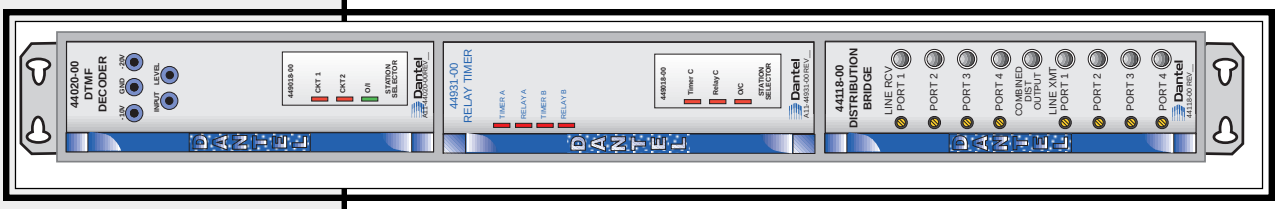
A18-05774-XX VNET/ORDER WIRE INTERFACE SHELF



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About this Practice:

This practice has been reissued to:

- This is a new document.

Reissued Practices: Updated and new content can be identified by a banner in the right margin.

UPDATED

Issue date: May 1998

CAUTION

- Install or remove modules from the shelf only when the power is off. If you install a module in the shelf with the power on, the internal circuitry may suffer damage and the product warranty will be void.
- Remove and install circuit boards only in a static-safe environment (use antistatic wrist straps, smocks, footwear, etc.).
- Keep circuit boards in their antistatic bags when they are not in use.
- Do not ship or store circuit boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.
- For more complete information on electrostatic discharge safety precautions, refer to Bellcore™ Technical Reference # TR-NWT-000870.

ORDERING INFORMATION

NOTE: This section lists the different options available for this product. To order any of the available options, contact Dantel Inside Sales through our toll-free number, **1-800-432-6835.**

OPTION NUMBER	FEATURES
A18-05774-00	Wired only. No modules.
A18-05774-01	Equipped VNET Interface Shelf

GENERAL DESCRIPTION

This unit is designed to be a 4 wire, DTMF controlled PBX interface that will output battery or ground on its M lead and it will accept battery or ground on its E lead depending upon the user's requirements.

The unit is designed so that the caller, from the PBX side, will shout down to the desired remote after the VNET interface has been accessed. No DTMF signaling to the remote Order Wire stations will be used. The DTMF signaling is only used to get access for the order wire to the PBX.

The user calling from the order wire side of the system will dial 3 digits plus "*" to gain access to the order wire. The same 3 digits plus "#" will release the system. Either party hanging up will release the system. The unit will operate from -21 to -56 volts with levels of +7 to -16 dBm on any port, using the Dantel 44118 VF bridge. In this application, port 4 (which is used for PBX acces) will be set for -6dBm on the RX input and 0dBm on the TX output. All other ports will be used for the order wire and will be +7 dBm on the RX and -16 dBm on the TX.

The OW interface will be made up of:

- An A17-44020-01, comprised of the A12-49018-00 Station Selector combined with the A11-44020-00 DTMF decoder in slot 1 (J1).
- An A17-44931-01, comprised of the A11-44931-00 timer combined with the B12-49031-00 sub assembly timer in slot 2 (J2).
- The A17-44118-00 4W/4W VF bridge in slot 3 (J3).

With this application, there is no signal tone sent to the PBX telling the user that he has access to the OW system after he has dialed the access number for the OW interface. The user will shout down for the desired station required.

INSTALLATION

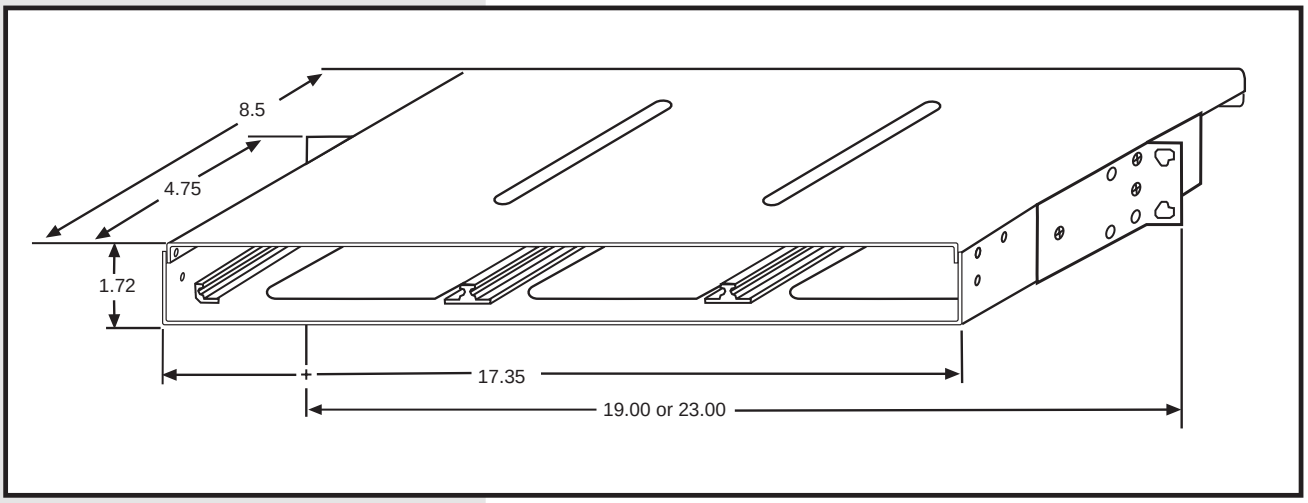
This section consists of:

1. Equipment mounting
2. Wiring
3. Switch and strap settings
   - ♦ 44020 DTMF Decoder
   - ♦ 49018 Station Selector subassembly
   - ♦ 44931 Relay Timer
   - ♦ 49031 Relay Timer subassembly
   - ♦ 44118 Bridge
4. Alignment procedure

EQUIPMENT MOUNTING

Install the shelf in an equipment rack using the hardware provided. Refer to Fig. 1.

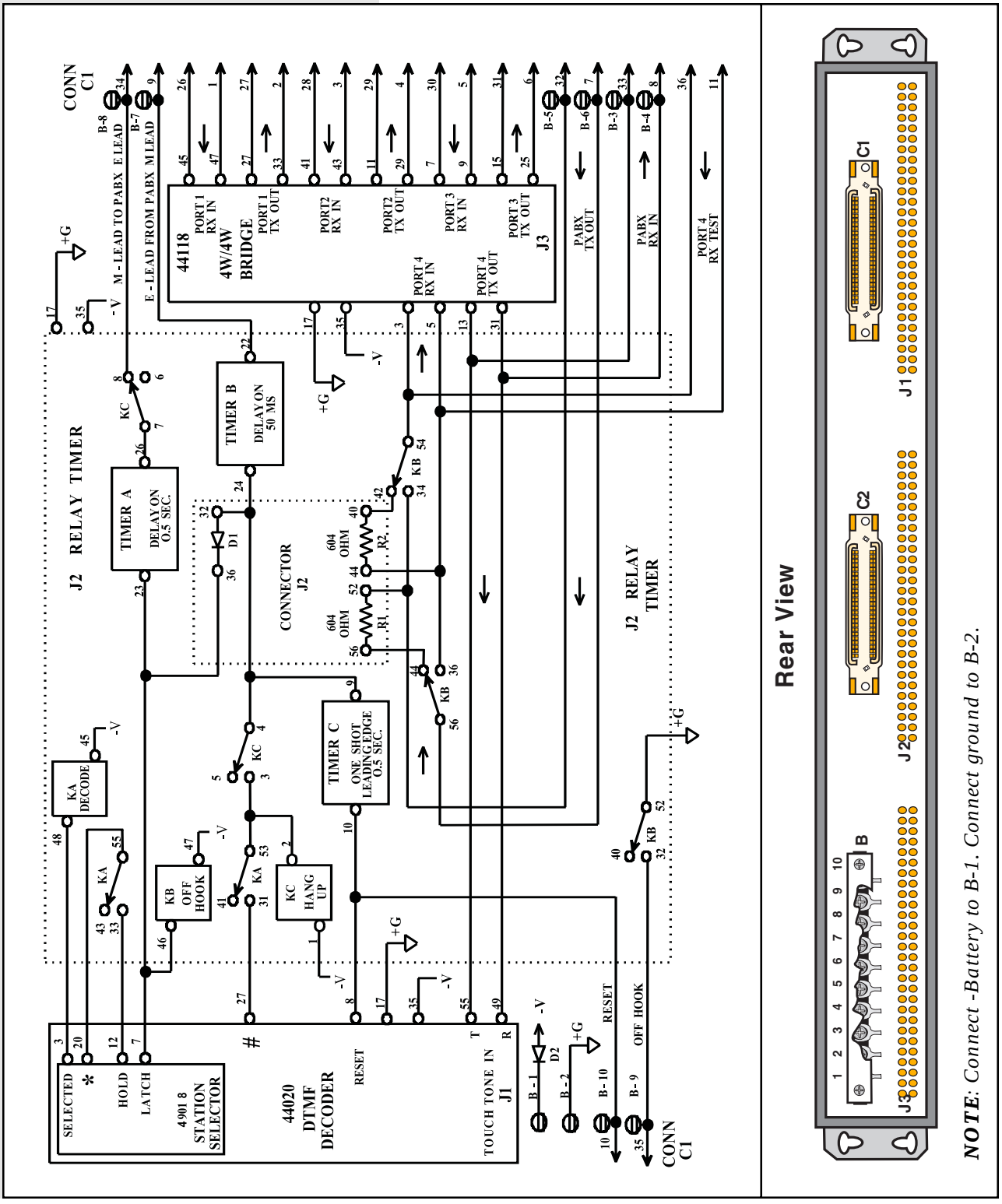
FIG. 1 - MOUNTING DIMENSIONS



WIRING

Wire the shelf as required. Refer to Fig. 2 for a functional schematic of the unit.

FIG. 2 - FUNCTIONAL SCHEMATIC, 05774 SHELF



Switch and Strap Settings

Refer to Tables A through D and Figs. 3 through 7 to set the straps and switches on the modules.

Table A - Switch and Strap Settings, 44020 DTMF Decoder

OPTION	SETTINGS
Input Impedance Bridging	BRDG
Input Level 0 to -20 dBm	0
Dial Tone Filter In	DTF IN
Dialing 12-digit	12 DGT
Auxiliary Output * and #	#2, *2, #1, *1
* or A Nonlatching	PLS
# or C Nonlatching	PLS

Fig. 3 - Switch and Strap Locations, 44020 DTMF Decoder

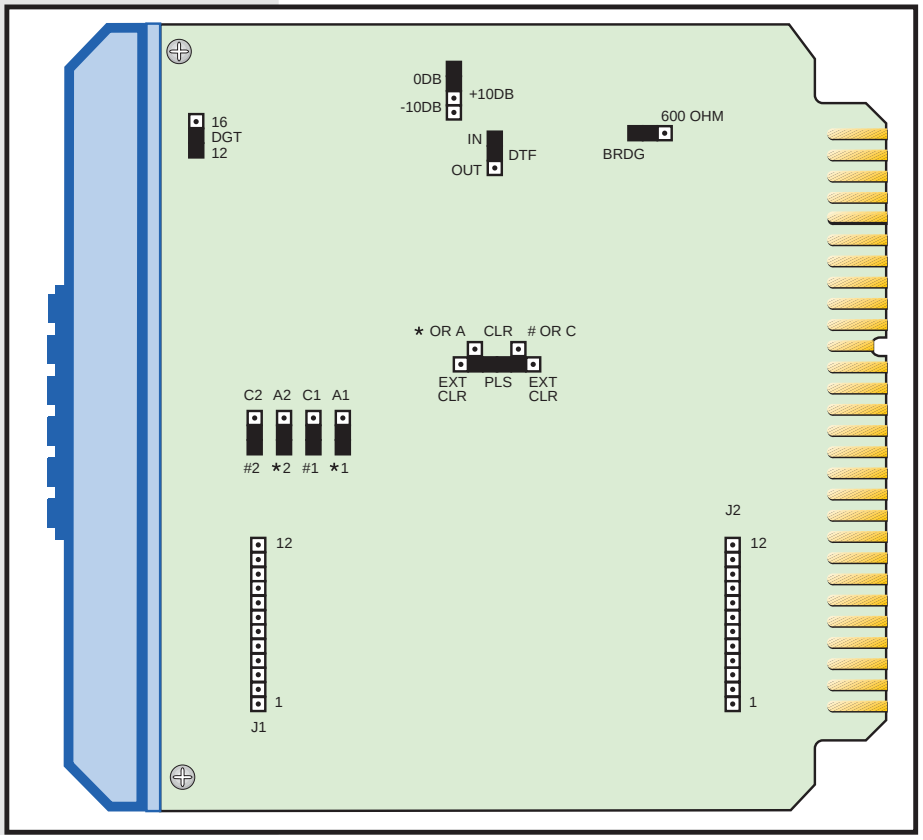


TABLE B - SWITCH AND STRAP SETTINGS, 49018 STATION SELECTOR SUBASSEMBLY

OPTION	SETTINGS
Reset	
3 second reset	IN
Number of Digits	
3-digit Codes	Digit 3
Address Code 1	
First Digit	S1 = 1 (or as required)
Second Digit	S2 = 2 (or as required)
Third Digit	S3 = 3 (or as required)
Address Code 2	
First Digit	S4 = 0 (any unused code)
Second Digit	S5 = 0 (any unused code)
Third Digit	S6 = 0 (any unused code)
Busy	
SET	SET A
CLEAR	CLR C

FIG. 4 - STRAP LOCATIONS, 49018 STATION SELECTOR SUBASSEMBLY

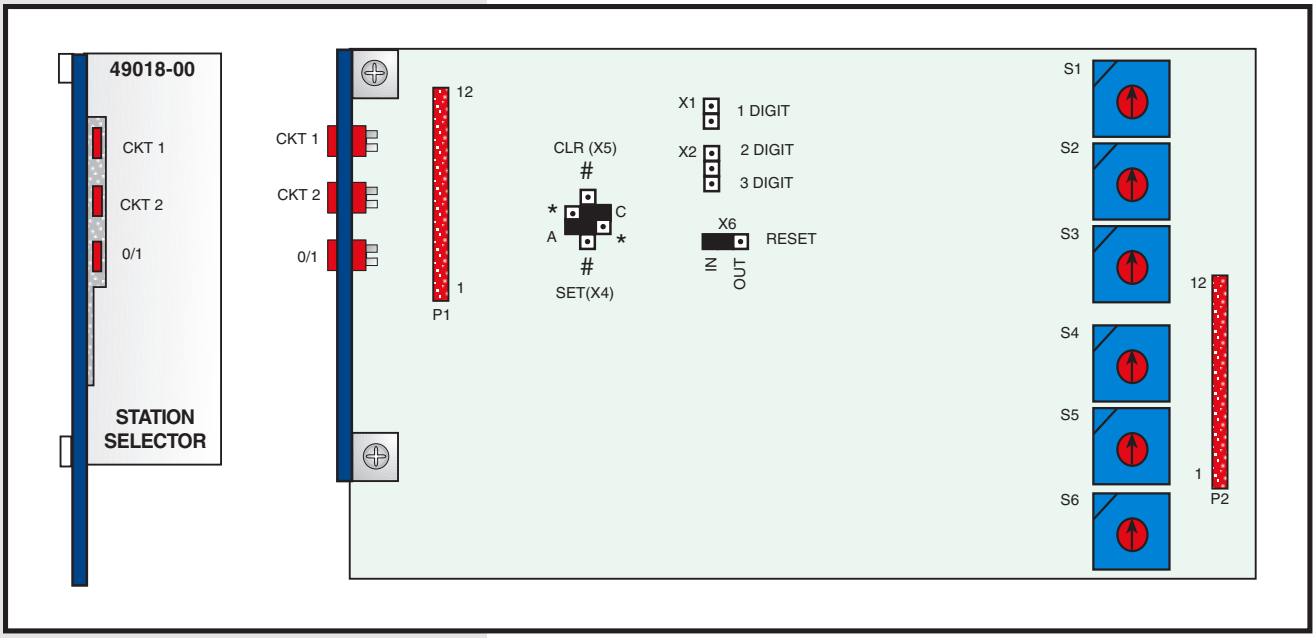


TABLE C - SWITCH AND STRAP SETTINGS, 44931 RELAY TIMER AND 49031 SUBASSEMBLY

TIMER A	
RO/NO	RO
RTI/RTO	RTI
TC/IC	TC
NI/RI	RI
IG/IB	IG
C1, C2, C3	C1
GO/BO (S1)	GO
DIP Switches (S2)	0111 1111
Relay A	48V

TIMER B	
RO/NO	RO
RTI/RTO	RTI
TC/IC	TC
NI/RI	NI
IG/IB	IB
C1, C2, C3	C1
GO/BO (S3)	GO
DIP Switches (S4)	1111 1111
Relay B	48V

TIMER C (SUBASSEMBLY	
RO/NO	NO
RTI/RTO	RTO
TC/IC	IC
NI/RI	RI
IG/IB	IG
C1, C2, C3	C1
GO/BO (S1)	GO
DIP Switches (S2)	0111 1111
Relay	48V
DC-HI/AC/DC-LO	AC
C8 IN/OUT	OUT
K1-2 IN/OUT	IN
K1-5 IN/OUT	IN

FIG. 5 - SWITCH AND STRAP LOCATIONS, 44931 RELAY TIMER

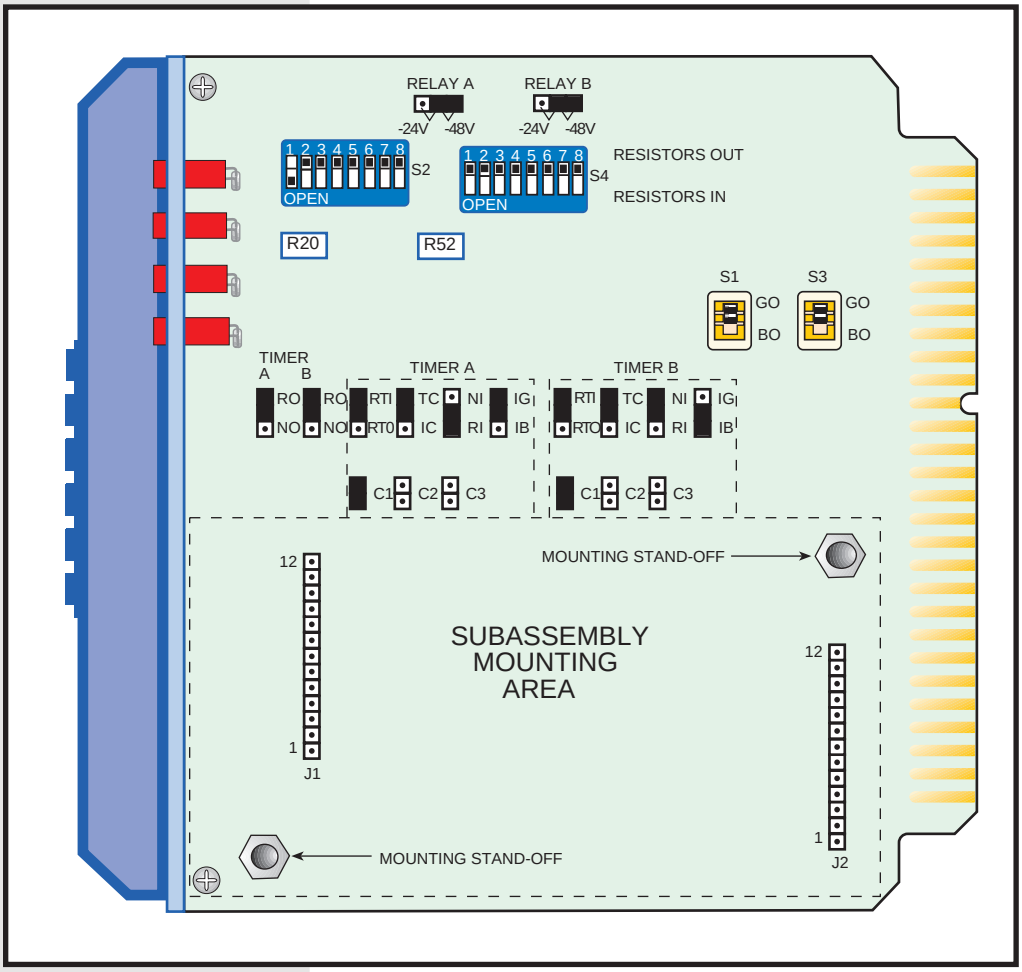


FIG. 6 - SWITCH AND STRAP LOCATIONS, 49031 RELAY TIMER SUBASSEMBLY

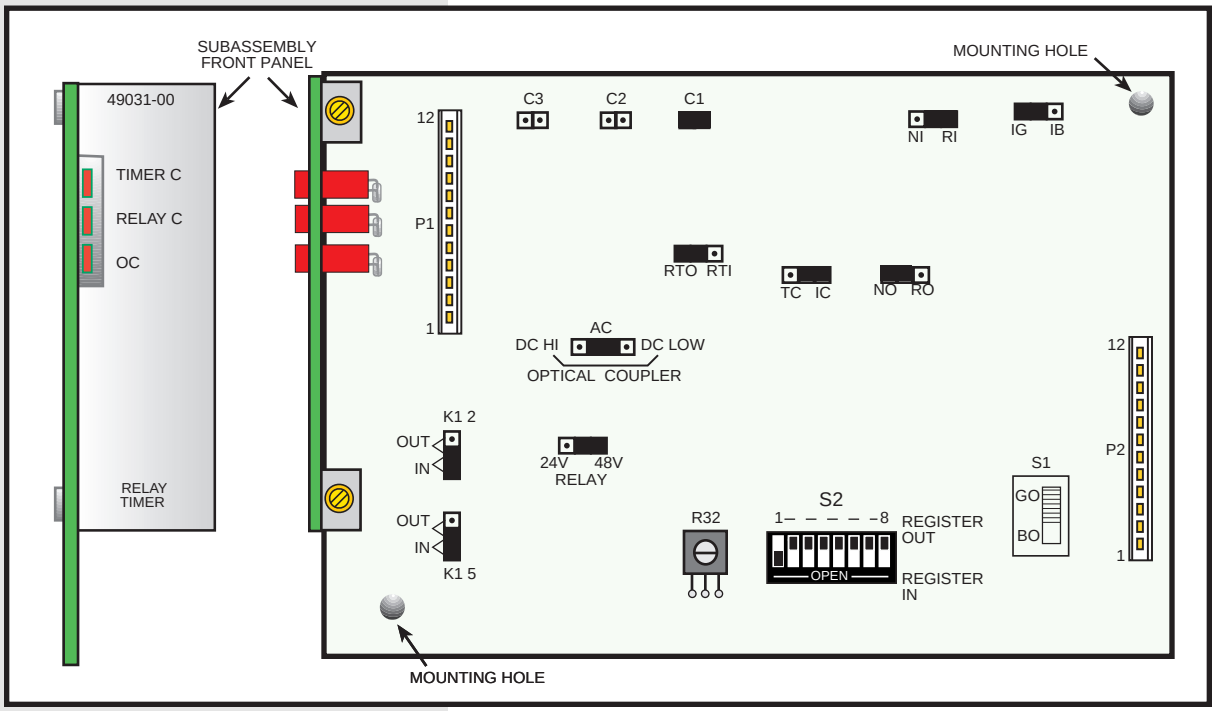
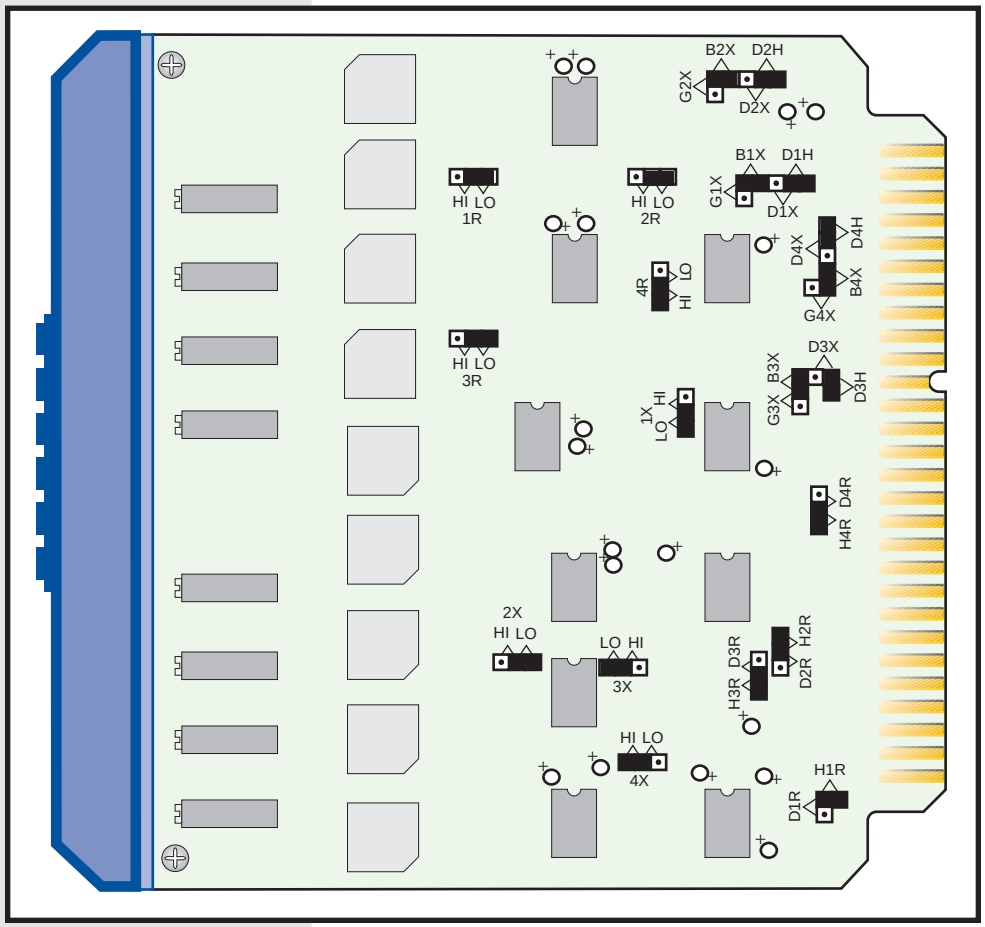


TABLE D - STRAP SETTINGS, 44118 BRIDGE

OPTION	STRAP IN
GAIN STRAPS	
Receive Port 1 0 to +7 dB	1R LO
Receive Port 2 0 to +7 dB	2R LO
Receive Port 3 0 to +7 dB	3R LO
Receive Port 4 0 to -16 dB	4R HI
Transmit Port 1 0 to -16 dB	1X LO
Transmit Port 2 0 to -16 dB	2X LO
Transmit Port 3 0 to -16 dB	3X LO
Transmit Port 4 0 to +7 dB	4X HI
FOUR-WAY BRIDGE	
Summing Bus IN	B1X, B2X, B3X, B4X
Transmit Distribution Networks OUT	D1H, D2H, D3H, D4H
Receive Distribution Networks OUT	H1R, H2R, H3R, H4R

FIG. 7 - STRAP LOCATIONS, 44118 BRIDGE



ALIGNMENT

All straps and levels are factory-set. If necessary, refer to Fig. 8 and the section below to align the 44118 Bridge.

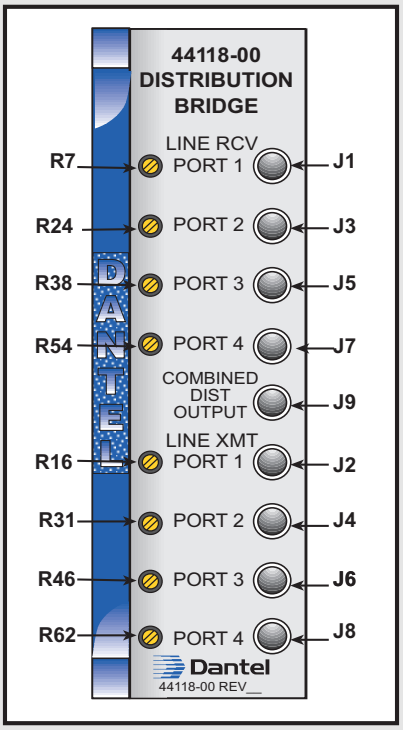
Equipment Required

- ♦ Signal Generator sending a 1kHz, 600 ohm signal at various levels.
- ♦ 600-ohm Level Meter (with and without 600-ohm termination).

1. Verify that the straps are set per Table D. Remove power from the shelf. Insert 44118 module into slot 3. Reapply power.
2. Connect a 600-ohm terminated dB meter across the 600-ohm output from the signal generator. Set the generator frequency to 1kHz. Adjust generator level for a reading equal to system line receive test tone level of +7dBm.

CONTINUED . . .

FIG. 8 - FRONT PANEL, 44118



3. Connect the 600-ohm terminated dB meter to the COMBINED DIST OUTPUT jack (J9) on the 44118 front panel. The meter will remain here for steps 4 through 7.

4. Connect the signal generator to the LINE RCV PORT 1 jack (J1) on the 44118 front panel. Adjust LINE RCV PORT 1 level control (R7) for a reading of -10dBm. (This is the distribution level.)

5. Move the generator to the LINE RCV PORT 2 jack (J3). Adjust LINE RCV PORT 2 level control (R24) for a reading of -10dBm.

6. Move the generator to the LINE RCV PORT 3 jack (J5). Adjust LINE RCV PORT 3 level control (R38) for a reading of -10dBm.

7. Remove the generator from port 3 and readjust the output from +7dBm to -6dBm. Move the generator to the LINE RCV PORT 4 jack (J7). Adjust LINE RCV PORT 4 level control (R54) for a reading of -10dBm.

8. For steps 9 through 11, leave the generator connected to J7. Do not change the generator level or any of the receive level controls.

9. Move the 600-ohm terminated dB meter to the LINE XMT PORT 1 jack (J2). Adjust the LINE XMT PORT 1 level control (R16) for a reading of -16dBm.

10. Move the 600-ohm terminated dB meter to the LINE XMT PORT 2 jack (J4). Adjust the LINE XMT PORT 2 level control (R31) for a reading of -16dBm.

11. Move the 600-ohm terminated dB meter to the LINE XMT PORT 3 jack (J6). Adjust the LINE XMT PORT 3 level control (R46) for a reading of -16dBm.

12. Remove the generator from port 4 and readjust the output from -6dBm to +7dBm. Move the generator to the LINE RCV PORT 1 jack (J1). Do not readjust any receive level controls. Move the 600-ohm termianted dB meter to the COMBINED DIST OUTPUT jack (J9). Verify a reading of -10dBm.

13. Move the 600-ohm terminated meter to the LINE XMT PORT 4 jack (J8). Adjust the LINE XMT PORT 4 level control (R62) for a level of 0dBm.

14. Calibration of the 44118 is complete. Remove the signal generator and the dB meter.

Refer to Fig 2. In the idle condition, relays KA, KB and KC are released and timers TA, TB and TC are not active. The relays and the timers are located in slot J2. Relay KB, being released, cut and terminate the input to the VF bridge (J3) and it will also cut and terminate the PBX output pair. (B-5 and B-6). This will prevent the placing of any VF coming from the PBX on the ORDER WIRE side of the system. The PBX is connected to port 4 of the bridge. The port 4 TX output of the bridge will go to the input of the 44020/49018 DTMF decoder and to the input of the PBX. (B-3 and B-4)

SEIZURE OF THE INTERFACE.

NOTE:

The 05774 Interface M Lead (pin 34) connects to the PBX E Lead.

The 05774 Interface E Lead (pin 9) connects to the PBX M Lead.

Seizure from the Order Wire

The 44020/49018 decoder will reset itself every 3 seconds, after each digit is detected.

Assume the decoder is set for address 1, 2, 3, "*" for the VNET access code. When the user dials the 3 digit code 1, 2 , 3 the output of the decoder detecting the correct code will operate relay KA for 3 seconds. When the user dials the "*" after 1, 2, 3 has been detected and relay KA has operated, a ground from the detected "*" will appear on pin 12 of the 49018 assembly.

This ground will create a latch on the 49018 that will place a ground on pin 7 of the 49018. This latched ground is placed on relay KB and timer TA. Timer TA is used to seize the PBX and it can be strapped to have battery or ground as an output depending on the user's requirement. Relay KB will operate and remove the shunt on the input pair from the PBX and dial tone will be heard by the order wire user when the PBX is seized.

The PBX seizing, will place battery or ground on its M lead which will go to timer TB. TB can be strapped for either battery or ground as an input. TB turning on will place an additional holding ground on timer TA and relay KB. This ground will also operate timer TC which is a 1/2 second 1 shot timer . When TC turns on, it will reset the 49018 latch. The ground that was coming out of the 49018 latch, on pin. 7, will be removed. The holding path for KB and TA is order wire timer TB which is being held by the E lead being active. (M lead of the PBX turned on)

The diode between TA and TB assures that the TC timer can only be activated by timer TB turning on. The interface is now under control of the M lead from the PBX. TC cannot retrigger until after the ground on its input has been removed and is reapplied.

Seizure from the PBX

When the PBX number for the interface is dialed, the M lead from the PBX will place a battery or ground on TB of the interface depending on the user's requirement. TB will be optioned so

that it is a slow to operate relay. (50 msec) After the slow to operate period, TB will output a ground which will turn on relay KB. This will remove the VF shunt and it will also turn on timer TA which will place either a ground or battery on the E lead of the PBX. The PBX will now be seized and the release of the interface will be as described below.

RELEASE OF THE INTERFACE.

From the Order Wire

The user will dial the 3 digit code (1, 2, 3 for this example) plus "#" and relay KA will turn on for 3 seconds when the 3 digits are detected. When the "#" is dialed, the decoder will output a ground on pin 27 through the operated KA contacts. Relay KC will turn on and lock to the ground from the output of timer TB which is being held by the E lead input on its input. (M lead from the PBX)

Relay KC turning on will open the M lead from TA to the PBX E lead. The PBX will have its E lead removed and relay KC will not be able to release until the PBX removes its M lead to the E lead of the VNET interface which will restore TB. When the PBX removes its M lead (E lead on the VNET interface) TB will release and the ground to KB and KC will be removed releasing them.

KB releasing will replace its terminations on the VF bridge and the PBX. KC releasing will reclose the TA output path to the PBX E lead. TA is inactive and the PBX will not reseize. KA will release after 3 seconds when the decoder resets itself. The '#" detection is only on for as long as the tone is present. The system is back to normal.

From the PBX side

The user of the PBX will hang up his phone and the PBX M lead (E lead on the interface) will be restored. This will cause TB to release and TB releasing will release TA and KB. The E lead from the interface to the PBX M lead will be restored and the PBX will be dropped.

KB releasing will replace the terminations on the VF bridge so the order wire users will not hear any VF from the PBX.

TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input Voltage Range	-21 to -56 VDC
Input Power Requirement @ -48VDC *	
Idle	110 mA
Full Load	271 mA
Heat Dissipation @ -48VDC	
Idle	24.73 Btu/Hr
Full Load	44.72 Btu/Hr
Physical Dimensions	
19"	19" x 8.25" x 1.72"
23"	23" x 8.25" x 1.72"
Weight	6.75 lbs
Operating Temperature Range	0° to 60° C.
NOTE: *There is no appreciable difference between the power requirements at -24 VDC and those at -48 VDC.*	

WARRANTY

LIMITED WARRANTY

The Seller warrants that the standard hardware products sold will be free from defects in material and workmanship and perform to the Seller's applicable published specifications for a period of 18 months for hardware, and 3 months for software, from the date of the original invoice. The liability of the Seller hereunder shall be limited to replacing or repairing, at its option, any defective products which are returned F.O.B. to the Seller's plant, (or, at the Seller's option, refunding the purchase price of such products). In no case are products to be returned without first obtaining permission and a customer return authorization number from the Seller. In no event shall the Seller be liable for any consequential or incidental damages.

Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. The Seller shall make the final determination as to the existence and cause of any alleged defect. No warranty is made with respect to custom equipment or products produced to the Buyer's specifications except as specifically stated in writing by the Seller in the contract for such custom equipment.

This warranty is the only warranty made by the Seller with respect to the goods delivered hereunder, and may be modified or amended only by a written instrument signed by a duly authorized officer of the Seller and accepted by the Buyer.

Warranty and remedies on products not manufactured by the Seller are in accordance with warranty of the respective manufacturer. THE SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY THE SELLER.

IN CASE OF DIFFICULTY

If you experience difficulty with this equipment, check the following, as appropriate:

1. **Switch settings**
2. **Signal levels**
3. **Software configuration**
4. **Connections between Dantel's equipment and your equipment.**

If there is still a problem, substitute equipment that is known to be good. For additional assistance, call Dantel's Technical Field Service Department weekdays, 6 A.M. to 5 P.M. pacific time:

1-800-4DANTEL (1-800-432-6835).

If a thorough checkout shows a piece of equipment has malfunctioned, you may return it to the factory. For repairs and emergency replacements, obtain a Return Material Authorization (RMA) number from the Customer Service Representative at **1-800-4DANTEL** (1-800-432-6835).

To ensure expedient processing of your order, provide a purchase order number and shipping and billing information when requesting an RMA number. Also, when the units are returned to Dantel, include a description of the failure symptoms for each unit returned. Send defective equipment to:

Dantel, Inc. • 2991 North Argyle Avenue • Fresno, California 93727-1388

Dantel

P.O. Box 55013 • Fresno, CA 93747-5013 Phone (209) 292-1111 Fax (209) 292-9355 http://www.dantel.com