

# | SERIESONE DR TIMER

## SOLID STATE RELAY TIMER



### Features

- 6 Amp AC and DC rated output
- Compact size (11mm wide)
- Dual SCR or MOSFET output
- AC/DC control
- Zero-crossing (resistive loads) or random-fire (inductive loads) AC output
- Timer status LED indicator
- UL listed, HP rated
- 8 Industry standard functions (A/At, B, C, D/Di, H/Ht, L/Li, Ac and Bw)

## PRODUCT SELECTION

| Control Voltage | AC Output  | DC Output |
|-----------------|------------|-----------|
| 12-24 VAC/DC    | DRTx24D06x | DRTx06D06 |
| 90-140 VAC/DC   | DRTx24B06x |           |
| 180-240 VAC/DC  | DRTx24A06x |           |

## SPECIFICATIONS

### Output <sup>(1)</sup>

| Description   | DRTx24                | DRTx06   |
|---|-----------------------|----------|
| Operating Voltage   | 24-280 VAC (47-440Hz) | 1-48 VDC |
| Transient Overvoltage [Vpk]   | 600                   | 60 VDC   |
| Rated Load Current <sup>(2)</sup>                                       | 6 Arms                | 6 A      |
| Rated Load Current {UL508 Motor Controller} <sup>(2)</sup><br>[Arms]    | 3.6 Arms              | -        |
| Minimum Load Current  | 150 mArms             | 2.5 mA   |
| Maximum Off-State Leakage Current @ Rated Voltage                       | 0.1 mArms             | 0.25 mA  |
| Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec] <sup>(3)</sup> | 500                   | -        |
| Maximum Surge Current (AC output 1 cycle. DC output 10ms)               | 285/300 Apk (50/60Hz) | 60 A     |
| Maximum I <sup>2</sup> t for Fusing [A <sup>2</sup> sec]                | 410/375 (50/60Hz)     | -        |

|   |                   |                   |
|---|-------------------|-------------------|
| Maximum On-State Voltage Drop @ Rated Current [Vpk]                           | 1.3               | 0.3 VDC           |
| Maximum On-State Resistance (RDS-ON) [Ohms]                                   | -                 | 0.034             |
| HP rating UL 508/IEC60947[HP (KW)]: 240 VAC                                   | 1/3 (0.24)        | -                 |
| IEC 62314 LC-A [FLA]  | 6 A               | -                 |
| IEC 62314 LC-B [Kw]   | 0.24              | -                 |
| Wire Size min/max (solid/stranded) [AWG/ IEC mm <sup>2</sup> ] <sup>(4)</sup> | 22/12 [0.33/3.31] | 22/12 [0.33/3.31] |
| Output Terminal Screw Torque [in lb (Nm)]                                     | 7.0 (0.8)         | 7.0 (0.8)         |

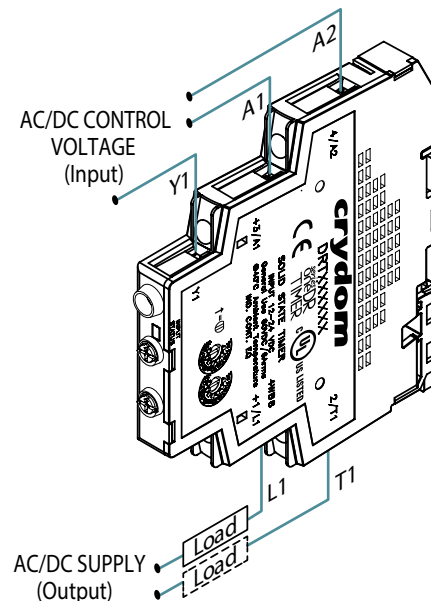
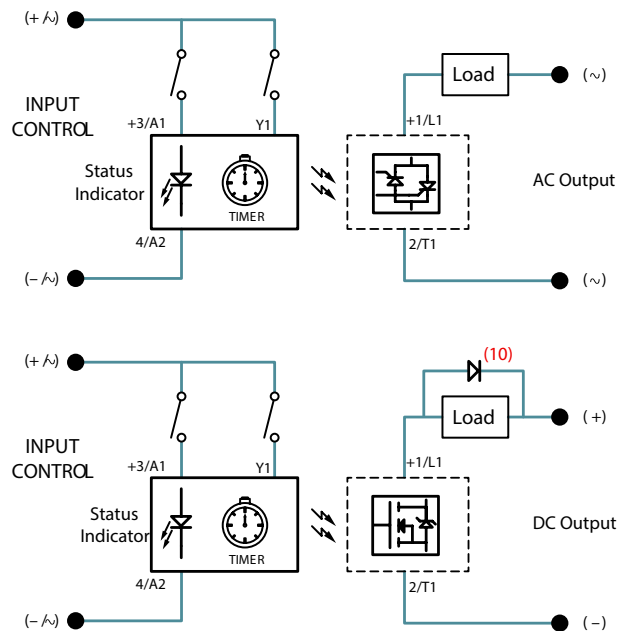
## Input <sup>(1)</sup>

| Description   | DRTxxxD06                  | DRTx24A06               | DRTx24B06               |
|---|----------------------------|-------------------------|-------------------------|
| Control Voltage Range   | 12-24 VAC/DC               | 180-240 VAC/DC          | 90-140 VAC/DC           |
| Must Turn-Off Voltage   | 1 VAC/DC                   | 20 VAC/DC               | 10 VAC/DC               |
| Min Input Current @ Min Voltage (AC/DC) (for on-state)                        | 7.6/6.3 mA <sup>(5)</sup>  | 7.2/7.1 mA              | 7.6/7.4 mA              |
| Maximum Input Current @ Maximum Voltage                                       | 12.1/9.1 mA <sup>(6)</sup> | 9.7/9.6 mA              | 12.5/12.3 mA            |
| Nominal Input Impedance   | 2K Ohms <sup>(7)</sup>     | 25K ohms                | 12K ohms                |
| Wire Size min-max (solid/stranded) [AWG/ IEC mm <sup>2</sup> ] <sup>(4)</sup> | 22-16 / 0.33-1.31          | 22-16 / 0.33-1.31       | 22-16 / 0.33-1.31       |
| LED Status Indicator (Color)  | Yes (green)                | Yes (green)             | Yes (green)             |
| Input Terminal Screw Torque [in lb (Nm)]                                      | 4.4 (0.5)                  | 4.4 (0.5)               | 4.4 (0.5)               |
| Maximum turn-on/off time  | See note <sup>(9)</sup>    | See note <sup>(9)</sup> | See note <sup>(9)</sup> |

## General <sup>(1)</sup>

| Description                                      | Parameters                  |
|--|-----------------------------|
| Dielectric Strength, Input/Output/Base (50/60Hz) | 3750 Vrms <sup>(8)</sup>    |
| Minimum Insulation Resistance (@ 500 VDC)        | 10 <sup>9</sup> Ohm         |
| Maximum Capacitance, Input/Output                | 10 pF                       |
| Ambient Operating Temperature Range              | -30 to 80 °C                |
| Ambient Storage Temperature Range                | -40 to 125 °C               |
| Weight (typical)                                 | 1.76 oz (50 g)              |
| Housing Material                                 | UL 94 V0 Self-extinguishing |
| Terminal Finish                                  | Sulfamate Nickel            |
| Humidity   | 5 - 85% Non condensing      |
| RoHS Exemption #'s                               | 7(a), 7(c)-I                |

# WIRING DIAGRAMS



# TIMER SETTINGS & RANGES

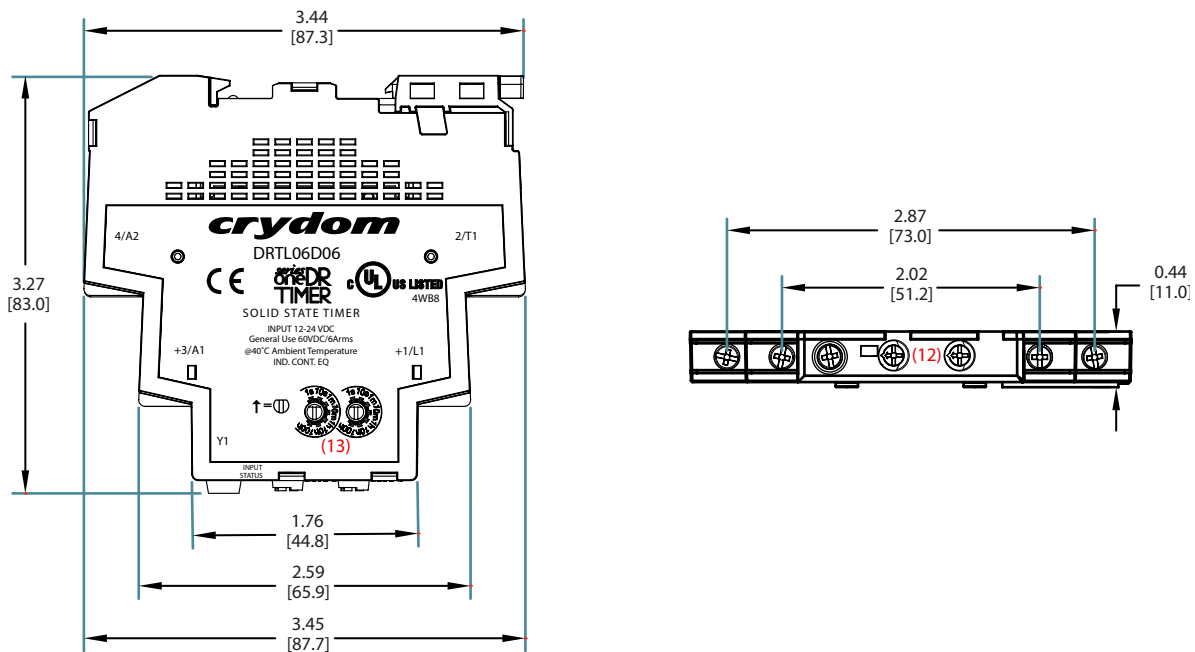
| Timer Settings   |                       |                     |
|--|-----------------------|---------------------|
| Timing Function  | Identification        |                     |
|  | Side View             | Front View          |
| <b>U</b><br>Multifunction<br>[A/At, H/Ht, D/Di, B, C, Ac, Bw]  | <br>Range    Function | <br>Fine Adjustment |
| <b>L</b><br>Repeat Cycle   | <br>T on    T off     | <br>Fine Adjustment |
| <b>A</b><br>Delay on Make<br><b>H</b><br>Interval<br><b>B</b><br>Single Shot<br><b>C</b><br>Delay on Break | <br>Range             | <br>Fine Adjustment |

| Timing Ranges <sup>(11)</sup> |                  |
|-------------------------------|------------------|
| Identification                | Timing Range     |
| 1s                            | 0.1 s to 1 s     |
| 10 s                          | 1 s to 10 s      |
| 1 min                         | 0.1 min to 1 min |
| 10 min                        | 1 min to 10 min  |
| 1 h                           | 0.1 h to 1 h     |
| 10 h                          | 1 h to 10 h      |
| 100 h                         | 10 h to 100 h    |

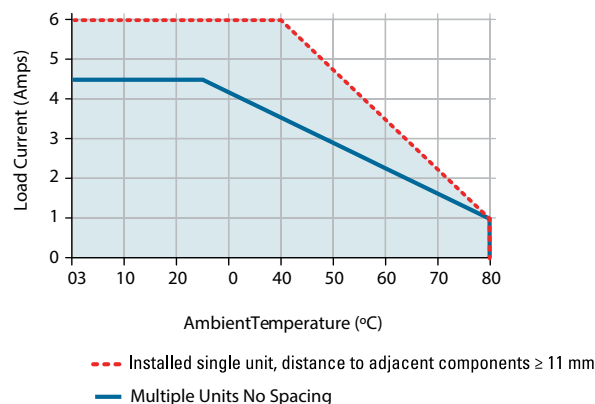
## GENERAL NOTES

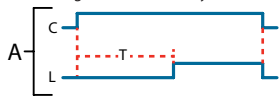
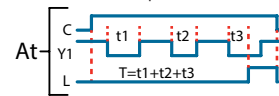
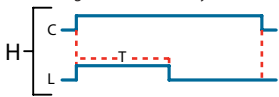
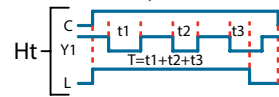
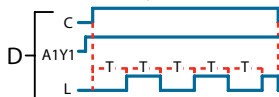
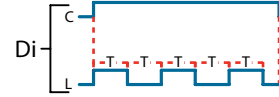
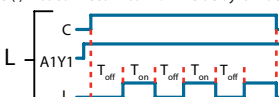
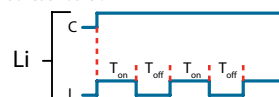
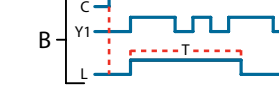
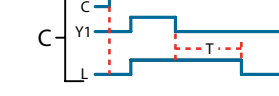
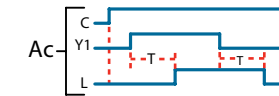
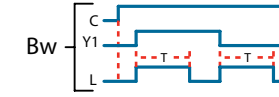
- (1) All parameters at 25°C unless otherwise specified.
- (2) See derating curves.
- (3) Off-State dv/dt test method per EIA/NARM standard RD-443, paragraph 13.11.1
- (4) For UL Listing, must use wire rated @ 75°C.
- (5) For DC output model minimum current spec is 15.7/12.4ma (AC/DC).
- (6) For DC output model maximum current spec is 27.9/20.3ma (AC/DC).
- (7) For DC output mode, spec is 1K.
- (8) For DC output model, spec is 2500V.
- (9) Activation Time = 65ms / Deactivation Time = 100 ms.
- (10) Inductive loads must be diode suppressed to prevent damage to output.
- (11) Timing accuracy  $\pm 10\%$ . Additional functions and time ranges are also available, please contact your local authorized Crydom Distributor, Representative or Sensata Sales office and request information about our custom products.
- (12) Do not apply a push force greater than 9.8N(2.2lbf) and Stop torque 4Ncm.
- (13) Do not apply a push/pull force greater than 5N(1.12lbf) and torque 20Nm.

## MECHANICAL SPECIFICATIONS



## THERMAL DERATE INFORMATION



| LED Status by Function                      |                 |        |           |              |                            |  |
|---|-----------------|--------|-----------|--------------|----------------------------|--|
| Function                                    | Control Voltage | Y1     | Timing    | Output State | LED Status                 | Notes  |
| <b>A/At</b><br>Delay On Make                | Off             | ◆      | Off       | Off          | Off                        | <p>At function is identical to the A function except when Y1 is connected to A1 timing is paused. When Y1 is removed timing resumes until relay times out. To reset timer remove control power.</p>   |
|   | On              | ◆      | On        | Off          | Long Flashes               |  |
|   | On              | ◆      | Timed Out | On           | On                         |  |
| <b>H/Ht</b><br>Interval                     | Off             | ◆      | Off       | Off          | Off                        | <p>Ht function is identical to the H function except when Y1 is connected to A1 timing is paused. When Y1 is removed timing resumes until relay times out. To reset timer remove control power.</p>   |
|   | On              | ◆      | On        | On           | Long Flashes               |  |
|   | On              | ◆      | Timed Out | Off          | Short Flashes              |  |
| <b>D/Di</b><br>Repeat Cycle                 | Off             | ◆      | Off       | Off          | Off                        | <p>To select between on time (Di) first or off time (D) first Y1 is connected. Default is On time (Di) first, for Off time (D) first connect Y1. Equal On/Off time.</p>                               |
|   | On              | ◆      | On        | On/Off       | Long Flashes/Short Flashes |  |
| <b>L/Li</b><br>Repeat Cycle                 | Off             | ◆      | Off       | Off          | Off                        | <p>To select between on time (Li) first or off time (L) first Y1 is connected. Default is On time (Li) first, for Off time (L) first connect Y1 to A1. Time delay is independent of each other.</p>   |
|   | On              | ◆      | On        | On/Off       | Long Flashes/Short Flashes |  |
| <b>B</b><br>Single Shot                     | Off             | Open   | Off       | Off          | Off                        | <p>Y1 switch can be momentary or maintained to A1. To reset timer after relay has timed out Y1 has to be opened.</p>    |
|   | On              | Open   | Off       | Off          | Short Flashes              |  |
|   | On              | Closed | On        | On           | Long Flashes               |  |
|   | On              | Closed | Timed Out | Off          | Short Flashes              |  |
| <b>C</b><br>Delay On Break                  | Off             | Open   | Off       | Off          | Off                        | <p>Y1 switch to A1 must be momentary for timing to begin. If during timing Y1 is closed again the time delay is reset and will begin again once Y1 is removed. Once timed out timer is reset and ready for the next cycle.</p>   |
|   | On              | Open   | Off       | Off          | Short Flashes              |  |
|   | On              | Closed | Off       | On           | On                         |  |
|   | On              | Open   | On        | On           | Long Flashes               |  |
|   | On              | Open   | Timed Out | Off          | Short Flashes              |  |
| <b>Ac</b><br>Delay On Make / Delay On Break | Off             | Open   | Off       | Off          | Off                        | <p>To start Delay on Make (A) timing connect Y1 to A1 and maintain until LED is on Solid then to start Delay on Break (C) portion remove Y1 until relay times out. Removing Y1 During (A) portion or Connecting Y1 during (C) portion will reset time for that portion.</p>           |
|   | On              | Open   | Off       | Off          | Short Flashes              |  |
|   | On              | Closed | On        | Off          | Long Flashes               |  |
|   | On              | Closed | Timed Out | On           | On                         |  |
|   | On              | Open   | On        | On           | Long Flashes               |  |
|   | On              | Open   | Timed Out | Off          | Short Flashes              |  |
| <b>Bw</b>                                   | Off             | Open   | Off       | Off          | Off                        | <p>Y1 to A1 switch can be momentary or maintained. If maintained until relay has timed out removing it will start timing again. If momentary and timers has timed out reapplying 1 will start timing again.</p>   |
|   | On              | Open   | Off       | Off          | Short Flashes              |  |
|   | On              | Closed | On        | On           | Long Flashes               |  |
|   | On              | Closed | Timed Out | Off          | Short Flashes              |  |

## ORDERING OPTIONS

Example : DRTA24D06R

|   | DRT | A | 24 | D | 06 | R |
|---|-----|---|----|---|----|---|
| <b>Series</b>   |     |   |    |   |    |   |
| <b>DRT</b>  |     |   |    |   |    |   |
| <b>Timing Function</b>  |     |   |    |   |    |   |
| <b>A:</b> A/At, Delay on Make<br><b>B:</b> Single Shot<br><b>C:</b> Delay on Break<br><b>H:</b> H/Ht, Interval<br><b>L:</b> L/Li, Repeat Cycle<br><b>U:</b> Multifunction (A/At, H/Ht, D/Di, B, C, Ac & Bw) |     |   |    |   |    |   |
| <b>Operating Voltage</b>  |     |   |    |   |    |   |
| <b>06:</b> 60 VDC<br><b>24:</b> 280 VAC   |     |   |    |   |    |   |
| <b>Control Voltage</b>  |     |   |    |   |    |   |
| <b>D:</b> 12-24 VAC/DC<br><b>A:</b> 180-240 VAC/DC (AC Output Only)<br><b>B:</b> 90-140 VAC/DC (AC Output Only)   |     |   |    |   |    |   |
| <b>Rated Load Current</b>   |     |   |    |   |    |   |
| <b>06:</b> 6 Amps   |     |   |    |   |    |   |
| <b>Switching Type</b>   |     |   |    |   |    |   |
| (24 suffix only)<br><b>Blank:</b> Zero Voltage Turn-On<br><b>R:</b> Random Turn-On  |     |   |    |   |    |   |

— Required for valid part number  
 □ For options only and not required for valid part number

## AGENCY APPROVALS & CERTIFICATIONS

Designed in accordance with the requirements of IEC 62314  
 IEC 60068-2-6 : Vibration 0.35mm and 0.75mm Amplitutde over 10-55 Hz  
 IEC 60068-2-27 : Shock 15G/11ms  
 IEC 61000-4-2 : Electrostatic Discharge Level 3  
 IEC 61000-4-4 : Electrically Fast Transients Level 3  
 IEC 61000-4-5 : Electrical Surges Level 3



E116949



## WARNINGS



### RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

**Failure to follow these instructions can result in serious injury, or equipment damage.**



### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

**Failure to follow these instructions will result in death or serious injury.**

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