Figure 2 describes the construction of the INP3201 evaluation board.



Figure 2: INP3201 block diagram

This block diagram has three major components:

1. Wireless Connectivity: Reference kit (RK) has an onboard Wi-Fi and BLE module powered by InnoPhase IoT INP1014 module. The image data from the camera is transferred wirelessly through the INP1014 module, powered by Talaria TWO chipset which supports:
   1. Wi-Fi: 802.11 b/g/n, up to MCS7 single-stream (1x1), BLE: BLE 5.0 w/
   2. Advanced Features: 2Mbps PHY, LE, Coding (Long-Range), Extended Advertising, Frequency Supported: 2.4GHz
2. Host processer: RK is powered with a highly integrated T31ZX processor QFN84pin which can accommodate Linux on it.
3. PowerSave MCU: This is an MCU from ST microelectronics STM32L010F4 which mainly takes over during the power save scenarios. It handles the sleep and wake up of Talaria TWO as well as T31, the algorithm for which depends on the application requirement.

## INP3201 Board Description

A close-up of a circuit board

Description automatically generated

Figure 3: INP3201 Board - with MCU

A transparent box with a black object on it

Description automatically generated

Figure 4: INP3201 board – without MCU

A circuit board with many blue labels

Description automatically generated

Figure 5: INP3201 board components

|  |  |
| --- | --- |
| **Sl.no from** Figure 5 | **Description** |
| 1 | INP1014 module |
| 2 | J14 - 3 PIN jumper Talaria TWO pull-up configuration |
| 3 | J5 - 2 PIN jumper for SDIO pull-up configuration |
| 4 | J6 - 10 pin connector for Talaria TWO SWD programming |
| 5 | SW4 - Talaria TWO reset button |
| 6 | J8 - T31 debug console (UART) |
| 7 | J9 - T31 debug connector for INP3000 2 PIN UART port |
| 8 | J20 - T31 SD card connector |
| 9 | SW5 - Bootsel button for T31 |
| 10 | J22 - µSD card slot pull-up jumper |
| 11 | J19 - Speaker connector |
| 12 | J18 - Power supply for speaker |
| 13 | J25 - 1.8V jumper for microphone |
| 14 | J23 - Microphone connector |
| 15 | J17 - IRCUT LED connector |
| 16 | J16 - IRCUT VCC options connector |
| 17 | D12 - IR LED |
| 18 | J4 - Digital PIR sensor |
| 19 | D11 - IR LED |
| 20 | S1 - Doorbell button |
| 21 | J13 – T31 power selection and current measurement jumper |
| 22 | J11 - Complete board current measurement jumper |
| 23 | SW3 - Power ON/OFF switch |
| 24 | BT1 - Battery connector |
| 25 | J1 – USB Type C connector |
| 26 | J3 – MCU programming connector |
| 27 | J7 – Talaria TWO current measurement |
| 28 | J4 – PIR Power Enable |
| 29 | Battery Connector same as BT1 |
| 30 | MCU |
| 31 | MCU Reset Switch |

Table 2: INP3201 components

The silk-screen top helps identify the jumper on the board:



Figure 6: INP3201 silk-screen top

## INP3201 Working Modes

### INP3201 EVB – MCU Bypass Mode

In the MCU bypass mode, the board will work with T31 as a video application Host processor and Talaria TWO will act as a wireless bridge, enabling power save feature for the whole system. In this mode, the optional STM Power-save MCU will not be populated on board.

On the INP3201 board, ensure to select the right jumper resistors to completely run in the MCU bypass mode without MCU. While using the INP3201 in MCU bypass mode, DNP (do not populate) the resistors mentioned in Table 3:

|  |  |
| --- | --- |
| **Resistor DNP** | **Schematics Net name** |
| R12 | CPU\_UART0\_TXD |
| R10 | CPU\_UART0\_RXD |
| R23 | MCU-WAKE-WIFI/RX |
| R49 | MCU-T2-PWR |
| R87 | MCU-T31-PWR |
| R129 | PIR-ACTIVE-MCU |
| R126 | MCU-DB |
| R141 | WIFI-WAKE-MCU/TX |

Table 3: DNP resistors for IN3201 in power-save MCU bypass mode

For more details on the schematics, refer: INP3201\_schematic\_MCU\_Bypass.pdf.

### INP3201 with Low Power MCU

In this mode, STM32L010F MCU and its software takes care of controlling the power-save mechanism of Talaria TWO and T31 by putting them to sleep/wakeup depending on the application. Based on the application, one can write the software on the STM power-save MCU for INP3201.

**Note**: The dotted lines in the block diagram (Figure 2) are for INP3201 with power-save MCU.

To enable the MCU, the following components must be mounted. Check the board to ensure the components are mounted.

|  |  |
| --- | --- |
| **Components** | **Net Name on Schematics** |
| R09 | MCU-WAKE-WIFI/RX |
| R10 | CPU\_UART0\_RXD |
| R11 | WIFI-WAKE-MCU/TX |
| R12 | CPU\_UART0\_TXD |
| R23 | MCU-WAKE-WIFI/RX |
| R47 | ENABLE T2 LDO |
| R87 | MCU-T31-PWR |
| R126 | MCU-DB |
| R141 | WIFI-WAKE-MCU/TX |
| Y1 | 32Khz Crystal Mounted |
| C8, C9 | Mounted |
| U45 | Mounted |

Table 4: Enable MCU - components to be mounted

Components to be unmounted:

|  |  |
| --- | --- |
| **Components** | **Net name on Schematics** |
| R127 | T2-DB remove |
| R128 | T2-T31-PWR |
| R130 | PIR-ACTIVE-T2 |
| R142, R143 | GR-LED Not Used |
| R30 | PIR-ACTIVE-T2 |
| R49 | MCU-T2-PWR |
| R89 | T2-T31-PWR |

Table 5: Enable MCU - components to be unmounted

For more details on the schematics, refer: INP3201\_schematic\_with\_Low\_Power\_MCU.pdf.