## INTRODUCTION

Two-wire partyline is a simple and cost-effective way of providing communications to a number of users who can share one or two channels. As the name implies, this kind of system ties everyone together with a single cable. The cable goes into a beltpack, which also has a jack for a headset. Each beltpack has a cable to the next beltpack in the chain.

In a single-channel system, everyone speaks and listens to everyone. In a two-channel system, it is possible to create two separate groups. Two-wire partyline actually uses three wires. The wire carries audio, supply voltage, and ground. In a two-channel system, the wire carrying the supply voltage also has a signal superimposed. This signal scheme is usually referred to as ground-referenced. Systems with so-called differential signaling require additional wires but we will not get into that here.

STAND-ALONE VS MATRIXED OPERATION

A two-wire partyline system can be used with nothing except a power supply and multiple beltpacks. This is the stand-alone mode of operation. In many cases, it is convenient to connect a partyline to a matrix. That mode of operation provides additional possibilities but in most cases it requires an interface between the two-wire system and the matrix.

USE CASES

Figure 1. Five use cases for two-wire partyline
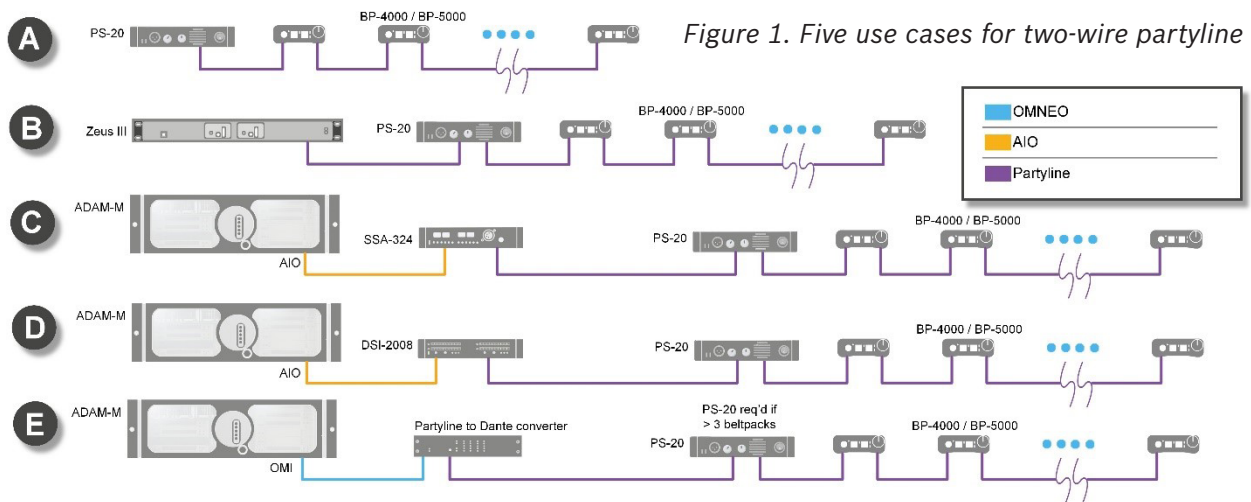
USE CASE A: STAND-ALONE

This is the simplest case, as discussed above. It requires nothing except beltpacks and a power supply. The example uses a PS-20 which is specific to the ground-referenced scheme from RTS.

USE CASE B: INTEGRATION WITH ZEUS III

Zeus III is an analog matrix from RTS with built-in connectors for two-wire partyline. A Zeus III does not provide power for the partyline, so a PS-20 is still required. The rear of the Zeus III is shown in Figure 2.

Figure 2. Rear of the Zeus III has two-wire partyline connectors

USE CASES C AND D: INTEGRATION WITH ADAM / ADAM-M

ADAM and ADAM-M are modular systems with cards that provide different capabilities. The AIO-16A card is used for connecting analog keypanels. Because the audio uses four electrical wires (plus two for keypanel data), this format is sometimes called four-wire. Two-wire and four-wire cannot be inter-connected without an adapter. RTS has two, the SSA-324 (an analog device) and the DSI-2008 (which has digital signal processing). Figure 3 and Figure 4 show the back of these two converters. The user manuals for these two products explain how the electrical connections must be made.
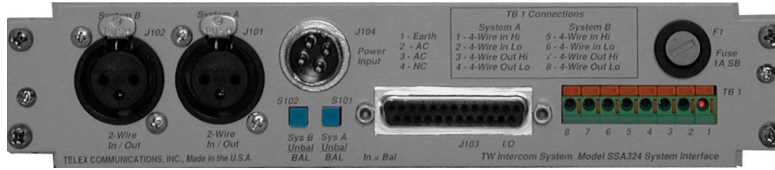

Figure 3. Back of the SSA-324

Figure 4. Back of DSI-2008

USE CASE E: INTEGRATION VIA OMNEO

It is possible to go directly from a two-wire partyline to high-quality audio over IP. Dante is supported by the OMNEO Matrix Interface (OMI), a card that goes into both ADAM and ADAM-M. Converters are available from several third-party suppliers. This example uses the M45DR from Studio Technologies. Figure 5 shows the back of that device.

Figure 5. Back of the StudioTech M45DR

The M45DR communicates via the RJ45 connector on the rear. In most cases, it would be connected to an Ethernet switch, which in turn is connected to the OMI-card. Dante eliminates the problem of creating unique analog cables, to connect from one device to another, as would be required in use cases C and D.

CONCLUSION

Two-wire partyline systems can be used in a stand-alone or matrixed configuration. The use cases are summarized in Table 1.

Configuration	Matrix	Matrix Card	Converter
Stand-alone	N/A	N/A	N/A
Matrixed	Zeus III	N/A	N/A
Matrixed	ADAM / ADAM-M	AIO-16A	SSA-324 or DSI-2008
Matrixed	ADAM / ADAM-M	OMI	M45DR

Table 1. Summary of use cases