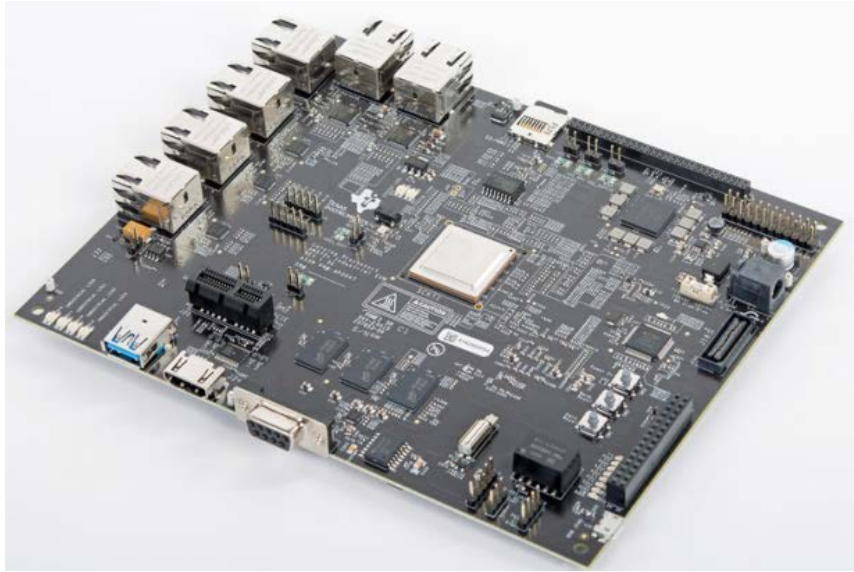


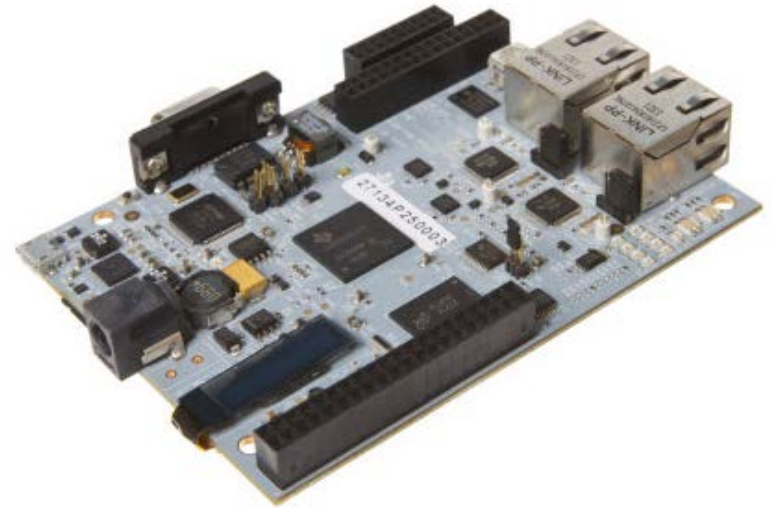
Demonstrating EtherCAT[®] Master on Sitara[™] AM57x Gb Ethernet and PRU-ICSS

TI Design: <http://www.ti.com/tool/TIDEP0079>



EtherCAT master
AM5728 IDK

<http://www.ti.com/tool/TMDXIDK5728>



EtherCAT slave
AM3359 ICEv2

<http://www.ti.com/tool/TMDSICE3359>



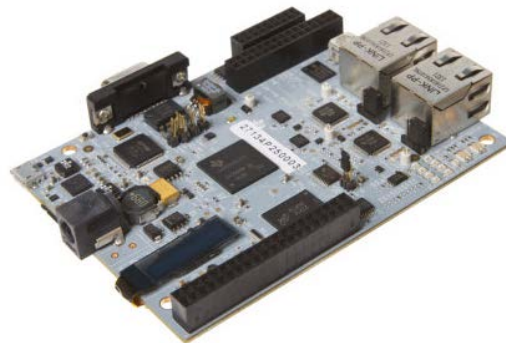
Ethernet cable



Computer



AM5728 IDK



AM3359 ICEv2



USB to micro-USB
cable



5V



24V

Power adapters



Micro USB

Required software for building/running EC-Master

- Acontis EtherCAT master stack and PRU-ICSS EtherCAT link layer library:
<http://www.acontis.com/eng/products/downloads/ethercat-for-ti-processors.html>
- Acontis EC-Engineer tool:
<http://www.acontis.com/eng/products/ethercat/ec-engineer/index.php>
- Processor SDK RTOS for AM57x:
http://software-dl.ti.com/processor-sdk-rtos/esd/AM57X/02_00_02_11/index_FDS.html
- Code Composer Studio (CCS):
http://processors.wiki.ti.com/index.php/Download_CCS
- Preferred Terminal Emulator

Required software for building/running EC-Slave

- Download PRU-ICSS EtherCAT slave (pre-built app):
http://software-dl.ti.com/processor-industrial-sw/esd/PRU_ICSS_EtherCAT_Slave/latest/index_FDS.html
- Processor SDK RTOS for AM335x:
http://software-dl.ti.com/processor-sdk-rtos/esd/AM335X/latest/index_FDS.html

How to run EtherCAT slave on ICEv2 via SD card

- Creating an SD Card:

http://processors.wiki.ti.com/index.php/Processor_SDK_RTOS_Creating_a_SD_Card_with_Windows

- SD card image file:

`\processor_sdk_rtos_am335x_X_XX_XX_XX\prebuilt-sdcards\evmAM335x\sd_card_img`

- Copy EtherCAT slave “app” and “MLO” in SD card.

- MLO file:

`processor_sdk_rtos_am335x_X_XX_XX_XX\prebuilt-sdcards\evmAM335x\sd_card_files`

- Prebuild EtherCAT slave application:

`pru_icss_ethercat_slave_prebuilt_01.00.04.02\applications\ethercat_slave_demo_arm\AM335x_release`

- Plug the microSD card into the ICEv2.
- Plug in the power cable.

ENI file creation using EC-Engineer

Steps for creating ENI file using EC-Engineer

1. Connect the EtherCAT slave to the computer (if using the AM3359 ICEv2, connect the Ethernet cable to J2)
2. Open the EC-Engineer tool
3. Select Online Configuration
4. Select the EtherCAT Master unit (Class A) as the master unit
5. Select 2000 as the Cycle Time (μs)
6. Select the desired network adapter as the slave that is connected to the local system.
7. Navigate to the Network option
8. Click Scan EtherCAT Network
9. Click Export ENI after the slaves are found, selecting Export ENI exports eni.xml

ENI file creation using EC-Engineer

Troubleshooting... What if my board is not scanned??

MasterENI.c file

- We can use [bin2header tool](#) in order to create EC-Master MasterENI.c file for ICEv2 board.
- In a console window, run “bin2header” tool using the instructions below:

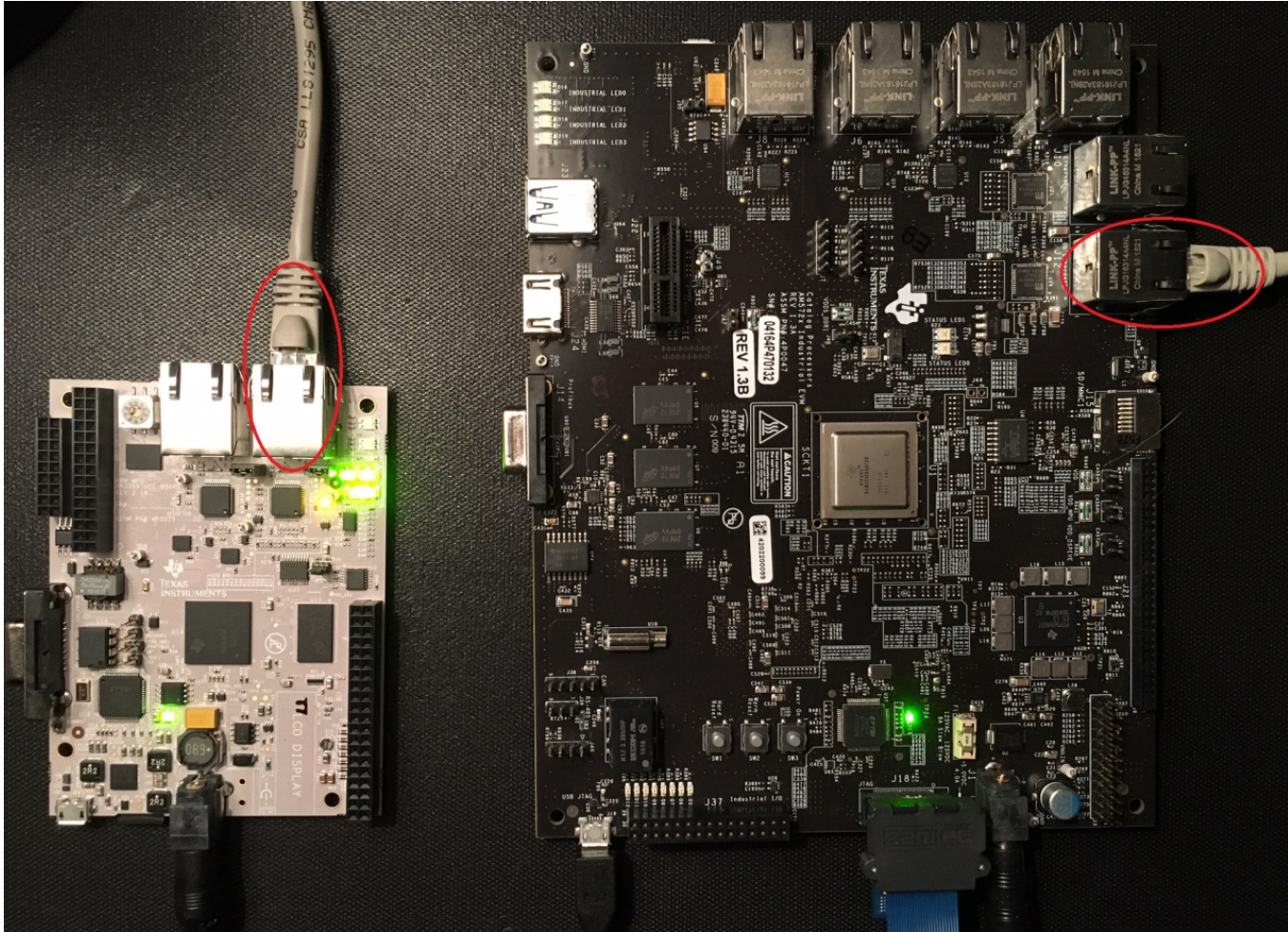
```
C:\windows\system32\cmd.exe
C:\TT\ADU-ICSS-EtherCAT_Slave_01.00.04.02\examples\tools\bin2header>bin2header.exe eni_ICEv2.xml MasterENI.c MasterENI_xml_data
file size: 16644
```

- Add size to MasterENI.c file

```
MasterENI.c x
0x43,0x6f,0x6e,0x66,0x69,0x67,0x3e,0x3c,0x2f,0x45,
0x74,0x68,0x65,0x72,0x43,0x41,0x54,0x43,0x6f,0x6e,
0x66,0x69,0x67,0x3e };
unsigned int MasterENI_xml_data_size = 16644;
```

- Confirm new MasterENI.c file is at: Workspace\SYSBIOS_AM57x\EcMasterDemo\eni

Run EC-Master demo on CPSW



Copy PRU-ICSS Link Layer Library

Please don't forget to copy [libemllICSS.a](#)

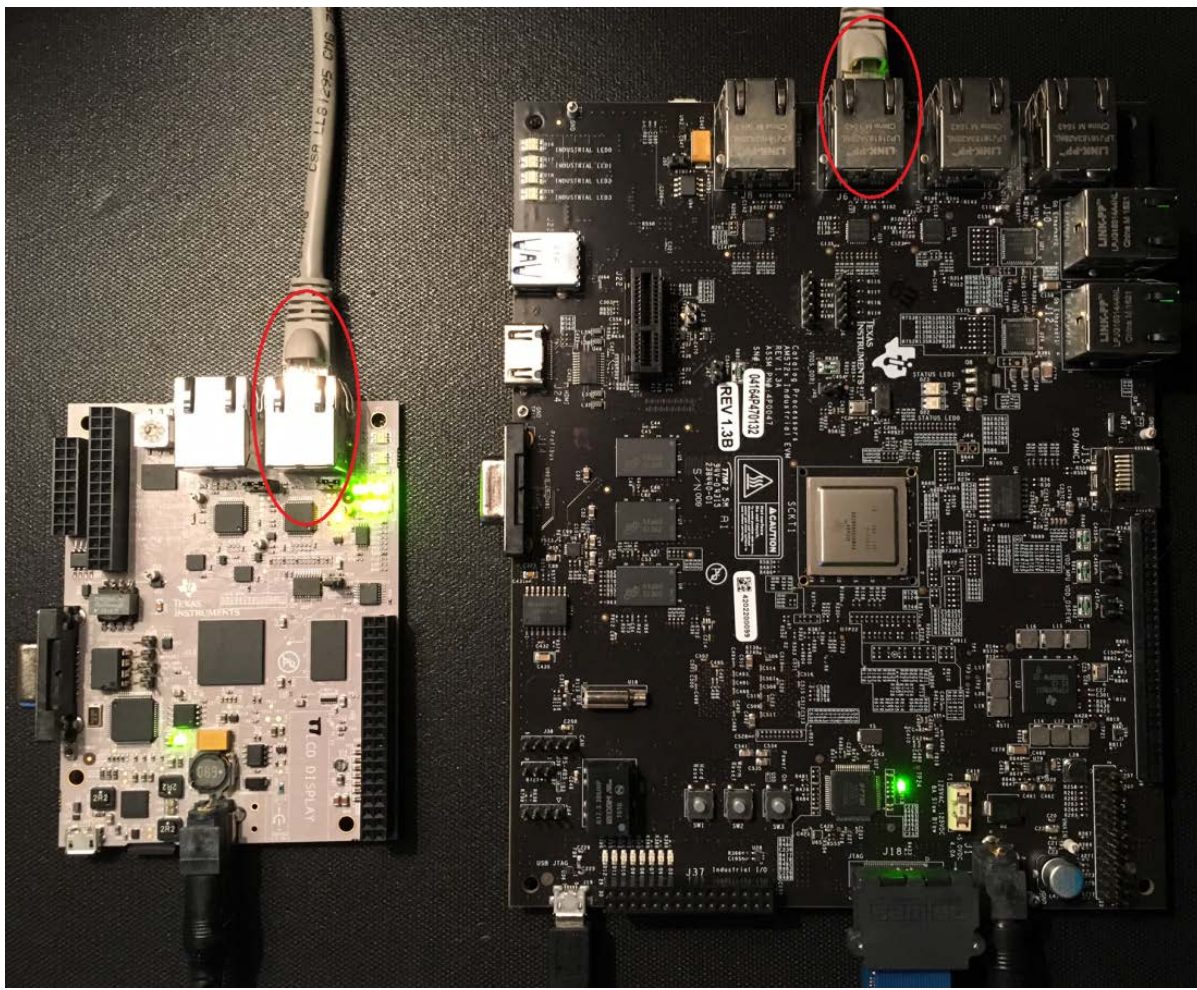
From:

[EC-Master-ICSS-V2.9.1.15-SYSBIOS_AM57x-Protected\SDK\LIB\SYSBIOS\am57x\Protected](#)

To:

[EC-Master-V2.9.1.15-SYSBIOS_AM57x-Protected\SDK\LIB\SYSBIOS\am57x\Protected](#)

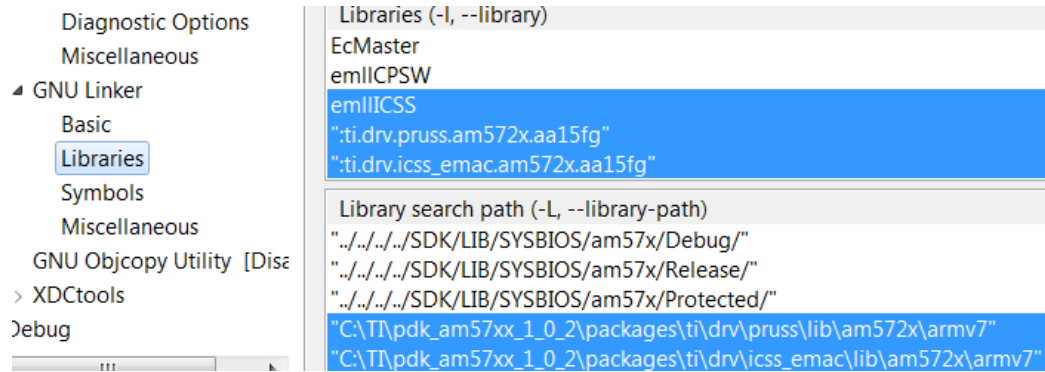
Run EC-Master demo on PRU-ICSS



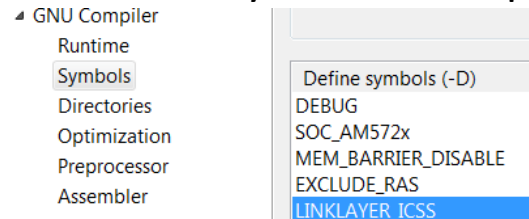
Run EC-Master demo on PRU-ICSS

CCS EcMasterDemo

- Add below libraries to the project properties:



- Add below symbol to the project properties:



For More Information

- TI Design (TIDEP-0079) EtherCAT Master Reference Design on Sitara AM57x Gb Ethernet and PRU-ICSS with Time Triggered Send: www.ti.com/tool/TIDEP0079
- EtherCAT Master on Sitara Processors Training Series: <https://training.ti.com/ethercat-master-on-sitara-processors-training-series>
- Sitara™ AM57x Processors: <http://www.ti.com/am57x>
- Processor SDK for AM57x: <http://www.ti.com/tool/PROCESSOR-SDK-AM57X>
- For questions regarding topics covered in this training, visit the Sitara Processors support forum at the TI E2E Community website: https://e2e.ti.com/support/arm/sitara_arm/f/791