



ALPHA-PAGE-232 v1.54

**Alphanumeric Paging System/RS-232 data input
COMP1 protocol/serial printer data input
Contains Telephone/PBX Interface**

Installation/Owners Manual

Alpha Communications®

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***** NOTICE *****

The Alpha-Page-232 digital pager interface system is an extremely reliable system for sending alarm messages to pocket pagers. The system sends messages to your pager(s) using a relatively high power radio signal. This signal has considerable range and has the ability to reject radio "noise" which could corrupt the message being sent.

Although Alpha-page-232 is extremely reliable in communicating messages, it must be used only as supplemental alarm annunciation in life safety applications such as fire and nurse call annunciation. Alpha-Page-232 should only be used to enhance the efficiency of life safety systems by providing additional, immediate alarm notification via wireless paging. Micro Logic Systems shall not be held liable for incidental or consequential damages resulting from annunciation failure.

INTRODUCTION

Alpha-page-232 is a pager interface system designed to receive messages in RS-232 form from nurse call, fire alarm, access control, security, and other systems. The system will receive data from a serial printer port, serial pager port, or any other application that provides messages in RS-232 form. All control characters (such as carriage return, line feed, form feed, etc.) are removed. Multiple spaces are also removed. The remaining alphanumeric message characters are formatted and sent to your alphanumeric pager(s). Maximum *formatted* message length is 120 characters. User programming/editing of messages is possible using a standard PS/2 type computer keyboard, see PROGRAMMING. Pre-programmed alphanumeric messages and numeric messages may be sent using DTMF tones from any telephone within the facility. All messages are transmitted to your pagers in approximately 5-8 seconds. Speed is a primary advantage of a user-owned paging system. Also, the owner of the system will never pay monthly paging charges.

INSTALLATION

Mount the MLS-EC2 enclosure near the host equipment that will be the data source for Alpha-Page-232. Note the length of the RS-232 cable supplied to connect Alpha-Page-232 to the host equipment.

Connect the PT-400 paging transmitter to the MLS-SPU3 board (refer to drawing C092198-2). **MAKE SURE TO OBSERVE VOLTAGE POLARITY.** The positive (+) wire of the PT-400 power cord is labeled . The plus wire must go to the "+12" terminal of the MLS-SPU3 board (the PT-400 power cord may have been factory installed). The PT-400 transmitter will sit on top of the MLS-EC2 enclosure. Route the PT-400's data cable through the 1 1/4" cable hole in the MLS-EC2 enclosure. Connect the antenna to the transmitter.

Bring power to Alpha-Page-232 from the TR12-20 plug-in power transformer via a pair of 18 AWG wires. Connect the transformer wires to the two "AC" terminals on the MLS-SPU3 board, polarity doesn't matter (refer to drawing C092198-3).

If your system will have battery power back-up, place the BT12-7 battery in the battery tray in the MLS-EC2 enclosure (refer to drawing C033197-1). Connect the MLS-H1 battery cord to the battery and the MLS-SPU3 board as shown on drawing C092198-3. **MAKE SURE TO OBSERVE PROPER VOLTAGE POLARITY.** Note: the MLS-H1 battery cord may have been factory installed. Do not short circuit the battery.

Route the ALPHA-PAGE-232 end of the RS-232 data cable through the 1 1/4" cable hole in the MLS-EC2 enclosure. Insert the supplied bushing into the cable hole. Plug the cable into the COM2 serial port on the MLS-SPU3 board (refer to drawing C092198-4). Connect the other end of the data cable to the RS-232 output of the host system. Refer to drawing C092198-4. Note: If the RS-232 cable has a 9-pin connector on BOTH ends, the ends of the cable are interchangeable.

DATA SETUP

Alpha-Page-232 will be receiving serial data from a COM (communications) port of the host system. You will need to configure the data format of the COM port on your host system. The settings must be set to the following parameters:

- 9600 baud
- 8 data bits
- no parity
- 1 stop bit

Alpha-Page-232 will send a CTS (clear to send) handshaking signal to the host system when it is ready to receive data. If possible, **Set the flow control parameter** of the COM port of the host system **to hardware or RTS/CTS.**

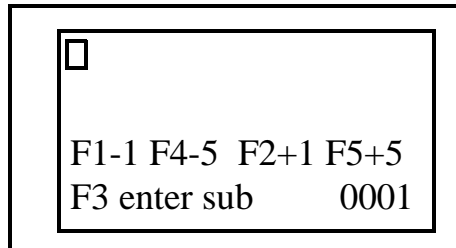
If you are using a serial printer output as the data source for Alpha-Page-232, configure the system to send messages to the "printer" immediately as events occur. Pages will then be sent immediately as system events occur. When RS-232 data is received by Alpha-Page-232, "Receiving..." will appear on the LCD display.

PROGRAMMING

Although programming of Alpha-Page-232 is not required, certain applications can benefit from user programming. For example, you may not want non-emergency messages to be sent to your pagers. Specified messages can be programmed to be ignored. Also, if non-descriptive, generic messages are output by the host system, you may program Alpha-Page-232 to substitute the generic messages with specific, user defined messages. For example, "room 1" could be replaced with "John Smith-room 305".

To enter the programming mode, simply plug a computer keyboard into the keyboard receptacle on the MLS-SPU3 board (see drawing C092198-1). The following screen will appear on the LCD display:

NOTE: To program the PHONE PAGE feature, press the <TAB> key while the search string screen is displayed.



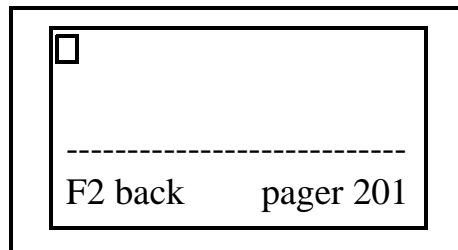
```


F1-1 F4-5 F2+1 F5+5
F3 enter sub 0001

```

search string screen 0001

Search strings (words, numbers, phrases) are entered in the top two lines of the LCD display. Search strings may contain 1 to 40 characters (including spaces). System capacity is 1400 search strings. The screen number (0001-1400) appears in the lower right corner. The F2 key allows you to move forward one screen to enter another search string. The F5 key moves the cursor ahead five screens. F1 moves the cursor back one screen, F4-back five screens. If any programmed search string is found in a message received from the host system, the message will be processed according to the content of the replacement message that corresponds the search string found. During programming, after a search string is entered, a corresponding replacement message is programmed. To do this, press F3. The following screen will appear:



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F2 back pager 201

```

replacement message screen

You can now enter a 1 to 40 character replacement message. If a replacement message is entered, the received message containing the corresponding search string is replaced by the replacement message. If you leave this screen blank, the received message containing the corresponding search string will be ignored by the paging system and not sent to the pagers. Note that you can also specify *which* pager receives each substitute message. Pagers are factory programmed with 1 or more 7 digit capcodes. A capcode is similar to a phone number. These capcodes are printed on the back of each pager. The first four digits of the capcodes are factory programmed into Alpha-Page-232 and do not need to be specified. The last three digits of a capcode is the pager number. A pager may have more than one pager number. This means a single pager can receive messages directed to more than one pager number. For example, a pager may contain a "group" pager number AND a second, unique pager number. Specific messages can be sent to a specific pager number. To change the pager number (the default pager number for all messages is 201) press the <tab> key. The cursor will move to the pager field (lower right). Now enter a pager number 000-999. Pagers with pager numbers 000-999 are available from Micro Logic Systems. Press <TAB> to return to the message field. If the "%" symbol is entered as the replacement message, the message will be sent as it was received but to the specified pager number programmed in the pager field. This is useful for directing messages to a pager number other than the default pager number. The default pager number is 201. By default, all pages will be to pager number 201. Press F2 to return to the corresponding search string screen. Note: The system will not be monitoring for incoming calls while the keyboard is plugged in (CTS clear to send signal to host is set to false). When you are finished programming, unplug keyboard to return to normal operation.

SPECIAL PROGRAMMING NOTES

If no programmed search string is found in a received message, the message will be sent as received to the default pager number.

When entering a search string, it must be entered exactly as it will be received by the paging system, search strings **are** case sensitive. For example, let's assume you are connecting the paging system to a nurse call system. Let's also assume you want to program a replacement message for the following message that is received from the nurse call system:

routine call-room #1

At the search string screen, you would enter the above message exactly as it appears above.

Routine call-room #1 is *not* the same, note the capital R.

After correctly entering this search string, you would press the F3 key to go to the *replacement message screen*. You would then enter the replacement message. For example:

routine call-Bill Smith, room #101A

Now, when Bill Smith places a call and the nurse call system sends the message "routine call-room #1" to the paging system, the paging system will replace that message with your message. The message "routine call-Bill Smith, room #101A" would be sent to your pager(s).

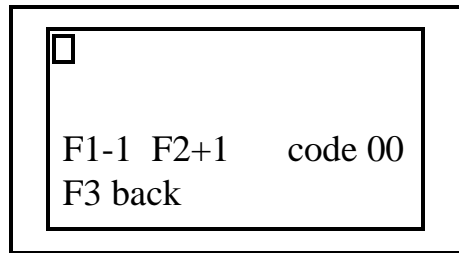
In order to increase programming flexibility and functionality, each search string that you enter can be located anywhere within a longer received message. This means that a single search string entry can be a portion of many incoming messages. For example, let's assume your paging system is attached to a nurse call system. You only wish to have emergency calls sent to your pagers, in other words, you want the paging system to ignore routine calls. Further, let's assume that the nurse call system provides the following messages in response to routine calls:

12:05 PM routine call-room 101
12:27 PM routine call-room 104
1:09 PM routine call-room 210
1:15 PM routine call-room 228
and so forth...

Each routine call message contains the words "routine call". You can have the paging system ignore **all** routine call messages with a single programming entry. At a search string screen you would enter "routine call". Notice that each of the above messages contains the characters "routine call". Therefore, they would **all** be substituted by the message you entered at the *replacement message screen* that corresponds to the search string screen where you entered "routine call". Note that "routine call" can appear anyplace in the received message. For this example we wanted each of the routine call messages to be ignored, therefore, you would leave the replacement message blank. Example 2, again assume the above "routine call" messages are output by the nurse call system. If the words "routine call" are entered at a search string screen and the corresponding replacement message is the percent % symbol and pager 209 is specified, **all** routine call messages would be sent (exactly as they were received) to pager number 209.

PHONE PAGE

The PHONE PAGE feature of Alpha-Page-232 allows users to send pre-programmed alphanumeric pagers using DTMF telephone tones (touch tones). Up to 100 40-character messages can be programmed. A one to seven digit numeric extension can be added to the end of any of the 100 pre-programmed alphanumeric messages at the time the message is sent. To set up PHONE PAGE, plug the programming keyboard into the keyboard receptacle on the MLS-SPU3 board. Press the <TAB> key. The following screen will appear:



To use *Phone Page*, establish a connection to Alpha-Page-232 (see TELEPHONE CONNECTION TO ALPHA-PAGE-232, next page), enter the three digit pager number to receive the page followed by the "*" key, followed by a two digit code (00-99). You will program an alphanumeric message to correspond to each code you wish to use. The programming screen above displays the code number you are programming (in this case, 00). Type the alphanumeric message that is to be transmitted when *00 is entered on the telephone keypad. Use the <BACKSPACE> key to move the cursor back one position. To edit an existing message simply type over it. Use the <SPACEBAR> to erase characters. To program the message for another two digit code, press the F2 key to move forward to the next code number, press the F1 key to move back to the previous code number.

NUMERIC SUFFIX

To increase the flexibility of *Phone Page*, a 1 to 7 digit numeric suffix can optionally be added to any of the alphanumeric messages **at the time of use**. For example, let's assume you've programmed the message "phone call on line" for code 00 above. When a user wishes to send that message to pager number 201, 201*00 is entered on the telephone keypad. To add a numeric suffix to that message, enter the suffix on the telephone keypad **immediately following** *00. If a user enters 201*0012 on the telephone keypad, the message "phone call on line 12" is transmitted to pager number 201. Note, Alpha-Page-232 will automatically add one space between the preprogrammed alphanumeric message and the numeric suffix.

NUMERIC PAGING

Alpha-Page-232 also allows simple numeric messages to be transmitted using the telephone interface. No pre-programming is required. The numeric paging feature takes two forms:

1: Numeric message to default pager number: Connect to Alpha-Page-232. Enter "#" followed by 1 to 11 numbers on the telephone keypad. The numeric page is immediately sent to the default pager number.

2: Numeric message to specified pager number: Connect to Alpha-Page-232. Enter the 3 digit pager number that will receive the message followed by a 1 to 9 number numeric message. For example, to send the number "5551234" to pager number 209, enter "2095551234".

You may immediately disconnect from Alpha-Page-232 after entering a page when using *Phone Page* or *Numeric Paging*.

TELEPHONE CONNECTION TO ALPHA-PAGE-232

In order to use the *Phone Page* and *Numeric Paging* features of Alpha-Page-232, a connection must be made between the telephone(s) to be used and the Alpha-Page-232 system. There are three basic configurations that can be used. Following is a description of each.

CONNECTION TO A STANDARD ANALOG TELEPHONE LINE

If a simple analog phone line is being used (such as that found in a typical home), connect the RJ-11 telephone line jack on the MLS-SPU3 board of Alpha-Page-232 to the same telephone line as the telephone extension(s) to be used for paging system access. To use the system, lift the handset of any telephone on the phone line. A dial tone should be heard. Begin entering digits. When done, hang up the handset. Be aware that touch tones being received by Alpha-Page-232 are also going out on the phone line. If at least seven digits are entered (a phone number), a call may be connected to an outside telephone customer. With this type of connection it is recommended that no more than six digits be used for paging. For wiring information, refer to drawing C122998-2.

CONNECTION TO PBX SYSTEM

To connect Alpha-Page-232 to a PBX telephone system, a Telephone Access Module is required. Micro Logic Systems recommends the Bogen TAM-B telephone access module. Configure the DIP switches on the TAM-B as shown on drawing C012799-1. Connect the plug-in power supply for the TAM-B as shown on drawing C012799-1. The TAM-B will be connected to a loop start trunk port on the PBX system, refer to drawing C122998-1. To use the telephone paging features of Alpha-Page-232, users will need to push the appropriate telephone button or buttons to access the trunk port that is connected to Alpha-Page-232. Once connected, a confirmation tone is heard in the handset (tone volume is adjusted with TONE VOL. control on the TAM-B). Alpha-Page-232 is now ready to receive touch-tone signals. When done, hang up the handset. NOTE: The VOX DELAY control on the TAM-B is not used.

CONNECTION TO EXTERNAL PHONE (CO) LINE

To connect to Alpha-Page-232 via telephone from a remote location, a Telephone Access Module is required. Micro Logic Systems recommends the Bogen TAM-B telephone access module. Configure the DIP switches on the TAM-B as shown on drawing C020399-1. No power supply is required for the TAM-B when connecting to an external phone line. Refer to drawing C012899-1 for phone line and MLS-SPU3 (Alpha-Page-232) connections to the TAM-B. To access the system from a remote location, call the phone number of the phone line connected to the TAM-B. The TAM-B will answer the call and send a confirmation tone to the remote phone (tone volume is adjusted with TONE VOL. control on the TAM-B). Alpha-Page-232 is now ready to receive touch-tone signals. When done, hang up the handset. The TAM-B provides CPC-calling party-controlled (loop current interruption) disconnect. This means that the phone line is disconnected from the TAM-B when the remote phone is hung up. The TAM-B also provides timer disconnect to make sure the line gets disconnected even if the calling party doesn't hang up (phone accidentally left off-hook). This timer is adjusted with the PAGING TIME control on the TAM-B. Set the control at least half way toward max. This allows at least 20 seconds for the user to enter all digits. The VOX DELAY control on the TAM-B is not used.

Centrex Modification

Some phone systems (in particular, Centrex-type systems) may produce open-switch-intervals (OSI's) when the TAM-B first answers the incoming call. OSI's are short breaks in loop current resulting when the central office switches equipment on and off the line. The TAM-B may misinterpret these OSI's as disconnect signals. It may be necessary to set AUX switches S4 and S5 in their OFF positions (refer to drawing C020399-1 for switch locations) if the TAM-B exhibits any of the following symptoms:

1. TAM-B disconnects from the line immediately after answering.
2. TAM-B answers and remains connected to the line but the page does not come through the paging system. This condition is verified if the TAM-B CONTACT CLOSURE is open during a page.

TEST MODE

When the system is first powered up, or after a reset, it will go through a test mode. Alpha-Page-232 first checks for the CTS (Clear To Send) signal from the paging transmitter. If CTS is NOT detected, "No Transmitter CTS" will appear on the LCD display. Make sure the transmitter data cable is securely connected on both ends and that the transmitter power connector is connected. Once Alpha-Page-232 has connected to the paging transmitter, testing will continue. "testing..." will appear on the LCD display. A test of system memory is performed. After the memory test, "Memory-OK" or "Memory-fail" will appear on the LCD.

PAGERS

When messages are sent to your pager(s), they are stored in the pager's memory. This memory can become full. If this occurs older messages will be over-written by new messages. It is recommended that messages be erased after they have been viewed following the instructions included with your pager(s).

RANGE

Your paging system contains a relatively high power paging transmitter. It is capable of sending messages over one mile. However, just like with cordless telephones, several factors can affect range. In most cases, the PT-400 transmitter should be placed on top of the MLS-EC2 enclosure. In **rare** cases it may be required to locate the PT-400 transmitter in a central location in your building to achieve full coverage throughout the building. If this is necessary, MLS-232 port extenders will be required to allow the PT-400 transmitter to be located remotely from the MLS-EC2 enclosure. Refer to drawing C092198-5 for wiring information.

MAINTENANCE

Alpha-Page-232 is virtually maintenance free. The optional 12V, 7 amp-hour battery used for power back-up may lose some of its capacity after approximately five years of use. It may be required at that time to replace the battery to maintain the full 36 hour power back-up capacity. It is recommended that the 3V lithium battery used for memory back-up (see drawing C081297-1) be replaced every five years to ensure proper system operation. The battery is contained in a battery holder and is easily replaceable. Replace with Panasonic type CR2025 or equivalent (3V, 150mAh, 20 mm diameter). You will occasionally need to replace the battery in your pager(s). You should turn the pager(s) off when not in use. Follow the instructions included with your pager(s).

TROUBLESHOOTING

Symptom:

System is dead, LCD screen is blank.

Possible causes:

Blown fuse in 12VAC transformer-replace transformer, do not short secondary terminals together.

Thermal fuse on MLS-SPU3 board triggered-check for and remove short circuit between "+12" and "GND" terminals of MLS-SPU3 board.

TR12-20 power transformer is not plugged in to AC outlet, or AC outlet is not "live".

Symptom:

Alarm/fault has occurred, but no message sent to pager(s).

Possible causes:

PT-400 transmitter is not properly connected to COM1. See drawing C092198-2, correct problem.

Power not connected to PT-400 transmitter. See drawing C092198-2.

Alpha-page-232 is not connected (or not connected properly) to the host system. Refer to drawing C092198-4, correct problem.

Wrong COM port being used on host system or serial data format of host is incorrect, see "DATA SETUP", correct problem.

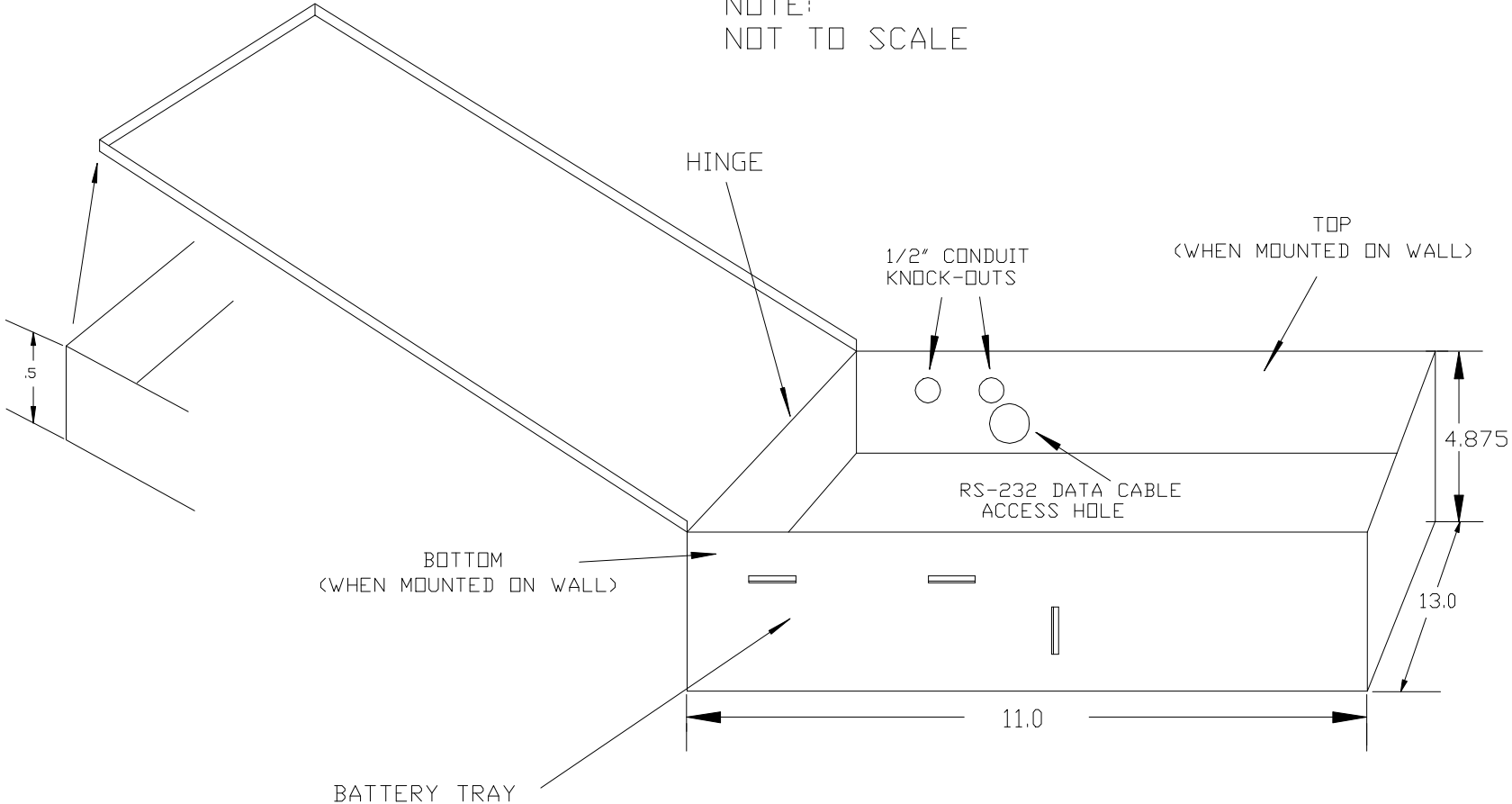
RS-232 data cable is backwards, make sure Alpha-Page-232 end is plugged into the MLS-SPU3 board, not the host system's COM port.

PT-400 transmitter is too far away from pagers-use MLS-232 port extenders and relocate transmitter centrally in building (see drawing C092198-5).

Message that was not transmitted was programmed to be ignored (not transmitted). Check programming.

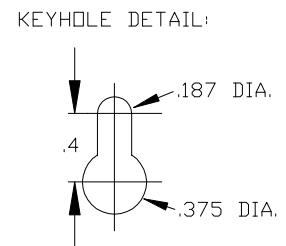
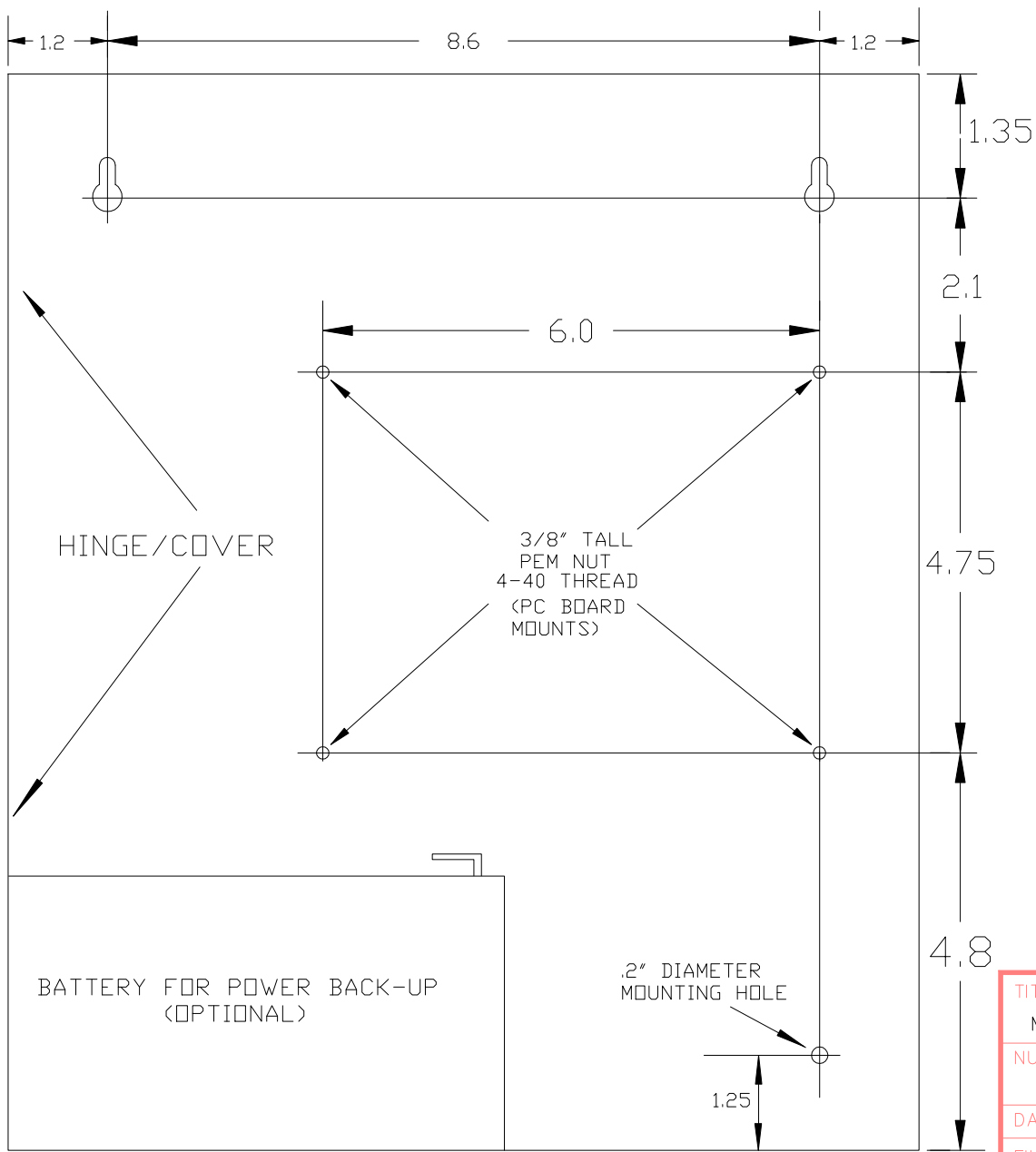
Keyboard is plugged in. The system is not monitoring for calls while the keyboard is plugged in-(while you are in the programming mode). Unplug the keyboard.

NOTE:
NOT TO SCALE



NOTES:
ENCLOSURE CONSTRUCTED FROM 18 GAUGE SHEET METAL-
PAINTED GRAY. COVER HELD CLOSED WITH MAGNET

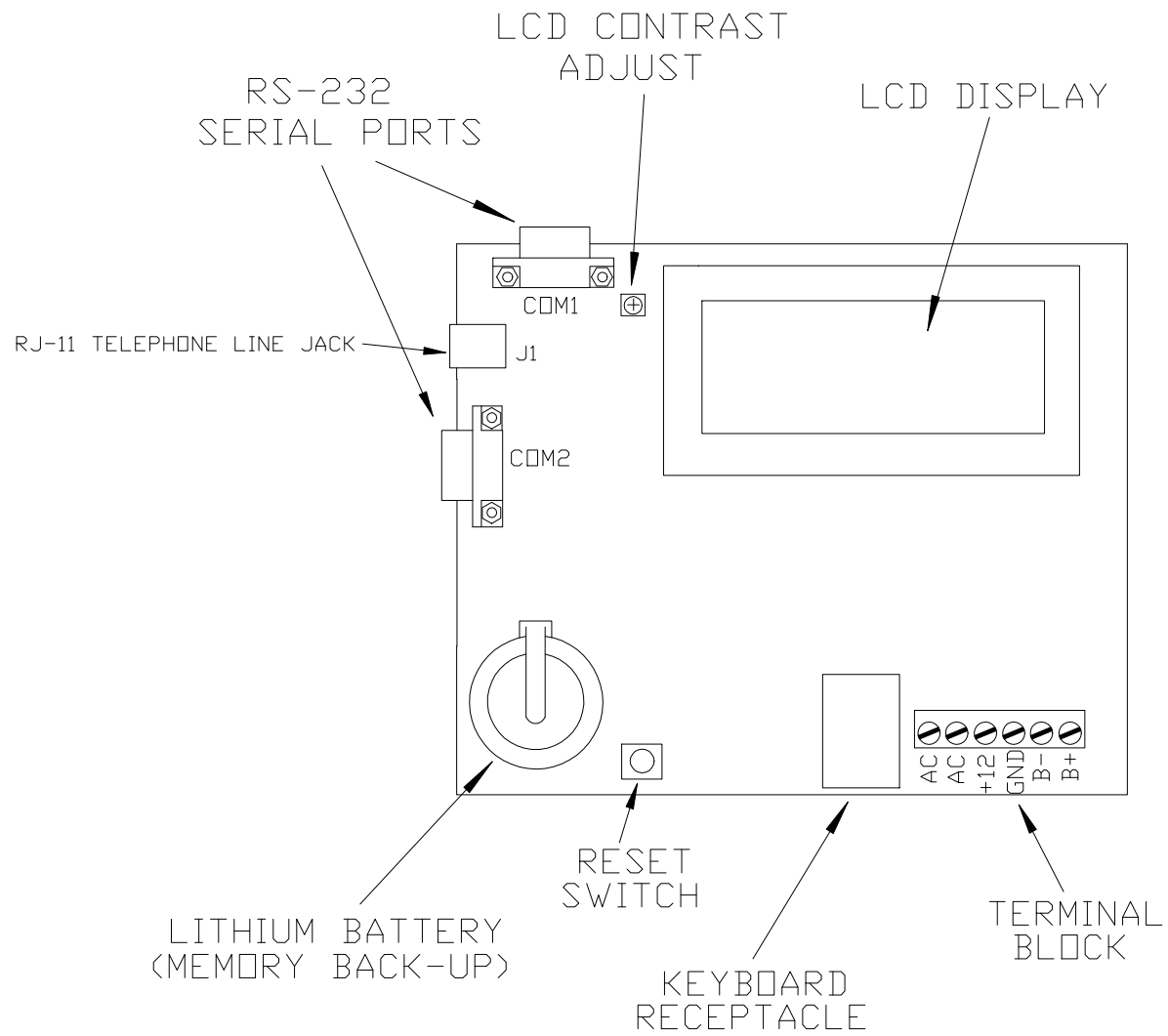
TITLE Alpha Communications	
MLS-EC2 ENCLOSURE-CONCEPTUAL DRAWING	
NUMBER C033197-1	REVISION A ORIG. SIZE A
DATE: 3/31/97	SHEET 1 OF 1
FILE: MLS-BOX5	DRAWN BY: MG



NOTE:
 ALL DIMENSIONS ARE
 IN INCHES.
 ENCLOSURE CONTAINS 2 KEYHOLES
 PLUS 1 ADDITIONAL MOUNTING HOLE.

BATTERY FOR POWER BACK-UP
 (OPTIONAL)

TITLE Alpha Communications	
MLS-EC2 MOUNTING HOLE/PCB MOUNTING NUT SPECS.	
NUMBER C033197-2	REVISION A
DATE: 3/31/97	SHEET 1 OF 1
FILE: EC2-BACK	DRAWN BY: MG



TITLE **Alpha Communications**
 MLS-SPU3 SIGNAL PROCESSING UNIT-OVERVIEW

NUMBER C092198-1

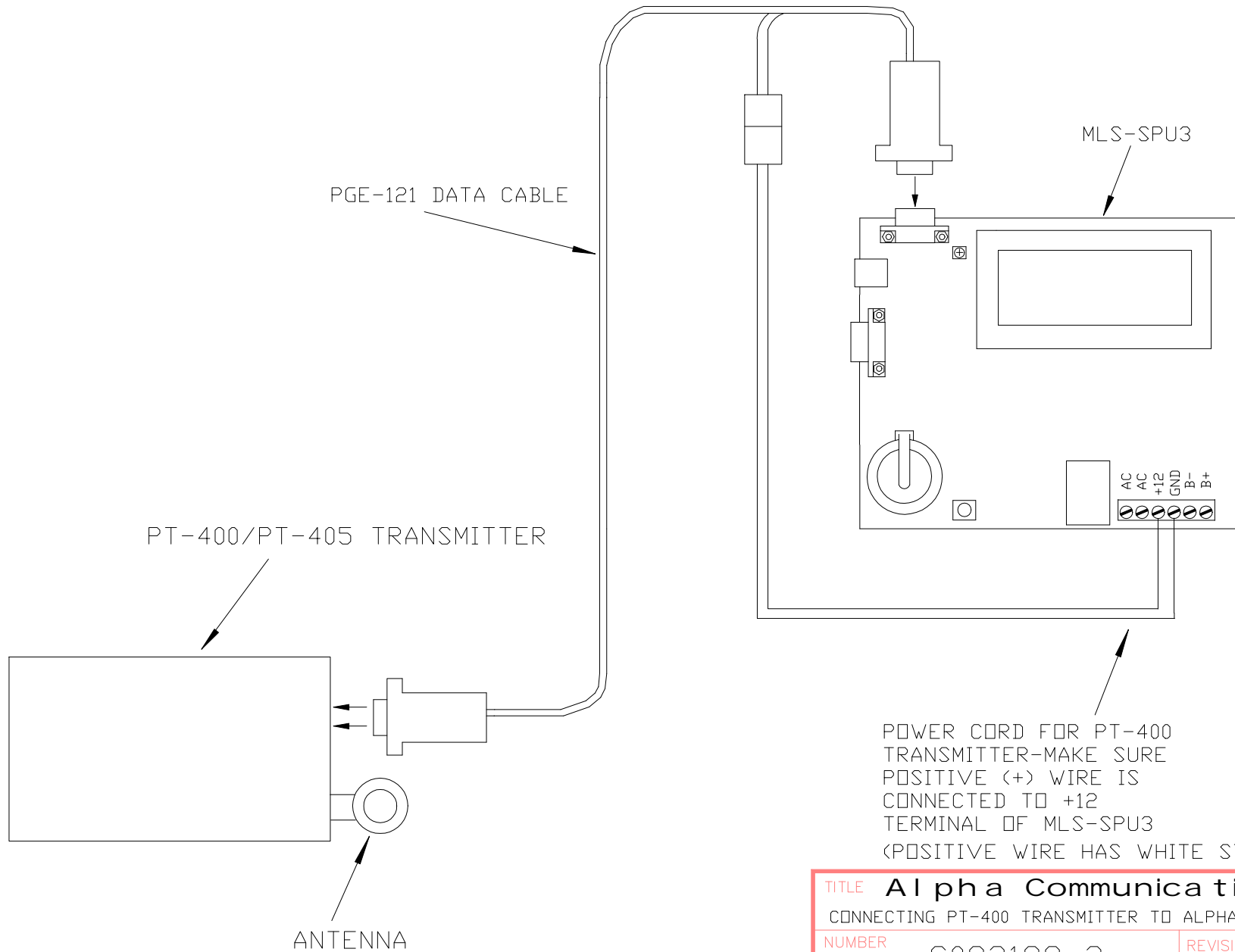
REVISION
 ORIG. SIZE A

DATE: 9/21/98

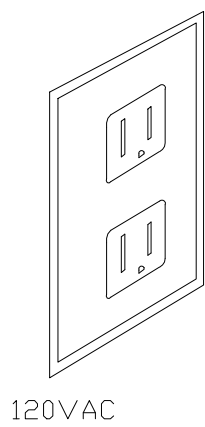
SHEET 1 OF 1

FILE: SPU3OVER

DRAWN BY: MG

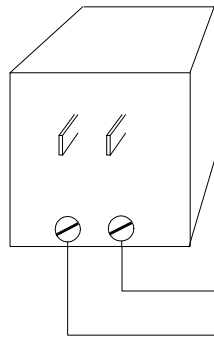


TITLE Alpha Communications CONNECTING PT-400 TRANSMITTER TO ALPHA-PAGE-232	
NUMBER C092198-2	REVISION ORIG. SIZE A
DATE: 9/21/98	SHEET 1 OF 1
FILE: PT4WIRE3	DRAWN BY: MG



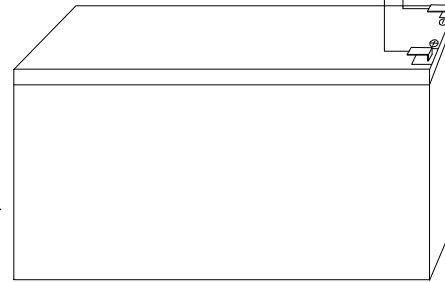
120VAC

TR12-20 12VAC ONLY!



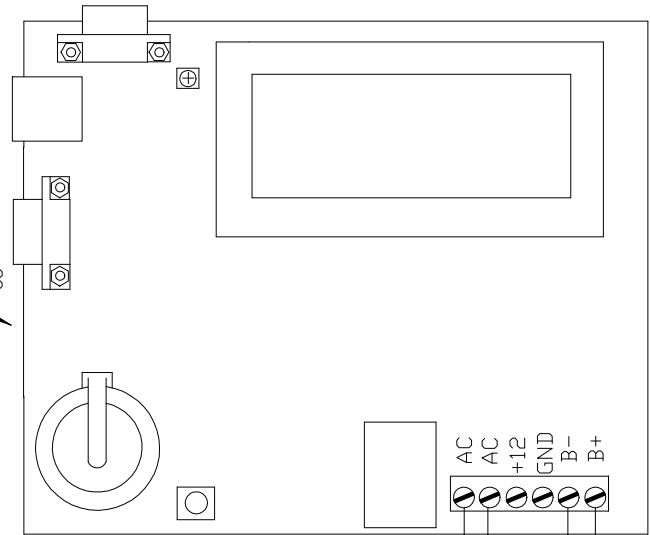
18 AWG
(UP TO 1000')

12V, 7 AMP-HOUR
LEAD-ACID
BATTERY



BT12-7

MLS-SPU3



MLS-H1 BATTERY
CORD-INCLUDED
WITH BATTERY

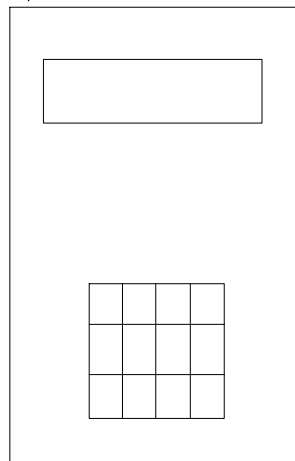
BLACK

RED

CAUTION!
MAKE SURE RED WIRE
IS CONNECTED TO
POSITIVE (+) TERMINAL
OF BATTERY AND TO
B+ TERMINAL OF
MLS-SPU3 BOARD.

TITLE Alpha Communications	
POWER WIRING AND POWER BACK-UP BATTERY CONNECTIONS TO MLS-SPU3	
NUMBER	C092198-3
DATE: 9/21/98	SHEET 1 OF 1
FILE: PWRBATT3	DRAWN BY: MG

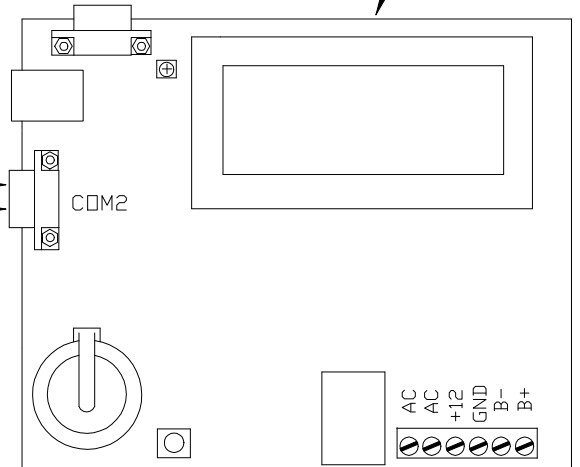
HOST-
NURSE CALL SYSTEM,
ACCESS CONTROL SYSTEM,
SECURITY SYSTEM,
FIRE ALARM SYSTEM, ETC.



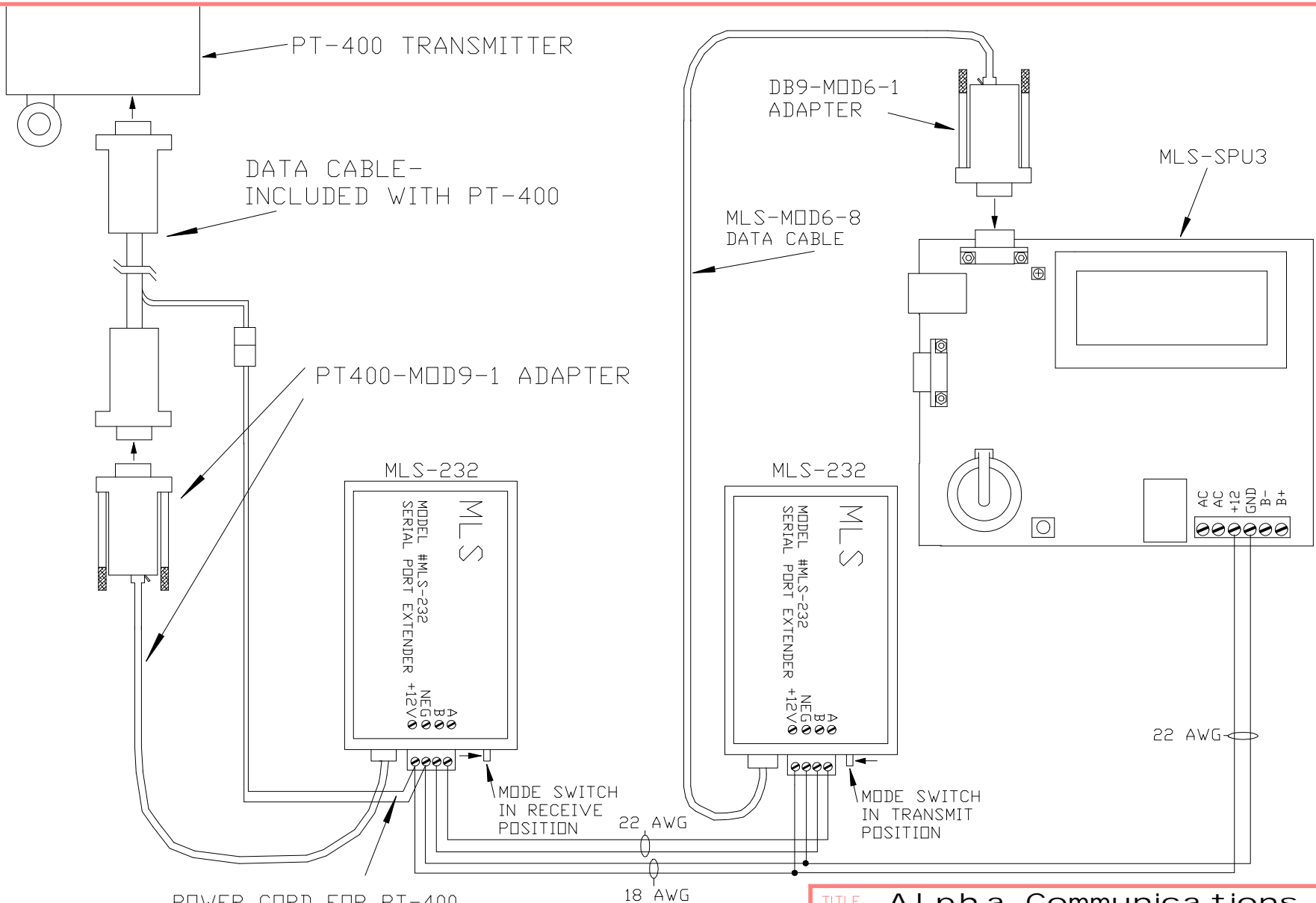
SERIAL (COM)
PORT

APPROPRIATE
MICRO LOGIC SYSTEMS
DATA CABLE

MLS-SPU3

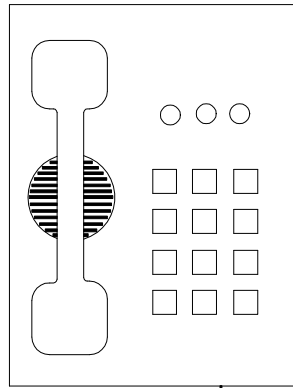


TITLE		Alpha Communications	
CONNECTING ALPHA-PAGE-232 TO HOST			
NUMBER	C092198-4	REVISION	A
		ORIG. SIZE	A
DATE: 9/21/98		SHEET	1 OF 1
FILE: 232HOST3		DRAWN BY:	MG



POWER CORD FOR PT-400 TRANSMITTER-MAKE SURE POSITIVE (+) WIRE IS CONNECTED TO +12V TERMINAL (POSITIVE WIRE HAS WHITE STRIPE)

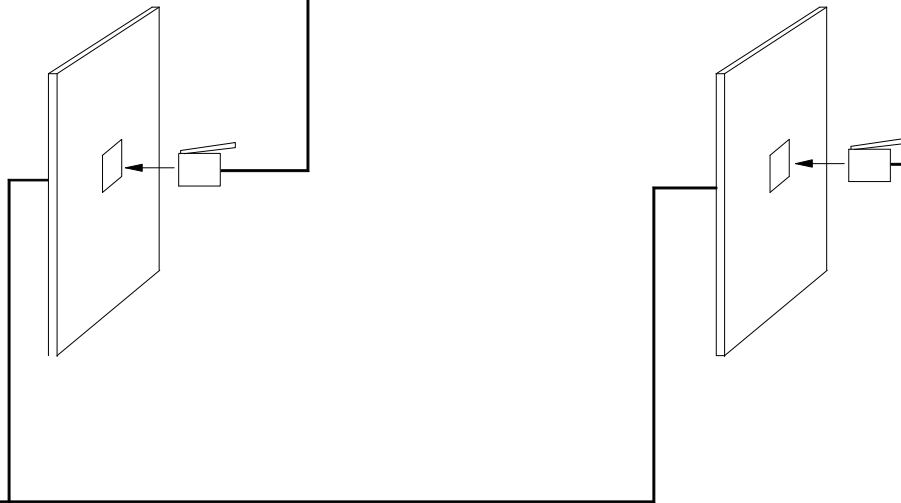
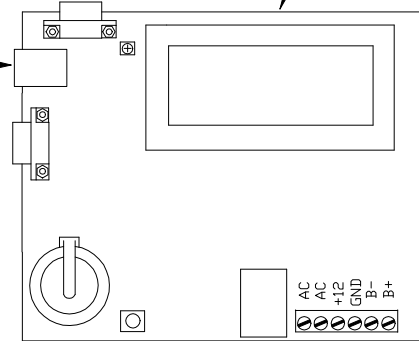
TITLE Alpha Communications	
WIRING MLS-232 PORT EXTENDER TO ALPHA-PAGE-232	
NUMBER C092198-5	REVISION C ORIG. SIZE A
DATE: 9/21/98	SHEET 1 OF 1
FILE: PT4232-3	DRAWN BY: MG



STANDARD ANALOG TELEPHONE

6 POSITION, 4 CONTACT
MODULAR PLUG

MLS-SPU3



ANALOG TELEPHONE LINE

TITLE **Alpha Communications**

CONNECTING ALPHA-PAGE-232 TO PHONE LINE

NUMBER C122998-2

REVISION
ORIG. SIZE A

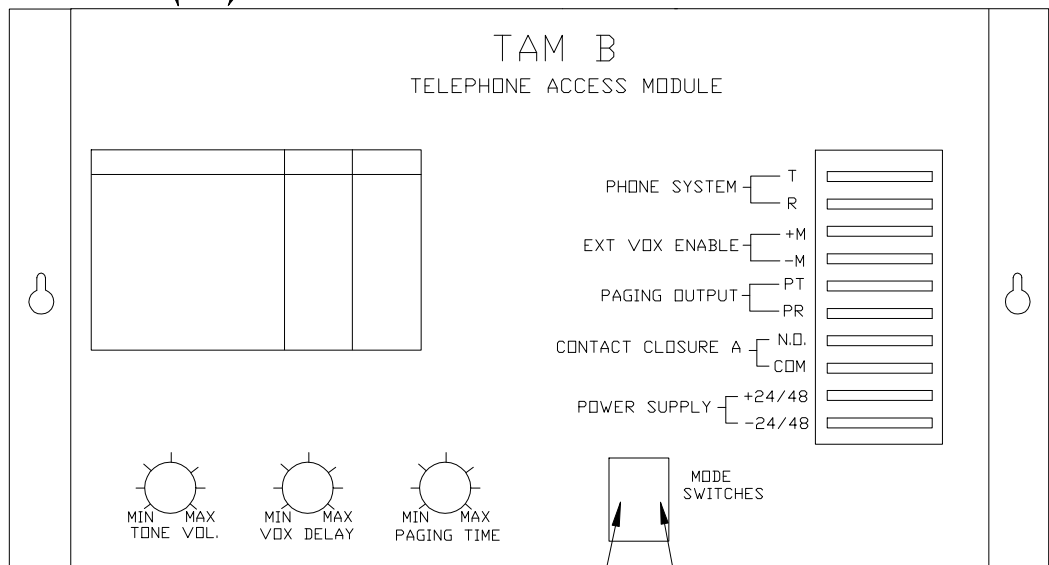
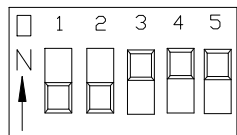
DATE: 12/29/98

SHEET 1 OF 1

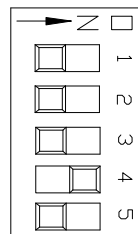
FILE: PHONE1

DRAWN BY: MG

AUX SWITCHES



MODE SWITCH SETTINGS



TITLE Alpha Communications TAM-B CONTROLS & SETUP-CONNECTION TO EXTERNAL (CO) PHONE LINE	
NUMBER C020399-1	REVISION A ORIG. SIZE A
DATE: 2/3/99	SHEET 1 OF 1
FILE: TAM-B2	DRAWN BY: MG

TAM B

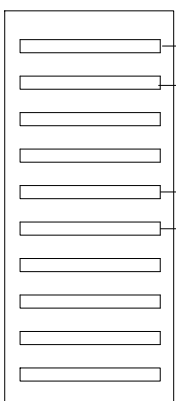
PHONE SYSTEM { T
R

EXT VOX ENABLE { +M
-M

PAGING OUTPUT { PT
PR

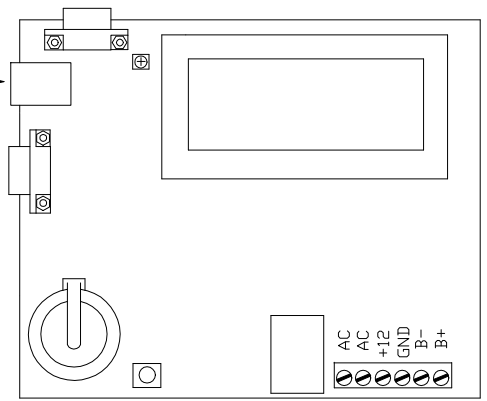
CONTACT CLOSURE A { N.O.
COM

POWER SUPPLY { +24/48
-24/48



T TO CO LINE
R (EXTERNAL TELEPHONE LINE)

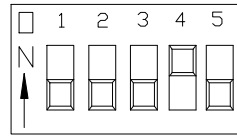
6 POSITION, 4 CONTACT
MODULAR CONNECTOR
(2 CENTER CONTACTS USED)



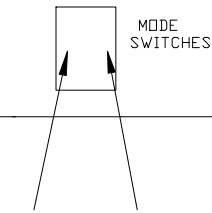
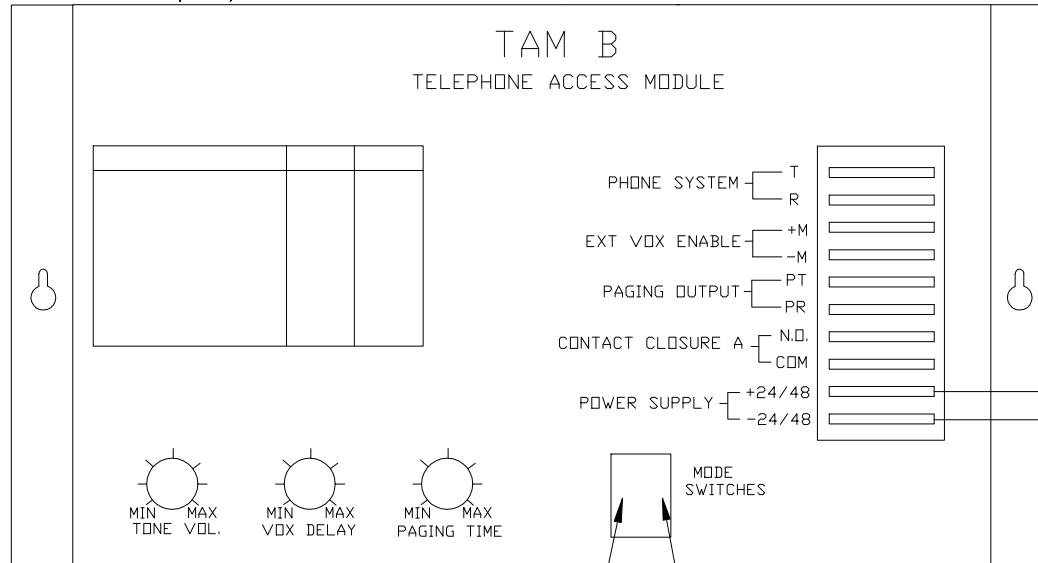
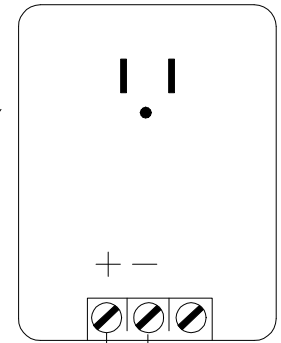
MLS-SPU3

TITLE Alpha Communications	
CONNECTING ALPHA-PAGE-232 TO EXTERNAL PHONE LINE	
NUMBER C012899-1	REVISION ORIG. SIZE A
DATE: 1/28/99	SHEET 1 OF 1
FILE: CO-LINE1	DRAWN BY: MG

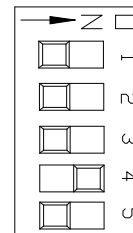
AUX SWITCHES



PLUG-IN
POWER SUPPLY
48 VDC

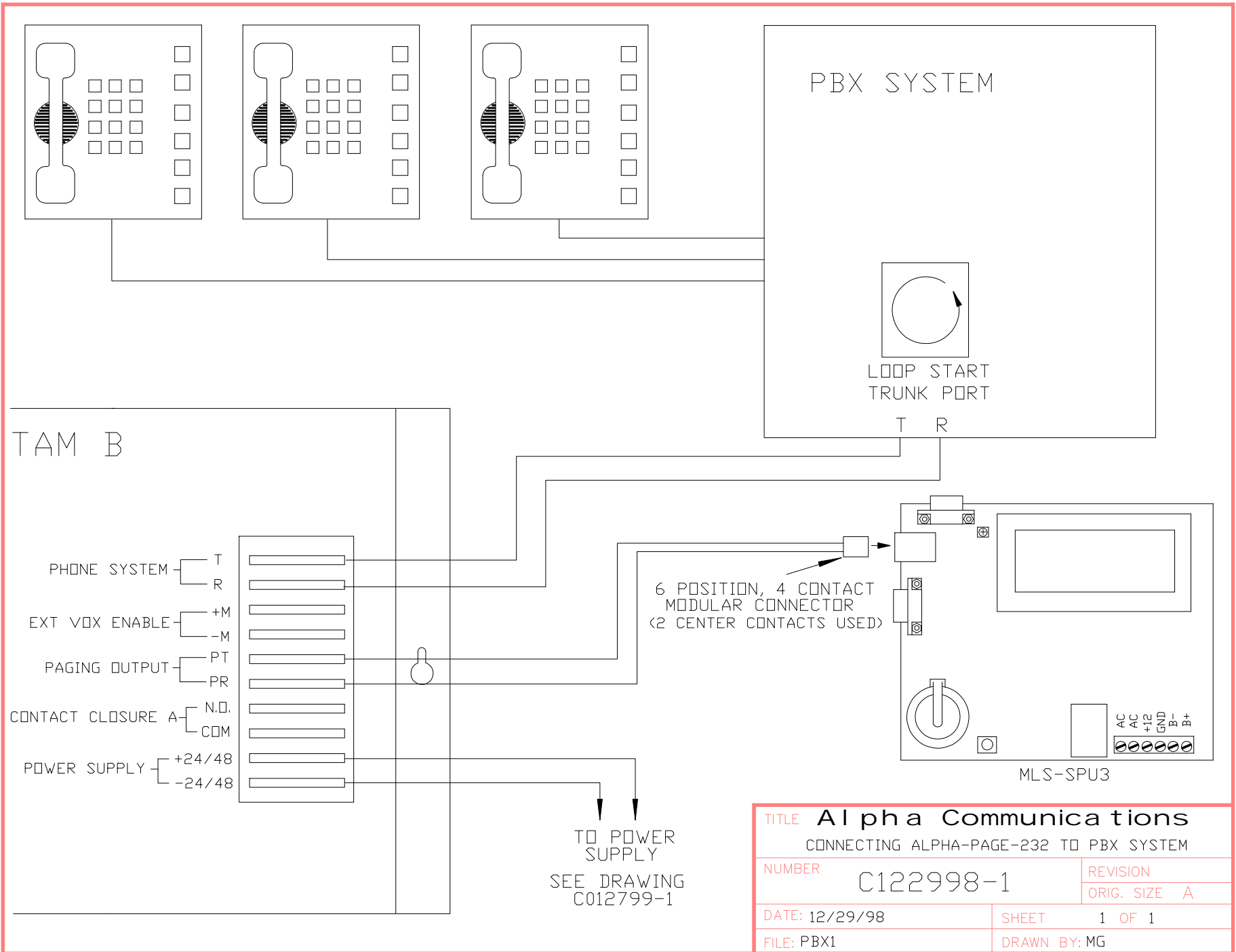


MODE SWITCH
SETTINGS



NOTE: MODE SWITCHES 1 AND 2 ARE SHOWN IN POSITION TO CONFIGURE TAM-B FOR USE WITH 48VDC POWER SUPPLY. ALTHOUGH THE TAM-B CAN BE USED WITH A 24VDC POWER SUPPLY, USING 48VDC IS RECOMMENDED.

TITLE Alpha Communications	
TAM-B CONTROLS & SETUP-PBX/LOOP START TRUNK PORT	
NUMBER C012799-1	REVISION A
	ORIG. SIZE A
DATE: 1/27/99	SHEET 1 OF 1
FILE: TAM-B1	DRAWN BY: MG



TITLE Alpha Communications

CONNECTING ALPHA-PAGE-232 TO PBX SYSTEM

NUMBER	C122998-1	REVISION	
		ORIG. SIZE	A

DATE: 12/29/98	SHEET	1 OF 1
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FILE: PBX1	DRAWN BY: MG
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