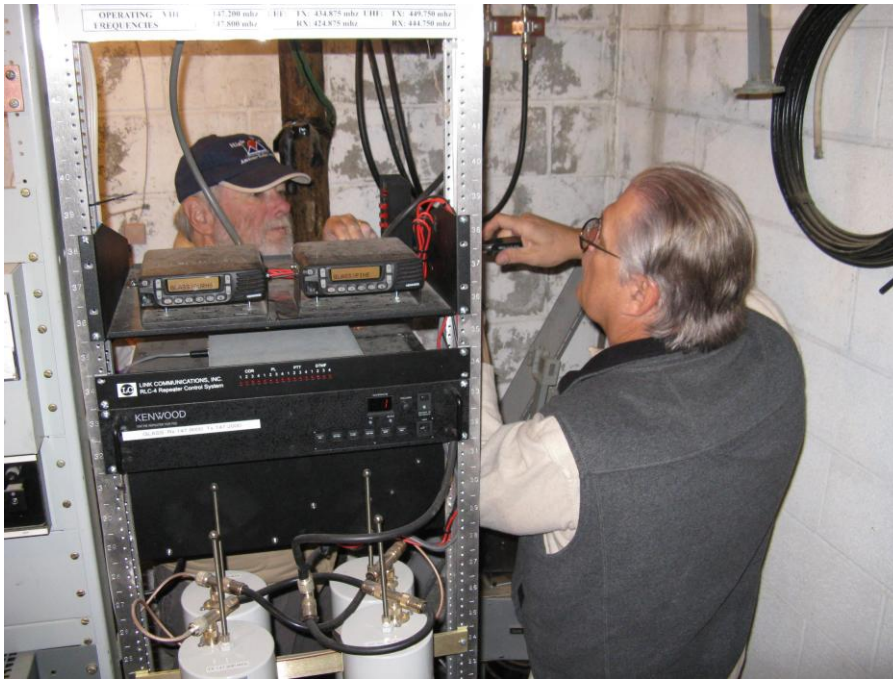


Basic configurations and equipment at most of our sites. Does not include Fusion



Glass Butte repeater system

- Kenwood TKR-750 Repeater
- Link RLC-4 Controller
- 2 Kenwood TK-8180 UHF Link Radios
- UHF Duplexer Band Pass Filters
- VHF Duplexer Band Pass Filters
- Battery Controller
- Power Supply



Link Radios

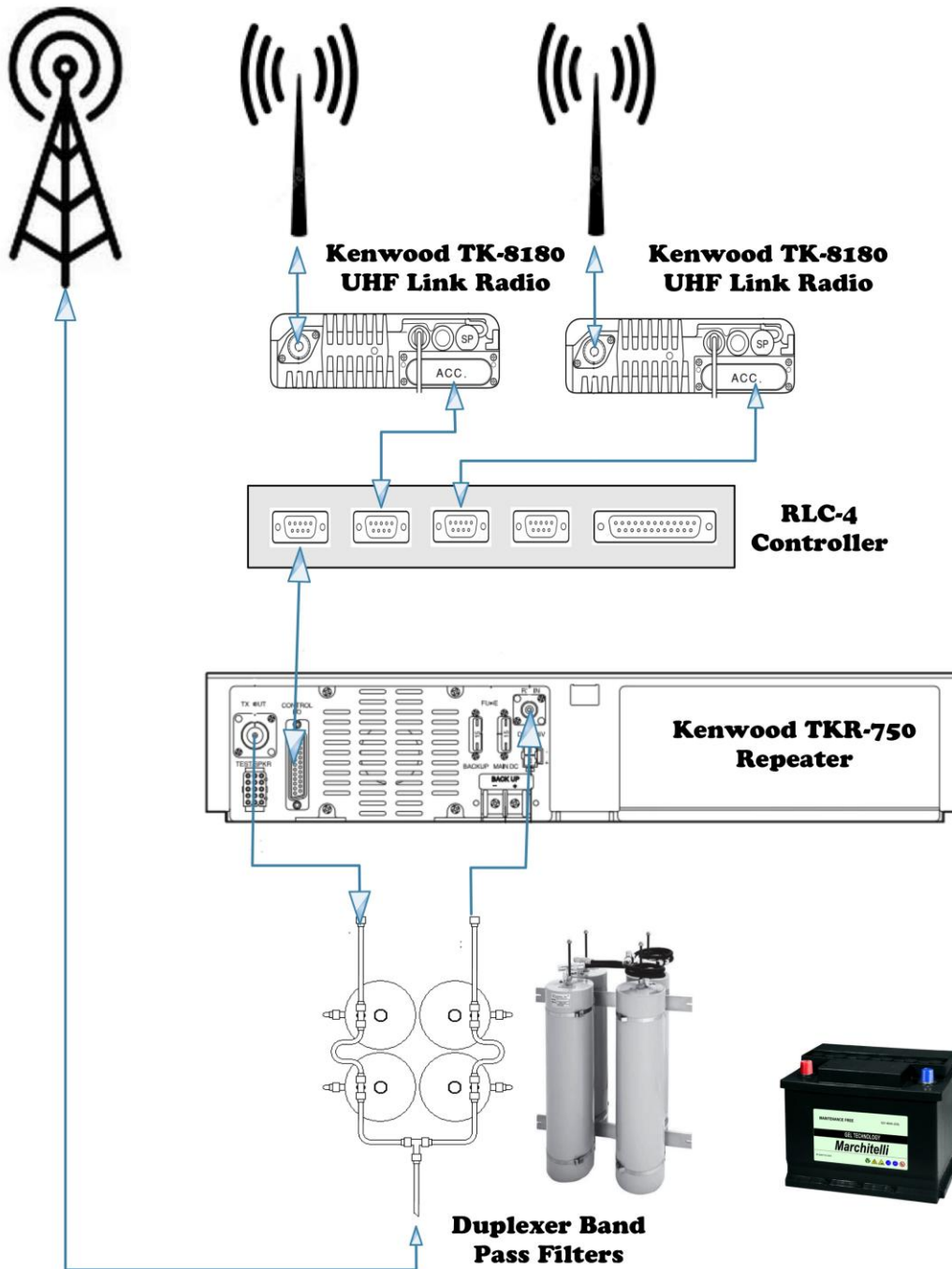
Controller

Repeater



RLC-4 Controller
Rack mount

Basic configurations and equipment at most of our sites. Does not include Fusion



Basic configurations and equipment at most of our sites. Does not include Fusion

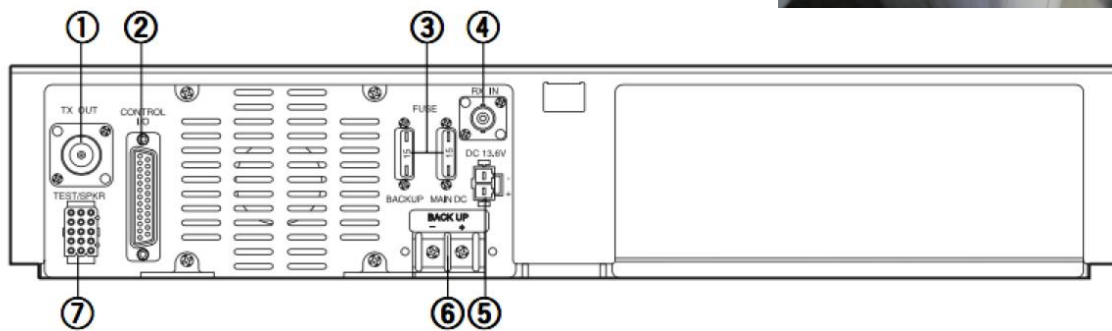
HiDARG's Basic Repeater Site Configuration

As ARRL notes, a repeater receives a signal on one frequency and simultaneously retransmits (repeats) it on another frequency. The frequency it receives on is called the input frequency, and the frequency it transmits on is called the output frequency.

The basic HiDARG setup is a Kenwood commercial grade repeater with its VHF transceiver programmed for the ORRC approved frequency pair for that site.

- *So for Pine, it would receive on 146.100 MHz and transmit on 146.700 MHz (which is the “designated” frequency and standard “offset” pair for the repeater). An amateur station tunes to the published 146.700 MHz to listen to the repeater and transmits to the repeater on 146.100 MHz.*

The repeater unit is connected to an Audio Test Solutions RLC-4 port controller along with any radios that link the repeater site to another repeater site. Its antenna passes through the duplexer cans (coaxial Tank Band Pass Filters) tuned to the transmit or receive frequency to #’s Q and R. Port W connects the repeater to the controller; the UHF link radios also connect to the controller ports, not to the repeater unit.



The RLC-4 has 4 ports – one for the repeater and up to 3 other radios. Depending on programming, repeater receive and/or transmit signals are available through each controller port. So the controller can independently allow or cut off signals to the links, depending on the controller’s programming. The controller can be programmed to respond to DTMF commands in a variety of ways. The commonly used method of connecting or disconnecting a repeater link to another repeater (e.g.

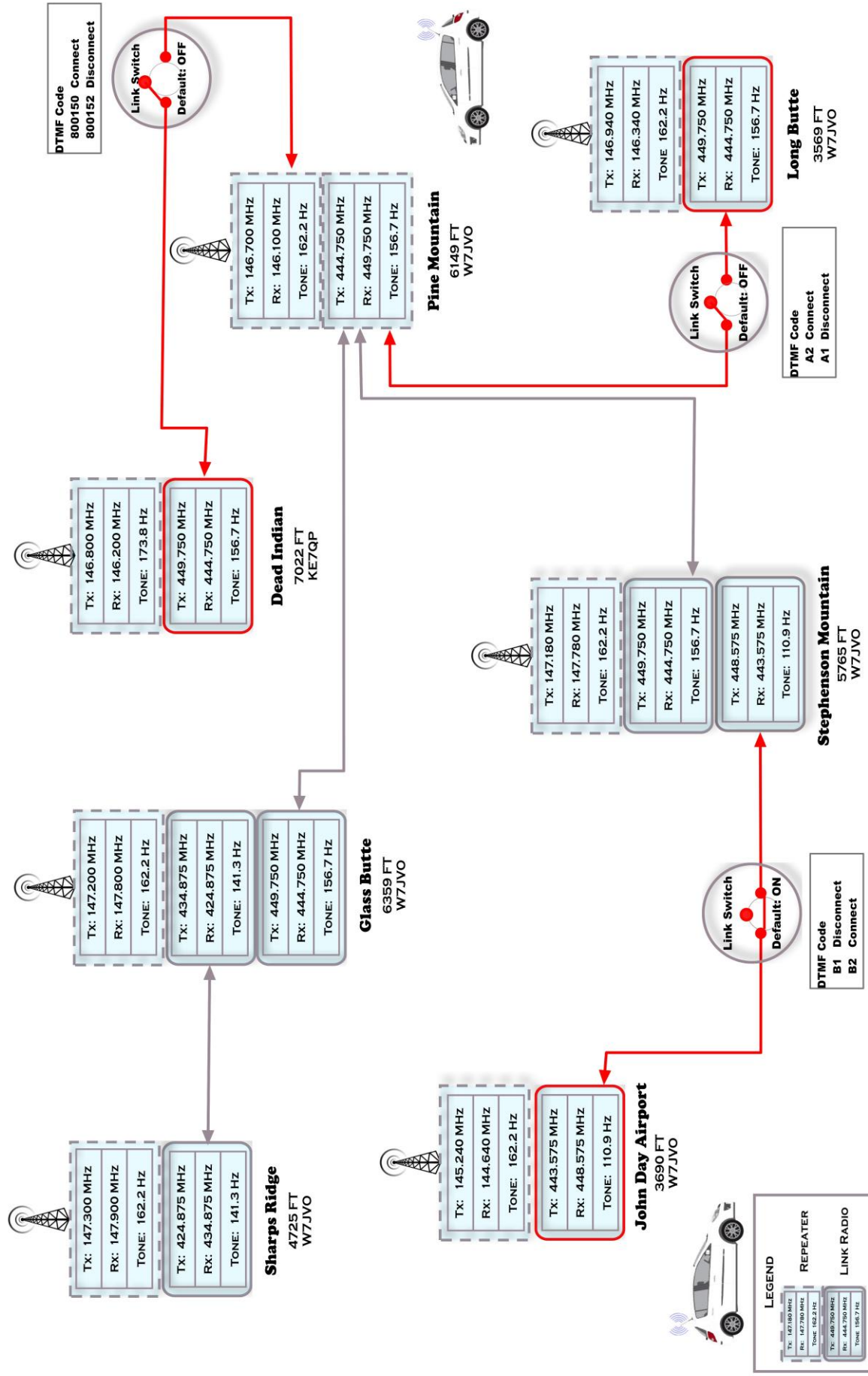
Basic configurations and equipment at most of our sites. Does not include Fusion

Long Butte and Pine) uses this methodology. The number of link radios, the set frequencies and controller instructions vary from site to site:

- *Long Butte, for example has only one link radio – for UHF connection to Pine. Its controller will make or break the connection between the link radio and the repeater. There is one published DTMF command set for this site.*
- *Stephenson, on the other hand, has two link radios - one UHF to Pine and one UHF to John Day. There is one published DTMF command to break the John Day link and several unpublished commands that allow the controller to establish either a stand-alone repeater or a combination of links. Normally, the John Day repeater link is connected to Stephenson and Stephenson, to Pine.*
- *Pine UHF is the hub to which all the repeater link radios communicate – if they can reliably reach it. Burns and John Day are currently “relayed” through links to Glass and Stephenson respectively.*
- *Because making and breaking these connections through controllers do require time, waiting a couple of seconds between keying a microphone and starting voice transmission ensures time for all links to connect and lessens the chance of dropping the first part of a transmission.*

Power to the repeater site array is supplied through storage batteries maintained through a float charger from the grid and/or from solar panels/wind, depending on the site. Automatic battery disconnects for low voltage battery protection and power monitoring capabilities have been added where possible.

All HiDARG repeaters are “open” (available for use by anyone in range) but require a 162.2 Hz tone to open the VHF repeater. Called CTCSS (continuous tone-coded squelch system), “tone” or PL (Private Line PL is a Motorola trademark) tones, this access tone reduces the likelihood that extraneous transmissions on the input frequency will accidentally key the repeater. The transmit (output) frequencies are not encoded.



ORIGINAL DIAGRAM CONCEPT: WE7EZ
REVISION 7/24/2017: KF7TGE / KF7MAX

HIDARG REPEATER SYSTEM