

DREXELBROOK®

A Leader in Level Measurement

Quick Start Guide

For the

Universal IV™ Lite and Universal IV™ Pro Model Transmitters

2-Wire RF Admittance / Capacitance Level
Measurement System with HART® Protocol



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AMETEK®
DREXELBROOK

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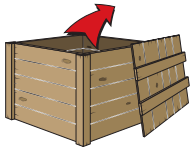
AMETEK Drexelbrook makes no warranty of any kind with regard to the material contained in this manual, including, but not limited to, implied warranties or fitness for a particular purpose. Drexelbrook shall not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of material.



IMPORTANT NOTICE

This quick start guide provides basic guidelines for the Drexelbrook Universal IV. Refer to the Universal IV Installation and Operation Manual for more detailed instructions.

1-1 Unpacking



- Remove the contents of the carton in a clean area
- Check all items against the packing list
- If there is any shortage or damage, report it immediately to the factory

1-2 Warning - Read the Following Carefully



- Installation, start up, and service should only be performed by trained personnel .
- Substitution of components may impair intrinsic safety.

1-3 General Safety Information - Please Read Before Proceeding to Avoid Injury



- The U IV is approved for use in hazardous locations when properly installed. Control drawings detailing installation guidelines are available in the instruction manual and at www.drexelbrook.com
- Always install to local codes/requirements/directives as mandated by local jurisdiction.
- The aluminum enclosure must be protected from mechanical friction and impact that cause sparks.
- Use the equipment only as instructed in the quick guide. Failure to do so may impair the protection provided by the equipment.
- The responsibility of proper usage of this device rests solely with the user.
- The supplier assumes no responsibility in the event of improper use by the customer.

1-4 Mounting the Electronic Unit

- When installing an insulated sensing element, use caution during installation to avoid damaging the insulation. Puncturing the insulation can render the system inoperable.
- Sensing elements should be mounted so they are not in the direct stream of a filling nozzle/chute. If this is not possible, a deflecting baffle should be installed.
- Do not take the sensing element apart or loosen the packing glands - Follow instructions in **Figure 1** below.
- **Figure 2** shows several incorrect installations. Take care to avoid these common problems.

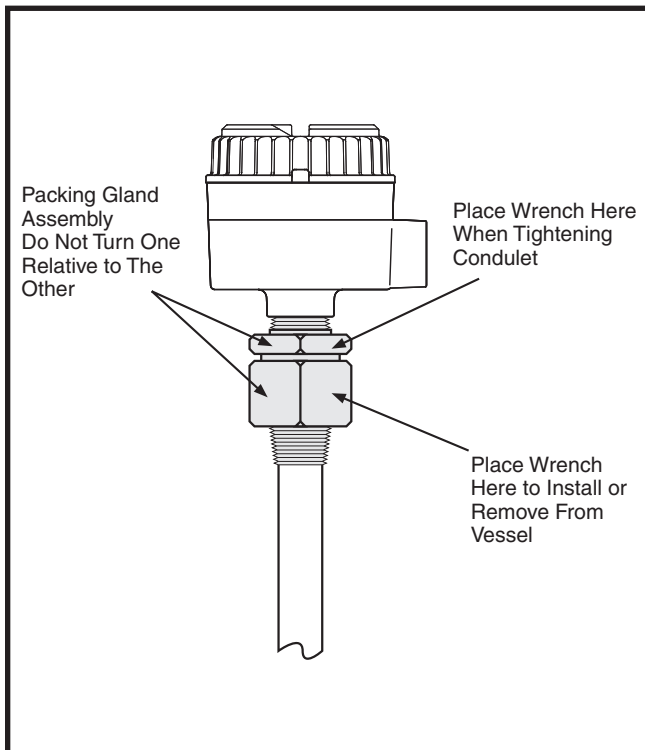


Figure 1
Installing Sensing Element

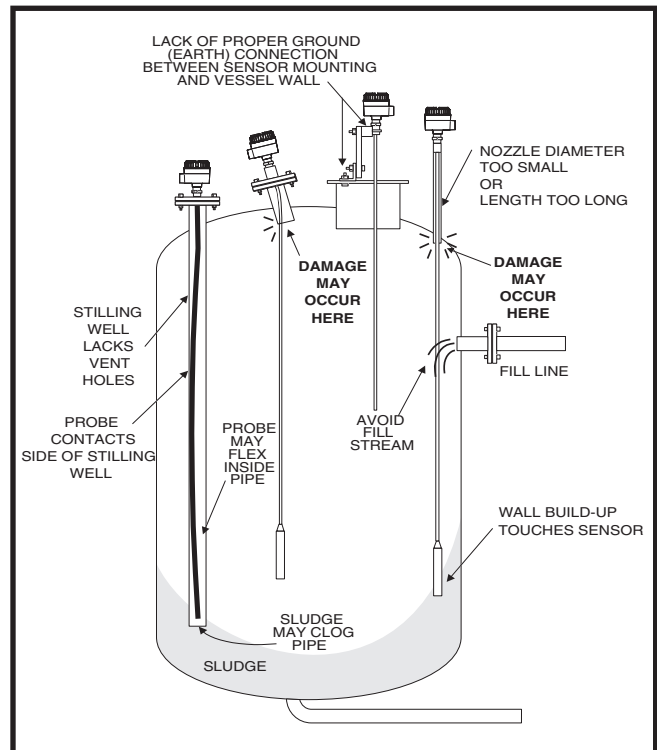
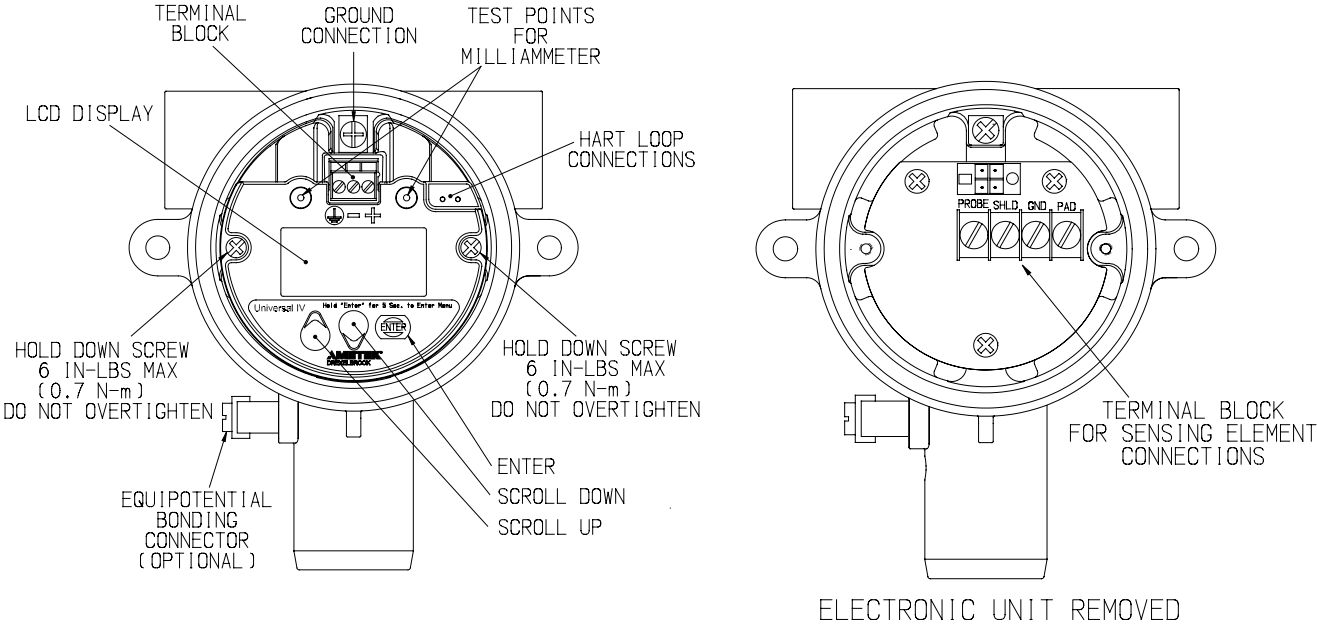


Figure 2
Common Installation Mistakes

1-5 System Description

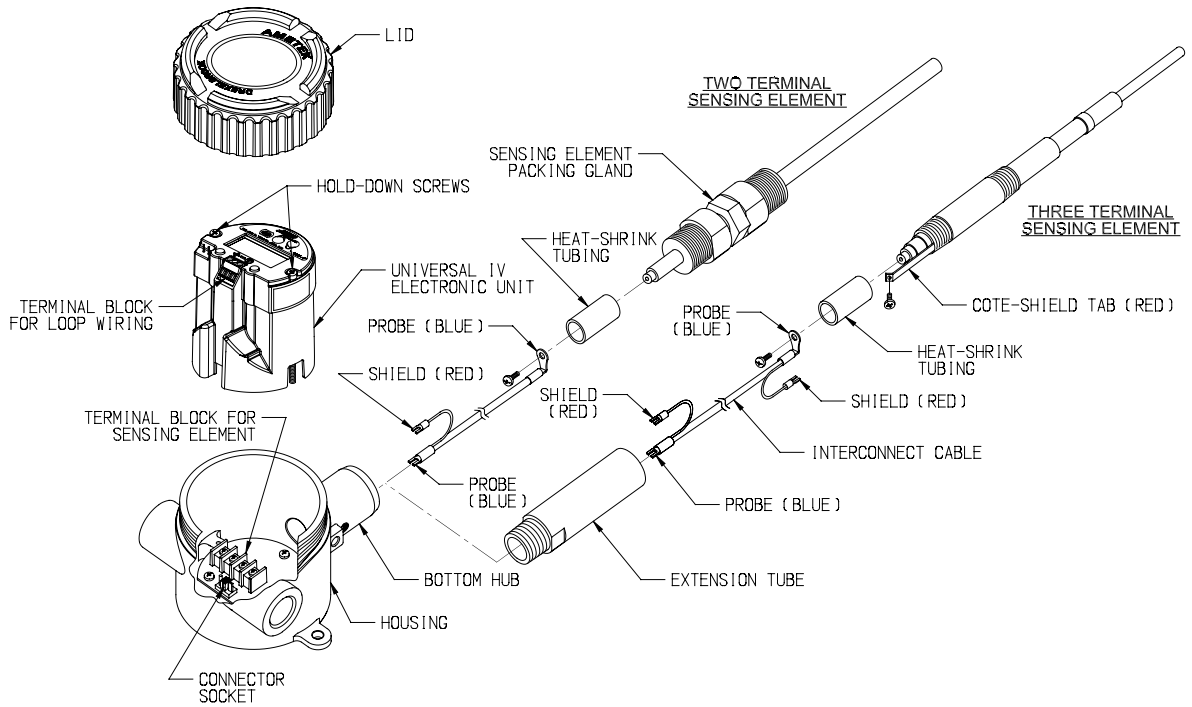
Each system consists of a Universal IV two-wire, 4-20 mA HART® electronic unit and a 700 series sensing element. A 380 series connecting cable is also supplied for connection of the sensing element to remote electronic units.

The Universal IV system is an admittance-to-current transducer. A change in level produces a change in admittance which results in a change of current. It is termed a two-wire transmitter because the same two wires that are used to power the unit also indicate the change in level (4-20 mA).

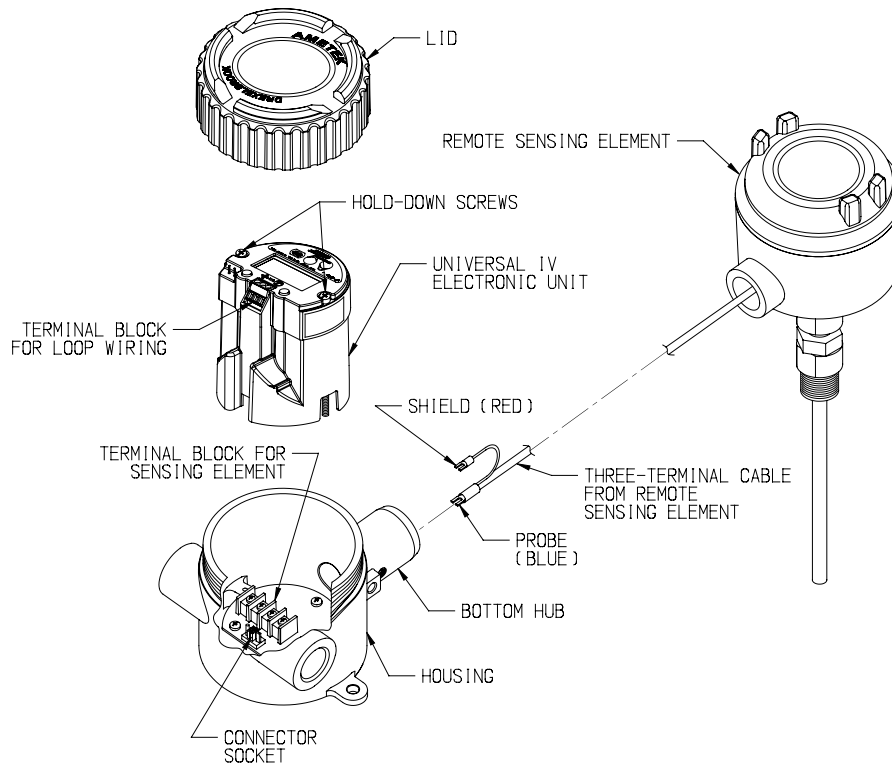


1-5 System Description (Continued)

Integral System



Remote System



1-6 Wiring the Sensing Element



CAUTION - Before using Intrinsic Safety Barriers, read the manufacturer's instruction for barrier operation. The UIV has a built in current limiter which holds the signal current to a max of 28mA.

The cable connections to the remote sensing element are shown in **Figure 3**

- Do not connect the cable to the sensing element until after the sensing element has been installed in the vessel and the conduit housing has been secured.
- If the sensing element does not have a shield connection, be sure to clip and/or tape the shield wire at the sensing element end of the cable only. See Figure 3
- Only Drexelbrook cables should be used to connect the transmitter to the sensing element as the use of other cables can result in unstable performance.

The cable from the sensing element is connected to the terminal strip below the instrument chassis. The cable connections are probe, ground (GND) and shield (SHLD) - **See Figure 3**

Integral units are pre-wired at the factory - **See Figure 4**

1-6 Wiring the Sensing Element (Continued) Remote System Sensing Element Wiring

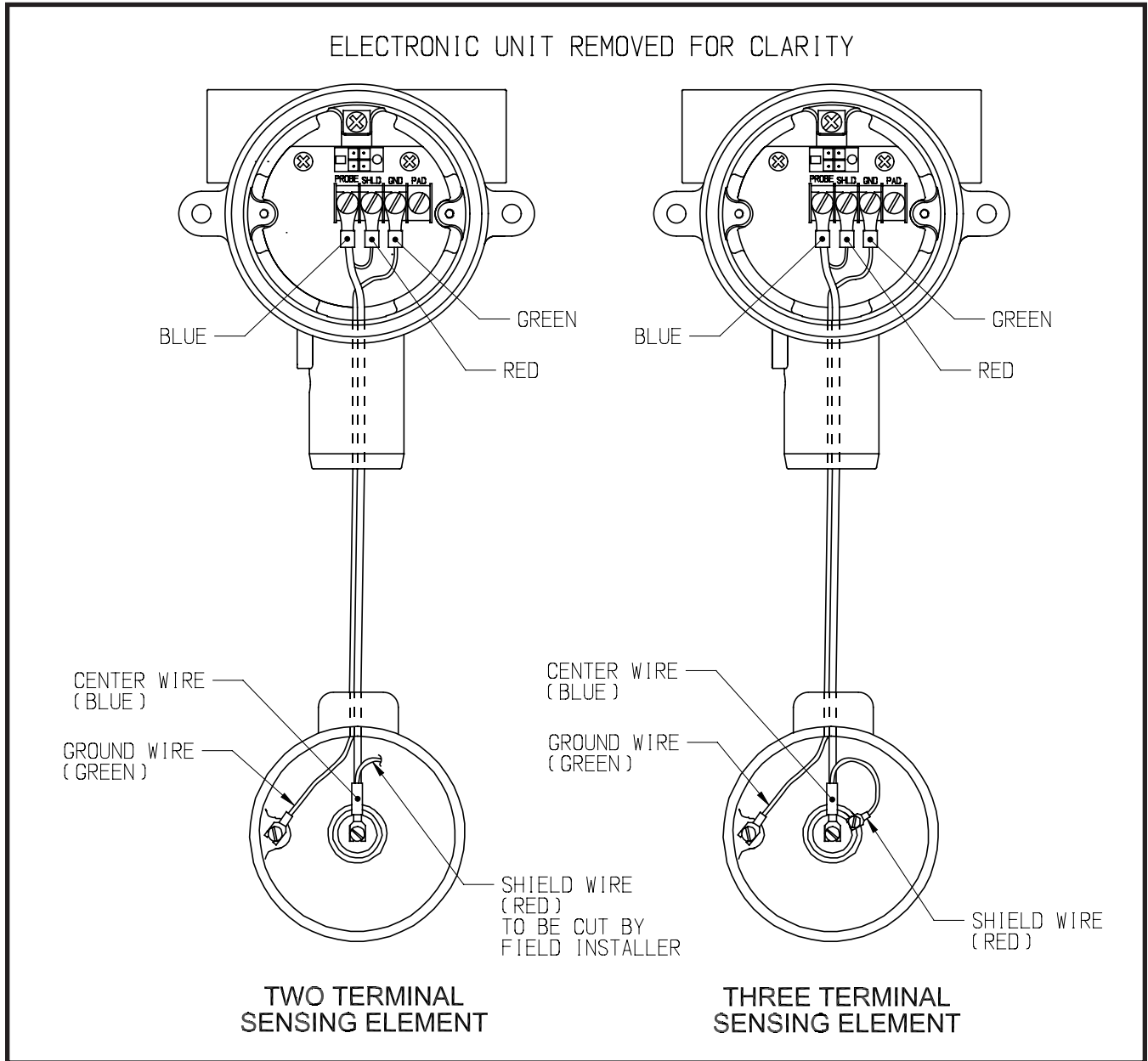


Figure 3
Universal IV Wiring Connections, Remote Mounting

1-6 Wiring the Sensing Element (Continued)
Integral System Sensing Element Wiring

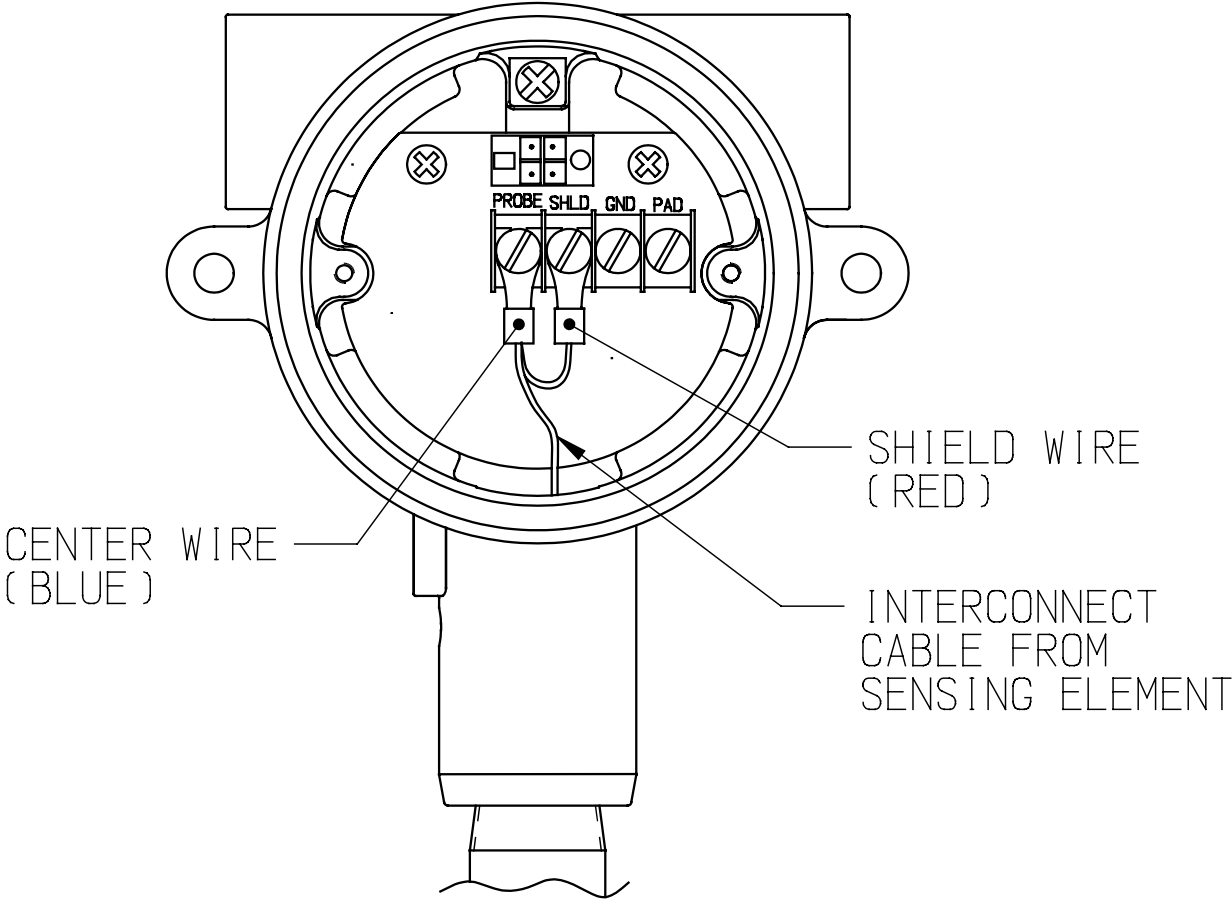


Figure 4
Universal IV Wiring Connections Integral Mounting

1-7 Wiring the Electronic Unit



Warning - Please Read Carefully

- Live maintenance in a hazardous (classified) location should only be carried out by skilled personnel trained in explosive protection methods.
- Test equipment used to perform live maintenance must be certified to use in the associated hazardous area.
- The housing cover may be safely opened when the UIV is installed as an intrinsically safe device using agency control drawings.
- For system configuration, remove the view port housing cover to access the display keypad for local system configuration.
- Signal connections are made to the three terminal block on the front of the chassis
- Wiring only needs to be light gauge (20 gauge or larger) due to low power consumption
- Twisted shielded pair cables are recommended

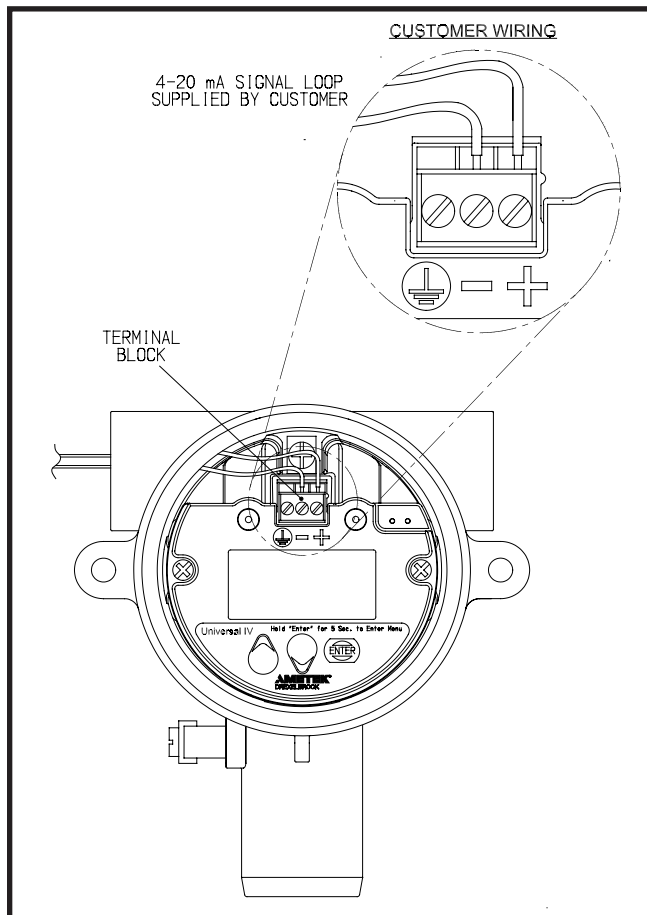


Figure 5
Universal IV Wiring Connections

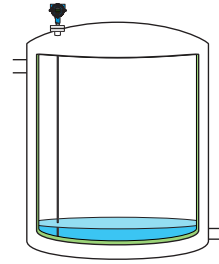
1-8 Calibration and Configuration via Display/Keypad



To enter the configuration menu:

- Press and hold "Enter" button for approximately 5 seconds
- Use "Up" and "Down" buttons to scroll through available menu options
- Press "Enter" to access sub-menu items
- Use "Up" and "Down" buttons to adjust settings; available options will be flashing
- Press "Enter" to accept the adjustment OR press and hold "Enter" for 5 seconds to exit to previous menu

1-9 Configuring the Universal IV via Display/Keypad

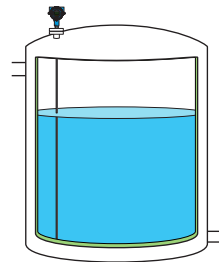
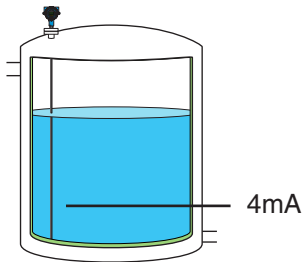


FCT 1.01

Select your desired level measurement.
Unit:
Feet (FEET), Inches (INCHES), mm (MM)
cm (CM), Meters (METERS)

FCT 4.02

Enter the level value equivalent to 4mA output.

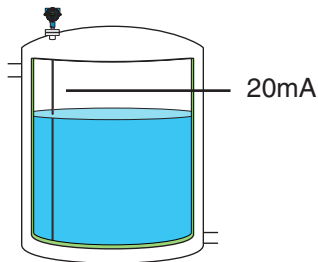


FCT 4.03

Enter the level value equivalent to 20mA output.

FCT 1.03

Low point calculation:
Enter the current low level value in the tank.



FCT 1.04

High point calculation:
Enter the current high level value in the tank.

Complete

1-10 Universal IV Retrofit Calibration Instructions.

The following instructions are to simplify the calibration of units provided to replace existing AMETEK Drexelbrook transmitters with the Universal IV

1. From Universal III or RCT:

- a. If existing transmitter is functional and a computer with HRTWin is available. The configuration and calibration can be saved and loaded into the new transmitter.
- i. It is strongly recommended to use the latest version of HRTWin. Version 9.0 and above are optimized for the enhanced features of the Universal IV. The download is available from the Universal IV web page at www.drexelbrook.com.
- b. Save file from existing transmitter. File: Save: File name.slt
- c. Install Universal IV transmitter.
- d. Load file previously saved: File: Open: File name.slt.
- e. Configuration/calibration is complete

2. If transmitter is not functional or not HART capable:

- a. Record range setting from existing transmitter, Range Span jumper position on Universal III and RCT or Step Span switch position of Universal II
- b. Edit Universal IV Upper Capacitance setting from Table 1. Parameter is located in lower

Universal II Step Span	Universal III / RCT Range Span	Universal IV Upper Capacitance
N/A	1	20 pF
1	2	100 pF
2	3	450 pF
3	4	2000 pF
4	5	10000 pF
5 and 6	6	45000 pF

- c. Proceed with normal calibration per manual or quickstart guide

2-1 FM US Approvals - Install per 420-0004-412-CD

The Universal IV Level Transmitter is rated as Intrinsically Safe for Class I, II and III, Groups A-G and Class I, Zone 0, Group IIC, in accordance with drawing 420-0004-412-CD; Nonincendive Class I, Division 2, Groups A-D Hazardous (Classified) Locations.

Furthermore, the Integral version is rated as Explosionproof for Class I, Division 1, Groups C & D; Dust Ignitionproof for Class II & III, Division 1, Groups E-G and Class I, Zone 1, Group IIB Hazardous (Classified) Locations with an integral sensor that is Intrinsically Safe for Class I, II & III, Groups A-G and Class I, Zone 1 Hazardous (Classified) Locations. The Remote version is rated as Explosionproof Class I, Division 1, Groups C & D; Dust-Ignitionproof for Class II & III, Division 1, Groups E-G and Class I, Zone 1, Group IIB Hazardous (Classified) Locations with connections to a 700 Series sensor that is Intrinsically Safe for Class I, II & III, Groups A-G and Class I, Zone 1 Hazardous (Classified) Locations.

2-2 FM Canada Approvals - Install per 420-0004-412-CD

The Universal IV Level Transmitter is rated as Intrinsically Safe for Class I, II and III, Groups A-G and Class I, Zone 0, Group IIC, in accordance with drawing 420-0004-412-CD; Nonincendive Class I, Division 2, Groups A-D Hazardous Locations.

Furthermore, the Integral version is rated as Explosionproof for Class I, Division 1, Groups C & D; Dust Ignitionproof for Class II & III, Division 1, Groups E-G and Class I, Zone 1, Group IIB Hazardous Locations with an integral sensor that is Intrinsically Safe for Class I, II & III, Groups A-G and Class I, Zone 1 Hazardous Locations. The Remote version is rated as Explosionproof Class I, Division 1, Groups C & D; Dust-Ignitionproof for Class II & III, Division 1, Groups E-G and Class I, Zone 1, Group IIB Hazardous Locations with connections to a 700 Series sensor that is Intrinsically Safe for Class I, II & III, Groups A-G and Class I, Zone 1 Hazardous Locations.

2-3 ATEX Approvals - Install per 420-0004-024-CD

Universal IV Level Transmitter – Integral

II 1 G Ex ia IIC T4 Ga $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**103**00-**-*)

II 2 G Ex d ia IIB T4 Gb $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**104**00-**-*)

II 2 D Ex tb ia IIIC Db T90°C $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**104**00-**-*)

Universal IV Level Transmitter – Remote (excluding models U**10***00-**-*)

II 1 G Ex ia IIC T4 $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**103***0-**-*)

II 2 (1) G Ex d [ia] IIB T4 $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**104***0-**-*)

II 2 (1) D Ex tb [ia] IIIC T90°C $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$; IP66 (For models U**10****0-**-*)

700-*, Universal IV Sensors

II 1 G Ex ia IIC T2...T5 Ga $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$

II 1 D Ex ia IIIC T300°C...T90°C Da $-40^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$

2-4 IECEx Approvals - Install per 420-0004-024-CD

Integral:

Ex ia IIC T4 Ga; Ex d ia IIB T4 Gb; Ex tb ia IIIC T90°C Db;
 $-40^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$; IP66

Input Voltage: 13-30Vdc; 1W

Remote:

Ex ia IIC T4 Ga; Ex tb [ia] IIIC T90°C Db; Ex d [ia] IIB T4 Gb;
 Ex tb [ia] IIIC T90°C Db; $-40^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$; IP66

Input Voltage: 13-30Vdc; 1W

Remote Sensor:

Ex ia IIC T5 ... T2 Ga; Ex ia IIIC T90°C ... T300°C Da; $-40^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$; IP66



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