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Cable Fault Locator (TDR) Quick Operation instruction

1. Panel

ON Button: Instrument power button.

OFF button: the instrument power off button

PULSE: Pulse method manual test button, press one time, the tester will send a single pulse.

AUTO: After pressing the AUTO button, the tester will do the automatic test automatically, and the tester will select the range and gain automatically.

◀ and ▶: The cursor move keys: Move the blue dashed cursor to left and right, Confirm fault distance. The cursor should move to point of pulse reflection, please refer to the following wave shape.

▲ and ▼: In the default state, the keys to increase and decrease GAIN. In particular state, you can refer to the instrument's bottom line prompt.

OK key: Used to switch between parameters.

Test port: Used to plug test leads.

Charging Port: Instrument charging jack.

LCD screen: To display waveforms and test ranges, wave velocity values, fault distance and other information. The bottom line is tip line used to display some of the current state and parameters.

2. Few basic concepts of pulse test method

Waveform: Waveform can reflect the situation of cables. Understanding the pulse waveform correctly is the key to use the ST612 TDR.

Because the instrument equipped with automatic impedance balanced circuit, the amplitude of the transmitted pulse can be compressed very small, basically only shows the reflected pulse, more easy to observe.

Fault Point confirm: The fault position is the starting point of the reflected pulse waveform. The left side of the screen is the starting point the transmit pulse, the blue dashed cursor is moved to the starting of reflected pulses waveform, now the value displayed on the screen is the fault distance. Under Automatic test functions, the equipment can automatically move the cursor to the starting point of fault reflected pulse, but sometimes need to manually fix the dotted line position of the cursor. Distance values If dashed cursor position in the other place, the distance values no meaning.

Range: The maximum test distance of test instrument in your hand is 4000m, The default range after power on is 240 meters. The screen will display the cable test waveform under your current selected range. If you are testing one cable with length 1500m(of course, generally you not clear it is 1500m), you can start testing from the smallest 240m, and gradually increase the test range until the range can display the full length of 2000 meters(a whole reflect waveform will occur). The test equipment will automatically choose the test range.

Wave velocity: from test principle, we know that in fact test distance is measuring time, time multiplied by the pulse propagation velocity value to get the distance, so you must know the exact velocity before test. Pulse wave propagation velocity in cable is called velocity.

Due to different manufacturers and production processes, the wave velocity of same type cable may be slightly different, can be calibrated by testing, If you know the exact length of the cable, you can use the instrument ST612 to measure and velocity calibration cable. Details as follows: Find a good pair, measuring the open reflected waveform from the remote cable. If there is a difference in total length and the actual length of the cable is measured, the wave velocity can be increased or decreased until the actual value and the measured cable length is equal. At this point the wave velocity is the actual velocity of this cable.

Gain: It mean the reflected pulse amplification, By adjusting the gain can change the amplitude of the waveform displayed on the screen, you can increase or decrease the gain by the corresponding button. It is the best if you can adjust the amplitude of the reflected pulse to the full screen. Under Automatic test, the equipment can adjust the gain automatically.

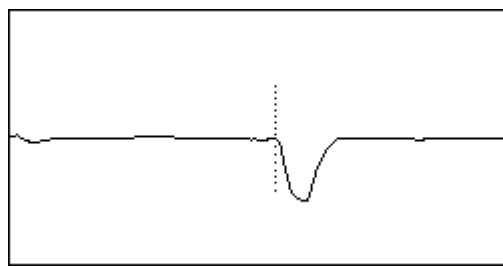
3, about the accuracy of the instrument, it has the relationship with our sampling and display relevant, our full screen display is 240 points, so our accuracy is plus or minus $1/240(0.0042)$, so it can meet the requirements 1% accuracy to.

4. Test mode and several common fault waveform

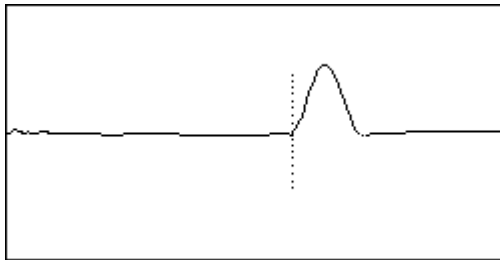
Test Mode One: connect two core by two clamps

Test mode two: connect a core by one clamp and connect to cable shield by another core.

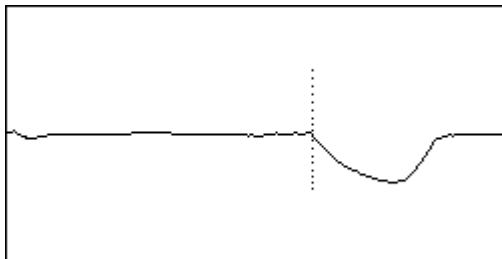
4.1 Waveform Down, Under test mode one, mean mix. Under test mode two mean line mix with shield, connect to the ground.



2. Break: waveform Up

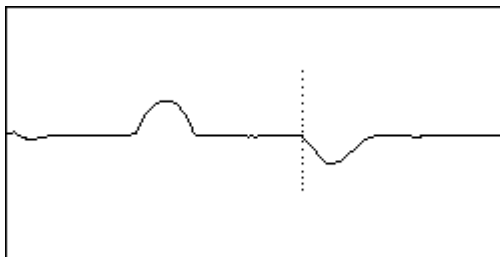


4.3 flooding: waveform changes more slowly



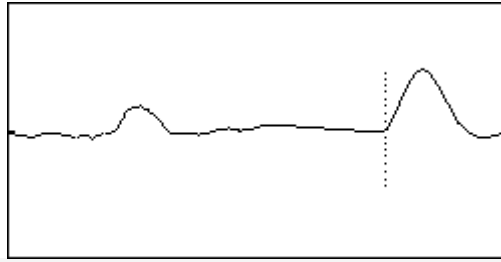
4.4. Remote fault waveform

When the point of fault farther from the test point, because of the line loss, the amplitude of the reflected pulse is very small, the start pulse of the instrument will be far greater than the magnitude of the reflected pulse failure, so you need to distinguish this case, the following diagram shows an 3120m disconnection reflected pulse.



4.5. Joint reflection waveform

The amplitude of the normal reflected pulse is small, changes relatively flat, or show "S" shape, and the value of the pulse fault point reflection is larger, the



starting point is steep. You can find from the picture the first reflection pulse is a joint.

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