

# BridgeCom SYSTEMS

## Connecting the ComLink CS-540 to the IDA Quick Response Alarm(QRA)

By: Ron Kochanowicz  
 Bridge Embedded Systems, Inc.  
 Email: Ron@BridgeEmbeddedSystems.com

### INTRODUCTION

Many times it's necessary to have information relayed to a concerned party when certain events occur at a repeater installation site. For example, you may need to know when a certain repeater has switched to battery backup or for security purposes you want an alert sent when an equipment rack door is opened. It might also be nice to know when the site Air Conditioner or heater goes down. Virtually any event than can be monitored can trigger an alert. By connecting the IDA QRA to the BridgeCom Systems' CS-540 repeater, it is possible to monitor all these events so that an alert can be sent to the system operator when they occur.

### CONNECTIVITY

The CS-540 comes with a 25pin female D-SUB connector on the rear of the unit. This connector supports all the I/O required for a clean one-cable connection from the QRA to the CS-540. Figure 1 diagrams the connections of each male connector:

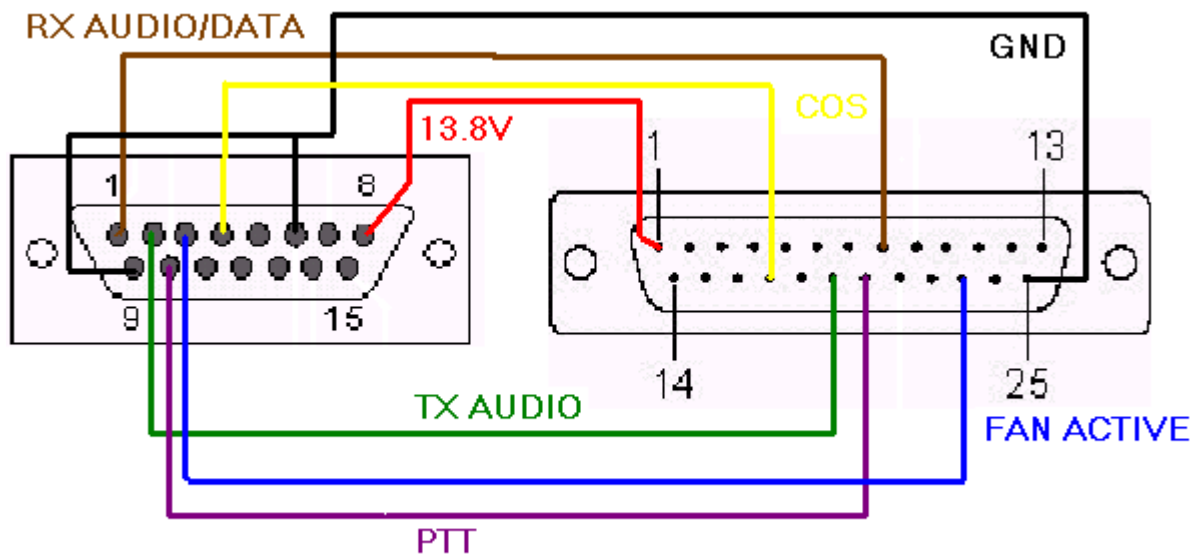


Figure 1: Connectivity Diagram

| CONNECTION    | PIN - QRA | PIN - CS-540 |
|---------------|-----------|--------------|
| GROUND        | 6,9       | 25           |
| POWER - 13.8V | 8         | 1            |
| TX Audio      | 2         | 19           |
| RX Audio/Data | 1         | 8            |
| External PTT  | 10        | 20           |
| FAN ACTIVE    | 3         | 23           |
| COS           | 4         | 17           |

To achieve these connections a custom built cable is to be constructed. This cable can be purchased by BridgeCom Systems or you can easily build one yourself. If you decide to build the cable, a seven-conductor shielded cable, one male 25pin DSUB connector, and one male 15pin DSUB are required. It is recommended the cable be made as short as possible. All of the connections are simple and straight through.

Pins 6 and 9 of the QRA are ground and are connected to pin 25-GND of the repeater. Power can be supplied to the QRA from the repeater. This is achieved by connecting Pin 1 of the repeater to Pin 8 of the QRA. The FAN Control line from the repeater functions as the TX indicator pin required by the QRA. The FAN control pin is active high and requires the QRA to be programmed to handle this polarity. The RX audio/data line from the repeater is not gated, therefore the QRA requires the RX indicator pin to be used in conjunction. The CS-540 COS output functions as the QRA's receive indicator. The CS-540 COS polarity can be programmed for either active high or low. The RX indicator pin of the QRA can handle active high or low. Make sure they are both in agreement. It is also important to note that the COS output can be made to toggle on valid signaling as well as carrier. The shield is to be connected to ground.

### **CS-540 SETUP AND OPERATION**

Program the CS-540 for the TX/RX frequencies it is to operate on. During programming make sure the COS output is enabled and that the polarity of the output is selected accordingly. To allow for the QRA's alerts to only be monitored by a certain user's CTCSS/DCS signal, program the COS settings dedicated to SLOT 1. The QRA effectively becomes a unique user on the CS-540. Once programmed, cycle the power of the repeater. Observe the CS-540 going through its power-up sequence and verify power is being supplied to the QRA by observing the GREEN status LED illuminated.

### **QRA SETUP AND OPERATION**

Follow the QRA installation manual for aligning the RX and TX audio out of the QRA. Keep in mind, if during transmit the QRA speech is getting cut-off, it may be the QRA's audio level is too high and need to be turned down. This can be done by adjusting R25 and R21. The jumper settings should be as follows: JP1 – 2-3, JP2 – jumped, JP3 – 2-3, and JP – open. Once the alignment is complete, simply program the QRA to transmit an alert when a certain event occurs.



**QRA Monitoring CS-540 Battery Backup**