3632-80 12 Channel and 3632-81 6 Channel Office Channel Unit—Data Port

CONTENTS PAGE

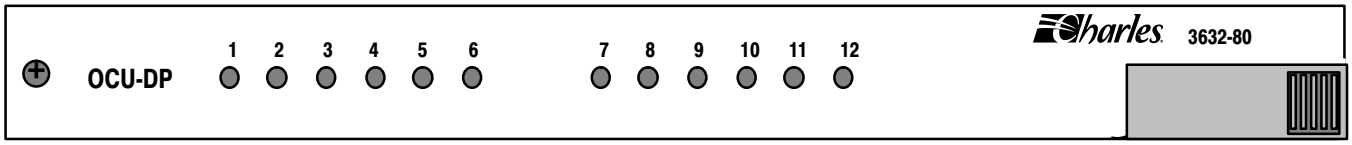

Figure 1. 3632-80 OCU-DP Front Panel

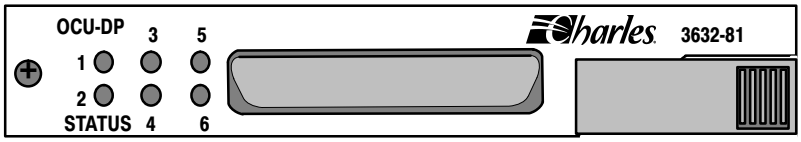

Figure 2. 3632-81 OCU-DP Front Panel

1. GENERAL

1.1 Document Purpose

This document provides general, installation, and testing information for the 12 and 6 Channel Office Channel Units — Data Port (OCU-DP). This document covers the following model numbers:

Model Number	Description	Figure
3632-80	12-Channel Office Channel Unit—Data Port	Figure 1
3632-81	6-Channel Office Channel Unit—Data Port	Figure 2

1.2 Document Status

This document is reprinted to add information regarding E1 functionality.

1.3 Equipment Function

The OCU-DP is part of the 360-80 Intelligent Channel Bank (ICB). This unit is used to provide digital data service (DDS) at rates of 2.4, 4.8, 9.6,19.2, 56 and 64 Kbps.

1.4 Equipment Location/Mounting

The 3632-80 mounts in any full-size slot of the 360-80 ICB. The 3632-81 mounts in the half-size slot of the ICB (issue 2 or later).

1.5 Equipment Features

The OCU-DP provides the foIlowing features:

- Digital data service (DDS) at rates of 2.4, 4.8, 9.6, 19.2, 56 and 64 Kbps.
- A 4-wire bipolar interface that supports long non-loaded outside plant or inside wire loops.
- Supports up to 12 circuits of OCU-DP operation.
- Supports SW 56 and enhanced SW 56 operation.
- In-channel facility error correction at 2.4, 4.8, 9.6 and 19.2 Kb rates.
- Optional second (DSO) channel error correction at 56 and 64 Kbps.
- Supports latching and non-latching loopbacks (with T1 control unit only).
- Extended loop receiver range to 45 dB at all rates.
- Compatible with DDS network control codes, error correction, and multiplexing as defined in Bellcore TR-TSY-000077, TR-TSY-000083, and ANSI T1 .1 07B 1991.
- Temperature hardened (-40 to +65 C).

1.6 Control Interface

This unit is managed through the craft port or the Network Management Software (NMS), which controls the provisioning of the unit and obtains status information from the unit. Provisioning is described in the Optioning section of this document. For operation, see the craft port or NMS documentation.

This unit will maintain its default provisioning until that provisioning is altered through the control interface. If this unit's provisioning is changed, it will maintain the new provisioning even if power is lost. If replaced with a new unit, the new unit will default to the same provisioning as was set for the prior unit. If this unit is installed in a location that was used by a different type of unit, this unit will use its own default provisioning.

1.7 Indicators

This unit provides a variety of status information. The following is a list of all the status information available through the management interface.

- Per circuit loss-of-signal status LED (On, Off)

- Per circuit data time slots used (1-24, none)
- Per circuit data rate (2.4, 4.8, 9.6,19.2, 56, SW56, 64)
- Per circuit zero code suppression (On, Off)
- Per circuit alternate CMI (On, Off)
- Per circuit latching loopback enable (On, Off)

The following are available with the T1 Control Unit:

- Per circuit active loopback (near-end, far-end)
- Per circuit test loopback to be transmitted (OCU, CSU, DSU, local, none)
- Per circuit test loopback to be transmitted with 2047 test pattern (Disable, Enable)
- Per circuit test loopback test time (Hour, Minute, Second)

Note: For 56 and 64 Kbps rates, if error correction is active, parity byte will be transmitted in next time slot

2. INSPECTION

2.1 Inspect for Damages

Inspect the equipment thoroughly upon delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

2.2 Equipment Identification

Charles Industries' equipment is identified by a model and issue number imprinted on the front panel or located elsewhere on the equipment. Each time a major engineering design change is made on the equipment, the issue number is advanced by 1 and imprinted on subsequent units manufactured. Therefore, be sure to include both the model number and its issue number when making inquiries about the equipment.

2.3 Static Concerns

Each unit is shipped in static-protective packaging to prevent electrostatic charges from damaging static-sensitive devices. Use approved static-preventive measures, such as static-conductive wrist straps and a static-dissipative mat, when handling units outside of their protective packaging. A unit intended for future use should be tested as soon as possible and returned to its original protective packaging for storage.

STATIC-SENSITIVE

This equipment contains static-sensitive electronic devices. To prevent electrostatic charges from damaging static-sensitive units:

- **Use approved static preventive measures (such as a static-conductive wrist strap and a static-dissipative mat) at all times whenever touching units outside of their original, shipped static-protective packaging.**
- **Do not ship or store units near strong electrostatic, electromagnetic, or magnetic fields.**
- **Use static-protective packaging for shipping or storage.**

3. APPLICATION GUIDELINES

The OCU-DP is intended to provide digital data services over 4W cable facilities. Figure 2 shows some typical applications. In all applications, the 4W cable facility will terminate on a compliant DDS CSU/DSU.

Note: At rates below 56 Kbps or without error correction, this module uses 12 DSO time slots. Error correction operation at 56 or 64 Kbps requires an additional time slot and increases the number of DSO time slots used.

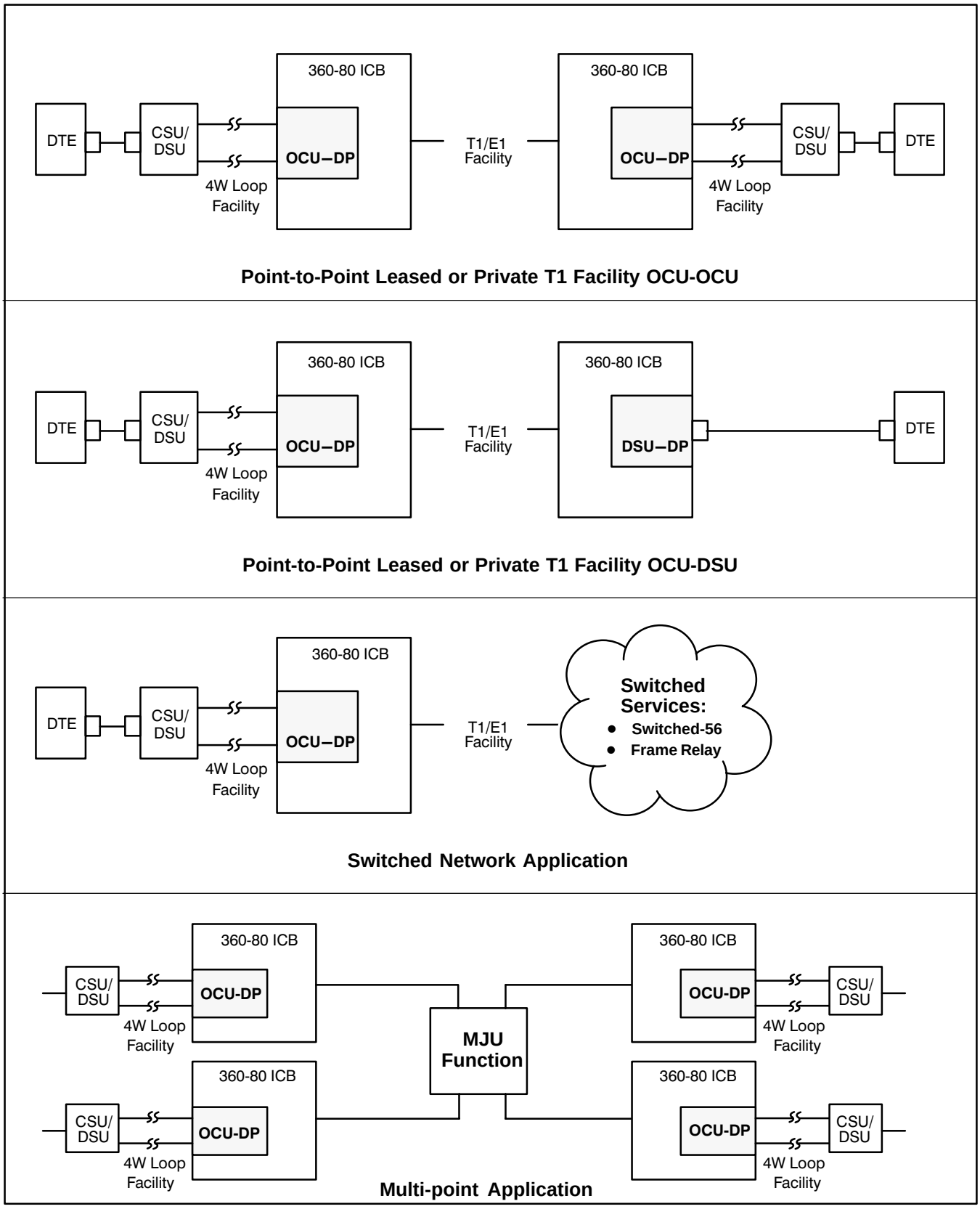

Figure 3. OCU-DP Applications

4. CIRCUIT DESCRIPTION

Refer to Figure 4 while reading the following description.

4.1 4W Loop Interface

This circuit provides an interface to the 4W metallic loop facility. It provides signal coupling transformers and secondary protection circuitry to protect the equipment from lightning and power cross disturbances. When the OCU-DP is connected to outside plant cable facilities, external primary protection must be equipped at the building entrance terminal.

The 4W loop interface also provides a source of sealing current to the loop. This helps prevent resistance buildup in metallic spliced connections. The polarity of this sealing current will be reversed to signal the terminating DSU or CSU to initiate a channel loopback test. Sealing current is nominally 12 mA depending on loop length.

The loop interface includes a circuit that detects loss of sealing current. If a loss is detected, the OCU-DP will send Abnormal Station Code (10011110) toward the network.

To accomplish an OCU loopback, a relay is provided to loop the OCU-DP output signal back toward the input and disconnect the loop facility for testing purposes. To accomplish a CSU loopback, a relay is provided to reverse the loop sealing current toward the CSU.

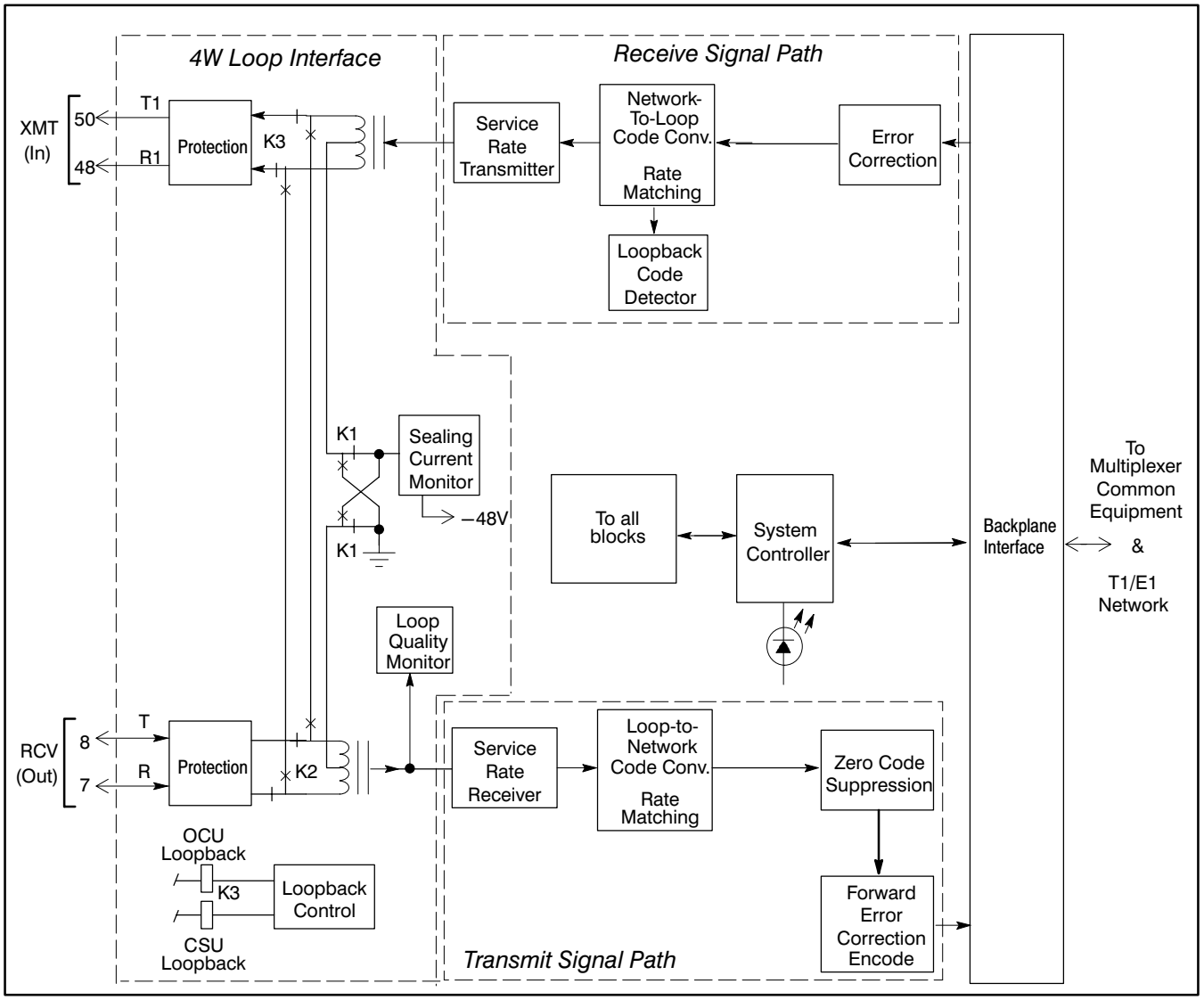

Figure 4. OCU–DP Circuit Block Diagram

4.2 Transmit Signal Path

This section describes the OCU-DP transmit signal path. The transmit path receives signals from the loop and transmits them toward the network.

4.2.1. Loop Receiver

Signals transmitted by the customer's DSU are processed by the OCU-DP receiver. The receiver can accommodate up to 45 dB of cable loss at the service rate. Table 1 shows the maximum loop length for various cable gauges at a given service rate.

4.2.2. Loop-To-Network Code Conversion

At the 2.4 through 19.2 Kb rates, data from the loop is formed into eight-bit bytes by assembling six bits of data, appending a logic 1 to the front, and adding a network control bit at logic level 1 (denoting data) at the end. At the 56 Kbps service rate, seven data bits, with a 1 added for the control bit, form the eight-bit network bytes. Control codes received from the customer loop are mapped into network control codes as shown in Table 2 (designated by a 0 network control bit). Also, reception at any service rate of a 000X0V sequence is decoded as six 0's.

4.2.3. Rate Matching

At 2.4, 4.8, and 9.6 Kb rates, the DS0 signal is formed by repeating the byte enough times to achieve the 64 KB data rate. The data is repeated five times at 9.6 Kb, 10 times at 4.8 Kb and 20 times at 2.4 Kb.

For 19.2 Kbps with error correction disabled, the DSO format consists of a five-byte frame composed of two data bytes (D1 and D2) containing a 1 in the most significant bit (MSB), and three bytes containing a 0 in the MSB. The MSBs of these five bytes form a five-bit pattern (01100) which is used for framing the 19.2 Kbps channel.

For 56 or 64 Kbps rates, this byte stuffing is not required to achieve the DS0 rate.

Table 1. Data Rate vs. Maximum Distance (45dB)

Base Loop Rate (Kbps)	Length (In Kft)/Wire Gauge			
	19 ga	22 ga	24 ga	26 ga
2.4	168.0	112.0	85.0	65.0
4.8	127.0	84.0	64.0	48.5
9.6	99.0	63.5	48.5	36.5
19.2	81.0	49.5	37.0	27.5
56.0	64.0	37.0	26.0	18.5
64	60.5	35.0	24.5	17.0

Table 2. Loop-to-Network Code Conversion

Definition	Code from Loop			DS0 Code to Network		
Bit Sequence	a_1	.. ....	a_8	b_1	.....	b_8
Idle	*	111X0V	0	b_1	111111	0
Channel Loopback	*	010X0V	0	1	010110	0
Abnormal Station				1	001111	0

* = Don't care bit.
X = 1 or 0 to force violation to alternate polarity of previous violation.
V = Loop bipolar violation.

4.2.4. Zero Code Suppression

If the zero code suppression (ZCS) option is enabled when an All-0's DSO byte is encountered, it is replaced by a 10011000 byte in the bit stream outbound for the DS1 facility. This feature is automatically disabled when operating at the 64 Kb rate.

4.2.5. Forward Error Correction

For 56 or 64 Kbps service rate with error correction enabled, a separate 64 Kbps stream (second DSO channel) of parity bytes is generated by encoding the data bytes with a shortened (16.8) Bose-Chaudhuri-Hocquenghem (BCH) coding algorithm. Operation of 56 or 64 Kbps with error correction enabled uses two 64 Kbps DSO channels.

For a 19.2 Kbps service rate with error correction enabled, only one 64 Kbps DSO channel is used. A parity byte is calculated using a BCH coding algorithm. The two data bytes and their calculated parity bytes are combined with a framing byte which is the 1's complement of the second parity byte. The resultant 5-byte group (DATA 1, DATA 2, PARITY 1, PARITY 2, FRAMING) is sent toward the network.

4.3 Receive Signal Path

This section describes the OCU-DP receive signal path that receives DSO signals from the network and transmits them toward the loop.

4.3.1. Error Correction

At the 2.4, 4.8, and 9.6 Kb rates with error correction enabled, errors are corrected in the received DSO data stream by applying a 3-out-of-5 majority vote algorithm on the individual bits of each grouping of five DSO bytes.

During 19.2, 56 and 64 Kbps operation with error correction enabled, errors are corrected by finding the 16-bit code word (data plus parity bytes) having the smallest Hamming distance from the actual 16-bit word received. This error correction scheme will correct all 1 and 2 bit errors and some 3 bit errors.

4.3.2. Rate Matching

For the 2.4, 4.8, and 9.6 Kb rates, the network bytes that were repeated to form the DSO signal are extracted. The service rate transmit clock is generated by integral division of a high-speed clock, phase-locked to the DSO bit clock provided by the channel bank common equipment.

4.3.3. Network-To-Loop Control Code Conversion

For the 2.4, 4.8, and 9.6 Kb rates, the network bytes which have a 1 in the network control bit (bit position 8) are translated into loop signal elements by using bits 2–7 to generate element TxB directly. Similarly, for 56 or 64 Kbps service, bits 1–7 in a data byte (network control bit set to a 1) form element TxB.

Network bytes with the network control bit set to 0 are translated to loop signal elements TxB, TxX, and TxV, as detailed in Table 3. If the OCU loopback sequence is decoded, the OCU-DP will respond by initiating a loopback at the interface to the customer loop. Similarly, if the channel loopback sequence is decoded, the OCU-DP will respond by reversing the polarity of the DC sealing current. If the module circuit is optioned to enable the DSU loopback re-map to CSU and a DSU loopback sequence is decoded, the OCU-DP will respond by treating this request as a channel loopback and reverse the polarity of the DC sealing current.

4.3.4. Loopback Code Detector

The OCU-DP will always respond to network initiated non-latching loopback control sequences. If the module circuit is optioned to enable latching loopback code detection, the OCU-DP will also respond to latching loopback control sequences. Latching loopback can be used at all service rates, including SW56. Only latching loopback is available at 64 Kbps.

Latching loopback for OCU loopback and channel loopback is activated by using the specific latching loopback sequence (per Bellcore publication TR-TSY-000077) as follows:

Enable:

TIP (mm. 35 bytes)—Transition In Progress
LSC (mm. 35 bytes)—Loopback Select Code
LBE (mm. 100 bytes)—Loopback Enable
FEV (mm. 32 bytes)—Far End Voice

Disable:

TiP (mm. 35 bytes) - Transition in Progress

A 10-second watchdog timer is activated between the LSC bytes and FEV bytes. The timer requires the correct receipt of the LBE sequences in less than 10 seconds after recognition of the LSC bytes. This ensures a termination of the latching loopback sequence if it is incorrectly started by receipt of random data/errors. In addition, the timer prevents the long-term latch due to receipt of enable sequences which may be embedded in data over a long period of time.

Table 3. Network-to-Loop Code Conversion

Definition	DS0 Code from Network			Code to Loop
Bit Sequence	b_1	.....	b_8	a_1 .. .... a_7
Idle	*	111111	0	b1111X0V
Channel Loopback (Note 1)	*	010100	0	$b_1$010100
DSU Loopback	*	010110	0	$b_1$010X0V
OCU Loopback	*	010101	0	$b_1$010X0V
Abnormal Station	*	001111	0	$b_1$001X0V
MUX-Out-of-Sync	*	001101	0	$b_1$001X0V
Unassigned MUX Channel	*	001101	0	$b_1$001X0V
Test Code	*	001110	0	$b_1$001X0V
Test Alert	*	110110	0	$b_1$110X0V
MJU Alert	*	111001	0	$b_1$111001
Loopback Enable (LBE)	*	101011	0	$b_1$101011
Far-End Voice (FEV)	*	101101	0	$b_1$101X0V
Transition in Progress (TIP)	*	011101	0	$b_1$011X0V
Block Code	*	000101	0	$b_1$000X0V
Release Code	*	111100	0	$b_1$111X0V

Note 1 = Sealing current is reversed to effect this loopback.
* = Don't care bit.
X = 1 or 0 to force violation to alternate polarity of previous violation.
V = Loop bipolar violation.

4.3.5. Transmitter

The transmitter sends information to the loop and DSU/CSU at the service rate using a bipolar line coding format. The amplitude of the signal is 1 .5V peak at all rates except 9.6 Kb, where it is 0.75 V peak.

4.4 64 KB Operation

The OCU-DP can be provisioned to operate at the 64 Kb "clear channel" rate. When operating at 64 Kb and using a T1 facility, the associated channel bank common equipment and the connecting T1 facility must be arranged for B8ZS line coding. At 64 Kb, only latching loopbacks are allowed. Also, the unit overrides the Zero Code Suppression (ZCS) option and does not perform ZCS at this rate.

4.5 Switched 56 Operation (T1 Facility Only)

Switched 56 (SW 56) is an extension of the dedicated DDS technology where the loop rate is fixed at 56 Kbps. Figure 2, SW 56 OCU-DP Application, shows a typical 4-wire SW 56 arrangement. The key to the SW 56 method of operation is the ability of the SW 56 DSU and SW 56 OCU-DP to communicate call status information. The SW 56 DSU is responsible for dialing telephone numbers of outbound calls, monitoring the progress of the call and establishing the data link once the remote end answers. It is also responsible for recognizing incoming calls and answering them by manual or automatic means.

The OCU-DP in the SW 56 mode is responsible for interpreting the call establishment information originating in the DSU and converting it into a format that is understood by the switched public network. It is also responsible for converting signaling information from the network into a format understood by the DSU.

“A” Bit signaling is used on the DS1 data stream to transport the signaling information between the OCU-DP and the Public Switched Digital Network. The least significant bit (LSB) of every sixth data byte contains the “A” signaling bit which is decoded by the OCU-DP and the public network digital switch. CMI/DMI transitions between the SW56 DSU and the OCU-DP are used to pass signaling information.

5. INSTALLATION

5.1 Installing the Unit

CAUTION

Installation and removal of units should be done with care. Do not force a unit into place. If excessive resistance is encountered while installing a unit, remove the unit and check the card guides and connector to verify proper alignment and the absence of foreign material.

5.1.1. Installing a New Unit

Step	Action
1.	If not already installed, install the rear panel, screwing it to the appropriate mounting locations on the shelf using the provided hardware.
2.	Insert the unit into the shelf, making sure that the unit is aligned with the card guides inside the shelf.
3.	Slide the unit fully in to the shelf.
4.	Once the unit is fully inserted, tighten the securing screw on the front panel of the unit.
5.	Wire the unit per the wiring information in the wiring section. The unit will perform a self-test to ensure that it is compatible with the network management software on the system.
6.	After the self-test is performed, check the software provisioning of the card using either the front panel craft interface on the front of the controller unit or the network management interface on the rear of the controller (see the section on network management for more information).

5.1.2. Installing a Replacement Unit

If you are replacing a unit that is already in service, insure that the unit is the same as the unit being replaced.

Step	Action
1.	Remove the wiring connectors from the front and rear of the unit.
2.	Unscrew the front panel securing screw to release the unit from the shelf.
3.	Using the card ejector, remove the unit from the shelf.
4.	Follow the procedure for installing a new unit.

5.2 Attaching the Rear Panel

Install the rear panel of the unit before the units are installed in the shelf and before wiring begins.

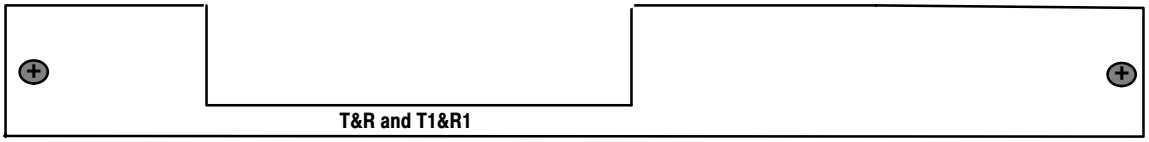

Figure 5. 3632-80 OCU-DP Rear Panel

5.3 Wiring the Unit

This unit comes from the factory with default provisioning. This provisioning can be altered through the Network Management interface. When this module is inserted in to a previously provisioned slot, if the card type matches, the module will change its provisioning options to match the previously provisioned module. If the module types do not match, the module will assume its default provisioning. The provisioning options are as follows with the default optioning shown in brackets:

Table 4. Pin Chart for Male 50-pin (25 pair) TELCO Connector

Circuit	Pin	
1	Pin 1 = R	Pin 26 = T
	Pin 2 = R1	Pin 27 = T1
2	Pin 3 = R	Pin 28 = T
	Pin 4 = R1	Pin 29 = T1
3	Pin 5 = R	Pin 30 = T
	Pin 6 = R1	Pin 31 = T1
4	Pin 7 = R	Pin 32 = T
	Pin 8 = R1	Pin 33 = T1
5	Pin 9 = R	Pin 34 = T
	Pin 10 = R1	Pin 35 = T1
6	Pin 11 = R	Pin 36 = T
	Pin 12 = R1	Pin 37 = T1
7	Pin 13 = R	Pin 38 = T
	Pin 14 = R1	Pin 39 = T1
8	Pin 15 = R	Pin 40 = T
	Pin 16 = R1	Pin 41 = T1
9	Pin 17 = R	Pin 42 = T
	Pin 18 = R1	Pin 43 = T1
10	Pin 19 = R	Pin 44 = T
	Pin 20 = R1	Pin 45 = T1
11	Pin 21 = R	Pin 46 = T
	Pin 22 = R1	Pin 47 = T1
12	Pin 23 = R	Pin 48 = T
	Pin 24 = R1	Pin 49 = T1

6. PROVISIONING

This unit comes from the factory with default provisioning, which can be changed through the control interface. When this unit is inserted in to a previously provisioned slot, if the card type matches, the unit will change its provisioning options to match the previously provisioned unit. If the unit type does not match the unit will assume its default provisioning. The provisioning options are as follows:

Option (per circuit)	Choices	Default
Data time slot used *Note: For 56 and 64 Kbps rates, if error correction is active, parity byte will be transmitted in next time slot.*	T1=1-24, None E1= 1–15, 17–31, None	3632-80: channel number 3632-81: T1=None E1=channel number
Data rate	2.4, 4.8, 9.6,19.2, 56, SW56, 64	64
Zero code suppression	On, Off	Off
Alternate CMI	On, Off	Off
Latching loopback enable	On, Off	Off
DSU loopback from network, re-map to CSU (SW56 mode only)*	DSU, CSU	DSU
Active loopback*	Near-end, Far-end	Near-end
Test loopback to be transmitted*	OCU, CSU, DSU, Local, None	None
Test loopback to be transmitted with 2047 test pattern*	Disable, Enable	Disable
Test loopback test time*	Hour, Minute, Second	1 minute
** Available with the T1 Control Unit.*		

7. TECHNICAL ASSISTANCE

If technical assistance is required, contact Charles Industries' Technical Services Center at:

847-806-8500
847-806-8556 (FAX)
800-607-8500
techserv@charlesindustries.com (e-mail)

8. WARRANTY & CUSTOMER SERVICE

8.1 Warranty

Charles Industries, Ltd. offers a 2-year warranty on this product. Contact your local Sales Representative at the address or telephone numbers below for warranty details. The warranty provisions are subject to change without notice. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract.

Charles Industries, Ltd.
5600 Apollo Drive
Rolling Meadows, Illinois 60008-4049
U.S.A.
847-806-6300 (Main Office)
847-806-6231 (FAX)

8.2 Field Repairs (In-Warranty Units)

Field repairs involving the replacement of components within a unit are not recommended and may void the warranty and compatibility with any applicable regulatory or agency requirements. If a unit needs repair, contact Charles Industries, Ltd. for replacement or repair instructions, or follow the *Repair Service Procedure* below.

8.3 Advanced Replacement Service (In-Warranty Units)

Charles Industries, Ltd. offers an "advanced replacement" service if a replacement unit is required as soon as possible. With this service, the unit will be shipped in the fastest manner consistent with the urgency of the situa-

tion. In most cases, there are no charges for in-warranty repairs, except for the transportation charges of the unit and for a testing and handling charge for units returned with no trouble found. Upon receipt of the advanced replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the pre-addressed shipping label provided. Call your customer service representative at the telephone number above for more details.

8.4 Standard Repair and Replacement Service (Both In-Warranty and Out-Of-Warranty Units)

Charles Industries, Ltd. offers a standard repair or exchange service for units either in- or out-of-warranty. With this service, units may be shipped to Charles Industries for either repair and quality testing or exchanged for a replacement unit, as determined by Charles Industries. Follow the *Repair Service Procedure* below to return units and to secure a repair or replacement. A handling charge applies for equipment returned with no trouble found. To obtain more details of this service and a schedule of prices, contact the Charles Service Center at 217-932-5288 (FAX 217-932-2943).

Repair Service Procedure

1. Prepare, complete, and enclose a purchase order in the box with the equipment to be returned.

2. Include the following information:

   – Company name and address
   – Contact name and phone number
   – Inventory of equipment being shipped
   – Particulars as to the nature of the failure
   – Return shipping address

3. Ship the equipment, purchase order, and above-listed information, transportation prepaid, to the service center address shown below.

   Charles Service Center
   503 N.E. 15th St., P.O. Box 339
   Casey, IL 62420-2054
   U.S.A.

4. Most repaired or replaced units will be returned within 30 or 45 days, depending on the product type and availability of repair parts. Repaired units are warranted for either 90 days from the date of repair or for the remaining unexpired portion of the original warranty, whichever is longer.

9. SPECIFICATIONS

9.1 Electrical

Parameter	Specification
Number of subscribers for each unit	3632-80: 12 circuits 3632-81: 6 circuits
Output pulse amplitude (Vop)	2.4 Kbps 1.34 < Vop <1.66 4.8 Kbps 1.34 < Vop < 1.66 9.6 Kbps 0.67 <Vop <0.83 19.2 Kbps 1.34 <Vop <1.66 56 Kbps 1.34 <Vop <1 .66 SW56 Kbps 1.34 <Vop <1.66 64 Kbps 1.34 < Vop < l.66
Data Rate	2.4, 4.8, 9.6, 19.2, 56, SW56, 64 Kbps

Parameter	Specification
Max. Input Signal Loss	2.4Kbps 45dB 4.8Kbps 45dB 9.6Kbps 45dB 19.2Kbps 45dB 56Kbps 45dB SW56Kbps 45dB 64Kbps 45dB.
Input Impedance	135 Ohm
Output Impedance	135 Ohm
Error correction	56, 64Kbps occupy 2 time slots Below 56Kbps occupy 1 time slot
Loopback	All data rates support OCU, CSU and DSU latching loopback. Below 64Kbps data rates support OCU, CSU and DSU non-latching loopback
DDS Test Set	DDS Test set emulation with 2047-bit test pattern
Output Waveform	RZ-AMI
Sealing current	4 to 20mA
Protection	Meets criteria of Bellcore TR-TSY-001 089
–48V Power Supply Current	**3632-80:** Normal: 186 mA Worst Case: 236 mA **3632-81:** Normal: 86 mA Worst Case: 145 mA
Heat Dissipation	**3632-80:** 12 watts **3632-81:** 7 watts

9.2 Physical

See Table 5 for the physical characteristics of the OCU-DP:

Table 5. Physical Specifications

	3632-80		3632-81	
Feature	**U.S.**	**Metric**	**U.S.**	**Metric**
Height	0.75 inch	1.9 centimeters	0.75 inch	1.9 centimeters
Width	9.625 inches	24.45 centimeters	5.64 inches	14.32 centimeters
Depth	9.25 inches	23.49 centimeters	9.25 inches	23.49 centimeters
Weight	1.38 pounds	0.62 kilogram	0.78 pound	0.35 kilogram
Temperature	–40° to 149° F	–40° to 65° C	–40° to 149° F	–40° to 65° C
Humidity	< 95% (non-condensing)			