SECTION 230923.18 - LEAK DETECTION INSTRUMENTS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			1. SUMMARY
				1. Section includes the following types of leak-detection switches:

Point-type, leak-detection switches.

Cable-type, leak-detection switches.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 230923 "Direct-Digital Control System for HVAC" for control equipment and software, relays, electrical power devices, uninterruptible power supply units, wire, and cable.

Section 230993 "Sequence of Operations for HVAC Controls" for requirements that relate to Section 230923.18.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product, including the following:

Operating characteristics, electrical characteristics, and furnished accessories indicating control signal, default control signal with loss of power, and electrical power requirements.

Product description with complete technical data and product specification sheets.

Installation operation and maintenance instructions including factors affecting performance.

* + - * 1. Shop Drawings:

Include details of product assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

Include diagrams for power, signal, and control wiring.

Include number-coded identification system for unique identification of wiring, cable, and tubing ends.

* + - * 1. Operation and Maintenance Data: To include in operation and maintenance manuals.
1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

* + - 1. LEAK-DETECTION SWITCHES
				1. Point-Type, Leak-Detection Switches:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9829) Subject to compliance with requirements, provide products by one of the following:

[RectorSeal HVAC; a CSW Industrials Company](http://www.specagent.com/Lookup?uid=123457163981).

[Veris Industries](http://www.specagent.com/Lookup?uid=123457007771).

[W. E. Anderson; Dwyer Instruments, Inc](http://www.specagent.com/Lookup?uid=123456944526).

Approved equivalent.

Requirements in remaining subparagraphs are based on W. E. Anderson's "Series WD2."

Features: Audible and visual alarm with relay output for remote indication.

Alarm activated based on change in resistance.

Performance:

Service: Water.

Temperature Limits: 32 to 122 deg F (zero to 50 deg C).

Switch Type: SPDT relay.

Electric Connection: Cable attached.

Construction: Acrylic, ABS plastic.

Field Power: 24-V ac or dc.

* + - * 1. Cable-Type, Leak-Detection Switches:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9830) Subject to compliance with requirements, provide products by the following:

[W. E. Anderson; Dwyer Instruments, Inc](http://www.specagent.com/Lookup?uid=123456944527).

Approved equivalent.

Requirements in remaining subparagraphs are based on W. E. Anderson's "Series WD."

Control Module Features:

Power and alarm LEDs.

Alarm test switch.

Continuous tape integrity self check.

Performance:

Service: Water, or other conductive liquid.

Switch Type: DPDT.

Electric Connection: Screw terminals.

Conduit Connection: 0.5 inch (13 mm).

Construction:

Control Module Enclosure: Extruded aluminum.

Tape: Hydrophobic with connector on each end.

Tape Length: [**60 inches (1500 mm)**] [**10 feet (3 m)**] [**15 feet (4.5 m)**] [**25 feet (7.5 m)**]. Field extendable.

Field Power: 24-V ac or 24- to 30-V dc.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
				2. Prepare written report, endorsed by Installer, listing conditions detrimental to performance.
				3. Proceed with installation only after unsatisfactory conditions have been corrected.
			2. LEAK-DETECTION INSTRUMENT APPLICATION

Retain "Leak-Detection Instrument Application" Article if instrument types are not indicated on Drawings.

Copy and edit paragraph below to suit each unique application requiring a different leak-detection switch type.

* + - * 1. <**Insert application**>: [**Leak-detection switches (point type)**] [**Leak-detection switches (cable type)**].
			1. INSTALLATION, GENERAL
				1. Properly support instruments, wiring, and conduit to comply with requirements indicated. Brace all products to prevent lateral movement and sway or a break in attachment when subjected to a <**Insert value**> force.
				2. Fastening Hardware:

Stillson wrenches, pliers, and other tools that cause injury to or mar surfaces of rods, nuts, and other parts are prohibited for work of assembling and tightening nuts.

Tighten bolts and nuts firmly and uniformly. Do not overstress threads by excessive force, or by oversized wrenches.

Lubricate threads of bolts, nuts, and screws with graphite and oil before assembly.

* + - * 1. Install products in locations that are accessible and that permit calibration and maintenance from floor, equipment platforms, or catwalks. Where ladders are required for Director’s Representative's access, confirm unrestricted ladder placement is possible under occupied condition.
			1. CONNECTIONS
				1. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables” for electrical power connections.
			2. INSTALLATION
				1. Mount switches not required to be mounted within system control panels on walls, floor-supported freestanding pipe stands, or floor-supported structural support frames. Use manufacturer mounting brackets to accommodate field mounting. Securely support and brace products to prevent vibration and movement.
			3. IDENTIFICATION
				1. Identify system components, wiring, cabling, and terminals. Each piece of wire, cable, and tubing shall have the same designation at each end for operators to determine continuity at points of connection. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
				2. Install engraved phenolic nameplate with instrument identification[**and on face of ceiling directly below instruments concealed above ceilings**].
			4. CHECKOUT PROCEDURES
				1. Check installed products before continuity tests and calibration.
				2. Check instruments for proper location and accessibility.
				3. Check instruments for proper installation for applicable considerations that impact performance.
			5. ADJUSTMENT, CALIBRATION, AND TESTING
				1. Description:

Calibrate each instrument installed that is not factory calibrated and provided with calibration documentation.

Provide a written description of proposed field procedures and equipment for calibrating each type of instrument. Submit procedures before calibration and adjustment.

Equipment and procedures used for calibration shall meet instrument manufacturer's written recommendations.

Provide diagnostic and test equipment for calibration and adjustment.

Calibrate each instrument according to instrument instruction manual supplied by manufacturer.

If after calibration indicated performance cannot be achieved, replace out-of-tolerance instruments.

Comply with field-testing requirements and procedures indicated by ASHRAE Guideline 11, "Field Testing of HVAC Control Components," in the absence of specific requirements, and to supplement requirements indicated.

* + - * 1. Digital Signals:

Check digital signals using a jumper wire.

Check digital signals using an ohmmeter to test for contact.

* + - * 1. Switches: Calibrate switches to make or break contact at set points indicated.
			1. MAINTENANCE SERVICE

Verify with Owner that maintenance service is required for Project.

* + - * 1. Maintenance Service: In addition to the contractors 1-year project warranty requirements, beginning at Substantial Completion, maintenance service shall include [**three**] [**six**] [**nine**] [**12**] months' full maintenance by [**skilled employees of systems and equipment Installer**] [**manufacturer's authorized service representative**]. Include [**monthly**] [**quarterly**] [**semiannual**] [**annual**] preventive maintenance, repair, or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper <**Insert equipment**> operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
			1. DEMONSTRATION
				1. [**Engage a factory-authorized service company field advisor to train**] [**Train**] Director’s Representative's maintenance personnel to adjust, operate, and maintain instrumentation and control devices.
				2. Coordinate video with operation and maintenance manuals and classroom instruction for use by Director’s Representative in operating, maintaining, and troubleshooting.
				3. Record videos on DVD disks.
				4. Director’s Representative shall have right to make additional copies of video for internal use without paying royalties.
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END OF SECTION 230923.18