



Model

DDU-300

DISPATCH DISPLAY UNIT

INSTRUCTION MANUAL

Model Features

- 10 entry ANI recall memory
- 137 entry alias database
- Auto-mute leading ANI
- Alternate function as a repeater access controller
- Decodes Midian's TVS-2 Kryptic 4-digit ANI's
- 11 status messages including emergency
- Easy to read backlit LCD display
- Serial printer logging (w/optional cable)

MANUAL REVISION: 2006.02.22

COVERS PRODUCT SOFTWARE VERSION(S):

2.0 _____

WITH DECODER VERSION(S):

3.5 _____

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DDU-300

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1 SPECIFICATIONS

Voltage/Current

Operating Voltage (nominal)	12 VDC
Operating Voltage (min-max)	12-15 VDC
Operating Current (standby @12 VDC)	100 mA
Operating Current (peak @15 VDC).....	500 mA

Inputs

Input Level (RX)	100-3000 mV p-p
Input Impedance (RX)	> 10k Ω

Outputs

Output Level (TX, unloaded)	150-2500 mV p-p
Output Impedance (TX).....	27k Ω if JU4 cut
Speaker Audio Output.....	1 W into 8 Ω

Mechanical

Dimensions:	.27 $\frac{1}{8}$ "H x 6 $\frac{1}{2}$ "W x 8 $\frac{3}{4}$ "L
Operating Temp	0° to 50° C

Decode Format

Midian's TVS-2 Kryptic format (4-digit)

Other

ANI Recall Stack Size	10
Alias Database Size	137

WARRANTY

Midian Electronics, Inc., warrants this product to be free from defects in material and workmanship for two years from date of shipment. If such malfunction occurs, it will be repaired or replaced (at our option) without charge for materials or labor if returned to the factory. This warranty does not apply to any parts damaged due to improper use--including accident, neglect, unreasonable use, and improper installation--or to unauthorized alterations or modifications of the equipment. It does not extend to damage incurred by natural causes such as lightning, fire, floods, or other such catastrophes, nor to damage caused by environmental extremes, such as power surges and/or transients. It does not extend to microprocessors, if it is determined by Midian that the failure of a micro is due to static damage, application of improper voltages to the unit, or other problems not related to circuit design. In such case or in the case of a desire to update the micro to a different version of software, such request must be specified in writing, and there will be a charge agreed upon by both parties.

This product is warranted to meet published specifications and to operate as specified only when properly installed in radio equipment which complies with U.S. FCC specifications and the applicable radio manufacturer's specifications. Midian Electronics is not responsible for any operational problems caused by system design, outside interference, or improper installation.

Equipment for repair can be returned to the factory without prior written authorization. A brief letter describing the nature of the defect should be included with the merchandise. Repair by other than Midian Electronics, Inc., will void this warranty. In-warranty merchandise must be shipped, freight prepaid, to Midian Electronics. Midian Electronics will return, freight prepaid via UPS ground, the repaired or replaced equipment to purchaser, within the United States. Out-of-warranty repairs will be billed at the rate of \$60 per hour, plus replacement parts.

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SCHEMATIC		
PICTORIAL		

2 OVERVIEW

The DDU provides the optimal ANI display decoder solution for small and medium sized radio systems such as those used by taxi fleets, police departments, construction crews, etc.

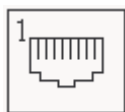
The last 10 ANI's received can be reviewed at any time. It can store up to 137 aliases in its user database. The user friendly menu system makes it as easy to use as a cell phone. Additional features include emergency status display and the ability to automatically mute incoming leading ANI's.

In addition to the decode features, the DDU-300 offers fleet management functions including selective calling of units, over the air reprogramming (OTAR), and the ability to disable units remotely.

3 INSTALLATION INSTRUCTIONS

Installation Note: Midian products utilize CMOS integrated circuits, which are susceptible to damage from high static charges. Be sure to follow standard antistatic procedures when handling, including using grounded workstations and soldering irons and wearing grounding bracelets.

3.1 RADIO INTERFACE



Radio Interface connector P1 is an 8-pin RJ-45 style connector in the center of the back panel.

+V IN (P1-5) [Red]

The DDU can be powered either by an optional wall transformer or by the radio power supply. Connect this wire to the radio power source provided it is between 12 and 15 VDC.

If using a wall transformer, make sure the voltage is between 12 and 15 VDC and the current rating is at least 800mA. Also, be certain that positive is connected to the inside ring.

GROUND (P1-6) [Black]

Connect to radio ground.

AUDIO INPUT/RX IN (P1-8) [Blue]

Connect to a point in the radio where receive audio is present at a constant level. If using PL or CTCSS, be sure to connect to a point after the CTCSS high pass filter. If using the Squelch Output of the DDU, be sure the RX audio point is not muted when the squelch output to the radio is asserted.

AUDIO OUTPUT/TX OUT (P1-4) [Green]

Connect to the mic-hi input of the radio. The output impedance of the DDU can be adjusted if necessary by replacing leaded resistor R81 with an appropriate value.

PTT OUTPUT (P1-3) [Yellow]

This connection is only required if the DDU is equipped with a microphone or handset.

This open collector output provides a ground to key-up the radio when transmitting. If connecting to a relay in the radio, make sure the coil is bypassed with a diode to eliminate counter-EMF.

This output may also be assigned to be the repeater access control output. See **REPEATER SETUP** for more information.

COR INPUT (P1-1) [Gray]

This connection is only required if using the internal speaker auto-mute feature, busy lockout, or repeater access control.

Connect to a point in the radio squelch or CTCSS circuit that changes logic level when carrier (or CTCSS) is detected. A radio whose circuitry provides a logic-low or logic-high can readily turn Q1 on and off. If only a high level is provided, it may be necessary to move R40 from its pull-up to its pull-down position.

MONITOR OUTPUT (P1-7) [Orange]

This optional output can be used to control the monitor function of the radio using the <MONITOR> button on the DDU. This is an open collector output which changes state each time the <MONITOR> button is pressed.

This output may also be assigned to be the repeater access control output. See **REPEATER SETUP** for more information.

SQ OUT/LTR IN (P1-2) [Brown]

This wire may be either a **Squelch Output** or a **Trunking Delay** (LTR) input, but not both. To use as a squelch output, install jumper R85 and make sure jumper JU5 is not installed. To use as a trunking delay input, remove R85 and install JU5.

When used as a Squelch Output, connect to a point in the radio which will mute the speaker when brought to ground (or left floating). Program the appropriate polarity in the **RADIO SETUP** menu.

When used as an LTR Trunking Delay Input, connect to a point in the radio which goes from 0 to 5 VDC when a channel has been acquired on the LTR

trunking system. If not using LTR, leave this unconnected.

3.2 JUMPER SETTINGS

There are two user configurable jumpers, JU1 and JU4. Both are installed at the factory. JU1 allows signaling audio to be heard in the local speaker. If this is not desired, cut JU1.

JU4 controls the output impedance of transmit audio. See **OUTPUT LEVEL** below to determine if JU4 will need to be cut.

3.3 ADJUSTMENTS

Once the unit has been connected to the radio, several adjustments must be made to achieve proper operation. It will be necessary to open the unit. Use the pictorial to identify the location of the following trim pots: R2 and R32 near connector P3, R51 near IC U6, and R105 near the volume control.

INPUT LEVEL

Use a service monitor to generate a 1000 Hz test tone at 2/3 of maximum system modulation (typically 3.3 kHz). Measure the voltage appearing at TP1 and adjust R2 such that TP1 is at 230mV RMS.

OUTPUT LEVEL

To set the audio output level, adjust R51 such that when the DDU sends a data packet, the radio is modulated just below 100%. To send a packet first press <SEND> at the **CALL A UNIT** prompt followed by 4 digits and <SEND>. If the output level cannot be adjusted low enough, it will be necessary to cut JU4. This changes the output from low impedance to high impedance.

MICROPHONE GAIN

If an optional microphone is installed, the microphone audio level must be adjusted. Cause the unit to go into transmit mode by holding down the <SEND> key. Speak loudly into the microphone at a normal distance. Adjust R105 such that maximum system modulation is achieved at peak voice.

SPEAKER PRE-AMP

Though the DDU has a volume control knob, it also has an input audio pre-amplifier. While listening to audio on the channel, adjust R32 so that the minimum and maximum volume control settings are at desired levels.

PLL ALIGNMENT

PLL alignment is performed at the factory and normally does not require any adjustment. In the unlikely event PLL alignment is required, the procedure is as follows:

- 1) Ground Pin 9 of U8.
- 2) Observe Pin 4 of U8 with a frequency counter or an oscilloscope.
- 3) Adjust R28 until Pin 4 is at 19.6 kHz.
- 4) Remove ground from Pin 9 of U8.
- 5) Adjust R26 until Pin 4 is at 27.6 kHz.

3.4 CONFIGURATION SETTINGS

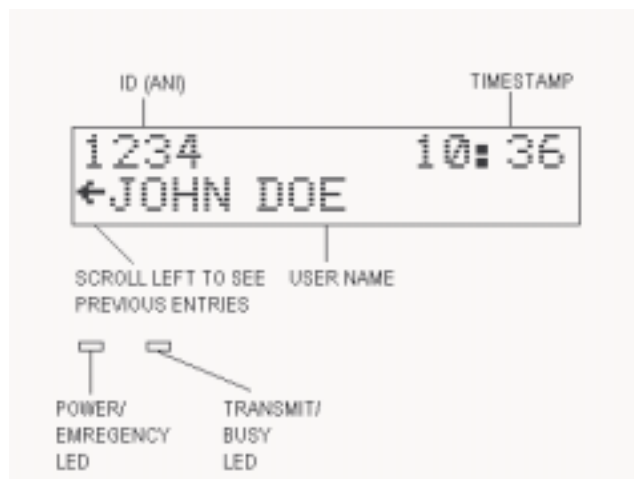
Once adjustments have been made, it will be necessary to configure the DDU to meet the system requirements. This is done via **Menu Mode**.

Be sure to set the time of day via **TIME SETUP** once the DDU is operating as desired. Once the time is set, be sure to leave the unit on at all times or else the time will have to be reset. The time can only be set to the nearest minute. Seconds are kept track of internally and start running the instant the unit is turned-on. It is a good idea to check the time clock monthly as crystal and temperature variances affect the accuracy.

4 BASIC OPERATION

4.1 DISPLAY MODE

The DDU operates either in **Display Mode** or **Menu Mode**. In display mode, the DDU normally displays the last ANI received.



4.1.1 Reading the Display

ID (ANI) – This is the numeric ID (or ANI) of the user who last transmitted on the channel. When an emergency ANI is received, this area will alternate

between displaying the ANI and the message 'EMERGENCY' every 2 seconds.

TIMESTAMP – This is the time of day that the last ANI was received. The timestamp is in 24-hour format. In 24-hour format, 4 A.M. is displayed as 04:00 and 4 P.M. is displayed as 16:00. *Note that the timestamp changes only when a new ANI comes in, it is not a time-of-day clock.*

USER NAME – This is the name of the user associated with the numeric ID that was received. User names are stored in a database. The database must be configured before names can be displayed.

SCROLL LEFT INDICATOR – Indicates that there are other ANI's previously logged. Press the left <SCROLL> button to view the previously logged items.

POWER / EMERGENCY LED – Glows green when power is turned on. Blinks between orange and green to indicate that an emergency ANI was received recently. This indicator remains blinking until the operator presses any key.

TRANSMIT / BUSY LED – This LED is off when there is no activity. It glows red during transmit. It blinks green any time the radio channel is busy (provided the COR input is connected).

4.1.2 Keypad Operation in Display Mode

<SCROLL> LEFT - When in Display Mode, the keypad <SCROLL> keys are used to scroll through the previously logged ANI's. The scroll left indicator remains present on the screen so long as there are more previous entries to be viewed. The scroll left indicator disappears when the oldest entry is reached.

<SCROLL> RIGHT - A scroll right indicator will appear on the right side of the screen when there are newer entries available for viewing. Press the right <SCROLL> button to view the newer entries. When the last entry is reached, the right scroll indicator disappears.

<#> POUND KEY – Repeatedly pressing the <#> key will always return the DDU to display mode with the last ANI received being shown.

<MONITOR> - This button always controls the monitor function of the radio. Press <MONITOR> to toggle the state of the monitor output to the radio.

<SEND> - Activates the radio PTT switch, placing the radio in transmit mode. This function applies only to units equipped with a microphone.

NUMBER KEYS – The number keys perform no function in display mode. They are used in menu mode for data entry.

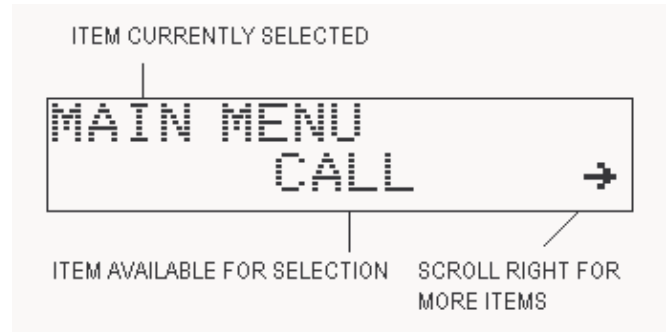
<*> STAR KEY – Pressing the <*> will place the DDU in Menu Mode at the main menu.

4.2 MENU MODE

The Menu Mode provides the method for configuring the DDU.

4.2.1 Navigating the Menus

Press the star key <*> while in Display Mode to place the unit into Menu Mode. Upon entry to Menu Mode, you will be in the Main Menu. The top line of the display indicates this. The bottom line displays an item available for selection, in this case the **CALL** command.

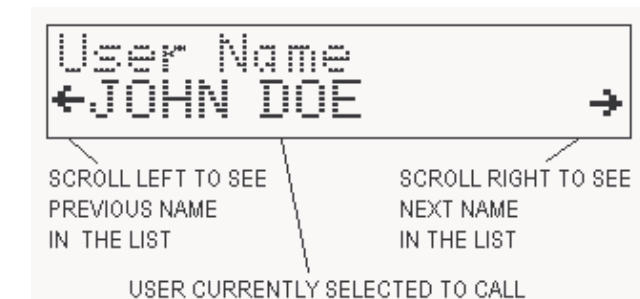


The scroll right symbol on the right side of the display indicates that additional items are available. Press the right <SCROLL> button to view the next available item. The scroll left symbol will then appear, indicating that the left <SCROLL> button may be used to go back to the previous item.

To select the displayed item, press the <SEND> button (the <SEND> button acts like an ENTER key when in menu mode). Upon selection, the name of the item will appear on the top line of the display. The bottom line will present additional items for selection. Press the <#> key to return to the previous selection.

4.2.2 Calling a Unit in the Database

To place a call to a unit in the database, first select **CALL** from the Main Menu. Press the right <SCROLL> button to display the first user in the database. Either the User ID will be displayed, or the User Name (alias) will be displayed. This is determined by the **Call Entry Mode** setting.



The left and right scroll indicators will appear on the bottom line. This is the **Select Mode**. Use the <SCROLL> keys to locate the desired user within the database. When the name is located, press the <SEND> key to place the call. The <#> key may be

used at any time prior to pressing <SEND> to cancel the call.

To locate a user in the database more quickly, you can enter one or more of the first few digits/letters of the User ID/Name prior to pressing the right <SCROLL> button. The DDU will search the database for users matching the first few digits/letters.

4.2.3 Calling a Unit Not in the Database

To place a call to a unit which is **not** in the database, start by selecting **CALL** from the Main Menu or by pressing a number key while in display mode. Instead of pressing the right <SCROLL> button, simply key the numeric ID of the user to be called using the keypad. Press <SEND> to initiate the call. The left <SCROLL> key may be used as a backspace key to correct any errors made during entry. The <#> key may be used at any time prior to pressing <SEND> to cancel the call.

4.2.4 Numeric vs. Alphanumeric Entry

There are two different data entry modes available on the DDU. As shipped from the factory, **Numeric** entry is the default mode when calling a unit. As numbers are entered, they appear on the bottom-left of the display. Pressing the <*> key while in numeric entry mode changes the mode to **Alphanumeric**.

In alphanumeric mode, you may type in letters and numbers as described in the next section. This allows you to type the name of a user in the database without having to scroll through the names. Alphanumeric data appears on the bottom line of the display as it is entered. You may make alphanumeric call entry the default mode by changing the **Call Entry Mode** setting in the **CONSOLE SETUP** menu.

4.3 USER DATABASE

The user database makes day-to-day operation of the DDU much easier. You can use easy-to-remember names instead of just numbers.

4.3.1 User Database Features

The primary purpose of the user database is to associate names with numbers. This way, when an ANI comes in, the name of the person can be displayed along with the ANI.

The DDU can store up to 137 names and ID numbers in its database. The DDU retains the database memory even when switched off.

4.3.2 Setting Up the User Database

Begin by compiling a list of names and ID numbers. Give some thought on how you are going to abbreviate the names since only 14 characters per name are available. To begin entering data, select **Add User** from the **USERS** menu.

4.3.3 Entering Alphanumeric Data

Entering alphabetic characters into the user database using the numeric keypad is easy. All of the letters of the alphabet appear above the numbers on the keypad. For example, the letters 'A' 'B' and 'C' appear on the <2> key.

Alphabetic characters are entered by pressing 2 digits. The first digit is the key with the desired letter appearing on it. The 2nd digit is the position of the letter on that key. For example, the code for the letter 'C' is 23 since it is the 3rd letter on the <2> key. The letter 'T' is the 1st letter on the <8> key, so its code is 81.

To enter numeric characters in an alphanumeric field, press the <0> key followed by the desired digit. Punctuation characters such as comma <,> and <-> do not appear on the keypad. Special codes have been assigned to allow entry of those characters. Please refer to the following chart

A=21	I=43	Q=72	Y=93	7=07	- =15
B=22	J=51	R=73	Z=94	8=08	= =16
C=23	K=52	S=74	1=01	9=09	* =17
D=31	L=53	T=81	2=02	0=00	/ =18
E=32	M=61	U=82	3=03	, =11	# =19
F=33	N=62	V=83	4=04	. =12	Spc=10
G=41	O=63	W=91	5=05	_ =13	
H=42	P=71	X=92	6=06	+ =14	

The code 10 is used to insert a space between characters.

4.3.4 Numeric vs. Alphanumeric Entry

There are two different data entry modes available on the DDU. **Numeric** entry is for entry of User ID codes. **Alphanumeric** entry is used when entering User Names to the database. When selecting a user in the database to be edited or deleted, either mode may be used.

As shipped from the factory, numeric is the default mode for selecting a unit to edit or delete. As numbers are entered, they appear on the bottom-left of the display. Pressing the <*> key while in numeric entry mode changes the mode to **Alphanumeric**. You may make this the default by changing the **Data Entry Mode** in the **CONSOLE SETUP** menu.

4.4 MISCELLANEOUS FEATURES

4.4.1 Locking and Unlocking Menus

The menu system incorporates a lock feature to prevent unauthorized personnel from changing the DDU configuration. The lock feature also serves to

simplify day-to-day operation of the unit. When the **LOCK** command is selected, all of the menus are disabled. The only item available will be **UNLOCK**. Selecting **UNLOCK** makes all of the menu items available again.

When locked, the unit is password protected so only authorized personnel may unlock the menus. As shipped from the factory, the security feature is disabled and the LOCK/UNLOCK options do not appear. To enable the feature and select a password, see the **SECURITY SETUP** menu item.

Remember your password! Once security is enabled and the menus are locked, the only way to unlock will be to use the password. If you do forget the password, contact Midian for the reset procedure.

4.4.2 Emergency/Status Display

Upon receipt of an emergency ANI, the emergency LED will blink and an alarm siren will sound (if enabled). Also, the ANI and the 'EMERGENCY' message are placed on the 1st line of the display, alternating every 2 seconds so that the user can be identified.

Up to 11 status messages can be programmed in total. All but status 9 and 10, are blank. Status 9 is reserved for EMERGENCY, and status 10 is reserved for DISABLED. Status message 0 is usually referred to as NO STATUS, and should be left blank. The actual text of the 10 status messages 0-10 may be programmed to any 10-character message you wish. Examples of which are EN-ROUTE, OFF DUTY, etc.

4.4.3 Repeater Access Control

The DDU can be interfaced to a repeater to limit access only to those users who are authorized. This is accomplished by requiring an ANI of the proper format before granting access. Access can be further restricted by requiring that the ANI match a User ID stored in the database. See **REPEATER SETUP** for more information.

5 MENU SYSTEM

The following sections describe the various functions of the menu system. Factory default settings are underlined.

5.1 CALL COMMAND

Allows you to place a call to a unit or units. You will be given the option to enter the 4-digit numeric ID of the unit you wish to call. If the user database is set up, you may use the right <SCROLL> buttons to go into **Select Mode** and find the name of the user to be called using the left and right <SCROLL> keys.

Alternatively, you can enter the User ID or User name in part or in whole. When entering the complete name or ID, simply press <SEND> to place the call. When

entering a partial name or ID, press the right <SCROLL> button and find the user you wish to call. Remember, you can use the <*> to toggle between numeric and alphabetic entry modes.

5.2 ACTIONS MENU

5.2.1 Prog Key 1 command

Reprograms security key code #1 over the air (OTAR feature). See **Set Key #** in the **ADMIN** menu to change the key. Simply enter the 4-digit code of the unit, or select from the database as if using the **CALL** command.

5.2.2 Prog Keys 1-2 command

Reprograms security key codes #1 and #2 over the air.

5.2.3 Prog Keys 1-3 command

Reprograms security key codes #1, #2, and #3 over the air.

5.2.4 Prog Keys 1-4 command

Reprograms all four security key codes #1 through #4 over the air.

5.2.5 Spy command

Commands a unit to self-key for a short time allowing you to listen in. The amount of time can be 0-90 seconds depending on how the scrambler is programmed. Simply enter the 4-digit code of the unit, or select from the database as if using the **CALL** command.

5.2.6 Query command

Commands a unit to report its ANI and status. This is sometimes referred to as a 'radio check'. Simply enter the 4-digit code of the unit, or select from the database as if using the **CALL** command.

5.2.7 Clear ANI Log command

Allows you to clear the ANI log without having to turn the unit off and back on.

5.3 LOCK OR UNLOCK COMMAND

Note The LOCK and UNLOCK menu options do not appear unless enabled in **SECURITY SETUP**.

Selecting LOCK will disable access to the rest of the menu system described in the following sections. Select UNLOCK to enable the entire menu system. You must enter a 4-digit password to unlock the menu system. See **SECURITY SETUP** for more information.

5.4 USERS MENU

5.4.1 Add User menu

Allows you to add a new user to the database. When

ADD USER is selected, you will be prompted to fill in the User ID and User Name for that user.

5.4.1.1 User ID field

This numeric field contains the primary ANI number assigned to the user's radio. The digits can be 0-9.

Range: 4 digits

Default: blank

5.4.1.2 User Name field

This alphanumeric field contains the name of the user associated with the user ID. A maximum of 14 characters may be used. See the **Entering Alphanumeric Data** section for more information.

Range: 0-14 characters

Default: blank

5.4.2 Edit User menu

Allows you to change information about a user. When you choose EDIT USER (or **Delete User**) the left and right scroll indicators will appear on the bottom line. This is the **Select Mode**. Use the <SCROLL> keys to locate the desired user within the database. When the name is located, press the <SEND> key to edit that user record.

To locate a user in the database more quickly, you can enter one or more of the first few digits/letters of the User ID/Name prior to pressing the right <SCROLL> button. The DDU will search the database for users matching the first few digits/letters.

5.4.3 Delete User menu

Allows you to delete a user record from the database. When DELETE USER is selected, you will be able to select the user you wish to delete in the same manner as if selecting a user to edit. Use the scroll buttons to find the user you wish to delete. Press <SEND> to delete the selected user. You will have to press <SEND> a second time to confirm. Press <#> to cancel if you change your mind.

5.5 ADMIN MENU

5.5.1 Set Key #1 setting

Allows you to modify security key code #1. The key is sent when one of the **Prog Key(s)** command is issued. All 8 digits must be entered.

Range: 8 digits

Default: 19981998

5.5.2 Set Key #2 setting

Allows you to modify security key code #2. The key is sent when one of the **Prog Keys** command is issued.

All 8 digits must be entered.

Range: 8 digits

Default: 22223456

5.5.3 Set Key #3 setting

Allows you to modify security key code #3. The key is sent when either the **Prog Keys 1-3** or **Prog Keys 1-4** command is issued. All 8 digits must be entered.

Range: 8 digits

Default: 33334567

5.5.4 Set Key #4 setting

Allows you to modify security key code #4. The key is sent when the **Prog Keys 1-4** command is issued. All 8 digits must be entered.

Range: 8 digits

Default: 44445678

5.5.5 Disable Unit command

Allows you to remotely disable a unit. This is useful if the unit is lost, stolen, or the user didn't pay their bill. Simply enter the 4-digit code of the unit, or select from the database as if using the **CALL** command.

5.5.6 Enable Unit command

Allows you to remotely enable a unit that was previously disabled. Simply enter the 4-digit code of the unit, or select from the database as if using the **CALL** command.

5.6 SETUP MENU

5.6.1 SOUNDS SETUP menu

5.6.1.1 Keypad Beep option

Turning this option on causes a beep to be heard for each key press.

OFF Keypad beeps off.

ON Keypad beeps on.

5.6.1.2 Beep On ANI option

Turning this option on will cause an alert beep to be heard every time a new ANI is received.

OFF Do not beep when ANI comes in.

ON Beep when ANI comes in.

5.6.1.3 Emerg Siren option

This causes a siren sound to be heard when an emergency ANI is received.

OFF Do not sound siren on emergency ANI.

ON Sound siren on emergency ANI.

5.6.1.4 Internal Speaker setting

Normally, the internal speaker is on and audio from the radio can be heard. If this is not desired, change this setting to OFF. The enabled beep features can still be heard however. If it is desired that absolutely no sound be heard from the console speaker, simply disconnect it.

OFF Internal speaker disabled.

ON Internal speaker enabled.

5.6.1.5 Auto Mute Speaker feature

This feature is designed to mute the internal speaker while an ANI is being received. It works in conjunction with the **Auto Mute Time**. When this feature is enabled, the internal speaker remains muted so long as there is no COR indication coming from the radio. When the COR indication goes active, the internal speaker will automatically unmute after the Auto Mute Time expires. **Note:** System sounds can still be heard during the mute period.

OFF Do not mute the internal speaker.

ON Mute/unmute speaker automatically.

5.6.1.6 Auto Mute Time setting

This is used in conjunction with the **Auto Mute Speaker** feature. This specifies how long the DDU internal speaker will remain muted after the COR input goes active. This value should be set to allow for any key-up delay of the transmitting unit as well as the time it takes for the ANI to complete.

Range: 0000 to 4000 milliseconds

Default: 0600 milliseconds

5.6.2 TIME SETUP menu

In order for the correct time to be displayed, the time clock must be set. The unit **must remain switched-on** at all times in order to keep track of the time. The clock must be set each time the unit is powered up.

5.6.2.1 Hour setting

Set the hour of the day in 24-hour format. Enter two digits.

Range: 00-23

Default: 00

5.6.2.2 Minute setting

Set the minutes past the hour. Enter two digits.

Range: 00-59

Default: 00

5.6.3 CONSOLE SETUP menu

5.6.3.1 Data Entry Mode setting

Determines if numeric entry or alphanumeric data entry is the default mode when selecting a record. The mode of entry can be toggled by pressing the <*> key during data entry (except when entering ANI's).

NUMERIC Start in numeric only mode.

ALPHA Start entry in alphanumeric mode.

5.6.3.2 Ignore Nonuser option

Turning on this option helps prevent the display of false decodes by ignoring ID's which do not appear in the user database. This can also be used to restrict access to a repeater to only those ID's in the database.

See **REPEATER SETUP** for more information.

OFF Display ID's not in database.

ON Ignore ID's not in database.

5.6.3.3 Fast Scrolling setting

Fast Scrolling allows for faster navigation through the menu system. The DDU can also animate the scrolling of the screen from side-to-side. This provides positive feedback in response to scrolling through menus and the ANI log. If this effect is desired, Fast Scrolling can be disabled.

OFF Animate scrolling from side to side.

ON Scroll at fast speed.

5.6.3.4 Contrast setting

Allows the display contrast to be adjusted for best viewing.

LOW Low contrast setting.

HIGH High contrast setting.

5.6.3.5 Mic. Option setting

Selects which type of optional microphone accessory is attached to the DDU. This is necessary so that the DDU knows how to treat the external signals.

NONE No microphone.

GOOSENECK Gooseneck style microphone.

PADDLE Paddle style desktop microphone.

HANDSET External handset.

5.6.3.6 Printer Option

The DDU, if ordered with the printer cable option, can log the ANI traffic to a serial printer. The printer must have a print buffer and a standard RS-232 port. It must be configured for 9600 baud, 8 data bits, 1 stop bit and no parity. In order to send data to the printer, this

option must be on.

OFF Do not send data to printer.
ON Send data to printer.

5.6.4 SECURITY SETUP menu

5.6.4.1 Security setting

Allows the security option to be turned on and off. If turned off, the **LOCK/UNLOCK** menus will not appear.

ON Enable security feature.
OFF Disable security feature.

5.6.4.2 Password setting

Sets the password required to UNLOCK the menu system when the Security is turned on. Must be 4 numeric digits.

Range: 4 digits
Default: 0000

5.6.5 ENCODER SETUP menu

5.6.5.1 Keyup Delay setting

This sets the *Key-Up Delay*, also known as *Front Porch Time*. This is the amount of time the DDU will wait after asserting PTT before sending data over the air. This time allows for delays introduced by repeaters and decoding of squelch control signals such as CTCSS.

Range: 0 to 9 x100 milliseconds
Default: 4 x 100 milliseconds

5.6.5.2 Preamble setting

Normally, the DDU will send just carrier or 'dead air' during the *Keyup Delay* period. Optionally, it can send a continuous preamble tone during this time. This is provided primarily for voters.

OFF no preamble during keyup delay
ON preamble sent during keyup delay

5.6.5.3 COR Polarity setting

Determines which state of the COR (carrier detect) input is considered the active state. When COR is active, the radio channel is busy. If the radio is using PL/CTCSS, it is recommended that the COR Input be connected to a point which goes active when PL is detected.

The COR input is used in conjunction with the **Busy Lockout** feature. If not connecting the COR input, do not enable Busy Lockout.

LOW Channel is busy when COR is 0V.
HIGH Channel is busy when COR is 5V.

5.6.5.4 Busy Lockout option

This option prevents the DDU from transmitting on a busy channel. If this option is ON, the unit will not transmit when the COR input is in the active state. The DDU will wait until the channel is clear and then transmit. When this option is OFF, the unit will transmit regardless of the state of the COR input.

OFF Transmit regardless of COR input.
ON Do not transmit when channel busy.

5.6.5.5 System ID setting

The scramblers will not accept commands from the DDU unless the System ID matches that programmed into the scramblers. The System ID in the scramblers is set at the factory. Normally, the system ID is 1230 unless a custom System ID was specified when the scramblers were ordered. Only change this setting if you know you have a custom System ID.

Range: 4 digits
Default: 1230

5.6.6 REPEATER SETUP menu

5.6.6.1 Repeat Control option

Allows the DDU to control access to a repeater. Causes the DDU to assert a PTT output to a repeater upon receipt of either: (1) any ANI in the format decoded by the DDU or (2) a valid User ID in the user database. To restrict repeater access to valid User ID's only, the **Ignore Nonuser** option in the **CONSOLE SETUP** must be turned ON. Otherwise, any incoming ANI of the proper format will be considered valid.

Other possible uses of the Repeat Control option include operation of a horn relay or the enabling of a PA speaker. Repeater control output can either be the PTT output, or the MONITOR output (see below).

OFF Repeater control disabled.
ON Repeater control is enabled.

5.6.6.2 Validate Time setting

This sets how long after COR becomes active, that the repeater will be keyed prior to receiving a valid decode. This allows time for the incoming ANI to be broadcast by the repeater before it has been validated. If no ANI (or valid User ID) has been decoded during this time, the repeater will be un-keyed. The repeater will remain un-keyed until COR goes inactive.

If set to 0, the repeater will not be keyed until after the ANI (or valid User ID) has been decoded.

Range: 00 to 99 10ths of a second (0.0 - 9.9 s)
Default: 10 10ths of a second (1.0 second)

5.6.6.3 PTT Hang Time setting

Once validation has occurred, this sets how long the repeater will remain keyed after COR goes inactive. Once the hang timer expires, a new validation will be required to access the repeater.

Range: 00 to 99 10ths of a second (0.0 - 9.9 s)
Default: 20 10ths of a second (2.0 seconds)

5.6.6.4 Hang Reset setting

This setting specifies what is required to reset the PTT hang timer before it expires. This can either be COR or COR+ANI. When set to COR, the hang timer will be reset if COR goes active prior to expiration, allowing the conversation to continue without a new validation. When set to COR+ANI, a new valid ANI will also be required to keep the repeater open.

COR Reset hang timer if COR goes active before the hang time expires.

COR+ANI Require both COR and an ANI (or valid User ID) to reset the hang timer before expiration.

5.6.6.5 Repeater Out setting

This setting specifies which output is used to put the repeater into transmit mode when Repeat Control is enabled.

PTT PTT output used to key repeater in Repeat Control mode.

MONITOR MONITOR output used to key repeater in Repeat Control mode.

5.6.7 STATUS SETUP menu

5.6.7.1 Status 0 Msg setting

There is a status message for each of the digits 0 through 9. These correspond to the first digit of a status/location packet sent by the TVS-2. Emergency packets always begin with the digit 9 and thus status message 9 should always be associated with emergency status (though the text may be changed). A special status code is sent by the scrambler when it has been remotely disabled. Status 10 is reserved for this code. Each status message may be up to 10 alphanumeric characters. If not using status messages, or if certain digits are not used, simply leave those blank.

Range: 0-10 characters
Default: blank

5.6.7.2 Status 1 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.3 Status 2 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.4 Status 3 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.5 Status 4 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.6 Status 5 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.7 Status 6 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.8 Status 7 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.9 Status 8 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: blank

5.6.7.10 Status 9 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters
Default: EMERGENCY

5.6.7.11 Status 10 Msg setting

See Status 0 Msg setting above.

Range: 0-10 characters

Default: DISABLED

5.6.8 UTILITIES menu

5.6.8.1 *Reset Defaults*

This will reset all the parameters listed above to the factory default settings. The contents of the user database will not be affected.

5.6.8.2 *Clear Database*

This will clear the user database of all ID's and User Names. The contents of the other parameters listed above will not be affected.

5.6.8.3 *Factory Debug*

This is used by the factory for product testing. **Do not select this function unless directed to do so by Midian Technical Support.** Damage to the unit may result.

6 SYSTEM ERROR MESSAGES

CHANNEL BUSY

Reason: An attempt was made to transmit on a busy channel with busy lockout enabled.

Solution: Wait until the channel is clear before transmitting.

DATABASE EMPTY

Reason: An attempt was made to edit or delete a user when the database was empty.

Solution: These functions do not apply when the database is empty.

DATABASE FULL

Reason: An attempt was made to add a user to the database and there is no more room. The maximum number of user aliases of 137 cannot be exceeded.

Solution: Remove any old user names that are no longer in service. If this is not possible, contact Midian to learn about our Computer Aided Dispatch (CAD) fleet management systems which can handle many more users.

DATABASE ERROR

Reason: One or more entries in the user database has been corrupted. This can happen if power is lost at the exact time the database is being updated. Any corrupted records will be blanked-out and must be re-entered.

Solution: Cycle power to the unit. This should clear the error. If the error message continues to come up, contact Midian technical support.

DUPLICATE ID

Reason: An attempt was made to add a user ID to the database which is already in the database. Each user ID in the database must be unique.

Solution: Choose a unique user ID for each user. If it is necessary to edit the user record, use the edit menu.

EE CHKSUM ERR

Reason: The configuration settings stored in EEPROM have been corrupted. This can happen if power is lost at the exact time a parameter is being updated. All configuration settings will be set back to defaults. The user database should not be affected.

Solution: Cycle power to the unit. This should clear the

error. If the error message continues to come up, contact Midian technical support.

EE WRITE FAIL

Reason: The EEPROM chip or connections to it have failed.

Solution: Contact Midian for instructions on getting the unit repaired.

MODEM TIMEOUT

Reason: The LTR input is being used and a channel could not be acquired on the trunking system. The DDU will wait about 4.5 seconds for the LTR input to go high before issuing this message and aborting the command in progress.

Solution: Try issuing the command again.

Reason: The modem (encode/decoder) section of the DDU is not responding to commands. This could be the result of a hardware failure.

Solution: Cycle power to the unit, Reset default parameters via the UTILITIES menu. Cycle power to the unit once again. If the error message continues to come up, contact Midian technical support.

NOT FOUND

Reason: There is no entry in the user database that matches the data entered.

Solution: When selecting a user to edit or delete, the name or the ID can be entered in whole or in part. When entering a partial name or ID, press the right <SCROLL> button to search the database for the first partial match. Press <SEND> only if the whole ID or name has been entered. There may be no entry in the database that matches in whole or in part. In that case, the user is not in the database.

7 MENU SYSTEM MAP

MAIN MENU

CALL

ACTIONS

- Prog Key 1
- Prog Keys 1-2
- Prog Keys 1-3
- Prog Keys 1-4
- Spy
- Query
- Clear ANI Log

LOCK/UNLOCK

USERS

- Add User
- Edit User
- Delete User

ADMIN

- Set Key #1
- Set Key #2
- Set Key #3
- Set Key #4
- Disable Unit
- Enable Unit

SETUP

SOUNDS SETUP

- Keypad Beep
- Beep On ANI
- Emerg Siren
- Int. Speaker
- Auto Mute Spk
- Auto Mute Time

TIME SETUP

- Hour
- Minute

CONSOLE SETUP

- Data Entry Mode
- Ignore Nonuser
- Fast Scrolling
- Contrast
- Mic. Option
- Printer Option

SECURITY SETUP

- Security Password

ENCODER SETUP

- Keyup Delay
- Preamble
- COR Polarity
- Busy Lockout
- System ID

REPEATER SETUP

- Repeat Control
- Validate Time
- PTT Hang Time
- Hang Reset
- Repeater Out

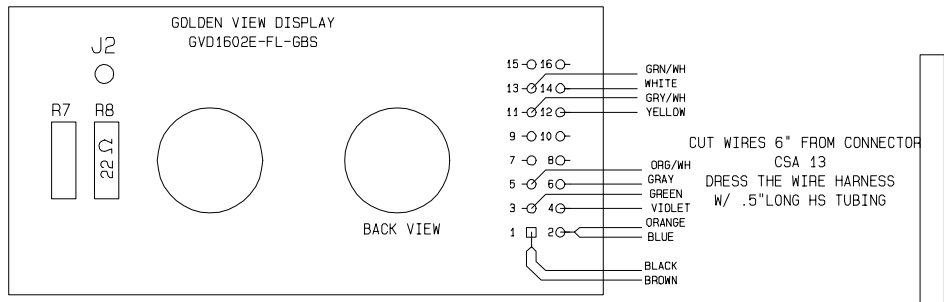
STATUS SETUP

- Status 0 Msg
- Status 1 Msg
- Status 2 Msg
- Status 3 Msg
- Status 4 Msg
- Status 5 Msg
- Status 6 Msg
- Status 7 Msg
- Status 8 Msg
- Status 9 Msg
- Status 10 Msg

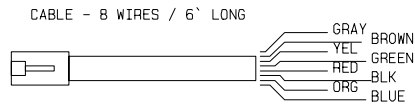
UTILITIES

- Reset Defaults
- Clear Database
- Factory Debug

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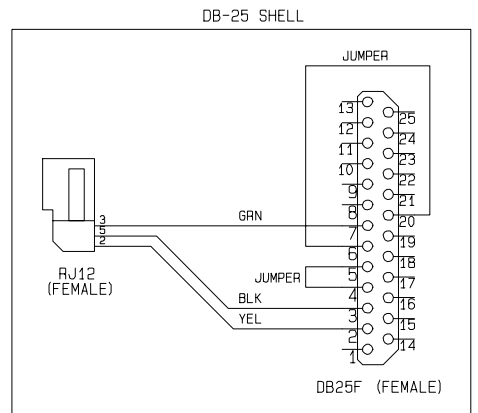
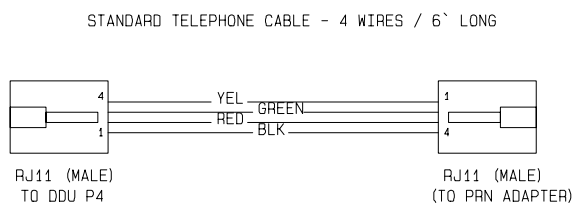


REMOVE EXISTING RES R8. REPLACE WITH 22 Ohm.
INSTALL JUMPER J2 WHEN THERE IS PROVISION FOR IT.



MIDIAN ELECTRONICS				
DATE	MAY 00	DWN.BY	AIB	APPR.
DESIGN	CJS	REV.	APR 9/03 AB	

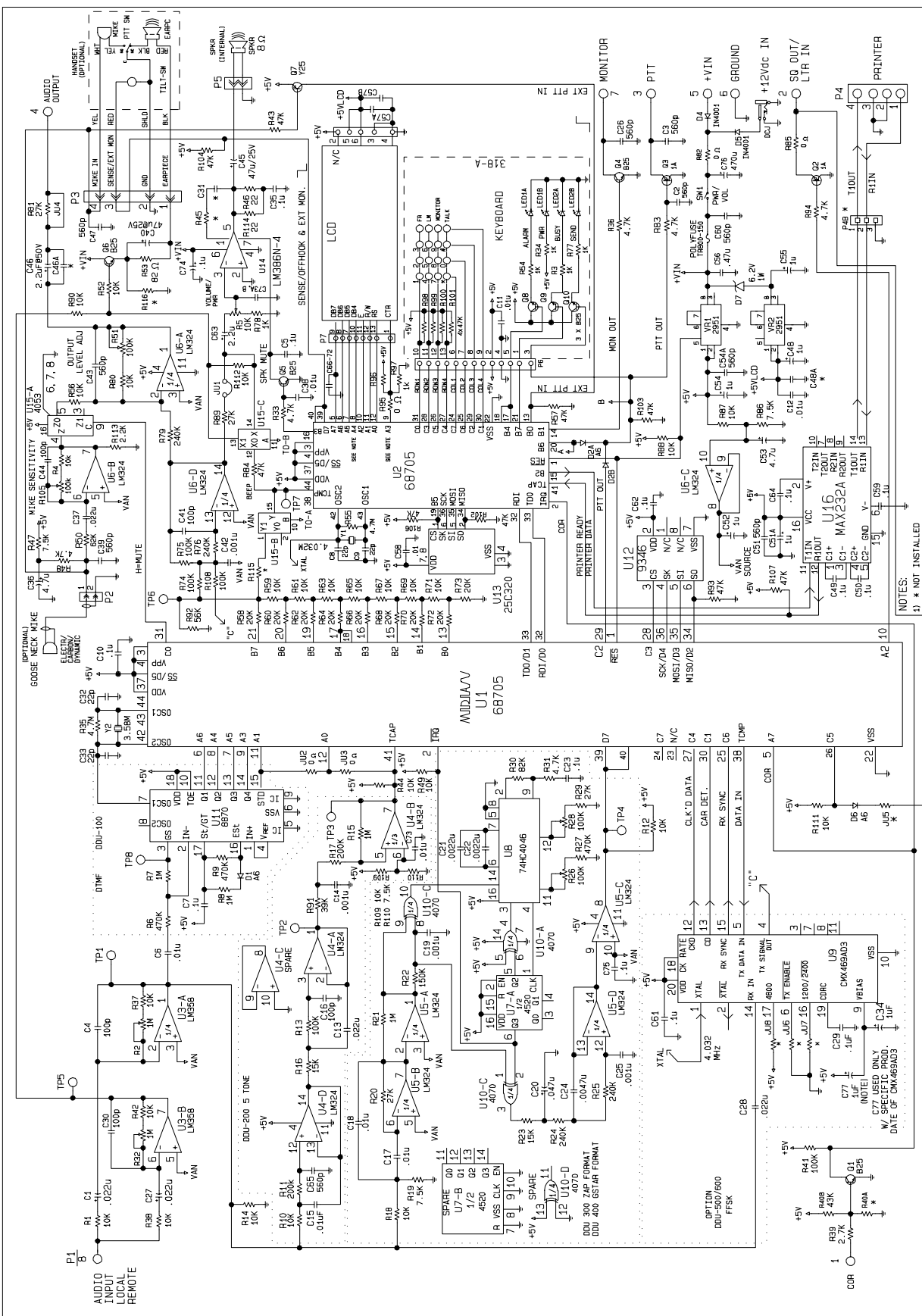
DDU/PDE1 PAGING & DIALING ENCODER	REV. B	FILE NO. 318B.SCH
SCHEMATIC	SHEET	DWG.NO. 318.CHD
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NOTE: BLUE, RED AND WHITE WIRES ARE NOT USED

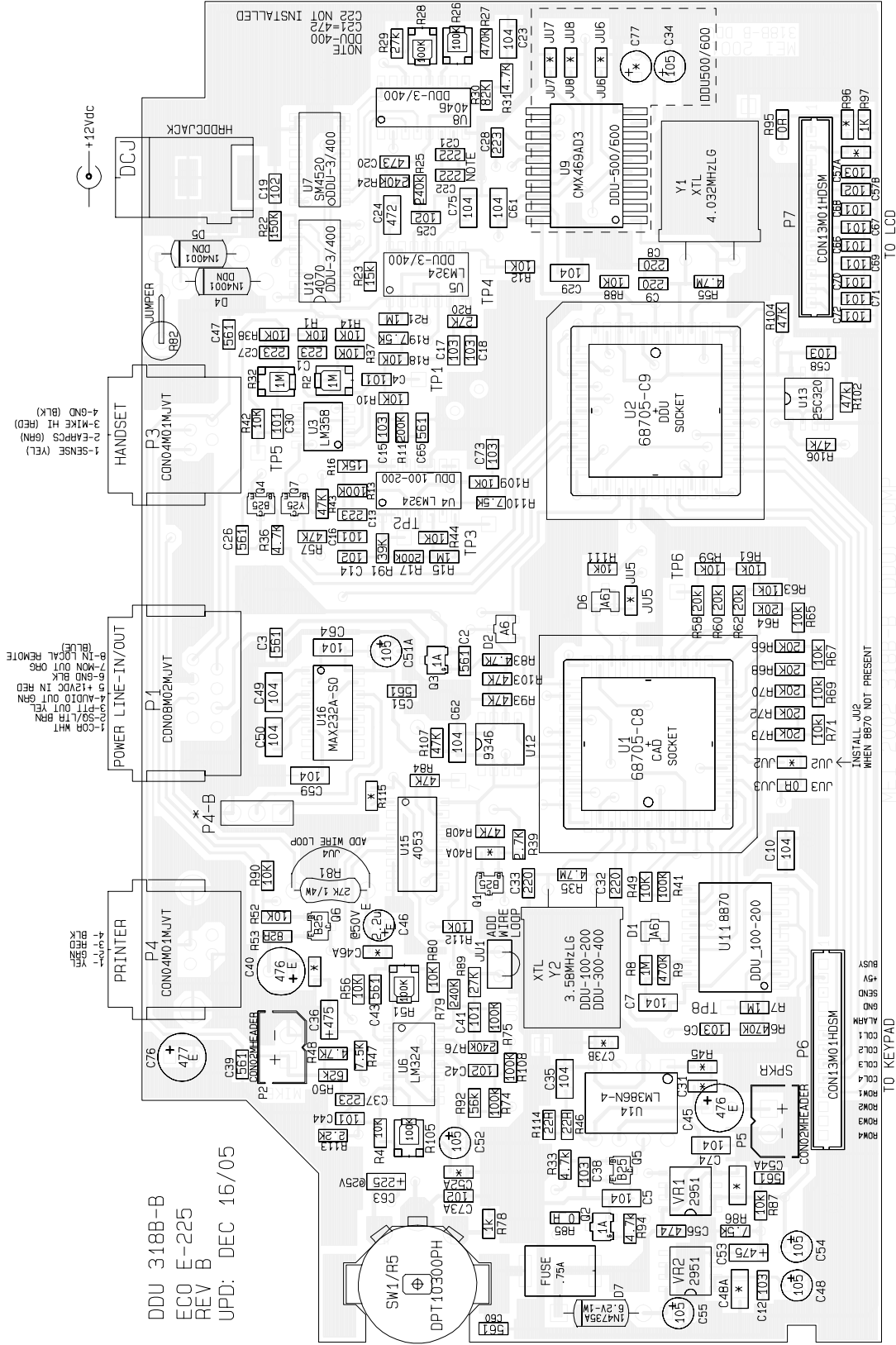
MIDIAN ELECTRONICS				
DATE	6/02	DWN.BY	AIB	APPR.
DESIGN	BB	REV.	APR 9/03 AB	

DDU/PDE1 PAGING & DIALING ENCODER	REV. B	FILE NO. 318B.SCH
SCHEMATIC	SHEET	DWG.NO. 318.CHD
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DATE MAY 2K DESIGN J.S.		ORN BY AIB REV. DEC 16/05 AB		APPR. COPYRIGHT © 2006		FILE NO. 318RB SCH		SHEET ONE NO. 318.CHO	
DISPATCH DISPLAY UNIT		Schematic		E-225		REV.		318RB SCH	

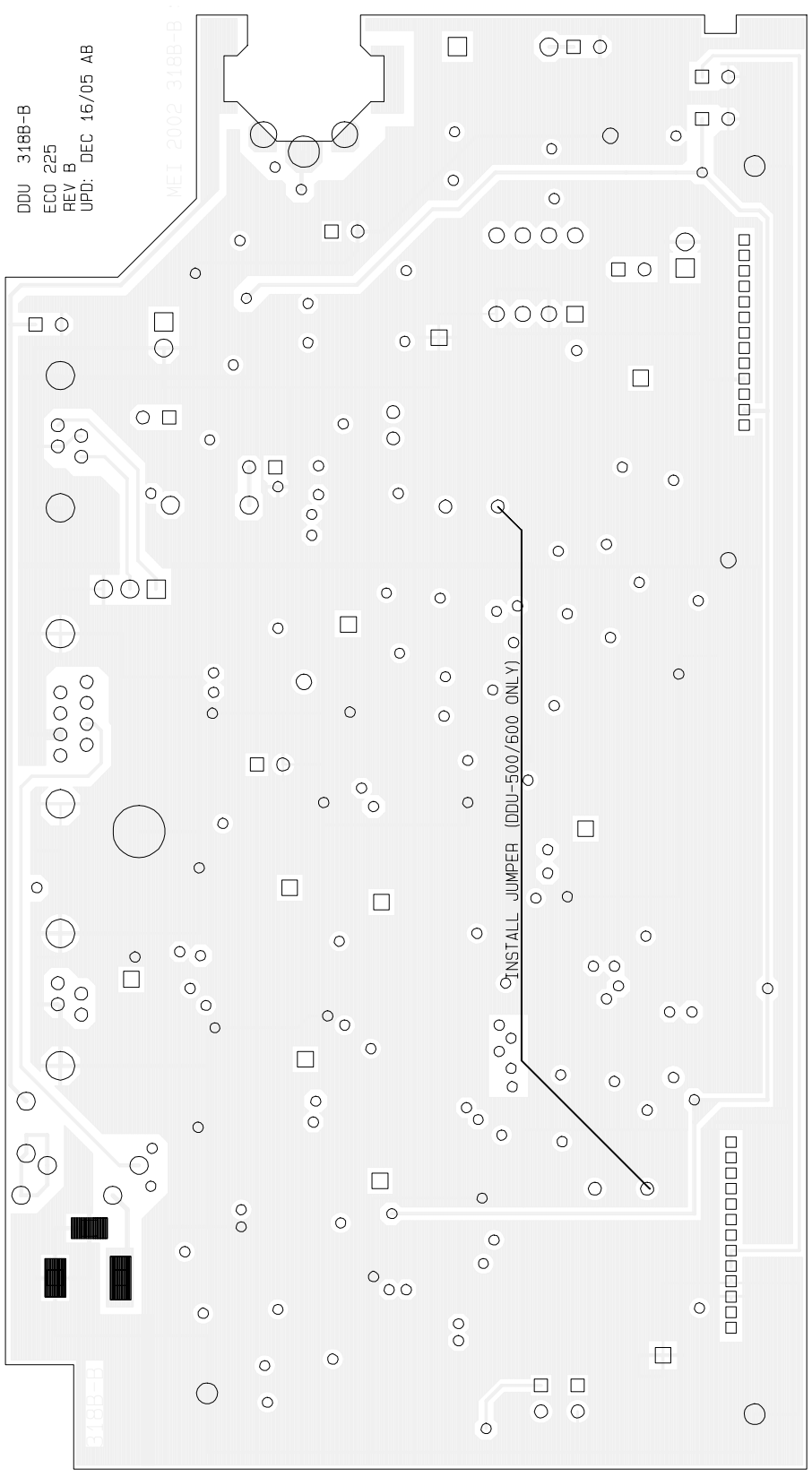
NOTES:
1) * NOT INSTALLED



MIDIAN ELECTRONICS		DDU SERIES		REV.	FILE NO.
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DESIGN		PICTORIAL		SHEET	DMG.NO.
CJS		REV. DEC 16/05 AB		ECO	318.CHP
				E-225	

TO LCD

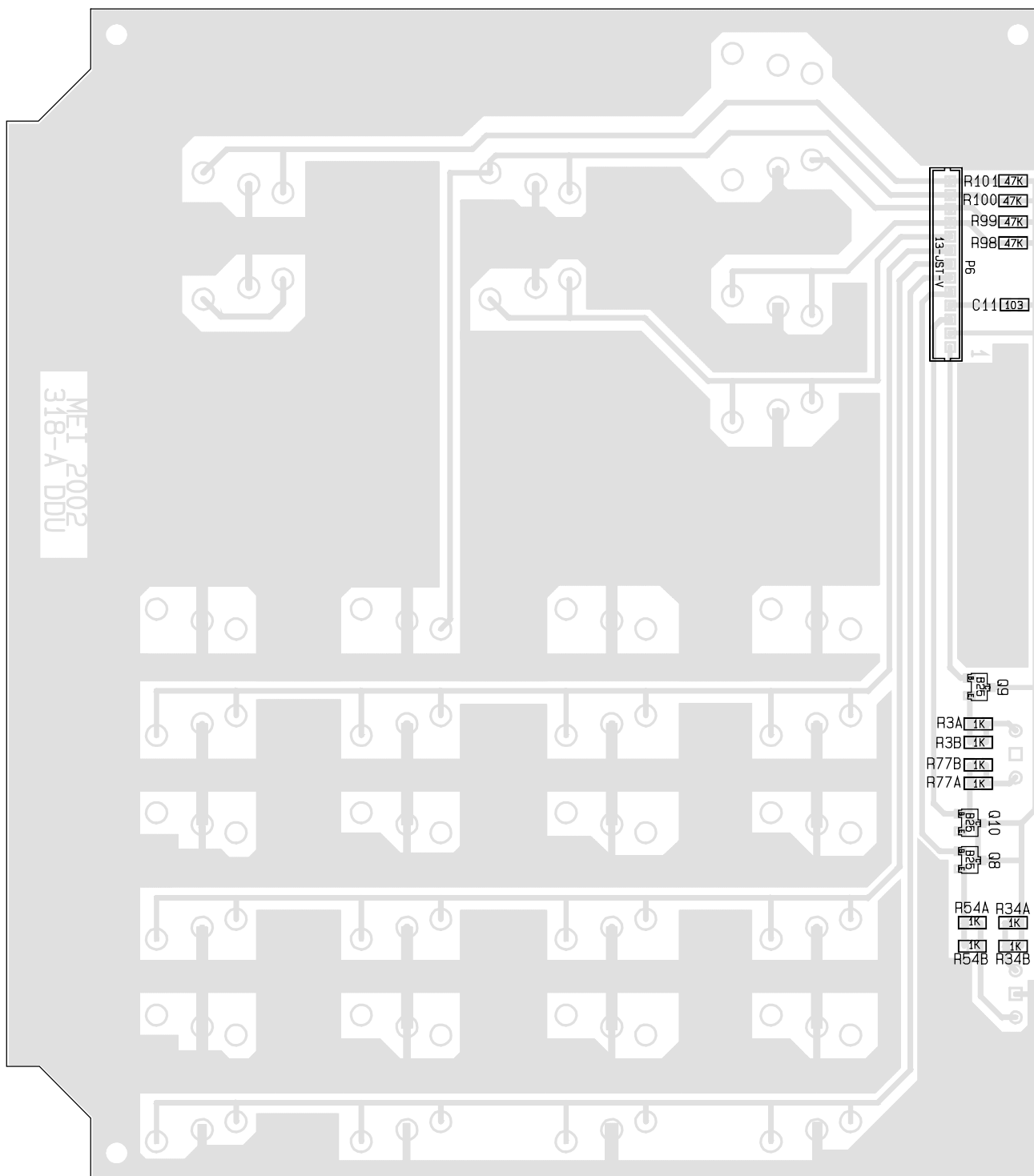
TO KEYPAD



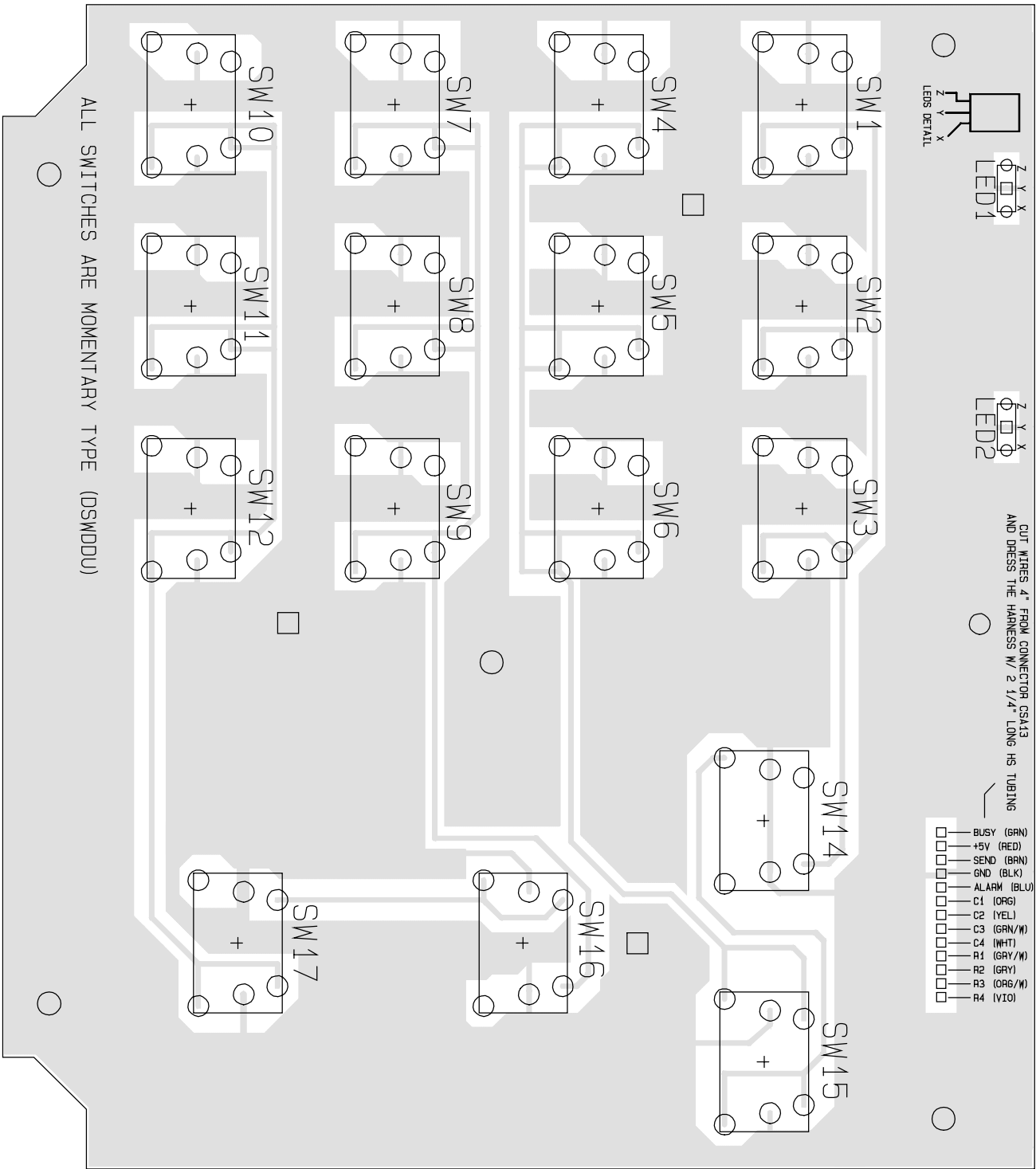
DDU 318B-B
ECO 225
REV B
UPD: DEC 16/05 AB

MEI 2002 318B-B

MIDIAN ELECTRONICS		DDU SERIES		REV.	FILE NO.
DATE MAY 2K		DISPATCH DISPLAY UNIT		B	318B.PCB
DESIGN CJS		PICTORIAL		SHEET	DMG.NO.
REV. DEC 16/05 AB		COPYRIGHT © 2005		ECO	318.CHP
APPR.				E-225	



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DATE	MAY 2K	DWN.BY	AB	APPR.
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