FRONTGRADE

APPLICATION NOTE

UT32M0R500

Quick Start Guide

FRONTGRADE
APPLICATION NOTE

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Product Name	Manufacturer Part Number	SMD #	Device Type
Arm Cortex M0+	UT32M0R500	5962-17212	01

Table 1: Cross Reference of Applicable Products

1.0 Overview

The UT32M0R500 Quick Start Guide references the documents and tools you will need to get up and running.

The UT32M0R500 is a highly integrated, full featured, low power microcontroller targeted for distributed processing network applications. The UT32M0R500 microcontroller utilizes the Arm® Cortex®-M0+ 32-bit processor with a RISC based architecture operating at a 50 MHz frequency.

2.0 Product Documentation

The latest UT32M0R500 documentation is available on our website. This includes the datasheet, functional manual, and application notes about using different peripherals, unused pin termination, and more. To download and view the latest documentation, visit: https://frontgrade.com/product/ut32m0r500#downloads

Some useful application notes for new users are:

- How to terminate unused pins:
  — https://frontgrade.com/sites/default/files/documents/App-Note-UT32M0R500-Unused-PinTermination.pdf
- Creating a new Keil µVision project
  — https://frontgrade.com/sites/default/files/documents/App-Note-UT32M0R500-Creating-Projects.pdf
- Using various peripherals
  — Any of the "Enable the _____" appnotes
- How to load new programs into the microcontroller
  — UART: https://frontgrade.com/sites/default/files/documents/App-Note-UT32M0R500-UART-Flash-Download.pdf
  — CAN: https://frontgrade.com/sites/default/files/documents/App-Note-UT32M0R500-CAN-Update-Protocol.pdf
  — Keil µVision and the ULINK2 JTAG pod: https://frontgrade.com/sites/default/files/documents/AppNote-UT32M0R500-and-Keil-Flash-Download.zip

3.0 Development and Debug Tools

The UT32M0R500 integrates the industry standard Arm® Cortex®-M0+ processor that supports a power set of debug tools

3.1 ARM Keil MDK

The MDK is a Microcontroller Development Kit. The MDK includes two ARM C.C++ compilers with Assembler, Linker, Run-time libraries, etc. To download the Keil software development tools, visit https://www.keil.com/demo/eval/arm.htm.

3.2 Keil ARM ULINK 2 Adapter

The debug adapter connects your PC's USB port to the target system via JTAG and allows you to program and debug embedded programs on target hardware. More information on the ULNK2 Debug Adapter can be found here: http://www.keil.com/arm/ulink2/

Figure 1: Keil ULINK2 JTAG debug pod

4.0 Source Code

An application program interface (API) is code that allows two software programs to communicate to each other. Driver APIs and example code is available for the UT32M0R500.

4.1 UT32M0R500 Driver APIs

Go to the Frontgrade website to request access to the software support package.
Visit: https://frontgrade.com/product/ut32m0r500#downloads

4.2 UT32M0R500 Example Code

Initial example code is available. Please contact the factory if you require other examples and the code can be provided on a case-by-case basis.

Go to the Frontgrade website to request access to the software support package.
Visit: https://frontgrade.com/product/ut32m0r500#downloads

5.0 Real Time Operating System (RTOS)

A royalty-free RTOS is also available from two sources and are optional to aid you in your development effort.

5.1 Real-Time eXecutive (RTX)

Directly supported by ARM Keil. Visit: http://www.keil.com/arm/rl-arm/kernel.asp

5.2 FreeRTOS

Open Source FreeRTOS. Visit: https://www.freertos.org/

6.0 Development Board

The UT32M0R500-EVB development board is available for purchase. This board provides a comprehensive and rapid prototyping platform for the UT32M0R500 Microcontroller. The Arduino™ Uno connectivity and full product pinout allow for easy expansion and accessibility. Along with the microcontroller, the subject board includes JTAG connectors for debugging and USB-to-UART connectors for communicating from a PC and supports an external clock.

The UT32M0R500-EVB Development Board User Manual can be found with the other UT32M0R500 documentation at: https://frontgrade.com/product/ut32m0r500#downloads
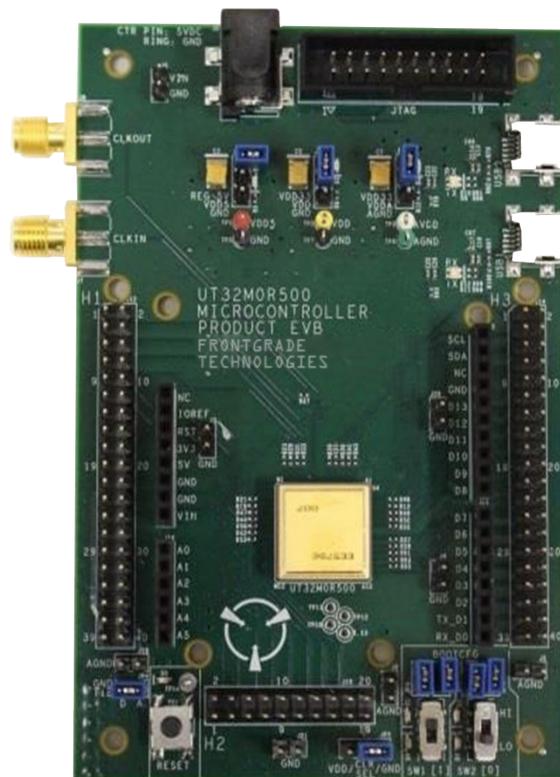
Figure 2: UT32M0R500 Evaluation Board

7.0 Summary and Conclusion

All product documentation and software development environment has been summarized in this document.

Revision History

Date	Revision #	Author	Change Description	Page #
5/8/2018	1.0.0	AW	Initial Release	
8/29/2018	1.1.0	JM	Added Functional Manual Link	
5/20/2021	1.2.0	OW	Updated Template, Updated links for the new Frontgrade website	