INDEX

INDEX

A

AB0 and AB1 PCA Commands, 5-2
AC Power
  fail signal, 12-9
  to blower/floppy disk system, 12-78
Access Code, 10-46, 13-250,
Account Code Commands
  clear tables, 13-221
  list report, 13-219
ACD. See Automatic Call Distribution.
AC1/AC2 Missing at A3TB2 of Common Control Motherboard, 12-76
Address Bus Command Word Configuration, 5-10
Address Plug
  expander PCA, 5-15
  model 85320 48k memory PCA, 4-20
  model 85320A 48k memory PCA, 4-20
  model 85320B 48k memory PCA, 4-21
  12k memory PCA, 4-19
Adjustments, Voltage
  memory power supply, 12-9
  208-Vac main power supply, 12-7
AFACTS, 1-46
Agent Performance and Status Report, 13-179, 13-190
Agent Statistics Report, 13-196, 13-197
AIOD Commands
  AIOD test, 13-75
  begin AIOD test, 13-75
  list AIOD dynamic table, 13-75
  list AIOD translation table, 13-76
  list AIOD trunk display group default extension, 13-75
  list console AIOD extension I.D. numbers, 13-76a
  list trunk to AIOD I.D. number, 13-77
  revise AIOD translation table, 13-76
  revise AIOD trunk display group default number, 13-75
  revise console AIOD extension I.D. number, 13-77
  revise trunk to AIOD I.D. number, 13-77
Air Conditioning, 2-42a
  cabinet 1 with nonredundant CPU, 144k memory, and redundant power, 2-46
  dc cabinet 1 with nonredundant CPU, 144k memory, and nonredundant power, 2-47
  dc cabinet 1 with redundant CPU, 144k memory, and nonredundant power, 2-48
  dc cabinet 1 with redundant CPU, 144k memory, and redundant power, 2-48
  dc cabinet 2 and 3 with nonredundant power, 2-48
  dc cabinet 2 and 3 with redundant power, 2-49
  environmental requirements
    ATC, 2-43
    cabinets, 2-43
  floppy disk drives, 2-49
  208-Vac cabinet 1 with nonredundant CPU and 144k memory, 2-45
  208-Vac cabinet 1 with redundant CPU and 144k memory, 2-45
  208-Vac cabinets 2 and 3, 2-46
Alarm
  high temperature, 2-10, 12-48
  software, 12-50, 12-53
Alignment, ATC, 9-13, 9-15
Amplifier, Paging, Troubleshooting, 10-64
Analog PCA, 16-Channel ETI II. See ETI II Analog PCA.
Answer Supervision (Tie Trunk)
  dial tone, 10-61
  off hook, 10-61
APL. See Automatic Program Load.
Area Autoselect
  list area autoselect table, 13-78
  set area autoselect, 13-85
  tables, 11-19
Area Code Commands
  delete area code, 13-89
  list area codes, 13-98
  new area code, 13-88
  revise area codes, 13-89
Area Code Only Table, 11-23
Area Routeselect
  list area routeselect, 13-86
  set area routeselect, 13-86
  table, 11-22, 13-253
ATC. See Attendant's Console.
Attendant's Console
  ACTST, 2-298a
  attaching cradle, 2-54

check, 2-280
commands
associate trunk with console, 13-57
list ATC group, 13-47
list console AIOD extension number, 13-76
revise ATC extension, 13-48a
revise ATC group, 13-48
revise console AIOD extension number, 13-76
controls and indicators, 2-224i
cross-connects, 2-90
functional description, 9-1
block diagram, 9-3
signal flow, 9-2
general description, 1-25, 1-26
group table, 13-254
installation, 2-92, 2-119
cable terminations, 2-120
StarSet, 2-121
VENTURE 1, 2-121
maintenance
removal and replacement, 9-4
troubleshooting, 9-4
system configuration printout A and B, 2-92
unpacking and inspection procedures, 2-53
Audit Table
format
Release 5 and up, 2-314
Releases 3 and 4, 2-312
interpretation
Release 5 and up, 2-313
Releases 3 and 4, 2-312
list audit table, 13-138
Authorization/Account Codes Table, 13-251
Automatic Call Distribution, 13-98
autoprint
agent performance and status report, 13-181
traffic reports, 13-191
commands
ACT: activate command, 13-190f
DEL: delete command, 13-190d
HELP: list move and change commands, 13-190b
LRER: list reports, 13-190c
LST: list command buffer, 13-190c
MACT: master activate command, 13-190i
MALD: master command, 13-190g
MDEL: master delete command, 13-190i
MLST: master list command, 13-190h
MOD: modify command, 13-190d
MSUS: master suspend command, 13-190h
SUS: suspend command, 13-190e
current status report, 13-184c
extension silent monitor table, 13-248
follow-me statistics, 13-182, 13-183
list ACD agent performance and status report, 13-179
list ACD parameters, 13-98a
list ACD traffic reports, 13-184
list call waiting thresholds, 13-100a
parameters table, 13-257
revise call waiting thresholds, 13-100b
set ACD parameters, 13-100
Automatic Call Intercept, 1-39
Automatic Call Restriction, 1-42
Automatic Program Load, 1-41, 3-29, 3-30
floppy disk system in redundant CBX with, 6-12
model 87871 integral floppy for, 2-138, 2-139
model 87875 integral floppy for (redundant systems), 2-143, 2-144
power-up with, 2-233
prompts and error messages, 13-132a
Autoprint
ACD agent performance and status report, 13-181
ACD traffic report, 13-191
expanded traffic statistics, 13-178
Autoprint Kill, 13-192
Autoselect
assign autoselect group, 13-55
change autoselect table, 13-84
group number, 11-22
tables, 11-19
AUTOVON Systems
COS features, 13-30
COS features, 13-30a
AUTOVON calling areas (19), 13-60a
AUTOVON maximum precedence level (20), 13-60b
AUTOVON precedence digit expected (22), 13-60b
AUTOVON preemption on AUTOVON ties (26), 13-60c

AUTOVON traffic on AUTOVON ties (23), 13-60b
commercial preemption on AUTOVON ties (27), 13-60d
commercial traffic on AUTOVON ties (24), 13-60c
incoming AUTOVON register type (21), 13-60b
internal precedence and preemption (IPP), 13-30, 13-31
internal preemption on AUTOVON ties (28), 13-60d
internal traffic on AUTOVON ties (25), 13-60c
trunk and feature access codes, 13-79
trunk commands, 13-52
trunk and feature access codes, 13-79
trunk commands, 13-52
AUTOVON calling areas (19) 13-60a
AUTOVON maximum precedence level (20), 13-60b
AUTOVON precedence digit expected (22), 13-60b
AUTOVON preemption on AUTOVON ties (26), 13-60c
AUTOVON traffic on AUTOVON ties (23), 13-60b
commercial preemption on AUTOVON ties (27), 13-60d
commercial traffic on AUTOVON ties (24), 13-60c
incoming AUTOVON register type (21), 13-60b
internal precedence and preemption (IPP), 13-30, 13-31
internal preemption on AUTOVON ties (28), 13-60d
internal traffic on AUTOVON ties (25), 13-60c
Auxiliary Equipment Ground Loops, 2-32

B

Bad Trunk
bad trunk table, 2-321, 2-322, 10-34
list reported bad trunks, 13-146
Battery
back-up, See Memory Back-up Battery.
charger size, 2-20
rack requirements, 2-19, 2-21
requirements, 2-20
Bias Generator PCA
functional description, 7-17
general description, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
pad, 13-235
Block Diagrams
ATC, 9-3
CDH trunk interface group, 10-20
coder PCA, 8-3
conference bridge group, 7-19
decoder PCA, 8-5
DID trunk interface group, 10-16
direct trunk bypass group, 10-27
direct trunk interface group, 10-2
DTMF register PCA, 7-10
ETI PCAs, 8-25
expander PCA, 5-11
floppy disk interface PCA, 6-13
I/O bus switch PCA, 6-8
KTA, 8-23
nonredundant computer common control, 4-3
quad DTMF register PCA, 7-13
redundant computer common control, 4-9
rotary sender PCA, 7-14
single-line OPX or OPS interface group, 8-14
tone generator PCA, 7-5
2-channel serial I/O PCA, 6-3
4-channel universal tie trunk group, 10-13
8-channel universal tie trunk interface group, 10-9
Bonded Copper Ground Rods, 2-23
Branch Circuits, 2-30, 2-34, 2-41
Busy Call Process, 11-5, 11-13
Bypass
cross-connects, 2-111
enable, 12-45, 12-55
functional description
CDH trunk, 10-30
direct trunk, 10-30, 10-47
general description
CDH trunk, 1-19
direct trunk, 1-18
troubleshooting, 10-47, 12-66

C

Cabinet Doors, 2-50
Cabinet, Adding, 2-156
Cable Pair Assignments
  bypass, 2-114
  DID trunk, 2-110
  direct trunk, 2-99
  ETS and key telephone, 2-87
  long-loop single-line telephones, 2-82
  quad serial I/O, 2-158s
  ROLMphone telephone, 2-81
  standard single-line and single-line OPX or OPS telephones, 2-81
  tie trunk, 2-105
Cable Terminations
  ATC, 2-120
  ETS telephone, 2-130
Call Detail Recording, 1-42
  CDR device J2 (SAP) pinouts, 12-58
  CDR unit rear view, 2-149
  commands
    disable CDR floppy, 13-154a
    floppy print aborted operation status, 13-158
    list CDR block count, 13-228
    list CDR traffic, 13-192
    list extension call details, 13-218
    list floppy revision level, 13-156
    list remaining capacity, 13-228
    print floppy sector, 13-156
    revise CDR inward, 13-72
    revise CDR outward, 13-77
    set CDR block count, 13-206
    test CDR magnetic tape, 13-157
    test floppy disk drive, 13-155
    write end of file
  exclusion table, 13-254
  Kennedy 9-channel magnetic tape system installation, 2-147
  model 87872 integral floppy for, 2-140, 2-142
  option parameter table, 13-254, 13-255
  traffic report, 13-193
  troubleshooting, 3-26, 3-27
Call Processing
  internal station to station, 11-5, 11-7
    *9 hold, 11-5, 11-11
    can't ring and busy, 11-5, 11-13
    COM group, 11-5, 11-15
    ringdown, 11-5, 11-17
  overview, 11-1
    queues, 11-4
    scheduler, 11-4
    state, 11-4
    status table, 11-4
    task, 11-4
    traffic table pegs, 11-3
    translation blocks, 11-3
  station to trunk, 11-19, 11-20
    last choice trunk call process, 11-26
    queuing call process, 11-27
    Release 4 route optimization, 11-19, 11-21
    Release 5 route optimization, 11-22, 11-24
    Release 6 route optimization, 11-22, 11-25
    trunk-accessing call process, 11-19
Call Queuing, 1-42
Call Screening, 13-90
Call Waiting Display, 13-180
Calling Number Destination (CND) COS command, 13-30
Camp On, 1-40
Can't Ring and Busy Call Process, 11-5, 11-13
Capacitors, 2200-Microfarad, 12-25
Capacity, 1-34
Cartridge System. See Magnetic Cartridge System.
CAS II Commands, 13-230a
  branch report printout, 13-230k
  list branch name, 13-230d
  list branch parameters, 13-230h
  list center parameters, 13-230b
  list department names, 13-230e
  modify branch name, 13-230e
  modify branch parameters, 13-230k
  modify center parameters, 13-230c
  modify department extension, 13-230g
  modify department names, 13-230f
CAS II MAC Commands Modified, 13-2301
  list traffic table entry, 13-230m
  list traffic table, 13-230m
  list trunk attributes, 13-2301
  modify tie flag, 13-230m
  revise trunk attributes, 13-2301
Cassette Unit. See Digital Cassette Unit.
CBX Bypass Groups. See Bypass.
CBX Documents, 1-2

CBX Management Reporter, 1-44
commands, 13-204
add department to exceptional call recording list, 13-227
assign department name, 13-214
change telephones not subject to call accumulation, 13-217
change telephones subject to call accumulation, 13-217
clear account code tables, 13-221
delete department, 13-214
delete division, 13-212
delete holiday, 13-210
designate holidays, 13-210
exchange extensions subject to CMR, 13-219
list account code report, 13-219
list all holidays, 13-209
list calls to specific numbers, 13-224
list CDR block count, 13-228
list CMR status of extension number, 13-229
list CMR traffic configuration, 13-200
list CMR traffic statistics report, 13-198
list corporate summary, 13-221
list cost printout adjustment factor, 13-218
list department name, 13-213
list departments subject to exceptional call recording, 13-226
list division summary, 13-222
list exceptional call parameters, 13-225
list exceptional calls, 13-225
list extension call details, 13-218
list extensions not in summary report, 13-223
list extensions within departments, 13-214
list flat rate table, 13-210
list international rate, 13-211
list maximum NNX count, 13-205
list maximum rate group count, 13-208
list NNX table count, 13-205
list NNX table, 13-204
list NPA table, 13-206
list rate group count, 13-209
list rate group, 13-207
list remaining CDR capacity, 13-228
list summary reports for all extensions within department, 13-223
list telephone numbers, 13-215
list traffic telephone number, 13-215
new extension accumulating summary data, 13-216
new extension subject to CMR, 13-219
revise CMR traffic internal time, 13-199
revise cost printout adjustment factor, 13-218
revise department name, 13-213
revise department number, 13-213
revise departments subject to exceptional call recording, 13-227
revise division name, 13-212
revise exceptional call parameters, 13-225
revise extension accumulating summary data, 13-216
revise flat rate table, 13-211
revise international rate, 13-211
revise NNX table count, 13-206
revise NNX table, 13-205
revise NPA table, 13-207
revise rate group count, 13-209
revise rate group table, 13-208
revise traffic telephone number, 13-216
set CDR block count, 13-228
set future print time, 13-217
set system for area code CMR, 13-228
start CMR traffic statistics report, 13-197
CDH Trunk Bypass. See also Bypass.
functional description, 10-25
bypass operation, 10-30
CDH trunk bypass interface PCA, 10-29
normal operation, 10-29
general description, 1-19
CDH Trunk Interface Group
functional description, 10-17, 10-29
general description, 1-18
maintenance, 10-33
removal and replacement, 10-65
troubleshooting, 10-33
CDR. See Call Detail Recording.

Ceilings, Floors and (Equipment Room), 2-10
Change Commands. See also Moves and Changes.
side number, 13-137
telephones not subject to call accumulation, 13-205
telephones subject to call accumulation, 13-217
Change Packages, 1-2
Channel Amplifier PCA, 10-76
Channel Identification
CHID dialogue, 10-54
list channel identification, 13-26
Channel Line Interface PCA
functional description, 8-11
maintenance, 8-27
schematic diagram, 8-12
Channel Test (CHTST), 2-297, 13-146
Check-out Procedures, System, 2-271
ATC check, 2-280
Checked Forced Account Codes, 1-46
direct trunk balancing, 2-280
channel amplifier PCA, 2-288
external R-C network, 2-290, 2-291
interface PCA jumper configurations and switch settings, 2-285
logic PCA, 2-284
loop-start trunks, 2-286
measuring ERL and SRL, 2-285
network build out capacitance, 2-289, 2-290
precision balance network, 2-291
test procedures, 2-281
test setup, 2-283
1.1-kilohm internal balance, 2-288, 10-76
900-ohm internal balance, 2-287
ETS station test, 2-292
floppy disk check-out, 2-292
key telephone station test, 2-292
ROLMphone telephone, 2-293
single-line station test, 2-292
trunk interface test, 2-292
4-wire test port PCA, 2-271, 2-273
connected to MDF, 2-275
controls and indicators, 2-272
loopback and silent test termination, 2-276
test setup, 2-278
Checked Forced Account Codes, 1-46
Chimes, Troubleshooting, 8-49
Circuit Capacity, 2-33
Clamps
cast bronze for armored ground wire, 2-24, 2-25
cast bronze for ground wire, 2-25
ground rod for cable to driven rod, 2-26
heavy duty, 2-23
U-bolt, 2-23, 2-24
Class of Service, 1-37
commands
assign DISA authorization code and COS, 13-60
list COS features, 13-26
list extension parameters, 13-15
list forced authorization code and COS, 13-32
list particular authorization code and COS, 13-31
moves and changes, 13-15
revise forced authorization code, COS and extension, 13-32a
sample COS feature assignment, 13-30a
set COS feature, 13-31
set COS, 13-31
features, 8-5, 13-27
specification table, 13-245
Cleaning
DCU heads, 3-4
floppy disk heads, 3-4
Clearances (in Equipment Room), 2-12
CMR II Commands, 13-229
list special rate cost, 13-230
revise special rate cost, 13-230a
Code Call, 1-45
access codes, 13-79
code call parameters, 13-132b, 13-132c
COS features, 13-30a
direct format, 13-260
ETS features, 13-44
system parameters, 13-114, 13-117, 13-122
Coder PCA
functional description, 8-1, 8-3
maintenance, 8-27
COM Group
call process, 11-5, 11-15
commands
list COM group code, 13-33
list COM group, 13-33
list extension parameters, 13-16
COM Line (Installation), 2-129
Command by Release, 13-270
Command Format, 13-1

Command Summary
call detail recording, 13-154
CBX management reporter, 13-204
command format, 13-1
commands by release, 13-271
configuration manual guide, 13-229
direct format, 13-259
equipment required, 13-1
error messages, 13-4
maintenance, 13-131
message registration, 13-201
moves and changes, 13-12
station/trunk troubleshooting, 13-15
traffic, 13-158
Command, ABO and AB1 PCA, 5-1
Command, Service Teleprinter, 2-235
Common Control Motherboard A
functional description, 4-2c
removal and replacement, 4-15
Common Control Motherboard B
functional description, 4-14
removal and replacement, 4-15
Companion I Installation, 2-131
Companion II Installation, 2-131
Complex Ground Loops, 2-31, 2-32
Components, Power Supply and Power Distribution System, 12-1
Computer Common Control Group, Chapter 4
functional description, 1-7, 4-1
general description, 1-7
internal grounding, 2-42a
nonredundant, 4-2b, 4-3
redundant, 4-7, 4-9
8000 computer common control group, 1-7
maintenance, 4-14
removing and replacing common control motherboard, 4-15
removing and replacing CPU 2, 3, and 4 PCAs, 4-17
removing and replacing memory and memory controller PCAs, 4-17, 4-19, 4-20, 4-21
removing and replacing memory motherboard, 4-16
Computer Groups, 1-7, 1-8c. See also Computer Common Control, TDM Network Control, and I/O Interface Groups.
nonredundant, 1-7, 1-8c
CPU PCAs, 1-8
memory controller PCA, 1-8
NPC, 1-9
RTC PCA, 1-9
TCC, 1-9
TDM network control PCAs, 1-8
12k memory PCAs, 1-7
2-channel serial I/O PCA, 1-9
48k memory PCAs, 1-8
redundant, 1-9, 1-10
Conductive backplane filler panels, 2-50
Conductive gasketing, 2-50
Conference Bridge Group
CBTST, 2-297
functional description, 7-17
block diagram, 7-19
signal flow, 7-19
general description, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
system configuration printout, 13-235
Configuration
memory
nonredundant, 4-5
redundant, 4-14
of critical electronics, 1-11
of jumper plugs
quad serial I/O PCA, 6-22
12k memory PCA, 4-19
48k memory PCA (model 85320), 4-20
48k memory PCA (model 85320A), 4-20
48k memory PCA (model 85320B), 4-21
of telephony groups, 1-11
of transfer rate selector plug, 6-6
Configuration Manual Guide. See System Configuration Printout.
Connection Facilities, 2-69
Connection Table, 5-6
Connections
KTA, 2-127
power monitoring, 3-11
tone generator PCA, 7-7
Connector Block, ATC 9-9
Connector Terminations, Key Telephone, 2-126
Connectors, Motor Control PCA, 6-25
Control PCA Test, 5-6. See also TDM Network Control.
model 87620 cassette, 3-35
model 87690 cassette, 3-40
model 87690A, 3-44
model 87690B, cassette, 3-45
error indications and messages, 3-46
operation with CRT or teleprinter, 3-45
operation without CRT or teleprinter, 3-45

model 87690C cassette, 3-46, 3-47
operation with CRT or teleprinter, 3-46
operation without CRT or teleprinter, 3-48
model 87691 diskette, 3-55
nonredundant systems, 3-55
redundant systems, 3-57
model 87691C diskette, 3-58
model 87693 cassette, 3-50
Control Station, 1-40
Controls and Indicators
ATC, 2-224i
CPU 1 and CPU 1 APL PCAs, 2-166, 2-167
CPU/memory switch assemblies 1 and 2, 2-158ah, 2-158ai
dc/ac inverter, 2-190, 2-190a
EPI STR-LINK II, 13-12
floppy disk interface PCA, 2-198, 2-199
I/O bus switch PCA, 2-196, 2-197
main power supply
dc, 2-188, 2-189
rotated dc main power supply, 2-204, 2-205
rotated 208-Vac main power supply (model 77110, level D), 2-200, 2-201
208-Vac model 77110, 2-184, 2-185
208-Vac model 86940, 2-180, 2-183
memory controller PCA (model 86200), 2-158i
memory controller PCA 8000, 2-158ab, 2-158ac
memory PCA, 2-165
memory power supply
model 77100, 2-202, 2-203
model 86950, 2-186, 2-187
memory switch assembly, 2-190b, 2-190c
NPC, 2-168, 2-169
PDP
cabinet 1 (dc), 2-212, 2-213
cabinet 1 (208 Vac), 2-206, 2-207
cabinet 2 (208 Vac and dc), 2-218, 2-219
cabinet 3 (208 Vac and dc), 2-222, 2-223
PortaCom service teleprinter, 13-6
power entry panel
dc cabinet 1, 2-176, 2-177
dc cabinets 2 and 3, 2-178, 2-179
208-Vac cabinet 1, 2-172, 2-173
208-Vac cabinets 2 and 3, 2-174, 2-175
quad serial I/O PCA, 2-158af, 2-158ag, 2-194, 2-195, 6-19
ROLMphone telephone, 2-224s
SAP
dc cabinet 1, 2-224d, 2-224e
dc cabinets 2 and 3, 2-224g, 2-224h
208-Vac cabinet 1, 2-224b, 2-224c
shelf 3 with TCC and NPC, 2-163
shelf 3, 2-161
Silent 700 service teleprinter, 13-9
Single Supply Memory 256k PCA, 2-158z, 2-158aa
TDM shelves, 2-170, 2-171
Techtran PXL 1000, 13-124
2-channel serial I/O PCA, 2-191, 2-192
4-wire test port PCA, 2-271, 2-273
7000 computer, 2-159
7000/8000 computer, 2-191
8000B CPU PCA, 2-158ad, 2-158ae
8000B CPU PCA, 2-158k
Conventional Key System 1A2 Installation, 2-132
Conversion, Data, KTI PCA, 8-19
Coordinator, Site, 2-9
Correction Table, 2-315, 2-316, 13-140
COS. See Class of Service.
Cost Printout Adjustment Factor, 13-218
Coupler PCAs. See ISB, MG-ISB
Couplings, Sectional Ground, 2-25, 2-26
Courtesy Down PCA, 13-148
CPU Diagnostic Test, 3-25
CPU PCAs
controls and indicators, 2-166, 2-167
functional description, 4-6
CPU 1 PCA, 4-7
CPU 2 PCA, 4-7
CPU 3 PCA, 4-7
CPU 4 PCA, 4-7
general description, 1-8
operating system loading with (CPU 1 APL PCA), 2-251
EPI STR-LINK II, nonredundant system, 2-251
EPI STR-LINK II, redundant system, 2-254

floppy disk, nonredundant system, 2-261
floppy disk, redundant system reloading, 2-266
floppy disk, redundant system, 2-264
Techtran PXL 1000, nonredundant system, 2-253
Techtran PXL 1000, redundant system, 2-258
operating system loading with (CPU 1 PCA), 2-240
EPI STR-LINK II, nonredundant system, 2-240
EPI STR-LINK II, redundant system, 2-254
Techtran PXL 1000, nonredundant system, 2-242
Techtran PXL 1000, redundant system, 2-247
removal and replacement, 4-17
CPU Test
model 87620 cassette, 3-37
model 87690 cassette, 3-40
model 87690A cassette, 3-43
model 87690B cassette, 3-45
model 87690C cassette, 3-46
model 87691 diskette, 3-55
nonredundant systems, 3-55
redundant systems, 3-57
model 87691C diskette, 3-58
model 87693 cassette, 3-62
CPU/Memory Switch Assemblies, 2-158ah, 2-158ai
Terminal blocks, 2-158k
Critical Electronics
functional description, 7-1
bias generator PCA, 7-17
conference bridge group, 7-17
DTMF register PCA, 7-9
quad DTMF register PCA, 7-11
rotary register PCA, 7-15
rotary sender PCA, 7-11
tone generator PCA, 7-2
general description, 1-11, 1-19
bias generator PCA, 1-19
conference bridge group, 1-19
DTMF register PCA, 1-19
quad DTMF register PCA, 1-19
rotary register PCA, 1-19
rotary sender PCA, 1-19
tone generator PCA, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
redundancy, adding, 2-151
Cross-Connects, 2-69
ATC, 2-90, 2-91
cable pair assignment, 2-95
punch-down sequence, configuration A, 2-105
punch-down sequence, configuration B, 2-110
system configuration printout A and B for ATC, 2-99
cabinet-to-MDF functions (25-pair cable), 2-74
CBX bypass group, 2-111, 2-112
cable pair assignments, 2-114
punch-down sequence, 2-113
wiring diagram, 2-117
Connection facilities, 2-69
DID trunk interface group, 2-107, 2-108
cable pair assignments, 2-110
punch-down sequence, 2-109
direct trunk interface group, 2-96, 2-97
cable pair assignments, 2-99
punch-down sequence, 2-98
ETI/KTI group, 2-83, 2-84,
cable pair assignments, 2-87
extension classification table, 2-85
punch-down sequence, 2-86
interface groups, 2-75
MDF layout, 2-71
MDF requirements, 2-45
OPS PCA, 2-79
peripheral equipment, 2-119
procedure, 2-79
ROLMphone telephone, 2-80
cable-pair assignments, 2-81
SAP-to-MDF connections, 2-76
single-line interface groups, 2-77, 2-78, 2-79
cable pair assignments, 2-81, 2-82
punch-down sequence, 2-80
universal tie trunk interface group, 2-101, 2-102
cable pair assignments, 2-105
punch-down sequence, 2-103
Cumulative Statistics Report Interpretation, 13-187
Cumulative Status Report, 13-185, 13-186a
Current Status Report, 13-184c, 13-185
Customer-Provided Equipment, 2-9

D

Daily Profile Report Interpretation, 13-195
Data Conversion, KTI PCA, 8-19
Data Receiver Register, 5-6
Data Transfer Between Computers, 4-11
Data Transmission Scheme, 5-6
Data Transmitter Register, 5-6
Data Word, 5-2
DC Cabinet, General Description, 1-22, 1-23, 1-24
DC Main Power Supply
  controls and indicators, 2-188, 2-189
  functional description, 12-12
  removal and replacement, 12-108
  voltages (PDP rear), 2-231
DC Plenum Assembly, 1-22a
DC Power Fail Circuits, 12-45, 12-46
DC Power Requirements
  battery charger size, 2-20
  battery rack requirements, 2-19, 2-21
  battery requirements, 2-19, 2-21
  dc power board, 2-17
  power cable wire size, 2-22, 2-22a
  primary power wiring diagram, 2-18
DC Voltage Distribution, 12-25
  +15V and -15V, 12-29
    dc cabinet 1 +15V, 12-32
    dc cabinet 1 -15V, 12-33
    208-Vac cabinet 1 +15V, 12-31
    208-Vac cabinet 1 -15V, 12-30
  +24V, 12-29
  +5P, +12P, and memory switch assemblies, 12-25
    +12P, 12-28
    +5P, 12-5
    to memory switch assembly, 12-28
  +5V, 12-25
    dc cabinet 1, 12-27
    208-Vac cabinet 1, 12-26
  -48V, 12-29
    dc cabinet 1, 12-35
    208-Vac cabinet 1, 2-56
  ring voltage, 12-29
    dc cabinet 1, 12-36
    208-Vac cabinet 1, 12-36
DC/AC Inverter
  controls and indicators, 2-166, 2-167
  functional description, 12-14a
  general description, 1-22
  removal and replacement, 12-109
DCU. See Digital Cassette Unit.
Decoder PCA
  functional description, 8-1, 8-5
  maintenance, 8-27
Deconfiguration floppy dump, 13-129
Department Commands
  assign names, 13-214
  delete, 13-214
  list extensions within departments, 13-214
  list names, 13-213
  list subject to exceptional call recording, 13-226
  list summary reports for all extensions within, 13-223
  revise name, 13-213
  revise number, 13-213
  revise subject to exceptional call recording, 13-227
Device Select Code Strapping Locations, 6-18
Diagnostics
  CPU, 3-25
  fault classification chart, 3-36
  model 87490A cassette, 3-50
    error messages, 3-53
    fault isolation, 3-27, 3-54
    LED indicators, 3-52
    operation with CRT or teleprinter, 3-50
    operation without CRT or teleprinter, 3-51
  model 87620 cassette, 3-35
    control PCA test, 3-38
    CPU test, 3-37
    memory test, 3-35
  model 87690 cassette, 3-38
    control PCA test, 3-40
    CPU test, 3-40
    memory test, 3-38
  model 87690A cassette, 3-40
    control PCA test, 3-44
    CPU test, 3-43
    memory test, 3-40
  model 87690B, 3-44
    control PCA test, 3-45
    CPU test, 3-45
    memory test, 3-44
  model 87690C cassette, 3-46
    control PCA test, 3-46, 3-47
    CPU test, 3-46
    memory test, 3-46
  model 87691 diskette, 3-55
    baud rate switches
    nonredundant systems, 3-55
    redundant systems 3-57
  model 87691C diskette, 3-58

model 87691D cassette, 2-158d
model 87693 cassette, 3-49
control PCA test, 3-50
CPU test, 3-50
magnetic tape test, 3-50
memory test, 3-49
TDM network exerciser, 3-50
model 87693A 8000 computer memory diagnostic cassette, 3-32c
model 87693A 8000 computer memory diagnostic cassette, 3-32e
8000 CPU memory test, 3-32a
model 89050 floppy on-line diagnostic, 3-58, 3-60
model 97691D diagnostic diskette, 3-32d
off-line model numbers, 3-34
run diagnostic test, 13-145
8000 computer memory diagnostic errors, 3-32d
8000 CPU memory test, 3-32g
Dialing Type, 13-16
Dictation Equipment, 1-40, 10-64
channel transmission levels, 10-65
checking configuration, 10-64
troubleshooting, 10-64
DID Trunk Interface Group, 2-108
cross-connects, 2-107
functional description, 10-15, 10-16
general description, 1-18a
installation, 2-108a
interface test, 10-48, 10-52
maintenance, 10-33
removal and replacement, 10-65
troubleshooting, 10-33
Digit Translation
list by trunk display group, 13-97
list table, 13-96
revise digit translation of trunk display group, 13-98
revise table, 13-97
table, 10-49, 13-252
Digital Cassette Unit. See also EPI STR-LINK II and Techtran PXL 1000
general description, 1-32, 1-33
heads, cleaning, 3-4
installation, 2-108a
interconnection, 13-7
setup procedures, 2-236
EPI STR-LINK II, 2-236, 2-238
Techtran PXL 1000, 2-239, 2-240
Troubleshooting, 3-22, 3-23, 3-25
Direct Format, 13-259
Direct Inward System Access, 1-38
Direct Trunk
balancing, 10-68
balance test setup, 2-282, 10-69
channel amplifier PCA, 2-288, 10-76
external R-C network, 2-290, 2-291, 10-78, 10-79
jumper configurations and switch settings, 2-285, 10-73
logic PCA, 2-284, 10-72
loop-start trunks, 2-286, 10-74
measuring ERL and SRL, 2-285, 10-73
NBOC network, 10-78
network buildout capacitance, 2-289, 2-290, 10-77
precision balance network, 2-291, 10-79
test procedures, 2-281, 10-68
1.1-kilohm internal balance, 2-288, 10-76
4-wire test port PCA, 10-70
900-ohm internal balancing, 2-287, 10-75
cross-connects, 2-96
installation, 2-98
interface group
block diagram, 10-2
functional description, 10-1
general description, 1-18
maintenance, 10-33
interface PCA, model 85570
functional description, 10-3, 10-5
removal and replacement, 10-66, 10-67
interface PCA, model 85570A, 10-3, 10-7
testing and troubleshooting, 10-40a
access code assignment, 10-45
direct trunk interface test, 10-42
direct trunk protocol, 10-41
direct trunk quick test, 10-40
test setup, 10-43
Direct Trunk Bypass Group
functional description, 10-30
block diagram, 10-27
bypass operation, 10-32
direct trunk bypass interface PCA, 10-31
normal operation, 10-32
general description, 1-18a
installation, 2-112a
DISA, Assign Authorization Code, 1-38, 13-60
Disk System. See Floppy Disk System

Disposable Filters, 3-2
Distribution Loss Resistors, 12-15, 12-23
Division Commands
  delete, 13-212
  list division summary, 13-222
  revise name, 13-212
Documents, CBX Related, 1-2
Double-Sided Integral Floppy Disk Drive Assemblies, 2-144a
  drive unit, 2-144d
  integral disks, 2-144d
  jumper plug configuration, 2-144b
  upgrade, 2-144a
Dranetz 606 and 616 Monitoring Ranges, 3-12
Drive Select Jumper Plug Locations, 2-141
Driving Studs, Sectional Ground, 2-25, 2-26
DTMF Register PCA
  functional description, 7-9
    block diagram, 7-10
    signal flow, 7-9
  general description, 1-19
  maintenance, 7-20
    removal and replacement, 7-20
    troubleshooting, 7-20
Dump Moves and Changes Table, 13-123
Dumping from EPI STR-LINK II to Techtran PXL 1000, 2-268

E

E&M Type I Signaling Test Setup, 10-57
E&M Type II Signaling Test Setup, 10-58
8-Channel Line Interface PCA
  functional description, 8-6, 8-24
  maintenance, 8-27
  schematic, 8-9
8-Channel OPX or OPS Line Interface PCA
  functional description, 8-13
  maintenance, 8-27
  schematic diagram, 8-15
8-Channel Tie Trunk Interface PCA, 2-102
8-Channel Universal Tie Trunk Group
  block diagram, 10-9
  removal and replacement (PCA), 10-83
    level 1, 2 jumper configuration, 10-85
    level 3 and higher switch settings, 10-85
  trunk controller PCA and 8-channel universal tie trunk PCA, 10-61
8000 Computer, 4-16
8000 Computer Maintenance, 5-10a
  removal and replacement, 5-10a
    removing the expanded PCA, 5-10b
    removing the RTC and TDM PCA, 5-10a
  troubleshooting, 5-10a
8000 Memory Controller PCA, 1-158ab, 2-158ac
8000B CPU PCA, 2-158ad, 2-158ae
8000 Computer
  controls and indicators, 2-158y
  functional description, 4-2a
  memory motherboard A, 1-8b, 4-1
  memory motherboard B, 1-8b, 4-2
  program loading procedures, 2-234
  shelf 3 terminal blocks, 2-158h
  single supply memory 256k PCA, 2-158g
  single-supply memory 256k PCA, 2-158z, 2-158aa
  upgrading a 7000 computer to an 8000 computer, 2-158
  8000 memory controller PCA, 2-158ab, 2-158ac
  8000A CPU PCAs, 4-2a
  8000B CPU PCA, 2-158ad, 2-158ae
  8000B CPU PCAs, 2-158j, 4-2a
8000 Upgrade Package
  installation in 208-Vac/dc nonredundant cabinets, 2-158b
  installation in 208-Vac/dc redundant cabinets, 2-158e
  installation kit, 2-158a
8-Channel DID Trunk Interface PCA, 2-108
Electrical Specifications, 1-35
Electronic telephone, 1-42
Enable Lines, PCA, 5-1
Environmental Specifications, 1-37
  physical specifications, 1-34
  transmission levels at 1004 Hz, 1-36
EPI-COM 300 Cartridge System Installation, 2-146
EPI-STR LINK II, 13-12
  controls and indicators, 13-124
  dumping to Techtran PXL 1000, 2-268
  move and change cassette loading, 2-269
  operating system loading with Model 85000A CPU 1 PCA

nonredundant system, 2-240
redundant system, 2-243
operating system loading with Model 85370 CPU 1 APL PCA
nonredundant system, 2-251
redundant system, 2-254
setup procedures, 2-236
Equal Access Software Commands, 13-98k
delete common carrier access, 13-98t
list common carrier attributes, 13-98n
list common carrier by index, 13-98w
list common carrier routes, 13-98w
list default common carrier, 13-98u
list overflow class of service, 13-98v
list route attributes, 13-98p
new common carrier access, 13-98n
revise common carrier attributes, 13-98o
revise default common carrier, 13-98u
revise overflow class of service, 13-98v
revise route attributes, 13-98r
Equipment Cabinet Structure, 1-3
computer groups,1-7
nonredundant, 1-7, 1-8
redundant, 1-9, 1-10
critical electronics and telephony groups, 1-11, 1-13
critical electronics, 1-19
general configuration, 1-11
interface groups, 1-11, 1-15
hardware listing, 13-230
model numbers, 1-4
power supply and power distribution system, 1-19
dc cabinet, 1-22, 1-23, 1-24
208-Vac cabinet, 1-19, 1-20, 1-21
SAP, 1-22
ventilation equipment, 1-22
Equipment Room
clearances, 2-12
layout, 2-13
ERL and SRL, Measuring, 10-73
Error Codes, 2-294
Error Messages, 2-301, 13-4, 13-129, 13-131, 13-132, 13-132a
Error Table, 2-303. See also On-Line Diagnostics.
clear error table,13-134
list error table, 13-131
Error Types, 13-133
ESW/Address Limit Tables, 3-39
ETI and KTI, 2-85
ROLMphone telephone, 2-80
ETI Group
cross-connects, 2-83
functional description, 8-24, 8-25
general description, 1-18
list PROM level, 13-137
maintenance
removal and replacement, 8-49
troubleshooting, 8-40
ETS Telephone
call waiting thresholds, 13-101
commands, 13-36
activate ETS, 13-36a
deactivate ETS (Release 6), 13-36a
interchange ETS, 13-38
list feature configuration tables, 13-39
list key or ETS button extensions, 13-36a
list line status extensions, 13-46a
move ETS telephone, 13-38
revise ETS button extensions, 13-38
revise ETS configuration, 13-44e
revise feature configuration, 13-44d
revise line status extensions, 13-47
revise voice call feature, 13-46
configuration table, 13-234
cross-connects, 2-83
feature button, 13-45
features, 13-40
information table, 13-247
installation, 2-84a, 2-129
station test, 2-292
Exceptional Call Commands
add department to exceptional call recording list, 13-227
list parameters, 13-225
list, 13-225
revise parameters, 13-225
Expanded Traffic Table Listing Explanation, 13-175
Expanded Traffic, 1-41
Expander PCA
address plug location and configuration, 5-15
EXTST, 2-297
functional description, 5-9

address bus command word configuration, 5-10
block diagram, 5-11
signal flow, 5-12
removal and replacement, 5-14
Expansions. See Upgrades and Expansions.
Extension Classification Table, 2-86, 10-55
Extension Number Line Assignment and Characteristics, 13-235, 13-236
Extension Parameters, List, 13-13
class of service, 13-15
COM group, 13-16
dialing type, 13-16
EXTN.#-FWD-to, 13-15
message waiting, 13-16
physical address, 13-14
pick-up group, 13-15
system forwarding flag, 13-15
test flag and tie flag, 13-16
voice call, 13-16
Extension Status Listing, 8-36, 8-41, 13-22, 13-64
change NOTEST flag, 13-25
list all extensions forwarded to this extension, 13-23
list channel identification, 13-26
list COS features, 13-23
list extension speed call numbers, 13-24
list trunk delay, 13-66
modify tie flag, 13-65
revise forwarding, 13-23
set dialing type, 13-25
External Device Connections, 12-55

F

Fall of Potential Method, 2-24
Fault Analysis, Power Distribution, 12-67, 12-68. See also Troubleshooting.
FCC EMI Radiation Limitations, 1-37
FCC Emission Requirements, 2-49
cabinet doors, 2-50
conductive gasketing, 2-50
flanges, 2-50
motherboards with added ground plane, 2-50
shielded ISB, 2-49, 2-50
Features, COS, 8-37
Feeder, 2-28
maximum ground wire length for, 2-31
single-point ground evaluation and, 2-40
+15V and -15V
+15V missing at test point, 12-83, 12-85
-15V missing at test point, 12-85, 12-87
distribution, 12-29
dc cabinet 1 +15V, 12-32
dc cabinet 1 -15V, 12-33
208-Vac cabinet 1 -15V, 12-30
208-Vac cabinet 1 -15V, 12-31
tolerances, cannot be adjusted to, 12-73
Filters
disposable filters, 3-2
First Digit Table,
list, 12-102, 13-103, 13-249
revise, 13-103
+5P
distribution, 12-25, 12-27
missing at test point, 12-72
+5V
distribution, 12-25
dc cabinet 1, 12-27
missing at test point, 12-72
208-Vac cabinet 1, 12-26
Flanges, 2-50
Flashphone
installation, 2-130
troubleshooting, 8-40
Flat Rate Table Commands
list, 13-210
revise, 13-210
Floors and Ceilings (Equipment Room), 2-10
Floppy Disk Assemblies, Double-Sided, 2-144a
drive unit, 2-144e
integral disks, 2-144d
jumper plug configuration, 2-144b
upgrade, 2-144a
Floppy Disk Commands
deconfiguration floppy dump, 13-129, 13-130
disable CDR floppy, 13-154
floppy print aborted operation status, 13-158
list floppy revision level, 13-156
print floppy sector, 13-156
test floppy disk drive, 13-155
verify loaded diskette, 13-129
Floppy Disk Controller Interface, 6-10
Floppy Disk Interface PCA
controls and indicators, 2-198, 2-199
functional description, 6-10

block diagram, 6-13
floppy-disk controller interface, 6-10
serial interface, 6-14
maintenance
removal and replacement, 6-17
troubleshooting, 3-22, 3-60
Floppy Disk System, Integral. See also Call Detail Recording.
air conditioning and power dissipation, 2-49
assembly, 3-63
check-out, 2-292
diskette insertion, 2-263
double-sided disks, 2-144a
general description, 1-25, 1-27
heads, cleaning, 3-4
in nonredundant CBX, 6-11
in redundant CBX with APL, 6-12
installation, 2-133
model 87870 single-sided floppy disk assembly, 2-133, 2-134, 3-63
model 87871 for APL, 2-138, 2-139
model 87872 for CDR, 2-140, 2-142
model 87875 for APL (redundant systems), 2-143, 2-144
Model 88981 double-sided floppy disk assembly, 3-66a
on-line diagnostics, 3-58, 3-60
operating system loading, 2-261
nonredundant system, 2-261
redundant system, reloading, 2-266
redundant system, 2-264
removal and replacement
motor control paddleboard connections, 3-65
power and signal cable connections, 3-66
troubleshooting, 3-26
APL, 3-29, 3-30
CDR, 3-26, 3-27
Floppy Disk System, Single-Sided, 2-133
Floppy Disk System, Stand-Alone, 2-145
Follow-Me Statistics Report, 13-182
Forced Authorization Code
list, 13-32
revise, 13-32
-48V
distribution, 12-29
missing at TDM shelves, 12-75
missing at TEST POINT, 12-93
DC cabinet 1, 12-35
208 Vac cabinet 1, 12-34
48k Memory PCAs
Forwarding, Revise, 13-23
4-Channel Universal Tie Trunk Group
functional description, 10-11
block diagram, 10-13
4-channel universal tie trunk interface PCA component configuration, 10-12
4-channel universal tie trunk interface PCA schematic diagram, 10-14
removal and replacement, 10-87, PCA
circuit descriptions, 10-89
circuit requirements, 10-89
jumper and IC locations, 10-88
strapping, 10-87
4-Channel KTI PCA
data conversion, 8-19
functional description, 8-16
interconnections, 8-18
maintenance, 8-27
4STAR Switching System, 1-42
automatic network dialing, 1-42
ROLMNET, 1-43
route optimization, 1-43
satellite operations, 1-43
4-Wire Test Port PCA
connected to MDF, 2-275
controls and indicators, 2-274
loopback and silent test termination, 2-276
test setup
direct trunk interface PCA, 2-279
standard single-line interface PCA, 2-279
universal tie trunk interface PCA, 2-278, 2-278a
Frame (ATC), Aligning, 9-13, 9-15
Functional Descriptions
ATC, 9-1
computer common control group, 4-1
critical electronics, 7-1
input/output device interfaces, 6-1
memory controller PCA (8000 computer), 4-2
power supply and power distribution system, 12-1
single supply 256k memory PCA, 4-2
station interface groups, 8-1
bias generator PCA 7-17
coder PCA, decoder PCA, and interface motherboards, 8-1
conference bridge group, 7-17
dc power supplies, 12-10

DTMF register PCA, 7-9
ETI group, 8-24
expander PCA, 5-9
floppy disk interface PCA, 6-10
I/O bus interface PCA, 6-14
I/O bus switch PCA, 6-7
ISB, 5-2
KTI group, 8-13
long-loop single-line interface group, 8-11
motor control PCA, 6-10
nonredundant, 4-2b
NPC, 5-8
power distribution, 12-14
power entry panel, 12-1
quad DTMF register PCA, 7-11
quad serial I/O PCA, 6-6
redundant, 4-1, 4-7
rotary register PCA, 7-15
rotary sender PCA, 7-11
RTC PCA, 5-9
single-line OPX or OPS interface group, 8-13
standard single-line interface group, 8-6
TCC, 5-8
TDM motherboards, 5-1, 5-2
TDM network control 1 and 2 PCAs, 5-4
tone generator PCA, 7-2
2-channel serial I/O PCA, 6-1
208-Vac power supplies, 12-2
TDM network control group, 5-1
trunk interface groups, 10-1
bypass groups, 10-17
CDH trunk interface group, 10-17
DID trunk interface group, 10-15
direct trunk interface group, 10-1
Universal tie trunk interface group, 10-8
watchdog timers, 4-2
8000 CPU, 4-2
Fuse Alarm PCAs, 12-15
Fuse Alarm, 12-47, 12-50
Fuse Replacement (ATC), 9-15, 9-16
Fuse Upgrade, 2-158v

G

Gain Adjustment, VENTURE 1, 2-123
Grounding
existing installations, 2-39
grounding methods, 2-26
hardware, 2-23
inspection, 3-5
internal cabinet, 2-41
new installations, 2-35
overview, 2-22
power wiring problems, 2-30
bonded copper ground rods, 2-23,
branch circuits, 2-30
cast bronze ground clamps for armored ground wire, 2-24, 2-29
cast bronze ground clamps for ground wire, 2-25
CBX branch circuit evaluation, 2-41
CBX feeder and single-point ground evaluations, 2-40
combined isolated ground and single point ground, 2-26, 2-28
dranetz 606 and 616 monitoring ranges, 3-12
fall of potential method, 2-24
feeder, 2-28
ground independence measurement, 3-5, 3-7
ground loops, 2-30
ground rod clamps for cable to driven rod, 2-26
heavy duty ground rod clamps, 2-23
initial inspection, 3-5
inspection form, 3-6
isolation transformers, 2-27, 2-29
loose connections, 2-35
neutral-ground bonds, 2-35
normal-mode noise source, 3-10
panelboard, 2-28a
pig tail ground rods, 2-26
power line disturbance monitoring, 3-8
power monitoring connections, 3-11
power supply grounding, 2-42
preinstallation site survey, 2-36
sectional ground rods, couplings, and driving studs 2-25, 2-26
single-point-to-cabinet grounding, 2-27
site record, 2-37
site requirements, 2-35
test equipment 2-36, 2-38

TSG/ASG and DSG grounding on TDM and CPU motherboards, 2-42a
U-bolt ground clamps, 2-23, 2-24
undersize wire, 2-31
power wiring, 2-27
troubleshooting, 2-31, 2-32

H

Hardware Configuration Checks, 2-55
PCA identification markings, 2-56
shelf 3 identification markings, 2-57
system configuration printout, 2-56
Hardware to Support Increased Software, 2-150
Heads, Cleaning
DCU, 3-4
floppy disk, 3-4
Headset Modification, ATC 9-13
High-Temperature Alarm, 12-47, 12-48
Holiday Commands
delete, 13-210
designate, 13-209
list all, 13-209
Home Area Code, 11-22
Hunt/Distribution Group, 1-38a
list, 13-33
revise 13-34

I

I/O Bus Interface PCA
functional description, 6-14
removal and replacement, 6-17
I/O Bus Switch Bypass PCA, 1-8b
I/O Bus Switch PCA
controls and indicators, 2-196, 2-197
functional description, 1-8c, 6-7
block diagram, 6-8
switched I/O bus signal flow, 6-9
removal and replacement, 6-17, 6-23
Impulses, 3-12
Indicators. See Controls and Indicators.
INPUT Circuit Breaker Tripped, 12-71
Input Listing, 13-229
Input Power Distribution
dc cabinet, 12-2, 12-5
208-Vac cabinet, 12-2, 12-3
Input/Output Device Interfaces
functional description, 6-1
general description,1-7
maintenance, 6-14
floppy disk interface PCA, 6-10
I/O bus interface PCA, 6-14
I/O bus switch PCA, 6-7
motor control PCA, 6-10
quad serial I/O PCA, 6-6
removal and replacement, 6-14
troubleshooting, 6-14
2-channel serial I/O PCA, 6-1
Inspection and Unpacking, 2-51
ATC, 2-53
CBX cabinets, 2-51
Installation, Cabinet, 2-55
FCC emission requirements, 2-49
cabinet doors, 2-50
conductive gasketing, 2-50
flanges, 2-50
hardware configuration checks, 2-55
multi-cabinet interconnections, 2-57
placement, 2-55
ISB connections, 2-57
MG-ISB connections, 2-65
motherboards with added ground plane, 2-50
PCA identification markings, 2-56
shelf 3 PCA identification markings, 2-57
shielded ISB, 2-49, 2-50
system configuration printout, 2-56
8000 upgrade package, 2-158
Integral Floppy Disk System. See Floppy Disk System.
Intercom Blocking, 1-39
Interconnections, Key Telephone, 8-19
Interface Groups, 1-11, 1-13, 1-15, 2-75. See also listing for each group.
Interface Motherboards
functional description, 8-1
maintenance
removal and replacement, 8-49, 10-65
troubleshooting, 8-40
Interface PCAs. See listing under each type of PCA.
Internal Precedence and Preemption (IPP) COS Command, 13-30

International Rate
list 13-211
revise 13-211
Intershelf Bus. See also MG-ISB.
connections, 2-57
functional description, 5-3
removal and replacement, 5-6, 5-17
terminator A assembly, 5-18
terminator B assembly, 5-18
cabinet 1 bay B to cabinet 2, 2-62
cabinet 1 to cabinet 3, 2-64
cabinet 2 bay A to cabinet 1, 2-62
cabinet 3 bay B to cabinet 1, 2-63
cable routing for computers 1 and 2, 2-59
ISB and ground strap, 2-58
ISB terminator PCAs at cabinet 2 bay B, 2-63
ISB terminator PCAs at cabinet 3 bay A, 2-65
Intrashelf Bus Configuration, 5-2
Inverter, DC/AC. See DC/AC Inverter.
ISB Coupler and Terminator PCAs, 12-39
shielded, 2-50
single-cabinet systems, 12-40, 12-41
three-cabinet systems, 12-45
two-cabinet systems, 12-43, 12-45
ISB Replacement Brackets, 2-157
ISB. See Intershelf Bus
Isolated Ground and Single-Point Ground, 2-26, 2-28
Isolation Transformers 2-27, 2-29

J

Jumpers
I/O bus switch PCA, 6-23
model 85320 48k memory PCA, 4-20
model 85320A 48k memory PCA, 4-20
model 85320B 48k memory PCA, 4-21
quad serial I/O PCA, 6-22
StarSet amplifiers, 2-125
12k memory PCA, 4-19

K

Kennedy 9-Channel Magnetic Tape System. See Magnetic Tape System.
Key System IA2 Installation, 2-132
Key Telephone
commands, 13-36
activate, 13-36
list feature configuration table, 13-39
move, 13-38
revise button extensions, 13-37
cross-connects, 2-83
installation, 2-126
interconnections, 8-18
station test, 2-292
troubleshooting, 8-40, 8-41
COM line, 2-129
connector terminations, 2-126
recommended telephones, 2-128
six-key phones, 2-127
ten-key phones, 2-128
Key Telephone Adapter
block diagram, 8-23
functional description, 8-20
installation, 2-84b, 2-127, 2-129
interconnections, 8-18
KSTST, 2-299
maintenance, 8-27
KTI Group
cross-connects, 2-81, 2-83
functional description, 8-13
block diagram, 8-17
KTA, 8-20, 8-23
KTI PCA data conversion, 8-19
KTI PCA/KTA/key telephone interconnections, 8-18
removal and replacement, 8-49
troubleshooting, 8-27
4-channel KTI PCA, 8-16, 8-21
general description, 1-18
maintenance
K1 and K2 Relays, 12-15

L

Lamp Replacement (ATC), 9-16
backlit display lamp, 9-16
push-button lamp, 9-17
Last Choice Trunk, 11-19, 11-26
Line Interface PCAs. See also name of PCA.
functional description, 8-1

maintenance, 8-27
LKB Listing, 8-41
Load Testing Memory Back-up Batteries, 3-2
Loading, Program. See Program Loading.
Local Mode, 2-234, 13-5, 13-9, 13-10
Logic PCA, 16-Channel ETI I, See 16-Channel ETI Logic PCA.
Long-Loop Single-line Interface Group
cross-connects, 2-77
functional description, 8-11, 8-12
general description, 1-17
maintenance
removal and replacement, 8-49
troubleshooting, 8-27
Loop-Start Trunks, 10-11
Loopback and Silent Test Termination, 2-276
Low Voltage Shutdown, 12-9
LRS Command Dialogue, 13-143

M

Magnetic Cartridge System, 1-28, 1-30
Magnetic Tape System, 1-28
connectors, 2-148
general description, 1-28
installation, 2-147
Magnetic Tape Test
model 87490A magnetic tape diagnostic cassette, 3-50
error messages, 3-50
fault isolation, 3-54
LED indicators, 3-53
operation with CRT or teleprinter, 3-50
operation without CRT or teleprinter, 3-51
model 87691C diskette, 3-58
model 87693 cassette, 3-50
Maid Status Control (MSC) COS Command, 13-30
Maid Status Room (MSR) COS Command, 13-30
MAIN CIRCUIT BREAKER Tripped, 12-70
Main Power Supply (DC Cabinet)
controls and indicators, 2-198, 2-199
functional description, 12-12
output ratings, 12-12
schematic diagram, 12-13
general description, 1-22
removal and replacement, 3-66h, 12-108
dc main power supply/SAP voltage inputs, 12-47
rotated, 2-204, 2-205, 12-14
Main Power Supply (208-VAC Cabinet)
controls and indicators
model 77110, 2-184, 2-185
model 86940, 2-180, 2-183
functional description, 12-7
ac power fail signal, 12-9
cabinet 1 schematic diagram, 12-8
output ratings, 12-7
overvoltage trip points, 12-9
voltage adjustments, 12-7
general description, 1-22
removal and replacement, 3-66g, 12-106
rotated, 2-200, 2-201, 12-8a
Maintenance. See also Self-Test
ATC, 9-4
removal and replacement, 9-4
troubleshooting, 9-4
commands
change side number, 13-137
clear error table,13-134
courtesy down PCA, 13-148
down control PCA, 13-150
down LCBX tie, 13-150
down PCA, 13-149
error types, 13-133
list assignment of extensions, 13-154
list audit table, 13-138
list correction table, 13-140a
list error information, 13-151
list error table, 13-132d
list ETI prom level, 13-147
list extension register/sender data, 13-142
list registers/senders, 13-143
list reported bad trunks, 13-146
list self-test results, 13-152
list system status, 13-153
NPC restart, 13-152
NPC, 13-153
post/standby load, 13-136
revise registers/senders, 13-144
revise security key, 13-136
run channel test, 13-146
run diagnostic test, 13-145
run message waiting test, 13-151
self-tests, 13-134
set message waiting, 13-152
set time and day, 13-134

switchover, 13-138
up control PCA, 13-150
up LCBX tie, 13-150
up PCA, 13-149
computer common control group, 4-14
removing and replacing common control motherboard, 4-16a
removing and replacing CPU 2,3 and 4 PCAs, 4-17
removing and replacing memory and memory controller PCAs, 4-16a, 4-19, 4-20, 4-21
removing and replacing memory motherboard, 4-16, 4-16b
critical electronics, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
input/output device interfaces, 6-14
removal and replacement, 6-14
troubleshooting, 6-14
maintenance tables, listing (self-test), 3-2
power supply and power distribution system, 12-66
removal and replacement, 12-103
troubleshooting, 12-66
station interface groups, 8-27
removal and replacement, 8-49
troubleshooting, 8-27
system, Chapter 3
diagnostics, 3-33
preventive, 3-1
removal and replacement (PCAs and floppy disk drive), 3-61
tools and equipment, 3-1
troubleshooting, 3-13
TDM network control group, 5-10
removal and replacement, 5-13
troubleshooting, 5-13
traffic table pegs for, 2-318
trunk interface group, 10-33
removal and replacement, 10-65
troubleshooting, 10-33
7000 computer, 4-16a, 5-13
removal and replacement, 5-13
8000 computer, 4-16, 5-10a
removal and replacement, 5-10a
MDF Cross-Connects. See Cross-Connects.
Memory Back-Up Batteries
functional description, 12-10
general description, 1-22
preventive maintenance (load testing), 3-2
removal and replacement, 12-105
Memory Configurations
nonredundant, 4-5
redundant, 4-14
Memory Controller PCA (8000)
controls and indicators, 2-158ab, 2-158ac
functional description, 1-8b, 4-2, 4-6
general description, 1-8a
removal and replacement 4-17
Memory Motherboard A
functional description, 1-8a, 4-2c
functional description, 1-8b, 4-1
removal and replacement, 4-16
Memory Motherboard B
functional description, 1-8a, 4-2a, 4-14
removal and replacement, 4-16
Memory PCAs
address plug/jumper
12k, 4-19
48k (model 85320), 4-20
48k (model 85320A), 4-20
48k (model 85320B), 4-21
controls and indicators, 2-165
functional description, 4-2c
general description, 1-7
12k, 1-8
48k, 1-8
nonredundant memory configurations, 4-5
removal and replacement, 4-17
Memory Power Supply, 12-9
controls and indicators
model 77100, 2-202, 2-203
model 86950, 2-186, 2-187
functional description
low voltage shutdown, 12-9
output ratings, 12-9
schematic diagram, 12-10
voltage adjustments, 12-9
wiring diagram, 12-11
general description, 1-22
removal and replacement, 12-105
Memory Switch Assembly
controls and indicators, 2-190b, 2-190c
terminal blocks, 2-158
voltage distribution, 12-25, 12-28
voltages 12-39
Memory Test
model 87620 cassette, 3-35, 3-37
model 87690 cassette, 3-38
model 87690, 3-40
model 87690A cassette, 3-40
model 87690B cassette, 3-45
model 87690C cassette, 3-46
model 87691 diskette, 3-55

nonredundant systems, 3-55
redundant systems, 3-57
model 87691C diskette, 3-58
model 87693 cassette, 3-49
Memory, Expanding
nonredundant system, 2-156
redundant system, 2-156
Message Registration, 13-201
list and clear message total, 13-201
list message rate, 13-202
list message total, 13-203
Revise Message Rate, 13-202
Revise Message Total, 13-203
table, 13-250
Message Waiting Lamp Single-Line Interface Group, 2-158d, 8-26a
Message Waiting, 1-44
change 13-36
list extension parameters, 13-13
list 13-36
run test, 13-151
set, 13-152
test (MWTST), 2-299
MG-ISB
connections, 2-65
cable routing for computers 1 and 2, 2-59
MG-ISB and ground strap, 2-58
TDM network control paddleboards, 2-67
terminator PCAs, 2-68
functional description, 5-3
removal and replacement, 5-19
upgrade, hardware requirements for, 2-157
Mixed PCA Groups, 1-19
Model 88981 double-sided floppy disk assembly, 3-66a
in nonredundant CBX, 6-11
in redundant CBX with APL, 6-12
on-line diagnostics, 3-58, 3-60
operating system loading, 2-261
redundant system, reloading, 2-266
removal and replacement
troubleshooting, 3-26
APL, 3-29, 3-30
CDR, 3-26, 3-27
motor control PCA connections, 3-65
nonredundant system, 2-261
power and signal cable connections, 3-66
redundant system, 2-264
Modem Alarm J30 (SAP) Pinouts, 12-65
Modem Extension Number Conversion Table, 13-19
Motherboards with added ground plane, 2-50
Motherboards. See names of motherboards.
Motor Control Paddleboard
connectors, 2-136, 3-65
functional description, 6-10
floppy disk system in nonredundant CBX, 6-11
floppy disk system in redundant CBX with APL, 6-12
schematic diagram, 6-13
maintenance
removal and replacement, 6-23, 6-24, 6-25
troubleshooting, 3-22, 6-14
orientation, 2-137
Moves and Changes, 13-12
ATC group commands, 13-47
list ATC group, 13-47
revise ATC extension, 13-48
revise ATC group, 13-48
automatic call distribution, 13-98
list ACD parameters, 13-98
list call waiting thresholds, 13-100
revise call waiting thresholds, 13-100
set ACD parameters, 13-99
ETS or key telephone commands, 13-36
activate ETS, 13-36a
deactivate ETS (Release 6), 13-36a
list feature configuration tables, 13-39
list key or ETS button extensions, 13-36a
list line status extensions, 13-46
move key or ETS telephone, 13-38
revise ETS configuration, 13-44e
revise feature configuration tables, 13-44d
revise key or ETS button extensions, 13-37
revise line status extensions, 13-47
revise voice call feature, 13-46
move and change load, 13-12
EPI STR-LINK II DCU, 13-12
Techtran PXL 1000 DCU, 13-13
route optimization, toll restriction, and digit translation, 13-78

change autoselect table, 13-84
change trunk restriction table, 13-83
delete area code, 13-89
list access codes, 13-78
list area autoselect table, 13-84
list area routeselect, 13-86
list area/office codes, 13-87
list digit translation by trunk display group, 13-97
list digit translation table, 13-96
list office code routeselect, 13-87
list route attributes, 13-91
list trunk restriction table, 13-83
new area code, 13-88
revise access codes, 13-82
revise area code, 13-89
revise digit translation of trunk display group, 13-98
revise digit translation table, 13-97
revise office code, 13-90
revise route attributes, 13-95
revise route group number, 13-90
set area autoselect, 13-85
set area routeselect, 13-86
set office code routeselect, 13-87
single-line commands, 13-13
change NOTEST flag, 13-25
ETS or key telephone commands, 13-36
interchange extensions, 13-20
list all extensions forwarded, 13-23
list channel identification, 13-26
list COM group, 13-33
list COS features, 13-26
list extension parameters, 13-13
list extension speed call, 13-24
list forced authorization code and COS, 13-32
list hunt/distribution group, 13-33
list message waiting, 13-36
list particular authorization code and COS, 13-31
list pick-up group, 13-34
list status of extension, 13-20
move extension numbers, 13-18a
new channel address, 13-17
new extension number, 13-16
renumber extension, 13-17
revise COM group, 13-33
revise forced authorization code, 13-32
revise forwarding, 13-23
revise hunt/distribution group, 13-34
revise interface type, 13-35
revise pick-up group, 13-35
set class of service, 13-31
set COS feature, 13-31
set dialing type, 13-25
system commands, 13-102
deconfiguration floppy dump, 13-126
dump moves and changes table, 13-123
floppy dump, 13-127
list first digit table, 13-102
list system parameter, 13-106
list system speed call directory, 13-103
open system lock, 13-102
print status of interrupted APL operation, 13-131
revise first digit table, 13-103
set system parameter, 13-106
set system speed call number, 13-104
verify LDMP, 13-127
verify loaded diskette, 13-129
trunk commands, 13-48a
activate trunk, 13-61
begin AIOD test, 13-75
deactivate trunk, 13-62
list AIOD dynamic table, 13-75
list AIOD translation table, 13-76
list AIOD trunk display group default and extension, 13-75
list console AIOD extension I.D. number, 13-76a
list display group features, 13-70
list status of nonidle trunks, 13-63
list trunk attributes, 13-49
list trunk delay, 13-66
list trunk group access, 13-72
list trunk group feature, 13-72
list trunk status, 13-62
list trunk to AIOD I.D. number, 13-77
list trunks with specific attribute value, 13-61

modify tie flag, 13-65
revise AIOD translation table, 13-76
revise AIOD trunk display group default number, 13-75
revise call detail recording inward, 13-72
revise call detail recording outward, 13-71
revise console AIOD extension I.D. number, 13-77
revise trunk attributes, 13-49
revise trunk to AIOD I.D. number, 13-77
set default extension, 13-78
set trunk delay, 13-69
set trunk group access, 13-74
Music-On-Hold, 1-40
troubleshooting, 8-49

N

Network Buildout Capacitance, 10-77, 10-78
Neutral-Ground Bonds, 2-35
New motherboards, 2-50
conductive backplane filler panels, 2-50
Night Service, 1-38
assigned night answer, 1-38
night answer, 1-38
*9 Hold Call Process
900-Ohm Internal Balancing
NNX Commands
list maximum count, 13-205
list table count, 13-205
list table, 13-204
revise table count, 13-206
revise table, 13-205
NNXMASSRESTRICT Table Commands, 13-98h
delete office restrict table, 13-98k
list office restrict table, 13-98i
new office restrict table, 13-98h
revise office restrict table, 13-98j
Noise Source, Normal Mode, 3-10
Nonredundant Computer Common Control, 4-2b
block diagram, 4-3
common control motherboard A, 4-2c
CPU PCAs, 4-6
CPU 1 PCA, 4-6
CPU 2 PCA, 4-6
CPU 3 PCA, 4-6
CPU 4 PCA, 4-6
general description, 1-7, 1-8
memory configurations, 4-5
memory controller PCA, 4-6
memory motherboard A, 4-2d
memory PCAs, 4-1
Nonredundant 8000 Computer Shelf 3
configuration, 1-8b
motherboard, 2-158c
Normal-Mode Noise Source, 3-10
NOTEST Flag, Change, 13-25
NPA Commands
list table, 13-206
revise table, 13-207
NPC, 13-153
controls and indicators, 2-168, 2-169
functional description, 5-8
general description, 1-9
removal and replacement, 5-13

O

Off-Premise Extensions, 1-40
Off-System Station Forwarding, 1-47
Office Code Commands
list routeselect, 13-87
list, 13-98
revise, 13-90
set routeselect, 13-87
On-Line Diagnostics/Error Table,
command error message summary, 2-301
error table listing, 2-303
self-test command summary, 2-300
troubleshooting, 2-305, 2-307
On-System Station Forwarding, 1-47
1.1-Kilohm Internal Balance, 2-288, 10-76
1004 Hz, Transmission Levels at, 1-36
Open System Lock, 13-102
Operating System Cassette, Techtran, 2-240
Operating System Cassette, 2-238
Operating System, Loading. See Program Loading.
OPS PCA, 2-79
Option Plug Locations, Quad Serial I/O PCA, 6-19
OPX Group. See Single-Line OPX Interface Group.
Output Ratings
dc main power supply, 12-12

memory power supply, 12-9
208-Vac main power supply, 12-7
Outputs, Tone Sender PCA, 7-9
Overvoltage Trip Points
208-Vac main power supply, 12-9

P

Paging Equipment Troubleshooting, 10-63
Panelboard, 2-28
single-phase panelboard, 2-30
three-phase panelboard, 2-30
two-phase panelboard, 2-30
Parts List, 3-67
Password, 1-45
commands
list move and change, 13-102b
list password capabilities, 13-102b
list password value, 13-102a
list port default capabilities, 13-102c
set password capabilities, 13-102b
set password move and change, 13-102b
set password value, 13-102a
set port default capabilities, 13-102c
PCA. See also name of individual PCA.
enable lines, 5-1
identification markings, 2-56, 2-57
PDP. See Power Distribution Panel.
Pegs, Traffic Table, 2-319
Peripheral Equipment
cross-connects, 2-119
general description, 1-25
ATC, 1-25, 1-26
DCU, 1-32, 1-33
ETS telephone, 1-29, 1-32
integral floppy disk system, 1-25, 1-27
key telephone, 1-29
magnetic cartridge system, 1-28, 1-30
magnetic tape system, 1-28
plant wiring equipment, 1-34
ROLMphone telephone, 1-29
service teleprinter, 1-32, 1-33
single-line telephone, 1-29, 1-31
installation, 2-119
ATC, 2-119
EPI-COM 300 cartridge system, 2-146
ETS telephone, 2-129
Flashphone, 2-130
integral floppy disk, 2-133
Kennedy 9-channel magnetic tape system, 2-147
KTA and key telephone, 2-126
ROLMphone telephone, 2-79
speakerphone, 2-130
stand-alone floppy disk, 2-145
PhoneMail Message System, 1-45
Physical Address, 13-14
Physical Specifications, 1-34
Pick-up Group Commands
list extension parameters, 13-13
list, 13-34
revise, 13-35
Pig Tail Ground Rods, 2-26
Pinouts
SAP
J2 (CDR device), 12-58
J3 (teleprinter/DCU), 12-58
J30 (modem alarm), 12-65
J4 (RTC, reset, and primary power), 12-59
J5 (PDP signals and power), 12-61
J6 (power supply 1 failure sense), 12-63
J7 (power supply 2 failure sense), 12-64
2-channel serial I/O PCA, 12-55
Plant Wiring Equipment, 1-34
Plantronics Jackset Installation, 2-131
Plenum Assemblies, 3-32c
dc, 1-22a
removing screens, 3-32c
208-Vac, 1-22a
Plug and Socket Configurations, 2-34
PortaCom
controls and indicators, 13-19
remote connection, 13-8
setup, 13-5
local mode, 13-5
remote mode, 13-8
Ports, DCU/Teleprinter/Serial I/O, 12-53
Position Performance and Status Report, 13-188a
Power and Grounding System. See also Grounding.
inspection, 3-5
Dranetz 606 and 616 monitoring ranges, 3-12
ground impedance measurement, 3-5, 3-7

initial inspection, 3-5
normal-mode noise source, 3-10
power and ground site inspection form, 3-6
power line disturbance, monitoring, 3-8
power monitoring connections, 3-11
troubleshooting, 3-31, 3-32
Power Distribution Panel
controls and indicators
dc cabinet 1, 2-212, 2-213
208-Vac and dc cabinet 2, 2-218, 2-219
208-Vac and dc cabinet 3, 2-222, 2-223
208-Vac cabinet 1, 2-206, 2-207
dc main power supply voltages, 2-231
functional description, 12-15
cabinet 1 wiring diagram, 12-17
cabinet 2 wiring diagram, 12-19
cabinet 3 wiring diagram, 12-20
distribution loss resistors, 12-15, 12-23
fuse alarm PCAs, 12-15
K1 and K2 relays, 12-15
ring voltage switching, 12-25
2200-microfarad capacitors, 12-25
general description, 1-22
signals and power J5 (SAP) pinouts, 12-61
voltage test points (rear), 2-232
Power Entry Box, Redesigned,
dc, 12-2
208-Vac, 12-2
Power Entry Panel
controls and indicators
dc cabinet 1, 2-176, 2-177
dc cabinets 2 and 3, 2-178, 2-179
208-Vac cabinet 1, 2-172, 2-173
208-Vac cabinets 2 and 3, 2-174, 2-175
functional description, 12-1
dc cabinet input power distribution, 12-2, 12-5
208-Vac cabinet input power distribution, 12-2, 12-3
general description, 1-22
Power Fail Signal (AC), 12-9
Power Fail, 12-52
dc cabinet, 12-54
208-Vac cabinet, 12-54
Power Line Disturbance, Monitoring, 3-8
impulses, 3-12
sags and surges, 3-12
slow average variations, 3-9
Power Requirements
dc
battery charger size, 2-20
battery rack requirements, 2-19, 2-21
battery requirements, 2-19
dc power board, 2-17
power cable wire size, 2-22a
primary power wiring diagram, 2-18
208-Vac, 2-11
primary power load balancing, 2-14
three-phase and single-phase primary power, 2-14
work sheet, 2-3
Power Supply and Power Distribution System
functional description, 12-1
dc power supplies, 12-12
power distribution, 12-15
power entry panel, 12-1
system components, 12-1
208-Vac power supplies, 12-7
general description, 1-19
dc cabinet, 1-22, 1-23, 1-24
208-Vac cabinet, 1-19, 1-20, 1-21
maintenance, 12-66
removal and replacement, 12-103
troubleshooting, 12-66
Power Supply. See also Main Power Supply, Memory Power Supply, 208-Vac Power Supply, DC Power.
checking power supply and upper shelf voltages, 3-4
controls and indicators, 2-180, 2-183, 2-184, 2-185
LED lighted on SAP, 12-79
power supply 1 failure sense J6 (SAP) pinouts, 12-63
power supply 2 failure sense J7 (SAP) pinouts, 12-64
voltage adjustments, 12-67
12V regulators, 12-53
Power Transformer (Model 87070), Removal and Replacement, 9-10
Power Transformer (Model 87070A), Removal and Replacement, 9-11, 9-12
Power-down Procedures, 2-233, 2-234
Power-Fail Circuits, dc, 12-45, 12-46

Power-up Procedures, 2-225, 2-234
dc system, 2-229
power-up with APL, 2-233
208-Vac system, 2-225
Precision Components Installation, 2-130
Precision Components, 2-130
teledialer 32 T, 2-131
Preventive Maintenance, 3-1
DCU heads, 3-4
floppy disk heads, 3-4
maintenance tables (self-test), 3-2
memory back-up batteries, 3-2
power and grounding system inspection, 3-5
common-mode noise source, 3-8
Dranetz 606 and 616 monitoring ranges, 3-12
ground impedance, 3-5, 3-7
initial inspection, 3-5
normal-mode noise source, 3-10
power line disturbance, 3-8
power monitoring connections, 3-11
site inspection form, 3-6
power supply and upper shelf voltages, 3-4
ventilation system, 3-1
air filters, 3-1, 3-3
air flow, 3-2
Program Loading, 2-234
DCU setup, 2-236
dumping from EPI to Techtran, 2-268
move and change cassette, 2-269
EPI STR-LINK II, 2-269
Techtran PXL 1000, 2-270
post/standby load, 13-136
service teleprinter setup, 2-234
local mode, 2-234
operating commands, 2-235
remote mode, 2-236
with Model 85000A CPU 1 PCA, 2-240
EPI STR-LINK II, nonredundant system, 2-240
EPI STR-LINK II, redundant system, 2-243
Techtran PXL 1000, nonredundant system, 2-242
Techtran PXL 1000, redundant system, 2-247
with Model 85370 CPU 1 APL PCA, 2-251
EPI STR-LINK II, nonredundant system, 2-251
EPI STR-LINK II, redundant system, 2-254
floppy disk, nonredundant system, 2-261
floppy disk, redundant system reloading, 2-266
floppy disk, redundant system, 2-264
Techtran PXL 1000, nonredundant system, 2-253
Techtran PXL 1000, redundant system, 2-258
8000 computer, 2-234, 2-239
Property Management System
calling number destination (CND), 13-30
maid status control (MSC), 13-30
maid status room (MSR), 13-30
Protocol, Direct Trunk, 10-41
Punch-down Sequence
CBX bypass, 2-113
DID trunk interface, 2-109
direct trunk interface, 2-98a
ETI and KTI, 2-85
ROLMphone telephone, 2-80
single-line interface, 2-80
universal tie trunk interface, 2-103
Push-Button Lamp Replacement, 9-16, 9-17

Q

Quad DTMF Register PCA
functional description, 7-11
block diagram, 7-13
signal flow, 7-12
general description, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
Quad Serial I/O PCA
controls and indicators, 2-172, 2-173, 6-19
functional description, 6-6, 6-7
installation
7000 computer, 6-7
8000 computer, 6-7
maintenance
removal and replacement, 6-17, 6-19, 6-20
troubleshooting, 6-14, 6-16
slot assignments, 2-158r, 6-7
7000 Computer, 2-158r, 6-7
8000 Computer, 2-158r, 6-7
Queues, 11-4
Queuing Call Process, 11-27

R

Rate Group Commands
list count, 13-209
list maximum count, 13-208
list, 13-207
revise count, 13-209
revise table, 13-208
RCCP, 13-266
Reader Comment Form, 1-2
Real-Time Clock PCA
functional description, 5-9
general description, 1-9
removal and replacement, 5-13
Real-Time Clock, 1-8a, 12-47, 12-52
Receiving System, 2-51
reshipment procedures, 2-53
unpacking and inspection procedures, 2-51
ATC, 2-53
CBX cabinets, 2-51
Recorded Announcement Intercept, 1-39
Redesigned Power Entry Box
dc, 12-2
208-Vac, 12-2
Redundant Computer Common Control, 4-7
block diagram, 4-9
data transfer between computers, 4-11
general description, 1-9, 1-10
redundant memory configurations, 4-14
redundant shelf 3 hardware, 4-1, 4-14
common control motherboard B, 4-14
memory motherboard B, 4-1, 4-14
RTC-I/O bus switch motherboard, 4-14
switchover conditions, 4-12
8000 computer, 4-1
Redundant Shelf 3
motherboard terminal blocks, 8000 computer, 2-158c
Redundant Systems with Two Quad Serial I/O PCAs, 2-158r
Register/Sender Map, 13-234
Register, Data Receiver, 5-6
Register, Data Transmitter, 5-6
Regulators, 12V Power Supply, 12-53
Related Documents, 1-2, 1-5
Relays, K1 and K2, 12-15
Remote Mode, 2-236, 13-8, 13-10
Remote Polling, 1-43
Removal and Replacement
attendant's console, 9-8
aligning top cover and frame, 9-13, 9-15
fuse replacement, 9-15, 9-16
headset modification,
lamps, 9-13, 9-16
power transformer (Model 87070), 9-10
power transformer (Model 87070A), 9-11, 9-12
top cover, 9-13, 9-14
verifying performance, 9-17
computer common control group, 4-14
common control motherboard, 4-15
CPU 2,3, and 4 PCAs, 4-17
memory and memory controller PCAs, 4-17
memory motherboard, 4-16
critical electronics, 7-20
floppy disk drives
motor control paddleboard connectors, 3-65
power and signal cable connections, 3-66
input/output device interfaces, 6-15
floppy disk interface PCA, 6-17
I/O bus interface PCA, 6-17
I/O bus switch PCA, 6-17
motor control PCA, 6-23
quad serial I/O PCA, 6-17
2-channel serial I/O PCA, 6-15
PCAs, 3-61
power off, 3-62
power on, 3-61
power supply and power distribution system, 12-103
dc main power supply, 12-108
dc/ac inverter, 12-109
memory back-up batteries, 12-105
memory power supply, 12-108
service alarm PCA, 12-103
208-Vac main power supply, 12-106
station interface groups, 8-49
interface motherboards, 8-49
PCAs, 8-50
TDM network control group, 5-13
expander PCA, 5-14
ISB assembly, 5-16
MG-ISB assembly, 5-19
TDM motherboard, 5-14
TDM network control, TCC, NPC, and RTC PCAs, 5-13

trunk interface groups
interface motherboards, 10-65
PCAs, 10-65
Reset, 12-47, 12-49
Reshipment Procedures, 2-53
Resistors, Distribution Loss, 2-29, 12-15
Restriction Table, 13-54
Retainer Bar Bracket Modification, 2-153
Ring Detection and Answer Circuit, 12-47, 12-51
Ring Voltage
distribution, 12-29
dc cabinet 1, 12-36
208-Vac cabinet 1, 12-36
missing at TDM shelves, 12-97
missing at test point, 12-95
switching, 12-25
Ringdown Call Process, 11-5, 11-17
ROLM Electronic Message System, 1-43
ROLMphone Telephone, 1-32, 1-32a, 2-80a, 8-26a
check-out, 2-293
commands
activate, 13-36a
deactivate, 13-36a
list configuration tables, 13-39
list key or button extension, 13-36a
move ROLMphone, 13-38
revise configuration, 13-44e
revise feature configuration tables, 13-44d
revise key or button extension, 13-38
revise option modules, 13-47
controls and indicators, 2-224s
cross-connects, 2-80c
cable-pair assignments, 2-81
features, 13-40
features, 13-44a
interface groups, 1-13, 1-17, 8-26a
motherboards, 2-80c
16-channel, 2-80b
48-channel, 2-80b
interface groups, 1-17, 8-26a
motherboards, 2-80c
16-channel, 2-80b
48-channel, 2-80b
motherboards, 1-17
punch-down sequence, 2-80
upgrade to use, 2-158r
Rotary Register PCA
commands
list extension register/sender data, 13-142
list register/sender data, 13-143
register/sender map, 13-234
revise register/sender, 13-144
functional description, 7-15, 7-16
general description, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
Rotary Sender PCA
commands
list extension register/sender data, 13-142
list, 13-143
register/sender map, 13-234
revise, 13-144
functional description, 7-11, 7-14
general description, 1-19
maintenance, 7-20
removal and replacement, 7-20
troubleshooting, 7-20
Rotated Dc Main Power Supply, 2-204, 2-205, 12-14
Rotated 208-Vac Main Power Supply, 2-200, 2-201, 12-8a
Route Attributes, 13-92
list, 13-91
revise, 13-95
Route Descriptor, 11-22
Route Group Number, 11-22
Route Group Table, 13-253
Route Optimization Call Process, 1-41
last choice trunk call process, 11-26
queuing call process, 11-27
Release 4, 11-19, 11-21
area autoselect tables, 11-19
autoselect tables, 11-19
last choice trunk, 11-19
trunk access code, 11-19
Release 5, 11-22, 11-24
area routeselect table, 11-22
autoselect group number, 11-22
route descriptor, 11-22
route group number, 11-22
routeselect table, 11-22
Release 6, 11-22, 11-25
areacodeonly table, 11-23
home area code, 11-22
selectroute table. 11-22
Route Optimization, Toll Restriction, and Digit Translation
Routeselect Table, 11-22, 13-235
RPI Group Installation, 2-158v
RRS Command Dialogue, 13-144
RSTST, 2-298

RTC-I/O Bus Switch Motherboard, 4-14
RTC,Reset, and Primary Power J4 (SAP) Pinouts, 12-59

S

Safety, 1-3, 2-7
Sags and Surges, 3-12
SAP, 2-42d, 12-45
  bypass enable, 12-52, 12-55
  controls and indicators
    dc cabinet 1, 2-224d, 2-224e
    dc cabinets 2 and 3, 2-224g, 2-224h
    208-Vac cabinet 1, 2-224b, 2-224c
  dc main power supply/SAP voltage inputs, 12-47
  dc power-fail circuits, 12-45, 12-46
  DCU/teleprinter/serial I/O ports, 12-53
  external device connections, 12-55
  fuse alarm, 12-47, 12-50
  general description
  high-temperature alarm, 12-47, 12-48
  power fail, 12-52
    dc cabinet, 12-54
    208 Vac cabinet, 12-54
  power supply LED lighted, 12-79
  real-time clocks, 12-47, 12-52
  reset, 12-47, 12-49
  ring detection and answer circuit, 12-47, 12-51
  SAP connectors, 12-57
    CDR device J1 (SAP) pinouts, 2-24
    modem alarm J30 (SAP) pinouts, 12-65
    PDP signals and power J5 (SAP) pinouts, 12-61
    power supply 1 failure sense J6 (SAP) pinouts, 12-63
    power supply 2 failure sense J7 (SAP) pinouts, 12-64
    RTC, reset, and primary power J4 (SAP) pinouts, 12-59
    teleprinter/DCU J3 (SAP) pinouts, 12-58
  SAP-to-MDF connections, 2-76
  software alarm, 12-50, 12-53
  umbilical enable, 12-52, 12-55
  12V power supply regulators, 12-53
  2-channel serial I/O PCA J1 pinouts, 12-55
SCCT, 13-269
Scheduler, 11-4
Schematic Diagrams
  CDH trunk interface PCA (Model 85550), 10-23
  CDH trunk interface PCA (Model 85550A), 10-21
  dc cabinet main power supply, 12-13
  DID trunk interface PCA, 10-18
  direct trunk interface PCA (Model 85570), 10-5
  direct trunk interface PCA (Model 85570A), 10-7
  memory power supply, 12-28
  motor control PCA, 6-13
  208-Vac cabinet 1 main power supply, 12-8
  4-channel line interface PCA, 8-12
  4-channel universal tie trunk interface PCA, 10-14
  8-channel line interface PCA, 8-9
  8-channel OPX line interface PCA, 8-15
Secretarial Intercept, 1-39
Security Key, Revise 13-136
Selectroute Table, 11-22
Self-Test, 2-294, 13-134
  audit table, 2-311
    format (Releases 3 and 4), 2-312
    format (Releases 5 and up), 2-314
    interpretation (Releases 3 and 4), 2-312
    interpretation (Releases 5 and up), 2-313
  bad trunk table, 2-321, 2-322
  command error message summary, 2-301
  command summary, 2-300
  correction table, 2-315, 2-316
  description, 2-293
    test 1 - control PCA test (CCTST), 2-294
    test 10 - message waiting test, 2-299
    test 2 - expander PCA test (EXTST), 2-297
    test 3 - conference bridge test (CBTST), 2-297
    test 4 - channel test (CHTST), 2-297
    test 5 - tone generator test (TGTST), 2-298

test 6 - rotary sender/register test, 2-298
test 7 - attendant's console test (ACTST), 2-298a
test 8 - trunk test (TKTST), 2-299
test 9 - key telephone adapter test (KSTST), 2-299
error types, 2-294
list of, 2-294
on-line diagnostics/error table, 2-299
sample error table listing, 2-303
traffic table, 2-315
pegs, 2-319
sample (Release 6), 2-317
troubleshooting, 2-305, 2-307
type 0006 error codes, 2-294a
Serial Interface Floppy, 6-14
ROLMphone telephone, 2-224s
Service Alarm PCA, Removal and Replacement, 12-103
connectors, 12-104
dc cabinet, 12-105
208-Vac cabinet, 12-103
Service Teleprinter
correct connections, 2-35
disconnection, 13-10
local mode, 13-10
remote mode, 13-10
T1745 silent 700 remote connection, 13-11
general description, 1-32, 1-33
ground loops, 2-32, 2-33
preliminary set-up procedures, 13-5
cassette unit/teleprinter/system interconnection (local), 13-7
PortaCom connection (remote), 13-8
PortaCom service teleprinter controls and indicators, 13-6
teleprinter connection, 13-5
TI745 silent 700 teleprinter controls and indicators, 13-9
troubleshooting, 3-18, 3-19
local (remote access good), 3-21
local troubleshooting of remote access problems, 3-18
local, 3-20
remote, 3-18
strapping option on silent 700, 3-21
7000 Computer, 4-15
configuration, 1-8b
controls and indicators, 2-159
maintenance
removal and replacement, 5-10b
removing and replacing the TDM network control, TCC, NPC, and RTC PCAs, 5-10b
troubleshooting, 5-10b
motherboard, 2-158c
nonredundant shelf 3, 1-8b
7000/8000 Computer
controls and indicators, 2-191
7000 Computer Maintenance, 5-10b
removal and replacement, 5-10b
removing and replacing the TDM network control, Tie, NPL, and RTC PCAs, 5-10b
troubleshooting, 5-10b
Shelf 3
backplane voltage test points, 2-228
controls and indicators, 2-161, 2-163
identification markings, 2-57
motherboards terminal blocks (redundant system), 2-227
nonredundant 8000 computer configuration, 1-8b
redundant hardware, 4-14
common control motherboard B, 4-14
memory motherboard B, 4-14
RTC - I/O bus switch motherboard, 4-14
terminal blocks
shelf 3 motherboards (8000 computer), 2-158c, 2-158h, 12-37
shelf 3 motherboards, 2-158h, 2-188c, 12-39
TDM motherboard, 12-39, 2-173a
voltages
shelf 3 and memory switch assembly, 12-39
TDM motherboard, 12-39
Shelves, 1-5
Shielded ISB, 2-49, 2-50
Shutdown, Low Voltage, 12-9
Side Number, 13-137
Signal Flow
attendant's console, 9-2
conference bridge group, 7-19
DTMF register PCA, 7-9
expander PCA, interface group, 8-2
Quad DTMF register PCA, 7-12
rotary register PCA, 7-16
single-line interface group, 8-7
switched I/O bus, 6-9
TDM network control, 5-7
tone generator PCA, 7-3

Silent Test Termination, Loopback and, 2-276
Simple Ground Loops, 2-32
Single Supply Memory 256k PCA
  controls and indicators, 2-158aa
Single-Line Commands, 13-13
  list extension parameters, 13-13
    class of service, 13-15
    COM group, 13-16
    dialing type, 13-16
    extn # - FWD - TO, 13-15
    message waiting, 13-16
    physical address, 13-14
    pick-up group, 13-15
    system forwarding flag, 13-15
    test flag and tie flag, 13-16
    voice call, 13-16
  move extension numbers, 13-18
  new channel address, 13-17
  new extension number, 13-16
  renumber extension, 13-17
    renumber modem extension, 13-17
Single-Line Interface Groups, See Single-Line OPX, OPS, Standard Single-Line, or Long-Loop.
  cross-connects, 2-77, 2-78
  functional description, 8-13
    block diagram, 8-14
    8-channel OPX line interface PCA schematic diagram, 8-15
  general description, 1-17
  installation, 2-78b
  maintenance
    removal and replacement, 8-49
    troubleshooting, 8-49
Single-Phase Panelboard, 2-30
Single-Point Ground
  combined isolated ground and single-point ground, 2-26, 2-28
  evaluation, 2-40
  single-point-to-cabinet grounding, 2-27, 2-29
Single-Sided Integral Floppy Disk System, 2-133
Site Preparation, 2-1
  air conditioning requirements
    ATC environmental requirements, 2-43
    cabinet 1 with nonredundant CPU, 144k memory, and redundant power, 2-46
    dc cabinet 1 with nonredundant CPU, 144k memory, and nonredundant power, 2-47
    dc cabinet 1 with redundant CPU, 144k memory, and nonredundant power, 2-47
    dc cabinet 1 with redundant CPU, 144k memory, and nonredundant power, 2-48
    dc cabinets 2 and 3 with nonredundant power, 2-48
    dc cabinets 2 and 3 with redundant power, 2-49
    equipment cabinet environmental requirements, 2-43
    floppy disk drives, 2-49
    208-Vac cabinet 1 with nonredundant CPU and 144k memory, 2-45
    208-Vac cabinet 1 with redundant CPU and 144k memory, 2-45
    208-Vac cabinets 2 and 3, 2-46
  check list, 2-6
  customer-provided equipment, 2-9
  dc power requirements, 2-15
    battery charger size, 2-20
    battery rack requirements, 2-19, 2-21
    battery requirements, 2-19
    dc power board, 2-17
    power cable wire size, 2-22a
    primary power wiring diagram, 2-18
  floors and ceilings, 2-10
  grounding requirements, 2-22
    existing installations, 2-39
    grounding methods, 2-26
    hardware, 2-23
    new installations, 2-35
    overview, 2-22c
    power wiring problems, 2-30
    power wiring, 2-27
  safety, 2-7
  site coordinator, 2-9
  space and weight requirements, 2-11
    clearances, 2-12
    equipment room layout, 2-13
    work sheet, 2-2
  208-Vac power requirements, 2-11
    primary power load balancing, 2-14
    three-phase and single phase primary power, 2-14
    work sheet, 2-3
Six-Key Phones (Installation), 2-127
16-Channel ETI II Analog PCA
  block diagram, 8-25
  functional description, 8-24
  maintenance, 8-27
16-Channel ETI I Logic PCA
  block diagram, 8-25
  functional description, 8-24
  LED indicators, 8-48

maintenance, 8-27
Slot Assignments, Quad Serial I/O PCA, 2-158r, 6-7
Slots, 1-6
Socket Configurations, Plug and, 2-34
Software Alarm, 12-50, 12-53
Software Features, Adding, 2-150
Software Group Control Table, 13-239
Software, Increased, Adding Hardware to Support, 2-150
Space and Weight Requirements (Equipment Room), 2-11
clearances, 2-12
equipment room layout, 2-13
work sheet, 2-2
Speakerphone Installation, 2-130
Companion I, 2-131
Companion II, 2-131
conventional key system 1A2, 2-132
Plantronics jackset J5 0180-1, 2-131
Precision Components, 2-130
teledialer 32T, 2-131
Special Digits Table, 13-252
Specifications, 1-34
capacity, 1-34
electrical specifications, 1-35
Standard Single-Line Interface Group
cross-connects, 2-77
functional description, 8-6
signal flow, 8-7
8-channel line interface PCA schematic, 8-9
general description, 1-18
maintenance
removal and replacement, 8-49
troubleshooting, 8-27, 8-28
StarSet Installation, 2-121
discrete amplifier board, 2-121
integrated circuit board, 2-125
jumper locations, 2-125
plug amplifier, 2-80
State, 11-4
Station Equipment, 1-29
ETS telephone, 1-29, 1-32
key telephone, 1-29
ROLMphone digital telephone, 1-30, 1-32a
single-line telephone, 1-29
Station Interface Groups
functional description
coder PCA, decoder PCA, interface motherboards, 8-1
ETI group, 8-24
KTI group, 8-16
long-loop single-line interface groups, 8-11
ROLMphone telephone, 8-26a
single-line OPX or OPS interface group, 8-13
standard single-line interface group, 8-6
maintenance, 8-27
removal and replacement, 8-49
troubleshooting, 8-27
Station Test, 2-292
Station/Trunk Troubleshooting, 3-13, 3-15
Status Table, 11-4
Strapping Locations, Devise Select Code, 6-18
Strapping Option on Silent 700 Service Teleprinter, 3-21
Strip 1+, 13-59
Super Test PCA, 1-46
Supply Voltage Missing at Load (Shelf), 12-81
Switch Pack and Option Plug Locations, Quad Serial I/O PCA, 6-19
controls and indicators, 2-158af, 2-158ag, 2-194, 2-195
Switchover, 4-12, 13-138
System Commands, 13-102
deconfiguration floppy dump, 13-130, 13-131
floppy dump, 13-127, 13-129
list first digit table (R5), 13-102
midnight APL check dump, 13-132a
open system lock, 13-102
repdial load command, 13-131, 13-132
verify loaded diskette, 13-130
System Configuration Printout, 2-56, 2-92
access codes table, 13-250
ACD extension silent monitor table, 13-248
area routeselect table, 13-253
ATC group table, 13-254
authorization/account codes table, 13-251
automatic call distribution parameters table, 13-257
bias generator, 13-235
CDR exclusion table, 13-254
CDR option parameter table, 13-254
class of service specification table, 13-245
conference bridge pairs, 13-235
description of CDR option parameters, 13-255
digit translation table, 13-234
equipment cabinet(s) hardware listing, 13-230

ETS feature configuration table, 13-246
ETS information table, 13-247
extension number line assignment and characteristics table, 13-235
extension number line assignment and characteristics, 13-236
first digit table, 13-248
input listing, 13-229
inter-extension blocking table, 13-248
message registration table, 13-250
miscellaneous data table, 13-257
optional features libraries table, 13-257
register/sender map, 13-234
route group table, 13-253
routeselect table, 13-252
software group control table, 13-239
special digits table, 13-252
system parameters table, 13-256
system speed call table, 13-251
tone generator, 13-235
trunk access table, 13-244
trunk assignment and characteristics table, 13-240
trunk assignments and characteristics, 13-240
trunk restriction table, 13-252
trunk/display group information table, 13-243
voice call table, 13-248
System Features and Options, 1-37
AFACTS, 1-46
automatic call intercept, 1-39
automatic call restriction, 1-42
automatic program load, 1-41
call detail recording, 1-42
call queuing, 1-42
camp on, 1-40
CBX management reporter, 1-44
centralized attendant service, 1-44
checked forced account codes, 1-46
class of service, 1-37
code call, 1-45
control station, 1-40
dictation, 1-40
direct inward system access, 1-38
DISA II, 1-38
electronic telephone, 1-42
expanded traffic, 1-41
intercom blocking, 1-39
message waiting, 1-44
music on hold, 1-40
night service, 1-38
assigned night answer, 1-38
night answer, 1-38
off-premise extensions, 1-40
off-system station forwarding, 1-47
on-system station forwarding, 1-47
password, 1-45
list move and change, 13-102b
list password capabilities, 13-102b
list password value, 13-102a
list port default capabilities, 13-102c
set move and change, 13-102b
set password capabilities, 13-102b
set password value, 13-102a
set port default capabilities, 13-102c
PhoneMail message system, 1-45
recorded announcement intercept, 1-39
remote polling, 1-43
ROLM electronic message system, 1-43
ROLMphone 400 digital telephone, 1-29
route optimization, 1-41
secretarial intercept, 1-39
toll restriction, 1-41
traffic feature use, 1-41
unchecked forced account codes, 1-46
voice band modem capability, 1-40
voice paging, 1-40
4STAR switching system, 1-42
automatic network dialing, 1-43
ROLMNET, 1-43
route optimization, 1-43
satellite operations, 1-43
System Forwarding Flag, 13-15
System Overview, 1-3
System Parameters, 10-49, 13-246, 13-256,
System Speed Call
list, 13-103
sample listing, 13-105
set, 13-104

T

table, 13-251
Task, 11-4
TCC
  functional description, 5-8
  general description, 1-9
  removal and replacement, 5-13
TDM Network Control Group
  functional description, 5-1
    expander PCA, 5-9
    ISB, 5-3
    NPC, 5-8
    RTC PCA, 5-9
    TCC, 5-8
    TDM motherboards, 5-1, 5-2
    TDM network control 1 and 2 PCAs, 5-4
  general description, 1-7
  maintenance, 5-10
    removal and replacement, 5-13
    troubleshooting, 5-13
TDM Network Control Paddleboards, MG-ISB, 2-67
TDM Network Control 1 and 2 PCAs
  CCTST, 2-293
  down control PCA, 13-150
  functional description, 5-4, 5-5
    connection table, 5-6
    control PCA test, 5-6
    data receiver register, 5-6
    data transmission, 5-6
    data transmitter register, 5-6
    signal flow, 5-7
  general description, 1-8a
  removal and replacement, 5-10a
  up control PCA, 13-150
  7000 computer maintenance, 5-10b
  8000 computer maintenance, 5-10a
    removal and replacement, 5-10a
    troubleshooting, 5-10a
TDM Network Exerciser, 3-50
TDM Network Motherboards
  functional description, 5-1
    AB0 and AB1 PCA commands, 5-1
    data word, 5-2
    intrashelf bus configuration, 5-2
    PCA enable lines, 5-1
  removal and replacement, 5-14
  terminal blocks, 12-38
  voltages, 12-39
TDM Shelves
  controls and indicators, 2-170, 2-171
  troubleshooting
    -48V missing, 12-75
    ring voltage missing, 12-97
    V1/V2 +5V missing, 12-91
Techtran PXL 1000 DCU, 13-13. See also Digital Cassette Unit.
  controls and indicators, 13-124
  dumping from EPI STR-LINK II, 2-268
  move and change cassette loading, 2-270
  operating system loading with model 85000A CPU 1 PCA
    nonredundant system, 2-242
    redundant system
  operating system loading with model 85370 CPU 1 APL PCA
    nonredundant system, 2-253
    redundant system, 2-251
  setup procedures, 2-239
Teledialer 32 T Installation, 2-131
Telephone Groups, Critical Electronics and. See Critical Electronics and Telephone Groups.
Telephone, ETS. See ETS Telephone.
Telephone, Key. See Key Telephone.
Telephone, Single-Line. See Single-Line Telephone.
Telephones, Recommended, 2-128
Teleprinter. See Service Teleprinter.
Ten-Digit Routing and Call Screening Commands, 13-98
  delete ten-digit entry, 13-98g
  list ten-digit attributes, 13-98b
  list ten-digit conversion number, 13-98f
  new ten-digit entry, 13-98b
  revise ten-digit attributes, 13-98e
  revise ten-digit conversion number, 13-98f
Ten-Digit Routing, 13-98
  ten-digit table, 13-98
Ten-Key Phones (Installation), 2-128
+10V PRIPWR Signal Missing A7TB2-1/A710TB2-2
Terminal Blocks
  CPU/memory switch assemblies, 2-158j
  memory switch assembly, 2-158
  shelf 3 motherboards, 12-37
    TDM motherboards
  shelf 3 nonredundant 7000 computer, 2-158c
  shelf 3 redundant 7000 computer, 2-227
  shelf 3 redundant 8000 computer, 2-158h
Termination Key Telephone, 2-126

Termination Power Orientation (Floppy), 2-138
Termination, ETS, Telephone Cable Lead, 2-130
Termination, Loopback and Silent Test, 2-276
Terminator A Assembly, 5-18
Terminator B Assembly, 5-18
Terminator PCAs. See ISB, MG-ISB.
Test Equipment, Grounding, 2-36, 2-38
Test Flag and Tie Flag, 13-16
Test Points Troubleshooting
  +12P missing, 12-99
  +15V missing, 12-83
  +24V missing, 12-74, 12-89
  +5P missing, 12-11
  +5V missing, 12-72
  -15V missing, 12-87
  -48V missing, 12-93
  ±15V missing, 12-85
  ring voltage missing, 12-95
Three-Phase Panelboard, 2-30
Tie Flag, Modify, 13-65
Tie Trunk Installation, 2-102a
Tie Trunk Interface Facilities, 2-79
Tie Trunk Interface Group Cross-connects, 2-101
  8-Channel DID trunk interface PCA, 2-108
  8-Channel tie trunk interface PCA, 2-102
Tie Trunk Troubleshooting, 10-53
  answer supervision readings on VOM (dial tone), 10-61
  answer supervision readings on VOM (off hook)
  checking configuration, 10-53
  E&M type I signaling test setup, 10-57
  E&M type II signaling test setup, 10-58
  tie trunk interface test, 10-54
  TMS display levels (A REC TERM), 10-62
  TMS display levels (B REC TERM), 10-62
Time-of-Day Access, 13-57
TKTST, 2-299
TMS Display Levels
  A REC TERM, 10-62
  B REC TERM, 10-62
Toll Restriction, 1-41, 13-78
Tone Sender PCA, 13-235
  functional description, 7-2
    block diagram, 7-5
    connections, 7-7
    outputs, 7-8
    signal flow, 7-3
  general description, 1-19
  maintenance
    removal and replacement, 7-20
    troubleshooting, 7-20
  TGTST, 2-297
Tone Sender, 2-298, 13-134
  TGTST, 2-298, 13-134
Tools and Equipment (System Maintenance), 3-1
Top Cover (ATC), Removal and Replacement, 9-13, 9-14
Top Cover and Frame (ATC), Aligning, 9-13, 9-15
Traffic Commands, 13-158
  abbreviated agent statistics report interpretation, 13-197
  ACD agent follow-me statistics report interpretation, 13-183
  agent performance and status report interpretation, 13-190a
  autoprint ACD agent performance and status report (Release 6 and up), 13-181
  autoprint ACD traffic reports (Release 6), 13-191
  autoprint expanded traffic statistics (Release 6 and up), 13-178
  autoprint kill (Releases 6 and 7), 13-192
  call waiting display, 13-180
  CDR traffic report interpretation, 13-193
  cumulative statistics report interpretation, 13-186a
  current status report interpretation, 13-185
  daily profile report interpretation, 13-195
  expanded traffic table listing explanation, 13-175
  interpretation of traffic table listing, 13-161
  list abbreviated agent statistics report (Release 5), 13-195
    Release 5, 13-195
    Releases 6 and 7, 13-196
  list ACD agent performance and status report (Release 5), 13-179
  list ACD traffic reports (Release 5), 13-184
    cumulative status report, 13-185
    current status report, 13-184
    position performance and status report, 13-188a
    trunk group report, 13-187

list agent follow-me statistics report (Release 6), 13-182
list CDR traffic (R5), 13-192
list CMR traffic configuration (Release 6 and 7), 13-200
list CMR traffic statistics report (Release 6 and 7), 13-198
list daily profile, 13-194
list expanded traffic statistics, 13-172
list traffic table data (Release 6), 13-169
list traffic table entry (Release 5), 13-169
list traffic table, 13-159
Release 3 printout, 13-159
Release 4 printout, 13-160
Release 5 printout, 13-160
Release 6 and above printouts, 13-160
Release 3 expanded traffic table listing, example, 13-173
revise CMR traffic interval time (Release 6 and 7), 13-199
revise traffic configuration (Release 6 and 7), 13-200
selected traffic data table interpretation, 13-171
start CMR traffic statistics report (Release 6), 13-197
trunk group report interpretation, 13-107
Traffic Feature Use, 1-41
Traffic Table, 2-315
sample, 2-317
pegs, 2-319, 11-3
Transaction Blocks, 11-3
Transfer Rate Selector Plug, 2-147, 6-6
Transmission Levels
at 1004 Hz, 1-38
model 85630 tie trunk interface PCA, 2-108a, 2-278
model 85631 tie trunk interface PCA, 2-102a, 2-278a
Troubleshooting
attendant's console, 9-4, 9-5
critical electronics, 7-20
ETI group, 8-40
input/output device interfaces, 6-14
floppy disk interface PCA, 3-22, 6-14
motor control PCA, 3-22, 6-14
quad serial I/O PCA, 6-14, 6-16
KTI group, 8-40, 8-41
music-on-hold and chimes, 8-49
power supply and power distribution, 12-66
bypass operation troubleshooting, 12-66
flow charts, 12-70, 12-101
power distribution fault analysis, 12-67
total system failure, 12-66
voltage measurements and adjustments, 12-67
self-test, 2-305, 2-307
single-line groups, 8-27, 8-28
flashphone, 8-49
from station, 8-27
from switch room, 8-40
system, 3-13
DCU, 3-22, 3-25, 3-27
floppy disk system, 3-26
power and grounding, 3-31, 3-32
service teleprinter, 3-18, 3-19
station/trunk, 3-13, 3-15
troubleshooting flow chart, 3-25
TDM network control group, 5-13
trunk interface groups, 10-33
bypass direct trunk, 10-47
DID trunk interface test, 10-48
direct trunk testing and troubleshooting, 10-40
general trunk troubleshooting, 10-33
paging equipment, 10-63
references, tools, and test equipment, 10-33
tie trunk, 10-53
7000 computer, 5-10b
8000 computer, 5-10b
Trunk Access Code, 10-45, 11-19
Trunk Access Table, 13-244
Trunk Access Values, 13-73
Trunk and Feature Access Codes, 13-79
Trunk Assignment and Characteristics Table, 13-240
Trunk Attribute (LTR) Listing, 10-38
Trunk Attribute Numbers, 10-38
Trunk Classification Table, 10-35
Trunk Commands, 13-48
activate trunk, 13-61
begin AIOD test, 13-49
deactivate trunk, 13-62
list AIOD dynamic table, 13-75
list AIOD translation table, 13-76
list AIOD trunk display group default extension, 13-75

list console AIOD extension ID number, 13-76a
list display group features, 13-70
list status of nonidle trunk, 13-63
list trunk attributes, 13-49
list trunk delay, 13-66
list trunk group access, 13-72b
list trunk group features, 13-72a
list trunk status, 13-62
list trunk to AIOD ID number, 13-77
list trunks with specific attribute value, 13-61
modify tie flag, 13-65
revise AIOD translation table, 13-76
revise AIOD trunk display group default number, 13-75
revise CDR inward, 13-72a
revise CDR outward, 13-71
revise console AIOD extension ID number, 13-77
revise trunk attributes, 13-49
activate/deactivate trunk, 13-50
assign autoselect group, 13-55
assign DISA authorization code and COS, 13-60
assign restriction table, 13-54
associate trunk with console, 13-57
revise CAS flag, 13-60
select general incoming mode, 13-52
select general type, 13-59
select night mode, 13-52
select outgoing mode 13-58
select sender type, 13-54
select TEST/NO TEST, 13-56
select traffic display group, 13-56
select trunk group, 13-55
select trunk-to-trunk call status, 13-57
set trunk access code, 13-53
strip 1+, 13-59
time-of-day access, 13-57
revise trunk to AIOD ID number, 13-77
set default extension, 13-78
set trunk delay, 13-69
set trunk group access (Release 4), 13-74
Trunk Commands, 13-52
AUTOVON calling areas (19) 13-60a
AUTOVON maximum precedence level (20), 13-60b
AUTOVON precedence digit expected (22), 13-60b
AUTOVON preemption on AUTOVON ties (26), 13-60c
AUTOVON traffic on AUTOVON ties (23), 13-60b
commercial preemption on AUTOVON ties (27), 13-60d
commercial traffic on AUTOVON ties (24), 13-60c
incoming AUTOVON register type (21), 13-60b
internal preemption on AUTOVON ties (28), 13-60d
internal traffic on AUTOVON ties (25), 13-60c
Trunk Controller PCA and 8-Channel Universal Tie Trunk PCA, 10-10
Trunk Display Group
delay interval, 13-67, 13-68
information table, 13-243
list digit translation by, 13-97
revise AIOD trunk display group default number, 13-75
revise digit translation by, 13-98
Trunk Group Report, 13-187, 13-188
Trunk Interface Groups
functional description, 10-1
CBX bypass groups, 10-25
CDH trunk interface group, 10-17
DID trunk interface group, 10-15
direct trunk interface group, 10-1
universal tie trunk interface groups, 10-8
maintenance, 10-33
removal and replacement, 10-65
troubleshooting, 10-33
Trunk Restriction Table, 13-252
change, 13-83
list, 13-84
Trunk Status (STT) Listings, 10-36, 10-37, 13-64
Trunk, Last Choice, 11-19, 11-26
Trunk, Loop Start, 2-276
12k Memory PCAs
+12P Distribution, 12-25, 12-28
+12P Missing at TEST POINT, 12-99
12V Power Supply Regulators
+24V Missing at TEST POINT
Two-Phase Panelboard, 2-30
2-Channel Serial I/O PCA
controls and indicators, 2-191, 2-192

functional description, 6-1
block diagram, 6-3
P4 pinouts to SAP, 6-5
transfer rate selector plug configurations, 6-6
general description, 1-9
removal and replacement, 6-15, 6-18
second 2-channel serial I/O PCA, 2-155
2-Channel Serial I/O PCA, 1-8b
256k Memory PCA (single supply)
functional description, 4-2
8000 controls and indicators, 2-158z, 2-158aa
208-VAC Plenum and Fan Assembly, 1-22a
208-VAC Redundant 8000 Upgrade Package, 2-158a
Upgrade Package, 2-155a
208-VAC Nonredundant 8000 Upgrade Package
nonredundant I/O bus switch PCA, 2-158a
208-VAC Power Requirements
primary power load balancing, 2-14
rotated main power supply, 2-200, 2-201, 12-8a
three phase and single-phase primary power, 2-14
work sheet, 2-3
208-VAC Power Supplies
functional description, 12-7
main power supply, 12-7
memory back-up batteries, 12-10
memory power supply, 12-9
removal and replacement
main power supply, 12-106
memory back-up batteries, 12-105
memory power supply, 12-108
voltage requirements, 12-67
208-VAC/DC Nonredundant Wired-For-Redundancy 8000 Upgrade Package, 2-158a
Type 0006 Error Codes, 2-294
APL, 3-30
CDR, 3-27

U

Umbilical
enable, 12-52, 12-55
voltage test points, 2-233
Undersize Wire, 2-31
branch circuit requirements, 2-34
circuit capacity, 2-33
maximum ground wire length, 2-31
plug and socket configuration, 2-34
Universal Tie Trunk Controller PCA (Model 85620)
jumper and switch locations, 10-81
removal and replacement, 10-80
signaling mode switches
Universal Tie Trunk Interface Group
cross-connects, 2-101
functional description, 10-8
4-channel universal tie trunk group, 10-11
8-channel universal tie trunk group, 10-8
general description, 1-18a
maintenance
removal and replacement, 10-65
troubleshooting, 10-33
PCA test setup, 2-278
Unpacking, 2-51
ATC, 2-53
CBX cabinets, 2-51
Up Commands
up control PCA, 13-150
up PCA, 13-149
Upgrades and Expansions, 2-150
adding cabinet, 2-156
adding critical electronics redundancy, 2-151
adding hardware to support increased software, 2-150
adding software features, 2-150
expanding memory, 2-154
nonredundant systems, 2-156
redundant systems, 2-156
expanding wired-for redundancy cabinet, 2-151
fuse, 2-158v
integral double-sided, single-density, redundant APL floppy disk assembly, 2-157
integral floppy basic assembly kit, 2-157
to use ROLMphone telephones, 2-158v
fuse, 2-158v
RPI group installation, 2-158v
208-Vac/dc nonredundant 8000, 2-157
with basic floppy assembly, 2-158
208-Vac/dc redundant 8000, 2-158a
with basic floppy assembly, 2-158a

208-Vac/dc wired-for-redundancy 8000, 2-158
with basic floppy assembly, 2-158a
7000 computer to an 8000 computer, 2-158
8000 upgrade installation kit, 2-157, 2-158b
Upper Shelf Voltages, Power Supply and Checking, 3-4

V

Ventilation
equipment, 1-22
preventive maintenance, 3-1
air filters, 3-1, 3-3
air flow, 3-2
VENTURE 1 Installation, 2-108, 2-121
Virtual Private Lines Commands, 13-259
list VPL route attributes command, 13-273
network conversion table commands, 13-263
delete network converion termination, 13-265
list network conversion termination, 13-264
list network system speed table, 13-269
list on-net restrict table, 13-268
list tone type, 13-266
new network conversion termination, 13-263
revise network conversion termination, 13-265
network traffic reports commands, 13-275
clear all supplemental report counters, 13-276
clear all traffic counters, 13-276
clear VPL network traffic (incoming) report, 13-279
initialize traffic counters, 13-275
network traffic report continuous, 13-277
network traffic supplement add, 13-278
network traffic supplement delete, 13-278
network traffic supplement list, 13-278
network traffic VPL incoming print, 13-279
print netwrok traffic report, 13-276
print supplemental traffic report, 13-277
on-net configuration table commands, 13-272
list virtual private lines, 13-272
revise virtual private lines, 13-273
signal detection PCA commands, 13-279
list SDC application, 13-280
revise SDC application, 13-280
virtual private line maintenance commands, 13-281
monitor extension, 13-281
monitor signal detector channel, 13-284
monitor trunk, 13-283
run diagnostic test, 13-287
run SDC test, 13-287
Virtual Private Lines, 13-259
network conversion table, 13-261
VPL configuration table, 13-270
Voice Band Modem Capability, 1-40
Voice Call, 13-16
list extension parameters, 13-16
revise, 13-46
table, 13-248
Voice Paging, 1-40
Voltages
low voltage shutdown, 12-9
measurements and adjustments, 12-67
memory power supply adjustments, 12-9
shelf 3 and memory switch assembly, 12-39
TDM motherboard, 12-39
upper shelf, checking, 3-4
208-Vac main power supply adjustments, 12-7, 12-67
V1/V2 +5V Missing at TDM Shelves Troubleshooting Flow Chart, 12-91

W

Watchdog Timers, 4-2
Watchdog Timers, 4-2b
Weight Requirements, Space and, 2-11
clearances, 2-12
equipment room layout, 2-13
work sheet, 2-2

Wire Length for Feeders, 2-31
Wired-for Redundancy Cabinet, 2-151
Wiring Diagrams
  AC1R. 3-73
  AC2R, 3-81
  AC3R, 3-89
  bypass, 2-117
  cabinet 1, 12-17
  cabinet 2, 12-19
  cabinet 3, 12-20
dc cabinet 1 primary power distribution, 3-119
dc primary power, 2-18
DC1RN, 3-95
DC2RN, 3-103
DC3RN, 3-111
memory power supply, 12-11
primary power, 2-18
208 Vac cabinet 1 ac distribution, 3-117