Bagged Underground Reference Electrodes

Typical Applications

- Underground storage tanks, buried pipelines, structures below concrete flooring

Featuring

- 30 or 50 year design life with EDI's LongLife(TM) gelled element
- Proprietary backfill mix to retain moisture and minimize migration of contaminants from the surrounding soil
- 50 feet (15 m) of #14 AWG HMW/PE lead wire is standard; other lengths available.

Model UL reference electrodes are the original reference electrode design for permanent underground applications. These bagged reference electrodes remain in widespread use today because they have proven long term durability. The reference electrode is contained in a cotton bag filled with bentonite-gypsum backfill. Since the entire surface of the bag is in contact with the surrounding soil, there is very low earth contact resistance. This is the primary reason that bagged electrodes are the preferred design for use in high resistance semi-dry soils or locations with seasonal dry periods.

Bagged reference electrodes are easily installed at new construction sites where there is an open excavation or at existing locations in a bore hole. After the electrode has been placed in the hole, it is covered with about 5 cm (2 inches) screened local backfill and then saturated with about 20 liters (5 gallons) potable water to activate it. The potential of the electrode should be checked against a portable electrode of known accuracy before the hole is backfilled.

EDI's LongLife Reference Electrode (**Model UL**) has a 30 year design life. We also offer an Extended Life version (**Model UL50**) with a 50 year design life for projects where a longer service life is required. These electrodes are also available in a sub-size version (**Model ULM**) which is packaged in a 4 inch (10 cm) diameter bag rather than the standard 7 inch (18 cm) diameter bag. A 1/8 in. dia. x 2 in. (3 mm x 50 mm) rod coupon can be attached to either the Model UL or UL50 electrode if specified at time of order.

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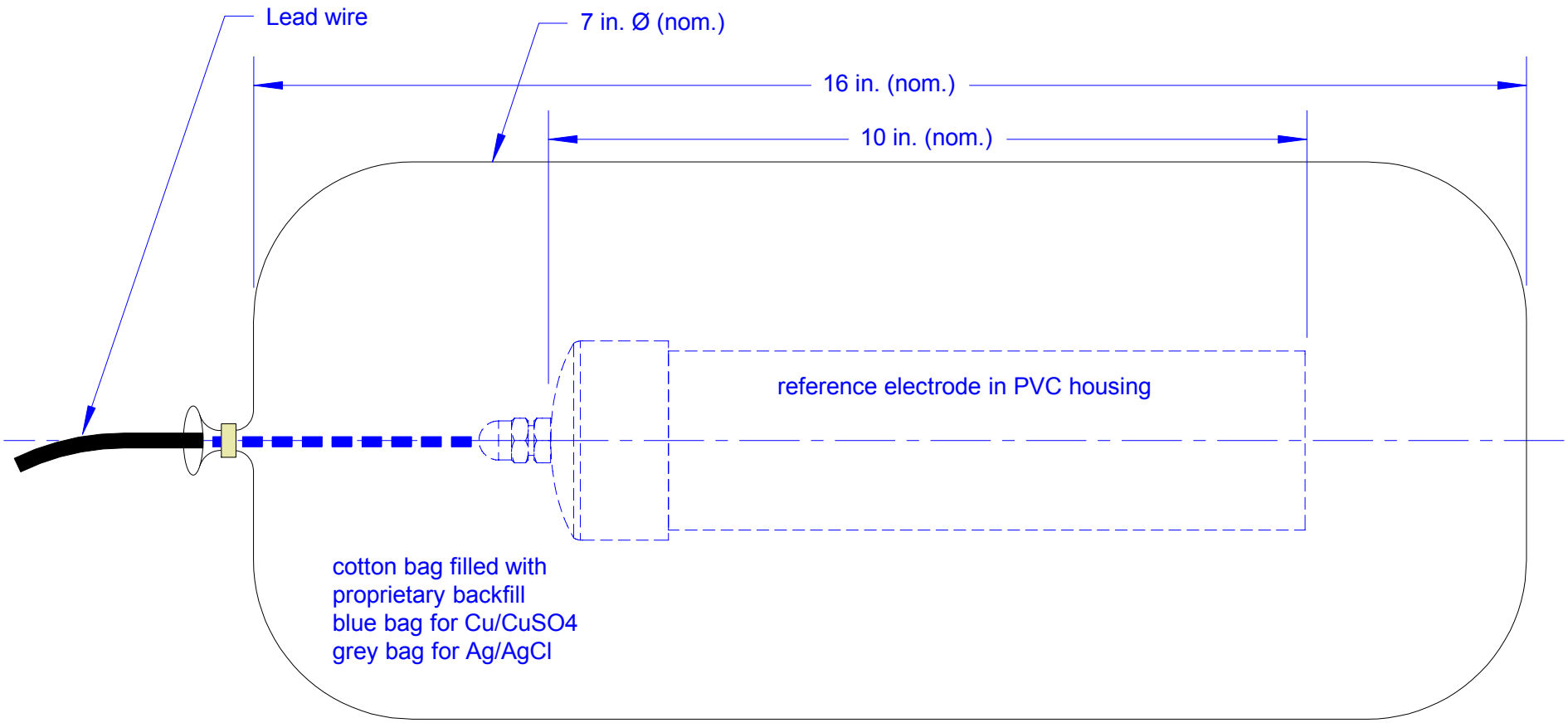
electrochemical devices, inc.
PO Box 789, Middlefield, OH 44062 440-632-5616
info@edi-cp.com www.edi-cp.com

U Series Underground Reference Electrodes



Model UL - 30 year (nom.) design life

Specify as EDI Model UL-xxx-yy
where xxx is element type
and yy is termination type

Element types

AGG = Ag/AgCl (saturated, gelled)
CUG = Cu/CuSO4 (saturated gelled)

Termination types

SW = 50 feet #14 AWG HMWPE lead wire
LWnnn = nnn feet #14 AWG HMWPE lead wire
CW = length and type of lead wire as specified

Installation

Remove bagged element from shipping carton.
Set in position in hole.
Thoroughly saturate bag with potable water; use at least 5 gallons.
Measure and record potential of bagged electrode using a calibrated portable reference.
Refill hole with suitable backfill.

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Bagged Underground Reference - 30 yr. Design Life

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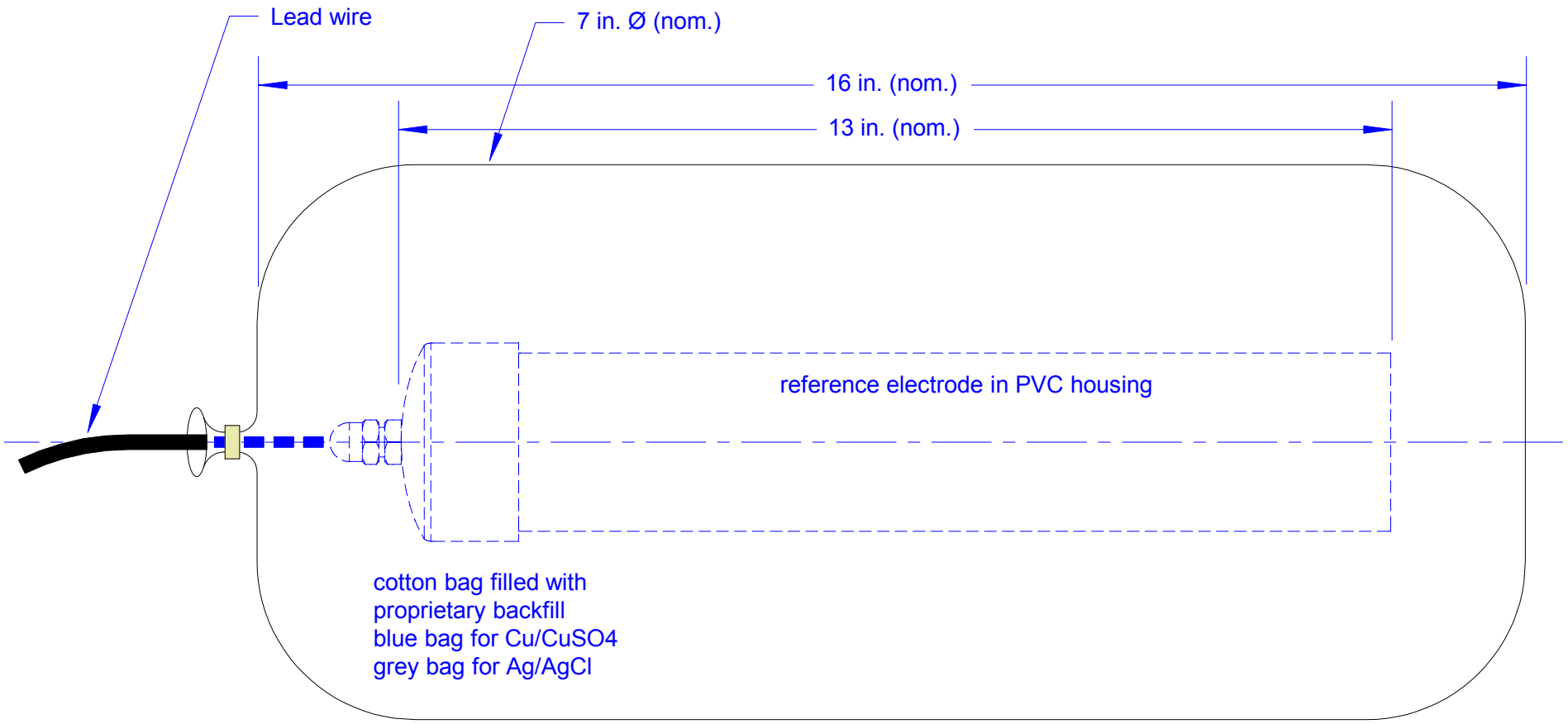
SCALE	DRAWN BY	DATE	DRAWING NUMBER
HALF	FJA	24 JUN 2015	UL-3



Model UL50 - 50 year (nom.) design life

Specify as EDI Model UL50-xxx-yy
where xxx is element type
and yy is termination type

Element types

AGG = Ag/AgCl (saturated, gelled)
CUG = Cu/CuSO4 (saturated gelled)

Termination types

SW = 50 feet #14 AWG HMWPE lead wire
LWnnn = nnn feet #14 AWG HMWPE lead wire
CW = length and type of lead wire as specified

Installation

Remove bagged element from shipping carton.
Set in position in hole.
Thoroughly saturate bag with potable water; use at least 5 gallons.
Measure and record potential of bagged electrode using a calibrated portable reference.
Refill hole with suitable backfill.

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Bagged Underground Reference - 50 yr. Design Life

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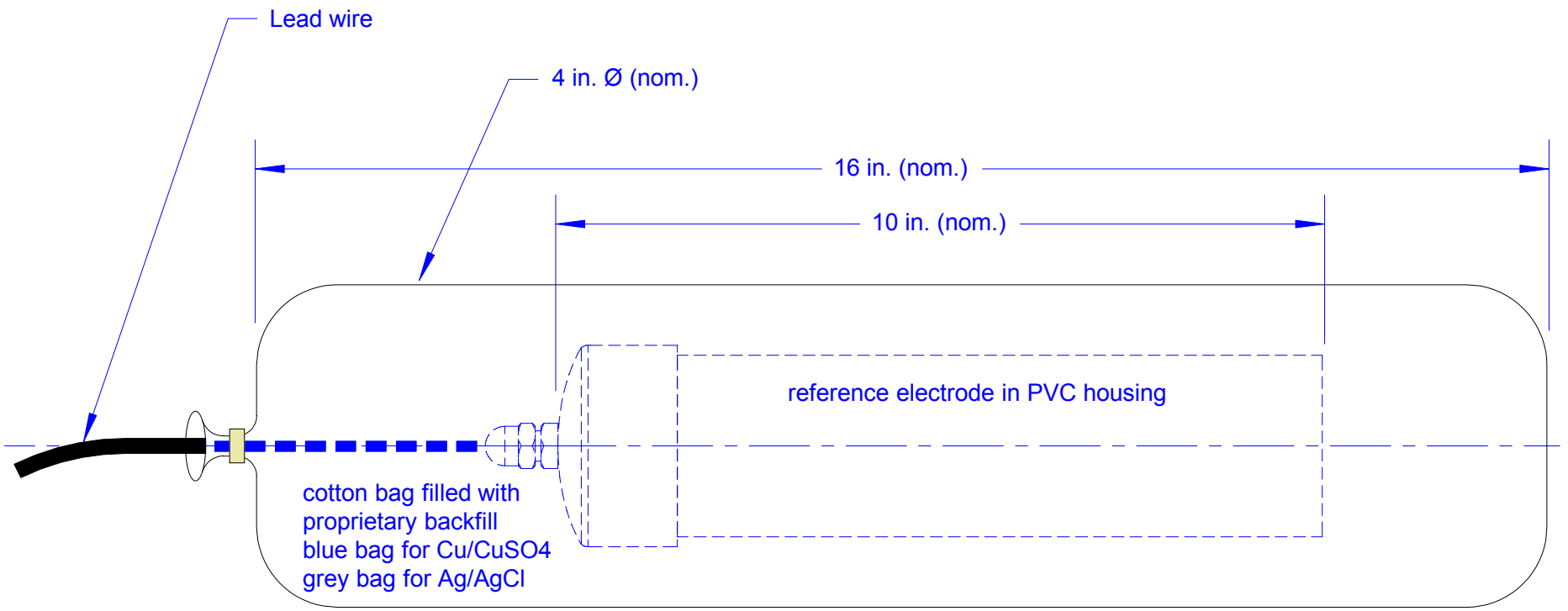
SCALE	DRAWN BY	DATE	DRAWING NUMBER
HALF	FJA	24 JUN 2015	UL-4



Model ULM - 30 year (nom.) design life

Specify as EDI Model ULM-xxx-yy
where xxx is element type
and yy is termination type

Element types

AGG = Ag/AgCl (saturated, gelled)
CUG = Cu/CuSO4 (saturated gelled)

Termination types

SW = 50 feet #14 AWG HMWPE lead wire
LWnnn = nnn feet #14 AWG HMWPE lead wire
CW = length and type of lead wire as specified

Installation

Remove bagged element from shipping carton.
Set in position in hole.
Thoroughly saturate bag with potable water; use at least 5 gallons.
Measure and record potential of bagged electrode using a calibrated portable reference.
Refill hole with suitable backfill.

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Mini Bagged Underground Reference - 30 yr Design

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SCALE	DRAWN BY	DATE	DRAWING NUMBER
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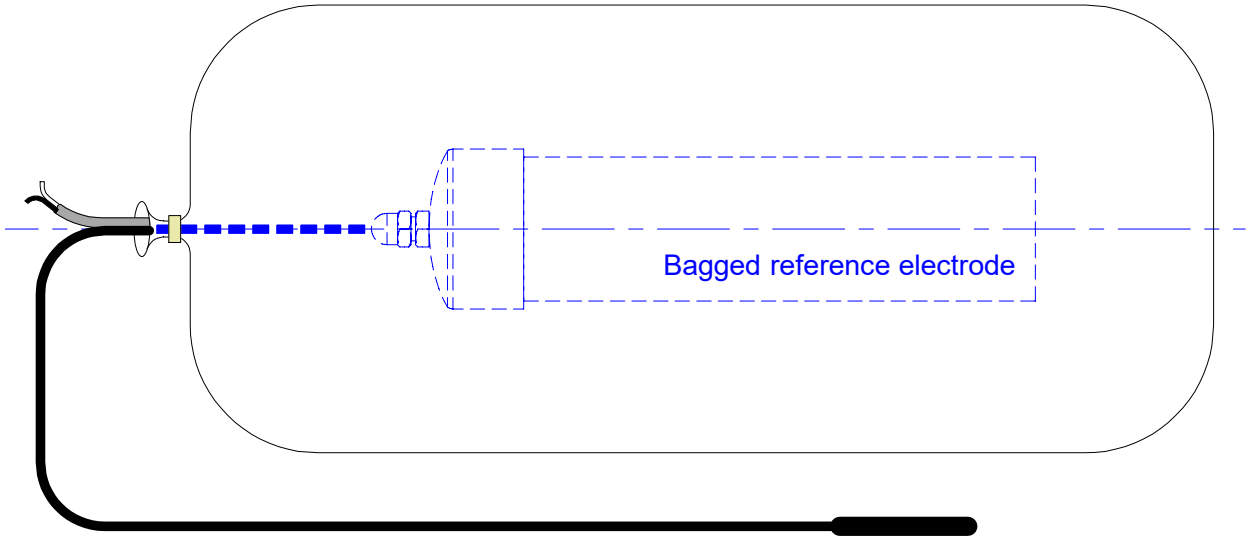
Model UI Instant Off Sensor is a 1/8 in Ø x 2 in (3 mm Ø x 50 mm) steel rod permanently attached to the reference electrode through a #14 RHW/USE2 wire. It can be added to either our UL or UL50 underground reference electrodes. It is specified by the addition of the letter I to the first group of the model number (e.g. UL becomes ULI). Other dimensions and features of the reference electrode are as shown on the respective data sheets or drawings.



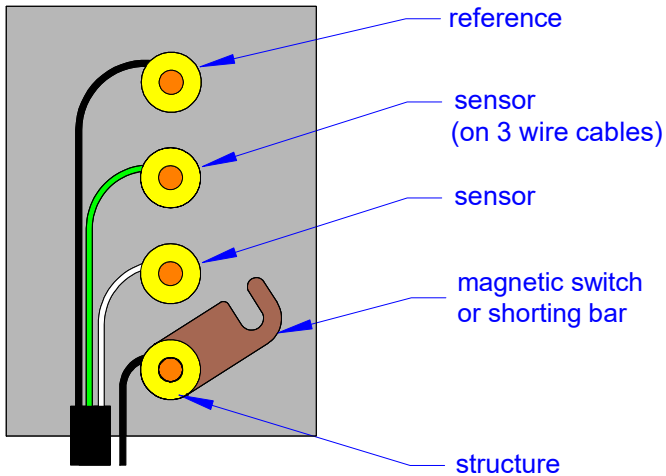
The electrode can be terminated with either a two wire cable, specified as 2Wnnn, or a three wire cable, specified as 3Wnnn. nnn refers to the cable length in feet. Both two and three wire cables have #16 conductors wires: black wire connects to the reference, white wire connects to the sensor, green wire on three conductor cables is also connected to the sensor.

Install by placing the reference electrode as directed; it should be surrounded by the same backfill as the structure. The sensor is pressed into undisturbed backfill within 6 inches (15 cm) of the cotton bag on the reference.

Make regular potential measurements between the reference and the sensor with the shorting bar closed. Make instant-disconnect measurements between the reference and the sensor as the shorting bar is opened.

This sensor can also be used as the working electrode for a three electrode linear polarization test, or as one electrode for semi-quantitative resistivity measurements on soil between the electrode and structure.

Note: A magnet operated switch such as EDI Model SM can be used to simplify making instant-disconnect measurements.



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Bagged Underground Reference with Rod Coupon

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SCALE	NONE	DRAWN BY	FJA	DATE	11 OCT 2016	DRAWING NUMBER	UL-7