

Synapsis Radar/ Chart Radar

ARPA Radar System



SYNAPSIS
Intelligent Bridge Control

Raytheon Anschütz
SeaScout

Synapsis Radar/ Chart Radar

Latest Navigation Technology for efficient collision avoidance. With its Synapsis Radars 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 Synapsis Radars exceeds the 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.

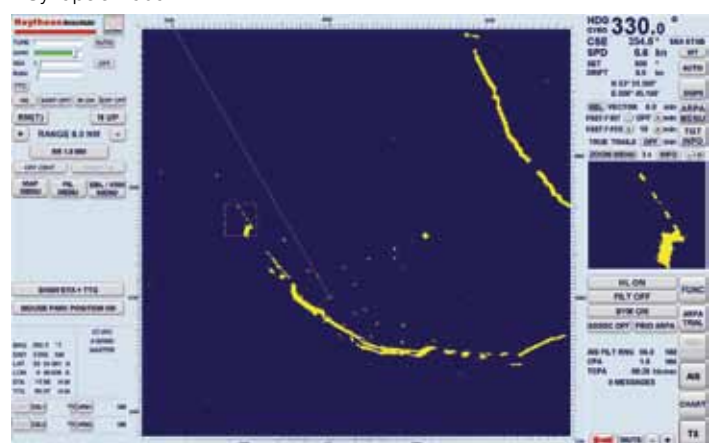
The Raytheon Anschütz worldwide sales and service network ensures quick and competent service support wherever needed.

Complying to MSC.192(79) from July, 1st 2008 onwards

Your Benefit[®]

- Extremely sensitive radar, also detects tiny targets such as small buoys or wooden stakes
- 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 colour display, combining brilliant display quality 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

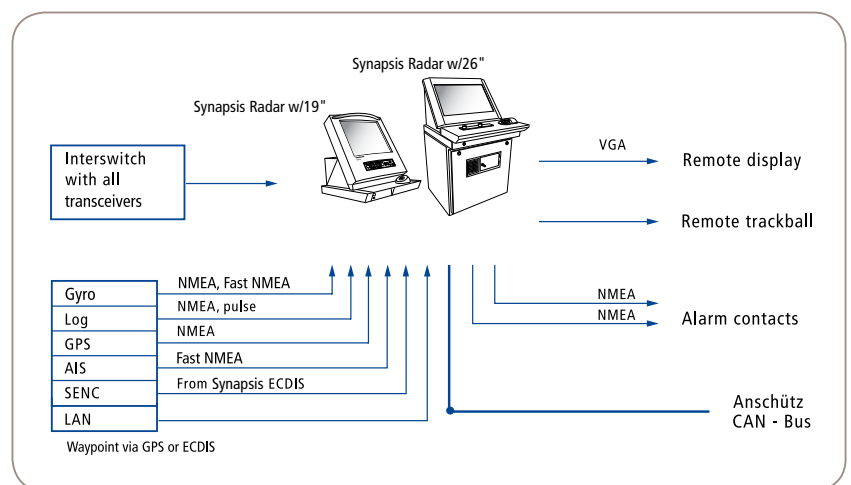
30 kW transceivers with 12 ft S-Band flat-profile antenna

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.

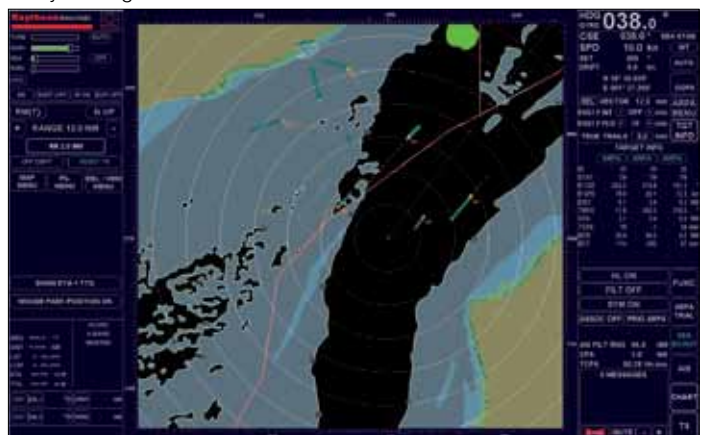
The Black Box version comprises radar processor unit, operator panel, trackball and on/off switch. It is connectable to the latest TFT colour display technology and therefore integrable into yard's console or usable for retrofit purposes.

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
- Digital VDR interface to Interschalt-VDR
- Alarm output via NMEA
- Connection to gyro or GPS, via NMEA or Fast NMEA
- SENC data input from Raytheon Anschütz Synopsis ECDIS



Day and night colours



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

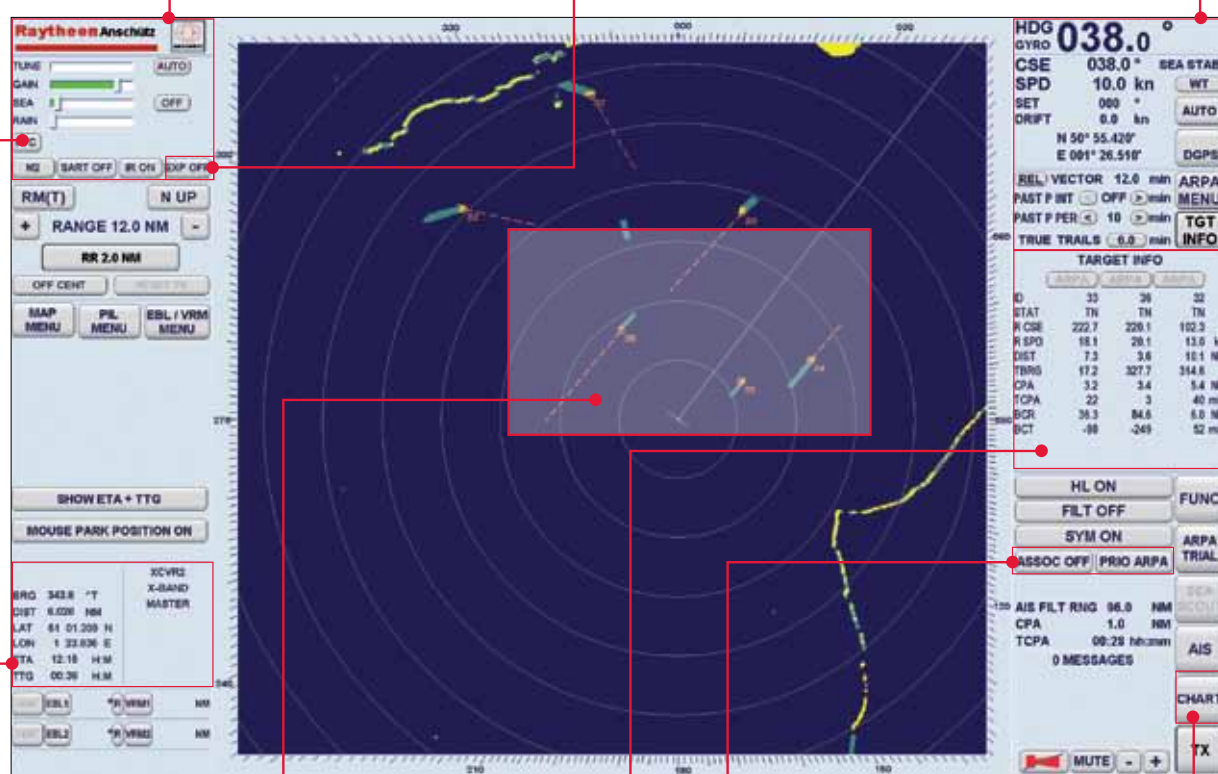


To combat clutter caused by rain, the Synopsis Radar offers, apart from the common FTC function the well-proven and patented Raytheon RainRate® function, which measures the actual rain attenuation and applies continuous filtering.

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

Echo Expansions: enlarges tiny, nearby targets

Own ship data provided by several sensors



Cursor information in radar video range

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.

Chartradar conditions

Functions

SeaScout

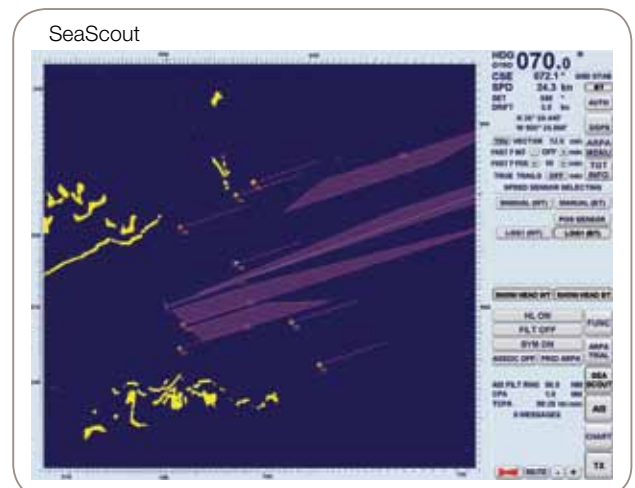
SeaScout supports the navigator finding a safe way and avoiding situations of possible collision.

The new function analyses the movement of the plotted objects and determines in which areas the danger caused by a possible crash is exceptionally 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 within Trial Manoeuvre just the course is changed, the results are already included in the displayed Go / NO Go Areas of SeaScout. Altering speed and delay in the trial manoeuvre now shows its influence within SeaScout and gives the operator a more comprehensive overview about the traffic situation and possible solutions.

AIS

AIS targets can be displayed on the radar video, detailed information on 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.



Raytheon Anschütz
SeaScout

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

Synopsis Radar Operator Panel



Multifunctional Workstation

Synapsis (Chart-) Radar uses the new standardized, ultra-compact Synapsis PC with solid-state disk and passive cooling instead of a fan, that was 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. To have 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.

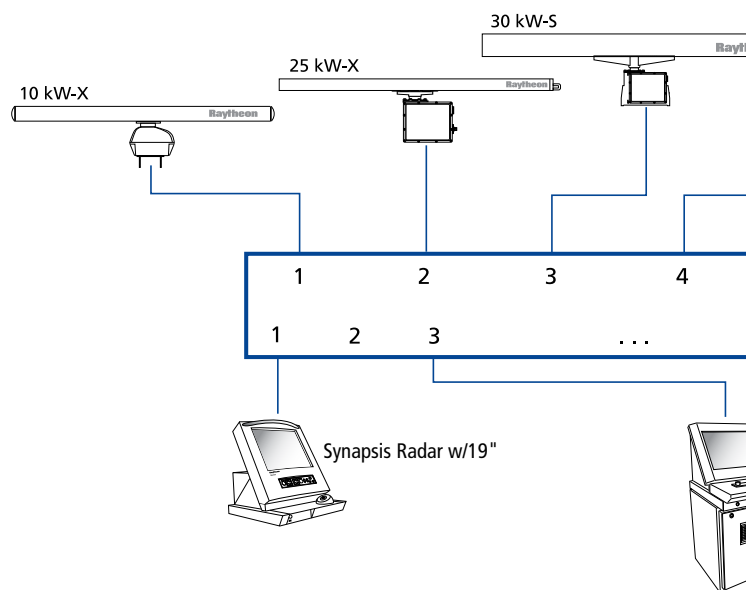


System Integration

- **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 Anschütz ECDIS
- **Synapsis Conning**

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"	Radarw/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

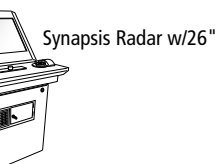
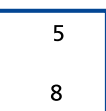
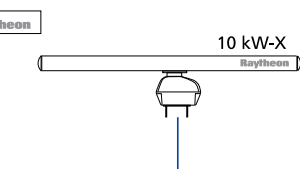
Range	0.125 nm – 96 nm
EBLs	2
VRMs	2
Parallel Index Lines	2
Display Presentations	RM (R), RM (T), TM
Display Heading Modes	H Up, N Up, C Up, R Up
Gyro Input	NMEA, Fast NMEA
Log Input	NMEA, pulse
Display Voltage	115/230 V AC

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

	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
Performance					
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

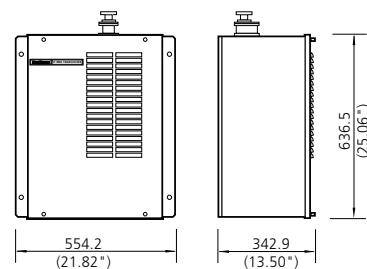
6 ft Antenna Unit	5.8 kg
8 ft Antenna Unit	10 kg
12 ft Antenna Unit	70 kg

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

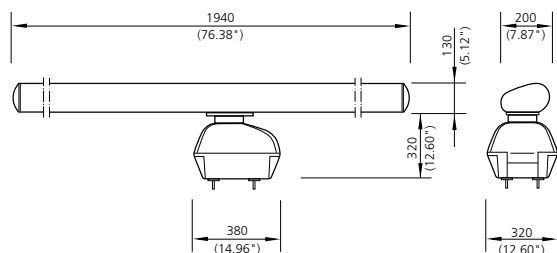
Radar Transceiver (down version)

Weight X-Band 29.5 kg

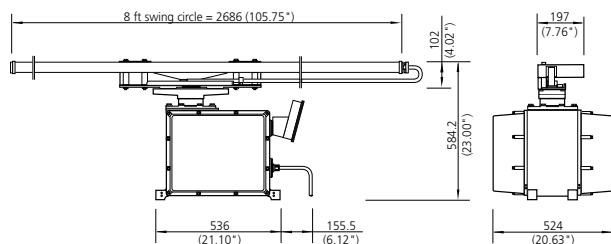
Weight S-Band 36.0 kg



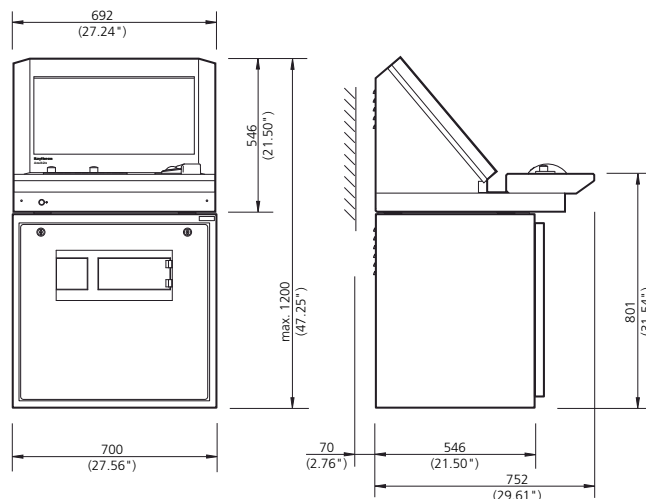
X-Band 6 ft Antenna Unit and Transceiver



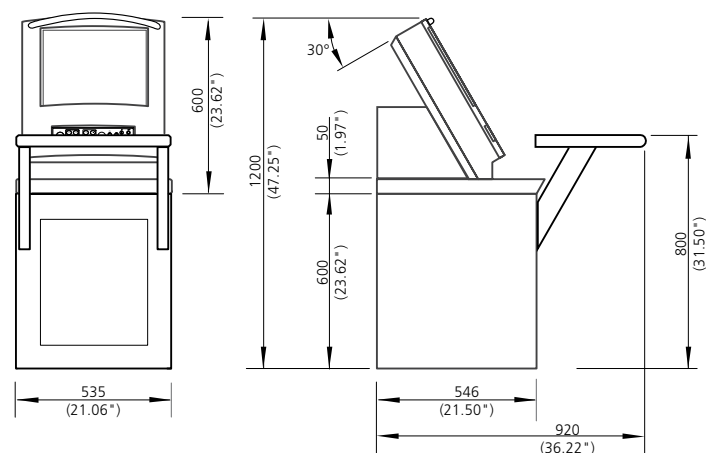
X-Band 8 ft Antenna Unit and Transceiver



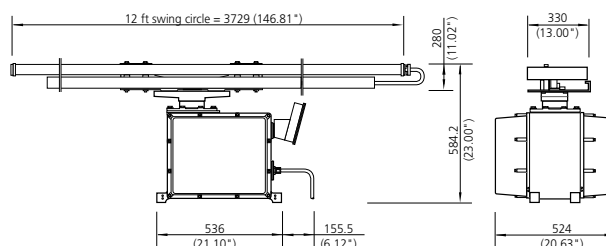
Synapsis Radar w/26" TFT Deckstand and Table Top



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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