



# SIM'COM CLASS 410

## Universal Central Office Line Simulator

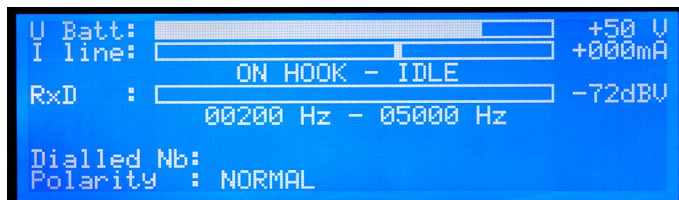
Low Cost, High performance and  
High Flexibility network emulator

### High performance at low cost

The CLASS410 is based on the characteristics that made the MT2's CLASS family so popular : **exceptional performance and ease of use**. Thanks to DSP technics, analysis and generation of signals are precise and stable.

It is designed for testing all types of analogue terminals : Telephone, payphone; modem; answering machine; fax machine, etc. including CallerID and SMS functionalities.

- **Standalone use:** The CLASS410 can be used as a standalone CO simulator. Parameters are set through the different user friendly menus. Four soft keys allows manual polarity reversal, sending of taxe pulse, impairment break, ringing, etc. **The new status screen** gives main information such as voltage of the battery, line current, status of the line, level (Rx, Tx or Ext) in the specified bandwidth and the number dialled. Levels are displayed using real time VU-meters with peak indicators.



- **Remote controled use :** Using CLASS-SOFT, delivered with equipment, all the parameters of the standalone mode can be set plus Caller ID and SMS testing. For Caller ID FSK and DTMF data transmission are supported. For SMS ETSI (ES 201 912) protocol 1 and protocol 2 are supported. A DLL is also provided for programmers who want to develop applications using Microsoft Windows.

### Main features

- SMS testing. Worldwide MT2's reputation in that domain at its best.
- Caller ID testing. Type I & Type II (On & Off-hook) - FSK and DTMF signals
- Standard CO behavior or scenario (script) execution or fully remote control mode.
- Isolated simulated line.
- Programmable battery voltage.
- Programmable line current limitation
- Three internal impedance and one external. High precision analogue circuits.
- Generates the network tones (one or two frequencies). Frequencies and levels are adjustable.
- Ringing polarised or non polarised, 4 timing per sequence.
- Line resistance adjustable.
- Bypass of the feeding bridge coils for precise pulse dialling measurement
- 12 or 16 KHz taxe pulses. Quantum at the beginning possible
- very complete B answer signal management
- Recorder/Player for quick telephony testing
- Signal measurement : FFT analysis, selective voltmeter, DTMF. On Rx, Tx, line or external measurement.
- DC measurement : external DC voltmeter and line current.
- Scenarios execution. Up to 100 scenarios in internal FLASH memory.
- Up to 100 configurations memory.
- Soft keys for manual generation : Taxe pulse, polarity reversal, break impairment, ringing, Caller ID
- Audio monitoring with internal loudspeaker : independant level control for Rx and Tx
- Isolated BNC connectors for Rx and Tx signals (monitoring and added modulation)
- 4 x digital input (100kohms) and 4 x digital output (open collector /1K ohms)

- **1 line simulated :** insulated to the earth.
- **Battery voltage :** 10 to 60V in steps of 1V.
- **Line current limitation :** 5 to 99mA in steps of 1mA.
- **Parking current limit. :** 5 to 99mA in steps of 1mA.
- **DC Current measurement :** 10uA to 99mA. Resolution 10uA.
- **AC(signal) measurement :** FFT analysis and true RMS selective voltmeter (low and high bandwidth adjustable from 200 to 20 000Hz). Measurement achieved on Rx or Tx or Line (RX+Tx) or external
- **Line resistance :** 200 to 3 200ohms in steps of 200ohms.
- **Line pick-up detection :** 5 to 99mA in steps of 1mA.
- **Impedance :** Internal : Zref TBR21 (270Ω + 150nF//750Ω) / 600Ω / Zchina (200Ω + 120nF//680Ω) or Zext.
- **Dialling Tone :** 2 frequencies of 200 to 5 000Hz in steps of 1Hz.  
Levels : -60 to +10dBV in steps of 1dB or OFF.  
Time before "Busy" from 0 to 999s in steps of 1s.
- **Busy Tone :** 2 frequencies of 200 to 5 000Hz in steps of 1Hz.  
Levels : -60 to +10dBV in steps of 1dB.  
ON and OFF time : 0 to 9 990ms in steps of 10ms.  
Time before "Parking" from 0 to 999s in steps of 1s.
- **Ext. modulation input :** For adding specific signals like noise. Zinput : 100KΩ
- **Ext. modulation output :** For signal analysis. Zoutput : 600Ω
- **Ringing :** Frequency from 17 to 99Hz in steps of 1Hz.  
Level : 10 to 99V in steps of 1V.  
4 times of 0 to 9 990ms in steps of 10ms.  
Times 1 and 3 are ON, Times 2 and 4 are OFF  
Nbr. of patterns : 0 to 99.  
Polarised and non-polarised mode.
- **«B answer» Signal :** Charging signal, polarity reversal, DTMF or tone (2 frequencies from 200 to 5 000Hz in steps of 1Hz).  
Level : -60 to +10dBV or OFF.  
Time from 0 to 9 990ms in steps of 10ms.
- **Charging signals :** 12 and 16 kHz in differential mode,  
levels : 5 to 4 000mVeff (e.m.f. value),  
ON time : 0 to 9 990ms in steps of 10ms,  
OFF time : 0 to 999s in steps of 100ms,  
Automatic or manual (button F1, F2, F3 or F4),  
Quantum pulses : 1 to 99 ascribable to each number.  
Quantum Inter-time from 0 to 2 000ms in steps of 10ms.
- **Reversed polarity :** controlled by the detection of line pick-up (with return to normal position when line returns to quiescent state) or via F1, F2, F3 or F4 buttons.
- **Buttons F1/F2/F3/F4 :** Four buttons are dedicated to commands that can be selected other : Break/Taxi pulse/Ringing/Polarity/CID.
- **Detection of DTMF numbering :** Assignment of a call number or a family of call numbers to each line (17 digits max).
- **Detection of «Flashing» :** From 50 to 400ms (signalisation through serial link).
- **Internal numbers with answering machine functions,** for rapid telephometric testing.
- **Digital I/O :** 4 x input (0-5V - 100KΩ) & 4 output (open collector with 1KΩ pullup to +5V)

### Caller ID signals generator (FSK&DTMF)

- **Type I and II signals :** according to a model built with CLASS-SOFT and loaded through the RS232 serial link.
- **frame memories :** 10 of each type of Caller ID description.
- **frame sending :** Manual, remote controlled or using Fx buttons

In a script editing, the following signals can be used with a precise timing (step of 10ms or 1bit for FSK) :

- **Tone :** Frequency of 200 to 5 000Hz in steps of 1Hz.  
Level : -60 to +10dBV in steps of 1 dB.
- **FSK Mark & Cesure bits :** Frequencies and levels as for tone.
- **FSK rate :** 120 to 4800 bits/s in steps of 1 bit/s.  
Nb of start/stop bits : 0 to x (65535 max).
- **Ring generator :** See specifications of line emulator.
- **DTMF generator :** Q23, level of each frequency adjustable from -60 to +10dBV (steps of 1dB).
- **Polarity reversal :** See specifications of line emulator.
- **White noise generator (pseudo random) :** OFF or from -60 to +10dBV (steps of 1dB).
- **Configuration memories :** 10 (EEPROM).

### Miscellaneous

- **Serial link :** RS232C.
- **Power supply :** 230V ±10%. (115/230V - Option B)
- **Temperature range:** operation at 5 to 40 °C.
- **Dimensions :** (L x W x D) 490 x 300 x 90 mm (19"/2U).
- **Weight :** 5 Kg approx.

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