

# High-Precision Cable Fault Locator TDR RI-307M3



TDR RI-307M3 is a high-precision 2-channel reflectometer, for applications with increased requirements to the accuracy (for example, LAN, CATV networks, pipeline monitoring systems, etc.). TDR RI-307M3 allows to make the following measurements on cables lengths from 1 m to 128 km with a low instrumental error (up to 3 cm):

- measurement distances to impedance inhomogeneities or faults:
  - break;
  - short circuit and low-resistance faults;
  - defective soldering;
  - faulty amplifier;
  - areas with high humidity;
  - couplings, splices of cable;
  - coils of Pupin, the weakness of pairs;
  - "Flickering" defects;
  - etc.
- measurement of cable lengths;
- measurement of the coefficient of shortening of the line for a known length;
- cable line impedance estimation;



## Field of application

TDR RI-307M3 is used for control during laying and operation of the following types of cable lines:

- communication cables with metallic core;
- signaling and control cables;
- computer networks (SCS, etc.);
- television and radio-frequency cable lines.
- power cables;
- aerial cable lines;
- to determine the length of the cable during its production, storage and trade.

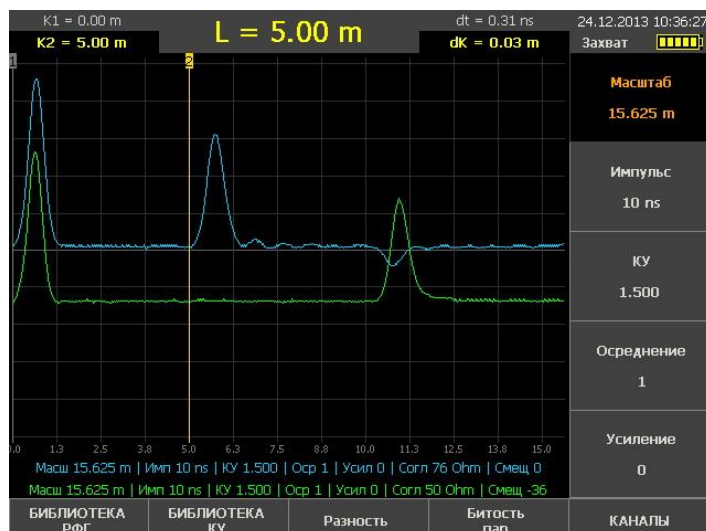
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## Improved measuring characteristics

TDR RI-307M3 is a deep modernization of the RI-307 reflectometer in terms of both hardware and software:

- **Instrumental error is 3 cm @  $v/2 = 100\text{m}/\mu\text{s}$**  - by increasing the effective sampling frequency to 3.2 GHz;
- **Improved detailing of the reflectograms** – device receiver redesign allowed to extend the bandwidth;
- **Extended ranges in range** - from 15 m to 128 km: **two additional "short" ranges of 15 m and 30 m** to improve the efficiency of measurements in the near zone;
- **A wide range of the probing pulse widths** (from 10 ns to 50  $\mu\text{s}$ ) allows the operator to select the optimal resolution of the instrument and the overlapping attenuation. In short areas with little attenuation, it is better to use short pulses to provide the best resolution; On long routes with a large attenuation, a longer pulse widths must be set to ensure maximum range;
- **Digital averaging of 1 ... 128** realizations allows to effectively suppress asynchronous;
- **Two parallel physical channels** make it possible to detect line differences in real time without storing the trace into memory.



## Ergonomics, visibility and ease of use

- **color TFT display 5.7 inches** with a resolution of 640 × 480 pixels and a wide viewing angle for easy operation and visual representation of measurement results.
- **Simultaneous display of up to 5 waveforms** allows the device to simultaneously display waveforms from two physical inputs and three waveforms from nonvolatile memory.
- **Direct measurement control** allows you to quickly and clearly control the measurement parameters without unnecessary time to switch between menus;
- **Two-cursor measuring system** allows measuring distances between any two points of the route - the device indicates the distance to the first and second cursor, as well as the distance between them;
- **Automatic storage of measurement parameters** - when the instrument is switched off (by the shutdown button or by the auto-off timer), the measurement parameters are stored in non-volatile memory.
- **The updated Magnifier** feature allows you to view the trace with a resolution of 3 cm on any range from 15 m to 128 km; It is possible to scroll the magnifier window within the range;

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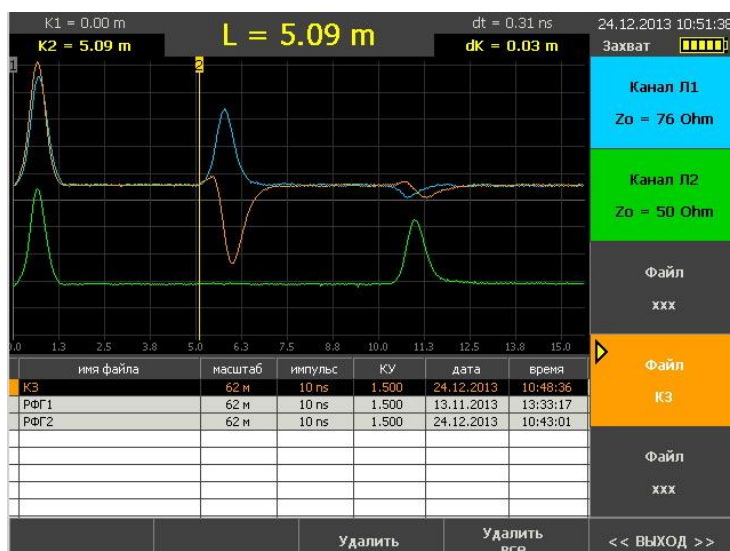
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- The mode **"Difference"** is intended for detecting differences in the reflectograms, it can be used for both physical channel waveforms and for traces from memory in any combination in real time.
- The **"Cross Talk" mode** is used to determine the points of entanglement of pairs in couplings.
- The **"Capture" mode** for detecting time-unstable faults ("flickering" defects) - the device in this mode accumulates on the screen the reflectograms an arbitrarily long period of time, so see short events are not missed.
- The device is equipped with a function of estimating the impedance of the line with an accuracy of about 5%;

## Storage of measurement results and interface with a computer

- A large amount of non-volatile memory for storing waveforms; up to 1000 named and dated waveforms with a high resolution (up to 8000 points per trace) in the non-volatile memory, which allows to study the results of measurements in detail and monitor their dynamics over a long period of time;
- Saving position of cursors when writing a trace to memory;
- The possibility of comparing the reflectograms taken for different ranges;
- the device has a built-in table of cable velocities factors;
- function **"Screen shot"** allowing instantly take a snapshot of the device's current screen and save it as a JPG file with the date and time;
- **USB port** for quick and easy data exchange with PC - the device is equipped with a USB port for recording / reading data to an external USB drive.



## Operation in hard field conditions

- Impact-resistant, hermetic case;
- Dust-proof keyboard;
- Wide operating temperature range -20 ° C ... + 40 ° C
- Powerful Lilon battery - at least 8 hours of continuous working from battery;
- High-speed charger allows you to quickly charge the device;
- Small dimensions 270x246x124 mm and a weight of not more than 2.5 kg

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### Specifications

<b>Measurement Modes</b>	<ul style="list-style-type: none"><li>2 channels Time Domain Reflectometry (TDR);</li><li>Cross Talk point detection</li></ul>
<b>Display</b>	Color TFT 5.7" (640x480 pixels)
<b>Range measuring distance</b>	from 0 to 128000 m
<b>Sub-bands of distance</b>	0 - 15 m, 0 - 30m, 0 - 62 m, 0 - 125 m, 0 - 250 m, 0 - 500 m; 0 - 1000 m, 0 - 2000 m, 0 - 4000 m, 0 - 8000 m, 0 - 16000 m, 0 - 32000 m, 0 - 64000 m, 0 - 128000 m
<b>Distance instrumental error</b>	3.0 cm (at $v/2 = 100\text{m}/\mu\text{s}$ )
<b>The effective sampling rate</b>	3200 MHz
<b>Range concerted resistance</b>	from 25 $\Omega$ to 520 $\Omega$
<b>Probe pulse duration</b>	from 10 ns to 50 $\mu\text{s}$
<b>The amplitude of the probe pulse</b>	not less than 10 V @ 50 Ohm
<b>The dynamic range</b>	not less 40 dB
<b>The setting range of the velocity factor</b>	PF= 1.000 ... 3.000 (step 0.001), $v/2=50.0 \dots 100.0 \text{ m}/\mu\text{s}$ (step 0.1 $\text{m}/\mu\text{s}$ )
<b>Memory</b>	Waveform Library up to 1000 waveforms Cables Library up to 500 cables
<b>Special modes</b>	<ul style="list-style-type: none"><li>Subtraction mode;</li><li>Compare mode;</li><li>PC data exchange via USB-flash;</li><li>Capture mode;</li><li>Cross Talk mode</li><li>Line impedance measurement</li></ul>
<b>Continuous battery operating time</b>	at least 8 hours
<b>Time of continuous operating time through the charger</b>	unlimited
<b>Dimensions</b>	270x246x124 mm
<b>Operating temperature range</b>	from -20 °C to +40 °C
<b>Weight with a battery</b>	not more than 2.5 kg

### Delivery Contents

	Quantity
Cable Fault Locator TDR RI-307M3	1 item
AC Adapter 12 V	1 item
Connecting cable 75 Ohm, 5.0 m, BNC.M - «Alligator clip»	1 item
Connecting cable 75 Ohm, 0.1 m, BNC.M-- «Alligator clip»	1 item
User Manual	1 item
CD-ROM with software	1 item
Accessories bag	1 item