



EMS

Electronic

Marker System

3M™ EMS

Electronic Marker System

The 3M™ Electronic Marker System helps eliminate guesswork. 3M markers operate even in the presence of metal conduits or pipes, metallic conductors, fences, AC power lines and electronic markers of other utilities. All EMS markers are color-coded to APWA standards for visual reference and each utility has its own frequency. For example, telephone utility markers are all orange in color. EMS signals provide positive identification of each utility, thus helping to reduce the risk of accidentally locating and excavating other buried facilities.

With our Full-Range, Mid-Range, Ball and Near-Surface Markers, there is a marker to meet almost every need. Markers are passive antennas with no internal power source to run down. Their water-resistant, polyethylene shells are impervious to minerals, chemicals and the temperature extremes normally found underground. A four-inch Disk marker is also available for marking handholes. These markers easily attach to nonmetallic lids or covers over flush-mounted facilities.



3M™ iD-Marker

3M iD markers are designed to not only provide an accurate, convenient, long-lasting method of marking underground assets, but also iD markers may be programmed to include customer-specific information such as facility data, type of application, material type and size, placement date and other important details. All iD markers are shipped with an individual 10-digit serial number already programmed in.

3M™ Dynatel™ Marker Locator

The 3M Dynatel Electronic Marker System (EMS) Marker Locator 1420E-iD allows to pinpoint the location and depth of all existing models of properly installed underground EMS markers. A feature exclusive to all EMS marker locators is the ability to read, write and lock programmed information into the 3M Electronic Marker System iD Markers. Information such as pre-programmed unique identification number, facility data, owner information, application type, placement date and other details from up to 100 markers can all be stored with date/time stamp and transmitted back to your PC for enhanced resource management. All Dynatel marker locators are now compatible with selected GPS/GIS field mapping instruments for real-time mapping of marker placement. All functions of a Dynatel marker locator are available in combination with most of 3M's cable/pipe locators.



3M™ Ball Marker

Engineered for narrow trench applications up to 1,5 m in depth, the 4" - diameter ball marker has a unique self-leveling feature that helps ensure an accurate, horizontal position regardless of how it is placed in the ground. The ball contains a mixture of water and propylene glycol (a common additive in toothpaste, hair gels etc. and generally recognized as safe for use in foods by USDA). The mixture is readily biodegradable in the environment and will not harm humans, wildlife or the environment in this application.



Technical Specifications

Maximum locating depth:	
Passive Ball Marker:	1,5 m (1,8 m with Dynatel 7000 Series)
iD Ball Marker:	1,2 m (1,0 m for Water & Power US) (1,5 m with Dynatel 7000 Series)
Dimensions:	10,4 cm diameter sphere
Weight:	350 g
Packaging:	30 per carton
Shipping weight:	11,34 kg
Installation orientation:	self-leveling
Operating temperature range:	-20 °C to 50 °C
Storage temperature range:	-40 °C to 70 °C

	3M Stock Number	Product	Application
	80-6111-6113-6	3M™ EMS Ball Marker 1401-XR	Telecommunication
	80-6111-4219-3	3M™ EMS iD Ball Marker 1421-XR/iD	Telecommunication
	80-6111-6114-4	3M™ EMS Ball Marker 1402-XR	Power (US) ***
	80-6111-4220-1	3M™ EMS iD Ball Marker 1422-XR/iD	Power (US) ***
	80-6300-0032-3	3M™ EMS Ball Marker 1403-XR	Water ***
	80-6111-4322-5	3M™ EMS iD Ball Marker 1423-XR/iD	Water ***
	80-6300-0033-1	3M™ EMS Ball Marker 1404-XR	Waste Water
	80-6111-4323-3	3M™ EMS iD Ball Marker 1424-XR/iD	Waste Water
	80-6300-0025-7	3M™ EMS Ball Marker 1405-XR	Gas
	80-6111-4324-1	3M™ EMS iD Ball Marker 1425-XR/iD	Gas
	80-6111-6115-1	3M™ EMS Ball Marker 1407-XR	Cable TV and communications
	80-6111-4221-9	3M™ EMS iD Ball Marker 1427-XR/iD	Cable TV and communications
	80-6111-6835-4	3M™ EMS Ball Marker 1408-XR	General Purpose and Reclaimed Water
	80-6111-4222-7	3M™ EMS iD Ball Marker 1428-XR/iD	General Purpose and Reclaimed Water
	80-6116-1371-4	3M™ EMS Ball Marker 1402CE-XR/CE	Power (Europe)
	80-6116-1369-8	3M™ EMS iD Ball Marker 1422CE-XR/iD/CE	Power (Europe)

3M™ Near-Surface Marker

The near-surface marker is ideal for marking underground and street access facilities. Its small cylindrical size and shape allows for easy installation in asphalt, concrete or rock without extensive digging or drilling.

Technical Specifications

Maximum locating depth:	0,6 m (0,9 m with Dynatel 7000 Series)
Dimensions:	2 cm diameter x 7,6 cm length
Weight:	25 g
Packaging:	50 per carton
Shipping weight:	1,36 kg
Installation orientation:	vertical
Temperature range:	
Operation:	-20 °C to 50 °C
Storage:	-40 °C to 70 °C



	3M Stock Number	Product	Application
	80-6102-3031-2	3M™ EMS Near-Surface Marker 1432	Telecommunication
	80-6113-2129-2	3M™ iD Near-Surface Marker 1432-XR/iD	Telecommunication
	80-6102-3037-9	3M™ EMS Near-Surface Marker 1433	Power (US) ***
	80-6113-2130-0	3M™ iD Near-Surface Marker 1433-XR/iD	Power (US) ***
	80-6102-3038-7	3M™ EMS Near-Surface Marker 1434	Water ***
	80-6113-2131-8	3M™ iD Near-Surface Marker 1434-XR/iD	Water ***
	80-6102-3039-5	3M™ EMS Near-Surface Marker 1435	Waste Water
	80-6113-2132-6	3M™ iD Near-Surface Marker 1435-XR/iD	Waste Water
	80-6102-3040-3	3M™ EMS Near-Surface Marker 1436	Gas
	80-6113-2133-4	3M™ iD Near-Surface Marker 1436-XR/iD	Gas
	80-6113-2994-9	3M™ iD Near-Surface Marker 1437-XR/iD	Cable TV and communications
	80-6113-2134-2	3M™ iD Near-Surface Marker 1438-XR/iD	General Purpose and Reclaimed Water



3M™ Full Range Marker

The Full Range marker is suited for deeper applications. Its 38 cm diameter makes it ideal for use as a digging shield over sensitive underground facilities.

Maximum locating depth:
 Passive Marker: 2,4 m (2,75 m with Dynatel 7000 Series)
 iD Marker: 2,0 m (2,4 m with Dynatel 7000 Series)

Dimensions: 38,1 cm diameter x 1,65 cm thick

Weight: 450 g

Packaging: 25 per carton

Shipping weight: 13,61 kg

Installation orientation: horizontal

Temperature range:
 Operation: -20 °C to 50 °C
 Storage: -40 °C to 70 °C



	3M Stock Number	Product	Application
 	80-6102-2107-1	3M™ EMS Full Range Marker 1250	Telecommunication
	80-6113-2123-5	3M™ iD Full Range Marker 1250-XR/iD	Telecommunication
 	80-6102-2129-5	3M™ EMS Full Range Marker 1251	Power (US) ***
	80-6113-2124-3	3M™ iD Full Range Marker 1251-XR/iD	Power (US) ***
 	80-6102-2151-9	3M™ EMS Full Range Marker 1252	Water ***
	80-6113-2125-0	3M™ iD Full Range Marker 1252-XR/iD	Water ***
 	80-6102-2150-1	3M™ EMS Full Range Marker 1253	Waste Water
	80-6113-2126-8	3M™ iD Full Range Marker 1253-XR/iD	Waste Water
 	80-6102-2155-0	3M™ EMS Full Range Marker 1254	Gas
	80-6113-2127-6	3M™ iD Full Range Marker 1254-XR/iD	Gas
	80-6113-2128-4	3M™ iD Full Range Marker 1428-XR/iD	General Purpose and Reclaimed Water

3M™ Mini-Marker

Mini-Marker have been designed for marking applications at slightly deeper depths. They need to be installed exactly horizontally, where the marker spokes in the 20,1 cm diameter mini-marker help stabilize it in the correct position after placement.

Technical Specifications

Maximum locating depth:	1,8 m (2,1 m with Dynatel 7000 Series)
Dimensions:	20,1 cm diameter x 3,2 cm thick
Weight:	142 g
Packaging:	50 per carton
Shipping weight:	7,7 kg
Installation orientation:	horizontal
Temperature range:	
Operation:	-20 °C to 50 °C
Storage:	-40 °C to 70 °C



	3M Stock Number	Product	Application
	80-6102-2191-5	3M™ EMS Mini-Marker 1255	Telecommunication
	80-6102-2192-3	3M™ EMS Mini-Marker 1256	Power (US) ***
	80-6102-2193-1	3M™ EMS Mini-Marker 1257	Water ***
	80-6102-2194-9	3M™ EMS Mini-Marker 1258	Waste Water
	80-6102-2195-6	3M™ EMS Mini-Marker 1259	Gas



3M™ Disk Marker (not for direct burial)

Disk Markers provide an easy and accurate method of precisely locating flush-mounted facilities, which become covered by backfill. The four-inch disk marker is easily fastened to the underside of non-metallic lids or covers over flush-mounted facilities, such as hand holes, manholes and other grade-level enclosures during construction and maintenance. Disk Markers are not intended for direct burial.

Technical Specifications

Maximum locating depth:	
Passive Disk Marker:	1,5 m (1,8 m with Dynatel 7000 Series)
iD Disk Marker:	1,2 m (1,0 m for Water & Power US) (1,5 m with Dynatel 7000 Series)
Dimensions:	10,4 cm diameter sphere
Weight:	39,7 g
Packaging:	210 per carton
Shipping weight:	12,27 kg
Installation orientation:	horizontal
Temperature range:	
Operation:	-20 °C to 50 °C
Storage:	-40 °C to 70 °C



	3M Stock Number	Product	Application
	80-6111-6118-5	3M™ EMS Disk Marker 1411-XR	Telecommunication
	80-6113-0351-4	3M™ iD Disk Marker 1411-XR/iD	Telecommunication
	80-6111-6119-3	3M™ EMS Disk Marker 1412-XR	Power (US) ***
	80-6113-0352-2	3M™ iD Disk Marker 1412-XR/iD	Power (US) ***
	80-6300-0026-5	3M™ EMS Disk Marker 1413-XR	Water ***
	80-6113-0353-0	3M™ iD Disk Marker 1413-XR/iD	Water ***
	80-6300-0027-3	3M™ EMS Disk Marker 1414-XR	Waste Water
	80-6113-0354-8	3M™ iD Disk Marker 1414-XR/iD	Waste Water
	80-6300-0028-1	3M™ EMS Disk Marker 1415-XR	Gas
	80-6113-0355-5	3M™ iD Disk Marker 1415-XR/iD	Gas
	80-6111-6923-8	3M™ EMS Disk Marker 1418-XR	General Purpose and Reclaimed Water
	80-6113-0356-3	3M™ iD Disk Marker 1418-XR/iD	General Purpose and Reclaimed Water
	80-6111-6709-1	3M™ EMS Disk Marker 1417-XR	Cable TV and communications

3M™ Dynatel™ EMS Marker Locator 1420E-iD

The Dynatel Electronic Marker System (EMS) Marker Locator 1420E-iD is a microprocessor-based system that quickly and efficiently locates underground markers - years after construction or maintenance.

Designed to be accurate, fast and integrated, the 1420E-iD EMS marker locator allows to accurately and easily:

- Locate, read and write to 3M iD markers
- Pinpoint the location and estimate the depth of all existing models of properly installed underground passive EMS markers
- Conduct direct depth reading of iD markers
- Locate two different marker frequencies simultaneously

A feature exclusive to the 1420E-iD marker locator is the ability to read, write and lock programmed information into the 3M™ Electronic Marker System iD Markers. Information such as a pre-programmed unique identification number, facility data, owner information, application type, placement date and other details from up to 100 markers can all be stored with date/time stamp and transmitted back to your PC for enhanced resource management.

Lightweight and compact, the locator is rugged, ergonomic and requires very little operator training. A large bright backlit digital liquid crystal display screen and soft-key operation make it easy to understand and use for more precise locates. A "memory" feature remembers operator set-up from the previous use. A standard RS232/USB communications port allows interface to an external computer for uploading/downloading of data, unit configuration and remote software upgrades. The system is estimated to operate for more than 20 hours on eight AA alkaline batteries.



Technical Specifications

Electrical Specifications

Marker compatibility:	All 3M EMS markers (frequencies) *
Dual marker mode:	Any two frequencies simultaneously
iD Marker read range:	
Near Surface marker:	0,6 m
Ball marker:	1,2 m (1,0 m for Water *** & Power (US) ***)
Full Range Marker:	2 m
Accuracy iD marker depth measurement :	±15% ±5 cm up to marker depth specifications
Display:	backlit, high-resolution graphic display
Memory storage with date / time stamp:	Read marker records: 100 Written marker records: 100 User defined templates: 32 Depth measurement: 5
Power:	Eight AA size alkaline batteries
Typical battery life:	20 hours
Serial port:	Standard RS232 serial with DB9 **

Physical Specifications

Dimensions, (H x W x D):	26,7 cm x 11,8 cm x 76,2 cm
Weight:	1,8 kg

Environmental Specifications

Operating temperature	-20 °C to 50 °C
Storage temperature:	-20 °C to 70 °C
Regulatory:	CE
Standard:	IP54

* Available frequencies depend on country specific regulations and are enabled when running the "Initial Configuration" using the software "Dynatel Locator PC Tools"

** USB - Serial adapter included



Dynatel™ Locator PC Tools Software

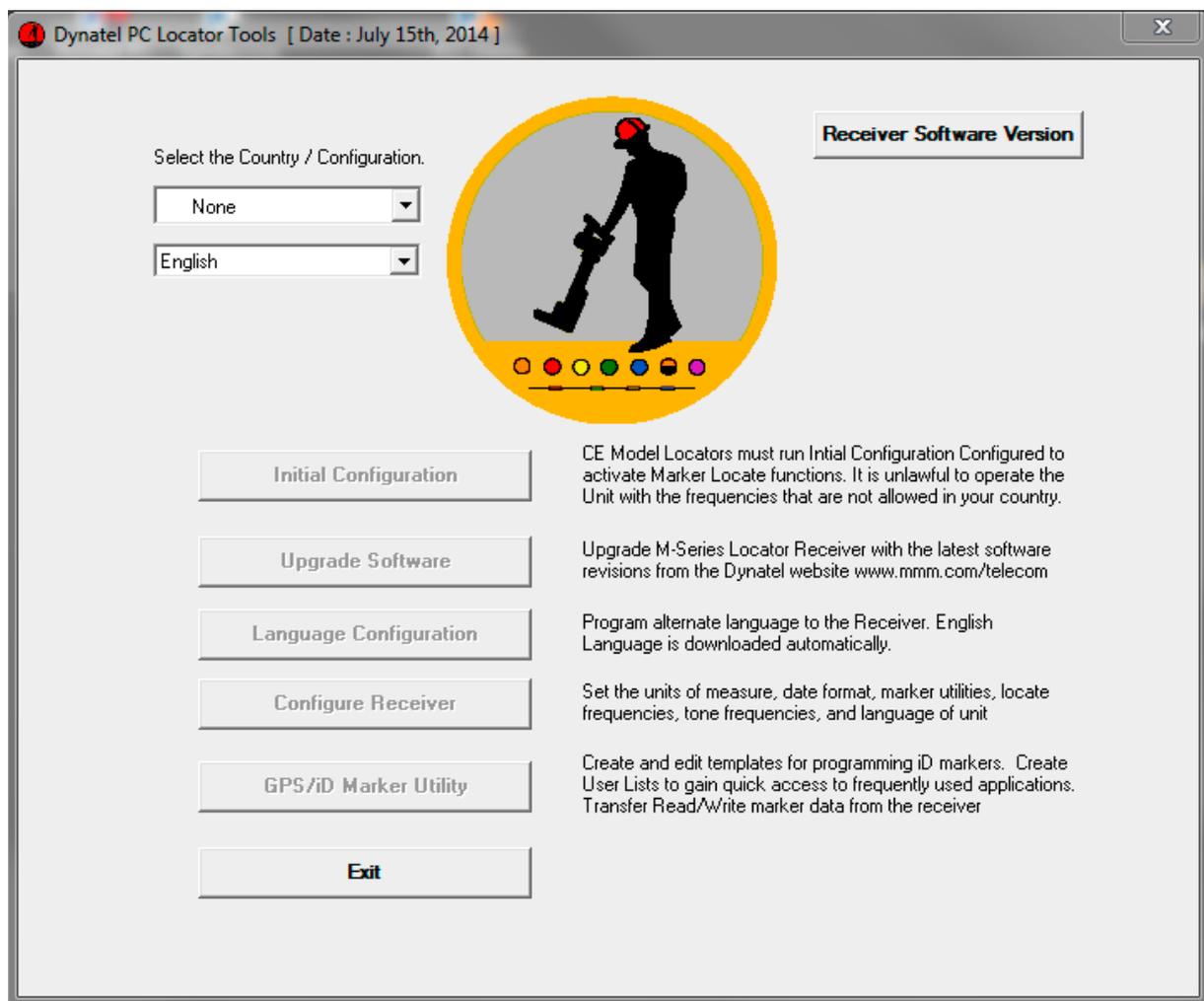
The Software „Dynatel Locator PC Tools“ (available for download on the 3M web site „www.3m.com/dynatel“) provides the user an excellent interface between the receiver and a PC and is mandatory for the first time configuration of marker locators.

This software utility provides the tool by which the user can

- Upgrade the receiver to the latest software revision
- Enable marker frequencies depending on country specific regulations ***
- Load an alternate language in the receiver
- Provide an iD marker utility.

The iD marker utility can be used to

- Create templates for programming iD markers
- Download marker data that has been programmed or read by the receiver for documentation databases.



*** Use of the Water and/or Power (US) frequency is restricted in some of the European countries. The receiver needs to go through Initial Configuration before it can be used. Initial Configuration will only enable the frequencies which are legally allowed in the selected country the unit will be used in. Water and Power (US) frequencies might be subjected to interferences from long wave radio stations operating in this frequency range. Even the Water and/or Power (US) frequency might be available in a country, it is recommended to do a field trial at every location and test the ability to locate and read the specific markers at the desired depth.

Please check with a 3M representative before ordering markers with Water or Power (US) frequency.

Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

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