

Digital Sensor Module

The Next Evolution
of Digital Strain
Measurement.

Mantracourt[®]
Electronics

Digital Sensor Module

DSM-SSBY-A
DSM-SSBY-B
DSM-SSBG-A



The DSM (Digital Sensor Module) is Mantracourt's next-generation embedded strain gauge digitiser platform that turns traditional strain-based sensors (such as load cells or torque sensors) into digital output devices. DSM processes the measurement internally and communicates it directly over industrial networks such as CAN initially via a proprietary protocol FlexiCAN, with additional protocols planned.

FlexiCAN is a versatile CAN communication solution capable of emulating the message structures of various established protocols. This means it can be tailored to behave like existing systems on a network, simplifying integration and reducing engineering complexity. It can also be configured to interact with proprietary CAN networks, giving customers confidence that it will integrate with their own bespoke systems. FlexiCAN delivers reliable data exchange while allowing a single hardware platform to be reconfigured for different CAN-based systems.

KEY FEATURES

- Next-generation strain gauge digitiser platform
- Available in embedded, card, and enclosed card formats
- Single hardware platform with firmware-defined protocols
- Configurable via software to suit different systems and applications
- Supply voltage capability up to 32 VDC (Automotive & Off-Highway)
- Selectable measurement rates from 1 to 1000 Hz
- Advanced calibration functionality:
gain/offset, multi-point, and polynomial correction
- Suitable for both linear and non-linear sensor applications
- Remote temperature support across all variants
- Flexible CAN interface compatible with standard CANbus networks
- Can be configured to interact with proprietary CAN systems
- Direct digital output over CAN eliminates analogue signal conditioning
- Deterministic digital measurement for reliable system integration
- Designed for straightforward integration into existing control systems
- Supports modern distributed sensing architectures
- Reduces product variants through configurable communications
- Simplifies wiring and improves noise immunity compared to analogue outputs
- Free toolkit available for configuration and setup

ELECTRICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
Supply Voltage Range	7–32 VDC (Maximum 32 VDC)
Supply Ripple	100 mV pk–pk
Typical Supply Current (350 Ω bridge)	45–60 mA
Bridge Excitation	4.5–5.25 VDC
Bridge Resistance	120–10,000 Ω
Sensitivity Range	± 0.5 to ± 480 mV/V (electronically switched)
ADC Resolution	24-bit (16 million internal counts)
Measurement Rates	1–1000 Hz selectable
Operating Temperature	–40 to +105 $^{\circ}$ C
Storage Temperature	–50 to +125 $^{\circ}$ C
Humidity	0–95% RH (non-condensing)

COMMUNICATION ARCHITECTURE

DSM hardware includes CAN (CAN 2.0B, ISO11898-2 compliant) and RS485 (2-wire half duplex; hardware provisioned). CAN bit rates supported: 10K–1M bps. Protocol selection is firmware-defined using DSM Toolkit.

PROTOCOL	STATUS	TARGET RELEASE
FlexiCAN	Launch firmware	Q3 2026
J1939	Planned firmware	Q4 2026
CANopen	Planned firmware	2027
RS485 (Modbus RTU planned)	Future	TBD

CALIBRATION CAPABILITY

DSM supports gain & offset calibration, multi-point calibration (2–11 points), and polynomial calibration (up to 4th degree). Shunt calibration, system zero adjustment, limit detection, and flag reporting are supported. Calibration updates require reinitialisation after coefficient changes.

TEMPERATURE CAPABILITY

VARIANT	TEMPERATURE SUPPORT
DSM-SSBY-A (Disc)	Remote temperature supported. No local temperature
DSM-SSBY-B (Open Card)	Local and remote temperature supported.
DSM-SSBG-A (Enclosed)	Local and remote temperature supported.

DTEMP supported for temperature compensation and indicative load cell temperature monitoring

MECHANICAL SPECIFICATIONS

VARIANT	SPECIFICATION
DSM-SSBY-A Disc	20 mm diameter, 5.5 mm height, M2 mounting
DSM-SSBY-B (Open Card)	70 mm x 21.7 mm
DSM-SSBG-A (Enclosed)	84 mm x 27.5 mm x 17.5 mm

COMPARISON WITH MANTRACOURT LEGACY CAN PRODUCT

AREA	DCELL	DSM PLATFORM
Hardware Architecture	Protocol-specific	Firmware-configurable platform
Supply Voltage	Up to 18 VDC	Up to 32 VDC
Mechanical Compatibility	Legacy format	New architecture (not compatible)
Protocol Expansion	Fixed	Multi-protocol roadmap
Callibration Capability	Limited	Gain/Offset, Multi-point, polynomial
Temperature Capability	Variant dependent	Remote temp across range
Sampling	Up to 200 Hz	Up to 1000 Hz

ACCESSORIES

- DTEMP

Ready to go Digital?

VISIT MANTRACOURT.COM:

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- Request a live demo or trial kit
- Contact our engineering sales team