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SIEMENS MLC MXL Addressable Device Line Card Instruction Manual

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INTRODUCTION

The Model MLC MXL Line Card loop driver from Siemens Industry, Inc., is a module that allows MXL intelligent addressable smoke detectors, manual stations, monitor devices, and control devices to interface to the FireFinder- XLS/Desigo Fire Safety Modular/Cerberus PRO Modular System. The MLC uses two consecutive addresses on the HNET network. The application program that is loaded into the on-board microprocessor controls the MLC operation. An XLS/Desigo Fire Safety Modular/Cerberus PRO Modular system can support a maximum of 2500 MXL intelligent field devices using up to 25 MLC cards. The MLC contains nine diagnostic LEDs. Ground fault detection is provided. A USB port is included to allow firmware upload via the front panel. All field devices connected to the MLC are addressed and tested using the Device Programming Unit (DPU) or the FPI-21 Programmer/Tester. The select system setting on the DPU and FPI-32 must be set to MXL.

OPERATION

The MLC initializes, operates, and maintains all devices residing on the loop. The MLC communicates all relevant device and event information, such as alarms and troubles, to the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular). The sensitivity of any intelligent smoke detector and the logic functions of any intelligent output devices can be checked and adjusted from the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) through the MLC. All information about the devices on the loop can be displayed on the PMI/ PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular). To see the available information for each device on the loop, refer to the FireFinder-XLS IOM Manual, P/N 315-033744, the Desigo Fire Safety Modular IOM, Document ID A6V11231620, or the Cerberus PRO Modular IOM, Document ID A6V11231627. The MLC supports two separate circuits of MXL intelligent field devices. Each circuit can monitor and control up to 60 intelligent devices as well as device accessories (relay bases, audible bases, and remote lamps) in any combination. Each circuit has a separate address on the HNET network. The installer sets the address on the module for the first circuit which can be either odd or even. A consecutive address is automatically assigned to the second circuit internally. The on-board microprocessor provides the MLC with the ability to function and initiate alarm conditions even if the PMI/PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) fails.

Controls and Indicators

The front panel of the MLC contains one reset switch, 9 LEDs, and three HNET address switches, as shown in Figure 1. Pushing the reset switch re-initializes the MLC operation. The MLC must be re-initialized by pushing the module Reset switch any time the 24VDC supply is interrupted.
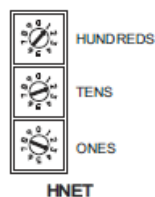
Figure 1
MLC Line Card

The LED functions are defined as follows:

| POWER	(Green)	Normally ON. When illuminated, indicates the power for the MLC is applied to the card.
CARD FAIL	(Yellow)	Normally OFF. When illuminated, indicates hardware failure on the card or unsuccessful firmware upload. During firmware upload, this LED should blink.
HNET FAIL	(Yellow)	Normally OFF. When illuminated, indicates that the HNET communication with the MLC has terminated.
ALARM	(Red)	Normally OFF. When illuminated, indicates that the MLC has detected an alarm.
TROUBLE	(Yellow)	Normally OFF. When illuminated, indicates that a trouble is present on the MLC that is not related to its field wiring or slave ALD driver.
MAIN CIRCUITS TROUBLE	(Yellow)	Normally OFF. When illuminated, indicates that the MLC has detected a wiring trouble (fault) on device loop 1 or 2.
MAIN CIRCUITS GND FAULT	(Yellow)	Normally OFF. When illuminated, indicates that the MLC has detected a ground fault on device loop 1 or 2 field wiring.
EXPANSION CIRCUITS TROUBLE	(Yellow)	Normally OFF. Not used at this time.
EXPANSION CIRCUITS GND FAULT	(Yellow)	Normally OFF. Not used at this time.

PRE-INSTALLATION

The following components must be set prior to inserting the card into the CC-5/CC-2 (refer to Figure 2): The MLC uses two module addresses in the HNET network. Set the lower of the two consecutive three-digit HNET network addresses (odd or even) for the MLC using the three rotary dial switches located near the bottom of the front panel. (Refer to Figure 1 for the location of the switches.) The address for the MLC must be the same as the address selected for it in the Zeus Programming Tool. To set the address, turn the pointers on each of the three dials to the numbers for the selected address. For example, if the address is 123, set the pointer for the HUNDREDS dial to "1", set the pointer for the TENS dial to "2", and set the pointer for the ONES dial to "3". The range of allowable addresses is from 001 to 251 (leading zeros must be used).

INSTALLATION

Remove all system power before installation, first battery then AC. (To power up, connect the AC first, then the battery.) The MLC plugs perpendicularly into one slot in the CC-5/CC-2 card-cage via two 96- pin DIN connectors

and can occupy any slot in the card cage. (Refer to Figure 2.) Insert the MLC card into the card guides rightside up (lettering on the front panel is legible).
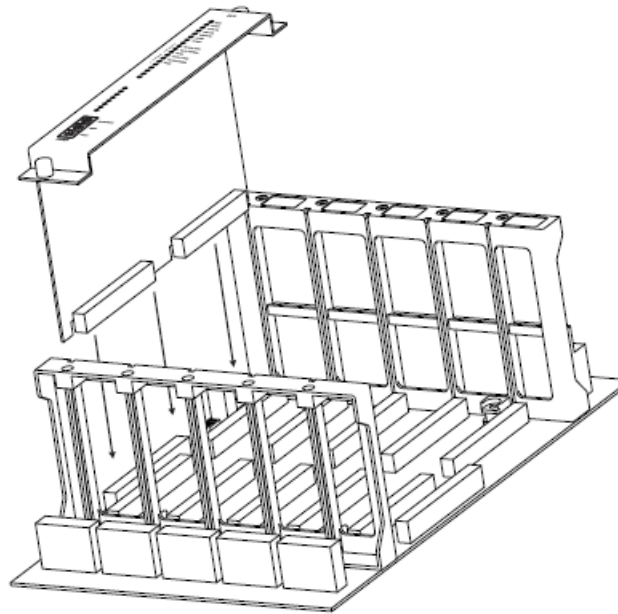
Figure 2
Installing The MLC

- Slide the card in until the card edge connectors contact the receptacles on the motherboard.
- Verify that the DIN connectors of the card and the card-cage aligned properly. The card can only plug in one direction to the card cage, if it does not align, DO NOT FORCE the card.
- Place thumbs on the front panel adjacent to the captive screws and gently apply even pressure on the card until the connectors seat in the receptacles on the motherboard.
- Secure with the captive screws.

FIRMWARE UPGRADES

The MLC is shipped with the latest firmware and the user should not have to upgrade unless suggested to do so by Siemens Industry, Inc. Technical Support. From time to time, modules used in XLS/Desigo Fire Safety Modular/Cerberus PRO Modular systems are upgraded to improve their operation or to add to their capabilities with new features. Firmware in the MLC is field upgradable. Refer to the Zeus Quickstart Manual, P/N 315-033875, and Zeus Help for additional details.

1. Plug one end of a user-supplied USB A to B cable into the USB port on the front of the MLC. Plug the other end into the host PC.
2. In Zeus, select the module to be upgraded in the Physical Tree. Then select the Build>Transfer>Module Firmware to Panel menu.
3. The Firmware via USB Port dialog displays a list of available firmware for the selected module. Select the firmware to be transferred.
4. Reset the module by depressing the reset switch with a pointed object, such as a pencil. The power and card fail LEDs should be blinking.
5. Click on Transfer to begin the module firmware transfer.
   If the Transfer button is not pressed within 30 seconds of resetting the MLC, the module will revert back to operation mode.
6. After the transfer is completed, click on the [icon] button to view the transfer detail status.
7. Disconnect the USB cable and reset the module.

Find MLC Software Version

To check for the current version of MLC software in an installed MLC, go to the PMI/ PMI-2/PMI-3 (XLS), FCM2041-U2 (Desigo Fire Safety Modular), FCM2041-U3 (Cerberus PRO Modular) and press the Menu button, select Report, press the More Info button and select the MLC at that address. Press the Configuration soft key, press Appl Rev for the Application Version and press View.
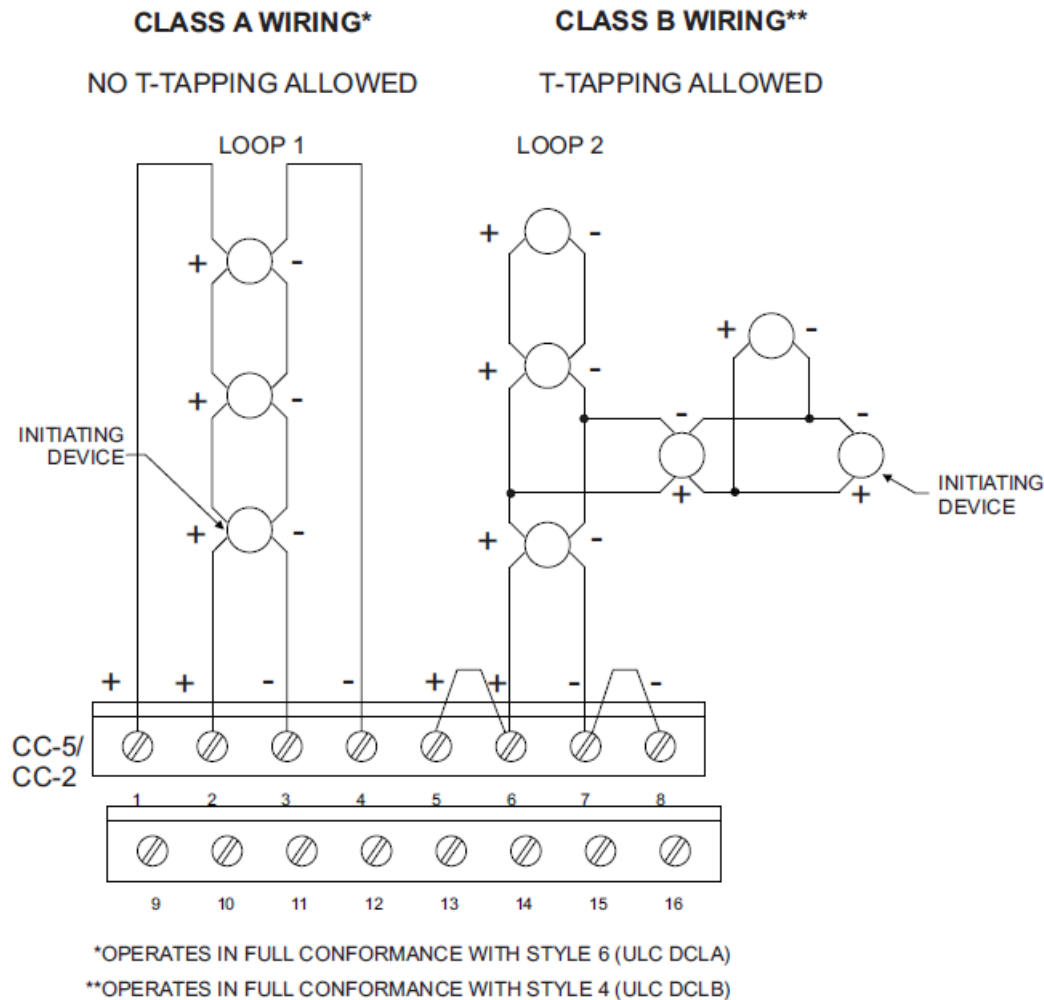
WIRING

All field wiring to the MLC is connected to the terminal blocks of the CC-5/CC-2 card cage slot in which it is installed.

To Connect External Wiring

1. Loosen the screw of the terminal by turning it counterclockwise.

2. Insert the wire into the side of the terminal block.

3. Tighten the screw of the terminal block by turning it clockwise.
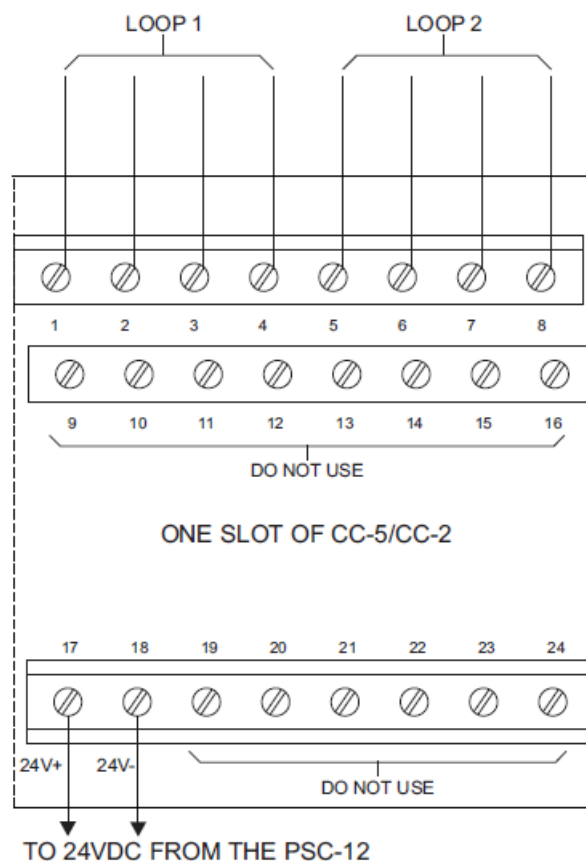
Connect +24V from the PSC-12/PSX-12 to terminal 17 and -24V from the PSC-12/ PSX-12 to terminal 18 of the slot in the CC-5/CC-2 where the MLC will be installed. (Refer to Figure 3.) Each device loop circuit can be wired Class B or Class A. MLC field circuit wiring does not require twisted, shielded wire. It can be installed in conduit containing low voltage power, notification appliance circuits, audible and speaker zone circuits, and RS-485 and other data circuits. Do not mix MLC and DLC circuits in the same conduit if the wire is untwisted and the run length exceeds 2000 feet. Electrical connections for the two loops are shown in Figure 4. Each device loop circuit can be independently wired in either Class A or Class B configuration.

CLASS A WIRING*

NO T-TAPPING ALLOWED

CLASS B WIRING**

T-TAPPING ALLOWED

*OPERATES IN FULL CONFORMANCE WITH STYLE 6 (ULC DCLA)
**OPERATES IN FULL CONFORMANCE WITH STYLE 4 (ULC DCLB)

NOTES:

1. EITHER LOOP MAY BE WIRED AS CLASS A OR CLASS B.
2. NO END OF LINE DEVICE REQUIRED.
3. BOTH CIRCUITS SUPERVISED AND POWER LIMITED PER NEC 760.
4. POSITIVE OR NEGATIVE GROUND FAULT DETECTED AT <25K OHMS ON TERMINALS 1-8.
5. IF LOOP 1 IS UNUSED, CONNECT A WIRE FROM TERMINAL 1 TO 2 AND A WIRE FROM TERMINAL 3 TO 4. IF LOOP 2 IS UNUSED, CONNECT A WIRE FROM TERMINAL 5 TO 6 AND FROM TERMINAL 7 TO 8.

COMPATIBILITY

1. The MLC supports only the intelligent devices listed in Table 1 and Table 2. The compatibility identifiers for the compatible devices are the model numbers listed in Table 1. Use any combination of those listed.
2. The MLC supports two device loops of up to 60 intelligent field devices each. Each loop draws a maximum of 90mA from the MLC.
3. All circuits are power limited per NEC 760. The MLC supports the use of 12- 18 AWG non-shielded, non-twisted, thermoplastic fixture wire without conduit, if permitted by local building codes.
4. No end of line device is required.
5. Total circuit resistance of each zone must not exceed 100 ohms.
   - **Maximum capacitance:**
     - 0.4µF between loop+ and loop-

- 0.8μF between loop+ and chassis
- 0.8μF between loop- and chassis

6. T-tapping is not allowed on Class A loops.

7. Does not support P2 (H-Series) devices.

8. Alarm verification shall not be used in initiating device circuits intended for cross-zone operation.

TABLE 1

MLC COMPATIBLE DEVICES

Compatible Devices	Base	Installation Instructions	Maximum Quantity on the Loop
CZM-1B6	—	P/N 315-095355	30
	DB-3S/DB-X3RS with DB-ADPT	P/N 315-095921	
FP-11*	or		60
	DB-11/DB-X11RS/ADBX-11	P/N 315-095921	
	DB-3S/DB-X3RS with DB-ADPT	P/N 315-095921	
FPT-11	or		60
	DB-11/DB-X11RS/ADBX-11	P/N 315-095921	
ICP	—	P/N 315-092471	12
ICP-B6	—	P/N 315-095306	12
ILI-1*/-1H*	DB-3S, DB-X3RS	P/N 315-095387	60
ILI-1A*/-1AH*	DB-3S, DB-X3RS	P/N 315-095387	60

		P/N 315-093234	
ILI-1B(d)*/-1BH(d)*	AD-3I, AD-3XRI	P/N 315-093235	60
ILP-1*/ILPT-1*	DB-3S, DB-X3RS	P/N 315-092594	60
ILP-1(d)*	AD-3ILP	P/N 315-093234	60
ILP-2	DB-3S, DB-X3RS	P/N 315-095028	60
ILP-2(d)	AD-3ILP	P/N 315-093234	60
ILT-1	DB-3S	P/N 315-093336	60
MSI-1/-2		P/N 315-090437	30
MSI-10/-20	—	P/N 315-090903	30
MSI-10B/-20B	—	P/N 315-093329	30
MSI-30B(C)	—	P/N 315-099274	30
MSI-B6F	—	P/N 315-095302	30
MSI-MB6	—	P/N 315-093613	30
TRI-B6/-B6D/-B6R**	—	P/N 315-093315	60
TRI-B6M**	—	P/N 315-049485	60
TRI-S/-D/-R**	—	P/N 315-049481	60

- duct application

- supports drift compensation (IEC)
- TRI devices with security usage cannot be mixed on the same loop with devices having any other usage.

TABLE 2

MLC COMPATIBLE LEGACY RETROFIT DEVICES UL864 8TH EDITION†

Compatible Devices	Base	Installation Instructions	Maximum Quantity on the Loop
CZM-1	—	P/N 315-090725	30
ID-60I/-60IH*	DB-3S, DB-X3RS	P/N 315-090287	60
ID-60IA/-60IAH*	DB-3S, DB-X3RS	P/N 315-090287	60
ID-60IB(d)/-60IBH(d)*	AD-3I, AD-3XRI	P/N 315-093234 P/N 315-093235	60 60
ID-60P/-60PT*	DB-3S, DB-X3RS	P/N 315-090289	60
ID-60T	DB-3S, DB-X3RS	P/N 315-090289	60
TRI-2/-2R/-2D**	—	P/N 315-090556	60
TRI-60/-60R/-60D**	—	P/N 315-092329	60
TRI-MMS**	—	P/N 315-699547	60
TRI-MTD**	—	P/N 315-699548	60

CZM-1/-1B6 Compatibility

Table 3 contains compatibility data for the CZM-1/-1B6 when the CZM-1/-1B6 is configured to perform alarm verification. Each detector model is listed with the allowable Zeus alarm verification delay range in seconds. This

setting is made in Zeus. In the Physical View, select the panel. In the Detail View, select the Properties tab. Make the appropriate setting in the field labeled "DLC Alarm Verification Delay Time (sec)," as shown in Figure 5.

TABLE 3

CZM-1/-1B6 ALARM VERIFICATION COMPATIBILITY

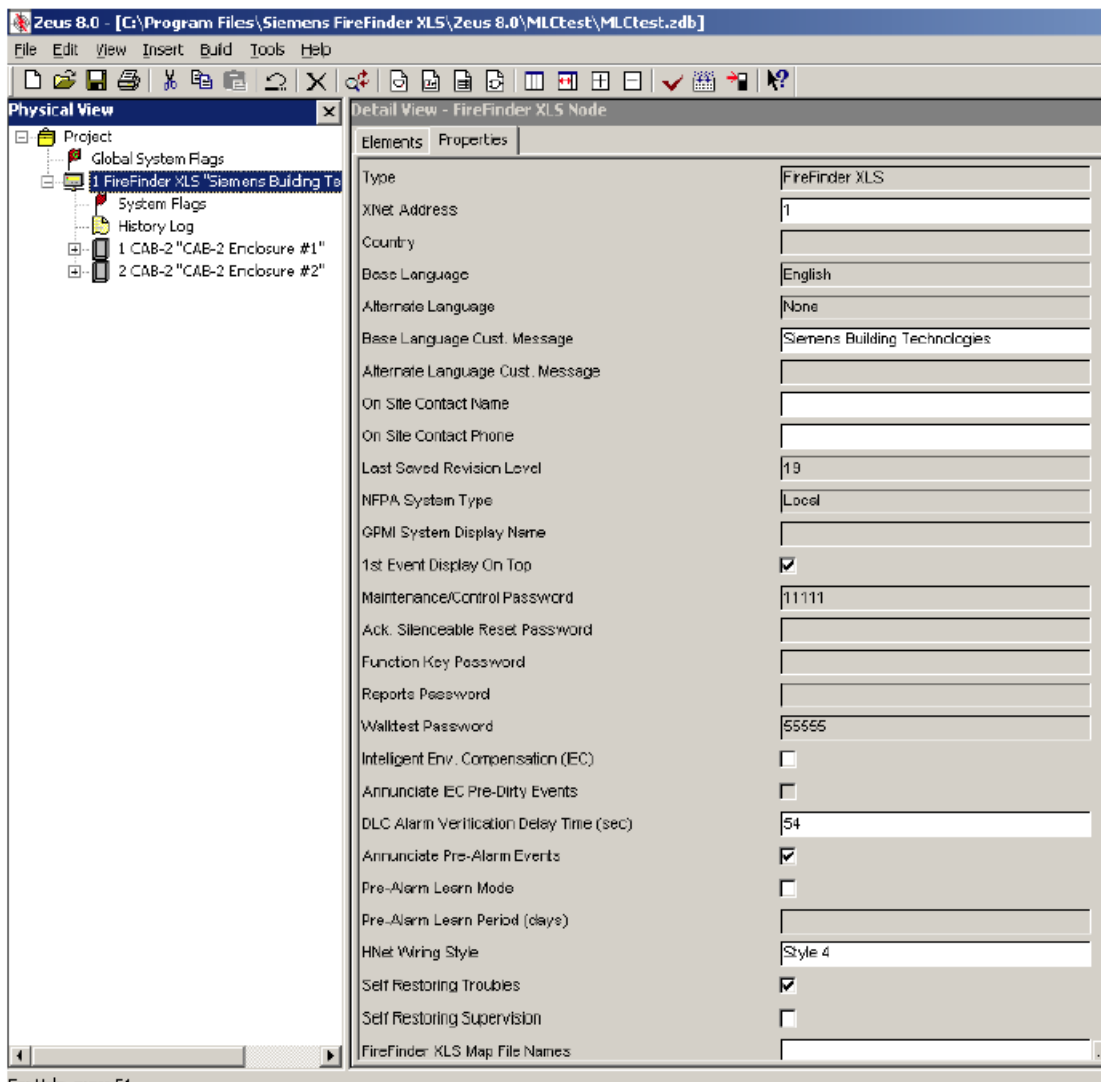| Detector Model	Allowable DLC Alarm Verification Delay Time (sec.)	Category
DI-3/3H	23-54 (23-30 in Canada and California)	A
DI-A3/A3H	23-54 (23-30 in Canada and California)	A
DI-B3/B3H	23-54 (23-30 in Canada and California)	A
DT-3P-135	Not Compatible	—
DT-11	Not Compatible	—
PB-1191	Not Compatible	—
PE-3	39-54 (Cannot be used in Canada or California)	B
PE-11/11T	Not Compatible	—

Figure 5
Selecting "DLC Alarm Verification Delay Time (sec.)"

Detectors with "Not Compatible"shown in Table 3 cannot be used with the CZM-1/-1B6 alarm verification feature, but can be used when alarm verification is disabled. Each detector is assigned a category. Do not mix detectors from different categories on the same circuit.

ELECTRICAL RATINGS

- 24V Back Plane Current 28mA
- Screw Terminal 24V Current 90mA + 1.5mA per device
- 6.2 Back Plane Current 1.5mA
- 24V Standby Current 120mA + 1.5mA per device

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Documents / Resources

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References

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