



## MODEL 214D

### FEATURES

- Displays Batch Total, Accumulated Total and Preset
- One or Two Stage Valve Control
- Fully Programmable
- ATEX Class 1, Zone 1 Approved
- Watertight to IP67 (Nema 4X)
- Wall, Pipe and Panel Mounting
- ATEX, IECEx, CSA Approved
- CE Compliant

## Batch Controller



The Model 214D Batch Controller is designed for flow applications where the precise control of batch quantities is required. Batch Total, Accumulated Total and Preset Values can all be displayed on the large LCD display.



# Field Mounting Batch Controller

PROVEN IN THOUSANDS OF FIELD INSTALLATIONS THROUGHOUT THE WORLD.

The 214D is a high accuracy, intrinsically safe Batch Controller designed to operate with digital output flowmeters. Having an IP67 weatherproof case, new tactile keyboard and various mounting options, the 214D is perfect for the most arduous of installations.



For hazardous area applications, the 214D is an intrinsically safe version with both ATEX approval, and CSA approval covering both the USA and Canada.

The 214D has an input conditioning circuit which will accept pulse or frequency flow signals generated by turbine, positive displacement, paddlewheel or other flowmeters. Configurable link positions enable the input circuit to be configured for the different signal types.

## DC Powered with Battery Backup

The 214D will operate from an external power source between 9 and 28 Volts and draws no more than 4mA.

Lithium batteries provide backup if the DC power is interrupted so that totals are not lost. The solenoids or sensors, however, may still require external power.

Solid state outputs provide control to solenoids and relays, and can sync-up to 200mA.

## Watertight Field Mounting Enclosure

The 214D Rate Totaliser is housed in a rugged yet attractive IP67 (Nema 4X) rated polycarbonate enclosure which is completely watertight.

A special universal bracket, supplied as standard, enables the instrument to be wall mounted. A 51mm (2") pipe mounting bracket is also available as are bottom and rear mounting stems for mounting the 214D directly on turbine flowmeters which have a 1" NPT or BSP boss.

## Fully User Programmable

K-factor, decimal point positions, valve delays and signal timeouts are fully user programmable.

The Signal Timeout feature, if programmed, will automatically stop the batch if the flow signal cuts out midway through a batch.

Contrec's unique magnet access strip allows the 202D to be re-configured in hazardous areas without opening the

enclosure. A great benefit in reducing production shutdown periods and improving maintenance efficiency times.

## One or Two Stage Valve Control

Two solid state relays are provided which can be set up to control a single or a two stage valve with slow stop and/or slow start. Alternatively, the second output can be used to control a pump.

The first output will energise at the start of the batch, and de-energise when the batch is complete.

The second output can be programmed to energise at a delayed start time after the batch start (0 to 9 seconds delay), and to de-energise at a pre-stop quantity prior to completion of the batch. This feature enables a slow startup and slow shutdown of the flow.

## Keyboard Operation

The unique 3 key operation of the 214D simplifies operation and enables batches to be controlled quickly and efficiently.



214D Facia

To enter a batch, the PRESET key is pressed and the ▲ and ► keys can be used to increment and change digits. Once set, the PRESET key is pressed again to return to the run mode. In the run mode, the RUN and STOP keys are used to start, stop or to pause the batch.

## Intrinsic Safety

The 214D is certified as intrinsically safe to European ATEX/IECEx standards, and CSA US/C standards for both the USA and Canada, see specification for details.



## Flowmeter Input

The 214D will connect directly to a turbine or paddlewheel with a certified IS coil or other certified IS devices which produce a pulse output, provided they do not produce a voltage, current or power which exceeds:

$$U_i = 24V, I_i = 20mA, P_i = 320mW$$

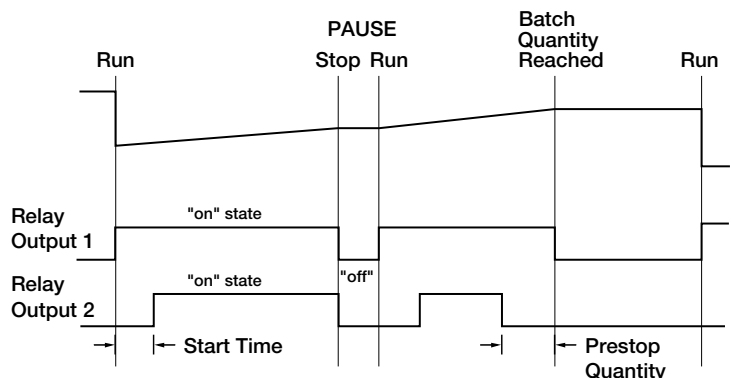
The maximum allowed capacitance and inductance of the pulser or coil, including cabling, is limited to:

$$C_{ext} = 60\mu F, L_{ext} = 1.5H$$

Output parameters on the input are:

$$U_o = 10.0V, I_o = 9.0mA$$

Note that devices such as reed switches, which can be classed as "Simple Apparatus" as defined in EN50020, may be connected to the 214D without additional certification.



Two Stage Valve Control

## Flowmeters with Namur Proximity switches

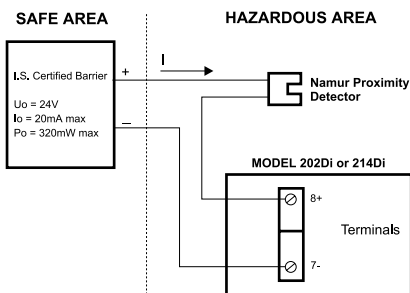
Namur Proximity switches may be used but will require a separate barrier to power the Namur switch, as shown below.

### Output and DC power

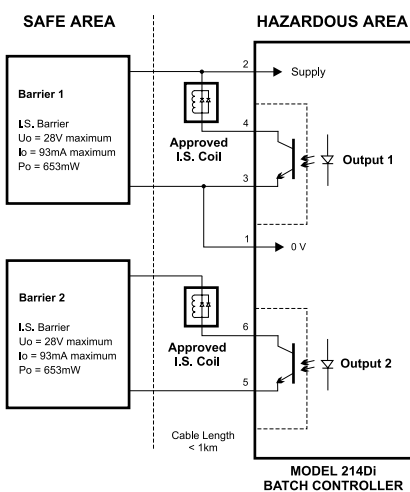
A barrier is required to provide DC power to the instrument and to power the IS solenoids or relays. One or two barriers may be used depending upon whether a one or two stage valve is used. Connection is as shown below.

Only certified intrinsically safe solenoids may be used for IS applications. Because these solenoids have a relatively small coil, they are usually only suitable for small line sizes and non-viscous products.

Generally, it is preferable to use a pneumatic system with the solenoid valves controlling air to a larger pneumatically controlled valve.



Intrinsically Safe Installation



Intrinsically Safe Installation

## SPECIFICATIONS

### Display

**Type:** LCD display

**Batch Total:** 7 digit 10mm (0.4") high LCD (continuously powered). *Note: The Accumulated Total is displayed when the ACCUM TOT key is pressed*

**Pre-set:** 5 digit 8.5mm (0.33") high LCD (continuously powered)

**K-factor Range:** The pulses per unit of measure (eg. pulses/ gallon) is programmable in the range of 0.0001 to 999,999

**Decimal Points:** Fully programmable for Total

**Frequency Range:** 0Hz to 10kHz

**Signal Type:** Link settable for sine wave (15mV P-P minimum), open collector, reed switch or pulse

**Interference:** CE compliance

**DC Power Input:** 9-28V @ 4mA maximum

### Physical

**Operating Temperature:** -20 to +60°C, -4 to +140°F

**Enclosure**

**Protection:** IP67 (Nema 4X) watertight

**Cable Entry:** By cable glands

**Materials:** Polycarbonate and ABS

### Mounting Options

**Wall:** Universal wall mounting bracket

**Pipe:** A galvanised metal bracket enables the 214D to be attached to a 51mm (2") vertical or horizontal pipe

**Panel:** Two mounting brackets supplied

**Turbine Meter:** Bottom and rear mounting stems are available for mounting the 214D directly on turbine flowmeters which have a 1" NPT or BSP boss

### Battery Backup

**Type:** 2 x Lithium battery packs

**Function:** The batteries will provide backup power for the instrument if no DC power is available. The batteries will not power the sensor (if power is required) or solenoid outputs

### Outputs

**Type:** 2 x solid state relay outputs suitable for driving DC solenoids or external relays. The outputs provide for one or two stage control of the flow

**Switching Power:** 200mA, 30Vdc maximum

**Saturation Voltage:** 0.8Vdc across outputs when in the "on" state

**Isolation:** Both outputs are separately isolated

### Hazardous Area Approval

#### Type of Approval:

- ATEX Rating - II 2G Ex ia IIB T4 Gb  
Cert No. BVS 15 ATEX E 106 X
- IECEx Rating - Ex ia IIB T4 Gb  
Cert No. IECEx BVS 15.0099X
- CSA us/c Rating - Class 1, Group C & D  
Cert No. 104840-5

### Intrinsically Safe Parameters

**Maximum Ambient:** 60°C (+140°F)

#### Maximum Input Parameters:

(For certified IS coil or other certified IS sensors which produce a pulse output)

Uo = 10.0V L(ext) = 1.5H li = 20mA  
Io = 9.0mA Li = 0mH Pi = 320mW  
C(ext) = 60uF Ui = 24V Ci = 0.002uF

*Note: Devices such as reed switches, which can be classed as "Simple Apparatus" as defined in the Cenelec standard EN50020, can be connected to the Model 214D without additional certification*

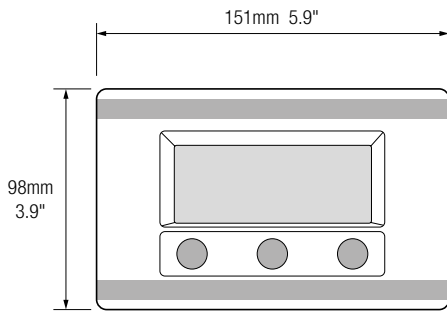
#### Maximum Output Parameters:

4-20mA or Relays: Ui = 28V  
li = 93mA  
Pi = 653mW

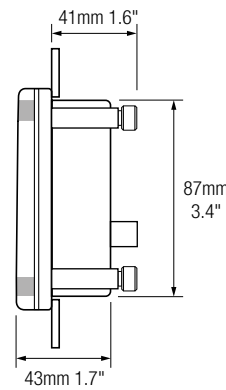
**Important:** Specifications are subject to change without notice.

# DIMENSIONS

## Enclosure Dimensions

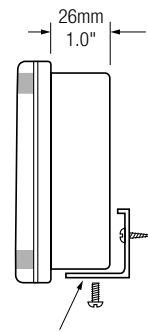


## Panel Mount



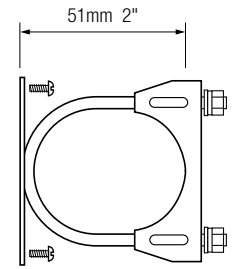
Panel Mount Brackets  
Option 1  
(cutout size 87mm 3.4" H  
x 141mm 5.6" W)

## Wall Mount



Wall Mount Bracket  
Options 0 & 2

## Pipe Mount Adapter



Pipe Bracket  
Option 6

# TERMINAL DESCRIPTIONS

Terminal Descriptions	
Number	
1	DC Power Input 0V
2	DC Power Input 9-28V
3	Output 1 (-)
4	Output 1 (+)
5	Output 2 (-)
6	Output 2 (+)
7	Pulse/Coil Input (-)
8	Pulse/Coil Input (+)

# PRODUCT CODES

Product Code, Mounting Types & Options			
<b>214Di</b>	•		<b>Batch Controller</b> (intrinsically safe)
<b>Enclosure Mounting</b>	0		Wall Mounting (no gland holes)
	1		Panel Mounting *
	2		Wall Mounting (standard glands)
	4		Turbine Mounting (stem bottom)
	6		Pipe Mounting
<b>Output (standard)</b>		3	DC Powered
<b>Hazardous Approvals</b>		C	CSA US & Canadian Approval
		M	ATEX/IECEx Approval

Typical Part Numbers: 214Di.23M

\* Note: Cable glands not included

## Instruments within the Contrec family:

**100 Series** – Accurate process instruments for field mounting applications

**200 Series** – Intrinsically safe, precise and reliable process instruments

**400 Series** – Rugged and dependable batch and flow control solutions

**505 Series** – Next generation flow instruments for a variety of applications

**515 Series** – Precise flow and batch control for more complex applications

**LC Series** – Robust load computers for petroleum and chemical applications

**TRAC 40** – Vehicle mount custody transfer approved registers



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