



Digital Repeater Compass

Type 133 - 811

OPERATOR MANUAL

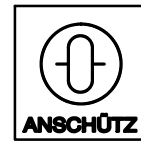
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Digital Repeater Compass Operator Manual



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1 General

The Digital Repeater Compass is designed to indicate the ship's heading referring to north, which has been ascertained by the Gyro/Magnetic compass (GPS/SAT for development status E02). The heading is read off at a 7-segment LCD display (luminous numerals). The Gyro (GPS/SAT development status E02) heading is shown in degrees and decimal degrees. The decimal digit is made smaller to prevent erroneous reading.

Heading changes are indicated by a tendency indicator. Depending on the speed of the heading change, a ring consisting of bi-colour LEDs indicate a turn to starboard by green light and a turn to backboard by red light. The R.o.T. in the LED ring is proportional to the ship's R.o.T.

Further characteristics of the Digital Repeater Compass:

- Recognition of a RS 422 interface acc. to NMEA and therefore automatic change-over of the operation mode when heading serial is detected.
- Synchronisation unnecessary because transmission of absolute values



Operator Manual

This operator manual contains all operating instructions as well as a survey of possible warnings and alarms indicated on the digital display.

Service Manual

In addition to the operator manual a service manual is available. It contains:

- information about installation and first putting into operation
- information about maintenance and repair
- a description of the Digital Repeater Compass

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2 Notes on the Operating Instructions

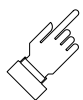
The operation is interactive (action $\Rightarrow$ reaction).

The operating procedure shown in the corresponding chapter is to be followed step by step. When necessary, helpful information in short form has been added to the figurative representation (symbols).

Explanation of symbols:



Key operation



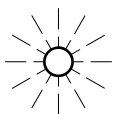
Action, general



LED *out*



LED *on*



LED *flashes*

3 Switching ON the Digital Repeater Compass

With switching-on the ship's supply the Digital Repeater Compass is ready for operation.



There are two different types of displaying the information during normal operation, depending on the development status (E01 or E02).

Development status **E01** see sections 4, 5 and 6.

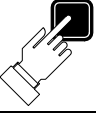
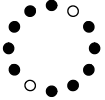
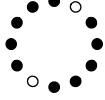
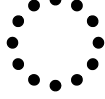
Development status **E02** see sections 7, 8 and 9.

The development status of this Digital Repeater Compass is shown on a type plate on the side of the housing.

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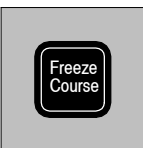
4 Signalling during Operation (Development status E01)

With normal operation the following is indicated on the digital display:

	Indications	Comments, Notes
[1] Valid Heading from the Gyro compass		
	 	Indication of Gyro compass heading with graduation by tenth of degree: - triggered LEDs in the ring light up green (turn to STBD) or red (turn to PORT)
[2] Valid Heading from Magnetic compass		
	 	Indication of Magnetic compass heading without graduation by tenth of a degree; with degree sign - triggered LEDs in the ring light up green (turn to STBD) or red (turn to PORT)
[3] No Valid Heading		
	 	- horizontal lines in the digital display - LEDs in the ring are dark

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Additional Operations (Development status E01)

	Indications	Comments, Notes
[1] Dimming		
 or: 	e. g.:  or 	Continuous brightness adjustment: - of the digital display - of the key illumination - of the tendency indicator (LEDs) <i>i</i> It can be dimmed via an external dimmer only, when the brightness has been set to minimum before.
[2] Test		
  approx. 3s simultaneously		During pressing the key check of - the LCD segments - the LEDs at max. brightness - the key illumination at max. brightness Switch-back to heading indication is automatic after release of the keys.
[3] Switching on / off the Tendency Indicator		
 		During the test: - Keep the key  pressed - Switch on/off the tendency indicator with the key  Switch-back to heading indication is automatic after release of the keys.
[4] 'Freeze' function for taking bearings with the bearing disc Requirement: An external push-button for the 'Freeze' function is connected to the "REMOTE CONTROL" terminals.		
e. g.:  external		After pressing the push-button, the heading indication is not changed for 6s; during this time, the tendency indicator is continuously lit-up in yellow.

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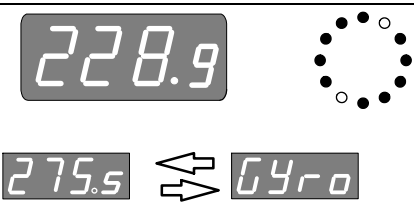
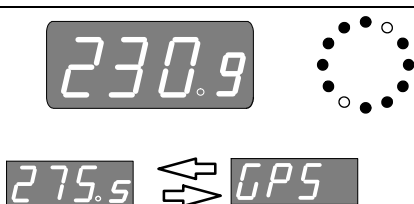
6 Alarm Display (Development status E01)

Effect: The heading indication do not follow up the heading changes any longer.
Measures: Check connections, or call Raytheon Anschütz Service.

Indications	Possible Causes
 flashing	Cable of the interface interchanged
 flashing	- no telegram via the interface - no cable contact at the interface

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Signalling during Operation (Development status E02)

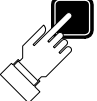
	Indications	Comments, Notes
[1]* Valid Heading from the Gyro compass		
		Indication of Gyro compass heading with graduation by tenth of a degree - triggered LEDs in the ring light up green (turn to STBD, red (turn to PORT) or orange (turn to STBD or PORT) but the Gyro compass is still in the settling stage (up to 4h after switching on the Gyro compass).
[2]* Valid Heading from Magnetic compass		
		Indication of Magnetic compass heading without graduation by tenth of a degree; with degree sign - Triggered LEDs in the ring light up green (turn to STBD) or red (turn to PORT).
		Up from development status year 2010 the decimal digit of magnetic heading is displayed.
[3]* Valid Heading from a GPS/SAT		
		Indication of GPS/SAT-compass heading with graduation by tenth of a degree - Triggered LEDs in the ring light up green (turn to STBD) or red (turn to PORT).
[4] No valid Heading		
		- horizontal lines in the digital display - LEDs in the ring are dark (see service manual)

- * [1] [2] [3] - Heading information in the display is alternating with the information of the heading source, this feature can be switched OFF (see service manual).
- The LED ring (tendency indicator) can be switched OFF (see service manual).

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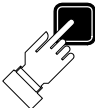
Additional Operations (Development status E02)

	Indications	Comments, Notes
1 Test		
  approx. 5s simultaneously During displaying "888.8" press right key      	 Read out (displaying) the configuration      	During pressing the keys, check of - the LED segments - the LEDs at max. brightness - the key illumination at max. brightness Switch-back to heading indication is automatic after release of the keys. Software status e.g. P008 E00.00 <u>Heading source</u> possible indications: GM = Gyro or Magnetic compass* G = Gyro compass* M = Magnetic compass <u>Heading offset</u> possible indications: 000° = Heading without offset 180° = Heading + 180° <u>Data format</u> possible indications: HSEr = Heading serial (Anschütz Coursebus) nMEA = NMEA Telegram <u>Data transmission rate</u> possible indications: 4.8, 9.6, 19.2 or 38.4 kBaud <u>Telegrams per second</u> 1000 = 1 Telegram/s 0100 = 10 Telegram/s 0020 = 50 Telegram/s For configuration see service manual * G = also GPS/SAT compass

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	Indications	Comments, Notes
2 Dimming		
 or: 	e.g.:  or 	Continuous brightness adjustment: - of the digital display - of the key illumination - of the tendency indicator (LEDs)  It can be dimmed via an external dimmer only, when the brightness has been set to minimum before.
3 'Freeze'-Function for taking bearings with bearing disc Requirements: An external push-button for the 'Freeze' function is connected to the 'REMOTE CONTROL' terminals.		
e.g.:  external		After pressing the push-button, the heading indication is not changed for 6 seconds; during this time the tendency indicator is continuously light-up in yellow.

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9 Alarm Display (Development status E02)

Effect: The heading indication does not follow up the heading changes any longer. No heading changes.

Measures: Check connections, or call Raytheon Anschütz Service.

Indications	Possible Causes
 flashing LED ring flashes orange	Data content of the interface corrupted
 flashing LED ring flashes orange	- no telegram via the interface - no cable contact at the interface
 flashing LED ring flashes orange	- System error - Heading invalid - Gyro error - Magnetic compass error

10 Switching off the Digital Repeater Compass

The Digital Repeater Compass can be switched off by switching off the supply voltage.