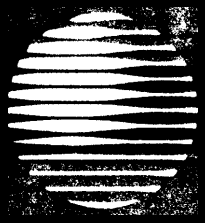


AT&T

PagePac®Voice Paging System

Reference Guide Volume I

999-350-631
February 1992

NOTICE

Every effort was made to ensure that the information in this guide was complete and accurate at the time of printing. However, information is subject to change.

VG—2500—2/92

PagePac®Voice Paging Systems

Reference Guide Volume I

Contents

INTRODUCTION

1

Why an AT&T Paging System?

AT&T has made a commitment to be the quality paging system supplier. The PagePac® line is a flexible product family that achieves the highest levels of quality, simplicity of use, and durability. Customers who purchase an AT&T PagePac system can look forward to improvements in productivity with only a small capital investment.

Selling PagePac is easy. Customers are already aware of a paging system's value. Just remember to ask customers where they need paging. The features and benefits of a PagePac system are unmatched for the price.

What are the Characteristics of the Paging Market?

The market for paging systems grows larger day-by-day. The market is expanding as more businesses discover the benefits. This growth will continue because the benefits of a paging system are tangible and require very little money to obtain.

Most manufacturers' voice communications products offer customers the same or similar features for about the same price as AT&T's systems. The rush to differentiate AT&T's voice communications systems by introducing new features is over. AT&T's voice systems will constantly improve, but so will all the other systems on the market. To customers, the differences between each of the systems are small. Customers are basing their decisions on the ability of a company to meet their needs for voice, paging, facsimile, service and support. Customers want a single solution.

The obvious benefits of paging makes PagePac easy to sell. Ask every customer about their paging needs when you are selling communications systems and increase the efficiency of your selling efforts and your rewards.

"Remember - Just Ask The Question."

Market Study Data*

Who Uses Paging?

- 51% of Businesses with 1-10 Lines
- 64% of Businesses with 11-40 Lines
- 85% of Businesses with 40+ Lines

When Do They Buy?

- 58% During New Building Construction
- 33% Buy New Systems at Existing Sites During Renovation
- 27% Upgrade Existing Paging Systems During Renovation

About This Reference Guide

This Reference guide is divided into specific segments: Section 1 includes introductory material; Section 2 covers the available speakers, while Sections 3 and 4 reviews the available PagePac Systems; Section 5 reviews the Door Products; Section 6 covers layout and design. Last is a Glossary followed by Appendix 1 and 2 which provide the PEC and SKU codes. Appendix 3 has the national support groups and Appendix 4 includes Harris Dracon's layout questionnaire.

When using this guide with the video: 1) Watch one segment at a time; making notes as you go. 2) Stop the VCR when instructed and take the section quiz. 3) If desired, review the video tape segment for additional details.

Are you selling Paging Systems to your customers? If not, who is?

Remember – "Think Paging, It Pay$"

* 1990 Paging Market Survey conducted by VDC, Inc. for Harris Corporation Dracon Division.

SPEAKERS

2

Cone Speakers

Cone speakers are designed to be used indoors for applications that require maximum clarity; not volume. They support Talkback and provide the best sound clarity for both voice and music.

Considerations

Voice Coil Cone (3.4 Volt)

- No more than 4 speakers per wire run
- Wire run not to exceed 600 feet
- Talkback on PagePac 6 Plus or PagePac 20 with, ZoneMate 9 or 39 (two maximum per Talkback zone)
- Wattage set .25 watt

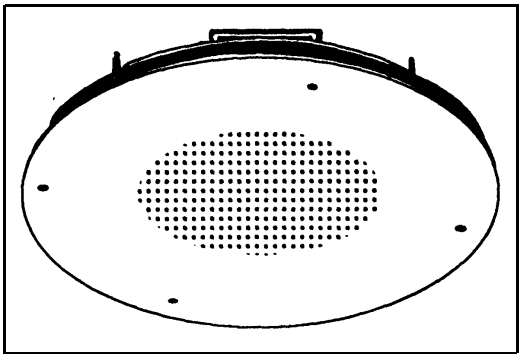
70 Volt Cone

- Number of speakers per wire run and length of wire run far exceeds voice coil limits
- Adjustable wattage settings are from .125–2.5 (taps)
- Talkback on PagePac VS, PagePac 50/100/200 with optional Talkback card
- P-TEC speakers are taps .25–4 watts

Located In

- Offices
- Department Stores
- Store Rooms
- Non-Hostile Environments less than 75 dB

Recessed Round

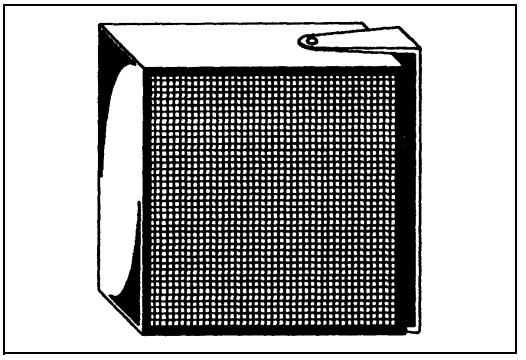


PEC: 53514 (Voice Coil)
SKU: 59554

PEC: 56121 (70 Volt)
SKU: 00201

Recessed Round ceiling speakers are designed to fit into most suspended or standard ceilings. They come with a white enamel baked finish and require that a hole be precut in the ceiling. Includes mounting hardware.

Wall / Universal

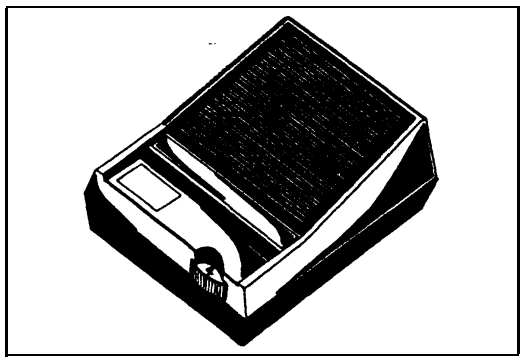


PEC: 53511 (Voice Coil)
SKU: 59551

PEC: 56150 (70 Volt)
SKU: 00547

Wall / Universal speakers can be mounted indoors on most flat surfaces. They are normally used when recessed ceiling mountings are not possible or desirable. They are in a wood grain cabinet with a black cloth grill.

Desktop

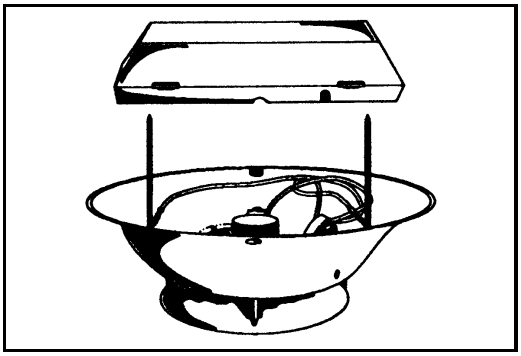


PEC: 53516 (Voice Coil)
SKU: 59555

PEC: 53000 (70 Volt)
SKU: 00543

Desktop speakers are small in size and are designed to cover a limited area (approximately 250 sq. ft.). They are normally used in private offices, most often as intercoms for voice announce on busy with your telephone system.

P-TEC®Lite



PEC: 53515 (Voice Coil)
SKU 00550

PEC: 56141 (70 Volt)
SKU: 00549

P-TEC Lite ceiling speakers are lightweight and easily mounted and/or moved. They use insert rods to mount the speaker flush into the ceiling tile thus eliminating the need to cut an installation hole.

Considerations

Voice Coil

- No more than 2 speakers per wire run
- Wire run not to exceed 400 feet
- Talkback on PagePac 6+ or 20, with ZoneMate 9 or 39 (no more than two speakers per Talkback zone)
- Wattage set at .25 watt
- Drop tile ceiling only

Horn Speakers

Horn speakers are made of a corrosion resistant metal. They are constructed so their internal components are sealed in the speaker's weather-proof housing. Horn speakers are designed for the outdoors or large noisy indoor areas where volume is more important than clarity. They do support talkback if conditions are right.

Considerations

Voice Coil

- No more than 1 Horn per wire run
- Wire run not to exceed 300 feet
- Talkback on PagePac 6+ or 20, with ZoneMate 9 or 39 (no more than one horn per Talkback zone)
- 1 watt no volume control, always use voice coil attenuator

70 volt

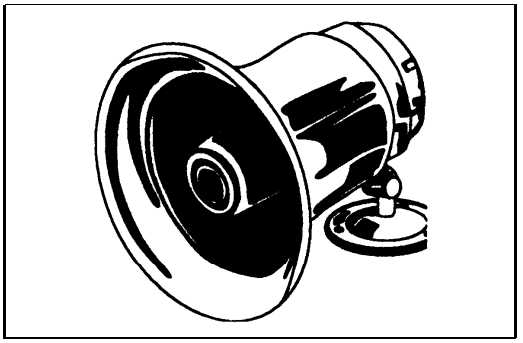
- Number of horns per wire run and length of wire run far exceed voice coil limits
- Talkback on PagePac VS, PagePac 50/100/200

Located In

- Factories
- Warehouses
- Outdoors
- Hostile/Non-hostile environments greater than 75 dB

Voice Coil Horns

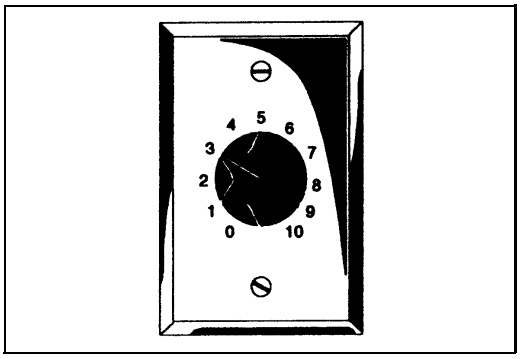
1 Watt Universal Horn Loudspeaker



PEC: 53512
SKU: 59552

1 watt Voice Coil Horn speakers are smaller and more compact than the 70 volt models. Tap Settings and a volume control are not available. It is recommended that an attenuator control be used for adjusting output.

Voice Coil Attenuator (3 Watt)

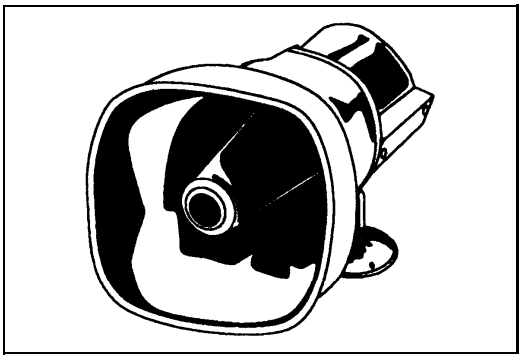


PEC: 53513
SKU: 59553

The Voice Coil Attenuator is used to adjust the volume on both Cone and Horn Voice Coil Speakers. No more than twelve Voice Coil Cone speakers or three Voice Coil Horn speakers can be connected to one Voice Coil Attenuator.

70 Volt Horns

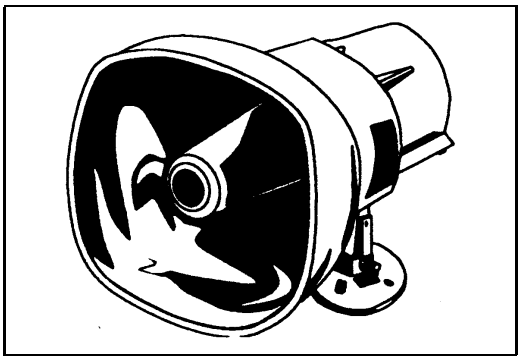
4/15 Watt Horn Loudspeaker



PEC: 51001
SKU: 00199

4/15 watt Horn speakers have a 110 degree dispersion angle and can be mounted on either a pole or a flat surface. These have adjustable tap settings from .25–15 watts. For fine tuning the volume, a 70 volt attenuator is recommended.

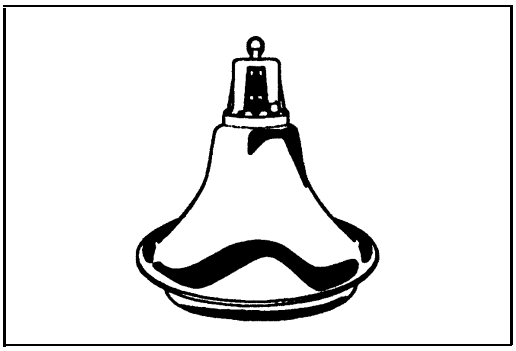
30 Watt Horn Loudspeaker



PEC: 52001
SKU: 00200

30 watt Horn speakers have a 110 degree dispersion angle and can be mounted on either a pole or a flat surface. These have adjustable tap settings from 1.2–30 watts. For fine tuning the volume, a 70 volt attenuator is recommended.

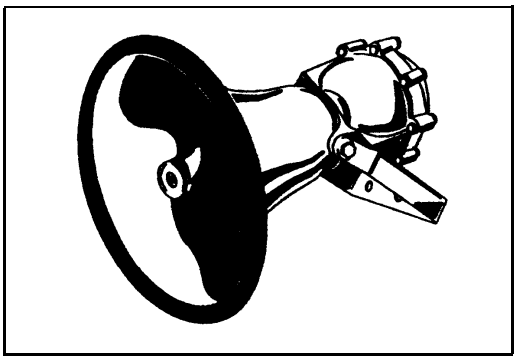
30 Watt Radial Horn Loudspeaker



PEC: 57001

30 watt Radial Horn Loudspeaker is designed to be suspended above the area to be covered. This speaker has a 360 degree sound dispersion pattern, which means it broadcasts sound in all directions. These have adjustable tap settings from 1.8–30 watts. For fine tuning of adjustment, a 70 volt attenuator is recommened.

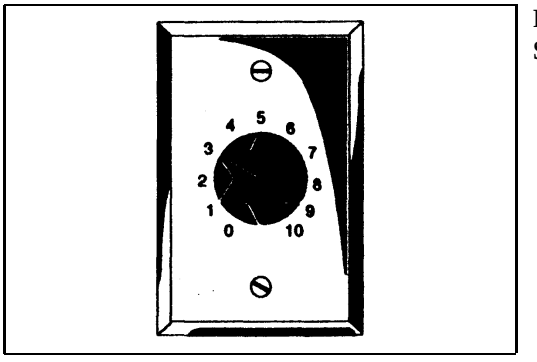
40 Watt Explosion Proof Horn Loudspeaker



PEC: 51005

40 watt Explosion Proof Horn Loudspeaker is UL® listed for installation in areas where explosive, flammable and/or corrosive substances are present. They have a 95 degree dispersion angle and can be mounted on either a pole or flat surface. These have adjustable tap settings from 2.5–40 watts. For fine tuning of adjustment, a 70 volt attenuator is recommended.

70 Volt Attenuator (35 watt)



PEC: 53010
SKU : 00544

The 70V Attenuator is used to control the volume on Cone and Horn 70V speakers. The number of speakers that one attenuator can adjust can not exceed 35 watts.

Speakers Quiz

1. Voice Coil Speakers work on all of the PagePac systems.

   True ❒ False ❒

2. Voice Coil Speakers have adjustable tap settings.

   True ❒ False ❒

3. Voice Coil Cone speakers are limited to 600 ft. cable runs, while 70.7VAC speaker cables can be much longer.

   True ❒ False ❒

4. It is okay to use cone speakers out-of-doors because they are weatherproof.

   True ❒ False ❒

5. The P-TEC Lite speakers are unique in design, and offer the customer a speaker that is easily installed and/or moved.

   True ❒ False ❒

6. You can mix P-TEC Lite speakers and regular speakers on the same cable run as long as they are of the same type, i.e., Voice Coil or 70.7VAC.

   True ❒ False ❒

7. Horn speakers have better penetrating power, therefore are better suited for high noise environments.

   True ❒ False ❒

8. The 1 watt Voice Coil Horn has a volume control so it is not necessary to order the voice coil attenuator.

   True ❒ False ❒

9. You can have talkback with horn speakers as long as conditions are right.

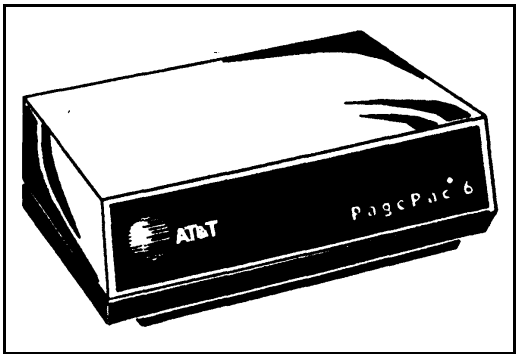
   True ❒ False ❒

Answers: 1) F 2) F 3) T 4) F 5) T 6) T 7) T 8) F 9) T

PagePac® 6/6+/20, ZoneMate 9/39

3

PagePac® 6



PEC: 5323-006
SKU: 00415

The PagePac 6 is a compact, six watt, single-zone paging 3.4 volt amplifier. It is intended for businesses with quiet to moderate sound levels and basic intra-premises paging needs. The PagePac 6 is ideal for office environment with up to 12,000 sq. ft. or warehouse facilities with from 7,000 to 15,000 sq. ft.

Applications

- People Locating
- Background Music

Features

- Voice Coil Speakers Only
- One Way Paging / One Zone Only
- Modular Options
  - Background Music Input
  - Port Saver

Considerations

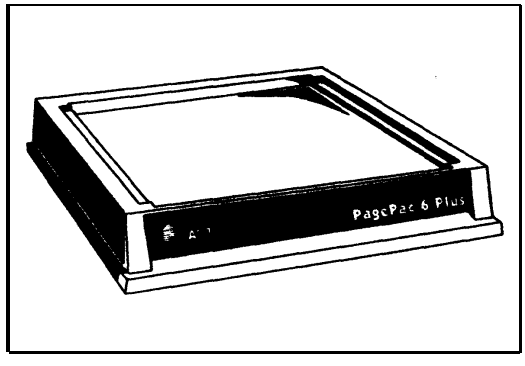
Cone Speakers

- 80% Rule → 18 Cone Speakers per systems
- No more than four speakers per wire run
- Wire run not to exceed 600 feet
- Voice Coil Only.

Horn Speakers

- 80% Rule → 4 Voice Coil Horns (1 watt)
- One Horn per wire run
- Wire run not to exceed 300 feet
- Recommend Voice Coil Attenuator
- Voice Coil Only

PagePac® 6 Plus



PEC: 5323-008
SKU: 00416

The PagePac 6 Plus is a compact, powerful, six watt paging amplifier intended for office environments with up to 12,000 sq. ft or warehouse facilities with 7,000 to 15,000 sq. ft. PagePac 6 Plus supports up to three zones and talkback.

Applications

- People Locating
- Background Music
- Zone Paging
- Talkback

Features

- Voice Coil Speakers Only
- Three Zones, Group Zones, and All Zone Paging
- Talkback by Zone
- Background Music Input
  - Zone Selectable (one music source)
- Port Saver

Considerations

Cone Speakers

- 80% Rule → 18 Cone Speakers per system; 6 per zone
- No more than four speakers per cable run
- Wire run not to exceed 600 feet
- No more than two Cone Speakers per Talkback zone, noise level should be less than 75 dB
- Voice Coil Only

Horn Speakers

- 80% Rule → 3 Voice Coil Horns (1 watt); 1 per zone
- One Horn per wire run
- Wire run not to exceed 300 feet
- Recommend Voice Coil Attenuator
- No more than one Horn per Talkback zone, noise level should be less than 75 dB
- Voice Coil Only

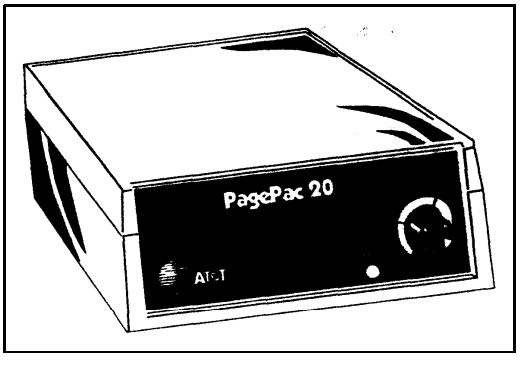
PagePac® 20 System

The PagePac 20 system truly is a paging “system.” It gives you 20 watts of power and the ability to interface both Voice Coil and 70 volt Speakers. It is intended to cover a wide variety of environments up to 30,000 square feet. Applications, components (PowerMate, ZoneMate 9/39) and features are discussed below.

Applications

- People Locating
- Background Music
- Zone Paging
- Talkback
- Nightbell Service
- Off-premise Paging

PagePac 20 PowerMate™



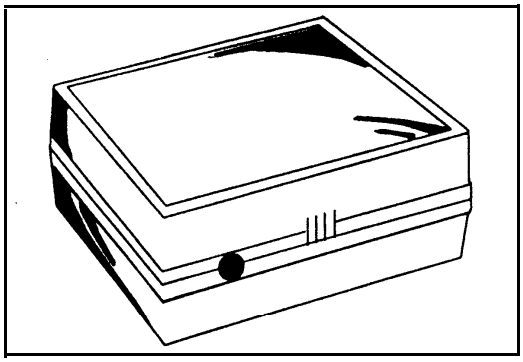
PEC: 5323-005
SKU: 59547

Features

- Voice Coil and/or 70 volt Speakers
- One-Way Paging / One Zone Only
- Background Music Input
- Voice Compression Circuit / Automatic Voice Control

ZoneMate™ 9

PagPac 20 PowerMate must accompany.



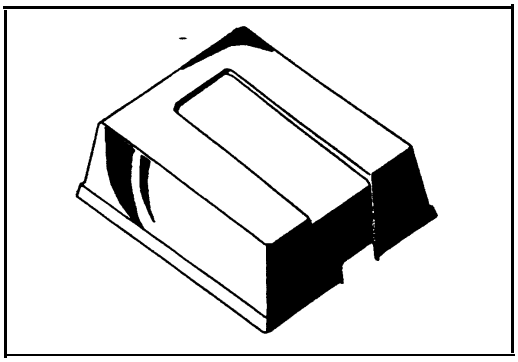
PEC: 53505
SKU: 00196

Features

- 9 Zones, Group Zones, and All Zone Paging
- Zones 1–6 Voice Coil Only
- Zones 7–9 Voice Coil or 70 Volt
- Talkback (Voice Coil Only) by Zone
- Background Music Input
- Nightbell Service by Zone
- Built-In Interfacing

ZoneMate 39

PagePac 20 PowerMate must accompany.



PEC: 53506
SKU: 00197

Features

- Voice Coil Speakers Only
- 39 Zones, Group Zones and All Zone Paging
- Talkback (Voice Coil Only) by Zone
- Background Music Input
- Nightbell Service by Zone
- Built-In Interfacing

Considerations With Cone Speakers

Voice Coil

- 80% Rule → 60 Cone Speakers per System
- No more than four Speakers per wire run
- Wire run not to exceed 600 feet
- No more than two Cone Speakers per Talkback zone, noise level should be less than 75 dB

70 Volt

- 80% Rule → Number of Cone Speakers depends on tap settings, do not exceed 17 watts
- Number of speakers per wire run and length of wire run far exceeds voice coil limits

Considerations With Horn Speakers

Voice Coil

- 80% Rule → 12 Voice Coil Horns (1 watt)
- No more than one Horn per wire run
- Wire run not to exceed 300 feet
- No more than one Horn per Talkback zone, noise level should be less than 75 dB
- Recommend Voice Coil Attenuator

70 Volt

- 80% Rule → Number of Horn Speakers depends on tap settings, do not exceed 17 watts
- Number of speakers per wire run and length of wire run far exceeds voice coil limits

PagePac 6/6+/20, ZoneMate 9/39 Quiz

1. Music on the PagePac 6 Plus is able to be turned **on** or **off** on a per zone basis.

   True ❒ False ❒

2. PagePac 6 Plus can have different music on a per zone basis.

   True ❒ False ❒

3. It's a good idea to interface with customer owned speakers, because there would never be any costs associated with doing this...even if the speaker volume needed to be adjusted.

   True ❒ False ❒

4. PagePac 6 has talkback capabilities.

   True ❒ False ❒

5. PagePac systems are similar to telephone systems in many ways, and are easy to design once trained on them.

   True ❒ False ❒

6. People locating can be accomplished on all PagePac systems.

   True ❒ False ❒

7. The PagePac 6 and PagePac 6 Plus give you zoning capabilities.

   True ❒ False ❒

8. It is okay to mix Voice Coil and 70.0 VAC speakers on the same cable run.

   True ❒ False ❒

Answers: 1) T 2) F 3) F 4) F 5) T 6) T 7) F 8) F

9. The ZoneMate 39 does not have 70.7 VAC capabilities.

True ❒ False ❒

10. The ZoneMate 9 can be used with:

A) PagePac 6 and 6 Plus; B) PagePac 50/100/200 Systems
C) Customer owned paging; D) None of the these.

11. The group zone feature allows you to call several zones at the same time without having to resort to all call paging.

True ❒ False ❒

12. The PagePac 20 system only fit the small business market and has no place in large business.

True ❒ False ❒

13. Night Bell Service has to ring in all zones on the PagePac 20 System.

True ❒ False ❒

14. PagePac 20, ZoneMate 39 and Voice Coil Desktop Speakers is a way to give your customer voice announce on busy when you sell a PARTNER phone system.

True ❒ False ❒

15. The voice compression circuit insures that all pages come out at the same volume level, regardless of who is making a particular page.

True ❒ False ❒

Answers: 9) T 10) D 11) T 12) F 13) F 14) T 15) T

PagePac® 50/100/200 SYSTEMS

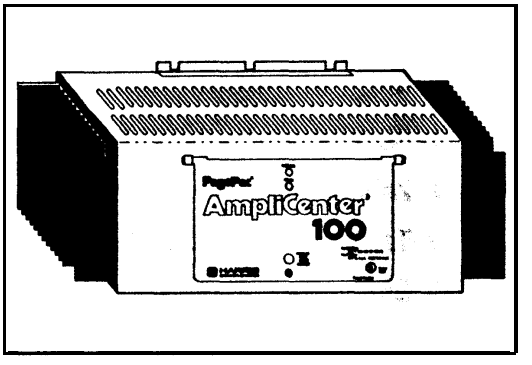
4

(This section is not presented in PagePac Voice Paging Systems Video-Based Training, Volume I)

PagePac 50/100/200 Systems

The PagePac 50/100/200 Systems truly are paging “systems” that can be used for basic paging applications or for more sophisticated paging applications. It gives you 50, 100 or 200 watts of power to drive 70 volt speakers. It is intended to cover a wide range of environments up to 300,000 sq. ft. Applications, components (AmpliCenters, PagePacs, and Auxiliary cards) and features are discussed below.

AmpliCenters 50/100/200



50
PEC: 52150
SKU: 00202

100
PEC: 52100
SKU: 00203

200
PEC: 52120

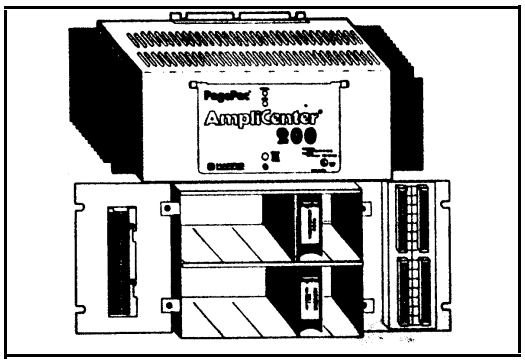
Applications

- People locating
- Background music
- Off-premise paging

Features

- 70 volt speakers only
- One-way paging / one zone only
- Background music input
- Off-premise paging output
- Voice compression circuit / automatic voice control
- Available in 50, 100 and 200 watt

PagePacs 50/100/200



50
PEC: 5322-051

100
PEC: 5322-101

200
PEC: 5322-201

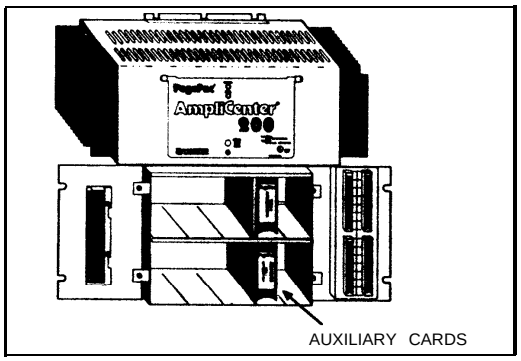
Applications

- People locating
- Background music
- Zone paging
- Talkback
- Emergency alert
- Off-premise paging

Features

- 70 volt Speakers only
- Up to 24 zones with All Call and Group Zones
- Optional Talkback by zone
- Optional Background Music by zone
- Built-in interfacing
- Zone Options for: Off Premise, Music only, Page only
- Attendant “Override” for emergency paging
- Voice compression circuit / Automatic voice control
- Available in 50, 100, and 200 watt

Auxiliary Cards



Optional features may be provided by using one or more of the following Auxiliary Cards:

- Type 1 PEC 58101 (4 zone page and music)
- Type 2 PEC 58102 (4 zone off premise)
- Type 3 PEC 58103 (3 zone page and music, 1 zone music only)
- Type 4 PEC 58105 (2 zones music/page, 2 zones page only)
- FM Tuner Card, PEC 58300 (provides background music to paging system and music-on-hold to telephone system)
- Talkback Control Card, PEC 58000 (provides talkback capabilities to designated zones)

PagePac 50/100/200 Quiz

1. The PagePac 50/100/200 can use Voice Coil speakers as well as the 70.7 VAC type.

   True ❒ False ❒

2. Talkback is a “system” feature, and you strap each zone that is to have the feature with a scrap of wire.

   True ❒ False ❒

3. PagePac VS uses the same talkback card as the PagePac 50/100/200.

   True ❒ False ❒

4. A continuity card is needed if there is no talkback card in the talkback slot.

   True ❒ False ❒

5. Any customer owned loudspeakers can be used on our paging systems if they are adjustable.

   True ❒ False ❒

6. The T-2 auxiliary card (off-prem) can be used inside the same building as the PagePac 50/100/200 to aid in the distribution of wire runs.

   True ❒ False ❒

7. The “scratch pad” in the group zone system found in the PagePac 50/100/200 erases immediately after it has been accessed.

   True ❒ False ❒

8. The “operator/emergency override” feature doesn’t require a PBX auxiliary port.

   True ❒ False ❒

9. Continuous music can be provided if a T-3 card and a separate music/amplifier source is used.

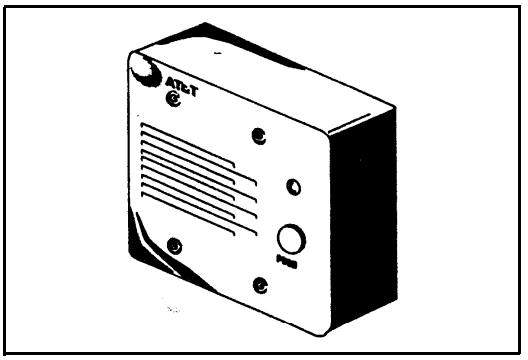
   True ❒ False ❒

Answers: 1) F 2) T 3) T 4) T 5) F 6) T 7) T 8) F 9) T

DOOR PRODUCTS

5

PARTNER Plus/II Door Phone



PEC: 5324-003
SKU: 01064

The PARTNER Plus/II Door Phone is ideal for securing an entrance when controlling or limiting access into a building's entrance is desired. It can ring up to five different extensions or it can ring external alerts and any phone can be used to dial the extention number to access speaker for two-way communications.

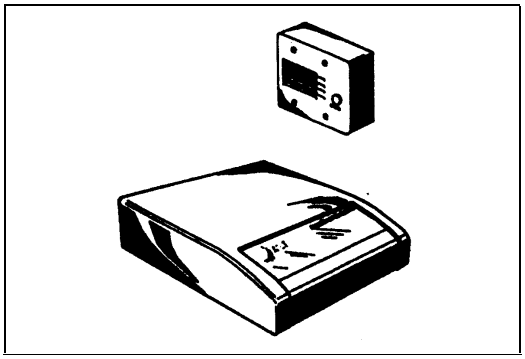
Applications

- Controlled access to entrance of business
- Controlled access to secured area within a business
- Controlled access into apartments or residential dwellings

Features

- Push button with two-way voice communications
- Partner Plus/II access
- Weather resistant
- Tamper proof
- Low cost
- Wire runs up to 1500 feet from control unit

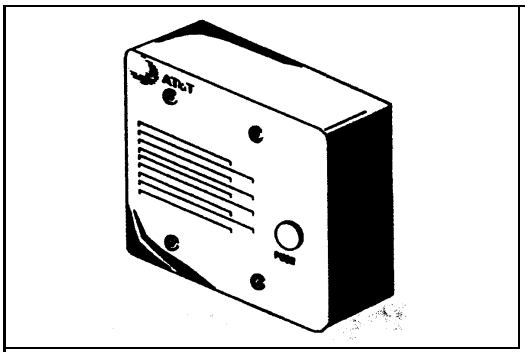
AT&T Door Phone Controller



PEC: 5324-001
SKU 09162

The AT&T Door Phone is ideal to secure an entrance when it is desired to control or have limited access into the building's entrance or into secured areas within a business. It has its own control unit and can interface with any POTS, Key System or PBX. Has ability to provide electric current, via push button or numeric code, to unlock door/gate. A locksmith is needed to install an electric door strikeplate to physically open the door, i.e., customer provided. Packaged with one Door Phone Speaker.

Door Phone Speaker



PEC: 53240
SKU: 09163

One additional speaker can be ordered to interface with Door Phone Controller (maximum of two speakers per controller).

Applications

- Controlled access to entrance of business
- Controlled access to secured area within a business
- Controlled access into apartments or residential dwellings
- Optional door opener facilitates entry
- Door ajar detection

Features

- Push button two-way voice communications
- Weather resistant
- Tamper proof
- Control for remote door/gate unlocking via push button or numeric code
- Door ajar detection
- PBX, Electronic Key, POTS compatible
- Port saver
- Security Code programmable
- Dial up to 16 digit telephone number
- Activate external alerts

Door Phone Quiz

1. The PARTNER Plus Phone System can have up to five stations ring when someone pushes the Door Phone button.

   True ❒ False ❒

2. When activated, the PARTNER Plus/II Door Phone can ring stations and external alerts at the same time.

   True ❒ False ❒

3. The AT&T Door Phone can provide an electrical current to open doors/gates.

   True ❒ False ❒

4. A locksmith does not need to be involved when installing an AT&T Door Phone with door unlock and door ajar capabilities.

   True ❒ False ❒

5. The AT&T Door Phone will work in conjunction with residential phone lines, key systems and PBX's.

   True ❒ False ❒

6. What is the maximum number of PARTNER Plus/II Door Phones that will work on a PARTNER Plus Phone System?

   A) One; B) Two; C) Three; D) None of the these.

Answers: 1) T 2) F 3) T 4) F 5) T 6) B

LAYOUT AND DESIGN

6

Considerations for Layout and Design

About Layout and Design

The intent of this section is to supplement the PagePac video and training you have received by providing additional material to assist you in uncovering, designing and selling the PagePac System that will fit your customer's communications needs today and tomorrow.

Listed below are main points to remember in designing a complete communications package:

- How important is paging to your customers business?
- 80% Rule → speaker load does not exceed 80% of PagePac wattage capacity.
- Make sure speaker recommended is compatible with PagePac you want to use.
- Voice Coil systems have limits on the number of speakers per cable run and the length of that cable run.
- Never mix Voice Coil speakers and 70VAC speakers on the same cable run.
- Never mix paging cable with telephone/data cable.
- Each zone requires its own cable run.
- Don't put speakers where they can surprise or irritate someone.
- Locate speakers near noise sources.
- Sell Talkback with care
  – Limit number of speakers in Talkback zone, two Cone speakers, one Horn speaker.
- More speakers at lower volumes is a better design than a few speakers playing at higher volumes. More speakers may mean less amplifier and that means less cost to your customers.
- Use a dB meter to get accurate sound level readings.

Don't try to do the impossible, take your time, use common sense, and ask for help if you neet it!!

"Rule of Thumb"

Speaker Coverage

How to Use

Determine the quality of coverage and/or the noise level present in areas your customer wants paging. Then find the coverage and/or noise level below. Tables 6-1 and 6-2 will tell you the distance between speakers and the square footage that each speaker will cover.

Cone Speakers

Offices, Store Rooms, Etc.

Ceilings 8'–15' High

Table 6-1.

Quality of Coverage	and/or	Noise	Distance Between Speakers	Square Feet
Excellent		High (75 dB)	20'	400'
Very Good		Moderate (70 dB)	25'	600'
Fair		Low (60 dB)	28'	800'

Hallway/Corridors

The distance between speakers should be 30' if using a ceiling speaker and 40' if using the wall-mount speaker.

Private Offices, Exam Rooms, Etc.

Desktop Speaker

Use the Desktop Speaker in private offices, exam rooms, and other small areas. It can sit on a desk or be wall mounted. Limit the coverage to approximately 250 sq. ft.

Considerations

- Speaker Location
  - Not directly over someone's head
  - At least 10' from phones
  - Close to noise sources, i.e., copy machines, etc.
- Are there private offices that need to be covered?
  - Doors open or closed?
- Customer wants Talkback
  - No more than two cone speakers per Talkback zone
- Generally do not want to have cone speakers playing at more than .25 watt in office environment
- Lighting Analogy...More lights equal more uniform coverage, the same holds true for paging.

Horn Speakers

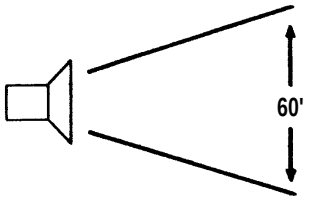
Light Manufacturing, Warehouse, Etc.

Ceilings 12' and Higher

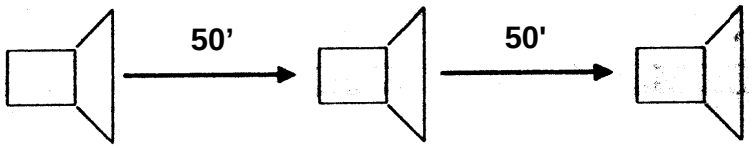
Table 6-2.

Quality of Coverage	and/or	Noise Level	Distance Between Speakers	Square Feet
Excellent		85 dB	50'	3000'
Very Good		80 dB	65'	4000'
Fair		75 dB	80'	5000'

A horn speaker will give you a 60’ width (lateral) of coverage, as shown below:



So the distance between speakers (Table 6-2), refers to the distance sound would travel before another speaker would need to be mounted. As shown below:



Considerations

- Horn Speaker Location
  - Between 15’ and 25’ high
  - Not where they will scare or irritate people
  - Where they won’t be damaged
  - At least 30’ from phones
  - Close to the noise source, i.e., machines, etc.
- Lateral (side-to-side) spacing of horns should be as follows:
  - 70 to 89 dB → 60 feet
  - 90 to 99 dB → 45 feet
  - 100 to 104 dB → 30 feet
  - 105+ dB → 20 feet
- If using Talkback, mount horn 12’–15’ high and make sure sound level is 75 dB or less. No more than one horn in a Talkback zone.
- Play all horn speakers in the same general direction.
- If sound level is greater than 85 dB, use 70VAC horns and horn matrix to determine tap setting and coverage.
- Always recommend Voice Coil Attenuator when recommending Voice Coil 1-watt Universal horn loudspeaker.
- Lighting Analogy...More lights equal more uniform coverage, the same holds true for paging.

Noise Levels

Noise is measured in decibels (dBs). Table 6-3 can be used to determine approximate noise levels in different environments. If you can obtain actual readings all the better, take the readings during normal business hours with your dB meter. You can also ask your customer for OSHA readings, but check to see if anything has changed since they were taken.

Table 6-3.

Environment	dB Range	Description	Est. Wattage	
Library	50 to 54	Quiet	Cone @	.12 (or less)
Private Office	55 to 59			.12
Office	60 to 64	Normal		.25 (or less)
Restaurant	65 to 69			.50 (or less)
Warehouse	70 to 74	Moderate	Cone/ Horn@	1.0
Computer Room	75 to 79			1.8
Light Industry	80 to 84	Noisy	Horn @	3.7 (of less)
Heavy Traffic	85 to 89			3.7
Diesel Engine	90 to 94	Very Noisy	Horn @	7.5*
Boiler Room	95 to 99			15.0*
Jackhammer	100 to 104	Extreme Noise		15.0*
Cannery	105 and Up			15.0*

*Call appropriate Support Group listed in Appendix 3 for assistance.

Sound Pressure

Refer to Table 6-4 for sound pressure (d8 level) of speakers at their various tap settings. Readings are taken at a distance of one (1) meter.

Table 6-4. Sound Pressure of Speakers

Description of Speaker	Tap Setting	Speaker Pressure (dB Level)
P-TEC LITE: 70.7 VAC	.25 .5 1.0 2.0 4.0	76 78 80 83 86
P-TEC LITE: Voice Coil	.25	76
CONE: 70.7 VAC Ceiling & Wall Type	.125 .25 .5 1.0 2.5	86 89 92 95 96
CONE: Voice Coil Ceiling Type	.25	89
CONE: Voice Coil Universal Wall Type	.25	82
CONE: 70.7 VAC Desktop Type	.125	77
CONE: Voice Coil Desktop Type	.25	81
HORN: Voice Coil 1 Watt	1.0	106
HORN: 70.7 VAC 4/15 Watt Type	.25 .5 .9 1.8 3.8 7.5 15.0	99 102 105 108 111 113 116
HORN: 70.7 VAC 30 Watt Type	1 2 2.5 5.0 7.5 15.0 30.0	111 114 117 119 122 125
HORN: 70.7 VAC 30 Watt Redial	30.0	121*
HORN: 70.7 VAC 40 Watt Expl. Proof	2.5 5.0 10.0 20.0 40.0	113 116 119 122 126
*Output in 360 degrees.		

Table 6-5. Determining Distance from 70V (4/15 watt) Horn Speakers (In Feet)

Noise Level dB	Wattage Tap Settings						
	.25	.50	. 9	1.8	3.7	7.5	15.0
68	100*						
69	90						
70	80						
71	70	100*					
72	65	90					
73	60	80					
74	55	70	100*				
75	50	65	90				
76	45	60	80				
77	40	55	70	100*			
78	35	60	65	90			
79	30	45	60	80			
80	25	40	55	70	100*		
81	22	35	50	65	90		
82	20	30	45	60	80		
83		25	40	55	70	100*	
84		22	35	50	65	90	
85		20	30	45	60	80	
86			25	40	55	70	100*
87			22	35	50	65	90
88			20	30	45	60	80
89				25	40	55	70
90				22	35	50	65
91				20	30	45	60
92					25	40	55
93					22	35	50
94					20	30	45
95						25	40
96						22	35
97						20	30
98							25
99							22
100							20

Distances

NOTE: To find the coverage of a horn speaker.

A) Determine the noise level.

B) Select the distance you want to be from the horn.

C) Multiply distance by 60 (width of coverage) to get square foot coverage of each horn.

EXAMPLE: The noise level is 86 dB and you want to hear the horn 70 feet away. Horn set at 7.5 watts, would cover approximately 4200 sq. ft.

*Maximum recommended distance.

Table 6-6. Adapters to Interface PagePacs with Telephone Systems (System 2000, Merlin Plus, Merlin 206/820, Merlin 1030/3070, Merlin II, Spirit 308/616, Spirit 2448)

PagePacs	System 2000		Merlin Plus		Merlin 206/820		Merlin 1030/3070		Merlin II		Spirit 308/616		Spirit 2448	
	C.O. Line	Page Port	C.O. Line	Page Port	C.O. Line	Service Cartridge	C.O. Line	Page Module	C.O. Line	Page Port	C.O. Line	Page Port	C.O. Line	Page Port
PagePac 6	N/A	N/A	2 or 3	5	2 or 3	1	2 or 3	4	2 or 3	N/A	2 or 3	5	2 or 3	N/A
PagePac 6 Plus	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A
PagePac 20	3	N/A	3	5	3	1	3	4	3	N/A	3	5	3	N/A
PagePac 20 with Optional ZoneMate 9 or 39	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A
PagePac VS	5, 13	N/A	5, 13	N/A	5, 13	N/A	5, 13	N/A	5, 13	N/A	5, 13	N/A	5, 13	N/A
PagePac 50/100/200	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A	5	N/A
AmpliCenter 50/100/200	3	N/A	3	5	3	1	3	4	3	N/A	3	5	3	N/A

NOTE: See page 6-12 for numerical codes.

Table 6-7. Adapters to Interface PagePacs with Telephone Systems (PARTNER, PARTNER Plus)

PAGEPACS	PARTNER		PARTNER PLUS		
	C.O. Line	Analog Station	C. O. Line	Page Port	Analog Station
PagePac 6	2 or 3	N/A	2 or 3	5	N/A
PagePac 6 Plus	5	N/A	5	5	N/A
PagePac 20	3	N/A	3	5	N/A
PagePac 20 with Optional 9 or 39 ZoneMate	5	N/A	5	5	N/A
PagePac VS	5, 13	N/A	5, 13	5	5, 13
PagePac 50/100/200	5	N/A	5	5	5
AmpliCenter 50/100/200	3	N/A	3	5	N/A

Table 6-8. Adapters to Interface PagePacs with Phone Systems (Merlin Legend, PARTNER II)

PAGEPACS	MERLIN LEGEND			PARTNER II		
	C.O. Line (Loop Start)	C.O. Line (Ground Start)	Analog Station	C.O. Line	Page Port	Analog Station
PagePac 6	2 or 3	N/A	N/A	2 or 3	5	N/A
PagePac 6 Plus	5	N/A	N/A	5	5	N/A
PagePac 20	3	N/A	N/A	3	5	N/A
PagePac 20 with Optional 9 or 39 ZoneMate	5	5	N/A	5	5	N/A
PagePac VS	5, 13	N/A	5, 13	5, 13	5	5, 13
PagePac 50/100/200	5	5	5	5	5	5
AmpliCenter 50/100/200	3	N/A	N/A	3	5	N/A

NOTE: See page 6-12 for numerical codes.

Table 6-9. Adapters to Interface PagePacs with Telephone Systems (Systems 25/75/G1/85/G2)

PAGEPACS	SYSTEM 25			SYSTEM 75/G1			SYSTEM 85/G2		
	C.O. Line	Auxiliary Trunk	Analog Station	C.O. Line	Auxiliary Trunk	Analog Station	C.O. Line	Auxiliary Trunk	Analog Station
PagePac 6	N/A	10 & 14	N/A	N/A	10 & 14	N/A	N/A	9	N/A
PagePac 6 Plus	7	N/A	N/A	7	N/A	N/A	N/A	N/A	N/A
PagePac 20	3 & 7	10 & 14	N/A	3 & 7	10 & 14	N/A	N/A	9	N/A
PagePac 20 w/ Optional 9 or 39 Zone-Mate	5, 7 or 12	6, 10 & 14	N/A	5, 7 or 12	6, 10 & 14	N/A	5	9 & 11	N/A
PagePac VS	5, 7, 13	N/A	8, 13	5, 7, 13	N/A	8, 13	N/A	N/A	8, 13
PagePac 50/100/200	5, 7, or 12	6, 10 & 14	8	5, 7 or 12	6, 10 & 14	8	5	9 & 11	8
AmpliCenter 50/100/200	3 & 7	10 & 14	N/A	3 & 7	10 & 14	N/A	N/A	9	N/A

NOTE: See page 6-12 for numerical codes.

Notes (Tables 6-6, 6-7, 6-8 and 6-9)

1. Music on hold paging cartridge #6102 MHPA.
2. Port Saver #53519.
3. Loop start trunk adapter #53518.
4. Service Module #61350A.
5. No adapter needed.
6. Programmed for dial dictation. (Allows Talkback)
7. ZTN77 or TN747 Circuit Packs (Loop Start) required.
8. ZTN78 or TN742 Circuit Packs (Station) required.
9. 89A Paging Adapter.
10. TN763 Circuit Pack.
11. No Talkback.
12. ZTN76 Circuit Pack (Ground Start) required.
13. Touch Tone Only.
14. 278A Paging Adapter.

GLOSSARY

Glossary Terms

Ambient Noise Level — Measurement of the sum of all the noise in a given area: expressed in decibels and measured by a dB meter.

AmpliCenter — The control and power center for Harris/Dracon's PagePac 50/100/200 paging systems or as a stand-alone single zone paging system.

Amplifier — A device which receives an input signal in wave form and gives as an output a magnified signal.

Attenuator — Reduces volume of sound from set level of loudspeakers: useful in conference rooms, lobbies and executive offices.

Automatic Voice Control — Ensures that a variety of paging voices will provide a consistent page output level (voltage) from most PagePac's systems (not available with PagePac 6/6Plus). Sometimes referred to as voice compression circuit.

Auxiliary Cards — Printed circuit cards that can provide the PagePac 50/100/200 system with additional features. See page 4-3.

Background Music — An optional feature, although the music capability is built into the amplifier, i.e., a music grade preamplifier and music-page switch (separate circuits); a separate music source is required. Customers may opt to use the PagePac FM tuner card (with PagePac VS and PagePac 50/100/200) or any other music source (tape deck, phonograph, etc.).

Built-In Interfacing — This ability of PagePac to interface with a telephone system is built into the PagePac, i.e., no additional adapters needed.

C.O. Line — "Central Office Line."

Common Equipment

Allows installation of additional circuit packs for enhancements. Also refers to cabinet and card file used to outfit an AmpliCenter for multi-zone use.

Cone Speakers

Cone speakers are mounted onto or in units called “baffles” and they look and operate something like the speakers in a home stereo system. Like stereo speakers, they reproduce high, medium and low ranges of sound, providing maximum voice and music clarity. Whatever the style (wall, ceiling, table), most PagePac speakers are either a “voice-coil” speaker or a “70.7-volt speaker.

Voice-coil speakers have the excellent voice and music clarity but are the least powerful. They’re generally used in very small areas, such as a small office or a doctor’s examining room and their tap setting is fixed at 0.25 watts.

The 70.7-volt speakers are larger, more powerful versions of the voice-coil speakers. They should be used in large areas, such as large offices or quiet stockrooms. The 70.7 volt speaks have five tap settings, ranging from 0.125 to 2.5 watts, which can be fine tuned depending on the room size.

Decibel

Unit of measure for sound intensity; the decibel (dB) scale is logarithmic so an increase of 6 dB is a doubling of sound. Thus 66 dB is twice as loud as 60 dB. Decibels can be measured with a decibel meter. Note: the “B” is always in caps due to its being named for Alexander Graham Bell.

Door Ajar Detection

Feature on AT&T Door Phone that will alert you if a secured door has been left open. Locksmith needed to complete installation.

Door Answering

PARTNER Plus/II Door Phone and Door Phone Controller units are capable of alerting a person inside a building or residence that someone is requesting attention at the door, gate or building entrance.

PagePal® Products Provide a means of connecting customer owned amplifiers to an AT&T switch: PagePal is a registered trademark of Harris/Dracon Division.

External Alerts Visual or audio alerts that are activated when designated lines, ports or stations are accessed.

Ground Start Off-hook calling condition given to a central office by many PBXS - one leg grounded (plus the usual loop across both legs through the apparatus). Usual trunk port access is on PBXS.

Horn Speakers Horn speakers reproduce middle-range sounds, which accounts for their greater efficiency, penetrating power, and range in high-noise areas. PagePac horns come in a number of sizes, and are designed to withstand hostile environments, such as outdoor areas, hazardous or corrosive atmospheres, machinery spaces, and high-impact and noise areas. For explosive atmosphere a special horn must be used.

Like their cousins the cone speakers, horns are classified as voice coil or 70.7 volt. The voice-coil model (called a universal horn) has but one volume setting (1 watt). Unlike their cousins the 70.7-volt horns come in three wattages (4/15 watt, 30 watts, 40 watts) with a generous range of tap setting for each model. Use them carefully.

Hostile Environment Environment that has extreme conditions, i.e., meat lockers, freezers, outdoors, saunas, etc.

Key Systems (KTS) A key telephone system in a small office or home providing immediate access to all users by pressing one or two keys. All users may obtain access to lines on the public network and may communicate with each other without needing the service of an operator, i.e., PARTNER Systems and Merlin Systems.

Loop Start	Method of calling a central office by applying a DC closed loop across the line. Usually C.O. line port access on key systems.
Layout	Acoustic design for speaker placement; should include area dimension, walls, posts and noise creating machinery, ambient noise levels, and type and placement of speakers to be used.
Loudspeaker	Device used to convert varying audio voltage into sound waves; PagePac uses cone loudspeakers in low-noise areas and horn loudspeakers in high-noise areas.
Nightbell Service	An ability to hear incoming ringing over the paging system. The ringing signal from a telephone is routed to an optional ZoneMate or Multi-Tone Generator connected to the Paging System and is converted so it can be heard over the loudspeakers.
Non-Hostile Environment	Environments not exposed to extreme conditions, i.e., offices, quiet warehouses, etc.
OSHA	Occupational Safety and Health Administration.
Override	Allows selected persons to obtain paging even though it is in normal use. PagePac 50/100/200 have override as a standard feature, allowing interruption of a normal page or background music for emergency announcements. The original Page is automatically restored after the announcement.
PagePac®	The name for Harris/Dracon paging equipment. Registered trademark of Harris/Dracon Division.
PBX (Private Branch Exchange)	Small local telephone office, either automatic or manually operated, serving extensions in a business complex and providing access to the public network, i.e., 75, 85.

Port — The physical place of access where electrical energy is connected to a device. See trunk port.

POTS — Plain Ordininary (or Old) Telephone Service. Service refers to a single residential line capable of dialing nationwide and international direct dialing.

Preamplifier — Boosts input signal (voice or music) and has the ability to regulate frequencies and volume.

P-TEC® — P-TEC Lite a unique lightweight ceiling speaker. It is easily mounted below the ceiling surfaces and simplifies adds, moves and changes. P-TEC is a registered trademark of Harris/Dracon Division. See page 2-4.

Remote Door Opening — Function of the Door Phone Controller to operate a customer provided electrical door lock.

Remote Paging — The ability to page remote locations and/or facilities from the same voice-paging system. Requires additional amplifiers.

Rule of Thumb — Helpful information to laying out and designing paging systems. See page 6-2.

Silent Switching — Ability of PagePacs to go from paging to music and music to paging, silently.

Speaker — See cone speakers, loudspeaker and horn speakers.

Stand Alone — Type of loudspeaker paging system, divorced from the main telephone system and requires separate microphones or telephones for each paging station.

Talkback — Two-way “hands-free” communication between a speaker and a telephone instrument. Provided by the PagePac with optional modules or the Door Phone products.

Talkback Control Card	The unit that allows talkback feature (see talkback) on PagePac 50/100/200 and PagePac VS.
Tap Setting	A means of grossly adjusting speaker volume. The volume, or power of a speaker is expressed in watts, and speakers require a certain amount of watts from the amplifier to power or drive the speakers.
Trunk	A telephone communication path or channel between two points, one of them usually being a telephone company central office or switching center.
Trunk Port	A place of access to a device or phone system where the telephone trunks are physically connected.
Voice Announce on Busy	Ability to verbally contact someone, via a speaker, at their telephone even though they are on the telephone.
Voice Coil	Harris/Dracon low voltage speakers are called Voice Coil Speakers. Voice coil also refers to an internal part of a. speaker that moves the cone assembly to produce the sound.
Voice Compression Circuit	Feature of some PagePacs to broadcast clear and consistent paging. Circuit compensates for deviations in speaking voice levels. Regardless of who is making the page, volume of the page will always be the same.
Watt	Unit of electrical power.
Zone Paging	In PagePac voice-paging systems, the ability to page selected areas (zones) or group zoning allows several areas to be paged at once (with zone, cards) or system wide.
ZoneMate 9/39	Components of PagePac 20 System that give the paging system additional features. See pages 3-5 and 3-6.

APPENDIX

Paging PECs and SKUs

Table A-1. Paging PECs and SKUs

Description	PECs	SKUs	COM Codes
Voice Coil Systems			
PagePac 6	5323-006	00415	405701277
PagePac 6 Plus	5323-008	00416	405701608
PagePac 20 PowerMate	5323-005	59547	403306059
70V Systems			
PagePac 20 PowerMate	5323-005	59547	403308059
PagePac VS	5322-700		403307192
PagePac 50	6322-051		403305444
PagePac 100	5322-101		403305451
PagePac 200	5322-201		403305469
Amplifiers			
PagePac 20 PowerMate	5323-005	59547	403308059
50W AmpliCenter	52150	00202	403305501
100W ArnpliCenter	52100	00203	403305485
200W AmpliCenter	52120		403305493
Door Products			
PARNTER Plus Door Phone	5324-003	01064	406269845
AT&T Door Phone	5324-001	09162	406269829
Options			
Port Saver (PP-6)	53519	00417	405703026
TalkMate (PP-20)	53501	59550	403307994
ZoneMate 9 (PP-20)	53505	00196	404057911
ZoneMate 39 (PP-20)	53506	00197	404057929
AUX-1 Card (PP-50/100/200)	58101		403303668
AUX-2 Card (PP-50/100/200)	58102		403303646
AUX-3 Card (PP-50/100/200)	58103		403303704
AUX-3 Card (PP-50/100/200	58105		403303712
Talkback Card (PP-50/ 100/200)	58000		403303712 403303662
FM Tuner Card (PP-50/ 100/200)	58300		403303746

Table A-1. Paging PECS and SKUS (continued)

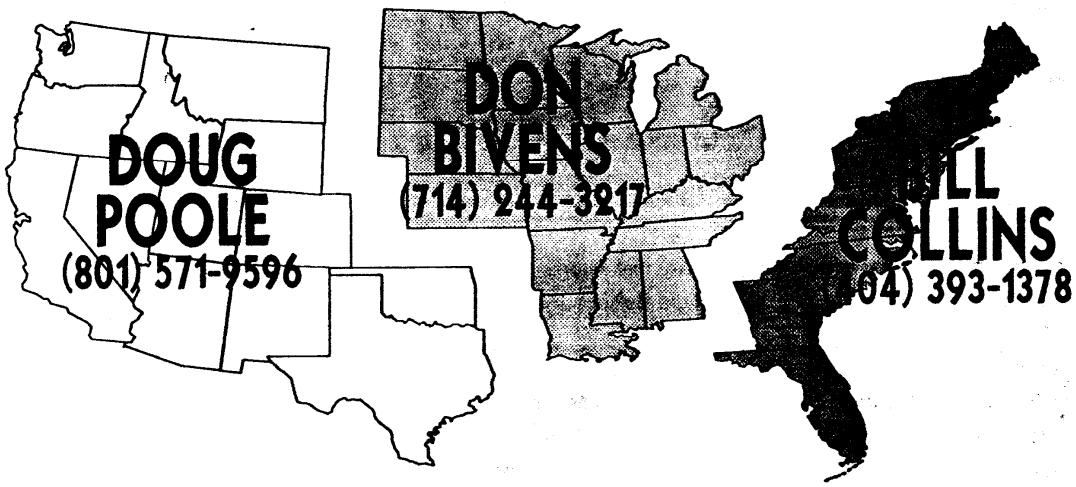
Description	PECs	SKUs	COM Codes
Ancillaries			
70V Talkback Inhibitor (10)	52335		403306202
Loop Start Trunk Adapter	53518	00204	405223298
Voice Coil Attenuator (3 Watt)	53513	59553	403308018
70V Attenuator (35 Watt)	53010	00544	403303555
Multi-Tone Generator	94729		406130229
Digital Delay Unit	94744		406295469
Ambient Noise Sensor	94723		406104968
Round Speaker Enclosure	52010	00541	403303514
Square Speaker Enclosure	52031	00542	403303522
P-TEC Enclosure (10)	94820		406545319
Remote Amp Adapter	94487		405426990
Voice Coil Cone Speakers			
P-TEC Lite	53515	00550	405891425
Desktop	53516	59555	403307804
Wall/Universal	53511	59551	443307770
Recessed Round	53514	59554	403307796
70V Cone Speakers			
P-TEC Lite	56141	00549	405891417
Recessed Square	56130		403303597
Desktop	53000	00543	403303530
Wall/Universai	56150	00547	403303621
2'x2' Lay-In-Grid	56001		403303571
Recessed Round	56121	00201	40330589
Voice Coil Horns			
Universal Horn (1 Watt)	53512	59552	403307788
70V Horns			
4/15 Watt	51001	00199	403303472
30 Watt	52001	00200	403303506
30 Watt Radial	57001		403303654
40 Watt Explosion	51005		403303498

Tiers of Support

For everyday questions see your Branch Specialist on Paging. If your Branch Specialist can not help you, call your Tiers of Support listed below for questions on layout, interface, equipment operation or product descriptions.

1. **Manager's Action Staff Hotline (M.A.S.H.)**
   (800) 537-3385
   National Technical Marketing (N.T.M)
   (800) 222-1513
   Technical Response Center (T. R.C.)
   (800) 248-1234
2. **Harris/Dracon Technical Support**
   (800) 437-2266
3. **Harris/Dracon's state specified Regional Managers listed below:**

HARRIS/DRACON REGIONAL MANAGERS



HARRIS
DRACON DIVISION

PagePac LAYOUT QUESTIONNAIRE

Based on the information listed below and supplied by:

Requestor:

Name _____
Company _____
Title _____
Address _____
Phone Number _____
Fax Number _____

For: **Date:**

Company Name _____
Location _____
_____
Phone Number _____
(For tracking purposes only)
Date Required _____

HARRIS CORPORATION-Dracon Division will respond in writing to your request.

Required Information:

1. Blueprint or detailed sketch of the building. (Please add the following information to the blueprint or sketch as it applies.)

A. Size of **each** area (i.e. length, width and height or a scale).
B. Locations of existing or proposed phones, especially in factories and warehouses.
C. Number of zones and zone areas.
D. Where is coverage needed. Specific areas? All areas?
E. Locations of barriers that would block sound, i.e. storage racks.
F. Locations and sources of loud noise, i.e. machinery.
G. Ambient noise for each area. Take actual readings or use the OSHA supplied environmental noise readings.
H. Construction Type, i.e. Metal Building, Concrete walls and floors.

2. Type of ceiling (check one). ❑ Air Plenum ❑ Drop Tile ❑ Open Grid ❑ Concrete ❑ Other _____

3. Type of phone system and access required.

Phone system:

A. Partner _____
B. Merlin / Legend _____
C. Spirit _____
D. System 25 _____
E. System 75 or 85 _____
F. Definity G1 - G2 _____
G. Other _____

Access Required:

❑ Station Access
❑ Trunk Access
❑ Page Port
❑ Aux. Port
❑ Other _____

4. Is the Phone System: ❑ SOLD ❑ BID ❑ INSTALLED

5. Talk-back requirements: ❑ Yes ❑ No If yes, area must be less than 75dB and specify which zones _____

6. How is the Paging System used? (Circle All that Apply)

Emergency Announcements	Night Bell
Life / Safety Evacuation	Alert Tones
People Locating	Time Clock
Break or End of Day Warnings	Background Music
Public Address Announcements	Foreground Musk
Door Answering	Remote Door Opening
Remote Paging	Other _____

7. List of existing equipment to be reused. If the equipment is not Harris' equipment we will need the Make, Model and Specifications of the existing equipment. (Attach Additional Sheet)

999-350-631
February 1992