

ELECTRIFICATION



**Programmable Displays
& Controllers for Electric
Mobile Machines**



DSEM-Series

A Message From Our DSEControl® General Manager

Electrification is transforming the way mobile machinery is designed, operated, and supported, creating new opportunities for efficiency, performance, and sustainability. At DSE, we work closely with OEMs across multiple industries to understand the real world demands of electric and hybrid machines.

Our **DSEM-Series** programmable displays give manufacturers the flexibility, connectivity, and reliability needed to support this transition. In this brochure, we highlight how **DSEM-Series** technology helps simplify control, enhance operator experience, and deliver robust, future ready HMI solutions for electrified applications across multiple sectors, including construction, mining, agriculture and logistics.

Mark Wass

DSEControl® General Manager



Electronics Excellence
Since 1975.

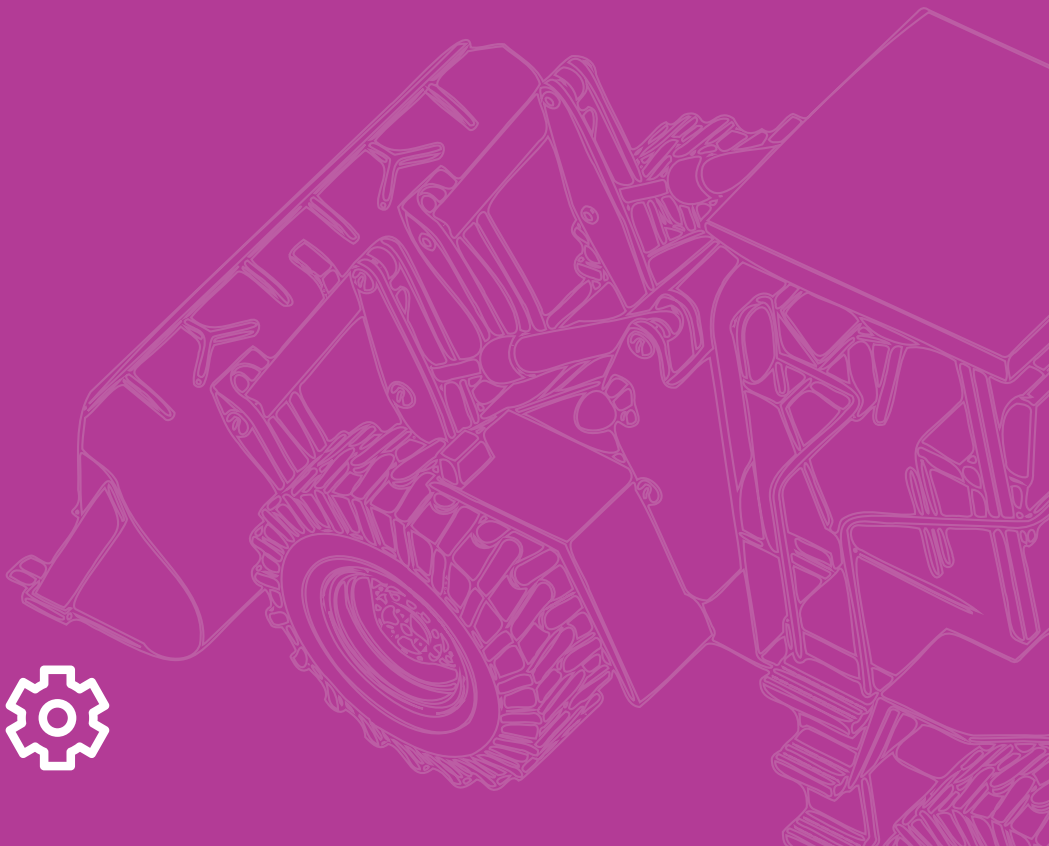


About DSE

Deep Sea Electronics (DSE) is a UK-based manufacturer with over 50 years of experience developing advanced control and display solutions. Designed and manufactured in the UK, our products are trusted by OEMs worldwide for their quality, reliability, and performance.

With more than 220 employees and a global support network, DSE serves a wide range of sectors including construction, mining, agriculture, material handling, and electric vehicles. Our programmable controllers and displays provide flexible machine control and intuitive operator interfaces for demanding applications.

DSE is renowned for its industry-leading technical support, working closely with customers from initial design through to integration and long-term operation. Backed by global engineering expertise, we remain committed to delivering innovative, future-ready solutions that enhance machine performance, operator experience, and reliability.





Mobile By Design.

DSEM-Series products provide powerful programmable display and control solutions for mobile machinery operating in demanding environments. Delivering an intuitive human-machine interface, they enable OEMs to present complex machine data clearly while giving operators responsive, reliable control. Available in multiple display sizes and configurations, **DSEM-Series** products are ideal for applications where visibility, performance, and durability are critical.

Designed for harsh environments, **DSEM-Series** displays offer robust construction, high brightness, and fast response times for use in construction, mining, agriculture, material handling, and transport applications. Support for multiple CAN networks, CODESYS, and Qt provides seamless integration and extensive customisation, allowing manufacturers to create application-specific interfaces while standardising platforms across product ranges. Backed by DSE's technical expertise and rigorous testing, the **DSEM-Series** enhances operator experience, machine efficiency, and long-term reliability.



DSEM-Series Range



Controllers



DSEM640
Programmable Controller (68 I/O)

- 32 bit processor with 220 MHz clock speed.
- 32 configurable inputs with digital / analogue capability.
- 36 configurable outputs with digital, PWM and PWMI.
- 4 independent CAN interfaces, J1939, CANopen and Raw CAN.



DSEM643
Programmable Controller (34 I/O)

- 32 bit processor with 220 MHz clock speed.
- 16 configurable inputs with digital / analogue capability.
- 18 configurable outputs with digital, PWM and PWMI.
- 4 independent CAN interfaces, J1939, CANopen and Raw CAN.

Displays



DSEM835
3.5" Programmable Display

- Optically bonded 3.5" colour display for harsh environments.
- Powerful processor with Cortex M7 400 MHz clock speed.
- 4 configurable inputs with digital / analogue capability.
- 3 configurable digital outputs.
- 2 CAN interfaces (J1939 / Raw CAN).



DSEM840
4.3" Programmable Display

- Optically bonded 4.3" colour display for harsh environments.
- Powerful processor with Cortex M7 400 MHz clock speed + M4 200 MHz clock speed.
- 64 MB of SDRAM / 20 MB CODESYS application / 20 MB user data memory.
- 4 configurable inputs, digital / analogue capability.
- 4 configurable digital outputs (2 x PWM).
- 2 independent CAN interfaces (J1939, CANopen and Raw CAN).

DSEM-Series Range

Displays

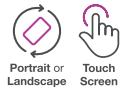


DSEM870
7" Programmable Display

- Optically bonded 7" colour display for harsh environments.
- Powerful ARM Cortex A9 processor with 800 MHz clock speed.
- 512 MB of DDR3 SDRAM / 2 GB NAND mass storage.
- 4 configurable inputs, digital / analogue capability.
- 4 configurable digital outputs.
- 2 independent CAN interfaces (J1939, CANopen and Raw CAN).



DSEM810
10" Programmable Display
(Non Keyed / Keyed Variants)



- Optically bonded 10.1" colour display for harsh environments.
- NXP i.MX 8 DualXPlus processor with GPU.
- 8 GB flash / 1 GB RAM.
- 4 outputs (Digital / PWM).
- 4 configurable inputs, digital / analogue capability.
- Keyed variant features 12 configurable colour backlit keys.
- 2 independent CAN interfaces (J1939, CANopen and Raw CAN).



DSEM812
12" Programmable Display
(Non Keyed / Keyed Variants)



- Optically bonded 12.1" 1000 cd/m² (nit) colour LCD display.
- i.MX 6 quad processor.
- 16 GB flash / 2 GB RAM.
- 6 configurable inputs, digital / analogue capability.
- 6 inputs (digital, resistive, voltage, 0 mA - 20 mA, frequency input).
- Keyed variant features 16 configurable colour backlit keys.
- 3 independent CAN interfaces (J1939, CANopen and Raw CAN).



New Technology



DSEM805

5" Programmable Display

In development by Deep Sea Electronics, the upcoming DSEM805 Programmable Display is set to redefine compact machine control, delivering the power, flexibility, and visual performance of a much larger HMI in an ultra-compact 5" platform, enabling OEMs to bring advanced capability to space-constrained applications without compromise.

Key Features:

- 5" optically bonded anti-glare 1000 cd/m2 (nit) display (800 x 400)
- 4 configurable inputs
- 4 configurable outputs
- 2 camera inputs
- 1 audio output
- 8 configurable soft-keys (RGB)
- 2 x CAN communications interfaces
- USB & Ethernet
- Panel / RAM mount options
- IP67 protection
- CODESYS 3.5 / Qt



Applications

DSEM-Series delivers intelligent, reliable control solutions for the next generation of electrified mobile machinery.



Construction



Mining Equipment



Agricultural Machinery



Logistics



Municipal



Transport



Leisure & Travel



Domestic





Construction

Electric construction equipment is playing an increasingly important role as the industry moves towards lower emissions, reduced noise, and greater energy efficiency. Electrified machines help contractors meet environmental regulations, operate in urban and indoor environments, and reduce operating costs through lower fuel and maintenance requirements.

DSEM-Series products provide a flexible and robust control and display platform for electric construction machinery. Programmable displays allow operators to monitor battery status, energy usage, operating modes, and system diagnostics, helping maximise machine performance and runtime. With support for multiple CAN networks and modern communication interfaces, **DSEM-Series** products integrate seamlessly with battery management systems, inverters, and vehicle controllers. Combined with configurable HMIs and a rugged design, they enable OEMs to deliver safe, efficient, and intuitive electric machine solutions for demanding construction environments.



Front Loaders



Excavators



Concrete Mixers



Lighting Towers



DSEM812
12" Programmable Display
(Non Keyed / Keyed Variants)



**Control for Electrified
Construction Machines,
Built for Tough
Environments.**



Mining Equipment

Electric mining equipment is increasingly being adopted to improve safety, efficiency, and sustainability in demanding operating environments. By eliminating diesel emissions, electrified machines support healthier working conditions, particularly underground, while helping operators meet environmental and ventilation requirements. Reduced noise, lower maintenance demands, and precise electric drivetrain control further enhance productivity and machine performance.

DSEM-Series products provide a powerful control and display platform for electric mining applications. Programmable HMIs enable real-time monitoring of high-voltage systems, power demand, battery status, and machine health, helping operators make informed decisions. With support for multiple CAN networks and modern control architectures, **DSEM-Series** products integrate seamlessly with traction systems, battery management systems, and auxiliary controls. Combined with a rugged design and flexible configuration capabilities, they deliver reliable, intuitive operation in harsh, high-duty mining environments.



Trucks



Excavators



Dump Trucks



Loaders



DSEM810
10" Programmable Display
(Non Keyed / Keyed Variants)



**Reliable Control
for Electrified Mining
Equipment, in Extreme
Conditions.**



Agricultural Machinery

Electric tractors, sprayers, and combine harvesters are becoming increasingly important as agriculture adopts more sustainable and efficient technologies. Electrification reduces emissions and noise while providing precise control of torque and speed, improving performance during planting, spraying, and harvesting operations. Fewer mechanical components can also reduce maintenance requirements and improve reliability.

DSEM-Series products provide a robust control and display platform for electric agricultural machinery. Programmable displays allow operators to monitor battery status, power consumption, implement performance, and machine diagnostics from a single interface. With support for multiple CAN networks and seamless integration with electric powertrains and implement controllers, **DSEM-Series** solutions deliver intuitive operation and consistent performance across a wide range of agricultural applications.



Timber Harvesters



Tractors



Combine Harvesters



Crop Sprayers



DSEM812
12" Programmable Display
(Non Keyed / Keyed Variants)



**Smart Control for
Electrified Agricultural
Machinery and Field
Performance.**



Logistics

Electric forklifts, boom lifts, and lifting platforms are widely used for their efficiency, low noise, and zero-emission operation, making them ideal for warehouses, factories, and urban environments. Electric drivetrains provide smooth, precise control, improving load handling, lifting accuracy, and operator confidence.

DSEM-Series products deliver a reliable control and display platform for electric access and material handling equipment. Programmable HMI's provide clear visibility of battery status, energy consumption, load information, and system diagnostics. With support for multiple CAN networks and seamless integration with electric drivetrains, lift controllers, and safety systems, DSEM-Series solutions help OEMs deliver safe, intuitive, and efficient machine operation.



Forklifts



Refrigerated Trucks



Lifting Platforms



Boom Lifts



DSEM835
3.5" Programmable Display



**Efficient Control for
Electrified Logistics and
Material Handling Fleets.**



Municipal

Electric road sweepers and refuse trucks are increasingly used to reduce emissions, noise, and operating costs in urban environments. Electrification supports cleaner air, quieter operation, and improved compliance with environmental regulations, while providing smooth and precise control of vehicle and auxiliary functions.

DSEM-Series products provide a flexible control and display platform for electric municipal vehicles. Programmable HMI's enable operators to monitor battery status, energy consumption, vehicle functions, and system diagnostics from a single interface. With support for multiple CAN networks and seamless integration with vehicle control and safety systems, DSEM-Series solutions help deliver efficient operation, reduced downtime, and a consistent operator experience.



Skip Loaders



Snow Ploughs



Road Sweepers



Refuse Vehicles



DSEM810
10" Programmable Display
(Non Keyed / Keyed Variants)



DSE

**Clean, Reliable Control
for Electrified Municipal
Service Vehicles.**



Transport

Electric buses and lorries are playing a key role in the transition to cleaner, more efficient transport. Electrification reduces emissions and noise, improves air quality, and helps operators meet increasingly stringent environmental regulations. Electric drivetrains also deliver smooth performance, regenerative braking, and lower maintenance requirements, reducing overall operating costs.

DSEM-Series products provide a powerful control and display platform for electric transport applications. Programmable displays enable real-time monitoring of battery status, energy consumption, vehicle range, and system health. With support for multiple CAN networks and seamless integration with battery management and vehicle control systems, DSEM-Series solutions deliver intuitive operation, improved uptime, and a consistent user experience across electric bus and lorry platforms.



Lorries / Trucks



Buses



DSEM835
3.5" Programmable
Display



DSEM810
10" Programmable Display
(Non Keyed / Keyed Variants)



**Advanced Control for
Electrified Transport
and Mobility Solutions.**



Leisure & Travel

Electric leisure and travel vehicles, including golf carts and airport transport vehicles, provide quiet, efficient, and environmentally friendly mobility. Their zero-emission operation, low noise levels, and smooth electric drivetrains make them ideal for resorts, airports, campuses, and other public environments while helping reduce operating and maintenance costs.

DSEM-Series products offer a flexible control and display platform for compact electric vehicles. Programmable displays provide clear visibility of battery status, speed, range, and system diagnostics, while CAN connectivity enables seamless integration with electric powertrains and vehicle management systems. The configurable HMI platform allows OEMs to create intuitive, branded user experiences while ensuring reliable performance across a wide range of applications.



Airport Cart



Golf Cart



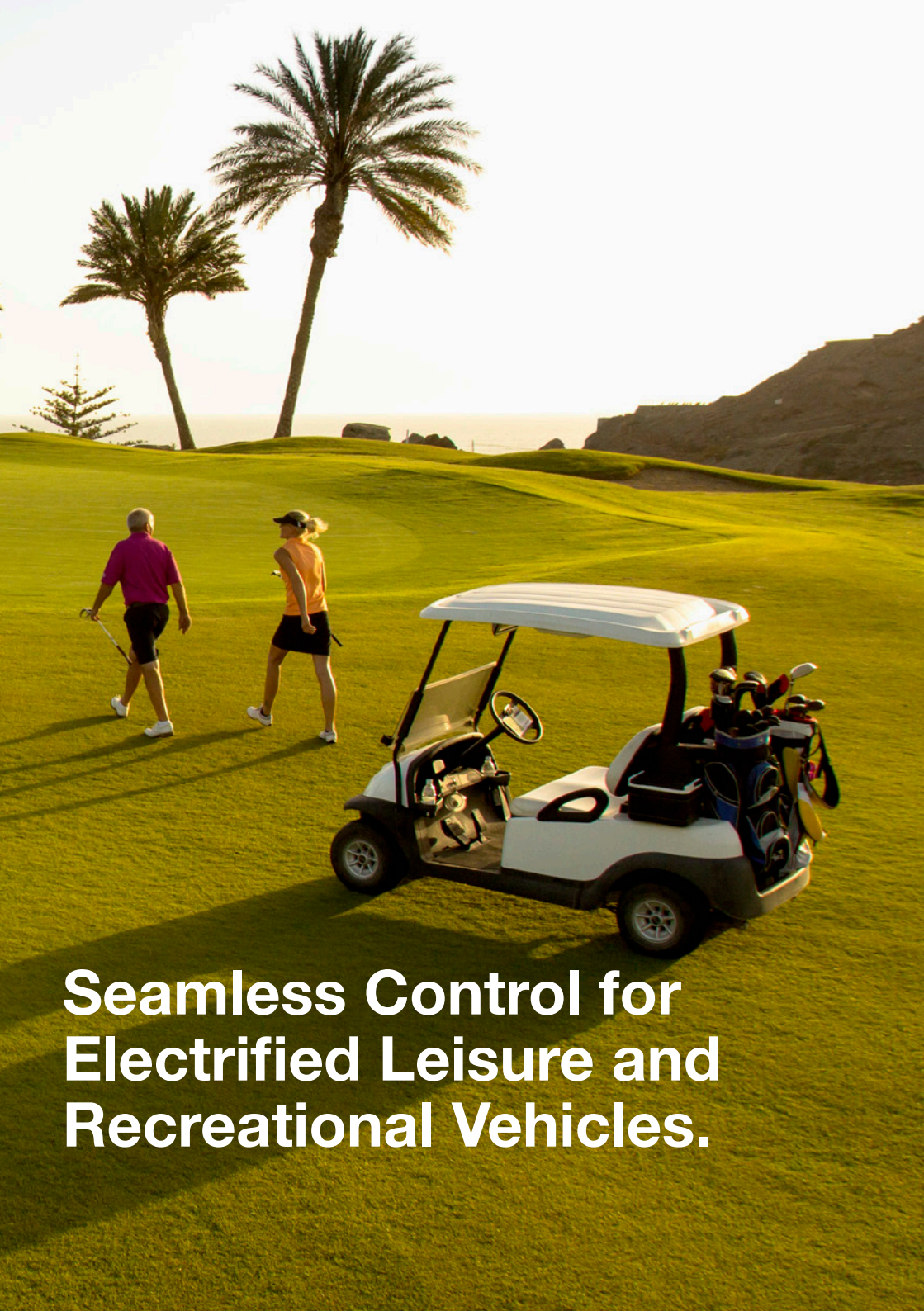
Electric Carts



DSEM835
3.5" Programmable
Display



DSEM810
10" Programmable Display
(Non Keyed / Keyed Variants)



**Seamless Control for
Electrified Leisure and
Recreational Vehicles.**



Domestic

Electric ride-on lawnmowers, utility vehicles, and other compact electric equipment are becoming increasingly popular due to their quiet operation, zero-emission performance, and low maintenance requirements. Electric drivetrains provide smooth, controllable power, making them ideal for residential and commercial property maintenance.

DSEM-Series products provide a compact and flexible control and display platform for domestic and light commercial electric vehicles. Programmable displays allow users to monitor battery status, power consumption, operating modes, and system alerts, while CAN connectivity enables seamless integration with motor controllers and battery management systems. The configurable HMI platform delivers intuitive operation, reliable performance, and a professional user experience.



Mowers



DSEM835
3.5" Programmable Display



**Simple, Smart Control
for Everyday Electrified
Domestic Vehicles.**

In-Depth Testing for Assured Quality.

All DSE**M-Series** products go through a series of rigorous tests in laboratory and real-life environments. This ensures all products comply with the required health and safety standards applicable to global mobile machine markets.



CE Marking



E11 Marking



Mechanical Testing



EMC Testing



Climatic Testing



Electrical Testing



DSEM-Series



Technical Support.

DSE provides comprehensive global technical support for its **DSEM-Series** programmable display products, helping customers from initial concept through to deployment and long-term operation. Our engineers work closely with OEMs and system integrators to define system architecture, select the most appropriate hardware, and optimise display functionality for specific applications.

With expertise in CODESYS, Qt, and CAN-based systems, DSE supports customers with programming, integration, and diagnostics to reduce development time and accelerate product launches. Backed by a global network of technical specialists, comprehensive documentation, and training resources, responsive support is available throughout the product lifecycle.

DSEM-Series products undergo rigorous environmental and functional testing, supported by firmware updates, lifecycle management, and ongoing technical assistance. This end-to-end approach ensures customers benefit from reliable, secure, and future-ready display solutions backed by DSE's engineering expertise.



Reliable Software Partners for Successful Automation.



CODESYS

- Reliable partner for successful automation devices.
- Globally established system platform.
- Single user interface.
- Power and usability for effective implementation of complex automation projects.
- Easy adaptation to different system requirements & environments.
- Integrated functionality for practice-oriented automation devices.



- Reliable partner at all stages of the product development process.
- Design and create incredible user interfaces.
- Intelligent software for developing and deploying entire product lines.
- Improved productivity support, enabling faster time to market for applications.
- Analyse customer insights with usage intelligence to support continuous device improvement.
- Automate testing and assure quality.

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VAT No. 316923457

