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| Title: | Nurse call Protocol structure 172-140330.doc |
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MELD CO electronics APS

(Additionally to this document, there are the bootloader protocol,
there are used for downloading software and changing the nodes settings. it uses the older rev 2.0 A can structure 11bit id.)



## 1. Application Layer

One Packet on the bus consist of
stype + nc_call_t(type,group,id,subid,prio,text)

```
U8 stype
00H=Sync
01H=ADD    (type,group,id,subid,prio,text)
02H=Remove (type,group,id,subid)
50H=Status (value) // voltage=((5.2/1024)*((value*2)+200))*11

typedef struct{
  U8 type;
  U8 group;
  U8 id;
  U8 subid;
  U8 prio;
  U8 text[14];
  U8 flags; //Must be in the end because it's not sent out on the can-bus
} nc_call_t;

U8 type
1=Call
2=Presence
255=Not Def.

U8 group, U8 id, U8 subid,
0-254, 255=Not Def.

U8 prio
0="No Sound"
1="Call No Speech"
2="Speech/Staff/Lift/Dore"
3="WC"
4="Phone/Assistance"
5="Emergency"
6="Diagnostic"
7="ID/Assault/Fire"
255=Not Def.

U8 text[14]
"Hello  World  " //14 chars in ISO8859-1 For more info read: http://da.wikipedia.org/wiki/ISO_8859-1
```

**Example, of adding a call**

```
st ,t  ,g  ,id ,si ,pwc,text "Hello  World  "
01H,01H,01H,01H,01H,03H,48H,65H,6CH,6CH,6FH,20H,20H,57H,6FH,72H,6CH,64H,20H,20H
```

**Example, of removeng a call**

```
st ,t  ,g  ,id ,si
02H,01H,01H,01H,01H
```

## 2. Wrapping ISO-15765-2

The smart thing about can-bus is, that the low level packets is a open standard so everyone can read the communication, the packets can max contain 8 data bytes, this gives a problem, when you want to send more then 8 bytes, to solve this I have used the ISO-15765-2
For more info read: https://en.wikipedia.org/wiki/ISO_15765-2

**Example, of adding a call**

St ,t ,g ,id ,si ,pwc,text "Hello World "
01H,01H,01H,01H,01H,03H,48H,65H,6CH,6CH,6FH,20H,20H,57H,6FH,72H,6CH,64H,20H,20H

And in ISO-15765 there is 3 packs, if you have a logger on the can-bus you will see this.
10H,14H,01H,01H,01H,01H,01H,03H
21H,48H,65H,6CH,6CH,6FH,20H,20H
22H,57H,6FH,72H,6CH,64H,20H,20H

## 4. CAN low level packet

We have selected the newer rev2.0 B structure with 29bit identifier so we can produce nodes with a unique id the top 3bit are for future purpose 26bit gives 0- 67108863 nodes
For more info read: SLLA270

## 5. Physical Layer

Medco have selected the TJA1051 as driver for the can bus because it's cheaper then LT1796
■ Protected from Overvoltage Line Faults to ±58V
■ ESD Protection to IEC 61000-4-2 Level 4
±8kV Contact Mode Test
■ High Input Impedance Supports Up to 110-200 Nodes (see AN00020)
For more info read the datasheet for the: NXP TJA1051

We have selected 50kb as bus speed to achieve a range of 1000meters, to be compatible with older systems like CD2000.
For more info read: SLLA270

## For more information please read about the Can Bus

https://en.wikipedia.org/wiki/CAN_bus