# DREXELBROOK

A Leader In Level Measurement Solutions



## DM231 Series with Modbus RTU Protocol

Magnetostrictive Liquid Level Sensor



### DM231 Magnetostrictive Liquid & Interface Level Sensor with Temperature outputs

Sensors are available in 316SS rigid designs with a choice of Single or Dual NPT mountings. Systems include an explosion-proof condulet housing containing a wiring terminal strip. All systems offer totally welded construction.

The DM231 is an Explosion Proof sensor with Modbus digital output (optional analog output converter available) for total level, interface level and temperature sensor outputs. Temperature sensors are evenly distributed over the active length of the rigid 316SS tube.

A variety of floats and mounting accessories are available to fit virtually any application. Contact your local representative to match your needs today. Modbus RTU digital output for total level, interface level, temperature and system diagnostics

## Accurately Measures:

- Total Level
- Interface Level
- Temperature 5 sensors over active range.

### **Easy Installation**

• No calibration needed

### **High Accuracy**

• 0.01% of measured span - less than 1 mm absolute, over full measurement range.

### **Minimal Maintenance**

• Unique diagnostic output provides float position beyond active range, as well as loss of float(s).

## **Explosion Proof Design**

- Meets FM approved for Class 1 Div. 1, Zone 1 Explosion Proof hazardous area installations
- ATEX and CE Approvals

















## **Continuous Level Measurement**

## DM231 Series

### **Specifications**

#### Technology:

Magnetostrictive

#### Calibration:

None

#### **Operating Voltage:**

• 10 - 30 VDC

#### **Output Signal:**

- Modbus RTU / ASCII
- 4-20mA analog (Via Optional Converter)

#### **Response Time:**

• 1.0 Second

#### Temperature Range:

- **Process:** -40°F to 257°F +/-1°F (-40°C to 125°C +/- 0.5°C)
- Ambient: -40° F to 185° F (-40°C to 85°C)

#### **Pressure Rating:**

- 316SS tube: 1000 psig. (69 bar)
- Float: Dependant, 316SS floats typical to 350 psig, (24 bar) consult factory

#### **Resolution:**

• +/- 0.0001"

#### Repeatability:

• +/- 0.0001"

#### Accuracy:

- Level: 0.01% or +/- 0.023" (0.06mm) which ever is greater
- Temperature: +/- 1°F (+/- 0.5°C)

#### Null Zone:

• 9.25" (235 mm)

#### Hysteresis:

• 0.002%

#### Deadband:

• 2.75" (70 mm)

#### **Enclosure Rating:**

• IP66, NEMA 4-4X

#### Probe Length:

 316SS 20" to 288" (508 - 7315 mm) Probes available in 1" (25 mm) increments

#### Span Length:

 8" to 276" (203 - 7010 mm)

#### Minimum Liquid / Liquid

#### Interface Measurement:

• ≥4" (100 mm)

#### Hazardous Area Approvals:

#### FM & CSA:

 $-40^\circ \leq Tamb \leq 125^\circ C$  Class I, II, III Div. 1 Groups A, B, C, D T4

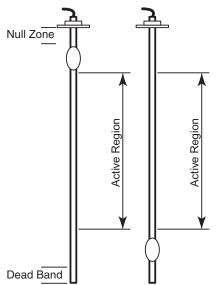
Class I, Div. 2 Groups A, B, C, D T4 ATEX:

### IIB T4 EEx d

Zone 1

\* Specifications may change without notice

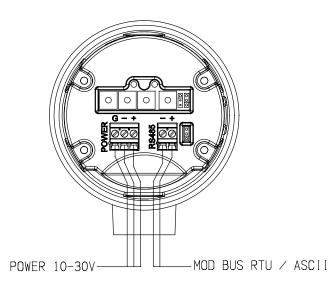
## **Float Diagnostic**



If Level or Interface Float are outside of active region: **Analog Mode** 3.7 mA

Modbus Mode "1000" as "product or "interface" reading plus Status Byte

## Wiring



## **Continuous Level Measurement**

## **DM231 Series**

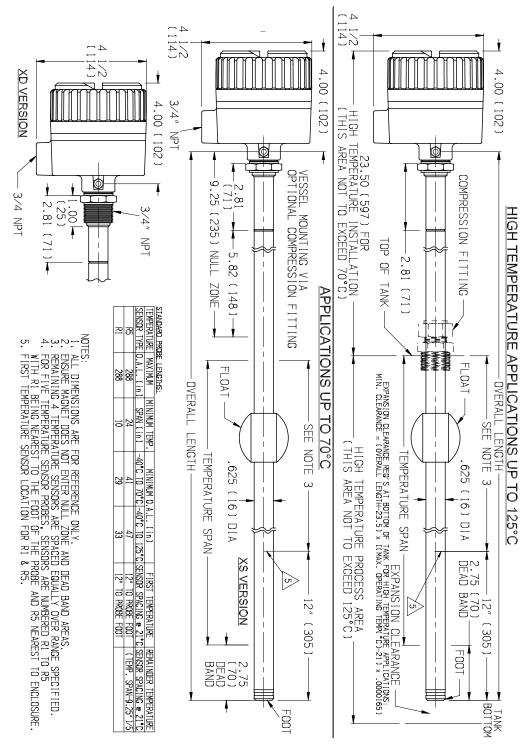
## **Model Numbering**

<ul> <li>Magnetostrictive Level Measuremen DM23</li> </ul>	t System with Modbus RTU Output
Protocol	
1 Modbus RTU / ASCII	
Style / Material	
X 316SS	
Style Connector	
	4" NPT - for housing attachment
	NPT - For both housing and process connection
Fittings	
	glish - Supplies a 3/4" NPT electrical connection
	tric - Supplies an adaptor to M20 electrical connection (ATEX Version Only)
	cimum Span
XXX	•
	Temperature Points     R1 1 Temperature Sensor
	R5 5 Temperature Sensors Evenly Spaced Over Span Length
	Output Signals - Order Floats Separately
	F1 Output Signal 1 - (For Total Level)
	F2 Output Signal 2 - (For Total Level and Interface Level)
	Overall Length
	XXX Overall Length of Sensor
	Style / Mounting
	H Condulet
	Special Mounting
	EX Explosion proof Class I Div. 1,
	(FM) ED Flame proof for Zone 1
	(ATEX)
	► Float Kit 1
	0 No Float Kit
	1 Float Kit, 316SS, 2.05" Diameter w/ E-Clip and spacer, 0.54 sp.gr.
	2 Float Kit, Nitrophyl, 2.02" Diameter w/ E-Clip and spacer. 0.40 sp.gr.
	3 Interrface Float Kit, 316 SS, 2.05" Diameter w E-Clip, 0.96sp. gr.
	Float Kit 2
	0 No Float Kit
	1 316SS, 2.05" Diameter 0.96 sg for use with "Nitrophly Level" only
	2 316SS, 2.05" Diameter 0.96 sg for use with "316SS Level" only
	Mounting 1
	0 No Mounting
	1 Compression fitting 5/8" X 3/4" NPT
	Mounting 2
	0 No Mounting
	1 Reducer Bushing, 316SS, ¾" NPT X 2" NPT
	Accessory 1
	0 No Accessory
	1 Modbus RTU to 4-20 mA analog output converter
$\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$	* * * * * * * * * *
· · · · · · ·	
M23 1 X	

## **Continuous Level Measurement**

## DM231 Series

#### **Dimensions inches, (mm)**





205 Keith Valley Road, Horsham, PA 19044 U.S.A. Tel: 215-674-1234 Fax: 215 674-2731 Email: drexelbrook.info@ametek.com Web: www.drexelbrook.com

©AMETEK, Inc. All rights reserved. • Printed in the U.S.A. • DM231-A • EDO#12-13-118 • Issue# 6