



MERLIN LEGENDTM
Communications System
Pocket Reference

Ordering Information

To order copies of this document:

Call: AT&T Customer Information Center on 800-432-6600;
In Canada, call 800-255-1242

Write: AT&T Customer Information Center
2855 North Franklin Road
P.O. Box 19901
Indianapolis, Indiana 46219-1385

For assistance when installing or programming the system:

Call: National Service Assistance Center (NSAC) at
800-628-2888 or your authorized AT&T dealer

Notice

While reasonable efforts were made to ensure that the information in this document was complete and accurate at the time of printing, AT&T can assume no responsibility for errors. Changes or corrections to the information in this document maybe incorporated into reissues.

Trademarks

Accunet is a registered trademark of AT&T.

AUDIX is a trademark of AT&T.

Definity is a registered trademark of AT&T.

Magic on Hold is a registered trademark of AT&T.

Megacom is a registered trademark of AT&T.

MERLIN is a registered trademark of AT&T.

MERLIN LEGEND is a trademark of AT&T.

MERLIN MAIL is a trademark of AT&T.

MLX-20L, MILX-10D, MLX-10, and MLX-28D are trademarks of
AT&T.

SYSTIMAX is a trademark of AT&T.

ERRATA

MERLIN LEGEND™ Communications System Pocket Reference 555-610-141

Ignore all references to the *small* processor module. The MERLIN LEGEND™ Communication System offers only one processor module. This processor module is referred to as a *large* processor module in this document.

Page 2

Backboard Requirements: *References to “Small system” should read “One expansion carrier” and references to “large system” should read “Two expansion carriers.”*

Pages 7-13

Hardware and software Parameters Table: *Ignore the columns headed “Small.”*

Page 14

Ordering Codes Table: *The following Price Element Codes are not valid:*

Small (Analog) - 6141-CUA

Small (Digital) - 6141-CUD

Small (Digital) - 6141-24D

Page 15

Ordering Codes Table: *The following Price Element Code (PEC) is not valid:*

Upgrade from Small to Large - 6140-USLA

Page 31

Memory Sizes: *Ignore reference to small processor module.*

October 1, 1991

Table of Contents

Design Benefits	1
Environmental Requirements	2
Control Unit Interfaces	4
Network Interface Requirements	5
FCC Registration	6
DOC Registration	6
Hardware and Software Parameters	7
Ordering Codes	14
Control Unit Modules	30
Adjunct Summary	38
Uninterruptible Power Source (UPS) Backup Times	48
Power Supply Unit Load Requirements	49
■ Unit Load Calculation Rules	49
■ Unit Load Rating of System Modules	51
■ Unit Load Rating of System Lines, Telephones, and Adjuncts	52
System Features	53
Telephone and Operator Console Features	56
Reference Documents	70

Design Benefits

Modular components allow easy, cost-effective growth in both size and function. For upgrades from the MERLIN® system family of products, all analog MERLIN system telephones, as well as wiring, can be reused. For upgrades from MERLIN II, certain line/trunk and station modules can also be reused.

Menu-driven system programming maintains the customer's command of business operations.

Built-in 1200-bps modem allows fast access to the system by customers, AT&T personnel, or authorized dealers from a remote location for system programming and maintenance.

Flexible mode of operation saves upgrade costs by allowing system configuration in one of three modes: Key, Behind Switch, and Hybrid/PBX.

Connectivity to other systems in the Behind Switch mode optimizes existing resources by permitting the system to work as part of another MERLIN LEGEND™ Communications System, System 25, System 75, System 85, Definity® 75/85, or other communications systems. Also, the system control unit can connect to another system's control unit by using an off-premises telephone (OPT) line, an analog tie trunk, or a digital tie trunk.

Digital 2.048-MHz bus supplies a 64-kbps channel on each of the 216 time slots.

68000 Motorola CPU running at 10 MHz with zero wait states provides fast system performance.

Memory data retention saves time by ensuring that system and station programming information is retained for 12 to 30 days, depending on the system configuration, in case of power failure or system shutdown.

Integrated voice and data capabilities allow users to converse while transmitting data at speeds up to 64 kbps.

DS1 interface can be configured for connection of either T1 or ISDN for basic call control with the AT&T 4ESS PRI service specifications.

ISDN S/T BRI protocol supports premier digital multiline telephones (MLX) with superior display capabilities and supports the ISDN 7500B Data Module for the connection of adjuncts.

Environmental Requirements

Control Unit

Fully loaded basic carrier	45 lbs	14" W x 23" H x 12" D
Fully loaded 2-carrier	90 lbs	25" W x 23" H x 12" D
Fully loaded 3-carrier	135 lbs	37" W x 23" H x 12" D

Mean Time Between Failures
(mean or average time the product/system is expected to operate before any type of failure occurs) 2.1 years

Mean Time Between Outages
(mean or average time the system is expected to operate before a failure affecting more than 25% of stations or lines for more than 15 seconds occurs) 4.0 years

Backboard

Without **SYSTIMAX™**

- Small system 4' W x 3' H x 3/4" D
- Large system 6' W x 3' H x 3/4" D

With SYSTIMAX

- Small system 5' W x 4' H x 3/4" D
- Large system 7' W x 4' H x 3/4" D

Backboard Mounting Hardware Requirements

- | | |
|---------------------------------------|--------------------|
| Wood surface | Wood screws |
| Concrete surface, brick, cinder block | Masonry anchors |
| Plaster, plasterboard | Toggle bolts |
| Sheet-metal surface | Sheet-metal screws |
- Hardware should have a combined pullout force of 650 lbs.
 - When mounting to sheet-metal walls, attach to structural members.

Location

- Within 5 ft of dedicated AC power outlet (1 plug per carrier)
- Within 1000 cable feet of telephones

Heat Dissipation

Fully loaded basic carrier	500 Btu/hr
Fully loaded 2-carrier	1000 Btu/hr
Fully loaded 3-carrier	1500 Btu/hr

Power Requirements

Basic carrier	117 VAC	60 Hz	± 5%	3A
2-carrier	117 VAC	60 Hz	± 5%	6A
3-carrier	117 VAC	60 Hz	± 5%	9A

Environmental Requirements (continued)

Temperature Humidity Range

40°–104°F; 4–40°C (optimum temperature 60°F)

20%-80% relative humidity

Ventilation

1" on left side; 1" on right side; 12" above; 12" below

Cautions

- Do not use switch control on AC outlet for control unit.
- Use approved ground (AC receptacle for 3-prong plug).
- Do not install control unit outdoors.
- Do not place control unit near extreme heat (furnaces, heaters, attics, or direct sunlight).
- Do not expose control unit to devices that generate electrical interference (such as arc welders or motors).
- Do not place anything on top of carriers.
- Do not install control unit under any device that may drip fluid, such as an air conditioner.

Control Unit Interfaces

Interface	Applications	Signaling Channel Rate	Audio/ Data Rate
ISDN-BRI S/T*	Digital switch to MLX telephones	16 kbps (D); 64 kbps (B)	
	Digital switch to ISDN 7500B Data Module	64 kbps (B and D)	
DS1	Switch to the following services ■ T1 — Emulated tie trunk, loop-start, and ground-start ■ ISDN-PRI services Accunet® switched digital service, Megacom® WATS, Megacom® 800, Software Defined Network (SDN)	64 kbps	
RS-232C	Switch to PC connected to system programming RS-232C port	2400 bps or 1200 bps	2400 bps or 1200 bps
	Switch to AT&T model 572 printer, PC with CAS, or CAT connected to RS-232C port	1200 bps	1200 bps

* Call handling derived from CCITT recommendation Q.931

Control Unit Interfaces (continued)

Interface	Applications	Signaling Channel Rate	Audio/Data Rate
ATL	Digital switch to analog multiline telephones	40 kHz	300-3400 Hz

Network Interface Requirements

Line/Trunk Type	Facility Interface Code	Network Interface
Loop-start	02LS2	RJ11C, RJ14C, RJ21X
Ground-start	02GS2	RJ11C, RJ14C, RJ21X
Direct Inward Dialing	02RV2-T	RJ11C, RJ14C, RJ21X
Off-premises telephone	0L13C	RJ11C, RJ14C
Tie line	TL31M	RJ2GX
T1	04DU9-B 04DU9-C	RJ48C/X
ISDN-PRI	04DU9-B 04DU9-C	RJ48C/X

FCC Registration

Registration Number	REN	Type
AS593M-72682-MF-E	1.5A	Multi-function
AS593M-72914-KF-E	1.5A	Key only

DOC Registration

DOC Certification No.	CSA Certification No.	Load No.
230-4095A	LR-56260	6

Hardware and Software Parameters

Item	Small	Large
Allowed lists		
Number of lists	8	8
Entries per list	10	10
Digits per entry	7	7
Applications		
CAS	1	1
CAT	1	1
CMS	2	2
Number of lines/trunks (each)	28	28
Number of agents (each)	28	28
Number of external alerts (each)	4	4
Integrated Solution II		
AUDIX Voice Power-IS II	1*	1*
Number of mailboxes (each)	300	300
Integrated Voice Power		
Automated Attendant	1*	1*
Call Accounting System-IS II	1	1
System Programming and		
Maintenance-IS II	1	1
MERLIN Attendant	4	4
MERLIN MAIL™ Voice Messaging		
System	4	4
Number of mailboxes (each)	40	40
System Programming		
and Maintenance-DOS	1	1
Automatic Route Selection		
Fully programmable ARS tables	16	16
Entries per table	100	100
Entries across all tables	1600	1600
ARS patterns	18	18
Subpatterns per pattern	2	2
Routes per subpattern	6	6
Default tables	4	4

* AUDIX Voice Power-IS II and Integrated Voice Power Automatic Attendant cannot be connected simultaneously.

Hardware and Software Parameters (continued)

Item	Small	Large
Callback calls in queue	64	64
Calling Groups		
Number of groups	32	32
Members per group*	20	20
Groups per member	1	1
Delay announcements per system	32	32
Delay announcements per group	1	1
Groups per delay announcement	32	32
External alerts per group	1	1
Coverage groups per group	1	1
Carriers		
Slots per basic carrier [†]	5	5
Slots per expansion carrier	6	6
Carriers per system	3	3
Total slots available	17 [‡]	17
Coverage Groups		
Number of groups	32	32
Senders per group	56	144
Groups per sender	1	1
Receiver buttons per group [§]	8	8
Groups per QCC receiver	30	30

* QCCs cannot be members.

† The processor module must be placed in slot 00 in the basic carrier.

‡ Software limits on the number of lines/trunks and stations usually limit the number of carriers in a small system to 2 and therefore the number of slots to 11.

§ For Hybrid/PBX systems, when queued call consoles (QCCs) are used, the queue can also be assigned as a receiver but is not counted in the 8-receiver maximum.

Hardware and Software Parameters (continued)

Item	Small	Large
Data hunt groups		
Number of groups	32	32
Members per group	20	20
Groups per member	1	1
Digital data via ISDN 7500B Data Module	24	127
Direct Inward Dialing		
Number of blocks	2	2
Number of trunks	24	80
Directories		
System Directory (System Speed Dial)		
Number of directories	1	1
Listings per directory	40	130
Extension Directory		
Number of directories	1	1
Listings per directory	56	144
Personal Directory		
Number of directories	16	48
Listings per directory	50	50
Direct Station Selectors*	12	16
Disallowed Lists		
Number of lists	8	8
Entries per list	10	10
Digits per entry	11	11
DS1 modules	1	3
Fax machines with Message Waiting	16 [†]	16 [†]

* Two per MLX module; the analog multiline display console has a built-in DSS.

† The system can support more than 16 fax machines, but those in excess of 16 cannot use the fax message-waiting indication.

Hardware and Software Parameters (continued)

Item	Small	Large
Lines/trunks*	24	80
Night Service		
Groups	8	8
Members per group	56	144
Groups per member	8	8
Emergency Allowed List entries	10	10
Operator Consoles		
Direct-line consoles (DLCs)		
MLX-20L™ or MLX-28D™†	6	8
BIS-22D, BIS-34D, or System Display Console‡	8	8
QCCs†	4	4
Combination of DLCs and QCCs	8	8
Number of consoles per module	2	2
Paging system ports (loop-start only)	3	3
Park codes	8	8
Personal lines	56	64
Personal Speed Dial§		
Entries per single-line or 5- or 10-button telephone	24	24
Entries per system	880	1200
Digits per entry	16	16
Pickup		
Number of groups	30	30
Members per group	15	15
Groups per member	1	1

* Lines/trunks can be configured as personal lines.

† Two per MLX module.

‡ Two per analog module.

§ Single-line and 5- or 10-button telephones only.

Hardware and Software Parameters (continued)

Item	Small	Large
Pools (trunk groups)		
Maximum number of pools	11	11
Maximum number of trunks in a pool	24	80
Pool buttons	56	64
Ports (not achievable simultaneously)		
Delay announcements	32	32
Digital data via ISDN 7500B		
Data Module	24	127
Paging	3	3
Voice and data (physical ports)	56	144
Voice Announce to Busy stations	28	127
Voice-mail interface*	20	20
Total ports [†]	80	224
Power failure transfer telephones	6	20

* Although the system software supports up to 24 voice mail interface (VMI) ports, all the VMI ports must be in the same calling group, and the maximum number of stations in a calling group is 20.

† The large system is said to have a total capacity of 224 (80 CO lines/trunks plus 144 stations). However, these are physical jacks. Each MLX station jack represents 2 logical endpoints (ports). For example, an MLX telephone with a Multi-Function Module (MFM) plugs into only 1 station jack, but the jack supports the telephone and whatever is connected to the MFM (fax machine, answering machine, etc.). The 1 station jack is supporting 2 endpoints.

Although it has only 1 jack, the 100D module can serve up to 24 endpoints. Therefore, the entire large system can be configured to connect up to 80 lines/trunks and 255 station endpoints, a total of 335 endpoints.

This total of 335 endpoints exceeds the system's capacity of 216 time slots. If more than 216 endpoints are in use at the same time, blocking can occur.

Hardware and Software Parameters (continued)

Item	Small	Large
Remote Access Number of barrier codes Digits per code	16 4	16 4
Shared System Access (SA) buttons Number of shared buttons per SA	16	16
Stations Total physical jacks Total endpoints	56 56	144 255
System programming equipment* MLX-20L™ RS-232 port for PC with SPM Modem	1 1 1	1 1 1
Telephones Analog multiline without Voice Announce to Busy Analog multiline with Voice Announce to Busy MLX-20L† MLX-10,™ MLX-10D,™ or MLX-28D (with or without ISDN 7500B Data Module or Multi-Function Module)‡ Single-line	56 28 16 24 56	136 127 48 127 144

* Remote system programming overrides on-site system programming unless an on-site backup or restore procedure is taking place. The system sends a message that a remote connection is established before terminating an on-site system programming session.

† Total includes the MLX-20L telephone used for system programming.

‡ An MFM and an ISDN 7500B Data Module cannot be connected to the same telephone at the same time.

Hardware and Software Parameters (continued)

Item	Small	Large
Traffic Hundred call seconds (CCS) per hour per station	7.0	6.0
Two-party conversations	40	108

Ordering Codes

Component	PEC	Comcode App	
Control Unit			
Small (Analog)	6141-CUA		
Basic carrier and housing		106388614	403E
Power supply module		105743801	391A1
Processor (small)		105711972	517A23
Feature module (small)		105711998	517A24
408 GS/LS		106064678	517A26
Small (Digital)	6141-CUD		
Basic carrier and housing		106388614	403E
Power supply module		105743801	391A1
Processor (small)		105711972	517A23
Feature module (small)		105711998	517A24
008 MLX		105628010	517A21
800 GS/LS		105627996	517A19
Small (Digital)	6141-24D		
Basic carrier and housing		106388614	403E
Power supply module		105743801	391A1
Processor (small)		105711972	517A23
Feature module (small)		105711998	517A24
008 MLX (3)		105628010	517A21
800 GS/LS		105627996	517A19
400 GS/LS/TTR		105627988	517A18
Large	6140-CUL		
Basic carrier and housing		106388614	403E
Power supply module		105743801	391A1
Processor (large)		106215155	517A27
Feature module (large)		106064660	517A25
Upgrade from MII to Large (Digital)	6140-UDLA		
Cover		106388234	16A
Processor (large)		106215155	517A27
008 MLX		105628010	517A21
Feature module (large)		106064660	517A25
MLX-20L telephone (choose one):			
Black		105685465	7713DO1A-003
White		105685473	7713DO1A-264
Expansion cover (zero, one, or two)		106388259	17A

Ordering Codes (continued)

Component	PEC	Comcode	App
Upgrade from MII to Large Cover	6140-UULA	106388234	16A
Processor (large)		106215155	517A27
Feature module (large)		106064660	517A25
Expansion cover (zero, one, or two)		106388259	17A
Upgrade from Small to Large Processor (large)	6140-USLA	106215155	517A27
Feature module (large)		106064660	517A25
Expansion Unit	61490		
Expansion carrier and housing		106388630	403F
Power supply module		105743801	391A1
Expansion Unit Cover	n/a	106388259	17A
Line/Trunk and Station Modules			
008 (ATL)	61485	105351092	51703
008 MLX	61486	105628010	517A21
008 OPT	61489	106387525	517A28
012 (T/R)	61487	106397631	517E13
100D (DS1)	61491	105461560	517B15
400EM (tie trunk)	8303-200	105311401	517A14
400 GS/LS/TTR	61483	105627988	517A18
408 GS/LS	61481	106064678	517A26
800 DID	61488	105628002	517A20
800 GS/LS	61484	105627996	517A19
Vintage Line/Station Modules			
400 (with TTRs)	61379	105408892	517B12
408 LS	61482	105512495	517C1
800 LS	61384	105351100	517B4
Telephones			
Digital/ISDN Multiline Telephones			
MLX-10 (black)	3156-02B	105685440	7712D01A-003
MLX-10 (white)	3156-02W	105685457	7712D01A-264

Ordering Codes (continued)

Component	PEC	Comcode	App
Digital/ISDN Multiline Telephones, continued			
MLX-10D (black)	3156-03B	105688303	7712D02A-003
MLX-10D (white)	3156-03W	105688311	7712D02A-264
MIX-20L (black)	3156-05B	105685465	7713D01A-003
MIX-20L (white)	3156-05W	105685473	7713D01A-264
MLX-28D (black)	3156-04B	105688329	7713D02A-003
MLX-28D (white)	3156-04W	105688337	7713D02A-264
Analog Multiline Telephones (black)			
MLC-5	3168-MLC	105515332	7312H01A-003
BIS-10	3165-10B	105161061	7313H01A-003
BIS-22	316W28	105188809	7314H01A-003
BIS-22D	3166-DSB	105630420	7315H01B-003
BIS-34	3167-34D	105167027	7317H01A-003
BIS-34D	3167-DSB	105630529	7317H01B-003
Vintage Analog Multiline Telephones (black)			
5-Button	3160-111	105217426	Z7302H01D-003
10-Button	3161-172	105217509	Z7303H01D-003
10-Button HFAI	3161-161	105371942	Z7309H01C-003
34-Button	3162-412	103842050	Z7305H01B-003
34-Button Deluxe	3162-417	105217715	Z7305H02D-003
34-Button BIS	3162-BIS	103981965	Z7305H03D-003
34-Button BIS/DIS	3162-DIS	103981981	7305H04C-003

Ordering Codes (continued)

Component	PEC	Comcode	App
Single-Line Telephones			
Model 7102	3185-MWR		
Black		105335285	7102A01A-003
Misty cream		105330419	7102A01A-215
Model 2500 YMGK (message waiting, recall, touch-tone, desk)	3178-NHL		
Black		105480578	2500YMGK-003
Misty cream		105480560	2500YMGK-215
Model 2500 MMGK (recall, touch-tone, desk)	3101-ETR		
Black		105414130	2500MMGK-003
Misty cream		105414122	2500MMGK-215
Model 2500 MMGJ (touch-tone, desk)	3101-EBD		
Black		105414155	2500MMGJ-003
Misty cream		105414148	2500MMGJ-215
Model 2554 MMGJ (touch-tone, wall)	3101-EBW		
Black		105480081	2554MMGJ-003
Misty cream		105480032	2554MMGJ-215
Model 500 MM (rotary, desk)	3100-ORD		
Black		103870234	500MM-03
Ivory		103870226	500MM-50
Beige		103870267	500MM-60

Ordering Codes (continued)

Component	PEC	Comcode	App
Single-Line Telephones, continued			
Model 554 BMPA (rotary, wall) Black	3100-ORW	103823498	554BMPA -3
Ivory		103823506	554BMPA -50
Beige		103823555	554BMPA -60
Consoles			
MERLIN® II System Display Console	61392	105229744	7318H01A- 003
DSS console (black)	3156-DCB	105685481	604A1-003
DSS console (white)	3156-DCW	105685499	604A1-264
Applications			
Call Accounting System (CAS)			
CAS Plus LEGEND	1201-DR1	406362244	
Custom Tariff*	12010	406158444	
CAS Plus upgrade	12009	406158394	
CAS/H			
CAS/H LEGEND 100S	1201-H10	405799255	
CAS/H LEGEND 200S	1201-H20	405799289	
CAS/H Custom Tariff*	12050	405799420	
Call Accounting Terminal (CAT)			
CAT/B 150S	3600-023	406478800	
CAT/H 150S	3600-024	406478818	
CAT/B update (Custom Tariff)*	36023	406478792	
CAT/H update (Custom Tariff)*	36024	406478784	
Call Management System (CMS)			
5 1/4" floppy disk	1207-100	106496540	
3 1/2" floppy disk		106496532	
Board	8301-100	106198815	
MERLIN LEGEND integrated Solution II			
AUDIX Voice Power-IS II			
AVP2.1 for LEGEND	1234-VR1	106491608	
LEGEND Integ SW	1234-SR1	106491590	
IVP4SS R1 .2	1234-BR1	106491616	
IVP4 Board LEGEND	8306-100	106248651	

* Consult AT&T or an authorized dealer for other area-specific information.

Ordering Codes (continued)

Component	PEC	ComcCode	App
Applications, continued			
Integrated Voice Power Automated Attendant SAA LEGEND	1234-AA1	106491624	
IVP4SS R1 .2 LEGEND	1234-BR1	106491616	
IVP4 Board LEGEND	8306-100	106248651	
Call Accounting System IS II	1201-U12	406478537	
System Programming and Maintenance IS II	61496	106496565	
MERLIN Attendant	6125-ATT		
Hardware		406221499	
Documentation		106431265	
MERLIN MAIL™ Voice Messaging System for the MERLIN LEGEND Communications System			
Two-port	6107-005		
MERLIN MAIL unit		406467910	
Remote maintenance device		406466193	
Four-port	6107-006		
MERLIN MAIL unit		406467902	
Remote maintenance device		406466193	
Two-port line card (R2) (upgrade from two to four)	6107-007	406464750	
System Programming and Maintenance (SPM) for the MERLIN LEGEND Communications System (MS-DOS*)	61495	106492655	
Adjuncts/Adapters			
System Adjuncts/Adapters			
Auxiliary Power Unit 9024	61416	406467142	9024
Channel service units (CSUs)			
ESF T1	2152-ESF	405616293	305010171 -001
Cable (8 mod, wire wrp)	21555	406012609	513861312 -505
Cable (8 mod, 15-pin sub)	21554	406012591	513823015 -50 Ft
Stand-alone wall mount	21545	405970104	380- 100213- 001

* Registered trademark of Microsoft Corporation

Ordering Codes (continued)

Component	PEC	Comcode	App
System Adjuncts/Adapters, continued			
Channel service units (CSUs)			
551 T1 L1	2152-15T	403768179	305-10097-001
Power unit	21530		
Unit		404242639	KS22911L1
Cord		103985660	DW4A-SE 10FT IP
Stand-alone wall mount	21545	405970104	380-100213-001
Cordless Telephones			
Model 5320	3103-CLS	105543516	CS6300U1 1A-229
DA-5 Digital Voice Announcer	62523	405745811	ANNCR-DA-5SL DI
Electrostatic discharge (ESD) suppression kits			
D-181574	n/a	105179329	0181574
D-181589	n/a	105201891	D181589
0-181590	n/a	105201909	D181590
0-181591	n/a	105201917	0181591
0-181593	n/a	105201933	0181593
EMI filter			Z200A
IROB unit — analog multiline*	32918	406106583	343 CA 0A 6XIN
IROB unit — MLX*	32919	106417447	505A ASSY 0A WD
ISDN 7500B Data Module	2164-BDM	105657654	Z7500B-L1
Stand-alone power supply	21625	405509852	WP90110 L7
Multiple mounting	21626	105441166	Z77A
7500A upgrade kit	21627	105688501	D182208
Magic-on-Hold® player	3128-010	405143827	DECK-MMP/ RCA PR
Modem 2224G	2224-CEO	105659965	2224C-L1 D/2

* Any multiline off-premises telephone must have an appropriate IROB protector at the control unit location and at the off-premises location.

Ordering Codes (continued)

Component	PEC	Comcode	App
System Adjunct/Adapters, continued			
Music Coupler	61398	406143925	ASSY-K23395 L3
PagePac* 6	5323-006	405701277	22052-006 PG PC
PagePac 6 Plus	5323-008	405701608	22052-000 PG PC6
PagePac 20 Power Mate [†] with three speakers	5323-005 5323-001	403308026 403308067	ADP06 ADP06
Ring generator unit	61388	105213201	129B RING GEN
SMDR Printers			
475 (80-column, serial)	3330-475	403318942	475- 8510BR2
476 (132-column, serial)	3330-476	403818495	476- 1550BR2
572 (80-column, serial)	3333-572	406152983	572- 9500DR 10IN
Uninterruptible Power Source (UPS)			
500 VA (15 min)	2403-050	105610141	515 UPS- 005C111
Reserve (1 hr)	24035	105610174	ERG W/BAT- 005E5
Universal Paging Access Module (UPAM)	58500	405891698	KIT-UPAM
TAM-B	n/a	405899972	D181900
PRS-48	n/a	405742735	D181900
WMT-1A	n/a	405891680	D181900
ZoneMate [†] 9	53505		
Dialer unit		404057911	DIAL UNIT- 9ZONE
Control unit		405024134	CNTL 22050- 020

* Registered trademark of Dracon, a division of Harris Corporation

† Trademark of Dracon, a division of Harris Corporation

Ordering Codes (continued)

Component	PEC	Comcode App
System Adjuncts/Adapters, continued		
ZoneMate 39	53506	
Dialer unit		404057929 39 ZONE SELECT
Control unit		405024134 CNTL - 22050- 020C
External Alerts		
Loud external ringer	31016A	103117016 RINGER- L1AMP- 49
E1CM-type	31019A	
Gray		102872934 RINGER- E1CM-49
Ivory		102917952 RINGER- E1CM-50
E1CM ringer and parts	61211	D-181233
290A adapter		102992252 290A ADPTR
Ringer		102872934 E1CM-49
Mounting plate		102988466 1049A
Cord		103938494 CORD- D4cH- 87-25
Supplemental Alerts		
Bell	61212A	403349962 BELL- KS23053 L1
Horn	61213A	403349970 KS23053 L2
Deluxe horn	61223A	406207217 SIG THET4-1
Strobe	61221A	403319197 STROB SCOPE
Chime	61222A	405136060 CHM- CHBT2 S1

Ordering Codes (continued)

Component	PEC	Comcode	App
Telephone Adapters			
General Purpose Adapter (analog)	2301-GPA	103977997	Z1C
Multi-Function Module (digital)	3156-MFM	105736474	540A1
Supplemental Alert Adapter (SAA)	2301-SSA	105031199	ADPTR-856A
Telephone Adjuncts			
Headset Adapter	3164-HFA	105752042	ADPTR-502C-003
Headset Adapter	62524	105471304	ADPTR-KS23552
Single-line telephones			
4A Speakerphone Power unit	3120-02W	102139938	4A PWR UNIT-85B1
Block connector		102434925	BLK CON-82B-49
Adapter for single-line telephone		102813888	ADPTR-223C
Adapter for multiline telephone		102949013	ADPTR-2230 IP
Transmitter		103971891	TRMR-680AF-03
Black		103873873	LSPK-108AA-O3
Ivory		103873881	LSPK-108AA-5O
Green		103873899	LSPK-108AA-51
Beige		103873907	LSPK-108AA-6O
White		103873964	LSPK-108AA-58
S202A Speakerphone Black	3152-008	105721088	TEL-S202A-003
Misty cream		105721096	TEL-S202A-215

Ordering Codes (continued)

Component	PEC	Comcode	App
Telephone Adjuncts, continued			
S203A Speakerphone Black	3131-008	106058340	MOD- S203A- 003
Misty cream		106508365	MOD- S203A- 215
Bracket		106284011	BRKT- S203 WL ST
Message Waiting Indicator	31032	103966396	Z34A
Hands Free Unit (HFU)	3163-HFU	103953790	MOD- S102A- 185
Headsets			
Analog Multiline Telephones			
Supra*	3122-011	403350085	HDST- KS22990 L1
	3122-012	403350077	HDST- KS22990 L2
	3122-013	403350051	HDST- KS22990 L3
StarSet II [†]	3122-001	403241540	HDST- KS22915 L1
	3122-002	403241557	HDST- KS22915 L2
	3122-003	403241565	HDST- KS22915 L3
	3122-004	403350093	HDST- KS23080 L1

* Trademark of Plantronics Corporation

† Registered trademark of Plantronics Corporation

Ordering Codes (continued)

Component	PEC	Comcode	App
Analog Multiline Telephones, continued			
StarMate* E	3122-204	403412307	HDST- KS23080 L4
	3122-214	403973431	HDST- KS23080 L5P
Digital/ISDN (MLX) Telephones			
StarSet II—StarMate-E	3122-304	405211723	HDST- KS23080 L7
Supra—StarMate-E	n/a	n/a	HDST- KS23080 L8
MLX Telephones—Miscellaneous Add-Ons/Replacement Parts			
Handsets and Cords			
Handset (black)	n/a	106050065	K2S1-003
Handset (white)	n/a	106053408	K2S1-264
Handset, amplified hearing	31052		
Black		105581896	K6S2-003
White		106248248	K6S2-264
Misty cream		105581904	K6S2-215
Handset, amplified push to listen	31053		
Black		106382344	K8S2-003
White		106382369	K8S2-264
Misty cream		106382351	K8S2-215
Handset cord (9', black)	n/a	105635429	H4DU-003 9Ft
Handset cord (9', white)	n/a	105701809	H4DU-264 9'BULK
Handset cord (12', white)	n/a	102402609	H4DU-264 12'IP
Handset cord (12', black)	n/a	102401445	H4DU-3 12Ft IP
Handset cord (25', black)	n/a	105523866	H4DU-3 25'
DSS line cord (2')	n/a	106187545	CORD D8AC-87

* Trademark of Plantronics Corporation

Ordering Codes (continued)

Component	PEC	Comcode	App
Desk Stands and User Trays			
Stand (large, black)	n/a	846320851	STAND- LARGE BL
Stand (large, white)	n/a	846320844	STAND- LARGE WH
Stand (small, black)	n/a	846320810	STAND- SMALL BL
Stand (small, white)	n/a	846320802	STAND- SMALL WH
User tray (black)	n/a	846320240	USER TRAY DWR B
User tray (white)	n/a	846320232	USER TRAY DWR W
Designation (Button Assignment) Cards and Covers			
Designation card* — MLX-10, MLX10D	n/a	106448707	KIT- D182459 PRT
Designation card* — MLX-20L	n/a	106448723	KIT- D182461 PRT
Designation card* — MIX28D	n/a	106448715	KIT- D182460 PRT
Designation card set [†] — DSS	n/a	106448756	KIT Set DSS
Designation card covers [†] — DSS (black)	n/a	106448731	KIT- D182462 PRT
Designation card covers [†] — DSS (white)	n/a	106448749	KIT- D182463 PRT

* Twelve per package

† Includes both top and bottom cards or covers

Ordering Codes (continued)

Component	PEC	Comcode	App
Designation (Button Assignment) Cards and Covers, continued			
Designation card set* — QCC	n/a	106561673	KIT-D182562 PRT
Designation card covers [†] — MLX-10, MLX10D, MLX20L	n/a	106448681	KIT-D182457 PRT
Designation card covers [†] — MLX-28D	n/a	106448699	KIT-D182458 PRT
Analog Multiline Telephones—Miscellaneous Add-Ons			
Desk Stands and Wall Mounts			
Adjustable desk stand, 10-button	32002	103746855	11A
Adjustable desk stand, 34-button	32003	103746863	11C
Fixed desk stand, 5- & 10-button	32004	103746848	10A
Desk stand/wall mount 14A, BIS-10	n/a	103804290	14A-003
Desk stand/wall mount 14B, BIS-22	n/a	103964458	14B-003
Desk stand/wall mount 14C, BIS-34	n/a	103979837	14C-003
Fixed desk stand and wall mount, 5-button	32000	103804290	10A
Kit of parts	32000	103995882	D-1 81230
Wall mount, 10-button	32001	103747846	201A
Kit of parts	32000	103995882	D-1 81230
Wall mount, 34-button	32006	103747853	203A
Kit of parts	32000	103995882	D-181230
Faceplates			
BIS-10	n/a	105203186	KIT PRTS-D-181582
BIS-22	n/a	105336986	KIT PRTS-D-181784

* Eight cards per kit (four sets)

† Four per package

Ordering Codes (continued)

Component	PEC	Comcode	App
Faceplates, continued			
BIS-22D	n/a	105690762	D-1 82210
BIS-34 and BIS-34D	n/a	105203194	D-181583
Button Label Sheets			
10-button BIS	n/a	105336978	D-181785
22-button BIS	n/a	105336960	D-181784
22-button BIS with display	n/a	105690770	D-182211
34-button BIS	n/a	105336956	D-181783
Display console (FM1) (includes one faceplate)	n/a	105299754	D-181727
Display console (FM2 & R3) (includes one faceplate)	n/a	105486252	D-182041
Single-Line Telephones—Miscellaneous Add-Ons			
Ground-Start Button			
KS23566L1	31021	405792839	Key-KS 23566L1
Miscellaneous Parts			
Interconnect Wiring Kit			
110AB1-100JP12	n/a	104409396	
110A1 trough	n/a	104407960	
D-Rings	n/a	842139248	
D8W cords	n/a	103786802	
Parts list	n/a	n/a	
SYSTIMAX™ MERLIN® Wiring Kit	3103-MER	106393671	
110A1 trough (5)	n/a	104407960	
110AB1-100JP12 modular block (2)	n/a	104409960	
110AB1 110 punch down block (1)	n/a	103823845	
D-Rings (6)	n/a	842139248	
110P8A5B patch cords (12—4-pair—5-ft. patch cords)	n/a	846619989	
D8W cords (24—14 ft.)	n/a	103786802	
Template	n/a	846613933	
Instruction sheet	n/a	846613941	
Parts List	n/a	846623924	

NOTES

Control Unit Modules

Module	Line/Trunk Type	Station Type
Processor	N/A	N/A
Power supply	N/A	N/A
008	N/A	Analog multiline telephone; Call Management System; analog data via a modem
008 MLX	N/A	MLX telephone; digital data device (such as the ISDN 7500B Data Module)

Specifications
Memory Sizes: large and small Highlights: 68000 processor at 10 MHz, built-in modem; built-in diagnostics; Key, Behind Switch, or Hybrid/PBX mode option; RAM backup for 12 days Ports: top RS-232C port for SMDR; bottom RS-232C port for system programming PC
Power input: 117 VAC Power output: +5 VDC (10 A), -5 VDC (2.50 A), -48 VDC (2.05A) Capacity: 54 unit loads
Capacity: 8 analog stations Signaling: analog multiline telephone protocol (40 kbps) Loop range: 1000 feet in-building or in-range out-of-building (with analog IROB protectors) service only
Capacity: 8 digital stations, each with 1 or 2 endpoints (each endpoint is assigned an individual extension number), including the following station types: ■ digital voice only ■ digital voice with Voice Announce to Busy ■ digital voice and digital data (via ISDN 7500B Data Module) ■ digital voice and MFM ■ digital data only (ISDN 7500B Data Module) Signaling: ISDN-BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus Power: 48-VDC phantom power to telephone; 48 VDC over a separate pair (7-8) to an operator DSS console Loop range: 1000 feet, in-building and in-range out-of-building (with MLX IROB protectors) service only

Control Unit Modules (continued)

Module	Line/Trunk Type	Station Type
008 OPT	N/A	On-premises or off-premises single-line telephone
012 (T/R)	N/A	Single-line telephone; MERLIN Attendant; MERLIN MAIL Voice Messaging System; T/R adjunct (such as an answering or fax machine); analog data device (such as a modem)

Specifications

Capacity: 8 T/R stations* on 2-way voice transmission path with support for telephones with message-waiting LEDs; 2 TTRs

Notice to Telco: Meets FCC Class C

Ringing current: 105-Vrms, 30-Hz sinusoidal ringing superimposed on -48 VDC; a ring generator must be installed in the power supply module of each carrier that has a 008 OPT module.

REN: ≤ 1.0 per port

Disconnect signal: 900 ms (T/R short for answering machines, G3 fax, etc.)

Switchhook flash detection: 300-1200 ms

Loop resistance: Serves 2-wire loops to 1300 ohms, including stations

Capacity: 12 T/R stations on 2-way voice transmission path with support for telephones with message-waiting LEDs, 2 TTRs

Power: 21-VDC, 600-ohm battery source

Ringing current: 105-Vrms, 30-Hz sinusoidal ringing superimposed on -48 VDC; a ring generator must be installed in the power supply module of each carrier that has a 012 module.

REN: ≤ 1.0 per port

Disconnect signal: 900 ms (T/R short for answering machines, G3 fax, etc.)

Switchhook flash detection: 300-1200 ms

- * The system recognizes the OPT module as an 012 module having 12 ports. However, the OPT module has only 8 jacks. Therefore, each installed OPT module decreases the system's capacity by 4 ports.

Control Unit Modules (continued)

Module	Line/Trunk Type	Station Type
100D	T1 or PRI	N/A
400 [†]	Loop-start and TTR	Power failure transfer (PFT) telephone
400EM	Tie trunk	N/A
400 GS/LS/TTR	Loop-start or ground-start and TTR	PFT telephone; button needed for ground-start PFT telephone
408 [†]	Loop-start	Analog multiline telephone; Call Management System; PFT telephone
408 GS/LS	Loop-start or ground-start	Analog multiline telephone; Call Management System; PFT telephone

† Although these MERLIN II modules are supported in the MERLIN LEGEND Communications System, the 400 GS/LS and the 408 GS/LS are the recommended modules.

Specifications
Capacity: 24 lines/trunks for voice and analog data or 23 lines/trunks for voice and data with 1 channel used for signaling Mode: multiplexes 24 or 23 lines/trunks into 1 facility and demultiplexes 1 facility into 23 or 24 lines/trunks Speed: Up to 64 kbps Signaling: DS1 over 4-wire; T1 uses robbed-bit or common-channel; PRI has ISDN-PRI (23 B + D)
Capacity: 4 lines/trunks, 4TITRs, 1 PFT telephone Signaling: Loop-start
Capacity: 4 tie lines Method of completion: automatic start, immediate-start, wink-start, or delay-dial-start Signaling: E&M type 1S, type 1C, type 5
Capacity: 4 lines/trunks, 4 TTRs, 1 PFT telephone Signaling: Loop-start or ground-start, optioned per port
Capacity: 4 lines/trunks, 8 stations, 1 PFT telephone Station signaling: analog multiline telephone (40 kbps) Line/trunk signaling: Loop-start line/trunk; analog voice Loop range: 1000 feet, in-building and in-range out-of building (with analog IROB protectors) service only
Capacity: 4 lines/trunks, 8 stations, 1 PFT telephone Station signaling: analog multiline telephone (40 kbps) Line/trunk signaling: loop-start or ground-start line/trunk (optional per port); voice Loop range: 1000 feet, in-building and in-range out-of-building (with analog IROB protectors) service only

Control Unit Modules (continued)

Module	Line/Trunk Type	Station Type
800 [‡]	Loop-start	PFT telephone
800 DID	Direct Inward Dialing	N/A
800 GS/LS	Loop-start or ground-start	PFT telephone; button needed for Ground-start PFT

[‡] Although this MERLIN II module is supported in the MERLIN LEGEND Communications System, the 800 GS/LS is the recommended module.

Specifications
Capacity: 8 lines/trunks, 2 PFT telephones Signaling: loop-start
Capacity: 8 trunks, 2 TTRs Transmission: incoming calls only; 2-way (1-pair) fixed impedance to DID trunks; no outgoing calls Signaling: loop-reverse battery; wink-start or immediate-start; accepts touch-tone dialing
Capacity: 8 lines/trunks, 2 PFT telephones Signaling: Loop-start or ground-start

Adjunct Summary

Equipment Type	Specifications	AT&T Products
Alerts (AC)*	- Any audible or visual alert that operates on 20-30-Hz ringing signals - Associated with a specific station (supplemental alert) or works on a programmed line/trunk port (external alert)	External Ringer—Loud External Ringer
Alerts (DC)	- Any audible or visual alert that operates on 48-VDC ringing signals - Associated with a specific station (supplemental alert) or works on a programmed line/trunk port (external alert)	Alert bell Alert horn Alert strobe Alert chime Alert deluxe horn Alert switch
Answer/Record Machine*	- Industry-standard machine - Low ringer equivalence (less than 0.15 or ≤ 1.0 total REN for T/R port) - Ability to recognize 600-ms disconnect signal or other means of automatic disconnect (such as voice reset disconnect timer, fixed recording time)	Model 1330 answering machine Model 1531 Remote Answering System telephone

* Cannot be connected to a QCC.

Interface				
LS or GS/LS	T/R	MFM	GPA	SAA
Line Jacks	012 Station Jack	Digital Station Jack	Analog Station Jack	Analog Station Jack
	✓	✓	✓	
✓*		✓		✓
	✓	✓	✓	

* Requires Universal Paging Access Module (UPAM) to provide 48 VDC.

Adjunct Summary (continued)

Equipment Type	Specifications	AT&T Products
Cordless Telephone*	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch-tone dialing can be used on T/R port. ■ Single line	5320 Cordless Telephone 5200 Cordless Telephone 5500 Cordless Telephone
Credit Card Verification Terminal*	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch-tone dialing can be used on T/R port.	N/A
Dial Dictation*	■ A device that requires contact closure can be used on LS/GS line jack only with UPAM	N/A
Direct Station Selector	■ A maximum of 2 DSSs can be connected to an operator console. ■ A 329A power unit must be added to an operator console having 2 DSSs. ■ Connects to "DSS" jack on operator console	N/A

* Cannot be connected to a QCC.

Interface				
LS or GS/LS	T/R	MFM	GPA	SAA
Line Jacks	012 Station Jack	Digital Station Jack	Analog Station Jack	Analog Station Jack
	✓	✓	✓	
	✓	✓		
✓	✓	✓	✓	

Adjunct Summary (continued)

Equipment Type	Specifications	AT&T Products
Fax*	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch tone dialing can be used on T/R port. ■ Industry-standard analog interface	AT&T 3410D AT&T 3500D AT&T 3510D AT&T 3520D AT&T 3530D AT&T Fax 4515D AT&T Fax 4525D AT&T Fax 9015 AT&T Fax 9020 AT&T Fax 9022 AT&T Fax 9025FX AT&T Fax 9035FX
Group Calling Delay Announcement*	■ Industry-standard announcement device ■ Must provide automatic disconnect ■ Each calling group can have its own announcement (maximum 32). ■ A device can provide delay announcement for more than one group.	Model 1330 Answering Machine DA-5 Digital Voice Announcer
Hands Free Unit	■ For use with analog multiline telephones ■ Connects directly to telephone	5202A
Headset for analog multiline telephone	N/A	Supra StarSet II StarMate E

* Cannot be connected to a QCC.

Interface				
LS or GS/LS	T/R	MFM	GPA	SAA
Line Jacks	012 Station Jack	Digital Station Jack	Analog Station Jack	Analog Station Jack
	✓	✓		
	✓	✓	✓	

Adjunct Summary (continued)

Equipment Type	Specifications	AT&T Products
Headset for MLX telephone	N/A	StarSet II— StarMate-E Supra—StarMate-E
Headset Adapter	■ Need to program Auto Answer All button for use with 502B, 502C ■ Connects directly to telephone OTHER jack	502A 502B 502C
Loud-speaker Paging	■ External paging system using DTMF signaling is connected to LS or GS line jack. ■ CPE paging systems require an interface unit; if CPE has 2-wire input, the BOGEN UPAM-K (58500) can be used.	PagePac 20 PagePac 20 with ZoneMate 9 PagePac 20 with ZoneMate 39 PagePac 6 PagePac 6 Plus
Message Waiting Indicator	■ For single-line sets ■ Connects directly to telephone	Z34A (PEC 31032)
Modem	■ If the modem supports touch-tone dialing via the associated data terminal, the keyboard can be used for dialing. ■ If the modem does not support touch-tone dialing, an associated basic (single-line) telephone can be used for dialing.	Modem Model 4000 Modem Model 2224G Modem Model 4024 Modem Model 2296A Modern Model 2296

Interface				
LS or GS/LS	T/R	MFM	GPA	SAA
Line Jacks	012 Station Jack	Digital Station Jack	Analog Station Jack	Analog Station Jack
✓				
✓*	✓	✓	✓	

* For modem model 2224G only.

Adjunct Summary (continued)

Equipment Type	Specifications	AT&T Products
Music-on-Hold*	Any FCC-registered 8-ohm music source or recorded announcement device	Magic on Hold®
Speaker-phone	- Connect directly to telephone - For single-line sets only	4A[†] (PEC 3120-02W) 203A (PEC 3131-008)
SMDR Printer	- Connects to upper RS-232 jack on processor module - Must be located within 50 feet of CU or use ADU to extend distance	AT&T 475 AT&T 476 AT&T 572

* If you use equipment that rebroadcasts music or other copyrighted materials, you may be required to obtain a copyright license from and pay license fees to a third party such as the American Society of Composers, Artists, and Producers (ASCAP) or Broadcast Music Incorporated (BMI). Or you can purchase a Magic on Hold system, which does not require you to obtain such a license, from AT&T or an authorized dealer.

† Requires 2500SM telephone.

Interface				
LS or GS/LS	T/R	MFM	GPA	SAA
Line Jacks	012 Station Jack	Digital Station Jack	Analog Station Jack	Analog Station Jack
✓*				

* Music Coupler required (PEC 61398).

Uninterruptible Power Source (UPS) Backup Times

UPS Units	Backup Time Limit	PEC
Basic 500VA	15 min	2403-050
1 500VA Reserve Cabinet	1 hr	24035

* Backup times for normal system operation at maximum system load

Power Supply Unit Load Requirements

Unit Load Calculation Rules

Mode	Installed Modules	Calculation
Hybrid/ PBX and Modified Key/ Behind Switch	6*	Not required
Square Key/ and Behind Switch	4 or fewer [†]	Not required

* The 391A1 power supply unit generally supports 6 modules of any type in Hybrid/PBX mode. However, if all 6 carrier slots have the following conditions, the unit load (UL) total may exceed 54 and auxiliary power may be required.

- Only MLX or analog multiline station modules are installed.
- More than 45 MLX-20L or 34-button analog multiline stations are installed.

† The 391A1 power supply unit generally supports 4 modules of any type in Square Key mode.

Power Supply Unit Load Requirements (continued)

Unit Load Calculation Rules (continued)

Mode	Installed Modules	Calculation
Square Key/ Behind Switch	5 or more	■ Use the “Unit Load Rating of System Modules” table and instructions below to determine the estimated ULs: ■ If ULs equal 54 or less, an Auxiliary Power Unit 9024 is not required. ■ If ULs exceed 54, use “Unit Load Rating of System Modules” table to determine the actual ULs for the system. ■ If the actual ULs exceed 54, try to exchange modules between carriers to reduce the ULs below 54.* ■ If the modules cannot be exchanged to reduce the ULs below 54, an Auxiliary Power Unit 9024 is required.

* Empty slots are not permitted between modules.

Power Supply Unit Load Requirements (continued)

Unit Load Rating of System Modules

Module	Unit Load	Module	Unit Load
008 (analog multiline telephones)	12.0	400EM	8.0
008 MLX	13.5	408 GS/LS	12.0
008 OPT	8.0	408 (LS)	12.0
012 T/R	8.4	800 GS/LS	0.0
100D (DS1)	0.0	800 (LS)*	0.0
400 GS/LS/TTR	0.0	800 DID	8.0
400 (LS)*	0.0	Processor	0.0

* This is a MERLIN II loop-start-only module that can be reused in the MERLIN LEGEND Communications System.

Power Supply Unit Load Requirements (continued)

Unit Load Rating of System Lines, Telephones, and Adjuncts

	Unit Load
Network Access Lines*	
DID	1.0
DS1	0.0
GS/LS	0.0
Tie	1.4
Telephones	
MLX-10 and MLX-10D	1.2
MLX-28D	1.7
MLX-20L	1.6
BIS-10	1.1
BIS-22 and BIS-22D	1.3
BIS-34 and BIS-34D	1.5
MLC-5	0.0
5-Button	0.8
10-Button Basic	1.1
10-Button HFAI	1.2
34-Button Basic	1.1
34-Button DLX	1.7
34-Button BIS	1.4
34-Button BIS/DIS	1.4
Single-line telephone	0.7
Optional Equipment	
DSS console [†]	0.9
MFM [‡]	1.3
General purpose Adapter	1.0
Hands Free Unit	1.0
Headset adapter	1.0

* Unit loads are computed per trunk for trunk-type network access lines.

† Up to two DSS consoles (one DSS per MLX-28D or MLX-20L) can be powered from each control unit carrier. For example, a 3-carrier system can have 6 system operator positions, each with one DSS powered from the control unit.

‡ The MFM is powered by an individual wall power unit located at the station.

System Features

Feature	Mode		
	Key	PBX	Behind Switch
Automatic Maintenance Busy	✓	✓	✓
Automatic Route Selection		✓	
Callback	✓	✓	✓
Calling Restrictions	✓	✓	✓
Coverage	✓	✓	✓
Delayed Ring interval	✓	✓	✓
Direct Inward Dialing		✓	
Direct-Line Console options	✓	✓	✓
Directory	✓	✓	✓
Extension Status	✓	✓	✓
Forced Account Code Entry	✓	✓	✓
Group Calling	✓	✓	✓
Headset Status	✓	✓	✓
Hold disconnect	✓	✓	✓
Inside dial tone	✓	✓	✓
Labeling	✓	✓	✓
Loudspeaker Page	✓	✓	✓
Microphone Disable	✓	✓	✓
Night Service	✓	✓	✓

System Features (continued)

Feature		Mode	
	Key	PBX	Behind Switch
Paging groups	✓	✓	✓
Park	✓	✓	✓
Pickup Group	✓	✓	✓
Pools (trunk groups)		✓	
Queued Call Console Options		✓	
Recall interval	✓	✓	✓
Reminder Cancel	✓	✓	✓
Remote Access	✓	✓	✓
Remote call forward	✓	✓	✓
Station Message Detail Recording	✓	✓	✓
System Numbering	✓	✓	✓
System Restart	✓	✓	✓
System Speed Dial	✓	✓	✓
Toll Type	✓	✓	✓
Touch-Tone or rotary signaling	✓	✓	✓
Transfer Options	✓	✓	✓
Voice Announce to Busy	✓	✓	✓

NOTES

K Key mode
P Hybrid/PBX mode
B Behind Switch mode

Telephone and Operator Console* Features

Feature	Program Code	Feature Code
Account Code Entry	* 82	82+ code
Alarm [†]	* 759	
Auto Answer All	* 754	
Auto Answer Intercom	* 753	
Auto Dial Inside (ext., group, DGC, zone) Outside	* 22+ ext. no. * 21+ tel. no.	
Automatic Line Selection Enter Exit	* 14 * * 14	
Barge-In [†]	* 58	
Callback Automatic On off Selective Cancel	* 12 * * 12 * 55	55 * 55

* A QCC can be used in Hybrid/PBX mode only.

† This is an operator console feature.

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB	KP	KPB	KPB
	KPB	KPB			KPB
					KPB
					KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB	KP	KPB	KPB

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
Call Waiting On off Pickup	* 11 * * 11	87
Camp-On	* 57	57
Conference	* 772	772
Coverage Receiver buttons: Group Primary Secondary Sender buttons: Cover inside & outside calls Cover outside calls only Coverage Off	* 42+ ext. no. * 40+ ext. no. * 41+ ext. no. * 48 * * 48 * 49	
Do Not Disturb	* 47	
Drop	* 773	773

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB	KPB	KPB	KPB
KPB	KPB	KPB		KPB	KPB
B	B	B		B	B
KPB	KPB	KPB	KPB	KPB	KPB
KPB	KPB	KPB		KPB	KPB
B	B	B		B	B

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
Extension Status		
Hotel/Motel mode		
Console buttons*		
ES Off	* 760	760 + DSS
ES1	* 761	761 + DSS
ES2	* 762	762 + DSS
Telephone buttons		
ES Off		* 44
ES1	* 45	45
ES2	* 44	44
Calling group/CMS mode		
Calling Group Supervisor buttons*		
Unavailable	* 760	760 + DSS
Available	* 762	762 + DSS
Agent buttons		
Sign-in (available)	* 44	44
Sign-out (unavailable)		* 44
After-call work state (CMS only)	* 45	
Feature button	* 20	
Follow Me		34+ ext. no.
Forward		
Inside	* 33	33+ ext. no.
Outside		33+ line no.
Forward/Follow Me		
Cancel		
Cancel all		* 34 *
Cancel one		* 34+
		ext. no.
Cancel from your telephone		33+ ext. no.

* This is an operator console feature.

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
	KPB	KPB			KPB
KPB	KPB	KPB	KPB	KPB	KPB
	KPB	KPB			KPB
KPB	KPB	KPB	KPB	KPB	KPB
					KPB
KPB	KPB	KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB	KPB	KPB

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
Group Calling Auto Dial button	* 22+ calling group ext. no.	
Group Page Auto Dial button	* 22+ group ext. no.	
Headset Auto Answer Mute (Headset/Handset) Status Off	* 780 * 783 * 782 * 781	
Hold Hold Release		771 * *
Last Number Dial	* 84	84
Messaging Message—Cancel Message—Delete Message Leave button Message —Next Message —Scroll Posted Message Return Call	 * 26 * 25 * 28 * 29 * 751 * 27	* 53+ .ext. no. 26 25 28 29 27
Message Light Off	* 54	54
Night Service*	* 39	39

* This is an operator console feature.

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB		KPB	
B B	B B	B B	B	B B	B B
KPB	KPB	KPB	KP	KPB	KPB
KPB	KPB	KPB	KPB	KPB	KPB
KPB KPB KPB	KPB KPB KPB	KPB KPB KPB	KPB	KPB	KPB KPB KPB KPB
KPB KPB	KPB KPB	KPB KPB		KPB	KPB KPB
KPB	KPB	KPB	KPB	KPB	KPB
	KPB	KPB			KPB

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
Notify Send Receive	* 757+ ext. no. * 758+ ext. no.	
Park	* 86	
Park Zone Auto Dial*	* 22+ Park zone ext. no.	
Personal Speed Dial	* 21	01-24
Personalized Ring	* 32+ ring no. (1-8)	
Pickup General use Specific extension Specific line Group	* 9 * 9+ ext. no. * 9+ line no. * 88	9 + ext. no. 9 + line no. 88
Privacy On Off	* 31	31 * 31
Recall	* 775	775

* This is an operator console feature.

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB	KP	KPB	KPB
	KPB	KPB			KPB
KPB			KP	KPB	KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB	KP	KPB	KPB
KPB	KPB	KPB	KP	KPB	KPB
KPB	KPB	KPB		KPB	KPB

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
Reminder Set	* 81	81 + time + A or P
Cancel Missed Operator Set	** 81 * 752	* 81
Operator Cancel		81 + ext. no. + time + A or P * 81 + ext. no.
Ringing & Idle Line Preference Cancel	* 343 * 344	
Ringing Options		
Individual lines		
Immediate Ring	* 37	
Delayed Ring	* 36	
No Ring	* 35	
All lines		
Immediate Ring	* 347	
Delayed Ring	* 346	
No Ring	* 345	
Abbreviated Ring		
Off	* 342	
On	* 341	
Send ring		
On	* 15	
Cancel	* * 15	
Saved Number Dial	* 85	
Send/Remove Message*	* 38	38 + DSS
Signaling (manual)	* 23 + ext. no.	

* This is an operator console feature.

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB	KPB	KPB	KPB
KPB	KPB	KPB		KPB	KPB
KPB	KPB	KPB		KPB	KPB
P	P	P	P	P	P
KPB	KPB	KPB	KPB	KPB	KPB
	KPB	KPB			KPB
KPB	KPB	KPB		KPB	KPB

* Includes the MLC-5 telephone.

Telephone and Operator Console Features (continued)

Feature	Program Code	Feature Code
System Speed Dial	* 24 + code	600-729
Transfer	* 774	774
Voice Announce On Off	* 10 ** 10	

MLX-10D	MLX-28D	MLX-20L	Single Line	MLX-10	Analog Multiline*
KPB	KPB	KPB	KP	KPB	KPB
B	B	B		B	B
KPB	KPB	KPB		KPB	KPB

* Includes the MLC-5 telephone.

Reference Documents

Document Number	Document Title
555-610-110	System Reference <i>System Reference</i>
555-610-141	<i>Pocket Reference</i>
555-610-111	System Setup and Modification <i>System Programming</i>
555-610-112	<i>Key System Planning</i>
555-610-113	<i>PBX System Planning</i>
555-610-116	<i>Key System Planning Forms only</i>
555-610-117	<i>PBX System Planning Forms only</i>
555-610-114	Data Guide <i>Data Guide</i>
555-610-118	<i>Data Planning Forms only</i>
555-610-120	Telephone User Support <i>Analog Multiline Telephones User's Guide</i>
555-610-122	<i>MLX-10D,TM MLX-28D,TM and MLX-20LTM Digital/ISDN Display Telephones User's Guide</i>
555-610-123	<i>MLX-10TM Digital/ISDN Non-Display Telephone User's Guide</i>
555-610-124	<i>MLX-10TM and MLX-10DTM User Cards</i>
555-610-125	<i>MLX-28DTM and MLX-20LTM User Cards</i>
555-610-121	<i>Single-Line Telephones User's Guide</i>
555-610-131	Operator Guides <i>Analog Direct-Line Consoles Operator's Guide</i>
555-610-132	<i>Digital/ISDN Direct-Line Consoles Operator's Guide</i>
555-610-133	<i>Digital/ISDN Queued Call Console Operator's Guide</i>
555-610-130	Miscellaneous <i>Calling Group Supervisor's Guide</i>
555-610-140	<i>Installation, Programming, and Maintenance</i>