3653-04 4W ETO W/SC Installation Guide

®UL Complies with UL Standard 1459 Second Edition*

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1. GENERAL

1.1 Document Purpose

This document provides installation instructions for the Charles Industries 3653–04 (Issue 6) 4W ETO W/SC Channel Unit.

1.2 Document Status

This document is reprinted to include a general editorial update.

1.3 Equipment Function

The3653–04 4W ETO W/SC Channel Unit is designed for operation in a Charles Industries 360/363 D4 Digital Carrier Terminal to provide an interface to a 4-wire voice frequency extension on private lines with no DC signaling. The 3653-04 Block Diagram is shown in Figure 1. Additional information, such as applications, circuit description, etc., is available in Section 365-304-206.

CAUTION

Field repairs/modifications may void compliance with UL 1459 – Second Edition.

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. INSTALLER CONNECTIONS

Installer connections are made to the channel unit via connectorized cable connectors that are part of the channel bank assembly. Refer to the appropriate channel bank installer documentation for pin assignments.

4. OPTIONING INFORMATION

The 3653-04 is equipped with switch options that are used to condition the module for proper application and operation. Refer to Figure 2 for the location and description of these options.

5. ALIGNMENT

5.1 Transmit Alignment

The XMT ATTN switches S2 and S3 are prescription controls that provide attenuation from zero to 24.5dB in increments of 0.1dB to accommodate an input TLP range from –16.0 to +8.5dB. To adjust the transmit path to the proper operation level, the difference between –16 and the transmit TLP at T&R must be obtained:

[XMT ATTN = TLP – (–16)]

For an input TLP of –2dBm, the XMT ATTN = –2 – (–16) = 14dB. Set the sum of the settings on S2 and S3 to 14.

5.2 Receive Alignment

The RCV ATTN switches S4 and S5 are prescription controls that provide attenuation from zero to 24.5dB in increments of 0.1dB to accommodate an output TLP range from +7.0 to –17.5dB. To adjust the receive path to the proper operation level, the difference between +7 and the receive TLP at T1&R1 must be obtained:

[RCV ATTN = 7 – TLP]

For an output TLP of +4dBm, the RCV ATTN=7 – (+4) =3.0dB. Set the sum of the settings on S4 & S5 to 3.

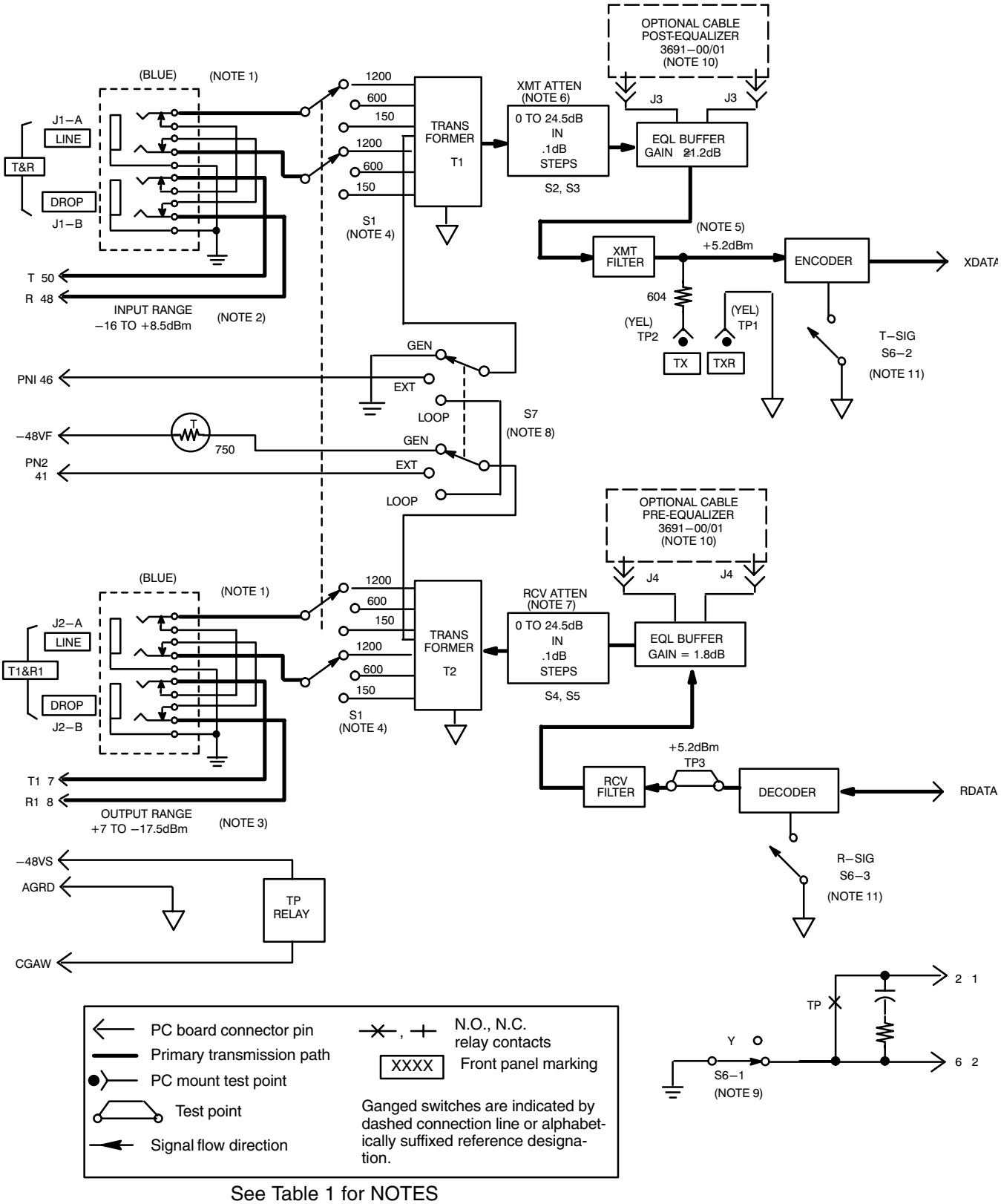
6. MOUNTING

The 3653–04 mount in one channel-unit slot of a 360/363 D4 terminal. The 3653–04 is equipped with an insert/eject lever mechanism. The front panel of the unit is hinged and constitutes the lever of the insert/eject mechanism. The mechanism ensures a positive connection between the channel unit's card-edge connector and the backplane connector when the unit is installed. This mechanism also facilitates removal of the unit.

To install a channel unit into a terminal, first lift the bottom edge of the front panel until it is parallel with the top edge of the card. Insert the unit into the appropriate card guide slots, and slide it in until the top part of the front panel is under the front lip of the terminal. Then push down on the front panel until it is in the vertical position. Press in the bottom edge of the front panel until it snaps and locks into place.

CAUTION

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



See Table 1 for NOTES

Figure 1. 3653–04 4W ETO W/SC Channel Unit Block Diagram

Table 1. Notes for Figure 1

<table>
<tr><th>#</th><th colspan="3">Note</th><th>#</th><th colspan="2">Note</th></tr>
<tr><td rowspan="5">1.</td><td colspan="3">PC mount test jacks</td><td rowspan="5">8.</td><td colspan="2">Option SC (Switch S7) is used to provide sealing current. With automatic ZAP, initial current is about 100mA when the card is plugged, then decreases to 20mA nominal.</td></tr>
<tr><td>Marking</td><td>Function</td><td>Color</td><td>SC Option</td><td>Function</td></tr>
<tr><td>T&R LINE, J1–A</td><td>Access toward channel unit</td><td>Blue</td><td>GEN</td><td>Supply sealing current to the loop.</td></tr>
<tr><td>T&R DROP, J1–B</td><td>Access toward office equipment</td><td>Blue</td><td>LOOP</td><td>Complete the path when sealing current is supplied from far end of loop.</td></tr>
<tr><td>T1&R1 LINE, J2–A</td><td>Access toward channel unit</td><td>Blue</td><td>EXT</td><td>When customer supplies external current to pins 41 & 46, or to turn OFF sealing current when no connections are made at the pins 41 & 46.</td></tr>
<tr><td></td><td>T1&R1 DROP, J2–B</td><td>Access toward office equipment</td><td>Blue</td><td></td><td></td><td></td></tr>
<tr><td></td><td>TX&TXR (TP2&TP1)</td><td>4-wire XMT monitor</td><td>Yellow</td><td>9.</td><td colspan="2" rowspan="2">The trunk processing relay (TP) is activated immediately upon an alarm condition in the channel bank. Approximately 2 seconds later, it is deactivated for 70 milliseconds. During the activated mode, leads designated as “1” and “2” are shorted. Lead “2” can be grounded by option Y. When the channel unit is removed from the mounting slot, the “1” lead (pin 2) is connected to ground through a shorting contact in the backplane card connector.</td></tr>
<tr><td>2.</td><td colspan="3">The XMT INPUT range at T&R: +8.5dBm to –16dBm. The unit is factory adjusted for –16dBm input, with the XMT ATTEN set for 0dB attenuation.</td></tr>
<tr><td>3.</td><td colspan="3">The RCV OUTPUT range at T1&R1: +7dBm to –17.5dBm. The unit is factory adjusted for +7dBm output, with the RCV ATTEN set for 0dB attenuation.</td><td></td><td colspan="2"></td></tr>
<tr><td>4.</td><td colspan="3">Switch S1 provides T/R and T1/R1 with impedance of 1200/600/150 ohm.</td><td rowspan="2">10.</td><td colspan="2" rowspan="2">The 3691–00 Non–loaded Cable Equalizer or the 3691–01 H88 Loaded Cable Equalizer are ordered separately to provide pre- and/or post-equalization when inserted into connector J3 and J4 respectively.</td></tr>
<tr><td>5.</td><td colspan="3">The level at the transmit unbalanced monitor points TX – TXR, measured with a bridged meter, should be +5.2dBm ±0.1dB.</td></tr>
<tr><td>6.</td><td colspan="3">The XMT ATTEN provides 24.5dB attenuation in 0.1dB steps to accommodate input range from +8.5dBm to –16dBm. With –16dBm input, no attenuation is needed.</td><td rowspan="2">11.</td><td colspan="2" rowspan="2">For full 8-bit conversion, open options T-SIG (encoding) and R-SIG (decoding). For 7 5/6-bit encoding and to send a BUSY to the far end on both signaling highways, close option T-SIG. For 7 5/6-bit decoding, close option R-SIG.</td></tr>
<tr><td>7.</td><td colspan="3">The RCV ATTEN provides 24.5dB attenuation in 0.1dB steps to accommodate output range from +7dBm to –17.5dBm. For +7dBm output level, no attenuation is needed.</td></tr>
</table>

7. TESTING

After completing Optioning, Installation, and Alignment, verify end-to-end circuit performance. If trouble is encountered, recheck all installer connections, optioning, alignment settings, and verify that the channel unit is making positive contact with the backplane connector. If the difficulty persists, replace the unit with one known to be good and retest. Section 360–001–205 provides information about channel unit testing for fault diagnosis or verification of circuit operation.

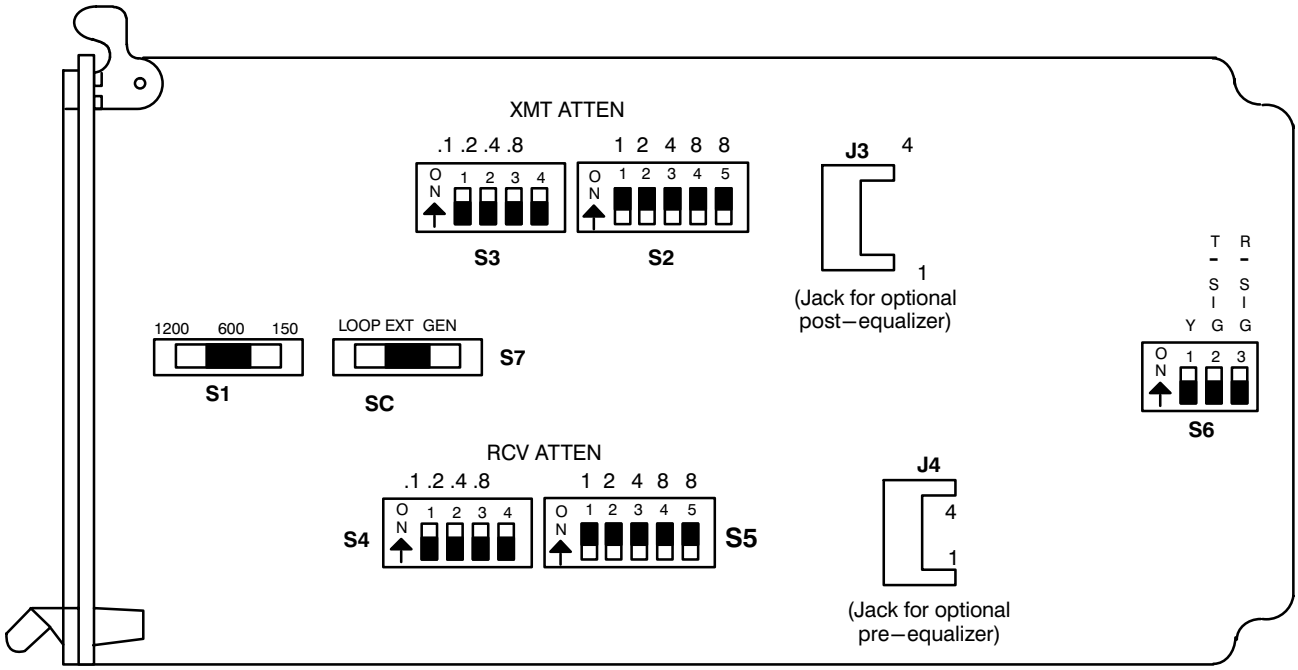


Figure 2. 3653–04 4W ETO W/SC Option Locations

Table 2. 3653–04 4W ETO W/SC Optioning Summary

Option	Position	Function
S1	As required.	3-position slide switch selects a transmit and receive path impedance of 150, 600, or 1200 ohms to match the impedance of the facility.
S2	See transmit alignment	5-section DIP switch selects XMT attenuation between 0dB and 23dB in 1.0dB increments. Use in conjunction with S3 to achieve required attenuation.
S3	See transmit alignment	4-section DIP switch selects XMT attenuation between 0dB and 1.5dB in 0.1dB increments. Use in conjunction with S2 to achieve required attenuation.
S4	See receive alignment	4-section DIP switch selects RCV attenuation between 0dB and 1.5dB in 0.1dB increments. Use in conjunction with S2 to achieve required attenuation.
S5	See receive alignment	5-section DIP switch selects RCV attenuation between 0dB and 23dB in 1.0dB increments. Use in conjunction with S3 to achieve required attenuation.
S6–1	ON/OFF as required	Y ON supplies a permanent ground to conditioning lead 2 (pin 6).
S6–2		3-section DIP switch selects ENCODING/DECODING scheme and CGA mode: T-SIG ON selects 7 5/6-bit encoding (XMT); T-SIG OFF selects 8-bit encoding.
S6–3		R-SIG ON selects 7 5/6-bit decoding (RCV); R-SIG OFF selects 8-bit decoding.
S7	GEN	3-position slide switch selects mode of sealing current supply; sealing current generated from system with automatic ZAP when unit first plugged in.
	EXT	Sealing current supplied from an external source via pins 46 and 41.
	LOOP	Sealing current supplied from far end of loop.
J3, J4	See Section 369–100–201	J3 for plug-in optional post-equalization. J4 for plug-in optional pre-equalization.

8. TECHNICAL ASSISTANCE

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

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