OVERHEAD SWITCHES
Gang-Operated
Type AR, Type D7 and Type D6

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NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

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**Type AR (Automation-Ready) Switch**
14.4kV, 25kV or 34.5kV  900 Amperes Continuous/Interrupt

**Description**
The Hubbell unitized Type AR switch is a distribution-level, loadbreak, gang-operated side-break switch designed to meet not only today’s needs but well into utilities’ future of distribution automation. Designed for nominal system voltages of 14.4kV and 25kV three- and four-wire systems and 34.5kV grounded-wye systems. The Type AR switch is available with a variety of options, and in ratings for present and planned requirements.

To minimize field installation time, the Type AR switch is pre-assembled, adjusted and mounted on a crossarm. Installation time is even faster for a Type AR switch with the hook stick-operation option.

**Variations and Configurations**
The Type AR switch is available in five basic configurations:
• Horizontal  • Vertical  • Phase-over-Phase  • Delta  • Inverted

All feature clockwise opening and are operable by torsional or reciprocating controls as well as hookstick operation (full-length down-the-pole control or crossarm-mounted hook stick-operation control).

1. **Full-length down-the-pole controls** consist of Torsional swing-handle operation for Horizontal, Delta and Inverted switches and Reciprocating pump-handle operation for Vertical and Phase-over-Phase switches. (Standard Duty or Heavy Duty controls are available for Vertical and Phase-over-Phase switches.) Switch open or close positions locking provisions are provided.

2. **Offset control option for horizontal configuration** allows the control to be trained down the side of the pole where interference prohibits mounting the control on the front of the pole.

3. **Crossarm-mounted hook stick-operation controls** provide pull-to-open / pull-to-close switch with maximum target hook stick accessibility.

**Features:**
All three phase switches feature a four-link overtoggle mechanism to assure locked closed blades, mechanical advantage for easier open and close operation, and “snap” feedback to the operator.

**Type AR Switch Ratings**
Nominal Voltage/Lightning Impulse Withstand: 14.4 kV/110 kV, 25 kV/150 kV or 34.5 kV grounded-wye/150 kV
Continuous Current: 900 amperes
Interrupting Current: 900 amperes
Peak Withstand Current: 65,000 amperes peak
Short Time Withstand Current: 25,000 amperes, symmetrical
Fault Making: 25,000 amperes, asymmetrical
Fault Breaking: 20,000 amperes, asymmetrical
Dead-ending: 8,000-lb. working load
Ice Breaking: 3/4-in. thick, opening and closing
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Feature —  Advantage —
• Automation-ready design  • Compatible with today’s D/A environment by adding a motor operator and RTU of your choice, or upgrade in the future
• 900-amp continuous and interruption current rating  • Meets present and future operation requirements
• Four-link overtoggle mechanism  • Mechanical advantage reduces operating torque to the lowest level in the industry to date
  • Overtoggle feature assures blades are closed and gives “snap” feedback to the operator
• Hook stick operation capability  • Minimizes installation time, reduces possible vandalism, eliminates control adjustments
• Unitized, pre-assembled construction  • Minimizes installation time and eliminates control adjustments
• Four mounting arrangements  • Meets various utility installation requirements

Available Options

Hook stick Operation   The Type AR switch can be operated by a hook stick operation. This option eliminates control pipe sections down the pole and their attendant adjustment during installation and maintenance.

Extra Pipe   The extra pipe section includes guide, coupling, and all hardware for attachment.

Extension Links   When deadending to the AR switch, extension links must be used to give needed clearance. The end clevis has a slotted hole for inserting the machine bolt without having to remove the extension bar. The extension links supplied are 14 inches long, hot-dip galvanized, and REA accepted. Catalog No. C2070112; six required per switch.

Surge Arrester Brackets   Three brackets can be supplied for mounting six surge arresters (utility supplied) for over-voltage protection.

Sensor Brackets   Extension Brackets can be supplied, or added to the AR Switch, to allow for the addition of line voltage/current sensors.

Single Phase of Type AR Switch

(1) Hot-rolled steel base formed into a channel and galvanized per ASTM A153.
(2) Hot-rolled crank lever provides high strength and corrosion resistance. Galvanized per ASTM A153.
(3) Delrin® bushing coupled with a cast aluminum rotating shaft eliminates the need for lubrication during the life of the switch.
(4) Insulators available in 2.25” bolt circle, porcelain or polymer.
(5) High-conductivity copper with phosphorous-bronze back-up springs and copper-tungsten fault-closing tips provide reliable contact areas. Silver-to-silver current-transfer points.
(6) Blade formed from hard-drawn, high-conductivity copper for maximum current carrying capability.
(7) Interrupter provides current interruption without external arc or flame. High-strength polyurethane material for strength, weatherability and UV resistance. Bolted tongue-in-groove mounting ensures positive alignment.
(8) Polycarbonate ice shield helps protect contacts from ice build up.

Crossarm Braces   Crossarm braces may be specified as an option.

ESP™ polymer Insulators   The distribution insulators, 2.25-inch bolt circle, are available in a U.S.-manufactured ESP polymer design. They are light weight, durable, and they offer long-term performance in every type of environment.

Terminal Connectors   Catalog No. ATC1343, fortified cadmium-plated aluminum parallel-groove clamp can be supplied with switches. Six per switch.

Cable Range: Minimum No. 2 solid copper [0.258 inch (6.55 mm)] to maximum 500 kcmil copper [0.811 inch (20.60 mm)].

Control Insulator   One 150 kV LIW (Lightning Impulse Withstand - BIL) polymer insulator in vertical control pipe.

Captive Hardware   Two stainless-steel spline bolts pressed into each terminal pad, nuts and lockwashers included.
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Horizontal Mounting – Down-the-Pole Control
Type AR (Automation-Ready) Switch
14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Horizontal Mounting – Offset Side-of-the-Pole Control
Type AR (Automation-Ready) Switch
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Vertical Mounting
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**Phase-over-Phase Mounting**

- **6-1/2” (165 MM)**
- **7-1/4” (184 MM)**
- **10” (254 MM)**
- **14” (356 MM)**
- **23-1/2” (597 MM)**
- **81-1/2” (2070 MM)**
- **85” (216 MM) (TYPICAL)**

**Standard Control**
- Type "S" and "F"
- AS REQUIRED BY USER

**Heavy Duty Control**
- Type "T" and "G"
- OPEN AND CLOSED LOCKING PROVISIONS

**All Lower Sections**
- 1-1/4” (32 MM) NPS GALV PIPE
- OR FIBERGLASS STEEL PIPE

**Couplings and Guides**
- **86-3/4” (2203 MM)**
- **84” (2134 MM) (TYPICAL)**

**Top Section**
- 1-1/4” (32 MM) NPS GALV PIPE
- OR FIBERGLASS STEEL PIPE

**3/4” (19 MM) NPS GALV PIPE**

**20 FT/8.5 M MAX WITHOUT ADDITION OF PIPE SECTION**

**VIEW "A"-"A"**

**SIDE VIEW**

- 4” (102 MM) SQUARE CROSSARM
  - GALV STEEL OR FIBERGLASS

- 3/4” (19 MM) NPS GALV PIPE
  - OR 1” (25 MM) FIBERGLASS ROD

**ENF OF CROSSARM**

**AS REQUIRED BY USER**

**Type AR (Automation-Ready) Switch**

CHANCE – CENTRALIA, MISSOURI
OCTOBER 2010
Type AR (Automation-Ready) Switch
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Delta Mounting
Type AR (Automation-Ready) Switch
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Inverted Mounting
Type AR (Automation-Ready) Switch
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Catalog Numbering System

**Position 1:**
Configuration
1 = Horizontal
2 = Vertical
3 = Ø-over-Ø
4 = Delta
5 = Inverted

**Position 2:**
Insulation, kV Impulse (maximum system kV)
1 = 110 porcelain (17.1kV)
3 = 110 polymer (17.1kV)
4 = 150 polymer (29kV)
6 = 150 polymer (38kV grounded-wye)
7 = 150 polymer Long Leak (39.6") (38kV grounded-wye)

**Position 3:**
Crossarm/Inter-Phase Shaft
S = Steel
F = Fiberglass
M = Steel crossarm, fiberglass interphase shaft

**Position 4:**
Standard Controls — Pipe sizes on drawings, pages 14A-4 thru -8
(All configurations)
S = All Steel Vertical Sections
F = One Fiberglass Vertical Section
H = Vertical Controls replaced with Hook stick Operating Mechanism

Heavy-Duty Controls — 1½" IPS
(Vertical and Ø-over-Ø only)
T = All Steel Vertical Sections
G = One Fiberglass Vertical Section

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**Option Tables by Configuration**

**Horizontal and Inverted Switches**
- B = Sensor Brackets
- * C = Control Insulator
- † H = Captive Hardware
- L = Surge Arrester Brackets
- * P = Extra Pipe
- * PP = Two Extra Pipes
- S = Steel Crossarm Brace, only one supplied
- † T = Terminal Connectors (ATC 1343)
- W = Wood Crossarm Brace, only one supplied
- X = Extension Links

**Phase-over-Phase Switch, S & F Controls**
- B = Sensor Brackets
- * C = Control Insulator
- † H = Captive Hardware
- L = Surge Arrester Brackets
- * P = Extra Pipe
- * PP = Two Extra Pipes
- † T = Terminal Connectors (ATC 1343)
- X = Extension Links

**Phase-over-Phase Switch, S & F Controls**
- B = Sensor Brackets
- * C = Control Insulator
- † H = Captive Hardware
- L = Surge Arrester Brackets
- * R = Extra Pipe
- * RR = Two Extra Pipes
- † T = Terminal Connectors (ATC 1343)
- X = Extension Links

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**Replacement Parts**

C8180001  Interrupter for all Mounting Configurations
E8181000P  Live Parts for all kV Ratings and Mounting Configurations

*Options C, P, R, PP and RR do not apply when Hook Stick Operated Control is supplied.
†Options H and T, Captive Hardware and Terminal Connectors, cannot be ordered together.