S5D9 UART Bus Example (Framework Version with ThreadX RTOS)

By

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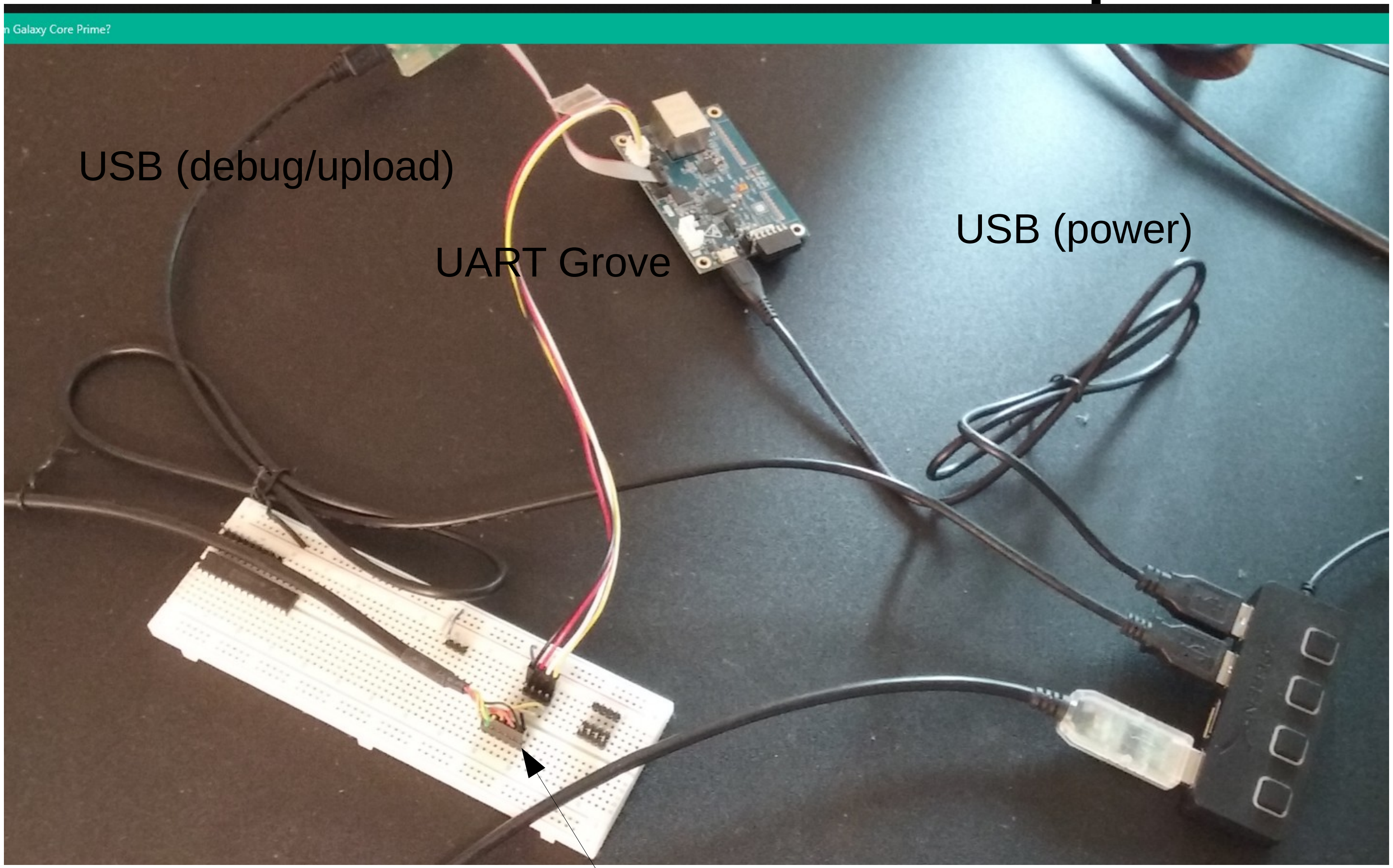
https://www.miketechuniverse.com

E2 Studio 5.4.0.023
SSP 1.3.0

Hardware Setup



UART to USB FDTI Cable (Adafruit)

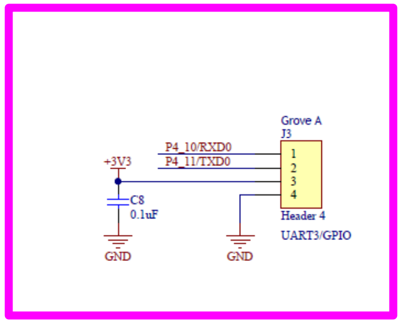
Color code (see next page)

Connection

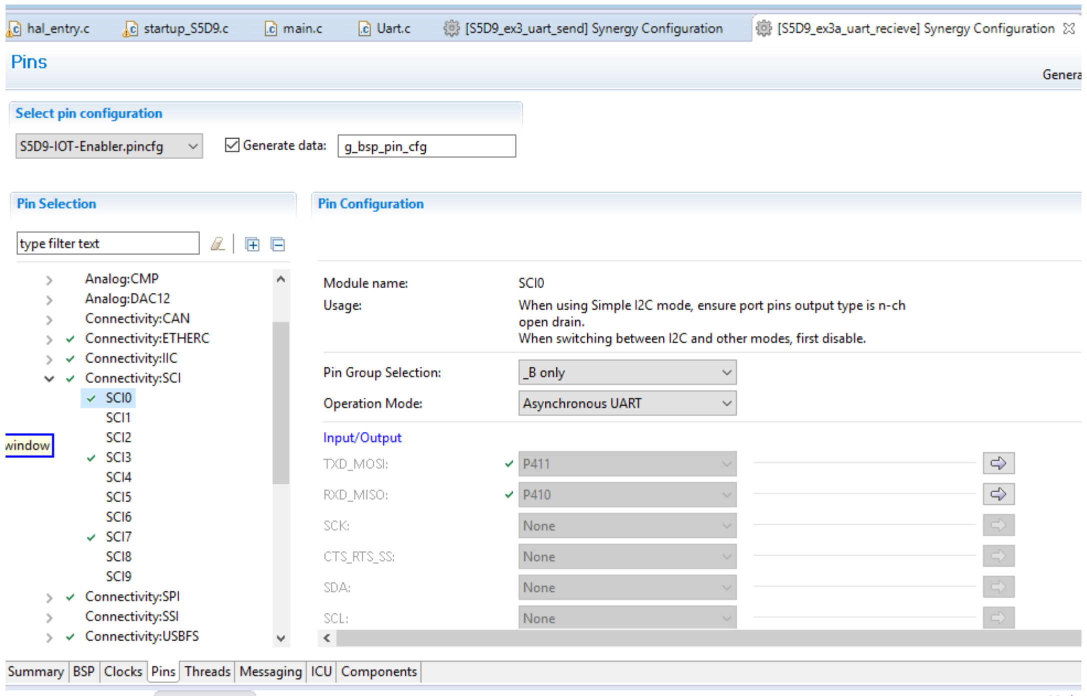
Connections

Grove A J3: UART to FTDI USB-to-UART Cable
Pin 1: Yellow RXD → Pin 4 Orange TXD
Pin 2: White TXD → Pin 5 Yellow RXD
Pin 3: Red 3V (No Connect)
Pin 4: Black GND → Pin 1 Black GND

Grove (UART)


Grove A
J3
P4_10/RXD0
P4_11/TXD0
+3V3
1
2
3
4
C8
0.1uF
Header 4
UART3/GPIO
GND
GND

Pin Configuration (SCI0 Asy UART)



hal_entry.c | startup_S5D9.c | main.c | Uart.c | [S5D9_ex3_uart_send] Synergy Configuration | [S5D9_ex3a_uart_recieve] Synergy Configuration

Pins

Select pin configuration

S5D9-IOT-Enabler.pincfg ☑ Generate data: g_bsp_pin_cfg

Pin Selection

- Analog:CMP
- Analog:DAC12
- Connectivity:CAN
- ✓ Connectivity:ETHERC
- ✓ Connectivity:IIC
- ✓ Connectivity:SCI
  - ✓ SCI0
  - SCI1
  - SCI2
  - ✓ SCI3
  - SCI4
  - SCI5
  - SCI6
  - ✓ SCI7
  - SCI8
  - SCI9
- ✓ Connectivity:SPI
- Connectivity:SSI
- ✓ Connectivity:USBFS

Pin Configuration

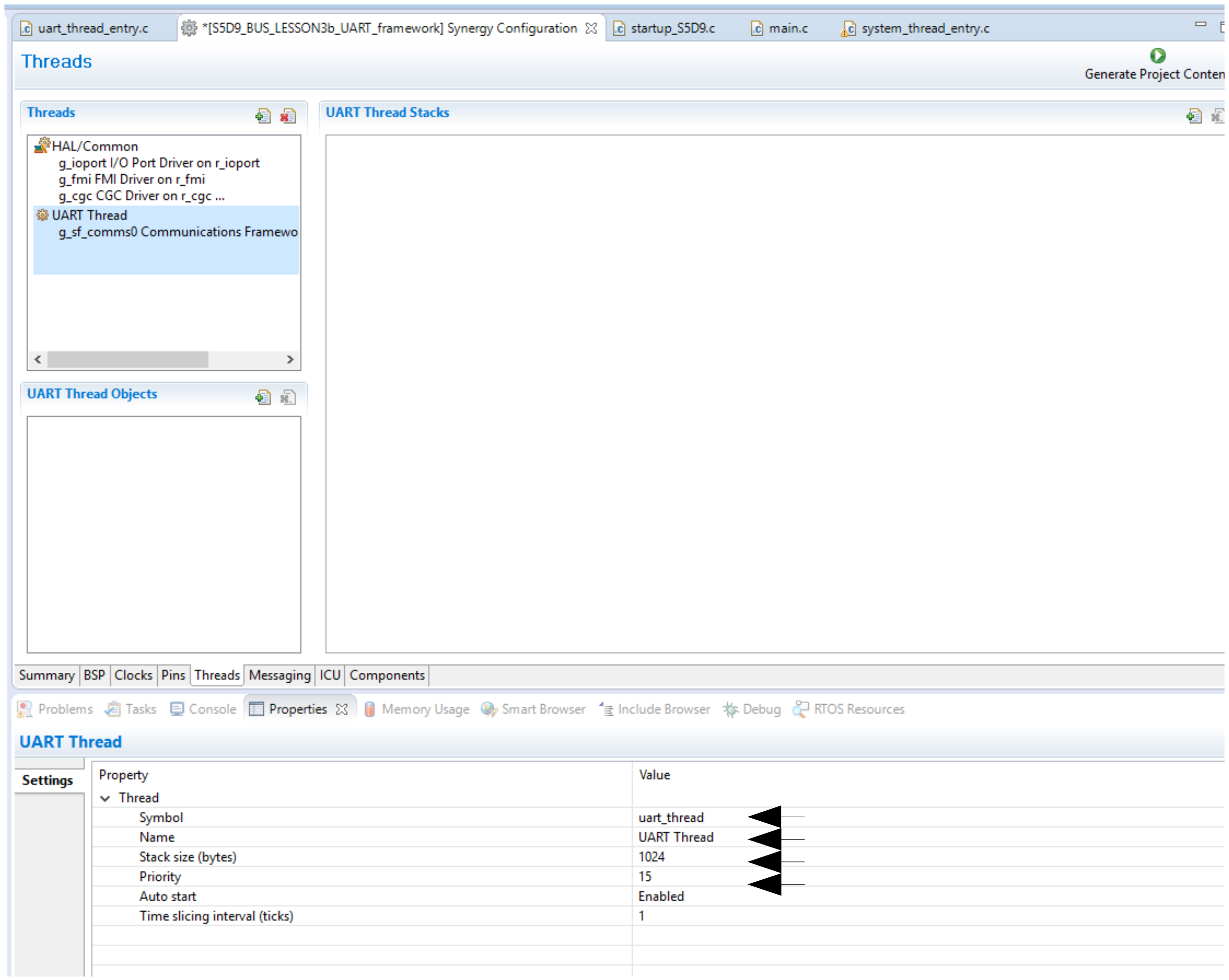
Module name:	SCI0
Usage:	When using Simple I2C mode, ensure port pins output type is n-ch open drain. When switching between I2C and other modes, first disable.
Pin Group Selection:	_B only
Operation Mode:	Asynchronous UART

Input/Output

TXD_MOSI:	✓ P411
RXD_MISO:	✓ P410
SCK:	None
CTS_RTS_SS:	None
SDA:	None
SCL:	None

Summary | BSP | Clocks | Pins | Threads | Messaging | ICU | Components

Create Thread and Fill in the properties



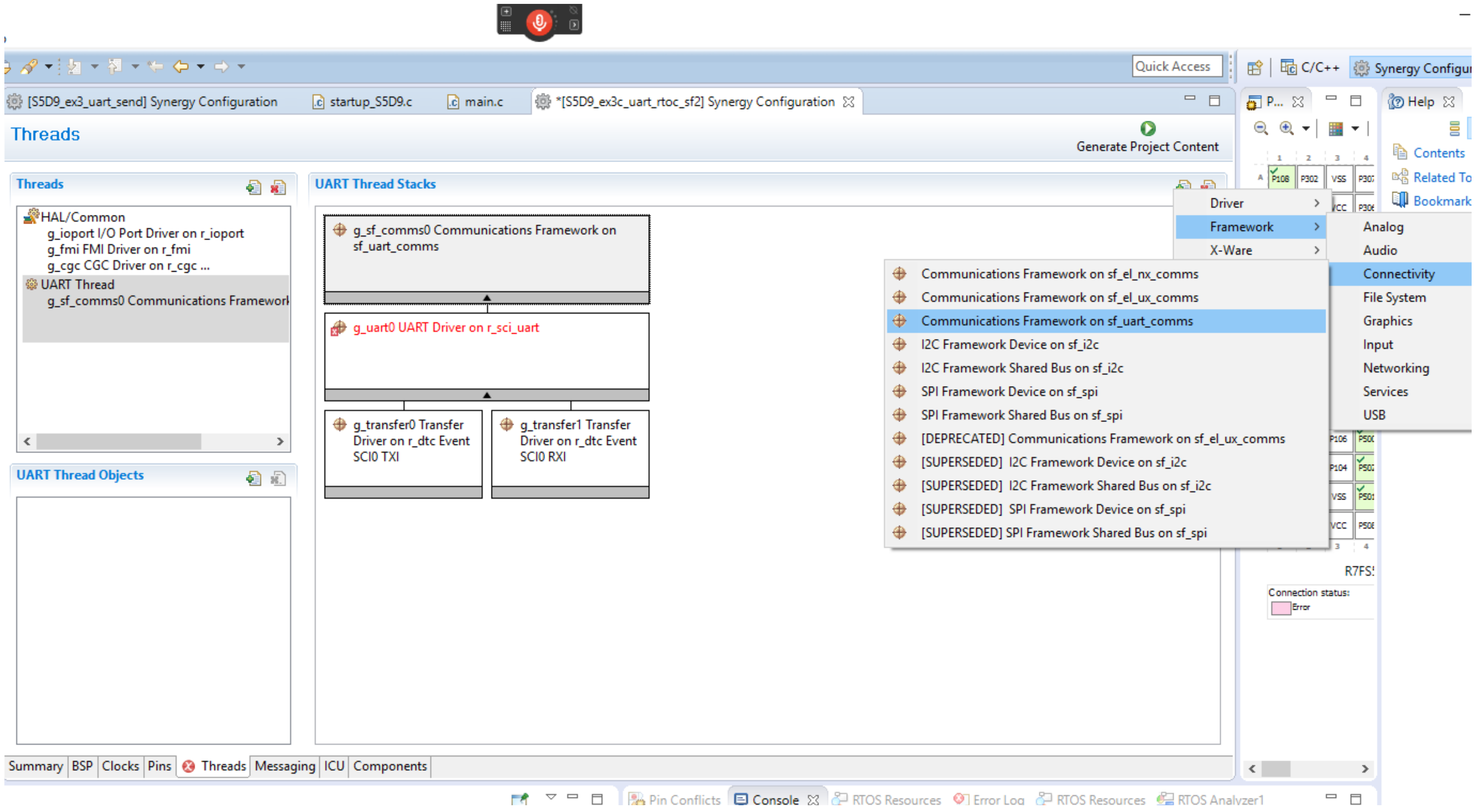
HAL/Common
- g_ioport I/O Port Driver on r_ioport
- g_fmi FMI Driver on r_fmi
- g_cgc CGC Driver on r_cgc ...

UART Thread
- g_sf_comms0 Communications Framewo

UART Thread

Property	Value
Thread	
Symbol	uart_thread
Name	UART Thread
Stack size (bytes)	1024
Priority	15
Auto start	Enabled
Time slicing interval (ticks)	1

Select UART Framework



Threads

- HAL/Common
  - g_ioport I/O Port Driver on r_ioport
  - g_fmi FMI Driver on r_fmi
  - g_cgc CGC Driver on r_cgc ...
- UART Thread
  - g_sf_comms0 Communications Framework

UART Thread Stacks

- g_sf_comms0 Communications Framework on sf_uart_comms
- g_uart0 UART Driver on r_sci_uart
- g_transfer0 Transfer Driver on r_dtc Event SCI0 TXI
- g_transfer1 Transfer Driver on r_dtc Event SCI0 RXI

UART Thread Objects

Quick Access
C/C++
Synergy Configur
[S5D9_ex3_uart_send] Synergy Configuration
startup_S5D9.c
main.c
*[S5D9_ex3c_uart_rtoc_sf2] Synergy Configuration
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Communications Framework on sf_el_nx_comms
Communications Framework on sf_el_ux_comms
Communications Framework on sf_uart_comms
I2C Framework Device on sf_i2c
I2C Framework Shared Bus on sf_i2c
SPI Framework Device on sf_spi
SPI Framework Shared Bus on sf_spi
[DEPRECATED] Communications Framework on sf_el_ux_comms
[SUPERSEDED] I2C Framework Device on sf_i2c
[SUPERSEDED] I2C Framework Shared Bus on sf_i2c
[SUPERSEDED] SPI Framework Device on sf_spi
[SUPERSEDED] SPI Framework Shared Bus on sf_spi
R7FS
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Pin Conflicts
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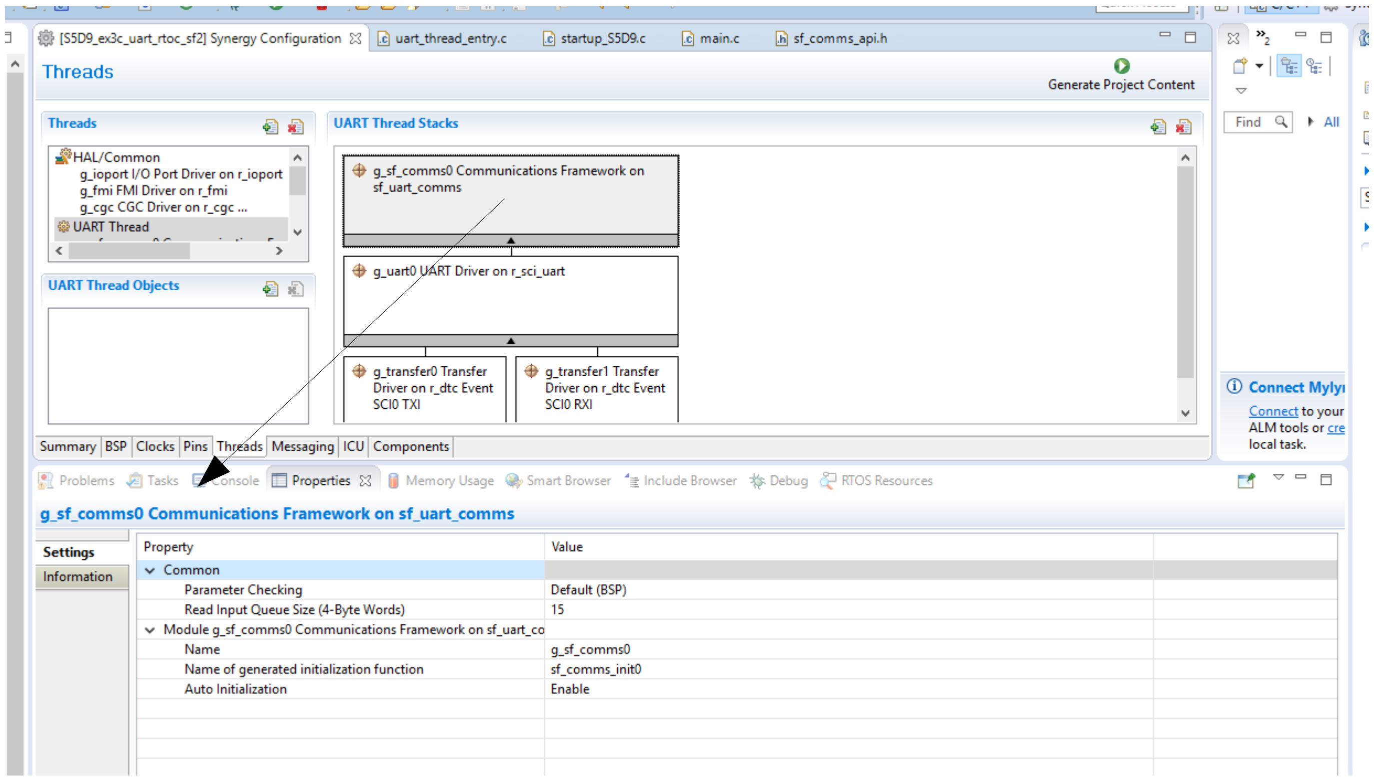
Error Log
RTOS Resources
RTOS Analyzer1


[S5D9_ex3c_uart_rtoc_sf2] Synergy Configuration
uart_thread_entry.c
startup_S5D9.c
main.c
sf_comms_api.h
Threads
Generate Project Content
Threads
HAL/Common
g_ioport I/O Port Driver on r_ioport
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UART Thread Objects
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Connect Mylyn
Connect to your ALM tools or cre local task.
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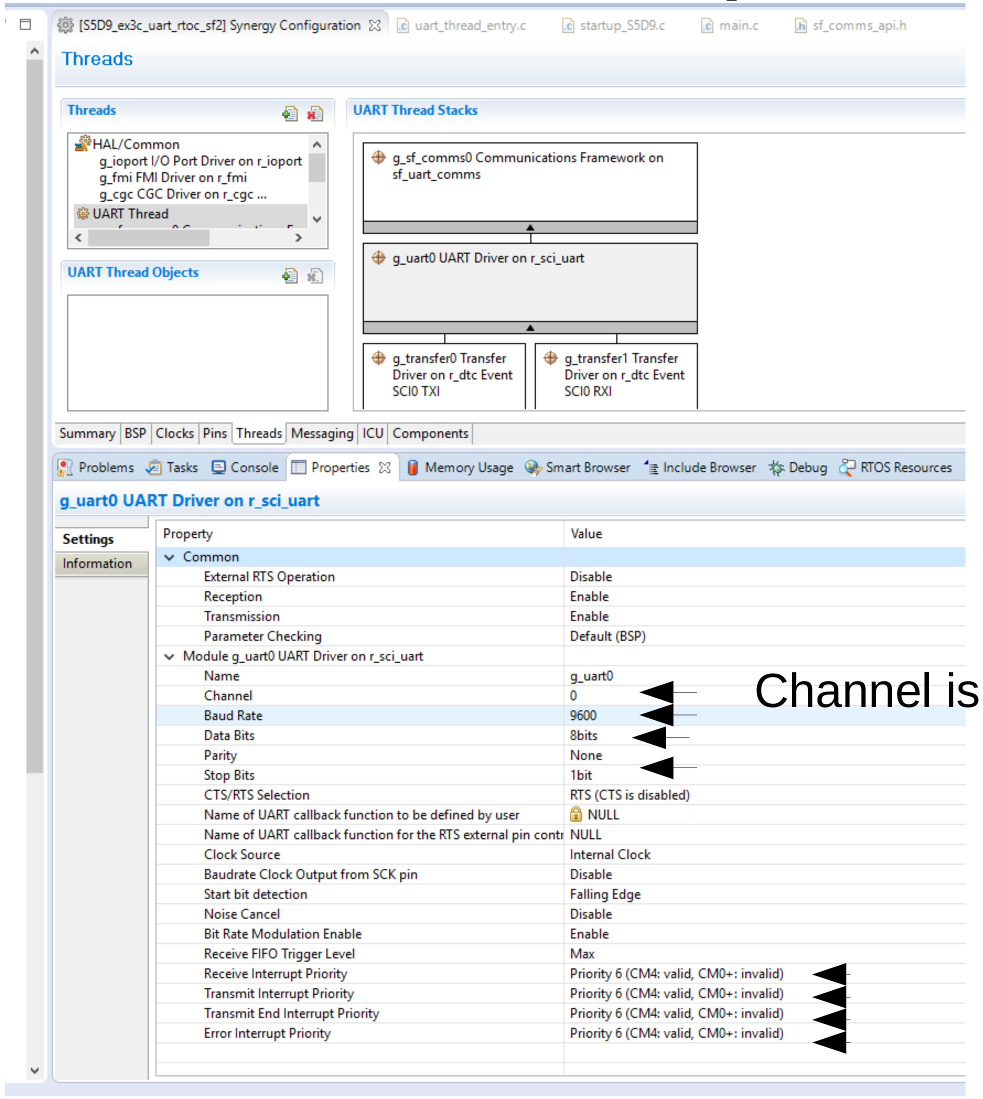
g_sf_comms0 Communications Framework on sf_uart_comms

Property	Value
Common	
Parameter Checking	Default (BSP)
Read Input Queue Size (4-Byte Words)	15
Module g_sf_comms0 Communications Framework on sf_uart_co	
Name	g_sf_comms0
Name of generated initialization function	sf_comms_init0
Auto Initialization	Enable

Set Priority 6 for Interrupt Priority. Channel is 0 (SCI0)



[S5D9_ex3c_uart_rtoc_sf2] Synergy Configuration
uart_thread_entry.c
startup_S5D9.c
main.c
sf_comms_api.h
Threads
Threads
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g_ioport I/O Port Driver on r_ioport
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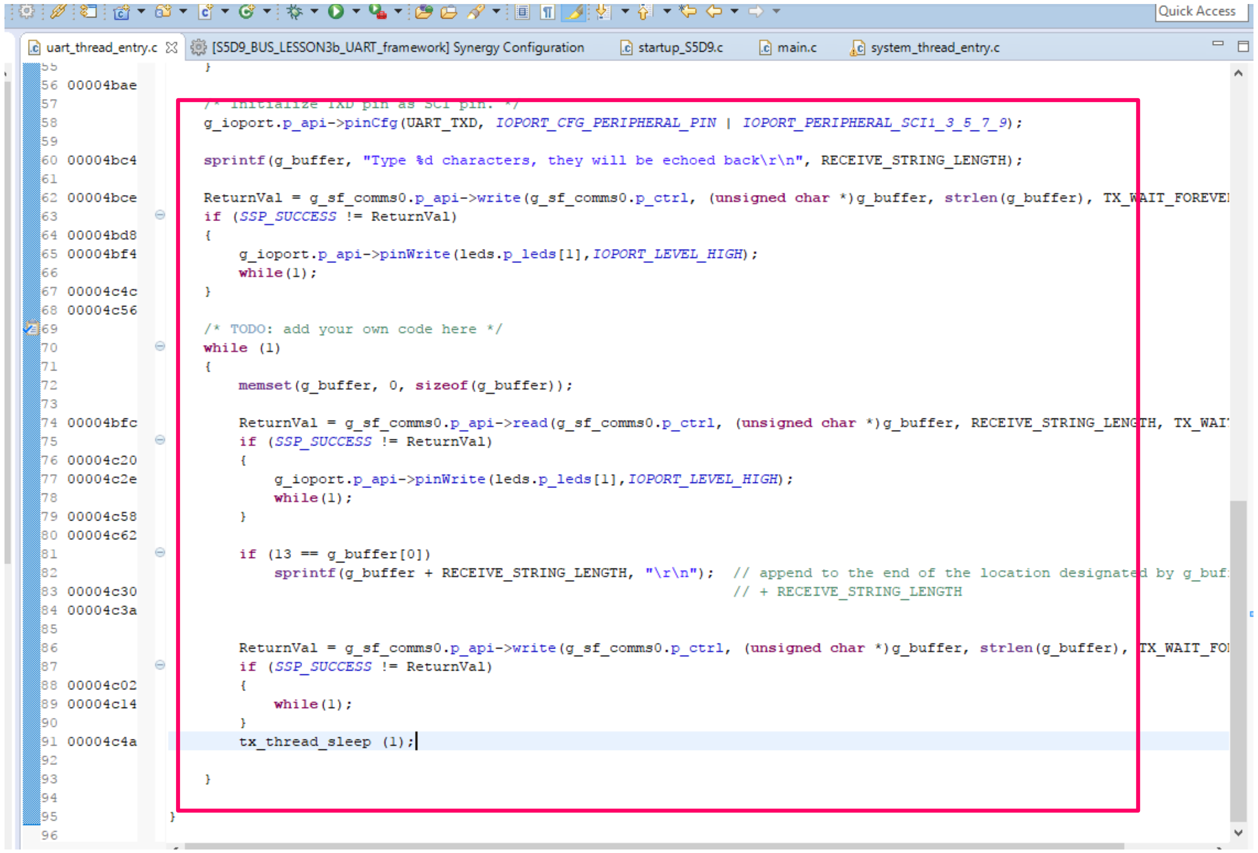
g_uart0 UART Driver on r_sci_uart

Property	Value
Common	
External RTS Operation	Disable
Reception	Enable
Transmission	Enable
Parameter Checking	Default (BSP)
Module g_uart0 UART Driver on r_sci_uart	
Name	g_uart0
Channel	0
Baud Rate	9600
Data Bits	8bits
Parity	None
Stop Bits	1bit
CTS/RTS Selection	RTS (CTS is disabled)
Name of UART callback function to be defined by user	NULL
Name of UART callback function for the RTS external pin contr	NULL
Clock Source	Internal Clock
Baudrate Clock Output from SCK pin	Disable
Start bit detection	Falling Edge
Noise Cancel	Disable
Bit Rate Modulation Enable	Enable
Receive FIFO Trigger Level	Max
Receive Interrupt Priority	Priority 6 (CM4: valid, CM0+: invalid)
Transmit Interrupt Priority	Priority 6 (CM4: valid, CM0+: invalid)
Transmit End Interrupt Priority	Priority 6 (CM4: valid, CM0+: invalid)
Error Interrupt Priority	Priority 6 (CM4: valid, CM0+: invalid)

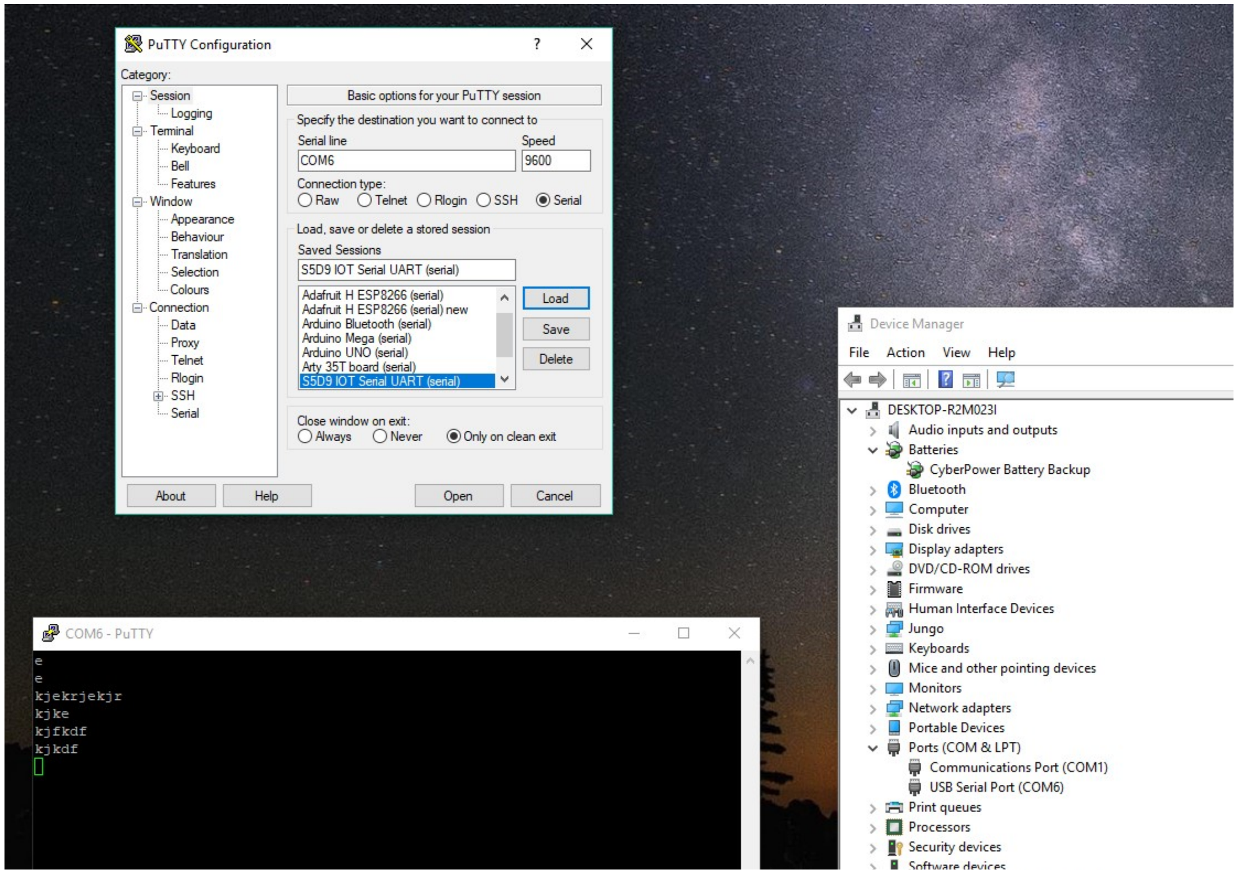
Channel is 0 because SC0 is used.

Source Code



```
    }

    /* initialize TXD pin as SCI pin. */
    g_ioport.p_api->pinCfg(UART_TXD, IOPORT_CFG_PERIPHERAL_PIN | IOPORT_PERIPHERAL_SCI1_3_5_7_9);

    sprintf(g_buffer, "Type %d characters, they will be echoed back\r\n", RECEIVE_STRING_LENGTH);

    ReturnVal = g_sf_comms0.p_api->write(g_sf_comms0.p_ctrl, (unsigned char *)g_buffer, strlen(g_buffer), TX_WAIT_FOREVE
    if (SSP_SUCCESS != ReturnVal)
    {
        g_ioport.p_api->pinWrite(leds.p_leds[1],IOPORT_LEVEL_HIGH);
        while(1);
    }

    /* TODO: add your own code here */
    while (1)
    {
        memset(g_buffer, 0, sizeof(g_buffer));

        ReturnVal = g_sf_comms0.p_api->read(g_sf_comms0.p_ctrl, (unsigned char *)g_buffer, RECEIVE_STRING_LENGTH, TX_WAI
        if (SSP_SUCCESS != ReturnVal)
        {
            g_ioport.p_api->pinWrite(leds.p_leds[1],IOPORT_LEVEL_HIGH);
            while(1);
        }

        if (13 == g_buffer[0])
            sprintf(g_buffer + RECEIVE_STRING_LENGTH, "\r\n");  // append to the end of the location designated by g_buf
                                                                // + RECEIVE_STRING_LENGTH


        ReturnVal = g_sf_comms0.p_api->write(g_sf_comms0.p_ctrl, (unsigned char *)g_buffer, strlen(g_buffer), TX_WAIT_FO
        if (SSP_SUCCESS != ReturnVal)
        {
            while(1);
        }
        tx_thread_sleep (1);

    }
}
```

Use Device Manager for the COM port #.



Specify the destination you want to connect to

Serial line: COM6

Speed: 9600

Connection type: Raw Telnet Rlogin SSH [✓ Serial]

Load, save or delete a stored session

Saved Sessions: S5D9 IOT Serial UART (serial)

- Adafruit H ESP8266 (serial)
- Adafruit H ESP8266 (serial) new
- Arduino Bluetooth (serial)
- Arduino Mega (serial)
- Arduino UNO (serial)
- Arty 35T board (serial)
- S5D9 IOT Serial UART (serial)

Close window on exit: Always Never [✓ Only on clean exit]

```
e
e
kjekrjekjr
kjke
kjfkdf
kjkdf
```

- DESKTOP-R2M023I
  - Audio inputs and outputs
  - Batteries
    - CyberPower Battery Backup
  - Bluetooth
  - Computer
  - Disk drives
  - Display adapters
  - DVD/CD-ROM drives
  - Firmware
  - Human Interface Devices
  - Jungo
  - Keyboards
  - Mice and other pointing devices
  - Monitors
  - Network adapters
  - Portable Devices
  - Ports (COM & LPT)
    - Communications Port (COM1)
    - USB Serial Port (COM6)
  - Print queues
  - Processors
  - Security devices
  - Software devices