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## Technical Specifications

### Electrical Power Supply

8V to 36V DC, 150 Watts *(complete system)*

### Digital Inputs

7 FLEx iO DC Inputs  
2 High Speed FLEx iO Inputs with a  
15kHz. Maximum count rate

Type:

Dry contact closure (TTL compatible)  
Max. Open circuit voltage 36V  
Max. Short circuit current 1 mA

### Digital Outputs

6 High Speed FLEx iO Digital Outputs  
Type:  
5 - High Side Switch, Short Circuit and Load  
Protected. Thermally Protected. Maximum  
load 36V DC, 5Amps.  
1 -Solid State Relay Output. Maximum Load  
60V DC, 2Amps.

### Motor Control

Brushless DC motor controller *or* Class I,  
Division 1 hazardous motor available.

### Colour Sensor

BLENDTECH Spectrum™ Colour Verification  
System - In line configuration. *(optional)*

### Communications

- 2 - Serial Communication Ports, RS-485  
RS-232 selectable with lightning / surge pro-  
tection
- Baud Rate: Selectable 1200 to 19200
- MODBUS ACSII System
- Report Printer Supported.
- Dresser/Wayne WIP Protocol Support.
- CANBUS Available

### Event Log

Up to 200 entries or transactions

### Display

20-character, 2-line graphic VFD

### Environment

Unit suitable for indoor or outdoor use with  
appropriate enclosure mounted in a fuel  
dispenser.

### Safety

All solid state design  
No open electrical contacts  
Brushless DC *or* Class I Division 1 Motor

### Hazardous Areas *(optional)*

System UL and CSA Approved for Class I,  
Group D, Division 1 Hazardous Areas with  
enclosure shown. (Pending)

## Materials of Construction

### Flowmeter

303 stainless steel body  
440 stainless steel gears

### Pump

304 stainless steel body. Teflon seals

### Process Piping and Valve

304 stainless steel

### Additive Tank (Storage)

Galvanneal Steel

## Operating Information

### Flowmeter

Accuracy: 0.5% of rate  
Flow Rate: 0 to 0.95 lpm (40 ppls/cc)

### Pump

Pressure: 80 psi maximum  
Flow Rate: 0 to 4000 cc per minute

### Operating Pressures

80 psi maximum

### Additive Tank (Storage)

15 litres maximum volume liters

# Product Bulletin

Integrated Additive • Dye Addition System

Document Number: ECM\_IIS-004



## Product Description

The BLENDTECH ECM Integrated SMART INJECTION system is a modern electronic microprocessor based “completely” self contained unit designed specifically for dye (colourant) and additive injection within a fuel dispenser. The unit is designed to facilitate and control the unattended accurate injection and verification of dyes and additives.

## Features

The Electronic Control Module (ECM) Integrated Injection System (IIS) processes and displays the data required for accurate control of dye or additive injections. The ECM Integrated Injection System normally operates as an intelligent slave to a main product dispenser.

The ECM IIS is a complete addition system. Composed of the ECM controller, interface to a TAS system, operator interface (HMI), additive tank inventory (tank level) system, integrated additive pump, optional optical colour verification system (for colourant and dye), BlendCOMM Management and Reporting Software, additive flow meter and optional transaction printer. The system has been designed as a complete “out of the box” solution, all components have been engineered into a seamless “user-friendly” integrated package hidden safely within the fuel dispenser.

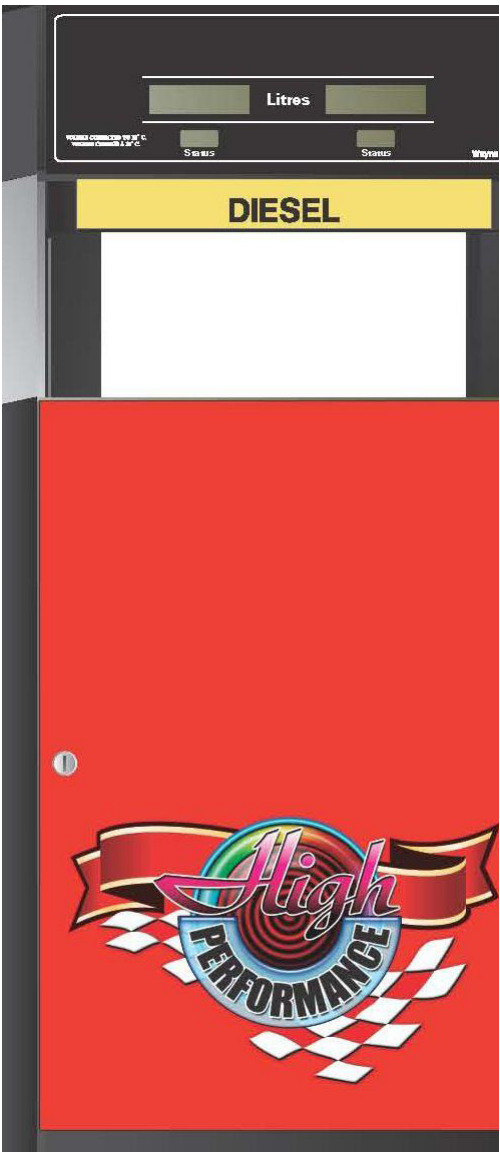
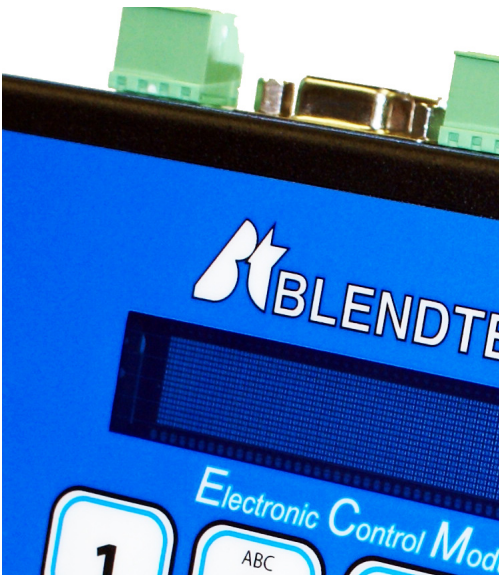
### Continuous Injection

Unique to BLENDTECH, the IIS unit operates as a continuous injector. This unique concept offers a number of benefits when compared to “traditional” methods of injection. The ECM uses a dynamic injection routine constantly computing the optimum injection size and interval while maintaining the desired treatment rate as closely as possible for the entire load. This method of additive injection will increase product quality and reduce cost of ownership.

### General Operation

The ECM Integrated Injection System is a slave to the main product stream *(the dispenser)*. The IIS is designed to operate in a completely unattended environment. The tank, inject valve, pump and ECM controller are all housed within a standard fuel dispenser, “out of sight out of mind”. No additional hardware is added to the exterior of the dispenser. Access to the injector is monitored using door switches mounted on each of the dispenser’s access panels limiting access to the IIS.

The injection process is activated when the ECM receives an enable signal from the hook switch, a remote PLC or TAS system or the enable command via a communications link. The ECM can also be configured to begin injection based on main product pulses. The ECM constantly monitors the injection process, if an error is detected or there is a problem with the injection system the ECM will remove a “hard-wired” permissive interlock connected to the dispenser, preventing “fuelling” from occurring or continuing. When an error occurs the ECM will flash a red light mounted behind the dispenser’s status display a more detailed description can be seen on the face of the ECM or transmitted over the communications circuit.



Specifications subject to change without prior notification

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Distributed by:



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**The Total Solution Company**

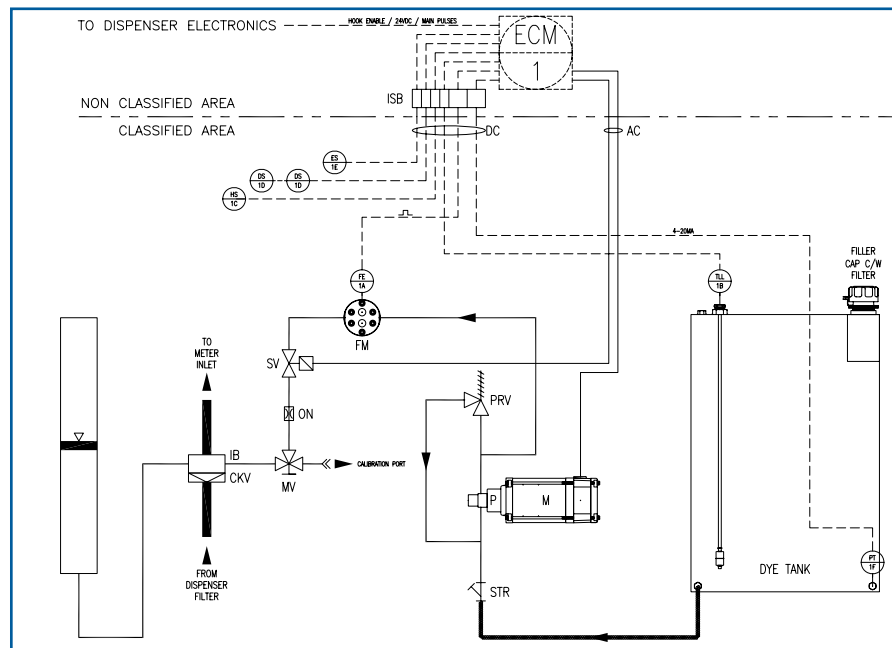
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The ECM unit maintains it's own internal calibration factors for both the main and additive flow meters and all user changeable parameters in nonvolatile memory. System firmware is stored in "flash" memory allowing easy access to downloadable software upgrades. System parameters may be changed via the unit's front panel or through the unit's serial communications port.

The communications circuit permits monitoring and control of the ECM unit. The ECM unit is compatible with the BlendCOMM Management and Control Software Package which can provide advanced control features such as BOL generation, remote authorization and on-line inventory. All BlendCOMM functionality can be accessed via a standard Windows PC. The Injection System stores a large amount of process information including operating state, volumes and errors in the ECM's transaction log. This transaction log provides an operator with a complete time and date stamped snap shot of the performance of the unit over a period of time. The transaction log can be downloaded via the RS485 or RS232 communications link using the BlendCOMM Management software.

## System Process Diagram



BLENDTECH Integrated Injector System Process Diagram

The ECM and IIS has been specifically engineered to function with a fuel dispenser it is not a retrofit or modification the design was drafted from the "ground up" with this application in mind.

All required hardware is located within the injector. BLENDTECH's exclusive invisible tank design ensures, no additional enclosures, tanks or equipment are added to the "outside" of the dispenser. "Out of sight out of mind" ensuring maximum security while maintaining a consistent "look and feel".

## Key Features

- Additive Pretreatment
- Clean starts - no contamination
- Additive and Product totals
- Supports a variety of flow meters
- Accepts flow meter pulse rates up to 15kHz.
- Error checking and alarm generation
- Provides for calibration of each flow meter pulser
- Additive Overtreat
- Flushing at end of load (*Preset Mode Only*)
- Designed to eliminate cross contamination
- 20 character, 2 line vacuum fluorescent graphic display
- Integrated easy to use HMI
- RS-485 and RS-232 data communications and control
- Available Report Printer
- FLEx iO user defined inputs and outputs
- 8V - 36V DC operation
- Nonvolatile memory and Transaction Log
- Flash Based Software
- BlendCOMM Management and Control Compatible
- MODBUS ASCII Protocol available
- Dresser/Wayne WIP Protocol supported.
- Integrated Additive Inventory System
- Spectrum™ Colour Verification System
- "Out of Sight, Out of Mind" Design with unique "Invisible" Tank design.
- Canadian Weights and Measures Approved when installed in approved dispenser.

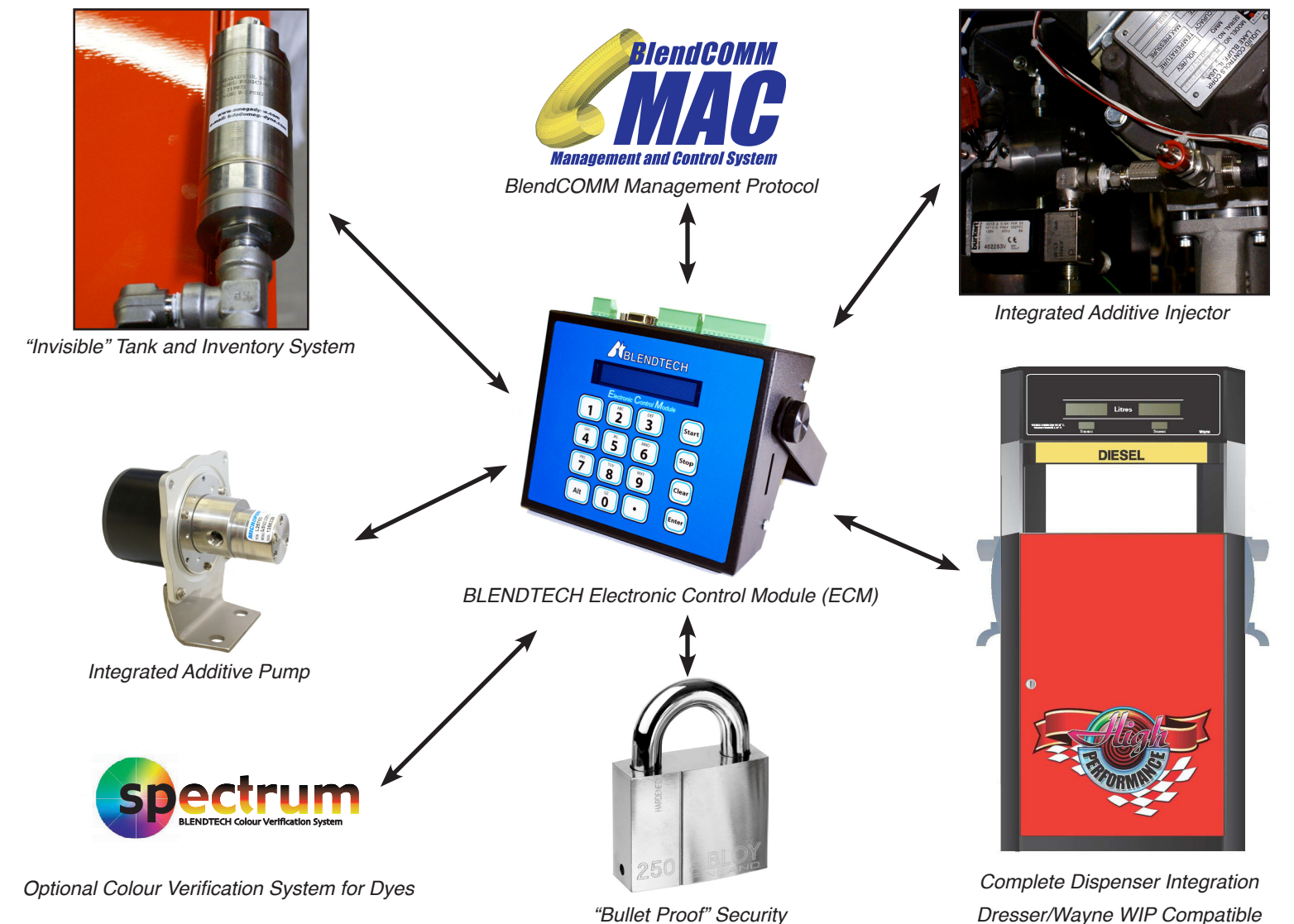
## Inventory and Security

The ECM controller and integrated additive tank level sensors provides the operator with a complete picture of the additive inventory. The ECM can be configured to prevent the transfer of a product if there is not enough additive to complete the desired preset. The inventory system also allows the ECM to monitor the addition or removal of product to the additive storage tank. All additions to the tank can be monitored and recorded in the system transaction log. The optional interlock to the fill cap prevents and monitors unauthorised access to the additive inventory.

## Spectrum™ - Colour Verification System

For taxation dye or colourant programs the presence or absence of dye is a growing concern. Using the ECM and the optional Spectrum™ colour sensor the system constantly monitors the addition of dye (colourant) to ensure proper operation. The Spectrum™ colour verification system can detect the presence of dye in clear fuel or the absence of dye in coloured fuel. This allows the system to ensure fuel is being dyed when it should be or prevents the colouring of already dyed fuel. The Spectrum™ colour sensor uses a complex method of colour analysis where the entire visible light spectrum is considered. The unit does not look at the product as a single absolute colour but as a colour made up of a complete spectrum (spectrum-analysis). This allows the colour sensor to target a specific wavelength of light absorbed by the dye marker. Unlike other systems which are effected by the "quality" of clear fuel, this method provides a true colour analysis of the product being produced.

## System Overview



## The Total Solution Company

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