

# INDUSCOM

## **DECENTRALIZED INTERCOMMUNICATION CONCEPT**



### **BUS INTERCOM**

## **Technical Description**

## I. GENERAL

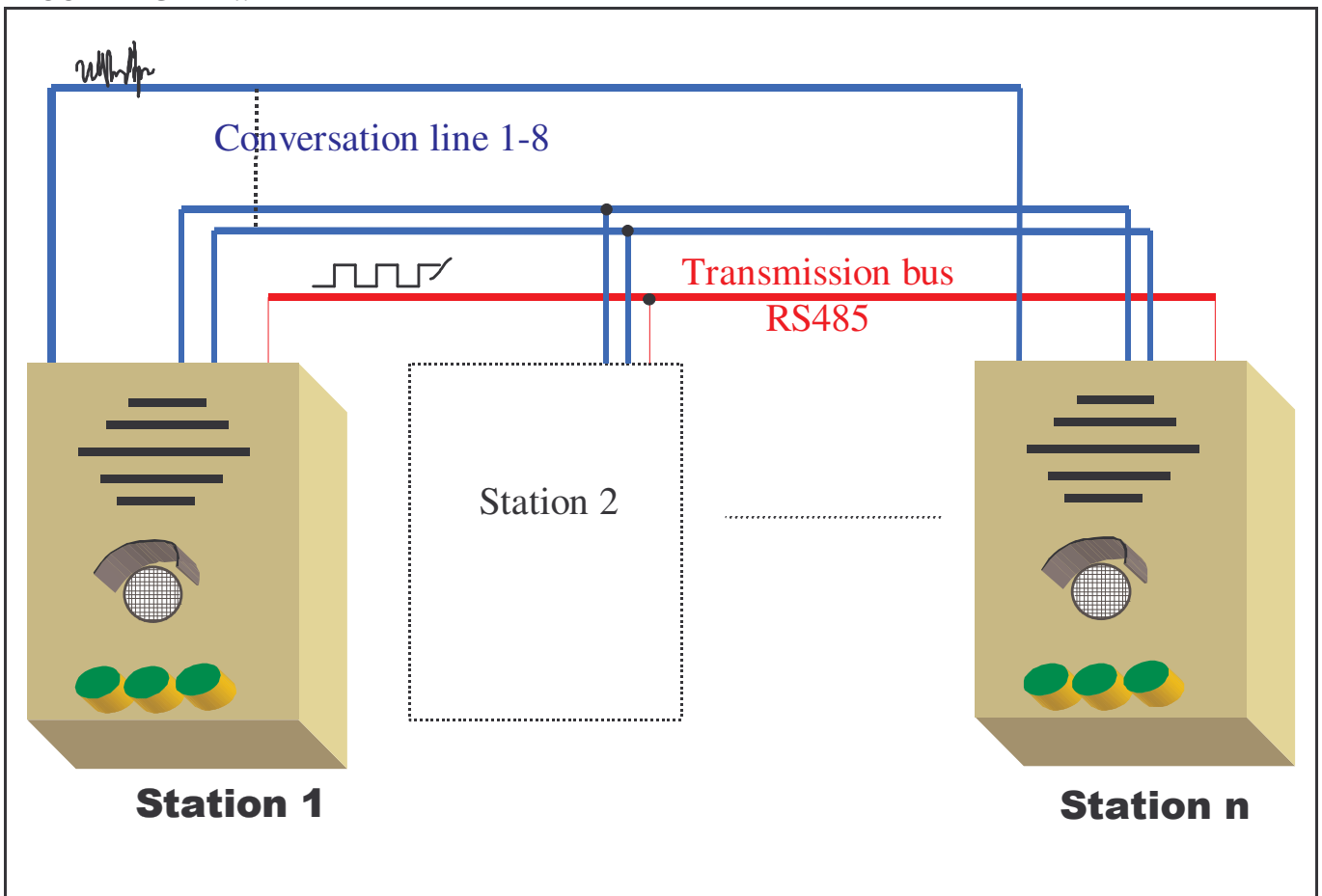
**INDUSCOM** is not *another intercom Bus* with the limitations usually encountered formerly in this type of equipment. **INDUSCOM** provides a true innovation, it includes all the main functions essential for a centralised network but without the constraint of

the installation of a switchboard, thus avoiding heavy costs.

It was formerly necessary to make a choice: either the desired performances, or the lowest cost.

**INDUSCOM** joins now both advantages!

### BLOCK DIAGRAM::



## II. PRINCIPLE OF OPERATION

All the intercom sets are linked by means of 1 to 8 audio pairs and 1 RS 485- 9600 Bd- data pair.

Each terminal set has its own address on the common bus..

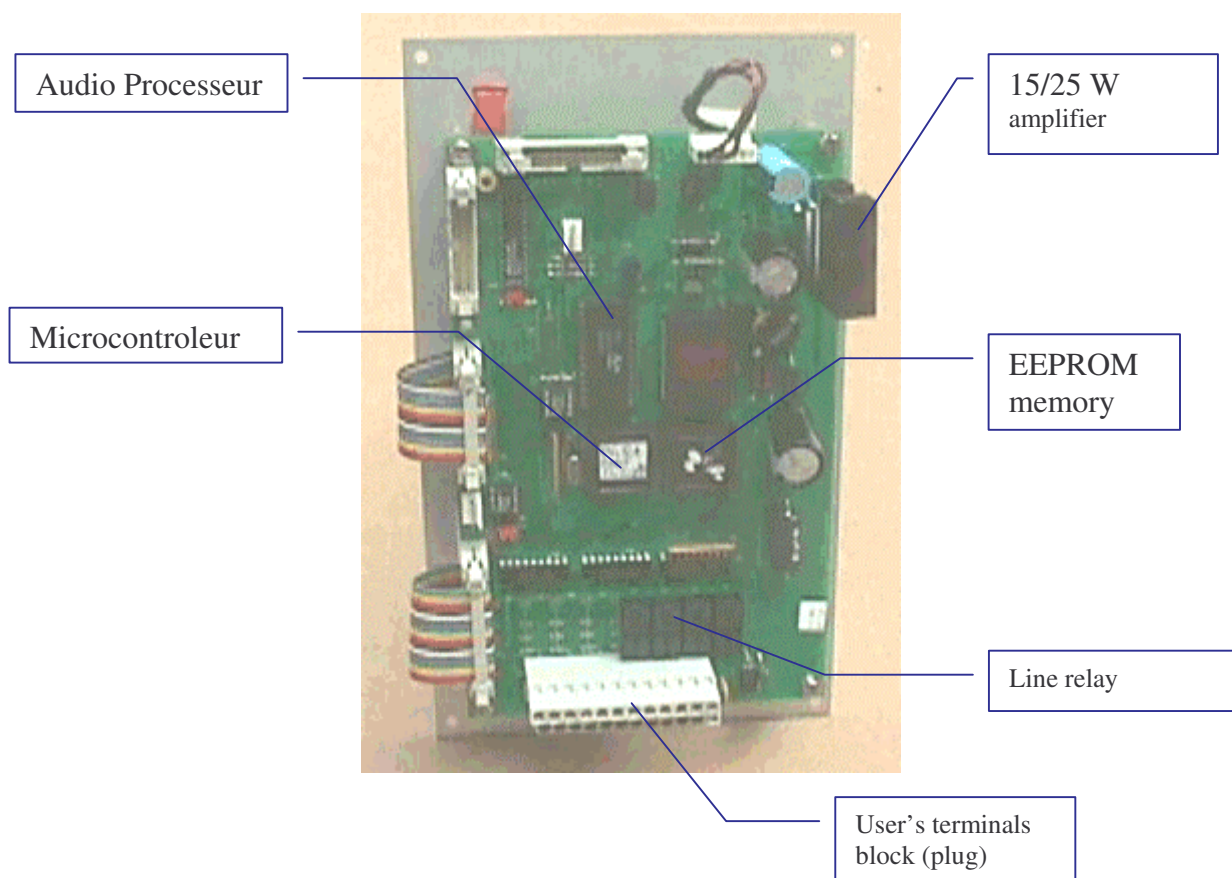
Each set watches continuously the data pair and updates its internal data base about the lines status. If two sets are busy on one of the pairs, the latter is recognised as busy by all the others. In a complete installation up to 8 conversations can be carried out simultaneously.

The electronic board is designed around a microcontroller with an EEPROM control program. Any updating or modification can

thus easily be made on site by loading a new

program or new parameters from a P.C.

## ELECTRONIC BOARD LAYOUT



### III. CALLING

Following the type of set, the calling may be performed either by dialling on a keyboard or by means of single direct calling pushbuttons. The dialling – or the operation of a dedicated pushbutton - starts the transmission via the data pair of a calling message including the address of the desired set to all the sets connected.

If the called set is free, it is immediately activated and answers by emitting a short bip. Simultaneously, a luminous indicator marks the connection.

The equipment can be programmed to activate only a ringing device, the audio output being released by intervention of an attendant.

Optionally, a luminous indicator and a tone signal can be activated when all the pairs are busy.

### IV. CONVERSATION

When an audio link is established, the conversation is carried out by means of push-to-talk buttons: each attendant must press a button or the key \* of the keyboard to talk.

The conversation is hence of the half duplex mode, but can be operated either manually, by means of the push-to-talk button, or free hands, by means of the included voice-operated system.

Since the free hands system is activated by the acoustic signals, its use is not recommended in noisy areas.

The end of the conversation is caused by any one of the attendants, by pressing the annulation (cancel) pushbutton. The audio pair is then liberated and all the sets receive the information.

An automatic cancellation causes the liberation of the link after a programmable time delay.

## V. GROUP AND GENERAL CALLING

(Paging)

By programming, it is possible to assign a call number or a dedicated pushbutton to a group of several sets.

The general calling is sent to all the sets and interrupts all the established conversations during the time it is activated. The interrupted conversations are restored at the end of the general call. Two tones are emitted in order to identify the general calling.

The group calling is addressed only to the sets suitably parametered to form the group. The operation mode is the same as in the case of general calling.

## VI. ADJUSTMENTS

The following levels can be digitally adjusted at each set:

- Loudspeaker power
- Ringing sound
- Bass tone
- Treble tone

These parameters can be programmed by means of a P.C. with an RS 485 interface.

On the suitably equipped sets, the same adjustments can also be operated by means of the keyboard, using code functions.

Optionally, the sets can be equipped with two special buttons “+” and “-“ for an easy adjustment of the audio power of the loudspeaker.

## VII. SET WITH LCD DISPLAYS

These sets equipped with the display option provide indications like the call number of the called sets, the used pair and, if desired, an identification labelling of the caller. The latter text can be programmed for each subscriber with up to 16 signs.

Information about the status of the lines can also be displayed.

## VIII. INPUTS

3 inputs are available to afford the possibility to activate an action or a remote alarm, etc. In some cases (for example on sets equipped with a handset) one of these inputs may already be used.

## IX. OUTPUTS

The electronic boards are equipped with open-close contacts able to activate lights or to energise relays. Some of these contacts are used to activate indicators like “line connected” or to mute the loudspeaker (when a handset is used). The others are at disposal for remote controls from sets to sets or for activation of an automatic programmable condition, as, for example, to activate a camera during a conversation, activate a recorder, marking the time/date, etc.

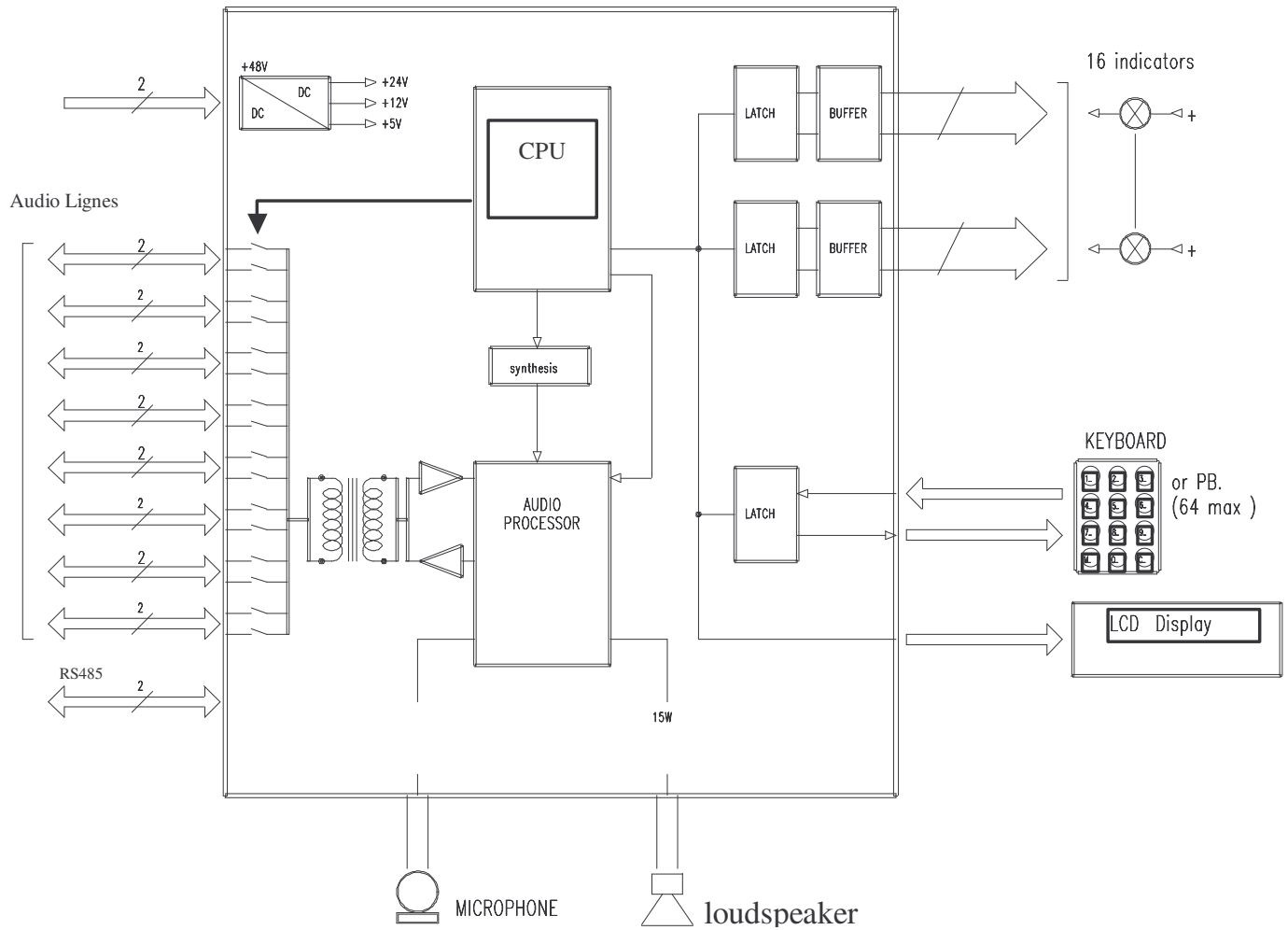
## X. TEST

Each set has an optionally true audio test, triggerable at a fixed time. In such case, the loudspeaker produces an audio tone which is received by the microphone and measured. In case of failure, the information can be transmitted to a control desk or to any monitoring system by means of a serial data link.

A main set can be used for monitoring the whole of the lines of the network, by a polling

interrogation system.

## XI. BLOCK DIAGRAM OF THE ELECTRONIC BOARD



## XII. WIRING

The external wiring is connected to a two-level terminals block located at the bottom of the p.c.b. Wires up to 1.5 mm<sup>2</sup> can be used.

Available terminals:

Supply	: 2
Audio line 1	: 2
Audio line 2	: 2
Audio line 3	: 2
Audio line 4	: 2
Audio line 5	: 2
Audio line 6	: 2
Audio line 7	: 2
Audio line 8	: 2

RS 485 data line : 2  
External loudspeaker : 2

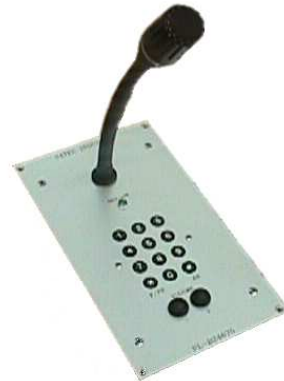
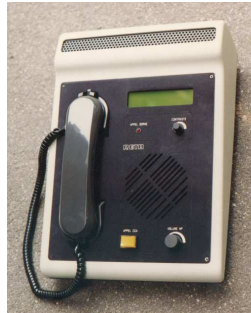
Note : the audio lines 5 through 8 are equipped only on the complete version. The standard version is equipped for 4 lines.

## XIII. EXTERNAL LOOK

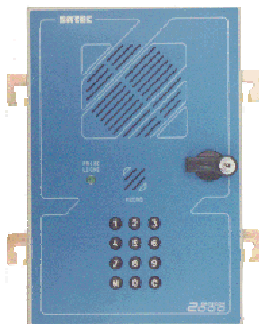
The intercom sets are designed under several presentations : metallic wall cabinet, moulded polyurethane wall cabinet, flush desktop panel, explosion-proof cabinet, etc.

### Examples:

#### DESK TYPE



#### INDUSTRIAL TYPE



Special Exed ATEX certified

## XIV. FEATURES

Supply		48 V.DC
Current drain	stand-by With 15 W audio output	100 mA 1 A
Maximum subscriber sets (without repeater)		128
Maximum number of keys per set (including special functions)		64
Optional screen display		2 rows, 16 char.
Output of the internal audio power amplifier	nominal peak	15 W on 8 $\Omega$ 22 W on 8 $\Omega$
Audio line output		0 dBm on 600 $\Omega$
Frequency range at the microphone		0.3 – 8 KHz
Frequency range of the output at the loudspeaker		0.3 – 8 KHz
Data and programming interface		RS 485, half duplex
Maximum simultaneous conversations		8
Number of TTL inputs		3
Number of open-close outputs per set (remote control, indicators, etc.)		16
Antibouncing	keyboard Auxillary inputs	3 ms 10 ms
Operating temperature		- 20 to + 50°C

*The above indicated characteristics are subject to modification without previous advice.*

## XV. SPECIAL APPLICATIONS

Due to their exceptional versatility, the microprocessor-driven INDUSCOM equipments are able to support a great number of functions. Please contact SATEC for information about any specific application not described as standard.