

Introduction of Device and Driver Support for Yokogawa F3RP71

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Outline

- F3RP71 (and F3RP61)
- Development and Runtime environment
- F3RP71 Device/Driver support
- Release Plan

F3RP71 (and F3RP61)

- Linux CPU module for Yokogawa PLC (FA-M3 series)
 - Successor of F3RP61
 - 35-40 F3RP61 in operation @ J-PARC MR
 - Evaluating one F3RP71



Development & Runtime Environment

- Yocto + Xilinx SDK + F3RP71 Board Support Package
 - ✱ Bootable SD card based on user-land by Yokogawa
- Make use of Plain GNU toolchain + Makefile
 - ✱ Cross development on Scientific Linux 6 (RHEL6 clone).
- EPICS base, modules and IOC products located on NFS
 - ✱ For easy replacement of CPU module
- Available APIs for IO module access
 - ✱ Library functions.
 - ✱ F3RP61 compatible ioctl(2) functions.

F3RP71 support

- Porting stated with F3RP61 v1.3.0
 - ✿ F3RP61 support originally developed by Odagiri-san (KEK)
 - ✿ F3RP61 v1.2.1 in operation at J-PARC MR
- (almost) source code compatible with F3RP61 support
 - ✿ Make use of F3RP61 compatible API
 - ✿ Minor modifications are needed in:
 - Macro for ioctl() request code
 - Path to header files
 - Device file for Ladder CPU
- A minimum test has been carried out
 - ✿ Blinking LEDs on DO module (F3WD64) thru caput.
 - ✿ More test is needed (DO, AI/AO, Ladder CPU, ...)
- Merging F3RP71 support with F3RP61 is desirable

Release date : TBD

● Decisions to make:

- ✳ DTYP field, DBD name, library name, ...
 - Use “F3RP61” for both 71 and 61
 - No need to modify db; Might be a bit confusing as DTYP for F3RP71
 - Introduce new DTYP, e.g, “eRT3” or “FAM3”
 - Need to modify EPICS db, Makefile, ... etc.
 - Individual DTYP for each: “F3RP71” and “F3RP61”
 - Need to modify EPICS db, Makefile, ...etc.
- ✳ HOST-ARCH
 - linux-f3rp71
 - F3RP61 uses linux-f3rp61
 - linux-arm
 - May conflicts with other arm-based IOCs ... ABI for 71 is armel

● Reorganization of F3RP61 support is needed

- ✳ v1.3.0 ... <https://github.com/EPICS-F3RP61/epics-f3rp61>
- ✳ v1.6.0 ... <http://www-linac.kek.jp/cont/epics/f3rp61>

● NIC hangs up on heavy network traffic

- ✳ Expecting a bug-fixed kernel by August
- ✳ Close contact with Yokogawa

Summary

- Device support for F3RP71 was ported from F3RP61
- A minimum test has been carried out
- Release data TDB