

## Depth Logging Output Formats Supported By Knudsen Echosounders

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**ISAH:Knudsen:** outputs the depth to surface uncorrected for heave offset for a dual channel system. (ie. LF and HF channels.)

\$PKEL,007,hhmmss,LF,x.x,HF,x.x\*hh<cr><lf>

where: hhmmss = 320M system's time

x.x = depth expressed in meters, where x.x = xx.xx for depths < 100  
xxx.x for depths < 1000  
xxxx. for depths < 10000  
xxxxx for depths >= 10000

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**ISAH: Elac:** outputs the depth format that will interface with the Elac, STG 721C Depth Digitizer record format option on the ISAH package from Questor Tangent. This format outputs the depth to surface uncorrected for heave offset.

Low Frequency: AxxxxxxO<cr><lf>

High Frequency: ExxxxxxO<cr><lf>

where: xxxxxx = depth expressed in centimetres.

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**Echotrac:** outputs Echotrac emulation string. This format outputs depth to surface corrected for heave.

Note: The echosounder only emulates the Echotrac output string. It cannot accept the annotation commands normally sent to an Echotrac system.

HF Frequency only: fceH xxxxx<CR>

LF Frequency only: fceL yyyyy<CR>

Both Frequencies: fceB xxxxx yyyyy <CR>

where: f = space if no event mark, F if event mark condition

cc = ET for [dm], et for [cm]

e = space if depth data okay, E if data bad

H,L,B = data indicators: H=HF, L=LF, B=both

xxxxx = HF channel depth,

yyyyy = LF channel depth

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**Digitrace [dm]:** emulates Digitrace output string for systems that output the depth to decimeter resolution. Outputs depth to surface corrected for heave.

Note: The echosounder only emulates the Digitrace output string. It cannot accept the annotation commands normally sent to a Digitrace system.

HF Frequency only: fDTeH xxxxx<CR>

LF Frequency only: fDTeL xxxxx<CR>

where: f = space if no event mark, F if event mark condition

e = space if depth data okay, E if data bad

H,L = data indicators: H=HF, L=LF

xxxxx = depth,

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**Digitrace [cm]:** emulates Digitrace output string for systems that output the depth to centimetre resolution. Outputs depth to surface corrected for heave.

Note: The echosounder only emulates the Digitrace output string. It cannot accept the annotation commands normally sent to a Digitrace system.

HF Frequency only: fDTeH xxxxx<CR>  
LF Frequency only: fDTeL xxxxx<CR>

where: f = space if no event mark, F if event mark condition  
e = space if depth data okay, E if data bad  
H,L = data indicators: H=HF, L=LF  
xxxxx = depth,

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**Simrad EA200 (6 byte):** outputs depth to surface corrected for heave. Depth value expressed is HF depth value if Hf channel is turned on (regardless if LF is on), LF depth value if LF channel only is on.

Dxxxxx

where: xxxxx = depth expressed in decimeters

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**Simrad EA200 (7 byte):** outputs depth to surface corrected for heave. Depth value expressed is HF depth value if Hf channel is turned on (regardless if LF is on), LF depth value if LF channel only is on.

Dxxxx.x

where: xxxx.x = depth expressed in metres

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**Deso 20:** emulates Deso20 system in both depth output and event mark input command.

For this emulation mode, the depth log output format supported is as follows:

Both frequencies: DAXXXXXX.XX mDBXXXXXX.XX m<CR><LF>  
High Frequency only: DBXXXXXX.XX m<CR><LF>  
Low Frequency only: DAXXXXXX.XX m<CR><LF>

where: DB = high frequency channel identifier  
DA = low frequency channel identifier  
X = number 0 .. 9  
m = meter units identifier.

The text annotation format supported is as follows:

TXxxx...xxx<CR><LF>

where TX = text identifier  
x = ASCII character between 20h and 7Fh.

When this line is received by the sounder, the ASCII characters are stored in the event mark annotation buffer. If an invalid character or more than 50 characters are received, the entire data line received is discarded and the event mark annotation buffer is cleared.

EM3<CR><LF>

When this line is received by the echosounder, it creates an event mark with the current contents of the event mark annotation buffer.

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**NMEA: SDDBT (HF)** outputs depth to transducer

\$SDDBT,x.x,f,x.x,M,x.x,F\*hh<CR><LF>

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**NMEA: SDDBT (LF)**

\$SDDBT,x.x,f,x.x,M,x.x,F\*hh<CR><LF>

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**Serial to BCD (HF) - special case compilation** Outputs depth to surface corrected for heave.

; <STX><POL><DATA><L/K><G/N><STATUS><CR><LF>  
;  
;  
; where: STX = 02h  
; POL = polarity = 02h for plus, 2Dh for minus  
; DATA = seven character with embedded decimal point,  
; leading zeros suppressed as 02h  
; L/K = units: L(4Ch) for pounds, K(4Bh) for kilograms  
; G/N = Gross or Net mode: G(47h) or N(4Eh)  
; STATUS = Space (02h??) for normal, M(4Dh) for motion,  
; I(49h) for invalid data, O(4Fh) for over/under range

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**Serial to BCD (LF) - special case compilation**

; <STX><POL><DATA><L/K><G/N><STATUS><CR><LF>  
;  
;  
; where: STX = 02h  
; POL = polarity = 02h for plus, 2Dh for minus  
; DATA = seven character with embedded decimal point,  
; leading zeros suppressed as 02h  
; L/K = units: L(4Ch) for pounds, K(4Bh) for kilograms  
; G/N = Gross or Net mode: G(47h) or N(4Eh)  
; STATUS = Space (02h??) for normal, M(4Dh) for motion,  
; I(49h) for invalid data, O(4Fh) for over/under range

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**PKEL:** a user-configurable format that can output any of the following: time-stamps, depths referenced to various offsets, heave, position, latency values, speed of sound, and a user-defined header.

The PKEL depth log output string can be configured by the user to contain any combination of the fields listed in the following table. The fields appear in the output string in the same order listed below. If a field is selected but no data is available (ie. heave field selected but no heave device selected), the field position is filled with dashes. All the fields are fixed fields, meaning they do not vary in size regardless of the data. Fields are separated by commas except Time and Milliseconds.

Two methods are available for configuring the output string format:

1) A Windows serial utility program, 320CFG.EXE, is provided with the Echosounder to allow the users to easily modify the depth log format to suit their individual needs. This program communicates with the echosounder's monitor port on COM3 via a null modem RS-232 serial cable.

2) It is possible to send the appropriate instruction directly to the echosounder monitor using any standard communications package with a simple null modem RS-232 serial cable.

The echosounder uses a 32-bit code to setup the configuration of the depth log string. This code is displayed in the secondary function interface menu as a hexadecimal value. The Windows utility program, 320CFG.EXE, automatically sets this code

value and sends it to the echosounder. Users familiar with binary and hexadecimal conversions can easily compute the appropriate code value to send to the echosounder for a given configuration. The bit corresponding to a field in the code word is set to 1 to select the field for output, and is reset to 0 to deselect the field.

**Example 1:**

To setup the Hypack compatible string select the following fields: HF depth corrected for draft, LF depth corrected for draft, and Heave.

For the 32 bit code: LSW = 0000 0100 0000 0000b = 0400h  
MSW = 0000 1000 0000 0100b = 0804h

Thus the instruction to send to the echosounder would be: \$PKEL30,1,0400,0804,<CR><LF>

This would result in a depth log string as follows: xx.xx,xx,xx,shhhhq<CR.<LF>

**Example 2:**

For the following code selection:

LSW = 1010 1001 1111 1001b = A9F9h  
MSW = 1111 1100 1010 1001b = FCA9h

the resulting instruction would be: \$PKEL30,1,A9F9,FCA9,MyString<CR><LF>

and the expected depth log format would be:

MyString,Fnnnn,ddmmyyy,hmmss.sss,tttt,HF,xx.xx,f,sxx.xx,LF,xx.xx,f,sxx.xx,xxxx,shhhhq,tttt,ll ll.llllll,ooo oo.oooooo,ttt\*hh<CR><LF>

**PKEL Depth Log String Format Fields**

Field #	Field Description	Field Format	Code Word Bit #
0	User defined preamble string	Printable ASCII chars (max.16)	LSW:0
1	KEL Proprietary String Standard Header	\$PKEL99	LSW:1
2	Record Number	rrrrr	LSW:2
3	Fix Indicator	Fnnnn	LSW:3
4	Date	Standard: ddmmyyyy Julian: Jddyyyy	LSW:4
5	Time at start of ping, to second resolution from MPM Real-Time Clock	hhmmss	LSW:5
6	Milliseconds sync'd to Real-Time Clock (Time field must be selected)	.sss	LSW:6
7	Ping Start to Data Output Latency	tttt	LSW:7
8	High Frequency Identification Header	HF	LSW:8
9	HF Depth, to transducer (uncorrected for any offsets)	xx.xx or xxx.x or xxxx. or xxxxx	LSW:9
10	HF Depth, corrected for draft	xx.xx or xxx.x or xxxx. or xxxxx	LSW:10
11	HF Depth, corrected for draft and heave	xx.xx or xxx.x or xxxx. or xxxxx	LSW:11
12	HF Depth, corrected for draft, heave, and tide	xx.xx or xxx.x or xxxx. or xxxxx	LSW:12
13	HF Depth validity flag	1 = okay, 0 = bad	LSW:13
14	HF Multiplexer Channel	0 - 15	LSW:14
15	HF Draft offset	sxx.xx	LSW:15
16	Low Frequency Identification Header	LF	MSW:0 (16)
17	LF Depth, to transducer (uncorrected for any offsets)	xx.xx or xxx.x or xxxx. or xxxxx	MSW:1 (17)
18	LF Depth, corrected for draft	xx.xx or xxx.x or xxxx. or xxxxx	MSW:2 (18)
19	LF Depth, corrected for draft and heave	xx.xx or xxx.x or xxxx. or xxxxx	MSW:3 (19)
20	LF Depth, corrected for draft, heave, and tide	xx.xx or xxx.x or xxxx. or xxxxx	MSW:4 (20)
21	LF Depth validity flag	1 = okay, 0 = bad	MSW:5 (21)
22	LF Multiplexer Channel	0 - 15	MSW:6 (22)
23	LF Draft offset	sxx.xx	MSW:7 (23)
24	Tide (not in use yet)	sxx.xx	MSW:8 (24)
25	Tide latency (Tide field must be selected)	tttt	MSW:9 (25)
26	Speed of Sound	xxxx	MSW:10 (26)
27	Heave	shhhhq	MSW:11 (27)
28	Heave Latency (Heave field must be selected)	tttt	MSW:12 (28)
29	Position: Latitude, Longitude	ll ll.llllllN,ooo oo.oooooE	MSW:13 (29)
30	Position Latency (position field must be selected)	tttt	MSW:14 (30)
31	Checksum	hh	MSW:15 (31)