

Maintenance & Operating Instructions

For

DIXON-ADS

Industrial Fluid Controls

A240 SERIES GROUND VERIFICATION MONITORS



The Right Connection®



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Overview

Industrial liquid processing creates a variety of potential hazards. Among those hazards is static buildup during loading or unloading of volatile chemicals. Static buildup must be prevented to avoid potentially disastrous ignition of liquids and vapors. The A240 series ground verification monitors are designed to mitigate the danger of static buildup by verifying the presence of a high quality and reliable earth-ground bond. With the presence of a ground path for static to dissipate, loading and unloading of flammable or combustible liquids can be done safely. The A240 monitor verifies the bond is of sufficient quality to prevent static buildup. Internal indicators inform the operator whether the process connection is safely grounded and internal relay contacts may be used to interlock operations until a safe earth bonding has been established.

Common applications for the A240 series monitor include:

- Tank truck and Rail car loading facilities
- Drum and barrel filling sites
- Loading of stationary tanks

Features

- Bright Red and Green Indicators to communicate A240 ground monitor status.
- Convenient user terminal blocks making installation easy.
- Environmentally sealed enclosure for long service life even in outdoor environments.
- Ability to integrate into process control systems
- Can provide and verify ground bond through single connection.

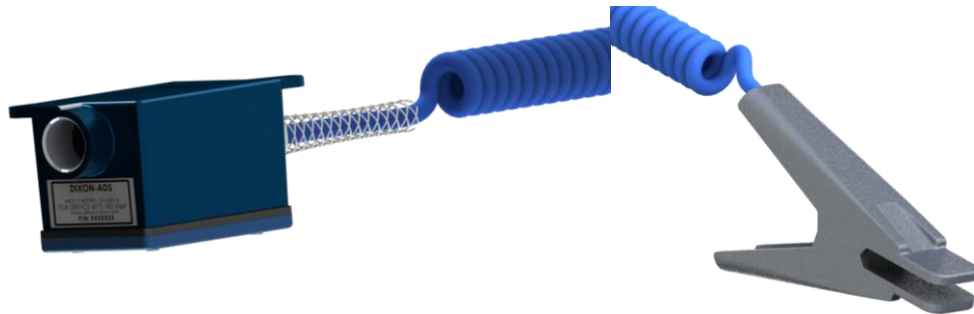
Technical Specifications

	MIN	MAX	NOMINAL
SUPPLY VOLTAGE	96VAC (A240120) 24VDC (A240024)	253VAC (A240120) 24VDC (A240024)	-
SUPPLY FREQUENCY	48Hz	62Hz	-
SUPPLY POWER	-	2W	-
AMBIENT TEMPERATURE	-40°F [-40°C]	140°F [60°C]	-
HEIGHT	6.0 in. [16cm]		
WIDTH	5.5 in. [14cm]		
DEPTH	7.5 in. [19cm]		
WEIGHT	15 lbs. (6.8 kg)		
INGRESS PROTECTION	IEC 60529 IP 66		
NEMA RATING	NEMA Type 4, 4X, 7, 9		
CONDUIT ENTRIES	3 X ¾" NPT		
SUITABLE FOR INSTALL IN HAZARDOUS LOCATIONS:	Class I, Division 1 & 2, Groups B, C, and D hazardous locations Class II, Division 1 & 2, Groups E, F, and G hazardous locations Class III hazardous locations		
SUITABLE FOR CONNECTION TO HAZARDOUS LOCATIONS:	Class I, Division 1 & 2, Groups A, B, C, and D hazardous locations Class I, Zone 0, 1 & 2, Groups IIC, IIB, and IIA hazardous locations		
GROUND CONNECTION THRESHOLD	Relay energized when ground clamp connection is less than 10Ω		
LIGHTS/INDICATORS	Unit will show red when ground clamp connection is disconnected or higher than 10Ω and will show green when ground clamp connection is less than 10Ω		
NUMBER OF OUTPUT RELAYS	1		
OUTPUT RELAY CONFIGURATION	One set of FORM C contacts. (Normally Open, Common, and Normally Closed contacts)		
OUTPUT RELAY CONTACT RATING	REFER TO STAHL DOCUMENT 9170A TO VERIFY RELAY RATINGS Max Power: 50W, 1000VA Max Voltage: 250VDC, 250VAC Max switching/carrying current: 2A/2A DC, 4A/4A AC		

Accessories

Ground Clamp:

The A540 Series ground clamps are key to creating a quality temporary connection for antistatic grounding applications. The clamp features three isolated stainless steel teeth, ensuring the clamp will penetrate dirt, corrosion, and road grime when in use. The isolated teeth cause the clamp to have fail safe operation, by recognizing when it is disconnected, and provides ground and a ground-verification signal in a single clamp. The clamp is tethered to a high durability coiled cord using a steel cable, reducing strain on the cable joint and extending the life of the cable.



Standard Ground Clamp P/N: A540CSB0251

Sealing Fitting:

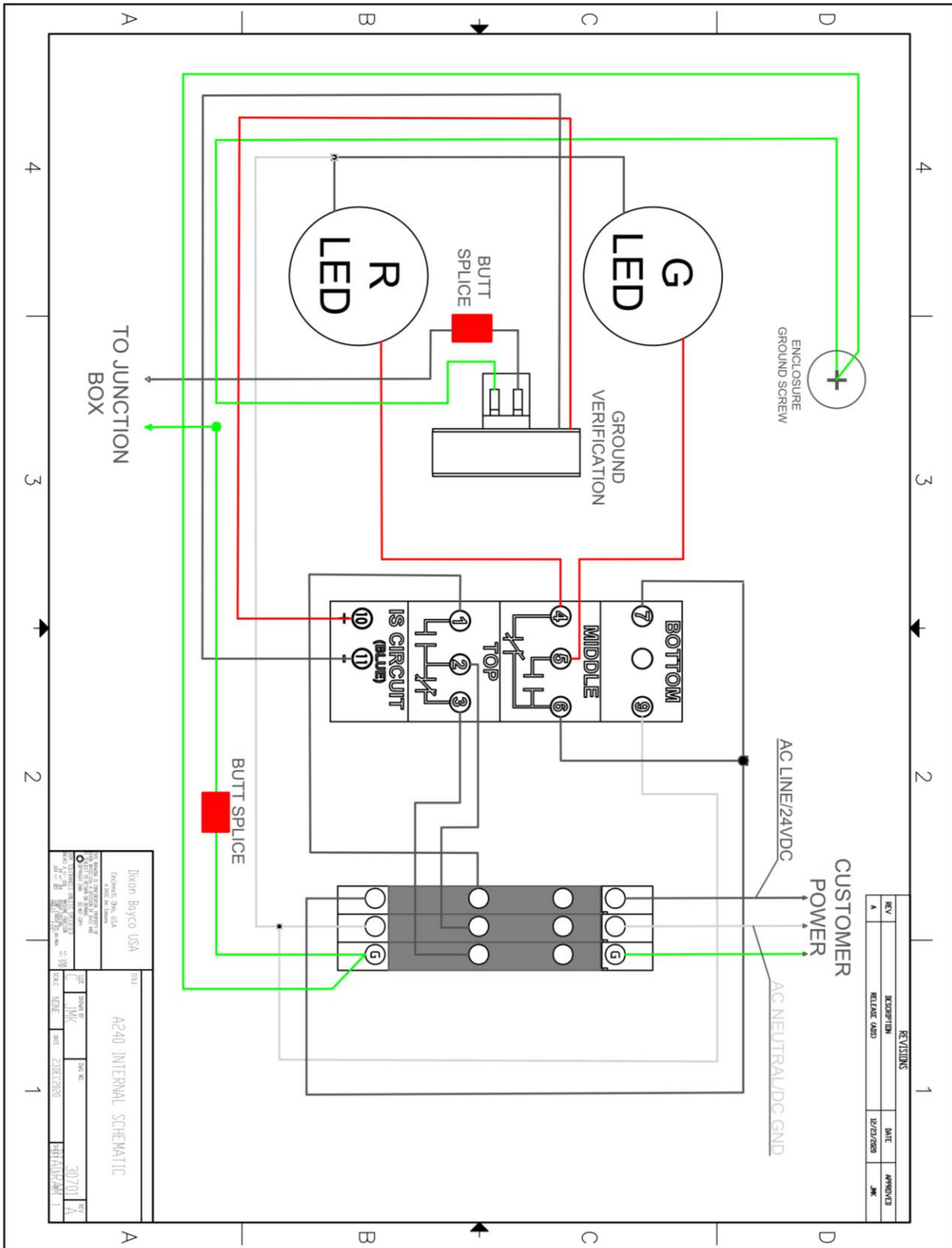
Sealing fittings are required within 18 inches of each enclosure entry used. These seal conduits from passing hazardous vapors or propagating flame. Sealing fittings are installed inline with conduit, then filled with sealing compound once wiring has been installed and verified. Downstream junction boxes containing Intrinsically Safe circuits may be serviced without danger.



$\frac{3}{4}$ " NPT Vertical Seal fitting with nipple; P/N: 30192AL

Note: Actual color may differ

A240 Controller Internal Schematic



Installation

INSTALLATION MUST BE COMPLETED BY A QUALIFIED HAZARDOUS LOCATION TECHNICIAN

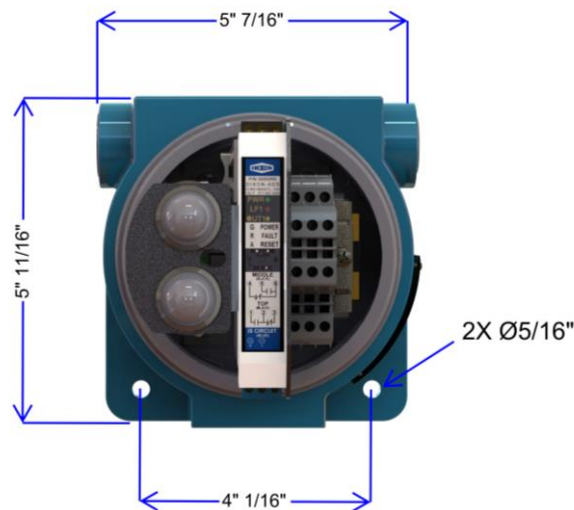
A240 Series monitors are suitable for installation in ordinary and specific hazardous locations (listed in technical specifications section) as defined by NEC NFPA70 and IECEx standard 60079. Installation to be performed by a qualified professional.

Mechanical

MECHANICAL INSTALLATION MUST BE COMPLETED BY A QUALIFIED HAZARDOUS LOCATION TECHNICIAN

It is recommended to wall mount the unit using stainless steel or galvanized steel hardware suitable for the monitor's weight and wall material.

1. Using the bolt pattern provided below, locate a sturdy area, large enough to install the unit.



For greatest environmental resistance it is recommended to mount the unit in the orientation shown. Keep in mind the intrinsically safe process connection must be run out of the bottom enclosure entry (as shown above). The A240 should be positioned at eye level, with indicators facing the typical operator position, for greatest visibility. The enclosure can withstand rain and sun exposure but will last longer when protected from the elements.

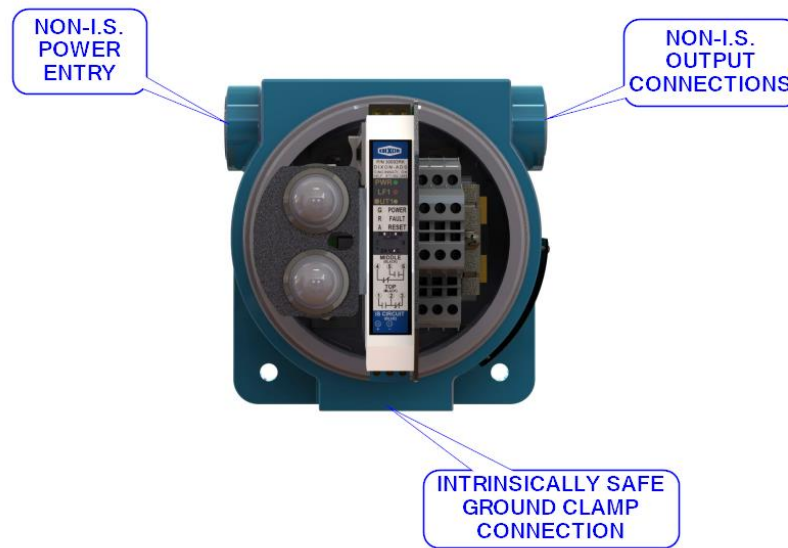
2. Level the bolt pattern and drill two holes marked on the pattern.
3. Have another person lift the monitor into position in front of the drilled holes.
4. Insert the two anchors or bolts into the two mounting holes shown above.
5. Tighten all the screws and ensure that the monitor is secure.

Electrical

ELECTRICAL INSTALLATION MUST BE COMPLETED BY A QUALIFIED HAZARDOUS LOCATION ELECTRICIAN FAMILIAR WITH LOCAL ELECTRICAL AND FIRE SAFETY CODE REQUIREMENTS.

- To be installed per NEC NFPA70 requirements for U.S. installations.

- Installation in other regions must conform to local electrical codes. Instructions provided below are general guidelines and may not cover local requirements.
- Sealing fittings required within 18" inches of the enclosure.
- The supply connection to the monitor must be made with rigid metal conduit.
- Any unused cable entries must be blocked with appropriately rated Ex stopping plugs.
- For 120V models, mains supply must be fed from a circuit breaker protected line. The circuit breaker in-line with A240 monitor must have a breaking capacity of 5,000A or more.
- Each enclosure entry point is intended for a specific connection to the A240 monitor. Refer to the image below for intended usage and threading for each cable entry.



**DO NOT DEVIATE FROM THE INTENDED USAGE OF EACH CABLE ENTRY;
I.S. AND NON-I.S. CABLING MUST NOT USE THE SAME CABLE ENTRY.**

1. Remove the lid from the A240 enclosure by first loosening the lid setscrew, then rotate the lid counter clockwise. Exercise caution when removing the lid, as it is not tethered to the enclosure and will fall once threads disengage.
2. Install supply wiring into the appropriate terminals, referring to the wiring diagram.

120V A240 models will automatically work with 120V and 240V supply voltage without configuration.

3. A high-quality ground connection is critical to the operation of the A240. Ensure the monitor is fed by a low resistance ground circuit. Failure of the A240's ground connection will prevent the monitor from operating normally.
4. Connect loads to the output relay terminals, as necessary. One single-pole-double-throw (Form C) relay is available for customer connection, having a common, normally closed, and normally open contacts.

5. Verify that all cable entries have either a sealing fitting or stopping plug installed.
6. Once electrical installation is complete, re-install the lid then tighten the set screw.

WARNING – WHEN CLOSING THE LID, ENSURE THAT NO WIRES ARE CAUGHT IN THE JOINT. TIGHTENING THE LID WHILE WIRES ARE IN THE FLAME PATH MAY IMPAIR SAFETY OR DAMAGE THE WIRES.

7. Verify proper functionality of system by testing before putting into service.

ALL CONDUIT AND CABLE GLAND THREADS TO BE INSTALLED INTO THREADED ENCLOSURE ENTRIES SHOULD USE TEFLON TAPE.

Maintenance

SERVICE SHOULD BE COMPLETED ONLY BY A QUALIFIED HAZARDOUS LOCATION TECHNICIAN.

DO NOT OPEN ENCLOSURE WHILE UNIT IS ENERGIZED.

DO NOT OPEN ENCLOSURE WHILE EXPLOSIVE ATMOSPHERE IS PRESENT.

REPLACE PARTS WITH GENUINE DIXON OR APPROVED EQUIVALENT PARTS; SUBSTITUTION MAY IMPAIR INTRINSIC SAFETY.

DO NOT REPAIR ANY FLAMEPROOF JOINTS; REPAIR MAY IMPAIR ENCLOSURE'S FLAMEPROOF PROTECTION. CONTACT DIXON IF FLAMEPROOF JOINT IS DAMAGED.

The A240 has few parts that will require regular maintenance, however it is important to service annually to extend the life of the monitor. Unsheltered units should be serviced in dry weather to prevent rainwater from entering the enclosure and minimize moisture exposure.

1. Once the unit has been powered down and hazardous vapors have dissipated, remove the lid.
2. Verify the O-ring gasket is in good condition.
3. Inspect the interior of the enclosure for condensation or pooled water. The presence of water will cause corrosion and/or failure and should be fixed immediately.

If water or condensation is present, replace O-ring, inspect cable entry threads and reapply grease if needed. Verify the conduit-sealing fittings are sealed, re-applying sealing compound if necessary.

4. Verify all wire terminals are tight.
5. Once maintenance is complete, re-install lid, then restore power to unit.

Replacement parts

Description	Part Number
Electronics Assembly	24VDC Models: 30701-024 120VAC Models: 30701-120
Sealing fitting; ¾" vertical	30192AL
Sealing compound	30339 for 5 lbs. or 30339-002 for 1 lb
Grounding Clamp	A540 Series. Call for specific P/N.

Operation

WARNING - USING THE A240 IN A MANNER NOT DEFINED IN THIS MANUAL MAY IMPAIR SAFETY.

1. Verify unit is powered on and idle by the presence of a red indicator light inside of the enclosure.
2. Test the unit's operation by clamping to a known grounded piece of metal. Verify the A240's indicator changes from RED to GREEN. Remove the clamp from the test point.
3. Before any other electrical connections are made, secure clamp to the process connection that is to be loaded.
4. Verify the A240 indicator changes from RED to GREEN.
5. Complete any other process connections.
6. Once all other safety measures are active, begin the loading process.
7. Once loading is complete, remove all other process connections, then the A240 last.
8. Return the A240 clamp to the isolated storage facility, verifying the indicator remains red.

Warranty

For warranty claims and information regarding coverage, please contact Dixon Support at

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