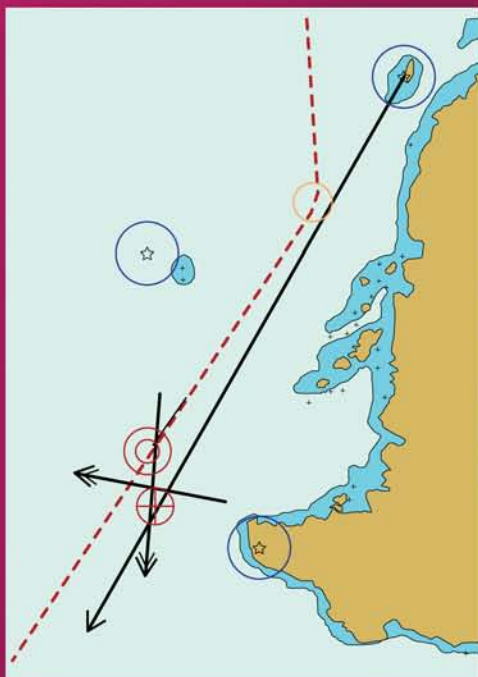


# SCAN Repeater™

NAVIGATION INSTRUMENTS

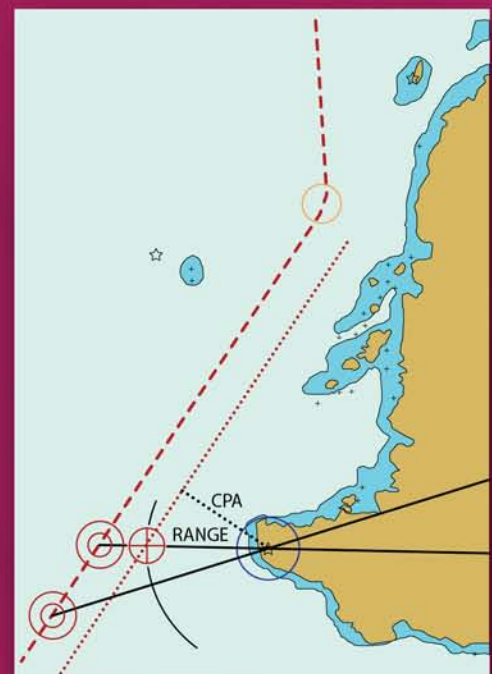
## Optical Bearing Device Model SR02-01Mk4

Optical Bearing Device (OBD)  
with ECDIS Interface and AIS  
target identification



*OBD generated  
Position Fix (P-Fix)*

ECDIS display with three (3)  
LOPs generated from the OBD



*OBD generated  
Running Fix (R-Fix)*

by making two more fixes to a Fixed Target  
the OBD will independently calculate CPA,  
TCPA and Range to that Fixed Target

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**Independent Position Fixes:** With the Optical Bearing Device (OBD) you can automatically add Lines of Position (LOPs) in your ECDIS for fast, accurate Optical Position Fixes.

**Running Fixes:** With the Optical Bearing Device you can also take Optical Running Fixes (independent of the ECDIS) and instantly identifying CPA and TCPA of fixed objects in front of the ship.

**Optical Bearing Line (OBL):** Display an OBL directly from the OBD in the ECDIS or the Radar.

**AIS Target information:** When looking at other ship with the Optical Bearing Device, the SR02-01 will retrieve AIS information about the target and display it on the OBD Display.

This ScanRepeater™ is a 3<sup>rd</sup> generation Lehmkuhl Repeater Unit; Built on 25 years of experience with units such as LR22 & LR40

### GENERAL DESCRIPTION

With the SR02-01Mk4 Optical Bearing Device (OBD) you can make a fast and accurate **Optical Position Fix** by automatically placing **Lines of Position (LOP)** in the ships ECDIS display.

You can make **Optical Running Fixes** (two or more fixes to the same target - separated in time) and the OBD will instantly calculate **CPA, TCPA and Range to Fixed Objects**.

The SR02-01Mk4 also creates an **Optical Bearing Line (OBL)** in the ECDIS display, allowing the operator of the OBD to identify targets to the ECDIS operator.

Feed-back from the ECDIS provides Target Identification in OBD Display allowing the OBD operator to point at targets and see in the Display such **AIS information** as MMSI number, Call Signal, Ship Name, Range and Destination.

The OBD has a dedicated data link to the ship's ECDIS. It can also receive information directly from the Gyrocompass, GPS, LOG and AIS.

With the SR02-01Mk4 Optical Bearing Device you can:

- Display an Optical Bearing Line (OBL) directly in the ECDIS.
- Take Independent Optical Position Fixes by Creating Lines of Position (LOP) to two or more targets directly in the ECDIS.
- Store all Optical Position Fixes in the ECDIS Logbook. This will provide proof that Independent Optical Position Fixes was done and might help meeting Wetting Requirements.
- Take Independent Optical Running Fixes to a fixes target. The OBD will instantly compute CPA, TCPA and Range to the fixed object. (R-Fix Mode)
- Identifying other ships (targets) by retrieving AIS information and displaying it in the Optical Bearing Device Display.

**The SR02-01 Optical Beading Device can fulfill the recommendation in IMO Res. MSC.232(82):**

*Whenever possible, a second independent positioning source, preferably of a different type, should be provided. In such cases ECDIS should be capable of identifying discrepancies between the two sources.*

*ECDIS should provide the capability to enter and plot manually obtained bearing and distance lines of position (LOP), and calculate the resulting position of own ship.*

*It should be possible to use the resulting position as an origin for dead-reckoning*

### OTHER KEY FEATURES

Very fast and easy Target Acquisition is achieved by using "Red-Dot" Optics.

#### Aim Optics

Very fast and easy Target Acquisition is made possible by using "Red-Dot" Optics.

SR02-01 employs professional, robust (MIL spec) and accurate "Red-Dot" Optics.



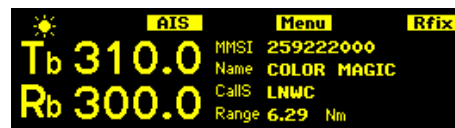
Red-Dot optical unit

### OPERATOR CONTROL

The SR02-01 is designed for One-Hand-Control with Control Grip, Aim Optics and Shoot Button (Fix Trigger) integrated together as one unit. This One-Hand Control unit is hinged to allow for ship pitching and is strong and sturdy enough to allow the operator use it as support in heavy seas.

#### OBD Display and Menu Control:

Bright, High Contrast Display (OLED) with Brilliance Control and Soft-Menu. Can be dimmed to "black".



Typical OBD Display Layout

The SR02-01Mk4 has a high resolution monochrome OLED display with four (4) SOFT MENU control buttons.

The unit has full Brilliance Control – allowing the user to adjust the display light virtually to zero.

#### One-Hand Control Grip & "Shoot Button"

The One-Hand-Control Grip is used to turn the OBD to point at any Target and it moves 360 degrees. It also moves approx +/- 15 degrees in Pitch.



Control Grip w/Optics & "Shoot Button"

The Control Grip has one Bearing Fix Trigger button ("Shoot Button").

When pressing the "Shoot Button" a Bearing Fix is taken and shown in the OBD Display.

The Bearing Fix-Data is immediately transmitted to the ECDIS and also stored in a **Target List** inside the OBD.

This Target List can be accessed / viewed by pressing the Menu button.

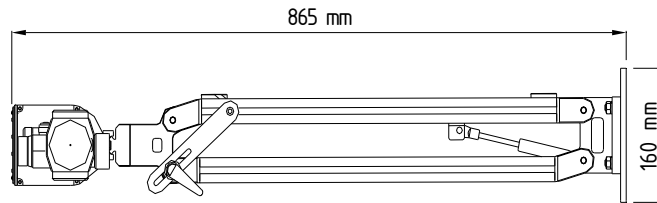
### MECHANICAL MOUNTING

The SR02-01Mk4 comes with a *Flexible Mechanical Mounting Arm for mounting up under Deck*

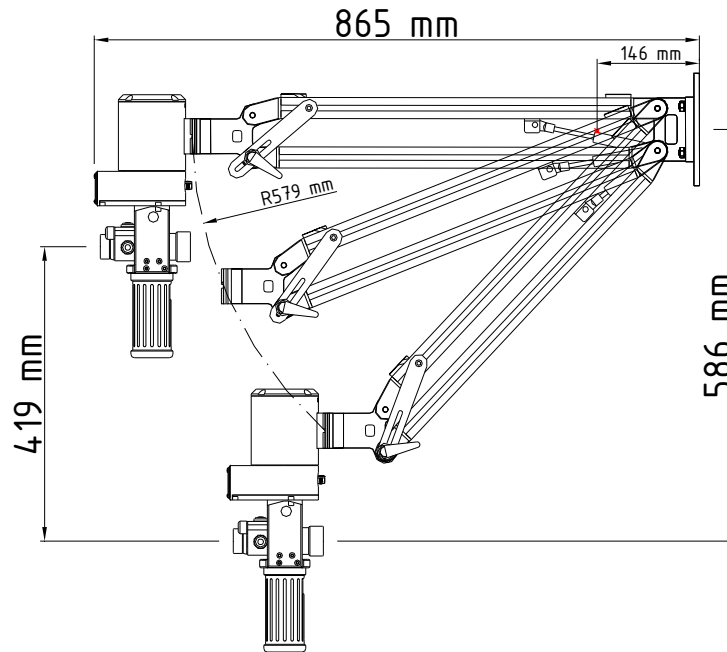
The Mounting Arm allows the OBD to be stowed and folded up under deck when it is not used and to be pulled down and quickly adjusted to the individual Operator's height.

It comes with a damping mechanism for easily moving and adjusting up or down.

**Other Mounting Solutions** are available.



**Fig. 1; SR02-01Mk4 in Stowed & Folded position “Under Deck”**



**Fig. 2; SR02-01Mk4 Side View – Working Position Range**

<b>Supply Voltage &amp; Power:</b>		<b>Weight &amp; Dimensions:</b>		Export Package:	
Input Voltage	24 VDC (18 – 33 V)	Total Weight /w Mounting Arm	10.5 kg		
Power Consumption	2.6 /2.2 W (Oper./Sleep Mode)	Length x With x Height	800 x 220 x 440 mm		
<b>Environmental</b>		<b>Stowage Well(Under Deck):</b>			
Operating temperature	- 5 ° C to + 55 ° C	Length x With x Height	950 x 415 x 200 mm (well)		
Storage temperature	- 20 ° C to + 70 ° C				
Protection Class	IP65				
<b>Accuracy:</b>		<b>Operator Position</b>			
Bearing Accuracy	+/- 0.1 degree	Height to Aiming Optics(adjustable)	170 / 190 mm (Min / Max)		
True Bearing Resolution	+/- 0.1 degrees + Gyro error				

### Data Communication (NMEA):

Physical input/output	Comments		
RS422 Communication		IEC 61162-1 Ed. 3.0 (2007-11)	IEC 61162-2 Ed. 1.0 (1998-09)
Selectable Baud rates:		4800, 9600, 19200 b/sec	4800, 9600, 19200, 38400 b/sec
Heading Input	10/50 per sec	\$--HDT, x.x, T*hh<CR><LF>	
LOG Input (Speed)	Dual Ground and Water Speed	\$--VBW ( 200/400 p /n.mile can also be used)	
GPS Input (Time)	1 per sec	\$--ZDA, hhmmss.ss, xx, xx, xxxx, xx, xx*hh<CR><LF>	
GPS Input (Speed)	Speed over Ground (R-Fix Mode)	\$--VTG	
GPS Input (Position)	Position is used when finding AIS targets	\$--GGA or \$--GLL	
AIS Input (Direct AIS input)	Automatically finds targets in visual sector	\$--VDM & \$--BDO	
<b>Full Duplex ECDIS-OBD Communication – meets IEC 61162-1 &amp; 2 specification</b>			
- Bearing Line Output:	10 per sec	\$POBLN; proprietary sentence sending continuous bearing angle data	
- Line of Position (LOP) Output	OBDD sends LOP data to ECDIS	\$POLOP; proprietary sentence sending Line of Position (LOP) data to the ECDIS	
- ECDIS Fix-Request	ECDIS sending request to OBDD	\$POFIX; proprietary sentence sending a Fix Request from ECDIS to OBDD	

DEALER

## *Scandinavian Micro Systems*

*is focused on a long term policy of Customer Satisfaction - providing the very best Customer Service and Support.*

## *Scandinavian Micro Systems*

*is committed to continuing its tradition of providing customers with innovative and cost effective products and services - delivered on time and at the right price.*

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