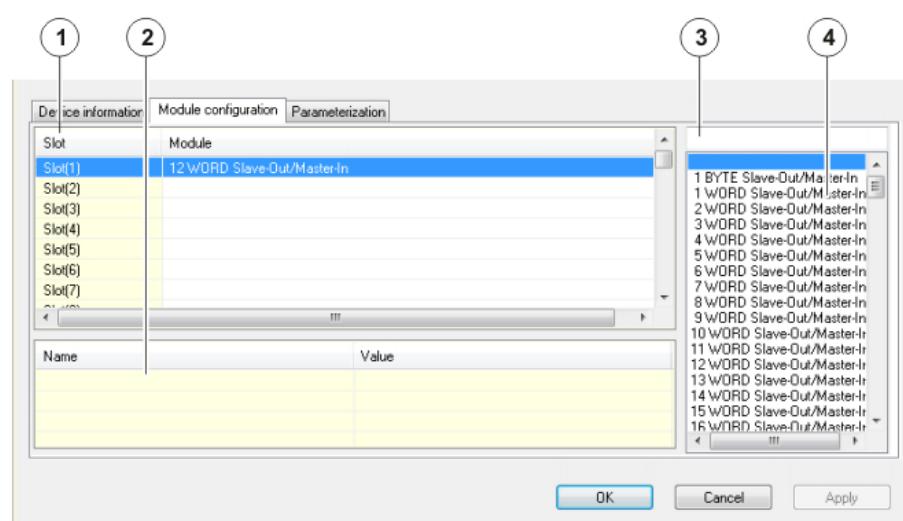
Fig. 5-1: "Module configuration" tab

1	Slot	3	Search box
2	Parameter window	4	Module window

All the windows can be resized as desired.

Element	Description
Slot	Number of slots on the device
	The number of slots displayed depends on the device selected. The number of slots displayed is always the maximum number possible for the device.
	To add a module to a slot, click on the slot and double-click on the desired module. To remove the module, click on the slot and double-click on the empty space above the first module.
Parameter window	The parameter window displays module-specific parameters, which can be set via a selection menu.
Search box	The search box can be used to search for modules. The search is a full-text search.
Module window	The available modules are displayed in the module window. The display is dependent on the input in the search box.

5.3.5 "Slave settings" tab

Fig. 5-2: "Slave settings" tab

Column	Description
Device name	Names of the PROFIBUS devices in the master ring
	The name from the device description file is displayed as the default name. If the box is left empty, or only spaces are entered, then the default name is used.
Profibus address	Address of the PROFIBUS devices in the master ring
	Address range: 1 … 125
Always available	■ **Activated:**The robot controller expects the device to be connected when the controller boots up. If the device is not connected, the robot controller issues an error message.
	■ **Deactivated:**The robot controller does not check whether the device is connected when the controller boots up.

5.3.6 "Gateway settings" tab (PROFIBUS master)
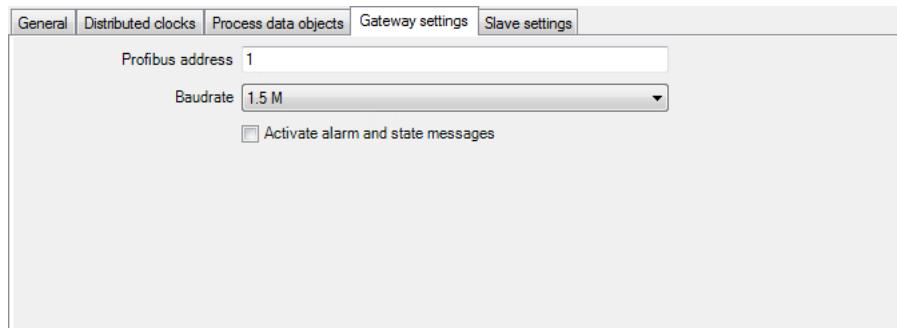
Fig. 5-3: "Gateway settings" tab (PROFIBUS master)

Box	Description
Profibus address	Address of the PROFIBUS master gateway Address range: 1 … 125
Baud rate	Baud rate of the PROFIBUS master gateway ■ 9.6 kBaud ■ 19.2 kBaud ■ 93.75 kBaud ■ 187.5 kBaud ■ 500 kBaud ■ 1.5 MBaud ■ 3 MBaud ■ 6 MBaud ■ 12 MBaud Default value: 1.5 MBaud
Activate alarm and state messages	■ **Activated**: Messages concerning the alarm and module status will be displayed on the KUKA smartHMI. ■ **Deactivated**: Messages concerning the alarm and module status will not be displayed.

5.3.7 "Gateway settings" tab (PROFIBUS slave)
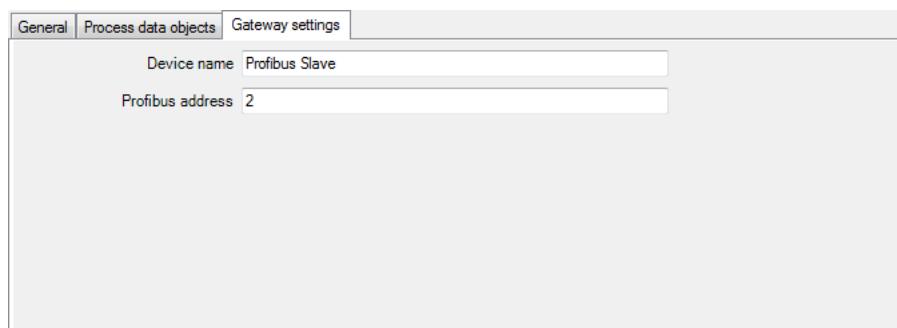
Fig. 5-4: "Gateway settings" tab (PROFIBUS slave)

Box	Description
Device name	Name of the PROFIBUS slave
	If the box is left empty, or only spaces are entered, then the default name is used.
	Default name: Profibus slave
Profibus address	Address of the PROFIBUS slave
	Address range: 1 … 125

5.4 PROFIBUS signal names in WorkVisual

Description   PROFIBUS signal names have the following structure in WorkVisual:

Example **03:0001 Input**

Fig. 5-5: PROFIBUS signal names in WorkVisual

Name	Meaning	In the example
1st value from left	Slot number **Note:** Modules without inputs/outputs, e.g. power supply modules, have a number but are not displayed in the list.	03
2nd value from left	Index number (consecutive ascending numbering of the individual inputs/outputs)	0001
Input/Output	Direction of processing	Input

6 Operation

6.1 Coupling/decoupling devices

For certain applications, e.g. tool change, it is necessary to couple and decouple devices. Coupling and decoupling can only be carried out via KRL.

Decoupling Properties of decoupled devices:

- If decoupled devices are disconnected from PROFIBUS or the power supply, no error is triggered.
- Decoupled devices cannot carry out error treatment in the case of read/write errors.

Coupling The IOCTL function is executed synchronously. It only returns when the device is functional and can be written to once again.

If a coupled device is not functional, e.g. because it is disconnected from the bus or supply voltage, a message is displayed after a default timeout of 2 s.

Always available The option **Always available** affects the way the robot controller reacts to a decoupled device in the event of a cold start or I/O reconfiguration. The option **Always available** can be set in WorkVisual in the settings of the PROFIBUS master.

(>>> 5.3.5 ""Slave settings" tab" Page 16)

	Always available: Yes	**Always available**: No
Device coupled	No error message	No error message
Device decoupled	Error message	No error message

Syntax `ret = ioCtl("[bus instance name]", '[command]', [device address])`

Description *[bus instance name]*: Depending on whether the command is to be executed for the PROFIBUS master or slave gateway, the appropriate name must be entered here:

- PROFIBUS master: SYS-X44_PB-Master1
- PROFIBUS slave: SYS-X44_PB-Slave1

[device address]: The address of a device is displayed in WorkVisual in the **Profibus address** box in the slave settings.

(>>> 5.3.5 ""Slave settings" tab" Page 16)

Return values for RET:

Value	Meaning
-3	Timeout - device not reacting
-2	Device address not found
-1	General error
0	Device successfully coupled/decoupled

Examples Here, device 6 is decoupled.

```
...
  RET = IOCTL("SYS-X44_PB-Master1", 'H003C',6)
...
```

Here, device 6 is coupled.

```
...
  RET = IOCTL("SYS-X44_PB-Master1", 'H0032',6)
...
```

The timeout for coupling/decoupling is set by default to 2 s. This default value can be changed. Here the value is set to 5000 ms:

```
RET = IOCTL("SYS-X44_PB-Master1",8008,5000)
```

6.2   Executing queries / changes

Description   A command can be used to execute a query or a change. Parameters are required for some queries and changes. If no parameter is required, "0" is entered as the parameter in the syntax.

Syntax   `ret = ioCtl("`*[bus instance name]*`", '`*[command]*`', `*[parameter]*`)`

Overview

Query	Command	Parameter
I/O status of gateway module	H8001	-
I/O status of gateway module and status of SYS-X44	H8002	-
Device is optionally present on system start	H8003	Device address
Device activated / deactivated	H8004	Device address
Device has error status	H8005	Device address
Number of devices with error	H8006	-
Number of configured devices	H8007	-
Timeout time for device activation	H8009	-

Change	Command	Parameter
Timeout time for device activation	H8008	Timeout time

> **i** Commands H8003 to H8009 are only available for the PROFIBUS master gateway.

> **i** The description of the PROFIBUS error codes can be found in the manufacturer's documentation for the corresponding device.

Command H8001   **Syntax**

PROFIBUS master gateway:
`ret = ioCtl("SYS-X44_PB-Master1", 'H8001', 0)`

PROFIBUS slave gateway:
`ret = ioCtl("SYS-X44_PB-Slave1", 'H8001', 0)`

Return values for RET:

Value	Meaning
-1	General error during ioCtl
0	PROFIBUS OK
> 0	PROFIBUS error code

Command H8002   **Syntax**

PROFIBUS master gateway:
`ret = ioCtl("SYS-X44_PB-Master1", 'H8002', 0)`

PROFIBUS slave gateway:

```
ret = ioCtl("SYS-X44_PB-Slave1", 'H8002', 0)
```

Return values for RET:

Value	Meaning
-1	General error during ioCtl
0	SYS-X44 and PROFIBUS Gateway OK
> 0	Bus error code

Bus error codes:

Value	Meaning
Bit 0	SYS-X44 does not have the status OPERATIONAL
Bit 1	At least one device in the SYS-X44 has an error
Bit 2	Error during configuration / initialization on system start
Bit 3	Error present on gateway bus
Bit 4	Error during initialization / configuration in gateway module on system start

Command H8003 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8003', device address)
```

Return values for RET:

Value	Meaning
-1	Device address not found / general error
0	Device is not optionally present on system start
1	Device is optionally present on system start

Command H8004 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8004', device address)
```

Return values for RET:

Value	Meaning
-1	Device address not found / general error
0	Device is deactivated
1	Device is activated

Command H8005 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8005', device address)
```

Return values for RET:

Value	Meaning
-1	Device address not found / general error
0	Device has no error
> 0	PROFIBUS error code

Command H8006 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8006', 0)
```

Return values for RET:

Value	Meaning
-1	General error during ioCtl
0	All configured devices OK
> 0	Number of faulty devices

> **i** Deactivated devices which are not physically connected to the PRO-FIBUS line are also considered faulty and included in this return value.

Command H8007 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8007', 0)
```

Return values for RET:

Value	Meaning
-1	General error during ioCtl
> 0	Number of configured devices

Command H8008 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8008', timeout time)
```

> **⚠** The timeout time must be specified in ms.

Return values for RET:

Value	Meaning
-1	General error during ioCtl
0	Value in ms was set

Command H8009 **Syntax**

```
ret = ioCtl("SYS-X44_PB-Master1", 'H8009', 0)
```

Return values for RET:

Value	Meaning
-1	General error during ioCtl
> 0	Timeout value in ms

7 Diagnosis

7.1 Displaying diagnostic data

| | The diagnostic data can also be displayed in WorkVisual. Information about procedures in WorkVisual is contained in the WorkVisual documentation. |

Procedure

1. Select **Diagnosis** > **Diagnostic monitor** in the main menu.
2. Select the desired module in the **Module** box.

   Diagnostic data are displayed for the selected module.

Description

Diagnostic data can be displayed for the following modules:

- ECatIO
- Extension Bus (SYS-X44) PROFIBUS Master (SYS-X44_PB-Master1)
- Extension Bus (SYS-X44) PROFIBUS Slave (SYS-X44_PB-Slave1)

ECatIO

Name	Description
Driver version	Name of the driver
Bus instance	Name and state of the bus instance

PROFIBUS master

Name	Description
Device name	Name of the master
Device version	Version of the master (hardware and software version)
Number of slaves	Number of slaves
Number of slaves with error	Number of slaves where an error has occurred
Cycle-Fail-Counter	Counter for bus cycle errors
Cycle time	Time (in µs) required by the master for an update
Station address	Address of the master
Baud rate	Baud rate of the master
Slave info(0)	Name and device address of the first slave
Slave state(0)	Status of the first slave
Slave info(1)	Name and device address of the second slave
Slave state(1)	Status of the second slave
Slave info(2)	Name and device address of the third slave
Slave state(2)	Status of the third slave

PROFIBUS slave

| Name	Description
Device name	Name of the slave
Device version	Version of the slave (hardware and software version)
Station address	Device address
Slave status	Status of the slave
Baud rate	Baud rate of the slave

7.2 Advanced device diagnosis in WorkVisual

Precondition

- The device to be diagnosed is connected and active.

Procedure

1. Expand the tree structure of the robot controller on the **Hardware** tab in the **Project structure** window.

2. Right-click on **KUKA Extension Bus (SYS-X44)** in the tree structure and select **Settings** from the context menu. A window opens.

3. On the **Master settings** tab, enter the IP address of the KLI in the **IP address** box.

4. Save the settings by selecting **OK**.

5. Right-click on **KUKA Extension Bus (SYS-X44)** and select **Connect** from the context menu.

6. Repeat step 5 for the bus coupler, the gateway and the device.

7. Right-click on the device and select **Diagnosis...** from the context menu. A window is displayed with the tabs **Identity**, **Status** and **I/Os**.

> ℹ️ The **Identity** tab is only displayed if the device supports this function.

Description

General information about the device is displayed on the **Identity** tab:

- Vendor
- Order number
- Serial number
- Hardware revision
- Software revision
- Revision counter
- Profile ID
- Profile-specific type
- Function tag
- Location tag

Alarms and diagnostic data of the device are displayed on the **Status** tab. This are device-specific; for further information, see the device manufacturer documentation. The data are not updated automatically. To call the current data, click on **Refresh**.
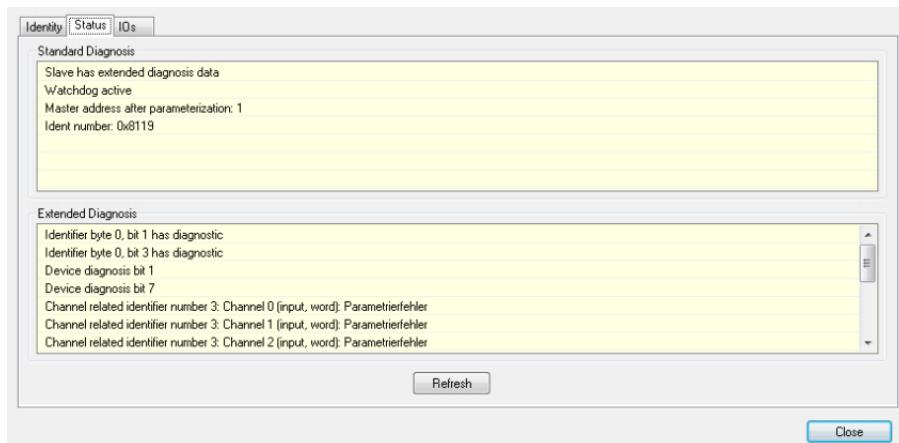

Fig. 7-1: "Status" tab

The image of the device is displayed on the **I/Os** tab. The inputs and outputs are displayed byte by byte in hexadecimal notation. The length specifies the number of actual bytes. The values are not updated automatically. To call the current values, activate the check box **Refresh every 1000 milliseconds**.

Fig. 7-2: "I/Os" tab

8 Messages

No. / type	Message text
2858 Stop message	Ackn. Stop due to field bus error
1034 Status message	Error on writing, driver: *driver name*
10039 Status message	*bus name*: Profibus master error in module [*module name*](*error code*) **Note**: The description of the error codes can be found in the manufacturer's documentation for the PROFIBUS master.
10040 Status message	*bus instance name*: Profibus master configuration error (*cause of error*) **Note**: The possible causes of errors are given in the following table.

Error causes

Cause of error	Description	Remedy
Invalid ECatWrapper interface	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
IODataCreate() Error	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
System Manager interface invalid	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
Error opening 'ecatms_sys_X44_swap.xml' File	The file ecatms_sys_X44_swap.xml contains syntax errors.	1. Correct the file. 2. Reconfigure the bus.
found Gateway multiple	There is more than one identical gateway. **Note**: A maximum of 1 master and 1 slave gateway may be added to the bus.	1. Remove the superfluous gateway module from the bus. 2. Reconfigure the bus.
unable to create Gateway-SEM	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
unable to spawn Gateway-Task	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
invalid Gateway PDO-Config	No valid process data configuration is available for the gateway module.	1. Check the bus configuration and correct if necessary. 2. Reconfigure the bus.

Cause of error	Description	Remedy
unable to allocate Gateway-Memory	System error	1. Reboot the system with a cold start. 2. If the error is still displayed, inform KUKA Service.
invalid Gateway-ID	The gateway module is unknown.	1. Use a different gateway module. 2. Reconfigure the bus.
invalid Gateway Error-Byte Config	The error status bytes of the devices do not match the bus configuration.	1. Check the bus configuration and topology of the Extension Bus and correct if necessary. 2. Reconfigure the bus.
invalid optional Slave Configuration	The file ecat_PBM_Gateway.xml is faulty.	1. Correct the file. 2. Reconfigure the bus.

9 KUKA Service

9.1 Requesting support

Introduction   The KUKA Roboter GmbH documentation offers information on operation and provides assistance with troubleshooting. For further assistance, please contact your local KUKA subsidiary.

Information   The following information is required for processing a support request:

- Model and serial number of the robot
- Model and serial number of the controller
- Model and serial number of the linear unit (if applicable)
- Model and serial number of the energy supply system (if applicable)
- Version of the KUKA System Software
- Optional software or modifications
- Archive of the software

  For KUKA System Software V8: instead of a conventional archive, generate the special data package for fault analysis (via **KrcDiag**).
- Application used
- Any external axes used
- Description of the problem, duration and frequency of the fault

9.2 KUKA Customer Support

Availability   KUKA Customer Support is available in many countries. Please do not hesitate to contact us if you have any questions.

Argentina   Ruben Costantini S.A. (Agency)
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