

TELEPHONE & EXCHANGE TESTER ETT 10

The **Telephone & Exchange Tester ETT 10** is intended for testing the main parameters of

- subscriber lines,
- exchanges and PABXs
- subscriber telephone sets and other terminal equipment such as fax machines and meter pulse counters



LINE mode parameters:

- Measurement of DC and AC voltages
- Observation of DTMF, MP and Tone signals

EXCH mode parameters:

- Measurement of DC and AC voltages
- Off-Hook test
- Measurement of Meter Pulse parameters

TEL mode parameters:

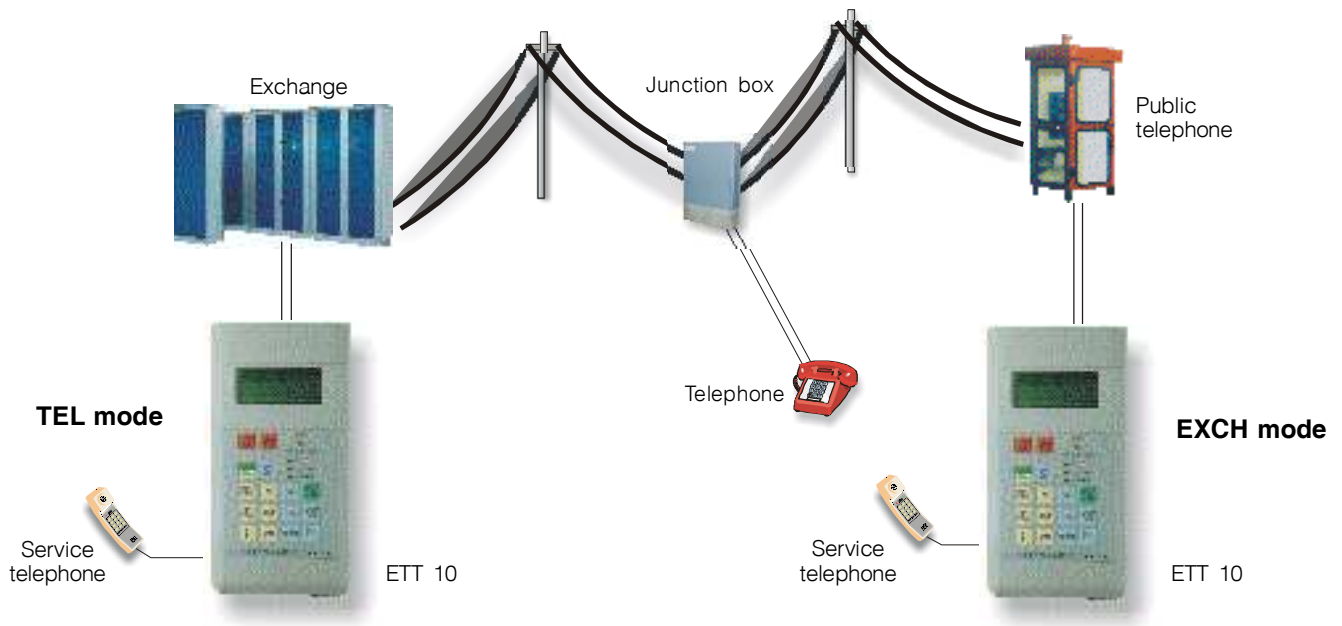
- Measurement of DC and AC voltages
- Resistance measurement
- Capacitance measurement
- Ring test
- Off-Hook test
- Measurement of DP parameters
- Measurement of DTMF parameters
- Generation of Meter Pulses

Accordingly, the **Telephone & Exchange Tester ETT 10** has three basic operation modes:

TEL MODE for measuring subscriber line and telephone set parameters

EXCH MODE for measuring subscriber line and exchange parameters

LINE MODE for measuring line voltages and observing DTMF, MP and Tone signals on the line



Maintenance statistics of telephone networks have shown that for most of the failures, the *exchange - line - subscriber* (EXCH-LINE-TEL) sections are responsible. Accordingly, the first step of the troubleshooting procedure is to locate the breakdown spot, i.e. to find out whether the failure source is within the exchange, the subscriber site or in the line (local loop). **This problem can be easily solved by the Telephone & Exchange Tester ETT 10**, in most cases without requiring the technician to visit the subscriber or the junction boxes along the line. Thanks to the remote diagnostics capability of the ETT 10, the *line - subscriber* section can be tested from the exchange side while the *line - exchange* section can be tested from the subscriber site. Further any section can be tested from an intermediate junction box. Following the incoming subscriber complaint message, this remote diagnostics capability of the ETT 10 will help you to easily locate and eliminate the faults

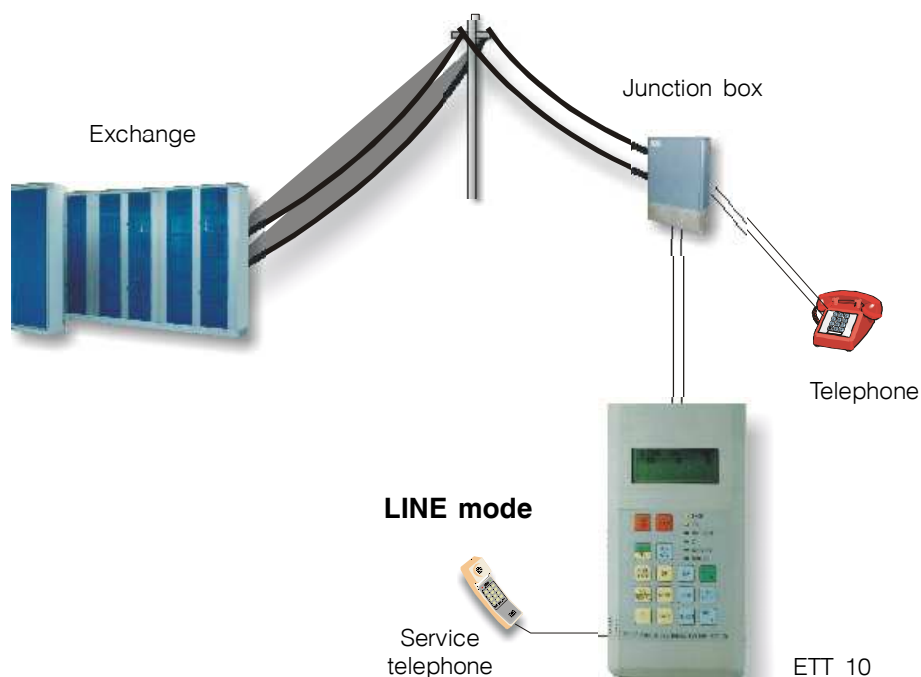
TEL MODE

Normally, subscriber error messages are analysed from the exchange side (TEL

MODE). These tests are aimed to check the line, as separated from the exchange, by measuring the DC and AC voltages between the two wires (T-R) and between each wire and the ground (T-G and R-G). In lack of interfering voltages, the ETT 10 will automatically continue to measure resistance and capacitance between the wires T-R,

T-G and R-G. These measurement results will allow you to check line condition and on-hook subscriber condition.

In course of the further investigation, the Telephone & Exchange Tester ETT 10 is operated as an exchange simulator by ringing the subscriber (RING), and with his assistance, can also test the subscriber equipment (telephone set, fax machine, PABX). The ETT 10 is suitable for measuring loop current, resistance of subscriber equipment, voice level, further DP and DTMF dialling parameters and finally calibration of meter pulse counter. Most of the test results are automatically evaluated and classified by an OK or ER? display.



EXCH MODE

Assuming that the line and subscriber equipment proved to be faultless, the next step is to test the exchange parameters (such battery voltage, line current, ringing voltage, level and frequency of the dial tone on the line, DC and AC voltages between the two wires and the ground (T-G and R-G), further parameters of meter pulses transmitted by the exchange.

It may happen that in the absence of the subscriber, no remote diagnosis from the exchange can be carried out. In this case, the technician has to visit the subscriber in order to investigate, in the TEL operation mode, the subscriber equipment on the spot (telephone set, payphone or fax machine), or in the EXCH mode, to investigate the exchange line and the exchange parameters.

LINE MODE

Malfunction of lines can also occur at intermediate points along the line.

In this case, the ETT 10 can locate the failure by carrying out suitable measurements at the junction box connecting the subscriber.

SPECIFICATIONS

Measuring modes

LINE mode parameters DC voltage, AC voltage
 EXCH mode parameters DC voltage, AC voltage,
 OFF-HOOK test, Meter pulse (receive)
 TEL mode parameters DC voltage, AC voltage,
 Resistance, Capacitance, RING test,
 OFF-HOOK test, DP test, DTMF test,
 Meter pulse (transmit)

Rated line voltage

LINE, EXCH, TEL

in AC/DC voltage measurement mode 270 Vp
 in OFF-HOOK mode 70 Vp

DC voltage measurement

LINE, EXCH, TEL

Termination high impedance
 TR: 5M Ω
 T-G and R-G: 100 k Ω
 Voltage range ± 1 to 200 V

AC voltage measurement

LINE, EXCH, TEL

Termination high impedance
 T-R: 700k Ω
 T-G and R-G: 80 k Ω
 Voltage range 2 to 180 Veff
 Frequency range 20 to 200 Hz

OFF-HOOK test (across lines T-R)

EXCH

Termination internal (600 Ω , 1,5 W) or
 external (service telephone)
 Voltage range 1 to 50 V
 Current (through internal termination) 1 to 55 mA
 Level range -26 to +10 dB
 Frequency range 200 Hz to 4 kHz

Meter pulse receiver

EXCH

Termination internal (200 Ω) or
 external (service telephone)
 Carrier frequency range 11600 to 12400 Hz or
 15680 to 16320 Hz
 Burst time 50 to 2000 ms
 Burst level 40 mV to 1.2 V (-26 to +4 dB)
 Number of bursts 1 to 999
 Break time 50 to 2000 ms

Resistance measurement

TEL

Across lines T-R (polarity can be reversed), T-G, R-G)
 Resistance range 1 k Ω to 5 M Ω

Capacitance measurement

TEL

Across lines T-R (polarity can be reversed), T-G, R-G)
 Capacitance range 0.02 to 10 μ F

Ring test

TEL

Ring voltage 50 Veff
 Clock 1 s ring / 3 s break
 Trip time 50 ms
 REN (1REN $\gg$ 0.3 VA) 0 to 3 REN

OFF-HOOK test

TEL

Across lines T-R (polarity can be reversed)
 Termination 600 Ω
 Voltage range 0 to 50 V
 Current range 0 to 25 mA
 Level range -26 to +10 dB
 Dial tone 420 Hz, -16 dB
 Fax tone 2100 Hz, -16 dB

Dial Pulse (DP) test

TEL

Measuring modes SINGLE, FLASH, REDIAL
 SINGLE test
 Speed range 5 to 15 pps
 Break / Make ratio 40 to 80 %
 Break time 40 to 80 ms
 FLASH test
 Flash time 100 to 300 ms
 REDIAL test
 Minimal interdigit time 100 to 2000 ms
 Displayed last number max. 16 digits

Dual Tone Multi Frequency (DTMF) test

TEL

Measuring modes SINGLE, FLASH, REDIAL
 SINGLE test
 Level range -16 to -4 dB
 Frequency range 500 to 2000 Hz
 Burst time 20 to 1000 ms
 FLASH test
 Flash time 100 to 300 ms
 REDIAL test
 Minimal interdigit time 20 to 1000 ms
 Displayed last number max. 16 digits

Meter pulse transmitter

TEL

Output impedance 200 Ω
 Nominal values (NOM)
 Frequency 12 kHz $\pm$ 0.5 %, or 16 kHz $\pm$ 0.5 %
 ON time / OFF time 200 ms / 110 ms
 Burst level 250 mV
 Minimal values (MIN)
 Frequency 11.7kHz $\pm$ 0.5%, or 15.75kHz $\pm$ 0.5 %
 ON time / OFF time 77 ms / 110 ms
 Burst level 55 mV
 Maximal values (MAX)
 Frequency 12.3kHz $\pm$ 0.5%, or 16.25kHz $\pm$ 0.5 %
 ON time / OFF time 900 ms / 110 ms
 Burst level 55 mV

General specifications

Power supply
 Internal rechargeable battery pack
 Operation time approx. 5 hours
 External DC source 12 to 16 V, min. 400 mA
 (e.g. mains adapter, car-battery)
 When external DC source is connected to ETT 10,
 the battery pack is being charged automatically.
 Ambient temperature range
 Operating 0 to +50 $^{\circ}$ C
 Storage and transport -20 to +70 $^{\circ}$ C
 CE test Rec. MSZ EN 55022
 Dimensions 200 x 100 x 40 mm
 Weight 0.6 kg

Ordering information

TELEPHONE & EXCHANGE TESTER

ETT 10 257-000-000

Including:

Operating manual
 Mains adapter
 Service telephone
 Measuring cables
 Battery pack
 Carrying bag and carrying case