



# Earth-Rite<sup>®</sup> MULTIPPOINT II

Static Ground Monitoring System

## Customer Supplied Cable Specifications and Approved Cable Parameters



The safety of any system incorporating the equipment referred to in this document is the responsibility of the installer of the system.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Any warranty is made void if the equipment is not installed, or used, in accordance with the manufacturers instructions.

## GENERAL

The installation must comply with the installation requirements of the country of use. e.g.

**Canada:** CSA C22.2 No. 0-M (General Requirements - Canadian Electrical Code, Part II)

**USA:** ANSI/ISA RP12.06.01 (Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations) and the National Electrical Code.

The installation must be in accordance with the manufacture's guidelines.

It is recommended that the transfer or mixing operation is interlocked with the contacts of the Earth-Rite MULTIPOINT II unit. This will ensure that the operation is stopped if the earth connection is inadvertently lost.

### **Maximum Cable Length Considerations for the Earth-Rite MULTIPOINT II Intrinsically Safe Circuits**

The Intrinsically Safe cables connected to the Earth-Rite MULTIPOINT II are restricted in length by three I.S. Parameters, namely C (capacitance), L (inductance) and the L/R ratio. The cable parameters correspond to the output parameters of the equipment (Co, Lo & Lo/Ro).

The IEC code of practice (IEC 60079-14) suggests practical maximum cable parameters, for C, L and the L/R ratio, as 200pf/m, 1µH/m and 30 µH/ohm respectively. However, cable manufacturers generally publish specific data for their cables.

This data can be used by the installer, in conjunction with the table below, to determine the maximum allowed cable length.

Consideration must also be given to the resistance of the cable loops as the Earth-Rite MULTIPOINT II monitors to a maximum resistance of 10 ohm per channel.

In addition, all installations must be carried out in accordance with any relevant national standards and requirements.

**For operational purposes, the cable between the Power Supply Unit and the Monitoring Unit should be no more than 200m (218 Yards) in length.**

## Cable resistance values

The resistance figure shown should be multiplied by 2 to give the loop resistance.

Length	Cable Size and Type	Ohms
100m	of 1.0mm sq copper cable has a resistance of	1.73
100m	of 1.5mm sq copper cable has a resistance of	1.13
100m	of 2.5mm sq copper cable has a resistance of	0.69
100m	of 4.0mm sq copper cable has a resistance of	0.43
100ft	of 18(UL) AWG copper cable has resistance of	0.53
100ft	of 14 AWG copper cable has resistance of	0.25
100ft	of 12 AWG copper cable has resistance of	0.16

## Earth-Rite MULTIPOINT II - Customer Supplied Cable Specification

### Recommended Specification

#### Typical Installation – using Newson Gale Clamps, Cables etc for Plant-Item Connections

**Cable from Earth-Rite MULTIPOINT II Monitoring Unit to the Earth-Rite MULTIPOINT II Marshalling Box**  
18AWG multi-conductor Cable with blue sheath or identifier (IS Circuit).

**Cable from Earth-Rite MULTIPOINT II Monitoring Unit to Earth-Rite MULTIPOINT II Power Supply Unit**  
18AWG 4-conductor Cable with blue sheath or identifier (IS Circuit). [Maximum Length: 200m]

**Cable from Earth-Rite MULTIPOINT II Monitoring unit to Site Static Ground Bar/Tape**  
10AWG single-conductor cable with orange sheath.

**Cable from the Site Static Ground Bar/Tape to the Earth-Rite MULTIPOINT II Marshalling Box**  
10AWG single-conductor cable with orange sheath.

**Cable from the Earth-Rite MULTIPOINT II Marshalling Box to each Remote Indicator Station**  
18(UL) AWG 5-conductor Cable with blue sheath or identifier (IS Circuit).

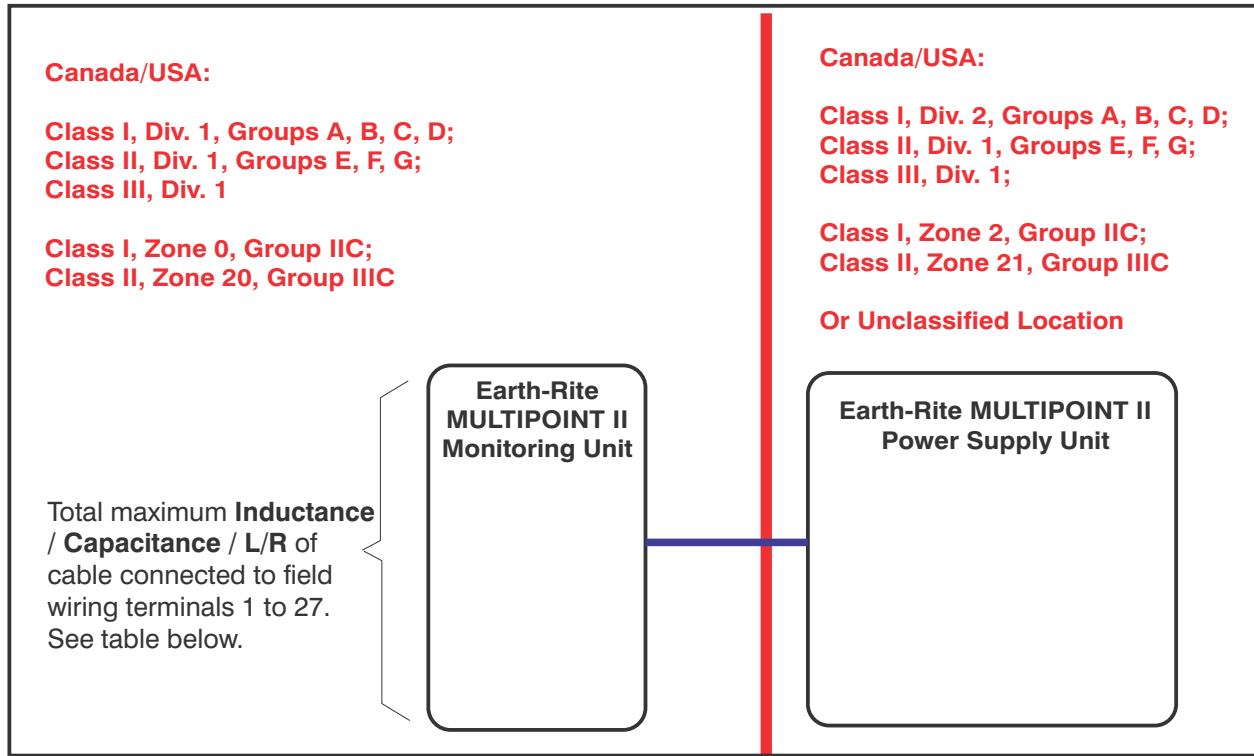
**Cable from Earth-Rite MULTIPOINT II Power Supply Unit to the Pump/Mixer/etc control circuit**  
14AWG 2-conductor cable + Equipment Grounding Conductor

**Cable from Supply to the Earth-Rite MULTIPOINT II Power Supply Unit**  
14AWG 2-conductor cable + Equipment Grounding Conductor

#### Insulation of cables connected to the Power Supply Unit

All cables connected to the non-Intrinsically Safe terminals of the Power Supply Unit shall have adequate insulation to suit the voltage and the environmental conditions. The insulation for all cables should be rated to at least 500V.

## Approved Cable Parameters



Item	NEC / CEC Class and Zone Groups	Class I Group IIC Class II Group IIIC	Class I Group IIB Class II Group IIIB	Class I Group IIA Class III Group IIIA
	NEC / CEC Class & Division Groups	Class I Group A Class I Group B Class II Group E	Class I Group C Class II Group F Class II Group G	Class I Group D Class III
External Capacitance (PSU to Monitor Unit )		1.5uF	9.9uF	39uF
External Inductance (PSU to Monitor Unit )		208uH	833uH	1667uH
External Lo/Ro (PSU to Monitor Unit )		29.1 uH/ohm	117 uH/ohm	234 uH/ohm
External Capacitance (Monitor Unit field wiring terminals) Co		1.5uF	9.9uF	39uF
External Inductance (Monitor Unit field wiring terminals) Lo		1022uH	4088uH	8175uH
External Lo/Ro (Monitor Unit field wiring terminals) Lo/Ro		68 uH/ohm	272 uH/ohm	544 uH/ohm

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