

More security for your supply infrastructure.



■ Countries with SebaKMT representatives

Reliable:

Worldwide, we are the leading company for the development and manufacture of measurement equipment for diagnosis of the state of a network and for fault locating. Our sectors of the market include electricity supply networks as well as communications and pipe networks.

High performance:

We concentrate on four areas: diagnosis of the state of a network, cable fault location, leak detection and line location. We are thus in the position to offer high performance in each of these areas.

Available:

SebaKMT has representatives in 130 countries worldwide, with excellently trained staff and the most modern technology. With that we have the most comprehensive service and consulting network in the industry. Wherever your international activities may lead you, we look forward to speaking to you.

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Intelligent systems for
efficiently and effectively
finding cables and pipes

sebaKMT

sebaKMT

Know how to do it. And what happens next.

Line location with SebaKMT: seek and you will find.

Welcome to the Number One.



SebaKMT is the world's leading developer and manufacturer of measuring equipment for diagnosing the condition and locating faults in power supply, telecommunications and pipe networks. SebaKMT is also the world's leading innovator in line location. However, there are of course a good many more reasons for working with SebaKMT: our service, our availability and – naturally – our products.

Safe, fast and always a good investment.

The SebaKMT line location systems allow your staff to quickly and reliably find cables, identify the exact route and gain a comprehensive view of the network. This not only increases the reliability of supply to your customers, but also improves the economy of your processes.

The challenge of line location

Line location means finding and identifying an underground cable or pipe without digging it up. A two-stage distinction is made between the required accuracy and the range of the data to be recorded:

► **Stage 1: ground survey**

The main aim of the ground survey is to prevent damaging the underground infrastructure by digging.

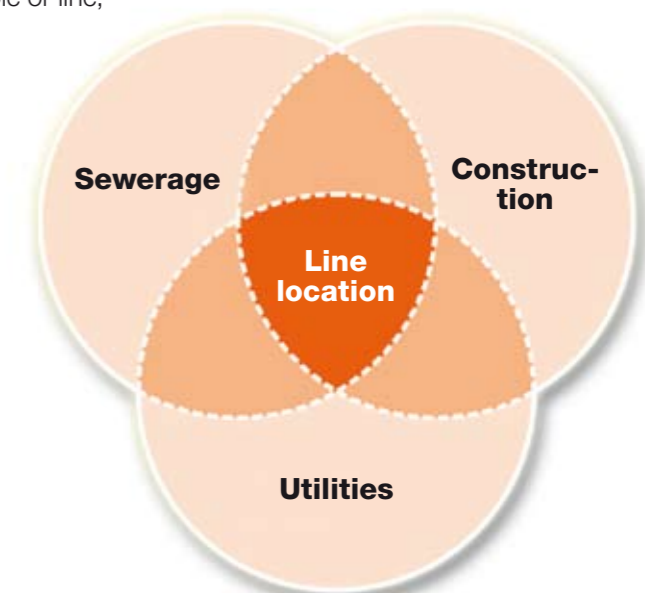
► **Stage 2: routing**

Routing requires more precise data recording. The task is to identify and record the exact route of a cable or line, in order to make future network maintenance easier.

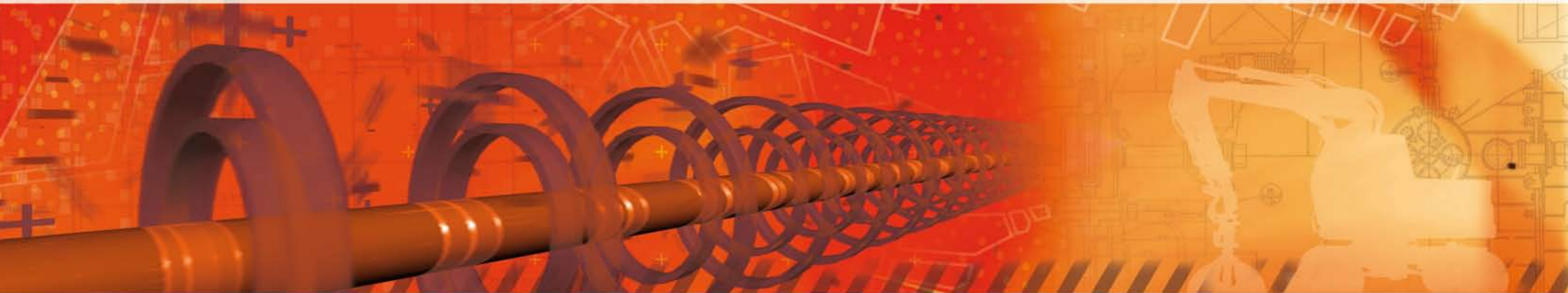
The task of line location

Line location is used differently in various sectors and industries.

Because of their flexibility and ease of use, SebaKMT systems are the perfect solution to all of your requirements.



The systems are based on alternating electromagnetic fields.



The principles of line location

The alternating electromagnetic field which forms around almost every metallic line is the basis for modern line location technology, which is called magnetic field location. This is based on the transmitter/receiver principle. There are two main versions of this: passive and active location.

Passive location

Passive location detects signals which are already present on the cable or line without input from



the location system. These might be 50/60 Hz or radio-frequency currents, or a protective current (CCP). These currents produce concentric magnetic fields around the cables or pipelines. This method requires that the object to be located is long, metallic and earthed at both ends, otherwise there can be no signal circuit. Power cables generate a 50 or 60 Hz signal and use surrounding cables and metallic lines as return conductors to the starting point. Radio signals between 15 and 23 kHz are generated by long wave transmitters and also use the surrounding cables and lines as return conductors.

Receivers such as the SebaKMT Easyloc location system can be used for passive location.

Active location

For active location, a generator induces an artificial signal onto the cable. This means the cable can be precisely identified, its route traced and its depth accurately measured. If the cable is poorly or not at all accessible, or already live, there are various coupling methods to induce the signal onto the line.

Flexible coupling technology

▶ Inductive coupling

Inductive coupling is used where there is no direct access to the cable or pipe to be located.

To do this, a SebaKMT frequency generator is set down on the ground above and in line with a buried conductor. The generator induces a signal on the cable, metallic pipe or other conductor.



▶ Galvanic coupling

Galvanic coupling is the ideal solution when the conductor to be located is easily accessible. Use the red terminal of the SebaKMT coupling accessory to connect to the line; the black terminal is connected to an earthing rod or another independently earthed metal object. Now you can trace the cable using the location system.

▶ Coupling using transmitter tongs

The special advantage of coupling using transmitter tongs is that the conductor can remain in service during location, as no direct contact to the conductor

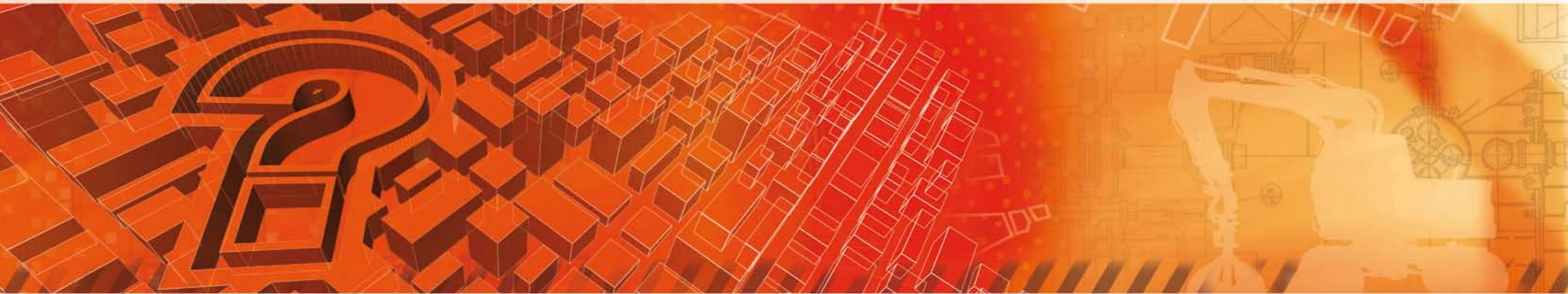
is required. The transmitter tongs are simply placed around the cable or pipe. The induced measuring current then facilitates quick and simple location.



The SebaKMT guarantee

Our wide range of different location systems caters for all requirements. Talk to your SebaKMT Sales Representative, who will put together the ideal solution for your needs. Guaranteed.

Stage 1: ground survey, essential before excavation work.



Prevention is better than a cure

Knowledge of the underground infrastructure is an indispensable precondition before starting any digging, because physical damage caused by excavation not only interrupts the supply, but also generally leads to substantial costs or even injury. Unfortunately, visual assessments on site and the existing plans are not normally sufficient. Therefore, you should use the tried-and-tested SebaKMT systems for ground surveys.

Cable and line location

We offer the Easyloc system for finding cables and lines. It is extremely easy to use, which means there is no need for lengthy training and instruction. Besides the position of the objects to be located, it also finds the depth of the cable or metallic line without using an additional transmitter. Combined with the Easyloc generator, the Easyloc-System is ideal for the requirements of all construction companies.



Locating metallic objects

If hydrants, valves and other metallic objects can no longer be found, special location equipment for valve rods and caps are used. The metallic objects hidden in the soil are found easily and reliably. Ferro-magnetic location equipment is the most reliable location method, as it does not signal non-ferrous metal.



FM 880-B

Locating non-metallic lines

Because non-metallic lines do not produce alternating electromagnetic fields of their own, a signal emitter known as a pig has to be introduced into the ceramic or PE pipe, for example using an inspection camera. The battery-operated pig transmits at a defined frequency. Alternatively, conductive fibre-glass location cables of various lengths and thicknesses with integrated copper wires can be used.

The signals then arrive at the surface where they can easily be received and analysed using a location system. Naturally, SebaKMT systems and pigs can transmit at all the usual frequencies, so that they are compatible with various location systems. A further option is location using the acoustic method.

A portable device produces a sound signal which can be detected and followed by ground microphones. The generators used are pipe peckers (RSP 3) or pulse wave generators (PWG).



MLS 55



GOK 50

Stage 2: Routing, precisely recording the infrastructure.



Do you know the route of every one of your cables?

Routing is the precise location, measurement and documentation of a supply or disposal line – a task as important as it is complex. It is important because efficient deployment of personnel for supply and disposal is becoming increasingly significant. It is complex because the long-standing structures of pipe routes are often used by different providers with many different cables, which makes them all the more difficult to clearly identify. The innovative SebaKMT line location technology makes routing a simple task. SebaKMT offers a whole range of systems, which differ in the amount of data they generate, so that they can be selected according to requirements.

Simplicity, precision, efficiency

SebaKMT location systems are used for simple, precise location of the route and depth of cables and metallic pipes. With two passive and up to three active



FM 9800-XT

search frequencies, the FM 9800-XT, for example, is a universally applicable line location device. The system's generator can automatically select the ideal

search frequency. By simultaneously transmitting several active frequencies, the location results can be immediately verified.

More frequencies More options More user-friendly

The new i5000 from SebaKMT is the most state-of-the-art line location system on the market. It includes many functions which help your staff in their daily location work during routing, while providing more reliable and meaningful results.

Here are some examples:

The centrepiece of the i5000 line location system is the multi-frequency receiver. This not only allows precise reading of the route and depth of a line, but also provides information on the quality of the signal. It does this using an indicator in the colour display of the i5000 receiver. The function known as "Distortion Alert" makes it much easier to



i5000

choose the right frequency for tracing the cable or line you are looking for.

The i5000 also has a "Signal Select" function that eliminates the need for subjective assessment of location signals, thus increasing the accuracy of location.

The defined cable or metallic pipe with the signal transmitted on it is detected with positive signal direction.

Signals on parallel cables are recorded as return current and shown in the display with negative signal direction.

Technology of the future: Marker location















Plastic pipes made of PVC, PE and GRP are increasingly used in drinking water, gas and sewage systems. So that they can be simply, permanently and reliably located, the pipes are laid with intelligent antennas called markers before they are buried. These are easy to find later on using location equipment and exactly reproduce the course of the pipe.

SebaKMT systems for line and object location.

If you have the choice, choose SebaKMT.
If you have SebaKMT, you have the choice.

SebaKMT information and advice

SebaKMT offers a range of versatile and highly specialised systems for line location. Our table of applications provides an initial overview here. For more detailed information, visit us at www.sebakmt.com. Alternatively, arrange a meeting with your SebaKMT Sales Representative. He will help analyse your requirements and ensure that your planned purchase is a profitable investment.

	Easyloc	Easyloc plus	FM 9860-XT	FM 9890-XT	FM 810-Dx	vLocPro	FL 10	i5000	i5000m	FLM 700	GOK 50-R	MLS	FM 880-B	FT 80
Main application of the device														
Other applications														
Ground survey	■	■	■	■		■	■	■	■					
Routing	■	■	■	■	■	■	■	■	■		■	■		
Drawing plans	■	■	■	■	■	■	■	■	■	■				
Metal location (ferromagnetic)													■	■
Object location									■	■			■	
Cable selection				■		■	■	■	■					
CCP (100 Hz cathode corrosion protection)		■				■	■	■	■					
Camera location	■	■				■								
Locating non-metallic lines	■	■	■	■	■	■	■	■	■	■	■	■		
Sheath fault location			■	■		■	■	■	■					
Cable fault location						■	■	■	■					