

Equipment Composition

Introduction

Terminal, Add/Drop, Regenerator and Digital Cross Connect equipments are assembled in sub-racks (450x265x280mm) built according to the *ETS 300 119-4* construction practice.

The sub-racks are suited to be mounted in a 2200mm cabinet constructed to *ETS 300 119-3* practice.

The station equipment can be suitably outfitted to meet the network requirements by consulting the next tables, which make reference to diversified equipment composition examples.

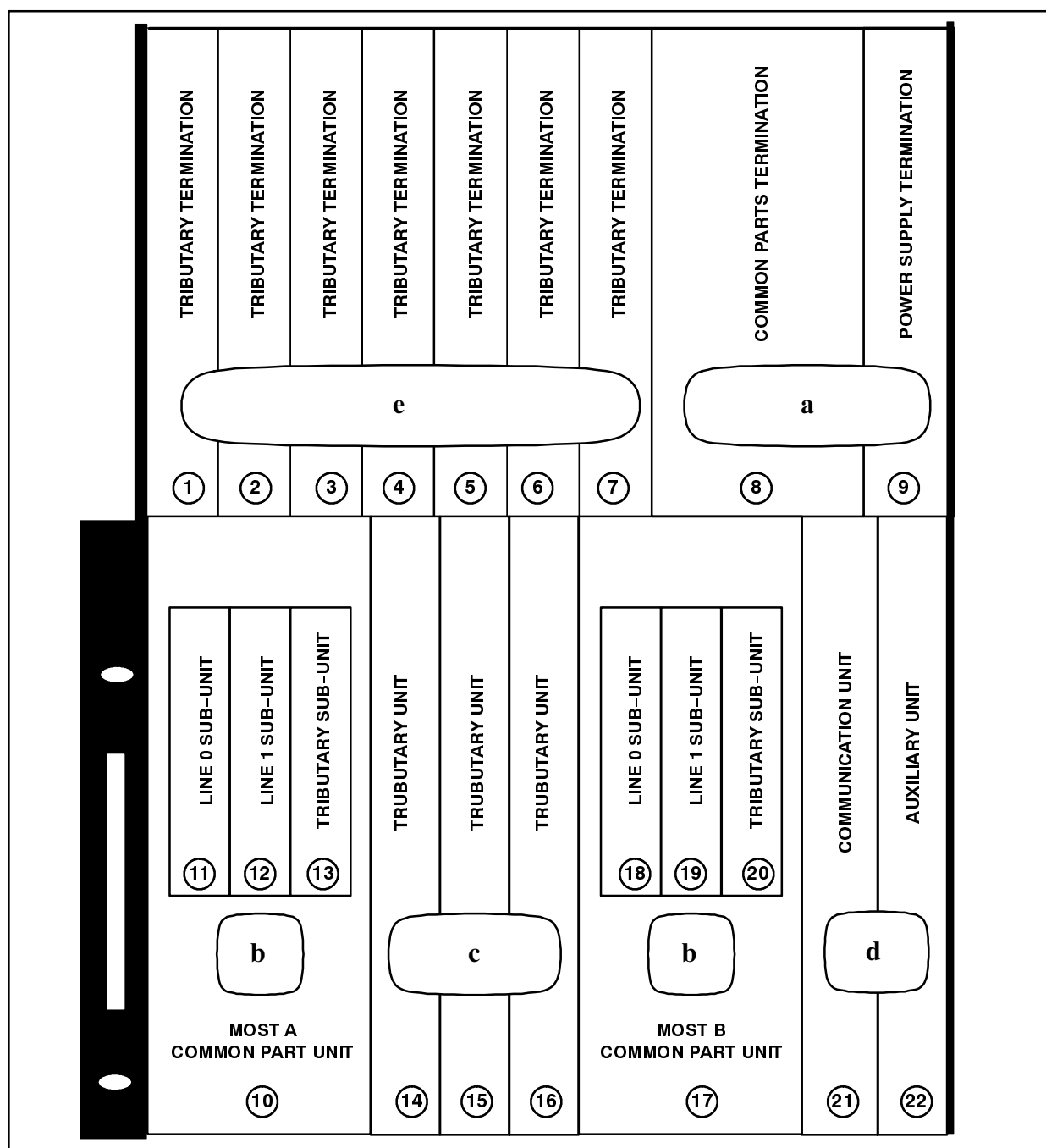


Fig. 1.4-1 Operative areas in which the sub-rack of ADM-1 is divided

As shown in the previous figure the sub-rack can be subdivided into five different areas:

- a) Common Parts and Power Supply Termination
- b) MOST Units
- c) Tributary Units
- d) Optional Units
- e) Tributary Termination Units

Composition Rules

The lower-case letters **x** after the titles indicate in which subrack area the units must be fitted (Fig. 1.4-1).

Common Parts **a**

All the items described in the following table must be always present in the equipment.

Description	Code	Notes	Q.ty	SLOT
Wired Sub-rack	133-1378/01		1	
Common Part Connection Unit –Type 2	131-8931/05	It includes the following terminations: – Q interface; – EOW extension; – Auxiliary channels (64kbit/s + V.11); – ground contact; – Rack Alarm Unit connection; – DAM interface; – F interface; – synchronisation input/output. (*)	1	8
Power Supply Connection Unit	131-8932/01	To be provided for each sub-rack	1	9

NOTE (*) For alternative use

MOST Unit ^(b)

At least one MOST Unit has always to be fitted in a sub-rack. The MOST Unit 131-9141/** is composed by the sub-units and accessories described in the following tables.

MOST Accessories

Description	Code	Notes	Q.ty
Cover kit	131-9215/01	Cover Kit for MOST (*)	1

NOTE (*) Only for MOST Unit Type 2 and MOST Unit Type 2S.

MOST Sub-units

Description	Code	Notes	Q.ty	Slot
MOST Common Parts Sub-unit Type 2	130-3492/01	Always fitted. The two sub-units are for alternative uses. The MOST Common Parts Sub-unit Type 2 manages 2MHz input/output clock; the MOST Common Parts Sub-unit Type 2s can handle 2MHz and/or 2Mbit/s input/output clock.	1/2	10/17
MOST Common Parts Sub-unit Type 2s	130-3492/03			
STM-1 Electrical Line Sub-Unit	130-3558/01	At least one line sub-unit must be provided for each MOST Unit	1/2	11/12 18/19
S-1.1 Optical Sub-unit with SC Connectors	130-3493/01			
S-1.1 Optical Sub-unit with FC Connectors	130-3493/02			
L-1.1 Optical Sub-unit with SC Connectors	130-3494/01			
L-1.1 Optical Sub-unit with FC Connectors	130-3494/02			
L-1.2/L-1.3 Optical Sub-unit with SC Connectors	130-3495/01			
L-1.2/L-1.3 Optical Sub-unit with FC Connectors	130-3495/02			
16x1.5/2Mbit/s Tributary Sub-unit	130-3496/06	–	0/1	13/20
32x1.5/2Mbit/s Tributary Sub-unit	130-3496/05	–	0/1	13/20
1x34Mbit/s G.703 Tributary Sub-unit	130-3545/01	–	0/1	13/20

STM-1 Line Interfaces (MOST Modules) Quantity

This table refers only to the line interface modules. Refer to the proper table for the necessary quantity of Tributary STM-1 interfaces.

Equipment Configuration	Note	Q.ty
Terminal without 1+1 Line protection	MOST A used	1
Terminal with 1+1 Line protection	MOST A used	2
Add/Drop (DXC) without 1+1 Line protection	MOST A used	2
Add/Drop (DXC) with 1+1 Line protection	MOST A and B used	4

The next table shows the possible configurations of I/F modules, in order to ensure the connection of the STM-1 electrical line interfaces.

Slot	Tributary connection unit	Tributary Termination Location						
		1	2	3	4	5	6	7
MOST A	140/155Mbit/s							
	140/155Mbit/s							
	2Mbit/s							
	1x34Mbit/s							
MOST B	140/155Mbit/s							
	140/155Mbit/s							
	2Mbit/s							
	1x34Mbit/s							

The configurations previously showed for each MOST Unit, are alternative. When an MSP protection is used the working and the protection lines use the same connection unit.

Tributary Interface Units ^c

In the following table the possible types and quantity of tributary interfaces are described.

Description	Code	Notes	Q.ty	Slot
63x1.5/2Mbit/s G.703 Tributary Unit	131-8977/01	This type of tributary interface can be only installed in tributary position 2 or, as a protection unit, in position 3	0-2	15/16
32x1.5/2bit/s G.703 Tributary Unit	131-8977/02	This type of tributary interface can be only installed in the tributary area position 3, as a protection unit for the MOST A unit 2Mbit/s tributary module	0-1	16
1x140Mbit/s / STM-1 (with VC-12 handling) G.703 Tributary Unit	131-9310/11	–	0-3	14/15/16
STM-1 G.703 Electrical/Mux Unit	131-8683/04	–	0-3	14/15/16
STM-1 L-1.1 Optical/Mux Unit Type 2 (FC/PC)	131-8682/01	(*)	0-3	14/15/16
STM-1 L-1.2/1.3 Optical/Mux Unit Type 2 (FC/PC)	131-8682/02	(*)	0-3	14/15/16
STM-1 S-1.1 Optical/Mux Unit Type 2 (FC/PC)	131-8682/03	(*)	0-3	14/15/16
3x34Mbit/s Tributary Unit	131-8685/01	–	0-3	14/15/16
3x45Mbit/s Tributary Unit	131-9251/01	–	0-3	14/15/16

NOTE (*) The units with code 131-8682/0x+20 are fitted with SC/PC connectors.

Optional Units ^d

The possible types and quantity of units that must be fitted into the equipment only in particular configurations, are described in the following table.

Description	Code	Notes	Q.ty	Slot
Communication Unit	131-8924/01	This unit must be fitted when the equipment is a gateway (management of Q interface)	0-1	21
Auxiliary Unit	131-8690/01	This unit must be fitted when the equipment uses the EOW channels or the 64kbit/s auxiliary channels	0-1	22

Tributary Termination Units ^e

The possible types and quantity of tributary termination units to be fitted in the termination side on the upper part of the sub-rack, are described in the following table.

Description	Code	Notes	Q.ty	Slot
32x1.5/2Mbit/s – 75ohm + 2xSTM–1 Line Connection Unit	131–8928/01	To be provided for 16x2Mbit/s, 32x2Mbit/s or 63x2Mbit/s Tributary Unit (in this case are necessary two connection units) when 75Ω unbalanced termination are required	0–2	(1,2,3) (2,3,4) (4,5,6) (5,6,7)
32x1.5/2Mbit/s – 100/120ohm + 2xSTM–1 Line Connection Unit	131–8930/01	To be provided for 16x1.5/2Mbit/s, 32x1.5/2Mbit/s or 63x1.5/2Mbit/s Tributary Unit (in this case are necessary two connection units) when 100/120Ω balanced termination are required	0–2	(1,2,3) (2,3,4) (4,5,6) (5,6,7)
4x140/155Mbit/s Connection Unit	131–9167/01	To be provided for 155 Mbit/s STM–1 Electrical Tributary Unit and Line Modules (on each connection unit are present two line and two tributary terminations)	0–3	4/5/7
4x140/155 Mbit/s Connection Unit (II issue)	131–9167/02	To be provided for 155 Mbit/s STM–1 Electrical Tributary Unit and Line Modules (on each connection unit are present two line and two tributary terminations). Mandatory for 1x140Mbit/s / STM–1 (with VC–12 handling) G.703 Tributary Unit (131–9310/11); alternative use for other 140/155 Mbit/s interfaces	0–3	4/5/7
1x140/155Mbit/s Connection Unit (for protection)	131–9371/01	To be provided for 155 Mbit/s STM–1 Electrical Tributary Unit for 1+1 unit protection	0–1	4
4x34/45Mbit/s Connection Unit	131–9001/01	To be provided for 3x34 and 3x45 Tributary Unit	0–2	4/5
1x34Mbit/s + 2xSTM–1 Line Connection Unit	131–8929/02	To be provided for 1x34 Tributary Sub-unit	0–2	1/7

The location of the Tributary Termination Units must agree with the following table (make reference to Fig. 1.4-2 for a view of possible locations):

Slot	Equippable tributary unit	Tributary Termination Location						
		1	2	3	4	5	6	7
MOST A	32x2Mbit/s							
	16x2Mbit/s							
	1x34Mbit/s							
TRIB-1	3x34/45Mbit/s							
	1xSTM-1/ 140Mbit/s el							
TRIB-2	63x2Mbit/s (I)							
	63x2Mbit/s (II)							
	63x2Mbit/s (III)							
	3x34/45Mbit/s							
	1xSTM-1/ 140Mbit/s el (I)							
	1xSTM-1/ 140Mbit/s el (II) (*)							
TRIB-3	1xSTM-1/ 140Mbit/s el							
MOST B	32x2Mbit/s							
	16x2Mbit/s							
	1x34Mbit/s							

NOTE (I) The termination units can be set in different configurations (e.g. 63x2 Mbit/s tributary unit has two possible configurations, (I) and (II))

NOTE (*) If STM-1 G.703 Electrical/Mux Units are fitted both in position TRIB-1 and TRIB-2, the Tributary Termination must be fitted in position 4.

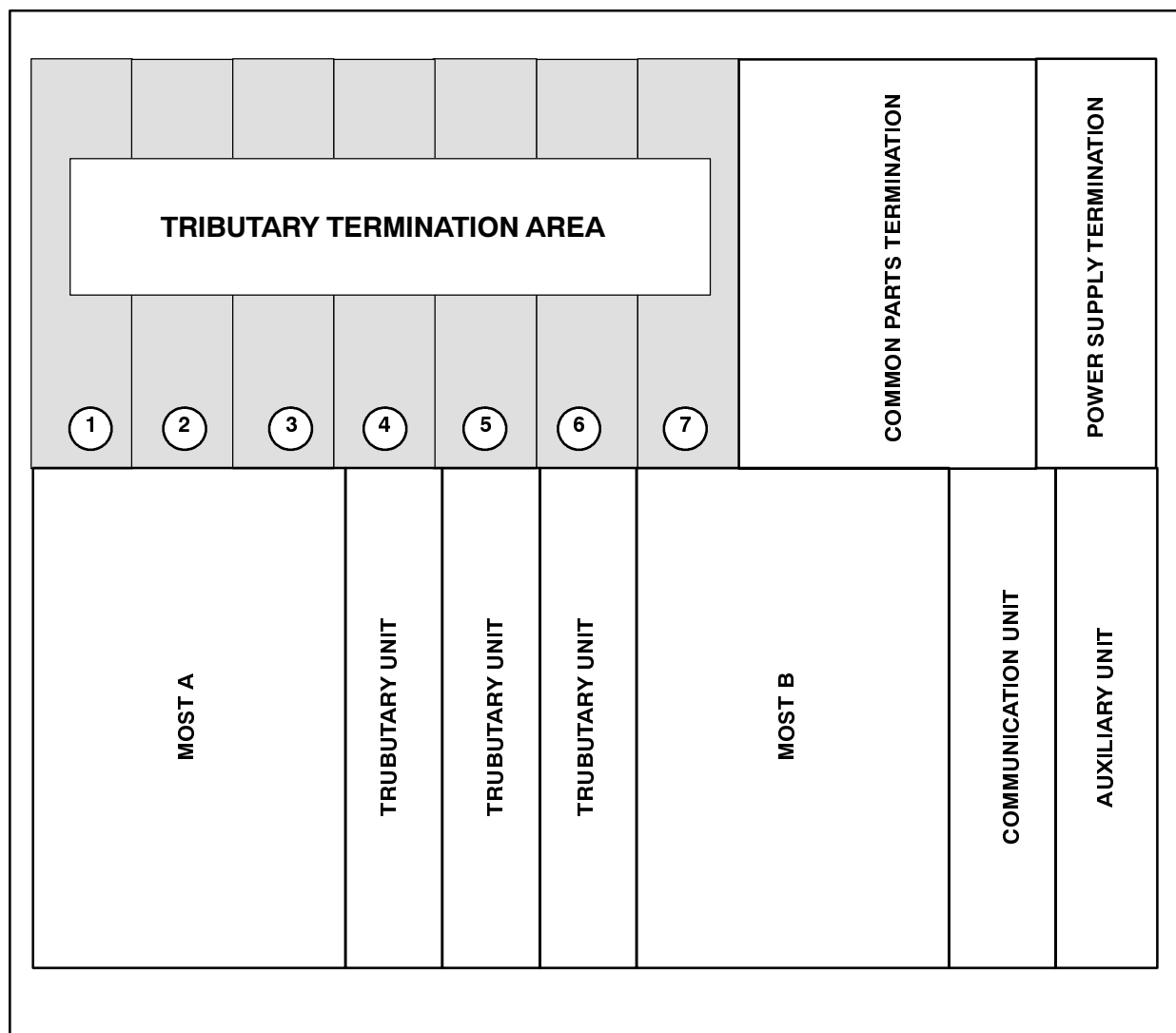


Fig. 1.4-2 Tributary termination locations

Connector Sets a e

All the types of connectors necessary for the installation of ADM-1 equipment are listed in the following table. Type and quantity of connectors depend on the equipment configuration.

Description	Code	Notes	Q.ty
sub-rack connector set	131-9521/01	This set includes connectors for the power supply, Q interfaces, ground contact, EOW extention, synchronization output and input, V11 interface	1
Connector for 1.5/2/34/45/140 Mbit/s, STM-1e sybchrony 1/f, 75ohm (0.3/1.95)	RTP 134 09/2	Coaxial connectors for 75 ohm. for cable TZC 75024 HF 75 ohm 0.3/1.95	0-74
Connector for 1.5/2 Mbit/s 100/120 ohm, D-Sub 78 pin	RNT258 101/78 RPY 10304/14	D-Sub 78 pin (high density) connectors for symmetric pair cable. For cable 2xTEL 48102/016	0-4

Accessories

The standard accessories for the ADM-1 equipment are listed in the following table.

Description	Code	Notes	Q.ty
Sub-rack Installation Kit	131-9125/02	–	1
Mechanical arrangement for ETSI rack	131-9022/01	–	1
Mechanical arrangement for 19" rack	131-9022/02	–	1
Optical Fibre Fixing Set and Sub-rack Reinforcement	131-9126/01	To be provided when optical units are fitted	0-1
Optical Fibre Fixing Set and Sub-rack Reinforcement (for 19" Rack)	131-9126/02	To be provided when optical units are fitted	0-1
Handset	68653-42/003	The auxiliary unit is required	0-1
Set of test cords (BNC)	131-8489/01	To be provided in the necessary quality on the station base	optional
Cable for connection of Local Controller	TSR 475 0203/6000	–	optional
Module for connection to monitor software (on MOST or Communication Unit)	131-6824/03	–	optional
Cable for connection of monitor software (on MOST or Communication Unit)	TSR 496 008/2000	–	optional
ADM-1 Documentation	EN/LZB 101 3949/05	To be provided in the necessary quality on the station base	optional

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Description	Code	Notes	Q.ty
Set of Test Cords (BNC)	131-8489/01	To be provided in the necessary quantity on the station base	optional
Set of Test Cords (Balanced)	131-8489/04	To be provided in the necessary quantity on the station base	optional
Set of Test Cords (1.6/5.6)	131-6940/01	To be provided in the necessary quantity on the station base	optional
Module for Connection to Monitor Software (on MOST or Communication Unit)	131-6824/03	–	optional
Cable for Connection to Monitor Software (on MOST or Communication Unit)	67115-45/015	–	optional
Power Distribution Sub-rack for Rack	131-8828/04	Sub-rack used for distributing external DC voltage to sub-racks in the rack	optional
Transceiver for Q Interface 10BASE2	131-8513/01	Medium Access Unit for thin (10BASE2) Q Ethernet I/F	optional
Transceiver for Q Interface 10BASET	131-8513/02	Medium Access Unit for UTP (10BASET) Q Ethernet I/F	optional
O.F. Upper Cover Kit (5M)	131-7503/31	To be provided for each STM-1 Optical/Mux Unit	0-3
ADM-1 Documentation	139-9044/**	Extended Documentation (Electrical Diagrams included) to be provided in the necessary quantity on the station base	optional
ADM-1 Basic Documentation	139-9044B**	Basic Documentation (Electrical Diagrams not included) to be provided in the necessary quantity on the station base	optional

Dummy Panels a b c d e

The different types of dummy panel, used to cover empty slots when units are not fitted, are listed in the following table.

Description	Code	Notes	Q.ty
5.5M/6U Dummy Panel	331-1918/01	To be provided when a tributary or the communication unit are not fitted	0-4
5M/6U Dummy Panel	331-2212/01	To be provided when the auxiliary unit is not fitted	0-1
7.5M/6U Dummy Panel	331-2211/01	To be provided when a MOST unit is not fitted	0-1
3.75M I/F Module Dummy Panel	331-2214/01	To be provided when a connection unit is not fitted	0-4
11.25M I/F Module Dummy Panel	331-2213/01	To be provided when a connection unit is not fitted	0-2

Software Kit – Rel. 3.2

In the following table are listed the kit and software codes for each unit.

Description		KIT Code Number	SW Code Number
Software Kit	sw	L38-0019/03.21 02	S39-0367/03.21 02
MOST Unit	BOOT SW	K38-0114/02.01 02	S38-0451/02.01 02
	APPL_SW	K38-1116/03.21 12	S38-0450/03.21 12
Communication Unit	BOOT SW	K38-0115/02.01 01	S38-0453/02.01 01
	APPL_SW	K38-0117/03.21 04	S38-0452/03.21 04
Auxiliary Unit	BOOT SW	K38-0033/01.01	S38-0334/01.01
	APPL_SW	K38-0241/02.31 01	S38-0335/04.01 01
63x1.5/2Mbit/s G.703 Tributary Unit	BOOT SW	K38-0108/01.01 04	S38-0338/01.01 04
	APPL_SW	K38-0122/03.21 02	S38-0339/07.02 02
32x1.5/2Mbit/s G.703 Tributary Unit	BOOT SW	K38-0108/01.01 04	S38-0338/01.01 04
	APPL_SW	K38-0122/03.21 02	S38-0339/07.02 02
STM-1 G.703 Electrical/Mux Unit	BOOT SW	K38-0110/01.01 02	S38-0496/01.01 02
	APPL_SW	K38-0161/03.21 01	S38-0464/06.02 01
STM-1 Optical/Mux Unit	BOOT SW	K38-0008/01.01	S38-0331/01.01
	APPL_SW	K38-0242/03.21 21	S38-0329/06.02 21
1x140Mbit/s / STM-1 (with VC-12 handling) G.703 Tributary Unit	BOOT SW	K38-0147/01.01 01	S38-0528/01.01 01
	APPL_SW	K38-0315/03.21 04	S38-0529/02.02 04

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Description		KIT Code Number	SW Code Number
3x34Mbit/s Tributary Unit	BOOT SW	K38-0035/01.01 05	S38-0336/01.01 05
	APPL_SW	K38-0282/03.21 01	S38-0337/01.06 01
3x45Mbit/s Tributary Unit	BOOT SW	K38-0035/01.01 05	S38-0336/01.01 05
	APPL_SW	K38-0282/03.21 01	S38-0337/01.06 01
LC Software	LC SW	K38-0118/03.21 15	S38-0454/03.21 15

MSH11C Hardware / Firmware / Software Compatibility Table

UNITS		RELEASE 2.1	RELEASE 2.2	RELEASE 2.3	RELEASE 3.1	RELEASE 3.2
MOST Unit	HW	131-9141/**	131-9141/**	131-9141/**	131-9141/**	131-9141/**
	BOOT	K38-0114/02.01	K38-0114/02.01	K38-0114/02.01	K38-0114/02.01	K38-0114/02.01
	FLASH SW	K38-0116/02.01	K38-0116/02.21	K38-0116/02.21	K38-0116/03.11 ✓	K38-0116/03.21 ✓
Communica- tion Unit	H W	131-8924/01	131-8924/01	131-8924/01	131-8924/01	131-8924/01
	BOOT	K38-0115/02.01	K38-0115/02.01	K38-0115/02.01	K38-0115/02.01	K38-0115/02.01
	FLASH SW	K38-0117/02.01	K38-0117/02.21	K38-0117/02.21	K38-0117/03.11 ✓	K38-0117/03.21 ✓
Auxiliary Unit	H W	–	131-8690/01	131-8690/01	131-8690/01	131-8690/01
	BOOT	–	K38-0033/01.01	K38-0033/01.01	K38-0033/01.01	K38-0033/01.01
	FLASH SW	–	K38-0241/02.21	K38-0241/02.21	K38-0241/02.31 ✓	K38-0241/02.31
63x1.5/2Mbit/s G.703 Tribu- tary Unit	H W	131-8977/01	131-8977/01	131-8977/01	131-8977/01	131-8977/01
	BOOT	K38-0108/01.01	K38-0108/01.01	K38-0108/01.01	K38-0108/01.01	K38-0108/01.01
	FLASH SW	K38-0122/02.01	K38-0122/02.01	K38-0122/02.01	K38-0122/02.31 ✓	K38-0122/03.21 ✓
32x1.5/2Mbit/s G.703 Tribu- tary Unit	H W	–	–	–	131-8977/02	131-8977/02
	BOOT	–	–	–	K38-0108/01.01	K38-0108/01.01
	FLASH SW	–	–	–	K38-0122/02.31	K38-0122/03.21 ✓
STM-1 G.703 Electrical/Mux Unit	H W	131-8683/04	131-8683/04	131-8683/04	131-8683/04	131-8683/04
	BOOT	k38-0110/01.01	k38-0110/01.01	k38-0110/01.01	k38-0110/01.01	K38-0110/01.01
	FLASH SW	K38-0161/02.01	K38-0161/02.21	K38-0161/02.21	K38-0161/02.31 ✓	K38-0161/03.21 ✓
STM-1 Opti- cal/Mux Unit	H W	–	131-8682/xx	131-8682/xx	131-8682/xx	131-8682/xx
	BOOT	–	k38-0008/01.01	k38-0008/01.01	k38-0008/01.01	k38-0008/01.01
	FLASH SW	–	K38-0242/02.21	K38-0242/02.21	K38-0242/02.31 ✓	K38-0242/03.21 ✓
1x140Mbit/s / STM-1 (with VC-12 han- dling) G.703 Tributary Unit	H W	–	–	–	131-9310/11	131-9310/11
	BOOT	–	–	–	K38-0147/01.01	K38-0147/01.01
	FLASH SW	–	–	–	K38-0315/03.11	K38-0315/03.21 ✓

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UNITS		RELEASE 2.1	RELEASE 2.2	RELEASE 2.3	RELEASE 3.1	RELEASE 3.2
3x34Mbit/s Tributary Unit	H W	–	–	131–8685/01	131–8685/01	131–8685/01
	BOOT	–	–	K38–xxxx/xx.xx	K38–0035/01.01	K38–0035/01.01
	FLASH SW	–	–	K38–xxxx/xx.xx	K38–0282/02.31 ✓	K38–0282/03.21 ✓
3x45Mbit/s Tributary Unit	H W	–	–	131–9251/01	131–9251/01	131–9251/01
	BOOT	–	–	K38–xxxx/xx.xx	K38–0035/01.01 ✓	K38–0035/01.01
	FLASH SW	–	–	K38–xxxx/xx.xx	K38–0282/02.31 ✓	K38–0282/03.21 ✓
LC Software	LC SW	K38–0118/02.01	K38–0118/02.21	K38–0118/02.23	K38–0118/03.11 ✓	K38–0118/03.21 ✓