![Chipsmall logo]

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Wi-Fi and Bluetooth Modules

Mod 1	Function	MCU Pin	Pin Name	Function Name	Voltage
2	BLE_RX	U3C(119)	PD5	USART2_TX	+3.3 V
3	BLE_TX	U3C(122)	PD6	USART2_RX	+3.3 V
4	BLE_CTS_N	U3C(118)	PD4	USART2_RTS	+3.3 V
5	BLE_RTS_N	U3C(117)	PD3	USART2_CTS	+3.3 V
14	BLE_REG_ON	U3C(44)	PC4	-	+3.3 V
20	WIFI_SDIO_CLK	U3C(113)	PC12	-	+3.3 V
22	WIFI_SDIO_CMD	U3C(116)	PD2	-	+3.3 V
23	WIFI_SDIO_D2	U3C(111)	PC10	-	+3.3 V
24	WIFI_SDIO_D0	U3C(98)	PC8	-	+3.3 V
25	WIFI_SDIO_D3	U3C(112)	PC11	-	+3.3 V
26	WIFI_SDIO_D1	U3C(99)	PC9	-	+3.3 V
27	WIFI_HOST_WAKE	U3C(97)	PC7	-	+3.3 V
28	WIFI_REG_ON	U3B(135)	PB5	-	+3.3 V
37	SLEEP_CLK	U3B(100)	PA8	-	+3.3 V
38	BLE_HOST_WAKE	U3C(45)	PC5	-	+3.3 V
39	BLE_DEV_WAKE	U3C(96)	PC6	-	+3.3 V

Temperature Sensor

Function	MCU Pin	Pin Name	Function Name	Voltage
TEMP_ADC	U3D(22)	PF10	ADC3_IN8	+3.3 V

Serial Flash 16 Mbit

U2	MCU Pin	Pin Name	Function Name	Voltage
1	SPI1_NSS	U3B(40)	PA4	+3.3 V
2	SPI1_MISO	U3B(42)	PA6	+3.3 V
3	+3.3 V	-	-	-
4	GND	-	-	-
5	SPI1_MOSI	U3B(43)	PA7	+3.3 V
6	SPI1_SCK	U3B(41)	PA5	+3.3 V
7	+3.3 V	-	-	-
8	+3.3 V	-	-	-

NEBULA REV 2.0
IoT DEVELOPMENT KIT
QUICK START GUIDE

Product Overview

The Nebula board is an IoT cloud ready board which allows developers to quickly prototype and deploy their IoT ecosystems.

Wireless connectivity is supported by the Murata 1DX module which is powered by the Cypress CYW4343W Wi-Fi (802.11 b/g/n) and Bluetooth Smart Ready (V4.2 +EDR) chipset radio. The module is designed to fit into small spaces and is smaller than a dime. The Nebula is driven by the STM32F429 ARM Cortex-M4 Microcontroller and includes 16 Mb of serial flash.

The Nebula board supports application development through Cypress' WICED (Wireless Internet Connectivity for Embedded Devices) platform. WICED is the only SDK that combines wireless, MCUs and memory in one environment that runs on Windows, OS X and Linux through Eclipse-based IDE.

Equipped to support 4 different interfaces to access the STM32F429 peripherals, the Nebula board enables developers to create any IoT application:

1. **Arduino™ Compatible Shield**
2. **mikroBUS™ Socket**
3. **Pmod™ Type 2A**
4. **USB Device**

The Nebula board has been designed for novices and expert developers alike looking to explore the vast opportunities in IoT applications such as asset tracking, energy management, fitness, lighting controls, HVAC, portable controls, security and building automation.

Board Components
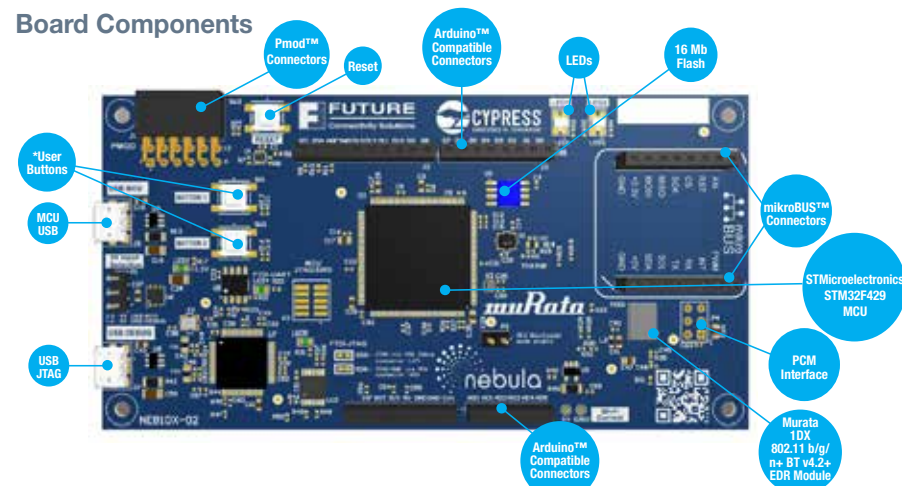
Documentation and tools are available for download at
https://community.cypress.com/community/partners/future-connectivity-solutions

mikroBUS Adapters

J4	Function	MCU Pin	Pin Name	Voltage
1	MIKRO_AD	U3B (37)	PA3	+3.3 V
2	MIKRO_RST	U3D (12)	PF2	+3.3 V
3	MIKRO_CS	U3D (3)	PE4	+3.3 V
4	MIKRO_SCK	U3D(1)	PE2	+3.3 V
5	MIKRO_MISO	U3D(4)	PE5	+3.3 V
6	MIKRO_MOSI	U3D(5)	PE6	+3.3 V
7	+3.3 V	-	-	-
8	GND	-	-	-

mikroBUS Adapters

J6	Function	MCU Pin	Pin Name	Voltage
9	GND	-	-	-
10	+5 V	-	-	+5 V
11	MIKRO_SDA	U3D(10)	PF0	+3.3 V
12	MIKRO_SCL	U3D(11)	PF1	+3.3 V
13	MIKRO_TX	U3D(58)	PE7	+3.3 V
14	MIKRO_RX	U3D(59)	PE8	+3.3 V
15	MIKRO_INT	U3C(27)	PC1	+3.3 V
16	MIKRO_PWM	U3B(36)	PA2	+3.3 V

Arduino Connectors

J8	Function	MCU Pin	Pin Name	Voltage
1	NC	-	-	-
2	GND	-	-	-
3	GND	-	-	-
4	+5 V	-	-	-
5	+3.3 V	-	-	+5 V
6	ARD_RESET	U3C (123)	PD7	-
7	+3.3 V	-	-	-
8	NC	-	-	-

Arduino Connectors

J3	Function	MCU Pin	Pin Name	Voltage
1	ARD_IO0	U3C(78)	PD9	+3.3 V
2	ARD_IO1	U3C(77)	PD8	+3.3 V
3	ARD_IO2	U3C(80)	PD11	+3.3 V
4	ARD_IO3	U3C(81)	PD12	+3.3 V
5	ARD_IO4	U3D(63)	PE10	+3.3 V
6	ARD_IO5	U3D(65)	PE12	+3.3 V
7	ARD_IO6	U3D(66)	PE13	+3.3 V
8	ARD_IO7	U3D(67)	PE14	+3.3 V

Arduino Connectors

J9	Function	MCU Pin	Pin Name	Voltage
1	AD_CH0	U3D (13)	PF3	+3.3 V
2	AD_CH1	U3D (14)	PF4	+3.3 V
3	AD_CH2	U3D (15)	PF5	+3.3 V
4	AD_CH3	U3D (19)	PF7	+3.3 V
5	AD_CH4	U3D (20)	PF8	+3.3 V
6	AD_CH5	U3D (21)	PF9	+3.3 V

Arduino Connectors

J2	Function	MCU Pin	Pin Name	Voltage
1	ARD_IO8	U3D(142)	PE1	+3.3 V
2	ARD_IO9	U3D(141)	PE0	+3.3 V
3	ARD_IO10	U3B(73)	PB12	+3.3 V
4	ARD_IO11	U3C(29)	PC3	+3.3 V
5	ARD_IO12	U3C(28)	PC2	+3.3 V
6	ARD_IO13	U3B(74)	PB13	+3.3 V
7	GND	-	-	-
8	ARD_AVREF	-	+3.3 V	-
9	ARD_SDA	U3B(137)	PB7	+3.3 V
10	ARD_SCL	U3B(136)	PB6	+3.3 V

Pmod Connectors

J1	Function	MCU Pin	Pin Name	Voltage
1	PMOD_D0	U3E(93)	PG8	+3.3 V
2	PMOD_D1	U3E(129)	PG14	+3.3 V
3	PMOD_D2	U3E(127)	PG12	+3.3 V
4	PMOD_D3	U3E(128)	PG13	+3.3 V
5	GND	-	-	-
6	+3.3 V	-	-	-
7	PMOD_D4	U3B(34)	PA0	+3.3 V
8	PMOD_D5	U3B(35)	PA1	+3.3 V
9	PMOD_D6	U3C(114)	PD0	+3.3 V
10	PMOD_D7	U3C(115)	PD1	+3.3 V
11	GND	-	-	-
12	+3.3 V	-	-	-

LED and User Buttons

Function	MCU Pin	Pin Name	LEVEL
LED1_GREEN	U3B(47)	PB1	Active High
LED1_RED	U3B(46)	PB0	Active High
LED2_GREEN	U3D(49)	PF11	Active High
LED2_RED	U3B(48)	PB2	Active High
USER_BUTTON1	U3E(91)	PG6	Active High
USER_BUTTON2	U3E(89)	PG4	Active High