INTERFACE UNIT TU11

Features

- Pulse / DTMF Dial Tester
- Ease of use – single button operation
- 100 hours operation with dry cells
- Handsfree telephone
- 2-W / 4-W interface

Transmission Testing

H HEUER INSTRUMENTS

Technical Specifications (TU11)

DIAL TESTER

Pulse

Break Time	11 ms - 99 ms ± 1 ms
Make Time	11 ms - 99 ms ± 1 ms
Dial Speed	± 0.1 Hz at 10 Hz
Interdigit Pause	150 ms - 999 ms ± 2 ms 1 s - 4 s ± 0.01 s
Number of Stored Digits	17
Contact Bounce for Correct Detection	< 10 ms
DC Line Voltage	30 V to 60 V dc
Detection Threshold Voltage Nominal	20 V
Input Impedance	>10 kΩ
Monitor Speaker Operational	

Pulse Programmed Test Limits

Break Time	60 ms - 70 ms
Make Time	30 ms - 40 ms
Dial Speed	9.3 Hz - 10.9 Hz
Interdigit Pause	> 750 ms

Any detected pulses that do not conform to the above specification are indicated as FAIL in the display. These limits are ROM programmable. Test limits are according to AUSTEL Technical Standard 1990

DTMF Dial Testing

High Tone Frequency	± 4 Hz
Low Tone Frequency	± 2 Hz
Detectable Frequency Deviation	± 2.5 %
Level of any Fundamental Frequency	-20 dBm to -5 dBm ± 0.5 dB -25 dBm to -1 dBm ± 1 dB
Tone ON Time	45 ms - 999 ms ± 3 ms
Tone OFF Time	45 ms - 999 ms ± 3 ms
Input Impedance	400 kΩ
Detected Characters	1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *, #, A, B, C, D
Number of Stored Digits	17
Monitor Speaker Operational	

DTMF Programmed Test Limits

Frequency of Tones	± 1.5 %
Level of any Fundamental Frequency	> -24 dBm
Tone Twist	± 6 dB Tone twist shall be less than 2 dB ± 2 dB at the telephone. ± 6 dB allows for 5.8 km of line.
Minimum Tone ON Time	50 ms
Minimum Tone OFF Time	70 ms

Any detected tones that do not conform to the abovespecification are as FAIL in the display. These limits are ROM programmable
Test limits are according to AUSTEL Technical Standard 1990

TELEPHONE

A & B sockets are connected in parallel. Both microphone and speaker are operational. Voice switching is employed to reduce acoustic feedback. Number dialled is displayed.

AC Impedance	600 Ω
DC Loophold	< 100 mA

Ring signal on line produces call tone on monitor speaker.

Pulse Dialler

Break Time	67 ms
Make Time	33 ms
Interdigit Pause	1000 ms
Dial Speed	10 Hz

DTMF Dialler

Low Tone Level	-8 dBm
High Tone Level	-6 dBm
Distortion	<-20 dB

4-Wire Telephone

A → B	The microphone is linked to the A connector and the monitor speaker is operated from the B connector.
A ← B	The monitor speaker is operated from the A connector and the microphone is linked to the B connector.
Output Impedance	600 Ω
Input Impedance	400 kΩ

INTERFACE FACILITIES

2-Wire Send	A & B are connected in parallel. The Level Generator plug is connecte to the A & B connectors. The monitor speaker is operational.
Output Impedance	400 kΩ in parallel with the Level Generator Zout. Note: The dc loop is held by the Level Generator.
2-Wire Receive	A & B are connected in parallel. The Level Meter plug is connected to the A & B connectors. The monitor speaker is operational.
Input Impedance	400 kΩ in parallel with the Level Meter Zin. Note: The dc loop is held by the Level Meter, which should be set to 600 Ω or 1200 Ω

4-Wire Send/Receive

A–Send, B-Receive	The Level Generator plug is connected to the A connector. The Level Meter plug and the monitor speaker are connected to the B connector.
Output Impedance	Level Generator Zout
A-Receive, B-Send	A-B connections are reversed.

Interfaces

A socket	balanced, floating 3-pin CF connector
B socket	balanced, floating 3-pin CF connector
LM11/LG11	5-pin DIN Audio socket
Charging	2.5 mm DC socket

Power Supply

Battery Type	4 AA (NiCd or Alkaline)
Battery Life	30 hrs typical (NiCd) > 100 hrs (Alkaline, basic LEVEL mode)
Low Battery Indication	< 3.8 V
AC Operation (& charging)	Ext. Adaptor: 240Vac to 6 Vdc (100mA)
Auto Power-Off	12 mins after last button press

General

Display	16x2 LCD
Audio Monitor	built-in speaker with volume control
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 60 °C
Dimensions	178 mm x 97 mm x 55 mm (L x W x H)
Weight	790g with batteries

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