

## Marine Applications

*Industry leading knowledge keeps you in control*



*We've got you covered,  
every knot of the way.*

## Partnership based on accountability

As a global enterprise that is highly competitive in the marine and engine sectors, Danfoss Industrial Controls brings together a wealth of talent and a strong commitment to providing our customers with a competitive advantage through industrial control solutions that make a difference to the bottom line.

We aim to measurably improve the performance and reliability of your monitoring and control systems. And with a proven track record throughout the world, we have the experience to prove it.

### **Expert knowledge of marine applications**

There is more to marine equipment than metal and lube oil. These are critical applications with essential elements. If they go down, so do your profits. We design our pressure and temperature controls to maximize uptime and mean time to repair. They provide safe, efficient operations to ensure that your equipment – and your profits – stays up. We have 60-plus years of experience, and leverage this knowledge to positively impact your operations.

### **For marine equipment manufacturers**

We understand that as a supplier, we need to go beyond delivering quality components; we work together with OEM customers to create a dependable logistics system, and we're highly adaptable, too. In short, we share the same objective as you: to deliver the best quality to your customers!

### **For ship owners**

We understand the critical need for uptime and robust performance as well as keeping equipment repair and maintenance at a minimum, which is why our valves, sensors, transmitters and switches are designed for accuracy, reliability and long life.

### **For ship builders**

We understand the need to comply with ever-tougher government regulations, which is why our products are accredited and certified in accordance with the world's most stringent standards.



### **Quality pays**

What could possibly be more critical than not finding the right controls solution for your applications? Maintaining and repairing them if the quality is not good enough. In fact, your lifecycle costs can easily outpace the cost of buying controls in the first place if they don't meet the highest quality standards. When you have a partner with our experience on board, you can feel confident knowing that our controls have passed stringent certification processes. In fact, they are so robust and reliable, they can help you lower costs and make them more predictable.

### **Service aimed to meet real-world challenges**

Sometimes, all you need is a marine controls specialist to help with product selection and configuration. Other times you need more optimised system solutions. Danfoss Industrial Controls approaches each case proactively to ensure maximum uptime and performance.

Our marine controls offering is one of the world's best, as proven in compressors, gear boxes, engine and propulsion systems, engines and countless other applications around the globe. Our people have the experience to provide control solutions and service



*We know how to keep  
technology flowing.*





## Global solutions dedicated to your business



Every business is different, but they all share a common goal. Our marine specialists are dedicated to increasing the performance of your applications.

Our specialists bring their experience to projects ranging from general boiler to propulsion systems. And we bring it around the globe, servicing accounts from ship owners and builders to engine manufacturers

In critical applications like gear boxes, compressors, or propulsion systems, Danfoss Industrial Controls has developed designs for clutch pressure monitoring and alarm, lube-oil pressure monitoring, control and alarm, exhaust-gas pressure and temperature monitoring, common rail monitoring, and fluid controls monitoring.

The list of solutions goes on. And the earlier we get in, the more we can do for you. Because, at Danfoss Industrial Controls we are committed to you.



### **With Danfoss at the helm, we can improve your operations**

Let's start with the heart of your operation. There's a good chance that your equipment could be running more effectively and efficiently.

Let us come in and make it happen. As a manufacturer of high quality industrial controls, we can size things up and make recommendations quickly. And deliver valuable solutions that can lower maintenance costs and extend equipment life – for an initial cost that's lower than what you might expect.



## Application overview

### Marine applications

	Pressure	Temperature	Fluid controls	Monitoring	Control	Alarm
Boilers	•	•	•	•	•	•
Pumping systems	•			•	•	•
Separators	•	•	•	•	•	•
Starting air compressors	•	•	•	•	•	•
Generators	•	•	•	•	•	•
Winches	•	•		•	•	•
Water treatment	•	•	•	•	•	•

### Propulsion systems

	Pressure	Temperature	Fluid controls	Monitoring	Control	Alarm
Start air	•		•	•	•	•
Scavenge/charge air	•	•		•	•	•
Lube oil	•	•		•	•	•
Water cooling	•	•		•	•	•
Fuel oil	•	•	•	•	•	•
Exhaust gas		•		•	•	•
Servo oil	•	•		•	•	•
Gears	•	•		•	•	•
Propeller systems	•	•		•	•	•






*Our depth, your competitive advantage.*



# The technology keeps on flowing

Danfoss products are well known for being robust, reliable and user-friendly, and our solutions for marine applications are no exception. When you have a partner like Danfoss, you can be confident knowing our controls have passed stringent certification processes.









## Pressure transmitters

Type	Compact Cartridge MBS	Standard Cartridge MBS	Standard Cartridge MBS Common Rail	Block Design MBS	Box Design EMP
					
<b>Measuring range</b>	0-1 bar to 0-600 bar	0-1 bar to 0-600 bar	0-1800 bar to 0-3000 bar	0-1 bar to 0-600 bar	-1 to 1.5 bar to 0-400 bar
<b>Electrical connection</b>	Various plugs/cables	Various plugs/cables	Various plugs/cables	DIN plug	Terminals
<b>Pressure connection</b>	Diff. types	Diff. types	M18 x 1.5	Diff. types	Diff. types
<b>Pressure references</b>	Absolute/gauge	Absolute/gauge	Absolute	Absolute/gauge	Gauge
<b>Output signal</b>	4-20 mA, ratio metric, voltage	4-20 mA	4-20 mA, ratio metric, voltage	4-20 mA	4-20 mA
<b>Accuracy (typical)</b>	±0.3%/0.5% FS	±0.3% FS	±1% FS	±0.1% FS	±0.3%/0.5% FS
<b>Zero point and span adjustment</b>				●	●
<b>Enclosure</b>	IP 65/67	IP 65/67	IP 65/67	IP 65	IP 67
<b>Marine approvals</b>	●	●	●	●	●
<b>Available with pulse-snubber</b>	●	●		●	
<b>Can be used together with:</b>					
<b>MBV 5000 test valve</b>				●	
<b>MBV 2000 isolating valve</b>	●	●			
<b>MBD 1000 display</b>	●	●		●	
	(DIN 43650 plug vers.)	(DIN 43650 plug vers.)	(DIN 43650 plug vers.)		

## Temperature sensors & transmitters

Type	Sensor MBT 5113	Sensor MBT 5116 Slim-line	Sensor MBT 5116 B-head	Sensor MBT 5250	Sensor MBT 5252	Sensor & transmitter MBT 5560	Transmitter MBT 9110
							
<b>Pt 100</b>		●	●	●	●		(●)
<b>Pt 1000</b>				●	●		(●)
<b>Thermocouple</b>	●						(●)
<b>Measuring insert</b>	Changeable	Changeable	Changeable	Changeable	Changeable		Changeable
<b>Media temperature</b>	-50 to 800 °C	-50 to 600 °C	-50 to 600 °C	-50 to 200 °C	-50 to 400 °C	-50 to 200 °C	
<b>Enclosure</b>	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	
<b>Material protection tube</b>	St. Steel	St. Steel	St. Steel	St. Steel	St. Steel	St. Steel	
<b>Reaction time <math>t_{0,5}</math> in water</b>	30 sec	30 sec	30 sec	9 sec	12 sec	10 sec	
<b>Output signal</b>	mV/4-20 mA	Ohm	Ohm/4-20 mA	Ohm	Ohm/4-20 mA	4-20 mA	4-20 mA
<b>EEx ia IIC T4/T6 approval</b>							●
<b>Marine approvals</b>	●	●	●	●	●	●	●
<b>Option: MBT 9110 built in</b>	●		●		●		

## Temperature and pressure switches

Type	Temperature switch RT	Temperature switch KPS	Temperature switch CAS	Temperature switch MBC	Pressure switch RT	Pressure switch KPS	Pressure switch CAS	Pressure switch MBC
								
<b>Measuring range</b>	-50 – 300 °C	-40 – 70 °C	-20 – 150 °C	-10 – 200 °C	-1 – 30 bar	0 – 60 bar	0 – 60 bar	0 – 600 bar
<b>Contact system</b>	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT
<b>Electrical rating</b>	4 amp	6 amp	0.1 amp	0.5 amp	4 amp	6 amp	0.1 amp	0.5 amp
<b>Electrical</b>	Screw terminals	Screw terminals	Screw terminals	DIN plug	Screw terminals	Screw terminals	Screw terminals	DIN plug
<b>Contact material</b>	Ag/Au	Au	Ag	Ag	Ag/Au	Au	Ag	Ag
<b>Differential</b>	Adjustable	Adjustable	Fixed	Fixed	Adjustable	Adjustable	Fixed	Fixed
<b>Enclosure</b>	IP 66/54	IP 67	IP 67	IP 65	IP 66/54	IP 67	IP 67	IP 65
<b>Design</b>	Box industrial	Box heavy duty	Box heavy duty	Block compact	Box industrial	Box heavy duty	Box heavy duty	Block compact
<b>Marine approvals</b>	●	●	●	●	●	●	●	●
<b>Also available as differential vers.</b>							●	●
<b>Can be used together with MBV 5000 test valve</b>								●

## Solenoid valves

Type	Solenoid valve EV210B	Solenoid valve EV220B	Solenoid valve EV224B	Solenoid valve EV250B
				
Connection ISO 228/1	G1/8 – G3/8	G1/2 – G2	G1/2 – G3/4	G3/8 – G1
Function	NC/NO	NC/NO	NC/NO	NC/NO
Orifice size mm	1.5-4.5	15-50	15-20	10-22
K <sub>v</sub> -value m <sup>3</sup> /h	0.08-0.55	4-40	Up to 8	2,5-7
Permissible diff. pressure bar	0-30	0.3-16	0.3-40	0-16
Media temperature max.	120 °C	140 °C	60 °C	140 °C
Valve body	Brass / St. Steel	Brass / St. Steel	Brass	DZR Brass
Internal parts	St. Steel	St. Steel	St. Steel	St. Steel
Seal material	EPDM / FKM	EPDM / FKM / NBR	NBR	EPDM / FKM
Marine approvals	●	●		●

### Customer care

Every customer is unique, faced with unique challenges and a unique list of needs. So at Danfoss Industrial Controls we give every customer our complete attention and interest so we can use our experience to find the right products. Service is an important part of Danfoss' quality.





*We deliver more.  
You spend less.*

## With Danfoss Industrial Controls, your safety, performance and satisfaction are assured

Danfoss Industrial Controls provides a long lifetime of safe, accurate and reliable performance for marine and engine applications. Our line of state-of-the-art components for monitoring and controls systems includes:

- Pressure and temperature switches
- Pressure transmitters
- Temperature sensors and transmitters
- Solenoid valves
- Externally operated valves
- Thermostatically operated valves
- Electro-mechanical contactors
- Electronic contactors and motor controllers

To learn more about our marine and engine solutions, contact any one of our sales and service centers in over 100 countries around the world.

Danfoss also provides solutions for drives, water hydraulics, refrigeration and air conditioning applications and more. Visit our website at [www.danfoss.com](http://www.danfoss.com)





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