

# IoT Dashboard App

Data Visualization in Dynamic, Interactive Dashboards 03VRS

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DOK-XCORE\*-GDB\*\*\*V03\*\*-AP01-EN-P

DC-AE/PAD-SYS (MiSc)/(PiaSt)

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# 1 About this documentation

## Editions of this documentation

Edition	Release date	Note
01	2024-12	First edition IoT Dashboard App Version GDB-V-0302

# 2 Important directions on use

## 2.1 Intended use

### 2.1.1 Introduction

Rexroth products are developed and manufactured to the state-of-the-art.

The products are tested prior to delivery to ensure operational safety and reliability.

<b>▲ WARNING</b>	<p><b>Personal injury and damage to property due to incorrect use of products!</b></p> <p>The products may only be used as intended.</p> <p>Failure to use the products as intended may cause situations resulting in property damage and personal injury.</p>
<b>NOTICE</b>	<p><b>Damages resulting from unintended use</b></p> <p>Rexroth As the manufacturer does not assume any warranty, liability or compensatory claims for damages resulting from unintended use of the products. The user alone shall bear the risks of an unintended use of the products.</p> <p>Before using Rexroth products, make sure that all the prerequisites for an intended use of the products are met:</p> <ul style="list-style-type: none"> <li>– Personnel that in any way, shape or form uses Rexroth products must first read and understand the relevant safety instructions and be familiar with their intended use</li> <li>– Leave hardware products in their original state, i.e., do not make any structural modifications. It is not permitted to decompile software products or alter source codes</li> <li>– Do not install damaged or defective products or commission them</li> <li>– It has to be ensured that the products have been installed as described in the relevant documentation</li> </ul>

### 2.1.2 Areas of use and application

Products of the ctrlX series are suitable for Motion/Logic applications.

**NOTICE**

Products of the ctrlX series may only be used with the accessories, mounting parts, and other components specified in this documentation. Components that are not expressly mentioned must neither be attached nor connected. The same applies to cables and lines.

Only to be operated with the hardware component configurations and combinations expressly specified and with the software and firmware specified in the corresponding documentations and functional descriptions.

Products of the ctrlX series are suitable for single-axis as well as for multi-axis drive and control tasks. Device types with different equipment and interfaces are available for using the system in specific applications.

Typical areas of application:

- Building automation
- IoT and Security Gateway or Device
- Handling & Robotic

Controls of the ctrlX CORE series may only be operated under the mounting and installation conditions, in the position of normal use and under the ambient conditions (temperature, degree of protection, humidity, EMC, etc.) specified in the related documentations.

## 2.2 Unintended use

"Unintended use" refers to using the ctrlX products outside of the above-mentioned areas of application or under operating conditions and technical data other than described and specified in the documentation.

ctrlX products must not be used if they are exposed to following conditions:

- Operating conditions that do not meet the specified ambient conditions. Operation under water, under extreme temperature fluctuations or under extreme maximum temperatures is prohibited
- Applications that have not been expressly authorized by Rexroth

## 3 Safety instructions

The Safety instructions contained in the available application documentation feature specific signal words (DANGER, WARNING, CAUTION or NOTICE) and, where required, a safety alert symbol (in accordance with ANSI Z535.6-2006).

The signal word is meant to draw the reader's attention to the safety instruction and identifies the hazard severity.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words DANGER, WARNING and CAUTION, is used to alert the reader to personal injury hazards.

The Safety instructions in this documentation are designed as follows:

**▲ DANGER**

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

**▲ WARNING**

In case of non-compliance with this safety instruction, death or serious injury **could** occur.

**▲ CAUTION**

In case of non-compliance with this safety instruction, minor or moderate injury could occur.

**NOTICE**

In case of non-compliance with this safety instruction, property damage could occur.

## 4 Introduction and overview

### 4.1 IoT Dashboard app for ctrlX OS – Basics

The ctrlX IoT Dashboard app enables the graphical visualization of data from various data sources, e.g. InfluxDB, MySQL, MongoDB, etc.

IoT Dashboard provides an extensive selection of visualization elements for displaying data in dashboards. In addition, rules for alarms can be created based on the recorded data in order to receive automatic notifications, e.g. by e-mail, when status changes or threshold values are exceeded.

### 4.2 Introduction

The IoT Dashboard app contains the open source software Grafana. Grafana provides tools used to display values from time sequence databases (e.g. InfluxDB) in diagrams. The application can also be used for monitoring threshold values and status changes.

Extensive documentation on Grafana OSS v9.3.6 used in the ctrlX IoT Dashboard app is available under the following link:

➔ <https://grafana.com/docs/grafana/v9.3/>.

A series of tutorials for beginners and advanced users is available under the following link:

➔ <https://grafana.com/tutorials/>.

## 5 IoT Dashboard installation and integration in the ctrlX OS web interface

The installation of apps is described in the documentation ctrlX OS - Operating System for ctrlX CORE Controls O3VRS, Application Manual, see ➔ [Web documentation](#).

By installing the app, the ctrlX OS web interface is extended by the “IoT Dashboard” node, see

➔ [Window - IoT Dashboard](#).

## 6 Licensing

License required to operate the IoT Dashboard app on a ctrlX OS device:

Type code	Material number
SWL-XC*-GDB-GRAFANA*DB***-NNNN	R911418579

## 7 Operation and configuration

In the following sections, only the operation and configuration of the ctrlX IoT Dashboard app in the context of ctrlX OS is discussed.

### User interface

The user interface can be accessed via the “IoT Dashboard” node in the ctrlX OS web interface in the browser, see

➔ [Window - IoT Dashboard](#).

## Users and authorizations

The IoT Dashboard authentication is linked to the ctrlX OS user administration. The authentication and roles in IoT Dashboard are adapted to the user and authorization management of ctrlX OS. Access to the IoT Dashboard user interface requires authentication (login) on the ctrlX OS device.

The ctrlX OS user is also logged in as IoT Dashboard user in the IoT Dashboard. The user can be assigned different roles in IoT Dashboard (admin/editor/viewer), see also → <https://grafana.com/docs/grafana/v9.3/administration/roles-and-permissions/>.

IoT Dashboard-specific authorizations can be defined in the ctrlX users and authorizations section.

The following authorizations are adapted to the roles within the IoT Dashboard app:

- IoT Dashboard Organization Administrator
- IoT Dashboard Editor
- IoT Dashboard Viewer

## Configuration file

A **grafana.ini** file is available for configuration in the ctrlX app data directory of the IoT Dashboard. With the configuration, the ctrlX IoT Dashboard app can be adapted to specific requirements, see → <https://grafana.com/docs/grafana/v9.3/setup-grafana/configure-grafana/>.



- A restart of the ctrlX IoT Dashboard app is required after the **grafana.ini** file has been changed.
- When changing the **grafana.ini** file, the ctrlX IoT Dashboard app can sporadically not be executed anymore.

## Storage concept

All IoT Dashboard files are first saved to the internal memory of the ctrlX OS device's internal memory. The data storage location can be configured in the **grafana.ini** file. The storage location of the IoT Dashboard files is limited to the writeable area

SNAP\_COMMON (/var/snap/ctrlx-grafana/common)

preselected in the app.

Here is an excerpt from **grafana.ini** with the default definitions of the IoT Dashboard paths:

```
[paths]
# Path to where grafana can store temp files, sessions, and
the sqlite3 db (if that is used)
data = ${SNAP_COMMON}/data

# Directory where grafana can store logs
logs = ${SNAP_COMMON}/data/log

# Directory where grafana will automatically scan and look for
plugins
plugins = ${SNAP_COMMON}/data/plugins

# folder that contains provisioning config files that grafana
will apply on startup and while running.
provisioning = ${SNAP_COMMON}/provisioning
```

### Data storage location on a USB flash drive or SD card as memory extension

A USB flash drive or SD card can be mounted as a memory extension on the ctrlX CORE. A folder such as `/media/sda1` is available for data exchange after a USB flash drive or SD card has been mounted on the ctrlX OS device.

This data storage location can be configured in the `grafana.ini` file, e.g:

```
data = /media/sda1/iot-dashboard/data
```

```
provisioning = /media/sda1/iot-dashboard/provisioning
```



The storage location of the IoT Dashboard files does not allow support for ctrlX Setup and ctrlX App Data.

#### Additional information

- [↪ Chapter 8.1.1 Window – “IoT Dashboard” on page 8](#)

## 8 ctrlX UI – Elements

### 8.1 Windows

#### 8.1.1 Window – “IoT Dashboard”

The IoT Dashboard app can be configured in the window “IoT Dashboard”.

#### Related topics:

- [↪ Information about the IoT Dashboard and the IoT Dashboard app](#)

#### Call:

ctrlX OS side navigation *“IoT Dashboard”*

When clicking on “IoT Dashboard”, the “Grafana” start page is opened in the browser.

#### Additional information

- [↪ Chapter 4.1 IoT Dashboard app for ctrlX OS – Basics on page 6](#)

# 9 Related documentation

## 9.1 Overview

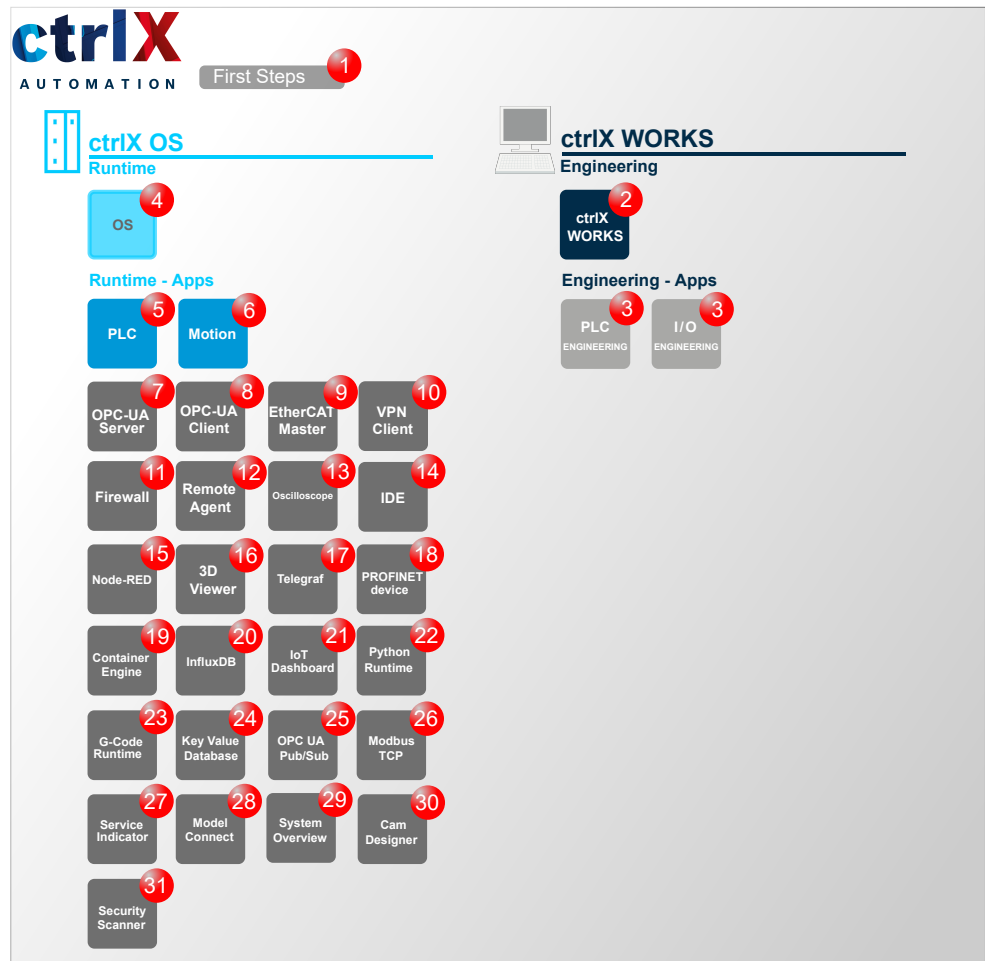


Fig. 1: Overview on further documentations

## 9.2 ctrlX AUTOMATION

No.	Documentation
1	<p><b>ctrlX WORKS First Steps</b></p> <p>Quick Start Guide</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XWORKS-F*STEP*****-QU01-EN-P</li> <li>• R911403760</li> </ul>

### 9.3 ctrIX WORKS

No.	Documentation
2	<p><b>ctrIX WORKS - Basic System 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XWORKS-WRK***V03**-APRS-EN-P</li> <li>• R911423376</li> </ul>
3	<p><b>ctrIX PLC Engineering - PLC Programming System 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XPLC**-PLE***V03**-APRS-EN-P</li> <li>• R911423378</li> </ul>
3	<p><b>ctrIX PLC Engineering - PLC Libraries 03VRS</b> Reference Book  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XPLC**-LIB***V03**-RERS-EN-P</li> <li>• R911423456</li> </ul>

### 9.4 ctrIX OS

No.	Documentation
4	<p><b>ctrIX OS - Operating System for ctrIX CORE Control Devices 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-XCR***V03**-APRS-EN-P</li> <li>• R911423382</li> </ul>
	<p><b>ctrIX OS - Data Layer Nodes 03VRS</b> Reference Book  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-DL****V03**-RERS-EN-P</li> <li>• R911423384</li> </ul>
	<p><b>ctrIX OS - Diagnostics 03VRS</b> Reference Book  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-DIAG**V03**-RERS-EN-P</li> <li>• R911423386</li> </ul>

## 9.5 ctrlX OS apps

No.	Documentation
5	<b>PLC App - PLC Runtime Environment for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-PLC***V03**-APRS-EN-P</li><li>• R911423401</li></ul>
6	<b>Motion App - Motion Runtime Environment for ctrlX CORE 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-MOT***V03**-APRS-EN-P</li><li>• R911423405</li></ul>
7	<b>OPC UA Server App - OPC UA Server for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-UAS***V03**-APRS-EN-P</li><li>• R911423392</li></ul>
8	<b>OPC UA Client App - OPC UA Client for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-UAC***V03**-APRS-EN-P</li><li>• R911423390</li></ul>
9	<b>EtherCAT Master App - EtherCAT Master for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-ECM***V03**-APRS-EN-P</li><li>• R911423394</li></ul>
10	<b>VPN Client App - Remote Support Software for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-VPN***V03**-APRS-EN-P</li><li>• R911423388</li></ul>
11	<b>Firewall App - Security Functions for ctrlX OS 03VRS</b> Application Manual <a href="#">↪ Web documentation link</a> Ordering information: <ul style="list-style-type: none"><li>• DOK-XCORE*-FRW***V03**-APRS-EN-P</li><li>• R911423397</li></ul>

No.	Documentation
12	<p><b>Remote Agent App - ctrlX Device Portal Connection for ctrlX OS Devices 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-RMA***V03**-APRS-EN-P</li> <li>● R911423399</li> </ul>
13	<p><b>Oscilloscope App - Oscilloscope Function for ctrlX OS Devices 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-OSC***V03**-APRS-EN-P</li> <li>● R911423407</li> </ul>
14	<p><b>IDE App - Integrated Development Environment 02VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-IEN***V02**-APRS-EN-P</li> <li>● R911421612</li> </ul>
15	<p><b>Node RED App - Graphic Programming for ctrlX OS 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-RED***V03**-APRS-EN-P</li> <li>● R911423403</li> </ul>
16	<p><b>3D Viewer App - Browser-based 3D Kinematic Simulation for ctrlX OS 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-3DV***V03**-APRS-EN-P</li> <li>● R911423411</li> </ul>
17	<p><b>Telegraf App - Server Agent for Collecting Data in the Data Layer 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-TSA***V03**-APRS-EN-P</li> <li>● R911425238</li> </ul>
18	<p><b>PROFINET Device App - PROFINET Device for ctrlX OS 03VRS</b></p> <p>Application Manual  <a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-PND***V03**-APRS-EN-P</li> <li>● R911425232</li> </ul>

No.	Documentation
19	<p><b>Container Engine App - Using Docker® Images on the ctrlX OS 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-DOE***V03**-APRS-EN-P</li> <li>• R911425234</li> </ul>
20	<p><b>InfluxDB App - Influx Database Connection for ctrlX OS 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-IDB***V03**-APRS-EN-P</li> <li>• R911425240</li> </ul>
21	<p><b>IoT Dashboard App - Data Visualization in Dynamic, Interactive Dashboards 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-GDB***V03**-APRS-EN-P</li> <li>• R911425248</li> </ul>
22	<p><b>Python Runtime App - Python Runtime Environment for ctrlX CORE 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-PYR***V03**-APRS-EN-P</li> <li>• R911425244</li> </ul>
23	<p><b>G-Code Runtime App - G-Code Interpreter for ctrlX OS 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-GCO***V03**-APRS-EN-P</li> <li>• R911425246</li> </ul>
24	<p><b>Key Value Database App - Data Layer Management 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-KVD***V03**-APRS-EN-P</li> <li>• R911425250</li> </ul>
25	<p><b>OPC UA Pub/Sub App - OPC UA Pub/Sub for ctrlX OS 03VRS</b></p> <p>Application Manual</p> <p><a href="#">↪ Web documentation link</a></p> <p>Ordering information:</p> <ul style="list-style-type: none"> <li>• DOK-XCORE*-UAP***V03**-APRS-EN-P</li> <li>• R911423409</li> </ul>

No.	Documentation
26	<p><b>Modbus TCP App - Modbus TCP Communication over ctrlX OS 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-MBT***V03**-APRS-EN-P</li> <li>● R911425236</li> </ul>
27	<p><b>Service Indicator - App Service Indicator for ctrlX OS 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-SIN***V03**-APRS-EN-P</li> <li>● R911425242</li> </ul>
28	<p><b>Model Connect App - Target for Model-based Development and Simulation for ctrlX OS 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-MOC***V03**-APRS-EN-P</li> <li>● R911425252</li> </ul>
29	<p><b>System Overview App - System Topology and System Information 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-SOV***V03**-APRS-EN-P</li> <li>● R911425254</li> </ul>
30	<p><b>Cam Designer - Configuring ctrlX MOTION Cams 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XWORKS-CAM***V03**-APRS-EN-P</li> <li>● R911427217</li> </ul>
31	<p><b>Security Scanner App, Inventory of Components 03VRS</b> Application Manual  <a href="#">↪ Web documentation link</a>                      Ordering information:</p> <ul style="list-style-type: none"> <li>● DOK-XCORE*-SSC***V03**-APRS-EN-P</li> <li>● R911427698</li> </ul>

# 10 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts provide you with advice and assistance. You can contact us **24/7**.

## Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone:     **+49 9352 40 5060**  
Fax:        **+49 9352 18 4941**  
Email:     ↪ [service.svc@boschrexroth.de](mailto:service.svc@boschrexroth.de)  
Internet:   ↪ <http://www.boschrexroth.com>

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

## Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

## Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)



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