R-IN32M3
Bus Interface Solution Kit

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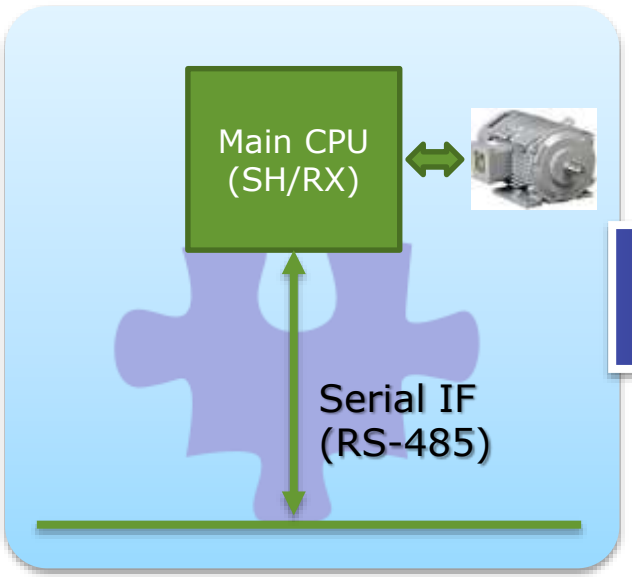
What is "Bus interface Solution Kit for Industrial Ethernet" ?

Only "Add on" this solution !

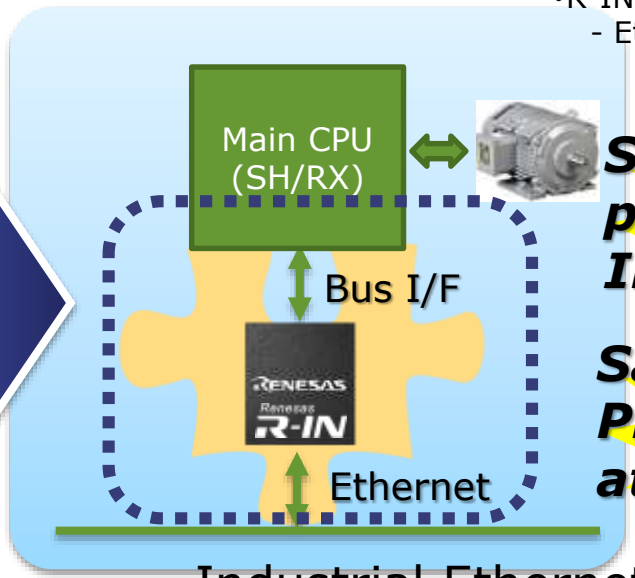
Supply packaged bus interface solutions

Deliverable Solutions

- Application Note
- Main CPU(RX) Sample SW
  - Boot Sequence from CPU
  - Access program to shared memory in R-IN32
- R-IN Sample FW
  - EtherCAT Protocol, API



Conventional Fieldbus
DeviceNet/PROFIBUS/CC-Link
etc..



Industrial Ethernet
EtherCAT / PROFINET / EtherNet/IP

Supply packaged bus IF solutions!

Sample Protocol Stack attached!

Easy Conversion from Fieldbus to Industrial Ethernet for Customer!
Especially Servo, Inverter Application.

Bus Interface Solution Kit Ver.2.0

Outline

- This solution kit enables the host MPU to access high-speed Industrial Ethernet easily by use of the External MPU IF function of R-IN32M3.

Target

- To support Industrial Ethernet communication newly from the conventional field bus device, especially motion controller and other servo devices.

- To execute the fast main processing of host MPU and handling the communication protocol separately and smoothly.

Bus Interface Solution Kit Ver.2.0

Function

- Sample software for host MPU (RX63T) ※1
- Support two boot sequences for R-IN32M3
  (External MPU boot / Serial Flash ROM boot)
- Include exclusive access to shared memory.
- Support EtherCAT protocol.

How to get

- Currently downloading from the web is Not supported.
- Please contact our sales person.

Note

※1 This sample software is for RX63T as the external MPU.

※ This sample software has been checked of operation with the original hardware environment, which contains "TS-R-IN32M3-EC" board produced by TESSERA TECHNOLOGY INC., Renesas Starter Kit for RX63T(R0K5563THS000BE) and the original bridge board. Currently, we have no plan to distribute the original bridge board.

Content

Protocol

- EtherCAT

Contents

- Sample software for External MPU(RX63T)
- Sample software for R-IN32M3
- Technical document
- Project file of SSC tool
- Patch file for SSC code.
- ESI sample file.

Operation checked

- TwinCAT

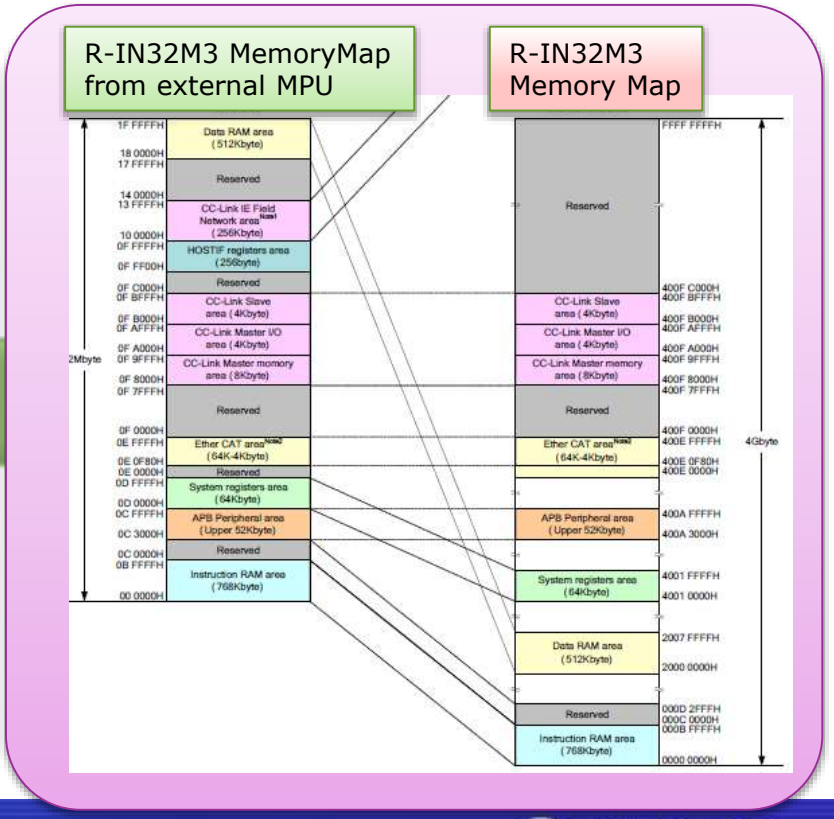
Note

- The difference from the sample code produced by Slave Stack Code(SSC) Tool (Ver. 1.3.1.0) is provided as patch file.
- The source files produced by SSC tool are not contained. Please obtain SSC tool from EtherCAT Technology Group (ETG).

What is "External MPU Interface" of R-IN32M3?

Outline

- External MPU can access the internal resources in R-IN32M3 through external bus.
- Address space: 2Mbyte (iRAM, Data RAM, etc.)
- Bus width (32bit/16bit)
- External MPU mode : MEMIFSEL(pin)=H
- Interface mode
  - Synchronous SRAM interface mode
  - Asynchronous SRAM interface mode
  - Synchronous SRAM type transmission mode

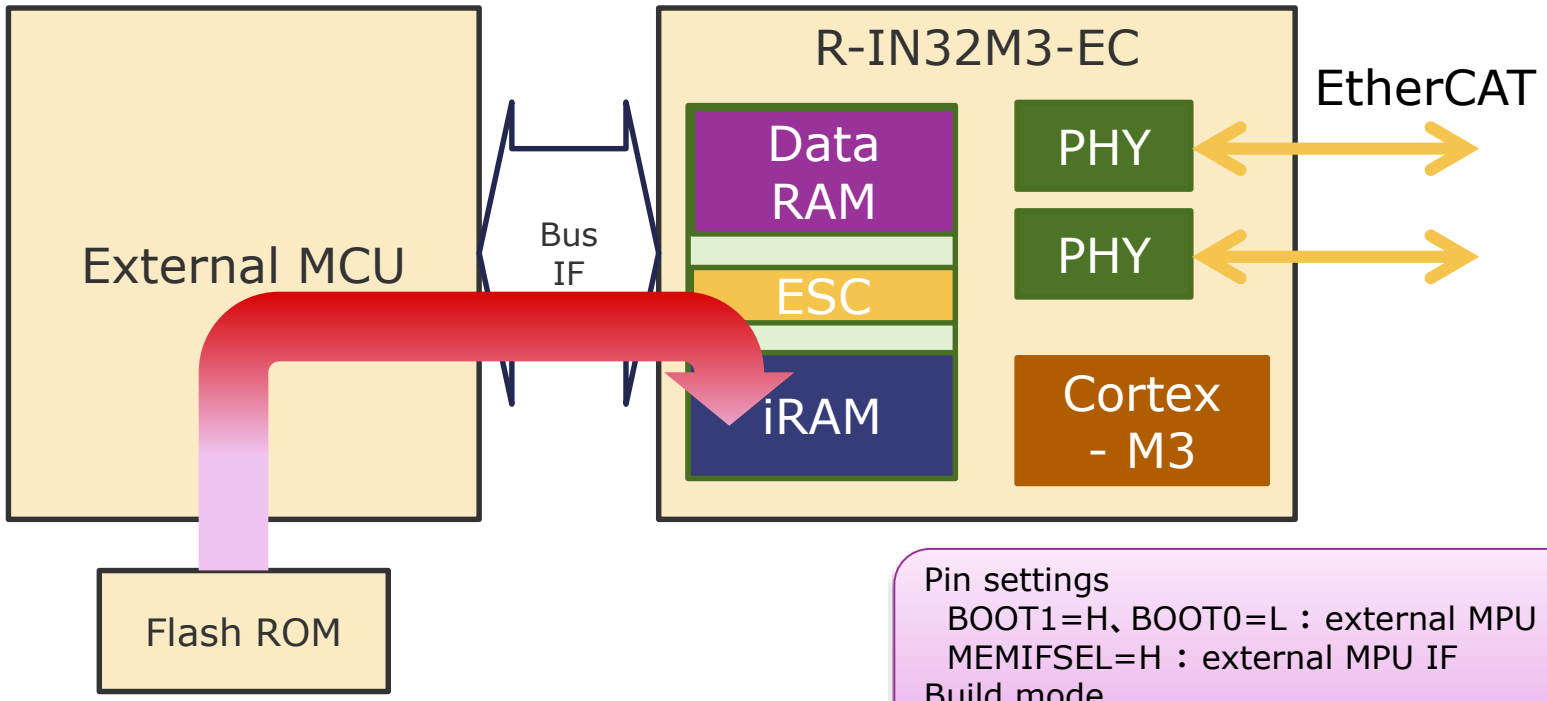


Boot Mode

- External MPU Boot Mode
- Serial Flash ROM Boot Mode

Boot Mode 1 External MPU Boot

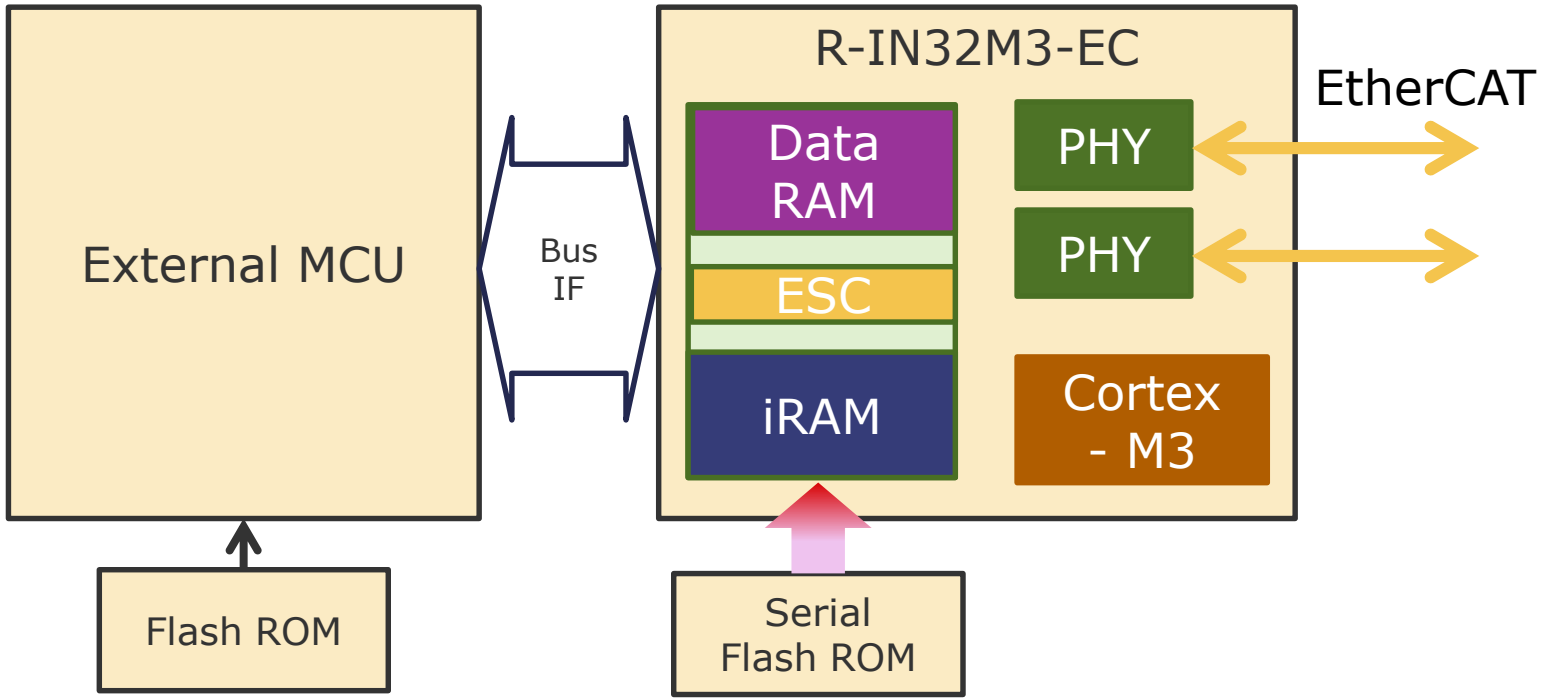
- ✓ In this mode, the program for R-IN32M3 is downloaded from the Flash ROM of External MPU to instruction RAM of R-IN32M3 though the bus interface.
- ✓ The binary program for R-IN32M3 is in the sample software, *Source¥rin32m3¥rin32m3_prog.h*
- ✓ No Serial Flash ROM is needed in external MPU boot mode.



Pin settings
BOOT1=H、BOOT0=L：external MPU boot
MEMIFSEL=H：external MPU IF
Build mode
Select ”Debug_RinBootMode”

Boot Mode 2 Serial Flash ROM Boot

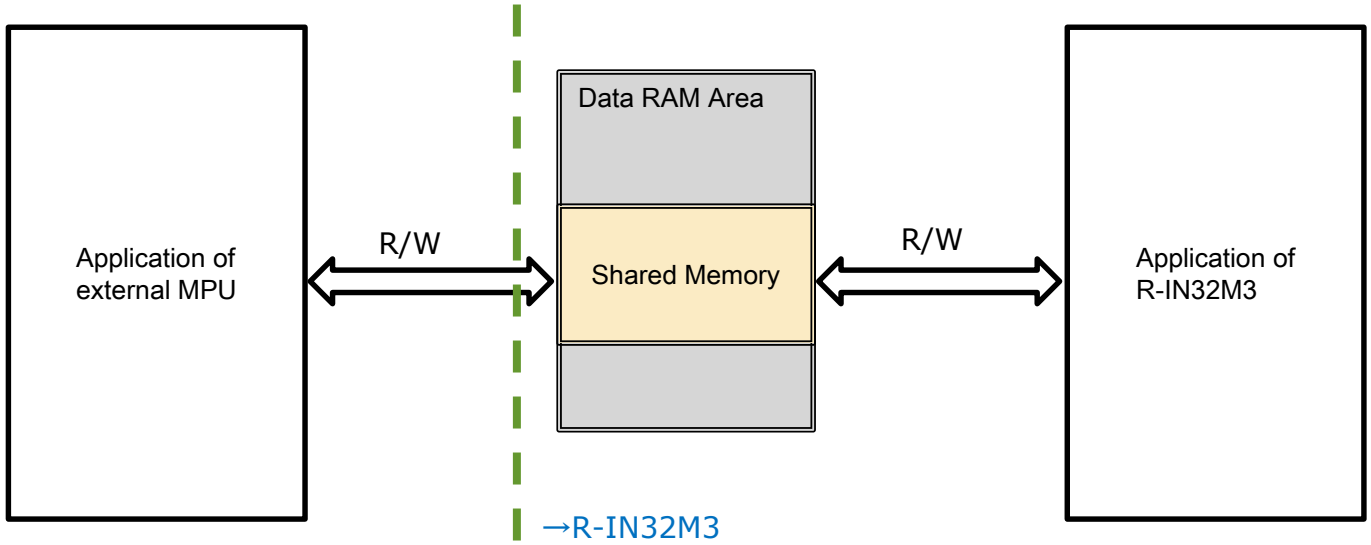
- ✓ R-IN32M3 downloads the program from external serial flash ROM to instruction ROM and is booted up.
- ✓ The host IF registers are set by the external MPU.
- ✓ Some initial settings of external bus pins are needed in this mode.



Pin settings
BOOT1=L、BOOT0=1H：serial flash ROM boot
MEMIFSEL=H：external MPU IF
Build mode
Select "Debug_RinSFlashBootMode"

Exclusive access to the shared memory

- ✓ The handshake method is applied in the sample software for external MPU and R-IN32 not to access the shared resources simultaneously.
- ✓ Shared memory is mapped on Data RAM to access the communication data.
- ✓ External MPU can access the shared memory without regard to exclusive access control.
- ✓ Maximum size of shard memory in the sample software : Max 1920Byte



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