

► Total Control.

NSO & NSE Network Navigation family



Technology
Integration

Innovation
Control

SIMRAD

Extended Family

Simrad Yachting is pleased to announce our new extended family of Networked navigation systems. The new NSO Offshore series features large, elegant display options, a new compact keypad controller and a powerful marine processor. The NSO Offshore and the NSE Expert systems both operate on the same network and use the same control interface. Mix and match displays to accommodate nearly any helm requirement. Simrad displays are now available from 8 inches to 19 inches.



NSO OFFSHORE

- ▶ Introducing the all-new NSO Offshore integrated navigation system for vessels with larger helm displays. Available with sleek and stylish 10, 15 & 19 inch displays, the NSO Offshore line is versatile and easy to expand. Based on the Simrad NSE platform, the NSO delivers 'best in class' charting, sounder and radar performance as well as unique control and integration options.

“The displays work perfectly and the controlling system is very good.”

Esa Makinen, Venelenti Magazine, Finland

“When you see it all integrated it is very, very clever because everything is on one large, readable screen”

Lars-Ake Redeen, Batliv, Sweden



NSE EXPERT

- ▶ Easy-to-use, bright visible displays with uncluttered presentation. The Simrad NSE 8 and 12 inch multifunctional displays provide professional level performance with sophisticated charting, radar and echo sounder integration. With powerful networking and vessel integration capabilities, NSE provides comfort and control at sea.

SIMRAD

Offshore Control



▶ NSO 19" Monitor

▶ NSO 15" Display



▶ NSO 10" Display



▶ Controller

▶ Computer



Flexible and Elegant Helms with Simrad NSO

New Simrad NSO cutting-edge performance navigation systems provide uncompromising bridge aesthetics and unrivalled technology integration. The NSO premier navigation system will complement any vessel from multi-helm luxury yachts to offshore-tested sport fish boats without the risk and expense of a custom design. Offering market leading performance and state-of-the-art technology, Simrad NSO combines robust construction and elegant design with innovative performance modules for precision navigation and piloting.

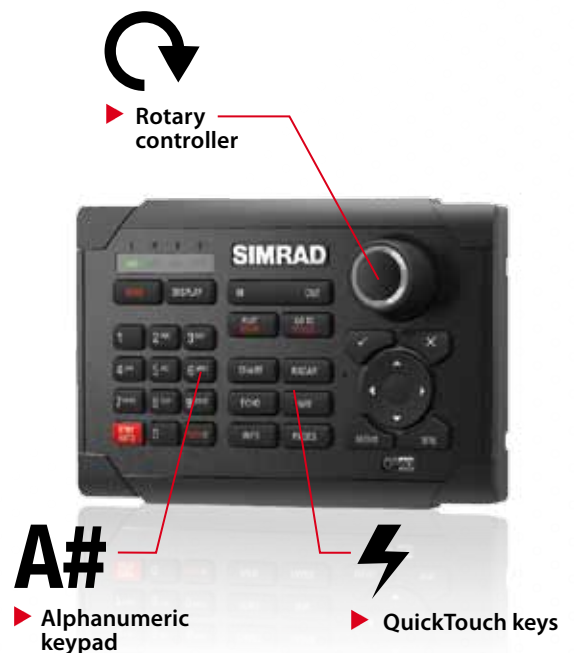
The Simrad NSO Series is the most flexible system available today. Select from three sizes of brilliant Simrad monitors or you have the option to select a standard monitor. Combine NSO and NSE in the same network and add multiple control units. Share chart, radar, or any Simrad performance module across the system. Build an NMEA 2000 network to your exact helm requirements, whether it is a single station or multi-monitor vessel, NSO delivers a bespoke solution.

Monitors

- ▶ NSO Offshore offers a wide range of display options to compliment any helm:
 - DI10 10" Display
 - DI15 15" Display
 - MO15 15" Monitor
 - MO19 19" Monitor
 - 3rd Party Monitor Support

OP40 Controller

- ▶ Imagine a control device/keypad designed by captains. The Simrad OP40 Wired Remote keypad replicates the logical functionality of the NSE keypad and has been optimized for remote display operation. Clearly labelled, programmable QuickTouch keys eliminate keypad guesswork allowing you to switch from Chart to Radar to Autopilot and more with ease and speed. The alphanumeric keypad makes it incredibly simple to enter waypoint names and positions. One twist of the rotary controller will convince you that the NSO was designed with performance navigation in mind.



Marine Processor

- ▶ The robust Simrad NSO Marine Processor is engineered for the harsh offshore environment. Rugged cast-aluminum housing, waterproof, positive-lock connections and generous heat-sinks protect an ultra-fast processor and large capacity hard-drive that delivers lightning-fast operation and premium performance.

Offshore or Anywhere

- ▶ The Simrad NSO is compatible with industry leading Navionics cartography. Fully Detailed Navionics Platinum Plus charts with 3D Bathymetrics and TurboView are available on SD Card. The included SD Chart Reader can be dash-mounted for easy access yet is small enough for discreet placement. The NSO is available with Pre-loaded coastal cartography to ensure you have expansive chart coverage wherever your voyage takes you.

Expert Technology



▶ Rotary controller:

Perfectly intuitive for fine or course control of gain, zoom and menu with push to enter functionality



▶ Alphanumeric keypad

Quickly enter waypoint, route and track information with precision



▶ QuickTouch keys

Touch a button and make things happen

Simrad NSE Features

▶ Brilliant, Low Power LED Display Technology

A "no compromise", brightest in class SunView™ LED Display NSE12 is industry first 12" MFD with high resolution XGA display Large readable fonts for clear visibility

▶ Lightning Fast, Fully Loaded Chartplotter

The high power processing of NSE lets you zoom, pan and navigate with virtually zero chart lag time

Navigate right out of the box. NSE comes preloaded with large scale, coastal navigation charts

All New Simrad High Performance GS15 GPS 5Hz Antenna with NMEA2000/SimNet connections

▶ Autopilot, StructureScan™ and Digital Switching

Integrated award winning performance Autopilot system

Experience life-like underwater structures with plug and play StructureScan™

CZone Digital Switching offers cost effective, control and monitoring of nearly any system on your boat

▶ Award Winning Echosounder and Radar Technology

BSM-1 Broadband Sonar for excellent target separation and deep water penetration

BR24 Broadband Radar & HD Digital Domes and Arrays for superior image clarity and definition

▶ New Simrad NSE Control Interface for Easy Operation

Rotary Controller, Cursor Pad, and an Alphanumeric Keypad for flexible & solid input control

QuickTouch for quick and easy page access and recall

Minimal time required to learn operation with on-screen menus and prompts

▶ Elegant Design, Brutally Strong Simrad Construction

Classic Simrad design with flush mount option compliments any helm design

Substantial aluminium housing, waterproof connections, and a robust bracket mount all designed for harsh environments

▶ Complete Flexibility – with "Masterless" Networking

Share Charting, Echosounder and Radar information across multiple units

"Masterless" system – Any networked unit can operate independently. Network switch may be required

SimNet plug and play data networking for NMEA2000 compatible sensors & Instrumentation

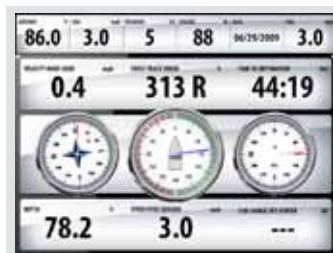
Video input and output for display of video or navigation data where you want it

Pushing all the right buttons.



NAV

Emphasis is on “clear and easy to read”. The position and steer screen offer concise information displayed in large fonts and simple graphics.



INFO

Pre-configured gauge displays show vessel, environmental and navigation information in digital, analogue or bar format. Optional video inputs complete your NSE system.



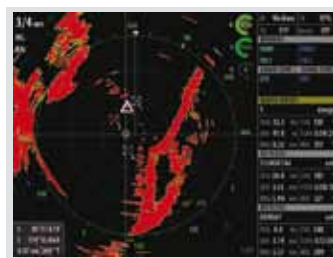
PAGES

The Pages utility is Command Central for frequently used options and tools. Display and edit waypoints, routes and tracks as well as saved log files. AIS, Alarms and GPS status pages are easily accessed.



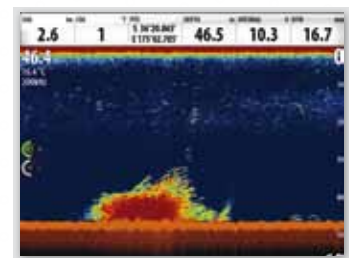
CHART

Instantly orient yourself to your surroundings. Simrad NSE comes with embedded coastal charts that allow for out of the box navigation for both novice and experienced mariners.



RADAR

Radar improves a mariner’s situational awareness. Easy to operate Radar function allows for Navigation, Target Tracking and collision avoidance. Display both MARPA and AIS targets for the complete picture.



ECHO

NSE utilises high performance Broadband Sounder™ technology to penetrate deepwater, clearly define underwater structure and “whisper” into the water to find more fish.

Integrate everything

Innovative high performance plug and play modules make Simrad Navigation Systems best in class in every class.

ECHO StructureScan™

Revolutionary StructureScan creates the ultimate in reality EchoSoundingStructureScan provides wide coverage in high detail with SideScan while the exclusive DownScan™ provides picture perfect images of structure and fish directly below your boat for a true 180° view.

StructureScan high-speed ethernet networking allows units to share one StructureScan transducer that can be viewed on all NSO and NSE units; plug-and-play ethernet allows for quick and clean installs.

CHART High Speed GPS

The impressive 16-channel NMEA 2000 GPS antenna provides superior sensitivity for signal acquisition, with incredible position accuracy, in a compact size that is easily flush mounted. This advanced positioning antenna is compatible with both NSO and NSE systems.

ECHO Broadband Sounder Module

Raising the bar in fishfinding technology, the Broadband Sounder Module (BSM) delivers incredible echo clarity and the highest underwater definition ever achieved. Choose BSM for increased levels of plug-and-play compatible with NSO and NSE navigation systems.

StructureScan™

High speed GPS

Broadband Sounder Module

SonicHub



INFO SonicHub

SonicHub™ integrates flawlessly with award winning Simrad NSO and NSE displays to make your music more accessible when on the water, with a direct link to your entire music collection via your iPhone, iTouch, iPod or USB device, without the need for a stereo head - Selecting and playing music couldn't be simpler.

NAV Autopilot

The world's best performing autopilot system now integrates with Offshore NSO and Expert NSE displays. Engineered to benefit both "space-challenged" dash layouts and multi-station expanded systems like flybridge boats, NSO and NSE autopilot integration offers tremendous flexibility. Control your autopilot like never before from your large, brilliant primary display.

Autopilot



AIS



Broadband Radar



HD Digital Radar™



RADAR HD Digital Radar

Simrad offers a range of radome and open array digital signal processing radar systems, working with power levels from 2kW to 25kW via high capacity Ethernet. These radars ensure exceptional detection of small or distant targets, virtually eliminating screen clutter allowing a clear and accurate image.

INFO AIS

Integrate an NSO or NSE system with Simrad AI50 or NAIS-300 Class B AIS Systems to see and be seen. Overlay AIS-equipped vessel information on chart and radar displays for exceptional situational awareness.

RADAR Broadband Radar

A revolution in radar unlike anything else on the recreational boating market, the Broadband Radar utilises solid-state technology and provides superior target detection and separation, ease of operation and a new level of navigational safety.

True innovation

HD Radar



▲ Monitoring storm fronts

▲ Radar overlay

▲ Tracking MARPA targets

- Simrad HD Digital Radars automatically adjust colour gradients on longer ranges for better interpretation when looking for storm areas and weather fronts
- The integration of a high speed heading sensor allows up to 10 different MARPA targets to be displayed on screen
- Simrad HD Radars now support True Motion Radar Display. Moving vessels are instantly distinguished from fixed objects and land masses, eliminating guesswork in PPI interpretation
- Simrad HD Radars ensure exceptional detection of small or distant targets using advanced Digital Signal Processing

Broadband Sounder Module



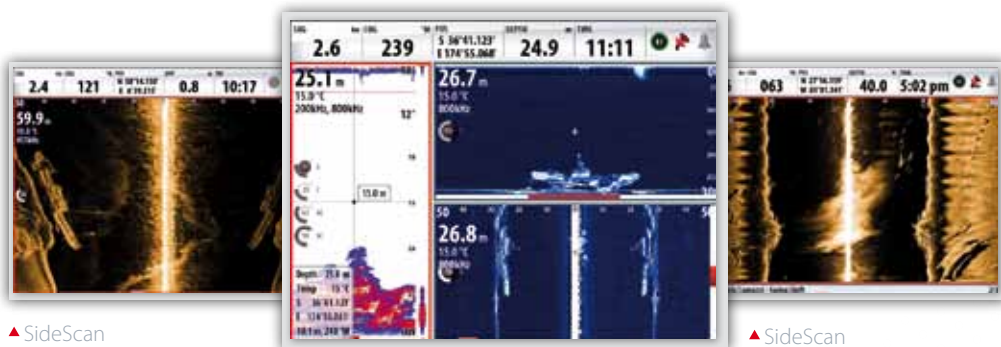
▲ Shallow water clarity

▲ Deep water penetration

▲ 'Whisper' into the water

- **Penetrate deep waters:** Capability to track bottom and see structure in deep offshore terrain and canyons over 3,000 feet
- **Clearly define underwater structure:** High-resolution linear receiver provides superior clarity in shallow and mid water
- **'Whisper' into the fish:** Exceptionally low power with efficient long pulses make the perfect 'low-noise' Sonar
- **Tri-Frequency capability:** Better match the frequency with your fishing location: 200kHz for shallow inshore, 50kHz for deep offshore and 83 kHz for a desirable blend of both

StructureScan™



▲ SideScan

▲ DownScan™ , SideScan and Sonar

▲ SideScan

- **SideScan:** Full-screen, top-down panoramic view of highly detailed bottom imaging on either side of the boat
- **DownScan™:** Adds a new dimension to echosounding. High Frequency imaging gives life-like representation of water structure
- **TrackBack™:** Scroll back simultaneously through sonar history and chartplotter trail from sonar or StructureScan™ display to easily mark waypoints
- **DownScan™ Overlay™:** Exclusive new technology overlays DownScan™ onto Broadband Sounder™ on one display that clearly separates fish targets from surrounding structure

Autopilot



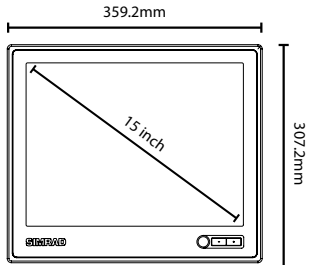
▲ Combine charting, autopilot and vessel pages for unprecedented vessel control

- Fully control your Simrad Autopilot from an NSE8 or NSE12 display
- Alter course with the Rotary Controller or Cursor Pad
- Dedicated Standby / Auto key and Pilot Status indicators allow safe, easy Pilot operation
- The NSE performs all the functions of an AP24 or AP28
- The NSE can replace or work together with an AP24 or AP28 controller
- Fully configure the Autopilot from the NSE display

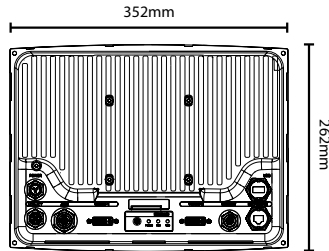
Specifications

NSO OFFSHORE

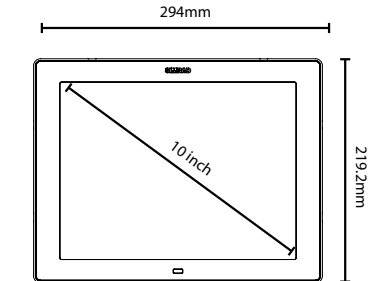
MO15F



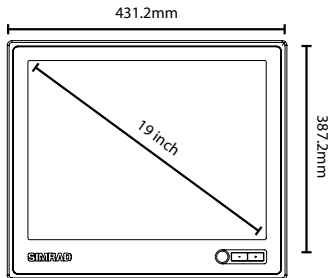
NSO MP



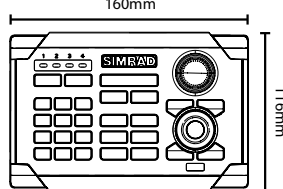
DI10



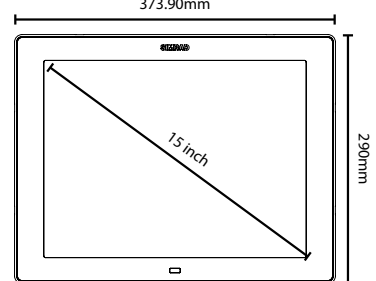
MO19F



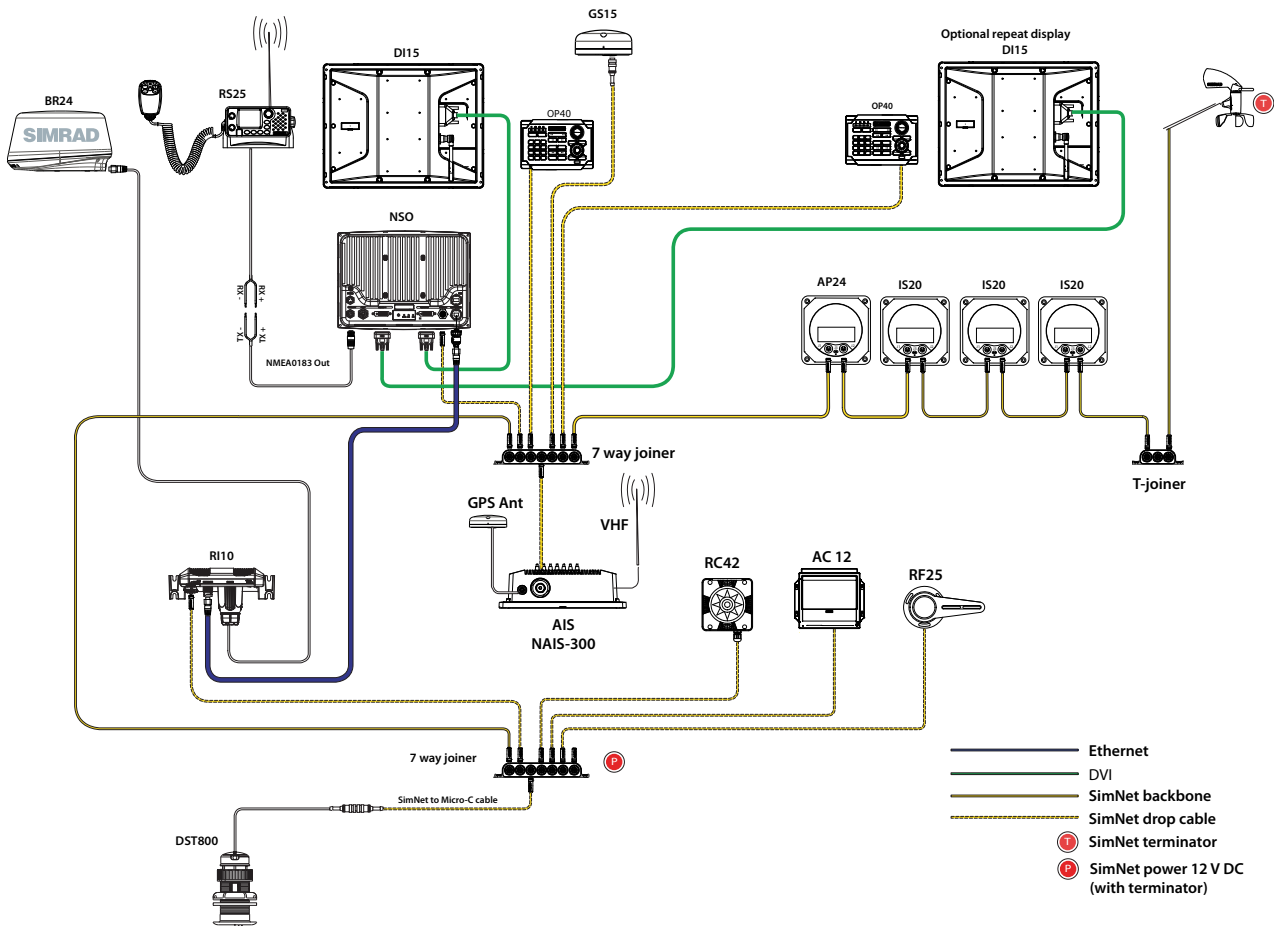
OP 40



DI15



System Diagram

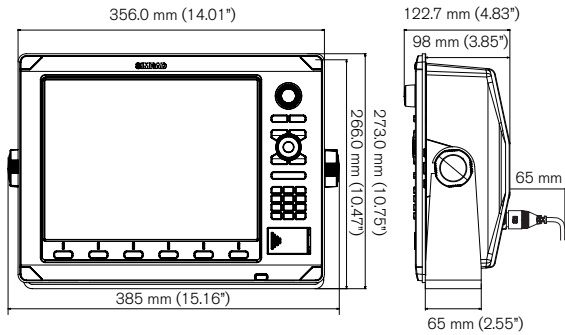


Display	DI10 and DI15	M015 and M019
Power supply	10-32 VDC	24 VDC (21 -32V DC)
Environmental Protection	IPX6	IPX6 (When flush mounted)
Resolution	DI10: 10.4" TFT SVGA bonded DI15: 15" TFT XGA bonded	19" TFT SXGA bonded 15" TFT XGA bonded
Video input	None	DVI-D, RGB, Composite and S-video
DVI-D, RGB, Composite and S-Video	Via OP40 Remote	+/- key on monitor
NSO Marine Processor		
Power Supply	10 - 32VDC	
Environmental Protection	IPX6	
Digital/Analog Video Outputs	1 x DVI-D (Digital only) 1 x DVI-D (Digital and Analog RGB)	
Simnet (NMEA2000)	1 Port, 1 SinNet load	
Ethernet	1 Port	
USB 2.0	1 Port	
NMEAD0183	1 x In/Out Port	
Audio Out	None	
Alarm output	< 250mA, 30VDC	
Speed log/temp.	From SimNet or via Echosounder box	
Keypad		
OP40 Wireds Remote		
Interface	Can/NMEA, 2000/SimNet	
Keypad Beeper	>80dBA@0.5m	
Backlight	Red (Night)	
Environmental Protection	IPX6	
Radar Characteristics		
Radar Compatibility	Broadband: Simrad BR24; Simrad HD Digital Series 2kW to 25kW	
Display Modes	Head-up, Course-up*, North-up*, Relative Motion (*Heading input required)	
Echo Trail	Intervals: 15 sec, 30 sec, 1 min, 3 min, Continuous. Clear Trails	

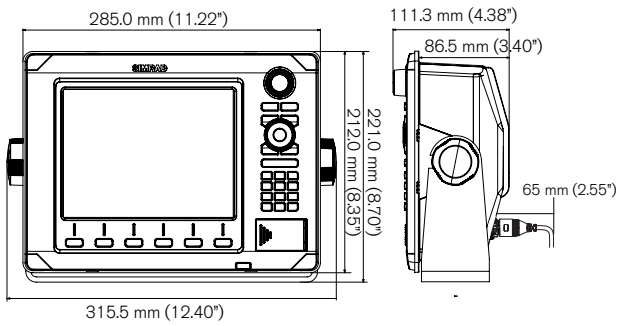
Specifications



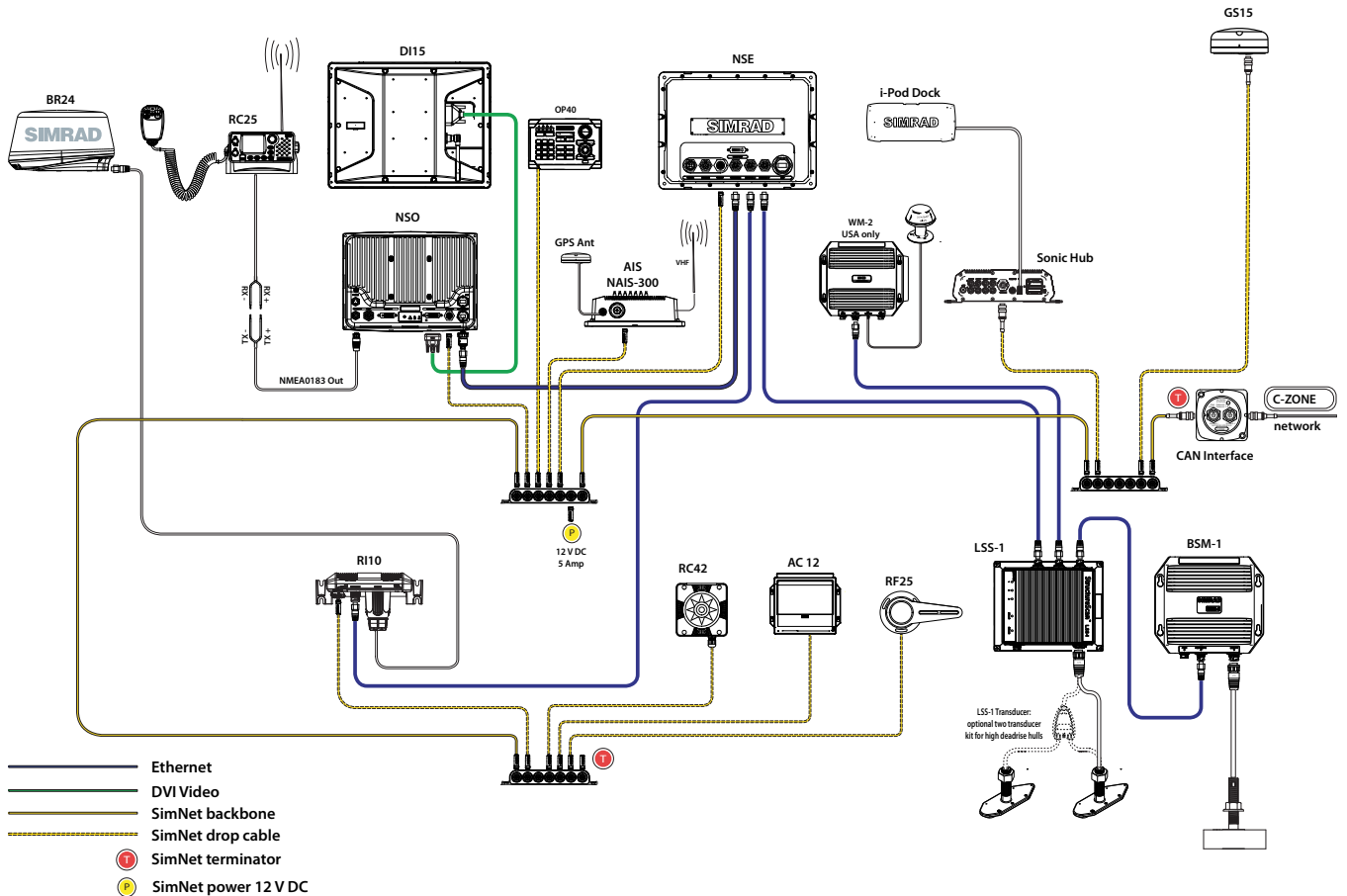
NSE12



NSE8



System Diagram



Display	NSE8	NSE12
Type	8" Colour TFT LCD	12.1" Colour TFT LCD
Screen Size	8 inch diagonal viewing area	12 inch diagonal viewing area
Screen Resolution	800 x 600	1024 x 768
Screen Brightness	1500 Nits	1500 Nits
Contrast Ratio	850:1	600:1
Viewing Angle	60 Deg above and below normal axis with >75% nominal brightness > 100:1 Contrast Ratio 60 Deg Side to Side from normal axis with : > 75% Nominal brightness. 100:1 contrast ratio	
Languages (31)	English (UK), English (US), German, French, Spanish, Italian, Portuguese, Croatian, Finnish, Icelandic, Dutch, Norwegian, Polish, Swedish, Slovenian, Russian, Ukrainian, Bulgarian	
Unit Dimensions without bracket/knobs (H x W x D) mm	212.0 x 285.0 x 111.3 mm	266.0 x 356.0 x 122.7 mm
Unit Dimensions without bracket/knobs (H x W x D) in	8.35 x 11.22 x 4.38 in	10.47 x 14.01 x 4.83 in
Pack Dimensions (H x W x L) mm	220 x 300 x 390 mm	260 x 340 x 435 mm
Pack Dimensions (H x W x L) Inches	8.66 x 11.81 x 15.35 inches	10.24 x 13.39 x 17.13 in
Pack Weight	6.3 kg/12.6 lbs	8.5 kg/17 lbs
Case Pack Weight (2 Per Case)	12.7 kg/ 25.4 lbs	17.1 kg/ 34 lbs

Mechanical

Housing Construction	Die Cast Aluminium Rear housing, Snap-fit front bezel
Heat Sinking	Direct heat transfer from processor to housing
Screen	Direct Bonded
Processor/ RAM/ Hard Drive	1.6 GHz / 512 MB / 80 GB
Interface	Direct Access Keys (DAK's), Alphanumeric Keypad, Rotary knob with Push-to-Enter

Plotter Characteristics

Display Modes	Head-up, Course-up*, North-up*, Relative Motion (*Heading input required)
Latitude Limit	83° North, 85° South
Alarms	Position, Off-Course, Waypoint Radius, Arrival, Anchor, Anchor Depth, Shallow, Deep, Water Temp Rate, Low Boat Speed, True Wind Shift, True Wind High, True Wind Low, Guard Zone 1 & 2, Voltage Hi/Lo, Missing Data: Depth/Rudder/Wind/Heading/Weather, Weather: Lightning, Severe Weather, Storm, Weather Watchbox, Vessels: Dangerous, AIS Lost, Message, MARPA Lost, MARPA Unavailable, Autopilot Alarms
Cartography	Embedded: Navico Insight HD US/Navionics Platinum Rest of World; Navionics Platinum Plus via SD Card

Radar Characteristics

Radar Compatibility	Broadband: Simrad BR24; Simrad HD Digital Series 2kW to 25kW
Display Modes	Head-up, Course-up*, North-up*, Relative Motion (*Heading input required)
Echo Trail	Intervals: 15 sec, 30 sec, 1 min, 3 min, Continuous. Clear Trails
VRM/EBL's	2: User Configurable

Interface

LAN	3 Ports 10/100 Base
Interface (NMEA 0183)	Input: GLL, GGA, RMC, RMB, GSA, GSV, APB, BWC, DBT, DPT, MTW, VLW, VHW, HDG Output: GGA, GLL, GSA, GSV, VTG, ZDA, AAM, APB, BOD, BWC, BWR, RMC, RMB, XTE, DBT, DPT, MTW, VLW, VHW, HDG, MWV, TLL, TTM
Interface (NMEA 2000)	Input: 59904, 60928, 65285, 65292, 65293, 65303, 65305, 65323, 65325, 65480, 126208, 126992, 126996, 127237, 127237, 127245, 127250, 127251, 127257, 127258, 127488, 127489, 127493, 127505, 127508, 128259, 128267, 128275, 129025, 129026, 129029, 129033, 129038, 129039, 129040, 129285, 129539, 129540, 129794, 129801, 129802, 130306, 130310, 130310, 130311, 130312, 130313, 130314, 130576, 130577, 130817, 130820, 130821, 130831, 130832, 130834, 130835, 130838, 130839, 130840, 130842, 130844, 130845, 130850, 130851, 130860 Output: 59904, 60928, 61184, 65292, 65287, 65289, 65290, 65293, 65303, 65305, 65323, 126208, 126996, 127237, 128259, 128267, 129285, 130577, 130818, 130819, 130831, 130835, 130836, 130837, 130839, 130840, 130844, 130845, 130850, 130851
USB Port	(2) - 1 Front, 1 Rear
Video Output	DVI-I x (1)
Video Input	Composite Video x (2) (multiplexed)
Video Compatibility	NTSC type N and 4.4.3, PAL type B, D, G, H, I, M, N User selectable
SD Card Slot	Single

Environment

Temperature	-15 Deg C to +55 Deg C (+5 Deg F to +131 Deg F)
Waterproofing	IPx7

Power

Current Draw (in Watts) at 12/24VDC Display only	12.0 VDC-24.0 VDC (9.0 - 34.0 VDC Min-Max) 21.6W or 1.8A @ 12.0 VDC or 21.6W or 0.9A @ 24VDC 33.6W or 2.8A @ 12.0 VDC or 33.6W or 1.4A @ 24VDC
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Certificates of Conformity

CE(EN60945:2002)/CTick

SIMRAD

www.simrad-yachting.com