



APPLICATION NOTE

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Products: Cutler-Hammer Enhanced 50 Series Photoelectric Sensors
Part No.: 1151E-6543, 1251E-6543, 1351E-6543, 1451E-6543, 1452E-6543
Subject: Replacing Allen-Bradley 9000 Series Photoelectric Sensors with Cutler-Hammer Enhanced 50 Series Sensors

Number: AN-SEN-008
Date Issued: 1/13/10
Revision: Rev. A

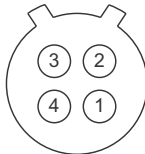
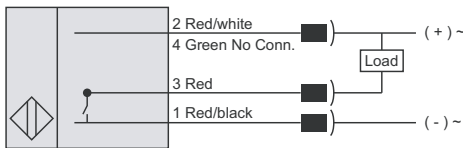
Wiring changes are required when replacing A-B 9000 Series sensors with C-H Enhanced 50 Series sensors.

The Allen-Bradley model 9 __ 3-QD1 sensors are a family of AC/DC sensors with 3-wire output configuration terminated with a dual key micro AC connector. Currently, the nearest Cutler-Hammer replacements are Enhanced 50 Series sensors with model numbers ending in the "-6543" suffix. These models have a 4-wire output configuration terminated in the same 4-pin dual key micro AC connector.

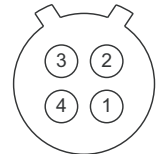
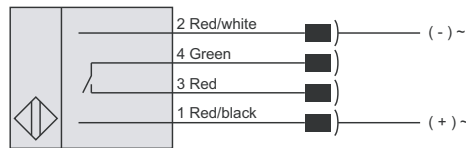
While the replacement Cutler-Hammer sensor will attach to the existing mating cable, external wiring changes are required before the sensor's output will function.

The following wiring diagrams and table show the wiring differences between the 9000 Series and Enhanced 50 Series sensors.

Allen-Bradley 9 __ 3-QD1 Sensors



Cutler-Hammer "-6543" Sensors



Sensor	Mating Cable Color Code	Connector Pin	Wire Color	AC Mode	DC Mode
Allen-Bradley 9000 Series	North American	1	Red/black	AC hot	DC common
		2	Red/white	AC neutral	DC positive
		3	Red	Switched AC output	NPN output
		4	Green	Not used	Not used
Cutler-Hammer Enhanced 50 Series	North American	1	Red/black	AC hot	DC positive
		2	Red/white	AC neutral	DC common
		3	Red	Switched AC output	NPN output
		4	Green	AC hot *	DC common
	IEC	1	Brown	AC hot	DC positive
		2	Blue	AC neutral	DC common
		3	Black	Switched AC output	NPN output
		4	White	AC hot	DC common

* Note: Using a green wire for a current carrying conductor is a violation of National Electrical Code, unless the 2008 NEC 250.119 exception applies ("Power-limited, Class 2 or 3 circuit cables containing only circuits operating at less than 50 volts"). For this reason, we recommend using a connector cable with IEC color codes, such as Cutler-Hammer part number CSAS4A4CY2202 (not currently available from ADC).

Technical Assistance

If you have any questions regarding this Application Note, please contact Technical Support at 770-844-4200.

