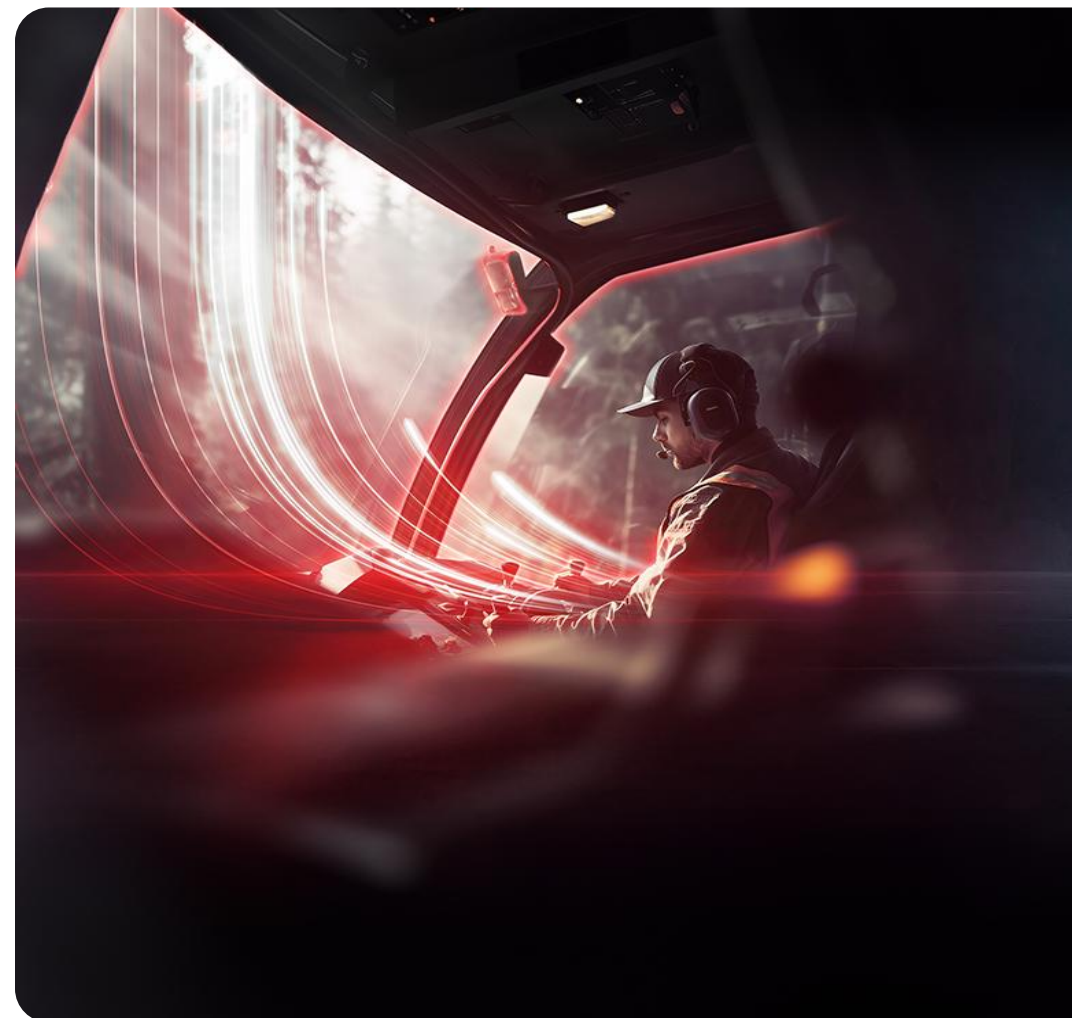


E-book

Electronic Controls Portfolio





PLUS+1[®] Eco System

The evolution from hardware-only to software systems and services

PLUS+1



Mobile off-highway



Proportional valves



Operator interfaces



Displays



Connected Solutions



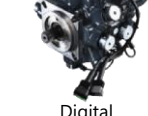
Autonomy



Electronic Joysticks and foot pedals



ICS cartridge valves and HICs



Digital Displacement[®] pumps



Hoses and fittings



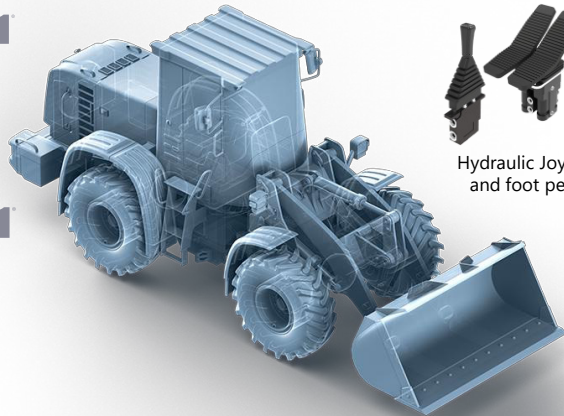
Electrohydraulic steering



Remote controls



Controllers



Hydraulic Joysticks and foot pedals



Geroler motors



Electric propel motors



Open circuit pumps



Sensors



Propel pumps



Gear pumps and motors



Track drive motors



Converters



Swing drive motors



Propel motors



Open circuit piston pumps



Steering units



Orbital motors



Radial piston motors



Large steering systems



Directional control valves

On-highway and Marine



Hoses and fittings



Motors and generators



Inverters and software



Airflex clutches and brakes



Marine and offshore pumps and motors

Industrial



Hydraulic power units



Hoses and fittings



Proportional control valves



Custom cylinders



Directional control valves



Open circuits piston pumps



Vane pumps and motors



Screw-in cartridge valves



Airflex clutches and brakes



Industrial motors



Table of Contents

Navigate through this e-book by **clicking** on the different buttons and learn more by clicking on the products



PLUS+1® Platform



PLUS+1® Controllers



PLUS+1® Displays



PLUS+1® Operator Interfaces



PLUS+1® Joysticks and Foot Pedals



Hydraulic Joysticks and Foot Pedals



PLUS+1® Remote Controls



PLUS+1® Connected Solutions



PLUS+1® Autonomy



PLUS+1® Partner Program



PLUS+1® Support



Sales Support

PLUS+1[®] Platform

Fast. Simple. Flexible.

PLUS+1 GUIDE and PLUS+1 Service Tool are the foundation of the PLUS+1 Platform. Engineered to accelerate your development process and bring higher quality machines to market faster.

Build your application with drag and drop logical components or software blocks in the PLUS+1 GUIDE graphical interface.

- The PLUS+1 Platform is specifically designed for mobile control, giving you tools to bring your machine applications to market faster
- The simple and intuitive interface makes PLUS+1 GUIDE and Service Tool easy to learn
- Import existing and/or develop code in IEC 61131-3 language (PLCopen), or C-code programs with the openness of the PLUS+1 platform
- PLUS+1 Compliance - Choose from hundreds of function blocks/libraries specifically designed for mobile control
- Go to market faster with a variety of off-the-shelf sub-system applications
- Functional Safety ready – Fulfils requirements for IEC 61508:2010 support tool certification
- Bespoke application software support services
- Service your machines wired or wirelessly with the very powerful PLUS+1 Service Tool or PLUS+1 Mobile Service Tool solution

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PLUS+1[®] Controllers

Intelligent vehicle control

Our PLUS+1 controllers are the brains behind intelligent vehicle control. Swiftly programmable to your specific requirements. Our powerful PLUS+1 microcontrollers bring intelligence to every node of a distributed control system. Thanks to their rugged design, they'll withstand the toughest conditions your vehicle comes up against. Programming our controllers requires minimum effort with our easy-to-learn PLUS+1 GUIDE software.

- Hardware specifically designed for mobile use
- High speed technology to process even the most complex applications
- Software-configurable universal I/O for multiple control options
- Simpler system design and faster development cycles with PLUS+1 Toolchain
- Off-the-shelf intelligent software available to reduce time to market, and increase machine productivity
- SC controllers are SIL 2 certified (Safety Integrity Level 2 according to IEC 61508)
- XL controllers are SIL 2 capable (Safety Integrity Level 2 according to IEC 61508)
- C-open programming capability and high current driver options on some controllers
- XL controller is certified ISOBUS compliant

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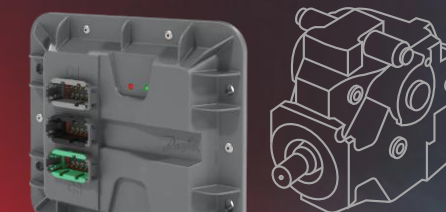
PLUS+1 Safety SC microcontrollers



PLUS+1 MC microcontrollers



PLUS+1 input/output expansion modules



PLUS+1 PC propel controllers



PLUS+1 high current controllers



PLUS+1 XL controllers



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PLUS+1[®] Displays

Monitoring, control and diagnostics

Monitoring vehicle performance has never been easier. Our displays give a customized all-in-one overview of your vehicle's CAN-based network. Just what operators need for continuous monitoring, control and diagnostics.

Many options are available with our PLUS+1 programmable displays – from plug and play, to customized operator interfaces with optional external video.

All of our displays have one thing in common: they provide an integrated operating network that brings the entire hydraulic system on your vehicle together. Whatever your needs, our displays can monitor every hydraulically-controlled detail, from oil pressure to machine angles.

- Supreme viewability with high brightness and optical bonding
- Touch technology and multiple button configuration options
- Multiple connectivity options
- Simpler screen design with PLUS+1 software and widget libraries
- CAN rotary device (HMR) for external screen navigation and machine control
 - The next level in operator comfort and machine modernization
- Qt-Based UI development for enhanced design flexibility and faster time to market on the 7-inch, 10-inch, and 12-inch displays



Read more



DM1000 (10") and DM1200 (12") series

Qt



DM700 (7")

Qt



DM430E (4.3") series



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PLUS+1[®] Operator Interfaces

Operator ergonomics and machine modernization possibilities

We are constantly striving to provide our operators with the most ergonomic and modernized human-machine interfaces. Our Human Machine Interface (HMI) CAN-based devices combine an ergonomic, modern and rugged design, into compact solutions for both open and enclosed cabs

- CAN Rotary device for external screen navigation and machine control, the next level in operator comfort and machine modernization
- Online configurator with almost 5,000 different icons as per ISO 7000, or fully customized for a truly unique appearance
- Intuitive five-finger control, allowing for "blind" operation of the device
- CAN controlled RGB LEDs provide the flexibility to easily customize each button for color and frequency
- Simpler system design and faster development cycles with PLUS+1 software
- PLUS+1 Partner Program for fast integration of CAN keypads

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HMR CAN rotary devices



CAN Keypads (HMK)
powered by PLUS+1 Partner Program



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PLUS+1[®] Joysticks and foot pedals

Endless configuration possibilities

Operators get a real feel for control with our wide range of joysticks. Endless configuration possibilities and ergonomic designs enable smooth and comfortable operation of your medium or heavy-duty vehicles. With single and dual-axis configurations and multiple mechanical and electrical interface options, our joysticks are as versatile as they come. Our complete range of modular PLUS+1 Compliant joysticks will seamlessly integrate into your intelligent mobile control solutions.

- Customizable solutions: Build your own joystick. Choose from four bases and five ergonomic grip types, with flexible button and switch placement
- PLUS+1 GUIDE programmability – Remove the need for an additional controller in the system
- Multiple electrical interfaces available for ease of configuration - including CAN+ (input module capability - allow up to 11 digital/analogue inputs)
- Superior performance. PLUS+1 Compliance enables simple and seamless future-oriented integration in the machine control system
- Faster, more flexible fulfilment times. The JS1-H standard portfolio is readily available, enabling you to reduce your warehouse stocks
- Bi-directional and uni-directional footpedals: Rugged design, high operating life



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JS1-H



JS1000



Bi-directional foot pedal

Uni-directional foot pedal



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Hydraulic Joysticks and foot pedals

Reliable and customizable

Danfoss hydraulic joysticks and foot pedals form an integral part of our state-of-the-art modular hydraulic control system, offering unparalleled versatility and ergonomic operation. Tailored solutions can be configured to provide the highest comfort and usability for operators. Engineered to withstand extreme conditions, our hydraulic joysticks ensure unwavering performance, even in the harshest environments.

The DHRCD joysticks are designed exclusively for dozers and forklift applications, offering complete flexibility. With independent configuration of each section, you can achieve optimal performance tailored to your specific needs.

The Danfoss line of hydraulic foot pedals offer a new level of precision and efficiency for off-highway vehicles. We understand the importance of ergonomics and functionality in every application. That's why our pedal types can be perfectly matched to ensure maximum comfort and control, while delivering unmatched performance.

- Over 30 years of experience in hydraulic control development
- Consistent performance, even in the toughest operating conditions with IP69K rating
- ISO 4406 certified for max. level of fluid contamination
- Customizable solutions: More than 8 different switch options for DHRCJ joysticks, more than 11 different lever options and 6 standard body options for DHRCD dozer joysticks, and 7 standard body options for foot pedals



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DHRCD Dozer Joysticks

DHRCJ Joysticks



DHRCP Foot Pedals



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PLUS+1[®] Remote Controls

Intelligent vehicle control

Our PLUS+1 remote controls incorporate the latest human-machine interface technologies. Through radio technology, the operator is kept at a safe distance while also improving productivity. The user-friendly programming tools and plug-and-play systems, ensure a fast customization and commissioning. Our remote controls are robust, ergonomic and safe.

- Flexible and freely configurable. The console boxes front plate is 100% customizable and all the devices are equipped with an external configurable SIM EEPROM
- Ergonomic design. Operator comfort is crucial for a human machine interface, which is why we have ergonomics at our core when designing the products
- Knowledge and tool sharing. We have developed support and service solutions to enable an autonomous approach, thus enhancing the customer experience. Such as:
 - PLUS+1 Compliance block
 - Remote control and display configurator
 - EEPROM programmer
 - Remote Controls Customer Service Center
- Safety comes first. The most recent software platform, working in 2.4GHz band has been certified with category 3-PLe by TÜV on the E-Stop
- PLUS+1 programmable console box displays (IK3/IK4), allowing simpler screen design and faster development cycles

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Transmitters



Ikompact

Ikargo

Ikore

IK1-G

iKontrol family

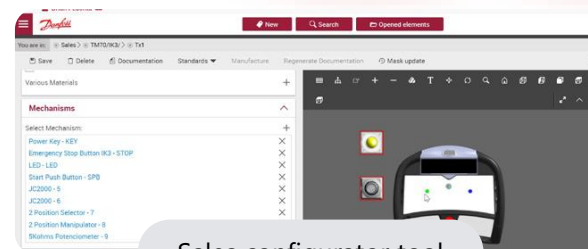
Receivers



R family

MP family

Explosion-proof portfolio



Sales configurator tool

ENGINEERING
TOMORROW

Danfoss

Remote Controls | Build Center

Build Center Program



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PLUS+1[®] Connected Solutions

Leveraging your data for optimal performance

PLUS+1 connected solutions combine telematics hardware, software infrastructure, and a user-friendly interface to provide one cohesive, connected experience. The platform opens the door to numerous value-adding services, from third party fleet management to PLUS+1 remote service and diagnostics, and over-the-air programming. Our hardware portfolio meets a wide range of connectivity needs, via cellular services, Wi-Fi networks and/or Bluetooth connections.

- Machine monitoring, diagnostics and remote updates
- Entire hardware portfolio on a single platform to meet mixed-fleet needs
- Fully encrypted to ensure data security
- PLUS+1 Remote and Mobile Service Tool capability (CS10)
- Complete solution including hardware, software and digital services
- Easy to order digital service plans via PLUS+1 Marketplace

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PLUS+1 Partner Program



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PLUS+1[®] Autonomy

Fast-track to autonomous machine functions

At Danfoss, we engineer solutions that increase machine safety, precision, productivity, and value, while also reducing with the added benefit of reducing development time to get machines to market faster.

Our PLUS+1 Autonomous Control Library (ACL) currently consists of ACL Essentials and ACL Advanced packages specifically designed for in-house engineering teams. These packages consist of pre-programmed and pre-tested software blocks for autonomous solutions, seamlessly integrated into our Danfoss' XM100 controller hardware.

The XM100 autonomous controller has been specifically designed to run the PLUS+1 autonomous software packages, supporting customers in enabling entry-level autonomous applications and delivering the central processing power for the future of mobile machinery and development.

The XM100 controller meets the needs of autonomous machines by interfacing with GNSS systems, LiDAR, Radar and inertial sensors while carrying out autonomous navigation tasks.

- Accelerate the development of your autonomous machines
- Increase the value of your machine, thus boosting your competitive advantage
- Get to market faster with off-the-shelf integrated solutions



Read more

Autonomous Custom Engineering Services (ACES):

- Help accelerating road to autonomy
- Project scoping
- Hardware architecture definition
- Software customization and implementation

Software features:

- Path recording and following
- Lidar-based feature detection
- Accurate positioning
- Obstacle detection and avoidance
- Feature localization and navigation

Hardware features:

- Powerful i.MX 6 QuadPlus processor
- 8 GB of flash and 2GB of DDR3RAM
- 4 CAN ports
- Interfaces for LiDAR and radar over Ethernet (10/100)
- Integrated 6-Axis Inertial Measurement Unit
- GNSS receiver
- Simpler system design and faster development cycles with PLUS+1 toolchain

ACES



PLUS+1 autonomous software



XM100 controller



Click on products to learn more



PLUS+1[®] Partner Program

Powerful programming

The PLUS+1 Partner Program extends the PLUS+1 Ecosystem beyond the Danfoss portfolio. We aim to bring an easy integration experience to more products and technologies, to better meet the unique needs of system integrators and machine manufacturers.

PLUS+1 Partner products are supported with PLUS+1 Compliance function blocks, integration documentation, and various integration assets, provided through PLUS+1 Update Center.

- Growing integration of partner products
- Increased portfolio of products
- Proemion and Trackunit partners for connected solutions
- LINAK[®] TECHLINE[®] electric actuators with PLUS+1 compliance block
- HMI Systems PLUS+1 Compliant keypads
- Partners in autonomy:
 - Sensata Technologies radar platform providing robust environmental awareness.
 - Ouster high-resolution digital LiDAR sensors designed for long-range detection in advanced autonomy systems.
 - LSLIDAR accessible LiDAR solutions offering reliable environmental sensing for scalable applications.



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Sensors



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PLUS+1[®] Support

For technical support

Getting help with your PLUS+1 requests has never been easier. A form will now guide you in creating a helpdesk case for any PLUS+1 request. With each new case, you will receive a case number which can be referenced for further support. Click on the PLUS+1 Helpdesk icon on the right to create your helpdesk support request.

If you are a customer, who receives service from one of our distributors, please contact them for support.

PLUS+1 Training

Danfoss offers flexible PLUS+1 platform training support to help you grow your knowledge and skills. Choose from instructor-led, virtual or self-paced e-Learning options, allowing you to adapt the training to your specific needs. Click on the PLUS+1 Training icon on the right to see currently offered training classes.

PLUS+1 User forum

The PLUS+1 User Forum is designed to help you find information and share your own experience. We hope this forum will become a valuable resource of knowledge and ideas for the PLUS+1 programming community. The PLUS+1 Helpdesk team provides comments and answers to questions posted, complementing the phone and email support we already provided.



PLUS+1 Training



PLUS+1 Helpdesk



PLUS+1 User Forum



PLUS+1 Development kit



PLUS+1 YouTube channel



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PLUS e1

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