V7

Dataport specification

Version 1.98

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Disclaimer

This document provides information how to read and write to the serial interface of V7 from a PDA port. Note that this document as well as the interface described with it is proprietary and copyright protected.

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The document assumes you are familiar with serial communication and the basics of the NMEA-0183 version 2.0 protocol.

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The most recent version of the "V7 PDA port specification" document and test data streams is available on www.lxnav.com.

Please let us know about your products and designs that use V7's data stream.

Suggestions to improve this document are very welcome and may be sent to info@lxnav.com.

Basic description of NMEA sentences

There are three different sentences:

- **PLXVF:** Output data from V7 (fast data)
- **PLXVS**: Output data from V7 (slow data)
- **PLXV0**: Data to V7 (settings)

Output data from V7

*$PLXVF,time ,AccX,AccY,AccZ,Vario,IAS,PressAlt,mode *CS<CR><LF>*

- Time, millisecond fraction of a second
- acceleration X-axis, fixed to device frame, pointing out of V7 in G
- acceleration Y-axis, fixed to device frame, pointing to the side of device in G
- acceleration Z-axis, fixed to device frame, pointing down of V7 in G
- vario in m/s
- IAS, indicated airspeed in m/s
- Pressure altitude in m
- mode tells in what mode operates V7 SC(speed to fly)=1, VARIO=0

Example:
*$PLXVF,1.00,0.87,-0.12,-0.25,90.2,244.3,1,*CS<CR><LF>*

*$PLXVS,OAT,mode,voltage,IGC FR press altitude *CS<CR><LF>*

- OAT - outside air temperature in degrees Celsius
- mode tells in what mode operates V7 SC(speed to fly)=1, VARIO=0
- Voltage in Volts
- Pressure altitude, that comes from IGC FR to GPS port in Meters

Example:
*$PLXVS,23.1,0,12.3,*CS<CR><LF>*

Input data to V7

*$PLXV0, command, R/W,parameter1,parameter2,...parameterN *CS<CR><LF>*

Command can be following:
MC, BAL, BUGS, VOL, POLAR, CONNECTION, NMEARATE,ELEVATION,QNH,BRGPS,BRPDA
R/W defines, if we are sending read request of write request,
When read request is sent all parameters can be left out.
Number of parameters depends on type of command:
*$PLXV0, MC,R/W,MacCready[m/s]*CS*
*$PLXV0, BAL,R/W,Overload factor*CS*, where overload factor is defined as ratio between current mass and mass of glider, where polar was calculated
*$PLXV0, BUGS,R/W,bugs[%]*CS*, where bugs is degradation of polar in percents.
*$PLXV0, VOL,R/W,volume[%]*CS*, where volume is in percents from 0..100%
*$PLXV0, POLAR,R/W,a,b,c,polarload,polarwgt,maxw,empty,pilot,name,stall*CS*, where

- A,B,C used in polar equation glider_sinke=a*sqr(v)+b*v+c, where v is given in kph/100 (120kph=>1.2)
- PolarLoad wing load used in polar in kg/m2
- PolarWeight weight used in polar in kg
- MaxWeight, maximum weight of glider in kg
- EmptyWeight, empty weight of glider in kg
- PilotWeight, pilot weight in kg
- Name, polar name
- StallSpeed, stall speed in m/s

*$PLXV0,CONNECTION,R/W,direction*CS*, where direction has two values:

- text »DIRECT« to enable direct link with GPS port on all baudrates or
- text »VSEVEN« to enable communication with V7 on set baudrate

*$PLXV0,NMEARATE,R/W,plxvf,plxvs,lxwp0, lxwp1, lxwp2, lxwp3, lxwp5*CS*, where parameters are followin
plxvf, rate of PLXVF recodr in Hz, recomended to use 20, 10, 5, 2 or 1Hz
plxvs, period for PLXVS in seconds
lxwp0, period for LXWP0 in seconds, zero means disabled
lxwp1, period for LXWP1 in seconds
lxwp2, period for LXWP2 in seconds
lxwp3, period for LXWP3 in seconds
lxwp5, period for LXWP5 in seconds
*$PLXV0,QNH, ,R/W,pressure in pascals*CS Change of QNH setting*
*$PLXV0,ELEVATION, R/W,elevation in meters*CS Change of elevation*
*$PLXV0,BRGPS, R/W, baudrate index *CS Change of baudrate on GPS port*
*$PLXV0,BRPDA, R/W,baudrate index*CS Change of baudrate on PDA port where baudrate indexes are following:*

```
enum { br4800=0, br9600, br19200, br38400, br57600,
br115200,br230400,br256000,br460800, br500k, br1M};
```

PDA baudrate must not be lower than GPS baud rate!

Example:

*$PLXV0,MC,W,1.2*CS<CR><LF> // Mc on V7 will be set to 1.2m/s*

*$PLXV0,MC,R*CS<CR><LF> // Request to read MC from V7*

*V7 will answer: $PLXF0,MC,W,1.2*CS<CR><LF>*

*$PLXV0,CONNECTION,W,DIRECT*CS<CR><LF> direct link is established*

*$PLXV0,CONNECTION,W,VSEVEN*CS<CR><LF> link with V7 is established*

*$PLXV0,NMEARATE,W,10,5,1,60,30,30,0,0*CS<CR><LF> Rates for NMEA sentences*

*$PLXV0,QNH,W,101025*38 Change of QNH setting*

*$PLXV0,ELEVATION,w,244*0C Change of elevation*

*$PLXV0,BRGPS,W,0*3D Change of baudrate on GPS port*

*$PLXV0,BRPDA,W,5*29 Change of baudrate on PDA port*