

PCM^x™

Pipeline Current Mapper system

User Guide

用户指南

Bedienungsanleitung

Руководство пользователя

Guía del usuario

Guide de l'utilisateur

90/UG105INT/03



Preface

About this guide

CAUTION: This guide provides basic operating instructions for the PCMx receiver and transmitters. It also contains important safety information and guidelines and as such should be read in its entirety before attempting to operate the PCMx receiver and transmitters.

This guide is intended as a quick reference guide only. For detailed instructions, including the use of accessories, help with eCert™, CALSafe™, survey measurements and usage-logging please refer to the PCMx operation and PCM Manager manuals. With the magnetometer foot removed the PCMx is automatically configured as an RD8100 PDLG cable and pipe locator. Additional instructions on its use as a cable and pipe locator can be found in the RD8100 operation manual. All manuals are available for download from www.radiodetection.com.

Certificates of conformity for the PCMx and Tx transmitter ranges can be found at www.radiodetection.com.

⚠ WARNING! Direct connection to live conductors is POTENTIALLY LETHAL. Direct connections to live conductors should be attempted by fully qualified personnel only using the relevant products that allow connections to energized lines.

⚠ WARNING! The transmitter is capable of outputting potentially lethal voltages. Take care when applying signals to any pipe or cable and be sure to notify other technicians who may be working on the line.

⚠ WARNING! Reduce audio level before using headphones to avoid damaging your hearing.

⚠ WARNING! This equipment is NOT approved for use in areas where hazardous gases may be present.

⚠ WARNING! The PCMx receiver will detect most buried conductors but there are some objects that do not radiate any detectable signal. The PCMx, or any other electromagnetic receiver, cannot detect these objects so proceed with caution. There are also some live cables which the PCMx will not be able to detect in Power mode. The PCMx does not indicate whether a signal is from a single cable or from several in close proximity.

⚠ WARNING! Batteries can get hot after prolonged use at full output power. Take care while replacing or handling batteries.

⚠ WARNING! The depth accuracy is $\pm 5\%$ or better under standard earth conditions and with undistorted fields. If you intend to excavate a located pipe, it is imperative that due care is taken appropriate to the danger of personal injury and damage to infrastructure. It is recommended that depth measurement is repeated throughout an excavation.

3 Year Extended Warranty

PCMx receivers and transmitters are covered by a 1 year warranty as standard. Customers can extend the warranty period of the receiver to a total of 3 years by registering their products within 3 months of purchase.

Registration is carried out using the PCM Manager PC software which can be downloaded from the Radiodetection website. Visit www.radiodetection.com/PCMx.

You can also register your product(s) by sending an email to rd_support@spx.com, including the following details:

- Serial number of each product to be registered
- Date of purchase
- Company name and address, including country
- Contact name, email address and telephone number
- Country of residence.

From time to time Radiodetection may release new software to improve the performance or add new functionality to its products. By registering, users will benefit from email alerts advising about new software and special offers related to its product range.

Users can opt-out at any time from receiving software and technical notifications, or just from receiving marketing material by contacting Radiodetection.

eCert and Self-Test

The PCMx receiver is safety equipment which should be regularly checked to ensure its correct operation.

eCert provides a thorough test of the PCMx locating circuitry including the magnetometer foot and supplies a Radiodetection Calibration Certificate when a positive test result is obtained.

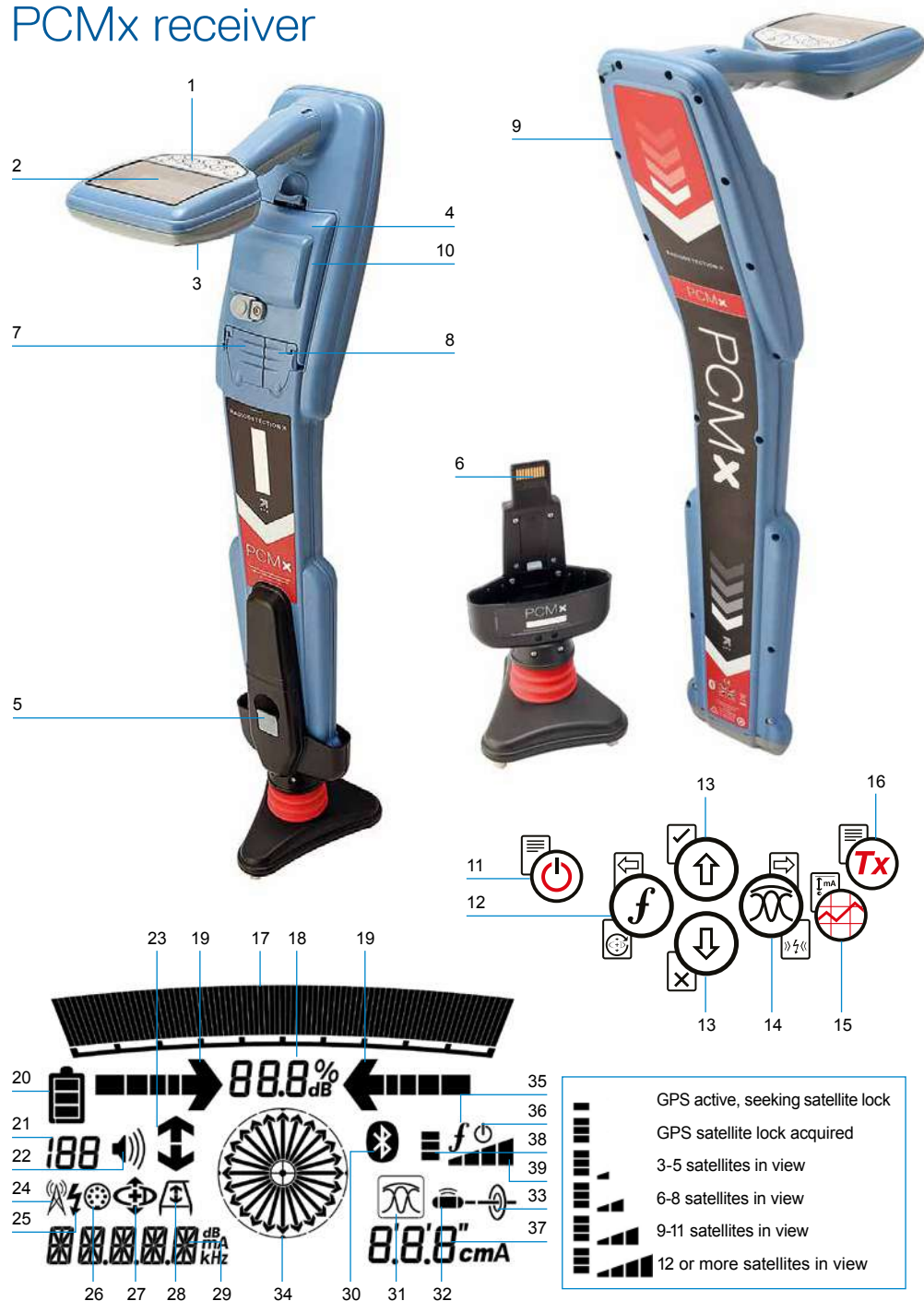
To run an eCert, the magnetometer foot must be on and the receiver should be connected to an internet-enabled PC on which the PCM Manager PC software is installed. **NOTE! Testing without the foot result in a “FAIL”.**

Refer to the PCM Manager manual for further details. Additional purchase may be required.

PCMx receivers incorporate an Enhanced Self-Test feature. In addition to the typical checks for display and power functions, the PCMx applies test signals to its locating circuitry during a Self-Test to check accuracy and performance.

We recommend that a self-test is run at least weekly, or before each use.

PCMx receiver



Receiver features

1. Keypad.
2. LCD with auto backlight.
3. Speaker.
4. Lithium-Ion battery pack.
5. Removable magnetometer foot. Used to detect the 4Hz mapping signal.
6. Connector for magnetometer foot
7. Accessory connector.
8. Headphone connector.
9. Bluetooth® module antenna.
10. USB port (inside battery compartment).

Receiver keypad

11. Power key.
12. Frequency key.
13. Up and down arrows.
14. Antenna key.
15. Survey key.
16. Transmitter key.

Receiver screen icons

17. Signal strength bar graph with peak marker.
18. Signal strength readout.
19. Null / Proportional Guidance arrows.
20. Battery level.
21. Sensitivity readout / Log number.
22. Volume level.
23. Current Direction or Fault Find arrows (see note below).
24. Radio Mode icon.
25. Power Mode icon.
26. Accessory / Measurement icon.
27. CD Mode icon.
28. A-Frame icon.

29. Frequency / current / menu readout.
30. Bluetooth status icon: Flashing icon means pairing is in progress. Solid icon indicates a connection is active.
31. Antenna mode icon: Indicates antenna mode selection: Peak / Peak+ / Null / Broad Peak / Guidance.
32. Sonde icon: Indicates that a sonde signal source is selected.
33. Line icon: Indicates that a line signal source is selected.
34. Compass: Shows the orientation of the located cable or sonde relative to the receiver.
35. Transmitter communication status – confirms successful iLOC™ communication. (Tx-1, Tx-5, Tx-10 only).
36. Transmitter standby indicator. (Tx-1, Tx-5, Tx-10 only).
37. Depth readout.
38. GPS Status.
39. GPS Signal quality.

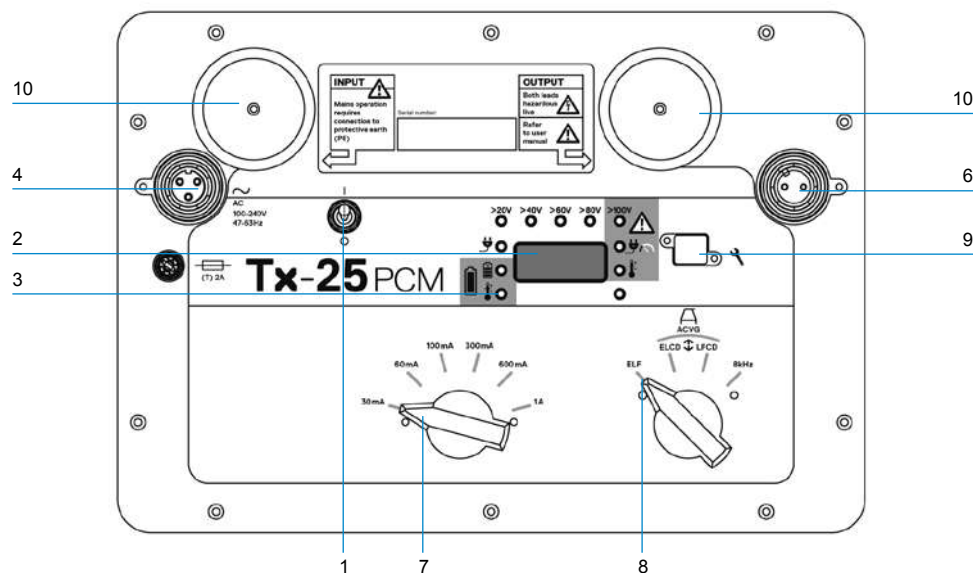
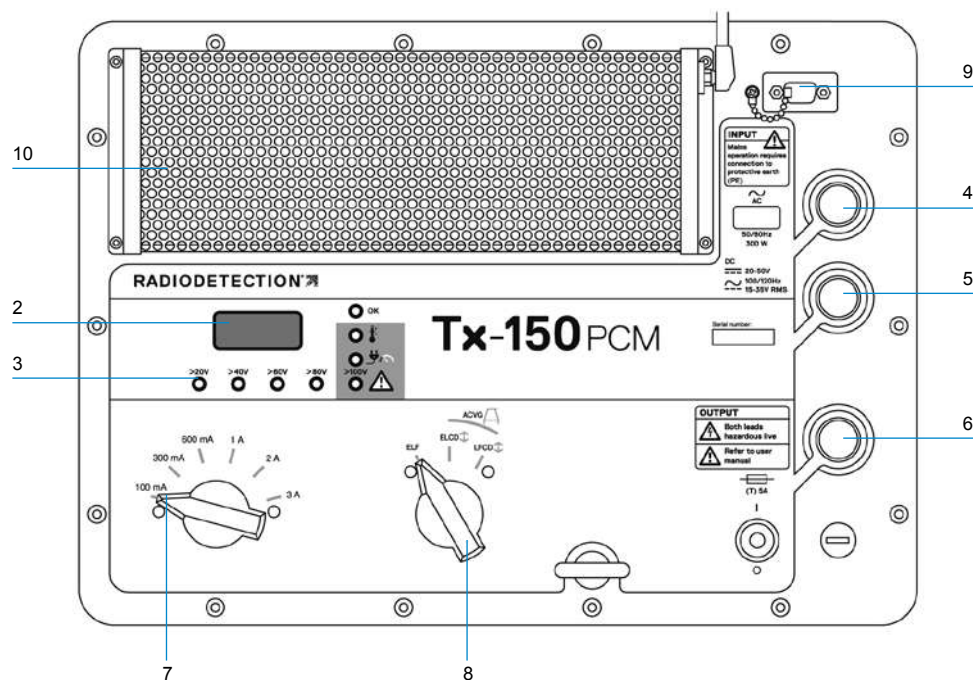
Current Direction arrows

NOTE! Different industry conventions have developed for Current Direction arrows and this is reflected in the different modes of use. In pipeline surveying the arrows indicate the return path to earth. The utility locating industry use the arrows to indicate the path of the signal as it transmitted away from the transmitter.

When the PCMx has the magnetometer foot attached, a reverse arrow, (pointing towards the Tx), on the receiver screen indicates that the user is following the correct cable or pipeline.

With the foot removed, a forward arrow, (pointing away from the Tx), indicates the user is locating the correct cable or pipeline.

Tx-150PCM & Tx-25PCM transmitters



The Tx-150PCM and the Tx-25PCM are constant current transmitters which transmit a 4Hz mapping frequency suitable for pipeline surveys.

The Tx-150PCM (150W) allows for long range signal detection of up to 30km (20 miles). Significantly fewer pipeline connection points are needed thereby reducing the time required to evaluate a section of pipeline.

The Tx-25PCM (25W) has internal Li-ion batteries that allow it to operate in the field independently of external power sources.

Transmitter features

1. On/Off switch.
2. LCD display: Indicates current output, (4Hz or 8kHz) in Amps.
3. LED indicators. Provide critical feedback on the transmitter's operation.
4. AC Input socket.
5. DC Input socket (Tx-150PCM only).
6. Output lead socket.
7. Output Level Selector: Select the output level in Amps.
8. Frequency Selector: Selects the frequency.
9. Communication Port: For service personnel only.
10. Heat sink: Vents heat from the transmitter during operation.

Transmitter controls

Frequency Select

The rotary switch selects the applied frequencies as follows:

ELF Transmission lines

ELF Maximum range.
35% 4Hz and 65% ELF
(128Hz or 98Hz).

ELCD Use for ACVG and current direction.
35% 4Hz, 30% 8Hz and
35% ELF.

LFCD Use as ELCD, alternative
locate frequency for congested
areas. 35% 4Hz, 30% 8Hz
and 35% LF (640Hz or 512Hz).

8kHz Locate only signal, no 4Hz
frequency for pipeline mapping.

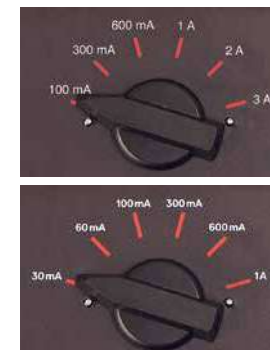
Output Current Selector

This rotary switch allows users to select different current settings.

The options are;

Tx-150PCM:
100mA, 300mA,
600mA, 1A, 2A,
3A

Tx-25PCM:
30mA, 60mA,
100mA, 300mA,
600mA, 1A



When the transmitter is operating, the selected current will remain at a constant level, unless the input power supply limit is reached.

Indication and warning lights

LCD Display: Displays the 4Hz or 8kHz signal current that is being delivered onto the pipe. On startup it confirms the AC frequency setting and associated location frequencies. The Tx-25PCM also displays the battery level on startup.

>20V >40V >60V >80V Output

Voltage Level: Indicates the output voltage levels. If no LED is lit the output voltage is below 20V. Do not use excessive voltage or current, as this may result in high current density through small holidays and coating defects. The may cause minor corrosion if the transmitter is left on for very long periods.

>100V Voltage Limit: LED on.

Transmitter has reached its 100V output voltage limit – resistance of the pipe or ground connection is too high. Check all connections to correct this problem.

NOTE: If the pipeline being surveyed has coating that is known to be in good condition, it is probable that the voltage warning LED's will illuminate as the current is increased.

Undesirable voltage on output:

LED flashes. This indicates a high voltage, such as mains, has been detected on the output. The unit will not operate until the cause of the high voltage has been removed and the transmitter has been reset by switching it off, and on again.



Power Limit: System cannot supply power required to support transmission at the selected current. Switch to a lower current setting until the OK LED illuminates GREEN. Allow a few seconds to settle between selections.



Tx Over Temperature: Lights if temperature exceeds recommended limits. The transmitter will automatically shut down. Wait until the transmitter has cooled down before recommencing operation.



OK: Lights GREEN to indicate unit is working correctly

Tx-25PCM only



Power: Indicates power supply connected



Battery Charging: Indicates when battery is charging. Lights ORANGE when battery level is low. Lights Green when battery is almost charged. When fully charged the LED will turn off.



Battery Charge Temperature: Indicates when battery is out of temperature range for charging.

Tx-1, Tx-5 and Tx-10 transmitters

The PCMx can also be used with a Radiodetection locating transmitter. These transmitters do not produce a 4Hz mapping signal but can be used to either:

- Boost the locate part of the signal when the PCMx is being used for pipeline surveys, (for more information see the PCMx Operation Manual).
- Provide a wider range of locate signals when the PCMx is being used in RD8100 mode, as a precision cable and pipe locator, (for more information see the RD8100 Operation Manual).



Setting up your PCMx receiver

Before you begin

IMPORTANT! This guide is intended to be a quick reference guide. We recommend you read the full operation manual before you attempt to operate the PCMx receiver or transmitters.

Rechargeable battery packs

Your PCMx comes with a Lithium-Ion battery pack installed. To charge the battery:


- Connect the battery charger to a 100-240VAC mains supply.
- Connect the battery charger to the connector on the battery pack.

NOTE: It is not necessary to disconnect the battery from the receiver for charging.

Switch on the mains supply. The charge LED provides the battery pack charging status as follows:

- Red = Charging
- Green = Fully Charged.
- Disconnect the charger once the battery pack is fully charged

Checking your system software version



If you wish to check which version of software is running on your PCMx, press and hold the  key when switching on the receiver. This information may be asked for when contacting Radiodetection or your local representative for technical support.

System setup









It is important that you set up the system according to regional / operational requirements, and your personal preferences, before you conduct your first survey. You can set the system up using the menus as described below.


The PCMx receiver menu allows you to select or change system options. Once entered, the menu is navigated using the arrow keys. When in the menu, most on-screen icons will temporarily disappear and the menu options will appear in the bottom left-hand corner of the display.

The right arrow enters a submenu and the left arrow returns to the previous menu.


Note that when browsing the receiver menu, the  and  keys act as left and right arrows.

To navigate menus:

1. Press the  key to enter the menu.
2. Use the  or  keys to scroll through the menu options.
3. Press the  key to enter the option's submenu.
4. Use the  or  keys to scroll through the submenu options.
5. Press the  key to confirm a selection and return to the previous menu.
6. Press the  key to return to the main operation screen.

NOTE: When you select an option and press the  key, the option will be enabled automatically.

Receiver menu options








- VOL: Adjust the speaker volume from 0 (mute) to 3 (loudest).
- DATA: Delete, send or review saved SurveyCERT measurements and enable or disable the Bluetooth communication channel.
- BT: Enable, disable, reset or pair Bluetooth connections. Also defines the protocol used when connecting to a PC or PDA.
- GPS: Enable, disable or reset the internal GPS module.
- CDR: Perform a Current Direction (CD) Reset. (Alternatively press and hold the  key when in CD mode).
- UNITS: Select metric or imperial units.
- INFO: Run a Self-Test, display the date of the most recent service recalibration (M CAL) or the most recent eCert calibration.
- LANG: Select menu language.
- POWER: Select local power network frequency: 50 or 60Hz.
- ANT: Enable or disable any antenna mode with the exception of Peak.
- FREQ: Enable or disable individual frequencies.
- ALERT: Enable or disable StrikeAlert™.
- BATT: Set battery type: Alkaline or NiMH. Li-Ion auto-selects when connected.
- ARROW: Select Null or proportional Guidance arrows in Peak+ mode
- COMPA: Enable or disable display of the Compass feature.
- TIME: Set a time to turn receiver off after a period of inactivity.
- VIEW: Review survey measurements (PCM mode only).

Examples of using the menu, selecting options and making changes:

Receiver mains power frequency

NOTE: It is important to ensure your receiver is set to locate the power frequencies used in your country. If the PCMx is set to the incorrect power frequency, the user will have difficulty locating in Power, CPS, ELF and LF modes as these locate frequencies are all dependent upon the correct power frequency.




To select the correct frequency (50 or 60Hz) for your country or region's power supply:




1. Press the  key to enter the menu.
2. Scroll to the POWER menu using the  or  keys.
3. Press the  key to enter the POWER menu.
4. Use the  or  keys to select the correct mains frequency.
5. Press the  key twice to accept your selection and return to the main operation screen.

Battery set up

The PCMx is supplied with a Lithium-Ion rechargeable battery. The Li-Ion option will automatically be selected when the battery pack is connected to the receiver. If you wish to use other battery types, using the tray supplied, the appropriate battery type must be selected.










To set your battery type:

1. Press the  key to enter the menu.
2. Scroll to the BATT menu using the  or  arrows.

3. Press the  key (receiver) or the  key (transmitter) to enter the BATT menu.
4. Scroll up or down to select the correct battery type (Alkaline, Nickel-metal Hydride or Lithium-Ion).
5. Press the  key twice to accept your selection and return to the main operation screen.

Running a Self-Test

We recommend that a Self-Test is run at least weekly, or before each use. As the Self-Test tests the integrity of the locate circuitry, it is important that it is carried out away from larger metallic object such as vehicles, or strong electrical signals. To run a Self-Test:

1. Ensure the magnetometer foot is connected. The Self-Test will fail without it.
2. Press the  key to enter the menu.
3. Scroll to the INFO menu using the  or  arrows.
4. Press the  key to enter the INFO menu.
5. Select TEST using the  or  arrows.
6. Press the  key to select YES.
7. Press the  key to begin the Self-Test.
8. Once the Self-Test is completed, the result (PASS or FAIL) will be displayed.
9. Restart the receiver using the  key.

Bluetooth wireless connections







PCMx receivers feature a Bluetooth wireless module, as standard, providing the ability to connect to compatible devices such as mobile devices running a compatible application such as PCM Manager or Bluetooth enabled transmitters.

NOTE: The PCMx wireless features may be subject to national and or local regulations. Please consult your local authorities for more information.

⚠ WARNING! Do not attempt any wireless connection in areas where such technology is considered hazardous. This may include: petrochemical facilities, medical facilities or around navigation equipment.

Switching Bluetooth on

By default, PCMx receivers are shipped with the Bluetooth wireless connection module switched off.

1. Press the  key to enter the menu.
2. Scroll to the BT menu using the  or  keys.
3. Press the  key (locator) or the  key (transmitter) to enter the BT menu.
4. Scroll up or down to the ON option.
5. Press the  key to switch Bluetooth ON and return to the previous menu.

You can switch Bluetooth off to conserve battery life, or to comply with regulations in areas where wireless communications are considered hazardous. To do this, follow the above process, selecting 'OFF' in the BT menus.

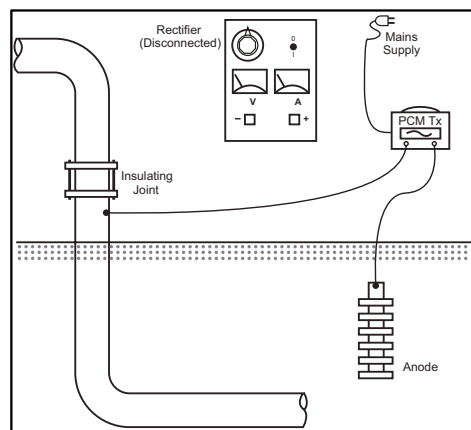
PCMx transmitter signal connection

⚠ WARNING! Appropriate safety procedures must be followed before removing pipeline CP connection from the rectifier. Before handling connection leads switch both the rectifier and PCMx transmitter OFF.

Connection to a rectifier

A rectifier station is an ideal place to connect the output of a PCMx transmitter as it provides connections to both pipe and an anode bed for a suitable ground. The rectifier can also be used to power transmitter using the mains supply. The Tx-150PCM can also be powered from the rectifier output.

1. Disconnect both pipe and anode cables from the rectifier.
2. Ensure the transmitter is turned off.
3. Connect the White signal output lead to the pipe cable.
4. Connect the Green signal output lead to the anode cable.



When connection to a rectifier is not possible

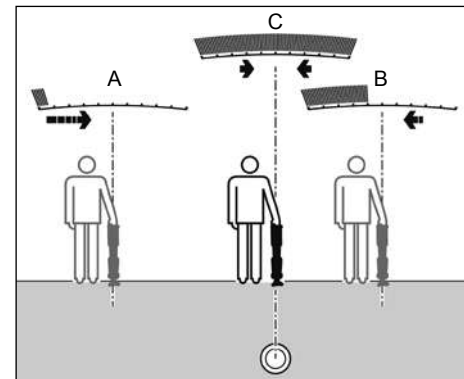
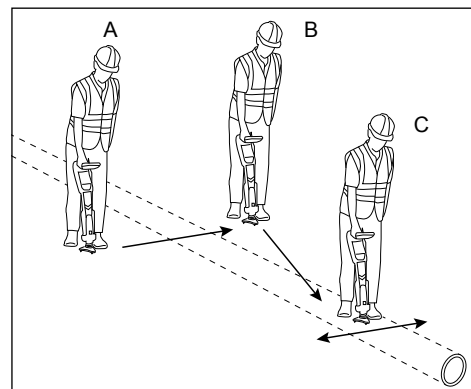
Connection of a PCMx transmitter can be made to a suitable test point or directly to the pipeline itself. Connect the White output cable to the connection that is connected directly to the pipeline and connect the Green output lead to either a sacrificial anode or use a suitable earth stake.

If using a sacrificial anode, make sure that it is not directly connected to the pipeline. When using an earth stake, position the stake 45m/ 150 feet away from the pipe. To achieve a suitable earth, it may be necessary to use more than one earth stake linked together.

When connecting to an electrical isolation joint, you may connect the White lead to one side of the joint and the Green output lead to the opposite side of the pipe section as this can often provide a suitable ground connection.

Conducting a pipeline survey

Locate and pinpoint the pipe



With the magnetometer foot attached, switch on the PCMx receiver.

1. Use the \mathcal{F} key to match the frequency mode of the receiver to the operating frequency of the transmitter. If you intend to conduct a survey of the pipeline, ensure both transmitter and receiver are set to one of the mapping frequencies, (ELF, ELCD or LFCD).
2. If you wish to capture location ensure the internal GPS is switched on (see details below).
3. Set the antenna mode to Peak+ by pressing the antenna key \mathbb{X} . The screen will display \mathbb{X} . Once in Peak+, holding down the antenna key alternates between adding Guidance or Null modes to the Peak reading. Add Guidance mode, by holding the antenna key down; Guide appears in the lower left corner of the display. Two holds may be required depending on the starting mode.
4. Use map information or pipeline markers to determine an approximate location for the pipe. Holding the PCMx receiver upright at your side, follow the guidance arrow to cross the path of the pipe. Proximity to the pipe

is indicated by a rising bar graph and an increase in tone when volume is switched on.






Pinpointing defines the exact position and direction of a pipeline after its position is approximately known. Pinpointing is important as the depth and current readings are affected by misalignment errors.

1. Adjust the receiver sensitivity to approximately 50% by pressing the \uparrow and \downarrow keys. This enables changes in the bar graph to be more readily seen.
2. Hold the PCMx upright and near to the ground.
3. Move it slowly from side to side and define the point of maximum response by looking at the bar graph. The guide arrows should be at minimum length.
4. To align the PCMx with the pipeline, rotate the receiver until the compass is in the 6 O'clock position.

The PCMx receiver features TruDepth™, a feature that helps to ensure the accuracy of locate or survey measurements. When the receiver is not aligned correctly with the pipe direction, the depth and current measurements are automatically removed from the display. The measurements will also be removed when the receiver determines that signal conditions are too poor for reliable results.

Having pinpointed the pipe, the PCMx will display the depth of the pipe, (measured to the center of the pipe), and the current of the locate signal. It is now possible, using the guide arrows, to follow the pipeline.

To turn the internal GPS on:


1. Press the  key to enter the menu.
2. Scroll to the GPS menu using the  or  keys.
3. Press the  key to enter the GPS menu.
4. Scroll to INT to select internal GPS.
5. Press the  key twice to accept your selection and return to the main operation screen.
6. When a GPS lock has been acquired the GPS lock symbol will display on the screen. An indicator of the number of satellites in view is also given.

Conducting an ACCA survey



An Alternating Current, Current Attenuation, (ACCA) survey measures the attenuation of the transmitted 4Hz signal to establish the pattern of current loss. The results can be used to; establish the condition of the pipeline coating, locate faults, or find shorts caused by contact with other metal objects.

Having used the pinpointing method above to ensure you are directly above the correct pipeline, it is now possible to take measurements of the 4Hz signal.

Procedure:



1. Use the peak response reading and compass direction to ensure you are directly above the pipeline.
2. Sit the receiver on the ground, keeping it upright and very still.
3. Press and hold the  key for approximately one second. Upon release a live 4Hz reading is displayed on the bottom right of the screen. It is normal for this reading to fluctuate within a couple of mA. However, a widely fluctuating reading

may indicate interference and it may be better to move along the pipeline to take the measurement.




4. The reading can be stored by pressing the  or rejected by pressing the  key. The PCMx can store up to 10,000 readings and the log number of the stored reading will be shown on the display.
5. Continue taking readings in this way along the length of the pipeline you wish to survey
6. For best results, readings should be taken at intervals of equal distance.



NOTE: If Bluetooth is switched on, the PCMx receiver will automatically attempt to send the reading via Bluetooth to a paired device. If the PCMx has not been paired, a BT error code will be displayed. If it is intended to only save the reading internally within the PCMx receiver, switch the BT-PC setting in the DATA menu to OFF.

Temporary measurements

In some situations, it can be difficult to view the display when taking a measurement. A temporary measurement can be taken for review before committing the record to memory. Take the measurement as detailed above, but instead of pressing the save or delete key, press the antenna key . The measurement will be held on screen for review. To save the measurement, press .

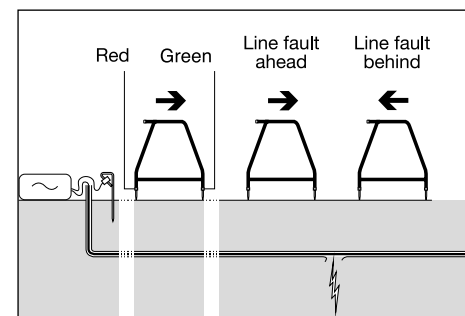
Review and Overwrite Measurement Logs

Saved readings within the PCMx can be reviewed or overwritten. To view a saved result, press  to enter the system menu and select VIEW. The last saved result will be displayed. To view other logs, use the  or  keys to step through.

To overwrite a saved result, select the result log and press . Once a new measurement is taken, press the  key to overwrite the selected reading. The log number that was overwritten will be displayed and the receiver will revert to storing new measurements at the end of the current records.

Conducting an ACVG survey

An Alternating Current Voltage Gradient, (ACVG), survey measures the leakage current in the vicinity of the pipeline to assess the coating condition, and pinpoint coating defects. An advantage of this survey method is that it can be done on a route parallel to the pipe. For example, it may be done on a pavement or grass verge parallel to a pipe running below a road surface. It requires the use of an A-Frame in addition to the PCMx receiver and transmitter.



Procedure:

1. Connect the transmitter to the pipeline and ground using the procedure described previously.
2. Set the PCMx transmitter to either ELCD or LFCD mode.
3. Connect the A-frame to the PCMx receiver via the accessory socket, and turn on the receiver.

4. The PCMx will automatically choose ACVG mode and an A-frame symbol will be displayed.
5. Choose an appropriate starting point for your survey. If a suspected fault location has been identified from a previous ACCA survey, begin the survey approximately 60 feet, (20 meters) from the suspected fault.
6. Place the A-frame spikes in the ground above, or parallel with, the pipe. Position the green spike forwards and the red spike towards the transmitter connection point.
7. If no fault is apparent, the arrows will flicker on and off and the dB readings will be erratic. When a fault is present, the Fault Find, (FF) arrows will display the fault direction and the dB readings will be stable. The dB reading will increase as the A-Frame is positioned closer to the fault.
8. Follow the pipeline pushing the A-Frame spikes into the ground at regular intervals and checking for FF arrows.
9. Move in the direction of the arrows. Find the point at which the arrows change direction. If the A-frame has been positioned directly above the pipe, the fault location will be directly below the A-Frame at this point.
10. If the measurements have been taken to the side of the pipe line, rotate the A-Frame 90° so that the green spike points towards the pipeline. Move back and forth across the pipeline to locate the fault in this direction, the intersection point will be directly over the fault.

Conducting survey types simultaneously

The PCMx allows users to conduct both an ACCA and an ACVG survey simultaneously. By collecting the data in one pass of the pipeline, rather than two, survey time can be reduced significantly.

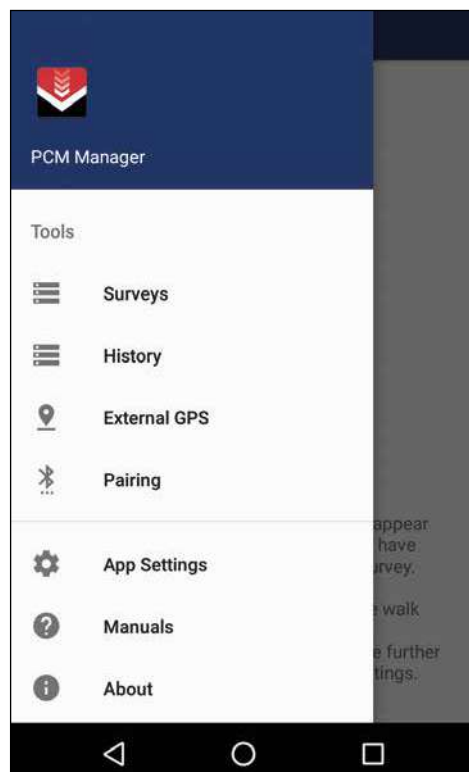
Procedure:

1. Connect the transmitter to the pipeline and ground using the procedure described previously.
2. Set the PCMx transmitter to either ELCD or LFCD mode.
3. Connect the A-frame to the PCMx receiver via the accessory socket, and turn on the receiver.
4. The PCMx will automatically select ACVG mode and an A-frame symbol will be displayed.
5. Match the mode of the receiver to the transmitter by repeated presses of the **f** key.
6. Begin your survey by following the procedures given above for conducting an ACVG survey. The display will show locate information (Peak-PLUS mode) and FF information.
7. To take a 4Hz current reading, follow steps 2 through 6 of the procedures given above for conducting an ACCA survey.

PCM Manager for mobile devices

Available from Google Play Store, PCM Manager for mobile devices is a companion application for PCMx receivers. It enables live graphing of survey results, walk forward and walk back features. It can also be used to collect location data from compatible GPS devices. After installing the software on your mobile device select the PCM Manager icon.

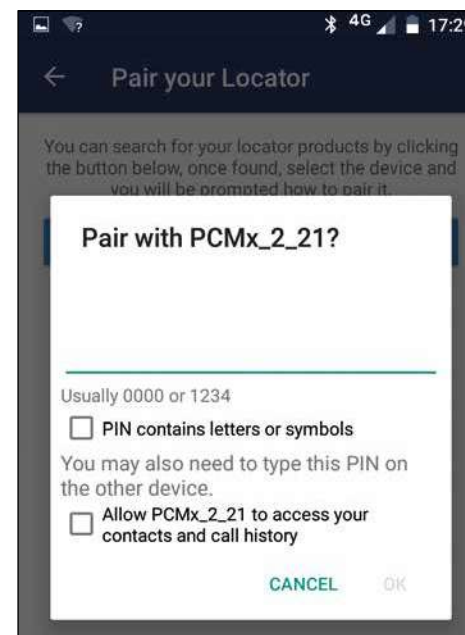
Prepare the PCMx receiver to pair by selecting the BT option in the system menu. Scroll to **PAIR** and press the **⇒** key to select the BT – PC option.



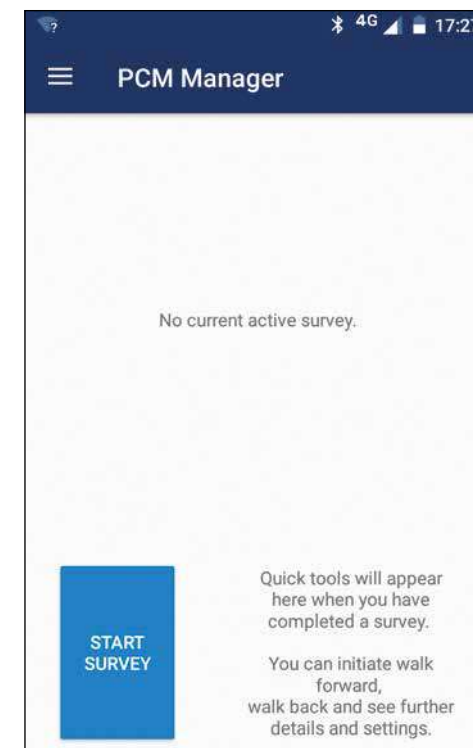
ON your Android device ensure Bluetooth is switched on. Launch PCM Manager and choose the menu option on the top left. Select **Pairing**.



Press **SEARCH FOR DEVICES**. On the PCMx receiver press the **f** key to initiate pairing. The name of the device will appear underneath **BLUETOOTH DEVICES FOUND**.



Select the device name. A prompt for the pairing code will appear. Insert 1234 and press OK. The device name will now appear under Paired Devices.



Press **⇒** to return to the main screen. Select **START SURVEY** to begin a survey. Each time you take a survey measurement, it will appear on the screen and a graph will appear over time. Select **FINISH SURVEY** to end the survey.

For more information about the application, select Manuals from the PCM Manager menu or download the manual from www.radiodetection.com/PCMx

PCM Manager PC Software

PCM Manager PC software is also available. The PC application allows the user to download survey data from the field for analysis. It is compatible with PCs running Microsoft Windows XP, 7, 8, 8.1 and 10. To download PCM Manager, go to **www.radiodetection.com/PCMx**

If you do not have internet access, or wish to receive PCM Manager on a CD-ROM, contact your local Radiodetection office or representative.

For more information about PCM Manager PC software refer to the PCM Manager operation manual.

Training

Radiodetection provides training services for most Radiodetection products. Our qualified instructors will train equipment operators or other personnel at your preferred location or at Radiodetection headquarters. For more information go to **www.radiodetection.com** or contact your local Radiodetection representative.

Care and maintenance

The PCMx receiver and transmitters are robust, durable and weatherproof. However, you can extend your equipment's life by following these care and maintenance guidelines.

General

Store the equipment in a clean and dry environment.

Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged.

Do not use this equipment when damaged or faulty.

Batteries and power supply

Only use the rechargeable battery packs, chargers and power supplies approved by Radiodetection.

If not using rechargeable packs, use good quality Alkaline or NiMH batteries only.

Batteries should be disposed of in accordance with your company's work practice, and/ or any relevant laws or guidelines in your country.

Cleaning

⚠ WARNING! Do not attempt to clean this equipment when it is powered or connected to any power source, including batteries, adapters and live cables.

Ensure the equipment is clean and dry whenever possible.

Clean with a soft, moistened cloth. Do not use abrasive materials or chemicals as they may damage the casing, including the reflective labels. Do not use high pressure jets of water to clean the equipment.

If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

Software upgrades

From time to time, Radiodetection may release software upgrades to enhance features and improve performance of the PCMx receiver. Software upgrades are free of charge and provided through the PCM Manager PC software.

E-mail alerts and notification of new software releases are sent to all registered users. You can also check if your products are up-to-date or upgrade them by using the PCM Manager software upgrade screen.

NOTE: To upgrade your product's software you need to have created an account using PCM Manager and have a live internet connection.

Disassembly

Do not attempt to disassemble this equipment under any circumstances. The receiver and transmitter contain no user serviceable parts.

Unauthorized disassembly will void the manufacturer's warranty, and may damage the equipment or reduce its performance.

Service and maintenance

Regularly check your equipment for correct operation by using the Self-Test function and eCert.

The receiver and transmitter are designed so that they do not require regular recalibration. However, as with all safety equipment, it is recommended that they are serviced and calibrated at least once a year either at Radiodetection or an approved repair center.

NOTE: Service by non-approved service centers may void the manufacturer's warranty.

Details of Radiodetection offices and distribution partners can be found at **www.radiodetection.com**.

Radiodetection products, including this guide, are under continuous development and are subject to change without notice. Go to **www.radiodetection.com** or contact your local Radiodetection representative for the latest information regarding the PCMx receiver or any Radiodetection product.

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