

# CAS Extension, EL7

## DESCRIPTION



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# 1

## GENERAL

### 1.1

#### DESCRIPTION

The Channel Associated Signaling (CAS) extension interface provides a digital connection to external equipments and offers them, through PCM-links, the functionality of analog extensions.

The interface supports 1.5 and 2Mb/s digital systems. Each 2Mb/s interface handles 30 extensions and each 1.5Mb/s interface up to 24 extensions. Both, 2Mb and 1.5Mb, can be handled simultaneously in the same MiVoice MX-ONE system.

Different signaling system are also handled simultaneously, which allows connections of different external equipments (for example, cordless telephone system, digital multiplexers, voice mail, and so on) to a MiVoice MX-ONE.

## 2

## FACILITIES

CAS extensions are implemented as analog extensions and are handled with the standard EX range of commands.

The functionality of the analog extension is only limited depending on the connected external equipment, for example if the external equipment does not support hook-flash or message waiting.

Besides the analog extension functionality, the CAS extension offers the capability to switch data from 64kbit clear-channel data-interfaces connected to the external equipment. This is applicable, for example, where a Multiplexer (MUX) is used as a simple remote unit and permits connections from MUX data extensions to other MX-ONE data interfaces, for example, ISDN-trunks and DPNSS-trunks (not to internal data extension).

For specific functionality and signaling of the different implemented protocols, see the different inter-working descriptions for CAS Extension, EL7.

Synchronization can be received through the external equipment clock source. This is only advisable when the MX-ONE is not linked to digital exchanges in an external network and when the external equipment clock stability is better than the MX-ONE internal clock.

The MX-ONE internal clock source is generated from the MX-ONE 2 MHz PCM clock. It shall have a stability of + / - 50 ppm. If the MX-ONE clock is locked to an external PCM clock, the stability is the same as that of the external PCM clock.

### 2.1

### CAPACITIES AND LIMITATIONS

One MX-ONE system can handle up to 16 different signaling schemes.

A maximum of 1920 CAS extensions and 64 interfaces (1.5 or 2Mb) can be initiated per LIM.

### 2.2

### ALARMS

CAS extension interface can generate the following fault codes:

<b>268</b>	Digital trunk - out of order
<b>269</b>	Digital trunk - loss of frame synchronization.
<b>270</b>	Digital trunk - bit error in frame sync. word.
<b>271</b>	Digital trunk - received alarm from remote end.
<b>272</b>	Digital trunk - loss of multi-frame synchronization.
<b>274</b>	Digital trunk - clock malfunction (slip).

Special fault codes for 1.5Mb interface can also be generated:

<b>310</b>	ISDN excessive bipolar violation
<b>311</b>	ISDN failed signal state

312	Loss of signal
313	ISDN Excessive out of frame

### 3 HARDWARE

#### 3.1 DESCRIPTION

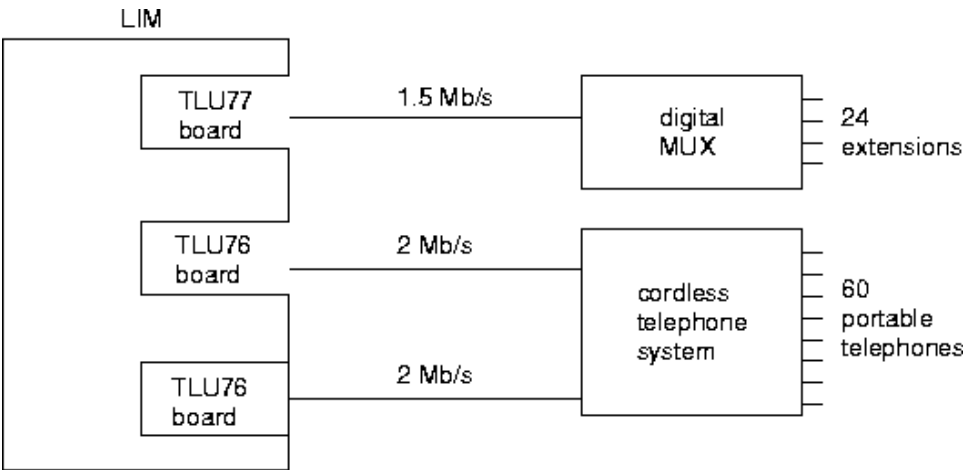
Standard TLU boards are used for CAS extension. MGU also supports CAS extension, but only the E1 (2Mb) interface.

- a TLU76 or E1 interfaces at MGU is used for 2Mb interface. This interface constitutes a 32-channel PCM (30 voice/data-channels) with High Density Bipolar Three (HDB3)-code and an input/output port of 120 ohms impedance, balanced to earth.
- b TLU77 is used for 1.5Mb interface. This interface constitutes a 24-channel PCM (23 or 24 voice/data channels). It can be operated on D4 or extended super-frame, Zero Code Suppression, or Bipolar with Eight-Zero Substitution (B8ZS) zero code suppression, Digital Multiplexed Interface (DMI), or non-DMI application. The signaling can be allocated to the 24th time slot or can be carried in the voice/data channels (this imposes a limit of 56 kb/s on data transmission).

#### 3.2 INTER-WORKING

A hardware inter-working example is illustrated in the following figure. In this example, a cordless telephone system with 60 extensions and a 1.5Mb digital multiplexer (max. 24 extensions) are connected to one LIM using CAS extension interfaces.

Specific information of the implemented protocols is given in the different inter-working descriptions, on CAS Extension, EL7.



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## SUMMARY

The CAS extension interface offers a digital and more effective connection to external equipments which require the analog extension interface functionality from the MX-ONE. Applications for this interface includes connections to Voice Mail, cordless telephone system, groups of remote extensions connected via Multiplexer, application computer, and so on.