**mbed OS5 Handbook**

**Drivers APIs**

[Driver APIs](https://os.mbed.com/docs/mbed-os/v5.13/apis/drivers.html) include analog and digital inputs and outputs on development boards, as well as digital interfaces, which allow your board to interface with a computer or external devices.

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| --- | --- | --- | --- | --- |
| [AnalogIn](https://os.mbed.com/docs/mbed-os/v5.13/apis/analogin.html) | [BusInOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/businout.html) | [Timeout](https://os.mbed.com/docs/mbed-os/v5.13/apis/timeout.html) | [Flash IAP](https://os.mbed.com/docs/mbed-os/v5.13/apis/flash-iap.html) | [I2CSlave](https://os.mbed.com/docs/mbed-os/v5.13/apis/i2cslave.html) |
| [AnalogOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/analogout.html) | [PortIn](https://os.mbed.com/docs/mbed-os/v5.13/apis/portin.html) | [Timer](https://os.mbed.com/docs/mbed-os/v5.13/apis/timer.html) | [RawSerial](https://os.mbed.com/docs/mbed-os/v5.13/apis/rawserial.html) | [CAN](https://os.mbed.com/docs/mbed-os/v5.13/apis/can.html) |
| [DigitalIn](https://os.mbed.com/docs/mbed-os/v5.13/apis/digitalin.html) | [PortOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/portout.html) | [LowPowerTicker](https://os.mbed.com/docs/mbed-os/v5.13/apis/lowpowerticker.html) | [Serial](https://os.mbed.com/docs/mbed-os/v5.13/apis/serial.html) | [MbedCRC](https://os.mbed.com/docs/mbed-os/v5.13/apis/mbedcrc.html) |
| [DigitalOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/digitalout.html) | [PortInOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/portinout.html) | [LowPowerTimeout](https://os.mbed.com/docs/mbed-os/v5.13/apis/lowpowertimeout.html) | [SPI](https://os.mbed.com/docs/mbed-os/v5.13/apis/spi.html) |  |
| [DigitalInOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/digitalinout.html) | [PwmOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/pwmout.html) | [LowPowerTimer](https://os.mbed.com/docs/mbed-os/v5.13/apis/lowpowertimer.html) | [SPISlave](https://os.mbed.com/docs/mbed-os/v5.13/apis/spislave.html) |  |
| [BusIn](https://os.mbed.com/docs/mbed-os/v5.13/apis/busin.html) | [InterruptIn](https://os.mbed.com/docs/mbed-os/v5.13/apis/interruptin.html) | [Watchdog](https://os.mbed.com/docs/mbed-os/v5.13/apis/watchdog.html) | [QuadSPI (QSPI)](https://os.mbed.com/docs/mbed-os/v5.13/apis/quadspi-qspi.html) |  |
| [BusOut](https://os.mbed.com/docs/mbed-os/v5.13/apis/busout.html) | [Ticker](https://os.mbed.com/docs/mbed-os/v5.13/apis/ticker.html) | [ResetReason](https://os.mbed.com/docs/mbed-os/v5.13/apis/resetreason.html) | [I2C](https://os.mbed.com/docs/mbed-os/v5.13/apis/i2c.html) |  |

**Platform APIs**

[Platform APIs](https://os.mbed.com/docs/mbed-os/v5.13/apis/platform.html) provide general purpose MCU management infrastructure, common data structures and a consistent user experience on top of different standard libraries and toolchains.

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| --- | --- | --- | --- |
| [Wait](https://os.mbed.com/docs/mbed-os/v5.13/apis/wait.html) | [Time](https://os.mbed.com/docs/mbed-os/v5.13/apis/time.html) | [NonCopyable](https://os.mbed.com/docs/mbed-os/v5.13/apis/noncopyable.html) | [CircularBuffer](https://os.mbed.com/docs/mbed-os/v5.13/apis/circularbuffer.html) |
| [Callback](https://os.mbed.com/docs/mbed-os/v5.13/apis/callback.html) | [RTC](https://os.mbed.com/docs/mbed-os/v5.13/apis/rtc.html) | [Shared pointer](https://os.mbed.com/docs/mbed-os/v5.13/apis/shared-pointer.html) | [ATCmdParser](https://os.mbed.com/docs/mbed-os/v5.13/apis/atcmdparser.html) |
| [DeepSleepLock](https://os.mbed.com/docs/mbed-os/v5.13/apis/deepsleeplock.html) | [Debug](https://os.mbed.com/docs/mbed-os/v5.13/apis/debug.html) | [Span](https://os.mbed.com/docs/mbed-os/v5.13/apis/span.html) | [Mbed statistics](https://os.mbed.com/docs/mbed-os/v5.13/apis/mbed-statistics.html) |
| [Power management (sleep)](https://os.mbed.com/docs/mbed-os/v5.13/apis/power-management-sleep.html) | [Memory tracing](https://os.mbed.com/docs/mbed-os/v5.13/apis/memory-tracing.html) | [FileHandle](https://os.mbed.com/docs/mbed-os/v5.13/apis/filehandle.html) | [MPU management](https://os.mbed.com/docs/mbed-os/v5.13/apis/mpu-management.html) |
| [Idle loop](https://os.mbed.com/docs/mbed-os/v5.13/apis/idle-loop.html) | [Error handling](https://os.mbed.com/docs/mbed-os/v5.13/apis/error-handling.html) | [Poll](https://os.mbed.com/docs/mbed-os/v5.13/apis/poll.html) | [ScopedRamExecutionLock](https://os.mbed.com/docs/mbed-os/v5.13/apis/scopedramexecutionlock.html) |
| [CriticalSectionLock](https://os.mbed.com/docs/mbed-os/v5.13/apis/criticalsectionlock.html) | [Assert](https://os.mbed.com/docs/mbed-os/v5.13/apis/assert.html) | [PlatformMutex](https://os.mbed.com/docs/mbed-os/v5.13/apis/platformmutex.html) | [ScopedRomWriteLock](https://os.mbed.com/docs/mbed-os/v5.13/apis/scopedromwritelock.html) |

**Drivers APIs**

**Analog**

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **mbed C++** | **C** | **description** |
| AnalogIn | [AnalogIn](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_in.html#a3504d43564933da5b952c0f4deefb874) (PinName pin) |  |  |
|  | [read](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_in.html#a868d9d1513fbaf34c4d5d15a7fa4baa8) () | AnalogIn\_read() |  |
|  |  |  |  |
| AnalogOut | [AnalogOut](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_out.html#a32d877265c2bc3c90bbccf398c281f97) (PinName pin) |  |  |
|  | [write](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_out.html#a04593bbcefdddb53406c0943a711f293) (float value)  [write\_u16](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_out.html#a8921787f68f4683761bc28f80bcf2feb) (unsigned short value) |  |  |

**Digital In/Out**

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **mbed C++** | **C** | **description** |
| DigitalIn | [DigitalIn](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_in.html#a98e5245aa5e717c5a561fba636b8282c) (PinName pin)  [DigitalIn](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_in.html#aa902382affc1b7bae1b4632cc3d6409a) (PinName pin, PinMode [mode](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_in.html#a12ffae4af877bdcd41ad2fc6a0a444ad)) |  |  |
|  | [read](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_analog_in.html#a868d9d1513fbaf34c4d5d15a7fa4baa8) () | AnalogIn\_read() |  |
|  | [mode](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_in.html#a12ffae4af877bdcd41ad2fc6a0a444ad) (PinMode pull) |  | set mode as PullUp/PullDown/PullNone/OpenDrain |
|  | [is\_connected](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_in.html#acd4f2a88f26859acfb84737dbdd95345) () |  | check mypin object is initialized and connected to a pin |
| DigitalOut | [DigitalOut](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_out.html#ab89d7345362cf8a18c535531cd05cbe6) (PinName pin)  [DigitalOut](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_out.html#a4ff3198805136b5bab272a9e80505cfc) (PinName pin, int value) |  |  |
|  | [write](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_out.html#a25d1931bc29d014446294ab8dc470f2a) (int value) |  |  |
|  | [read](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_out.html#aaab5dab5b969a87f538242e524431637) () |  |  |
|  | [is\_connected](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_digital_out.html#acd4f2a88f26859acfb84737dbdd95345) () |  | check mypin object is initialized and connected to a pin |
|  |  |  |  |
| BusIn | [BusIn](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_in.html#a3e21f55d6313b2656a29fabd58354ff8) (PinName p0, PinName p1=NC, PinName p2=NC, PinName p3=NC, PinName p4=NC, PinName p5=NC, PinName p6=NC, PinName p7=NC, PinName p8=NC, PinName p9=NC, PinName p10=NC, PinName p11=NC, PinName p12=NC, PinName p13=NC, PinName p14=NC, PinName p15=NC)  [BusIn](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_in.html#a2726c05bc999657475557364710c5d28) (PinName pins[16]) |  | ou can have up to 16 pins in a Bus. |
|  | [read](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_in.html#aaab5dab5b969a87f538242e524431637) () |  |  |
|  | [mode](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_in.html#a12ffae4af877bdcd41ad2fc6a0a444ad) (PinMode pull) |  |  |
| BusOut | [BusOut](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_out.html#a3b0fadabe8e5208de19b2349a2697dde) (PinName p0, PinName p1=NC, PinName p2=NC, PinName p3=NC, PinName p4=NC, PinName p5=NC, PinName p6=NC, PinName p7=NC, PinName p8=NC, PinName p9=NC, PinName p10=NC, PinName p11=NC, PinName p12=NC, PinName p13=NC, PinName p14=NC, PinName p15=NC)  [BusOut](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_out.html#a14458cb7f53d0b84ebb69213f68805d4) (PinName pins[16]) |  |  |
|  | [write](https://os.mbed.com/docs/v5.13/mbed-os-api-doxy/classmbed_1_1_bus_out.html#a25d1931bc29d014446294ab8dc470f2a) (int value) |  |  |