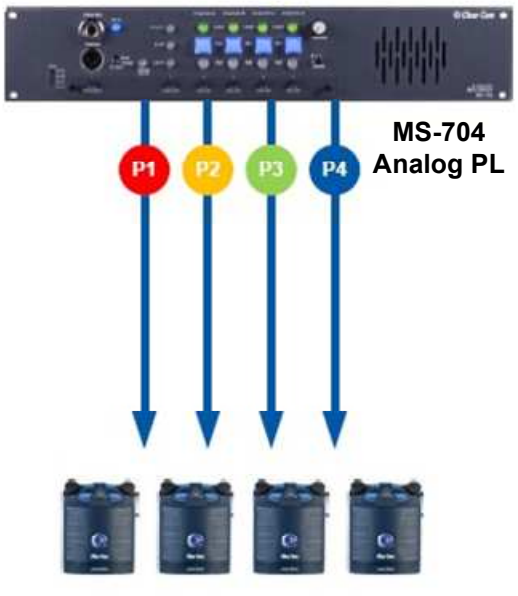
Analog PL vs Digital PL cabling comparison

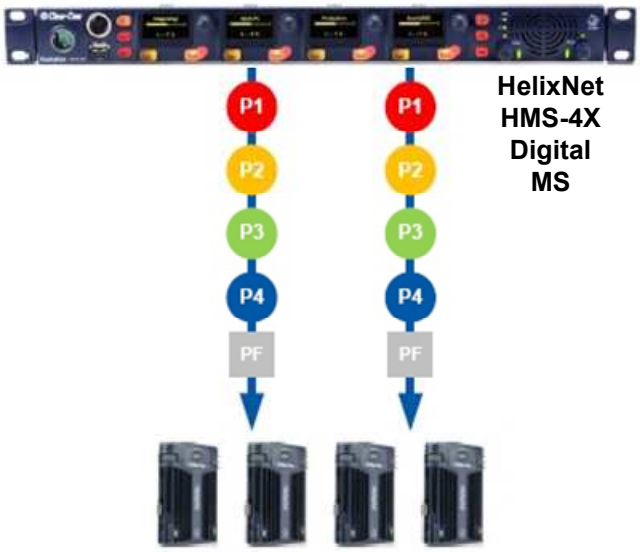
Analog PL System



Four independent party-lines each requiring a separate cable run from a four channel analog main station

- In a traditional analog party-line system, one cable is dedicated in hardware to each party-line channel. This can make it more difficult to build redundancy or spare capacity into the installation (owing to the number of connectors / cables dedicated to the delivery of channels).
- Analog party-line beltpacks (RS-602 shown) must be re-cabled to use alternative channels, requiring the physical re-location of cabling for new configurations. To aid switching, Clear-Com sells additional switching equipment (the SB-704 and RCS-2700 devices). The RS-602 (6-pin XLR) beltpack requires the YC-36 splitter / combiner to combine 2 channels into a 6-pin configuration, and multi-conductor cables.
  The RS-603 (3-pin XLR) beltpack requires a TWC-701 device to combine 2 Clear-Com channels in a single twisted pair.

HelixNet Digital PL System

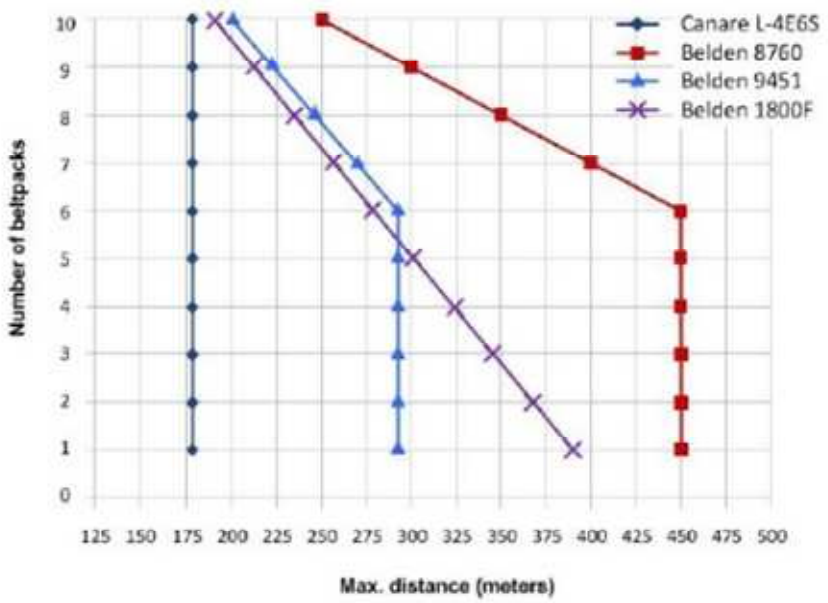


HelixNet 4 channel main station utilizes four channels + program on a single power line cable run to a digital beltpack

- In the HelixNet system, one cable can carry multiple channels (all four partyline channels plus a Program Feed). Because one cable can carry all channels, the second connector for each line can either be used for redundancy (flybacks) or for future extensions / changes to the cabling topology (layout).
- HBP-2X Digital Beltpacks can support any two of the four party-line channels (plus Program Feed), wherever they are physically located on the system. New configurations of beltpacks and channels can be deployed without the physical relocation of assets.
- Eliminates the task of managing terminations across multiple devices that can cause major problems such as gain differences and feedback caused when multiple or no terminations are set across devices.
- It is immune to the harmful effects of EMI and ground loop hum.
- HelixNet also provides more of an advantage for being able to use multiple types of cable from standard mic cable to Category 5/6 cable (shielded yields better results), which means that current cable infrastructure can be utilized and lower the cost of implementation.

Quick reference to cable capacitance

Manufacturer	Cable type	Gauge (AWG)	Style	Attenuation / 100m
Belden	**8760**	18	Std	11 dB
Canare	**L-4E6S**	21	Star Quad	56 dB
Belden	**9451**	22	Std	33 dB
Belden	**1800F**	24	Std	23 dB



Belden 8760 Multi-Conductor Cable General Description:
18 AWG stranded (16x30) tinned copper conductors, polyethylene insulation, twisted pair, overall Beldfoil shield (100% coverage), 20 AWG stranded tinned copper drain wire, PVC jacket.

Canare L-4E6S Star Quad Microphone Cable General Description:
Star Quad cable for all handheld microphone applications. Flexible, satin smooth to the touch and extra strong, this standard diameter, 21 AWG cable fits perfectly in all XLR-type audio connectors. Forty separate strands in each conductor eliminate breakage due to flexing.

Belden 9451 Multi-Conductor Cable General Description:
22 AWG stranded (7x30) TC conductors, polypropylene insulation, twisted pair, overall Beldfoil shield (100% coverage), 22 AWG stranded TC drain wire, PVC jacket.

Belden 1800F Multi-Conductor Cable General Description:
24 AWG stranded (42x40) HC BC conductors, Datalene insulation, conductors cabled with fillers, TC "French Braid" Shield (95% coverage), BC drain wire, PVC jacket.

Belden 7938A CAT-5 shielded Cable General Description:
24 AWG stranded (7x32) bare copper alloy conductors, bonded pairs, polyolefin insulation, polyester separator, TPE inner jacket, Beldfoil shield (100% coverage), 85% TC Braid, industrial grade sunlight-, oil and Weld splatter-resistant TPE jacket.