**Fastnet**

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| This is the general information on the bus used by B&G (Brookes and Gatehouse) H2000 and H3000 systems (and probably also the H1000)    **Fastnet Bus specifications**  (Thanks to Tom Lafleur for all the information) The bus is on a 28k8 speed, with odd parity and 2 stopbits Green and White are the data lines, together with a 12V and a Ground signal.  Data is sent on a system which looks a bit like CAN.  Complete layout of a Serial TTL to Fastnet [schematic](http://www.oppedijk.com/bandg/fastnet/B%26GFastNet1.pdf" \t "_blank)(thanks to Tom for all the work)    Basic layout of a data frame is this:   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | TO | FROM | Size | Command | Header Checksum | ChannelNR | Format | Data | Data | Repeat of more Channels | Full Checksum |   **Fastnet demo decode**  This is an example string recorded on the bus: ff 05 14 01 e7    1d 61 00 58    1c 51 01 df   87 06 00 be e8 e8  86 06 00 be e8 e8 a8    **split it into header and checksum parts:**  ff 05 14 01 e7    1d 61 00 58    1c 51 01 df   87 06 00 be e8 e8  86 06 00 be e8 e8 a8  ff = broadcast to all  05 = from wind/depth  14 = data in body part, 14hex = 20 dec = 20 databytes  01 = fastnet command, general data send  e7 = checksum header (header + checksum modulo 8 = 0)  a8 = full frame checksum(all data + checksum modulo 8 = 0    **decode body parts**  the first byte is the channel, the second is a mask to display the data? the rest is data ff 05 14 01 e7    1d 61 00 58              1d = air temp C, format = 61, data = 0058 hex  ==  88dec  ==  88/10 =  8.8 graden celsius  1c 51 01 df               1c = air temp F, format = 51, data =  01df hex  == 479dec  == 479/10 = 47.9 graden fahrenheit (= 8.8 graden celsius)  87 06 00 be e8 e8      87 = barometric pressure, format = 06, raw data is 4 letters, value " Off"  86 06 00 be e8 e8      86 = barometric pressure trend, format = 06, raw data is 4 letters, value " Off" a8  **more examples**  41 91 02 71           41 = Boatspeed, format = 91, data = 0271 hex = 625 decimal =  625/100 = 6.25 knots  4d 61 00 04           4d = AWS knots, format = 61,  0004 hex = 4 dec  = 04 knots  4f 61 00 02           4f  = AWS m/s, format = 61, 0002 hex = 2 dec  =  2ms (= 4 knots)    **format byte**  the format byte (e.g. 61) is a bit pattern, so transform this hex value to binary 61HEX = 01 10 00 01  divide the binary value in this format ZZ YY XXXX  ZZ = 01  YY = 10  XXXX = 0001    The ZZ value is the divider (or the place of the decimal point)  00 = xxxx  01 = xxx.x = divide by 10  10 = xx.xx = divide by 100  00 = x.xxx = divide by 1000    the YY value is the number of leading zero's (or the total number of digits visible)  00 = xxxx  01 = xxx  10 = xx  11 = x    The XXXX value is the formatter for different types of data (value, time, segment code for displaying text), check out the excel sheet below for more info  **Fastnet Channel information**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  | **Channel Number** | **Channel Number** | **Number of** | **Format** |  | | **Channel Name** | **Short Name** | **Dec** | **Hex** | **Bytes** |  | **Node** | | Node Reset |  | 00 | 00 | 0 |  |  | | ?? |  | 01 | 01 | 4 |  |  | | Rudder Angle |  | 11 | 0B | 4 |  | 5 | | Linear 5 |  | 12 | 0C |  |  | 0D | | Linear 6 |  | 13 | 0D |  |  | 0D | | Linear 7 |  | 14 | 0E |  |  | 0D | | Linear 8 |  | 15 | 0F |  |  | 0D | | Linear 9 |  | 16 | 10 |  |  | 0D | | Linear 10 |  | 17 | 11 |  |  | 0D | | Linear 11 |  | 18 | 12 |  |  | 0D | | Linear 12 |  | 19 | 13 |  |  | 0D | | Linear 13 |  | 20 | 14 |  |  | 0D | | Linear 14 |  | 21 | 15 |  |  | 0D | | Linear 15 |  | 22 | 16 |  |  | 0D | | Linear 16 |  | 23 | 17 |  |  | 0D | | ?? |  | 27 | 1B | 6 |  | 10 | | Air Temperature degrees F |  | 28 | 1C | 4 |  | 5 | | Air Temperature degrees C |  | 29 | 1D | 4 |  | 5 | | Sea Temperature degrees °F |  | 30 | 1E | 4 |  | 1 | | Sea Temperature degrees °C |  | 31 | 1F | 4 |  | 1 | | Head/Lift Trend |  | 39 | 27 | 4 |  | 30 | | Off Course |  | 41 | 29 | 4 |  | 30 | | Tacking Performance |  | 50 | 32 | 4 |  | 9 | | Reaching Performance |  | 51 | 33 | 4 |  | 9 | | Heel Angle |  | 52 | 34 | 6 |  | 5 | | Optimum Wind Angle |  | 53 | 35 | 4 |  | 9 | | Depth Sounder Receiver Gain |  | 54 | 36 | 4 |  | 1 | | Depth Sounder Noise |  | 55 | 37 | 4 |  | 1 | | Linear 1 |  | 56 | 38 | 4 |  | 9 | | Linear 2 |  | 57 | 39 | 4 |  | 9 | | Linear 3 |  | 58 | 3A | 4 |  | 9 | | Linear 4 |  | 59 | 3B | 4 |  | 9 | | Boatspeed, Knots |  | 65 | 41 | 4 |  | 1 | | Boatspeed, raw |  | 66 | 42 | 4 |  | 1 | | Yaw Rate |  | 68 | 44 | ? |  | ? | | ?? Lat/Long ?? |  | 71 | 47 | 5 | ?? |  | | Heading |  | 73 | 49 | 4 |  | x | | Heading, Raw |  | 74 | 4A | 6 |  | x | | Apparent Wind Speed knots |  | 77 | 4D | 4 |  | 5 | | Apparent Wind Speed, raw |  | 78 | 4E | 6 |  | 5 | | Apparent Wind Speed m/s |  | 79 | 4F | 4 |  | 5 | | Apparent Wind Angle |  | 81 | 51 | 4 |  | 5 | | Apparent Wind Angle, raw |  | 82 | 52 | 6 |  | 5 | | Target TWA |  | 83 | 53 | 4 |  | 9 | | True Wind Speed, knots |  | 85 | 55 | 4 |  | 5 | | True Wind Speed M/S |  | 86 | 56 | 4 |  | 5 | | ?? |  | 87 | 57 | 4 |  |  | | True Wind Angle |  | 89 | 59 | 4 |  | 5 | | ?? |  | 90 | 5A | 4 |  |  | | Average Speed, knots |  | 100 | 64 | 4 |  | 1 | | Request for data |  | 104 | 68 | 2 |  |  | | Course |  | 105 | 69 | 4 |  | 5 | | Act for data |  | 106 | 6A | 4 |  |  | | True Wind Direction |  | 109 | 6D | 4 |  | 5 | | ?? |  | 110 | 6E | 4 |  |  | | Next Leg Apparent Wind Angle |  | 111 | 6F | 4 |  | 9 | | Next Leg Target Boat Speed |  | 112 | 70 |  |  | 9 | | Next Leg Apparent Wind Speed |  | 113 | 71 | 4 |  | 9 | | Timer |  | 117 | 75 | 6 |  | 5 | | ?? |  | 119 | 77 |  |  |  | | Polar Performance |  | 124 | 7C | 4? |  | 9? | | Target Boatspeed |  | 125 | 7D | 4 |  | 9 | | Velocity Made Good, K |  | 127 | 7F | 6 |  | 5 | | Dead Reckoning Distance |  | 129 | 81 | 4 |  | 1 | | Leeway |  | 130 | 82 | 6 |  | 5 | | Tidal Drift |  | 131 | 83 | 4 |  | 9 | | Tidal Set |  | 132 | 84 | 4 |  | 9 | | Upwash |  | 133 | 85 |  |  |  | | Barometric Pressure Trend |  | 134 | 86 | 6 |  | 5 | | Barometric Pressure |  | 135 | 87 | 6 |  | 5 | | Battery Volts |  | 141 | 8D | 4 |  | 5 | | Heading on Next Tack |  | 154 | 9A | 4 |  | x | | Fore/Aft Trim |  | 155 | 9B | 6 |  | 5 | | Mast Angle |  | 156 | 9C | 4 |  | 5 | | Wind Angle to the Mast |  | 157 | 9D | 4 |  | 5 | | Pitch Rate |  | 158 | 9E | ? |  | ? | | ?? |  | 180 | B4 | 6 |  | 10 | | ?? |  | 182 | B6 | 2 |  |  | | Depth Meters |  | 193 | C1 | 4 |  | 1 | | Depth Feet |  | 194 | C2 | 4 |  | 1 | | Depth Fathoms |  | 195 | C3 | 4 |  | 1 | | Stored Log, NM |  | 205 | CD | 4 |  | 1 | | Trip Log, NM |  | 207 | CF | 4 |  | 1 | | Dead Reckoning Course |  | 211 | D3 | 4 |  | 1 | | ?? |  | 219 | DB | 4 |  |  | | Local Time |  | 220 | DC |  |  | 9 | | UTC Time |  | 221 | DD |  |  |  | | Bearing Wpt. to Wpt, true |  | 224 | E0 | 4 |  | 9 | | Bearing Wpt. to Wpt., mag. |  | 225 | E1 | 4 |  | 9 | | Layline |  | 226 | E2 |  |  | 9 | | Bearing to Waypoint, rhumb true |  | 227 | E3 | 4 |  | 9 | | Bearing to Waypoint, rhumb mag. |  | 228 | E4 | 4 |  | 9 | | Bearing to Waypoint, G.C. true |  | 229 | E5 | 4 |  | 9 | | Bearing to Waypoint, G.C. mag. |  | 230 | E6 | 4 |  | 9 | | Distance to Waypoint, Rhumb |  | 231 | E7 | 4 |  | 9 | | Distance to Waypoint, G.C. |  | 232 | E8 | 8 |  | 9 | | Course Over Ground, True |  | 233 | E9 | 4 |  | 9 | | Course Over Ground, Mag. |  | 234 | EA | 4 |  | 9 | | Speed Over Ground |  | 235 | EB | 4 |  | 9 | | Vel. Made Good, Course |  | 236 | EC | 4 |  | 9 | | Time to Waypoint |  | 237 | ED | 4 |  | 9 | | Cross Track Error |  | 238 | EE | 4 |  | 9 | | Remote 0 |  | 239 | EF | 4 |  | 9 | | Remote 1 |  | 240 | F0 | 4 |  | 9 | | Remote 2 |  | 241 | F1 | 4 |  | 9 | | Remote 3 |  | 242 | F2 | 4 |  | 9 | | Remote 4 |  | 243 | F3 | 4 |  | 9 | | Remote 5 |  | 244 | F4 | 4 |  | 9 | | Remote 6 |  | 245 | F5 | 4 |  | 9 | | Remote 7 |  | 246 | F6 | 4 |  | 9 | | Remote 8 |  | 247 | F7 | 4 |  | 9 | | Remote 9 |  | 248 | F8 | 4 |  | 9 | | Course to Sail |  | 249 | F9 |  |  |  | | Next Waypoint Distance |  | 250 | FA |  |  | 9 | | Time to Layline |  | 251? 252? | FB |  |  | 9 |   **not sure**     |  |  | | --- | --- | | F/STAY | 40 | | B/STAY | 3 | | PT RUN | 4 | | ST RUN | 5 | | PT V1 | 6 | | ST V1 | 7 | | MN SHT | 8 | | IFSTAY | 9 | | LOAD 1 | 0A | | LOAD 2 | 2A | | LOAD 3 | 2B | | LOAD 4 | 2C | | LOAD 5 | 2D | | LOAD 6 | 3D | | LOAD 7 | 3E | | LOAD 8 | 3F |       **FASTNET COMMANDS**   |  |  |  | | --- | --- | --- | |  |  |  | | Command |  | Bytes | | 00 | This maybe a ARP request to see if my node address is in use. (used at start up) or  Reset Command |  | | 01 | This appears to be a normal broadcast data command | Var | | 02 | New Text ? |  | | 03 | Sent from an NMEA FFD when NMEA data is there.    ff 60 02 03 50 47  or 47 50 | 2 | | 04 |  |  | | 05 |  |  | | 06 |  |  | | 07 |  |  | | 08 |  |  | | 09 |  |  | | 0A | Used at start up?? | 2 | | 0B |  |  | | 0C | This looks like a keep alive message, sent from FFD, 1 byte, ff 60 0C 6f | 1 | | 0D |  |  | | 0E |  |  | | 0F |  |  | | 10 |  |  | |  |  |  | | 20 | Sector Alarm |  | | 21 | Alarm, low alarm off, 60 01 21 ss 41 24 03 00 00 00 | 7 | | 22 | Alarm , hi alarm off , 60 01 22 ss 41 24 04 00 00 32 | 7 | |  |  |  | | 68 | Request for data, reply is 6A, 2 bytes in request, 00 03, ask for version number | 2 | |  |  |  | | 6A | Reply from a 68 request.. (FFD do not respond to this), replay is 4 bytes, 00 03 xx xx | 4 | |  |  |  | | C8 | FFD send this when powering off |  | | C9 | Used to set light intensity in FFD and 20/20, two bytes of data, 1st: 0,1,2,4, 2nd byte always 20h, 0 = off, 4 = max | 2 | | CA | Timer, 2 bytes, From FFD, start 10 = 05 60 CA ss FD, start 5, FE, start zero, FF |  | | CB | Timer, 2 bytes, From FFD, Frezze, Run, Halt | 2 | | CC | Timer Run, 2 bytes | 2 | | CD | Request Damping value   01 60 CD ss 59 | 2 | | CE | Set/Get damping value   60  01 CE ss 41 21 00 5E   (94) | 5 | | CF | From FFD, Manual Cal request, 01 60 CF  ss 41 | 2 | | D0 | From FFD , send reaching correct, 05 60 D0 ss 59 04, respond is a D4 | 3 | | D1 | Ask for cal 2? |  | | D2 |  |  | | D3 | Cal 1, 60 01 D3  ss 41 91 02 71, => 6.25, 41 = boatspeed,  Depth sends 60 01 D3 ss 41 06 00 f8 60 60 (respond to auto cal) | 5 or 7 | | D4 | Cal 2, respond to a D0, 60 05 D4 ss 59 54 04 00 00 00 | 7 | | D5 | Cal 3 |  | | D6 | Cal 4 |  | | D7 |  |  | | D8 |  |  | | D9 |  |  | | DA |  |  | | DB |  |  | | DC | Timer Freeze from FFD, 2 bytes   01 60 DC ss CF, respon from 01 is FD, 60 01 FD ss 35 | 2 | | DD |  |  | | DE | Alarm low off, 01 60 DE ss 41 |  | | DF |  |  | | E0 |  |  | | E1 |  |  | | E2 | Alarm low on,  01 60 E2 ss 41 (boat speed) |  | | E3 |  |  | | E4 |  |  | | E5 |  | 1 | | E6 | Alarm off, ff 60 E6 ss |  | | E7 |  |  | | E8 |  |  | | E9 | Set/Get Cal value, 60 01 E9  ss 41 91 00 64   64=1.00 | 5 | | EA | Start a cal run, Boat speed, 01 60 EA  ss 41, ack with an FD from FFD | 2 | | EB | Stop a cal run, Boat speed, 01 60 EB  ss 41, ack with an FD from FFD | 2 | | EC | End Cal run, 01 60 EC ss 41 D3,  Depth sends 60 01 D3 ss 41 06 00 f8 60 60 | 3 | | ED | Cal    FD 60 ED  26 |  | | EE | From FFD, request Cal value 41,   01 60 EE   ss 41, 41 = boatspeed |  | | EF | From FFD, ask what meter is connected. FD 60 EF ss 01, what on meter 01 | 2 | | F0 | From FFD/Processor , to chang meters display, FD 60 F0 ss  01 03, set meter 01 to Mag Wind 03 | 3 | | F1 | From FFD, Max Value, , 1st byte = seq, 2nd = 00 = Boat Speed, 01 = Wind Speed, FD 60 F1 01 00 or FD 60 03 01 | 2 | | F2 | Set/Get max value, FD 60 F2  07 00 51 00 78, new max wind is 120 or 12.5 | 5 | | F3 |  |  | | F4 |  |  | | F5 |  |  | | F6 |  |  | | F7 |  |  | | F8 |  |  | | F9 |  |  | | FA | ack for FC?? |  | | FB |  |  | | FC | Used on start up to assign channels, ie: this node will send this data | Var | | FD | ack for FC from FFD, 1 byte look like sequence # to ACK | 1 | | FE |  |  | | FF | FFD send on start up,waiting to see if some one is on the net, 0 bytes | 0 | |