200 Series

MODEL 220

FEATURES

- Non-linear Tank Correction
- Density Correction
- Four Level Alarms
- Level Bar Graph Display
- Tank Contents Display
- Powered by 4-20mA Loop
- Intrinsically Safe
- Wall, Pipe and Panel Mounting
- Watertight to IP67 (Nema 4X)
- ATEX, IECEx, CSA Approved
- CE Compliant

LOOP POWERED

Level Monitor

The Model 220 Level Monitor accepts a 4-20mA signal from a wide range of level sensors, including pressure transmitters, ultrasonic sensors or capacitance probes, and displays both level and tank contents on a large LCD display.

ACCURACY • QUALITY • PERFORMANCE

Field Mounting Level Monitor

PROVEN IN THOUSANDS OF FIELD INSTALLATIONS THROUGHOUT THE WORLD.

The 220 is a high accuracy, intrinsically safe Level Monitor designed to operate with digital output flowmeters. Having an IP67 weatherproof case, new tactile keyboard and various mounting options, the 220 is perfect for the most arduous of installations.

Solid state relay outputs provide up to four level alarms and a 25 point non-linearity correction table allows the instrument to be programmed to fit most tanks.

The Level Monitor is powered entirely from the 4-20mA current loop and, therefore, requires no external power or batteries.

The instrument is fully programmable with setup parameters such as span, offset, alarm levels etc, stored in a non-volatile memory which will retain all data for more than 10 years without power.

The Model 220 is housed in an attractive IP67 (Nema 4X) polycarbonate enclosure which is completely watertight.

A wall mounting bracket is supplied as standard, while a 51mm (2") pipe mounting bracket is available as an option. Alternatively, the Model 220 can be supplied as a panel mount instrument.

The Model 220 is powered entirely from the 4-20mA current loop and therefore requires no external power or batteries.

Display

Level bar graph
Displays measured level as a percentage (0-100%).

Contents
7 digit numeric display of contents with programmable span. An offset can be programmed to account for contents remaining in the tank when the measured level is 0%.

The contents are displayed with 42 digit resolution so that larger values are displayed with trailing zeros (for example, 1437765 would be displayed as 1437700 and 5467289 would be displayed as 5467000).

Filter
A programmable filter will filter out fluctuations in readings caused by agitation in the tank.

Density
Density correction is provided for level devices which are density sensitive. Should the density change, a correction factor can be programmed via the front panel.

Relays

Type
Four solid state opto-isolated DC relays arranged as high-high, high, low and low-low.

Acknowledgement
Alarms can be programmed for continuous operation or for an acknowledge mode of operation where the display key is pressed to acknowledge and cancel the relay alarm output.

Normally energised or de-energised relay
Relays are programmable to alarm in either mode.

Non-Linearity Correction

A 25 point non-linear correction table can be programmed to handle any shaped tank. Up to 25 points on both the x and y axes can be programmed and the Model 220 will perform linear interpolation between points.

The curve enables the contents of vessels, such as cylindrical tanks, bullet shaped tanks or hoppers to be displayed directly in engineering units as a volume or mass.

A conversion program which runs under Windows 95 is available to calculate theoretical values for the conversion program based on tank dimensions.

Intrinsic Safety

The 220 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.

Display

Type: LCD display

Level: 20 segment bar graph

Level Span: 0...100% proportional to input signal. For non-inverting tanks 0% is 4mA and 100% is 20mA. For inverting tanks 0% equals 20mA and 100% is 4mA

Contents: 7 digits with 12mm (0.48") high digits on the LCD. Contents are displayed with 42 digit resolution and trailing zeros

Contents Span: The contents span is programmable in the range of 0.001...9,999,999 and can be any unit of measure

Contents Zero: The contents zero is programmable in the range of 0.000...9,999,999. The contents zero is the contents in the tank at 0% level

Decimal Points: Decimal point position for contents is programmable in range of 0...3 decimal point places

Physical

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

Enclosure

Dimensions: 98mm (3.9") H x 151mm (5.9") W x 43mm (1.7") D

Protection: Sealed to Nema 4X or IP67 standards

Mounting Options

Wall: Universal wall mounting bracket

Pipe: A galvanised metal bracket is available which enables the Model 220 to be attached to a 51mm (2") vertical or horizontal pipe

Panel: Supplied with mounting brackets. Terminals accessible from rear. *(Note that the panel mount version is not watertight).*

4-20mA Power Input

Resolution and Linearity: 0.05% of span

Accuracy: 0.05% of span @ 25°C. 0.1% (typ) of span, full temperature range

Update Time: 0.5 second

Connection: Two wire

Voltage Drop: 2.5 volts maximum

Alarm / Pulse Outputs

Type: 4 x open collector outputs suitable for driving DC solenoids or external relays. The outputs provide high, high-high, low and low-low flow alarms

Switching Power: 200mA. 30Vdc maximum

Saturation Voltage: 0.8Vdc typical across the output in the "on" state

Isolation: Outputs are separately opto-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:

4-20mA or Relays: Ui = 28V

                     Ii = 93mA

                     Pi = 653mW
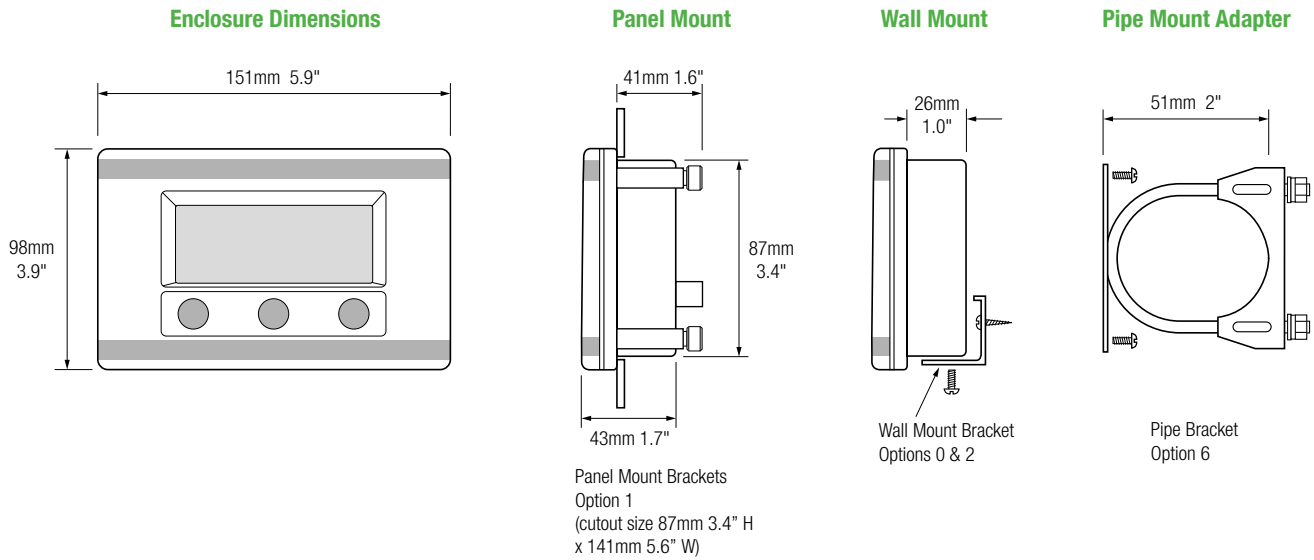
Maximum Output Parameters:

Relay: Ui = 28V

                   Ii = 93mA

                   Pi = 653mW

Important: Specifications are subject to change without notice.

DIMENSIONS

Enclosure Dimensions

151mm 5.9"

98mm
3.9"

Panel Mount

41mm 1.6"

87mm
3.4"

43mm 1.7"

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

Wall Mount

26mm
1.0"

Wall Mount Bracket
Options 0 & 2

Pipe Mount Adapter

51mm 2"

Pipe Bracket
Option 6

TERMINAL DESCRIPTIONS

Inputs & Outputs	
Number	
1	Low-low Alarm (−)
2	Low-low Alarm (+)
3	4-20mA (−) Input
4	4-20mA (+) Input
5	Low Alarm (−)
6	Low Alarm (+)
7	High Alarm (−) or Pulse (−)
8	High Alarm (+) or Pulse (+)
9	High-high Alarm (−)
10	High-high Alarm (+)

PRODUCT CODES

Product Code, Mounting Types & Options				
220i	•			**Level Monitor** (intrinsically safe)
Enclosure Mounting		0		Wall Mounting (no gland holes)
		1		Panel Mounting *
		2		Wall Mounting (standard glands holes)
		6		Pipe Mounting
Output (standard)			0	Loop Powered Alarm Outputs
Hazardous Approvals			C	CSA US & Canadian Approval
			M	ATEX/IECEx Approval

Typical Part Number: 220i.20C

* 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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