

Overhead faulted circuit indicators

Fisher Pierce series 1548 overhead FCIs

—
01 Trip/reset tool
AT2186-10
Manual trip/reset test
for both permanent
and temporary fault
indication using
hotstick-mountable
reset tool.



—
01



Reliable fault indication for single-phase overhead applications.

- Adaptive or fixed current trip with inrush restraint logic
- Adaptive trip logic eliminates the need for tripping selection or revision with changing load
- Automatic reset with return of load current and/or time reset of permanent fault indication
- Automatic time reset for temporary fault indication
- Manual trip test and reset capabilities using hotstick-mountable trip/reset tool
- Visual fault indication choices of LED, 5-LED array, flag or strobe light; highly viewable 360° indication (strobe or LED); radio fault reporting capability also available
- Hotstick mounting with automatic torque limiting
- Replaceable lithium battery offers 10-year, maintenance-free service life (Flag model has non-replaceable battery)
- Mounts on conductors with diameters from 0.14" to 1.20" (3.56 mm to 30.48 mm)
- Options include temporary/permanent fault indication, instantaneous recloser coordination feature and backfeed restraint using a delay-trip scheme (requires protective device to pass two cycles minimum of fault current before closing)

FCIs with radio transmitters

Series 1548 radio FCIs can signal faults to handheld receivers, radio receivers and the SmartLink® series 5000 cellular remote terminal unit (RTU) systems integrated with SCADA- and web-based reporting systems. Status, alarms and other event notifications can be integrated into SCADA systems, as well as sent to customer-designated personnel via e-mail, pager or text message. Having precise fault information reduces outage duration, improves system reliability and lowers operation costs.

Overhead faulted circuit indicators

Specifications

System voltage:

- Flag, strobe models: 44 kV max.
- LED, radio models: 69 kV max.

Continuous withstand load: 1,000 A max.

Operating temperature: -40 °C to 85 °C

Reset time accuracy: ±10% at 23 °C

Current reset: 3 A or 8 A min. (model specific)

Fixed trip current level: 50 to 1,500 A

Adaptive trip: 100 di/dt, 300 di/dt

Fault withstand: 25 kA for 10 cycles
(per ANSI/IEEE 495-1986)

Trip accuracy: ±10% at 23 °C

Battery: Replaceable 10-yr. lithium cell
(flag model non-replaceable)

Battery operating life at 23 °C:

- Single ultra bright LED & flag: 1,000 operating hrs.
 - 5 red LEDs: 400 operating hrs.
 - Strobe: 120 operating hrs.
 - Radio with LED: 800 operating hrs.
- Temporary fault model:**
- 1 amber (temporary fault) LED: 1,500 operating hrs.
 - 4 red (permanent fault) LEDs: 400 operating hrs.

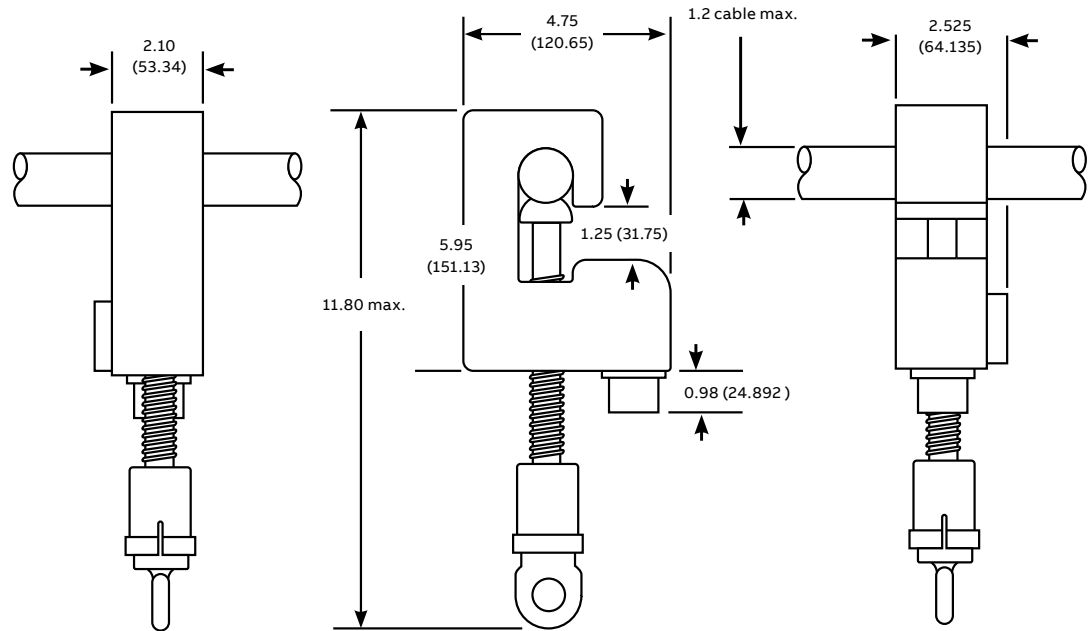
Housing: Semi-conductive UV-stable polycarbonate

Cable diameter: 0.14" to 1.2"
(3.56 mm to 30.48 mm)

Certifications:

- Complies with ANSI/IEEE 495-1986

Mechanical data



(All dimensions in inches with millimeter equivalents in parentheses)

Underground faulted circuit indicators

Specifications

Fault registration: Red, high-intensity LED with choice of hard-wired or fiber optic cable remote mounting or audible intermittent beeper signal

Trip current: Factory preset to customer specifications within range of 50 A and 100 A to 1,500 A in 100 A increments

Trip current accuracy: ±10% of trip rating (calibrated using 1" dia. cable for 400 A trip or less or 2.0" dia. cable for greater than 400 A trip)

Trip response speed: Consult trip curves (coordinated to properly applied link, expulsion, power and current-limiting fuses)

Reset time: 4 hrs., 2 hrs., 1 hr., manual trip/reset standard

Overload capacity: Capable of withstanding 25,000 A for 10 cycles

Continuous load current: Rated at 1,000A max.

Temperature range: -40 °C to 85 °C

Submersibility: Tested to 30 ft.

Operating battery life: 800 hrs. for LED indication, 160 hrs. for audible indication, both with 10-yr. life at 20 °C

Battery: Long-life lithium cell

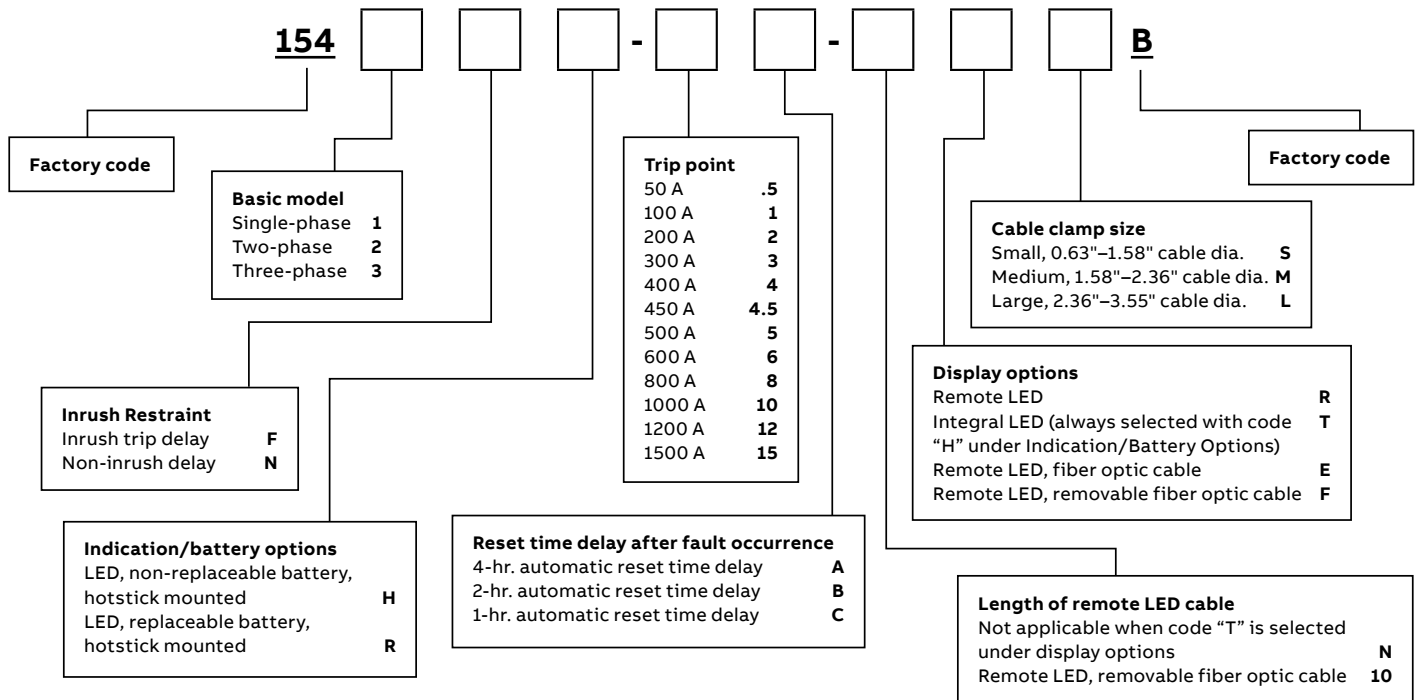
Cable ranges: 0.63" (16 mm) to 1.58" (40 mm); 1.58" (40 mm) to 2.36" (60 mm); 2.36" (60 mm) to 3.55" (90 mm)

Remote fiber optic options: Permanent or removable (10 ft. standard, 30 ft. max.)

Certifications: Complies with ANSI/IEEE 495-1986

The following diagram shows how to construct a catalog number for the Series 1541/1542/1543 FCIs. Not all combinations are possible. Consult factory for ordering assistance.

Indicates field that must be filled in to complete order.
 Note: Availability of selected configuration will be verified at quotation time.



Test point indicators

Fisher Pierce TPM series test point fault indicators



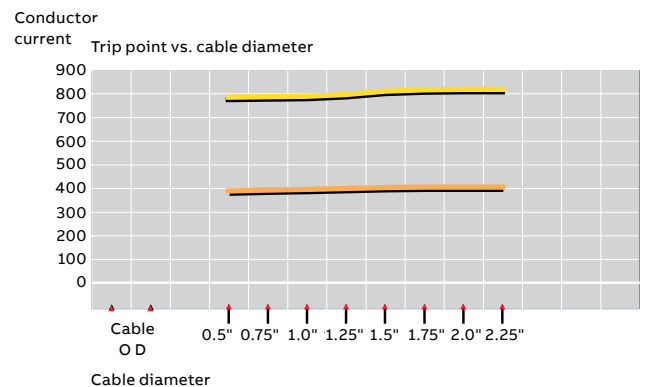
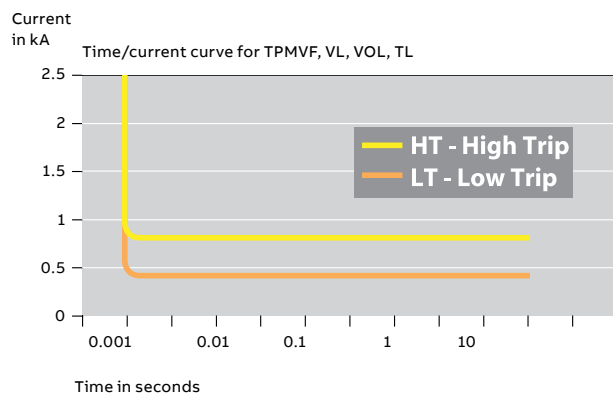
Mount directly to any IEEE 386 standard capacitive test point.

- AccQTrip™ logic circuitry prevents false indications in voltage-reset units due to inrush currents, cold load pickup and overloading
- High/low trip-setting selection requires no minimum load current and no load surveys
- Internal magnetic shielding prevents adjacent phase effects
- 1-msec. trip response coordinates with current-limiting fuses, as well as other protection devices
- Magnetically latched flag prevents flag indication from changing state due to shock or vibration
- Mounts directly to 200 A and 600 A elbows, splices and other cable accessories equipped with IEEE 386 standard capacitive test points from Fisher Pierce and other manufacturers
- Built-in pulling eye enables safe, easy hotstick installation and removal from test points
- Enclosed in a rugged, yet lightweight and compact, sealed, impact- and corrosion-resistant Lexan® housing with EPDM molded-rubber test point mounting boot

Fisher Pierce test point mounted fault indicators consist of a solid-state current sensor connected to a faulted-circuit display, providing a clear visual means for quickly locating faulted cables and equipment on underground distribution systems. Designs incorporate advanced circuit logic and monitoring system protection operation to prevent the indicator from tripping unless an overcurrent condition is followed by a loss of system voltage. Trip and reset operations are automatic, and for versatility and convenience, the same indicator may be used for 5 kV thru 35 kV applications.

Basic operation

A faulted circuit produces an associated magnetic field, which closes a reed switch in the indicator, resulting in a tripped display. Trip response occurs in 0.001 seconds (1 msec.), allowing the fault indicator to properly coordinate with all types of circuit-protection schemes, including current-limiting fuses. To eliminate confusing false trips, voltage-reset indicators are equipped with inrush, backfeed, overload and cold-load pick-up restraint circuitry. Current sensors feature internal shielding to prevent inadvertent tripping when located in close proximity to adjacent phases, such as in junction-mounted applications.



Test point indicators

Mechanical data

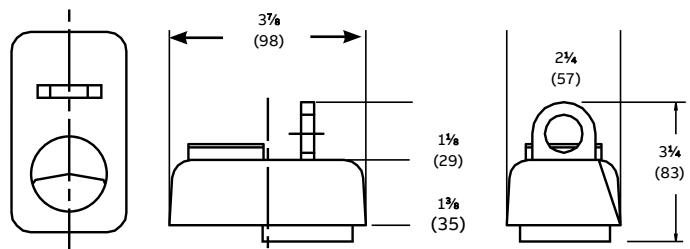


Fisher Pierce® TPM series test point fault indicators

Cat. no.	Description
TPMTL-[_]	Time reset with LED display (auto-resets to normal after 4 hrs.; may also be manually reset using an FTT test tool)
TPMVF-[_]	Voltage reset with flag display (auto-resets to normal after system voltage restoration; reset requires 5 kV min. voltage with time required for reset proportional to system voltage)
TPMVL-[_]	Voltage reset with LED display (auto-resets to normal after system voltage restoration; reset requires 5 kV min. voltage with time required for reset proportional to system voltage)
TPMVOL-[_]	Voltage operated, time reset, LED display (auto-resets after 4 hrs.; longer time resets available upon request)
Cat. no. suffix	Description
-LT	For 200 A. All fused taps use LOW trip rating. For URD applications, use LOW trip rating.
-HT	For 600A. For URD applications, use HIGH trip rating.

Note: For overhead bulk feeder applications, use HIGH or LOW trip ratings (whichever is greater than the minimum pickup setting of the related protection device). AccQTrip and AccQClamp™ are trademarks of Quality Indications, Inc.

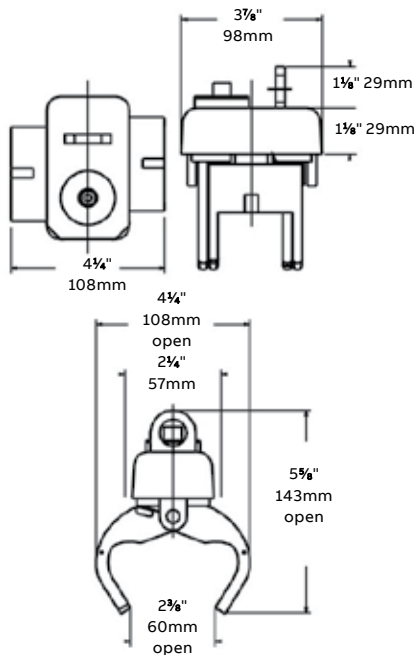
Dimensions



(All dimensions in inches with millimeter equivalents in parentheses)

Clamp-type faulted circuit indicators

Fisher Pierce series OLM overhead line fault indicators



Locate faulted circuits and equipment on overhead distribution systems.

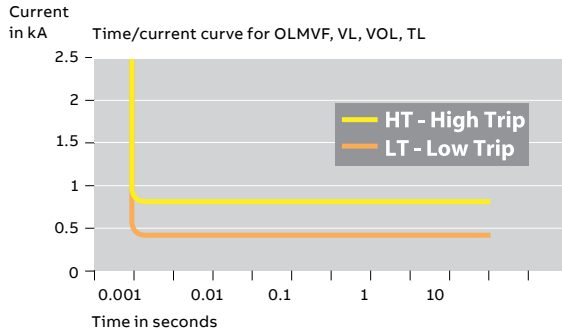
- AccQTrip logic circuitry in voltage reset units prevents false indications due to inrush currents, cold load pickup and overloading
- AccQClamp mounting provision – Universal one-size-fits-all design automatically adjusts
- High/low trip setting selection eliminates minimum load current and the need for load surveys
- Trip response of 0.001 seconds coordinates with current-limiting fuses, as well as other protection devices
- Internal magnetic shielding prevents adjacent phase effects
- Magnetically latched flag indication – Flag indication will not change states due to shock or vibration
- Compact and sealed lightweight enclosure

Self-powered Fisher Pierce series OLM Overhead line fault indicators consist of a solid-state current sensor connected to a faulted circuit display. Advanced circuit logic monitors system protection operation and prevents indicator tripping unless an overcurrent condition is followed by a loss of system voltage. Trip and reset operations are automatic, and the same indicator may be used for 5 kV thru 35 kV line-to-ground applications.

These compact, sealed and corrosion-resistant units are designed for direct installation to an overhead line using a spring-loaded, over-center toggle clamp. Equipped with retainer pads to prevent slip and twist, the clamp positions the conductor at a constant distance from the current sensor, maintaining trip accuracy over the entire conductor diameter range of 0.4" to 2.2".

Clamp-type faulted circuit indicators

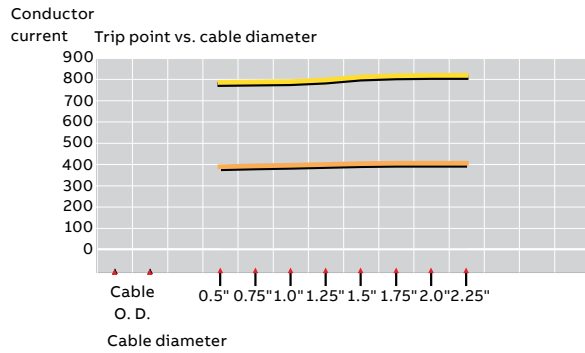
Basic operation



Basic operation

A faulted circuit produces a magnetic field, which closes a reed switch in the indicator and causes a tripped display. A trip response time of 0.001 seconds enables the indicator to properly coordinate with all circuit-protection schemes, including current-limiting fuses.

To eliminate confusing false trips, indicators feature inrush, overload and cold-load pick-up restraint circuitry as standard. Internal shielding of current sensors prevents inadvertent tripping when in close proximity to adjacent phases.



Test point indicators

Series OLM overhead line fault indicators

Series OLM overhead line fault indicators

Cat. no. prefix	Description	Reset operation
OLMTL	Time reset with LED display	Indicator auto-resets to normal after a four-hour time duration. Indicator may also be manually reset using an FTT test tool.
OLMVF	Voltage reset with flag display	Indicator auto-resets to normal after system voltage restoration. Reset requires 5k V minimum voltage to operate. Reset operation time is proportional to system voltage.
OLMVL	Voltage reset with LED display	Example: at 15 kV, reset occurs 30 seconds after system voltage restoration.
OLMVOL	Voltage operated, time reset, LED display	Indicator auto-resets after a four-hour time duration. Longer time resets are available upon request.

Cat. no. suffix	Description
LT	All fused taps use LOW trip rating for 200 A. Overhead applications, use LOW trip rating.
HT	For 600 A. Overhead applications, use HIGH trip rating.

Accessories for series TPM, UCM and OLM fault indicators



FTT (Field test tool)

Permits field testing and reset of fault indicators and provides assurance that the indicator is properly functioning. The test tool is lightweight, portable and incorporates a built-in magnet which operates the indicator trip and reset functions. The unit is equipped with provisions for hotstick handling and operation.

FO-Cable06

Remote fiber optic indicator for underground fault indicators with LED display can be extended to the outside of enclosures and/or vaults for ease of access and fault location. All the hardware for mounting the remote end of the cable to the enclosure is included. The display has a large reflective bolt to enhance visibility.

Fault indicator accessories

Cat. no.	Description
FTT	Field test tool, overall dimensions 2" wide x 3" high x 5/8" deep
FO-CABLE06	Remote fiber optic indicator for UFI

Test point indicators

V2 Voltage indicator



Easy way to visually determine the energized status of underground distribution circuits.

- Single model supports applications from 5 kV to 35 kV
- Flash rate per minute indicates system voltage (see chart on following page)
- Mounts to 200 A and 600 A elbows, splices and other cable accessory components equipped with IEEE 386 capacitive test points from Fisher Pierce or other manufacturers
- Molded EPDM rubber housing for shielded, sealed and corrosion-resistant construction
- Built-in pulling eye enables safe, easy hotstick installation and removal from test point
- 20-year neon bulb yields long, maintenance-free service life
- Easily tested for confirmation of proper operation with the V2-TB voltage indicator test box

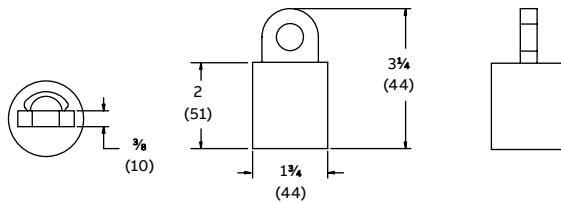
The V2 voltage indicator consists of a self-powered voltage sensor connected to a neon light that flashes when energized. Simply plug it into any IEEE 836 standard capacitive test point to determine the energized status of underground distribution circuits. Because the flash rate is proportional to the phase-to-phase system voltage, as indicated in the chart, one V2 model supports a wide range of applications — from 5 to 35 kV.

Test point indicators

Mechanical data

Voltage (kV)	Flash rate
5	20
10	40
15	70
20	100

Voltage (kV)	Flash rate
25	140
30	160
35	180



(All dimensions in inches with millimeter equivalents in parentheses)



V2-TB test box for easy field testing of V2 voltage indicators.

If the V2 neon voltage indicator indicates a power failure in an underground distribution circuit, you'll want to ensure that it's actually the circuit that's failed and not the V2 itself. For fast, simple assurance, field test the V2 with the compact, portable V2-TB voltage indicator test box, powered by replaceable C batteries.

V2 voltage indicator – Test point mounted

Cat. no.	Description
V2	Voltage indicator with neon display
V2-TB	Voltage indicator test box