
Instruction Manual

DTP Series DC Termination Panels

Rev. B 9/00
DTP Series manual.p65



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General Information

The CPI Communications DTP series DC remote adapters provide a reliable means of remotely controlling a two-way radio base station or repeater over in-house or leased metallic pair wiring.

The DTP series can be used with CPI DC remotes as well as most other manufacturers DC remote consoles.

The DTP remote adapters are available in the following variations, all of which provide adjustable RX and TX amplification and dip switch selection of control current format:

MODEL	DESCRIPTION
DTP1	Board only product, provides PTT.
DTP2	Board only product, provides PTT and monitor functions.
DTP3	Board only product, provides PTT, monitor, F1/F2 functions.

Installation

Connect the leased or in-house metallic twisted-pair 600 ohm line, to the DTP board via J2. (the RJ-11 jack)

Connect an external 12 to 16 volt semi-regulated DC power supply to J1 with the positive lead to J1-2 and the negative lead to J1-7.

Connect the radio receiver audio output to J1-6. Radio receiver audio output should be a source that is after the squelch circuit and not affected by the radio's volume control adjustment. If a squelched audio source is not available there is a squelch circuit provided on the DTP series termination panels. J1-5 is the input to the DTP's squelch circuit. It can be configured active high or active low using jumpers JU14 and JU15.

Connect the radio microphone input to J1-1. If microphone input is high-impedance, shielded cable should be used and R65 on the DTP board should be clipped. If a local microphone is used the mic high should be connected to J1-3.

If you have a DTP2, connect the monitor circuit of the radio to the DTP2 board using the form "C" relay contacts at J1-8, J1-9, and J1-10.

Connect the radio PTT circuit to the DTP at J1-4. For radios that key to a positive voltage instead of ground, the PTT circuit can be altered using JU1 and JU2.

The DTP3 provides a form "C" set of relay contacts at J1-12, J1-13, and J1-14 for two channel frequency selection. The relay output is factory set to be momentary. This can be changed to latching by using JU-16. The DTP1 and DTP2 do not provide these contacts.

Level Adjustments

The following level adjustments are normally required only at the time of installation.

1. RX Audio Adjustment

R57 controls the RX audio level to the phone line. With the phone line connected at J2, connect a RMS voltmeter to the leads of R61 and R62. Unsquench the receiver so that continuous noise is present and adjust potentiometer R57 for 0 dBm or 0.8 V rms on the meter.

2. TX MOD Adjustment

This section assumes that each remote in the system has been set to provide an average voice audio level of 0 dBm as measured at the DTP panel.

Have someone at the remote control console depress and hold the PTT switch. With a voice coming from the remote, adjust R47 to provide proper transmitter deviation.

Switch Settings

The following table lists dip switch setting for DTP series.

	DC Remote Provides				Set Switches		
	PTT (F1)	PTT (F2)	Mon (F1)	Mon (F2)	1	2	3
DTP1, DTP2 & DTP3	+/- 15mA				OFF	OFF	OFF
	+/- 6mA				ON	OFF	OFF
DTP2 & DTP3	+/- 15mA		+/- 6mA		OFF	ON	OFF
	+ 15mA		-6 mA		ON	ON	OFF
	+/- 6mA		+/- 2.5mA		OFF	OFF	ON
	+ 6mA		- 2.5mA		ON	OFF	ON
DTP3	+ 6mA	+ 15mA	- 2.5mA	- 2.5mA	OFF	ON	ON
	+ 15mA	- 15mA	+ 6mA	- 6mA	ON	ON	ON

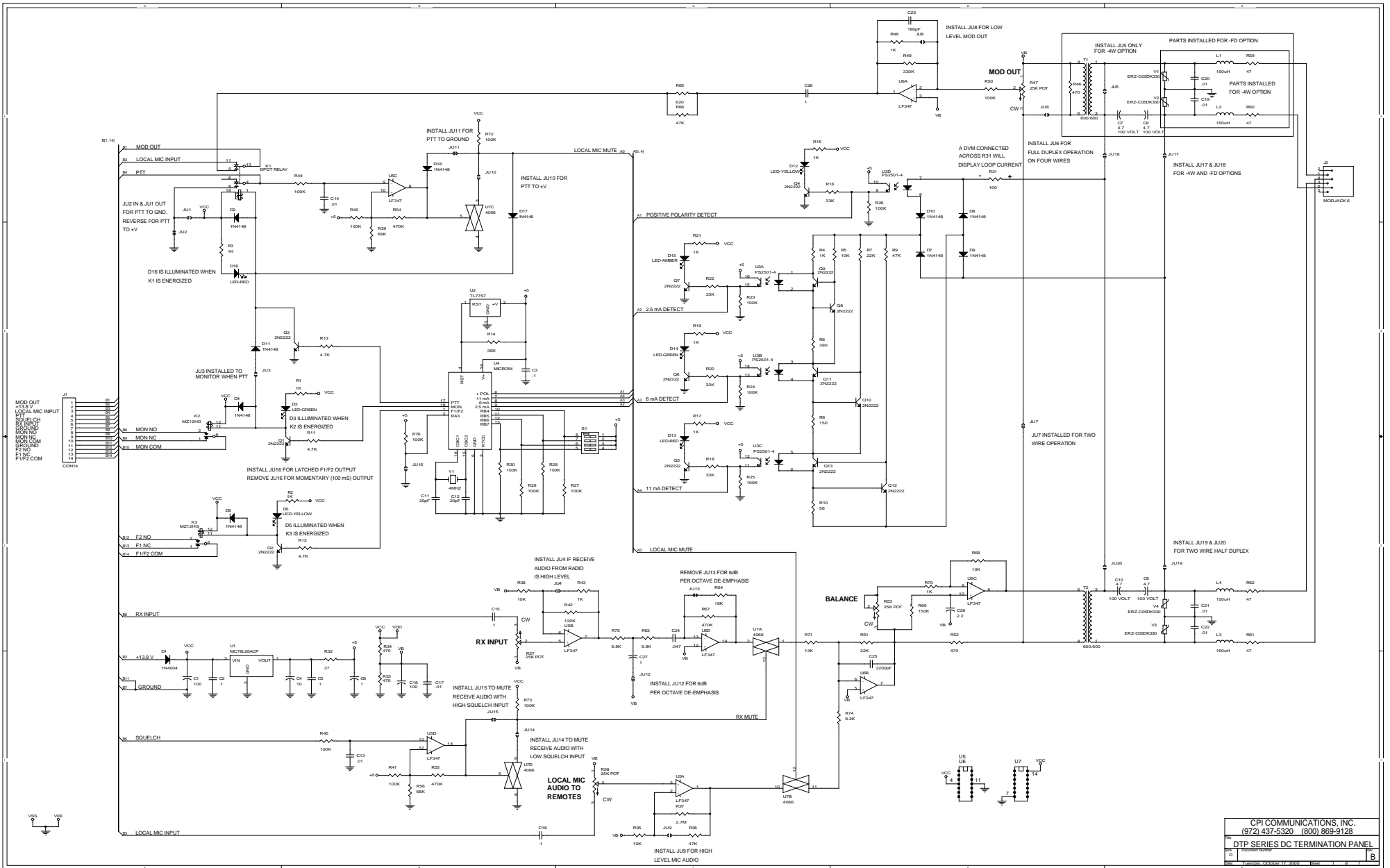
Dip switch 4 is normally in the OFF position. When in the ON position, The perceived polarity of the phone lines is reversed.

Modulation output is adjustable from 2 mVRMS to 565 mVRMS with 0 dBm on the phone lines. The phone lines can be driven to 0 dBm with an RX input level from 88 mVRMS to 880 mVRMS. A 0 dBm level on the phone line back to the remote can be produced with a mic high input between 2 mVRMS and 565 mVRMS.

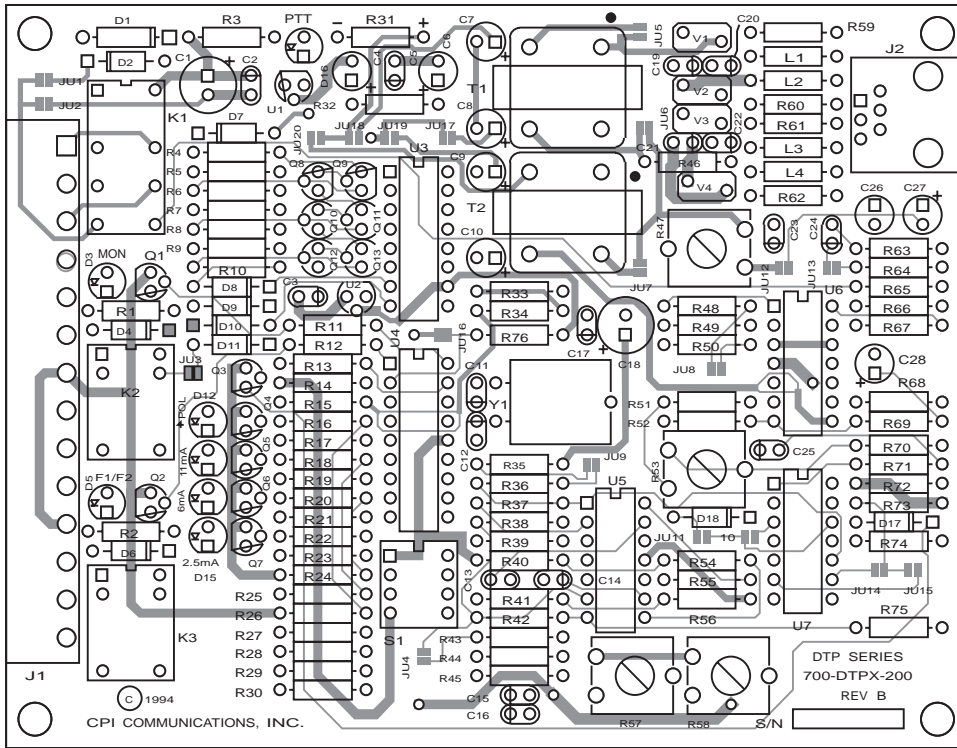
Parts List

DTP Series PCB #700-DTPX-200 Rev. B

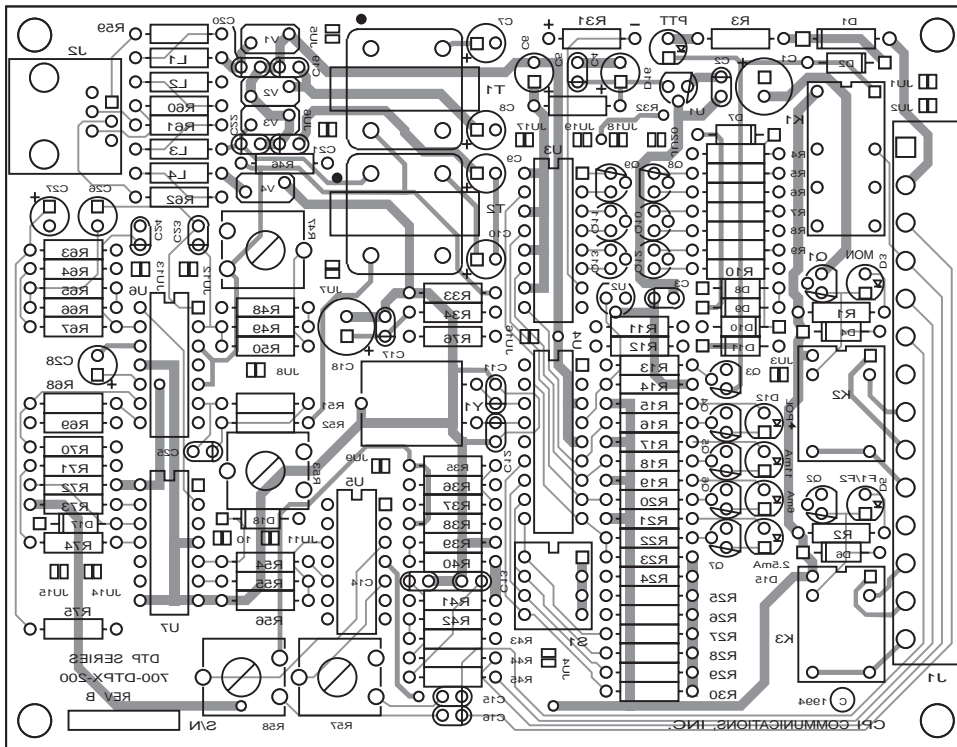
Reference	Description	CPI Part #
CAPACITORS		
C1,18	100uF Elec Rad	208-2021-107
C2,3,5,15,16	.1uF Mono Cer Dip	208-0092-104
C4	10uF Elec Rad	208-4022-106
C6,27	1uF Elec Rad	208-4052-105
C9,10	4.7uF 100V Elec Rad	208-2062-475
C11,12	20pF Cer	208-0001-200
C13,14,17,21,22	.01uf Mono Cer Dip	208-0092-103
C23	180pF Mono Cer Dip	208-0071-181
C24	.047 Mono Cer Dip	208-0092-473
C25	2200pF Mono Cer Dip	208-0071-222
C26	1uF Elec Rad Non-Polar	208-2000-001
C28	2.2uF Elec Rad	208-4052-225



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Top View



Bottom View

Reference	Description	CPI Part #
DIODES		
D1	1N4004 Rect	212-0002-004
D2,4,6,7,8,9,10,11,17,18	1N4148 Small Signal Switching	212-0110-012
D3,14	LED T1 Green	214-0002-004
D5,12	LED T1 Yellow	214-0002-003
D13,16	LED T1 Red	214-0002-001
D15	LED T1 Amber	214-0002-002
TRANSISTORS		
Q1,2,3,4,5,6,7,8,9,10,11,12,13	2N2222 NPN	240-2222-000
RESISTORS		
R1,2,3,4,15,17,19,21,48,43,70	1K 5% 1/4 Watt	242-0001-102
R5,35,38,68	10K 5% 1/4 Watt	242-0001-103
R6	390 Ohm 5% 1/4 Watt	242-0001-391
R7,51	22K 5% 1/4 Watt	242-0001-223
R8	150 Ohm 5% 1/4 Watt	242-0001-151
R9,36,66	47K 5% 1/4 Watt	242-0001-473
R10	56 Ohm 5% 1/4 Watt	242-0001-560
R11,12,13	4.7K 5% 1/4 Watt	242-0001-472
R14	39K 5% 1/4 Watt	242-0001-393
R16,18,20,22	33K 5% 1/4 Watt	242-0001-333
R23-30,40,41,44,45,50,72,73,76	100K 5% 1/4 Watt	242-0001-104
R31	100 Ohm 5% 1/4 Watt	242-0001-101
R32	27 Ohm 5% 1/4 Watt	242-0001-270
R33,34,52	470 Ohm 5% 1/4 Watt	242-0001-471
R37	2.7 Meg 5% 1/4 Watt	242-0001-275
R39,56	68K 5% 1/4 Watt	242-0001-683
R42	120K 5% 1/4 Watt	242-0001-124
R49	330K 5% 1/4 Watt	242-0001-334
R54,55,67	470K 5% 1/4 Watt	242-0001-474
R61,62	47 Ohm 5% 1/4 Watt	242-0001-470
R63,75	6.8K 5% 1/4 Watt	242-0001-682
R64	18K 5% 1/4 Watt	242-0001-183
R65	620 Ohm 5% 1/4 Watt	242-0001-621
R69	150K 5% 1/4 Watt	242-0001-154
R71	13K 5% 1/4 Watt	242-0001-133
R74	8.2K 5% 1/4 Watt	242-0001-822
POTENTIOMETERS		
R47,53,57,58	25K Pot	242-0101-253
INTEGRATED CIRCUITS		
U1	5 Volt Reg	417-7805-001
U2	Reset Generator	425-7757-000
U3	Quad Opto-Isolator	420-2501-000
U4	Microcontroller	425-1654-000
U5,6	Quad Op-Amp	420-L347-000
U7	Quad Analog Gate	412-4066-000

Reference	Description	CPI Part #
MISC.		
V3,4	MOV	242-0119-330
Y1	Crystal	258-0002-002
Cord	Modular Line Cord	600-0006-006
K1	DPDT Relay	230-0002-002
K2,3	SPDT Relay	230-0001-002
L3,4	150uH Choke	232-0000-150
T2	600:600 Transformer	246-0100-003
S1	4 Position Dip Switch	244-0002-004
-4W OPTION		
R59,60	47 Ohm 5% 1/4 Watt	242-0001-470
C19,20	.01uF Mono Cer Dip	208-0092-103
V1,2	MOV	242-0119-330
-FD OPTION (-4W option must also be installed)		
R46	470 Ohm 5% 1/4 Watt	242-0001-471
T1	600:600 Transformer	246-0100-003
C7,8	4.7uF Elec Rad 100 Volt	208-2062-475

Warranty

CPI Communications, Inc. warrants each product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defects or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation use or service discloses such defects, provided the unit is delivered by the customer to our authorized service center intact, with all transportation charges pre paid within two years from date of shipment to the original purchaser. Exceptions are semiconductors which carry only the manufacturer's standard warranty and lamp indicators and fuses which are warranted to be operational when shipped from the factory. No credit will be given for unauthorized repair.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us nor extended to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced, or changed, nor to accessories used therewith not of our own manufacture, nor to finish or appearance items.

This warranty is in lieu of all other warranties expressed or implied and no person is authorized to assume for us any other liability in connection with the sale of our products.

Please Note: CPI products are not authorized for use in applications where nonperformance may be life threatening, or where substantial risk to life and property may be present, without express written consent of the president of CPI Communications, Inc. CPI Communications, Inc. shall never be liable for consequential or indirect damages.