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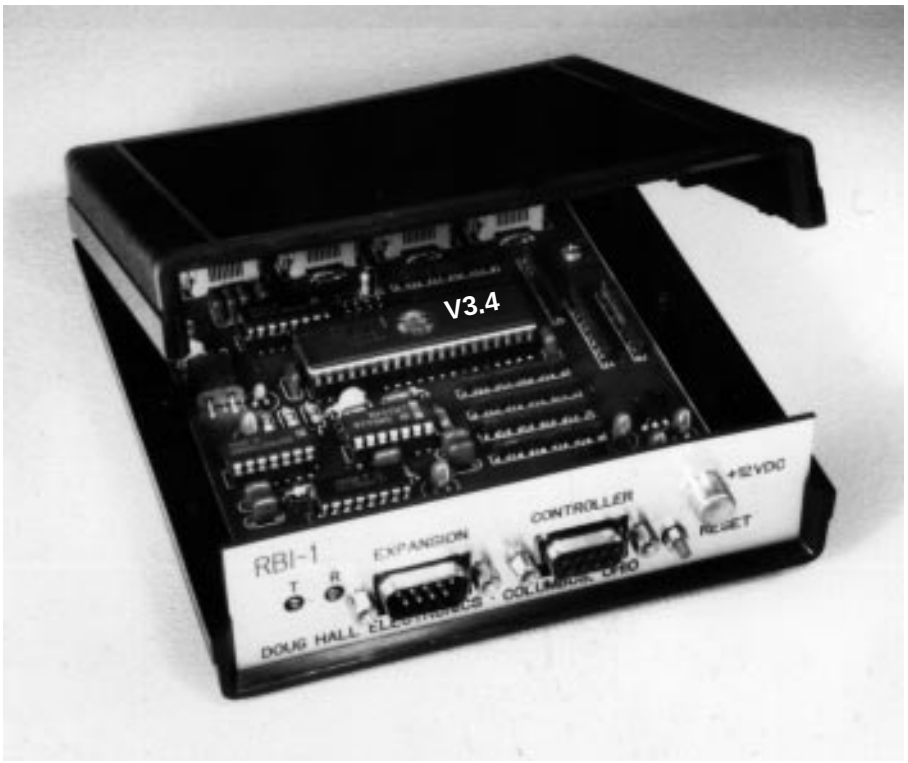
RBI-1 INFORMATION

REMOTE BASE INTERFACE



INTRODUCTION

The DHE Remote Base Interface (RBI-1) adapts most of the Kenwood series TM-XX1 mobile radios to several supporting Repeater Controllers. All connections to the Kenwood radio are made through the microphone jack. In the maximum configuration you can control Frequency, CTCSS encode/decode On/Off, CTCSS Frequency, RF Power, Offset, Power On/Off, and Band. Using the analog inputs available on some controllers you can remotely read back the remote base "S" meter. This is all still accomplished through the microphone jack without any radio modifications.

The Supported Kenwood Mobile Radios are as follows:

140	220	440	1200	DUAL	
TM-221	TM-321	TM-421	TM-521	TM-621+	TM-721+
TM-231	TM-331	TM-431	TM-531	TM-631+	TM-731+
TM-241		TM-441	TM-541		TM-701+

The RBI-1 supports the ACC FC-1 data stream or the DHE "Generic" data stream.

The Supported ACC Controllers are as follows:

ACC RC-850	2 Links 4 Bands
ACC RC-96	2 Bands (see options)
ACC RC-85	2 Bands (see options)

GENERIC SUPPORT

Most repeater controllers now support the "GENERIC" format. Others are working towards implementing the support so that they can also offer an intelligent remote base. The following is a list of the current supporting controller companies as of 04/96. Contact the controller companies for a list of controllers supported.

A/D Technologies Inc.
4688 Jefferson Twp. Lane
Marietta, GA 30066
(404) 992-2026
FAX 992-1809 BBS (404)518-6160

Computer Automation Technology, Inc.
4631 N.W. 31st Avenue, Suite 142
Fort Lauderdale, Florida 33309
(305) 978-6171

Link Communications
P.O. Box 1071
Sidney, MT 59270
(406) 482-7515

PC Repeater Controllers PCRC/2™
P.O. Box 459
Bohemia, NY 11716
(516) 286-7610
FAX 563-4716

S-COM Industries
P.O. Box 1718
Loveland, CO 80539-1718
(970) 663-6000

Specialty Controls
P.O. Box 267
Sparks, NV 89432
(702) 972-7245

FF Systems
P.O. Box 2363
Rolla, MO 65401
(314) 368-3716

ACC is the trademark of Advanced Computer Controls, Inc.
PCRC/2 is the trademark of PC Repeater Controllers

SPECIFICATIONS

Microprocessor: INTEL 87C51FA Series 12MHz

Connections:

- Power: RCA Phono + center pin.
- Controller: 9 Pin female "D" Connector
- Expansion: 9 Pin male "D" connector.
- Radios: 4 - 8 Pin Modular jacks compatible with the Kenwood PG-4H cable.
  1 PG-4H provided. Additional cables available from Kenwood or DHE.

Adjustments: "T" (VR1) Radio transmit audio level adjust.
"R" (VR2) Radio receive audio level adjust.

Audio: Radio Transmit 0.050V to 2.5V Input. Impedance 15K.
Radio Receive 0.020V to 2.5V Output. Impedance 5K.

COR output: Open collector, active High 4.7K pullup to 5V.

PTT input: Active Low, with internal 4.7k pullup to 5V.

"S" Meter output: 0 to +5V 0V = no signal, 5V = > "S" 9.
Output impedance approximately 5K.

Expansion output: 8 outputs, ground active, Sink 500mA each, 1A maximum total.

Power Requirements: +10 to +14 Vdc @ 23mA. Unit can be powered directly from the attached radio, but the radio will not be powered off when the remote is turned off.

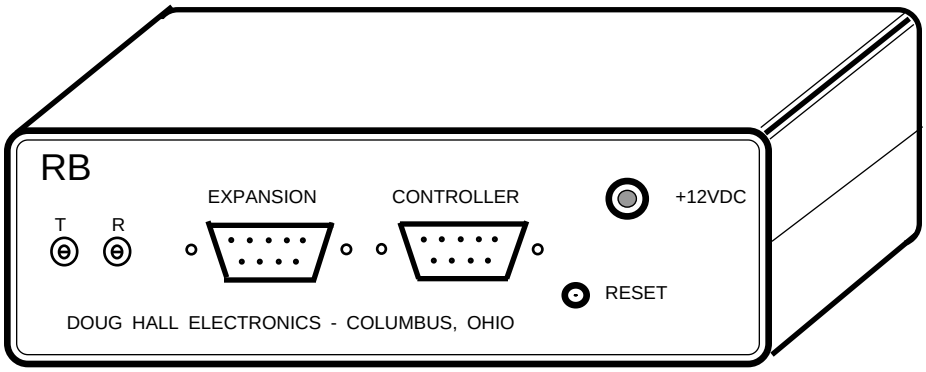
Size: 1.5" X 5.1" X 5.5"

Supported data streams: **ACC** "FC-1" format.
DHE "Generic" format.

CONNECTION

RBI-1 CONNECTION Line Name (Reference Controller User Manual) J2 **Generic**	ACC Line Name	ACC 850 LINK1	ACC 850 LINK2	ACC 96 LINK	ACC 85
1 RBI-1 Reset	Optional	DXX	DXX	N/A	J3-13
2 "S" Meter output	Optional	AXX	AXX	RPT-3	N/A
3 Data	RB Data	D11 (CX1)	D11 (CX1)	3	J3-12
4 Clock/Strobe RB Strobe	D18	D18 (CX2)	5 (CX2)	J3-9	
5 Kenwood TX Audio (T Pot)	TX Audio	TX	TX	6	J4-8
6 Kenwood RX Audio (R Pot)	Link RX Audio	L1 (R111)	L2 (R110)	7 (R103)	J4-6 (R2)
7 COS from Kenwood RX	RX COS	D4	D16	1	J3-2
8 PTT to Kenwood TX	TX PTT	D19	D6	4	J3-11 (CX3)
9 Ground	Ground	GND	GND	8	J3-14

Audio receive level from the Kenwood to the Controller is set by adjusting VR2 (R). The audio level from the Controller to the Kenwood is set by adjusting VR1 (T). Refer to you manuals for additional adjustments in your controller.



FRONT

SUPPORT CROSS REFERENCE

FUNCTION **CONTROLLER**	LINK2	CTCSS ENCODE	CTCSS FREQ SELECT	CTCSS DECODE	MULTI BAND	MEM. SUPP.	POWER ON/OFF RF PWR S-MTR	OUTPUT EXPANSION
ACC RC-850	Y	Y	Y	N	Y	N	Y	ROTOR
ACC RC-85/96	N/A	Y*	N	Y*	Y*	N	Y	Y
GENERIC		N/A	Y	Y	Y	Y	Y	Y Y
KENWOOD								
TM-221 / 321 / 421 / 521		Y	N	N	N	N	N	
TM-231 / 331 / 431 / 531		Y	Y	Y	N	Y	Y	
TM-241 / 441 / 541	Y	Y	Y	N	Y	Y		
TM-621 / 721		Y	N	N	Y	N	N	
TM-631 / 731		Y	N	N	Y	N	N	
TM-701		Y	Y	Y	Y	Y	Y	

* Options available by user selection.

Memory support is new in version 3.1. Memory channels must be supported by the Controller Manufacturer.

Memory support details:

Memory channels 0-20 (depending on the radio) can be selected using the "Generic" controller interface. If the memory channel selected is not programed the RBI-1 will revert to the VFO frequency.

CTCSS decode is determined by the memory channel. If encode or decode are on in the memory channel, the selection from the controller is overridden. If they are off in the memory channel, tone encode, decode, and frequency can be controlled by the controller.

Offset is always controlled by the memory channel.

In the event of an invalid function, IE: "Memory channel selected but not programed." will result in an error beep from the RBI-1 to the controller.

NEW RBI-1 Version 3.1 Memory support

Enhancements:
CTCSS:
Decode routines have been improved with magic and mirrors. CTCSS decode now takes less than 1 second. The COR routine has been updated to support the new CTCSS decode functions.

Radio hangs will now reset by the RBI-1 automatically.

RBI-1 resets now include an "acknowledge" beep out the receive audio line.

Memory support details:
Memory channels 0-20 (depending on the radio) can be selected using the "Generic" controller interface. Originally only channels 0-15 were going to be supported, because some radio's have their programmable offsets above channel 15, memory channel selection was expanded from the original architecture.

If the memory channel selected is not programed the RBI-1 will revert to the VFO frequency.

CTCSS decode is determined by the memory channel. If encode or decode are on in the memory channel, the selection from the controller is overridden. If they are off in the memory channel, tone encode, decode, and frequency can be controlled by the controller. Offset is always controlled by the memory channel.

Changes:
Band 0 is now 430....was 1240. The more popular 430 band is now accessible from an ACC-850 which is limited to bands 0-7. 430 and 130 bands were also added.
Generic Band assignments are as follows:

0 = 430	5 = 1270	10 = 420
1 = 1250	6 = 1280	11 = Future
2 = 140	7 = 1290	12 = "
3 = 220	8 = 1260	13 = "
4 = 440	9 = 1240	14 = 130

The ACC ITC-32 and ShackMaster support has been removed.

Fixes:
Unused byte count controller records will not drop transmitter. CAT / MING fix.
COR testing routine added on new style radio's to eliminate lost COR drop.

TYPICAL CONFIGURATION