3m dynatel 2273 cable fault locator manual

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3m dynatel 2273 cable fault locator manual

Operator’s ManualYou have just purchased one of the finest, most advanced locatingPlease read, understand and follow all safety information contained in these instructionsA. Transmitter Battery Installation. Remove cap from receiver handle.C. Cleaning. Output is limited to 10 watts at. Output is limited to 10 watts atTransmitter Connections. Perform a battery test. The continuity of the circuit will beIn twoperson active induction mode sweeps, one person holds the transmitter and. A. Directional Peak Dir Pk. Figure 1 If the target path is to the right of thePower frequencies refer to 50 or 60 Hz signals, and their harmonics, that can be tracedPopulate as many fields as possible fromAdditional Applications. A. Aerial Faults ToningShort Red clip to Tip; Black clip to ring.Locator Software UpgradesA. Product DescriptionRead Range 3M iD MarkersTransmitter Specifications. It also measures and pinpoints sheath faults in buried cables and conductor faults in aerial cables. The Transmitter provides four frequencies to accommodate varying factors such as distance, cable type, or soil conditions. If desired, all four frequencies may be transmitted at once. The Transmitter also provides a separate Tone function for identifying cables and pairs. The Receiver provides four locating modes to accomplish fast or difficult tracing and to pinpoint or verify a conductor. The Receiver detects 50 or 60 Hz AC Power signals and also measures the signal current in a cable and displays its magnitude. The depth of buried cables or sondes may also be displayed. INSTALLING OR REPLACING THE BATTERIES 6 C cells 6 AA cells CAUTION. Do not connect batteries improperly, charge or dispose of in fire. Batteries may leak or explode and cause personal injury. Always remove batteries when storing the units. Battery Disposal Since regulations vary, consult applicable regulations or authorities before disposal. Page 2 For each press, one of three units will display.http://bmdmi-media.org/editoruploads/combat-mission-manual.xml

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To change the passive Power frequency, press and hold then press to toggle between 50 or 60 Hz as displayed in the lower left corner of the display. To change the Null bar graph display mode, press and hold then press to toggle between normal Null bar graph display Null flag will flash and inverse Null bar graph display Null flag is on solid. See section About Trace Modes Page 11 for further information. RECEIVER BATTERY TEST Battery Test Indicator Battery Level Mark The Receiver batteries are tested for two seconds every time the unit is turned on. The time interval can be extended by pressing and holding. During the battery test, the bar graph should extend to the right of the battery level mark, otherwise replace the batteries. Note When batteries are low, the battery test indicator will flash. Page 3 Listen to the tone and watch the display.Note The battery test indicates battery condition for normal output levels. If the unit resets when the high output level is selected, use the normal output level or replace the batteries. USING EXTERNAL DC POWER AND 5 WATT OUTPUT If the unit has the option A, the Transmitter can be operated from an external 12V DC source as well as its internal batteries. Use the supplied cigarette lighter adapter cable to connect the DC power from a vehicles battery source to the Transmitters external power jack located next to the output jack. Note The internal batteries will not be recharged with external DC. 5 Watt Output An external DC source is required for 5 watt output. To select 5 watt operation, press once for high output 3W and again for 5 watt operation. The High Output flag will turn on for 3W and flash for 5W. Page 4 Perform a battery test and then connect the Transmitter using one of the

three methods below to put tracing signal on a cable. DANGER! Voltage greater than 240 volts will damage equipment and cause personal injury and death. Make all direct test connections before turning on the Transmitter.http://www.apnikheti.com/userfiles/combat-mission-manual-pdf.xml

Then activate the Transmitter in the Ohms mode and check the display for voltage readings. Follow standard procedures for reducing the voltage. WARNING! Potential for electrical shock exists when handling connecting cables while the Transmitter is in the TRACE, FAULT or TONE modes. Turn the Transmitter off before handling connecting cables. Page 5 Plug the direct connect cable into the front panel jack. Connect the Black clip to the ground rod. Place the ground rod in the earth perpendicular to the suspected cable path. If necessary, extend the black lead with the Ground Extension Cable. Next, remove the ground bonding and attach the Red clip to the shield. Note Never attach or remove the direct connect cable from the Transmitter front panel jack while the red and black clips are connected to a cable. Press to turn the Transmitter on in the Ohms mode. It will measure the continuity of the cable under test. Note In the ohms mode, the Transmitter can detect voltage as well as ohms. If a low voltage is detected, the display will alternate between displaying ohms and volts. When displaying ohms, the flag over the will be visible. When displaying volts, the flag over the V will be visible. When the voltage magnitude is sufficient to impair the accuracy of the ohms measurement, only voltage will be displayed. If the voltage is AC, a sine wave will be visible on the display. If a high AC voltage is detected, a rapid beeping tone will be heard. Page 6 Press again to select one or all of the four frequencies. The display will alternate between displaying the selected frequency and the output signal current. It is best to choose the lowest frequency for direct connect with farend ground and a high frequency for direct connect with no farend ground. Press to select high output level for longer tracing distances and deep cables. Transmitter setup is finished, now go to LOCATING A BURIED CABLE RECEIVER SETUP Page 10.

Page 7 Clamp the DynaCoupler around the cable below any bonds just before the cable enters the earth. The jaws of the coupler must fully close. Press to turn Transmitter on. Press again to select 8 khz, 33kHz, or 200 khz. Select high output level by pressing. Transmitter setup is finished, now go to LOCATING A BURIED CABLE Receiver Setup Page 10. Page 8 Press to turn the Transmitter on. Press again to select either 33 khz or 200 khz. For greater tracing range, select high output level by pressing. Note If the Receiver is less than 50 feet from the Transmitter, it can pick up signal through the air. For best results, keep the Receiver away from the Transmitter by at least that distance. Transmitter setup is finished, now go to LOCATING A BURIED CABLE RECEIVER SETUP PAGE 10. Page 9 Press to turn the Receiver on. Press to adjust the speaker volume as needed off, normal, high, or highexpanded. The highexpanded setting causes the audio to cut off below a certain threshold. Press to select a locate mode Peak, Null, or Diff . To select Special Peak mode from Peak mode, press and hold then press to toggle between Peak and Special Peak modes. While in Special Peak mode, the peak flag will flash. Note Peak, Special Peak, or Null mode may require resetting the Receiver gain. Press when the bar graph remains either fully open or fully closed. This is not necessary in differential mode since the unit automatically adjusts thereceiver gain. Page 10 As the antenna moves off the cable path, the speaker volume decreases and the bar graph opens. Peak with HighExpanded While in Peak mode, press to select High Expanded the highest setting. Speaker response is cut off as the antenna moves away from the cable. Null In this mode, the signal is a minimum directly over the cable and is maximum on either side of the cable. The speaker volume and display signal strength correspond to the signal being received.

http://www.drupalitalia.org/node/67609

In the normal bar graph display mode Null flag flashing the bar graph opens at low signal strength and closes at high signal strength. In the inverse Null bar graph display mode Null flag is on solid, the bar graph closes at low signal strength and opens at high signal strength. Differential In this mode, the Receiver provides an indication of the relative position of the cable to the Receiver by

displaying right or left arrows the arrow points toward the cable. The bar graph increases to a maximum as the Receiver antenna is moved directly over the cable path. Speaker response is a high warbling tone to the right of the cable path, a low warbling tone to the left, and a solid tone directly over the cable. Special Peak Mode This mode will increase the signal sensitivity of the Receiver when the signal is too weak for normal tracing. Use special attention when using this mode because it is more susceptible to congestion than the normal peak mode. Numerical Signal Strength Display Resolution The user may select between 3 levels of signal strength resolution. The setting will be displayed on the right end of the bar graph during selection. To change the setting, press and hold the key during power up then press the key. Display resolution may be changed between the standard 1X, no bars illuminated, 2X, One bar illuminated, and 4X Two bars illuminated. The unit saves the last setting until changed. Note While tracing cables in any mode, keep the Receiver handle in line with the suspected cable path. Page 11 The Receiver can be tuned to locate 3 different harmonics of the chosen power frequency. H50 Hz or H60 Hz high harmonic Best for general locating of passive power. L50 Hz or L60 Hz low harmonic Works best on primary power cables. May be used when high harmonic is weak or erratic. 100 Hz or 120 Hz For locating rectified AC power signals, often found on pipelines using impressed current cathodic protection.

When a Power frequency is selected, the Hz symbol will flash, indicating that alternate frequencies are available. To change the selected power frequency, press and hold then press to select the next Power frequency. Selecting Auxiliary Frequencies Auxiliary frequencies are used to trace cables without using frequencies supplied by the 2273 transmitter. The Receiver may be able to detect these auxiliary frequencies, depending on the model 31 khz For locating inservice CATV cables. 512, 560 Hz or other frequencies for locating cables connected to a remote location transmitter with that frequency. If your Receiver has multiple auxiliary frequencies, the Hz symbol will flash when one is selected. To change the selected auxiliary frequency, press and hold then press to select the next auxiliary frequency. Page 12 Press and the display will indicate the cable depth and relative current. Current is displayed in the lower left corner of the display. Press twice to continue tracing. You may also press to return to Trace mode. Note During a depthcurrent measurement, the display will exhibit when the received signal is too low, too high, or erratic. Page 13 These current indications will help to select a trace frequency, identify the correct cable and troubleshoot the set up. When using the direct connect method, the Transmitter output current number is displayed. A number higher than 70 represents a strong tracing signal. When the Receiver is used to find the cable near the Transmitter connection point, the current number displayed in the Receiver should correspond within 5 points to the Transmitter number if you are over the correct cable, and most of the signal is flowing in that cable. Note On the Transmitter every ten units on the current display represents a factor of two in current magnitude. On the receiver, trace current readings for 512Hz, 560 Hz and all additional auxiliary frequencies except 31.5 khz are now displayed in milliamps.

For all other trace frequencies every ten units on the current display represents a factor of two in current magnitude. When the Transmitter signal is applied using the DynaCoupler, the Transmitter current display indicates the current in the coupler and not in the cable. In order to get a measure of the cable current, point the Receiver at the exposed cable about two feet from the DynaCoupler. This will be the current number that should be used to identify the correct cable. In general, when the Transmitter is set up to apply more current on the target cable than any other cable, the cable can easily be identified because the Receiver current reading will be highest. Note Since some of the signal in the cable will bleed into the earth, it is expected that the Receiver current indication along the cable will decrease gradually away from the Transmitter. This effect is more pronounced at higher frequencies. Page 14 Perform a battery test then with the Transmitter off, connect the Black

clip to the ground rod. Place the ground rod behind the Transmitter, away from the faulted section, and in line with the cable path. If necessary, extend the ground lead with the Ground Extension Cable. Attach the Red clip to the shield. Press to turn the Transmitter on in the Ohms mode. Measure the fault resistance. The results are displayed in ohms. Note that failure to disconnect the shield bonds at either the nearend or the farend produces a heavy fault indication. Press again, to select the Fault mode. For maximum fault sensitivity, select high output level by pressing. Receiver Setup Press to turn the Receiver on. Press to select Fault mode. Connect the Earth Contact Frame to the accessory jack on the Receiver using the earth frame cable. Near the location of the ground rod about one step away, insert the frame probes fully into the ground with the greenbanded leg towards the fault and in line with the cable path.

Press to record a fault level reference visible in the lower left corner of the display. The Receiver bar graph is visible on the right side green.this indicates that the fault is ahead of the operator in the direction of the greenbanded leg. Continue along the cable path, reinserting the frame probes every few steps while watching the Receiver bar graph. When the bar graph is visible on the left side red, the fault has been passed and is now behind the operator. Move back, inserting the frame every few inches, until the bar graph returns to the green side. Turn the frame ninety degrees to the cable path. The fault is located beneath the center of the frame when the bar graph changes from one side to the other. Page 15 Pivot the frame in a circle around the red leg reinserting the green leg in the ground every few degrees of the circle. The bar graph should always be on the left red indicating that the fault is directly below the red leg.Compare the numeric indicator reading with the fault level reference in the lower left corner of the display. If they are close, the fault is the major one. If the fault reading is 20 points less than the reference reading, multiple faults may exist. Further searching is necessary to find the fault with the highest reading. Page 16 Press to select the 33kHz frequency. Press to select the Peak mode. If you find that the received signal is too weak in this mode, try the Special Peak mode. To select Special Peak mode, from Peak mode, press and hold then press to toggle between Peak and Special Peak modes. While in this mode the Peak flag will flash. With the Receiver handle perpendicular to the conduit path, locate the ADP position by moving along the path until a peak is found. Press when the bar graph remains either fully open or fully closed. Refer to the ADP operating instructions for further information.

Determining ADP Depth Place the Receiver Antenna on the ground directly above the located ADP position maintaining the handle orientation perpendicular to the path. Press twice to display ADP depth. To return to trace mode, press or. Note During a depth measurement, the display will exhibit when the received signal is too low, too high or erratic. Page 17 To attach the accessory, slide the Receiver horizontally into EMS Marker Locating Accessory mounting slot. Make sure the locking button holds the Receiver securely in the slot. To separate the units, press the locking button down and slide the Receiver out of the EMS Marker Locating Accessory mounting slot. Press to turn the Receiver on. Locating Markers while Tracing Cable Path To detect markers while tracing the cable path, set the 2205 or 2206 accessory mode switch to the Alert position, and trace the cable path normally. The internal buzzer in the accessory will alert you to the proximity of a detected marker. Note Do not use Null or Differential modes when using the 2205 or Locating Markers using the Receiver If the buzzer response is too broad, the exact marker position may be pinpointed by using the Receiver. Select 577 Hz or 33 khz on the Accessory. Use a different frequency from the tracing signal. Turn the Receiver ON, select Peak mode, and set the frequency to match the Accessory setting. Note The initial Receiver gain in Peak mode is optimized for interfacing with the 2205 or 2206 Accessory while searching for a marker. Press only when a marker is detected and the signal is too strong. To search for a new marker, reset the Receiver gain to the initial setting by turning its

power OFF and back ON, or pressing and then reselecting the Peak mode. Refer to the EMS Marker Locating Accessory operating instructions for further information. Page 18 If fault is a shorted pair, connect Red clip to tip and the Black clip to ring.

If the fault is a cross two pairs involved, connect the Red clip to crossed conductor of one pair and the Black clip to the crossed conductor of the other pair. If the fault is a ground, connect the Red clip to the faulted conductor and the Black clip to ground. Press to turn the Transmitter on and select Ohms mode to verify the fault. Press twice more to select the Tone mode. Press to change the high output level. Receiver Setup Press to turn the Receiver on. Press to select Tone mode. Connect a toning coil to the Receiver accessory jack. Press to select the low toning frequency 577 Hz. Move the toning coil along the cable and find a peak signal then press to adjust the Receiver gain. Press to adjust the speaker volume as needed. Follow the cable with the toning coil. An aerial fault is located at the point where the tone stops or drops off sharply. Page 19 However, Receiver setups are different. Perform a battery test; then with the transmitter off, connect the Dyna Coupler to the Transmitter front panel jack using the coupler cable. Note Cable Identification requires two DynaCouplers one at the Transmitter and one at the Receiver. Clamp the DynaCoupler around the cable or both and tip and ring of a pair and make sure the jaws fully close. Press to turn the Transmitter on and then twice more to select the Tone mode. Press to change the high output level. CABLE IDENTIFICATION Receiver Setup Press to turn the Receiver on. Press to select Tone mode. Connect a second DynaCoupler to the Receiver accessory jack using the earth frame cable or another coupler cable. Press to select the highest toning frequency 200 khz. Check the first cable in the group by clamping the DynaCoupler around the cable. Press and observe the numeric display, which is relative signal strength. Remember the number and continue by clamping the Dyna Coupler around the next cable in the group. If the signal strength is greater than the previous observation, press.

If the signal strength is less than before, ignore it. After checking all the cables in the group, the cable with the highest reading is the one being identified. Page 20 22 PAIR IDENTIFICATION Receiver Setup Press to turn the Receiver on. Press to select Tone mode. Connect the inductive probe to Receiver accessory jack using probe cable. Press to select the highest toning frequency 200 khz. Insert Probe into the bundle of pairs or group, if known and press. Next, divide the pairs into two bundles and insert the Probe into each of the bundles and observe the numeric display. The bundle with the highest reading will contain the target pair. Continue by dividing the bundle with the target pair into two parts and checking each part for the highest signal. In this way the target pair will be isolated. Duracell is a registered trademark of Duracell Inc. 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. Warranty; Limited Remedy; Limited Liability. This product will be free from defects in material and manufacture for a period of one year from the date of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If this product is defective within the shelf life period stated above, your exclusive remedy shall be, at 3M s option, to replace or repair the 3M product or refund the purchase price of the 3M product.

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