

Maintenance

The BMX*digital* console is designed to give many years of trouble-free operation. If it does require service, please read through this section. It provides information on maintenance and service for the BMX*digital* console, including the spare or replacement parts that are available.

Parts and Repair Services

The only parts that are field replaceable are faders, fader knobs, and rotary knobs (see page 5-2 for part numbers). Assemblies may be replaced in the field, but are generally not field-serviceable. For servicing, assemblies should be returned to Harris Technical Services Department.

BMX*digital* technical information (this manual, schematics, software, SPROM revision information, etc.) are available at this Internet support site: <ftp://ftp.pre.com>. Log in as: customer (the username). The password is: *pacific*. All documents and schematics are published in PDF format, so Acrobat Reader 4.0 or later is required.

PARTS ORDERING AND REPAIR INFORMATION

Spare modules and assemblies can be purchased through a sales representative or through the Harris Technical Services Department. To expedite the ordering process and ensure the cor-

rect parts are ordered, have the Harris part numbers available when ordering. For a list of parts, see page 5-2. Modules and other assemblies may have lead times exceeding two weeks, so order accordingly.

Assemblies returned to Harris for service, exchange, or credit must have an RA (Return Authorization) tracking number. This number is assigned by the Technical Services Department. Assemblies received without an RA number written on the shipping label side of the packaging may be returned or subject to an additional handling fee.

To order assemblies or to request an RA, contact Harris by mail, phone, fax, e-mail, or visit the Harris Website:

Harris Corporation
Attention: Technical Services Department
4240 Irwin Simpson Road
Mason, OH 45040 USA

Phone: 513.459.3503, 8:00 to 5:00 EST
Fax: 513.701.5309
E-mail: presupport@harris.com

www.broadcast.harris.com

All U.S. orders and serviced assemblies are shipped FOB Mason, Ohio using UPS Groundtrak, unless otherwise specified. Federal Express or UPS two-day, overnight and next morning delivery is also available for most items. For next day delivery, orders must be placed before 2 p.m. Eastern Time, and the shipping method must be specified at the time of order.

Assembly orders or repair services can be charged to American Express, VISA, or Mastercard. Orders may also be shipped COD, if not on account with Harris. Contact a sales representative for account information.

SPARE AND REPLACEMENT PARTS

These tables list the replaceable or serviceable assemblies and parts for the *BMXdigital*.

Replaceable Parts

The following are field-replaceable parts:

<i>Harris #</i>	<i>Description or Use</i>
12-93	10-character Display
19-327	Flex cable, 30 conductor
21-227-1	Universal Input module SPROM
21-227-2	Telco/Codec module SPROM
21-227-3	Remote Line Selector module SPROM
21-227-4	Session module SPROM
21-227-5	Control Room module SPROM
21-228-1	DSP module SPROM
21-332-1	Output 1 module SPROM
21-332-2	Two-Studio Monitor module SPROM
32-725	Rotary Knob
32-726	Fader Knob (silver)
32-727	Fader Knob (red)
32-728	Fader Knob (green)
32-729	Fader Knob (blue)
32-730	Fader Knob (yellow)
33-27-2	Gas Spring
80-1752	Display cover lens, Inputs & Session modules
80-1753	Trimpot Cover Lens, Outputs & Mic Pre modules
80-1754	Label Cover Lens, Session module
90-1709	30' Power cable (power supply to console)
90-1713-1	Fader Assembly, Input modules
90-1713-2	Fader Assembly, Control Room module
99-1100	Divider kit for two 12.25" blank panels
99-1101	Divider kit for three 12.25" blank panels
99-1714-1	Blank panel, 12.5" long (2nd mic preamp cover)
99-1714-2	Blank panel, 25" long (module cover)
99-1714-3	Blank panel, 6" long (accessory panel blank)
99-1714-4	Blank panel, 12.25" long (standard covers)

Serviceable Assemblies

The following table lists the serviceable or replaceable modules and assemblies:

<i>Harris #</i>	<i>Description or Use</i>
90-1704	Power Stick Assembly (w/regulator PCAs)
95-1180-1	3.3 V Power Converter, PCA
95-1180-2	5 V Power Converter, PCA
95-1180-3	19 V Power Converter, PCA
95-1181	Power Entry Converter
95-1178	Clock PCA (not used on <i>BMXdigital-14</i>)
95-1179	Timer PCA

<i>Harris #</i>	<i>Description or Use</i>
99-1151-1	Microphone Preamp module, 10 Input
95-1151-1	Left PCA (Mics 1 - 5)
95-1151-2	Right PCA (Mics 6 - 10)
99-1152-1	Universal Input module
90-1714-1	Faceplate switchboard assembly
95-1152-1	Main PCA
95-1162-1	Input PCA
99-1152-3	Universal Input module w/o Sends & Utilities
90-1714-3	Faceplate switchboard assembly
95-1152-1	Main PCA
99-1153-1	Telco/Codec module
90-1715-1	Faceplate switchboard assembly
95-1152-2	Main PCA
99-1153-3	Telco/Codec module w/o Sends & Utilities
90-1715-3	Faceplate switchboard assembly
95-1152-2	Main PCA
99-1155	Output 1 module
95-1155-1	Main PCA
95-1165-1	Connector PCA
99-1156-1	Output 2 module
95-1156	Main PCA
95-1176	Connector PCA
99-1156-2	Output 3 module
95-1156	Main PCA
95-1176	Connector PCA
99-1157	Control Room module
90-1719	Faceplate switchboard assembly
95-1157	Main PCA
95-1167	Connector PCA
99-1158	Studio module
90-1718	Faceplate switchboard assembly
95-1158-1	Main PCA
95-1168-1	Connector PCA
99-1159	Session Module
90-1717	Faceplate switchboard assembly
95-1159-1	Main PCA
95-1170	Connector PCA
99-1160-1	Master DSP module
95-1160-1	Main PCA
99-1160-2	Slave DSP module
95-1160-2	Main PCA
99-1163-1	RLS Module
90-1716-1	Faceplate switchboard assembly
95-1152-3	Main PCA
99-1163-3	RLS module w/o Sends & Utilities
90-1716-3	Faceplate switchboard assembly
95-1152-3	Main PCA
99-1177	Digital meter assembly
99-1201	1RU 48 Volt Power Coupler
99-1205	2RU 48 Volt Power Supply
99-1800	Single-board computer module (mounts on Session module)

TOOL AND INSTALLATION KITS

A tool kit and an installation kit are shipped with each new console.

Tool Kit

The contents and quantities of the 76-2001 Tool Kit are listed below:

<i>Harris #</i>	<i>Description or Use</i>	<i>Qty.</i>
38-88	Spare Button Head Screws	12
50-7	AA NiCad Batteries	3
70-126	AMP Crimp Tool	1
70-129	Extraction Tool	1
70-43	Module Pull Tool	1
70-90	Allen driver Hex Tool	1

Installation Kit

The installation kit shipped depends on the mainframe size ordered:

- *BMXdigital-8*: 76-2000-8
- *BMXdigital-14*: 76-2000-0
- *BMXdigital-22*: 76-2000-1
- *BMXdigital-30*: 76-2000-2
- *BMXdigital-38*: 76-2000-3

The contents and quantities of the installation kits are listed below:

Quantities for each BMXdigital framesize					
<i>P/N</i>	<i>Description</i>	<i>-8</i>	<i>-14</i>	<i>-22</i>	<i>-30 -38</i>
14-482	1x3 Housing	40	54	70	86 102
14-484	2x3 Housing	57	80	86	102 118
14-486	2x4 Housing	1	1	1	1 1
14-492	2x7 Housing	7	15	15	19 19
14-494	2x8 Housing	2	2	2	2 2
14-513	2x12 Housing	12	20	36	55 71
15-938-1	Receptacle Contact	900	1250	1534	1966 2366

Module Servicing

Most modules consist of two assemblies: a faceplate/switchboard assembly and a Main PCA. A Connector PCA may also be used for additional input or logic connectors. Assemblies are field-replaceable, but they are not field-serviceable. Do not disassemble the faceplate/switchboard assembly, as these are assembled using a fixture.

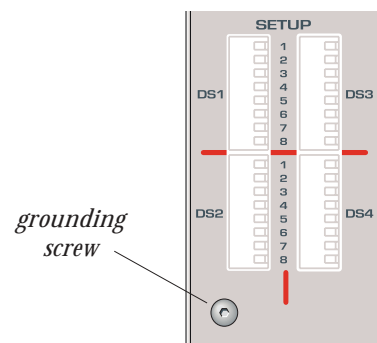
Any module not currently in the console's on-air signal path can be removed or installed with the console powered, and on-air, without causing any audio interruption or noises in the program audio.

NOTE: Prior to removing any module from the mainframe, turn off all its bus assignments and unplug all input, output, and logic cables.

Removing Modules

To remove a module from the mainframe:

- 1 Open the meter panel.
- 2 Use the included hex tool (PRE70-90) to remove the two screws located at the top and bottom of the module, and the grounding screw located directly below the dip switches.
- 3 Screw the module pull tool (PRE70-43) into the grounding screw hole and use the tool to carefully lift the module out of the mainframe.



NOTE: If you need to replace one of the assemblies, please contact Harris Technical Services Department for further instructions.

Installing Modules

To install a module into the mainframe:

- 1 Open the meter panel.
- 2 Lower the module into its slot. Be sure to align the pins on the PCA with the motherboard connector in the mainframe.
- 3 When the pins are aligned, press straight down to seat the module. Do not force the module, and do not press on buttons or connectors while seating the module.
- 4 Fasten the module to the mainframe using two 38-88 screws and install the module grounding screw.

NOTE: If the module does not work after installation, remove the module and visually check to make sure no connector pins are bent.

FADER SERVICING

There are no replaceable or rebuildable parts on the *BMXdigital* fader assembly. Fader service is comprised of cleaning and lubricating. Faders are conductive plastic, single-element faders.

If the fader movement is rough, either the lubricant on the glide rails has evaporated or foreign material has gotten into the fader. Dow Corning 510 is the preferred glide rail lubricant as it will not migrate to the contact fingers like other lubricating oils.

Fader Disassembly and Cleaning

To disassemble and clean the faders:

- 1 Remove the module from the mainframe.
- 2 Remove the fader knob and the two fader mounting screws, then remove the fader from the switch assembly.
- 3 Remove the snap-on fader assembly cover. It is held in place by plastic tabs.
- 4 Clean the fader using either a dry cotton swab or a cotton swab dampened with distilled water.

NOTE: The use of chemical cleaners on the conductive plastic will substantially shorten fader life. Never touch the fader slider contact fingers while cleaning the fader parts.

Use only a dry cotton swab, or a cotton swab dampened with distilled water, to clean the fader parts. Always use a clean dry swab to dry off the conductive plastic tracks after cleaning. If the fader rails are noticeably dirty, wipe them off using a dry cotton swab before lightly lubricating the top rail with Dow Corning 510 lubricant.

If coffee, a soft drink, or other sugared liquid has been spilled into the fader, remove it from the module as soon as possible and remove the top cover of the fader. Hold the fader under hot running water and move the fader slider back and forth to dissolve the sugars and other chemicals. Thoroughly dry the rails and conductive plastic using dry cotton swabs and then lubricate the top fader rail with Dow Corning 510 lubricant.

Lubricating the Glide Rail

Move the fader slider to the middle of its travel and place one drop of Dow Corning 510 lubricant (or equivalent) on the top rail on either side of the fader slider bushings. Move the slider through its full travel to distribute the lubricant. Be sure to wipe off any excess lubricant. Normally only the top rail (the one on which the fader slider bushings glide) requires lubricant.

CLOCK AND TIMER ASSEMBLY

The clock and timer assemblies are located in the meter panel. Note that the BMXdigital-14 does not have a clock assembly.

Clock Troubleshooting

If the clock is not working properly, check to be sure that the cable leading to the assembly is installed correctly. Also check the DIP switch settings that control the clock's operating mode. The clock's DIP switches are located on the clock circuit board. For more information about the clock circuit board, see page 2-5.

Timer Troubleshooting

If the timer is not working properly, check to be sure that the cable leading to the assembly from the Session module is installed correctly.

If the tenths of seconds display is not functioning as expected, check the DIP switch setting on the timer circuit board. For more information about the timer circuit board, see page 2-6.

If the timer is not Auto resetting as expected, check the various input module DIP switch settings. On the Universal input modules, DS1-7 sets timer reset for the A input and DS3-7 sets it for the B input. On the RLS modules, switch 2 sets timer reset. On the Telco modules, switch DS1-8 sets timer reset. For more information about setting the module DIP switches, see the Installation chapter sections for each module.

BACKUP BATTERIES

A "Keep Alive" voltage is generated by three AA nickel cadmium (NiCad) batteries (supplied in the tool kit). These batteries supply a voltage, to hold each module's logic state during power outages, so the console powers back up in the same state it was in when power was lost. For information on installing these batteries, see pages 2-4 and 2-5.

METER ASSEMBLY

The meter assemblies are field-replaceable only. There are no user-serviceable parts on the meter assembly.

Meter Troubleshooting






Each meter has three connections: 5 VDC power via a six wire cable that jumpers the meters, clock, and event timer to the rear chassis power connector; a ribbon cable that carries the serial data signal for the meter name display; and an AES/EBU digital audio cable.

If a meter is not working properly, check that the three cables are installed correctly. Also check that the two DIP switches, located on the meter circuit board, are set correctly. DSW2 is the DIP switch at the front edge of the board. Its settings are covered on page 2-6.

The other DIP switch (DSW1) sets the meter number (Meters 1 - 5, as viewed from left to right). This switch must be set properly when replacing a meter since each meter position has a specific setting, as shown below.

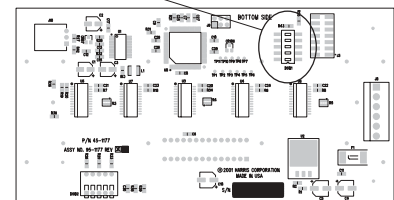
Meter Number Table for DSW1

SWITCH ON (set to the left)

	Auxiliary Meter
	PGM / UTL Meter 4 / BMXd-8 Meter
	PGM / UTL Meter 3
	PGM / UTL Meter 2
	PGM / UTL Meter 1

DSW1

METER
PCA



DSW1 is next to the ribbon cable connector (J3). Set only one DSW1 switch to On, per the above table. Move switch away from the J3 connector to set to On.

POWER SUPPLY

Periodically check that the vent openings are not blocked and there is no dust buildup on the vent openings.



CAUTION: To reduce the risk of electric shock, do not disassemble the power supply. Refer servicing to qualified service personnel.

Power Supply Connections

Both connectors must be attached to the back of the BMXdigital mainframe and the power supply. See page 2-4 for additional details.



5-pin Connector

Pin	Signal	Wire Color
1	+48 V	Red
2	+48 V	Yellow
3	Shield	Clear cover
4	+48 V Return	Black
5	+48 V Return	Blue with Black Stripe

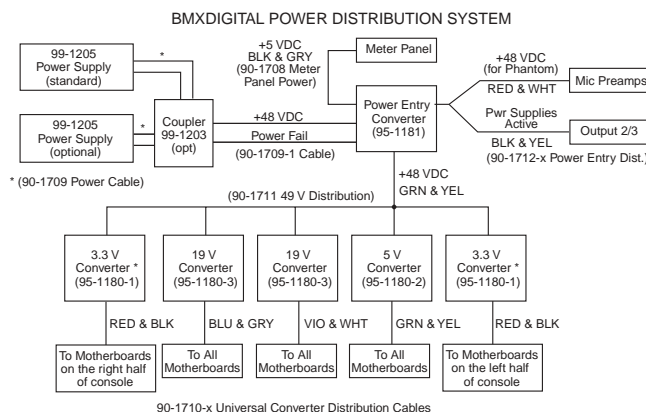


4-pin Connector

Pin	Signal	Wire Color
1	Power Supply 1 Collector	Orange
2	Power Supply 1 Emitter	Brown
3	Power Supply 2 Collector	Blue
4	Power Supply 2 Emitter	Red with Black Stripe

GENERAL TROUBLESHOOTING TIPS

There are five DC converter boards (four on the BMXd-8 and -14) on the Power Stick assembly that uses the rear chassis as a heat sink. Each board is protected by a solder-in fuse. Red LEDs on each board indicate it is working (these cannot be seen unless the bottom cover panels are removed on the mainframe). These boards convert the +48 V input into ± 19 , +5, and +3.3 volts. A power distribution block diagram is shown above.



Left End Motherboard (1 per console): Mic Preamp 1, Mic Preamp 2, Input positions 1 - 8, Master DSP
Middle Motherboards (1 on -14, 2 on -22, 3 on -30, and 4 on -38): Eight Input Positions, 1 Slave DSP
Right End Motherboard (1 per console): Session, Control Room, Studio, Outputs 1 - 3

* Only one 3.3 V Converter is used in the BMXd-8 and BMXd-14 frame sizes.

The console will not function without the Master DSP, Output 2 and Output 3 modules. These output several clock signals that coordinate communications between all the console modules. If these clocks are missing, there will be no module activity (no button LEDs, name displays, etc.). No other modules (Input, CR, Session, etc.) are absolutely essential to “starting up” the console.

The green LED on the power supply front indicates its 48 volt output is good. Red LEDs on the DSP cards indicate they are powered. If the power supply is good, and yet the only lights on the console are the LEDs on the DSP cards and the dB and channel lights on the meters, then check the Imminent Power Loss signal (as previously shown in the Power Supply section). When the power supply is on, pins 1 & 2 are shorted (and pins 3 & 4, when a secondary supply is used). If this signal opens up, it tells the Session module that the power supply was shut off or has lost power. The Session server then saves the current session settings and shuts itself down before its supply voltage is lost (large supply capacitors keep things powered up for a very short time).

Pins 1 & 2 can be manually shorted at the mainframe 4-pin connector to see if lack of this signal is the cause of a start-up problem.