



## PowerFax M-T1

The PowerFax M-T1™, a 24-line fax board with an integrated T1 digital trunk interface, from Commetrex employs the latest in DSP technology to halve the cost of high-density PC-based fax boards. The M-T1, and its sister products, the M-4 and the M-8, redefine the economics of fax servers of all types. Although they are priced at approximately thirty percent less than that of competitive products they offer world-class, market-proven performance, and in the case of the M-T1, unmatched system density. The M-T1 software is available for the Windows NT operating system and is installed via an easy-to-use automated installation procedure.

The PowerFax M-T1 is designed to simplify application development and ease end-user installation. It includes, in addition to fax send and receive, file-format conversion, document-queue management, and fax-status functions. And the MultiFax Fax Description Language (MultiFax FDL) supports the dynamic assembly of a fax from multiple elements, such as graphics and text.

### Features

- High density—24 fax lines per board
- Integrated digital T1 trunk interface
- Automated software install/deinstall
- 14.4 Kbps send/receive
- Turnaround polling
- Dynamic document re-sizing and re-encoding
- DSP-based fax software
- No-charge software upgrades
- MultiFax Fax Description Language
- Comprehensive API and developer's kit
- C-language demo programs

### Benefits

- Economical, high-density systems
- Uses one slot - reduced system size and cost
- Simplifies installation - reduces opportunity for errors
- Software-defined functionality offers the ultimate in system configurability.
- Up-to-date fax-resource software at no additional cost
- On-the-fly creation of fax text and documents
- Turnaround polling with document

## **Overview**

The PowerFax M-T1 multiline fax system combines Windows NT APIs, the MultiFax modems, 24 ports of fax capabilities and a T1 integrated digital trunk on a single, long ISA slot PC add-in board. The M-T1 board includes an "enhanced-compliant" MVIP switch to support advanced applications that require inter-board connection and switching. The M-T1 also includes a powerful, '386-class control processor and a large DRAM to dramatically reduce host-PC overhead. The fax modems are implemented on open-architecture Texas Instruments DSPs, allowing simple software upgrades to take advantage of the latest software releases.

Commetrex's MultiFax, available since mid-1993 as an OEM software product, is market-proven by over 100 fax-system developers in Asia, North America, and Europe. It is being used in the most demanding applications to send and receive hundreds of thousands of faxes a day.

But the M-T1 is not just a proven multiline fax board. It's a comprehensive developer's system which supports the rapid development of high-function fax systems of all types. With its exclusive Fax Description Language (FDL), the M-Series developer can easily implement information-service platforms which create ad hoc fax images from disparate elements such as text and graphical objects.

MultiFax has the highest fax-machine connection rate in the industry since it can

## **Applications**

The M-T1 offers the fax-system end-user or developer, the lowest-cost, highest-density, PC-based multiline fax platform available. It is suitable for information service systems, fax-server, fax-mail and fax store-and-forward applications from high-volume fax broadcast systems to enterprise-wide LAN fax servers and SOHO integrated voice/fax systems.

It is also well suited for fax broadcast and LAN-based fax server systems. Its market-proven technology, high density, and low cost per port make it an exceptional choice for supporting high-volume commercial fax systems as well as corporate fax servers.

## **System Environment**

There are three main data structures in MultiFax: MultiFax Document Queues (MDQs), Fax Status structures, and MultiFax System Parameters. MDQs, which are managed with 7 MultiFax functions, contain documents to be sent and received. This permits documents to be easily assembled independently of the fax application, strongly supporting client/server architectures. The Fax Status structures reflect the status of the current fax operation, including such indications as current page, current document, fax negotiation results, transfer rate, resolution, encoding, and error codes. System parameters hold information such as the default values for subscriber ID, country code, and manufacturer ID.

## **Development Productivity**

The M-T1 provides you with the most productive development environment available

## MultiFax FDL

MultiFax Fax Description Language (FDL) macros support the creation of faxes from dynamically assembled elements. For example, a personalized fax letter including information obtained from a centralized database, a pre-scanned signature, the date, time, and even a per-call personalized paragraph, can be created and transmitted in seconds. Examples of FDL macros are

```
@CONVERT:END          @CONVERT:PADTOEND
@CONVERT:FILE         @CONVERT:PAGEBREAK
@CONVERT:FONT         @CONVERT:PAGESIZE
@CONVERT:MARGIN      @CONVERT:TEXT
```

These macros are inserted into a text file and converted using the MultiFax file- and format-conversion functions. The resulting file is then placed in the appropriate MDQ.

## Format Conversions

The files produced by word processing, page layout, and graphics packages are generally not in the file format a fax transmits and receives. MultiFax supports conversions from FDL, PCX, Bi-Level TIFF, TIFF-F, and text (including Windows NT outline fonts).

## MultiFax API Functions

AllocFaxRes	GetConvertedPages
AnswerFaxPoll	GetDocStatus
CheckTiff	GetFaxResStatus
EndConvert	GetDocStatus
ReceiveFax	GetVersion
CancelFax	ClosePort
OpenConvert	CreateQueue
FaxConvertDirect	QueueDoc
SendFax	QueueFree
ReleaseFaxRes	ReleaseFaxRes

applications using the same Commetrex products our customers use. They are experts in not only the specifics of MultiFax, but with the computer, telephony, and fax environments as well.

## Specifications

**HOST REQUIREMENTS:** 386/486/Pentium PC-AT with Windows NT

**CAPACITY:** One T1 (DSX-1) 24 ports per board. 96 ports per PC

**FAX ENCODING:** MH, MR and MMR. Error Correction Mode (ECM)

**FAX MODEMS:** V.21 (300bps) for T.30 negotiation, V.27ter (2400/4800bps), V.29 (7200/9600bps), V.17/V.33 (14400/12000/9600/7200bps)

**FORMAT CONVERSIONS:** ASCII, PCX, TIFF-F, TIFF, Windows NT System Fonts, FDL

### BOARD WARRANTY

7-year hardware warranty

### DSX-1 TELEPHONY INTERFACE

**Line Interface:** Complete interface to one T1 trunk

**Framing:** D3/D4 (ESF or SLC-96 available on special order)

**Insertion and Detection:** ABCD bits

**Zero bits:** Selectable B8ZS, jammed bit (ZCS) or no zero code suppression

**Alarm Signal Capabilities:** Yellow, Red and Blue

**Counts:** Bipolar violation, F(t) error and CRC error

**Robbed Bit:** Selectable on a per channel basis

**Loopback:** Per channel and overall under software control. Automatic remote loopback with CSU option

**Connector:** RJ-48C

### HOST INTERFACE

**Electrical:** PC/AT bus designed to IEEE P966 ISA

## POWER REQUIREMENTS

2.5 Amps per board of PC/At power at +5 volts

## TONE DIALING

**DTMF Digits:** 0-9, \*, # and ABCD per ITU-T Q.23 and Q.24

**Rate:** Programmable (10 digits/sec nominal)  
Wait-for-dial-tone capability

**Dialing Parameters:** Software controllable

**Dialing Amplitude:** Network compatible  
(configurable by country) programmable  
range -33 dBm to 1 dBm

## PULSE DIALING

**10 Digits:** 0-9

**Pulsing Rate:** 10 pulses/sec (nominal)

**Make/Break Ratio:** Network compatible  
(configurable by country) 40/60 nominal

## DTMF TONE DETECTION

**DTMF Digits:** 0-9, \*, #, ABCD

**Dynamic Range:** -47 dBm to 0 dBm per tone,  
programmable

**Tone Duration:** 40 ms (minimum)

**Acceptable Twist:** 10 dB

**Talk-off:** Exceeds all Q.24 standards including  
Mitel CM 7291 and Bellcore TR-TSY-  
000762 tests

## ENVIRONMENT

**Operating Temperature:** 0°C to 50° C

**Storage Temperature:** -20° to 70° C

**Humidity:** 5 to 80%, non-condensing

## ON-BOARD PROCESSORS AND MEMORY

**DSPs:** 6 Texas Instruments TMS320C51 DSPs  
at 50 MIPS each

**Microprocessor:** 25 MHz 80386SX

**Memory:** 2 MB of dedicated DRAM for the on-  
board microprocessor and 256 KB of fast  
static RAM for the on-board microprocessor  
(128 KB shared with the host and 128 KB  
shared with the DSPs)

## MVIP DIGITAL SWITCHING

Enhanced-compliant MVIP interface provides  
total flexibility in connecting T1 channels to  
DSP resources, to other T1 channels, or to  
MVIP bus timeslots. Note that connections  
between T1 channels, or between T1 channels  
and other on-board resources, do not tie up  
MVIP bus timeslots. MVIP timeslots are only  
consumed when needed for inter-board  
connections.

## REGULATORY CERTIFICATION (USA AND CANADA)

**Telephone Network:** FCC Part 68 and DOC  
CS-03

**EMI:** FCC Part 15 Subpart J, Class A

**Safety:** NRTL Recognized to UL 1459 and  
CSA Recognized to Standard 225

## STANDARDS COMPLIANCE

**Digital Multiplexer Requirements and  
Objectives:** AT&T Pub. 43802, July '82

**Service Description and Interface  
Specifications:** AT&T TR 62411,  
ACCUNET T1.5

**Carrier to Customer Installation DS1  
Metallic Interface:** ANSI T1E1/88-001R1,  
Feb. '88