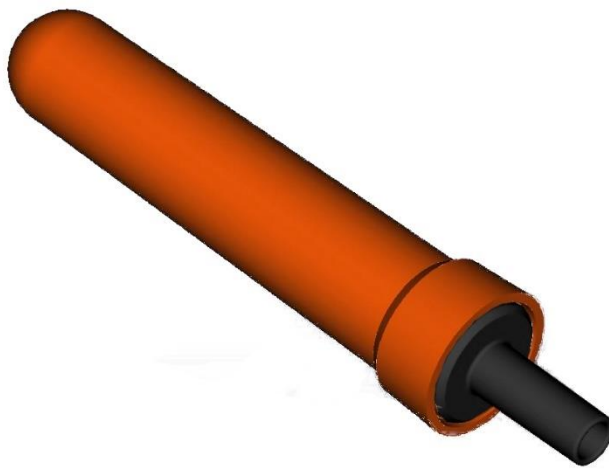


END-CAP ELECTRONIC MARKER FOR MICRODUCTS “KMARKER DUCT”



1. PRODUCT FEATURES

The KMARKER passive electronic marker device employs an inductive coil that functions as an antenna at a precise frequency according to market standards: 145.7kHz for drinking water, 101.4kHz for telecommunications, 83kHz for gas, etc.

The marker can be located without contact, by induction, with any compatible detector, up to depths of 1.5m (depending on the terrain and the detector used). The device is totally passive, it does not need batteries to work. It's made with highly durable materials and that they are not potentially dangerous and have a degree of protection IP68.

The marker is specially designed to be placed in the final section of a microduct, though a connector for standard microducts (included in the pack), which allows the tightness of the microduct to be maintained up to 15 bars of pressure. The marker would hold its place even in the event of blowing on the wrong microduct.

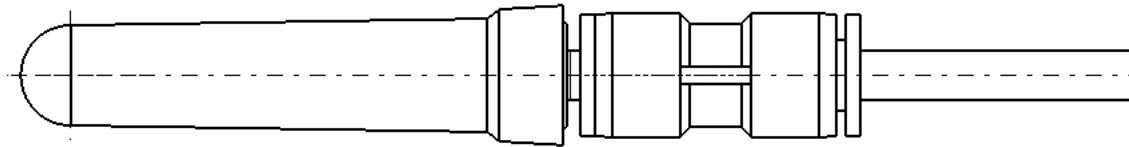


Illustration 1. Installation scheme: microduct, standard connector and marker

2. MAIN ADVANTAGES

This are the main advantages of the KMARKER DUCT marker, compared to other available markers in the market:

- Precision: being perfectly fixed at the end of the microduct to be located, marker can be located with the minimum labour cost and the least possible impact.
- Cost reduction.
- Microduct tightness guarantee. Microduct fixing system is made by using a microduct standard connector, which meets the requirements of each operator and has been preciously tested and homologated.
- Reduced size. The 20mm diameter at its widest part, allows the installation of the microduct from the trench (located on the public road) to the property to be covered, using horizontal drilling techniques, with minimal impact.

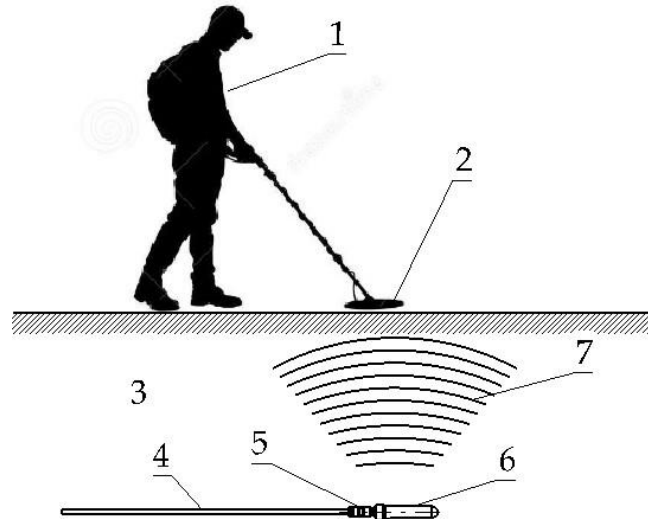


Illustration 2. Scheme of operation

The detection process consists of: the operator (1) aided by an electronic marker detector (2), locate the end of the microduct (4) on the ground (3), normally inside or bordering the clients plot in which the KMARKER DUCT electronic marker is fixed by means of a standard microduct connector (5).

3. DATASHEET

Parameter	Value
Case material	HDPE (high density polyethylene)
Case protection grade	UNE-EN 60529:2018: IP68
Case protection system	Pressure joint between the housing and the plug and dielectric fast cross-linking two component rubber (Raytech Magic Rubber).
Case colour	9 different colours depending on the calibrated frequency of the marker.
Dimensions, maximum diameter	20mm
Dimensions, length	80mm, 100mm (including the joint stem).
Working frequencies	See table with available models.
Microduct connector	Available: 5mm, 7mm, 10mm, 12mm Included by default: 7mm

Product model range:

Application	Color	kHz Frequency	Reference
Non-potable water	Purple	66.4	00.08.01.001
CATV	Orange/black or dark orange	77.0	00.08.01.002
Gas	Yellow	83.0	00.08.01.003
Optical fiber	Yellow+black or dark yellow	92.0	00.08.01.004
Telephone/ telecommunications	Orange	101.4	00.08.01.005
Energy	Red	134.0	00.08.01.006
Wastewater/ sanitation	Green	121.6	00.08.01.007
Water supply	Blue	145.7	00.08.01.008

Kyo Electric, its logo and Kmarker are registered trademarks.

Patent Pending