



**XDi**

FLEXIBLE DISPLAY INDICATOR



# GAME CHANGER IN BRIDGE INSTRUMENTATION

## Taking your power control & monitoring solutions to a new level

A front-runner in marine bridge instrumentation, DEIF consistently invests in R&D and has developed a number of innovative products at our research centre and manufacturing site in Skive, Denmark.

Increasingly, vessels shift from using analogue indicators to CANbus-based instrumentation. DEIF's complete range is now available with this compatibility also, just as we design and develop complete customised instrumentation system solutions.

To that end, our latest development is the patented illuminated indicator display series, XDi. The virtual display series is free of practical mechanical limitations and logistic concerns and comes with libraries of more than 100 preinstalled indicator layouts and functionalities for you to select, customise and set on board. Moreover, the indicators also enable graphic solutions for new combinations of related values and improved presentation of standard indicator types, e.g. rpm, pitch and Azimuth angle.

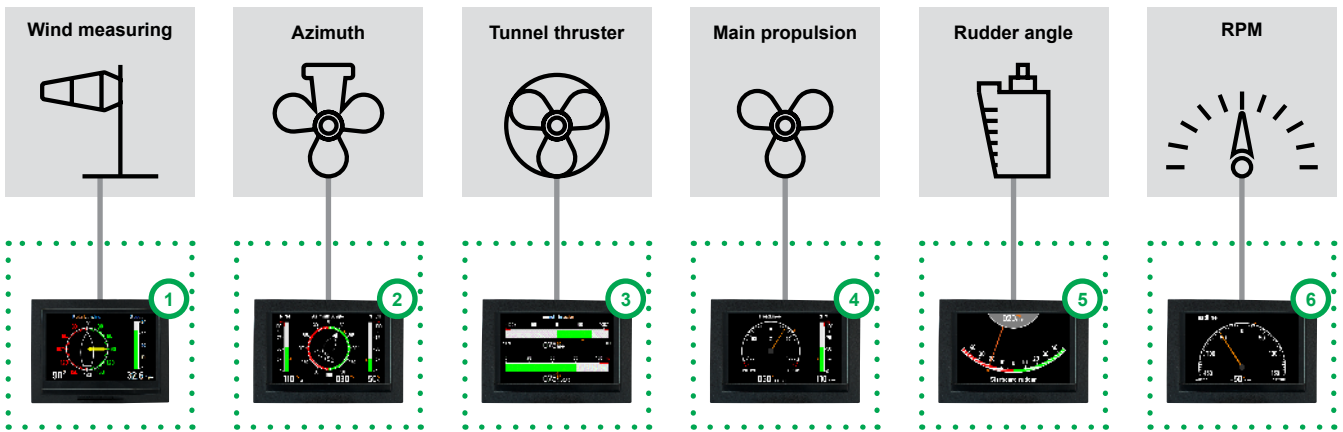
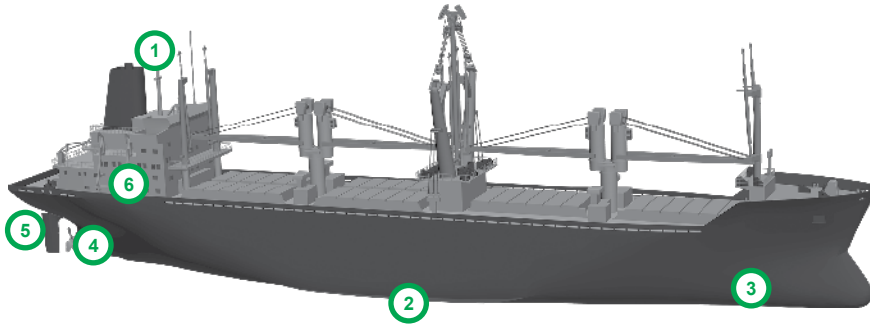
Saving you panel space and installation time, giving you more choices, greater flexibility and the ability to configure and make on-site repairs, XDi is the ultimate all-in-one solution.

In plain terms, a game changer.



# Bridge instrumentation

A front-runner in marine bridge instrumentation



## Game changers & customised solutions

Based on patented X-coil or display technology, DEIF's range of illuminated indicators is available for both analogue and CAN bus-based applications.

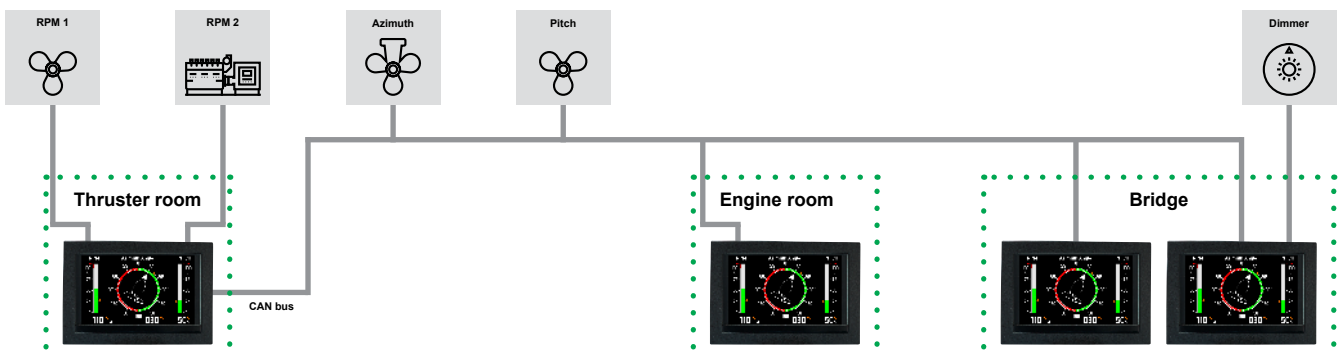
The below diagram shows a CAN-based system in which the thruster room XDi unit measures RPM and shares data on the CAN bus using the XDi-net protocol.

On the bridge, the analogue dimmer on one indicator is shared via CAN to control both indicators as a group.

## Relevant indicators



## Azimuth thruster application



## One indicator for all thruster modes

Switch between indicator modes – automatically

*»The XDi has reduced the number of indicators, installation time, and simplified operation«*

Johan Spruyt  
R&D Engineer  
ZF Marine Krimpen



### Game changer cuts costs

Until recently, renowned ZF Marine Krimpen used traditional indicator technology for its retractable azimuth thruster solutions. Individually customised to each customer, this required numerous indicators for each azimuth propeller – one for each operation mode.

Reducing installation time and costs, DEIF's virtual indicator solution, the XDi, now allows ZF Marine Krimpen to automatically change the indicator scale depending on which mode the retractable azimuth thruster is in.

"With the XDi, we take up much less space in the bridge operator panel and also simplify daily operation since there is just one thruster indicator display regardless of operation mode", R&D Engineer Johan Spruyt from ZF Marine Krimpen states.

### ZF Marine Krimpen

Formally known as HRP Thruster Systems, ZF Marine Krimpen has been active on the thruster market since 1973. The company designs and produces a wide range of steerable thrusters for all types of applications throughout the marine industry.

# Flexible display indicator

## The game changer in illuminated bridge instrumentation



DEIF's XDi illuminated indicator display series is a compact, easy-to-install, versatile and user-friendly revolution in bridge instrumentation.

The ultimate all-in-one solution, the XDi saves you panel space and installation time, gives you greater choice, more flexibility and the ability to configure and make repairs on-site.

With the XDi series, we have replaced mechanical scales and pointers with high quality displays, taking indicator performance to a new level without compromising DEIF customisation standards and maintaining approvals for all relevant applications.

XDi features high accuracy analogue readout (no mechanical or parallax's reading error), high precision digital readings, wide viewing angle and optimised day and night colour pallets, even a custom dusk pallet.

The XDi series comes in three different sizes with Dual, multi or Navigation libraries. You can order XDi with a DEIF standard indicator library – or you can have your own customised. Already a market-leader with record delivery times, the XDi series also enables us to ship your orders even faster.

Depending on functionality, all units are MED-certified. Approvals from major classification societies are available depending on application. DEIF has developed the XDi series cooperating closely with DNV GL.

### Features

- ▶ TFT graphical LED 3.5, 5 or 7" display
- ▶ Multiple virtual indicator layouts selectable from library
- ▶ Standard and custom indicator designs
- ▶ Displays 1 or more values
- ▶ 96, 144 or 192 DIN cutouts
- ▶ XDi-Net – a short-cut to CAN open
- ▶ Double CAN bus as standard
- ▶ Reduced wiring and installation
- ▶ Instant repairs on board
- ▶ Analogue and digital readout combined
- ▶ Standard day and night designs
- ▶ Dusk designs on request
- ▶ Redundant power inputs
- ▶ Optional analogue or digital input
- ▶ Optional NMEA or relay output
- ▶ MED and other relevant class approvals
- ▶ Optional double CAN connectors for daisy chaining
- ▶ Optional IP66 protection

Variants	No. of input values
XDi Dual	1 or 2
XDi Multi	Application-dependent

### Accessories

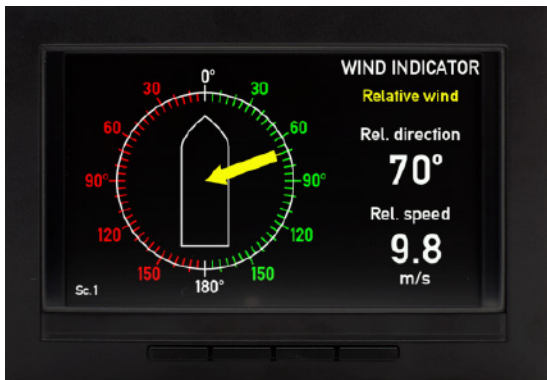
- ▶ AX1 analogue extension module
- ▶ DX1 digital extension module
- ▶ NX1 NMEA output extension module
- ▶ NX2 NMEA I/O extension module
- ▶ Front frames
- ▶ Dimmer potentiometer kit
- ▶ Azimuth/rudder transmitters RTA 602, RTC 300 or RTC 600

### Approvals



# Flexible display indicator – navigation

## Advanced navigation indicators and repeaters



Offering a number of advanced functions, including direct access to the main functions using the pushbuttons on the front, the XDi Navigation version (XDi-N) is the top model of DEIF's display-based indicator range.

With the XDi-N you can implement the same design across your bridge and combine propulsion and steering indication with a number of navigation indicators. Use DEIF's standard libraries or have your own created. Utilise the two standard CAN busses and the XDi-net data sharing and system integration functions to optimise your system with centralised group control functions.

### XDi-N main NMEA unit

The XDi-N main indicator is delivered with one NX2 NMEA input/output (I/O) module that in most cases covers all the needs for NMEA I/O.

### XDi-N CAN repeater

The XDi-N CAN repeater indicator functions are identical to the main unit and receives data via CANbus (XDi-net). Therefore no NMEA extension module is required.

### XDi-N navigation indicator library

DEIF offers a selection of standard navigation or wind indicator libraries. Over time, these will come to include heading, rate of turn, speed, depth, position, date/time, steering and WP info, distance, weather, etc.

### NMEA data interface

NMEA data in compliant with IEC 61162-1 is standard for the XDi-N which supports more than 80 different data types, including dimming control.

NMEA setup features:

- ▶ Automatic NMEA input scanning and selection
- ▶ Input overview with easy access to make changes
- ▶ NMEA sentence routing from input to output
- ▶ NMEA output configuration

### XDi-N features

- ▶ TFT graphical LED 3.5, 5 or 7" display
- ▶ Two CAN ports with CANopen and XDi-net
- ▶ Redundant power inputs
- ▶ XDi-Net – add multiple XDi indicators
- ▶ Up to six NMEA inputs & up to four outputs
- ▶ NMEA data offset and averaging functions
- ▶ Dimmer controllable using front/external pushbuttons, analogue, NMEA or CAN/XDi-net.
- ▶ 3 level priority data fall-back function
- ▶ True wind data calculation
- ▶ Calculate magnetic or true heading
- ▶ XDi-net group dimmer and day/night colour shift
- ▶ Toggle between up to four predefined indicator screens using the mode function
- ▶ Quick-switch between measuring units either locally or for the entire system
- ▶ Customised indicator designs available on request
- ▶ Standard day and night designs, dusk on request
- ▶ Optional analogue or digital inputs
- ▶ Optional warning and alarms/relay output
- ▶ MED and other relevant class approvals

### Variants

### Extension modules

XDi-N Main	NX2
XDi-N Repeater	None required

### Additional XDi-N accessories

- ▶ Wind sensor WSS 500 series or WSS 750
- ▶ Wind sensor extension cables
- ▶ IP66 connector box kit
- ▶ IP67 connector kit (WSS/WSS-L)

## Approvals



# Variants & extension modules

## Solutions customised to your requirements

### Variants

#### XDi Dual

1 or 2 input values displayed.



XDi 96 Dual



XDi 144 Dual



XDi 192 Dual

#### XDi Multi

Application-dependent no. of input values displayed.



XDi 96 Multi



XDi 144 Multi



XDi 192 Multi

#### XDi-N

With NX2 NMEA input/output module (share on XDi-net).



XDi 96 N



XDi 144 N



XDi 192 N

### XDi Dual / Multi versus XDi-N

XDi-D / M	XDi-N (platform 2)
▶ Analogue digital and CAN interface	▶ Analogue digital and CAN interface NMEA0183 interface (IEC61162-1) Incl. data calculation Routing NMEA data from input to output
▶ Hidden buttons (setup only)	▶ 4 front pushbuttons for operation
▶ Presents <u>one</u> fixed virtual indicator from library (D, M)	▶ Presents either one fixed virtual indicator <i>or</i> Toggle between up to 4 screen virtual indicators using the pushbuttons and/or XDi-net or CAN
	▶ Prioritised input fall-back function (2 or 3 inputs)
	▶ Shift units presented on display (Unit profile shift via CAN)
	▶ Dimmer/Colour control via front buttons
▶ New option: Front frame w/4 pushbuttons for dimmer/colour control only. (Platform 2 required)	▶ Optional front frame without buttons



# Indicator libraries

## Game-changing functionality made simple

Choose an XDi with a pre-installed standard or customised indicator library matching your applications.

### Library

The library contains a range of indicators and product profiles. During installation, the setup wizard guides you through the selection process.

### Product Profile – PP

The library contains one or more PP's to ease the installation setup. A PP contains default parameters for the CAN bus, dimmer groups and input type, warning and sound. Default parameters can be changed from the XDi menu.

### Virtual Indicator – VI

A library may contain more than 100 predefined virtual indicators. The VI contains the graphical design which can be either DEIF standard designs or unique custom designs placed in a custom library made by DEIF. The graphical design is fixed to comply with the relevant marine standards and cannot be changed by the user.

### Virtual Indicator Setup – VS

Each virtual indicator has one or more VS profiles to select for easy configuration. Each VS defines a unique setup for all inputs, outputs, controls and selectable headlines for the related virtual indicator. Default parameters can be changed from the XDi menu.

## Setup



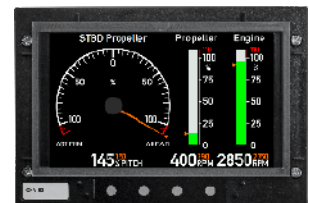
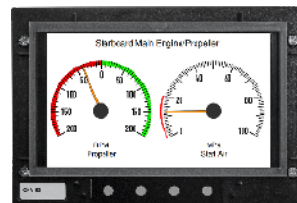
### Setup Wizard

An automatic guide makes setup very easy, even without prior training.

### Surveyor Information

Select the info screen for a complete status of the selected and locked set-up.

## On-site choices



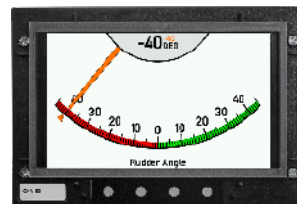
### Red

Define and set scale markings on-site.

### Indicator headline

Integrated headline option reduces variants.

## Day & night scales



### Day

Standard library contains both day and night designs.

### Night


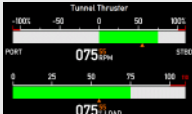



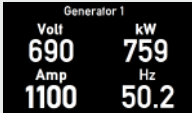

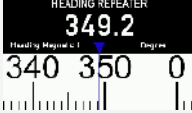
## Front-button control



Front buttons for easy screen toggling, dimming and unit shift. Make a change on one XDi-N unit or all XDi-N units in a group by the push of one button.

# Standard indicator libraries

## Select functionality and indicator type

Propulsion	Library class	Library number	Example
Azimuth	Dual (D)	001 to 010	
	Multi (M)	001 to 010	
Tunnel thruster	Dual (D)	011 to 020	
	Multi (M)	011 to 020	
Main propulsion	Dual (D)	021 to 030	
	Multi (M)	021 to 030	
Rudder angle	Dual (D)	031 to 040	
	Not applicable	-	
RPM	Dual (D)	041 to 050	
	Not applicable	-	
Universal digital	Dual (D)	051 to 060	
	Multi (M)	051 to 060	
Navigation	Library class	Library number	Example
Wind	Nav	001 to 010	
Navigation	Nav	011 to 020	

DEIF standard libraries contain a selection of indicators presenting dual or multiple data in a common design line. The different indicator types are collected in application-specific libraries to make selection and ordering easier. The standard indicators for applications requiring wheel-marking are approved according to the Marine Equipment Directive (MED).

The collection of standard indicators and application types will increase over time, based on user requests.

### Updating is simple

With a built-in USB interface on the rear side of the XDi, upgrading units with new libraries or other updates is a simple and easy procedure. No need to worry if you've ordered an XDi with the wrong library: All standard and your customised libraries are available for free download and can easily be uploaded to your XDi.

### No wait for repairs & spare parts

Because the XDi has an integrated library of virtual indicators, solutions and settings, fault issues can be resolved immediately by trained personnel. Keeping a spare unit of each size on board allows the ship crew to replace faulty units and have systems up and running again in no time.

# How it works

## A quick guide to the principles behind the XDi technology

The installation wizard starts automatically and guides you through the selection. Once you've confirmed your selection, the indicator will start normal operation and the setup is locked. Locking your indicator choice and settings is the basis for your MED approval.

### Define & Secure

Assign a CAN NodeID and XDi will flag on the CAN bus that it is available and not setup.

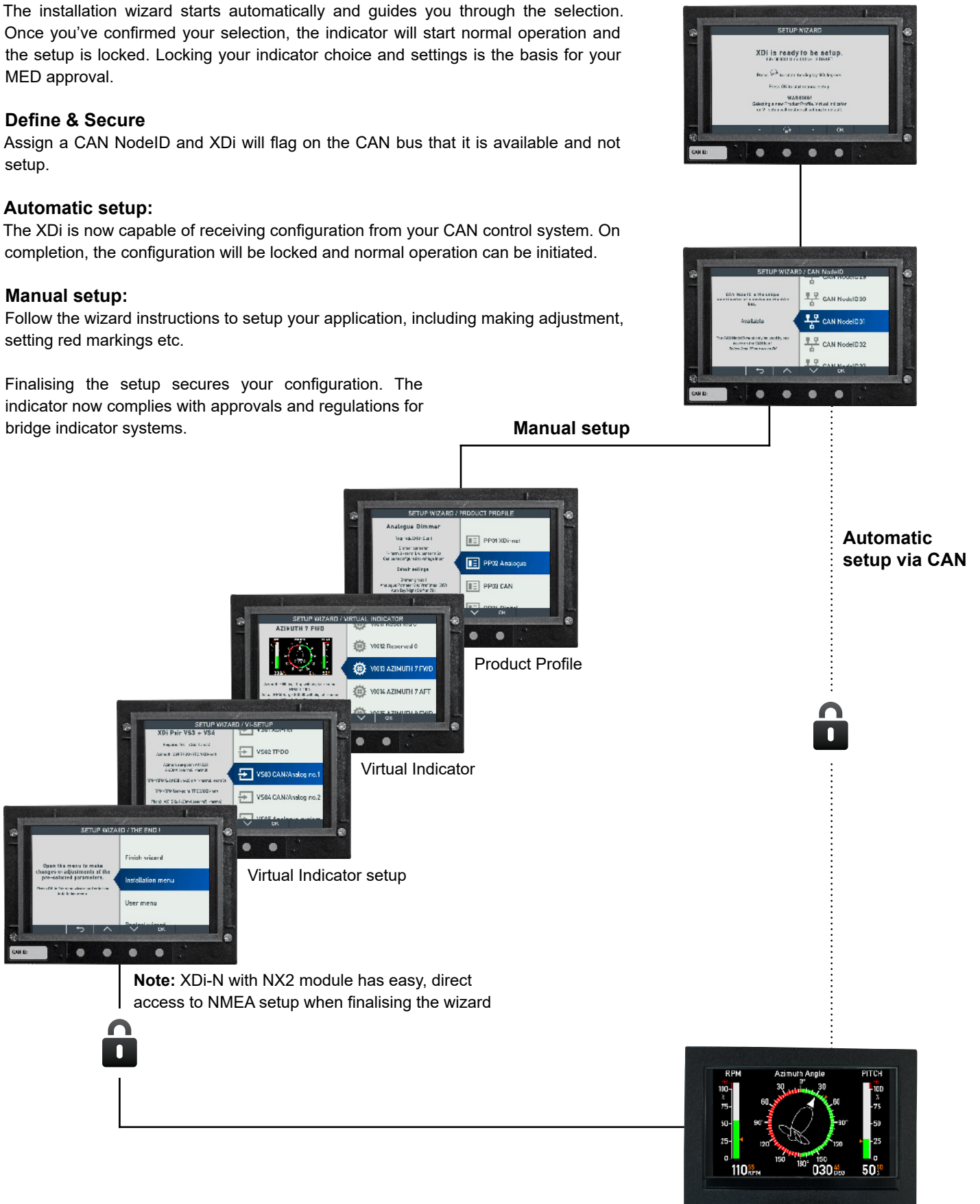
### Automatic setup:

The XDi is now capable of receiving configuration from your CAN control system. On completion, the configuration will be locked and normal operation can be initiated.

### Manual setup:

Follow the wizard instructions to setup your application, including making adjustment, setting red markings etc.

Finalising the setup secures your configuration. The indicator now complies with approvals and regulations for bridge indicator systems.

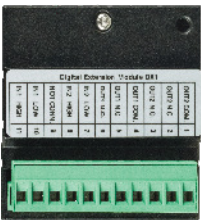


# Extension modules

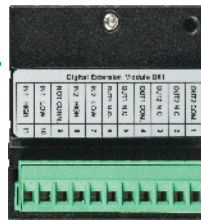
Add the functionality you need

Maximum one extension module for XDi 96 and two for XDi 144/192.

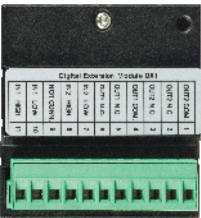
The 'quick snap-on' extension modules can be delivered separately or together with your XDi unit.



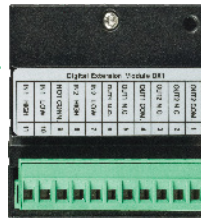
**AX1**  
Analogue inputs, dimmer input and reference output for external potentiometer



**DX1**  
Digital inputs, e.g. for RPM pick-up sensors. Relay outputs for external alarm/control



**NX1**  
NMEA0183 output module for data transfer to VDR, DP system or navigation system. Two contact inputs for remote push button control.



**NX2**  
NMEA0183 serial I/O module for integration in ship navigation systems. Two contact inputs for remote push button control.

# Customised indicator libraries & logo branding

## Full or partial customisation

Categorised according to application types, the indicators you need may be placed in different standard libraries. Since XDi units can hold just one library at a time, you will find it beneficial to order your XDi with the correct library.

### Customisation 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.

### Customisation 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.

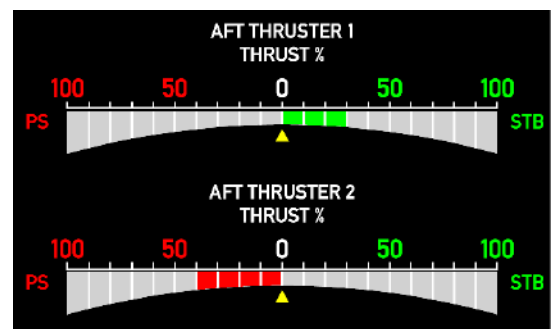
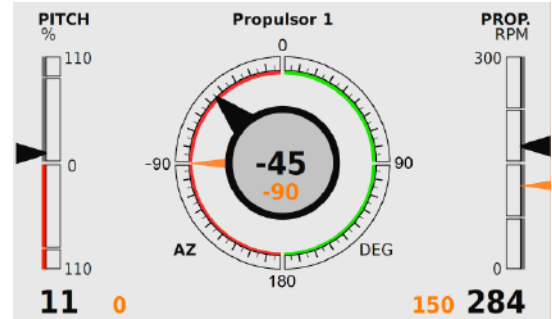
### Customisation level 3

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.

### Logo on front frame

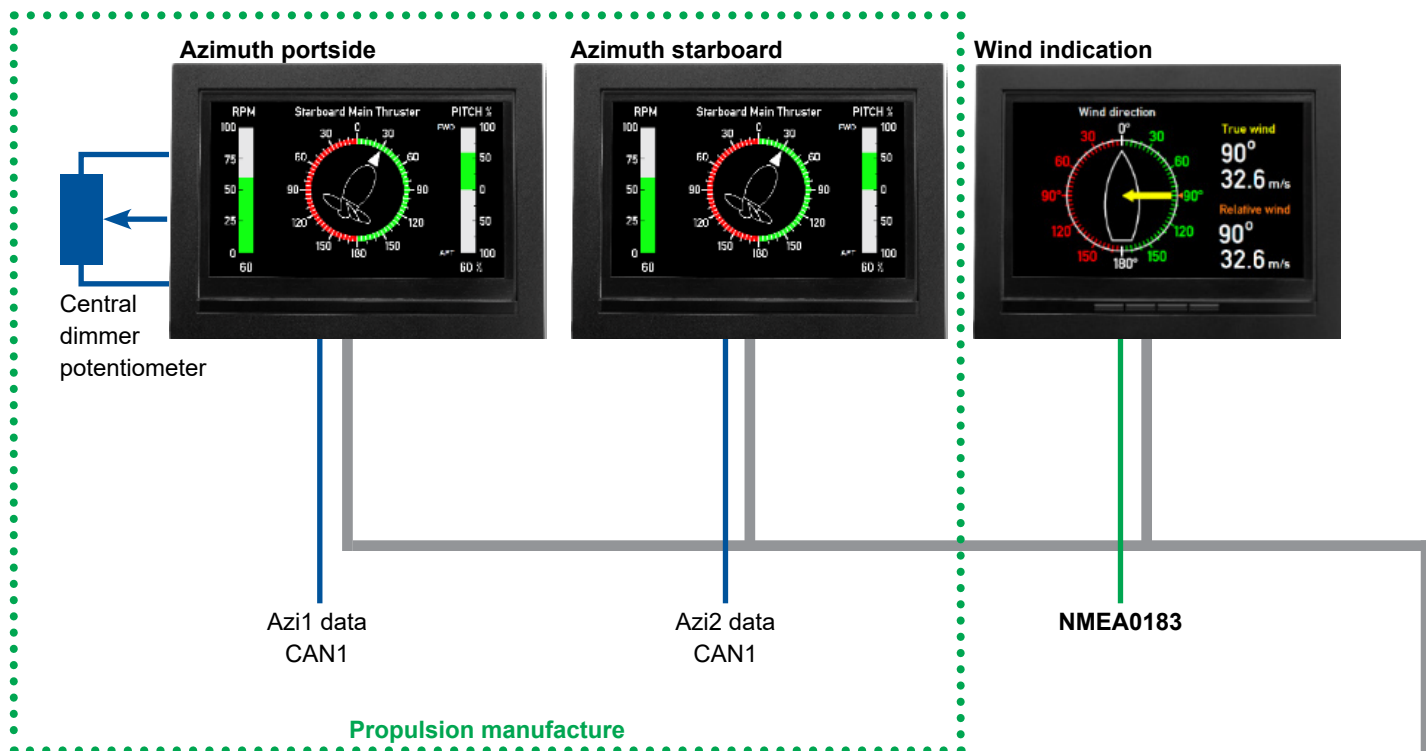
For those looking to brand XDi with their own company logo, DEIF recommends placing the logo on the removable front frame. Logos can be added to the virtual indicator designs, but will take up valuable display space, thus reducing flexibility and readability.

## Examples of customised indicators

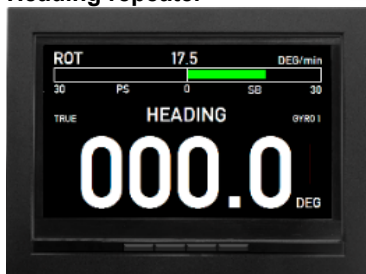


# Solution 1 - NMEA Converter box

## Bridge overhead panel



### Heading repeater



### Rate of turn



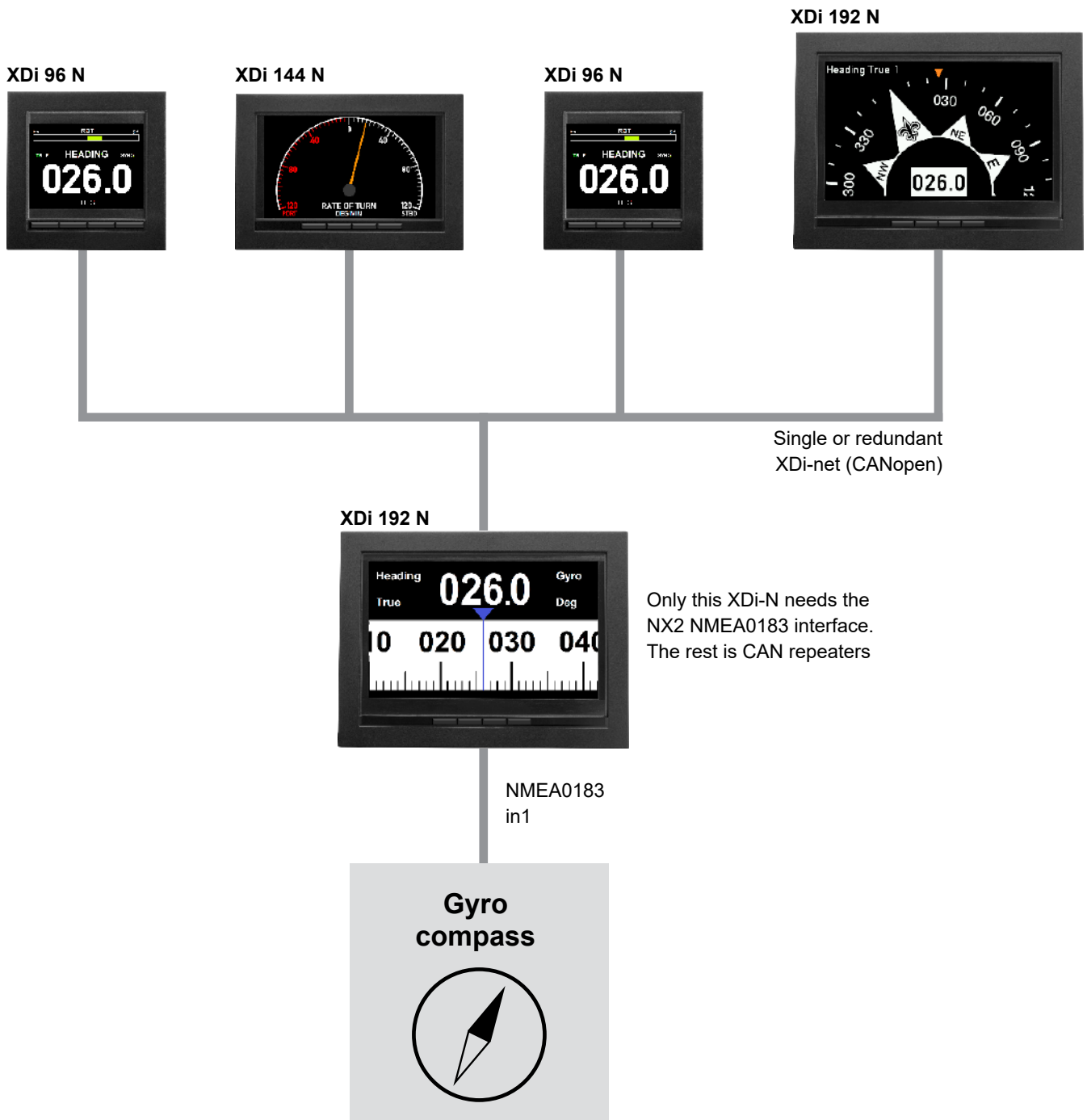
### Rudder angle



Navigation and dimming CAN2

# XDi-N heading indicator system

## XDi-net





**DEIF A/S**

Frisenborgvej 33, 7800 Skive, Denmark

Tel. +45 9614 9614

LEARN MORE AT [WWW.DEIF.COM/MARINE-OFFSHORE](http://WWW.DEIF.COM/MARINE-OFFSHORE)

