

DLMS Multichannel Investigation

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Rev. 1.00

Revision History

Rev.	Date	Description	
		Slide No.	Summary
1.00	Sept 4, 2013	All	Initialized revision

Outline

- Buffer usage (current)
- Physical layer (current)
- Tracking Information
- Design idea for multichannel

Buffer usage (current)

Use for debug (__DEBUG_DLMS), in \rI78g13QS+\application\dlms\physical\serial.c:

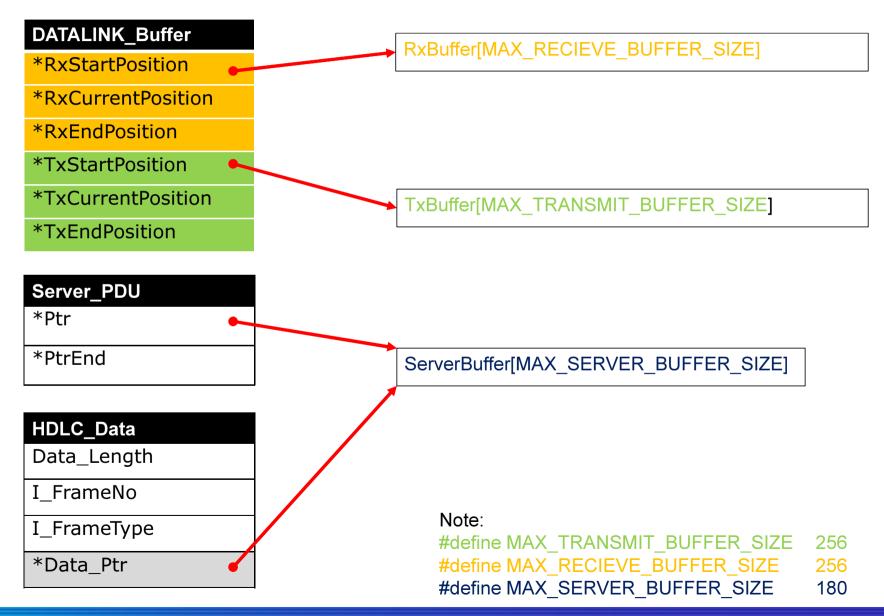
```
g_receive_data[256]
```

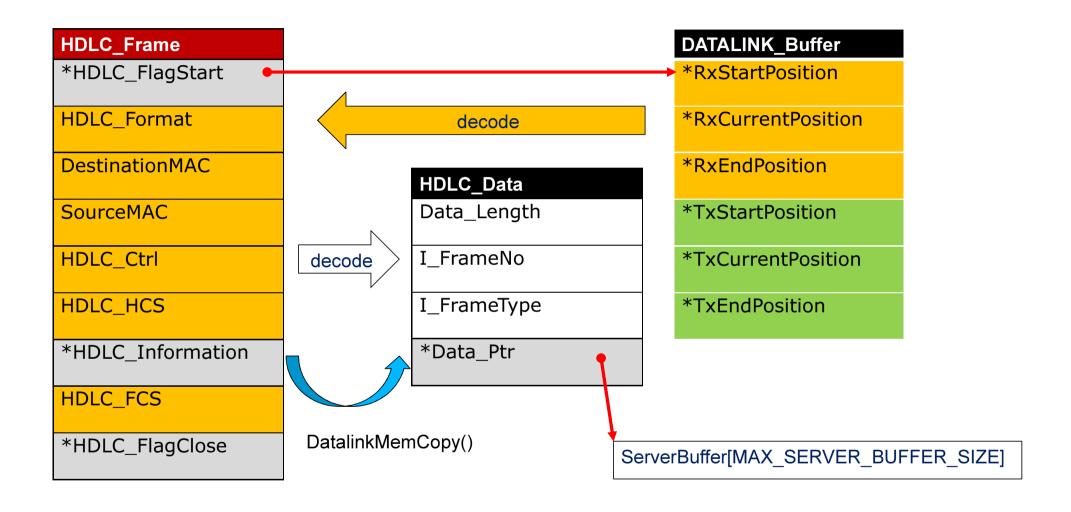
For COSEM Object Layer, in \rl78g13QS+\application\dlms\objects\r_dlms_obis.c:



Note: #define OBIS_SERVICE_DATA_BUFFER_LENGTH (180)

Data from/to UART

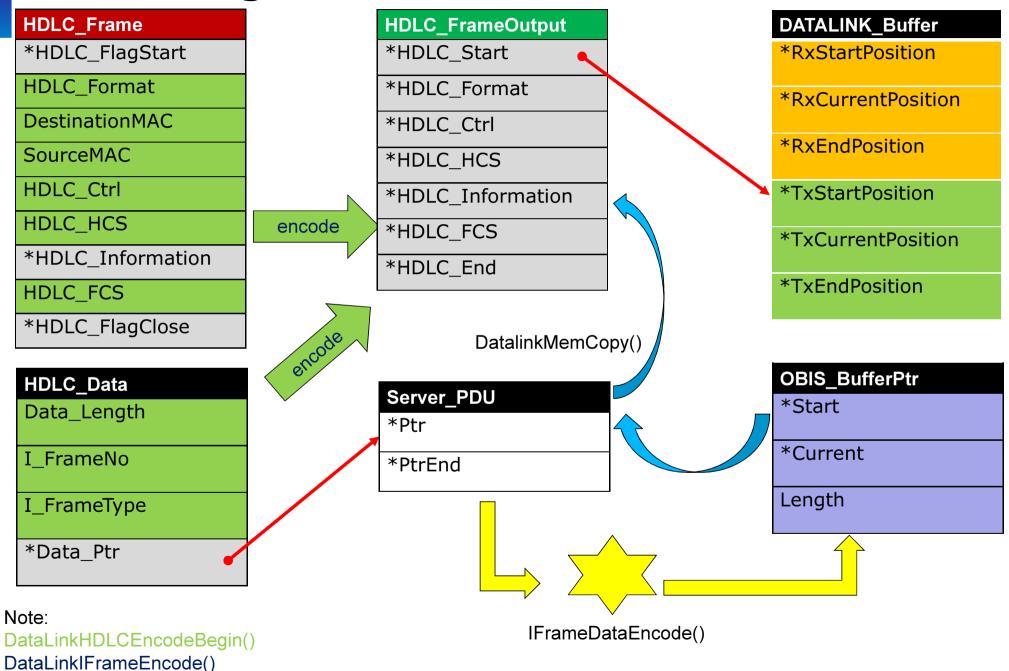




Note:

DataLinkHDLCDecode()

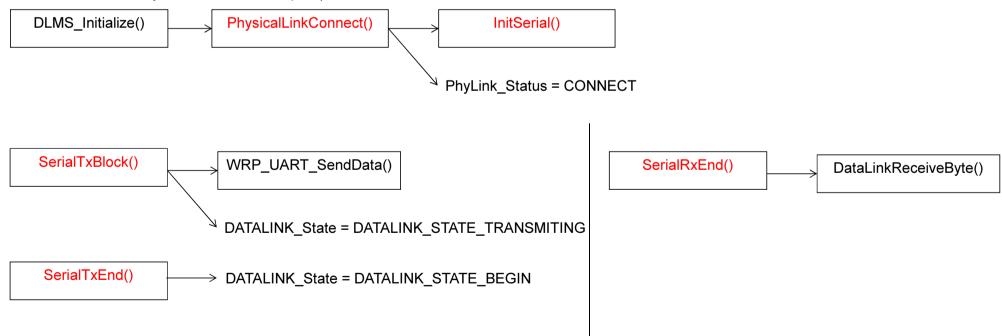
DataLinklFrameDecode()



Physical channel (current)

Physical layer

- In \rl78g13QS+\application\dlms\physical\serial.h:
 - void InitSerial(void);
 - void SerialTxEnd(void);
 - void SerialRxEnd(Unsigned8 byte);
 - void SerialTxBlock(Unsigned8* BlockPtr, Integer16 Length);
- In \rl78g13QS+\application\dlms\physical\Physical Layer.h:
 - extern Unsigned8 PhyLink_Status;
 - void PhysicalLinkConnect(void);
 - void PhysicalLinkDisconnect(void)



Design idea for multichannel

Use multi RX buffer Data from/to UART DATALINK_Buffer RxBuffer[MAX_RECIEVE_BUFFER_SIZE] *RxStartPosition *RxCurrentPosition *RxEndPosition *TxStartPosition *TxCurrentPosition TxBuffer[MAX TRANSMIT BUFFER SIZE] *TxEndPosition Server_PDU *Ptr *PtrEnd ServerBuffer[MAX SERVER BUFFER SIZE] HDLC_Data Data_Length I FrameNo Note: I_FrameType #define MAX TRANSMIT BUFFER SIZE 256 *Data Ptr #define MAX RECIEVE BUFFER SIZE 256 #define MAX SERVER BUFFER SIZE 180

Physical layer

- In \rl78g13QS+\application\dlms\physical\serial.h:
 - void InitSerial(Unsigned8 channel);
 - void SerialTxEnd(Unsigned8 channel);
 - void SerialRxEnd(Unsigned8 channel, Unsigned8 byte);
 - void SerialTxBlock(Unsigned8* BlockPtr, Integer16 Length); -> Send for current channel
- In \rl78g13QS+\application\dlms\physical\Physical Layer.h:
 - extern Unsigned8-PhyLink_Status; -> Move to channel_info_t define
 - void PhysicalLinkConnect(void);
 - void PhysicalLinkDisconnect(void);

Common information for each channel:

typedef struct {

Tracking Information

```
Unsigned8
                                                                           PhyLink Status:
                                                          /* Tx Buffer */
                                                          Unsigned8
                                                                           *SerialTx Buffer Str:
                                                          Unsigned8
                                                                            *SerialTx Buffer End;
typedef struct {
                                                          Unsigned8
                                                                            *TxStartPosition:
    Unsigned8
                      channel id:
                                                                           *TxCurrentPosition:
                                                          Unsigned8
} st token info:
                                                          Unsigned8
                                                                           *TxEndPosition:
                                                          /* Rx Buffer */
                                                          Unsigned8
                                                                           *SerialRx Buffer Str;
                                                          Unsigned8
                                                                           *SerialRx Buffer End;
                                                          Unsigned8
                                                                           *RxStartPosition:
                                                          Unsigned8
                                                                           *RxCurrentPosition:
                                                          Unsigned8
                                                                           *RxEndPosition:
#define MAX CONNMGR CHANNEL NUMBER (2)
                                                          /* Timeout info */
/* ID of physical channel(s) */
                                                                              Timeout Level;
                                                          st TimeoutCount
#define CHANNEL NOT SPECIFIED
                                               (0xFF)
                                                          st TimeoutCount
                                                                              Timeout ms;
                                                          st TimeoutEnable
                                                                              Timeout Enable;
                                                          /* Datalink info */
                                                                           DATALINK State;
                                                          Unsigned8
                                                          st DATALINK PAR
                                                                                DATALINK parameter;
                                                          Unsigned16
                                                                            ByteCount;
                                                          Unsigned8
                                                                           Server State;
                                                          Unsigned8
                                                                           Prev nR;
                                                          Unsigned8
                                                                           Prev nS;
                                                          Unsigned8
                                                                           nR;
                                                          Unsigned8
                                                                           nS;
                                                          Unsigned8
                                                                           Client Status;
                                                     } st channel info;
```

Connection manager

```
typedef struct {
Unsigned8
Unsigned8
channel_info_t
token_info_t
} st_connect_mgr_info
```

```
current channel id;
channel count;
channel info[MAX CONNMGR CHANNEL NUMBER];
app token;
                                              Meter Application
                                         Set_Attri
                                                      Action_Method
                            Get Attri
                                                                        Others...
                                             COSEM Object Layer
                           Class 1
                                       Class 3
                                                   Class 4
                                                              Class 15
                                                                          Others...
                                            COSEM Application Layer
                                                                                               Ciphering/
                                                                         Event
                           Cosem
                                                                                              Deciphering
                                        GET
                                                   SET
                                                             Action
                                                                       Notification
                            Open
                                                   APDU
     Connection
                                   HDLC
                                                                    HDLC
      manager
                                            Mode E
                                Physical Layer
                                                                PLC Phy Layer
                                                                 PLC profiles
                             Port 1
                                           Port 2
```



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