05735

SERIAL TO TL1 CONVERTER SHELF

Dantel

Y2K Compliant

Table of Contents

About this Practice:

This document has been reissued to:

• Update Table G.

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

Issue date: March 2000

UPDATED

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
B18-05735-00	Wired only shelf.
B18-05735-01	Basic shelf. TL1 GPP; two Hubbing Modules
B18-05735-31	16 serial port shelf; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-32	Two 202 modem ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-33	8 RS-422 MAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-41	32 RS-422 MAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-42	16 RS-422 SMAC ports; two 202 modem ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-43	24 RS-422 SMAC ports; two 202 modem ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-51	48 RS-422 SMAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-52	32 RS-422 MAC ports; two 202 modem ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-53	40 RS-422 MAC ports; one 202 modem port; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-61	16 RS-422 SMAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-62	32 RS-422 SMAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-63	48 RS-422 SMAC ports; -40 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-71	16 RS-422 SMAC ports; -41 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-72	32 RS-422 SMAC ports; -41 MAP firmware; TL1 GPP; two Hubbing Modules
B18-05735-73	48 RS-422 SMAC ports; -41 MAP firmware; TL1 GPP; two Hubbing Modules

GENERAL DESCRIPTION

The 5735 Master Shelf collects serial (TBOS) and discrete alarms from central office equipment. This alarm data is then processed, concentrated, and converted to asynchronous TL1 protocol for transmission to the host computer at the Alarm Center.

The backplane is connectorized with 25-pair Telco, DB25 connectors for all main ports. There is one universal slot with its 56 pins appearing on wire-wrap pins.

GENERAL DESCRIPTION

NOTE:

There is available, for each module in this system, an Installation and Operation Manual. This manual, or "practice", goes into far greater detail about how each module works. For a copy of any practice for any Dantel product, contact Dantel's Customer Support Services department.

This shelf, like many Dantel shelves is made up of separate plug-in models that are factory-wired together to accomplish a task. The 05735 is offered in a variety of options. Each option equips the shelf with a different collection of modules. Refer to Fig. 1 for a front view of a fully equipped 05735 shelf.

The modules used in the 05735 shelf are described below.

Multiple Alarm Processor (MAP) - slots 3, 6, and 9

The MAP is the center of the alarm acquisition side of this system. The MAP:

♦ Polls (interrogates) remote alarm reporting equipment.

♦ Operates control points and converts downstream protocols to DCPF.

♦ Reports alarm status to the Alarm Center and to the local printer output.

The MAP uses three ports to receive and transmit information:

♦ The Data Port connects the MAP to the Multiple Alarm Combiners (MACs), through which all alarm data is received.

♦ The Printer Port (also called the Craft or Configuration port) is used for local monitoring and configuring of the MAP. A serial printer can be connected here to obtain a hardcopy printout of the alarm information.

♦ The Master Port is used to report the alarm information to the Alarm Center through the TL1 GPP.

Multiple Alarm Combiner (MAC) - slots 1, 2, 4, 5, 7, and 8

The 46022-12 MAC is an eight port, RS-422 serial interface card that allows polling of remotes in TBOS, DCM, or other protocols. The MAC-12:

♦ Provides front panel readouts of alarm and communications status of all ports.

♦ Allows the user to set control points described in the database of the MAP.

♦ Provides 16 ports (2 MACs) for each MAP in the 05735 shelf.

A single MAC slot (usually slot 2) can be equipped with a 46022-30 MAC. This MAC would replace the 46022-12 normally found in that slot. This MAC-30 can be equipped with a 49013 Tone Modem subassembly allowing 1200 baud analog polling of devices. This line may then be bridged to go to several small remote sites.

GENERAL DESCRIPTION

Hubbing Module - slots 10 and 12

This module is an interface converter and digital hub.

♦ The Hubbing Module has eight ports, strappable for RS-232 or RS-422.

♦ A ninth port on each Hubbing Module can be equipped with any standard Dantel communications subassembly to provide 202 Tone, RS-422, or RS-232.

♦ The Hubbing Module in slot 10 combines the Master Ports of all the MAPs and routes them to the TL1 GPP.

♦ The Hubbing Module in slot 12 combines all the Printer Ports of all the MAPs.

Additional shelves can be brought into the remaining ports of the Hubbing Modules.

TL1 General Purpose Processor (TL1 GPP) - slot 11

The TL1 GPP polls DCPF devices and converts the alarm information into TL1 messages. There are three ports on a TL1 GPP:

♦ The Data Port is set for RS-232 and polls (interrogates) the Master Ports of the MAPs through the Hubbing Module in slot 10.

♦ The Master Port is also set for RS-232 and presents the TL1 messages at connector C9B, on the rear of the shelf.

♦ The Printer Port is used for software and database downloads as well as inputing printer syntax commands.

Fuse Module - slot 14

The Fuse Module provides a 1/2 amp fuse for each of the slots in the 05735 shelf. A 3 amp main fuse "FA" provides protection to the program -battery power.

FIG. 1 - FRONT VIEW, 05735 SHELF
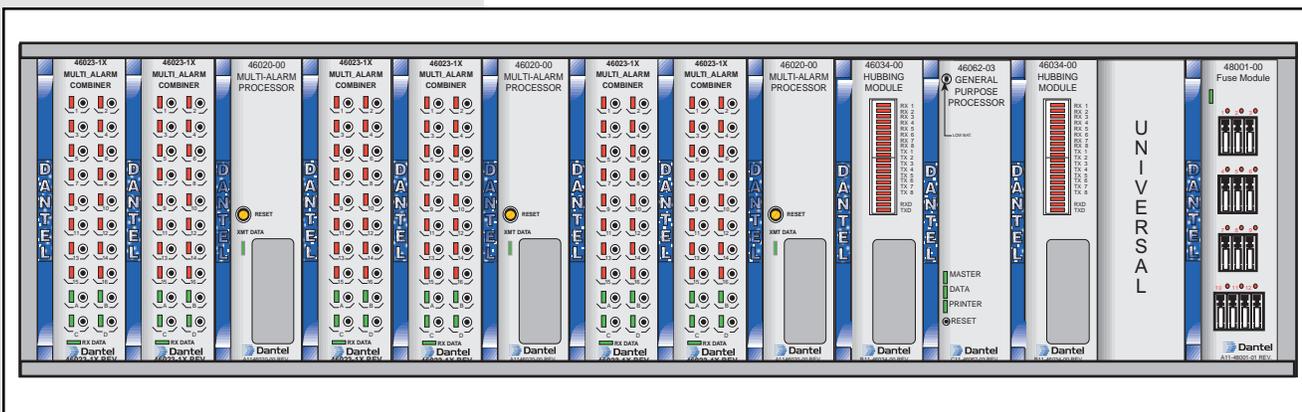
INSTALLATION

This section consists of three parts:

1. Equipment Mounting
2. Wiring
3. Switch and Strap Settings
   - 46062-22 TL1 GPP
   - 46034 Hubbing Modules
   - 49029 RS-232 Subassembly
   - 46020 MAP
   - 46022-12 MAC
   - 46022-30 MAC
   - 48001 Fuse Module
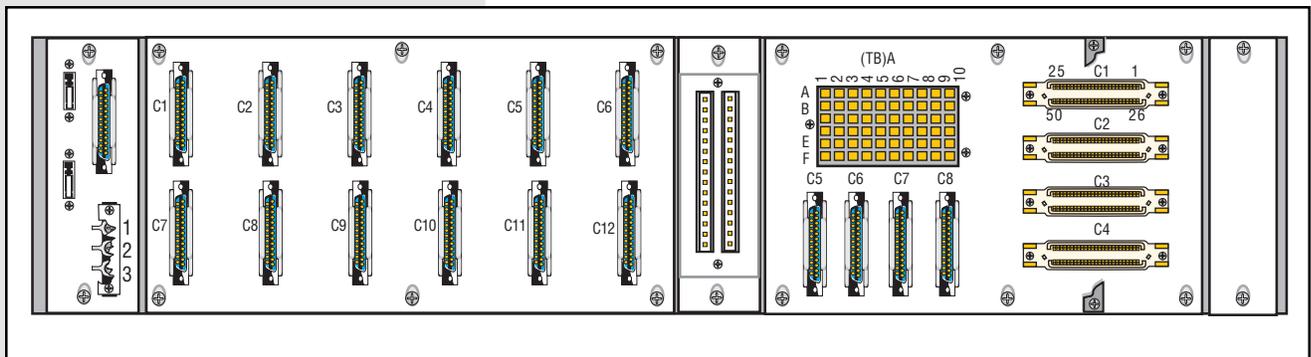
EQUIPMENT MOUNTING

Tools Required:

♦ Ohmmeter

♦ Phillips screwdriver

♦ 7/16" Nutdriver or socket wrench

Visually inspect shelf for obvious damage.

Use ohmmeter to check for a short across the power input at B (-DC) and (GND) at the left end of the rear of the shelf (refer to Fig. 2).

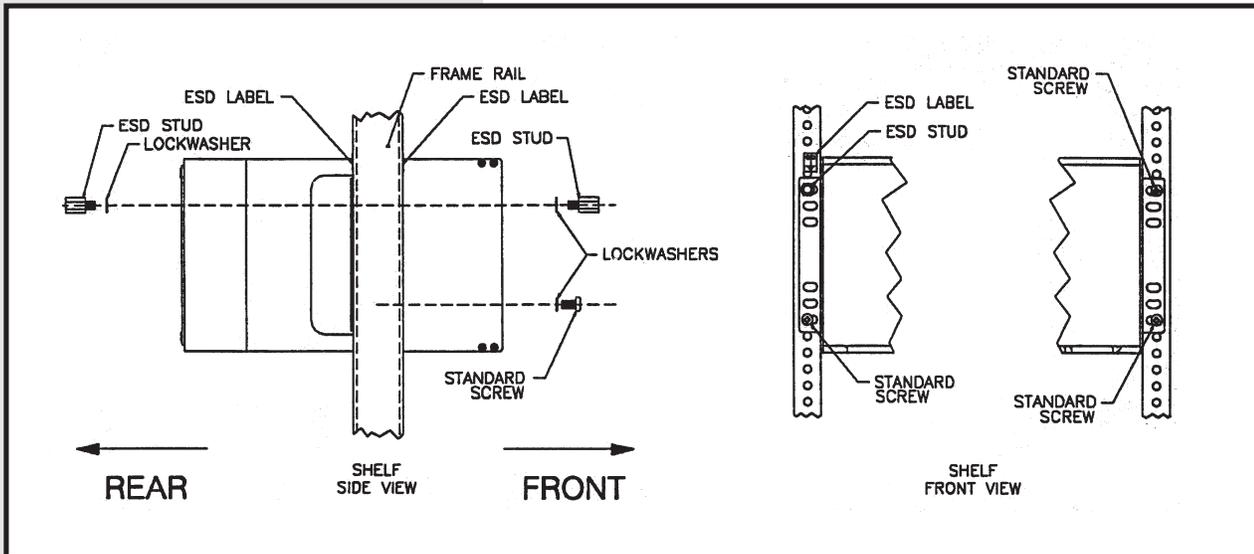### FIG. 2 - REAR VIEW OF 05735 SHELF

INSTALLATION

With a Phillips screwdriver, mount the shelf in an equipment rack using the screws and lockwashers supplied in a bag attached to the side of the shelf.

Mounting hardware is supplied in a bag attached to the side of the shelf.

Refer to Figure 3.

Facing the frame rail, place the equipment shelf in the rack in the desired location. Secure with three Phillips-head screws and lockwashers - two on the right side, top and bottom, and one on the lower left side.

Install one ESD stud, with lockwasher, in the upper left location.

Secure all fasteners tightly, ensuring proper grounding between ESD stud and frame rail.

Place ESD label next to the ESD stud.

From the rear of the bay, install the other ESD stud and lockwasher into the frame rail next to the equipment shelf. Secure tightly, ensuring proper grounding of the ESD stud. Place ESD label next to the ESD stud.

WIRING

Wire the 05735 Serial to TL1 Converter Shelf to external equipment as required. Use the B18-05735-XX Block and Level Drawing as a reference for making connections to Dantel equipment. Refer to Figs. 4 and 5 for drawings of the TSI Block and the connections from it to the 05735.
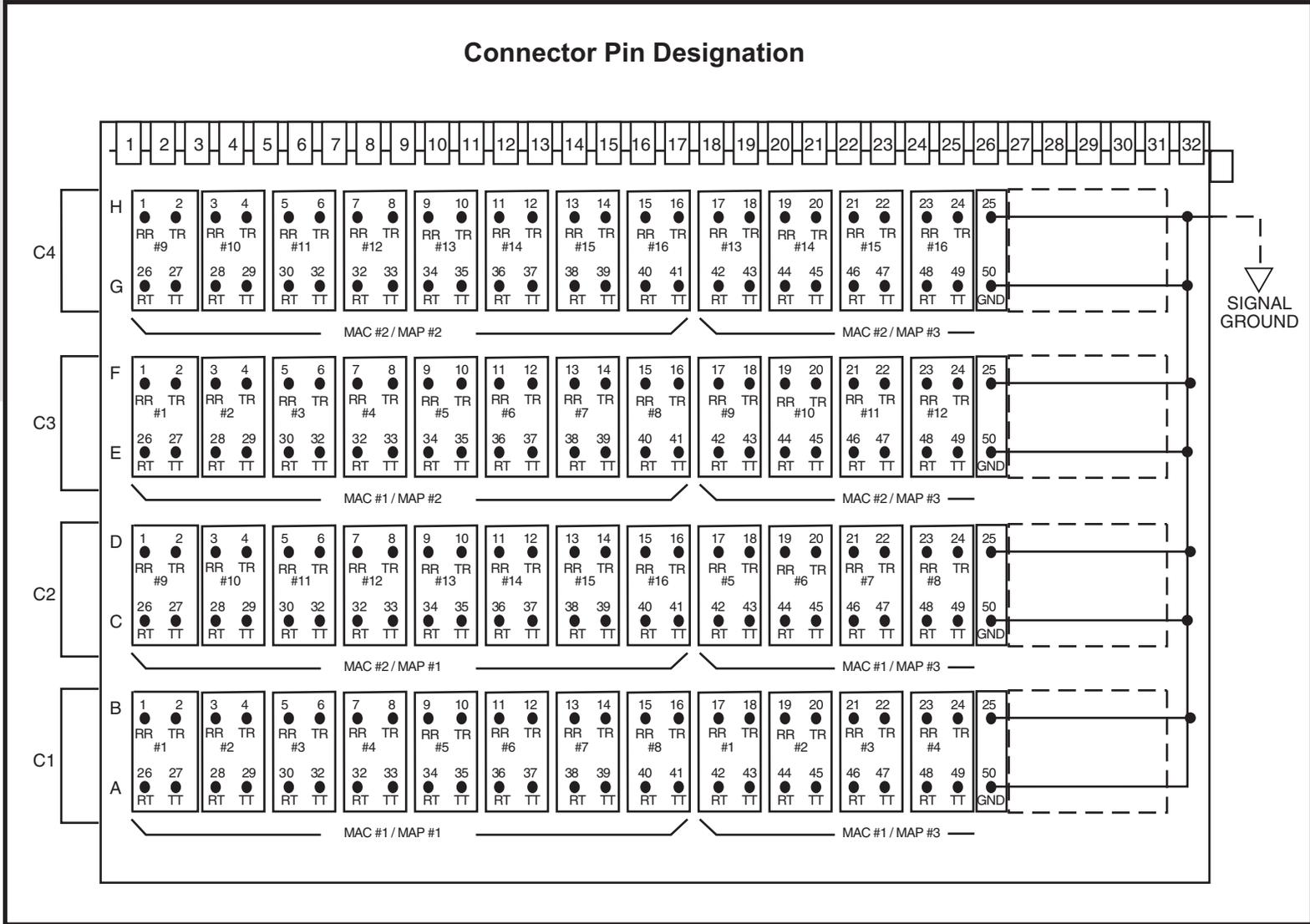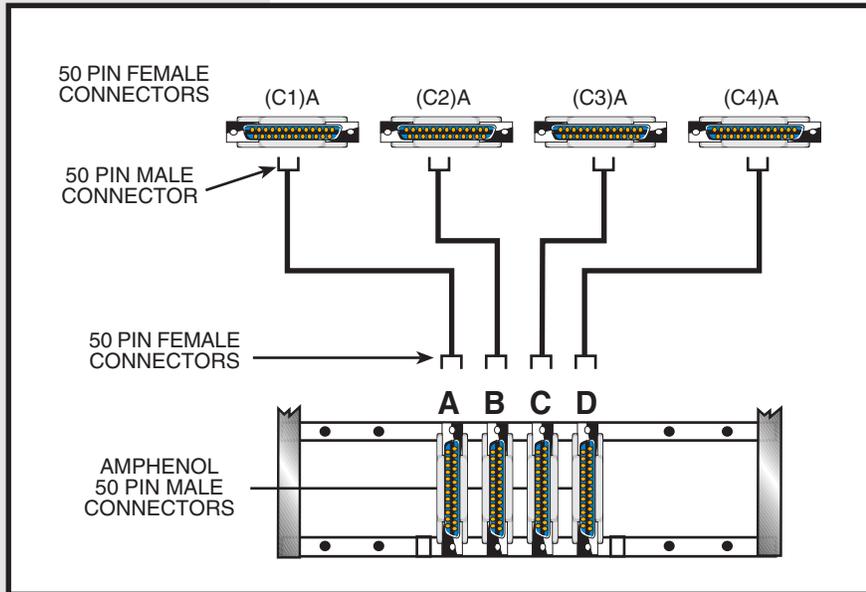
Connector Pin Designation

FIG. 4 - TSI BLOCK PIN ASSIGNMENTS

INSTALLATION

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |

C4

H: 1 2 RR TR #9 / 3 4 RR TR #10 / 5 6 RR TR #11 / 7 8 RR TR #12 / 9 10 RR TR #13 / 11 12 RR TR #14 / 13 14 RR TR #15 / 15 16 RR TR #16 / 17 18 RR TR #13 / 19 20 RR TR #14 / 21 22 RR TR #15 / 23 24 RR TR #16 / 25

G: 26 27 RT TT / 28 29 RT TT / 30 32 RT TT / 32 33 RT TT / 34 35 RT TT / 36 37 RT TT / 38 39 RT TT / 40 41 RT TT / 42 43 RT TT / 44 45 RT TT / 46 47 RT TT / 48 49 RT TT / 50 GND

MAC #2 / MAP #2 — MAC #2 / MAP #3

SIGNAL GROUND

C3

F: 1 2 RR TR #1 / 3 4 RR TR #2 / 5 6 RR TR #3 / 7 8 RR TR #4 / 9 10 RR TR #5 / 11 12 RR TR #6 / 13 14 RR TR #7 / 15 16 RR TR #8 / 17 18 RR TR #9 / 19 20 RR TR #10 / 21 22 RR TR #11 / 23 24 RR TR #12 / 25

E: 26 27 RT TT / 28 29 RT TT / 30 32 RT TT / 32 33 RT TT / 34 35 RT TT / 36 37 RT TT / 38 39 RT TT / 40 41 RT TT / 42 43 RT TT / 44 45 RT TT / 46 47 RT TT / 48 49 RT TT / 50 GND

MAC #1 / MAP #2 — MAC #2 / MAP #3

C2

D: 1 2 RR TR #9 / 3 4 RR TR #10 / 5 6 RR TR #11 / 7 8 RR TR #12 / 9 10 RR TR #13 / 11 12 RR TR #14 / 13 14 RR TR #15 / 15 16 RR TR #16 / 17 18 RR TR #5 / 19 20 RR TR #6 / 21 22 RR TR #7 / 23 24 RR TR #8 / 25

C: 26 27 RT TT / 28 29 RT TT / 30 32 RT TT / 32 33 RT TT / 34 35 RT TT / 36 37 RT TT / 38 39 RT TT / 40 41 RT TT / 42 43 RT TT / 44 45 RT TT / 46 47 RT TT / 48 49 RT TT / 50 GND

MAC #2 / MAP #1 — MAC #1 / MAP #3

C1

B: 1 2 RR TR #1 / 3 4 RR TR #2 / 5 6 RR TR #3 / 7 8 RR TR #4 / 9 10 RR TR #5 / 11 12 RR TR #6 / 13 14 RR TR #7 / 15 16 RR TR #8 / 17 18 RR TR #1 / 19 20 RR TR #2 / 21 22 RR TR #3 / 23 24 RR TR #4 / 25

A: 26 27 RT TT / 28 29 RT TT / 30 32 RT TT / 32 33 RT TT / 34 35 RT TT / 36 37 RT TT / 38 39 RT TT / 40 41 RT TT / 42 43 RT TT / 44 45 RT TT / 46 47 RT TT / 48 49 RT TT / 50 GND

MAC #1 / MAP #1 — MAC #1 / MAP #3

INSTALLATION

FIG. 5 - INTERCONNECTIONS FROM TSI BLOCK TO 05735

STRAP AND SWITCH SETTINGS

The following tables and figures present default settings for the 05735 shelf. Where options are available or necessary, those options will be shown. In the event that an option is desired that is not shown in this manual, refer to the practice specific to the module in question.

46062-22 TL1 GENERAL PURPOSE PROCESSOR

Use Fig. 6 and Table A to set the switch and strap options for the TL1 GPP.

INSTALLATION

FIG. 6 - SWITCH AND STRAP LOCATIONS; 46062-22
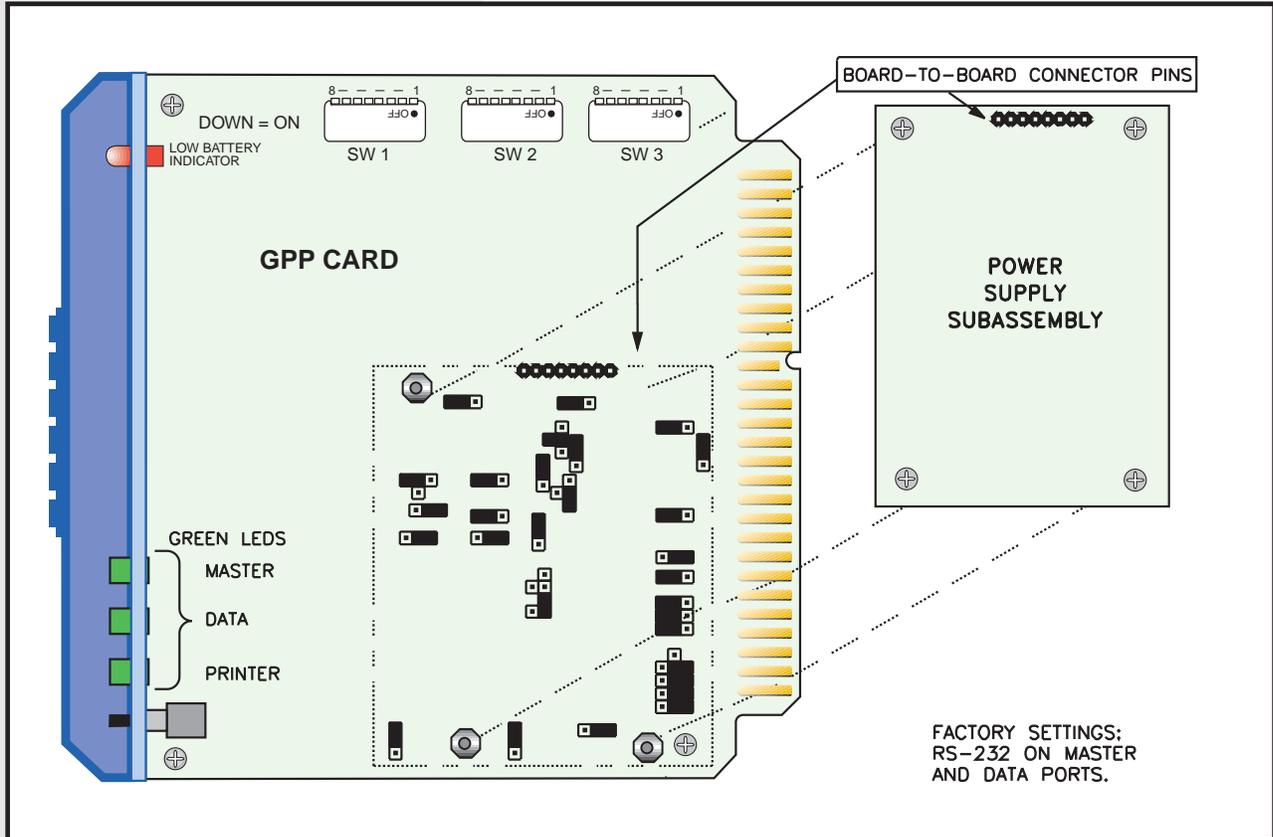
TABLE A - SWITCH SETTINGS; 46062-22

SWITCH	BIT							
	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	BIT 8
S1	ON	ON	ON	ON	ON	ON	ON	ON
S2	ON	OFF	ON	ON	ON	OFF	ON	ON
S3	ON	OFF	ON	ON	ON	OFF	ON	OFF
NOTE: ON means that the switch is DOWN, toward the main board.								

46034 HUBBING MODULE

Slot 10 (Master Hub)

Refer to Fig. 7 to find and set the switches and straps for the Hubbing Module in slot 10.

FIG. 7 - SWITCH AND STRAP LOCATIONS AND SETTINGS; 46034, SLOT 10
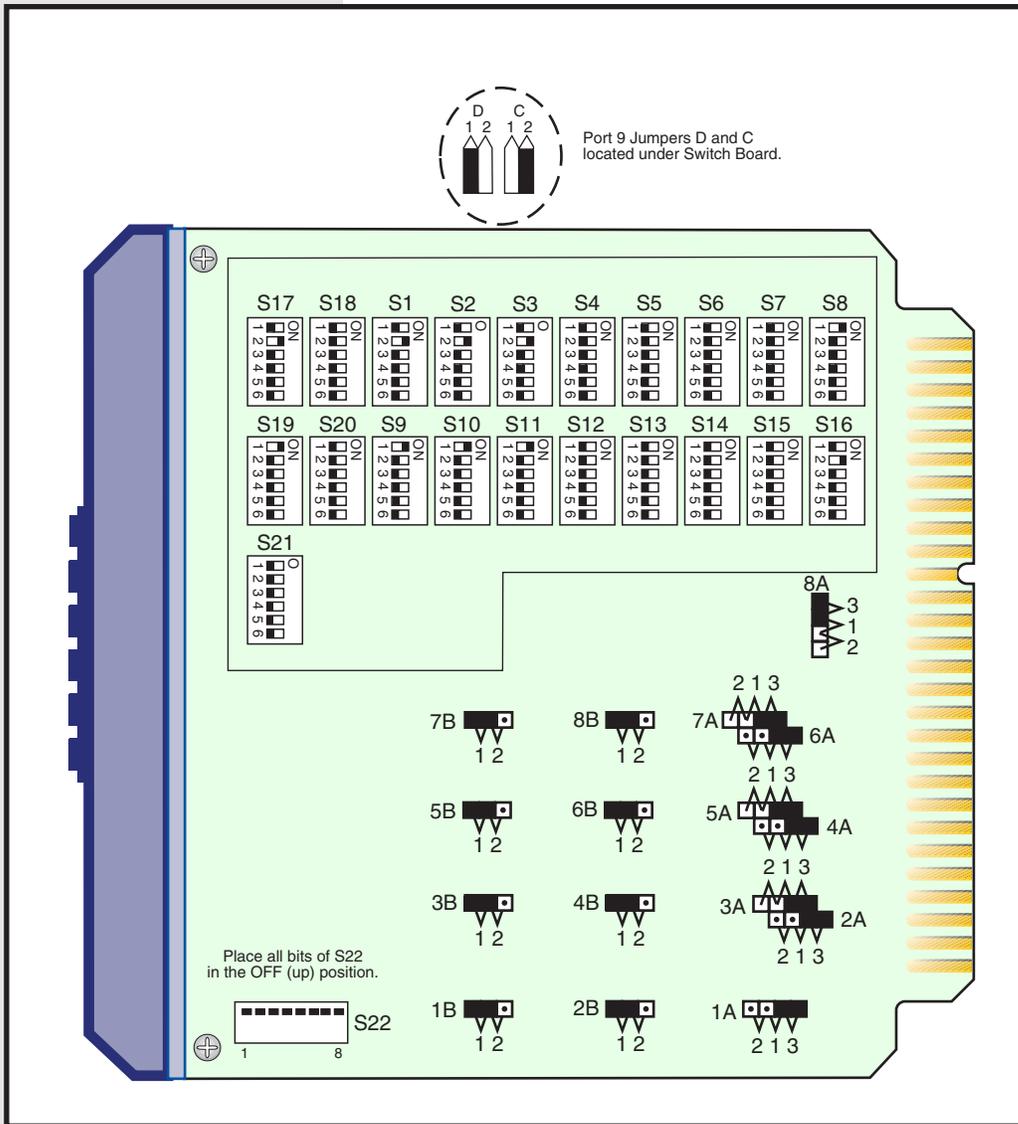
CONTINUED . . .

INSTALLATION

Slot 12 (Master Hub)

Refer to Fig. 8 to find and set the switches and straps for the Hubbing Module in slot 12.

FIG. 8 - SWITCH AND STRAP LOCATIONS AND SETTINGS; 46034, SLOT 12
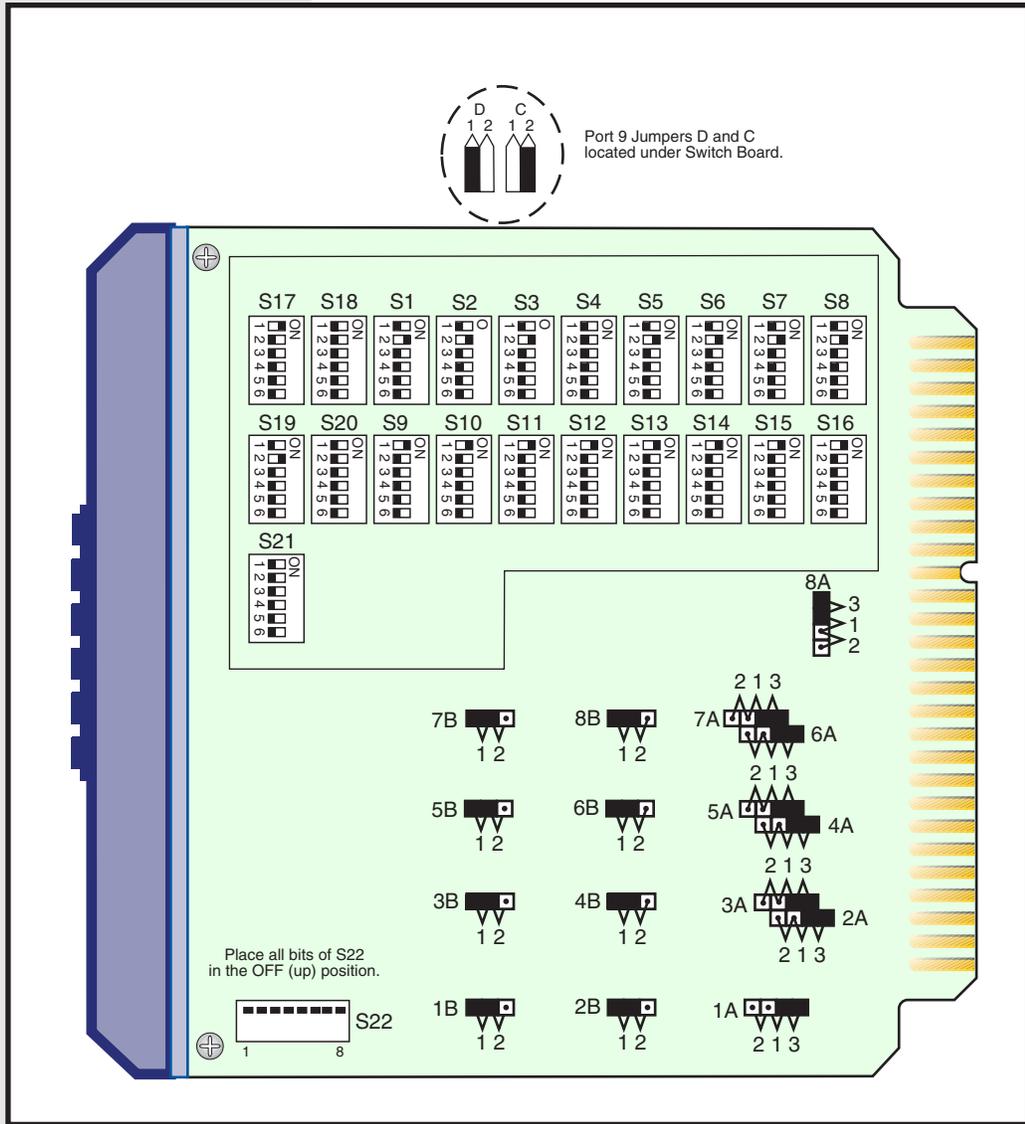
49029 RS-232 SUBASSEMBLY

Use Fig. 9 to find and set the straps and S1 on the 49029 subassemblies.

NOTE: *All 49029 Subassemblies are strapped and set the same.*

FIG. 9 - SWITCH AND STRAP LOCATIONS AND SETTINGS; 49029 SUBASSEMBLIES
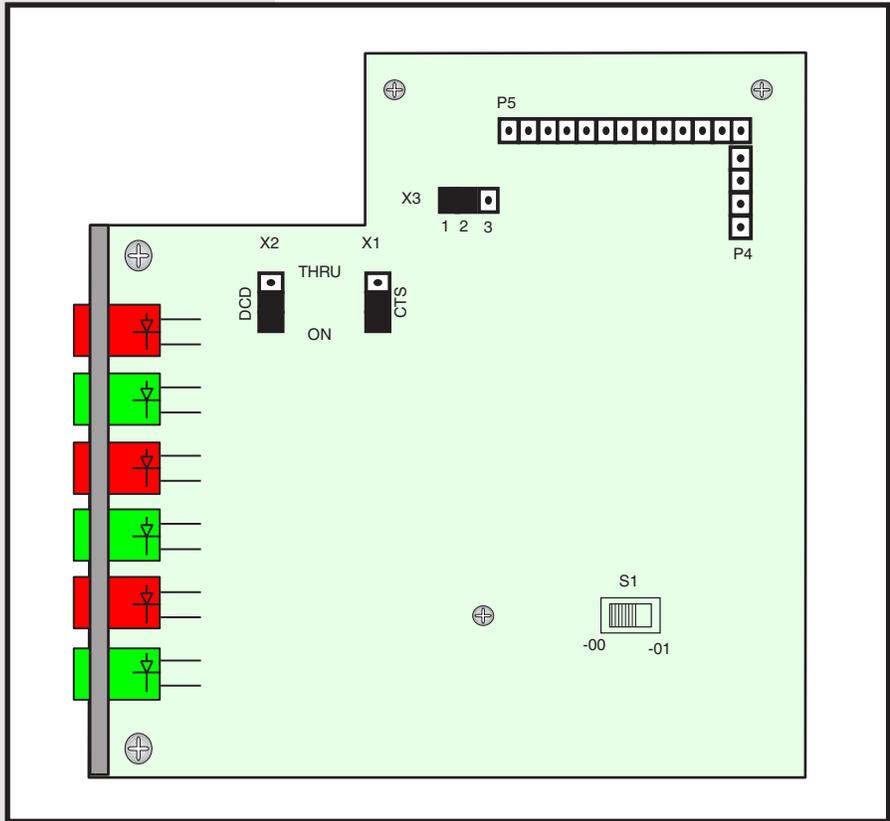
CONTINUED . . .

INSTALLATION

Figs. 10 and 11 show the switch locations on the MAP's.

FIG. 10 - MAP SWITCH LOCATIONS
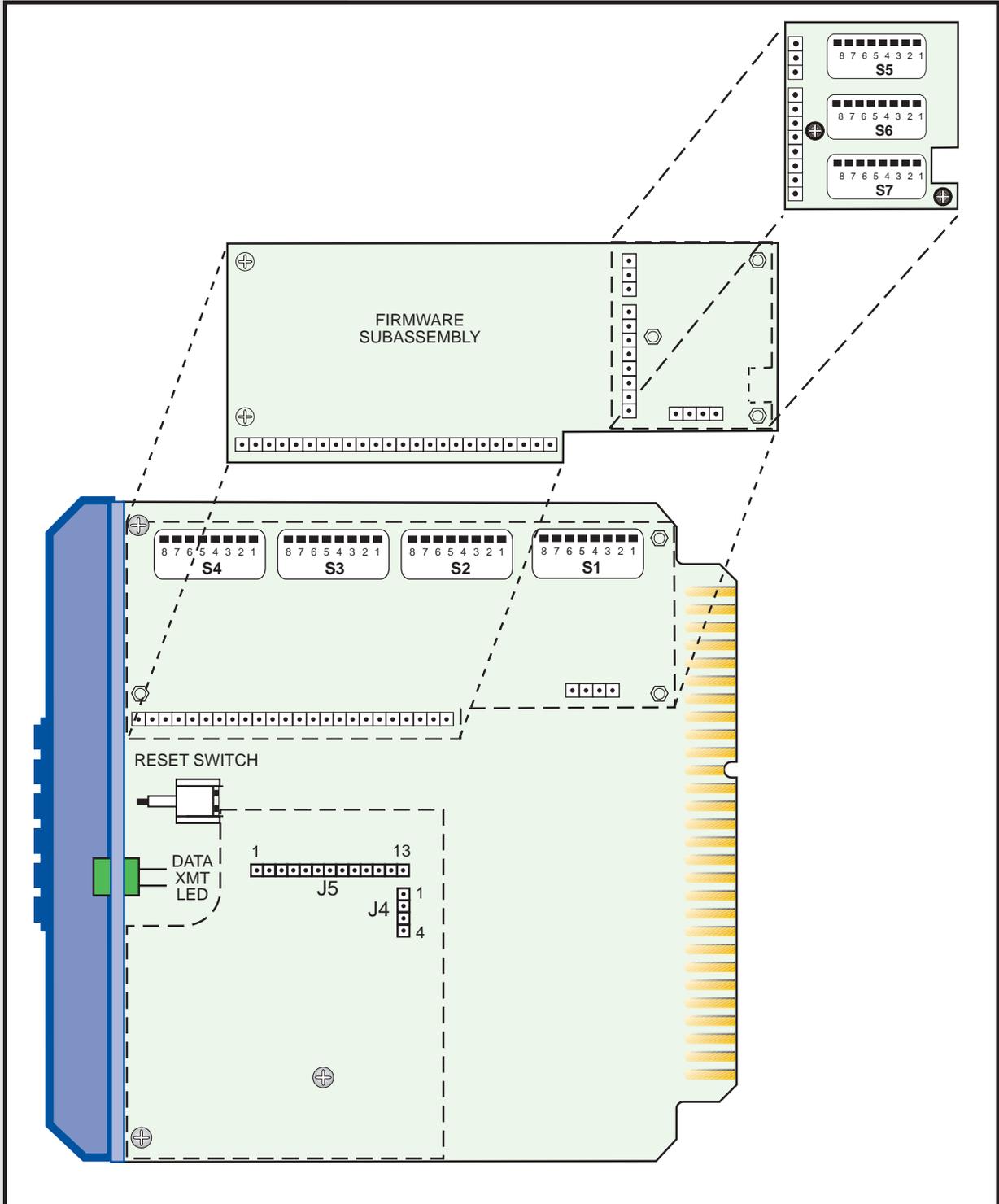
INSTALLATION

FIG. 11 - MAP SWITCH LOCATIONS (VIEWED FROM THE TOP)
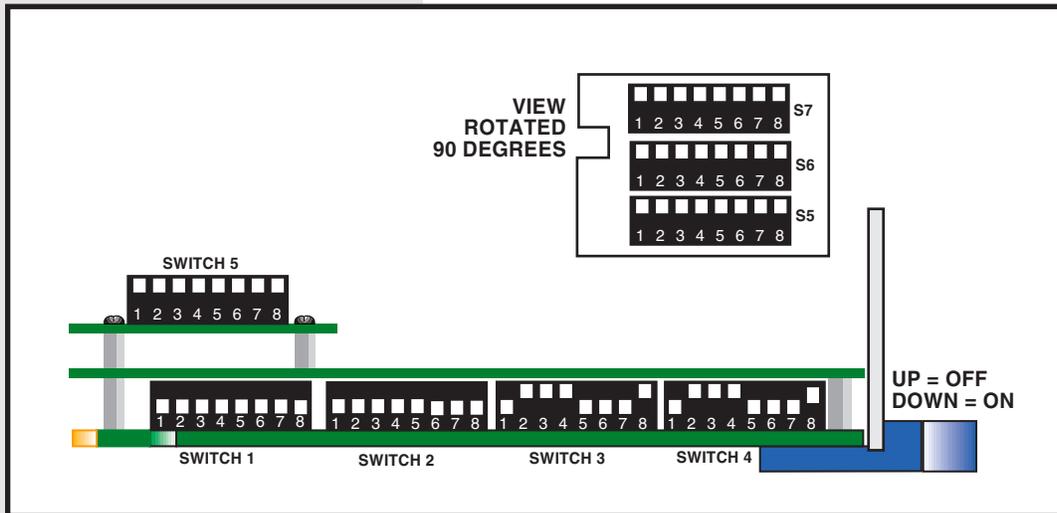
All MAPs

Switches 3 through 7, on all MAPs, are set the same. Refer to Table B.

TABLE B - MAP SWITCH SETTINGS; S3 THRU S7

SWITCH	POSITION							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
SW3	0	1	1	1	0	0	0	1
SW4	0	1	1	1	0	0	0	1
SW5	1	*	1	1	1	1	1	1
SW6	1	1	0	0	1	1	0	0
SW7	1	1	1	1	1	1	1	1

*** NOTE**: *Switch 5 position 2 must be down to configure on initial power-up. Place up to retain configuration in memory. A "1" indicates that the switch is up (up = OFF). A "0" indicates that the switch is down (down = ON).*

Slot 3

Refer to Table C for the switch settings for slot 3, switches S1 and S2.

TABLE C - MAP, SLOT 3; S1 AND S2

SWITCH	POSITION							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
SW1	0	0	0	0	0	0	0	0
SW2	0	0	0	0	0	0	0	0

*** NOTE**: *A "1" indicates that the switch is up (up = OFF). A "0" indicates that the switch is down (down = ON).*

Slot 6

Refer to Table D for the switch settings for slot 6, switches S1 and S2.

TABLE D - MAP, SLOT 6; S1 AND S2

SWITCH	POSITION							
	1	2	3	4	5	6	7	8
SW1	0	1	0	0	0	0	0	0
SW2	0	1	0	0	0	0	0	0
* ***NOTE***: A "1" indicates that the switch is up (up = OFF). A "0" indicates that the switch is down (down = ON).								

Slot 9

Refer to Table E for the switch settings for slot 9, switches S1 and S2.

TABLE E - MAP, SLOT 9; S1 AND S2

SWITCH	POSITION							
	1	2	3	4	5	6	7	8
SW1	0	0	1	0	0	0	0	0
SW2	0	0	1	0	0	0	0	0
* ***NOTE***: A "1" indicates that the switch is up (up = OFF). A "0" indicates that the switch is down (down = ON).								

Additional MAP Addresses

In the switch settings given above, the MAP in slot 3 is addressed as address 1; slot 6 is 3; slot 9 is 5.

Should additional or different addresses for the MAP be desired, refer to Table F. Switch 1 sets the address of the MAP's Master Port. Switch 2 sets the address of the Printer Port.

TABLE F - ADDITIONAL MAP ADDRESSES

The table below lists MAP addresses 1 through 255, each shown with its corresponding 8-position DIP switch setting (positions labeled 1 2 3 4 5 6 7 8, OFF = up, ON = down).

1	27	53	79	105	131	157	183	209	235
2	28	54	80	106	132	158	184	210	236
3	29	55	81	107	133	159	185	211	237
4	30	56	82	108	134	160	186	212	238
5	31	57	83	109	135	161	187	213	239
6	32	58	84	110	136	162	188	214	240
7	33	59	85	111	137	163	189	215	241
8	34	60	86	112	138	164	190	216	242
9	35	61	87	113	139	165	191	217	243
10	36	62	88	114	140	166	192	218	244
11	37	63	89	115	141	167	193	219	245
12	38	64	90	116	142	168	194	220	246
13	39	65	91	117	143	169	195	221	247
14	40	66	92	118	144	170	196	222	248
15	41	67	93	119	145	171	197	223	249
16	42	68	94	120	146	172	198	224	250
17	43	69	95	121	147	173	199	225	251
18	44	70	96	122	148	174	200	226	252
19	45	71	97	123	149	175	201	227	253
20	46	72	98	124	150	176	202	228	254
21	47	73	99	125	151	177	203	229	255
22	48	74	100	126	152	178	204	230	
23	49	75	101	127	153	179	205	231	
24	50	76	102	128	154	180	206	232	
25	51	77	103	129	155	181	207	233	
26	52	78	104	130	156	182	208	234	

INSTALLATION

Slots 1, 4, and 7

Set the switches and straps as shown in Fig. 12.

FIG. 12 - SWITCH AND STRAP LOCATIONS AND SETTINGS; 46022-12; SLOTS 1, 4, AND 7
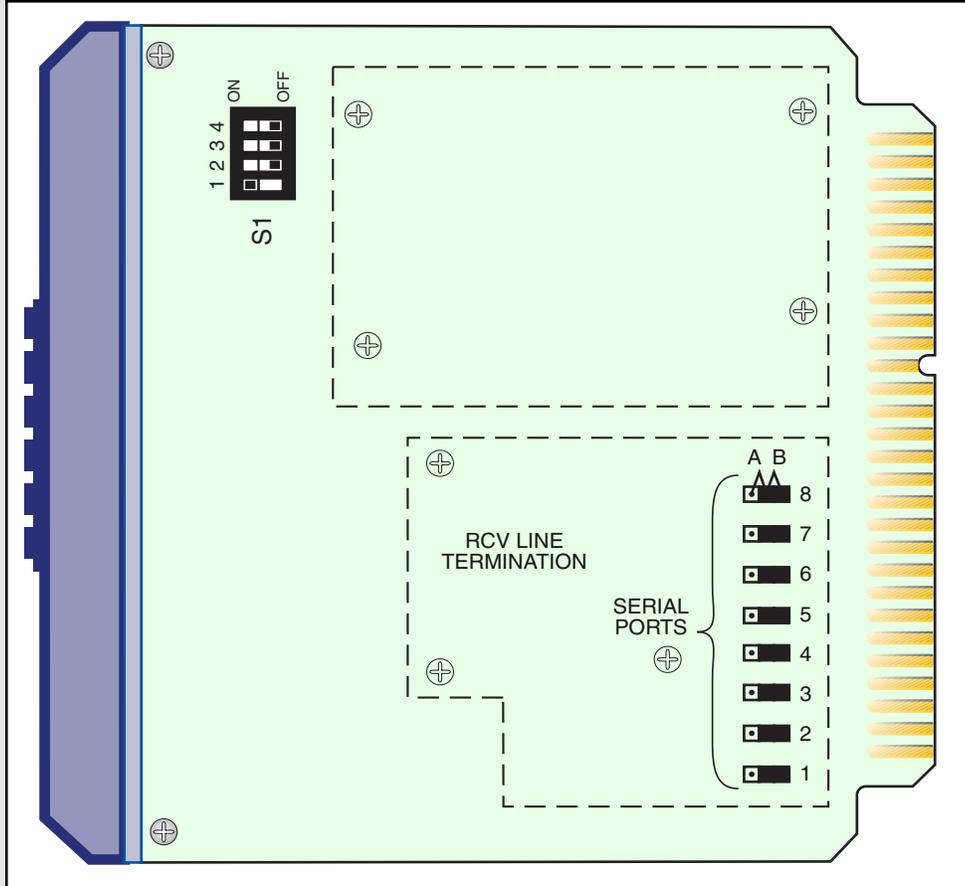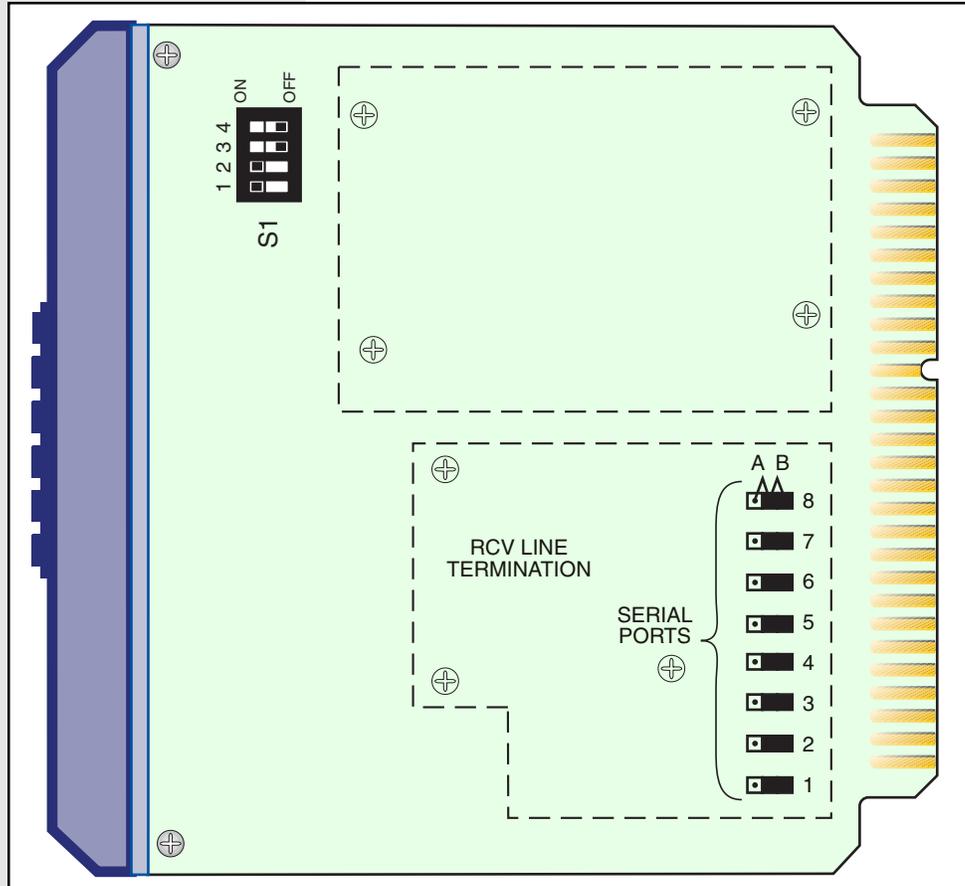
Slots 2, 5, and 8

Set the switches and straps as shown in Fig. 13.

FIG. 13 - SWITCH AND STRAP LOCATIONS AND SETTINGS; 46022-12; SLOTS 2, 5, AND 8

**46022-30 MULTIPLE ALARM COMBINER (MAC-30)**

Where used, the MAC-30 is equipped with a 49013 202 Tone Modem. Fig. 14 shows the switch and strap locations for the MAC-30 and the tone modem.

Table G shows the switch options for the MAC-30. Set the switches for the address and port of the MAC-12 being replaced.

Fig. 14 - Switch Locations; 46022-30 MAC equipped with a 49013 Tone Modem

49013 Not Drawn to Scale
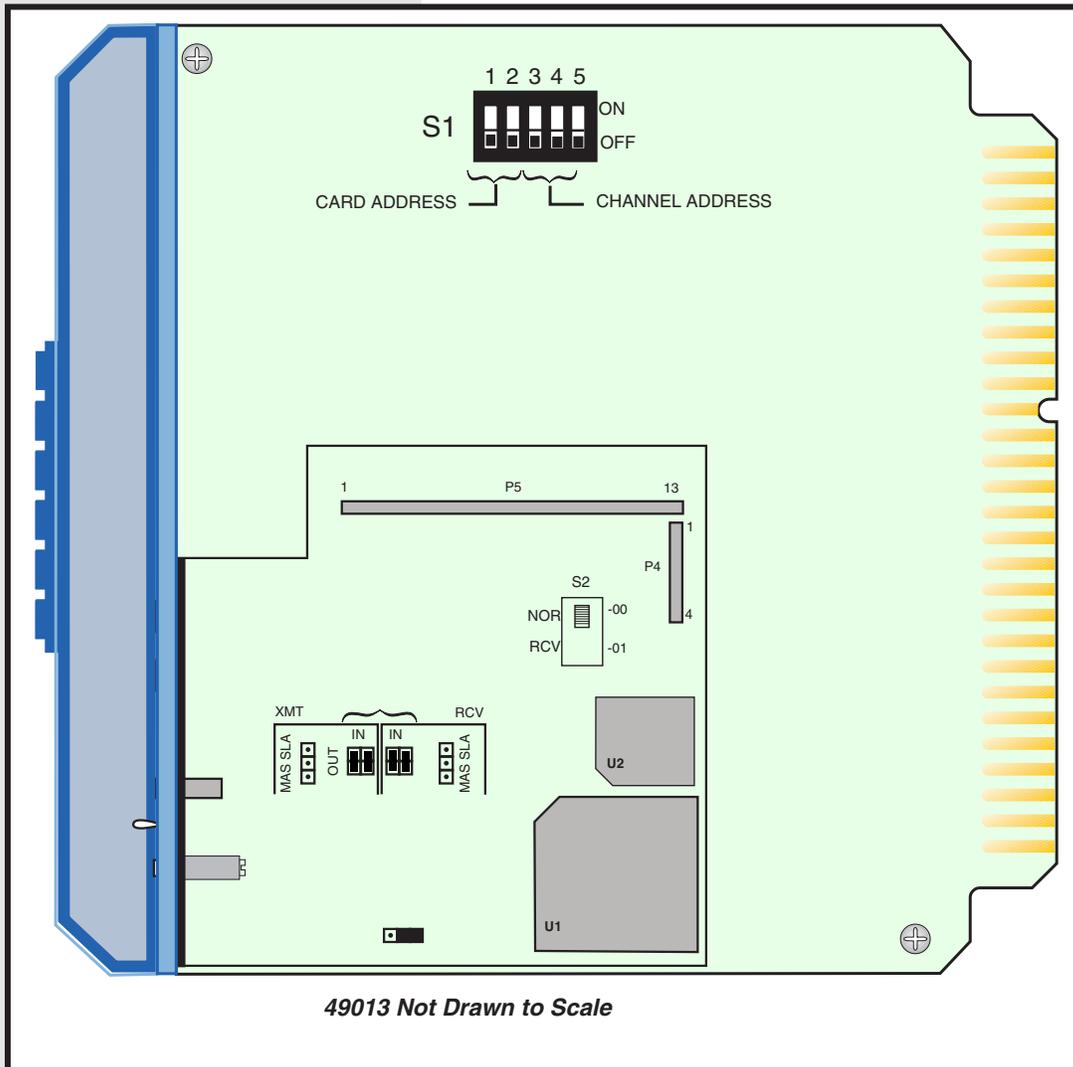
Table G - Switch Settings; 46022-30 MAC

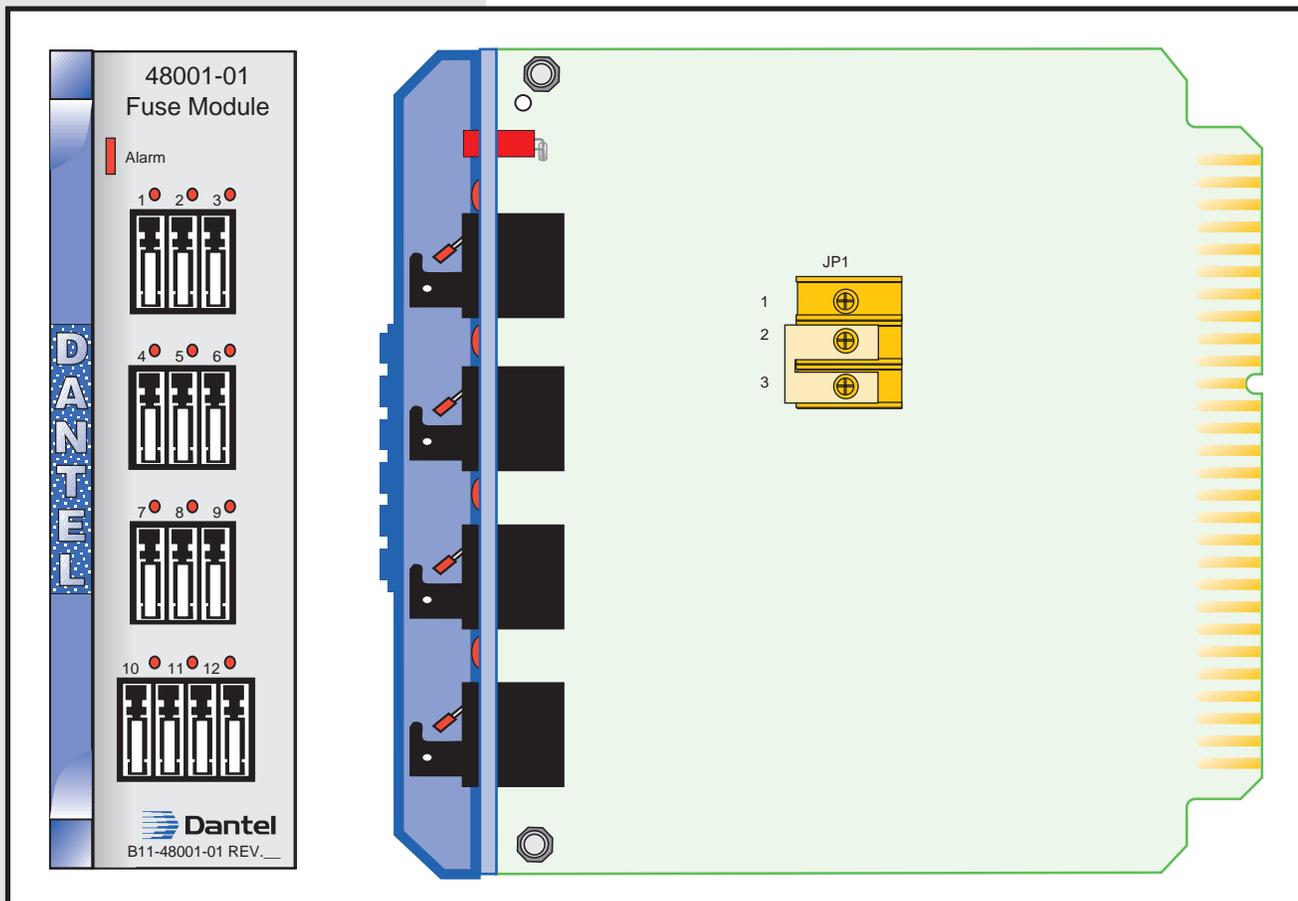| OPTION	OPTION	OPTION	OPTION	OPTION	OPTION
MAC ADDRESS	**S1-1**	**S1-2•**	**S1-3**	**S1-4**	**S1-5**
1*	OFF	OFF			
2	ON	OFF			
PORT ADDRESS					
1*			OFF	OFF	OFF
2			ON	OFF	OFF
3			OFF	ON	OFF
4			ON	ON	OFF
5			OFF	OFF	ON
6			ON	OFF	ON
7			OFF	ON	ON
8			ON	ON	ON
* Default Setting					

UPDATED

INSTALLATION

48001 FUSE MODULE

Set the strap per Fig. 15 and Table H.

FIG. 15 - STRAP LOCATION; 48001

TABLE H - FUSE MODULE STRAP OPTIONS

POSITION	DESCRIPTION
Pins 1 & 2	Redundant or Single Input
Pins 2 & 3 *	Two Independant Inputs
* Default	

TURN-UP PROCEDURE

This section describes a step-by-step procedure for turning up the 05735 shelf. Before beginning the procedure below, verify that:

- ♦ The shelf has been mounted in the equipment bay.

- ♦ All power and communications wiring has been made.

- ♦ All switches and straps have been set and match your MAP and GPP databases.

- ♦ All modules are installed in the shelf according to the option of the shelf.

- ♦ The latest versions of T/Shell for both the MAP's and the GPP, as well as the GPP software, have been installed on your PC.

- ♦ Databases for each MAP and GPP have been built and have the correct addresses.

NOTE: *Only database the ports for active, or soon to be active, devices. MAC ports databased but not connected to active devices will result in a bit 64 communications failure at the Alarm Center.*

If slot 13 is wired for a module, refer to the appropriate practice specific to that device.

STEP 1 - DOWNLOAD MAP DATABASES

- ♦ The T/Shell database must match the switch settings on the MAP being downloaded. This means that the database must have the correct addresses, baud rates, and protocols to match the MAP.

- ♦ When you are in the Transfer screen, Alt-F9 will access the download parameters.

- ♦ Access to the MAP Printer Ports is either through the Hubbing Module in slot 12 at connector C12B, or individually at C2B, C4B, or C6B. If these individual connectors are used, remove power from the Hubbing Module in slot 12 and re-move it from the shelf.

- ♦ Refer to the T/Shell documentation.

STEP 2 - DOWNLOAD THE GPP SOFTWARE AND DATABASE

- ♦ Verify that the database in T/Shell matches the switch set-tings on the GPP and the Transfer Screen Parameters.

- ♦ Avoid databasing non-responding devices. Any entries in the database that do not have responding devices will slow down the polling and reporting of alarms from responding devices. It will also result in a communications failure for those dis-plays.

CONTINUED . . .

TURN-UP PROCEDURE

♦ Access to the GPP is through the Hubbing Module in slot 12 or directly on C10B.

♦ Download the software file, then the database. Refer to the TL1 GPP Editor documentation.

STEP 3 - SET MODEM LEVELS (OPTIONAL)

If a 49013 Tone Modem Subassembly is used, it may be necessary to adjust the tone levels of that modem.

1. Apply power to the host modules with modems installed.

2. Place the front panel switch in the TEST position.

3. Verify that the front panel CD (Carrier Detect) LED at the distant end indicates data transmission activity.

4. With a dB meter (bridging), check the signal level at the XMT test points.

5. Adjust the XMT LVL to obtain the level required for the application.

6. When receiving data, check the incoming signal level at the RCV test points on the front panel with a dB meter (bridging). The signal level should be -20 to -40 dBm, depending on the application. There is no field adjustment for this circuit.

NOTE: *If the incoming signal is greater than -20dB, remove power from the module hosting the 49013 and place the receive straps in the "IN" position. Refer to Fig. 12*

STEP 4 - OBSERVE LED'S

Careful examination of the LED's on each module will reveal much about the status of the system. Detailed information on each module is contained in the practice specific to that module. Contact Dantel Customer Support Services for copies of these practices.

Multiple Alarm Combiners (MAC's)

The MAC front panel contains 16 red and 5 green LED's. For a detailed description of these LED's and their uses, refer to the MAP practice specific to the MAP in use.

Multiple Alarm Processor (MAP)

The MAP is the "brains" of the Dantel 460 Alarm and Control System. To fully understand its potential and capabilities, refer to the MAP practice specific to the MAP in use. The LED's, however, are simple.

CONTINUED . . .

♦ The green XMT DATA LED in the front panel flashes every time the MAP polls for a TBOS (serial) or DCM (discrete) device.

The 49029 communications subassembly mounted on the MAP, and visible through the MAP's front panel, contains six LED's.

♦ XMT DATA - indicates data being transmitted from the MAP to the TL1 GPP.

♦ RCV DATA - indicates a poll from the TL1 GPP.

♦ RTS, DTR, DCD, CTS - indicate that handshaking line is active.

General Purpose Processor (GPP)

The front panel of the GPP has three LED's labeled MASTER, DATA, and PRINTER. Each LED flashes when the corresponding port is transmitting data.

Hubbing Modules

The 46034 Hubbing Module has 20 front panel LED's that indicate the activity of all 9 ports. The first eight LED's, labeled RX1 to RX8 respectively, indicate receive (RX) activity for data ports one through eight.

The next eight LED's, labeled TX1 to TX8 respectively, indicate transmit (TX) activity for data ports one through eight.

The next two LED's are not labeled and do not function.

The last two LED's, labeled RXD and TXD, indicate data transmit (TXD) and data receive (RXD) activity for the communications subassembly (port nine).

TROUBLESHOOTING

If difficulties are experienced with this unit, check the following as appropriate:

♦ Switch and strap settings

♦ Signal levels

♦ Connections to external equipment

If there is a problem with a module, substitute a unit that is know to be good.

NOTE: *Additional assistance is available from Dantel's Customer Support Services Department between the hours of 7am and 5pm Pacific time, Monday through Friday. Call 1-800-4-DANTEL (800/432-6835)*

TURN-UP PROCEDURE

When it is determined that a unit has malfunctioned, the faulty unit may be returned to the factory for repair. For repairs and emergency replacements, obtain a "Returned Material Authorization" (RMA) number by calling Dantel and asking for the Customer Returns Representative. Please provide a purchase order number, and shipping and billing information when requesting a RMA number. Include a description of the malfunction with the returned equipment. Send defective equipment, with the RMA number clearly written on the outside of the package, to:

> Dantel, Inc.
> 2991 N. Argyle Ave.
> Fresno, CA 93727-1388

If a unit is returned and no problem is found, there will be a diagnostic charge for checking the unit, whether it is covered by warranty or not.

05735-0300 <90-00121>

NOTES

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 (559) 292-1111   Fax (559) 292-9355   http://www.dantel.com