The **SmartFlex™** Solution

Intelligent Sensor Integration






One SmartFlex Module can perform the work of many different devices, integrating analog sensors, digital sensors, and a wide range of protocols to create the most capable network imaginable.

AIRMAR®
TECHNOLOGY CORPORATION

The SmartFlex™ Solution

Unique. Powerful. Universal. Expandable.

SmartFlex provides a simple and cost-effective way to connect and manage a variety of analog and digital sensors and devices – regardless of their protocols. This results in the creation of an intelligent and capable network where all data is readily accessible.

Monitor Vital Parameters:

- Battery voltage
- Diesel fuel flow
- Engine J1939/J1708/J1587
- Fuel consumption
- Temperatures
- Tank levels
- Weather conditions
- Voltage

Digital Switching & Automation:

- Alerting & automation
- Custom alarms & notifications
- Timers & counters
- Fully programmable actions
- Relay control

Network Bridging & Filtering

Diagnostics:

- BUS traffic in human readable format
- Data recorder
- Value logging
- Searchable network traffic
- Traffic replay

and much more

SmartFlex™ View

Every SmartFlex module features embedded browser-based software with intuitive, menu-driven guidance for the set up and control of all connected devices. Drop down menus make set-up of new sensors intuitive and fast.

SmartFlex™ Alert

SmartFlex modules feature highly configurable alerting that can be defined for any value on the network and created as user-defined, customized alerts based on sensor status.

- Customized oil pressure alert
- Parameters at various RPM ranges
- Wind speed alerts

This allows for four types of alert variables:

- Network values
- Calculated value (logic equation from multiple values)
- Timer (desired variable did or did not happen within a certain time)
- Event counter (event happened X many times within the measured time)

Data Logging

SmartFlex CES Modules have built-in WiFi and Ethernet enabling simple connection to the Internet and Cloud based services. In addition, CES modules have two USB 2.0 access points for additional devices.

Once connected to networks or devices, custom value logs or entire bus logs can be sent to the cloud, making it easy for key personnel to understand current conditions as well as past network traffic and events. SmartFlex also provides the capability to push SMS/Email messages for custom criteria.

There are two ways to log important data:

- Value Logging:
  - Choose any value on the network(s) or any connected device
  - Custom set the time interval to log
  - Send logs at user defined times
  - Optional trigger/event condition to trigger logging (such as high wind events)
- Bus Logging (raw data on primary or secondary networks):
  - Multiple logging levels
  - All messages and values on the entire bus, or
  - Messages and device details, or
  - Messages only
  - Selectable logging times and notification times

SmartFlex Digital Sensors

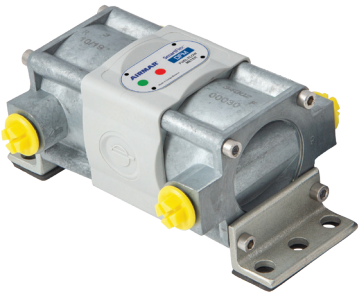
SmartFlex Diesel Flow Meters

Designed specifically to operate with SmartFlex CES Modules. Configuration is done with SmartFlex browser-based software. Available for both Single and Dual chamber (differential) functionality as well as a flanged housing model for instances where high pressure is present.

Common Specifications:

- Maximum Pressure: 25 bar
- Kinematic Viscosity : 1.5 – 6.0 mm^2/s (cSt) (.059" – .23" $^2/s$ (cSt))
- Threaded connections: M14 x 1.5 unless noted
- Maximum size of inclusions: 0.08 mm (.003")
- Max Pressure drop at max flow: 0.2 bar
- Supply voltage range: 10 – 16 VDC
- Operating ambient temp.: -40 – 85 °C (-40 – 185 °F)

Single-Chamber DFM



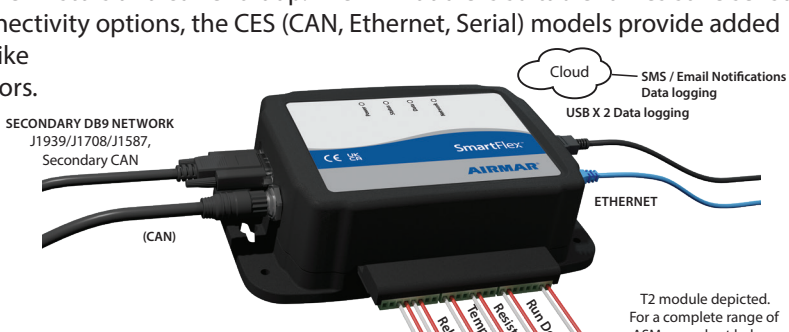
Dual-Chamber (differential) DFM

It Starts with ONE SmartFlex™ Module

At the heart of the solution is the **Airmar SmartFlex Module (ASM)**, a universal device with browser-based SmartFlex™ software that eliminates the need to buy additional hardware, software, or dedicated displays to program the modules or view the data.

The initial step involves selecting the appropriate ASM for your specific applications. It's important to identify the sensors you intend to connect and the desired features as each module is tailored to support certain types of sensors. For instance, the T1 module is designed to support resistive sensors, thermistors and current loop. The T2 module is suitable for resistive sensors, voltage inputs and switches. If you require more connectivity options, the CES (CAN, Ethernet, Serial) models provide added support for Ethernet, USB ports, and digital engines like J1939/J1708/J1587 and Airmar's diesel fuel flow sensors.

For additional support in choosing exactly the right module(s) for your application, please contact our team at Gemeco at 803-693-0777 for inquiries in the Americas, Australia and New Zealand or Airmar EMEA at +33 (0) 2 23 52 06 48 for inquiries in Europe, Middle East, and Africa.



T2 module depicted. For a complete range of ASMs, see chart below.

A Model for Every Installation!

	ASM-C-T1	ASM-C-T2	ASM-CES	ASM-CES-T1	ASM-CES-T2
Programmable Sensor Inputs	**Up to 8 Sensor Inputs per ASM**	**Up to 4 Sensor Inputs per ASM**		**Up to 8 Sensor Inputs per ASM**	**Up to 4 Sensor Inputs per ASM**
Thermistor (NTC)	✓	✓		✓	✓
Current Loop 4 wire interface	✓			✓	
Current Loop 2 and 3 wire interface	Up to 4			Up to 4	
Resistive Senders (US, European, or custom up to 300 OHMS)	✓	✓		✓	✓
Binary Switch	✓	✓		✓	✓
Voltage (0-75VDC)		✓			✓
Fixed Sensor Inputs					
Thermocouples (J,T,K,E types)*	2			2	
Relays (10A Resistive, 5A Inductive)		4			4
Run Detector (9-240VDC/VAC rms)		4			4
External Connections					
Primary NMEA 2000	✓	✓	✓	✓	✓
WiFi	✓	✓	✓	✓	✓
USB 2.0			**2**	**2**	**2**
Ethernet (RJ-45)			**1**	**1**	**1**
Secondary Network DB9 Male includes: SmartFlex™ Diesel Flow Meter, J1939/J1708/J1587 or NMEA 2000 (secondary) NMEA 0183 (RS-422, RS-485, RS232)			**1**	**1**	**1**
Signal K compatibility	✓	✓	✓	✓	✓
OneNet®			✓	✓	✓

* Dry Exhaust
Note: MODBUS, ISOBUS and SDI-12 will be available in future versions of SmartFlex

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ISO CERTIFIED CE UK CA Patent Pending

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