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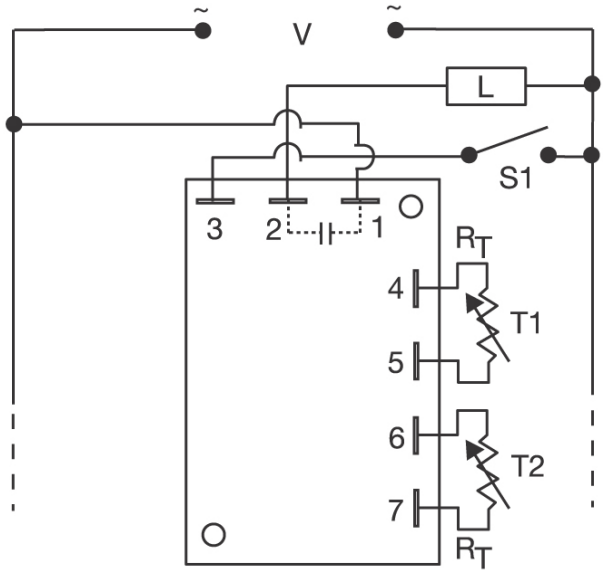
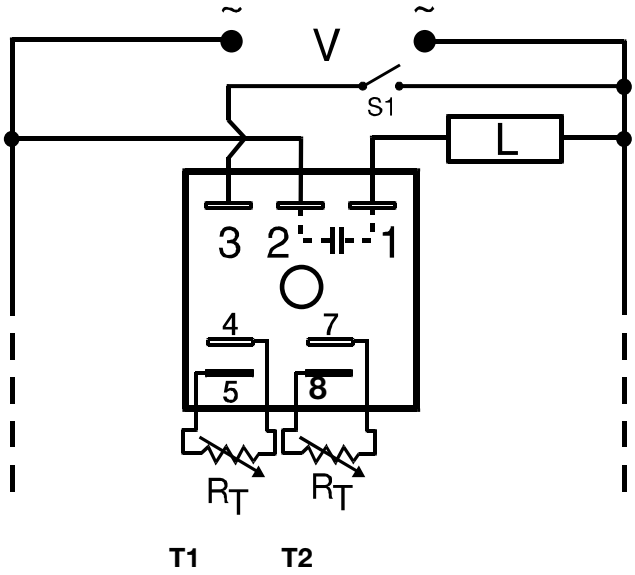
SSAC Product Line Conversion Notification February 11, 2005

ESD5 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 1000 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/-10 %		+/-5%
Operational	Terminals 1,3 are line input, T2 is the output.		Terminal connections are different. Terminals 2,3 are input, T1 is the output
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Mechanical			
Mounting	Surface mount with two #8 (M4 x 0.7) screw		Surface mount with one #10 (M5 x 0.8) screw
RT Terminals	Onboard adjust requires VTP Plug-on Modules		Terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Package	2.5 x 3.5 x 1.22 in. (63.5 x 88.9 x 31 mm)		2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Environmental			
Weight	≅ 4.8oz (136 g)		≅ 2.4 oz (68 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
RT = External Adjustment Potentiometer(s)
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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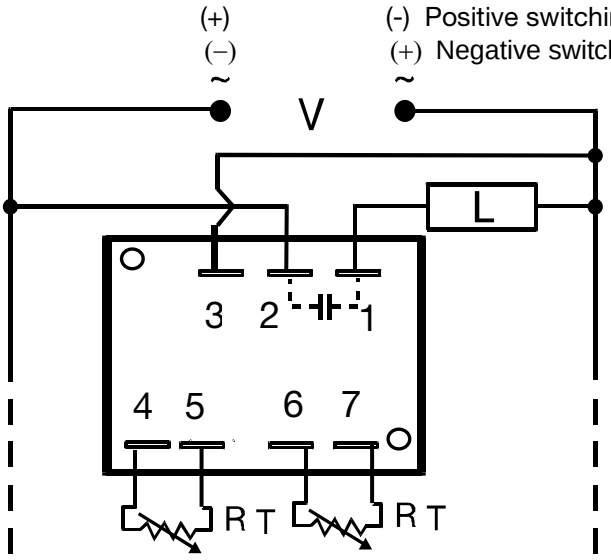
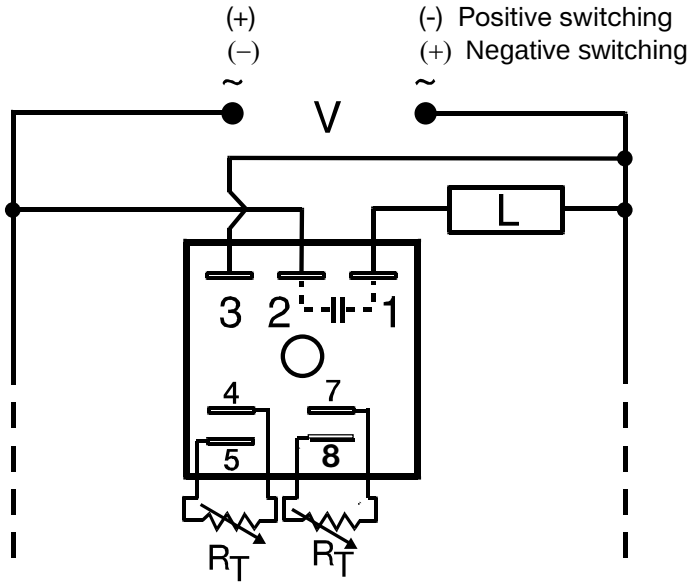
SSAC Product Line Conversion Notification February 11, 2005

ESDR Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	+/-10 %		≤ +/-5%
Operational	Time ranges 0 and 5 cannot be combined in the same unit.		Time ranges can be combined in any combination.
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Mechanical			
Mounting	Surface mount with two #8 (M4 x 0.7) screw		Surface mount with one #10 (M5 x 0.8) screw
RT Terminals	Onboard adjust requires VTP Plug-on Modules		Terminals are oriented differently (see notes)
Package	2.5 x 3.5 x 1.22 in. (63.5 x 88.9 x 31 mm)		2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Environmental			
Weight	≅ 4.8oz (136 g)		≅ 2.4 oz (68 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
RT = External Adjustment Potentiometer(s)
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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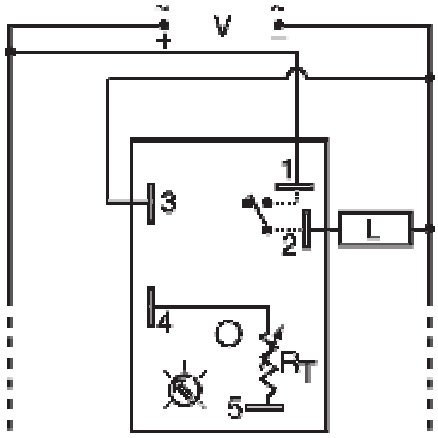
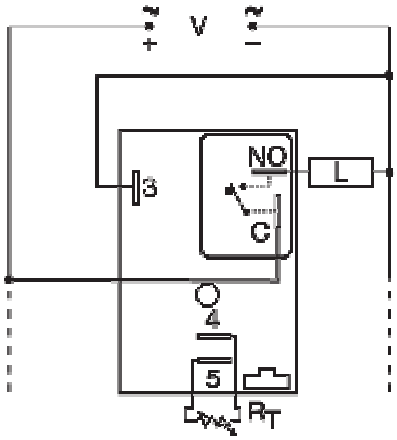
HRD3 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/−0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/−1%, +/−10%		+/−1%, +/−5%
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 120 & 230VAC: -20%…+10%		12 VDC, 24VDC: -15% … +20% 24 … 230 VAC: -20% … +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Non Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		**SPDT-N.O.** **SPDT-N.O.** General Purpose 125/240 VAC 30 A 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC 30 A 15 A 28 V DC 20 A 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC 1 hp* ¼ hp** 240 V AC 2 hp** 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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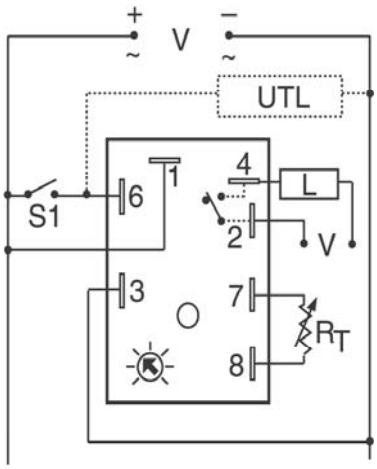
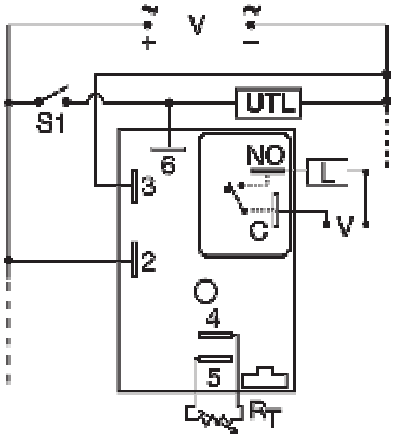
HRD9 Series Part Numbers

Important Differences Between Product Designs

Specifications	Pre 2005 Design	2005 Generation II Design
Time Delay		
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed	0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/–0.5 %	+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/–1%, +/–10%	+/–1%, +/–5%
Reset Time	≤ 500 ms	≤ 150 ms
RT Values (for external adjustment)	0-1 MΩ.	0-100 KΩ. (see note)
Input		
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 120 & 230VAC: -20%…+10%	12 VDC, 24VDC: -15% … +20% 24 … 230 VAC: -20% … +10%
Output		
Form	Single pole, normally open, non-isolated	SPDT Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP	SPDT-N.O. SPDT-N.O. General Purpose 125/240 VAC 30 A 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP	Resistive 125/240 V AC 30 A 15 A 28 V DC 20 A 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A	Motor Load 125 V AC 1 hp* ¼ hp** 240 V AC 2 hp** 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5	Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical		
Mechanical		Terminal layout is different.
Connection		Terminal connections are different.
Environmental		
Operating Temperature	-20°C ... +60°C	-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
UTL = Optional Untimed Load
S1 = Initiate Switch
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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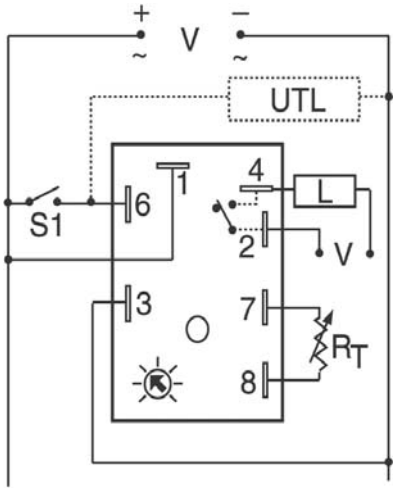
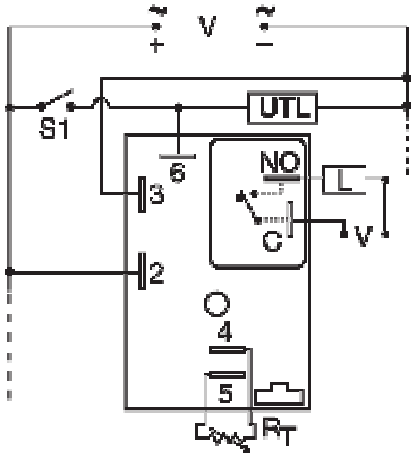
HRDB Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/–0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/–1%, +/–10%		+/–1%, +/–5%
Reset Time	≤ 500 ms		≤ 150 ms
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 120 & 230VAC: -20%…+10%		12 VDC, 24VDC: -15% … +20% 24 … 230 VAC: -20% … +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		**SPDT-N.O. SPDT-N.O.** General Purpose 125/240 VAC 30 A 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC 30 A 15 A 28 V DC 20 A 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC 1 hp* ¼ hp** 240 V AC 2 hp** 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
UTL = Optional Untimed Load
S1 = Initiate Switch
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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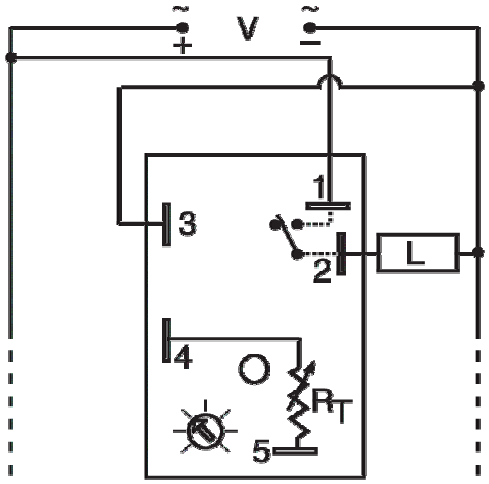
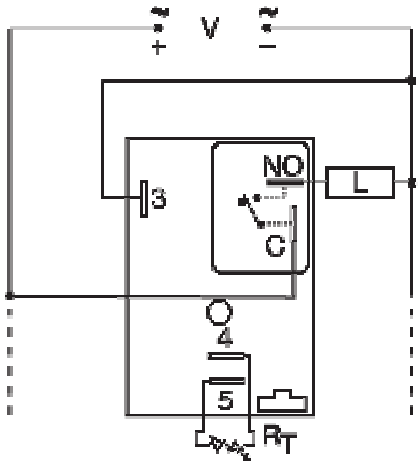
HRDI Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/−0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/−1%, +/−10%		+/−1%, +/−5%
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% ... +20% 120 & 230VAC: -20%...+10%		12 VDC, 24VDC: -15% ... +20% 24 ... 230 VAC: -20% ... +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Non Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		General Purpose 125/240 VAC: **SPDT-N.O.** 30 A; **SPDT-N.O.** 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC: 30 A; 15 A 28 V DC: 20 A; 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC: 1 hp*; ¼ hp** 240 V AC: 2 hp**; 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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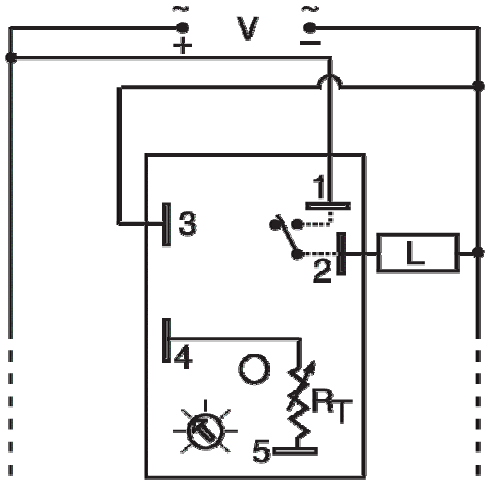
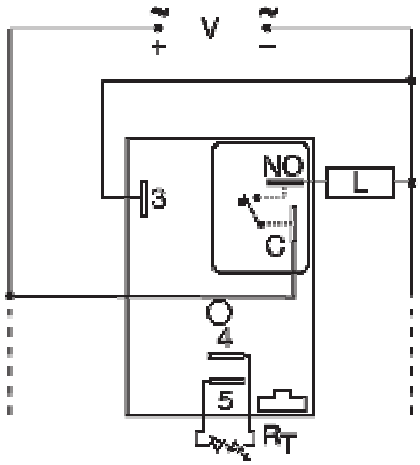
HRDM Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/−0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/−1%, +/−10%		+/−1%, +/−5%
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% ... +20% 120 & 230VAC: -20%...+10%		12 VDC, 24VDC: -15% ... +20% 24 ... 230 VAC: -20% ... +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Non Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		General Purpose 125/240 VAC: **SPDT-N.O.** 30 A; **SPDT-N.O.** 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC: 30 A; 15 A 28 V DC: 20 A; 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC: 1 hp*; ¼ hp** 240 V AC: 2 hp**; 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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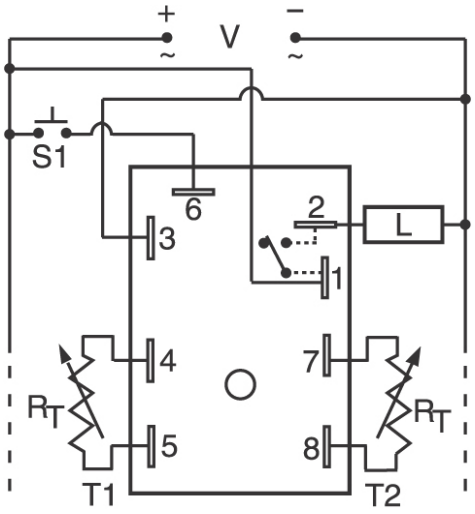
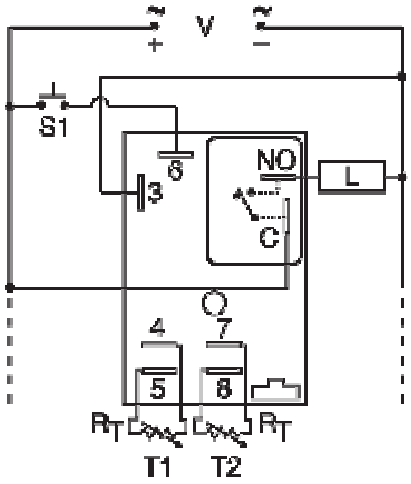
HRDR Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Repeat Accuracy	+/–0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/–10%		+/–5%
Reset Time	≤ 250 ms		≤ 150 ms
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 120 & 230VAC: -20%…+10%		12 VDC, 24VDC: -15% … +20% 24 … 230 VAC: -20% … +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Non Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		**SPDT-N.O.** **SPDT-N.O.** General Purpose 125/240 VAC 30 A 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC 30 A 15 A 28 V DC 20 A 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC 1 hp* ¼ hp** 240 V AC 2 hp** 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
S1 = Optional Initiate Switch
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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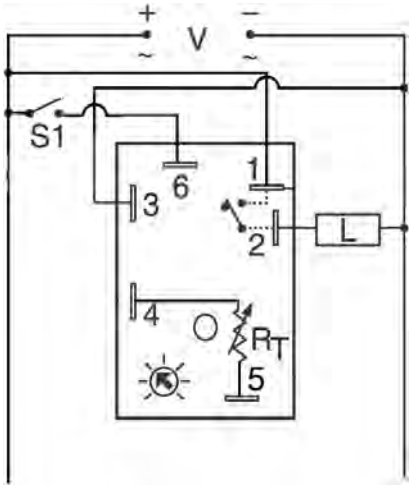
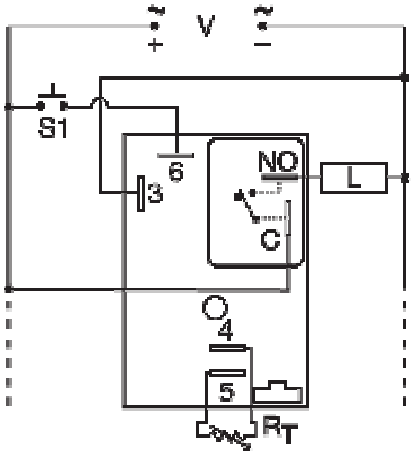
HRDS Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Repeat Accuracy	+/–0.5 %		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)	+/–1%, +/–10%		+/–1%, +/–5%
Reset Time	≤ 500 ms		≤ 150 ms
Initiate Time	≅ 200 ms		≤ 20 ms
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see note)
Input			
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 120 & 230VAC: -20%…+10%		12 VDC, 24VDC: -15% … +20% 24 … 230 VAC: -20% … +10%
Output			
Form	Single pole, normally open, non-isolated		SPDT Non Isolated
Contact Ratings @ 125 VAC	General purpose; UL: 15A, CSA: 30A Motor load; UL: 1HP, CSA: 1HP		**SPDT-N.O.** **SPDT-N.O.** General Purpose 125/240 VAC 30 A 15 A
240 VAC	General purpose; UL: 10A, CSA: 10A Motor load; UL: 1HP, CSA: 1HP		Resistive 125/240 V AC 30 A 15 A 28 V DC 20 A 10 A
30 VDC	Resistive; UL: 20A, CSA: 20A		Motor Load 125 V AC 1 hp* ¼ hp** 240 V AC 2 hp** 1 hp**
Life	Mechanical -- 1 x 10^6, Electrical -- 1 x 10^5		Mechanical -- 1 x 10^6; Electrical -- 1 x 10^5, *3 x 10^4, **6,000
Mechanical			
Mechanical			Terminal layout is different.
Connection			Terminal connections are different.
Environmental			
Operating Temperature	-20°C ... +60°C		-40°C ... +60°C



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate Switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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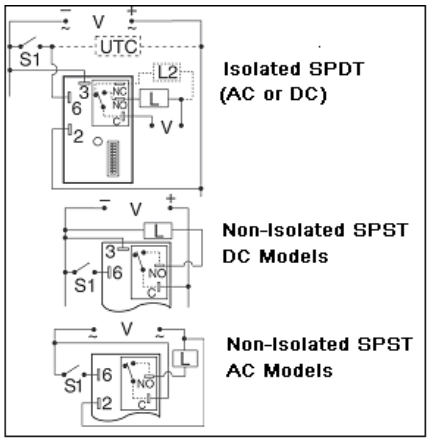
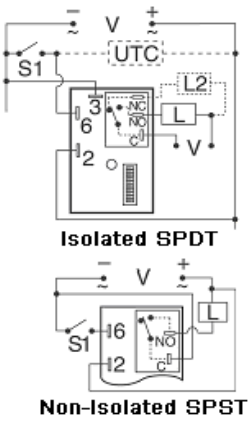
HRV Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Count Functions			
Minimum Switch Closure Time	≥ 25 ms		≥ 20 ms
Minimum Switch Open (between closures) Time	≥ 30 ms		≥ 20 ms
Time Delay			
Recycle Time	≤ 500ms		Reset Time: ≤ 150 ms
Output			
Ratings: Definite Purpose 125 V AC 17 FLA, 96 LRA*20 FLA, 60 LRA* Definite Purpose 240 V AC 30 FLA, 80 LRA*20 FLA, 60 LRA* * SPDT - N.C. Ratings: 10 A at 28 V DC (Resistive) 10 FLA, 30 LRA at 125 V AC/240 V AC (Definite Purpose)			Definite Purpose Ratings removed
Mechanical			
Mechanical			The Isolated SPST (not shown) will follow the terminal layout of the Isolated SPDT except the N.C. contact will be omitted.
Operational	Terminal layout and connections for Non-Isolated SPST units are different for AC and DC voltages.		Terminal layout for Non-Isolated SPST AC and DC voltages will be the same.





Legend
V = Input Voltage
L = Timed delayed load
UTL = Optional untimed load
UTC = Optional untimed counter
S1 = Initiate switch
Dashed lines are internal connections or optional connections

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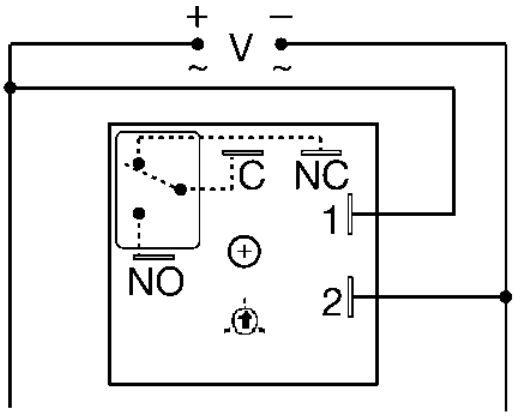
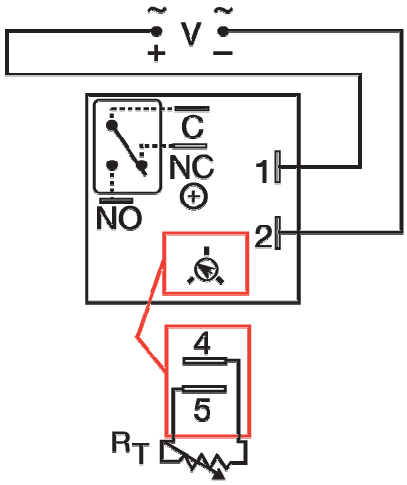
SSAC Product Line Conversion Notification April 11, 2005
KRD3 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	≤ 250 ms		≤ 150 ms
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/–10%		≤ +/- 5%
Input			
Power Consumption	12, 24 VDC≤ 0.65W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive 28 VDC; ¼ HP @ 125 VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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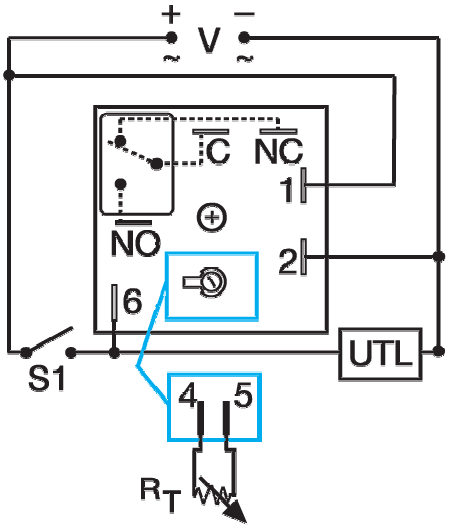
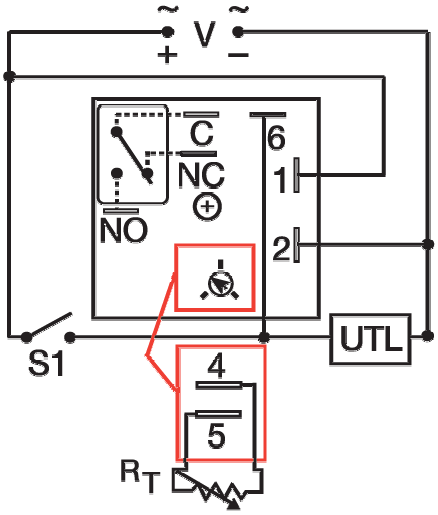
SSAC Product Line Conversion Notification April 11, 2005
KRD9 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Repeat Accuracy	+/-1% or 16 ms (20 ms @ 50Hz), whichever is greater		+/- 0.5% or 20 ms whichever is greater
Initiate Time	AC≅ 40 ms; DC ≅ 10 ms		≤ 40 ms; ≤ 750 Operations per Minute
Input			
Voltage (AC)	24 or 120 V AC; 12, 24 or 110 V DC		24 …240 VAC/DC; 12 … 48 VDC
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 110 VDC & 120VAC: -20%…+10%		12 … 48 VDC; - 15% …+ 20% 24 … 240 VAC/DC; -20% … +10%
Power Consumption	12, 24 VDC≤ 1W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive at 230 VAC & 28 VDC ¼ HP @ 125 VAC Max. Switching voltage: 250VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
UTL = Optional untimed load
S1 = Initiate switch
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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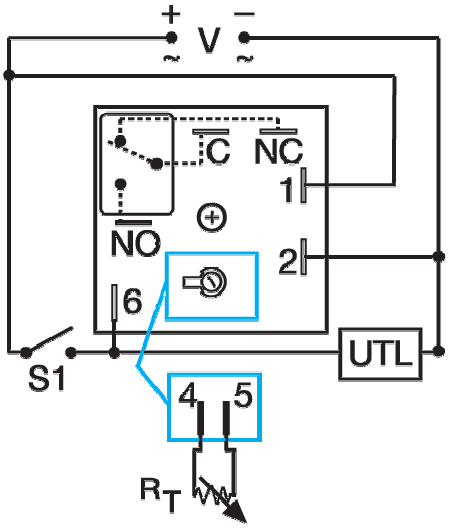
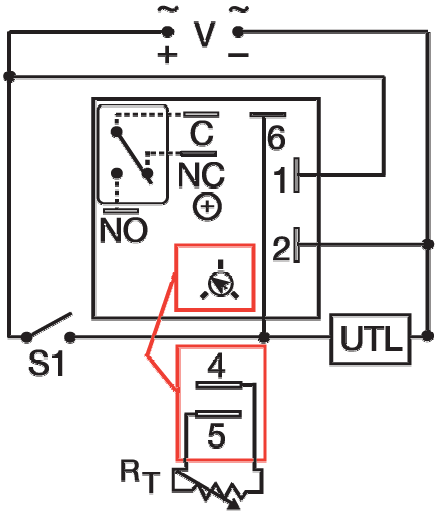
SSAC Product Line Conversion Notification April 11, 2005
KRDB Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Repeat Accuracy	+/-1% or 16 ms (20 ms @ 50Hz), whichever is greater		+/- 0.5% or 20 ms whichever is greater
Initiate Time	AC≅ 40 ms; DC ≅ 10 ms		≤ 40 ms
Input			
Voltage (AC)	24 or 120 V AC; 12, 24 or 110 V DC		24 …240 VAC/DC; 12 … 48 VDC
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 110 VDC & 120VAC: -20%…+10%		12 … 48 VDC; - 15% …+ 20% 24 … 240 VAC/DC; -20% … +10%
Power Consumption	12, 24 VDC≤ 1W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive at 230 VAC & 28 VDC ¼ HP @ 125 VAC Max. Switching voltage: 250VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
UTL = Optional untimed load
S1 = Initiate switch
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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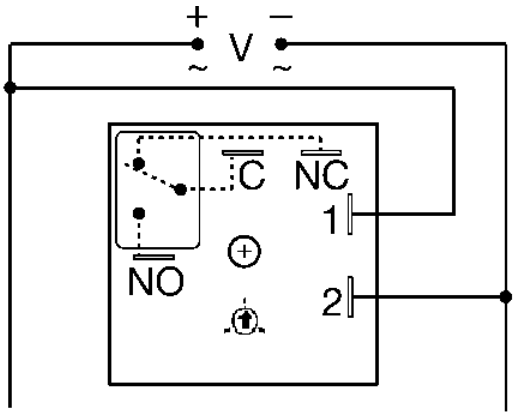
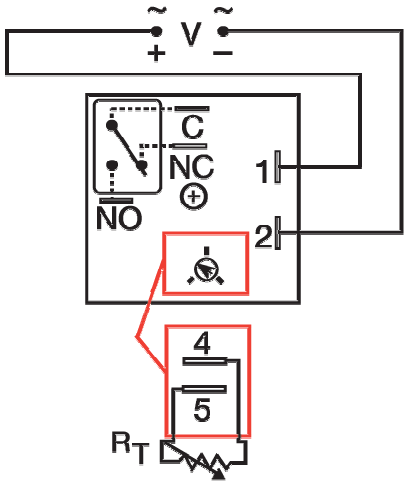
SSAC Product Line Conversion Notification April 11, 2005
KRDI Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	≤ 250 ms		≤ 150 ms
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/–10%		≤ +/- 5%
Input			
Power Consumption	12, 24 VDC≤ 0.65W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive 28 VDC; ¼ HP @ 125 VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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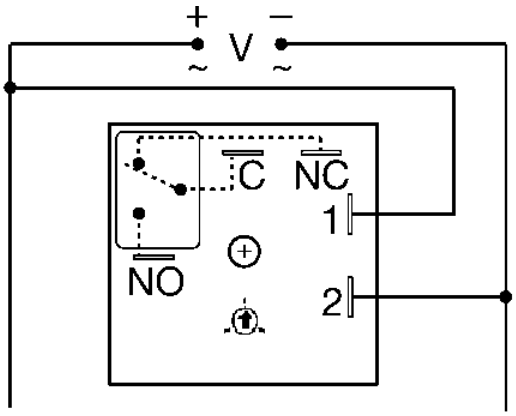
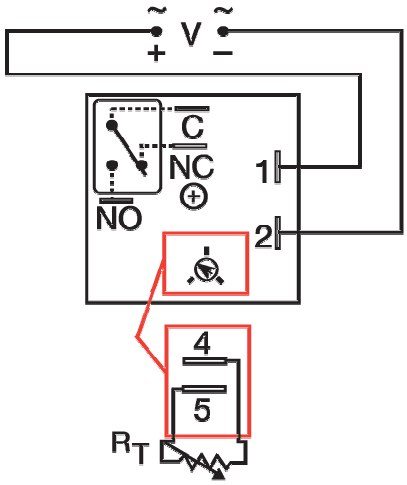
SSAC Product Line Conversion Notification April 11, 2005
KRDM Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	≤ 250 ms		≤ 150 ms
Range	0.2 s ... 100 m in 5 adjustable ranges or fixed		0.1 s ... 100 m in 5 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/–10%		≤ +/- 5%
Input			
Power Consumption	12, 24 VDC≤ 0.65W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive 28 VDC; ¼ HP @ 125 VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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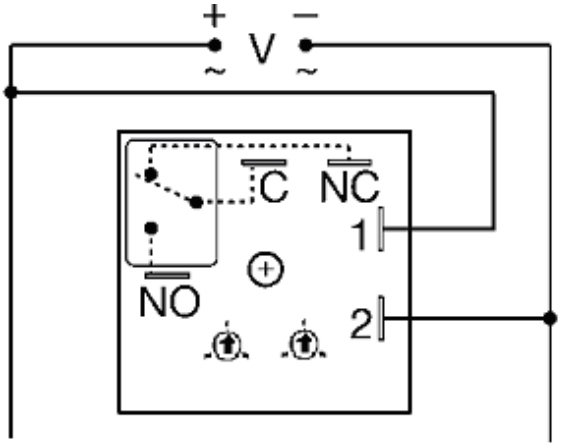
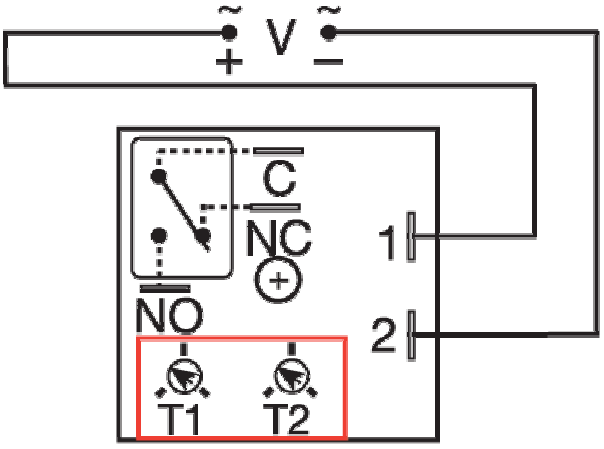
SSAC Product Line Conversion Notification April 11, 2005
KRDR Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	≤ 250 ms		≤ 150 ms
Range	0.2 s ... 100 m in 6 adjustable ranges or fixed		0.1 s ... 100 m in 6 adjustable ranges or fixed
Range 5	Highest time range is 5 to 500 minutes.		Highest time range is 10 to 1000 minutes.
Tolerance (Factory Calibration)	+/−10%		≤ +/- 5%
Input			
Power Consumption	12, 24 VDC≤ 0.65W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive 28 VDC; ¼ HP @ 125 VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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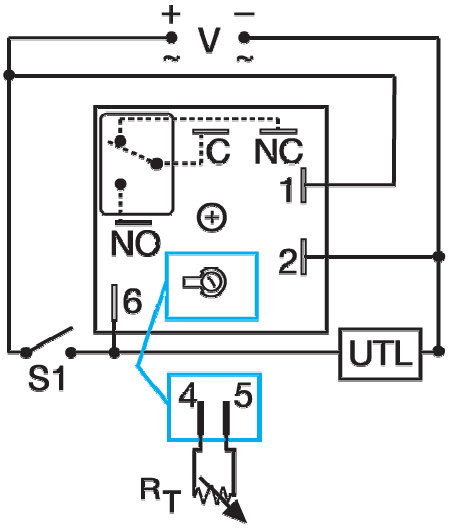
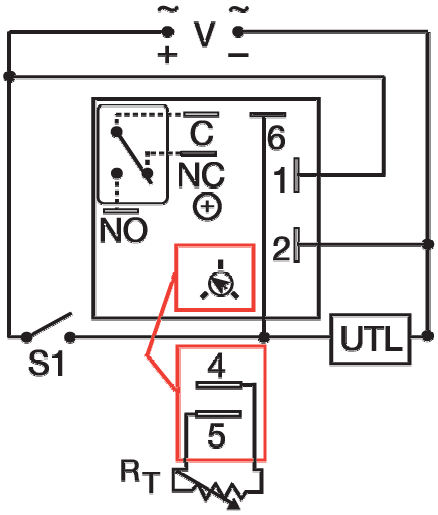
SSAC Product Line Conversion Notification April 11, 2005
KRDS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Repeat Accuracy	+/-1% or 16 ms (20 ms @ 50Hz), whichever is greater		+/- 0.5% or 20 ms whichever is greater
Initiate Time	AC≅ 40 ms; DC ≅ 10 ms		≤ 40 ms; ≤ 750 Operations per Minute
Input			
Voltage (AC)	24 or 120 V AC; 12, 24 or 110 V DC		24 …240 VAC/DC; 12 … 48 VDC
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 110 VDC & 120VAC: -20%…+10%		12 … 48 VDC; - 15% …+ 20% 24 … 240 VAC/DC; -20% … +10%
Power Consumption	12, 24 VDC≤ 1W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive at 230 VAC & 28 VDC ¼ HP @ 125 VAC Max. Switching voltage: 250VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
UTL = Optional untimed load
S1 = Initiate switch
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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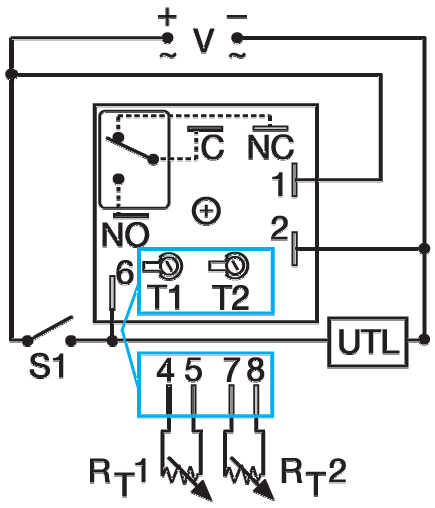
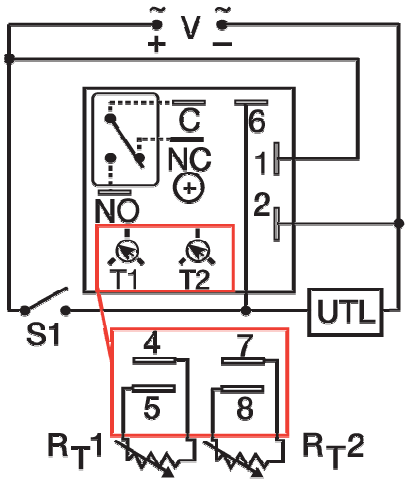
SSAC Product Line Conversion Notification April 4, 2005
KRPD Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Repeat Accuracy	+/-1% or 16 ms (20 ms @ 50Hz), whichever is greater		+/- 0.5% or 20 ms whichever is greater
Initiate Time	AC≅ 40 ms; DC ≅ 10 ms		≤ 40 ms; ≤ 750 Operations per Minute
Input			
Voltage (AC)	24 or 120 V AC; 12, 24 or 110 V DC		24 …240 VAC/DC; 12 … 48 VDC
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 110 VDC & 120VAC: -20%…+10%		12 … 48 VDC; - 15% … +20% 24 … 240 VAC/DC; -20% … +10%
Power Consumption	12, 24 VDC≤ 1W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive at 230 VAC & 28 VDC ¼ HP @ 125 VAC Max. Switching voltage: 250VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
UTL = Optional untimed load
S1 = Initiate switch (not required for some functions)
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

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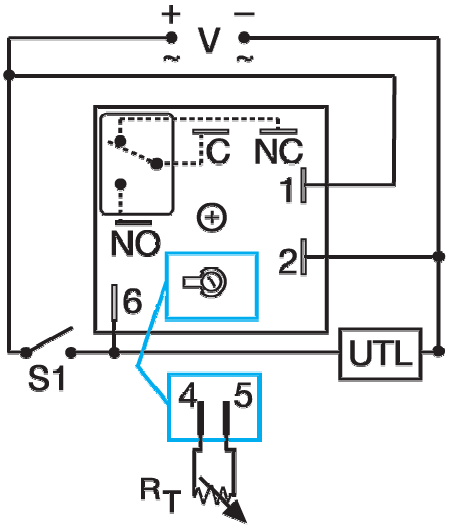
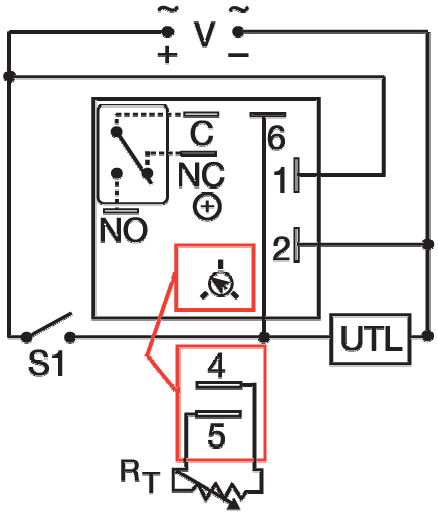
SSAC Product Line Conversion Notification April 4, 2005
KRPS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Repeat Accuracy	+/-1% or 16 ms (20 ms @ 50Hz), whichever is greater		+/- 0.5% or 20 ms whichever is greater
Initiate Time	AC≅ 40 ms; DC ≅ 10 ms		≤ 40 ms; ≤ 750 Operations per Minute
Input			
Voltage (AC)	24 or 120 V AC; 12, 24 or 110 V DC		24 …240 VAC/DC; 12 … 48 VDC
Tolerance	12 VDC, 24VAC/DC: -15% … +20% 110 VDC & 120VAC: -20%…+10%		12 … 48 VDC; - 15% …+ 20% 24 … 240 VAC/DC; -20% … +10%
Power Consumption	12, 24 VDC≤ 1W; 24 VAC: ≤ 1 VA; 110 VDC : ≤ 2W; 120 VAC ≤ 2 VA		AC ≤ 2 VA; DC ≤ 2 W
Output			
Contact Ratings (@ 40°C)	10A resistive @ 125 VAC 5A resistive @ 30 VDC; ¼ HP @ 125 VAC Max. Switching voltage: 230 VAC (5A resistive)		10A resistive @ 125 VAC 5A resistive at 230 VAC & 28 VDC ¼ HP @ 125 VAC Max. Switching voltage: 250VAC
Mechanical			
Terminals			Terminal layout is different. Onboard adjust requires an adjustment tool.



Pre 2005 Design



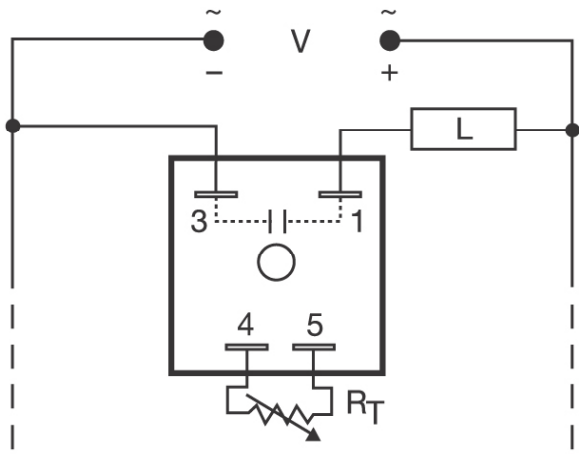
2005 Generation II Design

Legend:
V = Input voltage
UTL = Optional untimed load
S1 = Initiate switch (not required for some functions)
C = Common, Transfer Contact
NO = Normally Open
NC = Normally Closed
Dashed lines are internal connections

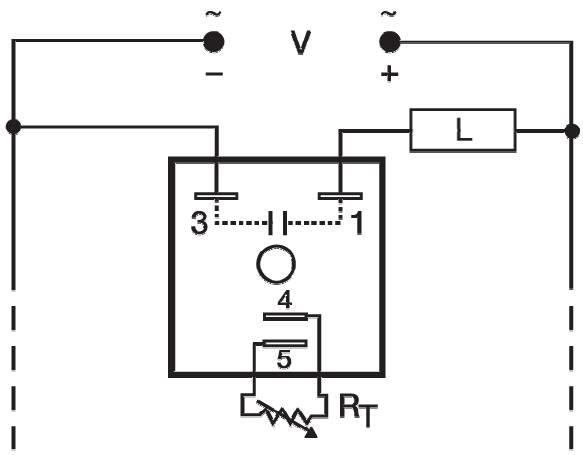
SSAC Product Line Conversion Notification April 11, 2005

KSD1 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ...500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/-10 %		+/-5%
Operational	Highest time range is 5 to 500 minutes.		Highest time range is 10 to 1000 minutes.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Recycle Time	≤ 200 ms		≤ 150 ms
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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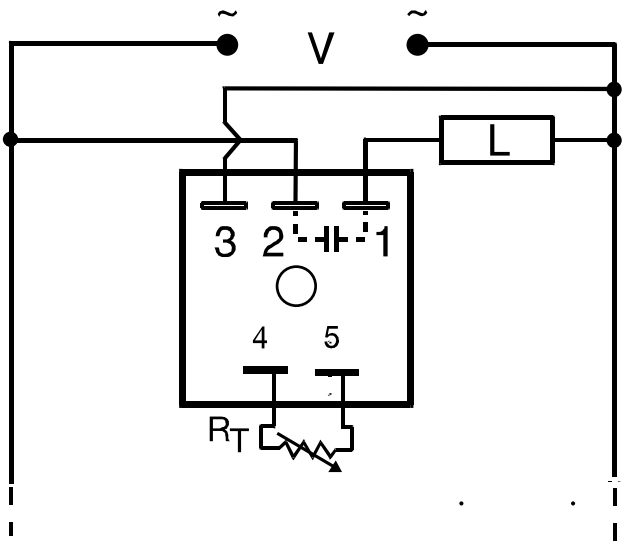
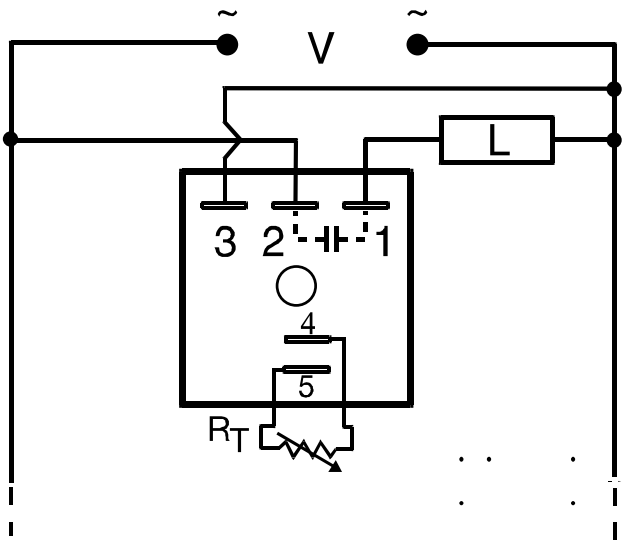
KSD2 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ...500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/-10 %		+/-5%
Operational	Highest time range is 5 to 500 minutes.		Highest time range is 10 to 1000 minutes.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Recycle Time	≤ 300 ms		≤ 150 ms
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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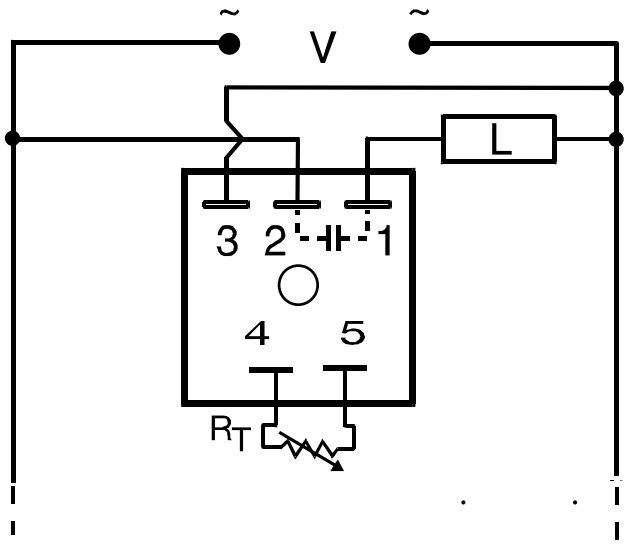
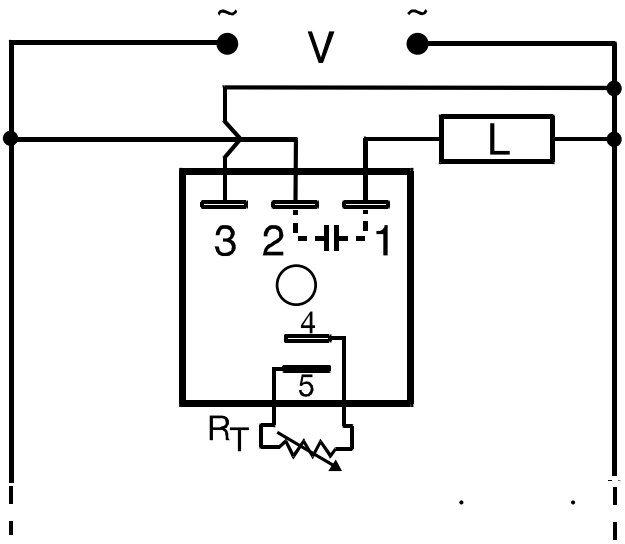
SSAC Product Line Conversion Notification March 4, 2005

KSD3 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ...500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/-10 %		+/-5%
Operational	Highest time range is 5 to 500 minutes.		Highest time range is 10 to 1000 minutes.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Recycle Time	≤ 300 ms		≤ 150 ms
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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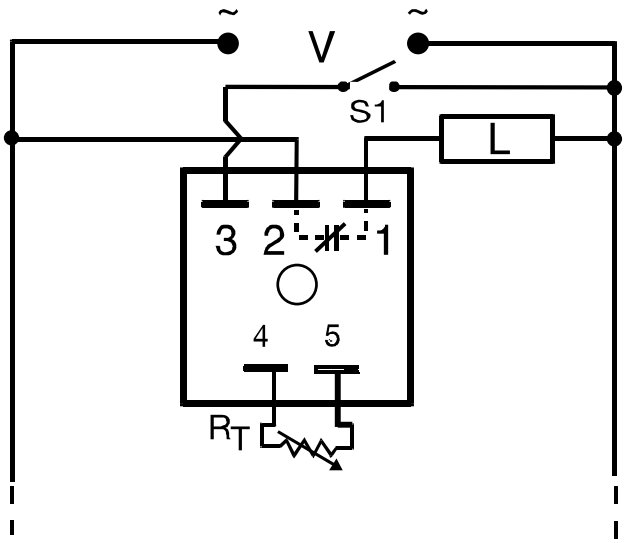
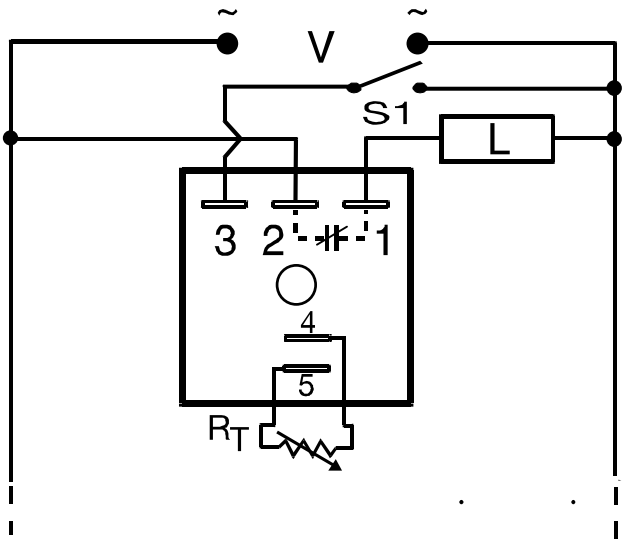
KSD4 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ...500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Tolerance (Factory Calibration)	+/-10 %		+/-5%
Operational	Highest time range is 100 to 500 minutes.		Highest time range is 1 to 1000 minutes.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Recycle Time	≤ 300 ms		≤ 150 ms
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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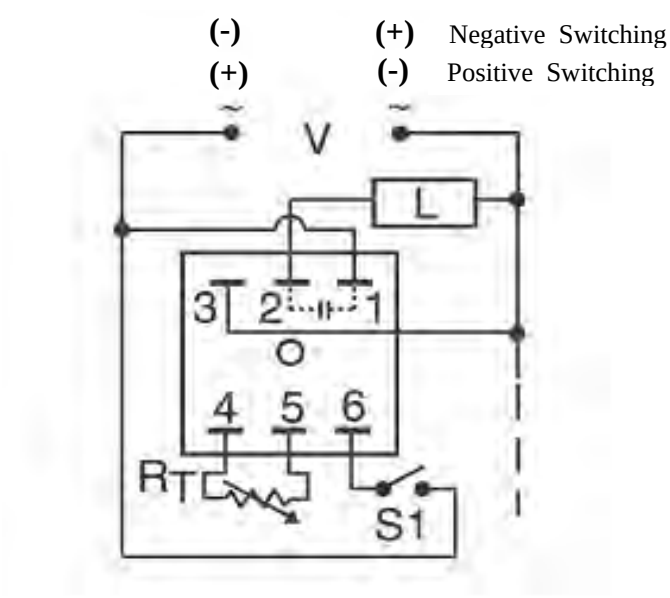
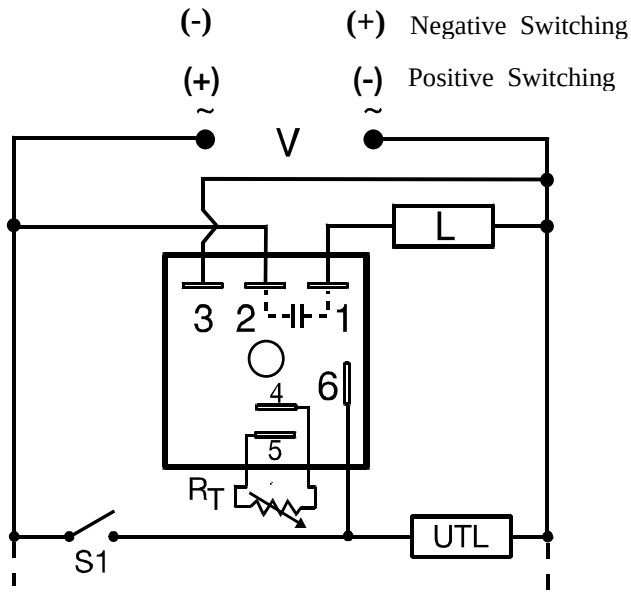
KSDB Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Output			
Maximum Load Current	1 A steady state, 10 A inrush at 60°C		1A Steady State, 10 A Inrush at 60°C
(except) 120 V DC	0.5 A steady state, 5 A inrush		All Voltages
Voltage Drop	AC≅ 2.5 V at 1 A, DC ≅ 1.7 V at rated current		AC≅ 2.5 V at 1 A, DC ≅ 1V at 1 A
Mechanical			
Mechanical	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Initiate terminal is in a different location. Can be ordered as onboard adjustable. (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, Terminal T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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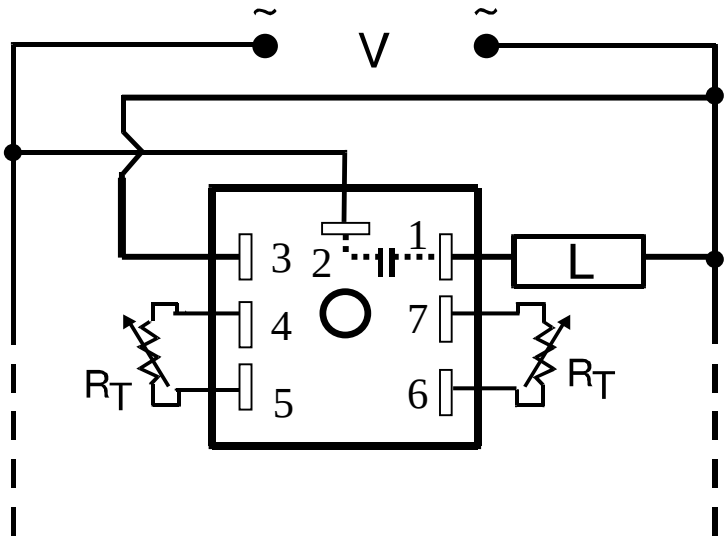
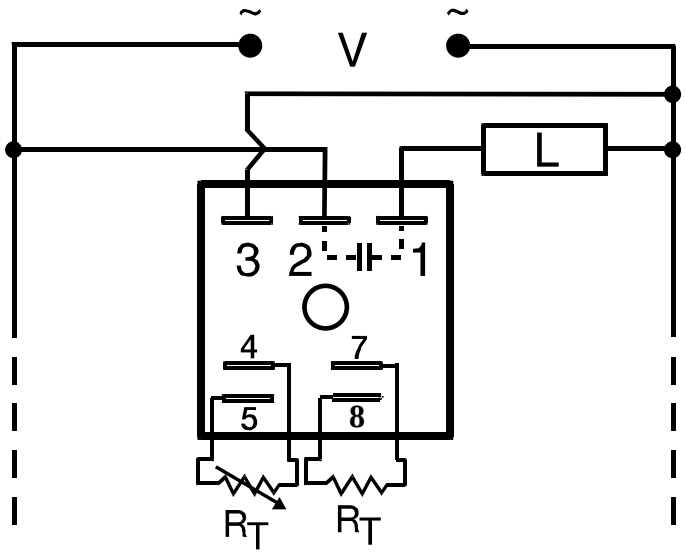
KSDR Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	+/-10 %		+/-5%
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ.(see notes)
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometers
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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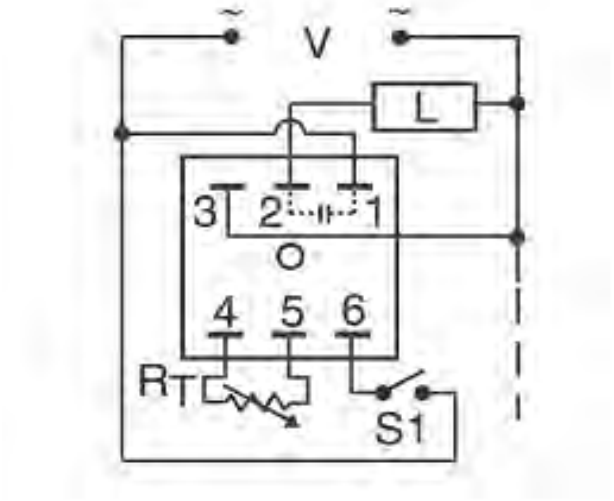
KSDS Series Part Numbers

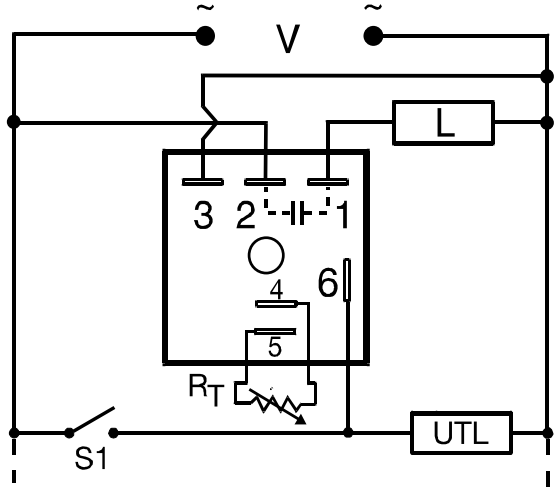
Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 500 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
RT Values (for external adjustment)	0-1 MΩ (ranges 0- 4). 0-3 MΩ (range 5).		0-100 KΩ. (see notes)
Tolerance (Factory Calibration)	≤ +/-10%		≤ +/-5%
Output			
Maximum Load Current	1 A steady state, 10 A inrush at 55°C		1 A steady state, 10 A inrush at 60°C
Voltage Drop	AC≅ 2.5 V at 1 A, DC ≅ 1.7 V at rated current		DC≅ 1 V at 1 A
Mechanical			
Mechanical	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Initiate terminal is in a different location. Can be ordered as onboard adjustable. (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, Terminal T1 is output

(-) (+) Negative Switching
(+) (-) Positive Switching



Pre 2005 Design

(-) (+) Negative Switching
(+) (-) Positive Switching



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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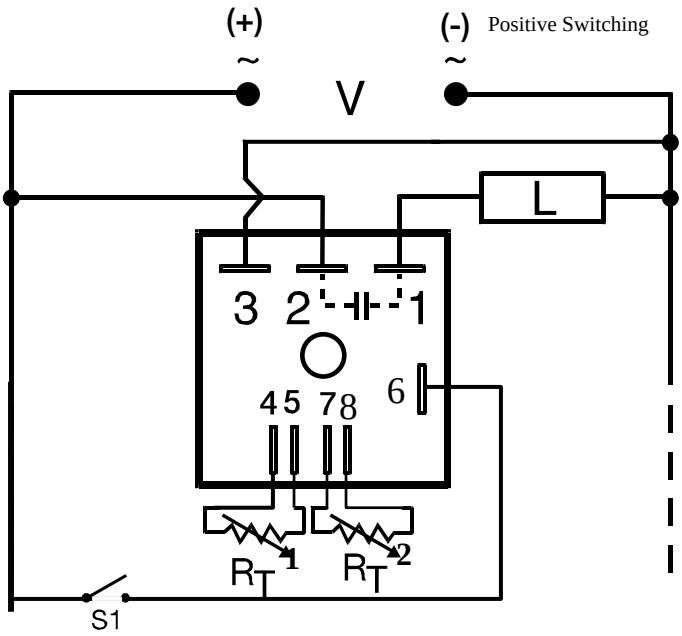
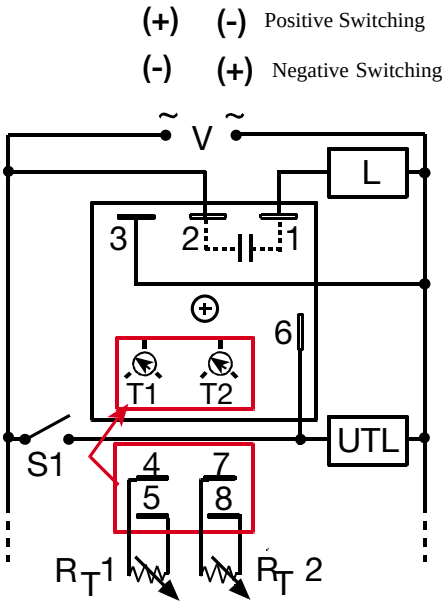
KSPD Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Repeat Accuracy	+/−1 % or 20 ms		± 0.5% or 20 ms
Input			
Voltage	24, 120, or 230 V AC; 12 or 24, V DC		24 to 240 V AC; 12 to 120 V DC
Line Frequency	50 ... 60 Hz		50 … 60 Hz/≤ 10% DC Ripple
Output			
DC Operation	Positive switching		Positive or negative switching
Mechanical			
RT Terminals			RT terminals are oriented differently. Initiate terminal is in a different location.



Pre 2005 Design



Terminal Location for External Adjustment

2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch (Not required for all functions)
UTL = Optional Untimed Load
RT = External Adjustment Potentiometers
Dashed lines are internal connections

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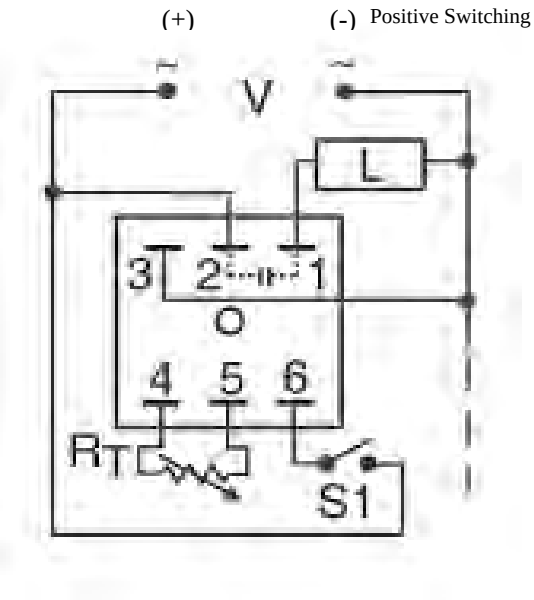
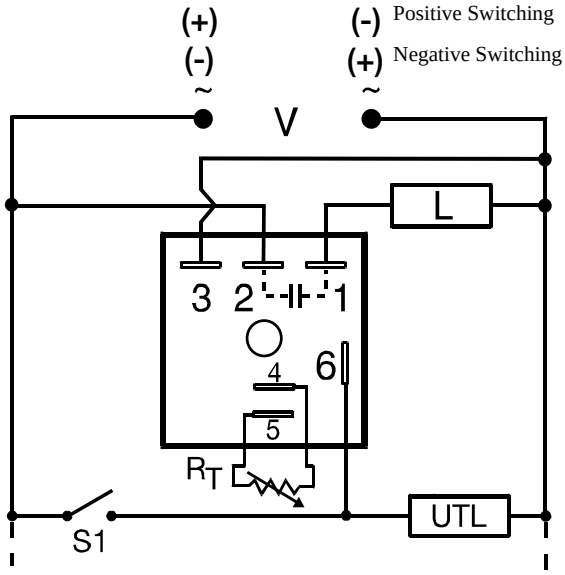
KSPS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Repeat Accuracy	+/–1 % or 20ms		± 0.5 or 20 ms
Input			
Voltage	24, 120, or 230 V AC; 12 or 24, V DC		24 to 240 V AC; 12 to 120 V DC
Line Frequency	50 ... 60 Hz		50 to 60 Hz/ ≤ 10% DC Ripple
Output			
DC Operation	Positive switching		Positive or negative switching
Mechanical			
RT Terminals			RT terminals are oriented differently. Initiate terminal is in a different location.



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch (Not required for all functions)
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

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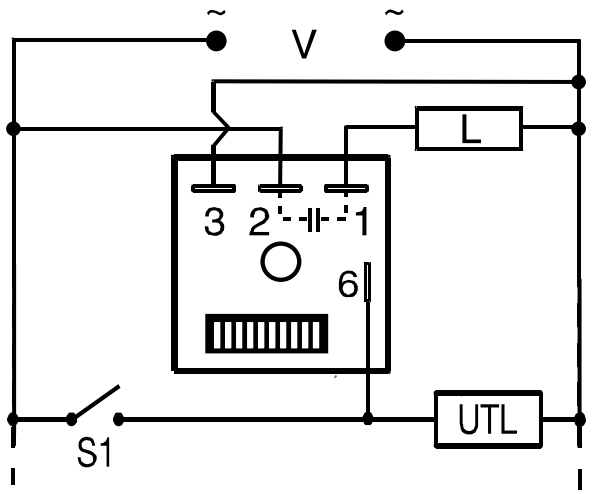
KSPU (Positive Switching DC Voltages)

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Setting Accuracy	<= +/- 2%		<=+/-1% or 20ms whichever is greater
Initiate Time	40 ms		<= 20 ms
Max. Initiate (Count) Rate	<= 10 per second		<= 25 per second
Input			
Voltage (AC)	24, 120, or 120/230VAC		24 to 240 VAC
Voltage (DC)	12, 24, or 120 VDC positive switching		12 to 120 VDC positive or negative switching

The connection diagram is the same for both designs:

(–) (+) Negative switching

(+) (-) Positive switching



Legend:
V = Input voltage
L = Time delayed load
UTL = Optional untimed load
S1 = Initiate switch (not required for some functions)
Dashed lines are internal connections

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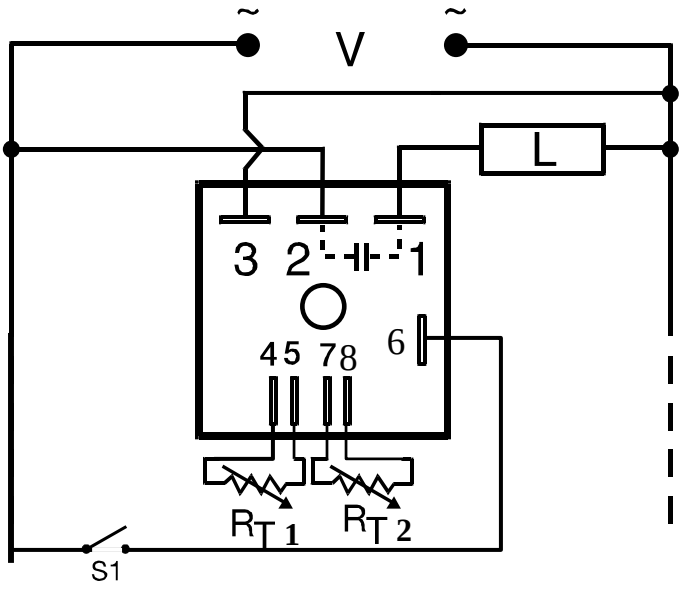
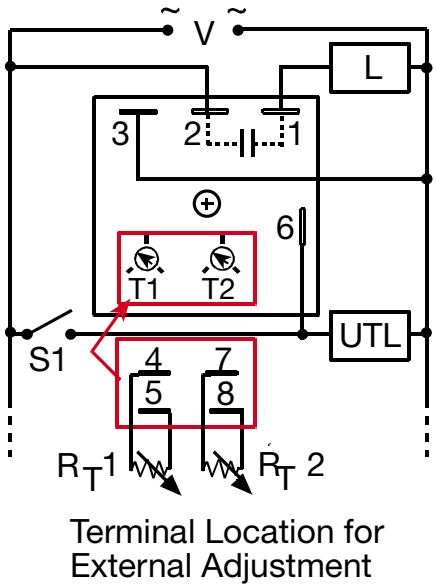
NHPD Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Repeat Accuracy	+/–1 % or 20 ms		± 0.5% or 20 ms
Input			
Voltage	24, 120, or 230 V AC		24 to 240 V AC
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5mA @ 230VAC
Mechanical			
RT Terminals	Vertical Orientation		Horizontal Orientation



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch (Not required for all functions)
UTL = Optional Untimed Load
RT = External Adjustment Potentiometers
Dashed lines are internal connections

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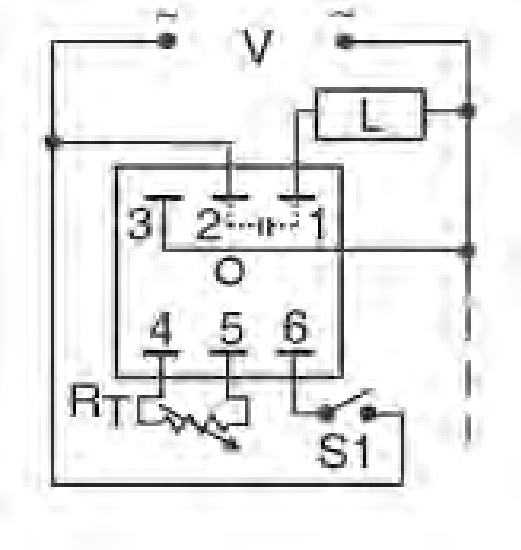
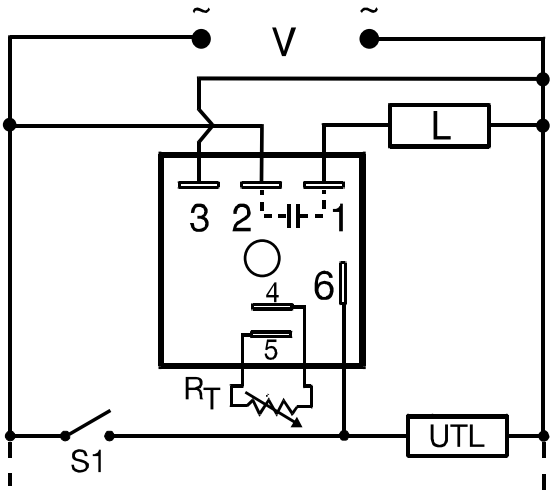
SSAC Product Line Conversion Notification February 25, 2005

NHPS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Repeat Accuracy	+/–1 % or 20ms		± 0.5 or 20 ms
Input			
Voltage	24, 120, or 230 V AC		24 to 240 V AC
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5mA at 230VAC



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch (Not required for all functions)
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

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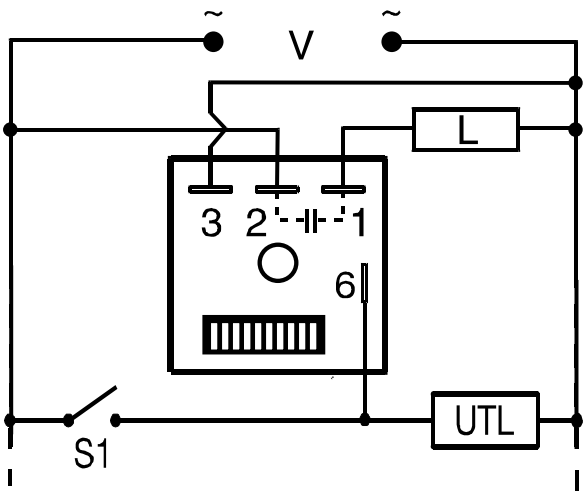
NHPU Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Recycle Time	<= 250 ms		<= 150 ms
Setting Accuracy	<= +/- 2%		<=+/-1% or 20ms whichever is greater
Initiate Time	40 ms		<= 20 ms
Max. Initiate (Count) Rate	<= 10 per second		<= 25 per second
Input			
Voltage (AC)	24, 120, or 120/230VAC		24 to 240 VAC

The connection diagram is the same for both designs::



Legend:
V = Input voltage
L = Time delayed load
UTL = Optional untimed load
S1 = Initiate switch (not required for some functions)
Dashed lines are internal connections

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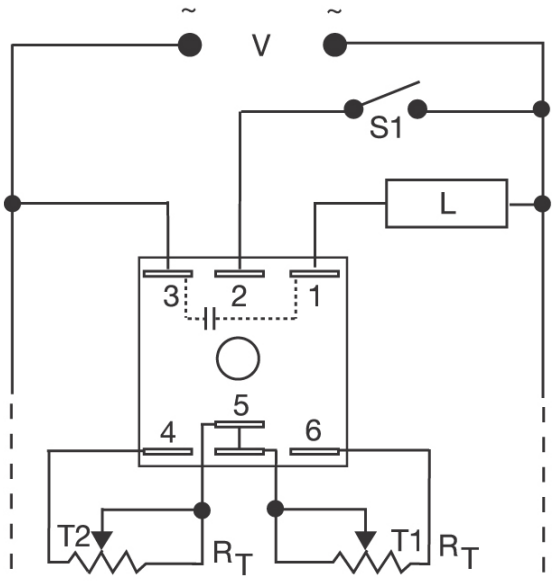
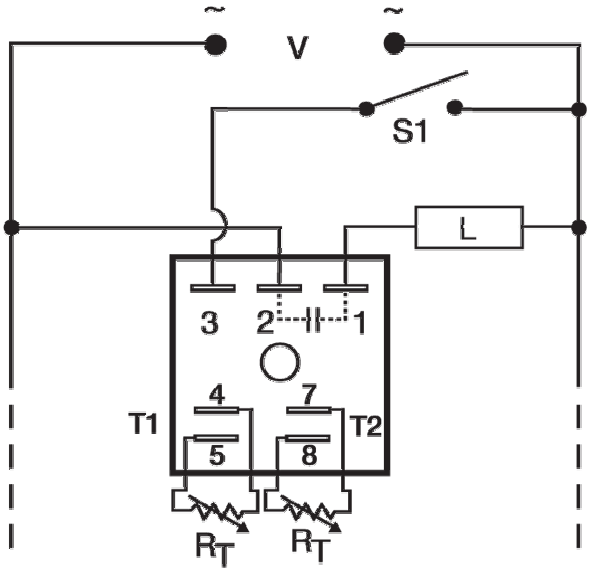
SSAC Product Line Conversion Notification April 11, 2005

PTHA Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see note)
Reset Time	≤ 500 ms		≤ 150 ms
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals			Terminals are oriented differently.
Connection	Terminals 2,3 line input. Terminal 1 output.		Terminals 2, 3 are input; T1 is output
Package	2 x 2 x 1.30 in. (50.8 x 50.8 x 33.0 mm)		2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4mm)
Environmental			
Weight	≅ 2.9 oz (82 g)		≅ 3.9 oz (111 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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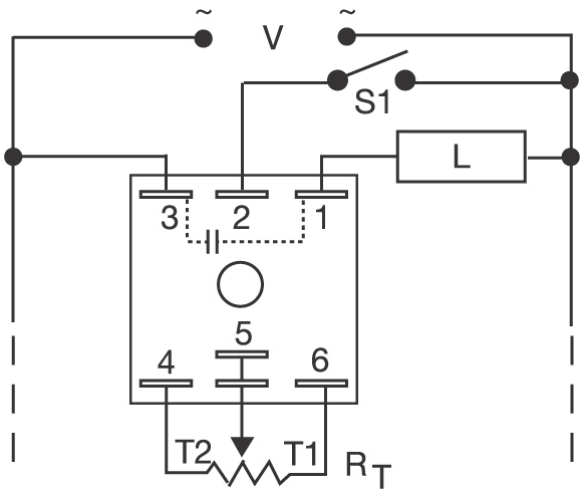
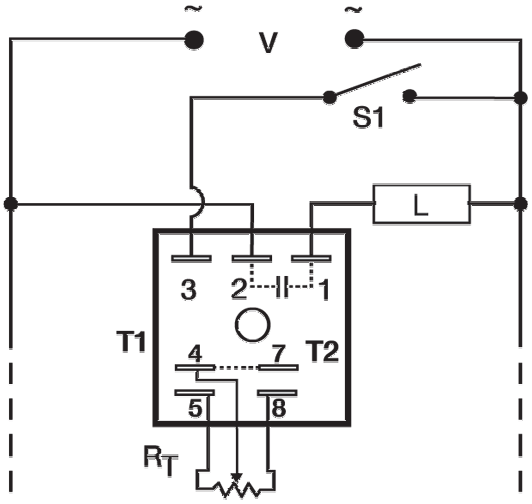
PTHF Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see note)
Reset Time	≤ 500 ms		≤ 150 ms
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals			Terminals are oriented differently.
Connection	Terminals 2,3 line input. Terminal 1 output.		Terminals 2, 3 are input; T1 is output
Package	2 x 2 x 1.30 in. (50.8 x 50.8 x 33.0 mm)		2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4mm)
Environmental			
Weight	≅ 2.9 oz (82 g)		≅ 3.9 oz (111 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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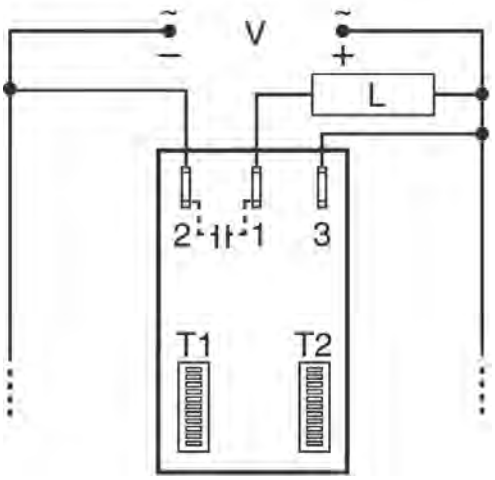
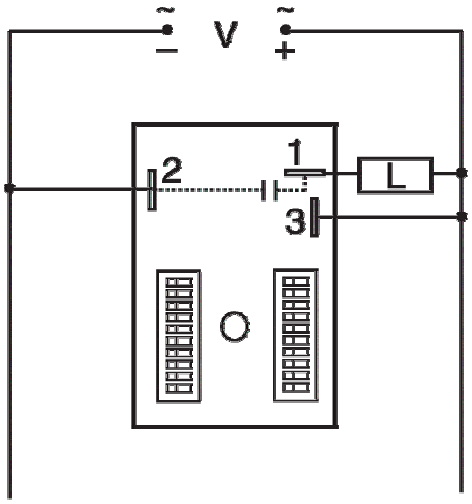
RS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 255.75 h in 4 adjustable ranges		0.1 s ... 1023 h in 4 adjustable ranges
Range 4	0.25 ... 255.75 h in 0.25 h increments		1 ... 1023 h in 1 h increments
Range Combination	Time ranges 1 and 4 cannot be combined in the same unit.		All combinations of time ranges are acceptable
Reset Time	100 ms		≤ 150 ms
Output			
Minimum Holding Current	5 mA		Off State Leakage; AC ≅ 5 mA; DC 1≅ mA
Mechanical			
Mounting	Surface mount with two to six #8 (M4 x 0.7) screws		Surface mount with one #10 (M5 x 0.8) screw
Package	4.5 x 3.1 x 1.3 in. (114 x 79 x 34 mm)		3 x 2 x 1.5 in. (76.7 x 51.3 x 38.1mm
Connection			Terminals are oriented differently.
Environmental			
Weight	≅ 7oz (198 g)		≅ 3.9 oz (111 g)



Pre 2005 Design



2005 Generation II Design

Legend:
V = Input voltage
L = Time delayed load
T1 = ON Time
T2 = OFF Time
Dashed lines are internal connections

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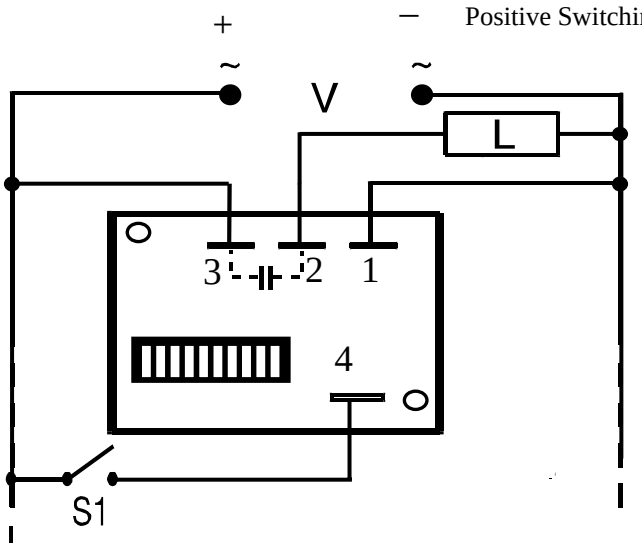
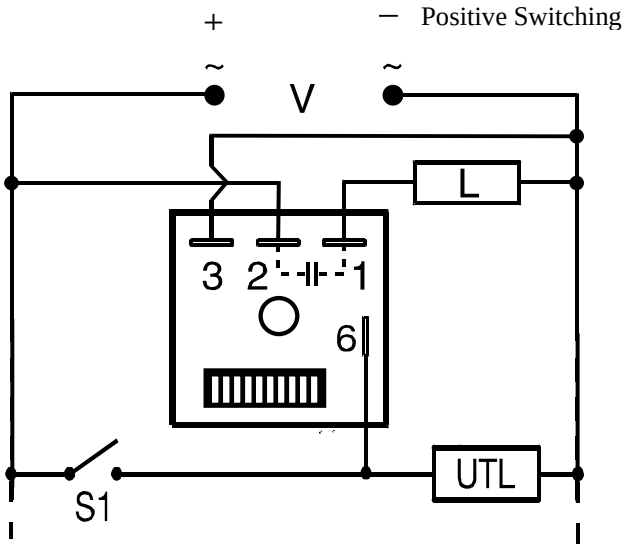
TDUB Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 10230 s in 3 adjustable ranges		0.1 s ... 102.3 m in 3 adjustable ranges
Tolerance (Factory Calibration)	+/-10 %		≤ +/-5%
Mechanical			
Mounting	Surface mount with two #8 (M4 x 0.7) screw		Surface mount with one #10 (M5 x 0.8) screw
Package	2.5 x 3.5 x 1.22 in. (63.5 x 88.9 x 31 mm)		2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Connection	Input Voltage T3, T1; Output T2		Input Voltage T3, T2; Output T1
Environmental			
Weight	≅ 4.8 oz (136 g)		≅ 2.4 oz (68 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate Switch
RT = External Adjustment Potentiometer(s)
UTL = Optional Untimed Load
Dashed lines are internal connections

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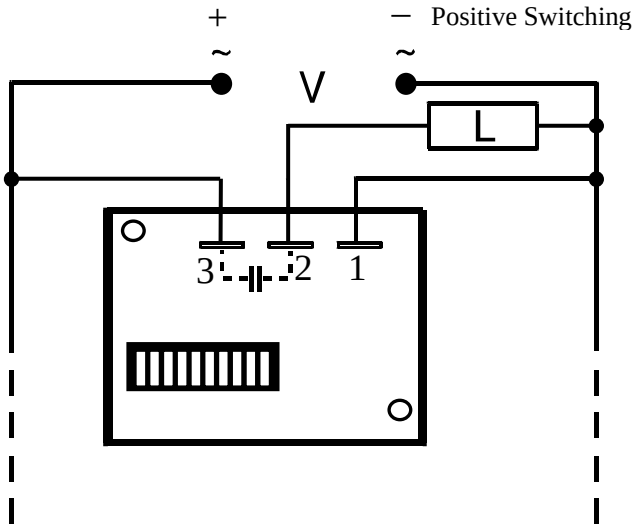
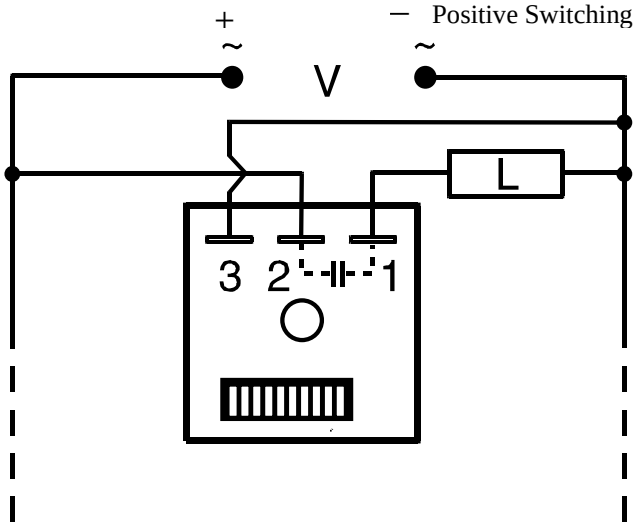
TDUI Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 10230 s in 3 adjustable ranges		0.1 s ... 102.3 m in 3 adjustable ranges
Tolerance (Factory Calibration)	+/-10 %		≤ +/-5%
Mechanical			
Mounting	Surface mount with two #8 (M4 x 0.7) screw		Surface mount with one #10 (M5 x 0.8) screw
Package	2.5 x 3.5 x 1.22 in. (63.5 x 88.9 x 31 mm)		2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Connection	Input Voltage T3, T1; Output T2		Input Voltage T3, T2; Output T1
Environmental			
Weight	≅ 4.8 oz (136 g)		≅ 2.4 oz (68 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
RT = External Adjustment Potentiometer(s)
UTL = Optional Untimed Load
Dashed lines are internal connections

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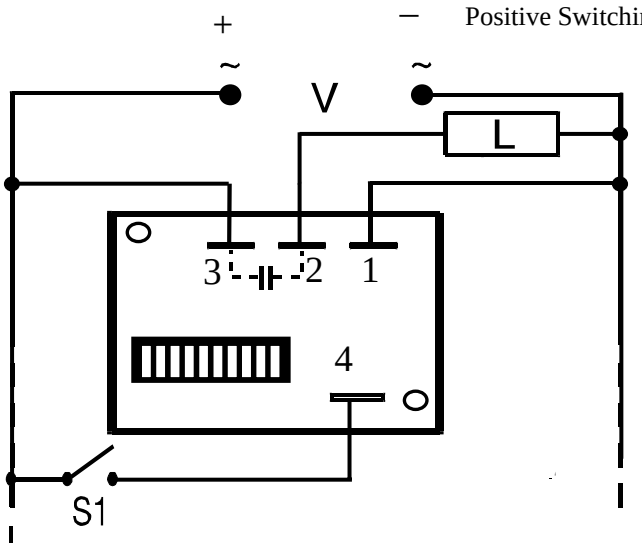
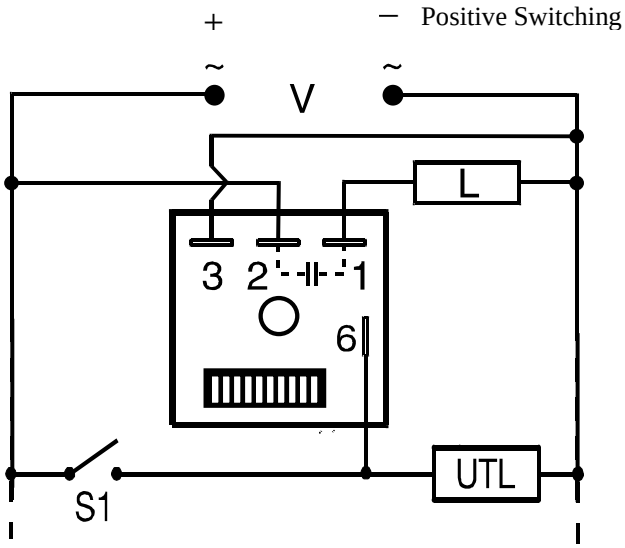
TDUS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.1 s ... 10230 s in 3 adjustable ranges		0.1 s ... 102.3 m in 3 adjustable ranges
Tolerance (Factory Calibration)	+/-10 %		≤ +/-5%
Mechanical			
Mounting	Surface mount with two #8 (M4 x 0.7) screw		Surface mount with one #10 (M5 x 0.8) screw
Package	2.5 x 3.5 x 1.22 in. (63.5 x 88.9 x 31 mm)		2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Connection	Input Voltage T3, T1; Output T2		Input Voltage T3, T2; Output T1
Environmental			
Weight	≅ 4.8 oz (136 g)		≅ 2.4 oz (68 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate Switch
RT = External Adjustment Potentiometer(s)
UTL = Optional Untimed Load
Dashed lines are internal connections

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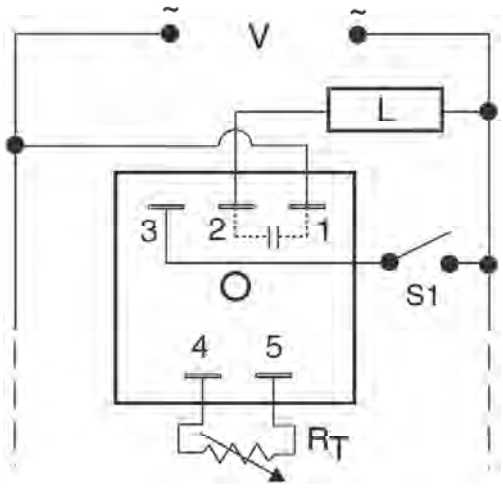
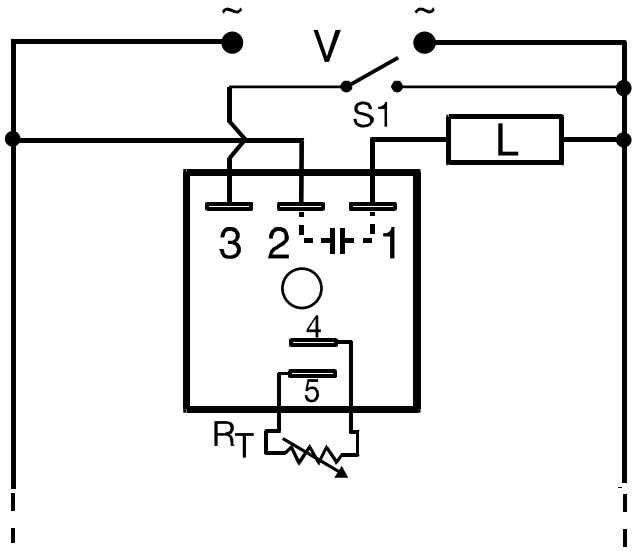
TH1 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ (see notes)
Recycle Time	≤ 100 ms		≤ 150 ms
Output			
Voltage Drop	AC≅ 2.0 V at rated current		≅ 2.5 V at rated current
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT and initiate terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connections	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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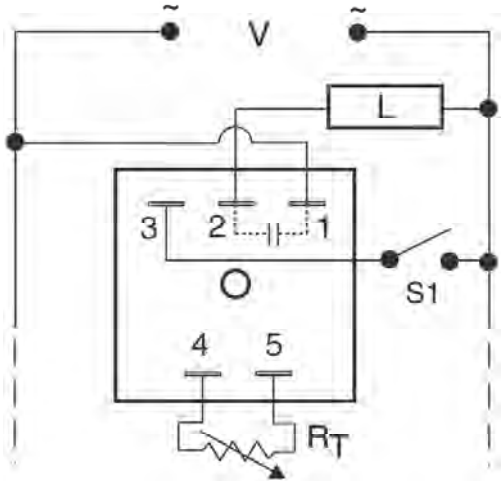
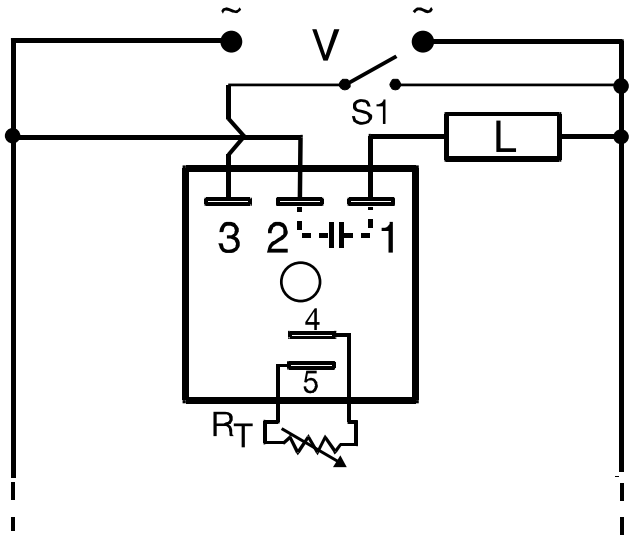
TH2 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ (see notes)
Recycle Time	≤ 100 ms		≤ 150 ms
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT and initiate terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connections	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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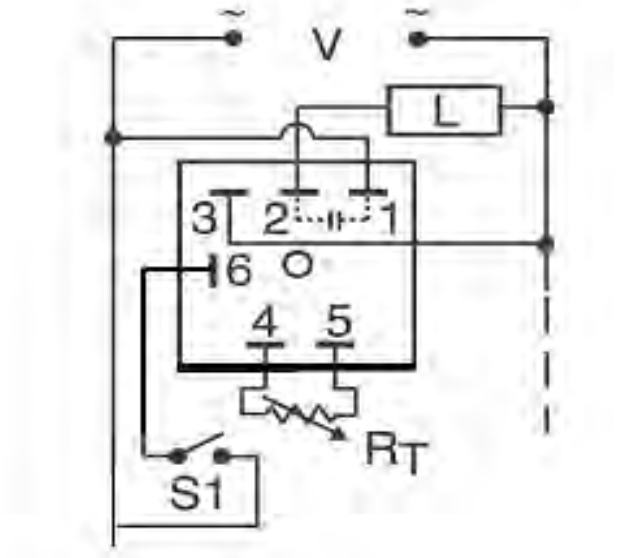
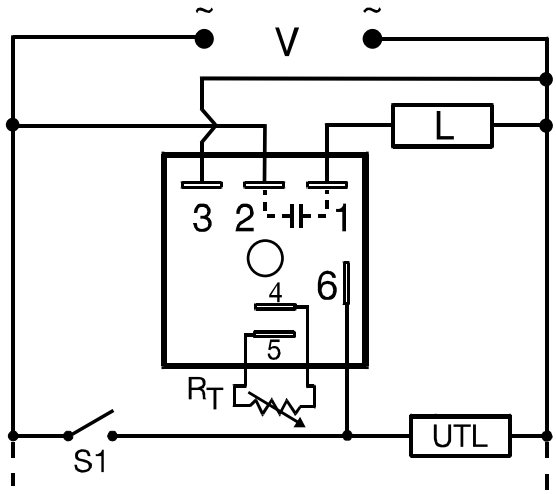
THC Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ (see notes)
Recycle Time	≤ 100 ms		≤ 150 ms
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT and initiate terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connections	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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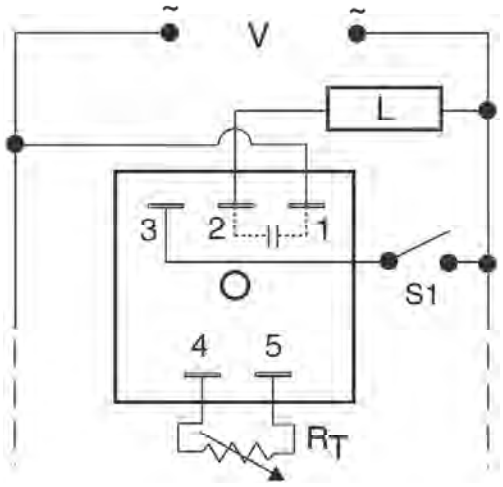
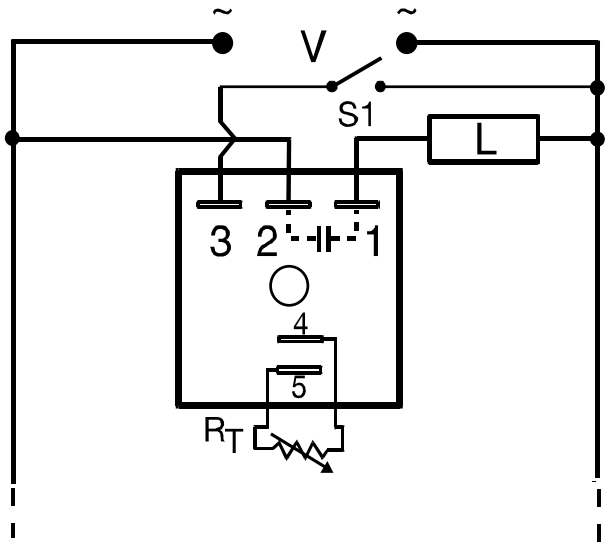
THD1 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Operational	Terminals 1,3 line input. Terminal 2 output.		Terminals 2, 3 are input; T1 is output
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Horizontally Aligned		Vertically Aligned (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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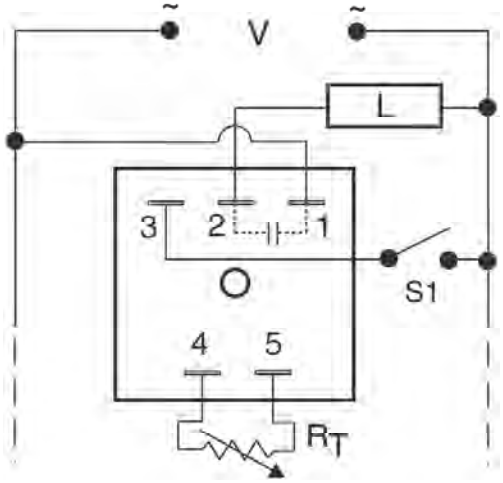
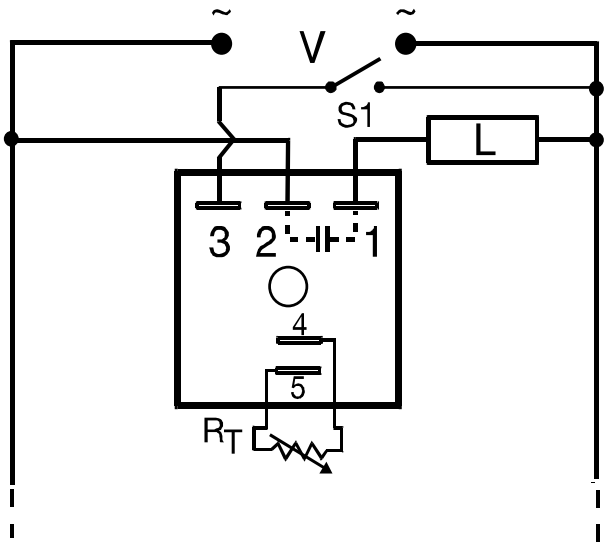
THD2 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Module		Terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connections	Terminals 1,3 line input. Terminal 2 output.		Terminals 2, 3 are input; T1 is output
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5mA @ 230VAC



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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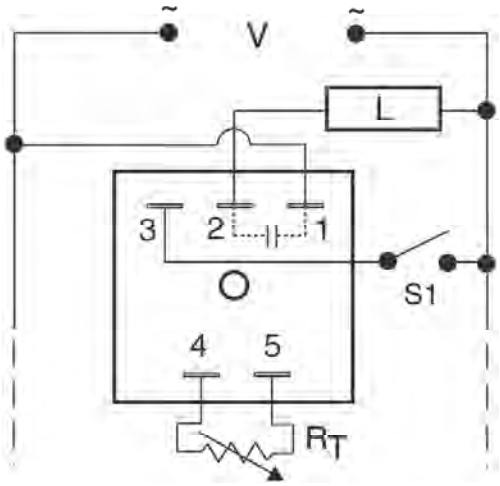
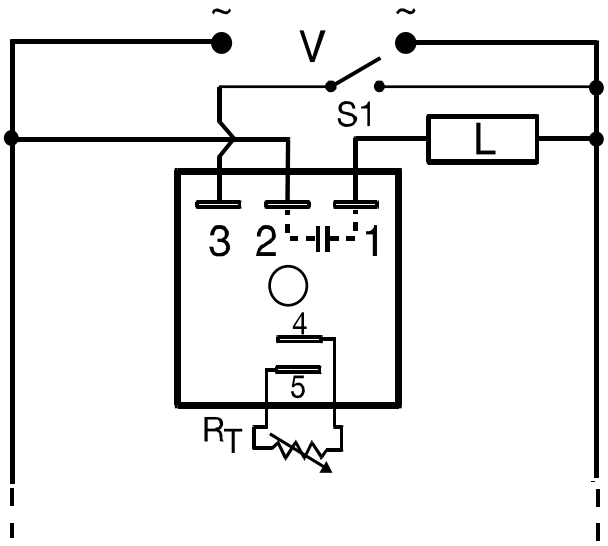
THD3 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Linearity:	≤+/–2% 10% to 100% of range		Linearity not specified.
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Modules		Terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 2, 3 are input; T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Optional Low Current Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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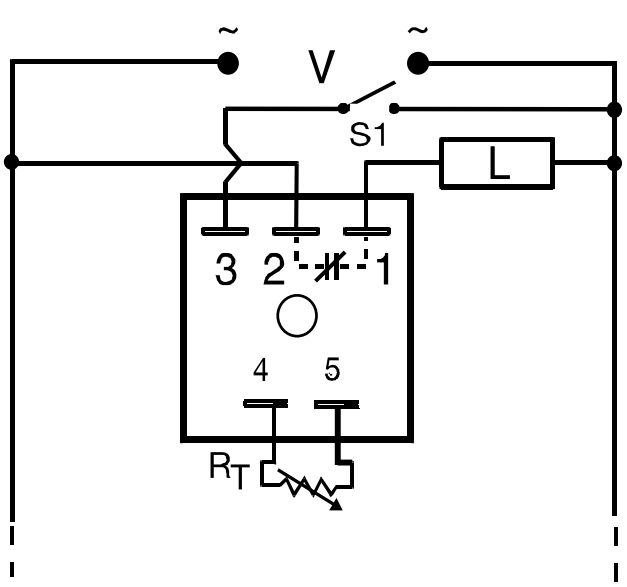
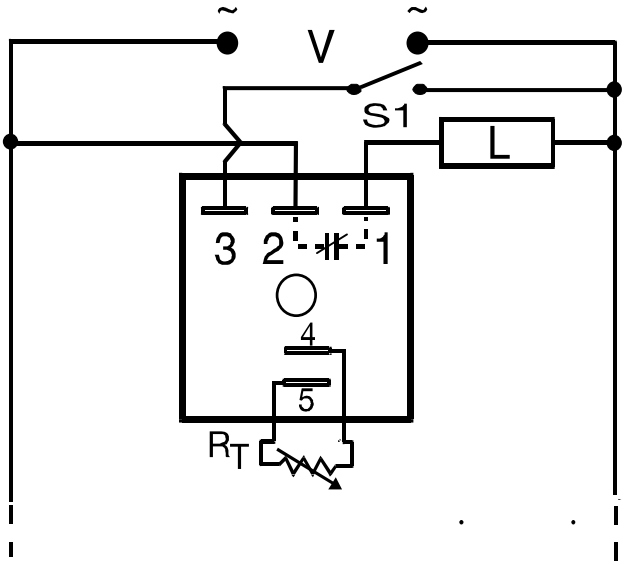
THD4 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Linearity:	≤+/–2% 10% to 100% of range		Linearity not specified.
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5mA @ 230VAC
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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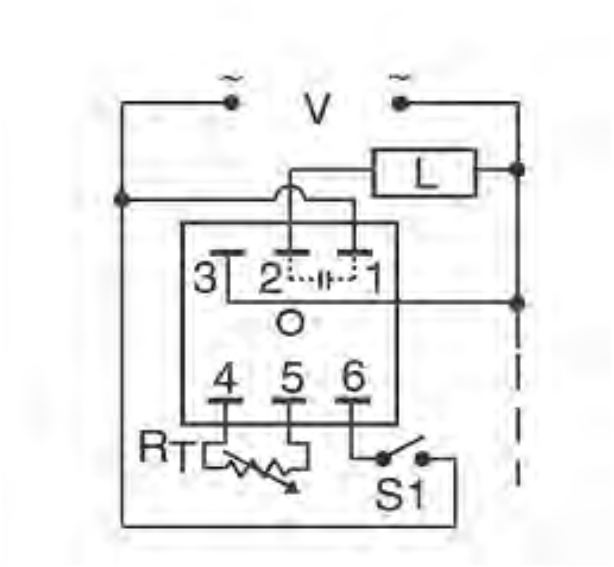
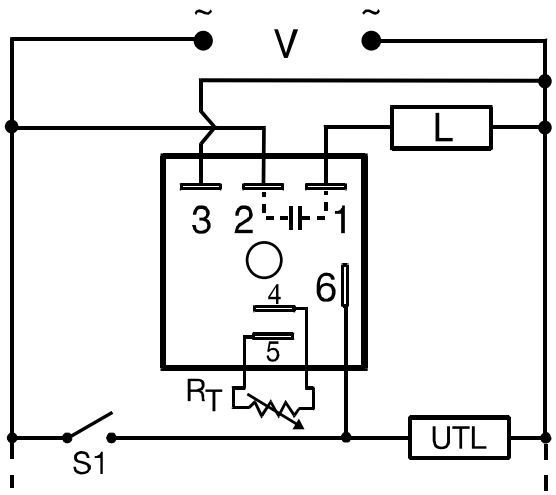
THDB Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Initiate time	50ms		20 ms
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Module		Terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 2, 3 are input; T1 is output
Package	2 x 2 x 1.30 in. (50.8 x 50.8 x 33.0 mm)		2 x 2 x **1.51 in.** (50.8 x 50.8 x **38.4mm**)
Environmental			
Weight	≅ 2.9 oz (82 g)		≅ 3.9 oz (111 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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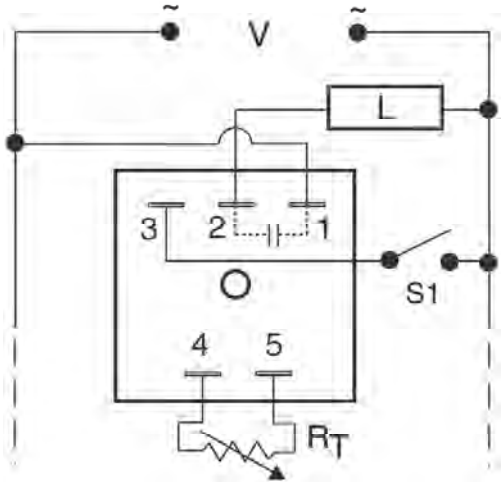
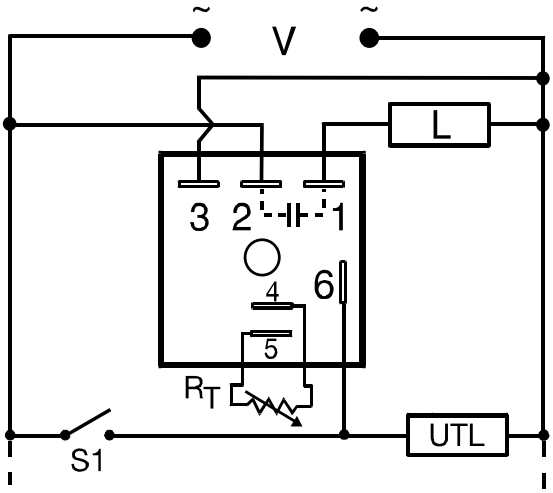
THDS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Initiate time	50ms		≤ 20 ms
Output			
Off State Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Module		Terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 2, 3 are input; T1 is output
Package	2 x 2 x 1.30 in. (50.8 x 50.8 x 33.0 mm)		2 x 2 x **1.51 in.** (50.8 x 50.8 x **38.4**mm)
Environmental			
Weight	≅ 2.9 oz (82 g)		≅ 3.9 oz (111 g)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time Delayed Load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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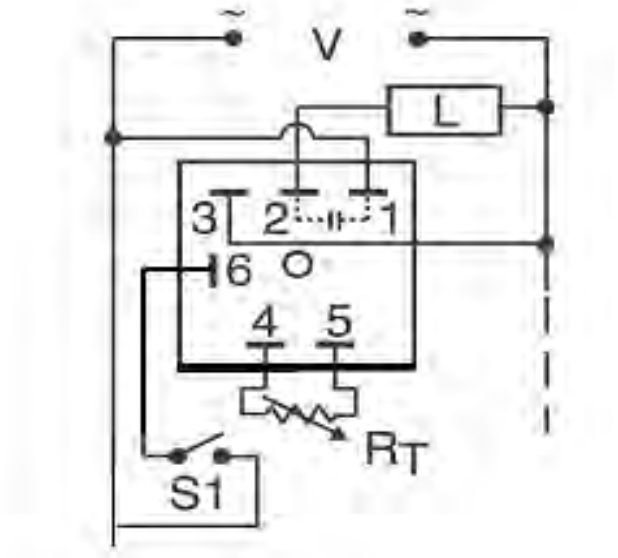
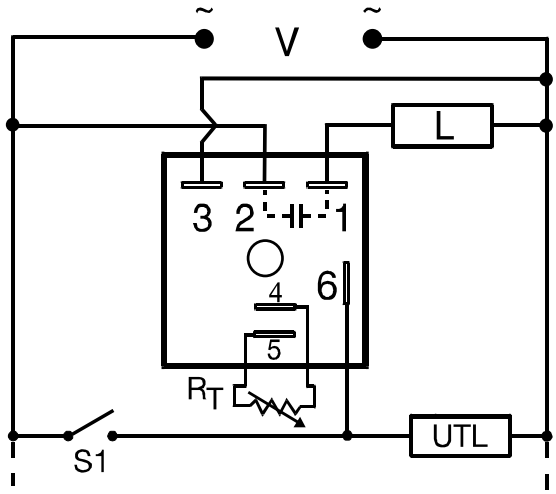
THS Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ (see notes)
Recycle Time	≤ 100 ms		≤ 150 ms
Output			
Leakage	8.6mA@230VAC, 4.5mA@120VAC, 0.9mA@24VAC		≅ 5 mA at 230 VAC
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT and initiate terminals are oriented differently. Can be ordered as onboard adjust (see notes)
Connections	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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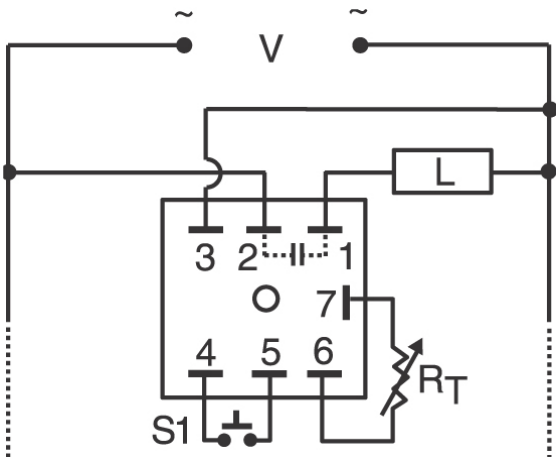
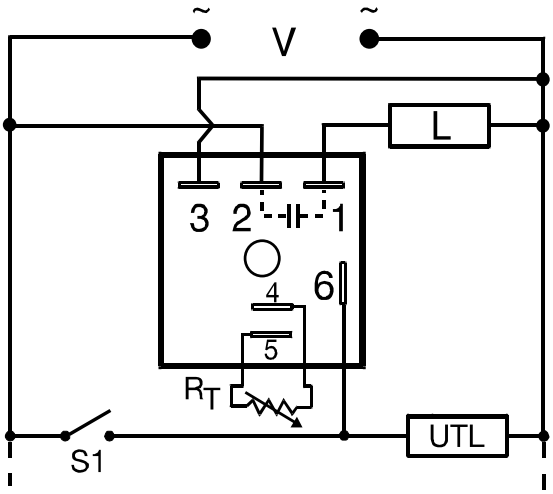
TSB Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
Operational	Terminals 4 & 5 initiate, terminals 6 & 7 for external adjust RT. Continues to time with complete loss of power.		Terminal connections are different. Terminals 4 & 5 for RT. Terminal 6 takes line voltage for initiate. Doubler terminal accessory is available to replace terminal T7. Initiate switch S1 can be connected to an optional untimed load. Time delay is reset upon loss of power.
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Module		Terminals are oriented differently. Onboard adjust is now available. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer(s)
Dashed lines are internal connections

Note: 1.) VTR plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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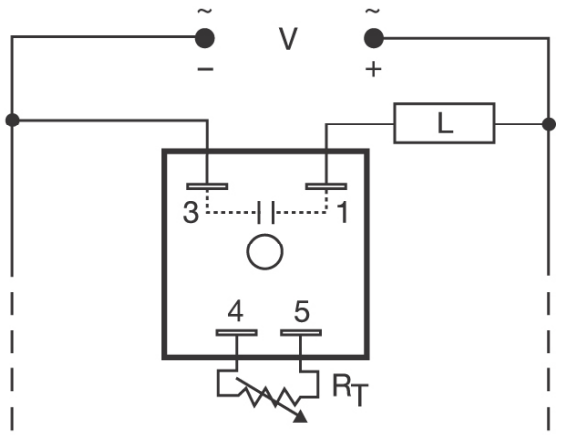
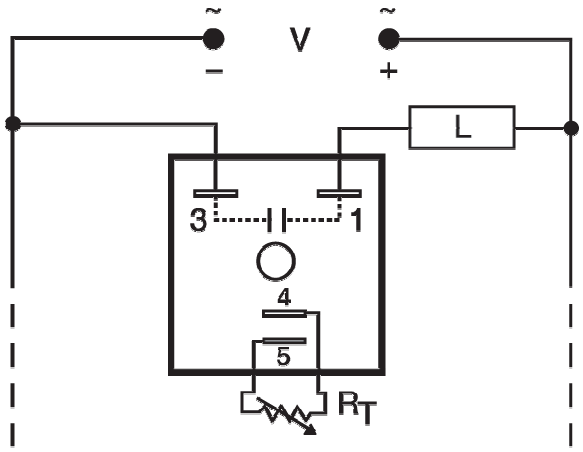
TSD1 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ...10000 m in 7 adjustable ranges or fixed		0.1 s ... 100 h m in 7 adjustable ranges or fixed
Operational	Highest time range is 100 to 10,000 minutes.		Highest time range is 1 to 100 hours.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Recycle Time	≤ 200 ms		≤ 150 ms
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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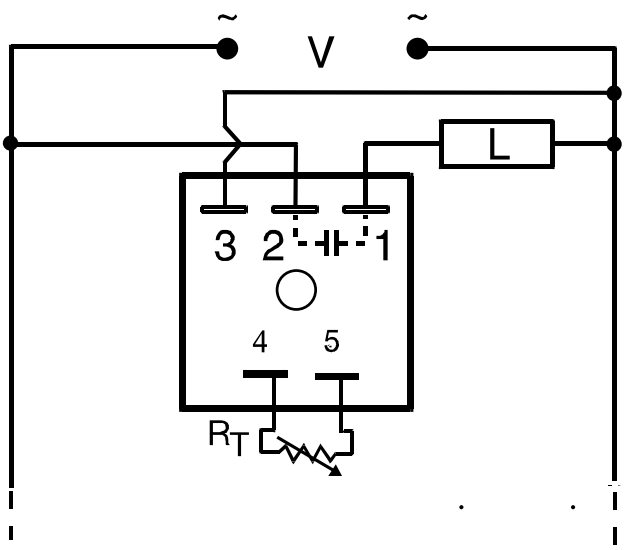
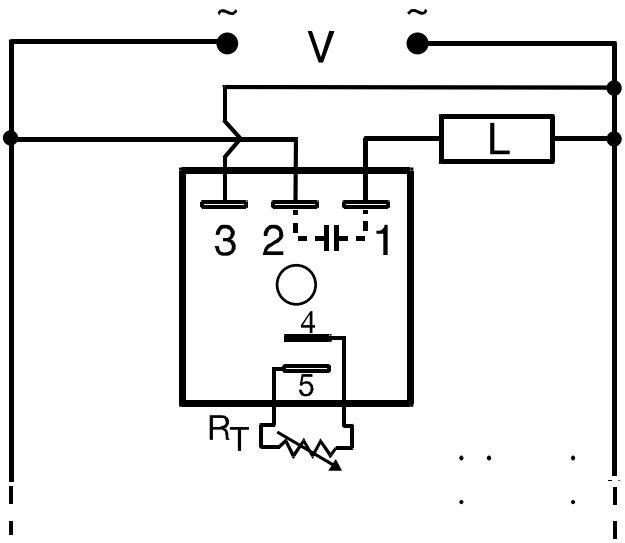
TSD2 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ...10000 m in 7 adjustable ranges or fixed		0.1 s ... 100 h m in 7 adjustable ranges or fixed
Operational	Highest time range is 100 to 10,000 minutes.		Highest time range is 1 to 100 hours.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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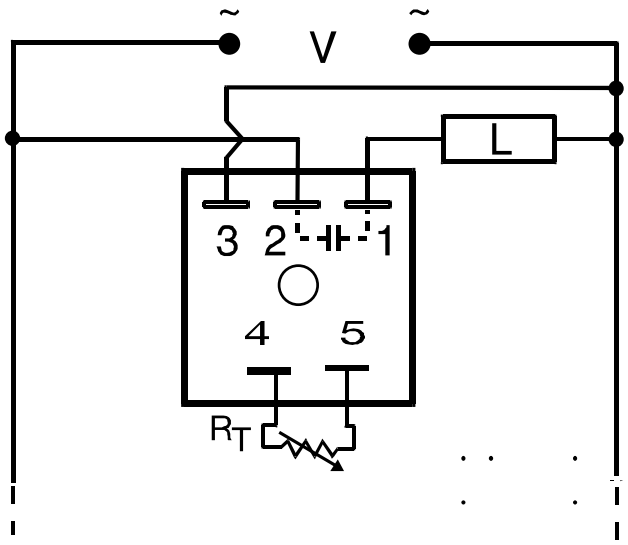
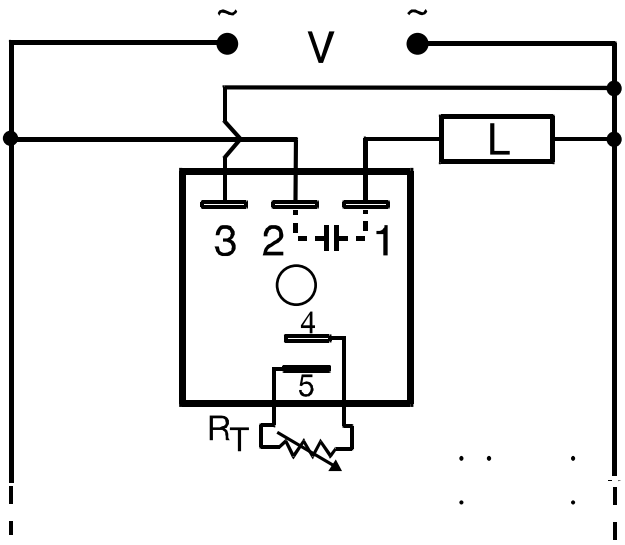
TSD3 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ...10000 m in 7 adjustable ranges or fixed		0.1 s ... 100 h m in 7 adjustable ranges or fixed
Operational	Highest time range is 100 to 10,000 minutes.		Highest time range is 1 to 100 hours.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ.(see notes)
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed delayed load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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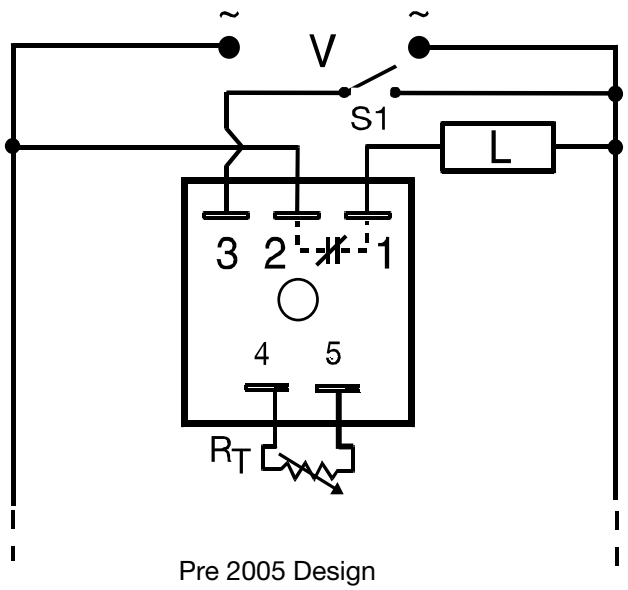
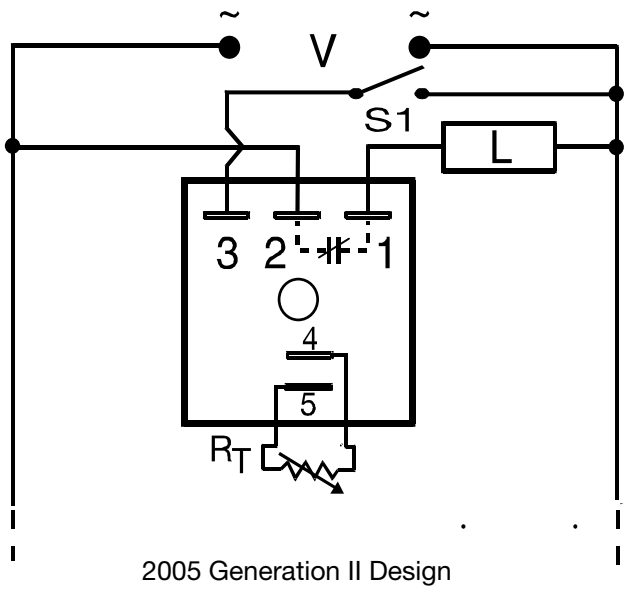
TSD4 Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ... 10000 m in 7 adjustable ranges or fixed		0.1 s ... 100 h in 7 adjustable ranges or fixed
Operational	Highest time range is 100 to 10000 minutes.		Highest time range is 1 to 100 hours.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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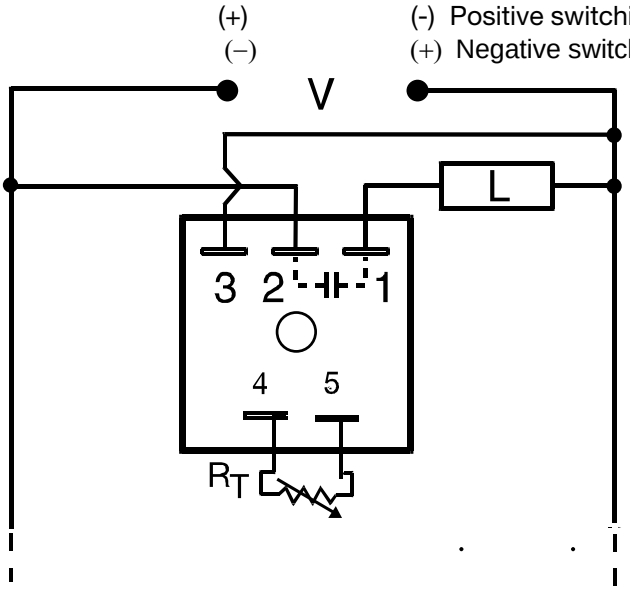
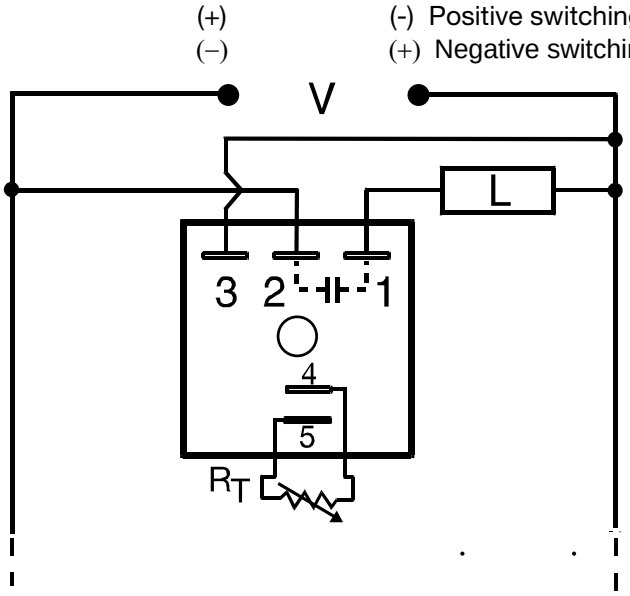
TSD6 Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Range	0.2 s ...10000 m in 7 adjustable ranges or fixed		0.1 s ... 100 h in 7 adjustable ranges or fixed
Operational	Highest time range is 100 to 10000 minutes.		Highest time range is 1 to 100 hours.
RT Values (for external adjustment)	0-1 MΩ.		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Can be ordered as onboard adjustable. (see notes)



Pre 2005 Design



2005 Generation II Design

Legend
V = Input Voltage
L = Timed Delayed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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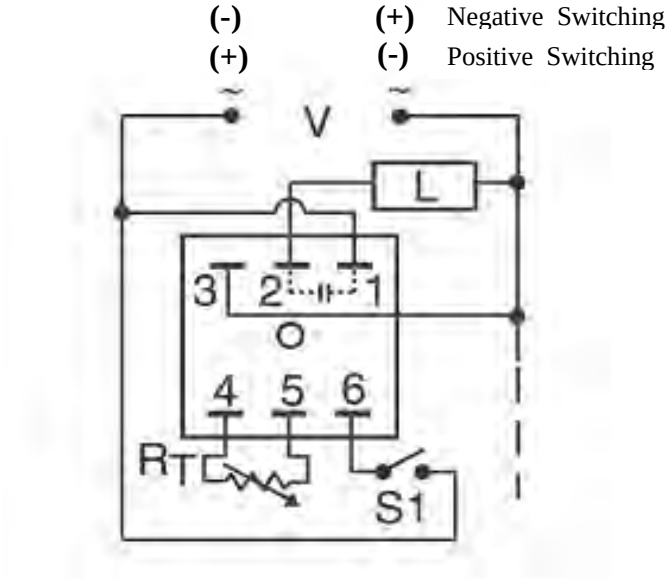
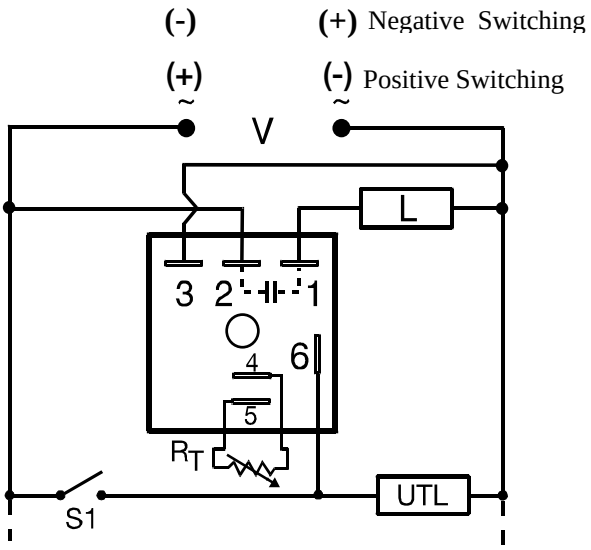
TSDB Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ. (see notes)
Input			
Voltage	24, 120, or 230 V AC; 12,24, or 120 V DC		12 or 24 V DC; 24, 120, or 230 V AC
Output			
Maximum Load Current	1 A steady state, 10 A inrush at 60°C		Same
(except) 120 V DC	0.5 A steady state, 5 A inrush		1 A steady state, 10 A inrush
Voltage Drop	AC≅ 2.5 V at 1 A, DC ≅ 1.7 V at rated current		AC≅ 2.5 V at 1 A, DC≅ 1 V at 1 A
Mechanical			
Mechanical	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Initiate terminal is in a different location. Can be ordered as onboard adjustable. (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, Terminal T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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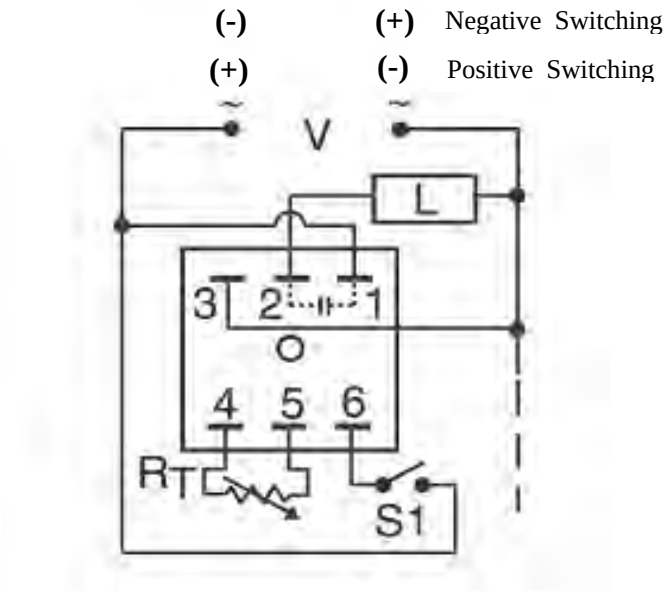
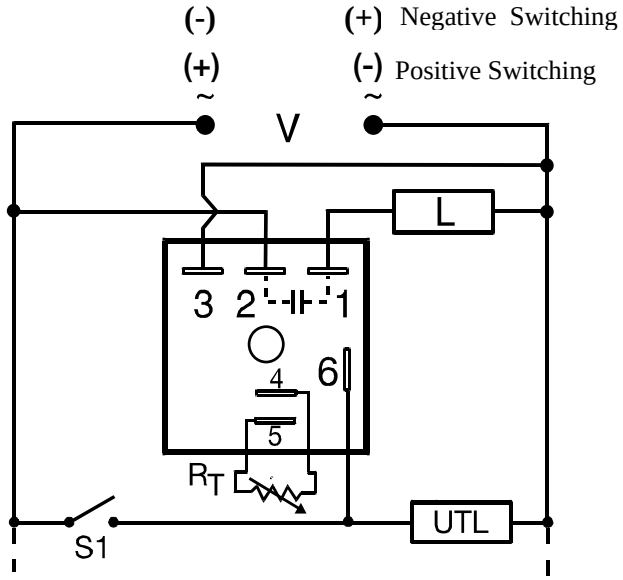
TSDS Series Part Numbers

Important Differences Between Product Designs			
Specification	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
RT Values (for external adjustment)	0-1 MΩ (ranges 0- 4). 0-3 MΩ (range 5).		0-100 KΩ. (see notes)
Output			
Voltage Drop	AC≅ 2.5 V at 1 A, DC ≅ 1.7 V at rated current		DC≅ 1 V at 1 A
Mechanical			
Mechanical	Onboard adjustment requires the use of a VTP Plug-on Module.		RT terminals are oriented differently. Initiate terminal is in a different location. Can be ordered as onboard adjustable. (see notes)
Connection	Terminals 1,3 line input. Terminal 2 output.		Terminals 3, 2 line input, Terminal T1 is output



Pre 2005 Design



2005 Generation II Design

Legend
V = Input voltage
L = Time delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTP plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

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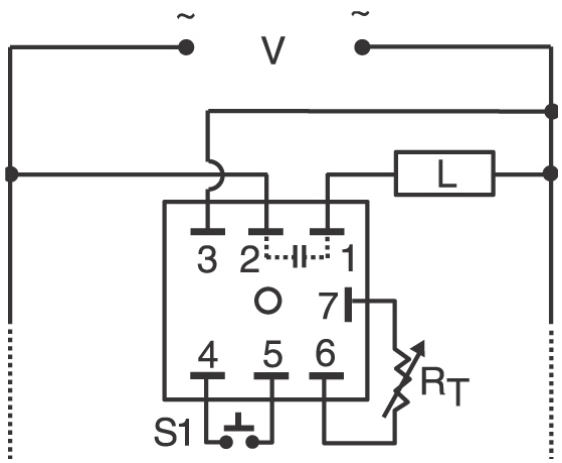
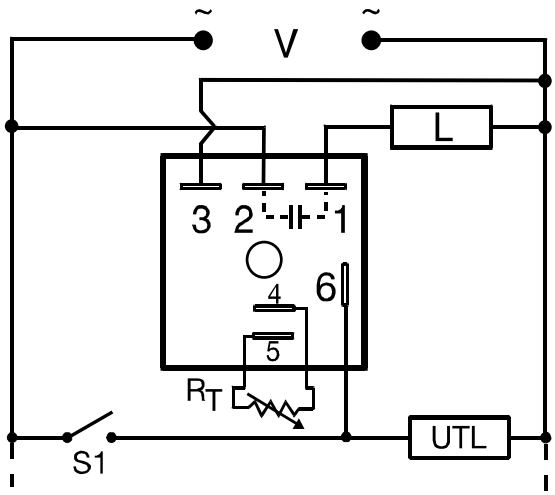
TSS Series Part Numbers

Important Differences Between Product Designs			
Specifications	**Pre 2005 Design**		**2005 Generation II Design**
Time Delay			
Tolerance (Factory Calibration)	≤ +/-10 %		≤ +/-5%
Operational	Terminals 4 & 5 initiate, terminals 6 & 7 for external adjust RT.		Terminal connections are different. Terminals 4 & 5 for RT. Terminal 6 takes line voltage for initiate. Doubler terminal accessory is available to replace terminal T7. Initiate switch S1 can be connected to an optional untimed load.
RT Values (for external adjustment)	0-3 MΩ (ranges 1, 2 & 3). 0-5 MΩ (range 4).		0-100 KΩ. (see notes)
Mechanical			
RT Terminals	Onboard adjust requires VTP Plug-on Module		Terminals are oriented differently. Onboard adjust is now available. (see notes)



Pre 2005 Design



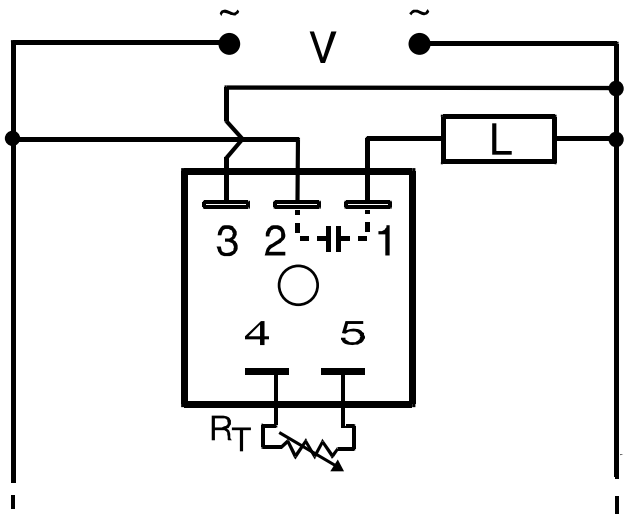
2005 Generation II Design

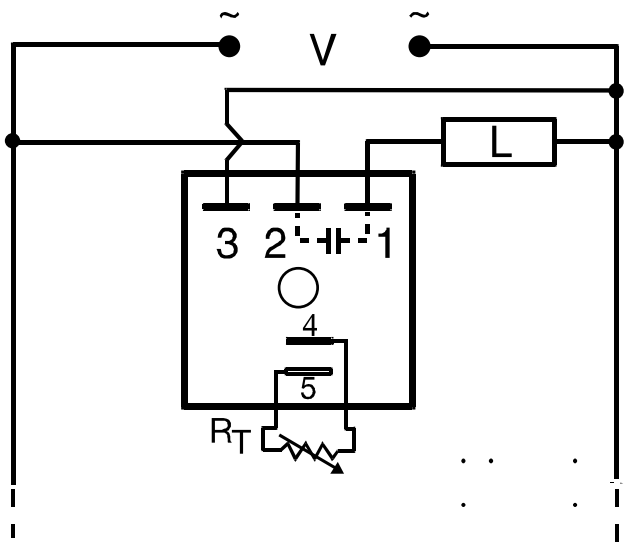
Legend
V = Input Voltage
L = Timed delayed load
S1 = Initiate switch
UTL = Optional Untimed Load
RT = External Adjustment Potentiometer
Dashed lines are internal connections

Note: 1.) VTR plug-on adjustment modules cannot be used with the 2005 Generation Design. An onboard adjustment option is available for the Generation II design.
2.) The RT Value cannot exceed 100 k ohms. If the RT exceeds 200k ohms erratic timing may occur. This is normal and not an indication of a defective unit.

TSDR

			Gen 2
Time Delay			
Range	0.1 s ... 1000 m in 6 adjustable ranges or fixed		0.1 s ... 1000 m in 6 adjustable ranges or fixed
Repeat Accuracy	+/-0.5%		Same
Tolerance (Factory Calibration)	+/-10%		Same
Recycle Time	150 ms		Same
Time Delay vs. Temperature & Voltage	+/-5%		Same
Input			
Voltage	24, 120, or 230 V AC		Same
Tolerance	+/-20%		Same
Line Frequency	50 ... 60 Hz		Same
Output			
Type	Solid state		Same
Maximum Load Current	1 A steady state, 10 A inrush at 60°C		Same
Voltage Drop	≅ 2.5 V at 1 A		Same
Protection			
Circuitry	Encapsulated		Same
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface		Same
Insulation Resistance	≥ 100 MΩ		Same
Mechanical			
Mounting	Surface mount with one #10 (M5 x 0.8) screw		Same
Package	2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)		Same
Termination	0.25 in. (6.35 mm) male quick connect terminals		Same
Environmental			
Operating Temperature	-40°C ... +60°C		Same
Storage Temperature	-40°C ... +85°C		Same
Humidity	95% relative, non-condensing		Same
Weight	≅ 2.4 oz (68 g)		Same





Notable differences			
Mechanical			RT terminals are oriented differently.
Operational	Adjustable range 0 cannot be combined with fixed times greater than 100 m.		
RT Values (for external adjustment)	0-5 MΩ.		0-100 KΩ.