VIVAX METROTECH

vLoc3 RTK-Pro

Technical Specifications V1.6

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
D-96110 Schesslitz

Tel : +49 954 277 227 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
Fax : +86-21-2281-9562
Website : www.vivax-metrotech.com
Email : SalesCN@vxmt.com.cn

A. Description and Typical Applications

Item	Parameter
Model Name	RTK-Pro
Model Number	VX226-01
Description	High-precision utility locator that combines advanced electromagnetic locating with integrated RTK GNSS for accurate mapping of buried utilities.
Intended Use	- Locating & pinpointing the position of buried pipes, cables, and sondes - High accuracy GNSS mapping of above and buried utility assets data collection in one device - Fault finding of damaged cables or pipe defects

B. Characteristics

Item	Parameter
Construction	High impact thermoplastic (ABS) injection molded housing
Weight	5.5lbs (*2.5kg*)
Dimensions	14.7in(L) x 4.9in(W) x 29.8in(H) (*374mm x 125mm x 758mm*)
Display Type	High-Visibility Color Display, 4.3”/10cm with 480 x 272 resolution and automatic backlight
Receiver Antennas	- Two sets of Omnidirectional Antennas, each comprising: • Two Compass antennas • Two Horizontal antennas • Two Vertical antennas - GNSS Antenna multi constellation - Cellular Antenna
Batteries	- Rechargeable custom Lithium-ion batteries with 100-240V AC mains charger (Standard) - Six x AA Alkaline batteries (optional)
Battery Life(1)	- Lithium-ion – typically *19 hours of continuous use at 70ºF *(21ºC)* - Alkaline – typically 6 hours of intermittent use at 70ºF *(21ºC)*
Environmental	IP65
External Connectors	- Accessory Socket – to charge the internal batteries and attach accessories - Mini USB socket for data transfer and programming - Nano SIM card for cellular connectivity - Micro USB for GNSS module firmware update

Temperature Range	- Operating: -4ºF to 122ºF (-20ºC to 50ºC) - Storage: -40ºF to 140ºF (-40ºC to 60ºC) - Recommended storage temperature for lithium-ion batteries is typically: • 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) *Storing batteries in a cool, dry place and at around 50% charge helps preserve battery health over time.	
Compliance and Approvals	- Complies with European standard CE (Directive 99/5/EC) • 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 • CFR 47 part 2 • CFR 47 Part 15 - PTCRB approval - FCC approval - AT&T Network approval
Manufacturing	Designed and manufactured per ISO 9001:2015	
What's In the Box	- vLoc3 RTK-Pro Receiver - USB data transfer cable - Custom lithium-ion battery pack - 100-240V AC mains charger	- Six x AA Alkaline battery holder - User handbook - Carry bag - Combination Bluetooth & WiFi module (factory embedded not accessible)
Compatible Accessories	- MLA (Marker Locator Adapter) to locate buried EMS Markers - A-frame fault locator - Remote Antenna (Stethoscope) - Vehicle Charging DC Lead - Range of Sondes (waterproof, self-contained transmitters for use in nonmetallic pipes & ducts) - Adapters • Tall adapter • Survey Adapter (30cm) • Long Survey Adapter (91cm) - Receiver clamp for cable identification	

C. RTK

Item	Parameter
GNSS Features	- Concurrent reception of multiple GNSS constellations: • GPS, GLONASS, Galileo, BeiDou, QZSS, SBAS - GNSS Signals: L1C/A, L2C, L1OF, L2OF, E1B/C, E5b, B1I, B2I - *Position accuracy RTK 0.01 m + 1 ppm CEP - Convergence time RTK < 10 sec - Acquisition: Cold starts = 24s, Reacquisition = 2s - SBAS and QZSS support **Specification dependent on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry*
NTRIP	- Compatible with Casters with RTCM3.x output messages - Compatible with MSM4, MSM5, MSM6, MSM7 - Real-time reference station connection status displayed on the receiver - Real-time horizontal accuracy in 2DRMS
Network & Wireless Interfaces(3)	- LTE Cat-4 with fallback to 3G and 2G - LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 - LTE-TDD: B38/B39/B40/B41 - WCDMA (3G): B1/B2/B4/B5/B6/B8/B19 - GSM (2G): B2 1900MHz / B3 1800MHz / B5 850MHz / B8 900MHz - PTCRB Certified - AT&T network approved - FOTA / DFOTA (firmware over the air) automatic updates - Wi-Fi: IEEE 802.11b/g/n (2.4 GHz) - ASCII password entry support - Bluetooth: Version 4.2 (BR/EDR and BLE) - Supports multiple simultaneous Wi-Fi and Bluetooth connections at the same time - Data Rates: • Wi-Fi: Up to 72 Mbps • Bluetooth: Up to 3 Mbps
Third-party Support	- Bluetooth connectivity to mobile devices for mapping on Android or iOS - NTRIP over Bluetooth from mobile device - NMEA0183 output over Bluetooth for high accuracy core location on mobile device - Connectivity from VMMap Cloud to external database via API

D. Operational

Item	Parameter
Information Displayed	**Information screen:** - Real-time GPS horizontal accuracy in 2DRMS - Spirit level used to align GNSS antenna - GPS coordinates available in DD, DDM, DMS format - Altitude MSL - Measured signal current in mA or Amps - Measured estimated depth of signal in Ft. and inches, Inches, Meter - Data logging storage options: store or discard - Incremental data log count per survey - Feature and attribute logging from .vxj library **Status Bar Information:** - Antenna configuration: Peak, Peak with arrows, Null, Broad, Broad with arrows, Delta Null, Omni Directional Peak, Omni Directional Broad - Continuous depth estimation - Continuous current measurement - Battery charge level condition and battery type (Li-Ion / Alkaline) - Speaker volume - Bluetooth status - GNSS Fix type status - Cellular connection status and signal quality - Wi-Fi connection status **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 - Distance from last data logged point - 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 5000, Classic Pro, Vector, Transverse Graph, Plan View, Sonde) - 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)

	- MLA Screen Style (Classic 5000, Classic Pro) - Auto Power off (5 mins, 10 mins, Never) - Coordinate Format (DMS, DDM, DD) - GPS Source (internal, Bluetooth) - Language (31 different languages available) - Survey type (Electric, Gas, Communications, Potable Water, Reclaimed Water, Sewer, Temporary Survey, Proposed Excavation, Oil) - Adapter (Tall, Survey, Long Survey, Not attached) - Marker type (when MLA is connected: Power, Water, Sanitary, Telephone, Gas, CATV, Non-Potable Water, Power-Europe) - Bluetooth/Wi-Fi Connection Enable/Disable/Auto Connect - Bluetooth Pairing - Wi-Fi Network connection - GNSS RTK Sources - Log Feature / Auto-Log Feature - 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	- 50 million record internal storage - Automatic data transfer when connected to cellular network or Wi-Fi hotspot to the VMMap Cloud and VMMapPro App - All parameters stored at each location including depth, current, date, time, mode, gain setting, frequency, locate uncertainty, longitude, latitude, height above sea-level, and more
Data Transfer	- 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. **Or** - Cellular or Wi-Fi hotspot transfer to the VMMap Cloud (Vivax-Metrotech Cloud)
Operating Frequencies	- Configurable frequencies from 98Hz to 200kHz • 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 • Signal Select: SIS-491Hz, SIS-982Hz, SIS-8440Hz, SIS-9.82kHz (Europe only)
Operating Antenna Modes	- Broad with arrows - Null, Delta Null - Peak, Peak with arrows, Broad Peak - Omni Directional Peak, Omni Directional Broad

Integrity Test	- Calibration Self-test • Uses direct signal injection to test antenna transfer function (TRF) - Distorted Frequency Test (DFT) • Aids in selecting optimal locate frequencies in noisy environments	
Gain Control	- Manual gain using "**+**" or "**-**" keys - One-touch of "**+**" or "**-**" keys rescales to 60% of the bar graph scale - In Vector Screen automatic gain control is used, "**+**" 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	
Accuracy[2]	Locate pinpointing accuracy:	- Up to 9ft *(3m)* – +/- 3% of the depth - Over 9ft *(3m)* – +/- 5% of the depth
	Depth measurement accuracy:	- +/- 3% of depth
	Current measurement accuracy:	- +/- 3% of actual current – up to 9ft *(3m)* - +/- 5% of actual current – over 9ft *(3m)*
	Depth range:	- Dependent on the strength of the signal radiating to the locator - Maximum depth displayed 98ft *(29m)*
Compatible Transmitters	Loc3-5Tx, Loc3-10Tx, Loc3-25Tx and any Vivax-Metrotech transmitter with matching frequencies	

E. Shipping and Packaging

Item	Parameter
Shipping Weight	17lbs (*7.7kg*)
Shipping Dimension	16.5in(L) x 11in(W) x 32.3in(H) (*420mm x 280mm x 820mm*)

F. Warranty

Item	Parameter
Warranty	24 months (Optional extended warranty available)

G. Software Updates

Item	Parameter
Software	- 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 cellular or Wi-Fi 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.
3) Connectivity and bands dependent on world coverage region

***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
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