

### High Current Relay 150



#### Features

- Limiting continuous current 150 A at 85°C
- Current switching ability up to 300 A
- Suitable for voltage levels up to 42 V
- Heat, moisture and vibration resistant
- Minimal contact resistance
- Dustproof and sealed versions

#### Typical Applications

- Engine control
- Glow Plug
- Heated front screen
- Preheating systems (e.g. for diesel engines, catalytic converters)
- Switches for loading ramps

Please contact Tyco Electronics for relay application support.



132\_305

#### Design

- ELV/RoHS/WEEE compliant
- Dustproof; protection class IP 54 to IEC 529 (EN 60 529)
- Sealed: sealing in accordance with IEC 68; immersion cleanable: protection class IP67 to IEC 529 (EN 60 529)

#### Weight

Approx. 220 g (7.8 oz.)

#### Nominal Voltage

12 V, 24 V or 42 V

#### Terminals

- Quick connect terminals (coil)
- Screw terminals (load)

#### Conditions

All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:  
23°C ambient temperature,  
20 - 50% RH, 998.9 ±33.9 hPa.

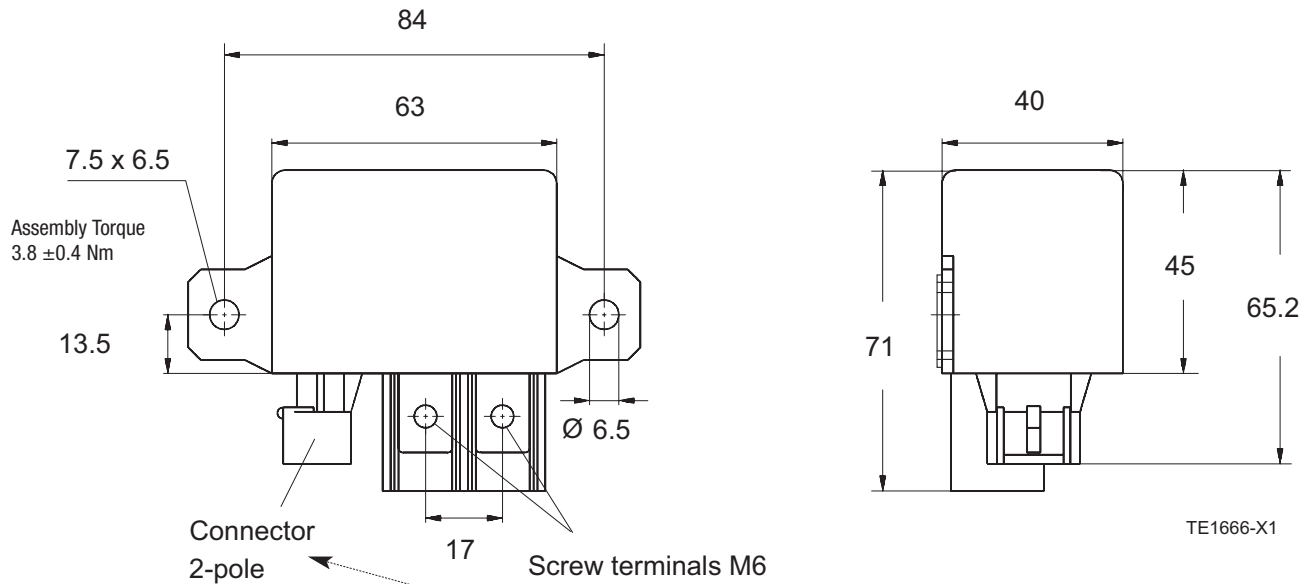
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

#### Disclaimer

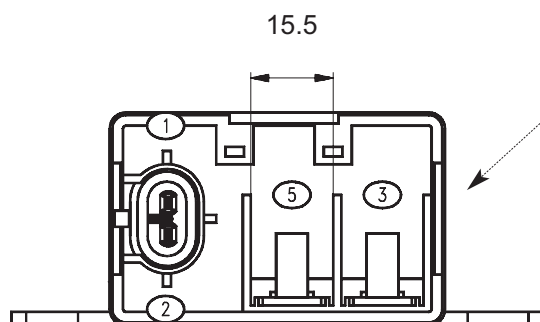
All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete our questionnaire and to request our technical service. Any responsibility for the application of the product remains with the customer only. All specifications are subject to change without notification. All rights of Tyco Electronics are reserved.

## High Current Relay 150

### Dimensional Drawing



### View of the Terminals (bottom view)



TE1667-61

### Connector Information AMP SUPERSEAL 1.5 SERIES

|                        |          |
|------------------------|----------|
| Coil side              |          |
| - Receptacle connector | 282080-1 |
| - Single wire seal     | 281934-2 |
| - Contact              | 282110-1 |
| Load side              |          |
| - Thimble              | 710026-0 |

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#### Contact Data

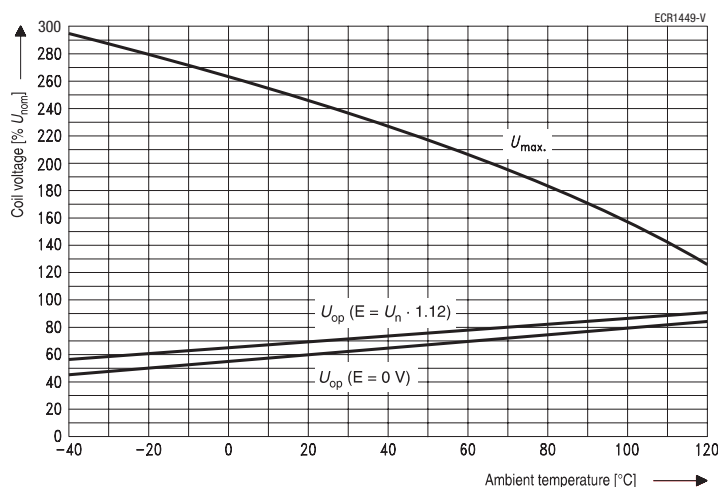
| Contact configuration                                                          | 1 Make contact/<br>1 Form A                                                       |                                                      | 1 Double make contact/<br>1 Form X                                                  |                                                    |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------|
| Circuit symbol<br>(see also Pin Assignment)                                    |  |                                                      |  |                                                    |
| Rated voltage                                                                  | 12 V                                                                              | 12 V                                                 | 24 V                                                                                | 24 V                                               |
| Rated current                                                                  |                                                                                   |                                                      |                                                                                     |                                                    |
| Cable 16 mm <sup>2</sup>                                                       | 130 A                                                                             | 120 A                                                | 120 A                                                                               | 100 A                                              |
| Cable 25 mm <sup>2</sup>                                                       | 150 A                                                                             | 130 A                                                | 135 A                                                                               | 120 A                                              |
| Limiting continuous current                                                    |                                                                                   |                                                      |                                                                                     |                                                    |
| Cable 16 mm <sup>2</sup> 23°C                                                  | 150 A                                                                             | 130 A                                                | 140 A                                                                               | 120 A                                              |
| 85°C                                                                           | 130 A                                                                             | 120 A                                                | 120 A                                                                               | 100 A                                              |
| 125°C                                                                          | 70 A                                                                              | 60 A                                                 | 60 A                                                                                | 50 A                                               |
| Limiting continuous current                                                    |                                                                                   |                                                      |                                                                                     |                                                    |
| Cable 25 mm <sup>2</sup> 23°C                                                  | 200 A                                                                             | 180 A                                                | 180 A                                                                               | 170 A                                              |
| 85°C                                                                           | 150 A                                                                             | 130 A                                                | 135 A                                                                               | 120 A                                              |
| 125°C                                                                          | 80 A                                                                              | 70 A                                                 | 70 A                                                                                | 60 A                                               |
| Contact material                                                               | AgNi0.15                                                                          | AgSnO <sub>2</sub>                                   | AgNi0.15                                                                            | AgSnO <sub>2</sub>                                 |
| Max. switching current <sup>1)</sup>                                           |                                                                                   |                                                      |                                                                                     |                                                    |
| On <sup>2)</sup>                                                               | 150 A                                                                             | 300 A                                                | 150 A                                                                               | 300 A                                              |
| Off                                                                            | 150 A                                                                             | 300 A                                                | 150 A                                                                               | 300 A                                              |
| Min. recommended load <sup>3)</sup>                                            | 1 A at 5 V                                                                        |                                                      |                                                                                     |                                                    |
| Voltage drop at 100 A (initial)                                                | Typ. 50 mV,<br>100 mV max.                                                        | Typ. 70 mV,<br>200 mV max.                           | Typ. 70 mV,<br>200 mV max.                                                          | Typ. 70 mV,<br>400 mV max.                         |
| Mechanical endurance (without load)                                            | > 10 <sup>7</sup> operations                                                      |                                                      |                                                                                     |                                                    |
| Electrical endurance at 23°C; 1 s: on, 5 s: off<br>(example of resistive load) | > 3 x 10 <sup>4</sup><br>operations<br>150 A, 13.5 V                              | > 5 x 10 <sup>4</sup><br>operations<br>300 A, 13.5 V | > 1 x 10 <sup>4</sup><br>operations<br>150 A, 27 V                                  | > 5 x 10 <sup>4</sup><br>operations<br>200 A, 27 V |
| Max switching rate at nominal load                                             | 6 operations per minute (0.1 Hz)                                                  |                                                      |                                                                                     |                                                    |

<sup>1)</sup> The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.

<sup>2)</sup> For a load current duration of maximum 3 s for a make/break ratio of 1:10.

<sup>3)</sup> See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at <http://relays.tycoelectronics.com/appnotes/>

#### Operating Voltage Range

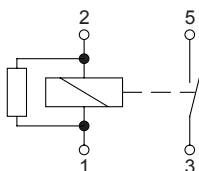


Does not take into account  
the temperature rise due to  
the contact current  
E = pre-energization

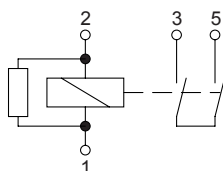
### High Current Relay 150

#### Circuit Diagram

AR  
1 Make contact/1 Form A  
with Resistor



XR  
1 Double make contact/1 Form X  
with Resistor



#### Coil Data

|                                                                        |                                      |
|------------------------------------------------------------------------|--------------------------------------|
| Available for nominal voltages                                         | 12 V / 24 V (other coils on request) |
| Nominal power consumption of the unsuppressed coil at nominal voltage  | 3.3 W                                |
| Nominal power consumption at nominal voltage with suppression resistor | 4.1 W                                |
| Test voltage winding/contact                                           | 1000 VAC <sub>rms</sub>              |
| Maximum ambient temperature range                                      | -40 to +125°C                        |
| Operate time at nominal voltage                                        | Typ. 25 ms                           |
| Release time at nominal voltage <sup>1)</sup>                          | Typ. 8 ms                            |

<sup>1)</sup> For unsuppressed relay coil.

#### Note:

A low resistive suppression device in parallel to the relay coil increases the release time and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

#### Mechanical Data

|                                               |                                                                           |
|-----------------------------------------------|---------------------------------------------------------------------------|
| Cover retention                               |                                                                           |
| Axial force                                   | 500 N                                                                     |
| Pull force                                    | 500 N                                                                     |
| Push force                                    | 500 N                                                                     |
| Terminals                                     |                                                                           |
| Pull force                                    | 150 N                                                                     |
| Push force                                    | 150 N                                                                     |
| Resistance to bending, force applied to front | 20 N <sup>1)</sup>                                                        |
| Resistance to bending, force applied to side  | 20 N <sup>1)</sup>                                                        |
| Max. torsion of screw bolts                   | 5 Nm                                                                      |
| Enclosures                                    | Protects relay from dust. For use in passenger compartment or enclosures. |
| Dust cover                                    | Please refer to the Application Notes in this catalog.                    |

<sup>1)</sup> Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

### High Current Relay 150

#### Environmental Conditions

|                            |                                                                                                                                                                    |                                                                                                                  |                             |                                                                                                           |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------|
| Temperature range, storage | Refer to <i>Storage</i> in the "Glossary" catalog page 23 or <a href="http://relays.tycoelectronics.com/appnotes/">http://relays.tycoelectronics.com/appnotes/</a> |                                                                                                                  |                             |                                                                                                           |
| Test                       | Relevant standard                                                                                                                                                  | Testing as per                                                                                                   | Dimension                   | Comments                                                                                                  |
| Temperature cycling        | IEC 68-2-14                                                                                                                                                        | Nb                                                                                                               | 10 cycles                   | -40/+85°C (5°C per min)                                                                                   |
| Dry heat                   | IEC 68-2-2                                                                                                                                                         | Ba                                                                                                               | 500 h                       | 100°C                                                                                                     |
| Damp heat<br>constant      | IEC 68-2-3                                                                                                                                                         | Ca                                                                                                               | 500 h                       | 40°C, 93% RH                                                                                              |
| Industrial atmosphere      | IEC 68-2-60                                                                                                                                                        | Method 4                                                                                                         | 21 days                     | 25°C                                                                                                      |
| Corrosive gas              | IEC 68-2-42<br>IEC 68-2-43                                                                                                                                         | 10 ±2 cm <sup>3</sup> /m <sup>3</sup> SO <sub>2</sub><br>1 ±0.3 cm <sup>3</sup> /m <sup>3</sup> H <sub>2</sub> S | 10 days<br>10 days          |                                                                                                           |
| Vibration resistance       | IEC 68-2-6 (sine sweep)                                                                                                                                            |                                                                                                                  | 10 - 200 Hz<br>5 g          | No change in the switching state > 10 µs<br>Valid for NC contacts, NO contact values significantly higher |
| Shock resistance           | IEC 68-2-27 (half sine form single pulses)                                                                                                                         |                                                                                                                  | 6 ms<br>min. 20 g           |                                                                                                           |
|                            |                                                                                                                                                                    |                                                                                                                  |                             |                                                                                                           |
| Load dump                  | ISO 7637-1 (12 V)<br>ISO 7637-2 (24 V)                                                                                                                             | Test pulse 5<br>Test pulse 5                                                                                     | Vs = +86.5 V<br>Vs = +200 V |                                                                                                           |
| Drop test                  | Capable of meeting specifications after 1.0 m (3.28 ft) drop onto concrete                                                                                         |                                                                                                                  |                             |                                                                                                           |
| Flammability               | UL94-HB or better (meets FMVSS 302) <sup>1)</sup>                                                                                                                  |                                                                                                                  |                             |                                                                                                           |

<sup>1)</sup> FMVSS: Federal Motor Vehicle Safety Standard.

#### Ordering Information

| Part Numbers<br>(see table below for coil data) |             | Nominal<br>Voltage | Circuit/Contact<br>Arrangement | Contact<br>Material | Protection Class according to<br>IEC 529 (EN 60 529 ) |
|-------------------------------------------------|-------------|--------------------|--------------------------------|---------------------|-------------------------------------------------------|
| Relay Description                               | Part Number |                    |                                |                     |                                                       |
| 12 V                                            |             |                    |                                |                     |                                                       |
| V23132-A2001-A100                               | 1393315-1   | 12 V               | AR/1 Form A                    | AgNi0.15            | IP54                                                  |
| V23132-A2001-A200                               | 1393315-2   | 12 V               | AR/1 Form A                    | AgSnO <sub>2</sub>  | IP54                                                  |
| V23132-A2001-B100                               | 1393315-3   | 12 V               | AR/1 Form A                    | AgNi0.15            | IP67                                                  |
| V23132-A2001-B200                               | 1416010-1   | 12 V               | AR/1 Form A                    | AgSnO <sub>2</sub>  | IP67                                                  |
| 24 V                                            |             |                    |                                |                     |                                                       |
| V23132-B2002-A100                               | 1393315-8   | 24 V               | XR/1 Form X                    | AgNi0.15            | IP54                                                  |
| V23132-B2002-A200                               | 1393315-9   | 24 V               | XR/1 Form X                    | AgSnO <sub>2</sub>  | IP54                                                  |
| V23132-B2002-B100                               | 1-1414428-0 | 24 V               | XR/1 Form X                    | AgNi0.15            | IP67                                                  |
| V23132-B2002-B200                               | 1-1393315-1 | 24 V               | XR/1 Form X                    | AgSnO <sub>2</sub>  | IP67                                                  |

#### Coil Versions

| Coil Data for HCR 150 | Rated Coil Voltage (V) | Coil Resistance                     |                                  | Must Operate Voltage (V) | Must Release Voltage (V) | Allowable Overdrive <sup>1)</sup> Voltage (V) |         |
|-----------------------|------------------------|-------------------------------------|----------------------------------|--------------------------|--------------------------|-----------------------------------------------|---------|
|                       |                        | without suppression device ±10% (Ω) | with suppression device ±10% (Ω) |                          |                          | at 23°C                                       | at 85°C |
| V23132-***001-****    | 12                     | 44                                  | 37                               | 7.2                      | 1.2                      | 27                                            | 20      |
| V23132-***002-****    | 24                     | 178                                 | 141                              | 14.4                     | 2.4                      | 54                                            | 38      |

<sup>1)</sup> Allowable overdrive is stated with no load applied and minimum coil resistance.

#### Standard Delivery Packs (orders in multiples of delivery pack)

HCR 150: 10 pieces