

Cable Locator Inst.

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SECTION I: OPERATING MODES

Pipe and cable locators in general can operate in a variety of modes and frequencies. The following is a brief description of the basic operating modes supported by the XTpc line of pipe and cable locators

Passive 50/60 Hz (P)

In the passive mode the transmitter is not used at all. Instead, the receiver searches for an appropriate harmonic of 60 or 50 Hz signals (factory preset). These signals are typically present in energized power cables, making it possible to locate them without the use of a transmitter to impose a tracing signal on them.

Passive Cathodic (PC)

Long pipelines usually have to deal with the issue of corrosion. A known group of techniques used to control corrosion involves the use of periodic cathodes along the pipeline and the circulation of low-level currents rectified from the power grid. The passive cathodic mode does not use the transmitter at all. Instead, the receiver searches for an appropriate harmonic of rectified 60 or 50 Hz from the power grid, therefore making it possible to trace pipelines for long distances without the use of a transmitter to impose a tracing signal on them.

Conductive (C)

In the conductive mode the transmitter imposes a signal of the "active" frequency onto the pipe or cable to be traced. It does so by making direct contact with the pipe or cable at a point where it comes up to the surface (a transformer box, a water hydrant, a telephone switch box, a gas meter, etc.). The circuit is closed, providing a return path, by a ground stake that is buried in the ground in the vicinity of the transmitter.

Inductive Clamp (IC)

In the inductive clamp mode the transmitter imposes a signal of the "active" frequency onto the pipe or cable to be traced. It does so by energizing a "clamp" that is placed completely encircling the pipe or cable at a point where it comes up to the surface (a transformer box, a telephone switch box, a gas meter, etc.). The clamp then induces a current on the pipe or cable. In this mode it is not

necessary to provide a return path for the induced current to the transmitter. The induced current will travel on the pipe or cable for a distance making it possible to trace it.

Inductive (I)

In the inductive mode the transmitter imposes a signal of the "active" frequency onto the pipe or cable to be traced. It does so by radiating a signal through the inductive antenna, which is placed on the ground in a direction perpendicular to the pipe or cable being traced. The inductive antenna then induces a current on the pipe or cable. In this mode it is not necessary to provide a return path for the induced current to the transmitter. The induced current will travel on the pipe or cable for a distance making it possible to trace it.

Sonde (S)

In the sonde mode the transmitter is not used at all. This mode is used to trace non-metallic pipes, or metallic pipes where the other modes are inapplicable or inefficient. A small sonde or "beacon transmitter" is pushed through the pipe by some means. The receiver searches for the signal emitted by the sonde. Since the signal being traced by the receiver is produced by the sonde, and not travelling along the pipes, there are some differences in the way the receiver is used. Due to the nature and strength of the sonde signal, it is necessary to have some idea of where the sonde is, to narrow the search area to a circle of several feet radius centered at the sonde. This is usually not much of a problem, since the sonde is "guided" by a device under control of the work crew, often with a camera attached to it.