

ENGINEERING
TOMORROW

Danfoss

Danfoss Telematics Solutions (DTS) 2.0

Driving **productivity** and **profit**
with the **power** of **information**

**Plug and
perform**

versus code and compile.





Putting the
power
in your hands.

Danfoss Telematics Solutions

Profit from information's limitless **possibilities**

Answers before questions need to be asked. Solutions before problems ever arise. That's the power of information. That's the power of Danfoss Telematics Solutions.

We engineered the newly expanded lineup of Danfoss Telematics Solutions so it's easier than ever to gather and analyze critical data from heavy equipment — and send data to that equipment, too. Owners can communicate with machines — and machines can communicate with each other. Information can travel 10 feet away — or 10,000 miles away. Improving operator safety and equipment security. Increasing machine efficiency and lifespan. Minimizing jobsite downtime and costs. Maximizing productivity and profitability.

Danfoss Telematics Solutions. Profit from the possibilities.

Danfoss leads the way. Again.

For more than 30 years, our expertise has delivered real benefits to customers — including the first generation of Danfoss Telematics Solutions, which continues to provide affordable, plug-and-perform information management for new machines and existing fleet retrofits.

Now, our expanded portfolio of Danfoss Telematics Solutions offers customers even more, including data transfer using Wi-Fi. And with the addition of Bluetooth and satellite capabilities, Danfoss Telematics Solutions will continue to provide the flexibility and scalability you need — around the jobsite or around the world.

Plug-and-perform convenience — now with even more functionality

Customers demand convenience and Danfoss delivers. Building on the plug-and-perform ease of use that launched our first generation of telematics products, the expanded portfolio of Danfoss Telematics Solutions adds more data transfer choices and functionality too, with more options to better serve more customers.

Empowering smaller OEMs to compete on a larger scale

With more capabilities and connectivity than ever before, Danfoss Telematics Solutions enable original equipment manufacturers (OEMs) of any size to compete — and win with superior benefits.

More power. Same ease of use.

Additional functionality doesn't have to mean additional complexity. The newly expanded lineup of added-feature Danfoss Telematics Solutions can still be integrated into an OEM process without the need for specific programming knowledge — and can be easily retrofitted to customers' entire fleets without needing to change even one line of software code.

Make our solutions your own

Open and flexible, Danfoss Telematics Solutions help OEMs differentiate themselves from the competition with easy-to-develop, custom applications. Our PLUS+1® GUIDE (Graphical User Integrated Development Environment) system uses drag-and-drop editing, making application development simple — even by programmers lacking formal development training.

We made it easy to stay up to date

Because all Danfoss Telematics Solutions integrate seamlessly with PLUS+1 development and service tools, it's easy to keep machines current with parameter adjustments and software updates — and real-time, remote access makes staying up to date even easier.

Built for today. Engineered for tomorrow.

As telematics' capabilities grow, Danfoss Telematics Solutions can grow too. With robust power and capacity, they're designed to handle upgrades — so OEMs can offer additional services and benefits to customers, and enjoy additional revenue streams.



Global

access to vital data
and functions.



Maximizing productivity and minimizing expenses. That's telematics. That's the Danfoss difference.

Intelligent management of information that flows from equipment — and flows to it. Using that information to help equipment and operators work smarter, more safely, more profitably, and more economically. That's how we're engineering tomorrow with Danfoss Telematics Solutions.



Reduce

costs with remote
diagnostics.

Critical information that's immediately available and instantly actionable

Together, Danfoss Telematics Solutions and the Danfoss access portal harness the power of information — so customers can keep machines and operators working productively and efficiently.

Customized alarms provide immediate notification of events like breakdowns, impending maintenance needs, improper use, and operation in an unauthorized location.

Geotracking and geofencing use GPS, GLONASS and BeiDou to track equipment movement and define the areas where equipment can operate.

Data analysis provides instant awareness of when each machine is due for maintenance — and if any machine is showing early signs of failure, even days before a breakdown.

Diagnostics can be performed remotely without requiring a technician's travel to a jobsite, dramatically reducing downtime, labor, and costs.

Location and tracking shows where, when and how long every machine is used.

Customized job reports can be instantly created or set for automatic generation at specified intervals. Virtually any data can be reported, including the amount of time specific equipment was used at a jobsite — helping minimize or even eliminate employees' manual time logging.

Machine efficiency and system settings can be monitored and optimized remotely and in real time.

Machine use records show how often and how long each machine on a jobsite is used, aiding in efficiency analysis and improvement, equipment resource allocation, and even accident investigation.

Get the data flowing with Danfoss Telematics Solutions

Danfoss Telematics Solutions are engineered for peak performance in all areas of telematics.

Gathering data: Danfoss has data capture systems that can be integrated at the OEM level, adding value to products. Our data capture systems also can be retrofitted to existing equipment to build or expand a networked fleet. We've done all the research and development, testing, and perfecting for you. And for equipment that already has the PLUS+1® Service Tool, retrofit is as easy as changing a cable.



Transmitting data: Danfoss Telematics Solutions are available with a wide variety of data-transmission technologies, including Wi-Fi, cellular, Bluetooth, and satellite. Customers using cellular data service aren't locked into single network provider; they can choose a provider and data plan that best meets their needs. GPS, GLONASS and BeiDou connectivity ensures accurate identification of equipment location anywhere in the world.

Interpreting data: Our access portal is a robust and versatile Web-based interface that's OEM-brandable and offers all the functionality, features, and customization of competing telematics solutions.

Storing data: Optional Danfoss Telematics Solutions can store real-time data for offline analysis to help customers precisely determine machine activity at exact points in time.

Transforming information into action

Danfoss Telematics Solutions do more than make information available — they put information to work. The result is demonstrable benefits that can improve the productivity and efficiency of any jobsite.

Machine modifications can happen virtually anywhere — even if a technician or fleet manager is thousands of miles away. Software updates, parameter changes, and diagnostics sessions don't require a cabled connection to the machine, so they can be performed wirelessly and conveniently: a big benefit when a machine is in a hard-to-access location or during inclement weather.

Wireless machine-to-machine communication enables two or more machines to exchange CAN-based data without expensive, damage-prone cables, precisely coordinating their movements and synchronizing their operation to enhance productivity.

Event detection helps ensure proper equipment operation, encourages productivity, and can help safeguard both machines and operators. Danfoss Telematics Solutions can be programmed to detect everyday events such as the opening of a door, the unlatching of a hood, or the removal of a fuel cap — as well as more-serious circumstances, such as unauthorized use, a collision, or an operator's request for emergency assistance.

Direct output allows select Danfoss Telematics Solutions to integrate with a machine's key operating parameters and direct programmable actions — such as enabling or disabling the engine's ignition system during certain times of day.

Boost your business with telematics

Telematics is creating big efficiencies for companies of all sizes, and the trend will only get bigger as technology evolves and data flowing from equipment becomes increasingly valuable.

What do Danfoss Telematics Solutions do for you?

Immediately and affordably get you into the telematics-enabled machinery market, without the need to develop or create your own proprietary system.

Allow you to offer customers an easy-to-use system that lets them tap into the profit-driving capabilities of telematics.

Create ongoing revenue streams through things like monitoring fees and service contracts, and deepen customer relationships through telematic-enabled service offerings.

Enhance your brand by offering leading-edge features on equipment.

Let you serve customers through proactive maintenance offerings.

While other providers hit OEMs for costly upgrades and additional features, Danfoss takes care of life-cycle management for the telematics solution, providing flexibility and controlling costs.



Protect your investment

Danfoss Telematics Solutions offers features that can stop thieves in their tracks, including:

Geofencing: Protect your fleet using virtual fences. Individual actions can be defined based on events. Owners can be notified by SMS or email in real-time.

Three-axis accelerometer: Users can define and trigger actions based on G-forces measured on the machine.

Direct output: Command signals can be sent to limit key machine operating parameters, such as engine ignition.

Boosting your business is our top priority. Contact a Danfoss account manager or distributor today and learn how telematics can increase profitability and efficiency for you.





Protect

your machinery
and your operators.

New benefits from a new generation of telematics solutions



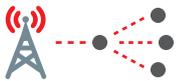
Powerful, intuitive user interface: The Danfoss Telematics Solutions access portal helps customers easily understand machine data so they can make timely, informed decisions. Web-browser based, it's compatible with any internet-capable device, including smartphones and tablets. The access portal can be tailored to each customer's unique needs to highlight the key metrics that matter most — and it also can be customized with an OEM's business name and logo, so customers are regularly reminded of the value and benefits that OEM provides.



Remote satellite connection: The wireless data-exchange benefits of Danfoss Telematics Solutions are now possible anywhere in the world. Available remote satellite connections enable global two-way communication to serve even the most isolated off-shore or mining applications — so machines can transmit operational data, receive software downloads, accept parameter modifications, and undergo diagnostics. **(WS503/WS503BP)**



Direct/remote Wi-Fi access and Bluetooth ready: All of the telematics functions that typically require a connecting cable — including data transfers, software updates, parameter modifications, and diagnostics — can now be performed wirelessly, either directly between a machine and a laptop, or remotely. **(WS103)**



Remote machine-to-machine Wi-Fi connection: Multiple machines at a remote jobsite can exchange data with a single machine equipped with a remote data-enabled Danfoss Telematics Solution, enabling all the machines to communicate with a remote Wi-Fi network. **(WS103)**



CAN bridging: CAN-based data can be wirelessly exchanged between implements and machines, enabling precise coordination of movement, synchronized operations, and other productivity enhancing benefits — without the need for expensive, damage-prone CAN cables. **(WS103)**



Direct inputs: Digital and analog switch and sensor-triggered machine events — such as the opening of a door or the pressing of a “panic” button — can be recognized by a Danfoss Telematics Solution and programmed responses can be activated to help protect operators, equipment, and materials. **(WS503/WS503BP)**



Direct output: Danfoss Telematics Solutions can be programmed to transmit command signals to a machine via a digital output bus, enabling remote control of key machine operating parameters, such as engine ignition. **(WS503/WS503BP)**



Battery backup: If system power is lost, the four amp-hour battery pack can continue to power the unit's essential features for up to a year, monitoring the accelerometer for shocks and maintaining contact with GPS satellites to aid in machine location and recovery. **(WS503BP)**

The full portfolio of Danfoss Telematics Solutions



WS103



WS403



WS503

WS503BP

	WS103	WS403	WS403J	WS503	WS503BP
Wi-Fi Bridging and Bluetooth Ready Communicates with remote servers using nearby WS403/503-enabled machines' data connection.	■				
Wi-Fi Service Tool Eliminates need for cabled connection. Perform diagnostics, parameter changes, and software upgrades via Wi-Fi connection directly to PLUS+1 Service Tool laptop or through Wi-Fi network.	■				
Wi-Fi CAN Eliminates need for CAN cables. Exchanges data with nearby CAN bus connected WS103.	■				
CAN Bus Industry-standard equipment data input/output port.	1	1	1	2	2
Three-Axis Accelerometer Measures movement to detect collisions and unauthorized use.		■	■	■	■
Real-Time Clock Exceptionally accurate time stamping.		■	■	■	■
SD Card-Based Data Storage Supports up to 32GB of data storage.		■	■	■	■
DoCoMo Certification Certified by NTT DoCoMo, Inc. for sale in Japan.			■		
Satellite Support An RS232 interface allows the direct connection to an external satellite modem for two-way data communication virtually anywhere in the world.				■	■
Direct Inputs (Analog/Digital) Allows direct connection of switches, relays and sensors to monitor events such as doors opening or activation of a "panic" button.				2A/1D	2A/1D
Direct Output (Digital) Can enable or disable essential machine operating functions, such as engine ignition.				■	■
Internal Battery Pack Keeps unit's accelerometer and GPS system energized after loss of system power to aid in locating machine after collision or theft.					■

About Danfoss Power Solutions

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of off-highway vehicles. We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.

Danfoss Power Solutions – your strongest partner in mobile hydraulics.

Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1® GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

Wherever off-highway vehicles are at work, so is Danfoss Power Solutions. We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

Go to www.powersolutions.danfoss.com for further product information.

Danfoss Power Solutions (US) Company

2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss Power Solutions ApS

Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss Power Solutions GmbH & Co. OHG

Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss Power Solutions Trading (Shanghai) Co. Ltd.

Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 3418 5200