



Natural-sounding telephone audio...

... for broadcast, conferencing
and public address



About Comrex DH Series Digital Telephone Hybrids

When you want to present, broadcast, or record a telephone conversation, it's important to separate the "send" audio from the "receive" audio on the call. If proper isolation is not achieved, unpleasant things can happen to your audio like echo, feedback, and the dreaded "barrel effect". Hybrids are used to convert the "two-wire" telephone network back into a "four-wire" circuit, providing separate audio connectors for send and receive, and isolating the two using digital signal processing. The Comrex DH Series Digital Telephone Hybrids also provide filtering of unwanted "hum" and "hiss", as well as automatically adjusting caller audio to a uniform level.

Comrex understands telephone-to-audio interface better than anyone else. For 30 years we've been improving the sound of phone lines for broadcasters. The careful design of the Comrex DH Series results in consistent, high-quality audio. Installation is rapid, adjustments are set-and-forget, and operation is straightforward.

Select from one of three models to "answer the call" of your application:

- DH20 single hybrid unit with analog audio connections and the quality you demand.
- DH22 dual-hybrid unit to connect to two phone lines simultaneously for flawless conferencing.
- DH30 single hybrid unit with advanced audio processing for best audio performance, both digital and analog audio connections and a number of additional convenient features.

All models also include selectable automatic gain control (AGC) to keep caller's audio level consistent, as well as caller ducking that lowers incoming caller audio so local talent remains in control of the conversation.

Need telephone audio? Put Comrex on the line.



Features & Benefits

Digital hybrid and audio processing performance

- Comrex's proprietary high-performance, digital hybrids deliver consistently high quality telephone audio.
- Continuously adapt to telephone line conditions.
- Deep, stable hybrid null ensures maximum isolation between local (send) and caller audio.
- Eliminates echo, "honking" and other artifacts.
- Receive filter reduces telephone line noise.
- Selectable AGC maintains a consistent audio output, even when the caller signal varies widely.
- Selectable caller ducking lowers incoming caller audio so local talent remains in control of the conversation.

Additional audio processing on the DH30:

- Acoustic echo cancelling for applications where open speakers and microphones are used.
- Adjustable digital compression, downward expansion, three-band equalization and bass boost further improve audio quality.

Built for the real world

- Easy installation and operation. Hybrids do not need to be adjusted as you segue from caller to caller.
- Separately selectable single-ring auto-answer and auto-disconnect function for assisted or unattended operation.
- Selectable auto mix-minus when mix-minus cannot otherwise be created. Performance is best with a genuine mix-minus.
- Handy front panel controls and status indication, also available via rear panel remote connector.
- Hybrid on/off controls and status.
- Send and caller level indication.
- Automatically accepts all worldwide AC power.
- Compliant with worldwide regulations, including FCC, CSA and CE.

All the right connections

- Inputs and outputs are balanced XLR and level on each is individually adjustable, ensuring the best audio mix.
- Send input accepts microphone and line levels.
- Auxiliary output provides either caller audio or a mix of caller and local audio. Useful for recording and public address.
- An amplified speaker output, with rear panel 1/4" TRS connection and front panel volume control, is provided for caller monitoring.

Three models to match your requirements

Comrex DH Series Hybrids are a great choice for talk shows, news feeds, production, conferencing, Internet applications... any time you need great telephone sound. Select the one that meets your needs.

KEY DIFFERENCES AMONG DH SERIES MODELS

	DH20	DH22	DH30
Digital Signal Processing			
Digital signal processing hybrid	One	Two	One
Acoustic echo cancellation	—	—	Yes
Audio processing	Selectable AGC and caller ducking	Selectable AGC and caller ducking	Selectable AGC and caller ducking Adjustable compressor, downward expander and equalizer with bass boost
Audio and Telephone Connections			
Telephone line inputs with Tel Set loop-thru	One	Two	One
Balanced analog mic/line send audio input	One	One with auto-conferencing	One with selectable phantom mic power
Balanced analog on hold audio input	—	—	One
AES/EBU digital input and output	—	—	One each
Monitor amplifier with front panel volume control and rear panel output	1 watt into 8 Ω load	1 watt into 8 Ω load	2 watts into 8 Ω load
Control and Status			
Front panel send and caller audio level indication	Bicolor LED for each level	Bicolor LED for each level	Full LED VU meter for each level
Set-up and programming	Front panel trim pots and DIP switches under access plate	Front panel trim pots and DIP switches under access plate	Front panel LCD and multifunction buttons with lockout
Remote control and status indication	Logic interface	Logic interface	Logic and serial interfaces
Control of external recorder	—	—	Front panel buttons, rear panel closures and status output
Other Features			
Alternate cue feed to caller	—	—	Front panel selectable

DH22 special features

- Auto-conference function sends common local audio (send) auto to each caller mixed with the audio of the other caller—they hear the other parties, but not themselves.
- Multiple external mix-minus setups are not required.
- Two digital hybrids balance each caller separately, avoiding the problems inherent in “button mashing” two callers on one hybrid.
- Audio may be combined to a single output or as two separate outputs to feed your console or mixer.

DH30 special features

- Both balanced analog and AES/EBU digital inputs and outputs.
- Acoustic echo cancellation improves hybrid performance and eliminates feedback when used in studios and other venues with open speakers and microphones.
- Remote controllable, password protected processing presets help individualize processing for varied talent and programming.

Adjustable processing available to further improve audio quality are:

- Digital compressor and downward expansion.
- Three-band equalization with additional bass boost.

Additional controls available on front panel:

- Record function sends a start/stop signal to an external recording device.
- Cue function switches audio signal sent to caller to “offline” cue input.



DH20



DH22



DH30

Need multiple hybrids
with multiline and call
screening capabilities?

The Comrex Studio Telephone Access Center puts you in control with great sound, ease of operation and scalable configuration. Contact us for details.



Specifications

DH Series

Hybrid performance

- Telephone transmit
- Frequency response: 250 Hz to 3.5 kHz, ± 1 dB
- Dynamic Range: >70 dB
- Distortion: $<0.1\%$
- Send-to-caller separation: 55dB nominal
- Caller-to-send separation: 50 dB nominal

Audio processing

- Selectable automatic gain control (AGC)—Threshold -50 dBm, works to achieve an equivalent average caller level of -30 dBm from the telephone circuit
- Ducking control—adjustable from 0 to 18 dB in 6 dB increments

Audio connections

- Send input—XLR female: -55 dBu (mic level) or 0 dBu (line level) nominal, adjustable, balanced, bridging, 20 k Ω impedance, DH30 provides selectable 12 VDC phantom power
- Caller output (one on DH20 and DH30, two on DH22)—XLR male: 0 dBu nominal, adjustable, balanced, 50 Ω impedance
- Auxiliary output—XLR male: 0 dBu nominal, adjustable, balanced, 50 Ω impedance
- Monitor output—1/4" TRS: 1 watt output on DH20 and DH22, 2 watt output on DH30 into 8 Ω load
- Cue input (DH30 only)—XLR female: -55 dBu (mic level) or 0 dBu (line level) nominal, adjustable, balanced, bridging, 20 k Ω impedance
- AES/EBU input/output (DH30 only)—XLR: 32, 44.1 and 48 kHz sample rate

Supplementary audio connections available on rear panel

DB-25 remote connector

- Send Input—0dBu nominal, adjustable, unbalanced, 20k Ω impedance
- Caller Output—0dBu nominal, adjustable, unbalanced, 50 Ω impedance
- Auxiliary Output—0dBu nominal, adjustable, unbalanced, 50 Ω impedance

Telco connections

- Telco line (one on DH20 and DH30, two on DH22)—RJ11 Plain old telephone service (POTS), analog extension from PBX. A-Lead supervision provided
- Telco set provides loop-thru to standard telephone set or other systems (one on DH20 and DH30, two on DH22)

Control connections

- Remote—DB-25
- Control inputs—activated with switch closure to ground
- Hybrid on/off, user selectable as momentary or latching (two inputs, one for each hybrid, on DH22)
- Monitor audio mute
- Record start (DH30 only)
- Feed cue audio to caller (DH30 only)
- Send and caller audio mute (DH30 only)
- Activate up to three presets (DH30 only)
- Status outputs—Open collector rated at 30 VDC, 40 mA maximum
- Hybrid on/off (two outputs, one for each hybrid, on DH22)
- Hybrid send/caller presence indication (two sets, one for each hybrid on DH22)
- Record control (DH30 only)—DB-9: Provides start, stop and enable commands to external recorder.
- Serial control (DH30 only)—DB-9: Connected to the serial port of a PC or other RS-232 device, this port receives commands to remotely control operation, request status or download firmware upgrades.

Power and physical

- Auto adjusting power supply for 120/240 VAC 60/50 Hz operation—20 watts
- Size: 19" W x 10.125" D x 1.75" H (48.26 cm x 25.7 cm x 4.44 cm)—standard 1 RU EIA rack mounting
- DH20 and DH22 weight: 6.4 lbs (2.9 kg)
- DH30 weight: 6.7 lbs (3.04 kg)
- Operating environment: 32 to 100 $^{\circ}$ F (0 to 38 $^{\circ}$ C), 0 to 80% humidity

About Comrex

Comrex, an innovator in communications and telephony technologies for more than 40 years, provides reliable solutions to meet the demands of live broadcast. Thousands of radio and TV stations trust the quality of our products every day for news, sports and entertainment audio. The company is headquartered near Boston, Massachusetts, and Comrex products are offered and supported by a worldwide network of dealers.

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Put Comrex On The Line.