chris_daquino (/s/profile/0050X000009ycEhQAI) (Customer) asked a question.
Edited January 11, 2020 at 2:52 PM (/s/question/0D50X0000BxwtLRSQY/can-bus-between-stm32f103-and-arduino)

CAN Bus between STM32F103 and Arduino

I have a few arduino boards communicating through each other on a CAN Bus. Arduino is connected to a MCP2515 CAN Bus Module TJA1050.
All arduino are communicating properly between each other. Here is an example of my reader on arduino:

```
#include "MIDIUSB.h"
#include <SPI.h>
#include <mcp2515.h>

struct can_frame txMsg, rxMsg;
//struct can_frame rxmsg;

MCP2515 mcp2515(7);

byte chan = 1;

void setup() {
    Serial.begin(500000);
    Serial.println("myDrum 2 MIDI");

    SPI.begin();

    mcp2515.reset();
    mcp2515.setBitrate(CAN_500KBPS,MCP_8MHZ);
    mcp2515.setNormalMode();
}


void loop() {

    if (mcp2515.readMessage(&rxMsg) == MCP2515::ERROR_OK) {

        switch (rxMsg.data[0])
        {
        case 144:
            noteOn(chan, rxMsg.data[1], rxMsg.data[2]);
            break;
        case 178:
            controlChange(chan, rxMsg.data[1], rxMsg.data[2]);
            break;
        default:
            break;
        }

        //Serial.print("Received Message: ");
        Serial.print(rxMsg.data[0]); Serial.print(" - ");
        Serial.print(rxMsg.data[1]); Serial.print(" - ");
        Serial.println(rxMsg.data[2]);
    }
}

void noteOn(byte channel, byte pitch, byte velocity) {
    midiEventPacket_t noteOn = {0x09, 0x90 | channel, pitch, velocity};
    MidiUSB.sendMIDI(noteOn);
    MidiUSB.flush();
}

void controlChange(byte channel, byte control, byte value) {
    midiEventPacket_t event = {0x0B, 0xB0 | channel, control, value};
    MidiUSB.sendMIDI(event);
    MidiUSB.flush();
}
```

Now I'm trying to add an STM32F103 with a MCP2551 transceiver module but nothing is being received from the STM32F103 on the arduino side. Since the arduino's are talking to each other, I tend to think that the issue is on the STM32F103 side. My code is below. Any thoughts on what I'm missing?

```
#include "main.h"
ADC_HandleTypeDef hadc1;
ADC_HandleTypeDef hadc2;

CAN_HandleTypeDef hcan;

I2C_HandleTypeDef hi2c1;

UART_HandleTypeDef huart1;

/* USER CODE BEGIN PV */
CAN_RxHeaderTypeDef RxHeader;
CAN_TxHeaderTypeDef TxHeader;
uint32_t TxMailbox;
/* USER CODE END PV */

/* Private function prototypes -----------------------------------------------*/
void SystemClock_Config(void);
static void MX_GPIO_Init(void);
static void MX_CAN_Init(void);
static void MX_USART1_UART_Init(void);
static void MX_ADC1_Init(void);
static void MX_ADC2_Init(void);
static void MX_I2C1_Init(void);
/* USER CODE BEGIN PFP */

/* USER CODE END PFP */

/* Private user code ---------------------------------------------------------*/
/* USER CODE BEGIN 0 */

/* USER CODE END 0 */


int main(void)
{
  /* USER CODE BEGIN 1 */

  /* USER CODE END 1 */


  /* MCU Configuration--------------------------------------------------------*/

  /* Reset of all peripherals, Initializes the Flash interface and the Systick. */
  HAL_Init();

  /* USER CODE BEGIN Init */

  /* USER CODE END Init */

  /* Configure the system clock */
  SystemClock_Config();

  /* USER CODE BEGIN SysInit */

  /* USER CODE END SysInit */

  /* Initialize all configured peripherals */
  MX_GPIO_Init();
  MX_CAN_Init();
  MX_USART1_UART_Init();
  MX_ADC1_Init();
  MX_ADC2_Init();
  MX_I2C1_Init();
  /* USER CODE BEGIN 2 */

  /* USER CODE END 2 */

  /* Infinite loop */
  /* USER CODE BEGIN WHILE */
  while (1)
  {
```

```
 73
 74
 75                 uint8_t message[3];
 76                 message[0] = 144;
 77                 message[1] = 38;
 78                 message[2] = 127;
 79
 80                 TxHeader.DLC = 3;
 81                 TxHeader.StdId = 0x221;
 82                 TxHeader.IDE   = CAN_ID_STD;
 83                 TxHeader.RTR = CAN_RTR_DATA;
 84
 85
 86                 if( HAL_CAN_AddTxMessage(&hcan, &TxHeader, &message, &TxMailbox) != HAL_OK)
 87                 {
 88                         Error_Handler();
 89                 }
 90
 91           HAL_Delay(1000);
 92     /* USER CODE END WHILE */
 93
 94     /* USER CODE BEGIN 3 */
 95   }
 96   /* USER CODE END 3 */
 97 }
 98
 99
100 void SystemClock_Config(void)
101 {
102   RCC_OscInitTypeDef RCC_OscInitStruct = {0};
103   RCC_ClkInitTypeDef RCC_ClkInitStruct = {0};
104   RCC_PeriphCLKInitTypeDef PeriphClkInit = {0};
105
106   /** Initializes the CPU, AHB and APB busses clocks
107   */
108   RCC_OscInitStruct.OscillatorType = RCC_OSCILLATORTYPE_HSE;
109   RCC_OscInitStruct.HSEState = RCC_HSE_ON;
110   RCC_OscInitStruct.HSEPredivValue = RCC_HSE_PREDIV_DIV1;
111   RCC_OscInitStruct.HSIState = RCC_HSI_ON;
112   RCC_OscInitStruct.PLL.PLLState = RCC_PLL_ON;
113   RCC_OscInitStruct.PLL.PLLSource = RCC_PLLSOURCE_HSE;
114   RCC_OscInitStruct.PLL.PLLMUL = RCC_PLL_MUL9;
115   if (HAL_RCC_OscConfig(&RCC_OscInitStruct) != HAL_OK)
116   {
117     Error_Handler();
118   }
119   /** Initializes the CPU, AHB and APB busses clocks
120   */
121   RCC_ClkInitStruct.ClockType = RCC_CLOCKTYPE_HCLK|RCC_CLOCKTYPE_SYSCLK
122                                 |RCC_CLOCKTYPE_PCLK1|RCC_CLOCKTYPE_PCLK2;
123   RCC_ClkInitStruct.SYSCLKSource = RCC_SYSCLKSOURCE_PLLCLK;
124   RCC_ClkInitStruct.AHBCLKDivider = RCC_SYSCLK_DIV1;
125   RCC_ClkInitStruct.APB1CLKDivider = RCC_HCLK_DIV2;
126   RCC_ClkInitStruct.APB2CLKDivider = RCC_HCLK_DIV1;
127
128   if (HAL_RCC_ClockConfig(&RCC_ClkInitStruct, FLASH_LATENCY_2) != HAL_OK)
129   {
130     Error_Handler();
131   }
132   PeriphClkInit.PeriphClockSelection = RCC_PERIPHCLK_ADC;
133   PeriphClkInit.AdcClockSelection = RCC_ADCPCLK2_DIV6;
134   if (HAL_RCCEx_PeriphCLKConfig(&PeriphClkInit) != HAL_OK)
135   {
136     Error_Handler();
137   }
138 }
139
140
141 static void MX_CAN_Init(void)
142 {
143
144   /* USER CODE BEGIN CAN_Init 0 */
145
146   /* USER CODE END CAN_Init 0 */
147
```

```
148   /* USER CODE BEGIN CAN_Init 1 */
149
150   /* USER CODE END CAN_Init 1 */
151   hcan.Instance = CAN1;
152   hcan.Init.Prescaler = 9;
153   hcan.Init.Mode = CAN_MODE_NORMAL;
154   hcan.Init.SyncJumpWidth = CAN_SJW_1TQ;
155   hcan.Init.TimeSeg1 = CAN_BS1_13TQ;
156   hcan.Init.TimeSeg2 = CAN_BS2_2TQ;
157   hcan.Init.TimeTriggeredMode = DISABLE;
158   hcan.Init.AutoBusOff = DISABLE;
159   hcan.Init.AutoWakeUp = DISABLE;
160   hcan.Init.AutoRetransmission = DISABLE;
161   hcan.Init.ReceiveFifoLocked = DISABLE;
162   hcan.Init.TransmitFifoPriority = DISABLE;
163   if (HAL_CAN_Init(&hcan) != HAL_OK)
164   {
165     Error_Handler();
166   }
167   /* USER CODE BEGIN CAN_Init 2 */
168   CAN_FilterTypeDef can_filter_init;
169   can_filter_init.FilterActivation = CAN_FILTER_ENABLE;
170   can_filter_init.FilterBank  = 0;
171   can_filter_init.FilterFIFOAssignment = CAN_RX_FIFO0;
172   can_filter_init.FilterIdHigh = 0x9999;
173   can_filter_init.FilterIdLow = 0x0000;
174   can_filter_init.FilterMaskIdHigh = 0x9999;
175   can_filter_init.FilterMaskIdLow = 0x0000;
176   can_filter_init.FilterMode = CAN_FILTERMODE_IDMASK;
177   can_filter_init.FilterScale = CAN_FILTERSCALE_32BIT;
178
179   if( HAL_CAN_ConfigFilter(&hcan,&can_filter_init) != HAL_OK)
180         {
181           Error_Handler();
182         }
183
184   if( HAL_CAN_Start(&hcan) != HAL_OK)
185         {
186           Error_Handler();
187         }
188
189 //  if(HAL_CAN_ActivateNotification(&hcan,CAN_IT_TX_MAILBOX_EMPTY|CAN_IT_BUSOFF)!= HAL_OK)
190 //      {
191 //                      Error_Handler();
192 //      }
193
194   /* USER CODE END CAN_Init 2 */
195
196 }
197
198 static void MX_GPIO_Init(void)
199 {
200   GPIO_InitTypeDef GPIO_InitStruct = {0};
201
202   /* GPIO Ports Clock Enable */
203   __HAL_RCC_GPIOC_CLK_ENABLE();
204   __HAL_RCC_GPIOD_CLK_ENABLE();
205   __HAL_RCC_GPIOA_CLK_ENABLE();
206   __HAL_RCC_GPIOB_CLK_ENABLE();
207
208   /*Configure GPIO pin Output Level */
209   HAL_GPIO_WritePin(LED_GPIO_Port, LED_Pin, GPIO_PIN_SET);
210
211   /*Configure GPIO pin Output Level */
212   HAL_GPIO_WritePin(drain1_GPIO_Port, drain1_Pin, GPIO_PIN_RESET);
213
214   /*Configure GPIO pin : LED_Pin */
215   GPIO_InitStruct.Pin = LED_Pin;
216   GPIO_InitStruct.Mode = GPIO_MODE_OUTPUT_PP;
217   GPIO_InitStruct.Pull = GPIO_NOPULL;
218   GPIO_InitStruct.Speed = GPIO_SPEED_FREQ_MEDIUM;
219   HAL_GPIO_Init(LED_GPIO_Port, &GPIO_InitStruct);
220
221   /*Configure GPIO pins : pad1_Pin pad2_Pin */
222   GPIO_InitStruct.Pin = pad1_Pin|pad2_Pin;
```

```
223    GPIO_InitStruct.Mode = GPIO_MODE_ANALOG;
224    HAL_GPIO_Init(GPIOA, &GPIO_InitStruct);
225
226    /*Configure GPIO pins : PA5 trigger1_Pin trigger2_Pin */
227    GPIO_InitStruct.Pin = GPIO_PIN_5|trigger1_Pin|trigger2_Pin;
228    GPIO_InitStruct.Mode = GPIO_MODE_INPUT;
229    GPIO_InitStruct.Pull = GPIO_NOPULL;
230    HAL_GPIO_Init(GPIOA, &GPIO_InitStruct);
231
232    /*Configure GPIO pin : drain1_Pin */
233    GPIO_InitStruct.Pin = drain1_Pin;
234    GPIO_InitStruct.Mode = GPIO_MODE_OUTPUT_OD;
235    GPIO_InitStruct.Pull = GPIO_NOPULL;
236    GPIO_InitStruct.Speed = GPIO_SPEED_FREQ_HIGH;
237    HAL_GPIO_Init(drain1_GPIO_Port, &GPIO_InitStruct);
238
239  }
240
```

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JoniS (/s/profile/0050X0000089GMFQA2) (Customer)
3 years ago

is it possible some of the arduinos always try transmit same time as the STM? If multiple devices transmit same time the one with lowest message ID gets its message sent, and since you have not configured AutoRetransmission, your stm would not try transmit again, well atleast before you call transmit again.

What is the clock speed for your CAN?(just to make sure its configured to that 500kbits baud)

Like Reply

A.MUHENDIS (/s/profile/0050X000007SCshQAG) (Customer)
2 years ago

I think MCP2515 needs to be connected with stm32f103 via SPI interface, which is not configured from stm32 side !

Like Reply

APatel (/s/profile/0053W000002nXxCQAU) (Customer)
9 months ago

Hey @chris_daquino (/s/profile/0050X000009ycEhQAI) (Customer)
Have you found any solution on this post?
I'm trying the same connection b/w Arduino and STM32F753 and facing the same issue.
I hope I can find solution from you.

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