

## flt 通讯问题

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I Versions

| Version | Date       | Comment       | Edited by |
|---------|------------|---------------|-----------|
| 1.0     | 2022.12.28 | First Edition | 黄宇伟       |
|         |            |               |           |
|         |            |               |           |
|         |            |               |           |

Table 1: Versions

II Distribution

| Name | Company, Department | Amount | Remarks |
|------|---------------------|--------|---------|
|      |                     |        |         |
|      |                     |        |         |
|      |                     |        |         |
|      |                     |        |         |

Table 2: Distribution

III Safety Notices

Safety notices in this document are organized as follows:

| Safety notice | Description                                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------------------|
| Danger!       | Disregarding the safety regulations and guidelines can be life-threatening.                                 |
| Warning!      | Disregarding the safety regulations and guidelines can result in severe injury or heavy damage to material. |
| Caution!      | Disregarding the safety regulations and guidelines can result in injury or damage to material.              |
| Information:  | Important information used to prevent errors.                                                               |

Table 3: Safety notices

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## 1 问题

根据现场反馈，在通讯中断后，断线重连后读到的数据会与发送请求无法匹配。

AS 环境

AS : AS4.7

AR : H4.73

程序使用的是：AsFltGen 库。

X20cs1030 模式使用的是 flat steam

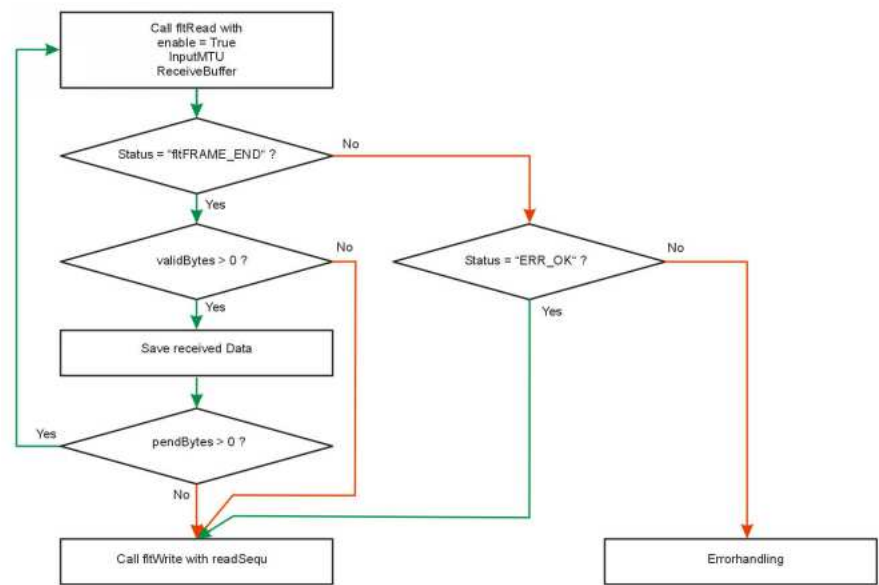
## 2 问题原因

在通讯中断后，程序通讯代码就进入停止状态，不再继续读取。导致数据栈中出现堆栈现象，从而在重新链接上时，发送新指令但收到的是前一次的数据。

3 测试

1.按照帮助说明流程，对代码读写流程进行优化。且增加一段持续读取状态，用于清空堆栈数据。

Diagram of process using receive mode "Frame":



|              |                |       |                                                                             |
|--------------|----------------|-------|-----------------------------------------------------------------------------|
| ORS          | FB_SerialCanIO | local |                                                                             |
| F800RS[0]    | FB_SerialCanIO |       |                                                                             |
| trSendData   | STRING[80]     |       | '01R25\$ \$n'                                                               |
| !ErrReset    | BOOL           |       | FALSE                                                                       |
| ready        | BOOL           |       | FALSE                                                                       |
| omOverTime   | UDINT          |       | 1500                                                                        |
| trOrbyte     | BOOL           |       | FALSE                                                                       |
| yteSendData  | BYTE[0..30]    |       |                                                                             |
| !mdSend      | BOOL           |       | FALSE                                                                       |
| !nlyWrite    | BOOL           |       | FALSE                                                                       |
| !nlyWrite    | BOOL           |       | TRUE                                                                        |
| !xBytes      | USINT[0..7]    |       |                                                                             |
| !xBytes      | USINT[0..7]    |       |                                                                             |
| !endDataLen  | UINT           |       | 0                                                                           |
| !SendDataLen | BOOL           |       | FALSE                                                                       |
| trReceived   | STRING[110]    |       | 'Running Counter Running Counter Running Counter Running Counter= 91\$ \$n' |
| !ErrCom      | BOOL           |       | FALSE                                                                       |
| !yteReceived | BYTE[0..43]    |       |                                                                             |
| !ommDone     | BOOL           |       | FALSE                                                                       |
| !rrorID      | UINT           |       | 33809                                                                       |
| !rameCm      | FrameCm_typ    |       |                                                                             |
| step         | enTERM_STEP    |       | FLT_READ_ECHO                                                               |
| Commands     | command_typ    |       |                                                                             |
| receive_data | STRING[110]    |       | 'Running Counter Running Counter Running Counter Running Counter= 91\$ \$n' |
| send_data    | STRING[80]     |       | '01R25\$ \$n'                                                               |
| FLT_write    | fltWrite       |       |                                                                             |
| enable       | BOOL           |       | TRUE                                                                        |
| cfg          | UDINT          |       | 0                                                                           |
| pBuf         | UDINT          |       | 58714030                                                                    |
| bufLen       | UINT           |       | 0                                                                           |
| readSequ     | USINT          |       | 224                                                                         |
| pTxBytes     | UDINT          |       | 58713735                                                                    |
| txBytesLen   | USINT          |       | 8                                                                           |
| pSequ        | UDINT          |       | 58713743                                                                    |
| status       | UINT           |       | 0                                                                           |
| _cache       | fltTx_t        |       |                                                                             |
| FLT_read     | fltRead        |       |                                                                             |

2.但出现其他情况，为了加快通讯速度，减小了通讯等待时间 ComOverTime。减小到 200ms 时出现 receive\_btdata 输出数据在结束状态 33809 之后。

| Name         | Type           | Scope | Force | Value      |
|--------------|----------------|-------|-------|------------|
| FBGT800RS    | FB_SerialCanIO | local |       |            |
| FBGT800RS[0] | FB_SerialCanIO |       |       |            |
| strSendData  | STRING[80]     |       |       | '01R1\$<n' |
| bErrReset    | BOOL           |       |       | FALSE      |
| Ready        | BOOL           |       |       | FALSE      |
| ComOverTime  | UDINT          |       |       | 200        |
| strOrbyte    | BOOL           |       |       | FALSE      |
| ByteSendData | BYTE[0..30]    |       |       |            |
| CmdSend      | BOOL           |       |       | FALSE      |
| OnlyWrite    | BOOL           |       |       | FALSE      |
| fbInit       | BOOL           |       |       | TRUE       |
| TxBytes      | USINT[0..7]    |       |       |            |
| RxBytes      | USINT[0..7]    |       |       |            |
| SendDataLen  | UINT           |       |       | 0          |
| bSendDataLen | BOOL           |       |       | FALSE      |
| strReceived  | STRING[110]    |       |       | '          |
| bErrCom      | BOOL           |       |       | FALSE      |
| ByteReceived | BYTE[0..43]    |       |       |            |
| CommDone     | BOOL           |       |       | FALSE      |
| ErrorID      | UINT           |       |       | 33809      |
| FrameCm      | FrameCm_typ    |       |       |            |
| step         | enTERM_STEP    |       |       | FRM_WRITE  |
| Commands     | command_typ    |       |       |            |
| receive_data | STRING[110]    |       |       | '          |
| send_data    | STRING[80]     |       |       | '01R1\$<n' |
| FLT_write    | fltWrite       |       |       |            |
| FLT_read     | fltRead        |       |       |            |
| enable       | BOOL           |       |       | TRUE       |
| cfg          | UDINT          |       |       | 131072     |
| pBuf         | UDINT          |       |       | 58714735   |
| bufLen       | UINT           |       |       | 111        |
| pRxBytes     | UDINT          |       |       | 58714559   |
| rxBytesLen   | USINT          |       |       | 8          |
| status       | UINT           |       |       | 33809      |
| validBytes   | UINT           |       |       | 70         |
| pendBytes    | UINT           |       |       | 0          |
| readSequ     | USINT          |       |       | 224        |
| cache        | fltRx t        |       |       |            |

| Name         | Type           | Scope | Force | Value                                                             |
|--------------|----------------|-------|-------|-------------------------------------------------------------------|
| FBGT800RS    | FB_SerialCanIO | local |       |                                                                   |
| FBGT800RS[0] | FB_SerialCanIO |       |       |                                                                   |
| strSendData  | STRING[80]     |       |       | '01R1\$<n'                                                        |
| bErrReset    | BOOL           |       |       | FALSE                                                             |
| Ready        | BOOL           |       |       | FALSE                                                             |
| ComOverTime  | UDINT          |       |       | 200                                                               |
| strOrbyte    | BOOL           |       |       | FALSE                                                             |
| ByteSendData | BYTE[0..30]    |       |       |                                                                   |
| CmdSend      | BOOL           |       |       | FALSE                                                             |
| OnlyWrite    | BOOL           |       |       | FALSE                                                             |
| fbInit       | BOOL           |       |       | TRUE                                                              |
| TxBytes      | USINT[0..7]    |       |       |                                                                   |
| RxBytes      | USINT[0..7]    |       |       |                                                                   |
| SendDataLen  | UINT           |       |       | 0                                                                 |
| bSendDataLen | BOOL           |       |       | FALSE                                                             |
| strReceived  | STRING[110]    |       |       | '                                                                 |
| bErrCom      | BOOL           |       |       | FALSE                                                             |
| ByteReceived | BYTE[0..43]    |       |       |                                                                   |
| CommDone     | BOOL           |       |       | FALSE                                                             |
| ErrorID      | UINT           |       |       | 33809                                                             |
| FrameCm      | FrameCm_typ    |       |       |                                                                   |
| step         | enTERM_STEP    |       |       | FRM_COPY_RD_DATA                                                  |
| Commands     | command_typ    |       |       |                                                                   |
| receive_data | STRING[110]    |       |       | 'Running Counter Running Counter Running Counter Running Counter' |
| send_data    | STRING[80]     |       |       | '01R1\$<n'                                                        |
| FLT_write    | fltWrite       |       |       |                                                                   |
| FLT_read     | fltRead        |       |       |                                                                   |
| enable       | BOOL           |       |       | TRUE                                                              |
| cfg          | UDINT          |       |       | 131072                                                            |
| pBuf         | UDINT          |       |       | 58714735                                                          |
| bufLen       | UINT           |       |       | 111                                                               |
| pRxBytes     | UDINT          |       |       | 58714559                                                          |
| rxBytesLen   | USINT          |       |       | 8                                                                 |
| status       | UINT           |       |       | 0                                                                 |
| validBytes   | UINT           |       |       | 2                                                                 |
| pendBytes    | UINT           |       |       | 0                                                                 |
| readSequ     | USINT          |       |       | 240                                                               |
| cache        | fltRx t        |       |       |                                                                   |

3.怀疑是否是功能块状态机不正确导致。数据输出做出更改，检测到有数据就输出，但这样会输出异常数据。

```
wrong -> ERROR +

UB *)

recv buffer to
recv buffer leng
once recv buffer
recv buffer leng

UB *)
the received da
edging - no data
knowledge recve
```

|                           |             |                                                                                          |
|---------------------------|-------------|------------------------------------------------------------------------------------------|
| IB_UART:IB_SerialCanIO.at | String[110] |                                                                                          |
| ByteReceived              | BOOL        | FALSE                                                                                    |
| CommDone                  | BYTE[0..43] |                                                                                          |
| ErrorID                   | BOOL        | FALSE                                                                                    |
| FrameCm                   | UINT        | 33809                                                                                    |
| step                      | FrameCm_typ |                                                                                          |
| Commands                  | enTERM_STEP | FRM_READ                                                                                 |
| receive_data              | command_typ |                                                                                          |
| send_data                 | STRING[110] | 'Counteg Counter^unning Counter Running Counter Runni ^# Counter= 496\$<br>'01R14\$<br>' |
| ErrorID                   | STRING[80]  |                                                                                          |
| FrameCm                   | UINT        | 33809                                                                                    |
| step                      | FrameCm_typ |                                                                                          |
| Commands                  | enTERM_STEP | FRM_READ                                                                                 |
| receive_data              | command_typ |                                                                                          |
| send_data                 | STRING[110] | 'Rung Counter Running Counter Running Counter Running Counter= 488\$<br>'01F0\$<br>'     |
| FLT_write                 | STRING[80]  |                                                                                          |
| step                      | enTERM_STEP | FRM_READ                                                                                 |
| Commands                  | command_typ |                                                                                          |
| receive_data              | STRING[110] | 'Rung Counter Running Counter Running Counter Running Counter= 470\$<br>'01R14\$<br>'    |
| send_data                 | STRING[80]  |                                                                                          |
| FrameCm                   | FrameCm_typ |                                                                                          |
| step                      | enTERM_STEP | FRM_READ                                                                                 |
| Commands                  | command_typ |                                                                                          |
| receive_data              | STRING[110] | 'Running Counter Running Counter Running Counter Running Counter= 471\$<br>'01R25\$<br>' |
| send_data                 | STRING[80]  |                                                                                          |
| FLT_write                 | fltWrite    |                                                                                          |
| CommDone                  | BOOL        | FALSE                                                                                    |
| ErrorID                   | UINT        | 33809                                                                                    |
| FrameCm                   | FrameCm_typ |                                                                                          |
| step                      | enTERM_STEP | FRM_READ                                                                                 |
| Commands                  | command_typ |                                                                                          |
| receive_data              | STRING[110] | 'Running Counter Running Counter Ru ing Counter Runni ^# Counter= 479\$<br>'01R14\$<br>' |
| send_data                 | STRING[80]  |                                                                                          |
| FLT_write                 | fltWrite    |                                                                                          |
| FLT_read                  | fltRead     |                                                                                          |

#### 4.我们向总部提交问题询问我们疑惑

为什么当通信操作循环减少时，fltread 返回的数据比 33809 ( FB 的状态 ) 晚？



ticket400393344.  
docx

#### 总部回复：

We had a quick look into the Application...

It seems that the ASFltGen Library is Ok, but the function block FB\_SerialCanIO from the Application is broken.

When FB\_SerialCanIO is in FrmaeCm.step FRM\_READ: it calls fltRead (FrameCm.FLT\_read()) in Line 103 if the returned Status is ERR\_OK it changes FrameCm.step to FLT\_READ\_ECHO.

In step FTL\_READ\_ECHO the step is turned back to FLT\_READ if ComOverTime is not elapsed.  
If ComOverTime has elapsed the FUB sets FrameCm.step := FRM\_WAIT; where the Received data is cleared.

It seems that the programmer of this function block had expected the fltRead to return "ERR\_FUB\_BUSY" on partly received frames, but this is not the case, the FUB returns ERR\_OK, see the step diagram from the help.

See attached [Info\_A.jpg].

See attached [Info\_B.jpg].

There are some other problems in the Application Source....

CycleTime is calculated form the result of the RTInfo\_0() FUB before the fub is called!? This will work as the cycle\_time from the previous call is still in the FUB strucure, but it looks strange nonetheless.

See attached [Info\_C.jpg].

The call to fltRead/fltWrite is much slower than the X2X Cycle time, this will not give the optimum performance,

个人理解是总部是说这个必须按照帮助说明的流程运行，出现这异常情况是因为我们做了一个超时步骤，在 read 《》 write 交互中，前一次数据未读完整，就中断了读。然后重新发送了写的指令进行一次新的通讯。但实际通讯数据栈留有前一次部分旧数据造成读出异常结果。

## 4 结果

现在完成了基本的通讯，但在加快通讯数据方面还存在问题未解决。