

# MCUXDQS

## MCUXpresso 配置工具的快速入门指南

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用户指南

### Document information

Information	Content
Keywords	MCUXpresso 配置工具
Abstract	MCUXpresso 配置工具集是一套评估和配置工具，可帮助您从初始评估到生产软件开发。



## 1 简介

**MCUXpresso** 配置工具是一套评估和配置工具，可帮助您从初始评估到生产软件开发。通过 **MCUXpresso** 配置工具，您可以配置 NXP Cortex-M 处理器并生成初始化的 SDK 驱动程序。MCUXpresso 配置工具提供通用功能，旨在为硬件设计师、软件工程师、嵌入式工程师、和现场应用工程师（FAE）提供帮助。

此工具免费提供。Windows、Linux 或 Mac 的安装程序可从<http://nxp.com>下载。

为了编译生成的代码，您也需要使用 MCUXpresso SDK 包。您可以从 <http://mcuxpresso.nxp.com> 上下载该 SDK 包。SDK 包中包含一些示例工程，可帮助您入门。

您可使用安装文件夹中的链接来启动此工具。作为工具的第一步，您必须创建一个配置。本文介绍了以下使用示例：

- 从**SDK**示例或现有工程入手 — 对于新用户以及已经拥有工具链工程（源由该工具生成）的用户而言，从具有 NXP 评估板工程入手会非常有用。支持的工具有 Keil  $\mu$  Vision、IAR Embedded Workbench、CodeWarrior、和 Arm GCC。
- 从新配置入手 — 对于定制电路板或尚不包含任何工具配置的现有工具链工程而言，从新配置入手会非常有用。

### 1.1 创建新配置

您可以直接在“开始运行”对话框或通过从“主菜单”中选择“文件” > “新建”来创建新配置。

如果您开始为任何一块 NXP 电路板或套件开始创建配置，我们建议您从“一个 MCUXpresso SDK”示例开始为电路板或套件创建新配置。这些配置包含了与电路板有关的设置。如果您选择了处理器，那么配置将为空。

新配置创建后，您可以选择从一个 MEX 文件中继续导入现有配置。如果您已有可用配置或想重复使用以前配置时，则此功能非常有用。如要从一个 MEX 文件中导入现有配置，可以从“菜单栏”中选择“文件” > “导入...” > “导入配置 (\*.mex)”。

#### 1.1.1 克隆一个 SDK 示例

您可以通过为 IAR Embedded Workbench、Keil  $\mu$  Vision 和/或 GCC ARM Embedded（命令行）克隆一个 SDK 示例来创建新配置。生成的工程包含了创建工程需要的所有源文件和库文件，该文件便于客户化，共享，或用于控制版本系统。

SDK 示例克隆功能支持 MCUXpresso SDK 2.2 及更高版本。

注：如要克隆一个 SDK 示例或要创建一个“hello\_world”工程，您必须首先下载一个 SDK 包。更多关于 NXP Semiconductors 提供的 SDK 软件包的详细信息，请参阅 [MCUXpresso Software Development Kit](#)。

注：如果服务器不可用，且设备数据未缓存，则工程创建将失败。

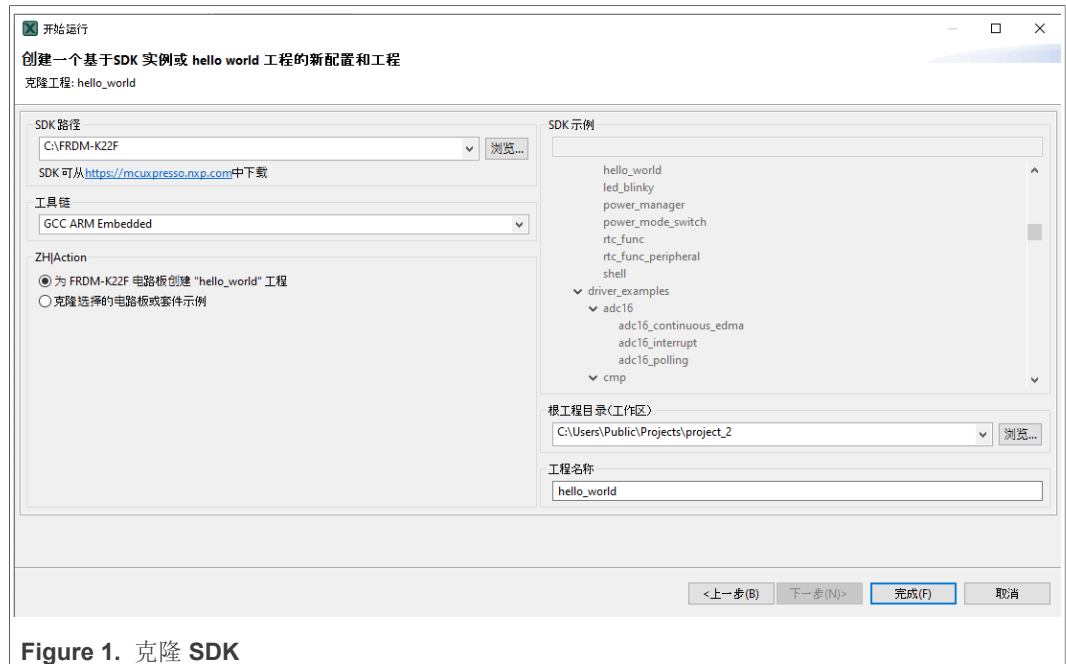


Figure 1. 克隆 SDK

如要克隆一个 SDK 示例，请遵循以下步骤：

1. 在“开始运行”对话框中，选择“为基于 SDK 示例或 hello world 工程创建新配置”。或者，您也可以在“菜单栏”中，选择“文件” > “新建”。
2. 单击“下一步”。
3. 指定本地保存的 SDK 包的路径。
4. 选择您创建工程的目标工具链。
5. 选择您所想克隆的 SDK 示例。
6. 指定您想保存工程的基本工程目录。
7. 指定工程名称。
8. 单击“完成”。

您还可以创建一个基本的、最小定制化的“hello\_world”工程，而不必从软件包中选择一个 SDK 示例。如要创建“hello\_world”工程，请遵循以下步骤：

1. 在“开始运行”对话框中，选择“为基于 SDK 示例或 hello world 工程创建新配置”。或者，您也可以在“菜单栏”中，选择“文件” > “新建”。
2. 单击“下一步”。
3. 指定本地保存的 SDK 包的路径。
4. 选择您创建工程的目标工具链。
5. 选择“创建“hello\_world””。
6. 指定您想保存工程的基本工程目录。
7. 指定工程名称。
8. 单击“完成”。

“配置工具概览”窗口显示配置和支持的工具的详细信息。现在，您可以通过单击工具图标来选择工具。

### 1.1.2 创建新工具链配置

您可以为现有的工具链工程创建一个配置。配置一旦完成，将直接更新与该工程相关的配置文件。

MCUXpresso 配置工具当前支持以下工具链：

- IAR Embedded Workbench
- Keil MDK uVision
- Arm GCC
- CodeWarrior with SDK

注：要使配置工具的功能可以正确使用，必须使用源自 SDK 软件包的工具链工程，或是使用配置工具的克隆功能创建的工具链工程。

如要基于当前 IDE/工具链工程创建新配置，请遵循以下步骤：

1. 在“开始运行”对话框中，选择“为当前IDE/工具链工程创建新配置”。或者，您也可以在“菜单栏”中，选择“文件” > “新建”。
2. 单击“浏览”。
3. 选择工程文件并通过单击“确定”进行确认。
4. 单击“完成”。

### 1.1.3 创建独立新配置

您可以创建不属于任何工具链工程的新配置。

您也可以在以后将该配置（MEX）文件保存于工具链工程文件夹中，从而将该配置纳入工程。

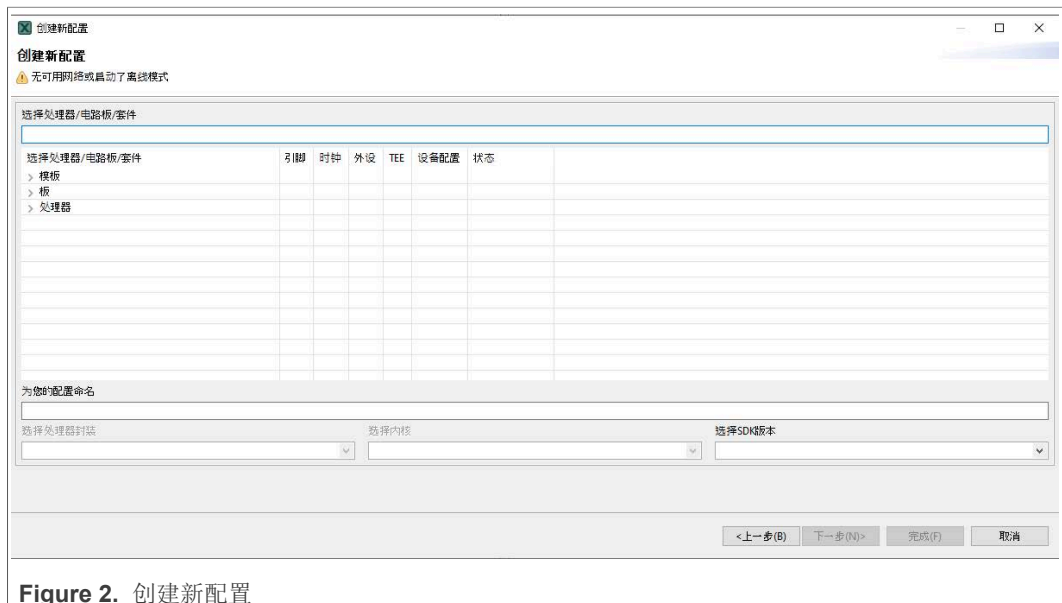


Figure 2. 创建新配置

如需创建一个独立的新配置，请遵循以下步骤：

1. 在“开始开发”向导中，选择“为处理器、主板或套件创建新的独立配置”。或者，您也可以在“菜单栏”中，选择“文件” > “新建”。

2. 单击“下一步”。
3. 从列表中选择处理器、电路板、或套件。  
注：如果当前您是离线工作，则只能看到本地保存的选项。更多信息，请参阅[《用户指南》](#)的“离线工作”章节。
4. 为您的配置命名。您也可以选择处理器封装、内核、以及 SDK 版本。
5. 单击“完成”。

## 2 指定工具

工具栏右侧包含工具选择按钮。您可使用这些按钮在不同工具间切换。

Table 1. MCUXpresso 配置工具

名称	说明
<a href="#">引脚工具</a>	可用于配置器件的引脚。您可以通过本引脚工具来创建、检测和修改设备引脚的复用以及其他配置选项。
<a href="#">时钟工具</a>	可用于配置系统时钟（内核、系统、总线、外设时钟）的初始化，并生成带时钟初始化功能和配置结构的 C 代码。
<a href="#">外设工具</a>	可用于进行MCUXpresso SDK 驱动程序的初始化配置。
<a href="#">设备配置工具</a>	可用于通过 Boot ROM 参考手册中描述的格式和常数来生成和配置 DCD 图像。
<a href="#">可信执行环境工具</a>	可用于为内存区域，总线主导，以及外设配置安全策略，以此保护和隔离应用的敏感地区。

### 2.1 引脚工具

“引脚”工具可用于显示和配置处理器的引脚。基本设置可在“引脚、外设信号”或“封装”视图中完成。

更高级的设置（引脚电气功能），可在“路由引脚”视图中调整。

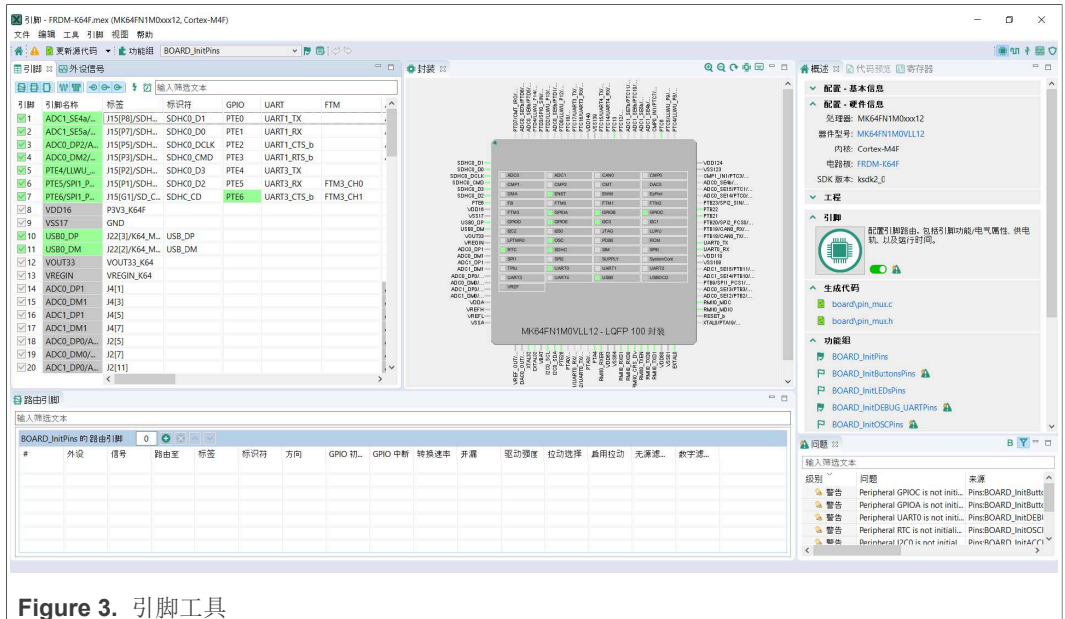


Figure 3. 引脚工具

## 2.2 时钟工具

“时钟”工具允许显示和更改时钟源以及输出设置。您可以通过“时钟表”视图来设置时钟源和输出，也可以通过“时钟显示图”和“详细信息”视图对更多高级设置进行调整。可以在“功能组属性”和“详细信息”视图中的“时钟表”和“时钟显示图”中更改时钟环境的全局设置，例如，运行模式、MCG 模式和 SCG 模式。

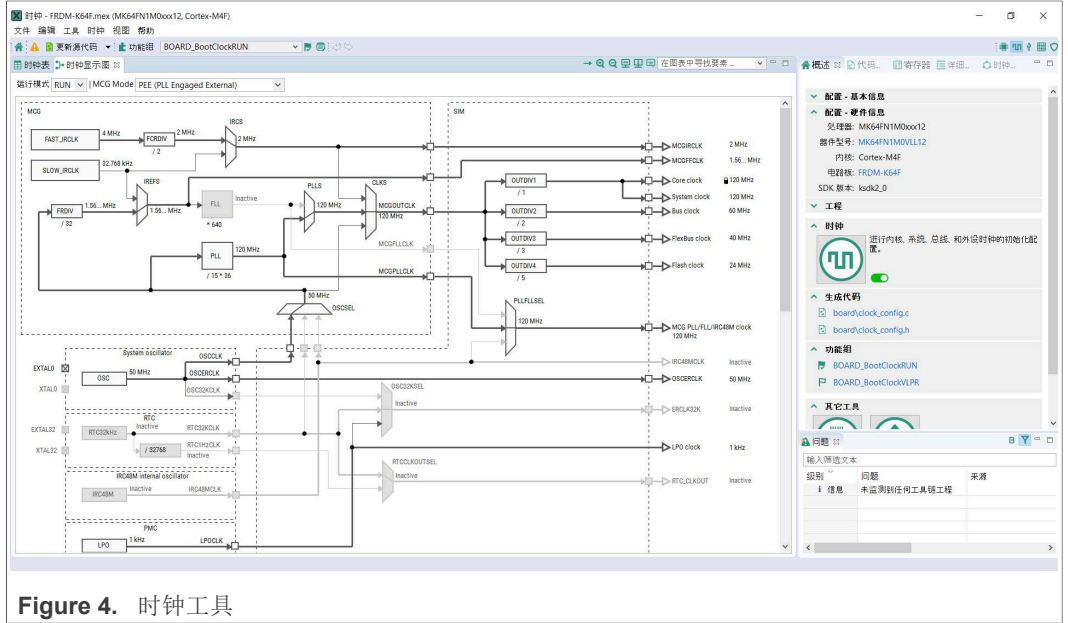


Figure 4. 时钟工具

## 2.3 外设工具

“外设”工具可用于为所选外设进行初始化配置，并生成代码。在“外设”视图中，选择要配置的外设，然后确定添加配置组件。然后，您可以选择外设模式，并在设置编辑器中配置设置。

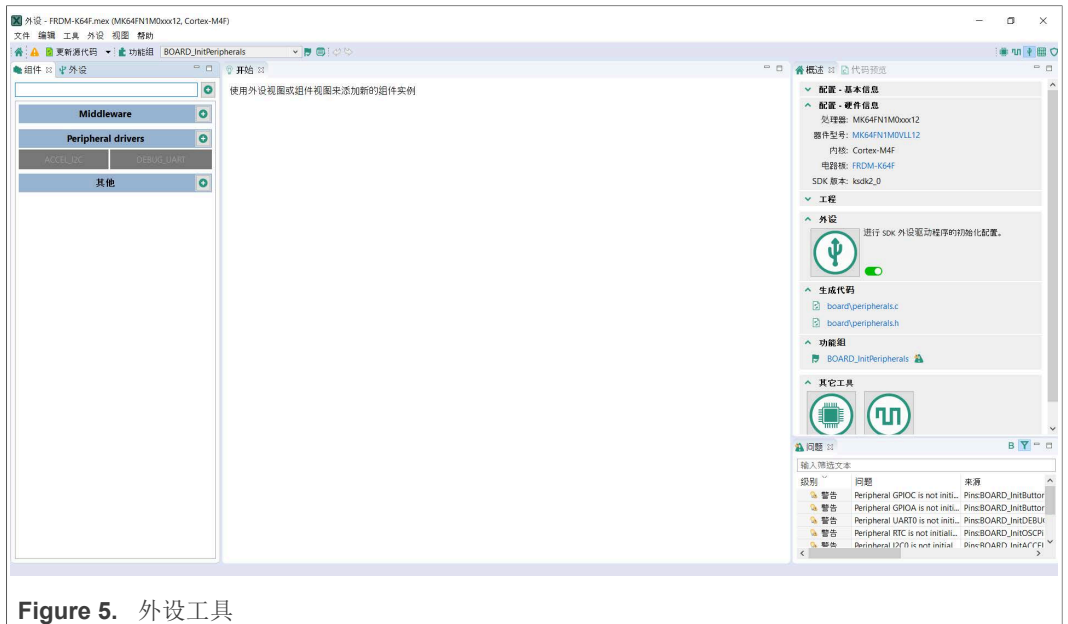


Figure 5. 外设工具

## 2.4 设备配置工具

“设备配置”工具可用于配置硬件内存接口的初始化。通过“设备配置暑假 (DCD)”视图，您可以创建不同类型的命令并指定其顺序，定义其地址、值、大小、和轮询。

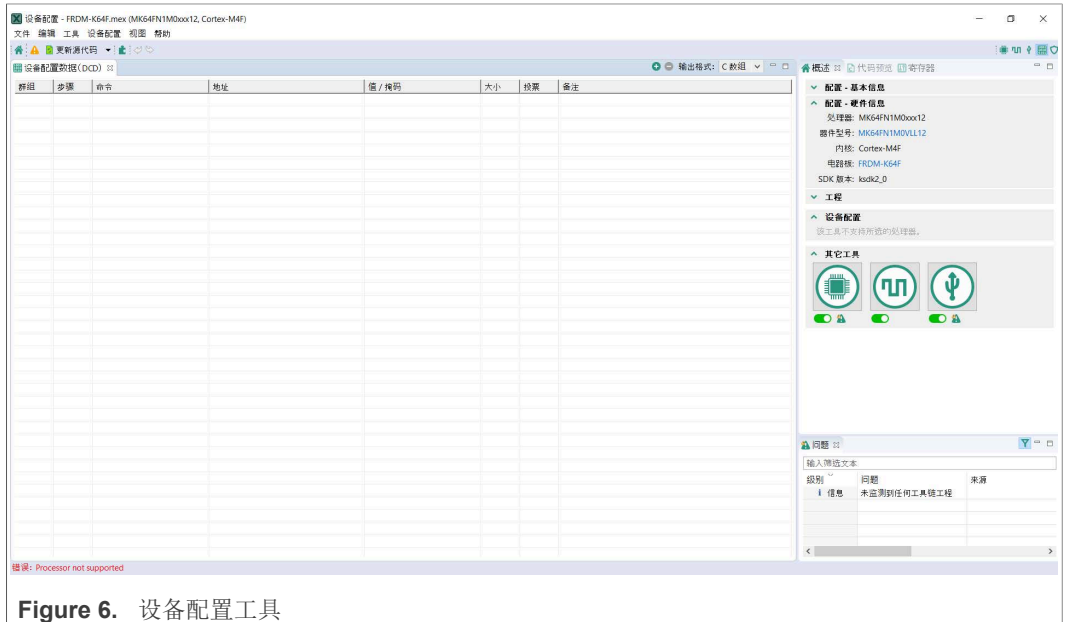


Figure 6. 设备配置工具

## 2.5 可信执行环境工具

“可信执行环境”或 TEE 工具可用于为内存区域，总线主导，以及外设配置安全策略，以此保护和隔离应用的敏感地区。

在“安全访问配置”及其界面上，您可以为应用的各个部分设置安全策略，并在“内存属性映射”、“访问概述”、和“域概述”视图中查看这些策略。使用“用户内存区域”视图，您可以方便地查看内存区域及其安全级别。

通过 TEE 工具，您可以在“寄存器”视图中查看寄存器，并在“代码预览”中检测代码。

**Note:** 为了使您的配置生效，请确保您已在“安全访问配置”视图的“其他”子视图中启用了相关的安全检测选项。

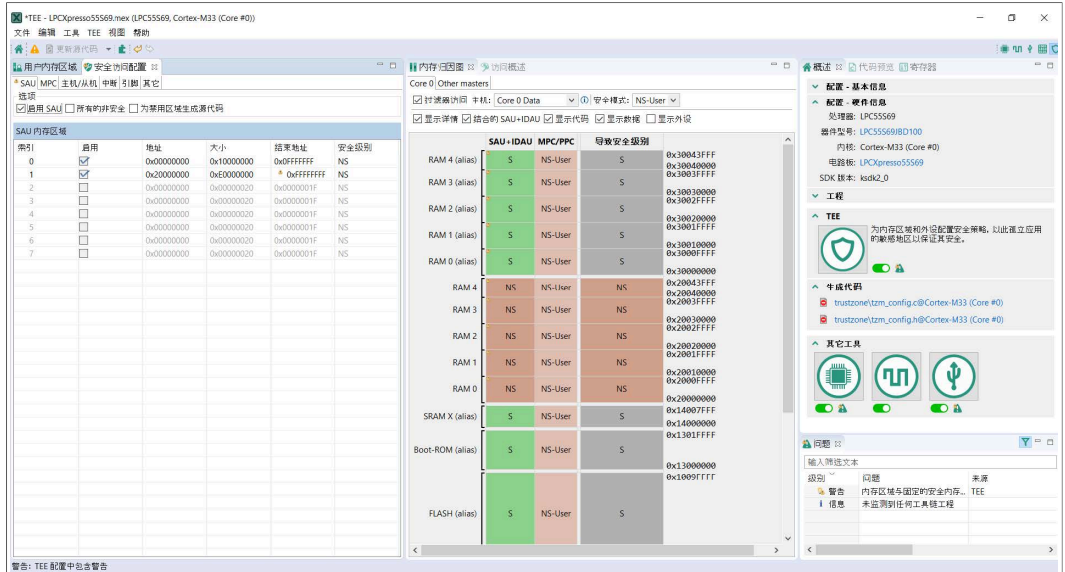


Figure 7. TEE 工具用户界面 (SAU + IDAU)

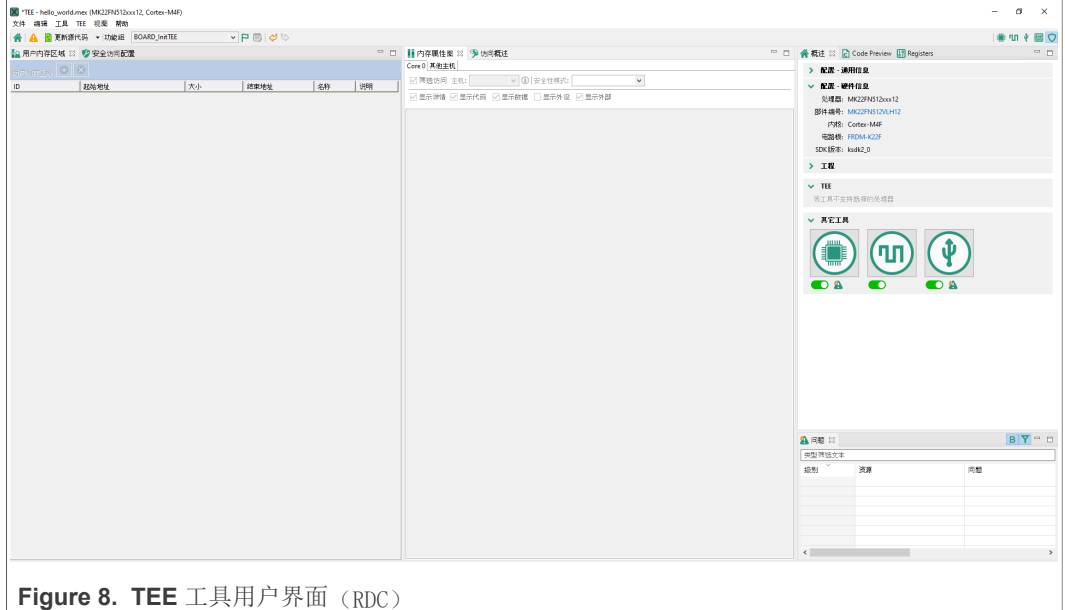


Figure 8. TEE 工具用户界面 (RDC)

### 3 生成源代码

通过单击“更新代码”按钮，您可以更新 MCUXpresso 配置工具生成的源文件。该命令将打开对话框，其中包含要重新生成的文件列表，并允许您选择生成代码的工具。



Figure 9. “更新源代码”按钮

或者，您也可以通过点击“源代码”视图中的导出按钮来导出选定的源文件。





Figure 10. 代码预览

## 4 修订记录

Table 2. 修订记录

版本号	日期	重大变更
0	2021年6月23日	初始版本
1	2021年12月22日	较小更新
2	2022年6月30日	为 v.12 更新
3	2022年9月20日	为 v.12.1 更新
4	2022年12月20日	为 v. 13 发布，无内容更新

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