

King Communications

KDT5000/KDT5000R

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Application Note / Radio Model

“Panic Switch” Installation

Notes:

1. The parameter structure for the command PEN is “PEN 1”.
2. Install a 10k ohm 1/8 watt resistor between pin 1 and pin 9 of the DB9M connector of the radio interface cable.
3. An industrial grade N.O. push button switch is recommended for the “panic switch”.
4. A wire must also be attached between pin 9 of the DB9M connector and one pole of the N.O. contact of the panic switch. See diagram below.
5. Connect the other pole of the N.O. contact to a wire going to pin 5 of the DB9M connector.
6. The panic function is initiated when pin 9 is pulled high momentarily.
7. Verify that all MDT's have been modified per App. Notes 10039 or 10040.

Wiring Configuration:

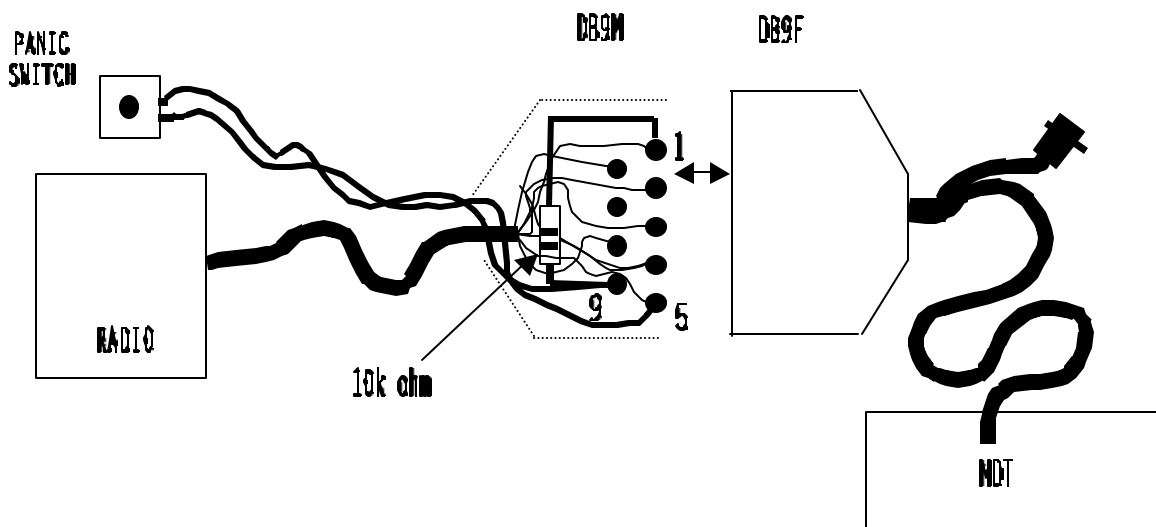


FIG. 1

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Application Note / Radio Model

Motorola Maxtrac Series

“HLN9123A Logic Bd. and 688010W76-A”

Wiring Configuration:

KDT5000R	Signal Name	Maxtrac logic board 688010w76-A
PIN #1	Ground	Any ground area
2	Speaker Mute (MUP)	Base of Q509
3	Press To Talk (PTP)	Pin #11 of J8 Conn.
4	Receive Audio	Pin #1 of U552B
5	Power (12VDC)	Pin #5 of J8 Conn.
6	Clear To Send (TRP)	Collector Q652
7	Trunk Decode (SQP)	Collector Q552
8	Transmit Audio	Pin #2 of U652A (15K in series)
9	Not Used	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
LKI	1 80
RKI	1 10
SRL	23: Note 1
STL	18: Note 1
TRP	-
SRT	7 500 0 0 0 0 0

Notes:

1. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.

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Application Note / Radio Model

Johnson 8600 Series

Wiring Configuration:

KDT5000R	Signal Name	Johnson 8600 Series Radio
PIN #1	Ground	P2 Pin #9
2	Speaker Mute	P2 Pin #6
3	Press To Talk	P2 Pin #2
4	Receive Audio	P2 Pin #4
5	Power (12VDC)	P2 Pin #5
6	Clear To Send	P2 Pin #1 Note 2
7	Carrier Detect	P2 Pin # 7
8	Transmit Audio	P2 Pin #11
9	Not Used	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
TRP	+
RKI	10
LKI	80
STL	26: Note 1
SRL	25: Note 1
SRT	7 500 0 0 0 0 0 Note: 3

Notes:

1. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.
2. This connection is required for trunking mode only.
3. If radio is to be used in a conventional system change the following settings:
SRT 0 0 0 0 0 0 0, RKI 1 25, and LKI 1 25.

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Application Note / Radio Model
Standard GX1510U

Wiring Configuration:

KDT5000R	Signal Name	Radio
PIN #1	Ground	Any Ground Connection
2	Speaker Mute	Gate of Q606
3	Press To Talk	Pin #3 of Mic Jack
4	Receive Audio	Junction R128 and C152
5	Power (12VDC)	Collector of Q403
6	Unused	NA
7	Carrier Detect (COR)	Collector of Q712
8	Transmit Audio	Junction of R280 and VR202 with 15K resistor in series
9	Unused	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
LKI	20
SRT	0 0 0 0 0 0

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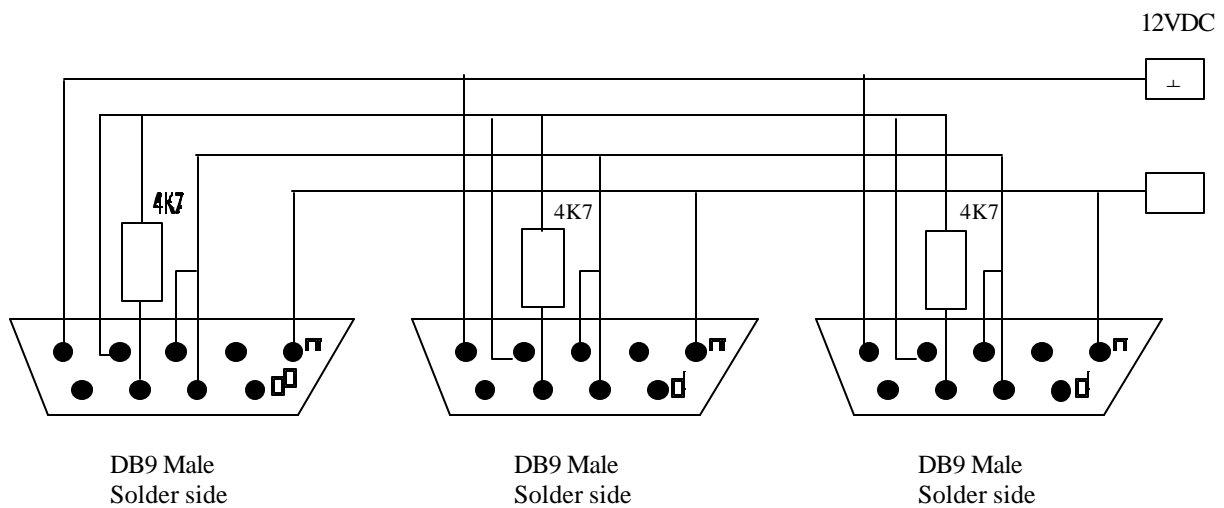
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Application Note / Radio Model
KDT5000R "Back to Back" Cable Construction

Wiring Configuration:



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Application Note / Radio Model

Kenwood TK840

Wiring Configuration:

KDT5000R	Signal Name	KCT19 Accessory Connection Cable
PIN #1 (Brn.)	Ground	Pin A-6 (Red)
2 (Blu.)	Speaker Mute	Pin A-12 (See mods #1) (Yel.-C1)
3 (Red)	Press To Talk	Pin A-8 (Purple)
4 (Orng.)	Receive Audio	Pin A-4 (See mods #3) (Brwn.)
5 (Yel.)	Power (12VDC)	Pin A-7 (Orng.-Large)
6 (Grn.)	Clear to Send	Pin A-13 (See mods #4 and notes #1) (White)
7 (Violet)	Carrier Detect (COR)	Pin A-11 (See mods #2 and notes #2) (Gray)
8 (Gray)	Transmit Audio	Pin A-9 (Yel.)
9 (Wht.)	Unused	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
SPS	100
SRT	7 500 0 0 0 0 0
TRP	-
RKI	1 20
LKI	1 80

Radio Preparation and Modification:

1. Clip the yellow wire on the KCT19 from its connector C1. Add the 4" length of yellow wire to the just cut KCT19 yellow wire and insulate the connection. Solder the other end of the newly added yellow wire to the base of Q19 (grid location G11)
2. TRUNKING USE ONLY. Clip the gray wire on the KCT19 from its connector D8. Add the 4" length of gray wire to the just cut KCT19 gray wire and insulate the connection. Solder the other end of the newly added gray wire to the base of Q20.
3. Clip the brown wire on the KCT19 from its connector D1, ensuring to leave enough length on both ends to solder to. Add the 2K ohm resistor in series with the brown wire and properly insulate the connectors.
4. Program the radio for an Access Logic Signal of Continuous

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Notes:

1. Leave this connection un-terminated if radio is to be used in a conventional only system.
2. Do not perform modification step #2 if radio is to be used in a conventional only system.
3. If radio is to be used in a conventional only system, replace the above listed KDT settings with the following: SRT 0 0 0 0 0 0, RKI 1 25, and LKI 1 25.
4. Align the KDT per the alignment instructions in the KDT training manual. Adjustment of the radio's TX deviation may be required.

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Application Note / Radio Model

Bendix/King EPH Portable

Wiring Configuration:

KDT5000R	Signal Name	Side Connector via LAA0602
PIN #1	Ground	#3 of J17
2	Unused	NA
3	Press To Talk	#2 of J17
4	Receive Audio	Center pin of J15 Audio Jack
5	Power (12VDC)	#1 of J17
6	Unused	NA
7	Carrier Detect (COR)	#5 of J17
8	Transmit Audio	#4 of J17
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
LKI	100
SRT	0 0 0 0 0 0 0 0

Notes:

Requires use of an LAA0602 Accessories connector from B/K radio. The following mod will convert PRI switch to a MDT mode or Programming mode switch:

1. Remove R55 (Options board)
2. Cut pin 3 of P11 Control board.
3. Cut path on both sides of SW2.
4. Add jumper between top leg of SW2 and pad of R55 (Junction R55 and C56)
5. Add jumper between center leg of SW2 and pad of R55 (Junction R55 and J10 pin 6)
6. Add jumper between bottom leg of SW2 and I4/Options board pin 5
7. Add jumper between top leg of SW3 and Gnd.

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Application Note / Radio Model

Motorola Radius GM300

Wiring Configuration:

KDT5000R	Signal Name	Rear Accessory Connector Pin #
PIN #1	Ground	7
2	Speaker Mute	6
3	Press To Talk	3
4	Receive Audio	11
5	Power (12VDC)	13
6	Unused	NA
7	Carrier Detect (COR)	4
8	Transmit Audio	5
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
LKI	100
SRT	0000000

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Application Note / Radio Model

RELM - SLU25

Wiring Configuration:

KDT5000R	Signal Name	Radio
PIN #1	Ground	Any Ground Connection
2	Speaker Mute	U201 pin #13
3	Press To Talk	J301 Pin 1
4	Receive Audio	U301 Pin 9
5	Power (12VDC)	SW101 Pin 5
6	Unused	NA
7	Carrier Detect (COR)	U204 Pin 7
8	Transmit Audio	P201 Pin 4 100K ohm in series
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
MUP	+
LKI	20
SRL	23: Note 1
STL	18: Note 1
SRT	0 0 0 0 0 0

1. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.

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Application Note / Radio Model

Kenwood TK760

Wiring Configuration:

KDT5000 DB9	Signal Name	KCT19 Accessory Connection Cable
PIN #1 (Brn.) Note: 4	Ground	Pin A-6 (Red)
2 (Blu.)	Speaker Mute	Pin A-13 (See notes #2) (Wht.)
3 (Red)	Press To Talk	Pin A-8 (Purple)
4 (Orng.)	Receive Audio	Pin A-4 (Brn.)
5 (Yel.)	Power (12VDC)	Pin A-7 (See notes #2) (Orng. Large)
6 (Grn.)	Unused	NA
7 (Violet)	Carrier Detect (COR)	Pin A-11 (Gray)
8 (Gray)	Transmit Audio	Pin A-9 (See notes #1) (Yel.)
9 (White)	Unused	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
RKI	10
LKI	50
SRT	0 0 0 0 0 0

Notes:

1. Clip the yellow wire on the KCT19 from its connector D4, ensuring to leave enough length on both ends to solder to. Add the 100K ohm resistor in series with the yellow wire and properly insulate the connections.
2. Add the 10K ohm resistor as a jumper between pin A-13 and pin A-7 on the KCT19 connector cable.
3. Align the KDT as per the alignment instructions in the KDT Training Manual. Adjustment of the radio's TX deviation may be required.
4. Wire colors are for King Communications radio interface cable (P/N KRIC).

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Application Note / Radio Model

Garmin GPS 35/36 to KDT5000

Wiring Configuration:

Accessory Serial Connector DB9 Male (Connect to KDT5000)	Signal Name	Garmin GPS 35/36 Accessory Connection Cable DB9 FEMALE
PIN #1	Not used	NA
2	RX Serial Data	TX Data (White wire)
3	TX Serial Data	RX Data (Blue wire)
4	Data Terminal Ready	NA
5	Ground	Ground (Black wire) and Common Ground (unshielded wire)
6	Not used	NA
7	Not used	NA
8	Clear To Send	NA
9	+12VDC	+12VDC (Red Wire)

Notes:

1. Wire the DB9 female connector (not supplied) according the configuration table above. Ensure that the ground connection wire is wired common to the KDT5000 ground connection.
2. Configure the KDT5000 terminal for correct GPS usage as specified in the appropriate configuration download file. After this procedure ensures that the accessory RS232 port has been set up to communicate at a baud rate speed of 4800 BPS. Now issue a 'SDA 20' command to the KDT5000 (Configure the accessory RS232 port as a GPS device attached) Some download files may contain the necessary commands to configure the accessory RS232 port upon reset (RST) of the KDT5000.
3. Connect the Accessory Serial Connector (DB9 female) to the KDT5000 terminal.
4. Connect the power (10-32VDC) to the Garmin GPS 35/36 device. Ensure that the power is connected to the KDT5000 terminal and press the key marked 'GPS' on the keyboard.
5. The GPS unit will take approx. 45 seconds to achieve a process of satellite acquisition and tracking. After a position fix has been calculated, valid position, velocity and time information will be transmitted over the output channel to the KDT5000.

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Application Note / Radio Model

Motorola Maxtrac “SmartNet” to KDT5000

“HLN9313A Logic Board”

Wiring Configuration:

KDT5000	Signal Name	Maxtrac logic board HLN9313A
PIN #1	Ground	Any ground area
2	Speaker Mute	Base of Q509
3	Press To Talk	Pin #11 of J8 Conn.
4	Receive Audio	Pin #1 of U552B
5	Power (12VDC)	Pin #5 of J8 Conn.
6	Clear To Send	Collector Q652
7	Trunk Decode	Gate Q551 : Note 1
8	Transmit Audio	Pin #2 of U652A (15K in series)
9	Not Used	NA

Terminal Programming:

SQP	+
PTP	+
TRP	-
MUP	-
LKI	1 1000
RKI	1 10
SRL	23: Note 2
STL	18: Note 2
SRT	7 80 0 0 0 0 0

Notes:

1. The Gate of Q551 can be located at a feed through located just behind Pin#1 and #2 of J8.
2. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.

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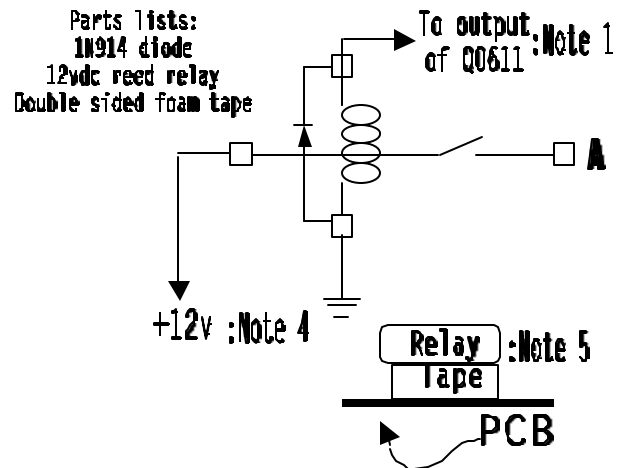
Application Note / Radio Model

Motorola GTX and LCS 2000 to KDT5000 Model # M11UGD6CB1AN and M10UGD6DC5AN"

Wiring Configuration:

KDT5000R Center DB9	Signal Name	Main board FLF5582A
PIN #1	Ground	Any ground area
2	Speaker Mute (MUP)	#8 of U0401
3	Press To Talk (PTP)	#3 of J0400
4	Receive Audio	#11 J0400
5	Power (12VDC)	"A" terminal of relay
6	Clear To Send (TRP)	Junction R6524 and R6523 : Note 2
7	Trunk Decode (SQP)	Junction R0404 and R0405
8	Transmit Audio	#2 of J0400 15K ohm Series
9	Not Used	NA

SQP	-
PTP	+
TRP	+
MUP	-
LKI	1 1000
RKI	1 10
SRL	23: Note 3
STL	18: Note 3
SRT	7 80 0 0 0 0 0



Notes:

1. The output of the Q0611 transistor is the middle leg and the signal name is SW_B+.
2. The connection for Clear to Send is made at the junction of R6524 and R6523 on the K9.1 signal side.
3. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.
4. This connection to 12v should be made at the power input terminal of the radio.
5. Mount Relay to PCB with foam tape.

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Application Note / Radio Model

Ericsson MDX

“LBI-38848E”

Wiring Configuration:

KDT5000R	Signal Name	Option Cable LBI-38844C
PIN #1	Ground	J905 #1
2	Speaker Mute (MUP)	J905 #10
3	Press To Talk (PTP)	J905 #7
4	Receive Audio	J905 #11
5	Power (12VDC)	J905 #5
6	Clear To Send (TRP)	J905 #13 Note 1
7	Trunk Decode (SQP)	-
8	Transmit Audio	J905 #4 Note 2
9	Not Used	NA

Terminal Programming:

LKI	1 1000
RKI	1 10
SRL	23: Note 3
STL	23: Note 3
SRT	7 80 0 0 0 0 0

Notes:

1. A 10K-ohm pull-up resistor must be add from SW A+ (pin #5) to Relay (pin #13).
2. A 10K-ohm Pull-up resistor must be connected in series with the TX audio.
3. The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.

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Application Note / Radio Model
Motorola Radius M1225 to KDT5000

Wiring Configuration:

KDT5000R	Signal Name	16 Pin Accessory Connector
PIN #1	Ground	Pin # 7
2	Speaker Mute	N/C
3	Press To Talk	Pin # 3
4	Receive Audio	Pin # 11
5	Power (12VDC)	Pin # 13
6	Clear To Send	N/C
7	Trunk Decode	Pin # 8
8	Transmit Audio	Pin # 5
9	Not Used	NA

Terminal Programming:

LKI	10
RKI	10
SRL	23: Note 1
STL	18: Note 1
SRT	0 0 0 0 0 0

Note: 1. . The settings for SRL and STL are initial settings only and the radio and terminal should be fine-tuned according to the standard TX and RX setup procedures.

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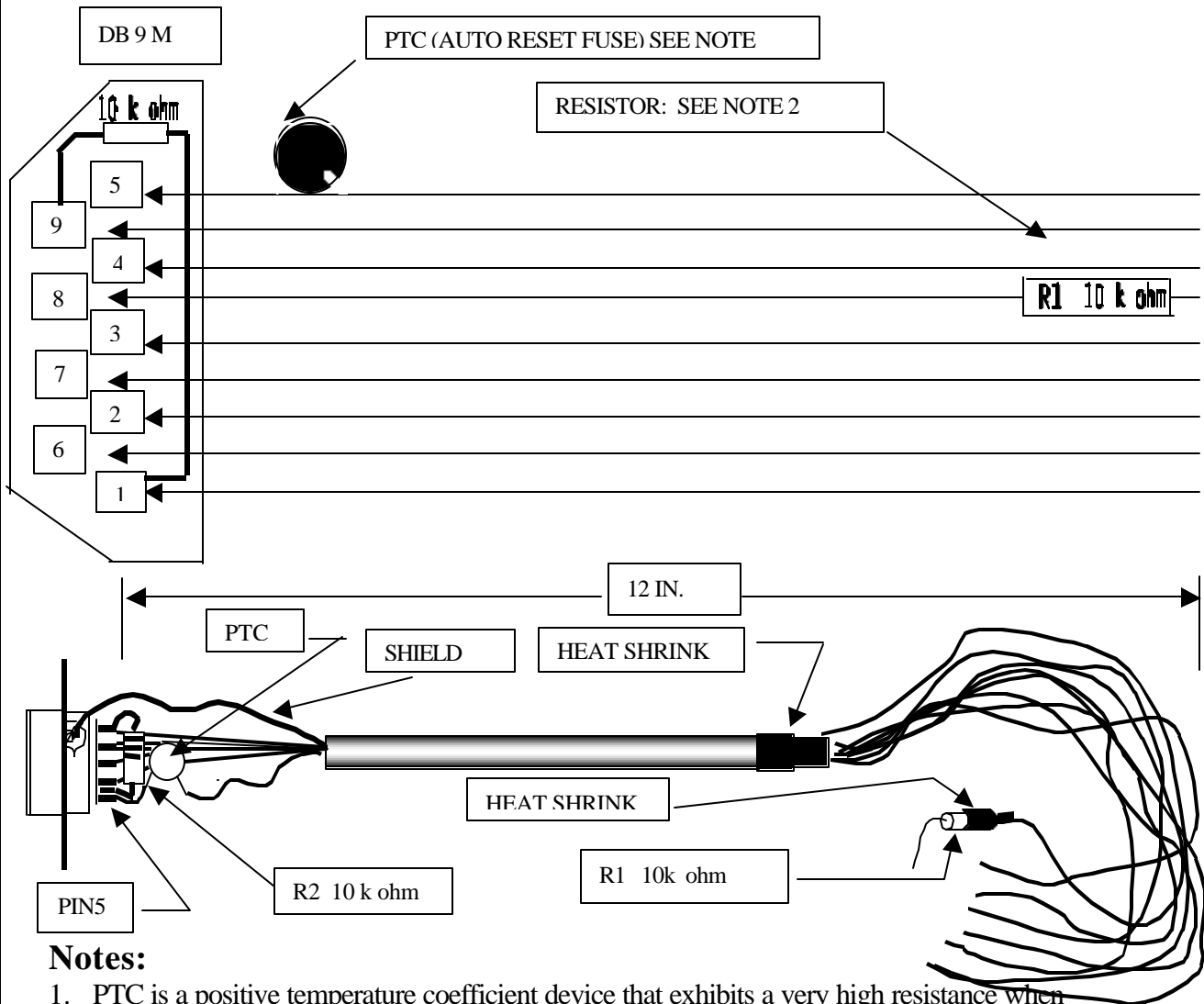
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Application Note / Radio Model

KDT5000 to Radio Interface Cable Construction (KRIC Cable)

Wiring Configuration:



Notes:

1. PTC is a positive temperature coefficient device that exhibits a very high resistance when current exceeds 800 ma. providing over current protection for the DB9M connector. The PTC automatically resets when over current condition is removed. The PTC is to be mounted inside the DB9M connector shell.
2. The value of R1 is to be selected on test to provide the proper transmitter audio range for the specific Radio model to be interfaced.

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KDT5000/KDT5000R

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**Application Note / Radio Model
SEA ESP504/520 ACSB Transceiver**

Wiring Configuration:

KDT5000R	Signal Name	SEA ESP504/520 ACSB Radio
PIN #1	Ground	Any Ground Connection
2	Speaker Mute	Pin 10 of U102, see note 3
3	Press To Talk	Terminal A of JU 4
4	Receive Audio	TP107
5	Power (12VDC)	Pos. terminal of C14
6	Clear To Send	Pin 1 of J303
7	Carrier Detect (COR)	End of 33k ohm resistor opposite pin 10 of U102. See note 3.
8	Transmit Audio	TP102 with series 56k ohm res. See note 2.
9	Unused	NA

Notes:

1a. A modification kit including a connectorized cable assembly is available.

1b. A drilling jig designed to permit correct location of the cable entry hole without damaging the external finish of the transceiver will be available shortly.

2. A 56K ohm resistor is required in series with the KDT500 TX audio output. A 1/8 watt axial lead resistor can be installed at TP102 for this purpose.

If data muting is desired, carefully perform the following modification to the SEA personality board. Locate the etch from U102 pin 10 to the plated PCB thru-hole. Using an X-acto knife, carefully cut through the etch at its midpoint. Remove the coating from the etch on either side of the cut then tin the two sides. Install a 33 K ohm SMD resistor so as to bridge the cut. If data muting is not required. Do not make this modification and do not install the muting lead from pin 2 of the DB9M connector.

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KDT5000/KDT5000R

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Application Note / Radio Model

Motorola Maxar 80 to KDT500

Internal Radio Modifications:

1. Pin 3 J601 to any convenient ground point.
2. Pin 11 J601 to the collector of Q409 PL board (carrier Detect).
3. Pin 13 J601 to the junction of R447 and Yel-Blu wire PL Board (Discriminator Audio).
4. Pin 14 J601 to the junction of CR16 & C92 Main Board (Speaker Mute).
5. Pin 15 J601 to the negative side of C120 Main Board (TX Audio).

Wiring Configuration:

Interconnect cable equipped with a male DB9 for connection to the KDT500 Female DB9.

Wiring Configuration:

KDT5000R	Signal Name	P601 Accessories connector
PIN #1	Ground	Pin 3
2	Speaker Mute (MUP)	Pin 14
3	Press To Talk (PTP)	Pin 8
4	Receive Audio	Pin 13
5	Power (12VDC)	Pin 7
6	Clear To Send (TRP)	N/C
7	Trunk Decode (SQP)	Pin 11
8	Transmit Audio	Pin 15
9	Not Used	NA

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KDT5000/KDT5000R

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Application Note / Radio Model
Maxon SM-2450

Wiring Configuration:

KDT5000R	Signal Name	Maxon 2450
PIN #1	Ground	*Pin 3 IC108 & Relay Contact
2	Speaker Mute	*Relay Coil
3	Press To Talk	Pin 18 CON 403
4	Receive Audio	Junction C190 & C201
5	Power (12VDC)	*Pin 5 IC108 & Relay Coil
6	Unused	N/A
7	Carrier Detect (COR)	Collector Q131
8	Transmit Audio	Pin 4 CON 403
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
MUP	-
LKI	1 30
SRT	0 0 0 0 0 0

* See Fig.2

Notes:

1. Extend each wire of radio interface cable, except the shield wire, by 6 inches and cut the shield wire to a two inch length and insulate with heat shrink.
2. Disassembly radio (reference exploded view drawing in service manual)
3. Remove main board from housing.
4. Remove external speaker jack from main board (this is to allow the external speaker jack hole on the rear panel to be used for the radio interface cable).
5. Install a 1N914 diode across the coil terminals of the relay and mount the relay atop the transformer as shown in Fig. 1 on page 2.
6. Thread wires of the radio interface cable through the speaker jack hole to the inside of the radio housing and secure with a cable tie around the cable heat shrink protruding on the inside of rear panel.
7. Connect a jumper between the external speaker jack switch holes on the PCB. (This is to allow the internal speaker to operate in the absence of the discarded external speaker jack)
8. Solder the wires of the radio interface cable to the points listed in the table above. Solder the shield wire to the ground hole on the main board vacated by the speaker jack
9. Insert the main board back into the radio housing with care and route the radio interface cable per the diagram on page two of this applications note.

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Application Note / Radio Model

Maxon SM-2450: Radio Interface Cable Routing Diagram

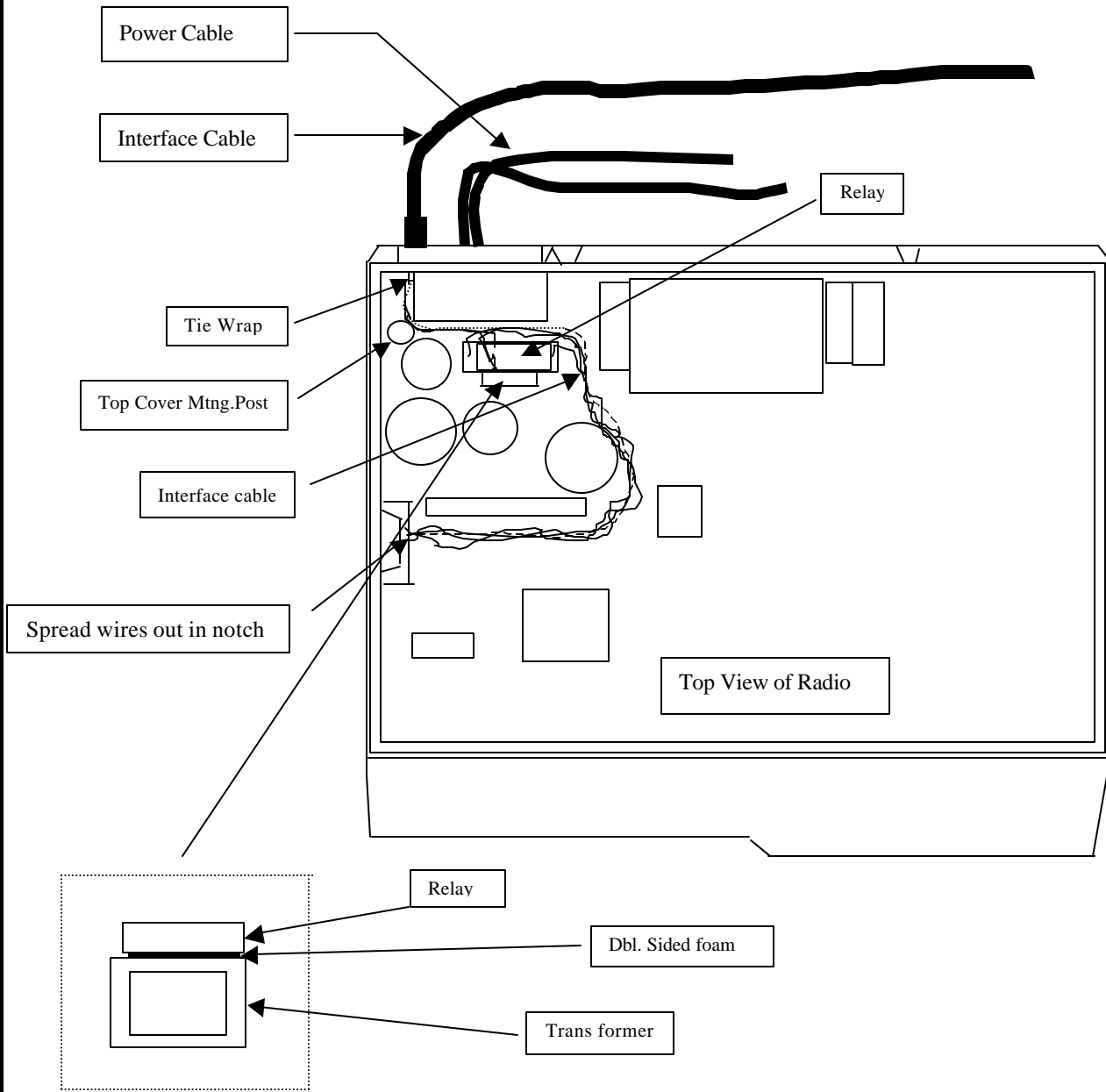


Fig. 1

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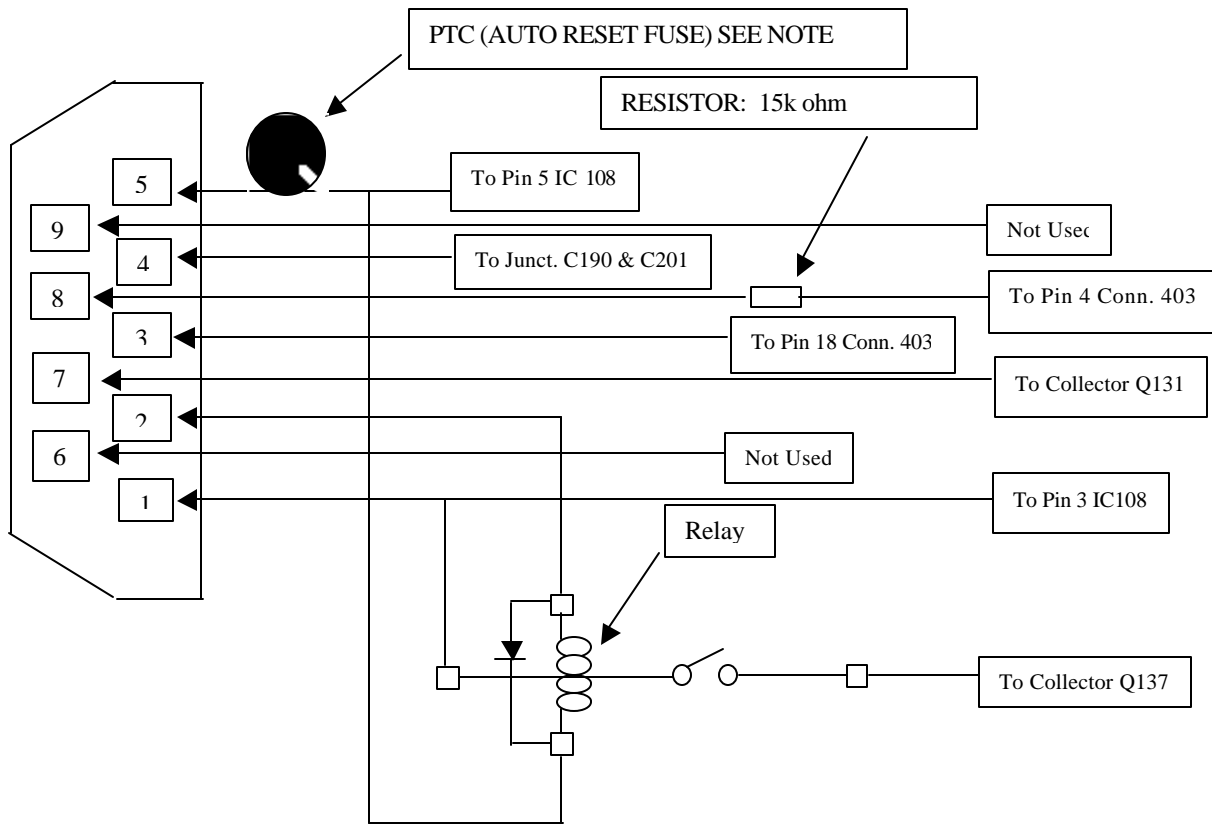


Fig. 2

Parts List

- Interface Cable
- 1N914 diode
- 5VDC Reed Relay (Radio Shack 275-232)
- Double Sided Foam Tape

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King Communications

KDT5000/KDT5000R

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Application Note / Radio Model
MIDLAND 70-1337 Bantam Mobile

Wiring Configuration:

KDT5000R	Signal Name	MIDLAND 70-1337
PIN #1	Ground	Pin 3 of J902
2	Speaker Mute	Pin 8 of IC203
3	Press To Talk	Pin 2 of J401
4	Receive Audio	Pin 7 of J902
5	Power (12VDC)	Pin 22 of J902
6	Unused	
7	Carrier Detect (COR)	Wiper of S401 (CTCSS)
8	Transmit Audio	Pin 1 of J401
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
MUP	-
LKI	1 30
SRT	0 0 0 0 0 0

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Application Note / Radio Model
MIDLAND 70-1336A/B

Wiring Configuration:

KDT5000R Center DB9	Signal Name	MIDLAND 70-1336A/B
PIN #1	Ground	Pin J408
2	Speaker Mute	Pin 7 J408
3	Press To Talk	Pin 2 J305
4	Receive Audio	Pin 11 J408
5	Power (12VDC)	Pin 6 IC 406
6	Unused	
7	Carrier Detect (COR)	Pin 5 J408
8	Transmit Audio	Pin 1 J305
9	Unused	NA

Terminal Programming:

SQP	+
PTP	-
MUP	-
LKI	1 30
SRT	0 0 0 0 0 0

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KDT5000/KDT5000R

Application Document 10022

Application Note/ radio Model

SEA ESP520DX / ESP520D * See note 3 below

Wiring Configuration:

KDT5000R Center DB9	Signal Name	ESP520DX DB-25M
PIN #1	Ground	Pin #1 & Pin #11
2	Speaker Mute	NA
3	Press To Talk	Pin #5
4	Receive Audio	Pin #10
5	Power (12VDC)	Pin #13
6	Clear To Send	Pin #6
7	Carrier Detect	Pin #20
8	Transmit Audio	Pin #12
9	Not Used	NA

Notes:

1. MSK levels from the MDT should be set at 100mv P/P.
2. Version 2.0 firmware should be installed in the MDT500.
3. There are both hardware and firmware changes required to upgrade the ESP520D to an ESP520DX. Refer to SEA document DOC520D.01 on page 2 of this application note. The Bill of material listed on page 2 is required for the upgrade and can be obtained from SEA.

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KDT5000/KDT5000R

Bill of Material

1 Ea.	DOC-520D-01	Field Software Upgrade DOC. (listed below)
1 Ea.	OPS-520D-U1	Slave CPU Revision V2.00 or later.
1 Ea.	OPS-520D-U2	Master CPU Revision V2.00 or later.
1 Ea.	OPS-520D-U6	DSP PROM Revision V2.00 or later.
1 Ea.	RES- 0010-471	470 Ohm 1/8W Resistor.

ESP520D SOFTWARE UPGRADE INSTRUCTIONS (DOC520D.01) REV. A

1.1 Remove the radio's Top Cover.

- 1.1.1 Remove the two (2) screws from the top cover of the radio.
- 1.1.2 Remove the top cover of the radio.

1.2 Replace the radio's CPU firmware and DSP firmware.

- 1.2.1 Remove U1 CPU firmware (OPS-520D-U1, V1.05 or earlier).
- 1.2.2 Install OPS-520D-U1, V2.00 or later.
- 1.2.3 Remove U2 CPU firmware (OPS-520-U2, V1.05 or earlier).
- 1.2.4 Install OPS-520D-U2, V2.00 or later.
- 1.2.5 Remove U6 DSP firmware (OPS-520D-U6, V1.05 or earlier).
- 1.2.6 Install OPS-520D-U6, V2.00 or later.

1.3 Install R38 (470 ohm) load resistor.

- 1.3.1 Using an Ohm meter to measure the resistance from U2 pin 21 to ground. If the resistance measured is 470 Ohms +/-20 ohms then continue on to step 1.4.
- 1.3.2 Remove the two (2) screws from the data interface board (the board with the large gray cable).
- 1.3.3 Remove the two (2) standoffs from the personality board.
- 1.3.4 Remove the two (2) screws from the personality board.
- 1.3.5 Remove the personality board from the radio.
- 1.3.6 Install the 470 ohm resistor (RES-0010-471) on the bottom of the board from U2 pin 21 to ground.
- 1.3.7 Replace the personality board back into the radio.
- 1.3.8 Replace the two (2) personality board standoffs.
- 1.3.9 Replace the two (2) personality board screws.

1.4 Modify the data interface board (ASY-520D-11).

- 1.4.1 Remove the two (2) screws from the data interface board (the board with the large gray cable). Turn this board over so that the component side is facing up.
- 1.4.2 Solder a small piece of wire between U2 pin 2 and U2 pin 15.
- 1.4.3 Replace the data interface board back on the standoffs.
- 1.4.4 Replace the two (2) screws back into the data interface board.

1.5 Replace the radio's Top cover.

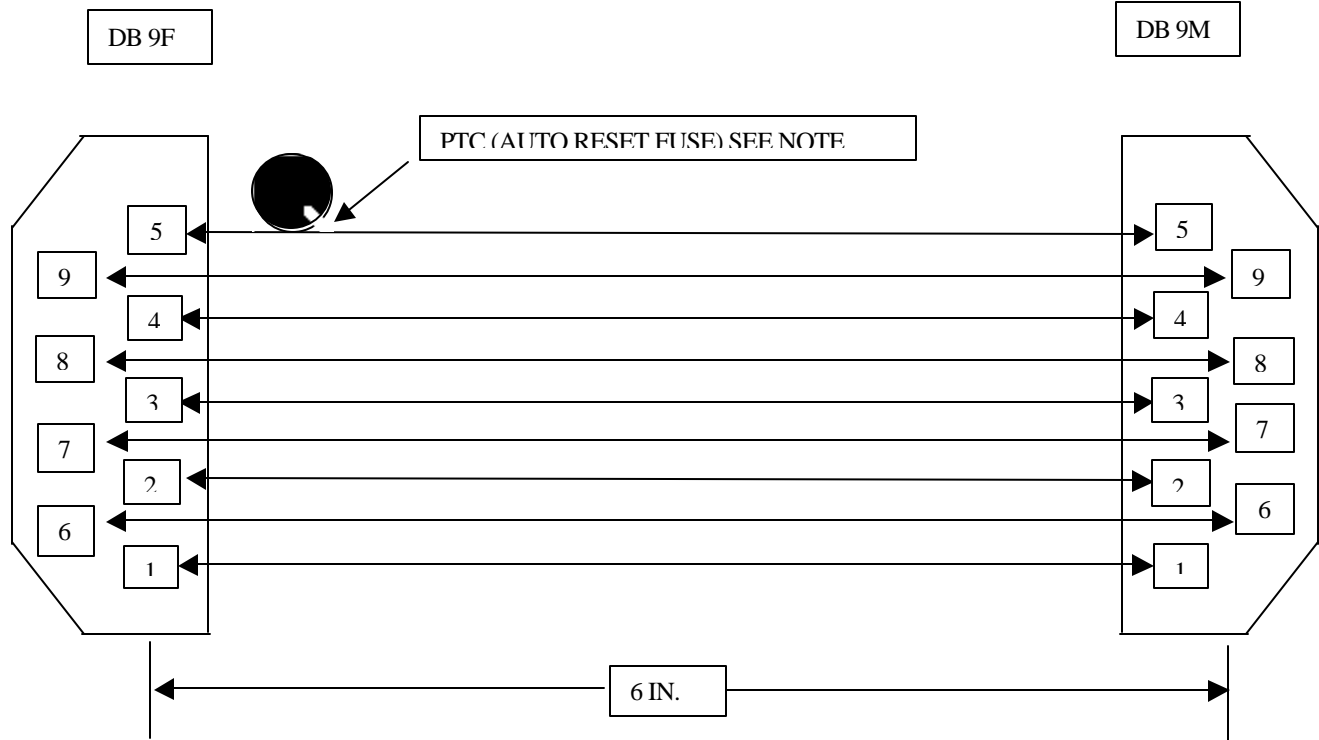
- 1.5.1 Replace the top cover of the radio.
- 1.5.2 Replace the two (2) screws in the top cover of the radio.

The software upgrade is now complete.

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KDT5000/KDT5000R

Application Document 10023
Application Note/Radio Model
KRIC Power Circuit Protection Adaptor



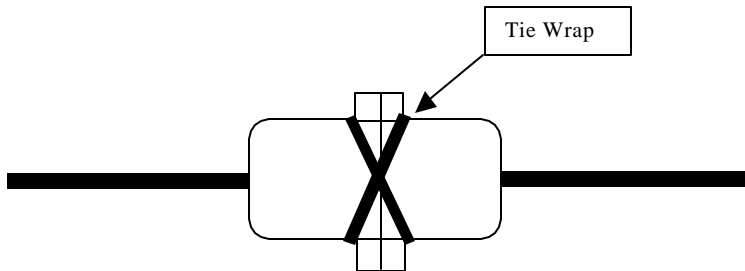
Notes:

PTC is a positive temperature coefficient device that exhibits a very high resistance when current exceeds 800 ma. providing over current protection for the DB9M connector. The PTC automatically resets when over current condition is removed. The PTC is to be mounted inside the DB9F connector shell.

Parts list consists of the following items:

- 1 DB9F connector with shell and screws
- 1 DB9M connector with shell and screws
- 1 Six (6) inch length of KRIC cable wire
- 1 800 ma. PTC resetable fuse

Plug adaptor between radio cable and MDT mate male to female and secure with cable tie wrap as shown here.



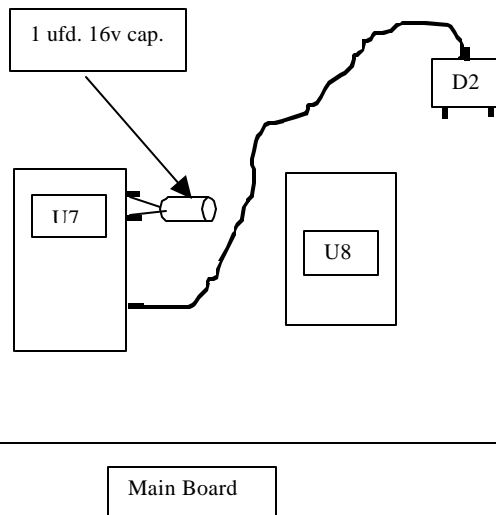
King Communications

KDT5000/KDT5000R

Application Document 10024

Application Note/Radio Model

Modification of the KDT5000A for Data Detect



Notes:

Add the following items to the KDT 5000A main pcb.

- (1) .1 ufd 16v capacitor.
- (1) 1 jumper wire.

Reference the diagram above and perform the following steps.

1. Solder a jumper from pin 13 of U7 to the cathode of D2.
2. Solder the ground lead of the .1 ufd cap. to pin 17 of U7.
3. Solder the positive lead of the .1 ufd cap. to pin 19 of U7.

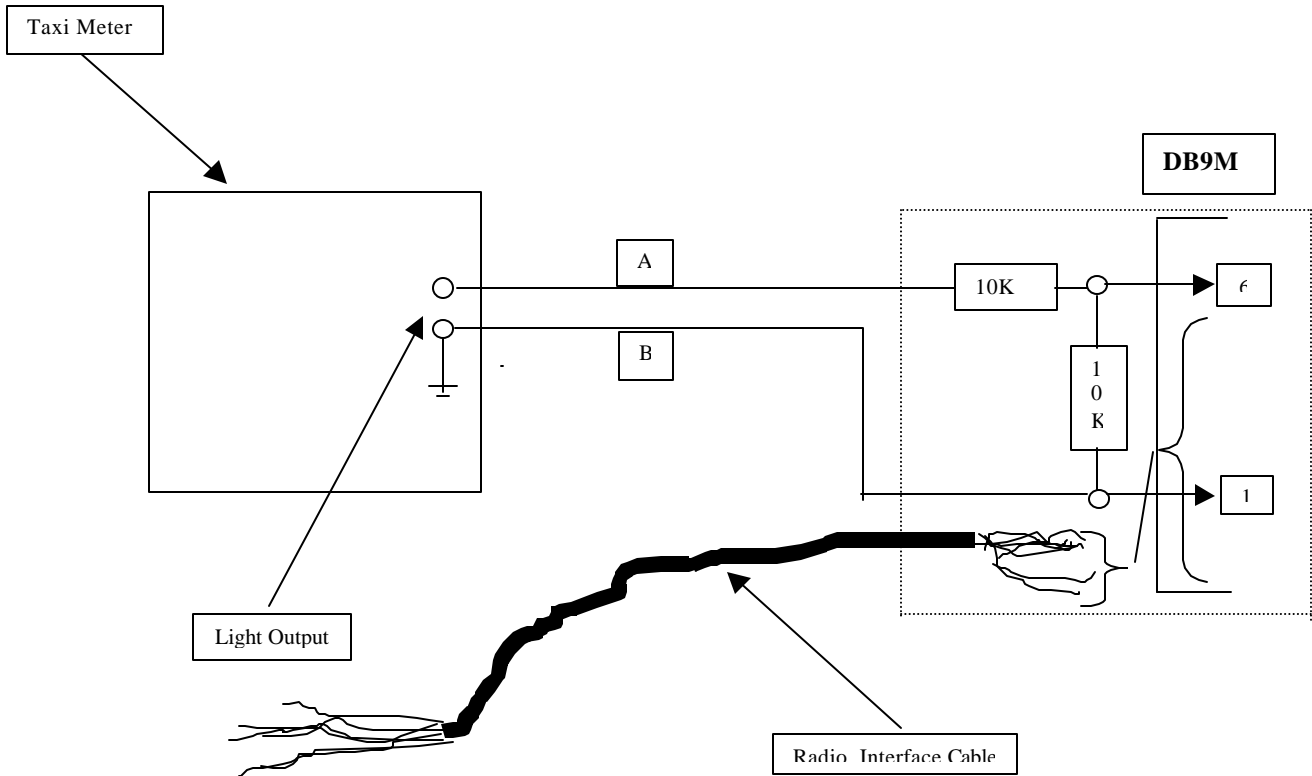
King Communications

KDT5000/KDT5000R

Application Document 10025

Application Note/Radio Model

Flag Fall Interface for Taxi Meter To The KDT 5000



Notes:

The following parts should be added to the King Radio Interface Cable (KRIC) per the diagram above.

(2) 10K 1/8watt resistors.

1. Solder one lead of each resistor to pin 6 of the DB9M connector.
2. Solder the other lead of one of the resistors to pin 1 of the DB9M.
3. Attach a 3ft. length of 24 awg insulated wire (A) to the free lead of the other resistor that's attached to pin 6 of the DB9M.
4. Attach a 3ft. length of 24 awg insulated wire (B) to pin 1 of the DB9M.
5. Route the two wires through the rear of the DB9M shell along side the existing radio cable.
6. Connect wire A and B to the Cab meter as shown in the diagram above.
7. Using the EXC program enter the following command into the MDT: FFS 10 F4 F3

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WF

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KDT5000/KDT5000R

Application Document 10026

Application Note/ Radio Model
UNIDEN SMU 250KTS

Wiring Configuration:

KDT5000R	Signal Name	UNIDEN SMU 250KTS
PIN #1	Ground	Power Ground
2	Speaker Mute	J406 Pin 4
3	Press To Talk	PTT Pin Mic Connector
4	Receive Audio	J406 Pin 5
5	Power (12VDC)	Switched terminal VR701
6	Clear To Send	N/A
7	Carrier Detect	P3 WA 401
8	Transmit Audio	J406Pin 3
9	Not Used	NA

Terminal Programming:

SQP	+
PTP	-
MUP	-
LKI	1 30
SRT	0 0 0 0 0 0

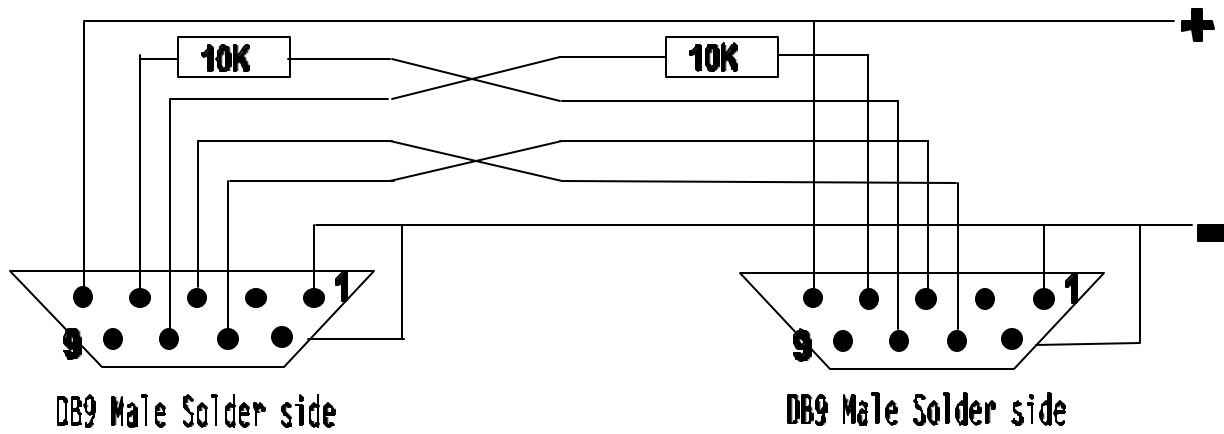
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KDT5000/KDT5000R

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Application Note/ Radio Model

KDT5000R "Back to Back" Cable Construction (Modified)



REV.1
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KDT5000/KDT5000R

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Application Note/ Radio Model
JOHNSON VIKING

Wiring Configuration:

KDT5000R	Signal Name	STANDARD GX4800UT
PIN #1	Ground	J300 PIN 10
2	Speaker Mute	J401 PIN 10
3	Press To Talk	W/O 23(MIC. PTT)
4	Receive Audio	W/O 1(RX DEMOD AUDIO)
5	Power (12VDC)	J300 (SW. BAT)
6	Clear To Send	W/O 9 (T/R)
7	Carrier Detect	W/O 19 (RX MUTE)
8	Transmit Audio	R703 LEG THRU 150K PIN2 U605
9	Not Used	NA

Terminal Programming:

SQP	+
PTP	-
MUP	-
TRP	+
SRT	7 8 0 0 0 0 0 0

REV.2
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KDT5000/KDT5000R

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Application Note/ Radio Model
KENWOOD TK805

Wiring Configuration:

KDT5000R	Signal Name	KENWOOD TK805
PIN #1	Ground	Suitable ground point :Note 1
2	Speaker Mute	High side of VR201
3	Press To Talk	Pin 3 of J201
4	Receive Audio	Pin 2 of W201
5	Power (12VDC)	Switched side of S201
6	Clear To Send	Not applicable:Note 2
7	Carrier Detect	Pin 5 of W201
8	Transmit Audio	Pin 5 of J201 via 27k ohm res.
9	Not Used	NA

Note 1: Cover shield wire with heat shrink and connect to ground also.

Note 2: Pin 6 is not used for conventional radio.

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KDT5000/KDT5000R

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Application Note/ Radio Model

KENWOOD TK810

Wiring Configuration:

KDT5000R	Signal Name	KENWOOD TK810
PIN #1	Ground	Pin 11 of CN1 Note 3
2	Speaker Mute	Pin 3 of CN2
3	Press To Talk	Pin 2 of CN1 Note 3
4	Receive Audio	Pin 9 of CN1 Note 3
5	Power (12VDC)	Pin 1 of CN1 Note 3
6	Clear To Send	N/A
7	Carrier Detect	Pin 10 of CN1 Note 3
8	Transmit Audio	Pin 2 of CN1 via 180k ohm res. Note 3
9	Not Used	NA

Note 1: Beware if mic hang-up is connected to ground radio will not transmit.

Note 2: Cover shield wire with heat shrink and solder to ground plane on top side of CTCSS board.

Note 3: CN1 is located on KQT-7 CTCSS board.

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KDT5000/KDT5000R

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Application Note/ Radio Model
MAXON SM-4450

Wiring Configuration:

KDT5000R	Signal Name	SM-4450
PIN #1	Ground	Pin 3 of PL 3
2	Speaker Mute	Volume pot high
3	Press To Talk	Pin 4 of PL 4
4	Receive Audio	Pin 1 of PL3
5	Power (12VDC)	Pin 5 of PL3
6	Clear To Send	N/A
7	Carrier Detect	Pin 1 of PL2
8	Transmit Audio	IC 1131 Pin 2 via 150k ohm res.
9	Not Used	NA

Note 1:Remove 3.5mm external and auxiliary speaker jacks from SM-4450 control board.

Note 2:Solder links in place of each socket that is removed.

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KDT5000/KDT5000R

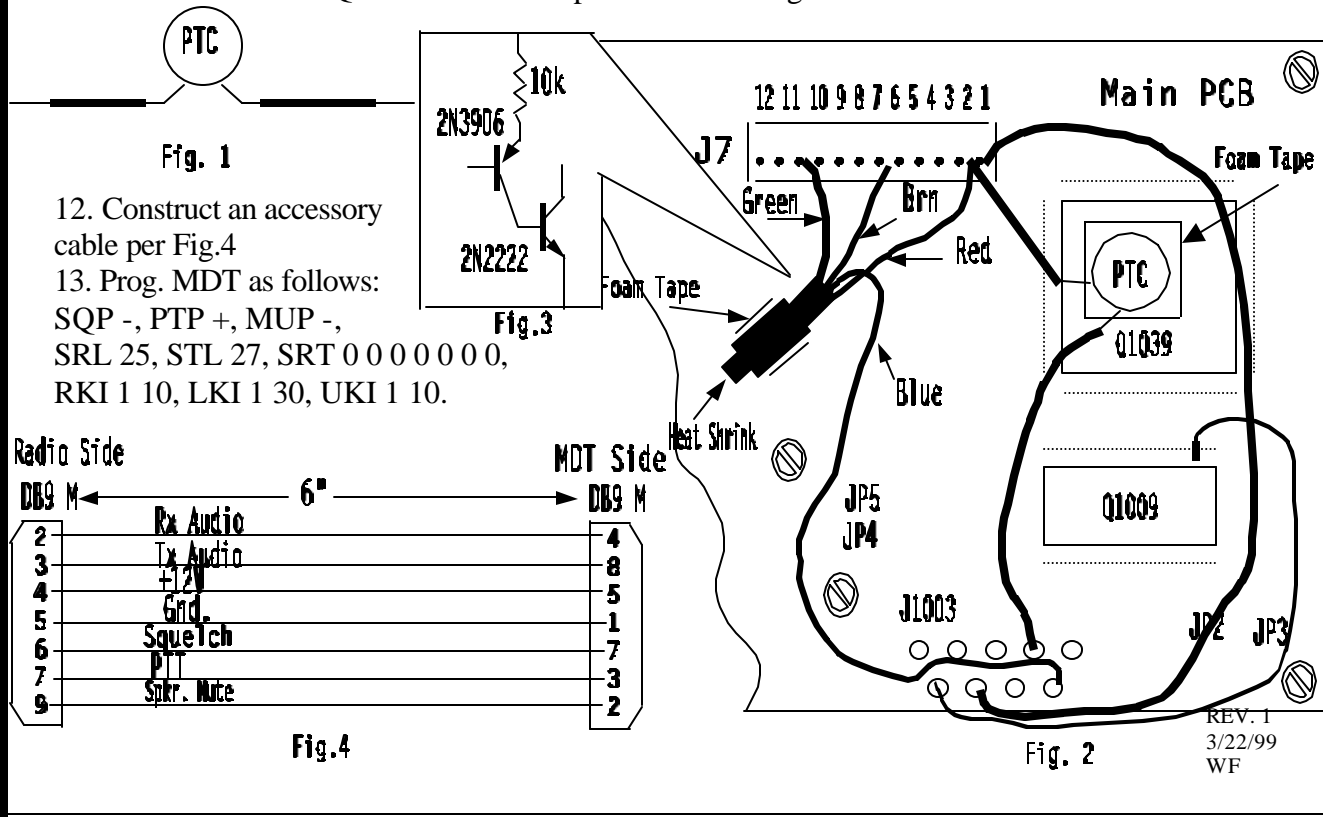
Application Document 10032

Application Note/ Radio Model STANDARD GX1710

Wiring Configuration:

The following internal connections must be made to the GX1710 in order for the DB9 (J1003) accessory connector to be used for connection to the KDT5000 MDT.

1. Move Jumper (Solder bridge) from JP2 to JP3;
2. Move Jumper (Solder bridge) from JP4 to JP5;
3. Connect a wire from pin 13 of Q1009 to pin 6 of J1003.
4. Connect a wire from pin 1 of J7 to pin 7 of J1003.
5. Construct a transistor circuit as shown in figures 3.
6. Connect a wire from pin 10 of J7 to collector of 2N2222 (green wire).
7. Connect a wire from pin 2 of J7 to emitter of 2N3906 VIA a 10K ohm resistor (red wire).
8. Connect a wire from pin 6 of J7 to emitter of 2N2222(brown wire).
9. Connect a wire from pin 9 of J1003 to base of 2N3906(blue wire).
10. Prepare the PTC (Bourns p/n R0406272T) as shown in fig.1 and connect between pin 4 of J7 and pin 4 of J1003.
11. Mount the PTC to Q1039 with foam tape as shown in Fig. 2.



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KDT5000/KDT5000R

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Application Note/ Radio Model

MIDLAND 70-1341 / 70-1344 / 70-1441 / 70-1444

MIDLAND 70-1391 / 70-1394 / 70-1491 / 70-1494

Wiring Configuration:

KDT5000R	Signal Name	70-1xxx
PIN #1	Ground	Pin 1 of J402
2	Speaker Mute	Pin 12 of J401
3	Press To Talk	Pin 9 of J403
4	Receive Audio	Pin 9 of J401
5	Power (12VDC)	Pin 11 of J402
6	Clear To Send	N/A
7	Carrier Detect	Pin 67 of IC 901
8	Transmit Audio	Pin 1 of IC 407 (R465)
9	Not Used	-----

Terminal Programming:

LKI	1 30
RKI	1 10
SRL	28: Note 1
STL	13: Note 1
SRT	0 0 0 0 0 0
MUP	-
PTP	+
SQP	-

Note 1: The settings for STL and SRL are initial settings only, each terminal and radio should be fine tuned in accordance with the standard setup procedure.

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KDT5000/KDT5000R

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Application Note/ Radio Model

MOTOROLA SM50 "RADIUS"

Wiring Configuration:

PRELIMINARY

KDT5000	Signal Name	SM-50 Acc. Connector Pin #
PIN #1 (Brn.)	Ground	Pin 7 of J3
2 (Blu)	Speaker Mute	Pin 14 of J3
3 (Red)	Press To Talk	Pin 3 of J3
4 (Orng.)	Receive Audio	Pin 11 of J3
5 (Yel.)	Power (12VDC)	Pin 13 of J3
6 (Grn.)	Clear To Send	N/A
7 (Vio.)	Carrier Detect	Pin 8 of J3
8 (Gray)	Transmit Audio	Pin 5 of J3
9 (Wht.)	Not Used	-----

Terminal Programming:

LKI	1 30
RKI	1 10
SRL	28: Note 1
STL	13: Note 1
SRT	0 0 0 0 0 0
MUP	-
PTP	+
SQP	-

Program Radio as follows: **Acc. Ext.:** Remote, **Pwr. Up delay:** 1.0

Pin	Function	Dir.	Debounce	Active level
4	Null	Output	N	Low
8	pl/dp&csq det	output	N	Low
9	Null	input	N	Low
12	Null	Input	N	Low
14	Rx aud. Mute	Input	Y	Low

Note 1: The settings for STL and SRL are initial settings only, each terminal and radio should be fine tuned in accordance with the standard setup procedure.

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KDT5000/KDT5000R

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Application Note

“DATA DETECT” Modification for MDT5000R

Perform the following steps:

1. Install a .1ufd 16v cap. between pin11 and pin 20 of U5, with the negative lead to pin 11 if a electrolytic is used.
2. Install a jumper from pin 14 of U5 to pin 6 of U3.
3. Cut the land which goes from pin 6 of U3 to L11 (noise filter).

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KDT5000/KDT5000R

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Application Note/ Radio Model

MOTOROLA "MITREK" BASE STATION-FULL DUPLEX OPERATION

Full duplex operation requires two base MDT's one for receive and one for transmit. They are mutually exclusive and provide a two-way data path between the mobile units and the dispatch PC. When a mobile unit transmits, the base receiver outputs data to Rx terminal and COR to base Tx. The base Tx broadcasts a PL tone to indicate occupancy of the mobile transmit frequency. Data packets from the base transmit terminal may also be sent to the transmitter and conveyed along with the PL tone. *PL tone is transmitted only when receiver is active.*

Wiring Configuration:

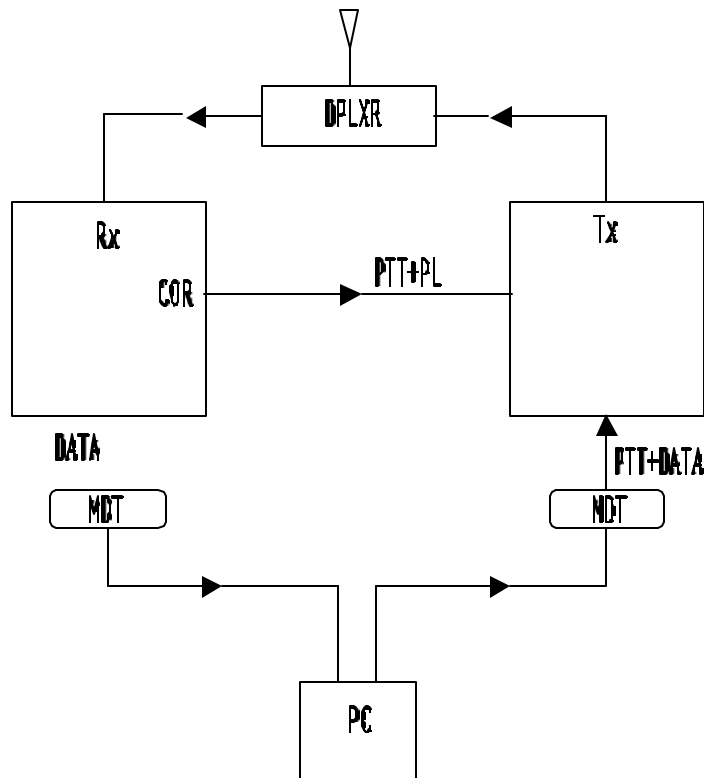
KDT5000 KRIC CABLE (RECEIVE)	Signal Name	MITREK - TONE PL BOARD
PIN #1 (Brn.)	Ground	PIN 9 OF P3
2 (Blu)	Speaker Mute	N/A
3 (Red)	Press To Talk	N/A
4 (Orng.)	Receive Audio	PIN 6 OF P3
5 (Yel.)	Power (12VDC)	PIN 8 OF P3
6 (Grn.)	Clear To Send	N/A
7 (Vio.)	Carrier Detect	N/A
8 (Gray)	Transmit Audio	N/A
9 (Wht.)	Not Used	-----
KDT5000 KRIC CABLE (TRANSMIT)	Signal Name	MITREK - TONE PL BOARD
PIN #1 (Brn.)	Ground	PIN 9 OF P3
2 (Blu)	Speaker Mute	N/A
3 (Red)	Press To Talk	PIN 9 OF metering socket
4 (Orng.)	Receive Audio	N/A
5 (Yel.)	Power (12VDC)	PIN 8 OF P3
6 (Grn.)	Clear To Send	N/A
7 (Vio.)	Carrier Detect	N/A
8 (Gray)	Transmit Audio	PIN 3 OF P3
9 (Wht.)	Not Used	-----

King Communications

KDT5000/KDT5000R

NOTES:

1. Modify the MITREK PL board according to the diagrams on file.
2. Connect the CSI model SS-64 tone encoder board flying leads as follows:
 - Black to pin 9 of P3 on PL board.
 - Red to pin 8 of P3 on PL board.
 - Orange to collector of Q4 on PL board.
 - Gray to pin 9 of metering socket on main board.
 - Yellow to pin 1 of P3 on PL board.
3. Adjust P101 on SS-64 for a 1volt p-p signal at pin 3 of P3 on PL board.
4. Using the EXC program, set the following parameters:
 - Receive unit: SRL 23, STL 30, SRT 0 0 0 0 0 0, LKI 1 30
 - Transmit unit: STL 30, STL 30, SRT 0 0 0 0 0 0, , LKI 1 30



System Diagram

King Communications

KDT5000/KDT5000R

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Application Note/ Radio Model: MOTOROLA MSF 5000 BASE STA. FULL DUPLEX

Full duplex operation requires two base MDT's one for receive and one for transmit. They are mutually exclusive and provide a two-way data path between the mobile units and the dispatch PC. When a mobile unit transmits, the base receiver outputs data to Rx terminal and COR to base Tx. The base Tx broadcasts a PL tone to indicate occupancy of the mobile transmit frequency. Data packets from the base transmit terminal may also be sent to the transmitter and conveyed along with the PL tone. *PL tone is transmitted only when receiver is active.*

Wiring Configuration:

KDT5000 KRIC CABLE (RECEIVE)	Signal Name	
PIN #1 (Brn.)	Ground	Any Gnd.
2 (Blu)	Speaker Mute	N/A
3 (Red)	Press To Talk	N/A
4 (Orng.)	Receive Audio	TP3
5 (Yel.)	Power (12VDC)	Pins 1,2, 3,& 4 of J800
6 (Grn.)	Clear To Send	N/A
7 (Vio.)	Carrier Detect	N/A
8 (Gray)	Transmit Audio	N/A
9 (Wht.)	Not Used	-----
KDT5000 KRIC CABLE (TRANSMIT)	Signal Name	
PIN #1 (Brn.)	Ground	Any Gnd.
2 (Blu)	Speaker Mute	N/A
3 (Red)	Press To Talk	TP 9
4 (Orng.)	Receive Audio	N/A
5 (Yel.)	Power (12VDC)	Pins 1,2, 3,& 4 of J800
6 (Grn.)	Clear To Send	N/A
7 (Vio.)	Carrier Detect	N/A
8 (Gray)	Transmit Audio	Pin 34 of J800
9 (Wht.)	Not Used	-----

Notes:

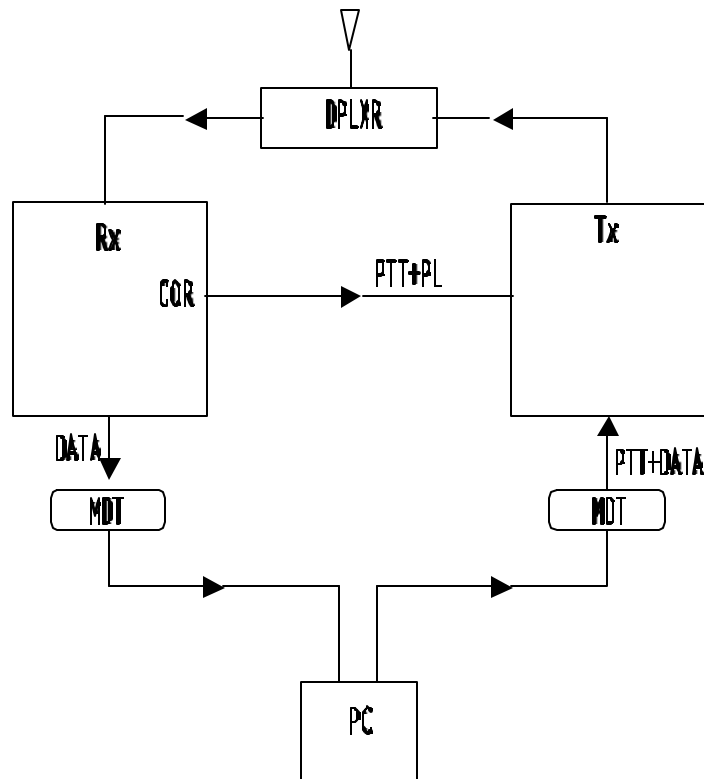
King Communications

KDT5000/KDT5000R

1. Program radio for RPT mode, transmit and receive frequency pair to the reverse of mobile radio frequencies and PL tone to correspond to mobile units.

Page 2 of 2

2. Check radio for proper RPT mode operation before beginning the interfacing procedure.
3. Connect two 30 in. interface cables per the chart above.
4. Cut land to pin 1 of U831 on station control module.
5. Remove resistor R8175, R895 and jumper plug JU14A.
6. Install a wire between JU14 pin 1 and U831 pin 1.
7. Install a wire between JU14 pin 2 and U831 pin 2.
8. Adjust IDC/DEV control for .750khz (PL tone modulation only) while holding TP9 to ground.
9. Using the EXC program, adjust the STL parameter of the base Tx MDT (start with STL 24) for 3.5khz deviation. If unable to obtain deviation within +/- 100hz, change the value of R898 slightly. Final STL setting should be 23-25.
10. With signal generator, modulate an on frequency signal with 1000 hz tone with deviation set for 3.0khz, Adjust base receive MDT SRL parameter (with EXC software) for 1v p-p at input of base Rx MDT (C17-pin 11 of U8).
11. Using the EXC program, set the following parameters:
Receive unit: SRT 0 0 0 0 0 0 0, STL 24, LKI 1 30
Transmit unit: SRT 0 0 0 0 0 0 0, LKI 1 30



System Diagram

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KDT5000/KDT5000R

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Application Note / Radio Model

Kenwood TK880

Wiring Configuration:

KDT5000R	Signal Name	KCT19 Accessory Connection Cable
PIN #1 (Brn.)	Ground	Pin A-6 (Red)
2 (Blu.)	Speaker Mute	Pin A-2 (See mods #1)
3 (Red)	Press To Talk	Pin A-8 (Purple)
4 (Orng.)	Receive Audio	Pin A-4 (See mods #2) (Brwn.)
5 (Yel.)	Power (12VDC)	Pin A-7 (Orng.-Large)
6 (Grn.)	Clear to Send	Pin A-15 (See note #1) (White)
7 (Violet)	Carrier Detect (COR)	Pin A-11 (Gray)
8 (Gray)	Transmit Audio	Pin A-9 (Yel.)
9 (Wht.)	Unused	NA

Terminal Programming:

SQP	-
PTP	+
MUP	-
SPS	100
SRT	7 500 0 0 0 0 0
TRP	+
RKI	1 20
LKI	1 80

Radio Preparation and Modification:

1. Set jumper option AM
2. Clip the brown wire on the KCT19 from its connector D1, ensuring to leave enough length on both ends to solder to. Add the 2K ohm resistor in series with the brown wire and properly insulate the connectors.
3. Set jumper option LOK and program the radio for an Access Logic Signal of Continuous.

Notes:

1. Leave this connection un-terminated if radio is to be used in a conventional only system.
2. Do not perform modification step #2 if radio is to be used in a conventional only system.
3. If radio is to be used in a conventional only system, replace the above listed KDT settings with the following: SRT 0 0 0 0 0 0 0, RKI 1 25, and LKI 1 25.
4. Align the KDT per the alignment instructions in the KDT training manual. Adjustment of the radio's TX deviation may be required.

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KDT5000/KDT5000R

Application Document 10039

Application Note

Modification of MDT 5000 for "PANIC BUTTON".

1. Remove the green wire that is connected between pin 13 of U7 and pin 23 of U12.
2. Install a 10k ohm resistor in the place marked R32.
3. Move transistor T6 to from its position to the place marked T8.
4. Perform an operational check by providing a logic high input into pin 9 of the DB9F attached to the MDT.

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KDT5000/KDT5000R

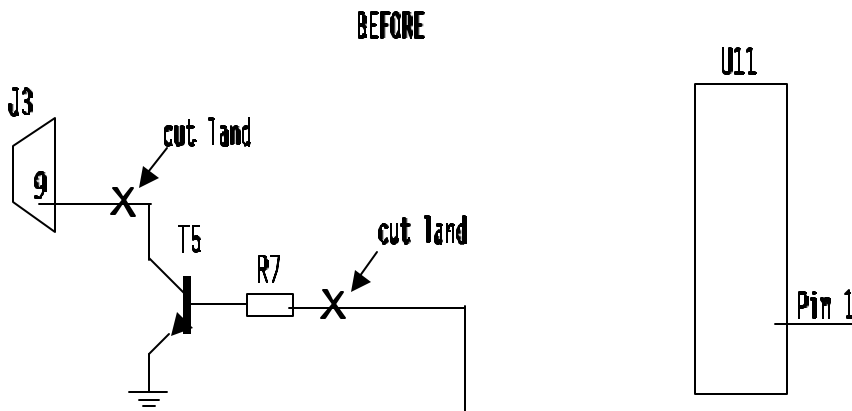
Application Document 10040

Application Note

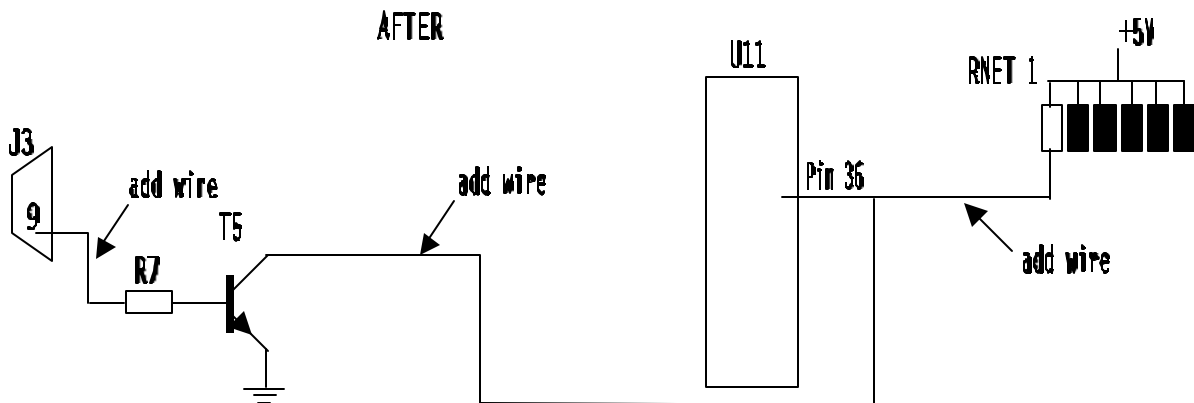
Modification of MDT 5000R for "PANIC BUTTON".

PANIC BUTTON:

1. Disconnect R7 from pin1 of U11 and reconnect to pin 9 of J3.
2. Disconnect the collector of transistor T5 from pin 9 of J3 and reconnect to pin 36 of U11.
4. Connect a wire from pin 36 of U11 to the spare resistor in RNET1.



Note: All connections should be made on solder side of board.



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KDT5000/KDT5000R

Application Document 10041

Application Note

Modification of MDT 5000 for DATA DETECT.

1. Break the cathode of D2 from its connection and reconnect to pin 13 of U7.
2. Perform an operational check by observing that the red LED busy light is on when data is being received by the MDT.

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KDT5000/KDT5000R

Application Document 10042

Application Note

Modification of MDT 5000R for DATA DETECT.

- 1.Cut land between pin 6 of U3 and L11.
- 2.Reconnect pin 6 of U3 with a wire to pin 14 of U5.
- 3.Install a 1ufd. 16v capacitor between pin 11(negative) and pin 20(positive) of U5.
- 4.Perform an operational check by observing that the red LED busy light is on when data in being received by the MDT.

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