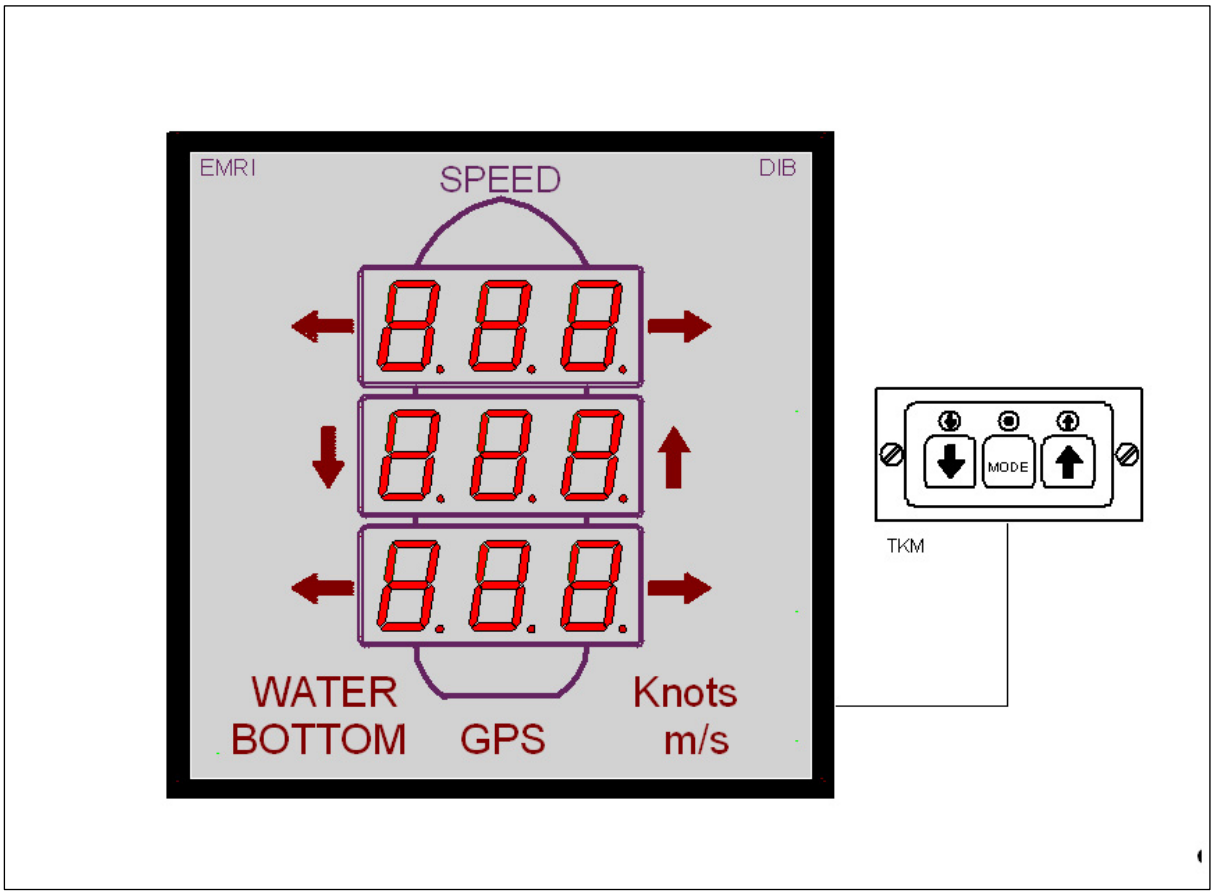
DIB10

GPS & LOG SPEED DISPLAY

3 SPEED VALUES

Docking Information Display, DIB10

Speed log or GPS data based Docking Speed Information.



Three displays on the front to fulfil the requirements for a docking display.

External push-button for mode set-up and display dimming.
24 VDC supplied (current consumption: 600 mA)
Serial RS422/RS485 input channels.
Receives NMEA speed sentences: $xxVBW, $xxVHW, $xxVTG.
Receives NMEA heading and rate of turn sentences: $xxHDT, $xxROT.
Receives NMEA special docking display information $PSAEVTS, $PSALL, $PEDIB.
Transmits NMEA special docking display information $PSALL.
Transmits NMEA proprietary $PEDIB sentence for slave display.
Transmits (optional) NMEA $xxVBW sentence.

All sentences according to IEC 61162-1, Edition 5, 2016-08. The VBW sentence also according to IEC 1162-1, First edition, 1995-11. The DIB10 is using standard 1 second transmission interval.

The 3 displays on front shows from top to bottom:

side speed of bow
ahead/astern speed along ships
side speed of stern.

The display function is dependent on the input signals available:

	Input: NMEA □	Upper display (bow)	Mid display (Ahd./ast.)	Lower display (stern)	Water - Bottom
1	$PSALL (*1)	Side speed of bow	Along ships speed	Side speed of stern	Mode always: Bottom
2	$xxVBW $PSAEVTS (*2)	Side speed of bow	Along ships speed	Side speed of stern	Set by mode Pushb. or follows VBW
3	$xxVBW□	Side speed	Along ships speed	Side speed of stern Blanked (*4)	Set by mode Pushb. or follows VBW
4	$xxVBW $xxROT/HDT (*3)	Side speed of bow	Along ships speed	Side speed of stern	Set by mode Pushb. or follows VBW
5	$xxVHW□	Blanked	Along ships speed	Blanked	Mode always: Water
6	$xxVTG□	Blanked	Speed along course made good	Blanked	Mode always: Bottom
7	$xxVTG $xxHDT/ROT (*3)	Side speed bow	Along ships speed	Side speed of stern	Mode always: Bottom

*1: Proprietary Consilium docking display information.
*2: Proprietary STN transverse speed of stern. Note that the STN DOLOG also sends $PKVBW, which is of an old type using B=bottom, W=water, F=not valid, This information will be disregarded by the instrument.
*3: See the Function set-up description.
The rate of turn will always be calculated from the HDT information, and the serial ROT information will be used only if this function is selected and the ROT nmea sentence information is available, else the calculated rate of turn will be used.
*4: Blanked only if NMEA ver. lower than 2.3 or transvers speed aft field is empty.

MODE selection on the TKM keypad:

With the TKM keypad it is possible to select among different display modes.

Bottom or Water: It can be selected, if measurements relative to either bottom or water are preferred.
If the preferred type of measurement is not available, the opposite type will be displayed instead, if available.
During normal operation, lights will indicate which type is actually displayed.

Knots or m/s: The units used can be selected. All measurements are converted to the units selected.
During normal operation lights will indicate the units used.

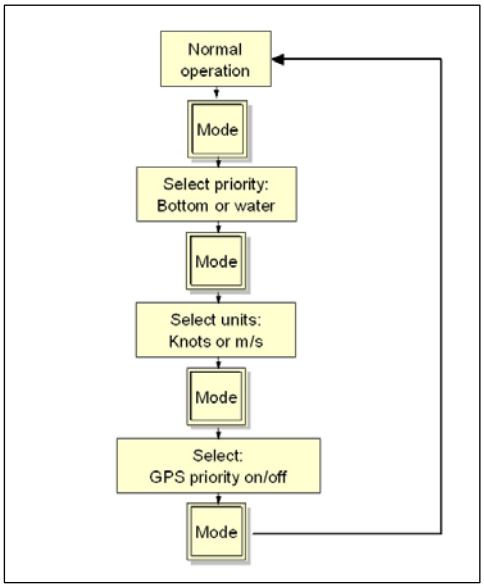
GPS priority on or off: It can be selected, if measurements from GPS-sources (i.e. $xxVTG) will take priority over measurements from other sources.
During normal operation, a light will indicate if a GPS source is actually used.

With the Mode key it is possible to select the mode to be changed,
and the field selected for modification will be flashing.

While the field is flashing, the selection can be changed by using the arrow-keys.

If no key is touched within 15 seconds, the display will automatically return to normal operation.

The mode selection sequence is:



Select highest priority:
Up-arrow selects Water,
down-arrow selects Bottom.

Select preferred units:
Up-arrow selects Knots,
down-arrow selects m/s.

Select GPS priority mode:
Up-arrow selects On,
down-arrow selects Off.

Example: To change the "Knots" setting to "m/s":
Press twice the Mode key. The "Knots" field will then be flashing,
Press the down arrow to select "m/s", which will then be flashing.
Then press Mode key twice again to terminate the set-up sequence, or let the sequence time-out automatically.

Parameter set-up by use of TKM keypad:

If the Mode key is held for more than 10 seconds, parameter-setup mode is entered.
Whenever in parameter-setup mode, the name of the parameter to be changed and its actual value are displayed.

With the Mode key it is possible to select the parameter to be changed,
and the up arrow is used to increase (or set on, if on/off type) the parameter value,
and the down arrow is used to decrease (or set off, if on/off type) the parameter value.

Parameters available are:

Distance from log transducer to bow (in meters). This value is used in conversions between rotation and side speed of bow.	Display (example):	100 Log -----
Distance from log transducer to stern (in meters). This value is used in conversions between rotation and side speed of stern.	Display (example):	----- Log 100
Distance from GPS antenna to bow (in meters). This value is used in conversions between rotation and side speed of bow.	Display (example):	100 gPS -----
Distance from GPS antenna to stern (in meters). This value is used in conversions between rotation and side speed of stern.	Display (example):	----- gPS 100
Force the use of $xxROT info instead of turning rate derived from HDT.	Display (example):	----- rot oFF

HDT filtering time constant (in seconds). Display (example): Hdt
If rate of turn is to be derived from HDT, a digital filter is used to tAu
compensate for variations in transmission rate of the $xxHDT sentences. 2.0

VBW output mode. Display (example):
UbU
Decides allowed sources for VBW output data. If GPS is enabled, VBW output is preferably based on gPS
GPS-data. If LOG is enabled, VBW may alternatively be based on Log-data. Log
If neither GPS or LOG is enabled, VBW output is disabled.

VBW bottom speed copy mode. Display (example):
UbU
Selects whether or not bottom speeds are copied to water speed fields cP
in generated outgoing VBW sentence when no water speed is available. bot
(NOTE: Only use this facility in cases where this transfer of speedinformation is required.
With this option turned on, the VBW sentence does not conform to the NMEA standard!)

Aft station mode. Display (example):
AFt
Selects the use of flipped display layout in normal operation.
StA
This setting does not affect output to slave-display(s). on

Fraction digits. Display (example):
FrA
Selects the no. of fraction digits in speed display,
dIg
when speed value is below 10.0. 2

Brightness control mode. Display (example): Pot
Normally, a jumper on the MPD board selects if brightness brI
is controlled by potmeter (jumper not installed) -----
or controlled by keypad (jumper installed, factory default).

If the jumper is not installed (meaning brightness control by potmeter),
it is possible to force the use of keypad instead by setting the brightness control mode to 'PAd'.
Thus the brightness is controlled by keypad if either the jumper is installed OR
the 'PAd' mode is selected.

Saving parameters in flash-memory: If the Mode key is held for more than 10 seconds during parameter-setup, the present parameters will be saved in the flash-memory,
and the display will return to normal operation.

Note: The present settings of Bottom/Water mode, Units and GPS priority mode will also be saved in the flash-memory during this operation. These settings will be used afterwards as power-on defaults.

Return to normal operation without saving parameters: If the up arrow key is held for more than 10 seconds during parameter-setup of brightness control mode (where this key is not used for any editing purpose), display will return to normal operation without saving any parameter in flash-memory.

Lamp test: If up-arrow and down-arrow keys are pressed simultaneously during normal operation, all lightbars and display segments are switched on.

Typical connection to NMEA information sources

There are 3 serial NMEA inputs (isolated RS422/RS485) available:

Load requirement: max. 2.0mA at 2V. The isolation of the inputs can withstand 1kV AC.

NMEA Input 1: X2 / 8: RS485A - (A)
X2 / 7: RS485A+ (B)

NMEA Input 2: X1 / 2: RXB - (A)
X1 / 3: RXB+ (B)

NMEA Input 3: X2 / 9: RXA - (A) (Timer input)
X2 / 10: RXA+ (B) (Timer input)

Typically, one input will be connected to the speed log data source. ($xxVBW),
one to the gyro ($xxHDT and/or $xxROT),
and one to a GPS data source. ($xxVTG)

The NMEA data can be entered on any of the above listed inputs.

Connection to NMEA output

There is 1 serial NMEA output (isolated RS422) available:

NMEA Output: X2 / 12: RS485B - (A)
X2 / 11: RS485B+ (B)

Output drive capability: 2V in 50 ohms.

If a $PSALL sentence is available on any of the NMEA inputs,
this $PSALL sentence is retransmitted to the output.

If no $PSALL sentence is received, a $PSALL sentence with values
derived from other sentences is transmitted.

If a $xxVBW sentence is available on any of the NMEA inputs,
and GPS data source is enabled in VBW output mode setup,
this $xxVBW sentence is retransmitted to the output.

If no $xxVBW sentence is received, but either GPS data source
or LOG data source is enabled in VBW output mode setup,
a $GPVBW sentence with values derived from other sentences is transmitted.
In this case GP will be used as talker ID.

For the purpose of connecting another DIB unit as a slave-display,
actual display readings and selected modes are transmitted in
a proprietary sentence:

$PEDIB,22.22,33.33,44.44,W,K,L*

where	22.22	is the value in upper display	(in m/s)
	33.33	is the value in middle display	(in m/s)
	44.44	is the value in lower display	(in m/s)
	W	is the reference (either **W**ater or **B**ottom)	
	K	is the units-selection on the display (either **K**nots or **M**/s)	
	L	is the selected signal source (**L**og or **G**ps)	

Whenever this sentence is received on any input of a DIB unit,
this unit will operate in slave-mode and follow the readings of the master unit.

While receiving the $PEDIB regularly, the slave will ignore any other sentence,
and it will not be possible to change the display selections from the keypad.

The inputs and output are described in drawing no. 3-3920.

NMEA Signal priority

Priority rules:

1. If more than one NMEA sentence with the same identifier is entered to the display, only the one received on the lowest NMEA input number will be used, in order to avoid flickering data displays.

2. NMEA information priority rules are as follows:

    a. If $PEDIB sentence is received, the unit operates in slave mode, and all other sentences are ignored.

    b. If proprietary sentence information is received and "GPS priority" is off, then these are used: First $PSALL, then $PSAEVTS

    c. $xxVBW information has priority over $xxVHW information.

    d. If there is no information available for the selected mode of "Water/Bottom" and "GPS priority", then the display switches to the opposite mode automatically, if data is available for that mode. The display returns automatically to the selected mode, if data for the given mode is received again.

Proprietary Sentences.

SAL Docking log:

Proprietary sentence by Consilium Marine

```
   1     2    3    4   5 6
$PSALL, x.x, x.x, x.x, A*hh<CR><LF>
```

1	Talker ID, Consilium Marine		
2	Longitudinal ground speed, knots		
3	Transversal ground speed of bow, knots		
4	Transversal ground speed of stern, knots		
5	Status:	B	Valid bottom track.
		W	Valid water track, only longitudinal speed is valid.
		L	Valid bottom track, invalid turn rate sensor data, data field 4 contains transversal speed of log, data field 5 is invalid.
		E	Log error
6	Check sum		

Transverse Speed at Stern:

Proprietary sentence by STN ATLAS Elektronik GmbH

```
 1   2    3    4  5    6 7
$PSAEVTS, x.x, A, x.x, A*hh<CR><LF>
```

1	Talker ID, STN ATLAS Elektronik GmbH
2	Sentence identifier: Velocity Transverse Stern
3	Transverse water speed, knots (- : port)
4	Status: Water speed A = valid
5	Transverse ground speed, knots (- : port)
6	Status: Ground speed A = valid
7	Check sum

Stern transverse speed data are referenced to location programmed by distance between DOLOG transducer and ship's stern

DIB10-BW

GPS & LOG SPEED DISPLAY

3 SPEED VALUES

WATERTIGHT BRACKET MOUNTED