



# Product sheet

## Additive Injection System Model 1020

### Features

- Provides accountability to ISO 9000
- Controls 1 to 4 additive lines
- High accuracy < 0.5%
- Comprehensive alarms including over/under injection
- Computer output for reports
- US and European Hazardous Area Approval
- Stores last 500 deliveries
- RS232 & RS422 communications ports
- Fully programmable



### Overview

To meet international quality standards, terminal operators must ensure that additives are accurately injected into fuel.

The Contrec 1020 Additive System provides this assurance of quality by measuring and recording the total quantity of additive injected during a load.

### Accuracy, Alarms and Accountability

The 1020 Additive Controller will accept up to four flowmeter inputs and control up to four solenoid valves. An injection rate is programmable for each injector via the front keypad or via the RS422 interface.

A unique Pulse Averaging technique ensures that additives are injected with an accuracy better than 0.5%. Comprehensive alarms ensure that any failure in the system or shortage of additive is immediately detected and signalled.

Injector modules can be mounted remotely from the 1020 Additive Controller and close to the point of injection. This ensures minimal contamination when switching from one additive to another in multi-company applications where more than one type of additive may be available per line.

The 1020 will cycle through each additive line and display both the accumulated volume of additive injected and the main product total. Additionally, the display can be toggled to show average flow rate for the last additive batch and the volume of the last additive batch.

### Audit Trail to ISO 9000 Quality Standards

Up to 500 deliveries can be logged in memory, with time and date, and downloaded to a computer for report generation. When used in conjunction with the Contrec 1010 Load Computers, the additive quantity and type can be printed on the bill of lading and stored in the transaction files for full accountability

A comprehensive instruction set and SLIP protocol allows the 1020 to be integrated into larger terminal automation systems and controlled remotely via computer.

## Additive Injection system

### Operation

The 1020 controls up to 4 additive lines. Each line is independently controlled with separate product inputs and alarm outputs.

A hardware permissive input on each line can be programmed to inhibit or enable injection by an external switch or controller, while a software permissive enables control via a computer or PLC.

If a product requires more than one additive, the permissive inputs provide a convenient method of selecting the additive blend.

The amount of additive and the injection rate for each injector is programmable during normal operation via the keypad or the RS232/1422 interface.

Test injections, which can be initiated through the START key, enable the system to be calibrated and tested in situ.

Flow rates can be adjusted and the quantity delivered on each injection can be verified.

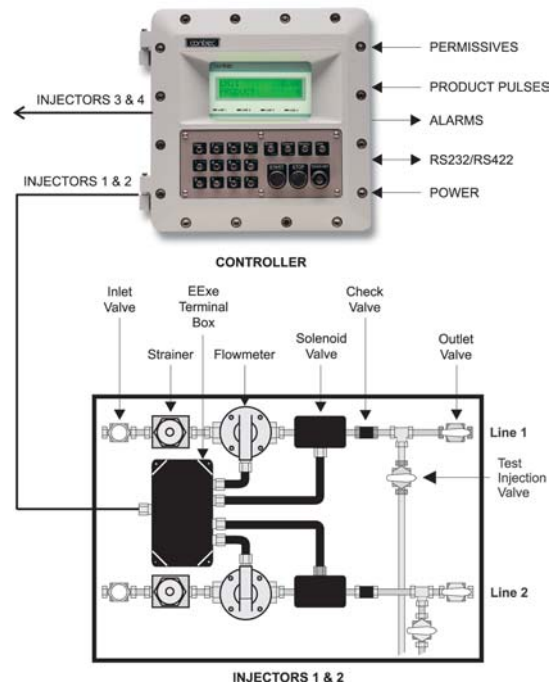
### Alarms

Comprehensive alarm reporting is a key feature, ensuring reliable and accurate injection of additives.

Alarms are signalled via relay outputs or the RS232/422 if any of the following conditions are detected:

- Injection rate is low
- Injection quantity is low
- Injection rate is high
- No flow detected
- Loss of power to system

Alarms can be cancelled via the keypad, a remote switch input or the RS232/422 interface.



## Calculation of Additive

### Example

Unleaded fuel is being loaded at around 2400 l/m and it is required to inject additive at 0.07%.

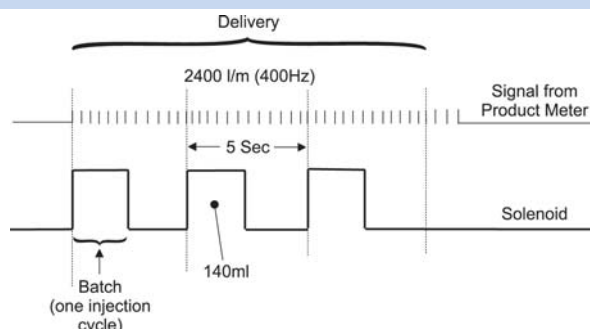
The flow signal comes directly from the flowmeter which has a K-factor of 10 pulses per litre.

By programming the controller for a product K-factor of 10 and a Product Preset of 200, an injection cycle will be initiated every 200 litres (which is every 5 seconds at 2400 l/m).

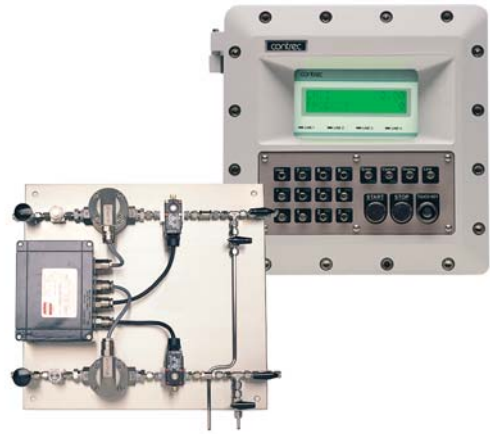
Since each injection represents 200 litres, the amount to be injected is 200 litres x 0.07% = 140 ml. Therefore, the Additive Preset is programmed as 140 ml.

That is:	Product K-factor	10.000 p/l
	Product Preset	200 litres
	Additive Preset	140 ml

To put this in perspective, this will result in an injection every 5 seconds and if the additive flow rate is, say 4 l/m, then the solenoid would be energised for approximately 2 seconds on each injection cycle.



# Specifications



## Physical

### Displays

**Alphanumeric:** 2 line x 16 character (9mm high) backlit LCD.

### Keypad Buttons

**Switches:** Flameproof with heavy duty actuators. 11 numeric and 7 function keys.

**Materials:** Stainless Steel.

### Enclosure

**Dimensions:** 302mm (w) x 288mm (h) x 326mm (d).

**Material:** Powder coated aluminium.

**Sealing:** IP66 (Nema 4x) weatherproof, fully O-ring sealed.

**Mounting:** Four 8 x 1.5mm metric or 5116" IJNF threaded holes top and bottom.

**Weight:** Single enclosure 22.5 kg (approx). Shipping weight 23.0 kg (approx).

**Cable Connection:** Five 25mm x 1.5mm metric threaded holes or 2 x 1¼" and 1 x 1" NPT holes.

### Power Requirements

110V ac, 50/60Hz. 240V ac, 50/60Hz.

### Operating Temperature

-10 to 60°C (-40°C with optional heater).

**Communications** RS232/RS422.

**Interference** CE compliance.

### Main Product Input

The main product signal can come from the Load Computer or the flowmeter.

**Input Frequency:** 0 to 2000Hz.

**K-factor Range:** 1.000 to 10,000.

**Signal:** Accepts pulse or open collector transistor inputs.

### Permissive Switch Inputs

Accepts input signals from voltage free contacts.

## Physical (con'd)

### Alarm, Pump & Permissive Relay Outputs

**Type:** Voltage free contacts.

**Maximum Current:** 5 Amps.

**Maximum Voltage:** 250V ac, 30V dc.

## Injector

### Operational

**Injection Flow Rate Range:** 0 to 6.0 l/m (maximum flow rate at which the system can deliver additive).

**Inlet Pressure:** Maximum: 10 bar.

**Maximum Pressure Drop:** Between inlet and outlet at 1 cst. 3 bar at 4.0 l/m. 6 bar at 5.0 l/m. 8 bar at 6.0 l/m.

**Accuracy:** ±0.5% of rate.

**Repeatability:** ±0.03% typical.

**Temperature Range:** -40 to 60°C.

**Minimum Injection Time:** 0.5 sec.

### Flowmeter

**Maximum Range:** 7.5 l/m.

**Minimum Range:** 0.17 l/m.

**Body Material:** 316 Stainless Steel.

**O-ring Material:** Teflon.

**Flowmeter Piston:** Peek.

**Inlet Fittings** To suit ¼" 316 Stainless Steel tubing.

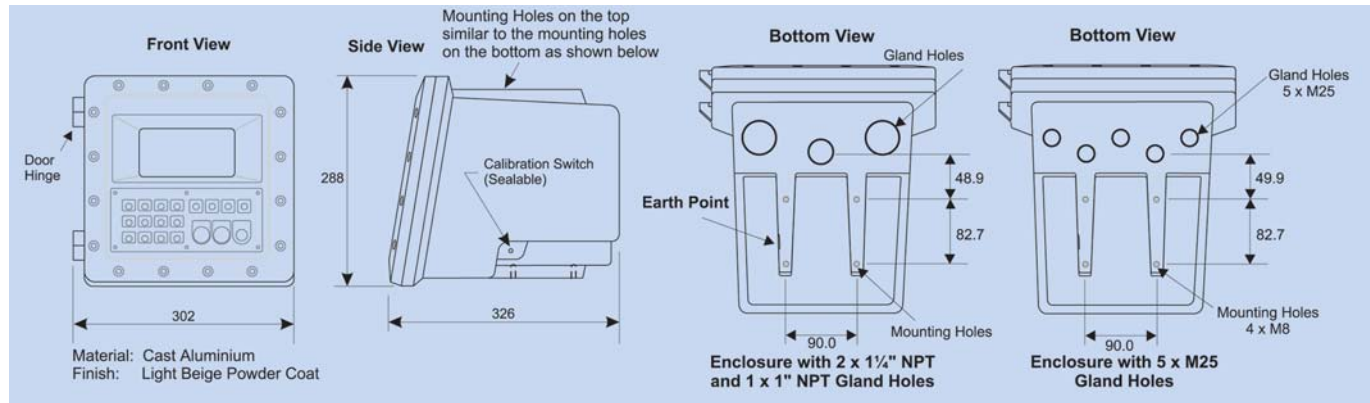
**Filter** 40 microns.

**Mounting & Size** (2 injectors per mounting plate) Stainless Steel plate, 472mm (w) x 440mm (h) with four mounting holes.

**Terminations** EExe termination box.

*Important: Specifications are subject to change without notice.*

## Dimensional diagrams (All dimensions in mm)



## Identification code

Pos 1, 2, 3, 4 Model																	
1	0	2	0	Additive Injection System													
Pos 5 Style																	
H	Ex 810 enclosure																
P	Panel mount enclosure																
Pos 6 Lines																	
0	Controler only				1 to 4	Number of additive lines											
Pos 7																	
-																	
Pos 8, 9 Application pack																	
K	A	For description see application pack brief															
Pos 10																	
-																	
Pos 11 Authorisation																	
0	None																
Pos 12 Glands, approvals and heater options for enclosures																	
A	SAA approved with 5x M25				M	ATEX with 5x M25											
C	CSA us/c 2x 1.25" & 1x1"				N	ATEX as above with heater											
D	CSA as above with heater				L	No gland holes											
Pos 13 Power supply																	
1	110 Vac																
2	220 Vac																
3	DC Volts																
Pos 14 Display type																	
A	Alphanumeric only																
Pos 15 Metrology approval																	
0	None																
1	0	2	0	H	2	-	K	A	-	0	M	2	A	0	Typical identification code		
1	0	2	0												A	0	Your identification code

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contrec

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