TU-DO Wireless Doorbell
Class Diagram - Firmware Revision 2.1 Beta

Door

DoorCFG

+ ring_led_pin: int16_t = -1;
+ power_led_pin: int16_t = -1;
+ con_timeout_s: uint16_t = 0;
+ n_bells: uint8_t = 0;
+ ssid: String = "";
+ psk: String = "";
+ static_ip: String = "";
+ gateway: String = "";
+ subnet: String = "";
+ port: uint16_t = 0;
+ bell_timeout_ms: unsigned long = 0;

+ checkValidity(): bool

RingTX

- ip: String
- port: unsigned int
- client: AsyncClient
- timeout: unsigned long
- tstamp: unsigned long
- stat: ring_stat = UNINITIALIZED

- txRingMSG(): bool
- con(): ring_stat
- sen(): ring_stat

+ RingTX()
+ RingTX(dest_ip: String, port: unsigned int, timeout_ms: unsigned long)
+ send(): void
+ status(): ring_stat
+ update(): void

RingSender

- n_bells: uint8_t
- stat: ring_stat

RingSender()
+ RingSender(door_ip: IPAddress, port: unsigned int, n_bells: uint8_t, timeout_ms: unsigned long)
+ ~RingSender()
+ operator=(other: const RingSender&)
+ acks(): uint8_t
+ fails(): uint8_t
+ send()
+ status(): ring_stat
+ update()

Common

StatusLED

- pin: uint8_t
- stat: bool
- mod: led_mode
- blink_interval: unsigned long
- tstamp: unsigned long
- blks: unsigned int

+ StatusLED()
+ StatusLED(pin: uint8_t, blink_interval: unsigned long = 500)
+ setBlinkInterval(interval: unsigned long): void
+ mode(m: led_mode): void
+ getMode(): led_mode
+ update(): void
+ blinks(): unsigned int

Door

- state: door_state
- err: error_type

- bootMSG(): void
- init(): door_state
- connecting(): door_state
- connected(): door_state
- ringing(): door_state
- error(): door_state
- error_handling(): door_state
- power_off(): door_state

+ Door()
+ Door(cfg: DoorCFG)
+ run(): void

WiFiHandler

- ssid: String
- psk: String
- ip: IPAddress
- gateway: IPAddress
- subnet: IPAddress
- timeout_ms: uint16_t
- rejoin: bool
- stat: wifi_stat = DISCONNECTED
- timeout_tstamp: unsigned long

- timeout(): bool
- _connect(): void
- unexpected_disconnect(): void

+ WiFiHandler()
+ WiFiHandler(ssid: String, psk: String, ip: IPAddress, gateway: IPAddress, subnet: IPAddress, timeout_ms: uint16_t, rejoin: bool = true)
+ connect(): void
+ disconnect(): void
+ update(): void
+ status(): wifi_stat

Bell

BellCFG

+ buzzer_pin: int16_t = -1
+ led_pin: int16_t = -1
+ ssid: String = ""
+ psk: String = ""
+ door_ip: String = ""
+ static_ip: String = ""
+ gateway: String = ""
+ subnet: String = ""
+ port: uint16_t = 0

+ checkValidity(): bool

RingReceiver

- server: inline static *AsyncServer
- client: inline static *AsyncClient
- door_ip: inline static IPAddress
- running: inline static bool
- recv: inline static bool
- instance: inline static *RingReceiver

- RingReceiver()
- on_new_client(arg: void*, new_client: *AsyncClient): static void
- on_data(arg: void*, client: *AsyncClient, data: void*, len: size_t): static void
- on_disconnect(arg: void*, client: *AsyncClient): static void
- on_timeout(arg: void*, client: *AsyncClient, time: uint32_t): static void
- on_error(arg: void*, client: *AsyncClient, error: int8_t): static void

+ get_instance(): static *RingReceiver
+ begin(port: uint16_t, door_ip_addr: String): void
+ received(): bool

Bell

- state: bell_state;
- err: error_type;

- bootMSG(): void
- init(): bell_state
- disconnected(): bell_state
- connecting(): bell_state
- connected(): bell_state
- ringing(): bell_state
- error(): bell_state
- error_handling(): bell_state

+ Bell()
+ Bell(bell_cfg: BellCFG)
+ run(): void

Buzzer

- pin: uint8_t
- melody: note_t *
- melody_len: size_t
- i_tone: size_t
- stat: bzr_stat
- tstamp: unsigned long

+ Buzzer()
+ Buzzer(pin: uint8_t, melody: note_t *, melody_len: size_t)
+ ring(): void
+ ringing(): bool
+ update(): void

Relationships / labels:
1: cfg
2: ring_led, pwr_led
1: led
1: cfg
1: led
1: ring_receiver
0..*: tx[]
1: ring_sender
1: wifi_handler
1: wifi_handler
1: buzzer

Legend:
- Exclusive to Door Firmware
- Exclusive to Bell Firmware
- Shared across Door and Bell Firmware
- Main Class