Directions

Write code to implement Modes 0, 1, and 2. Each mode must have an example function showing how this code would be used in an application. Please also make sure to initialize any necessary items. Read the below sections as though it was a datasheet/specification for a device or external IC. Please use the files in the **inc/** directory, this includes the pin numbers as well as some other helper functions which should be used to implent the solution. NOTE you are not required to use all functions provided, it is up to you how it is implemented.

Additional Considerations

- Write the code assuming that it will be used in other projects
    - This also means it has to work alongside other code
- Write the code assuming that it will be used in other hardware
- Create as many or as few files as you see necessary or helpful

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Device Pins

NOTE the direction of each pin is from the perspective of the device that is being controlled, not the MCU. EX SUCCESS is an output, which means that the MCU pin which it is connected to should likely be an input of some kind.

nRST: input

- **0**: Holds the device in reset
- **posedge**: Enters configuration mode
- **1**: Device not in reset

nTEST: input

- Manufacturer debug pin, should always be 1

DONE: output (open drain, requires pullup)

- **0**: Configuration is not started or still pending
- **1**: Configuration is complete

SUCCESS: output

- **0**: When DONE = 1 there was an error in configuration
- **1**: When DONE = 1 configuration completed without error

CTRL: input/output

- **0**: Selects mode 0 for configuration (posedge nRST)
- **1**: Selects mode 1 for configuration (posedge nRST)
    - In mode 1, it also serves as an nEN output which the device must control

SELECT: input

- **0**: The device is not being selected for configuration
- **1**: The device is selected for configuration

Device Supplies

VCCA

VCCA should be powered on only while nRST is 0

VCCB

VCCB should be powered on only while nRST is 0 and after VCCA is stable

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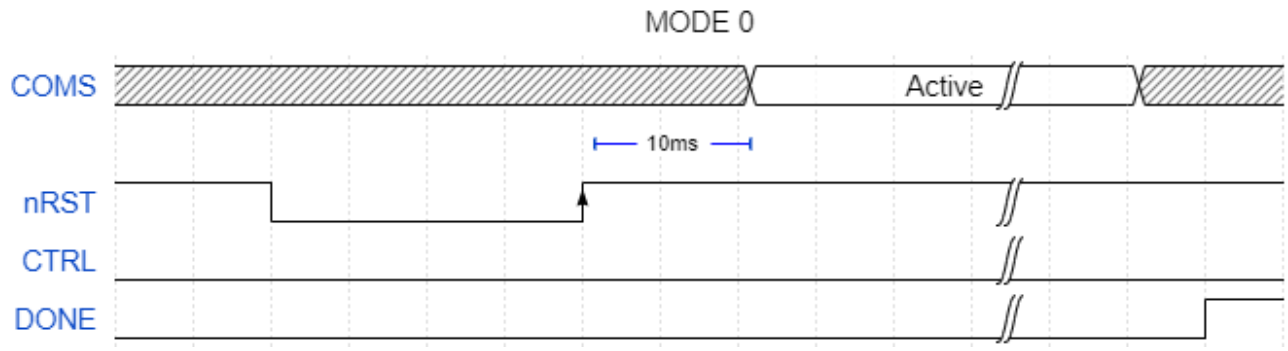
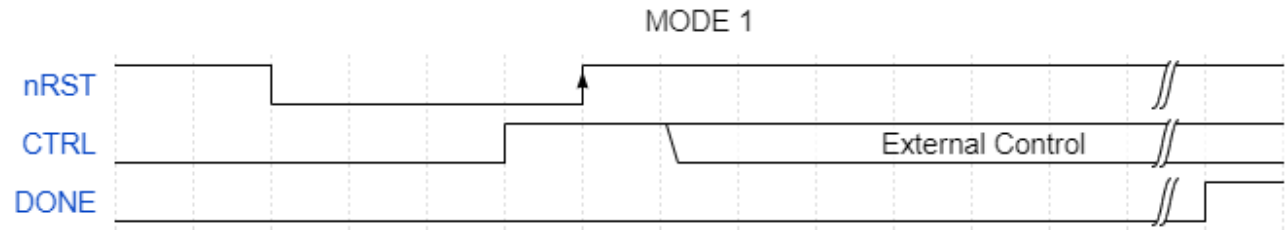
MODES

In general, assume that the duration of the configuration time is: `1 + sizeof(data) * 8 / 1000000` seconds at least, and no more than 2x that

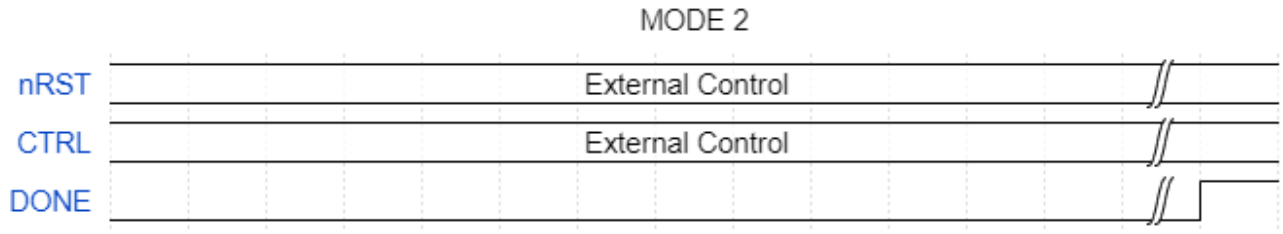
MODE 0



MODE 1



MODE 2



Additional Notes

- "External Control" means the MCU will not be the one controlling that pin at that time.

Final Deliverable

- Please do not modify any of the provided files
- Please place completed files in the top directory of your submission (next to inc/)
- Please submit your answers in a github repo and share it with: tucker.swan@10xar.com
    - The commit history will be checked for this repository
- Please also add a README which provides a time estimation of how long it took to complete and any additional information