

AR/ARD Series — Convertible Contact Industrial Control



AR 4-Pole

AR 6-Pole

Product Description

The AR/ARD relays are electromechanical convertible contact relays. AR relays are AC devices and the ARD is for DC applications.

Application Description

Type AR and ARD relays are designed for use on machine tools, process lines, conveyors and similar automatic and semi-automatic equipment.

Operation

AR relays are available in either 4- or 6-pole configurations. AR relays are easily converted to 8 or 10 poles simply by adding a 4-pole deck. In addition, mechanical latch and solid-state timer attachments are available with 4- and 6-pole relays.

Contacts are convertible from NO to NC, to provide any combination desired up to a maximum of 10. For the ARD, the number of poles cannot exceed **four** NC in any pole configuration. Wide spacing of contacts simplifies installation, contact testing and maintenance. Contacts are electrically and mechanically isolated from each other. Overlap contacts are also available in one or two sets. These contacts should be mounted in the center pole positions. AC and DC contact cartridges should not be used in the same relay.

Standards and Certifications

- UL File No. E19223
- CSA File No. LR39402-6, LR54517 and LR54520

Technical Data and Specifications

Table 49-137. Specifications

Contact Ratings — 600V AC Cartridge NEMA A600					
Volts	Maximum Current			Maximum VA	
	Cont.	Make	Break	Make	Break
120	10	60	6	7200	720
240	10	30	3	7200	720
480	10	15	1.5	7200	720
600	10	12	1.2	7200	720

DC Cartridges NEMA P600

Volts	Maximum Current		Maximum VA Make or Break
	Cont.	Make or Break	
125	5	1.10	138
250	5	0.55	138
600	5	0.20	138

Resistive Rating	Coil Power Requirements
125V DC: 3A 250V DC: 1.5A	AC: 96 VA open, 14 VA closed DC: 14 watts open, 250V max.

Voltage	AR Relays	ARD Relays
Pickup Voltage (max.)	85%	65%
Dropout Voltage (min.)	60%	15%
Voltage (max.)	110%	110%

Options

Table 49-138. Options

Description	Suffix Code	Adder U.S. \$
Convertible Contacts AR and ARD relays listed are supplied with NO contacts which are easily converted to NC. If both NO and NC poles are required, order by Catalog Number. Example: 4-pole relay with 1NO and 3NC contacts, order AR413A.	①	
Screw Terminals For ring-type connectors, add Suffix R to the Catalog Number. Example: AR420AR.	R	
Overlapping Contacts NO contact closes before corresponding NC contact opens — supplied as NO/NC sets of two cartridges. Insert letter S after relay type designation in listed Catalog Number. Example: AR402AS. Specify the number of sets required: S for one set and S2 for two sets.	S or S2 ①	

① Consult Customer Support Center for availability.

Accessories

Four-Pole Top Deck Adder

- Increases contact capacity from four/six poles to eight/ten poles.
- Mounts on top of basic relay using three screws.
- Will not interfere with wiring, testing or convertible cartridges.



- Screw terminals for ring connectors available; to order add Suffix **R** to Catalog Number listed below.

Table 49-139. Four-Pole Top Deck Adder

No. of Pole Spaces	Contacts			Catalog Number	Price U.S. \$
	NO	NC	Blank Cavities		
4	2	0	2	ARA20 ARA40	
	4	0	0		
With 600V DC Cartridges					
4	2	0	2	ARDA20 ARDA40	
	4	0	0		

Discount Symbol 1CD1

Product Selection

When Ordering Specify

- Catalog Number of Basic Relay with 120/60, 110/50 AC coil from AR/ARD Relays table.

- If a coil voltage other than listed is required, select the Suffix Code from the Coil Voltage table below and substitute it for the last letter in the Catalog Number. Example: AR64V for a 110/60 AC coil.

Table 49-140. AR/ARD Relays

Number of Pole Spaces	Contacts			AR 600V AC Relays 120/60, 110/50 AC Coil		ARD 600V DC Relays 120 DC Coil	
	NO	NC	Blank Cavities	Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
4	0 2 4	0 0 0	4 2 0	AR4A AR420A AR440A		ARD4S ARD420S ARD440S	
6	0 4 6	0 0 0	6 2 0	AR6A AR640A AR660A		ARD6S — ARD660S	
8 ^①	6 8	0 0	2 0	AR860A AR880A		ARD860S ^② ARD880S	
10 ^①	10	0	0	AR10100A		ARD10100S	

① Will not accept top-mounted latch or timers.

② Contact Customer Support Center for availability.

Table 49-141. Coil Voltage Table

AR Coils			ARD Coils	
Volts AC	Hz	Suffix Code	Volts DC	Suffix Code
12	60	F	12	D
24	60	I	24	L
48	60	G	48	M
110	60	V	95	B
110/120	50/60	A	120	S
208	60	B	130	U
220/240	50/60	W	240	T
277	60	C		
380/440	50/60	H		
440/480	50/60	X		
550	60	D		
550/600	50/60	E		

Table 49-142. Contact Cartridges — 600V

Type Terminal	Standard Contact Cartridge		Overlap Contact Cartridge	
	Catalog Number ^③	Price U.S. \$	Catalog Number ^④	Price U.S. \$
AC Cartridges With Clamp Terminals With Screw Terminals	ARC ARCR		AROC AROCR	
DC Cartridges With Clamp Terminals With Screw Terminals	ARDC ARDCR		ARDOC ARDOCR	

③ Standard cartridges are sold in cartons of four cartridges. Catalog Number is for single cartridge.

④ Overlap contact cartridges are sold in sets of two cartridges. Catalog Number is for sets of two.

AR/ARD Series — Convertible Contact Industrial Control



Catalog Number
ARML Permanent Magnet Latch for AR/ARD Relays

Permanent Magnet Latch

By energizing the relay coil, the latch attachment “sets” (when the base relay’s armature/crossbar assembly has closed) holding the relay ON, even after the relay coil has been de-energized. The clearing coil on the latch is energized to release the armature/crossbar assembly.

- Field mountable to four and six pole
- Latch plunger is adjustable
- Latch coil continuously rated
- Unlatching power requirements
 - Open gap: 24 VA
 - Closed gap: 7 VA
 - Burden: 4 watts AC, 6 watts DC

Table 49-143. Permanent Magnet Latch

Operating Volts	Coil Hz	Catalog Number	Price U.S. \$
For AC Control Circuits			
24	60	ARMLI	
48	60	ARMLG	
120	60/50	ARMLA	
240	60/50	ARMLW	
For DC Control Circuits			
24	—	ARMLL	
48	—	ARMLM	
120	—	ARMLS	
240	—	ARMLT	

Reference Information

- ART, ARTD: IL 14510, IL 14485



ART Solid-State Timer

Solid-State Timer

- Mounts on basic four- or six-pole relay using two screws
- Has one NO solid-state contact
- ON delay or OFF delay applications
- Will switch 120V AC and DC coils
- ARTD is field convertible to 24 or 48V DC

Table 49-144. Solid-State Timer

Volts	Time Delay Seconds	ON Delay		OFF Delay	
		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
AC	0.1 – 30	ART-ON		ART-OF	
AC	30.0 – 60	ART-ONB		ART-OFB	
DC	0.1 – 30	ARTD-ON		ARTD-OF	

Solid-State Timer Electrical Ratings

- Input
 - 120V AC, ±10%, 50/60 Hz
 - 120, 48, 24V DC, ±10%
- Power Required: AC, DC: 2 VA max.
- Contact Ratings: AC, 0.2A inductive
 - Inrush: 1.3A max.
- DC will switch 4, 8 and 10-pole ARD relays
 - 48V DC: 0.25A
 - 24V DC: 0.5A
- Repeatability
 - AC ±2% w/10% voltage variation ±7.5% and 15% temperature variation
 - DC ±1% w/10% voltage variation and 15°C temperature variation

Specifications

- Ambient Temp. Range: -20° to 70°C
- Duty Cycle
 - AC, DC: 150 operations/minute max.
- Reset Time ART and ARTD
 - ON Delay ART: 50 ms max.
 - ON Delay ARTD: 100 ms independent of time setting and duty cycle
 - OFF Delay: instantaneous



Catalog Number
ARSS Surge Suppressor for AR Relays

Surge Suppressor

- Mounts in contact cavity of AR relays
- Limits high transient voltages resulting from de-energizing relay coil or other electromechanical devices
- Protects sensitive instruments and solid-state devices
- 120V AC max, not used on DC
- For noise suppression, see Catalog Number SS-56 starter mounted surge suppressor.

Table 49-145. Surge Suppressor

Catalog Number	Price U.S. \$
ARSS	

Dimensions **Page 49-93**
Discount Symbol **1CD1**

Dimensions and Enclosures

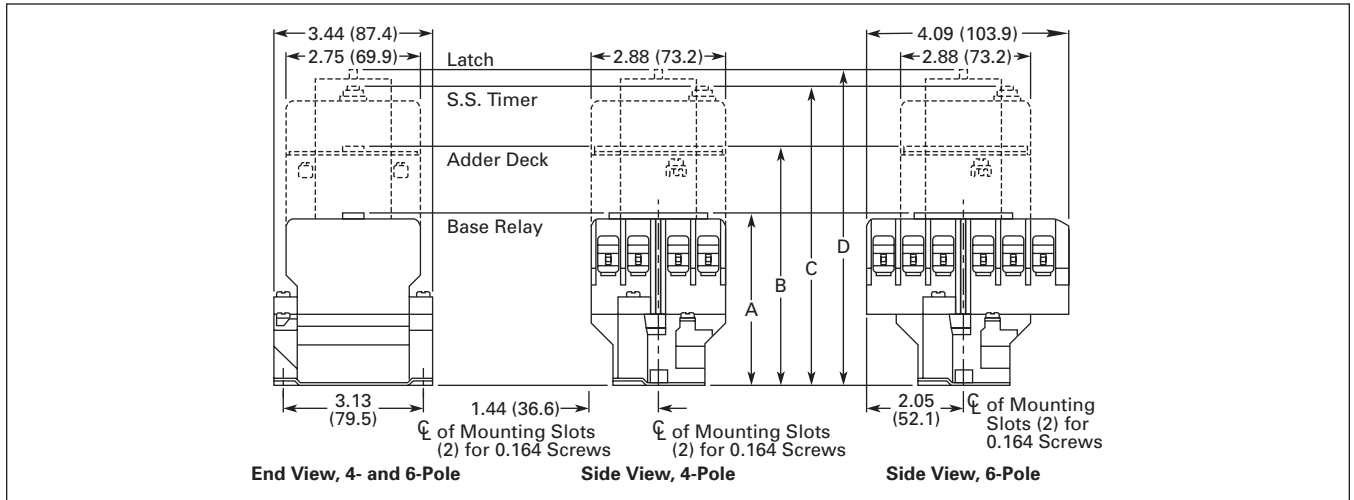


Figure 49-129. 4- and 6-Pole with 4-Pole Adder, Solid-State Timer and Mechanical Latch — Approximate Dimensions in Inches (mm)

Table 49-146. 4- and 6-Pole with 4-Pole Adder, Solid-State Timer and Mechanical Latch

Relay Catalog Number	Approximate Dimensions in Inches (mm)			
	A 4-, 6-Pole Relays	B Relay Adder	C Relay with Timer	D Relay with Latch
AR	3.56 (90.4)	4.94 (125.5)	6.00 (152.4)	6.39 (162.3)
ARD	4.63 (117.6)	6.00 (152.4)	7.06 (179.3)	7.45 (189.2)

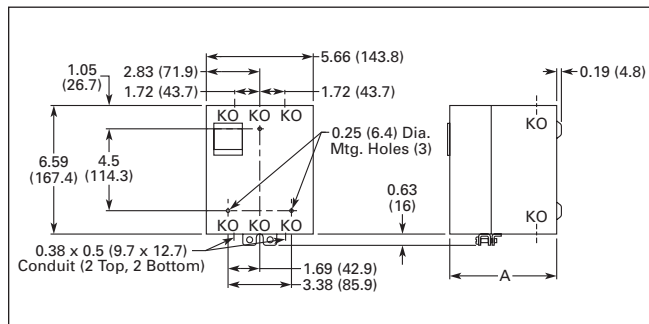


Figure 49-130. Enclosures — NEMA 1 for BF, BFD, AR and DFRD — Approximate Dimensions in Inches (mm)

Table 49-147. Enclosures — NEMA 1 for BF, BFD, AR, ARD

Catalog Number	Poles	Dimension A in Inches (mm) NEMA 1
Relays without Attachments		
BF, AR, ARD	All	5.34 (135.6)
BFD	4 – 8	5.34 (135.6)
BFD	10, 12	7.97 (202.4)
Relays with Attachments		
BF, AR, ARD	All	7.97 (202.4)