



## SCIOPTA Installation

v2.1

# Abstract

This document describes the **SCIOPTA Installation** for the SCIOPTA Kernels.

## Copyright

Copyright © 2023 by SCIOPTA Systems GmbH. All rights reserved. No part of this publication may be reproduced, transmitted, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, optical, chemical or otherwise, without the prior written permission of SCIOPTA Systems GmbH. The Software described in this document is licensed under a software license agreement and maybe used only in accordance with the terms of this agreement.

## Disclaimer

SCIOPTA Systems GmbH, makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability of fitness for any particular purpose. Further, SCIOPTA Systems GmbH, reserves the right to revise this publication and to make changes from time to time in the contents hereof without obligation to SCIOPTA Systems GmbH to notify any person of such revision or changes.

## Trademark

**SCIOPTA** is a registered trademark of SCIOPTA Systems GmbH.

## Contact

Corporate Headquarters  
SCIOPTA Systems GmbH  
Hauptstrasse 293  
79576 Weil am Rhein  
Germany  
Tel. +49 7621 940 919 0  
Fax +49 7621 940 919 19  
email: [sales@sciopta.com](mailto:sales@sciopta.com)  
[www.sciopta.com](http://www.sciopta.com)

# Contents

<b>1. Introduction</b> .....	1
1.1. SCIOPTA Real-Time Operating System .....	1
1.2. SCIOPTA Safety Kernels .....	1
1.3. Supported Processors .....	2
1.4. About This Manual .....	2
<b>2. Installation</b> .....	3
2.1. Introduction .....	3
2.2. The SCIOPTA Delivery .....	3
2.3. System Requirements .....	3
2.4. Installation Procedure .....	4
2.4.1. Unpack the SCIOPTA Delivery .....	4
2.4.2. Product Versions .....	4
2.4.3. SCONF Configuration Utility .....	4
2.4.4. DRUID System Level Debugger .....	5
2.4.5. SCIOPTA_HOME Environment Variable .....	5
2.4.6. Setting SCIOPTA PATH Environment Variable .....	5
2.4.7. Removing SCIOPTA .....	5
<b>3. Manual Versions</b> .....	6
3.1. Manual Version 1.0 .....	6
3.2. Manual Version 2.0 .....	6
3.3. Manual Version 2.1 .....	6

# 1. Introduction

## 1.1. SCIOPTA Real-Time Operating System

**SCIOPTA** is a high performance fully pre-emptive real-time operating system for hard real-time application available for many target platforms.

Available modules:

- Pre-emptive Multitasking Real-Time Kernel
- Board Support Packages
- IPS - Internet Protocols v4/v6(TCP/IP)
- IPS Applications - Internet Protocols Applications (Web Server, TFTP, FTP, DNS, DHCP, Telnet, SMTP etc.)
- FAT File System
- (fail) SAFE FAT File System
- Flash File System, NOR and NAND
- Universal Serial Bus, USB Device
- Universal Serial Bus, USB Host
- DRUID - System Level Debugger
- SCIOPTA PEG - Embedded GUI
- CONNECTOR - support for distributed multi-CPU systems
- SCIOPTA Memory Management System - Support for MMU
- SCAPI - SCIOPTA API for Windows or LINUX host
- SCSIM - SCIOPTA Simulator

SCIOPTA Real-Time Operating System contains design objects such as SCIOPTA modules, processes, messages and message pools. SCIOPTA is designed on a message based architecture allowing direct message passing between processes. Messages are mainly used for interprocess communication and synchronization.

SCIOPTA messages are stored and maintained in memory pools. The memory pool manager is designed for high performance and memory fragmentation is avoided. Processes can be grouped in SCIOPTA modules, which allows you to design a very modular system. Modules can be static or created and killed during runtime as a whole. SCIOPTA modules can be used to encapsulate whole system blocks (such as a communication stack) and protect them from other modules in the system.

The SCIOPTA Real-Time Kernel has a very high performance. The SCIOPTA architecture is specifically designed to provide excellent real-time performance and small size. Internal data structures, memory management, interprocess communication and time management are highly optimized. SCIOPTA Real-Time kernels will also run on small single-chip devices without MMU.

## 1.2. SCIOPTA Safety Kernels

SCIOPTA provides a Real-Time Operating System for some CPU families which is certified according to IEC 61508 up to SIL3, CENELEC EN 50128 up to SIL3/4 and ISO 26262 up to ASIL D:

### [IEC INTERNATIONAL STANDARD 61508](#)

Edition 2.0 2010-04

Functional safety of electrical/electronic/programmable electronic safety-related systems

Part 1: General requirements

Part 2: Requirements for electrical/electronic/programmable electronic safetyrelated systems (in addition for INT Kernel)

Part 3: Software requirements

Part 4: Definitions and abbreviations

### [CENELEC European Committee for Electrotechnical Standardization FprEN 50128:2011/A2:2020](#)

Railway applications

Communication, signalling and processing systems

Software for railway control and protection systems

### ISO International Organization for Standardization 26262

First Edition 2018-12

Road vehicles – Functional safety

Part 2: Management of functional safety

Part 6: Product development at the software level

Part 8: Supporting processes

Please consult the SCIOPTA Kernel Manuals for more information (Ref. [SCIOPTA Kernel Reference Manual](#) and [SCIOPTA Architecture Manual](#)).

## 1.3. Supported Processors

SCIOPTA version	CPU families
V1 Kernels	ARM and Coldfire (active), PowerPC (inactive) (all assembly)
V2 Kernels	Analog Devices Blackfin, Renesas RX and RXv2, Infineon Aurix and ARM64 (all mainly C) ARM (assembly)
V2 Kernel INT	PowerPC (assembly)

Please consult the latest version of the SCIOPTA Price List for the complete list.

## 1.4. About This Manual

The purpose of this SCIOPTA Installation and Getting Started Manual is to give all needed information how to use SCIOPTA Real-Time Kernel in an embedded project for all CPU family.

Chapter [Installation](#) describes how to install SCIOPTA. Topics such as system requirements, installation procedure and removing are covered.

Please consult also the **SCIOPTA Kernel Reference Manual** which contains a complete description of all system calls and error messages and the **SCIOPTA GDD and Utilities User's and Reference Manual** for a detailed description of the GDD interface and SCIOPTA utilities.

## 2. Installation

### 2.1. Introduction

This chapter describes how to install SCIOPTA. Topics such as system requirements, installation procedure and removing are covered herein.

### 2.2. The SCIOPTA Delivery

Before you start the installation please check the SCIOPTA delivery. The following items should be included:

- An 7-Zip file named <Customer-ID>\_<version>\_<cpu>\_delivery.7z
- Installation password for your purchased SCIOPTA products.
- MD5 hash over above file.

The following products are available:

- Kernel, Basic BSP
  - Support for MMU or MPU
  - DRUID System Level Debug Package
  - Internet Protocols v4/v6(TCP/IP)
  - IPS Applications (Web Server, TFTP, FTP, DNS, DHCP, Telnet and SMTP etc.)
  - FAT File System
  - (fail) SAFE FAT File System
  - Flash File Systems
  - USB Device
  - USB Host
  - SCIOPTA Connector, transparent distributed systems
  - Board Support Package and Device Driver
  - PEG+ Embedded GUI (Separate delivery)
  - SCIOPTA CONNECTOR (Separate delivery)
- SCIOPTA Architecture Manual
  - SCIOPTA Kernel Reference Manual
  - Sciopta kernel Configuration Manual
  - Sciopta Getting Start Manual

### 2.3. System Requirements

Personal Computer or Workstation running Microsoft® Windows. A free hard disk space of maximum 200 Mbytes should be available.

## 2.4. Installation Procedure

### 2.4.1. Unpack the SCIOPTA Delivery

The SCIOPTA delivery is included in compressed one 7-zip file (see: <http://www.7-zip.org/>) which you have downloaded from a SCIOPTA server.

The file name is constructed as follows:

**<SCIOPTA customer number>\_<CPU family>\_<version>.7z**

- The **SCIOPTA customer number** is composed of the string SCN and a 5 digit number (e.g. SCN10248).
- **Version** is a four field compound number as described in the next paragraph (e.g. 1.9.6.14).

Example file name: **SCN10248\_arm\_1.9.6.14.7z**.

Copy the archive at the location you want to have SCIOPTA installed. Unpack the file. You must enter a password which was delivered by email.

The SCIOPTA installation does not create any entries in the Windows registry.

If you have placed the 7-Zip file at **<install\_folder>** the SCIOPTA products will be installed at the following location:

**<install\_folder>\sciopta\<version>**

The expression **<version>** stands for the SCIOPTA four digit version number (e.g. 1.9.6.14).

Please make sure that all SCIOPTA products of one version are installed in the same destination folder.

You can have more than one SCIOPTA version installed. To switch between versions you just need to modify the **SCIOPTA\_HOME** and **PATH** environment variable as described below.

### 2.4.2. Product Versions

Each SCIOPTA product release is identified by a version number consisting of a four field compound number of the format:

**“X.Y.Z.F”**

The first digit, **X**, is used for the major release number which will identify a major increase in the product functionality and involves usually a total rewrite or redesigning of the product including changes in the SCIOPTA kernel API. This number starts at 1.

The second digit, **Y**, is used for a release number which is used to identify important enhancements. This number is incremented to indicate new functionality in the product and may include changes in function calls without modifications in the SCIOPTA kernel API. This number starts at 0.

The third digit, **Z**, stands for feature release number. The feature release number is iterated to identify when functionality have been increased and new files, board support packages or CPUs have been added. This requires also changes in the documentation. This number starts at 0.

The fourth digit, **F**, is called the build number and changes if modifications on the examples or board support packages have been made. This number starts at 0.

### 2.4.3. SCONF Configuration Utility

The kernel of a SCIOPTA system needs to be configured before you can generate the whole system. The included **SCONF** (sconf.exe) configuration tool is used to setup a SCIOPTA system. You will define system parameters and operating system objects such as SCIOPTA modules, processes and message pools.

The **SCONF** tool is located here:

```
<install_folder>\sciopta\<version>\bin\win32\sconf.exe
```

Define a link to `sconf.exe` from the desktop if you wish to start **SCONF** from a desktop icon.

#### 2.4.4. DRUID System Level Debugger

If you have installed the SCIOPTA DRUID system level debugger two programs (`druid.exe` and `druids.exe`) are included in the `\bin` directory:

```
<install_folder>\sciopta\<version>\bin\win32\druid.exe  
<install_folder>\sciopta\<version>\bin\win32\druids.exe
```

Define links to `druid.exe` and/or `druids.exe` from the desktop if you wish to start DRUID from a desktop icon. Please consult the SCIOPTA DRUID, User's and Reference Manuals for more information about the DRUID system level debugger.

#### 2.4.5. SCIOPTA\_HOME Environment Variable

The SCIOPTA system building process needs the **SCIOPTA\_HOME** environment variable to be defined. Please define the **SCIOPTA\_HOME** environment variable and set it to the following value:

```
<install_folder>\sciopta\<version>
```

The expression `<version>` stands for the SCIOPTA four digit version number.

#### 2.4.6. Setting SCIOPTA\_PATH Environment Variable

If you are using makefiles to build your system, please include

```
<install_folder>\sciopta\<version>\bin\win32
```

in your path environment variable.

#### 2.4.7. Removing SCIOPTA

The SCIOPTA installation does not create any entries in the Windows registry. Therefore there is no removing utility needed to remove SCIOPTA from your computer. You just need to delete the folder.

```
<install_folder>\sciopta\<version>
```

to remove SCIOPTA of a specific version from your computer.

## 3. Manual Versions

### 3.1. Manual Version 1.0

- Initial version based on SCIOPTA – Real Time Kernel, SCIOPTA Installation and Getting Started.

### 3.2. Manual Version 2.0

- Rewrite the whole manual.

### 3.3. Manual Version 2.1

- Chapter folding
  - Initial chapters are folded.
  - Some clarifications.
  - Layout fixes.