

Synapsis Radar/ Chart Radar

ARPA Radar System



Synapsis Radar/ Chart Radar

Latest Navigation Technology for Efficient Collision Avoidance

With its Synapsis Radar Raytheon Anschütz presents one of the most sensitive Radars even under rough weather conditions. Brilliant performance goes hand in hand with ease of use and installation.

The intelligent functionality of the Synapsis Radar exceeds basic IMO standards and provides effective support concerning collision avoidance. The Synapsis Chart Radar additionally increases the efficiency during watch keeping by displaying charts parallel to the Radar image.

A large PPI and a clear structured display of all control functions and status indications allow the user to concentrate on navigational tasks. An intuitive and direct operation of all important controls is achieved thanks to less submenus.

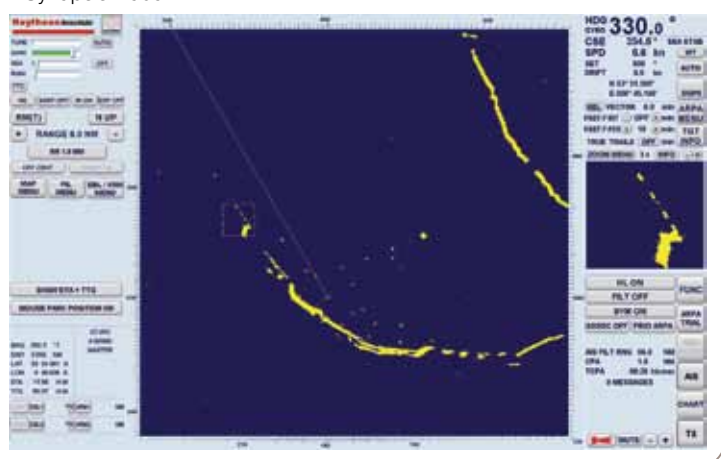
Synapsis Radars comply with latest IMO regulations and requirements such as IMO Res. A.823(19), MSC 64 (67) Annex 4 and A.820 (19)-High Speed Craft Code and with MSC.192(79) from July, 1st 2008 onwards.

The Raytheon Anschütz worldwide sales and service network ensures quick and competent service support wherever needed at any time.

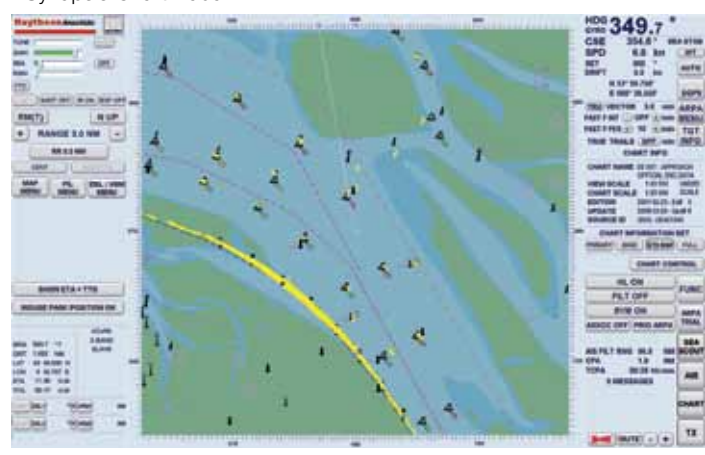
Your Benefit[®]

- Extremely sensitive Radar, also detects tiny targets such as small buoys or wooden stakes
- Increased Safety thanks to advanced functions such as SeaScout collision avoidance tool
- Clear structured user interface, provides all important information at a glance
- PC-technology based processor, compact design and easy to service
- Software-updating quick and simple by USB-stick
- High resolution TFT color display, combining brilliant display quality under all prevalent lighting conditions and compact design with a long life time, up to 26"
- Proven use also for surveillance and offshore systems together with 12 ft. and 18 ft. X-Band antennas

Synapsis Radar



Synapsis Chart Radar



Transceivers and Antennas

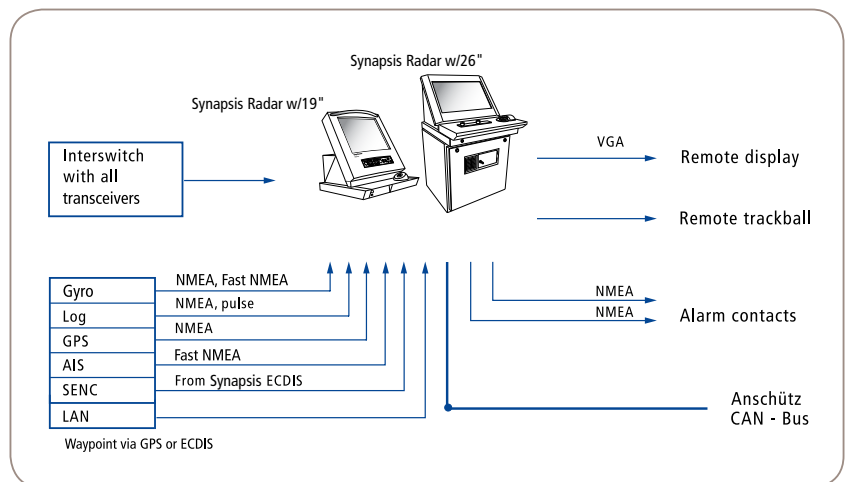
Variety of combinations with transceivers and antennas:
 10 kW transceivers with 6 ft X-Band flat-profile antenna
 25 kW transceivers with 8 ft X-Band flat-profile antenna
 30 kW transceivers with 12 ft S-Band flat-profile antenna

Available as Deckstand, Table Top or Black Box version –
 for stand alone installations, installations at the top of a
 console or into a customer's console.

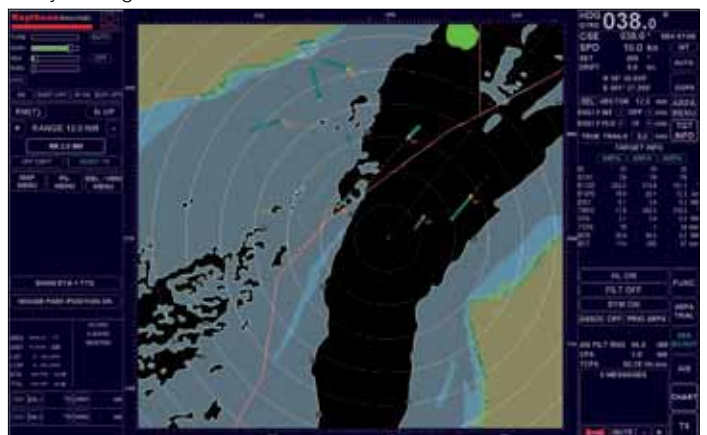
The Black Box version comprises Radar processor unit,
 operator panel, trackball and on/off switch. It is connectable
 to the latest TFT color display technology and therefore inte-
 grable into yard's console or usable for retrofit purposes.

Standard Interfaces

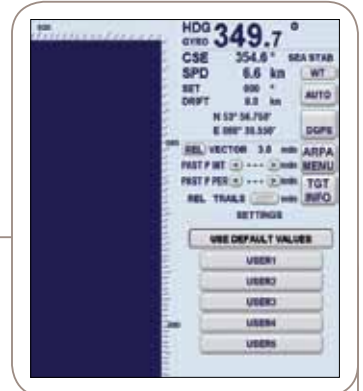
- Large number of standard interfaces
- USB interface for external units or updating
 by USB stick
- CAN Bus (Controller Area Network)
- VGA video output to add remote display
 or connect VDR
- Alarm output via NMEA
- Connection to gyro or GPS, via NMEA
 or Fast NMEA
- SENC data input from Raytheon Anschütz
 Synapsis ECDIS



Day and night colors



User settings: The Synopsis Radar allows easy storage of up to 5 different user settings. The operators benefit from reduced workload and optimized display settings to improve operational safety.

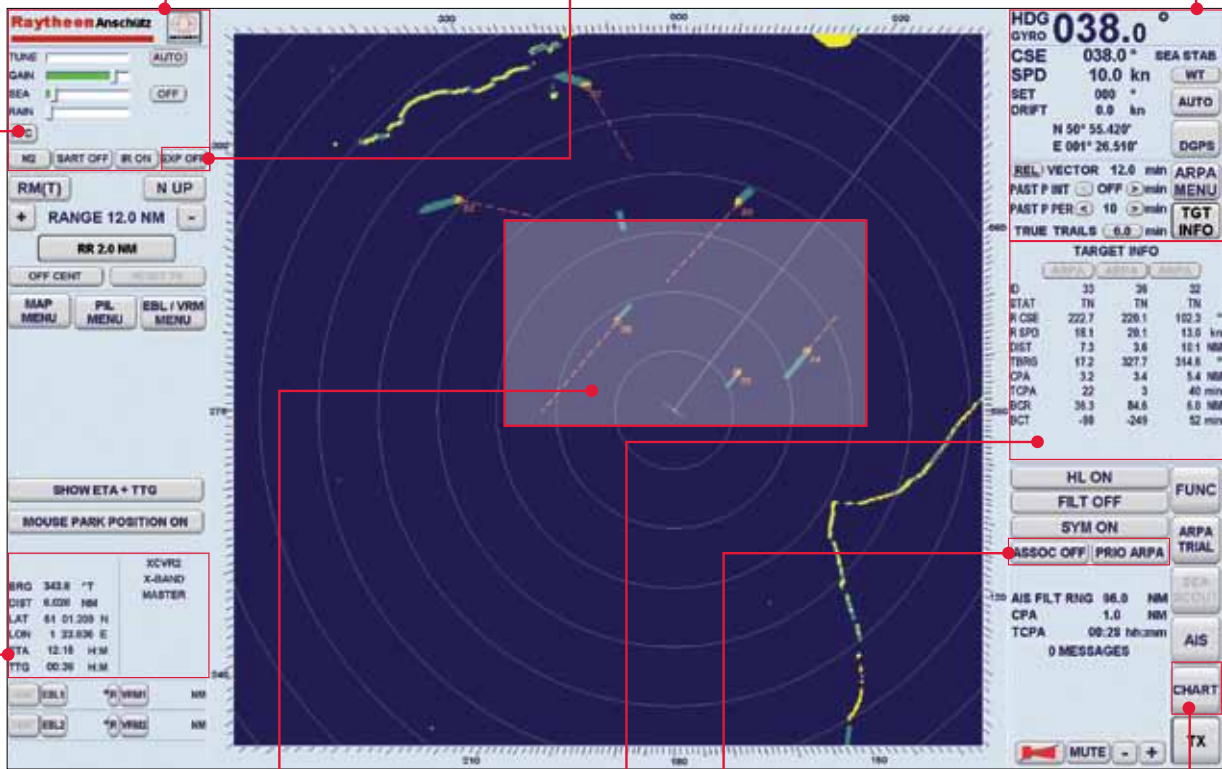


To combat clutter caused by rain, the Synopsis Radar offers, apart from the common FTC function an advanced anti-clutter capability, which measures the actual rain attenuation and applies continuous filtering.

Antenna sensitivity controls incl. manual or automatic anti-clutter controls

Echo Expansions: enlarges tiny, nearby targets

Own ship data provided by several sensors



Target Trails: also available in relative mode, help to clarify traffic situations

ARPA: Automatic tracking / plotting of up to 70 targets, offers full control even in dense traffic ARPA functionality remains available in different display modes e.g. when switching from north-up to head-up

Target association of ARPA and AIS targets, to avoid the presentation of two full targets symbols for the same physical target. The function can be enabled or disabled. If the AIS and Radar information become sufficiently different, the association is cancelled and two targets are displayed, no alarm is raised.

Chart Radar conditions

Cursor information in Radar video range

Advanced Functions

SeaScout Collision Avoidance

SeaScout supports the navigator in finding a save way and avoiding situations of possible collision.

The function analyses the movement of plotted objects and determines in which areas the danger caused by a possible crash is exceptional high. These areas are displayed as a hatched field. If the navigator avoids these so-called “No Go Areas”, he navigates most probably on a safe route. SeaScout shows true zones (in relation to other true objects e.g. chart underlay, buoys, true marks, traffic separation zones, nav lines).

The function Trial Manoeuvre cooperates perfectly with SeaScout. If the course is changed within Trial Manoeuvre, the results are already included in the displayed Go / No Go Areas of SeaScout. Altering speed and delay in the trial manoeuvre will show its influence within SeaScout and gives the operator a more comprehensive overview about the traffic situation and possible manoeuvring solutions.

AIS

AIS targets can be displayed on the Radar video, detailed information about targets can be shown on request and alarms for lost or dangerous AIS targets will be generated. It is possible to display up to 3 targets: AIS identifier no., status, course, speed, distance, true bearing, closest point of approach, and time to closest point of approach. The type of AIS symbol shows if it is a sleeping target, a normal target, a selected target, a dangerous target or a lost target.

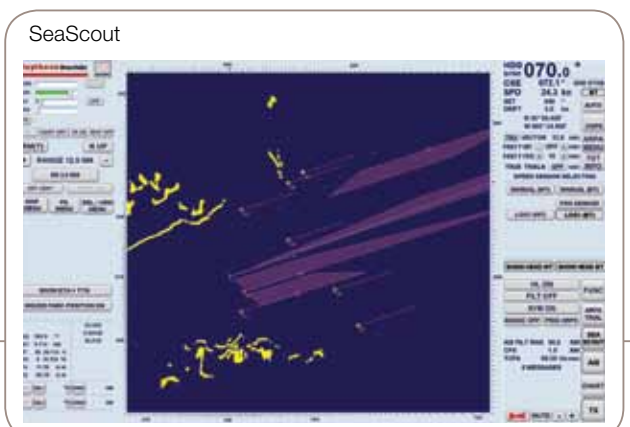
The Radar Operator Panel provides turning knobs for quick and sensible operation of EBL (Electronic Bearing Line) and VRM (Variable Range Marker) or alternatively for Gain and Sea

Radar Operator Panel



Raytheon Anschutz
SeaScout

SeaScout



Multifunctional Workstation

Synapsis (Chart-) Radar uses the new standardized, ultra-compact Synapsis PC's with solid-state disk and passive cooling that were designed to increase reliability. The (Chart-) Radar is available as an independent stand-alone system or as part of a Multifunctional Workstation in combination with type-approved ECDIS and Conning. These functionalities run in parallel on one processor, the selection is possible by a pull-down menu at the right corner of the screen. Having all data visible at a glance reduces stress during watch-keeping and ensures that the navigator can concentrate on main tasks especially in demanding situations. Tailor-made solutions assist the crew in collision avoidance, route planning and track control and therefore enhance navigational safety.

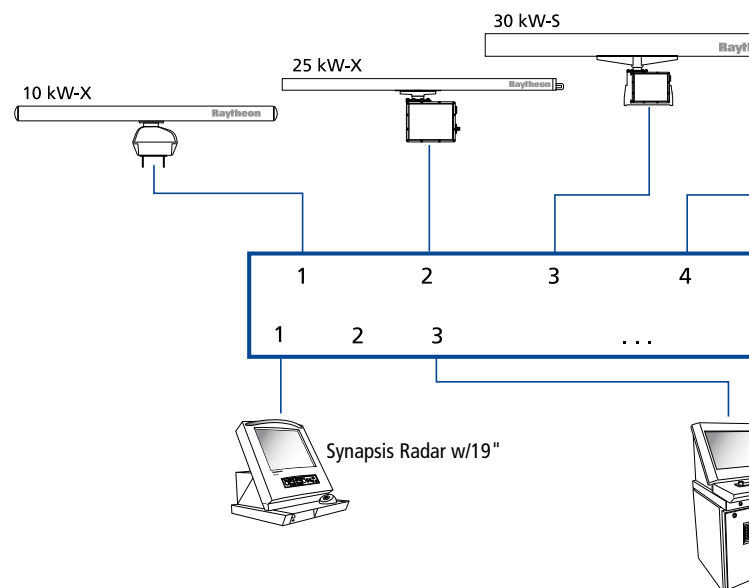


System Integration

- **AIS** (Automatic Identification System)
Display of AIS targets, additional information to provide a better overview of traffic situation
- **ECDIS/GPS**
Display route coming from ECDIS/GPS
- **ARCP-Panel** (Autopilot Remote Control Panel)
Autopilot operation directly from Radar workplace
- **SENC-Data** (System Electronic Navigation Chart-Data)
Input of selected chart symbols from Raytheon Anschutz Synapsis ECDIS
- **Synapsis Conning**
- **Synapsis Integrated Navigation System**
(IMO type-approved)

Interswitch

- Integrated interswitch for up to three displays and two 25 or 30 kW and one 10 kW transceivers
- Interswitch unit for connection of up to 8 master (or slave) displays with 5 transceivers
- Easy access to all Radar information and full control of each Radar



Technical Data

	Radar w/26"	Radar w/19"
TFT Display Size	26"	19"
PPI Diameter (IMO) / Operational Display Area	321 x 338 mm	12" (250 mm)
Resolution	1920 x 1200 pixel	1280 x 1024 pixel

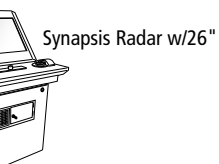
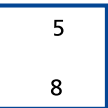
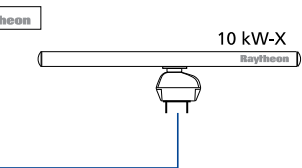
Range	0.125 nm – 96 nm		
EBLs	2		
VRMs	2		
Parallel Index Lines	2		
Display Presentations	RM (R), RM (T), TM		
Display Heading Modes	H Up, N Up, C Up, R Up		
Gyro Input	NMEA, Fast NMEA		
Log Input	NMEA, pulse		
Display Voltage	115/230 V AC		

RF Power	10 kW	25 kW	30 kW
Frequency	X-Band	X-Band	S-Band
Scanner size	6 ft	8 ft	12 ft
Horizontal Beam Width	1.2 deg	0.95 deg	1.9 deg
Vertical Beam Width	25 deg	24.4 deg	26 deg
Gain (dB)	29 dB	31 dB	28 dB
Polarization	horizontal		
Rotation Rate (RPM)	22		
	(optional 40 rpm, 8 ft X-Band only)		
Wind Load	100 kts		
Voltage Requirements	115/230 VAC, 1 ph, 50/60 Hz or 230-440 VAC, 3 ph, 50/60 Hz		
Power Requirements	300 VA	700 VA	1,400 VA

Transceiver Technical Data

Performance	X-Band (3cm)				S-Band (10cm)
	10 kW, U	25 kW, U/D	25 kW, U/D	25 kW, U/D	30 kW, U/D
Peak Power (kW, typ.)	10	25	25	25	30
Dynamic Range (dB)	100	100	100	100	130
Intermediate Frequency (MHz)	60	60	60	60	60
PRF (pulse repetition frequency) (Hz)	3200	3000	2000	1000	750
Receiver Band Width (MHz)	20	20	6	4	4
Receiver Noise (dB)	6.0	5.5	5.5	5.5	5.0
Pulse Width (µsec)	Short: 0.08 Med 1: 0.3 Med 2: 0.6 Long: 1.2	Short: 0.06 Med 1: 0.25 Med 2: 0.5 Long: 1.0			

U = Up
D = Down



Dimensions and Weights

Synapsis Radar w/26" Table Top	approx. 50 kg
Synapsis Radar w/26" Deckstand	approx. 105 kg
Synapsis Radar w/19" Table Top	approx. 29 kg
Synapsis Radar w/19" Deckstand	approx. 85 kg

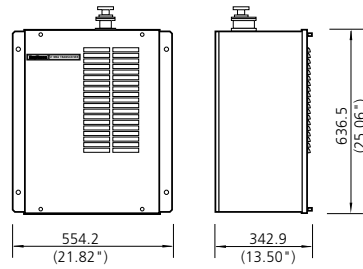
6 ft Antenna Unit	5.8 kg
8 ft Antenna Unit	10 kg
12 ft Antenna Unit	70 kg

10 kW X-Band Transceiver	14.5 kg
25 kW X-Band Transceiver	65 kg
30 kW S-Band Transceiver	87 kg

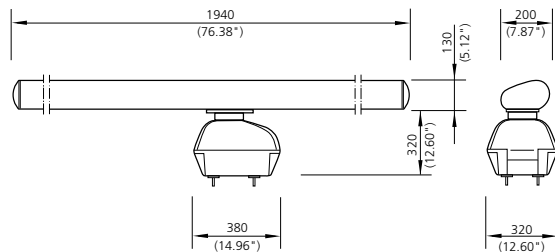
Radar Transceiver (down version)

Weight X-Band 29.5 kg

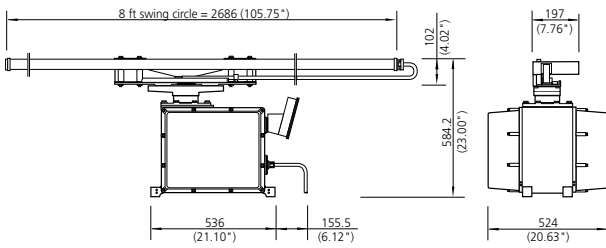
Weight S-Band 36.0 kg



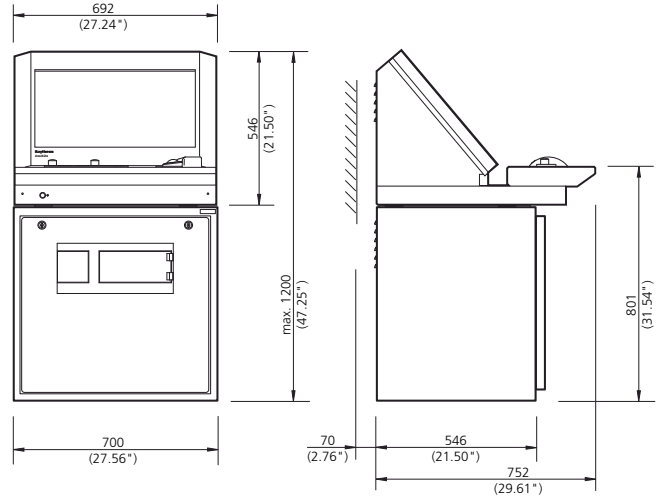
X-Band 6 ft Antenna Unit and Transceiver



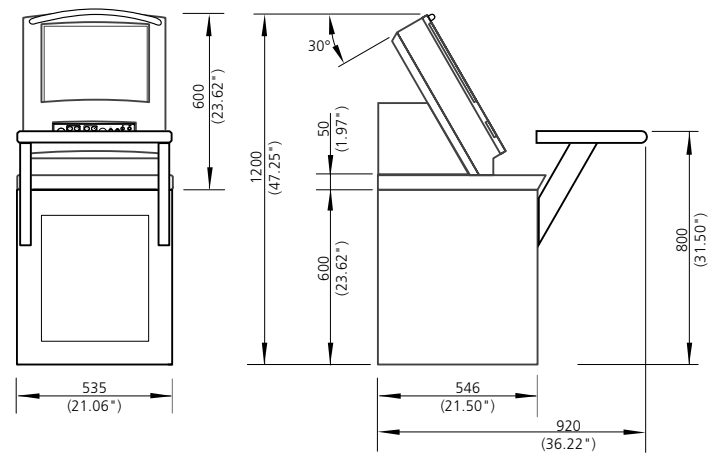
X-Band 8 ft Antenna Unit and Transceiver



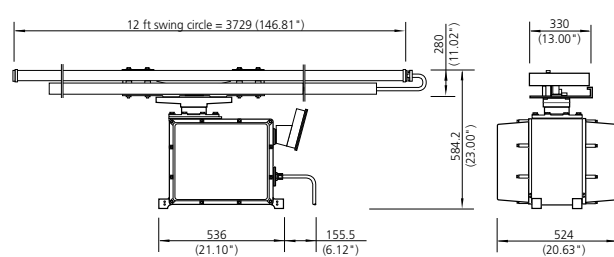
Synapsis Radar w/26" TFT Deckstand and Table Top



Synapsis Radar w/19" Deckstand and Table Top



S-Band 12 ft Antenna Unit and Transceiver



Subject to change due to technical developments without notice.

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