

## UART Low Level Driver

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# Release Notes

Applies to Product Release: 01.00.00.16  
Publication Date: Sep 30, 2019

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# UART Low Level Driver version 01.00.00.16

## Overview

This document provides the release information for the latest UART LLD which should be used by drivers and application that interface with UART.

UART LLD module includes:

- Compiled library (Big and Little) Endian of UART Low Level Driver.
- Sources, examples and unit test code.
- API reference guide

## LLD Dependencies

LLD is dependent on following external components delivered in PDK package:

- CSL

## New/Updated Features and Quality

### Release 1.0.0.15

REQ #	Description
PRSDK-4453	Add SMP support

### Release 1.0.0.14

REQ #	Description
PRSDK-4436	Increase number of UART ports via Soft UART with PRU

### Release 1.0.0.12

REQ #	Description
PRSDK-2230	UART: support different stop bit
PRSDK-2231	UART: test different character length
PRSDK-2232	UART: test different parity types

### **Release 1.0.0.11**

REQ #	Description
PRSDK-2194	RTOS Installer script to autoset SDK_INSTALL_PATH

### **Release 1.0.0.10**

REQ #	Description

### **Release 1.0.0.9**

REQ #	Description
PRSDK-3190	AM574x SoC integration
PRSDK-2664	Processor SDK upgrade for AM574x - New package and new features

### **Release 1.0.0.8**

REQ #	Description
New feature	TDA2px support

### **Release 1.0.0.7**

REQ #	Description
PRSDK-1266	UART LLD Rx trigger level user configurable
PRSDK-2119	Support for bypassing interrupt configuration in UART and OSAL module
PRSDK-2131	PDK support for DRA72x

### **Release 1.0.0.6**

REQ #	Description
PRSDK-2063	Disabled profiling utils library references
PRSDK-1901	OSAL C66x lib in processor SDK to be enhanced to have Event Combiner APIs
PRSDK-1143	TI RTOS UART STDIO APIs extension to support additional configuration
PRSDK-1018	TI RTOS UART: Timeout in polled mode
PRSDK-1446	Remove the board_cfg.h dependency
PRSDK-1460	UART support on DRA75x platform
PRSDK-1518	PDK: Control Driver Support for OMAPL137/OMAPL138 and C6748
PRSDK-1007	TI RTOS UART: Need to use RX FIFO

### **Release 1.0.0.5**

REQ #	Description
PRSDK-44	Add iceK2G support
PRSDK-950	UART IP V1 trigger level support in DMA mode
PRSDK-996	TI RTOS: UART - Number of byte read incase of timeout
PRSDK-997	TI RTOS UART: Common library between DMA and non-DMA mode
PRSDK-1444	Add DRA75x support
PRSDK-1297	Add DRA78x support

### **Release 1.0.0.4**

REQ #	Description
PRSDK-1083	UART LLD UART_readCancel() does not clear the previously received data (stale data).
PRSDK-1078	Remove unwanted waits in TI RTOS Drivers - I2C, UART
PRSDK-1015	Simultaneous read and write operation on same instance
PRSDK-1293	K2G UART LLD EDMA mode logical channel not freed
PRSDK-1448	K2G UART LLD EDMA mode stop responding
PRSDK-1549	Fix UART_printf issue in multi task calls
PRSDK-1552	Compilation failure while building UART_BasicExample_DMATestProject .
PRSDK-1638	UART_BasicExample tests failed due to DMA/non-DMA RX error on K2(ARM LE) platforms

### **Release 1.0.0.3**

- DAL implementation corresponding to Keystone devices is relocated to CSL directory.
- DAL implementation corresponding to AM devices is reused from the CSL-FL.
- All the examples/test project bios config files are updated to include CSL library.

### **Release 1.0.0.2:**

- Added the SoC driver and test/example support for K2G
- Added the SoC driver and test/example support for TDAxx
- Added ARM test/example for K2L/K2E
- Added benchmarking support
- Fixed Klocwork/Misra-C compilation warnings
- Added edma examples for AM335x and AM437x
- Cleaned up bios config file for AM572x/AM571x/AM437x/AM335x

### **Release 1.0.0.1:**

- Added the lib and test/example support for Keystone II
- Added the lib and test/example support for Keystone I
- Added M4 support for AM571x and AM572x
- Fixed Klocwork/Misra-C compilation warnings
- Added benchmarking support

### **Release 1.0.0.0:**

- Initial Release

## Resolved Incident Reports (IR)

### Release 1.0.0.16:

IR #	Description
PRSDK-6177	fix UART_Baremetal_TestApp failure for mpu1_0
PRSDK-6178	fix bug to run UART_DMA_TestApp on all the R5 cores
PRSDK-6233	Enabling all cores for j721e
PRSDK-6347	fix Misra-C issues
PRSDK-6476	fix UART non-DMA simultaneous read write test issue
PRSDK-6158	fix UART_BasicExample_TestProject task creation fail issue
PRSDK-2666	c++ build fix

### Release 1.0.0.15:

IR #	Description
PRSDK-5678	fix Klocwork static analysis issues
PRSDK-4085	Add j721e_evm build support
PRSDK-2168	Updated while statement to a short and efficient code.
PRSDK-3291	Rename c7x to c7x_1
PRSDK-4967	one LLD library support for R5 on J7
PRSDK-5866	Fix for Simultaneous R/W test case (UT11) failure.
PRSDK-4453	Remove redundant config file and add generic config file
PRSDK-5991	UART LLD open fails for instances beyond UART2

### Release 1.0.0.14:

<b>IR #</b>	<b>Description</b>
PRSDK-5273	RTSC dependencies added
PRSDK-5043	fix FIFO trigger level of 56 bytes test
PRSDK-5157	fix DMA FIFO trigger level test
PRSDK-4972	Add rxTCC variable for DMA RX complete
PRSDK-3586	J7 to J721E
PRSDK-5358	fix bios exception in UART_printf
PRSDK-5258	add test case to support multiple instances using DMA
PRSDK-3715	Migrate to new CSL SOC alias change
PRSDK-5449	Fix for UART_BasicExample_TestProject hang on iceAMIC110

**Release 1.0.0.13:**



<b>IR #</b>	<b>Description</b>
PRSDK-2230	add test case for stop bit
PRSDK-2231	add test case for char length
PRSDK-2232	add test case for parity type
PRSDK-4123	Align AM65xx unit tests name & directory for system test
PRSDK-4525	add unit test support on am65xx_idk
PRSDK-4529	fix issue of UART LLD can't read value 0xff byte
PRSDK-4704	Increaseing the MPU region size to 32K
PRSDK-4800	Updated all the UART examples to have a common string "press the esc"
PRSDK-4169	Adding sciclient as a dependency for board
PRSDK-4543	fix UART DMA TX/RX FIFO trigger level test on K1/K2
PRSDK-4169	Removed duplicate sciclient inclusion
PRSDK-297	Modify datat type int32 to int16
PRSDK-2892	Added Non-executable flag to device peripheral memory MMU config

#### **Release 1.0.0.12:**

<b>IR #</b>	<b>Description</b>
PRSDK-4049	RTOS: K3: UART teardown is not working
PRSDK-2866	CC-Link example prints the menu incorrectly
PRSDK-4197	UARTDivisorValCompute does not round up to nearest integer resulting in large baudrate errors
PRSDK-4105	UART open sets up incorrect baudrates for 921600 bps settings

#### **Release 1.0.0.10:**

IR #	Description
PRSDK-3272	UART DMA support library missing on AM437x
PRSDK-3382	UART: API UART_read() reads additional byte from what requested by application and drops in case FIFO has extra bytes
PRSDK-2819	Networking API header files are not compatible with C++
PRSDK-3471	PDK: unresolved symbols Compilation failure on AM5 platforms
PRSDK-3551	Incorrect interrupt definitions for UART1,2,4,5 in AM335x PDK driver
PRSDK-3023	LDRA code coverage support is needed in unit test projects to print statistics to UART
PRSDK-3394	Need unit test to test UART_Read: Possible loss of last byte when IP receives data before API is called and if returnMode is set to UART_RETURN_FULL
PRSDK-3040	OMAPL138 DSP example app execution fails when booting from SD card
PSDKRA-108	DRA78x build errors for all CCS examples
PSDKRA-54	Refactor pad configuration sequence

#### **Release 1.0.0.9:**

IR #	Description
PRSDK-3087	UART read misses input when returnMode is set to UART_RETURN_FULL
PRSDK-3037	UART_stdio: API files should include definition of return values expected from API functions
PRSDK-3038	uart example: has duplicate definition

#### **Release 1.0.0.8:**

IR #	Description
PRSDK-2786	fix UART even/odd parity setting bug

#### **Release 1.0.0.7:**

IR #	Description
PRSDK-2052	RTOS AMIC110: UART_BasicExample_TestProject fails
PRSDK-2067	RTOS AM570x-EVM: All DSP tests are failing because of no, or just one character, output to UART
PRSDK-2068	RTOS AM570x-EVM: All M4 tests are failing because of no, or just one character, output to UART
PRSDK-2069	RTOS AM570x-EVM: Many ARM tests are failing
PRSDK-2071	Fix Misra-C/KlocWork errors in i2c/gpio/uart/spi LLD
PRSDK-2256	Wrong documentation for UART function
PRSDK-2357	RTOS: UART: K2L SoC library build failure

#### **Release 1.0.0.6:**

IR #	Description
PRSDK-1984	UART-LLD: Tests fails with M4 in call back mode
PRSDK-1916	Renaming DRA7xx board names
PRSDK-1088	fixed wrong mmu configuration for DDR
PRSDK-1859	fix unit test compilation issue for keystone devices
PRSDK-2103	[UART LLD] Make with -j build fails intermittently for UART console lib

#### **Release 1.0.0.5:**

IR #	Description
PRSDK-1083	UART LLD UART_readCancel() does not clear the previously received data (stale data).
PRSDK-1078	Remove unwanted waits in TI RTOS Drivers - I2C, UART
PRSDK-1015	Simultaneous read and write operation on same instance
PRSDK-1293	K2G UART LLD EDMA mode logical channel not freed
PRSDK-1448	K2G UART LLD EDMA mode stop responding
PRSDK-1549	Fix UART_printf issue in multi task calls
PRSDK-1552	Compilation failure while building UART_BasicExample_DMATestProject .
PRSDK-1638	UART_BasicExample tests failed due to DMA/non-DMA RX error on K2(ARM LE) platforms

#### **Release 1.0.0.4:**

IR #	Description
PRSDK-517	Add UART SoC Get/Set initial configuration API's in control LLDs for AM devices
PRSDK-839	klocwork bug introduced due to version update from 10.2.1 to 11.1.0
PRSDK-781	Klocwork report for TI RTOS drivers : UART, I2C, SPI, McASP and MMCSD
PRSDK-1084	K2G UART LLD Write callback is invoked before completion of UART Tx operation
PRSDK-1193	fix simultaneous read/write issue
PRSDK-1173	fix comilation issue for C6657 c66xDMATestProject
PRSDK-1192	fix UART_BasicExample_###_TestProject build error

#### **Release 1.0.0.3:**

IR #	Description
CATREQ-419	TI RTOS: UART driver to reuse CSL-FL

## Known Issues/Limitations

## Licensing

Please refer to the software Manifest document for the details.

## Delivery Package

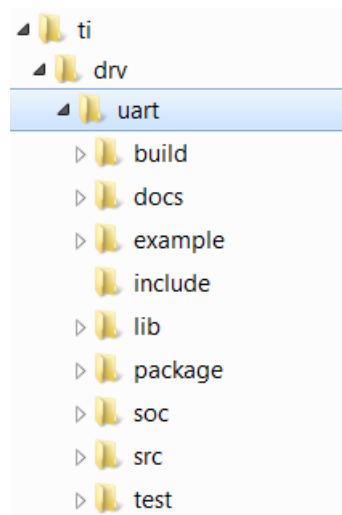
There is no separate delivery package. The UART LLD is being delivered as part of PDK.

## Installation Instructions

The LLD is currently bundled as part of Platform Development Kit (PDK). Refer installation instruction to the release notes provided for PDK.

## Directory structure

After installation, the UART LLD has the following directory structure:



The following table explains each individual directory:

Directory Name	Description
ti/drv/uart	The top level directory contains the following:-

	<ol style="list-style-type: none"> <li>1. <u>Environment configuration batch file</u> The file “setupenv.bat” is used to configure the build environment for the UART low level driver.</li> <li>2. <u>XDC Build and Package files</u> These files (config.bld, package.xdc etc) are the XDC build files which are used to create the UART package.</li> <li>3. <u>Exported Driver header file</u> Header files which are provided by the UART low level driver and should be used by the application developers for driver customization and usage.</li> </ol>
ti/drv/uart/build	The directory contains internal XDC build related files which are used to create the UART low level driver package.
ti/drv/uart/docs	The directory contains the UART low level driver documentation.
ti/drv/uart/example	The “example” directory in the UART low level driver contains a simple example.
ti/drv/uart/lib	The “lib” folder has pre-built Big and Little Endian libraries for the UART low level driver along with their <u>code/data size information</u> .
ti/drv/uart/package	Internal UART low level driver package files.
ti/drv/uart/soc	Source code for the UART SoC specific low level driver.
ti/drv/uart/src	Source code for the UART IP specific low level driver.
ti/drv/uart/test	The “test” directory in the UART low level driver contains unit test examples.

## Customer Documentation List

Table 1 lists the documents that are accessible through the /docs folder on the product installation CD or in the delivery package.

**Table 1 Product Documentation included with this Release**

Document #	Document Title	File Name
1	API documentation (generated by Doxygen)	docs/uartDocs.c hm
2	Release Notes	docs/ReleaseNot es_UART_LLD. pdf
2	Software Manifest	docs/ UART_LLD_So ftwareManifest. html