

WHAT CS8014_{NET4} SYSTEM OFFERS

The new Telephone Test Equipment, CS8014_{NET4}, increases enormously the already large capabilities of CS8010 Rel.3.2 and further enhances the measurement possibilities.

Primary objective of the **CS8014** Designer was to cover maximally the test requirements of the ETSI¹ 300-001 specifications (TBR21 and TBR38 at present).

This innovative Telephone Test Equipment increases the work fields from final factory testing, as completely performed by our **CS8010**, to Design, Quality Assurance and Approvals fields. Its test speed and its automation possibilities increase the interest in **CS8014_{NET4}**, specially for large test quantity.

For Laboratory use, the System becomes highly flexible if connected to an host Personal Computer. The Program Management Software, operating in WINDOWS[®] environment, allows a graphic display and to create a Report of measurement results.

The Program Management Software **WIN8014** offers also to build or edit test programs, to change tests attributes, other than the normal programs filing with up/download from disk and vice versa.

Our System is now able to operate in conformity with different Standards or with different telecommunication terminals (as telephone sets, automatic answers, telefax, etc.) by an immediate uploading of the appropriate default program .

CS8014_{NET4} increases really the robotized test cycles with the possibility to organise as matrix (rows x columns) up to 20 actuator relays. So, It is now possible to have up to 100 independent commands to actuate keyboards, to arrange circuit connection or to control external test equipments, etc...

A very important optional function can be installed on **CS8014_{NET4}**; it allows to generate Network Tones, DTMF signals and other special services. Now it is possible a further range enhancement of test functions toward the telephone devices that use the Network Tones for its own operations. The test of automatic diallers is one

TRANSMISSION & ACOUSTICAL MEASUREMENTS

sensitivity:

- **Loudness Rating**
 - CCITT P series
 - IEEE 269-661
 - BRITISH Std6317
 - AUSTRALIA
- **OREM A**
 - B&K 3356/57
- **OREM B**
 - DIN 44013
- **OREM CH**
 - SR 784.103.12
- **RMS level**
 - For vocal messages evaluation

others:

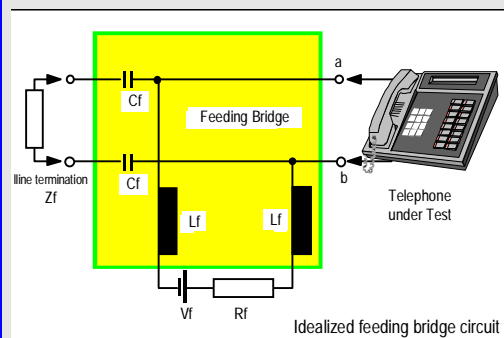
- **Magnetic Field**
 - Hearing Aids
- **Reflection Factor**
 - High resolution method

¹ ETSI = European Telecommunications Standard Institute

Implemented Functions:

classic application; indeed they decodes the dialling tones, the busy or the calling tones, generated by this option, to adapt its own functional flux.

- **Feeding Circuit** (ETSI 300-001 §1.5)



- Programmable Feeding Bridge:
 - ♣ Inductors equivalent to: 2x1H, 2x2H, 2x5H or external, selectable by program;
 - ♣ Capacitors equivalent to 2x2μF, 2x20μF, 2x47μF or external, selectable by program;
 - ♣ Padding resistor Rf (current limiting) from 300 to 10240Ω, included inductor resistance.
 - ♣ Battery voltage programmable from 0 to ±125V;

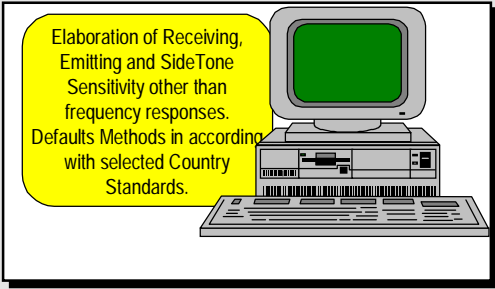
Feeding Bridge characteristics allow the feeding circuits configuration meeting ETSI rules for all the Countries, except United Kingdom and Ireland, which require external devices.

- Constant Current circuit: Programmable from 5 to 99 mA
- Exchange-side line termination:
 - internal 600Ω or external complex dipole, program selectable.

An external line termination allows to perform transmitting measurements and reflection factor measurements with complex reference impedance, as required by some Administrations.

- Artificial Line:
 - A plug-in define the cable characteristics, intended as distributed constant line. Programmable in Miles, Km, or Ω in 16 steps; can be selected also one single discrete line.

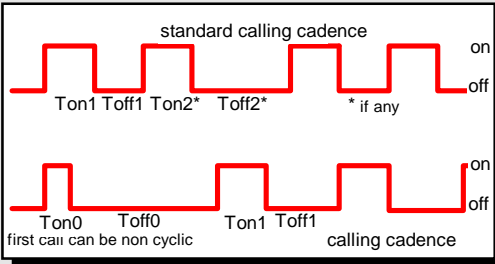
• **Transmission Measure Methods**



- Loudness Rating
 - CCITT P series
 - IEEE 269-661
 - BRITISH Std6317
 - AUSTRALIA
- OREM A -B&K 3356/57
- OREM B -DIN 44013
- OREM CH -SR 784.103.12 *implemented meeting Swiss Rules*
- Noise Generation: Useful for OGM and IGM tests on answering machines;
- RMS level measures: with long time constant, to evaluate vocal or pre-recorded messages;

This last measuring method allows the RMS level evaluation of the signal injected into the line, or on acoustic devices, by answering machines or similar devices using digitally recorded messages.

• **Ringer tests** (ETSI-300-001 §1.5)



- Calling Generator:
 - ♦ direct voltage, programmable from 0 to ± 125 V, superimposed to calling alternate current, programmable from 0 to 120 V_{ac} at frequencies from 5 to 99 Hz;

It is now possible to realise the real calling conditions, with the evaluation of the effect of the DC current.

- ♦ automatic skip to the next programmed test if the DC current exceed the programmed limit with control of ring number;

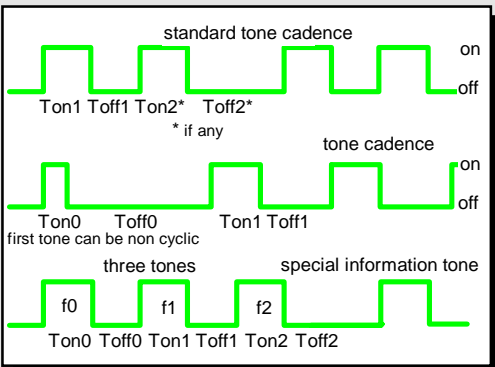
The function allows automatic detecting of off-hook motion of an automatic answering machine or a Fax following the calling phase.

- ♦ calling rhythms programmable with up to 6 single time elements;
- Normally, can be programmed two different T_{ON} times and two T_{OFF} times to perform the standard calling cadence. Can be generated also two additional times T_{ON0} and T_{OFF0} useful for the simulation of a non-cyclic starting calling pulse. They can be delivered, one time only, at the start of the calling sequence.

- ♦ evaluation of acoustic level of the telephone ringer using PH-18 Sound Level Meter;
- ♦ evaluation of the alternate current at the input of a calling receiver;

The function allows impedance evaluation of a calling receiver.

• **Network Tones** (ETSI-300-001 §1.7)
 (OPTIONAL)



- Network Tone Generator :
 - ♣ Generate dial, ringing, busy congestion, calling in progress tones. Can be programmed others typical sequences. Selection between predefined tone kind;

It is now possible the network tones generation useful for the functional evaluation of the devices which react with it. The tone is generated during a particular subtest which don't modify the preceding feeding conditions.

- ♣ tones sequences programmed with up to 6 single time elements;
- Normally, two different T_{ON} times and two T_{OFF} times performing the standard tone cadence can be programmed. Also two additional times T_{ON0} and T_{OFF0} useful for the simulation of a first non-cyclic starting tone element can be programmed. Some Administrations require this particular different first tone element. These last times can be delivered either one time only, at the start of the tone sequence, and as part of normal sequence, and then cyclically repeated.

- ♣ Each active time element of the tone sequence is programmable in frequency (Hz) and level (dBm).;

The operation can include bitonal or tritonal sequence (*special information tone*). Sensitivity of tone detector circuit can be also verified.

- DTMF Signal Generator :
 - ♣ Network Tone family includes generation of DTMF signals;

This function enlarge the test capability of CS8014 tester to the devices which receive the DTMF signals as remote controls or coded data.

<ul style="list-style-type: none"> • DTMF type 	<ul style="list-style-type: none"> -levels LOW/HIGH group; -level ratio LOW/HIGH group; -frequencies LOW/HIGH group; -numbers and sequences programmed; -Comfort-Tone acoustic level; -level regulation vs line current; minimum 190 mSec/key;
-execution time	
<ul style="list-style-type: none"> • Memory test 	<ul style="list-style-type: none"> -last dialled number; -stored numbers and pauses; -memory retention check (with line micro-interruptions) (pulse type only); -repetition time check (for a DTMF keypad);

<p>Ringer Testing</p> <ul style="list-style-type: none"> • Calling Generator 	<p><u>New Tests</u></p>
-feeding voltage	0 ÷ ±125 V _{dc}
-calling voltage	0 ÷ 120 V _{eff} , step 1V
-frequencies	5 ÷ 99 Hz, step 1 Hz
-current limit	1 ÷ 99 mA peak, step 1 mA; (possible skip to next test if exceeded);
-line resistance	0 ÷ 10240 Ω, step 10Ω
-timing	-continuous, -timed (programmable), -cyclic on/off with up to 6 times programmable
<ul style="list-style-type: none"> • Measures 	
-acoustic level eval.	by Sound Level Meter PH-18 from 55 to 113 dB _{SPL}
-ac current	measure the calling current from 0 to 70 mA _{RMS} (calling receiver impedance)
-execution time	as programmed

<p>Switching & Continuity Testing</p> <ul style="list-style-type: none"> • Type of test 	<p>All contact type can be tested: gravity switch, ground key, etc... The tester checks the correct sequence of <i>continuity/not-continuity</i> between different access points. A programmable delay makes possible to ignore a temporary state shorter than it (as bounces);</p>
-access points	up to 8; organised in up to 3 different configurations;
-continuity trip point	programmable from 10 to 9999Ω (±5% or 5Ω from 100 to 3000Ω) or in voltage drop from 0.1 to 15.0V;
-sequence time resolution	0.2mSec between two different temporary states of a contact sequence;
-execution time	real time;

<p>Feeding Circuit (line loop)</p> <p><u>New Subscriber loop!</u></p> <ul style="list-style-type: none"> • Feeder 	
-constant voltage	0 ÷ 125 V _{dc} , 100 mA with normal or reversed polarity. (current limit 130 mA)
-constant current	from 1 to 99 mA, under software control.
<ul style="list-style-type: none"> • Feeding Bridge 	
-inductance program selectables	equiv. to 2 x 1H; equiv. to 2 x 2H; equiv. to 2 x 5H or external
-inductor resistance or	2 x 150Ω to 2 x 500Ω
-series resistance R _f (NET4)	programmable from 2 x 150 to 2 x 5265Ω in 2 x 5Ω steps, included inductor resistance;
-capacitance program selectables	2 x 2μF; 2 x 20μF 2 x 47μF or external capacitor;
<ul style="list-style-type: none"> • Artificial line 	<p>An interchangeable plug-in defines distributed constants cable characteristics and support an optional discrete line. If used, programmable in Ω, in Km or in Miles or in cells in 15 steps or selectable the optional line.</p>

<p>Network Tones generator (OPTIONAL)</p> <p><u>Absolutely New</u></p> <ul style="list-style-type: none"> • Predefined tone sequences 	<p>dial tone, busy, ringing, congestion tones, etc... program selectable;</p>
<ul style="list-style-type: none"> • Tones generator 	
-cycle	up to 6 elementary times, where T _{on0} e T _{off0} can be used as starting element.
-times	0 to 9.9 Sec programmable
- levels	0 to -35 dB _m , programmable for each sequence element;
- frequency	100 to 20.000 Hz, programmable for each sequence element;