

Operation Description

Product Name: DMR Repeater

Model Number: TR850

- 1. Emitter Power Voltage: DC 13.6 V or AC 100~240 V, 50/60Hz**
- 2. CPU Frequency: 300 MHz**
- 3. RF Frequency: 136-174 MHz**
- 4. Modulation: FM/4FSK**

TR850 can be configured to analog, digital or mixed mode. When configured to mixed mode, the repeater can dynamically switch between analog and digital depending on the type of call it receives.

5. Work process Example (for the Analog mode):

5.1 The repeater works in a duplex mode, the duplex frequency interval is 10 MHz.

5.2 The repeater can receive a RF signal; the RF signal will be demodulated and output as the audio signal through the ACCY connector. Please refer to the details as below:

5.2.1 An incoming signal from the antenna applies to a RF amplifier (IC3000) after passing through a LPF and a 3-pole LC filter. After the signal is amplified (IC3000), the signal is filtered by a band pass filter (a 3-pole LC tuner filter) to eliminate unwanted signals before it is passed to the first mixer. The tuner voltages of these diodes are controlled by to track the DAC.

5.2.2 The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (IC3005) to create a 51.65 MHz first intermediate frequency (1st IF) signal. The first IF signal will be fed through a monolithic crystal filters (MCFs: Z3001 and Z3000) to further remove spurious signals

5.2.3 The first IF signal is amplified by Q3001 and Q3002, and then go through U4000 (IF processing IC). The signal is heterodyned again with a second local oscillator signal within U4000 to create a 2.25 MHz second IF signal. This second IF signal is then digitized by the $\Sigma - \Delta$ ADC, demodulated into its quadrature I and Q components, filtered via matching decimation filters, and reformatted to enable a synchronous serial interface to a DSP.

5.2.4 The repeater demodulates the audio signal, and then provides the audio signal to the ACCY connector output.

5.3 The audio signal will be picked up by the ACCY connector and the external MIC; audio signal will be modulated as RF signal and transmitted to the air via the external TX antenna.

5.3.1 The MIC picks up the audio signal, and then coded by the DAC. The signal goes to the VCO and modulated as RF signal.

5.3.2 The RF signal obtained from the VCO goes to the buffer amplifier Q202, and then will be amplified by IC304. The pre-amplified signal will go to the power amplifier, Q102 and power amplifiers module of U100 which are capable of producing up to 40 Watt RF output power. The amplified output signal will go through a low pass filter network and then transmits to the air via the TX antenna.