

Call Forwarder / Service Observation Unit



RCF-3

Installation Guide

Features

- 40dBm Motorola automatic gain control
- Input can be a phone, speaker, handset, radio, or microphone
- Passive “Hi-Z” input will not disturb the monitored device
- Trigger can be VOX, external sensor, or phone line off-hook detection
- Output can be a radio or phone line
- Relay outputs are provided to key radio transmitters
- Two opto-isolated inputs for direct connection to alarm systems, panic buttons, motion sensors, etc.
- VOX operation with automatic timeout
- Simple menu-driven interface with LCD
- Internal battery backup
- 12VDC mobile or 120VAC operation using adapter
- “Barge-in” conferencing mode when using two phone lines

Specifications

<i>Operating Power</i>	+10VDC to 15VDC, 150mA, Negative Ground
<i>Charging Power</i>	+14-+15VDC, 2.0A
<i>Input Level</i>	-30dBm to +10dBm
<i>Input Impedance</i>	10MOhm DC, capacitively coupled HiZ, >10K loading at 1KHz, 0dBm
<i>Output Level</i>	ALC controlled at 0dBm into 600 Ohms
<i>Output Impedance</i>	Approx 600 Ohms
<i>Off-Hook Trip</i>	>25VDC for on-hook. Approx. 10VDC hysteresis. Designed for 48V lines.
<i>Alarm Inputs</i>	Normally open dry contacts to opto-isolators, Ground to dial
<i>Battery</i>	12VDC Lead-Acid Gel-Call
<i>Temp Range</i>	0-60°C

General Description

The DLI RCF-3 call forwarder is a service observation unit for telecommunications. It will automatically dial a preprogrammed phone number and transfer audio to and from a radio or telephone. A barge-in conferencing mode lets the monitoring party join in on the conversation by pressing the * key. An external connector provides extra signaling to connect radios, alarm systems, motion sensors, etc.

External Hardware Compatibility

- For inputs, any dry or wet line up to +10dBm is compatible. Dry lines operate only in VOX or ALARM modes. Off-hook voltage sensing is provided for wet lines (i.e. outside phone trunks).
- For outputs any radio or wet line is compatible. DTMF signaling is used to dial-out. Dry contacts are provided to key radio transmitters.
- In general, any analog handset or phone line is compatible with the input port. Any analog trunk or extension with DTMF dialing is compatible with the output port.
- Most radios can be connected directly to the output port. Some radios will require a lower level. Use a series resistor for attenuation if the 0dBm level is too high for a radio attached to the output port.

External Power Input

The external power connector body pin is grounded. The center pin will accept DC voltage from 10 to 15VDC. The unit will operate with 10V or more and charge with 13V or more. A sealed lead-acid battery provides backup power in the event of a power failure.

Operating Modes

The DLI RCF-3 call forwarder has three operating modes: VOX, Off-Hook, and Alarm.

VOX Mode

VOX mode is used when dry lines (without DC voltage), microphones, radios, or handsets are connected to the monitoring input. Automatic gain control is applied to the audio input. The noise floor is filtered, and a VOX trigger occurs when audio exceeds the noise floor by a dynamic threshold. When sound is detected and a VOX trigger occurs, the dialer will automatically call a preprogrammed number. The connection will remain open until a period of silence is detected. This adjustable period is called the VOX timeout.

Off-Hook Mode

The forwarder can detect the off-hook condition of a telephone by monitoring the voltage on the phone line. Use the Off-Hook mode to connect to outside analog phone lines or to analog extensions on a PBX. The VOX timeout setting is not used in off-hook mode. Dialing begins when a phone goes off hook, and the forwarder disconnects one second after the phone is returned to on-hook condition.

Alarm Mode

An external alarm or switch can be used to trigger the call forwarder. For example, a conference room microphone may be forwarded to a cell phone when a switch is flipped or a motion sensor is activated. Or, a microphone may be forwarded when an alarm sensor is activated. Two opto-isolated inputs on the DB-25 connector are provided for this purpose. Either pin 2 or 3 of the DB-23 connector bay be connected to ground (pins 9-12). When either pin is grounded, dialing will begin.

Installation Example - Phone Forwarded to Phone



1. Connect the wall adapter to the rear power connector.
2. Connect the monitored phone to the left jack marked "Monitor". Use an RJ-11 cable and a "Y" connector or "loop through" the two left jacks on the forwarder.
3. Connect the right jack marked "Dial-Out" to an unused outside phone line.
4. Switch the unit on and press "1" to enter setup.
5. Choose the "Off-Hook" mode for voltage sensing.
6. Enter the phone number to which you want calls forwarded. Press "Enter".
7. Whenever the monitored phone goes off-hook, the call will be automatically forwarded to the number you entered.
8. The recipient of the call may "join in" on the conversation by entering conference mode. To do this, press the "*" key on either phone.

Notes:

- After a period of silence specified by the timeout, the call forwarder will hang up.
- Battery backup will last approximately 8 hours in this configuration.
- Hold down the "0" key to enter a delay while entering the forwarding number. This is useful when a pause is required before dialing, such as when connecting through a PBX.

Installation Example - Radio Forwarded to Phone



1. Connect the wall adapter to the rear power connector.
2. Connect pins 2 & 3 of the left jack marked "Monitor" to the radio audio output.
3. Connect the right jack marked "Dial-Out" to an unused outside phone line.
4. Switch the unit on and press "1" to enter setup.
5. Choose the "VOX" mode to dial when the radio breaks squelch.
6. Start with a timeout setting of 15 seconds. Press "Enter".
7. Enter the phone number to which you want calls forwarded. Press "Enter".
8. Whenever the radio breaks squelch, the VOX trigger will dial the stored number and automatically forward audio to the number you entered.

Notes:

1. Dialing will commence when audio is detected (VOX trigger).
2. After a period of silence specified by the VOX timeout, the call forwarder will hang up.
3. To forward audio to another radio, rather than a phone, use the contact closure outputs on pins 1,14, and 15 of the DB-25 connector to key the transmitting radio.
4. Battery backup will last approximately 8 hours in this configuration.
5. Hold down the "0" key to enter a delay while entering the forwarding number. This is useful when a pause is required before dialing, such as when connecting through a PBX.

Installation Example - Phone Forwarded to Radio



1. Connect the wall adapter to the rear power connector.
2. Connect the left jack marked "Monitor" to an outside phone line using a "Y" connector or looping through the unit.
3. Connect pins 2 and 3 of the jack marked "Dial-Out" to the audio input of the radio.
4. Connect pins 1 and 15 of the DB-25 connector to the microphone switch on the radio.
5. Switch the unit on and press "1" to enter setup.
6. Choose the "Off-Hook" mode. A phone number is not needed.
7. Whenever the phone is taken "off-hook", the normally open contacts in the forwarder will close, keying the radio. Audio will be forwarded to the radio until the phone is returned to on-hook condition.

Installation Example - Microphone Forwarded to Phone



1. Connect the wall adapter to the rear power connector.
2. Connect pins 2 & 3 of the left jack marked "Monitor" to the microphone audio output.
3. Connect the right jack marked "Dial-Out" to an unused outside phone line.
4. Switch the unit on and press "1" to enter setup.
5. Choose the "VOX" mode to dial when the sound is detected, or choose "ALARM" mode to connect an optional panic switch, alarm input, or motion sensor.
6. (optional) Connect an external sensor, switch, or alarm to the DB-25 connector.
7. If VOX mode is selected, start with a timeout setting of 90 seconds. Press "Enter".
8. Enter the phone number to which you want calls forwarded. Press "Enter".
9. Whenever VOX or Alarm is triggered, the stored number will automatically be dialed and audio will be forwarded until the alarm trigger is released (ALARM mode) or the timeout setting expires (VOX mode).

Notes:

1. In ALARM mode, the connection will remain open as long as pin 2 or 3 on the DB-25 connector is grounded.
2. When using ALARM mode, connect normally open dry contacts between the ground pin 10 and trigger pins 2 or 3. Two sensors may be connected. Either will start dialing.
3. Dialing will commence when audio is detected (VOX trigger).
4. After a period of silence specified by the VOX timeout, the call forwarder will hang up.
5. To forward audio to another radio, rather than a phone, use the contact closure outputs on pins 1,14, and 15 of the DB-25 connector to key the transmitting radio.
6. Battery backup will last approximately 8 hours in this configuration.
7. Hold down the "0" key to enter a delay while entering the forwarding number. This is useful when a pause is required before dialing, such as when connecting through a PBX.

DB-25 Pinout

<i>Pin</i>	<i>Function</i>
9,10,11,12 & 17	Ground
2 & 3	Alarm Triggers – ground either pin to dial.
1,14, 15	Dry contact radio transmit relay. Pin 1 is common, pin 14 is NC, pin 15 is NO
13	+5V output (100mA max)
16	Single-ended audio output
19	TTL level off-hook output
22-25	Used to re-flash with custom firmware – contact DLI with requirements

RJ-11 Pinout

<i>Pins</i>	<i>Function</i>
1,4 (yellow/black)	Not Connected
2,3 (red/green)	TX/RX Audio

Note: Left and right pairs of jacks loop-through

U-229 Pinout

<i>Pin</i>	<i>Function</i>
A	Chassis/Electrical Ground
B	RX Audio Out (from radio), +3dBm
D	TX Audio In (to radio), -30dBm

Support

Please visit www.digital-loggers.com for more frequently asked questions, free driver updates, manuals and accessories. If we haven't answered your questions here, please call (408) 330-5599 or send an email to support@digital-loggers.com. We'll be glad to help.

