

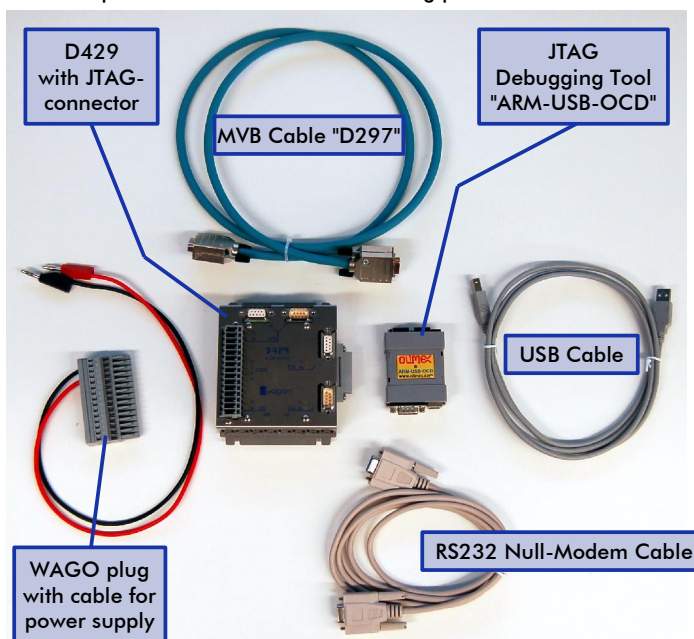
D429 Development Kit

Quick Start Guide



Overview

The D429 Development Kit consists of the following parts:



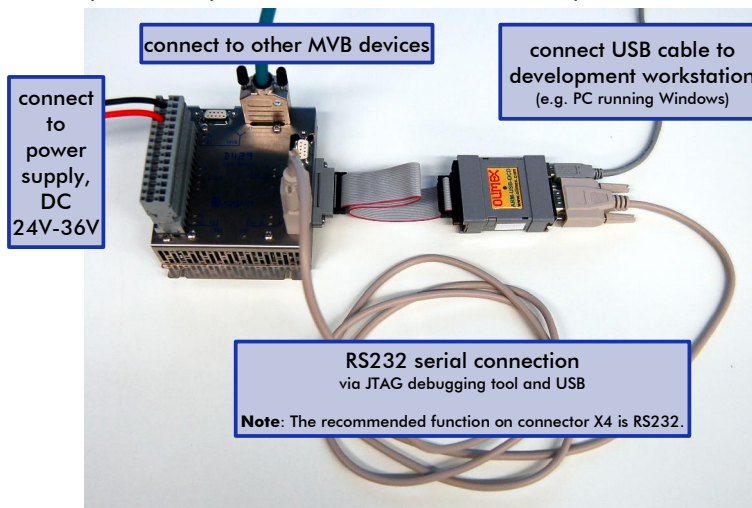
The D429 Development Kit is designed for the purpose of software development in lab environment.



In contrast to the standard product, the D429 of the Development Kit has an external JTAG connector.

Hardware Setup of Development Environment

Assemble the development environment as shown on the picture:



Features of D429:

- MVB: ESD+ or EMD
- CAN: 2.0A/2.0B
- X4: RS232, RS485 or RS422 (RS232 is recommended)
- X5: RS485 or RS422
- 256KB + 1 MB SRAM
- Flash File System (up to 64 MB)
- RTC (battery buffered)
- Power supply: 24V-36V (nominal)

Order Codes:

- D429Dev.D-LV (for MVB-ESD+)
 - D429Dev.T-LV (for MVB-EMD)
- Note: In addition configuration of X4 and X5 must be specified.

Software Setup of Development Environment

Installation

1. Install driver for JTAG debugging tool "ARM-USB-OCD".
Connect JTAG debugging tool "ARM-USB-OCD" via USB to development workstation and install driver downloaded from Duagon's website www.duagon.com/devel/olimex_driver_arm_usb_ocd_071206.zip.
Note: Don't install the OLIMEX CDROM.
2. Install Cygwin [1].
3. Install GNU Toolchain [1].
4. Install OpenOCD [1].
5. Install CONTROLLER Driver Kit for D429.
Note: Copy file "contr_d429.tgz" to preferred directory "/duagon/driver_kits" and extract archive using command "tar xvzf contr_d429.tgz".

[1] Please refer to Duagon document "d-000553-nnnnnn, eCos Real-Time Operating System for AT91DUAGON – User's Guide", which can be downloaded from Duagon's website www.duagon.com/devel/ecos_at91duagon.pdf.

Setup of OpenOCD Server

Batch file to start OpenOCD server:

```
openocd-ftd2xx.exe -f duagon_olimex.cfg
pause
call duagon_olimex.bat
```

Content of file "duagon_olimex.cfg":

```
# Daemon configuration
telnet_port 4444
gdb_port 3333
daemon_startup reset

# JTAG interface configuration, ft2232 options
interface ft2232
ft2232_device_desc "Olimex OpenOCD JTAG A"
ft2232_layout "olimex-jtag"
ft2232_vid_pid 0x15BA 0x0003
jtag_speed 0
reset_config srst_only srst_pulls_trst
jtag_device 4 0x1 0xf 0xe

# Target configuration
target arm7tdmi little run_and_halt 0 arm7tdmi
run_and_halt_time 0 2000
```

Note: For more information about the OpenOCD configuration file, take a look at "http://openfacts.berlios.de/index-en.phtml?title=OpenOCD_configuration".

Setup Firmware of D429

By default (after power-up), the D429 will start the demo application.
To be able to debug an user application, the startup of the D429 have to just load the PLD firmware and then remain at prompt "uMON>" of Boot Loader "MicroMonitor".

For this, download the following startup script using uMON-command "xmodem -d -F startup -f be":

```
=====
# Startup Script for D429 Development Kit
# =====

# -----
# Check settings for hardware configuration.
# -----
if $PLD_BCR seq \ $PLD_BCR goto ERROR_HW_CFG

# -----
# Configure hardware.
# -----
pld -V -s -u -e -F pld.bin -R BCR=$PLD_BCR
goto EXIT

# -----
# Error handling.
# -----
# ERROR_HW_CFG:
echo "ERROR: No hardware configuration defined."
reset

# -----
# Exit the script.
# -----
# EXIT:
set PLD_BCR
exit
```

Debugging an Application using GNU GDB/Insight

Compiling for debugging:

- do not optimize code (i.e. compiler flag "-O0")
- don't strip debugging symbols from executable ELF file (i.e. don't use linker flag "-s")

Note: Set Makefile variable "DEBUG" to 1.

Start debugger "GDB" by following command line:

```
arm-elf-gdb -x duagon_openocd.gdb app.elf
```

Content of file "duagon_openocd.gdb":

```
# connect to target
target remote localhost:3333

# configure download
set download-write-size 2048
set remote memory-write-packet-size 2048
set remote memory-write-packet-size fixed
monitor arm7_9 sw_bkpts enable
monitor arm7_9 fast_writes enable
monitor arm7_9 dcc_downloads disable

# reset target
monitor reset
monitor wait_halt

# load executable
load
```

Related Documents

Data Sheet	d429_ds.pdf
SW Driver Kit "CONTROLLER"	contr_d429.tgz

All documents can be downloaded from our webpage "www.duagon.com".



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