

MDL

The MODCOMP Diagnostic Loader
User and Reference Manual — Version 1.0

Large Scale Systems Museum

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1 Introduction

MDL (the MODCOMP Diagnostic Loader) downloads stand-alone diagnostic and utility programs into a MODCOMP computer over an RS-232 serial line. It runs on Linux and replaces `CDL.EXE`, the MS-DOS loader that MODCOMP field engineers used for the same job. MDL reproduces the original program's transfer behaviour — file decryption, pacing, and the end-of-file trailer required by the Stand-Alone Linking Loader — so the diagnostic images from the original distribution can be loaded unmodified.

Between transfers, MDL is a serial terminal: whatever the MODCOMP sends is displayed, and whatever you type is sent to the MODCOMP. This lets you drive the MODCOMP console, start a loader, pick a diagnostic, and watch its output without switching programs.

1.1 Program types

Every diagnostic image belongs to one of three types. The type decides which menu the program appears in and how it is transmitted.

Fillable

Self-contained images loaded directly into the machine, typically through the console fill or bootstrap mechanism. The SAL and DAX loaders themselves are Fillable programs. Fillable transfers use only the inter-byte delay.

SAL

Object modules loaded through the Stand-Alone Linking Loader (SAL), which must already be running on the MODCOMP. SAL transfers use both the inter-byte and inter-block delays, and are followed by the SAL end-of-file trailer (Section 10).

DAX

Programs loaded through the Diagnostic Application Executive (DAX), which must already be running. DAX transfers use both delays but have no trailer.

A typical session therefore loads SAL or DAX as a Fillable program first, follows the prompt shown in the program's notes (for example, typing `PR` at the SAL prompt, or `LDEV=PR,LOAD.` at the DAX prompt), and then sends the desired diagnostic from the SAL or DAX menu.

1.2 User interfaces

MDL has four ways to operate:

- a **graphical interface** (GTK 4 with a VTE terminal), used by default when a display is available;
- a **full-screen text interface** (ncurses), used by default on a console or remote text session;
- a **plain terminal mode**, a minimal line-oriented interface closest to the original DOS program; and

- **non-interactive commands** for listing the available programs and sending a single program from a script.

All four share the same configuration file, diagnostic table, session log, and transfer engine.

2 Building and installing

2.1 Requirements

- A Linux system with a C11 compiler (gcc) and GNU make.
- pkg-config.
- For the text interface: the wide-character ncurses library (ncursesw) and its development headers.
- For the graphical interface (optional): GTK 4 and vte-2.91-gtk4, with development headers.
- xxd, only if mdl_logo.c must be regenerated from mdl_logo.png.

On Debian-derived systems the libraries are provided by libncurses-dev, libgtk-4-dev, and libvte-2.91-gtk4-dev.

2.2 Building

From the source directory:

```
make                # ncurses + GTK (GTK only if its libraries are found)
make GTK=0          # ncurses only
make NCURSES=0      # no ncurses interface
make NCURSES=0 GTK=0 # plain terminal and command-line modes only
make test           # build, then run "mdl --list" as a smoke test
make clean          # remove object files and the binary
```

The Makefile reports which interfaces it is building. If GTK 4 or VTE is not installed, the graphical interface is silently left out and the build continues.

2.3 Installing

MDL can be run straight from the source directory, which contains mdl.conf and the diags directory. To install it for all users:

```
make PREFIX=/usr/local
sudo make install PREFIX=/usr/local
```

This installs:

<code>\$(PREFIX)/bin/mdl</code>	the program
<code>\$(PREFIX)/share/mdl/mdl.conf</code>	system-wide settings
<code>\$(PREFIX)/share/mdl/diags/</code>	the images and diags.conf
<code>\$(PREFIX)/share/doc/mdl/</code>	this manual (if built)

The installed `mdl.conf` points `DiagDir` at the installed images and writes the session log to `~/mdl.log`. Use the same `PREFIX` for `make` and `make install`, because the data directory is compiled into the program. `DESTDIR` is honoured for staged installs, and `make uninstall` removes the installed files. `make manual` builds this manual.

2.4 Serial port access

Serial devices are normally owned by `root` and a group such as `dialout`, `uucp`, or `plugdev`, depending on the distribution. Check with `ls -l /dev/ttyUSB0` and add your account to that group (then log in again):

```
sudo usermod -a -G dialout $USER
```

3 Connecting to the MODCOMP

Connect a serial port on the Linux machine to the MODCOMP console or loader port with an appropriate null-modem cable. Either a built-in RS-232 port (`/dev/ttySn`) or a USB serial adapter (`/dev/ttyUSBn`, `/dev/ttyACMn`) may be used.

The line is always configured for 8 data bits, raw mode, with modem-control lines ignored (`CLOCAL`). Baud rate, parity, stop bits, and flow control come from the configuration file. The factory settings of 9600 baud, no parity, one stop bit, and no flow control match most MODCOMP installations.

USB adapter latency. USB serial adapters buffer outgoing data for up to 16 ms before sending it. When the port is opened, MDL tries to set the adapter's latency timer to 1 ms by writing to `/sys/bus/usb-serial/devices/device/latency_timer`. This normally requires root privileges or a `udev` rule; if the write fails, MDL continues silently and transfers still work, only with coarser pacing. A `udev` rule such as the following makes the setting permanent for FTDI adapters:

```
ACTION=="add", SUBSYSTEM=="usb-serial", DRIVER=="ftdi_sio", \
    ATTR{latency_timer}="1"
```

4 Running MDL

4.1 Command line

```
mdl [options] [file]
```

Option	Meaning
-n, -no-serial	Do not open the serial port. Useful for browsing the diagnostic table or checking the configuration without hardware.
-c, -config FILE	Use <i>FILE</i> as the configuration file instead of searching for one (Section 9.1).
-l, -list	Print the diagnostic table and exit.
-gtk	Use the graphical interface even if no display variable is set. Only available when built with GTK.
-ncurses	Use the full-screen text interface even if a display is available. Only available when built with GTK (without GTK, ncurses is already the default).
-terminal	Use the plain terminal mode.
<i>file</i>	Send one program non-interactively and exit (Section 8).
-t, -type TYPE	For a file given by path: send it as fillable (default), sal or dax.
-e, -encrypted	For a file given by path: decrypt it before sending.
-h, -help	Print a usage summary and exit.

4.2 Choosing the interface

If a program name is given, MDL sends it and exits. Otherwise, with `-terminal` it runs the plain terminal mode. Otherwise it chooses the graphical interface when it was compiled in and either `DISPLAY` or `WAYLAND_DISPLAY` is set (or `-gtk` is given), and the ncurses interface in all other cases. `-ncurses` overrides the display check.

4.3 Startup

At startup MDL:

1. loads built-in defaults, then the configuration file;
2. applies the `MDL_PORT` environment variable, if set, as the serial device;
3. scans the diagnostic directory and builds the Fillable, SAL, and DAX menus from the [Diag] entries in the configuration file;
4. opens the session log if logging is enabled; and
5. opens the serial port (unless `-n` was given) and starts the chosen interface.

A missing configuration file is not fatal: MDL prints a warning and runs with defaults, but the menus will be empty because the diagnostic table lives in the configuration file. A serial port that cannot be opened is also not fatal; the interface starts and reports the problem, and transfers are refused until the port is available.

5 The graphical interface

The main window contains, from top to bottom:

Menu bar

File: *Dump Scrollback...*, *Quit*. **Settings:** *Preferences...*, *Reload Config*. **Help:** *About*, *View Log File*.

Toolbar

Fillable, **SAL**, and **DAX** buttons, each opening a list of programs of that type; **Clear**, which resets the terminal; **Dump...**, which saves the scrollback buffer to a text file; and **Log**, a toggle that turns session logging on and off.

Terminal

A VT-compatible terminal showing everything received from the MODCOMP. Keystrokes typed into it are sent to the serial port as typed; sends CR (or CR LF, per EnterSends). If LocalEcho is enabled they are also displayed locally.

Notes panel

Hidden until a program with operator notes has been sent successfully; it then slides open to show the notes, which usually describe what to type next on the MODCOMP.

Status bar

A status lamp, the serial device and line settings, and the most recent status message. Messages clear themselves after fifteen seconds.

The status lamp shows the state of the serial connection:

Lamp	Meaning
Grey	No serial port (-n)
Green	Serial port open
Amber	Transfer in progress
Red	Serial port could not be opened, or the last action failed

5.1 Sending a program

Click **Fillable**, **SAL**, or **DAX** and activate a program in the list (double-click, or select it and press). Entries whose image file is not in the diagnostic directory are dimmed and marked (*not found*); choosing one only produces an error message.

A *File Transfer* window opens showing the program description, a progress bar, bytes sent, the transfer rate, and, for SAL and DAX programs, the current 256-byte block number. If the program has notes, they are shown in this window too. **Cancel** stops the transfer before the next byte; if a SAL or DAX block delay is in progress, that delay finishes first. Closing the window while a transfer is running is the same as **Cancel**, and the main window cannot be closed until the transfer has finished or been cancelled.

When the transfer completes the bar turns green and the window closes by itself half a second later. If the transfer is cancelled or fails, the window stays open with a **Dismiss** button, and a failure shows its reason (for example, an unreadable image file).

While a transfer is running, characters echoed back by the MODCOMP are discarded so the terminal is not flooded; normal display resumes as soon as the transfer ends, so a loader's sign-on message appears immediately.

More than one copy of MDL can run at once, for example one per serial port, each with its own configuration file (-c).

5.2 Preferences

Settings → *Preferences...* opens a dialog with four tabs:

Serial

Device, baud rate, parity (N, E, O), stop bits, flow control, and local echo.

Timing

Inter-byte delay for Fillable, SAL, and DAX, and block delay for SAL and DAX, in milliseconds.

Display

Terminal foreground and background colours, font family and size (with a live preview), terminal columns and rows, and scrollbar length.

Paths

Diagnostic directory and session log file.

The buttons behave as follows:

Apply applies every tab immediately: the port is reopened, the terminal's colours, font and size change, and the menus are rebuilt if the diagnostic directory changed. Nothing is written to disk.

Save applies every tab, writes the settings to the configuration file, and closes the dialog. Only the affected lines are rewritten; comments, ordering and unrelated keys are preserved, and the file is replaced atomically, so an interruption cannot leave it half-written. If the configuration file in use cannot be written (for example the installed system-wide one), the settings are saved to `~/.config/mdl/mdl.conf` instead, which is used from then on. If saving fails the dialog stays open and the status bar says why.

Cancel closes the dialog without saving (settings already applied with **Apply** remain in effect for the session).

A changed session log path takes effect the next time MDL starts. The window's size and maximised state are remembered when it is closed, if the configuration file is writable.

5.3 Other commands

Reload Config re-reads the configuration file from scratch, as at startup, and applies it: the port is reopened if its settings changed, the terminal's colours and font are refreshed, and the program menus are rebuilt. The **Log** button's state and the window size are left as they are.

Dump Scrollback saves the complete terminal history as plain text.

View Log File opens the session log in the program named by the `EDITOR` environment variable (which may include options), or in the desktop's default application if `EDITOR` is not set.

6 The full-screen text interface

The ncurses interface fills the terminal window:

- the top line shows the date and time;
- the large centre area shows data received from the MODCOMP;
- the second-to-last line shows status and error messages;
- the bottom line shows the serial settings and a row of function-key buttons, which can also be clicked with the mouse.

The interface requires a UTF-8 locale for correct line drawing. Colours come from the `*Color` settings (Section 9.5).

6.1 Keys

Key	Action
F2	Choose and send a Fillable program.
F3	Choose and send a SAL program.
F4	Choose and send a DAX program.
F5	Rescan the diagnostic directory and rebuild the menus from the configuration file.
F8	Turn session logging on or off.
F10	Quit.
PgUp / PgDn	Scroll the received-data history back or forward by half a screen. The mouse wheel scrolls three lines at a time.
End	Return to the most recent output.
Enter	Send CR, or CR LF with <code>EnterSends=CRLF</code> .
Any other key	Sent to the MODCOMP unchanged, including control characters such as Ctrl-C and Ctrl-S .

Typed characters are shown locally only if `LocalEcho` is set; normally what you see is what the MODCOMP sends back. As on a real terminal, a carriage return moves to the start of the line and

a backspace moves left without erasing. Up to 2000 lines of history are kept. If the terminal is too small for a dialog, the status line says so. MDL also exits cleanly, restoring the terminal, on SIGTERM or SIGHUP.

6.2 Choosing a program

F2, **F3**, and **F4** open a centred list of programs of that type. The dialog's size is set by DialogHeightPct and DialogWidthPct. Programs whose image file is missing are shown dimmed.

Key	Action
Up / Down (or k / j)	Move the selection
PgUp / PgDn , Home / End	Move by a page / to the ends
Enter , or click an entry	Send the program
Esc , q , F10 , or click [Esc] Cancel or the close mark	Cancel

6.3 The transfer window

During a transfer a window shows the program name and description, bytes sent, percentage, transfer rate, a progress bar, and any operator notes. Press **Ctrl-C** or click [Cancel] to stop the transfer. When it ends, press **Enter**, **Space**, or **Esc**, or click [Dismiss], to return to the terminal. The status line then reports whether the transfer completed or was aborted, or why it failed.

7 Plain terminal mode

-terminal runs a simple terminal on the controlling tty, without full-screen drawing. It prints a banner listing the function keys and then passes data in both directions:

- received characters are printed as they arrive (carriage returns are shown as new lines; other control characters are discarded);
- typed characters, including control characters, are sent to the MODCOMP, and printable ones are echoed locally when LocalEcho is set;
- **Enter** sends CR, or CR LF with EnterSends=CRLF.

F2, **F3**, or **F4** closes the terminal, prints a numbered list of Fillable, SAL, or DAX programs, and asks for a number; 0 or an empty answer cancels. The function keys may send either the ESC 0 or the ESC [form; both are recognised. During the transfer, progress is printed and **Ctrl-C** aborts it. Afterwards, press a key to return to the terminal. **F8** toggles logging and **F10** quits. With -n, the lists can be browsed but transfers are refused.

8 Non-interactive use

8.1 Listing programs

`mdl -list` prints the three menus, in configuration-file order, with an exclamation mark beside any program whose image file is missing from the diagnostic directory. It does not open the serial port.

8.2 Sending one program

```
mdl FILE_103
mdl -c /opt/mdl/mdl.conf FILE_040
mdl ./images/custom.bin
mdl --type sal --encrypted ./images/FILE_040
```

A bare name is looked up in all three menus; the matching entry's type, encryption flag, and notes are used exactly as if it had been chosen interactively. The serial settings and progress are printed (when `ShowSelection` is non-zero), then any operator notes. `Ctrl-C` aborts the transfer.

A name containing a slash is treated as a path to an arbitrary file. It is sent as a Fillable program without decryption unless `-type` and `-encrypted` say otherwise. With `-n` the port is not opened, so nothing is sent and the command fails.

The exit status is 0 if the transfer completed and 1 otherwise.

9 Configuration file

9.1 Location and syntax

MDL uses the first of these configuration files that exists:

1. the file named with `-c`;
2. the file named by the `MDL_CONF` environment variable;
3. `mdl.conf` in the current directory;
4. `$XDG_CONFIG_HOME/mdl/mdl.conf`, normally `~/.config/mdl/mdl.conf`;
5. `$(PREFIX)/share/mdl/mdl.conf`, the installed copy.

The table of programs is kept separately, in `diags.conf` in the diagnostic directory (Section 9.4). Both files use Windows INI syntax:

```
[Section]
Key=Value
; comment
```

- Section and key names are not case-sensitive.
- Lines beginning with ; or # are comments. In the settings sections a semicolon after a value also starts a comment, so those values cannot contain semicolons; in [Diag] stanzas it does not, so notes may contain them.
- Lines may be of any length.
- Numbers may be written in decimal or, with a 0x prefix, in hexadecimal. A leading zero means octal: 010 is eight.
- Relative paths (DiagDir, DiagTable, SessionLog) are relative to the directory containing the configuration file, so MDL can be run from anywhere. A leading ~/ means your home directory.

9.2 [TTY.Terminal] — serial port and interface

Key	Default	Meaning
Device	/dev/ttyUSB0	Serial device path. Overridden by the MDL_PORT environment variable.
Port	–	Legacy DOS port number: 1 means /dev/ttyS0, 2 means /dev/ttyS1, and so on. Ignored if Device appears earlier in the section.
Baud	9600	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200. Other values fall back to 9600 with a warning.
Parity	N	None, Even, Odd, Mark, or Space (first letter only).
StopBits	1	1 or 2.
FlowControl	N	N none, R RTS/CTS, X XON/XOFF.
LocalEcho	0	1 also displays typed characters locally, in every interface. Normally the MODCOMP echoes them itself.
EnterSends	CR	What Enter sends: CR or CRLF.
ShowSelection	1	Plain terminal and command-line modes: print the serial settings and transfer progress.
LoggingEnabled	1	Open the session log at startup.
DiagDir	diags	Directory containing the diagnostic images and diags.conf.
DiagTable	–	Program table file, if not diags.conf in DiagDir.
SessionLog	mdl.log	Session log file (appended to).
DialogHeightPct	50	ncurses program-list height, percent of the screen (10–90, minimum 8 rows).
DialogWidthPct	75	ncurses dialog width, percent of the screen (20–95, minimum 40 columns).
TextColor	0x02	ncurses colours; see Section 9.5.
MenuColor	0x1F	
MenuBarColor	0x71	
ErrorColor	0x4E	
ButtonColor	0x4F	

Key	Default	Meaning
MessageColor	0x5F	
GtkWindowWidth	900	Initial window width in pixels.
GtkWindowHeight	600	Initial window height in pixels.
GtkMaximized	0	1 starts the window maximised.
TerminalCols	80	Terminal width in characters.
TerminalRows	25	Terminal height in characters.
ScrollbackLines	2000	Terminal history length.
VteForeground	#00FF00	Terminal text colour.
VteBackground	#000000	Terminal background colour.
VteFont	Monospace 12	Terminal font (Pango font description).

9.3 [Fillable], [SAL], [DAX] — transfer timing

Key	Fillable	SAL	DAX
InterByteDelay	0	3	3
FileBlockDelay	—	1250	1250

The table shows the built-in defaults; the distributed `mdl.conf` sets the Fillable inter-byte delay to 1. Both values are in milliseconds. `InterByteDelay` is the pause after every byte. `FileBlockDelay` is the pause after every 256-byte block except the last. The block delay is never applied to Fillable programs, matching the original loader; a `FileBlockDelay` key in `[Fillable]` is ignored.

If a MODCOMP loader loses characters or reports checksum errors, increase these values. The defaults were chosen to be safe with the original hardware rather than fast.

9.4 `diags.conf` — the diagnostic table

The programs offered in the menus are listed in `diags.conf`, kept in the diagnostic directory beside the images so that an image set and its table travel together (`DiagTable` names a different file). If there is no such file, MDL reads `[Diag]` stanzas from the settings file instead, as earlier versions did; if both exist, the stanzas in the settings file are ignored with a warning.

Each program is described by its own `[Diag]` stanza:

```
[Diag]
Filename = FILE_103
Name     = Stand Alone Linking Loader (SAL)
Type     = Fillable
Encrypted = yes
Notes    = After the SAL Prompt, Type "PR" enter, Then use the SAL menu ...
```

Key	Required	Meaning
Filename	yes	Image file name in <code>DiagDir</code> (up to 31 characters).
Name	yes	Description shown in the menus (up to 127 characters).
Type	yes	Fillable, SAL, or DAX (or F, S, D).
Encrypted	yes	yes/no, true/false, or 1/0. The images from the original distribution are encrypted.
Notes	no	Operator instructions shown after the transfer (up to 511 characters, one line).

Programs appear in each menu in the order of their stanzas. A stanza that lacks any required key, or whose `Filename` is too long, is skipped with a warning giving the file, line number and reason; over-long notes are truncated with a warning. Files in `DiagDir` without a stanza are ignored; stanzas whose file is missing still appear in the menus but are marked as missing. Each menu holds up to 512 programs, and at most 512 files in `DiagDir` are examined.

9.5 ncurses colours

The `*Color` keys use the PC text-mode attribute byte of the original DOS program: bits 0–2 select the foreground colour and bits 4–6 the background.

0	Black	4	Red
1	Blue	5	Magenta
2	Green	6	Yellow (brown)
3	Cyan	7	White

For example, `0x1F` is white on blue. The intensity bit (bit 3) and blink bit (bit 7) are accepted but not used; MDL applies bold where appropriate instead.

Key	Used for
<code>TextColor</code>	Received-data area
<code>MenuColor</code>	Dialog bodies
<code>MenuBarColor</code>	Top line, dialog borders and titles, selected entry
<code>ErrorColor</code>	Error messages
<code>ButtonColor</code>	Function-key bar and dialog buttons
<code>MessageColor</code>	Status line and filled part of the progress bar

10 Transfer protocol

Every transfer, in every interface, follows the same steps:

1. The whole image file is read into memory.

2. If the program is marked `Encrypted`, it is decrypted in place: each byte at offset i is exclusive-ORed with $i \bmod 256$. The operation is its own inverse.
3. The data is sent one byte at a time. After each byte MDL waits for it to leave the transmitter, discards anything received (the MODCOMP echoes every byte), and waits `InterByteDelay` milliseconds.
4. After every 256 bytes, progress is reported and, for SAL and DAX programs, MDL waits `FileBlockDelay` milliseconds unless the block was the last.
5. For SAL programs only, the twelve-byte end-of-file trailer `$. . . . .` (two dollar signs and ten full stops) is sent, unencrypted, with the same inter-byte delay. Without it SAL waits indefinitely for more data.
6. The output is drained and the result is logged.

If the transfer is cancelled or fails, the serial input buffer is flushed so that stale echoes do not appear in the terminal. After a successful transfer the input is left alone, so the loader's response is displayed.

Because every byte is individually drained, the effective transfer rate is lower than the line rate: at 9600 baud with a 3 ms inter-byte delay, expect roughly 200–250 bytes per second, plus 1.25 s per block for SAL and DAX programs.

11 Session log

When logging is enabled, MDL appends to the file named by `SessionLog`. Each run adds a header and a trailer:

```
===== MDL SESSION  OPENED = Sun May 24 21:04:33 2026 =====
Serial:  /dev/ttyUSB0 9600,N,8,1
DiagDir:  /home/mdl/diags
Modcomp Diagnostic Loader, v1.0

FILE_103      [Fillable] SEND STARTED  Sun May 24 21:05:10 2026
FILE_103      COMPLETE 4608 bytes  Sun May 24 21:05:31 2026
===== MDL SESSION  CLOSED = Sun May 24 21:14:45 2026 =====
```

Failed and cancelled transfers are recorded with the reason. Data received from the MODCOMP is also written to the log, in every interface. Turning logging off (`F8` or the **Log** button) stops all of this; only the `SESSION LOG ACTIVATED` and `DEACTIVATED` entries themselves are always recorded.

12 Troubleshooting

“Cannot open /dev/ttyUSB0: Permission denied”

Add your account to the group that owns the device and log in again.

“Cannot open /dev/ttyUSB0: No such file or directory”

Set Device to the correct port (dmesg shows the name assigned to a USB adapter), or set MDL_PORT.

The menus are empty

MDL did not find diags.conf. Check DiagDir (the -list output shows the directory it used) and the warnings printed at startup.

Programs are marked missing

Check DiagDir, remembering that a relative path is taken from the directory containing the configuration file, and that file names are case-sensitive.

The MODCOMP receives garbage

Check the baud rate and parity on both ends, and that the program’s Encrypted setting matches the file.

A loader stalls or reports errors part-way through

Increase InterByteDelay and, for SAL and DAX, FileBlockDelay. With a USB adapter, make sure the latency timer is set to 1 ms.

Box-drawing characters look wrong in the text interface

Use a UTF-8 locale (for example LANG=en_US.UTF-8).

A Distributed diagnostic programs

The configuration file supplied with MDL defines the following programs.

Fillable programs (25)

File	Description
FILE_103	Stand Alone Linking Loader (SAL)
FILE_046	Diagnostic Application Executive (DAX)
FILE_018_2	Extended Diagnostic Application Executive (EDAX)
FILE_034	Classic & 782X Fixed & Floating Point Diagnostic
FILE_007	Classic II Memory Diag. Model 3695/3696
FILE_036	CL II/15/25/45/55/75 CPU Diagnostic - Part 1
FILE_037	CL II/15/25/45/55/75 CPU Diagnostic - Part 2
FILE_038	CL II/15/25/45/55/75 CPU Diagnostic - Part 3
FILE_039	CL II/15/25/45/55/75 CPU Diagnostic - Part 4
FILE_050	Disc/Tape Copy Program
FILE_043	Single Board Classic Memory Diagnostic
FILE_042	Single Board Classic 2mb Memory Diagnostic
FILE_022	Classic 7830/7860 Memory Diagnostic
FILE_015	MC II/III/7810 CPU Diagnostic - Part 1
FILE_016	MC II/III/7810 CPU Diagnostic - Part 2
FILE_017	MC II/III/7810 CPU Diagnostic - Part 3
FILE_021	Classic 7830/7860 Fixed & F.P. Diag
FILE_025	AFD Boot/Dump
FILE_078	MHD Boot/Dump

File	Description
FILE_079	MHD Boot/Dump Init Pkg
FILE_053	FHD Boot/Dump (DMP/DEV #2)
FILE_054	FHD Boot/Dump Init Pkg (DMP/DEV #2)
FILE_055	Floppy Disc Boot/Dump
FILE_056	Floppy Disc Boot/Dump Init Pkg
FILE_086	Mag Tape C.I. Boot/Dump Pkg

SAL programs (51)

File	Description
FILE_112	MAX II/III SYSGEN
FILE_113	MAX II/III Patch One Large
FILE_114	MAX II/III Patch Two Small
FILE_040	CL II/15/25/45/55/75 CPU Part 5
FILE_041	CL II/15/25/45/55/75 CPU Part 6
FILE_077	MHD Alternate Track Initializer
FILE_018	MC 7810 Solid State Memory Diag
FILE_067	MC II 32k Per Plane Memory
FILE_064	MC II/III/5 Memory Diagnostic
FILE_066	MC II/III Floating Point Diagnostic
FILE_014	4821 High Speed Serial Link Diag
FILE_063	Mag Tape Exerciser
FILE_111	C.P.I. Process I/O Exerciser
FILE_072	MC IV/7830/7860 CPU Diag-Part 5
FILE_073	MC IV/7830/7860 CPU Diag-Part 6
FILE_092	Peripheral Selector Exerciser
FILE_065	MC II/III/7810 System Protect Diag
FILE_019	MC II/IV/7810/7830 Sys. Protect Diag
FILE_102	IOIS Async Channel (SACI) Exerciser
FILE_012	Interval Timer Test (4701)
FILE_108	UNIVAC Vip Exerciser
FILE_095	Paper Tape Copy/Verify Program
FILE_033	Centronics Line Printer Exerciser
FILE_093	Peripheral Switch Exerciser
FILE_101	SACI Diagnostic
FILE_107	TTY-KSR Console Keyboard Diag
FILE_026	Analog Input System Test
FILE_001	Interval Timer/Pulse Accumulator Diag (1108)
FILE_098	Remote/Local IOIS Exerciser
FILE_071	MC IV CPU Diagnostic-Part 4
FILE_069	MC IV CPU Diagnostic-Part 2
FILE_061	MC IV/25/35 Memory Diagnostic
FILE_030	Async Comm System Diag-Grp B Unit C/D
FILE_031	Async Comm System Diag Grp B Unit E/F
FILE_058	Fast FHD Exerciser
FILE_110	X-Y Plotter Diagnostic
FILE_094	Paper Tape Reader/Punch Diag

File	Description
FILE_068	MC IV CPU Diagnostic-Part 1
FILE_070	MC IV CPU Diagnostic-Part 3
FILE_005	20 Head MHD Exerciser
FILE_049	Cartridge MHD Exerciser (DEV.#3)
FILE_099	Remote/Local MODACS Exerciser
FILE_029	Async Comm System Diag-Grp B Unit A/B
FILE_028	Async Comm System Diag-Grp B Unit 8/9
FILE_074	MC IV Diagnostic Panel Diag
FILE_051	Electrostatic Printer/Plotter Diag
FILE_048	Cartridge MHD Exerciser
FILE_100	Sync/Async Comm. Controller Diag
FILE_057	Floppy Disc Diagnostic
FILE_106	Sync. Comm. Cont. Diag
FILE_024	7830/7860 Shared Memory Diagnostic

DAX programs (40)

File	Description
FILE_059	I/O Processor Diagnostic
FILE_011	Classic 4176 MHD Diag-Single Port
FILE_010	Classic 4176 MHD Diag-Dual Port
FILE_104	Standard Link Controller diagnostic
FILE_105	Standard Link 2-CPU Diag
FILE_013	4805-X/4820 Parallel Link
FILE_032	ATC/AMC/Multifunction Async Diag
FILE_020	Classic & 782X Fixed F.P. Diag
FILE_085	Mod. Comm. Contr. Link Diag
FILE_044	Classic Mag Tape Diag
FILE_045	Classic Programmable Peripheral Selector Diag
FILE_035	Classic Series 4185-X Disc Subsystem
FILE_096	QCIC Diagnostic
FILE_097	QCIC Link Diagnostic
FILE_087	Multifunction Controller Diag
FILE_082	MODACS III Digital Diagnostic Part 1
FILE_083	MODACS III Digital Diagnostic Part 2
FILE_084	MODACS III Digital Diagnostic Part 3
FILE_081	MODACS III Controller Diagnostic
FILE_080	MODACS III Analog Diagnostic
FILE_090	MODACS/REMACS WRR AIS Remote/Local Diag
FILE_088	MODACS AMP/ADC Per Channel Remote/Local Diag
FILE_002	Modular Communications Controller Diag. (#1907-8)
FILE_089	Modular Communications Macro Diagnostic
FILE_109	Wide angle Solid State AIS Diagnostic
FILE_023	Classic 7830/7860 Fixed & Floating Point Diag
FILE_075	MC IV Floating Point Diag
FILE_076	Memory + Diagnostic
FILE_003	MODCOMP/IBM 1950 Channel Interface Diagnostic

File	Description
FILE_009	4138 Controller Diagnostic
FILE_008	4138 Dual Port Diagnostic
FILE_047	Cartridge Moving Head Disc Diagnostic
FILE_004	200 TPI Moving Head Disc Diagnostic
FILE_091	Paper Punch Task
FILE_052	Enhanced Card Reader Diagnostic
FILE_027	Async Floppy Disc Diag
FILE_060	I/O TESTER
FILE_006	Model 3517 F.P. Simulation Task
FILE_062	Line Printer Diagnostic
FILE_048_2	IPS Diagnostic