ETM25/27/29 Modular Computing Components

OEM Information for the Force Flexor PCI/ISA Family 10-Slot Enclosure

Order Number: EK-A0944-UG. C3

August 2001

This manual describes how to use and upgrade the Force Flexor Family 10-Slot enclosure in the ETM25/27/29 series.

Revision/Update Information: Manual revision 2.0

Force Computers
Irvine ,Scotland, UK

August 2001

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EMC Notice

This equipment is designed to meet the requirements of class B digital devices, as defined in FCC rules and the European emission standard EN55022. It is the responsibility of the Original Equipment Manufacturers (OEM – system integrator) to obtain FCC and other applicable approvals for the completed system.

Note

All components fitted to the kernel (option cards, drives, and so on) must have suitable agency approval to maintain the equipment's approval status. In addition, all external connections to the kernel must not invalidate the SELV status of the equipment.

Note

The use of shielded cables when connecting to the I/O interface ports is required to ensure compliance with EMC regulations and standards.

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Preface

This manual introduces the **ETM25/27/29** Flexor Components and describes the Force Computers Flexor Product Family 10-slot enclosure. It contains information on the product features, using storage devices, installing or removing option boards and **module unit** components, and installing the rackmount and chassis slide kits.

Audience

This manual is for anyone responsible for building, configuring, and expanding systems created with ETM25/27/29 Components. You must be familiar with computer equipment and components before you use this manual. You must also be familiar with assembling and disassembling computer equipment.

Conventions

The following conventions are used in this manual:

Convention	Description
n.nn	A period in numerals signals the decimal point indicator. For example, 1.75 equals one and three-fourths.
nn nnn	A space character separates digits in numerals with 5 or more digits. For example, 10 000 equals ten thousand.
Italic type	Indicates the following: • Complete *titles* of associated documents. • Online electronic *addresses*.
bold type	In procedures, **(n)** refers to the number in the corresponding figure. In text, **bold type** highlights the first occurrence of a **term** referenced in the glossary.
Note	A note contains information of special importance to the reader.
Caution	A caution contains information to prevent damage to the equipment.
Warning	A warning contains information to prevent personal injury.
*	An asterisk (*) in a part number signifies any number in a particular position in a part number. For example, EBM3*-PA refers to the part numbers EBM31-PA, EBM32-PA, EBM33-PA, and so on.

How to Get Help

If you need help with the ETM25/27/29 Components, contact one of the following sources of support:

- Your supplier
- A Force Computers field applications engineer
- Force Flexor support at:

  flexorsupport@fci.com

Associated Documentation

The following documentation complements this manual:

- *OEM Information for Force Computers PCI/ISA Product Family Backplanes.* The order number for this manual is: EK-A0929-TM.
- *OEM Information for the ETMXE-DP/DF/DS Dense Disk PAK.* The order number for this manual is: EK-A0943-UG.
- User information manuals accompanying each **Single-Board Computer (SBC).** Consult these manuals for more information on the SBC, firmware, and supported options.

1
Introduction

This chapter introduces the Force Computers Flexor 10-Slot enclosure and the ETM25/27/29 kernel. It contains information on:

- Description of the 10-Slot Enclosure
- ETM25/27/29 Kernels
- Technical Specifications
- Warranty and Ordering Information
- Field Replaceable Parts
- Setting Up the Module Unit
- Flexor PCI/ISA Product Family

Description of the 10-Slot Enclosure

This section describes the Force Computers Flexor 10-Slot Enclosure, which includes integral cooling using a dual fan, an **operator control panel (OCP),** and a **power supply unit (PSU)**.

The 10-Slot enclosure is available in two main variations:

- 360 watt dual redundant AC power supply with load sharing backplane **OR**
- 360 watt single AC power supply (no PSU redundancy)

Optional mounting and cover kits are available for the 10-Slot enclosure as follows:

- Vertical outer cover for tower installation
- Horizontal outer cover for desktop installation
- Rackmount kit to mount into a 19-inch rack

The 10-Slot enclosure is part of an ETM25/27/29 kernel; the kernel type depends on the backplane option chosen. For more information on kernels see the section *ETM25/27/29 Kernels*. The 10-Slot enclosure is designed for use with the Force Computers Flexor ETMAB-xA 10-Slot and ETMXB-DA 7-Slot PICMG backplanes.

ETM25/27/29 Kernels

The ETM25/27/29 product offering is part of Force Computers Flexor Family. The ETM25/27/29 product range uses the Force Computers Flexor 10-Slot ETMAB-CA, ETMAB-EA, and 7-Slot ETMXB-DA backplanes. Using Compaq 64-bit Alpha technology as well as x86-based SBCs, the Force Flexor Family allows systems designers to take advantage of low-cost, high-performance **Peripheral Component Interface (PCI)** and **Industry Standard Archi tecture (ISA)** peripherals. Responding to the requirements of the **PICMG (PCI Industrial Computer Manufacturers Group)** specification, the Force Flexor Family product offering provides high flexibility. A Force Flexor enclosure can accommodate a variety of SBCs and supports multiple operating systems. The information in this manual applies to the enclosure portion of the ETM25/27/29 kernels.

Systems designers can use options cards based on the *PCI Local Bus Specification Revision 2.0* or *2.1* and ISA (16-bit) options in a variety of configurations. Table 1-1 lists the part numbers you can order for the 10-Slot enclosure.

Table 1-1: Part Numbers for Flexor 10-Slot Enclosures

Part Numbers	Description
Backplanes	
ETMAB-CA	10-Slot PICMG 4 ISA, 7PCI (1 Shared) backplane
ETMXB-DA	7-Slot PICMG 4 ISA, 4 PCI (1 Shared) backplane
ETMAB-EA	10-Slot PICMG 10 ISA, 4 PCI shared backplane
Kernels	
ETM25-SA	10-Slot enclosure with single 360W AC PSU and ETMAB-CA backplane
ETM25-DA	10-Slot enclosure with dual 360W AC PSU and ETMAB-CA backplane
ETM27-SA	10-Slot enclosure with single 360W AC PSU and ETMXB-DA backplane
ETM29-SA	10-Slot enclosure with single 360W AC PSU and ETMAB-EA backplane
ETM29-DA	10-Slot enclosure with dual 360W AC PSU and ETMAB-EA backplane
Optional Kits	
ETMXK-BR	19-inch Rack mounting kit for 10-Slot enclosure
ETMXK-BD	Horizontal Desktop kit for 10-Slot enclosure
ETMXK-BT	Vertical Tower kit for 10-Slot enclosure

Figure 1-1 through to Figure 1-3 show illustrations of the various 10-Slot enclosures with associated kits.

Figure 1-1: 10-Slot Enclosure with ETMXK-BD Desktop Kit

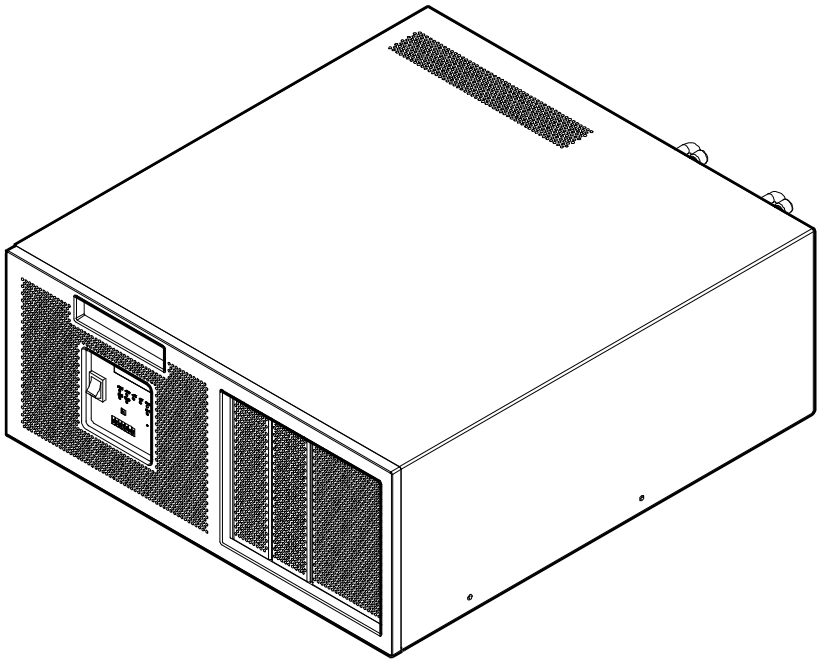


Figure 1-2: 10-Slot Enclosure with ETMXK-BT Tower Kit

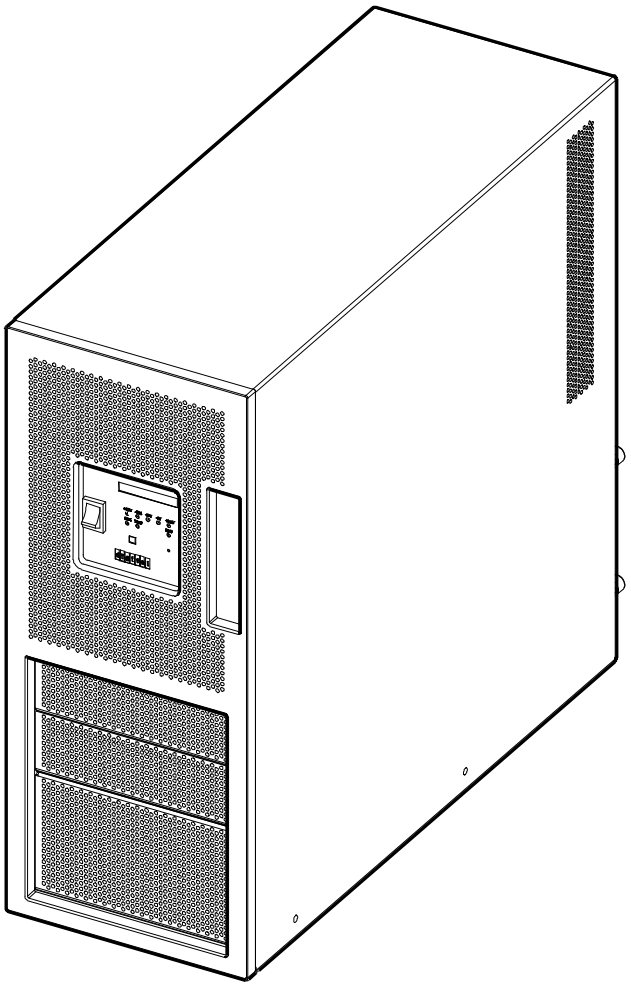
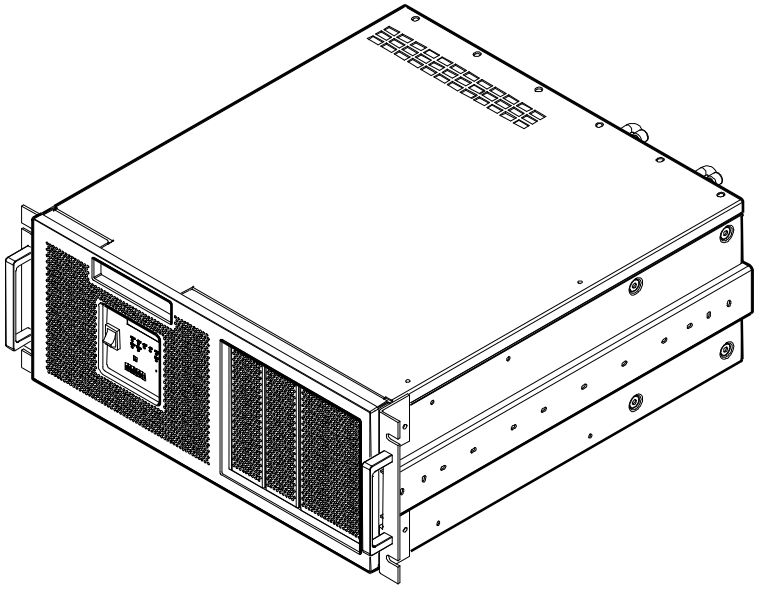


Figure 1-3: 10-Slot Enclosure with ETMXK-BR Rackmount Kit



Technical Specifications

WARNING

Before connecting a power source, ensure that the voltage supply is within the ranges specified in Table 1-3.

Failure to observe these precautions will result in damage to the module unit and may result in injury.

WARNUNG

Vor dem Anschluß an eine Stromquelle überprüfen Sie, ob die Versorgungsspannung sich innerhalb des in Table 1-3 genannten Rahmens bewegt.

Nichtbeachtung dieser Vorsichtsmaßnahmen führt zu Beschädigung der Moduleinheit und kann Verletzungen verursachen.

Physical Specifications

Table 1-2 lists the physical specifications of the 10-Slot enclosure.

Table 1-2: Physical Specifications of the 10-Slot Enclosure Kernels

Specification	ETM25/27/29-SA Variants	ETM25/29-DA Variants
Weight, kg (lb)	20.0 (44.0)	21.0 (46.2)
Height, cm (in)	17.6 (6.93) (Approx: 4U)	17.6 (6.93) (Approx: 4U)
Width, cm (in)	42.8 (16.86)	42.8 (16.86)
Depth, cm (in)	46.7 (18.40)*	46.7 (18.40)*

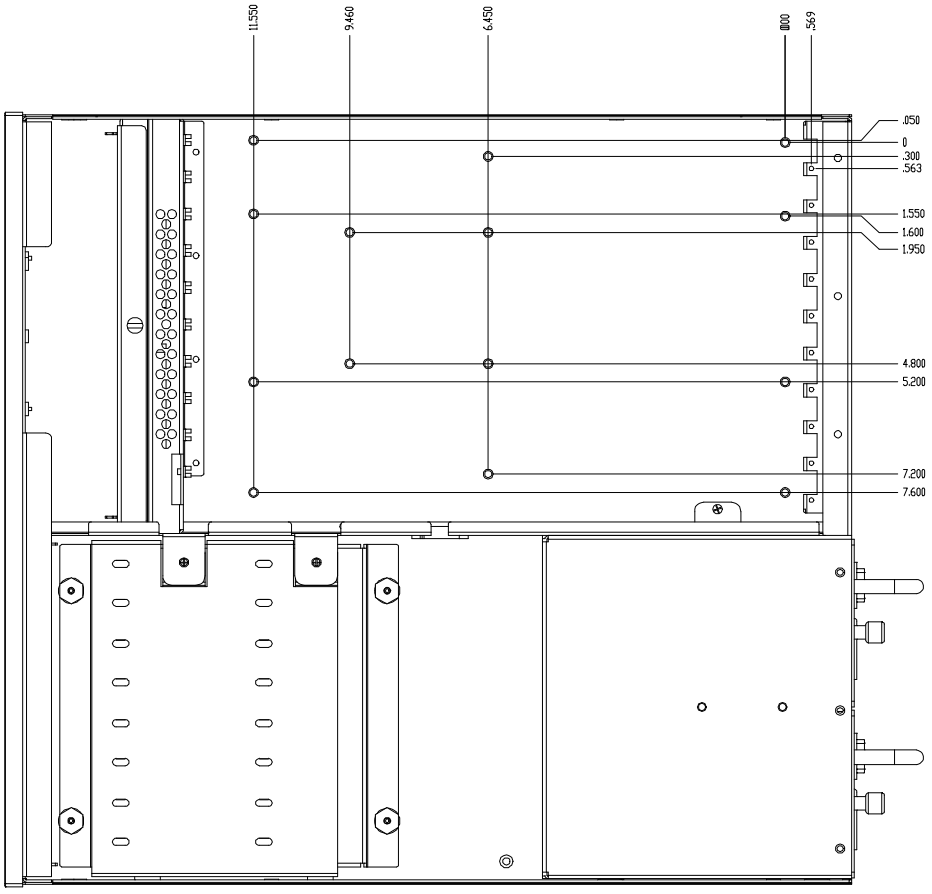
* Depth measurement excludes PSU handles (3.8cm, equivalent to 1.5 inches) and power cord dimensions.

Figure 1-4 shows the location of the mounting holes for the ETMAB-CA/EA and the ETMXB-DA backplanes in the 10-Slot enclosure and the datum points of enclosure fixing points for the backplane.

Note

All measurements in illustrations are in inches.

Figure 1-4: Mounting Holes in the 10-Slot Enclosure for Force Flexor Family Backplanes



Power Input Specifications

Table 1-3 lists the power input specifications of the 10-Slot enclosure.

Table 1-3: ETM25/27/29–SA and –DA Power Input Specifications

Range Setting	Voltage Range	Max. Current Redundant PSU	Max. Current Single PSU	Frequency Range
AC 360W Power Supply Specifications				
100-240 V	90 V to 264 V RMS	10.0A	10.0 A	47 Hz to 63 Hz

The PSU(s) in the 10-Slot enclosure must be set to the input voltage specified. You must not operate the ETM25/27/29 outside these ranges.

Note

The input power at rated output must not exceed 592W for model numbers ETM25/27/29-SA & DA.

Power Output Specifications

Table 1-4 lists the power output specifications of the ETM25/27/29-SA and DA power supply.

Table 1-4: ETM25/27/29–SA and –DA Power Output Specifications

Voltage	Voltage Range	Max. Current	Min. Current
+3.3 V	3.17 V to 3.465 V	30 A	0.5 A
+5.0 V	4.82 V to 5.25 V	40 A	3.0 A
+12 V	11.4 V to 12.56 V	12 A	0 A
-12 V	-13.15 V to -10.2 V	1.0 A	0 A
-5.0 V	-5.45 V to -4.6 V	0.5 A	0 A
+5.0 V Aux.	4.5 V to 5.5 V	2.0 A	0 A

Note

The +5 V power plus the +3V power must not exceed 200 W.
The combined current on the –5 V and –12 V outputs should not exceed 1.0 A.

Kernel Loading Specifications

Figure 1-5: Loading Specifications for ETM25/27/29 Kernels

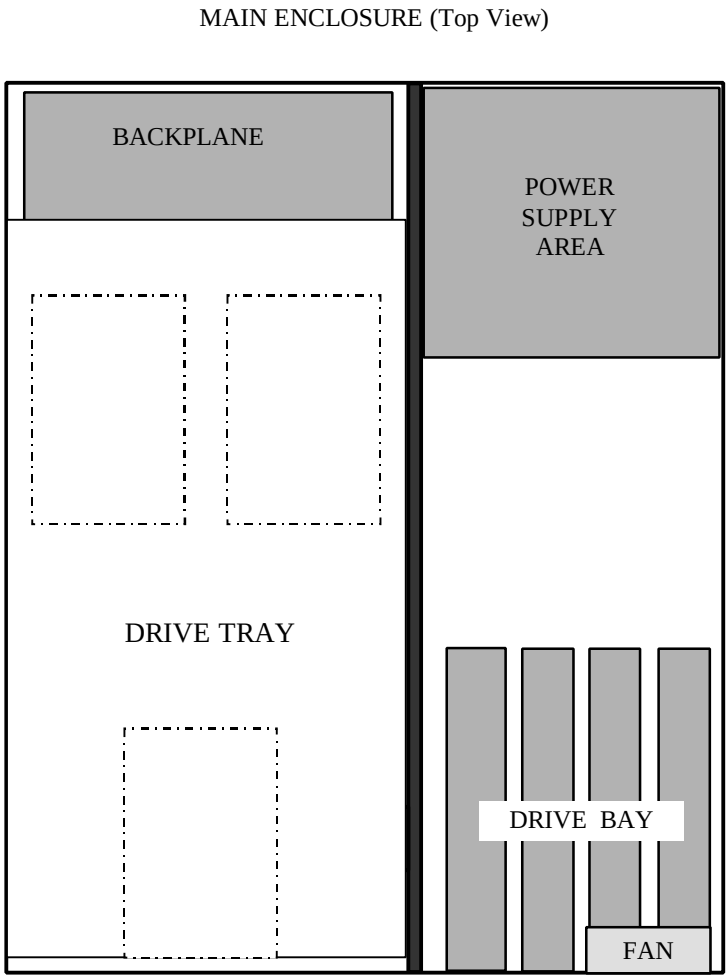


Table 1-5 shows the maximum allowable power consumption for specific areas of ETM15/17/19 kernels.

Table 1-5: Maximum Power Consumption for ETM25/27/29 Kernel Areas

Area	Maximum Allowable Power Consumption
PSU	360W (AC)
Drive Bay	2 fan assisted drive bays not exceeding 40W and two unassisted drive bays not exceeding 20W for supplied configuration. See PSU specification for further details.
Drive Tray	3 drive areas (ETM29 only 1) not exceeding 7.5W per drive. See PSU specification for further details.
Backplane	Each card slot should not exceed 25W. The total loading for this area should not exceed 300W. See PSU specification for further details.

Acoustic Noise Emission

Table 1-1 lists the required limits for product acoustical noise emission classification.

Table 1-6: Acoustic Noise Categories

Acoustic Category	Mode Type	Lwadc Limit (decibels)
1. Manufacturing Space	Operating	85
	Idle	85
2. Computer Room	Operating	80
	Idle	75
3. Open office/equipment only space	Operating	70
	Idle	64
4. Open office/occupied space	Operating	64
Non-desktop unit	Idle	58
Desktop unit	Idle	55
5. Private Office	Operating	60
Non-desktop units	Idle	53
Desktop units	Idle	50
Portable, remotely hosted products	Idle	46

The acoustic noise emission values of the enclosure are given in Table 1-7. The values presented in Table 1-7 are derived from measured emissions and statistically account for sample-to-sample noise emission variability. The declared values in Table 1-7 are as *per* ISO 9296 and ISO 7779. Current values for specific configurations are available from your Force Computers representative.

Table 1-7: Acoustic Noise Emission Values

	Sound Power Level L_{WAd}, B (1 B = 10 dBA)		Sound Pressure Level L_{pAm}, dBA (Bystander positions)	
Product	***Idle***	***Operate***	***Idle***	***Operate***
ETM25/27/29	5.34	5.60	41.7	44.0

Schallemissionswerte

Die Schallemissionswerte des Gehäuses sind in Table 1-8 dargelegt. Die in Table 1-8 beschriebenen Werte sind von gemessenen Emissionen abgeleitet und machen statistisch die Variabilität der Schallemissionsstichproben aus. Die in Table 1-8 gegebenen Werte entsprechen ISO 9296 und ISO 7779/DIN EN 27779. Aktuelle Werte für spezifische Konfigurationen sind von Ihrem Force Computers vertreter erhältlich.

Table 1-8: Schallemissionswerte

	Schalleistungspegel L_{WAd}, B (1 B = 10 dBA)		**Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)**	
Gerät	***Leerlauf***	***Betrieb***	***Leerlauf***	***Betrieb***
ETM25/27/29	5.34	5.60	41.7	44.0

Airflow Specification

Each enclosure fan supplied with the ETM25/27/29 is rated at 45 +/- 3 cubic feet per minute (cfm) in free air or zero static pressure, with a total airflow of 90 cfm. The actual airflow volume through the enclosure is less than this figure, depending on the selected SBC and options and their shape.

Caution

The system integrator must ensure that the airflow is suitable for the application.

Air filters must be cleaned and or serviced on a regular basis. Correct intervals are strongly influenced by site specific conditions. An initial inspection and cleaning interval of 30 days should be adjusted based on site specific conditions. The frequency with which you need to replace the air filter depends on site specific conditions.

Failure to clean or replace the filters will decrease expected MTBF: reduced air flow will increase internal temperatures, and internal contamination can occur.

Vorsicht

Der Systemintegrator muß sicherstellen, daß der Luftstrom für das Gerät geeignet ist.

Environmental Specifications

Table 1-9 and Table 1-10 list the environmental specifications for the ETM25/27/29 kernel options.

Table 1-9: Environmental Specifications for the 10-Slot Enclosure

Condition	Range or Value
Operating	
Temperature range	0°C (32°F) to 50°C (122°F)
Relative humidity	5% to 95% noncondensing
Operating altitude	12 000 feet maximum (3,659 m) *
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Vibration	5 Hz to 16 Hz: 0.020 in 16 Hz to 200 Hz: 0.25 G 200 Hz to 500 Hz: 0.1 G peak
Shock	10 G, 3 axis
MTBF (MIL-HDBK-217F)	See Table 1-10
Nonoperating	
Temperature range	-40°C (-40°F) to 65°C (149°F)
Storage (shipping) altitude	40 000 feet
Relative humidity	5% to 95%
Maximum wet bulb temperature	32°C (90°F)
Vibration	1.5 G, 3 axis

* The maximum operating temperature must be derated by 1.8°C per 3280 feet (1000 m) above sea level.

Note

Some options that you can add may have more restrictive environmental specifications. Refer to the user manuals accompanying the options for further information.

Table 1-10: Reliability Estimates for ETM25/27/29 Kernels

Part Number	Description	MTBF (Hours)
Reliability at 25°C		
ETM25-SA	10-Slot enclosure with single AC PSU and ETMAB-CA backplane	90 000
ETM25-DA	10-Slot enclosure with dual AC PSU and ETMAB-CA backplane	187 000
ETM27-SA	10-Slot enclosure with single AC PSU and ETMXB-DA backplane	92 000
ETM29-SA	10-Slot enclosure with single AC PSU and ETMAB-EA backplane	93 000
ETM29-DA	10-Slot enclosure with dual AC PSU and ETMAB-EA backplane	196 000
Reliability at 40°C		
ETM25-SA	10-Slot enclosure with single AC PSU and ETMAB-CA backplane	36 000
ETM25-DA	10-Slot enclosure with dual AC PSU and ETMAB-CA backplane	75 000
ETM27-SA	10-Slot enclosure with single AC PSU and ETMXB-DA backplane	37 000
ETM29-SA	10-Slot enclosure with single AC PSU and ETMAB-EA backplane	37 000
ETM29-DA	10-Slot enclosure with dual AC PSU and ETMAB-EA backplane	79 000
Reliability at 50°C		
ETM25-SA	10-Slot enclosure with single AC PSU and ETMAB-CA backplane	22 000
ETM25-DA	10-Slot enclosure with dual AC PSU and ETMAB-CA backplane	47 000
ETM27-SA	10-Slot enclosure with single AC PSU and ETMXB-DA backplane	23 000
ETM29-SA	10-Slot enclosure with single AC PSU and ETMAB-EA backplane	23 000
ETM29-DA	10-Slot enclosure with dual AC PSU and ETMAB-EA backplane	49 000

Warranty and Ordering Information

This section provides warranty and ordering information on Force Computers Flexor products.

Returning Products to Force Computers

All Force Computers Flexor products carry a two-year Return-to-Force Computers warranty, as described in the following sections. For the first two years of the Warranty Period, FRUs will receive warranty service through Force Computer's standard RMA procedures. This warranty service may be performed by Force Computers, or by a Force Computers Authorized Service Provider

Hardware Warranty

The Hardware Warranty is a limited warranty consisting of return to Force Computers Repair Service Center. Force will, at it's option, repair, replace or provide a credit for defective FRUs that are returned to Force under the warranty program. For repairs, Force Computers will repair the FRU with either new or refurbished parts at no charge. All parts that Force Computers replaces shall become Force Computers property upon the date Force Computers delivers the repaired FRU or part back to the purchaser.

Availability

Warranty is available worldwide to Customers. Proof of purchase or ownership of equipment, including serial numbers, may be required. Products which have been defaced by removing serial numbers, etch levels, or key components are not eligible for warranty. In such case, where a return is deemed non-warranty, the standard repair charges apply.

Response Time

Force Computers uses best efforts to repair eligible FRUs identified by customers as defective.

Eligible Parts

FRUs as defined by Force Computers are the only parts eligible for coverage. FRUs in need of repair due to improper treatment or use are not eligible for return. Improper treatment includes, but is not limited to; lifted or burnt etches or contamination due to non-Force Computers repair or modification.

Purchaser Responsibility

Please note the following customer responsibilities:

- The customer is responsible for installing the equipment.
- Fault diagnosis and equipment disassembly is the sole responsibility of the customer on returns of FRUs.
- The customer shall properly package and prepay transportation cost of FRUs sent to Force Computers.
- The customer assumes all risk of loss or damage to FRUs in transit to Force Computers.

Pre-Call Checklist

Prior to calling Force Computers or an authorized reseller, please follow the pre-call checklist. This allows Force Computers to assist you more quickly and efficiently. The pre-call checklist is as follows:

- Consult your product user documentation that is included with your product to assure that your system features are properly configured.
- Execute the customer diagnostics provided with your product, if applicable, and record the information. Consult the accompanying user documentation for more details on operation of this utility.
- Determine the product model number and serial number to enable processing of warranty support.

Return-to-Force Computers Process

In order to return products under warranty, the customer needs to contact the Force Computers Customer Service Representative via the SAP order process. The customer will be provided with a Return Material Authorization (RMA#) and an address to which to send the defective material, which will normally be as defined below. The Customer is responsible for sending the product to the address provided. The Customer pays for transportation for Return-to-Force warranty to the factory. Force Computers pays transportation for return to the customer.

Force Computers Service Centers

For products purchased within the U.S., Canada, or Mexico; please call the following Force Service center for RMA information and shipping instructions:

Phone (408) 369-6273
Email: RMA@fci.com
Fax: (408) 371-4912

Force Computers
RSC Department
5799 Fontanoso Way
San Jose, CA 95138

For products purchased outside of the U.S., Canada, or Mexico; please call the following Force Service center for RMA information and shipping instructions:

Phone: 49 (0) 89 601 4575
Email: Repair.Center@force.de
Fax: 49 (0) 89 601 4243

Force Computers
RSC Department
Professor Messerschmitt Str. 1
D-85579 Neubiberg / Muenchen
Germany

Field Replaceable Parts

This section contains information about field replaceable parts associated with the 10-Slot enclosure and ETM25/27/29 module unit. Table 1-11 lists the order numbers for the field replaceable parts; Table 1-12 lists the order numbers for the power cord field replaceable parts.

Table 1-11: Order Numbers for Field Replaceable Parts

Field Replaceable Part	Part Number
OCP cable assembly	17-04682-02
Serial port cable assembly	17-04701-01
Parallel port cable assembly	17-04702-01
Enclosure disk harness cable	17-04680-01
Enclosure power supply cable	17-04858-01
Enclosure fan cable	17-04681-01
Server management signals ribbon cable assembly	17-04391-01
Dual enclosure fan, 92 mm sq. axial	12-45774-03
Power delay circuit, PWB assembly for OCP	54-38534-01
PICMG enclosure operator control panel PWB assembly	54-20704-01
Operator control panel assembly (no logo)	70-33422-02
Flexor PCI/ISA Product Family 7-Slot PCI/ISA backplane	54-20710-01
Flexor 10-Slot PCI/ISA backplane	54-38582-01
Flexor 10-Slot PCI/ISA combination backplane	54-30124-01
Dense Disk Pak III 2-drive storage enclosure kit	ETMXE-DS
Blanking plate for 5.25-inch storage bay	74-52705-01
Power supply, 360W, 5 output, 100/240V AC unit	130-00023-03
Power supply, AC current sharing backplane assembly	30-50515-01
Front bezel assembly for 10-Slot enclosure	70-33420-01
Air filter for 10-Slot enclosure	12-45964-04
Manual, OEM information for the Force Flexor 10-Slot Enclosure	EK-A0944-UG
Manual, OEM Information for Force Computers Flexor Backplanes	EK-A0929-TM

Table 1-12: Power Cord Field Replaceable Parts

Field Replaceable Part	Order Number	Part Number
Power cord, 10 A, 2.5 m, IEC320-C13, North America	BN19P-1K	17-00606-02
Power cord, 10 A, 2.5 m, IEC320-C13, Central Europe	BN03A-2E	17-00199-17
Power cord, 10 A, 2.5 m, IEC320-C13, Switzerland	BN19E-2E	17-00210-13
Power cord, 10 A, 2.5 m, IEC320-C13, UK/Ireland	BN26D-2E	17-00209-17
Power cord, 10 A, 2.5 m, IEC320-C13, Israel	BN18L-2E	17-00457-16
Power cord, 10 A, 2.5 m, IEC320-C13, Africa/India	BN22X-2E	17-00456-14
Power cord, 10 A, 2.5 m, IEC320-C13, Australia/N.Z.	BN19H-2E	17-00198-14

Setting Up the Module Unit

This section describes how to set up the module unit. It contains information on:

- OCP Controls and Indicators
- OCP Connector
- ATX PSU Input Connector
- Rear Panel Ports, Connectors, and Controls
- Option Support
- Choosing a Location for the Module Unit
- Turning On the Module Unit
- Turning Off the Module Unit

OCP Controls and Indicators

Table 1-13 lists the controls and indicators on the operator control panel of the 10-Slot enclosure and describes their functions. The item numbers in the first column of Table 1-13 refers to the various indicators and switches in Figure 1-6.

Caution

Use the Halt/Reset button only as allowed by the operating system.

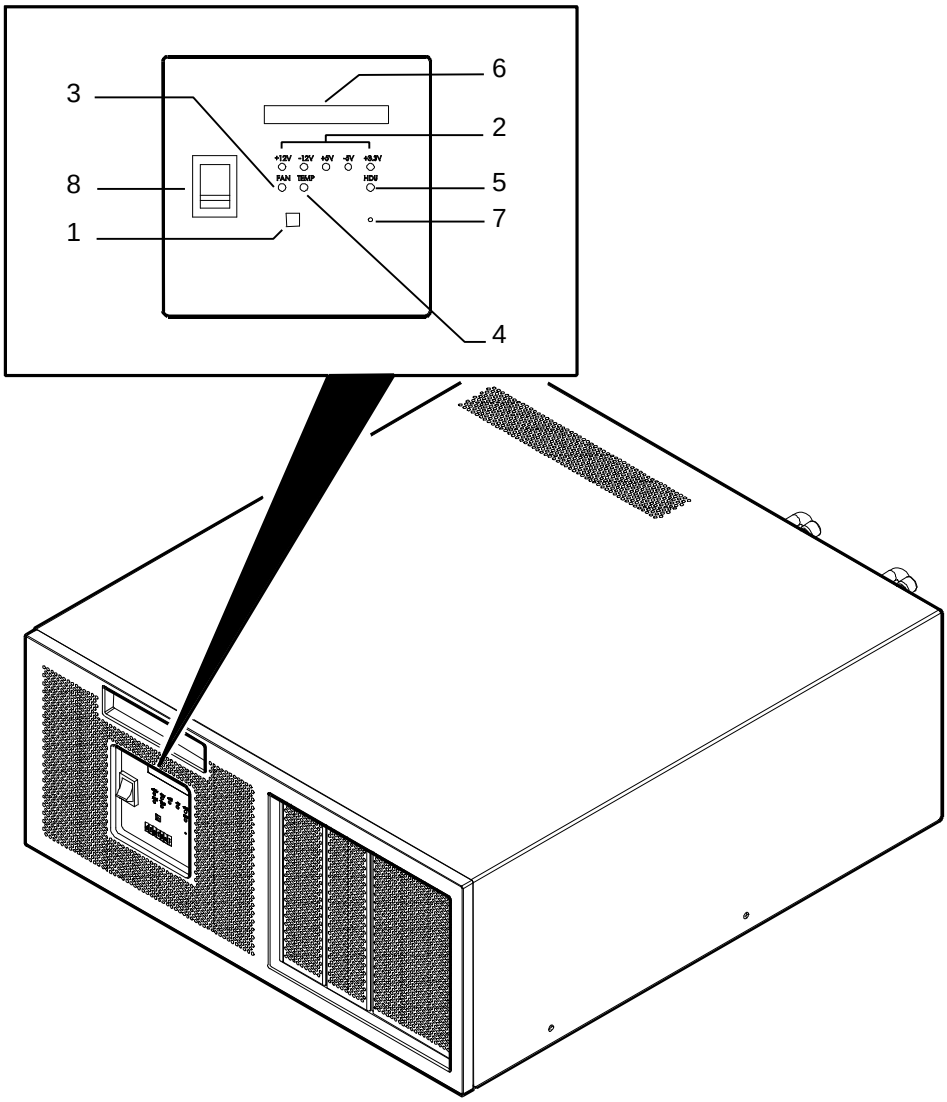
Vorsicht

Benutzen Sie den Halt/Reset Knopf nur wie im Betriebssystem vorgesehen.

Table 1-13: OCP Controls and Indicators

Item	Control or Indicator	Function
1	Halt/Reset button	Halts the SBC, or resets it, depending on the SBC setup.
2	Power indicator LEDs	Indicates that the various voltage supplies of +3.3 V, +5 V, -5 V, +12 V and -12 V are on.
3	Fan failure indicator	Indicates that the fan has stopped working.
4	Over temperature indicator	Indicates that the temperature in the module unit has reached a critical level (approximately 60°C).
5	Hard Disk Unit **(HDU)** indicator	Indicates that the SBC is accessing the hard disk drive.
6	Status display	Indicates the status of various system parameters, if supported by the SBC.
7	Speaker	Provides the CPU speaker output.
8	Power switch	Switches the module unit on or off.

Figure 1-6: Location of the OCP Controls and Indicators



OCP Connector

A 20-pin connector on the Flexor PCI/ISA Product Family backplanes allows a single connection to be made to the OCP. This connection includes signals controlling the speaker, the disk activity LED, the alphanumeric display, and an AT keyboard connection. Refer to the SBC documentation for information about the signals. Table 1-14 lists the pin values for the OCP connector and Figure 1-7 shows the location of the pins on the OCP connector.

Figure 1-7: Location of Pins on the OCP Connector

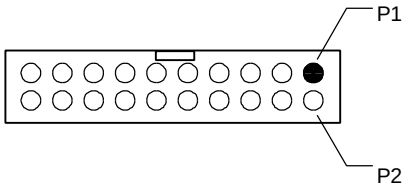


Table 1-14: Pin Values for the 20-Pin OCP Connector

Pin	Value	Pin	Value
1	+5 V	2	Speaker
3	I^2C Data	4	LED cathode
5	GND	6	Reset
7	+12 V	8	-5 V
9	-12 V	10	+3.3 V
11	Over_Temp	12	I^2C clock
13	KB Lock	14	KB data
15	Fan_Status	16	KB clock
17	GND	18	GND
19	+5 V	20	+5 V

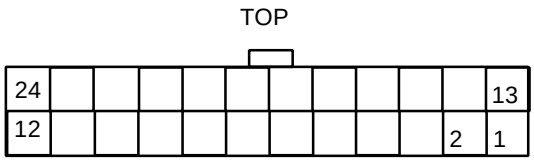
ATX PSU Input Connector

This connector (Molex 39-01-2241) mates with a Molex 39-01-2240 or equivalent. Table 1-15 lists the pin values for this connector and Figure 1-8 shows the location of the pins on the connector.

Table 1-15: Pin Values for the ATX PSU Input Connector

Pin	Value	Pin	Value
1	+3.3 V	13	+3.3 V
2	+3.3 V	14	–12 V
3	GND	15	GND
4	+5 V	16	Power Down
5	GND	17	GND
6	+5 V	18	GND
7	GND	19	GND
8	Power Good	20	–5 V
9	5V_AUX	21	+5 V
10	+12 V	22	+5 V
11	+12 V	23	+5 V
12	GND	24	GND

Figure 1-8: Location of Pins on the ATX PSU Input Connector



Rear Panel Ports, Connectors, and Controls

WARNING

Before connecting a power source, ensure that the voltage supply is within the ranges specified in Table 1-3.

Failure to observe these precautions will result in damage to the module unit and may result in injur y.

WARNUNG

Vor dem Anschluß an eine Stromquelle überprüfen Sie, ob die Versorgungsspannung sich innerhalb des in Table 1-3 genannten Rahmens bewegt.

Nichtbeachtung dieser Vorsichtsmaßnahmen führt zu Beschädigung de r Moduleinheit und kann Verletzungen verursachen.

Table 1-16 lists the ports, connectors, and controls on the rear panel of the module unit and describes their functions. The item numbers in the first column of Table 1-16 refer to the various parts as shown in Figure 1-9. Since the figures represent different variations of the 10-Slot enclosure, some item numbers or parts are not present in the various figures.

Table 1-16: Rear Panel Ports, Connectors, and Controls

Item	Port, Connector or Control	Function
1	Mains power input connector	Enables you to connect the module unit to a mains power socket. Requires cord with IEC320-C13 connector.
2	Option slots	Depending on the options installed, these slots may contain various ports, connectors, controls, or indicators. See your option documentation for more information.
3	Power switch	Switches the PSU on or off.
4	Option ports	Slots may be used for D-type connectors.
5	DC input connector	Enables you to connect the DC power supply module unit to a DC supply. [DC PSU variant requires 3W3 D-Sub connector (supplied). This must be assembled by a qualified person.]
6	Grounding stud	Enables grounding of the main chassis. (This is NOT the negative connection for the DC PSU.)
7	PSU status indicator	Indicates the status of the associated PSU: – RED indicates that the PSU is switched OFF or has failed – GREEN indicates that the PSU is switched ON and functioning normally

Note

The AC power connector supplied is in accordance with the PSU current and regulatory requirements. An appropriate circuit and connector is required. Please consult the local electrical code and Table 1-12.

Figure 1-9 through to Figure 1-10 shows the location of the ports, connectors, and controls on the rear panel of the module units.

Figure 1-9: Rear Panel Ports, Connectors, and Controls for ETM25/27/29-SA Variant Enclosures (Single Mains 100-240 V AC Power Supply)

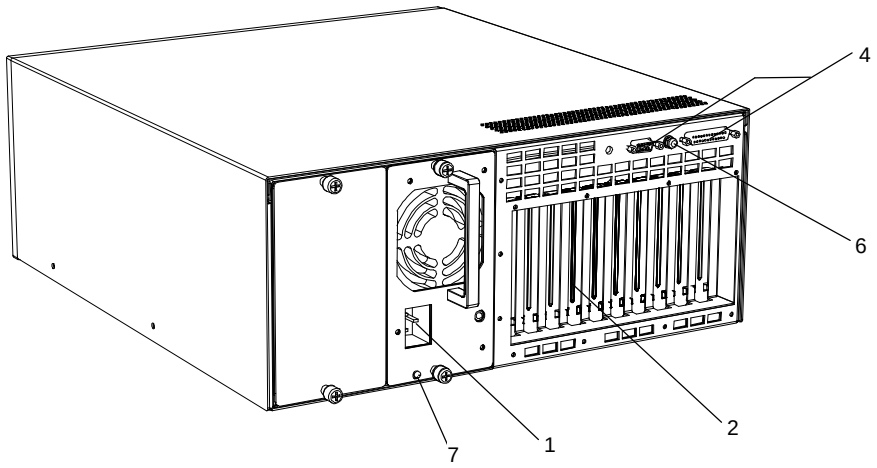
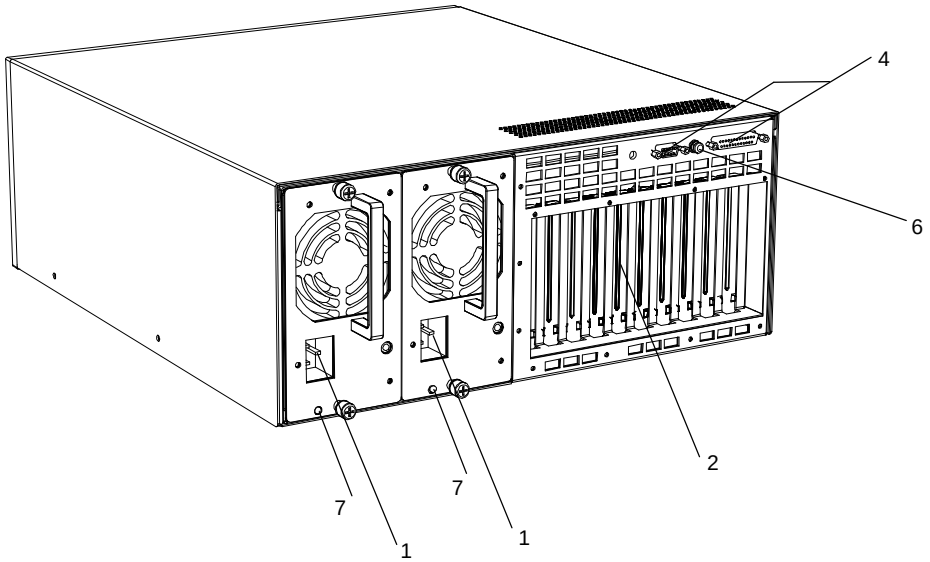


Figure 1-10: Rear Panel Ports, Connectors, and Controls for ETM25/29-DA Variant Enclosures (Dual Mains 100-240 V AC Power Supply)



WARNING

Before connecting a power source, ensure that the voltage supply is within the ranges specified in Table 1-3.

Failure to observe these precautions will result in damage to the module unit and may result in injury.

WARNUNG

Vor dem Anschluß an eine Stromquelle überprüfen Sie, ob die Versorgungsspannung sich innerhalb des in Table 1-3 genannten Rahmens bewegt.

Nichtbeachtung dieser Vorsichtsmaßnahmen führt zu Beschädigung der Moduleinheit und kann Verletzungen verursachen.

Option Support

For more information about the options supported by the SBC you choose, consult the SBC user documentation or contact your SBC supplier.

Choosing a Location for the Module Unit

Choose a location for the 10-Slot enclosure that complies with the environmental specifications listed in Table 1-9. You must leave a minimum clearance of 3 inches at the front and rear of the module unit to allow air to circulate. Air vents on the top, front, side, and rear of the module unit must be left clear to allow adequate air circulation to prevent excessive heat, which can damage the internal components. Table 1-17 lists the various locations where you must not operate the module unit.

Caution

If the module unit is mounted on a rack, then the system integrator is responsible for the mechanical stability of the rack configuration in both of the following situations:

- When the module unit is in the fully home position
- When the module unit is in the fully extended position

The system integrator is also responsible for the thermal design in the enclosure.

Vorsicht

Wenn die Moduleinheit auf einem Gestell montiert ist, dann ist der Systemintegrator in den folgenden Fällen für die mechanische Stabilität der Gestellkonfiguration verantwortlich:

- Wenn die Moduleinheit sich innerhalb des Gestells befindet
- Wenn die Moduleinheit sich außerhalb des Gestells befindet

Der Systemintegrator ist verantwortlich für die thermische Konstruktion im Gehäuse.

Table 1-17: Unsuitable Locations for the Module Unit

Location	Explanation
Dirty or dusty locations	Dirt and dust can damage the module unit components and clog the air vents.
Locations exposed to direct heat or sunlight	Direct heat and sunlight can cause the module unit to overheat and fail.
Unstable locations	See Table 1-2 for the weight of the 10-Slot enclosure. If you are not placing the module unit on the floor, make sure that the location is steady and stable and can support the weight.

Note

Care should be taken whilst handling the module unit. The Power Supply handles located at the rear of the module unit should not be used under any circumstances for lifting or transporting the module unit to different locations; these handles are intended only to aid the process of replacing the Power Supply Unit.

Turning On the Module Unit

WARNING

Before connecting a power source, ensure that the voltage supply is within the ranges specified in Table 1-3.

Failure to observe these precautions will result in damage to the module unit and may result in injury.

WARNUNG

Vor dem Anschluß an eine Stromquelle überprüfen Sie, ob die Versorgungsspannung sich innerhalb des in Table 1-3 genannten Rahmens bewegt.

Nichtbeachtung dieser Vor sichtsmaßnahmen führt zu Beschädigung der Moduleinheit und kann Verletzungen verursachen.

Turn on the module unit as follows:

1. Consult the user manuals for all peripherals that are connected to the module unit to ensure that you follow the appropriate power sequencing procedure for each peripheral.
2. The power indicator LEDs on the operator control panel illuminate (see Figure 1-6). Each LED corresponding to each PSU will be RED until the front OCP switch is set to ON; the LEDs will then change to GREEN.
3. Check the results of the power-up tests, if displayed. See the user information manual for the specific SBC in each module unit for more information on the SBC power-up tests.
4. Boot the operating system. See the operating system documentation for further information on the correct boot procedure to use.

Turning Off the Module Unit

Turn off the module unit as follows:

1. Shut down the operating system, following the instructions in the operating system user information.
2. Set the power switches to the OFF position on all peripherals that are connected to the module unit.
3. Set the power switch on the module unit to the OFF position.

Flexor PCI/ISA Product Family

The ETM25/27/29 enclosures are part of the Force Computers Flexor Family. Using Compaq 64-bit Alpha technology as well as X86-based single board computers (SBCs), the Flexor PCI/ISA Product Family range allows systems designers to use low-cost, high-performance **PCI (Peripheral Component Interface**) and **ISA (Industry Standard Architecture)** peripherals. Responding to the requirements of the **PICMG (PCI Industrial Computer Manufacturers Group)** specification, the Flexor PCI/ISA Product Family provides high flexibility. A Flexor PCI/ISA Product Family enclosure can accommodate a variety of SBCs and supports multiple operating systems. For more information on the Flexor PCI/ISA Product Family, go to the following Web page:

http://www.forcecomputers.com

Systems designers can select options based on the *PCI Local Bus Specification Revision 2.0* or *2.1* in a variety of configurations.

2

Accessing the Internal Components

This chapter describes how to access the internal components in the ETM25/27/29 module unit. You must follow the procedures listed in this chapter to install, remove, or replace any of the components in the module unit. This chapter contains information on:

- Before You Begin
- Accessing the Module Unit
- Removing the Module Unit Cover
- Removing the Disk Tray
- Removing the Front Bezel
- Reassembling the Module Unit

Before You Begin

This section describes important information that you must know before accessing the internal module unit components. It describes:

- Preparing to Access Internal Components
- Equipment Requirements
- Antistatic Precautions

Preparing to Access Internal Components

Before you remove the module unit cover, follow these steps:

1. Shut down the operating system following the instructions in the operating system documentation.
2. Set the power switch to the OFF position on all peripherals connected to the module unit.
3. Set the power switch to the OFF position on the module unit.

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Equipment Requirements

To properly complete the procedures in the remainder of this manual, you must have the following equipment:

- Flat-bladed screwdriver (4 mm tip size or similar)
- Philips screwdriver (number 1 tip size or similar)
- Wire cutters
- Small tie wraps
- Antistatic wriststrap

Antistatic Precautions

Force Computers recommends that you use an antistatic wriststrap when handling internal components. In addition, follow these rules:

- Do not allow any circuit board or component to touch non-conductors.
- Ensure that your clothing does not make contact with any circuit board or component.
- Keep any loose circuit boards inside or on top of their special conductive plastic wrappers.
- Before you touch a loose circuit board or component, ensure that any static electricity is discharged.

Accessing the Module Unit

This section provides information on accessing the module unit. To access the module unit you must do one of the following actions, depending on your model type:

- Dismount a module unit from the rack frame
- Remove the outer cover of a module unit

Dismounting a Module Unit from the Rack Frame

WARNING

When accessing the module unit mounted on a rack, take precautions to ensure that the rack does not overbalance.

WARNUNG

Beim Umgang mit einer auf einem Gestell montiert en Moduleinheit ist darauf zu achten, daß das Gestell nicht kippt.

To dismount the module unit, carry out the following steps:

1. Remove all cables from the rear of the module unit.
2. Ensure that all other equipment installed in the rack is fully pushed back.
3. Slide the module unit forward on the chassis slides, until the slides lock.
4. Release the chassis slides by pressing the slide locks on each side of the module unit.
5. Using a lift, pull the module unit free of the rack rails.
6. Place the module unit on a level, stable surface.

Removing the Outer Cover of a Module Unit

Carry out the following steps to remove the outer cover of a module unit (see Figure 2-1 or Figure 2-2):

1. Place the module unit on a flat secure surface.
2. Remove the four screws **(2)** that secure the outer cover **(1)** to the module unit.
3. Lift the outer cover from the module unit.

Figure 2-1: Removing the Outer Cover of a Vertical (Tower) Module Unit

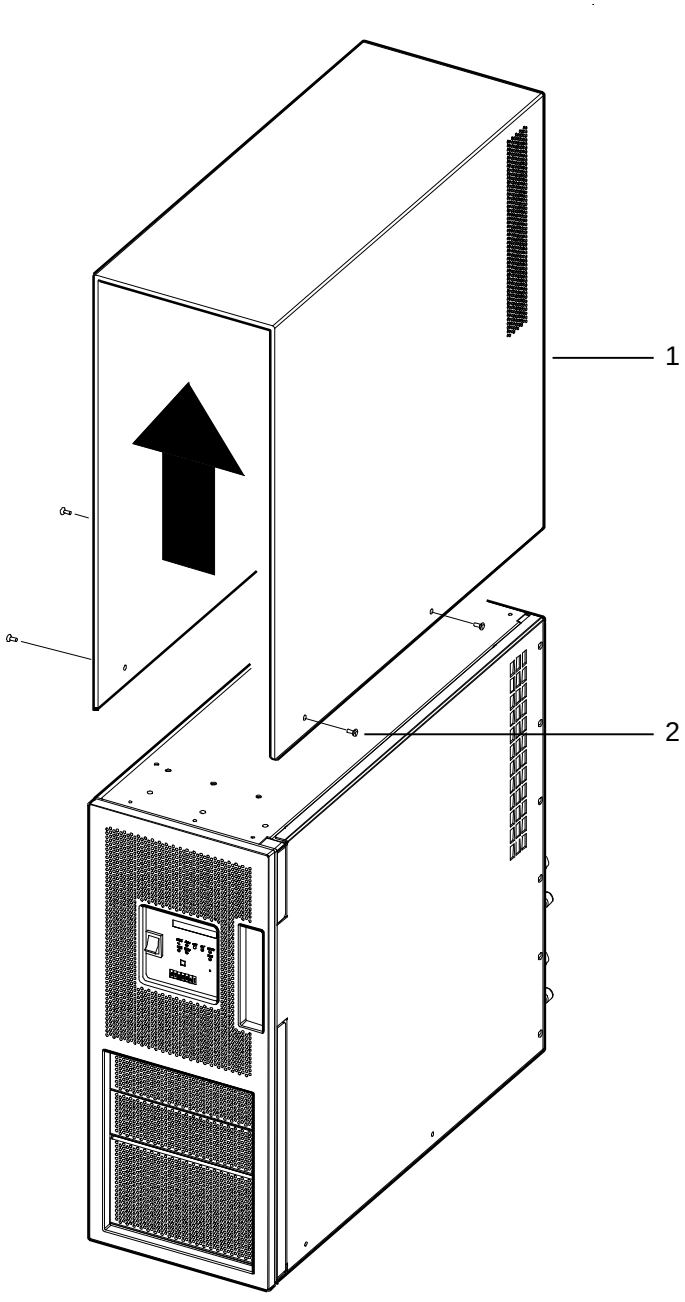
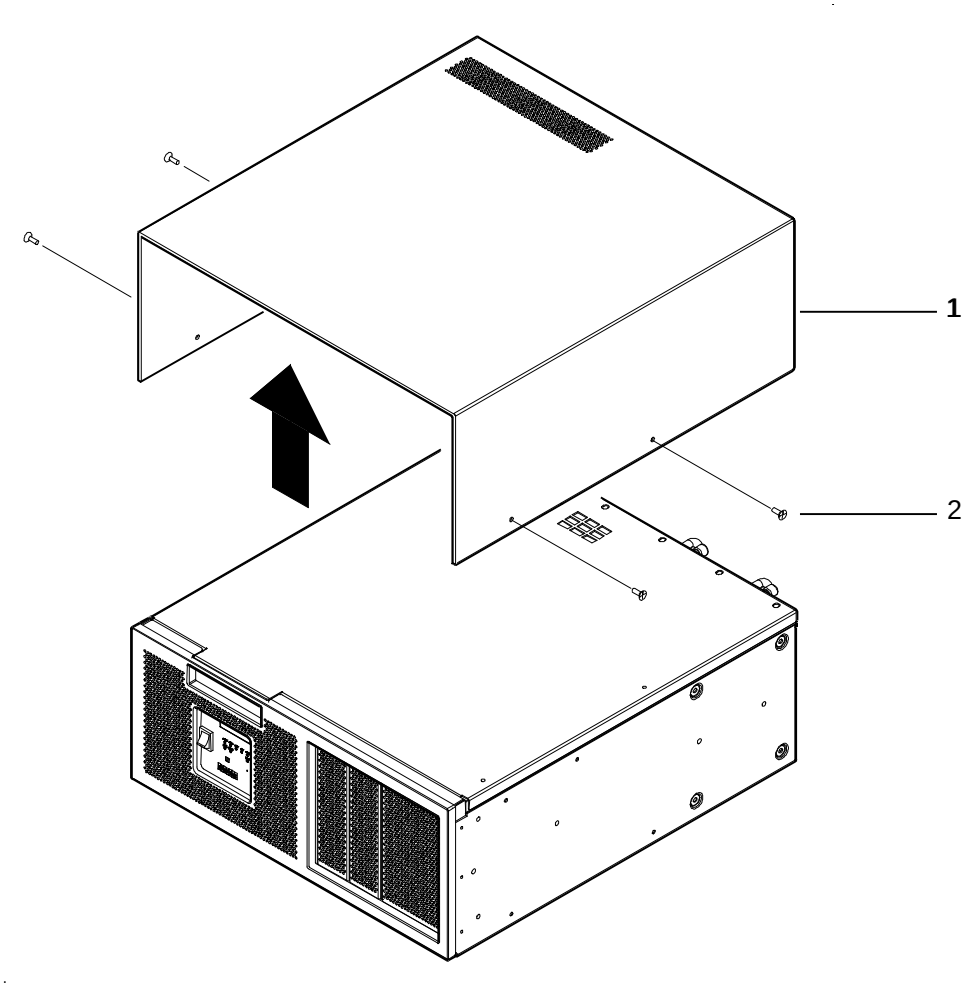


Figure 2-2: Removing the Outer Cover of a Horizontal (Desktop) Module Unit



Removing the Module Unit Cover

This section describes how to remove the module unit cover. To remove the module unit cover, carry out the following steps (see Figure 2-3):

WARNING

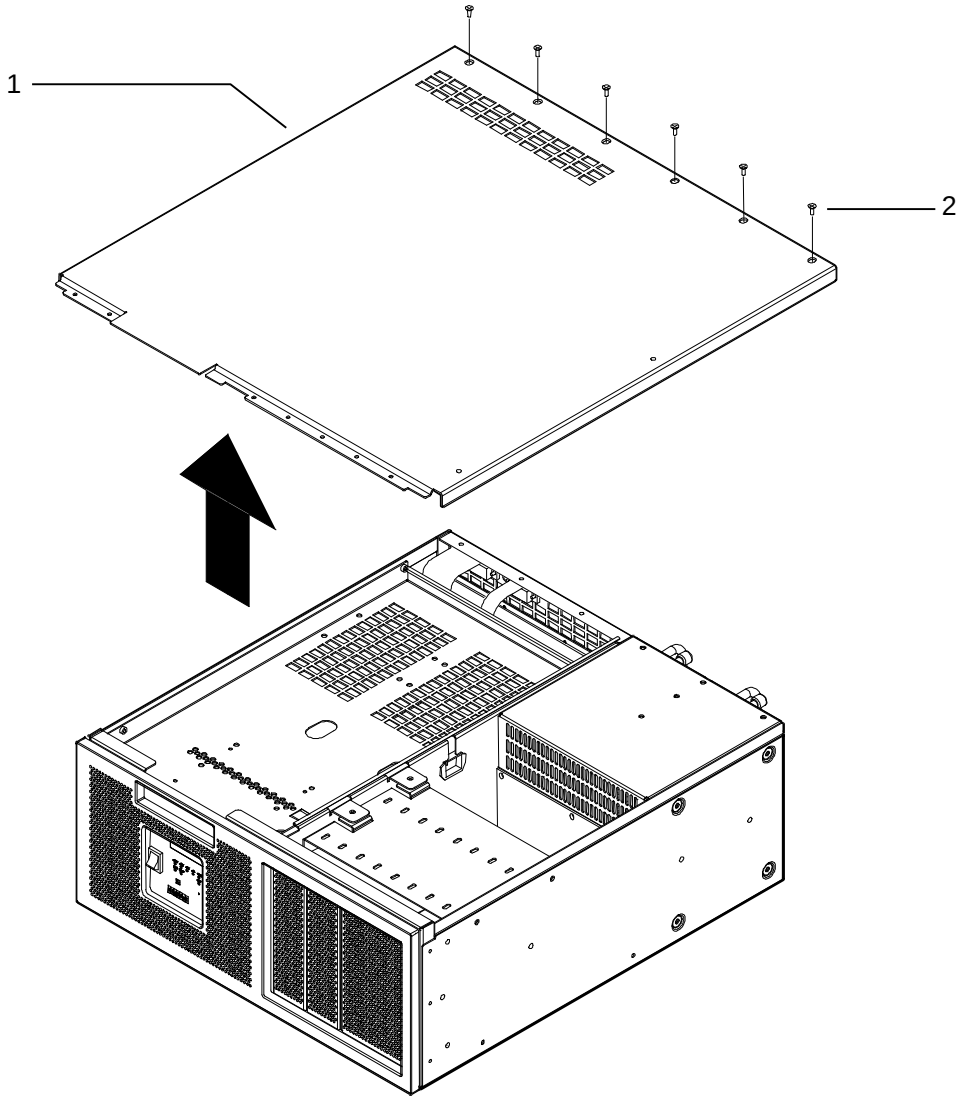
Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

1. Depending on the version, remove the outer cover, or optionally remove the module unit from the rack. See the section *Accessing the Module Unit* earlier in this chapter.
2. Remove the six screws **(2)** that secure the module unit cover **(1)** to the chassis.
3. Lift up the cover slightly and slide it towards the rear of the chassis to disengage the EMC strips at the enclosure front. Once the EMC strips clear, the module unit cover can be lifted clear of the chassis.

Figure 2-3: Removing the Module Unit Cover



Removing the Disk Tray

This section describes how to remove the disk tray from the chassis (see Figure 2-4 and Figure 2-6).

1. Remove the disk tray **(1)** by first removing the screws **(2).**
2. Slide the disk tray to the back of the enclosure to disengage the disk tray locking feature from the chassis. The disk tray can then be lifted vertically and away from the chassis.

Figure 2-4: Removing the Disk Tray from ETM25 & 27 Enclosures

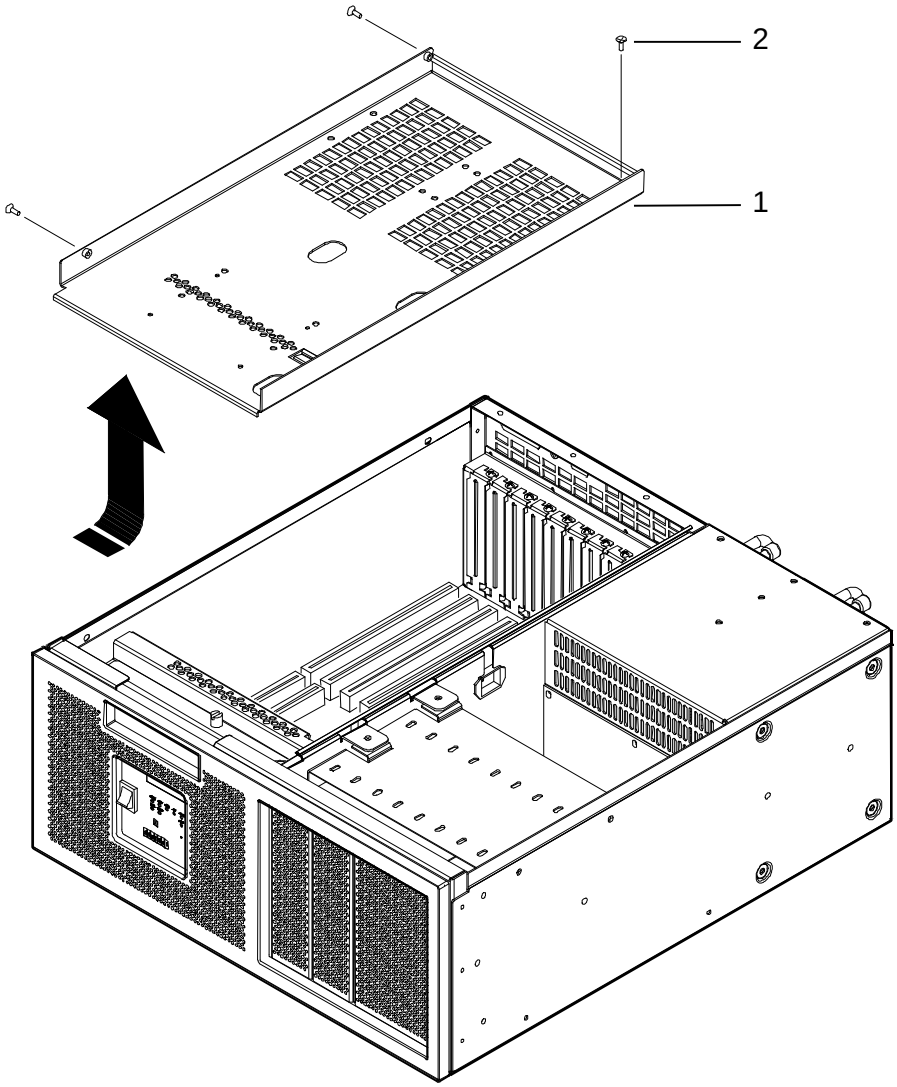
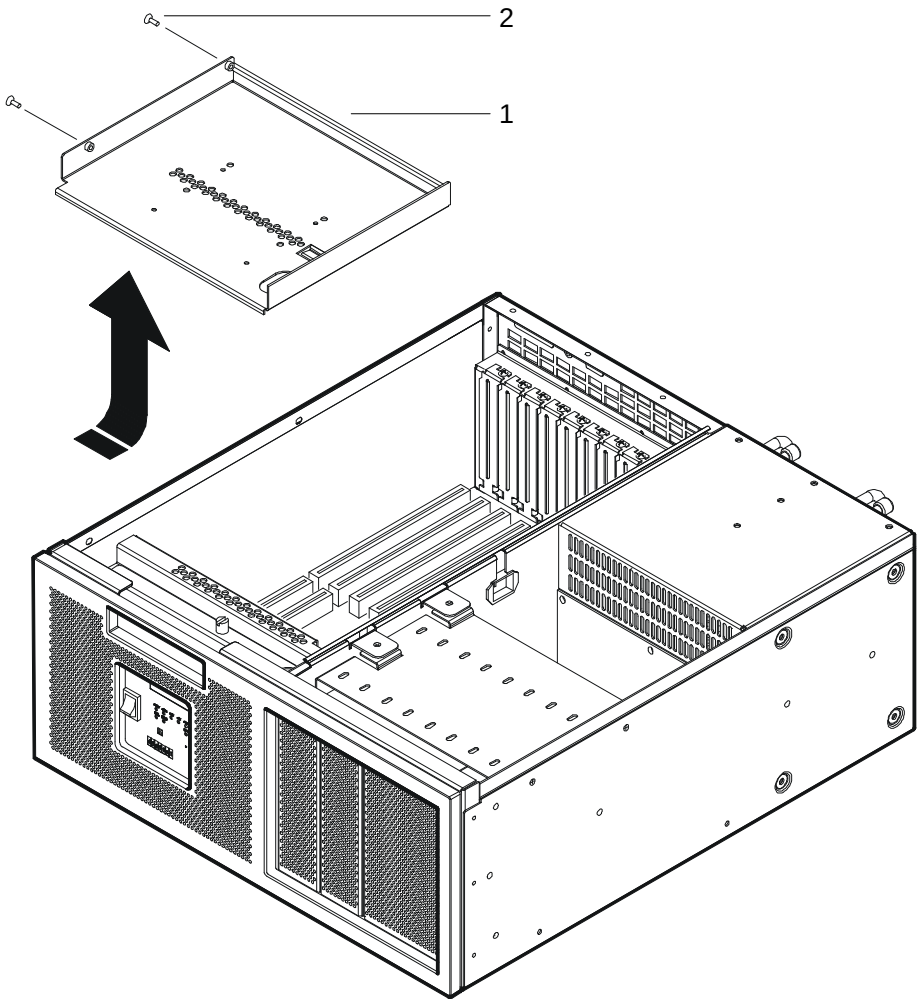


Figure 2-5: Removing the Disk Tray from ETM29 Enclosures

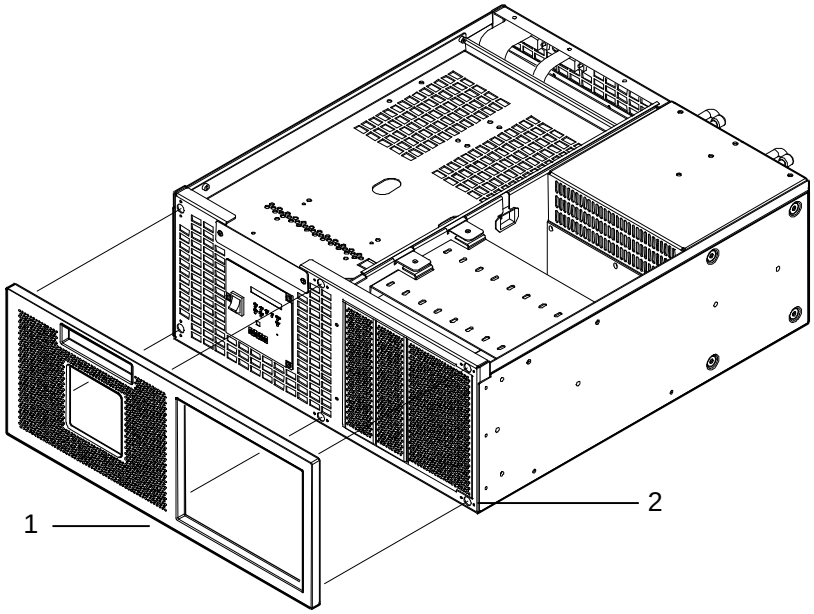


Removing the Front Bezel

This section describes how to remove the front bezel from the chassis (see Figure 2-6).

1. Remove the front bezel **(1)** by carefully prising it from the chassis at an accessible corner using a flat-bladed screwdriver. The bezel is secured to the enclosure using six spring-retained ball studs **(2)**. After several studs are released, the bezel can be pulled away from the chassis. Take care not to scratch the painted finish of the bezel.
2. You can remove the front bezel together with the air filter. You can then check the air filter for cleanliness.

Figure 2-6: Removing the Front Bezel from the Enclosure



Reassembling the Module Unit

Reassemble the module unit as follows:

1. Make sure that all the internal cables are connected correctly.
2. Replace the disk tray by sliding it forward onto the locking feature on the fan plenum and securing the 2/3 screws.
3. Replace the module unit cover by sliding it into the front of the chassis ensuring that the EMC gaskets seat under the chassis front edge. Then push down the sides of the module unit cover until it is seated at the back. The screw holes at the rear should now line up with the threaded holes in the main chassis.
4. Tighten the six screws securing the module unit cover to the chassis.
5. Replace the front bezel frame and air filter. The bezel frame assembly will snap into the front of the chassis via the ball studs on the frame and the receptacles in the front face of the chassis.
6. Depending on the module unit version, replace the unit outer cover, or reinstall the module unit in the rack, by reversing the steps in the section *Accessing the Module Unit* in this chapter.
7. Reconnect any of the external cables that were disconnected from the module unit.
8. Set the power switches to the ON position on all peripherals connected to the module unit.
9. Set the power switch on the front operator control panel switch to the ON position.
10. If necessary, use firmware or operating system commands to test the operation of the module unit.

3

Installing and Removing Storage Drives

This chapter describes how to remove and install storage drives in the ETM25/27/29 module unit. This chapter contains information on:

- Drive Bays
- Removing Internal Disk Tray Devices
- Installing Internal Disk Tray Devices
- Removing a Drive Device from the Front Access Drive Bays
- Installing a Drive Device into the Front Access Drive Bays
- Removing a Carrier from a 3.5-Inch Storage Device
- Adding a Carrier to a 3.5-Inch Storage Device
- Cable Assemblies for Connecting Storage Devices
- Cable Routing to Internal Drive Configurations

Drive Bays

This section provides information on the drive bays in the ETM25/27/29 kernel. Figure 3-1 and Figure 3-2 show the drive bays for storage devices in the main CPU enclosure. Table 3–1 lists the devices supported in each enclosure.

Table 3–1: Supported Drive Bay Configurations

Drive Bays	Supported Devices
Front access drive bays	The following are the supported devices: • Up to four 1/2 height 5.25-inch drive options using standard mounting slots. Can include CD-ROM or 3.5-inch floppy or similar drive, **or** • Up to five 1/3 height 3.5-inch drive options using Dense Disk Pak (DDP) enclosure hardware (allows forced cooling of up to five 1/2 height drives) plus one 1/2 height 5.25-inch drive option using standard mounting slots. These can include CD-ROM or 3.5-inch floppy or similar drive.
Internal tray drive bay	• Up to three 1/3 height 3.5-inch disk drive options (Front position only on ETM29), **or** • Up to two 1/3 height 3.5-inch disk drive options (Unavailable on the ETM29) plus one floppy or similar drive.

Figure 3-1: Main Enclosure Drive Bays, Default Configuration

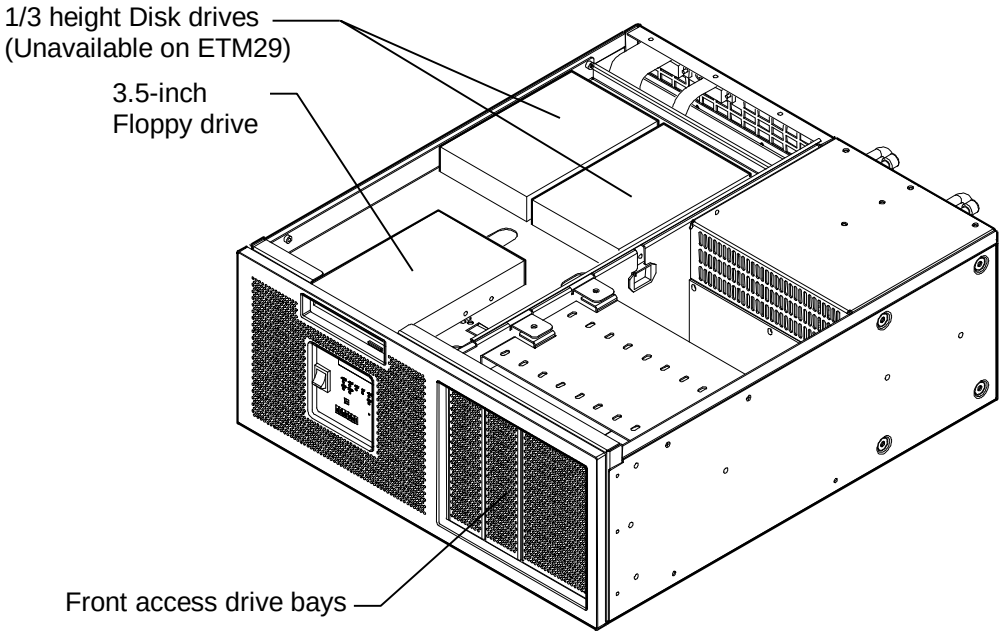
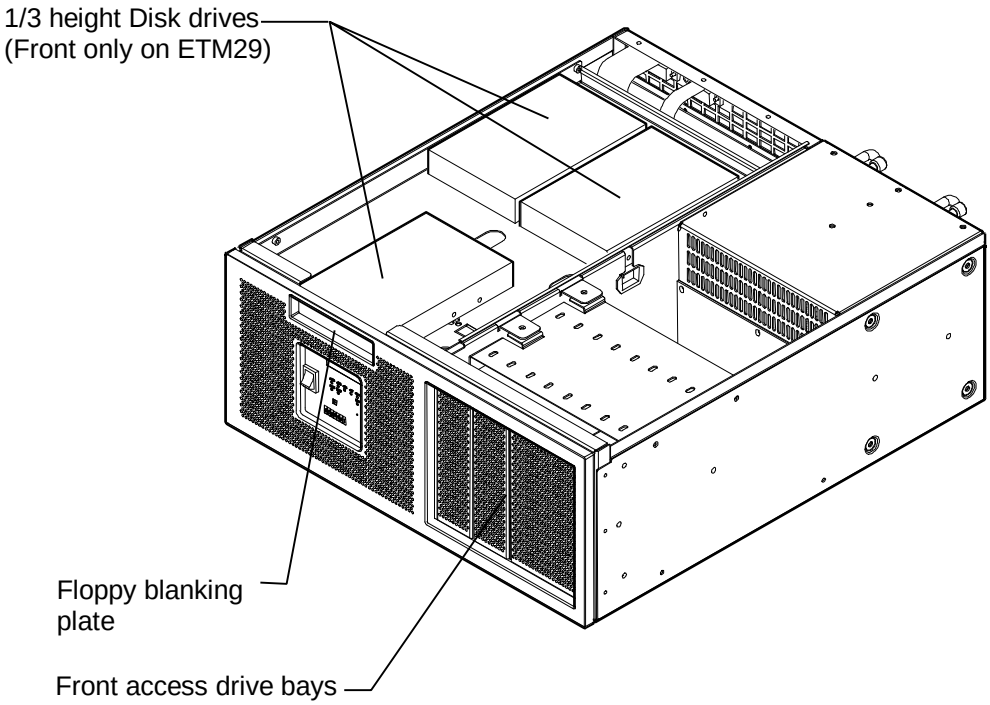


Figure 3-2: Main Enclosure Drive Bays, Alternative Configuration



Removing Internal Disk Tray Devices

This section describes how to remove internal disk tray devices.

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

You can remove storage devices from the internal tray as follows (see Figure 3-3 and Figure 3-4):

1. Follow the instructions in Chapter 2 to do the following:
   - Dismount the module unit from a rack and remove the front bezel or remove the module unit out cover and front bezel.
   - Remove the inner cover from the enclosure.
2. Follow the instructions in Chapter 2 to remove the disk drive tray with drives attached from the main enclosure.
3. Note the location and orientation of all cables attached to the storage device drive.

4. Remove the power and communications cables from the rear of the drives to be removed.
5. Remove the screws **(3)** that secure the drives **(2)** to the tray **(1)** and remove the drive from the tray.
6. To reassemble the module unit, reverse the above instructions and follow the instructions in Chapter 2 to reassemble the module unit.

Caution

Take care when handling the storage device. The active components on the storage device are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit dem Speicherlaufwerkgerät. Die Wirkkomponenten auf dem Speicherlaufwerkgerät dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 3-3: Removing an Internal Drive from the Disk Tray, Default Configuration

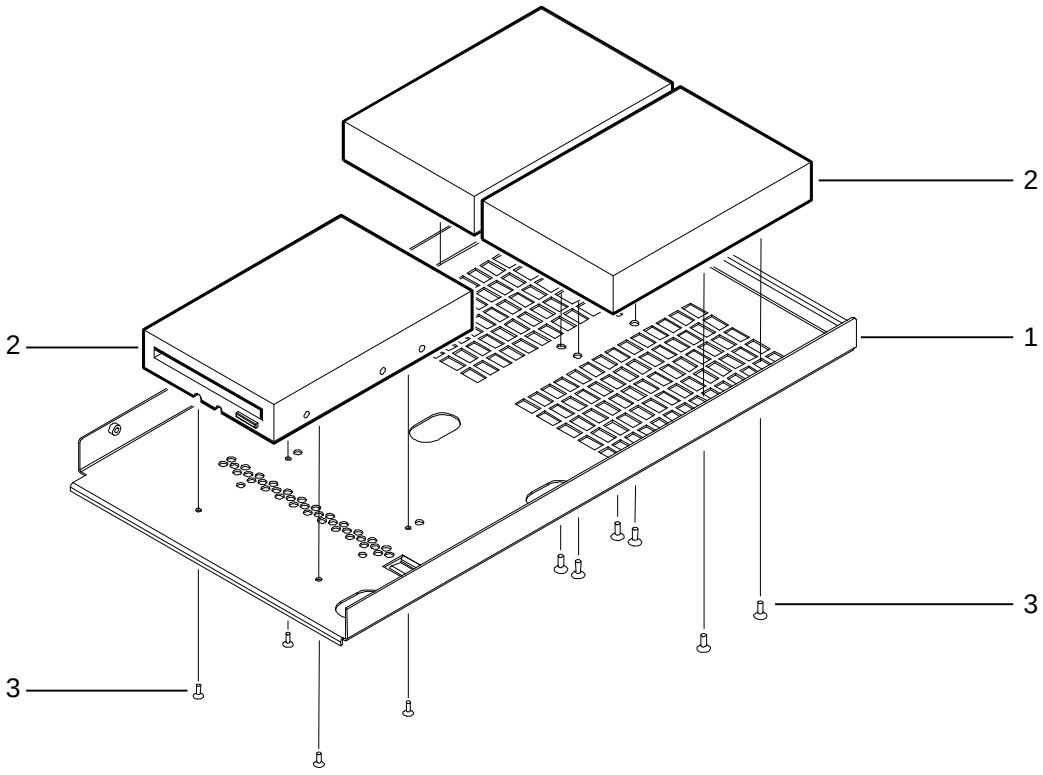
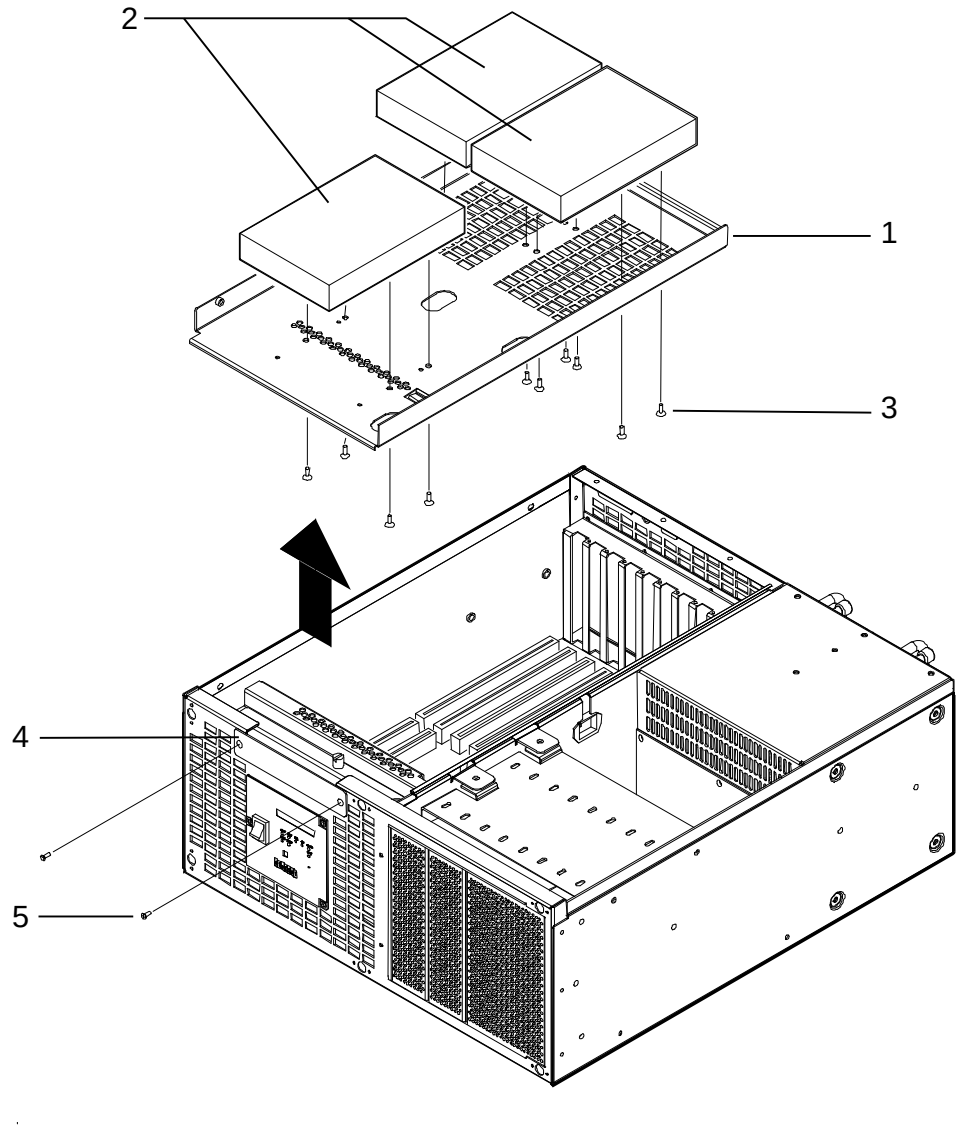


Figure 3-4: Removing an Internal Drive from the Disk Tray, Al ternative Configuration



Installing Internal Disk Tray Devices

To install a storage device in the internal disk tray, reverse the steps in the section *Removing Internal Disk Tray Devices*. Ensure that, where no floppy or similar drive is fitted, the floppy blanking plate is always refitted to maintain the EMC compliance of the enclosure.

Removing a Drive Device from the Front Access D rive Bays

This section describes how to remove devices from the front access drive bays.

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

You can remove a storage device from a front access drive bay as follows (see Figure 3-5 and Figure 3-6):

1. Follow the instructions in Chapter 2 to do the following:
   - Remove the outer cover of the module unit.
   - Dismount the module unit from a rack.
   - Remove the module unit cover.
2. Note the location and orientation of all cables attached to storage devices.
3. Remove the power and communications cables from the rear of each drive.
4. Remove the screws **(2)** that secure the drive **(1)** or the drive carrier **(3)** to the main enclosure and remove the drive or carrier with attached drives.
5. For drives that are held in a carrier, remove the carrier screws to separate the drive from the carrier (see the section *Removing a Carrier from a 3.5-Inch Storage Device*).
6. To reassemble the module unit, reverse the above instructions and follow the instructions in Chapter 2 to reassemble the module unit.

Caution

Take care when handling the storage device. The active components on the storage device are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit dem Speicherlaufwerkgerät. Die Wirkkomponenten auf dem Speicherlaufwerkgerät dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 3-5: Main Enclosure Front Access Drive Bays, Default Configuration

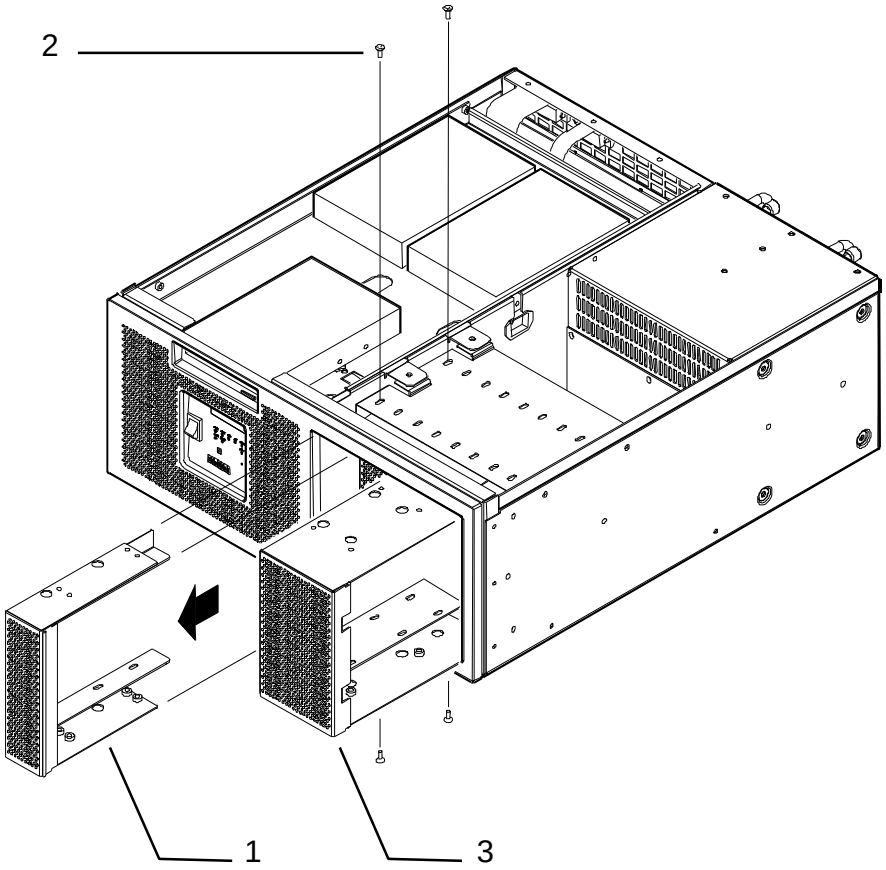
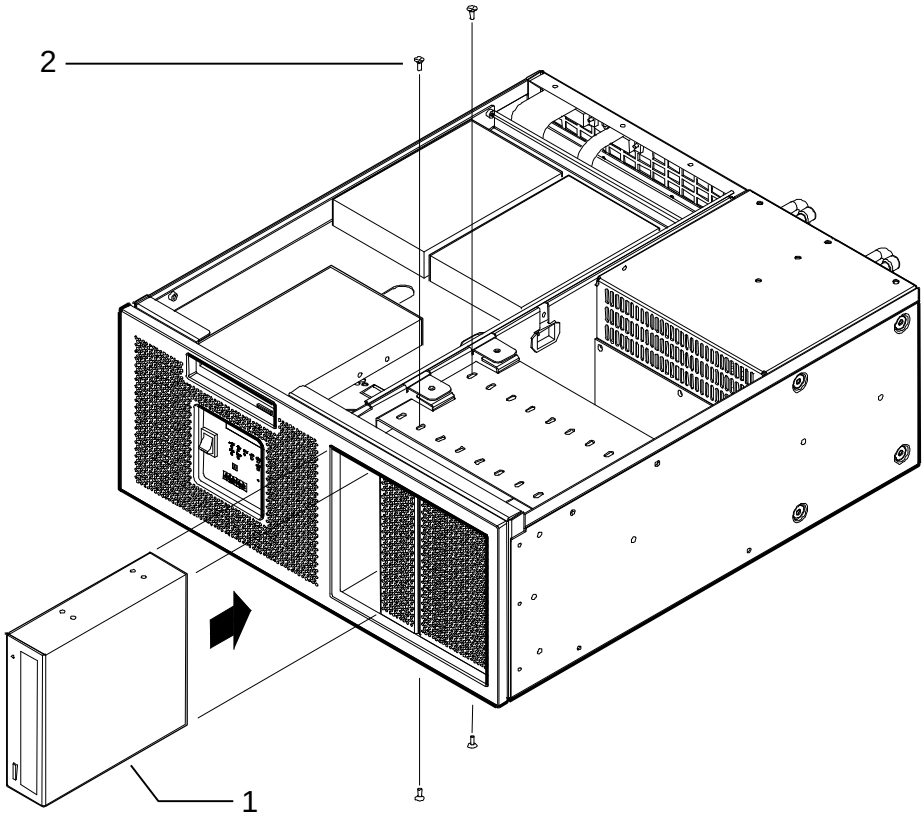


Figure 3-6: Main Enclosure Front Access Drive Bays, Alternative Configuration



Installing a Drive Device into the Front Access Drive Bays

To install a storage device into a front access drive bay, reverse the steps in the section *Removing a Drive Device from the Front Access Drive Bays.*

Removing a Carrier from a 3.5-Inch Storage Device

This section describes how to remove a carrier from a 3.5-inch storage device. You can remove the 5.25-inch carrier from a 3.5-inch storage device as follows (see Figure 3-7):

1. Remove the six screws **(2)** securing the carrier **(1)** to the storage device **(3)**.
2. Remove the storage device from the carrier.

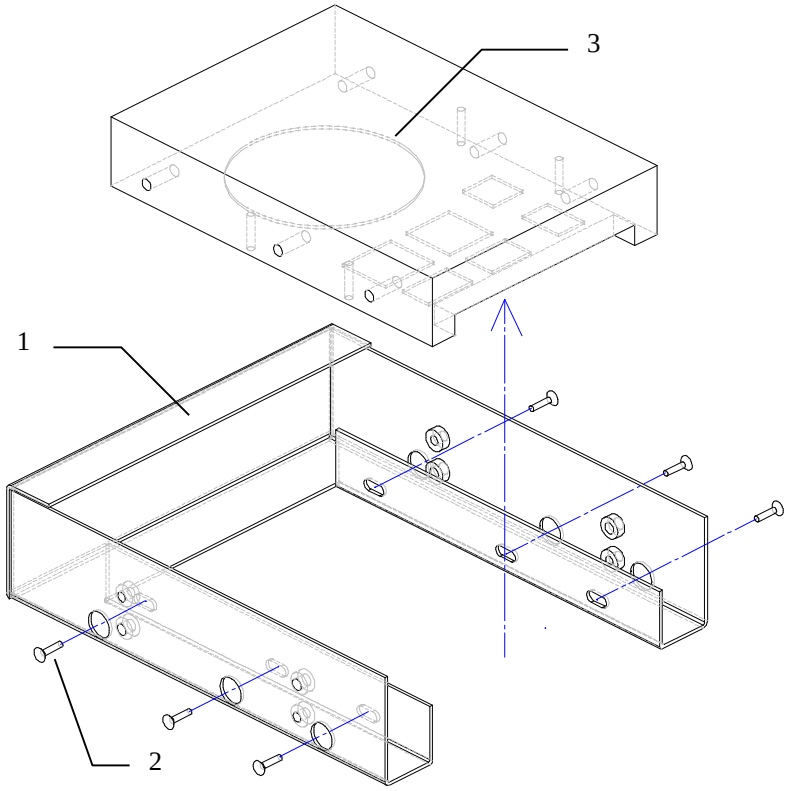
Caution

Take care when handling the storage device. The active components on the storage device are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit dem Speicherlaufwerkgerät. Die Wirkkomponenten auf dem Speicherlaufwerkgerät dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 3-7: Removing a 5.25-inch Carrier from a 3.5-Inch Storage Device



Adding a Carrier to a 3.5-Inch Storage Device

To convert a 3.5-inch storage device for use in a 5.25-inch drive bay, add a 5.25-inch carrier by reversing the steps in the section *Removing a Carrier from a 3.5-Inch Storage Device.*

Cable Assemblies for Connecting Storage Devices

Force Flexor family enclosures are orderable with individual cables, to enhance cost effectiveness.

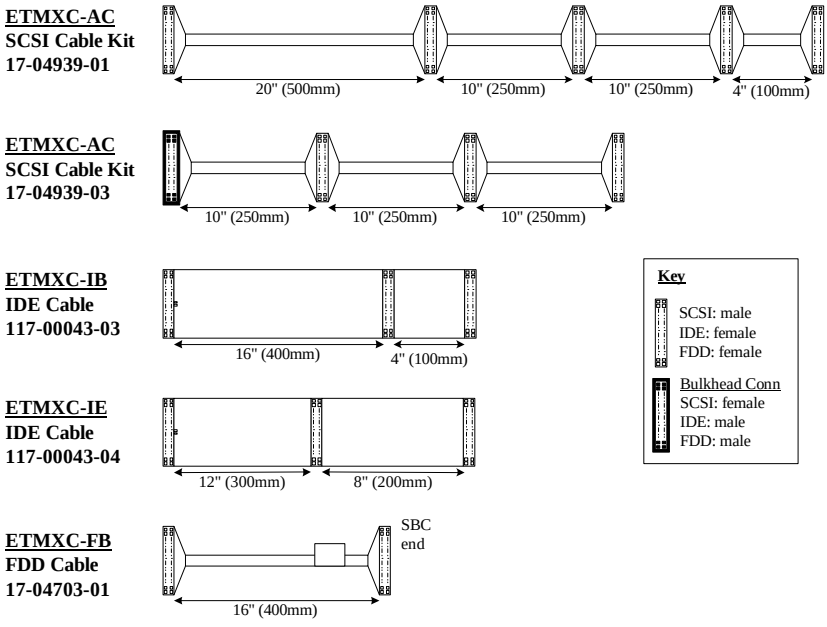
Table 3-2 Individual Cables for Flexor ETM25/27/29

Part Number	Qty	Option Ordered	Cable Description
ETMXC-FB (17-04703-01)	1	1.44Mb Floppy Drive	0.4m taped ribbon floppy cable
ETMXC-IB (117-00043-03)	1	For up to 2 IDE Devices	3-Drop flat ultra ATA IDE cable (main drive bay)
ETMXC-IB (117-00043-03)	2	For more than 2 IDE Devices	3-Drop flat ultra ATA IDE cable (main drive bay)
ETMXC-IE (117-00043-04)	2	For 2 IDE devices in tray	3-Drop flat ultra ATA IDE cable (top tray connection)
ETMXC-AC (17-04939-01, -03)	1	Wide SCSI Device	2 piece 7-drop wide SCSI cable with terminator
ETMXC-CG	1*	Narrow SCSI Device	Wide 68-pin (female) to Narrow 50-pin (female) SCSI converter
ETMXC-CA	1	Alpha or Intel SBC	Parallel / Serial Port bulkhead bracket and cables

* Order 1 converter for each Narrow device on the wide SCSI bus.

Figure 3-8: Cable Assemblies for Connecting Storage Devices

Figure 3-8 shows the common I/O cable assemblies used to connect storage devices in the ETM25/27/29 kernels (approximate dimensions used).

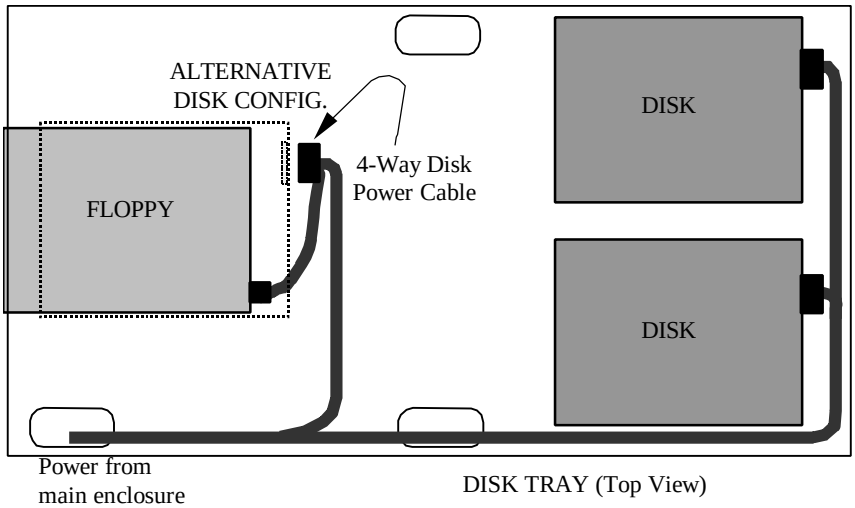


Cable Routing to Internal Drive Configurations

This section provides information on typical cable routing to the internal drives. Figure 3-9 through Figure 3-15 show diagrams of the suggested routing of cables for a variety of configurations of internal storage devices in the ETM25/27/29 kernels. The cable routings shown are those preferred, providing efficient routing between device drives and minimizing the possibility of trapping or damaging the cable assemblies. Take care when routing cables and installing or removing components to avoid cable damage.

Figure 3-9 shows the routing of the 4-way power cable in the disk tray in the top section of the main enclosure. The option is available to power a floppy or similar drive and one disk in ETM25/27/29 kernels and an additional two disks in ETM25/27 kernels.

Figure 3-9: Power Cable Routing in the Internal Disk Tray



The ETM25/27/29 kernel cabling may require combinations of two or more of the configurations shown. SCSI cabling must be terminated only at the ends of the cable. Where a terminator is shown on the cable, there must be no termination on the associated drives.

Figure 3-10 shows the cable routing to a floppy drive in the internal disk tray using the cable 17-04703-01.

Figure 3-10: Cable Routing to a Floppy Drive in the Internal Disk Tray

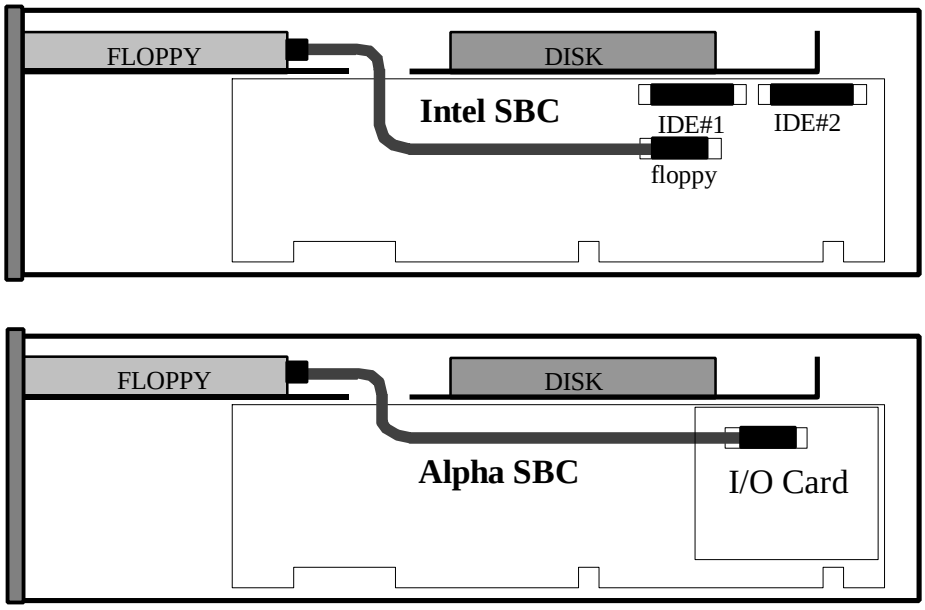


Figure 3-11 shows the cable routing to a disk drive in the internal disk tray using the IDE cable 117-00043-04 (ETMXC-IE).

Figure 3-11: Cable Routing to a Disk Drive in the Internal Disk Tray

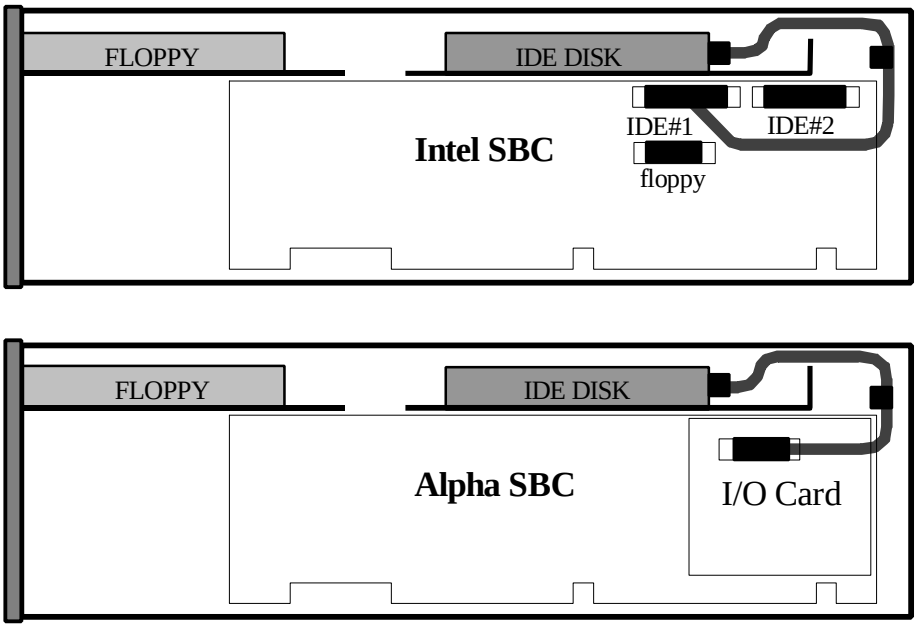


Figure 3-12 shows the cable routing to disk drives and a CD-ROM in the front access drive bays, using a wide SCSI cable 17-04939-01, terminator 12-50058-01 (both contained in ETMXC-AC cable kit) and 17-04009-01 wide SCSI cable to narrow SCSI device adapter (ETMXC-CG).

Figure 3-12: Cable Routing to Disk Drives and a CDROM in the Front Access Drive Bays

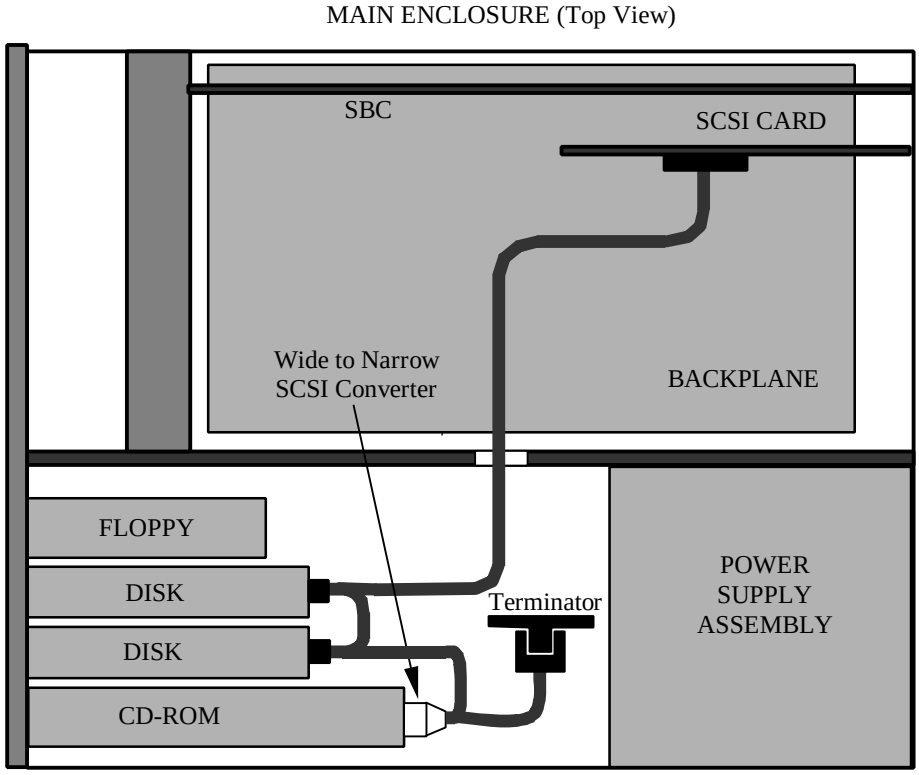


Figure 3-13 shows the cable routing to a CD-ROM drive and disk drives in the front access drive bays, using two 117-00043-03 IDE cables (ETMXC-IB).

Figure 3-13: Cable Routing to Disk Drives and CD-ROM Drive in the Front Access Drive Bays

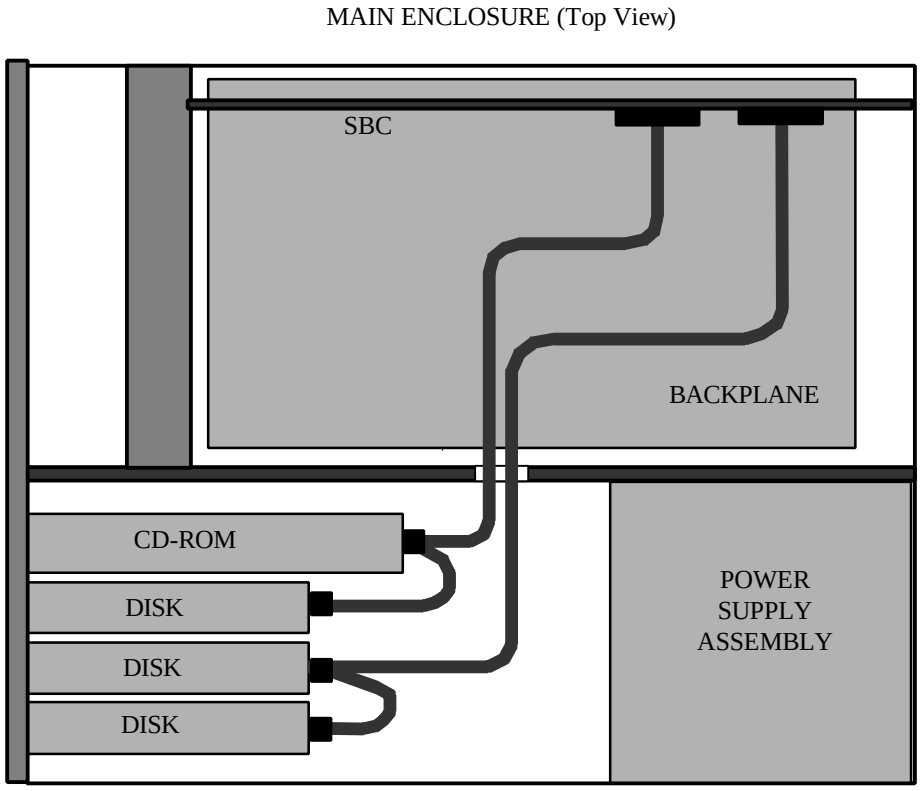


Figure 3-14 shows the cable routing to 2 disk drives in the internal disk tray (ETM25 and 27 only) and a CD-ROM drive and disk drive in the front access drive bays, using IDE cables 117-00043-04 and 117-00043-03 respectively.

Figure 3-14: Cable Routing to Disk Drives in the Internal Disk Tray and a CD-ROM Drive and a Disk Drive in the Front Access Drive Bays

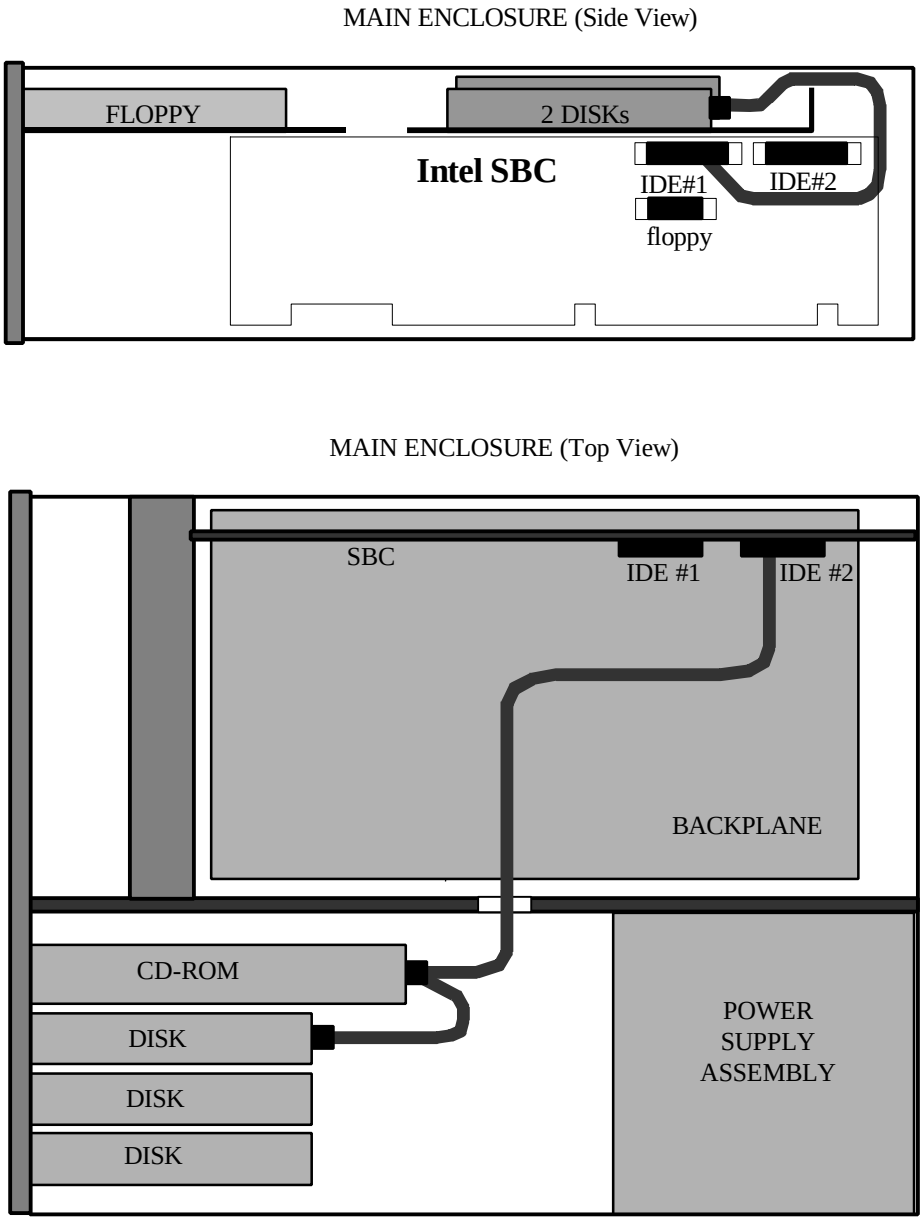
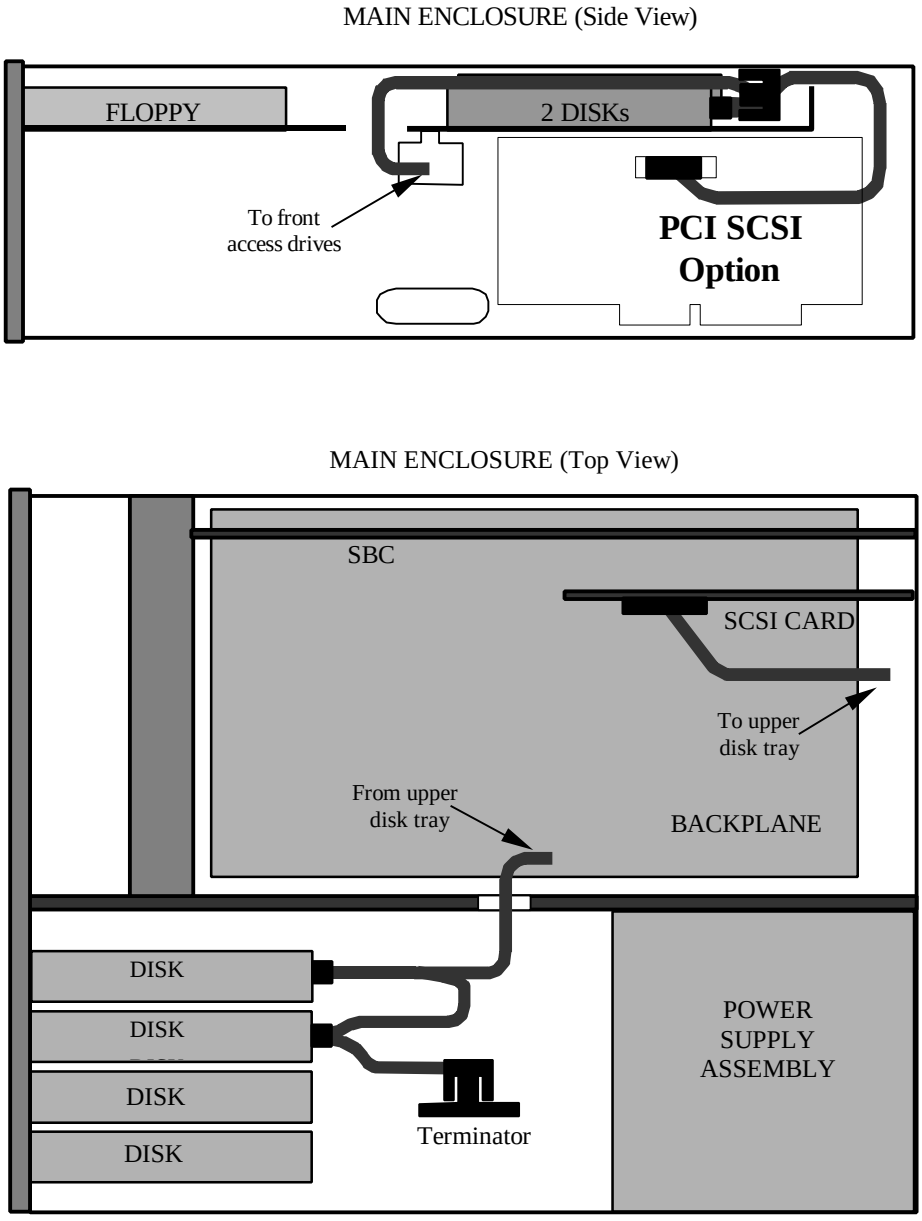


Figure 3-15 shows the cable routing to two disk drives in the internal disk tray (ETM25 and 27 only) and two disk drives in the front access drive bays, using ultra wide SCSI cables 17-04939-01 and 17-04939-03 and SCSI terminator 12-50058-01 (all contained in cable kit ETMXC-AC).

Figure 3-15: Cable Routing to Two Disk Drives in the Internal Disk Tray and a CD-ROM Drive and a Disk Drive in the Front Access Drive Bays



4

Installing and Removing Option Boards

This chapter describes how to install and remove the option boards and the SBC that are used with the ETM25/27/29 module unit. This chapter contains information on:

- Option Board Configurations
- Installing a PCI or ISA Option Board
- Removing a PCI or ISA Option Board
- Installing an SBC
- Removing an SBC

Option Board Configurations

This section provides information on option board configurations. The module unit has 10 external openings that can accommodate option boards. One or two of these openings are reserved for the SBC, the remainder can be used by a mixture of PCI and ISA options. Consult the manuals for the SBC for any additional requirements concerning power, adequate airflow provision, and any other matters. You can install various combinations of PCI and ISA option boards onto the Force Computers Flexor Family backplane **(1)** (see Figure 4-1). Installation of the SBC can only be made in the SBC connectors **(2)** located on the backplane.

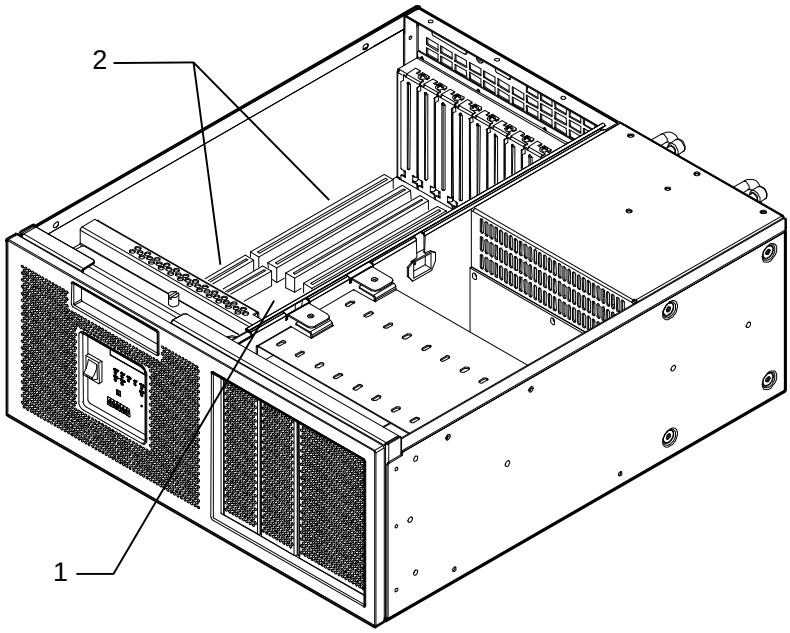
Note

The rear panel of the enclosure chassis has a series of gaskets that must connect with the metal brackets of options cards. Take care when inserting the option cards so that they connect with these gaskets. If the option cards do not make proper contact with the gaskets, unacceptable electromagnetic interference may be caused. Care must also be taken when removing or installing the option cards.

Note

The procedures for installing and removing option boards apply equally to both PCI and ISA option boards. However, the illustrations in the following sections only show ISA option boards and SBCs.

Figure 4-1: SBC Connector Location on the Backplane



Note

The illustrations in this chapter show a typical backplane for reference purposes.

Installing a PCI or ISA Option Board

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Install a PCI or ISA option board as follows (see Figure 4-2):

1. Follow the instructions in Chapter 2 to:
   - Dismount the module unit from a rack.
   - Remove the module unit outer cover.
   - Remove the module unit cover.
2. Follow the instructions in Chapter 3 to remove the drive tray from the module unit.
3. Select a vacant option board connector on the Force Computers Flexor backplane. You must select a connector that is appropriate for the type of option board that you are installing.
4. Remove the screw **(2)** that secures the slot cover **(1)** to the chassis.
5. Remove the slot cover from the chassis and store it for future use.
6. Carefully install the option board **(4)** into the appropriate connector on the Force Computers Flexor backplane **(3)** and press it firmly into place. Depending on the option, you may wish to install some cabling now.
7. Secure the option board to the chassis using the screw you removed previously.
8. Connect all required cables to the internal or external ports on the option board.
9. Follow the instructions in Chapter 3 and Chapter 2 to reassemble the module unit.

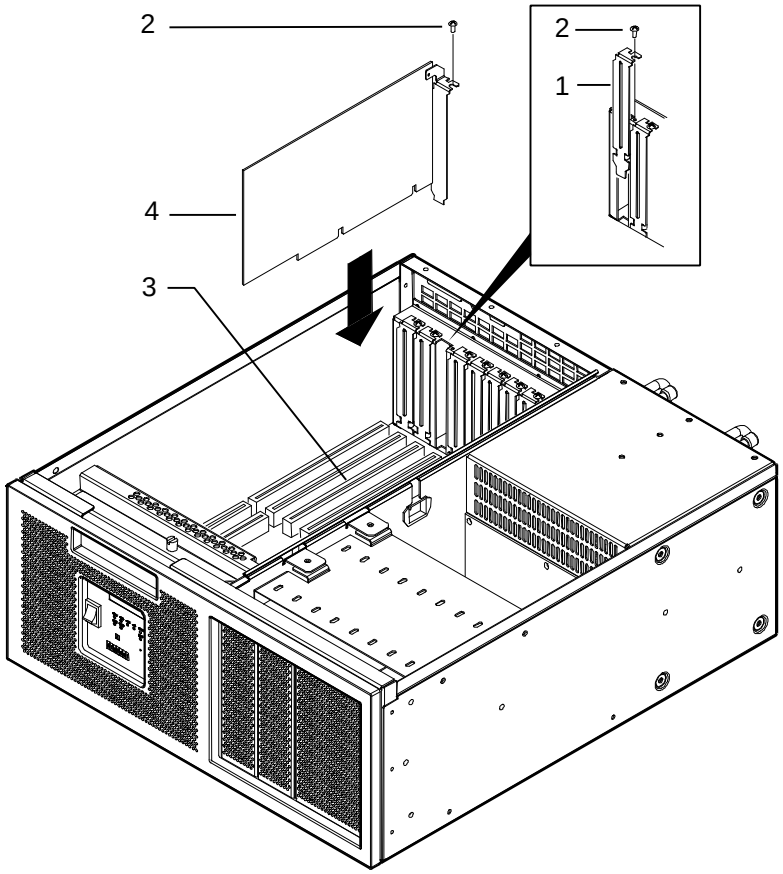
Caution

Take care when handling the option board. The active components on the option board are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit der Option-Platte. Die Wirkkomponenten auf der Option-Platte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 4-2: Installing an Option Board



Removing a PCI or ISA Option Board

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove a PCI or ISA option board as follows (see Figure 4-3):

1. Follow the instructions in Chapter 2 to:
   - Dismount the module unit from a rack
   - Remove the module unit outer cover
   - Remove the module unit cover
2. Follow the instructions in Chapter 3 to remove the drive tray from the module unit.
3. Note the location and orientation of all cables connected to the option board **(1).**
4. Disconnect any cables connected to the internal or external ports on the option board.
5. Remove the screw **(2)** securing the option board to the chassis.
6. Carefully disconnect the option board from the connector on the backplane and remove the option board from the module unit.
7. If you intend leaving the option connector vacant, install a slot cover **(3)** and secure it to the chassis using the screw that you removed previously.
8. Follow the instructions in Chapter 3 and Chapter 2 to reassemble the module unit.

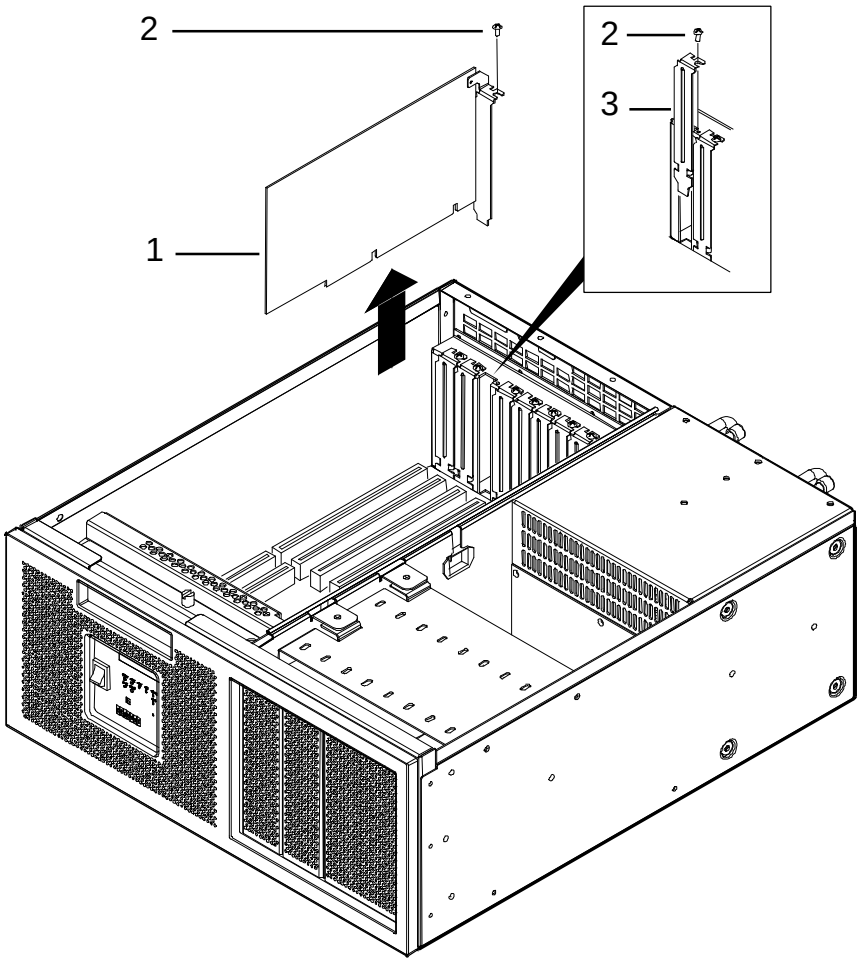
Caution

Take care when handling the option board. The active components on the option board are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit der Option-Platte. Die Wirkkomponenten auf der Option-Platte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 4-3: Removing an Option Board



Installing an SBC

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Install an SBC as follows (see Figure 4-4):

1. Follow the instructions in Chapter 2 to:
   - Dismount the module unit from a rack
   - Remove the module unit outer cover
   - Remove the module unit cover
2. Follow the instructions in Chapter 3 to remove the drive tray from the module unit.
3. Referring to Figure 4-1, locate the SBC connector on the backplane.
4. Referring to Figure 4-4, remove the screw **(2)** that secures the slot cover **(1)** to the chassis. Some SBCs may require the removal of two slot covers.
5. Remove the slot cover(s) from the chassis and store it for future use.
6. Carefully install the SBC **(4)** in the correct connector **(3)** on the backplane. Depending on the SBC, you may wish to connect some cables before installing the SBC.
7. Secure the SBC to the chassis using the screw previously removed.
8. Connect the appropriate cables to the SBC. Refer to the user information manual supplied with each SBC for information about connecting cables to the SBC.
9. Follow the instructions in Chapter 3 and Chapter 2 to reassemble the module unit.

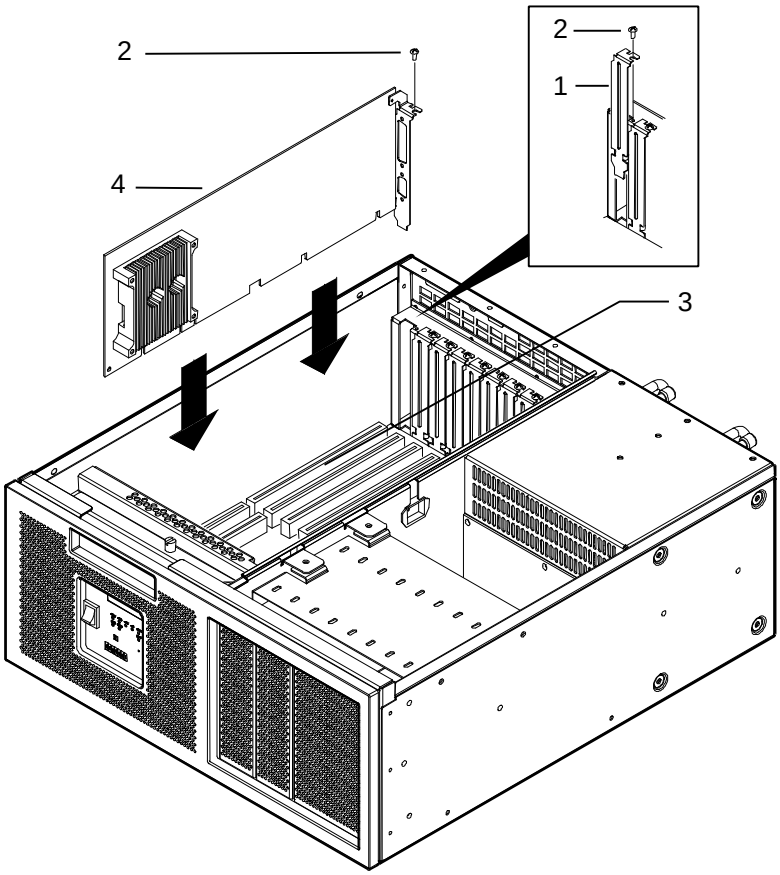
Caution

Take care when handling the SBC. The active components on the SBC are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit der SBC-Platte. Die Wirkkomponenten auf der SBC-Platte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 4-4: Installing an SBC



Removing an SBC

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie d ie Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove an SBC as follows (see Figure 4-5):

1. Follow the instructions in Chapter 2 to:
   - Dismount the module unit from a rack.
   - Remove the module unit outer cover.
   - Remove the module unit cover.
2. Follow the instructions in Chapter 3 to remove the drive tray from the module unit.
3. Note the location and orientation of all cables connected to the SBC **(1)**.
4. Disconnect any cables attached to the SBC. You may wish to remove some cables after removing the SBC from the backplane.
5. Remove the screw **(2)** that secures the SBC to the chassis. Some SBCs may require the removal of two screws.
6. Carefully remove the SBC from the SBC connector on the backplane.

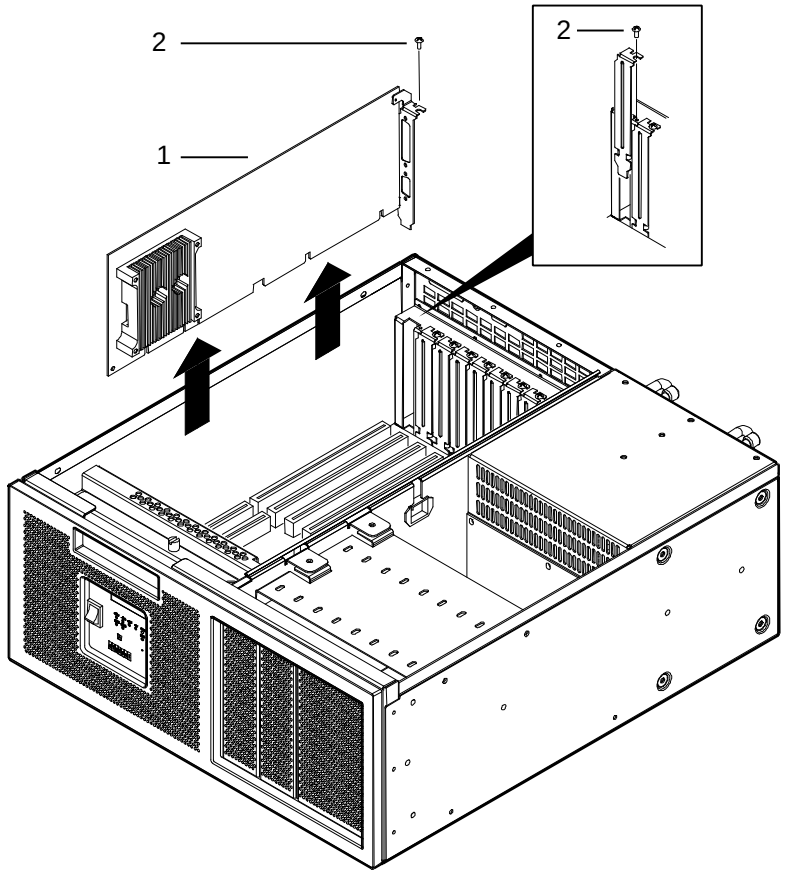
Caution

Take care when handling the SBC. The active components on the SBC are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit der SBC-Platte. Die Wirkkomponenten auf der SBC-Platte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Figure 4-5: Removing an SBC



5
Replacing Module Unit Components

This chapter describes how to remove and replace module unit components. It contains information on:

- Removing and Replacing the Front Bezel and Air Filter
- Removing the Backplane
- Replacing the Backplane
- Removing the Power Supply Unit
- Replacing the Power Supply Unit
- Removing the Power-Sharing Backplane
- Replacing the Power-Sharing Backplane
- Removing and Replacing the Operator Control Panel
- Removing the Main Enclosure Fans
- Replacing the Main Enclosure Fans

Removing and Replacing the Front Bezel and Air Filter

Note

In all service operations, use care to avoid damaging cables and EMC gasketing.

Note

The frequency with which you need to replace the air filter depends on local conditions.

Remove the front bezel and air filter from the 10-slot enclosure as follows (see Figure 5-1):

1. The enclosure need not be removed from a rack, or have its outer cover removed to access the air filter.
2. Remove the front bezel assembly **(1)** from the enclosure, by prising it from the chassis at an accessible corner using a flat-bladed screwdriver.
3. With the bezel assembly removed, remove the air filter **(2)** from the rear of the front bezel frame.
4. Change the air filter or wash it in warm soapy water.
5. Ensure that the air filter is dry and replace it by reversing the above steps.

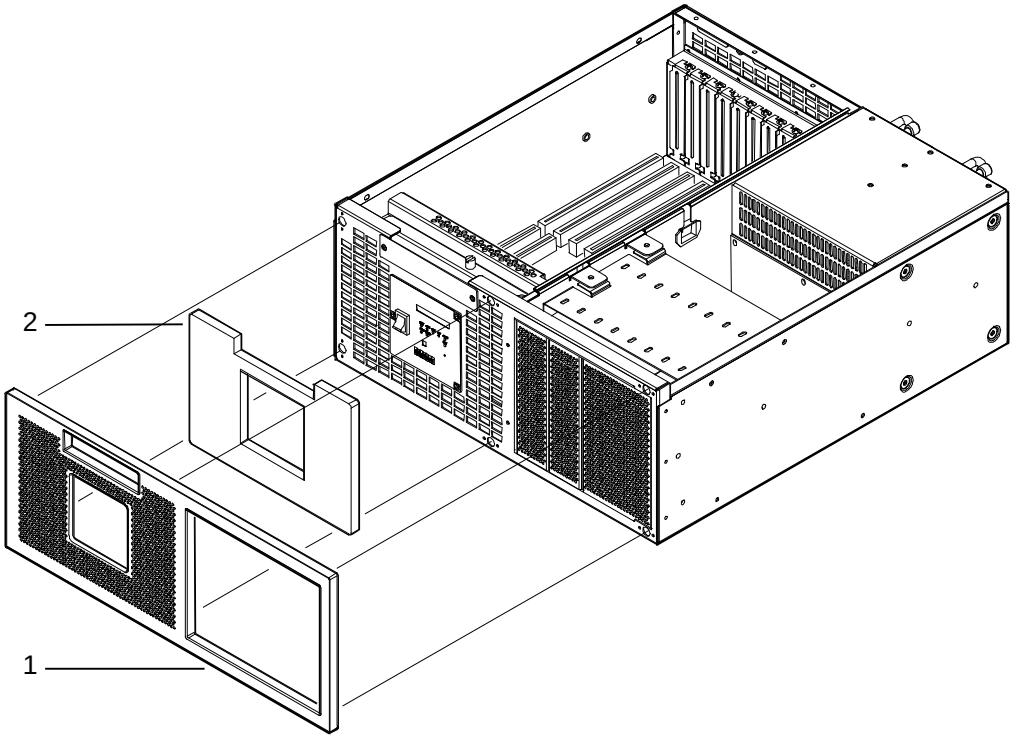
Caution

The system integrator must ensure that the airflow is suitable for the application.

Air filters must be cleaned and or serviced on a regular basis. Correct intervals are strongly influenced by site specific conditions. An initial inspection and cleaning interval of 30 days should be adjusted based on site specific conditions. The frequency with which you need to replace the air filter depends on site specific conditions.

Failure to clean or replace the filters will decrease expected MTBF: reduced air flow will increase internal tempera tures, and internal contamination can occur.

Figure 5-1: Removing and Replacing the Air Filter From the 10 -Slot Enclosure



Removing the Backplane

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Caution

Take care when handling the backplane. The active components on the backplane are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

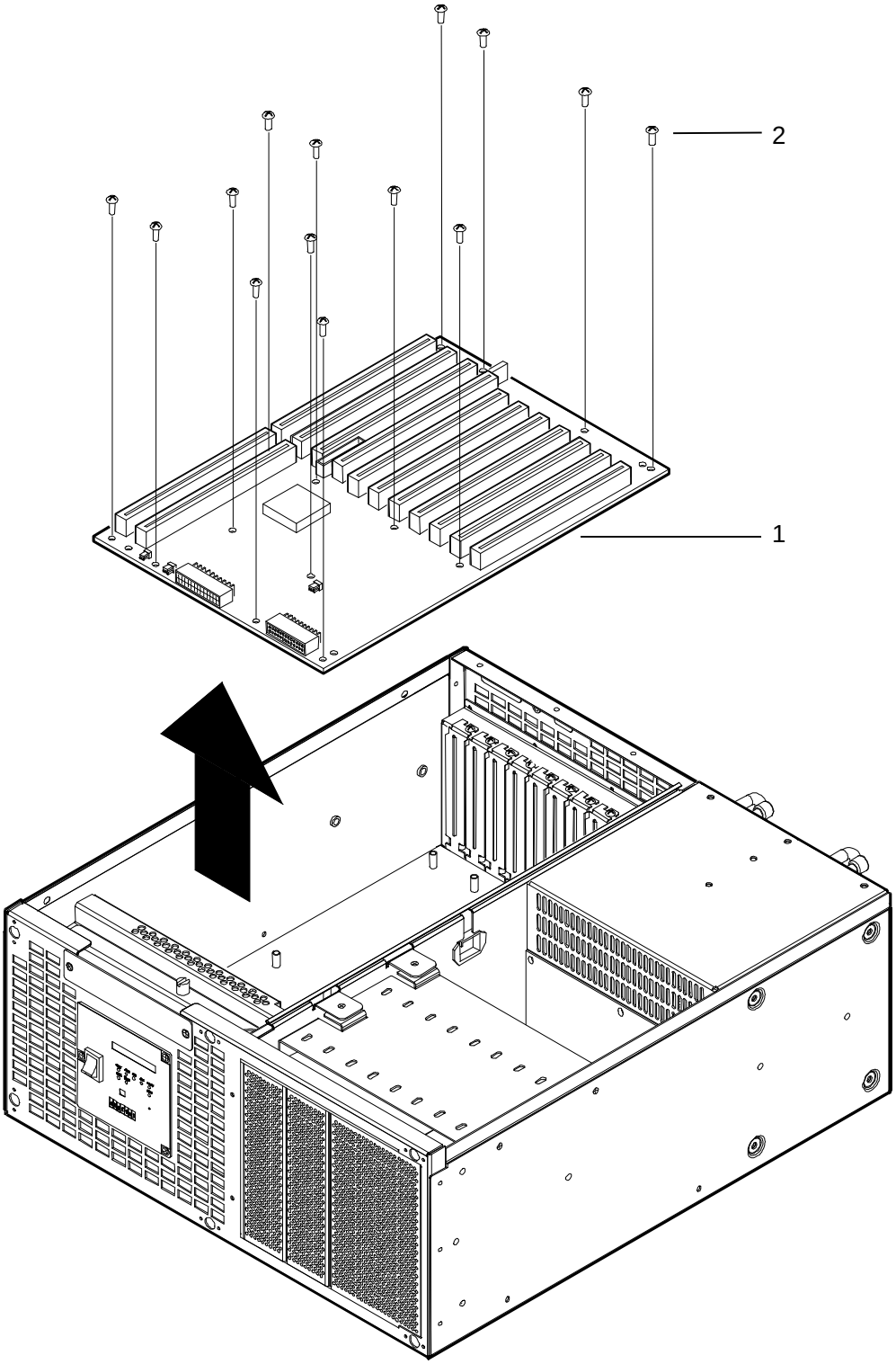
Vorsicht

Vorsicht im Umgang mit der Rückplatte. Die Wirkkomponenten auf der Rückplatte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Remove the backplane as follows (see Figure 5-2):

1. Follow the instructions in Chapter 2 to dismount the module unit from a rack or remove the outer cover from the module unit and remove the main enclosure cover.
2. Follow the instructions in Chapter 3 to remove the main enclosure disk tray from the module unit.
3. If necessary, follow the instructions in Chapter 4 to remove the SBC and any option boards installed on the backplane **(1)**.
4. Note the location and orientation of all cables connected to the backplane.
5. Disconnect all the cables connected to the backplane.
6. Remove the screws **(2)** securing the backplane to the chassis (14 screws for the 10-slot backplane and 11 screws for the 7-slot backplane).
7. Remove the backplane from the chassis.

Figure 5-2: Screw Locations for OEM Information for Force Computers Flexor 10-Slot Enclosure Backplanes



Replacing the Backplane

WARNING

Make sure tha t the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Caution

Take care when handling the backplane. The active components on the backplane are sensitive to electrostatic discharge (ESD), and can easily be damaged. Take anti-ESD precautions such as wearing isolation gloves or an antistatic wriststrap.

Vorsicht

Vorsicht im Umgang mit der Rückplatte. Die Wirkkomponenten auf der Rückplatte dürfen keine Electrostatischen Entladung (ESD) ausgesetzt sein und können leicht beschädigt werden. Bitte treffen Sie Vorkehrungen gegen ESD, wie beispeilsweise durch Tragen von Isolierhandschuhen oder antistatischem Armband.

Replace the Force Computers Flexor backplane as follows (see Figure 5-3):

1. Follow the instructions in the section *Removing the Backplane* to remove a backplane that is already installed in the module unit.
2. Insert the backplane into the chassis making sure that the ISA and PCI option card connectors are in line with the slot openings at the rear of the enclosure.
3. Secure the backplane to the chassis using the screws that were removed in step 1.
4. Reconnect all the cables that were disconnected from the backplane in step 1. Typical Force Computers Flexor backplane connections are shown in Figure 5-3, where:

   1 = Typical backplane

   2 = Interface to SBC Connector (Ensure cable is oriented so that ribbon does not chafe on through hole components on adjacent ISA card)

   3 = Off SBC Connector

   4 = Power Status Connector

   5 = Fan 1 and 2 Power Connector

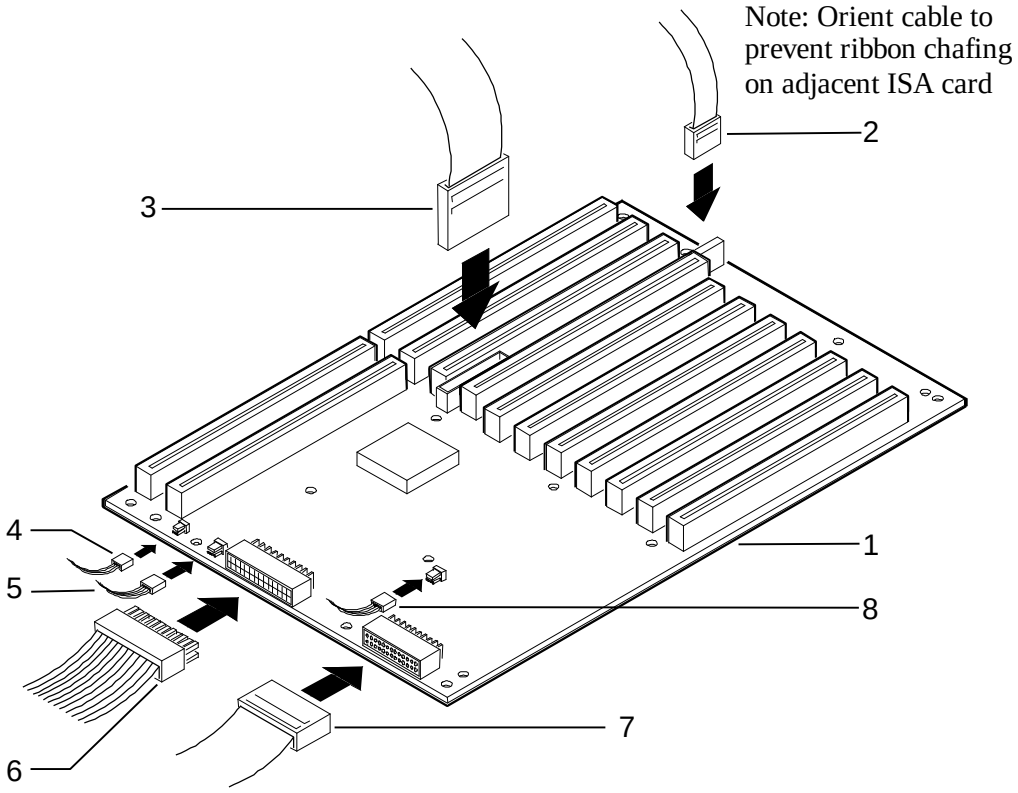
   6 = Power Input Connector

   7 = Operator Control Panel Connector

   8 = Fan 3 and 4 Power Connector

5. Follow the instructions in Chapter 4 to install the SBC and any option cards that were previously removed from the module unit.
6. Follow the instructions in Chapter 3 and Chapter 2 to reassemble the module unit.

Figure 5-3: Cable Connections for the Force Computers Flexor Backplanes



For information on the functionality of Force Computers Flexor backplanes, see the manual entitled *OEM Information for Force Computers Flexor Backplanes.*

Removing the Power Supply Unit

This section describes how to remove a power supply unit from the main enclosure module. ETM25/29-DA have dual redundant power supply systems, whilst ETM25/27/29-SA units have single power supplies with no redundancy.

Caution

ETM25/29-DA kernels are designed and approved to allow qualified personnel to remove a PSU while the remaining unit is ON, that is, while the remaining unit continues to power the main enclosure module. Switch off the PSU that is to be removed, and detach its mains connector before proceeding. Use caution when doing so.

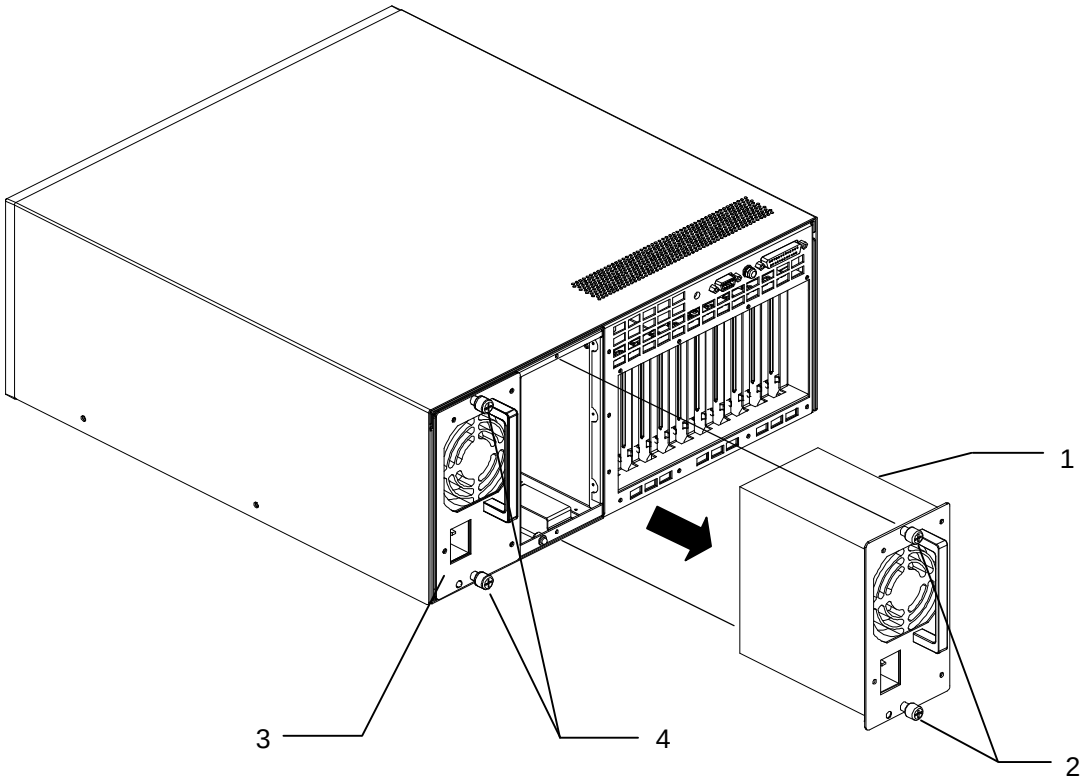
Vorsicht

ETM25/29-DA Kerne sind so konstruiert und zugelassen, daß ausgebildetes Personal die Stromversorgungseinheit entfernen kann, während das übrige Gerät angeschaltet (auf ON) bleibt, d.h. während das übrige Gerät die Hauptmoduleinheit weiterhin mit Strom versorgt. Schalten Sie die zu entfernende Stromversorgungseinheit ab, und ziehen Sie den Netzstecker heraus, bevor Sie fortfahren. Gehen Sie dabei vorsichtig vor.

Remove the power supply unit from ETM25/29-DA kernels as follows (see Figure 5-4) and :

1. If necessary, follow the instructions in Chapter 2 to dismount the module unit from a rack. You do not have to remove the outer cover of the main enclosure.
2. Undo the captive screws **(2)** / **(4)** from the rear of the module unit **(1)** / **(3).**
3. Pull the PSU from the main enclosure using the PSU unit handle.

Figure 5-4: Removing a Power Supply Unit from ETM25/29-DA Enclosures



WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

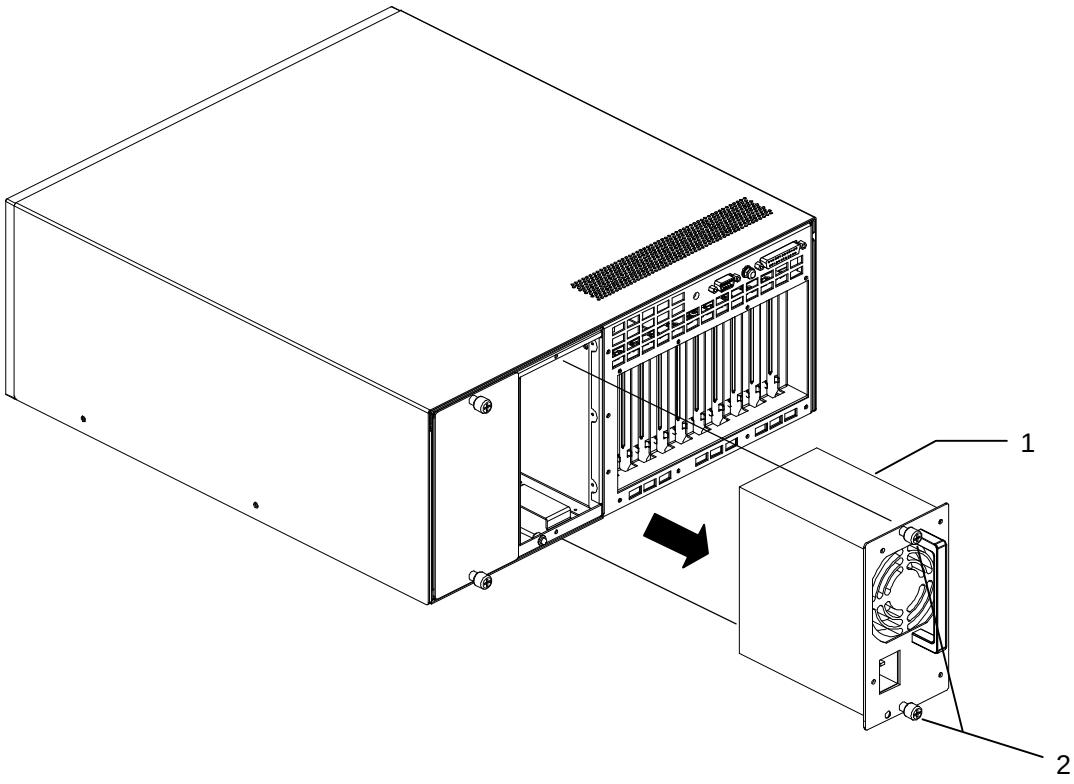
WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove the power supply unit from ETM25/27/29-SA kernels as follows (see Figure 5-5 and):

1. If necessary, follow the instructions in Chapter 2 to dismount the module unit from a rack. You do not have to remove the outer cover of the main enclosure.
2. Undo the two captive screws **(2)** from the rear of the module unit **(1).**
3. Pull the PSU from the main enclosure using the PSU unit handle.
4. Disconnect the PSU unit connectors from the internal cable harness and remove PSU unit.

Figure 5-5: Removing a Power Supply Unit from ETM25/27/29 -SA Enclosures



Replacing the Power Supply Unit

WARNING

Make sure that the main s power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

To replace the power supply unit, verify the setting on the voltage selector switch on AC power supplies and reverse the steps in the section *Removing the Power Supply Unit*, taking care to ensure that none of the EMC gasketing is damaged.

Removing the Power-Sharing Backplane

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

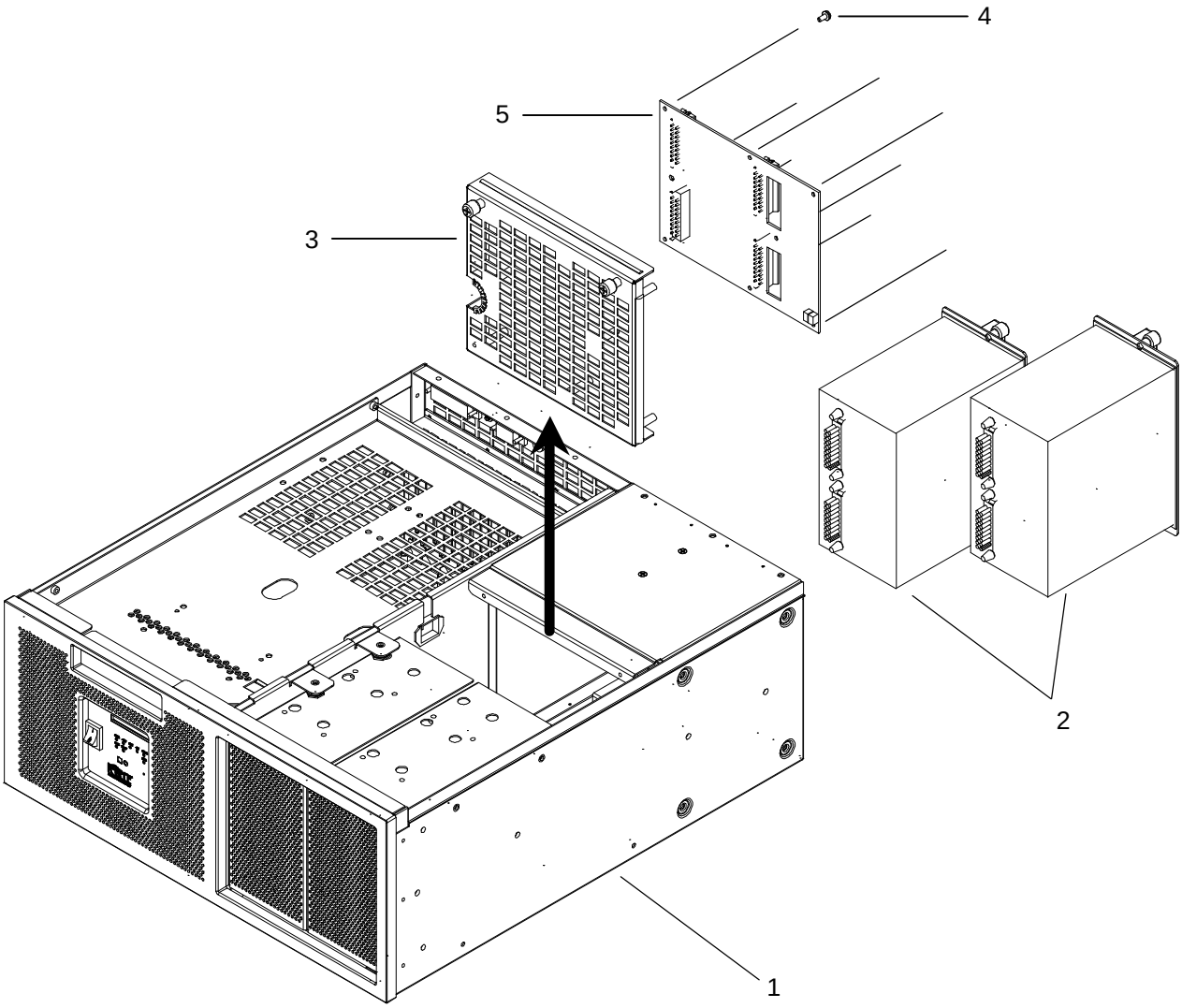
WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove the power-sharing backplane from ETM25/29-DA kernels as follows (see: Figure 5-6: Removing the Power-Sharing Backplane Module from ETM25/29-DA Enclosures):

1. Follow the instructions in Chapter 2 to dismount the module unit **(1)** from a rack or remove the outer cover from the module unit and remove the main enclosure cover.
2. Remove the Power Supply Units **(2)** as outlined earlier in this chapter.
3. Loosen the captive screws on the load sharing backplane housing **(3)**. Lift and remove the housing **(3)** from the module unit **(1)**.
4. Unscrew the 8 screws **(4)** that secure the load sharing backplane **(5)** to the backplane housing **(3)**. Remove the load sharing backplane from the housing
5. Disconnect the cable harness from the load sharing backplane **(5)** to free the backplane completely.

Figure 5-6: Removing the Power-Sharing Backplane Module from ETM25/29-DA Enclosures



Replacing the Power-Sharing Backplane

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

To replace the power-sharing backplane reverse the steps in the section *Removing the Power-Sharing Backplane*, taking care to ensure that none of the EMC gasketing is damaged.

Removing and Replacing the Operator Control Panel

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

WARNUNG

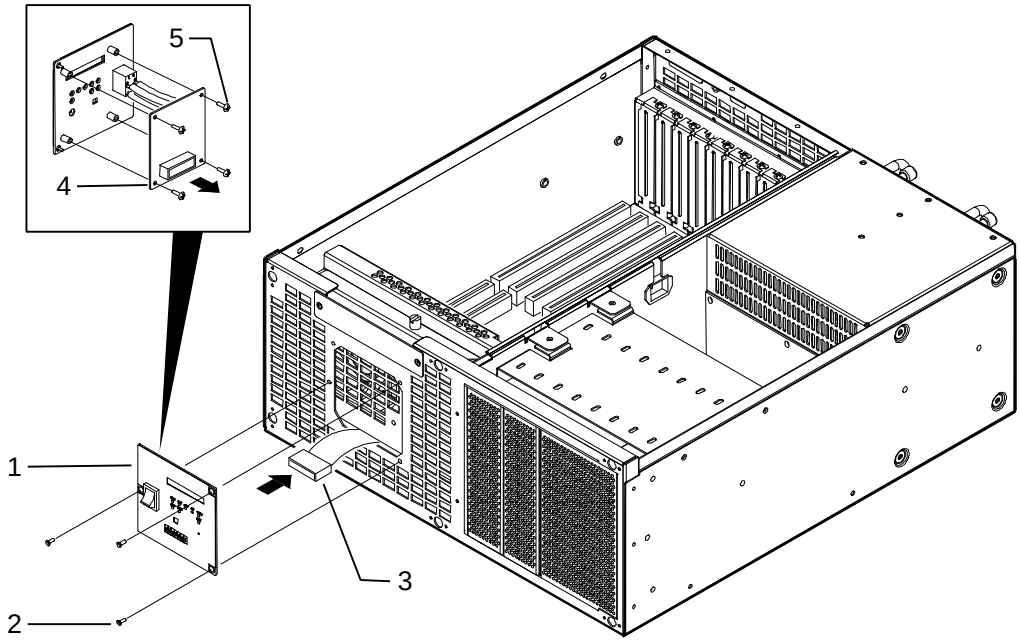
Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove the OCP as follows (see Figure 5-7):

1. If necessary, follow the instructions in Chapter 2 to dismount the module unit from a rack. You do not have to remove the outer cover of the main enclosure.
2. Follow the instructions in the section *Removing and Replacing the Front Bezel and Air Filter* to remove the front bezel assembly.
3. Remove the 3 screws **(2)** securing the OCP assembly **(1)** to the chassis.
4. Withdraw the OCP assembly from the chassis. Disconnect the ribbon connector **(3)** from the back of the OCP circuit board, and the power delay circuit from its 5 pin connector.
5. Remove the OCP circuit board **(4)** from the OCP plate by removing the four screws **(5)**.

Replace the OCP circuit board by reversing the above steps.

Figure 5-7: Removing and Replacing the Operator Control Panel



Removing the Main Enclosure Fans

WARNING

Make sure that the mains power supply is disconnected from the module unit before continuing.

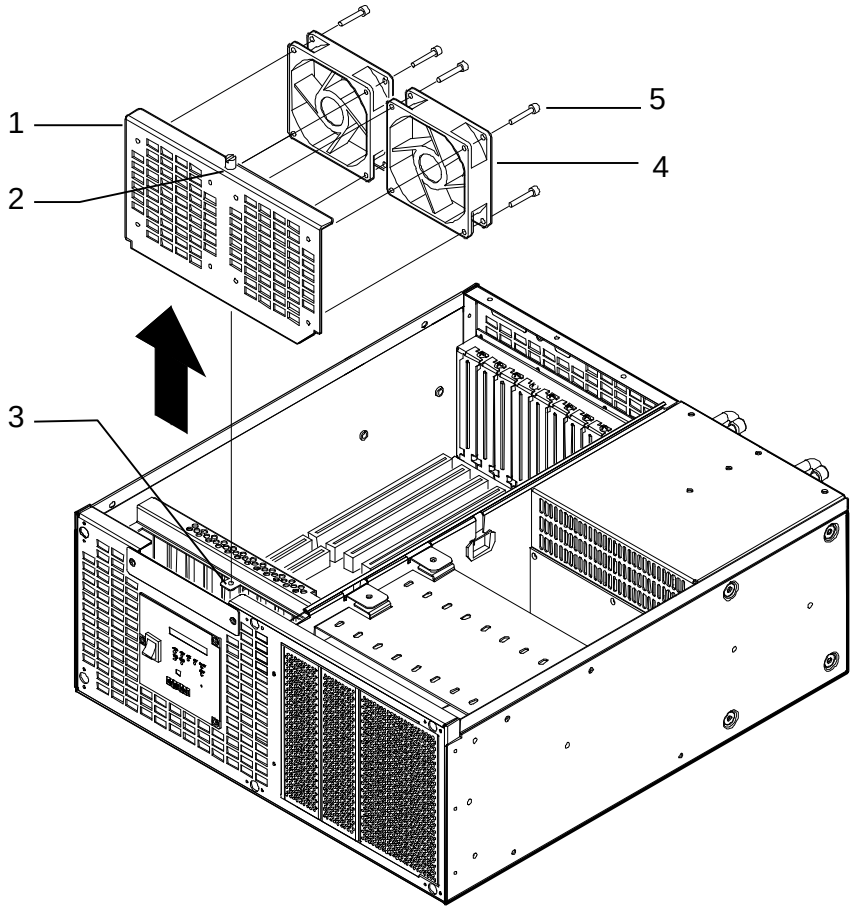
WARNUNG

Bitte unterbrechen Sie die Wechselstromversorgung der Moduleinheit, bevor Sie fortfahren.

Remove the fan as follows (see Figure 5-8):

1. Follow the instructions in Chapter 2 to dismount the module unit from a rack or remove the outer cover from the module unit and remove the main enclosure cover.
2. Follow the instructions in Chapter 3 to remove the main enclosure disk tray from the module unit.
3. Undo the captive screw **(2)** on top of the fan holder and remove the fan holder assembly **(1)**.
4. Disconnect the fan cable connector from its connection at the base of the plenum **(3)**.
5. With the fan holder assembly accessible, remove the eight screws **(5)** securing the fans **(4)** to the fan holder metalwork.
6. Remove the dual fan unit from the chassis.

Figure 5-8: Removing and Replacing the Main Enclosure Fans



Note

Figure 5-8 illustrates the removal and replacement of a typical fan. If there is a fan safety guard, then replace the guard when you reassemble the fan.

Replacing the Main Enclosure Fans

WARNING

You must reconnect the fans when the backp lane is replaced (see Figure 5-3) and you must verify their operation immediately after turning on the power. There is a risk of damage to the module unit if the fans are not correctly reconnected and functioning normal ly when the power is switched on.

WARNUNG

Die Kühlgebläse müssen beim Ersetzen der Rückplatte (Figure 5-3) wieder angeschlossen werden. Der Betrieb der Kühlgebläse muß unmittelbar nach dem Einschalten des Stromes überprüft werden. Falls die Kühlgebläse nicht richtig wieder angeschlossen worden sind und nicht normal funktionieren, wenn der Strom eingeschaltet ist, besteht die Gefahr, daß die Moduleinheit beschädigt wird.

To replace the fans, reverse the steps in the section *Removing the Main Enclosure Fans*, ensuring that the fans are oriented so that the air flow is toward the plenum, SBC, and option cards. The direction of air flow is marked on the fan body. Ensure that the fan guards are replaced on the front of each fan to comply with safety regulations.

6
Rackmount and Chassis Slide Kit

This chapter provides information necessary to install the rackmount and chassis slide kit for the 10-Slot enclosure ETMXK-BR, and contains information on:

- Installation Conditions
- Kit Contents
- Assembly and Disassembly of the Rackmount and Chassis Slide Kit

Installation Conditions

This section provides general information on installation conditions for installing the rackmount and chassis slide kit. The rackmount and chassis slide kit components are optimized for use with a type 19 **RETMA** rack. A typical rack has a free space of 17.75 inches between the front rails. The mounting holes are on 18.312-inch centers. The rear set of rails are 25 inches behind the front set, measured from the inside of the rear rails to the inside of the front rails. The rackmount and chassis slide kit contains components to adapt to a wider range of rack depths.

WARNING

When accessing the module unit mounted in a rack, take precautions to ensure that the rack does not overbalance.

WARNUNG

Beim Umgang mit einer auf einem Gestell montierten Moduleinheit ist darauf zu achten, daß das Gestell nicht kippt.

Kit Contents

This section provides information on the contents of the rackmount and chassis slide kit. The kit contains components that allow you to secure the chassis into a rack. Table 6–1 describes the contents of the kit. Before installing the kit, check that you have all the required parts, and the correct quantity of each part.

Table 6–1: Contents of the Rackmount Kit ETMXK-BR

Description	Quantity
Chassis Slide Kit (X2 in kit)	
Chassis slide, 18” long	1
Washer, helical split, stainless steel	4
Screw, Philips, pan head, 8-32 x 0.375 inch long	4
Screws, Philips, 10-32 x 0.500 inch long	2
U-nuts, 10-32 thread, 0.585 long x 0.510 wide	2
Screw, Philips, pan head, 8-32 x .187 inch long	4
Left slide bracket	1
Right slide bracket	1
Handle Assembly (X2 in kit)	
Handle assembly	1
Screws, Philips, 6-32 x 5/16 inch	2

Assembly and Disassembly of the Rackmount and Chassis Slide Kit

This section provides information on the assembly and disassembly of the rackmount and chassis slide kit. Before you remove or assemble the rackmount and chassis slide kit, familiarize yourself with the tools that you require during the assembly process, and the assembly stages that you need to follow. This section contains information on the following:

- Tools Required
- Disassembly Stages
- Attaching the Slide Kits and Handle Assemblies to the Module Unit
- Assembling the Mounting Brackets to the Rack
- Loading the Module Unit Assembly into the Mounting Brackets
- Locking the Assembled Module Unit into the Rack

Tools Required

The tools you require to assemble the rackmount and chassis slide kit are as follows:

- A Philips number 1 screwdriver
- A Philips number 2 screwdriver
- Flat-bladed screwdrivers
- A 0.312-inch nut driver

Disassembly Stages

If it is necessary to disassemble the rackmount kit from the chassis slide kit, carry out the following steps:

1. Unlock the rackmounted module from the rack.
2. Pull out and unload the rackmounted module from the rack using a lift.
3. Remove the module unit from the rack.
4. Remove the rollerbars from the module unit, if required.
5. Remove the handle assemblies from the module unit, if required.

The following sections describe how to carry out the individual steps required to complete each assembly or disassembly stage.

Attaching the Slide Kits and Handle Assemblies to the Module Unit

Use the following steps to assemble the chassis slides and handle assemblies to the enclosure (see Figure 6-1):

1. Open each chassis slide assembly by pulling out the rollerbar **(1**) from the slide tracks so that the set of four holes is accessible.
2. Align the set of four holes in the rollerbar with the threaded holes in the side of the enclosure.
3. Attach a rollerbar to each side of the enclosure with the eight 8-32 x 0.187-inch Philips flathead screws **(2)**. Ensure that the front of the rollerbar is mounted to the front of the enclosure.
4. Attach the handle assemblies **(3)** to each side of the enclosure with the four 6-32 x 5/16-inch screws **(4)**.

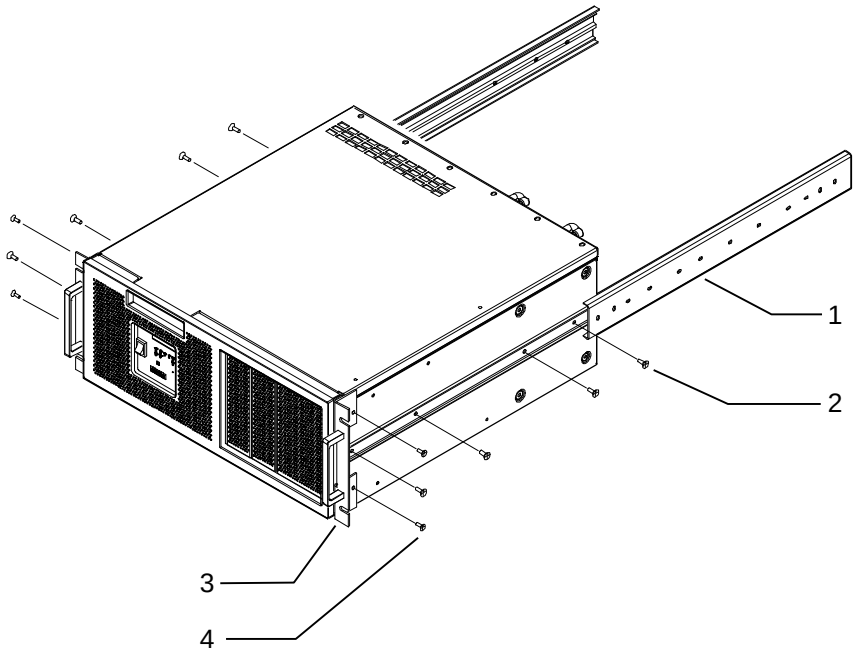
Caution

Do not use screws longer than 0.187 inches (0.64 cm) to attach rollerbars to the main enclosure.

Vorsicht

Keine Schrauben, die länger als 0.187 inches (0.64 cm) sind, zur Befestigung von Laufrollenleisten an der Moduleinheit verwenden.

Figure 6-1: Attaching Slide Assemblies to the Enclosure

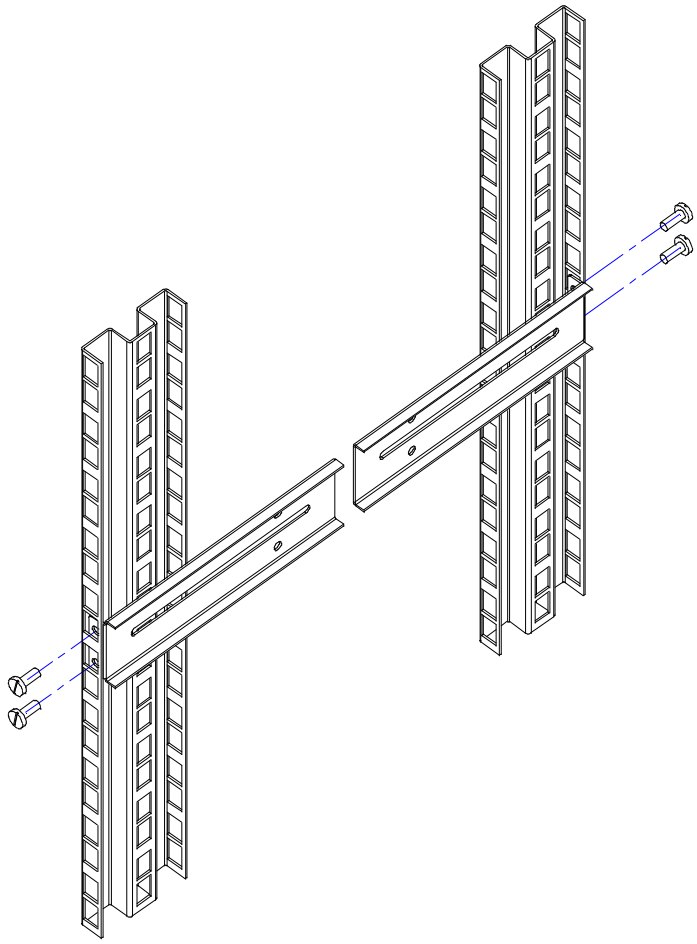


Assembling the Mounting Brackets to the Rack

Assemble the mounting brackets to the rack by carrying out the following steps (see Figure 6-2):

1. Attach a mounting bracket to the rack at the desired rack height using the kit of parts supplied for use with the rack (see rack vendor for supply).
2. Using the same size of screws, washers, and nuts, attach the remaining mounting brackets to the rear and opposite side of the rack, so that all four brackets are at the same height.

Figure 6-2: Assembling the Mounting Brackets to the Rack



Note

Figure 6-2 illustrates the assembly of the mounting brackets to the left-hand slide track. You also need to assemble the mounting brackets to the right-hand slide track in the same way.

Loading the Module Unit Assembly into the Mounting Brackets

Assemble the module unit with attached slides and handles into the mounting brackets fixed in the rack by carrying out the following steps (see Figure 6-3):

Rackmount and Chassis Slide Kit

WARNING

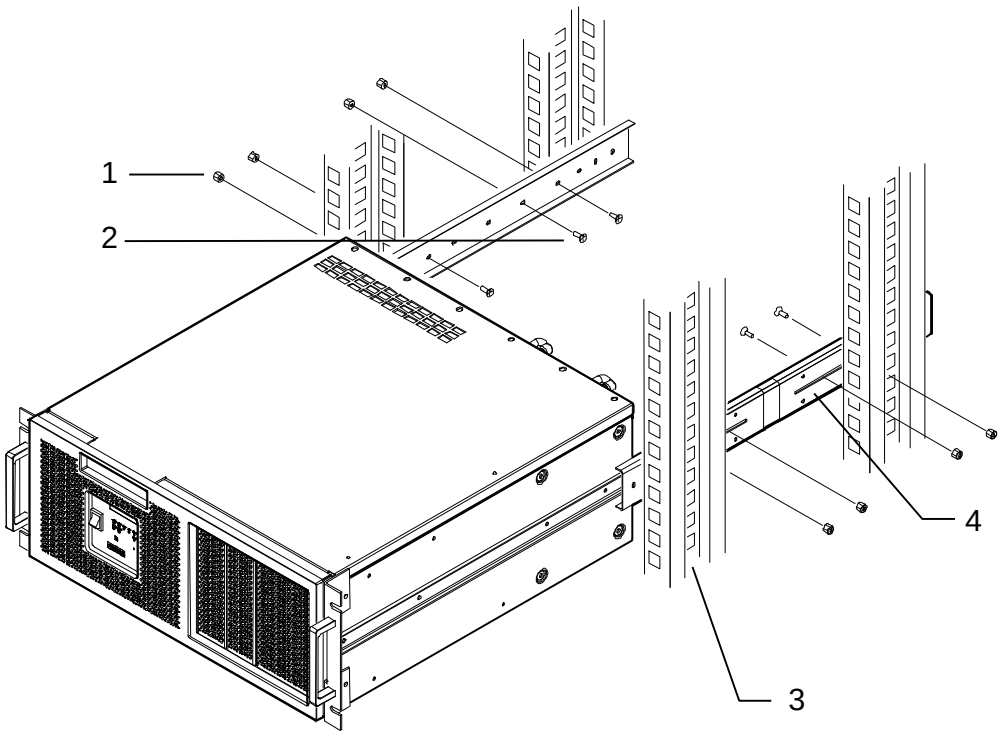
When assembling or accessing the module unit mounted in a rack, take precautions to ensure that the rack does not overbalance.

WARNUNG

Beim Umgang mit einer auf einem Gestell montierten Moduleinheit ist darauf zu achten, daß das Gestell nicht kippt.

1. Using a lift, position the module unit with slides and handles so that the rear ends of the rollerbars slot into the mounting brackets.
2. Gently guide the module unit into position in the rack.
3. From a fully inserted position, withdraw the module unit from the rack so that the four mounting holes in the mounting brackets are visible. Ensure that the weight of the module is still held by the lift to prevent over balancing.
4. Attach the rollerbars to the mounting brackets using four 10-32 screws.

Figure 6-3: Assembling the Rackmount Module Unit into the Mounting Brackets



Locking the Assembled Module Unit into the Rack

Lock the module units into the rack by carrying out the following steps (see Figure 6-4):

WARNING

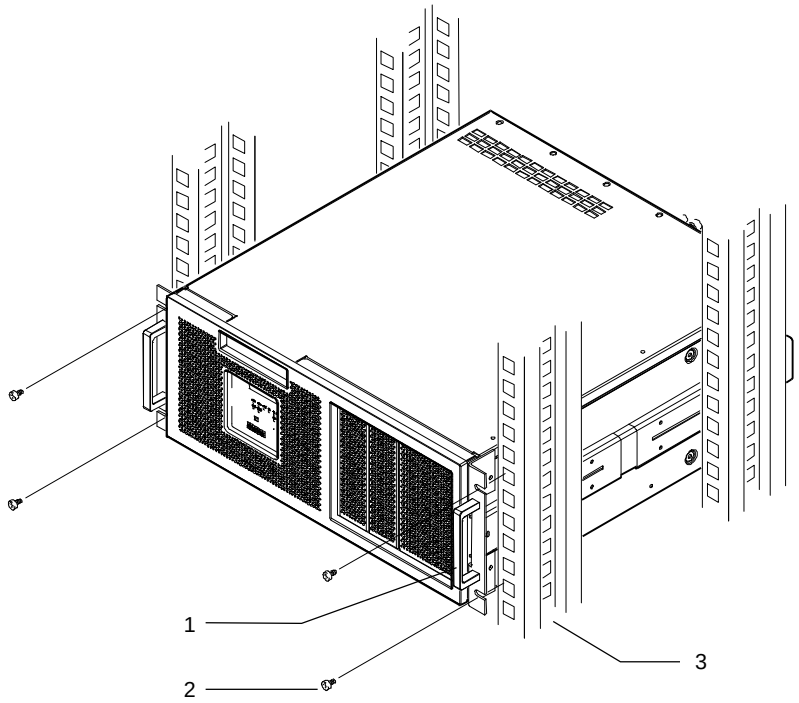
When accessing the module unit mounted in a rack, take precautions to ensure that the rack does not overbalance.

WARNUNG

Beim Umgang mit einer auf einem Gestell montierten Moduleinheit ist darauf zu achten, daß das Gestell nicht kippt.

1. Gently guide the module unit into the fully inserted position in the rack.
2. Using the locking mechanism supplied with the rack (see rack vendor for supply), lock the rack in the fully home position on both the left- and right-hand side of the rack.

Figure 6-4: Locking the Module Unit into the Rack



A
Enclosure Dimensional Drawings

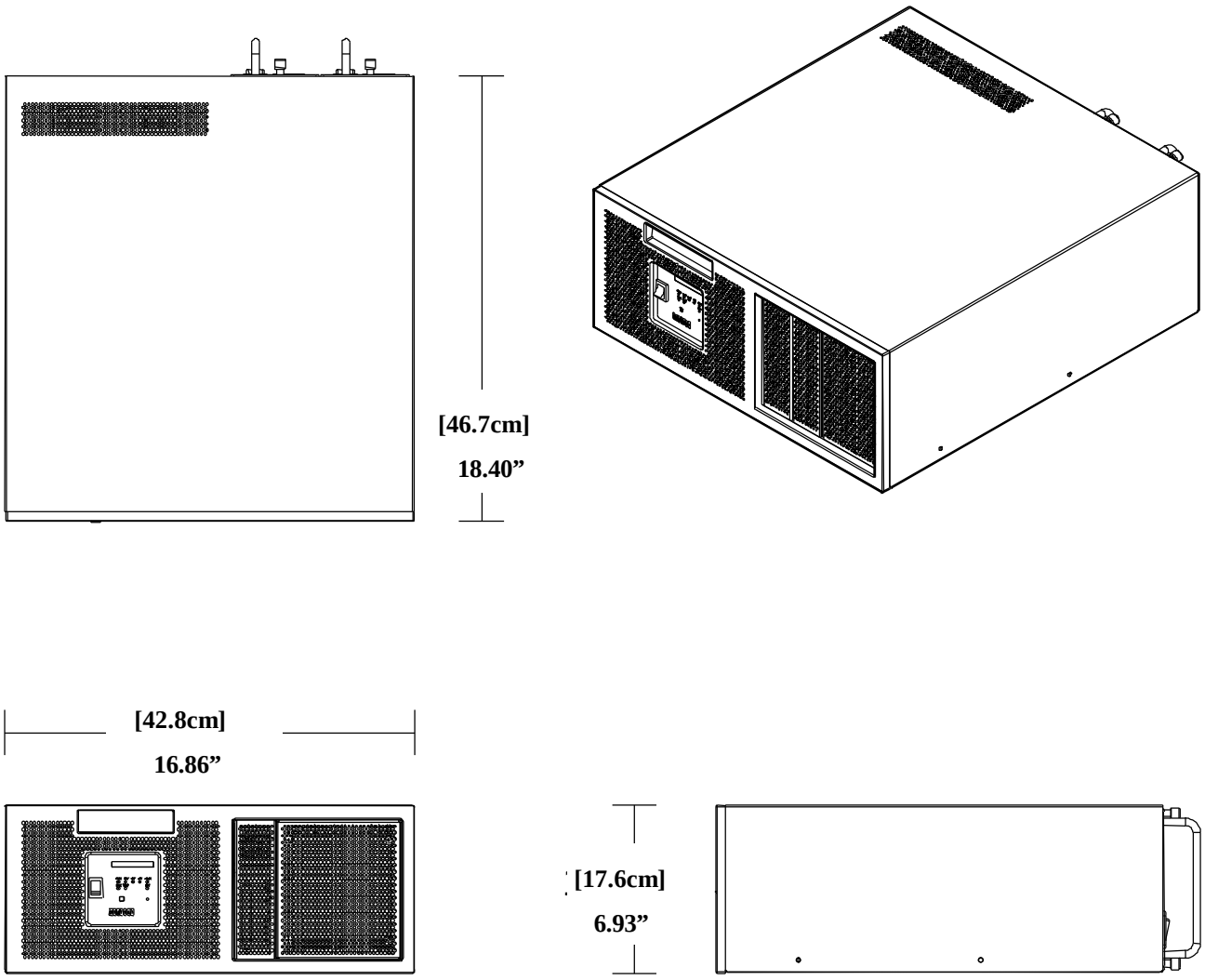
This appendix provides dimension information for the ETM25/27/29 kernels. The information is presented as follows:

- Main Enclosure Dimensions Desktop Variant
- Main Enclosure Dimensions Desktop Variant
- Main Enclosure Dimensions Tower Variant
- Rackmount Dimensions

Main Enclosure Dimensions Desktop Variant

Figure A-1 provides information on the dimensions of the main enclosure with a ETMXK-BD desktop kit.

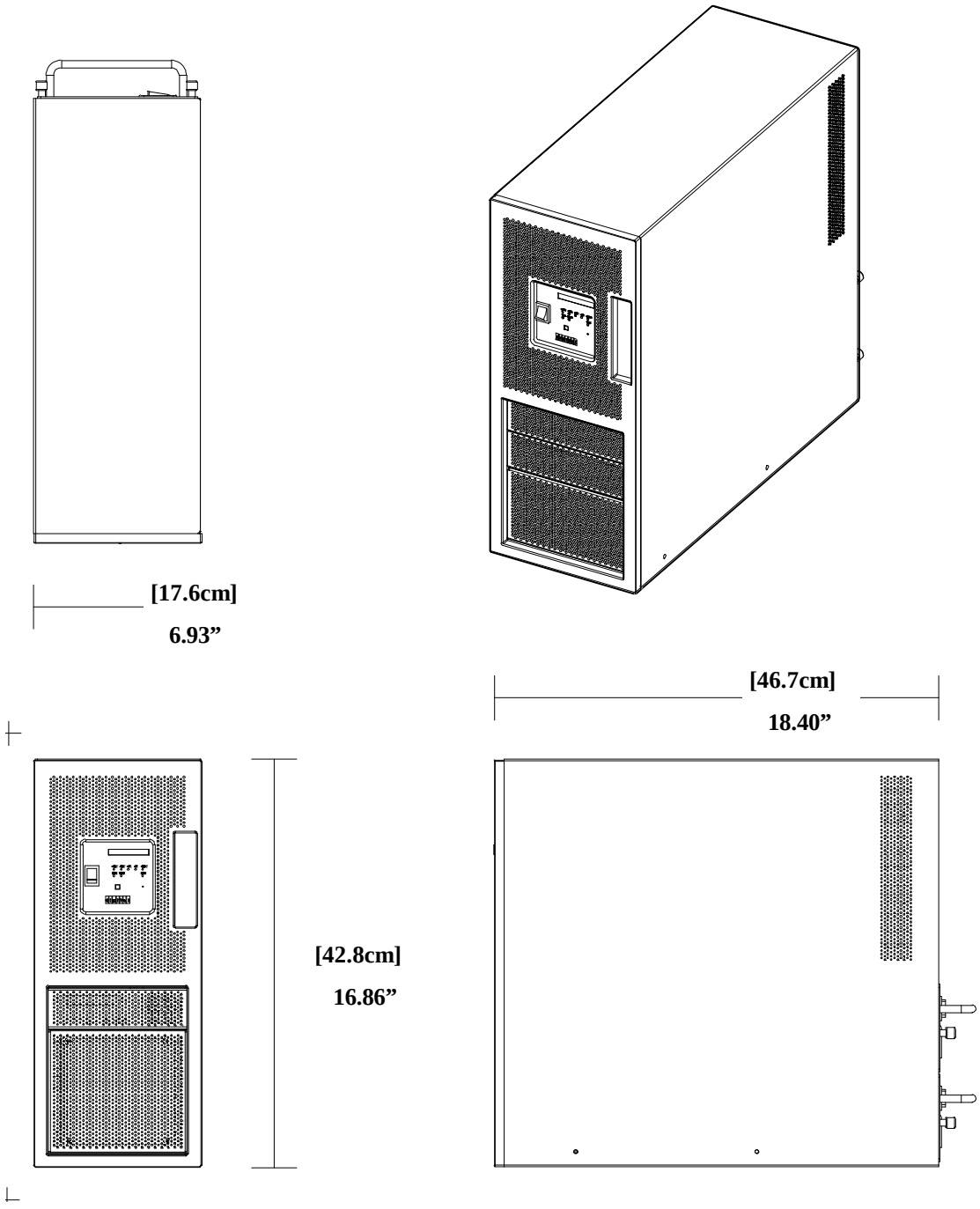
Figure A-1: Main Enclosure Dimensions Desktop Variant



Main Enclosure Dimensions Tower Variant

Figure A-2 provides information on the dimensions of the main enclosure with an ETMXK-BT tower kit.

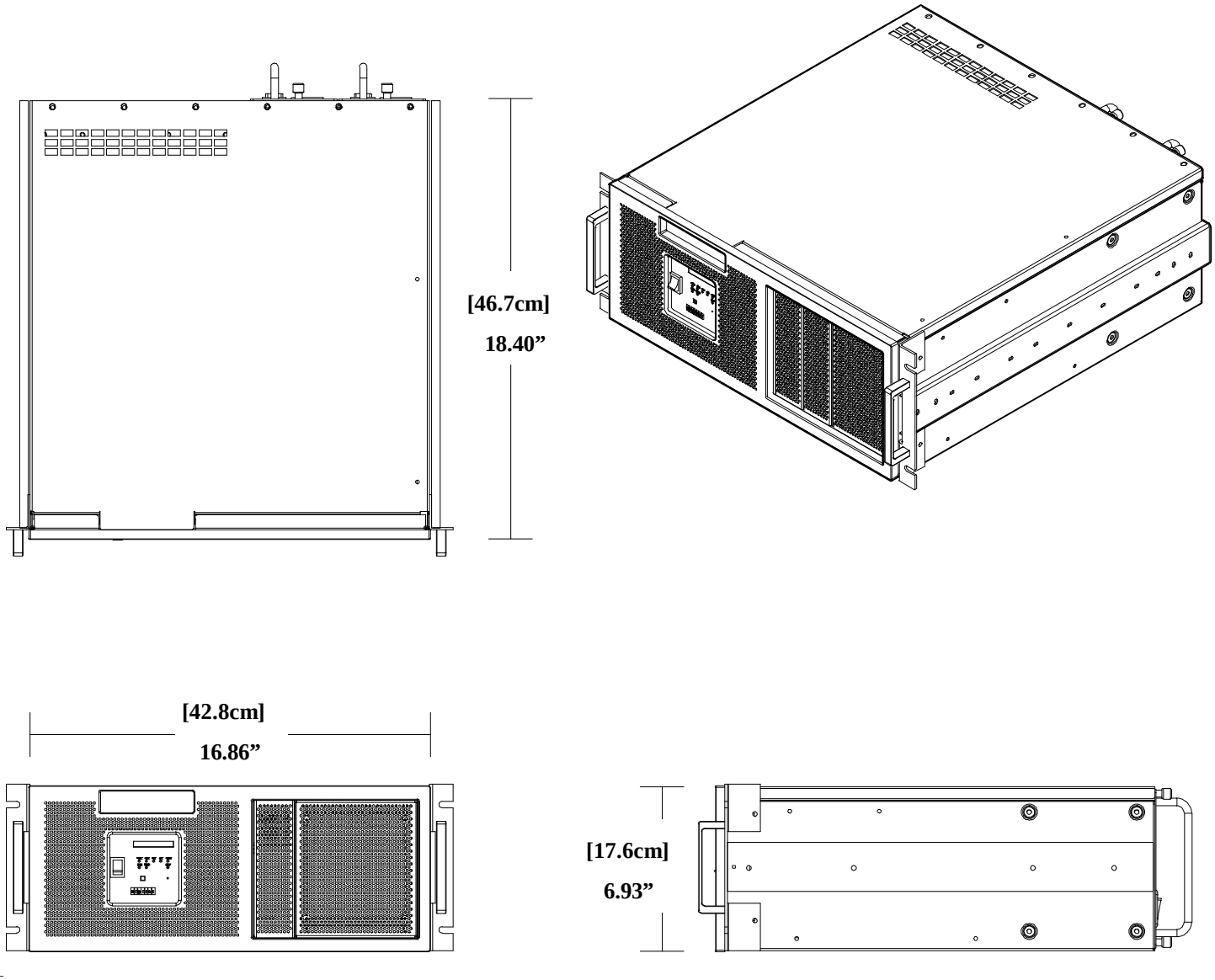
Figure A-2: Main Enclosure Dimensions Tower Variant



Rackmount Dimensions

Figure A-3 provides information on the dimensions of the enclosure with the ETMXK-BR rackmount kit.

Figure A-3: Rackmounted Enclosure Dimensions



Glossary

AT

Advanced Technology — an industry-standard PC interface.

ATX

Advanced Technology Extended

CLP

Country List Price

CPU

Central Processing Unit

CRC

Customer Return Center

DDP

Dense Disk Pak

ECO

Engineering Change Order

ESD

Electrostatic Discharge

EMC

Electromagnetic Compatibility

ETM25

Reference name for the Force Computers Flexor10-Slot enclosure with ETMXB-CA 10-Slot (6 PCI, 1 shared PCI/ISA, 3 ISA,) backplane.

ETM27

Reference name for the Force Computers Flexor 10-slot enclosure with ETMXB-DA 7-Slot (4 PCI, 3 ISA) backplane.

ETM29

Reference name for the Force Computers Flexor 10-slot enclosure with ETMXB-EA 10-Slot (4 shared PCI/ISA, 6 ISA) backplane.

ETMxB-xx

Reference name for the backplane used in the ETM25/27/29 series enclosures.

FAQ

Frequently Asked Questions. A FAQ is a collection of questions users ask most often about a product, and their answers. Use the FAQ page to search for a solution to a problem you are encountering. This term is often used in the context of a Worldwide Web page.

FCC

Federal Communications Commission

FOB

Free on board.

FRU

Field Replaceable Unit

HDU

Hard Disk Unit

IDE

Integrated Device Electronics

ISA

Industry Standard Architecture. A widely used computer interface standard

ISP

In-System Programmable, also described as "in-circuit programmable".

Kernel unit

In this manual, the term kernel unit refers to a unit assembled from a backplane and an enclosure (which includes the power supply and OCP). A kernel does not contain either an SBC or storage devices.

LED

Light-Emitting Diode

MIL-HDBK

Military Handbook

Module unit

In this manual, the term module unit refers to a module unit assembled from a backplane board, an enclosure, an SBC, and specified storage devices.

MTBF

Mean Time Between Failures

OCP

Operator Control Panel

OEM

Original Equipment Manufacturer

PCI

Peripheral Component Interconnect

PICMG

PCI Industrial Computer Manufacturers Group

PSU

Power Supply Unit

RETMA

Radio, Electronics, and Television Manufacturers Association

RMA

Return Material Authorization

SBC

Single-Board Computer

SCSI

Small Computer System Interconnect

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