CC3100 click

From MikroElektonika Documentation

CC3100 click carries the successor of the highly popular CC3000 module from Texas Instruments. Its claim to fame was that it simplified WiFi for embedded developers by integrating multiple Internet Protocols and a Wifi driver with a simple API.

CC3100 inherits all these benefits, and on top of that, adds an updated protocol stack (support for 802.11n) and cutting edge security features (TLS encryption, hardware crypto-engine and more).

Contents

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IC/Module	CC3100 (http://www.ti.com/general/docs/lit/getliterature.tsp?genericPartNumber=cc3100&fileType=pdf)
Interface	UART, SPI, nHIB, INT, nRESET, CS, CSK
Power supply	3.3V
Product page	www.mikroe.com/click/cc3100 (http://www.mikroe.com/click/cc3100)
Schematic	CC3100 click schematic (http://cdn-docs.mikroe.com/images/c/c2/CC3100_click_schematic_v100.pdf)

Features and usage notes

The CC3100 module itself comprises a Wi-Fi Network Processor and Power-Management Subsystems. This Fully Integrated Module Includes all Required Clocks, SPI Flash, and Passives.

For wireless reception, CC3100 click has a **2.4 GHz PCB antenna**.

CC3100 can function either as an access point, a station (connects to a router), or a node in a P2P connection. CC3100 click has an online jumper FORCE AP for configuring the board to work in Access Point mode by default.

CC3100 vs CC3000 comparison chart

CC3100	**CC3000**
802.11 transceiver mode - Allows transmitting and receiving of proprietary data through a socket without adding MAC or PHY headers	Doesn't have this option
Support of **eight** simultaneous TCP, UDP, **or RAW sockets**	Supports **four** simultaneous TCP or UDP sockets
Service discovery: Multicast DNS service discovery lets a client advertise its service without a centralized server	Doesn't have this feature
Interfaces over a 4-wire serial peripheral interface (SPI) with any MCU or a processor at a **clock speed of 20 MHz**.	Interfaces over 4-wire serial peripheral interface (SPI) with any microcontroller, or processor at **clock speed up to 16 MHz**
Ultra-low leakage when disabled (hibernate mode) with a current of less than 4 µA with the RTC running	Ultra-low leakage shut-down mode with current <5 µA
Dimensions: 9x9mm	Dimensions: 16.3x13.5mm
Operating temperature: -40° to 85°C	Operating temperature: -20° to 70°C
MAC with a crypto engine for fast, secure internet connections with 256-bit encryption.	Doesn't have this feature

Pinout diagram

This table shows how the pinout on CC3100 click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™			Pin	Notes
Not connected	NC	1	AN	PWM 16	**nHIB**	Active-low hibernation mode pin
Active-low reset pin	**nRESET**	2	RST	INT 15	**INT/nRTS**	Function depends on position of SPI/UART jumper
Function depends on position of SPI/UART jumper	**CS/nCTS**	3	CS	RX 14	**TX**	UART lines
SPI lines	**SCK**	4	SCK	TX 13	**RX**	UART lines
SPI lines	**MISO**	5	MISO	SCL 12	NC	Not connected
SPI lines	**MOSI**	6	MOSI	SDA 11	NC	Not connected
Power supply	**+3.3V**	7	+3.3V	+5V 10	NC	Not connected, click works on 3.3V supply only
Ground	**GND**	8	GND	GND 9	**GND**	Ground

For communicating with the target board MCU, **either the UART or SPI interface** can be used. This is configured through a pair of onboard jumpers (zero ohm resistors). By default, they are soldered into the SPI position. Depending on whether SPI or UART is being used, pins 3 and 15 take different functions.

Programming

CC3100 is part of TI's SimpleLink embedded wireless product line.

Texas Instruments offers a **SimpleLink SDK.** You can use the SDK as example code for any platform. The CC3100 SDK contains drivers, many sample applications for Wi-Fi features and Internet and documentation needed to use the CC3100. The examples available on Libstock are also based on code from the SDK. We particularly chose examples that make it easy to understand how to use SimpleLink and develop your own solutions.

Code example

This code snippet shows the initialization routine (EasyFT90x board with the click placed on mikroBUS socket #1) which must be done before using the SimpleLink driver.

```
void system_init()
{
    GPIO_Digital_Output( &GPIO_PORT_00_07, _GPIO_PINMASK_1 );
    GPIO_Digital_Output( &GPIO_PORT_24_31, _GPIO_PINMASK_4 );
    GPIO_Digital_Output( &GPIO_PORT_56_63, _GPIO_PINMASK_0 );
    GPIO_Digital_Input( &GPIO_PORT_00_07, _GPIO_PINMASK_3 );

    SPIM1_Init_Advanced( _SPI_MASTER_CLK_RATIO_8, _SPI_CFG_PHASE_CAPTURE_FALLING |
                         _SPI_CFG_POLARITY_IDLE_LOW | _SPI_CFG_SS_AUTO_DISABLE |
                         _SPI_CFG_FIFO_DISABLE, _SPI_SS_LINE_NONE );

    GPIO03_CFG0_bit = 1;
    GPIO03_CFG1_bit = 1;
    GPIO03_CFG2_bit = 0;
    GPIO03_CFG3_bit = 0;

    IRQ_CTRL.B31 = 0;
}

This code snippet shows initialization routine ( FT90x board for mikroBUS 1 socket ) which must be done before usage of the SimpleLink driver.
```

Code examples for CC3100 click, written for MikroElektronika hardware and compilers are available on Libstock (http://libstock.mikroe.com/projects/view/1941/cc3100-click).

Resources

- Vendor's data sheet (http://www.ti.com/lit/ds/symlink/cc3100.pdf)
- Demo code / Library (http://libstock.mikroe.com/projects/view/1941/cc3100-click)
- Tutorial (http://learn.mikroe.com/cc3100/)
- CC3100 demo software development kit and library from Texas Instruments (http://www.ti.com/tool/cc3100sdk)
- mikroBUS™ standard specifications (http://www.mikroe.com/mikrobus/)