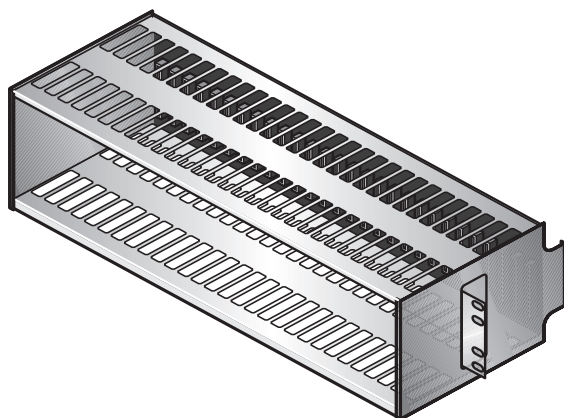
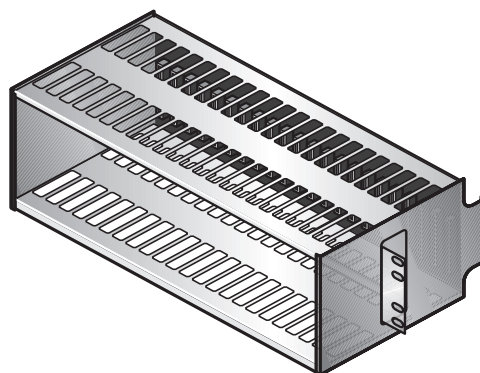


# INSTALLATION GUIDE



HMS-317



HMS-318

## HMS-317 AND HMS-318 MANAGEMENT SHELF

<b>Model/List</b>	<b>Part Number</b>	<b>CLEI</b>
HMS-317 List 2	150-1128-02	T1MFUR04
HMS-317 List 3	150-1128-03	T1MF1R04
HMS-318 List 2	150-1129-02	T1MFVS04
HMS-318 List 2B	150-1129-22	N/A

## REVISION HISTORY OF THIS GUIDE

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Issue	Release Date	Revisions Made
01	July 15, 2002	Initial release

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July 15, 2002

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## USING THIS GUIDE

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



**Notes** contains information about special circumstances.



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

## UNPACK AND INSPECT YOUR SHIPMENT

Upon receipt of the equipment:

- Unpack each container and inspect the contents for signs of damage. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company and to ADC DSL Systems, Inc. Order replacement equipment, if necessary.
- Check the packing list to ensure complete and accurate shipment of each listed item. If the shipment is short or irregular, contact ADC DSL Systems, Inc. as described in [“Appendix D - Product Support”](#) on page 28. If you must store the equipment for a prolonged period, store the equipment in its original container.



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# OVERVIEW

This guide provides detailed information and installation instructions for the following HiGain® Central Office (CO) Management shelves:

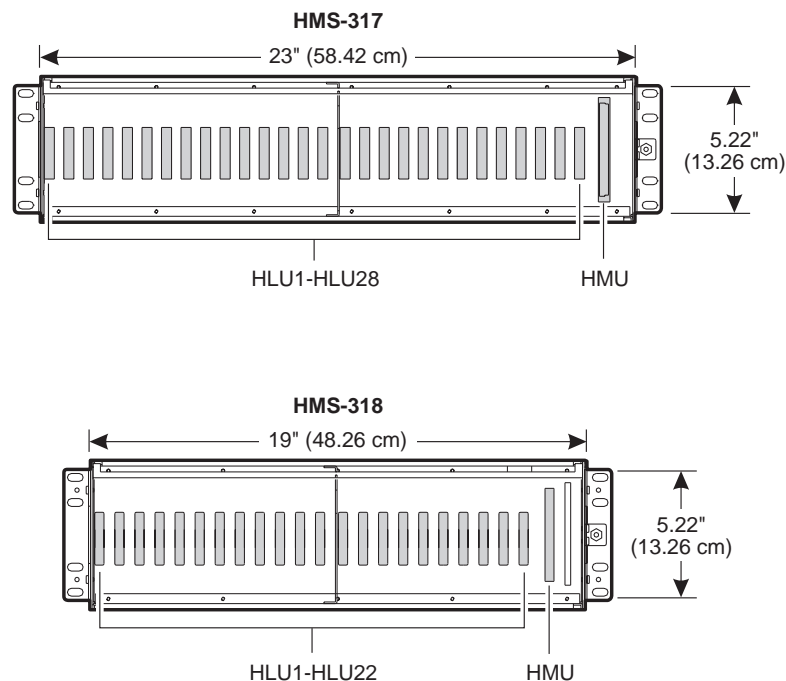
- HMS-317 List 2
- HMS-317 List 3
- HMS-318 List 2
- HMS-318 List 2B

## DESCRIPTION

The HMS-317 and HMS-318 shelves ([Figure 1](#)) support 1.544 Mbps (T1) or 2.048 Mbps (E1) full-duplex transmission over two unconditioned, non-loaded copper loops. Each shelf supports DSX-1 interfaces at the central office (CO) and the remote end, with remote provisioning and performance monitoring. In addition, the HMS-318 supports G.703 circuit connections.

HMS-317 and HMS-318 shelves are shipped with:

- Adjustable mounting brackets that allow the shelf to be positioned in the equipment rack to match the recess of existing equipment.
- M5 x 0.8 by 10 mm mounting screws (4)
- BNC-T connector
- 50Ω BNC terminator
- HMS-317 and HMS-318 Management Shelf Quick Installation Guide



**Figure 1.** HMS-317 and HMS-318 Front View

The HMS-317 (List 2 and List 3) shelf has one HMU and 28 HLU card slots. The HMS-318 (List 2 and List 2B) shelf has one HMU and 22 HLU card slots. Communications between the HMU slot and the HLU card slots are routed through the backplane.

Figure 2 shows the location of the connectors, wire-wrap pins and terminal boards located on the backplane of the HMS-317 and HMS-318 shelves. Table 1 provides a description of each backplane component. For information on the signal and pin assignments for these connectors, see “Appendix A - Signal and Pin Assignments” on page 18.

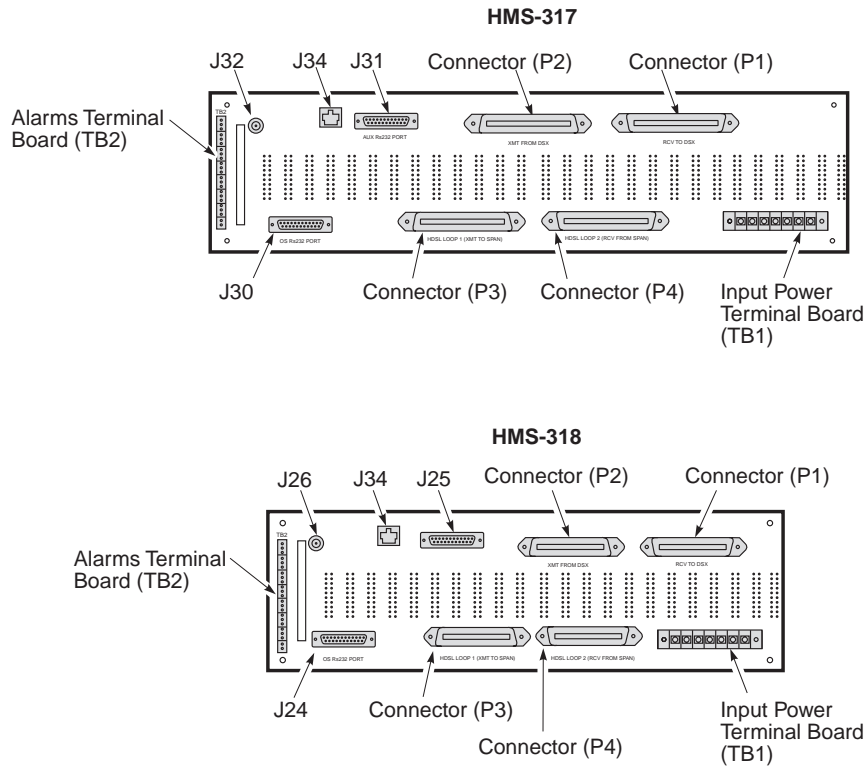


Figure 2. HMS-317 and HMS-318 Rear View

**Table 1.** HMS Backplane Connections

Connector/Terminal Board		Connector Type	Description
HMS-317 List 2 and 3	HMS-318 List 2 and 2B		
J32	J26	BNC	10BASE-2 Ethernet LAN connector
J34	J34	RJ-45	10BASE-T Network Management port
J31	J25	RS-232 DB-25 (Female)	AUX Craft Port (DTE)
J30	J24	RS-232 DB-25 (Female)	OS Craft Port (DTE)
P1	—	Amphenol 64-pin (Male)	DSX-1 Receive
P2	—	Amphenol 64-pin (Male)	DSX-1 Transmit
P3	—	Amphenol 64-pin (Male)	HDSL Span Loop 1
P4	—	Amphenol 64-pin (Male)	HDSL Span Loop 2
—	P1	Amphenol 50-pin (Male)	DSX-1 Receive
—	P2	Amphenol 50-pin (Male)	DSX-1 Transmit
—	P3	Amphenol 50-pin (Male)	HDSL Span Loop 1
—	P4	Amphenol 50-pin (Male)	HDSL Span Loop 2
J1 - J28	J1 - J22	20-pin wire-wrap	HLU connectors
J29	J23	DIN 96-pin (Female)	HMU connector
TB1	—	7-position terminal block	Power connector
—	TB1	9-position terminal block	Power connector
TB2	TB2	22-pin wire-wrap	Alarm connector

## DSX-1 and HDSL Span Connectors

Figure 2 on page 2 shows the location of the HDSL span connectors on the backplane of the HMS-317 and HMS-318 shelves. For information on the signal and pin assignments for these connectors, see “Appendix A - Signal and Pin Assignments” on page 18.

### HMS-317 List 2 and List 3 Plug-in Connectors

The HMS-317 List 2 and List 3 (Figure 2 on page 2) have two 64-pin Amphenol-type male connectors (P1 and P2) for DSX-1 receive and transmit connections and two 64-pin Amphenol-type male connectors (P3 and P4) on the backplane. These connectors provide HDSL Span, Loop1 and Loop 2, receive and transmit connections to the shelf. These connectors provide Tip and Ring connections for all cards in the shelf. Use a mating 64-Pin AMP Style RP No. 2-5522771 connector for 24–26 AWG cables or an RS No. 552307-1 for 22 AWG cables.

### HMS-318 List 2 and List 2B Plug-in Connectors

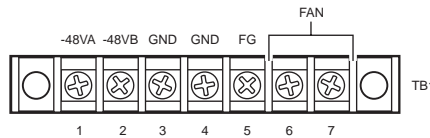
The HMS-318 List 2 and List 2B (Figure 2 on page 2) have two 50-pin Amphenol-type male connectors (P1 and P2) for DSX-1 receive and transmit connections and two 50-pin Amphenol-type male connectors (P3 and P4) on the backplane. These connectors provide HDSL Span, Loop1 and Loop 2, receive and transmit connections to the shelf. These connectors provide Tip and Ring connections for all cards in the shelf. Use a mating 50-pin AMP Style Kit No. 2-22913-1 connector for 24–26 AWG cables.

# POWER AND ALARM CONNECTIONS

Both the HMS-317 and HMS-318 have separate input power (TB1) and alarms (TB2) terminal boards. This section provides detailed information on TB1 and TB2 connections to each shelf.

## Input Power Terminal Block

The input power terminal board (TB1) provides a central connection point for the CO primary and redundant (HMS-317 List 3 only) power feeds (A and B). [Figure 3](#) illustrates TB1 on the HMS-317 and the HMS-318 shelves.



**Figure 3.** Input Power Terminal Block (TB1)

### HMS-317 List 2 Input Power Connections

The power and fan inputs terminal block (TB1; see [Figure 3](#)) provides a central connection point for the CO primary input power feed. Slots 1 through 14 on the HMS-317 List 2 are powered by the -48VA bus. Slots 15 through 28 are powered by the -48VB bus. The two GND terminals are tied together. The HMU-319 is diode-OR'ed to both power busses, to guard against power failure in the event that one power supply is lost. This feature requires the 2 ground terminals to be tied together on the HMU card.

### HMS-317 List 3 Input Power Connections

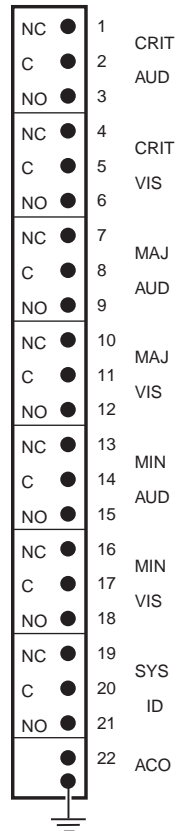
The HMS-317 List 3 requires two battery supply sources (-48VA bus and -48VB bus). The power and fan inputs terminal block (TB1; see [Figure 3](#)) provides a central connection point for the CO primary and redundant input power feeds. The -48VA bus provides primary power to slots 1 through 28. The -48VB bus provides to ensure backup power in the event of a power failure.

### HMS-318 List 2 and 2B Input Power Connections

The power and fan inputs terminal block (TB1; see [Figure 3](#)) provides a central connection point for the CO primary input power feed. Slots 1 through 11 on the HMS-318 List 2 and List 2B are powered by the -48VA bus. Slots 12 through 22 are powered by the -48VB bus. The two GND terminals are tied together. The HMU-319 is diode-OR'ed to both power busses, to guard against power failure in the event that one power supply is lost. This feature requires the 2 ground terminals to be tied together on the HMU card.

## Alarms Terminal Block

The Alarms Terminal Block (TB2; see [Figure 4](#)) is a 22-pin wire-wrap connector. TB1 provides a central connection point to the Normally Closed (NC), Common (COM) and Normally Open (NO) relay contacts for installing optional alarm inputs connections.



**Figure 4.** Alarms Terminal Block (TB2)

## CONNECTING TO HDSL CIRCUITS

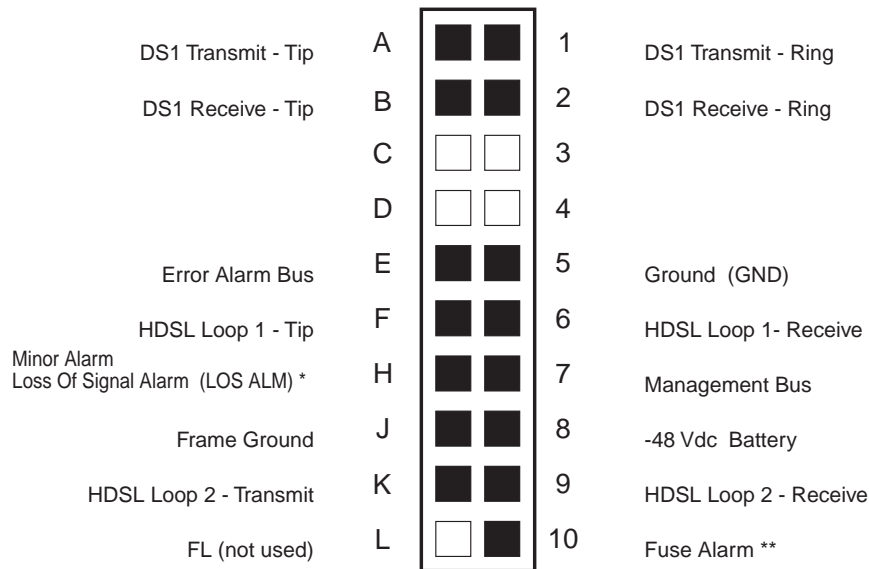
This section provides information on making DSX-1 and HDSL connections to HMS-317 and HMS-318 shelves.

### DSX-1 and HDSL Plug-in Connections

DSX-1 connections to the HMS-317 and HMS-318 shelves can be made through HMS backplane connectors P1 (RCV to DSX) and P2 (XMT from DSX). HDSL connections to the shelves can be made through backplane connectors P3 (HDSL Loop 1) and P4 (HDSL Loop 2). Connectors P1, P2, P3 and P4 are described in “DSX-1 and HDSL Span Connectors” on page 3.

### DSX-1 and HDSL Wire-wrap Connections

DSX-1 and HDSL connections can be made to the individual card connectors through the HMS backplane wire-wrap pins (0.045-inch square/1.14 mm). Straps for cable dressings and a protective Lexan rear cover are provided with the shelf. Figure 5 shows the HLU card slot pinouts on the HMS backplane.



**Notes:**

\* Minor alarm output is normally floating (0 to -60V maximum) and a ground (10 ma maximum, +5 Vdc for HLU-319 List 2D) when activated

\*\* Fuse alarm is normally floating (0 to -80V maximum) and at -48V (10 ma maximum) when activated

**Figure 5.** HLU Slot Wire-wrap Pinouts for HDSL Circuits

## CONNECTING TO HDSL2 CIRCUITS

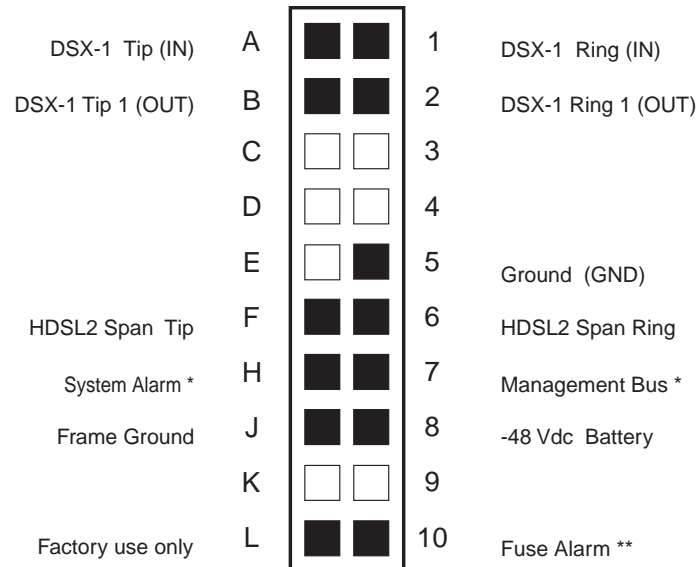
This section provides information on making DSX-1 and HDSL2 connections to HMS-317 and HMS-318 shelves.

### HDSL2 Plug-in Connections

DSX-1 connections to the HMS-317 and HMS-318 shelves can be made through HMS backplane connectors P1 (RCV to DSX) and P2 (XMT from DSX). HDSL2 connections to the shelves can be made through backplane connectors P3 (HDSL Loop 1) and P4 (HDSL Loop 2). Connectors P1, P2, P3 and P4 are described in “DSX-1 and HDSL Span Connectors” on page 3.

### HDSL2 Wire-wrap Connections

DSX-1 and HDSL2 connections can be made to the individual card connectors through the HMS backplane wire-wrap pins (0.045-inch square/1.14 mm). Straps for cable dressings and a protective Lexan rear cover are provided with the shelf. Figure 6 shows the HLU card slot pinouts on the HMS backplane.



**Notes:**

\* System alarm and management bus reserved.

\*\* Fuse alarm normally floating (0 to -80 Vdc maximum) and at -48Vdc (10 ma maximum) when activated.

**Figure 6.** HLU Slot Wire-wrap Pinouts for HDSL2 Circuits

## CONNECTING TO HDSL4 CIRCUITS

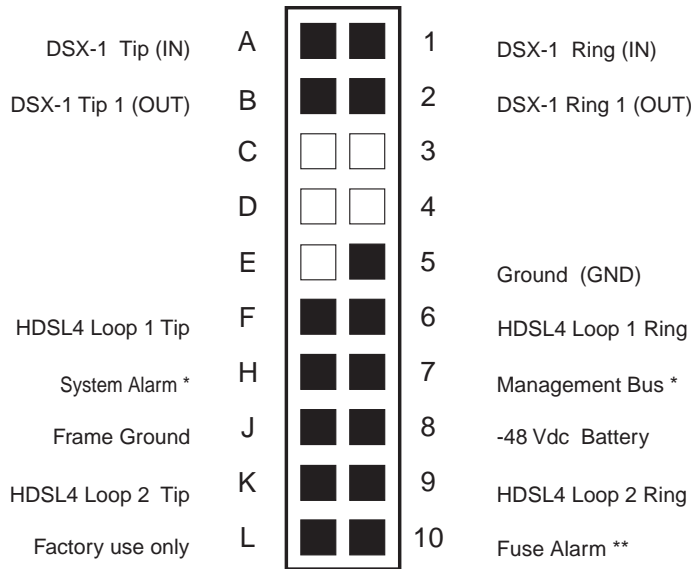
This section provides information on making DSX-1 and HDSL4 connections to HMS-317 and HMS-318 shelves.

### HDSL4 Plug-in Connections

DSX-1 connections to the HMS-317 and HMS-318 shelves can be made through HMS backplane connectors P1 (RCV to DSX) and P2 (XMT from DSX). HDSL4 connections to the shelves can be made through backplane connectors P3 (HDSL Loop 1) and P4 (HDSL Loop 2). Connectors P1, P2, P3 and P4 are described in “DSX-1 and HDSL Span Connectors” on page 3.

### HDSL4 Wire-wrap Connections

DSX-1 and HDSL2 connections can be made to the individual card connectors through backplane wire-wrap pins (0.045-inch square/1.14 mm). Straps for cable dressings and a protective Lexan rear cover are provided with the shelf. Figure 7 shows the HLU card slot pinouts on the HMS backplane.



**Notes:**

- \* System alarm and management bus reserved.
- \*\* Fuse alarm normally floating (0 to -80 Vdc maximum) and at -48Vdc (10 ma maximum) when activated.

**Figure 7.** HLU Slot Wire-wrap Pinouts for HDSL4 Circuits

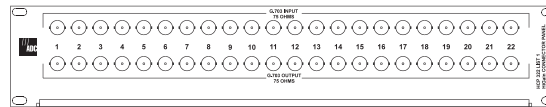


# CONNECTING G.703 CIRCUITS TO THE HMS-318

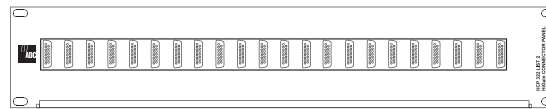
The HiGain System provides a cost-effective, easy-to-deploy method for delivering G.703 High Capacity Digital Service (HCDS) over metallic pairs. Customers can deploy fiber-like quality service over two unconditioned, non-loaded copper pairs without using conventional span repeaters or cable pair conditioning and without the need to separate pairs or remove bridged taps.

## G.703 Plug-in Connections

The ADC HCP-322 Connector Panel, List 1 and List 2 (Figure 8 on page 9), can be used to connect up to 22 G.703 circuits to HiGain ELU-319 line units housed in the HMS-318 shelf. The ADC HCP-322 List 1 panel has 44 BNC connectors for connecting G.703 75Ω circuits to ELU-319 List 1, List 5 and 5D line units. The ADC HCP-322 List 2 panel contains 22 DB-15 connectors for connecting G.703 120Ω circuits to ELU-319 List 6 and 6D line units. The ADC HCP-322 List 2 panel also includes wire-wrap pins for optionally connecting the connector case of each receive (RCV) pair to frame ground. A typical application of the HCP-322 Connector Panel is shown in Figure 9 on page 9.



HCP-322 List 1 Connector Panel



HCP-322 List 2 Connector Panel

Figure 8. ADC HCP-322 List 1 and List 2 Connector Panel

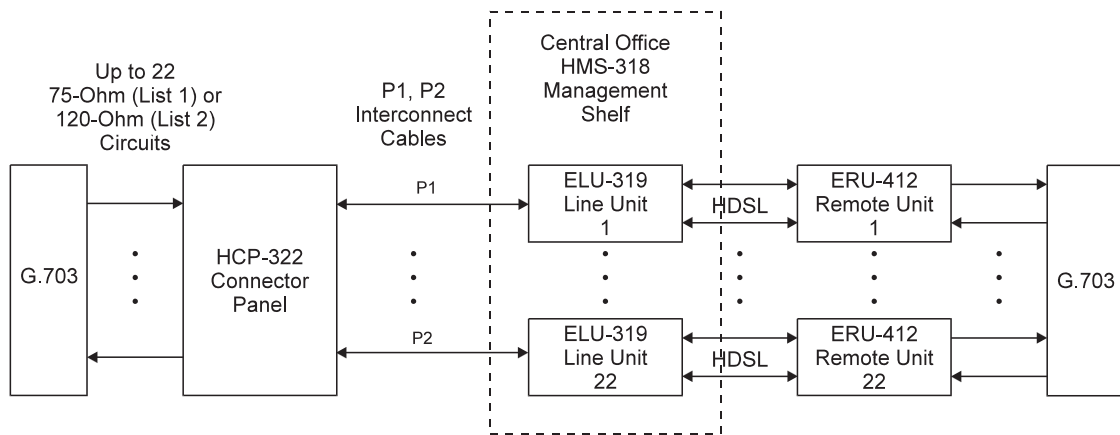


Figure 9. Typical HiGain G.703 Application

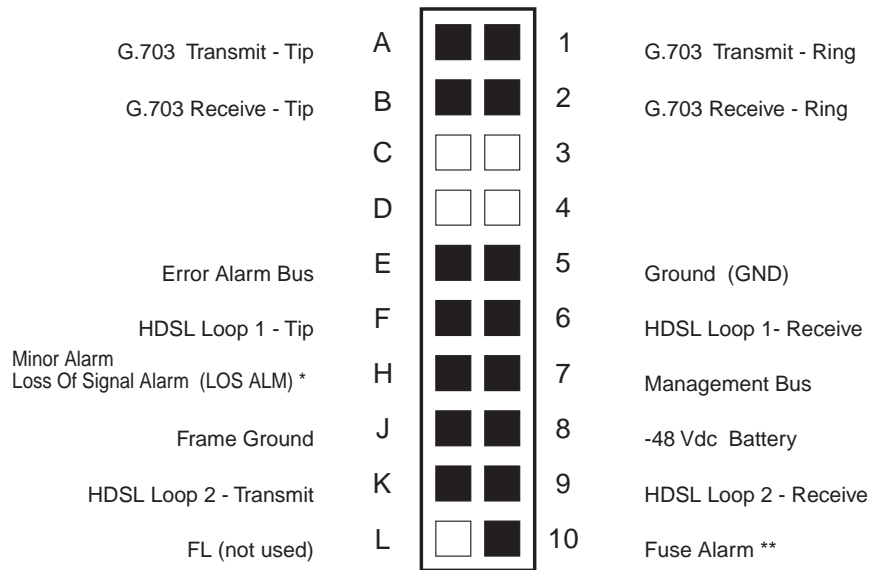
For more information on the ADC HCP-322 Connector Panel or installation instructions, refer to the *HCP-322 Quick Installation Guide*, document number 100-322-100-xx.

## G.703 Wire-wrap Connections

G.703 connections can be made to the individual card connectors through the HMS backplane wire-wrap pins (0.045-inch square/1.14 mm). Straps for cable dressings and a protective Lexan rear cover are provided with the shelf.

### G.703 Wire-wrap Connections for HDSL

Figure 10 shows the HLU card slot pinouts on the HMS backplane for HDSL circuits.



**Notes:**

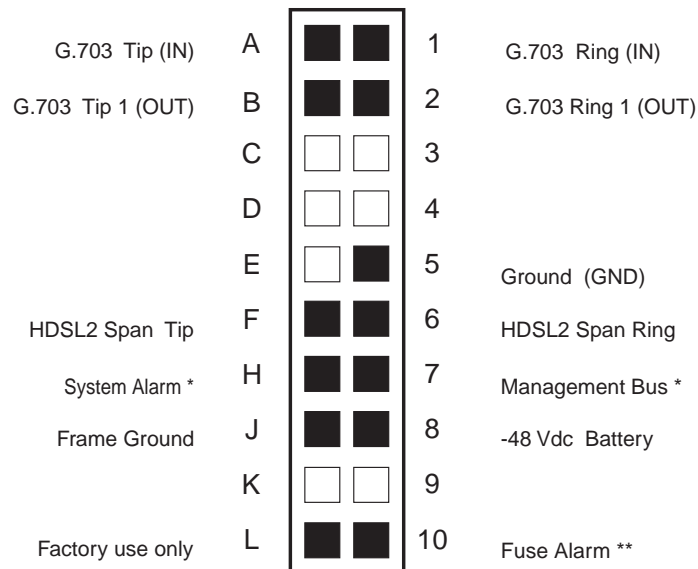
\* Minor alarm output is normally floating (0 to -60V maximum) and a ground (10 ma maximum, +5 Vdc for HLU-319 List 2D) when activated

\*\* Fuse alarm is normally floating (0 to -80V maximum) and at -48V (10 ma maximum) when activated

**Figure 10.** HLU Slot Wire-wrap Pinouts for G.703/HDSL Circuits

## G.703 Wire-wrap Connections for HDSL2

Figure 11 shows the HLU card slot pinouts on the HMS backplane for HDSL2 circuits.



**Notes:**

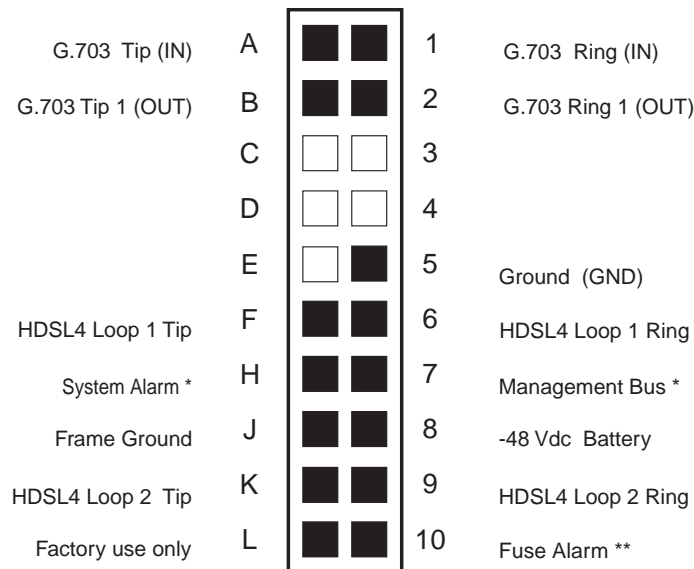
\* System alarm and management bus reserved.

\*\* Fuse alarm normally floating (0 to -80 Vdc maximum) and at -48Vdc (10 ma maximum) when activated.

**Figure 11.** HLU Slot Wire-wrap Pinouts for G.703/HDSL2 Circuits

### G.703 Wire-wrap Connections for HDSL4

Figure 12 shows the HLU card slot pinouts on the HMS backplane for HDSL4 circuits.



**Notes:**

- \* System alarm and management bus reserved.
- \*\* Fuse alarm normally floating (0 to -80 Vdc maximum) and at -48Vdc (10 ma maximum) when activated.

**Figure 12.** HLU Slot Wire-wrap Pinouts for G.703/HDSL4 Circuits

## ASYNCHRONOUS MANAGEMENT PORTS

Two RS-232 communication ports, J30 and J31 on HMS-317 and J24 and J25 located on the HMS-318 backplane (see Figure 13), provide for optional OS and AUX management interfaces to be connected to the HiGain system. Table 2 lists the pin connections for the OS communication port connector. Table 3 on page 14 lists the pin connections for the AUX communication port connector.

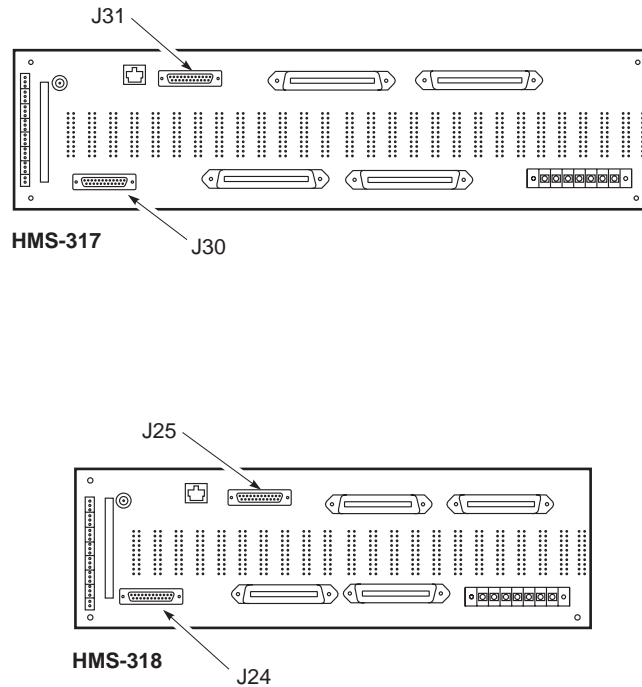


Figure 13. HMS OS and AUX Asynchronous Management Ports



The HMU-319 requires that DSR be asserted by the connected DCE in order to establish communications on this port. The HMU-319 always asserts DTR on this port.

Table 2. J30/J24 - OS RS-232 PORT (DTE)

Pin No.	Signal	Direction
2	Transmit Data (TD)	Out
3	Receive Data (RD)	In
6	Data Set Ready (DSR)	In
7	Ground (GND)	—
20	Data Terminal Ready (DTR)	Out

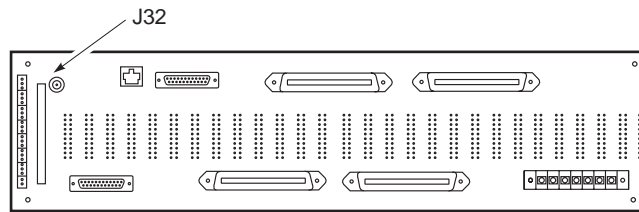
**Table 3. J31/J25 - AUX RS-232 PORT (DTE)**

Pin No.	Signal	Direction
2	Transmit Data (TD)	Out
3	Receive Data (RD)	In
6	Data Set Ready (DSR)	In
7	Ground (GND)	—
20	Data Terminal Ready (DTR)	Out

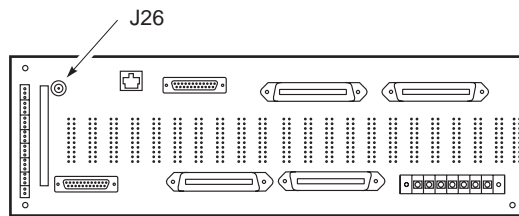
## MULTISHELF NETWORK CONNECTIONS

The BNC connector (J32 on the HMS-317 and J26 on HMS-318; see [Figure 14](#)) can be used to connect the management ports of up to 32 shelves into an integrated network through a 10BASE-2 (IEEE 802.3) Ethernet LAN. The backplane RJ-45 connector (J34) provides a 10BASE-2 and a 10BASE-T (IEEE.802.3) Ethernet LAN.

For detailed signal and pin assignment information on the BNC and RJ-45 connectors, see “[Appendix A - Signal and Pin Assignments](#)” on page 18.



HMS-317



HMS-318

**Figure 14. Multishelf Network Ports**

## POWER DISSIPATION FACTORS

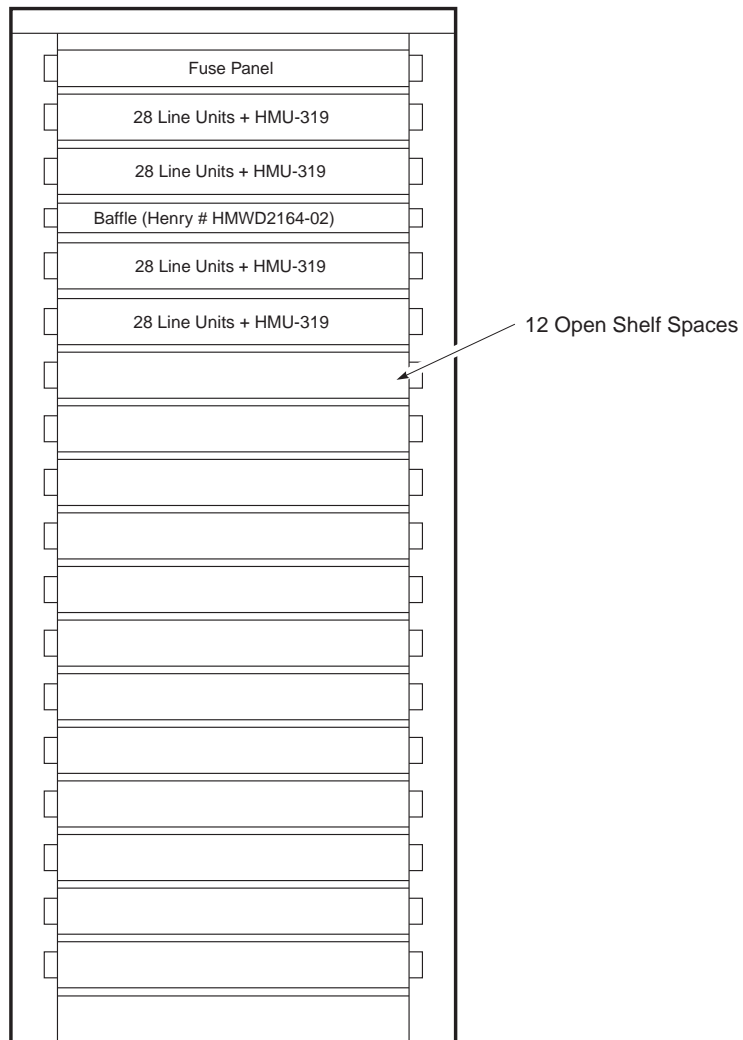
The HMS-317 and the HMS-318 are both 12-inch (30.48 cm) deep individual CO equipment frames with open-faced mountings and natural convection cooling. GR-63-CORE limits the maximum dissipation of the HMS shelf to 134.7 Watts per square foot. Figure 15 shows a typical CO equipment rack layout using HMS-317 or HMS-318 shelves. As the figure illustrates, heat baffles should be placed between every two shelves to help reduce the chimney heating effect.

The maximum allowable power dissipation for each equipment rack is:

- 800 watts for a 19-inch wide rack
- 946 watts for a 23-inch wide rack



Refer to the HLU-319 or ELU-319 user manual to determine the maximum number of HLU cards that can be installed in a shelf before affecting the maximum power dissipation density of the shelf.



**Figure 15.** Central Office Equipment Rack Configuration

# INSTALLATION

This section contains site requirements and installation instructions for the HMS-317 List 2 and List 3, and the HMS-318 List 2 and List 2B.

## SITE REQUIREMENTS

The -48VA and -48VB busses provide the -48V shelf battery feed. Each bus should be fused at 10 Amperes.

## SHELF INSTALLATION

This section provides detailed instructions for installing the HMS-317 and the HMS-318 shelves.

- 1 Attach the mounting brackets to the shelf.



**When mounting a 19-inch HMS-318 shelf into a 23-inch equipment rack, position the shorter side of the bracket against the shelf.**

- 2 Position the shelf in the CO equipment rack and secure with four mounting screws (provided).
- 3 Complete one of the following steps to make the HDSL and DSX connections to the shelf using one of the following methods:
  - Plug the DSX interface cables into P1 and P2 and the HDSL interface cables into P3 and P4.
  - Wire-wrap the DSX and HDSL inputs to the appropriate individual card slots. Pin assignments are listed in [“Appendix A - Signal and Pin Assignments”](#) on page 18.



**See [Figure 2 on page 2](#)) for the location of the HDSL Span connectors. HDSL Span pin assignments are listed in [“Appendix A - Signal and Pin Assignments”](#) on page 18. Standard PIC cable color codes are listed in [Table 8 on page 26](#).**



**The HCP-322 connector panel can be used with the HMS-318 to provide a G.703 (75  $\Omega$  or 120  $\Omega$ ) interface for ELU-319 applications. If you are connecting an HMS-318 shelf to a G.703 circuit, refer to the *HCP-322 List 1 and List 2 Connector Panel Quick Installation Guide* for connection instructions. For technical assistance contact information, see [“Appendix D - Product Support”](#) on page 28.**

- 4 Connect the power and optional fan inputs to TB1 ([Figure 16](#)).



**Slots 1 through 14 on the HMS-317 are powered by the -48VA bus. Slots 15 through 28 are powered by the -48VB bus.**

**Slots 1 through 11 on the HMS-318 are powered by the -48VA bus. Slots 12 through 22 are powered by the -48VB bus.**

**The HMU-319 is diode-OR'ed to both power busses to guard against power failure in the event that one power supply is lost. This feature requires the two ground (GND) terminals to be connected on the HMU card.**

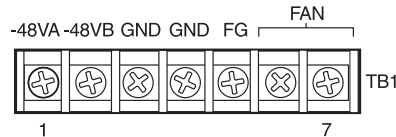




To avoid voltage differences from building up between the shelf ground (GND) bus and the ground pins of the management terminal that connects to the RS-232 ports, connect the shelf ground pins and the terminal ground bus to the TB1 FG pin.

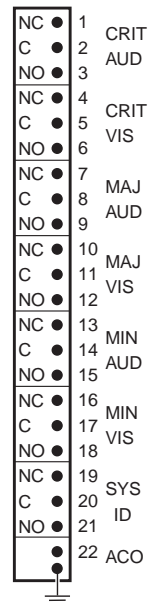


The FAN terminals on TB1 provide access to the Normally Open (NO), Form A fan relay contact located on the HMU-319 management unit. A temperature monitor activates this fan relay when the shelf temperature exceeds 45°C (±1°C) and deactivates the relay when the temperature drops below 35°C (±1°C). If the temperature exceeds 77°C (±1°C) a critical alarm is also generated. The critical alarm resets when the temperature drops below 40°C (±1°C).



**Figure 16.** Input Power Terminal Strip (TB1)

- 5 Connect the optional alarm outputs to the Alarms Terminal Board (TB2; [Figure 17](#)).



**Figure 17.** Terminal Strip TB2, HMU-319 Alarm Outputs

- 6 Install the line units (HLUs) and the HMU-319 management unit in the shelf, as described in the applicable user manual.

# APPENDIX A - SIGNAL AND PIN ASSIGNMENTS

This section provides information on Tip and Ring signal and pin assignments to HMS-317 and HMS-318 management shelves.

P1-DSX Receive, Tip and Ring ..... 18  
 P2-DSX Transmit, Tip and Ring ..... 20  
 P3-HDSL Loop 1, Tip and Ring ..... 22  
 P4-HDSL Loop 2, Tip and Ring ..... 24

## Connector P1 - DSX Receive

Table 4 provides signal and pin assignment information for making DSX receive circuit connections to HMS-317 and HMS-318 shelves.

*Table 4. P1-DSX Receive, Tip and Ring*

Cable Pin Number		Slot	Card Slot Pin Number
HMS-317	HMS-318		"B" denotes Tip "2" denotes Ring
33	26	1	B
1	1		2
34	27	2	B
2	2		2
35	28	3	B
3	3		2
36	29	4	B
4	4		2
37	30	5	B
5	5		2
38	31	6	B
6	6		2
39	32	7	B
7	7		2
40	33	8	B
8	8		2
41	34	9	B
9	9		2
42	35	10	B
10	10		2
43	36	11	B
11	11		2
44	37	12	B
12	12		2
45	38	13	B
13	13		2
46	39	14	B
14	14		2
47	40	15	B

*Continued*

**Table 4. P1-DSX Receive, Tip and Ring (Cont.)**

Cable Pin Number		Slot	Card Slot Pin Number
HMS-317	HMS-318		"B" denotes Tip "2" denotes Ring
15	15		2
47	41	16	B
16	16		2
49	42	17	B
17	17		2
50	43	18	B
18	18		2
51	44	19	B
19	19		2
52	45	20	B
20	20		2
53	46	21	B
21	21		2
54	47	22	B
22	22		2
55		23	B
23			2
56		24	B
24			2
57		25	B
25			2
58		26	B
26			2
59		27	B
27			2
60		28	B
28			2

## Connector P2 - DSX Transmit

The following table provides signal and pin assignment information for making DSX transmit circuit connections to HMS-317 and HMS-318 shelves.

*Table 5. P2-DSX Transmit, Tip and Ring*

Cable Pin Number		Slot	Card Pin Number "A" denotes Tip "1" denotes Ring
HMS-317	HMS-318		
33	26	1	A
1	1		1
34	27	2	A
2	2		1
35	28	3	A
3	3		1
36	29	4	A
4	4		1
37	30	5	A
5	5		1
38	31	6	A
6	6		1
39	32	7	A
7	7		1
40	33	8	A
8	8		1
41	34	9	A
9	9		1
42	35	10	A
10	10		1
43	36	11	A
11	11		1
44	37	12	A
12	12		1
45	38	13	A
13	13		1
46	39	14	A
14	14		1
47	40	15	A
15	15		1
47	41	16	A
16	16		1
49	42	17	A
17	17		1
50	43	18	A
18	18		1
51	44	19	A
19	19		1
52	45	20	A
20	20		1
53	46	21	A

*Continued*

**Table 5. P2-DSX Transmit, Tip and Ring (Cont.)**

Cable Pin Number		Slot	Card Pin Number
HMS-317	HMS-318		"A" denotes Tip "1" denotes Ring
21	21		1
54	47	22	A
22	22		1
55		23	A
23			1
56		24	A
24			1
57		25	A
25			1
58		26	A
26			1
59		27	A
27			1
60		28	A
28			1

## Connector P3 (Loop 1)

Table 6 provides connector P3 signal and pin assignment information for making HDSL, HDSL2 and HDSL4 connections to HMS-317 and HMS-318 shelves.

*Table 6. P3-HDSL Loop 1, Tip and Ring*

Cable Pin Number		Slot	Card Pin Number
HMS-317	HMS-318		"F" denotes Tip "6" denotes Ring
33	26	1	F
1	1		6
34	27	2	F
2	2		6
35	28	3	F
3	3		6
36	29	4	F
4	4		6
37	30	5	F
5	5		6
38	31	6	F
6	6		6
39	32	7	F
7	7		6
40	33	8	F
8	8		6
41	34	9	F
9	9		6
42	35	10	F
10	10		6
43	36	11	F
11	11		6
44	37	12	F
12	12		6
45	38	13	F
13	13		6
46	39	14	F
14	14		6
47	40	15	F
15	15		6
47	41	16	F
16	16		6
49	42	17	F
17	17		6
50	43	18	F
18	18		6
51	44	19	F
19	19		6
52	45	20	F
20	20		6
53	46	21	F

*Continued*

**Table 6. P3-HDSL Loop 1, Tip and Ring (Cont.)**

Cable Pin Number		Slot	Card Pin Number
HMS-317	HMS-318		"F" denotes Tip "6" denotes Ring
21	21		6
54	47	22	F
22	22		6
55		23	F
23			6
56		24	F
24			6
57		25	F
25			6
58		26	F
26			6
59		27	F
27			6
60		28	F
28			6

## Connector P4 (Loop 2)

Table 7 provides connector P4 signal and pin assignment information for making HDSL, HDSL2 and HDSL4 connections to HMS-317 and HMS-318 shelves.

*Table 7. P4-HDSL Loop 2, Tip and Ring*

Cable Pin Number		Slot	Card Pin Number "K" denotes Tip "9" denotes Ring
HMS-317	HMS-318		
33	26	1	K
1	1		9
34	27	2	K
2	2		9
35	28	3	K
3	3		9
36	29	4	K
4	4		9
37	30	5	K
5	5		9
38	31	6	K
6	6		9
39	32	7	K
7	7		9
40	33	8	K
8	8		9
41	34	9	K
9	9		9
42	35	10	K
10	10		9
43	36	11	K
11	11		9
44	37	12	K
12	12		9
45	38	13	K
13	13		9
46	39	14	K
14	14		9
47	40	15	K
15	15		9
47	41	16	K
16	16		9
49	42	17	K
17	17		9
50	43	18	K
18	18		9
51	44	19	K
19	19		9
52	45	20	K
20	20		9
53	46	21	K

*Continued*



**Table 7. P4-HDSL Loop 2, Tip and Ring (Cont.)**

Cable Pin Number		Slot	Card Pin Number
HMS-317	HMS-318		"K" denotes Tip "9" denotes Ring
21	21		9
54	47	22	K
22	22		9
55		23	K
23			9
56		24	K
24			9
57		25	K
25			9
58		26	K
26			9
59		27	K
27			9
60		28	K
28			9

# APPENDIX B - STANDARD PIC COLOR CODE

*Table 8. Standard PIC Color Code*

<b>Pair Number</b>	<b>Tip</b>	<b>Ring</b>
1	White	Blue
2	White	Orange
3	White	Green
4	White	Brown
5	White	Slate
6	Red	Blue
7	Red	Orange
8	Red	Green
9	Red	Brown
10	Red	Slate
11	Black	Blue
12	Black	Orange
13	Black	Green
14	Black	Brown
15	Black	Slate
16	Yellow	Blue
17	Yellow	Orange
18	Yellow	Green
19	Yellow	Brown
20	Yellow	Slate
21	Violet	Blue
22	Violet	Orange
23	Violet	Green
24	Violet	Brown
25	Violet	Slate
26	White	Blue
27	White	Orange
28	White	Green

# APPENDIX C - SPECIFICATIONS

<b>Mounting</b>	STS high-density shelf
<b>Telco Facility</b>	HMS-317: 32-pair, male connectors (P3, P4) wire-wrap HMS-318: 25-pair, type 57, male connector (P3, P4), wire-wrap
<b>DSX-1</b>	HMS-317: DSX-1 RCV (P1), DSX-1 XMT (P2): 32-pair male connector or wire-wrap HMS-318: DSX-1 RCV (P1), DSX-1 XMT (P2): 25-pair male connector or wire-wrap



**RCV (output toward DSX-1)**  
**XMT (input from DSX-1)**

<b>Power Supply Option</b>	Split or common input power options.
<b>Height</b>	HMS-317: 5.33 in. (13.26 cm) HMS-318: 5.33 in. (13.26 cm)
<b>Width</b>	HMS-317: 23 in. (58.4 cm) HMS-318: 19 in. (48.06 cm)
<b>Depth</b>	HMS-317: 11.5 in. (30 cm) HMS-318: 11.5 in. (30 cm)
<b>Weight</b>	HMS-317: 11.6 lb (5.36 kg) HMS-318: 9.7 lb (4.4 kg)

# APPENDIX D - PRODUCT SUPPORT

ADC Customer Service Group provides expert pre-sales and post-sales support and training for all its products. Technical support is available 24 hours a day, 7 days a week by contacting the ADC Technical Assistance Center (TAC).

<b>Sales Assistance</b> 800.366.3891 ext. 73000 (USA and Canada) or 952.917.3000 Fax: 952.917.3237	<ul style="list-style-type: none"> <li>• Quotation Proposals</li> <li>• Ordering and Delivery</li> <li>• General Product Information</li> </ul>
<b>Systems Integration</b> 800.366.3891 ext. 73000 (USA and Canada) or 952.917.3000	<ul style="list-style-type: none"> <li>• Complete Solutions (from concept to installation)</li> <li>• Network Design and Integration Testing</li> <li>• System Turn-Up and Testing</li> <li>• Network Monitoring (upstream or downstream)</li> <li>• Power Monitoring and Remote Surveillance</li> <li>• Service/Maintenance Agreements</li> <li>• Systems Operation</li> </ul>
<b>ADC Technical Assistance Center</b> 800.638.0031 (USA and Canada) or 714.730.3222 Fax: 714.730.2400 Email: <a href="mailto:wsd_support@adc.com">wsd_support@adc.com</a>	<ul style="list-style-type: none"> <li>• Technical Information</li> <li>• System/Network Configuration</li> <li>• Product Specification and Application</li> <li>• Training (product-specific)</li> <li>• Installation and Operation Assistance</li> <li>• Troubleshooting and Repair/Field Assistance</li> </ul>
<b>Online Technical Support</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.adc.com/Knowledge_Base/index.jsp">www.adc.com/Knowledge_Base/index.jsp</a></li> </ul>
<b>Online Technical Publications</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.adc.com/library1/">www.adc.com/library1/</a></li> </ul>
<b>Product Return Department</b> 800.366.3891 ext. 73748 (USA and Canada) or 952.917.3748 Fax: 952.917.3237 Email: <a href="mailto:repair&amp;return@adc.com">repair&amp;return@adc.com</a>	<ul style="list-style-type: none"> <li>• ADC Return Material Authorization (RMA) number and instructions must be obtained before returning products.</li> </ul>
<i>All 800 lines are toll-free in the USA and Canada.</i>	

# APPENDIX E - ABBREVIATIONS

<b>CI</b>	Customer Interface
<b>CLEI</b>	Common Language Equipment Interface
<b>CO</b>	Central Office
<b>CREM</b>	Customer Remote Loopback
<b>DDS</b>	Digital Data Service
<b>DSX-1</b>	DS-1 Cross-connect frame
<b>ECI</b>	Equipment Catalog Item
<b>HDSL</b>	High-bit-rate Digital Subscriber Line
<b>HDU</b>	HiGain Doubler Unit
<b>HLU</b>	HiGain Line Unit
<b>HMS</b>	HiGain Management Shelf
<b>HMU</b>	HiGain Management Unit
<b>HRE</b>	HiGain Remote Enclosure
<b>HRU</b>	HiGain Remote Unit
<b>LED</b>	Light Emitting Diode
<b>NLOC</b>	Network Local Loopback
<b>NVRAM</b>	Non-volatile Random Access Memory
<b>PIC</b>	Plastic Insulated Conductor
<b>RCV</b>	Receive
<b>RMA</b>	Return Material Authorization
<b>STS</b>	Synchronous Transport System
<b>XMT</b>	Transmit
<b>ZBTS</b>	Zero Byte Timeslot



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# CERTIFICATION AND WARRANTY

## FCC COMPLIANCE

This equipment can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, can cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Refer to the installation section of this manual for guidance on: Cabling, correct connections, grounding.

## WARRANTY

ADC DSL Systems, Incorporated ("ADC") warrants that, for a period of twelve (12) months from the date of shipment, the hardware portion of its products will be free of material defects and faulty workmanship under normal use. ADC's obligation, under this warranty, is limited to replacing or repairing, at ADC's option, any such hardware product which is returned during the 12-month warranty period per ADC's instructions and which product is confirmed by ADC not to comply with the foregoing warranty.

ADC warrants that, for a period of 90 days from the date of purchase, the software furnished with its products will operate substantially in accordance with the ADC published specifications and documentation for such software. ADC's entire liability for software that does not comply with the foregoing warranty and is reported to ADC during the 90-day warranty period is, at ADC's option, either (a) return of the price paid or (b) repair or replace of the software. ADC also warrants that, for a period of thirty (30) days from the date of purchase, the media on which software is stored will be free from material defects under normal use. ADC will replace defective media at no charge if it is returned to ADC during the 30-day warranty period along with proof of the date of shipment.

The transportation charges for shipment of returned products to ADC will be prepaid by the Buyer. ADC will pay transportation charges for shipment of replacement products to Buyer, unless no trouble is found (NTF), in which case the Buyer will pay transportation charges.

ADC may use reconditioned parts for such repair or replacement. This warranty *does not* apply to any product which has been repaired, worked upon, or altered by persons not authorized by ADC or in ADC's sole judgment has subjected to misuse, accident, fire or other casualty, or operation beyond its design range.

Repaired products have a 90-day warranty, or until the end of the original warranty period—whichever period is greater.

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## MODIFICATIONS

Any changes or modifications made to this device that are not expressly approved by ADC DSL Systems, Inc. voids the user's warranty.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

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**ADC DSL Systems, Inc.**

14402 Franklin Avenue  
Tustin, CA 92780-7013

Tel: 714.832.9922

Fax: 714.832.9924

**Technical Assistance**

Tel: 800.638.0031

Tel: 714.730.3222

Fax: 714.730.2400



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