Midian’s RIC-2 enables users on different radio systems to interoperate or to expand coverage into areas such as mines or basements. This case study describes some of the common applications for Midian’s RIC-2.

Case Study # 1: Repeater Interoperability Controller

Users on two different repeaters in distant locations or incompatible repeaters need the ability to communicate. These repeaters can be in the same band (i.e. VHF or UHF), different bands (i.e. VHF and UHF), different protocols (Motorola’s MotoTRBO, Kenwood’s Nexedge or P25), etc.

How The RIC-2 Can Resolve The Issue

A RIC-2 would be connected to each repeater and the two RIC-2 units would be connected by a dedicated line, microwave or telemetry link. The connections of the RIC-2 to the repeater would be power, ground, Busy Detect (COR), PTT, RX audio and TX audio.

When repeater A receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, this causes the RIC-2 to send an F4 function tone and 2175 Hz keying tones to the RIC-2 at repeater B along with the received audio. The RIC-2 at repeater B decodes the F4 function tone and keying tones and gives a PTT output to key repeater B and then passes the received audio to repeater B and then the field radios on repeater B hear the audio from repeater A.

Likewise, when repeater B receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, which causes the RIC-2 to send an F5 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at repeater A decodes the F5 function tone and 2175 Hz keying tones and gives a PTT output to key repeater A and then passes the received audio to repeater A and then the field radios on repeater A hear the audio from repeater B.
Case Study: RIC-2

Case Study # 2: Repeater Interoperability Controller with Dispatch Control

A dispatcher needs to talk with users on two different repeaters separately or simultaneously and the users in distant locations or incompatible repeaters need the ability to communicate. These repeaters can be in the same band (i.e. VHF or UHF), different bands (i.e. VHF and UHF), different protocols (Motorola’s MotoTRBO, Kenwood’s Nexedge or P25), etc.

How The RIC-2 Can Resolve The Issue

A RIC-2 would be connected to each repeater and the two RIC-2 units would be connected by a dedicated line, microwave or telemetry link. The dispatch console such as Midian’s TRC series would be connected in parallel. The connections of the RIC-2 to the repeater would be power, ground, Busy Detect (COR), PTT, RX audio and TX audio.

When the dispatcher wants to talk to someone on repeater A the dispatcher selects F1 on the console and the console sends the F1 function tone and the 2175 Hz keying tones. Repeater A decodes the F1 function tone and 2175 Hz keyings tones, while repeater B ignores it. When the dispatcher wants to talk to someone on repeater B the dispatcher selects F2 on the console and the console sends the F2 function tone and the 2175 Hz keying tones. Repeater B decodes the F2 function tone and 2175 Hz keyings tones, while repeater A ignores it. When the dispatcher wants to talk to users on both repeaters the dispatcher selects F3 on the console and the console sends the F3 function tone and the 2175 Hz keying tones. Both repeaters decode the F3 function tone and 2175 Hz keying tones.

When repeater A receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, this causes the RIC-2 to send an F4 function tone and 2175 Hz keying tones to the RIC-2 at repeater B along with the received audio. The RIC-2 at repeater B decodes the F4 function tone and keying tones and gives a PTT output to key repeater B and then passes the received audio to repeater B and then the field radios on repeater B hear the audio from repeater A.

Likewise, when repeater B receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, which causes the RIC-2 to send an F5 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at repeater A decodes the F5 function tone and 2175 Hz keying tones and gives a PTT output to key repeater A and then passes the received audio to repeater A and then the field radios on repeater A hear the audio from repeater B.
Case Study # 3: Single Mine Shaft

Radios in a mine shaft are not able to communicate with the mine’s repeater system outside the mine shaft.

How The RIC-2 Can Resolve The Issue

A RIC-2 would be connected to the repeater above ground and another RIC-2 would be connected to a base station radio programmed to a talk around channel in the mine shaft and the two RIC-2 units would be connected by a dedicated line. The connections of the RIC-2 to the repeater/base station would be power, ground, Busy Detect (COR), PTT, RX audio and TX audio.

When the connected repeater receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, this causes the RIC-2 to send an F4 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at the base station decodes the F4 function tone and 2175 Hz keying tones and gives a PTT output to key the base station and then passes the received audio to the base station and then the field radios in the mine hear the audio from the repeater.

Likewise, when the base station radio receives audio on the talkaround channel from a field radio in the mine shaft the base station radio gives a busy output to the RIC-2, which causes the RIC-2 to send an F5 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at the repeater decodes the F5 function tone and 2175 Hz keying tones and gives a PTT output to key the repeater and then passes the received audio to the repeater and then the field radios outside the mine hear the audio from the users inside the mine.
Case Study # 4: Building Basement

Radios in a building basement are not able to communicate with radios on the repeater system outside and inside the building.

How The RIC-2 Can Resolve The Issue

A RIC-2 would be connected to the repeater on top of the building and another RIC-2 would be connected to a base station radio programmed to a talk around channel in the basement and the two RIC-2 units would be connected by a dedicated line. The connections of the RIC-2 to the repeater/base station would be power, ground, Busy Detect (COR), PTT, RX audio and TX audio.

When the connected repeater receives audio from a field radio the repeater gives a busy output (COR) to the RIC-2, this causes the RIC-2 to send an F4 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at the base station decodes the F4 function tone and 2175 Hz keying tones and gives a PTT output to key the base station and then passes the received audio to the base station and then the field radios in the basement hear the audio from the repeater.

Likewise, when the base station radio receives audio on the talkaround channel from a field radio in the basement the base station radio gives a busy output to the RIC-2, which causes the RIC-2 to send an F5 function tone and 2175 Hz keying tones to the other RIC-2 along with the received audio. The RIC-2 at the repeater decodes the F5 function tone and 2175 Hz keying tones and gives a PTT output to key the repeater and then passes the received audio to the repeater and then the field radios inside and outside the building hear the audio from the users inside the basement.