Unit 2- ARM Processors and Peripherals

PERIPHERALS

- ARM peripherals are hardware components that interface with the ARM processor to provide additional functionality beyond the core processing capabilities.

- These peripherals enable the system to interact with the external environment, perform specific tasks and enhance overall system performance.

GPIO (General Purpose Input Output)

- GPIO (General Purpose Input Output) ARM based LPC2148 m icrocontroller has 45 general purpose input output pins.
- The operating voltage of these input output pins is 5 volts. GPIO registers control the dev ice pins which are not linked to a particular periphera l function.
- The device pins can be arranged as i/p or o/p. Indiv idual registers allow for clearing any number of o/p’s concurrently.
- The output register value can be read back, & the present condition of the port pins

- LPC2148 has two IO ports each of 32-bit wide, provided by 64 IO pins.
- Ports are named as P0 and P1. Pins of each port labelled as Px.y where “x” stands for port number, 0 or 1. Where “y” stands for pin number usually between 0 to 31.
- Each pin can perform multiple functions.
- For example: Pin no.1 which is P0.21 serves as GPIO as well as PWM5, AD1.6 (A/D converter1, input 6), CAP1.3 (Capture input for Timer1, Channel 3)

Digital to analog Converter:

- This LPC2148 microcontroller has one 10 bit digital to analog converter (DAC).
- This converter converts the digital input into analog output.
- The maximum DAC output voltages are called VREF voltages.
- Power down mode and buffered output is also available in this digital to analog converter

10-bit ADC (Analog to Digital Converter)

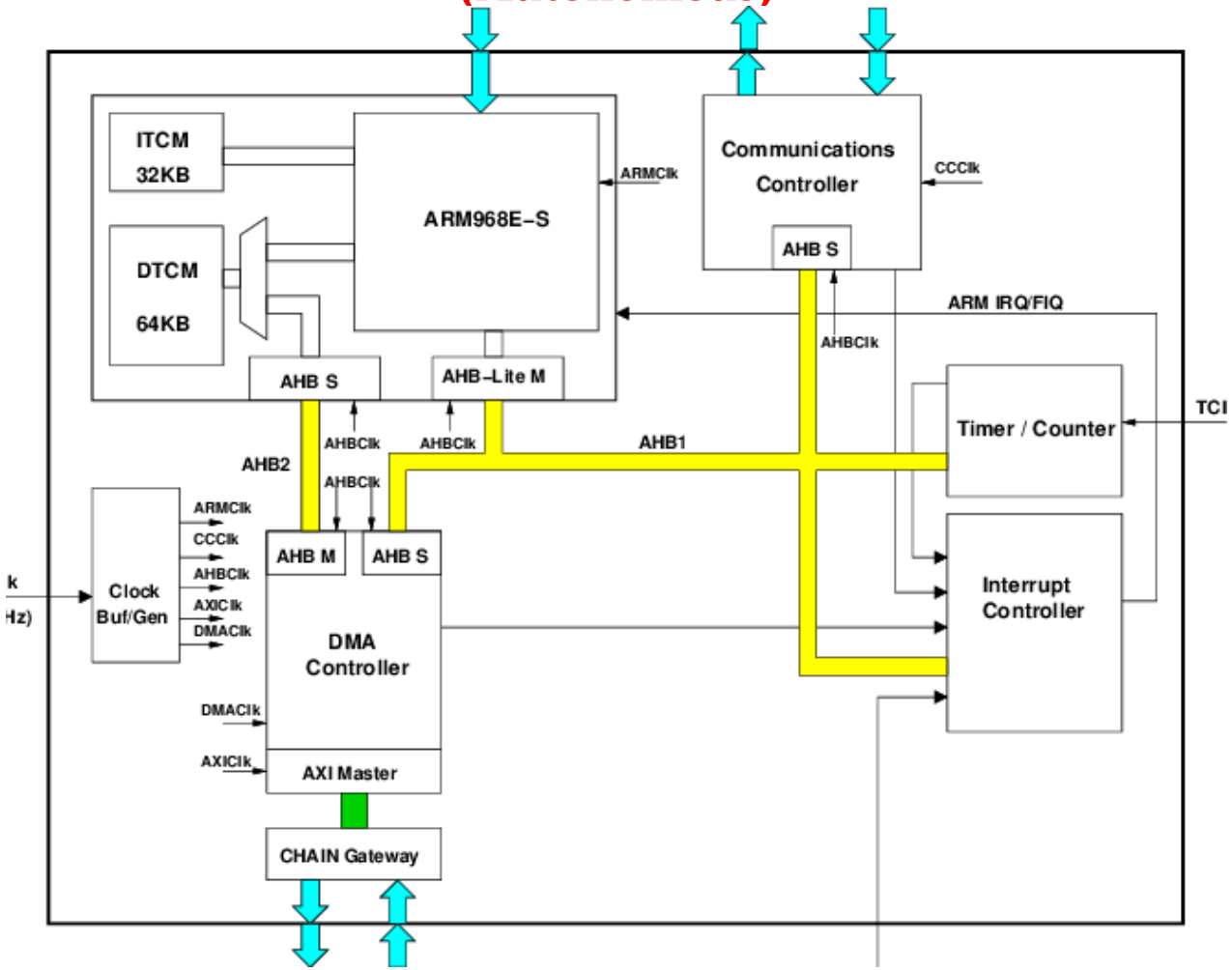
- The microcontrollers like LPC2144/46/48 include two ADC converters ADC0 and ADC1, and are only 10-bit straight approximation ADC's.
- Although ADC0 includes 6- channels and ADC1 has 8- channels

10-bit DAC (Digital to Analog Converter)

- This LPC2148 microcontroller has one 10 bit digital to analog converter (DAC). This converter converts the digital input into analog output.
- The maximum DAC output voltages are called VREF voltages. Power down mode and buffered output is also available in this digital to analog converter

Device Controller-USB 2.0

- The universal serial bus consists of 4-wires, and that gives the support for communication between a number of peripherals and hosts.
- This controller allows the bandwidth of USB for connecting devices using a protocol based on the token.
- The bus supports unplugging hot plugging and dynamic collection of the devices. Every communication is started through the host-controller.
- These microcontrollers are designed with a universal serial bus apparatus controller that allows 12 Mbit/sec data replaced by a host controller of USB


ITCM
32KB
DTCM
64KB
ARM968E-S
AHB S
AHB-Lite M
ARMClk
Communications
Controller
CCClk
AHB S
ARM IRQ/FIQ
AHBClk
Timer / Counter
TCI
AHB1
AHB2
AHBClk
AHBClk
AHBClk
AHBClk
ARMClk
CCClk
AHBClk
AXIClk
DMAClk
Clock
Buf/Gen
AHB M
AHB S
DMA
Controller
Interrupt
Controller
DMAClk
AXIClk
AXI Master
CHAIN Gateway

Thank you