

SAFE LHD Cable™

Reference Guide 2.1

This reference guide provides general information for the installation, servicing, and maintaining of a SafeCable Linear Heat Detection System. For more detail, please refer to the SafeCable Installation Manual.



Only authorized technicians with current certification numbers and employed by an authorized distributor of Safe Fire Detection are permitted to install, service and maintain SafeCable Linear Heat Detection Systems.

Technical support will not be given to any person who has not successfully completed the SafeCable Technical Training Module and does not possess a current certificate number.

AUTHORIZED	
Authorized Distributor _____	
Technician _____	
Certificate Number _____	Date _____
Authorization is valid for two years from the completion date. This certificate is only valid while the holder is employed by the authorized distributor listed.	

SAFE LHD Cable™

Reference Guide

Table of Contents:

1. Using this Guide	3
1.1 Important Precautions	3
2. What is SafeCable?	5
3. Typical Installation	6
4. J/ELR Box Installation	8
5. Installation Sag Chart	8
6. Splicing SafeCable.....	9
7. Special Installations	10
7.1 GuideWire Installation	10
7.2 L-Brackets	10
7.3 Surface Mounting	10
8. Mounting Accessories	11
9. Connecting to a Panel	12
9.1 Distance Locating	12
9.2 2 Wire (Class "B") Installation	12
9.3 4 Wire (Class "A") Installation	12
10. Commissioning / Service	13
10.1 2 Wire (Class "B")	13
10.2 4 Wire (Class "A")	13
10.3 Recording Loop Resistance	14
10.4 Heat Test (If Required)	14
10.5 Optional System Test Switch	14
11. Return Procedures (RMA)	15



Note:

Any repairs performed outside the scope of this SafeCable Installation, Service, and Maintenance Guide are the sole responsibility of the distributor and technician. Safe Fire Detection does not authorize sub-component repairs of any kind.

Signature of Authorized Technician

Safe Fire Detection, Inc. • 5915 Stockbridge Dr. • Monroe, NC 28110
Tel.: 704-821-7920 • Fax: 704-821-4327 • Email: staff@safefiredetection.com



1. Using this Guide



Please read before continuing

This Installation, Service, and Maintenance Guide, along with the appropriate manual, and completion of the SafeCable Training Module, will provide you with all the information needed to install, commission, service, and maintain a SafeCable Linear Heat Detection system.

- SafeCable Linear Heat Detection systems must be installed and tested to meet all NFPA, Federal, State, and Local regulations and requirements.
- This guide may only be used by those individuals who have successfully completed the SafeCable Training Module, and have passed the certification test.
- Technical phone assistance will only be given to those individuals who have a current and valid training certificate number from Safe Fire Detection, Inc.
- Any repairs, maintenance or testing performed outside the scope of this Guide are the sole responsibility of the distributor and technician. Safe Fire Detection, Inc. neither authorizes, nor supplies parts for use in any servicing or repair by unauthorized distributors.
- Possession of this Guide does not constitute certification from Safe Fire Detection, Inc.
- Information in this guide may change without notice.

1.1 Important Precautions

As with any linear heat detection cable, certain precautions must be taken before, during, and after the installation. Please note the following precautions prior to installation.

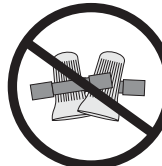
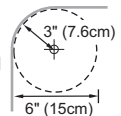


Releasing either end of unspooled wire may cause it to recoil.



Do not exceed the maximum bend radius of 3" (7.6cm).

3" (7.6cm) Radius Bend

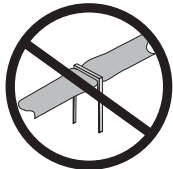


Only use mounting fasteners and connectors that are approved by SAFE Fire Detection.

Important Precautions: (cont.)



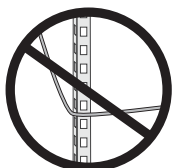
Do not store SafeCable in ambient temperatures near the alarm point of the detection wire.



Do not use staples of any kind for securing SafeCable



Do not lay SafeCable on the ground where it may be accidentally damaged.



Do not pull SafeCable across sharp objects or corners. This may damage the outer jacket.



Do not paint SafeCable



Prior to performing any testing, please read the following safety precautions.

- Be sure to get authorization prior to any testing.
- Inform personnel and alarm company prior to any testing.
- Be sure suppression systems have been deactivated prior to any testing and all safety precautions have been taken.
- Always use every safety procedure. Use caution when igniting materials for system testing and have a fire extinguisher on hand.
- After completing the testing and making sure the system is not in alarm, notify personnel, reactivate the suppression systems, and bring all systems back online.
- The testing procedures contained herein may not be suitable for all installations or hazards.
- SafeCable connected to a suppression system must not have an ELR Test Switch installed.

2. What is SafeLHD?



SAFE LHD Cable

SafeCable is available in five different temperatures: 155°, 172°, 190°, 220°, and 365°. Each come standard with a PVC coating (365° is Nylon coated) but can also have an additional layer of, UV-Resistant Nylon harsh environments or Polypropylene for difficult chemical environments. In addition to these options all SafeCables can come with an additional stainless steel support "Guidewire" for longer distances.

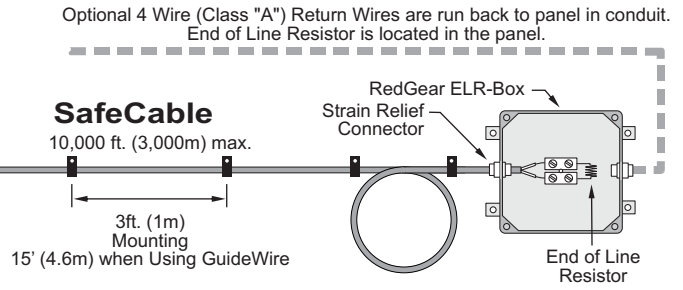
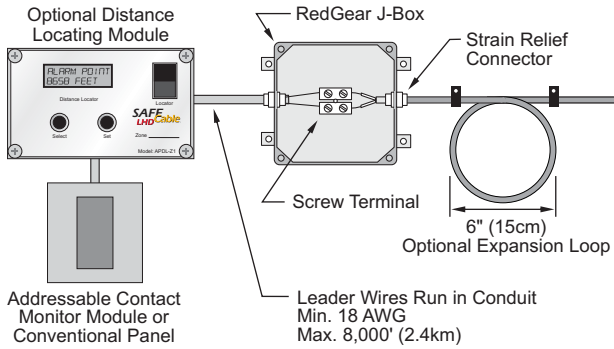
SafeCable is easy to design, install, operate and maintain Linear Heat Detection cable. Up to 10,000 feet (3,000m) of SafeCable can be used on every zone of any approved conventional panel or contact monitor module. And can be used on any existing approved linear heat detection panel.

You begin at any new or existing approved fire alarm control panel. If required, the optional distance locating module may be connected directly to the fire alarm panel. Or as required directly to the addressable module near the panel or at another convenient location. If required, leader wires are then connected to the distance locating module and run in conduit to the hazard zone where they are connected to the beginning of the SafeCable zone.

ANEMA 4(IP 65) J-Box is used at the beginning of each zone where the leader wires (if used) are connected to the SafeCable using a Screw Terminal. The SafeCable exits the J-Box through a moisture proof Strain Relief Connector which seals the enclosure. Immediately after exiting the J-Box, an optional 6 inch (15cm) loop can be made in the cable to allow for expansion and contraction. Mounting hardware which allows the SafeCable to freely expand and contract is used to secure the cable every 3ft. (1m). Several types of mounting hardware is available for various hazards.

SafeCable may be spaced a maximum of 35 feet (10.7 meters) between runs and half the listed spacing from any sidewall. If it is an integral part of a pre-action sprinkler system, it may be strapped to the sprinkler pipe using double loop mounting straps. with the cable located on the bottom of the pipe. At the end of each zone, another optional expansion/contraction loop can be made before entering the ELR-Box through another Strain Relief Connector. The End of Line Resistor, supplied by your panel manufacturer, is then connected to the SafeCable using another Screw Terminal. It's that easy.

3. Typical Installation



Note: This guide is for reference only and shows a typical linear heat detection system based on our design and installation manual which must be used for all design, installation, service and maintenance. Only authorized personnel with a valid certification number may design, install, maintain, service or repair SafeCable LHD.

1 Review your design to determine the location of the panel or addressable modules, and the length of detection cable needed for each zone and location of J/ELR-Boxes.

2 Check shipment to be sure you have all the needed equipment.

3 Reel off the length of wire needed for a zone, onto a smaller zone spool.

Small zone spools are easy to handle and can be passed through bar joists.

4 Note: You may slide mounting accessories onto the SafeCable for an easier installation.

Eyebolts and insulating grommets should be run on the SafeCable prior to installation. See page 10 for GuideWire Installation details.

5 Install Leader Wires in conduit from the panel or module to the beginning of each zone per your design.

6 Fasten the J-Box to the Leader Wire conduit. Connect the Leader Wires to the Screw Terminal and install a Strain Relief Connector. See page 8 for J-Box Installation

7 Make a 6" (15cm) expansion/contraction loop in the SafeCable before passing it through the Strain Relief Connector of the J-Box. Make the connection between the Leader Wires and SafeCable using a Screw Terminal. Tighten Strain Relief Connector to create a seal.

8 Mount SafeCable at 3 foot (1 meter) intervals as it is being unreeled during installation. See page 8 for Installation Sag details.

SafeCable must be able to move freely within all mounting fasteners.

9 During installation, it may be necessary to splice multiple sections of SafeCable together. See page 9 for Zone Splicing details.

10 Make another 6" (15cm) loop in the SafeCable before passing it through the Strain Relief Connector of the ELR-Box. Connect the SafeCable and End of Line Resistor using a Screw Terminal. Tighten the Strain Relief Connector to create a seal.

4. J/ELR-Box Installation

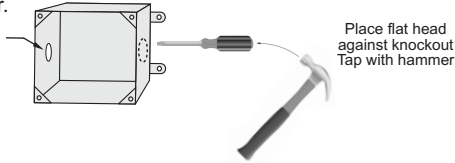
J-Boxes are used for:

- Connections between SafeCable and the Leader Wires from the FACP.
- All outdoor splices.

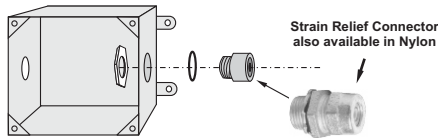
ELR-Boxes are used for:

- Connecting the End of Line Resistor at the end of the SafeCable run.

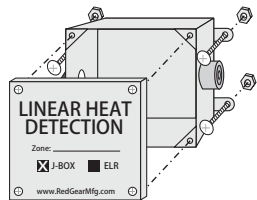
- 1 Use a hammer and a flat head screw drive to remove the side knockouts in the enclosure for the Strain Relief Connector.



- 2 Insert Strain Relief Connector with O-Ring from the outside of the J/ELR- Box and secure with locking nut.



- 3 Securely mount the J/ELR-Box using all four mounting holes. After making the connections, tightly secure the cover.



5. Installation Sag Chart

During installation, be aware of the amount of Sag, or Slack, in the detection wire. Refer the sag chart below to determine the proper amount of Sag/Slack for your application.



Installation Temperature Range	Sag / Slack	Mount Spacing
Ambient to 20°F (-7°C)	3/4" (19mm)	3ft.(1m)
20°F (-7°C) to 0°F (-18°C)	7/8" (22mm)	3ft.(1m)
0°F (-18°C) to -20°F (-29°C)	1" (25mm)	3ft.(1m)
-20°F (-29°C) to -40°F (-40°C)	1 1/8" (29mm)	3ft.(1m)

6. Splicing SafeCable

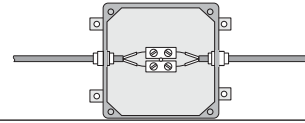
SafeCable may be easily spliced to:

- Obtain the total length needed for a zone.
- Combine multiple temperatures on a single zone.
- Repair damaged or activated sections.

All splices must be done by following one of the procedures detailed below. All outdoor splices must be made using a NEMA 4(IP 65) rated J/-Box.

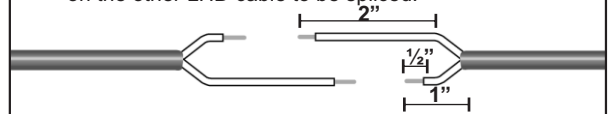
Splicing: Option A

1. All outdoor splices must be made using a J-Box or NEMA 4(IP 65) rated enclosure. See page 8 for J-Box Installation details.

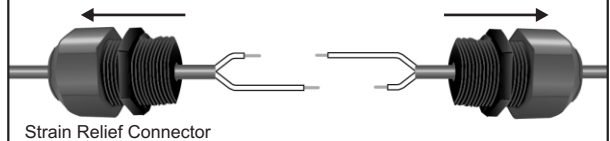


Splicing: Option B

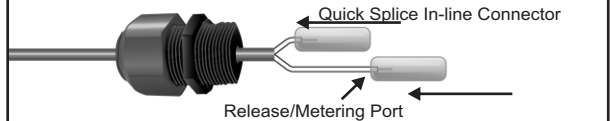
1. Strip outer LHD jacket back 2" on 1st end of LHD to be spliced. Cut one of the inner conductors 1" shorter than the other. Strip the inner conductors back 1/2". Repeat on the other LHD cable to be spliced.



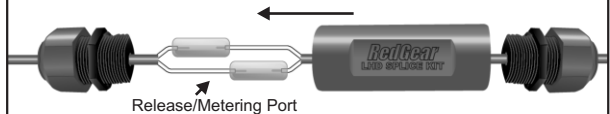
2. Slide a Strain Relief connector on the end of each LHD cable. As illustrated.



3. Push Quick Splice In-Line connectors (or single screw terminals) on two of the inner conductors on one of the LHD cable ends until it stops.



4. Slide the splice barrel onto one of the LHD cable ends. Attach the other LHD cable to the opposite end of the Quick Splice In-line connectors(or single screw terminals) to complete the splice.



6. Screw the two strain relief connectors onto the splice barrel and tighten. You have completed your splice.



7. Special Installations

Depending on the hazard being protected, several mounting options may be used for an installation. See page 11 for Mounting Accessory details.

Below are installation examples using GuideWire for additional support during long runs, and other types of mounting options.

7.1 GuideWire Installation

SafeCable with GuideWire is used for installations where a long span, of up to 250 feet(76m), is required. GuideWire allows the SafeCable to be mounted at 15 foot(4.5m) intervals instead of the standard 3 foot spacing.

1 Beginning of Run

SafeCable with GuideWire may be suspended using different types of mounting accessories. See page 11 for Mounting Accessory details.

2 End of Run Anchoring Options

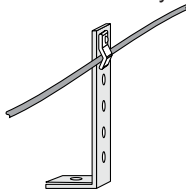
Option A: Typical end of run using an Eyebolt for anchoring.

Option B: A second Turnbuckle may be used for additional tensioning.

OR

7.2 L-Brackets

For mounting SafeCable to equipment or around perimeters, L-Brackets may be used. These brackets may be used as shown.



7.3 Surface Mounting

When mounting SafeCable directly to the surface of the equipment being protected, Surface Mounts with Surface Mount Adhesive and Single Loop Mounting Straps are used.




8. Mounting Accessories

To prevent damage to the detection cable, only mounting hardware recommended by Safe Fire Detection should be used. A part number ending with the following indicates the quantity per package. X=10, Q=25, L=50, C=100, M=1,000.

	RedGear Double Loop Mounting Straps Used for attaching SafeCable to pipe. 3/4" - 2"(2cm-5cm) pipe- Part #: RG1112C or RG1112M 2 1/2"-3 1/2"(6cm-8.9cm) pipe- Part#: RG1113C or RG1113M
	Large Single Loop Mounting Straps Use Small Single Loop Mounting Strap to secure SafeCable to Large Single Loop Mounting Strap. 4" - 6" pipe - Part #: TC1029L
	RedGear Small Single Loop Mounting Straps Used with Surface Mounts, or Larger Single Loop Mounting Straps. Part #: RG1114C or RG1114M
	RedGear Universal Mount with Cable Tie Used with surface mount adhesive or screws. Part #: RG1123C or RG1123M
	Surface Mount Adhesive Used to secure Surface Mount. Part #: TC1019
	Cable Clips Used to secure SafeCable to Beam Clamps, Cable Tray Mounting Clips, and L-Brackets. Nylon - Part #: TC1012C or M Zinc - Part #: TC1013L
	RedGear Beam Clamps Used to secure SafeCable to beams. 1/4", 5/16", 3/8" - Part #: RG1117L or RG1117C 7/16", 1/2" - Part #: RG1118L or RG1118C
	RedGear L-Bracket Used with Cable Clips and Push Pins for securing SafeCable Part #: RG1122X
	RedGear Cable Tray Clips Used with Cable Clips and Push Pins for securing SafeCable For mounting to 1/16"-1/4" material Part #: RG1120C or RG1120M
	Universal Mounting Clips Used with Cable Ties for securing SafeCable For mounting 1/8"(3.1mm) to 1/4"(6mm) material - Part #: TC1023C For mounting 5/16" to 1/2" material - Part #: TC1024C
	Push Pins Used to secure Cable Clips to Beam Clamps, Cable Tray Mounting Clips, and L-Brackets. Part #: TC1034Q
	Threaded Eyebolts Used for suspending SafeCable with or without GuideWire. Includes one nut. Zinc - Part #: TC1030ZX Stainless Steel - Part #: TC1030SS Additional Nut (Zinc) - Part #: TC1031ZC Additional Nut (Stainless Steel) - Part #: TC1031SSC
	Insulating Grommets Inserted in Eyebolt to insulate and prevent damage to SafeCable. Part #: TC1032C
	Turnbuckle - Stainless Steel (Aluminum body) Used to fasten and tighten GuideWire attached to SafeCable for long suspended lengths. Part #: TC1033SS

9. Connecting to a Panel

CAUTION:
 Only licensed and authorized personnel should make connections to a fire alarm control panel. Completing the SafeCable Training Module does not authorize an individual to make any connections to a Fire Alarm Panel. Be sure to check all Federal, State, and Local codes prior to any fire alarm connections.

NOTE:
 SafeCable does not require the use of Leader Wires for installation. SafeCable may be connected directly to any approved panel or addressable module.

9.1 Distance Locating

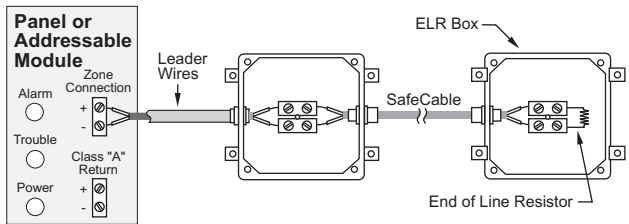
If the SafeCable system includes a Distance Locating Interface Module, please refer to the APDL-Z1 Distance Locating Installation and Commissioning Manual.



Displays distance in both feet and meters.

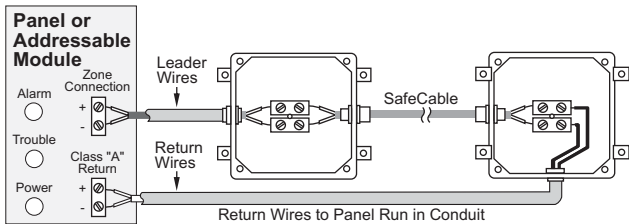
9.2 2 Wire (Class "B") Installation

Connect the Leader Wires to the panel or addressable module. The End of Line Resistor is supplied by the panel or module manufacturer. Place the resistor in the ELR-Box to complete the circuit.




9.3 4 Wire (Class "A") Installation

Connect the Leader Wires to the panel or addressable module. The Class "A" Return Wires must be run in conduit and are connected to the Class "A" return terminal in the panel, or on the addressable module. The End of Line Resistor is built into the panel or addressable module.



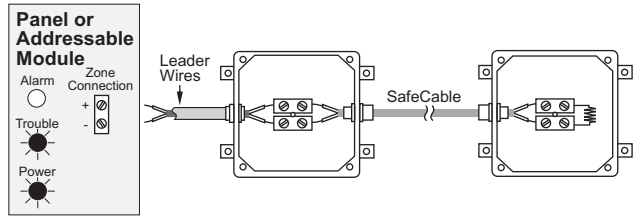
NOTE: End of Line Resistor is mounted in panel.

10. Commissioning / Service

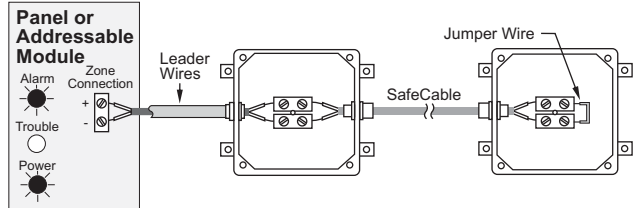
CAUTION:
 Always use every safety procedure and have a fire extinguisher on hand. Be sure suppression systems have been deactivated prior to any testing and all safety precautions have been taken. Inform personnel and alarm company prior to any testing. After completing testing, be sure to notify personnel, reactivate suppression systems, and bring all systems back online.

10.1 2 Wire (Class "B")

Disconnect the Leader Wires from the panel or addressable module to place the system in a Trouble state.

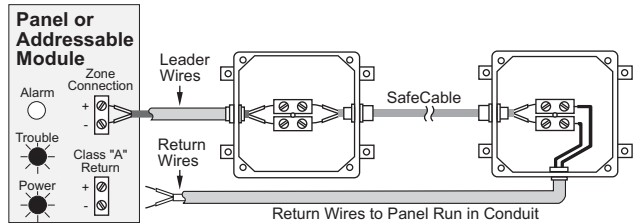


To place the fire alarm panel into Alarm state, replace the End of Line Resistor with a Jumper Wire.



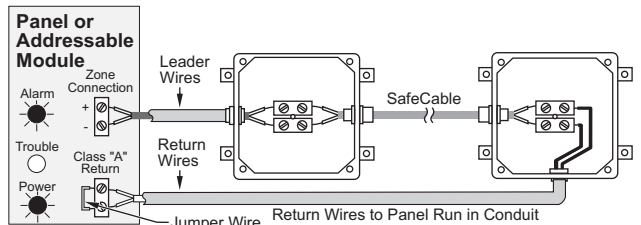
10.2 4 Wire (Class "A")

Disconnect the Class "A" Return Wires of the circuit from the control panel or addressable module terminals as shown below. This will place the panel in a Trouble state. Reconnect the Return Wires to place the circuit back into normal operation.



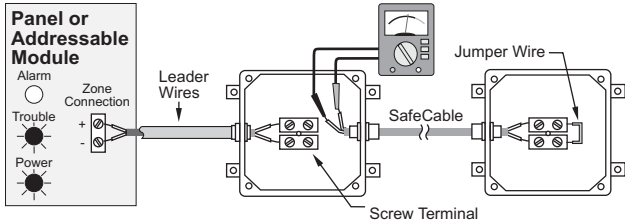
NOTE: End of Line Resistor is mounted in panel

To place the circuit into an Alarm state, place a Jumper Wire across the connected Class "A" Return Wires.



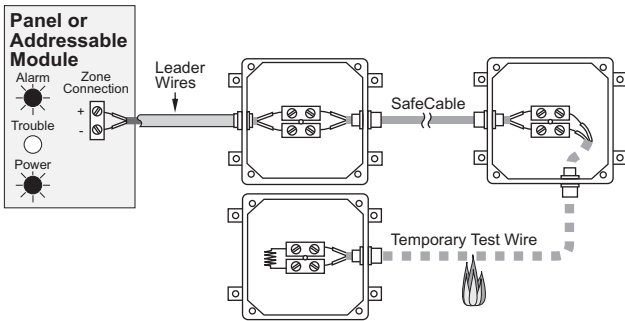
10.3 Recording Loop Resistance

NFPA requires that loop resistance be measured and recorded. To measure the resistance, put the circuit into an Alarm state by placing a Jumper Wire in place of the End of Line Resistor. Next, disconnect the SafeCable from the Screw Terminal and place an ohmmeter across the detection wire. Compare the resistance with previous tests. Any changes in resistance levels must be investigated. Changes may be caused by accidental damage to the SafeCable polymer outer covering, in-line splices, or at wire termination points.



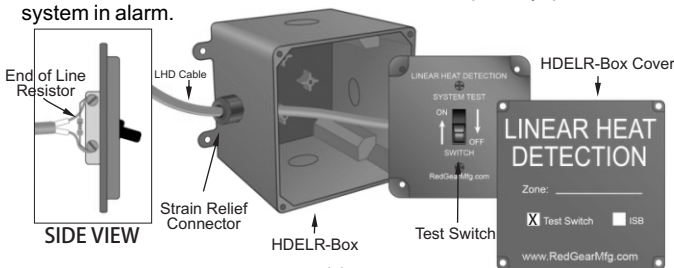
10.4 Heat Test (If required)

At the ELR-Box, install a small length of SafeCable to be used for testing. Be sure that the SafeCable used for the test has the same activation temperature as the installed SafeCable. To test the system, overheat the test piece of wire until the system indicates an alarm. After the test is complete, replace the heat actuated portion of SafeCable and place the system back online.



10.5 Optional System Test Switch

Systems not connected to a suppression system may use a Testswitch located in an RedGear HDELR-Box at the end of a SafeCable run. Flick the Test switch to temporarily place the system in alarm.



11. Return Procedures (RMA)

Any Warranty Exchange or Returned Goods not returned to Safe within 30 days of the ship date, will not be credited or refunded.

No RMA's can be processed after 2:00 p.m. EST.

Warranty Exchange and Returned Goods RMA procedure.

1. Call our Customer Service department at 704-821-7920 with the Part, Model, Serial and/or Spool number to submit an RMA request.
2. An RMA will be generated and emailed to you by our Customer Service Department for a Warranty Exchange or Return Goods.
3. Return the part with a copy of the RMA in the box and a note indicating the reason for the return.
4. Our Technical Department will inspect the returned item for physical damage.
5. Pending approval from our Technical Department, one of the following will apply:

Warranty Exchange:

A Warranty credit will be applied to the PO if the defective part is returned, in tact, within 30 days of the replacement part ship date. Shipping will not be credited.

Returned Goods:

For Returned Goods, a credit memo will be issued for the amount of the part, less the restocking fee of 25% and shipping, if returned within 30 days of the ship date.

Notes:

One Company, ...Many Great Products

SAFE LHD Cables



Linear Heat Detection

Addressable / Conventional

PRO Series



Addressable Air Sampling

Networkable

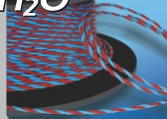
PRO Locator



Localize the Source of the Alarm

Portable Detection

PRO H₂O Cable



Linear Leak Detection

Addressable / Conventional

SAFE-4Z Alarm



Help Build Your System

Fire Panel and Accessories

SAFE Flame



UVIR and IR3 Flame Detection

Flame Detection

Register for important updates

Safe Fire Detection periodically emails Technical Bulletins and updates with important information. To be included in these emailings, please email your contact information to staff@safefiredetection.com.



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