

Auxiliary Unit Type 1 131–8690/01

The Auxiliary Unit performs auxiliary and service functions, by interfacing with the SOH and POH bytes, on SDH and PDH interfaces.

This allows the management of Engineering Order Wire and of 64kbit/s point-to-point connections (both G.703 and V.11) for subscriber communications.

Functions

The Auxiliary Unit supports:

- ◆ *access to seven EOW channels by means of a 2 or 4-wire analogue interface*
- ◆ *management of up to eight G.703 64kbit/s user defined channels by means of SOH and POH bytes*
- ◆ *management of up to four Nx 64kbit/s V.11 user defined channels by means of SOH and POH bytes (where N is 1, 3 or 9)*

IMPORTANT *Since the Auxiliary Unit 131–8690/01 can be used on different equipments (ADM–1, ADM–4/1, ADM–16) differences can be found in the number of EOW and data channels available.*

Functional Description

In this description reference will be made to the following block diagram

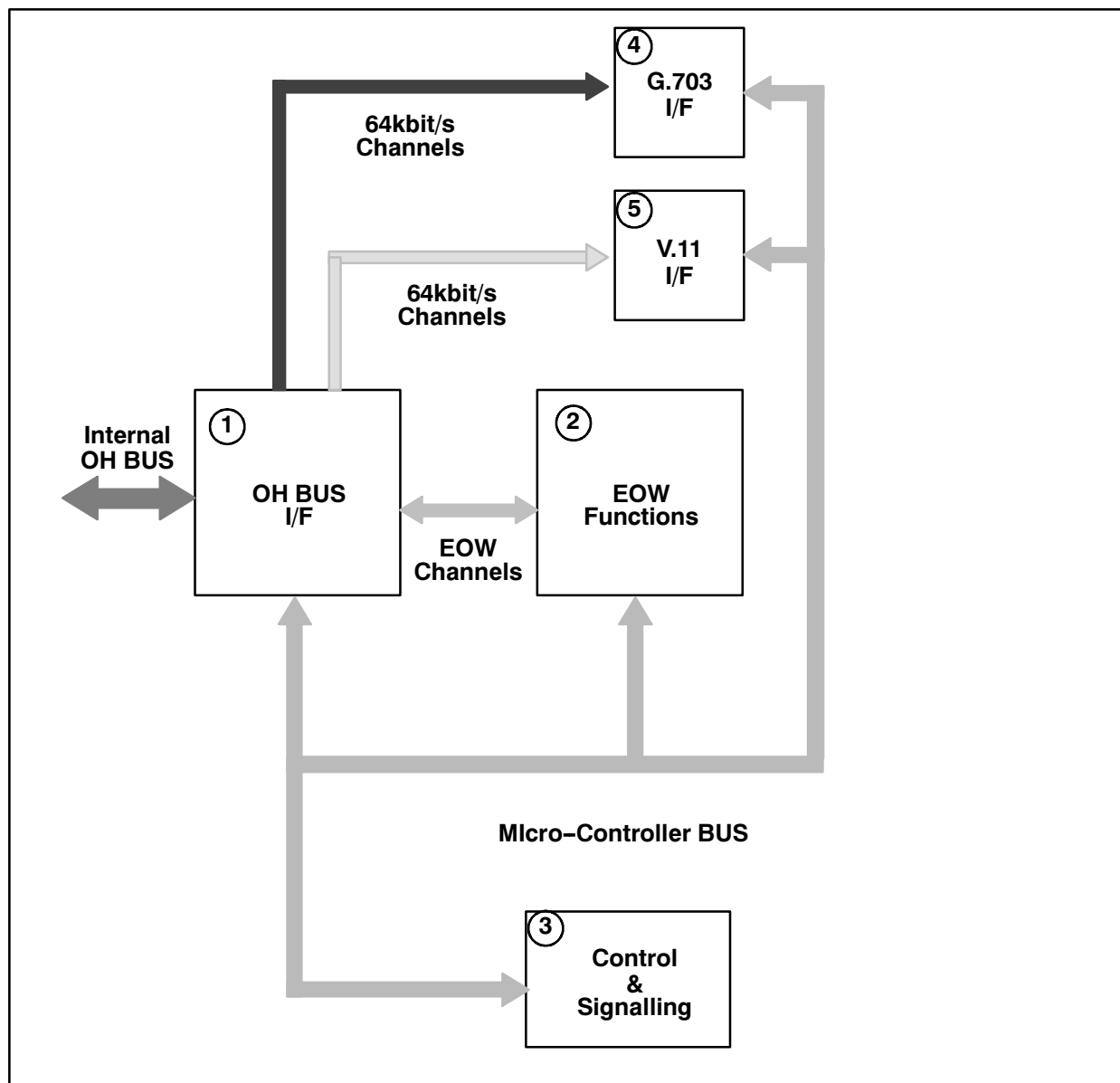


Fig. 5.7-1 Auxiliary Unit: simplified block diagram

The Auxiliary Unit can manage audio connections among local and remote equipments, connected by the STM-N interfaces, using E1 and E2 bytes of the SOH.

The access to the EOW can be either a standard 2 wire analogue interface (performing the functions of current feed, hook status detection and DTMF signalling) or a 4-wire (analogue or digital) interface.

Both selective and omnibus calls are available. For selective calls at least three digits are required to identify a destination system.

The telephone is connected to a single area, therefore calls are only possible within the same EOW Area (incoming collective calls on a different area are indicated with a blinking of area display). The switch from one area to the other is performed by means of a push button on the front panel.

Two different types of EOW areas are available.

EOW area type 1 is formed by:

- ◆ *1 STM-N coming from WEST line interfaces*
- ◆ *1 STM-N coming from EAST line interfaces*
- ◆ *3 STM-1s coming from the tributary interfaces*

EOW area type 2 is formed by:

- ◆ *2 STM-N coming from WEST line interfaces*
- ◆ *2 STM-N coming from EAST line interfaces*
- ◆ *1 STM-N coming from the tributary interfaces*

For what concerns the user defined data channels, these are:

- ◆ *up to eight 64kbit/s G.703 channels*
- ◆ *up to four Nx64kbit/s V11 channels*

A 3x64kbits V.11 channel can be used to carry DCCr (192kbit/s) while a 9x64kbit/s V11 channel can carry DCCm (576kbit/s).

OH BUS Interface

The Auxiliary Unit interfaces with the OVERHEAD BUS, incoming from the backpanel, by means of seven SOH ASICs.

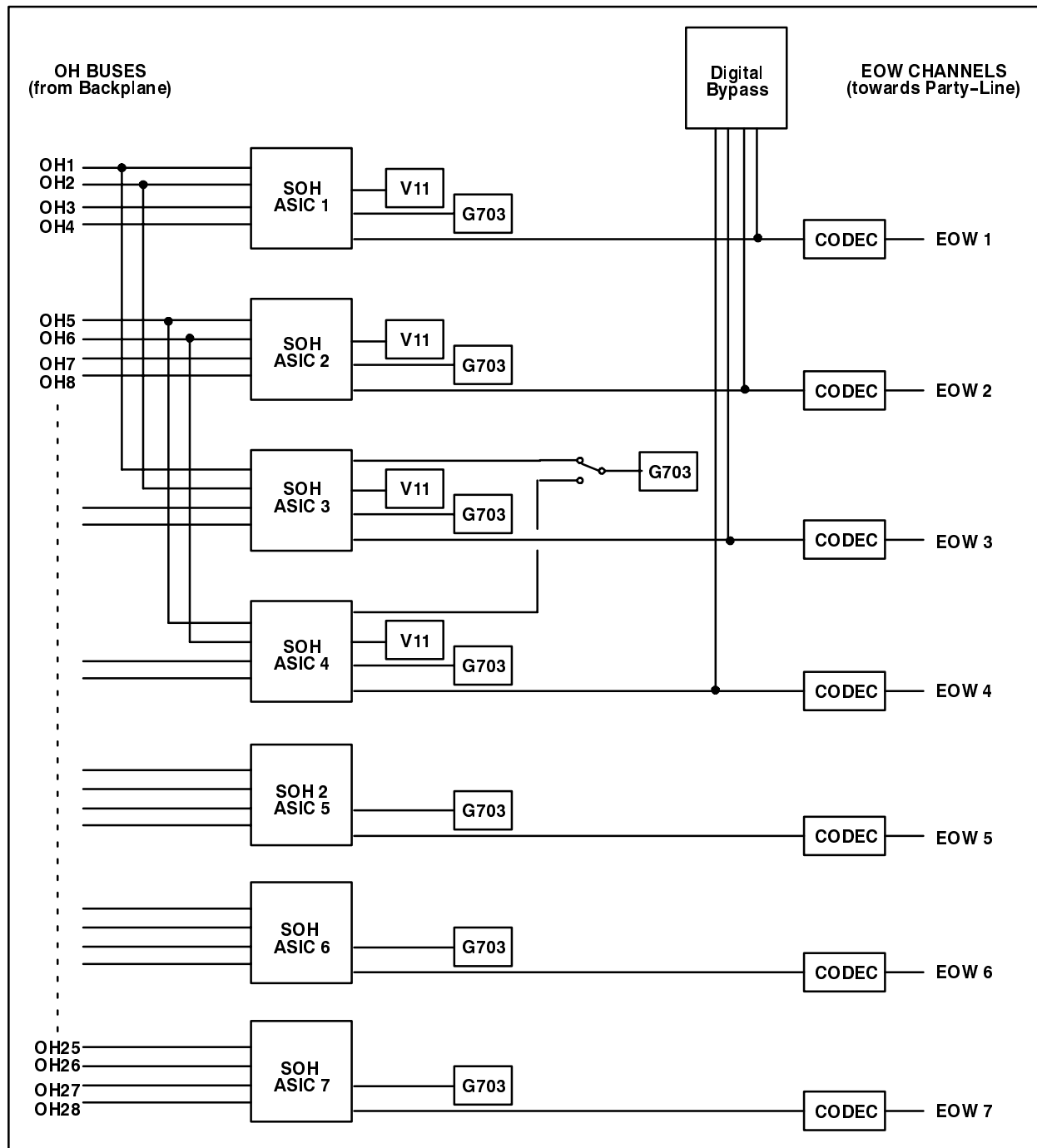


Fig. 5.7–2 OH BUS and auxiliary channel interfaces: simplified block diagram

Each SOH ASIC receives the SOH and POH bytes on four OH buses and associates them to up to four 64kbit/s data channels (A–D).

Each of these data channels is connected to a specific interface.

In detail:

- ◆ *channel D of SOH ASICs 1 and 3 are dedicated to the EOW for the WEST line*
- ◆ *channel D of SOH ASICs 2 and 4 are dedicated to the EOW for the EAST line*
- ◆ *channel D of SOH ASICs 5,6 and 7 are dedicated to the EOW for tributary interfaces*
- ◆ *channels B of SOH ASICs 1 to 4 are dedicated to 64kbit/s V11 interfaces*
- ◆ *channels C of all SOH ASICs are dedicated to G.703 64kbit/s interfaces*

Up to seven EOW channels can be managed.

On the line side both E1 and E2 bytes can be handled at the same time (in fact each line interface is connected to two SOH ASICs).

When both E1 and E2 bytes are used, only three SOH interfaces are free for use on tributary side.

The output of D channels of SOH ASICs is converted from a digital to analogue format, before being sent towards block 2.

On the first four SOH ASICs is also available a digital-bypass option. This function allows direct interconnections between some OH buses, without using the analog matrix.

If used on a regenerator equipment, the Auxiliary Unit Type 1 allows the following direct interconnections, for what concerns EOW channels:

OH bus 1 and 9 <--> OH bus 2 and 10
OH bus 3 <--> OH bus 4
OH bus 5 and 13 <--> OH bus 6 and 14
OH bus 7 <--> OH bus 8

These interconnections ensure the straight connection of EOW channels of one side of the regenerator section to the other.

If used on Add/Drop Multiplexers the Auxiliary Unit Type 1 allows direct interconnections, for what concerns EOW channels, between OH bus 1 to 16.

When the Auxiliary Unit Type 1 is inserted on a Ring Master equipment, on the EOW channels extracted from the line interfaces is inserted and detected, a check tone, used to verify the integrity of the ring.

OH Buses Mapping

Since the Auxiliary Unit Type 1 is used on different equipments, in the following table is given the meaning of the OH buses in all the possible applications.

OH Bus	Meaning on ADM–16	Meaning on ADM–4/1	Meaning on ADM–1
1	First OH bus on line WEST A	First OH bus on line WEST A	First OH bus on line 1 MOST A
2	First OH bus on line WEST B	First OH bus on line WEST B	First OH bus on line 1 MOST B
3	Third OH bus on Tributary 2	Second OH bus on line EAST A	Not used
4	Fourth OH bus on Tributary 2	Second OH bus on line EAST B	Not used
5	First OH bus on line EAST A	First OH bus on line EAST A	First OH bus on line 0 MOST A
6	First OH bus on line EAST B	First OH bus on line EAST B	First OH bus on line 0 MOST B
7	First OH bus on Tributary 7	Second OH bus on line WEST A	Not used
8	Second OH bus on Tributary 7	Second OH bus on line WEST A	Not used
9	First OH bus on line WEST A	First OH bus on line WEST A	Second OH bus on line 1 MOST A
10	First OH bus on line WEST B	First OH bus on line WEST B	Second OH bus on line 1 MOST B
11	First OH bus on Tributary 4	OH bus on Tributary 2	First OH bus on Tributary 2
12	First OH bus on Tributary 3	OH bus on Tributary 5	First OH bus on Tributary MOST B
13	First OH bus on line EAST A	First OH bus on line EAST A	Second OH bus on line 0 MOST A
14	First OH bus on line EAST B	First OH bus on line EAST B	Second OH bus on line 0 MOST B
15	First OH bus on Tributary 0	OH bus on Tributary 3	First OH bus on Tributary 3
16	First OH bus on Tributary 1	OH bus on Tributary 4	First OH bus on Tributary MOST A
17	Second OH bus on Tributary 0	First OH bus on Tributary 1	First OH bus on Tributary 1
18	Second OH bus on Tributary 5	First OH bus on Tributary 8	Not used
19	Second OH bus on Tributary 1	Second OH bus on Tributary 6	Not used

OH Bus	Meaning on ADM-16	Meaning on ADM-4/1	Meaning on ADM-1
20	Second OH bus on Tributary 2	Fourth External OH bus	Not used
21	Second OH bus on Tributary 4	First OH bus on Tributary 7	Not used
22	Second OH bus on Tributary 8	First External OH bus	Not used
23	First OH bus on Tributary 5	Second OH bus on Tributary 1	Not used
24	Second OH bus on Tributary 6	Second OH bus on Tributary 8	Not used
25	Second OH bus on Tributary 3	First OH bus on Tributary 6	Not used
26	First OH bus on Tributary 8	Third External OH bus	Not used
27	First OH bus on Tributary 2	Second OH bus on Tributary 7	Not used
28	Second OH bus on Tributary 9	Second External OH bus	Not used

G.703 Interface

Using the free bytes of SOH, in the STM–N interfaces, point-to-point connections for subscriber communications are available.

The Auxiliary Unit Type 1 allows the management of up to eight 64kbit/s G.703 co-directional channels.

The bytes used to form these data channels can be independently selected by means of Local Controller or Network Management Center.

Each one of these interfaces carries out level coding/decoding and adapting/translating operations between CMI and TTL on Rx and Tx sides, in accordance with ITU–T recommendation G.703.

IMPORTANT *When on an OH bus is enabled an audio connection (EOW channel), the G.703 channel eventually enabled on the same SOH ASIC, must use spare bytes on the same OH bus. This fact is connected to the clock extraction performed by the SOH ASIC.*

V.11 Interface

The Auxiliary Unit allows the management of up to four Nx64kbit/s V.11 contra-directional channels.

The bytes used to form these data channels can be independently selected by means of Local Controller or Network Management Centre.

EOW Functions

The seven analogic 64kbit/s channels dedicated to EOW, incoming from the SOH ASICs, are received by the two analog matrixes (PARTY LINE), one for each EOW area.

From these seven incoming channels are extracted the E1 and E2 bytes. The messages relevant to the current equipment are sent either to the Telephone interface or to the EOW extensions.

The signals not pertaining the local equipment, are re-routed by the analogue matrix, towards the proper SOH interfaces.

The PARTY LINE are formed by ten adders, each one able to interconnect one EOW channel to the others. Each PARTY LINE is always connected to nine EOW channels(*), while the telephone interface is connected to a single PARTY LINE at a time.

The currently selected area can be modified by pressing the SEL button on the front panel of the unit.

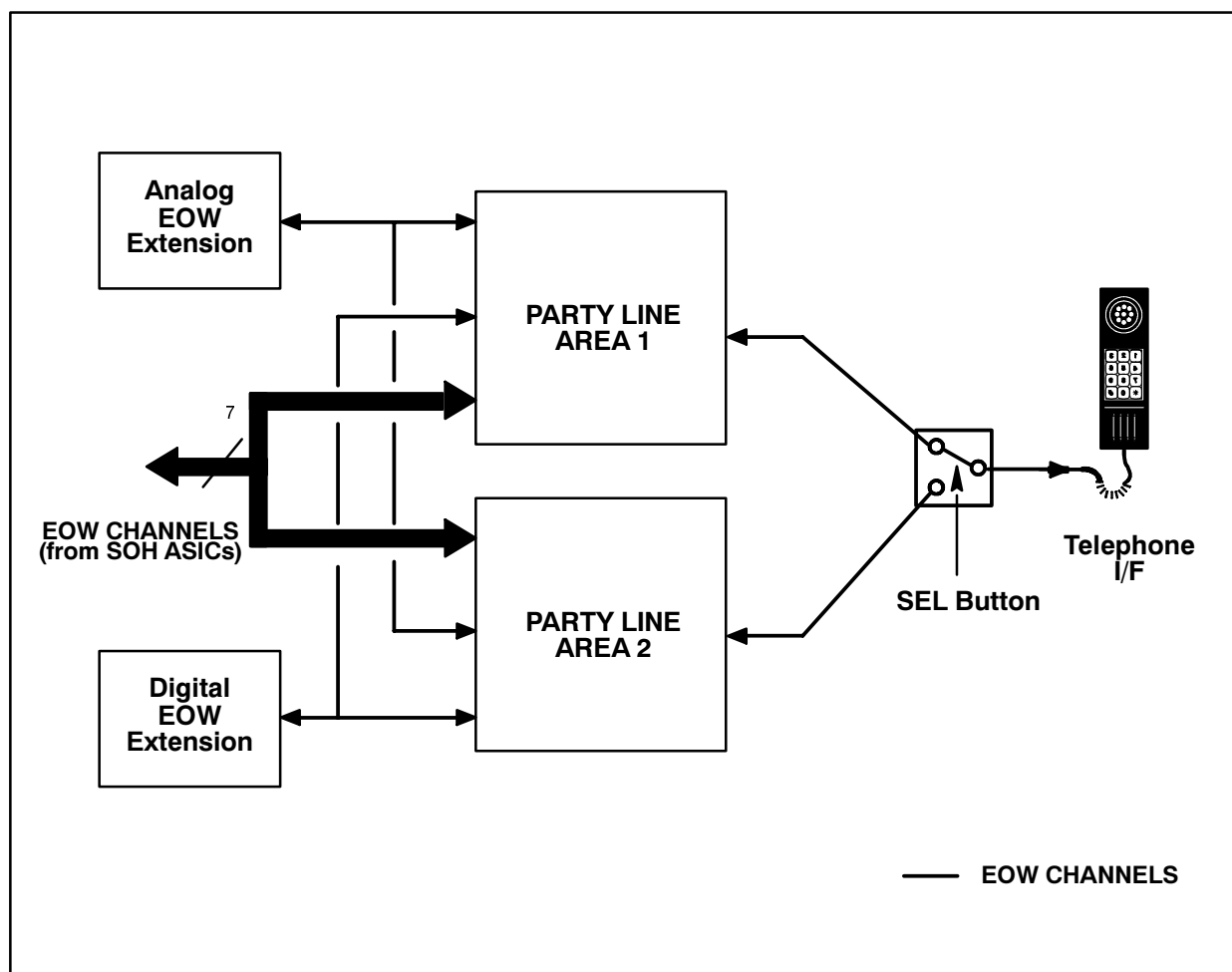


Fig. 5.7-3 EOW Management: simplified block diagram

NOTE (*) The EOW channels used in one area are not accessible on the other area.

On the transmission side the analogue signal incoming from the local handset (or from the EOW extension) is sent to the PARTY LINES which re-route it towards the SOH interfaces, by means of EOW channels.

These EOW channels are converted from an analogue to a digital format, before being processed by SOH ASICs.

It is up to the telephone interface also the generation and detection of DTMF signalling and of service tones.

Control and Signalling

The Control and Signalling block controls the devices available on the unit front panel and performs a supervision of unit operation.

The devices available on the front panel are:

- ◆ *Red LED*
 - *lights on to indicate an internal failure on the unit*
- ◆ *Yellow LED G1*
 - *flashes to indicate an on-going conversation (selective or multiple). When the light stays on, it indicates that the line is engaged by a selective conversation*
- ◆ *Yellow LED G2*
 - *flashes to indicate that the line is engaged by an omnibus conversation. If the light stays on it can indicate either that the subscriber has joined an omnibus conversation or that a subscriber engaged in a selective conversation is making another call.*
- ◆ *RESET button R*
 - *allows a unit hardware RESET or an EOW channel RESET.*
- ◆ *Inclusion button I*
 - *allows subscribers to join both selective and omnibus conversations in which they are not involved. Subscribers already involved in selective conversations can call another subscriber by keeping this button pressed. This button is also used to leave a conversation*
- ◆ *AREA display*
 - *indicates the currently selected EOW area (it also blinks when a collective call is detected on the other area)*
- ◆ *SEL button*
 - *allows the change the currently selected area*

On the Auxiliary Unit is also available a buzzer for incoming call signalling.

Technical characteristics

Microprocessor and Memories

<i>Microprocessor:</i>	Motorola 68302
<i>Bootstrap Memory:</i>	1 x 128 Kbyte EPROM
<i>Program Memory:</i>	2 x 128 Kbyte FLASH
<i>Inventory Memory:</i>	1 x 4 Kbyte EEPROM

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