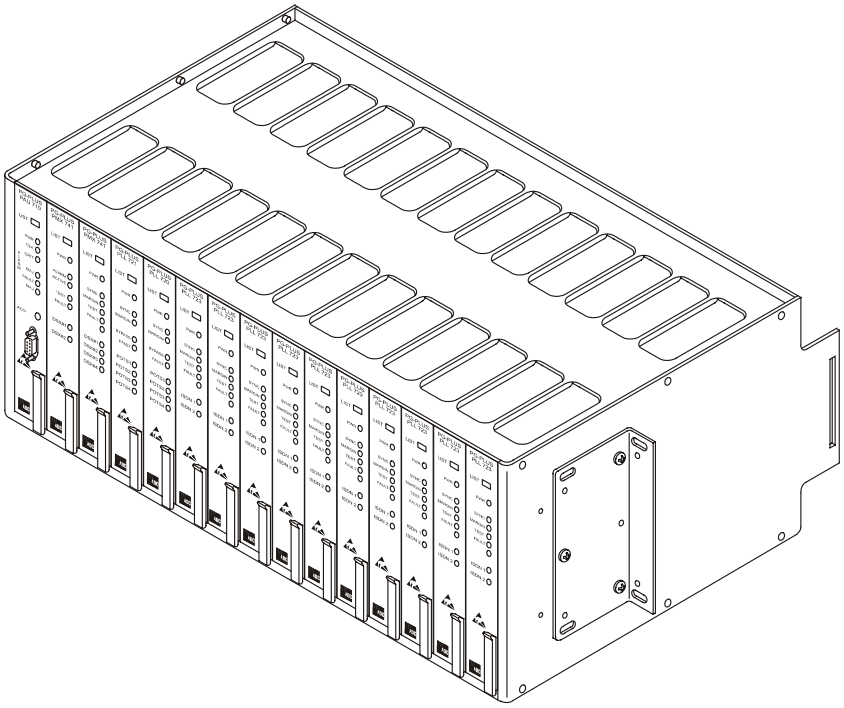
PG-PLUS

TECHNICAL PRACTICE



19" CENTRAL OFFICE TERMINAL SHELF

Model	List	CLEI Code
PCS-718	2	S9MTBA0A~~

Section SCP-PCS718-020-04H

Revision History of This Practice

Revision	Release Date	Revisions Made
02	October 10,1997	Add wiring pin tables and correct connection process
03	January 10, 2002	Release to rebrand document to comply with ADC standards
04	January 6, 2003	Updated Product Support Information

USING THIS TECHNICAL PRACTICE

Two types of messages, identified by icons, appear in the text:

Notes contain information about special circumstances.

Cautions indicate the possibility of equipment damage or the possibility of personal injury.

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PCS-718 OVERVIEW

This practice describes the ADC® PG-Plus® PCS-718 List 2 Central Office Terminal 19-inch Shelf (COTS) which supports up to twelve PG-Plus subscriber carrier systems.

DESCRIPTION AND FEATURES

The PCS-718 provides wire-wrap connections to the CO lines on its backplane. It also provides convenient mounting of COTS Plus Alarm Unit (PAUs) and Central Office Line Units (COLUs), and the termination points for subscriber circuits, alarm, power, and metallic test access. All circuit boards are installed from the front of the shelf. Interconnections for PG-Plus units are located on the backplane at the rear of the shelf. The COTS accommodates the following PG-Plus units (see Figure 1):

- 12 COLUs
- Two Multiplexer Units (PMX)
- One PAU or one PG-Plus Management Unit (PMU) (interchangeable)

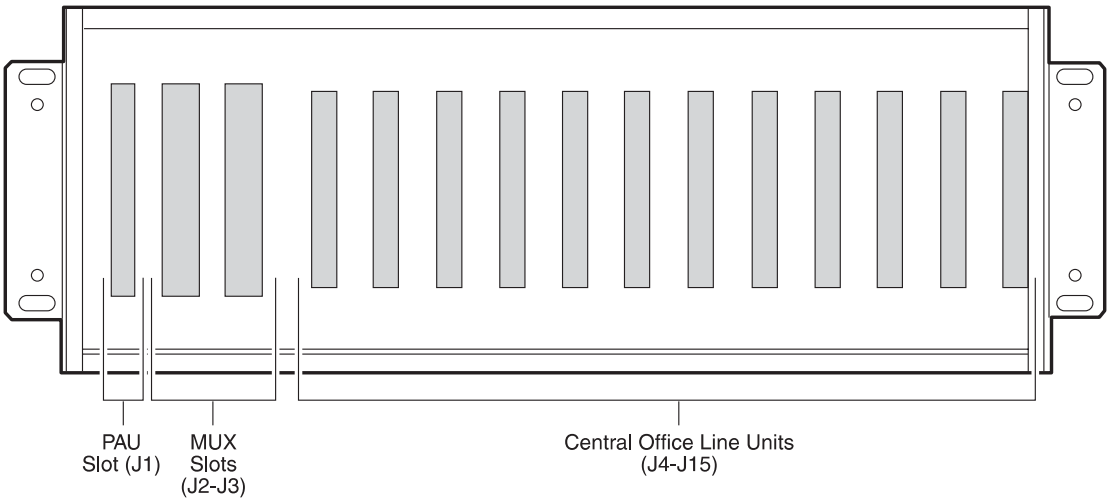

Figure 1 PG-Plus PCS-718 COT Shelf

The COTS features:

- Wire-wrap connections for HDSL, Central Office (CO) lines, punch-down connections (Type 110), alarm cutoff, and alarm relays
- Screw terminal connections for frame ground and CO battery
- DB-25 connector for network communications

THEORY OF OPERATION

Data Channel Overview

The COTS backplane uses redundant Pulse Code Modulation (PCM) transmit and receive buses and Serial Communications Buses (SCB) for data transfer and intra-shelf communications. Individual clock, data, and synchronization buses originate from the PMX cards and terminate at each COLU position. The shelf provides the signal connectivity and -48 V dc power distribution in the COTS. Figure 2 shows the backplane signal interconnection.

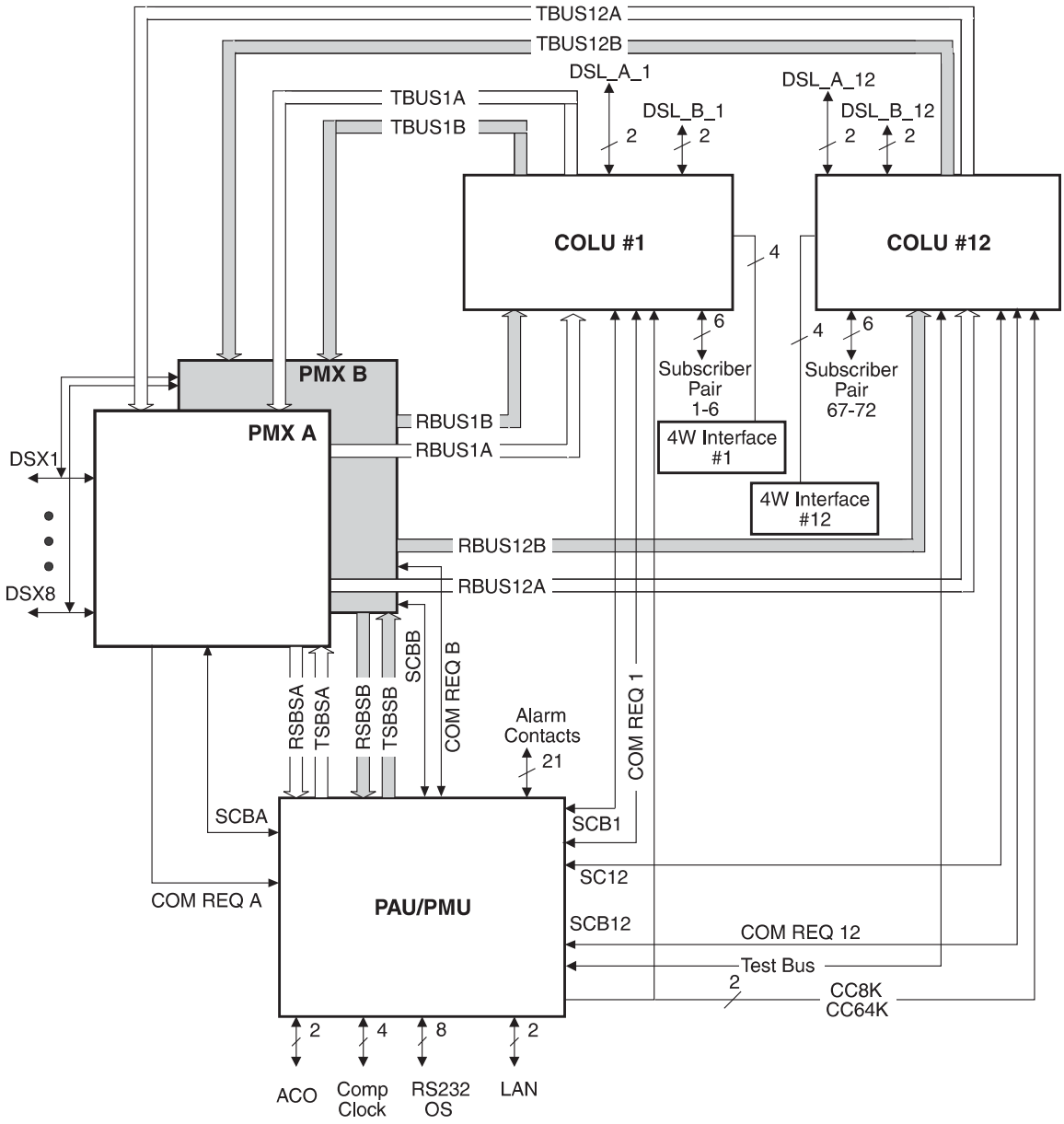

Figure 2 Backplane Signal Configuration

Serial Communications Bus

The Serial Communications Bus (SCB) provides the means for the PAU/PMU to communicate with all other boards in the shelf to allow:

- Software downloads
- Coordination of PMX equipment protection
- Generation of status, alarm, and performance reports through the PG-Plus Console menus
- Provisioning of each unit installed in the shelf through the PG-Plus Console menus

The serial bus operates in a master/slave polled environment with the PAU/PMU functioning as the SCB master. Each COLU position has its own SCB connection to avoid conflict. The SCB acts as the "card present" line to notify the PAU/PMU board that a line unit is present in the shelf. Figure 3 shows the communication line between the PAU/PMU and any COLU. If a COLU is not installed, the line is pulled high to notify the PAU/PMU that a line unit is not present and data should not be sent. When installed, each card pulls its line low.

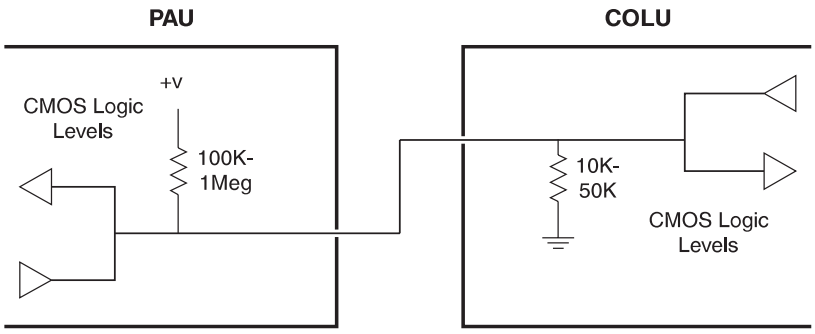

Figure 3 Communication Line Between PAU/PMU and COLU

Composite Clock Signals

Composite clock signals are a 64 kHz bipolar clock with 8 kHz bipolar violations. The 64 kHz clock and the 8 kHz violations define the bit and byte boundaries of DDS data as it is transferred within a CO. In support of DDS interfaces, PG-Plus defines two composite clock interfaces at the PAU or the PMU card slot. The PAU/PMU selects the clock and translates it into bit and byte clocks, which it then distributes to the COLUs. Wire-wrap pins on the backplane allow the composite clock source to be terminated or daisy-chained to another shelf.

Test Bus

The Test Bus provides a common Tip/Ring bus from the COLUs to the PAU/PMU. This bus allows the PAU/PMU to provide a resistive signature to any of the tested subscriber circuits.

Communication Requests

The COTS provides communication requests from each of the cards to the PAU/PMU slot. These signals are used by the COLU and PMX units to initiate communication with the PAU or the PMU.

Backplane Connections

Each shelf supports the connection of up to twelve COLUs, two PMX units, and one PAU/PMU. The backplane of the COTS contains the connectors shown in Figure 4 and Table 1. Wiring external to the COTS should follow the provisions of the current edition of the National Electrical Code and applicable local codes.

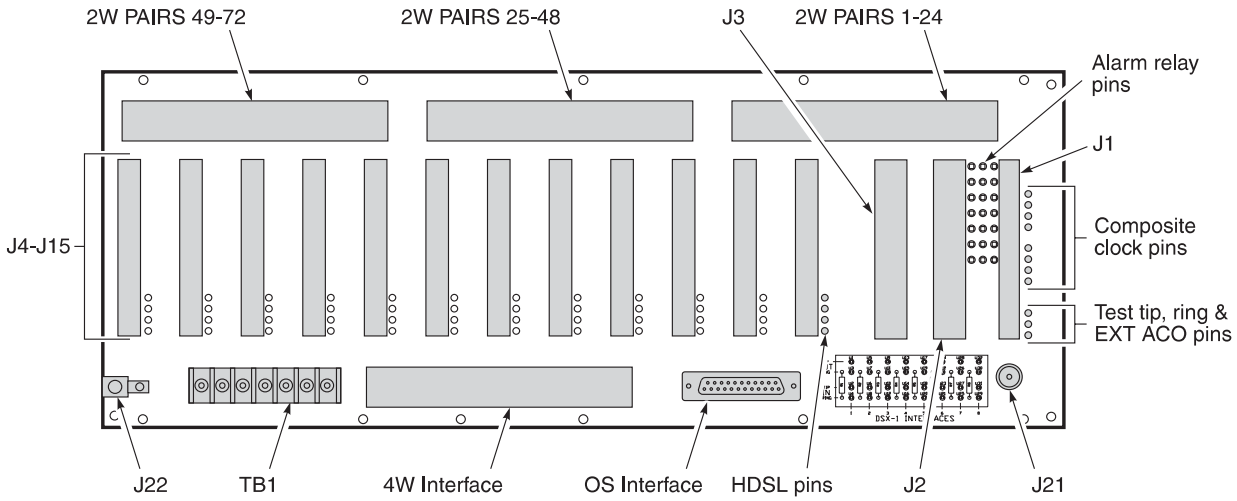

Figure 4 PCS-718 Shelf Backplane

The following sections identify each backplane connector by type and function.

Information in Tables 3 through 17 can be used for diagnostic and troubleshooting procedures under the direction of an authorized ADC technical support representative.

Table 1. *PCS-718 Backplane Connectors*

Connector	Description
J1	PAU or PMU connector
J2	PMX 1 connector
J3	PMX 2 connector
J4 - J15	COLU HDSL connectors
J20	DB-25 (RS-232) connector
J21	LAN connector
J22	Frame Ground
2W Pairs 1-72	Wire-wrap pin
4W Interface	PB1-12 Wire-wrap pin punch blocks
TB1	Seven-position power-terminal strip

POWER

The COTS backplane has a seven-position power-terminal strip (TB1) that provides connections for dual -48 V dc, common battery return, and frame ground to each of the card slots by way of screw terminals. The shelf can be wired for redundant powering, split-powering, or single-source powering depending upon requirements.

COLU HDSL

There are 12 sets of wire-wrap COLU HDSL interfaces on the backplane, one for each COLU slot (J4 - J15 where J4 corresponds to slot LU1, and J15 corresponds to slot LU12). Each COLU slot is also equipped with a second pair of HDSL wire-wrap pins for future XDSL configurations.

Two-Wire Subscriber Pairs

The COT has twelve COLUs, each COLU has six pairs of wires totaling in 72 two-wire subscriber pairs that terminate at the wire-wrap pins on the backplane.

Four-Wire Pairs

The COTS provides a total of twelve four-wire data interfaces (PB1-PB12) that are segregated from the two-wire pairs on separate punch-down blocks (4W Interface Type 110, see Table 2). One four-wire connection is provided for each COLU slot.

Table 2. *PB1-PB12 Punch-down Blocks*

Punch Block #	Assignment	Assignment
PB1 Transmit	4WTXR1	4WTXT1
PB1 Receive	4WRXR1	4WRXT1
PB2 Transmit	4WTXR2	4WTXT2
PB2 Receive	4WRXR2	4WRXT2
PB3 Transmit	4WTXR3	4WTXT3
PB3 Receive	4WRXR3	4WRXT3
PB4 Transmit	4WTXR4	4WTXT4
PB4 Receive	4WRXR4	4WRXT4
PB5 Transmit	4WTXR5	4WTXT5
PB5 Receive	4WRXR5	4WRXT5
PB6 Transmit	4WTXR6	4WTXT6
PB6 Receive	4WRXR6	4WRXT6
PB7 Transmit	4WTXR7	4WTXT7
PB7 Receive	4WRXR7	4WRXT7
PB8 Transmit	4WTXR8	4WTXT8
PB8 Receive	4WRXR8	4WRXT8
PB9 Transmit	4WTXR9	4WTXT9
PB9 Receive	4WRXR9	4WRXT9
PB10 Transmit	4WTXR10	4WTXT10
PB10 Receive	4WRXR10	4WRXT10
PB11 Transmit	4WTXR11	4WTXT11
PB11 Receive	4WRXR11	4WRXT11
PB12 Transmit	4WTXR12	4WTXT12
PB12 Receive	4WRXR12	4WRXT12

COLU Edge Card Connectors

Tables 3 through 14 show the backplane connector pinouts for each COLU slot.

Table 3. *COLU #1 (J4) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP1	RING1	50
47	TIP2	RING2	48
45	TIP3	RING3	46
43	TIP4	RING4	44
41	TIP5	RING5	42
39	TIP6	RING6	40
37	<BURN IN>	-	38
35	CC8KA	CC64KA	36
33	INTRPT1-	SCB1	34
31	RDATA1	RDATB1	32
29	CLKA1	CLKB1	30
27	RSIGA1	RSIGB1	28
25	FSYNCA1	FSYNCB1	26
23	TDATA1	TDATB1	24
21	TSIGA1	TSIGB1	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA1	HTIPB1	10
7	HRINGA1	HRINGB1	8
5	FGND	FGND	6
3	4WRXT1	4WRXR1	4
1	4WTXT1	4WTXR1	2

Table 4. *COLU #2 (J5) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP7	RING7	50
47	TIP8	RING8	48
45	TIP9	RING9	46
43	TIP10	RING10	44
41	TIP11	RING11	42
39	TIP12	RING12	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT2-	SCB2	34
31	RDATA2	RDATB2	32
29	CLKA2	CLKB2	30
27	RSIGA2	RSIGB2	28
25	FSYNCA2	FSYNCB2	26
23	TDATA2	TDATB2	24
21	TSIGA2	TSIGB2	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA2	HTIPB2	10
7	HRINGA2	HRINGB2	8
5	FGND	FGND	6
3	4WRXT2	4WRXR2	4
1	4WTXT2	4WTXR2	2

Table 5. *COLU #3 (J6) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP13	RING13	50
47	TIP14	RING14	48
45	TIP15	RING15	46
43	TIP16	RING16	44
41	TIP17	RING17	42
39	TIP18	RING18	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT3-	SCB3	34
31	RDATA3	RDATB3	32
29	CLKA3	CLKB3	30
27	RSIGA3	RSIGB3	28
25	FSYNCA3	FSYNCB3	26
23	TDATA3	TDATB3	24
21	TSIGA3	TSIGB3	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA3	HTIPB3	10
7	HRINGA3	HRINGB3	8
5	FGND	FGND	6
3	4WRXT3	4WRXR3	4
1	4WTXT3	4WTXR3	2

Table 6. *COLU #4 (J7) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP19	RING19	50
47	TIP20	RING20	48
45	TIP21	RING21	46
43	TIP22	RING22	44
41	TIP23	RING23	42
39	TIP24	RING24	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT4-	SCB4	34
31	RDATA4	RDATB4	32
29	CLKA4	CLKB4	30
27	RSIGA4	RSIGB4	28
25	FSYNCA4	FSYNCB4	26
23	TDATA4	TDATB4	24
21	TSIGA4	TSIGB4	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA4	HTIPB4	10
7	HRINGA4	HRINGB4	8
5	FGND	FGND	6
3	4WRXT4	4WRXR4	4
1	4WTXT4	4WTXR4	2

Table 7. *COLU #5 (J8) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP25	RING25	50
47	TIP26	RING26	48
45	TIP27	RING27	46
43	TIP28	RING28	44
41	TIP29	RING29	42
39	TIP30	RING30	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT5-	SCB5	34
31	RDATA5	RDATB5	32
29	CLKA5	CLKB5	30
27	RSIGA5	RSIGB5	28
25	FSYNCA5	FSYNCB5	26
23	TDATA5	TDATB5	24
21	TSIGA5	TSIGB5	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA5	HTIPB5	10
7	HRINGA5	HRINGB5	8
5	FGND	FGND	6
3	4WRXT5	4WRXR5	4
1	4WTXT5	4WTXR5	2

Table 8. *COLU #6 (J9) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP31	RING31	50
47	TIP32	RING32	48
45	TIP33	RING33	46
43	TIP34	RING34	44
41	TIP35	RING35	42
39	TIP36	RING36	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT6-	SCB6	34
31	RDATA6	RDATB6	32
29	CLKA6	CLKB6	30
27	RSIGA6	RSIGB6	28
25	FSYNCA6	FSYNCB6	26
23	TDATA6	TDATB6	24
21	TSIGA6	TSIGB6	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_L	BATA_L	16
13	BATB_L	BATB_L	14
11	–	–	12
9	HTIPA6	HTIPB6	10
7	HRINGA6	HRINGB6	8
5	FGND	FGND	6
3	4WRXT6	4WRXR6	4
1	4WTXT6	4WTXR6	2

Table 9. *COLU #7 (J10) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP37	RING37	50
47	TIP38	RING38	48
45	TIP39	RING39	46
43	TIP40	RING40	44
41	TIP41	RING41	42
39	TIP42	RING42	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT7-	SCB7	34
31	RDATA7	RDATB7	32
29	CLKA7	CLKB7	30
27	RSIGA7	RSIGB7	28
25	FSYNCA7	FSYNCB7	26
23	TDATA7	TDATB7	24
21	TSIGA7	TSIGB7	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA7	HTIPB7	10
7	HRINGA7	HRINGB7	8
5	FGND	FGND	6
3	4WRXT7	4WRXR7	4
1	4WTXT7	4WTXR7	2

Table 10. *COLU #8 (J11) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP43	RING43	50
47	TIP44	RING44	48
45	TIP45	RING45	46
43	TIP46	RING46	44
41	TIP47	RING47	42
39	TIP48	RING48	40
37	<BURN IN>	–	38
35	CC8KA	CC64KA	36
33	INTRPT8-	SCB8	34
31	RDATA8	RDATB8	32
29	CLKA8	CLKB8	30
27	RSIGA8	RSIGB8	28
25	FSYNCA8	FSYNCB8	26
23	TDATA8	TDATB8	24
21	TSIGA8	TSIGB8	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA8	HTIPB8	10
7	HRINGA8	HRINGB8	8
5	FGND	FGND	6
3	4WRXT8	4WRXR8	4
1	4WTXT8	4WTXR8	2

Table 11. *COLU #9 (J12) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP49	RING49	50
47	TIP50	RING50	48
45	TIP51	RING51	46
43	TIP52	RING52	44
41	TIP53	RING53	42
39	TIP54	RING54	40
37	<BURN IN>	–	38
35	CC8KB	CC64KB	36
33	INTRPT9-	SCB9	34
31	RDATA9	RDATB9	32
29	CLKA9	CLKB9	30
27	RSIGA9	RSIGB9	28
25	FSYNCA9	FSYNCB9	26
23	TDATA9	TDATB9	24
21	TSIGA9	TSIGB9	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA9	HTIPB9	10
7	HRINGA9	HRINGB9	8
5	FGND	FGND	6
3	4WRXT9	4WRXR9	4
1	4WTXT9	4WTXR9	2

Table 12. *COLU #10 (J13) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP55	RING55	50
47	TIP56	RING56	48
45	TIP57	RING57	46
43	TIP58	RING58	44
41	TIP59	RING59	42
39	TIP60	RING60	40
37	<BURN IN>	–	38
35	CC8KB	CC64KB	36
33	INTRPT10-	SCB10	34
31	RDATA10	RDATB10	32
29	CLKA10	CLKB10	30
27	RSIGA10	RSIGB10	28
25	FSYNCA10	FSYNCB10	26
23	TDATA10	TDATB10	24
21	TSIGA10	TSIGB10	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA10	HTIPB10	10
7	HRINGA10	HRINGB10	8
5	FGND	FGND	6
3	4WRXT10	4WRXR10	4
1	4WTXT10	4WTXR10	2

Table 13. *COLU #11 (J14) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP61	RING61	50
47	TIP62	RING62	48
45	TIP63	RING63	46
43	TIP64	RING64	44
41	TIP65	RING65	42
39	TIP66	RING66	40
37	<BURN IN>	–	38
35	CC8KB	CC64KB	36
33	INTRPT11-	SCB11	34
31	RDATA11	RDATB11	32
29	CLKA11	CLKB11	30
27	RSIGA11	RSIGB11	28
25	FSYNCA11	FSYNCB11	26
23	TDATA11	TDATB11	24
21	TSIGA11	TSIGB11	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA11	HTIPB11	10
7	HRINGA11	HRINGB11	8
5	FGND	FGND	6
3	4WRXT11	4WRXR11	4
1	4WTXT11	4WTXR11	2

Table 14. *COLU #12 (J15) Connector Pinouts*

Pin #	Assignment	Assignment	Pin #
49	TIP67	RING67	50
47	TIP68	RING68	48
45	TIP69	RING69	46
43	TIP70	RING70	44
41	TIP71	RING71	42
39	TIP72	RING72	40
37	<BURN IN>	–	38
35	CC8KB	CC64KB	36
33	INTRPT12-	SCB12	34
31	RDATA12	RDATB12	32
29	CLKA12	CLKB12	30
27	RSIGA12	RSIGB12	28
25	FSYNCA12	FSYNCB12	26
23	TDATA12	TDATB12	24
21	TSIGA12	TSIGB12	22
19	TSTTIP	TSTRING	20
17	GND	GND	18
15	BATA_H	BATA_H	16
13	BATB_H	BATB_H	14
11	–	–	12
9	HTIPA12	HTIPB12	10
7	HRINGA12	HRINGB12	8
5	FGND	FGND	6
3	4WRXT12	4WRXR12	4
1	4WTXT12	4WTXR12	2

Alarm Cutoff

The shelf backplane provides a wire-wrap pin for connection to an external alarm cutoff circuit.

Alarm Contacts

The COTS provides access to the PG-Plus Alarm Unit (PAU) alarm relays by way of wire-wrap pins on the shelf backplane. Both normally open (NO) and normally closed (NC) relay operation is supported. Figure 5 shows the configuration of the alarm relays.

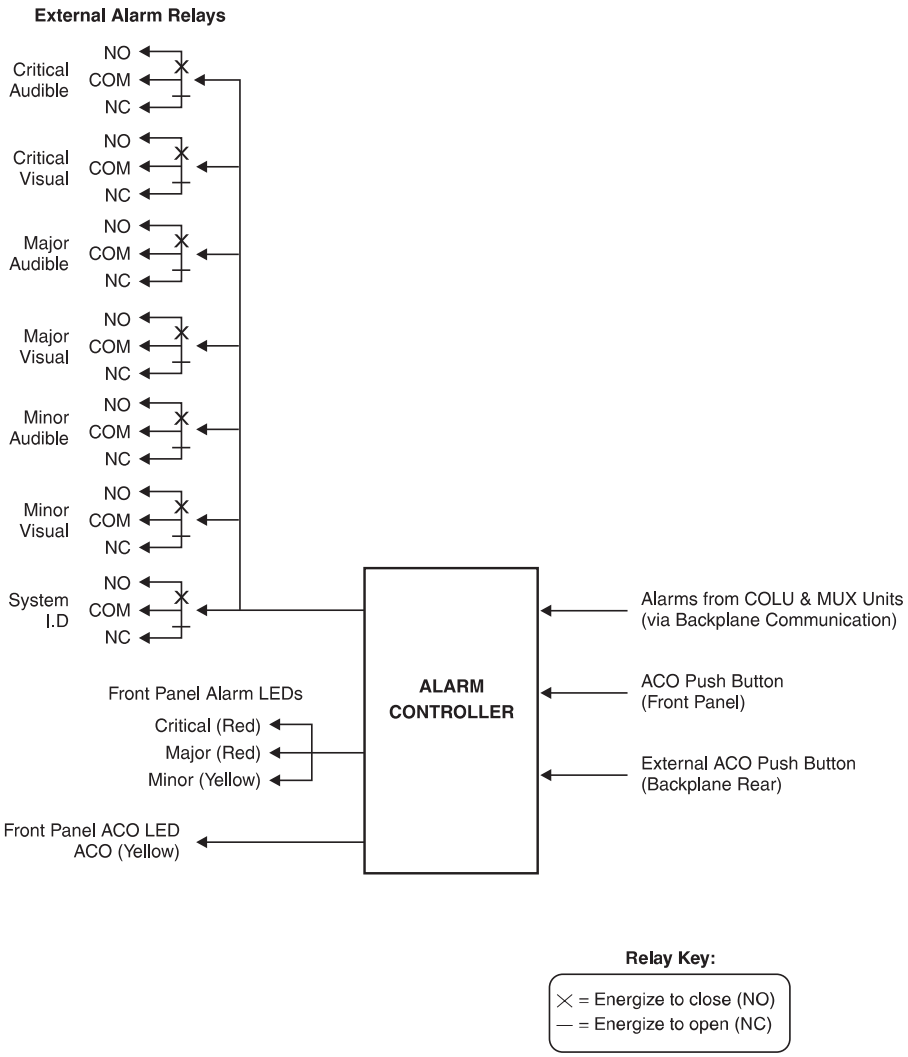

Figure 5 Alarm Relay Contacts from PAU to Wire-Wrap Field

OS Interface

The PG-Plus COTS supports RS-232 X.25 interfaces through a backplane-mounted DB25 connector.

LAN Interface

The PG-Plus COTS supports interconnecting multiple shelves by means of a 10base^{T} BNC LAN connector. This feature is used with a PG-Plus PMU unit.

DSX1 Connections

The COTS provides direct 100 Ω resistive termination for eight DS1 inputs from the DSX-1 cross-connect by way of wire-wrap pins located at the bottom right-hand side of the shelf backplane. The DS1 inputs are bridged to both PMX slots to allow for 1:1 equipment protection.

PAU/PMU Connector

J1 on the backplane is the 96-pin DIN-type PAU/PMU connector. Table 15 lists the PAU/PMU connector pinouts.

Table 15. *PAU/PMU 96-Pin DIN-Type Connector*

Pin #	Row A	Row B	Row C
32	MJRAUDNO	MJRAUDCOM	MJRAUDNC
31	MJRVISNO	MJRVISCOM	MJRVISNC
30	MNRAUDNO	MNRAUDCOM	MNRAUDNC
29	MNRVISNO	MNRVISCOM	MNRVISNC
28	CRITAUDNO	CRITAUDCOM	CRITAUDNC
27	CRITVISNO	CRITVISCOM	CRITVISNC
26	SYSNO	SYSCOM	SYSNC
25	SCB1	INTRPT1-	CC1TIP
24	SCB2	INTRPT2-	CC1RING
23	SCB3	INTRPT3-	CC2TIP
22	SCB4	INTRPT4-	CC2RING
21	SCB5	INTRPT5-	ACO1
20	SCB6	INTRPT6-	GND
19	SCB7	INTRPT7-	TSTTIP
18	SCB8	INTRPT8-	TSTRING
17	SCB9	INTRPT9-	CC64KA
16	SCB10	INTRPT10-	CC8KA
15	SCB11	INTRPT11-	CC64KB
14	SCB12	INTRPT12-	CC8KB
13	SCB13	INTRPT13-	INTRPTA-
12	SCB14	INTRPT14-	FSYNCAEOC
11	SCB15	INTRPT15-	RCLKAEOC
10	SCB16	INTRPT16-	INTRPTB-
9	SCBA	SCBB	FSYNCBEOC
8	BATB_H	TDATBEOC	RCLKBEOC
7	RDATAEOC	RDATBEOC	
6	BATA_L	TDATAEOC	FGND
5	GND	ID1	ID0
4	NMATX	NMARX	<BURN IN>
3	NMADTR	NMADSR	NMAGND
2	NMACD	NMARCLK	NMATCLK
1	LAN	LGND	LGND

PMX Connector

J2 and J3 on the backplane are the 160-pin DIN-type PMX connectors. Table 16 lists the PMX A (labeled as PMX 1 on the front of the shelf) connector pinouts. Table 17 lists the PMX B (labeled as PMX 2 on the front of the shelf) connector pinouts.

Table 16. *PMX 1 160-Pin DIN-Type Connector*

Pin #	Row A	Row B	Row C	Row D	Row E
32	RDATA1	RDATA2	RDATA3	RDATA4	RDATA5
31	RSIGA1	RSIGA2	RSIGA3	RSIGA4	RSIGA5
30	TDATA1	TDATA2	TDATA3	TDATA4	TDATA5
29	TSIGA1	TSIGA2	TSIGA3	TSIGA4	TSIGA5
28	CLKA1	CLKA2	CLKA3	CLKA4	CLKA5
27	FSYNCA1	FSYNCA2	FSYNCA3	FSYNCA4	FSYNCA5
26	GND	GND	GND	GND	GND
25	RDATA6	RDATA7	RDATA8	RDATA9	RDATA10
24	RSIGA6	RSIGA7	RSIGA8	RSIGA9	RSIGA10
23	TDATA6	TDATA7	TDATA8	TDATA9	TDATA10
22	TSIGA6	TSIGA7	TSIGA8	TSIGA9	TSIGA10
21	CLKA6	CLKA7	CLKA8	CLKA9	FSYNCA10
20	FSYNCA6	FSYNCA7	FSYNCA8	FSYNCA9	CLKA10
19	GND	GND	GND	GND	GND
18	RDATA11	RDATA12	RDATA13	RDATA14	RDATA15
17	RSIGA11	RSIGA12	RSIGA13	RSIGA14	RSIGA15
16	TDATA11	TDATA12	TDATA13	TDATA14	TDATA15
15	TSIGA11	TSIGA12	TSIGA13	TSIGA14	TSIGA15
14	CLKA11	CLKA12	CLKA13	CLKA14	CLKA15
13	FSYNCA11	FSYNCA12	FSYNCA13	FSYNCA14	FSYNCA15
12	RDATA16	RSIGA16	CLKA16	SCBA	RDATAEOC
11	BATA_L	TSIGA16	FSYNCA16	INTRPTA-	TDATAEOC
10	BATA_L	TDATA16	RCLKAEOC	FSYNCAEOC	BATB_H
9	B2A	GND	A2B	GND	BATB_H
8	–	–	–	–	<RESERVED>
7	RXTIP1	RXTIP4	TXTIP4	RXTIP7	FGND
6	RXRING1	RXRING4	TXRING4	RXRING7	FGND
5	TXTIP1	RXTIP3	RXTIP5	TXTIP7	–
4	TXRING1	RXRING3	RXRING5	TXRING7	RXTIP8
3	RXTIP2	TXTIP3	TXTIP5	RXTIP6	RXRING8
2	RXRING2	TXRING3	TXRING5	RXRING6	TXTIP8
1	TXTIP2	TXRING2	TXRING6	TXTIP6	TXRING8

Table 17. *PMX 2 160-Pin DIN-Type Connector*

Pin #	Row A	Row B	Row C	Row D	Row E
32	RDATB1	RDATB2	RDATB3	RDATB4	RDATB5
31	RSIGB1	RSIGB2	RSIGB3	RSIGB4	RSIGB5
30	TDATB1	TDATB2	TDATB3	TDATB4	TDATB5
29	TSIGB1	TSIGB2	TSIGB3	TSIGB4	TSIGB5
28	CLKB1	CLKB2	CLKB3	CLKB4	CLKB5
27	FSYNCB1	FSYNCB2	FSYNCB3	FSYNCB4	FSYNCB5
26	GND	GND	GND	GND	GND
25	RDATB6	RDATB7	RDATB8	RDATB9	RDATB10
24	RSIGB6	RSIGB7	RSIGB8	RSIGB9	RSIGB10
23	TDATB6	TDATB7	TDATB8	TDATB9	TDATB10
22	TSIGB6	TSIGB7	TSIGB8	TSIGB9	TSIGB10
21	CLKB6	CLKB7	CLKB8	CLKB9	FSYNCB10
20	FSYNCB6	FSYNCB7	FSYNCB8	FSYNCB9	CLKB10
19	GND	GND	GND	GND	GND
18	RDATB11	RDATB12	RDATB13	RDATB14	RDATB15
17	RSIGB11	RSIGB12	RSIGB13	RSIGB14	RSIGB15
16	TDATB11	TDATB12	TDATB13	TDATB14	TDATB15
15	TSIGB11	TSIGB12	TSIGB13	TSIGB14	TSIGB15
14	CLKB11	CLKB12	CLKB13	CLKB14	CLKB15
13	FSYNCB11	FSYNCB12	FSYNCB13	FSYNCB14	FSYNCB15
12	RDATB16	RSIGB16	CLKB16	SCBB	RDATBEOC
11	BATA_L	TSIGB16	FSYNCB16	INTRPTB-	TDATBEOC
10	BATA_L	TDATB16	RCLKBEOC	FSYNCBEOC	BATB_H
9	A2B	GND	B2A	GND	BATB_H
8	–	–	–	–	<RESERVED>
7	RXTIP1	RXTIP4	TXTIP4	RXTIP7	FGND
6	RXRING1	RXRING4	TXRING4	RXRING7	FGND
5	TXTIP1	RXTIP3	RXTIP5	TXTIP7	–
4	TXRING1	RXRING3	RXRING5	TXRING7	RXTIP8
3	RXTIP2	TXTIP3	TXTIP5	RXTIP6	RXRING8
2	RXRING2	TXRING3	TXRING5	RXRING6	TXTIP8
1	TXTIP2	TXRING2	TXRING6	TXTIP6	TXRING8

SPECIFICATIONS

Dimensions

Height	8.5 in. (22.0 cm.)
Width	19.0 in. (48.3 cm.)
Depth	11.75 in. (29.8 cm.)
Weight	10.2 lbs. (4.5 kg.)

Environment

Temperature	-40°F to +150°F; -40°C to + 65°C
Humidity	5% to 95% (non-condensing)
Altitude	-200 ft. MSL to 13,000 ft. MSL; -60 m MSL to 4,000 m MSL
Vibration	NEBS

Mounting 19-inch or 23-inch equipment rack using universal mounting brackets.

Mounting the COTS in a 23-inch equipment rack on extended brackets is not recommended where vibration is a concern.

Environment

Temperature	-40°F to +149°F; -40°C to + 65°C
Humidity	5% to 95% (noncondensing)
Altitude	-200 ft. MSL to 13,000 ft. MSL; -60 m MSL to 4,000 m MSL
Vibration	NEBS

INSTALLATION AND TEST

REQUIRED TOOLS AND TEST EQUIPMENT

The tools and test equipment required for the installation of the COTS are:

- One wire-wrap tool for .045-inch Square Pins
- One #2 Phillips screwdriver
- One flat-head screwdriver
- One pair wire-strippers
- One pair side-cutters
- One Volt-Ohmmeter
- Type 110 Punch-Down tool

POWER

The COTS uses –48 V dc CO battery. This voltage must be fused on a fuse panel in the CO. The fuse rating depends on the powering option used.

MOUNTING

Attach the shelf to the selected position in the 19-inch or 23-inch equipment frames. For 23-inch frame installations, reverse the mounting brackets on the shelf.

WIRING ACCESS

All wiring to the COTS is done on the backplane. To access the backplane, remove the clear Plexiglas™ cover.

ALARM LEADS

Audible and visual alarm leads from the CO alarm panel to the COTS must be provided. Run the Alarm leads down the side of the COTS mounting frame.

HDSL LINES

One pair of leads from the COTS to the HDSL Tip and Ring pair at the distribution frame must be provided for each system in the COTS. These leads should be dressed along the side of the frame per local practices.

SUBSCRIBER LINES

Most typical CO cables can be connected to the wire-wrap pins for connecting the COTS to the CO switch subscriber line circuits at the distribution frame. Dress the cables along the sides of the frame per local practices.

CONNECTIONS

Ground Connections

Frame Ground must be connected to provide discharge path for outside plant protection circuits.

Two Frame Ground termination points are provided on the COTS. The J22 and TB1 FGND Frame Ground termination points are electrically equivalent. To ground the COTS, perform one of the following ground connection options:

- **J22 Connection**

  The preferred termination point is at J22, located on the lower left corner of the COTS backplane. This ground lug will accept wire in the range of 6 to 12 AWG.

Use this connection only if the equipment frame has a common equipment ground wire running along the vertical member of the frame.

  a Using a wire gauge of the same size as the common equipment frame ground wire, remove 5/8-inch of insulation and insert into the ground lug J22.

  b Using a flat-head screwdriver, secure the wire in the lug.

  c Attach the other end to the common equipment frame ground using locally approved methods.

- **TB1 FGND Connection**

  a Using minimum 12 AWG wire, attach a spade lug connector to terminate the ground wire on the FGND terminal of TB1.

  b Connect the other end of the frame ground wire to the CO Frame Ground termination point using locally approved methods.

Power Connections

The TB1 termination point on the COTS backplane provides connections for dual -48 V dc, common battery return, and frame ground to each of the card slots by way of screw terminals. The shelf can be wired for redundant powering, split-powering, or single-source powering depending upon requirements. The following sections describe the three powering options available on this device. The preferred powering method is redundant-shelf powering. Prior to performing any power connections:

1 Remove all fuses in the equipment bay's fuse panel for the circuit where the PG-Plus -48 V dc power leads will be terminated until the COTS is wired and ready for turn-up.

2 Run the battery and battery return lines from the fuse panel to the COTS mounting frame using a minimum of 12 AWG wire.

3 Connect to a reliably grounded -48 V dc source that is electrically isolated from the AC source.

4 The branch circuit overcurrent protection shall be rated 48 V, 20 A.

5 Disconnect both input supply sources before servicing.

Redundant-Shelf Powering

Each circuit card in the COTS receives power from two -48 V dc sources. If one -48 V dc source is lost, the other -48 V dc source provides power to the shelf circuit cards. Each -48 V dc source is fused at 20 amps.

A four-position jumper is in place on the TB1 block (Figure 6). This jumper shorts all of the 48 VDC inputs together to prevent an alarm situation when only one input feed wire is connected.To provide redundant-shelf powering:

1 Ensure that the ground connection is in place.

2 Remove the four-position jumper from TB1.

3 Cut the four-position jumper in half, then cut out a small strip to ensure a gap between the two pieces when they are replaced.

4 Replace the two pieces on the TB1 block, connecting TB1-1 to TB1-2 with one piece; then TB-3 to TB-4 with the second piece.

5 Connect a wire to the -48A-LOW terminal of TB1. Connect the opposite end of this wire to the CO A battery supply terminal at the fuse panel (labeled -48A-HIGH).

6 Connect a wire to the -48B-HIGH terminal of TB1. Connect the opposite end of this wire to the CO B battery supply at the fuse panel (labeled -48B-HIGH).

7 Connect a wire from the Battery Return terminal in position 5 of TB1 on the COTS backplane to the A CO battery return at the fuse panel.

8 Connect a wire from the COTS terminal in position 6 of TB1 on the COTS backplane to the B CO battery return at the fuse panel.

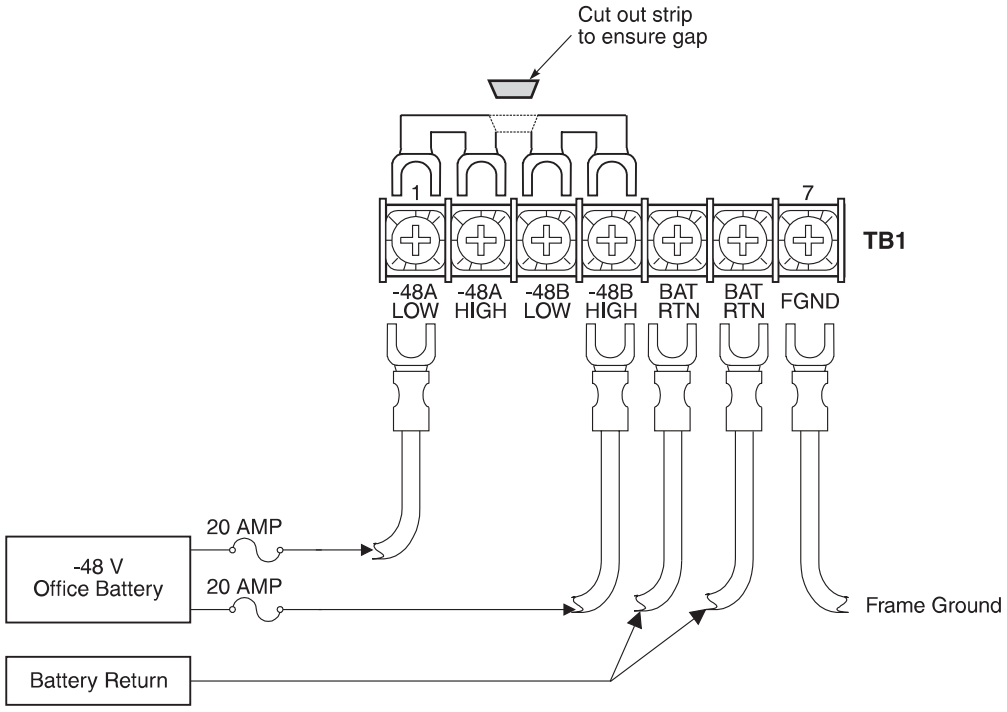

Figure 6 Redundant Shelf Power Wiring

Split-Shelf Powering

One half of the shelf is powered from one -48 V dc source, the other half is powered from another -48 V dc source. Common equipment circuit cards are powered from both sources. If one power supply should fail, one-half of the shelf maintains power. Each -48 V dc source is fused at 10 amps.

A four-position jumper is in place on the TB1 block (refer to Figure 6). This jumper shorts all of the 48 VDC inputs together to prevent an alarm situation when only one input feed wire is connected. To provide split-shelf powering:

1 Ensure that the ground connection is in place.

2 Remove the four-position jumper (refer to Figure 6) and discard.

3 Connect a wire to the -48A-LOW terminal of TB1 (Figure 7). Connect the opposite end of this wire to the A CO battery supply at the fuse panel.

4 Connect a wire to the -48B-HIGH terminal of TB1. Connect the opposite end of this wire to the B CO battery supply at the fuse panel.

5 Connect a wire from the Battery Return terminal in position 5 of TB1 on the COTS backplane to the A CO battery return at the fuse panel.

6 Connect a wire from the Battery Return terminal in position 6 of TB1 on the COTS backplane to the B CO battery return at the fuse panel.

7 Using a short jumper wire, connect the -48 A-LOW and -48 B-LOW terminals of TB1. Make this connection at the top of the terminal block as shown in Figure 7.

8 As in step 2, connect the -48A-HIGH and -48B-HIGH terminals of TB1. Make this connection at the top of the terminal block as shown in Figure 7.

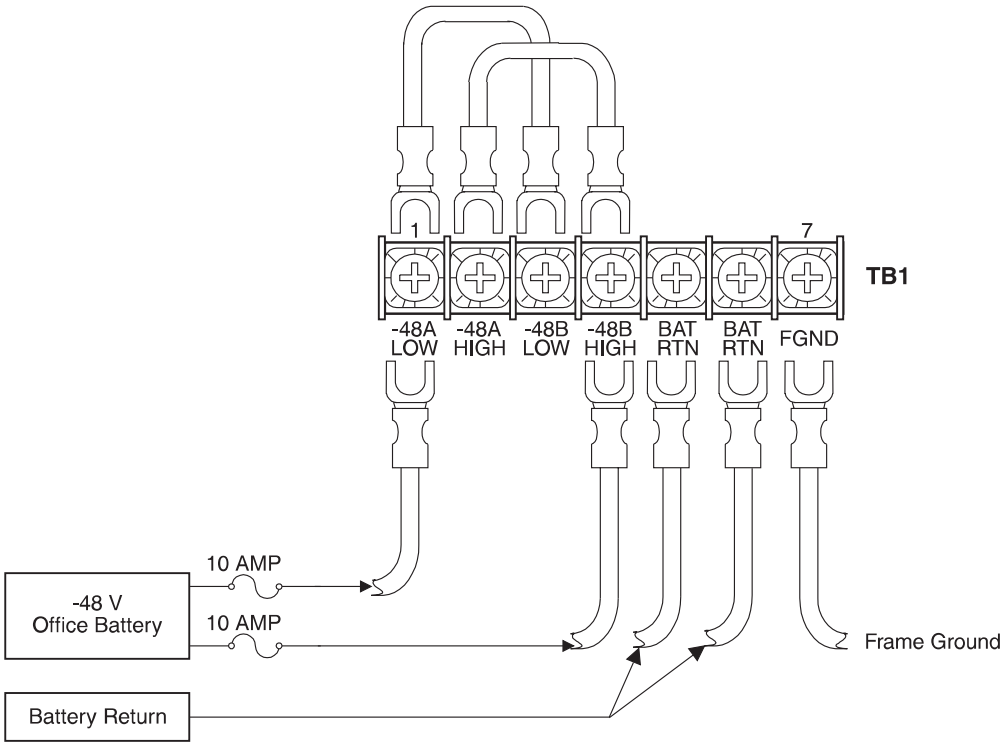

Figure 7 Split-Shelf Wiring

Single-Source Powering

The entire shelf is powered from a single source of -48 V dc power fused at 20 amps.

A four-position jumper is in place on the TB1 block. This jumper shorts all of the 48 VDC inputs together to prevent an alarm situation when only one input feed wire is connected. To provide single-source powering:

1 Ensure that the ground connection is in place.

2 Connect a wire to the -48A-LOW terminal at TB1 (Figure 8). Connect the opposite end of this wire to the -48 V dc CO battery supply at the fuse panel.

3 Connect a wire to the Battery Return terminal in position 6 of TB1. Connect the opposite end of this wire to the battery return of the CO battery supply at the fuse panel.

4 Connect a jumper wire from the -48A-LOW terminal of TB1 to the -48B-HIGH terminal of TB1.

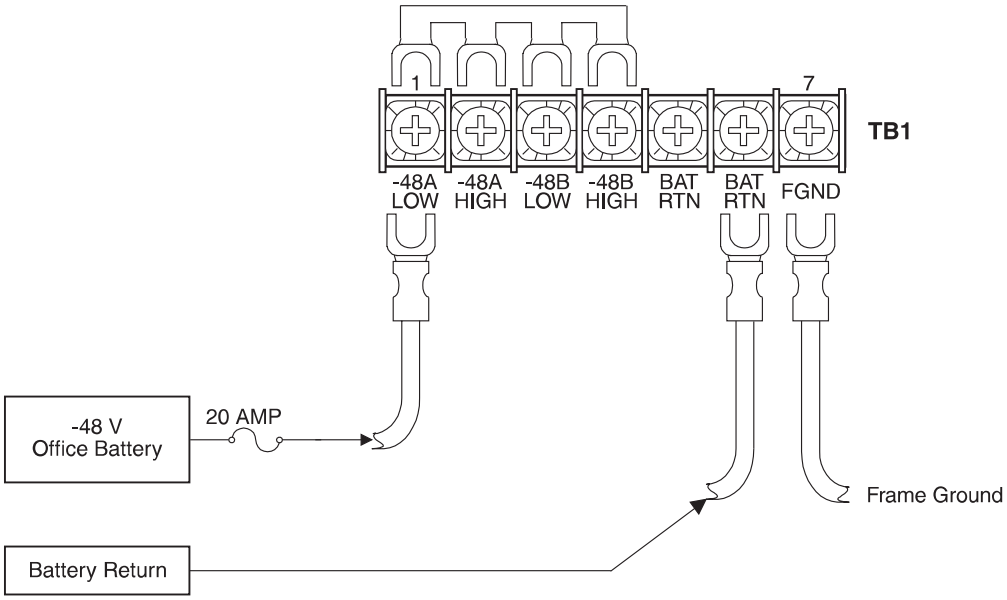

Figure 8 Single-Source Power Wiring

If the -48 HIGH and the -48 LOW terminals are not jumpered, the COLU power LED blinks, because one of the power rails is missing.

Audible and Visual Alarm Connections

Use a wire-wrap tool to terminate the alarm leads from the external alarm equipment on the alarm relay wire-wrap field. See Figure 9 for the location of the alarm relay wire-wrap field. Table 18 shows the layout of the wire-wrap pins on the shelf backplane.

If a remote ACO switch is to be wired, refer to the <italics 10 bold>External ACO Connection section for wire-wrap pin field location.

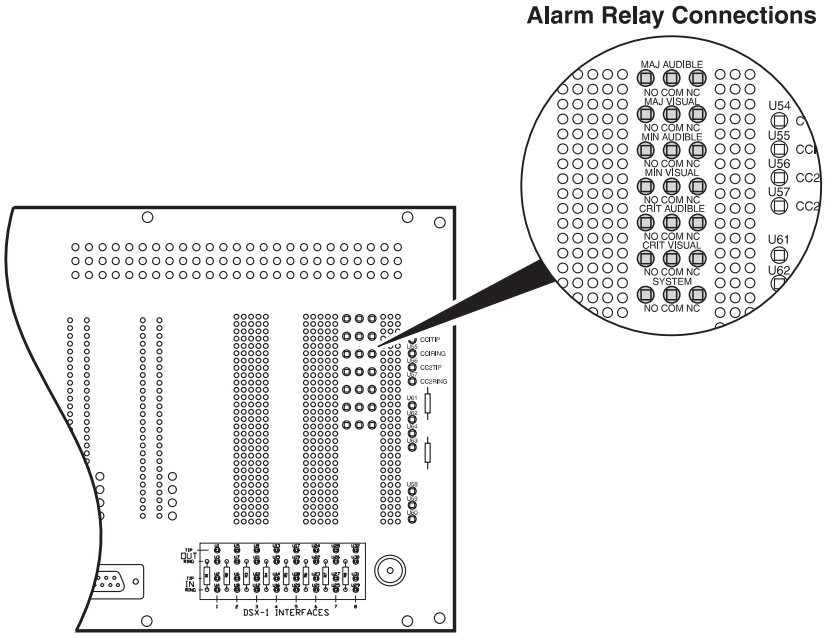

Figure 9 Alarm Relay Wire-Wrap Field

Table 18. *Alarm Relay Wire-Wrap Field*

Normally Open Connection	Common Connection	Normally Closed Connection	Description
MJRAUDNO	MJRAUDCOM	MJRAUDNC	Major audio alarm
MJRVISNO	MJRVISCOM	MJRVISNC	Major visual alarm
MNRAUDNO	MNRAUDCOM	MNRAUDNC	Minor audio alarm
MNRVISNO	MNRVISCOM	MNRVISNC	Minor visual alarm
CRITAUDNO	CRITAUDCOM	CRITAUDNC	Critical audio alarm
CRITVISNO	CRITVISCOM	CRITVISNC	Critical visual alarm
SYSNO	SYSCOM	SYSNC	System Alarm (or all visual alarms)

Subscriber Connections From CO

Subscriber lines from the CO are connected to the COTS by way of wire-wrap pins. Tables 19 through 21 show how the subscriber services are assigned at the Telco connectors. Tables 22 through 24 list the Telco connector pinouts..

Table 19. *Shelf Pair Assignments 1 through 24*

Shelf Cardslot	COLU Type					Shelf Pair Assignment
	PLL-720	PLL-721	PLL-722	PLL-723	PLL-724	
LU1	POTS1	POTS1	POTS1		POTS	1
	POTS2	POTS2	POTS2			2
	POTS3	POTS3	POTS3			3
	POTS4	POTS4	ISDN	ISDN1	ISDN	4
		POTS5		ISDN2		5
		POTS6				6
LU2	POTS1	POTS1	POTS1		POTS	7
	POTS2	POTS2	POTS2			8
	POTS3	POTS3	POTS3			9
	POTS4	POTS4	ISDN	ISDN1	ISDN	10
		POTS5		ISDN2		11
		POTS6				12
LU3	POTS1	POTS1	POTS1		POTS	13
	POTS2	POTS2	POTS2			14
	POTS3	POTS3	POTS3			15
	POTS4	POTS4	ISDN	ISDN1	ISDN	16
		POTS5		ISDN2		17
		POTS6				18
LU4	POTS1	POTS1	POTS1		POTS	19
	POTS2	POTS2	POTS2			20
	POTS3	POTS3	POTS3			21
	POTS4	POTS4	ISDN	ISDN1	ISDN	22
		POTS5		ISDN2		23
		POTS6				24

Table 20. *Shelf Pair Assignments 25 through 48*

Shelf Cardslot	COLU Type					Shelf Pair Assignments
	PLL-720	PLL-721	PLL-722	PLL-723	PLL-724	
LU5	POTS1	POTS1	POTS1		POTS	25
	POTS2	POTS2	POTS2			26
	POTS3	POTS3	POTS3			27
	POTS4	POTS4	ISDN	ISDN1	ISDN	28
		POTS5		ISDN2		29
		POTS6				30
LU6	POTS1	POTS1	POTS1		POTS	31
	POTS2	POTS2	POTS2			32
	POTS3	POTS3	POTS3			33
	POTS4	POTS4	ISDN	ISDN1	ISDN	34
		POTS5		ISDN2		35
		POTS6				36
LU7	POTS1	POTS1	POTS1		POTS	P2-37
	POTS2	POTS2	POTS2			P2-38
	POTS3	POTS3	POTS3			P2-39
	POTS4	POTS4	ISDN	ISDN1	ISDN	P2-40
		POTS5		ISDN2		P2-41
		POTS6				P2-42
LU8	POTS1	POTS1	POTS1		POTS	43
	POTS2	POTS2	POTS2			44
	POTS3	POTS3	POTS3			45
	POTS4	POTS4	ISDN	ISDN1	ISDN	46
		POTS5		ISDN2		47
		POTS6				48

Table 21. *Shelf Pair Assignments 49 through 72*

Shelf Cardslot	COLU Type					Shelf Pair Assignments
	PLL-720	**PLL-721**	**PLL-722**	**PLL-723**	**PLL-724**	
LU9	POTS1	POTS1	POTS1		POTS	49
	POTS2	POTS2	POTS2			50
	POTS3	POTS3	POTS3			51
	POTS4	POTS4	ISDN	ISDN1	ISDN	52
		POTS5		ISDN2		53
		POTS6				54
LU10	POTS1	POTS1	POTS1		POTS	55
	POTS2	POTS2	POTS2			56
	POTS3	POTS3	POTS3			57
	POTS4	POTS4	ISDN	ISDN1	ISDN	58
		POTS5		ISDN2		59
		POTS6				60
LU11	POTS1	POTS1	POTS1		POTS	61
	POTS2	POTS2	POTS2			62
	POTS3	POTS3	POTS3			63
	POTS4	POTS4	ISDN	ISDN1	ISDN	64
		POTS5		ISDN2		65
		POTS6				66
LU12	POTS1	POTS1	POTS1		POTS	67
	POTS2	POTS2	POTS2			68
	POTS3	POTS3	POTS3			69
	POTS4	POTS4	ISDN	ISDN1	ISDN	70
		POTS5		ISDN2		71
		POTS6				72

Table 22. *CO Lines Wire-Wrap Pins*

Ring	Tip	Ground
RING1	TIP1	SLEEVE
RING2	TIP2	SLEEVE
RING3	TIP3	SLEEVE
RING4	TIP4	SLEEVE
RING5	TIP5	SLEEVE
RING6	TIP6	SLEEVE
RING7	TIP7	SLEEVE
RING8	TIP8	SLEEVE
RING9	TIP9	SLEEVE
RING10	TIP10	SLEEVE
RING11	TIP11	SLEEVE
RING12	TIP12	SLEEVE
RING13	TIP13	SLEEVE
RING14	TIP14	SLEEVE
RING15	TIP15	SLEEVE
RING16	TIP16	SLEEVE
RING17	TIP17	SLEEVE
RING18	TIP18	SLEEVE
RING19	TIP19	SLEEVE
RING20	TIP20	SLEEVE
RING21	TIP21	SLEEVE
RING22	TIP22	SLEEVE
RING23	TIP23	SLEEVE
RING24	TIP24	SLEEVE

Table 23. *CO Lines Wire-Wrap Pins*

Ring	Tip	Ground
RING25	TIP25	SLEEVE
RING26	TIP26	SLEEVE
RING27	TIP27	SLEEVE
RING28	TIP28	SLEEVE
RING29	TIP29	SLEEVE
RING30	TIP30	SLEEVE
RING31	TIP31	SLEEVE
RING32	TIP32	SLEEVE
RING33	TIP33	SLEEVE
RING34	TIP34	SLEEVE
RING35	TIP35	SLEEVE
RING36	TIP36	SLEEVE
RING37	TIP37	SLEEVE
RING38	TIP38	SLEEVE
RING15	TIP39	SLEEVE
RING40	TIP40	SLEEVE
RING41	TIP41	SLEEVE
RING42	TIP42	SLEEVE
RING43	TIP43	SLEEVE
RING44	TIP44	SLEEVE
RING45	TIP45	SLEEVE
RING46	TIP46	SLEEVE
RING47	TIP47	SLEEVE
RING48	TIP48	SLEEVE

Table 24. *CO Lines Wire-Wrap Pins*

Ring	Tip	Ground
RING49	TIP49	SLEEVE
RING50	TIP50	SLEEVE
RING51	TIP51	SLEEVE
RING52	TIP52	SLEEVE
RING53	TIP53	SLEEVE
RING54	TIP54	SLEEVE
RING55	TIP55	SLEEVE
RING56	TIP56	SLEEVE
RING57	TIP57	SLEEVE
RING58	TIP58	SLEEVE
RING59	TIP59	SLEEVE
RING60	TIP60	SLEEVE
RING61	TIP61	SLEEVE
RING62	TIP62	SLEEVE
RING63	TIP63	SLEEVE
RING64	TIP64	SLEEVE
RING65	TIP65	SLEEVE
RING66	TIP66	SLEEVE
RING67	TIP67	SLEEVE
RING68	TIP68	SLEEVE
RING69	TIP69	SLEEVE
RING70	TIP70	SLEEVE
RING71	TIP71	SLEEVE
RING72	TIP72	SLEEVE

Composite Clock Connections

This step is required only if provisioning for DDS circuits.

Termination resistors (TERM1 and TERM2) are located below the composite clock wire-wrap pins to provide the correct termination on the composite clock pins. To terminate the clock leads from the Telco Timing Source Generator to the backplane:Connect CC1TIP to one terminal of TERM 1, and CC1RING to the other terminal on TERM 1 (Figure 10).

1 Connect CC1TIP to one terminal of TERM 1, and CC1RING to the other terminal on TERM 1 (Figure 10).

2 Connect CC2TIP to one terminal of TERM 2, and CC2RING to the other terminal on TERM 2 (Figure 10) if a second composite clock source is to be used.

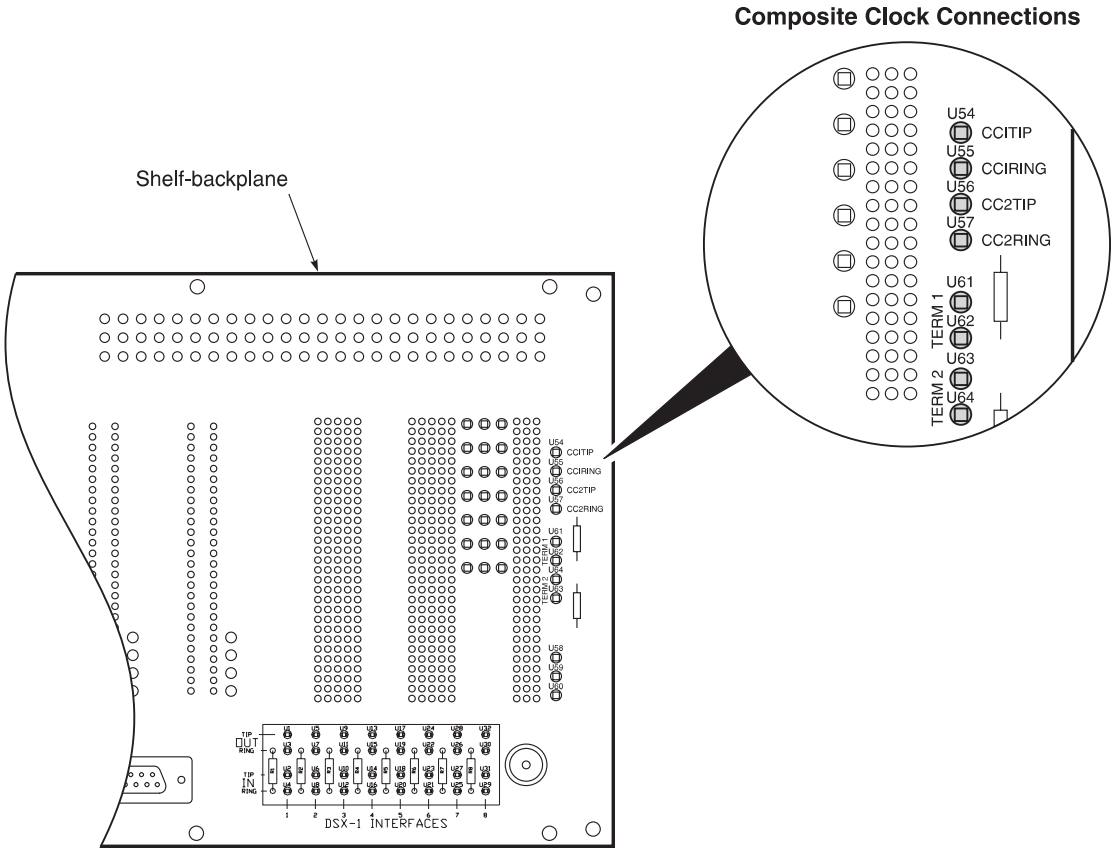

Figure 10 Composite Clock Wire Wrap Assignment

HDSL Wiring

J4 - J15 on the backplane correspond to COLU slot numbers LU1 to LU12, and provide wiring support for two HDSL interfaces per COLU.

Figure 11 shows HDSL connections J4 and J5. The wire-wrap pin labels for J4 - J15 correspond to the COLU slot number. In Figure 11, DSL_A-1 is for the primary HDSL connection to COLU slot 1 (LU1). For COLU slot 12 (LU12), the wire-wrap pin label would read DSL_A-12.

To make the wire-wrap terminations on the HDSL wire-wrap field:

1 Use a wire-wrap tool to terminate HDSL pair #1 onto the Tip and Ring wire-wrap pins labeled DSL_A-1.

2 Terminate the remainder of the required HDSL pairs onto the Tip and Ring wire-wrap pins on terminals DSL_A-2 (LU2) through DSL_A-12 (LU12).

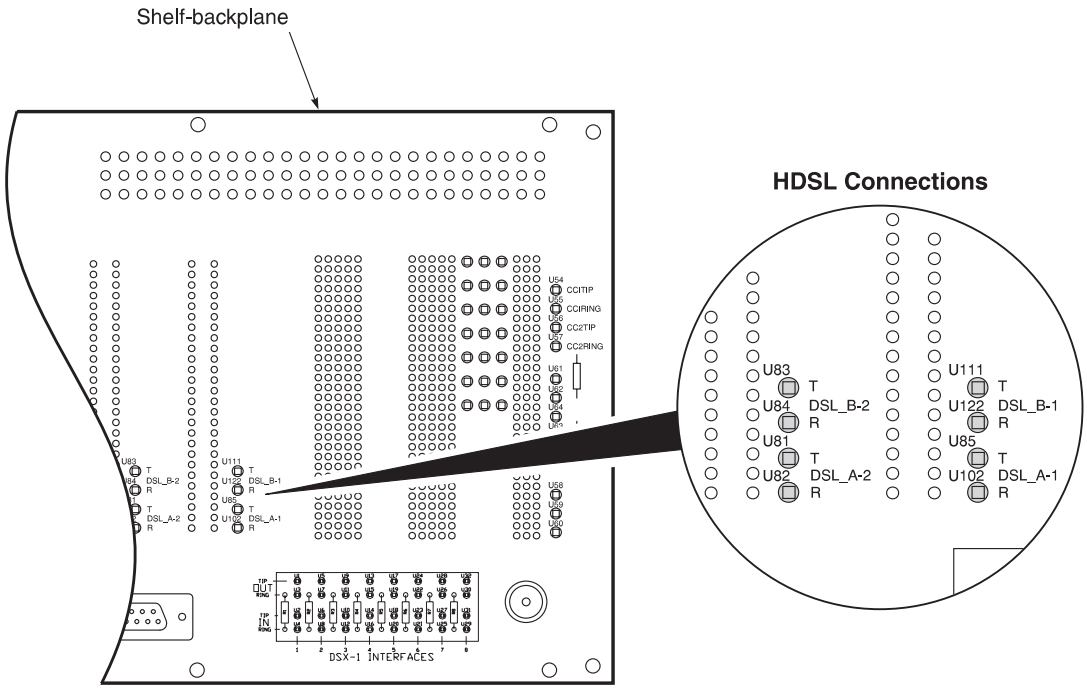

Figure 11 HDSL Wire-Wrap Pairs

External ACO Connection

The ACO connection is made on the pin labeled EXT ACO as shown in Figure 12. To control the ACO remotely, connect the ACO to GROUND through a Normally Open, momentary contact switch.

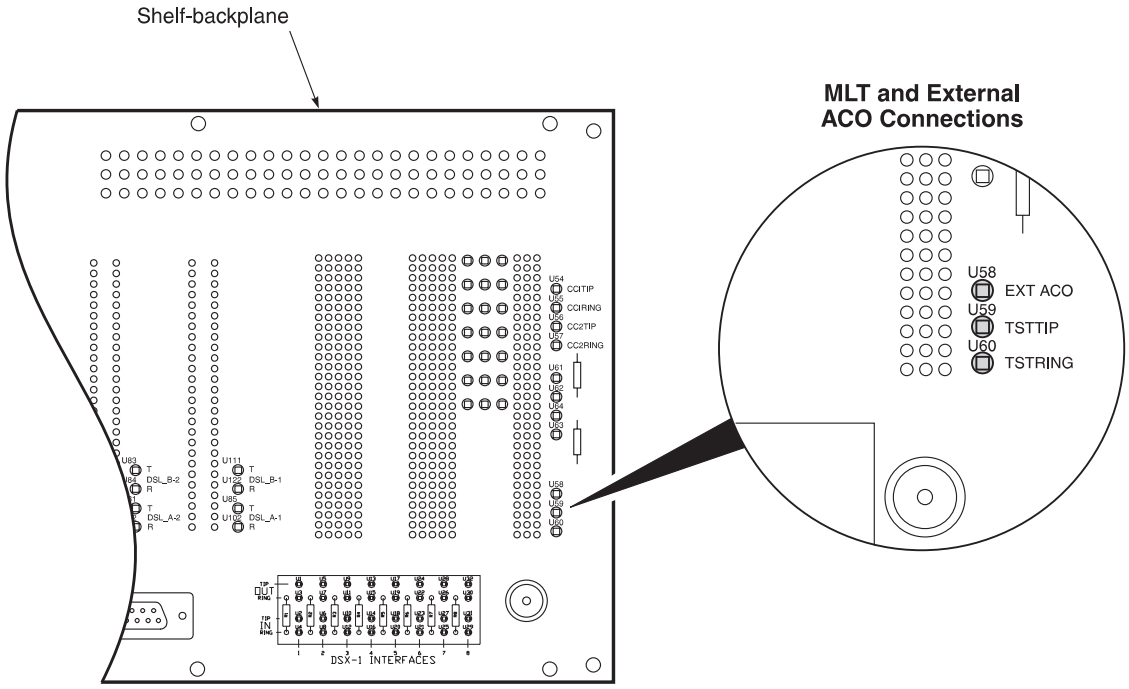

Figure 12 External ACO Wire-Wrap Connections

TURN-UP AND TEST

The following steps should be performed before any circuit cards are installed in the COTS.

1 Verify correct termination of all the HDSL lines on the wire-wrap field on the shelf backplane.

2 Install the fuse(s) in the CO fuse panel for the circuits providing -48 V dc power to the COTS. Observe that the fuses hold when installed.

3 Verify that there is between -42V dc and -56V dc between each of the -48 V dc terminals and GND on TB1 on the COT backplane.

4 Measure the dc voltage across the HDSL terminations. Ensure that there are 0V dc between the Tip and Ring, Tip and Ground, and Ring and Ground of each HDSL circuit terminated on the shelf.

5 Measure the resistance across the terminals of the HDSL pairs. There should be at least 100 k Ω of resistance across the Tip and Ring, Tip and Ground, and Ring and Ground of each HDSL circuit terminated on the COTS backplane.

6 Replace the clear Plexiglas cover on the back of the COTS.

PRODUCT SUPPORT

TECHNICAL SUPPORT

Technical Assistance is available 24 hours a day, 7 days a week by the contacting Customer Service Engineering group at:

Telephone:	800.366.3891 The 800 telephone support line is toll-free in the U.S. and Canada.
Email:	wsd_support@adc.com
Knowledge Base:	http://adc.com/Knowledge_Base/index.jsp
Web:	www.adc.com

LIMITED WARRANTY

Product warranty is determined by your service agreement. Refer to the ADC Warranty/Software Handbook for additional information, or contact your sales representative or Customer Service for details.

RETURNS

To return equipment to ADC:

1 Locate the number of the purchase order under which the equipment was purchased. To obtain a return authorization number, you need to provide the original purchase order number to ADC's Return Material Authorization (RMA) Department.

2 Call or write ADC's RMA Department to ask for an RMA number and any additional instructions. Use the telephone number, fax number or email address listed below:

- Telephone: 800.366.3891
- Email Address: rma@ADC.com

3 Include the following information, in writing, along with the equipment you are returning:

- Company name and address.
- Contact name and telephone number.
- The shipping address to which ADC should return the repaired equipment.
- The original purchase order number.
- A description of the equipment that includes the model and part number of each unit being returned, as well as the number of units that you are returning.
- The reason for the return. For example:
  - The equipment needs an ECO/ECN upgrade.
  - The equipment is defective.

If the equipment is defective, please tell us what you observed just before the equipment malfunctioned. Be as detailed in your description as possible.

If there is another reason for returning the equipment, please let us know so we can determine how best to help you.

4 Pack the equipment in a shipping carton.

5 Write ADC's address and the RMA Number you received from the RMA Department clearly on the outside of the carton and return to:

ADC DSL Systems, Inc.
14352 Franklin Ave.
Tustin, CA 92780-7013

Attention: **RMA (Number)**

All shipments are to be returned prepaid. ADC will not accept any collect shipments.

FCC CLASS A COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the use will be required to correct the interference at his own expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by ADC Technologies, Inc. voids the user's warranty.

All wiring external to the product(s) should follow the provisions of the current edition of the National Electrical Code.

ACRONYMS

ACO	Alarm Cut-Off. A switch used to silence audible alarms.
AWG	American Wire Gauge
CO	Central Office
COLU	Central Office Line Unit. PG-Plus HDSL Interface Unit.
COTS	Central Office Terminal Shelf. PG-Plus Central Office Shelf including line units and common equipment.
DDS	Digital Data Service
DS1	Digital Signal One. A 1.544 Mbps carrier signal.
ESD	Electrostatic Discharge
HDSL	High-bit-rate Digital Subscriber Line
LED	Light-Emitting Diode
MLT	Mechanized Loop Testing (Per TA297)
PAU	PG-Plus Alarm Unit
PMU	PG-Plus Management Unit
POTS	Plain Old Telephone Service
PRL	PG-Plus Remote Line unit
PMX	PG–Plus Multiplexer Unit.
RLU	Remote Line Unit (circuitry only)
RMA	Return Materials Authorization
RT	Remote Terminal (enclosure and RLU inclusive)
SDT	Subscriber Drop Test

World Headquarters:
ADC Telecommunications, Inc.
12501 Whitewater Drive
Minnetonka, Minnesota USA 55343

For Technical Assistance:
800.366.3891

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