RHO Elektronik GmbH THETA

The Leader in DF

Wideband Radio Direction Finder

RT-800

The compact solution for VTS, mobile ATC stations and SAR purposes

118 ... 470 MHz

The RT-800 is a radio direction finder for stationary coast-surveillance and identification of ships that are transmitting on the VHF radio band. The bearing information from transmitters can be correlated with the corresponding radar target and AIS-position information at a VTS / (Vessel Traffic Service) center. Two or more RT-800 Systems on different locations can be used to locate a ship's exact position by triangulation.

The RT-800 is, as well a perfect solution for mobile ATC stations. This direction finder can operate on frequency bands as follows:

- Civil VHF air band from 118 MHz to 137 MHz
- Extended Marine VHF from 137 MHz to 225 MHz
- Military air band from 225 to 400 MHz
- All 19 Cospas-Sarsat frequencies between 406,022 to 406,076 MHz
- UHF FM band from 406,1 to 470 MHz

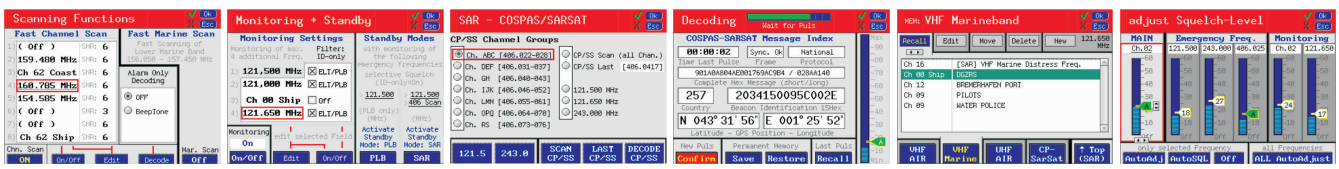
Features

- Best relation of performance and price
- Decoding of transmissions on all 19 Cospas-Sarsat channels
- Bearing (finding the direction) of the Cospas Sarsat signal on all 19 channels
- Full manual operational functionality at installation site for calibration and service
- Fast frequency monitoring by scanning of up to 8 frequencies
- Low maintenance costs
- Easy and reasonable priced installation as no patched HF antenna cable has to be used
- Effective remote operation via LAN/Ethernet or RS-232
- Extreme compact, rugged and light-weight DF antenna for easyinstallation and use in maritime weather conditions
- Maintainance free due to no moving parts
- External lightning protection available

Examples of installations on site

DCU bearing display

Examples of different pages



Technical data

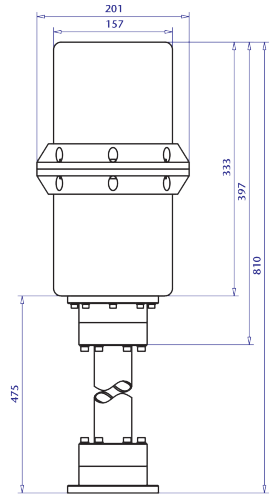
Method of bearing:	Doppler principle (3 kHz rotational frequency, right / left rotation)
Bearing accuracy[1]:	±2° RMS
Internal resolution:	1°
Sensitivity:	RF voltage at receiver input (50 Ω): VHF, UHF < 100 nV; COSPAS-SARSAT 406MHz < 150 nV
Frequency stability:	±2.0 ppm ($\Delta f/f = \pm 2 \times 10^{-6}$) (in temperature range -30 °C to +80 °C)
Receiving bands:	4 (VHF-air band; VHF-marine band; UHF-air band; COSPAS-SARSAT)
Receiving frequencies, frequency ranges:	Standard Version 118.000 to 123.975 MHz (8.33 kHz) 154.000 to 162.995 MHz (5.00 kHz) 240.000 to 245.975 MHz (25.0 kHz) 400.000 to 406.093 MHz Optional extended frequency range 118.000 to 136.993 MHz (AM / 8.33kHz) 137.000 to 224.995 MHz (FM / 5.0 kHz) 225.000 to 399.975 MHz (AM / 25.0 kHz) 406.100 to 470.000 MHz (FM / 5.0 kHz)
Marine channels:	Channel 0 .. 28 / 60 .. 88 (ship / coast stations)
COSPAS-SARSAT freq.:	19 Channels A to S (406.022 to 406.076 MHz)
COSPAS-SARSAT fast scan:	Full automatic detection of any active COSPAS-SARSAT channel A to S within 400 ms
COSPAS-SARSAT decoding:	Reception and decoding of COSPAS-SARSAT data signal (112 or 144 bit, 400 baud, biphase L encoded, phase modulation, with Bose-Chaudhuri-Hocquenghem error-correcting code, specified according to COSPAS-SARSAT
Monitoring / Scanning modes:	Monitoring: - 121.5 Mhz and three selectable frequencies are monitored during normal operation. Standby: - COSPAS-SARSAT and 121.5 Mhz emergency frequencies are monitored. Fast Marine Ship Band Scan: - Fast scan (without gap) of all ship channels[01..88] within approx. 3 sec. Fast Channel Scan: - Fast scan of up to eight freely selectable frequencies/channels within approx. 2 sec.
Signal filtering:	All emergency frequencies can be filtered for ELT modulation (false alarms disabled).
Bearable modulation:	A3E, F3E, A3X (ELT modulation), F1D, G2D, COSPAS-SARSAT Bearing largely independent of modulation
Polarization:	Vertical
Polarization error:	≤ 5° at 60° field vector rotation
Garbling cone:	Approx. 30° to the vertical
Response time[2]:	≤ 50 ms (with sufficient reception field strength)
TFT-graphic display:	320 x 240 pixel (max. brightness 450 cd/m^2, continously/automatic control.
Operating voltage:	85 - 264 V_{AC} / 47 - 63 Hz; 12-28V_{DC}
Power consumption:	Nominal 30W @ 230V_{AC}
Audio out:	Internal speaker 4 W Line out (adjustable from 100 mV_{pp} to 2000 mV_{pp})
Interface:	Ethernet Interface for complete remote control (NMEA Protocol: Input/Output) Ethernet Interface for IP streaming audio out RS232 (NMEA Protocol: Input/Output) PTT input (for ground transmitter suppression) Alarm Relay Output Input for optional external GPS (RS422)

[1] With undisturbed wave field and sufficient field strength. Measured by changing the angle of incidence with the antenna rotating on a revolving table in order to eliminate environment influences on the result.

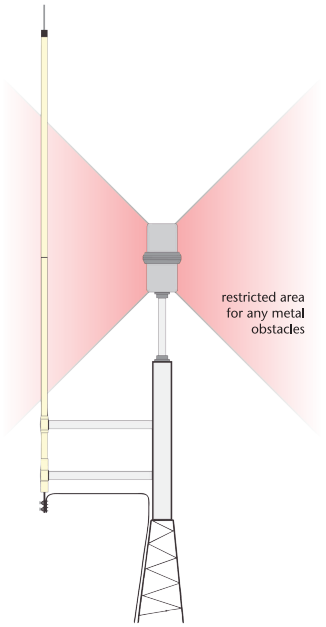
[2] Very weak signals can increase response time considerably!

Mechanical characteristics

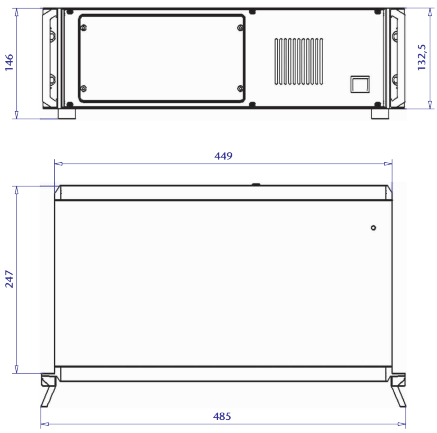
	Display Control Unit (DCU)	Antenna Unit (AU)
Weight:	Approx. 5900 g	Approx. 5200 g
Operating temperature:	-20 °C to +60 °C	-40 °C to +60 °C
Storage temperature:	-40 °C to +80 °C	-55 °C to +80 °C
Ingress protection:		IP 67



Antenna Unit



Antenna Unit installed
with optional RHOTHETA
Lightning Protection Rod



Display Control Unit

All product specifications subject to change without notice.

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