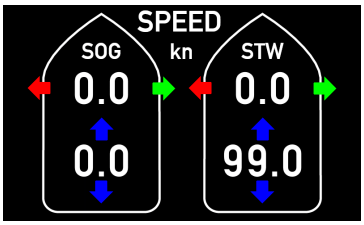
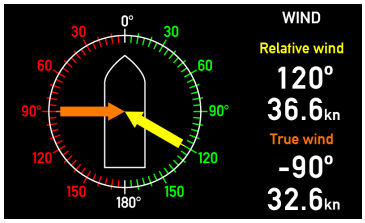
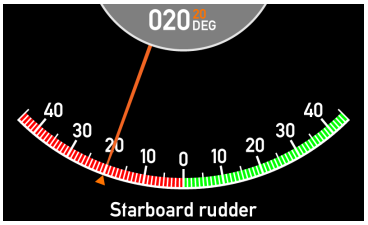
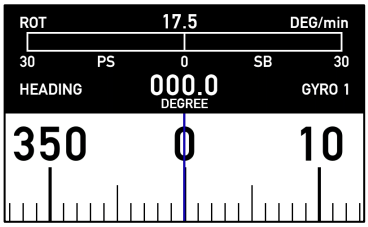
XDi-Standard virtual indicator libraries

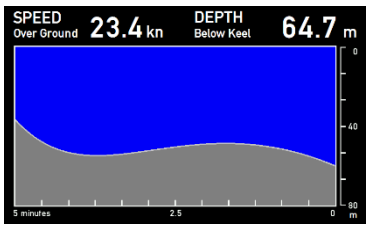
4189350067C

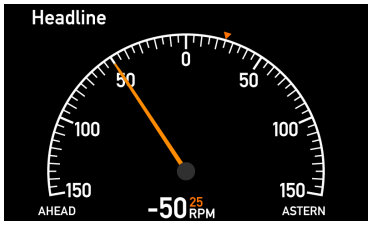


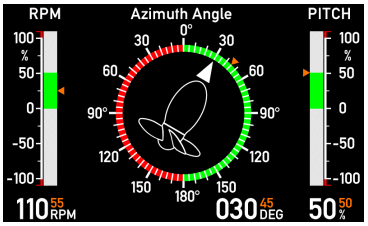


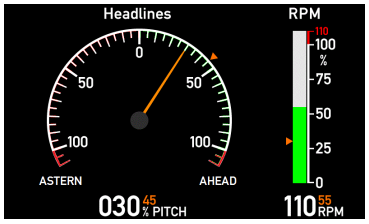


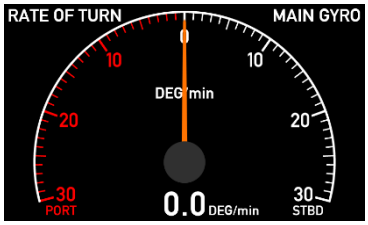


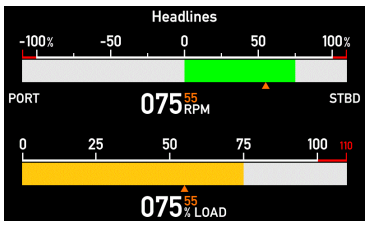












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DEIF A/S

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Introduction

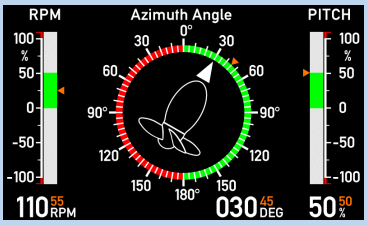
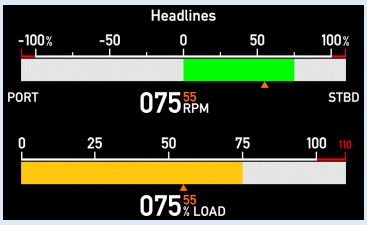
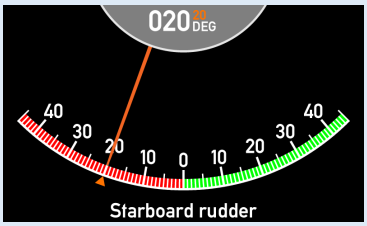
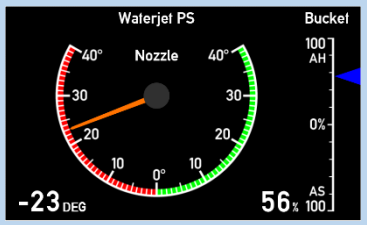
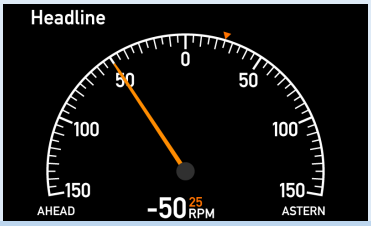
The DEIF standard XDi libraries offer a collection of virtual indicators (VI) for selected applications. All relevant indicators are designed and approved according to the Marine Equipment Directive (MED) and are therefore wheel-marked.

Standard library overview

The following libraries are available for XDi 96, XDi 144 and XDi 192 and grouped under a library owner. Please note that new standard libraries for other types of applications will be added over time.

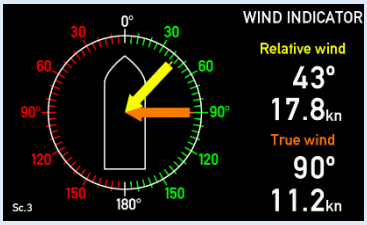
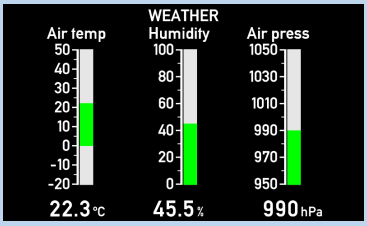
Library owner 1: DEIF standard propulsion indicator libraries

Single screen indicators with MED (Wheel-mark) approval when appropriate.

Indicator type	Data inputs	Library product class	Library number	Example
Azimuth	1-2	Dual (D)	001	
	3 or more	Multi (M)	001	
Tunnel thruster	1-2	Dual (D)	011	
	3 or more	Multi (M)	011	
Main propulsion	1-2	Dual (D)	021	
	3 or more	Multi (M)	021	
Rudder angle	1-2	Dual (D)	031	
	3 or more	Not applicable	-	
Waterjet	1-2	Dual (D)	032	
	3 or more	Not applicable	-	
RPM	1-2	Dual (D)	041, 042	
	3 or more	Not applicable	-	

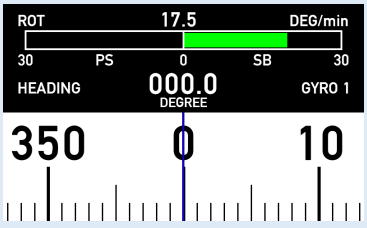
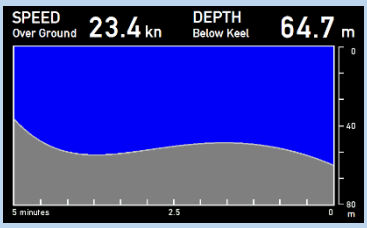
Library owner 2: DEIF standard Wind/Weather indicator libraries.

XDi-N Virtual indicators with up to 4 screens.

Indicator type	Data inputs	Library product class	Library number	Example
Wind	3 or more	Navigation	001	
Weather	3 or more	Navigation	011	

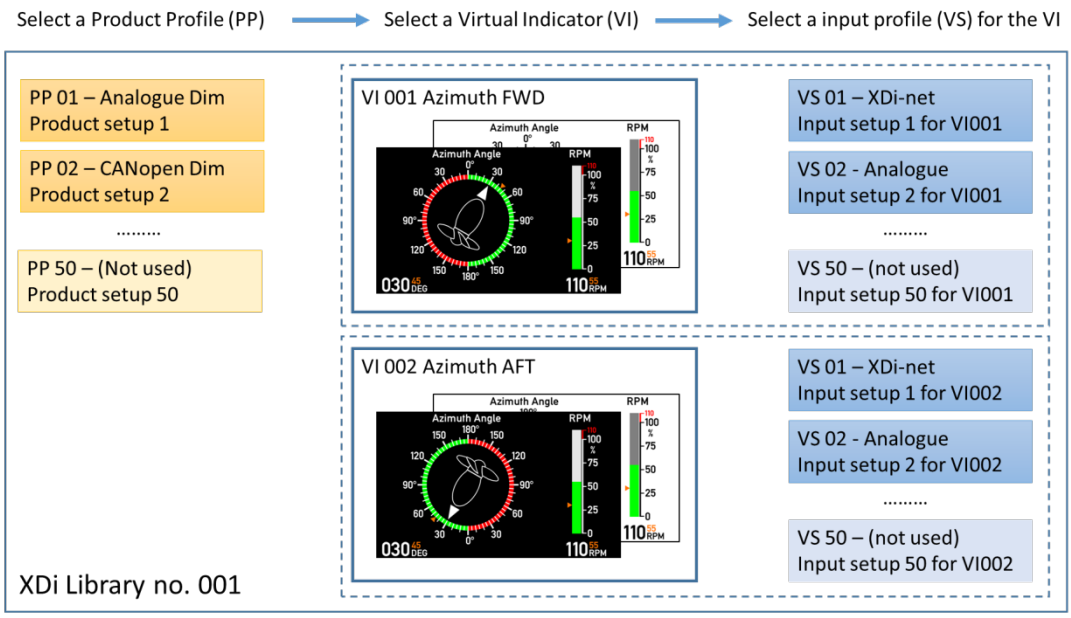
Library owner 3: DEIF standard Navigation indicator libraries.

XDi-N Virtual indicators with up to 4 screens. MED (Wheel-marked) when appropriate.

Indicator type	Data inputs	Library product class	Library number	Example
Heading	3 or more	Navigation	001	
Speed and Depth	3 or more	Navigation	002	
ROT	1-2	Dual	002	

XDi library structure

The DEIF standard libraries contain a selection of application-specific virtual indicators (VI), each with a selection of input setup profiles (VS) and product profiles (PP). The profiles contain the default input setup parameters for different input types (for example CANopen, XDi-net, analogue, digital RPM or NMEA).
The first time you power up the XDi, a wizard will automatically guide you through the selection:



A library may contain up to 50 PPs and 100 VIs, each with up to 50 VS profiles.

Lib. owner 1: Standard product profiles (PP) for Propulsion indicators

DEIF standard propulsion libraries contain the same collection of product profiles (PPs), where the two CAN buses are pre-configured to support XDi-net, and where different dimmer input configurations are made available for easy selection.

Prod. profile / Data input	PP 01	PP 02	PP 03	PP 04	PP 05	PP 06	Can be changed from XDi menu
Name	XDi-net dim.	Analogue dim 1	CANopen dim.	Digital dim.	Local analogue	ECR fixed dim.	
Dimmer group:	Dimmer group 1	Dimmer group 1	Dimmer group 1	Dimmer group 1	Local	Local	No. and name can be changed.
Dimmer source:	XDi-net and from front ***)	Analogue, pot-meter 0 to Vref (max. 30V) *) Slot 1, dim. Shared on XDi-net	TPDO COBID: 0x1A0 – byte 0 (see chapter CANopen TPDOs)	Digital dimmer input, up down. **) Slot 1, Di1&2 Shared on XDi-net	Analogue, pot-meter 0 to Vref (max. 30V)*) Slot 1, dim.	Fixed dimmer level 75 %	You can shift from defined source to XDi-net and back. Dimmer source parameters can be adjusted/changed.
Day/night colour:	Auto Day/night	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Double push on S1i1 & 2	Auto Day/night Shift at 70 %	Auto Day/night Shift at 20 %	Can be changed, incl. dimmer pre-set parameters.
Colour select source:	None	None	None	DX digital I/O	None	None	Should not be changed.

*) AX1 extension module is required. **) DX1 extension module is required.

***) 4 button option and XDi library must be version 2000 or higher (Platform 2).

Lib. owner 2: Standard Product Profiles (PP) for Wind/Weather indicators

DEIF standard wind and weather libraries contain a collection of product profiles (PPs), where the two CAN buses are pre-configured to support XDi-net, and where different dimmer input configurations are made available for easy selection. The product profile also contains support for the NMEA0183 sentences that is needed for all the indicators in this library.

Prod. profile / Data input	PP 01	PP 02	PP 03	PP 04	PP 05	Can be changed from XDi menu
Name	Front dimmer	XDi-net	Front dimmer	Analogue	NMEA	
Dimmer group:	Dimmer group 1	Dimmer group 1	Local	Dimmer gr. 1	Dimmer group 1	No. and name can be changed.
Dimmer source:	Front buttons / XDi-net	XDi-net	Front buttons	Analogue, Dimmer potentiometer (+ term 3, - term 1, wiper term 2)	NMEA/XDi-net	You can shift from defined source to XDi-net and back. Dimmer source parameters can be adjusted/changed.
Day/night colour:	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Auto Day/night	Auto Day/night Shift	Can be changed, incl. dimmer level pre-set parameters.
Colour select source:	None	None	None	None	None	Should not be changed.

NMEA0183 Support for all PP's in the Wind library

Dimmer and Day/Night shift (Gr.1-6): DDC (in PP's with NMEA dimming)

Wind: MWV, MWD,
Speed: VHW, VBW, VTG, RMC,
Heading: HMR, THS, HTD, VHW, HDT, HDG,
MagVar; HMR, RMC, HDG

XDi shares selected NMEA data on XDi-net

NMEA0183 Support in all PP's in the Weather library

Dimmer and Day/Night shift (Gr.1-6): DDC (in PP's with NMEA dimming)

Wind: MWV, MWD,
Speed: VHW, VBW, VTG, RMC,
Heading: HMR, THS, HTD, VHW, HDT, HDG,
MagVar; HMR, RMC, HDG
Weather: XDR

XDi shares selected NMEA data on XDi-net.

Note: The number of supported NMEA sentences may be increased if new virtual indicators require new data types to be received via NMEA.

Lib. owner 3: Standard Product Profiles (PP) for Navigation indicators

DEIF standard wind and weather libraries contain a collection of product profiles (PPs), where the two CAN buses are pre-configured to support XDi-net, and where different dimmer input configurations are made available for easy selection. The product profile also contains support for the NMEA0183 sentences that is needed for all the indicators in this library.

Prod. profile / Data input	PP 01	PP 02	PP 03	PP 04	PP 05	Can be changed from XDi menu
Name	Front dimmer	Analogue	NMEA Gr. 1	NMEA Gr. 2	NMEA Gr. 3	
Dimmer group:	Dimmer group 1	Dimmer group 1	Dimmer group 1	Dimmer group 2	Dimmer group 3	No. and name can be changed.
Dimmer source:	Front buttons / XDi-net	Potentiometer from Vref (term.3) to 0V (term.1) and wiper to term. 2.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	You can shift from defined source to XDi-net and back. Dimmer source parameters can be adjusted/changed.
Day/night colour:	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Auto Day/night Shift at 70 %	Can be changed, incl. dimmer level pre-set parameters.
Colour select source:	None	None	None	None	None	Should not be changed.

Prod. profile / Data input	PP 06	PP 07	PP 08	PP 09	PP 10	Can be changed from XDi menu
Name	NMEA Gr. 4	NMEA Gr. 1DC	NMEA Gr. 2DC	NMEA Gr. 3DC	NMEA Gr. 4DC	DC = Dim + Colour via NMEA
Dimmer group:	Dimmer group 4 (to 6)	Dimmer group 1	Dimmer group 2	Dimmer group 3	Dimmer group 4 (to 6)	No. and name can be changed.
Dimmer source:	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	NX2 module required for NMEA diming. Without NX2 dimming is via XDi-net.	You can shift from defined source to XDi-net and back. Dimmer source parameters can be adjusted/changed.
Day/night colour:	Auto Day/night Shift at 70 %	Separate Day/night Control	Separate Day/night Control	Separate Day/night Control	Separate Day/night Control	Can be changed, incl. dimmer level pre-set parameters.
Colour select source:	None	NMEA or XDi-net	NMEA or XDi-net	NMEA or XDi-net	NMEA or XDi-net	Should not be changed.

NMEA0183 Support in all PP's in the Heading library

Dimmer and Day/Night colour: DDC (in PP's with NMEA dimming)

Heading: HDG, HMR, VHW, HTD, HMR, VHW, HTD, THS and HDT.
MagVar; HMR, RMC and HDG
Rate of turn: ROT
Default: COM1 or 3 at 4.8 kbps

XDi shares selected NMEA data on XDi-net.

NMEA0183 Support in all PP's in the Speed & Depth library

Dimmer and Day/Night colour: DDC (in PP's with NMEA dimming)

STW: VHW and VBW
SOG: VTG, VBW, RMC
Depth: DBT, DPT
Default: COM1 or 3 at 4.8 kbps

XDi shares selected NMEA data on XDi-net.

Note: The number of supported NMEA sentences may be increased if new virtual indicators require new data types to be received via NMEA.

More information about dimming

Description of how to use the different product profiles to select different dimmer inputs and to perform system dimmer control is found in the XDi designer's handbook 4189350049.
You will also find some system application examples in the handbook.

Standard input types (VS)

The VS profile contains a full set of default input configurations for the virtual indicator it belongs to.
The most commonly used input configurations for a given indicator type are made available in the standard XDi libraries, and new profiles will be added over time.

Standard input types supported in standard XDi libraries

Type	Mode	Description
CANopen *	XDi-net	DEIF plug & play protocol for easy system integration is active in DEIF standard libraries. Data can be broadcast using XDi-net format, even if a TPDO or RPDO is defined for the input.
	TPDO/RPDO	Default TPDOs are defined in the detailed standard library specification document. (Can be changed from the XDi installation menu).
	DAM-MPDO	Each data type is sent directly addressed to each XDi indicator on the CAN bus, making system setup complicated, and the same data may be sent several times, which requires more band width. (Default OFF).
Analogue (AX1 required)	CURRENT	Default 4 to 20 mA, can be adjusted in the range ±20 mA or changed to voltage from the XDi menu.
	VOLTAGE	Voltage input type can be selected from the XDi menu and can be adjusted in the range ±30 V.
	SIN/COS	Use both inputs (1 and 2) on the AX1 extension module. Nominal ±10 V (the XDi auto-adjusts within ±5 to 15 V). Only used for Azimuth in the standard libraries. In XDi libraries using software platform 2 (version 2000 or higher) this input can also be configured to 4-20 mA SIN/COS input. (Input zero-offset of 12000 µA must be inserted)
Digital (DX1 required)	RPM	One RPM pickup input used to calculate RPM (single direction). Default: 0 to 24 V pulses. Parameters can be adjusted from the XDi menu.
	RPM ±	Two RPM pickup inputs used to calculate bidirectional RPM (direction forward (+)/reverse (-)). Default: 0 to 24 V pulses. Parameters can be adjusted from the XDi menu.
NMEA (NX2 required)	NMEA0183**	Supported NMEA sentences are defined in the selected PP. NMEA data should be available during installation to allow XDi to make a scanning of all NMEA inputs. Unique input sources will be automatically selected. If the scanning detects more than one input source for a given data type, the correct source must be manually selected.

*) See appendix 1 for information about the CAN TPDOs and object indexes used in the standard libraries.
**) NMEA0183 serial data support class approved according to IEC61162-1 and IEC61162-2

Description of how to use the standard virtual indicators and their setup profiles in different system applications is found in the XDi designer's handbook 4189350049.

Library identification

The XDi libraries are identified by a unique name, for example:

XDi 144 M 000001 011 r2458 v0001

Where:	**XDi 144**	is the product size
	M	is the performance class (M = Multi, D = Dual or N = Navigation)
	000001	is the library owner ID, in this case “DEIF standard”
	011	is the library number
	r2458	is a revision number only relevant for draft libraries
	v0001	is the library version number

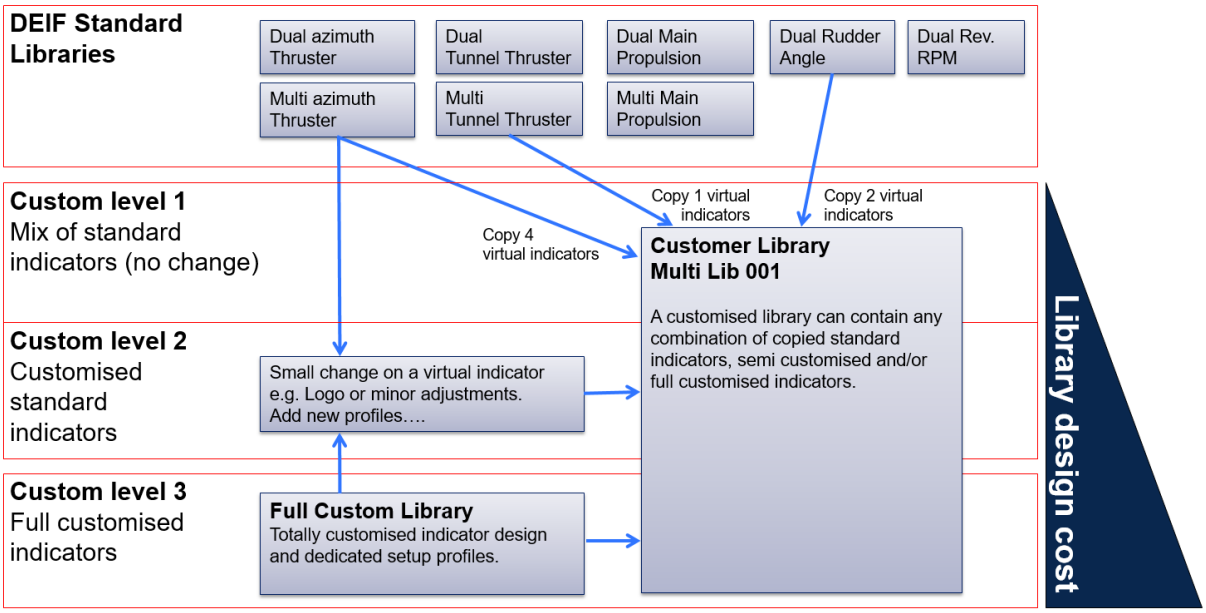
The version number is increased by one every time a new library version is released.

Libraries for XDi 144 will also automatically be made available for XDi 192 and the other way around. The XDi 96 requires a separate library due to a different display format.

To order an XDi with a preinstalled library, please state the following: XDi size, performance class, library owner ID and library number. The revision and version will always be the latest released version.

Standard or customised library

All XDi standard libraries are free of charge, and you can always get a new XDi library package to install on your XDi.
You can even have different standard libraries stored on your laptop and install the right one that contains the virtual indicators which fits the actual installation.



Custom level 1: If you often use the same combination of standard indicators, for instance from the azimuth, tunnel thruster and rudder libraries, it may well prove beneficial for you to have your own customised library created which contains your preferred indicators (copied from standard libraries). DEIF offers to compile and pre-install such a custom library in your indicators for a small one-off fee.

Custom level 2: To match your system needs and reduce setup time during installation, it may be cost-effective for you to have some of the standard indicators or default setup parameters slightly changed. The fee is slightly higher than for customisation level 1.

Custom level 3: Full customisation is for those requiring unique designs in line with their company profile. DEIF's knowledge and experience in this field secures optimised graphical designs and system integration for the entire custom library. Please contact DEIF for a quotation based on your requirements.

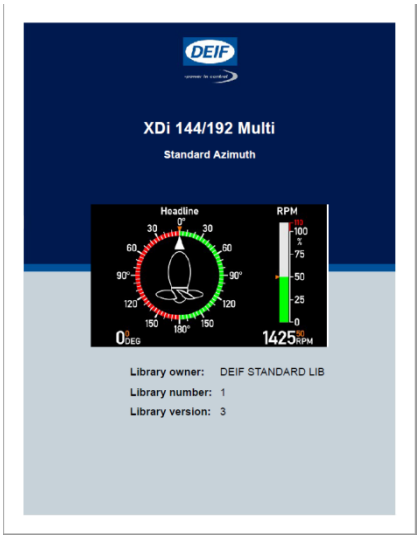
In general, customised libraries make installation easy and limits or eliminates parameter adjustment via the XDi menu.

XDi library upgrade

XDi is equipped with a USB service port that allows easy library and software upgrade from a PC or laptop. Just download the XDi upgrade tool and follow the instructions.
Using the upgrade tool you can easily change the functions of an XDi, by simply uploading a new library. If you want to have one or more of the standard libraries downloaded to your PC or laptop, please contact DEIF support to get access to the free library packages you need on the FTP server.

Library documentation

The full content of each standard library is documented in a separate pdf report that will automatically be updated every time a new XDi library is released.
In this document you will find: description of available Product Profiles (PP), picture and description of all Virtual Indicators (VI) and their respective setup profiles (VS).



The pdf report for each library can be downloaded from the FTP server: ftp://support.deif.com
Login name: deif_xdi
Password: rFCy1CMM

The XDi standard libraries will continually expand with the addition of new indicators and setup profiles.
So please check the FTP if you have a need for a new XDi indicator. If the indicator is not already there, we might be working on implementing it or we may offer to add it free of charge, if there is a general demand for it.

Upgrade or change library in your XDi

On the FTP server you will also be able to download all the standard XDi library packages, so you can quite easily change the function of your XDi indicator to function in another application then what it was purchased for.
In the top model, XDi-Nav, you can install either a Dual, Multi or Navigation library. This makes it a very flexible service unit.
In the XDi-Multi you can install a Dual or a Multi library. Where the XDi-Dual only accepts a dual type library.

Relevant XDi documentation

To be able to utilise the XDi series to the most, please also consult the following documents available on the XDi product pages on www.deif.com:

- XDi data sheet 4921250067
- XDI designers handbook 4189350049
- XDi-net CANopen reference manual 4189350066
- Wind sensor application notes with XDi-N 4189350080
- Application notes, heading indicator systems using XDi-N indicators 4189350081

On the same page you will also find all relevant XDi approval certificates.

To get the latest documentation you can access deif.com via the following links:
Propulsion: https://www.deif.com/documentation/xdi
Wind and weather: https://www.deif.com/documentation/xdi-n-wind
Navigation: https://www.deif.com/documentation/xdi-n-navigation

Appendix 1 – CANopen protocol

This appendix defines the CANopen TPDOs and XDi-net indexes used in the CAN communication between data sources and the XDi units on the CAN bus.
The below table shows the default CANopen TPDOs used in the relevant product and VI-setup profiles in the DEIF standard libraries.
The default COBID of each TPDO and the input scaling parameters can be changed from the XDi installation menu to fit your application.

When data sharing on XDi-net is active, data are broadcasted directly to the object indexes listed below, without the need for a TPDO. See the XDi-net/CANopen reference manual for details.
XDi-net is a full plug and play concept and does not need any advanced setup or data mapping.

Input data

Data type	COBID (TPDOs)	Mapped into byte	Data type	Data value and resolution	XDi–net object index-sub. index	PDO converter	Note
Azimuth angle actual (relative)	0x181	0 1	I16	±32 767 relative	0x3001-02	0x2501	The TPDO input range represents ±180.0° and is converted to ±1800 in XDi-net object index.
Rudder angle actual (relative)	0x181	0 1	I16	±32 767 relative	0x3001-02	0x2501	The TPDO input range represents ±180.0° and is converted to ±1800 in XDi-net object index.
Rudder/Azimuth output (Absolute)	0x18A	0 1	I16	±1800 Res. 0.1°	0x3001-02	Output	Used to convert TPDO form encoder to absolute output angle for XL sCAN.
Azimuth commanded	0x1A1	0 1	I16	±1800 Res. 0.1°	0x3001-07	0x2511	
Rudder angle comm.	0x1A1	0 1	I16	±1800 Res. 0.1°	0x3001-07	0x2511	
Pitch angle actual (relative)	0x182	0 1	I16	±32 767 relative	0x3021-02	0x2521	The TPDO input range represents ±180.0° and is converted to ±1800 in XDi-net object index.
Pitch angle actual (absolute)	0x182	0 1	I16	±1800 Res. 0.1°	0x3021-02	0x2521	

Data type	COBID (TPDOs)	Mapped into byte	Data type	Data value and resolution	XDi–net object index-sub. index	PDO converter	Note
Pitch % actual	0x182 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3031-02	0x2521	Calculated based on pitch angle (if no angle then actual is set equal to % value, f. ex. actual 1000 (100.0°) and 1000 (100.0 %)
Pitch angle comm.	0x3A1	0 1	I16	±1800 Res. 0.1°	0x3021-07	0x2531	Reserved for later use
Pitch % commanded	0x3A1 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3031-07	0x2531	Calculated based on pitch angle (if no angle then actual is set equal to % value, for ex. actual 1000 (100.0°) and 1000 (100.0 %)
(Reserved pitch % commanded)	(0x3A1)	(2 3)	I16	±1000 Res. 0.1 %	0x3031-07	(TBD)	Only used if % pitch comm. is sent separately
Prop. RPM actual	0x183	0 1	I16	±32767 Res. 0.1 RPM	0x3081-02	0x2581	
Prop. RPM % actual	0x183 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3091-02	0x2581	Calculated based on RPM (if no RPM then actual is set equal to % value, for ex. actual 1000 (100.0 RPM) and % 1000 (100.0 %)
Prop. thrust % actual	0x184	4 5	I16	±1000 Res. 0.1 %	0x30A1-02	0x25A1	Reserved for later use
Prop. power % actual	0x185	6 7	I16	±1000 Res. 0.1 %	0x30B1-02	0x25C1	Reserved for later use
Prop. power % actual	0x18C Calc.	-	I16	±1000 Res. 0.1 %	0x30B1-02	-	Calculated based on Prop. PWR in kW or MW and use 0x18C as input and

Data type	COBID (TPDOs)	Mapped into byte	Data type	Data value and resolution	XDi–net object index-sub. index	PDO converter	Note
							scale to %.
Prop. power kW or MW	0x18C	01	I16	±32765	0x30E1-02 0x30D1-02	0x25C1	kW (30E1) or MW (30D1) depends on destination index in the VS profile.
Prop. RPM comm.	0x2A1	0 1	I16	±32767 Res. 0.1 RPM	0x3081-07	0x2591	
Prop. RPM % comm.	0x2A1 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3091-07	0x2591	Calculated based on RPM (if no RPM then actual is set equal to % value, for ex. actual 1000 (100.0 RPM) and % 1000 (100.0 %)
(Reserved Prop. RPM % comm.)	(0x2A1)	(2 3)	I16			(TBD)	Only used if % RPM comm. is sent separately
Prop. thrust % comm.	0x2A1	4 5	I16	±1000 Res. 0.1 %	0x30A1-07	0x25B1	Reserved for later use
Prop. power % comm.	0x2A1	6 7	I16	±1000 Res. 0.1 %	0x30B1-07	0x25D1	Reserved for later use
Prop. load % actual	0x186	0 1	I16	±1000 Res. 0.1 %	0x30C1-02	0x25E1	
Prop. load % comm.	0x3A1	4 5	I16	±1000 Res. 0.1 %	0x30C1-07	0x25F1	
Engine RPM actual	0x187	0 1	I16	±32767 Res. 0.1 RPM	0x3201-02	0x2701	
Engine RPM % actual	0x187 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3211-02	0x2701	Calculated based on RPM (if no RPM then Actual is set equal to % value for ex. actual 1000 (100.0 RPM) and % 1000 (100.0%)
Engine RPM comm.	0x4A1	0 1	I16	±32767 Res. 0.1	0x3201-07	0x2711	

Data type	COBID (TPDOs)	Mapped into byte	Data type	Data value and resolution	XDi–net object index-sub. index	PDO converter	Note
				RPM			
Engine RPM % comm.	0x4A1 Calc.	0 1	I16	±1000 Res. 0.1 %	0x3211-07	0x2711	Calculated based on RPM (if no RPM then Actual is set equal to % value for ex. actual 1000 (100.0 RPM) and % 1000 (100.0%)
(Reserved Engine RPM % comm.)	(0x4A1)	(2 3)	I16	±1000 Res 0.1 %		(TBD)	Only used if % RPM comm. is sent separately
Waterjet Bucket	0x189	0 1	I16	±1000 Res 0.1 %	0x3701-02	0x2B01	Universal par. gr.0 instance 1 is used
ROT	0x18D	0 1	I16	±3000 Res 0.1 °/min	0x3AE1-02	0x2B01	

Dimmer data

Data type	COBID (TPDOs)	Mapped into byte	Data type	Data value and resolution	XDi –net object index-sub. index	PDO converter	Note
Dimmer level gr. 1	0x1A0	0	U8 (I8)	0 to 100 1 %	0x3501-02	0x2CE1	
Dimmer level gr. 2	0x1A0	1	U8 (I8)	0 to 100 1 %	0x3502-02	0x2CE2	
Dimmer level gr. 3	0x1A0	2	U8 (I8)	0 to 100 1 %	0x3503-02	0x2CE3	
Dimmer level gr. 4	0x1A0	3	U8 (I8)	0 to 100 1 %	0x3504-02	0x2CE4	
Dimmer level gr. 5	0x1A0	4	U8 (I8)	0 to 100 1 %	0x3505-02	0x2CE5	
Dimmer level gr. 6	0x1A0	5	U8 (I8)	0 to 100 1 %	0x3506-02	0x2CE6	
Dimmer level gr. 7	0x1A0	6	U8 (I8)	0 to 100 1 %	0x3507-02	0x2CE7	
Dimmer level gr. 8	0x1A0	7	U8 (I8)	0 to 100 1 %	0x3508-02	0x2CE8	
Dimmer level gr. 9	0x2A0	0	U8 (I8)	0 to 100 1 %	0x3509-02	0x2CE9	
Auto colour select is used in the released XDi standard libraries, the following are reserved.							
Colour shift gr. 1	0x3A0	0	U2	0=Day, 1=Night, 2=Dusk	0x3501-03	0x2CF1	Only the two least significant bits are used.
Colour shift gr. 2	0x3A0	1	U2	0=Day, 1=Night, 2=Dusk	0x3502-03	0x2CF2	2 LSB are the only bit used.
Colour shift gr. 3	0x3A0	2	U2	0=Day, 1=Night, 2=Dusk	0x3503-03	0x2CF3	2 LSB are the only bit used.
Colour shift gr. 4	0x3A0	3	U2	0=Day, 1=Night, 2=Dusk	0x3504-03	0x2CF4	2 LSB are the only bit used.
Colour shift gr. 5	0x3A0	4	U2	0=Day, 1=Night, 2=Dusk	0x3505-03	0x2CF5	2 LSB are the only bit used.
Colour shift gr. 6	0x3A0	5	U2	0=Day, 1=Night, 2=Dusk	0x3506-03	0x2CF6	2 LSB are the only bit used.
Colour shift gr. 7	0x3A0	6	U2	0=Day, 1=Night, 2=Dusk	0x3507-03	0x2CF7	2 LSB are the only bit used.
Colour shift gr. 8	0x3A0	7	U2	0=Day, 1=Night, 2=Dusk	0x3508-03	0x2CF8	2 LSB are the only bit used.
Colour shift gr. 9	0x4A0	0	U2	0=Day, 1=Night, 2=Dusk	0x3508-03	0x2CF9	2 LSB are the only bit used.

Node IDs related to the used TPDOs

Each CAN node has four TPDOs (TPDO1 to 4) and four RPDOs (RPDO1 to 4) assigned.
The TPDOs used as default input for the standard libraries are the ones assigned for CAN node with ID from 1 to 11 and 32-33, and if new CAN input data types are added later, the TPDOs assigned for node 12 to 40 will be used as default TPDOs.
Please see the XDi/CANopen reference manual for more detailed information about CANopen TPDOs and their COBIDs.

Actual data

Node ID 1: Azimuth/rudder transmitter (16 bit encoder, for example DEIF RTC 600 or RTC 300)
Node ID 2: Pitch angle transmitter (16 bit encoder, for example DEIF RTC 600 or RTC 300) also used for calculated % pitch
Node ID 3: Prop. RPM, RPM %
Node ID 4: Thrust %
Node ID 5: Power %
Node ID 6: Load %
Node ID 7: Engine RPM, RPM %
Node ID 10 (0x0A): Used for rudder/azimuth angle output
(Node ID 11(0x0B): Is reserved for pitch angle (or pitch %) output (for instance to be received by an XL indicator))
Node ID 12 (0x0C): Used for prop. power in kW or MW (set-point data can be mapped in this TPDO if needed)
Node ID 13 (0x0D): Used for heading and/or ROT

Commanded (set point data)

Node ID 33 (0x21): Commanded values for azimuth/rudder, pitch, propeller RPM, RPM %, thrust %, power %, load %, engine RPM, engine RPM %

Dimmer data

Node ID 32 (0x20): Dimmer group 1 to 8 and colour shift 1 to 8.

TPDO and XDi-net input switching

In all product profiles (PPs) in the standard libraries, sharing of variable data via the XDi-net protocol is by default activated. This means that even if a CAN TPDO is defined as the VI input in selected VI setup profile (VS), it is still possible to use either the specified TPDO or XDi-net for data transfer.
XDi will automatically shift between the two input types.
If you use VS02 that is pre-set to use TPDOs for all inputs, you can still decide to use XDi-net instead for some of the indications in the VI. This is often the case if a CAN angle encoder is used in a system where all other data is received from another XDi that is sharing data from its analogue (or digital) input module.

If the defined but unused TPDOs are not used for anything else on the CAN bus, it is not necessary to do anything.
If a defined but unused TPDO is used for something else on the CAN bus, you must disable the TPDO via the XDi installation menu.

Input data should not be sent in both a TPDO and on XDi-net at the same time.