

## 8.0 Wiring Detail

### 8.1 Wiring Guidelines For Fixed Controllers And Sensor/Transmitter Connections

The following guidelines represent the conductor quantities and minimum wire sizes that should be used for wiring sensors or sensor/transmitters to the RKI fixed controllers for gas detection. Please note the following:

- 8.1.1 Use either the sizes listed below or larger (never smaller).
- 8.1.2 Wiring cables should either be shielded or be installed inside a conduit.
- 8.1.3 All 4-20 mA signal wiring must use shielded twisted pair signal cables.
- 8.1.4 Please note that for assemblies with 115 VAC required for the pump, it is assumed that AC power will be obtained locally, and these wires are not counted in the column 2 wire count.
- 8.1.5 For assemblies with 24 VDC pumps, it is assumed that the pump power will be obtained from the controller, and so these wires (2) are included in column 2 wire count.

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### 8.2 Wiring Conductor Quantities, And Pump Requirements:

Instrument or transmitter	# wires needed from sensor to controller	Maximum wire size for terminals (AWG)	Pump power required
LEL sensor only	4		
LEL sensor/transmitter	3	14	
Oxygen sensor only	2		
Oxygen sensor/transmitter	2	14	
CO sensor only	2		
CO sensor/transmitter	2	14	
H2S sensor only	2		
H2 sensor/transmitter	3	14	
Solid State sensor	3		
Solid State sensor/transmitter	3	14	
M2A transmitters	3	14	
GD-K8A	2	14	
GD-K7D2	2	14	24VDC
GD-K7D2	2	14	115 VAC
GD-K8DG/S8DG	2	14	115 VAC
35-3000RK-LEL	6	16	24 VAC
35-3000RK-OXY	4	16	24 VAC
35-3000RK-LEL/O	8	16	24 VAC
GD-D8	4	14	115 VAC
GD-D8V	3	14	115 VAC
GD-K77D/GD-K71D	3 or 4	14	24 VAC
PS2		14	
Beacon 110		14	
Beacon 200		14	
Beacon 800		14	
Pioneer 4W		12	
Pioneer 16R		12	
RM-570-W, SR-570, TM-570		14	

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### 8.3 Wiring Sizes Required For Different Distances From Sensor to Controller:

Sensor or Sensor/ Transmitter	Number of Wires to Controller	Maximum Distance to Controller w/18 AWG Wire	Maximum Distance to Controller w/16 AWG Wire	Maximum distance to Controller w/14 AWG wire
Direct Connect LEL	4	500 ft.	1,000 ft.	2,000 ft.
Direct Connect Oxygen	2	500 ft.	1,000 ft.	2,000 ft.
Direct Connect H2S	2	500 ft.	1,000 ft.	2,000 ft.
Direct Connect CO	2	500 ft.	1,000 ft.	2,000 ft.
4 - 20 mA LEL Transmitter	3	2,500 ft.	5,000 ft.	8,000 ft.
4 - 20 mA Oxygen Transmitter	2	2,500 ft.	5,000 ft.	8,000 ft.
4 - 20 mA H2S Transmitter	2	2,500 ft.	5,000 ft.	8,000 ft.
4 - 20 mA CO Tranmsitter	2	2,500 ft.	5,000 ft.	8,000 ft.
M2	3	2,500 ft.	5,000 ft.	8,000 ft.
GD-K8A	2	2,500 ft.	5,000 ft.	n/a
GD-K7D2	2	2,500 ft.	5,000 ft.	n/a
GD-K8DG/S8DG	2	2,500 ft.	5,000 ft.	n/a
35-3000RK-LEL	6	500 ft.	1,000 ft.	n/a
35-3000RK-OXY	4	500 ft.	1,000 ft.	n/a
35-3000RK-LEL/O	8	500 ft.	1,000 ft.	n/a
GD-D8	4	500 ft.	1,000 ft.	2,000 ft.
GD-D8V	3	500 ft.	1,000 ft.	2,000 ft.
GD-K77D	3 for RKI Controller 4 for Riken Controller	2,500 ft.	5,000 ft.	n/a

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