Cold Clamp

Optical Communications Test Applications

- Precision optical fault location
- Match optical & physical cable features during installation
- Ideal when upgrading from 1310 to 1550 nm
- Field damage location
- Submarine damage location
- Factory quality assurance
- Examination of temperature induced cable loss
- R&D

Revision 3

The Cold Clamp is of interest to anyone responsible for the precise physical location of optical faults in jelly filled fibre optic cable up to 38 mm diameter. These are typically used in direct burial or submarine applications.

The Cold Clamp can typically be used without disrupting traffic on the cable being tested.

Features

- Realistic field fault location to better than 1 metre
- Major productivity gains
- Reduced stress on field crews
- Improved network availability
- Can be used on live cable
- Increase cable lifetime

Video Available

A revolutionary concept in optical cable fault finding, see videos on our website, Kingfisherfiber

Cold Clamp

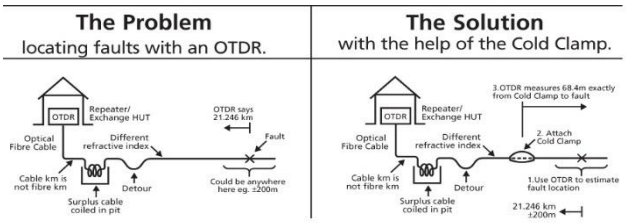
This system is approved and in daily use by Telstra Corp, for maintenance of their three million km fibre optic cable network.

OTDR Limitations: however due to cable properties, the uncertainty is at best about ±1%, or 20 meters per Km away from the OTDR.

The Cold Clamp device itself is typically used once. It is generally left on the cable for a variety of reasons including safety & long term cable fault management. With suitable safety precautions, the device can be used in a trench, manhole or ventilated walk-through cable duct. The Work Kit provides the protective equipment and procedures required to use the Cold Clamp. Most types of OTDR are suitable for use with the Cold Clamp. Any OTDR that can acquire data with less than 0.1 dB noise, and can measure the start of an event to a meter resolution, is adequate. The dead zone is not a major issue.

How is it Done:

A Cold Clamp is attached to the cable close to the optical cable fault location as estimate d by the OTDR. Liquid nitrogen is then poured into the Cold Clamp, which creates a temporary optical loss point of approximately 0.2 – 1 dB. This can be picked up on an OTDR, and its distance relative to the fault point can be determined to an accuracy of typically 1 meter. The Cold Clamp system is simple and reliable.



Getting Started:

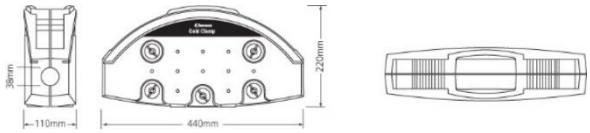
To get started, you can purchase a Starter Pack, which provides sufficient equipment for one crew at one depot to use the Cold Clamp 10 times. You might need to purchase extra equipment for other crews, other depots, and a number of Cold Clamps. You will need to reorder Cold Clamps on a regular basis from your dealer as they get used. You will need to locate a supplier of liquid nitrogen, and arrange a storage position in the depot. You will need to work out a transport strategy to get the liquid nitrogen on site. This could involve any combination of: A courier company or your own personnel using the 10-liter Dewar, or your own personnel using the 1 Liter-Dewar (maybe fitted in a jerry can holder or transit box). Most safety and training issues are covered in the user manual supplied with the protective gear, however you may like to check local safety regulations before starting training. Your liquid nitrogen supplier should be able to inform you on these. You should also check if your company has any internal procedures for use of liquid nitrogen or nitrogen gas.

Effects on Cable Reliability:

Cables are made of polymers that exhibit good ductile behavior, which means that even under cryogenic conditions, these materials will tolerate considerable abuse before cracking. No long term effects have been observed on cable systems where the Cold Clamp has been in use since 1993.

Working with Liquid Nitrogen:

Cable crews should already be familiar with asphyxiation risks, and equipped with oxygen monitor sets to detect gas hazards in cable pits, so this risk should be generally covered by existing procedures. During transport, it is important that the liquid nitrogen is kept in a compartment that does not vent into a passenger compartment. Occasional minor splashing of liquid nitrogen onto the skin does not cause any problem. However, splashing into the eyes, or soaking of clothes or shoes by accidental spillage does create a burns hazard. The safety equipment of the Work Kit addresses these issues



Descriptions of components:

- *Cold Clamp & consumables*: 2 half-clamps and other piece parts that make up a complete Cold Clamp.
- *10-Liter Dewar* (Liquid nitrogen storage and transport container): It provides 1 month of liquid nitrogen storage. It is also approved for use by many courier and transport companies when shipment to a work site or local depot is required.
- *1-Liter Dewar and transit box* (Liquid nitrogen transport container): The inexpensive unit is suitable for use by trained personnel where they can pick up liquid nitrogen from a 10- liter Dewar at a depot, and use it the same day. This Dewar comes in a container that fits onto a vehicle's 'jerry can' holder. Alternatively, the Transit Box, when correctly fitted inside a vehicle, enables the safe transport of liquid nitrogen within a passenger compartment.
- *Work Kit:* Protective equipment (overall, gloves, face mask, over-boot), tools (storage bag, tape gauge) and manual.

SPECIFICATION

Parameter	Value
Maximum Cable Diameter	38 mm
Known Applicable Cable types	Fiber optic cable, jelly filled with acrylate coated fiber, including armored types.
Typical loss created by Cold Clamp	0.21 dB at 1300 & 1550 nm
Typical usage of liquid nitrogen	300 ml (15mm non-metallic cable)
Liquid nitrogen boiling Point	-196°C, -321°F
10-Liter Dewar	Boil dry time in static conditions: 45 days
Weight	Empty 6.1 kg, Full 14.1 kg

ORDERING INFORMATION

Description	Part Number
Cold Clamp, Starter Kit	COLDCLAMP-1
Cold Clamp, Cold Clamps & consumable	COLDCLAMP-2
Cold Clamp, Work Kit	COLDCLAMP-3
Cold Clamp, 10-liter Dewar	COLDCLAMP-4
Cold Clamp, 1-liter Dewar flask & transit box	COLDCLAMP-5

STANDARD COMPONENT

Part Number	Component	Quantity
COLDCLAMP-1	*Cold Clamp & consumables / 10-Liter Dewar / Work Kit*	10 / 1 / 1 set
COLDCLAMP-2	*Cold Clamp & consumables*	10
COLDCLAMP-3	*Work Kit*	1 set
COLDCLAMP-4	*10-Liter Dewar*	1
COLDCLAMP-5	*1-Litre Dewar flask & transit box*	1 set

Technical data is subject to change without notice as part of our program of continuous improvements

AUTHORIZED DEALER

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