j_varsXX.d

Note. XX represents a number, for example 01.

This file controls the way the data variables operate in DfW. There are a number of different sections, which may not be relevant depending on your instrument system; there are also some sections which it is not recommended that you edit directly and these are not discussed in this document.

Below are examples as to how to read in additional variables from your instruments, control the averaging of variables, control the time series plots and add your own variables.

In the notes below, the boxed text defines how each section works, and there then follows more detailed information and examples. Throughout, columns are separated by at least one space.

Variables

This section defines what variables exist in DfW. The first column is the unique identification number for the variable. The second column is the long name, which is seen in most places inside the program (for example, on the data bar and Show Data). The third column is the short name, which is used as label on the times series plots. The fourth column controls the number of decimal places for the variable. The fifth column specifies whether the value should be an absolute value (number 1) or normal data (0). The final column is the data type (0=normal, 1= -180 to 180, 2 = 0 to 360, 4=distance).

For example, the line:

```
0 Heel              Hl       1    1    0
```

is a variable with DfW identification number `0`, is called `Heel`, has short name `Hl`, has one decimal place, is an absolute value and is normal data.

A number of the variables listed in this section will not have data in them by default and will therefore always read 0. If you want to view data for these variables, therefore, it is necessary to configure the `j_varsXX.d` file to read in the correct values from your instruments system (see Reading in a new variable below).

B&G

This section defines what variables are read in from a B&G Hercules system to DfW (note that the Hydra/H1000 systems work via the NMEA interface, see below). The first column is the B&G identification number (or function number). See Table 5.5 of the Hercules 200 manual for the standard B&G identification numbers; to use the remote functions (Table 5.6), 32 must be added to the channel number. If the tables above do not contain the function you require, the B&G identifier can be in the form nnn.fff, where nnn denotes the node number and fff the B&G function number for the B&G network. See Table 5.12 of the Hercules 2000 manual and/or contact your B&G agent for more information.

The second column is the DfW identification number, as listed in the `[variables]` section above. The third column is the B&G symbol indicating port tack. The final column is an indicator to switch the sign, since all variables should be positive on starboard (1=switch; otherwise 0).

For example, the line:

```
0    0  H    0
```

means that B&G variable number 0 is read in to the variable with DfW identification number 0, with the sign for port tack being H and no switch of sign.

Ockam

This section controls the input of variables from an Ockam instrument system. The first column is the Ockam tag, with the full stop/period symbol (.) replacing the prime (') on the Ockam system. The second column is the DfW identification number. The third column is no longer used by the software and is ignored, any value can therefore be entered when adding new variables.

For example, the line:

```
H    0    30.0
```

means that Ockam variable H is read into the variable with DfW identification number 0 with the final column being ignored.

The `[ockgps]` section controls the GPS input on an Ockam instrument system. X. is latitude, X is longitude. The figures in the middle column are for error checking, with the data not being updated if the difference between the new and old values is greater than this value.

The `[magnum]` section controls the output of data to Ockam Magnum displays. The first column is display label, the second column is Ockam identifier. If there is a third column, then this text is sent as the label along with the data. For example, the line:

```
heel          H
```

will write out the variable with Ockam tag H (which is Heel) to the Magnum with label `heel` .

NMEA

This section controls the input of data from an NMEA instrument system. Note that this includes the B&G Hydra/H1000, Silva, NKE and standard NMEA connections.

The first column is the NMEA string and the second is the field number within that string of the data you require. The third column determines whether the data is an angle (1) or normal data (0); If using the string MWV, then this should be set to 2 because of the way the NMEA string works. The final column is the DfW identification number.

For example, the line:

```
VHW 5 0 1
```

will reference the NMEA string VHW, using data from field number 5. You will find that this is boat speed through the water. The third column shows that this is normal data. The final column shows that this value is read in to the variable with DfW identification number 1, which is boat speed.

For details of NMEA strings and filed numbers, please consult the manual for your instrument system.

WTP

This file controls the input of variables from a Sailmath WTP. The first column is WTP function number (from bg_vars.d) and the second column is DfW identification number. For example, the line:

```
0    0
```

will read data from WTP function number 0 (which you will find is heel) into the variable with DfW identification number 0 (heel).

Reading in a new variable

As was mentioned above, not all variables in the `[variables]` list will have data in them by default, so it is necessary to configure the file as appropriate for your instrument system. By default, the variable **VMG** is not read in from any instrument system so we will use this as an example of what is necessary to read in a new variable. Looking at the [`variables`] section in the sample file at the end of this document, we can see that VMG has DfW identification number 16.

B&G

Looking at Table 5.5 of the Hercules 2000 manual, we can see that VMG has B&G function number 19. In the `[b&g]` section, the line

```
19    16    -    0
```

will read in this value to the variable VMG in DfW. Note that in this case, the **D** or **U** character representing down- or upwind will ignored by DfW.

Ockam

Looking at section 4 of the Ockam manual, we can see that VMG has Ockam tag **b**. In the `[ockam]` section of the file, the line:

```
b      16     1.0
```

will mean that VMG is read from the Ockam system to the variable VMG in DfW.

NMEA

NMEA string VPW contains the VMG information, with VMGneing contained in field number 1. In the `[nmea]` section, the line

```
VPW      1     0    16
```

will read in this data to the variable VMG in DfW.

WTP

VMG has function number 19 on the WTP, so in the `[wtp]` section the line

```
19    16
```

will read this in to the variable VMG in DfW.

Averages

This section controls the averaging for the four averaged variables in DfW. The first column is the DfW identification number for an averaged value and the second column is the DfW identification number for the variable which is being averaged. For example, the line

```
74   5
```

specifies that the data for variable 74 (average course) is coming from variable 5 (course).

Datalog

This section controls the variables which are available to plot on time series plots in DfW. The first column contains a sequential list of numbers. The second column is the DfW identification number for the variable to be plotted. The final two columns determine the default values for the upper and lower bounds for the plots.

A sample j_varsXX.d file

```
[variables]
 0 Heel              Hl       1    1    0
 1 Boatspeed         VS       2    0    0
 2 AW_angle          AA       0    1    1
 3 AW_speed          AS       1    0    0
 4 Leeway            Le       1    1    0

 5 Course            Cs       0    0    2
 6 Heading           Hd       0    0    2
 7 TW_Dirn           TD       0    0    2
 8 TW_angle          TA       0    1    1
 9 TW_speed          TS       1    0    0

10 GW_Dirn           GWD      0    0    2
11 GW_speed          GWS      1    0    0

12 Orig_TWS          ts       1    0    0
13 Orig_TWA          ta       0    1    1
14 Orig_TWD          td       0    0    2
15 TWD_Off           wdo      0    0    1

16 VMG               VG       1    1    0

17 Ext_SOG           SOG      2    0    0
18 Ext_COG           COG      0    0    2
19 Ext_VMC           VMC      2    0    0
20 Opt_VMC           OVC      2    0    0
21 Cse_OVMC          COC      0    0    2

22 Vs_target         TS       2    0    0
23 Vs_targ%          T%       0    0    0
24 TWA_targ          AT       0    1    1
25 Vs_perf           PPV      2    0    0
26 Vs_perf%          PP%      0    0    0

27 Vs_nav            PNV      2    0    0
28 Vs_nav%           PN%      0    0    0
29 Brg_o_Mrk         BM       0    0    2
30 Dst_t_Mrk         DM       2    0    4
31 Tm_t_Mrk          TM       0    0    3

32 Curr_Rate         CrR      2    0    0
33 Curr_Dir          CrD      0    0    2
34 MCur_Rate         MCR      2    0    0
35 MCur_Dir          MCD      0    0    2
36 DCur_Rate         DCR      2    0    0
37 DCur_Dir          DCD      0    0    2
38 LCur_Rate         LCR      2    0    0
39 LCur_Dir          LCD      0    0    2

40 ManOvrBrg         MOB      0    0    2
41 ManOvrRng         MOR      3    0    4

42 O_Heel            OHl      1    1    0
43 O_Boatspd         OVS      2    0    0
44 O_Course          OCs      0    0    2
45 O_TW_Dirn         OTD      0    0    2
46 O_TW_angle        OTA      0    1    1
47 O_TW_speed        OTS      1    0    0

48 Hl-OHl            DHl      1    0    0
49 VS-OVS            DVS      2    0    0
50 Cse-OCse          DCs      0    0    1
51 TWD-OTWD          DTD      0    0    1
52 TWA-OTWA          DTA      0    0    1
53 TWS-OTWS          DTS      1    0    0
```

```
54 OBRng              OBR     0    0    0
55 OBBrg              OBB     0    0    2
56 OBRngW             ORW     0    0    0
57 OBRngM             ORM     0    0    0
58 OBGMW              OGW     1    0    0
59 OBGMM              OGM     1    0    0
60 OBDMC              ODC     1    0    0
61 OBDMOC             ODO     1    0    0

62 Depth              Dep     1    0    0

63 DST_STRB           DOS     2    0    4
64 TM_STRB            TOS     0    0    3
65 DST_PORT           DOP     2    0    4
66 TM_PORT            TOP     0    0    3

67 GGAUTC             UTC     1    0    0
68 GGASVA             SVA     1    0    0
69 GGAQHD             QHD     1    0    0

70 S_APortDn          APD     0    0    3
71 S_APortUp          APU     0    0    3
72 S_AStbdDn          ASD     0    0    3
73 S_AStbdUp          ASU     0    0    3

74 AveCse             ACs     0    0    2
75 AveTWD             ATD     0    0    2
76 AveTWS             ATS     1    0    0
77 AveNav%            AN%     0    0    0

78 O_AWA              OAA     0    1    1
79 O_AWS              OAS     1    0    0

80 MA_TWD             MWD     0    0    2
81 MA_TWS             MWS     1    0    0
82 MA_VS              MVS     2    0    0
83 MA_VSNP            MVP     1    0    0

84 DST_LAYL           DTL     1    0    4
85 TM_LAYL            TTL     0    0    3
86 UP_CSTRB           UCS     0    0    2
87 UP_CPORT           UCP     0    0    2
88 DN_CSTRB           DCS     0    0    2
89 DN_CPORT           DCP     0    0    2
90 UP_LSTBD           ULS     0    0    2
91 UP_LPORT           ULP     0    0    2
92 DN_LSTBD           DLS     0    0    2
93 DN_LPORT           DLP     0    0    2
94 DST_LINE           DSL     1    0    4
95 TM_LINE            TSL     0    0    3

96 AWA_TARG           AAT     0    1    1

[UserVariables]
80  7  null.cal  MA_TWD.fil
81  9  null.cal  MA_TWS.fil
82  1  null.cal  MA_VS.fil
83 28  null.cal  MA_VSNP.fil

[newvars]
GGAUTC     67
GGASVA     68
GGAQHD     69
S_APortDn  70
S_APortUp  71
S_AStbdDn  72
S_AStbdUp  73
DST_LAYL   84
TM_LAYL    85
```

```
UP_CSTRB    86
UP_CPORT    87
DN_CSTRB    88
DN_CPORT    89
UP_LSTBD    90
UP_LPORT    91
DN_LSTBD    92
DN_LPORT    93
DST_LINE    94
TM_LINE     95
AWA_TARG    96

[2boattelem]
78  2
79  3

[averages]
74  5
75  7
76  9
77 28

[datalog]
 0   0     0.0   30.0
 1   1     0.0   12.0
 2   2     0.0  180.0
 3   3     0.0   20.0
 4   4     0.0    6.0

 5   5     0.0  360.0
 6  12     0.0   20.0
 7  13     0.0  180.0
 8   7     0.0  360.0
 9   8     0.0  180.0

10   9     0.0   20.0
11  15   -20.0   20.0
12  17     0.0   12.0
13  18     0.0  360.0
14  22     0.0   12.0

15  27     0.0   12.0
16  23    90.0  110.0
17  28    90.0  110.0
18  34     0.0   10.0
19  35     0.0  360.0

20  42     0.0   30.0
21  43     0.0   12.0
22  44     0.0  360.0
23  45     0.0  360.0
24  46     0.0  180.0

25  47     0.0   20.0
26  48    -5.0    5.0
27  49    -5.0    5.0
28  50   -10.0   10.0
29  51   -15.0   15.0

30  52   -15.0   15.0
31  53    -5.0    5.0
32  54     0.0  300.0
33  55     0.0  360.0
34  56  -100.0  100.0

35  57  -100.0  100.0
36  58     0.0   50.0
37  62     0.0   50.0
```

```
[b&g]
 0   0  H   0
 1   1  -   0
10   3  -   0
12  12  -   0
13   2  -   0

14  13  =   0
15  14  -   0
23   4  L   0
25   5  C   1
50  18  -   0

51  17  -   0
11  62  -   0
 5   6  -   0

[ockam]
H   0   30.0
B   1   10.0
A   3   20.0
a  12   20.0
D   2   60.0

d  13   60.0
c  14   60.0
h   4   10.0
C   6  360.0
Y  62   50.0

U  18   60.0
U. 17   10.0

[ockgps]
X.  0.01  latitude
X   0.01  longitude

[magnum]
boatspeed       B
heading         C
true_wind_speed a
true_wind_angle d
true_wind_dirn  c
app_wind_speed  A
app_wind_angle  D
mizzen_AWS      %
mizzen_AWA      &
heel            H
depth_surface   W
depth_keel      w
opposite_tack   O
COG/SOG         f
rudder_angle    Y
user_1          1  POLAR_VS
user_2          2  TARG_VS

[nmea]
VHW 5 0 1
VHW 3 0 6
MWV 3 0 3
MWV 1 2 2
VTG 1 0 18
VTG 5 0 17
DBT 3 0 62

[wtp]
 0   0
13   6
```

```
 2   1
10   2
11   3
22  13
23  12

24  14
16   8
17   9
18   7
14   5

12   4
28  18
27  17

77  67
78  68
79  69

[instruments]
simul               9600 none    8    1
```