Charles Telecommunications Group

Section 360-381-802 Equipment Issue 2
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3603-81 T1 Controller Unit Installation Guide

GENERAL DESCRIPTION

Document Purpose

This document provides installation information for the T1 with SNMP (T1-S).

Equipment Function

The T1-S is part of the 360-80 Intelligent Channel Bank (ICB). It combines the functions of a Line Interface Unit (LIU) and a Channel Service Unit (CSU), allowing direct connections to public T1 networks.

Equipment Location/Mounting

Mount the T1-S in the primary slot of the 360-80. One controller unit must be installed in the primary slot for proper system operation. Drop and insert applications require a Secondary T1 unit (issue 2 or later).

Performance History

This unit stores performance history for the last 30 days and over the last 24 hours in 15-minute intervals. This performance history includes bit error rate (BER), errored seconds (ES) and severely errored seconds (SES).

Control Interface

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

This unit will maintain its default provisioning until that provisioning is altered through the NMI. 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 need to have its provisioning changed to the same provisioning as was set for the prior unit.

INSPECTION

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.

Equipment Identification

Charles 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.

STATIC-SENSITIVE

To prevent electrostatic charges from damaging static-sensitive units:

Use approved static-preventive measures (such as static-conductive wrist straps and static-dissipative mats) at all times whenever touching units outside of their original, shipped, protective packaging.

Do not ship or store units near strong electrostatic, electromagnetic, or magnetic fields.

Always use the original static-protective packaging for shipping or storage.

INSTALLATION

Attaching the Rear Panel

The rear panel of the unit should be installed before all units are installed in the shelf, and before wiring begins.

Installing a New Unit

Step	Action
1.	If not already installed, install the rear panel by 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. **CAUTION** **Due to mechanical differences, the T1-S card can only be installed in an Issue 3 or greater ICB shelf.**
3.	Slide the unit into the shelf. **CAUTION** **If there is already a rear panel installed on the shelf, check for interference. The rear panel may need to be removed and replaced with the rear panel shipped w/the new unit.**
4.	Once the unit is fully inserted, tighten the securing screw on the front panel.
5.	Wire the unit per the wiring section.
6.	The unit will perform a self-test to ensure that it is compatible with the network management software on the system.
7.	After the self-test is performed, check the software provisioning of the card using the craft interface on the front of the controller unit.

Installing a Replacement Unit

If you are replacing a unit that is already in service, make sure 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 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.

Wiring the Unit

Use the following steps to wire the unit.

Step	Action
1.	Connect T1 to the rear panel RJ48 jack (J1).
2.	If using the Ethernet network management interface on the rear of the unit, connect the system to the other units using J2 and J3.
3.	If you are using the composite clock, remove the connector and wire the signal to the connector labeled CCLK IN.
4.	Reinstall the connector with the composite clock signal wires.
5.	Power and alarm should already be wired. If not, see the documentation for the ICB shelf.

Front Panel Switch and LED Definitions

The Audible Alarm Cut Off (ACO) switch is a pushbutton used to open the audible alarm contacts from the 360-80 system. This switch will only mask audible indications of present alarm conditions—it will NOT clear the alarm. If a new alarm occurs, the alarm will re-enable.

The Address ID switch on the front panel is a multi-section switch for setting the system address on the system management bus. This switch is used if the system is connected together with other 360-80 systems into a central management control center. This switch allows the control center to 'address' the individual systems. See section on network management for more information.

Table 1. LED Definitions

Label	Color	Status	Indicates that...
POWER	Green	ON	Unit is receiving power.
		OFF	The unit is not powered.
AR	Red	ON	The unit is detecting a red alarm on the T1 interface caused by a loss of signal (LOS) or a loss of framing (LOF) or out of frame (OOF) condition.
		OFF	Normal operation.
AY	Yellow	ON	The unit is receiving a YELLOW alarm condition on the T1. This indicates that a problem is upstream at some other device or network node.
		OFF	Normal operation.
TP	Yellow	ON	The system is processing the trunk signaling data based on detected alarm conditions.
		OFF	Normal operation.
LP	Green	ON	The unit is in loopback. This indication only occurs during testing.
		Flashing	Valid external timing source has been lost.
		OFF	Normal operation.

OPTIONING

Hardware Optioning

Option	Type	Choices	Description
Composite clock termination	3-pin connector	Termination IN	Place the Berg connector between the middle and bottom pins to terminate the composite clock input wired to the ICB. Use for a single ICB, or on the last ICB in a daisy-chained series.
		Termination OUT	Place the Berg connector between the top and middle pins to remove termination from the composite clock input. This is done when the clock will be connected to additional equipment.

Software Optioning

This unit comes from the factory with default provisioning, which can be changed through Network Management or the craft terminal interface. Each unit has its own provisioning options. The provisioning options are as follows with the default optioning noted:

Option	Choices	Default
ICB Address (address= 1 + switch setting)	Switch settings 00 through 15	00
T1 Frame format	Superframe (SF), Extended Superframe (ESF)	ESF
Auto detect mode (loop timing only)	No, Yes	No
Transmit T1 Timing Source	External, Internal, Looped	Internal
Line Build Out (LBO)	110, 220, 330, 440, 550, 660 FT OR 0, 7.5, 15, 22 dB	0-110 FT
T1 Line Code	AMI, B8ZS	B8ZS
Test Generator (per channel)	Tone Test, 1 KHz 0 dBm0, None	None
T1 Loopback Selection	Line Near End, Line Far End, Payload Far End	None
CGA Process Mode	Normal, CM2, CM3	Normal
Remote Control Method	None, Occupy one channel, Facility data link (ESF only)	Facility data link
Operation mode	Normal T1, Dual T1, Protection T1	Normal T1
Status (Protection mode only)	Primary T1, Secondary T1	Primary T1
Error threshold (Protection mode only)	0 – 900	250

ALARMS

This unit provides for alarm contacts for audible and visual alarms. Access to the alarm contacts is provided on the 360-80 shelf. Pressing the audible alarm cut-off (ACO) switch clears the alarm indication for the audible alarm contacts (pressing this switch does not clear the alarm). See the shelf documentation for information on wiring. The unit generates alarm indications based on the configuration of the alarm registers. See section on Network Management for more information.

NETWORK MANAGEMENT

Default Unit Configurations

The ICB stores all configuration settings in the T1-S. The T1-S is shipped from the factory with the default settings, which may be changed through the network management interfaces.

Changing Unit Configuration Locally

The ICB can be configured through the front panel craft terminal (MGMT) jack. See the craft terminal interface documentation for procedures.

Network Management

The 360–80 channel bank can be managed via two different interfaces over the Ethernet connection on the rear of the T1–S card. The Network Management System (NMS) interface is GUI based and requires proprietary software operating on the managing PC. The Network Node Manager (NNM) interface is SNMP based and requires SNMP network manager software operating on the managing PC. See NMS and NNM documentation for more information.

To use either interface from outside the T1 controller's LAN a "gateway" address must be defined. The gateway address should be the same as the IP address of the LAN's router.

Front Panel RJ11 Jack

The RJ11 jack on the front of the unit is the local craft/control port. The default interface is an RS232 connection that defaults to 9600 baud, 8 bits, 1 stop and no parity. The interface through the control port is VT-100. VT-100 operation on a PC requires VT-100 emulation software. An IP address and IP subnet mask must be configured through the craft interface before the unit will communicate with the NMS/GUI or SNMP. To communicate with SNMP, the SNMP community table must also be configured. See the network management section or the network management interface documentation for more information.

A cable (03-200542-0) is available to connect between the front panel RJ11 jack and a DB-9 connector.

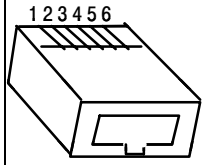
T1 Jack

The RJ48 connector on the rear of the T1-S is for the primary T1.

Rear Panel RJ45 Jack

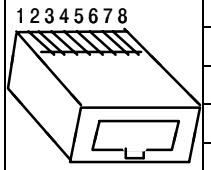
The J2 RJ45 jack on the rear of the unit is for interfacing to a network management control center using SNMP or proprietary NMS/GUI software over Ethernet.

Table 2. Front Panel RJ11 Jack Pinouts



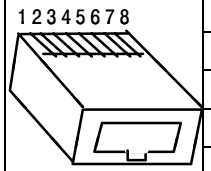
Pin #	Use	DB9
1	NC	
2	GND	5
3	RCV (ICB input)	3
4	XMT (ICB output)	2
5	Enable PC (ICB input)	7
6	NC	

Table 3. RJ48C T1 Jack Pinouts (J1)



Pin #	Use
1	R (RCV from network)
2	T (RCV from network
3	—
4	R1 (XMT to network)
5	T1 (XMT to network)
6	—
7	—
8	—

Table 4. RJ45 Ethernet Jack Pinouts (J2)



Pin #	Use
1	XMT (TD+)
2	XMT (TD–)
3	RCV (RD+)
4	NC
5	NC
6	RCV (RD–)
7	NC
8	NC

TECHNICAL ASSISTANCE

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

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800–607–8500
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