



Adamson Systems Engineering



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1.0 Introduction



The M Series Processor is a complete 4 input - 8 output digital loudspeaker management system designed for the touring or fixed sound installation markets. The absolute latest in available technology is utilized with 32-bit (40-bit extended) floating point processors and high performance 24-bit Analog Converters. The high-bit DSP prevents noise and distortion induced by truncation errors of the commonly used 24-bit fixed-point devices. A complete set of parameters include I/O levels, delay, polarity, 6 bands of parametric EQ per channel, multiple crossover selections and full function limiters. Precise frequency control is achieved with its 1 Hz resolution. Inputs and outputs can be routed in multiple configuration to meet any requirements. The M Series Processor can be controlled or configured in real time on the front panel or with the intuitive PC GUI accessed via the RS-232 interface. Software upgrade for CPU and DSP via PC keeps the device current with newly developed algorithms and functions once available. Multiple setup storage and system security complete this professional package.

2.0 Features

- 4 Inputs and 8 Outputs with flexible routing
- 32-bit (40-bit extended) floating point DSP
- 48/96kHz Sampling Rate Selectable
- High Performance 24-bit A/D Converters
- 1 Hz Frequency Resolution
- 6 Parametric Equalizers for each Input and Output
- Multiple Crossover types with Full Function Limiters
- Precise Level, Polarity and Delay
- CPU and DSP upgrade via PC
- Individual Channel Buttons with Linking capability
- 4-Line x 26 Character Backlit LCD Display
- Full 5-segment LED's on every Input and Output
- Storage of up to 30 Program Setups
- Multiple Levels of Security Locks
- RS-232 Interface for PC Control and Configuration
- Future options available

3.0 Front Panel Functions



1. **Mute keys** - Mute/Unmute input and output channels. When an input channel is muted, a red LED will come on for indication.

2. **Gain/Menu keys** - Selects the corresponding channel for the LCD menu display and is acknowledged by a green LED. The last modified menu will be displayed on the LCD. Linking multiple channels is accomplished by pressing and holding the first channel key, then pushing the other desired channels. This eases programming for same parameters across multiple channels. Multiple Inputs can be linked together and multiple outputs can be linked together. Inputs and Outputs are linked separately.

3. **Peak Level LED** - Indicates the current peak level of the Signal: Signal (-42dB), -12dB, -6dB, -3dB, Over/Limit. The Input Over LED references to the device's maximum headroom. The Output Limit LED references to the threshold of the limiter.

4. **LCD** - Shows all the necessary information to control the unit.

5. **Menu Control keys** - There are 6 menu keys: <<Menu (Menu Down), Menu>> (Menu Up), <<Cursor (Cursor Down), Cursor>> (Cursor Up), Enter/Sys/Speed and Exit. The functions of each key is explained below:

<<Menu: Previous menu screen

Menu>>: Next menu screen

<<Cursor: Previous cursor in the menu screen

Cursor>>: Next cursor in the menu Screen

Enter/Sys/Speed: Enter is used only in the System Menu to proceed with selected actions

Sys enters the System Menu from the main menu

Speed modifies delay and frequency (1 Hz resolution mode) data values by 100X.

Exit: Exit to the Main Menu

6. **Rotary Thumb Wheel** - Changes parameter data values. The wheel has travel velocity sensing which ease large incremental data modifications. For modifying delay and frequency (1 Hz resolution), pressing the Speed key simultaneously will increment/decrement the data value by 100X.

4.0 Rear Panel Functions



1. **Power switch** - Controls power On/Off.
2. **Main Power** - Connects via a standard IEC socket. A compatible power cord is supplied with the unit. The voltage input is either 115VAC or 230VAC and is clearly specified on the unit. Voltage requirement has to be stated upon ordering.
3. **Main Fuse** - T200mA-250V. Slow blow type.
4. **RS232** - a standard female DB9 socket. A straight through cable is required for PC connection.
5. **Option slot** - Option slot for future use.
6. **XLR input and outputs** - Separate 3-pin XLR connectors are provided for each audio input and output. The device's output stage employs the balanced impedance topology. All I/O connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as -.

5.0 Powering Up the Device

- After powering up the unit, the following initialization screen is displayed on the LCD:

```
*** ADAMSON M SERIES ***  
** DLP-4080 CONTROLLER **  
----- INITIALIZING -----
```

- The initialization process takes about 8 seconds and during that period the unit boots and displays the M Series Processor's firmware version.
- After the initialization process is finished the M Series Processor displays its main screen:

```
*** ADAMSON M SERIES ***  
***** DLP-4080 *****  
PROGRAM: 01 XXXXXXXXXXXXX
```

- The screen shows the current program number and program name assigned to the unit. The program assigned is always the last program the user recalled or stored before powering down the unit.
- Now the M Series Processor is now ready to operate.

6.0 Operating The Device

Tips: Channel Linking - If the user presses one of the Input or Output Menu keys, holds it down and press any other Menu key(s) in the same group (Input or Output group), then the channels are linked together. The green menu LEDs for the linked channels are lit. Any modification of the data for the selected channel will be applied to the linked channels as well. To cancel the linking, just press any other Menu key or the Sys key after releasing the held key.

6.1 Input Menus

Each of the M Series Processor's input channels has a separate Menu key. There are 3 menus for each input channel.

Signal - Signal parameters

```
IN_1:XXXXXX MENU:Signal
LEVEL:0.00dB
POL :+
DELAY:0 (000.000ms)
```

- LEVEL - Gain, -40.00dB to +15.00dB in 0.25dB steps.
- POL - Polarity, can be normal (+) or inverted (-).
- DELAY - Delay in 21us steps. Can be displayed in ms, ft or m. The time unit of the delay can be changed in the System menu. The maximum delay permitted is 24,000 steps (500ms).

```
IN_1:XXXXXX MENU:EQ
EQ# :1 BW:0.33oct
LEVEL:0.00dB Q=4.36
FREQ :1000Hz TYPE:Param
```

- EQ# - Selects one of the 6 available Equalizers.
- LEVEL - EQ level gain. Ranges from -30.00dB to +15.00dB in 0.25dB steps.
- FREQ - EQ center frequency. Ranges from 20 to 20,000Hz in either 1Hz steps or 1/36 octave steps. The sampling rate and the frequency steps can be selected in the System Menu.
- BW - EQ Bandwidth. Ranges from 0.02 to 2.50 octaves in steps of 0.01 octave steps for PEQ. The Q value is automatically shown beneath the octave value. For Lo-Shf or Hi-Shf, it is either 6 or 12dB/Oct.
- Type - Type of EQ. The types can be parametric (PEQ), Lo-shelf (Lo-shf) and Hi-shelf (Hi-shf).

Ch-Name - Channel Name

```
IN_1:XXXXXX MENU:Ch-Name
NAME:XXXXXX
```

- Name - Channel name. It is 6 characters in length.

6.2 Output Menus

Each output channel on the M Series Processor has a separate menu key. There are 6 menus for each output channel.

Signal - Signal parameters

```
OUT_1:XXXXXX MENU:Signal
LEVEL:0.00dB
POL :+
DELAY:0 (000.000ms)
```

- Refer to the Input Menus for details

EQ - EQ paramters

```
OUT_1:XXXXXX MENU:EQ
EQ# :1 BW:0.33oct
LEVEL:0.00dB Q=4.36
FREQ :1000Hz TYPE:Param
```

- Refer to the Input Menus for details

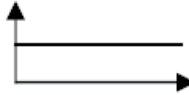
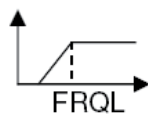
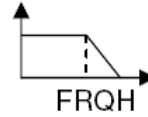

6.2 Output Menus

XOver - Crossover parameters

```
OUT_1:XXXXXX MENU:XOver
FTRL:Off FTRH:Off
FRQL:1000Hz FRQL:1000Hz
SLPL:24dB SLPH:24dB
```

- FTRL - Filter Type of low frequency crossover point (high pass). Types can be Butterworth (Butterworth), Link-Ri (Linkritz Riley) or Bessel.
- FRQL - Filter cut-off Frequency of low frequency crossover point (high pass). Ranges from 20 to 20,000Hz in either 1Hz steps or 1/36 octave steps. The frequency steps can be selected in the System Menu.
- SLPL - Filter Slope of low frequency crossover point (high pass). Ranges from 6 to 48dB/octave (48kHz) or 6 to 24dB/octave (96kHz) in 6dB/octave steps. If the selected Filter Type is Linkritz Riley, the available slopes are 12 / 24 / 36 / 48 dB/octave (48kHz) or 12 / 24 (96kHz).
- FTRH - Filter Type of high frequency crossover point (low pass).
- FRQH - Filter cut-off Frequency of high frequency crossover point (low pass).
- SLPH - Filter Slope of high frequency crossover point (low pass).

6.2 Output Menus

| Filter configuration | Low crossover point | High crossover point | |
|----------------------|---------------------|----------------------|--|
| None | FTRL Off | FTRH Off |  |
| Highpass | FTRL not Off | FTRH Off |  |
| Lowpass | FTRL Off | FTRH not Off |  |
| Bandpass | FTRL not Off | FTRH not Off |  |

Limit - Output Limiter

```
OUT_1:XXXXXX MENU:Limit
THRESH :+20.0dBu
ATTACK :100ms
RELEASE:32x
```

- THRESH - Limit Threshold. Ranges from -20 to +20dBu in 0.5dB steps.
- ATTACK - Attack time. Ranges from 0.3 to 1ms in 0.1ms steps, then ranges from 1 to 100ms in 1ms steps.
- RELEASE - Release time. Can be set at 2X, 4X, 8X, 16X or 32X the attack time.

6.2 Output Menus

Source - Input Source

```
OUT_1:XXXXXX MENU:Source
1:On 4:Off
2:Off
3:Off
```

- 1,2,3,4 – Input channel source for the current output channel. Can be set to enable the input source (On) or disable it (Off). If more than one input source are enabled, they will be added together as the source for the current output channel.

Ch-Name - Channel Name

```
OUT_1:XXXXXX MENU:Ch-Name
NAME:XXXXXX
```

- Refer to the Input Menus for details

6.3 System Menus

The System Menus allow the user to control and change parameters that are related to the system behavior and general operation. It can be accessed by pressing the Sys key in the main menu (when no Input/Output or System Menu is activated). All System Menus require the Enter key to be pressed for the selected action.

Recall - Program Recall

The M Series Processor has a built in non-volatile memory that can store up to 30 different program setups. A program can be recalled using this menu.

```
SYSTEM-SETUP MENU:Store
PROG:01
NAME:XXXXXXXXXXXX
```

- PROG - Program Number to be recalled..
- NAME - Program Name of the program. This is read only, the user has no access to them.

Store - Program store

The M Series Processor has a built in non-volatile memory that can store up to 30 different program setups. A program can be stored using this menu. The old program with the same program number will be replaced. Once the program is stored in the flash memory, it can be recalled at a later time, even after power down.

```
SYSTEM-SETUP MENU:Recall
PROG:01
NAME:XXXXXXXXXXXX
```

- PROG - Program Number for the current data to be stored.
- NAME - Program Name, allows a maximum length of 12 characters.

6.3 System Menus

Config - Device Configuration

SYSTEM-SETUP MENU : Config
MODE : 2-Way

- MODE - configures the mode of operation.

| Mode: | Out 1 | Out 2 | Out 3 | Out 4 | Out 5 | Out 6 | Out 7 | Out 8 |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
| None | Any | Any | Any | Any | Any | Any | Any | Any |
| Stereo 2-Way | In1 | In1 | In2 | In2 | Any | Any | Any | Any |
| Stereo 3-Way | In1 | In1 | In1 | In2 | In2 | In2 | Any | Any |
| Stereo 4-Way | In1 | In1 | In1 | In1 | In2 | In2 | In2 | In2 |

The unit assigns the Input source for the corresponding outputs when the Mode of Configuration is selected. The crossover point parameters like the filter type, cut-off frequency and slope have to be configured manually in the Xover Menu in each Output menu.

*Note: The configuration mode configures the input sources when selected. The user can change the source afterwards if desired. It does not keep the configuration in memory.

Copy - Copy channels

SYSTEM-SETUP MENU : Copy
SOURCE : In1
TARGET : In2

Copy Channels from the source to the target. When the Source and Targets are both Inputs or Outputs, all audio parameters will be copied. When one of the Source or the Target is an input while the other is an output, only the Level, Polarity, Delay and EQ are copied.

- SOURCE - Channel to be copied from.
- TARGET - Channel to be copied to.

6.3 System Menus

General - General system parameters

```
SYSTEM-SETUP MENU:Sampling
SAMPLING RATE:96kHz
```

- **FREQ MODE** - Selects the frequency control mode for EQ and crossover filters. Can be 36 steps/octave or All Frequencies (1 Hz resolution).
- **DELAY UNIT** - ms, ft or m.
- **DEVICE#** - Assigns the device ID from 1 to 16. This ID is useful when a network of more than 1 unit is present.

PC Link - PC Link Enable

```
SYSTEM-SETUP MENU:General
FREQ MODE :All Freq
DELAY UNIT:01
DEVICE# :1
```

- **PCLINK:** - PC Link Enable. It enables (On) or disables (Off) RS232 communication with the PC software. It is recommended to turn off the link when the unit is not connected to the PC.

Sampling - Sampling Rate Selection

```
SYSTEM-SETUP MENU:PC Link
PCLINK:On
```

- **SAMPLING RATE:** - Sampling Rate selection. The unit can operate under 48kHz or 96kHz sampling rate according to this option. The device has to be shut down and turned back on for the hardware effect to take place. For 96kHz operation, crossover slopes can be up to 24dB/Oct only, while 48kHz gives crossover slopes to 48dB/Oct.

6.3 System Menus

Security - Security Locks

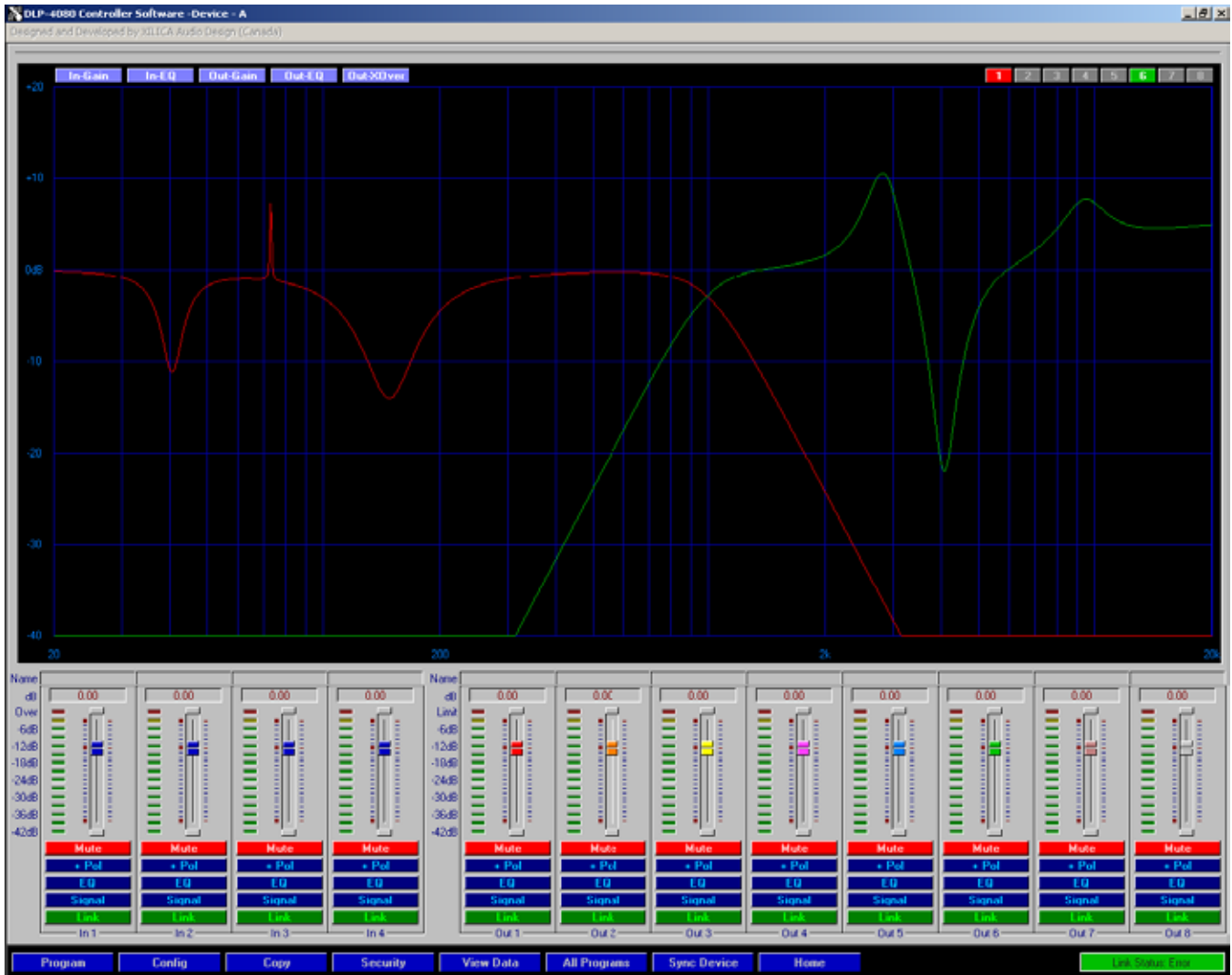
The M Series Processor enables the user to secure the unit and prevent undesired changes in the setup. In order to switch between the security level the user must enter the correct password.

SYSTEM-SETUP MENU: Security
MENU: In-Signal
LOCK: No
PASSWORD: XXXX

- MENU - Selects the menu to be locked/unlocked. The options are:
- In-Signal - Input Signal Menu (Level, Polarity, Delay).
- In-EQ - Input EQ Menu.
- In-Name - Input Channel Name Menu
- Out-Signal - Output Signal Menu (Level, Polarity, Delay).
- Out-EQ - Output EQ Menu.
- Out-Xover - Output Crossover Menu.
- Out-Limit - Output Limit Menu.
- Out-Source - Output Source Menu.
- Out-Name - Output Channel Name Menu.
- System - System Menu
- LOCK - Selects to lock (Yes) or unlock (No) the corresponding menu.
- PASSWORD – The password of the DLP-4080 is 4 characters in length. The user can change it via the PC application software. The factory default of a new unit does not require a password.

7.0 Quick Reference

| Parameters | Menu <<Menu>> | Field <<Cursor>> | Min | Max | Steps | Units |
|------------------|------------------|---------------------|---|--------------------------|-------|------------|
| Level | Signal | LEVEL | -40 | +15 | 0.25 | dB |
| Polarity | Signal | POL | + / - | | | |
| Delay | Signal | DELAY | 0 | 24,000 | 1 | 21us steps |
| EQ Number | EQ | EQ# | 1 | 6 | 1 | |
| EQ Level | EQ | LEVEL | -30 | +15 | 0.25 | dB |
| EQ Frequency | EQ | FREQ | 20 | 20,000 | 1 | Hz |
| EQ Bandwidth | EQ | BW | 0.02 | 2.50 | 0.01 | Octave |
| Crossover Low | XOver | FTRL | Off / Butterworth / Linkwitz-Riley / Bessel | | | |
| Crossover Low | XOver | FRQL | 20 | 20,000 | 1 | Hz |
| Crossover Low | XOver | SLPL | 6 | 48 (48kHz) 24 (96kHz) | 6 | dB/octave |
| Crossover High | XOver | FTRH | Off / Butterworth / Linkwitz-Riley / Bessel | | | |
| Crossover High | XOver | FRQH | 20 | 20,000 | 1 | Hz |
| Crossover High | XOver | SLPH | 6 | 48 (48kHz) 24 (96kHz) | 6 | dB/octave |
| Out Limit Thresh | Limit | THRESH | -20 | +20 | 0.5 | dBu |
| Out Attack Time | Limit | ATTACK | 0.3 | 100 | 0.1/1 | ms |
| Out Release Time | Limit | RELEASE | 2 / 4 / 8 / 16 / 32X Attack time | | | |
| Source | Source | 1, 2, 3, 4 | Off / On | | | |
| Channel Name | Ch-Name | NAME | 6 characters | | | |



The M Series Processor is shipped with a special PC Graphic User Interface (GUI) application - XLink. XLink gives the user an option to control the M Series Processor from a remote PC via the RS232 serial communication link. The GUI application makes it much easier to control and monitor the device, allowing the user to get the whole picture on one screen. Programs can be recalled and stored from/to PC's hard drive, thus expanding the storage to become virtually limitless.

9.0 Specifications

Inputs and Outputs

Input Impedance: > 10k Ohms
Output Impedance: 50 Ohms
Maximum Level: +20dBu
Type: Electronically balanced

Audio Performance

Frequency Response: +/- 0.1dB (20 to 20kHz)
Dynamic Range: 115dB typ (unweighted)
CMMR: > 60dB (50 to 10kHz)
Crosstalk: < -100dB
Distortion: 0.002% (1kHz @+4dBu)

Digital Audio Performance

Processor: 32-bit (40-bit extended)
Sampling Rate: 48kHz/96kHz
Analog Converters: High Performance 24-bit
Propagation Delay: 3ms

Front Panel Controls

Display: 4 x 26 Character Backlit LCD
Level Meters: 5 segment LED
Buttons: 12 Mute Controls
12 Gain/Menu Controls
6 Menu Controls
Dial Encoder: Embedded Thumb Wheel

Connectors

Audio: 3-pin XLR
RS-232: Female DB-9
Power: Standard IEC Socket

9.0 Specifications

General

Power: 115 / 230 VAC (50 / 60Hz)
Dimensions: 19"x1.75"x8" (483x44x203 mm)
Weight: 10lbs / 4.6kg

Audio Control Parameters

Gain: -40 to +15dB in 0.25dB steps
Polarity: +/-
Delay: Up to 500ms per I/O
Equalizers (6 per I/O)
Type: Parametric, Hi-shelf, Lo-shelf
Gain: -30 to +15dB in 0.25dB steps
Bandwidth: 0.02 to 2.50 octaves (Q=0.5 to 72)
Crossover Filters (2 per Output)
Filter Types: Butterworth, Bessel, Linkwitz Riley
Slopes: 6 to 48dB/oct (48kHz)
6 to 24dB/oct (96kHz)
Limiters
Threshold: -20 to +20dBu
Attack: 0.3 to 100ms
Release: 2 to 32X the attack time

System Parameters

No. of Programs: 30
Program Names: 12 character length
Delay Units: ms, ft, m
Frequency Modes: 36 steps/oct, 1Hz resolution
Security Locks: Any individual menu
PC Link: Off, On
Copy channels: All parameters
Channel Names: 6 character length
Note: Specifications subject to change without notice

10.0 Warranty

The M Series Processor is warranted covering materials and workmanship for a period of one (1) year, as determined by the date of retail purchase (according to the sales receipt from an authorized dealer) or the date of manufacture if the sales receipt is not available (according to the serial number). This warranty applies to the product; therefore, the remainder of the warranty period will be automatically transferred to any subsequent owner. This warranty applies only to failure of a Xilica product caused by defects in materials and workmanship during the stated warranty period. It does not apply to a unit that has been subjected to abuse, accident, modification, improper handling/installation, or repairs made without factory authorization or by anyone other than authorized Xilica Field Service Stations. This warranty is void if the serial number has been defaced, altered or removed. Products covered by this warranty will be repaired or replaced at the option of Xilica, without charge for materials or labor, provided all the terms of this warranty have been met.

For factory service, please call or email for a Return Authorization (R/A) number before shipping. If the product is shipped, the following information must be included in the package:

1. Owner's complete name, daytime phone number, return street address and return authorization number.
2. The serial number of the product being returned and a copy of the retail sales receipt, if possible.
3. A complete description of the problem(s) experienced, including a brief description of how the equipment is being used and other equipments involved.



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