Charles Telecommunications Group

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12-Channel (3652-80) and 6-Channel (3652-81) 2/4-Wire E&M/TO Unit Installation Guide

GENERAL DESCRIPTION

Document Purpose

This document provides installation information for the 12-channel and 6-channel 2/4-Wire E&M/Transmission Only (TO) units in the 3652 model series.

Equipment Function

The 2/4-wire E&M/TO unit is part of the 360-80 Intelligent Channel Bank (ICB).

Equipment Location/Mounting

The 3652-80 plugs into any full size slot of the Charles 360-80 ICB. The 3652-81 plugs into the half-size slot of the ICB.

Note: The 3652-81 must be used in an Issue 3 or later ICB shelf.

Control Interface

This unit is managed through the craft port or the Network Management Software (NMS), that controls the provisioning of the unit and obtains status information from the unit. Provisioning is described in 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.

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 that is visible on the outside of the unit. The exact location of this information may vary slightly depending on the equipment. Each time a major engineering design change is made, 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

Installing a New Unit

Ensure that all manual optioning is done on the new unit.

Note: Any manual optioning that is not done before the card is installed will require the system to discontinue service on all circuits when the card is removed for optioning in the future.

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. **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 with the new unit.**
4.	Once the unit is fully inserted, tighten the securing screw on the front panel. The unit will perform a self-test to ensure that it is compatible with the network management software on the system.
5.	Wire the unit per the wiring information in the wiring section.
6.	After the self-test is performed, check the software provisioning of the card using either the craft interface on the front of the controller unit or the network management interface on the rear of the controller.

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 securing screw to release the unit from the shelf.
3.	Using the card ejector, remove the unit from the shelf.
4.	Inspect the manual optioning of the new unit and make sure that the optioning is the same as the one removed.
5.	Follow the procedure for installing a new unit.

Attaching the Rear Panel

The rear panel of the full size unit (3652-80) should be installed before the all units are installed in the shelf, and before wiring begins. The half size unit 3652-81 does not require a new rear panel.

Wiring the Unit

When the unit is installed in a Charles ICB, it makes electrical connection to other associated cards through a prewired backplane provided as part of the ICB.

Table 1. Pin Chart for Male 50-pin (25 pair) TELCO Connector on Back Panel of 3652-80

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

E&M Signaling TELCO Connector (on front of E&M unit)

For E&M signalling Types 1 & 5 to function correctly, it is important to connect the battery return to earth ground.

Note: It is important that the E and EB polarity be maintained when connecting the equipment. For safety reasons, the EB lead will default to the channel bank battery ground.

Note: MB is also known as SB, and EB is also known as SG.

Table 2. Chart for Male 50-(25-pair) TELCO Connector on Front of 3652-80

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

Table 3. Pin Chart for 50-pin Male (25-pair) TELCO Connector on Front of 3652-81

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

PROVISIONING

Each of the channels in the E&M unit is individually controlled and optioned.

Hardware Provisioning

To set hardware options, the E&M unit must be removed from service. Hardware options should be set prior to installing the module to prevent further interruption of service. In the following table, default options have a ✓ next to them. The x in "Jx" represents any of the channels.

Option	Choices	Set Jumpers...
2W/4W Mode. Set using 8 jumper settings. All 8 jumpers must be changed together when module is removed from the slot.	2W	Jx05 through Jx12 to jumper pins 2–3 (black jumpers)
	4W✓	Jx05 through Jx12 to jumper pins 1–2 (black jumpers)
Per channel hybrid impedance. Set using 4 jumper settings. All 4 jumpers must be changed together when the module is removed from the slot.	600 ohms✓	Jx01 through Jx04 to jumper pins 1–2 (yellow jumpers)
	900 ohms	Jx01 through Jx04 to jumper pins 2–3 (yellow jumpers)

Note: See the module documentation for location of jumpers.

Software Provisioning

Refer to the Network Management Interface documentation for software optioning information.

When installed, this unit uses the default provisioning, which can be altered through the network management interface. When this unit is inserted into a previously provisioned slot, if the card type matches, the unit's provisioning options change to match the previously provisioned unit. If the unit type does not match the unit being replaced, it assumes its default provisioning. The individual channel provisioning options are as follows:

Option	Choices	Default
Per channel forced busy	On, Off	Off
Per channel time slot used	T1=1–24, none E1=1–15, 17–31, none	3652-80: timeslot = channel # 3652-81: timeslot=none (T1) timeslot=channel number (E1)
Per channel unit configuration	2-wire, 4-wire	4-wire per card jumper setting
Per channel unit mode	E&M, TO	E&M
Per channel signaling mode	I, II, III, IV, V	V
Per channel transmit level setting	–19 to +13 dBm in 0.1 dB increments	+3 dBm (2W), –16 dBm (4W)
Per channel receive level setting	–19 to +13 dBm in 0.1 dB increments	–3 dBm (2W), +7 dBm (4W)
Per channel loopback	Active, None	None
Per channel CGAI action	Idle, Busy	Idle
Per channel CGAD action	Idle, Busy	Busy

TECHNICAL ASSISTANCE

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

847–806–8500
800–607–8500
847–806–8556 (FAX)

techserv@charlesindustries.com (e-mail)