OG COMMS USER MANUAL

OG COMMS Intercom





110 Newton Place Hauppauge, NY 11788 (800)-488-8378 / (516)-671-7278 sales@multidyne.com www.multidyne.com

Chapter Head Contents

Introduction
Features and Operation
Card Buttons and LEDs
WET/DRY Selection Button
RTS/CC or GAIN L/GAIN H Select Button
OFF/AUTOTERM or WET TERM/AUT TERM Selection Jumper
Auto Nulling
Audio Present LEDs
CONNECTOR INTERFACES and PINOUTS
Dashboard GUI
SPECIFICATIONS
Appendix: Summary of Internal Termination State vs. Mode Selection

The OG COMMS Intercom unit provides a means to interface between two channels of 2-wire party-line intercom audio and two channels of 4-Wire analog line-level signals. The unit is capable of performing auto nulling for each channel with the push of a button. In addition, each of the 4-Wire input and output channel levels are monitored and displayed on easy to understand card edge audio present LEDs. With the push of a button or a Dashboard setting the unit can be a +28VDC party-line voltage power source while providing the 200 ohm intercom audio termination on both channels. The unit can also be configured to work with either RTS party-line or Clear Com party-line equipment with the push of a card edge button or a Dashboard setting. This adjusts the output gain between the party line circuitry and the 4 Wire line level circuitry depending on which type of units one is interfacing with.

Features and Operation

This manual describes the OG COMMS version of the Intercom. Besides being able to control the functions via buttons on the card itself, functionality can also be controlled via Dashboard. The manual assumes that the user has a working knowledge of Dashboard. A Dashboard tutorial is beyond the scope of this manual.

Card Buttons and LEDs

These buttons and LEDs can be found near the front edge of the card. They control basic functionality, and can be identified via silkscreening on the card.

Button	Function	LED Function	
Null	Nulls Ch1, then Ch2	Off: not nulled, Green: Null OK, Yellow: Null in Prog- ress, Red: Null unsuccessful	
Wet/Dry	Toggle. Wets or dries Ch1	Wet LED: Off: Dry, Green: Wet, Red: Fault Dry LED: Off: Wet, On: Dry	
RTS/CC	Toggle. Selects RTS or Clearcom	Either RTS or CC LED will be on for selected mode.	

WET/DRY Selection Button

The Intercom can supply party-line power by momentarily pressing the Wet/dry button until the Wet LED lights and the Dry LED goes out. This can also be done via Dashboard. With this function enabled, the unit will provide +28 VDC to pin 2 of the XLR connector of the party-line ports. When enabled, the CH1 WET LED will turn green. When selecting the WET mode, verify that the WET LED is green. If red, it means there is a short or overload on the party-line, or the wetting circuitry within the unit is defective. If the Intercom unit is to be connected to a party-line intercom system with an existing power source, then the internal power supply within the Intercom board should be turned off. This is accomplished by pressing the WET/DRY switch again so that the Wet LED goes out and the Dry LED comes on. Pin 2 of the XLR connector will no longer provide +28VDC to the rest of the party-line. The wet/dry setting will be retained in NVRAM on the card.

RTS/CC or GAIN L/GAIN H Select Button

The OG COMMS can be set to RTS or Clear Com mode. Select the mode by pressing the RTS/CC button so that the proper LED lights. This mode can also be controlled by Dashboard. This setting adjusts the gain needed to interface between the 4 Wire to 2 Wire signals and it also adjusts the gain from the 2 Wire to 4 Wire signals. It increases the gain going from a Clear Com connected 2 Wire unit to the 4 Wire side of the interface to compensate for the lower 2 Wire operating voltages of the Clear Com units as compared to RTS units. The RTS units operate at a higher voltage on the party-line side and thus require less gain when translating from 2 Wire to 4 Wire signals. When the signal originates from the 4 Wire side and translate over to the 2 Wire side the gains are opposite. Less gain is applied to a 4 Wire input as it translates to the 2 Wire side of the interface with when a Clear Com unit is present on the party-line connection as opposed to a RTS unit. The RTS/CC setting will be retained in NVRAM on the card.

OFF/AUTOTERM or WET TERM/AUT TERM Selection Jumper

The Intercom can be set to the AUTOTERM mode by placing a jumper shunt on J64. It can also be controlled via Dashboard. When this selection is chosen, the unit will look at both party-line channels to see if they contain the +28 VDC wetting voltage. For channel 1 the unit's internal circuitry will remove the internal 200 ohm terminating resistor if the unit is sourcing the +28 VDC or if it is externally wetted. For Ch2, it will remove the 200R only if the channel is externally wetted. (Ch2 cannot be internally wetted). If the WET TERM is selected, then if the Intercom is providing the +28 VDC (WET/DRY switch set to WET), both channels will be terminated. If the Intercom is not providing the +28 VDC (WET/DRY switch set to DRY) then the terminations on both channels are removed.

Auto Nulling

Auto nulling is done to achieve maximum return loss between the 4 Wire input and the 4 Wire output channels. Auto nulling can be and should be done whenever there's been changes made to the party-line connections. To auto null, push the Null button momentarily and release. This function can also be performed via Dashboard. Observe that the null CH1 status LED glows orange while the nulling process is taking place. The OG COMMS will also produce a 24khz Mic Kill tone. RTS compatible beltpacks will respond to this tone and automatically kill the mic input. If you have another type of beltpack, be sure to turn off the mic input or the null will be poor. The process should last about 30 seconds after which time the LED will turn green if successful or red if a null was not able to be obtained. After the Ch1 nulling is complete, the unit will null Ch2. During the auto nulling process there will be tones of 1khz, 300hz, 3khz and 1khz again on each of the party line channels. After the nulling process is complete, you will need to re-enable your mic inputs. When performed via Dashboard, the user has the option of nulling the two channels separately. Null settings will be retained in NVRAM on the card, so it will not be necessary to perform the null process again if power is lost, unless, of course, the partyline has been altered.

If two or more OG COMMS or other intercom units are used as part of the 2 Wire system they should each be nulled to prevent an audio feedback path that may cause an audio oscillation. This is evidenced by an audio squeal, howling or whistle. Once the units are nulled, this should go away. But it can also return if one of the beltpacks or other loads are changed or disconnected from one or both ends. Then the oscillation will return since the load that the intercom has been nulled for is suddenly gone, and the resulting lack audio return loss will result in feedback.

Note that if the party line has been altered after a null has been done, the status LEDs will not update on their own. They do not monitor status on a continuous basis. They only reflect the result of the last nulling procedure, so it will be necessary to perform the nulling procedure again. This is commonplace in the industry, as it is impossible to measure the depth of the null on a continuous basis without asserting mic kill and injecting tones.

Audio Present LEDs

The Intercom unit contains four LEDs on the card edge. These show the presence of audio on the Ch1 and Ch2 4 wire inputs and outputs. They can be identified via silkscreening on the card. The LEDs are also shown on Dashboard.

CONNECTOR INTERFACES and PINOUTS

CONNECTOR	DESCRIPTION	
	PIN 1 SHIELD(GND)	
FRONT PANEL XLR CONNECTOR	PIN 2 CH 1	
	PIN 3 CH 2	

The party-line interface can operate stand alone or interconnected with an existing intercom system. If so chosen, the Intercom unit can provide the source of the 28 VDC required to run an intercom setup on PIN 2 of the XLR. In addition, the user can also choose to have the unit provide 200 ohm termination resistors to each of the two party-line channels at PINS 1 & 2 or not on



the party-line XLR connector. See the above description in Section 2.1.3 for how the termination logic works. If the unit is supplying the DC power for the party-line, the CH1 WET LED will be green (if it is red, then there is either an overload condition somewhere in the party-line circuit or an internal problem with the unit). Below is shown the rear panel DB15 connector. It has balanced line-level 4 wire inputs and outputs for Ch1 and Ch2, and for the partyline. Multidyne sells a breakout cable for this connector, terminated with XLRs. Contact Multidyne for more information.

Dashboard GUI

Below is shown the Dashboard screen for the OG Comms.



At the top are buttons for PL Power off and on. These operate in the same fashion as the WET/DRY button or switch on the card, and controls the wetting of Ch1. Below these is a window showing the voltage on the party line.

Below this is a section for autoterminating the channels if both are determined to be dry. Check this box to enable this feature. It should only be used if you are certain that external terminations are not being applied elsewhere on the party line. There is also an individual termination select for Ch1 and Ch2.

Below the islaged tion for PL gain select. This is otherwise known as RTS/ClearCom beltpack select. It operates in the same fashion as the RTS/CC buttonor switch on the card. In RTS mode, a nominal -10db signal is present on the PL, but in ClearCom mode, the level is -14db, so the TX and RX gains required by the OG-Comms will be different for the 2 cases. Select the button for the beltpack you want to use.

Below this section are indicators for audio present on the 4-wire inputs and outputs of the OG-Comms. These indicators are green if audio is detected.

At the bottom of the screen are 3 buttons for nulling Ch1 by itself, Ch2 by itself, and Ch1 and Ch2 together. These operate in the same fashion as the button or switch on the card. When one of these is pressed, a popup will ask if you want to proceed with the null. Select yes to proceed. A message below the button will provide status of the null process.

SPECIFICATIONS

General Audio:

Frequency Response: ±2.5 dB, 100 Hz to 8 kHz Distortion (THD+N): <TDB%, measured at 1 kHz, 4-wire input to 2-wire interface Signal-to-Noise Ratio: >TBD dB, measured at 1 kHz, 4-wire input to 2-wire interface

2-Wire Party-Line Intercom Interface:

Type: 2-channel party-line, unbalanced (pin 1 common; pin 2 DC with channel 1 audio; pin 3 channel 2 audio) Compatibility: single- and dual-channel intercom systems such as from RTS® and Clear-Com® Impedance–Normal: >20 k ohms Impedance–2-Wire (PL) Power Source Mode: 200 ohms Nominal Level: –10 dBu RTS, -14dbu Clear Com "Mic Kill" Signal: 24 kHz, ±1% 2-Wire Power Source: 28 Vdc nominal, 750 mA maximum

Hybrids: 2

Topology: 3-section analog circuitry compensates for resistive, inductive, and capacitive 2-wire party-line loads

Nulling Method: automatic upon user initiation, processor implements digital control of analog circuitry; settings stored in non-volatile memory Nulling Line Impedance Range: 120 to 350 ohms

Nulling Cable Length Range: 0 to 3200 feet

Trans-Hybrid Loss: >35 dB, typical at 1000 Hz

4-Wire Inputs: 2

Type: capacitor-coupled Impedance: 20 k ohms Nominal Level: +4 dBu Maximum Level: +22 dBu

4-Wire Outputs: 2

Type: capacitor-coupled Impedance: <50 ohms nominal Nominal Level: +4 dBu Maximum Level: +20 dBu into 2 k ohms

Power requirements

Connector Type: Coaxial, negative sleeve, Switchcraft 712 compatible

Power: 9 to 24VDC, < 25W depending of number of beltpacks connected

Appendix: Summary of Internal Termination State vs. Mode Selection

EXTERNAL WET- TING PRESENT (Y/N)	UNIT MODE WET/ DRY	UNIT MODE AUTO- TERM (ON/OFF)	CHANNEL 1 INTER- NAL TERMINATION APPPLIED (Y/N)	CHANNEL 2 INTER- NAL TERMINATION APPPLIED (Y/N)
Ν	DRY	OFF	Ν	Ν
Ν	DRY	ON	Y	Y
Y	DRY	OFF	Ν	Ν
Y	DRY	ON	Ν	Y
Ν	WET	OFF	Y	Y
Ν	WET	ON	Υ	Ν



110 Newton Place Hauppauge, NY 11788 (800)-488-8378 / (516)-671-7278 sales@multidyne.com www.multidyne.com