3660–02 2W Private Line Auto Ringdown and Point-to-Point Manual Ringdown Channel Unit Installation Guide

Complies with UL Standard 1459 Second Edition*

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1. GENERAL

1.1 Document Purpose

This document describes how to install the Charles Industries 3660–02 2–Wire Private Line Automatic Ringdown (PLARD) and Point–to–Point Manual Ringdown (PPMRD) Channel Unit.

1.2 Document Status

This document is reprinted to correct the equipment issue in the header.

1.3 Equipment Function

The channel unit is used in the Charles Industries 360/363 D4 Digital Carrier Terminal to provide an interface to ringdown type circuits. The 3660–02 Block Diagram is shown in Figure 1. Additional information, such as applications, circuit description, etc., is available in Section 366-002-202.

CAUTION

Field repairs/modifications may void compliance with UL 1459 – Second Edition. 3660–02 compliance with UL 1459 – Second Edition is restricted to inside plant wiring.

STATIC-SENSITIVE

Channel units are shipped in static-protective material to protect static-sensitive devices. Use static–preventive measures for storage and handling.

2. INSTALLER CONNECTIONS

Installer connections are made to the channel unit by wire–wrapping leads onto the associated 50–pin connectors located on the backplane assembly of the 360/363 D4 terminal. On connectorized 360/363 D4 terminals (360–10, –11, etc.) connections are made via 25–pair female connectors (CINCH 222–22–50–023 or equivalent) to the appropriate 25–pair male connectors of the 360/363 D4 terminal. Refer to Section 360–000–200.

3. OPTIONING INFORMATION

The 3660–02 is equipped with DIP and slide switches that are used to condition the module for proper application and operation. Refer to Figure 2 for the location and descriptions.

4. ALIGNMENT

4.1 Transmit Alignment

The XMT ATTENUATION switch S3 is a prescription control that provides attenuation from zero to 16.5dB, in increments of 0.1dB, to accommodate an input TLP range from +0.5 to –16dBm. To adjust the transmit path to the proper operating level, the difference between –16 and the transmit TLP at T&R must be obtained.

[XMT ATTN = TLP – (–16)]

For an input TLP of +0.0dBm, the XMT ATTN = 0.0 – (–16) = 16dB. Set the sum of the switch settings on S3 to 16.

4.2 Receive Alignment

The RCV ATTENUATION switch S4 is a prescription control that provides attenuation from zero to 16.5dB in increments of 0.1dB to accommodate an output TLP range from +0.0 to –16.5dBm. To adjust the receive path to the proper operating level, the difference between +0.0 and the receive TLP at T&R must be obtained.

[RCV ATTN = (+0.0) – TLP]

For an output TLP of –7dBm, the RCV ATTN = +0.0 – (–7) = 7dB. Set the sum of the switch settings on S4 to 7.

5. MOUNTING

The 3660–02 mounts in any channel unit slot of a 360/363 D4 terminal. The 3660–02 is equipped with an insert/eject lever in the form of a hinged front panel which ensures a positive connection of the channel unit's card–edge connector to the backplane connector when the unit is installed. The insert/eject lever also facilitates removal of the unit.

CAUTION

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

Step	Action
1.	Align the channel unit with the appropriate card–guided slot of the terminal.
2.	With the front panel in a horizontal (up) position, slide the unit into the slot.
3.	When the top portion of the hinged front panel is under the front lip of the terminal, push down on the front panel until it is in the vertical position. The channel unit's card–edge connector will begin to make contact with the inner portion of the backplane connector.
4.	Continue applying light pressure onto the bottom edge of the front panel until the unit snaps into place.

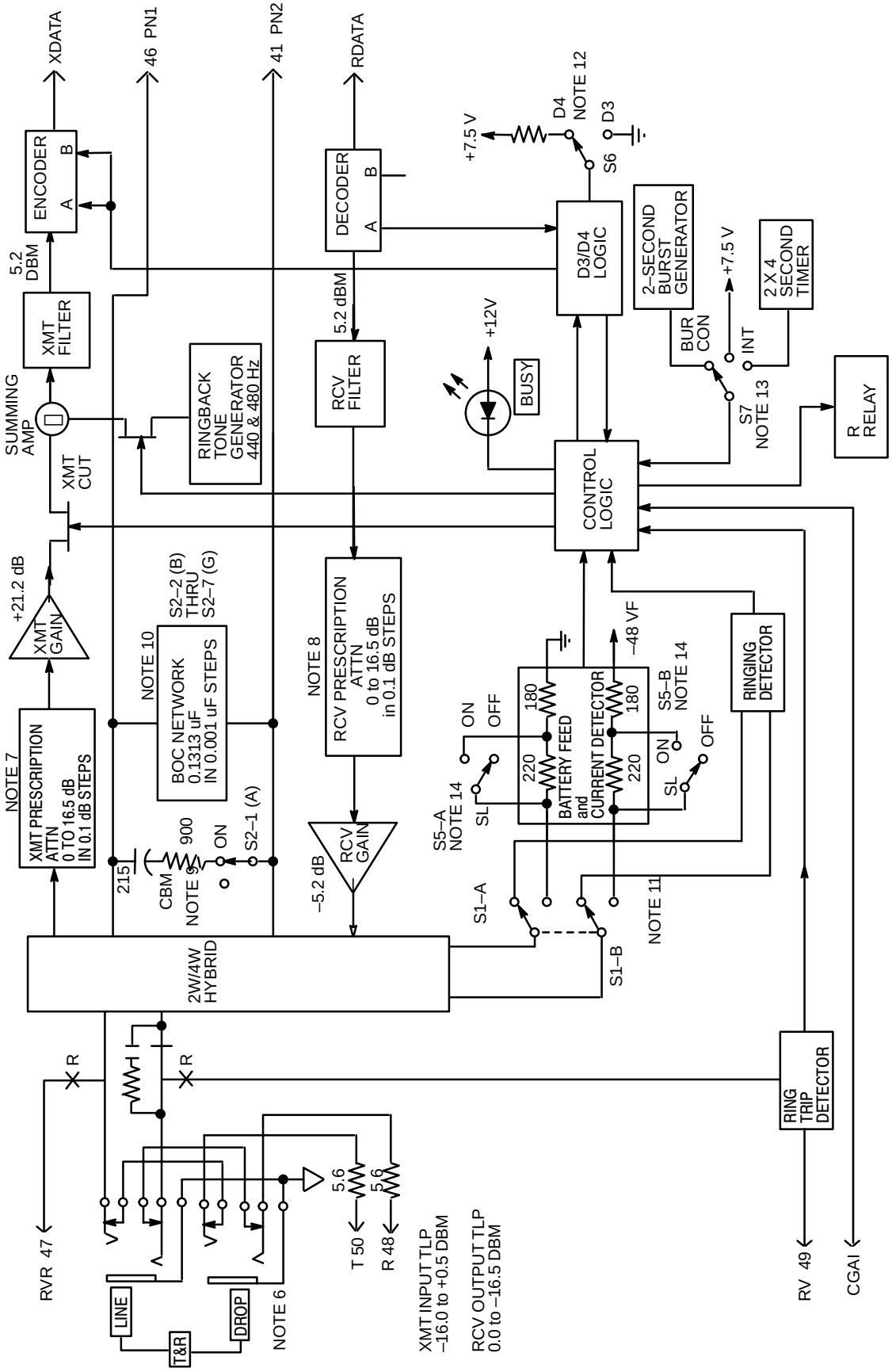

Figure 1. 3660–02 2W PLARD/PPMRD (Issue 2) Block Diagram

Table 1. Notes for Figure 1 Block Diagram

#	Note	
1.	←	PC board connector pin
2.	xxx	Front panel marking
3.	←	Signal flow direction
4.	⊣ . ⊢	Normally open, normally closed relay contacts.
5.	Ganged switches are indicated by dashed connection line or alphabetically suffixed reference designations; numerical suffix denotes discrete switch within a package.	
6.	PC mount test jacks	
	MARKING	**FUNCTION**
	T&R Line	Access toward channel unit
	T&R Drop	Access toward metallic facility
7.	The XMT INPUT range at T&R is –16.0 to +0.5dBm. The XMT ATTEN is adjustable for 0 to 16.5dB in 0.1d increments. For +0.5dBm input at T&R, the XMT ATTEN should be set for 16.5dB of attenuation.	
8.	The RCV OUTPUT range at T&R is 0.0 to –16.5dBm. The RCV ATTEN is adjustable for 0 to 16.5dB in 0.1dB increments. For 0.0dBm output at T&R, the XMT ATTEN should be set for 0dB of attenuation.	
9.	Option A (S2–1) is used to select a comp net resistance of 900 ohms in series with a 2.15uF capacitor. Leave S2–1 off for external comp net.	
10.	Options B through H (S2–2 through S2–8) provide additional capacitance for balancing of cable capacitance.	
11.	When the channel unit is used in the Automatic Ringdown Mode, set S1 to the PLARD position. When the channel unit is used in the No Code or Repeat Input Manual Ringdown Modes, set S1 to the PPMRD position. S1 is located at the front panel.	
12.	For either the no code or repeat input manual ringdown modes, set S6 to the D4 position. For the automatic ringdown mode and with a D4 type of PLAR channel unit at the far end of the T1 facility, place S6 in the D4 position. For the automatic ringdown mode and with a D3 type of PLAR channel unit at the far end of the T1 facility, place S6 in the D3 position.	
13.	Applied Ringing Option (Switch S7): INT – Interrupted ringing. Repetitive 2 seconds on and 4 seconds off ringing is applied toward the local station whenever the distant station is off–hook. Used in the Automatic Ringdown Mode. CON – Continuous ringing. Ringing applied by the distant station is repeated toward the local station. Used the Repeat Input Manual Ringdown Mode. BUR – Burst ringing. A single 2–second burst of ringing is applied toward the local station after the distant station removes ringing. Used in the No Code Manual Ringdown Mode.	
14.	For loop lengths less than 300 ohms, set SL (S5) to OFF. (This option is used only in the PLARD mode.)	

Table 2. Mode Selection

Mode of Operation	Switch S1 Position	Switch S6 Position	Switch S7 Set To
Automatic Ringdown Mode 2–second ringing and 4–second silent period (2/4) applied to the East End, when the West End goes off–hook.	PLARD	D3/D4 (See 12, Table 1)	INT
Repeat Input Manual Ringdown Mode Ringing applied manually by the West End isrepeated to the East End.	PPMRD	D4	CON
No Code Manual Ringdown Mode 2–second burst of ringing applied to the East End when the West End removes manually applied ringing.	PPMRD	D4	BUR

Table 3. Level Adjustment

Level Switch (S3/S4) ON	XMT/RCV Attenuation (in dB)
.1	.1
.2	.2
.4	.4
.8	.8
1	1
2	2
4	4
8	8

Note: Switch settings are additive up to 16.5dB in 0.1dB steps

Table 4. BOC Capacitor Section

Switches on S2 in the ON Position	Results in Capacitance of (in uF)
B	.068
C	.033
D	.015
E	.0082
F	.0039
G	.0022
H	.0010

Note: Switch settings are additive up to 0.1313uF in approximately 0.0010uF steps.

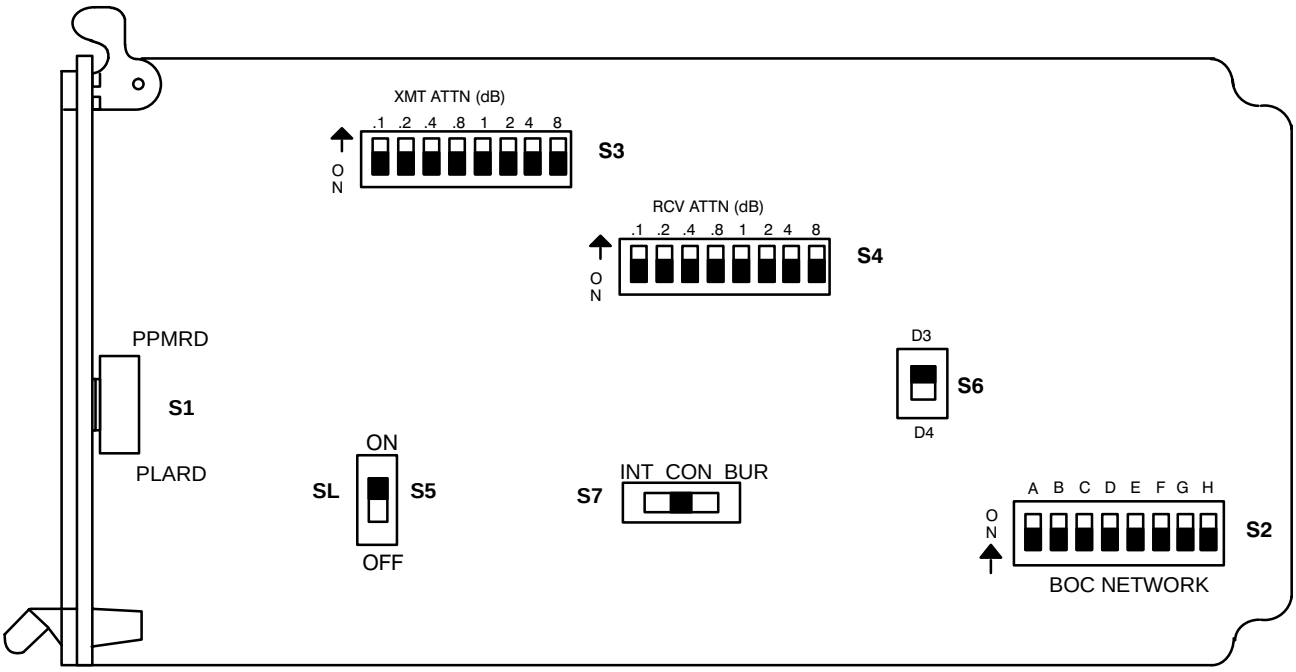

Figure 2. 3660–02 Option Locations

Table 5. 3660–02 Option Summary

Option	Function/Remarks	Position
S1 (PLARD, PPMRD)	Automatic Ringdown Operation (Detects Loop Closure). Refer to Table 2. Manual Ringdown Operation (Detects Ringing Voltage). Refer to Table 2.	PLARD PPRMD
S2–A	If an external CBN/PBN is used (connected to leads PN1 and PN2). Internal Compromise Balance Network (CBN) of 900 ohms + 2.15uF.	ON OFF
S2–B–H	Provides additional balancing of cable capacitance. Provides up to 0.1313uF in approximately 0.001uF increments. Refer to Table 3.	ON/OFF as required
S3 (XMT ATTEN)	Provides up to 16.5dB of attenuation (additive in 0.1dB increments) for the transmit channel. Refer to Table 3.	See Alignment and Table 3
S4 (RCV ATTEN)	Provides up to 16.5dB of attenuation (additive in 0.1dB increments) for the receive channel. Refer to Table 3.	See Alignment and Table 3
S5 (SL)	For a short–loop length less than 300 ohms. For loop length greater than 300 ohms.	OFF ON
S6 (D3/D4)	Optioned for Automatic Ringdown mode (S1 to PLARD) and interfacing a D3 type PLAR channel unit. Refer Table 2. Optioned for Automatic Ringdown mode (S1 to PLARD) and interfacing a D4 type PLAR channel unit. Refer Table 2. Optioned for Manual Ringdown mode (S1 to PPMRD). Refer Table 2.	D3 D4 D4
S7 (INT/CON/BUR)	S7 is optioned for the type of ringing applied to T&R. S7 is optioned in conjunction with optioning of S1 and S6 for Automatic Ringdown, Repeat Input Manual Ringdown, and No Code Manual Ringdown modes.	Option Per Table 2

6. TESTING

After completing Optioning, Installation, and Alignment, place a call end-to-end through the facility to verify proper operation. If trouble is encountered, recheck all installer connections, options and alignment settings, and verify that the channel unit is making positive connection to the backplane connector. If trouble persists, replace the unit with a similar unit known to be in proper operating order and retest the facility. Channel unit testing for fault diagnosis or verification of circuit operation is provided in Section 360-001-205.

7. TECHNICAL ASSISTANCE

7.1 Technical Assistance — U.S.

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)

7.2 Technical Assistance — Canada

Canadian customers contact:

905–821–7673 (Main Office)
905–821–3280 (FAX)

8. WARRANTY & CUSTOMER SERVICE

8.1 Warranty

Charles Industries, Ltd. offers an industry-leading, 5-year warranty on products manufactured by Charles Industries. 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

Telephone: 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 situation. 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 preaddressed 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 CI 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.

CI Service Center
Route 40 East
Casey, IL 62420–2054

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.