



ETL165F-40 • Electro Thermal Link®

The Electro Thermal Link [ETL®] is a multi-purpose, dual response fusible link / release device. The fusible link portion functions identically to an ordinary fusible link. *Ambient* temperature nearing the rated temperature causes the low temperature alloy to melt, allowing the link halves to separate. The ETL165F-40 can also be actuated by an electrical impulse. A 0.2 ampere *minimum* trip current applied for a 50 millisecond *minimum* duration starts an *irreversible* chemical reaction. This reaction melts the fusible alloy and causes link separation in 6 to 10 seconds at standard temperature. The ETL® was designed to substantially improve life safety and minimize property damage by providing both *ordinary fusible link response times in the event of fire* along with the capacity to *instantaneously* respond to any type of fire, smoke, infrared, light detector (etc.) capable of supplying a short duration current impulse. The design allows for ETL® substitution or retrofitting of ordinary fusible links and other actuators or release devices installed in: dampers; doors; roof hatches; towers; extinguishing systems, and inert chemical or gas release systems. An inherent major advantage of the ETL® over other products is the *dually redundant* dormancy – it draws no current and stays inertly in place until actuated, then functions and separates in seconds. The ETL® is designed and intended FOR INDOOR (or sheltered) DRY USE ONLY. The ETL® is an Underwriters Laboratories listed device manufactured to exacting quality standards.

Technical Description

The ETL® is a UL® listed fusible link / release device with a 165°F (74°C) nominal temperature rating and a 2 - 40 pound (1.866 - 18 KG) continuous – continuous tensile End pull weight rating at standard temperature. It contains a bridge wire initiated pyrotechnic heating element requiring a fifty (50) millisecond minimum duration all fire current of 200 mill amperes (0.2 ampere) within a voltage range of 24 VDC (NEC Class 2, low voltage). In addition, the link has additional circuits that allow an Alarm System listed under UL® 864 to supervise (monitor) the product for broken wire, shorts or grounds in the wires feeding the power to this product. The fusible link portion is a nominal 1" (25.4 mm) X 3 1/8 (79.4 mm) X 1/2" (12.7 mm) envelope with 1/2" (12.7mm) square reinforced openings at the ends to allow attachment of "S" hooks, straps, or other attachments. A perforated two piece electrical enclosure houses an 11/16" (17.3 mm) diameter x 1 1/4" (31.7 mm) protruding cylinder containing the pyrotechnic heating element and attachment wires (UL® 1018 Wire Class 1). It provides a means to attach a standard EMT conduit connector adapter to 3/8" (9.5 mm) or 1/2" (12.7 mm) flexible conduit, thereby meeting any requirements such as National Electric Code specifications for 'Wiring in Ducts, Plenums, and Other Air Handling Spaces.' The ETL® has a forty (40) pound maximum continuous tensile strength at standard temperature, which can only be achieved in installations where the link is subject to equal linear tension from both ends.

Electrical Characteristics

The ETL® is rated 24 VDC, 200mA. It contains a bridge wire initiated pyrotechnic heating element. The 14u bridge wire has a nominal resistance of **10 to 30 Ohms**. The bridge wire serves as the ignition source for the chemical heater core. The design of the bridge wire has been optimized, requiring minimal energy to function while remaining safe to handle, transport and install.

Care should be exercised in handling and installing the ETL® with particular attention to the following electrical characteristics: Avoid proximity to electrostatic discharge or heavy induction fields. Keep the lead wires twisted or otherwise shunted unless performing resistance checks or until making final connection. Keep the ETL® inside the packaging box when not in use, protect it from unwanted accidental exposure to stray current such as radio transmission fields; electric motor induction fields; electrical coils, and static discharge.

The ETL® integrates a relay that isolates the bridge wire in the thermal element. When an alarm system "end of the line" device is wired to the link input and the link and is terminated to a Listed UL 864 Fire Alarm Control unit compatible with this device the wiring should be supervised. When wired, the listed control unit continuously monitors the link circuit, per the wiring diagram. Even minimal continuous input current through the bridge wire will cause long term "baking" of the internal chemical core, and allow ingress for an undesired current at levels sufficient to cause unwanted actuation of the device.

It is possible for the chemical heat core to leave a conductive path after functioning. Some residual resistance could cause the core to continue to draw a minimal current from a supply transformer or battery. If this is an installation consideration or problem it will be necessary to fuse the system upstream to accommodate it. Assure that any such fusing will not prevent any ETL® in the system from having less than the minimum trip current (0.2 ampere minimum) available.

Installation Instructions

Refer to wiring diagram for electrical connections.

The ETL® is typically mounted on dampers in ductwork; roof hatches; fire doors, and for other uses where retrofit or replacement of standard fusible links of forty pound rating (or less) is desired. It is typically attached mechanically by placing metal straps or “S” hooks through the square link half opening to provide a “floating” linear force tension of 2 Lb minimum, 40 Lb maximum continuous load end pull. The ETL® has a 40 Lb maximum continuous tensile strength end pull, at standard temperature (which can only be achieved in installation where the link is subject to equal linear tension). If radial, side or “peel” forces are encountered (which is typical in most smoke damper installations) the weight may have to be reduced, or the force vectors re-established. For this reason it is not permissible to bolt or fix one end of the ETL® in most installations. Even if the installation is gravity release (i.e. 40 lbs. hanging straight down from the bottom of the link) it is recommended to allow the link to “float” using “S” hooks, straps or other attachments.

As the ETL® is designed to be mounted on dampers in ductwork, the wiring is subject to the National Electrical Code Para. 300-22 “Wiring in Ducts, Plenums, and other Air Handling Spaces,” which requires the use of metallic protection of all such wiring. Accordingly, the ETL® attachment end is the same diameter as ½” EMT tubing permitting standard UL® listed 3/8” or ½” flex to ½” EMT connectors to be used together with the appropriate flexible metal conduit to completely encase the wires within the duct as illustrated in Fig 1. Note that the flexible conduit should run in a substantially level, straight line with a minimum length and slack, to either side of the duct, assuring it cannot be trapped under the damper blades upon closure. Always mount the junction box outside the duct on the top or either side at a point at or above the level of the ETL® when mounted on the damper. Never use rigid or EMT to electrically directly connect to the link as this may interfere with the mechanical operation.

The ETL® is typically wired by connecting it to a UL® 864 Fire Alarm Control. The types of systems typically utilize an “end of line” device. This must be wired in accordance with the alarm system instructions. In normal conditions the alarm system sends a reversed low voltage signal to the link. The end of line device allows only a small amount of current through the circuit. The alarm system uses this signal to supervise the circuit; the voltage is not large enough to operate the link. During an alarm condition the alarm system uses a forward biased voltage to the power lead. The end of line device allows this current to pass through the circuit. Actuating supply current is typically provided by an NEC class 2 low voltage 24 DC source capable of delivering a minimum of 0.2 ampere (200 mill amperes) minimum for 50 milliseconds minimum duration to each unit wired to the system. The product is intended to be connected to power limited circuits.

ETL® Storage

The ETL® should be stored in indoor or sheltered dry areas where the ambient temperature should not exceed 100°F. The ETL® should remain in its box while in storage to prevent it from accidental actuation in extreme induction fields.

Limited Warranty

GLOBE TECHNOLOGIES warrants that our products are free from defects as to workmanship and materials, when used in accordance with their approval listings and the restrictions and cautions that apply. Our obligation under this warranty shall be limited to replacing, at our plant, any parts thereof which shall, within one year after delivery to the ORIGINAL PURCHASER, be demonstrated to be defective. In order to accomplish the demonstration of defectiveness, the parts claimed to be defective must be sent by the original purchaser to Globe Technologies, 1109 W. Cedar, Standish, MI 48658. Globe shall not be liable under any terms of this warranty if the defective part is not submitted to Globe for inspection. This warranty does not extend to consequential damages of any nature. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS. No person, firm or corporation is authorized to assume for us any other liability in

connection with the sale of our products.

