



QIF-2011 audio signal interface installation manual

The QIF-2011 allows external audio signals to be sent over the paging channel of the QX-5000.

Up to four different external signals can be connected to the QIF-2011, each with an individual level adjustment. Signal 1 has highest priority, signal 4 the lowest. Jumpers allow setting the priority of the signals over QX-5000 native paging or alarm signals. Signal inputs 3 and 4 have built-in attenuators to allow direct connection of 70VRMS or 25VRMS signal lines to the interface.

The external signals are activated through a dry contact closure. If needed, both the audio and the control inputs wiring can be supervised for faults by setting the appropriate jumper. When supervision is required, 3.9K Ohms end of line resistors must be connected to each control and audio signal lines.

Outputs are provided to control which zones are selected for paging. Each signal can control a specific number of zones as programmed using the QX-5000 audio configurator (this requires a QIF-2000 input extender to be installed in the QX-5000). For simpler systems, a common output is provided for direct interface to one of the QIF-5000 opto-coupled inputs.

A dry contact is provided for strobe controls. It will close if either external signals or QIF-5000 paging are active.

Shielded pairs should be used for all audio signals. The interface should be installed next to or inside the QX-5000 enclosure.

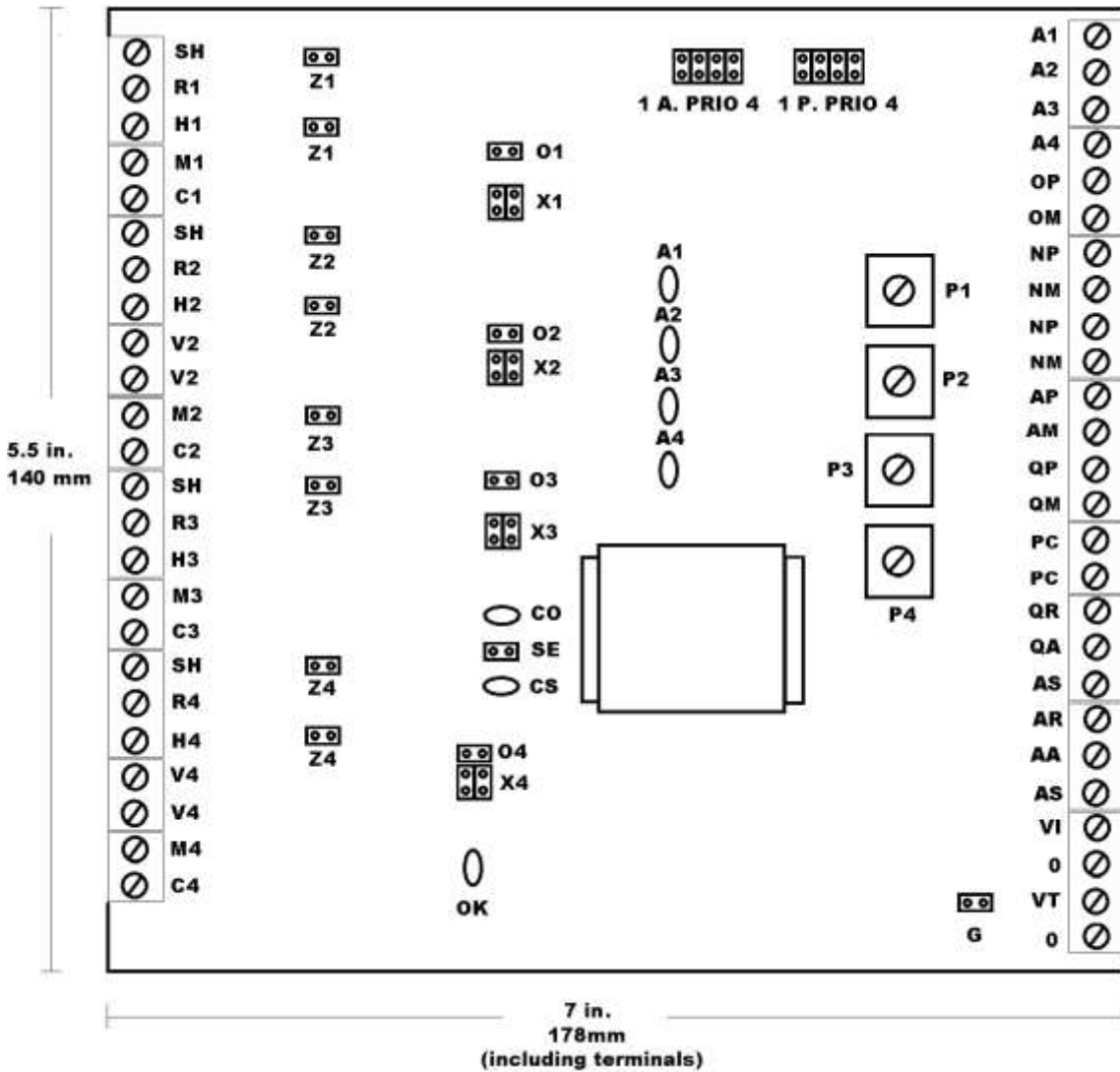


FIGURE 1: QIF-2011 INTERFACE CONTROLS AND INDICATORS (Note: On early boards , QM and VT terminals were identified as QP and VO and first hi-voltage input belonged to zone 3 instead of zone2)

Terminal identification table

Terminal	Function
SH (beside R1)	Audio signal shield connection
R1	External signal #1 audio return
H1	External signal #1 audio positive. Connect H1 and R1 to external signal source with highest priority.
M1	External signal #1 control input return
C1	External signal #1 control input positive. M1 and C1 typically

Terminal	Function
	connect to normally open dry contact used to activate input 1.
SH (beside R2)	Audio signal shield connection
R2	External signal #2 audio return
H2	External signal #2 audio positive. Connect H1 and R1 to external signal source.
M2	External signal #2 control input return
Across V3 terminals	High voltage input for signal #3 (70VRMS maximum)
C2	External signal #2 control input positive. M2 and C2 typically connect to normally open dry contact used to activate input 2.
SH (beside R3)	Audio signal shield connection
R3	External signal #3 audio return
H3	External signal #3 audio positive. Connect H3 and R3 to external signal source.
M3	External signal #3 control input return
C3	External signal #3 control input positive. M3 and C3 typically connect to normally open dry contact used to activate input 3.
SH (beside R4)	Audio signal shield connection
R4	External signal #4 audio return
H4	External signal #4 audio positive. Connect H4 and R4 to external signal source with highest priority.
Across V4 terminals	High voltage input for signal #4 (70VRMS maximum)
M4	External signal #4 control input return
C4	External signal #4 control input positive. M4 and C4 typically connect to normally open dry contact used to activate input 4.
A1	Command for signal #1 zone selection (Compatible with QIF-2000)
A2	Command for signal #2 zone selection (Compatible with QIF-2000)
A3	Command for signal #3 zone selection (Compatible with QIF-2000)
A4	Command for signal #4 zone selection (Compatible with QIF-2000)
OP	Common command for zones selections when any of signals 1 to 4 are active. Compatible with QIF-5000 opto-isolated inputs. If used, typically connects to QIF-5000 connector J4 screw 3 (Opto input 3).
OM	Return for OP. If used, typically connects to QIF-5000 connector J4 screw 4 (Opto input 3).
NP (two terminals , internal connection)	Connect is parallel with either silenceable or non-silenceable inputs of the QIF-5000 (J4 screws 7 or 5). Provides alarm status of the QX-5000 system to the QIF-2011 interface.
NM (two terminals, internal connection))	Return for MP (QIF-5000 J4 screws 8 or 6 depending on control signal used).
AP	Connection for Push-to-Talk line from QMP-510X series remote paging microphone consoles (QMP-510X terminal PTT IN +) . Provides QX-5000 internal paging status to the QIF-2011 interface

Terminal	Function
AM	Return for AP signal. Connects to QMP-510X terminal PTT IN -
QP	Connects to push to talk input on QIF-5000 (J2 terminal 1). This input is used to activate paging function of the QX-5000 system.
QM	Return for QP signal. Connect to QIF-5000 J2 terminal 2.
Across PC terminals	Paging active dry contact. Closes when external signals or QX-5000 paging is active.
QA	Connect to QIF-5000 paging signal input. (J1 terminal 1)
QR	Return for QA. Connects to QIF-5000 J1 terminal 2.
AA	Connection for audio line from QMP-510X series remote paging microphone consoles. Connects to QMP-510X MIC IN + terminal.
AR	Return for AA. Connects to QMP-510X MIC IN - terminal.
AS (two terminals)	Connection for shield of cables connected to QA,QR and AA,AR
VI	24VDC input. Connect to QIF-5000 J2 terminal 8.
0 (two terminals)	0V power return for VI and VO. Connect one to QIF-5000 J2 terminal 7 and the other to the QMP-501X 24VDC IN – terminal.
VO	24 VDC output. Connect to first QMP-510X series remote paging console. Connect to QMP-501X 24VDC IN + terminal.

Jumpers identification table

Jumper	Function (when inserted)
Z1 (two jumpers)	Signal 1 audio line supervision enable. Both jumpers must be installed and a 3.9K end of line resistor is required. In addition, coupling capacitors may be needed on signal output to prevent disruption of supervision voltage.
Z2 to Z4	Same function as Z1 but used for signal lines 2 to 4.
O1	Open detection for Zone 1 signal line. Must be removed when Z1 jumpers are not installed.
O2 to O4	Same function as O1 but used for signal lines 2 to 4.
X1	Control input #1 supervision and polarity. See figure XXX for possible combinations.
X2 to X4	Same function as X1 but used for signal lines 2 to 4.
SE	Enables short circuit detection on signal lines input.
G	Ground fault detection enable on external signal side. Detection is performed by the QIF-5000.
A. PRIO 1 to 4	Disable external signals 1 to 4 during alarm condition on QX-5000.
P. PRIO 1 to 4	Disable external signals 1 to 4 during QX-5000 paging activation.

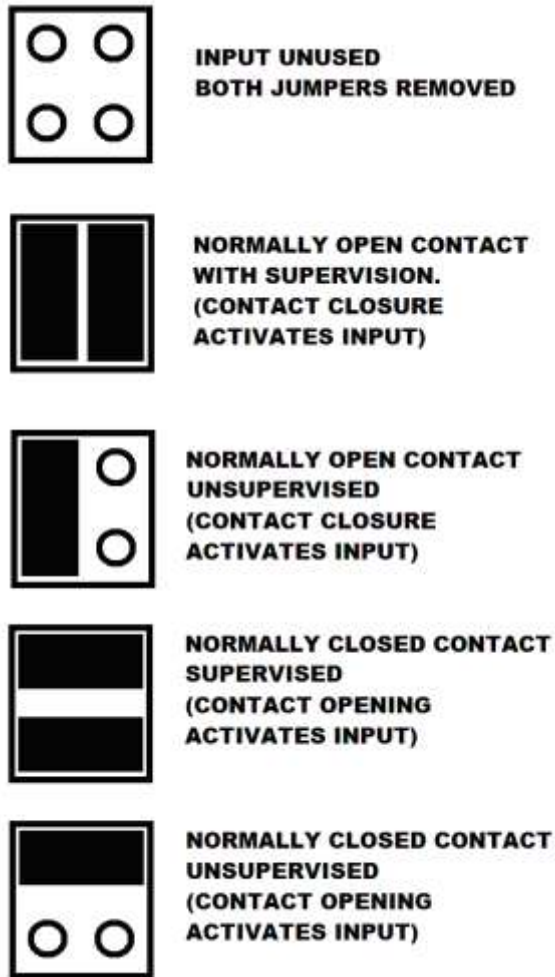


Figure 2: X1 TO X4 JUMPERS CONFIGURATION (WITH BOARD VIEWED AS IN FIGURE 1)

LEDs and potentiometers identification tables

LEDs , POTs	Function
OK	Green led indicating that interface is operational
CS	Yellow LED indicating short circuit detection on one of the signals

LEDs , POTs	Function
	lines. Troubles will be reported back to QIF-5000 and will be displayed as microphone troubles.
CO	Yellow LED indicating open-circuit detection on one of the signal lines (H1-R1 to H4-R4) or a fault on one of the control line (C1-M1 to C4-M4 , type of fault reported depends on X1 to X4 jumper configuration). Troubles will be reported back to QIF-5000 and will be displayed as microphone troubles.
A1 to A4	Green LED indicating activation of external signals 1 to 4
P1 to P4	Potentiometer for adjusting level of inputs 1 to 4. Turn clockwise to increase gain.

Typical system connection diagram

Requirements:

The diagram describes a system where external input 2 signal is coming from an existing emergency audio system 70V output and input 4 from a background music source at 0dB. Priority for paging is QX-5000 local (highest), then the emergency paging source and finally the background music source. Both paging sources have priority over the alarm signals but the background music must be interrupted for the duration of an alarm. External paging activation is done from a normally open dry contact in the Fire-Alarm panel some distance away from the QX-5000. All-call operation is required for the external paging. Background music is turned off at night and is controlled by a normally open dry contact in a timer unit. In addition, the background music is only required to play in a few specific zones.

In that kind of system, supervision is not used for the signal lines: The 70V line is supervised by the existing panel and the background music is not an alarm feature. The jumpers will be set as follow on the QIF-2011:

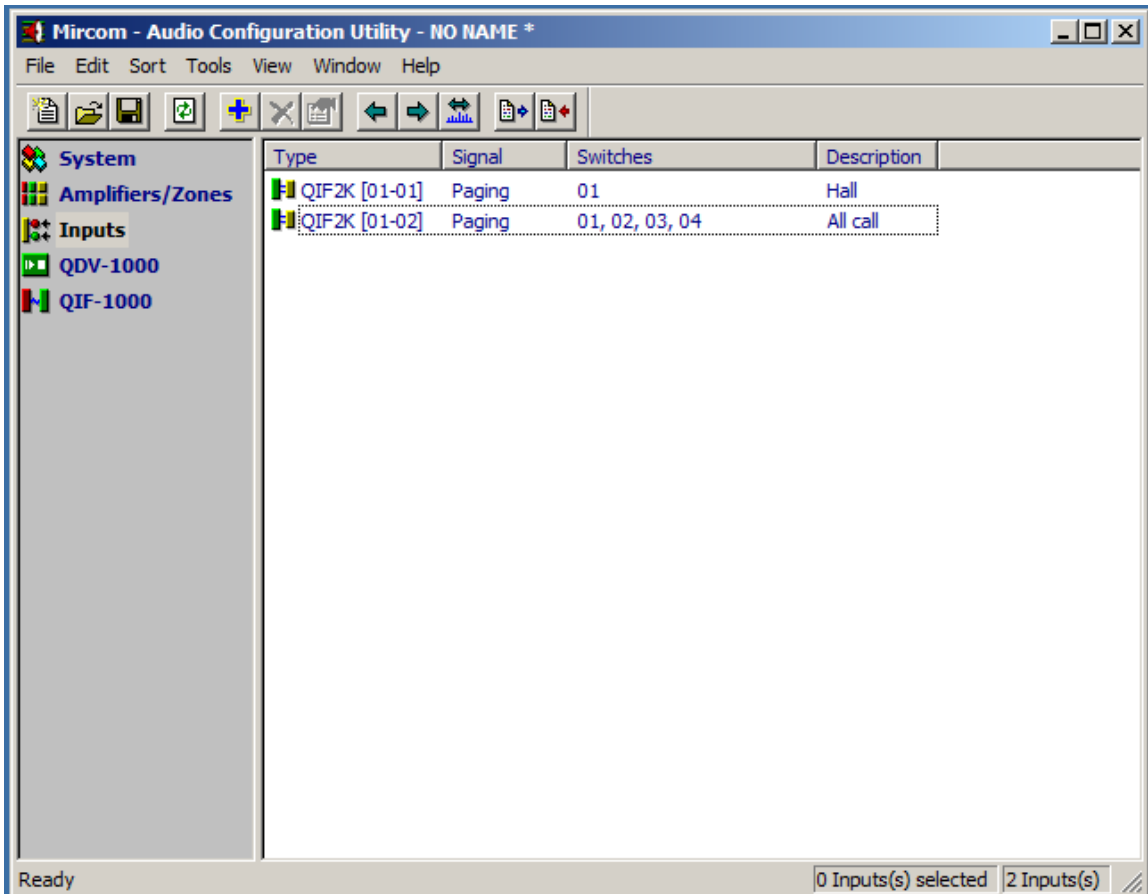
- Remove Z1,Z2,Z3,Z4 jumper pairs
- Remove O1,O2,O3 and O4
- Remove X1 , X3 jumper pairs
- Remove G jumper.
- Install X2 jumpers as per normally open, supervised configuration in figure 2.
- Install X4 jumpers as per normally open, unsupervised configuration in figure 2.

Material required:

In addition to the basic material required for QX-5000 operation, a QIF-2000 must be used to provide zone selection specific to either external paging or background music. A 3.9K End of line resistor must be installed at the fire alarm panel to provide supervision for the command line for the external emergency paging signal.

Configuration:

In the QX-5000 configurator inputs pane, select zones for each signal. The QIF-2000 input #1 is selected for background music (hall only) and input #2 is used for external signal all call (assuming a four zones system).



WIRING:

The following diagrams provide wiring information for the QIF-2011 for the typical configuration described above.

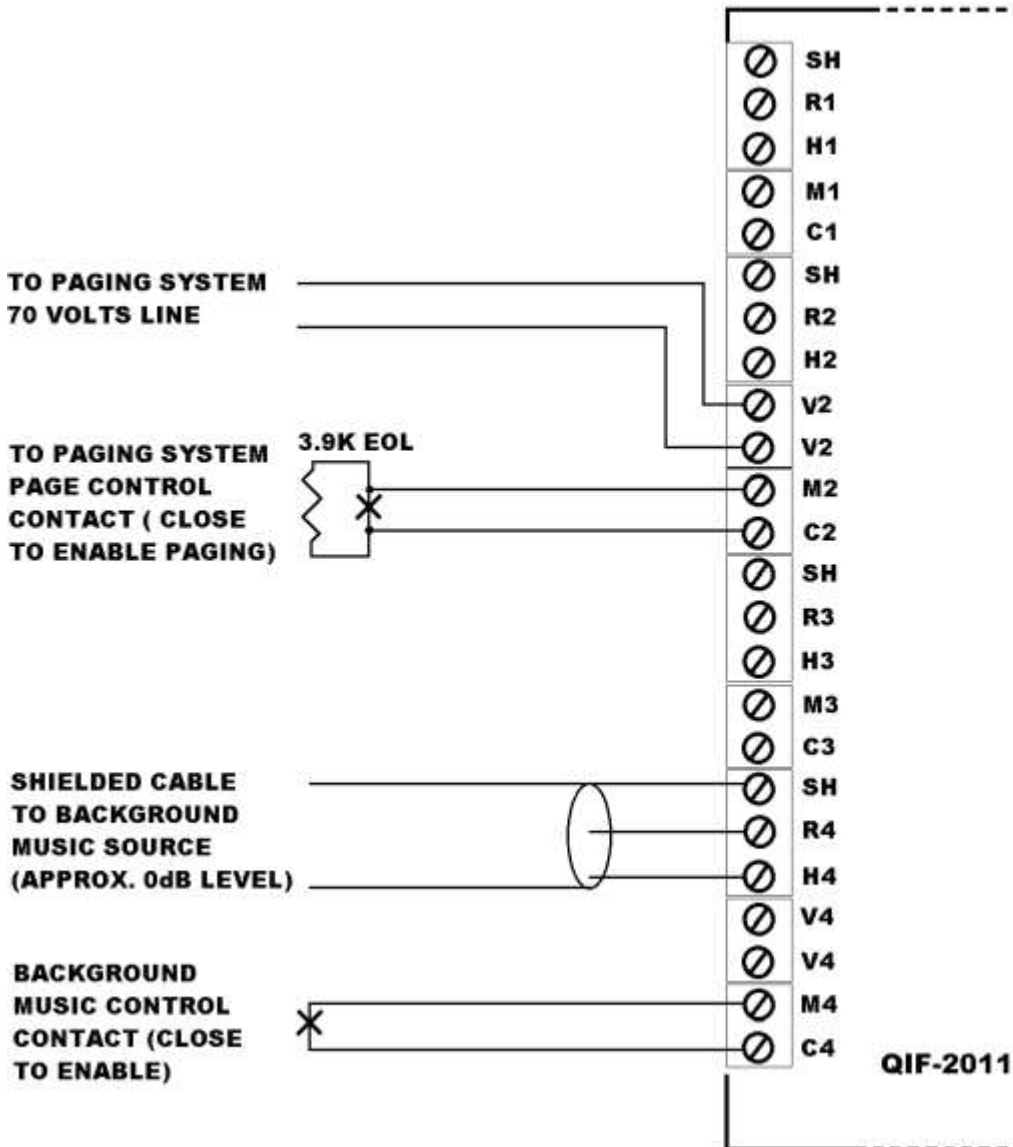


Figure 3: QIF-2011 connection on signal side for the typical system described. Please see text for other possibilities.

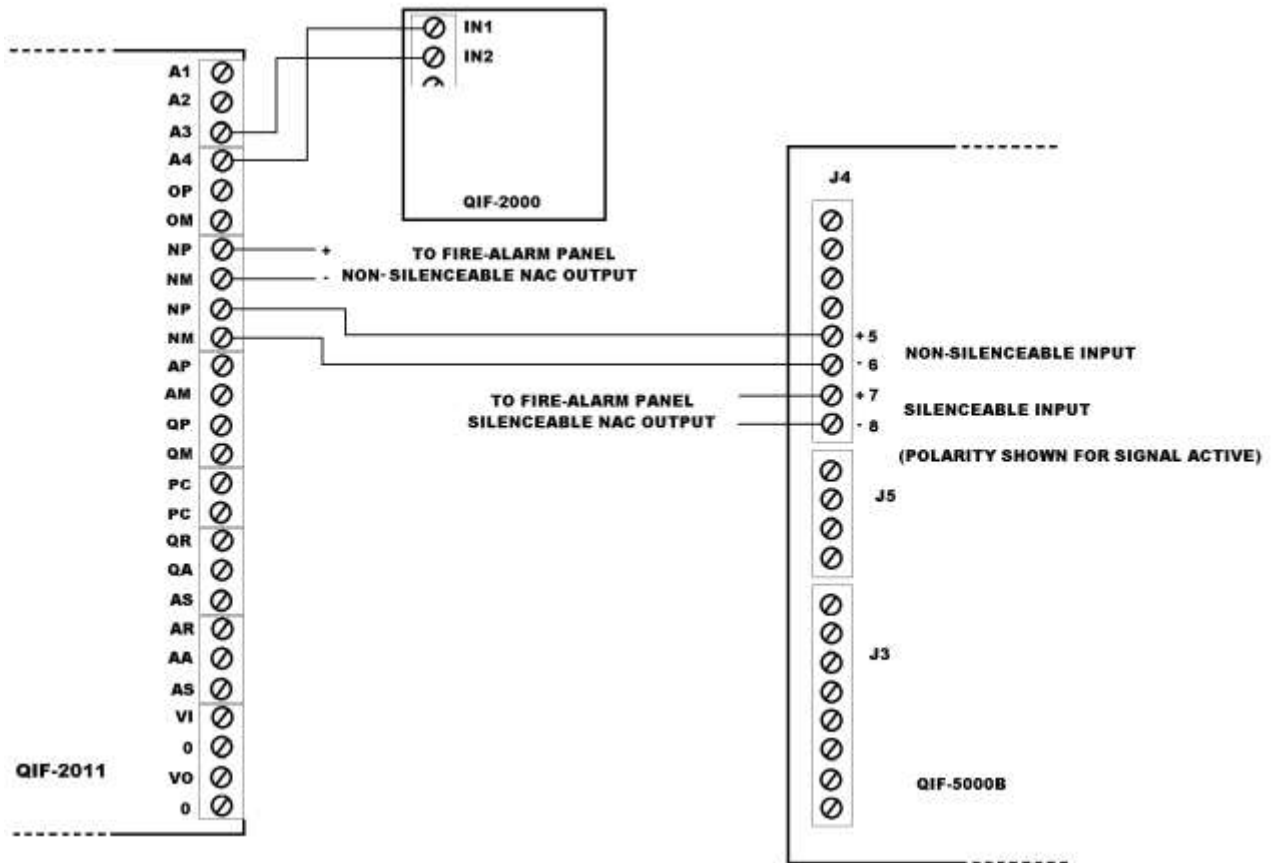


Figure 4: QIF-2011 to QIF-2000, QIF-5000 and Fire-Alarm panel connections for typical system described above. See text and figure 7 for other configurations.

Note: Only connections used for the QIF-2011 are shown. For other connections on the QIF-5000B J3 to J5 terminal blocks please consult QX-5000 manual (Mircom document number LT-616).

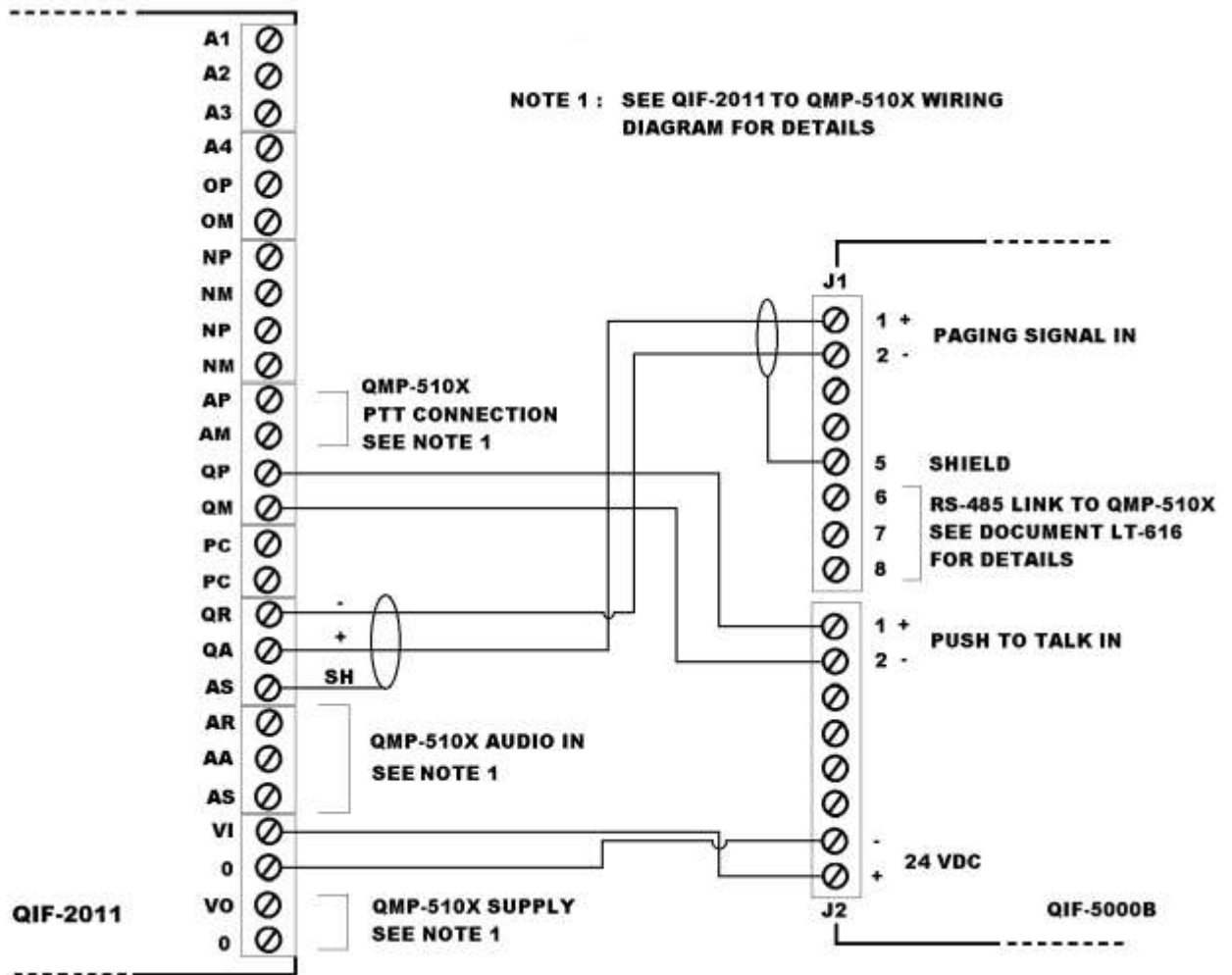


Figure 5: QIF-2011 to QIF-5000B wiring for signal lines for any signal configurations.

Note: only connections used for the QIF-2011 are shown. For other connections on the QIF-5000B J1 and J2 terminal blocks please consult QX-5000 manual (Mircom document number LT-616).

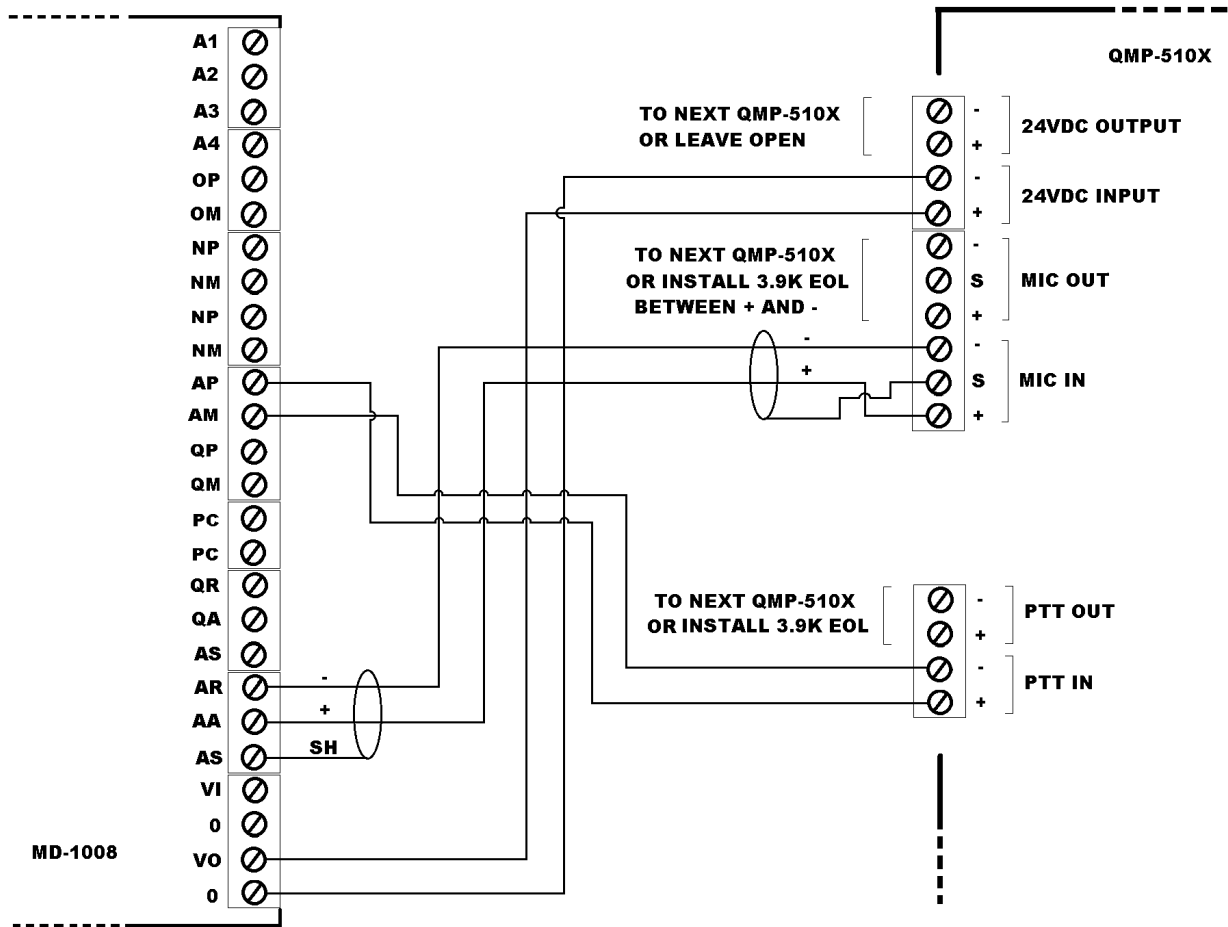
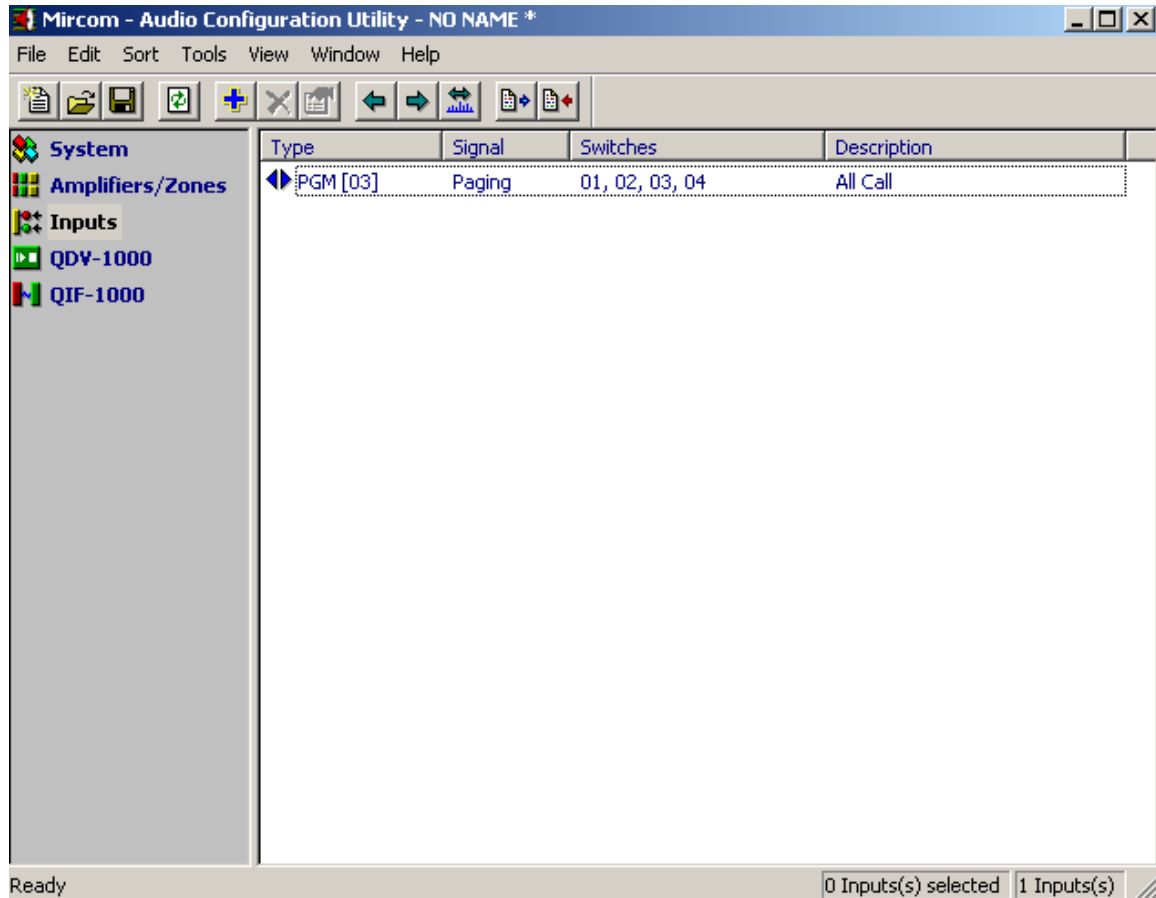


Figure 6: QIF-2011 to QMP-510X connections for any signal configuration.

Note: only connections used for the QIF-2011 are shown. For other connections on the QMP-510x terminal blocks and connectors please consult QX-5000 manual (Mircom document number LT-616).

Alternate zone selection:

If only all-call is required for all external signals, connection to a QIF-2000 is not necessary and the QIF-2011 can be connected to opto-input #3 or 4 on the QIF-5000B if those are free. The configuration would be modified as follow:



The wiring diagram will be modified as follow:

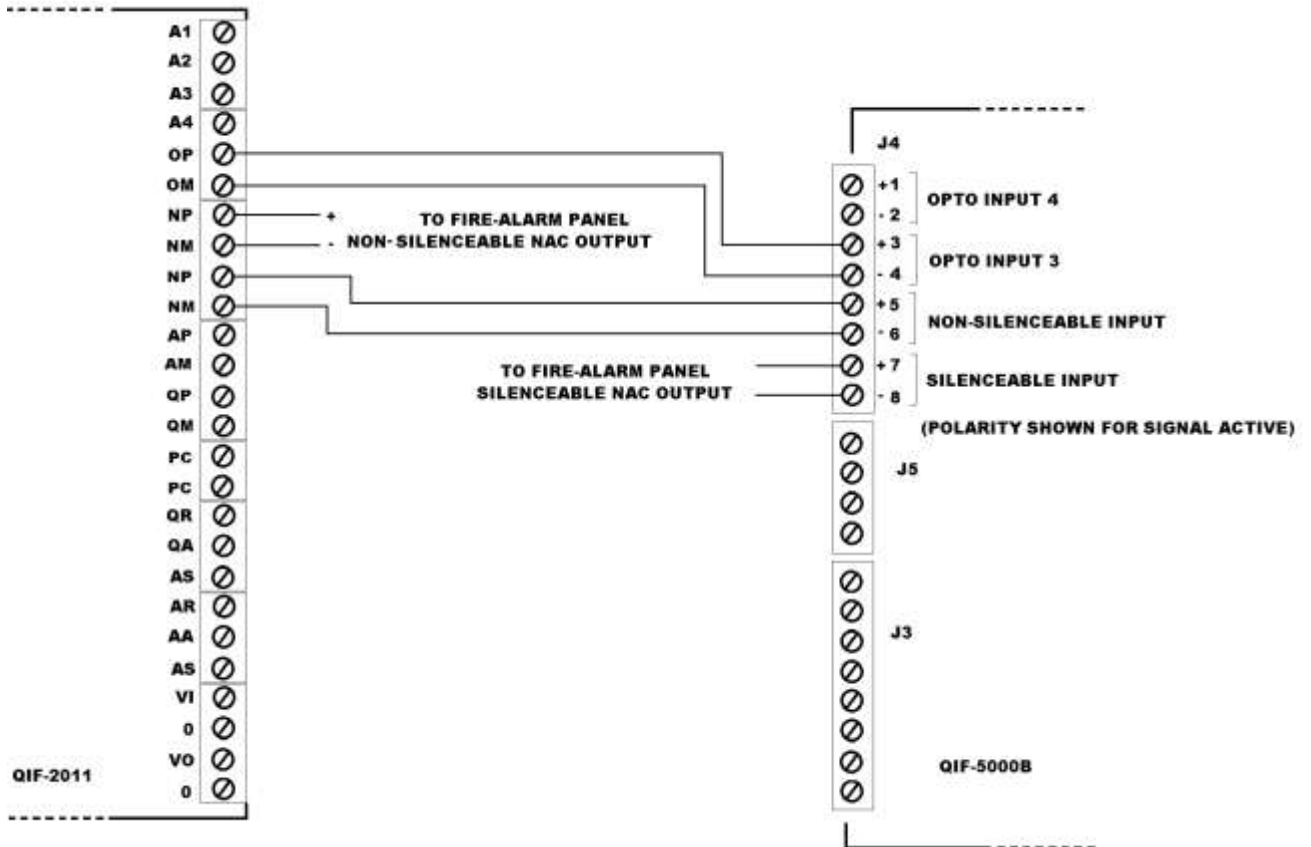


Figure 7: Wiring diagram, external signals select all zones. No QIF-2000 is required.

ANC-5000 connection:

The QIF-2011 can also be used to connect external signal sources to the ANC-5000 FleXNet audio controller. The signal side connections remain the same but the connections to the ANC-5000 must be done as per figure 8. Priority jumpers must be removed and jumper JW27 on the QIF-2011 must be set as shown. Also, jumpers JW7 and JW8 must be installed on the ANC-5000. The basic scheme shown is suitable for all call operation of the FleXNet. For selective operation and other FleXNet configurations issues, see the FleXNet installation and configuration instructions.

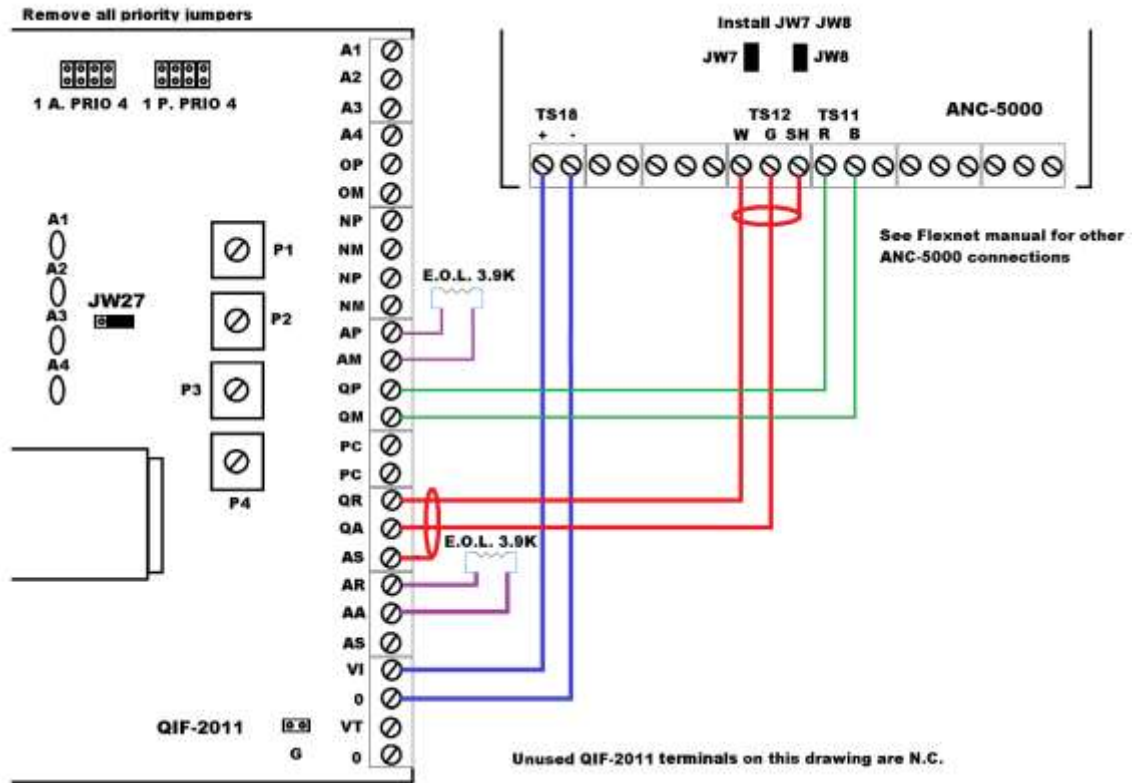


Figure 8: QIF-2011 to ANC-5000 connections

Electrical characteristics

ITEM	VALUE
Current consumption	40mA @24VDC
Signal inputs normal voltage (Rx to Hx)	2.2V +- 10%
Control input normal voltage (Cx to Mx)	2.2V +- 10%
Signal inputs open circuit detection voltage (Rx to Hx)	4.1V +- 10%
Control inputs open circuit detection voltage (Rx to Hx)	4.1V +- 10%
Signal inputs short circuit detection voltage (Rx to Hx)	0.75 V +- 10%
Control inputs short circuit detection voltage (Rx to Hx)	0.75 V +- 10%
QMP-501X PTT input normal voltage (AP to AM)	6.9V +- 20%
QMP-501X PTT open circuit detection voltage (AP to AM)	12.8V +- 20%
QMP-501X PTT short circuit detection voltage (AP to AM)	2.8V +- 20%
QIF-5000 signal input voltage high	
Voltage at A1 to A4 (Standby)	0V
Voltage at A1 to A4 (Corresponding input actuated)	2.5V minimum

ITEM	VALUE
Voltage between OP and OM (standby)	0V
Voltage between OP and OM (Any external inputs actuated)	16 V minimum
Voltage between QP and QM (Standby)	8V +- 20%
Voltage between QP and QM (Any paging inputs actuated)	0V
Voltage between QP and QM (Any trouble detected)	24VDC +- 20%
Alarm input detection level (Between NP and NM)	12VDC minimum
Minimum external source voltage for full power audio output on QX-5000 (Potentiometer adjusted for maximum gain)	250mV RMS
Maximum voltage at external low voltage signal inputs 1 to 4	2VRMS
Minimum external source voltage for full power audio output on QX-5000 (High voltage inputs 2 and 4 , Potentiometer adjusted for maximum gain)	12 VRMS`
Maximum voltage at high voltage signal inputs 2 and 4	100VRMS

Revision History

Nov 20, 2010: Original

June 22, 2011: Revised for rev2 boards spinout and renaming to QIF-2011

July 17, 2012: Added section on ANC-5000 connection.