in 120 volts alternating current (ac), 60-hertz circuits. Cord AFCIs can be rated up to 30 amperes. Placement of the device in the circuit must be considered when complying with 210.12. Six possible configurations using listed equipment are permitted by the *NEC*. The objective of the *NEC* is to provide protection of the entire branch circuit. The configurations may use a single combination-type AFCI at the origin of the circuit, a combination of devices, or a combination of physical protection for part of the circuit and a device-type AFCI located downstream of the origin of the circuit. Where the AFCI is not located at the origin of the circuit, a higher level of physical protection must be provided for branch-circuit conductors from the origin of the branch circuit to the device-type AFCI. Some configurations have length restrictions to the first outlet, based on the size of the conductors (50 feet for 14 AWG and 70 feet for 12 AWG). Commentary Table 210.2 summarizes the permitted methods of providing AFCI protection.

Branch-circuit/feeder-type AFCI devices provide arcing protection against parallel faults. An example of a parallel arcing fault is a cable stapled to a wooden stud where the staple has been driven deeply into the cable jacket, damaging the conductor insulation. Combination-type AFCIs provide parallel arcing protection as well as protection against series arcing, such as could occur in a cord set.

AFCI protection is required to protect receptacle outlets, lighting outlets, smoke alarm outlets, and other outlets. See the definition of *outlet* in Article 100. Because circuits are often shared between a bedroom and other areas such as closets and hallways, providing AFCI protection on the complete circuit would comply with 210.12. Providing AFCI protection on other circuits, or locations other than those specified in 210.12(B) through (D), is not prohibited.

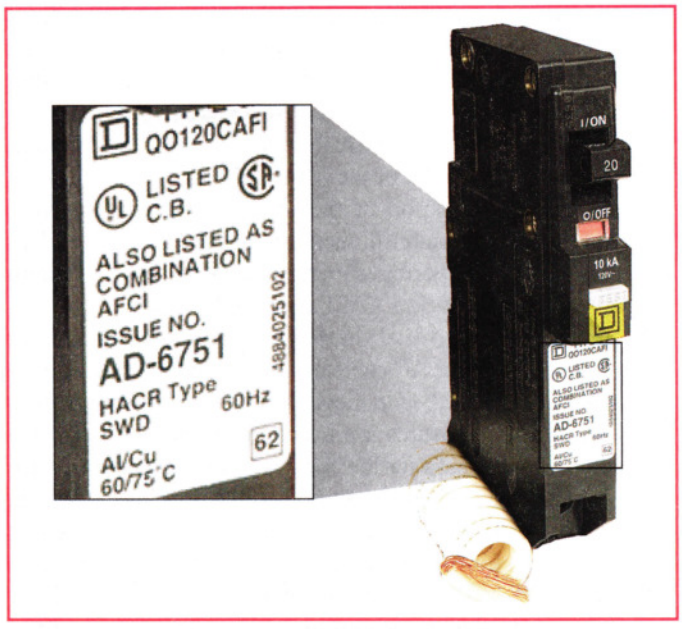

EXHIBIT 210.21 A circuit breaker with the required marking indicating the type of AFCI protection. *(Courtesy of Square D by Schneider Electric)*

(4) A listed outlet branch-circuit-type AFCI installed on the branch circuit at the first outlet in combination with a listed branch-circuit overcurrent protective device if all of the following conditions are met:

a. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit AFCI.

COMMENTARY TABLE 210.2 *AFCI Protection Methods*

210.12(A) Reference	AFCI Protection Method	Additional Installation Requirements
210.12(A)(1)	• Combination-type AFCI circuit breaker installed at origin of branch circuit.	• No additional requirements
210.12(A)(2)	• Branch/feeder-type AFCI circuit breaker installed at origin of branch circuit, plus • Outlet branch-circuit-type AFCI device installed at first outlet in branch circuit.	• Marking of first outlet box in branch circuit
210.12(A)(3)	• Supplemental arc protection-type circuit breaker installed at origin of branch circuit, plus • Outlet branch-circuit-type AFCI device installed at first outlet in branch circuit.	• Continuous branch-circuit wiring • "Home run" conductor length restricted • Marking of first outlet box in branch circuit
210.12(A)(4)	• Branch-circuit overcurrent protective device, plus • Outlet branch-circuit-type AFCI device installed at first outlet in branch circuit. The combination of devices must be listed and identified to provide "system combination-type" arc-fault protection for the "home run" conductors.	• Continuous branch-circuit wiring • "Home run" conductor length restricted (50 ft for 14 AWG, 70 ft for 12 AWG) • Marking of first outlet box in branch circuit
210.12(A)(5)	• Outlet branch-circuit-type AFCI device installed at first outlet in branch circuit.	• Branch-circuit conductors installed in specific types of metal raceways or metal cables and metal boxes from origin of branch circuit to the first outlet
210.12(A)(6)	• Outlet branch-circuit-type AFCI device installed at first outlet in branch circuit.	• Branch-circuit conduit, tubing, or cable encased in 2 inches of concrete from origin of branch circuit to the first outlet