



# Satellite Compass

Standard 21





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## Standard 21

*Standard 21 provides ship's heading information.* It is oriented to geographical north and not affected by the earth magnetic field, latitude and ship's speed. There is no need for compensation of variation and deviation.

Standard 21 shows its strengths – heading availability and accuracy in highly dynamic situations – even in case of GPS signal blockages and with the ruggedized mechanical and electronic design that guarantees a long life of the entire system.

The Standard 21 therefore is the perfect satellite compass for all kinds of professional work boats such as fishing or pilot boats and a perfect back-up for a gyro compass system.

## Function

The two GPS receivers of the Standard 21 antenna unit are installed in parallel to the ship's fore-aft-line. By measuring the carrier phases of the GPS signals the precise differential ranges of the GPS receivers to the GPS satellites are calculated.

Based on this data a baseline vector between the two GPS receivers is determined - resulting in the ship's heading relative to geographical north.

In order to bridge short-time satellite signal losses the Standard 21 uses 3 solid state rate sensors. Thus, the data of the rate sensors are used to provide continuous heading information. The rate sensors and accelerometers are also used to provide roll and pitch data and to compensate heading for these tilt effects.

Only the combination of these three different sensors ensures accurate and reliable heading information.

## Features

In addition to ship's heading STD 21 provides latitude, longitude, rate-of-turn, course over ground, and ground speed information as NMEA output. Roll and pitch are displayed. The serial interfaces of Standard 21 can be configured as NMEA (1Hz), fast NMEA (50Hz) or as course bus. Standard 21 comes with a solid mechanical and electronic design. Mounting brackets are included in the scope of supply for a simple installation on the mast. The antenna is connected with a twisted pair cable. 30 meters of cable are provided with the system, ensuring more flexibility than systems with coaxial cables. Also longer cables can be used with less financial effort compared to coaxial cables. The aluminium disks of the antenna protect the GPS receivers from multipath signals – increasing the performance and accuracy of the whole system. Standard 21 exceeds the IMO requirements for Transmitting Heading Devices (THD) noticeably – a benefit in day-to-day work. Standard 21 settles within 4 minutes, offers superior accuracy of 0.5°, is faster in follow-up and allows longer satellite signal blockages.

The system does not require any regular maintenance.



Antenna unit



Processor unit



Operator unit with casing

## Approval

Standard 21 is type-approved by the German Bundesamt für Seeschifffahrt und Hydrographie (BSH).

It exceeds the ISO 22090-3 requirements for Transmitting Heading Devices.

Standard 21 conforms to EN/IEC 61162 for standard and fast NMEA output.

## Display modes



## Benefits

- Compliant with IMO requirements for Transmitting Heading Devices (THD)
- Provides true heading unaffected by earth magnetic field, latitude and ship's speed
- BSH (Bundesamt für Seeschifffahrt und Hydrographie) type approval
- High accuracy of 0.5° (RMS)
- Unique multipath protection
- Short start-up time even in dynamic conditions
- Best performance in case of satellite signal blockage with regard to accuracy and time
- Use of standard cable
- Redundant CAN bus connection operator unit – processor unit
- Including adjustable casing for operator unit
- Solid long life design
- No regular maintenance

## Accessories

- Self-aligning steering repeater
- Self-aligning bearing repeater
- Digital repeater
- Multi display
- Serial interface booster
- Additional output formats: Step, SIF

## Technical Data

### Accuracy

0.5° (RMS)

### Angular resolution

0.1°

### Settling time

4 minutes

### Interfaces

2 x RS 422 (course bus, NMEA, fast NMEA)

### Telegrams

HDT, ROT, VTG, GGA, DTM, GSA, ZDA

### Alarms

Heading failure  
System failure

### Supply voltage

24V DC (10 - 36 V DC)

### Power consumption

Approx. 15 W

### Ambient temperature

Operator unit: -15°C to +55°C  
Processor unit: -15°C to +55°C  
Antenna unit: -25°C to +55°C

### Type of enclosure acc. to IEC/EN 60529

Operator unit with casing IP22  
Processor unit IP 22  
Antenna unit IP 56

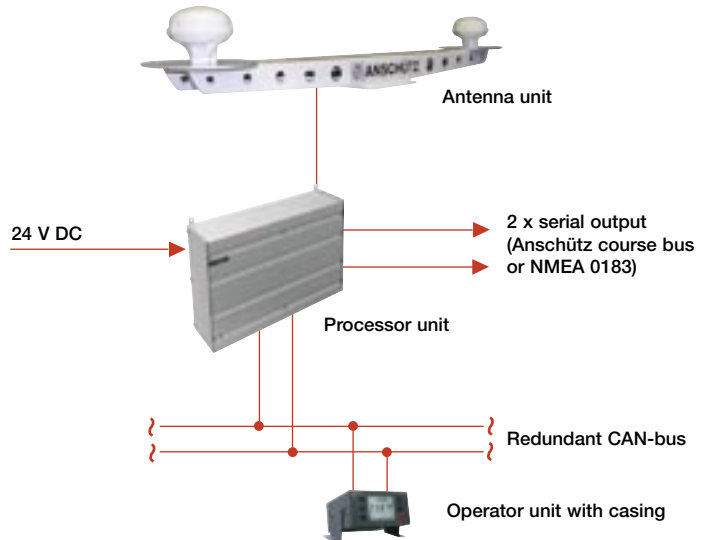
### In accordance with

ISO 22090-3, EN 60945, EN/IEC 61162

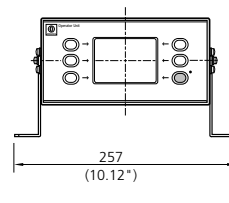
### Scope of supply

- 1 operator unit with casing
- 1 processor unit
- 1 antenna unit
- 1 antenna cable (30 m)
- 2 connection cables (6 m)
- 1 power cable (6 m)
- 1 set cable glands
- 1 operator manual

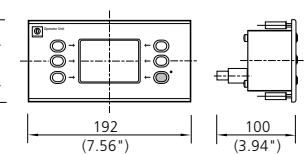
## Block diagram



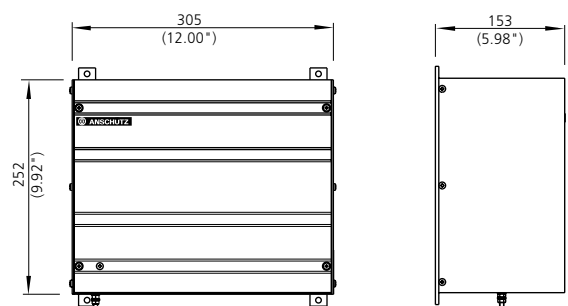
### Operator unit with casing



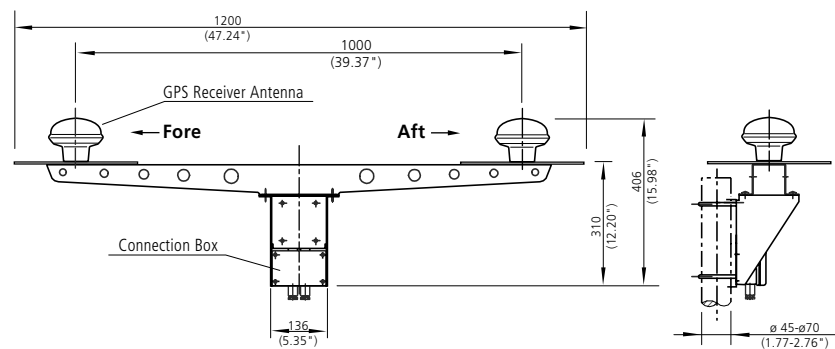
### Operator unit



### Processor unit



### Antenna unit



Subject to alteration due to technical developments without notice.