DPC-CAN/PROTOCOL/ENG

Index

1 What is DPC-CAN ?

- DPC-CAN is setup and test Interface for HiTEC RCD CAN Servo.
- Serial Communication via CP2xxx
- CAN 2.0B Interface
  - CAN 2.0A message, 2.0B message
- USB connector.
- 3 pin power connector.
  - GND, POWER+, NC
- 4 pin CAN connector.
  - GND, POWER+, CANL, CANH

- You can use CANL, CANH without GND, POWER+.

2 Packet

```
<Start Flag>, <Msg: n byte>, <Add Checksum of Msg>, <MsgLen = n>, <End Flag>
```

- You must use packet form to send *Msg* or parsing *Msg*.
  - Except *FIXED FORMAT*.
  - ex) Write n bytes: xxxxx

- Host -> DPC-CAN

    - Start Flag = STX = 2, End Flag = ETX = 3

- DPC-CAN -> Host
    - if CAN Recv Msg, Start Flag = STX+2 = 4, End Flag = ETX+2 = 5
    - if Error Msg, Start Flag = STX+4 = 6, End Flag = ETX+4 = 7

3 Connect

- Connect DPC-CAN to PC.
- Open Serial Port
    - 115200 bps, 8, n, 1
- Write: 6 bytes: ':', 'A', ':', 'A', ':', 'A'
- Write: 4 bytes: 2, 'X', 'X', 3
- Clear recv buffer
- Write: 8 bytes: 2, 'V', 'S', 0, 0, 0, 0, 3
- Wait 100 msec
- Read all recv bytes
    - Find Value 4
    - get next 2 bytes
    - format = 4, <VER H>, <VER L>
- Check Version of DPC-CAN
- Init DPC-CAN
- Now You can send or recv CAN 2.0A, 2.0B messages.

- Connect Servo to DPC-CAN
- Power On Servo

3.1 Version

- VER H
    - bit 7..4:
        - 0 or 1 = Bootloader Type 1 = B1
        - 2 = Bootloader Type 2 = B2
    - bit 3..0:
        - 0 or 1 = DPC-CAN FW V1
        - 2 = DPC-CAN FW V2
- VER L
    - Firmware Version
    - ex) 23 -> Ver 2.3

- YOU MUST CHECK DPC-CAN FW V2, Ver 2.2+

4 Disconnect

- Close Serial Port

5 Init

5.1 'S' - set baudrate, sample point

```
'S', <speed index>, <sampling point index>
```

- ex) 'S', 0, 0 --> 1000 kbps, 50%
- speed table
  - 0 = 1000
  - 1 = 800
  - 2 = 750
  - 3 = 500
  - 4 = 400
  - 5 = 250
  - 6 = 200
  - 7 = 150
  - 8 = 125
- sampling point
  - 0 = 50%
  - 1 = 87.5% (recommanded)

5.2 'T' - set default target can id

```
'T', <CAN ID byte 0>, <CAN ID byte 1>, <CAN ID byte 2>, <CAN ID byte 3>
```

- You can send 'M' Msg, after this setting.
- CAN ID
  - little endian
  - if CAN ID byte 3, bit 7 is 1, this is 2.0B CAN ID.

6 '?' - get configuration

- You can get CAN baudrate and DEFAULT TARGET CAN ID.

- SEND
  - Write 3 bytes: 2, '?', 3 --> THIS IS NOT PACKET FORM
- RETURN

```
'U', <can speed index>, <can sample point index>, <ID byte 0>, <ID byte 1>, <ID byte 2>, <ID byte 3>
```

7 send can message

- You must use packet form
  - Start Flag = STX, End Flag = ETX

7.1 'M' - send CAN message with default target can id

```
'M', < data byte 0 >, ..., < data byte n-1 >
```

- Msg length is 1 ~ 9 bytes.
- ex) send CAN 2.0A message "HELLO" with default can id

- 'M', 'H', 'E', 'L', 'L', 'O'

7.2 'A', 'C' - send CAN 2.0A message

```
'A', <CAN ID byte 0>, <CAN ID byte 1>, <data byte 0>, ..., <data byte n-1>
```

- Msg length is 3 ~ 11 bytes.
- ex) send CAN 2.0A message "HELLO" with CAN ID 0x123
  - 'A', 0x23, 0x01, 'H', 'E', 'L', 'L', 'O'

- if you use 'C' instead of 'A', default target can id will be changed.

7.3 'B', 'D' - send CAN 2.0B message

```
'B', <CAN ID byte 0>, <CAN ID byte 1>, <CAN ID byte 2>, <CAN ID byte 3>, <data byte 0>, ..., <data byte n-1>
```

- Msg length is 5 ~ 13 bytes.
- ex) send CAN 2.0B message "HELLO" with CAN ID 0x12345678
  - 'B', 0x78, 0x56, 0x34, 0x12, 'H', 'E', 'L', 'L', 'O'

- if you use 'D' instead of 'B', default target can id will be changed.

8 read messages

- if DPC-CAN recv normal CAN message from CAN network, DPC-CAN send CAN Data in packet form to PC.
  - Start Flag = STX+2 = 4, End Flag = ETX+2 = 5
- if DPC-CAN detect error, DPC-DPC send error Msg in packet form to PC.
  - Start Flag = STX+4 = 6, End Flag = ETX+4 = 7

8.1 error messages

- "SET" message
  - You need setup baudrate and sample point to send any packet.

- "ID" message
  - You need setup default target can id to send 'M' Msg.

8.2 recv CAN message

- only One format

```
<CAN ID byte 0>, <CAN ID byte 1>, <CAN ID byte 2>, <CAN ID byte 3>, <data byte 0>, ..., <data byte n-1>
```

- Msg Length is 4 ~ 12 bytes.
- CAN ID is 4 byte fixed.
- if CAN ID byte 3 bit 7 is 1, this is CAN 2.0B message.

- ex) 0x78, 0x56, 0x34, 0x92, 0x99

- CAN 2.0B Message, ID = 0x12345678, Data Len = 1, Data = 0x99

- END OF FILE