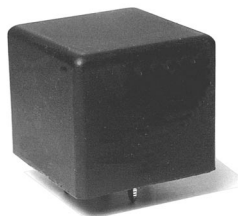


Greenwich Electronics, Inc.

AR1 Series

- Standard automotive type relay
- Plug-in and PCB mounting
- Heavy-duty silver alloy contacts
- Coil paralleled diode or resistor
- Various bracket options, skirted, sealed versions
- Applications: automotive, industrial machinery, motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
6	273	22
12	133	90
24	73	330

Pick-up Voltage	$\leq 60\%$ nominal
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	168% nominal
Coil Consumption	Approx. 1.6W

Contact

Configuration	A: 1 form A (SPST-NO), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 40A@14VDC NC: 30A@14VDC
Initial Voltage Drop	SPST: 100mV@10A SPDT-NO: 250mV@10A; SPDT-NC: 200mV@10A
Max. Carry Current	NO: 60A NC: 40A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 120A (lamp load) NC: 45A (lamp load)
Max. Switching Power	50 - 500W (application dependent)

Greenwich Electronics, Inc.

CHARACTERISTICS

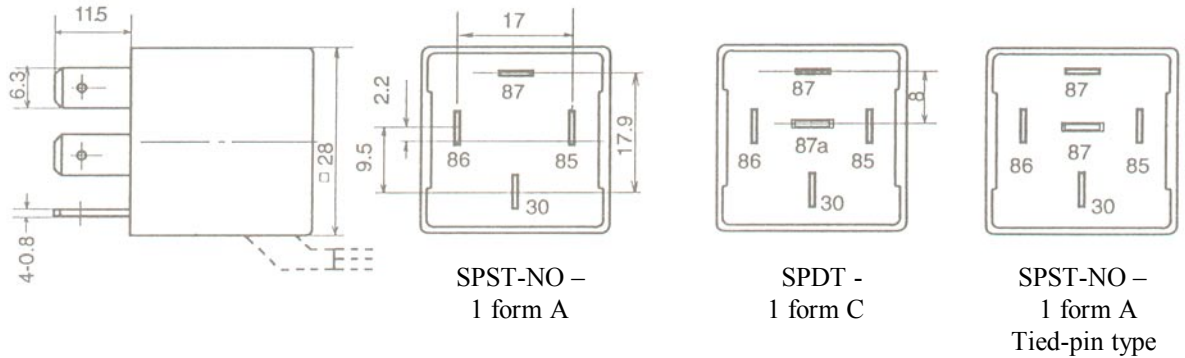
Contact Resistance	Max. 50mΩ
Operate Time	≤7ms
Release Time	≤2ms
Insulation Resistance	100MΩ (@500VDC, 50%RH)
Dielectric Strength:	
• Between coil and contacts	500VRMS / one minute
• Between open contacts	500VRMS / one minute
Vibration Resistance	10-18Hz, 1.5mm, single amplitude; 18-60Hz, 40m/s ²
Shock Resistance	20g, 11msec.
Ambient Temperature	
• Storage	-40°C to 125°C
• Operate	-40°C to 155°C
Relative Humidity	95%@40°C
Life Expectancy:	
• Mechanical	1 x 10 ⁷
• Electrical	1 x 10 ⁵ (at rated load)
Weight	Approx. 34 grams (dependent upon mounting type)

ORDERING INFORMATION

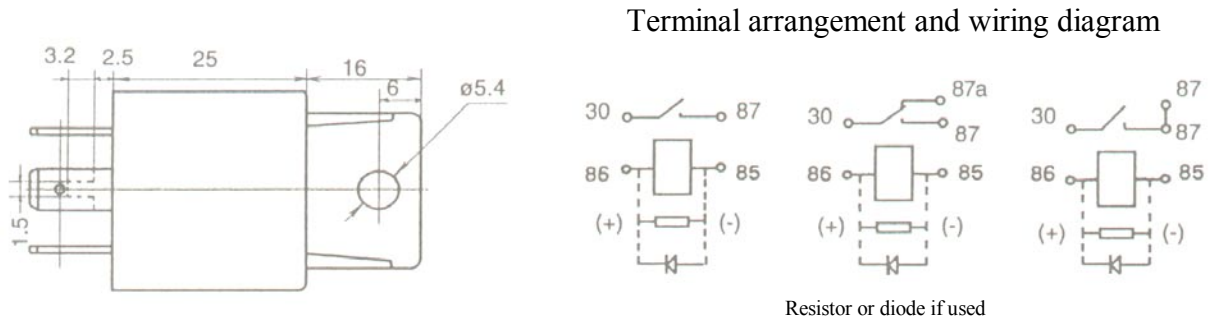
<u>AR1</u>	-	<u>012</u>	-	<u>C</u>	<u>2</u>	<u>1</u>	<u>RK</u>	<u>S</u>
I		II		III	IV	V	VI	VII
I.	Series			AR1				
II.	Coil Voltage (VDC)			006, 012, 024				
III.	Contact configuration			A - 1 form A (SPST-NO), C - 1 form C (SPDT)				
IV.	Coil Paralleled Component			0 - No component, 1 - Resistor, 2 - Diode				
V.	Connection Type			1 - Plug-in, 2 - PCB				
VI.	Mounting Type			N - No bracket, M - Molded bracket, R - Removable metal bracket, K - Skirted				
VII.	Package Type			nil - dust cover, S - Sealed				

Greenwich Electronics, Inc.

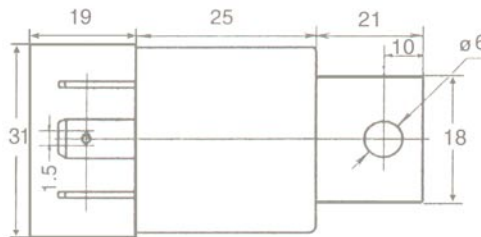
AR1 Series Dimensions and Schematics (in mm)



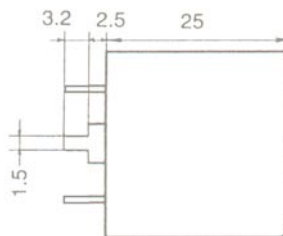
AR1 - 1M type (plug-in with molded bracket)



AR1 - 1RK type (plug-in with removable bracket and skirt)



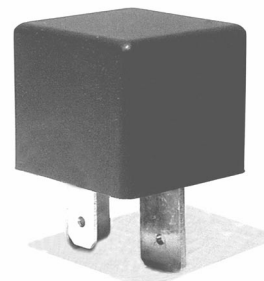
AR1 - 2 type (PCB)



Greenwich Electronics, Inc.

AR2 Series

- Standard automotive type relay
- SPST-NO 70A capacity
- Heavy-duty Silver alloy contacts
- Coil paralleled diode or resistor
- Applications: automotive, industrial machinery, motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
6	273	22
12	133	90
24	73	330

Pick-up Voltage	$\leq 60\%$ nominal
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	168% nominal
Coil Consumption	Approx. 1.6W

Contact

Configuration	A: 1 form A (SPST-NO)
Material	Silver (Ag) alloy
Rated Load	NO: 70A@14VDC
Initial Voltage Drop	SPST: 100mV@10A
Max. Carry Current	NO: 70A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 120A (lamp load)
Max. Switching Power	60 - 800W (application dependent)

CHARACTERISTICS

Contact Resistance	Max. 50m Ω
Operate Time	$\leq 7\text{ms}$
Release Time	$\leq 2\text{ms}$
Insulation Resistance	100M Ω (@500VDC, 50%RH)

Greenwich Electronics, Inc.

Dielectric Strength:

- Between coil and contacts 500VAC / one minute

- Between open contacts 500VAC / one minute

Vibration Resistance 10-18Hz, 1.5mm, single amplitude; 18-60Hz, 40m/s²

Shock Resistance 20g, 11msec.

Ambient Temperature

- Storage -40°C to 125°C

- Operate -40°C to 155°C

Relative Humidity 95%@40°C

Life Expectancy:

- Mechanical 1 x 10⁷

- Electrical 1 x 10⁵ (at rated load)

Weight Approx. 41 grams (dependent upon mounting type)

ORDERING INFORMATION

AR2 - 012 - A 0 1 M S
I II III IV V VI VII

I. Series

AR2

II. Coil Voltage (VDC)

006, 012, 024

III. Contact configuration

A - 1 form A (SPST-NO)

IV. Coil Paralleled Component

0 - No component, **1** - Resistor, **2** - Diode

V. Connection Type

1 - Plug-in with 6.3mm terminal, **3** - Plug-in with 2.8mm terminal

VI. Mounting Type

N - No bracket, **M** - Molded bracket, **R** - Removable metal bracket

VII. Package Type

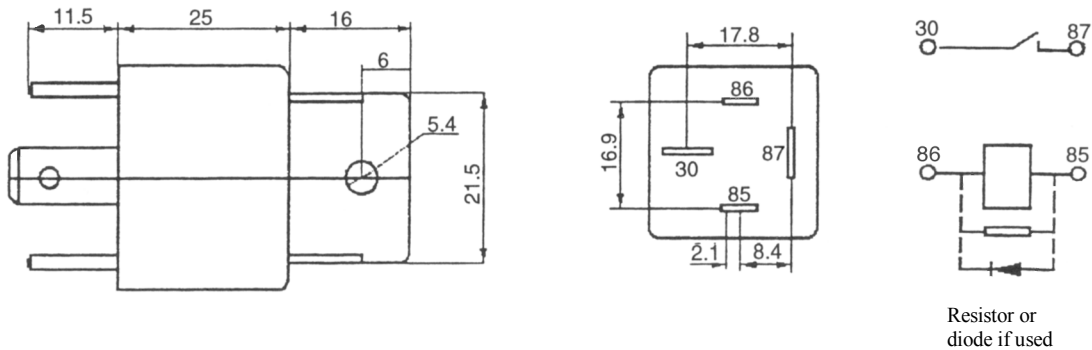
nil - dust cover, **S** - Sealed

Greenwich Electronics, Inc.

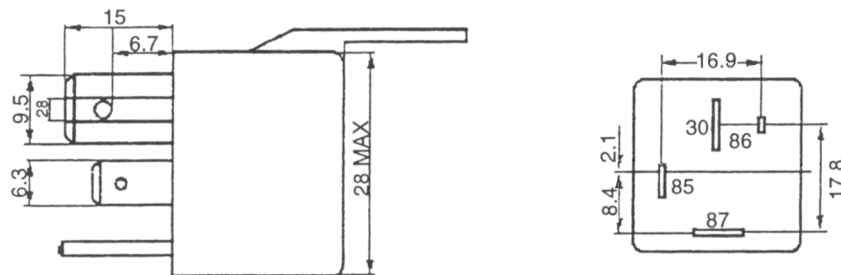
AR2 Series Dimensions and Schematics (in mm)

AR2 – 1N/M types (6.3mm coil terminals, no or molded bracket)

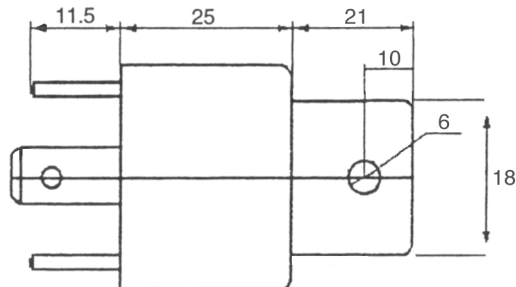
Terminal arrangement and wiring diagram



AR2 – 3N/M types (2.9mm coil terminal, no or molded bracket)



AR2 - R type (removable bracket)



Greenwich Electronics, Inc.

AR3 Series

- Standard automotive type relay
- SPDT-NO 80A capacity
- Plug-in and PCB types
- Heavy-duty Silver alloy contacts
- Coil paralleled diode or resistor
- Applications: automotive, industrial machinery, motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
12	150	80
24	75	320

Pick-up Voltage	$\leq 65\%$ nominal
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	$\leq 150\%$ nominal
Coil Consumption	Approx. 1.8W

Contact

Configuration	A: 1 form A (SPST-NO), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 80A@14VDC, NC: 60A@14VDC
Initial Voltage Drop	SPST: $\leq 100\text{mV}$ @80A
Max. Carry Current	NO: 100A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 80A
Max. Switching Power	Approx. 980W (application dependent)

CHARACTERISTICS

Contact Resistance	Max. 50m Ω
Operate Time	$\leq 10\text{ms}$
Release Time	$\leq 10\text{ms}$
Insulation Resistance	Min. 100M Ω (@500VDC)

Greenwich Electronics, Inc.

Dielectric Strength:

- Between coil and contacts 500VAC / one minute
- Between open contacts 500VAC / one minute

Vibration Resistance

10-55Hz, 1.5mm double amplitude

Shock Resistance

Approx. 20g

Ambient Temperature

- Operate -40°C to +80°C
- Storage -40°C to +155°C

Relative Humidity

45% - 85%

Life Expectancy:

- Mechanical 1×10^7
- Electrical 1×10^5 (at rated load)

Weight

Approx. 47 grams (dependent upon mounting type)

ORDERING INFORMATION

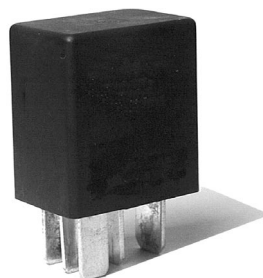
AR3 - 012 - A 0 1 M S
I II III IV V VI VII

- | | | |
|------|---------------------------|--|
| I. | Series | AR3 |
| II. | Coil Voltage (VDC) | 012, 024 |
| III. | Contact configuration | A - 1 form A (SPST-NO), C - 1 form C (SPDT) |
| IV. | Coil Paralleled Component | 0 - No component, 1 - Resistor, 2 - Diode |
| V. | Connection Type | 1 - Plug-in, 2 - PCB |
| VI. | Mounting Type | N - No bracket, M - Molded bracket, R - Removable metal bracket |
| VII. | Package Type | nil - dust cover, S - Sealed (not available with R type) |

Greenwich Electronics, Inc.

AR4 Series

- Standard automotive type relay
- SPDT-NO 25A capacity
- Coil paralleled diode or resistor
- High temperature design
- Applications: automotive, industrial machinery, motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA)		Coil Resistance (Ω)	
	($\pm 10\%$ at 20°C)		($\pm 10\%$ at 20°C)	
	SPST	SPDT	SPST	SPDT
6	200	250	30	25
12	100	124	120	96
24	50	62.5	480	384

Pick-up Voltage	$\leq 60\%$ nominal ($\leq 65\%$ nominal for sealed model)
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	$\leq 130\%$ nominal
Coil Consumption	SPST: Approx. 1.2W, SPDT: Approx. 1.5W

Contact

Configuration	A: 1 form A (SPST-NO), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 25A@14VDC, NC: 20A@14VDC
Initial Voltage Drop	SPST: $\leq 200\text{mV}$ (@ 25A)
Max. Carry Current	NO: 30A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 25A
Max. Switching Power	350W

CHARACTERISTICS

Contact Resistance	Max. $50\text{m}\Omega$ (0.1A/6V)
Operate Time	$\leq 10\text{ms}$
Release Time	$\leq 7\text{ms}$
Insulation Resistance	Min. $100\text{M}\Omega$ (@500VDC)

Greenwich Electronics, Inc.

Dielectric Strength:

- Between coil and contacts 500VAC / one minute
- Between open contacts 500VAC / one minute

Vibration Resistance

10-40Hz, 1.27mm double amplitude

Shock Resistance

Approx. 10g

Ambient Temperature:

- Storage -40°C to 155°C
- Operate -40°C to 85°C

Relative Humidity

20% - 85%

Life Expectancy:

- Mechanical 1×10^7
- Electrical 1×10^5 (at rated load)

Weight

Approx. 19 grams

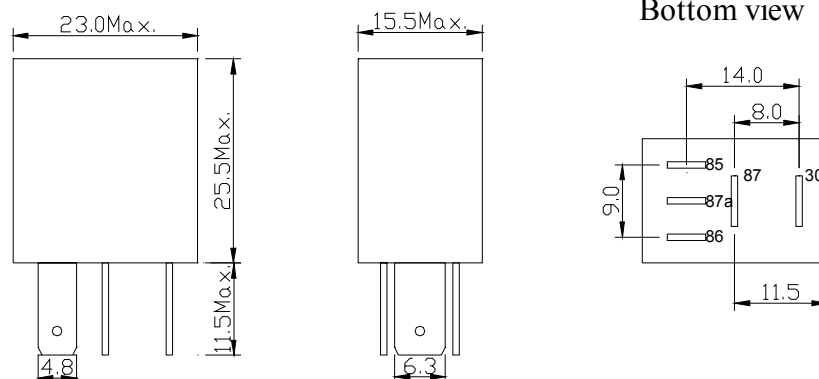
ORDERING INFORMATION

AR4 - 006 - A 1 2 S
I II III IV V VI

I.	Series	AR4
II.	Coil Voltage (VDC)	006, 012, 024
III.	Contact configuration	A - 1 form A (SPST-NO), C - 1 form C (SPDT)
IV.	Coil Paralleled Component	0 - No component, 1 - Resistor, 2 - Diode
V.	Connection Type	1 - Plug-in with 4.8mm terminals, 2 - PCB, 3 - Plug-in with 2.75mm terminals
VI.	Package Type	nil - dust cover, S - Sealed

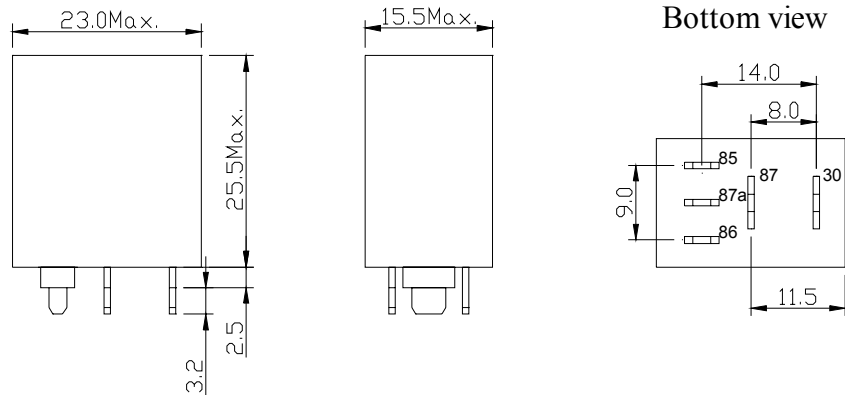
AR4 Series Dimensions and Schematics (in mm)

AR4 – 1 style (4.8mm contact terminals)

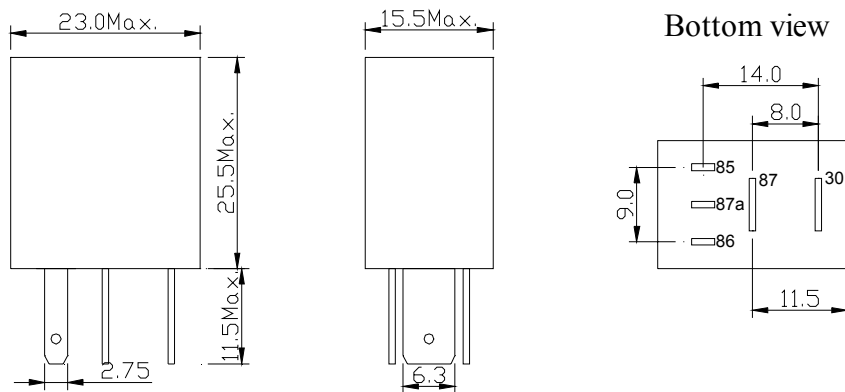


Greenwich Electronics, Inc.

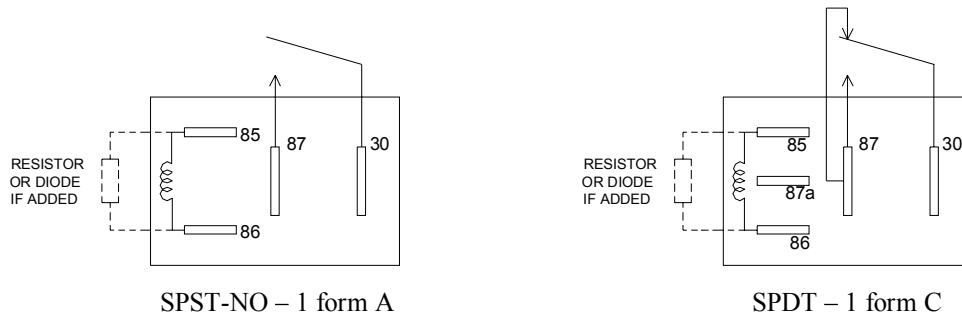
AR4 – 2 style (PCB terminals)



AR4 – 3 style (2.75mm contact terminals)



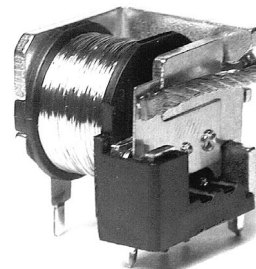
Terminal arrangement and wiring diagram



Greenwich Electronics, Inc.

AR5 Series

- High capacity PCB in a small, low cost package
- US and European footprint
- 100A switching capacity
- High temperature design
- Open frame or sealed
- Applications: automotive, industrial machinery, flashers, motor controls



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 23°C)	Coil Resistance (Ω) ($\pm 10\%$ at 23°C)
6	316	19
12	133	90
24	66	362

Pick-up Voltage	$\leq 75\%$ nominal
Drop-out Voltage	$\geq 6.67\%$ nominal
Max. Coil Voltage:	
• Initial	200% nominal
• Constant	137% nominal
Coil Consumption	Approx. 1.5W

Contact

Configuration	A: 1 form A (SPST-NO), B: 1 form B (SPST-NC), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 40A@14VDC, 12A@60VAC (resistive)
Initial Voltage Drop	SPST: 100mV@10A
Max. Carry Current	NO: 45A, NC: 30A
Max. Switching Voltage	70VDC
Max. Switching Current	NO: 100A, NC: 30A
Max. Switching Power	560W, 720VA

Greenwich Electronics, Inc.

CHARACTERISTICS

Contact Resistance	Max. 50mΩ
Operate Time	≤10ms
Release Time	≤5ms
Insulation Resistance	Min. 100MΩ (@500VDC)
Dielectric Strength:	
• Between coil and contacts	500VAC / one minute
• Between open contacts	500VAC / one minute
Vibration Resistance	10-55Hz, 1.5mm double amplitude
Shock Resistance	Approx. 15g, 11msec
Ambient Temperature	
• Storage	-40°C to 125°C
• Operate	-40°C to 155°C
Relative Humidity	95%@ 40°C
Life Expectancy:	
• Mechanical	1 x 10 ⁷
• Electrical	1 x 10 ⁵ Operations (at rated load)
Weight	Open frame: Approx. 22g, Sealed: Approx. 26g

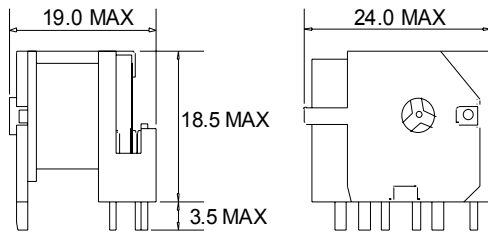
ORDERING INFORMATION

	<u>AR5</u>	-	<u>012</u>	-	<u>B</u>	<u>E</u>	<u>H</u>	<u>O</u>
	I		II		III	IV	V	VI
I.	Series				AR5			
II.	Coil Voltage (VDC)				006, 012, 024			
III.	Contact configuration				A - 1 form A (SPST-NO), B - 1 form B (SPST-NC), C - 1 form C (SPDT)			
IV.	Footprint				U - US footprint, E - European footprint			
V.	Contact Capacity				nil - Standard rating, H - Heavy duty rating			
VI.	Package Type				O - Open frame, S - Sealed			

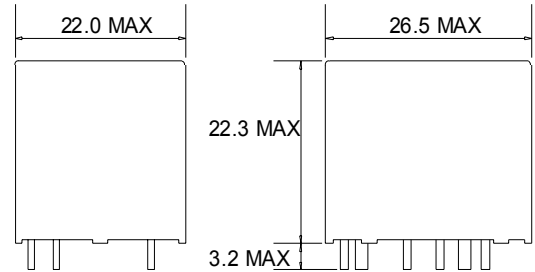
Greenwich Electronics, Inc.

AR5 Series Dimensions and Schematics (in mm)

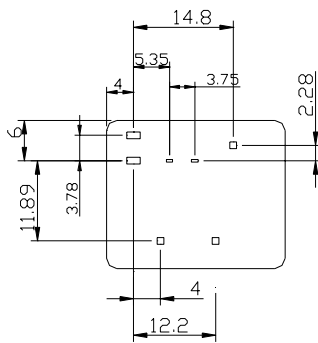
O type – Open frame



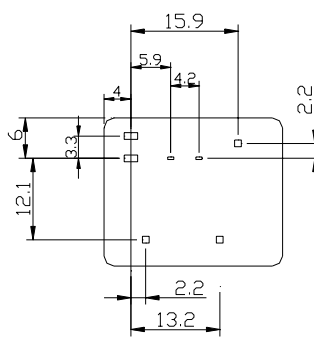
S type – Sealed package



U type –
US footprint

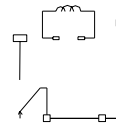


E type –
European footprint

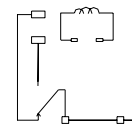


Terminal arrangement and
wiring diagram

SPST-NO – 1 form A



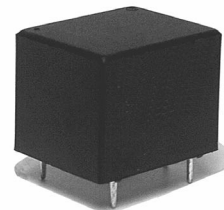
SPDT – 1 form C



Greenwich Electronics, Inc.

AR6 Series

- Heavy duty (20A) PCB relay
- 15A continuous rating at 105⁰C
- Silver alloy contacts
- Applications: automotive, industrial machinery, motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) (± 10% at 20 ⁰ C)	Coil Resistance (Ω) (± 10% at 20 ⁰ C)
6	133	45
12	67	180
24	33	720

Pick-up Voltage	≤55% nominal
Drop-out Voltage	≥10% nominal
Max. Coil Voltage	130% nominal
Coil Consumption	Approx. 0.8W

Contact

Configuration	A: 1 form A (SPST-NO), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 20A@16VDC NC: 16A@250VAC / 30VDC, 8A@250VAC / 30VDC
Initial Voltage Drop	≤250mV @25A
Max. Carry Current	NO: 25A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 20A
Max. Switching Power	500W, 4000VA

CHARACTERISTICS

Contact Resistance	Max. 50mΩ (0.1A/6V)
Operate Time	≤10ms
Release Time	≤5ms
Insulation Resistance	≥250MΩ (@500VDC)

Greenwich Electronics, Inc.

Dielectric Strength:

- Between coil and contacts 500VAC - 50Hz / one minute
- Between open contacts 500VAC - 50Hz / one minute

Vibration Resistance

10-50Hz, double amplitude 1.5mm

Shock Resistance

10g

Ambient Temperature

- Operate -40°C to 105°C
- Storage -40°C to 155°C

Relative Humidity

20% - 85%

Life Expectancy:

- Mechanical 1×10^7
- Electrical 1×10^5 (at rated load)

Weight

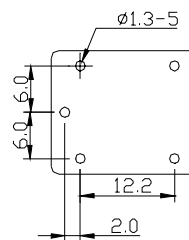
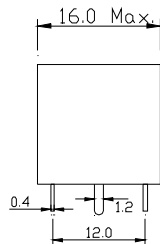
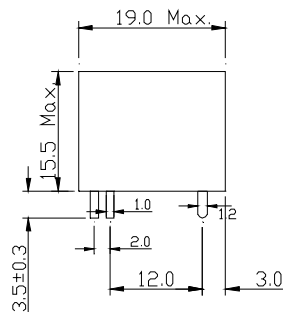
Approx. 10 grams

ORDERING INFORMATION

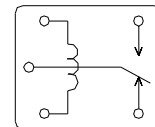
AR6 - 012 - C S
I II III IV

- | | | |
|------|-----------------------|---|
| I. | Series | AR6 |
| II. | Coil Voltage (VDC) | 006, 012, 024 |
| III. | Contact configuration | A - 1 form A (SPST-NO), C - 1 form C (SPDT) |
| IV. | Package Type | nil - dust cover, S - Sealed |

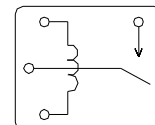
AR6 Series Dimensions and Schematics (in mm)



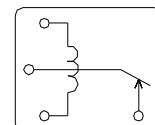
Terminal arrangement and wiring diagram



SPDT - 1 form C



SPST-NO - 1 form A



SPST-NC - 1 form B

Greenwich Electronics, Inc.

AR7 Series

- Miniature heavy duty relay
- 25A/1 hr at 25⁰C
- High temperature design
- Low noise version
- Applications: automotive controls, alarms, light duty motor controls, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA)		Coil Resistance (Ω)	
	(± 10% at 20 ⁰ C)		(± 10% at 20 ⁰ C)	
	Type 8	Type 6	Type 8	Type 6
6	133	100	45	60
9	90	67	100	135
12	67	50	180	240
24	14.4	14.4	720	960

Pick-up Voltage	≤60% nominal @20 ⁰ C (≤75% @85 ⁰ C)
Drop-out Voltage	≥8% nominal @20 ⁰ C (≥10% @85 ⁰ C)
Max. Coil Voltage	130% nominal
Coil Consumption	Type 8: Approx. 0.8W, Type 6: Approx. 0.6W

Contact

Configuration	A: 1 form A (SPST-NO), C: 1 form C (SPDT)
Material	Silver (Ag) alloy
Rated Load	NO: 20A@14VDC (25A/1 hr@25 ⁰ C), 10A@120VAC, 5A@250VAC NC: 15A@14VDC, 10A@120VAC, 5A@250VAC SPST: 250mV@25A
Initial Voltage Drop	
Max. Carry Current	NO: 25A
Max. Switching Voltage	75VDC
Max. Switching Current	NO: 20A
Max. Switching Power	280W, 1200VA

Greenwich Electronics, Inc.

CHARACTERISTICS

Contact Resistance	Max. 50m Ω (0.1A, 6VDC)
Operate Time	≤ 10 ms
Release Time	≤ 5 ms
Insulation Resistance	Min. 100M Ω (@500VDC)
Dielectric Strength:	
• Between coil and contacts	500VAC - 50Hz / one minute
• Between open contacts	500VAC - 50Hz / one minute
Vibration Resistance	10-55Hz, 1.5mm double amplitude
Shock Resistance	Approx. 10g
Ambient Temperature:	
• Storage	-40 ⁰ C to 100 ⁰ C
• Operate	-40 ⁰ C to 85 ⁰ C
Relative Humidity	20% - 85%
Life Expectancy:	
• Mechanical	1 x 10 ⁷
• Electrical	1 x 10 ⁵ (at rated load)
Weight	Standard: approx. 6 grams, Quiet: approx. 10 grams

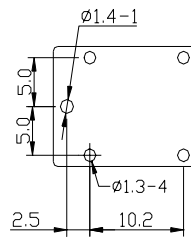
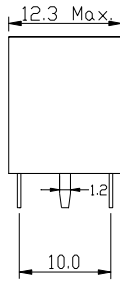
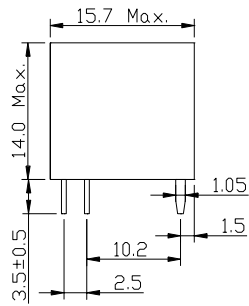
ORDERING INFORMATION

	<u>AR7</u>	-	<u>024</u>	-	<u>C</u>	<u>Q</u>	<u>8</u>	<u>S</u>
	I		II		III	IV	V	VI
I.	Series				AR7			
II.	Coil Voltage (VDC)				006, 009, 012, 024			
III.	Contact configuration				A - 1 form A (SPST-NO), C - 1 form C (SPDT)			
IV.	Relay noise				nil - Standard (~70dB), Q - Quiet (<60dB)			
V.	Coil consumption				6 - 0.6W, 8 - 0.8W			
VI.	Package Type				nil - dust cover, S - Sealed			

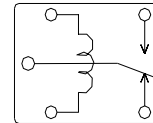
Greenwich Electronics, Inc.

AR7 Series Dimensions and Schematics (in mm)

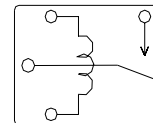
AR7 – standard type



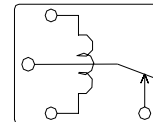
Terminal arrangement and wiring diagram



SPDT - 1 form C



SPST-NO - 1 form A



SPST-NC - 1 form B

AR7 – Q style (quiet)

