

ECDIS – ECS+

Electronic chart systems are now ca. 25 years finding their way to help the navigator in his work by showing him constantly where he is in respect to his surroundings. These systems and their associated aspects on data handling are also of interest to the hydrographic community.

The majority of the hydrographic community is (or should be) interested in Electronic Chart Systems, be it an ECDIS or ECS, and their aspects. To mention groups: from the public sector (mainly HO's) those that are involved in promulgation of regulations and in (ENC) data production, the private chart manufacturers, the ECDIS/ECS manufacturers, the seagoing surveyors for safely navigating their ships and the (private sector) surveyors who can use the systems as a base for their surveying activities and to display their data results.

There is also a strong tie with the seagoing surveyor as it can be said that ECDIS/ECS evolved from the hydrographic data logging systems, which plotted the ships position on position plotting sheets. The evolvement into a general installed equipment on ships was limited by the technical and price restraints from the computer technology at the beginning.

If used for surveying only, the IMO/IEC/IHO-regulations are not so relevant for the systems. The surveyors however can exploit in their ECS or special survey systems the advantages of the S57-standard: an accepted and prescribed data-format which can be of interest to the private sector surveying field. E.g. to transfer data to other applications. One application is the use of data to be displayed on top of navigational data e.g. Environmental Data.

It will be interesting to see in which way the ECDIS-ECS+ systems evolve the coming years. The price of the hardware cannot be a threshold anymore to enjoy the benefits from navigating with electronic chart systems, neither is the rapidly increasing coverage of official ENC's. It is the price tag on the official ENC's, which still make quite a lot of ship owners choosing for the combination of traditional paper chart navigation supported by an ECS+ with a world wide chart (commercial) database instead of going completely digital with an ECDIS-system.

We like to thank those manufacturers who contributed to the product survey by answering the questionnaire. ■

Manufacturer's Name	ADVETO AB
Product Name	ECDIS-4000 (Base, Standard, Extended)
Trade Name of OEMs	N/A
Roll-out date of current version	1-1-2006
Basics	
Software solution	Adveto navigation software with ECDIS kernel from SevenCs
Combined software/hardware solution	Y, according to typeapproved ECDIS
Operating system	MS Windows XP embedded
Console version and/or standard computer hardware	Three versions: Console version, Desktop version and Retrofit version
Basic features	
Functions designed for onboard use of SOLAS vessels	Y
Functions designed for leisure market	N
Derivatives available for shore based use	Y, CVTS for fleet management
Supp. off. data formats (e.g. ENC, SENC, ARCS, BSB)	ENC, SENC, BSB
Supp. priv. data formats (e.g. CM93, TRANSAS TX90)	CHARTWORLD, ADVETO CHARTS
Compliance and approvals	
IMO Res A.817(19) ECDIS Performance Standards	Y
IHO S57, Ed. 3.1.1 (ECDIS Data format)	Y
IHO S52, App. 2, Ed. 4.2 (ECDIS Colours & Symbols)	Y
IHO S52, App. 2, Annex A presentation Library 3.3	Y
Resolution MSC.232(82) (Revised performance standards for ECDIS)	Y
IEC 61174, Ed. 2 ECDIS test requirements	Y
Resolution MSC.191(79) (New performance standard for presentation)	Y
Inland ECDIS Standard of CCNR	Y, new ECDIS version 2008
RTCM ECS software specification	Y, new ECS version 2008
Type approval (which standard(s)/by whom/when)	All three ECDIS Typeapproved by DNV
Integration	
Import of ARPA targets	Y
Radar video overlay	Y, new ECDIS version 2008
Integrated tracking functions for radar targets based on radar overlay	Y, new ECDIS version 2008
Import of AIS targets	Y
MKD functions for connected AIS receiver	Y, new ECDIS version 2008
Integrated solution of double installation for common data management	Y
Main component of an Integrated Navigation System with remote access to heading control	N
Main component of an Integrated Navigation System with remote access to track control	N
Added functions	
Selectable chart projections	Y
Head up for vector data and/or raster data	Y
Relative motion/centred display of AIS and/or radar targets for vector data and/or raster data	Y
Integrated sailing directions database (including photographs)	Y
Trial manoeuvre mode for tracked targets and own ship behaviour and/or simulation	Y with emulator
Extended detection of charted and dynamic hazards to navigation	Y
Tidal height / Tidal current calculations/overlay	Y
Weather overlay	Y, new ECDIS version 2008
Conning display	Y
Online help functions	Y, new ECDIS version 2008
User interface in local languages	N
Print functions for chart images, content of chart database, waypoint list	Y
Print functions of ISM-required route planning documents	Y
Interfacing	
Max. number of serial interface according to NMEA 0183 (IEC 61162-1/-2)	12, optional 8 extra ports
Max. number of serial interface according to NMEA 2000 CAN Bus (IEC 61162-3)	With extra hardware unlimited
Max. number of analogue interfaces	With extra hardware unlimited
Special interface for gyro compasses	Y, with extra hardware
Possibility of slave displays with/without own user interface	Y, with own user interface
Support	
Documentation in local language	Y, Swedish
Provision of 7/24 chart data service on request	Y
Remote maintenance via wireless communication	Y via Adveto Shore Support
Device dependent ECDIS/ECS training	Y
Special remarks / functions not listed above	Control Unit ECDIS Type approved; 20 programmable, for often used functions; Navigation Predictor ECDIS Typeapproved

N/A Not Applicable
 No information received

Chartworx Holland by TheMAP 1000	Chartworx Holland by TheMAP 610	Chartworx Holland by TRAX Navigator Pro	CherSoft Ltd Henry
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3-7-2007	3-7-2007	10-7-2007	12-6-2007
Y	Y	Y	Y
N	N	N	Y, through Intermarine (on request)
MS Windows XP (SP2) Vista Standard hardware	MS Windows XP (SP2) Vista Standard hardware	MS Windows XP (SP2) Vista Standard hardware	MS Windows 2000, XP and Vista Available through Intermarine (on request)
I)	I)	I)	Route Planning, Navigation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compatible with NOAA data
Ocean View ENC, SENC	The MAP Planner system ENC, SENC, ARCS, BSB	TRAX Planner System ENC, SENC	2) 3)
CM 93/3	CM 93/3, C-MAP MAX Pro	CM93/3, C-MAP MAX Pro	CherSoft SENC
N	N	N	Y
Y	Y	Y	Y
Y	Y	Y	Y
Y	Y	Y	Y
Y	Y	Y	Y
N	N	N	N
N/A	N/A	N/A	<input type="checkbox"/>
N/A	N/A	N/A	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	To be approved (61174 ECDIS) August 2007 by Qinetiq
Y	Y	Y	Y
Y	N	N	Y, on request
N	N	N	Y, on request
Y	Y	Y	From August 2007
Y	N	N	N/A
Y	Y	Y	Y
N	N	N	N
N	N	N	N
Y	Y	Y	N
Y	Y	Y	Vector only
Y	Y	Y	Y
N	N	N	Planned integration with UKHO Sailing Directions and Digital Radio Signals
N	N	N	N
Y	Y	Y	Y
Y	Y	Y	Y (+ integration UKHO TotalTide)
Y	Y	Y	On request
Y	N	N	Y
Y	Y	Y	Y
GB	GB, D, I, F, S, DE, N, E, IS, NL	GB, D, I, F, S, DE, N, E, IS, NL	N
Y	Y	Y	Y
N	N	N	Partial
Hardware dependant	Hardware dependant	Hardware dependant	Unlimited
Hardware dependant	Hardware dependant	Hardware dependant	N/A
Hardware dependant	Hardware dependant	Hardware dependant	N/A
Y	Y	Y	On request
Y	Y	Y	On request
English	Dutch / English / German	Dutch / English	N
Y	Y	Y	Y
N	N	N	N
Y	Y	Y	On request
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adaptable, configurable, interoperable. Henry can be adapted and extended to customer requirement. COM interface allows user-defined drivers for specific tasks



Product Survey

Manufacturer's Name	e-MLX Co, Ltd (e-Marine Logix)	Euronav Ltd	Jeppesen Marine
Product Name	e-Navigator	SeaPro	C-Map by Jeppesen SDK
Trade Name of OEMs	<input type="checkbox"/>	N/A	N/A
Roll-out date of current version	Oct. 2005	1-1-2007	2005
Basics			
Software solution	e-Marine ECDIS Kernel	Y	ECDIS OEM Development Kit
Combined software/hardware solution	Hatteland PC	N	N/A
Operating system	MS Windows 2000, XP	MS Windows 2000, XP, Vista	MS Windows 2000, XP
Console version and/or standard computer hardware	2.0	N	N/A
Basic features			
Functions designed for onboard use of SOLAS vessels	Y	Parallel indices, alarm for AIS & ARPA targets, logging	Y
Functions designed for leisure market	Not yet	4)	N
Derivatives available for shore based use	N/A	5)	Y
Supp. off. data formats (e.g. ENC, SENC, ARCS, BSB)	ENC, ARCS	ENC, SENC, ARCS navigator, BSB	Y
Supp. priv. data formats (e.g. CM93, TRANSAS TX90)	N/A	BSB4, ARCS skipper, Livechart, Navionics	Y
Compliance and approvals			
IMO Res A.817(19) ECDIS Performance Standards	Y	N	Y
IHO S57, Ed. 3.1.1 (ECDIS Data format)	Y	N	Y
IHO S52, App. 2, Ed. 4.2 (ECDIS Colours & Symbols)	Y	N	Y
IHO S52, App. 2, Annex A presentation Library 3.3	Y	N	Y
Resolution MSC.232(82) (Revised performance standards for ECDIS)	Y	N	Y
IEC 61174, Ed. 2 ECDIS test requirements	Y	N	Y
Resolution MSC.191(79) (New performance standard for presentation)	Y	N	Y
Inland ECDIS Standard of CCNR	N/A	N	Y
RTCM ECS software specification	N/A	N	Y
Type approval (which standard(s)/by whom/when)	Approved / DNV and Korean Register	None	NHS SENC format, report 2002-1392/DNV
Integration			
Import of ARPA targets	Y	Y	Y
Radar video overlay	N/A	Y, with Koden RADAR PC	Y
Integrated tracking functions for radar targets based on radar overlay	Y	Y	Y
Import of AIS targets	Y	Y	Y
MKD functions for connected AIS receiver	Y	Y	Y
Integrated solution of double installation for common data management	N/A	Y	N/A
Main component of an Integrated Navigation System with remote access to heading control	N/A	N	N/A
Main component of an Integrated Navigation System with remote access to track control	N/A	N	N/A
Added functions			
Selectable chart projections	Y	Y, North, course and head-up	Y
Head up for vector data and/or raster data	Y	Y	Y
Relative motion/centred display of AIS and/or radar targets for vector data and/or raster data	Y	Y	Y
Integrated sailing directions database (including photographs)	N/A	N	Y (N)
Trial manoeuvre mode for tracked targets and own ship behaviour and/or simulation	Y	N	N/A
Extended detection of charted and dynamic hazards to navigation	Y	Y	Y
Tidal height / Tidal current calculations/overlay	N/A	Y	Y
Weather overlay	Y	Y	Y
Conning display	N/A	N	N/A
Online help functions	N/A	Y	Y
User interface in local languages	Y, KR	GB, E, F, D, N	N/A
Print functions for chart images, content of chart database, waypoint list	Y	Y	Y
Print functions of ISM-required route planning documents	N/A	N	N/A
Interfacing			
Max. number of serial interface according to NMEA 0183 (IEC 61162-1/-2)	10	8	N/A
Max. number of serial interface according to NMEA 2000 CAN Bus (IEC 61162-3)	N/A	0	N/A
Max. number of analogue interfaces	1	0	N/A
Special interface for gyro compasses	Y	Radar PC	N/A
Possibility of slave displays with/without own user interface	N/A	<input type="checkbox"/>	N/A
Support			
Documentation in local language	Y	N, GB	N/A
Provision of 7/24 chart data service on request	<input type="checkbox"/>	N	N/A
Remote maintenance via wireless communication	N/A	N	N/A
Device dependent ECDIS/ECS training	Y	N	N/A
Special remarks / functions not listed above	<input type="checkbox"/>	<input type="checkbox"/>	C-Map Jeppesen SDK is used by more than 90 ECDIS/ECS manufacturers



N/A Not Applicable
 No information received

KELVIN HUGHES LTD	L-3 Communications Navigation AS	NavSim Technology Inc.	Offshore Systems Ltd.
Manta ECDIS	NaviNet 3000 ECDIS	BoatCruiser 2.0, SailCruiser, NavCruiser PRO	ECPINS
<input type="checkbox"/>	N/A	<input type="checkbox"/>	<input type="checkbox"/>
2005	15-5-2007	<input type="checkbox"/>	27-8-2007
Y	N/A	Innovative Marine Navigation Software compliant with NMEA 0183 devices	13)
Y	Y		Different configurations based on customer requirements
MS Windows Console/Stand Alone/Desk Top	MS Windows XP HS-201	MS Windows 98 and up 9)	MS Windows XP COTS console or modular scalable hardware solutions
Y	Y	10)	Route Planning, Route Monitoring, ARPA & AIS display, AIS MKD, etc
N	N	11)	N/A
Y	Y	Ready for Adaptation, used for customized applications	Y, different training levels.
Y	ENC, SENC (CM-ENC), ARCS	NOAA ENC S-57, BSB, QV, SoftChart, E-Topo	14)
Y	CM93, NaviNet	C-Map MAX, MAX Pro, Maptech, NDI Digital Ocean	C-Map CM93, OSL NTX
Y	Y	<input type="checkbox"/>	Y
Y	Y	Y	Y
Y	Y	Y	Y
Y	Not tested yet	<input type="checkbox"/>	Y
Y	Y	<input type="checkbox"/>	Not yet tested
Y	Not tested yet	Y	Y
NA	N/A	<input type="checkbox"/>	Y, data dictionary; symbology standard ECDIS
Y	N/A	Y	Y
UK / BSH	6)	<input type="checkbox"/>	Type approved as ECDIS, ECS, AIS MKD and combined ECDIS/S-VDR by BSH 2002-200
Y	Y	Y	Y
Y	Y	N	RIBNET or other manufacturers radar cards
Y	Y, via a network-based ARPA radar display in same computer	<input type="checkbox"/>	N
Y	Y	Y	Y
Y	N	Much more	15)
Y	7)	Y	Both single and double headed ECDIS solutions.
Y	Y	Y	N
Y	Y	Y	N
N/A	Mercator	Y, any projection that the chart is created for	Equidistant Cylindrical, Polar Stereographic
Y	N	Y, also North Up, Magnetic North Up, Course Up	Y
Y	Y, relative motion, but no fix to radar/AIS targets	Y	Y
<input type="checkbox"/>	N	Y	N/A
Y	Y	Y	N/A
Y	Y	<input type="checkbox"/>	Y
<input type="checkbox"/>	Y	Y	16)
N	Y	Coming soon	N/A
Y	Y	Conning Position	N/A
Y	Y	www.navsim.com	Y
N	N	GB	GB
Y	Y	Y	A number of features incl. screen captures
<input type="checkbox"/>	Y	<input type="checkbox"/>	Y
128	Unlimited	No limit	32
2	None	N	N/A
64	Unlimited	N	6
Y	External converter	Y	Y
Y	Y	Y	Y
Y	N	GB	Y
Y	Y	Y, working hours	N/A
Y	Y	N	N/A
Y	Y	<input type="checkbox"/>	Full system maintainer training
<input type="checkbox"/>	11)	12)	17)



Product Survey

Manufacturer's Name	PC Maritime	Periskal Group Tresco cvba	QPS
Product Name	Navmaster ECDIS	Periskal Inland ECDIS	Qastor
Trade Name of OEMs	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Roll-out date of current version	2007	<input type="checkbox"/>	29-5-2007
Basics			
Software solution	Y	<input type="checkbox"/>	Y
Combined software/hardware solution	Y	Y	Various portable pilot positioning systems
Operating system	MS Windows 2000, XP	MS Windows XP	MS Windows XP, Vista
Console version and/or standard computer hardware	Both options	<input type="checkbox"/>	Standard computer hardware, laptops
Basic features			
Functions designed for onboard use of SOLAS vessels	Y	N	19)
Functions designed for leisure market	Y, in different version	N	N/A
Derivatives available for shore based use	Y, training version available, and office management version available	Y	Y
Supp. off. data formats (e.g. ENC, SENC, ARCS, BSB)	All of these	ENC, SENC	S-57, SENC
Supp. priv. data formats (e.g. CM93, TRANSAS TX90)	CM93	Designed for Inland Vessels	CM93, DXF
Compliance and approvals			
IMO Res A.817(19) ECDIS Performance Standards	Y	Y	Almost all items save items 9.2, 9.4, 10.4.4, 10.4.5, 10.5.9, 14
IHO S57, Ed. 3.1.1 (ECDIS Data format)	Y	Y	Y
IHO S52, App. 2, Ed. 4.2 (ECDIS Colours & Symbols)	Y	Y	Y
IHO S52, App. 2, Annex A presentation Library 3.3	Y	Y	Y
Resolution MSC.232(82) (Revised performance standards for ECDIS)	Y	Y	Y, except when use of a system to a fixed mounted location is required
IEC 61174, Ed. 2 ECDIS test requirements	Y	Y	Y, except when use of a system to a fixed mounted location is required
Resolution MSC.191(79) (New performance standard for presentation)	Y	Y	Y, except when use of a system to a fixed mounted location is required
Inland ECDIS Standard of CCNR	N	Y	Y
RTCM ECS software specification	N	N	Y
Type approval (which standard(s)/by whom/when)	DNV Aug 2005, GL March 2007	Type Approved Inland ECDIS, Fachstelle für Verkehrstechniken Koblenz Germany	Not type approved
Integration			
Import of ARPA targets	Y	Y	N
Radar video overlay	Y	Y	N
Integrated tracking functions for radar targets based on radar overlay	N	N	N/A
Import of AIS targets	Y	Y	Y
MKD functions for connected AIS receiver	Y	Y	N
Integrated solution of double installation for common data management	Y	Y	N/A
Main component of an Integrated Navigation System with remote access to heading control	N	N	N/A
Main component of an Integrated Navigation System with remote access to track control	N	N	N/A
Added functions			
Selectable chart projections	N	N	N
Head up for vector data and/or raster data	Y	Y	Head up, course up, fixed orientation up for raster charts only
Relative motion/centred display of AIS and/or radar targets for vector data and/or raster data	Y	Y	All, only vector data
Integrated sailing directions database (including photographs)	N	N	N
Trial manoeuvre mode for tracked targets and own ship behaviour and/or simulation	Y	N	N
Extended detection of charted and dynamic hazards to navigation	Y	Y	<input type="checkbox"/>
Tidal height / Tidal current calculations/overlay	Y	Y	Manual, external tide, ATT tables predicted tide
Weather overlay	N	Y	N
Conning display	N	Y	<input type="checkbox"/>
Online help functions	Y	N	N
User interface in local languages	N	18)	GB
Print functions for chart images, content of chart database, waypoint list	Y	Y	N
Print functions of ISM-required route planning documents	Y	N	N
Interfacing			
Max. number of serial interface according to NMEA 0183 (IEC 61162-1/-2)	Y	10	Limited by hardware and operating system only
Max. number of serial interface according to NMEA 2000 CAN Bus (IEC 61162-3)	N	0	Limited by hardware and operating system only
Max. number of analogue interfaces	Y	<input type="checkbox"/>	N/A
Special interface for gyro compasses	Y	Y	N/A
Possibility of slave displays with/without own user interface	Y	Y	Docking data can be displayed on slave PDA
Support			
Documentation in local language	N	Y	English
Provision of 24/7 chart data service on request	Y	Y	N/A
Remote maintenance via wireless communication	Y	Y	N
Device dependent ECDIS/ECS training	Y	Y	Locally or on site
Special remarks / functions not listed above	<input type="checkbox"/>	<input type="checkbox"/>	20)



N/A Not Applicable
 No information received

SevenCs GmbH & Co ORCA Master	T-Kartor Sweden AB Det Levende Søkort (The Living Chart)	Transas Ltd. Navi-Sailor 4000 ECDIS	TRESCO Engineering byba NAVICART ECDIS or TRESCO ECDIS (type approved) ALPHACHART ECDIS
N/A	N/A	N/A	<input type="checkbox"/>
31-8-2007	May 2007	June 2007	<input type="checkbox"/>
Y	Y	N/A as ECDIS (Y for ECS)	Y
N	N/A	Y	Hardware delivered by Alphanon Marine Rotterdam
MS Windows 2000, XP Standard computer hardware	MS Windows 2000, XP Standard computer	MS Windows XP (SP2) With and without console but with Transas dedicated computer, display and keyboard	MS Windows 2000, XP and Vista Standard computer hardware
Y	N/A	Y	Y
N	Y	Development on request	N
Y	N/A	Yes	Y
All mentioned, plus DNC, VPF	N/A	Y	Primar ENC, Ic-Enc ENC, UKHO ARCS and MapTech BSB
N	N/A	Y	TRESCO SENC and CMAP CM/93-3
Y	N/A	Y	<input type="checkbox"/>
Y	N/A	Y	<input type="checkbox"/>
Y	N/A	Y	<input type="checkbox"/>
N	N/A	Y	<input type="checkbox"/>
Y	N/A	Y	<input type="checkbox"/>
Y	N/A	N/A, present in future plans	<input type="checkbox"/>
Y	N/A	N/A	<input type="checkbox"/>
Y	N/A	N/A	<input type="checkbox"/>
Approval from BSH	N/A; Compliant with DK and SE INT I respectively	Type approved by DNV, June 2007	Bundesamt für Seeschifffahrt und Hydrographie / on 11 november 2004
Y	N/A	Y	Y
N	N/A	Y	Y
Y	N/A	Y	N
Y	N/A	Y	Y
N	N/A	Y	Display: Y; Keyboard N
N/A optional use of data via a network	N/A	Y	Y, required for ECDIS certificate
N	N/A	N/A	Y, with Alphanon concept from Alphanon marine
N	N/A	N/A, planned for Transas INS (NS4000 as main component)	N
Y	N/A	Only Mercator projection	Mercator for vector charts, all other for raster data
Y, for raster data	N/A	Y	Y (vector), N (raster)
Y	N/A	Y	Y
Y	Y	Y	Y
N	N/A	Y	N (in standard ECDIS)
Y	N/A	Y	Y, compliant with S-57
Y	N/A	Y	N
Y	N/A	Y	N
Y	N/A	Yes, if ECDIS used as multifunctional display	Y
N	Y	N/A	Y
N	DK, S, GB	Development on request	GB, F, D, NL
Y	Y	Y	Y
N	N/A	Y	Y
6	4	Up to 16 COM ports for sensors con- nection)	8, expandable to 16, 24, etc.
0	N/A	N/A (2 ports planned)	0
0	N/A	Up to 16	0
N	N/A	22)	Y, connection with onboard alarm console
N	Y, without own user interface	Y	Y
English	N/A	On request	GB, F, NL
Y	N/A	Y	N
N	N/A	N/A	Y
Y	N/A	Y	<input type="checkbox"/>
Accepts WMS (Web Map Service) protocol	21)	<input type="checkbox"/>	Several chart overlays possible: radar-over- lay, survey/dredging overlay, users' DXF/ DWG overlay



Manufacturer's Name	TRESCO Engineering bvba
Product Name	NAVICHART Inland ECDIS or TRESCO Navigis
Trade Name of OEMs	ALPHACHART River
Roll-out date of current version	<input type="checkbox"/>
Basics	
Software solution	Y
Combined software/hardware solution	Software-only (no approved hardware required for European river use)
Operating system	MS Windows 2000, XP and Vista
Console version and/or standard computer hardware	Standard computer hardware
Basic features	
Functions designed for onboard use of SOLAS vessels	N
Functions designed for leisure market	Y
Derivatives available for shore based use	Y: AIS, Trace & Tracking, Route planning...
Supp. off. data formats (e.g. ENC, SENC, ARCS, BSB)	Primar ENC, Ic-Enc ENC, UKHO ARCS and MapTech BSB
Supp. priv. data formats (e.g. CM93, TRANSAT X90)	TRESCO SENC and CMAP CM/93-3
Compliance and approvals	
IMO Res A.817(19) ECDIS Performance Standards	<input type="checkbox"/>
IHO S57, Ed. 3.1.1 (ECDIS Data format)	<input type="checkbox"/>
IHO S52, App. 2, Ed. 4.2 (ECDIS Colours & Symbols)	<input type="checkbox"/>
IHO S52, App. 2, Annex A presentation Library 3.3	<input type="checkbox"/>
Resolution MSC.232(82) (Revised performance standards for ECDIS)	<input type="checkbox"/>
IEC 61174, Ed. 2 ECDIS test requirements	N
Resolution MSC.191(79) (New performance standard for presentation)	N
Inland ECDIS Standard of CCNR	N
RTCM ECS software specification	N
Type approval (which standard(s)/by whom/when)	Type Approval by Wasser-Schiffahrt Amt in Mainz
Integration	
Import of ARPA targets	Optional
Radar video overlay	Optional
Integrated tracking functions for radar targets based on radar overlay	N
Import of AIS targets	Optional
MKD functions for connected AIS receiver	Display Y, Keyboard N
Integrated solution of double installation for common data management	Y
Main component of an Integrated Navigation System with remote access to heading control	N/A for river use
Main component of an Integrated Navigation System with remote access to track control	N
Added functions	
Selectable chart projections	Marcator for vector charts, all other for raster data
Head up for vector data and/or raster data	Y (vector), N (raster)
Relative motion/centred display of AIS and/or radar targets for vector data and/or raster data	Y
Integrated sailing directions database (including photographs)	Y
Trial manoeuvre mode for tracked targets and own ship behaviour and/or simulation	N (in standard ECDIS)
Extended detection of charted and dynamic hazards to navigation	Y, compliant with S-58
Tidal height / Tidal current calculations/overlay	N
Weather overlay	N
Conning display	Y
Online help functions	
User interface in local languages	GB, F, D, NL
Print functions for chart images, content of chart database, waypoint list	Y
Print functions of ISM-required route planning documents	Y
Interfacing	
Max. number of serial interface according to NMEA 0183 (IEC 61162-1/-2)	4
Max. number of serial interface according to NMEA 2000 CAN Bus (IEC 61162-3)	0
Max. number of analogue interfaces	0
Special interface for gyro compasses	N
Possibility of slave displays with/without own user interface	Y
Support	
Documentation in local language	English, French, Dutch
Provision of 7/24 chart data service on request	N
Remote maintenance via wireless communication	N
Device dependent ECDIS/ECS training	Y
Special remarks / functions not listed above	Several chart overlays possible: radar-overlay, survey/dredging overlay, users' DXF/DWG overlay

NOTES

- All IMO requirements, Real Time Update Service, Notice to Mariners, AIS, Route planning etc.
- Yes – through COM interface 3rd party control is possible (database integration for fleet management, route planning and military exercise planning)
- ENC, ARCS, BSB, NTF, Shape, GeoTiff, VPF (DNC), import general purpose images, others on request
- Tides and tidal route making, cpa/tpca for AIS and ARPA, GRIB weather display, overlay facility
- Fleet tracking by AIS and ARPA, Passenger information systems for cruise ships
- In accordance with Council Directive 96/98/EC, as amended by Commission Directive: SOLAS 74 Convention, as amended (last amendment), Regulations V/19.2.1.4 & V/19.2.1.5 - IMO Resolution MSC.97(73) 13.8 [(2000 HSC Code) - IMO Resolution A.817(19), as amended by IMO Res. MSC 64(67) Annex 5 and by IMO Res. MSC.86(70) Annex 4 - IMO Resolution A694(17) - IEC 61174 (2002) - IEC 61162 - IEC 60945 (1996-11); by Bureau Veritas.
- Yes, multiple computers can be connected where each contain a full set of data. However there is only need to install on one computer, then all data will be synchronized automatically with the rest. Multiple redundancy
- Multi-functional display with ECDIS, Conning, Radar, Sonar, Integrated Automation System; Equal SW in all computers, any computer can be used as backup for each other; High redundancy, single failure tolerant; Flexible keyboard that can operate on multiple displays.
- 128 MB RAM, 500MHz CPU, 100 MB free HD space (500 MB recommended), 16 bit color, 800 x 600 display
- Quilted S-57/BSB charts, voyage planning, tracking, connecting to all NMEA-compliant instruments, recording all navigation data
- Customizable displays, multiple marine instrument support, fuel consumption, user friendly
- Playback mode (Time Machine); Split screen; Polar plots/support for sailboats; Guardian module for C-Map MAX Pro; Optional weather (NowCasting); Parallel Index Line, DRBL; Real-Time chart updates; R-T shoals on St. Lawrence; Support for High-Density Bottom charts; Satellite pictures, oblique pictures; Fuel consumption layout; Zones, instantaneous routes, markers, annotations
- ECIPNS can incorporate information from a wide variety of sensors and displays the information in a user-friendly format. A customizable menu allows to extract or add information.
- S57, IMO Approved S63 (encrypted S57), UKHO ARCS, BSB, Seafarer, NZ Mariner and military formats
- Supports SAAB R4 AIS receiver through a fully functional type-approved software MKD
- Display: Nobeltec Tides and Currents; height of tide data (St. Lawrence Seaway) where available.
- ECIPNS meets and exceeds the requirements laid down by the IMO. Enhanced visual and radar fixing; Multiple Grid Reference Systems; Specialised "Drawing tool-kit"; Auto-contour generation; Additional Military Layers; Waterspace Management Areas and Moving Havens; Advanced AIS interfacing with other databases such as Lloyds Fairplay
- Dutch, French, German, Russian, Polish, Hungarian, Slovak, Serbian, Croatian, Rumanian, Bulgarian, English
- Designed in compliance with IHO, IMO and IEC standards; as the software tools for portable pilot units
- QASTOR is connected to an independent, portable positioning system by the pilots and used as a navigation tool on deep draught vessels
- GPS connection via USB and serial connection. Functionality for user to create own themes with text descriptions, images, URL. Themes can be exchanged with other users of the product
- Yes, many options available "on shelf" and special interfaces can be made on request

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N/A Not Applicable
 No information received