



VIVAX
METROTECH

vLoc3-ML

Technical Specifications V1.5



VIVAX
METROTECH

Worldwide Locations

World Headquarters, United States of America

Vivax-Metrotech Corporation

3251 Olcott Street, Santa Clara, CA 95054, USA

T/Free : 1-800-446-3392

Tel : +1-408-734-3880

Fax : +1-408-904-4964

Website : www.vivax-metrotech.com

Email : SalesUSA@vxmt.com

Central/South America and the Caribbean

Ventas para América Latina

3251 Olcott Street, Santa Clara, CA 95054, USA

T/Free : 1-800-446-3392

Tel : +1-408-734-3880

Fax : +1-408-743-5597

Website : www.vivax-metrotech.com

Email : LatinSales@vxmt.com

Canada

Vivax Canada, Inc.

41 Courtland Ave Unit 8, Vaughan, ON L4K 3T3, Canada

Tel : +1-289-846-3010

Fax : +1-905-752-0214

Website : www.vivax-metrotech.ca

Email : SalesCA@vxmt.com

United Kingdom

Vivax-Metrotech Ltd.

Unit 1, B/C Polden Business Centre, Bristol Road, Bridgwater, Somerset, TA6 4AW, UK

Tel : +44(0)1793 822679

Website : www.vivax-metrotech.co.uk

Email : SalesUK@vxmt.com

France

Vivax-Metrotech SAS

Technoparc - 1 allée du Moulin Berger, 69130 Ecully, France

Tel : +33(0)4 72 53 03 03

Fax : +33(0)4 72 53 03 13

Website : www.vivax-metrotech.fr

Email : SalesFR@vxmt.com

Germany

Metrotech Vertriebs GmbH

Am steinernen Kreuz 10a
96110 Schesslitz

Tel : +49 9542 77227-42

Website : www.vivax-metrotech.de

Email : SalesEU@vxmt.com

China

Vivax-Metrotech (Shanghai) Ltd.

Building 10, Lane 1158 Zhongxin Rd.,
Songjiang District, Shanghai, China, 201615

Tel : +86-21-5109-9980

Website : www.vivax-metrotech.com

Email : SalesCN@vxmt.com.cn

A. Description and Typical Applications

Item	Parameter
Model Name	vLoc3-ML
Model Number	VX220-01
Description	<ul style="list-style-type: none"> - Multi-purpose precision locator receiver - Electronic marker- detection
Intended Use	<ul style="list-style-type: none"> - Locating & pinpointing the position of buried pipes, cables and sondes - Detection of any one of 8 marker types buried to a depth of 6ft (2m) - Fault-finding of damaged cables or pipe defects

B. Characteristics

Item	Parameter
Construction	High-impact thermoplastic (ABS) injection molded housing
Weight	5.7lbs (2.6kg)
Dimensions	12.2in(L) x 6.3in(W) x 28.4in(H) (310mm x 159mm x 721mm)
Display Type	High-Visibility Color Display, 4.3"/10cm with 480 x 272 resolution and automatic backlight
Receiver Antennas	<p>Two sets of Omnidirectional Antennas, each comprising:</p> <ul style="list-style-type: none"> • Two Compass Antennas • Two Horizontal Antennas • Two Vertical Antennas <p>One set of EMS transmit/receive antennas</p>
Batteries	<ul style="list-style-type: none"> - Rechargeable custom Lithium-ion batteries with 100-240V AC mains charger (Standard) - Six x AA Alkaline batteries
Battery Life	<ul style="list-style-type: none"> - Lithium-ion – typically 30 hours of continuous use at 70°F (21°C) - Alkaline – typically 10 hours of intermittent use at 70°F (21°C)
Environmental	IP65
External Connectors	<ul style="list-style-type: none"> - Accessory Socket – to charge the internal batteries and attach accessories - Mini-USB socket for data transfer and programming
Temperature Range	<ul style="list-style-type: none"> - Operating: -4°F to 122°F (-20°C to 50°C) - Storage: -40°F to 140°F (-40°C to 60°C) - Recommended storage temperature for lithium-ion batteries is typically:

	<ul style="list-style-type: none"> • Long-term storage: 59°F to 77°F (15°C to 25°C) • Short-term storage: 104°F (Up to 40°C) • Avoid: Temperatures below -4°F (-20°C) or above 140°F (60°C) <p>Storing batteries in a cool, dry place and at around 50% charge helps preserve battery health over time.</p>
Compliance and Approvals	<ul style="list-style-type: none"> - Complies with European standard CE (Directive 99/5/EC) <ul style="list-style-type: none"> • EN 55011 • EN 61000-4-2: A1 & A2 • EN 61000-4-3 • EN 61000-4-8: A1 • ETSI EN 300 330-2 • ETSI EN 301 489-1 • ETSI EN 301 489-3 - Complies with FCC Rules Part 15 <ul style="list-style-type: none"> • CFR 47 part 2 • CFR 47 Part 15
Manufacturing	Designed and manufactured per ISO 9001:2015
What's In the Box	<ul style="list-style-type: none"> - vLoc3-ML Receiver - USB data transfer cable - Custom lithium-ion battery pack - 100-240V AC mains charger - Alkaline battery holder - User handbook - Soft carry bag - Combination Bluetooth & WiFi module (factory embedded not accessible)
Network & Wireless Interfaces	<ul style="list-style-type: none"> - Wi-Fi: IEEE 802.11b/g/n (2.4 GHz) - ASCII password entry support - Bluetooth: Version 4.2 (BR/EDR and Low Energy) - Dual-mode operation: Supports simultaneous Wi-Fi and Bluetooth connections
Compatible Accessories	<ul style="list-style-type: none"> - A-frame Fault Locator - Remote Antenna (Stethoscope) - Vehicle Charging DC Lead - Range of Sondes (waterproof, self-contained transmitters for use in nonmetallic pipes & ducts) - Receiver Clamp

C. Operational

Item	Parameter
Information Displayed	<p>Information screen:</p> <ul style="list-style-type: none"> - Real-time horizontal accuracy - Altitude

- SD Reset
- GPS coordinates available in DD, DDM, DMS format
- Measured signal current in mA or Amps
- Measured estimated depth of signal in Ft. and inches, Inches, or Meter
- Data logging storage options: store or discard
- Incremental data log count per survey
- Depth to marker

Status Bar Information:

- Antenna configuration: Peak, Peak with arrows, Null, Broad, Broad with arrows, Delta Null, Omni Directional Peak, Omni Directional Broad
- Marker detection icon
- Continuous depth estimation
- Continuous current measurement
- Battery charge level condition and battery type (Li-Ion / Alkaline)
- Speaker volume
- Bluetooth status
- GNSS Fix type status
- Wi-Fi connection status

Dedicated Marker Screen:

- Marker type icon
- Marker signal strength bar graph (color-coded) with numeric value and peak level indicator
- Circular bar graph to indicate marker signal strength

Dual-Marker and Locate Screen (in addition to the classic locate screen):

- Marker type icon
- Circular bar graph to indicate marker signal strength

Locate screen (Classic display):

- Signal strength moving bar graph & numeric value from 0% to 99.9%
- Bar graph color-coded, indicating distortion level
- Peak level indicator
- Proportional left/right null indication
- Compass with full 360°-line direction indicator
- Gain level 0dB to 140dB
- Frequency selected
- Warnings when triggered
- Plug and play automatic recognition of accessories
- Accessory specific custom screens

Customer definable start-up screen

Locate Perspectives

- **Classic Locate** – moving bar graph with numeric value showing signal strength
- **Vector Locate Screen** – fully automatic gain control with information display
 - Offset distance measurement to signal
 - Directional left or right arrow to offset location
 - Continuous depth estimation
 - Locate signal uncertainty with scaled circle indicator
 - Mini plan view for line orientation
 - Scale adjustment for deep utilities
- **Transverse Graph Screen** - visual assessment of locate quality and distortion
 - Visual peak indicator
 - Visual null indicator
 - Comparison of peak and null signal simultaneously
- **Plan View Screen** – fully automatic gain graphical representation of the cable position independent of cable direction
 - Directional guidance arrow
 - Line orientation
 - Locate uncertainty represented with dash lines
 - Locate Uncertainty Line – Color Change Indicator
- **3D Sonde Locate Screen** – directing arrow to move to the Sonde position along the polar axis
 - Directional guidance arrow
 - Null point indicator
 - Bar graph with peak signal response
 - Magnetic field alignment indicator

Configuration

- The intuitive setup menu enables the user to configure:
 - Display Backlight (Low, Medium, High, Auto)
 - Frequency menu
 - Pipe diameter
 - Locate Perspective (Classic, Vector, Transverse Graph, Plan View, Sonde)
 - Dedicated Marker or Dual–Marker Mode
 - Measurement units (Feet, Inches, Metres)
 - Speaker Volume (Low, Medium, High, Off)
 - Continuous information (Depth, Signal current, Depth & Current, Off)
 - Warnings (Overhead cable, Swing alert, Shallow depth, Signal overload)
 - Sound configuration (AM, FM)
 - Antenna configuration (Peak, Peak with arrows, Null, Broad, Broad with arrows, Delta Null, Omni Directional Peak, Omni Directional Broad)
 - Auto Power off (5 mins, 10 mins, Never)

	<ul style="list-style-type: none"> • Coordinate Format (DMS, DDM, DD) • Language (31 different languages available) • Survey type (Electric, Gas, Communications, Potable Water, Reclaimed Water, Sewer, Temporary Survey, Proposed Excavation, Oil) • Marker type (Power, Water, Sanitary, Telephone, Gas, CATV, Non-Potable Water, Power-Europe) • Bluetooth/WiFi Connection Enable/Disable/Auto Connect • Bluetooth Pairing • WiFi Network connection • Set up frequency selection to toggle by “f” pushbutton • Change antenna mode by toggling “Enter” pushbutton • Change screen views selection to toggle by long press “Enter” pushbutton 																											
Data Logging	<ul style="list-style-type: none"> - 50 million records of internal storage - Data can also be transferred via Bluetooth to the VMap Mobile App and VMap Cloud - All parameters stored at each location, including depth, current, date, time, mode, gain setting, frequency, longitude, latitude, and more 																											
Data Transfer	<ul style="list-style-type: none"> - Via the Vivax-Metrotech “MyLocator3” software application available free of charge from www.vivax-metrotech.com. Data can be saved in csv, kml, shp, dxf, txt, xls and xlsx formats. The transfer is via a USB cable connection from the locator to the host computer <p>Or</p> <ul style="list-style-type: none"> - Via Bluetooth from the locator to the VMap App and also into the VMap Cloud (Vivax-Metrotech Cloud) 																											
Operating Frequencies	<ul style="list-style-type: none"> - Configurable frequencies from 98Hz to 200 kHz • Dedicated Power 50Hz and 60Hz • Radio 10.0kHz - 22.7kHz bandwidth • Power harmonics for 50Hz or 60Hz regions • SD-USA: 256Hz/512Hz, SD-EUROPE: 320Hz/640Hz 																											
Marker Frequencies	<table border="1" data-bbox="427 1498 1474 1853"> <thead> <tr> <th>Ref #</th> <th>Utility</th> <th>Frequency (Hz)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Power (Red)</td> <td>169,800</td> </tr> <tr> <td>2</td> <td>Water (Blue)</td> <td>145,700</td> </tr> <tr> <td>3</td> <td>Sanitary (Green)</td> <td>121,600</td> </tr> <tr> <td>4</td> <td>Telephone (Orange)</td> <td>101,400</td> </tr> <tr> <td>5</td> <td>Gas (Yellow)</td> <td>83,000</td> </tr> <tr> <td>6</td> <td>CATV (Orange/Black)</td> <td>77,000</td> </tr> <tr> <td>7</td> <td>Non-potable Water (Purple)</td> <td>66,350</td> </tr> <tr> <td>9*</td> <td>Power Europe (Blue/Red)</td> <td>134,000</td> </tr> </tbody> </table> <p>*Not available in all markets</p>	Ref #	Utility	Frequency (Hz)	1	Power (Red)	169,800	2	Water (Blue)	145,700	3	Sanitary (Green)	121,600	4	Telephone (Orange)	101,400	5	Gas (Yellow)	83,000	6	CATV (Orange/Black)	77,000	7	Non-potable Water (Purple)	66,350	9*	Power Europe (Blue/Red)	134,000
Ref #	Utility	Frequency (Hz)																										
1	Power (Red)	169,800																										
2	Water (Blue)	145,700																										
3	Sanitary (Green)	121,600																										
4	Telephone (Orange)	101,400																										
5	Gas (Yellow)	83,000																										
6	CATV (Orange/Black)	77,000																										
7	Non-potable Water (Purple)	66,350																										
9*	Power Europe (Blue/Red)	134,000																										
Operating Antenna	<ul style="list-style-type: none"> - Peak, Peak with arrows, Broad Peak 																											

Modes	<ul style="list-style-type: none"> - Broad with arrows - Null, Delta Null - Omni Directional Peak, Omni Directional Broad - Marker locate - Marker and line locate 	
Integrity Test	<ul style="list-style-type: none"> - Calibration Self-test <ul style="list-style-type: none"> • Uses direct signal injection to test antenna transfer function (TRF) - Distorted Frequency Test (DFT) <ul style="list-style-type: none"> • Aids in selecting optimal locate frequencies in noisy environments 	
Gain Control	<ul style="list-style-type: none"> - Manual gain using "+" or "-" keys - One-touch of "+" or "-" keys rescales to 60% of the bar graph scale - In Vector Screen, "+" and "-" keys act as zoom feature to keep target utility in view - In the Transverse Graph screen, "+" key saves the screen graph, "-" key clears the screen 	
Accuracy²	Locate pinpointing accuracy:	<ul style="list-style-type: none"> - Up to 9ft (3m) – +/- 3% of depth - Over 9ft (3m) – +/- 5% of depth
	Depth measurement accuracy:	+/- 3% of depth
	Current measurement accuracy:	<ul style="list-style-type: none"> - +/- 3% of actual current – up to 9ft (3m) - +/- 5% of actual current – over 9ft (3m)
	Depth range:	<ul style="list-style-type: none"> - Dependent on the strength of the signal radiating to the locator - Maximum depth displayed 98ft (30m)
	Marker depth:	<ul style="list-style-type: none"> - +/- 4% of depth – up to 4ft. (1.2m) - +/- 10% of depth – over 4ft (1.2m)
Sensitivity	5 uA rms @ 1m depth, 32768Hz to yield +20dB SNR referred to a <10Hz> bandwidth	
Compatible Transmitters	Loc3 series and any Vivax-Metrotech transmitter with matching frequencies	

D. Communications

Item	Parameter
Bluetooth & Wi-Fi	Internal Bluetooth for communicating with: <ul style="list-style-type: none"> • External GPS, data logging devices or Apps • Apple® devices • Android™ devices • Windows® devices

Internal Wi-Fi for Over the air updates and future applications

E. Shipping and Packaging

Item	Parameter
Shipping Weight	16lbs. (7.3kg)
Shipping Dimension	30in(L) x 11in(W) x 14in(H) (800mm x 280mm x 380mm)

F. Warranty

Item	Parameter
Warranty	<ul style="list-style-type: none"> - 24 months - Extended warranty available

G. Software Updates

Item	Parameter
Software	<ul style="list-style-type: none"> - The software can be upgraded using a PC with a USB port. Program updates and locator software updates are available via the free MyLocator3 app - Software updates provided over the air (OTA) when connected to a WiFi hotspot.

- 1) Battery life varies with usage conditions such as backlight, brightness, speaker volume, and Wi-Fi/BT connectivity; continuous operation may reduce the runtime compared to typical intermittent use. Lithium-ion battery performance will gradually degrade over time and with repeated charge cycles, leading to reduced operating duration under continuous use. Re-charging cycles are approximately 500 times the life cycle.
- 2) Locate and depth accuracy are quoted for 20°C and average soil conductivity. It is also assumed the return current localisation is deep compared to the target cable.

Disclaimer: Product and accessory specifications and availability information are subject to change without prior notice.

Performance Disclaimer

Actual performance may vary depending on environmental conditions, user technique, and signal interference.

Software & Firmware Disclaimer

Functionality described may depend on the software or firmware version installed. Features are subject to modification through future updates.

Battery & Power Disclaimer

Battery life is estimated and may vary based on settings, usage, temperature, and battery age.

Calibration Disclaimer

Self-Test results confirm system consistency with factory calibration but do not replace periodic professional calibration if required by company policy or regulation.

Compliance Disclaimer

Compliance with regional standards may vary by country. Users are responsible for ensuring the product is used in accordance with local laws and regulations.

Use Case Disclaimer

The system is intended for professional utility locating and should not be used for purposes outside the manufacturer's defined scope.

Third-Party Services Disclaimer

Use of GNSS correction services or cloud platforms may require third-party subscriptions and are subject to their terms and availability.

Feature Availability Disclaimer:

Certain features, frequencies, or accessories may only be available in specific markets due to regional regulations or product certifications. Please consult your local Vivax-Metrotech representative for availability in your area.

Trademark Disclaimer:

All product names, logos, and brands mentioned are the property of their respective owners. All company, product, and service names used in this document are for identification purposes only. Use of these names, logos, or brands does not imply endorsement.