Interfacing ACC's Repeater Controllers to the ICOM IC-RPxx20 Repeaters

ICOM's IC-RPxx20 repeaters offer, in one impressive package, a high performance receiver and transmitter and a heavy duty power supply. They also include a "bare-bones" internal control system. Operation and enjoyment of the repeater can be enhanced by adding an ACC controller external to the repeater to add full remote control and remote programming, autopatch/autodial, synthesized speech, remote base and linking support, scheduling, and lots more that has made ACC the amateur radio standard for repeater control.

Hooking up the controller is easy because the back of the repeater has an "ACC" connector ("Advanced Computer Controls" or "accessory" connector?).

ICOM also made it easy to disable the internal controller so that your ACC controller will have complete control of the transmitter. It isu't uecessary to cut any traces, remove any components or unplug any connectors. Just follow the steps below:

1. Turn down pot R33 in the repeater Logic Unit to eliminate the internal audio path.
2. Set DIP switch S4-2 off in the Logic-A Unit to disable the internal IDer.
3. If you intend to use the repeater's internal CTCSS decoder, install a wire from the "DET" signal at IC9, pin 17 (P23) of the Logic Unit to the ACC connector, pin 8.
4. Wire a cable from the ACC connector to your ACC controller as shown in the table below. Set DIP switches on the controller as shown.
5. Power up the equipment. Press the LOCAL INHIBIT switch on the repeater front panel to eliminate the internal keying path. This effectively makes the unit a full-duplex transceiver, not a repeater. But there's a trick! If the repeater loses power, when power is restored, the repeater will come back up in repeat mode. To cause it to always power up in local, keep the button pushed in all the time by stuffing a tie wrap in the cutout for the button, or use another trick to keep the button depressed.
6. Adjust audio levels as required by the controller. Logic Unit pot R45 adjusts the receiver audio level available to the controller at pin 5 of the ACC connector.

ICOM IC-RPxx20 ACC Connector			REPEATER CONTROLLER		
PIN #	NAME	DESCRIPTION	RC-850	RC-96	RC-85
1	NC	No connection.	-	-	-
2	GND	Connect to ground.	Phono jack shield	REPEATER-2 (brown), shield	J4-1, J3-14, J1-1
3	SEND	PTT. When grounded, transmits.	DIGITAL I/O-7	REPEATER-4 (orange)	J3-10
4	MOD	External modulator input.	TX phono jack	REPEATER-6 (green)	J4-8
5	AF	Fixed AF output.	RX phono jack	REPEATER-7 (blue)	J4-7
6	SQLS	Squelch output (low true, o. c., see Note 1).	DIGITAL I/O-17	REPEATER-1 (black)	J3-1
7	13.8V	13.8V output.	POWER Jones-2	+12V or center pin of POWER	J1-2
8	NC	Optional CTCSS (see Note 2).	[DIGITAL I/O-15]	[REPEATER-5 (yellow)]	[J3-4]

Notes:
1. Wire a 2.2K pullup resistor from SQLS to 13.8V.
2. Connect the "DET" signal from IC9 pin 23 on the Logic Board to ACC connector pin 8 to use the internal CTCSS decoder. Connect this pin to the controller as shown.
3. RC-850 DIP switches (main board) – SW1 off, SW2 on, SW3 on
4. RC-96, RC-85 DIP switches – SW1 off, SW2 off, SW3 on

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